



DRAFT REPORT

Breamlea Foreshore Masterplan and Management Plan Update



Prepared for City of Greater Geelong by:
Thompson Berrill Landscape Design Pty Ltd



AUGUST 2009

TABLE OF CONTENTS

ACKNOWLEDGEMENTS		Page No
ABBREVIATIONS		
1.0	INTRODUCTION	4
1.1	Project Scope	4
1.2	Key Objectives	4
1.3	Project Process	5
1.4	Project Team	5
2.0	SITE CONTEXT	6
2.1	Study Area	6
2.2	Historical Background	6
2.3	Land Ownership and Planning	8
2.4	Breamlea Foreshore Masterplan and Management Plan 1999	10
2.5	Relevant Commonwealth and State Government Legislation	11
3.0	EXISTING CONDITIONS	16
3.1	Geology and Geomorphology	16
3.2	Coastal Processes	16
3.3	Flora	17
3.4	Fauna and Avifauna	21
3.5	Cultural Heritage	22
3.6	Community Consultation	22
4.0	OVERALL RECOMMENDATIONS	24
4.1	Overall Design Intent	24
4.2	Point Impossible to Scott Street	25
4.3	Breamlea Township	26
4.4	Cahir Park	27
4.5	Breamlea Recreation Reserve	28
4.6	Breamlea Township Vegetation Management	29
4.7	Beach Access	30
4.8	Breamlea Caravan Park to Black Rocks	31
4.9	Traffic Management	33
5.0	IMPLEMENTATION	37
5.1	Climate Change and Coastal Processes	37
5.2	Protection of Significant Fauna	38
5.3	Vegetation Management	39
5.4	Stormwater Management	41
5.5	Overall	42
5.6	Point Impossible to Scott Street	43
5.7	Breamlea Township	44
5.8	Breamlea Caravan Park to Black Rocks	45
5.9	Infrastructure	46
5.10	Management and Planning	48
5.11	Cultural Heritage	49
6.0	BIBLIOGRAPHY	51

APPENDICES

APPENDIX A: Summary Report Community Consultation Outcomes

Prepared by TBLD P/L for City of Greater Geelong February 2009

APPENDIX B: Breamlea Moonah Mapping

Prepared by Mark Trengove Ecological Services November 2004 for Breamlea Association and City of Greater Geelong

APPENDIX C: Draft Updated Breamlea Community Fire Management Plan 2009

INDEX OF PLANS & FIGURES

MASTERPLAN

DWG NO BF D01 Final Design Thompson Creek to Noble Rocks	35
DWG NO BF D02 Final Design Noble Rocks to Black Rock	36

VEGETATION COMMUNITIES PLANS

DWG NO BF E05 Vegetation Communities Thompson Creek to Noble Rocks	19
DWG NO BF E06 Vegetation Communities Noble Rocks to Black Rock	20

Figure 1	Site Context Plan	6
Figure 2	Existing Land Management	9
Figure 3	Point Impossible to Scott Street	25
Figure 4	Breamlea Township	26
Figure 5	Breamlea Caravan Park to Black Rocks	31

ACKNOWLEDGEMENTS

The study was guided by a project steering group made up of representatives from the City of Greater Geelong, Department of Sustainability and Environment, Parks Victoria, Breamlea Progress Association, Breamlea Coast Action, Bancoora Surf Life Saving Club, Wathaurong Cooperative and Surf Coast Shire.

We would like to thank the following members of the Steering Committee for their guidance and input to this plan.

Burke Renouf	Sustainability Officer, City of Greater Geelong, CoGG
Matt Jackman	Capital Works Project Manager, CoGG
David Scurrie	Fire Prevention Officer, CoGG
Alex Shackleton	Environment Officer, CoGG
Ned Turcinov	Environment Officer, CoGG
Geoff Brooks	Senior Land Use Planner, South West Region, DSE
Reg Abrahams	Wathaurong Aboriginal Cooperative Ltd
Steven Reddington	Sustainability Department, Barwon Water
Siobbon Rogan	Parks Victoria
David Hooker	Breamlea Coast Action
Brian Southall	Breamlea Association
Dawn Tarticchio	Breamlea Caravan Park
Rob McKinley	Bancoora SLSC

We would also like to thank all the residents and people who responded to the questionnaire and enthusiastically attended the community workshop giving valuable input and direction for the development of this updated Management and Masterplan for Breamlea.

ABBREVIATIONS

Abbreviation	Description
AAV	Aboriginal Affairs Victoria
BCC	Barwon Coast Committee
BW	Barwon Water
CAP	Coastal Action Plan
CoGG	City of Greater Geelong
DSE	Department of Sustainability and Environment
EBPC	Environment Protection and Biodiversity Conservation Act
EEMSS	Estuary Entrance Management Support System
EPA	Environment Protection Authority
ESO	Environmental Significance Overlay
FFG	Flora and Fauna Guarantee Act
GORCC	Great Ocean Road Coast Committee
HO	Heritage Overlay
PV	Parks Victoria
RAP	Registered Aboriginal Party
SCS	Surf Coast Shire
VCS	Victorian Coastal Strategy
VPO	Vegetation Protection Overlay
WMO	Wildfire Management Overlay

1.0 INTRODUCTION

1.1 Project Scope

The Breamlea Foreshore Masterplan and Management Plan study area included approximately 3km of foreshore from Thompson Creek to Black Rocks. Breamlea is a unique place, with just over 100 houses nestled in the shelter of spectacular sand dunes between the coast and a unique saltmarsh and estuarine environment of Thompson Creek (formerly Bream Creek). Given the proximity of residents to these two unique environments of the Foreshore and Saltmarsh, there are inevitably pressures placed upon them and this plan outlines a forward direction to achieve a balance between the human impacts and protection of these important and natural systems.

Coastal reserve management at Breamlea over the last 10 years has been completed by the City of Greater Geelong in accordance with the recommendations of the Breamlea Foreshore Masterplan and Management Plan adopted by Council in 1999. In accordance with the *Coastal Management Act 1995* management plans are recommended to be reviewed every 3 years and provide updated management recommendations for Council over a 10 year planning horizon.

The project brief called for the preparation of an update of the existing Management Plan to guide the future management and development of Breamlea. The Plan is to establish up to date management guidelines and recommendations for the City of Greater Geelong to encourage and guide an integrated approach for the future management, use and development of the reserve in consultation with other management agencies, adjoining residents and the local community.

As with the previous plan, the project was guided by a project steering group made up of predominantly representatives from the City of Greater Geelong, Department of Sustainability and Environment, Parks Victoria, CCMA, Breamlea Progress Association, Breamlea Coast Action, Bancoora Surf Life Saving Club, Wathaurong Cooperative, Barwon Water and Breamlea Caravan Park.

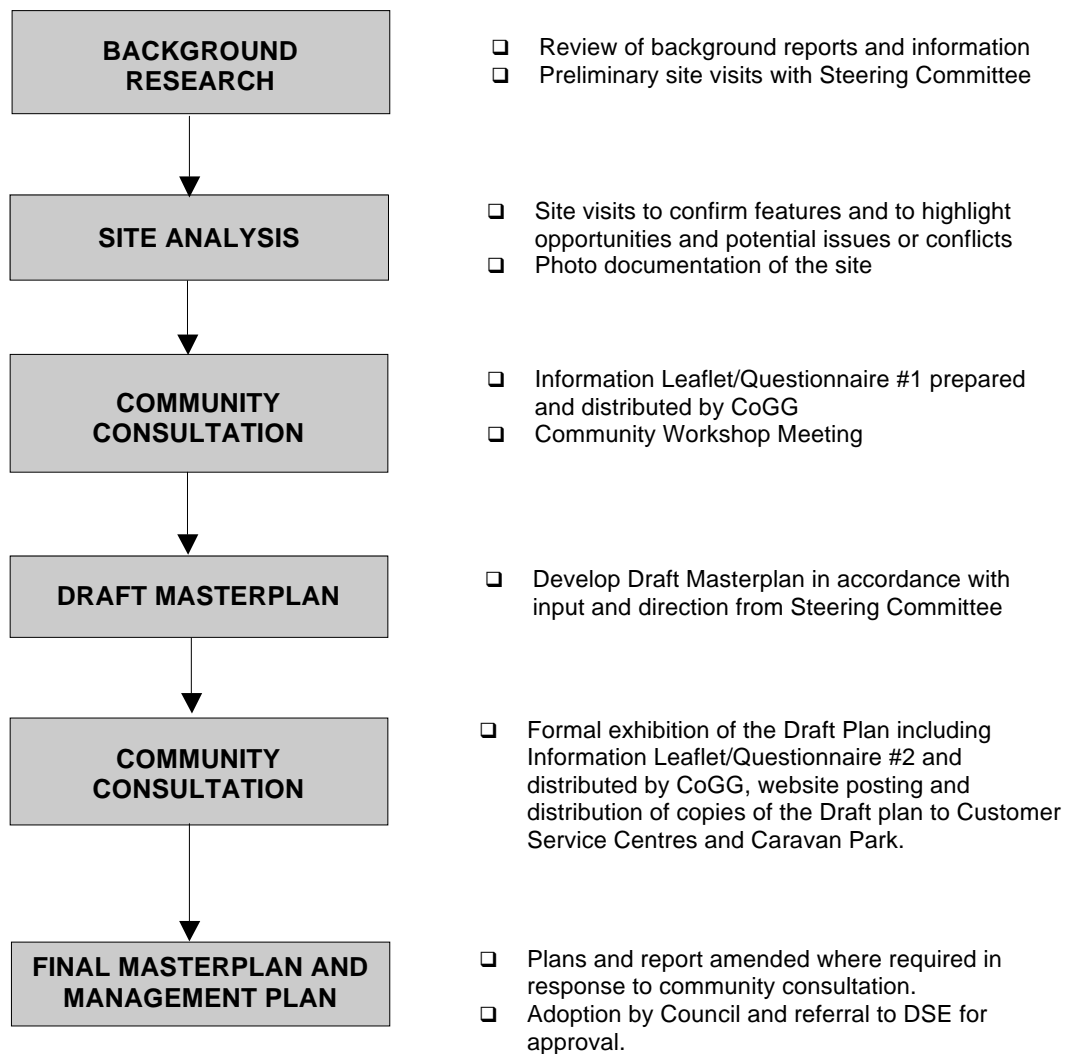
Specifically the project brief called for the update of the existing Plan while again....”
ensuring that the long term management and development aspirations of the residents and relevant organisations are in accordance with the Victorian Coastal Strategy and are realised in such a manner that the area’s natural and intrinsic character is maintained and enhanced.”

Consultation with the wider community was undertaken during the development of the updated plan at a workshop, via an information leaflet/questionnaire and written submissions. The enthusiastic involvement of the Steering Committee and the wider Breamlea community has again informed the development of this plan.

1.2 Key Objectives

- To re-confirm the community’s vision and values for the reserve
- To update the Management Plan based on these, and a plan for the continued improvement of the recreational, environmental and visual amenity
- To review existing infrastructure and provide recommendations for improvement and ongoing maintenance
- To review existing pedestrian and vehicle links and investigate opportunities for further improvement
- To protect the integrity of sites of historical and cultural value significance
- To review provision of recreational infrastructure

1.3 Project Process



1.4 Project Team

Thompson Berrill Landscape Design Pty Ltd (TBLD)

TBLD is a firm of landscape architects with expertise in the area of open space, coastal and waterway planning and design. TBLD have worked extensively in this region preparing a range of management plans for other coastal areas and waterways through the Bellarine Peninsula and Geelong region, including the 1999 plan for Breamlea to be updated as part of this study.

2.0 SITE CONTEXT

2.1 Study Area

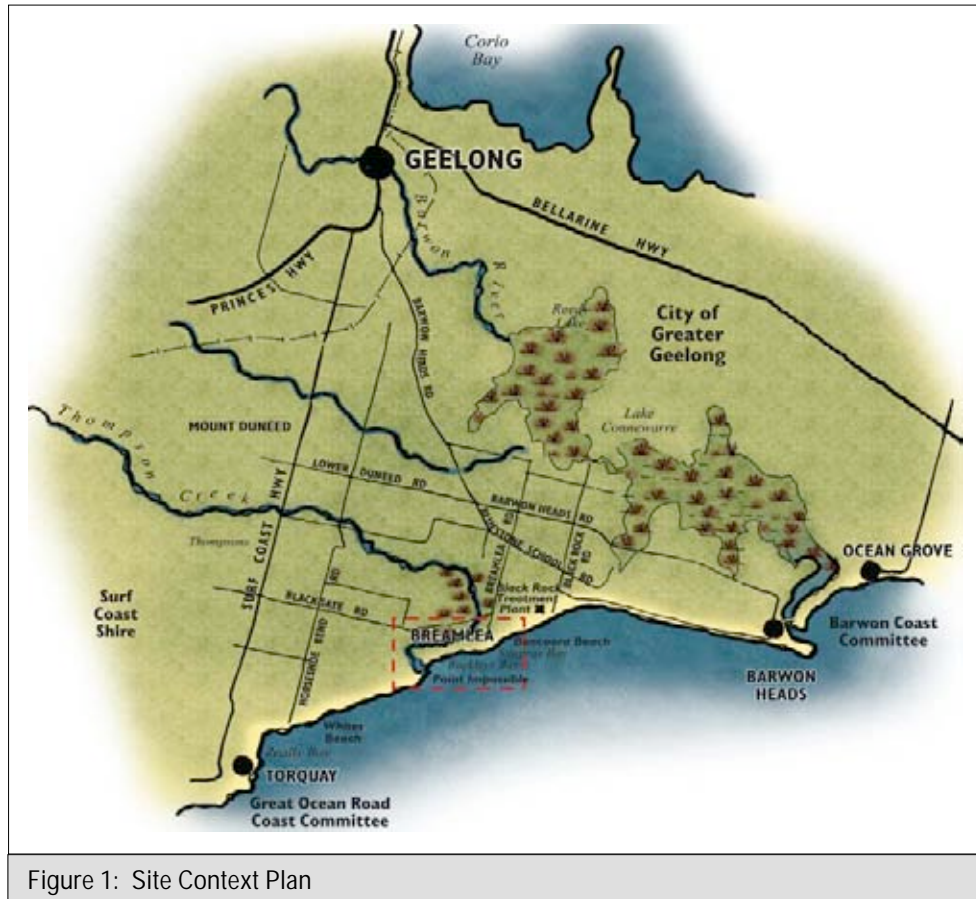


Figure 1: Site Context Plan

2.2 Historical background

Europeans first made written observations on the Aboriginal people of the Bellarine Peninsula from 1802, when explorers began to chart the entrance of Port Phillip Bay. However, most early texts relate to 1836 onwards, when there was a permanent European presence.

According to Clark (Terraculture, 2008) the coastline to the east of Torquay (including Breamlea) falls within the known traditional boundaries for the Wathaurong or *Wada wurrung* language group, whose territory included the coast west of the Werribee River to Painkalac Creek at Aireys Inlet. The *Wada wurrung* language group included at least twenty-five clans, family units who were closely associated with particular localities. The *Bengalat balug* clan (Bellarine Peninsula people) are thought to have controlled the coastline as far south(west) as the Barwon River. The neighbouring clan on the western side of the Barwon River may have been the *Wada wurrung balug*, who were more generally associated with the Geelong area. For more information, refer to section 3.5, Cultural Heritage.

William Buckley was an escaped convict from the *Calcutta* in 1803 when they settled briefly at Sorrento. Buckley and two others travelled around Port Phillip Bay to Corio Bay and the Bellarine Peninsula and beyond. His two companions left to find their way back and Buckley stayed on and was adopted by the *Wada wurrung*. He lived with them near

the mouth of Bream Creek (now Thompson Creek) for the next 32 years (Wynd, 1988). The Buckley's Well marks the location of the freshwater spring, which was reputedly the source of Buckley's fresh water at his Breamlea camp (Geelong Regional Commission, undated). This is listed on Heritage Victoria's Victorian Heritage database as a B listed Heritage place of Regional significance. The site is listed in the City of Greater Geelong Planning Scheme with Heritage Overlay H057.



Photo 2-1: Area known as Buckley's Well

In 1891 the SS Bancoora ran aground off Buckley's Beach and all the crew came ashore and camped in the dunes. By the early 1900's Bream Creek became a summer camping place for people of Geelong and by the 1920's campers were constructing makeshift huts from a range of materials including timber washed up on the beach. During the depression of the 1930's these huts became home to a number of people who could no longer afford rent in Geelong. Refer to photographs 2-2 and 2-3 below.

In 1942 the Surveyor General sub-divided the land at Breamlea for sale at public auction and included a Recreation Reserve of 5 acres (which is today known as Breamlea Recreation Reserve) and a Municipal Reserve (Cahir Park).



Photo 2-2: An Early Hut erected by the Southwells (Source: B.Roberts)



Photo 2-3: Tents in the dunes at Breamlea during the early 1900's

2.3 Land ownership and Planning

2.3.1 Land Ownership & Management

The Breamlea Foreshore, with the exception of freehold land, is Crown Land. The land is managed by a range of management authorities. The foreshore and dunal area is managed by City of Greater Geelong, acting as the Committee of Management on behalf of DSE for Crown land, the majority of the saltmarsh area along Thompson Creek is managed by Parks Victoria, and the foreshore at the Black Rock Treatment Plant is managed by Barwon Water. Great Ocean Road Coast Committee manage the foreshore south of and including Point Impossible while Surf Coast Shire is the municipal authority north of Blackgate Road and west of Breamlea Road. Barwon Coast Committee manage the foreshore east of Black Rock through to Barwon Heads.

Refer Figure 2: Land Management Plan

AGENCY	MANAGEMENT RESPONSIBILITIES
City of Greater Geelong (COGG)	<ul style="list-style-type: none"> • Manage the Foreshore Reserved Crown Land as designated Committee of Management on behalf of DSE. • Responsible for the management of the Breamlea Caravan Park. • The local planning and municipal authority for Breamlea.
Department of Sustainability and Environment (DSE)	<ul style="list-style-type: none"> • Own the Reserved and Unreserved Crown Land within the study area. The Reserved Crown Land is managed by City of Greater Geelong as designated Committee of Management. • The seabed, which is unreserved crown land, is managed directly by DSE.
Parks Victoria (PV)	<ul style="list-style-type: none"> • Parks Victoria is responsible for the management of the wetland areas along Thompson Creek.
Barwon Water (BW)	<ul style="list-style-type: none"> • Owns and manages the Black Rock Treatment Plant. • Owns and manages the decommissioned sewer along Thompson Creek.
Surf Coast Shire (SCS)	<ul style="list-style-type: none"> • The local planning and municipal authority west of Breamlea Road and north of Thompson Creek including Pt. Impossible Road.
Corangamite Catchment Management Authority	<ul style="list-style-type: none"> • Catchment authority Thompson Creek including the referral authority for mouth opening.
Great Ocean Road Coast Committee (GORCC)	<ul style="list-style-type: none"> • Manage the Foreshore Reserved Crown Land south of Thompson Creek including Point Impossible as designated Committee of Management on behalf of DSE.
Barwon Coast Committee (BCC)	<ul style="list-style-type: none"> • Manage the Foreshore Reserved Crown Land east of Black Rocks as designated Committee of Management on behalf of DSE.
Aboriginal Affairs Victoria (AAV)	<ul style="list-style-type: none"> • Responsible for administering the <i>Aboriginal Heritage Act</i> 2006.
Registered Aboriginal Party (RAP)	<ul style="list-style-type: none"> • The Aboriginal Heritage Act 2006 allows for Registered Aboriginal Parties (RAPs) to take responsibility for designated areas. Any agency or landowner that intends to disturb or destroy an archaeological site (both registered and unregistered) must seek written consent from the RAP when confirmed prior to proceeding with works. Generally works within 100 metres of a registered site constitutes disturbance and will require written consent. The Victorian Aboriginal Heritage Council recently appointed the Wathaurung Aboriginal Corporation as the RAP for areas along the Bellarine Peninsula and Geelong including Breamlea.



Figure 2 Existing Land Management
 (Source: Department of Sustainability & Environment)

2.3.2 Planning Scheme Overlays

The majority of public open space at Breamlea including the foreshore, along Thompson Creek, Cahir Park and the Caravan Park is zoned Public Conservation and Resource Zone (PCRZ) in the current City of Greater Geelong Planning Scheme.

Breamlea Recreation Reserve is zoned as Public Park and Recreation Zone (PPRZ). The residential area of Breamlea is included in the Township Zone (TZ) and the Barwon Water Black Rock Sewerage Treatment Plant is zoned Public Use Zone – Service and Utility (PUZ1).

There are two Environmental Significance Overlays (ESOs) over Breamlea. ESO 2 covers wetland areas along Thompson Creek and is designed to protect sensitive flora and habitat values associated with the creek.

Private residential areas in Breamlea are also covered by two overlays. These include an Environmental Significance Overlay ESO1, which is designed to:

- Conserve and protect areas of flora and fauna habitat, geological and natural interest
- Ensure development does not impact on the environmental significance of the land
- Ensure that siting and design of any buildings and works maintains the environmental integrity of the land

Residential areas are also subject to a Design and Development Overlay (DDO14), which requires a permit for buildings above 7.5m in height.

There is a single existing Heritage Overlay (HO57) nominated as Buckleys Well, which applies to all land with 10m of the well site near the shop off Horwood Drive.

2.4 Breamlea Foreshore Masterplan and Management Plan 1999

In addition to ongoing weed control, specialist cultural heritage and Moonah studies, the following capital works have been undertaken in accordance with the recommendations of the 1999 Masterplan and Management Plan.

2.4.1 Bancoora

- Realignment of beach access at the SLSC
- Upgrade of SLSC car park
- Construction of look out platforms and surf patrol unit
- Installation of picnic facilities and BBQ
- Path connection through to the Caravan Park
- Removal of berm and widening of access road to enable overflow parking

2.4.2 Recreation Reserve

- Installation of new public toilet
- Installation of picnic facilities
- Path connection through to Caravan Park

2.4.3 Cahir Park

- Removal of toilet block
- Provision of seats and tables
- Improvements to vehicle turnaround at Scott Street

2.4.4 Foreshore Reserve

- Upgrade of beach access stairs
- Installation of beach signage
- Improvements to emergency vehicle turnarounds

2.4.5 Thompson Creek

- Decommissioning of the sewer main and concrete retaining wall (removal and rehabilitation in progress)

2.5 Relevant Commonwealth and State Government Legislation

2.5.1 Commonwealth and State Legislation

Aboriginal Heritage Act 2006

- Creates an Aboriginal Heritage Council, with membership of traditional owners who will advise on the protection of Aboriginal heritage.
- Cultural heritage management plans will be required for certain development plans or activities.
- Registered Aboriginal Parties will be able to evaluate management plans, advise on permit applications, enter into cultural heritage agreements and negotiate the repatriation of Aboriginal human remains.
- Alternative dispute resolution procedures will be developed.

Heritage Act 1995

Heritage Victoria administers this Act. It is intended to protect the heritage in Victoria relating to non-Indigenous or European heritage in the state of Victoria. This includes built structures, modifications to the natural landscape including archaeological features and deposits resulting from its historic use.

Crown Land (Reserves) Act 1978

The Act provides for the reserves of Crown lands for certain purposes and for the management of such lands.

Coastal Management Act 1995

The Act stipulates the appropriate strategic planning and management documents that are required to guide the future management of the Victorian coast. This Management Plan has been prepared in accordance with its requirements.

2.5.2 Relevant State-wide policies and strategies

2.5.2.1 Victorian Coastal Strategy 2008, Victorian Coastal Council, 2008

This Strategy was developed by the Victorian Coastal Council under the *Coastal Management Act (1995)* and provides an integrated coastal management framework for the Victorian Coast. The Strategy considers the environmental, social and economic implications of future management of the coast in order to establish an ecologically sustainable development and management framework. The Strategy responds to three key issues facing the coast:

- climate change which will result in impacts on the coast, including rising sea levels;
- rapid population growth in coastal areas; and
- the health of our unique and valued marine environment.

The Strategy has identified Breamlea as having low growth capacity, which is defined as 'Growth contained within existing urban or appropriately zoned land through infill capacity and renewal with defined settlement boundaries.'

- 2.5.2.2 Siting and Design Guidelines for Structures on the Victorian Coast**, Victorian Coastal Council (1998)
 These guidelines assist coastal managers, local government and other stakeholders to ensure sympathetic development that complements the surrounding landscape. They describe the issues to consider in the siting, design and construction of new structures and the improvement of existing structures in coastal areas.
- 2.5.2.3 Central West Victoria Regional Coastal Action Plan**, Morrice, Margie in association with the Central West Victoria Coastal & Marine Planning Program Steering Committee and Barnes, C (December 2003)
 The CAP sets out the strategic direction for the region. It brings together Commonwealth, State regional and local policy into a coastal and marine regional context. In particular it is based on the principles of environmental sustainability and the hierarchy of principles in the Victorian Coastal Strategy 2002. The actions provide for the continual improvement of outcomes for coastal and marine values.
- 2.5.2.4 Central West Victoria Estuaries Coastal Action Plan**, Western Coastal Board in association with Chris Harty Planning and Environmental Management, Central West Victoria Coastal & Marine Planning Program Steering Committee and Morrice, Margie (August 2005)
 This Plan establishes a planning and management framework that will improve the protection of estuary values through integrated management planning. It is based on the principles of integrated coastal management, the Victorian Coastal Strategy 2002, ecological sustainability, capacity building and community empowerment.
- 2.5.2.5 Corangamite Wetland Strategy**, Corangamite Catchment Management Authority (2006 - 2011)
 This strategy aims to provide a strategic investment framework for the cost-effective and coordinated promotion, protection and enhancement of the region's wetland assets. The strategy facilitates the conservation and wise use of regional wetlands so as to maintain and where practicable, restore their ecological character. It is a sub-strategy to the Corangamite River Health Strategy.
- 2.5.3 Relevant local policies and strategies**
 The following is a brief summary of the key outcomes and recommendations from existing background documents that informed the development of the Management Plan. For original descriptions, please refer to the original report listed in the Bibliography.
- 2.5.3.1 Thompson Creek Estuary Opening**
 Recent estuary opening meetings between the CCMA, DSE, CoGG and SCS concluded that the mouth/estuary area of Thompson Creek is Crown Land Reserve and is located within the boundaries of the Surf Coast Shire. The Crown Land is managed by GORCC as the delegated authority under the *Crown Land Reserves Act*. Each area of Crown Land requires *Coastal Management Act* consent from DSE for all works including artificial mouth openings unless it is considered maintenance or an emergency under the *Emergency Management Act*. Mouth openings and other works also require a Works on Waterways Permit under the *Water Act* from the CCMA, unless it is considered an emergency under the *Emergency Management Act*. The *Emergency Management Act* overrides the *Coastal Management Act* and the *Water Act* if the situation is considered an emergency under this Act. Even if considered an emergency under this Act, it is considered good management to adhere to the conditions of the Coastal Management Act Consent and the Works on Waterways Permit under the Water Act where-ever possible.
- The CCMA, DSE and GORCC have no need to open the Thompson Creek estuary unless it is of environmental benefit. However Council's including CoGG and SCS, are responsible for management of other social and economic values, including risks to infrastructure and public safety, that are not the responsibility of DSE, GORCC or the CCMA. Therefore, Councils can request permission under the Coastal Management Act and Water Act to conduct an opening and to manage social, economic and environmental

risks. If Council is not supported by the other agencies to conduct the opening for social and economic reasons and the situation becomes an emergency opening, this does not require Coastal Management Act or Water Act Consent.

Risks to social and economic values are higher for the lower lying areas on the Surf Coast Shire side. The most recent artificial mouth opening was completed by Surf Coast Shire under the *Emergency Management Act* to relieve flooding on Point Impossible Road in late 2008.

The CCMA is funding the data collection and population of the Estuary Entrance Management Support System (EEMSS) for estuaries that are opened under a Works on Waterways Permit including Thompson Creek. EEMSS collects data on social, environmental and economic assets affected by inundation by closed estuaries or by opening decisions. Part of the process of populating EEMSS includes looking at opportunities to undertake physical works on social and economic assets that would enable artificial openings to be minimised. If identified, there is potential for CCMA and the key stakeholders to apply for funding to address such works. The EEMSS will be applied and will be referred to as the decision support system for all artificial estuary mouth openings and permits will be updated accordingly to reflect this requirement. The EEMSS does not make an opening decision, but it does provide more robust rationale based on relative risk for supporting a decision.

2.5.3.2 Biodiversity Strategy, City of Greater Geelong, 2003

This Strategy details the context of biodiversity in Geelong, its importance, value and legislative obligations for its protection. The Biodiversity inventory is provided in summary whilst the Strategy itself details the Vision, Mission, Guiding Principles, Commitment and Targets to ensure Biodiversity protection and enhancement. Biodiversity is defined as 'the totality of the variety of living organisms, the genetic differences among them, and the communities and ecosystems in which they occur. It is the natural wealth of the earth, which supplies all our food and much of our shelter and raw materials' (COGG, 2003). Breamlea is located in a Primary biodiversity zone. This refers to all Council conservation reserves, State conservation reserves and any other area that is managed for the specific purpose of conserving and protecting biodiversity.

2.5.3.3 Domestic Animal Management Plan, City of Greater Geelong, 2008

The City of Greater Geelong has one of the largest dog and cat populations in the state. Critical to animal management is the concept of responsible pet ownership and the plan is designed to address issues and set parameters for dogs and cats in public spaces in accordance with the Domestic (Feral and Nuisance) Animals Act.

The Management Plan notes that the beach at Breamlea is designated as Category 1 (Green) and is an area where dogs are permitted off leash at all times. The Domestic Animal Management Plan indicates that there may be some short-term restrictions on beaches where the Hooded Plover is nesting which applies to Breamlea. In permitted areas, dogs must always be under direct control of the person in charge of the dog(s). Bancoora Beach is designated as Category 2 (Yellow) and is an area where dogs are permitted off leash and under effective control in the mornings prior to 10:00am and in the evenings after 6:00pm (outside of daylight savings time). Dogs are required to be on a leash at all other times.

2.5.3.4 Draft Updated Breamlea Community Fire Management Plan, Ecotide Pty Ltd, 2005

The purpose of the plan is to optimize the safety of people and assets (built and environmental) by mitigating the effects of bushfire in the township of Breamlea. The general coastal area is subject to severe fire weather. Surrounding areas and adjacent westerly coastal towns have had a history of major fires for many years, while Breamlea Township has not had a major bushfire in living memory. The town is a popular coastal recreation area and the population increases by many hundreds during the Fire Danger Period, thus increasing the potential for ignition of fires. In the event of a bushfire in Breamlea township there is a high probability of life and asset loss due to the combination of population density and vegetation adjacent to residences.

Fire suppression is made more difficult due to the single access route into the township, the potential danger to fire fighters in the narrow and vegetated road surrounds and the inadequate water supply to attack a bushfire. There are significant areas of fire prone vegetation within the township adjacent to houses and surrounding the Caravan Park. During a bushfire it is likely that the flow of traffic to and from the township will be disrupted or highly congested, with the potential for motor vehicle accidents increased. Congestion will be due to a combination of fire fighting vehicles attempting to reach the township and a significant part of the community opting to evacuate in the opposite direction.

The Municipal Fire Prevention Committee is responsible for the management and subsequent maintenance of the plan. A total of twenty-one recommendations have been outlined to improve fire management in the study area. Where appropriate, outstanding recommendations have also been included in the Management Plan recommendations. Note: The City of Greater Geelong has completed a review of the Breamlea Community Fire Management Plan and a copy of the Updated Plan is attached as Appendix C to this report.

2.5.3.5 Bellarine Peninsula Strategic Plan, City of Greater Geelong, 2006

The 2016 vision for Breamlea is to remain small and peaceful, while also doing our best to protect the environment that it is nestled in.

In the following decade...

- Breamlea will continue to be a quiet, peaceful relaxing place to live
- The community will continue to improve on the protection of the environment that surrounds the township
- There is a need to continue working in collaboration with COGG and other departments to ensure the township remains sustainable for the future generations
- Breamlea is to remain a township that offers passive recreation to residents and visitors
- Maintain small town
- To be environmentally sensitive
- Promote passive recreation
- Strictly controlled development

2.5.3.6 Breamlea Holiday Park Future Strategy, City of Greater Geelong, 2009 – 2014

This strategy covers a 5 year period from 2009 – 2014 and will be implemented under the direction and guidance of the Environment & Natural Resources Unit of the City of Greater Geelong.

The park and infrastructure includes 136 Sites, of which 67% are 12 month permit sites with the remainder being casual powered and un-powered sites and 6 cabins, with 2 more to be constructed. The park also has 2 amenities blocks, a general store, post office, a playground and BBQ facilities. There is currently no onsite caretaker/manager residence.

The park has a long history with the local community of Breamlea. The combined park, post office and shop are in fact the only commercial facilities in Breamlea and are viewed almost as the 'hub' and often the location for social interaction of locals and park users.

Income generated from the Caravan Park is put back into park improvement and environmental management, therefore the better the visitor amenities, experiences and in turn occupancy rates, the better the potential profits for improvements.

The report identifies issues including:-

- Non compliance of permit holder vans including the age of vans and the ability of vans to be towed as required by regulations
- Low casual usage of the park despite being located in one of the most popular visitor regions in Australia

Opportunities identified to revitalize the park include:-

- Reduction in the high number of 12 month permit holders should alter to allow for wider casual and community use

- Provision of new cabin accommodation and other types of environmentally responsive accommodation such as eco-tents and camping platforms
- Management as an eco-demonstration site for the local community with practical information and advice on how to maintain and restore our natural environment, use resources more efficiently and reduce our everyday environmental impacts.

3.0 EXISTING CONDITIONS

3.1 Geology and Geomorphology

The coast at Breamlea is formed of high sand dunes that form a ridge at the back of the beach from near Point Impossible to the lava flows at Black Rocks. The dune system has caused Thompson Creek to meander to the west and discharge near Point Impossible and has also caused the development of extensive salt and freshwater marshes in the poorly drained area to the north of the dunes. The dunes are of Pleistocene origin, with many exposures of calcarenite; formed from the cementation of old wind blown sands with calcium carbonate from shell fragments within the sands. While the base of the dunes and the rock formations offshore are of Pleistocene origin, the surficial deposits on the dunes are of recent origin.

The saltmarsh that borders Thompson Creek to the north of the township is of recent origin and would have formed in approximately the last 6-8,000 years when the sea level rose and then stabilised after the last ice age. The present sea level has caused the creek to slow down and occasionally stop flowing. This has allowed sediment to deposit and the saltmarsh to grow. The creek and associated saltmarsh communities are relatively untouched and so is important for its vegetation communities and as a roosting area for many species of birds.

3.2 Coastal Processes

Previous investigation (G.Byrne 1998) concluded that the dune system seems to be actively growing due to coastal wind action. There are numerous blowouts along the beach and sand is constantly being blown up from the beach into these blowouts. From there it is eventually stabilised by vegetation. The mechanism of the capture of the sand and the formation of the dune shape seems to be as follows:

- Whenever a new blowout forms, the sand is blown straight up from the beach. There are several cases where footpaths have acted as blowouts and the path itself has soon filled in with sand so that the level of sand is higher at the landward end of the path than it is in adjacent areas.



Photo 3-1: Sand build up on beach access steps



Photo 3-2: Steep natural dune frontage

- Behind the first line of dunes there are several large areas of denuded sand, where the circulating wind has carved round bowls that expose the Pleistocene calcarenite substrate. These bowls seem to persist for many years but it is possible to identify older bowls that have been partly filled in with new sand and have revegetated.
- There is a ridge of high dunes on the north side of the bowl formation and sand is being blown up through further blowouts to the north side of this ridge. Once there it

is no longer part of the active beach dune system and is just increasing the size of the dune formation.

While some of the blowouts have been initiated from recent access paths to the beach, the process appears to be natural. In fact the areas of unvegetated and mobile sands are more extensive in the historical aerial photography than they are at present. The most extensive area of mobile sand appears in the earliest available aerial photography in 1939.

The dune system at Breamlea is acting as a sink for sand that is moving along the coast from the west. The beach near Breamlea has been previously assessed as stable in the long term. It undergoes short-term erosion of the back of the beach and the front of the dunes during storms, however this is a cyclical phenomenon and the beach soon builds up again. It is estimated that there is in excess of 200,000 cubic metres of sand a year every year travelling from west to east along the beach and in the nearshore zone under the prevailing south west swells. A small proportion of that sand is blown ashore, particularly in summer, and this gradually increases the volume of sand permanently captured in the dune system. The dunes are therefore an active and dynamic system of erosion and deposition.

The Victorian Coastal Strategy highlights that one of the most significant dynamic elements that needs to be managed is climate change. This will result in direct impacts on the coastline at Breamlea and the Thompson Creek estuary including increased sea levels (*approximately 18cm - 59cm by 2100, Victorian Climate Change Green Paper, issued 3 June 2009*) and increased frequency and severity of storm events.

3.3 Flora

Moonah (*Melaleuca lanceolata ssp lanceolata*) is a dominant tree species within the coastal areas of the Bellarine Peninsula, including Breamlea. As a result of clearing and other pressures brought on by development, Moonah woodlands are now much reduced from the former distribution. Moonah Coastal Woodlands are a listed community under the Victorian Flora and Fauna Guarantee Act (1988).

The pre-1750 EVC mapping of the study area undertaken by DSE (2003) indicates that the study area and immediate surrounds were comprised of EVC 1 Coastal Dune Scrub Mosaic, EVC 9 Coastal Saltmarsh and EVC 175 Grassy Woodland. While Moonah is not listed as a benchmark component of any of these EVC's, historical records (M.Trengove – personal data) and the present remnant distribution indicate that Moonah is a component of EVC 1 and EVC 175.

In 2004, Moonah mapping completed by Mark Trengove recorded 291 individual indigenous remnant Moonah trees at 86 sites within the Breamlea area.

- 62% of all Moonahs occur on private property
- 94% of all Moonahs are mature
- No regeneration of Moonah is occurring at 96% of all sites and that only limited regeneration has occurred at the remaining 4%
- 89% of all Moonahs have a relatively healthy canopy
- 90% of all sites have a relatively poor quality understorey, with the majority carrying exotic understorey vegetation, comprised in the main of environmental weeds or exotic gardens species

Recommendations from this report have informed CoGG works programs and have also been adopted as part of the updated Management Plan.

During the preparation of the 1999 plan, a survey of existing vegetation was undertaken by Mark Trengove. Vegetation communities were identified, and a list of significant species completed. The original Vegetation Communities Plan has been reproduced for this report and includes a full list of the Indigenous plant species, environmental weeds and regionally significant species.



Photo 3-3: Saltmarsh



Photo 3-4: Horwood Drive

3.3.1 Vegetation Communities

Regionally Significant:

- ***Themeda triandra/Poa poiformis* grassland**
This occurs adjacent the northern boundary of the oval at the Breamlea Recreation Reserve. It contains a good representation of indigenous grassland species and is in relatively good condition with species including *Themeda triandra*, *Poa poiformis*, *Ficinia nodosa*, *Clematis microphylla*, *Juncus sp.*, *Dianella brevicaulis*, *Dichondra repens*, *Asperula conferata*, *Veronica gracilis*, *Geranium sp* and *Stipa flavescens*.



Photo 3-5: Grassland at Breamlea Recreation Reserve

Other dominant Vegetation Communities include:

- ***Leptospermum laevigatum*, *Acacia sophorae* dominated dune vegetation**
This predominantly occurs in the dune system adjacent to the township of Breamlea. These two species are not considered indigenous to this coastal system and have been shown to be invading more diverse coastal shrublands along this section of coast. Other indigenous species in this vegetation community include *Spinifex hirsutus*, *Ficinia nodosa*, *Rhagodia candolleana*, *Swainsona lessertifolia*, and *Clematis microphylla*.
- **Mixed coastal Shrubland/grassland**
This is the dominant vegetation community between Thompson Creek and the area west of Scott Street. There is an invasion of Marram Grass and some Coast Tea-tree but otherwise, this vegetation is in relatively good condition. The indigenous species include *Ozothamnus turbinatus*, *Leucophyta brownii*, *Senecio sp.*, *Apium prostratum*, *Ficinia nodosa*, *Spinifex hirsutus*, *Actites megalocarpa*, *Pomaderris sp.* and *Apium prostratum*.

The existing vegetation at Breamlea on public and private land is critical to habitat, biodiversity and landscape character values. The existing vegetation structure, proximity to property and limitations on fire access present significant challenges to management of these conservation values, while minimising extreme fire risk as identified in the Draft Updated Breamlea Community Fire Management Plan (refer 2.5.3.4). The impacts of climate change, including reduced average rainfall and hotter, drier summers will exacerbate the existing fire risk and contribute to potential changes in critical habitat areas including the saltmarsh and foredune environments that are home to rare and threatened species.

Insert Vegetation Communities Plan 1

Insert Vegetation Communities Plan 2

3.4 Fauna and Avifauna

This study did not include any new survey of fauna or avifauna. Information from the original Plan summarising background research and advice from local groups has been reproduced in the updated Masterplan. The following species have been identified in the Breamlea area:

- Whilst not recently sighted, it is assumed that the Orange-bellied Parrot, which is one of Australia's rarest and most endangered species, listed as Threatened in the EPBC Act, would be present in the Breamlea Wetlands. Information supplied by Pauline Reilly, Fellow of Royal Australasian Ornithologists Union (RAOU) notes that "Breamlea is either a permanent wintering ground or a staging area for the parrot on its journey into The Coorong in South Australia". The vegetation present that is vital to this bird includes *Sclerostegia arbuscula*, *Suaeda australis*, *Frankenia pauciflora*, *Atriplex cinerea* and *Sarcocornia quinqueflora*. "The first four species do not occur in wetlands further westward along the coast, the next suitable area beginning at Port Fairy".



Photo 3-6 & 3-7: Temporary and permanent signage advising of Hooded Plover nesting areas

- The Hooded Plover nests on the beach at Breamlea. This is a Threatened species listed in the Flora and Fauna Guarantee Act, and is vulnerable to predation and disturbance from their nests that are on the ground in open dunes from August to February. Current management by Council, Parks Victoria and supported by the local community includes use of permanent and temporary signage to advise local residents and visitors of nesting periods and temporary fencing to restrict human and dog access to sensitive areas.
- Other bird species sighted in the Breamlea area as recorded by the Geelong Naturalists Club and Susan Howells, with assistance from other Breamlea residents, include White-faced Heron, Masked Lapwing, Double-banded Plover, Red-capped Plover, Silver Gull, Grey Teal, Red-necked Stint, White-fronted Chat, Sacred Ibis, Greenshank, Crested Tern, Black Swans, Ducks & Golden-headed Cisticola.
- There is a Skipper Butterfly colony living in the Chaffy Saw Sedge (*Gahnia filum*).
- Echidnas and Brush-tailed possums have been sighted in the Breamlea dunes. Small marsupials including Bush Rats and *Antechinus* may be found in the dunes, however there are no formal survey records of this.
- The beaches from Breamlea around to Ocean Grove are frequented at various times by different species of seal including Australian Fur seals, Elephant seals, Leopard seals and New Zealand Fur seals. Seals are protected under the Victoria Wildlife Act 1975. As with the Hooded Plover temporary signage is used by Council and Parks Victoria to alert local residents and visitors to the presence of seals on the beach and in the dunes. A clearance zone of at least 50 metres is recommended and control of dogs to prevent harassment and potential injury.



Photo 3-8: Temporary seal warning signage at Bancoora Beach

3.5 Cultural Heritage

Several Archaeological and Cultural Heritage Impact Assessments have been completed by Terraculture Pty Ltd, Austral Heritage Consultants (now Terraculture Pty Ltd) in consultation with the local Aboriginal Community. The most recent study (Terraculture 2008) describes the environmental context in relation to cultural heritage values:

There are several major ecological zones represented in Breamlea and the surrounding area. These are the dunes, the ocean, the tidal Thompson Creek, basalt rock platforms and wetlands/saltmarshes. Each of these has a plant community that supports a range of fauna, which would have been more extensive in the past. Together, these would have provided an extremely diverse range of food resources for the former Aboriginal inhabitants.

The ocean provided habitat for rock platform, softshore and estuarine shellfish. Other major animal food resources associated with the ocean were fish and sea mammals.

*Thompson Creek and the surrounding saltmarshes were probably the focus of Aboriginal hunting and gathering activities. Wetlands generally support a wide range of traditional Aboriginal plant foods that would have provided a staple food source, as well as plants used for their fibre and medicinal properties. A range of small and medium land mammals, including the Swamp Wallaby (*Wallabia bicolor*), various reptiles and sea-birds, were all probable food species. Thompson Creek would have been a good source of fish...*

*...The dunes in Breamlea are vegetated in remnant Moonah and Tea-tree. Specific plant foods associated with coastal dunes include pigface (*Carpobrotus rossii*), New Zealand spinach (*Tetragonia tetragonoides*), Coast Beard-Heath (*Leucopogon parviflorus*) and Coast Wattle (*Arcacia sophorae*). Such plants would have provided reliable seasonally abundant food available during the spring and summer months.*

There are more than 60 Aboriginal archaeological sites on the Aboriginal Affairs Victoria register within a 2km radius of Breamlea, and within 1km of the coast. The sites are predominantly shell middens with several stone artifact scatters, some earth features and others at Point Impossible.

Terraculture note that remnant vegetation is usually a good indicator of the degree of ground disturbance, and the relatively undisturbed nature of the remnant vegetation in Breamlea means there is likely to be *in situ* Aboriginal archaeological deposits.

Terraculture conclude that previous surveys demonstrate that Breamlea has one of the highest densities of Aboriginal archaeological middens along the central west coast. The middens display inter-site variability, varying in size and content. They display lateral variation in the distribution of shellfish, stone artifacts and charcoal lenses. They provide valuable data on past Aboriginal use of the region that is not available from survey data elsewhere along the adjoining coastline, or indeed from other more conventional historical sources. Therefore, Breamlea's Aboriginal cultural heritage is highly significant.

3.6 Community Consultation

Community consultation was a key feature of the development and implementation of the original plan. Many residents have lived in the area for an extended period of time and their enthusiasm and custodianship of the natural values and history provides a valuable resource to assist Council and other agencies in management of the area. Council also prepares an information package, which is made available to new Breamlea residents. This provides information on the significant environmental and cultural heritage values of Breamlea and outlines the responsibilities associated with living and or owning property in such a unique area.

For this project, an information leaflet and questionnaire was prepared to seek feedback from the community regarding the update of the Breamlea Foreshore Masterplan and Management Plan. The questionnaire was designed to reconfirm resident and stakeholder views on key issues and identify any additional issues or opportunities to be considered in preparation of the updated Management Plan. Respondents were also given the opportunity to provide details of the consultation and management actions that have worked well in Breamlea in the past, and indicate what they would like Breamlea to look like in ten years time.

A total of forty-four (44) questionnaires were completed and returned along with two detailed written responses. A community meeting was also held on the evening of February 5, 2009 at the Breamlea Caravan Park. The meeting was attended by 28 local community members. The issues and opportunities raised through the community consultation have been considered as part of the development of the updated Plan. Refer Appendix A for further details.

4.0 OVERALL RECOMMENDATIONS

4.1 Overall Design Intent

4.1.1 Key Design Objectives

- Protect existing environmental and cultural heritage values of the area.
- Maintain primary visitor facilities at Bancoora Beach to reduce the impact of vehicular traffic through the local township of Breamlea.
- Achieve a balance between recreation facilities and natural environmental values of the study area.
- Retain existing recreation passive facilities in the two reserves and minimise their visual impact on the surrounding saltmarsh.
- Sensitively design and locate interpretive signage to inform visitors and the local community about the unique environmental values at Breamlea.

4.1.2 Key Management Objectives

- Manage the section of coast between Point Impossible and Scott Street as a conservation zone, discouraging formal public access and undertaking weed control to preserve unique environmental and cultural values.
- Manage Bancoora Beach car park and immediate surrounds as the key visitor destination point for the town.
- Actively restrict access to existing designated beach access routes into the dunes between Bancoora Beach and Black Rocks and manage primarily for conservation values and to minimise impact on cultural heritage sites.
- Restrict public vehicle and horse access to the beach and dune environment.
- Continue to protect the high conservation values of Thompson Creek and the saltmarsh communities.

4.2 Point Impossible to Scott Street

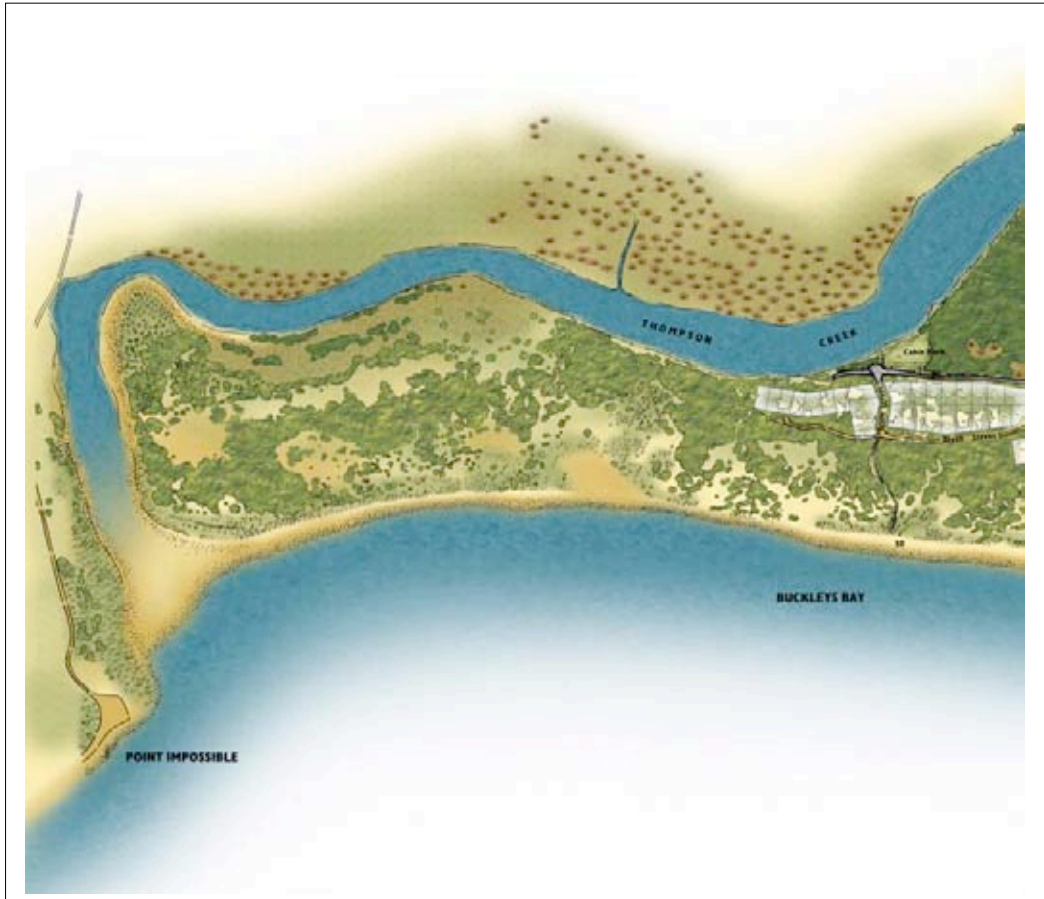


Figure 3: Point Impossible to Scott Street

4.2.1 Issues

- Part of the existing known habitat area for the threatened Hooded Plover.
- A relatively diverse range of indigenous vegetation communities present in this area including high diversity of lichens, moss and fungi.
- Some invasion of Coast Tea-tree in the previously disturbed areas, although this is relatively localised and general invasion of Coast Tea-tree is minimal compared with that further east in the study area.
- There is an existing informal track along the edge of Thompson Creek through the saltmarsh.
- The former Torquay to Black Rock underground sewerage rising main and associated concrete retaining wall along Thompson Creek downstream of Cahir Park has been removed and the area rehabilitated by Barwon Water.



Photo 4-1: Informal path through saltmarsh along Thompson Creek



Photo 4-2: Rehabilitated location of former sewerage pipe

4.2.2 Recommendations

- This area is recognised as a conservation area given the important habitat qualities and is a known area of cultural significance.
- Discourage general public use of the existing track through the saltmarsh along Thompson Creek. There will not be active fencing or brush matting of this track but it is to be downgraded as a pedestrian track, with long term recolonisation by saltmarsh species. Dogs are to be on lead at all times through this area.
- Install signage regarding the conservation values and the disturbance that humans and dogs can cause to bird habitat areas, especially the Hooded Plover.
- Undertake woody weed control including Boxthorn from areas of intact Coastal Grassland/Shrubland vegetation areas.
- Use indigenous brush matting to restrict access to informal tracks through the dunes, especially following the Barwon Water sewer removal. There may also need to be some short term fencing to discourage access through this period.
- Monitor and remove Sea Spurge and Sea Wheat-grass to control and stop it's spread through the study area.

4.3 Breamlea Township

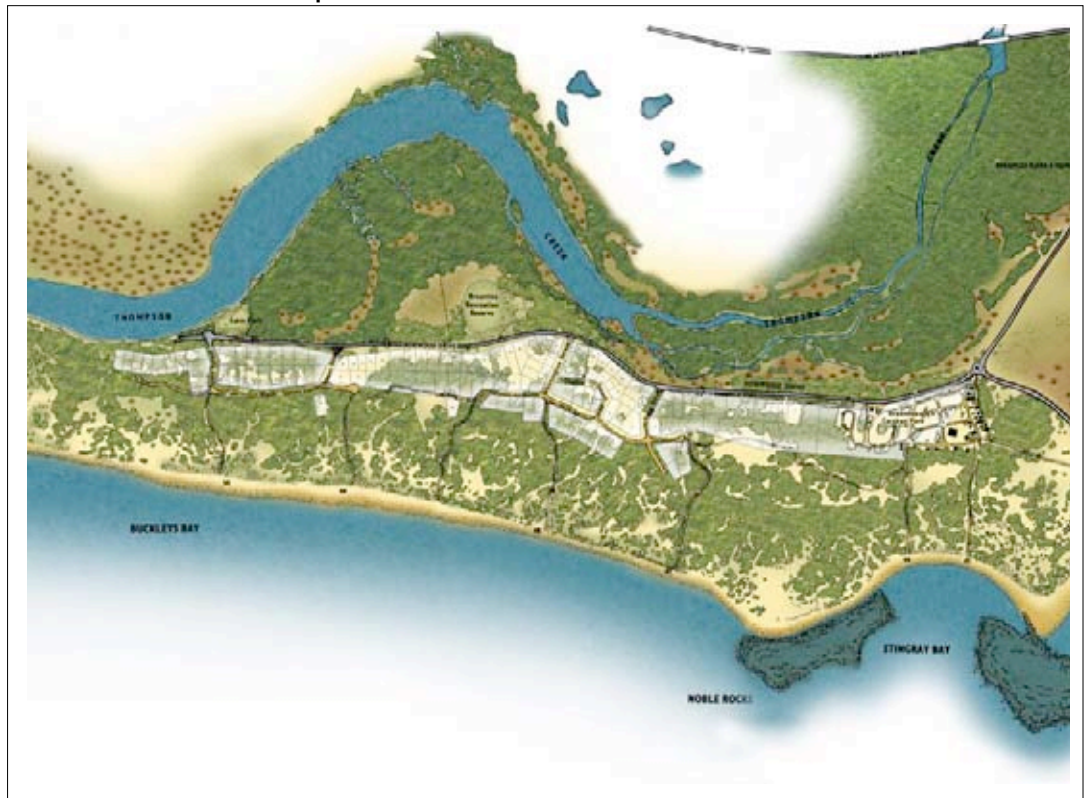


Figure 4: Breamlea Township

4.3.1 Issues

- The Breamlea township between Scott Street and the Caravan Park has an informal character, with small winding unsealed roads and most houses nested in amongst the dune vegetation. Access is primarily via Horwood Drive adjoining streets steeply graded up the dune system.
- Horwood Drive is a local dead end road however despite introduction of 40km/hr traffic restrictions and provision of an off road path from the Caravan Park to the Recreation Reserve, traffic speed is still an issue. The road layout at both Blackgate Road and at Breamlea Road intersections still directs traffic into the Breamlea township and despite no through road signage frequently cars travel right through to Scott Street before turning back and heading to Bancoora Beach or through to Torquay/Barwon Heads.

- The dune system behind the existing township has six formalised fenced paths that provide access over and down to the beach via constructed timber stairs. The dead end or street corners connecting these beach access points are frequently blocked with illegally parked cars during summer that impedes emergency vehicle turnaround and access to residential driveways.
- Blyth Street provides a slim buffer between the coastal reserve vegetation and houses except in the area known locally as “Fairyland” which historically formed part of the unused road reserve. Here the Coast Tea-tree is extremely thick and runs right to the back of most properties. The coastal reserve through this area has been identified as an extreme fire risk.
- There is a large exposed sand area between Vagg Street and the Caravan Park. When compared to 1942 aerial photographs, vegetation has slowly recolonised in this area. Through this area the calcified roots and original base rock of the sand dunes are becoming exposed and eroded.
- There are a large number of remnant Moonahs located on private property through the town.
- Many exotic garden escapee plants, e.g. succulents, mirror bush, ivy, pampas grass, gorse etc. are invading the coastal foreshore land and there is still evidence of lawn dumping on the creek side of Horwood Drive.



Photo 4-3: Path along Horwood Drive



Photo 4-4: Dense vegetation along Blyth St

4.3.2 Recommendations

Refer to 4.4.2, 4.5.2, 4.6.2 and 4.7.2.

4.4 Cahir Park

4.4.1 Issues

- Cahir Park provides expansive and tranquil views over Thompson Creek and the adjoining saltmarsh from existing seats and picnic tables located in the open grassland. There is angle parking and a generous vehicle turnaround at the end of Scott Street and Horwood Drive.
- The open grass reserve has limited facilities or planting and is used primarily for sitting and viewing the creek and informal boat launching.



Photo 4-5: Cahir Park



Photo 4-6: Cahir Park Monument



Photo 4-7: Stone sea wall along the creek

- The planted Norfolk Island Pines were recommended for removal in the previous plan as they are not indigenous to the area and are out of context with the surrounding significant remnant saltmarsh areas along the creek. These trees have not noticeably grown over the intervening 10-year period.

4.4.2 Recommendations

- Undertake additional overstorey planting of Moonahs along Horwood Drive and near the seats to create some shade without interrupting the views over Thompson Creek. When these new trees are established undertake staged removal of the Norfolk Island Pines.
- Revegetation utilising grassland species is proposed to the western edge of the reserve to discourage access along Thompson Creek to the conservation area. Interpretive signage explaining the significance of the saltmarsh vegetation, habitat and cultural heritage values is proposed in the park.
- Establish a buffer between the exotic mown grass of the park and the saltmarsh using the existing gravel path as the boundary. Undertake weed control and revegetation on the saltmarsh side of the park using Knobby Club Rush and Prickly Spear Grass to restrict access and reduce weed invasion in the significant saltmarsh vegetation.
- Retain the existing monument and restore the drinking fountain.
- Investigate interpretive signage regarding the remnants of the former timber pier while retaining informal access only to the creek consistent with the environmental values of the estuary. Upgrade the existing stone steps.

4.5 Breamlea Recreation Reserve

4.5.1 Issues

- Breamlea Recreation Reserve is connected to the Caravan Park via an informal walking track along Horwood Drive. The reserve contains a small playground, public toilets, picnic facilities and BBQ. The former cricket field is too small for competition but is used for informal ball games.
- In accordance with the recommendations of the previous plan, the toilet block has been relocated from Cahir Park.



Photo 4-8: Breamlea Recreation Reserve. BBQ, playground and toilets.



Photo 4-9: Breamlea Recreation Reserve oval

4.5.2 Recommendations

- Retain the existing oval as informal open space for informal games etc and install signage banning the use of hard cricket balls or golf, which may present risk to other users in the reserve.
- Continue thinning, up to 80% of existing trunks and branches, of the Coast Tea-tree on the Horwood Drive edge in the short term. The extensive Tea-tree removal and pruning will open up views to the playground from Horwood Drive, for safety reasons, whilst retaining some scattered overstorey canopy for shade in the area. In the longer term all the Coast Tea-tree will be replaced with indigenous overstorey trees including Moonah and She-oak.
- Retain the existing playground. In the longer term when this equipment requires replacement, a more site responsive design for the playground could be considered, with materials that reflect the unique environment.
- Sensitive cultural heritage sites within close proximity to existing infrastructure must be considered in any future works in this area.
- In response to a petition from Breamlea residents, a small skate facility was proposed at the Recreation Reserve in the previous plan. A skate facility is not proposed in the updated Plan.
- Establish a designated crossing point on Horwood Drive. This crossing point will also assist in slowing traffic and improving safety and amenity in the park.
- Indigenous grasses only be used in re-grassing once the Tea-tree is thinned.



Photo 4-10: Informal walking access along Horwood Drive to the Recreation Reserve.



Photo 4-11: Toilet facilities at the Recreation Reserve

4.6 Breamlea Township Vegetation Management

4.6.1 Issues

- Fire management
- Ongoing protection of the remnant Moonah Woodland
- Appropriate vegetation management on private properties

4.6.2 Recommendations

- Implement the recommendations of the Draft Updated Breamlea Community Fire Management Plan (see Appendix C) focusing on active vegetation management and fuel reduction along the south side of the township (Blyth Street side) adjacent to the foreshore reserve.
- Investigate formation of a formal fenced pedestrian path access between Vagg Street and the Caravan Park to provide improved recreational links and establish a continuous fire break along the coast side of the township.
- Ensure fuel reduction works consider impacts including:
 - Protection of remnant Moonah Woodland
 - Opportunities to improve indigenous groundlayer biodiversity following the removal of Coast Tea-tree and Coast Wattle
 - Staging to minimise impacts on habitat values and landscape amenity

- Liaise with local residents regarding vegetation management on private land
- Investigate protection of Moonah Woodland through implementation of a Vegetation Protection Overlay (VPO) including education regarding management of these existing trees in the context of ongoing required fuel reduction and establishment of fire buffer zones.
- Liaise with residents to encourage use of appropriate indigenous plants to minimise fire risk and improve biodiversity and habitat values and to undertake management of exotic planting to minimise weed invasion in the coastal reserve.



Photo 4-12: Blyth St



Photo 4-13: Blyth St and Scott St

4.7 Beach Access

4.7.1 Issues

- Walking is the most popular recreational use at Breamlea and the beach access tracks, local roads, beach and informal track along the Creek all form various loops completed by locals and visitors.
- Bancoora beach is the main recreational focal point at Breamlea and there is both all ability and emergency vehicle access to the beach at the SLSC.
- The proximity of the township to the dunes in this location means that a number of access tracks to the beach are required. There are five beach access ramps/stairs, which provide local access down the steep primary dune system. These are linked to formalised tracks where fencing restricts informal access through the dunes.
- The front (coastal) face of the dunes are subject to being periodically washed away during heavy storms. The impacts of climate change are expected to exacerbate this natural occurrence. The existing stair systems have been previously washed away or damaged in such heavy storms and at other times they alternatively collect sand till covered.



Photo 4-14: Bancoora beach vehicle access to beach



Photo 4-15: Typical beach/dune access steps

4.7.2 Recommendations

- If existing beach access stairs are damaged or required replacement investigate an alternative low impact board and chain access. These would be laid on the steeper sections of paths to give some grip and stability and would be significantly lower in replacement, cost and minimise impact on the natural dune processes.
- Options for improving all ability beach access were reviewed during this project, and apart from improving the sandy walking surface at Bancoora using sections with

timber board and chain along the existing vehicle access it is not possible to reduce the steepness of the tracks behind the township given the mobile nature of these dunes.

- Restrict pedestrian beach access and walking loops to existing tracks and roads using fencing and develop and enforce local laws regarding protection of the coastal dune vegetation, habitat values and cultural heritage sites.
- Establish a formal fenced pedestrian link from Vagg Street through to the Breamlea Caravan Park and the existing 46W beach access track to reduce existing informal access through the dunes behind Noble Rocks and improve fire access.

4.8 Breamlea Caravan Park to Black Rocks



Figure 5: Breamlea Caravan Park to Black Rocks

4.8.1 Breamlea Caravan Park

4.8.1.1 Issues

- The Caravan Park and infrastructure is over 40 years old, including 136 Sites of which 67% are 12 month permit sites with the remainder being casual powered and un-powered sites and 6 cabins, with 2 more to be built. The park also has 2 amenities blocks, a general store, post office, a playground and BBQ facilities. There is currently no onsite caretaker/manager residence and parts of the caravan park built infrastructure including amenity blocks no longer meet contemporary standards and will require major upgrade or replacement in the near future
- The Caravan Park also includes the only shop in Breamlea and is a popular location for social interaction of locals and park users.



Photo 4-16: Breamlea shop



4.8.1.2 Recommendations

- When undertaking the required detailed review of Caravan Park operations, investigate opportunities to relocate new facilities to the corner of Horwood Drive and Breamlea Road to improve service for Bancoora beach users and reduce vehicle traffic in Horwood Drive (subject to detailed design investigation and cultural heritage assessment)
- Promote development of the Caravan Park as a key environmental education facility.

4.8.2 Bancoora

4.8.2.1 Issues

- Bancoora beach is the main recreational focal point and visitor destination at Breamlea. The Bancoora SLSC and car park also provide emergency vehicle access to the beach the evacuation point for the town.
- There are existing picnic facilities including public toilets, BBQ and extensive parking at the SLSC, which service both day visitors and local residents from the Caravan Park and town.
- There is an unsealed off road path link between the Caravan Park, beach access and facilities at the Bancoora SLSC
- The verge at Bancoora Road is used as overflow parking on summer beach and event days.
- Unsealed roads north of the SLSC that date from the time when Breamlea was connected to Barwon Heads before the construction of the Black Rock Sewerage Treatment Plant. Access to this area was closed as part of previous plan recommendations and these areas have become largely reclaimed with indigenous species.

4.8.2.2 Recommendations

- Maintain existing emergency and maintenance vehicle access to the beach at Bancoora and investigate use of board and chain over the soft sand to improve all ability pedestrian access to the beach.
- Investigate opportunities to soften the visual impact of the Bancoora SLSC building and improve entry and interface with the car park and public toilets. Maintain required vegetation clearance consistent with use as the town emergency evacuation point.
- Upgrade wheelchair access to existing public toilets at Bancoora SLSC.
- Implement recommendations of the Draft Updated Breamlea Community Fire Management Plan maintaining Bancoora as the evacuation site.



Photo 4-18: Bancoora Surf Life Saving Club



Photo 4-19: Bancoora Beach lookout platforms



Photo 4-20: Bancoora picnic facilities



Photo 4-21: Bancoora Road



Photo 4-22: Overflow parking area at Bancoora SLSC

- Maintain existing vehicle control measures to prevent vehicle and pedestrian access to the beach and saltmarsh areas north of Bancoora.
- Actively control the spread of Coast Tea-tree and Coast Wattle to maintain existing biodiversity values. Liaise with other land managers including Barwon Water, DSE and Barwon Coast Committee of Management to ensure consistent management practices of the coastal land in this area.
- Undertake weed control and stormwater management improvements to overflow car parking areas. Use carefully placed Moonah to improve shade and amenity while retaining required clearances consistent with use of the area as township evacuation point.

4.9 Traffic Management

4.9.1 Issues

- There is no public bus or other transport connection to Breamlea. School bus access at the Caravan Park is constrained and buses frequently have to reverse out to turn around, proving a potential risk to pedestrians and passengers.
- Despite prominent no through road signs, excess tourist traffic is directed into Breamlea (due to existing road layout) at Blackgate Road as visitors unsuccessfully seek a route along the coast between Torquay to Barwon Heads.
- Bancoora Beach and Surf Life Saving Club has extensive car parking, long vehicle turnaround and is the primary visitor destination at Breamlea. The intersection of Breamlea Road and Horwood Drive directs traffic into the town where the only available turn around is at the far end of Horwood drive at Scott Street where there is no beach access and limited parking.
- Horwood Drive is signed as 40km/hr and there is an informal pedestrian path on the southern (housing) side of the road that provides access from Bancoora Beach and the Caravan Park shop to the Recreation Reserve. There is no dedicated crossing point to the recreation reserve and on straight sections of road vehicle speeds frequently exceed the 40km/hr limit.
- The five beach access points within the town are highly constrained and there is only limited on road visitor parking. Informal visitor parking on summer beach days frequently obstructs residential driveways and limits emergency vehicle access and turnaround.



Photo 4-23: Breamlea Road



Photo 4-24: Horwood Drive

4.9.2 Recommendations

- The intersection of Blackgate Road and Breamlea Road is jointly managed by Surf Coast Shire and City of Greater Geelong. Investigate a joint project to realign Blackgate Road at the intersection to improve safety and connection on the primary desire line – Torquay to Barwon Heads with access to Breamlea via a secondary T-intersection.
- Investigate establishment of a small roundabout at the corner of Breamlea Road and Horwood Drive. This design is to prioritise traffic flow to Bancoora, provide for emergency and bus turnaround (enabling establishment of a public bus service to Breamlea), slow traffic speed and volumes in Horwood Drive.
- In the longer term the roundabout may also provide a new access to the Caravan Park. This could enable a reduction in road width along Horwood Drive, additional visitor overflow parking and improvements in pedestrian access.
- Establish outstands at the Breamlea Recreation Reserve on Horwood Drive. These will provide improved sightlines for pedestrians using the path link to the Caravan Park and negotiated one-way access will reduce traffic speeds in Horwood Drive.

- *Insert Final Design Thompson Creek to Noble Rocks Masterplan*

Insert Final Design Noble Rocks to Black Rock Masterplan

5.0 IMPLEMENTATION

The following tables are to be read in conjunction with the overall recommendations outlined in Section 4.0. Each recommendation is assigned a priority, which represents the following indicative timeframe:

HIGH: 1 – 2 years

MEDIUM: 2 – 5 years

LOW: 5+ years

Ongoing – Part of existing Council or Agency Programs/Policies

These priorities are subject to availability of Councils capital and operational budgets to undertake the tasks and in some instances, availability of other agency budgets and works and other funding sources e.g. Commonwealth and State Government grants. In instances where there is only one priority level listed for numerous recommendations, that priority level relates to all recommendations.

ENVIRONMENT

No	Issue	Recommendation	Priority	Agency
5.1	CLIMATE CHANGE AND COASTAL PROCESSES			
5.1.1	As a coastal community Breamlea, like other towns along the Bellarine Peninsula and Surf Coast, is directly threatened by the impacts of climate change. The specific climate change threats at Breamlea include: <ul style="list-style-type: none"> • rising sea levels contributing to potential flooding and storm surge events along Thompson Creek, • more violent storm patterns and changes to historical coastal erosion/deposition processes • decreasing rainfall contributing to changes in vegetation, habitat and potential bush fire risk. 	Ensure future infrastructure design and management systems at Breamlea consider the impacts of climate change including: <ul style="list-style-type: none"> • ensure design and location of new infrastructure and building approvals considers the impact of rising sea levels especially along Thompson Creek • monitor coastal erosion/deposition and review the location of beach access points and infrastructure to minimise ongoing maintenance/replacement costs • monitor existing vegetation communities and changes in habitat for FFG and EPBC listed species • ensure building design, vegetation and emergency management practices consider the increasing risk from bushfires 	Ongoing	CoGG DSE PV Local Residents
5.1.2	The mouth of Thompson Creek naturally closes over in drier months leading to increased water levels in the estuary. In the past, the mouth has been artificially opened by Surf Coast Shire under the Emergency Management Act to alleviate flooding on Point Impossible Road however the environmental impacts of this are unknown.	<ul style="list-style-type: none"> • Artificial mouth openings at Thompson Creek require Coastal Management Act consent from DSE and a Works on Waterway Permit from the CCMA. An emergency opening can be completed under the Emergency Management Act by Council. • Use the Estuary Entrance Management Support System data to assist in evaluating the potential environmental and socio economic risks associated with artificial mouth openings at Thompson Creek, including potential impacts from 	Ongoing	CoGG SCS DSE CCMA

No	Issue	Recommendation	Priority	Agency
		<p>upstream development at Armstrongs Creek.</p> <ul style="list-style-type: none"> • Short term, CoGG and Surf Coast Shire to develop a memorandum of understanding to define responsibilities and cost sharing if mouth openings are required to protect critical infrastructure, noting that Surf Coast Shire infrastructure will always be affected first. • Longer term, investigate opportunities to upgrade built infrastructure to reduce the need for artificial openings. 		
5.2	PROTECTION OF SIGNIFICANT FAUNA			
5.2.1	The Orange-bellied Parrot (<i>Neophema chrysogaster</i>) is listed as critically endangered in the Environment Protection and Biodiversity Conservation Act and saltmarsh areas at Breamlea along with other areas at Connewarre and the Bellarine Peninsula form part of their winter range.	<ul style="list-style-type: none"> • Continue monitoring of Orange-bellied Parrot through the winter period and implement recommendations identified as part of the recovery plan. • Continue education program in consultation with local residents and include information about Hooded Plover in the new resident information packs. • Enforce dog on lead provisions during nesting period (refer 5.2.3). and liaise with adjoining landholders to monitor feral cat and fox impacts and implement control programs (refer 5.2.4). 	Ongoing	PV DSE CoGG Local residents
5.2.2	The Hooded Plover (<i>Charadrius rubricollis</i>) is protected under Schedule 2 of the Flora and Fauna Guarantee Act and foredune and beach areas at Breamlea provide critical nesting and habitat areas	<ul style="list-style-type: none"> • Protect Hooded Plover habitat along Thompson Creek. Continue use of temporary signage to educate and discourage access through this area during the nesting period from August to February. • Continue education program in consultation with local residents and include information about Hooded Plover in the new resident information packs (refer 5.10.3). • Enforce dog on lead provisions during nesting period (refer 5.2.3) and liaise with adjoining landholders to monitor feral cat and fox impacts and implement control programs (refer 5.2.4). 	Ongoing	CoGG PV DSE Local residents
5.2.3	The existing beach dog off lead status at certain times of the year is not compatible with sensitive habitat values including Hooded Plover nesting sites, potential winter refuge areas for Orange bellied Parrot and different species of seals including Fur, Elephant and Leopard seals.	<ul style="list-style-type: none"> • Continue use of temporary signage to regulate dog off lead areas along the beach which are subject to seasonal changes in habitat values for Hooded Plover and different species of seal. • Designate the conservation area from Scott Street to Point Impossible along Thompson Creek (not the beach) as Category 5 (Brown) requiring dogs to be on lead all year round to minimise impact on bird habitat and environmental values (refer 5.5.1). 	Ongoing High	CoGG PV CoGG

No	Issue	Recommendation	Priority	Agency
5.2.4	Foxes and domestic and feral cats threaten significant bird species and other small mammals found at Breamlea.	<ul style="list-style-type: none"> • Liaise with adjoining land managers to undertake a feral cat and fox control program • In accordance with the recommendations of the Urban Animal Management Plan introduce cat confinement between sunset and sunrise. 	High	CoGG DPI Landholders
5.2.5	Rabbits are found in varying numbers throughout the study area, particularly in the dunes	<ul style="list-style-type: none"> • Liaise with adjoining land managers and private landholders to undertake a joint rabbit control program. 	Low	CoGG DPI Landholders
5.3	VEGETATION MANAGEMENT			
5.3.1	The saltmarsh vegetation along the edge of Thompson Creek is in good condition and contains an interesting diversity of vegetation including <i>Stipa stipoides</i> and <i>Sclerostegia arbuscula</i> .	<ul style="list-style-type: none"> • Continue ongoing weed management of Sea Spurge throughout this area to retain the species diversity. • Eradicate small invasion of Sea Wheat Grass to prevent spread of this species. This will require continual monitoring. • <i>Sclerostegia arbuscula</i> is one of the food plants for the endangered Orange-bellied Parrot. Ensure this species is protected in this area (refer 5.2.1). 	Ongoing	PV
5.3.2	The saltmarsh along the western edge of Cahir Park is subject to ongoing weed invasion. Historic filling along the Creek may also restrict tidal flows in and out of the saltmarsh.	<ul style="list-style-type: none"> • Carefully remove excavated fill from along the creek to re-establish natural tidal flows into the saltmarsh. • Control invasive weeds and exotic mown grass along the western edge of Cahir Park using the existing gravel path as a buffer and revegetate the saltmarsh verge with low indigenous species to restrict access into the area. 	Medium	CoGG
5.3.3	The <i>Themeda triandra/Poa poiformis</i> grassland to the north of the oval at Breamlea Recreation Reserve is of regional significance.	<ul style="list-style-type: none"> • Monitor and actively manage any invasion of weeds to this area. • Ensure no disturbance with earthworks, spraying etc occurs to this remnant grassland, which is the only one found in the study area. 	Ongoing	CoGG
5.3.4	291 Moonahs <i>Melaleuca lanceolata ssp lanceolata</i> have been recorded in the Breamlea area, of which 274 are mature remnants. However there is no natural regeneration occurring at 96% of the sites and almost all areas are characterised by exotic or degraded understorey.	<ul style="list-style-type: none"> • Manage remnant vegetation to protect and enhance Moonah Woodland biodiversity including understorey weed control and encouraging natural regeneration where possible. • Limit biomass reduction activities (other than weed control) such as burning other than as required for fuel reduction purposes (refer 5.3.10). 	High	CoGG
5.3.5	62% of the mature Moonah <i>Melaleuca lanceolata ssp lanceolata</i> Woodland at Breamlea is found on private land. The majority of trees on private property are surrounded by exotic	<ul style="list-style-type: none"> • Investigate establishment of a Vegetation Protection Overlay for Moonah at Breamlea. • Educate and monitor weed control and fuel reduction works undertaken on private land to protect and minimise impacts on Moonah and to encourage improvements in 	High	CoGG Local residents

No	Issue	Recommendation	Priority	Agency
	gardens or in farming land which has a history of grazing and there is limited understorey and no natural regeneration.	understorey biodiversity (refer 5.10.3).		
5.3.6	Moonah Woodland and remnant Coastal Dune Scrub Mosaic west of Scott Street is in good condition and provides a key habitat and biodiversity area.	<ul style="list-style-type: none"> Undertake a targeted weed control program (including staged removal of Coast Tea-tree) to protect existing Moonah and continue regeneration/revegetation of indigenous understorey. 	Medium	CoGG
5.3.7	The removal of the former sewer rising main and retaining wall along Thompson Creek by Barwon Water required removal of some indigenous vegetation. This may also increase short term erosion and public access along the Creek from Cahir Park to Point Impossible.	<ul style="list-style-type: none"> Ensure revegetation is completed using indigenous species of local provenance in accordance with Net Gain Permit requirements. Short term, fencing may be required. 	High	BW CoGG PV DSE
5.3.8	Exotic garden plants are invading the indigenous plant communities. Residents currently dump weeds and garden clippings in the dunes and to the north side of Horwood Drive.	<ul style="list-style-type: none"> Continue education of the local Breamlea community about the impact that exotic and native garden escapee plants and dumping of lawn clippings and garden waste are having on the biodiversity of values and natural environment (refer 5.10.3). Target the major weed species as a priority for eradication. 	Ongoing	CoGG Local residents
5.3.9	There are some native species that have been identified as requiring control to protect the biodiversity of existing remnant vegetation. <ul style="list-style-type: none"> Coast Tea-tree (<i>Leptospermum laevigatum</i>) and Coast Wattle (<i>Acacia sophorae</i>) are native species which in favourable conditions have spread to such an extent that they are impacting on the biodiversity values, especially groundlayer diversity, Leucopogon dominated shrubland and Moonah Woodland. Coast Tea-tree, when established, appears to provide the conditions for the invasion of other weed species, eventually creating areas which are of little ecological value and potentially 	<ul style="list-style-type: none"> Prioritise removal of <i>Leptospermum laevigatum</i> and Coast Wattle <i>Acacia sophorae</i> are to continue to focus on keeping the remnant areas north of Breamlea Road/Bancoora free of these species and undertaking opportunistic removal as part of fuel reduction programs (refer 5.3.10). Marram Grass (<i>Ammophloa arenaria</i>) is not recommended for removal, however, in areas that are relatively free of this species that contain a good cover of Spinifex Marram Grass should be actively removed. This needs to be carefully undertaken to ensure transitional vegetation cover is maintained for erosion control and retention of habitat value. 	Med Low	CoGG Landholders CoGG

No	Issue	Recommendation	Priority	Agency
	<p>increasing fire risk.</p> <ul style="list-style-type: none"> Marram Grass (<i>Ammophloa arenaria</i>) is widespread along the entire dune system. 			
5.3.10	<p>Breamlea has been identified as an area of extreme fire risk in the Draft Updated Breamlea Community Fire Management Plan 2005. Mechanical fuel reduction and prescribed burns have been recommended for areas along Blyth Street and the southern side of the coastal reserve adjoining residential areas.</p>	<p>Implement the recommendations of the Draft Updated Breamlea Community Fire Management Plan (see Appendix C) including:</p> <ul style="list-style-type: none"> Inclusion of Breamlea in a Wildfire Management Overlay (WMO) in the City of Greater Geelong Planning Scheme. Active vegetation management and fuel reduction along the south side of the township (Blyth St side) adjacent to the foreshore reserve. Investigation of a formal fenced pedestrian path access between Vagg Street and the Caravan Park to establish a continuous fire break along the coast side of the township. Ensure fuel reduction works consider impacts including: <ul style="list-style-type: none"> Protection of remnant Moonah Woodland Opportunities to improve indigenous groundlayer biodiversity following the removal of Coast Tea-tree and Coast Wattle Staging to minimise impacts on habitat values and landscape amenity Liaison with local residents regarding vegetation management on private land 	High	CoGG DSE CFA
5.3.11	<p>Planted Norfolk Island Pines at Cahir Park have struggled to become established in drought conditions and are out of character with the remnant saltmarsh area along Thompson Creek.</p>	<ul style="list-style-type: none"> Establish a more natural arrangement of Moonahs to provide shade for seating areas while retaining open views to the creek from Horwood Drive. Once new planting is established remove existing Norfolk Island Pines 	<p>Medium</p> <p>Low</p>	<p>CoGG</p> <p>CoGG</p>
5.3.12	<p>There is limited shade planting, especially in over flow parking areas at Bancoora.</p>	<ul style="list-style-type: none"> Liaise with the CFA and BSLSC to undertake carefully placed planting of Moonah to provide additional shade and shelter in the car park and around the BSLSC while maintaining required vegetation clearances consistent with use as and emergency evacuation point. 	Low	CoGG CFA BSLSC
5.4	STORMWATER MANAGEMENT			
5.4.1	<p>Existing stormwater runoff currently drains to minor entry pits and directly into the saltmarsh and the soil is sandy and free draining in most parts. There is the potential, if the amount or water quality changes that this could negatively impact on the saltmarsh.</p>	<ul style="list-style-type: none"> Monitor runoff from roads in the township and Caravan Park for water quality including sediments and water borne pollutants. Ensure any new Council drainage works implement best practice water sensitive urban design principles. Minimise the area of new sealed surfaces and kerbs and require new developments to treat stormwater on-site where possible. 	High	CoGG

No	Issue	Recommendation	Priority	Agency
	Actual locations of outlets were not identified during this study.			
5.4.2	There are potential impacts from upstream development on the Thompson Creek Catchment on the health and future of the Breamlea saltmarsh, and Thompson Creek estuary/opening.	<ul style="list-style-type: none"> Ensure all major upstream work in the Thompson Creek catchment consider the impacts on Breamlea Saltmarsh, especially in relation to water quality and quantity. 	Ongoing	CoGG CCMP
5.4.3	Septic system may be contaminating ground water and impacting on water quality in Breamlea saltmarsh.	<ul style="list-style-type: none"> Investigate adding septic system and e coli review to EEMSS risk assessment to assess impacts on potential contamination risk at Breamlea saltmarsh and Thompson Creek estuary. 	High	DSE CCMA BW CoGG

RECREATION

No	Issue	Recommendation	Priority	Agency
5.5	OVERALL			
5.5.1	Breamlea is designated as a dog off lead beach for much of the year however increasing use, especially as nearby residential development extends along Armstrongs Creek, may impact on habitat values and the overall balance between dogs, general beach users and environmental values.	<ul style="list-style-type: none"> Increase local laws enforcement to ensure dogs off lead remain 'under effective control'. Monitor the impacts of increasing dog of lead use of the beach and review restrictions and local laws enforcement in accordance with the overall policy direction of the Urban Animal Management Plan. This may include extending the Category 2 (Yellow) morning and evening dog off lead restrictions further along the beach during daylight saving hours (refer 5.2.3). Install additional dog waste bag dispensers at main beach access points (refer 5.9.9). 	High	CoGG
5.5.2	Existing beach access tracks are steep and difficult to access for people with limited mobility.	<ul style="list-style-type: none"> There is existing graded pedestrian access proposed at Bancoora Beach. The front face of the dunes is undergoing continual change as a result of wave and wind action. It is to be expected that any steps or structures will require maintenance and replacement periodically Undertake regular maintenance and clearing sand build up around permanent structures (e.g. fences and steps) Install board and chain to steep sections of access paths in the fore dunes for easier access (refer 5.1.1). 	Ongoing	CoGG
5.5.3	Boating on Thompson Creek	<ul style="list-style-type: none"> Boating on Thompson Creek is covered under Section 15 of the Marine Act 1998. The act provides for "efficient and safe operation of vessels on state waters" Within 30m 	Ongoing	PV

No	Issue	Recommendation	Priority	Agency
		<p>of shore, no vessel can exceed 5 knots, which would include the length of Thompson Creek in the study area.</p> <ul style="list-style-type: none"> • Kayak and canoe use of the creek including hire facilities are permitted (refer 5.5.7). 		
5.5.4	Informal access in the dunes including intensive use by sporting clubs and fitness groups is contributing to loss of vegetation, erosion and potential impacts on sensitive cultural heritage and habitat values.	<ul style="list-style-type: none"> • Liaise with local sporting clubs to confirm that informal access to sand dunes at Breamlea is prohibited. • Investigate licensing of fitness groups and other commercial businesses using the public reserve and beach area to minimise impacts of their activities on public open space and environmental values. • Review local laws to investigate options for by-law restriction of public access in the dunes aside from existing formal beach access paths. 	High	CoGG
5.5.5	Breamlea is a popular location for fishing.	<ul style="list-style-type: none"> • Monitor adherence to minimum size fishing and designated species and catch limits. • Liaise with fishing community regarding cleaning up of litter, especially bait bags 	Ongoing	DPI DSE PV
5.5.6	There are no public boat launching ramps at Breamlea.	<ul style="list-style-type: none"> • The access ramp at Bancoora Beach is for Bancoora Surf Life Saving Club access only, and at all other times this is to be kept locked. • Information signage to be installed at Bancoora Beach to advise location of public boat launching ramps nearby – e.g. Fishermans Beach, Torquay and Barwon Heads. 	Ongoing	PV CoGG
5.5.7	Torquay Surfing Academy P/L has a license to operate a surf school at Bancoora Beach. As part of a new license the operator wants to incorporate kayaking on Thompson Creek.	<p>Maintain and review existing surf school license at Bancoora Beach every two years. In consultation with Parks Victoria extend license to include kayaking activities on Thompson Creek subject to the following conditions:</p> <ul style="list-style-type: none"> • Ongoing review and monitoring of activities to ensure no impacts on environmental values along the creek. • Ensure public use of Cahir Park is not disrupted through loading and unloading activities. • Car parking shall only be permitted in designated car parking areas. • Bancoora Surf Life Saving Club car park shall remain the preferred location for car parking and Cahir Park is only to be used as a pick up and drop off area. 	Ongoing	PV CoGG
5.6	POINT IMPOSSIBLE TO SCOTT STREET			
5.6.1	The informal walking track along Thompson Creek from Cahir Park to Point Impossible may impact on sensitive habitat values (refer	<ul style="list-style-type: none"> • Retain low level informal local walking access only along the creek from Cahir Park to Point Impossible. Infrastructure such as boardwalks are not recommended in this area due to potential impacts on cultural heritage 	Ongoing	CoGG PV (RAP)

No	Issue	Recommendation	Priority	Agency
	5.2.2) and cultural values (refer 5.10.1). Although narrow and well defined at times of high water in the estuary, access can become difficult and additional inland routes are formed which increases impact on vegetation.	<p>values and increasing use with subsequent habitat impacts arising from improved access.</p> <ul style="list-style-type: none"> Liaise with PV and the RAP to investigate if there is an acceptable high water route that minimises impact on cultural heritage, flora and fauna values. (If confirmed this route could be pegged temporarily to alert residents and regular users to the preferred route and to realign the informal track. Other tracks are to be brush matted and closed) Monitor use of the route and discourage visitor access especially during Hooded Plover nesting season. Following the removal of the Barwon Water retaining water and sewer, fencing may be required to restrict public access until proposed revegetation becomes established. 	<p>High</p> <p>Ongoing</p>	
5.6.2	There are limited recreation facilities at Cahir Park and this has been a key direction from the previous Management Plan.	<ul style="list-style-type: none"> Retain informal character at Cahir Park including open grass, views over the creek from existing seating, picnic tables and gravel path. Develop and install interpretive signage regarding the significance of saltmarsh habitat values, estuary water levels and cultural heritage values of the area. Retain informal water access and reconstruct existing stone steps to match the curved stone sea wall (refer 5.10.3). 	Medium	CoGG PV RAP
5.7	BREAMLEA TOWNSHIP			
5.7.1	Pedestrian access along Horwood Drive links the Recreation Reserve to the Breamlea Caravan Park, however there is no designated safe road crossing point.	<ul style="list-style-type: none"> Investigate establishment of a designated crossing point on Horwood Drive at the recreation reserve. Use outstands with bollards and low indigenous planting to reduce road width, slow traffic, improve sightlines and amenity at the entry to the reserve. Reduce traffic speed in Horwood Drive and maintain signage and reflective markers to delineate shared on road sections (refer 5.9.4). 	High	CoGG
5.7.2	Informal access through the dunes at Beach Access 46W is impacting on dune vegetation, habitat and cultural heritage values.	<ul style="list-style-type: none"> Investigate reopening a formal pedestrian access path connecting from Vagg Street through to the Breamlea Caravan Park and Beach Access 46W. Establishment of this route will assist in reducing informal access and impact on habitat and cultural heritage values on the dunes at beach access 46 and extend a continuous fire break along the coastal reserve (refer 5.3.10). 	High	CoGG (RAP)
5.7.3	The playground at Breamlea Recreation Reserve has standard off shelf equipment.	<ul style="list-style-type: none"> Retain the existing playground. In the longer term when this equipment requires replacement, investigate a more site responsive design for the playground using materials and 	Low	CoGG

No	Issue	Recommendation	Priority	Agency
		themes that reflect the unique environment of the area.		
5.7.4	In response to a petition from Breamlea residents, a small skate facility was proposed at the Recreation Reserve in the previous plan.	<ul style="list-style-type: none"> A skate facility is no longer desired or supported at Breamlea and the toilet block relocated from Cahir Park has been constructed on the proposed site. No further built infrastructure is proposed at the recreation reserve. 		CoGG
5.7.5	The existing oval at the Recreation Reserve is too small for competition cricket.	<ul style="list-style-type: none"> Retain the existing oval as informal open space for informal games, community events etc and install signage banning the use of hard cricket balls or playing golf, which may present risks to other users in the reserve. Monitor grass mowing to minimise impact on native grasslands (refer 5.3.3). 	Ongoing	CoGG
5.8	BREAMLEA CARAVAN PARK TO BLACK ROCKS			
5.8.1	The Bancoora SLSC building is a prominent structure in the landscape and is highly visible at the major entry point to Breamlea.	<ul style="list-style-type: none"> Liaise with the club to facilitate implementation and ongoing maintenance of the proposed landscape works to visually soften the impact of the building in this site. 	Med	CoGG BSLSC
5.8.2	Bancoora Beach vehicle access point is not for general public boat launching use.	<ul style="list-style-type: none"> Provide signage to identify alternative public boat launching facilities - i.e. at Torquay and Barwon Heads. BSLSC are to ensure that this Vehicle access point is kept locked and inaccessible to public vehicles at all times. 	Ongoing	CoGG
5.8.3	All beaches, other than Bancoora Beach are unsafe for swimming and existing beach signage indicates the location of patrolled beaches.	<ul style="list-style-type: none"> Continue to promote and support the BSLSC in their patrolling of Bancoora Beach for the safety of residents and visitors. 	Ongoing	CoGG BSLSC
5.8.4	Bancoora Beach is recognised as a popular surfing destination.	<ul style="list-style-type: none"> Maintain and support facilities and infrastructure associated with the BSLSC including parking, access and viewing platforms. Install interpretive signage to inform surfers of the damage uncontrolled access through the dunes can cause. 	Ongoing	CoGG BSLSC
5.8.5	Horses currently access Bancoora Beach at the vehicle access point. It has been identified that they can potentially harm the habitat values of the dunes.	<ul style="list-style-type: none"> Prohibit horse access and notify groups and rural properties to inform them of alternative beach access points for horses (refer 5.5.4). 	Ongoing	CoGG

INFRASTRUCTURE AND TRAFFIC MANAGEMENT

No	Issue	Recommendation	Priority	Agency
5.9	INFRASTRUCTURE			
5.9.1	There is no public bus or other transport connection to Breamlea. School bus access at the Caravan Park is constrained and buses frequently have to reverse out to turn around, proving a significant risk to pedestrians and passengers.	<ul style="list-style-type: none"> Liaise with Dept of Transport and local bus companies to upgrade existing bus turn around and parking facilities (refer 5.9.3). 	High	CoGG DOT
5.9.2	Despite prominent no through road signs, excess tourist traffic is directed into Breamlea (due to existing road layout) at Blackgate Road as visitors unsuccessfully seek a route along the coast between Torquay to Barwon Heads.	<ul style="list-style-type: none"> The intersection of Blackgate Road and Breamlea Road is jointly managed by Surf Coast Shire and City of Greater Geelong. Investigate a joint project to realign Blackgate Road at the intersection to improve safety and connection on the primary desire line – Torquay to Barwon Heads with access to Breamlea via a secondary T-intersection. 	Medium	CoGG SCS
5.9.3	Bancoora Beach and Surf Life Saving Club has extensive car parking, long vehicle turnaround and is the primary visitor destination at Breamlea. The intersection of Breamlea Road and Horwood Drive directs traffic into the town where the only available turn around is at the far end of Horwood drive at Scott Street where there is no beach access and limited parking.	<ul style="list-style-type: none"> Investigate establishment of a small roundabout at the corner of Breamlea Road and Horwood Drive. This design is to prioritise traffic flow to Bancoora, provide for emergency and bus turnaround (enabling establishment of a public bus service to Breamlea), slow traffic speed and volumes in Horwood Drive. In the longer term the roundabout may also provide a new access to the Caravan Park. This could enable a reduction in road width along Horwood Drive, additional visitor overflow parking and improvements in pedestrian access. 	High	CoGG
5.9.4	Horwood Drive is signed as 40km/hr and there is an informal pedestrian path on the southern (housing) side of the road that provides access from Bancoora Beach and the Caravan Park shop to the Recreation Reserve. There is no dedicated crossing point to the recreation reserve and on straight sections of road vehicle speeds frequently exceed the 40km/hr limit.	<ul style="list-style-type: none"> Establish outstands at the Breamlea Recreation Reserve on Horwood Drive to improve sightlines for pedestrians crossing the road while using the path link to the caravan park (refer 5). Establish negotiated one way access at the crossing point to reduce traffic speeds in Horwood Drive. Implement works to reduce traffic volumes and speeds in Horwood Drive (refer 5.9.1, 5.9.2 and 5.9.3). 	High	CoGG

No	Issue	Recommendation	Priority	Agency
5.9.5	The five beach access points within the town are highly constrained and there is only limited on road visitor parking. Informal visitor parking on summer beach days frequently obstructs residential driveways and limits emergency vehicle access and turnaround.	<ul style="list-style-type: none"> Review and improve clearway parking signage at all beach entry points to define emergency turnaround areas and retain clearance to residential driveways. Increase local laws enforcement by completion or targeted sweeps of the area on total fire ban days and public holidays in summer. 	High	CoGG
5.9.6	Fencing is required in many areas (mainly tracks) to minimise the impacts on natural values along the coast. Fencing is expensive to maintain and can present a risk to the public in dynamic coastal systems due to erosion or inundation with sand.	<ul style="list-style-type: none"> Retain and maintain existing fencing along beach access paths to discourage uncontrolled access through the dunes. Where possible fences are to be constructed approximately 2 metres from edge of path to minimise their visual impact on the natural environment and landscape character. Minimise the use of fencing along the beach where periodic erosion and inundation with sand reduce effectiveness and increase maintenance costs. Continue ongoing community education regarding the important natural values of the dunes and an understanding of the impact uncontrolled access has on these. Install interpretive signage at major entry points – e.g., Bancoora Beach and the Breamlea Caravan Park to advise visitors of the environmental significance of the site and to use designated paths only. 	Ongoing	CoGG
5.9.7	The front face of the dunes is undergoing continual change as a result of wave and wind action. It is to be expected that any steps or structures will require maintenance and replacement periodically	<ul style="list-style-type: none"> Undertake regular maintenance and clearing sand build up around permanent structures (e.g. fences and steps). If existing beach access stairs are damaged or require replacement investigate an alternative low impact board and chain access. These would be laid on the steeper sections of paths to give some grip and stability and would be significantly lower in replacement cost and minimise impact on the natural dune processes (refer 5.1.1). 	Ongoing	CoGG
5.9.8	Redundant signage	<ul style="list-style-type: none"> Review and remove redundant signage. Where new signage is proposed integrate multiple signs to one post or location to minimise the number of signs required. 	High	CoGG
5.9.9	Lack of rubbish and recycling bins and inadequate collection during peak summer periods contributes to littering on the beach and in the dunes.	<ul style="list-style-type: none"> Provide additional 240 litre bins at key visitor areas including Bancoora, beach access points and the Recreation Reserve. Increase clearance rates and provide additional bins over the summer period to meet increasing visitor numbers. 	High	CoGG

No	Issue	Recommendation	Priority	Agency
5.9.10	Lack of co ordination between residential and public open space rubbish collection.	<ul style="list-style-type: none"> Investigate opportunities to coordinate residential and public open space rubbish and recycling collection at Breamlea to reduce truck volumes and improve effective clearance rates. 	High	CoGG
5.9.11	Facilities at the Breamlea Caravan Park including the shop and amenity blocks no longer meet contemporary standards and will require upgrade or replacement.	<ul style="list-style-type: none"> Implement the recommendations of the Breamlea Caravan Park Masterplan Ensure development of any new facilities meets best practice environmental sustainability standards. Undertake required Cultural Heritage Investigation during the initial planning stages to minimise impacts on archaeological and cultural heritage values (refer 5.11.1). 	High	CoGG RAP
5.9.12	The only shop at Breamlea is at the Caravan Park.	<ul style="list-style-type: none"> Retain and support the shop at Breamlea as an important community facility When undertaking the required detailed review of Caravan Park operations, investigate opportunities to relocate the shop and entry to the corner of Horwood Drive and Breamlea Road to improve service for Bancoora beach users and reduce vehicle traffic in Horwood Drive (subject to detailed design investigation and cultural heritage assessment). 	Ongoing	CoGG
5.9.13	Electricity pole and fire plug outside 99-101 Horwood Drive are overgrown and present a fire risk to property and adjoining coastal reserve.	<ul style="list-style-type: none"> Notify Powercor to undertake required vegetation clearance and ongoing management to minimise potential fire risk from electricity pole at 99-101 Horwood Drive. 	High	Powercor CFA
5.10	MANAGEMENT AND PLANNING			
5.10.1	Breamlea has been identified as an area of extreme fire risk in the Draft Updated Breamlea Fire Management Plan 2005.	<ul style="list-style-type: none"> Investigate inclusion of Breamlea in a Wildfire Management Overlay (WMO) in the City of Greater Geelong Planning Scheme. Implement the recommendations of the Fire Plan. 	High	CoGG DSE PV CFA
5.10.2	Lack of community consultation.	<ul style="list-style-type: none"> Future implementation works are to be in accordance with the direction set out in this Management Plan. This Plan has received community input to its development, however, implementation will involve appropriate liaison with affected stakeholders and users. Where additional design plans are to be prepared, consultation with relevant community stakeholders will be included during the preparation of the plans. The implementation works will then be done in accordance with these plans. 	Ongoing	CoGG

No	Issue	Recommendation	Priority	Agency
5.10.3	Lack of visitor and community awareness regarding the unique environmental and cultural values at Breamlea.	<ul style="list-style-type: none"> Continue to prepare and supply new resident information packs regarding environmental and cultural values at Breamlea and landholder requirements under the planning scheme and other legislation. Investigate distribution of information packs to local real estate agents to ensure prospective buyers are aware of planning scheme and other legislation requirements at Breamlea. Continue development of environmental and cultural heritage awareness and education programs through facilities at the Breamlea Caravan Park 	Ongoing	CoGG
			High	CoGG
			Ongoing	CoGG RAP
5.10.4	Lack of by laws enforcement on public holidays and weekends exacerbates damage to the foreshore from illegal camping, vehicle access, litter etc.	<ul style="list-style-type: none"> Review provision of after hours, weekend and public holiday local laws enforcement. 	High	CoGG

CULTURAL HERITAGE

No	Issue	Recommendation	Priority	Agency
5.11	CULTURAL HERITAGE			
5.11.1	Previous surveys demonstrate that Breamlea has one of the highest densities of Aboriginal archaeological middens along the central west coast of Victoria. They provide valuable data on past aboriginal use of the region and ongoing connection to past land use.	<ul style="list-style-type: none"> The Aboriginal Heritage Act 2006 allows for Registered Aboriginal Parties (RAPs) to take responsibility for designated areas. Any agency or landowner that intends to disturb or destroy an archaeological site (both registered and unregistered) must seek written consent from the RAP when confirmed prior to proceeding with works. Generally works within 100 metres of a registered site constitutes disturbance and will require written consent. Undertake required Cultural Heritage Management Plans for all works which involve significant ground disturbance. Liaise with RAP to investigate development appropriately designed and located interpretive signage to assist in educating visitors regarding both archaeological and cultural heritage values at Breamlea. 	Ongoing	RAP COGG
			Ongoing	
			High	
5.11.2	The entire Breamlea region has been identified as of archaeological interest and as an area of high cultural heritage sensitivity, yet there is no Heritage Overlay or provisions in the Planning Scheme or Building Permits regarding development on private	<ul style="list-style-type: none"> Investigate appropriate regulations or planning mechanisms (e.g. Heritage Overlay or memorandum of understanding with the RAP for monitoring of Building Permit works in Breamlea) to establish guidelines regarding control/monitoring/recording excavation and removal of soil from private land in Breamlea to other locations. 	High	RAP AAV CoGG Landholders

No	Issue	Recommendation	Priority	Agency
	land, particularly excavation and removal of soil and other materials from site. These activities present a threat to archaeological and cultural heritage values including both disturbance and removal to sites away from Breamlea.			
5.11.3	The historical significance of the area nominated as Buckley's Well covered by the existing Heritage Overlay (HO57) in the City of Greater Geelong Planning Scheme is not well documented.	<ul style="list-style-type: none"> Review of Heritage Significance of the site known as Buckleys Well (HO57) and confirm if the Heritage Overlay should be retained. 	Low	CoGG
5.11.4	Historic marker and drinking fountain at Cahir Park.	<ul style="list-style-type: none"> Retain historic marker and drinking fountain at Cahir Park (Note: water is currently turned off as part of Stage 4 water restrictions) 	Ongoing	CoGG
5.11.5	Remnants of former timber pier at Cahir Park	<ul style="list-style-type: none"> Investigate and confirm details and potential heritage significance. Reconstruction of the pier is not proposed as there is existing informal water access via steps at Cahir Park and large scale infrastructure in the Creek is inconsistent with current environmental values. 	Low	CoGG CCMA

6.0 BIBLIOGRAPHY

Aboriginal Affairs Victoria & Conservation & Natural Resources (March 1996), **Aboriginal Archaeology of the Barwon Drainage Basin**, extract from unknown source

Austral Heritage Consultants (April 1997), Barwon **Heads Access Plan: An Aboriginal Archaeological Assessment** Prepared for the Barwon Access Steering Committee

Austral Heritage Consultants (June 1997), **An Aboriginal Archaeological Survey of a proposed beach access between Breamlea Caravan Park and the Bancoora Surf Life Saving Club at Breamlea** prepared for the City of Greater Geelong

Breamlea Coastal Community Working Group (November 1997), **Coastal Management at Breamlea - issues, future management and priority actions - Draft Discussion Paper**, submitted to City of Greater Geelong and the DNRE

Breamlea Progress Association compiled and edited Roberts, Bev (1995), **A Special Place A Breamlea Album**

City of Greater Geelong (1994), **2010 - A Preferred Future** - prepared by Geelong's Preferred Future 2010 Community

City of Greater Geelong (October 1997), **Greater Geelong Planning Scheme Exhibition Copy**

City of Greater Geelong (1997-2000), **Corporate Plan**

City of Greater Geelong (September 1994), **Fire Prevention Plan**

Coastal Management & Co-ordination Committee (March 1979), **Barway Coastal Study A Basis for Planning & Management**

Corangamite Catchment Management Authority (2006), **Corangamite Wetland Strategy (2006 – 2011)**

Country Victoria Tourism Council & Tourism Victoria (1995), **Great Ocean Road Tourism Development Plan**

Crosby DF, Arthur Ryle Institute for Environmental Research (May 1990), **Technical Report Series No. 98 A Management Plan for the Altona Skipper Butterfly** Prepared for Dept of Conservation, Forests & Lands

Department of Conservation & Environment (December 1991), **Geelong Region Proposed Coastal Management Plan**

Dept of Crown Lands and Survey (March 1979), **Barway Coastal Study Vol 1 - A Basis for Planning & Management** - prepared for the Coastal Management and Coordinating Committee

Geelong Regional Commisision (undated), **Historic Places Documentation Sheet**, sheet no. 389, Buckleys Well

Land Conservation Council (April 1995), **Marine & Coastal Special Investigation Proposed Recommendations**

Morrice, Margie (December 2003), **Central West Victoria Regional Coastal Action Plan**, prepared in association with the Central West Victoria Coastal & Marine Planning Program Steering Committee and Barnes, C

Marine & Freshwater Resources Institute (undated), **Coastal Dune Revegetation Programme. Report on the 1997 Dune Revegetation Programme**

Parklinks (July 1996), **Barwon Region Strategic Bicycle Plan**, prepared in association with Bicycle Victoria, Mackintosh Consulting and Aspect Landscape Consultants Pty Ltd

Prescott, J (undated), **South Barwon 1857 – 1985**, compiled by John Prescott, extract pp 146

Quanchi, Emma (undated), **William Buckley Historical Trail Interpretation & Information Plan** prepared for Geelong Otway Tourism

Richards T. & Jordan J. (1996), **Aboriginal Archaeological Investigations in the Barwon Drainage Basin** - Prepared for Aboriginal Affairs Victoria

Terraculture (2008), **Cultural Heritage Impact Assessment: Breamlea Rising Main De-commissioning** – A final report prepared for Barwon Water Corporation by Catherine Webb

Thompson Creek Catchment Committee (February 1998), **Thompson Creek Catchment Plan**

Torquay Public Reserve Committee of Management (1998), **Vertebrate Pest Management Plan**

Tract Consultants Pty Ltd. & Chris Dance Land Design Pty Ltd (May 1998), **Landscape Setting Types for the Victorian Coast**, report prepared for Victorian Coastal Council

Tract Consultants Pty Ltd. & Chris Dance Land Design Pty Ltd. (May 1998), **Siting & Design Guidelines for Structures on the Victorian Coast**, report prepared for Victorian Coastal Council

Victorian Coastal Council (2008), **Victorian Coastal Strategy 2008**, adopted by the Victorian State Government

Victorian State Government (1995), **Coastal Management Act**

Western Coastal Board (August 2005), **Central West Victoria Estuaries Coastal Action Plan**, prepared in association with Chris Harty Planning and Environmental Management, Central West Victoria Coastal & Marine Planning Program Steering Committee and Morrice, Margie

Whitehall, Debra (January 1997), **Background Information and Recommended Guidelines for River Mouth Dredging**, prepared for Natural Resources and Environment

Wynd, I (1988), **Balla-Wein – A History of the Shire of Bellarine**, extract pp 4 to 5

APPENDIX A

SUMMARY REPORT COMMUNITY CONSULTATION OUTCOMES

(Summary of completed questionnaires and community meeting held in February 2009)

Breamlea Masterplan and Management Plan Update

SUMMARY REPORT

COMMUNITY CONSULTATION OUTCOMES

Undertaken during the research and analysis phase
of the project

Prepared by Thompson Berrill Landscape Design Pty Ltd
for
City of Greater Geelong

February 2009

TABLE OF CONTENTS

	PAGE #
1. INTRODUCTION	3
2. INFORMATION LEAFLET QUESTIONNAIRE #1 RESPONSES	3
2.1 Location	3
2.2 Age range	4
2.3 Issues/Opportunities to be addressed	4
2.4 What has worked well in the past?	6
2.5 What should Breamlea look like in ten years time?	7
2.6 Planning Controls	9
3. SUMMARY OF WRITTEN SUBMISSIONS	9

ATTACHMENT 1

Breamlea Masterplan and Management Plan Information Leaflet #1

ATTACHMENT 2

Community Information Session Meeting Notes - 5.2.2009

1. INTRODUCTION

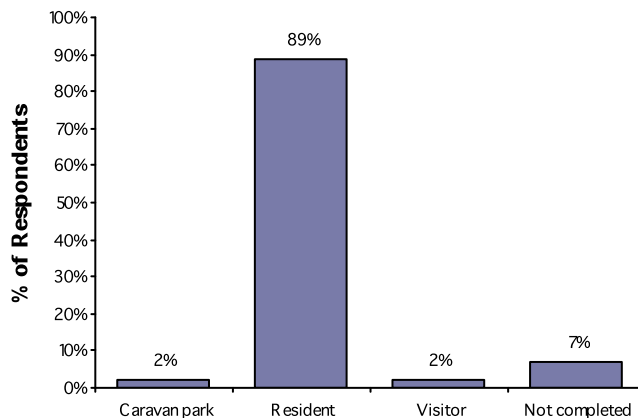
An information leaflet and questionnaire was prepared to seek feedback from the community regarding the update of the Breamlea Masterplan and Management Plan. The questionnaire was designed to reconfirm resident and stakeholder views on key issues and identify any additional issues or opportunities to be considered in preparation of the new management plan. Respondents were also given the opportunity to provide details of the consultation and management actions that have worked well in Breamlea in the past, and indicate what they would like Breamlea to look in like ten years time. Refer to the attached questionnaire for details.

The information leaflet questionnaire was letterbox dropped to residents in Breamlea and additional copies and display copies were made available at the Breamlea shop, through the busy Christmas period from December 15 2008 to February 20 2009.

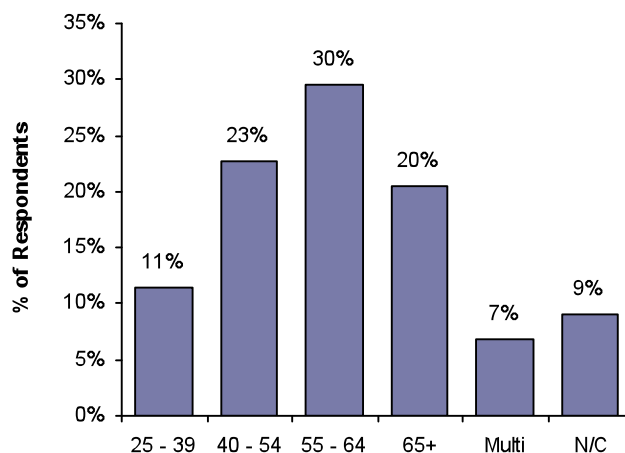
A total of 44 questionnaires were completed and returned along with 2 detailed written responses and the outcomes of these have been summarised. Note. there were 57 leaflets returned in the 1999 questionnaire.

2. INFORMATION LEAFLET QUESTIONNAIRE #1 RESPONSES

2.1 Location



2.2 Age range



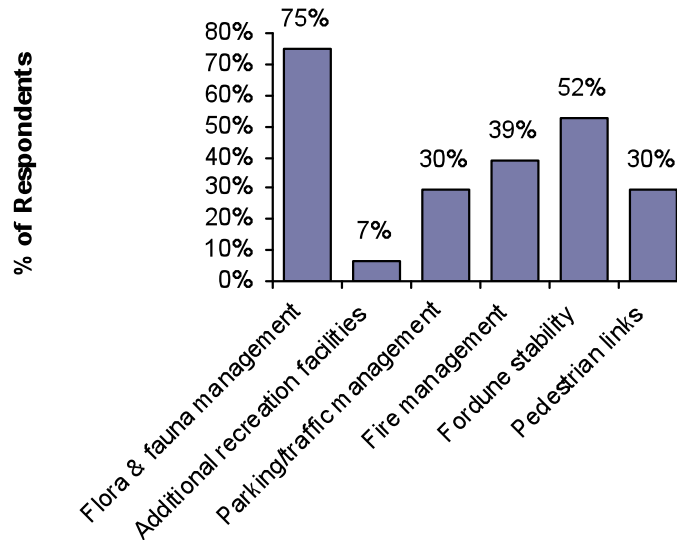
NB: 'Multi' category refers to questionnaires completed with multiple age categories including children aged 0-14.

There were a significantly higher proportion of children under 17 in the 1999 responses (30 in the 0-14 category alone) and while some were recorded in the 'multi' (family section) no

children were recorded individually in 2009. The transition of residents from the 40-54 group into the 55-64 age group is also noticeable when comparing the 1999 and current age profile of respondents and is consistent with the 10 year interval between the current and previous plans.

2.3 Issues/Opportunities to be addressed

2.3.1 Respondents were asked to tick a box indicating issues/opportunities they thought were most important to address in the updated management plan.



2.3.2 Respondents were able to list more than one issue/opportunity and below is the list of others which are to be considered in the updated management plan.

14%	6	Consultation Process
	2	Community representation was provided in original MP, but never implemented
	1	Adequate community consultation and involvement
	1	Clarification of lines of management of Breamlea
	1	Implementation of 6.2.4 in original MP which places 'high/ongoing' priority to setting up 'Community Advisory Committee'
	1	Meetings with locals to be held at a suitable time (e.g. Sundays)
45%	20	Infrastructure
	3	Telephone and electricity cables to be run underground
	2	Review/upgrade of facilities of the Caravan Park
	2	Tidy up/renovate caravan park amenities
	1	Leave Breamlea as is, minimal or no development
	1	Maintenance of the free tennis courts (near cricket oval)
	1	Monitor Thompsons Creek for contamination from septic tanks
	1	No additional recreation facilities; it is a beach haven
	1	Power lines always spark, very dangerous
	1	Provide a destination shop
	1	Redevelop General Store, separate from Caravan Park, provide car/cyclist parking, good food/coffee, information
	1	Safe/easy access for fire trucks on residential streets incl. clearways/turning circles
	1	Some street lights shine straight into homes, back of light should be painted black
	1	Speed humps are too high
	1	Upgrading Black Rock treatment to full tertiary treatment
1	Tarred road for whole of Blythe Street	

	1	Rebuild old jetty at Cahir Park
14%	6	Flora & fauna management
	1	Council to provide active support to the Coast Action Group for environment protection and responsibility (and lines of responsibility)
	1	Remove Boxthorn on council property
	1	Replanting of suitable plants (gradual replacement of Tea Tree, with other original plants)
	1	The Little Desert area is supposed to be bare, not covered in vegetation
	1	Too much dune stability; is a natural occurrence and should be only mildly maintained
	1	Weed eradication
9%	4	Fire management
	1	All additional parking in Breamlea needs to be banned on total fire ban days
	1	First responder support (for first aid also)
	1	Parking/traffic control on total fire ban days
	1	Removal of dead vegetation on public land needs to happen regularly
23%	10	Pedestrian links
	1	Boardwalk around wetland to appreciate what has been saved
	1	A path along Bream Creek to its outlet and the ocean
	1	Boardwalk over wetland allowing access to mouth of creek (all weather conditions)
	1	Build bike track linking Horwood Drive and Point Impossible Road
	1	Existing access tracks need to be better maintained; posts, wires and steps all need fixing
	1	Need a pedestrian link from shop to beach
	1	Old wire removed from path 48W to the beach
	1	Poor beach access from Whittington Street
	1	Provide dog dropping bags along each access track
	1	Timber walkways and stairs should be built for access to beach
9%	4	Traffic management
	1	Cars traveling too fast, better speed signage at entrance to Breamlea
	1	Encourage use of SLSC
	1	Enforce 40km speed limit
	1	Install more speed humps
16%	7	General
	1	Cleaning of general areas at Breamlea
	1	Give Bream Creek back its original name (not Thompsons Creek)
	1	Impact of people (including visitors) on the environment
	1	More rubbish bins required, to be emptied regularly
	1	Policing of people lighting fires and climbing all over sand dunes
	1	Public toilets need to be maintained twice daily at least, especially in hot weather
	1	Council make clear individual and department areas of responsibility and lines of responsibility

2.4

What has worked well in the past?

Respondents were asked to nominate Council policies, works and education programs that have worked well at Breamlea in the past.

36%	16	Consultation Process
	2	Follow up of last Management Plan through Management Committee did not happen well enough
	2	Previous management plan was excellent (1999)
	2	Resident consultations and feedback prior to change
	1	Last 6 years have been disappointing from consultation point of view
	1	Community consultation
	1	Community consultation re children's playground
	1	Comprehensive community engagement, when implemented, has worked well in the past to Community's & Council's benefit. The last 5 years have been disappointing from that aspect.
	1	Consultations have happened, but the difficulty is in follow through by CoGG and the provision of open channels and contact and information.
	1	Co-operative approach with community with mutually understood plans of action that are actually followed through
	1	Information dissemination
	1	Letting community know why actions need to be taken (community education)
	1	Public meetings are okay, but not enough. Written comments should be considered especially when there is real detail.
	1	Town meetings at Bancoora Surf Club
	14%	6	Infrastructure
1		Breamlea Oval recreation area
1		Improved recreation area with toilet, playground, BBQ and security lighting
1		Playground design
1		Provision of new playground and BBQ
1		Relocation of toilets with great, modern facilities
1		Restrictions on height and density of development
11%	5	Flora & fauna management
	3	Weeding groups
	1	All artificially blown out of proportion due to narrow minded and inflated conservation issue re fauna
	1	Clearance of tea tree and weed species (however much more required)
5%	2	Fire management
	2	Fire consultation groups
18%	8	Pedestrian links
	2	Designated walkway along Horwood Drive
	1	Dune stabilisation and provision of access tracks to beach
	1	Improved beach access for mobility impaired residents, i.e. stairs at Whittington St
	1	Paths through dunes
	1	Pedestrian footpath
	1	Pedestrian link from caravan park to Surf Club
	1	Tidy up of Blythe St track
7%	3	Traffic management
	2	40km speed limit through town
	1	Bancoora car park
7%	3	General
	1	Don't know what CoGG have done except raise rates to ridiculous heights
	1	Not sure this question can be answered positively, would like to see significant improvement
	1	Not sure, new resident

2.5

What should Breamlea look like in ten years time?

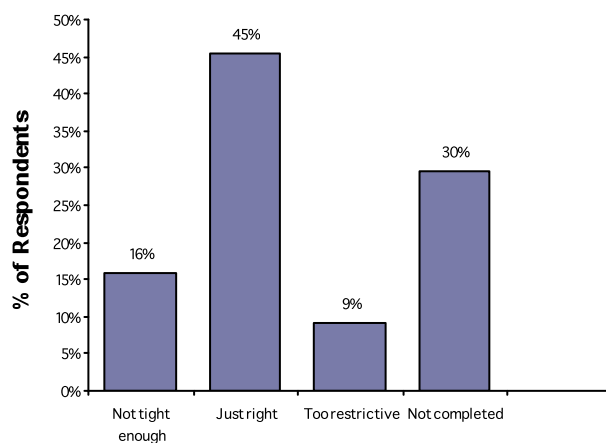
Respondents were asked their opinion of what Breamlea should look like in ten years.

61%	27	Similar/Same
16%	7	Less weeds and creepers
16%	7	More indigenous flora
9%	4	Less tea tree
7%	3	Improved/renovated houses
7%	3	Minimum or no development - leave it as is
7%	3	Moonah rehabilitation, protection and promotion
7%	3	Utility cables underground
5%	2	Build more pedestrian paths
5%	2	Ecological, well cared for environment
5%	2	Launching ramp for water craft from Cahir Park free from knee due mud (due to siltation)
5%	2	Marked reduction in noxious woody weed infestations
5%	2	No houses or aerals should be seen from beach or dunes
5%	2	Peaceful hamlet
5%	2	Preservation/maintenance rather than 'progress'
5%	2	Tap water needs to be replaced at Cahir Park
	1	A roundabout at entrance to town with beach signage
	1	Active and positive cooperation between Management and Community
	1	Active promotion of indigenous planting
	1	Better control of Bridal Creeper
	1	Better signage at entrance meaning people will use Bancoora more, less tourists to Breamlea
	1	Boardwalk from caravan along Horwood Drive
	1	Boardwalk through mudflats to Pt Impossible providing year round access
	1	Cleaner and greener along Horwood Drive
	1	Clearance of muddy water
	1	Community garden for local food production
	1	Continual working on the dune stabilisation
	1	Controlled access through dunes
	1	Dunes revegetated
	1	Easier walkways through dunes (timber)
	1	Enhanced/protected areas for conservation
	1	Fuel reduction
	1	Good community interaction
	1	Good fire access
	1	Improved beach access
	1	Increase number of Moonah and improvement in the health of current stands
	1	Less 'action groups' in Breamlea who are changing and dividing harmony of town
	1	Less fuel fire load in dunes
	1	Let nature take its course (however, residents should be able to plant but not build, what they want)
	1	Local bus services to Breamlea
	1	More landscaping
	1	More landscaping at Cahir Park
	1	Newly planted Moonah's at entrance
	1	No additional recreation facilities
	1	No change to character of town
	1	No cheap, nasty buildings being built (e.g. the new 'Shed' in Caravan Park) - Hardly green!
	1	No 'creeping developments'
	1	No developments or commercialisation
	1	No dual occupancy/high rise buildings
	1	No more houses above tree line

1	No more public concreting
1	No subdivision
1	Quiet haven for residents, holidaymakers and day-trippers
1	Regeneration of indigenous species
1	Relocation of shop between Bancoora and the caravan park
1	Removal of illegally constructed dwellings
1	Road verges weed free and maintained
1	Safe/easy access for fire trucks along all residential streets including clearway turning circles
1	Self sufficient
1	Sitting caretakers and local state/government authorities
1	Solar powered
1	Unaltered buildings/roads
1	Unaltered view from town to beach
1	Vegetation should be less (weeds/fire hazard)
1	Wetland reserve restored and maintained (if it looked less like a weed and rubbish infested dump, it would be less likely to be used as a dumping ground)

2.6 Planning Controls

Respondents were asked in a tick a box format their opinion of existing planning controls at Breamlea.



3.0

SUMMARY OF WRITTEN SUBMISSIONS

In addition to the returned questionnaires, another 2 written submissions were received. A summary of key issues and opportunities raised in these more detailed submissions has been included below.

- Large amount of money spent on underground plastic pipe in Horwood Drive, which disrupted traffic for months. This project has still not been completed.
- Future planning for an 'aged' community in Breamlea with provision of a twice-weekly shuttle bus to Geelong.
- Poor workmanship every time the verge of the road is graded (some potholes are filled, others are disregarded).
- Extreme delay in providing a Final Report of outcome to community regarding Breamlea Fire Management Plan, despite many hours of community involvement.
- Considering making Breamlea a cat-free area, given its unique environment with birds, etc.
- Education of all real estate agents and other sales representatives, re vegetation, dual occupancy, etc.
- Brief overview leaflet for real estate agents and other sales representatives outlining main points with further reference to where they can gain more information.
- Utilisation of Protea Farm on Breamlea Road with a Rotary Club and Karingal to harvest and roadside sell the flowers.
- Turn-off to Bancoora to reduce traffic into Breamlea, especially travelers who are lost heading to Torquay.
- Improvement of dangerous intersection at Breamlea/Blackgate Road, needs changes.
- Too much stress on very hot north wind days.
- Danger of fire coming from dunes on southerly days/nights if lightning strikes.
- People lighting fires in the dunes.
- Greatly increased amount of vegetation in the dunes (along with drought) creates fire hazard for most of the year.
- Flora management, pedestrian links and parking management are intimately connected with fire management.
- Little Desert area should be restored to refuge space in a bushfire, pedestrian link to Post Office and offer a pleasant circular walk when weather makes beach walks unattractive.
- Old path on the north through the Wattle Thicket should be reopened.
- Old secret path through vegetation at the foot of the dunes should be reopened.
- Other recent vegetation should be removed, with careful planning and correct pruning.
- More fuel needs to be removed along Horwood Drive, with correct pruning.
- Create clearways in a natural state for people to walk along in a less suburbanised way than on south side of the road.
- Keep access open wherever possible. This was a great problem with the original plan and is still a problem.

ATTACHMENT 1

Breamlea Masterplan and Management Plan Leaflet #1

Breamlea Masterplan and Management Plan

UPDATE



What is the plan for?

The Breamlea Masterplan and Management Plan was released in 1999 and the City of Greater Geelong in conjunction with the local community and other management authorities have completed many of the recommended works over the past 10 years.

The City of Greater Geelong is preparing to undertake a review and update of the plan to guide works and management of the area for the next 10 years.

Where is the project up to?

The project is in the first phase of research to review the original management plan recommendations and to identify if there are any additional issues or opportunities to be considered in preparation of the new management plan.


How can you be involved?

Please complete the questionnaire on the other side of this leaflet and return to the Council free post address or Breamlea Store by Friday February 6 2009.

A community meeting to discuss issues and opportunities to be considered in updating the plan is also proposed to be held on:

Thursday February 5 2009 from
6.30pm to 8.30pm at the Caravan Park
Education Centre

If you require any further information please contact: *Burke Renouf, Sustainability Officer - City of Greater Geelong Environment Unit*
e-mail: brenouf@geelongcity.vic.gov.au
or ph: 5272 4785

If you would like to be kept informed about the project, please fill out your name and address and return to the City of Greater Geelong. 

Plan Overall Objectives

- Develop a plan that achieves a balance between local community needs and the enhancement of the unique natural environment.
- Clearly identify and define areas within Breamlea that can accommodate visitors and provide adequate facilities and interpretive information at these locations.
- Ensure future provision of recreation infrastructure in the coastal environment is sensitive to environmental needs and not excessive to local community and visitor requirements.
- Promote understanding in the Breamlea Community of the unique natural dynamic system and the actions individuals can undertake to assist the overall quality and management of the environment.
- Recognise and protect unique cultural values of the foreshore.
- Encourage sensitive and site responsive design of future buildings on both freehold and public land in Breamlea.

Existing recommendations to be considered as part of the plan update include:

- Thompson Creek Mouth to Scott Street is managed as a conservation zone. Proposed removal of the decommissioned sewer and concrete retaining wall by Barwon Water will provide opportunities for further weed control and restoration/ protection of natural processes and environmental values.
- Vehicle circulation, parking and pedestrian links and safety is to be reviewed between Scott Street and the Breamlea Caravan Park.
- Provision of facilities at the key visitor destination points in the town including the Breamlea Caravan Park, the Bancoora Beach car park and Recreation Reserve will be reviewed.
- Management of the coast between Bancoora Beach and Black Rock as a conservation zone.
- Monitoring of high value conservation areas along Thompsons Creek including significant saltmarsh communities.

NAME -----
ADDRESS -----
POSTCODE ----- EMAIL -----

Council is collecting the personal information requested on this form for research and analysis. Council will solely use the personal information for that primary purpose or directly related purposes. The respondent understands that the personal information provided is for the purposes of this and future research by the City and that they may apply to Council for access, deletion and/or amendment of the information. Council may disclose your personal information to third parties such as contractors or agents to provide services on our behalf. Council requires that the information is not used for any other purpose. Provision of personal information is optional. You can contact Council's Privacy Officer on 5227 0270 for further information on the City's privacy policy.



CITY OF GREATER GEELONG
Questionnaire

Breamlea Masterplan and Management Plan

Please fill out this questionnaire for yourself and your family.

Q1. Resident Caravan Park Day Visitor

Q2. Age Range: 0-14 25-39 55-64
15-24 40-54 65+

Q3. Please indicate your top three issues/opportunities that need to be addressed in the updated management plan:

- Flora & fauna management
- Fire management
- Other (Please list)
- Additional recreation facilities
- Foredune stability
- Parking/traffic management
- Pedestrian links

first fold
↑

Q4. What CoGG consultation and management actions have worked well at Breamlea in the past?

Q5. What should Breamlea look like in ten years time?

Q6. Are existing Breamlea planning controls: not tight enough just right too restrictive

* Please attach any further comments, thoughts and ideas, fold and return to the Council free post address or Breamlea Store by Friday February 6 2009.

second fold
↓

Delivery Address:
PO Box 104
GEELONG VIC 3220

ATTENTION: ENVIRONMENT UNIT

FOLD DIAGRAM
Once completed fold questionnaire
as diagram shows:



No stamp required
if posted in Australia



City of Greater Geelong
Reply Paid 104
GEELONG VIC 3220

ATTACHMENT 2

Breamlea Masterplan and Management Plan Community Meeting Notes 5.2.2009

MEETING NOTES

Breamlea Masterplan and Management Plan Update Community Workshop # 1

Thursday, February 5 2009 from 6:30pm to 9:30pm, Breamlea Caravan Park - Education Centre

Attendees:

28 local community members

Burke Renouf, Sustainability Officer, City of Greater Geelong

Matthew Bolton, Thompson Berrill Landscape Design Pty Ltd

1.0 WELCOME

BR welcomed all to the meeting and gave a brief outline of the project scope and the intent of the meeting.

2.0 BRIEF OUTLINE OF PROJECT PROCESS METHODOLOGY AND TIMEFRAMES

MB briefly presented this information.

3.0 BRIEF PRESENTATION OF EXISTING CONDITIONS

MB gave a brief presentation summarising the many works that have been completed at Breamlea by City of Greater Geelong, resident groups and other agencies, in accordance with the recommendations of the previous plan. There have also been a number of subsequent studies completed since 1999. These include most recently the fire plan in November 2005. There was comment from many residents that although involved in the process, they were yet to see a copy of the Fire Plan. BR advised that copies would be made available on council's website or via email as soon as possible.

4.0 WORKSHOP SESSION

4.1 IDENTIFY KEY STRENGTHS AND VALUES OF BREAMLEA

The following is a summary of the values and strengths identified during the consultation phase in 1998. Discussion at the meeting in 2009 confirmed these key strengths and values are very similar today.

Quality Valued	No.	%
Peace and quiet	35	30
Beaches	21	18
Friendly 'village' community	15	13
Natural environment/landscape	13	11
Lack of (major) development	12	10
Beauty	11	9
Isolation/seclusion	10	8
Wetlands	9	8
Unique	7	6
Ocean	5	4
Tranquility	5	4
Wildlife/birdlife	5	4
No through traffic	4	3
Proximity to Geelong	3	3
Lack of pollution	2	2
Privacy	2	2
Great place for friends or family to visit	2	2
History	1	1
Aboriginal history	1	1

4.2

IDENTIFY KEY ISSUES/WEAKNESSES TO BE ADDRESSED IN THE MANAGEMENT PLAN

The next part of the meeting was run as a workshop with comments and feedback from people present, recorded onto butcher's paper.

- Severe impact on the primary dunes from informal tracks being created by sliding and access. Not always residents, often fitness groups and other visitors
- People from fitness groups are very aggressive and residents have given up trying to stop them from using sand dunes
- Sand covering beach access steps is a potential risk and is possibly changing the natural process of the dunes. Are steps appropriate in a dune environment?
- Increasing numbers of illegal campers in the dunes. There are no toilets or running water, which creates sanitation problems. Bylaws do not respond and police will not enforce. Weekends are the main problem (after hours) when enforcement agencies are reluctant to act
- Management of council subcontractors who have been seen working on total fire ban days and dumping inappropriate materials in the vegetation areas adjoining properties. On ground management is lacking.
- Clearance of firebreak around private property is expensive and difficult.
- Total fire ban days coincide with hot days/peak visitor periods and increased number of people and vehicles present a high risk
- Protection of no parking zones at beach access points on total fire ban days is critical for emergency access
- Parking is a fire access issue and creates resident access issues also
- Emergency vehicle access (ambulances, etc) is still difficult in many areas on busy days, as without enforcement people do not obey the signs
- Illegal parking on Scott and Blythe Streets, visitors ignore no parking signage
- Proliferation of signs - can we improve visual quality by removing outdated or no longer relevant signage
- Completion of the Geelong Ring Road may add a large number of vehicles/visitors to Breamlea. Therefore, action to address the intersection at Bancoora/Blackgate Road is very urgent and needs to be completed within short time frame
- Improve visibility at Blackgate Road/Breamlea (need a slip lane)
- Speeding over the 40km limit in Horwood Drive. Residents, visitors and garbage trucks are all at fault (especially on the way back out of town). Control/enforcement of limits is vital to making them work and improving safety
- Speeding in Horwood Drive (still an issue), needs special control/diversion at Bancoora SLSC as per previous plan recommendations
- Lack of 40km signage on the return journey along Horwood Drive contributes to speeding
- Recent gravel verges works in town and along Blackgate Road are soft and spread out over the asphalt, presenting significant risk to cyclists
- Out of control dogs on beaches. Larger and wilder dogs are let loose at Breamlea, given the decreasing number of off lead areas in Geelong.
- There is no such thing as effective control with many of these dogs who are brought to Breamlea primarily because they cannot be exercised elsewhere.
- The Hooded Plover population is thriving at the moment, despite current situation with dogs and informal dune access
- Dog waste is frequently overflowing bins
- Item 6.2.4 from the original 1999 Management Plan, 'Provision of Community Advisory Committee' was a high priority yet has not been implemented.

Consultation with council has noticeably deteriorated over the past 5 years and this could be used to restore relations

- Relationship of community with council. Customer service responses (emails and letters take 3-4 months) and there is a lack of following through on commitments from council
- Planning process is difficult with a high turn over of officers at council and a lack of awareness of important documents like the Management Plan
- Planning controls on private/public land (difference especially for agencies such as Powercor.
- Shop/post office is not big enough to service the future. The existing facility does not comply with many standards (OHS and security) and without accommodation it would be very difficult to get another manager given Dawn lives locally
- Would not want to see the caravan park sold off like Zeally Bay, as it is of critical importance to the local community
- Maintenance of power line clearance to vegetation at the end of Horwood Drive
- Upstream management of Thompsons Creek, especially with the Armstrong Creek Development
- What is happening with the pill bill box at Thompsons Creek/Point Impossible?
- Potential lack of public access along Thompsons Creek, due to 'Conservation Zone requirements. The narrow salt access track is good and provides the right balance of access and protection of values
- Protection of Moonah Woodland. Education of local real estate agents is important as they often miss inform new residents about what they can and cannot do on their land
- Woody weeds - a marked reduction is important and Blythe St needs urgent attention
- Residents planting weeds species and a lack of maintenance contributes to spread of weeds and potential fire risk
- Better servicing of rubbish at Bancoora (only 2 bins in the car park)
- Clearance of bins at beach access tracks. Overflowing bins are frequently cleaned up by residents
- Jet skis and enforcement of powered craft restrictions
- Horses and motorbikes illegally accessing the beach
- Climate change - impacts of rising sea levels

4.3 IDENTIFY KEY OPPORTUNITIES TO BE CONSIDERED IN THE MANAGEMENT PLAN

- Consider implementation of no smoking/no glass on beach restrictions
- Investigate implementing by-laws like Surf Coast where it is an offence to be off a designated track in the dunes
- Dry timber, fuel reduction and removal of dead tea tree along the back of the dunes and Horwood Drive
- Investigate use of a communal chipper or collection by council at no cost to residents
- Rebuild the old jetty at Cahir Park
- A new shop/post office should be built on the corner at the turn-off to the Surf Lifesaving Club. In this location it would provide direction to Bancoora and the caravan park, while reducing the volume of through traffic into Breamlea. Do not need a huge building, but needs to be bigger than current facility
- Potential under grounding of powerlines at Breamlea

- Consider boardwalk access through the wetland and around to Point Impossible along Thompsons Creek. There is a small section, which is regularly wet creating more tracks and disturbance as people try and avoid the area
- Is there potential for new management authority other than City of Greater Geelong, e.g. Barwon Coast or Great Ocean Road Coast Committee?
- Clarify who you need to ring to complain about various local issues
- Investigate licensing the various fitness groups who use Breamlea and other beaches through City of Greater Geelong. This has been successfully used by Great Ocean Road Coast Committee
- Provision and use of service vehicles in proportion to the scale of the community, e.g. smaller garbage trucks and graders
- Investigate a 'speed cameras in area' sign
- Provision of public transport to Breamlea
- Ensure the same contractor who does residential rubbish collects the beach access rubbish, reducing the number of visits by trucks to Breamlea and improving efficiency of collection
- Put recycling bins at the beach access areas
- Provide larger and more bins at Bancoora and adjust seasonal clearance rates
- Council hard rubbish and branch collection at Breamlea
- Provide dog waste bags at beach access points
- Use of recycled water at Breamlea, possibly via the use of the now decommissioned section of sewer which continues to Black Rock through Breamlea.
- Provision of water storage for fire use. Place underground and consider use of recycled water
- Investigate restriction of visitors to Breamlea on total fire ban days
- Fire management plan - crucial that vegetation management recommendations protect Moonah and character of Breamlea
- Remove dead weeds after spraying to reduce the risk

5.0 MEETING CLOSE

BR thanked all for the attendance and input.

APPENDIX B

BREAMLEA MOONAH MAPPING

Report by Mark Trengove Ecological Services for Breamlea Association and City of Greater Geelong,
November 2004

Breamlea

Moonah Mapping

**Prepared for the Breamlea Association
and the
City of Greater Geelong**

**Prepared By
Mark Trengove
Ecological Services***

**Final Report
November 2004**

**A Report on the occurrence and health of Moonah
(*Melaleuca lanceolata* ssp *lanceolata*)
at Breamlea**

***PO Box 1502, Geelong 3220.**

CONTENTS

INTRODUCTION	.....	1
STUDY AREA	.....	1
MOONAH	.....	1
EVC	.....	1
METHODS	.....	2
RESULTS		
MOONAH	.....	3
LAND TENURE	.....	3
AGE CLASS	.....	3
REGENERATION	.....	3
CANOPY HEALTH	.....	3
UNDERSTOREY	.....	4
ENVIRONMENTAL WEEDS	.....	5
NOTES		
SITE DATA	.....	6
CONCLUSION	.....	7
RECOMMENDATIONS	.....	7
ACKNOWLEDGMENTS	.....	8
REFERENCES	.....	9
Table 1	Environmental Weed Species	5
Appendix 1	Site Data	10
Map 1	Site Locations	end

INTRODUCTION

This report was commissioned by the Breamlea Association and the City of Greater Geelong in 2003. The report aims to document the distribution, age, health, ecosystem quantity and land tenure of the remnant Moonah (*Melaleuca lanceolata* ssp *lanceolata*) populations within the Breamlea area.

STUDY AREA

The study area consists of the coastal township of Breamlea and the immediate surrounding area. The study area was selected to include all remnant Moonah vegetation. Breamlea is situated approximately 20 kilometres south of Geelong, within the City of Greater Geelong. The dominant geological features are recent beach and dune sands and recent estuarine sand, silt and clay (Geological Survey of Victoria -Anglesea Geological Map, 1980). Thompson Creek flows through the study area where it is subject to tidal inundation. The study area consists of natural and semi-natural dune scrub vegetation, mostly natural saltmarsh vegetation and mostly cleared agricultural land.

The study area is located within the Otway Plains Bioregion (DSE 2004) and is within the Corangamite Catchment Management Authority area.

Refer to Map 1 for the location of the study area.

MOONAH

Moonah is a dominant tree species within the coastal areas of the Bellarine Peninsula. As a result of clearing and other pressures brought on by development Moonah woodlands are now much reduced from the former distribution. Moonah Coastal Woodlands are a listed community under the Victorian Flora and Fauna Guarantee Act (1988).

Ecological Vegetation Class (EVC)

EVC's are the primary level of classification of vegetation communities within Victoria. An EVC contains one or more plant (floristic) community, and represents a grouping of vegetation communities with broadly similar ecological attributes. Classification of EVC's in this report follows Oates and Toranto (in DNRE 2002).

The pre-1750 EVC mapping of the study area undertaken by DSE (DSE 2003) indicates that the study area and immediate surrounds were comprised of EVC 1 Coastal Dune Scrub Mosaic, EVC 9 Coastal Saltmarsh and EVC 175 Grassy Woodland. While Moonah is not listed as a benchmark component of any of these EVC's, historical records (M. Trengove - *personal data*) and the present remnant distribution indicate that Moonah is a component of EVC 1 and EVC 175.

METHODS

The Breamlea area was inspected on foot by the author on the 23rd and 24th of February 2004 to locate all Moonahs. The Moonahs were flowering at this time which assisted with location and identification.

All locations were recorded as Way Points using a Garmin 12 CX Global Positioning System Navigator. All data was then converted to .dxf files and downloaded as distribution maps utilizing the City of Greater Geelong's Geographic Information System, using Autocad software.

Field notes were taken at each Way Point recording Numbers of Trees, Canopy Health, Understorey Health, Maturity, Regeneration, Location and Land Tenure.

Where the trees occurred on private property attempts were made to gain permission from landholders for access and data recording from land holders. Where this was not possible, Way Point data was collected and visual assessments were made from the nearest accessible property boundary.

RESULTS

MOONAHS

A total of 291 Moonahs were recorded at 86 sites. The occurrences are discussed below-

The data collected for each site is given below in Appendix 1.

The location of all occurrences of Moonahs is provided in Map 1 (*end*).

LAND TENURE

The land tenure of the sites where Moonahs were recorded are as follows-

- Private Property - 47 sites
- Natural Interest Reserves -12 sites
- Road Reserves -10 sites
- Recreation Reserves - 7 sites

AGE CLASS

Of the 291 Moonahs recorded, 274 are mature and 17 are juvenile.

REGENERATION

The occurrence of any regeneration of Moonah was recorded during the survey. Only limited regeneration was observed. The breakdown of regeneration for each of the sites is as follows -

- No regeneration 83 sites
- Limited regeneration 3 sites
- Good regeneration 0 sites

Of the 3 sites with limited regeneration two are Recreation Reserves and one is a Road Reserve.

CANOPY HEALTH

Moonah canopy health was recorded at each site. Canopy health relates to the degree of die-back, loss of foliage, age or general health of the tree. The breakdown of canopy health is as follows-

- 1 (unhealthy) 6 sites
- 2 (moderately healthy) 77 sites
- 2,3 (moderately healthy to healthy) 1 sites
- 3 (relatively healthy) 2 sites

To a certain extent canopy health would be effected by the current relatively dry conditions.

UNDERSTOREY

Understorey quality was recorded at each site point. The breakdown of understorey quality is as follows -

- 1 (substantially modified) 53 sites
- 2 (partially intact) 30 sites
- 2,3 (partially intact to substantially intact) 1 sites
- 3 (substantially intact) 7 sites

Of the sites that contain partially intact to substantially intact and substantially intact understoreys seven sites are Recreation Reserves and one site is Natural Interest Reserve.

The high percentage of sites with substantially modified understorey reflects the relatively high percentage of occurrences on private property. The majority of private property occurrences are either in residential situations with exotic gardens or in farming land where the understorey has a history of grazing.

ENVIRONMENTAL WEED SPECIES

The occurrence of serious environmental weeds species was recorded at each site. A total of 13 environmental weeds species were recorded at Moonah sites within the study area. They are listed below-

Table 1 Environmental Weed Species

BOTANICAL NAME	COMMON NAME
<i>Asparagus asparagoides</i>	Smilax
<i>Chrysanthemoides monilifera</i>	Boneseed
<i>Coprosma repens</i>	Mirror Bush
<i>Delairea odorata</i>	Cape Ivy
<i>Dipogon lignosus</i>	Dolichos Creeper
<i>Galenia pubescens</i>	Blanket Weed
<i>Leptospermum laevigatum</i>	Coast Tea-tree
<i>Lycium ferrocissimum</i>	Boxthorn
<i>Pennisetum clandestinum</i>	Kikuyu Grass
<i>Pittosporum undulatum</i>	Sweet Pittosporum
<i>Polygala myrtifolia</i>	Myrtle-leaf Milkwort
<i>Senecio angulatus</i>	Climbing Groundsel
<i>Stenotaphrum secundatum</i>	Buffalo Grass

24 sites carried multiple weed species. 17 sites carried one weed species and 45 sites carried no weed species. The majority of the nil weed sites are private properties where the Moonahs exist in an exotic (but free of environmental weeds) garden setting.

Smilax was located at a number of sites, but as the survey was not conducted at the optimal time for the observation of Smilax, it can be assumed that there are more occurrences of this weed. The optimal time for the observation of Smilax is winter to spring.

NOTES SITE DATA

Appendix 1 contains the Site Data in spread sheet form. The spread sheet legend is as follows-

Spread Sheet Legend

SITE # Site Number

TENURE Land Tenure

Mature Numbers of individual mature Moonahs

Juvenile Numbers of individual juvenile Moonahs

Understorey

- 1 Substantially modified understorey (dominated by exotic species, an absence of indigenous species or physical disturbance)
- 2 Partially intact understorey (a mixture of indigenous and exotic species)
- 3 Substantially intact understorey (dominated by indigenous species, an absence of exotic species or relatively little disturbance).

Canopy

- 1 Unhealthy canopy (little foliage, damaged or senescent branches)
- 2 Moderately healthy canopy (partially healthy canopy)
- 3 Relatively healthy canopy (healthy foliage, intact branches).

Regeneration

- Nil** (No regeneration)
- Limited** (Some regeneration)
- Good** (Significant regeneration).

ENVIRONMENTAL WEED SPECIES

Asp- *Asparagus asparagoides*, Chr- *Chrysanthemoides monilifera*, Cop- *Coprosma repens*, Del- *Delairea odorata*, Dip -*Dipogon lignosus*, Gal- *Galenia pubescens*, Lep- *Leptospermum laevigatum*, Lyc- *Lycium ferrocissimum*, Pen- *Pennisetum clandestinum*, Pit- *Pittosporum undulatum*, Sen- *Senecio angulatus*, Ste- *Stenotaphrum secundatum*.

LOCATION MAPS

Map 1 at the end of this report shows the locations of all sites of Moonahs within the study area.

CONCLUSION

The current report recorded 291 individual indigenous remnant Moonah trees at 86 sites within the study area. Further, the report found that -

- 62 % of all Moonahs occur on private property
- 94 % of all Moonahs are mature
- no regeneration of Moonah is occurring at 96 % of all sites and that only limited regeneration has occurred at the remaining 4 %
- 89 % of all Moonahs have a relatively healthy canopy
- 90 % of all sites have a relatively poor quality understorey, with the majority carrying exotic understorey vegetation, comprised in the main of environmental weeds or exotic gardens species.

The current report finds that Moonah appears to be much reduced within in the study area, in terms of both plant numbers and of the overall population distribution. This finding is consistent with the results for the majority of the areas where Moonah occur (DSE 2002).

While it is not certain what the pre-european distribution of Moonah in the study area was, it is evident from this report that Moonah occurs over a range of ecological niches, ranging from rear dune slopes to salt marsh margins.

While the majority of Moonahs are relatively healthy, the limited amount of regeneration currently evident suggests that effort is required to promote recruitment as a matter of priority.

RECOMMENDATIONS

In order to improve both the quantity and quality of Moonah Woodland vegetation within the study area, the following management actions are recommended -

General Site Recommendations

- Manage remnant vegetation to maintain and enhance Moonah Woodland biodiversity values
- Limit activities that are likely to cause direct loss or degradation to Moonah Woodland biodiversity values
- Revegetate with Moonah as the dominant tree species in all areas within the appropriate distribution range
- Restore understorey health with in existing populations, primarily by removing exotic vegetation and by either encouraging natural regeneration or the planting of indigenous understorey species
- Encouraging natural regeneration of Moonah, where possible

- Limit biomass reduction activities (other than weed control) such as burning, other than as required for approved fuel reduction purposes
- In conjunction with the community, develop appropriate educational guidelines for valuing and managing remnant vegetation
- Retain existing remnant vegetation wherever possible
- Initiate a Vegetation Protection Overlay for all Moonah areas.

Private Property Site Recommendations

- Encourage land holders to remove known or potential environmental weeds
- Encourage land holders to plant indigenous species
- Limit activities that will have direct impact on biodiversity values to areas that are already degraded, such activities include building, car parking and intense recreation
- Limit activities that are likely to cause longer term disturbance and degradation. Such activities include - altered hydrological regimes (ie storm water run-off) and increased nutrient regimes (ie garden fertilizer run-off)
- Encourage land holders to adopt horticultural practices that are not overly reliant upon fertilizers and pesticides and the introduction of foreign soil
- Encourage land holders to strike an appropriate balance between ‘tidying up’ areas of remnant vegetation for fire protection purposes and preserving and promoting indigenous vegetation
- Educate land holders about the benefits of living in a semi natural area.

ACKNOWLEDGEMENTS

David Hooker -Breamlea Association
Alex Shackleton -City of Greater Geelong
Ned Turcinov -City of Greater Geelong

REFERENCES

Conn, B J (1993). Natural regions and vegetation of Victoria. Pp. 79-158 In Foreman, D B and Walsh, G (eds.) 'Flora of Victoria Volume 1: Introduction.' Inkata Press, Melbourne.

Corangamite Catchment Management Authority (2004). 'Corangamite Draft Native Vegetation Plan' CCMA, Colac, Victoria.

DNRE (2002). 'Victoria's Native Vegetation Management A Framework for Action' DNRE, Melbourne.

DSE (2003) 'Victoria's Native Vegetation Management- A Framework For Action- Technical Support Maps' (CD). DSE, Melbourne.

DSE (August 2004). 'Native Vegetation Operational Guidelines for Applying Net Gain in Planning Decisions- Draft for Consultation' DSE, Melbourne.

DSE (2002): 'FFG Action Statement #41 Coastal Moonah Woodland'. DSE, Melbourne.

Ross, J H & Walsh, N G (2003). ' A Census of the Vascular Plants of Victoria' Royal Botanic Gardens, Melbourne.

Thompson Berrill Landscape Design Pty Ltd (1999) : 'Breamlea Foreshore Masterplan and Management Plan Report'. DNRE & CoGG.

Walsh, N G & Entwisle, T (1994-1999). 'Flora of Victoria Vol 2-4' Inkata Press, Melbourne.

APPENDIX C

DRAFT UPDATED BREAMLEA COMMUNITY FIRE MANAGEMENT PLAN 2009

**CITY OF GREATER
GEE LONG**
PO BOX 104
GEE LONG 3220 AUSTRALIA
GENERAL ENQUIRIES:
03 5227 0270
www.geelongaustralia.com.au

**ENVIRONMENT & NATURAL
RESOURCES UNIT**

Draft Updated Breamlea Community Fire Management Plan (BCFMP)



(Photo courtesy of CoGG Fire Prevention)

CONTENTS

EXECUTIVE SUMMARY

SUMMARY OF ACTIONS

1 INTRODUCTION

2 PRINCIPLES OF COMMUNITY FIRE MANAGEMENT

3 ROLE OF THE FIRE SERVICES AND LOCAL GOVERNEMENT

4 STEERING COMMITTEE MEMBERS

5 BREAMLEA COMMUNITY FIRE MANAGEMENT PLAN (BCFMP)

5.1	BUSHFIRE PREPAREDNESS PLAN	11
5.1.1	GENERAL DESCRIPTION OF STUDY AREA	11
5.1.2	LAND MANAGEMENT RESPONSIBILITIES	11
5.1.3	TOPOGRAPHY	13
5.1.4	PLANNING CONTROLS - EXISTING	13
5.1.5	BUILDING SAFETY AND CONSTRUCTION	13
5.1.6	FIRE HISTORY OF SURROUNDING LANDS	14
5.1.7	FIRE RISK (CAUSE AND FREQUENCY) IN THE FIRE MANAGEMENT STUDY AREA	14
5.1.8	FIRE WEATHER PATTERNS (HISTORICAL) IN BREAMLEA AREA	15
5.1.9	FUEL HAZARD ASSESSMENT	15
5.1.10	WATER SUPPLY FOR FIRE SUPPRESSION - ASSESSMENT OF MAINS AND STATIC WATER SUPPLY	17
5.1.11	ACCESS FOR FIRE SUPPRESSION	17
5.1.12	EMERGENCY SERVICES RESPONSE AND THE ROAD NETWORK CAPACITY	18
5.1.13	FIRE REFUGE	18
5.1.14	PUBLIC INFORMATION CURRENTLY AVAILABLE/VIEWED	18
5.1.15	EXISTING FIRE PREVENTION ISSUES IN THE TOWNSHIP	19
5.1.16	FIRE IMPACTS ON SMALL RESIDENTIAL ALLOTMENTS	20
5.1.17	ENVIRONMENTAL CONSTRAINTS AND FIRE SUPPRESSION TECHNIQUES	21
5.1.18	FIRE IMPACTS ON ROADSIDE VEGETATION	21
5.1.19	FIRE IMPACTS ON BBQ AREAS AND FORESHORE	21
5.1.20	FIRE IMPACTS ON THE CARAVAN PARK	22
5.1.21	FIRE IMPACTS ON THE SURF LIFE SAVING CLUB	22

5.1.22	SAFETY FOR FIRE FIGHTERS	22
5.1.23	FIRE IMPACT ON EMERGENCY SERVICES RESPONSE	23
5.1.24	COMMUNITY PROFILING - GENERAL BEHAVIOURS ASSOCIATED WITH BUSHFIRES	23
5.1.25	POTENTIAL NUMBERS OF PEOPLE AT BREAMLEA DURING THE FDP	24
5.1.26	PERMANENT RESIDENTS BEHAVIOUR ANALYSIS	24
5.1.27	SEMI PERMANENT (CASUAL) RESIDENTS BEHAVIOUR ANALYSIS	24
5.1.28	VACANT LAND OWNERS BEHAVIOUR ANALYSIS	24
5.1.29	SEMI PERMANENT CARAVAN PARK RESIDENTS BEHAVIOUR ANALYSIS	25
5.1.30	CASUAL CARAVAN PARK RESIDENTS BEHAVIOUR ANALYSIS	26
5.1.31	TOURIST/DAY VISITORS BEHAVIOUR ANALYSIS	26
5.1.32	DEVELOPING ACTION STRATEGIES TO ADDRESS THE PROBLEM/RISK AREAS OF THE COMMUNITY	26
5.2	BUSHFIRE PREVENTION PLAN	28
5.2.1	FIRE PREVENTION FUEL REDUCTION WORKS PROGRAMME (TOWNSHIP AND BREAMLEA CARAVAN PARK)	28
5.2.2	COMMUNITY FIREGUARD/RURAL WATCH GROUPS	30
5.2.3	BUSHFIRE BLITZ	31
5.2.4	FIRE PREVENTION NOTICES	31
5.2.5	AS 3959 FOR BUILDINGS	32
5.2.6	LOCAL LAWS APPLICATION	33
5.2.7	PASSIVE AND ACTIVE STRATEGIES FOR VEHICLE MOVEMENTS AND DIRECTED ACTIVITIES	33
5.2.8	SAFE ASSEMBLY POINT	33
5.3	BUSHFIRE RESPONSE PLAN	34
5.3.1	FORMAL AND INFORMAL INFORMATION NETWORKS FOR FIRE ALERTING	34
5.3.2	FIRE BRIGADE RESPONSE CAPACITY - FIRST ATTACK	34
5.3.3	ENVIRONMENTAL CONSTRAINTS AND FIRE SUPPRESSION	37
5.4	COMMUNITY BUSHFIRE RECOVERY PLAN	37
5.4.1	DESIGNATED RECOVERY CENTRE	37
5.4.2	ADDITIONAL SUPPORT AND WELFARE OPTIONS	38
6	ADMINISTRATIVE ISSUES	
6.1	ADMINISTRATION OF THE PLAN	39
6.2	ISSUING AND OBTAINING COPIES OF THE PLAN	39

ANNEX A FUEL HAZARD ASSESSMENT SITES AT BREAMLEA TOWNSHIP AREA
ANNEX B SEMI PERMANENT CARAVAN PARK RESIDENTS SURVEY
ANNEX C COMMUNITY PROFILE/DEMOGRAPHIC INFORMATION
ANNEX D COMMUNITY MEMBER PROFILE

EXECUTIVE SUMMARY

The purpose of this plan is to optimise the safety of people and assets (built and environmental) by mitigating the effects of bushfire in the township of Breamlea and the adjacent Breamlea Caravan Park.

The Breamlea Community Fire Management Plan is a totally integrated fire management plan based on sound emergency and land management and ecological principles. The plan serves several purposes, a report on the status of fire management in the study area, an opportunity to raise awareness and knowledge of bushfires and a way forward to better fire management outcomes.

This general coastal area is subject to severe fire weather. Surrounding areas and adjacent westerly coastal towns have had a history of major fires for many years.

Breamlea Township has not had a major bushfire in living memory. The limited statistical evidence on fire frequency and cause, suggests that the study area is not prone to a high frequency of fire occurrence.

The town is a popular coastal recreation area and the population increases by many hundreds during the Fire Danger Period, thus increasing the potential for ignition of fires. In the event of a bushfire in Breamlea township there is a high probability of life and asset loss due to the combination of population density and vegetation adjacent to residences.

Fire suppression is made more difficult due to the single access route into the township, the potential danger to fire fighters in the narrow and vegetated road surrounds and the inadequate water supply to attack a bushfire. There are significant areas of fire prone vegetation within the township adjacent to houses and surrounding the caravan park. These areas need to be fuel modified to reduce potential fire intensities. There are areas of vegetation that are less fire prone and in moderate seasons can to some degree inhibit the spread of fire. Examples are salty areas and wetter vegetation around creeks.

During a bushfire it is likely that the flow of traffic to and from the township will be disrupted or highly congested, with the potential for motor vehicle accidents increased. Congestion will be due to a combination of fire fighting vehicles attempting to reach the township and a significant part of the community opting to evacuate in the opposite direction. A comprehensive education strategy is needed to change the likely unsafe behaviour of sections of the community and encourage them to opt for better survival strategies.

Proposed bushfire prevention measures in the plan have concentrated on strategically locating and maintaining fuel reduced areas between the park lands, residential properties, the township and the caravan park. Small allotment landowners are being asked to reduce fuel loads and arrangements near dwellings to reduce the likelihood of hot embers igniting flammable material.

The plan seeks to reduce the risk of fire impact to an acceptable level, while recognising the inherent threat of bushfire due to the proximity of remaining flammable vegetation fuels.

The fire suppression segment of the plan seeks to give emergency services and members of the Breamlea Township a 'hands on manual' for the response and recovery phases of a bushfire. The effectiveness of the plan depends on a wide distribution of the information and the understanding that people will use it as an aid.

Council, via the Municipal Fire Prevention Committee, is responsible for the management and subsequent maintenance of the plan.

SUMMARY OF ACTIONS

Action 1: That this plan be reviewed and updated bi-annually .

Action 2: That Council seek financial support from the Fire Access Road Subsidy Scheme for strategically placed static water supplies be provided within the Township for use by CFA Brigades.

Action 3: That existing hydrants are appropriately maintained by the relevant authority, marked in accordance with CFA hydrant marking guidelines and accessible to fire vehicles.

Action 4: That Fire Prevention notices are issued on an annual or as needed basis targeting the prescriptive removal of surface fuels, overhanging fuels and combustible material for all residential and caravan park properties to reduce fuel loads.

Action 5: That recognised fire and local authorities implement a prescribed mechanical fuel removal process with known performance standards to modify surface, ladder fuels and bark fuels in proximity to identified assets.

Action 6: That Emergency Service access to Breamlea Township, caravan park and residential areas is ensured at all times, especially during the Fire Danger Period through signage and enforcement .

Action 7: That a variety of passive and active traffic management options are implemented to prevent day visitors from parking cars in residential areas.

Action 8: That existing fire vehicle turn around circles are clearly designated as no parking areas and penalties are notified and enforced by local laws officers during the Fire Danger Period.

Action 9: That all roads meet width and height clearance (4 metres x 4 metres) specifications of CFA standard fire vehicles.

Action 10: That the Connewarre Hall be formalised as a bushfire assembly point during a bushfire and day visitors and other people mobile during a bushfire be directed there as a safer holding area.

Action 11: That CFA and City of Greater Geelong increase community education about bushfires and target delivery to the different community demographic profiles.

1 INTRODUCTION

This plan has been initiated by the City of Greater Geelong and the CFA to advance fire management in the Breamlea township and provide a model for the municipality to apply to other areas in the future.

The plan sets out the guiding principles for a best practice approach to fire management planning for a township, while engaging the community to make the plan relevant and highly useful.

Parts of the document will serve functions of:

- (i) reporting on the current fire management status of the study area
- (ii) raising the awareness of stakeholders and the community about fire related issues and ecological settings
- (iii) demonstrate how to effectively create strategies for better fire management and survival in a bushfire.

The community has had input into most sections of the plan and there are components of the plan that can be readily extracted and copied to provide various stakeholders with practical fire management and emergency response information.

There are four main sections of the plan that are expanded upon in the document:

1. Preparedness - involves an assessment of the current situation, hazard and risk assessment, and overall planning to address the identified fire management issues
2. Prevention -the implementation of bushfire prevention plans to address the associated fire, economic, environmental, and sociological factors.
3. Response- broadly defined as the operational response for fire suppression.
4. Recovery- generally overlaps with the response phase, and can be broadly defined as the time in a bushfire when fire suppression activities begin to be reduced and the general supportive welfare mechanisms assume relatively greater priority.

There is also a Glossary of Terms at the back of the plan to assist the user to understand the terminology used to describe elements of fire management.

2 PRINCIPLES OF COMMUNITY FIRE MANAGEMENT

The plan is based on a set of principles and practices that have been collated over many years of collective fire management experience from many agencies and individuals. This cumulative wisdom represents a best practice approach to creating a fire management plan that works for all stakeholders.

The scope of bushfire management includes all those activities directed to prevention, detection, damage mitigation and suppression of bushfires. It includes bushfire legislation, policy, administration, law enforcement, community education, training of fire-fighters, planning, communications systems, equipment, research, and the multitude of field operations undertaken by land managers and emergency services personnel relating to bushfire control. It also includes knowledge of environmental conditions and how they respond to fire.

Best Practice in bushfire management is defined as a system which:

- Delivers increased protection of community members and assets from destructive bushfires.
- Avoids or minimises undesirable environmental impacts such as loss of biodiversity, water pollution etc.
- Ensures, as far as is possible, the safety of fire fighters.
- Is based on credible science and employs protocols and prescriptions continually updated in the light of research and field experience.
- Provides for independent monitoring of the plan's outcomes, and public reporting of it.
- Has community support, a high level of public understanding of the issues and strong leadership from fire agencies and local government. (AABDWA 2005)

3 ROLE OF THE FIRE SERVICES AND LOCAL GOVERNMENT

Local Government and the CFA have significant leadership and implementation roles to play in bushfire management. Both agencies have defined legislative requirements in relation to fire management and ideally operate at the local level to most suitably address local issues and needs.

CFA also has an Environment Policy to assist brigades in their use of fire in the environment.

A complimentary relationship between these bodies and meaningful consultation with their communities can result in practical and cost effective bushfire management systems.

4 STEERING COMMITTEE MEMBERS

The City of Greater Geelong in partnership with the CFA created a steering committee to ensure appropriate public consultation and oversee the creation of the Breamlea Community Fire Management Plan.

This steering committee will also act as stewards for the implementation of the approved plan now and into the future.

The members of the committee are:

- General Manager City Services, COGG

Bernie Cotter - Manager Environment, COGG

Kevin Garde - MERO, COGG

David Skurrie - MFPO, COGG

Bob Barry - Operations Manager/ Corangamite Region 7 CFA

Les Mahon - Resident

David Hooker - Resident

Since the adoption of this plan the Steering Committee met and formed 4 Sub Committee's to oversee the investigation and possible implementation of the 21 Recommendations listed in the original Fire Plan .

The 21 Recommendations were sorted into like categories and Sub Committees were then formed including representatives of Council, CFA, residents and other relevant parties if required.

These Sub committees were;

- Fire and Emergency Operations
- Community Education and Safety
- Infrastructure and Planning
- Environment and Fuel Management

The sub committees have been meeting and most recommendations have now been actioned.

Those recommendations not yet completed are listed as Actions in this version of the Plan as they are all in various stages of implementation.

5 BREAMLEA COMMUNITY FIRE MANAGEMENT PLAN (BCFMP)

The purpose of this plan is to optimise the safety of people and assets (built and environmental) by mitigating the effects of bushfire in the township of Breamlea and the adjacent Breamlea Caravan Park.

The Breamlea Community Fire Management Plan seeks to accomplish the following specific objectives:

- To protect people residing in or visiting Breamlea Township and caravan park from the impact of bushfires.
- To protect the properties, assets and the environment of the Township and surrounds from bushfires.
- To present a consistent and complimentary approach to bushfire prevention strategies between all government agencies, landholders and the community.
- As far as practicable, to retain the essential bushland/coastal appearance of Breamlea Township.
- To develop and promote the individual's responsibility for fire prevention and protection.
- To facilitate the integrated emergency response and recovery phases by organisations and individuals.
- To implement an effective fire awareness education strategy for residents and tourists.
- To encourage an integrated emergency management approach to fire.
- To achieve solutions and strategies based on factual data and the application of contemporary understanding of fire management and ecological knowledge.
- To implement a works program by the community and Council to mitigate the effects of bushfire.
- To ensure plans are monitored and an appropriate reporting mechanism is in place for continual review and improvement.

5.1 BUSHFIRE PREPAREDNESS PLAN

This section of the plan involves an assessment of the current situation, the application of hazard and risk assessment techniques, and overall planning considerations to address the identified fire management issues.

This includes community consultation outcomes and the analysis of likely fire impacts on people and assets. Strategies are then developed to reduce the risk of fire impact in preparation for implementation in the bushfire prevention section of the plan.

5.1.1 General Description of Study Area

Breamlea Township is a small community of approximately 100 houses nestled in coastal sand dunes about 30 kilometres south of Geelong. It is bounded by the saltmarsh and estuarine environment of Thompsons Creek with the latter managed by Parks Victoria.

The Township is characterised by its

- Residential properties
- 165 site caravan park
- Bancoora Surf Life Saving Club
- Recreation reserves

5.1.2 Land Management Responsibilities

Within the Study area the principal land manager is the City of Greater Geelong and private residents. Refer to figure 1 for a map of responsibilities.



Figure 1: Map of Study Zone and Assets, land managed by Council and adjacent Parks Victoria

5.1.3 Topography

The coastal topography at Breamlea is dominated by primary sand dunes that form a ridge from near Point Impossible to the lava flows at Black Rocks. The dune has caused Thompson Creek to meander west and discharge near Point Impossible. This has also caused the formation of extensive salt marshes north of the dunes (TBLD 1999).

5.1.4 Planning Controls - Existing

Current planning controls discourage the clearing of native vegetation. Several exemptions apply. Fire prevention activities are permitted under certain conditions.

One of those exemptions applies to the clearing or modification of vegetation for fire protection purposes. *Section 52.17* of the City of Greater Geelong Planning Scheme states that:

“A permit is not required to remove, destroy or lop native vegetation if the removal, destruction or lopping is necessary for fire fighting purposes, periodic fuel reduction burning or the making of a firebreak of up to 6 metres wide ... and ... the removal of ground fuel within 30 metres of a building.”

Environmental objectives from Greater Geelong Planning Scheme

Environmental Significance Overlay:

To conserve and protect areas of flora and fauna habitat and geological and natural interest.

To ensure that development does not impact on the environmental significance of the land.

To ensure that siting and design of any buildings and works maintains the environmental integrity of the land.

Wildfire Management Overlay

To ensure that development satisfies fire protection objectives and does not increase the threat to life and surrounding property from wildfire. A permit is required and applications must address vegetation management, water supply, access and building location after a site assessment.

5.1.5 Building Safety and Construction

Planning and Building control provisions such as Bushfire Prone Area applies to the Breamlea Township area. The Wildfire Management Overlay provisions will shortly apply

Fire issues are addressed principally via the application of the Country Fires Act 1958 and nominally under DSE fire protection planning frameworks.

City of Greater Geelong has instigated Bushfire Prone Area status which ensures any new houses constructed must meet the Australian Standard 3959.

5.1.6 Fire History of Surrounding Lands

There is no recorded fire history in Parks Victoria land surrounding Breamlea Township (Jackson L, PVper comms April 2005).

Reference to the DSE Otway Fire Protection Plan indicates that prescribed burning is excluded from the Breamlea Flora and Fauna Reserve only. There are no fire protection strategies detailed for the public lands surrounding Breamlea. (DSE 2003)

Any fire management plan needs to be consistent with strategies adopted in adjacent lands managed by Parks Victoria.

It is reasonable to assume that fires immediately north of Breamlea Township and in the Parks Victoria 'wetlands' (saltmarsh and estuarine environment) are unlikely to start and be sustained under most fire weather conditions. This considerably reduces the threat to the Township of a fire starting in the township directly from fire and wind blown embers from the north.

Some 20 kilometres south west of the Breamlea Township lies in the Otways with significant fire potential and the possibility of providing wind blown embers into the general Breamlea area on severe fire weather days.

5.1.7 Fire Risk (cause and frequency) in the Fire Management Study Area

There have been no bushfires in Breamlea Township in recorded history from 1997 onwards (Smith B 2005).

Recorded fire incidents are:

- Motor vehicle fire Jan 2001 and Structure fire on Dec 2003
- Major coastal fires have occurred adjacent (approximately 30 km) to Breamlea in the past (e.g. Ash Wednesday 1983)

Council Fire Prevention and Environment officers' report that there have been occasional fires lit by fisherman on the foreshore, and sporadic incidences of small unreported fires adjacent to the Caravan park area at times

5.1.8 Fire Weather Patterns (Historical) in Breamlea Area

As a general description of fire weather, Breamlea exhibits the typical fire weather patterns of south eastern Australia. Fire weather days usually consist of north west winds (generated by hot dry 'northerleys' from the inland) followed by a later south west wind change in the afternoon sweeping along the coastal area of Victoria.

This is classically depicted in the weather pattern experienced on 16th February 1983 in the Ash Wednesday fires and is the most likely weather scenario posing a threat to Breamlea Township on severe fire weather days.

5.1.9 Fuel Hazard Assessment

Fuel hazard is defined by DSE literature as ' A fuel complex defined by volume, type, condition, arrangement and location that determines both the ease of ignition and difficulty of fire suppression'. It is measured by estimating the combination of bark, elevated fuel and surface fine fuel hazard. (DNRE 1999)

A fuel hazard assessment was conducted in the study area to determine the overall fuel hazard in the relatively homogeneous vegetation types. Three sites were sampled and the average fuel load for vegetation in the study area was estimated at **27 tonnes per hectare**.

Figure 2 depicts the distribution of fuel hazard over the study area. The site results and pictures of the fuel appear in annex a

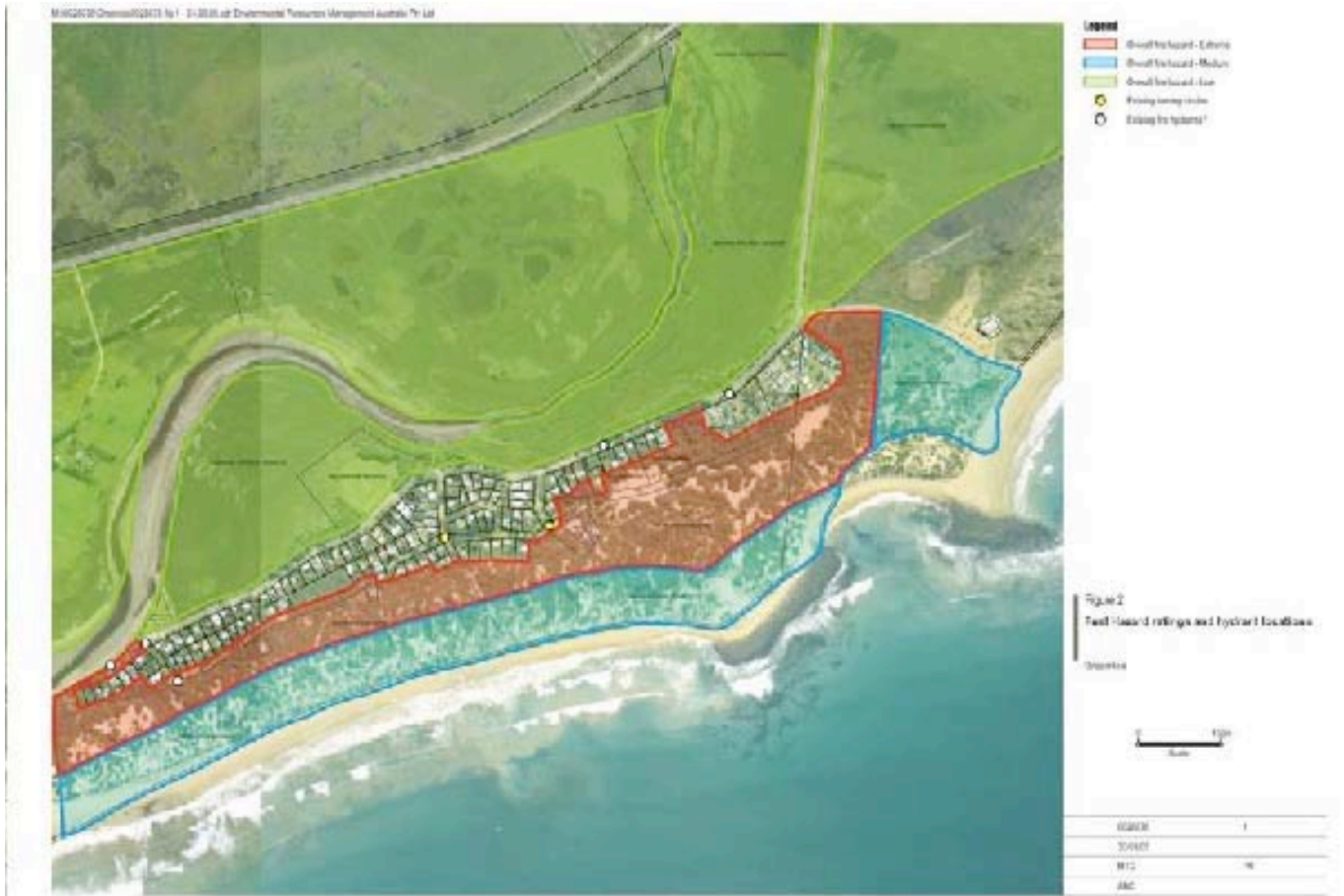


Figure 2: Fuel Hazard ratings and hydrant locations

5.1.10 Water Supply for Fire Suppression – Assessment of Mains and Static Water Supply

A report commissioned by CFA and conducted by Fire Methods Pty Ltd on 10 February 2005 into the capacity of the water supply system of hydrants at Breamlea township ascertained that:

- The existing hydrant capability meets standards for subdivision guidelines (flow of 270 litres /min).
- Hydrant flow is capable of dealing with a single structure fire where several fire vehicles may be required to pump water from the mains.
- Water supplies would not be adequate to deal with a bushfire where multiple fire vehicles would need to draw water from the mains for sustained fire fighting operations. Observations indicate that there are no static water supplies within the township, or on most residential properties, that would meet fire fighting operational or domestic requirements. There are several fire hydrants that a brigade vehicle would have difficulty accessing due to poor maintenance of the area surrounding the actual hydrant.
- Water supplies are critical to successful fire fighting operations either for established brigade operations or for use by residents in protecting their homes.

There is an opportunity over time for Council and CFA to promote the installation of 10 000 litres water tanks by residential property owners. Water supplies should be connected to a fuel powered fire fighting water pump. Each pump should have easily available a length of fire fighting hose which reaches all parts of the dwelling and out-buildings and has fitted a suitable controllable branch. Each tank should have fitted a CFA approved suction point.

It is evident that the existing mains supply is inadequate to sustain a prolonged and extensive fire fighting event such as a larger bushfire. Supplementing the mains supply (which could be interrupted by loss of electricity supplies) with accessible strategically located static water supplies could enhance the brigade success on their first arrival at the fire scene. These water supplies may also provide water for use by residents to fight a fire.

5.1.11 Access for Fire Suppression

Access for fire vehicles is important to enable direct attack on a fire, asset protection and personnel safety.

Fire suppression access at Breamlea is compromised by the following:

- A single access road into the township for initial response.
- Narrow width roads in the township.
- Obstructed access due to vegetation overhang on some roads.
- Insufficient radius for fire fighting vehicle to turnaround at major junctions and at the end of roads.
- Poor access to some hydrants.
- Problems in the summer with tourists and vehicles being parked on residential roads and other assembly areas.

Effective fire suppression requires free and fast transit along roads unencumbered by

other vehicles. Fire vehicles also require large turnaround circles to ensure quick escape and free movement. They need road widths and height clearances of approximately four by four metres and appropriate road surfaces and accessible slopes. Access to resources such as water and hydrants is also critical for fire suppression.

5.1.12 Emergency Services Response and the Road Network Capacity

The primary response CFA Brigade in the CFA Barwon Corangamite Regional 'Brigade Response Plans' is Connewarre. Support Brigades are listed as Barwon Heads, Grovedale and Ocean Grove tankers.

Connewarre has an approximately 7 minute road travel response time from the Brigade station and the additional turn out time of approximately 5 minutes for a rural brigade based on recent turnout data. This turnout allowance time could be a minimum of 12 minutes or up to 20 minutes under the standard deemed satisfactory for a rural CFA brigade. Arrival time at Breamlea to an incident could be between 12 to 20 minutes. Arrival times for the support brigades would be greater. The assumption behind these times is that relatively unimpeded road access leading into and within the Township is available.

Other emergency services that would also require efficient access to respond are:

- Police
- Medical (ambulance)
- SES

Bushfires are most successfully attacked (i.e. extinguished or kept small enough for ground crews to bring under control) within the first twenty minutes from the time of ignition. A fire starting in Breamlea that has not been detected or attacked by residents or day visitors could be expected to have a duration of up to 20 minutes before ground crews arrive. Although aerial suppression is a possibility, it would be dependent on other State priorities for fire response at the time and therefore could not be relied upon as a first attack option in all situations.

Breamlea residents have a history of being independent due to their relative isolation and reports from the public meeting indicate that residents responded to a structure fire in the town successfully before the local brigade arrived.

5.1.13 Fire Refuge

There are no formal designated 'Fire Refuge Areas' within or adjacent to the Breamlea Township. Currently Council and CFA policy does not support the establishment and maintenance of fire refuges.

5.1.14 Public Information and Awareness activities Currently Available/Viewed

There is an Emergency Procedure Manual for the Breamlea Caravan park issued by the City of Greater Geelong Council on 30/1/2001.

Connewarre Fire Brigade has been proactive and undertaken a number of fire prevention and awareness activities that include: establishing a Community Fire Guard, Bush Fire Blitz meetings, promoting fire safety through news letters, flyer drop and display, and conducting fire safety inspections.

In general, a continued and wide ranging and targeted education program needs to be adopted for the whole community to raise awareness and develop appropriate coordinated action strategies for a bushfire. Analysis later in the report supports and expands on this observation.

5.1.15 Existing Fire Prevention Issues in the Township

Some Breamlea householders maintain their properties in an effective fire safe condition. However, there are a number of generic activities and practices that could be adopted to further reduce the likely impact of bushfire for the majority of the township.

Fire prevention issues that need to be addressed are:

- Removal of accumulated of fuel around houses.
- Removal of trees overhanging houses.
- Increased maintenance of houses vulnerable to ember attack.
- Reduction of high fuel loads adjacent to and within property boundaries.

Research from many bushfire events from 1983 onwards confirms that there are some fundamental steps that need to be taken to protect houses from fire attack and to optimise their use as shelter from radiant heat.

Ember attack is known to cause the majority of house destruction by causing the ignition of small fires in crevices in and around the home, often aided by flammable material immediately adjacent to house surfaces.

Where appropriate, concentrated effort may be needed by local fire prevention officers on properties that do not meet these basic bushfire safety standards.

A summary of Fire Management issues and their impacts, are listed in Table 2 below

Fire Prevention Issue	Potential Impact
Significant quantity of man made fuel accumulation around houses	Increases radiant heat, direct flame contact and ember attack
Trees overhanging houses	Increased risk of direct flame contact and radiant heat exposure
Some houses in poorly maintained condition	Increased vulnerability to ember attack
Natural fuel loads are high and provide a continuous series of 'ladder' fuels for fire spread adjacent to and within property boundaries	Increased fire intensities and rates of spread
Fuel load and distribution of vegetation is extreme in the study area around residences	Highest fire impact due to fuel loads is adjacent to residences
Ecological sensitivities are significant	Loss of vegetation in an extreme fire event could de- stabilize dunes
Community preparedness is relatively low	Un- prepared communities are vulnerable to lose life and assets since the fire service cannot protect all houses.
Adequate Fire Response is compromised by confused access, inadequate water supply and other time consuming operational issues.	Initial response is compromised potentially resulting in a larger and more dangerous fire
Community knowledge and response to bushfire is essentially unknown	People often select poor survival strategies in a bushfire
Breamlea Township and Caravan park are vulnerable to the impacts of fire	The combination of all factors leaves this area in the high risk category

5.1.16 Fire Impacts on Small Residential Allotments

The fire impacts on small residential allotments and houses could be very severe given the potential for direct flame contact, radiant heat ignition and the deluge of embers attacking houses. There are many houses where the proximity of overhanging branches could allow direct flame contact and expose buildings to large amounts of radiant heat sufficient to ignite building walls. Ember attack, which research has indicated is the primary method of house destruction, would be a significant factor in residences igniting.

The desired strategy is to begin the process of increased protection with a dedicated works program of modifying the fuel in the proximity of the houses to reduce fire intensity, (to allow the possibility of effective fire fighting) and to reduce the likelihood of direct flame contact and radiant heat exposure. Separation of the assets and significant fire intensities represents an effective tool in reducing the fire threat.

Fuel reduction practices would need to be on a broad scale, cost effective, and ecologically sustainable.

5.1.17 Environmental Constraints and Fire Suppression Techniques

Mineral earth fire breaks are frequently used as a fire protection method and are often constructed hurriedly to assist with fire suppression. Mineral earth breaks are often constructed using heavy machinery and may remove large amounts of vegetation.

The use of mineral earth breaks in the Breamlea township is not recommended. The majority of the township is built on the primary sand dune and as such any removal of sand binding vegetation may create potential sand blowouts.

Retardant foam which is used in aerial fire suppression is readily biodegradable and does not persist in the soil. It is not known to have a significant impact on the survival of native plants (3M Company 1999).

The influence of Phoscheck as an aerial fire retardant on floristic richness and diversity is uncertain. There is a school of thought that suggests that the relatively high levels of phosphorus contained in Phoscheck may detrimentally impact on floristic diversity and richness and also promote particular species that may have attributes contrary to achieving fire protection. No evidence to support this concern could be located.

The use of freshwater, estuarine water or sea water for fire bombing is not considered to be detrimental to the vegetation of the site. Impact from the weight of the water may cause physical damage to the vegetation but is not considered to be significant. The salt content of the water is not likely to have long term negative impacts on the vegetation.



Mineral earth break (*photo courtesy of DSE*)

5.1.18 Fire Impacts on Roadside Vegetation

The vegetation of the roadsides in the vicinity of Breamlea is considered to be of high quality and contain significant biological values. The Greater Geelong Biodiversity Strategy (COGG 2003) contains reference to a Roadside Management Plan but details of roadsides were not available at the time of preparation of this plan. Further assessment of this resource is required with the appropriate follow up actions.

5.1.19 Fire Impacts on BBQ areas and Foreshore

The actual foreshore and reserve areas (Cahir Park and Breamlea Recreation Reserve adjacent to Horwood Drive) are well maintained and have relatively low fuel loads being mainly grassland. It would be expected that fire impacts in these areas would be relatively low and indeed fire operations may be based in these areas because of their lower fire threat.

5.1.20 Fire Impacts on the Caravan Park

The caravan park located at the far eastern end of the township at the time of inspection had undergone some fuel reduction practices in order to reduce the fuel immediately outside the perimeter of the park. Clearing of vegetation had occurred in some cases quite a few metres from the perimeter and the caravan park manager indicated that overhanging branches would be removed from caravans and dwellings within the park.

The potential for direct flame contact, effects of radiant heat ignition and massive ember attack exist also for the caravan park occupants and for their assets.

In a similar fashion for the permanent residents, the caravan park would be included in a dedicated works program to modify surrounding fuels to reduce fire intensity and other fire behaviour issues.

The desired strategy is to begin the process with a works program of modifying the fuel in the proximity of the caravan park to reduce fire intensity, (to allow the possibility of effective fire fighting and to reduce the likelihood of direct flame contact and radiant heat exposure).

Fuel reduction practices would need to be on a broad scale, be cost effective, and ecologically sustainable.

5.1.21 Fire Impacts on the Surf Life Saving Club

The Bancoora Surf Life Saving Club (BSLSC) is located at the eastern end of the Township and is the first major asset approached from the Geelong. It is surrounded by a cleared car park to the west and relatively lightly vegetated dunes to the south east. The proximity of this vegetation is unlikely to pose a threat, with the exception of ember attack from any adjacent fires.

The BSLSC area is a key focal point for the users of the club and day visitors. It provides the principal parking facilities on entering the town. It is one of the major departure and access areas to the beaches.

This area has the potential to direct most of the day visitors into logical vehicle parking areas and discourage parking in the main residential areas. It is also a suitable location to provide information on bushfires and the recommended response to a bushfire.

5.1.22 Safety for Fire Fighters

Safety of fire fighters is paramount in determining the response to a bushfire. Fires in these vegetation types would exhibit extreme fire behaviour with fire in the crowns of the trees. Recent fires in similar coastal vegetation on the Mornington Peninsula generated flame heights above power telegraph poles and the massive production of embers. (Mt Martha Park Bushland Reserve fire on the 18 March 2003. (Robertson G ,2004)

In the Township itself there are many areas that have high fuel loads adjacent to roads and properties that would support extreme fire behaviour. For example, south of Blyth



road. As a result fire fighting crews would be unable to directly attack fires in such areas. Crew safety would therefore require the use of other fire fighting strategies, which would focus on the protection of assets at a safe distance from the fire front.

5.1.23 Fire Impact on Emergency Services Response

A bushfire in and around the Breamlea Township would elicit a multi brigade response from CFA, Police and other support services. It would be reasonable to assume that an estimate of the number of public road users in an emergency could create severe congestion on the single entry and exit road from Breamlea. This could cause delays in response as well as endangering members of the public due to decreased visibility from smoke hazards.

Fire operations could be hindered by the poor access of internal Breamlea roads, further aggravated by the propensity for visitors to park in the designated fire vehicle turning circles and along streets in such density that would prohibit the access of fire vehicles.

As a general guideline for an integrated approach to ensuring access for fire vehicles and personnel in residential areas the City of Greater Geelong could review the current road network and where ever possible, and as opportunities allow, seek to generally comply with CFA guidelines titled, "Requirements for Water Supplies and Access for Subdivisions in Residential 1 and 2 and Township Zones.

5.1.24 Community Profiling – general behaviours associated with bushfires

In discussing the behaviours that people exhibit in response to a bushfire it should be noted that they are very varied and not easily predicted. For instance many people that have decided on a valid plan prior to a bushfire may make another decision at the time of the fire due to other considerations.

There are approximately nineteen elements of preparedness grouped into 5 key dimensions that can affect an individual's response to a bushfire (Rhodes 2003):

- (a) Awareness and recognition of the wildfire risk;
- (b) Knowledge of fire behavior and fire safety measures;
- (c) Planning for the event of a fire;
- (d) Physical preparations of property and household, and
- (e) Psychological readiness involving confidence and self-reliance.

Responding to a bushfire can invoke complex decision making processes so it is hard to categorise any group of people with a homogeneous set of behavioural characteristics. Nonetheless, for the purposes of this analysis the following is an attempt to make some assumptions regarding the demographic profile of Breamlea Township occupants.

5.1.25 Potential numbers of people at Breamlea during the FDP

In order to estimate the maximum potential numbers of people at Breamlea Township or surrounds on any given day during the Fire Danger Period some assumptions

regarding the number of people per house and car and so on were applied by the consultants according to demographic profile. The actual numbers can be viewed in annex d.

These calculations indicated that approximately 1300 people could be in the Township on any given day during the Fire Danger Period. Many of these people (35%) are likely to be casual visitors who may have a very poor understanding of what to do in a bushfire.

These factors have direct implication on how day visitors could be empowered or directed to select greater personal safety strategies.

General community education programs provide a greater awareness of bushfire and appropriate response strategies and for the early alert of an actual bushfire. We have encouraged and attempted to regulate movement of day visitors away from the residential areas to increase their safety and facilitate fire service access. The previous recommendation number 6 is applicable here as a people management strategy.

On receiving notification of a bushfire it is prudent that the day visitors have a designated area to attend for their safety and to allow emergency services to fire fight unimpeded by movements by the public.

When directing the public to an assembly area, the location needs to be a relatively well known and easily recognised landmark. It needs to be relatively free from the direct impact of fires and capable of providing shelter and basic needs of water for protection and sustenance for the duration of a bushfire event. The Connewarre Community Hall would meet these criteria.

5.1.26 Permanent Residents Behaviour Analysis

These are people that reside in the Township full time and have established houses with conventional facilities. These people are likely to very conversant with local issues, geography and interested in being part of the solution to any given issue.

It is expected that such residents would have implemented appropriate personal survival strategies in a bushfire given the correct information and motivation and be clear on whether to go early or stay and defend.

5.1.27 Semi Permanent (Casual) Residents Behaviour Analysis

This group is similar to the permanent residents, although may take less of an interest in broader community issues unless they are personally affected. These people are likely to be well acquainted with local geography and facilities. They may not have the same motivation to develop personal bushfire survival strategies or appropriate knowledge to defend their properties. These people may not be in their Breamlea residence all of the time which means their house may be vacant at the time of a fire.

5.1.28 Vacant Land Owners Behaviour Analysis

This group of residents may or may not have a physical structure on the land and possibly use the block for infrequent visits. Owners may allow friends/ family etc to use the block or residence for casual visits. Both these categories of people are likely to have less motivation to seek knowledge of the bushfire issues and relatively poor geographic understanding of the area, giving them less effective response ability in the event of a bushfire. Potentially the maintenance on their property in terms of fuel management and general house repairs is likely to be less effective than full time and part time residents.

Semi Permanent Caravan Park Residents Behaviour Analysis

These people are often characterised by having dwellings consisting of caravans and relatively permanent annexes attached to these caravans and who 'reside' in the Park on a semi permanent basis. The caravans in many cases would not be easily moved in an emergency and would require bushfire defence in a similar fashion to conventional houses. Many of the annexes are canvas and would be subject to attack by embers. Gaps in such infrastructure are frequent and would pose significant entry points for embers and for subsequent ignition points.

Behaviour in a bushfire could be reasonably assumed to be like that of the permanent residents.

Results from the Semi Permanent Caravan park residents survey analysis indicate that despite the size of the sample (7 people responded, a statistically invalid sample size) the results were reasonably aligned to anecdotal and similar project experience of the consultant for people of this profile. (Barnard P, 1990)

Some general behavioural trends could be discerned from the limited data.

50 % of respondents estimated that their knowledge of bushfires was insufficient to prepare them for an adequate response. Results were contradictory when asked if they required more information on this subject. The 50% of the respondents who thought their knowledge was sufficient did not appear to demonstrate understanding in their subsequent responses to other questions in terms of adopting effective survival strategies.

50 % of respondents indicated that on hearing of a bushfire near the Breamlea area they would seek more information from recognised authorities, which could mean CFA, a council representative or the caravan park manager. Nearly 40 % (37%) said they would evacuate the caravan park, presumably exiting the main road of Breamlea or travelling to some other internal Township landmark for perceived greater safety. 13% would seek to defend their property at the Caravan park.

A fire within Breamlea would elicit 50 % of the respondents in an evacuation move, with half those before seeking more information from recognised authorities. 25% would defend their properties. There is a large proportion of this demographic that clearly do not know the dangers of late evacuation during a bushfire. The primary risk of late evacuation involves people being trapped in the fire and being exposed to deadly radiant heat levels. Depending on what information is relayed from 'recognised authorities' a higher percentage of people could opt for the evacuation option.

A large majority of respondents (83%) indicated that they would respond favourably to fire service personnel directions implying a willingness to recognise the need for a coordinated and safe response. This is an opportunity for authorities to implement comprehensive education material on bushfires and have in place accurate and timely information services on bushfires to allow people to make informed decisions.

At least 50% of the respondents indicated that fire prevention measures were insufficient and made some suggestions on how this could be improved. Some of these suggestions are mentioned in other areas of this report.

Conclusions from the survey indicate that:

This survey group demonstrates a lack of knowledge of bushfire behaviour to the extent that a large proportion could make inappropriate survival decisions and subsequently increase the potential loss of life and assets. Such decisions would also increase the complexity of the emergency service response and delay the normalisation of the event.

It is not unreasonable to assume that there would be significant numbers of people in all

of the other demographic profiles who could act in a similar fashion.

Positive instructions from recognised authorities combined with targeted and ongoing education programs would have beneficial bushfire mitigation effects and save lives and property.

5.1.30 Casual Caravan Park Residents Behaviour Analysis

This group of people would represent a broad cross section of the general community and would have less geographic knowledge of the Breamlea area and the issues involved with bushfires. They are likely to be urban based people with lower motivation levels to learn about bushfires and their survival needs. In terms of behaviour this group potentially is very vulnerable to taking inappropriate actions in a bushfire.

5.1.31 Tourist/Day Visitors Behaviour Analysis

This group of people is similar to the casual caravan park group and often would only be visiting Breamlea for the day for a particular activity. Knowledge of bushfire issues and appropriate survival strategies could be expected to be relatively low, making this group very vulnerable.

5.1.32 Developing Action Strategies to Address the Problem/Risk Areas of the Community

In assessing the risk to human life and property the final estimation is a review of a complex array of variables. Among these variables are human behaviour in times of actual or perceived fire emergency, the intensity of the fire behaviour, and the general level of preparedness and survival strategies adopted by people.

Fire behaviour can be modified to a degree by reducing and changing the arrangement of fuels. Houses and other assets can be made safer by keeping them in good condition to prevent ember entry and removing other flammable objects and vegetation in proximity to the asset. Human behaviour is far more complex and relies on effective education programs and people being willing to some degree to take responsibility for their decisions before, during and after a bushfire and to select effective survival strategies.

The demographics of Breamlea with its relatively large influx of visitors during the summer period and its mix of permanent and non permanent residents also adds complexity to any model of human behaviour in a fire event.

Hence each demographic of the community are rated as to their relative risk in a bushfire.

Table 3 then contrasts the demographic groups' potential numbers, potential behaviour in a bushfire, the risk estimate and also suggests potential action/treatment strategies for education, community involvement, local government and fire authorities. Strategies that would be considered high priority for each group are indicated in **bold** type in the table.

Community Member Profile	Estimated max no.s in the FDP per day	Potential behaviour in a bushfire event	Risk estimate	Potential action strategies for education community involvement, local government and fire authorities
Permanent Residents	290	<ul style="list-style-type: none"> Stay and defend Evacuation (early or late) Community Fireguard/safe house 	SI = High U = Med	<ul style="list-style-type: none"> Community Fireguard/Rural Watch Bushfire Blitz Fire prevention notices AS3959 for buildings Local laws patrols Letter box drop with relevant information Committee of Management/community consultation Working bees Friends group Fire Alert system First attack option Fuel reduction program
Semi Permanent (casual) Residents	138	<ul style="list-style-type: none"> Evacuation (early or late) Refer to neighbours for strategy Travel to a landmark area 	SI = High U = Med	<ul style="list-style-type: none"> Same as permanent residents
Vacant Land Owners	24	<ul style="list-style-type: none"> Same as casual residents 	SI = High U = High	<ul style="list-style-type: none"> Fuel reduction program Letter box drop with relevant information Fire prevention notices
Semi Permanent Caravan Park Residents	90	<ul style="list-style-type: none"> Stay and defend Evacuation (early or late) Comply with CP fire plan Travel to a landmark area 	SI = Med U = Med	<ul style="list-style-type: none"> Community Fireguard Bushfire Blitz Fire prevention notices Fire Alert system Committee of Management/community consultation First attach option Fuel reduction program
Casual Caravan Park Residents	280	<ul style="list-style-type: none"> Evacuation (early or late) Comply with CP fire plan Travel to a landmark area 	SI = High U = High	<ul style="list-style-type: none"> Bushfire Blitz Local laws patrols Fire Alert system
Tourist/Day Visitors	450	<ul style="list-style-type: none"> Evacuation (early or late) Travel to a landmark area 	SI = High U = High	<ul style="list-style-type: none"> Education Boards at central entry points eg. Surf Club Fire Alert system Education/surveys to gather information and raise awareness Passive and active strategies for vehicle movements and directed activities with relevant information
Total on a given day	1272		Av SI = High Av U = High	

Table 3 Community Behaviour, Risk and strategies

5.2 BUSHFIRE PREVENTION PLAN

The Bushfire Prevention section of the plan seeks to consolidate the observations and the analysis of factors in the previous section and define prevention strategies and treatments. These strategies and treatments directly address the associated fire, economic, environmental, and sociological factors to reduce the impact of a bushfire.

A Bushfire Prevention plan is a central product from a fire management plan and should be:

Specific- prescriptive to best practice standards conducted by approved and competent people.

Measurable- so you know when you have achieved the stated outcomes and can be accountable to stakeholders.

Aspirational – aims to meet a number of management objectives with integrity.

Realistic- operationally and economically feasible.

Time bound- offers short and long term solutions.

The following strategies and treatments have been mentioned in Table 6.1 as possible actions to apply to specific demographic profiles and environments. Detailed explanations are given as to how these strategies and treatments are defined and implemented.

5.2.1 Fire Prevention Fuel Reduction Works Programme (Township and Breamlea Caravan Park)

A central idea of reducing the impact of fire on properties and other assets is to modify the fuel adjacent to and surrounding them. This means that some quantifiable strip of vegetation (length and breadth) is to be modified to a specified prescription. The aim is to reduce the type, quantity and arrangement of fuels to a level that reduces fire intensity and lowers the impact of the fire.

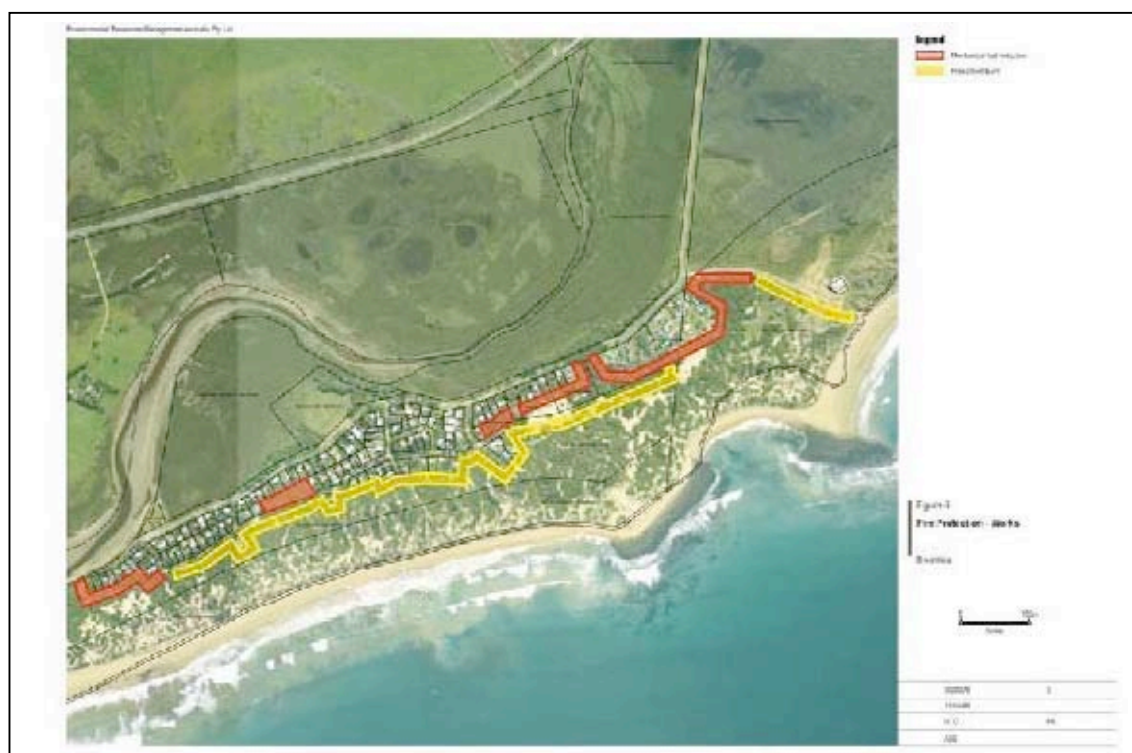


Figure 6 Areas for potential prescribed burning and mechanical fuel reduction.

(i) Physical Removal Of Coast Tea-Tree Overstorey Adjacent To Residences

Mechanical or physical removal or modification of fuels are implemented where prescribed burning is impractical, not cost effective or burning poses a significant risk of damage to residences and other assets.

Parameters of general mechanical fuel reduction prescription and steps include:

- Refer to Figure 6 for indication of the area for use of this method.
- Cut and remove known weed species and Coast Tea-tree/ Coast Wattle over storey
- Replace the dominant Coast Tea-tree/ Coast Wattle overstorey with species that
 - are relatively low growing,
 - do not produce high volumes of leaf litter,
 - do not create elevated fine fuels and generally remain green (high moisture content) and succulent year round (Ramsay & Rudolph 2003).
- Once removed, monitor natural regeneration and develop vegetation management plan accordingly.

(ii) Modification Of Fuels In Close Proximity (Private Gardens) To Residences

Vegetation management in the vicinity of built assets should aim to reduce the chance of ignition and to restrict the spread of fire. Plants that provide such attributes are recommended. Such plants remain relatively succulent and do not drop much leaf litter during the summer. The litter they do drop readily decomposes and they provide an arrangement of fuel type that reduces the fire intensity and rate of spread (Ramsay & Rudolph 2003).

The City of Greater Geelong encourages the use of indigenous flora in gardens in Breamlea rather than using exotic plants that may be more difficult to establish and have potential to become weeds. Other plants could be used in gardens but from a fire protection perspective should have the following qualities:

- succulent low evergreen shrubs.
- low flammability plants and low organic matter production.
- dense foliage that covers the ground.

A garden that provides a mosaic of plant form is also recommended.



Managed garden around house with appropriate plants

5.2.2 Community Fireguard/Rural Watch Groups

Community Fireguard (CFG) is facilitated by CFA and delivered at the local community level to empower groups to take responsibility for their own safety and survival strategies. It has proven to be a highly effective method of helping people help themselves. An extract from CFA literature explains the concept.

Community Fireguard encourages residents to work together to improve bushfire safety. Community Fireguard groups are formed when residents of a local area choose to participate in the program. Ideally, the groups are small, made up of neighbours or residents living in a shared bushfire risk environment. By working together with support from CFA, groups can develop strategies, which are simple and effective. By becoming involved in a Community Fireguard group, residents are able to develop strategies for themselves – strategies that work because they have local ownership and support. Groups make decisions about the best way to protect them in a way that fits their lifestyle, environment, physical capabilities, finances and experience. (CFA website- Community Fireguard publication)

Every Community Fireguard group focuses on its own special needs. Groups draw on the support of Community Fireguard facilitators whenever they need it.

Some additional activities and strategies of CFG groups may include:

- organising neighbourhood working bees to reduce the amount of fine fuel or to improve a nature reserve
- becoming familiar with each other's properties and fire fighting equipment in groups where a shared response is planned
- making plans with the more vulnerable people who may have special needs in regards to bushfire safety
- establishing a telephone tree to facilitate communication within the group
- working out new ways to share resources and information
- organising the bulk buying of personal protective clothing and equipment.

5.2.3 Bushfire Blitz

Bushfire blitz is a program run by CFA facilitators that takes bushfire issues to the local

communities on their street corners. It is a practical way to raise awareness of bushfires and galvanise local street communities in becoming aware of their specific bushfire risk. It therefore takes the abstract idea that 'it won't happen to me' and places the potential of bushfire in the actual reality of living in the bush.

It discusses a range of issues such as:

- Making a fire plan for your house and family
- Likely fire behaviour in your type of bush
- Stay or Go philosophy
- Strategies to protect your property
- Options to start a Community Fireguard in your area

5.2.4 Fire Prevention Notices

Fire Prevention Notices are issued under the CFA legislation. Section 42 (2) of the Country Fire Authority Act 1958 states: "A fire prevention notice may only be served if the fire prevention officer forms the opinion -

(a) that it is necessary, or may become necessary to do so to protect life or property from the threat of fire; and

(b) that there is no procedure under any other Act or regulations made under any Act that is more appropriate in the circumstances to address that threat."

The Act also specifies how to serve a fire prevention notice.

The issues that are taken into account during the inspection include:

- The lay of the land, does it fact north, south, east or west.
- The slope of the land.
- The type, arrangement, quality and quantity of vegetation on the property.
- What assets are on the land that might need to be protected.
- What assets are on neighbouring land that might need protection.
- Has there been any fire management or mitigation works carried out on the property under inspection or the neighbouring land that has reduced the risk.
- The current and/or forecast weather conditions.

A fire prevention notice will always be headed Fire Prevention Notice, it will specify the work required and there will be a date for completion of the works.

It should be noted that a Fire Prevention Notice might be served at any time of the year. If the Council issues a Notice in the cooler months then unless some special circumstance applies, the compliance date will normally be later in the year as the summer weather warms up. Although there is no statutory requirement to do so, a letter is usually sent out to the landowner to remind them about the work that is required, and compliance date if the notice is issued early in the year.

The Notice only allows vegetation to be removed, or altered, in "strict" compliance with what is stated on the Notice itself. Unauthorised removal, destruction, or alteration to

vegetation may carry severe penalties. (MPS 2005)

5.2.5 AS 3959 for Buildings

The CSIRO research team generated this Australian Standard 3959-1993, "Construction of buildings in bushfire-prone areas", arising from extensive research into the Ash Wednesday fires in 1983. This Standard has recently been revised (1999). Since that time CSIRO has sent survey teams to every Australian bushfire involving significant house loss and has confirmed the initial research.

There are several aspects that are inter-dependent and combine to contribute to the lowering of a bushfire threat to a dwelling:

Vegetation

It is desirable to have a fuel-reduced area around a building to reduce the level of hazard, in particular the risk of attack by flame contact and radiant heat. The practical extent of the fuel-reduced area depends on the type of vegetation, slope of the land and its aspect.

The management of existing vegetation involves both selective fuel reduction (removal, thinning or pruning) and the retention of vegetation, which may have beneficial effects by acting as windbreaks and radiant heat barriers.

Building Design

It is desirable that the shape of new buildings incorporates the minimum of re-entrant corners and changes in roof profile where burning debris may accumulate and ignite the building.

Windows

Windows are the most vulnerable features of a house exposed to bushfire attack. AS 3959 specifies wire mesh on all opening windows including louvres. This reduces, to some extent, the levels of radiant heat impacting on the glazing and, if the glass cracks and falls away, it can help prevent wind-borne burning debris from entering the building. There are other methods suggested for window protection such as shutters and various glazing options.

Decks

Research has found timber decks to be particularly vulnerable to multiple ignitions from burning wind-borne debris, due to the large areas of horizontal timber surface they present. These ignitions grow and join to attack windows and doorways opening on to the deck, taking the fire to the interior of the house. In the absence of successful fire fighting intervention, this leads to total destruction of the house.

Further research is planned to investigate design alternatives to improve the performance of timber decks.

Other Building Elements

AS3959-1999 gives some basic guidelines for the protection of other building elements. In areas likely to be subject to attack by embers alone (without direct flame contact or significant heat radiation) the general rule is to protect combustible wall

cladding, and post and poles for the first 300 mm above a horizontal surface where debris and embers can accumulate. Wall vents should be screened with metal mesh (bronze flywire is suitable) to prevent embers from entering underfloor areas. (CSIRO 2005)

5.2.6 Local Laws Application

The application of local laws and other legislation in relation to vehicle control and other regulatory controls such as use of beaches and so on are an important tool in facilitating appropriate behavioural change to enable smooth running of communities.

Hence enforcement strategies should go hand in hand with appropriate and sustained education strategies to have the best results.

5.2.7 Passive and Active Strategies for Vehicle Movements and Directed Activities

This treatment method could involve a number of different options. These could range from engineering solutions such as roundabouts to slow and direct flow of traffic, parking barriers, prohibitive signage and enforcement strategies. Other active amenities such as constructed walking access trails and vantage points to beach scapes designed to encourage and direct day visitors actions are also options.

Options should be integrated with existing council strategies and other recommendations from reports such as the Breamlea Foreshore MasterPlan and Management Plan Report

5.2.8 Safe Assembly Point

Refer to Bushfire Recovery section.

5.3 BUSHFIRE RESPONSE PLAN

The response section of the plan outlines the operational response for fire suppression from the formal authorities like the fire brigade and local government and what actions the members of the community can take to be self reliant.

Access to the appropriate information for all concerned is vitally important and this section contains pages of relevant contact organisations and key personnel. The information desirably should be photocopied and distributed to parts of the community like private individuals, caravan park manager, Surf club managers and other key personnel.

5.3.1 Formal and Informal Information Networks for Fire Alerting

Fire authorities have established a number of different avenues to gain information on fires. They are updated regularly during the Fire Danger Period.

Formal sources for fire alerting and progress include:

CFA (9262 8444) Information Unit

DSE (136 186) Information Unit

ABC Radio

CFA(www.cfa.vic.gov.au - News and Fire Updates)

DSE (www.dse.vic.gov.au)

Victorian Bushfire Information Line 1800 240 667

Informal sources of information include Community Fireguard groups within their own sphere of contacts via telephone trees and other systems.

5.3.2 Fire Brigade Response Capacity – First Attack

On being alerted that there is a fire in a particular brigade area the brigade is turned out via a despatching centre and responds to the fire. Each brigade has a pre-planned set of strategies as to how they would approach and fight a fire depending on the location and phase of development of that fire.

DSE fire fighting crews would also likely to be despatched depending on the locality of the fire(s).

These strategies by necessity need to be flexible and provide guidelines for brigade personnel for their own safety and fire fighting effectiveness. The first arriving brigade at a fire in or around the Breamlea locality would consider the following information in the Table 6.1 below:

Table 6.1 Brigade Response for a Grass & Scrub Fire – Breamlea Township

<u>Response (Multi Brigade):</u> <ul style="list-style-type: none"> • Primary: Connewarre T1, T2 • Support: B/Heads Tanker, Grovedale T, Ocean Grove T, FWC T
<u>Water Supplies:</u> <ul style="list-style-type: none"> • Fire plugs throughout Township • Breamlea Rd 300m Nth of Blackgate Rd • Bancoora SLSC
<u>Information:</u> <ul style="list-style-type: none"> • Occupancy- heavy summer residential population • Full occupancy in Caravan park • Traffic congestion due to day trippers <u>Exposure:</u> Caravan park
<u>Escalation:</u> <ul style="list-style-type: none"> • FIRE- Tankers, Helitak, IMT, MCV, Police
<u>Communications Plan</u> <ul style="list-style-type: none"> • VicFire Ch 21 • Incident Control Point Command Ch 22 • <i>Fire Ground 1 Ch 24</i> • Fire Ground 2 Ch 13
<u>Watchouts:</u> <ul style="list-style-type: none"> • Coastal seabreezes / wind changes • Traffic Hazards to crew • Entrapment

(Baker D, 2005)

Table 6.2 CFA Brigade Response for a Fire at Breamlea Caravan Park

<p><u>Response (Multi Brigade):</u></p> <ul style="list-style-type: none"> • Primary: Connewarre T1, T2 • Support: Belmont Pumper, Barwon Heads Pumper, Grovedale Tanker, Ocean Grove Tanker ,Torquay Tanker 	
<p><u>Water Supplies:</u></p> <ul style="list-style-type: none"> • Fire Plug behind Nth fence • Fire Plug @ Main Entrance <p><u>Alternative Access:</u> Nil</p>	
<p><u>Appliance Arrival Duties (Map Over):</u> (dependent on incident type)</p> <ul style="list-style-type: none"> • Clear area or Park of Personnel • Determine Occupancy Status of Vans • External Fire Fight • 1st Pumper with BA to commence Internal Search 	
<p><u>Information:</u></p> <ul style="list-style-type: none"> • Occupancy- Inhabitants in Caravans • Visitors <p><u>Exposure:</u></p> <ul style="list-style-type: none"> • Multiple caravans in close proximity • Tea Tree vegetation on Sth & West sides • Marrum grass to East <p><u>Recommendations:</u></p> <ul style="list-style-type: none"> • Internal fire main & hose reels • Fire Access track on East side of Park 	<p><u>Communications Plan</u></p> <ul style="list-style-type: none"> • VicFire Ch 21 • Incident Control Point Command Ch 22 • Fire Ground 1 Ch 24 • Fire Ground 2 Ch 13
<p><u>Escalation:</u></p> <ul style="list-style-type: none"> • FIRE- Pumpers & Tankers • RDO <p><u>Key Considerations:</u></p> <ul style="list-style-type: none"> • Rescue • Exposures of other vans • Fire Fight. • Traffic control 	<p><u>Watchouts:</u></p> <ul style="list-style-type: none"> • Gas Bottles – on caravans <ul style="list-style-type: none"> -NW of Amenities Block -NW of Manager’s Unit • Limited access • Congestion internally with traffic adjacent to roadway

(BAKER D, 2005)

Additional fire fighting considerations for Breamlea scrub and caravan park fire responses are summarised as follows:

There are three key anchor points from which it would be safe to fight a fire from, being the Breamlea Road near Bancoora SLSC Road, the Recreation Reserve and the West Gravel Car Park, however the ability to use any of these points would be determined by fire location/conditions on the day.

In the event of a bushfire “running” into the township, CFA would not be committing resources within the township area unless crew safety could be guaranteed. Crew safety assessment is a complex mix of crew training, fire location, behaviour and intensity, access, and available water supplies. CFA resources would be working from secure anchor points as identified. This may require the resources to be staged at a safe area until it was safe for them to attack the fire. (Verdoorn G.2005)

5.3.3 Environmental Constraints and Fire Suppression

It is recommended that mineral earth breaks not be constructed either as a fire protection measure or during fire suppression. The risks associated with vegetation removal are considered to be too great. The use of Phoscheck, foam and water bombing are not considered to be significantly detrimental as to prevent their use under emergency situations to save life and property.

It is recommended that fire be excluded from the vicinity of extant Moonah. The response of Moonah to fire is not well understood and there is potential for the few remaining plants to be burnt beyond recovery. Careful use of ignition techniques in the vicinity of such plants will provide adequate protection from scorch.

5.4 COMMUNITY BUSHFIRE RECOVERY PLAN

Recovery activities can begin sometimes during an incident and more immediately after an incident has been declared 'safe' by the fire authorities.

This section of the plan facilitates contacts and options for disaster victims to begin the process of rebuilding their homes; replacing property; resuming employment; restoring their businesses; permanently repairing, rebuilding, or relocating public infrastructure; and mitigating future disaster losses.

It also refers to Government programs of assistance, support, and technical services that facilitate disaster victims' recovery actions — such as grants and low-interest loans for repair or replacement of homes, businesses, property, and infrastructure; technical assistance; and education and information.

Recovery activities should be carried out in the context of long-term redevelopment of viable, disaster-resistant communities. (FEMA 2005)

6.4.1 Designated Recovery Centre

Recovery operations often require longer periods of support to the community than the response phase. Ideally the operating locations for a recovery centre should be well known to community members, capable of sustaining a large contingent of personnel and be located near or in the township.

The Bancoora Surf Life Saving Club is therefore the designated Recovery Centre from which Council services and other State support agencies can administer first response activities to affected members of the community after a fire event.

The following general facilities should be in place prior to a bushfire event to ensure efficient and effective delivery of services:

- Appropriate space requirements for between 10-20 support organisations
- Telecommunications facilities (provision for the above)
- Catering facilities
- Car parking
- Storage areas for goods and services for distribution
- Secure holding areas for specialised equipment

5.4.2 Additional Support and Welfare Options

The following topic information in Table 8 may be useful to the community who have been, or are likely to be affected by bushfire from the Department of Human Services website:

<http://hnp.dhs.vic.gov.au- Menu /Services / State Emergency Recovery Unit>

<u>Children and Crisis</u>	<u>Family and Crisis</u>	<u>Giving Psychological Support</u>
<u>Public Health Information - Bushfire Smoke & Your Health</u>	<u>Public Health Information - Hazards on your Property after a Bushfire</u>	<u>Stress after Emergencies</u>
<u>When Someone You Know Has Had a Traumatic Experience</u>	<u>Financial Assistance Available from Department of Human Services</u>	<u>Teenagers and Crisis</u>
<u>Public Health Information - Advice for People with Water Tanks</u>	<u>The Stress of Being Under Thre</u>	

Table 8 Resource topics for assistance in bushfire recovery

6 ADMINISTRATIVE ISSUES

6.1 ADMINISTRATION OF THE PLAN

The Greater City of Geelong Municipal Fire Prevention Committee is responsible for all aspects of this plan on acceptance by the Council.

6.2 ISSUING AND OBTAINING COPIES OF THE PLAN

The first issue of the approved plan has been forwarded to the following organisations and community groups:

- Breamlea community groups and individuals as requested
- Publicly advertised in the community and available at the Council offices
- City of Greater Geelong
- CFA Region 6/7
- Caravan park owners and copy on display for users
- DSE and Parks Vic
- Wathaurong local indigenous group
- Emergency Services (SES, Police, Ambulance)
- Local Water Authority, Electricity and Gas suppliers

Copies of the updated plan will be distributed to the above groups and organisations.

A copy of the plan will be posted on the Geelong Australia Website after approval by Council.




REFERENCES

- 3M Company 1999, Fluorochemical use, distribution and release overview 3M Company.
- AABDWA 2005. The Alliance Against Bushfire Damage in Western Australia website, 2005
- Baker D, 2005 Captain, Connewarre Rural Fire Brigade
- Barnard P, 1990, Coffin Bay Community Fire Management Plan
- Betts R August 2001 'Living with risk' ferny creek fire alert siren evaluation report.' Office of the Emergency Services Commissioner
- CFA 2005 website- Community Fireguard publication
- COGG 2003, Biodiversity Strategy, City of Greater Geelong
- COGG 2005, Emergency manual, City of Greater Geelong
- CFA 2005 Community Fireguard- An extract from CFA literature explains the concept.
- CSIRO website- AS3959
- DSE 2003, Otway Fire Protection Plan Department of Sustainability and Environment, 2003
- DNRE 1999 'Overall Fuel Hazard Guide Third Edition May 1999' Department of Natural Resources and Environment, Melbourne.
- FEMA 2005 Federal Emergency Management Agency R&/R website
- Gill M, 2003- CSIRO a richter-type scale for fires? Research Letter #2
- Mornington Peninsula Shire 2005 Website for fire prevention notices
- Ramsay, G.C. and Rudolph, L. 2003 Landscape and Building Design for Bushfire Areas. CSIRO Publishing, Collingwood, Australia.
- Rhodes, A 2003 CFA Understanding Community Preparedness and Response to Wildfire Risk
- Thompson Berrill Landscape Design Pty Ltd, 1999, Breamlea Foreshore MasterPlan and Management Plan Report
- Verdoorn,G May 2005 CFA Operational response letter Operations Officer Region 6/7

Annex A

Fuel Hazard Assessment Sites at Breamlea Township

Table B.1 Fuel Hazard Assessment Sites at Breamlea Township Area

Sampling Site	Overall Fuel Hazard	Fuel Loads (tonnes/ha)	Slope (degrees)	Photo of fuel type at site
Site 1 GPS 381758 S 1442258 E West end of last house from block 101	EXTREME	28	16	
Site 2 GPS 381752S 1442317E West of Block 27 Blyth Rd	EXTREME	22	6	
Site 3 GPS 381742S 1442345E 40 metres West of Caravan Park	EXTREME	31	2	
AVERAGE	EXTREME	27		

Annex B

Semi Permanent Caravan Park Residents Survey

KNOWLEDGE OF BUSHFIRES

- 50 % prepared
- 50 % un prepared for a bushfire

ACCESS TO INFORMATION

- 83 % say they have sufficient information to respond effectively to a bushfire
- 67 % say they could have more info

RESPONSE TO HEARING OF A BUSHFIRE IN THE AREA

- 50 % seek info from recognised authorities
- 37 % evacuate
- 13 % defend property

RESPONSE TO HEARING OF A BUSHFIRE IN THE BREAMLEA TOWNSHIP OR NEAR THE CARAVAN PARK

- 50 % evacuate
- 25 % seek more info
- 25 % defend property

RESPONSE TO HEARING OF A BUSHFIRE IN THE BREAMLEA TOWNSHIP OR NEAR THE CARAVAN PARK

- 50 % evacuate
- 25 % seek more info
- 25 % defend property

RESPONSE TO FIRE AUTHORITY DIRECTIONS

- 83 % would respond favourably to fire service directions

PREVENTION AND PROTECTIONS MEASURES

- 33% enough measures
- 17% don't know
- 50% not enough
- Suggestions were:Evacuation plan
- assembly areas
- info dissemination to all current and new residents of Breamlea
- Fire warning siren.
- More signage indicating no fires in the open.
- Fuel reduction of dead material in the dunes.
- Signing of safe areas
- road widening for better access and evacuation.

Annex C

Community Profile/Demographic Information

Person Profile	Number of Persons
All Together The Number Of Blocks In Breamlea Is:	112
Vacant Land/ Empty Houses:	8
Occupied Houses:	104 <i>PERMANENT: 58</i> <i>CASUAL: 46</i>
Population of Residents in Breamlea:	259 <i>PERMANENT: 140</i> <i>CASUAL: 119</i>
Number of families in Breamlea:	38
Number Of Couples In Breamlea:	46
Number of singles in Breamlea:	20
Number Of People Over 65 Yrs Of Age:	24
The Number Of Children	65 <i>PERMANENT-DEPENDENT: 26</i> - Adult: 17 Casual- Dependent: 17 - ADULT: 5

Table D.1 Community profile/demographic information

Annex D

Community Member Profile

Community Member profile (unit)	Estimated number of people per unit	Estimated maximum numbers in the FDP per day
Permanent Residents	Ave 4-5/ house	290
Semi Permanent (casual) residents	Ave 3/ house	138
Vacant Land owners	Ave 3/ house	24
Semi Permanent Caravan Park residents	Ave 3 / van	90
Casual Caravan Park residents	Ave 4/ van	280
Tourists/ Day Visitors	Ave3/ car	450
Total number of people at Breamlea in the FDP on a given day		1272

Table E.1 Community Member Profile

GLOSSARY OF TERMS

Available fuel:

The portion of total fuel that actually burns under specified weather conditions.

Biodiversity:

Describes the full range of living things and is the variety and number of species or organisms, the genetic variation within a species and the ways in which they interact with each other in communities and ecosystems.

Burning program:

A program that sets out a number of prescribed burns and schedules these for a designated area over a nominated time, normally looking ahead over one fire season (for the coming spring to the following autumn), but can also look ahead 5 years or more.

Bushfire:

An unplanned fire on public land or non-urban land. A generic term, which includes grass fires, forest fires and scrub fires. Sometimes called a wildfire.

Bushfire threat:

A term used to describe and analyse the danger that a bushfire poses in a particular place, or to specified values. There are four aspects:

- (i) the risk of a fire starting, and of it becoming uncontrollable;
- (ii) the values, which will be lost or damaged if a bushfire starts and gets away;
- (iii) the extent of damage which could be caused; and
- (iv) the resources, which can be brought to bear on a fire and their efficiency and effectiveness.

Ecological burning:

Treatment of vegetation in nominated areas by use of fire to achieve specified ecological objectives.

Elevated Fuel Complex:

See Fuel Arrangement

Fire behaviour:

The manner in which a fire reacts to variations in fuel, weather and topography. Common measures are rate of spread, flame height and intensity.

Firebreak:

A narrow strip or area upon which flammable fine fuel is almost eliminated. It may be a natural break or be maintained mechanically or chemically. Its purpose is to isolate, slow or stop the spread of a ground fire or to provide a control line from which a fire can be attacked.

Fire Danger Index = Danger Index:

A scale from 0 to 100, which indicates the degree of difficulty of suppressing a bushfire. The index is derived from weather data including wind speed, temperature, relative humidity and rainfall.

Fire Management:

All uses of fire taken or planned to -

- provide protection of life, property, land and assets from bushfire, and
- meet other goals of land management or natural resource management

Fire pre-suppression:

Activities undertaken in advance of bushfire occurrence to ensure more effective fire suppression.

Fire prevention:

Activities undertaken to minimise the incidence of bushfires

Fire suppression:

All work and activities directed at extinguishing a bushfire.

First Attack:

Initial commitment of personnel and resources following report of a bushfire.

Fuel Arrangement:

A general term referring to spatial distribution and orientation of fuel particle in a fuel bed. Fuels may be arranged in a vertical sense - "elevated fuels" or may be arranged on the ground - "ground fuels".

Fuel:

Combustible material. In the context of this Plan, the following categories of fuel area distinguished:

- Fine fuel: The fuel that burns to produce the flame front. This fuel is defined to be less than 6 mm thickness. It is typically dead leaves, twigs and grasses.
- Heavy fuel: The fuel that burns after the fire front passes. This fuel is typically larger branches and fallen logs.
- Ground fuel: Combustible material lying on the ground surface.
- Aerial or Elevated fuel: Combustible material erect or suspended above the ground surface.

Fuel break:

A buffer of land in which fine fuel load is eliminated. Its purpose is to lower bushfire intensity to a controllable level (i.e. to less than 3000 kW/m).

Fuel load = Fuel quantity:

The oven dry weight of fine fuel (<6mm in diameter thickness) per unit area - commonly expressed as tonnes per hectare.

Fuel management:

Manipulation of the distribution and composition of combustible material by various means including mechanical, chemical, biological and by fire.

Fuel Reduction Burning:

The planned use of fire to reduce the quantity and arrangement of fine fuels in a specified area. The fire is designed to achieve its objective with specified flame height, rate of spread and intensity.

Fuel Type:

An identifiable association of fuel elements (eg. vegetation height, density and species) that features a distinctive type of fire behaviour under specified weather conditions. Examples of common fuel types are grassland, heathland, dry open forest, tall open forest.

Ground Fuels:

Peat and humus accumulating at ground level.

Habitat Management:

Manipulation of critical elements of the habitat of a species of flora or fauna to achieve a particular object.

Management Burning:

See prescribed burning.

Prescribed burning:

Planned use of fire to achieve specific land management or natural resource management objectives. (Prescribed burning includes 'fuel reduction burning', 'protection burning', 'management burning', 'ecological burning').

Public Land Assets and Values:

Recognised features of public land managed by Land Management Agencies. Includes buildings, infrastructures, (roads, bridges etc) commercial plantations, conservation values (vegetation types, flora, fauna habitat, fauna, recreational, historical, archaeological, landscape, water quality, soil condition, etc.).

Rate of Spread:

Forward rate of spread, i.e.. fastest moving section of the fire.

Rehabilitation Strategy:

A post fire management plan developed to ensure the impact of fire and any subsequent suppression operations is minimised. It may include activities to reduce soil erosion and promote revegetation on bared areas.

Slashing:

Mowing to reduce fuel loads resulting in disruption to the vertical arrangement of fuels .In this plan the term is used to describe activities undertaken on an infrequent basis for fire hazard reduction.

Vertical Arrangements of Fuel:

See Fuel Arrangement