

River Red Gum Forests Investigation

DRAFT PROPOSALS PAPER
FOR PUBLIC COMMENT

Victorian Environmental
Assessment Council

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FOREWORD

The River Red Gum forests and their associated ecosystems are ecologically, socially, culturally and economically significant to all Australians. The community values the various natural assets, benefits and services derived from these ecosystems. Across the Investigation area, public land is widely used for recreation, forestry, grazing and conservation.

During the course of this Investigation we have identified that past and current uses, as well as increasing population pressures, are affecting the long-term viability of the forests and wetlands. Changing river flows in the River Murray and its Victorian tributaries compound these impacts and affect the health of the entire river system, particularly the floodplains.

The long-term maintenance and protection of the region's biodiversity is underpinned by a park and reserve system in the River Red Gum Forests Investigation area, which aims to include representative examples of all ecosystems. However, parks and reserves in themselves, will not guarantee the protection of the natural values of the forests and wetlands. Protection of these values is ultimately dependent on an adequate and appropriately timed water flow regime across the entire River Murray system, including the floodplains. In formulating its draft proposals VEAC was conscious of the need to consider the potential impact of climate change on these ecosystems and the need to maintain and enhance connectivity across the landscape.

We recognise the strong association that Indigenous Traditional Owners have with much of the Investigation area. Many of these groups would like to be more involved in managing public land. While Victoria is a leader in many fields of land management, our state lags well behind other Australian jurisdictions in recognising the benefits both to Aboriginal people and to land managers of sharing land management. We propose mechanisms to increase the participation of Indigenous people in public land management, whilst also acknowledging that adequate capacity and training is necessary for this to be successful.

The process of selecting specific areas of public land for high levels of protection is often controversial. For example, the forests in the Investigation area are currently used for many purposes, with many community and industry groups having used the forests for generations in a relatively unrestricted manner. Despite the differing views expressed by the community about the future management of public land in the region, it is clear that all groups and individuals share a deep concern for the wellbeing of the River Red Gum forests.



Council members. Front row left to right: Duncan Malcolm, Chairperson; Jill McFarlane; Jan Macpherson. Back row left to right: David Mercer; Barry Hart.

Throughout the Investigation process VEAC has heard strong arguments for multiple-use approaches to public land use and environmental management. We believe that, across the Investigation area, these draft proposals provide for multiple uses of public land whilst also protecting the unique ecology of the region.

In drawing up its draft proposals VEAC has sought and carefully considered information on the social and economic implications of its recommendations. We acknowledge that changes in categories of public land will adversely affect some individuals and groups. On balance, however, VEAC believes that the environmental outcomes sought will, in the medium to long term, outweigh any short term costs. Where such costs are incurred by individuals or particular groups, VEAC recommends that the government provide assistance to those affected.

Council greatly appreciates the assistance it has received from the community to date and particularly the hundreds of thoughtful and often detailed submissions. We expect that the proposals in this paper will be energetically debated by the public and look forward to receiving the further views of everyone with an interest in this unique area. Your input is encouraged as we develop our Final Report to go to the Minister for Water, Environment and Climate Change in February 2008.

Mr Duncan Malcolm (Chairperson)

Associate Professor David Mercer

Professor Barry Hart

Ms Jan Macpherson

Ms Jill McFarlane

ACKNOWLEDGMENT OF COUNTRY

The Victorian Environmental Assessment Council acknowledges Traditional Owners within the Investigation area, their rich culture and their spiritual connection to Country. This includes the Bangerang, Bararapa, Dhudoroa, Dja Dja Wurrung, Jarra Jarra, Jupagulk, Latje Latje, Ntait, Nyeri Nyeri, Robinvale, Tati Tati, Taungurung, Wadi Wadi, Wamba Wamba, Way Wurru, Wergaia, Yorta Yorta and Yulupna peoples. We also recognise and acknowledge the contribution and interests of Indigenous people and organisations in the management of land and natural resources. Finally, we acknowledge that past injustices and continuing inequities experienced by Indigenous people has limited, and continues to limit, their participation in land and natural resource management processes.

Contents

What is the Victorian Environmental Assessment Council?	ii
Making submissions	ii
Foreword	v
Executive Summary	viii

PART A

Chapter 1 Introduction	1
Scope of the Investigation	3
Community and stakeholder consultation	4
Information sources	5
Timeframe for the Investigation	5
Structure of Draft Proposals Paper	5

PART B RECOMMENDATIONS

Chapter 2 General recommendations	7
General recommendations	8
Environmental water	10
Increasing Indigenous involvement in public land management	15
Recreation and tourism	20
Domestic stock grazing	22
Chapter 3 Public land use recommendations	24
A. National parks	24
A1. Murray–Sunset National Park	26
A2. Hattah–Kulkyne National Park	27
A3. Leaghur–Koorangie National Park	28
A4. Gunbower National Park	29
A5. Terrick Terrick National Park	30
A6. Lower Goulburn River National Park	31
A7. Barmah National Park	32
A8. Warby Range–Ovens River National Park	34
A9. Mount Buffalo National Park	35
B. Regional parks and other parks	35
B1. Kerang Regional Park	36
B2. Shepparton Regional Park	37
B3. Murray River Park	37
B4. Kings Billabong Park	39
B5. Murray–Kulkyne Park	39
B6. Gadsen Bend Park	40
B7. Nyah–Vinifera Park	41

C. State forests	43
C1. Benwell State Forest	45
C2. Guttram State Forest	45
C3. Gunbower State Forest	45
D. Nature conservation reserves	46
E. Historic and cultural features reserves	51
F. Reference areas and heritage rivers	53
G. Natural features reserves	55
H. Water production, drainage and distribution areas	58
I. Community use areas	59
J. Services and utilities areas	61
K. Earth resources extraction areas	62
L. Plantations	63
M. Uncategorised public land	64

PART C IMPLICATIONS

Chapter 4 Social, economic and environmental implications	67
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APPENDICES

1. Executive summary of social and economic assessment of proposed recommendations	76
2. Community Reference Group, Government Contact Agencies and Indigenous Steering Committee	86
3. Extract of Report on VEAC Indigenous community consultation workshops	89
4. Submissions received in response to the Notice of Investigation and Discussion Paper	108
5. Investigation timeframe	128
6. Species names used in the Draft Proposals Paper	129
7. Forest growth rates, state forest areas available for harvesting and sustainable timber volume estimates	131
8. Recommendations for natural features reserves	132
9. Uncategorised public land parcels recommended for revegetation	136
10. Reservation status of Ecological Vegetation Classes	137
11. Representation of key values in the current and recommended reserve system	146

MAPS

A. River Red Gum Forests Investigation Proposed Public Land Use
B. River Red Gum Forests Investigation Proposed Public Land Use in Kerang Region
C. River Red Gum Forests Investigation Proposed Public Land Use in Selected Towns

Executive Summary

The River Red Gum forests and their associated ecosystems are appreciated for their natural, aesthetic, cultural and economic values and uses. However, there are many pressures on these areas. Many River Red Gum forests are severely stressed and there is strong evidence that without improved environmental water flows onto the floodplains, many of these forests may be lost over time.

As many ecosystems in the Investigation area are poorly represented in the conservation reserve system, the Victorian Environmental Assessment Council (VEAC) proposes a substantial increase in the reserve system to improve their protection. In these proposals, VEAC considered the potential impact of climate change and the need to maintain and enhance connectivity across the landscape. However, protection of these ecosystems with conservation land management alone is not enough. Water management is also vital for ensuring the long-term survival of the riverine forests and wetlands, particularly the provision of adequate environmental water flows to allow regular and substantial flooding of the riverine floodplain.

Scope of the Investigation

The Victorian government asked VEAC to:

- identify and evaluate the extent, condition, values, management, resources and uses of riverine red gum forests and associated fauna, wetlands, floodplain ecosystems and vegetation communities; and
- make recommendations relating to the conservation, protection and ecological sustainable use of public land.

In addition, VEAC must take a number of specific matters into consideration (see Chapter 1 for details).

The Investigation began in April 2005 and a Discussion Paper was released for public comment in October 2006. Public comment is sought on this Draft Proposals Paper (released in July 2007), and a Final Report is required to be submitted to the Minister for Water, Environment and Climate Change by 1 February 2008.

Social and economic effects

An independent assessment of the social and economic implications of the draft proposals was commissioned and a summary of the report is included at Appendix 1. The full report is available on VEAC's website (www.veac.vic.gov.au). Chapter 4 includes a discussion of the socio-economic analyses (benefit cost analysis and the regional input output analysis) and the broad social and economic implications of the draft proposals.

Consultation process

VEAC used three primary consultation methods to assist with developing its draft proposals:

- Advisory groups-VEAC established a Community Reference Group, Government Contact Group and Indigenous Steering Committee to provide input and advice. Members of the Community Reference Group include people with backgrounds in recreational uses, industries (timber and grazing), rural communities, local government authorities and other agencies. Members of the Indigenous Steering Committee provided advice on the Indigenous consultation program.

- Formal submissions process-two submission periods have been conducted to date with over 1350 written submissions received in response to the Discussion Paper.
- Direct consultation-VEAC has met with individuals and groups in local communities, community forums, local government authorities, industry bodies, recreation and conservation groups, and government agencies.

Summary of major proposals

The following major proposals are included in this report.

Major new or additional areas of national parks

- Barmah National Park-establishment of a large new national park from state park, state forest and River Murray Reserve in the largest River Red Gum forest along the River Murray.
- Gunbower National Park-establishment of a new national park from state forest and River Murray Reserve on the River Murray near Cohuna.
- Lower Goulburn River National Park-establishment of a new national park mostly from state forest extending from the River Murray, along the Goulburn River to the south of Shepparton and including Kanyapella Basin.
- Warby Range-Ovens River National Park-enlargement and addition to the Warby Range State Park of regional park and state forest along the Ovens River.
- Leaghur-Koorangie National Park-establishment of a new national park in the Loddon and Avoca River floodplains west and south of Kerang, from a number of public land units, the largest of which include Leaghur State Park, Koorangie (The Marshes) Wildlife Reserve and Wandella Flora and Fauna Reserve.
- Murray-Sunset National Park-substantial area addition of state forest (including Wallpolla Island), Mullroo Creek Wildlife Area and River Murray Reserve to this existing national park.
- Terrick Terrick National Park-addition of several grassland nature conservation reserves and other public land units to this national park.

Major new or additional areas of regional or other parks

- Murray River Park-consolidation of the River Murray Reserve and incorporation of regional parks at Echuca, Tocumwal, Cobram, Yarrawonga and Wodonga.
- Four (three new) parks balancing recreation and conservation objectives along the River Murray-Kings Billabong Park incorporating Kings Billabong Wildlife Reserve and Bottle Bend; Murray-Kulkyne Park incorporating the existing park and River Murray Reserve near Colignan; Gadsen Bend Park incorporating state forest and River Murray Reserve south of Robinvale; and Nyah-Vinifera Park incorporating Nyah State Forest and Vinifera forest (River Murray Reserve) downstream of Swan Hill.
- Two new regional parks close to regional centres-Kerang Regional Park incorporating Fosters, Back and Town Swamps and Cemetery Forest Wildlife Reserve; and Shepparton Regional Park adjoining the proposed Lower Goulburn River National Park and incorporating part of the Lower Goulburn State Forest, Shepparton Flora and

Fauna Reserve and Mooroopna Recreation Reserve.

Nature conservation areas

There are 27 new, nine expanded and 13 existing nature conservation reserves in the Investigation area. The majority of the new nature conservation reserves are in the Victorian Riverina bioregion.

State forests

- Gunbower State Forest—incorporates 75 percent of the area in the existing state forest that was previously available for timber harvesting.
- Benwell and Guttram State Forests (northwest of Koondrook)—remain unchanged.

Other areas

There are numerous other areas of public land in the Investigation area. These include 110 natural features reserves and many public land water frontages, three new or modified and 10 existing historic and cultural features reserves, five new or modified community use areas and many water production, service and utilities and earth resources extraction areas.

Changes to land-use categories alone are not sufficient to protect natural and cultural values on public land. VEAC has also proposed changes to public land management in four overarching themes: environmental water, Indigenous involvement, recreation and tourism, and domestic stock grazing.

Major issues

Environmental water

To achieve sufficient flooding and maintain ecological connectivity between the rivers and their floodplains, a volume of water in the order of 4000 gigalitres is required for a floodplain inundation event at least every five years, although VEAC has commissioned further research to refine these figures.

Indigenous involvement in public land management

There is a clear need for resourcing and capacity building to support increased involvement of Traditional Owner groups in public land management and decision-making, including Traditional Owner identification, registration, establishment of internal decision-making processes and informed consent protocols. VEAC proposes co-management of the proposed Barmah National Park and the Nyah-Vinifera Park through Boards of Management with majority Aboriginal membership and a range of other arrangements for shared management including Aboriginal Advisory Committees for west Walpolla Island and Bumbang Island. A change of provisions is required to allow for traditional cultural practice by Traditional Owners across public land through a consent and permit system involving Indigenous Traditional Owners of the specific area.

Recreation and tourism

The sustainable promotion and maintenance of recreation and tourism is an important factor for the River Red Gum Forests Investigation area. VEAC is proposing an increased diversity of camping experiences with more regulated camping in some areas to ensure the sustainability of this immensely popular activity. In addition a ban is proposed

on solid fuel fires and firewood collection on all public land during the high fire danger period and all year in national parks and nature conservation reserves. The development of a River Murray Strategy will provide a long-term framework for sustainable recreation, tourism, commerce and similar uses along the length of the River Murray in Victoria.

Domestic stock grazing

Significant changes are proposed for domestic stock grazing in the Investigation area including the exclusion of broad-acre domestic stock grazing across public land, other than unused roads and a five-year phase out of grazing on public land water frontages.

Summary

Across the Investigation area, the conservation reserve system (land in national parks, nature conservation reserves and some other areas), would increase from 25 percent of public land to 65 percent; or from 5.7 percent of the original extent of River Red Gum forests, wetlands and associated ecosystems to 14.5 percent.

Summary of uses and effects

The independent social and economic assessment found that, overall, VEAC's proposed recommendations would result in a net increase in economic value to Victoria of \$92 million per year excluding the costs of environmental water. Most of the benefits result from non-use values for environmental protection, which are heavily dependent on adequate environmental water. The principal economic costs of the proposed recommendations are also related to environmental water but are difficult to determine largely because of the variable price of water. If the water can be acquired for less than between \$1320 and \$2880 per megalitre, the recommendations would continue to deliver net benefits to Victoria.

The benefits of the proposed recommendations would accrue mostly to people outside the Investigation area, especially in Melbourne, while the costs would be largely borne within the Investigation area particularly in areas near where public land timber harvesting and grazing are focussed: the towns of Cohuna, Koondrook, Nathalia and Picola are likely to be most sensitive to these effects.

Environmental water

The most urgent and serious environmental problem in the Investigation area is the imminent loss or degradation of large areas of wetlands and riverine forests as a result of greatly reduced frequency of flooding. This reduced frequency of flooding is already having substantial negative impacts on natural values (especially biodiversity), Aboriginal associations, recreational values and the sustainability of timber harvesting, and these impacts are likely to become severe without prompt and significant action. Many tens of thousands of hectares of forests and wetlands may be lost without adequate flooding in the near future.

Changes to public land-use categories alone will not be sufficient to address this problem. As a result, VEAC's proposed approach goes beyond such changes to identify the approximate frequency and extent of flooding required to maintain wetlands and riverine forests in a healthy condition and recommends that such flooding be brought

Land use category	Current area (hectares)	Proposed area (hectares)
National park	52,120	151,765
State park	9925	0
Other park (Schedule Three, <i>National Parks Act 1975</i>)	4000	11,105
Regional park (except Murray River Park)	3775	1740
Murray River Park	0	32,030
Nature conservation reserve	11,895	9685
Natural features reserve (River Murray Reserve)	48,665 (16,060)	27,020
Water production	2120	2095
Water supply regulation and drainage	10,545	10,370
Historic and cultural features reserve	705	865
Community use area	2690	2440
State forest	106,910	12,205
Plantation	175	175
Earth resources	125	225
Services and utility	5880	6120
Wildlife co-operative management area	2565	0
Uncategorised public land	6620	875
Total Public Land	268,715	268,715
Freehold	951,380	951,380
Total Extent of Study Area (including all freehold and other land)	1,220,095	1,220,095

about. A key element of this approach is the reinstatement of significant overbank flows from rivers to achieve this flooding and maintain ecological connectivity along rivers and between rivers and their floodplains.

This flooding would require several hundred gigalitres per year. However, for maximum benefit, this water would not be used every year but be accumulated for use every five or so years to mimic a natural flood. This is a significant new approach. It may be that some of the details are not perfect. VEAC's view is that such uncertainty does not constitute a reason not to act. Instead flexibility needs to be built into water management planning to accommodate improved information about the practicalities and consequences of sustainable flood management and provision. The primary and urgent focus of such management needs to be the broader objective of significantly increased overbank flooding to restore and maintain wetland and forest health.

Other issues addressed in draft recommendations on environmental water include inappropriate summer flooding of Barmah forest and deteriorating levee banks.

Indigenous involvement

Council has recommended increased involvement of Indigenous people and Traditional Owners in public land management. A number of draft recommendations have been made to increase Indigenous community capacity and enhance involvement in management, including a proposal for a program that will facilitate Aboriginal Traditional Owner identification, registration, and the establishment of internal decision-making processes and informed consent protocols.

A range of approaches are recommended for increasing Traditional Owner engagement and decision-making within shared management arrangements. The proposed Barmah National Park and Nyah-Vinifera Park are proposed to be co-managed through a new arrangement involving Boards of Management with a majority of members of the relevant Aboriginal traditional owner group or groups. Other arrangements are also proposed including Aboriginal Advisory Committees for the west Walpolla Island area of the Murray-Sunset National Park and for the Bumbang Island Historic and Cultural Features Reserve. A number of flexible arrangements acknowledge

the different aspirations of different Aboriginal Traditional Owner groups at this time and provides for future changes in arrangements for particular areas.

Traditional cultural practice is viewed as one of the key ways that Aboriginal people may keep their culture alive and teach younger generations. VEAC has recommended changes to allow for traditional cultural practice by Traditional Owners across public land in the Investigation area through a consent and permit system involving Indigenous Traditional Owners in decision-making.

Recreation and tourism

Recreation and tourism are significant contributors to the economy of the Investigation area, with around eight million visitor days and \$970 million being spent each year in the region. Most people are drawn to the rivers and streams for recreation activities—notably the Murray and Goulburn Rivers—particularly for low-cost and relatively unregulated camping holidays. Around 0.65 million people a year visit parks in the Investigation area alone, with a strong trend towards increasing numbers.

The increasing popularity of camping in the Investigation area has increased impacts on natural values and altered the overall experience. To accommodate a range of visitor experiences whilst increasing the camping capacity in a sustainable manner, VEAC recommends increased regulated camping in some areas while maintaining dispersed camping in other areas. To further reduce the impacts of camping-related activities, VEAC proposes a ban on solid fuel fires and firewood collection during the designated high fire danger period on all public land in the Investigation area and for the entire year in national parks and nature conservation reserves. This will reduce the likelihood of forest fires and the reduction in firewood collection will improve the habitat for ground dwelling animals.

VEAC's proposed recommendations will reduce the number and area of wetlands available for recreational duck hunting, affecting some 3950 duck hunters who visit these wetlands. A reduction in duck hunters visiting the Investigation area is estimated to lead to a net economic loss of \$0.082 million and 17 (equivalent) direct jobs in the region, particularly in the Kerang area. This is largely due to reduced spending on fuel, accommodation and other services in the region. Recommended improvements to environmental water regimes will enhance many wetlands and therefore improve hunting opportunities for available areas, potentially reducing the estimated economic effects.

Integrated planning along the whole of the River Murray corridor is desirable and should take into account activities on the river itself and adjacent private land, as well as on public land. VEAC has proposed that a co-ordinated River Murray Strategy be undertaken to provide a long-term framework for sustainable recreation, tourism, commerce and other uses.

Biodiversity conservation

The Investigation area follows the riverine corridor running through an essentially semi-arid environment in the northwest to the grasslands of the Victorian Riverina to the fertile mountain valleys in the east. This corridor supports a diverse range of ecosystems and habitats, and many threatened plants and animals. In developing its

recommendations, VEAC has used Ecological Vegetation Classes (EVCs) as surrogates for ecosystems, and the nationally agreed criteria for establishing the comprehensive, adequate and representative reserve system (also known as the 'JANIS criteria'). Protection of threatened EVCs in permanent reserves is a key element of these systems.

VEAC's proposed recommendations more than double the total area of permanent reserves from 69,641 hectares to 178,923 hectares. These proposed reserves satisfy JANIS criteria for the majority of ecosystems and important threatened or depleted EVCs such as Riverine Grassy Woodland, Floodplain Riparian Woodland, Grassy Riverine Forest, Lignum Swampy Woodland, Plains Woodland, Plains Grassland, Semi-arid Chenopod Woodland, Chenopod Mallee and Riverine Chenopod Woodland.

The proposed conservation reserve system provides essential protection for the last Victorian breeding site of the threatened Superb Parrot (in the proposed Barmah National Park) and reduces threats to the endangered Mueller Daisy at two of the most important sites for this species in Victoria.

Consolidation of protected areas into large and well-connected reserves is an important component ensuring long-term viability and allowing for species movement across the landscape. Strong habitat linkages also provide a buffer for the future effects of climate change. Notably, the north-south links in the proposed Warby Range-Ovens River and Lower Goulburn River National Parks and the consolidated Murray River Park will be particularly important habitat corridors or links.

However, environmental flooding is the most critical requirement for biodiversity conservation. Without the implementation of this recommendation public land-use changes will not be sufficient for the long-term sustainability of the River Red Gum forests flood-dependant ecosystems.

Wood products

Timber industry

State forests in the Investigation area are a major source of durable timber products on public land, as well as supporting biodiversity and providing for a broad range of recreational activities. VEAC's draft recommendations significantly reduce the area of state forest—from 106,710 hectares to 12,210 hectares. Commercial timber harvesting in the Investigation area is largely from Barmah, Gunbower and the Lower Goulburn forests. The area available for harvesting (not counting areas in which harvesting is uneconomic, non-viable or prohibited) would reduce from 25,165 to 10,105 hectares, or 40 percent under VEAC's proposed recommendations. This will greatly decrease the volume of wood produced and, consequently, the size of the River Red Gum timber industry.

Estimates of sustainable yield based on new predicted growth rates show that with frequent flooding and the current available area, the sustainable harvest volume is likely to be reduced to 62 percent of the current harvest volume. That is, without any changes as a result of VEAC's recommendations, the sustainable harvest is around 38 percent of current harvest volumes (details provided in Appendix 7).

Countering this loss somewhat, VEAC's environmental water recommendations will increase forest flooding and thereby increase current timber growth rates as River Red Gum forest health depends on water supplied by regular winter–spring flooding. The proposed reduced state forest area and significantly greater floodplain inundation are estimated to result in a sustainable harvest equivalent to 36 percent of the current harvest volumes.

In financial terms, these changes would reduce the net economic contribution of the timber industry to the Victorian economy from \$2.5 million per annum currently to \$0.5 million per annum. Employment in the industry would reduce from around 96 direct jobs currently to around 19 direct jobs (full-time equivalents) in the Investigation area.

Commercial and domestic firewood

The percentage reductions in timber availability (above) resulting from VEAC's recommendations are likely to apply with reasonable reliability to firewood, especially waste timber following commercial sawlog harvesting activities and thinning operations.

Domestic firewood is largely obtained from fallen wood, and is largely constrained by accessibility—it is generally not cost-effective to travel more than about 20 kilometres for domestic firewood. Local firewood strategies such as those implemented following acceptance of the ECC Box-Ironbark Forests and Woodlands Investigation recommendations may be appropriate in parts of the River Red Gum Forests Investigation area to guide the transition to new domestic firewood arrangements. To cater for areas with few affordable alternatives (especially reticulated gas) and where little state forest remains, zones for domestic firewood collection are recommended in the Murray River Park in the Mildura, Robinvale and possibly Nathalia areas. State forests near Koondrook will also remain available for domestic firewood collection.

Domestic stock grazing

Council has considered a range of information and opinions in forming the view that while domestic stock grazing can be an effective tool to address specific land management problems at particular locations and times, scientific evidence indicates that in general it adversely affects natural values especially biodiversity, water quality and soil condition. Accordingly, VEAC is recommending that domestic stock grazing be generally excluded from public land in the Investigation area with the exception of approximately 4600 hectares of licensed unused road reserves. The draft recommendations allow for grazing as a targeted management tool, to address particular environmental or management problems, such as controlling particular weed infestations or maintaining a specific grassy habitat structure. Council acknowledges that excluding stock grazing from public land water frontages is likely to require considerable fencing and off-stream water point installation, and therefore a five-year phase-out period is proposed for removal of grazing from these areas.

These proposals are a significant shift in public land management priorities and will see the cessation of some 1725 licences over an area of approximately 84,900 hectares. This includes some 12,100 hectares of public

land water frontages (1260 licences) subject to the five-year phase-out and broad-acre grazing over about 43,000 hectares which is recommended to cease immediately. The latter includes 29,600 hectares of Barmah forest, which provides an estimated economic contribution of \$250,000, and 2 full-time equivalent jobs, for 38 permit holders. It is estimated the use of public land in the entire Investigation area for domestic stock grazing has an economic contribution of approximately \$1.25 million and supports 14 to 17 full-time equivalent jobs.

Submissions on the Draft Proposals Paper

Specific proposals are made in this Draft Proposals Paper for public land across the River Red Gum Forests Investigation area, and all stakeholders are encouraged to make submissions to VEAC during the public comment period. These submissions are a key part of the consultation process and will be considered in detail when VEAC is developing its Final Report for submission to the Minister for Water, Environment and Climate Change.

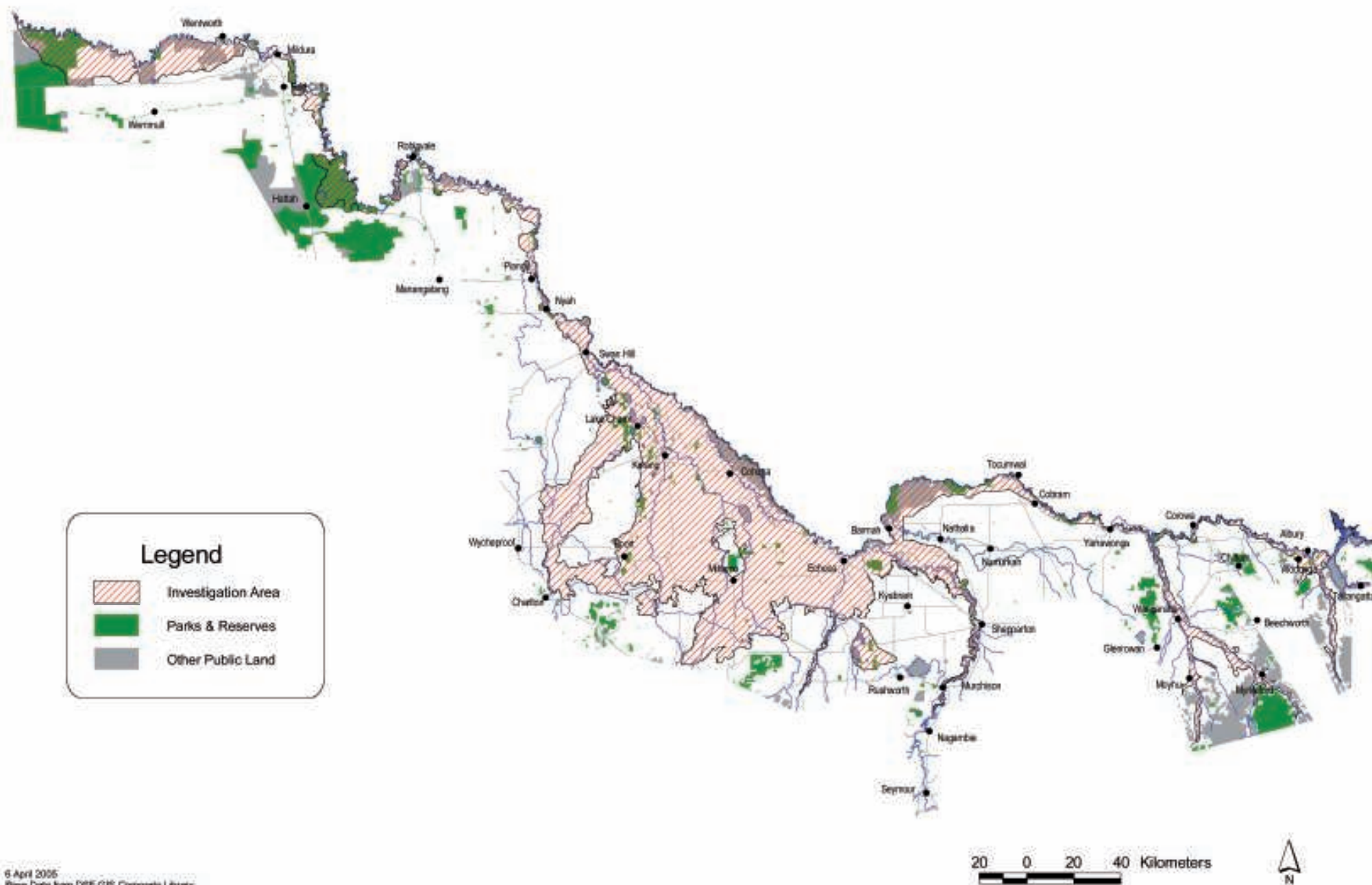
The closing date for written submissions is Monday, 10 September 2007.



Introduction



Map 1. River Red Gum Forests Investigation Area.



1 Introduction

The River Red Gum forests and wetlands of the River Murray are characterised by a diversity of natural values and attributes. These values include biodiversity, history, geology, cultural heritage, scenic, as well as many other, qualities. People also use the area for a range of activities, such as recreation, grazing, forestry and community education. These values are described in detail in the first report for the River Red Gum Forests Investigation, the Discussion Paper, released in October 2006.

The Victorian government asked the Victorian Environmental Assessment Council (VEAC) to undertake an Investigation into the River Red Gum Forests of the River Murray and its Victorian tributaries in 2005. This Draft Proposals Paper, the second report of the

Investigation, outlines VEAC's proposed recommendations—including general recommendations, thematic recommendations and recommendations for public land categories. The Paper also includes a section exploring the social, economic and environmental implications of the proposed recommendations.

Scope of the Investigation

Legislation and terms of reference

VEAC conducts its investigations at the request of the Minister in accordance with the *Victorian Environmental Assessment Council Act 2001* (the VEAC Act) and the Terms of Reference provided by the Minister. Together these determine how VEAC conducts its investigations, including the reports that are required and public consultation timelines. The River Red Gum Forests Investigation began in April 2005.

Requirements under the VEAC Act

Under Section 18 of the VEAC Act, the Council must have regard to the following considerations in carrying out an investigation and in making recommendations to the Minister:

- the principles of ecologically sustainable development
- the need to conserve and protect biological diversity
- the need to conserve and protect any areas which have ecological, natural, landscape or cultural interest or significance, recreational value or geological or geomorphological significance
- the need to provide for the creation and preservation of a comprehensive, adequate and representative system of parks and reserves within the State of Victoria
- the existence of any international treaty ratified by the Commonwealth of Australia which is relevant to the investigation
- any agreement at a national, interstate or local government level into which the Government of Victoria has entered, or under which the Government of Victoria has undertaken any obligation in conjunction with the Commonwealth, a State, Territory or municipal council, which relates to the subject matter of the investigation
- the potential environmental, social and economic consequences of implementing the proposed recommendations
- any existing or proposed use of the environment or natural resources.

Terms of Reference

The purposes of the Investigation as described in the Terms of Reference are to:

(a) Identify and evaluate the extent, condition, values, management, resources and uses of riverine red gum forests and associated fauna, wetlands, floodplain ecosystems and vegetation communities¹; and

(b) Make recommendations relating to the conservation, protection and ecological sustainable use of public land as specified in Section 18 of the *Victorian Environmental Assessment Council Act 2001*.

In addition to the considerations specified in Section 18 of the VEAC Act, the Council must also take into consideration the following matters:

- Policies, programs and reports, as well as obligations, resulting from International, Commonwealth-State and Interstate agreements or arrangements, as they relate to the investigation
- Existing State Government policies, programs, strategies and Ministerial Statements, as they relate to the investigation
- Regional programs, strategies and plans, as they relate to the investigation
- Possible opportunities for indigenous management involvement
- The Yorta Yorta Co-operative Management Agreement
- Appropriate access for commercial opportunities (e.g. timber, grazing, apiaries, and other resource industries), for appropriate recreation activities, and for community values and uses
- Nationally agreed criteria for a comprehensive, adequate and representative reserve system
- Opportunities for a joint management regime with the New South Wales Government for the River Murray and public land on its floodplains, and
- The Council is required to release a Discussion Paper, a Draft Proposals Paper, and submit a Final Report on the results of its Investigation. The Final Report must be submitted by 1 February 2008.

¹ This includes all Ecological Vegetation Classes (EVCs) occurring within the investigation area boundary

Investigation boundary

The River Red Gum Forests Investigation area consists of 268,715 hectares of public land (within a total area of 1,215,800 hectares for the Investigation area) with a boundary extending from Lake Hume to the South Australian border. It also includes public land along a number of Victorian river tributaries. The boundaries of the Investigation area, including the distribution of public land in the area, are shown in Map 1.

Statewide perspective

For this Investigation VEAC has taken a Victoria-wide perspective. In so doing, VEAC acknowledges that some users of public land may benefit whilst others will incur costs. To ensure transparency in its decision-making processes and to identify which groups will be affected, VEAC commissioned a socio-economic analysis of its proposed recommendations and their implications. A discussion of this analysis is included in Chapter 4 of this document, and a summary is included at Appendix 1.

Community and stakeholder consultation

Under its legislation VEAC is required to consult with the community. Three consultation methods have been adopted by VEAC for this Investigation: the use of advisory groups for the provision of information and advice; direct consultation with individuals; groups and organisations; and, a formal submission process based on the release of public documents.

Advisory groups

As required under Section 13 of the VEAC Act, the Council has established a Community Reference Group for the Investigation. The Community Reference Group is made up of representatives of a broad range of interests related to the Investigation and provides advice and input to VEAC on a range of issues.

The Council has also established an Indigenous Steering Committee under section 12 of the VEAC Act, comprising representatives from across the Investigation area to provide advice on consultation processes and methods for gaining Indigenous communities' views on greater involvement in public land management.

A Government Contact Group consisting of a range of representatives from government agencies provides technical advice to the Council.

A list of members of the Community Reference Group and the Indigenous Steering Committee along with the Government Contact Agencies is provided at Appendix 2.

Direct consultation

Since the release of the Discussion Paper, VEAC has met with a range of individuals and groups to hear their views and to gain greater insights into their positions on public land use in the Investigation area. VEAC also met with a diverse range of individuals at the six community forums which were held following the release of the Discussion Paper. These forums provided an opportunity for people to learn about the Investigation, discuss relevant issues and meet with Council members and staff in an informal

setting. Approximately 70 people attended these events. The forums were accompanied by an extensive media campaign covering both print and radio media. Four briefing sessions were also held for government agency representatives following the release of the Discussion Paper.

The Indigenous consultation process involved twelve workshops at eleven locations within and near the Investigation area, with a total of 79 people attending. Views gained from each of these workshops were used to help formulate the proposed recommendations for Indigenous involvement in public land management. A copy of the consultant's report on the Indigenous consultation is included at Appendix 3.

Formal submission process

Two submission periods have now been completed, the first following the Notice of Investigation being advertised and the second following release of the Discussion Paper in October 2006. Over 1350 submissions were received in response to the Discussion Paper, from individuals, interest groups and organisations representing a broad cross-section of the community. These submissions contained a lot of valuable material and provided information used in the development of the proposed recommendations in this paper. A complete list of all those who made submissions for both periods is provided in Appendix 4. Details for making submissions responding to this Draft Proposals Paper can be found inside the front cover of this document.

Submission outcomes

In response to the Discussion Paper many submissions made specific comments about how public land should or could be used in the future. Others made more descriptive comments about how they use specific areas of public land. Different submissions often presented opposing views. For example, some submissions argued for grazing to continue on public land whilst others argued for it to be discontinued. Other submissions argued for the establishment of national parks in areas such as the Barmah forest with others arguing against this category for this forest. Specific descriptions and analysis of community views are incorporated into the discussion of the proposed recommendations for each land category, found in Chapter 3 of the document.

Many submissions also argued that increased resources must be made available for public land management activities throughout the Investigation area, including staffing levels, infrastructure and day to day operations.

The key general themes that emerged from the submissions were:

- the importance of the Investigation area for recreational uses
- whether Barmah forest should be a national park
- whether grazing is an appropriate use of public land
- the need for an adequate community consultation process for the Investigation
- the need for greater and appropriate environmental water flows

- the desirability of greater involvement of Indigenous people in public land management
- the importance of public land for achieving conservation objectives.

Information sources

In preparing this Draft Proposals Paper, VEAC has drawn on many sources including relevant existing studies, material from the Discussion Paper, submissions responding to the Discussion Paper, information from the community, land and water managers, VEAC's own research and, where necessary, commissioned consultancies.

Timeframe for the Investigation

Following the release of this Draft Proposals Paper there will be a formal submission period of more than 60 days, **closing on Monday, 10 September 2007**. The community is invited to respond to the paper by making submissions and comments. During this time VEAC will conduct a series of briefings and other forums to provide information and to hear the community's views on the proposed recommendations.

Information gained from the community consultation process will be used to further refine VEAC's recommendations. These recommendations then form the basis of the Final Report that VEAC presents to the Minister for Water, Environment and Climate Change by 1 February 2008. The Minister must make the report available to the public within seven days. Appendix 5 contains the timeframe for the entire River Red Gum Forests Investigation process.

Structure of Draft Proposals Paper

This Draft Proposals Paper is divided into three main parts:

- Part A includes preamble material, a foreword and Chapter 1
- Part B outlines the proposed recommendations including the general recommendations, thematic recommendations and recommendations for public land categories and covers Chapters 2 and 3
- Part C includes Chapter 4 and describes the social, economic and environmental implications of the proposed recommendations outlined in Part B.

More comprehensive and detailed information on the values and uses of public land in the Investigation area can be found in the River Red Gum Forests Investigation Discussion Paper. Copies of the Discussion Paper are available at the same locations as for this Draft Proposals Paper or can be accessed through the VEAC website www.veac.vic.gov.au.



B

Recommendations



2 General recommendations

The River Red Gum Forests Investigation area is a much loved and popular place. Both visitors and residents enjoy its many aesthetic, cultural and economic values and uses. However many of these values are under serious threat from both changing and ongoing patterns of water and land use. Indeed some economic uses of the River Red Gum forests, such as grazing and forestry, are already at serious risk particularly in the face of climate change.

Public land occupies some 269,000 hectares of the total Investigation area (1,220,000 hectares) and comprises some 22 percent of the former extent of River Red Gum forests and related ecosystems. As these ecosystems are poorly represented on public land and under significant threat from damaging processes, VEAC proposes that a substantial area be protected within the conservation reserve system. However, it must be noted that even with the additional protection provided through a conservation land management regime, there is a real possibility that the riverine forests and wetlands will not survive unless the under flooding is addressed.

The draft public land-use recommendations are underpinned by a series of environmental water recommendations. The evidence is strong that, without environmental water flows to the River Red Gum floodplains via overbank flows, the forests will be lost over time. The Murray-Darling Basin river systems are under extreme stress during this extended dry period and drought, but if flows are not restored to forest and wetland systems, they will suffer irreparable damage and will be permanently lost for future generations.

In constructing the proposed conservation reserve system, VEAC has endeavoured to consolidate and improve public land connections between habitats. Public land-use

categories have been simplified, notably the River Murray Reserve has been incorporated into adjoining categories reducing potential boundary management issues. The River Murray corridor is identified as a critical environmental element of this floodplain forest system and the majority of public land in this zone has been protected in a series of national parks and regional parks, particularly the proposed Murray River Park (Recommendation B3).

In some places there is a need to provide for and manage visitor use in a more coordinated and effective manner, especially along the rivers. This is particularly the case during peak periods around long weekends and public holidays. If some activities continue in their current pattern and visitor numbers continue to grow, natural values will inevitably decline with diminished appeal for visitors. Some of the proposed land-use changes will have little impact outside the peak periods and will allow everyone to share the experience of camping and visiting the popular parts of the Investigation area. Through detailed management planning, the feel of remote and dispersed camping, horseriding, four wheel driving and other popular activities will still be available throughout the Investigation area.

In Victoria Indigenous involvement in public land management is minimal, particularly in comparison to other Australian states and territories. In the past, there have been few mechanisms for assisting Traditional Owners to engage with public land planning and management and involvement in decision making is almost non-existent. Council proposes a range of mechanisms to increase the capacity of Indigenous Traditional Owners to be involved in public land-use planning and management. Such increased involvement benefits both land managers and Indigenous people and is a significant practical mechanism towards the reconciliation of traditional Indigenous cultural values and practices with the needs and interests of the wider Australian community.



GENERAL RECOMMENDATIONS

Implementation resources

- R1** The government allocate adequate resources for implementation of these recommendations and ensure that the objectives of the report and recommendations are achieved.

Resourcing for ongoing land management

- R2** The government allocates additional resources to address the current and future public land management needs across the region, with priority given to fire protection, pest plant and animal control, track maintenance, on-ground staff presence, and the provision and servicing of recreation and tourist facilities.

Assistance

- R3** Where individuals or local communities are adversely affected as a result of the implementation of recommendations in this report, government establishes a process to evaluate and implement mechanisms and levels of assistance required to minimise those effects.

Interim management and minor boundary adjustments

- R4** Upon government approval of VEAC recommendations:
- (a) relevant land be managed in accordance with those recommendations and be consistent with national and international conventions where appropriate; and
 - (b) subsequent implementation of recommendations and land management allow flexibility for minor boundary adjustments.

Knowledge and information

- R5** Land managers base their management on adaptive management practices and address current and future information and knowledge gaps.

Community engagement and awareness

- R6** The government support measures to increase awareness, appreciation, education, interpretation and promotion of River Red Gum forests and associated ecosystems throughout the Investigation area, Victoria and nationally.
- R7** The government support community participation through adequate resourcing of planning processes associated with changes in land use categories and future management arrangements.

Landscape-scale conservation

- R8** The government continue to encourage protection and restoration of River Red Gum forests and other vegetation communities on private land, particularly where these areas adjoin or link public land blocks, and where opportunities exist, consider acquiring areas to consolidate vegetation or wildlife corridors.
- R9** That the relevant Catchment Management Authority, in partnership with appropriate land managers, investigate and pursue opportunities to establish Conservation Management Networks at suitable locations in the Investigation area.

Notes:

1. A Conservation Management Network (CMN) is a network of vegetation remnants, the managers of those remnants and other interested parties. CMNs have been established in a number of fragmented landscapes in southeastern Australia to facilitate the coordination of remnant vegetation conservation and management across public and private land. Private landholder involvement is on a voluntary basis.
2. VEAC considers areas between the Warby Range and Ovens River forests, Lower Goulburn floodplain, Loddon floodplain between Leaghur and Wandella forests and north of Kerang, and Avoca Plains to be suitable candidate areas for Conservation Management Networks.

Environmental water

The River Red Gum Forests Investigation Discussion Paper highlighted the long term environmental impact of insufficient flooding on the survival of wetlands and riverine forests in the Investigation area. There are already large areas of native vegetation in very poor condition due to insufficient flooding. If insufficient flooding continues, these areas would eventually turn into degraded versions of the adjoining dryland vegetation that survive on local rainfall—such as mallee, saltbush and clay pan communities. Under current flood regimes, the health and expanse of wetland and riverine communities will continue to decline, providing little resilience to the impacts of climate change in the future.

Deterioration of the remaining wetlands and forests will have devastating consequences for the plant and animal communities dependent upon these habitats. The River Murray and its associated tributaries form a vast interconnected dispersal corridor across the eastern half of the Australian continent. This corridor crosses climatic, biogeographic and bioregional boundaries, maintaining essential genetic dispersal for a wide range of aquatic and terrestrial species. Many of our rarest and most vulnerable species will only survive future climate change if they are able to move significant distances along contiguous longitudinal corridors. With its wide geographic spread and comparatively contiguous vegetation corridors, the Murray and its tributaries constitute the single most significant north–south trans-continental corridor in the country. The wetlands and riverine forests of the Investigation area constitute a vital link in this environmental chain.

The riverine forests of the Investigation area are loved and visited by tens of thousands of people every year. They are a treasured natural resource for all Victorians and their deterioration would constitute an irreplaceable loss for many, not least for the Aboriginal people of the area whose cultural and spiritual connections to their Country are profound. The tourism and timber industries of the region would also be devastated. Already around 75 percent of riverine trees in much of the Investigation area are dangerously stressed. If only a third of wetlands and riverine forests were lost through insufficient flooding (a scenario that is probable rather than merely possible) approximately 80,000 hectares of highly significant native vegetation would be lost in Victoria alone. Losses in both South Australia and New South Wales are likely to be of a similar magnitude. No other factor poses a comparable imminent and potentially disastrous threat to the environment of the Investigation area.

Changes to public land-use categories alone will do virtually nothing to avert this problem. Increased reserve system protection must be underpinned by more water reaching wetlands and floodplain forests. There are significant initiatives currently under way to do just that. The Living Murray First Step plans to provide an extra 500 gegalitres per year for the six ‘icon sites’ along the River Murray. However, it must be remembered that the completed flooding of Barmah–Millewa forest in 2005 using around 500 gegalitres (see page 270 and Map D in the Discussion Paper for details) only reached about half of

the Barmah–Millewa floodplain. Many stands of stressed River Red Gums remain—including some within two kilometres of the River Murray. Besides the Barmah–Millewa forest example, other managed floods have been limited to discrete sites such as the lower Gunbower forest, Hattah Lakes, Lindsay–Wallpolla, Burra Creek and Lake Murphy, for ‘emergency’ watering and small ongoing allocations of water to wetlands, mostly from Victoria’s existing environmental water entitlements.

Although insufficient, this flooding is nevertheless extremely important to sustain these areas in the interim until more substantial inundation occurs. However, this flooding covers a comparatively small total area—certainly not approaching the many tens of thousands of hectares under threat. In particular, it does little to assist many areas, especially outside the ‘icon sites’—such as most of the long stretch of narrow floodplain between Gunbower–Perricoota and Hattah–Kulkyne. In addition, this flooding often involves small discrete flows along channels, tributary creeks (‘runners’) and through pumps. Except in areas near the Barmah choke there are very limited overbank flows, so the critical ecological connectivity between the rivers and their floodplains, and along the length of rivers is lost. To maintain these connections and the health of large areas of wetlands and riverine forests will require much larger flood events, mimicking natural floods, where water flows across much of the floodplain as the flood pulse moves downstream. Such a single large inundation also maximises water efficiency—river channel heights only need to be raised once, rather than repeatedly raised which would be the case if different sites were flooded in separate events.

Whilst survival of the wetland and riverine forests is dependent on mimicking some aspects of natural flood events, it is clearly not feasible or necessarily useful to recreate the natural flood regime of the Murray system in total. The level of diversions required to support irrigated agriculture preclude this option. There would also be little value in flooding areas which no longer support significant areas of potentially healthy native vegetation. Broadly, the outcome sought is to maintain or restore the health of native vegetation that is currently healthy or would be if flooded in the near future. The question then becomes: what regime is required to achieve this objective?

Proposed flood regimes

Clearly different ecosystems require different flooding regimes. A major flood would be required relatively infrequently (say once every ten years) to maintain vegetation dominated by Black Box in a healthy state, whereas some wetlands require almost annual inundation. Most ecosystems dominated by River Red Gums probably require flooding in the order of every two to five years. The optimal regime may involve occasional major floods, frequent small floods (perhaps not greatly different from the current environmental watering regime) and floods of intermediate size and frequency. To minimise the amount of water required and maximise the similarity to natural seasonality, deliberate floods would be timed to coincide with natural flood events in the spring of naturally wet years when inflows to the system are higher than usual and floodplain soil moisture is high as a result of rain.

There is also likely to be variation in the appropriate duration of flooding for different ecological purposes. Some estimates suggest as little as a week is required to maintain tree health, while three to four months is required for successful breeding of colony-nesting waterbirds. Because a deliberate flood event of this scale has never occurred, the volume of water required to produce flooding of various spatial extents is poorly understood. However the technical input provided by the Expert Reference Panel Report for the Murray Darling Basin Ministerial Council; 2002 and the Scientific Reference Panel Interim Report for the Murray Darling Basin Commission as the basis for the The Living Murray Initiative decision did attempt to address this issue. Combined, the reports developed a number of flow scenarios for possible 'icon sites' and estimated the daily flow (in gegalitres) required for each scenario at each site. Based on these reports the scenario which provides the highest floodplain connectivity and hence floodplain and wetland health would require the following volumes for one month of flooding for the current icon sites in Victoria:

- Barmah–Millewa forest: approximately 900 gegalitres
- Gunbower–Perricoota forest: approximately 1200 gegalitres
- Hattah Lakes: approximately 1470 gegalitres
- Lindsay–Wallpolla (and Chowilla in South Australia): approximately 3000 gegalitres.

To calculate the total amount of water required for such a flood event is not simple a matter of adding up the requirements for each site. Rather a number of factors require consideration when identifying the total amount of water necessary, including:

- the amount of water returned to the river from floodplains and then 'reused' downstream, and the amount lost through evaporation and ground water seepage. For example, some estimates are that around 80 percent or greater of the water required to inundate Barmah–Millewa forest returns to the river. Improving the currently poor accounting for these processes (especially beyond the icon sites) would be a key prerequisite in the deliberate improvement of floodplain inundation
- the estimates above are only for the 'icon sites'. Such flow regime estimates ignore the need for ecological connectivity along the entire length of the River Murray and its tributaries and hence the need for inundation of floodplains upstream and downstream of the icon sites
- the different conditions across location and time (particularly soil moisture prior to inundation, local topography and hydrology)
- the interaction of ground water and surface water and the relationship of both with ecosystem health and floodplain inundation
- the type of flow regime required in terms of duration, spatial extent, frequency of flooding and flood depth and the localised ecological outcomes sought
- level of information and knowledge available on the

relationship between ecosystem health, floodplain inundation (particularly the spatial extent) and required flow volumes.

VEAC is commissioning further work to assist in improving the precision and reliability of the estimated water requirements—the results of which will be available from VEAC's website (www.veac.vic.gov.au). Nonetheless, the Expert Reference Panel suggested that a total of 1950 gegalitres to 4000 gegalitres is required to achieve an overbank flood event with a high degree of floodplain connectivity along the length of the River Murray. Ultimately, precise and reliable figures will probably only be finalised through close monitoring of several actual deliberate flood events. Nonetheless, a figure of this magnitude (4000 gegalitres) is not surprising given the modest extent of the 500 gegalitres flood event in 2005 referred to above.

The further work commissioned by VEAC will assist in determining an appropriate frequency for overbank flood events. If, however, such events were required once every five years for example, then the total volume of water required would equate to 800 gegalitres per year. The volume required would be less if some water was also contributed by rainfall on the floodplain, natural flows from catchments or some water management activities such as filling Lake Victoria prior to the start of the irrigation season.

Lack of information should not justify inaction or only working towards interim or short term ecological objectives. Nor does lack of knowledge justify excluding areas of public land where River Red Gum forests and wetlands are currently under stress.

While modelling has its limitations, Council believes that it must be a key management tool to assist with improving the knowledge base for environmental flows. Managers need to build on existing knowledge and practices from previous flow events through adaptive management processes. In particular, evaluation and feedback processes need to be used to further refine environmental flow requirements as well as their efficient and effective delivery, including security of water allocation. Such adaptive management should be undertaken within the context of the estimated 4000 gegalitres required for an environmentally sustainable flood regime.



The Overbank Flood Event

The foremost environmental threat to the floodplain ecosystems of the Investigation area is not merely lack of water volume as such but insufficient overbank flooding. Currently around 70 percent of Murray–Darling inflows are extracted, and the floodplains are likely to be among the most severely affected parts of the natural system. Studies suggest that river health declines steeply when more than 30 percent of inflows are extracted. Given current use patterns, it is not surprising that floodplains are likely to be among the most severely affected parts of the natural system. The main intent of VEAC's environmental water recommendations is to ensure that overbank floods are large enough and frequent enough to avert this threat.

A program to deliver such floods could be reasonably simple at the broadest level. The following example shows how an overbank event might be delivered at least once every five years, for instance.

The five year cycle would commence as the flood waters of the previous overbank event recede. In the first two years there would be no need for further flooding. However, if an overbank flood occurred naturally in these years (that is, there was much higher than average inflows) the 'clock' would be reset and the five year cycle would start again. If the third year of the cycle had high inflows, but not quite high enough to generate an overbank event, then a small amount of water could be added to the naturally high winter-spring flows to generate overbank flows and restart the cycle.

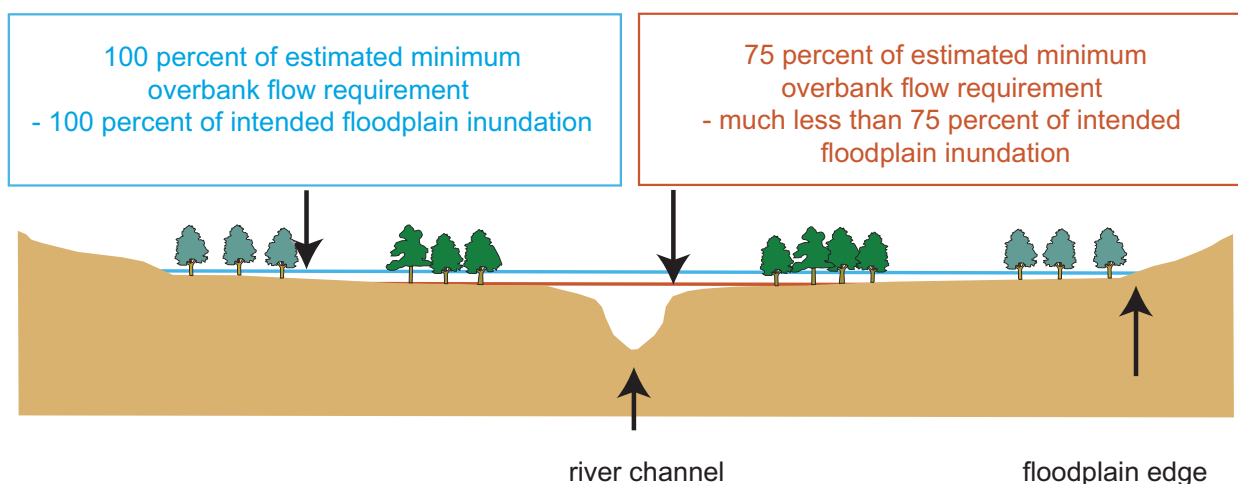
The fourth year would be similar to the third year, except that the threshold of above average inflow required to justify augmentation would be lower. If no overbank events occur in the first four years, then whatever water is

required to generate an event would be added to any natural flows to ensure an overbank event in the winter–spring of the fifth year.

Any such program would also need to include variations to cater for the varying demands of ecosystem health such as wetlands that require more frequent inundation. More elevated parts of the floodplain—typically found at a greater distance from the main river channel and vegetated with Black Box trees—would require less frequent but larger events (that is, using more water) to ensure floodwaters reach them.

In reality, of course, the operation of such a program would be more complicated than this notional concept. The complexity arises at a number of levels such as:

- cross-jurisdictional: ultimately the recommended changes would require the support of the Commonwealth and other state and territory governments in the Murray–Darling Basin
- operating rules: there are many rules which govern the operation of the River Murray system and several of these would require modification to accommodate VEAC's recommendations. The Council acknowledges that many of these problems will require considerable work to resolve, and that it is not VEAC's role to develop detailed proposals for the supply and delivery of environmental water. VEAC's task is to provide strategic advice relating to the protection and ecologically sustainable management of the environment and natural resources of public land. It is Council's view that there is no more important matter in this regard than the delivery of adequate floodplain inundation to permit the river red gum forest ecosystems to be maintained in a healthy condition.



The simple account above serves to highlight the importance of ensuring a sufficient volume of water is delivered to produce a successful overbank flooding event. The figure describing the size of a flood event is—to define it precisely—the estimated minimum volume required to maintain ecosystem health. That is, the minimum expanse, depth and duration of flooding required to maintain the desired level and extent of ecosystem health. Because it is a minimum figure, any reduction in this figure is likely to lead to a proportionately much greater reduction in the area inundated and, therefore, the ecosystem health benefits, as shown in the following simple schematic diagram.

The process of determining environmental flow allocations for river systems often involves compromises on the volume of water allocated. The key point when allocating water for overbank events is to direct the effect of any such compromises away from the total event volume, in order to avoid the significant reduction in benefits shown in the schematic diagram. As a result, it is important to have a good understanding of the effect of event frequency on ecosystem health and to build some flexibility into the determination of an appropriate frequency. The CSIRO study which VEAC has commissioned (results available at www.veac.vic.gov.au) provides new information on the effects of overbank event frequency.

The CSIRO study is also intended to provide additional information to underpin a broader discussion around the estimate of the minimum overbank flow volume of 4000 gegalitres per event derived from the 2002 Expert Reference Panel work. Despite being a minimum estimate, a figure of this magnitude may be seen as likely to have a significant impact on the availability of water for consumptive uses. However there are a number of reasons why the actual impact may be considerably less. For example, any high natural inflows will directly reduce the amount required, some of the water may come from savings and not users, and some consumptive uses (such as filling Lake Victoria in spring) may make a contribution to that part of the volume required to raise river channel depth.

In an environmental context, the proposed minimum environmental flows are not especially large amounts of water. Eight hundred gegalitres (the average volume required to be accumulated per year to allow an overbank event every five years), for example, is less than 10 percent of annual inflows to the River Murray. For a one in five year event, VEAC's recommendations amount to a reinstatement of overbank flood frequency in the order of 30 percent of the natural frequency. Whilst the recommendations require a significant shift in current environmental flow management, they represent the minimum required to ensure the long-term ecological, economic and cultural viability of the River Red Gum forests and wetlands.

Site-specific issues

VEAC believes that there is currently little integration of environmental flows on public land along the length of the River Murray, including its Victorian tributaries and lakes. In part this reflects the site-specific nature of current planning required around timing and availability of water for environmental flows, as well as the focus on specific features rather than the system as a whole. VEAC's view is that a long term strategy is required to achieve an integrated approach to environmental water planning for the entire Investigation area. Set flooding regimes within the natural flood-drought cycle are required to achieve a high level of floodplain health and connectivity. Because flood volumes are not proportional to the area assisted (or to the 'level of benefit' delivered), compromise water volumes are unlikely to be useful for sustaining the wetlands and forests as a healthy system in their entirety. A small flood does not help the entire system a 'small amount', it only helps a small area, and possibly the area least in need of help. See the boxed text for further explanation.

In addition to determining the most appropriate flow regime for the River Murray there are four specific operational and ecological issues warranting particular comment.

Wetland management

The first specific issue relates to the various wetland systems such as Kerang Lakes, Corop Wetlands, Boort Wetlands and Kanyapella Basin scattered throughout the Investigation area. Many of these lake systems, like the River Red Gum forests, are under stress and unless an appropriate environmental flow regime is determined, secured and implemented over the long term there is a real risk that the biodiversity, aesthetic and recreational values of these ecosystems may be lost in the future. Such a regime would also need to address the unnatural flow regimes introduced into parts of the lake systems that are used in the delivery of water for nearby irrigators and downstream users.

Barmah forest flooding

The second issue relates to summer flooding in Barmah forest and its detrimental effects on the ecology of the forests and wetlands. These floods occur as a result of irrigation water being released into the river system but then rejected by irrigators because of summer rain events. Irrigation water in the river system then reaches the Barmah choke (the restricted section of the River Murray) where it is forced out onto the floodplain and wetlands, resulting in unseasonal floods, causing degradation of the ecology, particularly the loss of Moira Grass plains through the encroachment of Giant Rush and River Red Gums. VEAC believes this encroachment is a major concern and if left unmanaged will result in irreversibly changed vegetation communities and ecology of the forests. This issue should be addressed through a range of policy and management tools rather than solely relying on engineering solutions such as the proposed Barmah Choke Bypass which will allow irrigation flows to by-pass the physical constraint of the Barmah choke.

Levee banks

The third issue is levee banks for flood mitigation. Throughout the Investigation area there are numerous levee banks, used to manage or mitigate flooding, mostly on private land but some also located on public land. Many, including both those located on private and public land are in need of major maintenance or upgrade to remain effective. Many of these levee banks (such as along the Old Mail Road in the Lindsay–Wallpolla area and in the lower Goulburn River area) either impede water movement across the floodplain or are in disrepair. Where levees are in disrepair, there should be an assessment of whether the structures are still required or in fact could be removed or constructed in an alternative manner, thereby achieving greater spatial coverage during flooding events. Management of flooding at the boundaries of private and public land could be managed without levees and facilitate the greater floodplain connectivity through the use of special area plans under the *Catchment and Land Protection Act 1994* and environmental overlays under the *Planning and Environment Act 1987*.

Salt accumulation on the floodplains

The final issue is salt accumulation in the floodplain soils where the groundwater is shallow. This salt accumulation has increased as a result of shallower groundwater levels from irrigation and native vegetation clearing. The salt levels were kept in check naturally by flooding and rainfall but with a decline in both the rate of salt accumulation in the Lindsay–Wallpolla area has led to significant areas of degraded vegetation. Salt accumulation coupled with lack of flooding and drought conditions is showing visible signs

progressively up the River Murray.

Summary of environmental water issues

In summary VEAC believes that decision making processes involved in determining environmental flow events for the protection of the unique riverine ecosystems should be undertaken in the context of the following framework.

Environmental flow allocations be determined in the context of clearly stated ecological objectives at a regional and River Murray scale and be informed by:

- an understanding of the natural water regimes with respect to volume, seasonality, annual variability and duration conditions
- ecosystem values and maintenance of those values rather than the requirements for environmental restoration works such as flushes for blue-green algae or salinity management or to support public land resource utilisation industries.

The arrangements or processes through which these considerations are addressed should be:

- based on rigorous, transparent and scientifically based methodology, including water accounting practices that are freely available to the public
- flexible and adaptable to enable changes to be introduced when increased information and understanding becomes available and climate change impacts require addressing
- based on a delivery system that is compatible with ecological objectives and attempts to minimise energy inputs or extensive infrastructure.

RECOMMENDATIONS

Environmental water

- R10** That the environmental outcomes for the Investigation sought through the public land category system are dependent on a volume of water in the order of 4000 gigalitres for a floodplain inundation event at least every five years.
- R11** That an Investigation area wide environmental flow strategy be developed with the objective of achieving an integrated and consistent approach to environmental flows across the River Murray area, its Victorian tributaries and the key wetlands of Kerang Lakes, Corop Wetlands, Boort Wetlands and Kanyapella Basin described in Chapter 3.
- R12** That the improvement of the information and knowledge base of the River Red Gum forests and their ecosystems and wetlands, hydrology and the river as a system, and in particular the use of models to integrate this information, be given a high priority and for this information and knowledge be readily available to the community.
- R13** That sufficient resources be allocated as a matter of highest priority for the development of a detailed environmental water accounting system across the entire Investigation area.
- R14** That land and water managers develop a suite of non-engineering options to mitigate the causes of summer flooding in Barmah forest.
- R15** That the relevant agency conducts an audit of existing levee banks in the Investigation area and where appropriate remove those levees in disrepair or seek alternative structures to facilitate greater dispersal of flood waters across floodplains; and where this is deemed necessary land and water management agencies undertake an extensive consultation process with private land holders and relevant public land managers.
- R16** That where changes to water supply infrastructure are likely to occur in the future then environmental flows should not be adversely affected and additional costs associated with the provision of environmental flows be borne by the whole community.
- R17** That where potential opportunities exist, special area plans and the statutory planning processes be applied as management tools to more effectively manage environmental flows for ecological outcomes at the interface between public and private land.

Increasing Indigenous involvement in public land management

The association Aboriginal people have with the River Red Gum Forests Investigation area has endured for some 50,000 years. The relationship between Indigenous people and the land, as well as the current extent of Indigenous involvement in land management, was discussed in detail in the Discussion Paper. The Paper also presented information on public land management options and generalised models of Indigenous involvement in land management.

In carrying out its Investigation VEAC is specifically required to take into consideration possible opportunities for Indigenous management involvement and the existing Yorta Yorta Co-operative Management Agreement.

To facilitate the participation of Aboriginal people in the Investigation, VEAC commissioned consultants to seek the views of Indigenous people and communities in the Investigation area, initially through a series of consultation workshops. An Indigenous Steering Committee was established to provide advice on consultation processes. A summary of the key findings in the consultants' report is provided in Appendix 3. The full report is available from the VEAC website or by contacting VEAC directly (see details inside the front cover). Council will continue to consult with Aboriginal people throughout the Investigation, while acknowledging that there are difficulties associated with the finite time for the Investigation and the competing demands on the time and resources of Aboriginal people, particularly Traditional Owners. The consultation conducted to date is therefore considered to be the preliminary development stage of an ongoing relationship between public land management agencies and Indigenous people in the Investigation area.

It is also noted that Yorta Yorta Nations Aboriginal Corporation did not wish to provide specific comments to VEAC about the Yorta Yorta Co-operative Management Agreement for consideration in this Investigation. Given this, the Council does not consider that it is appropriate to make any draft recommendations relating to the agreement at this stage.

Australian jurisdictions are increasingly adopting various forms of shared land management as a means of reconciling Indigenous claims to land and, in some cases, legal requirements to accommodate native title interests. It is evident that, for various reasons, Victoria has not taken the steps that most other states and territories have taken in providing for direct participation in land management. Council considers that a flexible framework for the direct involvement of Indigenous people and Traditional Owners is needed for the management of public land in the Investigation area.

There is a broad range of Indigenous community aspirations for involvement in public land management. The recommendations presented below will provide for greater levels of involvement of Indigenous people, but acknowledge that there is a need for flexibility to accommodate the existing levels of capacity and aspirations of each Indigenous Traditional Owner community. The recommendations also provide for greater access to public land for traditional cultural practice.

During both of VEAC's formal submission periods, many stakeholders expressed their wish to see greater involvement in public land management for Indigenous people, especially the Yorta Yorta Traditional Owner group. Aboriginal people, or groups who identified as Traditional Owners, described aspirations from the handback of Barmah forest through to increased consultation and sustainable harvest of native species for traditional cultural practice and use. In some submissions, joint management was proposed as a mechanism to improve social outcomes and economic development for Indigenous people. Key avenues for this improvement were seen as including increased tourism revenue and employment in land management. A relatively small number of submissions were generally opposed to greater Indigenous involvement in public land management, with some specifically opposing any 'handback' arrangements.

Many Indigenous communities have expressed the desire to participate in public land management but are constrained in various ways including through their limited access to resources (see Appendix 3). Native Title Services Victoria (NTSV) and the new Registered Aboriginal Parties (RAP) cultural heritage processes undertake registration and identification processes for Indigenous people. However, neither of these processes specifically provides resources for groups to establish or conduct internal consensus/agreement or informed consent processes.

In more general terms, Traditional Owners are regularly consulted by public land managers and government agencies on matters related to land or natural resource management without clearly structured decision-making processes or resources for Indigenous communities to undertake such processes. Indigenous communities and individuals typically do not receive remuneration for provision or use of their knowledge, but under some Federal accreditation processes for state and local natural resource management agencies (e.g. National Action Plan for Salinity and Water Quality funding), Indigenous community consultation must be demonstrated.

In other states and territories, Aboriginal land councils perform a mediator function on behalf of Aboriginal landowners and Aboriginal people living on the land. These functions are established as a legal obligation using agreed informed consent or group consensus/agreement processes. Traditional Owner identification, registration, internal informed consent processes or protocols are necessary if a greater level of involvement in public land management decision-making—both strategic and practical—is to be achieved.

Indigenous Traditional Owner Groups have identified the following as major impediments to their participation in management and decision-making processes associated with public land:

- lack of administrative infrastructure to manage or coordinate activities
- need for payment for time and expertise provided to government agencies when consulted about specific areas of public land or related management issues
- need for funding to enable Traditional Owner Groups to establish and undertake ongoing 'informed consent' and internal group decision-making processes or protocols.

Council believes a properly resourced program is required to facilitate greater involvement of Indigenous people in management and decision-making processes for public land. The program needs to include a brokering and advisory capacity to assist Traditional Owner Groups to undertake processes that achieve agreement on traditional owner identification, registration and effective internal processes and decision-making. Achieving these things may lead to improved outcomes (including resourcing and capacity building) through more structured and strategic engagement between public land and natural resource management agencies and Aboriginal Traditional Owners.

Agreements established by processes such as Murray Darling Basin Commission's Murray Lower Darling Rivers Indigenous Nations (MLDRIN) Living Murray Initiative and Native Title registration could be used as a basis to formally identify and register Traditional Owner Groups.

RECOMMENDATIONS

Increasing Indigenous community capacity

R18 That:

government provides assistance with strategic decision-making regarding public land management along the River Murray and across boundaries of Aboriginal Traditional Owner Groups by establishing a properly resourced program to provide the following services:

- (a) a mediated and resourced process to facilitate:
 - (i) Aboriginal Traditional Owner identification and registration,
 - (ii) engagement of Aboriginal Traditional Owner Groups or bodies with public land management agencies,
 - (iii) group internal decision-making and procedures or protocols such as informed consent and choice of spokespersons,
 - (iv) the establishment of boundaries of Country between groups, and
 - (v) dispute resolution.
- (b) administrative support for relevant Aboriginal Traditional Owner Groups,
- (c) coordination of consultation requests from government agencies and preferential selection of appropriately qualified Traditional Owner Groups or organisations for contract services to work on land and natural resource management projects on Country,
- (d) assistance for relevant Aboriginal Traditional Owner Groups with targeted training and capacity building exercises such as work placements, traineeships and use of existing programs to establish Aboriginal rangers and land management contractors to work on public land on traditional Country,

(e) assistance with coordination of relevant Aboriginal Traditional Owner Groups' responsibilities under cultural heritage and native title processes where these coincide with public land management,

(f) support for initiatives aimed at retaining traditional knowledge and expertise and assisting with the integration of this knowledge in land and natural resource management projects and partnerships on Country, and

(g) support for Aboriginal Traditional Owner Groups wanting to develop a permit regime as described in recommendations R26 and R27 for the traditional hunting, gathering and ceremonial use of Country.

Notes:

1. Aboriginal Traditional Owners are defined as those people who are the direct descendants of specific Indigenous groups present prior to European settlement.
2. Indigenous people refer to land and natural resources of an area over which they have a profound cultural and spiritual relationship as their traditional Country.

Current management of public land in Victoria does not generally provide for meaningful participation of Indigenous people in decision-making, although there are some examples of positive relationships and effective consultative arrangements. At the same time, many Indigenous communities have reflected a general aspiration for increased involvement in public land management, particularly on their traditional Country.

The Discussion Paper for this Investigation provided detailed examples of various models of Indigenous involvement. Involving Indigenous people in the management of national parks and other protected areas is a common approach in Australian states and territories. This approach has rarely been taken in Victoria, although Council notes the recently announced Gunditjmara agreement which includes a form of co-management of Mount Eccles National Park in western Victoria. Council is also aware that there are negotiations currently underway between the Victorian government and North West Nation Clans Aboriginal Corporation that may involve public land in the Investigation area. Currently advisory bodies or committees for public land may be established under various land Acts, and these can be a useful means of becoming involved in management.

The proposals below allow for various levels of Indigenous involvement in public land management (Recommendations R19-R25). In some cases, specific areas have been designated for particular management regimes, but it is important that legislative provision is made for additional areas to be added in the future as Aboriginal Traditional Owners decide on the level of management involvement they wish to have for particular areas of public land. Indigenous communities in the River Red Gum Forests Investigation area want increased involvement in public land management generally and also for specific areas of public land.

The draft proposals presented here provide opportunities for Aboriginal people to increase their participation in public land management and build capacity through targeted employment and more strategic and resourced consultation.

RECOMMENDATIONS

Enhancing Indigenous involvement

R19 That:

(a) planning and management relating to traditional interests and uses acknowledge the unique relationship of Aboriginal people with Country and be based on recognition and respect for the traditional and contemporary relationship of Aboriginal people with the land,

(b) prior to implementing VEAC's recommendations for parks and reserves, and changes in public land management, government consult with Traditional Owners and Aboriginal groups regarding their native title rights and interests,

(c) government, in consultation with Aboriginal Traditional Owner Groups, establish mechanisms to improve and resource Indigenous participation in land and water management including:

(i) development of principles and protocols to improve the policy and planning processes of public land and water management agencies and resource the representation and participation of Aboriginal people in these processes,

(ii) preparation of a strategy to improve the participation of Aboriginal people in land, water and resource use decision-making and day-to-day management,

(iii) provision of information to assist the facilitation of land and water use agreements between agencies and Aboriginal Traditional Owner Groups,

(iv) facilitation of surveys and site visits necessary for planning and development purposes,

(v) development of cross-cultural awareness programs for land, water and natural resources agency staff to improve knowledge and understanding of, and communication with, Aboriginal communities, and

(vi) assistance to provide Aboriginal communities with the capacity (including resources and skills) to fully participate in future consultation and management planning arrangements.

(d) opportunities for increased employment and training for local Aboriginal people be resourced and provided in the implementation of parks and reserves in the River Red Gum Forests Investigation area.

Shared management in its various forms is a partnership between Aboriginal Traditional Owners and government—working together within a framework of shared decision-making and management responsibility. One of the key social attributes of such management arrangements is that it recognises Traditional Owners and reaffirms their ties with their Country. The exercise of traditional practices of caring for Country through a management structure gives Indigenous people a stronger and active role in land management. Aboriginal Traditional Owners see this as a means of valuing and respecting their knowledge of land and wildlife, along with mainstream scientific approaches, to achieve better land management and conservation outcomes.

Employment opportunities can be created for Aboriginal people in a range of roles under shared management structures. It is expected that, through training and participation, Aboriginal people will develop skills and gain employment as rangers and in other park-related services and enterprises.

Typically, for a momentum to be established that will lead to meaningful Indigenous involvement in public land management, processes and arrangements must be underpinned or initiated by specific legislation. Without specific legislation, progress towards shared management can be very slow or stall completely. Council therefore proposes that changes be made to the *National Parks Act 1975* to provide for the increased involvement of Traditional Owners in the management of parks, and specifically for shared management arrangements. It is also proposed that legislative provision be made now to enable the transfer of scheduled national park land to Traditional Owners, and for processes to be established for nominating parks for that schedule. Changes are required to the *National Park Act 1975* for parks scheduled under the *National Parks Act 1975* to be co-managed by a management board consisting of government and Aboriginal Traditional Owners. These management board provisions are essentially the same whether the parks remain in public ownership (referred to here as co-management), or transferred to Aboriginal Traditional Owners (referred to here as joint management). The following recommendations outline the legislative changes that VEAC considers are required to facilitate future joint management and co-management.



RECOMMENDATIONS

Joint management provisions for national parks

R20

That the *National Parks Act 1975* be amended to make provision for a process for scheduled areas to be transferred to Aboriginal Traditional Owners, identified in accordance with Recommendation R18, as national park Aboriginal Land (inalienable freehold), subject to agreement to enter into a lease for use of the land as a national park, that the board of management has a majority of Traditional Owners, and that a process be established for nomination and addition of parks to the schedule.

Co-management provisions for parks and reserves

R21

That the *National Parks Act 1975* be amended to make provision for co-management of the specific parks listed below with which an Aboriginal group or groups have a traditional association by establishing co-management agreements, and

(a) the co-management agreements will be between relevant Aboriginal Traditional Owner Groups, identified in accordance with Recommendation R18, and government, and

(b) the park or reserve be managed by a co-management board consisting of a majority of members of the relevant Aboriginal Traditional Owner group or groups, identified in accordance with Recommendation R18, and

(c) the co-management board provide for (amongst other obligations):

- (i) protection for the natural environment, flora and fauna, and other natural values
- (ii) continued enjoyment of the area by members of the public in a manner consistent with the designated public land-use category
- (iii) preservation and protection of Aboriginal sites, features, objects and structures of spiritual or cultural significance within the area, and
- (iv) continued enjoyment of the area by the relevant Aboriginal groups for cultural, spiritual and traditional uses.

(d) the co-management partners prepare a management plan for the park, and

(e) the co-management partners manage the park or reserve on the 'business as usual' basis agreed between the co-management partners that the park can continue to operate normally until the first co-management plan comes into operation.

R22

That the *National Parks Act 1975*, and other relevant legislation such as the *Crown Land (Reserves) Act 1978* be amended to provide for:

(a) a process for additional areas with which an Aboriginal group or groups have a traditional association to be added to the areas over which the above co-management arrangements may apply, and

(b) other co-management arrangements not necessarily involving a board of management or a board of management with majority Aboriginal Traditional Owners.

Consultative or advisory roles also provide for Aboriginal Traditional Owners or Aboriginal people more generally to participate in public land management. Although this

structure does not provide for decision-making responsibilities, it provides a more flexible entry point for some people or groups into public land management.

RECOMMENDATIONS

Aboriginal advisory committees

R23 That:

provision be made for involvement of Aboriginal people in management of designated areas of public land by establishing:

(a) advisory committees (under existing legislation) consisting of Aboriginal Traditional Owner representatives, identified in accordance with processes outlined in Recommendation R18, to provide the land manager with advice on one or more aspects of land management,

and that:

(b) advisory committees be adequately resourced to perform their functions and that, if required, legislation be amended to provide for allowances and expenses,

and that:

(c) the specific role of the advisory committees can be changed following review and agreement by the parties.

Recommendations for Indigenous involvement in management of specific areas

Areas with a high level of Indigenous cultural heritage and groups with an enthusiasm and willingness to engage in management issues are suitable candidates for co-management arrangements. VEAC proposes that co-management agreements be developed for the following parks.

Proposed co-management for Nyah–Vinifera Park

Nyah and Vinifera forests have an outstanding range and concentration of Indigenous cultural heritage sites. Keeping the culture including caring for Country was expressed as the most important thing to Aboriginal people from this area. Co-management between the Aboriginal Traditional Owner group and government for the proposed Nyah–Vinifera Park (Recommendation B7) will provide an opportunity for culture and tradition to be supported, practised and shared. There may also be opportunities for both nature and culture based tourism business development in the proposed Nyah–Vinifera Park. This park is proposed to be established under the *National Parks Act 1975*.

Proposed co-management for Barmah National Park

The Aboriginal Traditional Owners of the Barmah forest have expressed a desire to join in partnership with the government in the ongoing operation and management of this area of their traditional lands as a national park. There is widespread support from environment and other community groups for such a partnership, which is viewed as an opportunity to link the skills and knowledge of Aboriginal people with those of the government agency park managers. This partnership has the potential to achieve the most desirable and effective conservation and cultural heritage outcomes, while ensuring access for visitors and providing a richer visitor experience.

RECOMMENDATIONS

Co-management of specific parks

R24 That:

a co-management agreement be entered into between the government and the relevant Aboriginal Traditional Owner Group or groups identified in accordance with Recommendation R18 and that the following areas be managed by a co-management board consisting of government and a majority of Aboriginal Traditional Owner group representatives in accordance with Recommendation R21:

(a) Barmah National Park (Recommendation A7)

(b) Nyah–Vinifera Park (Recommendation B7).

Note:

1. The establishment of this co-management arrangement for the proposed Barmah National Park is not intended to affect the existing agreements for other areas of public land under the Yorta Yorta Cooperative Management Agreement.

In other areas, Aboriginal advisory committees have the potential to offer a more flexible system for engaging Aboriginal people in the public land management process, without imposing onerous or under-resourced management responsibilities.

Proposed West Wallpolla Island Aboriginal Advisory Committee

West Wallpolla Island State Forest is currently managed by a joint committee of management established under the *Forests Act 1958*. Members of the committee represent the land manager, grazing licensee, cultural heritage group representing the Latje Latje Traditional Owners and other government land management agencies. This committee has been established based on relationships established over several years of negotiations for protection of Aboriginal cultural heritage sites.

The recommendations below provide for the Aboriginal Traditional Owners to remain involved in management of west Wallpolla Island and cultural heritage sites in particular, after it is added to the proposed expanded Murray-Sunset National Park (Recommendation A1). This advisory committee can be established under existing provisions of the *National Parks Act 1975*. The level of involvement may be re-negotiated at some later time to cover other locations and matters other than cultural heritage protection. As outlined in the general recommendations for advisory committees above, resources are required to support the advisory committee and provide appropriate payments for service.

Proposed Bumbang Island Aboriginal Advisory Committee

Currently Bumbang Island Historic and Cultural Features Reserve, comprising some 570 hectares near Robinvale, protects one of the most significant clusters of scarred trees in the Investigation area (see also Recommendation

E2). Many other Aboriginal sites and places also occur in this area. In recognition of the ongoing management and planning required for protection of these sites, VEAC proposes that an Aboriginal advisory committee be established to work with the land manager. This will, in some respects, formalise existing relationships but also provide for a clear allocation of resources to the Aboriginal advisory committee.

RECOMMENDATIONS

Specific Aboriginal advisory committees

R25 That:

an Aboriginal advisory committee be established as described in Recommendation R23 for:

- (a) west Wallpolla Island area of Murray-Sunset National Park
- (b) Bumbang Island Historic and Cultural Features Reserve.

Aboriginal traditional cultural practice

During consultation with Indigenous people, the right and ability to practice traditional cultural activities on Country has been raised. Although provisions exist under various pieces of legislation allowing for some activities (e.g. hunting for Aboriginal cultural purposes) there is no broad understanding about how to obtain such permissions, nor is the role of Aboriginal Traditional Owners in the process clear. Changes to legislation are required to provide for an appropriate role for Traditional Owner Groups in the issue of permits to undertake cultural practice involving hunting or gathering on their traditional Country. In order to facilitate this process, authority must be devolved to Indigenous people to develop their own internal decision-making processes around such matters. Traditional Owner Groups need to be identified and supported to perform such tasks.

Council proposes that provision be made for Aboriginal hunting, food gathering and traditional ceremonial practice across public land in the Investigation area. This activity may be regulated through a permit system in which traditional cultural practice can be restricted depending upon the permission of the identified Aboriginal Traditional Owners of the Country.

There are many examples throughout Australia and internationally of permit regimes that accommodate traditional cultural practice, including protocols for the consideration of matters such as the protection of threatened species. Evolution and modification of traditional cultural practice over time allows for modern forms of hunting with firearms or other weapons and is not restricted to practices undertaken before European colonisation.

RECOMMENDATIONS

Aboriginal traditional cultural practice

R26 That:

policies and legislative restrictions inhibiting traditional cultural practice on specified areas of public lands and waters be amended to provide for Aboriginal Traditional Owners to undertake the following activities for personal, domestic and non-commercial communal use:

- (a) hunt (including using firearms), gather, collect and fish,
- (b) collect earth materials, and
- (c) conduct a cultural or spiritual ceremony, including (if required) having exclusive use of specified areas for a specified time.

R27 That:

traditional cultural practice be governed by a permit regime and protocols established by the land manager in partnership with the identified Aboriginal Traditional Owners for the specific area(s).

Recreation and tourism

Recreational activities are immensely popular in many parts of the Investigation area. These activities include camping (and associated activities), dogwalking, boating (including waterskiing and wakeboarding), fishing, horseriding, four wheel drive and general car touring, trailbike riding, hunting, bushwalking, birdwatching and other nature study. As well as the community benefits arising from recreation on public land, there may also be impacts. These impacts have increased as visitation rates have increased and are likely to continue increasing in the future.

Camping

Camping in the Investigation area is popular and provides for low-cost holidays with a diversity of experiences, ranging from dispersed camping to designated, more regulated camping where campers stay on defined campsites and facilities such as toilets may be provided. Many visitors place a high value on the relatively unregulated experience of dispersed camping along the River Murray and other major rivers in the Investigation area, and there is some evidence that campers believe that there is no ready substitute for this setting. VEAC acknowledges the importance of maintaining opportunities for these camping activities and that maintaining the availability of these experiences may require management of peak visitor numbers and distribution. Dispersed camping, especially in peak periods when visitor numbers are very high, has a significant impact on the natural environment. Additionally, high density camping may lead to disputes between campers over sites and noise and may reduce the quality of the

experience—especially if people are primarily camping in these areas for peace and quiet. At peak periods it can be difficult for day visitors to access popular stretches of the major rivers, as all available sites are occupied by campers.

It is important to many visitors to be able to camp with their dog. Whilst dogs are excluded from most national parks—including all national parks proposed in the Investigation area—it is proposed that dogs be permitted in the proposed Murray River Park, except for some sensitive areas where dogs need to be excluded, either to protect particular natural values of a site, or where they are incompatible with other recreational uses. It is proposed that these exclusion areas, being local in nature, be defined in management plans.

In some areas the width of public land between the River Murray and adjoining private land is insufficient to accommodate temporary campers' toilets at a distance of 100 metres from the river edge as generally required. This is particularly the case around some towns e.g. Echuca. However, these narrow stretches of public land may provide important points of access to the river for day visitor use, fishing or launching of boats. In these cases VEAC believes that camping should be restricted to designated sites in nearby areas where the public land is wider than 100 metres and more facilities can be provided (e.g. permanent public toilets), as required.

RECOMMENDATIONS

Planning for dispersed camping

R28 That:

dispersed camping be provided for in national and other parks as specified in general recommendations and/or presented for each area (see chapter 3), and

(a) management planning processes for parks be coordinated across the Investigation area so that overall, in each region, areas provide for the following experiences where permitted in the specific public land use category:

- (i) day visitor areas
- (ii) camping areas with dogs, or areas with dogs on leash only
- (iii) camping areas with horses
- (iv) camping areas without noise from generators, pump houses, utilities etc either fixed or temporary
- (v) camping areas with facilities such as toilets, fireplaces etc.

(b) during periods of high visitor use, be managed to minimise impacts, which may include temporary restriction on some uses in areas of high values.

Camping on narrow river frontages

R29 That:

camping not be permitted on the Murray, Ovens and Goulburn Rivers where the public land frontage is less than 100 metres wide from the top of the bank.

Campfires

Many people have raised concerns about campfire safety over summer. Escaped campfires are the major cause of wildfires in River Red Gum environments in the summer months. For example over 60 percent of wildfires in the Barmah forest of known source from 1983 to 2004 were started from escaped campfires. In New South Wales and South Australia there is a seasonal solid fuel fire ban over the high fire danger period along the River Murray. A similar seasonal ban in Victoria is likely to reduce the fire hazard and reduce confusion resulting from different regimes across the state borders.

Additionally, many stakeholders expressed concern about the environmental impact of firewood collection by campers. Coarse woody debris (sticks, logs and wood on the ground) is essential habitat for many ground-dwelling animals. The estimated current level of coarse woody debris in river red gum forests is approximately 20 tonnes per hectare, reduced from a pre-European level of about 125 tonnes per hectare. The main cause of this reduction is firewood collection. Animals dependent on coarse woody debris such as the yellow-footed antechinus only occur at sites with around 45 tonnes per hectare.

RECOMMENDATIONS

Solid fuel fire bans and firewood strategy for campers

R30 That:

solid fuel fires and collection of firewood for campfires not be permitted:

- (a) in proposed national parks and nature conservation reserves, and
- (b) on all other public land adjoining the Murray, Ovens and Goulburn Rivers within the Investigation area during the high fire danger period (the period to be determined by the Department of Sustainability and Environment in conjunction with the Country Fire Authority).

R31 That:

the Department of Sustainability and Environment develop (in the context of management planning) a firewood strategy for campers (outside the solid fuel fire ban period) that puts limits on firewood collection with a target of an average of at least 50 tonnes per hectare of coarse woody debris retained in each frontage block.

River Murray Strategy

Many aspects of camping and associated recreational activities on public land along the River Murray are similar to the Victorian coast. These include:

- the narrow, linear nature of the public land in many places
- the opportunity for affordable family holidays
- the perception of 'being close to nature'
- the perception of the safety of the destination
- areas of high environmental degradation
- the concept of the area being 'loved to death'
- the complexity and changing nature over the length with areas closer to Melbourne experiencing higher demands or impacts
- the importance of visitors to the economy of local small towns
- multiple access points across and to public land
- the tendency for families to repeatedly camp at the same location over many years and develop a sense of 'ownership' of the area
- the increasing pressure on the environment in peak periods and the inability of these areas to sufficiently recover between peaks
- the pressure placed on public land by developments on adjacent private land.

The complexity and differences in many parts of the coast is recognised by successive governments in the Victorian Coastal Strategy which was developed to take an integrated approach to coastal planning and management. VEAC proposes that a River Murray Strategy, similar to the Victorian Coastal Strategy, be developed to bring together multiple stakeholders and agencies with responsibility for managing different parts of the River Murray, its anabranches, wetlands, catchments, and adjoining public and private land. The objectives of this strategy are to improve outcomes for conservation, recreation and appropriate and sustainable development using a process of long term strategic planning. This is particularly important along the River Murray given the added level of complexity associated with cross border issues. Like the Victorian Coastal Strategy, such a strategy is not intended to replace or duplicate the detailed management plans for specific parks and reserves on public land, but is intended to articulate a long term vision for use and development of the River Murray corridor, and to pick up longer term planning issues, particularly those relating to pressures from outside the public land estate such as adjacent private land and activities on the River Murray itself.

RECOMMENDATIONS

Integrated strategic planning

R32 That:

a River Murray Strategy be developed within three years of government acceptance of these recommendations, in consultation with relevant Victorian and New South Wales government agencies and relevant planning bodies to provide a long term framework for the use of the River Murray on a sustainable basis for recreation, conservation, tourism, commerce and similar uses.

Domestic stock grazing

Public land grazing by domestic stock was highlighted as a significant issue in the Discussion Paper, and attracted considerable comment in public consultations. Council has considered these and other inputs in forming the view that while domestic stock grazing can be an effective management tool to address specific problems at particular locations and times, the scientific evidence indicates that in general it adversely affects natural values especially biodiversity, water quality and soil condition. Accordingly, VEAC is recommending that domestic stock grazing be generally excluded from public land in the Investigation area, with some limited exceptions.

This proposal to largely exclude grazing on public land is a significant change in emphasis from most existing management of domestic stock grazing on public land. As documented in the Discussion Paper, domestic stock grazing is currently common on public land water frontages (formally known as 'natural features reserves—stream frontages'), unused roads (formally 'services and utilities—transport (roads)' that are not in use), state forests, regional parks and some other public land use categories. In most of these areas public land grazing continues largely on the basis that it is permitted unless it is demonstrated to be not ecologically sustainable or causing environmental damage. That is, although a growing body of research demonstrates that stock grazing usually has significant impacts on ecological communities which have not evolved under such grazing regimes, demonstrating specific environmental damage (or sustainability) at individual locations is costly, time-consuming and is consequently rarely done.

This approach differs from the intent of earlier government-approved recommendations of the Land Conservation Council. For example, the LCC (1991) Rivers and Streams Investigation recommended that grazing continue on stream frontages where it does not conflict with several other uses, notably conservation of native flora and fauna, and restoration of indigenous vegetation. Although this recommendation has provided some

impetus for the removal of grazing as part of frontage protection programs undertaken by catchment management authorities and DSE, it has had little if any effect on grazing elsewhere even where it seems likely that damage is occurring. This is why VEAC is explicitly recommending in this Investigation that grazing generally not be permitted other than to address a particular environmental or management problem, such as controlling particular weed infestations or maintaining a specific grassy habitat structure.

It is Council's expectation that this purpose will arise infrequently and when it does, the framework under which it is managed would be different from the current general approach. That is, domestic stock grazing should only occur to address a specific, explicitly-stated problem and with grazing-specific management planning and research, and control of stock numbers residing with the land manager. This is currently the case in Terrick Terrick National Park where, for example, sheep grazing is closely monitored and administered through short term contracts rather than under licence or agistment permits. It should be noted that VEAC does not see broad-scale fuel reduction for fire protection as a specific problem for which domestic stock grazing is an appropriate management tool—the scientific evidence concerning the effects of grazing on broad-scale fire protection in the vegetation types of the Investigation area is equivocal at best.

VEAC is also recommending two other limited exceptions to the immediate removal of grazing. Because of the large number (approximately 2000) and long boundaries (often unfenced) of grazing licences along public land water frontages ('stream frontages'), VEAC is recommending a five year phase-out of stream frontage licences, to allow time for the administration of the change and for fencing and alternative water sources to be established where required. There are also a large number of unused road licences, most of which are not completely fenced if at all. Because it would currently be impractical to manage these areas separately from the agricultural land in which they are embedded VEAC is recommending that grazing continue to be permitted in these areas. In general, though, these unused roads should be retained in public ownership. It should be noted that a relatively small number of stream frontages and unused roads have been recommended in categories from which grazing is recommended to be excluded immediately (e.g. national park), and the exceptions to the immediate removal of grazing do not apply in these areas.

In addition to the large number of grazing licenses there are a small number of current licenses for cultivation or cropping in the Investigation area. Consistent with the removal of grazing elsewhere VEAC is also recommending the removal of cultivation from these areas. There may also be areas of unlicensed cultivation or cropping in the Investigation area which should be removed immediately. All areas from which cultivation is removed should be revegetated.

RECOMMENDATIONS

Domestic stock grazing

R33 That:

cultivation, cropping and domestic stock grazing not be permitted on public land in the River Red Gum Forests Investigation area, except:

- (a) in areas proposed to remain as public land water frontages (natural features reserves) where grazing be subject to a phase out to be completed within five years of government response to these recommendations; and
- (b) in areas proposed to remain as unused roads (services and utilities—transport (roads) where an unused road license is current).

Notes:

1. This recommendation is consistent with recommendations for relevant public land categories (notably national parks, the Murray River Park, nature conservation reserves and state forests) which also specifically exclude domestic stock grazing, and which would be effective immediately from the time of establishment of new or ongoing areas in these categories.
2. Land managers may utilise stock grazing under contract for ecological purposes or for short-term management purposes such as targeted weed control.
3. Continuation of grazing on unused roads should not be interpreted as a step towards their disposal; in general, unused roads should stay in public ownership.



3 Public land use recommendations

A National parks

Victoria's national and state parks are the cornerstone of the state's protected reserve system. Parks currently comprise approximately 62,100 hectares or about 23 percent of public land in the Investigation area. These areas are set aside to protect natural values whilst providing a range of visitor experiences. These activities include education, recreation and inspiration as well as the sense of rejuvenation experienced in natural environments. For many years, national parks in the Investigation area have been popular with tourists for visits ranging from day trips to extended camping holidays. The River Murray and major tributaries are a major focus for recreation and tourism but other environments also offer a range of different experiences.

National parks are generally, although not always, larger than state parks but the two categories of parks are otherwise established and managed for the same objectives under provisions of the *National Parks Act 1975*. For the River Red Gum Forests Investigation area there are no state parks recommended and existing state parks are proposed as part of larger consolidated national parks. Although national and state parks have the same management intent and level of protection, the objectives of national parks are generally better understood by the general public and the park visitor. As such, Council believes that state parks larger than the internationally accepted size should generally be redesignated as national parks.

VEAC is proposing to establish a number of new national parks and nature conservation reserves to meet nationally agreed criteria for a comprehensive, adequate and representative reserve system. These proposals will protect threatened species habitat and other outstanding natural values. New park areas will expand the area currently within national and state parks from ~62,000 hectares to a proposed area of some 152,000 hectares. The substantial change reflects the shifting priorities for public land use since the last systematic assessments in the Investigation area, the majority of which were more than 20 years ago. In proposing this change, Council has endeavoured to design a robust national park system that represents and protects the different ecosystems and natural values from the potential effects of climate change. In choosing areas as proposed national parks, Council has emphasised the need for improved connectivity and habitat links across bioregions. Strengthening the links along the vegetated corridors of major waterways in the Investigation area was a key consideration, particularly given that the River Murray forms an important biolink traversing a range of inland environments across south-eastern Australia. In such areas where the public land is narrow or discontinuous, private protected areas may be established to achieve similar objectives.

As described in Chapter 2 General Recommendations, there is a danger that increasing visitor numbers to the Investigation area will over time reduce the natural values that initially attracted people to the area. This is particularly the case for peak periods around long weekends, the Christmas/New Year period and Easter. To strengthen the protection of natural values in national parks, changes are proposed to the distribution of camping sites and amenities. A ban on solid fuel campfires is proposed. Harvesting of forest products, hunting and grazing by domestic stock are not consistent with national park objectives and will not be continued where they currently exist in proposed national parks. Mineral exploration licences may continue, be renewed (if they do not lapse), and proceed to a mining licence and work authority, with appropriate consent, but no other new exploration or mining licences can be granted once the proposed national parks are established.

As a result of altered flooding regimes and other management practices, the condition of some ecosystems has changed or is continuing to change. For example, Giant Rush and River Red Gums are invading the Moira Grass plains in Barmah Forest as a result of summer flooding of these areas. In such instances, park managers need the flexibility to undertake adaptive management to restore ecosystems or to return them to a condition more closely resembling their natural condition. Such management should be based on clearly defined, transparent and scientifically supported ecological objectives.

As well as the general national park recommendations below, which apply to all new or expanded national parks, specific recommendations may apply to individual parks or areas within parks. A detailed description of the location, values, uses and implications of proposed public land use changes for each proposed new or expanded national park is provided on the following pages.



RECOMMENDATIONS

General recommendations for national parks

A That national parks shown on Map A (numbered A1 to A9) and described below:

(a) be used to:

- (i) conserve and protect biodiversity, natural landscapes and natural processes
- (ii) protect significant cultural and historic sites and places, including Aboriginal cultural sites and places
- (iii) provide opportunities for recreation and education associated with the enjoyment, and understanding of natural environments and cultural heritage;

and that:

(b) the following activities generally be permitted:

- (i) bushwalking, nature observation, heritage appreciation, picnicking
- (ii) camping in designated areas, and dispersed camping in accordance with Recommendation R28-R29 if specified where this will not adversely affect biodiversity values or water quality
- (iii) car touring, including four wheel driving, on formed roads and tracks
- (iv) mountain bike and trailbike riding on formed roads and tracks
- (v) horseriding on formed roads and tracks
- (vi) apiculture at existing licensed sites, subject to the outcome of research into the ecological impacts of this industry, and park management requirements
- (vii) research, subject to permit

and that:

(c) the following activities not be permitted:

- (i) harvesting of forest products (see note 1 below)
- (ii) grazing by domestic stock (see note 2 below)
- (iii) hunting and use of firearms (see note 3 below)
- (iv) exploration and mining, other than continuation of operations within existing permits and licences, as approved
- (v) dogwalking and camping with dogs
- (vi) overnight camping with horses
- (vii) solid fuel fires at any time of year

(d) unused road reserves be added to adjoining parks where appropriate, and

(e) be reserved under Schedule 2 of the *National Parks Act 1975*.

Notes:

1. Ecological thinning may be permitted where required.
2. Short-term grazing may be contracted for ecological or management purposes such as targeted weed control.
3. Hunting and use of firearms authorised as part of a pest animal control program and/or for traditional Aboriginal cultural purposes in accordance with Recommendation R26-R27.
4. Practical access should continue to be provided to existing private land holdings surrounded by a national park.
5. Implementation of recommendations and land management should allow flexibility for minor boundary adjustments.

A1 Murray–Sunset National Park

Murray–Sunset National Park was originally established to protect a broad range of environments from the South Australian border and the River Murray in the west and north, across the Sunset Country to adjoin Hattah–Kulkyne National Park in the east. This national park is the second largest in Victoria comprising some 633,000 hectares of which 60 percent is Murray Mallee bioregion, 36 percent is Lowen Mallee bioregion, whilst Murray Scroll Belt Bioregion covers about 4 percent. It is this area of Murray Scroll Belt bioregion that is within the River Red Gum Forests Investigation area with minor areas of Murray Mallee bioregion also included in the northwest regions.

The proposed Murray–Sunset National Park (57,715 hectares in the Investigation area) enhances features and attributes relating to the River Murray floodplain and strengthens the existing natural vegetated corridor along this important biogeographic zone. The expanded park complements the existing Neds Corner Station, a Private Protected Area established by the Trust for Nature (Victoria). The national park extends east from the South Australian state border, providing a continuous protected frontage to the River Murray for nearly 200 kilometres along its many bends and meanders, through the arid mallee country to Snaggy Point just west of the Darling River junction.

A large, generally consolidated park, the proposed area incorporates the existing Murray–Sunset National Park (26,340 hectares in the Investigation area) and the existing Mullroo Creek Wildlife Area (1140 hectares), as well as state forest (28,560 hectares), natural features reserves (1200 hectares of public water frontage) and Murray River Reserve (~1300 hectares) from the South Australian state border to the Snaggy Point west of Darling River junction, Lock Nine Historic Area Reserve (0.01 hectares) and areas of uncategorised public land (575 hectares).

Consolidating this national park achieves the goals of improving the representation of ecological vegetation classes (EVCs) in reserves and protecting threatened species, significant geomorphological features and habitat links as well as providing a buffer for the effects of future climate change. The expanded Murray–Sunset National Park represents a large proportion the Murray Scroll Belt bioregion and includes the vulnerable EVCs Semi-arid Chenopod Woodland, Shallow Freshwater Marsh and Alluvial Plains Semi-arid Grassland. The area hosts five endangered and 15 vulnerable flora species, including chenopods (saltbush), wattles, swainson-peas, lilies, emu-bush and daisies. Many of these species occur only in the far northwest of the state. This area, notably Wallpolla Island, is also particularly important for threatened reptiles such as the critically endangered Beaked Gecko, the endangered Carpet Python and Red-naped Snake, and the vulnerable Curl Snake and Tree Goanna.

Three geological and geomorphological sites of international and state significance lie within the expanded Murray–Sunset National Park including the nationally significant Lindsay Island floodplains comprising scroll plains, anabranch and channels. The sites of state significance are Olney Bore Eocene to Miocene type section and Wallpolla Island and Creek anabranch and floodplain.

VEAC recognises that the ecological and recreational values associated with the creation of a national park are heavily dependent on adequate environmental flows. These are outlined further in chapter 2 under Recommendations R10-R17. In some areas engineering works may be required to deliver water across existing structures such as the Mail Route Road that currently acts as a levee limiting the extent of medium sized floods across Lindsay Island.

Community views received for this area so far have largely focussed on enhancing conservation by including most areas of public land in protected categories through retaining and expanding the Murray–Sunset National Park. Protection for Chowilla Floodplain Living Murray Icon site and specific areas of high conservation value was promoted, particularly for areas such as wetlands and habitat links. Connectivity along the River Murray was also highlighted with this area forming a drought refuge and zone for species movement, both seasonally and under the effects of climate change.

The River Murray is a drawcard for a number of visitor activities and experiences, but education and management strategies are required to strike a balance between sustainable tourism and protection of conservation values. It is estimated that visitor numbers range from 15,000 to 11,000 per annum in the two main areas of public land proposed as national park additions—Mulcra Island and Wallpolla Island. Visitor levels are similar at Lindsay Island in the existing national park. Some restrictions to recreational use such as camping, firewood collection and reduced opportunities for camping with dogs will occur in the areas proposed for addition to the proposed Murray–Sunset National Park.

Commercial grazing over ~22,000 hectares of state forest and public land water frontages will be excluded in areas proposed as national park additions. Adjoining land owners may need to control stock access to the abutting national park by fencing property boundaries. Trust For Nature has reported significant improvements in biodiversity values such as vegetation condition and increases in reptile populations since grazing was removed from Neds Corner Station in 2003.

Commercial harvesting of sawlogs or firewood is not currently occurring from the proposed national park additions. Council acknowledges that the proposals may have some impact on local domestic firewood collection. Existing apiculture sites will continue to be permitted in the proposed additions to the national park.

Council proposes that the joint DSE and Indigenous community committee of management established for west Wallpolla Island State Forest under the *Forests Act 1958* be replaced by a new Aboriginal advisory committee under the *National Parks Act 1975*, to provide advice and information to the park manager on cultural heritage management over the west Wallpolla Island area and land management more generally (Recommendation R25).

RECOMMENDATIONS

Murray-Sunset National Park

A1 That:

- (a) the area of 57,715 hectares shown on Map A be used in accordance with the general recommendations for national parks, and
- (b) an environmental water regime be established for this national park in accordance with Recommendation R10-13 and R15-17, and
- (c) acknowledgment of the spiritual importance and cultural heritage values of this park, and in particular west Wallpolla Island, for Indigenous Traditional Owners be reflected in the management and visitor interpretation of values of this area, and
- (d) an Indigenous advisory committee be established in accordance with Recommendation R23 to facilitate greater Indigenous community involvement and provide expert advice to the park manager on cultural heritage site management specifically for west Wallpolla Island, and also more generally in land management, planning and on-ground works throughout the national park.

Notes:

1. The area of the park within the investigation area encompasses two existing reference areas (see recommendations F1). Reference areas must be managed in accordance with the *Reference Areas Act 1978*.
2. Subject to assessment of existing values and uses, areas of Lindsay Point State Forest immediately adjacent to the proposed national park that are outside the Investigation area, are suggested as logical additions to the proposed national park.
3. Engineering solutions be adopted to facilitate medium sized floods across Mail Route Road maintaining Lindsay Island floodplain system linkage to the River Murray and other waterways.

A2 Hattah–Kulkyne National Park

The Hattah lakes area, located some 70 kilometres south of Mildura, has long been identified as an area of outstanding natural values. Hattah Lakes National Park (7200 hectares) was reserved in 1960 and additional areas of state forest were added to the park in 1980 to form Hattah–Kulkyne National Park. The park consists of riverine and floodplain vegetation close to the River Murray and a lake system as well as rolling sand dunes and distinctive mallee extending inland from the river and lakes. The River Red Gum Forests Investigation area encompasses about 48 percent (24,422 hectares) of the existing Hattah–Kulkyne National Park, entirely within the Robinvale Plains Bioregion. The national park abuts Murray–Kulkyne Park (see Recommendation B5) for a significant proportion of the River Murray frontage. The proposals presented here are a minor expansion of the current national park with

the addition of Brockie Bushland Reserve (5.2 hectares).

Two hundred and forty-five native fauna species, including 47 threatened and near threatened species, have been recorded from the portion of Hattah–Kulkyne National Park in the River Red Gum Forests Investigation area. These include five species considered critically endangered in Victoria: Intermediate Egret, Painted Snipe, Plains-wanderer, Murray Hardyhead and Silver Perch. Hattah–Kulkyne National Park also provides habitat for Greater Long-eared Bat, Mallee Emu-wren and Regent Parrot—all considered vulnerable Australia-wide. Four hundred and sixty-four native plants including 92 rare and threatened species have also been recorded. These include Winged Peppergrass which is endangered in Victoria and Australia. The area also includes the most secure Victorian populations of endangered Dwarf Swainson-pea and vulnerable Spreading Scurf-pea, which is almost entirely restricted in Victoria to the national park.

The portion of Hattah–Kulkyne in the Investigation area contributes significantly to the representation of vulnerable Semi-arid Woodland, depleted Riverine Chenopod Woodland and Riverine Grassy Woodland Ecological Vegetation Classes (EVCs). The addition of Brockie Bushland Reserve (5.2 hectares) south of Lake Kramen contributes vulnerable Woorinen Mallee and Semi-arid Woodland EVCs to the proposed national park.

The Hattah lakes are the River Murray's largest overflow lake system and of national geomorphological significance. This area is different from the floodplain-inundation areas that constitute most of the Murray's geomorphology. The system of anabranch lakes and associated channels takes overflow from the River Murray along Chalka Creek returning only a small amount of flow to the Murray with the majority retained in ponded terminal lakes. Red sand dunes have migrated into the area from the desert to the west providing a unique geomorphological system in this region. Other overflow lake systems occur on tributaries to the Murray (e.g. the Willandra Lakes on the Darling River) but not on the River Murray.

The lakes in Hattah–Kulkyne National Park are attractive habitat for waterfowl and have been identified as wetlands of international significance under the Ramsar convention and JAMBA and CAMBA migratory bird agreements. Two Ramsar inland wetland types are recognised: permanent freshwater lakes and seasonal intermittent freshwater lakes including floodplain lakes. Two wetland types are also recognised under the Victoria classification of wetlands: Deep Freshwater Meadow and Permanent Open Freshwater. The lakes and wetlands are currently managed to protect these values.

VEAC received a number of public submissions arguing that the Hattah Lakes area should receive adequate environmental flows. The Council recognises that the ecological and recreational values associated with the creation of the Hattah–Kulkyne National Park are heavily dependent on adequate environmental flows. This is outlined further in Chapter 2 under environmental flow recommendations (R10-13 and R15-16).

There are a significant number of Aboriginal cultural heritage sites and places in the national park, including burial sites and a large number of scarred trees near the

lakes system. Shell middens occur around the margins of current lakes or stream and also palaeo-lakes that encompassed a much larger area during periods of higher rainfall in the past.

Recreation is an important activity in Hattah–Kulkyne National Park. Camping is provided for at Lake Mournpall and Lake Hattah campgrounds where toilets, picnic tables and fireplaces are located. Camping on the River Murray within the park is restricted to Firemans and Jinkers Bends. Camping with dogs is not permitted within the national park, but dogs (on a lead) are permitted in the adjoining Murray-Kulkyne Park. Campers enjoy Hattah–Kulkyne National Park for its natural setting and the feeling of remoteness. The park is popular with birdwatchers as the diverse range of habitats and access to water provide for many different bird species.

RECOMMENDATIONS

Hattah-Kulkyne National Park

A2

That:

(a) the area of 24,428 hectares shown on Map A be used in accordance with the general recommendations for national parks, and

(b) an environmental water regime be established for this national park in accordance with Recommendation R10-13 and R15-16.

A3 Leaghur–Koorangie National Park

The Leaghur–Koorangie National Park (7790 hectares) incorporates a number of public land units in the Loddon and Avoca River Floodplains, to the south and west of Kerang as listed below.

• Leaghur State Park	1556 hectares
• Lake Leaghur water supply reserve	83 hectares
• Leaghur Wildlife Reserve	176 hectares
• Appin State Forest (Special Protection Zone)	290 hectares
• Appin Recreation Reserve	4 hectares
• Lake Meran (Meering) Lake Reserve	205 hectares
• Wandella Flora and Fauna Reserve	981 hectares
• Lake Wandella Wildlife Reserve	62 hectares
• Pelican Lake Wildlife Reserve	38 hectares
• Lake Elizabeth Wildlife Reserve	121 hectares
• Koorangie (The Marshes) Wildlife Reserve	3255 hectares
• Yassom Swamp Flora and Fauna Reserve	362 hectares
• Mystic Park Bushland Reserve	646 hectares

The creation of Leaghur–Koorangie National Park contributes significantly to the representation of the

threatened Ecological Vegetation Classes (EVCs) including the endangered Lake Bed Herbland, Intermittent Swampy Woodland and Chenopod Grassland, and the vulnerable Riverine Chenopod Woodland, Lignum Swampy Woodland, Lignum Wetland, Freshwater Lake Aggregate and Red Gum Wetland.

The Avoca Marshes are part of the internationally significant Kerang Wetlands Ramsar site and are of state geomorphological significance. The Avoca Marshes are particularly important for waterbirds. In particular, Third Marsh is of statewide importance for species such as Eurasian Coot, Grey Teal and Hardhead, and also supports the endangered Freckled Duck and Blue-billed Duck. First Marsh has been an important breeding area for a variety of cormorant species, as has Second Marsh for the Darter. In most years, Lake Bael Bael has supported the endangered Freckled Duck and Little Bittern as well as providing habitat for the Australian Painted Snipe. The Black Box woodlands of the Leaghur, Appin and Wandella blocks are important habitat for the endangered Grey-crowned Babbler and a number of other declining woodland bird species. The native grasslands surrounding Yassoms Swamp support critically endangered Plains-wanderers. Lake Elizabeth provides habitat for Freckled Duck and Blue-billed Duck, and for the critically endangered fish species, the Murray Hardyhead.

A number of sites of indigenous cultural significance have been identified in various sections of the proposed national park, including scarred trees at Leaghur, Appin and Wandella forests and cooking mounds, burial sites and shell deposits at the Avoca Marshes. The national park should be managed to protect these values.

Hunting is currently permitted within the Koorangie (The Marshes), Lake Wandella, Lake Elizabeth and Lake Leaghur sections of the proposed Leaghur–Koorangie National Park but would not be permitted in the new national park. No timber harvesting currently occurs in the proposed park. Only a small part of the proposed Leaghur–Koorangie National Park is grazed under licence. Grazing would be discontinued in the new park. There are no apiary sites in the proposed Leaghur–Koorangie National Park. There are currently two exploration licences over parts of the proposed Leaghur–Koorangie National Park and these may continue, be renewed (if they do not lapse) and proceed to a mining licence and work authority, with appropriate consent. No new exploration or mining licences can be granted once the proposed national park is established.

The Leaghur–Koorangie National Park offers a variety of recreational opportunities. Bushwalking and horseriding occurs in the Leaghur, Appin and Wandella Forests while birdwatching is popular at the Avoca Marshes. Waterskiing and picnicking occur at Lake Meran (Meering). These activities will be able to continue in the national park, although horseriding would be restricted to formed roads. Due to the changes in the hydrology of the landscape, the wetlands and woodlands of the Leaghur–Koorangie National Park will require environmental water allocations to maintain the health of these ecosystems.

A number of submissions called for an expansion of the Leaghur State Park and/or the establishment of a Kerang Lakes State Park. Others sought better protection of

28

River Red Gum Forests Investigation July 2007

individual wetlands as new nature conservation reserves. In the previous submission period, hunting groups opposed any restrictions to access to areas currently available for hunting.

RECOMMENDATIONS

Leaghur-Koorangie National Park

A3 That:

- a) the area of 7790 hectares shown on Map A be used in accordance with the general recommendations for national parks, and
- b) an appropriate environmental water regime be implemented in accordance with Recommendation R11-13 and R15-17
- c) speed boating and fishing within parts of Lake Meran (Meering) be permitted, by arrangement with the land manager, and
- d) existing water diversion licences be allowed to continue from particular wetlands where no other sources of water are available to adjoining landowners.

A4 Gunbower National Park

Gunbower Island forest is the second largest River Red Gum forest in Victoria and includes wetlands and billabongs as well as extensive black box and saltbush woodlands to the south. This wetland area is listed under both the Ramsar Convention and the Directory of Important Wetlands in Australia.

The proposed Gunbower National Park (9574 hectares) encompasses 8746 hectares of the Gunbower State Forest (much of which is existing Special Protection Zone) as well as 631 hectares of Murray River Reserve upstream of and including McClures Bend. Smaller areas included are part of Spence Bridge Education Area (35 hectares) and part of Gunbower Creek Public Land Water Frontage (149 hectares). The boundary for the proposed national park has been chosen to protect a diversity of vegetation types, including endangered and under-represented Ecological Vegetation Classes (EVCs), important flora and fauna habitat, whilst also providing a diversity of recreational opportunities and retaining timber harvesting activities in the adjoining Gunbower State Forest (Recommendation C3).

The creation of Gunbower National Park contributes significantly to the representation of the threatened EVCs such as the endangered Riverine Chenopod Woodland and Plains Woodland, the vulnerable Riverine Grassy Woodland and Spike-sedge Wetland, as well as smaller areas of Sedgy Riverine Forest, Riverine Swamp Forest and Riverine Grassy Forest.

One hundred and ninety-five species of native fauna have been recorded in the proposed Gunbower National Park, including 30 threatened species such as endangered Carpet Python, Silver Perch, Giant Bullfrog, Broad-shelled Tortoise and Squirrel Glider. A number of egrets and other colonially-nesting waterbird breeding sites exist within

Gunbower forest but there have been very few breeding events in the last 30 years due to insufficient flooding. The most recent event was in 2005/06 when egrets bred along Little Gunbower Creek (recommended to remain part of the Gunbower State Forest) after environmental water flooded parts of the forest. Within the proposed Gunbower National Park, egrets bred at Charcoal Swamp and at Little Reedy Lagoon in the early 2000s. Although both of these areas are protected in the proposed Gunbower National Park they will require environmental water allocations to ensure the habitat is suitable for the breeding of these threatened species. For details on environmental flows recommendations refer to Recommendation R10-13 and R15-17.

The floodplain, wetlands and drier Black Box woodlands provide habitat for 242 native plant species including 14 rare and threatened species. The threatened species include Western Water-starwort, a semi-aquatic plant that is threatened by altered flooding regimes, and Winged Peppergrass, with rare saltbushes and daisies also present.

Cattle grazing in Gunbower forest was primarily by agistment in the past but stock have not been agisted in the forest for several years. The 12 current grazing licences in the Black Box woodland in the south of the proposed park cover a total of 1481 hectares. Grazing would not be continued in the proposed national park.

Commercial timber harvesting is currently a major use of Gunbower Forest. For example, DSE's 2006/07 Wood Utilisation Plan allocated 7485 cubic metres from Gunbower State Forest. However, as no timber is currently harvested from the special protection zones or the Murray River Reserve, the proposed Gunbower National Park does not impact greatly on the volumes of timber available for harvesting.

There are currently 23 apiculture sites in the proposed Gunbower National Park and these will continue to be permitted. There are two mineral exploration licences over the proposed Gunbower National Park and these may continue, be renewed (if they do not lapse) and proceed to a mining licence and work authority, with appropriate consent. No other new exploration or mining licences can be granted once the proposed national park is established.

Recreation is another major use of Gunbower Forest. The river bends are particularly popular for dispersed camping in a natural setting and facilities at the existing Spence Bridge Education Area also provide a focus for recreational activities. Horseriding, trailbike riding and four wheel driving are popular in the forest and are proposed to be permitted to continue on existing trails and roads in the proposed Gunbower National Park. Hunting, previously permitted within state forest, is not consistent with national park objectives and is not permitted in the new park.

A number of historic sites, mostly representing early timber harvesting practices, have been identified in Gunbower forest and the national park should be managed to protect these values.

Community views regarding Gunbower forest were divided between proposing a new national park and retaining Gunbower as a state forest with access for timber harvesting and firewood collection. There were further calls for increasing environmental flows and better management of the timing of flooding events.

RECOMMENDATIONS

Gunbower National Park

A4 That:

- (a) the area of 9574 hectares shown on Map A be used in accordance with the general recommendations for national parks, and
- (b) a dispersed camping strategy be implemented as specified in Recommendation R28-29, and
- (c) an appropriate environmental water regime be implemented in accordance with Recommendation R10-13 and R15-17.

A5 Terrick Terrick National Park

The expanded Terrick Terrick National Park (3353 hectares within the Investigation area, 5882 hectares in total) incorporates the existing Terrick Terrick National Park, the Terrick Terrick East, Roslynmead, Kotta, Tomara Gilgais, Pine Grove, and Wanurp Nature Conservation Reserves, The Meadows Wildlife Reserve, uncategorised public land known as 'Canegrass Swamp' and parts of the Bendigo Creek water frontage reserve. The additions to the national park are centred on an area known as the Patho Plains, between Echuca and Mitiamo.

This expanded national park more than doubles the extent of endangered Northern Plains Grassland Ecological Vegetation Class (EVC) already protected in the existing Terrick Terrick National Park. With the majority of this proposed park already part of the conservation reserve system in a variety of categories, consolidation in a single national park will simplify their management. Although the proposed park appears to be fragmented, areas of native grasslands on private land provide ecological connections for the expanded park. Indeed, the Northern Plains Conservation Management Network which is currently operates over the Patho Plains, seeks to coordinate the management of native grasslands over public and private land.

Besides the size and quality of the Northern Plains Grasslands themselves, the area is the most important in the state for the critically-endangered Plains-wanderer, a small quail-like bird endemic to Australia. As many of the grasslands have not previously been cultivated, they provide habitat for significant reptile species such as Curl Snake and Hooded Scaly-foot. The shallow ephemeral wetlands within the grasslands provide habitat for Brolgas. The grasslands are also renowned for their flora, with the area being a stronghold for a number of threatened species including the nationally-vulnerable Red Swainson-pea and Slender Darling-pea. The Bendigo (Mount Hope) Creek provides habitat for a number of threatened woodland fauna species, including Grey-crowned Babbler, Tree Goanna and Bush Stone-curlew.

The expansion of the Terrick Terrick National Park complements significant investment in conservation efforts on public and private land in this area, ranging from land

purchase, conservation covenants, fencing and ecological grazing regimes.

Sites of Indigenous cultural significance have been identified in sections of the Bendigo (Mt Hope) Creek. The national park should be managed to protect these values.

There are currently four apiculture sites in the Terrick Terrick National Park, in the woodland section outside of the Investigation area and these will continue to be permitted. There are three mineral exploration licences over the expanded Terrick Terrick National Park and these may continue, be renewed (if they do not lapse) and proceed to a mining licence and work authority, with appropriate consent. No other new exploration or mining licences can be granted once the proposed national park is established.

The grasslands section of Terrick Terrick National Park and the existing nature conservation reserves are currently grazed by sheep at times of the year to provide desirable structure for Plains-wanderer and other flora and fauna. This grazing is for ecological purposes, in accordance with the respective management plans, and is not under licence. The timing and stocking rate is strictly controlled by Parks Victoria. In the short term at least, it would be highly desirable to retain this management regime. The current licensed grazing of Bendigo (Mt Hope) Creek would not continue in the proposed national park. The restoration of fencing along parts of the creek would be required to exclude stock.

Recreational opportunities are mainly restricted to the woodland section of the national park (outside of the Investigation area) and have not been widely encouraged in the grasslands section of the existing Terrick Terrick National Park nor in the nature conservation reserves. Hunting was previously permitted within The Meadows and Bendigo Creek Water Frontage Reserve sections of the proposed Terrick Terrick National Park but would not be permitted in the new park. No commercial timber harvesting currently occurs in the proposed national park area.

A small number of submissions called for the addition of various grassland reserves on the Patho Plains to the Terrick Terrick National Park.



RECOMMENDATIONS

Terrick Terrick National Park

A5 That:

- (a) the area of 3353 hectares shown on Map A be used in accordance with the general recommendations for national parks, and
- (b) existing water diversion licences be allowed to continue where no other sources of water are available to adjoining landowners, and
- (c) low intensity sheep grazing, where necessary for biodiversity conservation, be permitted to be contracted at the land manager's discretion.

Notes:

1. Some small areas along Bendigo (Mt Hope) Creek have been cropped (legally and illegally) and require restoration to enhance their grassland and woodland ecosystems. Fencing to align with cadastral boundaries is required to prevent further loss of values along this creek.
2. There is currently an agricultural licence over an area of Crown land adjoining Bendigo (Mt Hope) Creek (Parcel number P129443) and this area has been cropped for a number of years. However considering its proximity to native grassland areas (both on public and private land), and a population of the endangered Striated Sun-moth, restoration of a native grassland community on this site is considered desirable. The agricultural licence should be cancelled and no further cropping should occur.
3. Improved fencing for parts of Bendigo (Mt Hope) Creek is required.

A6 Lower Goulburn River National Park

The Lower Goulburn River National Park (14,718 hectares) incorporates most of the Lower Goulburn and River Murray State Forests as well as the Little Gilmartin and Big Gilmartin State Forests. It also includes the Wyunga Bushland Reserve, Yambuna Bridge Streamside Reserve, Loch Garry and Kanyapella Basin Wildlife Management Cooperative Areas, Reedy Swamp Wildlife Reserve, Gemmill Swamp Wildlife Reserve (where hunting is not currently permitted) and sections of water reserves along Yambuna and Warrigal Creeks.

The Lower Goulburn River corridor has strong ecological integrity and is a recognised biolink through the landscape. In recognition of its unique natural, recreational, scenic and cultural values, the Goulburn Heritage River was declared in 1992. Kanyapella Basin and the Lower Goulburn River Floodplain are both listed under the Directory of Important Wetlands in Australia. The Lower Goulburn River National Park makes significant contributions to improving the representation of a number of Ecological Vegetation Classes (EVCs) in the Murray Fans bioregion, including Riverine Grassy Woodland, Sedgy Riverine Forest and Floodplain Riparian Woodland, as well as protecting areas of endangered Plains Woodland and Riverine Chenopod Woodland along the River Murray.

The Lower Goulburn forests are particularly important habitat for a number of significant fauna species, including the Squirrel Glider, Brush-tailed Phascogale, and

Barking Owl. Kanyapella Basin provides habitat for a number of threatened bird species, including the critically endangered Australian Painted Snipe, the endangered Bush Stone-curlew and the vulnerable Brolga, Royal Spoonbill, Great Egret, Diamond Firetail and Musk Duck. Flora species of note include the endangered Grey Billy-buttons, Small Scurf-pea and Jericho Wire-grass. A site of state geomorphological significance occurs on the Goulburn River at Kialla West. The proposed Lower Goulburn River National Park contains a number of known sites of Indigenous cultural heritage including scarred trees and artefacts along the riverine forests, and cooking mounds at Loch Gary and Kanyapella Basin. The national park should be managed to protect these values.

The Goulburn River forests are popular for camping, fishing, canoeing, bushwalking and a variety of other recreational activities, particularly close to Shepparton and where the Goulburn and Murray Rivers meet. Camping with dogs will not be permitted within the proposed park but dogs (on a lead) will be permitted in the adjoining proposed Murray River Park (Recommendation B3) where the Goulburn River and River Murray meet, and in the proposed Shepparton Regional Park (Recommendation B2).

The state forests in the Lower Goulburn contribute six percent of total sawlog production in the Murray Fans bioregion (which includes Barmah and Gunbower forests). The extent of domestic firewood collection in the state forests is not precisely known but is widespread. Grazing licences occupy approximately 60 percent of public land along the Lower Goulburn forests, although it is unlikely that this proportion is grazed at any one time. Grazing would be discontinued in the proposed national park. Small areas of Kanyapella Basin have a history of cropping, an activity not consistent with national park objectives and which would not continue. Such areas will require restoration. Hunting is currently permitted within the state forest portion of the proposed Lower Goulburn River National Park and in Kanyapella Basin, but would not be permitted in the new national park.

There are currently five apiculture sites in the proposed Lower Goulburn River National Park and these will continue to be permitted. A mineral exploration licence occurs over the proposed national park between Yambuna Bridge and the River Murray, including Kanyapella Basin and this may continue, be renewed (if it does not lapse) and proceed to a mining licence and work authority, with appropriate consent. No other new exploration or mining licences can be granted once the proposed national park is established.

Due to the changes in flow regimes down the Goulburn River and into Kanyapella Basin, the wetlands and woodlands of the Lower Goulburn River National Park will require overbank flow events to maintain health of the floodplain and associated ecosystems. These are discussed under general recommendations and specifically R10-17.

Many submissions called for the creation of a national park, state park and/or regional park for the Goulburn River forests and joint management with Yorta Yorta. Of the small number of submissions that mentioned Kanyapella Basin, all suggested improved management or reservation for conservation purposes was required (including proposals for it to become a nature conservation reserve or state park).

RECOMMENDATIONS

Lower Goulburn River National Park

A6 That:

- (a) the area of 14,718 hectares shown on Map A be used in accordance with the general recommendations for national parks, and
- (b) a dispersed camping strategy be implemented as part of management planning for this national park, and
- (c) an appropriate environmental water regime be implemented in accordance with Recommendation R10-17, and
- (d) existing water diversion licences be allowed to continue where no other sources of water are available to adjoining landowners.

Notes:

1. The approved route of the Shepparton Bypass passes through the recommended national park south of Reedy Swamp. The proposed national park would not affect the bypass.
2. Certain public land areas now managed by Goulburn-Murray Water are to be incorporated in the park under these recommendations. Goulburn-Murray Water should continue to manage channels and regulators within the Kanyapella Basin section of the park for the purpose of flood mitigation and water transfer.
3. Sections of Kanyapella Basin have been cleared for agricultural purposes. Restoration of these areas using indigenous species matching benchmarks for Ecological Vegetation Classes should be undertaken.
4. The water requirements for Kanyapella Basin and options for achieving an improved water regime in this area are outlined in the Kanyapella Basin Environmental Management Plan.

A7 Barmah National Park

With the adjoining Millewa forest in New South Wales, Barmah forest forms the largest River Red Gum forest in the world. It is also the pre-eminent site in the Investigation area in terms of natural values—many of which are threatened. Accordingly, VEAC is proposing the creation of Barmah National Park (29,942 hectares) encompassing the existing Barmah State Forest (21,217 hectares), Barmah State Park (8366 hectares in two blocks) and Murray River Reserve (271 hectares). Additionally public land water frontage along Broken Creek (66 hectares) and Ulupna Creek (eight hectares) as well as six hectares of road reserve and three hectares of uncategorised public land would be included. Two reference areas in the existing Barmah State Park are proposed to be retained in the new national park (Recommendation F1). Not included in the park is an area of 22 hectares around the Dharnya centre buildings and nearby muster yards. This envelope (currently partly state forest and state park) is proposed as community use area

(Recommendation I5) to provide greater flexibility for potential development and use of this 'gateway to the park'.

The Barmah–Millewa forest is recognised internationally as a wetland of significance under the Ramsar Convention. It supports approximately 224 native fauna and 370 native flora species with some 39 threatened or near-threatened fauna species, including breeding sites for the Superb Parrot (the only remaining site in Victoria) and colonially breeding water birds such as Great, Intermediate and Little Egrets.

The proposed national park will protect habitat for 38 rare or threatened plants including the endangered Mueller Daisy, Slender Love-grass, Spiny-fruit Saltbush, and Winged Peppergrass. Creation of the park will also significantly improve the reserve system protection of 71 endangered, vulnerable, or depleted Ecological Vegetation Classes. The communities include the endangered Plains Woodland and vulnerable Riverine Swampy Woodland and Riverine Grassy Woodlands.

The Barmah-Millewa forest exists because of the limited flow capacity of the main river channel and presents a range of geomorphological features of national importance. The forest ecology has formed as a result of the interaction between tectonic movements of the earth and the River Murray's changing hydrology. The Murray in this region has been strongly influenced by local, relatively recent tectonic movements on the roughly north-south oriented Cadell Fault, and the changing sequence of channels across the floodplain. The region is also characterised by a severely constricted reach, known as the Barmah Choke, in which the river channel capacity significantly decreases, thereby forcing the river's flow into the Edward River and out onto the broader floodplain, including its network of channels and anabranches. The floodplain is characterised by its width and swampy nature — shallow but widespread floods are common. More recently these floods have occurred as a result of 'rain-rejection flows' that exceed the main channel capacity.

Barmah forest has a significant number of Aboriginal cultural heritage sites and places including scarred trees, mounds, stone artefact scatters, middens and burial sites. Traditional Owners have articulated a strong affinity with the Barmah forest and continue to assert their claims of ownership of this area as their traditional Country. Council acknowledges the cultural importance of this area for Traditional Owners and proposes that a shared management structure be established for the proposed Barmah National Park. The management board or committee would consist of a majority of Traditional Owner representatives as outlined in general Recommendation R24.

Currently, Barmah forest is used extensively for recreational activities, ranging from camping along the river and creeks to fishing, waterskiing, swimming and canoeing. The natural attributes of the forests, sandy beaches adjoining the river, creeks and lakes provide an ideal setting for low cost family holidays, particularly over Easter, Christmas and the Melbourne Cup long weekend. VEAC strongly supports the continued use of Barmah forest for recreation where such use is consistent with national park objectives.

However, because of the intensity of recreation use during peak times Council is proposing that camping in Barmah forest—as elsewhere in the Investigation area—be managed in accordance with Recommendations R28 and R31.

Collection of wood for campfires will not be permitted in the proposed Barmah National Park. This recommendation is consistent with concerns regarding increased fire risk from escaped campfires and the negative impacts of collection of wood for campfires on the biodiversity values of the area.

The use of public land areas for camping with dogs and undertaking day visits with dogs is important for many people. Dogs will not be permitted in the proposed national park for Barmah, but will be allowed in the adjoining proposed Murray River Park.

Domestic stock grazing has occurred in Barmah forest for several generations. The average of 2000 (summer) and 800 (winter) head of cattle agisted in the forest has been reduced in response to recent drought conditions, culminating in the destocking of the forest for the 2007 winter term. There are also 7 current grazing licences covering a total of 78 hectares and with a total carrying capacity of 112 Dry Sheep Equivalent that would be included in the proposed national park. Grazing with domestic stock is incompatible with national park status and will not be permitted in the proposed park. As well as domestic stock, Barmah forest is also grazed by feral horses and deer which, together with feral pigs, should also be promptly removed from the proposed national park to protect its highly significant natural values.

Comparatively frequent flooding has allowed Barmah forest to supply over half the timber resource (including commercial firewood) harvested in the Investigation area in recent years. However, timber harvesting is not generally permitted in national parks and will not be permitted in the proposed Barmah National Park. State forests near Koondrook will remain available for commercial timber production.

Similarly, domestic firewood collection under permit—which currently occurs in Barmah State Forest—will not be allowed in the proposed national park. VEAC is proposing that a zone for domestic firewood collection be established in the proposed Murray River Park (Recommendation B3) near to Nathalia in order to provide firewood for local residents, many of whom have few viable alternative heating sources.

Parts of three current mineral exploration licences (for gold and other metals) overlap with roughly the southern half of the existing Barmah State Forest. These licences can continue and be renewed (provided the licence does not lapse) and proceed to a mining licence and work authority, with appropriate consent. However, once the proposed national park is established no other new exploration or mining licences would be granted.

Apiculture is currently permitted in Barmah forest other than in and within 2 kilometres of the two reference areas. This will continue to be the case in the proposed Barmah National Park.

Historically, hunting in Barmah State Forest focused on feral animals, notably pigs and deer, with waterfowl taken

occasionally. Under the proposed national park hunting will not be a permitted use. However, the removal of introduced animals by land managers, in association with organised hunting groups, is supported.

Council has received a large number of comments about the Barmah forest, with opinions divided between those who support the establishment of a national park (typically with increased Indigenous involvement), and those who support continued uses including timber harvesting, cattle grazing and recreation. Many people believe that the viability of small towns is dependent on retaining the timber industry in the Investigation area and, in particular, in the Barmah forest. Many submissions also proposed a more natural water flow regime to maintain the ecological values of the forest.

RECOMMENDATIONS

Barmah National Park

A7 That:

- (a) the area of 29,942 hectares shown on Map A be used in accordance with the general recommendations for national parks, and
- (b) a dispersed camping strategy be implemented as specified in Recommendation R28-31,
- (c) an environmental water regime be established for this national park in accordance with Recommendation R10-17,
- (d) an Indigenous co-management board be established for the national park in accordance with Recommendation R24

Notes:

1. Over time the course of the River Murray has altered since the State Border was determined. A 43 hectare area of NSW known as 'Native Dog Flora Reserve' (part of Thornley State Forest) is effectively an inlier and contiguous with the Ulupna Island section of Barmah National Park. An agreement should be sought with the NSW Department of Primary Industries to enable DSE or a designated agency to manage Native Dog Flora Reserve as part of the Barmah National Park under existing provisions of Section 19D of the *National Parks Act 1975*.
2. The park encompasses two existing reference areas (see Recommendation F1). Reference areas must be managed in accordance with the *Reference Areas Act 1978*.
3. Council notes that feral horses and pigs have been present in the Barmah forest for several decades. The land manager has responsibility for eliminating and controlling pest plants and animals, and should make a concerted effort to exclude these animals from the proposed national park.

A8 Warby Range–Ovens River National Park

The proposed Warby Range–Ovens River National Park (total area 15,745 hectares) links the existing Warby Range State Park (11,460 hectares outside the River Red Gum Forests Investigation area) with 4223 hectares of public land along the Lower Ovens near the confluence of the Ovens and Murray Rivers. Within the Investigation area, the proposed national park consists of the existing Lower Ovens State Forest (2573 hectares), Lower Ovens Regional Park (1217 hectares), Peechelba Flora Reserve (220 hectares) and approximately 20 hectares of public land water frontage. A further 62 hectares of public land water frontage reserve and bushland reserve along Chinaman and Irishtown Creeks linking the Killawarra and Lower Ovens Forests are also included in the proposed national park.

The Ovens River—a Heritage River—remains the only substantial, essentially unregulated Victorian tributary of the River Murray, with only two tributaries (the Buffalo and King Rivers) having a small storage each. The resultant near natural flow regime partly explains the high biodiversity values and moderate–good stream condition of the Lower Ovens. The flooding pattern also generates floods further downstream along the River Murray and its floodplains. Maintaining the Ovens River as an unregulated system is essential to protect the natural values along the river.

The Warby Range–Ovens River National Park will protect wetlands and streams that provide habitat for many threatened bird and frog species including egrets, spoonbills, White-bellied Sea-Eagle and the Growling Grass Frog. Significant aquatic species include the Murray and Trout Cod, Golden Perch, Flat-headed Galaxias, Fly-specked Hardyhead (southern form) and Murray Spiny Cray. The forests have particular importance for the near threatened Southern Myotis, usually a cave-dwelling bat, which roosts in River Red Gums in this area. More than 185 native animal species have been recorded in the Lower Ovens forests including 30 threatened species.

Two hundred and one native plant species (including nine rare or threatened species) have been recorded in the area. The region is extremely important for the endangered Mueller Daisy. This species occurs in only about four populations across northern Victoria (as well as a small area in NSW) and is threatened by overgrazing. A regionally significant localised shrubland of Rough-barked Honey-myrtle is located in the proposed park near Peechelba.

Creating the Warby Range–Ovens River National Park will substantially increase reserve system representation for the threatened Ecological Vegetation Classes (EVCs) Sedgy Riverine Forest, Floodplain Riparian Woodland, Riverine Swampy Woodland and Billabong Wetland Aggregate.

Domestic firewood sales for the area are currently around 200–300 cubic metres a year. Since no sawlog or commercial firewood harvesting activities have occurred recently in the Ovens forests, departmental thinning activities have been carried out in the last five years to provide this firewood. A number of grazing licences (including broadacre, water frontage, and unused road reserve) cover approximately 70 percent of the proposed national park within the Investigation area. These activities are inconsistent with the objectives of a national park and will be discontinued.

There are currently five apiculture sites in the Lower Ovens forests and these will continue to be permitted in the proposed national park. A base mineral exploration licence is current over most of the Lower Ovens forests and this may continue, be renewed (if it does not lapse) and proceed to a mining licence and work authority, with appropriate consent. However, no other new exploration or mining licences can be granted once the proposed national park is established.

The forests and wetlands of the Lower Ovens River provide a tranquil setting and are popular for recreational activities including camping and fishing. Convenient access from the Murray Valley Highway and the ability to reach the nearby town of Bundalong by boat add to the camping experience. Camping peaks (beyond capacity) over Easter, Christmas and Melbourne Cup weekend and is most popular at Parolas Bend (15,000 annual camper nights and up to 2000 individuals at Easter). Such large numbers of campers create high demand for firewood and remove habitat for ground dwelling fauna. The use of pit toilets is also a problem in the narrow band of less than 100 metres between the river and the adjacent wetlands. Camping will continue in the Warby Range–Ovens River National Park but firewood collection will not be permitted. VEAC recognises the need to reduce human waste close to waterways and proposes that all campers at Parolas Bend be required to provide and use a chemical toilet.

There was strong community support for including the Lower Ovens forests in a national park and for careful water management and better environmental protection. A number of submissions called for the linking of the Lower Ovens to the Warby Range State Park in a consolidated national park.

The Lower Ovens forests provide an important north–south vegetated link between the River Murray and the Warby Ranges that will increase in importance with climate change. Consolidating the Lower Ovens forests with the Warby Range State Park in one park will lead to a more integrated conservation management approach and ultimately more effective on-ground connections between the areas to achieve conservation objectives. The creation of a larger national park, whilst occurring in two discrete units, is supported by native vegetation corridors on private land between the two areas.

RECOMMENDATIONS

Warby Range–Ovens River National Park

A8 That:

- (a) the area of 15,745 hectares (4223 hectares inside the Investigation area and 11,522 outside of the Investigation area) shown on Map A as the Warby Range–Ovens River National Park be used in accordance with the general recommendations for national parks, and
- (b) a dispersed camping strategy be implemented as part of management planning for this national park, and
- (c) an appropriate environmental water regime be implemented in accordance with Recommendation R11-13, R15 and R17, and
- (d) existing water diversion licences be allowed to continue where no other water sources are available to adjoining landholders.

Notes:

1. All campers at Parolas Bend must have a chemical toilet which must be emptied at an approved disposal point such as a caravan park.
2. Car rallying will continue to be permitted in Killawarra forest (currently part of Warby Range State Park), by arrangement with the land manager.

A9 Mount Buffalo National Park

A small area (4.1 hectares) of public land water frontage reserve and unused road reserve along the Buckland River and stone reserve at Nug Nug is proposed to be added to the Mount Buffalo National Park. This area contains Herb-rich Foothill Forest Ecological Vegetation Class and the addition of this area consolidates the boundary of the park which is outside the Investigation area.

RECOMMENDATIONS

Mount Buffalo National Park

A9 That:

the area of 4.1 hectares shown on Map A be used in accordance with the general recommendations for national parks.

B Regional parks and other parks

A regional park is an area of public land set aside primarily to provide recreation for large numbers of people in natural or semi-natural surroundings. Such parks provide an area of natural vegetation close to towns and permit a wide range of recreational activities and some low-level resource extraction. They generally give recreation objectives priority over conservation objectives. There are many areas in the River Red Gum Forests Investigation area that provide for high intensity recreational activities.

Regional parks are usually readily accessible from urban centres or major tourist routes. Some of these are close to towns and present examples of the typical regional park where townspeople can walk their dog every day or visitors can stop for a picnic in a natural bush setting. More intensively developed recreation areas on public land, such as sportsgrounds, are described under the section on community use areas.

Two such proposed regional parks, Kerang and Shepparton Regional Parks, are described below.

Public land along the River Murray has similar levels of recreational intensity and activity to regional parks. This area has the same management objectives as a regional park but, as it extends from Wodonga to near Mildura, it is proposed to be known simply as the Murray River Park.

There are other places in the Investigation area that currently have a comparable intensity of recreational use and similar activities (e.g. dog walking) to a regional park, in combination with a high level of natural values. In such cases, conservation objectives require a higher priority than apportioned in regional parks, a priority similar to that given to recreation objectives. These four proposed parks—Murray–Kulkyne, Kings Billabong, Gadsen Bend, Nyah-Vinifera—will be reserved under Schedule Three of the *National Parks Act 1975* and are described below. Schedule Three currently includes similar categories of parks (e.g. coastal parks) where both conservation and recreation are considered a high priority. Establishing these parks in this way means that they are considered protected areas and contribute towards achieving a comprehensive, adequate and representative reserve system, while at the same time allowing for a broader range of uses and activities such as dogwalking, that are not usually accommodated in national, state and wilderness parks.

Regional parks have high levels of visitor use, and it is important for land managers to have effective tools to manage and regulate visitor activities. Development of appropriate regulations is a high priority. For areas abutting the New South Wales border on the River Murray, it is also important to ensure a seamless regulatory regime across the border, which is difficult to define on the ground.

RECOMMENDATIONS

General recommendations for regional parks and other parks

B That:

- (a) regional parks and other parks shown on Map A (numbered B1 to B7) and described below be used to:
 - (i) provide for informal recreation associated with enjoyment of natural surroundings by large numbers of people,
 - (ii) conserve and protect natural landscapes and scenic values,
 - (iii) conserve and protect biodiversity to the extent that is consistent with (i) above,
 - (iv) protect significant cultural and historic sites and places, including Aboriginal cultural sites and places; and
- (b) the following activities generally be permitted:
 - (i) bushwalking, nature observation, heritage appreciation, picnicking
 - (ii) camping including dispersed camping and overnight camping with horses,
 - (iii) dogwalking and camping with dogs (see notes below),
 - (iv) car touring, including four wheel driving, on formed roads and tracks,
 - (v) mountain bike and trailbike riding on formed roads and tracks,
 - (vi) horseriding on formed roads and tracks,
 - (vii) apiculture,
 - (viii) metal detecting, prospecting, and
 - (ix) research, subject to permit.
- (c) the following activities not be permitted:
 - (i) harvesting of forest products (see notes below),
 - (ii) grazing by domestic stock,
 - (iii) hunting and use of firearms,
 - (iv) burning solid fuel fires during the high fire danger period.
- (d) unused road reserves be added to adjoining parks where appropriate.

Notes:

1. Dogs must be on a leash in some areas as zoned in management plans.
2. Collection of firewood for campfires is permitted.
3. Ecological thinning may be permitted where required.
4. Short-term grazing may be contracted for ecological or management purposes such as targeted weed control.
5. Hunting and use of firearms may be allowed as part of a pest animal control program.
6. Implementation of recommendations and land management should allow flexibility for minor boundary adjustments.

B1 Kerang Regional Park

The proposed Kerang Regional Park (1138 hectares) encompasses a variety of public land parcels containing riverine and wetland environments encircling the township of Kerang. This land includes Town and Back Swamps, Cemetery Forest Wildlife Reserve (and adjoining uncategorised Crown land), Fosters Swamp and areas of public land water frontage along the Loddon River and Pyramid Creek which link these swamps.

The majority of the proposed park is part of the Kerang Wetlands Ramsar Site, which was listed as an internationally important wetland because of the types of wetland represented and the ecological and genetic diversity they support, particularly significant numbers of waterbirds. The wetlands within the proposed Kerang

Regional Park support habitat for a range of significant fauna species, including Great and Intermediate Egrets, Royal Spoonbill and Golden Perch and flora species such as Swamp Buttercup, Umbrella Wattle, Twin-leaf Bedstraw, Spreading Emu-bush and Waterbush. Lignum Swampy Woodland and Lignum Wetland are the dominant Ecological Vegetation Classes (EVC) and the sections of the Loddon River and Pyramid Creek contain River Red Gum and Black Box riparian woodlands. Fosters Swamp, in particular, has high water bird carrying capacity and species diversity. The Brick Kilns (Tragedy) Bridge, constructed in 1927, on Lower Loddon Road over Pyramid Creek, is considered to be of state historical significance.

Town and Back Swamps are currently used for passive recreation such as dogwalking. Fosters Swamp is currently

used by Lower Murray Water for directing tertiary sewage outfall and drainage water for evaporation, and it can continue to be used for this purpose as required in consultation with the land manager. The sewage lagoon system and associated infrastructure is not included in the regional park proposal. Parts of Cemetery Swamp are currently designated as a Wildlife Reserve available for hunting, and hunting is also permitted in the other wetlands surrounding Kerang. Due to the proximity to the township of Kerang and the objective to encourage use of these areas for a range of recreational activities, hunting would not be permitted in the proposed regional park. As Fosters Swamp is currently used for the purpose of directing tertiary sewage outfall and drainage water for evaporation, access to the western section of the swamp (where the ponds are located) may need to be restricted. Grazing licences exist on parts of the proposed Regional Park but would not be continued.

A number of submissions called for the establishment of a Kerang Lakes State Park, while others sought better protection of individual wetlands as new nature conservation reserves. In the previous submission period, hunting groups have opposed the loss of access to areas currently available for hunting. The proposed Kerang Regional Park would unify and enhance the management of these important wetlands, both for their recreation and biodiversity values.

The natural values of this park are similar to those of the adjoining proposed Lower Goulburn River National Park, with Sedgy Riverine Forest, Riverine Grassy Woodland and Riverine Swamp Forest EVCs which provide habitat for significant species such as the endangered Squirrel Gilder.

A large number of submissions called for the creation of a national park, state park and/or regional park for the Goulburn River Forests.

RECOMMENDATIONS

Shepparton Regional Park

B2 That:

- (a) the area of 603 hectares shown on Map A as the Shepparton Regional Park be used in accordance with regional parks general Recommendations B,
- (b) the area be reserved under section 4 of the *Crown Land (Reserves) Act 1978*, and
- (c) a management plan be prepared.

RECOMMENDATIONS

Kerang Regional Park

B1 That:

- (a) the area of 1138 hectares shown on Map A as the Kerang Regional Park be used in accordance with regional parks general Recommendations B,
- (b) the use of Fosters Swamp as a outfall for tertiary sewage and drainage outfall be permitted in consultation with the land manager,
- (c) the area be reserved under section 4 of the *Crown Land (Reserves) Act 1978*, and
- (d) a management plan be prepared.

B2 Shepparton Regional Park

The Shepparton Regional Park (603 hectares) is centred on the River Red Gum forests of the Goulburn River between Shepparton and Mooroopna. It incorporates part of the Lower Goulburn State Forest, the Shepparton Flora and Fauna Reserve, Mooroopna Recreation Reserve and public land water frontage. This area continues from the proposed Lower Goulburn River National Park to the north and south and offers a number of recreational activities including walking, fishing, canoeing, bikeriding, horseriding, trailbike riding and nature observation. The proposed Shepparton Regional Park provides increased opportunities for recreation activities that would not be available in the proposed Lower Goulburn River National Park, such as dogwalking.

B3 Murray River Park

The establishment of the Murray River Park builds on the approved Land Conservation Council's 1985 recommendations for the River Murray Reserve. This park will help conserve and protect the many values and uses of public land along the River Murray and maintain a treescape corridor along the river. The Murray River Park (32,028 hectares) incorporates most of the existing River Murray Reserve, adjoining areas of state forest, existing regional parks at Wodonga, Yarrawonga, Cobram, Tocumwal and Echuca, public land water frontages, and small areas of land in various other public land use categories. The Murray River Park is the major land use category along the River Murray in the Investigation area. The Murray River Park does not occur where proposed national parks, nature conservation reserves or regional parks under Schedule Three of the *National Parks Act 1975* adjoin the River Murray.

As outlined by the Land Conservation Council in 1985, these lands, in association with the river, provide a significant natural attraction for people wishing to engage in river-based recreation in an essentially natural environment, and provide an outstanding scenic landscape. A wide range of recreational activities is pursued on and adjacent to the river. Camping in secluded spots or adjacent to the many sandy beaches found along the Yarrawonga-Ulupna Island reach of the river is very popular, as is fishing, walking, nature study or just relaxing by the river. Swimming, houseboating, canoeing, rafting, and waterskiing are all very popular pastimes. The enjoyment derived from various activities depends in large measure on maintaining and protecting the river and treescape adjacent to it. In addition, the river's heritage values need to be protected, including old sawmill sites, punt landings, and localities associated with the riverboat

era. Many archaeological sites of significance—such as Aboriginal fish weirs, middens, and canoe trees—also occur and others will undoubtedly be identified.

Management of the Murray River Park should be directed toward enhancing the scenic, recreation, and nature conservation values, protecting historical and archaeological features and providing opportunities for a diversity of recreation activities in an essentially natural riverine environment. Consolidation of the various land use categories that comprise the proposed Murray River Park will allow for a more integrated management approach of these riverlands, enhancing and broadening recreational opportunities and emphasising connectivity. To ensure the riverine environment is maintained with an increasing numbers of campers along River Murray, the development of a strategy for dispersed camping and associated firewood collection is required. Camping will be prohibited on public land water frontages on the River Murray where the public land is less than 100 metres wide between the river and the adjacent freehold land (see Recommendation R29). As part of a dispersed camping strategy, some bends or river stretches should be identified where dispersed camping is excluded, while other camping sites could be reconfigured or ‘hardened’ to allow greater usage.

Due to the importance of fallen timber for fauna in the riverine forests, commercial and domestic firewood collection would not be permitted in the Murray River Park, other than in zones to be designated by the land manager for domestic firewood collection around Mildura, Robinvale, and at a suitable location in proximity to Nathalia. As a general rule, an average of 45 tonnes/hectares of coarse woody debris across each frontage block should be maintained. Due to fire risk, solid fuel fires during the high fire danger period (as determined by the Department of Sustainability and Environment in conjunction with the Country Fire Authority) on all public land adjoining the River Murray will be prohibited (see Recommendation R30–31).

Given that there are a high level of natural and scenic values and intense recreation pressures, some activities previously permitted in the former land-use categories will be incompatible with the objectives and direction sought through the Murray River Park. For example, due to the numerous campers using areas in the proposed Murray River Park, hunting and grazing are not appropriate. A number of licensed pump sites, pumpline sites, and regulators associated with water management and use occur within the reserve and the use of these facilities would continue. However, Council believes that new structures should be located on private land or on consolidated sites as far as possible, and more stringent guidelines should be applied to the overall appearance of these structures, particularly at pump sites so that the impact of these sites on the scenic riverine environment is minimised.

The land in New South Wales abutting the River Murray has characteristics, values, and uses similar to those of the proposed Murray River Park and it would be desirable if this public land could be managed in a manner compatible with the management of the Murray River Park. As the Victorian–New South Wales border is the top of the

southern bank of the River Murray, activities occurring on the River Murray itself or on sandbanks on the southern side of the River Murray are within the jurisdiction of New South Wales. Nonetheless a number of activities that occur on the river or the sandbars have a direct impact on areas within the proposed Murray River Park, including watersports, the construction of jetties connected to the Victorian side of the river and activities associated with camping on sandbars. A coordinated management approach with New South Wales authorities, preferably including a seamless regulatory regime, would resolve a number of these anomalies and provide a more integrated approach to planning along the River Murray.

RECOMMENDATION

Murray River Park

B3 That:

- (a) the area of 32,028 hectares shown on Map A as the Murray River Park be used in accordance with regional parks general Recommendations B,
- (b) a Management Plan for the Murray River Park be developed in consultation with the community within three years of the acceptance of this recommendation,
- (c) use of existing and licensed pump and pump-line sites be permitted to continue, but new pumps should be located on private land if practicable or be consolidated on existing sites where possible,
- (d) commercial firewood collection not be permitted, and domestic firewood collection generally not be permitted, other than in zones to be designated by the land manager around Mildura, Robinvale and at a suitable location in proximity to Nathalia,
- (e) broadly, other existing uses in the area of the proposed Murray River Park be permitted at the discretion of the land manager and subject to the management plan,
- (f) the proposed Murray River Park be considered “restricted” Crown land under the *Mineral Resources (Sustainable Development) Act 1990*,
- (g) the park be zoned in order to provide for the range of uses outlined above and be permanently reserved under section 4 of the *Crown Land (Reserves) Act 1978*,
- (h) regulations be developed to be in place as soon as practicable after the park is established, and
- (i) a coordinated approach to management across the border with New South Wales be developed, including a co-ordinated regulatory regime.

Notes:

- 1. A firewood strategy for campers should be developed in accordance with Recommendation R31.

B4 Kings Billabong Park

The proposed Kings Billabong Park incorporates the existing Kings Billabong Wildlife Reserve, Karadoc State Forest, Red Cliffs Scenic Reserve, Water supply and drainage basin, Mildura Bushland Reserve and linking areas of River Murray Reserve. Kings Billabong Wildlife Reserve (where hunting is not currently permitted) is a 2135 hectare nature conservation reserve 8 kilometres southeast of Mildura within the Robinvale Plains bioregion. A 17 hectare recreation reserve at Bruces Bend containing a houseboat marina occurs to north of Kings Billabong but is not part of the proposed Kings Billabong Park.

A total of 393 species of native flora and 179 species of native fauna have been recorded in the proposed Kings Billabong Park, including 82 significant flora and 31 significant fauna species. The fauna includes the nationally vulnerable Regent Parrot and Growling Grass Frog. Many of the threatened plant species have very restricted distributions in Victoria, such as the Curly Flat-sedge which is known in only 3 sites between Boundary Bend and Mildura.

There are 22 Ecological Vegetation Classes mapped within Kings Billabong and Bottle Bend, including Lignum Shrubland, Lignum Swampy Woodland, Intermittent Swampy Woodland, Riverine Chenopod Woodland and Spike-sedge Wetland. Areas of Semi-arid Woodland, Chenopod Mallee, Woorinen Mallee with Woorinen Sands Mallee occur elsewhere in the proposed park. The wetlands in Kings Billabong were ephemeral prior to European settlement but have since been used as a water storage basin from which water is pumped for irrigation. Permanent inundation has resulted in the death of many River Red Gums.

The Kings Billabong Wildlife Reserve has high river health and biodiversity values, and is identified as a high value section of river by the Mallee River Health Strategy. The Kings Billabong wetlands are listed on the Directory of Important Wetlands, however parts of the southern section of Kings Billabong are affected by secondary salination caused by rising groundwater and disposal of irrigation drainage. This has caused the death of vegetation and changed the understorey composition.

Many sites in Kings Billabong are important for Indigenous cultural heritage. Kings Billabong and the adjacent Psyche Bend Pumps Historic and Cultural Features Reserve (Recommendation E1) are an important part of the irrigated horticulture heritage of the region. The Psyche Bend Pumps area should be managed in conjunction with the Kings Billabong Park to protect the historic values of the site.

There are five apiary sites in the proposed Kings Billabong Park while Bottle Bend (River Murray Reserve) and Karadoc State Forest are crossed by a small number of water supply licences. A 290 hectare grazing licence covers the eastern section of the Karadoc State Forest and a 75 hectare licence covers part of the western area.

Kings Billabong and Bottle Bend provide highly accessible, low cost camping destinations in a bush setting close to Mildura and Red Cliffs. These areas are particularly popular as vantage points for the Mildura water ski race held

annually at Easter. Annual visitor numbers in Kings Billabong have been estimated to be in the vicinity of 75,000–100,000, with highest visitation occurring during Easter and on public holidays. Kings Billabong and Bottle Bend provide opportunities for many recreational activities including dogwalking, camping, horseriding, fishing, walking, bicycle riding, canoeing, birdwatching, waterskiing (not on the Billabong), sightseeing and picnicking.

Council has not received specific comments about Kings Billabong, Red Cliffs Scenic Reserve, Bottle Bend, Karadoc State Forest or Mildura Bushland Reserve. However, the Friends of Kings Billabong Wildlife Reserve group has an active partnership with Parks Victoria and were recently very involved in the development of the Riverine Protection Plan for Kings Billabong.

RECOMMENDATIONS

Kings Billabong Park

B4 That:

(a) the area of 3535 hectares shown on Map A as the Kings Billabong Park be used in accordance with regional parks and other parks general Recommendations B.

(b) the park be established under Schedule Three of the *National Parks Act 1975*

B5 Murray–Kulkyne Park

This enlarged park includes the existing Murray–Kulkyne Park (3999 hectares) which occurs in two distinct blocks on the River Murray either side of the Hattah–Kulkyne National Park, as well as the Tarpaulin Island Reference Area (395 hectares) and a narrow section of River Murray Reserve (165 hectares), between the existing northern boundary of the park and Colignan. The existing Murray–Kulkyne Park is currently reserved under Schedule Three of the *National Parks Act 1975*.

The existing Murray–Kulkyne Park contains large areas of depleted EVCs including Grassy Riverine Forest and Riverine Grassy Woodland in the northern section and Lignum Swampy Woodland and Lignum Shrubland in the southern section, and smaller areas of nine threatened EVCs. One hundred and eleven species of native fauna including 14 threatened species have been recorded in the northern section and 124 species of native fauna including 12 threatened species have been recorded in the southern sections of Murray–Kulkyne Park. The threatened species include Bush Stone-curlew, Regent Parrot, Painted Honeyeater and Curl Snake. Ninety-two species of native flora including 11 threatened species have been recorded in the northern section and 81 species of native flora including eight threatened species have been recorded in the southern part of Murray–Kulkyne Park.

The narrow section of the existing River Murray Reserve, between the existing northern boundary of the

Murray–Kulkyne Park and the Colignan township has many natural values, including threatened flora species such as Woolly Scurf-pea, Silky Glycine, Desert Lantern, Tall Kerosene Grass, Silky Umbrella-grass and Sand Sida. The EVCs in the area comprise mostly of Shrubby Riverine Woodland, Grassy Riverine Forest, Floodway Pond Herbland and Intermittent Swampy Woodland in the tight bends with smaller areas of Shallow Freshwater Marsh, Riverine Chenopod Woodland and Riverine Grassy Woodland.

The primary use of the proposed Murray–Kulkyne Park is recreation and conservation. The park’s location on the River Murray and its reservation status allows a different recreational opportunity from the experience in the adjoining Hattah–Kulkyne National Park. For example, campers can bring their dogs (which must be on a lead) and enjoy dispersed camping in Murray–Kulkyne Park.

There are a small number of licences in the area proposed for addition to the Murray–Kulkyne Park, including three apiary licences. These licences will be allowed to continue.

The small number of submissions that specifically mentioned Murray–Kulkyne Park suggested it be added to Hattah–Kulkyne National Park. Only one submission specifically referred to the forests around Nangiloc and Colignan, suggesting it be added to the conservation reserves system for the conservation of wildlife. Adding the area to the existing Murray–Kulkyne Park will give the area a higher profile with both land managers and the public and lead to better conservation outcomes as recreational pressure increases in the future. The Tarpaulin Island Reference Area will continue to be managed under the *Reference Areas Act 1978*, but, as it is separated from the rest of the park by the River Murray, it will require fencing to prevent access by domestic stock from New South Wales (see Recommendation F1(c)).

RECOMMENDATIONS

Murray–Kulkyne Park

B5 That:

- (a) the area of 4563 hectares shown on Map A as the Murray–Kulkyne Park be used in accordance with regional parks and other parks general Recommendations B, and
- (b) fencing be undertaken of the Tarpaulin Island Reference Area to prohibit wandering stock from New South Wales entering the site, and
- (c) the park be established under Schedule Three of the *National Parks Act 1975*.

B6 Gadsen Bend Park

The proposed Gadsen Bend Park (1618 hectares) incorporates the Gadsen Bend State Forest and River Murray Reserve upstream of the existing Murray–Kulkyne Park near Robinvale. The varying EVCs represented in the proposed Gadsen Bend Park contribute to the representation of the reserve system in the Robinvale Plains bioregion. The southern section contains the vulnerable Semi-arid Chenopod Woodland and Semi-arid Parilla Woodland while the northern section has larger areas of more riverine vegetation such as Lignum Swampy Woodland, Lignum Shrubland and Riverine Grassy Woodland. Shrubby Riverine Woodland and Intermittent Swampy Woodland EVCs occupy the insides of the river bends.

Significant fauna species known to occur in the proposed Gadsen Bend Park include the endangered Carpet Python and vulnerable Regent Parrot. One hundred and nine species of native flora have been recorded including 16 threatened or near-threatened species. Of particular importance are the endangered Silver Tails (this is the only place this species is found in Victoria) and Woolly Scurf-pea (only populations in Victoria are between Boundary Bend and Mildura).

Grazing on the main area of forest was removed six to seven years ago. There are seven grazing licences (mostly less than 10 hectares) on blocks on the boundary of the forest. The vegetation on these blocks is currently in poor condition and requires restoration. There are four apiary licences in the northern section of the forest, and a licence for a rifle range over most of the downstream section (~140 hectares). The rifle range itself is not part of the proposed park, but is proposed as a separate community use area (Recommendation I1). Most of the existing buffers around the shooting ranges are recommended to be included in the park, with existing restrictions on access maintained by zoning. Other recreational activities are similar to other parts of the River Murray and include camping, fishing and four wheel driving but visitation is not as high as in areas that are closer to major population centres.

No community views put to VEAC specified Gadsen Bend State Forest but some submissions proposed that public land around Robinvale (or in the Robinvale Plains bioregion) be added to the reserve system.

RECOMMENDATIONS

Gadsen Bend Park

B6 That:

- (a) the area of 1618 hectares shown on Map A as the Gadsen Bend Park be used in accordance with regional parks and other parks general Recommendations B, and
- (b) the park be established under Schedule Three of the *National Parks Act 1975*

B7 Nyah–Vinifera Park

The proposed Nyah–Vinifera Park (1391 hectares) incorporates the Nyah State Forest (845 hectares) and the Vinifera forest section of the River Murray Reserve (~450 hectares) at Nyah, between Swan Hill and Piangil.

There are 19 Ecological Vegetation Classes (EVCs) in the Nyah and Vinifera forests including larger areas of Riverine Swamp Forest and Sedgy Riverine Forest and smaller areas of threatened EVCs such as Riverine Grassy Woodland, Spike-sedge Wetland and Riverine Chenopod Woodland.

Riverine habitat is essential for Carpet Pythons and they have recently been recorded in Nyah State Forest and near Vinifera forest. Hollow-bearing trees and logs, or large rock outcrops, and thick ground cover, are essential for Carpet Pythons. An important population of endangered Grey-crowned Babblers occurs at the Wood Wood end of the Nyah State Forest. Other threatened faunal species recorded in Nyah State Forest and Vinifera forest include the Australian Shoveler, Great Egret, Intermediate Egret, Hardhead, Musk Duck and Royal Spoonbill and Diamond Firetail. Two significant flora species, Riverina Bitter-cress and Native Couch are recorded in these forests.

Nyah and Vinifera forests are important cultural sites for the Wadi Wadi people and there are numerous burial sites, middens, and scarred trees. Some of the mounds created by burial sites attract trail bike riders who use the sites as jumps. The earthen ovens and middens are listed under the Register of the National Estate. European heritage reflects the pioneering history of the area. The Takasuka Bank (levee) shows an early example of water diversion to grow rice crops.

Wood Utilisation Plans for the past three years have allocated a 1650 cubic metres firewood coupe in Nyah State Forest; however the coupe has not been cut and domestic firewood has been sourced from elsewhere. Cattle grazing (agistment) was removed from Nyah State Forest approximately seven years ago and from Vinifera forest approximately nine to ten years ago because the cattle were damaging Indigenous cultural sites. There is an apiary site in each of Nyah and Vinifera forests.

An earthen weir across the Parnee Malloo Creek ponds water almost the full length of the creek. The Nyah District Golf Club pumps water out of the Creek to irrigate its greens and fairways during wet years and during dry years pumps directly from the River Murray. Drains from adjoining freehold land enter the southern end of Nyah State Forest.

The region is popular for camping, fishing, boating, four wheel driving, trailbike riding and walking and is readily accessible from the Murray Valley Highway. Vinifera forest is popular for duck hunting when the creek is running but this activity will not continue in the proposed Nyah–Vinifera Park. The Nyah District Pony Club is currently licensed to use 13 hectares of Vinifera forest for equestrian activities and this activity will be allowed to continue.

The majority of submissions pertaining to Nyah and/or Vinifera forests proposed that the forests become a state or national park. While some submissions wanted to be able to harvest timber from Nyah State Forest, others

proposed Nyah remain a state forest to reduce the risk of fire. Many submissions proposed that camping be maintained.

RECOMMENDATIONS

Nyah–Vinifera Park

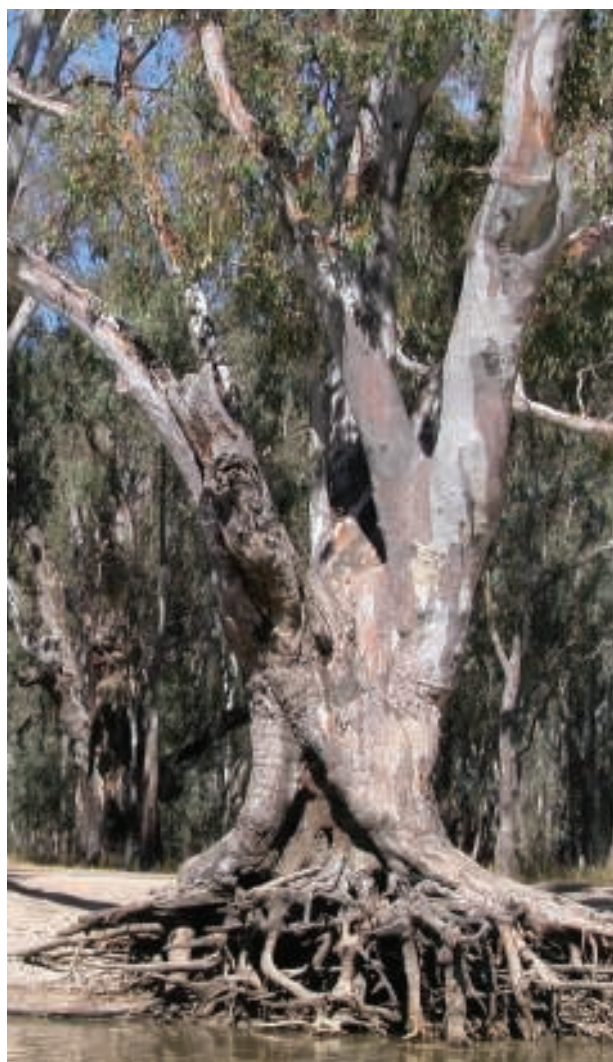
B7 That:

(a) the area of 1391 hectares shown on Map A as the Nyah–Vinifera Park be used in accordance with regional parks and other parks general Recommendations B,

(b) Indigenous co-management arrangements be established in accordance with Recommendation R24,

(c) the area currently licensed for equestrian activities be zoned for this purpose in management planning,

(d) the park be established under Schedule Three of the *National Parks Act 1975*.





C State forests

The River Red Gum forests of the Murray Valley have been a major source of durable timbers and firewood in southeastern Australia since the early days of European settlement. State forests are a major source of timber products on public land, as well as supporting biodiversity and providing for a broad range of recreational activities including camping, horseriding, four wheel driving and car touring, hunting and fishing. These forests also provide for a variety of other uses such as earth resource extraction and apiculture.

State forests are of great cultural and spiritual importance to Aboriginal people. They contain many sites of particular significance and allow the continuation of traditional practices on Country. State forests also contain areas of European cultural significance. With careful management, especially adequate flooding, the state forests of the Investigation area can continue to produce timber whilst also catering for a wide range of other uses and values into the future albeit in the greatly reduced area recommended here.

Timber

Seasoned River Red Gum timber is relatively hard and moderately dense so it is often used for structural timber. Its vibrant red colour and decorative grain when polished give it great appeal for furniture and appearance products such as flooring. It is also durable and resistant to white ants and borers, making it ideal for use as railway sleepers and wharf timber. Finally, its density also makes it sought after for firewood.

The net gain to the economy from the timber industry is approximately \$2.5 million per annum. The industry employs approximately 96 people (full-time equivalents) directly and another 20 people indirectly in or near the Investigation area (see Appendix 1 for details).

The recommendations in this report significantly reduce the area of state forest—from 106,710 hectares to 12,207 hectares. However, only a small proportion of the current total state forest area is actually available for timber harvesting because some state forests do not contain River Red Gums, timber harvesting is not economically viable in other forests, timber harvesting is prohibited in Special Protection Zones, and the Code of Forest Practices also places limits on harvesting. Most of the current commercial timber harvesting is from Barmah, Gunbower and the Lower Goulburn forests.

In the three major commercial forests the area available for harvesting from General Management Zone only—that is, not counting the contribution from Special Management Zone—would reduce from 24,038 hectares to 10,105 hectares, or 42 percent of the current available area, under VEAC's proposed recommendations. All of the remaining available area would be in Gunbower forest and the nearby Benwell and Guttram forests. See Chapter 4 for a discussion of the implications of these draft proposals on the River Red Gum timber industry.

Estimating the long-term sustainable harvest volumes available from these areas, and thus the size of the industry, is particularly difficult because growth rates vary with site quality and flood regime. Because rainfall in the Investigation area is insufficient to sustain River Red Gum

forests, the health, growth and indeed existence of these forests is dependent on water supplied by regular winter–spring flooding from the River Murray and its tributaries. River regulation and increased extraction of water for agriculture and urban use coupled with the ongoing drought has severely reduced the extent and altered the timing of this flooding. These changed flood regimes have reduced tree growth rates substantially and placed large areas of River Red Gum forest under severe stress. For example, Continuous Forest Inventory (CFI) plot measurements in Barmah and Gunbower forests, obtained from DSE, indicate that growth rates between 1998 and 2005 were only 61 percent of rates recorded in previous periods. This decrease is almost certainly due to the recent drought and lack of flooding over the last ten years.

Estimates of sustainable yield have been made using the CFI data to predict growth, areas from the current proposals and the Department of Sustainability and Environment's methods for calculating uneven aged forest. A summary of the results is provided in Appendix 7.

Appendix 7 shows that with frequent flooding and the current available area, an average of 6288 cubic metres of sawlogs and standard logs could be harvested sustainably each year. The 6288 cubic metres figure differs from the Mid-Murray Forest Management Area Estimate of Sawlog Resource (5200 cubic metres per year, estimated by DSE in 2002) partly because the later figure does not include standard logs.

VEAC's recommendations for a reduced state forest area and significantly greater floodplain inundation than in recent years (Recommendations R10-17) are estimated to result in a sustainable harvest equivalent to 36 percent of the current harvest. Failure to deliver on flooding will reduce this to 22 percent of the current volume. Some timber businesses are unlikely to be viable with such volumes. Without VEAC's proposed recommendations, that is, without any reductions in area, the sustainable harvest is still likely to drop to 38 percent of the current volume if nothing is done to increase flooding (Appendix 7).

Commercial and domestic firewood

Since the implementation of the Environment Conservation Council (ECC) Box-Ironbark Forests and Woodland Investigation recommendations after 2002, there has been increased pressure on other forests to supply firewood. Much of this pressure has been focussed on the River Red Gum forests because of their accessibility, availability and the suitability of River Red Gum for firewood. The effects of changes in available forest and flooding regimes on sustainable firewood volumes are even more poorly known than the corresponding effects on timber volumes. However, firewood and timber volumes are both primarily a function of forest productivity. Therefore, the percentage reductions in timber availability resulting from VEAC's recommendations for public land categories and environmental flows (see Appendix 7) are likely to apply with reasonable reliability to firewood, especially waste timber following commercial sawlog harvesting activities and thinning operations.

The likely situation with domestic firewood is less clear because it is largely obtained from fallen wood, and is also constrained by accessibility—it is generally not cost-effective to travel more than about 20 kilometres for

domestic firewood. To cater for areas with few affordable alternatives (especially reticulated gas) and where little state forest remains, zones for domestic firewood collection are recommended in the Murray River Park: in the Mildura, Robinvale and Nathalia areas (Recommendation B3). As part of the implementation of the ECC Box-Ironbark recommendations, local firewood strategies were developed to guide the transition to the new arrangements for firewood for particularly affected areas. Such strategies may be appropriate in parts of the River Red Gum Forests Investigation area.

Other uses and values

The issues associated with key thematic recommendations in Chapter 2 such as environmental water, Aboriginal

involvement, recreation and tourism and domestic stock grazing are applicable in state forests as they are in other larger public land use categories. Notably:

- for increased floodplain inundation and other aspects of environmental water management (Recommendations R10-17)
- for increased Indigenous involvement in public land management and continuation of traditional practices (Recommendations R18-27)
- for improved management of recreation in riverine forests, including controls on campfires and collection of wood for campfires (Recommendations R28-32)
- to remove domestic stock grazing (Recommendations R33).

RECOMMENDATIONS

General recommendations for state forests

C That the state forests (numbered C1 to C3) shown on Map A be used to:

- (a) produce hardwood timber and other forest products
- (b) conserve and protect biodiversity, natural landscapes and natural processes
- (c) protect significant cultural and historic sites and places, including Aboriginal cultural sites and places
- (d) provide opportunities for recreation (including hunting) and education
- (e) provide for flood mitigation;

and that:

(f) the following activities be generally permitted:

- (i) bushwalking, nature observation, heritage appreciation, picnicking
- (ii) camping, including dispersed camping and overnight camping with horses
- (iii) dogwalking and camping with dogs
- (iv) hunting
- (v) car touring, including four wheel driving, on formed roads and tracks
- (vi) mountainbike and trailbike riding on formed roads and tracks
- (vii) horseriding on formed roads and tracks
- (viii) apiculture
- (ix) exploration and mining
- (x) research, subject to permit;

and that:

(g) the following activities not be permitted:

- (i) domestic stock grazing
- (ii) solid fuel fires during the high fire danger period

and that:

(h) DSE review the forest management zoning within the state forests of the Mid-Murray Forest Management Area.

C1-C2 Benwell and Guttram State Forests

Benwell (565 hectares) and Guttram (1226 hectares) State Forests both adjoin the River Murray between Koondrook and Murrabit. These state forests will be managed by DSE and continue to be available for timber harvesting, dispersed camping, horseriding and firewood collection.

The EVCs in Benwell and Guttram State Forests are typical of these floodplains. At Benwell they include Riverine Swamp Forest (d), Grassy Riverine Forest (d), Floodway Pond Herbland/Riverine Swamp Forest Complex (d) and small areas of Spike sedge-wetland (v). The EVCs at Guttram State Forest include Riverine Swamp Forest, Floodway Pond Herbland/Riverine Swamp Forest Complex and Sedgy Riverine Forest along the river.

VEAC received very few community comments explicitly about Benwell and Guttram forests. However, many community sectors wanted to retain access to all state forests, mainly for recreational activities and timber harvesting.

RECOMMENDATIONS

Benwell State Forest

C1 That:
(a) the area of 565 hectares shown on Map A as the Benwell State Forest be used in accordance with the general Recommendations for state forests C.

Guttram State Forest

C2 That:
(a) the area of 1226 hectares shown on Map A as the Guttram State Forest be used in accordance with the general Recommendations for state forests C.

C3 Gunbower State Forest

Gunbower State Forest (10,416 hectares) is situated along the River Murray between Torrumbarry and Koondrook. Two sections of the current Gunbower State Forest have been proposed for inclusion into the Gunbower National Park. The southern section consists of predominantly Black Box woodland and sections of the current Murray River Reserve. The western part includes the wetlands along the Gunbower Creek. Gunbower State Forest will be managed by DSE and continue to be available for timber harvesting, dispersed camping, horseriding and firewood collection.

The main EVCs in the proposed Gunbower State Forest are Riverine Swamp Forest, Floodway Pond Herbland/Riverine Swamp Forest Complex, Riverine Grassy Forest with small areas of Sedgy Riverine Forest along the river and Spike-sedge wetland lining the internal depressions.

Gunbower Forest is a Ramsar site. It contains significant wetlands that are currently managed as Special Management Zones under the Mid-Murray Forest Management Plan. These sites are significant breeding areas for colonial waterbirds. The most recent breeding event was in 2005/06 when egrets bred along Little Gunbower Creek after environmental water flooded parts of the forest. The current level of protective management in place for this area will continue.

RECOMMENDATIONS

Gunbower State Forest

C3 That:
(a) the area of 10,416 hectares shown on Map A as the Gunbower State Forest be used in accordance with the general Recommendations for state forests C, and
(b) areas currently zoned for the protection of colonial waterbird breeding sites under the Mid-Murray Forest Management Plan continue to be managed for this purpose.



D Nature conservation reserves

Some areas of public land are highly significant for their ecosystems, plant or animal habitats, or both. Nature conservation reserves are set aside to conserve rare or threatened species, significant plant associations or communities, or valuable habitat for populations of significant fauna. The primary land use objective is nature conservation, although education, scientific research and passive recreation are permitted subject to the maintenance of the particular values of the reserve. Nature conservation reserves differ from parks in that they are generally smaller, and that recreation is not a primary use. Together with national parks and some regional parks, nature conservation reserves make up the major part of the protected area system.

Many of the new nature conservation reserves in the River Red Gum Forests Investigation area protect native grasslands and grassy woodlands in the Victorian Riverina bioregion. These ecosystems have suffered considerable decline from intensive irrigated and dryland agriculture and domestic stock grazing. The quality of the remaining grasslands can vary from very small but high quality sites to larger sites containing less floristic species diversity but important fauna habitat. Indeed several of the threatening processes that have reduced the diversity of some of the larger sites continue today. Overgrazing and, in some instances, cropping (legal and illegal) of grasslands have occurred on a number of public land blocks in the Investigation area. Since this area was last studied by the Land Conservation Council in 1985, our knowledge of grassy ecosystem ecology and distribution has improved

RECOMMENDATIONS

General recommendations for nature conservation reserves

D That the nature conservation reserves shown on Map A (numbered D1 to D49):

(a) be used to:

- (i) conserve and protect species, communities or habitats of indigenous animals and plants
- (ii) provide for educational and scientific study if consistent with (i) above
- (iii) provide for recreation by small numbers of people, if consistent with (i) above

and that:

(b) the following activities generally be permitted:

- (i) bushwalking, nature observation, heritage appreciation, picnicking
- (ii) car touring, including four-wheel driving, on formed roads and tracks
- (iii) apiculture on existing licensed sites, subject to the outcome of research into the ecological impacts of this industry, and management requirements
- (iv) exploration and mining for minerals and searching for and extraction of stone resources subject to the consent of the Crown land Minister under the relevant earth resources legislation

and that:

(c) the following activities not be permitted:

- (i) grazing of domestic stock (see note 1 below)
- (ii) harvesting of forest products
- (iii) hunting and the use of firearms (see note 2 below)
- (iv) solid fuel fires at any time of year
- (v) dogwalking
- (vi) horseriding

and that:

(d) they be permanently reserved under the *Crown Land (Reserves) Act 1978* for the purpose of 'preservation of an area of ecological significance'.

Notes

1. Grazing contracted for ecological purposes or for short-term management purposes such as targeted weed control may be permitted
2. Hunting and the use of firearms may be authorised as part of a pest animal control program.
3. The above management objectives and summary land-use recommendations are those that generally apply for the land-use category. Exceptions to these may apply to specific reserves in special circumstances.
4. A number of areas containing native grasslands have been planted with non-indigenous trees or shrubs. They have the potential to degrade grassland values and should be removed unless considered important for fauna habitat.
5. A small but significant area of Buloke-dominated Plains Woodland occurs on the border of the Investigation area (Crown Allotment 11B, Section C, Parish of Charlton East, Parcel No. P121341). This was not subject to a recommendation in the Environment Conservation Council's Box-Ironbark Forests and Woodlands Investigation and VEAC considers it warrants reservation as a new nature conservation reserve (the Aristida Nature Conservation Reserve).

considerably. There has also been significant investment in the conservation of these ecosystems, through state and commonwealth government land purchase programs and private land conservation programs. Through the establishment of a series of new nature conservation reserves, VEAC is contributing to these efforts. A description of the location and values of the 13 existing, nine expanded and 27 new nature conservation reserves is provided on the following pages.

D1 Lambert Island Nature Conservation Reserve

This 1222 hectare site incorporates the Lambert Island Flora Reserve, adjoining State Forest and River Murray Reserve south of Mildura. It includes a diverse range of EVCs including Lignum Swampy Woodland, Riverine Grassy Woodland, Riverine Chenopod Woodland and Lignum Shrublands. In particular, it contributes to the representation of two under-reserved EVCs (Floodway Pond Herbland and Shallow Freshwater Marsh) in the Robinvale Plains bioregion. The endangered Tough Scurf-pea and Yellow Tails have been recorded at the site.

D2 Karadoc Nature Conservation Reserve

The existing Karadoc Flora Reserve (111 hectares), on the River Murray south of Mildura, includes a diverse range of EVCs including Lignum Shrubland, Shrubby Riverine Woodland, Grassy Riverine Forest, Grassy Riverine Forest/Floodway Pond Herbland Complex, Riverine Chenopod Woodland, Semi-arid Chenopod Woodland and Floodway Pond Herbland.

D3 Lakes Powell and Carpul Nature Conservation Reserve

This 725 hectare site includes the Lakes Powell and Carpul Wildlife Reserve (where hunting is currently excluded) and adjoining uncategorised Crown land to the south east of Robinvale. It contains at least 35 flora species of conservation significance, including the endangered Hoary Scurf-pea and Woolly Scurf-pea, as well as providing habitat for a number of threatened waterfowl species. A diverse range of EVCs including Lake Bed Herbland, Intermittent Swampy Woodland, Riverine Chenopod Woodland, Lignum Swampy Woodland, Lignum Shrubland, Chenopod Mallee and Woorinen Mallee are represented on this site.

D4 Murrumbidgee Junction Nature Conservation Reserve

Between Boundary Bend and Robinvale, the proposed Murrumbidgee Junction Nature Conservation Reserve (1223 hectares) comprises 916 hectares of the existing Murrumbidgee State Forest, 286 hectares of River Murray Reserve and the Passage Camp Flora Reserve (21 hectares). This area includes the junction of three bioregions (Robinvale Plains to the west, Murray Mallee to the south and Murray Fans to the East) as well as the confluence of the Murrumbidgee and Murray Rivers. Carpet Pythons and Regent Parrots have been recorded on the site, as have 10 threatened flora species, including the endangered Grey Scurf-pea and the Dwarf Swainson-pea. The Murrumbidgee Junction Nature Conservation Reserve will contribute significantly to representation of Lignum Swampy Woodland, Lignum Shrubland, Riverine Chenopod Woodland, Shallow Freshwater Marsh and Riverine Grassy Woodland Ecological Vegetation Classes.

D5 Towaninny Nature Conservation Reserve

This 81 hectare site is the existing Towaninny Flora Reserve. Black Box wetland occupies a well-developed example of a gilgai soil—a feature that was common on Quaternary sedimentary land surfaces before ploughing became widespread. Chenopod Grassland EVC is also represented.

D6 Ninyeunook-Lalbert Creek Nature Conservation Reserve

This eight hectares site is the existing Ninyeunook I205 Bushland Reserve. It is a high quality example of Riverine Swampy Woodland/Lignum Wetland Mosaic and provides habitat for the endangered Hoary Scurf-pea. This block of Crown land is part of the Bunguluke Wetlands, Tyrell Creek and Lalbert Creek Floodplain system, which is listed on the Directory of Important Wetlands in Australia.

D7 Ninyeunook Township Nature Conservation Reserve

This six hectare site of uncategorised Crown land is located at the old Ninyeunook township site. It is an important remnant of Savannah Grassland EVC connected to larger grasslands in the district by vegetated roadsides. The reserve is likely to contain sites of some historical significance, with a plaque on the site indicating the various buildings and uses that previously occurred in the Ninyeunook village.

D8 Towaninny South Nature Conservation Reserve

This 35 hectare site incorporates the Towaninny South Flora Reserve and adjoining township land. The high quality remnant of Plains Savannah has a number of significant flora species including Buloke, Bluish Raspwort, Pale Spike-sedge, Long Eryngium, Leafless Bluebush and Bush Minuria.

D9 Towaninny North Nature Conservation Reserve

This 40 hectare Lignum Swampy Woodland is the existing Towaninny I203 Bushland Reserve and is linked via a vegetated creekline to the Towaninny Nature Conservation Reserve to the south.

D10 Cannie Nature Conservation Reserve

This 16 hectare site is the existing Cannie Flora Reserve and protects relatively undisturbed Buloke woodland and associated grassland growing on calcareous clays. The vulnerable Umbrella Wattle and Buloke Mistletoe have been recorded on the site.

D11 Griffith Lagoon Nature Conservation Reserve

This 69 hectare site is the existing Quambatook Flora and Fauna Reserve, a Lignum Swampy Woodland, however the proposed name change is intended to more accurately reflect the area protected.

D12 Terrappee Nature Conservation Reserve

This new reserve totalling 18 hectares includes the Terrappee Water Supply Purpose Reserve, an unused recreation reserve and uncategorised public land. It is a significant Plains Grassland and Plains Woodland remnant, with threatened flora including the vulnerable Riverine Flax-lily, Wedderburn Wattle, Inland Pomaderris and an unnamed *Diuris* species. Hairy Tails and Buloke also occur on the site, part of which has been subject to unauthorised cropping.

D13 Buckrabanyule Nature Conservation Reserve

This 40 hectare site is the existing Buckrabanyule Water Conservation Reserve to the north of Wychitella. It contains an area of Plains Woodland and Plains Grassland EVCs with scattered Bulokes.

D14 Wychitella North Nature Conservation Reserve

This 40 hectare site is a Water Supply Reserve to the south west of Boort. It is an important Buloke-dominated Plains Woodland, with the vulnerable Buloke Mistletoe present. Parts of the western section of this site have been illegally cropped and are now recovering.

D15 Korrak Korrak Nature Conservation Reserve

This 273 hectare site incorporates the existing Korrak Korrak Nature Conservation Reserve and Back Creek Water Frontage Reserve. The Korrak Korrak block is a high quality Chenopod Grassland and Riverine Chenopod Woodland, recently purchased for conservation. It contains a number of significant flora species, including Chariot Wheels, Cane Grass, Leafless Bluebush and Smooth Minuria. The grasslands provide likely habitat for the Plains-wanderer which has been recorded nearby. The Black Box-dominated Back Creek provides an important ecological linkage between the grasslands in this reserve with the Trust for Nature's Korrak Korrak Grassland Reserve and the grasslands at Yassom Swamp (now part of the proposed Leaghur-Koorangie National Park) to the north.

D16 Boort Nature Conservation Reserve

The 43 hectare site is the existing Boort Flora Reserve, north west of Boort. It contains Broombush Mallee/Low Rises Grassy Woodland Mosaic, Plains Woodland and Pine Buloke Woodland EVCs and habitat for the Tree Goanna.

D17 Woolshed Swamp Nature Conservation Reserve

This 497 hectare site incorporates the Woolshed Swamp Wildlife Reserve, Woolshed Swamp Sheepwash Historic Reserve and disused quarry south of Boort. Listed on the Directory of Important Wetlands in Australia, Woolshed Swamp is a high value wetland for its large size, habitat diversity and lack of disturbance. The wetland is an intermittent shallow freshwater swamp fringed by River Red Gum and Yellow Box. It supports a diversity of fauna species and is a valuable waterbird breeding habitat when it contains water. Significant numbers of Pink-eared Duck and Australian Shelduck have bred here in the past. This is also the location of significant Indigenous heritage sites.

D18 Mysia Nature Conservation Reserve

These two blocks totalling 42 hectares at Mysia are proposed to be added to the existing Mysia Nature Conservation Reserve (just outside of the Investigation area). They contain significant areas of Plains Grassland and Plains Woodland, including scattered Bulokes. The inter-tussock spaces, soil cracks, natural undulations and good moss and lichen cover over much of the area provide good potential habitat for grassland fauna.

D19 Lake Yando Nature Conservation Reserve

This 87 hectare site is the existing Lake Yando Wildlife Reserve to the north of Boort. It is a freshwater marsh surrounded by woodland dominated by River Red Gum and Black Box, with a herbaceous layer dominated by Southern Cane-grass.

D20 Duck Lake South Nature Conservation Reserve

This 116 hectare reserve is the southern section of the Duck Lake Wildlife Reserve, north west of Kerang. A saline wetland, the muddy edges of this lake provides habitat for wading birds. Small areas of fringing vegetation include Plains Woodland and Semi-arid Woodland EVCs. The lake and associated lunette area are sites of local geomorphological significance. The northern section of Duck Lake will be available for duck hunting.

D21 Winlaton Nature Conservation Reserve

This important 86 hectare Chenopod Shrubland is the existing Winlaton Nature Conservation Reserve, most of which was recently purchased by the state government. It contains the first record of the saltbush *Atriplex turbinata* for Victoria, and other significant flora species such as Winged New Holland Daisy, Leafless Bluebush, Yakka Grass, Mealy Saltbush, Bladder Saltbush and Spiny Lignum. It adjoins high quality grassland and woodland areas protected on private land by conservation covenants.

D22 Benjeroop–Dartagook Nature Conservation Reserve

This significant new nature conservation reserve (totalling 1179 hectares) combines the Dartagook Wildlife Reserve (where hunting is currently excluded) (728 hectares), Benjeroop State Forest (Special Protection Zone) (336 hectares), and adjoining water frontage reserves along the Barr Creek and Loddon River. The Dartagook section is Black Box–River Red Gum forest and lignum swamp at the junction of the Loddon River and Sheepwash Creek. The Benjeroop section is an open woodland dominated by Black Box with a Tangled Lignum and Rounded Noon-flower understorey. The new reserve contributes to the representation of Riverine Chenopod Woodland and Lignum Swampy Woodland in the Murray Fans bioregion. It provides habitat for a number of significant fish species including the critically endangered Silver Perch, the endangered Murray Cod and Freshwater Catfish and the vulnerable Golden Perch. It also provides important habitat for declining woodland birds such as the Hooded Robin and Brown Treecreeper while the Grey-crowned Babbler occurs on adjoining private land. A number of rare flora species are present including Branching Groundsel, Three-wing Bluebush, Shining Glasswort, Spreading Emu-bush and Spotted Emu-bush.

D23 Tragowel Swamp Nature Conservation Reserve

The 274 hectare existing Tragowel Swamp Wildlife Reserve (where hunting is currently excluded), to the south of Kerang, contains Lignum Swampy Woodland and Lignum Wetland EVCs. Listed on the Directory of Important Wetlands in Australia, the swamp supports an ibis rookery and a number of threatened waterbird species.

D24 Plumptions Nature Conservation Reserve

This 160 hectare block of uncategorised Crown land to the north of Kerang (locally known as Plumptions Forest) contains a relatively large area of Riverine Chenopod Woodland EVC, with small areas of Chenopod Grassland. It provides known habitat for Curl Snake, Bush Stone-curlew and Grey-crowned Babbler. Restoration activities by local community groups have been undertaken in the past.

D25 Pyramid Creek Nature Conservation Reserve

This reserve is a 50 hectare block of uncategorised public land adjoining Pyramid Creek to the southeast of Kerang. It contains Lignum Wetland and Lignum Swampy Woodland EVCs and complements the proposed Kerang Regional Park to the north.

D26 Gladfield Nature Conservation Reserve

The 28 hectare block of uncategorised Crown land contains Chenopod Grassland EVC around a Lignum Wetland in a region with very little native vegetation remaining. The wetland area contains the rare Spiny Lignum, and the new reserve adjoins a roadside with good quality native grassland.

D27 Yarrowalla Nature Conservation Reserve

This reserve comprises a 15 hectare area of remnant ephemeral wetland area surrounding the Calivil Creek in an area where little native vegetation remains. The vulnerable Cane Grass and rare Spiny Lignum are present on the site and the wetland provides known habitat for Brolga. Some revegetation is required.

D28 Johnson Swamp Nature Conservation Reserve

This 555 hectare site is the existing Johnson Swamp Wildlife Reserve and contains Lignum Swampy Woodland and Riverine Chenopod Woodland EVCs. It is part of the internationally significant Kerang Wetlands Ramsar site and supports the endangered Freckled Duck and Carpet Python and provides potential habitat for the Australian Painted Snipe. Johnson and Hird Swamps receive a guaranteed 2600 megalitres of environmental water annually provided through the Victorian flora and fauna entitlement.

D29 Gannawarra Red Gum Swamp Nature Conservation Reserve

This 148 hectare site is the existing Red Gum Swamp Wildlife Reserve (where hunting is currently excluded), to the south west of Koondrook. The wetland, which is currently dry, contains saltbush, lignum, and numerous dead River Red Gums and is part of the Lignum Swampy Woodland EVC.

D30 Rowland Nature Conservation Reserve

This 143 hectare site is the existing Rowland Wildlife Reserve (where hunting is currently excluded) on Pyramid Creek. Predominantly a wetland with saltbush and lignum, it contains areas with Black Box.

D31 Flannery Nature Conservation Reserve

This 56 hectare site is the existing Flannery Wildlife Reserve (where hunting is currently excluded), on the junction of Pyramid and Box Creeks. A Lignum Wetland with some Black Box, the endangered Grey-crowned Babbler has been recorded here.

D32 Prairie Nature Conservation Reserve

This 35 hectare site is an existing timber and public purpose reserve south of Mitiamo. It is a significant and relatively large block containing Plains Grassland, Lignum Wetland and Wetland Formation EVCs. Connected to Bendigo Creek via Myers Creek, it provides suitable habitat for a range of threatened flora and fauna species found on similar habitat nearby, such as Brolga and threatened grassland plant species.

D33 Tang Tang Swamp Nature Conservation Reserve

The existing 129 hectare Tang Tang Swamp Wildlife Reserve to the east of Dingee is recommended as a nature conservation reserve. This significant River Red Gum Swamp and Plains Grassland reserve is listed on the Directory of Important Wetlands in Australia. The swamp is a known breeding site of Brolgas and nomadic waterbirds. The Plains Grassland area protects the endangered Red Swainson-pea and vulnerable Silky Swainson-pea.

D34 Thunder Swamp Nature Conservation Reserve

The existing 90 hectare Thunder Swamp Wildlife Reserve to the south east of Dingee is recommended as a nature conservation reserve. It contains part of a significant River Red Gum Swamp and a relatively large surrounding area of Plains Grassland. The nationally vulnerable River Swamp Wallaby-grass has been recorded on the site and Great Egret and Royal Spoonbill are known to use the wetland.

D35 Milloo Nature Conservation Reserve

This 61 hectare site incorporates the Milloo Bushland Reserve and adjoining uncategorised Crown land to the west of Tennyson. It contains a relatively large grassland/grassy woodland block on public land for this part of the landscape.

D36 Mount Terrick Road Nature Conservation Reserve

This site contains three small parcels of Plains Grassland totalling eight hectares linked by grasslands on the Mount Terrick Road, near Mitiamo, including a water reserve, uncategorised Crown land and unused road reserve. The rare Club-hair New Holland Daisy is found on one of these blocks.

D37 Pannooabamawm Nature Conservation Reserve

This eight hectare site is uncategorised Crown land next to the Pannooabamawm Cemetery. It contains Northern Plains Grassland with significant flora species such as Red Swainson-pea, Leafless Bluebush and Buloke.

D38 Patho Plains Railway Nature Conservation Reserve

This 92 hectare section of disused railway between Kotta and Patho is part of the Elmore–Cohuna line. It contains significant areas of Plains Grassland and provides an ecological link through the Patho Plains. Significant flora species include Red Swainson-pea, Pale Flax-lily, Umbrella Wattle and Spiny Rice-flower.

D39 Little Kotta Nature Conservation Reserve

This 19 hectare site is the existing Kotta (Torrumbarry) Bushland Reserve. It is a significant area of Plains Grassland and Plains Woodland with River Red Gum and Buloke in the overstorey.

D40 Welton Nature Conservation Reserve

This 162 hectare area of Riverine Chenopod Woodland includes the Patho Wildlife Reserve (where hunting is currently excluded) and adjoining public land water frontage reserve. It protects known habitat of the nationally endangered Winged Peppergrass and is linked to the proposed Gunbower National Park.

D41 Pipit Nature Conservation Reserve

This important area of Plains Grassland (33 hectares) to the south west of Echuca includes the Roslynmead Natural Features Reserve and adjoining uncategorised public land and unused road reserve. It contains red soils grassland and *Juncus* grassland sub-communities.

D42 Millewa Nature Conservation Reserve

The 30 hectare existing Millewa Nature Conservation Reserve protects an important area of Plains Grassland to the south west of Echuca.

D43 Strathallan Nature Conservation Reserve

This small area of Northern Plains Grassland (one hectare) contains a population of the endangered Red Swainson-pea and potential habitat for the endangered Small Scurf-pea. It adjoins larger areas of grassland along the Bendigo-Echuca Railway line.

D44 Wallenjoe Swamp Nature Conservation Reserve

This 425 hectare site is the existing Wallenjoe Swamp Wildlife Reserve. The Wallenjoe wetlands are of national significance and valued for their size, rarity of wetland type, species diversity and habitat value. Wallenjoe Swamp is primarily a River Red Gum Wetland containing a variety of other EVCs, including Red Gum Wetland/Plains Grassy Wetland Mosaic, Plains Grassy Wetland, and small areas of Plains Grassland/Plains Grassy Woodland/Gilgai Wetland Mosaic. It is a known egret nesting site and has previously been a nesting area for Blue-billed Ducks.

D45 One Tree Swamp and Two Tree Swamp Nature Conservation Reserve

This new reserve combines the existing One Tree Swamp Nature Conservation Reserve, the Two Tree Swamp Wildlife Reserve (where hunting is currently excluded) and small areas of adjoining public land (totalling 856 hectares). One Tree, Two Tree and Wallenjoe Swamps are part of the Wallenjoe Wetlands complex, a closely inter-linked system of deep and shallow freshwater marshes north of Colbinabbin. The wetlands are of national significance and valued for their size, rarity of wetland type, species diversity and habitat value. In particular One Tree and Two Tree Swamps provide valuable breeding habitat for Brolga. One Tree Swamp was recently purchased through the National Reserve System Program and is one of the largest Southern Cane-grass dominated wetlands in the district.

D46 East Wangaratta Nature Conservation Reserve

The addition of this 177 hectares state forest, public land water frontage reserve and uncategorised Crown land to the reserve system contributes to meeting reservation targets for the endangered Riverine Grassy Woodland/Riverine Swampy Woodland Mosaic and vulnerable Floodplain Riparian Woodland EVCs in the Victorian Riverina bioregion. Vulnerable waterbirds such as Australasian Shoveller, Hardhead, Musk Duck and Great Egret have been recorded in this reserve.

D47 Moodemere Nature Conservation Reserve

This 12 hectares site is the existing Moodemere Nature Conservation Reserve and an unused road reserve, west of Rutherglen. This recently-purchased reserve contains a high quality Grey Box–Buloke Grassy Woodland

community, which is threatened at the state and national levels. The Moodemere Nature Conservation Reserve provides important habitat for a number of declining woodland bird species, and the site supports the vulnerable Buloke Mistletoe. It adjoins Lake Moodemere, recommended to become part of the Murray River Park.

D48 Ryans Lagoon Nature Conservation Reserve

This 151 hectare site is the existing Ryans Lagoon Wildlife Reserve (where hunting is currently excluded) to the east of Wodonga. Listed on the Directory of Important Wetlands in Australia, Ryans Lagoon is a River Red Gum-dominated deep freshwater marsh with a rush-dominated understorey consisting of two billabongs and a small anabranch off Ryans Creek. It is a particularly good representative example of riverine billabongs in the upper parts of the River Murray.

D49 Bonegilla Nature Conservation Reserve

Three small bushland reserves totalling 13 hectares to the east of Wodonga are recommended to form a new nature conservation reserve. They contain examples of Grassy White Box Woodland community, part of the 'White Box–Yellow Box–Blakely's Red Gum Grassy Woodlands and Derived Native Grasslands' community, considered critically endangered at a national level. Plant populations of endangered Wedge Diuris, and vulnerable Purple Diuris and Western Silver Wattle occur on these blocks.

RECOMMENDATIONS

Nature conservation reserves

D1-49 That:

the recommended nature conservation reserves listed and described above be used in accordance with the general recommendations for nature conservation reserves (Recommendations D).



E Historic and cultural features reserves

Throughout the Investigation area there are many sites associated with thousands of years of Aboriginal history and more recent non-Indigenous exploration, settlement, agriculture, timber production and gold exploration and mining.

Many surveys have located and recorded Aboriginal sites and places revealing an extensive array of Aboriginal cultural heritage values across a rich cultural landscape. For example River Red Gum ‘scarred trees’ are an important reminder of this cultural connection. Other tree species in these forests were also used, with their heritage values similarly seen through scars caused by the removal of bark – in particular Grey and Black Box. One of the most significant clusters of scarred trees occurs at Bumbang Island near Robinvale (see Recommendation E2). In many areas important Aboriginal cultural heritage sites co-occur with other outstanding values: for example, the fish traps and Aboriginal mounds in Barmah forest where important biodiversity and ecological values are also recorded. While the new *Aboriginal Heritage Act 2006* acknowledges the central decision-making role of relevant Aboriginal communities and groups in protecting and managing Aboriginal cultural heritage values, identifying and protecting these values is the role of all land managers.

Some 1100 sites of non-Indigenous historic significance have been identified on public land in the Investigation area (unpublished report to VEAC available on VEAC website). Many of these are buildings and transport infrastructure that remain in use today (e.g. Koondrook road bridge, Echuca Court house). There are many other sites that have not been identified in the Investigation area, including numerous and extensive Indigenous cultural heritage places and landscapes. For some sites, identification places them at risk of destruction or progressive deterioration. Specific legislation exists to protect all sites from destruction and vandalism both on public and private land.

Historic and cultural features reserves are established primarily to protect places with highly significant historical or cultural values, including remnant historical features such as buildings, structures, relics or other artefacts. These reserves may also include places with no tangible on-ground presence such as meeting places or areas of spiritual or mythological importance. The historic and cultural heritage reserves listed below are identified for specific management that not only protects the physical elements of the place, but also enhances values through provision of visitor experiences and interpretations associated with cultural heritage. These sites have been proposed as, or should continue to be, historic and cultural features reserves, historic areas or historic reserves reflecting these important values

Many features of historic or cultural significance are included within other public land-use categories such as national parks and state forest. Council considers that these sites can be managed to protect the historic and cultural heritage values and also provide opportunities for enhanced visitor experiences. In some places these values may form key visitor attractions to the area. For other sites, mechanisms such as zoning, listing on heritage registers and identification through planning schemes provide adequate protection and guide management practices.

RECOMMENDATIONS

General recommendations for historic and cultural features reserves

E That:

historic and cultural features reserves, according to their specific characteristics, be used to:

- (a) protect historic and cultural heritage values, features and sites (Indigenous and non-Indigenous)
 - (b) provide opportunities for:
 - (i) education and passive recreation such as picnicking, walking and, where relevant, fishing, and
 - (ii) more intensive recreation such as camping where specified by the land manager and subject to compatibility with (a)
 - (c) protect areas with remnant natural vegetation or habitat value,
- and that:
- (d) timber harvesting not be permitted
 - (e) low impact exploration for minerals be permitted, and mining, subject to consideration of the impact on values in (a) for each application or case,
 - (f) prospecting and apiculture be generally permitted,
 - (g) grazing not be permitted, except where required for short periods as a land management tool at the discretion of the land manager, and
 - (h) the areas be permanently reserved under the *Crown Land (Reserves) Act 1978*, and managed by the Department of Sustainability and Environment.

RECOMMENDATIONS

Existing historic and cultural features reserves

E1-E10 That:

existing historic and cultural features reserves, historic areas or historic reserves indicated on Map A and listed below continue to be used as such and be managed in accordance with Recommendation E:

- E1 Psyche Bend, Kings Billabong (4.2 hectares)
- E2 Bumbang Island, Robinvale (570 hectares)
- E3 Boort (Old Courthouse) (0.05 hectares)
- E4 Kinipianial Creek (40 hectares)
- E5 Serpentine Creek Weir (0.04 hectares)
- E6 Cohuna (Old Courthouse) (0.1 hectares)
- E7 Days Mill, south of Murchison (4 hectares)
- E8 Echuca & Waranga Trust Irrigation Pump and Channel, Murchison (17 hectares)
- E9 Murchison Police Paddocks (9 hectares)
- E10 Happy Valley Creek, Myrtleford (1 hectare)

Notes:

1. Management of the existing Bumbang Island Historic Area (E2) should be conducted in consultation with an Indigenous Advisory Committee established as described in Recommendation R23.

Several existing historic and cultural features or historic reserves have been recommended to be included within new public land use categories. These are:

- (a) Lock Nine Pump historic site is included in the expanded Murray Sunset National Park (A1)
- (b) Woolshed Swamp Sheepwash Historic Reserve (12.8 hectares) is now included in the proposed Woolshed Swamp Nature Conservation Reserve (D17)
- (c) Major Mitchell Lagoon Historic Area (12.7 hectares) is now included in the proposed Murray River Park (B3).

E11-E13 Proposed historic and cultural heritage reserves

E11 Koondrook Historic and Cultural Features Reserve (14.6 hectares)

This new historic area encompasses a number of significant sites and cultural heritage themes such as transport (tramway, bridges, wharf, moving goods, bridging waterways), industry (timber harvesting and water management), and unique engineering constructions (Condidorios bridge, tramway). Remnants

of the former Koondrook Tramway Complex (Victorian Heritage Register H1570) run parallel to the Kerang-Koondrook Road and terminate in the township of Koondrook. The largest intact features are the station building and Y-shaped yard, situated in the main street. Two historic bridges connect the town to areas to the north and east: Condidorios Bridge (VHR H1799) (established in 1906) across Gunbower Creek, and Barham-Koondrook Bridge (established in 1904) spanning the River Murray. Other features include a pumphouse, an operational timber mill (Arbuthnot Sawmill), shipping shed and barge slipway. Together these sites form a historically important precinct containing many rare and possibly unique features and design.

E12 Echuca Historic and Cultural Features Reserve (115 hectares)

The Echuca Historic and Cultural Features Reserve highlights the very significant part Echuca played in the development of Victoria. It includes historical features representing several themes—goods and people, exploiting natural resources, and building settlements. The focus is Echuca Wharf, a major River Red Gum timber structure and a hub of nineteenth century paddlesteamer commerce. The associated railhead—the terminus of the Murray Valley (Melbourne to Echuca) Railway—transported River Murray and Riverina produce to the Port of Melbourne. The reserve also includes the cargo shed and a functioning red gum sawmill on the wharf, the old police station (VHR H377, Echuca Historical Society museum), the railway pumping station (VHR H1053) as well as approaches to the Murray road and rail bridge and, in the forest near Chambers Bend, McIntosh's sawmill site, Shin Bone Alley and the Southern Cross Village Settlement site.

Nearby historical features open to the community and associated with those above but not in the reserve, include Shackells Bond Store (VHR H558), former Star Hotel and the Port Dioramas, on Campaspe Shire land.

E13 Bonegilla Historic and Cultural Features Reserve (15.7 hectares)

Bonegilla migrant camp or reception centre (Block 19) is of both historical and social significance (VHR 1835). The original army camp was constructed in 1940 as 24 separate blocks comprising more than 800 buildings. Block 19 was converted to a reception centre for migrants of non-British origin with about 320,000 immigrants received from 1947 until it ceased operation in 1971. This site is of national significance and has important values related to the expansion of defence building activities and operations for the Second World War and later the Vietnam War.

The majority of the area is currently reserved as a museum and for the promotion of tourism. The proposed historic and cultural features reserve includes an abutting parcel of unreserved Crown land (one hectares) and the recommended change of reserve purpose will allow the land manager to more appropriately manage and conserve the site's historical values as the primary objective. The current management body has received funding for visitor and interpretative facilities. A conservation management plan was completed prior to transfer to the Victorian Government from the Commonwealth in 1996. Council

considers that the new reservation purpose will not specifically alter the current management arrangements, but more closely align the reservation purpose with the key site values.

RECOMMENDATIONS

Proposed historic and cultural features reserves

E11-E13 That:

the following areas, indicated on Map A be managed in accordance with the general recommendations for historic and cultural features reserves:

- E11 Koondrook (14.6 hectares)¹
- E12 Echuca (115 hectares)
- E13 Bonegilla (15.7 hectares)

Notes:

1. Currently two authorised uses exist in the area proposed as Koondrook Historic and Cultural Features Reserve (reserve for sawmill, and a licence for residence and gardens). Council recommends that provision be made for continued use and management of the features on these sites where sympathetic to the reserve purpose. Should these uses no longer be required, the features of historic and cultural value on the site are to be retained and managed in accordance with the reserve purpose.



F Reference areas and heritage rivers

Three categories of land use overlay are defined by legislation: reference areas, heritage rivers and declared water supply catchments (see H: Water production, drainage and distribution areas). Recommendations are presented below for the continuation of existing reference areas and heritage rivers in the Investigation area. For some of these areas, there are proposed changes in the underlying public land use category.

Reference areas

Reference areas are relatively small areas of public land containing viable samples of one or more land types that are relatively undisturbed and that are proclaimed under the *Reference Areas Act 1978*. Such areas are set aside as a reference for the comparative study of land, particularly in relation to problems arising from land uses. The primary management objective of reference areas is that natural processes should be allowed to continue undisturbed and that areas should remain in as natural a state as possible.

Within reference areas, only activities associated with protecting the natural processes of the area, emergency operations or approved research are permitted. Grazing, mineral exploration, mining, harvesting of forest produce, apiculture, quarrying, educational activities and recreational activities are specifically prohibited in reference areas. Access is restricted to authorised researchers and people undertaking management tasks or emergency operations, as well as those with Ministerial approval. Reference area management plans typically define a surrounding buffer area on public land which restrict land uses that may have a detrimental effect on the reference area. Buffer widths vary depending upon the activity.

There are six existing reference areas in the Investigation area. All but one of these currently overlay national or state parks. Tarpaulin Bend Reference Area is at present within state forest. In the draft proposals above, the area of state forest encompassing Tarpaulin Bend is recommended as an addition to Murray-Kulkyne Park, and the two reference areas within Barmah State Park are included in the proposed Barmah National Park. Therefore all reference areas in the Investigation area are proposed as overlays to either national park or other parks under the *National Parks Act 1975*. A brief description of the land values in each reference area is provided below.

Toupnein Creek and Lake Wallawalla Reference Areas are within the existing Murray-Sunset National Park. Toupnein Creek Reference Area is on a floodplain and higher alluvial plain adjoining the River Murray and vegetated with Black Box-chenopod woodland, floodplain grassland and some areas of lignum, River Red Gum forest and alluvial plain shrubland. This area uniquely supports floodplain vegetation in a semi-arid environment. Lake Wallawalla Reference Area is located in red-brown duplex soils of the higher alluvial plains, but includes both a lunette and a portion of the River Murray floodplain. Black Box chenopod woodland, alluvial plain and alluvial rise shrubland are represented here.

Tarpaulin Bend Reference Area is located on the grey clays of the present floodplain of the River Murray. It is predominantly River Red Gum forest and Black Box chenopod woodland, and is a good representation of the mid-mallee vegetation communities of the River Murray floodplain. It is proposed that the area become part of the Murray–Kulkyne Park. Council acknowledges that there are some difficulties associated with management of this area. Tarpaulin Bend was isolated as an inlier within New South Wales when the River Murray cut a new course to the south of a meander defining the reference area boundary. The area is occasionally grazed and effort should be made to manage this area in accordance with the existing reference area overlay as part of the proposed Murray–Kulkyne Park.

Chalka Creek Reference Area is flat floodplain consisting of clay, sand and sandy clay with shallow channels within the existing Hattah–Kulkyne National Park. Vegetation is River Red Gum and Black Box woodland, and the area is flooded by overflow from the River Murray along Chalka Creek.

Top Island and Top End Reference Areas are within the existing Barmah State Park. These areas are occasionally grazed. Inclusion in the proposed Barmah National Park and removal of grazing will provide greater security for these reference areas. Both reference areas are located on floodplains subject to frequent flooding by the River Murray. Top Island Reference Area vegetation consists of an open River Red Gum forest with an understorey of Moira Grass, Warrego Summer-grass, Swamp Wallaby-grass and Common Spike Rush. Also present are tall closed grasslands of Giant Rush and grasslands dominated by Moira Grass. Top End Reference Area is dominated by River Red Gum open forest with an understorey of Terete Culm-sedge and Warrego Summer-grass. Some areas have Terete Culm-sedge in association with Warengo Summer-grass and Swamp Wallaby-grass or Grey Box open woodland.

RECOMMENDATIONS

Reference areas

F1 That:

the following areas, totalling 3730 hectares, shown on Map A, continue to be used as reference areas proclaimed under the *Reference Areas Act 1978* and managed by the Department of Sustainability and Environment:

- (a) Toupnein Creek (1659 hectares)
- (b) Lake Wallawalla (996 hectares)
- (c) Tarpaulin Bend (440 hectares)
- (d) Chalka Creek (329 hectares)
- (e) Top Island (177 hectares)
- (f) Top End (124 hectares).

Heritage rivers

Victoria's 18 heritage river areas were established under the *Heritage Rivers Act 1992* to protect those rivers with outstanding values for current and future generations. The

areas identified have at least four values of state or greater significance focused on the biodiversity, recreational, cultural heritage and scenic values. New and extended impoundments, barriers and impeding structures are prohibited in all heritage river areas to retain their free-flowing condition and protect native fish habitat, recreational canoeing or scenic values. Other recommended uses must also be appropriate to protect the rivers' heritage values. The Goulburn and Ovens Rivers are the only designated heritage river areas in the Investigation area.

Both heritage river areas contain significant River Red Gum communities providing habitat for threatened fauna species and a high native fish diversity including Murray Cod. These rivers are also very scenic, popular for recreational fishing and have significant cultural heritage sites within a substantially cleared landscape.

The Goulburn River Heritage Area extends 430 kilometres downstream from Lake Eildon to the River Murray near Echuca. The Goulburn is a highly regulated river, with water stored at Lake Eildon and Goulburn weir and then diverted downstream for irrigation. By contrast the Ovens River Heritage Area—extending from Killawarra to the River Murray confluence with Lake Mulwala—is the only totally unregulated large river in the Investigation area. The vegetation along this corridor is highly significant, especially because of the intact understorey of Silver Wattle and River Bottlebrush. In 2002 the Victorian River Health Strategy highlighted the Ovens River as one of two heritage rivers of very high value as entire river systems.

The draft proposals presented above recommend changing much of the public land use category of these heritage river areas to national parks. Draft management plans for these rivers were released for comment in 1997, but no final management plans have been approved. In 2006 changes to the heritage rivers legislation updated the management plan provisions and acknowledged the role of other public land plans or strategies in managing heritage river areas. Regional river health strategies have been prepared by catchment management authorities for the Goulburn and Ovens Rivers, which establish regional priorities for river protection and restoration of heritage river values.

RECOMMENDATIONS

Heritage rivers

F2 That:

the following areas, totalling 20,410 hectares indicated on Map A, continue to be used as Heritage River Areas proclaimed under the *Heritage Rivers Act 1992* and managed by the Department of Sustainability and Environment:

- (a) the Goulburn River Heritage Area (16,660 hectares)
- (b) the Ovens River Heritage Area (3750 hectares)

Notes:

1. Some 2650 hectares of the Goulburn Heritage River, outside the Investigation area, be managed in a manner consistent to that area described above.

G Natural features reserves

Natural features reserves include public land use categories with a variety of natural features worthy of protection, including scenic areas, bushland, lakes, rivers and streams, geological and geomorphological features. Protection of these particular natural features is the primary focus of the reserve, however a variety of opportunities for recreation and other uses may also be provided, including duck hunting in selected reserves.

Although the values present on these reserves are worthy of protection, they are typically not as significant as those within national or state parks and nature conservation reserves and may be more resilient to a higher level of recreation activity or minor resource use. Many of these areas are relatively small parcels of vegetated public land or in linear strips along waterways.

Some 27,019 hectares of public land are proposed to be included in this grouping in the Investigation area, within the following subcategories:

- bushland areas
- streamside areas
- wildlife areas (seasonally available for hunting and sometimes known locally as state game reserves)
- public land water frontages
- stream beds and banks.

Those areas previously in highway park and lake reserve categories are proposed to be incorporated into various other public land use categories in this Investigation area.

VEAC recognises the importance of smaller strips and areas of bushland as habitat links across a fragmented landscape. Some reserves are small pockets of remnant vegetation in largely cleared agricultural land. In particular, public land water frontages and streamside areas provide important corridors for the movement of species both seasonally and during changing climatic conditions. The proposed general recommendations for natural features reserves present a strategic shift in the use of these areas by the proposed phase-out of grazing as a resource use (see grazing general recommendations R33), and the exclusion of timber harvesting in all natural features reserves and especially water frontages and streamside areas.

Additionally the importance of the River Murray corridor has been recognised and Council proposes that public land along this area be added to the new Murray River Park (Recommendation B3) in areas between national parks that have frontage to the river.

Degradation of wetlands and lakes through salinisation and unnatural water regimes is a major land management issue, particularly in the Kerang lakes area. With water production requirements also dictating the management of these areas, it is important for the environmental needs of wetlands and natural lakes to be taken into consideration. These wetlands should receive a sufficient water regime to enhance the ecological, aesthetic and recreational potential of these sites (see environmental water recommendations R11-R13 and R15-17).

RECOMMENDATIONS

General recommendation for natural features reserves

G That:

the natural features reserves, according to their specific characteristics:

(a) be used to:

- (i) protect natural features and values
- (ii) provide opportunities for education and recreation, including hunting where specified
- (iii) protect areas with remnant vegetation or habitat value and conserve native flora and fauna
- (iv) provide protection for historic and Aboriginal cultural values and sites
- (v) maintain scenic features and the character and quality of the local landscapes, and
- (vi) preserve features of geological or geomorphological interest,

and that:

- (b) timber harvesting not be permitted
- (c) exploration for minerals be permitted, and mining, subject to decisions on particular cases
- (d) prospecting and apiculture be generally permitted
- (e) grazing not be permitted
- (f) unused road reserves adjoining natural features reserves be added to those reserves where appropriate, and
- (g) they be permanently reserved under the *Crown Land (Reserves) Act 1978*, and managed by the Department of Sustainability and Environment.

Notes:

1. The above management objectives and summary land-use recommendations are those that generally apply for the land use category. Exceptions to these may apply to specific reserves in special circumstances.
2. Grazing contracted for ecological purposes or for short-term management purposes such as targeted weed control may be permitted where required.
3. Prospecting and apiculture would generally be permitted, subject to appropriate conditions.
4. Apiculture sites should be located away from picnic areas, car parks, walking tracks and other focal points for recreation.
5. While the primary public land manager remains DSE, on-ground management can be delegated to organisations or institutions other than DSE, such as committees of management, under licence or other arrangement, subject to review of management effectiveness.
6. Several of the natural features reserves have values worthy of protection other than their primary use.

Bushland areas

Last century many small reserves were set aside for overnight camping by drovers with their travelling stock. Others had a spring or dam and were reserved for stock water supply. Unused recreation reserves and gravel reserves that have revegetated often also have riverine or plains vegetation. Remaining reserves of these types are now distributed throughout largely cleared freehold farmland and many have been designated bushland areas. These scattered patches of remnant bush add scenic diversity to the landscape and are of increasing importance for nature conservation. The 60 retained and proposed new bushland areas comprising some 3397 hectares are shown on Map A and listed in Appendix 8.

RECOMMENDATIONS

Bushland areas

G1-G60 That:

all existing bushland areas and new bushland areas listed in Appendix 8 and shown in Map A, be used in accordance with the natural features reserves general Recommendations G.

Streamside areas

Streamside areas are localised nodes of public land along creeks or rivers where the public land is wider, or ecologically significant. Access is generally given by a road either crossing, or near, the stream. Existing streamside areas were set aside for picnics and informal recreation, and in some cases, for camping. Where they carry remnant vegetation these reserves are increasingly important for nature conservation. The 24 retained and proposed new streamside areas comprise some 2165 hectares and are shown on Map A and listed in Appendix 8.

RECOMMENDATIONS

Streamside areas

G61-82 That:

all existing streamside areas, and new streamside areas listed in Appendix 8 and shown on Map A, be used in accordance with the natural features reserves general Recommendation G, and

(a) where appropriate, be used for more intensive recreation such as camping, at the discretion of the land manager and if this does not conflict with the maintenance of the water quality in the adjacent stream.

Wildlife areas

Wildlife areas within the Investigation area are typically wetlands (often known as 'state game reserves') which are seasonally available for hunting. These areas protect the habitat of wetland plants and animals. Those wildlife areas in which hunting is not permitted are re-classified as nature conservation reserves (see Recommendations D1-49). The 25 retained and proposed new wildlife areas comprising some 5512 hectares are shown on Map A and listed in Appendix 8.

RECOMMENDATIONS

Wildlife areas

G83-G104 That:

the wildlife areas shown on Map A and listed in Appendix 8 be used in accordance with the natural features reserve general Recommendation G, and be used:

- (a) to conserve and protect species, communities or habitats of indigenous animals and plants, and
- (b) for public recreation (including hunting in season as specified by the land manager) and education, where this does not conflict with the primary objective.

Public land water frontages

Public land water frontages comprise a long narrow corridor of Crown land along major streams and rivers. Many of these areas were set aside in 1881. On the Northern Plains, these linear reserves along with vegetated road reserves provide most of the remaining habitat for numerous threatened species. Stream frontage reserves are also an important recreation resource. Many are currently licensed to adjoining land holders for various uses but mostly for grazing and for stock access to water. Council proposes a major shift in the management priorities for these areas in keeping with the process established by catchment management authorities to fence off and revegetate these areas. As described in the general recommendations for grazing (Recommendation 33) domestic stock grazing is to be phased out of all public land water frontages over the next five years. Public land water frontages along the Avoca, Loddon, Campaspe, Ovens, King and Kiewa Rivers are to be known as 'river reserves' (Appendix 8).

RECOMMENDATIONS

Public land water frontages

G105-G111 That:

public land water frontages, where not otherwise recommended for a specific use, be used in accordance with the natural features reserves general recommendation G, and be used to:

- (a) conserve native flora and fauna as part of an integrated system of habitat networks across the state
- (b) maintain or restore native vegetation
- (c) protect adjoining land from erosion, and provide for flood passage
- (d) protect the character and scenic quality of the local landscape
- (e) provide protection for cultural heritage features and values, and
- (f) provide access for recreation (including hunting where appropriate) at levels of use consistent with (a) to (e) above

and that:

- (g) catchment management authorities, in cooperation with adjoining landholders, implement programs to gradually restore frontages on currently grazed, degraded, eroded or salt-affected stream-banks, where frontage vegetation is degraded or not regenerating and to protect natural, cultural, recreational and scenic values or water quality
- (h) programs to restore frontages be implemented according to local priorities and a practical timetable, with particular emphasis on the Victorian Riverina bioregion
- (i) where frontages adjoin farmland, fencing and off-stream stock watering points be encouraged by appropriate support
- (j) where stream frontage vegetation is to be restored, particularly in cleared or degraded areas, native trees, shrubs and ground species be planted, where possible using seed of local provenance
- (k) where appropriate, suitable areas for more intensive recreational use be identified and facilities established
- (l) where land exchanges are proposed that involve frontage land that is no longer adjacent to rivers, efforts be made to prevent loss of any nature conservation or other values of this land from the public land estate
- (m) no new licences for grazing by domestic stock be issued, and that existing licences be systematically reviewed, with a view to completing the phasing out of grazing within five years, except where there is an ecological objective or a specific management purpose

(n) where a licence has been issued for a public land water frontage, usually for grazing, recreation use by the public for activities such as walking, nature observation or fishing be permitted, while motorised forms of recreation not be permitted

(o) licensees be required to provide stiles in any fences erected across their licence area if requested to do so by the land manager

(p) no new cultivation of stream frontages for agriculture be permitted, and areas currently cultivated be revegetated

(q) timber cutting not be permitted

(r) sand and gravel extraction may be permitted by the land managers where this is consistent with the above uses, and where necessary for bed and bank stability, and

(s) public land water frontages be managed by the relevant catchment management authority and DSE, as appropriate.

Stream beds and banks

The beds and banks of all watercourses are deemed to have remained Crown land under the *Water Act 1905* and subsequent Acts. Stream bed and bank recommendations apply to all watercourses outside other major public land use categories, whether or not there is an adjoining public land water frontage.

RECOMMENDATIONS

Stream beds and banks

G112 That:

Stream beds and banks, subject to other relevant recommendations, guidelines and statutory requirements, be used in accordance with the natural features reserves general recommendation G, and be used to:

- (a) conserve or restore habitat for native flora and fauna
- (b) provide for appropriate recreational activities and levels of use
- (c) provide for flood passage and drainage requirements of adjacent land
- (d) provide, where necessary, for the passage of artificial flows of water stored within the catchment or transferred from other catchments
- (e) maintain streams in a stable condition using environmentally sound techniques, and
- (f) provide a source of sand and gravel where this does not conflict with the above.

Note:

1. Stream beds and banks recommendations apply to all watercourses outside major public land use categories, whether or not there is an adjoining public land water frontage.

H Water production, drainage and distribution areas

From a water industry perspective, water production includes harvesting, storing and distributing water from local catchments. However, from a public land use perspective its also includes water storage areas, bores, off-takes, diversion weirs, pump intakes and associated buffer areas that obtain their supply from catchment flows. The River Red Gum Forests Investigation area includes few areas that are solely used for collection of water or water production. Many of the large water bodies in the Investigation area serve as holding basins for distribution and storage of water derived from a distant catchment source or as salinity disposal basins. These distribution or holding facilities and channels, storage tanks, and most drainage or flood protection channels are described here as the water distribution and drainage public land use category.

Many of the Kerang lakes are utilised for water distribution via a linked series of channels and lakes that include areas reserved as wildlife and nature conservation reserves. In this area water is moved through a series of previously natural lakes connected by both natural and constructed waterways or channels. Water is also pumped directly from the River Murray into some of these storage basins. Management of water is important in this region most notably for primary industry and the environment. The role of water for environmental purposes is described in greater detail in general recommendations for environmental water (Chapter 2).

The precise boundaries of the water production areas and, in particular, the buffer strips surrounding the defined facilities, are normally defined in detailed plans called special area plans (or pre-existing 'land use determinations') following the declaration of 'special water supply catchment areas' under the *Catchment and Land Protection Act 1994*. Parts of two declared water supply catchments currently exist and are proposed to continue in the Investigation area — Lake Hume and Ovens River (upstream of Wangaratta). Access to domestic water supply storages should generally be restricted to protect and retain high water quality and yield.

There are significant areas of public land currently used to support irrigation industries in the Murray and Goulburn Valleys. Many of these areas also support significant biodiversity, historic, recreational and other values and are managed by water authorities. VEAC believes that the relevant water authorities should continue to manage such areas in a way that is sympathetic to these other secondary values.

RECOMMENDATIONS

General recommendation for water production areas

H1 That:

water production areas; storage areas, diversion works and associated facilities; protective buffer zones around diversion works and storages where defined in a special area plan; and any other public land considered necessary, as shown on Map A be used for:

- (a) water supply purposes
- (b) other activities permitted by the water supply authority after consultation with the Department of Sustainability and Environment, and other agencies, as appropriate
- (c) the protection of natural and cultural heritage values
- and
- (d) unless otherwise securely reserved, these area be permanently reserved under the *Crown Land (Reserves) Act 1978* for water supply purposes and be managed by the water supply authority.

General recommendation for water distribution and drainage areas

H2 That:

water distribution and drainage areas and associated facilities; and any other public land considered necessary, as shown on Map A be used for:

- (a) storage and distribution of water for irrigation and domestic supply purposes
- (b) flood mitigation purposes
- (c) salt drainage or disposal purposes
- (d) other activities permitted by the water supply authority after consultation with the Department of Sustainability and Environment, and other agencies, as appropriate
- (e) the protection of natural and cultural heritage values to the extent consistent with the above
- and
- (f) unless otherwise securely reserved, these areas be permanently reserved under the *Crown Land (Reserves) Act 1978* for water distribution and drainage purposes and be managed by the water supply authority.

Notes:

1. Several large water storage areas not primarily used for domestic water supply are also used for water-based recreation. This may continue except where it results in deteriorating water quality.

I Community use areas

Designated community use areas are primarily used for education, recreation or other specific community purposes. Many are within towns and are used for purposes such as sporting ovals, public gardens, playgrounds and camping areas. The majority of these reserves are managed by local committees of management providing a focus for community activities. Some contain small areas of remnant vegetation that contribute to local habitat and landscape values. Community use areas include:

- Recreation areas—mostly small reserves close to townships with facilities for organised sports and informal recreation, e.g. sports ovals, shooting ranges, speedways
- Parklands and gardens—small intensively used community parklands, playgrounds and ornamental gardens
- Buildings in public use—such as schools, public halls, court houses, police stations, and
- Education areas—specifically set aside as reserves where students can study natural ecosystems, practice methods of environmental analysis or field techniques, and conduct simple natural science experiments. While nature study is permitted on most areas of public land, use is usually restricted to passive forms, mostly relying on observation.

There are many existing community use areas within the Investigation area, the majority of which are within townships. VEAC recognises the value of these public open spaces and community facilities and recommends that those currently in use largely be retained. These areas are not individually listed but can be viewed in detail on the public land use maps of the proposed recommendations for major townships in the Investigation area (see map in pocket at rear of this paper). New community use areas and those for which there are changes proposed are described below.

RECOMMENDATIONS

General recommendation for community use areas

I That:

recommended new and existing community use areas be used for recreation, parks and gardens, buildings for community purposes and education;

and

(a) appropriate facilities be provided

(b) where relevant, and where compatible with the above, features of cultural significance, natural surroundings and the local character and quality of the landscape be maintained or restored

(c) harvesting of forest products, hunting and 'stone' extraction, as defined in the *Extractive Industries Development Act 1995*, not be permitted

and:

(d) they be reserved under the *Crown Land (Reserves) Act 1978*, and managed by the Department of Sustainability and Environment, and

(e) small areas continue to be used by communities for local recreation and managed by committees of management or Department of Sustainability and Environment as appropriate.

Note:

1. The Pine Grove Recreation Reserve contains significant Plains Grassland values which should be protected.

11–15 Proposed new and modified community use areas

11 Gadsen Bend Rifle Range Community Use Area

The Gadsen Bend Rifle Range is currently a licensed area of state forest, operating as a rifle range in close proximity to Robinvale. The proposed Gadsen Bend Rifle Range Community Use Area is a long narrow, mostly cleared area (20.7 hectares) with many access tracks. It abuts the proposed Gadsen Bend Park to the west and south and is bounded by private land (mostly grazing) to the east. Community safety in the adjoining proposed park should be a priority and every effort should be made to revegetate the land in the proposed community use area that is not directly used for the rifle range.

12 Swan Hill Pioneer Settlement Museum Community Use Area

The Pioneer Settlement Museum is on public land fronting the Little River Murray in Swan Hill. This area is a major tourist attraction and displays a range of cultural heritage artefacts relating to the mallee and riverine regions including the paddlesteamer *Gem* (VHR 1742). The *Gem*—one of the largest paddlesteamers on the River Murray—was once owned by the Chaffey brothers of Mildura and operated from 1876 until the early 1950s. It is technologically important as an example of an iron-framed River Red Gum planked vessel designed for river use and forms the focal point of the museum. The settlement area includes nature walks and various interpretative materials. The museum is currently operated under contract for Swan Hill Rural City Council and this arrangement should not be affected by the proposed change to a community use area.

13 Spence Bridge Education Area

Education areas are specifically set aside as reserves where students can study natural ecosystems, learn environmental analysis and field techniques and conduct long-term experiments. Environmental education is the long-term primary land use. Education areas are usually selected to show both areas of undisturbed natural vegetation as well as areas which have been altered by activities such as timber production and agriculture. Appropriate facilities, including accommodation, may be established onsite or be located nearby.

Two of the three existing education areas are proposed for inclusion in other public land use categories. The Spence Bridge Education Area is proposed as a smaller area with new boundaries encompassing the popular Treetops scout campsite and buildings. The smaller community use area will continue to provide for a range of recreation activities in a natural setting and opportunities for study of natural ecosystems or environmental education. Wemen Education Area is included in the Hattah-Kulkyne National Park (Recommendation A2) and Darling Junction Education Area is encompassed within the Murray River Park (Recommendation B3)

14 Little Lake Boort Recreation Area

The area adjoining and including Little Lake Boort is currently used as a recreation area. Facilities on the site include buildings, caravan and camping areas, swimming pool, picnic facilities and tennis courts. Also within this precinct is a water treatment area. VEAC proposes that the area encompassing the water treatment plant be categorised for water production, while the remainder is allocated to a community use area for recreation.

15 Barmah Forest Community Use Area

The Barmah Forest Community Use Area currently comprises 5.7 hectares around the Dharnya Centre and associated buildings in Barmah forest, but excludes the muster yards. The area is reserved under the *Forests Act 1958* for 'special purposes'. The existing buildings and cultural heritage information and services at this 'gateway to Barmah Forest' have the potential to be further developed as a visitor information and cultural heritage node for the surrounding proposed Barmah National Park. Such a node might also include some commercial activities. Approximately 20 hectares around the Dharnya Centre and muster yards is proposed as a new community use area to accommodate a broader range of activities and uses.

RECOMMENDATIONS

New or modified community use areas

11-15 That the area of:

- I1 20.7 hectares shown on Map A as the Gadsen Bend Rifle Range Community Use Area and described above be used in accordance with community use areas general recommendations I
- I2 12.3 hectares shown on Map A as the Swan Hill Pioneer Settlement Museum Community Use Area and described above be used in accordance with community use areas general recommendations I
- I3 3.5 hectares shown on Map A as the Spence Bridge Education Area and described above be used in accordance with community use areas general recommendations I
- I4 119.2 hectares shown on Map A as the Little Lake Boort Recreation Area and described above be used in accordance with community use areas general recommendations I
- I5 21.9 hectares shown on Map A as the Barmah Forest Community Use Area and described above be used in accordance with community use areas general recommendations I.



J Services and utilities areas

Numerous utilities are located on public land, such as transport, communications, cemeteries, water, sewerage, waste disposal, electricity and gas and other services. Within townships there are hospitals, schools and municipal buildings, depots and other utilities on public land. Many of these areas are too small to be displayed on Map A or the detailed township maps.

Some of these reserves have other important values. This is particularly the case for roads, railways and channels which, together with water frontages, provide a habitat network across the largely cleared or fragmented landscape of farmland and townships. Narrow avenues of large old trees have scenic appeal along many roadsides in the Investigation area. These corridors may house small remnants of rare vegetation types and provide key habitat not only for species that live in large old trees, but also for understorey species in ungrazed areas. Additionally many important geological sites are exposed in road and railway cuttings.

Land managers and local municipal councils have put a great deal of effort into assessing and managing natural values on road and railway reserves. Public land managers should continue to protect these important biodiversity and other natural values. Where the area is no longer required for service and utilities, the primary management objective should be assessed and the capability for other public use considered.



RECOMMENDATIONS

General recommendations for services and utilities areas

J That:

existing reserves and easements for public services and utilities such as transport, electricity and gas, communications, cemeteries, water and sewerage continue to be used for those purposes, and that

(a) new services, or utility sites and easements or lines, not be sited in or across reference areas, and wherever possible not be sited in or across national or other parks or nature conservation reserves, and

(b) railway lines and other service and utility sites be managed to protect natural values including remnant vegetation and habitat, as far as practical, and

(c) organisations responsible for road reserve management conserve and protect indigenous flora and fauna communities and habitat occurring on roadsides, in accordance with the guidelines above and as part of roadside management plans, and

(d) a review be conducted of unused road reserves and those identified as containing significant environmental values be conserved and protected, and

(e) should a public land area or building and site used for service or utility purposes no longer be required for its primary designated use, it be assessed for its natural, recreational and cultural heritage values, and capability for other public uses.

Notes:

1. While DSE, VicRoads and municipalities are commonly responsible for road reserve management, many unused roads are managed by adjoining landholders. Roads and unused road reserves may not be distinguishable on Map A.
2. There are numerous cemeteries across the area which have remnant natural vegetation. These should be managed to protect this vegetation where it does not interfere with the primary aim of the cemetery.
3. The Pyramid Hill airstrip contains important areas of Plains Grassland which should be managed for conservation purposes in conjunction with the airstrip. If this Crown land is no longer required for airstrip purposes in the future, the land should become a nature conservation reserve.

K Earth resources extraction areas

Mineral and stone production contributes significantly to the future prosperity of the Victorian economy. Access to areas for exploration and production also need to be balanced against other values such as aesthetic, water or nature conservation. Although there are currently limited exploration, mining and extractive areas within the River Red Gum Forests Investigation area, there remains potential for currently uneconomic resources to be economically exploitable in the future or for new deposits to be discovered.

Currently there are ten earth resource extraction areas in the Investigation area for gravel, stone and industrial minerals such as salt and gypsum. These currently operate under various arrangements including stone reserves, extractive material licences, work authorities and industrial leases. Earth resource extraction is administered under several Acts. Generally:

- quarrying for stone requires a work authority under the *Extractive Industries Development Act 1995* (EIDA Act)
- extraction of minerals including coal, mineral sands, gold and gypsum requires a mining licence under the *Mineral Resources (Sustainable Development) Act 1990*
- harvesting of salt requires an industrial lease (section 134) or extractive materials licence (section 138) under the *Land Act 1958*.

VEAC proposes that areas that will operate as earth resource extraction areas for some period of time, and have this as the primary use, are categorised as extractive resource areas. Those areas that encompass a relatively small area of public land or have a short-term use for earth resource areas will be assessed for other public land use values and categorised appropriately.

The standards of operation and rehabilitation for short-term resource extraction such as stone, gypsum and sand mining should be similar to comparable scale mining operations. The following principles and guidelines for earth resource extraction are proposed to minimise the impacts of these activities on natural values in surrounding areas.

Principles and guidelines

- Native vegetation should preferably not be removed for extraction, particularly where the same extractive resource is available on already cleared land or where the resource is shallow and extraction will be short-term.
- If vegetation is to be removed, it should in accordance with the Native Vegetation Management Framework.
- An assessment of possible impacts on Aboriginal cultural heritage values should be carried out for new proposals.
- Reclamation of extraction sites needs to be of a high standard.
- Extraction sites should be rationalised to the smallest practical number of sites.
- Sites in use should be progressively rehabilitated.
- Disused extraction sites should be rehabilitated where possible, including removal of rubbish, measures taken to stabilise the surface and ensure public safety, and revegetation as required.
- Location of sites and conditions imposed should aim at

minimising adverse effects on adjoining public land from noise, dust, unsightliness, and erosion.

- Particular care is necessary to avoid affecting water quality in run-off from extraction sites.
- Extraction should avoid sites susceptible to erosion. The potential for adverse impacts of extraction in streambeds and granitic sands is severe, and if no alternative source is available, specific protective measures should be applied.
- In large public land areas, the land managers may extract stone from appropriate sites as required for management needs.

RECOMMENDATIONS

General recommendations for earth resource extraction areas

K That:

existing earth resource areas shown on Map A continue to be used for the extraction of stone, sand, salt, gypsum and other mining resource use in accordance with current legislative and regulatory requirements, and the principles and guidelines described above, and that

(a) proposed new extraction sites be located and operated in accordance with the current legislation and regulations, and as appropriate the above principles and guidelines, and

(b) extraction sites preferably be located on already cleared land, and

(c) when no longer required for extraction, each site be considered uncategorised public land and assessed for public land values and uses, and where appropriate assigned to another public land use category or made surplus.

K1–K2 Proposals for earth resources extraction areas

K1 Mining sites

Currently salt and gypsum mining are undertaken on public land in the Investigation area. Although there is potential for precious mineral deposits and brown coal below the surface and a number of exploration licences are held over parts of the Investigation area, there are currently no established mine sites for these resources. Three existing gypsum mining sites are recommended to continue operations as proposed earth resource extraction areas (Recommendation K1). Two gypsum mining licences operate over an area of the existing natural features reserve, the Duck Lake Wildlife Area. This area is proposed to be retained as a natural features reserve and be re-named the Duck Lake North Wildlife area (Appendix 8) to distinguish this area from the adjoining proposed Duck Lake South Nature Conservation Reserve (Recommendation D20).

RECOMMENDATIONS

General recommendation for mining sites

K1 That:

existing mining sites shown on Map A and listed below continue to be used in accordance with the earth resource extraction areas general Recommendation K,

- (a) McDonald Road Salt Lake Mining Area (67.1 hectares)
- (b) Micks Lake Mining Area (118.8 hectares)
- (c) Copi Mining Area (3.8 hectares).

K2 Stone reserves

Specific small areas were recommended in previous Land Conservation Council studies as stone reserves. Typically local municipal councils use these areas as gravel and crushed rock resources for construction and road making materials. Extraction of material from stone reserves requires authorisation under the EIDA Act.

VEAC recommends that operating stone extraction sites continue, but encourages the industry to improve land management practices in line with the principles and guidelines recommended above.

The majority of existing stone reserves are no longer operational and are proposed as additions to other public land categories. Notably the Merbein stone reserve is recommended to be included in the proposed Wargan-Mallee Bushland Reserve (Appendix 8) and requires rehabilitation and revegetation works.

RECOMMENDATIONS

General recommendation for stone reserves

K2 That:

existing stone reserves shown on Map A and listed below continue to be used in accordance with the earth resource extraction areas general Recommendation K,

- (a) Hyem Gravel Reserve (0.3 hectares)
- (b) Milawa Gravel Reserve (0.7 hectares)
- (c) Boort Gravel Reserve (35.5 hectares).

L Plantations

Public land is used for both softwood (pine) and hardwood (eucalypt) plantations. The River Red Gum Forests Investigation area includes a small area (173 hectares) of softwood timber plantations located on public land along the Ovens River between Myrtleford and Porepunkah (Braithwaites and Junction plantations). The Victorian Plantations Corporation currently lease these areas to Hancock Plantations Victoria. VEAC proposes no changes to this arrangement and recommends these areas continue to be used as plantation public land use category.

RECOMMENDATIONS

General recommendation for plantations

L That:

existing plantations held under lease and shown on Map A continue under present use and management.



M Uncategorized public land

Uncategorised public land is a broad category for which there is no specific use recommended. In some cases, this includes areas that are formally reserved and have a reservation purpose, but have not been categorised because of exclusion from previous Land Conservation Council investigations. This includes a number of townships in the River Red Gum Forests Investigation area (Echuca, Mildura, Swan Hill and parts of Shepparton and Wangaratta) and land acquired by government agencies or statutory authorities since the last systematic assessment. In many of these areas, new public land use recommendations simply formalise existing reservation or use.

In other cases, public land that has no clear primary use is recommended as uncategorised public land and, subject to assessment of any public land attributes present on the site, either assigned to an appropriate land manager or disposed of through sale. The Department of Sustainability and Environment carries out these assessments of Crown land parcels. Public land attributes are the resources (or natural, recreational, heritage or scenic values) present on a site that would generally require its retention as Crown land. Crown land that has minimal or no such values or resources is considered surplus to Government needs and may be disposed of. In certain circumstances, and after native title assessments have been made, this may be undertaken as a land exchange for nearby freehold land that has high values.

A number of blocks of public land have been proposed for revegetation or reestablishment of native vegetation, many of which are found in the Victorian Riverina bioregion (see Appendix 9). Prior to any revegetation, these sites will require assessment for the presence of existing native vegetation, particularly native grasslands. In some circumstances, the removal of grazing will allow the natural reestablishment of native grasslands or grassy woodlands. In other situations, revegetation should be undertaken with seed local to the area and with species appropriate to the Ecological Vegetation Class.

RECOMMENDATIONS

General recommendations for uncategorised public land

M Public land other than that:

- (a) recommended for specific uses in this report, or
- (b) subject to previous approved specific land use recommendations

be uncategorised public land; and

- (c) existing legal use and tenure continue for the time being, and

- (d) when Crown land assessments are completed, the land be either:

- (i) assigned to a Department of Sustainability and Environment land manager and treated as outlined above if it has public land values (i.e. native forest or native grasslands), or
- (ii) disposed of if assessed as surplus,

- (e) those parcels identified in Appendix 9 and shown on Map A be revegetated with species local to the area or be managed in a way which allows for the natural regeneration of native vegetation.



Implications



4 Social, economic and environmental implications of the proposed recommendations

This chapter summarises and discusses the implications of the recommendations proposed in the preceding two chapters. The recommendations are examined overall and for each major public land use and for each resource in the Investigation area. Under the *Victorian Environmental Assessment Council Act 2001*, VEAC must address the potential environmental, social and economic consequences of its recommendations. Addressing these consequences has been of paramount importance in the River Red Gum Forests Investigation. In addition, the proposed recommendations have also been subjected to independent analysis. A team of consultants led by Gillespie Economics was commissioned by VEAC to independently assess the social and economic implications of VEAC's proposed recommendations. Appendix 1 is the executive summary from the consultants' full report which is available from VEAC's website (www.veac.vic.gov.au) or by request from the VEAC office (see inside front cover for contact details).

The consultants' main task was to identify the benefits and costs of VEAC's proposed recommendations for each of the key uses of public land in the Investigation area. Under headings for each of these main uses, this chapter draws on the consultants' work to explain the likely implications of the proposed recommendations overall and for each use. The effects of the proposed recommendations are predominantly quantified as the net economic contribution to the state economy and to regional economic activity and employment. The consultants also assessed the implications of VEAC's proposed recommendations for small town viability in the Investigation area.

The Gillespie Economics benefit cost analysis for this Investigation uses material from a separate study commissioned by VEAC and undertaken by URS (Australia) in 2007 which quantifies the values of various non-market uses of public land in financial terms. This study surveyed a sample of Victorians on the values they place on environmental protection, using the forests of East Gippsland and the River Red Gum forests and wetlands of northern Victoria as study sites. The benefits of this work are that the values expressed by people are derived directly from the values expressed by people for the East Gippsland and the River Red Gum forests rather than being values expressed by people interstate and overseas. They also reflect current community values. As a result, the quantification of the values expressed by people for different uses of public land in the benefit cost analysis of VEAC's proposed recommendations by Gillespie Economics are considered more robust and relevant.

VEAC stresses that the purpose of identifying the financial value of various uses is to provide a single comparable unit of measurement for the different uses and values of public land. The financial values, in themselves, have not driven deliberations. Rather, in developing its recommendations, VEAC has sought to balance social, economic and environmental benefits in a broad sense and the detailed evaluation of benefits and costs has been calculated subsequently.

Overall assessment

Identifying and placing financial values on the benefits and costs of VEAC's proposed recommendations required the consultants to make many assumptions and specify a number of caveats on their results. These are documented in detail in the full report.

The most significant factor in the assessment was VEAC's recommendations for additional environmental water for overbank flooding. Many of the overall benefits and costs of the recommendations result from the recommendations for overbank flooding. However, the wide range of potential costs of allocating and storing that water make it impossible to reliably cost these recommendations.

The details of the potential costs of allocating and storing environmental water are described more fully in the consultants' full report and executive summary (Appendix 1). For this overall assessment, the consultants have estimated the net benefits and costs of the proposed recommendations, excluding the costs of allocating and storing environmental water. From this estimate, the consultants have derived the break-even price for the water; that is, the dollar value of the water above which the recommendations incur a net cost.

The consultants concluded that the proposed recommendations would result in a net increase in economic value to Victoria of \$92 million per year excluding the costs of environmental water. The break-even price for environmental water would be between \$1320 and \$2880 per megalitre. Most of the benefits from the proposed recommendations result from non-use values for environmental protection, which are heavily dependent on adequate environmental water. These benefits would accrue mostly to people outside the Investigation area, especially in Melbourne, while the costs of the proposed recommendations would be largely borne within the Investigation area particularly in the areas near where public land timber harvesting and grazing are focussed. The towns of Cohuna, Koondrook, Nathalia and Picola are likely to be most sensitive to these effects, as they would be occurring in the context of the contraction of local economies and populations in these areas that has been experienced in recent years.

Environmental water

The objectives sought through VEAC's proposed land category recommendations largely depend on an adequate and effective environmental flow regime. This regime, based on overbank flows and floodplain inundation along the length of the River Murray and its Victorian tributaries, is described fully in Chapter two. The flood regime proposed assumes that a healthy floodplain, with a high degree of floodplain connectivity, depends on overbank flood events of around 4000 gigalitres of water at least

every five years. The costs of providing such water for environmental purposes needs to be borne by all Victorians if, as a community, we wish to protect and use the River Red Gum forests and their associated ecosystems into the future.

The estimated size and frequency of the required overbank flood events is a preliminary estimate subject to many caveats (see Chapter 2). VEAC has commissioned CSIRO to conduct further work towards more reliable estimates (see the VEAC website for preliminary results). However, it is also important that the Victorian community has an understanding of the estimated size and frequency of what VEAC is proposing, and that figures can be incorporated into the benefit cost analysis of the proposed recommendations. On this basis, a 4000 gegalitres overbank flood event at least every five years is the best estimate available for achieving a healthy floodplain.

The consultants' assessment of the implications of VEAC's recommendations for environmental water (included in Appendix 1) required some novel approaches to deal with the difficulties posed by this issue. Four scenarios were developed to gain a better understanding of the role of environmental water and to attempt to differentiate the costs and benefits attributable to environmental water:

Scenario 1: Base Case: no new management changes other than the 500 gegalitres of water already approved for The Living Murray Icon sites. This scenario is what would eventuate without VEAC's proposed recommendations.

Scenario 2: the implementation of VEAC's recommendations including new protected areas, but with no additional environmental water. This scenario provides a benchmark for assessing the benefits of the proposed recommendations with and without water.

Scenario 3: the implementation of VEAC's recommendations including new protected areas, but with additional environmental water for only a 2000 gegalitre flood event every five years. This scenario provides insight into the implications of a smaller flood event with limited overbank flows and ecosystem health outcomes.

Scenario 4: VEAC's Proposed Recommendations: the implementation of all VEAC's recommendations including new protected areas and additional environmental water for a 4000 gegalitre overbank flood event every five years. This scenario is what VEAC is recommending—the comparison between this scenario and scenario 1 is the basis for assessing the implications of VEAC's recommendations.

Although water is now traded on a more or less open market, several factors confounded attempts to assign a dollar value for the cost of environmental water, notably:

- the wide range of prices currently paid for water: in the order of \$50 to \$4000 per megalitre depending on location, delivery, use and status (temporary or permanent)
- the changing (generally increasing, but unpredictable) prices paid for water
- the effect that a large new buyer (the government) would have on prices if it was to enter the water market and purchase significant volumes

The consultants resolved this issue, not by assigning a cost to water but by calculating the overall 'break-even' price for water. That is, the price of water above which the overall result of recommendations is a net cost to the economy. So if the water can be obtained for less than the break-even price, the recommendations overall will amount to a net benefit to the economy.

The resulting analyses strongly confirm VEAC's recognition of the importance of environmental water. The values of both the benefits and costs associated with environmental water dwarf the total benefits and costs of all other uses combined. For example, the net benefits of the recommendations without additional environmental water amount to \$14.73 million per annum (Scenario 2—see Appendix 1), whereas the corresponding figure with VEAC's recommended additional environmental water is \$97.75 million per annum. It is worth noting here that comparable benefits will also accrue to South Australia and New South Wales and overbank flooding extends into those states to much the same degree as that envisaged for Victoria.

Based on the break-even costings (see Appendix 1), Victoria as a community can afford to pay up to \$1322 per megalitre for the required water before the costs outweigh the benefits accruing (using a six percent discount rate over 20 years). If a four percent discount rate is applied in perpetuity, Victoria could afford to pay up to \$2881 before the costs to Victoria exceed the benefits derived.

These break-even costings encompass the contribution that the current use of the water makes to the Victorian economy. On the other hand, regional effects are much more difficult to predict. Irrigated agriculture (where the effects are most likely to manifest) has been undergoing significant change in recent decades and continues to do so as a result of factors such as water trading, salinity, increasing water prices and the profitability of different enterprises. Further constraints on the availability of water are likely to impact most heavily in the least profitable areas, industries and uses. Where the cost of water becomes too high for irrigators, they may sell their water, purchase less water and use it more efficiently, shift to dryland agriculture or ultimately sell both their land and water. These changes in land and water use patterns are already occurring through water trading intra- and extra-region in the Kerang-Swan Hill area. Similar trends are likely to be seen throughout the irrigation districts of Victoria as well as New South Wales and South Australia. Given that benefits are shared between all three states, it would seem reasonable that the costs are also shared.

The proposed recommendations relating to environmental water for the River Red Gum forests and wetlands will require a shift in the security of environmental flow allocations relative to other water user needs, resulting in some dislocation for these users. However, there would also be consumptive use benefits, including for recreational fishing and hunting, timber productivity and maintenance of the forests' aesthetic attributes for recreation more generally.

Ultimately, the decision to provide adequate environmental water regimes requires us to acknowledge that a significant volume of water is required for overbank flows and floodplain inundation. The benefit–cost analysis of

these proposed recommendations indicates that there is considerable scope to pay market prices for water to achieve environmental flows and ensure the long term protection of the River Red Gum forests and their associated ecosystems on public land in the Investigation area.

Increasing Indigenous involvement in public land management

VEAC considered a number of issues during development of the proposed recommendations regarding the role of Indigenous people in public land management (see Chapter 2). The broad range of Indigenous community aspirations include increased involvement in public land management. In some cases choosing specific land management arrangement for specific groups is beyond both VEAC's scope and timeframe. A flexible range of options for increased levels of Indigenous Traditional Owner involvement is considered more appropriate, although clearly there is a need to provide adequate resources to support such increased involvement including capacity building, training, provisions for group decision-making and administrative support.

Council considers that there is a need for increased involvement of Indigenous people generally and Traditional Owners specifically in public land management in the Investigation area. The proposed recommendations provide for greater involvement by Indigenous people in public land management, whilst acknowledging that institutional and legislative change is also required to accommodate the existing capacity and aspirations of each Indigenous Traditional Owner group. In order to facilitate greater and meaningful involvement in public land management, progress needs to be made towards Aboriginal Traditional Owner identification and registration. However this progress must also operate within established internal decision-making processes and informed consent protocols.

VEAC's proposed recommendations for shared management of two specified parks, with management boards which have majority Aboriginal membership, is a major change in the way national parks and other public land are managed in Victoria. Such a management framework should facilitate the active engagement of the relevant Aboriginal groups in park management and decision-making. The Council is also proposing legislative change now to establish the framework for 'handback-leaseback' of parks in Victoria. Without such a statutory framework, progress towards joint management will stall.

Traditional cultural practice is one of the key ways that Aboriginal people can keep their culture alive and teach younger generations. The Council considers that ensuring Aboriginal Traditional Owners have a genuine role in decision-making about contemporary cultural practice is extremely important. VEAC's recommendations allow for traditional cultural practice on public land across the Investigation area and provide opportunities for Aboriginal people to build capacity and training. The proposed recommendations support the renewal of Traditional Owners' cultural ties with their traditional Country through the practice and shared responsibilities for management, decision-making and planning.

In a broader sense, the draft recommendations will address some of the social and economic inequities that exist between Aboriginal and non-Aboriginal people in the Investigation area and more widely, as well as furthering the Victorian government's efforts towards reconciliation. However, it must be acknowledged that the legacy of the past cannot be rectified either quickly or easily, and that support and leadership from both within and outside Indigenous groups will be required to achieve the best outcomes. Working on Country and supporting Indigenous responsibilities to care for Country has the potential to provide real social benefits for Indigenous people.

The Investigation process has utilised and extended existing relationships between public land managers and Aboriginal people or groups, but Council acknowledges that its consultation is limited in both scope and timeframe. The building of long-term relationships and trust between government and Aboriginal people is critical to the success of any future land management arrangements particularly those under shared governance structures. The amount of time and resources to achieve positive social, economic and cultural outcomes should be realistically estimated and genuinely accommodated. Council believes that the proposed recommendations provide a range of positive opportunities for Aboriginal people and the wider Victorian community. Ultimately, however, the way in which these recommendations are implemented will be critical to their success and indeed measuring such outcomes may be highly subjective. VEAC will continue to consult with Aboriginal people and groups during the remainder of the Investigation. A summary of the key findings in the consultant's report from the initial consultation period is provided at Appendix 3 and the full report is provided on VEAC's website.

The formal assessment of VEAC's recommendations for increasing Indigenous involvement in public land management (Appendix 1) concluded that there was no increased contribution to the Victorian economy, nor additional employment beyond that included in the consultants' estimate of \$3 million for additional management costs.

Recreation and tourism

Recreation and tourism contribute significantly to the economy of the Investigation area, with around eight million visitor days and \$970 million being spent each year in the region. Camping and associated activities along the River Murray and its tributaries are major attractions for visitors to the region, attracting around 0.65 million visitors a year to parks alone. Camping holidays also play a significant social role in visitors' lives with many families visiting the same site for many years. Recently however, camping numbers at many locations have been at or beyond capacity in peak periods and this relatively unregulated activity has damaged the environment, negating the reason visitors were initially drawn to the region. The number of visitors and, therefore, the severity and extent of this problem, continue to steadily increase.

VEAC proposes more designated camping and reduced dispersed camping in the proposed national parks with numerous areas remaining for dispersed, unregulated camping in the proposed Murray River Park. Additionally,

camping will be prohibited in locations where the area of public land adjacent to the river is too narrow to legally permit a toilet. This will require some adjustment of camping behaviour. Gradually, some 'traditional' camping sites will be closed and rehabilitated, while others will be available specifically for day visitors. This is intended to moderate the issues caused by camping at levels beyond capacity in peak periods, and provide for a greater diversity of recreational activities and experiences. These actions are necessary if Victorians wish to maintain such recreational opportunities for future generations.

With the improved environmental conditions of public lands in the Investigation area resulting from the adoption of VEAC's proposed recommendations, visitor numbers are projected to continue their current steady growth patterns. VEAC's management recommendations will assist management of this growth and ensure greater diversity and sustainability of the recreational experience.

VEAC understands the dilemma posed by allowing camping with dogs on public land. Many people consider their dog as part of their family and choose their holiday destination partly based on whether or not dogs are permitted. Conversely, dogs can bother other people (especially the very young and old) in picnic and camping grounds, along walking tracks and on beaches. Dogs, even if very obedient or on a lead, can scare away native wildlife by barking and leaving scent.

There is little restriction on dogs on public land in the Investigation area at present. In general, dogs are not allowed in national parks in Victoria, as these areas are primarily established to protect native flora and fauna, but dogs are allowed in state forests, regional parks and may other categories of public land. Therefore, people will no longer be able to camp with their dogs on Wallpolla Island and in the proposed Leaghur-Koorangie, Gunbower, Lower Goulburn River, Barmah and Warby Range-Ovens River National Parks. However, it is VEAC's intention that people should be able to camp at nearby locations with their dogs. Thus, dogs will be allowed in the extensive Murray River Park, the proposed Kings Billabong, Murray-Kulkynie, Gadsen Bend and Nyah-Vinifera Parks, state forests and regional parks.

As Victoria has just experienced the biggest bushfire season in recorded history, fires are at the forefront of people's minds. Escaped campfires are the largest source of bushfires in the Investigation area over the summer period. VEAC proposes that Victoria align with New South Wales and South Australia and ban solid fuel fires on public land over the high fire danger period, and that this be extended throughout the year in proposed national parks and nature conservation reserves. Campers will be able to cook with fuel stoves on all but total fire ban days. Whilst many campers will miss the romance of cooking over a wood fire, the positives far outweigh the negatives. The number of campfire escapes should decrease (based on New South Wales experience), increasing the safety for adjoining property holders, and the amount of wood on the ground should increase providing essential habitat for many ground-dwelling species which are presently threatened by firewood collection (which would also be discontinued in the summer period and in proposed national parks and nature conservation reserves).

VEAC's proposed recommendations to include a number of wildlife reserves (state game reserves) in the dedicated reserve system will reduce the number and area of wetlands available for duck hunting which, unlike other recreational implications, can be reliably quantified.

Around 3950 duck hunters use these wetlands on the opening weekend of the hunting season. A reduction in duck hunters in the Investigation area may cost Victoria \$0.082 million and 17 direct jobs in the region (e.g. Kerang) from reduced demand for fuel, accommodation and other services. Many of these duck hunters will be able to access other areas for duck hunting both within and outside of the Investigation area. VEAC anticipates that improved environmental water regimes for a number of wetlands in the region will improve hunting opportunities on many wetlands that are currently available for hunting but have been dry for a number of years.

The public lands of the Investigation area are popular for a wide range of other recreational activities such as fishing, horseriding, trailbike riding, four wheel driving, car touring and picnicking. These activities would not be affected by VEAC's proposed recommendations, except that camping with horses and off-track horseriding would not be permitted in the proposed new national parks and nature conservation reserves. These activities are permitted in existing and proposed state forests and regional parks, including the proposed Murray River Park.

Orderly management of recreation is a key component of the strategic planning framework. At present, such planning is fragmented and area or site specific and lacks co-ordination across the entire River Murray region. Fifteen local government areas, four catchment management authorities and several Parks Victoria and Department of Sustainability and Environment regions all contribute to planning for public land and development on adjacent private land. Adding to the complexity are the multiple agencies with planning responsibilities on the other side of the River Murray, and the fact that the river itself is within New South Wales's jurisdiction. VEAC considers it essential that long-term, strategic planning for recreation and tourism is applied to public and private land along the River Murray corridor as a whole. In this way, areas for development and high and low intensity of use can be planned and coordinated at the landscape scale, similar to planning for the Victorian coastal strip.

Wood products

The River Red Gum forests of the Investigation area sustain a diverse timber industry with products ranging from fine furniture to firewood and sawdust. Nearly all production comes from the largest forests—Gunbower and especially Barmah but also along the lower Goulburn. The wood goes to mills in Koondrook, Echuca and Benalla, as well as a number of smaller producers mostly based in the areas surrounding Gunbower and Barmah forests. Riverine forests across the Investigation area also supply domestic firewood to many local permit-holders.

VEAC's draft recommendations would very significantly reduce the total area of state forest in the Investigation area and, in particular, would reduce available area of merchantable forest from 25,164 hectares to 10,105 hectares. This will greatly decrease the volume of wood produced and, consequently, the size of the timber

industry. Countering this loss somewhat, environmental water recommendations (R10–R17) would increase flooding of the remaining forests and thereby increase current timber growth rates.

The net result of these changes would be to reduce the harvest of sawlogs and standard logs from the current figure of 10,160 cubic metres per year (2006-07 licence volume) to a sustainable harvest figure of 2250 cubic metres per year (see Appendix 7 or 'C State forests' in Chapter three for details). However, the same analysis indicates that the sustainable harvest level would fall to 3820 cubic metres per year without implementation of any VEAC recommendations as a result of several factors, notably lower growth rates caused by reduced forest flooding in recent years. That is, about 80 percent of the predicted loss of harvest volume is due to reduced flooding, and about 20 percent is due to VEAC's recommendations that would reduce the available area of state forest.

In addition to sawlogs and standard logs, residual logs are also cut for products such as firewood—about 9000 cubic metres of which was produced commercially in 2006-07 (domestic firewood is considered separately below). Sustainable harvest volumes are even more difficult to determine for these logs than for sawlogs and standard logs. However, given that the same biological factors (growth rates and so on) operate over the same areas, the changes in sawlog and standard log availability are likely to approximate availability changes for other products over the long term.

In financial terms, VEAC's proposed recommendations would reduce the net economic contribution of the timber industry to the Victorian economy from the current \$2.5 million per annum to \$0.5 million per annum. Employment in the industry would reduce from current employment of around 96 direct full-time equivalent jobs to an estimated average of around 19 direct jobs (full-time equivalents). Further details of the analysis behind these figures, as well as impacts on several other social and economic indicators (such as indirect employment), are provided in Appendix 1 and the consultants' full report (on the VEAC website).

While these impacts are relatively small in the regional context—the sector represents 0.1 percent or less of the regional economy—the impacts will be felt disproportionately in a few local towns. The larger towns of Echuca and Benalla have substantial economies unrelated to the timber industry and are unlikely to be significantly affected by the reductions in available timber. The town of Koondrook is more likely to be adversely affected. This is a small town where the contribution of the sawmill and its ancillary services plays a significant part in the economy. Similarly, the many small-scale producers located close to Barmah and Gunbower forests form a more substantial part of the local economy than is the case in other parts of the Investigation area.

However, it not possible to be regionally specific about the effects of the draft recommendations because operators, including the three sawmills, may not be equally affected. Rationalisation of the industry may reduce the impacts in some areas and increase it in others. The government and the Department of Sustainability and Environment decide

on detailed matters such as future sawlog and other licence allocations, industry restructure or refocus, alternative supplies and measures to assist the industry to deal with VEAC's recommended changes.

Domestic firewood harvesting would also be affected by the recommendations. Current harvesting amounts to about 9000 cubic metres per year. As with the commercial timber industry, location is a key factor in assessing the impact of the recommendations on domestic firewood harvesting. Key local factors include the availability of affordable alternatives, particularly reticulated natural gas and the distance to forest areas—it is generally considered uneconomic to travel further than about 20 kilometres to collect firewood.

There are several population centres with limited or no access to the reticulated gas network and where domestic firewood use is currently high. These areas would be able to obtain domestic firewood as follows:

- Kerang, Koondrook and Cohuna areas from the recommended Gunbower, Benwell and Guttram State Forests
- Mildura and Robinvale from firewood zones recommended in the new Murray River Park
- Nathalia, Picola and Barmah from potential firewood zones recommended in the new Murray River Park, but predominantly through development of a firewood strategy.

The management of firewood will continue to be a difficult issue but the Department of Sustainability and Environment has been developing successful strategies for firewood management in other areas similarly affected (e.g. in northeast Victoria as part of implementation of the ECC Box-Ironbark recommendations).

The burning of firewood for heating and cooking is generally an inefficient energy source that generates high levels of wood smoke. Some reduction in its use—and continuing the roll-out of the natural gas network—would be desirable on these grounds.

Agriculture

The Investigation area comprises a substantial proportion of Victorian intensive primary production industries, notably both dryland and irrigated crops or pasture. Agricultural activities are largely undertaken on private land, however the use of water for irrigation has a major effect on the natural values of public land in the Investigation area, and on uses (such as grazing and forestry) which depend on environmental values. The implications of Council's recommendations relating to water use are detailed in the 'Environmental Water' section of this chapter.

Grazing

There is currently some 89,500 hectares of public land licensed for domestic stock grazing in the Investigation area, mostly in state forest, public land water frontage and the River Murray Reserve. Public land grazing is closely aligned with the development and expansion of European settlement in the region, but has declined in economic importance as private land enterprise has expanded. About 2930 licensees and permit holders derive an estimated economic contribution of \$1.32 million from

domestic stock grazing on public land in the Investigation area (Appendix 1).

While domestic stock grazing can be an effective tool to address specific land management problems at particular locations and times, scientific evidence indicates that, in general, it adversely affects natural values especially biodiversity, water quality and soil condition. Accordingly, VEAC proposes a major shift in public land management priorities and that domestic stock grazing be generally excluded from public land in the Investigation area, with the exception of unused road licences (about 4600 hectares). The draft recommendations provide for limited future use of grazing as a targeted management tool, to address a particular environmental or management problem. Such uses include controlling particular weed infestations or maintaining a specific grassy habitat structure.

Some 1725 licences will be cancelled over an area of approximately 84,900 hectares worth approximately \$1.25 million economic contribution and 14 to 17 full-time equivalent jobs. A phase-out period of five years is proposed for removal of domestic stock grazing from public land water frontages (1260 licences over about 12,100 hectares), while broad-acre grazing in other areas, e.g. national parks and nature conservation reserves, is recommended to cease immediately (about 43,000 hectares). Removal of grazing from Barmah forest will affect 38 permit holders over an area of some 29,600 hectares at an estimated economic contribution of \$250,000 and 2 full-time equivalent jobs. Although not a large economic value from a regional perspective, the recommended changes are more likely to have an impact on small towns currently experiencing economic and population declines such as Nathalia, Picola and Barmah.

Excluding stock grazing from public land water frontages is likely to require considerable fencing and, over time, the installation of off-stream water points. Access to water points across public land water frontages remains an important use of public land and water resources. Many adjoining landowners have undertaken streamside rehabilitation activities supported by catchment management authorities. The proposed recommendations encourage the continuation of these projects, accelerated to exclude grazing from all public land water frontages within five years. Those licences held over unused roads within largely cleared freehold land may continue. Where significant ecological values have been identified on unused roads, these have been proposed for inclusion in conservation categories or specific management regimes recommended.

As a cultural activity, domestic stock grazing is celebrated at the annual Barmah muster. The Barmah muster yards are a site of cultural heritage significance. With the exclusion of commercial grazing from the proposed Barmah National Park (Recommendation A7), the muster yards will no longer have a functional use. Council has recommended an area encompassing both the muster yards and the Dharnya cultural centre as a community use area (Recommendation I5) to provide for a range of activities not generally permitted in a national park. This may include camping with horses and dogs and commercial activities.

Apiculture

The Investigation area plays an important role in the Victorian apiculture industry contributing around \$1 million to the economy and supporting about 30 full-time equivalent jobs. Apiculture is generally proposed to continue as a resource use in the Investigation area and at existing apiary sites in proposed national parks. In other places where currently permitted, apiculture can continue to operate and is unaffected by VEAC's proposed recommendations. Overall, the recommendations are not expected to have any effects on the apiculture industry. However, the viability of apiculture is inseparable from the health of the River Red Gum forests and the proposals to supply additional environmental water to the floodplain forests will be of significant benefit for this industry in production rates.

Earth resources

The extractive and mining resources industries produced material with an average combined annual value of \$12.78 million in the Investigation area from 2003 to 2005. Almost the entire value—more than 98 percent—was derived from extractive industries producing crushed rock, sand, gravel and clay used in construction and road making industries. Such resources need to be close to where they are used as transport is expensive and can make up to 25 percent of production costs.

A number of stone reserves in the Investigation area are no longer in use and have been proposed for rehabilitation and inclusion in other public land use categories. Where stone reserves and extractive industries are currently operating on public land, these areas have been recommended as earth resource extraction areas where this is the primary use. VEAC encourages the extractive industry to improve land management practices in line with the recommended principles and guidelines similar in intent to those currently applicable to mining operations.

As described above, the mining industry is of low economic value in the Investigation area, and consists largely of the industrial minerals salt and gypsum. There are a number of exploration permits including those for mineral sands, gold, base metals and potential for brown coal in the future. Existing permits will continue under current provisions.

Ecosystem protection

Biodiversity includes the genetic diversity, species diversity and ecosystem diversity of all life-forms and their interactions with each other and the physical environment. As many species are poorly known or undescribed, conservation planning has focused on establishing dedicated reserve systems (where biodiversity protection is paramount) that are comprehensive, adequate and representative. The establishment of such a reserve system in the River Red Gum Forests Investigation area has been an important driver in the formulation of VEAC's proposed recommendations. Indeed it was a key component of the terms of reference given to VEAC by the government for the Investigation and, under VEAC's legislation, the need to provide for such a system must be taken into account in all its investigations.

In developing its recommendations, VEAC has used Ecological Vegetation Classes (EVCs) as surrogates for

ecosystems, and the nationally agreed criteria for establishing the comprehensive, adequate and representative reserve system (also known as the 'JANIS criteria'). EVCs and the JANIS criteria are described in more detail in the River Red Gum Forests Investigation Discussion Paper. The key elements of the JANIS criteria are reserve system representation targets of 100 percent of the current extent of rare or endangered EVCs, 60 percent of the remaining extent of vulnerable EVCs and at least 15 percent of the pre-1750 (that is, pre-European) extent of all other EVCs. There was a particular emphasis on achieving comprehensiveness, adequacy and representativeness in the four main bioregions—Murray Fans, Murray Scroll Belt, Victorian Riverina and Robinvale Plains (see Appendix 10 for reservation status in the Investigation area, and the VEAC website—www.veac.vic.gov.au—for representation across the bioregions).

Appendix 10 shows VEAC's proposed recommendations more than double the total area of permanent reserves from 68,388 hectares to 174,748 hectares. Appendix 10 also shows that VEAC's proposed new dedicated reserves satisfy the JANIS targets for the majority of EVCs. Key EVCs for which protected area representation is proposed to increase significantly include:

- Riverine Grassy Woodland, Grassy Riverine Forest, Riverine Chenopod Woodland, Plains Woodland, Riverine Swamp Forest, Riverine Swampy Woodland, Lignum Swampy Woodland, Grassy Riverine Forest/Riverine Swamp Forest Complex, Sedgy Riverine Forest/Riverine Swamp Forest Complex in the Murray Fans bioregion
- Semi-arid Chenopod Woodland, Low Chenopod Shrubland, Riverine Chenopod Woodland, Lignum Shrubland, Shrubby Riverine Woodland, Lignum Swampy Woodland in the Murray Scroll Belt bioregion
- Lignum Swampy Woodland and Shrubby Riverine Woodland in the Robinvale Plains bioregion, and
- Lake Bed Herbland, Plains Grassland, Riverine Grassy Woodland, Sedgy Riverine Forest, Lignum Swampy Woodland, Floodplain Riparian Woodland in the Victorian Riverina bioregion.

For some EVCs, the proposed protected area system does not satisfy the JANIS targets. For many of these EVCs, much of the remaining extent occurs on private land, particularly those in the Victorian Riverina bioregion. Other EVCs which do not meet reservation targets occur in thin strips or small sections of the Murray River Park or in public land water frontages which are not considered to be protected areas. Despite this VEAC considers the increased emphasis on management for conservation within these land use categories would provide an appropriate balance. Subsequent management planning in the Murray River Park can satisfactorily protect areas of threatened or endangered EVCs.

VEAC has been particularly conscious of creating large and well-connected protected areas, where feasible, to ensure reserves are viable in the long term and allow for species movement across the landscape. In addition, other values such as sites of Indigenous cultural heritage, sites of

historic significance, scenic landscapes, have also been incorporated into the proposed protected area system.

The economic value of biodiversity protection is measured in terms of the financial values that a sample group of people indicated they are willing to pay to gain additional biodiversity protection (see Appendix 1 for a discussion of the assumptions involved in these estimates). URS (Australia) undertook a comprehensive survey of people in the Investigation area, of residents in other parts of rural Victoria, and of people living in Melbourne to ascertain the non-use values people attributed to various environmental attributes. Specifically, the willingness of people to pay for healthy areas of River Red Gums, for an increase in threatened parrot numbers, and for an increase in numbers of Murray Cod and other threatened fish were used as surrogates for improved outcomes for biodiversity associated with increasing the protected area estate and improved environmental water flows.

Gillespie Economics applied these non-use values from the above study to estimate the values according from the protected area network. Based on this it is estimated that Victorians are willing to pay approximately \$98 million per year over 20 years to secure the environmental benefits that will come from VEAC's proposed recommendations.

Threatened species

A comprehensive, adequate and representative reserve system is designed to provide the optimal protection for biodiversity, including protecting ecosystems and the habitat of species for which we currently have little or no information. However, there are often key elements of biodiversity for which we have specific knowledge and can make provisions in the reserve system. Threatened flora and fauna species are such elements and the inclusion of these species in permanent conservation reserves is a high priority. Appendix 11 outlines the representation of key threatened flora and fauna species in the proposed reserve system.

The populations of many threatened flora species are limited by overgrazing and soil disturbance associated with cropping. The extended protected area system in the Victorian Riverina bioregion will significantly improve the protection for many of these species. The removal of grazing in Barmah forest will significantly improve conditions for the endangered Mueller Daisy. Improved water regimes should reduce River Red Gums and Giant Rush encroachment on Moira Grass plains. Many ground-dwelling, riverine species such as Carpet Pythons, rely on leaves, sticks and logs (coarse woody debris) on the ground for refuge from predators and as breeding habitat. The proposed new national parks should substantially increase in the amount of coarse woody debris, as it will no longer be collected for firewood. The prohibition of collecting firewood for commercial and domestic purposes in the Murray River Park (except designated domestic firewood collection zones) should also increase the level of this vital habitat element.

Some threatened species, particularly birds, are recorded over a wide geographic range but only breed in very limited locations under certain conditions. For example, the Superb Parrot only breeds in Victoria in hollows in old trees that are near water but also close enough to feeding grounds in more open country. Regent Parrots, like Superb

Parrots, require hollows in mature or dead trees that are within close proximity to their feeding grounds in mallee vegetation. It is imperative that the trees with hollows are protected and that younger trees are allowed to grow into this age class. Egrets will only breed in Victoria in live trees that are surrounded by water for many months. Protecting these specific habitat elements is vital for the conservation of these species in Victoria.

Sites of geological and geomorphological significance

VEAC commissioned a study of sites of geological or geomorphological significance, which were previously poorly documented in the Investigation area. The study

addressed this knowledge gap and revealed many outstanding sites relating to river and floodplain geomorphology in the River Red Gum Forests Investigation area (see Discussion Paper). Of the 21 sites of high significance, most of these are on public land and two thirds have been included in conservation reserves (see Appendix 11). Notably three sites of national significance (Barmah forest, Hattah lakes and Lindsay Island) are proposed or are currently within national parks and Living Murray Icon sites. Three sites of state significance are also proposed for inclusion in the conservation reserve system: palaeolake Kanyapella area, Wallpolla Island, and the Shepparton Formation geological type locality.



APPENDIX 1: Executive summary of social and economic assessment of proposed recommendations

River Red Gum Forests Investigation – Socio-Economic Assessment of Draft Proposals Paper

Executive Summary

Prepared for the

Victorian Environmental Assessment Council

8 Nicholson St
East Melbourne 3002

by



**Gillespie Economics
DCA Economics**

and

Environmental & Resource Economics

June 2007

This Appendix is a summary of the much longer report which is available on VEAC's website (www.veac.vic.gov.au) or by request from the VEAC office (see the inside front cover for contact details)

The two main types of socio-economic impact assessment employed in this study are Benefit-Cost Analysis (BCA) and regional Input-Output (IO) analysis. The two methods have quite distinct roles.

Benefit-Cost Analysis – BCA assesses the net economic gains or losses to Victorians that may arise as a consequence of changed public land management. On a state-wide basis, if the benefits of the changes exceed the costs the changes should be implemented.

Regional Input-Output Analysis – Local and regional communities have a strong interest in the possible impacts of changed public land management on their employment prospects and incomes. IO analysis provides estimates of these impacts on regional economies, including both direct and flow-on effects. This method of analysis does not determine whether the people of Victoria are likely to incur a net economic gain or loss as a result of changed management.

1. Benefit Cost Analysis

The Victorian River Red Gum (RRG) forests, wetlands and floodplains of the Murray Valley are valuable environmental resources with many, sometimes competing, land uses giving rise to benefits for a wide range of people. Determining the appropriate balance of these uses from a society-wide perspective requires information about the relative values generated from those uses to be incorporated into the conceptual framework of a benefit cost analysis. Under this framework, alternative forest management scenarios (Scenarios 2, 3 and 4) are compared against the base case or do-nothing new option (Scenario 1) to identify if any of the alternative options will lead to an improvement in well-being for the people of Victoria. The scenarios are:

- | | |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Scenario 1</i> | BASE CASE - No new management changes over the next 20 years (including 500 GL per annum already identified for The Living Murray icon sites, and 127 GL per annum for existing annual environmental allocations) |
| <i>Scenario 2</i> | All VEAC's proposed recommendations including new national parks but with no additional water |
| <i>Scenario 3</i> | All VEAC's proposed recommendations including national parks but with 2,000 GL additional water every five years on average |
| <i>Scenario 4</i> | All VEAC's proposed recommendations including national parks and VEAC's estimated 4,000 GL additional water every five years on average |

Information about the commercial values of forest uses such as timber production and grazing in the River Red Gum forests and the cost of water to be used under Scenarios 3 and 4 is available from the markets in which outputs are exchanged. Forest protection benefits arise from recreation and tourism activities, ecosystem and cultural heritage conservation. Quantification of these non-market values were the focus of an earlier study for VEAC on the Non-Use Values of Victorian Public Land (Bennett et al. 2007).

Estimating the Market-Based Values Associated with Forest Use

VEAC draft recommendations for public land use mainly affect the timber and grazing uses of the RRG forests. The implications of the recommendations for water allocations to improve the health of the RRG forests are dealt with separately.

Timber Industry

The economic impacts on the timber industry were based on the results of a financial survey of participants in the industry, including mill operators, sleeper cutters and commercial firewood licensees. A total of 19 operators were interviewed out of approximately 22 licensees in the study area. Around 10 operators provided financial information in sufficient detail to allow extrapolation to the rest of the industry, based on licensed volumes of four categories of timber.

The direct gross annual value of the RRG-based timber industry is currently about \$9.3 m with a net economic contribution to the Victorian economy of about \$2.5 m per year. Assets dedicated to the industry total are valued at approximately \$11.3 m.

VEAC has advised that the timber harvest to be expected over the next 20 years for the Base Case (Scenario 1) will be about 30 per cent of current yields (as a result of lower tree growth rates due to reduced forest flooding), resulting in a net economic contribution of \$0.75 m per year. The calculated contributions for the other three scenarios, respectively, are \$0.27 m, \$0.33 m and \$0.50 m per year, reflecting the impacts of VEAC's draft recommendations, and increased water availability for scenarios 3 and 4.

Grazing

VEAC's draft recommendations include cessation of grazing in the Barmah forest (about 30,000 ha) and exclusion of grazing over a five year period in other public land (about 55,000 ha), including water frontage reserves (about 15,000 ha). It assumed in the BCA that only the water frontage areas will require provision of fencing and watering points. Graziers were not surveyed as part of this study and the analysis is based largely on other studies conducted for the Victorian and NSW Governments and on area estimates provided by VEAC.

For the Barmah forest it is estimated that the annual net economic contribution of grazing is \$0.14 m in the base case scenario (Scenario 1), based on grazing of 2,000 head of cattle in the summer six month period and 800 head in the winter six month period. For the other three scenarios (Scenarios 2, 3 and 4) the net economic contribution is zero.

For the other public land, including water frontage areas, grazing returns an annual net economic contribution of \$0.77 m in the base case and annual net costs of \$1.32 m per year for the other three scenarios – due to the need for fencing, watering points and increased pest management. It is assumed, conservatively, that these costs are incurred immediately, even though they will not be due for five years.

Estimating the Non-market Environmental Values Associated with Forest Protection

Choice modelling

Choice modelling (CM), a *stated preference* non-market valuation technique, was used to estimate the protection values associated with the RRG forests (Bennett et al 2007). The CM technique involves a sample of people being asked to make a sequence of choices between different alternative forest management strategies described in terms of their impacts on particular attributes.

For the RRG forests, the attributes and the ranges over which they may vary over the next 20 years under the various management scenarios are summarised in the following table.

Attributes and their levels for River Red Gum forests

Attribute	Description	Levels
Cost	Compulsory annual payment (\$)	0; 20; 50; 100
Healthy RRGs	Area in hectares	54,000; 67,000; 74,000; 80,000
Threatened Parrots	Number of breeding pairs (Regent and Superb Parrots)	900; 1,200; 1,500; 1,800
Murray Cod and other threatened native fish	Percentage of pre-European numbers	10; 20; 40; 60
Recreation Facilities	Number of campsites with facilities	6; 9; 12; 18

Descriptions of the survey materials used and survey logistics are provided by Bennett et al.(2007).

The six samples used in the surveys are shown in the following table.

Selection of Samples

		REGION	
	Melbourne (out of region)	Murray Region	Gippsland Region
STUDY AREA			
River Red Gum forests (RRG)	1. Metro	2. Echuca 3. Mildura 4. Wodonga 5. Rural	6. Bairnsdale (out of region)

The surveys were conducted using a drop-off-pick-up process in November 2006.

Results for River Red Gum forests

Models explaining respondents' choices between alternative forest management options are used to estimate the marginal values of the Healthy RRGs, Parrots, Cod and Recreation attributes. These values are expressed in terms of *implicit prices*: the marginal willingness to pay for the average respondent household over a 20 year period for a unit increase in the attribute.

The results in the table below show that respondents in the Bairnsdale and Melbourne sub samples are willing to pay \$3.29 and \$1.45 respectively for a 1,000 hectare increase in the area of healthy RRG forest (per annum per household for 20 years). 'Within region' respondents recorded values that are not significantly different from zero. People in those areas were prepared to accept the status quo with respect to that attribute.

Respondents were found to attach a positive value to increasing the numbers of breeding pairs of threatened parrots, ranging from around \$4 to \$8.40 per 100 pairs. The implicit price for a one-percent increase in the populations of Murray Cod and other threatened native fish species varies across the sub samples from about \$1 to \$1.40. Implicit prices for the recreation attribute are not significant for any of the sub samples.

Implicit Price Estimates for River Red Gums

Sub sample →	Melbourne (\$/yr/hh)	Bairnsdale (\$/yr/hh)	Within region (\$/yr/hh)
Attribute ↓			
Healthy RRGs /1,000 ha	1.45*** (0.46)	3.29** (1.29)	0.0677 (0.47)
Parrots /100 pairs	4.39*** (1.04)	8.39*** (2.76)	3.96*** (1.04)
Cod /1% increase	1.02*** (0.17)	1.37*** (0.44)	1.09*** (0.17)
Recreation /campsite	-0.11 (0.62)	-0.85 (1.53)	-0.24 (0.66)

Notes: Significance levels indicated by: * 0.1, ** 0.05, *** 0.01.
Standard Errors in parentheses.

The non-significance of the recreation/campsite attribute may be due to a conflict of preferences between those seeing positive outcomes (eg. more facilities providing a better camping experience) and those seeing negative outcomes (eg. more facilities leading to more congestion).

Application to Benefit Cost Analysis

The implicit prices estimated from the choice data are directly applicable to the consideration of alternative forest management options. Specifically, they are compatible with the principles of BCA. The process of employing implicit prices in the BCA involves four basic stages.

- 1) Predicting the impact of a management change on the attributes used in the choice modelling exercise relative to the predicted continuation of the 'status quo'.
- 2) Multiplying the implicit prices by the respective predicted attribute change to estimate the per respondent household willingness to pay for each attribute change.
- 3) Aggregating the per respondent household willingness to pay across all attribute changes.
- 4) Extrapolating across the relevant population, using the survey response rate, to estimate the societal willingness to pay for the management change.

Assumptions for Environmental Outcomes

The assumptions for environmental outcomes were specified by VEAC and are summarised below. It is emphasised that these assumptions will be revisited in light of the flood modelling recently commissioned by VEAC.

	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Healthy RRGs ('000 ha)	54	60	65	80
Threatened parrots ('00 pairs)	9	10	14	16
Murray Cod & other threatened native fish	10	10	20	30

Non-market issues that are not addressed in this analysis include implications for Indigenous cultural heritage, and the cultural heritage value of the Barmah muster and other RRG related heritage issues. The environmental benefits of excluding grazing from riparian areas have not been explicitly calculated. The implications of different forest management regimes for emissions of greenhouse gases have not been considered.

VEAC has indicated that there will be no net recreation and tourism benefits or costs associated with their recommendations over the next 20 years or so.

The VEAC draft recommendations will have positive environmental impacts outside Victoria and these are considered later.

It was assumed that additional management costs for the public land areas, including new national parks, would be \$3 m per year.

In addition to the above environmental outcomes, VEAC draft recommendations involve increased protection of about 7475 ha of wetlands and restrictions affecting approximately 3950 duck hunters. A recent study in South Australia puts the economic value (measured as consumer surplus) of duck hunting at about \$48 per trip, with 95% confidence limits of about \$30 and \$120. These values are consistent with the economic values estimated for other recreational pursuits such as fishing.

Conservative estimates put the value of wetland protection at about \$1,000 per hectare. However, the wetlands in the study area already benefit from protection – eg. by being located within a wildlife reserve. Based on somewhat arbitrary assumptions concerning the percentage of duck hunters who could find alternative sites (75%) and the degree to which moderate increases in the level of wetland protection is reflected in environmental value (50%), it was calculated that the net economic loss for Scenarios 2 through 4 is \$0.082 m per year, compared with the base case.

Demographic data

Demographic data (approximate for 2006) and survey response rates relevant to estimating the environmental values are summarised in the table below. Victorian rural areas outside rural cities and towns are not included due to the low survey response rate for these areas.

	Number of households (m)	Survey response rate
Melbourne	1.3	50
Murray region cities and towns	0.1	80
Out of region cities and towns	0.3	70

An Assessment of VEAC Draft Recommendations

A summary of undiscounted annual benefits and costs for each scenario relative to the base case is shown in the table below. The benefits include the non-marketed environmental protection values, including wetlands. The costs include the foregone value of timber and grazing production and duck hunting.

Scenario	Benefits (\$m/year)			Costs (\$m/year)
	Low	Average	High	Average
Scenario 2 (no additional water)	9.07	14.73	24.06	5.80
Scenario 3 (2,000GL every 5 years)	23.36	53.01	82.66	5.73
Scenario 4 (4,000GL every 5 years)	41.86	97.75	153.65	5.57

The Low, Average and High results reflect the 95 percent confidence limits placed on the estimates of the environmental values.

It is apparent from the above table that the environmental benefits of the VEAC draft recommendations dominate the costs in terms of lost timber, grazing and duck hunting opportunities. *However, it is important to note that the costs do not include the costs of provision or storage of water for Scenarios 3 and 4.*

Assuming a planning horizon of 20 years and a real discount rate of 6 percent and in the absence of water costs, annuities and Net Present Values for all three scenarios are strongly positive.

However, this result must be considered in the light of the cost of water under Scenarios 3 and 4. This is achieved by estimating the break-even water prices which would set the Net Present Values equal to zero. In other words, these prices would represent the upper limits to the prices that could be paid for water before the costs of the draft recommendations outweighed the benefits. The results of these calculations are shown in the table below.

	Break-even water prices (\$/ML/yr)		
	Low	Average	High
Scenario 3 (2,000GL/5 years)	\$44	\$118	\$192
Scenario 4 (4,000GL/5 years)	\$45	\$115	\$185

	NPVs for water value (\$/ML/20 years)		
	Low	Average	High
Scenario 3 (2,000GL/5 years)	\$505	\$1,356	\$2,206
Scenario 4 (4,000GL/5 years)	\$520	\$1,322	\$2,123

	NPVs for water value (in perpetuity)		
	Low	Average	High
Scenario 3 (2,000GL/5 years)	\$734	\$1,970	\$3,205
Scenario 4 (4,000GL/5 years)	\$756	\$1,921	\$3,085

	NPVs for water value (in perpetuity @ 4% discount rate*)		
	Low	Average	High
Scenario 3 (2,000GL/5 years)	\$1,102	\$2,955	\$4,808
Scenario 4 (4,000GL/5 years)	\$1,134	\$2,881	\$4,628

The first sub-table shows break-even prices in the range of \$44 to \$185 per ML per year and fall approximately within the range paid by irrigation farmers for annual charges (assuming that their water entitlements are delivered). They are also comparable with the prices paid in water markets for temporary water, except in times of severe drought where prices can be higher.

The second sub-table shows the break-even prices that might be paid for a once-off purchase of water needed over the next 20 years and ranges from \$505 per ML to \$2,123 per ML. These ranges are comparable with market prices for permanent trade of entitlements for irrigation water in 'average' years.

There are economic arguments for accepting lower discount rates and longer planning horizons for some environmental projects, for example as discussed in the Stern report on climate change. Sub-tables 3 and 4 present the results for considering net benefits in perpetuity rather than over 20 years, and for a discount rate of 4 percent (compared with Stern's 2.5 percent) in the fourth sub-table.

A number of important qualifiers must be attached to these observations.

First, to our knowledge, there have been no transactions over 20 GL in the past and VEAC recommendations involve acquiring 40 times that amount each year. There is no analysis which informs us of the likely impacts on water prices of these quantities being withdrawn from irrigation.

Second, none of the 500 GL per year of water under the Living Murray agreement has been recovered to date and only about half of it has appeared on the Eligible Measures Register. The political economy of acquiring the equivalent of up to an additional 800 GL pr year would require extensive analysis and negotiation between three State governments and the Commonwealth.

Third, while the quantities involved represent only about 7 percent of the average annual total inflows to the Murray River below Darling River (about 11,200 GL), they represent 30 percent of Victoria's 2004/05 total allocation (although the benefits of overbank flows would accrue to all three States).

Fourth, the implications for storage of the environmental water have not been addressed – the requirements of the draft VEAC recommendations represent about 40 percent of the total storage available in the system.

Fifth, the logistics of storing and delivering the quantities of water suggested will require extensive analysis of a complex system.

Sixth, any re-allocations of water in the Murray Darling Basin will need to take account of forecasts made about the effects of global warming.

Seventh, the social and economic impacts of withdrawing large quantities of water from irrigation have not been assessed. Approximately 60 percent of the benefits of VEAC's draft recommendations are enjoyed by people in Melbourne while only about 5 percent accrue to those in the study area. In contrast, most of the costs of the draft recommendations are incurred by those living in the study area.

In summary, the figures that we present should be seen as part of a pre-feasibility analysis which suggests that further work is warranted before making decisions on the allocation of water in the Murray Darling Basin.

It should be noted that the benefits of VEAC's draft recommendations considered in this analysis are only those enjoyed by Victorians. The management regimes considered will inevitably also benefit ecosystems in NSW and SA with consequent environmental benefits to people in those States. In the above analysis all costs (in terms of water) are effectively debited to Victorians. Present estimates of the extent of this 'cross-subsidisation' is that only about 60 percent of the environmental water required under the VEAC draft recommendations will flood Victorian ecosystems.

A possible source of over-estimation of both the benefits and costs of the VEAC draft recommendations is associated with the annual 500 GL Living Murray allocation and the annual 125 GL (approximately) already allocated to the Barmah Forest. Applied once in 5 years these flows would provide a maximum of 3125 GL towards flooding regimes, yet in the BCA we have ignored their possible contribution. Clearly they will need to be considered in conjunction with the VEAC draft recommendations once the flooding analyses commissioned by VEAC have been completed.

Conclusions

It is apparent from the BCA that two items dominate the analysis – the environmental benefits and assumptions made about those and the water costs and their assumptions. The other benefits and costs assessed are small in comparison with these two items.

It is generally accepted that the waters of Murray Darling system are over-allocated and most economists agree that the most efficient way of dealing with this problem and at the same time making more water available to the environment is by buying back irrigation water entitlements.

This is probably the first study of its kind which attempts to provide a guide to the economic values associated with the two main competing uses of water in the Murray Darling Basin. It shows that the draft VEAC recommendations provide significant environmental benefits that may be competitive with other uses of water.

2. Regional and Social Impacts

VEAC draft recommendations are likely to have impacts on regional economic activity in terms of output, employment and incomes. It is important to recall that while the recommendations generate substantial economic benefits as shown in the Benefit Costs Analysis, few of these benefits and most of the costs are captured in the study area.

It is also important to note that the following impact analysis only applies to the scenario where additional areas of River Red Gum forests are protected but no additional water is made available (Scenario 2). The regional impacts of diverting 2,000 or 4,000 GL every five or so years for environmental flows would be substantial in terms of irrigated agriculture and horticulture but the quantification of these effects was beyond the scope of this study.

Timber industry

The River Red Gum timber industry is estimated to contribute less than 0.1% of regional economic activity.

The estimated loss of 80% of the River Red Gum timber industry is estimated to result in a loss in annual regional economic activity in the order of:

- \$11.3 m to \$13.0 m in output;
- \$2.6 m to \$3.1 m in income;
- \$5.8 m to \$6.5 m in value-added; and
- 77 direct jobs up to 90 jobs in total (including flow-on jobs).

These represent an upper estimate of the impacts of the draft VEAC recommendations because they assume that current harvest levels can be maintained into the future. VEAC advice is that future harvest levels may be only about 30 percent of current levels (that is, a 70 percent reduction as a result of reduced forest flooding), even if restrictions were not placed on the areas available for harvest.

Apart from the direct impacts on the mills and forestry and logging, flow-on output, value-added and income effects are likely to be mainly in the forestry and logging sector; wholesale trade sector; retail trade sector; road transport sector; other repairs sector and other machinery and equipment manufacturing sector.

The direct employment effects would be felt in the timber milling sector and forestry and logging sectors. Production-induced employment impacts would occur across a range of sectors including the primary sector, manufacturing sectors, wholesale and retail trade sectors, repairs sectors, and transport sector, while consumption induced employment impacts would be felt primarily in the wholesale and retail trade sectors and services sectors.

Duck hunting

In the order of 3,950 duck hunters would potentially be affected by VEAC draft recommendations resulting in impacts of:

- \$2.4 m to \$2.8 m in output;
- \$0.5 m to \$0.6 m in income;
- \$0.9 m to \$1.1 m in value-added; and
- 17 to 19 jobs.

This is a worse case scenario because it assumes that all hunting sites in the study area are at capacity and there are no substitute sites within the region for these displaced duck hunters. However, there may be sites that are below capacity and VEAC's recommended increased environmental flooding should increase opportunities for hunting at wetlands that would not otherwise have water and support ducks. The impacts are linear and hence if it is assumed that 50% of duck hunters can be accommodated in substitute sites within the region then the impacts will be 50% of those identified above.

Impacts of reduced duck hunting for output, value-added and income effects are likely to be mainly in the retail trade sector; wholesale trade sector; fabricated metal products sector; other food products sector; petroleum and coal products manufacturing sector; accommodation, cafes and restaurants; health services sector; and road transport sector.

The main employment impacts are direct impacts in the wholesale and retail trade sectors.

Grazing

The restriction of cattle grazing in the Barmah forest would result in a reduction in up to 2,000 head in the summer term and 800 head in the winter term resulting in the following potential regional economic impacts:

- \$200,000 to \$240,000 in output;
- \$71,000 to \$83,000 in income;
- \$102,000 to \$122,000 in value-added; and
- 2 jobs.

The restriction of cattle grazing in the proposed 55,000 ha of riverside reserves and other public land would have the following regional economic impacts:

- \$1,095,000 to \$1,343,000 in output;
- \$391,000 to \$455,000 in income;
- \$558,000 to \$668,000 in value-added; and
- 12 to 14 jobs.

Flow-on impacts of cattle grazing for output, value-added and income effects are likely to be mainly in the wholesale trade sector; grains sector retail trade sector; road transport sector; services to agriculture sector; health services; legal and accounting sector.

Overall impacts of restrictions on timber harvesting, duck hunting and grazing

From a regional perspective these impacts are not large. However, some areas and towns are likely to be more directly impacted, particularly from timber industry impacts, for instance Echuca, Picola, Koondrook, Cohuna and Shepparton. The sensitivity of towns to loss of employment can be gauged from simple indicators of regional economic health such as population growth, employment growth and economic diversity.

Gannawarra SLA (Statistical Local Area used by the Australian Bureau of Statistics) which contains Cohuna and Koondrook has been experiencing population and employment decline. Losses of employment at Cohuna and Koondrook while likely to be modest would occur in a declining rural economy and declining towns.

Campaspe (S) – Echuca (SLA) which contains Echuca has been experiencing population and employment growth. Loss of employment in Echuca is likely to be larger but would be occurring in a growing rural economy.

Moir (S) West (SLA) which contains towns of Barmah, Nathalia and Picola has also been experiencing population and employment growth over time. However, Nathalia (the largest of the

three towns and the only one with readily available ABS statistics) has been experiencing population decline (likely to also be the case for Picola and Barmah). This is likely to result from “backwash” effects of growth of surrounding larger towns including Shepparton and Echuca. So loss of even a modest number of jobs across Nathalia and Picola would be occurring in declining rural towns.

Greater Shepparton City Part A is a large, diversified regional economy with growing employment and population. It is therefore likely to be resilient to loss of a modest number of jobs.

Overall the towns of Cohuna, Koondrook, Nathalia and Picola are likely to be the most sensitive to any job losses (and potential population losses).

At an individual level there are also a range of potential impacts of the loss of employment for individuals and their families including poverty and financial hardship, reduced future work opportunities, reduced participation in mainstream community life, strains in family relationships, and intergenerational welfare dependency.

APPENDIX 2: Advisory Groups: Community Reference Group, Government Contact Agencies and Indigenous Steering Committee

River Red Gum Forests Investigation Community Reference Group	
Member	Organisation
Barmah Forest Cattlemen's Association	Kelvin Trickey
Barmah Forest Preservation League	Stan Vale
Birds Australia	Euan Moore
Shire of Campaspe	Cr Neil Repacholi
Confederation of Australian Motor Sport, Victoria	Ian Cook
Country Fire Authority	Rachel Rogers
Environment Victoria	Rod Orr
Federation of Victorian Walking Clubs (VicWalk)	Steve Robertson
Four Wheel Drive Victoria	Zac Powell
Friends of Nyah Vinifera Forest	Joe Blake
Gannawarra Shire Council	Cr Neville Goulding
Goulburn Valley Environment Group	Louise Anderson
Horse Riding Clubs Association of Victoria	Debbie Warne
Mildura Shire Council	Cr Tom Crouch
Minerals Councils of Australia (Victorian Division)	Trevor Shard
Moira Shire Council	Cr David McKenzie
Murray Lower Darling Rivers Indigenous Nations	Wayne Webster
Sporting Shooters' Association of Victoria	Colin Wood
Timber Communities Australia	Faye Ashwin
Tourism Alliance, Victoria	Nicholas Hunt
Victorian Association of Forest Industries	Paul Madden
Victorian Farmers' Federation	Ian Lobban
Victorian National Parks Association	Nick Roberts
VRFish	John Corbett

River Red Gum Forests Investigation Government Contact Agencies

Aboriginal Affairs Victoria, Department for Victorian Communities

Coliban Water

Department for Water, Land & Biodiversity (South Australia)

Department of Environment & Conservation (New South Wales)

Department of Environment & Heritage (South Australia)

Department of Environment and Heritage (Commonwealth)

Department of Infrastructure Planning & Natural Resources (New South Wales)

Department of Primary Industries

Department of Sustainability & Environment (Victoria)

Goulburn Murray Rural Water

Goulburn Valley Water

Goulburn-Broken Catchment Management Authority

Grampians Wimmera Mallee Water Authority

Lower Murray Urban & Rural Water Authority

Mallee Catchment Management Authority

Murray Darling Basin Commission (Commonwealth)

North Central Catchment Management Authority

North East Water

North-East Catchment Management Authority

Parks Victoria

Regional Development Victoria, (Department of Innovation, Industry & Regional Development)

Tourism Victoria

VicForests

VicRoads

River Red Gum Forests Investigation Indigenous Steering Committee

Members*

Henry Atkinson

John (Sandy) Atkinson

Rex Harradine

Rose Kirby

Sam Morgan

Gary Murray

Bobby Nicholls

Darren Perry

Sissy Pettit-Havea

Ken Stewart

Wayne Webster (Co-Chairperson)

Victorian Environmental Assessment Council

Duncan Malcolm (Co-Chairperson)

William Glenbar (consultant)

Karen Milward (consultant)

Mel Mitchell

Paul Peake

Additional people involved

Brett Ahmat (DSE)

**Additionally, meetings have also been attended by other Indigenous community members and other guests.*

APPENDIX 3: Extract of Report on the VEAC Indigenous Community Consultation Workshops

18 May 2007

Contents

Executive Summary	2
Introduction	4
Workshop Program and Presentations.....	5
Key Findings from VEAC Indigenous Community Consultations.....	6
Awareness of Public Land Use Categories.....	6
Awareness about Options for Indigenous Involvement in Land Management.....	6
Current Involvement in Public Land Management	8
<i>What is working now</i>	<i>8</i>
<i>What could be improved</i>	<i>10</i>
Issues that need to be considered	12
<i>Participation in Planning and Decision-making.....</i>	<i>12</i>
<i>Participation in Management of Public Land.....</i>	<i>13</i>
Indigenous Biodiversity and Natural Resource Management Agency	15
What we would like to see happen.....	17
Last Word - Aboriginal Cultural Heritage	19
<i>Cultural Heritage and Aboriginal Perspectives on Land Management</i>	<i>19</i>

Acknowledgements

VEAC and the project consultants would like to thank the workshop participants for making time to attend and actively participate in the VEAC Indigenous Community Consultation Workshops convened in March 2007. Without this input, it would not have been possible to provide VEAC Councillors with first hand advice and input into how best to facilitate greater opportunities to involve Indigenous people more fully in future opportunities to participate in planning, management and decision-making of public land within the Investigation area.

We would also like to acknowledge the contribution and leadership shown by members of the VEAC Indigenous Steering Committee who have been very clear about how best to undertake each aspect of the community consultation process. Advice provided by members of this Steering Committee has greatly assisted VEAC staff and Councillors to better understand and appreciate the limitations and factors that impact on involving Indigenous people in any consultation processes.

Finally, we would like to thank VEAC staff for support they gave to the project consultants throughout the process to ensure that project was successful in achieving set outcomes. We look forward to the next consultation process where Indigenous people in the Investigation area can provide feedback about the draft proposals and recommendations made by VEAC.

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Executive Summary

Indigenous Community Consultation Workshops were arranged as part of the VEAC River Red Gum Forests Investigation to give Indigenous people a process where they could provide comments about opportunities to involve Indigenous people more fully in the planning, management and decision-making processes on public land.

It was clear that workshop participants were keen to find out more about what was involved in public land management processes. This information could then be used to assist with capacity building and economic opportunities for themselves and other Indigenous people living in communities in the study area. It was also clear that there are opportunities to build a stronger knowledge base about various operational processes undertaken by the natural resource management agencies that have prime responsibility for managing public land in the study area. This includes Catchment Management Authorities (CMAs), Parks Victoria, the Department of Primary Industry (DPI) and the Department of Sustainability and Environment (DSE) who may have individual and/or joint management responsibilities for specific public land areas.

Workshop participants confirmed that Indigenous Traditional Owner (TO) groups have an important role to play in providing advice to staff of public land management agencies. Consideration must also be given to establishing clear processes to ensure public land areas are aligned with areas claimed by TO groups. The following key points were made in relation to this issue.

- 1) There is a need to confirm which Indigenous people and groups (including TO groups) are to be involved in public land management processes.
 - a) Confirmation of which TO group has authority and responsibility to speak for specific areas needs to be undertaken via a separate process which is outside the responsibility of staff of the various government agencies. That is, there needs to be an independent process.
 - b) TO groups and other agreed Indigenous stakeholders are to have responsibility for identifying/nominating who their consultants, contractors and other representatives are.
 - c) Cross-border issues with NSW and SA Indigenous people need to be taken into account.
- 2) Traditional Owner boundaries needed to be agreed upon between each of the TO groups.
 - a) Responsibility for involvement in planning, management and decision-making for specific public land areas must be based on the boundary areas agreed to by TO groups.
 - b) Public land on/near boundaries where there was no agreement needed to involve all TO parties in the planning, management and decision-making process (where applicable).
- 3) A majority of Indigenous and TO groups who may potentially be involved or have a role in planning, management and decision-making processes of public land within the River Red Gum Forests Investigation study area do not currently:
 - a) have an effective and financially viable administrative infrastructure in place to support, manage or co-ordinate their activities; or
 - b) receive any agreed payment for time they provide to staff of government agencies when they are 'consulted' about issues on public land; or
 - c) receive any regular funds to enable members of their group to undertake or participate in any 'informed consent' processes about public land or natural resource management issues.

Comments made during workshops strongly indicate that capacity building is an important and key aspect of any approach taken to actively involve Indigenous people in any future opportunities to participate equally and more fully in planning, management and decision-making processes on public land within the investigation area. The following suggestions were made in relation to this issue.

- 4) Indigenous people and TO group representatives would like to have formal agreements in place with public land management agencies including professional development/training options, work placements, scholarships, traineeships, jobs, service contracts and consulting fees as part of the agreement process.

Access to public land areas within the River Red Gum Forests Investigation area was also raised as a key issue given that connection to country was still a very strong factor in the lives of many workshop participants. It was strongly indicated that local knowledge about water flows, flora and fauna biodiversity, and traditional Indigenous land management practices on specific pieces of public land would be a key contribution that Indigenous stakeholders could make as part of any future involvement in public land management, planning and decision-making processes.

The following suggestions were made in relation to this issue.

- 5) Indigenous people want legislative changes to allow them permanent access to public land so they can undertake 'Traditional Cultural Practices' and, where possible, for agencies to issue Indigenous people with permits for 'recreational fishing' etc at no cost – ie for free.
- 6) That information workshops be organised so Indigenous people living in the study area could gain a better understanding about the roles and responsibilities of management agencies in relation to public land areas.

Finally, it was clear that some workshop participants would like to see the Victorian government make arrangements for some public land areas within the River Red Gum Forests Investigation area to be changed into different categories where they had a more formal 'hands-on' involvement in direct management. A number of examples were raised where other State and Territory governments had actively pursued and taken action to support arrangements to work more closely with Indigenous people as part of their public land management strategies.

It is obvious that more consultation is required with each Traditional Owner group in the River Red Gum Forests Investigation area before a clearer picture can be formed about how best to approach this issue from a Victorian perspective. To this end, the following suggestions were made.

- 7) Hand-back lease-back arrangements would be an ideal outcome for most Indigenous groups, however, the creation of more co-operative management agreement type arrangements would also be welcome. If this were to occur:
 - a) Support needs to be provided by government for Indigenous and TO groups to undertake consultation processes so they can identify specific public land areas which may form part of any future hand-back lease-back or co-operative management agreement process.
 - b) A business case may need to be developed (and funded) as part of this process which includes information about the financial options and opportunities that may result under any new arrangement that is put in place.
 - c) Legislative changes will need to occur for each piece of public land where a hand-back lease-back or co-operative management agreement is put in place.
 - d) Support may also need to be provided for dispute resolution processes to occur where there are differences of opinion between and amongst Indigenous people who are part of any hand-back lease-back, co-operative management agreement or any other such processes where a financial or other benefit is likely to occur.

Introduction

The Victorian Environment Assessment Council (VEAC) engaged external independent consultants (William Glenbar and Karen Milward) to organise and conduct a series of Indigenous community consultation workshops in various locations within the River Red Gum Forests Investigation area. Where possible, neutral venues were organised in each location.

An information flyer describing the purpose, dates, locations and start/end times of the workshops was prepared and circulated to Indigenous people using the Native Title Services Victoria (NTSV) mail list. The NTSV mail list provided, in the first instance, a comprehensive contact list of Indigenous people who may be interested in attending the VEAC workshops. Public land in the River Red Gum Forests Investigation area includes land that a number of Traditional Owner Groups have expressed an interest in.

Information about the workshops was also emailed to staff of public land management agencies for them to circulate to Indigenous people in their communities who may not be on the NTSV list. Information was also emailed to departmental staff in South Australia to circulate to people in their areas who may have an interest in attending the Berri workshop or others being convened in Victoria.

**Table 1 – VEAC Indigenous Community Consultation Workshops
(by Date, Location and No. of Participants)**

Date	Location	No. Participants	Other Comments
10 March 2007	Echuca	16	Yorta Yorta Workshop
14 March 2007	Wodonga	3	
15 March 2007	Bendigo	2	
16 March 2007	Echuca	5	
17 March 2007	Swan Hill	6	
18 March 2007	Barham (NSW)	6	+ 2 other guests
18 March 2007	Deniliquin (NSW)	6	
19 March 2007	Robinvale	3	
20 March 2007	Mildura	4	
21 March 2007	Berri (SA)	9	
22 March 2007	Shepparton	7	
25 March 2007	Thornton	11	
Total No. of Participants		78 persons	

It should be noted that NTSV also convened a workshop in Bendigo on the 17th and 18th of March 2007, at which members of the North West Nations were provided with an update about the status of their native title claim. A number of participants at the VEAC workshops held that weekend confirmed that they knew of participants at the Bendigo workshop who would have attended the VEAC workshop, however, they felt that the NTSV workshop was more relevant to them at that point in time.

The purpose of this report is to provide a summary of the issues raised by participants attending these workshops. This information will be considered by VEAC Councillors when developing recommendations about how to include Indigenous people in planning, management and decision-making processes on public land which in the River Red Gum Forests Investigation area. A summary of the key points and issues raised at each workshop appears in the full report (Appendices 1 to 11).

A separate workshop was requested by and convened for members of the Yorta Yorta Nations Aboriginal Corporation (YYNAC) on 10 March 2007. This workshop was to provide input into the consultation process and specifically comments to VEAC about the Yorta Yorta Co-operative Management Agreement signed with the Victorian Government on 30 April 2004. Subsequent to the workshop in early May 2007, the Corporation indicated that comments on the Yorta Yorta Co-operative Management Agreement would not be addressed to VEAC.

Workshop program and presentations

To ensure consistency in the issues discussed, a workshop program was prepared and used at each session. At each workshop participants were provided with a copy of the following documents (see resource documents provided in Appendix 12-15):

- VEAC River Red Gum Forests Investigation – Submissions Invited brochure (October 2006)
- VEAC Resource Document 1: Indigenous Land Management Framework Discussion Paper
- VEAC Resource Document 2: Models of Indigenous Involvement in Land Management
- VEAC Resource Document 3: Views from the Community – Indigenous Issues
- VEAC Resource Document 4: VEAC Angahook-Otway Investigation Recommendation R12 – Enhancing Indigenous Involvement
- Permitted Uses and Activities in Major Public Land Use Categories handout
- River Red Gum Forests Investigation – Discussion Paper (October 2006)

Large-scale public land use maps of selected areas of the River Red Gum Forests Investigation area were also organised and displayed at each workshop. The maps provided participants with a detailed view of the public lands in and around towns where the workshops were held.

The first part of each workshop focused on providing background information including the VEAC process as well as a broad overview of public land use categories and examples of Indigenous involvement in public land planning, management and decision-making. The second part of the workshop involved gathering comments and information from participants relating to how best to create opportunities for involving Indigenous people in public land planning, management and decision-making.

Table 2 – VEAC Indigenous Community Consultations Workshop Program

Session 1 – Introduction

- Overview of the VEAC River Red Gums Investigation process
 - Consultation Timelines (Round 1 and Round 2)
 - Why we are here today and what we would like to find out from you
-

Session 2 – Public Land Use Categories

- A description of the various public land use categories in Victoria
 - Overview of the public land use categories in this area
 - Different land categories in this area
 - Who is responsible for what (DSE, DPI, Parks Victoria, etc)
 - Cultural Heritage Issues and Public Land Use Categories
-

Session 3 – Indigenous Involvement in Public Land Management (Examples)

- Current initiatives being implemented in Victoria
 - Yorta Yorta Co-operative Management Agreement
 - Heritage Act 2006 and Registered Aboriginal Parties
 - Aboriginal Land Economic Development Workshops (AAV)
 - Examples of interstate and international models
-

Session 4 – Recommendations from Indigenous stakeholders

- What involvement do you currently have in management of public land issues?
 - What is working now? What could be improved?
 - What issues you think need to be considered by VEAC?
 - What type of involvement would you like to have in relation to the public land which forms part of the River Red Gums Study Area?
 - Short term and Longer term
 - What are the critical issues that need to be considered by Government?
 - Current Issues and Future Issues (eg. Economic Development, Employment, Planning, Decision-making, etc)
 - Recommendations from workshop participants about public land in the study area
 - General recommendations about Indigenous involvement in management of public land in the investigation area
 - Recommendations about Indigenous involvement in management in specific areas of land as identified by workshop participants
-

Key Findings from VEAC Indigenous Community Consultations

Awareness of public land use categories

Participants at each workshop were provided with a copy of the “*Permitted uses and activities in major public land use categories*” information sheet prepared by VEAC. It was obvious from questions raised that access to this information proved useful in informing workshop participants about the types of issues they needed to be aware of and consider if Aboriginal people to be more pro-actively involved in public land planning, management and decision-making processes in the future.

“Can a workshop about public land administration and public land categories etc be organised so we can find out what this all means?”

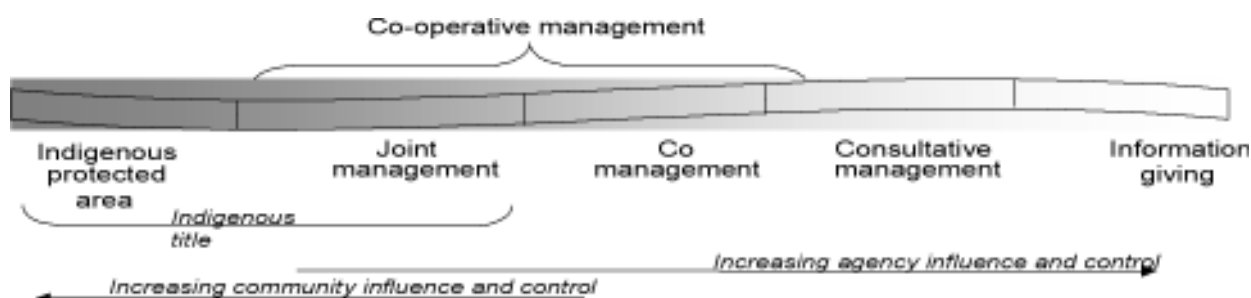
It is suggested that VEAC or staff of other relevant agencies organise and conduct a series of *Public Land Use Information Sessions* for Aboriginal people within the study area so they have an opportunity to better understand how current public land administration and management systems operate.

Awareness of options for Indigenous involvement in public land management

Session 3 of the workshops focused on providing participants with background information about how Aboriginal people in other states/territories were involved in public land planning, management and decision-making processes. Workshop participants were asked to refer to “*Resource Document No. 2 – Models of Indigenous Involvement in Land Management*” during this session so they could reference existing models of Indigenous involvement in public land planning, management and decision-making processes – using examples from Victoria and interstate.

Discussions during this session focused on “*Figure 6.2 – Current arrangements for Indigenous involvement in public land management*” with examples cited to show opportunities they may wish to pursue as part of the VEAC River Red Gum Forests Investigation process.

Figure 6.2 Current arrangements for Indigenous involvement in public land management (from VEAC River Red Gum Forests Investigation Discussion Paper, October 2006).



Source: modified after Borrini-Feyerabend (1996)

It was clear from comments made during this session at almost all workshops that most participants had little information about the mechanics involved in progressing towards a co-management or joint management arrangement for public lands in Victoria. The primary focus of many participants over the past 20 years or so appears to have been on pursuing Native Title outcomes rather than other types of arrangements which may prove more financially beneficial to them or members of their Traditional Owner groups – in the short, medium or longer term.

A high level of interest was expressed in putting in place joint management arrangements for public land areas where a ‘hand-back lease-back’ arrangement was put in place. However, it is not clear at this point in time which public land areas would be possible opportunities for hand-back lease-back arrangements in the study area.

Examples of approaches taken in the Northern Territory and Queensland were also presented at each workshop so participants could gain an insight into the various areas that needed to be considered if

they were to be involved in a similar arrangement in Victoria.

Information from the 'Table of Contents' page in the Queensland Government's *Currawinya National Park Management plan (February 2001)* document was presented at each workshop. The purpose of this approach was to provide workshop participants with an example of the type of issues that needed to be considered, from an Aboriginal perspective, if arrangements were made for them to be more actively involved in public land planning, management and decision-making processes. Topics listed in 'Section 3 Management strategies' was raised as a talking point at each workshop. This section of the *Currawinya National Park Management plan* covered the following:

3 Management strategies

3.1 Management of natural resources

- Native plants and plant community management*
- Native animals: management*
- Landscapes, soil, wetland and catchment protection*
- Weed management*
- Feral animal management*
- Fire management*
- Research and scientific values*

3.2 Management of cultural resources

- Aboriginal interests*
- Post-European heritage*

3.3 Management of recreation and tourism

- Recreational opportunities and facilities*
- Education and interpretation*
- Safety*

3.4 Park administration and management

- Infrastructure and administration*
- Resource harvesting*
- Zoning*

Topics listed in the Currawinya National Park Management plan provided participants with an opportunity to reflect on how they and members of their group could benefit from direct involvement in service contracts, employment and skills development opportunities and in the planning, management and decision-making process. Training or information sessions could be arranged for Aboriginal people who want to learn more about similar documents that exist in Victoria for each public land area so they have an opportunity to understand more fully how public land management agencies in Victoria operate.

Another example shown to workshop participants was the "*Northern Territory Parks & Conservation masterplan – summary paper (September 2005)*" published by the Northern Territory Department of Natural Resources, Environment and the Arts. Information contained in this document was raised at each workshop to provide workshop participants with another example showing how Aboriginal interests in public land planning, management and decision-making processes could also extend to a more broader definition of Natural Resource Management from a 'bio-diversity' perspective. This fitted in more closely with participants cultural perspective or views on connection to country being more about the whole of the environment not just about flora and fauna, water, minerals or timber as separate resources.

One issue of interest to workshop participants was the possibility of a 'Stewardship Payment' system for areas of high conservation value. Workshop participants expressed an interest in having a similar arrangement in place in Victoria as a means of actively involving and providing a financial base for employing Aboriginal people in public land planning, management and decision-making processes. If this option is explored, additional funding and resourcing is required for both public land management agencies and Aboriginal representative bodies.

Current involvement in public land management

What is working now

A majority of workshop participants indicated that, from their perspective, there did not appear to be anything in place at present which was working when it came to involving Aboriginal people in public land planning, management and decision-making processes.

Having said this, it appears that most workshop participants have limited awareness of other agreements being implemented in Victoria. This includes the *Wotjobaluk, Jaadwa, Jadawadjali, Wergaia and Jupagalk Native Title Settlement* under which the State Government allocated three parcels of culturally significant land totalling some 45 ha and funding of \$2.6 million over five years to meet costs associated with land management activities.

One critical issue to be considered is separating the relationship between cultural heritage issues, native title claims, arrangements reached under Indigenous Land Use Agreements (ILUA) and how Aboriginal involvement in public land planning, management and decision-making processes may work.

In 2006, the Victorian Catchment Management Council (VCMC) undertook research which focused primarily on the following key objectives:

- (i) To improve management of natural resources in Victoria;
- (ii) To present an overview of the current status of Indigenous engagement in natural resource management in Victoria; and
- (iii) To provide advice on how Indigenous engagement within the catchment management framework in Victorian can be improved.¹

Information contained in the *Conclusions* section of the report *A VCMC Position/Perspective Paper on Indigenous Engagement in Victoria* states that:

To be more effective, we need to use a broad mix of mechanisms for engagement and be genuinely committed to forming long-term relationships, which requires nurturing and persistence on both sides. Above all, government and other NRM agencies need to go beyond the rhetoric and act on their promises. This entails creating real opportunities for Indigenous people to become empowered as managers of our natural resources so that they can continue to practice their culture. Only when Indigenous policy and planning directions become a core function will we know that we have achieved our joint goal of true involvement.

In order to truly move ahead with Indigenous engagement in Victoria, VCMC advises that Victorian Government, NRM managers, and Indigenous community efforts be focused/continue to be focussed in the following areas as a matter of urgency:

- Engage with **Traditional Owners** first and foremost without excluding the broader Indigenous community.
- Encourage employees involved in NRM across whole-of-government to undertake **cultural awareness training**.
- Provide **pathways** to Indigenous people to prepare them for entering the workforce and offer a mix of employment opportunities across all levels and occupational groups.
- Provide **on-the-job training** to build the capacity of Indigenous employees and put structures/mentors in place to support and encourage Indigenous employees.
- Be an NRM **funding** conduit (particularly CMAs) for Indigenous communities and build awareness and capacity within Indigenous communities of funding programs.
- Ensure that statewide and regional Indigenous **strategies** are owned by the community and backed-up by funding to carry out on-ground projects.
- Develop/tailor **Indigenous Advisory Groups** across all regions where existing networks do not already exist.
- Work with Indigenous Nations to develop a process for coordination and exchange of **Indigenous knowledge** as part of the VCMC *Catchment Knowledge Exchange* Project.
- Establish robust **monitoring, evaluation, reporting and learning** frameworks regarding Indigenous involvement in NRM.²

¹ "A VCMC Position/Perspective Paper on Indigenous Engagement in Victoria", State of Victoria, Victorian Catchment Management Council 2006, page 6.

² "A VCMC Position/Perspective Paper on Indigenous Engagement in Victoria", State of Victoria, Victorian Catchment Management Council 2006, page 29.

Section 4 of the report “*Demystifying the Meaning of ‘Indigenous Engagement’*” stated the following:

‘Engaging’ or ‘communicating’ or ‘developing partnerships’ with Indigenous individuals and communities is intrinsic to the process of involving Indigenous communities in natural resource management. Engagement is about earning trust and gaining respect on both sides and requires honest, sensitivity and an ongoing commitment over time.”³

Administrative capacity and informed consent processes

A majority of workshop participants raised the issue of administrative capacity or lack thereof as an impediment which impacts on their ability to participate in both natural resource management and public land planning, management and decision-making processes. Most Traditional Owner groups who have an interest in public land within the study area do not receive regular or ongoing income (grants or otherwise) to have in place staff and/or a basic administrative structure to manage their interactions with government agencies.

This particular issue was also raised in the context of the Registered Aboriginal Party arrangements under the new *Aboriginal Heritage Act 2006* which come into effect on 29 May 2007. Most workshop participants expressed an expectation that they would receive funds under the new arrangements to address this issue. Their views were changed somewhat when they were advised that it is highly unlikely that AAV or the Heritage Council would be provide specific funds for this purpose.

This will be a critical issue that will need further consideration by VEAC if opportunities are to be created for Aboriginal groups to participate in both natural resource management and/or public land planning, management, planning and decision-making processes. It may be necessary to undertake a more detailed investigation into the likely options and cost implications associated with building the capacity of Aboriginal groups in this particular area.

“We need resources to undertake consultation (phone, equipment, petrol, accommodation etc). – by default people in other organisations are doing this work or it doesn’t get done.”

“We need funding to cover our ‘informed consent’ processes – perhaps an annual fee paid to each group.”

Specifically, costs associated with undertaking informed consent processes needs to be considered by all government agencies. It is possible to identify likely cost implications based on matching individual pieces of public land with a Traditional Owner group – as outlined in the *Register of Public Land Areas* concept. Further discussion between agency staff and Traditional Owner groups will, however, need to occur before this option is pursued.

In terms of costs associated with informed consent process, it may be possible to identify what the cost implications are based on a set number of informed consent processes being undertaken each year by each Traditional Owner group. Agencies could then put in place processes that merge planning, management and decision-making requirements so that informed consent processes deal with multiple issues at the same time. This approach would result in cost savings for public land management agencies and provide certainty to Traditional Owner groups that these costs will be met each year.

“Economic benefits need to overcome capacity constraints and offer additional opportunities.”

³ “A VCMC Position/Perspective Paper on Indigenous Engagement in Victoria”, State of Victoria, Victorian Catchment Management Council 2006, page 8.

What can be improved

Many workshop participants indicated that they and other people they knew had been contacted on numerous occasions by staff public land management agencies and asked to provide information, advice and feedback about a range of issues in relation to specific sites, areas or items located on public land. In most cases, Aboriginal people participating in these processes are not being paid for their time, knowledge or expertise.

“In this area (in particular) there is confusion over the appropriate Indigenous people to deal with.”

At the same time, workshop participants indicated that many agency staff did not follow well-established Aboriginal protocols in relation to who to contact from each group about specific issues. Participants indicated that this was one area where a majority of public land management agencies could improve.

Figure 1 - Current Perception about how NRM Agencies Interact with Aboriginal People



Specifically, workshop participants suggested that agencies could remedy this situation by putting in place an *Indigenous Consultant Contact Register* or similar which could be accessed by all agency staff when they wanted to interact with Aboriginal people. It was further suggested that procedures should be put in place for Traditional Owner groups and other key Indigenous people in the community to be given primary responsibility for nominating who should be placed on the register. This would ensure that Aboriginal people with appropriate cultural knowledge would be consulted as opposed to persons who may not be able to provide the ‘correct’ information required.

At the same time, it was suggested that all public land management agencies should make funds available to pay consultant fees to Aboriginal people on the Register in addition to other costs

that may be incurred during any consultation process. This would ensure that Aboriginal people who gave their time and expertise were properly compensated and/or reimbursed.

Government agencies and statutory authorities responsible for public land in North West Victoria commenced discussions and negotiations with Traditional Owners in the North West region in 2005 to negotiate a Memorandum of Understanding (MOU) document. The purpose of the MOU is to outline how members of each group would work together in the region. Figure 2 below provides an overview of the MOU document. Once agreement is reached, it is anticipated that all government agencies and Traditional Owner groups will have an agreed process in place confirming the working relationship between each group for planning, management and decision-making issues on public land.

Figure 2
Current Options being Pursued by Government Land Management Agencies in North West Victoria with Indigenous Traditional Owner (TO) Groups

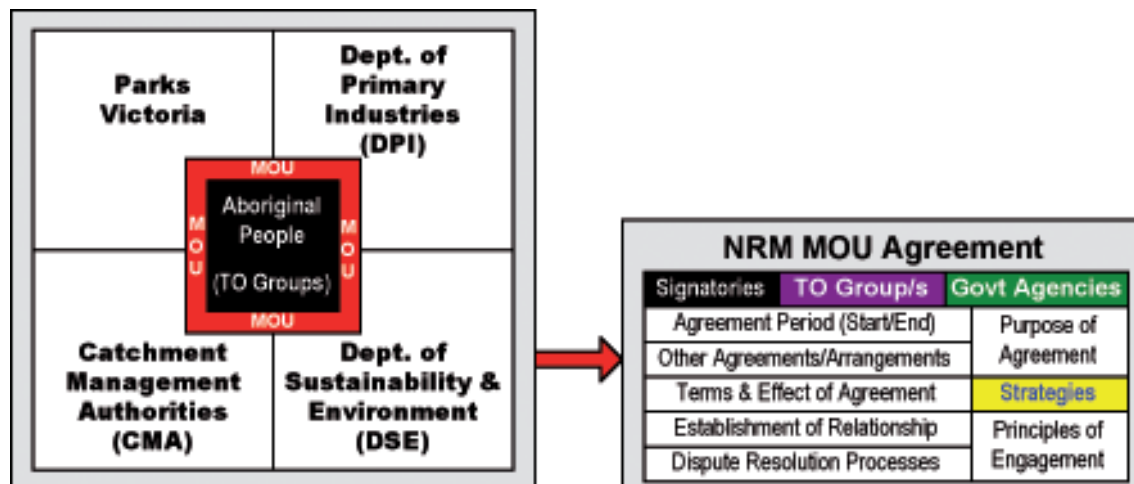
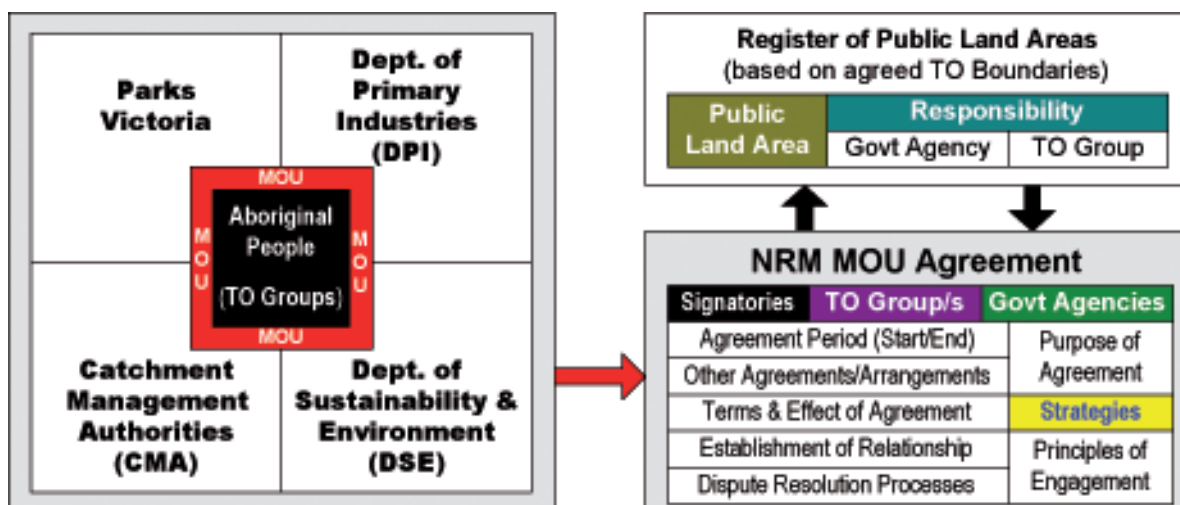


Figure 3 - Adding Another Aspect to Strengthen Proposed MOU Options currently being negotiated



There are, however, some elements missing from the current process. One element raised and explored at most workshops was the creation of a 'register of public land areas' containing the following elements:

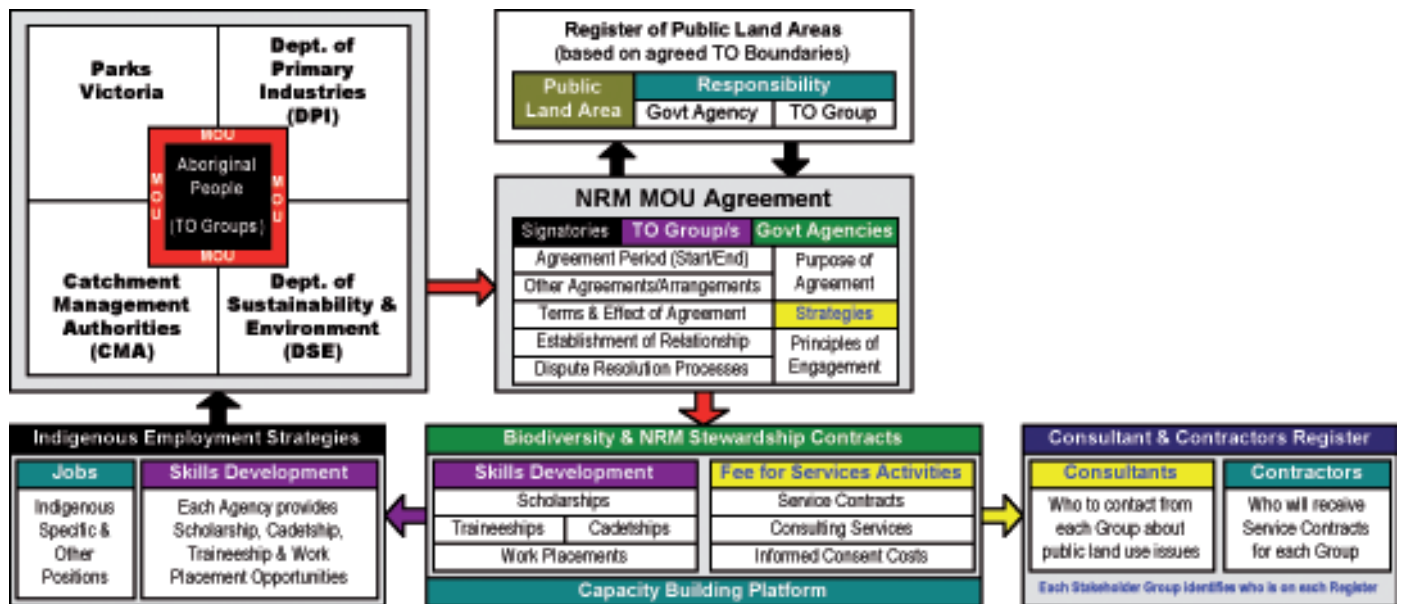
- a list of the public land areas which would be subject to the MOU process;
- a list of the government agencies who have responsibility for these area of public land; and
- a list of the Traditional Owner groups who have responsibilities for these area of public land.

The Register would confirm which Aboriginal group and/or person public land management agency staff should contact when consultation was required.

"Recognised" traditional owners have recently become more prominent, but non-traditional owners Aboriginal people are the ones with expertise, contacts, partnerships, resources and identify as custodians ("new" traditional owner groups often not turning up to meetings etc.)

At the same time, workshop participants indicated that Indigenous employment opportunities should be more clearly identified as part of any future MOU arrangement. This included existing employment and skills development opportunities within each agency as well as any self-employment options that could result form service contracts and other activities on public land. For example - contracts for feral animal or weed management; landscape, soil, wetland and catchment protection/re-vegetation; education and interpretation services (including cultural awareness training), etc.

Figure 4 - Adding More Detail to the Proposed MOU Engagement Arrangements/Processes



Some workshop participants did not agree with this type of model and did not see this as a way of providing them with greater access to public land management, decision-making or planning processes.

Issues to be considered

Participation in planning and decision-making

The “*Case Studies in Indigenous Engagement in Natural Resource Management in Australia*” report published in May 2004 by the Commonwealth Department of Environment and Heritage contained a section titled “*Attributes of Good Indigenous engagement in NRM*”. Information from this section of the report was shown to VEAC workshop participants to clarify if these comments accurately reflected those they had already made, particularly those relating to opportunities for involving Indigenous people in public land planning, management and decision-making processes in Victoria. The major areas covered include:

- Attributes of Good Indigenous engagement in NRM
- Time and Timing
- Dedicated resources
- Support for Indigenous processes
- Effective leadership
- Recognition
- Capacity building
- Indigenous diversity
- Scale- i.e. more than one Traditional Owners Country
- Complimenting social and economic objectives
- Effective and on-going communication

The report concluded:

Indigenous groups involved in the case studies remain committed to working with regional NRM structures, partly because they see benefit in the approach but mostly because this is currently their best option for regaining a voice in the management and use of their country. They remain hopeful (and watchful), but not confident that their views and aspirations will be incorporated into regional NRM management. It will be the long-term commitment to engagement and the measurement of the practical outcomes that will show any real change, not what is spent on a round of consultations for the purpose of accreditation of a regional NRM plan.⁴

Most workshop participants agreed that comments made in this report reflected views similar to their own.

⁴Smyth, D., Szabo, S., George, M., “Case Studies in Indigenous Engagement in Natural Resource Management in Australia”, May 2004, pages 17 to 22.

Participation in management of public land

Confirming who should participate

A majority of workshop participants indicated that it was important that all public land management agencies have an agreed process in place to identify who they will contact and work with in each area of public land. At the same time, the role and responsibilities of agency staff was raised as an issue, particularly in those agencies which already employ Indigenous specific positions to interact with Aboriginal people.

“Validity of “new” groups is crucial to the legitimacy and success of any agreements.”

Whilst it is possible to eventually reach agreement about which Traditional Owner group will have the responsibility for planning, management and decision-making processes, how this occurs in the first instance is critical. It was confirmed on numerous occasions during the workshops that it is not appropriate for public land agency staff to be put in a position where they have to make the decision about who will/will not be contacted in relation to these issues.

At the same time, many workshop participants agreed that members of the Traditional Owner groups needed to have agreed processes in place for dealing with this specific issue and, where disputes arose, that these processes also provided a dispute resolution mechanism or process to resolve any difference of opinion. It is not clear how this process should be administered. There may be a role for Native Title Services Victoria, the new Cultural Heritage Council or an independent body in relation to this issue. Consultation with Traditional Owner groups should be undertaken before a final decision is made.

Need to have support provided so that Traditional Owner groups can sort out who is who and assistance where there are disputes or disagreements amongst or between groups.

We would also like to participate in joint management arrangements but the government only seems to recognise the ‘Yorta Yorta’ but not other Indigenous groups.

There is also a need to consider Aboriginal people who are not part of a Traditional Owner group but who may still have an important contribution to make based on their personal and/or professional knowledge and expertise. How this fits in with existing arrangements is unclear and it may, therefore, be necessary to include this issue in any process which is put in place to create a framework for involving Aboriginal people in public land planning, management and decision-making processes.

Discussions with existing Traditional Owner groups may confirm that there are some individuals in their community who they would trust and turn to for support in this area. If this is the case, whatever processes are eventually put in place will need to accommodate these arrangements.

Another point raised by participants in relation to ‘who should participate’ was about how to be included in processes when other members of your group marginalise you and/or members of your family or group. This situation can occur within many groups for a number of reasons including:

- a lack of capacity on the part of the group to put in place effective administrative structures and processes which enable the group to keep members informed about what is happening;
- a change in leadership within the group which results in the exclusion of individual group members in internal discussion and decision-making processes;
- differences of opinion about who should/should not participate in processes combined with ‘gate-keeping’ situations where information is withheld deliberately and on a regular basis;
- a split in the group/s about who is/is not entitled to be a member resulting in factions or splinter groups being set up which are separate from but still a part of the whole group; and
- exclusion by default because individual members and families live off-country and do not have the financial capacity to regularly participate in group meetings or decision-making processes.

Another consideration impacting particularly on Aboriginal groups is who benefits financially from any employment opportunities or contract work that is forthcoming. In these situations, family members

may, for whatever reason, be given opportunities ahead of other group members who may be more skilled, experienced or knowledgeable. The challenge will be to ensure that there are transparent processes put in place which provide opportunities for all Aboriginal people to participate in and benefit from any changes implemented.

Economic development opportunities

A majority of workshop participants confirmed that economic development opportunities were an essential component of any future involvement for Indigenous people in public land planning, management and decision-making processes. Given that the River Red Gum Forests Investigation area is quite large, it may be necessary to make arrangements to undertake more focused consultation activities with representatives of each Traditional Owner group and members of the local Indigenous communities.

Aboriginal Affairs Victoria have run a series of economic development workshops in locations within the River Red Gum Forests study area, however, it may be beneficial to arrange for focused workshops with Aboriginal people who may not have had the opportunity to participate in these sessions. If possible, arrangements should be made to include public land management agency staff in the process to identify specific business opportunities to be incorporated into agreements or work contracts on public lands within the study area.

At the same time, it is worth considering how to tie in current permitted uses and activities in major public land use categories so that Aboriginal people on or near country have an opportunity to identify how their skills, knowledge and experiences can be utilised as part of any future arrangements.

"We need jobs and confirmed pathways from training positions to full-time jobs. Set up a business incubator structure to facilitate this process so people can 'task the worker' as well as receive access to support structures."

A number of workshop participants raised the issue of direct economic opportunities in resource industries, recreation or tourism activities. However, in many instances an injection of start-up funds may be required to facilitate this process. It was clear from comments made by workshop participants that opportunities could be provided which build on an existing skills and knowledge base. The challenge will be to identify how best to approach this issue taking into account existing processes as well as using these to create new employment opportunities at a local level.

Employment opportunities

Most workshop participants indicated that they were familiar with the requirements that government agencies have in place for Indigenous recruitment and employment. However, many did not know what opportunities currently exist in public land management agencies or how to find out more information or access these positions.

It was agreed by many workshop participants that scholarships, traineeships and work placements were an important access point to gaining meaningful full-time employment opportunities in their local area. It was further suggested that public land managers could do more at a local or regional level to actively promote and create a greater awareness about these opportunities in the study area.

Parks Victoria is undertaking to create more employment and career path opportunities for Indigenous people. A number of opportunities do already exist in Parks Victoria, however, a greater level of awareness could be achieved within the study area.

The Department of Primary Industries, Catchment Management Authorities and the Department of Sustainability and Environment also have similar employment and career opportunities for Indigenous people. It may be useful to consider the merits of all these agencies working more closely with each other to clearly present information to Indigenous people on what career options exist within and between agencies.

At the same time, it may also be useful for these agencies to work more closely together to identify

opportunities where 'service contracts' can be combined or streamlined to facilitate on-going or more substantial employment opportunities.

It is suggested that further discussions occur in relation to this issue so that a streamlined strategy is put in place which adds value to the opportunities of all agencies and, where possible, to identify cost savings that can occur as a result of undertaking joint- activities in the study area.

Indigenous Biodiversity and Natural Resource Management Agency

One of the ideas to evolve from comments made by some workshop participants was that of establishing an independent Indigenous Biodiversity and Natural Resource Management Agency as a vehicle for those Aboriginal groups who do not have an administrative or financial infrastructure in place. The main idea behind this concept was to explore with workshop participants key elements and tasks that may be provided by the agency if it were to be set up.

It was confirmed that Traditional Owner groups and groups with existing agreements in place would continue to have separate organisational entities to undertake work associated with Cultural Heritage and Native Title issues as well as other informed consent processes.

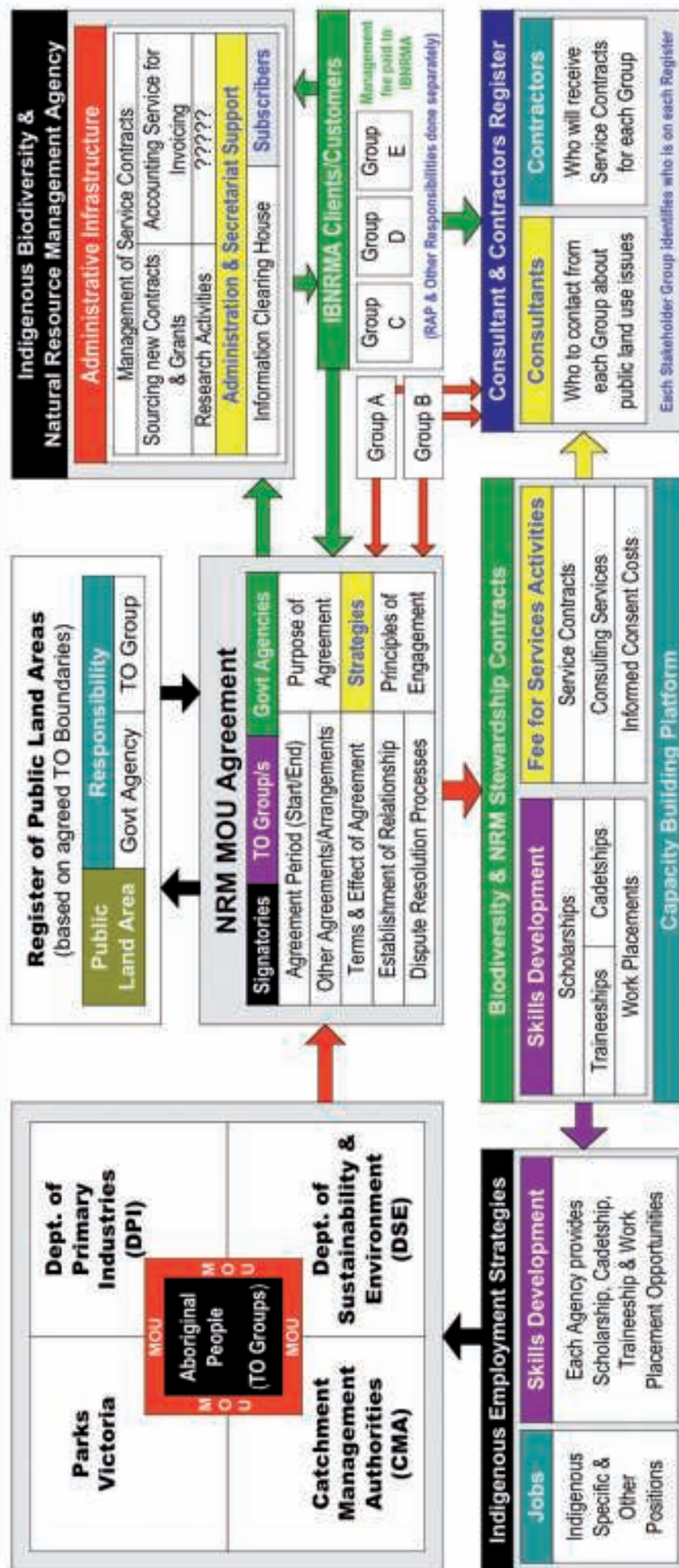
Figure 5 of this report provides an overview of the core elements of the agency. A number of workshop participants indicated that they thought there was some merit in the concept, however, a few felt that the proposed agency arrangement would not be a good idea or that more work needs to be undertaken before supporting the concept.

"We agree in principle with the model proposed and will await the next round of VEAC consultations."

"Set up an independent Land Management Agency. Vision Statement – repairing the land for the future generations and stewardship."

Most workshop participants agreed that the Register of Public Land Areas and the Consultant and Contractors Register were a good idea and should be implemented even if the agency did not proceed. They also supported the idea of having MOUs in place which were underpinned by biodiversity and stewardship contracts arrangements or similar. It was suggested that these elements would go some way towards providing more certainty about financial and employment opportunities.

Figure 5 - Framework for Involving Indigenous People in Public Land Management, Planning & Decision-making Processes



Note: This is a concept only at this point in time and is only to be interpreted as a visual summary of comments made by participants at the VEAC Indigenous Community Consultation Workshops. This model has not been discussed with government agency staff and should not, therefore, be used as a basis for any current or future models that will be set up by the Victorian Government – now or at any future time.

(Prepared by W Glenbar and K Milward)

What we would like to see happen

A majority of workshop participants expressed the view that 'hand-back lease-back' options for some of the public land within the River Red Gum Forests study area would be welcome. It was suggested that, where this does occur, the beneficiaries of these arrangements needed to be Traditional Owner groups in the first instance.

Having said this, there will obviously be a need to ensure that processes are put in place that allow for full participation and benefits to occur for all Aboriginal people who are part of these groups. The main barrier to this at the moment is that a number of Traditional Owner groups do not appear to have the capacity or processes in place to clearly identify who is/is not a member of their group – particularly where a number of their members live 'off-country'.

At the same time, it is clear that support needs to be provided to Aboriginal groups so they have the resources to undertake these internal discussions and decision-making processes for themselves in the longer term.

"We worked on the strategic plan for DSE and Parks Victoria for them but did not get paid for it."

"Lack of involvement in NRM planning processes - e.g. Fire management and participation in delivery/understanding in NRM processes (fire management and tracks not being surveyed)"

"With the fires and natural disasters they are not getting traditional owners involved. Parks Victoria and DSE in the North East in particular. As soon as a fire is declared safe they need to get the traditional owners in there immediately to do the survey work."

In some locations it was obvious that Aboriginal groups were frustrated at the inability of agency staff to include them in local planning, management and decision-making processes. The issue of fire responses was raised at a number of workshops as something to be addressed by DSE. Some workshop participants also mentioned examples of good practice, but these were generally outside their regions.

There were a number of positive ideas raised by workshop participants. It is suggested that public land management agencies be encouraged to conduct regular information sessions with Aboriginal groups in their regions as part of an ongoing capacity building for future increased levels of involvement in planning, management and decision-making process. Information gathered in these sessions could then be incorporated into agency 'action plans'.

Specific issues raised include the following:

- A general lack of information about public land management and a need for more interpretation signage and consultations with all government bodies, information about local land administration, who manages each area of public land, community assistance or workshops to find out more about public land administration and public land categories. This also needs to reach Aboriginal people in remote areas.
- Some groups have put various land management proposals to government agencies and received mostly no response, while others have had no interaction with public land managers. More partnerships with government were promoted (working within existing frameworks).
- For effective Indigenous participation there is a need to over-ride state borders as these are political constructs and have little to do with Indigenous and natural resource management objectives (cross border issues). Governments in NSW and Victoria need to consider and look at region as one River (Murray). Any cross border issues need to be negotiated and agreed to by all stakeholders.
- A need to educate Aboriginal kids in primary school first about their culture. Resources like the internet connected, laptops and printers to do assignments are important.
- A need to look at the bigger global picture to make sure something is left for the children, Traditional owners and other Indigenous groups to sign up to agreements all the time. "If we want to do something to the land we have to put something back so there is something left to do on the land".
- Local and regional employment strategies – DSE facilitators need to come out and meeting with

Traditional Owners to discuss the employment strategies and professional development opportunities so we fully understand and know about it.

- More employment opportunities should be provided in government departments and agencies and local mob preferred for jobs rather than Aboriginal people who are not involved in community or who don't have local knowledge.
- Employ on a contract basis local Aboriginal people who are keen and have local knowledge and then give them the right training, support and skills. Some workshop participants wanted this to be negotiated with Traditional Owners only. A register can be established of people that want to provide a service e.g. consultant and contractors register. Establish scholarships, traineeships and a career path. Training for on-ground works (chain saw, chemical use and 4 WD etc.) or hands on involvement in management tasks. Aboriginal controlled training facilities should be supported to establish skills training for land management
- Service Contracts between government agencies and Traditional Owner groups is a good idea. These could include a payment for a set number of hours of consultation each year. This would provide an income source to support Aboriginal community participation.
- If you do cultural work they should be getting paid for their time and expertise (e.g. professionals such as archaeologists). For example Aboriginal people involved in cultural heritage assessment processes (e.g. assessment of logging coups) have not received payment or re-imbursement for participation costs or expert knowledge and time provided to the land manager. In other places public land managers haven't consulted Aboriginal people and will not have the cultural knowledge to know if these areas are sensitive (i.e. scarred or birthing trees).
- Funding and resourcing are needed for government meetings, elders meetings and administration, informed consent etc for involvement in public land management. Community engagement – think about as part of the negotiation process. Indigenous peoples participation in government processes is restricted due to the low socio-economic situation. Participation in planning and decision-making processes would be improved if costs and expenses are covered.
- Need to have support provided so that Traditional Owner groups can sort out who is who and assistance where there are disputes or disagreements amongst or between groups. Funds are required for administrative support, as there is no capacity to do this currently. Those groups that are receiving government support are much better placed to participate.
- Government agencies should not negotiate with just one person from a clan or tribal group as a short cut–negotiations and meeting should be with all Traditional Owner group members.
- A need for Aboriginal people to share knowledge and the workload. There currently exists a range of specialist knowledge and expertise. Funding is needed to allow the time and women with young children to undertake the study and the training required to actively and effectively participate in public land and resource management.
- Intellectual property rights and dispute resolution need to be included – secured and protected if Traditional Owners are to participate in public land planning and decision-making.
- A need to get consent with the registered parties for any agreements that have cultural sensitivity.
- Greater focus should be given to water as this system provides the fabric for communities and environmental connections. Aboriginal people in the study area are interested in environmental flows and use of water by industry and would like more transparency in these arrangements. There were many problems described with the health of the river including salinity and the system is being poisoned.
- Senior Management needs to do their homework first and change their policies and vision statements at the top level. There needs to be a reporting mechanism to measure what needs to be achieved. This is also reflected in inconsistencies between public land management agencies and different offices operational practices. They have to be trained and there must be repercussions in place if policies or agreements are not implemented or followed.
- Need access to resources for cultural practices and artefacts e.g. making boomerangs, stone tools and potential for business enterprises such as highly specialised cottage industries with high value add. Its not just about scarred trees, artefacts, weed and pest control. It is also about bush tucker access and traditional hunting and gathering rights in all public land including parks.
- Indigenous groups to receive a percentage of revenue from activities on public land (e.g. timber industry).

Last word - Aboriginal cultural heritage

Almost all Aboriginal people consulted were aware of the *Aboriginal Heritage Act 2006*, the role of the Aboriginal Heritage Council and the process for becoming a Registered Aboriginal Party under the Act. Participants at the VEAC workshops were advised that Aboriginal Cultural Heritage issues were not within the scope of the VEAC River Red Gum Forests Investigation and were to be dealt with separately by the Aboriginal Heritage Council and Aboriginal Affairs Victoria.

A number of participants attending the VEAC workshops indicated that they had attended one of the information workshops convened by Aboriginal Affairs Victoria about the new arrangements under the *Aboriginal Heritage Act 2006*, however, there appeared to be some confusion about what the financial arrangements will be under the new system. Where questions about this specific issue were raised, the consultants advised workshop participants to make contact with the Aboriginal Heritage Council and/or Aboriginal Affairs Victoria to seek clarification about issues raised.

Those members that went to the AAV workshops found it very interesting and that the processes haven't really changed over the years.

How will the AAV Heritage Act work in with VEAC's process when it comes into place in May 2007?

Cultural heritage and Aboriginal perspectives on land management

A number of workshop participants indicated quite strongly that it was difficult to separate Aboriginal cultural heritage values from land management, planning and decision-making processes. The main reason was that decisions about land management were inter-related with Aboriginal cultural practices, lifestyles and seasonal cycles - which still exist today.

It was confirmed that spiritual connections with country were still quite strong, even where people lived off-country. Access to specific sites within public land areas was seen as under-pinning Aboriginal identity and expression. The connection with Aboriginal cultural heritage sites on public and private lands remains a prime goal of many Aboriginal people – particularly those within the boundaries of the River Red Gum Forests study area.

A number of stories were told at the VEAC workshops about the importance and inter-relationship of Aboriginal cultural heritage and land management practices. The issue of biodiversity was raised on a number of occasions as this was seen as critical to understanding the relationship and connection with Aboriginal cultural values, environmental practices and environmental health.

"There are issues with the Red Gums needing to survive as they are being used for firewood. They are cut to the stumps and just left there. This needs to be repaired too in the context of biodiversity."

"Big interest in the environmental flows – end of the river and the problems with salinity and now its building up and poisoning the system. Pumping in environmental flows in one area and then for other areas. They are robbing the river system and robbing it of the Murray cods."

At the same time, a number of workshop participants raised the issue of cultural practices being an important issue today and that cultural heritage was not something that only exists from a historical or archaeological perspective.

"Cultural practices on country, particularly in national parks; we need continued access for hunting rights and traditional foods."

A majority of workshop participants would like to see arrangements put in place where Aboriginal people can have access to areas on public land so they can continue with their cultural practices. If this occurs, it was suggested that an *Aboriginal Cultural Practices Permit System* or similar be put in place to monitor who is accessing and using resources on public land. Whilst it was not clear how this system should operate, it was suggested that representatives of Traditional Owner groups should have some authority to vet and approve permit applications which relate to public land areas where they are acknowledged as the custodians.

For this to occur, legislative and regulatory changes need to occur, where appropriate, so the issue of Aboriginal cultural practices is embedded in the policies and procedures of agencies with responsibility for planning, management and decision-making on public land areas.

APPENDIX 4: Submissions received in response to the Notice of Investigation and Discussion Paper

The following tables list the organisations and individuals that made submissions in response to the Notice of Investigation (Sub. Period No. 1) or the Discussion Paper (Sub. Period No. 2), and their submission numbers.

Organisation	Contact	Sub. Period No.	
		1	2
Arbuthnot Sawmills	Mr Paul Madden	271	1132
Archard Laser & Hydraulics		41	
Arnold Bloch Leibler	Mr Peter Seidel		655
Australian Conservation Foundation	Dr Arlene Buchan; Mr Lindsay Hesketh; Mr Matt Ruchel	44	557
Australian Motorcycle Trail Riders Association	Mr Peter Ellard	3	
Bangerang Cultural Centre Co-operative Ltd	Mr Kevin Atkinson		415
Barham Koondrook Garden Club	Ms Lyn Smith	503	
Barham Koondrook Historical Society	Ms Rhonda Frankling	544	
Barham Progress Association Inc	Ms Joy Eagle	15	
Barmah Forest Cattlemen's Association Inc	Mr Kelvin Trickey	364	349
Barmah Forest Preservation League	Mr Stan Vale; Mr Peter Newman	404	830
Bayside Reconciliation Group	Mr Ken Blackman		327
Benalla District Environment Group	Ms Christine Holmes; Ms Kate Stothers	98	460
Bird Observers Club of Australia	Mr Richard Hunter		508
Bird Observers Club of Australia, Murray-Goulburn Branch	Mr Gary Deayton	339	
Birds Australia, Victorian Regional Group	Mr Euan Moore	13	480
Bush Users Group, Indigo Region	Ms Win Morgan	384	
Bush Users Group Victoria Inc	Mr Bob Richardson	373	
Central Murray Apiaries	Mr Peter Pigdon	14	
Central Murray Regional Waste Management Group	Ms Karen Fazzani		1358
Central Victorian Apiarists Association	Mr Rodney Gell		166
Coalition Against Duck Shooting	Ms Lynn Trakell		292
Cohuna & District Progress Association Inc	Mr Greg Peace	526	
Cohuna Joinery & Building Supplies	Mr Alan Fletcher	177	
Cohuna Trail Riding Club	Ms Audrey Dickins; Ms Sandra Basile	81	259
Cohuna Uniting Church Shared Ministry Team	M- & M- L. & H. Radley	541	
Confederation of Australian Motor Sport, Victoria	Mr Gary Grant	523	
Conservation Council of South Australia	Mr Peter Owen	200	
Construction Material Processors' Association	Mr Grant Phillips; Ms Sarah Andrew	454	627
Country Fire Authority, Headquarters	Mr Neil Bibby		414
Cross Campus Indigenous Solidarity Network (CCISN)	Mr Liam Neame		617
Dandenong Valley Bushwalking club Inc	Mr John Freeman		256
Daylesford Anglers Club	Mr Dale Whitehouse	524	
Department for Victorian Communities, Aboriginal Affairs Victoria	Ms Joy Elley		159
Department of Agriculture Fisheries and Forestry	Mr Tony Bartlett		246
Department of Infrastructure	Mr John Robinson	170	
Department of Primary Industries, Melbourne	Mr Ross Garsden, Mr Richard Bolt		446
Echuca Moama Triathlon Club	Mr Mark Wight		314
Ecosurveys Pty Ltd	Mr Rick Webster	95	
Environment Defenders' Office	Mr Brendan Sydes		464
Environment Victoria Inc	Ms Sue Phillips; Ms Juliet Le Feuvre	432	463

Organisation	Contact	Sub. Period No.	
		1	2
Environmental Farmers Network	Mr John Pettigrew		136
Federation of Victorian Walking Clubs (VicWalk) Inc	Mr Steve Robertson	391	56
Field & Game Australia Inc	Mr Rod Drew	456	
Forest Action Trust	Ms Lauren Caulfield	428	
Four Wheel Drive Victoria	Mr Barry Chare	460	
Friends of Nyah-Vinifera Forest Inc	Mr John O'Bree	434	629
Friends of Otway National Park	Ms Margaret MacDonald		237
Friends of the Box-Ironbark Forests, Mount Alexander Region	Mr Bernard Slattery	340	
Friends of the Earth	Mr Jonathon La Nauze	261	625
Gannawarra Shire Council	Mr Des Bilske; Ms Rebecca Roesler	525	304
Geelong Environment Council Inc	Ms Joan Lindros		478
Goldfields Honey	Ms & Mr Marie & Colin Murley		402
Gondwana Canoe Hire Pty Ltd	Ms Lyn O'Brien	267	245
Goulburn Broken Catchment Management Authority	Mr Bill O'Kane; Mr Tim Barlow	366	276
Goulburn Murray Water	Mr Pat Feehan		305
Goulburn Valley 4WD Club	Mr Dallas Rundle		174
Goulburn Valley Environment Group	Dr Doug Robinson	199	621
Goulburn Valley Regional Waste Management	Mr Nicholas Nagle		540
Greater Shepparton City Council	Mr Greg McKenzie		518
Gunbower Island State Forest Users Group	Ms Audrey Dickins		248
Happy Horses Hoofcare	Ms Audrey Dickins	82	
Hodgeson House	Mr & Ms Allen & Anne Perry		106
Institute of Foresters of Australia	Mr Ross Penny	398	
Institute of Foresters of Australia, Victorian Division	Mr Gary Featherston		484
IUCN World Commission on Protected Areas	Ms Penelope Figgis		261
J. & G. Coulter Pty Ltd	Ms Jeanette Coulter	389	
The Jewish Ecological Coalition	Ms Rosemary Cowen		533
Kerang & District Assembly of God Church Inc	Ps Allan Jakobi	70	
Kerang Environment Study Centre	Mr George Hardwick	537	
Kingston Conservation & Environment Coalition Inc	Mr Bill Hampel	310	
Kyabram Field and Game	Mr Graham Jamison	399	
Lakes and Craters Environment Group	Ms Jennette Lambell		404
Latrobe University, Bendigo	Ms Deidre Slattery		521
Leitchville Bunyip Sporting Club	M- L.J. Taylor	362	
Lower Murray Water Authority	Mr Ron Leamon; Mr Owen Russell		441
Mallee Catchment Management Authority	Mr Trent Wallis; Ms Joan Burns	435	443
Melbourne Bushwalkers Inc	Mr Rod Novak	358	
Mid Murray Landcare Network	Mr David Ellemor	57	
Mid Northern Association of Angling Clubs Inc	Mr Rob Loats	54	477
Mid-Murray Field Naturalists Inc	Mr Neil Macfarlane		457
Mildura Campus, La Trobe University	Mr Geoffrey Brown		1351
Mildura Rural City Council	Mr Phil Pearce	506	
Mildura Tourism Inc	Ms Dani Harvey		598
Minerals Council of Australia, Victorian Division	Mr Chris Fraser	314	1324
Minister for Aboriginal Affairs	The Honourable Gavin Jennings MLC	79	
Moira Shire	Ms Jane Visser		286
Monash Indigenous Solidarity Collective	Mr Giles Bray		624

Organisation	Contact	Sub. Period No.	
		1	2
Monash Student Association	Mr Robin Hannigan		725
Moser and Hinks, Apiarists	Mr Philip Moser; Mr David Hinks		405
Murrabit Advancement Association Inc	Mr Stephen O'Donoghue	505	511
Murrabit Riding Club Inc	Ms Jeanette Coulter	388	486
Murray Darling Association Inc	Mr Adrian Wells; Mr Damien Hientze	19	228
Murray Lower Darling Rivers Indigenous Nations	Mr Steven Ross	431	615
Murray River Councils of North Central Victoria	Ms Katrina Tehan		972
Murray River Horse Trails	Mr & Ms Graeme & Debbie Padget & Jackson	216	434
The Myer Foundation	Ms Christine Fraser; Mr Carrillo Gantner	430	528
Nathalia Fire Brigades Group	Mr Phil Hawkey	85	
Nathalia Wildflower Group	Ms Joan Harding		416
National Parks Association of New South Wales	Ms Jacquie Kelly; Mr Andrew Cox	421	542
National Parks Australia Council Inc	Ms Anne Reeves		642
Native Title Services Victoria Ltd	Dr Mark Brett		597
Nature Conservation Council of New South Wales	Ms Madeline Hourihan	169	
Nillumbik Reconciliation Group	Ms Jan Aitken		383
Nillumbik Shire Council	Mr Dominique Pomeroy		1352
North Central Catchment Management Authority	Mr Gavin Hanlon; Ms Jennifer Alexander	439	553
North East Catchment Management Authority	Mr John Riddiford		445
North East Victorian Firewood Strategy Implementation Community Reference Group	Ms Greta Quinliven		455
North-Eastern Apiarists' Association	Ms Elwyne Papworth	474	
Parklands Albury Wodonga	Mr Ben Berry		410
Parks Victoria	Mr Brian Doolan		465
Pax Christi Australia	Mr Michael Henry		652
Peregrine Club	Ms Ruth Glare		291
Plantations North East Incorporated	Mr Bernard Young	443	546
Polperro Dolphin Swims Pty Ltd	Ms Judith Muir		15
Prospectors & Miners Association of Victoria	Ms Rita Bentley	319	
Redgum Timber Producers (Australia)	Mr Ron Sharples		311
Regeneration Solutions Pty Ltd	Mr Ian Davidson		104
Right Angles Consulting Pty Ltd	Dr Kathy Lacey		14
River Country Adventours	Mr Rob Asplin	74	
River Redgum Furniture	Mr & Mr Dean & Wayne Attwell & Hall	370	
Ryan & McNulty Sawmills	Mr Greg McNulty	313	317
Shepparton Adult Riding Club	Mr Chris Flynn	392	
Shepparton Field & Game	Mr David Moore		355
Shepparton Irrigation Region Implementation Committee (Goulburn Broken Catchment Management Authority)	Mr Peter Gibson; Mr Ken Sampson		244
Shepparton Region Reconciliation Group			312
Shire of Campaspe	Mr Wayne Harvey	365	
Shire of Campaspe	Cr Judi Lawler		420
Sporting Shooters' Association of Australia (Vic) Ltd	Mr Philip Brown	320	
St James-Devenish Branch VFF Incorporating Broken Boosey Landholders Group	Ms Kathy Beattie	381	

Organisation	Contact	Sub. Period No.	
		1	2
Sunraysia Apiarists' Association	Mr Trevor Monson		487
Sunraysia Bird Observers' Club	Ms Pauline Bartels; Mr Barrie Mac Millian	181	350
Sunraysia Mallee Economic Development Board	Mr Andrew Millen		609
Surveyor-General Victoria	Mr David Boyle	24	
Swan Hill Rural City Council	Cr Bruce Jones; Mr Ian Couper	348	1255
Threatened Ecosystems Network	Mr Ray Maino		151
The Timber Benders	Ms Sue Ewart	419	
Timber Communities Australia, Central Murray Red Gum Branch	Ms Faye Ashwin	322	296
Timber Communities Australia, Mid Murray Redgum Branch	Mr Ray Hill	180	297
Timber Communities Australia, Victorian State Office	Mr Scott Gentle		285
Tourism Alliance Victoria Limited	Mr Nicholas Hunt		403
Tourism Victoria	Mr Sean Daugherty		10
Trust For Nature (Victoria)	Dr Chris Williams	385	616
Trust for Nature (Victoria), North Central Region	Mr Tim Read		541
Victorian Apiarists' Association	Mr Linton Briggs		309
Victorian Association of Forest Industries	Mr Pat Wilson; Ms Tricia Caswell	471	375
Victorian Association of Forest Industries, Red Gum Division	Mr Paul Madden		86
Victorian Catchment Management Council	Ms Patricia Geraghty		295
Victorian Farmers Federation	Mr Simon Ramsay		290
Victorian Farmers Federation, Nathalia Picola Branch	Mr Tom Tinkler	344	430
Victorian Forest Health Advisory Committee	Mr Ian Smith	451	
Victorian National Parks Association	Mr Nick Roberts	311	527
Victorian Piscatorial Council Inc	Mr George Hardwick	217	
VRFish	Mr John Corbett		552
Wangaratta Rural City Council	Ms Karen Jones	472	503
Wangaratta Urban Landcare Group	Ms Helen Curtis	16	
Waterkeepers Australia	Mr Greg Hunt	120	
The Wilderness Society Inc	Mr Richard Hughes		604
Wildlife Profiles	Mr Peter Robertson	4	
Yalca-Yielima Rural Fire Brigade		407	630
Yarrawonga and Mulwala Tourism Inc	Dr John Charles		160
Yielima Graziers Association	Mr Frank Mannion		826
Yorta Yorta Nation Aboriginal Corporation	Ms Monica Morgan; Mr Henry Atkinson	450	263

Name	Sub. Period No.		Name	Sub. Period No.	
	1	2		1	2
Mr Kevin Abbot		54	Dr Chris Atmore		373
Ms Leyla Acaroglu		807	M- J. Augello	84	
Mr Henry James Achert		451	Ms Jay Ayerson		825
Mr Chris Adams		774	M- Neylan Aykut	445	
Mr Ian Adams	436		Ms Janet Bachsinar		719
Mr Mark Adams		808	Mr Andrew Bailey		755
Mr Matt Addison		809	Mr Brian Bainbridge		520
Mr Michael Adler		198	Assoc Prof John R. Baird		150
Ms Anne-lise Ah-fat		810	Mr Max Baker		543
Mr James Ahern		811	Mr & Mrs Max & Belinda Baker	520	
Mr Leigh Ahern	134	205	Mr Seamus Balkin		635
M- Zane Alcorn		812	Mr Richie Ball		827
Ms Jennifer Alden		623	Ms Jillian Bambach		394
Mr Ben Aldrige		473	Mr Leon Bannister		828
Mr Gabrielle Alexander		461	Mr Adam Barber		1307
Ms Karen Alexander		550	Ms Sarah Barber		324
Mr Robert Alexander		665	Ms Jennie Barnes		663
Ms Liz Allan		813	Mr David Barnett		599
Ms Jane Allardice		814	Ms Jenny Barnett		532
M- Chris Allen	420		Ms Phoebe Barton		1308
Ms Siobhan Allen		815	M- & M- J. & L. Bartram	176	
Ms Amanda Allen-Toland		816	Mr Graeme Barwick		425
Ms Margaret Ambrose		360	Mr John Bat	78	42
Mr Anthony Amis		793	Mr Tony Bates		829
Ms Esther Anatolitis		817	Mr Damian Bateson		831
Mr Ian Anderson		278	Ms Carmen Batson		1347
Ms Louise Anderson		428	Ms Beth Batt	350	
Ms Meg Anderson		124	Mr Matt Batten	467	
Mr Mervyn Anderson		247	M- Edan Baxter		834
Mr Tim Anderson		1304	Ms Jade Baxter		833
Ms Kathy Andison		715	M- M.L. Baxter	349	
Mr Andrew Apostola		818	Mr Tom Baxter		832
M- Takashige Arai		819	Ms Vica Bayley		835
Mr Alex Arbuthnot		545	Ms Shoshanna Beale		1309
Ms Nellie Arbuthnot		506	Mr Daniel Beard		836
Mr Aaron Archer		820	Ms Cherie Beaton		837
Mr David Archer		437	Mr Darren Beattie	542	
Mr Ben Ardley		821	M- S. Beattie		592
Ms Juliet Armatolos		1305	Dr John Beaumont		582
Mr & Mrs Ron & Margaret Armstrong	130		Ms Asha Bec		838
Ms Inge Arnold		1306	M- Jecs Beckaling		839
M- P. Arrien		227	Mr Rod Beckam		840
Ms Fairlie Arthur		492	Ms Fran Begley		841
Ms Lyndall Ash	208	468	Mr Robert Bekke		842
Mrs M.E. Ash	547		Mr Peter Belgrave		768
Mr Roger Ashburner	466	469	Mr Ian Bell		843
Mr Terry Ashton		148	Ms Julie Bell		141
Ms Faye Ashwin	455		Ms Lisa Belleas		844
M- A. Ata		822	Ms Helen Bennett		548
Ms Amy Atkinson		670	M- Ollie Bennett		845
Ms Gabrielle Atkinson		823	Mr John Bentley	202	626
Dr Wayne Atkinson	168	824	Mr Paul Bentley		846

Name	Sub. Period No.		Name	Sub. Period No.	
	1	2		1	2
Mr R. Berbling		424	M- O., S., E. & D. Brew	336	
M- E. Bergmeier	299		Mr Roy Brew		502
Mr Per Bernard		179	Mr Tim Briedi		859
Mr Geoff Berry	77	522	Ms Belinda Briggs		685
Ms Linda Bester	437		Mr & Ms Darren & Margie Briggs	63	
Mr J.W. Beveridge		381	Ms Hazel Brimley		718
Mr David Beyer	441		Ms Sue Brink		122
Ms Julia Bielak	107		Ms Melanie Brint		860
Ms Kitty Billings		215	Mr John Brissett	112	
Ms Laura Billings	263		Ms Jeanne Brit		118
Ms Deanne Bird	111		Ms Diane Brodie		861
Ms Penny Bissett		745	Mr William Broen	298	
Ms Christene Blair		847	Dr Andrew Brookes		634
Ms Beryl Blake		362	Ms Jane Brookes		633
Mr Joe Blake		628	Ms Nola Brooks		862
Ms Shelley Blake		848	Mr & Mrs Robert & Beverly Brooks		586
Ms Debbie Blakeney		11	Ms Tara Brooks		863
Ms Sylvia Blegg		449	M- D. Brown	192	
Ms Sieglinde Bleichredt		849	M- E.S. Brown	193	
Ms Mackenzie Bock		850	Mr Gus Brown		864
Ms Melinda Bock		851	Ms Lucy Brown		865
Mr Jopie Bodegraven		57	M- M.E. Brown	190	
Ms Rhiannon Bogaert	240		M- P.J. Brown	189	
Ms Nicole Boldt		761	Mr Phillip Brown		614
Ms Annie Bolitho	429		Mr & Mrs Robert & Dorothy Brown	453	
Mr Frank Bolton	6	16	Mr Stanley Brown	191	74
Mrs Eleanor Bolza	39	572	M- V. Brown	194	
Ms Mara Bonacci		326	Mr John Browning		866
Mr Jason Bond		852	Messrs Terry & Jerry Browning	380	
Mr Andrew Booth		639	Ms Jenny Bruce		77
Ms Katherine Booth		853	Ms Carolyn Brush		867
Mr Michael Boothby		45	Ms Penelope Brussen		701
Ms Annette Borchard		3	Mr David Bryan		279
Mr Graham Borrell		269	Ms Christy Bryar		868
Mr Darcy Botterill	382		Ms Danya Bryx		1311
M- & M- Greg & Kathleen Botterill	461		Mr Dylan Buckee		869
Ms Laura Botterill	383		Ms Melissa Buckely		764
Mr Mark Boulet	75		Ms Ann Buik	55	
Ms Monique Bouma		855	Mr Tony Buiu	246	
Ms Yvette Bouma		854	Ms Erin Bulleur		870
Mr James Bouchier		171	Mr Paul Bullock		871
Mr Phil Bourne		782	Mr Ben Burdett		872
Mr John Bowen	94		Ms Kerry Burgess		48
Ms Robin Bowen		17	Ms Anna Burggraaff		873
Mr Alexander Bowles		38	Ms Millicent Burke		874
Ms Lisa Bowring		856	Ms Val Burke		512
Mr Geoff Bradbury		348	Ms Virginia Burns		266
Ms Cara Bramich	136		Ms Georgie Burns-Williamson	377	
Ms Anne Bray		549	Ms Suzanne Burris		1085
Ms Tresa Breeze		857	M- A.B. Burtchell		99
Ms Edwina Breitzke	30		Ms Sallie Burton		570
Mr Elliot Brennan		858	Mr Andrew Butcher	253	

Name	Sub. Period No.		Name	Sub. Period No.	
	1	2		1	2
Ms Sophie Butcher	251		Ms Mary Cilli	418	
Ms Dorothy Button		682	M- Olaf Ciolek		281
Ms Marion Byass		534	Ms Holly Clark		890
Ms Rosalind Byass		499	Ms Barbara Clarke		891
Ms Penny Byrne	368		Ms Barbary Clarke	390	
Ms Stephanie Cahalan		875	Mr Chris Clarke		92
Mr Bruce Calder	530		Mr John Cleary		892
Mrs Gwen Calder	521		Ms Nicole Cleary	236	
Mr Brad Caldwell	369	554	Mr & Mrs Craig & Andrea Cleave	546	
Mr David Caldwell		729	Ms Adrienne Cleaver		893
Ms Helen Caldwell	393	555	Ms Debbie Clemson		306
Ms Julie Caldwell		112	Mr Paul Clift		726
Mr Pierre Call	417		Ms Megan Clinton		894
Ms Beth Cameron		877	Ms Rachel Close		337
Mr John Cameron	26		Mr Brian Coffey		799
Ms Karri Cameron		876	Mr Nicholas Coleman		896
Mr & Mrs Douglas & Joan Campbell	376		Mr Oliver Coleman		895
Mr Joseph Campbell		878	Mr Steve Collett	491	
Mr Loki Campbell Type		316	Ms Nina Collins		374
Ms Gemma Candy		562	Ms Sally Collins		673
Ms Kate Canny		879	Mr Tim Collins		1312
M- Loki Carbis		684	Mrs E.M. Colman	528	
Mr Joanna Carr		746	Ms Joanne Colosimo		240
Ms Anne Carroll		560	Mr Gareth Coming		897
Mr Anthony Carroll	214	435	Ms Helen Conaglen		900
Ms Judith Carstens		881	Mr Paul Conaglen		899
Ms Melissa Carstens		880	M- V. Conaglen		898
Mr Andrew Carter		882	Mr Michael Condon		714
Mr Ivan Carter		31	Ms Christine Connelly		901
Ms Lisa Carter	515		Mr Michael Connors		393
Mr Brendan Casey		185	M- Gabrielle Conroy		902
Ms Elly Cashmore		4	Ms Browyn Cook		517
Ms Tricia Caswell		117	Ms Elizabeth Cook	301	
Mr Joel Catchlove		883	Ms Cathy Coote		384
Ms Lauren Caulfield		884	M- E. Coppings	414	
Mr & Mrs John & Barbara Caven	329		Ms Georgie Coram		903
Mr Michael Cebon		51	Ms Judy Coram		905
Mr Mark Ceff		885	Ms Pippa Coram		904
M- J. Chalmers	534		Ms Rleena Cordes	531	
Mr Luke Chamberlain	187	165	Mr Walter Cordes	363	
Mr Graeme Chapman		24	Mr David Corke	510	
Ms Emily Chauvel		886	Ms Tarryn Corkery-Lavender	219	
M- Del Chessell		648	Ms Jillian Cornelious		906
Ms Charmaine Chew		887	Mr Daniel Cornellssen		907
Mr Michael Chew	295		Ms Ema Corro		908
M- Childs	148		Miss Frances Corry	309	249
Ms Rachel Chiodo		267	Miss Joan Corry		318
M- Shahrear Chowdhury		888	Mr Adam Cosier		909
Ms Ann Christy		331	Ms Esther Costa	354	88
Mr Wayne Church	514		Ms Lara Coughlan		910
Mr Mathew Churchill		33	Ms Jeanette Coulter		485
Mr Matthew Churchill		889	Mr David Coulton		40

Name	Sub. Period No.		Name	Sub. Period No.	
	1	2		1	2
Ms Claire Counsell		911	M- Chic Dee	508	
Mr & Ms Mike & Pat Coupar		94	Ms Julia Dehm	88	378
Ms Georgette Courtenay		93	Mr Jack Delaney	345	
M- J. Coutts-Slater		912	Ms Rebecca Dempsey		180
Ms Brigid Cowling	532		Ms Rachel Dempster		574
Ms Lauren Cowling		797	Ms Liz Denborough		930
Ms Courtney Cox	37	188	Ms Carrie Deutsch		110
Mr Rob Cozman		913	Mr Barrie Dexter		376
Mr Andrew Cramb		496	Mr Frank Di Mascolo	104	224
Mr Richard Cranston		315	Ms Giselle Di Paolo		931
Ms Holly Creenaune		1313	Mr John Dickins		255
Mr Don Crichton	131		Ms Dianne Dies		932
Ms Sara Culic		914	Ms Eleanor Dilley		230
Ms Vanessa Culliford		1314	Mr Simon Dimopoulos		933
Ms Debbie Culling		915	Ms Victoria Dixon		934
Mr Toby Cumming		620	Mr Timothy Dobson		935
Mr Mark Cunningham		371	Ms Andrea Doling		936
Ms Shelagh Curmi		450	Mr James Donald	283	
Ms Aleah Currie		916	Ms Caroline Doolan		1317
Ms Helen Curtis		257	M- Chris Doran		937
M- M. Curtis	272		Ms Tanya Doran	139	
Mr Darryl Curwood	164		Ms Nicky Dougherty		938
Ms Mary Cusack		438	Mr Bruce Doughty		144
Ms Jennifer Dagley		396	Ms Jessica Douglas		939
Mr Billy Dain		917	Ms Jennifer Doull		940
Mr Peter Dale	278		Mr Malcolm Dow		170
Ms Lara Daley		918	Mr & Ms Malcolm & Elinor Dow & Knappert	197	
Ms Lesley Dalziel	315	143	Mr Jason Doyle	470	287
M- Lai Dancer		919	Ms Eva Draczenko		941
M- Azadeh Dastayari		920	Mr Ray Draper		154
Mr Geoffrey Davey	495		Ms Andrew Duffell		514
Ms Rosemary Davidson		1048	Ms Shirley Duffield		400
Ms Gwyneth Davies		922	Ms Julie Duffus		156
Ms Jan Davies		921	Mr Richard Duffy		169
Mr Lloyd Davies		201	M- Duggan	154	
Ms Margaret Davies		444	M- Duggan	155	
Mr Richard Davine		923	M- J.M. Duggan	144	
Ms Anita Davis		1315	Ms Jenifer Duke	241	173
Mr & Ms Barry & Faye Davis	161		Ms Judith Dunn		280
Mr T Davis		452	Ms Lorna Dunn	10	
Mr Michael Davison		794	Ms Patricia Dunn		943
M- Chris Dawson	463		Ms Samantha Dunn		942
M- J.G. Dawson	233		Ms Bernie Durkin		945
Ms Sarah Day		1316	Ms Joanne Durst		462
Ms Olivia De Dios Conway		924	Ms Joanne Dutoit		187
Ms Judy De Groot		925	Ms Phillipa Dwyer		547
Mr Vince de Simone		471	Mr Neil Eagle	195	
Mr Christiaan de Vreeze		926	Ms Melissa Eastham	80	
Ms Lorraine Dean		928	Mr John Eberbach	427	310
Ms Nadia Dean		927	Mr Victor Eddy	101	300
Ms Tara Dean		929	Ms Jan Edwards		948
Ms Monique Decortis		341	Ms Julie Edwards		947

Name	Sub. Period No.		Name	Sub. Period No.	
	1	2		1	2
Ms Mary Edwards		949	Ms Katie Foley		366
Mr Reginald Edwards		946	Mr Ray Foley	462	200
Mr & Mrs Rodney & Sandy Edwards	27		Mr Greg Follett		962
Ms Sandra Edwards		47	Ms Elizabeth Forbes		64
Ms Marina Eleftheriadis		662	Ms Hannah Ford		963
Mr Peter Ellard	317		Mrs Betty Gladys Forster		340
Mr David Ellemor		510	Mr Charles Foster	213	63
Ms Janice A. Ellemor		601	Ms Joni Foster		239
Mr Edward Ellis		950	Ms Melanie Foster		964
Mr & Mr Kevin & Glenn Emmins		456	Ms Yanoula Fouras		222
Mr & Ms Michael & Lara English	452		Mr Bernie Fox		140
Ms Georgia Ensor		952	Ms Heather Frahn		236
Ms Marita Ensor		951	Mr Benn Frail		676
Ms Caroline Evans		954	Mr Adrian Francis	265	
Ms Diane Evans		953	Ms Helen Frania		1051
Mr & Mrs Christine & Bert Fabel		49	Ms Hayley Franklin		710
M- Falahey	185		Ms Julianne Fraser		686
Ms Cecily Falkingham		339	Ms & Mr Catherine & Robert Fraser & Blake	446	
Mr Robert Fallon	69		Mr John Free		385
Dr Mike Faris	269		Ms Catherine French		965
M- K.B. Farley	335		M- Chris French		966
Ms Liz Farnsworth		955	Ms Nicole Frisina		183
Mr Ben Farrall		956	Ms Marion Frost		409
Ms Frances Farrall	488		Mr & Mrs Graeme & Heather Frostick	361	432
Mr Shane Farrell		957	Mr Simon Fuller		6
Ms Suzanne Farrugia		135	Ms Dianne Fulton		967
Mr Michael Feller		130	Ms Jane Furze		969
Ms Denise Fenwick	287		Mrs E.G. Fyfe		970
Ms Elisabeth Fenwick		958	Ms Bethany Gadd		971
Mr Peter Ferguson		8	Ms Janet Galbraith		790
Mr Anthony Fernando		498	Mr Jim Galea		466
Ms Chantelle Fernando		775	Ms Tanya Galvin	42	1344
Ms Chiamanti Fernando		762	Mr Roger Gamble		973
Ms Denise Fernando		126	Ms Janine Garland		34
Mr Darren Ferrier		657	Ms Laura Gatti		974
Ms Rosemary Ffrench		959	Ms Anita Gazani		976
Ms Richard Fields		960	Mr Edson Gazani		975
M- Pat Finegan		584	Ms Kellie Gee		356
Mr Rob Fisher	535		Mr Miles Geldard	9	
Ms Yvonne Fisher		352	Mr Ken Gell		515
Mr Lachlan Fitch		271	Mr Rodney Gell		293
Ms Susie Fitch		265	M- S. Genziuk		977
Mr James Fitzsimons	473		Mrs B.M. George	122	
Mr & Mrs J. & A. Flack	117		Ms Heather Gibbs		84
Mr Peter Flanagan	102	55	Ms Margaret Gibson		260
Mr Marco Flores		961	Mr Nicholas Gilbert		184
Mr Chris Flynn		303	Ms Katherine Giljohann		675
Mr Owen Flynn	333	353	Ms Glynis Gilkes		426
M- P.F. Flynn	529		Ms Brenda Gill		81
Miss Trikkelle Flynn	337		Ms Sharon Gill		591
Mr Michael Fogarty		363	Ms Linden Gillbank		298
Ms Kathryn Foley		199	Ms Kate Gillespie-Jones		399

Name	Sub. Period No.		Name	Sub. Period No.	
	1	2		1	2
Ms Louise Gilmore		978	Ms Yvette Hadj		995
M- D. Gilpin	158		Mr William Hahucke	346	
Ms Leanne Girardi		1345	Mr Stephen Haley		996
M- Chris Gittins		65	Ms Carolyn Hall		997
Ms Rosemary Glaisher		1318	Mr David Hall		221
Mr Anthony Glass	400	481	Mr George Hall	321	234
Ms Belinda Glass	401	491	Ms Sarah Halligan		523
Ms Regina Gleeson		650	Ms June Halls	47	
Mr Thanh-Lan Gluckman		558	Ms Sarah Hamer		998
Mrs & Mr Fay & George Godden	93		Ms Michelle Hamilton		101
Mr Ronice Goebel		740	Mr Simon Hamilton		999
Mr Gerard Gomes	224		Mr David Hammerton		307
Mr Andrei Gooderham		979	Mr Bill Hampel		272
Mr Hammy Goonan		367	Ms Judith Hampton		422
Mr Richard Goonan		563	M- B. Hancock	416	
Dr Ascelin Gordon		5	Ms Lexie Hancock	481	
Ms Claire Gordon		980	Ms Amy Hankinson		139
Mr Erin Gordon		760	Ms Kylie Hannel	492	
M- J. Goss	256		Ms Denise Hanson	152	
Mr Simon Goudkamp		981	Ms Marie Hapke		776
Cr Neville Goulding	65	1357	Mr Jim Happ	196	
Ms Angela Grace	221		Mr Richard Harcourt		1000
Ms Robyn Gradey		982	Mr Brendan Harding	110	
Ms Elizabeth Graham		765	Mr Ian Harding		78
Ms Margaret Graham		983	Ms Jaye Hardy		182
Ms Charlene Grainger		219	Mr Peter Hardy		129
Mr Vittorio Grando		984	Ms Celia Hardy-Smith	477	
Ms Ann Grant	62		Mr Jim Harker	198	80
Mr Joe Grant		985	Ms Ruth Harland		735
Mr & Mrs Wenda & Mal Grant		50	Mr Gary Harper		692
Mr Michael Gravener		777	Ms Marion Harper		737
Mr Peter Gray		986	Ms Susan Harrington	211	
Ms Beth Graze		683	Mr Andrew Harris		1001
Ms Katie Greaves		1349	Mr Ian Harris	328	476
Mr Jim Green		328	Ms Viola Harris		1339
Ms Marion Green		796	Ms Virginia Harris		29
Ms Sophie Green		759	M- G.C. Harrisen	302	
Mr Keith Greenham	49		Ms Stefanie Hartley		1002
Ms Marilyn Grey		120	Mr & Mrs Barry & Heather Harvey	7	137
Mr Adam Gribb		987	Ms Karma Hastwell		113
Mr Ben Griffin		988	Mr James Hattam	326	
Ms Caitlin Griffith		989	Ms M.G. Hattersley		585
Mr Ryan Griffith		448	Mr John Hay	173	427
Mr Harry Grinblat		567	Mr Julian Hay	125	
Ms Jennifer Grindrod		990	Ms Rachel Hay		1003
Ms Bridget Grinter		98	Mr Jamie Hayden		1004
Ms Cathy Guinness		991	Mr Chris Hayes		27
M- B. Gully		992	M- Ashley & Linda Hazelman	215	
Mr & Mrs John & Shirley Gunson		751	Ms Alica Head		13
Ms Amanda Gunzburg		671	Mr & Mrs Gary & Carole Heap	448	
Ms Beverley Hack		993	Mr & Mrs Jason & Lorelle Heap	447	
Mr Hilton Hack		994	Mr Matthew Heathwood		1005

Name	Sub. Period No.		Name	Sub. Period No.	
	1	2		1	2
Mr Soc Hedditch	91		M- Staumn Hunder		1303
Mr Brett Hedger		25	Mr Peter Hunter	201	52
Ms Katherine Hellwig		1006	M- C. Hutchinson		1021
Ms Julia Hempel	296		Ms Julie Hyndman		564
Ms Caroline Henckels		1007	Mr Tony Iltis		1022
Ms Sasha Henriss-Anderssen		1008	Mr Jack Indge		1023
Mr Greg Henry	356	294	Ms Justine Indigo-Rose		1024
M- P. Hense	183		Mr John Inga		731
Mr Kenneth Hercott		669	Mr Phil Ingamells		500
Mrs Mavis Hester	126		Ms Liz Ingham		1321
Mr Wayne Hester	119		Ms Abbie Ingram		202
Mr Stuart Hibberd		30	M- C. Ingram		1025
Ms Jacqueline Hibbert	12		Ms Lauren Ireland		1026
Ms Liz Hickey		754	Ms Siobhan Isherwood		1027
Mrs Hannah Hicks	83		Ms Danko Istvan		494
Mr Ray Hicks		413	M- Mayank Jainou		1348
Ms Nicole Hilder		1009	Mr Alex James		262
Mr George Hill		1010	Ms Becky James		1028
Ms Juanita Hill	482		Mr Colin James		68
Ms DeChantal Hillis		1011	Mr Philip James		1029
Mr Simon Hinkley		505	Ms Libby Jamieson		1030
Ms Colette Hion		1012	Ms Jemma Jaram		1031
Mr Paul Hiraber	277		Ms Cate Jarrett		619
Ms Nico Hirzel		1013	Ms Alison Jean		651
Mr Colin Hochery		1014	Mr Norman Jeans		618
Mr Geoff Hodgson		109	Ms Val Jeans		622
Ms Isobel Holland	243		M- Jeffrey	274	
Mr & Mrs Keith & Jeanette Holland	343		Ms Kate Jeffreys		1032
Ms Mouci Holland	238		Mr Peter Jeffs		763
Mr Neville Holland	331	401	Ms Natalie Jenkins		1340
Ms Rebecca Holland	458		Mr Paul Jerry		1033
Ms Anne Hollingshead		800	Ms Lisa Jobson		1034
Ms Annette Hollingworth	166		Ms Brita Johanson		1035
Mr Robert Hollingworth	109		Mr Chris Johns		798
Ms Ann Holmes	497		Ms Emily Johns		1036
Ms Christine Holmes	72	786	Mr H.R. (Reg) Johnson	59	250
Mr David Holmes		1015	Ms Kathleen Johnson		329
Ms Kate Holmes		535	Mr Warren Johnson		1037
Ms Rebecca Holmes		661	Ms Leah Johnston		795
Mr Andrew Holt		282	Mr Shane Johnston		1038
Ms Lucy Holt		284	Ms Katrina Joiner	5	
M- Pippa Holt		283	Ms Antonia Jolic	239	
Mr David Horne		1016	Mr Charles Jones		302
Ms Katie Horner		372	Ms Cybelle Jones		1040
Mr Darren Howard	281		Ms Joan Jones		1039
Mr & Mrs Dorothy & Michael Howes		1319	Mr Bernard Jordan		90
Ms Madeline Hudson		1320	Ms Christene Joy		1041
Ms Sarah Hughes		1017	Ms Anna Just		210
Ms Vera Humennynt		1018	Mr Karl Just		211
Ms Melissa Humphries		190	Mr Carl Justin	288	
M- Dale Humphrey		1019	Ms Andrea Kalbusch		149
M- Yan Hun		1020	Mr Travis Kane		674

Name	Sub. Period No.		Name	Sub. Period No.	
	1	2		1	2
Ms Helen Kaptein		442	Ms Andrea La Nauze		370
M- A.E. Kassavetis		301	Ms Elizabeth La Nauze		779
Mr Shane Kavanagh		1042	Mr Sam La Rocca		789
Ms Pooya Kazemi		1043	Mr Ray Laan		732
Ms Lisa Keefe		1044	Dr Geoff Lacey	20	147
Mr Graham Keen		232	Ms Lindy Lahn		1052
Ms Prue Keenan		1356	Mr John Laing		519
Mr Simon Keenan		667	Ms Bervene Lake	538	
Ms Estelle Kefford		60	M- A. Lamaro		1053
Mr Wakeman Kellan		155	Ms Melanie Lambert	444	
Ms Bernadine Kelly		87	Ms Margaret Lamerton		111
Ms Carmel Kelly		1341	Mr Gus Lancaster		23
Ms Elizabeth Kelly		258	Ms Clare Land		536
Ms Gerald Kelly		1342	Ms Abbie Lane		1054
Dr Jacqueline Kelly		595	M- N. Lane	285	
Mr & Ms Dave & Jane Kelman & Rafe		22	Mr Newton Lane		436
Ms Jessica Kelso		1046	Ms Sarah Lane		1350
Mr Nick Kelson		1322	M- F. Lang		1055
Ms Effie Kene	61	71	Ms & Mr Jennifer & Paul Lang & Webb	45	
Mr Andrew Kennedy	479		Mr F. Langenhurst		571
Ms Wilma Kennedy	413	429	Mr & Mrs John & Ruth Lavendar		773
Ms Emma Kenny		203	Mr Stephen Lavender	38	
Ms Amanda Keogh	282		M- Rhedyn Law		1056
Ms Vanessa Keogh		596	Mr Shaun Lawlor	442	
Mr Jonathan Keren-Black		467	Ms Jan Laws	415	
Mr Lincoln Kern		152	Mr Jeff Lawson		1057
Ms Lauren Kerr	500		Mr & Mrs James & Mary Lay		607
Mr Stewart Kerr	115	241	Ms Merrin Layden		707
Mr Barry Kidd	533		Mr Michael Lea-Whyte	188	264
Mr Jim Killmister	522		Mr Richard Leadbetter		1058
Mr Matt Kiluck		1346	Ms Karly Learmonth		1060
Ms Monica King		1047	Mr Steve Learmonth		1059
Mr & Mrs Raelene & Stuart King		167	Ms Josephine Lee		1323
Ms Sally Kinglake		216	Ms Freja Leonard		636
Ms Rachel Kitchener		386	M- N. Leoy	235	
Ms Jacinta Kleidon		447	Mr Greg Levy		594
Ms Lucy Klem	499	336	Ms Emma Lewis		1061
M- K.M. Kloe	300		Mr Maurice Lewis		531
Ms Dawn Kneen	374	207	Mr Peter Lewis	347	
M- Alex Knight	174		Mr Scott Lewis		1063
Ms Joy Knight	175		Ms Sue Lewis		1062
Mr Roger Knight	518		Ms Joyce Li		1064
M- L. Koch	143		Ms Deborah Liddelow		1065
Mr Matt Koorevellis		1049	M- Janoel Liddy-Morrey		1066
Ms Maree Kratzer	36		Ms Rachel Liebhaber	469	
Ms Cathryn Kriewaldt		516	Mr Drew Liepa		1067
Mr Richard Kuhlen		568	Mr David Lilley	484	
Ms Camille Kumar		359	Ms Amy Lindell		1068
Mr Sumit Kumar		1050	Mr John Lindner		100
Ms Carol Kunert		191	Ms Susan Lintott		1069
Ms Ana Kuzmanic	494		Ms Holly Livesey	284	
Ms Mary Kyriakidis		694	Ms Amanda Lo Cascio		770

Name	Sub. Period No.		Name	Sub. Period No.	
	1	2		1	2
Ms Donna Lobartolo		28	M- Kiah Martin		133
Mr Len Lock	121	421	Ms Fiyona Martyn		1084
Ms Michelle Lock		706	Ms Malveena Martyn		688
Mr Alan Lodge	476	488	Mr John Mason		175
Mr Stephen Lodge	459	612	Ms Julie Mason		107
Ms Hillari Logan		1070	Ms Vivienne Massoni		103
Mr Graham Long	207		M- M. Matan	290	
Ms Ruth Long	325		Mr Ken Mawson	92	
Ms Judy Longbottom		1071	Mr Mattias Mazza		1086
Ms Anne Low	22		Mr Fred McAlister		36
Mr Alan Lubke		196	Mr Robert McBain	87	
Mr Geoff Lubke	179	41	Ms Kathy McBrien		1087
M- H.L. Lubke	424		Ms Charlotte McCabe		108
Mr Ian Lubke	425	556	Mr Nic McCaffrey		537
Mr Les Lubke		529	Ms Claire McCall		1325
Ms Andrew Luke		758	Ms Sarah McCall		1088
Mr & Ms Andrew & Helen Luke & Gargan	35		Ms Martha McCare		1089
M- A. Lyndon		1072	Mr Gary McCarten		1090
Ms Ainslie Macaulay		1073	Mr James McCaw	29	20
Ms Louise Macaulay		153	Mr Nick McClean		1091
Ms Meg Maclagan		1076	Ms Anne McCoy		235
Ms Rhiannon Maclagan		1074	Mr Damien McCrohan		644
Ms Sarah Maclagan		1075	Mr Brett McDonald		1092
Ms Isla MacLeod		743	Mr Cameron McDonald	378	784
Mrs Lyn Madden	405		Mr Ian McDonald	332	
Mr Paul Madden	406		Ms & Ms Pam & Lyn McDonald	323	
Ms Helen Madder		1078	Mr Peter McDonald	449	524
Mr Ian Magee		509	Ms Raelene McFarlane	286	569
Mr Damian Magner		1079	Ms Kate McGannon		1093
Mr Magnusson		172	Mr Phillip McGarry		530
Mr Bob Maguire		750	Mr Kevin McGaw		351
Ms Meaghan Maguire		693	Mr Daniel McGrath	480	
Ms Kerry Maher		659	Ms Patricia McGrath	184	
Ms Leticia Maher		18	M- S. McGrath	146	
Ms Andrea Main		1080	Mr Bruce McGregor		1094
Mr Darren Malone		1081	Mrs Eileen McKee	512	418
Mr Peter Maloney-Ford		610	Ms Laura McKenzie	270	
Mr Andrew Mande		1082	Ms Lisa McLachlan		1095
Ms Kaaren Manley	56	411	Ms Shelly McLaren		1326
Mr Tim Mannion	132	431	Ms Catherine McLean		730
Mr Niki Marijancevic	504		Ms Julia McLean		1097
Mr & Mrs Joe & Inge Marinac	330		Ms Leanne McLean		734
Mr Peter Maroudas	291		Ms Sally Mclean		85
Mr Neil Marriot		128	Ms Shae McLean		1096
Ms Jane Marriott		204	M- J. McLeish	318	
Mr Dudley Marrows	527		M- Azlan McLennan		1098
Mr Howie Marshall		1045	Ms Claire McLisky		1099
Ms Marguerite Marshall		97	Mr & Mrs Noel & Jean McLoughlin		689
Mr Aislinn Martin		660	Mr David McMillan		1100
Ms Anywn Martin		1355	Mr Doug McMillan		664
Ms Deborah Martin		1083	Mr Colm McNaughton		1101
			Mr & Ms John & Margot McNeil	396	

Name	Sub. Period No.		Name	Sub. Period No.	
	1	2		1	2
Ms Bernadette McPherson		741	Ms Stella Mulder	140	576
Ms Anthea McQueen		716	Ms Kitty Muntz		116
Ms Lindsay McRae		638	Ms Kerri Murdoch		1122
Ms Rachael Mead		772	Ms Annabelle Murphy		19
Ms Imogen Melgaard		1102	Ms Maureen Murray	409	
Mr Adam Menary		1103	Ms Betty Murtagh	371	275
Ms Danielle Mengel		681	M- & M- C.J. & S.M. Myers	316	
Mr Max Menyhart		1104	M- Alex Nadram		1123
Ms Catherine Menzies		658	M- Arun Nair		1124
Ms Ann Mercer		1106	Mr Alistair Nairn		736
M- E. Mercer		1105	Ms Sherilea NapierCollins		1125
Ms Louise Merrett		1107	Ms Anita Narayan		1127
Ms Mary Micallef		1108	M- Anjila Narayan		1126
Ms Margaret Mikulin	225		Ms Catherine Narayan		1129
M- Kim Milem		1109	Ms Indira Narayan		1329
Ms Kelly Milikins		654	Mr Matthew Narayan		1130
M- B. Miller	210		Dr R.R Narayan		1128
Ms Lauren Miller		358	Ms Beth Nathan		1131
Ms Talie Miller		1110	Ms Alexandra Naunton		1133
Mr Ron Milligan		742	Ms Anne Neame		724
Mr Jeff Mills	105	395	Mr David Neame		723
Mr George Milosevic		1111	Mr Liam Neame		608
Mr Mark Minett		482	Ms Anna Negri		1330
Ms Leanne Minshall		1112	Ms Marg Newham		1134
Mrs Bette Mitchell		62	Mr Peter Newman	394	944
M- C. Mitchell		1113	Ms Linda Nicholls	395	
Ms Kristie Molnar		1115	Ms Marilyne Nicholls		602
Ms Johanna Monk		678	Mr Paul Nicholls		75
Dr Lee-Ann Monk	379		Ms Jackie Nicholson	167	
Ms Marlene Moor	342	288	Ms Jean Nickels		270
Mr Max Moor	129	408	Mr Geoff Nicol		289
Mr & Ms Shayne & Deborah Moor		539	Mr Lewis Nicolson		1135
Mr Wayne Moore		91	Mrs W. Nikolovski	58	
Ms Donna Morabito		388	M- Yuki Nishino		1136
Ms Natalie Moreira		79	Mr Daniel Nitsche	501	
Ms Greta Morgan		791	Ms Rita Nobes		32
Ms Genevieve Morley		696	Mr Brodie Noorbergen		1137
Ms Elle Morrell		1116	Ms Maree Nordberg		178
M- Chris Morrey		1117	Mr Stefan Nott		1138
Ms Louise Morris		1118	Mr Rod Novak	206	35
Mrs Lynne Morris	203	440	Ms Jenna Nutty		1139
Ms Carly Morrison		1119	Mr Anne O'Brien		1331
Mr Michael Morrow	60		Ms Joanna O'Brien	464	
Mr Philip Moser	334		Mr Ken O'Brien	516	
Mr Roger Moser		453	Ms Kylie O'Brien	275	
Ms Sarah Mount		1327	Ms Loretta O'Brien		1140
Ms Katey Moysey		1120	Mr Martin O'Brien	360	
Mr & Mrs Ian & Lois Mues	178		Ms Catherine O'Bryan		1141
Ms Sarah Mugaun		1121	M- J.M. O'Callaghan	145	
Ms Loretta Mui		1328	M- W.F. O'Callaghan	156	
Ms Amy Muir		119	Mr & Mrs Harry & Margaret O'Connor	86	
Ms Judith Muir	52		M- T.H. O'Donoghue	352	

Name	Sub. Period No.		Name	Sub. Period No.	
	1	2		1	2
M- Mack O'Dousil		1142	Mr Barry Patton		344
Ms Maureen O'Flaherty		593	Mr Ric Pawsey	66	37
Ms Alison O'Gorman	279	220	Mr & Mrs Leon & Brooke Peace	327	
Ms Bernice O'Leary		739	Mr Matt Peacock		1160
Mr Chris O'Neill	305		Ms Kathryn Pegiel		1161
Ms Margaret O'Neill	48		Mr & Ms Stanislaw & Barbara Pelczynski & Pelczynsk	108	346
Mr Patrick O'Neill	171		Mr & Mrs Michael Pellegrino	519	
Ms Tracy O'Sullivan		1143	Mr Stephen Pennells		590
Mr Chris Oakshott		379	Mr Ricky Perez		1162
Mr Rod Oaten		192	M- Miki Perkins	90	
Ms Jo Occhipinti		1144	Ms Kiera Perrott	100	277
Mr Neville Oddie		708	Ms Katherine Perry		423
Ms Georgine Ogilvie		389	Mr Maurice Perry		208
Mr Harold Ogilvie		73	Mr John Pettigrew	308	
Ms Jo Oldland		1145	Ms Nissa Phillips		733
Ms Gay Olney		1147	Mr & Mrs Craig & Nicola Philp		666
Mr Peter Olney		1146	Mr John Philpott		589
Ms Kristina Olsen		233	Ms Amber Pike		1163
Ms Caroline Ondracek		691	Mr Eric Pilkington	25	
Mr Glenn Opitz		1148	M- J. Pine		1164
Ms Jane Orme		606	Ms Catie Pitman		1165
Ms Joyclyn Orme		722	Ms Christine Pitt		114
Mr Rod Orr		1354	Mr Lachlan Plain		1166
Mr Pepe Ortega		1149	M- & M- J.M. & D.R. Plattfuss	351	
Ms Vivienne Ortege		1150	Ms Ellenie Pond	498	
Mr Glenn Osboldstone		21	Ms Jan Poolsinso	43	
Mr Tim Osborn		493	Ms Eva Popov	124	
Ms Gayle Osborne		1151	Ms Bev Porteous		526
Mr Grant Osbourne		1152	Mr Joel Porter		1167
Ms Louise Osland		1153	Mr Fabian Postiglioni	485	
Mr Graeme Padgett		412	Ms Dorothy Powell	153	
Ms Louise Pain		1154	Ms Jasmine Powell		59
M- A. Palamountain		1155	Mr Greg Power		1353
M- J. Palamountain		1156	Mr Rod Power	545	
Ms Amanda Palmer		1114	Ms Morgaine Presser		1168
Mr Doug Palmer		132	Mr David Prest	223	
Mr Grant Palmer	408	345	Mr Anthony Price	135	
Ms Lucille Palmer	422		Mr Ian Price		125
M- D.H. Panton	186		Mr Bill Probst	11	102
Ms Jan Parkinson		580	Ms Caroline Pruscino		1169
Ms Linda Parlane		1157	Mr Lewis Pugh		649
Ms Shirley Parnaby		1077	Ms Sandra Pullman	507	226
Ms Ange Parrish		1332	Mrs Joy Punton		252
Mr Sebastian Neo Pasche		1158	Ms Nathalie Purcel		767
Mr Rodney Pascoe	517		Dr Frank Purcell	118	
Mr James Pashley		390	Mr Neville Quinlan	157	
Mr Wolf Passauer	2		Mr & Ms Pat & Michelle Quinn	50	
Mr Nick Pastalatzis		365	Mr Peter Quinn		483
Ms Sharon Patridge		788	Ms Johnathon Rabbi		771
Ms Adrienne Patterson		713	Mr Jim Radford		640
Ms Claire Patterson		1159	Mr Ray Radford		603
Mr Howard Patterson		417			

Name	Sub. Period No.		Name	Sub. Period No.	
	1	2		1	2
M- & M- L. & H. Radley	540		Mr Grant Roberts		1190
Mrs Sue Radywonik	402		Mr Jack Roberts		753
M- & M- V. & S.M. Radywonik	357		Mr Kelvin Roberts		1187
Mr Tony Rae	234		Mr Martin Roberts		1189
Mr Gavin Ragg		1170	Mr Morgan Roberts	490	
Mr River Rain	324		Mr Nick Roberts	106	647
Ms Tanya Rajapakse		1171	Mr Ray Roberts	123	
Ms Jan Ramage	232	587	Mr Bruce Robertson		702
Mr Jose Ramos		1172	Mr David Robertson		58
Mr Geoffrey Randall	513		Mr Hugh Robertson	440	
Ms Susan Charles Rankin		177	Mr Allan Robins	89	209
Ms Meagan Rathgeber		738	Dr Doug Robinson		605
Ms Stephanie Raubault		1173	Ms Helen Robinson		551
Mr Matthew Rawson		1174	Mr Matt Robinson		1191
Ms Katherine Raymond		229	Mr Sebastian Robinson		1193
Ms Gillian Rayner	312	1175	Mr Simon Robinson		1192
Mr George Read		968	Mr Chris Robson	244	
Ms Melanie Read-Wishart	502		Ms Jacqui Robson		1194
Ms Gabrielle Reade		1176	Ms Jane Robson	242	
Ms Amanda Rebbechi		1177	Mr Cameron Rodda	475	783
Ms Lili Recht		1178	Ms Charmaine Rodrigues		1195
Mr Jack Rees	511		Ms Lisa Rodrigues		699
Ms Lucy Rees		1180	Ms Shirley Roeszler		273
Mr Mark Rees		1179	Ms Lynne Rolley		756
Mrs Ruth Rehfishch		43	Mr Rick Ronnan		39
Mr David Reid	307		Ms Lucy Rose		792
Mr William Reid		176	Ms Mary Rose		747
Ms Pauline Reilly	34		Ms Naomi Rose		1196
Ms Rachel Reilly		712	Ms Simone Rosel		382
Mrs Yan Reiter		342	Mr Douglas Rosenow		581
Ms Patricia Reivers		1181	Ms Emily Ross		1197
Ms Danielle Rendall		1182	Mr George Ross		766
Ms Margaret Rennie		1183	M- & M- Murray Ross	97	
Mr John Renowden		632	Ms Gita Rotherham		1198
Ms Helen Reynolds		504	Ms Lyndall Rowley		643
Mr Bob Rich		475	Ms Brenda Roy		181
Ms Natalie Rich		781	Mr Dave Roy	228	
Mr Max Richards	18		Ms Sharon Roy	229	
Mr Peter W. Richardson		213	Ms Sophie Rudolph		698
Ms Vanessa Richardson		320	Ms Karin Ruff	411	
Mr & Ms Peter & Helen Richardson & Harley	53		Mr Tilman Ruff		1199
Ms Browyn Riddell		369	Ms Kristin Rule		1200
Mr D. Riis	8		Ms Rosemary Rule		217
M- E. Riley		1184	Ms Josephine Rumsey	151	
Mr & Mrs David & Fay Rimmer	438		Mr Miguel Rusett		1201
Mr David Ring		1185	Ms Holly Russ	539	
Mr Daniel Ripper		1186	Ms Jacqueline Russ	543	
Ms Peter Robert		780	Ms Catriona Russell		1202
Mr Ben Roberts		1188	Mr Colin Russell	423	538
Mr Donald Roberts		253	Ms Morgana Russell		645
Ms Fiona Roberts		668	Ms Susie Russell		157
			Ms Penni Russon	260	

Name	Sub. Period No.		Name	Sub. Period No.	
	1	2		1	2
M- Chris Rust		1203	Ms Norma Sheridan		330
Mr John Ruyg		778	Ms Meredith Sherlock		1219
Ms Geraldine Ryan		1310	Ms Rachel Shulkes		1220
Mr Rick Ryan	76		Mr Paul Sijpkens		653
Mr Ricky Ryan		212	M- Jordy Silverstein		1335
Mr Terry Ryder	292		Mr David Simeveks	486	
Mr Michael Sabada		1204	Ms Kerrie Simmonds		631
Mr Andy Sadri		1205	Ms Joan Simms		335
M- Handan Sahib		1206	Mr Michael Simon		544
Ms Emma Salter	355		Ms Anne Simonis		1221
Mr Matthew Salter		677	Ms Ruth Singer		1222
Mr Michael Sanders		1207	M- & Ms Alex & Rhonda Sislov & Chrisanthou	28	67
Ms Nicole Sanderson		368	Ms Lizzy Skinner		744
Mr Luke Sango	245		Ms Lyndall Sleep	359	
Ms Marian Santos		1208	Mr Frank Smit		1223
M- Olympia Sarrunkolaou	231		Ms Pauline Smit		1224
Ms Claudia Sartori		1209	Ms Beth Smith		123
Ms Kim Sauberg		656	Mr Bruce Smith	338	
Mr Erwin Sauerwein	1	46	Ms Celia Smith		454
Ms Michelle Savona		1333	Mr Colin Smith	172	225
Ms Margaret Sawyer		1210	Ms Ellen Smith	237	
M- K. Saxton	294		Ms Emma Smith		1225
Mr Mark Sayers		1211	Ms Gina Smith		1226
Ms Miliyika Scales		134	M- Lar Smith		1227
Mr Bill Schapp		121	Mr & Mrs Margaret & Eric Smith		138
Ms Zoe Schepisi		1212	Mr Michael Smith		115
Ms Julie Schilin	412	387	Mr Mikael Smith		672
Mrs Tania Schlemitz-Justin	289		Ms Miranda Smith		769
Ms Gillian Schoenborn		419	Mr Peter Smith		680
Mr James Schrieber	262		M- R. Smith	303	
Mr Brendan Scott	493		Mr Terry Smith	182	
Ms Gillian Scott		1213	Ms Zoe Smith	259	
Ms Lucinda Scott		513	Dr Peter Snider	128	223
Ms Nina Scott		1334	Mr Jmes Somerville		251
Ms Trisha Scott		721	Ms Amy Spencer		1228
Mr Lee Seary	23		Ms Tracee Spiby	403	
Ms Lorraine See		709	Mr Paul Spinks		1229
M- Rye Sejen		323	Ms Melita Spooner		1336
Ms Barbara Selby		61	Mr Spowart		161
Ms Anne Selmas	293		Ms Annie Sprague		53
Mr Bob Semmens		145	Ms Pia Spreen		1230
Ms Emma Senior		1214	Mr Peter Stafford	33	
Ms Domenica Settle		1215	Ms Erika Stahr		717
Mr Tom Sevil		1216	Mr Ross Staley	99	1343
Ms Anne Seward		479	Mr Daniel Roland Stammberger		1231
Ms Melina Shackell		727	M- N.K Stanley		757
Ms Melanie Sharp		1217	Ms Jindi Star		1232
Ms Kath Sharpe		254	Mr Paul Stark		218
Mr & Mrs Ken & Ula Sheather	46	583	Mr Jim Starkey	149	
Mr Alan Shell	71	1	M- P. Starkey	147	
Mr Timonthy Shepherd		72	Ms Maya Statton	252	
Ms Fiona Sherar		1218			

Name	Sub. Period No.		Name	Sub. Period No.	
	1	2		1	2
Mr Peter Statton		577	Mr William Taylor		1249
Mr Bob Steel	113	131	Dr Catherine Tenni		12
Mr David Stephenis		1233	Ms Angela Thelen	258	
M- B. Stephens	487		Mrs Joan Theyers	51	193
M- Pat Stephens		1234	Mr Theyers		195
M- R.R. Stephenson	165		Mr Donald Thomas		787
Mr Ross Stephenson		332	M- J.R. Thomas	137	2
Ms Tali Sternfein		1235	Mr Mark Thomas		364
Mr Max Stevens		472	Mr Dan Thompson		1250
Ms Sophie Stevenson		1236	Mr Geoff Thompson	67	
Mr Alistair Stewart		474	Ms Katie Thompson		1251
Ms Hannah Stewart	230		Mr Malcolm Thompson		313
Ms Amanda Stobbie		728	Ms Brooke Thomson	387	
Mr Keith Stockwell	17	354	M- T. Thomson	306	
Ms Donna Stoddart		1237	Mr Tim Thorncraft		720
Ms Marie-Claire Stoller	297		Ms Peta Thornton		1252
Mr Douglas & Lois Stone	341		Mr Ian Threadgold		69
Mr John Stone		1238	Mr R.W. Threadgold		319
Ms Kate Stothers		459	Ms Robyn Till		168
Mr David Strangward		1239	Mr Adam Tiller		1253
Ms Micheal Strangward		238	Ms Jay Tilley		242
Mr Andrew Stretton		1240	Ms Amanda Tinworth		1254
Mr Bill Stringer		711	M- Belisarius Tolstoshev-Wansbrough		322
Mr James Struher		1241	Ms Belinda Toohey		397
Ms Michaela Stubbs		321	Ms Tessa Toubmourou		158
Ms Lisa Sulinski		559	Ms Jane Townsend		1256
Mr Damian Sullivan		1242	M- Mez Tozer		1257
M- P.R. Sullivan	304		Mr Alastair Traill		1337
Ms Jane Sultana	103		Mr Domenico Treviso		7
Ms Jill Sutherland		26	Mr Enoch Trickey	96	162
Ms Rhonda Sutton		44	Mr Kelvin Trickey	205	308
Ms Tammy-Jo Sutton		1243	Mr & Mrs Neil & Robyn Trickey	204	146
Mrs Iris Swan		357	Mr Stuart Trickey	367	470
Mr John Swan		1266	Ms Jane Trikojus		1258
Mr Kevin Swan	249	197	Ms Janelle Trotman		1259
Mr Robert Swan	509	333	Mr Hugh Tunnecliff		1260
Mr Trent Swan	250		Mr Paul Turnbull	433	
Ms Amanda Swaney	32		Ms Ann Turner	222	578
Ms Jill Swanson		361	M- B. Turner	142	
Mr Dave Sweeney		377	M- John Turner	257	
Mr Llywellyn Swift		1244	Mr Ken Turner	264	579
Ms Vicki Swinbank		700	Ms Maureen Turner	478	
Ms Jessica Sykes	127		Ms Michelle Turner		704
Mr Johnathan Symons		695	Mr Rob Turner	468	
Ms Jennifer Talbot		406	Mr Ron Turner	141	
Mr Howard Tankey	410	214	Ms Kathryn Turton-Lane		1261
Ms Limia Tarr	73		M- N. Twyman		1262
Ms Julie Tarrant		1246	Mr Mark Tyler		1263
Ms Shelley Tarrant		1245	Ms Daniela Tymms		495
Ms Sophia Tay		1247	Mr Chris Tzaros	372	
Mr Neale Taylor		142	Mr John Unkovich		679
Mr Rick Taylor		1248	Mr Jake Urlus		1264

Name	Sub. Period No.		Name	Sub. Period No.	
	1	2		1	2
Ms Jean Vagg	138		Ms Raelene West	375	
Mr Stan Vale		433	Ms Rose Lilian West		703
Dr Alyssa Vass		268	Mr James Westland	247	
Ms Sharne Vate		600	Ms Teisha Westwood		1282
Ms Lorien Vecellio		1265	Mr James Wetter	220	
Ms Natasha Verco		1267	Ms Elizabeth Wheeler		243
Mr Nick Verginis		497	Ms Jemi White		398
Ms Eva Vincent		611	Mr Keith White		66
Mr Ben Viner		1268	Mr Nicholas White		1283
Mr Matt Vines		1269	Ms Angela Wichmann		1338
Ms Sharna Vitols		76	Ms Heidi Wichmann		1284
Ms Lynne Waddington		1270	Mr Jorg Wichmann		1285
Mr & Mrs Margaret & Michael Waddington		561	Ms Bronte Wicker	226	
Mr Peter Wadham		687	Ms Monique Wicks		334
Ms Sugita Wahl		1271	M- Nils Wiebkin	64	
Mr Geoff Wakeman		501	M- E. Wilkie		1286
Mr A. Walker		299	Mr Malcolm Wilkie		1287
Mr Cam Walker		391	Mr Alan Wilkinson		690
Ms Cathy Walker		801	Ms Giselle Wilkinson		1288
Ms Gillian Walker		575	Mr Damon Wilkshire		1289
Mr Jim Walker		1272	Mr Tom Willcox		697
Ms Linley Walker	114	9	Ms Beverley Williams		274
Ms Mary Walker		749	Mr Craig Williams	489	
Ms Sue Walker		489	Mr David Williams		490
Ms Susie Walker		1273	Mr Guy Williams		163
Ms Tanya Walker	116		Mr Lance Williams		613
Mr Matt Wallace		206	Ms Matthew Williams		1290
Mr & M- Wallis		343	Ms Nicola Williams	386	
Ms Hannah Wallis		1274	Mr Paul Williams		1291
Mr Adam Walsh		392	Ms Ann Williamson		588
Mr Jeffery Walters		748	Mr Philip Williamson	353	
Mr Angus Ward		1275	Mr Troy Williamson		1292
Ms Justine Ward	31		Miss Grace Willoughby	212	507
Mr Keith Ward		646	Ms Michelle Willoughby		164
Mr & Mrs Albert & Dolly Warild	465		Mr & Ms James E. & Shirley Wilson	397	
Mr & Ms John & Denise Waterson		231	Miss Jenna Wilson	68	
M- G. Watkins		439	Mr & Mrs Myra & Kelvin Wilson		407
Ms Petra Watson		1276	Mr Ray Wilson		194
Mr Steve Watson		525	Ms Ruth Wilson	483	325
M- D. Watts		1277	Mr Jeffrey Wiltshire		95
Ms Annie Wearne		380	Mr John Wiltshire		347
Mr & Mrs Nancy & Harry Weatherman	160		Mr Aidan Windle		1293
Ms Nancy Weathermen		83	M- Yael Winikoff		1294
Mr Hugh Webb	536		Ms Jodie Winnel		105
Mr & Mrs John & Jan Webb	40		Ms Anna Wood		1295
Ms Alison Webster		566	Mr Douglas Wood	133	
Ms Christina Webster		1278	Mr & Ms Stephen & Jennifer Wood & Lynch		127
Mr Shayne Webster	496	565	Ms Elizabeth Woodhouse	209	338
Mr Udi Weizman		1279	Ms Betty Woods		89
Mr Michael Wells		1280	Ms Catherine Woods		785
Ms Natalie Wells		1281	Ms Kay Woodward		82

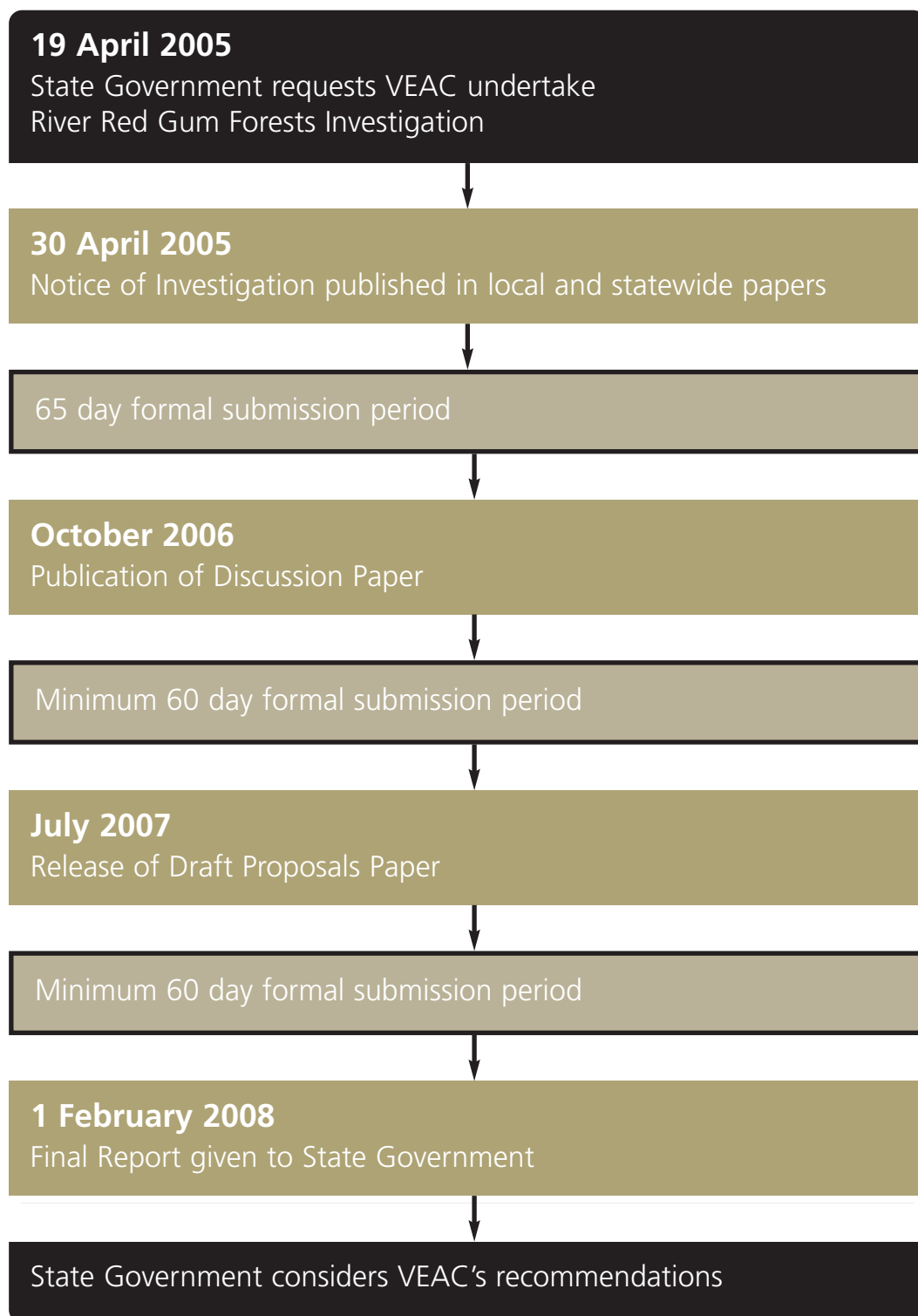
Name	Sub. Period No.	
	1	2
Mr Zach Worrall		752
Ms Harriet Wynne		1296
Mr Andre Wyrwa		1297
M- Natsuko Yamada		1298
Ms Amelia Young		1301
Ms Fiona Young		705
Ms Helen Young		1299
Mr Luke Young		573
Mr Thomas Young		1300
M- Kim Yugovic		1302
Ms Amanda Zame	280	

Name incomplete or illegible:

Sub. period 1: 21, 150, 159, 162, 163, 218, 227, 248, 254, 255, 266, 268, 273, 276, 426, 457.

Sub. period 2: 70, 186, 189, 458, 637, 802, 803, 804, 805, 806.

APPENDIX 5: Timeframe and community consultation process for River Red Gum Forests Investigation



APPENDIX 6: Species names used in the Draft Proposals Paper

English name	Scientific name	English name	Scientific name
Fauna			
Australian Shelduck	<i>Tadorna tadornoides</i>	Silver Perch	<i>Bidyanus bidyanus</i>
Barking Marsh Frog	<i>Limnodynastes fletcheri</i>	Southern Myotis	<i>Myotis macropus</i>
Barking Owl	<i>Ninox connivens</i>	Squirrel Glider	<i>Petaurus norfolcensis</i>
Beaked Gecko	<i>Rhynchoedura ornata</i>	Superb Parrot	<i>Polytelis swainsonii</i>
Blue-billed Duck	<i>Oxyura australis</i>	Tree Goanna	<i>Varanus varius</i>
Broad-shelled Tortoise	<i>Chelodina expansa</i>	Trout Cod	<i>Maccullochella macquariensis</i>
Brolga	<i>Grus rubicunda</i>	White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>
Brown Treecreeper	<i>Climacteris picumnus</i>		
Brush-tailed Phascogale	<i>Phascogale tapoatafa</i>	Flora	
Bush Stone-curlew	<i>Burhinus grallarius</i>	Black Box	<i>Eucalyptus largiflorens</i>
Carpet Python	<i>Morelia spilota metcalfei</i>	Bladder Saltbush	<i>Atriplex vesicaria</i>
Curl Snake	<i>Suta suta</i>	Bluebush	<i>Maireana</i> spp.
Darter	<i>Anhinga melanogaster</i>	Bluish Raspwort	<i>Haloragis glauca</i> f. <i>glauca</i>
Diamond Firetail	<i>Stagonopleura guttata</i>	Branching Groundsel	<i>Senecio</i> sp. aff. <i>cunninghamii</i> (North-west)
Dog	<i>Canis familiaris familiaris</i>	Broombush	<i>Melaleuca uncinata</i>
Eurasian Coot	<i>Fulica atra</i>	Buloke	<i>Allocasuarina luehmannii</i>
Flat-headed Galaxias	<i>Galaxias rostratus</i>	Buloke Mistletoe	<i>Amyema linophylla</i> subsp. <i>orientale</i>
Fly-specked Hardyhead	<i>Craterocephalus stercusmuscarum fulvus</i>	Bush Minuria	<i>Minuria cunninghamii</i>
Freckled Duck	<i>Stictonetta naevosa</i>	Cane Grass	<i>Eragrostis australasica</i>
Freshwater Catfish	<i>Tandanus tandanus</i>	Chariot Wheels	<i>Maireana cheelii</i>
Giant Bullfrog	<i>Limnodynastes interioris</i>	Chenopod	<i>Chenopodiaceae</i> spp.
Golden Perch	<i>Macquaria ambigua</i>	Club-hair New Holland Daisy	<i>Vittadinia condyloides</i>
Great Egret	<i>Ardea alba</i>	Curly Flat-sedge	<i>Cyperus rigidellus</i>
Greater Long-eared Bat	<i>Nyctophilus timoriensis</i>	Desert Lantern	<i>Abutilon otocarpum</i>
Grey Teal	<i>Anas gracilis</i>	Diuris	<i>Diuris</i> spp.
Grey-crowned Babbler	<i>Pomatostomus temporalis</i>	Dwarf Swainson-pea	<i>Swainsona phacoides</i>
Growing Grass Frog	<i>Litoria raniformis</i>	Eucalypt	<i>Eucalyptus</i> spp.
Hardhead	<i>Aythya australis</i>	Giant Rush	<i>Juncus ingens</i>
Hooded Robin	<i>Melanodryas cucullata</i>	Grey Billy-buttons	<i>Craspedia canens</i>
Hooded Scaly-foot	<i>Pygopus schraderi</i>	Grey Box	<i>Eucalyptus microcarpa</i>
Intermediate Egret	<i>Ardea intermedia</i>	Grey Scurf-pea	<i>Cullen discolor</i>
Legless Lizard	<i>Delma</i> spp.	Hairy Tails	<i>Ptilotus erubescens</i>
Little Bittern	<i>Ixobrychus minutus</i>	Hoary Scurf-pea	<i>Cullen cinereum</i>
Little Egret	<i>Egretta garzetta</i>	Inland Pomaderris	<i>Pomaderris paniculosa</i> subsp. <i>paniculosa</i>
Mallee Emu-wren	<i>Stipiturus mallee</i>	Jericho Wire-grass	<i>Aristida jerichoensis</i> var. <i>subspinulifera</i>
Murray Cod	<i>Maccullochella peelii peelii</i>	Leafless Bluebush	<i>Maireana aphylla</i>
Murray Hardyhead	<i>Craterocephalus fluviatilis</i>	Lignum	<i>Muehlenbeckia</i> spp.
Murray Spiny Cray	<i>Euastacus armatus</i>	Long Eryngium	<i>Eryngium paludosum</i>
Musk Duck	<i>Biziura lobata</i>	Mealy Saltbush	<i>Atriplex pseudocampanulata</i>
Painted Honeyeater	<i>Grantiella picta</i>	Mueller Daisy	<i>Brachyscome muelleroides</i>
Painted Snipe	<i>Rostratula benghalensis</i>	Native Couch	<i>Cynodon dactylon</i> var. <i>pulchellus</i>
Pink-eared Duck	<i>Malacorhynchus membranaceus</i>	New Holland Daisy	<i>Vittadinia</i> spp.
Plains-wanderer	<i>Pedionomus torquatus</i>	Pale Flax-lily	<i>Dianella longifolia</i> s.l.
Red-naped Snake	<i>Furina diadema</i>	Pale Spike-sedge	<i>Eleocharis pallens</i>
Regent Parrot	<i>Polytelis anthopeplus</i>		
Royal Spoonbill	<i>Platalea regia</i>		

English name	Scientific name
Purple Diuris	<i>Diuris punctata</i> var. <i>punctata</i>
Red Swainson-pea	<i>Swainsona plagiotropis</i>
River Bottlebrush	<i>Callistemon sieberi</i>
River Swamp Wallaby-grass	<i>Amphibromus fluitans</i>
Riverina Bitter-cress	<i>Cardamine moirensis</i>
Riverine Flax-lily	<i>Dianella porracea</i>
Rough-barked Honey-myrtle	<i>Melaleuca parvistaminea</i>
Rounded Noon-flower	<i>Disphyma crassifolium</i> subsp. <i>clavellatum</i>
Saltbush	<i>Atriplex</i> spp.
Sand Sida	<i>Sida ammophila</i>
Shining Glasswort	<i>Halosarcia nitida</i>
Silky Glycine	<i>Glycine canescens</i>
Silky Swainson-pea	<i>Swainsona sericea</i>
Silky Umbrella-grass	<i>Digitaria ammophila</i>
Silver Tails	<i>Ptilotus obovatus</i> var. <i>obovatus</i>
Silver Wattle	<i>Acacia dealbata</i>
Slender Darling-pea	<i>Swainsona murrayana</i>
Slender Love-grass	<i>Eragrostis exigua</i>
Small Scurf-pea	<i>Cullen parvum</i>
Smooth Minuria	<i>Minuria integerrima</i>
Southern Cane-grass	<i>Eragrostis infecunda</i>
Spiny Lignum	<i>Muehlenbeckia horrida</i> subsp. <i>horrida</i>
Spiny Mud-grass (Moir grass)	<i>Pseudoraphis spinescens</i>
Spiny Rice-flower	<i>Pimelea spinescens</i>
Spiny-fruit Saltbush	<i>Atriplex spinibractea</i>
Spotted Emu-bush	<i>Eremophila maculata</i> var. <i>maculata</i>
Spreading Emu-bush	<i>Eremophila divaricata</i> subsp. <i>divaricata</i>
Spreading Scurf-pea	<i>Cullen patens</i>
Swamp Buttercup	<i>Ranunculus undosus</i>
Swamp Wallaby-grass	<i>Amphibromus</i> spp.
Tall Kerosene Grass	<i>Aristida holathera</i> var. <i>holathera</i>
Tangled Lignum	<i>Muehlenbeckia florulenta</i>
Three-wing Bluebush	<i>Maireana triptera</i>
Tough Scurf-pea	<i>Cullen tenax</i>
Twin-leaf Bedstraw	<i>Asperula gemella</i>
Umbrella Wattle	<i>Acacia oswaldii</i>
Warrego Summer-grass	<i>Paspalidium jubiflorum</i>
Waterbush	<i>Myoporum montanum</i>
Wedderburn Wattle	<i>Acacia euthycarpa</i> subsp. <i>oblanceolata</i>
Wedge Diuris	<i>Diuris dendrobioides</i>
Western Silver Wattle	<i>Acacia decora</i>
Western Water-starwort	<i>Callitriche cyclocarpa</i>

English name	Scientific name
White Box	<i>Eucalyptus albens</i>
Winged New Holland Daisy	<i>Vittadinia pterochaeta</i>
Winged Peppergrass	<i>Lepidium monophloides</i>
Woolly Scurf-pea	<i>Cullen pallidum</i>
Yakka Grass	<i>Sporobolus caroli</i>
Yellow Box	<i>Eucalyptus melliodora</i>
Yellow Tails	<i>Ptilotus nobilis</i> var. <i>nobilis</i>

APPENDIX 7: Forest growth rates, state forest areas available for harvesting and sustainable timber volume estimates, from recent analysis of Continuous Forest Inventory (CFI) data

	Growth rates (m ³ /ha/year)		Available areas (ha)		Sustainable timber (sawlog & standard) volumes (m ³ /year)			
Forest location and site quality	Original (frequent flooding)	Recent (reduced flooding)	Current	Recommended (by VEAC)	Current area and original growth rates	Current area and recent growth rates	Recommended area and original growth rates	Recommended area and current growth rates
Barmah High SQ	0.38	0.23	6740	0	2541	1552	0	0
Barmah Low SQ	0.17	0.10	7154	0	1188	720	0	0
Goulburn High SQ	0.27	0.25	35	0	9	8	0	0
Goulburn Low SQ	0.14	0.16	5	0	1	1	0	0
Gunbower High SQ	0.27	0.16	7773	6656	2083	1262	1784	1080
Gunbower Low SQ	0.14	0.08	3457	3448	467	277	466	276
Total			25,164	10,105	6,288	3,820	2,249	1,357
Percent of 2006-07 licence volumes					62%	38%	22%	13%
Percent of 6288 m ³ /yr					100%	61%	36%	22%
Percent of 3820 m ³ /yr						100%	59%	36%

Notes

Only River Red Gum Forest within the General Management Zone has been included in the analysis.
 Site Quality data and CFI data were provided by the Department of Sustainability and Environment.
 Assumes that growth rates will return to original values if environmental flows as recommended are achieved.

APPENDIX 8: Recommendations for natural features reserves

Recommendations for natural features reserves – bushland areas

Rec No.	Name	Area (ha)	Parcel number list*
G1	Wargan-Mallee Bushland Area	1441.1	P000189, P000182, P000221, P000181, P000180, P000223 P000202, and parts of P003436, P000202 and P000224
G2	Carwarp Bushland Area	6.0	P000321, P000322
G3	Piangil Bushland Area	0.2	P006157, P006156
G4	Nyah Bushland Area	155.3	P003015, P002996, P002994, P372745, P372743, P372744
G5	Lake Kelly Bushland Area	3.4	P004347
G6	McMillans Lake Bushland Area	32.5	P120122, P123963
G7	Spences Lake Bushland Area Note: salt extraction activities can continue in this Area	40.9	P121808, P121807
G8	Cranes Lake Bushland Area Note: Salt extraction activities can continue in this Area	34.1	P121844
G9	Beauchamp Salt Lake Bushland Area	18.6	P120056
G10	Beauchamp Bushland Area	5.1	P123295, P120020
G11	Lake Lookout Bushland Area	69.5	P120058
G12	Sandhill Lake Bushland Area	165.2	P120053, P120054, P120067, P120068, P368494
G13	Quambatook Bushland Area	9.5	P123487
G14	Narrewillock Bushland Area	1.1	P122211, P123338
G15	Barrakee Bushland Area	15.8	P128295, P128293, P121350, P121351, P128294
G16	Lake Boort Bushland Area	477.8	P120807, P120797, P120800, P120801, P120798
G17	Boort Bushland Area	2.8	P125408, P364867
G18	Dry Lake Bushland Area	144.6	Dry Lake south of Kerang
G19	Salter Bushland Area	3.8	P122156, P122157
G20	Myall Bushland Area	32.1	P134423, P125285, P125286
G21	Murrabit Bushland Area	17.3	P122149, P125270
G22	Cohuna Bushland Area	1.9	P121580
G23	Wee Wee Rup Bushland Area	6.9	P122411,
G24	Leitchville Bushland Area	9.3	P122420, P122419
G25	Pyramid Hill Bushland Area	3.1	P124729
G26	Blind Creek Bushland Area	3.6	P129452
G27	Mologa Wetland Bushland Area	1.1	P127123
G28	Mologa Triangle Bushland Area	2.6	P132441
G29	Mologa Bushland Area	2.9	P132803
G30	Dingee Bushland Area	10.0	P121911, P121900, P121912
G31	Terrick Terrick North Bushland Area	1.5	P131378, P131379, P131380, P133775
G32	McIntyre Rd Grassland Bushland Area	1.1	P124491, P124492, P124490
G33	Bickford Rd Grassland Bushland Area	0.8	P124487
G34	Dullard Waterhole Bushland Area	0.8	P124457
G35	Elmore-Cohuna Railway Bushland Area	31.7	Section of unused rail reserve between Kotta and McColl
G36	Lockington Bushland Area	3.7	P370727, P370725, P370724, P370726, P130029
G37	Turrumberry North Bushland Area	7.0	P124493
G38	Wharparilla Bushland Area	9.8	P131652, P131653, P131654, P131666, P131655, P131656, P131657, P131658, P131659, P131660, P131661, P131662, P131663, P131664, P131665, P125466, P131641, P131642, P131643, P131645, P131646, P131647, P131648, P131649, P131650, P131651
G39	Echuca West Bushland Area	10.2	P125462
G40	Piper Bushland Area	12.5	P124697

Recommendations for natural features reserves – bushland areas continued

Rec No.	Name	Area (ha)	Parcel number list*
G41	Beattie Depression Bushland Area Note: This area can continue to be used as a floodway. Southern sections of this area should be revegetated.	398.0	Beattie Depression floodway east of Echuca
G42	Nanneella Bushland Area	28.0	P160556, P161253, P161252
G43	Rushworth-Colbinabbin Rail Line Bushland Area	15.6	P125135, P372106 and sections of disused railway line near Karook
G44	Moira Bushland Area	8.0	P160557
G45	Lower Moira Bushland Area	3.1	P160558, part road reserve
G46	Narioka Bushland Area	2.2	P160560
G47	Brooms Bushland Area	9.9	P160567
G48	Barwo Bushland Area	6.5	P160568
G49	McLellands Bushland Area	35.5	P160571, P160570
G50	Kotupna Bushland Area	3.6	P160569
G51	Kotupna School Bushland Area	2.6	P368704
G52	St Germain's Bushland Area	0.4	P162682
G53	Undera Bushland Area	1.3	P162693
G54	Strathmerton Bushland Area	38.0	P16057, P160579, P160577, P160576 and part adjoining rail land
G55	Horseshoe Lagoon Bushland Area	9.5	P204458
G56	Kaluna Park Bushland Area	23.2	P204519, P204488
G57	Ovens Billabong Bushland Area	2.2	P206888
G58	Oxley Bushland Area Note: This area should be revegetated	7.3	P200133, P200131, P200132, P200124, P200134
G59	Wodonga Bushland Area	4.9	P205761
G60	Bonegilla Wetland Bushland Area	0.4	P200095

* Crown Land areas have in the past been described using a Crown Allotment (CA), Section (Sec) and Parish (P) or Township (T). More recently Crown land has been attributed a unique identifier known as a Crown parcel (P number). The P number is provided here for Crown land parcels. Other public land owned by public authorities is given a more general geographic description and is shown on Map A.

Recommendations for natural features reserves – streamside areas

Rec No.	Name	Area (ha)	Parcel number list*
G61	Mosquito Creek Streamside Area	179.5	P123484, P123483, P123481
G62	Capels Crossing Streamside Area	292.2	P133045, P125353, P121817, P121836, P123007, and parts of P123008, P124683, P125339 P123006 and P121816 and adjoining public land
G63	Kinypanial Streamside Area	16.1	P123174
G64	Haynammi Streamside Area	24.0	P122562, P122564, P122563, P122559, P122560, P122561
G65	Strathallan Streamside Area	21.2	P375442
G66	Bandella Streamside Area	21.4	P126735
G67	Bonn Streamside Area	6.7	P120728, P120729
G68	Runnymede Streamside Area	13.7	P123695, P123696
G69	English Bridge Streamside Area	34.4	P120912, P120910, P120908, P120911, P120913, P120909, P123450
G70	Wakiti Creek Streamside Area	313.5	P161635, P161636 and part P161634
G71	Deep Creek Streamside Area	5.3	P161614
G72	Skeleton Creek Streamside Area	105.0	P161632, P161637, P161638, P161639, P161640, P161598, P161599, P161600, P161601, P161606, P161607, P372699, P372700, P372701

Recommendations for natural features reserves – streamside areas continued

Rec No.	Name	Area (ha)	Parcel number list*
G73	Arcadia Streamside Area	1074.0	P163921, P163905, P163904, P125269, P163900, P163899, P163901, P163902, P162806, P162807, P162805, P163914, P163925, P164293, P163927, P163909, P162804, P163881, P163912, P163913, P163880, P163879, P163910, P163923, P163908, P163911, P163878, P163877, P163480, P163479, P163867, P163922, and parts of P163835, P163921, P163924, P363614, P163898, P163903 P161592 and P161588
G74	Dargalong Streamside Area	1.3	P163956
G75	Wharing Streamside Area	2.8	P163436
G76	Oxley Streamside Area	1.1	P201780
G77	Tarrowingee Streamside Area	24.7	P203477, P201614, P201613
G78	Whorroughly Streamside Area	12.3	P201892, P203087, P201900
G79	Eurobin Streamside Area	2.0	P202212
G80	Kergunyah Streamside Area	1.8	P204160
G81	Gundowring Streamside Area	4.8	P200890, P204201, P200891
G82	Dederang Streamside Area	7.0	P204637

Recommendations for natural features reserves – wildlife areas

Rec No.	Name	Area (ha)	Parcel number list*
G83	Heywood Lake Wildlife Area	566.6	P007053, P007052, P007054
G84	Lake Mannaor Wildlife Area	86.6	P004284, P366448, P004283
G85	Tutchewop Wildlife Area	514.6	P004298, P004297, P004296, P004295, P131950, P131951, P131952
G86	Cullens Lake Wildlife Area	748.7	P134443, P121805, P121850, P120044, P121849, P120046
G87	Duck Lake North Wildlife Area	296.2	Part of P121848
G88	Little Lake Charm Wildlife Area	61.3	P370260, P370259
G89	Stevenson Swamp Wildlife Area	92.6	P121811
G90	Lake Murphy Wildlife Area	223.4	P126661, P126664, P126662, P126663
G91	Great Spectacle Lake Complex Wildlife Area	150.8	P123213, P131971, P131972, P126695, P131973, P131970 P134448
G92	Lake Lyndger Wildlife Area	331.8	P120790
G93	Two Mile Swamp Wildlife Area	143.6	P124510, P124511
G94	Westblades Swamp Wildlife Area	69.7	P125346, P134667, P134404, P125345
G95	Harts Swamp Wildlife Area	44.9	P125276
G96	McDonald Swamp Wildlife Area	215.2	P122147
G97	Hird Swamp Wildlife Area	456.6	P133719, P134582, P126218, P126219, P133273, P133276, P126218, P122136, P126221, P126214 and part P126190
G98	Baillieu Lagoon Wildlife Area	191.0	P124468
G99	Murphy Swamp Wildlife Area	84.88	P124486, P133403, P133402
G100	Corop Wildlife Area	12.1	P132828, P132827, P132826, P128705, P128706, P128707
G101	Gaynor Swamp Wildlife Area	451.6	P134171, P122129, P134173, P132958, P122137, P134172, P122135, P134174
G102	Mansfield Swamp Wildlife Area	490.4	P133706, P133705, P133712, P133713, P133711, P133714, P133718, P133717, P133958
G103	Murchison Lagoon Wildlife Area	5.9	P163198
G104	Big Reedy Lagoon Wildlife Area	274.0	P163638, P364151, P371783, P371784

Recommendations for natural features reserves – public land water frontage areas

Rec No.	Name	Area (ha)
G105	Avoca River Reserve	1424.4
G106	Loddon River Reserve	1703.1
G107	Campaspe River Reserve	631.93
G108	Ovens River Reserve	1537.9
G109	King River Reserve	621.9
G110	Kiewa River Reserve	1186.1
G111	Various public land water frontage areas as indicated on Map A.	

APPENDIX 9: Uncategorised public land parcels recommended for revegetation

Parcel number	Area (ha)
P000188	1.93
P000190	2.35
Part of P000202	28
P000222	4.82
P003030	4.33
P004282	9.18
P120019	0.42
P120062	7.96
P120456	2.23
P122448	2.17
P122723	3.77
P122725	1.62
P122803	2.06
P124431	6.7
P124483	7.77
P124549	2.04
P124565	26.04
P124769	5.08
P124858	4.31
P124919	0.69
P124928	1.7
P125133	3.98
P125404	4.77
P125693	1.98
P127127	2.12
P128363	2.22
P128367	3.06
P128368	0.33
Part of P128370	8.55
Part of P131383	14.52
P131384	2.88
P131818	1.04
P132615	2.4
P132616	9.55
P133036	1.94
P369595	5.78
P370261	4.65
P370262	1.59
P370871	6.42

Note: Crown Land areas have in the past been described using a Crown Allotment (CA), Section (Sec) and Parish (P) or Township (T). More recently Crown land has been attributed a unique identifier known as a Crown parcel (Parcel number). The P number is provided above for Crown land parcels. Maps of these parcels can be generated by the Catchment Information Mapper website (<http://nremapsc.nre.vic.gov.au/MapShare.v2/imf.jsp?site=cim> or go to the DSE website www.dse.vic.gov.au and select the following links: 'Property, Titles & Maps', then 'Maps, Imagery and Data', then 'Maps', then 'MapShare', then 'Catchment Information Mapper') or can be provided by VEAC upon request.

APPENDIX 10: Reservation status of Ecological Vegetation Classes (EVCs)

The following table (overleaf) provides details on the extent of representation of Ecological Vegetation Classes (EVCs) in the proposed dedicated reserve system across the investigation area. The full reservation status of EVCs in each bioregion within the investigation area is available on the VEAC website (www.veac.vic.gov.au) or by request from VEAC.



		Area in hectares			Area in hectares					Bioregional conservation status for main bioregions			
EVC no.	Ecological vegetation classes	Pre-1750 extent	Current extent	Percent remaining	Current dedicated reserve	Proposed dedicated reserve	Proposed other public land	Proposed dedicated reserves as % of pre-1750 extent	Proposed dedicated reserves as % of current extent	MF	MSB	RP	VR
806	Alluvial Plains Semi-arid Grassland	3,520	3,517	99.9	1,568	3,052	64	86.7	86.8		V	V	
81	Alluvial Terraces Herb-rich Woodland/Creekline Grassy Woodland Mosaic	15	9	61.6	0	0	5	0.0	0.0				V
653	Aquatic Herbland	139	139	100.0	0	139	0	99.8	99.8	D			
1043	Aquatic Herbland/Floodplain Grassy Wetland Mosaic	59	59	100.0	0	59	0	100.0	100.0	E			
1044	Aquatic Herbland/Floodway Pond Herbland	1	1	100.0	0	1	0	100.0	100.0	D			
1045	Aquatic Herbland/Riverine Swamp Forest Mosaic	1	1	100.0	0	1	0	100.0	100.0	D			
1047	Aquatic Herbland/Tall Marsh Mosaic	68	68	100.0	0	68	0	100.0	100.0	D			
993	Bare Rock/Ground	1,160	1,160	100.0	525	691	356	59.6	59.6	na	na	na	
334	Billabong Wetland Aggregate	1,316	1,096	83.3	17	347	291	26.3	31.6	D			V
297	Billabong Wetland Aggregate/Red Gum Swamp Mosaic	21	1	7.1	0	0	0	0.0	0.0	E			D
61	Box Ironbark Forest	49	17	34.2	0	1	2	2.4	7.1				V
636	Brackish Lake Aggregate	1,959	1,884	96.2	0	0	1,843	0.0	0.0				E
291	Cane Grass Wetland	46	7	16.3	0	0	0	0.0	0.0				V
829	Chenopod Grassland	107,915	17,461	16.2	279	413	407	0.4	2.4	E			E
158	Chenopod Mallee	4,466	2,986	66.9	233	2,014	81	45.1	67.4	V	V	V	V
68	Creekline Grassy Woodland	2,390	938	39.2	4	9	88	0.4	1.0	E			E
807	Disused Floodway Shrubby Herbland	23	23	100.0	13	23	0	100.0	100.0		E		
1022	Drainage-line Aggregate	116	116	100.0	0	113	0	97.4	97.4	V			E
1023	Drainage-line Aggregate/Riverine Swamp Forest Mosaic	23	23	100.0	0	23	0	100.0	100.0	V			
1025	Drainage-line Aggregate/Sedgy Riverine Forest Mosaic	3	3	100.0	0	3	0	100.0	100.0	V			
168	Drainage-line Aggregate/Tall Marsh Mosaic	3,668	2,522	68.8	25	703	624	19.2	27.9	V			
108	Drainage-line Grassy Woodland/Lake Bed Herbland Mosaic	765	0	0.0	0	0	0	0.0	0.0	E			
809	Floodplain Grassy Wetland	581	577	99.2	0	515	54	88.7	89.4	E	E	E	
1049	Floodplain Grassy Wetland/Floodway Pond Herbland Mosaic	6	6	100.0	0	6	0	100.0	100.0	E			
1051	Floodplain Grassy Wetland/Riverine Swamp Forest Mosaic	101	101	100.0	0	101	0	100.0	100.0	E			
1052	Floodplain Grassy Wetland/Riverine Swampy Woodland Mosaic	9	5	54.5	0	1	0	16.2	29.7	E			
1054	Floodplain Grassy Wetland/Spike-sedge Wetland Mosaic	22	22	100.0	0	22	0	100.0	100.0	E			
1055	Floodplain Grassy Wetland/Tall Marsh Mosaic	21	21	100.0	0	21	0	100.0	100.0	E			
56	Floodplain Riparian Woodland	22,024	15,593	70.8	57	4,050	4,257	18.4	26.0	D			V
1033	Floodplain Riparian Woodland/Floodway Pond Herbland Mosaic	3	3	96.5	0	2	0	82.4	85.4	D			

		Area in hectares			Area in hectares					Bioregional conservation status for main bioregions			
EVC no.	Ecological vegetation classes	Pre-1750 extent	Current extent	Percent remaining	Current dedicated reserve	Proposed dedicated reserve	Proposed other public land	Proposed dedicated reserves as % of pre-1750 extent	Proposed dedicated reserves as % of current extent	MF	MSB	RP	VR
1031	Floodplain Riparian Woodland/Grassy Riverine Forest Mosaic	34	34	100.0	0	6	16	16.3	16.3	D			
1032	Floodplain Riparian Woodland/Riverine Grassy Woodland Mosaic	27	18	68.1	0	6	5	21.0	30.9	V			
1034	Floodplain Riparian Woodland/Riverine Swamp Forest Mosaic	237	55	23.3	0	2	48	0.7	3.1	D			
1035	Floodplain Riparian Woodland/Sedgy Riverine Forest Mosaic	207	205	99.1	0	3	136	1.3	1.3	D			
1037	Floodplain Riparian Woodland/Tall Marsh Mosaic	1	1	100.0	0	1	0	100.0	100.0	D			
172	Floodplain Wetland Aggregate	1,161	912	78.6	3	171	196	14.8	18.8	D			
810	Floodway Pond Herbland	1,166	1,156	99.2	183	627	430	53.8	54.2	D	D	D	
945	Floodway Pond Herbland/Riverine Swamp Forest Complex	2,523	2,523	100.0	0	783	1,735	31.0	31.0	D			
1058	Floodway Pond Herbland/Riverine Swamp Forest Mosaic	89	32	36.3	0	1	6	1.1	3.0	D			
1060	Floodway Pond Herbland/Tall Marsh Mosaic	7	7	100.0	0	7	0	100.0	100.0	D			
718	Freshwater Lake Aggregate	4,220	4,203	99.6	1	170	3,988	4.0	4.0				V
235	Plains Woodland/Herb-rich Gilgai Wetland Mosaic	1,733	186	10.7	0	0	23	0.0	0.0				E
22	Grassy Dry Forest	640	266	41.6	0	0	18	0.0	0.0				D
106	Grassy Riverine Forest	9,458	8,929	94.4	1,725	4,025	4,119	42.6	45.1	D	D	D	D
1015	Grassy Riverine Forest/Drainage-line Aggregate Mosaic	3	3	100.0	0	3	0	100.0	100.0	D			
811	Grassy Riverine Forest/Floodway Pond Herbland Complex	1,141	1,127	98.8	268	458	597	40.1	40.6	D	D	D	
1029	Grassy Riverine Forest/Floodway Pond Herbland Mosaic	5	5	100.0	0	5	0	100.0	100.0	D			
1017	Grassy Riverine Forest/Riverine Grassy Woodland Mosaic	23	23	100.0	0	23	0	100.0	100.0	V			
812	Grassy Riverine Forest/Riverine Swamp Forest Complex	8,323	6,367	76.5	0	2,964	1,584	35.6	46.5	D			D
1030	Grassy Riverine Forest/Riverine Swamp Forest Mosaic	67	67	100.0	0	67	0	99.5	99.5	D			
1062	Grassy Riverine Forest/Riverine Swampy Woodland Mosaic	1	1	100.0	0	1	0	100.0	100.0	V			
1063	Grassy Riverine Forest/Sedgy Riverine Forest Mosaic	344	344	100.0	0	344	0	100.0	100.0	D			
1065	Grassy Riverine Forest/Tall Marsh Mosaic	2	2	100.0	0	2	0	100.0	100.0	D			
175	Grassy Woodland	4,023	714	17.8	47	67	63	1.7	9.3	E			E
251	Grassy Woodland/Valley Grassy Forest Mosaic	64	5	7.6	0	0	0	0.0	0.0				E
20	Heathy Dry Forest	6	5	88.2	0	0	0	0.0	0.0				LC
23	Herb-rich Foothill Forest	195	114	58.6	0	4	12	2.2	3.8				D
813	Intermittent Swampy Woodland	9,204	9,157	99.5	5,750	7,080	1,336	76.9	77.3	D	D	D	E
107	Lake Bed Herbland	3,695	3,649	98.8	1,850	2,908	252	78.7	79.7	V	V	D	E
808	Lignum Shrubland	16,673	16,045	96.2	5,655	9,849	2,097	59.1	61.4	V	D	D	

[illegible]

		Area in hectares			Area in hectares					Bioregional conservation status for main bioregions			
EVC no.	Ecological vegetation classes	Pre-1750 extent	Current extent	Percent remaining	Current dedicated reserve	Proposed dedicated reserve	Proposed other public land	Proposed dedicated reserves as % of pre-1750 extent	Proposed dedicated reserves as % of current extent	MF	MSB	RP	VR
1016	Mosaic of Grassy Riverine Forest/Plains Grassy Woodland-Grassy Woodland Complex	0	0	100.0	0	0	0	100.0	100.0	D			
1019	Mosaic of Grassy Riverine Forest/Sedgy Riverine Forest-Riverine Swamp Forest Complex	76	76	100.0	0	76	0	100.0	100.0	D			
1061	Mosaic of Grassy Riverine Forest-Riverine Swamp Forest Complex/Riverine Swamp Forest	239	239	100.0	0	238	0	99.8	99.8	D			
1042	Mosaic of Riverine Grassy Woodland/Floodway Pond Herbland-Riverine Swamp Forest Complex	1	1	100.0	0	1	0	100.0	100.0	V			
1072	Mosaic of Riverine Swamp Forest/Floodway Pond Herbland-Riverine Swamp Forest Complex	882	882	100.0	0	881	0	99.9	99.9	D			
1074	Mosaic of Riverine Swampy Woodland/Sedgy Riverine Forest-Riverine Swamp Forest Complex	32	32	100.0	0	32	0	100.0	100.0	V			
1078	Mosaic of Sedgy Riverine Forest/Floodway Pond Herbland-Riverine Swamp Forest Complex	31	31	100.1	0	31	0	99.4	99.3	D			
1075	Mosaic of Sedgy Riverine Forest/Sedgy Riverine Forest-Riverine Swamp Forest Complex	1,253	1,231	98.2	0	1,134	0	90.5	92.1	D			
1080	Mosaic of Sedgy Riverine Forest-Riverine Swamp Forest Complex/Floodway Pond Herbland-Riverine Swamp Forest Complex	65	65	100.0	0	65	0	100.0	100.0	D			
1079	Mosaic of Sedgy Riverine Forest-Riverine Swamp Forest Complex/Tall Marsh	7	7	100.0	0	7	0	100.0	100.0	D			
1083	Mosaic of Tall Marsh/Floodway Pond Herbland-Riverine Swamp Forest Complex	83	83	100.5	0	83	0	100.0	99.5	D			
1085	Mountain Valley Riparian Woodland	1,325	892	67.3	0	4	553	0.3	0.4				
132	Plains Grassland	250,267	37,784	15.1	1,969	2,442	598	1.0	6.5	E		E	E
267	Plains Grassland/Plains Grassy Woodland/Gilgai Wetland Mosaic	13,066	1,391	10.6	19	37	318	0.3	2.6	E			E
125	Plains Grassy Wetland	2,172	645	29.7	121	145	0	6.7	22.5	E			E
55	Plains Grassy Woodland	13,455	1,532	11.4	3	6	134	0.0	0.4				E
238	Plains Grassy Woodland/Creekline Grassy Woodland/Floodplain Riparian Woodland Mosaic	1,288	80	6.2	0	0	0	0.0	0.0				E
240	Plains Grassy Woodland/Creekline Grassy Woodland/Wetland Formation Mosaic	0	0	96.6	0	0	0	0.0	0.0				E
259	Plains Grassy Woodland/Gilgai Wetland Mosaic	6	1	10.7	0	0	0	0.0	0.0	E			E
187	Plains Grassy Woodland/Grassy Woodland Complex	95	30	31.2	0	0	6	0.0	0.0				na
188	Plains Grassy Woodland/Valley Grassy Forest Complex	13	1	3.9	0	0	0	0.0	0.0				na

		Area in hectares			Area in hectares					Bioregional conservation status for main bioregions			
EVC no.	Ecological vegetation classes	Pre-1750 extent	Current extent	Percent remaining	Current dedicated reserve	Proposed dedicated reserve	Proposed other public land	Proposed dedicated reserves as % of pre-1750 extent	Proposed dedicated reserves as % of current extent	MF	MSB	RP	VR
190	Plains Grassy Woodland/Valley Grassy Forest/Grassy Woodland Complex	194	15	7.6	0	0	4	0.0	0.0				E
888	Plains Saltmarsh	298	266	89.3	3	0	260	0.0	0.0				E
826	Plains Savannah	14,080	2,257	16.0	12	38	43	0.3	1.7	E			E
803	Plains Woodland	135,033	22,055	16.3	313	3,569	1,685	2.6	16.2	E		E	E
855	Plains Woodland/Lignum Swamp Mosaic	1,250	137	11.0	0	0	0	0.0	0.0				E
273	Plains Woodland/Plains Grassland/Gilgai Wetland Mosaic	6	2	27.6	0	0	0	0.0	0.0				E
856	Plains Woodland/Red Gum Swamp Mosaic	1,034	169	16.4	0	0	4	0.0	0.0				E
292	Red Gum Swamp	1,706	1,600	93.8	45	831	564	48.7	51.9	V			V
333	Red Gum Swamp/Plains Grassy Wetland Mosaic	718	398	55.4	1	79	122	11.1	20.0	E			E
96	Ridged Plains Mallee	1,865	463	24.8	112	121	93	6.5	26.1	E		E	E
18	Riparian Forest	399	319	80.0	0	5	252	1.1	1.4				V
237	Riparian Forest/Swampy Riparian Woodland Mosaic	9	34	384.9	0	0	5	5.5	1.4				D
84	Riparian Forest/Swampy Riparian Woodland/Riparian Shrubland/Riverine Escarpment Scrub Mosaic	1	1	100.0	0	0	1	0.0	0.0				na
103	Riverine Chenopod Woodland	140,325	60,556	43.2	13,412	23,879	7,270	17.0	39.4	E	D	D	V
321	Riverine Chenopod Woodland/Lignum Swamp Mosaic	24	13	54.5	0	0	0	0.0	0.0	E			V
110	Riverine Chenopod Woodland/Plains Grassland Mosaic	1,113	266	23.9	0	0	15	0.0	0.0				E
975	Riverine Ephemeral Wetland	1	1	100.0	0	1	0	100.0	100.0	V			
1088	Riverine Grassland	65	62	95.4	0	61	0	95.0	99.5	E			
295	Riverine Grassy Woodland	56,097	28,684	51.1	3,376	11,687	4,972	20.8	40.7	V		D	V
1027	Riverine Grassy Woodland/Grassy Riverine Forest-Riverine Swamp Forest Complex	0	0	100.0	0	0	0	100.0	100.0	V			
870	Riverine Grassy Woodland/Plains Woodland Complex	1,355	283	20.9	0	0	42	0.0	0.0	E			
871	Riverine Grassy Woodland/Plains Woodland/Gilgai Wetland Complex	829	146	17.6	0	5	1	0.6	3.3	E			E
872	Riverine Grassy Woodland/Plains Woodland/Riverine Chenopod Woodland Complex	1,131	280	24.8	0	0	1	0.0	0.0	E			na
873	Riverine Grassy Woodland/Riverine Chenopod Woodland/Wetland Mosaic	50	9	18.5	0	0	0	0.0	0.0	V			
1028	Riverine Grassy Woodland/Riverine Swamp Forest Mosaic	14	14	100.0	0	14	0	100.0	100.0	V			
1040	Riverine Grassy Woodland/Riverine Swampy Woodland Mosaic	13,931	4,250	30.5	12	545	540	3.9	12.8	V			

		Area in hectares			Area in hectares					Bioregional conservation status for main bioregions			
EVC no.	Ecological vegetation classes	Pre-1750 extent	Current extent	Percent remaining	Current dedicated reserve	Proposed dedicated reserve	Proposed other public land	Proposed dedicated reserves as % of pre-1750 extent	Proposed dedicated reserves as % of current extent	MF	MSB	RP	VR
1041	Riverine Grassy Woodland/Sedgy Riverine Forest Mosaic	594	566	95.3	0	215	319	36.2	37.9	V			
814	Riverine Swamp Forest	12,630	12,043	95.4	34	5,274	6,003	41.8	43.8	D			D
1067	Riverine Swamp Forest/Riverine Swampy Woodland Mosaic	55	55	100.0	0	30	21	54.9	54.9	V			
1068	Riverine Swamp Forest/Sedgy Riverine Forest Mosaic	475	396	83.3	13	57	221	11.9	14.3	D			
1069	Riverine Swamp Forest/Sedgy Riverine Forest-Riverine Swamp Forest Complex	1,325	1,218	91.9	0	1,127	34	85.0	92.5	D			
1070	Riverine Swamp Forest/Spike-sedge Wetland Mosaic	6	6	100.0	0	6	0	100.0	100.0	V			
1071	Riverine Swamp Forest/Tall Marsh Mosaic	573	573	100.0	0	573	0	100.0	100.0	D			
815	Riverine Swampy Woodland	8,938	6,182	69.2	48	2,807	789	31.4	45.4	V	V		
946	Riverine Swampy Woodland/Lignum Swamp Mosaic	5,824	2,231	38.3	8	86	132	1.5	3.9				V
1099	Riverine Swampy Woodland/Plains Grassy Wetland Mosaic	308	30	9.7	1	1	0	0.3	3.0	E			
1073	Riverine Swampy Woodland/Sedgy Riverine Forest Mosaic	348	345	99.2	0	17	304	4.9	5.0	V			
28	Rocky Outcrop Shrubland	141	43	30.4	0	1	0	0.5	1.7				V
804	Rushy Riverine Swamp	293	206	70.4	0	168	25	57.2	81.3	D			
717	Saline Lake Aggregate	182	181	99.0	35	176	0	96.4	97.3				LC
101	Samphire Shrubland	1,351	1,266	93.7	307	202	916	15.0	16.0	LC			LC
264	Sand Ridge Woodland	1,845	727	39.4	1	96	42	5.2	13.2	E			E
694	Sandstone Ridge Shrubland/Low Rises Woodland Mosaic	147	8	5.3	0	0	0	0.0	0.0				E
985	Sandy Beach	73	64	87.7	0	5	28	6.5	7.4	na			
816	Sedgy Riverine Forest	17,427	16,534	94.9	203	10,540	3,869	60.5	63.7	D		D	V
817	Sedgy Riverine Forest/Riverine Swamp Forest Complex	3,875	3,831	98.9	0	3,646	90	94.1	95.2	D			
1076	Sedgy Riverine Forest/Spike-sedge Wetland Mosaic	0	0	100.0	0	0	0	100.0	100.0	V			
1077	Sedgy Riverine Forest/Tall Marsh Mosaic	2	2	100.0	0	2	0	100.0	100.0	D			
98	Semi-arid Chenopod Woodland	33,309	20,148	60.5	1,977	8,557	1,020	25.7	42.5	E	D	V	E
828	Semi-arid Parilla Woodland	1,839	482	26.2	18	166	84	9.0	34.5			V	
97	Semi-arid Woodland	18,184	12,337	67.8	7,137	10,117	240	55.6	82.0	V	V	V	E
200	Shallow Freshwater Marsh	619	618	99.9	43	307	308	49.7	49.7	V	V	V	
21	Shrubby Dry Forest	9	8	84.1	0	0	0	0.0	0.0				V
818	Shrubby Riverine Woodland	7,958	7,950	99.9	2,373	5,092	2,267	64.0	64.1	LC	LC	LC	
819	Spike-sedge Wetland	790	726	91.9	78	397	291	50.3	54.7	V	V	V	V
1081	Spike-sedge Wetland/Tall Marsh Mosaic	59	59	100.0	50	59	0	99.8	99.8	V			

EVC no.	Ecological vegetation classes	Area in hectares		Percent remaining	Area in hectares					Bioregional conservation status for main bioregions			
		Pre-1750 extent	Current extent		Current dedicated reserve	Proposed dedicated reserve	Proposed other public land	Proposed dedicated reserves as % of pre-1750 extent	Proposed dedicated reserves as % of current extent	MF	MSB	RP	VR
820	Sub-saline Depression Shrubland	1,011	932	92.1	113	668	109	66.1	71.7		V	D	
83	Swampy Riparian Woodland	7	3	47.6	0	0	1	0.0	0.0				E
937	Swampy Woodland	9,881	1,712	17.3	0	8	396	0.1	0.5				
821	Tall Marsh	1,435	1,411	98.3	53	913	443	63.7	64.7	LC		D	D
1087	Tall Marsh/Aquatic Herbland Mosaic	7	7	100.0	0	0	7	0.0	0.0				
1084	Tall Marsh/Non-Vegetation Mosaic	16	16	100.0	0	16	0	100.0	100.0	D			
1090	Tall Marsh/Open Water Mosaic	185	184	99.7	0	97	60	52.4	52.5	LC			
1082	Tall Marsh/Riverine Swamp Forest Mosaic	3	3	100.0	0	3	0	100.0	100.0	D			
47	Valley Grassy Forest	1,531	214	14.0	0	2	26	0.2	1.1				V
265	Valley Grassy Forest/Grassy Dry Forest Mosaic	3	1	35.7	0	0	0	0.0	0.0				V
998	Water Body - Natural or man made	5,419	6,646	122.6	307	2,513	2,121	46.4	37.8	na	na	na	
74	Wetland Formation	11,884	3,625	30.5	24	209	74	1.8	5.8	E			E
824	Woorinen Mallee	2,442	1,393	57.0	668	1,116	29	45.7	80.1	V	V	V	V
86	Woorinen Sands Mallee	2,662	2,450	92.0	2,265	2,281	25	85.7	93.1	D	D	D	
	TOTAL	1,208,430	480,762	39.8	68,388	174,748	74,131	14.5	36.3				

KEY

Bioregions

MF – Murray Fans
 MSB – Murray Scroll Belt
 RP – Robinvale Plain
 VR – Victorian Riverina

Bioregional Conservation Status

E – Endangered
 V – Vulnerable
 D – Depleted
 LC – Least Concern
 na – Not Applicable * Bioregional Conservation Status based on latest advice from DSE (June 2007)

In addition to the representation of EVCs in the public land dedicated reserve system shown above, the following EVCs are also represented in Private Protected Areas owned by the Trust for Nature (Vic) and accredited under the National Reserve System (note: not all these reserves are entirely contained within the study area)—

Alluvial Plains Semi-arid Grassland	291 ha	Lignum Swamp	86 ha
Chenopod Grassland	79 ha	Lignum Swampy Woodland	497 ha
Chenopod Mallee	161 ha	Low Chenopod Shrubland	18,921 ha
Floodplain Grassy Wetland	1 ha	Plains Grassland	350 ha
Floodway Pond Herbland	12 ha	Riverine Chenopod Woodland	969 ha
Grassy Riverine Forest	0 ha	Semi-arid Chenopod Woodland	4,899 ha
Grassy Riverine Forest/Floodway Pond Herbland Complex	13 ha	Semi-arid Woodland	69 ha
Intermittent Swampy Woodland	118 ha	Shrubby Riverine Woodland	275 ha
Lignum Shrubland	753 ha	Total	27,495 ha

The figures given for the total extent of both public land and the conservation reserve system in the investigation area is greater than the figures shown in this table because several thousand hectares of public land that have been cleared are not included in this table.

Key threatened species

Common name (see Appendix 6 for scientific name)	Victorian conserva- tion status	Total number of records in study area	Number of records in current permanent reserves (and percent of total)	Number of records in proposed permanent reserve additions	Number of records in proposed permanent reserves (and percent of total)	Number of records in other public land	Number of records in freehold land
Animals							
Barking Marsh Frog	d	66	2 (3)	13	15 (23)	13	37
Broad-shelled Tortoise	e, L	19	1 (5)	7	8 (42)	5	6
Carpet Python	e, L	64	12 (19)	15	27 (42)	7	30
Curl Snake	v	22	12 (55)	5	17 (77)	0	5
Grey-crowned Babbler	e, L	347	6 (2)	11	17 (5)	21	298
Murray Cod	e, L	214	13 (6)	60	73 (34)	72	69
Regent Parrot	v, L	94	18 (19)	20	38 (40)	29	27
Silver Perch	ce, L	76	1 (1)	24	25 (33)	33	15
Squirrel Glider	e, L	62	4 (6)	19	23 (37)	21	18
Superb Parrot	e, L	192	0 (0)	113	113 (59)	1	78
Plants							
Mueller Daisy	e, L	5	0 (0)	2	2 (40)	1	2
Slender Love-grass	e	7	0 (0)	5	5 (71)	0	2
Western Water-starwort	v	9	0 (0)	3	3 (33)	5	1
Winged Peppergrass	e, L	28	18 (64)	6	24 (86)	0	4
Small Scurf-pea	e, L	42	2 (5)	20	22 (52)	2	18
Spiny Mud-grass (Moir grass)		149	20 (13)	46	66 (44)	44	39

The above data are from the Department of Sustainability and Environment's Flora Information System and Atlas of Victorian Wildlife. See the River Red Gum Forests Investigation Discussion Paper for further details.

Sites of high geological or geomorphological significance

Significance	No. of sites	No. sites partly or wholly in conservation reserves (and % of total)	No. sites in VEAC conservation reserve additions	No. of sites in proposed conservation reserves (and % of total)	No. of sites in other public land	No. of sites in freehold land
International	0*	0	0	0	0	0
National	5	2 (40)	1	3 (60)	2	0
State	16	3 (19)	3	9 (56)	6	1

*Three international and two state significance sites located outside the Investigation area (listed in the Discussion Paper) are not included in the calculation above.

