Lavinia
Nature Reserve
(Ramsar Site)
Management Plan

2000
This draft management plan for the Lavinia Nature Reserve has been prepared in accordance with the requirements of Part IV of the National Parks and Wildlife Act 1970.

Unless otherwise specified, this plan adopts the interpretation of terms given in Section 3 of the National Parks and Wildlife Act 1970. The term “Minister” when used in the plan means the Minister administering the Act. The term “reserve” refers to Lavinia Nature Reserve.

In accordance with Section 23(1) of the National Parks and Wildlife Act 1970, the managing authority for the reserve, in this case the Director of National Parks and Wildlife is to manage it in accordance with this management plan. The position of Director is held by the General Manager, Resource Management and Conservation Division, Department of Primary Industries, Water and Environment.

ACKNOWLEDGEMENTS

Many people have assisted in the preparation of this plan by providing information and comments on earlier drafts. Their time and efforts are gratefully acknowledged.
Making a Representation – What do you think?

Copies of the draft plan are available for inspection or purchase at Service Tasmania, 134 Macquarie Street, Hobart and at the Hobart and Launceston offices of the Parks and Wildlife Service, Department of Primary Industries, Water and Environment.

Writing a Representation

What do you think of the proposals in this draft management plan? This is your chance to have a say on how we propose to manage the reserve for the next 10 years. Please make your representation concise and clear. It will help if you refer to the section numbers in the plan. Say whether you agree or disagree with the action proposed in the areas, which interest you. Where possible give reasons and provide sources of information. Suggest alternatives if you disagree. Giving reasons, offering information and alternative suggestions will help improve the plan.

If you do not wish your representation to be viewed by other members of the public, mark it "confidential".

Note that all representations are potentially available under the Freedom of Information legislation, however it is only the content of the representation that could be made available, not the name and personal details of the person who made the representation.

How is Your Representation Assessed?

The Minister will consider all representations made with respect to the draft plan and may make alterations to the draft plan having regard to the representations. As a general guide, and depending on all circumstances, the draft plan may be amended if a representation:
- provides new information relevant to planning and management;
- indicates proposed policies and actions are misunderstood and need clarification;
- clarifies or proposes policies and actions that would better achieve the management objectives;
- identifies a lack of policies or actions for particular issues; or
- corrects errors, omissions or lack of clarity.

Similarly, the draft plan may not be amended if a representation:
- contradicts planning proposals for which there is widespread support;
- conflicts with government policy;
- is contrary to the intention of relevant legislation or national or international conventions or agreements;
- is among widely divergent viewpoints better handled or balanced by the proposed policies or actions;
- addresses issues beyond the scope of the plan; or
- ignores or contradicts relevant established facts.

How much time do you have?

This draft management plan was released for public comment on 20 May 2000. Your comments should be submitted to the Minister by 17 July 2000.

The Minister for Primary Industries, Water and Environment
First Floor
Franklin Square Offices
Hobart, Tasmania 7000
Summary

Lavinia Nature Reserve on the north-eastern coast of King Island in Bass Strait, protects a highly significant and diverse ecosystem, spectacular coastal and bush landscapes, a rich cultural heritage and a significant lagoon and wetland system.

The reserve is covered by a variety of sandy coastal deposits. It contains the longest system of beach ridges and parallel dunes in the state which formed at two different periods, the Pleistocene and the Holocene, about 120,000 years apart. The Nook Swamps are imponded between the ‘new’ and ‘old’ shorelines.

The reserve is listed under the Ramsar Convention as a Wetland of International Importance. Lavinia Nature Reserve is important for nature conservation due to its variety of landscapes, vegetation communities and fauna. It contains critical feeding and roosting habitat for the nationally endangered orange-bellied parrot and plant species listed in the schedule to The Threatened Species Protection Act 1995, species including the sticky daisy bush *Olearia glutinosa*, purple cudweed *Gamochaeta purpurea* and tiny caladenia *Caladenia pusilla*.

The reserve also protects the rare southern hairy red snail *Austrochloritis victoriae* which is known to occur in Tasmania only on the north-eastern coast of King Island amongst fallen logs and feeding on rotting wood and leaf litter.

Within the reserve, there are significant Aboriginal sites, particularly around the lagoon system and the coastal beaches.

Lavinia Nature Reserve will be managed to protect its outstanding natural and cultural values, and provide for a limited range of recreational opportunities.

To these ends, the management plan:

- zones the reserve to take account of different features and values and to direct and manage visitor activities and impacts;
- allows beach vehicle access to Lavinia Beach between Lavinia Point and north to the reserve boundary during the months of October – March inclusive to protect nesting shorebird habitat along Nine Mile Beach;
- identifies key locations for the provision of visitor facilities and services at Lavinia Visitor Services Zone and Sea Elephant River Visitor Services Site;
- proposes investigation of options for a high quality-walking track in the Sea Elephant River Visitor Services Site; and
- identifies a Special Management Area adjacent to the Sea Elephant River between March and July annually to protect the feeding and roosting habitat of the orange–bellied parrot.
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1 Introduction

1.1 An Overview of the Reserve

1.1.1 Location and Regional Context

Lavinia Nature Reserve is located 12km north of Naracoopa on the north eastern coast of King Island, Tasmania in Bass Strait between Boulder Point and Cowper Point (see Map 1).

The reserve was named after the 52-ton schooner *Martha Lavinia* that, in 1871 carrying a cargo of potatoes between Tasmania and Adelaide struck a reef offshore near the reserve. The crew reached shore and camped under the vessel’s mainsail before finding their way north to the Cape Wickham lighthouse.

The reserve includes long sandy beaches, coastal heathlands, wetlands and a river estuary, which also provides habitat for a number of rare and endangered birds.

1.1.2 Importance of the Reserve

The Lavinia Nature Reserve is similar to a category I Protected Area in the International Union for the Conservation of Nature (IUCN) categorisation system. Category I reserves are strict nature reserves managed mainly for science or wilderness protection.

The reserve is important for nature conservation due to its variety of landscape, vegetation communities and fauna. It contains critical feeding and roosting habitat for the orange-bellied parrot *Neophema chrysogaster*, which is listed nationally as endangered under the *Endangered Species Protection Act* 1992 and in Tasmania under the *Threatened Species Protection Act* 1995.

The reserve contains the largest significant area of remnant native vegetation on King Island, and includes a number of rare or threatened plant species.

1.2 Creation of the Reserve

1.2.1 Reservation History

The Sea Elephant River Wildlife Sanctuary was proclaimed in 1959 when 510 hectares of land in the vicinity of the Sea Elephant River mouth were gazetted under the *Animals and Birds Protection Act* 1928. In 1971 under the *National Parks and Wildlife Act* 1970, the Lavinia Sanctuary was proclaimed and was combined with the Sea Elephant River Sanctuary to become a conservation area. Several additions and excisions have been made to the reserve over the years. See Reservation History in Appendix 1.

1.2.2 Area and Boundaries

Lavinia Nature Reserve covers 6 800 hectares. Its boundary to the east is Bass Strait and boundaries to the north, south and west contain a mixture of freehold land and unallocated Crown land.
LAVINIA NATURE RESERVE

MAP 2
ACCESS and VEHICLE TRACKS

1. Martha Lavinia Road
2. Access track to Lake Martha Lavinia
3. Access track to Penny’s Lagoon
4. Track to Lavinia Point
5. Track to Lavinia Beach
6. Nine Mile Beach Track
7. Sea Elephant Road
8. 4wd riverside track
9. Bicentennial road
10. 4wd single lane road
11. 4wd estuary track
12. Fire trail off East Wickman Road
13. Fire trails within reserve

Registered vehicle access all year between Boulder Point and Lavinia Point

Vehicle access not permitted between Lavinia Point and Cowper Point, October to March inclusive

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1.3 Ramsar Site

1.3.1 The Ramsar Convention

The Convention on Wetlands (Ramsar, Iran 1971) is an intergovernmental treaty which provides the framework for international cooperation for the conservation and wise use of wetlands. It is the first of the modern global treaties on conservation and wise use of natural resources (Ramsar Convention Bureau 1997). The Convention, which is commonly referred to as the Ramsar Convention, takes its name from the Iranian city of Ramsar where the treaty was adopted in 1971.

The Convention on Wetlands (Ramsar, Iran 1971) aims to conserve wetlands, which globally are considered one of the most threatened groups of habitats.

The Ramsar of Wetlands of International Importance has been established under the Convention. Sovereignty of the sites remains with the countries within which the sites are located. By December 1999 there were 117 contracting parties to the Convention, with 1 007 wetland sites, totaling 71.8 million hectares, designated for inclusion in the Ramsar List of Wetlands of International Importance. (Ramsar Convention Bureau 1999).

Management of wetlands and Ramsar sites should be in accordance with the duties and obligations of signatories to the Convention. In particular, article 3.1 states that the contracting parties “shall formulate and implement their planning so as to promote the conservation of wetlands included in the list, and as far as possible the wise use of wetlands in their territory”.

Australia was the first nation to become a contracting party to the convention in 1971. Australia now has 49 Ramsar sites covering an area more than five million hectares. Ten of these 49 sites are located in Tasmania.

The Lavinia Nature Reserve on King Island was the fifth Australian Ramsar site to be listed under the convention.

1.3.2 Criteria met for Ramsar Listing

The Lavinia Nature Reserve meets the following criteria for listing as an internationally important wetland (see Appendix 2.)

2(a) it supports an appreciable assemblage of rare, vulnerable or endangered species or subspecies of plant or animal, or an appreciable number of individuals of any one or more of these species;

2(c) it is of special value as the habitat of plants or animals at a critical stage of their biological cycle;

2(d) it is of special value for one or more endemic plant or animal species or communities.

Lavinia Nature Reserve provides critical feeding habitat for the endangered orange-bellied parrot during its migration from Tasmania to Victoria. Between March and July individuals and small flocks feed on plants near the mouth of the Sea elephant River. Adjacent scrubland is favoured as day and evening roosts.

One vulnerable and ten rare plant species occur in Lavinia Nature Reserve and it is the only reserve in Tasmania where the vulnerable scrambling ground fern Hypolepis distans has been recorded.

1.3.3 Ramsar Site

The Ramsar site at the Sea Elephant River estuary on King Island was nominated in 1982 and listed in 1983 as the Sea Elephant Conservation Area Ramsar site. The site consisted of 1 730 hectares and included the Sea Elephant River Wildlife Sanctuary. In 1988, the Sea Elephant River Wildlife Sanctuary was incorporated into the adjoining Lavinia Nature Reserve and its

1 The wise use of wetlands is their sustainable utilisation for the benefit of mankind in a way compatible with the maintenance of the natural properties of the ecosystem and the sustainable utilisation is the human use of a wetland so that it may yield the greatest continuous benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations.
boundaries re-aligned. The Ramsar site boundary was redefined in 1994 to correspond with the Lavinia Nature Reserve boundary.
2 Vision and Objectives for the Reserve

2.1 The Vision for the Reserve

Developing a vision for the reserve provides people with a signpost to the future management direction. It is important that the management decisions made today give a clear path to follow. This strategic direction assists in avoiding inappropriate development and management and ensures that the area continues to be worthy of reserve status.

2.1.1 The Vision

Lavinia Nature Reserve continues to contain a rich natural biodiversity within its lagoon and wetland systems and vegetation communities. Orange-bellied parrots continue to use the reserve as a feeding and roosting habitat and are not threatened by pests, disease or human intervention.

Nesting shorebirds continue to breed at the mouth of the Sea Elephant River and Nine-Mile Beach without disturbance.

Landforms are undisturbed or rehabilitating and the air, land and water are unpolluted.

Visitors enjoy the reserve for its quietness and relaxed and uncrowded atmosphere, and appreciate the scenic natural landscapes.

Visitors pursue recreation based on the features and values of the reserve, without disturbing or detracting from the experiences of other visitors.

2.2 Purposes and Objectives of Nature Reserves

Nature Reserves are a category of reserve under the Tasmanian reserve system. The purposes and objectives of nature reserves are set out in the National Parks and Wildlife Act 1970.

Nature reserves are areas of land that contain natural values that-

a) contribute to the natural biological diversity or geological diversity of the land, or both; and
b) are unique, important or have representative value.

The purposes of reservation of nature reserves are the conservation of the natural biological diversity or geological diversity of the area of land, or both, and the conservation of the natural values of that area of land that are unique, important or have representative value. These purposes apply to Lavinia Nature Reserve.

The management objectives of nature reserves are:
- to conserve natural biological diversity;
- to conserve geological diversity;
- to preserve the quality of water and protect catchments;
- to conserve sites or areas of cultural significance;
- to encourage education based on the purpose of reservation and the natural or cultural values of the nature reserve, or both;
- to encourage research, particularly that which furthers the purposes of reservation;
- to protect the nature reserve against, and rehabilitate the nature reserve following adverse impacts such as those of fire, introduced species, diseases and soil erosion on the nature reserve’s natural and cultural values and on assets within and adjacent to the nature reserve;
- to encourage cooperative management programs with Aboriginal people in areas of significance to them in a manner consistent with the purpose of reservation and the other management objectives.

All of these general objectives for nature reserves set out in the Act apply to Lavinia Nature Reserve. The reasons these objectives apply and the manner in which the objectives will be achieved are specified in detail throughout this management plan.
2.3 Specific Management Objectives

To maintain the reserve values, and to achieve the reserve vision, management objectives are set out below. These objectives are fundamental to the long-term protection of the reserve. They elaborate upon and give emphasis to them in light of the particular features; circumstances, issues and values of the Lavinia Nature Reserve described or identified in this management plan.

Objectives

Specific management objectives are to:

• conserve threatened species, habitats and communities of conservation significance, particularly those for which the area has been designated as a Ramsar Site, National Estate values, and natural diversity;
• conserve natural landscapes and sites of geoconservation significance;
• protect and retain the recreational and tourism character of the reserve;
• provide recreation and tourism opportunities and facilities based on appreciation and enjoyment of the natural, heritage, recreational and educational values of the reserve;
• Enrich visitor experiences of reserve values through education and interpretation; and
• develop public understanding and support of the values and goals for the management of the reserve;

2.4 Management Zones

Lavinia Nature Reserve is a relatively large area of land identified as significant for the conservation of natural biodiversity and to conserve sites of cultural significance. The area is also valued by the local community and tourists as an area to fish, walk, camp, and observe nature.

The vision and management objectives identified in the plan apply to the entire reserve, however some activities may be appropriate at different parts of the reserve in different seasons.

Objectives

The objectives of zoning are to:

- take account of localised features, conditions, and values;
- protect and enhance reserve values by concentrating and guiding tourism and recreation activities to designated locations; and
- provide a range of recreational and tourism opportunities consistent with the values of the reserve.

Policies

• The reserve is divided into five distinct management zones (See Maps 3-6):
  1. Lavinia Visitor Services Zone
  2. Sea Elephant River Visitor Services Site
  3. Recreation Zone
  4. Natural Zone
  5. Special Management Area

• Visitor facilities and services in each area will be limited to those provided for in Section 5 of this management plan

• A special management area has been identified as an area where public access will be restricted to protect the feeding and roosting habitat of the orange – bellied parrot between March and July annually. See Map 6.
## Table 1  Management Zones – Lavinia Nature Reserve

<table>
<thead>
<tr>
<th>Zone or Site</th>
<th>Description</th>
<th>Objectives</th>
</tr>
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<tbody>
<tr>
<td><strong>Lavinia Visitor Services Zone</strong></td>
<td>This zone encompasses Lake Martha Lavinia and Pennys Lagoon, Lavinia Beach between Lavinia Point and the northern reserve boundary.&lt;br&gt;&lt;br&gt;This zone receives a high number of day and overnight visitors and has high visitor impact. Day facilities include a picnic area with amenities at Pennys Lagoon and vehicle tracks.&lt;br&gt;&lt;br&gt;Informal camping occurs behind the foredunes on Lavinia Beach.</td>
<td>- provide recreational and tourism opportunities for day and overnight visits consistent with the natural and cultural setting;&lt;br&gt;- protect and conserve the recreational and tourism atmosphere and character;&lt;br&gt;- minimise the impact of recreation and tourism on significant natural and cultural features;&lt;br&gt;- protect, maintain and monitor the recreational and tourism character;&lt;br&gt;- provide recreational and tourism opportunities consistent with the above objectives; and&lt;br&gt;- consistent with the above, provide the principal visitor services and facilities for the reserve.</td>
</tr>
<tr>
<td><strong>Sea Elephant River Visitor Services Site</strong></td>
<td>Located in the southern end of the reserve, the site includes part of the Sea Elephant River estuary and adjacent land and is currently a low key day visitor destination&lt;br&gt;&lt;br&gt;The area has a picnic table, pit toilet and a boat launching site. The area also contains a marine farm and provides access for the farm lessees.</td>
<td>- provide recreational and tourism opportunities for day visitors consistent with the natural and cultural setting;&lt;br&gt;- protect and conserve the recreational and tourism atmosphere and character;&lt;br&gt;- minimise the impact of recreation and tourism on significant natural and cultural features;&lt;br&gt;- provide recreational and tourism opportunities consistent with the above objectives.</td>
</tr>
<tr>
<td>Zone or Site</td>
<td>Description</td>
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<tr>
<td>Recreation Zone</td>
<td>The Recreation Zone is primarily a corridor for recreational travel and access to beaches on Nine-Mile Beach between Lavinia Point and Cowper Point. It also provides for low key, nature based beach recreation.</td>
<td>- protect, maintain and monitor environmental and heritage features and values; and - provide for low impact, low density, non-intrusive recreational use and enjoyment of the area.</td>
</tr>
<tr>
<td>Natural Zone</td>
<td>Much of the Lavinia Nature Reserve has remained as a substantially undisturbed landscape with important environmental values. Much of this zone covers the more remote and rugged parts of the reserve with little evidence of development except for some remains of past human activity, such as firetrails. Parts of the zone are of particular significance for flora conservation, particularly the roosting and feeding habitat of the orange-bellied parrot and the southern hairy red snail. Protection of the different vegetation types, particularly high conservation value heathland communities and the sense of remoteness are the primary management concerns. By preserving the isolation and naturalness of the area, the diversity of recreational opportunity in the area is maintained.</td>
<td>- conserve the natural integrity of the zone; - protect, maintain and monitor the diversity of plant and animal species and communities; - protect, maintain and monitor geodiversity; - protect Aboriginal and historic heritage; and - allow sustainable recreational use but no new facilities or tracks are to be provided.</td>
</tr>
</tbody>
</table>
MAP 5
ZONES: RECREATION
and NATURAL ZONE

- Recreation Zone - Access between March and October
- Natural Zone
- Lavinia Nature Reserve
- Toilet
- Road / track

Produced by Information & Land Services
<table>
<thead>
<tr>
<th>Zone or Site</th>
<th>Description</th>
<th>Objectives</th>
</tr>
</thead>
</table>
| Special Management Area| An area around the Sea Elephant River estuary has been identified as critical roosting and feeding habitat for the orange-bellied parrot. In order to reduce the risk of disturbance to the parrots and reduce impact on the habitat, a special management area has been identified. | - conserve the natural integrity of the area;  
- protect the roosting and feeding habitat for the orange-bellied parrot;  
- protect, maintain and monitor the diversity of plant and animal species and communities;  
- protect, maintain and monitor geodiversity;  
- protect Aboriginal and historic heritage; |
LAVINIA NATURE RESERVE

MAP 6
SPECIAL MANAGEMENT AREA

- Lavinia Nature Reserve
- Special Management Area - Restricted Access between March and July

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3. Conservation

3.1 Climate

King Island experiences a mild maritime climate similar to other coastal areas of northern Tasmania and Bass Strait.

King Island receives the highest rainfall of all the Bass Strait islands with an average annual rainfall ranging from 750-1000mm. Rain is winter-dominant with all centres showing similar monthly distribution patterns.

3.2 Geodiversity

King Island consists primarily of a basement of Precambrian metamorphics overlain by Quaternary sands. Basement rock types include quartzites, slates, phyllites, schists, granulites, porphyroids and conglomerates (Jennings 1959).

Inland and coastal outcrops of solid rock west of the Lavinia Nature Reserve between Pennys Lagoon and Disappointment Bay are Precambrian granite. Precambrian granite also occurs within the reserve near the junction of Sea Elephant River and Saltwater Creek. Granite outcrops occur nearby around Mt Counsel.

Sandy deposits dominate Lavinia Nature Reserve. These include Pleistocene dunes in the west, which indicate the position of the Pleistocene coastline approximately 125 000 years ago. Some of the most significant geomorphological features are the parallel dunes and beach ridges. These parallel dunes are probably the longest in Tasmania extending north from the Sea Elephant River mouth to Lavinia Point. Dune development was halted by much lower sea levels during the last glaciation, which ended approximately 10 000 years ago, but recommenced 6 000 years ago. In both the Pleistocene and Holocene systems blown out parallel dunes have often developed into parabolic dunes.

Two major beaches within the reserve, the Nine Mile Beach and Lavinia Beach are composed of undifferentiated, calcareous sand and are highly susceptible to wind and wave erosion.

Immediately behind the beaches are the Holocene parallel dunes/beach ridges. The number of ridges increase northward from one or two near the mouth of the Sea Elephant River to over twenty inland near Lavinia Point.

Inland from the Holocene dunes is a flat depression occupied by the Nook Swamps. This area separates the older Pleistocene dunes and coastline from the younger Holocene dunes. The Holocene dunes have deflected the Sea Elephant River south. The Nook Swamps are either permanently inundated with water or are subjected to prolonged periods of waterlogging. These soils have a dark sandy peat surface overlying pale sand, which becomes darker with depth.

The Lavinia Point – Cowper Point Dunes have been assessed as an indicative area of National Estate significance as a geomorphological site.

The Pleistocene shoreline near the head of Nook Swamps consists of two groups of parallel dunes separated by a swampy depression. The western section of Lavinia Nature Reserve is a region of swamps and parallel and parabolic dunes. The soil is highly susceptible to waterlogging and the undulating areas consist of pale grey sand over a coffee coloured sand pan to a depth of greater than one metre.

The location of the Sea Elephant River mouth has varied considerably in the past and is continuing to do so. During the Pleistocene, the mouth was probably very close to the present confluence with Saltwater Creek. With the development of the Holocene dunes the Sea Elephant River has been forced south and over the last ninety years has moved up and down the coast.
Objectives

The objectives of geoheritage conservation in the reserve are to:

- protect, maintain and monitor geodiversity;
- protect, maintain and monitor sites of geoconservation significance;
- maintain the natural rates and magnitudes of change in earth processes; and
- minimise harmful impacts on geoconservation values.

Policies

- Potential adverse impacts on geodiversity and earth processes will be assessed when planning any development or action, including land rehabilitation and stabilisation (see Section 4.5).

- Management practices and development will avoid or otherwise minimise impacts on the integrity of sites of geoconservation significance.

- Protect the geoheritage National Estate values of significance at Cowper Point and the Nook Swamps

Actions

- Prepare an inventory of sites of geoconservation significance.

- Monitor the impacts of vehicles on the Lavinia and Nine Mile Beach in accordance with Section 5.4.3

3.3 Natural Landscape

The State Policy on Water Quality Management 1997 focuses on the achievement of water quality objectives for all water bodies. In accordance with the policy, protected environmental values are required to be set for the surface waters and ground waters within reserve. Because the reserve extends to low water mark, the marine waters between low water and high water are within the reserve for the purposes of the State Policy. The proposed protected environmental values are:

A. Protection of aquatic ecosystems:

- pristine or nearly pristine ecosystems for those watercourses with their headwaters in the reserve;
- modified (not pristine) ecosystems from which edible fish, crustacea and shellfish are harvested for all other waters, including marine waters, within the reserve; and

B. Protection of recreational water quality and aesthetics:

- primary contact for all marine waters within the reserve; and
- secondary contact for all fresh waters within the reserve; and
- aesthetics

Objectives

The objectives of natural landscape management in the reserve are to:

- protect, maintain and monitor the National Estate values of the natural landscape;
- maintain or enhance water quality designated by protected environmental values; and
- protect scenic values.

Policies

- Designated protected environmental values will be adopted as the minimum standard for water quality within the reserve.
### Actions

- Identify and protect significant natural landscape features and attributes that contribute to the National Estate value of the reserve, particularly the parallel dunes and the Sea Elephant River estuary.
- Identify and protect significant natural landscape viewfields.
- Assess the visual impact of proposed developments on natural landscape values before approval of such developments.
- Where feasible, remove, relocate, or replace facilities whose location or design significantly impact on natural landscape quality.

### 3.4 Flora

The vegetation of King Island reflects the constraints imposed by the physical environment and the effects of European land use. Since early European settlement, the vegetation has been dramatically altered with the use of fire for agriculture and for opening up the country for travel. The relationship between vegetation and fire is largely responsible for the pattern observed in the present vegetation of the reserve.

The Lavinia Nature Reserve contains the largest significant area of remnant native vegetation on King Island. One hundred and thirty nine species of higher plants have been recorded (Appendix 3). Of which seven species are endemic to Tasmania. A number of plants are considered rare or threatened: the scrambling ground fern Hypolepis distans is considered vulnerable at a state level and Lavinia Nature Reserve is the only reserve in Tasmania in which it has been recorded. Other species include; tiny caladenia Caladenia pusilla, common sneezewood Centipeda cunninghamii, starwort Callitriche sonderi, blueberry ash Elaeocarpus reticulatus, bog clubmoss Lycopodiella serpentina, tiny selaginella Selaginella gracillima, sticky daisy bush Olearia glutinosa, purple cudweed Gamochaeta purpurea, hyssop loosestrife Lythrum hyssopifolia and violet Viola cleistogamoides.

Lavinia Nature Reserve was identified during the Regional Forest Agreement process as an area containing remnant vegetation, which is ‘important in maintaining existing processes or natural systems at a regional or national scale’

Within the reserve three heathland communities have been identified and include: swamp paperbark dry heath dominated by Melaleuca ericifolia, coastal tea tree heath dominated by Leptospermum laevigatum and scented paperbark wet heath dominated by Melaleuca squarrosa. (Kirkpatrick 1999)

The main threat to the heathland communities within the reserve is the spread of the pathogen Phytophthora cinnamomi but inappropriate fire regimes also affect species composition and distribution.

Frequent cool firing has lead to the replacement of woody vegetation by bracken fields or tussock grasslands in much of the reserve. Fine fuels accumulate rapidly in these communities and the perceived fire risk often leads to further fuel reduction burning. Consequently, such fires often eliminate species, which regenerate from seeds, rootstocks or sensitive underground organs.

Off-road vehicles and motorbikes have caused considerable damage to the saltmarsh community along the Sea Elephant River estuary. The saltmarsh species are extremely fragile, easily destroyed, and take many years to regenerate.

### Objectives

The objectives of flora conservation in the reserve are to:

- protect, maintain and monitor natural flora diversity;
- protect, maintain and monitor threatened flora species;
protect, maintain and monitor plant communities of conservation significance; and
- minimise harmful impacts on reserve indigenous flora.

Policies

The following areas will be given high flora conservation priority:
- old growth forest communities;
- known and potential roosting sites of the orange - bellied parrot;
- sites of Hypolepis distans;
- saltmarsh communities adjacent to the Sea Elephant River estuary,
- heathland communities,
- the Nook swamps; and
- any area containing threatened flora species or communities of conservation significance.

- Identified adverse impacts in high conservation priority areas, including saltmarsh habitats and the Nook Swamps will be avoided or limited to those which are localised and of minimal impact.

- Only local provenance of species native to the reserve will be used in rehabilitation works unless written approval is given for alternatives.

- All practicable efforts will be made, consistent with the available resources, prevailing Fire Danger Index, fire intensity and fire crew safety, to exclude unwanted wildfire from or restrict its spread in high conservation priority areas.

Actions

- Complete preparation of a detailed vegetation map for the reserve.

- Monitor the impacts of boating on saltmarsh communities in the Sea Elephant River estuary in accordance with Section 5.4.1

- Prepare programs for ecological management burning, setting out the fire frequencies necessary to maintain viable populations of species and communities of conservation value.

- Identify, prepare and implement management programs for identified threatened flora species or communities of conservation significance.

3.5 Fauna

A comprehensive fauna survey has yet to be undertaken in the Lavinia Nature Reserve. Apart from species recorded exclusively in the remnant wet forest of King Island, it is likely that the majority of species recorded for the island can be found in the reserve.

Over 170 bird, 20 mammal and 9 reptile species have been recorded in the wild on King Island since European occupation (Appendix 4 and 5).

Of the 170 bird species, approximately three-quarters are considered resident for all or some parts of the year (Appendix 5).

Since European discovery at least three species have become extinct; the King Island emu (c1805), common wombat (c1805) and spotted-tailed quoll (c1923)

There are currently two endangered bird species on the island, the orange-bellied parrot Neophema chrysogaster and the King Island subspecies of the brown thornbill Acanthiza pusilla.

The orange-bellied parrot is one of Australia’s most threatened bird species with a total population of less than 200 individuals.

The species breeds in a narrow coastal strip in south west Tasmania between October and March, and migrates to the Australian mainland coast between the Gippsland Lakes in Victoria and the Coorong in South Australia for winter. The species feeds on the seed and fruit of sedge-land and heathland plants during breeding and saltmarsh and coastal strandline plants at other times of the year.
The saltmarsh habitat of the Sea Elephant River estuary is an important migration feeding and roosting habitat for the parrots enroute to the mainland. Birds arrive in the area in March and the majority have left by July, although some individuals may overwinter at the estuary.

The saltmarsh is approximately 200ha and is a critical feeding habitat for the parrot, because it is the only substantial area of natural feeding habitat for the species on the island.

Important plant species for the parrot at or near the estuary include: Sarcocornia quinqueflora, Acaena novae-zelandiae and Cakile maritima for feeding; Sclerostegia arbuscula for perching (and occasional feeding); and the taller shrubs and trees dominated by Acacia verticillata, Leptospermum scoparium, Melaleuca ericifolia and M. squarrosa for roosting.

Very little is known about the endemic King Island subspecies of the brown thornbill. It is extremely rare and was last recorded in 1971. It has only been collected on three occasions, in 1902, 1968 and 1971. The subspecies is difficult to identify in the field because of its similarity to the Tasmanian thornbill Acanthiza ewingii, which is abundant on King Island. Consequently, there are no reliable sight records in the literature. Specimens have been collected in dense mixed dry scrub and it is therefore highly likely that if the subspecies still exists then it will occur throughout the Leptospermum sp. scrub of the Lavinia Nature Reserve.

A colony of fairy tern Sterna nereis often nests on the unvegetated sand spit on the southern side of the Sea Elephant River estuary mouth.

Several other ground nesting birds nest on the Nine Mile Beach including the hooded plover Charadrius cucullatus and pied oystercatcher Haematopus ostralegus. The breeding areas, eggs and chicks of these species are susceptible to being destroyed by constant disturbance and activities such as beach driving.

Short-tailed shearwaters Puffinus tenuirostris are present on King Island from September to May and nest in the reserve in colonies in the dunes behind Lavinia Beach.

King Island is the southern limit of the distribution of several other bird species such as the dusky moorhen Gallinula tenebrosa, masked woodswallow Artamus cyanopterus and the golden – headed cisticola Cisticola exilis.

The marshy grasslands surrounding the Sea Elephant River estuary are an important habitat for the only known Tasmanian population of the golden – headed cisticola Cisticola exilis.

Likewise, the old – growth paperbark swamps, particularly The Nook Swamps are important for the protection of the regionally threatened scrubtit Acanthornis magnus.

Many species such as the nankeen night heron Nycticorax caledonicus and the Australian kestrel Falco cenchroides are common on King Island but are rarely observed on the Tasmanian mainland.

Recent changes in the taxonomy of birds have identified several new sub – species unique to King island. These species may be recommended for listing as nationally threatened under a review of The Threatened Bird Action Plan (Garnett in prep.).

Seven native and one introduced freshwater fish species occur on King Island none of which are considered threatened (Appendix 4). All of the native species occur in the Sea Elephant River.

One hundred and seventy invertebrates have been recorded for King Island or in the waters surrounding King Island (Appendix 4). There is one rare terrestrial invertebrate known to occur on King Island. A terrestrial snail, the southern hairy red snail Austrochloritis victoriae previously thought to be extinct in Tasmania, was rediscovered in the
The snail lives in damp areas with well-developed paperbark, tea tree and banksia scrub. The list of invertebrates is by no means complete and research into the species and their ecological requirements is needed. The paucity of data on animal abundance highlights the need for faunal surveys and research in the reserve. Baseline data is vital to formulate management decisions.

**Objectives**

The objectives for fauna conservation in the reserve are to:

- protect, maintain and monitor threatened fauna species, in particular the orange-bellied parrot;
- protect, maintain and monitor the diversity of indigenous fauna and habitat;
- minimise harmful impacts on indigenous fauna and habitats; and
- provide opportunities for visitors to encounter wildlife.

**Policies**

- The following reserve habitats will be left undisturbed or otherwise given special protection:
  - orange-bellied parrot feeding and roosting habitats;
  - well developed paperbark, tea tree and banksia scrub habitat for the southern hairy red snail;
  - any other threatened species habitat; and
  - habitats of beach breeding birds during the breeding season between October and March.

- All practicable efforts will be made to prevent adverse fire and other impacts on the lifecycle of threatened species.

- Use of shore breeding birds’ areas may be limited or access restricted if monitoring shows disturbance of breeding.

- Information and education will be provided to visitors on minimising impacts on shore breeding birds.

- Animal management and control measures, including fencing, culling, biological control, removal, or relocation, will be adopted if studies show them to be warranted and practicable.

- A special management area has been identified on the Sea Elephant River estuary to reduce the risk of disturbance or impact on the habitat of the orange – bellied parrot in accordance with Section 5.5.5.

**Actions**

- Undertake a systematic survey of the fauna and faunal communities in the reserve and adjacent Crown land.

- Prepare programs of ecological management, setting out the fire frequencies necessary to protect the habitat of the orange – bellied parrot and the southern hairy red snail.

- Monitor the breeding success of shorebirds at the Sea Elephant River estuary and Nine-Mile Beach.
• Protect nesting shore bird habitat between Lavinia Point and Cowper Point by limiting vehicle access between October and March. In accordance with Section 5.4.3.

• Monitor orange – bellied parrot feeding and roosting habitats including those in adjacent unallocated Crown land.

• Upgrade and maintain the riverside firetrail to protect the roosting and feeding habitat of orange – bellied parrot in accordance with Section 4.1

3.6 Aboriginal and Historic Heritage

3.6.1 Aboriginal Heritage

The Aboriginal heritage of Lavinia Nature Reserve has not been systematically investigated. European knowledge of human history in the King Island area is restricted to a combination of historical records and archaeological investigation of the sites created by thousands of years of Aboriginal occupation and use. Evidence shows that Aboriginal people have lived in Tasmania continuously from at least 37 000 years ago.

Archaeological evidence of Aboriginal occupation of King Island has identified several sites. The majority of these sites include stone artefact scatters and middens.

The sites are principally located along the West Coast or inland along watercourses or lagoons.

Evidence from these sites indicates that Aboriginal people occupied the area during the last Ice Age, when King Island, Tasmania and mainland Australia were connected via the Bassian Plain approximately 14 000 years ago.

The archaeological evidence has been interpreted to suggest that during the last 6 000 years Aboriginal occupation of King Island was seasonal rather than continuous. If this interpretation is correct, it indicates that west and north west Aboriginal groups had watercraft capable of crossing the fifty five kilometre stretch of water between the smaller Tasmanian Islands and King Island.

Several other midden sites have been recorded on King Island. However, these middens have been interpreted as contact period sites dating to the early nineteenth century. The middens, probably created by Aboriginal women in association with sealers, are located in close proximity to known early sealing camps. In general, the middens predominantly comprise of warrener shellfish.

Objectives

The objectives of management of Aboriginal heritage are, in cooperation with the Aboriginal community, to:

- identify and record sites of Aboriginal heritage;
- protect and conserve Aboriginal heritage; and
- interpret Aboriginal heritage

Policies

• Aboriginal heritage values will be assessed and protected in accordance with this management plan and any agreed national or state charter or guidelines for Aboriginal sites

• Sites of Aboriginal significance will not be publicised unless the site has been assessed, in cooperation with the Aboriginal community, for educational or interpretative use. Where applicable, make use of any agreed Aboriginal interpretation strategy.

• The Aboriginal community will be consulted on any undertaking or development that may impinge upon Aboriginal sites.

• All proposed landscape modification, development, or maintenance within the park will be subject to the prescriptions of Section 4.5.
• As far as possible, development will be located well away from areas of Aboriginal heritage.

• Aboriginal heritage will not be deliberately disturbed for management, development or research purposes unless the Director determines there is no practicable alternative and a permit to disturb Aboriginal relics has been issued under the Aboriginal Relics Act 1975.

• Consult with the Aboriginal community on the management of Aboriginal heritage.

**Actions**

• In cooperation with the Aboriginal community, identify and record Aboriginal sites.

• Develop interpretation of the Aboriginal heritage in consultation with the Aboriginal community.

• Monitor Aboriginal sites for, and protect them from, damage.

### 3.6.2 Historic Heritage

Following on from Bass and Flinders’ discovery of a navigable strait in 1798, the British Government reacted quickly to the news of this short cut to Sydney sending instructions to the captain of the *Lady Nelson* to sail from South Africa west to east through the newly discovered strait. This was accomplished in 1800 but without sighting King Island.

On 1st January 1801, Captain John Black in the ship *Harbinger*, while sheltering in the lee of New Years Isles, named the nearby large island King Island in honour of the new Governor of New South Wales.

Although regarded by early surveyors as useless for agriculture and settlement, King Island was a virtual gold mine for those who sailed in to harvest its enormous population of seals and sea elephants.

King Island, by its very position across central Bass Strait and its scattering of offshore rocks, reefs and islands, was a hazard for many ships sailing east and west. By the turn of the nineteenth century, over fifty-seven ships were wrecked on the shores of King Island. Few archaeological surveys have been conducted and to date no European heritage sites have been recorded within the reserve.

King Island was the second known target of sealers, after Cape Barren Island in the late 18th and early 19th century. Three main camps were established on the island, including Sea Elephant Bay. It is reported that a sealers’ camp was located on a hill at the northern end of Sea Elephant Bay the site of which would be very close to, or within, the reserve boundary. Another possible site is Cowper Point, named after the second officer of the *Nautilus*, Daniel Cooper who established a camp for his sealing operations.

In Kostaglou (1996), a source alleges that in the 19th century, the mouth of the Sea Elephant River is thought to have been a kilometre further north than now. It could not be crossed at low tide except by boat; it is also said that sometimes whales, as well as seals were boiled down there for blubber.’

In 1888, King Island was thrown open to free settlers and by 1901, the island’s population had grown to 240. After the end of both World Wars, soldier settlement schemes were established on King Island and land clearing began on a massive scale.

**Objectives**

The objectives of historic heritage conservation and management are to:

- identify and record historic heritage in the reserve;
- actively conserve and maintain the heritage integrity and quality of significant cultural landscapes, heritage structures and vegetation, and other heritage features;
- protect and conserve historic heritage from damage.
**Policies**

- Conservation and management of historic heritage in the reserve will adhere to the Burra Charter of Australia ICOMOS (Marquis-Kyle & Walker, 1992) and its associated guidelines.

- A conservation policy statement or conservation plan, including specific assessment of significance, will be prepared before any decisions about major works, use, removal or interpretation of individual elements of historic heritage. Such statements or plans will be prepared in accordance with the principles outlined in the Burra Charter, using the methodology outlined in Kerr (1996).

- Adaptations to heritage structures as may be provided for in a conservation policy statement or conservation plan will be readily reversible and new services will not be apparent from outside buildings, or impact upon heritage values.

- Accurate, detailed working documentation, appropriate to the scale and significance of the works, will be prepared before any conservation works.

- Accurate, detailed documentation, appropriate to the scale and significance of the works, will be prepared to record any conservation works “as built”.

- To avoid disturbance of historic ground features, including quarries, sub-surface remains, and archaeological deposits such as building footings, drainage channels and tracks, an archaeological assessment will be required before approval of any development or ground-breaking work in areas of heritage significance (see Section 4.5).

**Actions**

- Identify, record and assess the significance of all historic features.

- Make safe any dangerous structures, in keeping with their heritage significance.

- Remove any damaging uses, activities and developments that intrude upon or detract from heritage values.

- Prepare conservation policy statements or plans for all significant historic heritage features.

- Catalogue, appropriately store, or present historic artefacts to visitors. When warranted, adopt conservation measures.

- Provide suitable fire protection for all heritage structures.

**3.6.3 Cultural Landscape**

Lavinia Nature Reserve contributes to a cultural heritage landscape of significance which is based on an extensive record of oral history stories of shipwreck and sealing.

**Objectives**

The objectives of cultural landscape management in the reserve are to:

- identify and maintain significant heritage vegetation and cultural landscapes; and
- revegetate or allow natural regeneration of all other pastures and disturbed areas.

**Policies**

- Cultural landscape management will be based on:
  - identification, management and maintenance of significant cultural landscapes and heritage vegetation; and
  - identification and protection of significant viewfields.

- Relevant archaeological, historic heritage, botanical and zoological
information will be used in developing cultural landscape management programs.

• Introduced plants of heritage significance will be retained and, if necessary, replaced to maintain continuity of the historic cultural landscape.

• Cultural landscape maintenance and renewal will be based on the researched layout of heritage plantings and cleared areas.

*Actions*

• Identify, record and assess the significance of any historic plantings and cultural landscapes.
4 Protection

4.1 Fire Management

Since the arrival of Europeans King Island has been subjected to a regime of frequent and extensive firing which has dramatically altered the vegetation particularly within the reserve where bracken fields and tussock grassland have replaced woody vegetation.

The vegetation of the reserve is extremely conducive to fire with extensive areas of bracken fields and tussock grasslands, sedgeland, heath and scrub communities.

Frequent fires have occurred in recent years within the reserve:
- In 1972 a wildfire burnt from Lavinia Point to Nook Swamps. Later in the same year, a larger fire burnt out most of the Lavinia Nature Reserve excluding the Nook Swamps.
- In 1978, an escaped land clearing fire burnt an extensive area near the previously known Sea Elephant River Wildlife Sanctuary. Sections of the Nook Swamps were again burnt.
- In 1985, a fuel reduction burn of 50ha was conducted along the northern end of the reserve boundary.
- In 1992, a wildfire burnt much of the southern section of the reserve including a large area of the Nook Swamps.
- In December 1996, a wildfire burnt approximately 400ha in the northern section of the reserve.

The Parks and Wildlife Service is responsible under the Fire Service Act 1979 and the Fire Service (Miscellaneous) Regulations 1996 for all aspects of fire management within the reserve, including prevention, containment and suppression. There is a duty of care towards the safety of visitors and neighbours and their property.

The highest priority for wildfire suppression is protection of visitors, neighbouring properties, and reserve facilities and buildings. The safety of walkers and campers in the event of a bushfire is of particular concern.

The existing network of firetrails was originally developed to facilitate a regime of cool mosaic burning in the reserve. Some burning was carried out, but diminishing resources made it difficult to continue the practice.

Nevertheless, during a wildfire, fire behaviour and suppression necessity will determine on ground actions and may mean that priorities need modification on the day of a wildfire. High fuel loads in some areas may preclude direct suppression of any actively spreading fire, which might occur in the Natural and Recreation Zones.

An area near the Sea Elephant River has been identified as a priority area for wildfire suppression in order to protect the roosting and feeding habitat of the orange-bellied parrot. See Map 6.

It is also important to protect areas of well-developed paperbark; tea tree and banksia scrub from frequent or high intensity fires to protect the habitat of the southern hairy red snail.

Objectives

The objectives of fire management are to:
- protect areas of high flora and fauna conservation significance;
- protect neighbours and their property;
- maintain or improve nature conservation values.

Policies

- Based on contemporary knowledge, fire management priorities will be directed towards fire regimes and provision of fire protection considered necessary to protect human life and property.
- Fire management will be undertaken in consultation with relevant authorities and local landholders, taking into account the interactions between the
characteristics of fuel accumulation, slope and aspect.

- Fire management and suppression procedures will accord with the Inter-Agency Fire Management Protocol agreed between the Parks and Wildlife Service, the Tasmania Fire Service and Forestry Tasmania (Forestry Tasmania et al, 1996).

- All fire management actions including habitat management burning, fuel reduction burning, water hole and fire track construction or maintenance will be undertaken in accordance with Section 5.5.

- Fuel reduction, including burning, slashing, mowing, and similar methods, may be used for wildfire prevention and containment.

- Ecological management burning may be undertaken.

- Fire frequencies set out in ecological management programs will aim to maintain viable populations of plants and animals and communities of conservation significance, in accordance with Sections 3.4 and 3.5.

- All practicable measures consistent with this management plan will be taken to diminish the risk of wildfires occurring in the reserve and to lessen their impact.

- Existing vehicular tracks will be maintained if they are required for fire management. Tracks no longer required will be closed unless suitable for recreation use.

- When fire danger conditions warrant, the Director or authorised staff may close all or some areas of the reserve by restricting access.

- Except on days of relatively low Fire Danger Index, suppression procedures will usually involve bringing the fire to safe edges provided by the sea, firebreaks, and any low fuel areas.

- Within the capacity to do so, Parks and Wildlife Service personnel and equipment will be provided for effective first attack capability. Further assistance may be sought through the Tasmania Fire Service and Forestry Tasmania.

- Open fires will not be permitted within the reserve and a ‘fuel stove only area’ policy will be adopted.

- An area within the Sea Elephant River (see Map 6) has been identified as a priority for wildfire suppression.

**Actions**

- Develop and implement a Fire Management Plan for the reserve.

- Inform visitors of the “fuel stove only policy”

- Upgrade and maintain the firetrail between Bicentennial Road and the Sea Elephant River which has been identified as a priority area for wildfire suppression.

- Prevent public vehicular access to the riverside firetrail.

- Close and rehabilitate firetrails 12 – 17 shown on Map 2.

- Provide suitable fire protection for all structures.

- Maintain fire suppression equipment to operational standards.

- Train staff in fire prevention and suppression procedures, including fuel reduction burning, wildfire and structural fire fighting, use of fire fighting equipment, and actions to be taken at different fire ratings.

### 4.2 Pests, Weeds, and Diseases

#### 4.2.1 Introduced Fauna

A number of introduced plant and animal species have established wild populations on King Island and in the Lavinia Nature Reserve and pose varying threats to the
native fauna and flora.

Feral cats *Felis catus* are widespread on the island and have been observed throughout the Lavinia Nature Reserve. Feral cats are considered a major threat to the endangered orange-bellied parrot because the birds feed on the saltmarsh of the Sea Elephant River and are therefore susceptible to predation (Brown and Wilson 1984).

Other introduced animal species known or likely to occur in Lavinia Nature Reserve include; Indian peafowl *Pavo cristatus*, common pheasant *Phasianus colchicus*, Californian quail *Lophortyx californicus*, skylark *Alauda arvensis*, goldfinch *Carduelis carduelis*, greenfinch *Chloris chloris*, house sparrow *Passer domesticus*, common starling *Sturnus vulgaris*, common blackbird *Turdus merula* and wild turkey *Meleagris gallopava*.

All these introduced species have impacts on native species and ecosystems. The presence of species not indigenous to the reserve is out of keeping with the reasons for their reservation.

**Objectives**

The objectives of management of introduced fauna in the reserve are to:

- eradicate introduced species where this is feasible and warranted by the damage being caused; and
- control and manage introduced species where eradication is not practicable or warranted.

**Policies**

- Any proposal to introduce or translocate to the reserve Tasmanian fauna not historically indigenous within the reserve will require a prior comprehensive scientific assessment before approval.

- Eradication of introduced fauna will only be attempted where populations of non target species are not threatened by the proposed methods, unless the threat from the introduced species is greater than the threat from eradication methods.

- Eradication, control, and containment programs and priorities will be based on clear, well documented contemporary knowledge or, where necessary, additional research.

- In accordance with the *National Parks and Reserved Land Regulations* 1999, stock, pets and other domestic animals are not be permitted in the reserve.

**Actions**

- Implement a feral cat eradication program within the Sea Elephant River Visitor Service Site and Special Management Area.

- Monitor introduced animal populations and undertake regular surveys of each species.

**4.2.2 Weeds**

Many plants have been introduced to the reserve. Some have become weeds, invading bushland, and competing with native species. Effective control and management of weeds is necessary and priority targets for control need to be identified. Planning and resources are required. Landowners and land managers have a responsibility to prevent weeds spreading from their land to neighbouring tenures.

Ragwort *Senecio jacobaea* and spear thistle *Cirsium vulgare* have been found in Lavinia Nature Reserve. These species are declared secondary weeds under the *Noxious Weeds Act* 1964.

Introduced marram grass has been found on beaches in the reserve. It is considered an invasive weed, which alters natural dune and beach processes. Provided resources are available, there are effective methods for removal, such as the planting of boobyalla *Acacia sophorae*.

**Objectives**

The objectives of weed management in the reserve are to:
eradicate weeds where this is feasible and warranted by the damage being caused; and
- control and manage weeds where eradication is not possible or warranted.

Policies

- In general, weed management will accord with the provisions of the PWS introduced plants policy

- Weed management will be linked with:
  - protection of natural and cultural values;
  - erosion control; and
  - revegetation works.

- An integrated regional approach to weed management, involving neighbouring land owners and managers, will be supported.

- Eradication or control of weeds will only be attempted where non target species are not threatened by the proposed methods, unless the threat from the weeds is greater than the threat from eradication methods.

- Weed eradication, control, and containment actions and priorities will be based on clear, well documented contemporary knowledge or, where necessary, additional research which:
  - identifies species requiring priority for weed control;
  - identifies areas where weeds should be eradicated or controlled, including where they should be retained as an interim means of environmental protection;
  - assesses any threat plants of heritage significance pose as environmental weeds;
  - specifies methods of removal and disposal of weeds;
  - identifies protocols for the use of herbicides and fertilisers;
  - prescribes the appropriate time of year for control; and
  - outlines the structure of any further research into the most effective means of control.

- The assistance of volunteers will be sought for control and eradication where suitable planned and programmed works and effective supervision or direction are available.

- Introduced plants and cultural landscapes retained for their heritage significance will be managed to prevent their invasion of indigenous plant communities.

- Priority will be given to the eradication of ragwort, spear thistle and marram grass.

Actions

- Implement the PWS North West District weed strategy.

- Monitor the reserve for new weed invasions

- Eradicate, control or contain marram grass outbreaks on Lavinia and Nine Mile Beaches.

4.2.3 Phytophthora cinnamomi

Phytophthora cinnamomi is a microscopic fungus, which lives in the soil and roots and causes dieback or death in a large number Tasmanian native plant species in sedgeland, heath, open forest and disturbed rainforest.

The cinnamon root rot fungus Phytophthora cinnamomi is present on King Island and is widespread in Lavinia Nature Reserve along roadsides and firetrails. The pathogen is also likely to be present along fence lines between the reserve and adjacent private land. Spread of the pathogen from these points of infection is facilitated by the sandy texture of the substrate, the mild climate, frequently moist conditions, off-road use of vehicles and transport of spores by wildlife.

Although the disease can spread by natural means, it is spread more rapidly and over greater areas by human activity. The disease can be spread in infected soil carried on boots, wheels and tracks of vehicles and machinery and by animals, which scratch or dig in the soil.
Except for localised infections, once an area is infected there is no known practical means to eliminate it from that area. Treatments are being trialed to determine whether the impacts may be reduced. However, these will only be practical for treating threatened species and limited areas.

Care must be taken to avoid spreading Phytophthora to vulnerable areas yet uninfected. If any new infection is identified, it may be practical, with swift action, to attempt to control disease development with chemicals.

**Objectives**

The objectives of Phytophthora cinnamomi management are to:

- limit the spread of Phytophthora cinnamomi in the reserve; and
- educate the community in Phytophthora prevention hygiene measures.

**Policies**

- All practicable steps will be taken to prevent the spread of Phytophthora into uninfected areas where efforts to exclude the disease are warranted by the values at risk.

- Any imported soil, fill or crushed rock used in any construction project in areas known to be free of Phytophthora and where exclusion of the disease is a priority, will be obtained from sites identified as Phytophthora - free, using Phytophthora-free machinery.

- Where direct seeding is not used, all plants used in planting works within areas free of Phytophthora will be propagated, in Phytophthora-free soil or other medium from certified Phytophthora- free nurseries.

**Actions**

- Undertake periodic surveys of Phytophthora - prone areas including the heathland communities to monitor the disease status of the reserve

- Inform visitors of the Phytophthora threat to the reserve.

- In general, limit development and recreation activity to those areas already infected or of low priority for disease exclusion, such as the Lavinia Visitor Services Zone and Sea Elephant River Visitor Services Site and Recreation Zone.

### 4.3 Soil Conservation and Erosion Control

Erosion is a problem within Lavinia Nature Reserve, partly due to the high rainfall and wind experienced on King Island.

Activities such as off-road driving on sand dunes have resulted in vegetation being destroyed allowing blowouts to develop. Similarly, the use of vehicles on the Sea Elephant River estuary has resulted in a significant reduction in saltmarsh and strandline communities.

Some action has been taken to combat erosion but more work is required to control existing erosion problems and prevent future degradation.

A sandpit is located within the reserve boundary east of Lake Marth Lavinia. The pit has not been used for many years, is not currently licensed and requires rehabilitation.

**Objective**

The objective of soil conservation and erosion control in the reserve is to:

- prevent erosion and rehabilitate damaged areas.

**Policies**

- Erosion hazard and status assessments will be made where significant ground disturbance or soil exposure is proposed.
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• Land rehabilitation and stabilisation will be carried out based on a prior geomorphological assessment.

• Vehicles will not be permitted on the saltmarsh communities in the Sea Elephant River estuary in accordance with Sections 3.4 and 5.5.5.

Actions

• Rehabilitate, revegetate or otherwise stabilise disturbed or eroding areas, including unwanted vehicular trails.

• Monitor Lavinia and Nine Mile beaches and dunes for erosion and dune stability.

• Construct and maintain a suitably designed sand crossing at the end of the Martha Lavinia Road for vehicle access on to the Lavinia Beach in accordance with Section 5.4.3

• Rehabilitate the sandpit east of Lake Martha Lavinia.

• Construct and maintain a gate to prohibit vehicle access onto the Sea Elephant River estuary, in accordance with Sections 5.4.3 and 5.5.2

• Close and rehabilitate the eastern boat launch site on the Sea Elephant River in accordance with Section 5.4.1

4.4 Managing Visitor Impacts

Visitor services are provided to assist visitors in the reserve minimise the impacts of use.

Firewood collection is causing degradation around Pennys Lagoon and inappropriate use of vehicles at the Sea Elephant River is damaging the natural values of the area.

Objectives

The objectives for managing visitor impacts are to:

- protect, maintain and monitor environmental and heritage values;
- protect, maintain and monitor the recreational character of the reserve; and
- maintain the reserve in a state that is valued by visitors.

Policies

• Visitor services and visitor activities will be encouraged in ecologically sustainable areas of the reserve.

• The best available and practicable technology will be used to maintain environmental quality in areas subject to use.

• The maximum party size for licensed walking tour groups will be consistent with the principles of the Statewide Walking Tracks Strategy and Marketing Plan 1998.

• The general public will be encouraged to observe the same party size requirements as licensed groups.

• Toilet facilities will be managed to ensure that adjacent water bodies are not polluted by waste discharged from them.

• Camping areas will be designated within the Lavinia Visitor Services Zone and, if necessary, tent sites defined to prevent environmental damage (See 5.5).

Actions

• Provide environmentally sustainable toilets within the Lavinia Visitor Services Zone and Sea Elephant River Visitor Services Site.

• Inform visitors of, and encourage them to apply techniques for minimal impact use of the reserve.

• Enforce the permit conditions and/or codes of conduct for the use of motor vehicles and boats. See Sections 5.4.1 and 5.4.3.
4.5 Managing Development Works

Development works can include manipulative research, construction, relocation or repair of a walking or vehicular track, erosion control works, and erection of signs or gates.

Objectives

The objectives of managing development works are to:

- avoid or minimise the impact of development works on reserve values;
- protect, maintain and monitor the special tourism and recreation character of the reserve; and
- foster public confidence in approved developments.

Policies

• In the reserve facilities, services and other development will be limited to that provided for in the management zones identified in this management plan.

• In site plans, review the design, placement and construction of existing visitor facilities and prepare a strategy for the long term development and management of such facilities. Consider rationalisation of facilities where conditions are sub-standard and where impacts or demand do not warrant or demand the number or type of facilities provided.

• New private memorials or commemorative plaques will not be permitted in the reserve.

• Public memorials or commemorative plaques may be permitted in the reserve if they commemorate events or people of the area that are of regional, state, national or international significance and are approved by the Director.

• With the approval of the Director, plaques acknowledging reserve infrastructure or services provided by bequests or commercial sponsorship may be attached to the infrastructure and include a company name and logo but no product advertising will be permitted on such plaques.

Actions

• Undertake site planning for the Lavinia Visitor Services Zone and Sea Elephant River Visitor Services Site.
5 Visiting the Reserve

5.1 Understanding the Reserve Visit

Visitor numbers to Lavinia Nature Reserve have not been recorded. The Tourism Visitor Survey for King Island 1996 indicates that a total of 10,460 people stayed at least one night on the island and 3,984 (38%) visited Lavinia Nature Reserve.

Tourist buses regularly conduct tours to the northern section of the reserve to Lake Martha Lavinia, Pennys Lagoon and Lavinia Beach. Both King Island residents and tourists use the Lavinia Nature Reserve for a number of recreational activities.

Most visitors to the reserve visit either the Sea Elephant River or the Lavinia Beach and lakes area by vehicle. Although no visitor statistics are collected for the reserve, the summer months appear to be the busiest time for visitors.

Visitors with boats use the beaches around the coastline of the reserve as a base for fishing, launching boats further south at Naracoopa or Grassy Harbour.

There are two broad categories of visitors to the reserve:
- day visitors consisting primarily of small family groups and coach tour passengers, but also including independent recreators to fish, walk and surf, especially at Lavinia Beach.
- overnight visitors to Lavinia Beach consisting mainly of King Island residents during summer and holidays.

Objectives

The objectives of understanding the reserve visit are to:
- understand visitor pressures on the reserve; and
- provide the basis for effective visitor management.

Policies

- Visitor research will be focussed on improving the inventory and understanding of visitor numbers and characteristics, behaviour, needs and expectations, and assisting visitor management.

Actions

- Record visitor numbers to the Lavinia Visitor Services Zone and Sea Elephant River Visitor Services Site.
- Monitor and investigate visitor pressures on the reserve, in particular the use of the camping area at Lavinia Beach and day use area in Sea Elephant River Visitor Services Site.

5.2 Promoting the Reserve

Lavinia Nature Reserve is characterised by an unspoiled natural environment where visitors can relax at the beach, fish and soak up the landscape or learn about its natural values.

Bird watching has become a niche tourism market worldwide and the Sea Elephant River area provides easy access to view many of King Island’s species, including limited opportunities to view the orange – belled parrot.

The reserve is an important component of tourism on the island, Lavinia Beach being popular with recreators, campers and independent visitors to the island.

Good marketing and pre-visit information will attract visitors seeking the experiences provided by reserve. It will also allow visitors to plan their visit to the island to experience the variety of attractions available.
The objectives of promoting the reserve are to:
- increase the profile of the reserve features and values with potential visitors; and
- encourage visits to the reserve and the island.

Policies

The tourism and recreational themes promoted for the reserve will be:
- spectacular geodiversity: dune landforms and coastal processes;
- important habitat for beach breeding birds and the orange–bellied parrot,
- heathlands;
- surfing, fishing, walking; and
- accessible.

- All tourism and recreational development and marketing for the reserve should conform with, where possible, and emphasise the tourism and recreational themes.
- Cooperative promotion of the reserve with regional tourism groups will be encouraged.

Actions

- Liaise with Tourism Tasmania, the King Island Council and local tourism groups in promoting the reserve as a day tour destination.
- Develop and implement a sign plan for the reserve to promote and guide visitors around the reserve.

5.3 Interpretation and Education

The objectives of interpretation and education for the reserve are to:
- encourage pre-visit awareness of special recreational and tourism character, facilities, opportunities and experiences;
- reveal the diversity and values of the natural and heritage features of the reserve; in particular the dune landforms and unique flora and fauna;
- explain the different periods of people’s use of the reserve;
- encourage visitors to pursue their interests and explore what the reserve has to offer;
- realise the educational values of the reserve;
- canvas issues to be confronted in managing the reserve;
- increase public awareness of safety issues; and
- inform visitors of reserve etiquette and minimal impact practices.

Policies

- High priority will be given to provision of good quality visitor information and interpretation.

- Interpretation programs and facilities will mainly be concentrated in the Lavinia Visitor Services Zone and Sea Elephant River Visitor Service Site. Some basic interpretation may be provided in the Recreation Zone. No interpretation facilities will be located in the Natural Zone.

- Use of the reserve for teaching about its environmental and heritage values will be encouraged.

- School and other groups undertaking educational activities will be encouraged to discuss their proposed program with staff when planning their visit.

Actions

Visitors are increasingly looking to enjoy, understand and appreciate their visit to the reserve through high standard presentation of information, interpretation and education.

Interpretation and education are critical to the delivery of quality reserve experiences, as well as fostering an appreciation of and caring attitude towards the reserve (Department of Tourism, Sport and Recreation, 1994).
• Prepare and implement an interpretation plan to guide development of interpretation facilities in the reserve.

• Provide prospective reserve visitors with pre-visit information.

• Upgrade interpretation at Pennys Lagoon for day visitors.

• Investigate the development of a high quality walking track with interpretation on the orange – bellied parrot within the Sea Elephant River Visitor Services Site in accordance with section 5.4.4

• Educate and encourage visitors to adopt safe practices and provide them with sufficient information about potential hazards to enable them to make responsible decisions.

5.4 Access

Objectives

The objectives for access to and within the reserve are to:

- maintain, develop and promote opportunities for people, including those with disabilities, to visit;
- protect reserve values by concentrating and limiting developed visitor arrival points and travel routes to designated locations in the Lavinia Visitor Services Zone and Sea Elephant River Visitor Services Site.

5.4.1 Boating

Boating occurs on Lake Martha Lavinia, Pennys Lagoon and the Sea Elephant River and is mostly confined to non-motorised craft (canoes, kayaks, rowing boats etc.). Most boating is by camping and fishing enthusiasts.

Powerboats have previously been used on Lake Martha Lavinia for water skiing, but the lake no longer contains enough water to carry out the sport. Boating, usually in small dinghies also occurs on the Sea Elephant River.

Within the Sea Elephant River estuary, boating has been identified as an alternative to vehicle driving along the river, which may limit the damage to the saltmarsh habitat, an important food source for the orange – bellied parrot.

To further reduce the disturbance to the orange- bellied parrot a speed limit will be introduced on the Sea Elephant River estuary.

The estuary adjoins important roosting and feeding habitats for the orange-bellied parrot. See Map 6.

To protect these habitats a special management area has been identified and boating within the area will not be permitted between March and July upstream from the boat-launching site. See Map 6.

Boat access to the whole of the Sea Elephant River estuary will be permitted outside these months.

Policies

• The use of motorised boats on Lake Martha Lavinia and Pennys Lagoon will not be permitted

• One boat launching site at Sea Elephant River will be maintained and alternative sites will be closed and rehabilitated in accordance with Section 4.4

• Boating on the Sea Elephant River will not be permitted upstream of the boat-launching site between March and July inclusive.

• Boat access to the whole of the Sea Elephant River estuary will be permitted between August and February annually.

• In accordance with 15 (3) National Parks and Reserved Land Regulations 1999 signs will be displayed restricting speed limits of vessels to five knots and identify areas of operation.
• The use of motorised boats in the Sea Elephant River will be monitored and use modified if the need arises.

**Actions**

• Inform visitors of the restrictions of the use of motorised boats in the reserve.

• Maintain one boat launching site on the Sea Elephant River.

• Close and rehabilitate the eastern boat launch site on the Sea Elephant River in accordance with Section 4.1.

• Install boat speed limit and restricted access signs in the Sea Elephant River.

• Monitor the impacts of boating on saltmarsh communities in the Sea Elephant River estuary in accordance with Section 3.4.

5.4.2 Air

There are no aircraft landing grounds in the reserve.

**Policies**

• Airdrops within the reserve will only be permitted for management or emergency purposes.

• Except in an emergency, or for management purposes, all aircraft, including helicopters, will require a permit to land or take off in the reserve, as required by the National Parks and Reserved Land Regulations 1999.

5.4.3 Vehicles

The use of vehicles along formed and unformed tracks within the reserve has led to localised destruction of vegetation, erosion and disturbance to breeding wildlife. Vehicle access throughout the reserve also increases the risk of wildfire and spread of the root rot fungus *Phytophthora cinnamomii*.

Off-road driving is primarily associated with fishing along Lavinia and Nine Mile Beach and between Cowper Point and the mouth of the Sea Elephant River. Evidence suggests that 4-wheel driving and the use of motorbikes including All Terrain Vehicles (ATV’s) is becoming more common. Inappropriate use of vehicles has damaged the reserve. Mainly by the destruction of dune vegetation leading to erosion and dune blowouts, erosion and disturbance of saltmarsh areas.

Fishing is a popular pursuit on King Island. The seaward side of the Lavinia Nature Reserve, in particular Lavinia Beach, is one of the most popular fishing locations on the island. Currently people gain access to the beach using off-road vehicles from the end of the Martha Lavinia Road.

Lavinia Beach also has some of the best surfing on the island, and surfers drive along the beach and tracks to check the surf conditions.

**Policies**

• Before construction of any new roads or vehicular tracks, or the re-routing of existing ones, survey the proposed route for disease risk, habitat and species significance, and heritage significance.

• Public vehicular access within the reserve will be limited to those roads, tracks, beaches, parking and standing areas designated in or permitted by this plan, through site plans, codes of conduct, notesheets or permits and licences.

• Public use of registered motorised vehicles, including trail bikes and off-road vehicles, will only be permitted on designated-formed roads and beaches within the reserve. Use anywhere else in the reserve will not be permitted.

• Registered vehicles will be permitted on Nine Mile Beach between Lavinia Point and Cowper Point between April and September and will be monitored and use modified if the need arises.

• To protect nesting shorebirds, in particular the fairy tern and hooded plover, vehicles will not be permitted on the Nine Mile Beach from Lavinia Point to Cowper Point from October to March.
inclusive, under regulations 12 (1) (a) of the National Parks and Reserved Land Regulations 1999 unless authorised by the Director.

- Registered vehicles will be permitted on Lavinia Beach between Lavinia Point and north to the reserve boundary all year on a self-regulation basis. Use will be monitored and use modified if the need arises. See Map 3.

- The existing extensive track network will be rationalised and several tracks will be closed and rehabilitated
  - the Nine Mile Beach track will be closed and rehabilitated at the junction of the Martha Lavinia Road in the north and at the Sea Elephant River in the south. See Track 6 on Map 2;
  - the track leading from Lake Martha Lavinia to Lavinia Beach (5) and the muttonbird colony will be closed and rehabilitated. See Track 5 Map 2;
  - the riverside track will be closed to public access but will be maintained as a firetrail. See Track 8 Map 2;
  - the estuary track along the eastern edge of the Sea Elephant River will be closed and rehabilitated. See Track 11 Map 2; and
  - all other tracks previously maintained as firetrails will be closed and rehabilitated. See Tracks 12 – 17 Map 2.

- The track leading from the turning circle on the Lavinia Point Road to Lookout Hill will be maintained. See Track 4 Map 2

**Actions**

- Encourage relevant authorities to upgrade road access to the reserve.
- Provide vehicle access to visitors.
- Liaise with the local community, King Island Council and other users on developing a self-regulation system for beach driving.
- Upgrade and maintain the riverside track as a fire trail in accordance with Section 4.1. See Track 9 Map 2

- Construct and maintain a suitably designed sand crossing at the end of the Martha Lavinia Road for vehicle access onto the beach in accordance with Section 4.1.
- Construct and maintain a gate to prohibit vehicle access onto the Sea Elephant estuary below the boat launching area in accordance with Section 4.1.
- Maintain and investigate upgrading the vehicular track from the turning circle at the end of Martha Lavinia Road to Lookout Hill. See Track 4 Map 2.
- Consult with King Island Council on planning and maintaining access roads that cross between the reserve and Council managed roads.
- Monitor the impacts of vehicles on the Lavinia and Nine Mile Beach.
- Close and rehabilitate the following tracks as shown on Map2:
  - Nine Mile Beach track. (6)
  - Lavinia Point track past Lookout Hill
  - Lake Martha Lavinia - Lavinia Beach track (5)
  - Estuary track (11)
  - Firetrails (12 - 17)

**5.4.4 Walking**

Walking tracks provide an opportunity to appreciate the scenic values of the coastal and lagoon environments as well as the flora and fauna. Currently, there are no designated walking tracks within the reserve.

There has been interest amongst visitors, in observing orange – bellied parrots. The development of a high quality-walking track adjacent to the saltmarsh community on the Sea Elephant River has been
considered. The walk would contain information to explain the importance of the habitat for the orange – bellied parrot and would provide a hardened area to observe the birds without disturbance to the species.

Policies

• The standards of construction and maintenance of all walking tracks will be in accordance with the provisions of the Walking Track Management Manual (Blamey 1987).

• The priorities for upgrading existing walking tracks or constructing new tracks will be determined and approved before any work commences.

• Before the construction of any new walking tracks, or re-routing of existing tracks, survey the proposed route for disease risk, habitat and species significance, and heritage significance.

• Walking track development and maintenance will accord with the prescriptions of Section 5.5.

• Exact track locations and standards will be determined, and construction undertaken, using appropriate guidelines of the Walking Track Management Manual (Blamey, 1987) and the Walking Track Management Strategy (Parks and Wildlife Service, 1998) and according to any applicable site plan.

• To retain its natural character, walking tracks will not be constructed in the Natural Zone unless monitoring of routes indicates the need for minimal surfacing and drainage for environmental protection purposes only.

Actions

• Investigate the development of a high quality-walking track in the Sea Elephant River Visitor Services Site.

5.4.5 Camping

The development of camping areas within Lavinia Nature Reserve has been informal, haphazard and uncontrolled and has lead to degradation of conservation values.

Camping presently occurs throughout Lavinia Nature Reserve primarily adjacent to Lavinia Beach and at the southern most edge of the Sea Elephant River estuary.

The camping areas are expanding due to the increasing number of people using them and the continual cutting of trees for firewood. The vegetation at all sites is extremely flammable. A fireplace has been constructed at Pennys Lagoon to minimise the risk of a fire escaping. However, increased use of these sites increases the potential of fire escaping into the nearby vegetation.

Policies

• The continuation of low key camping in the Lavinia Visitor Services Zone will be provided for.

• Campfires will not be permitted in the reserve.

Actions

• A formal camping area in the Lavinia Visitor Services Zone will be identified and developed.

5.4.6 Surfing

The surf around Lavinia Nature Reserve builds up after southwesterly gales. Swell on the west coast of the island wraps around Cape Wickham down the coast to Lavinia Point. The swell also develops up the east coast of the island turning inshore at Lavinia Point where it meets the south bound swell.

Because of these unique island conditions, the surf on Lavinia Beach has been considered a top surfing location. It is increasing in popularity and is the main reason for some people visiting King Island.

Many surfers visit the reserve on a daily basis, others camp behind the foredunes between the end of Martha Lavinia Road and Lavinia Point.

Actions
• Consult with surfers and the Surf Riders Foundation and involve them, as appropriate in the management of the area.

5.5 Providing Facilities and Services

The reserve is popular with the local community and tourists to the island as the main area of public land with natural values remaining on King Island.

The challenge for management is to provide facilities and services in a co-ordinated way, without destroying the values, which attract visitors in the first place. To maintain these values the type, location and level of facilities and services has to be determined and made explicit. The spectrum of recreational opportunities and the system of zoning within the plan will assist in maintaining and enhancing recreational opportunities.

Objectives

The objectives of providing visitor facilities and services are to:

- provide opportunities for activities, relaxation, contemplation, enjoyment and educational experiences through direct contact or participatory involvement with the values of the reserve;
- enrich visitor experiences of the reserve;
- encourage understanding of and support for the reserve by highlighting and presenting their values;
- safeguard the special tourism and recreational character of the reserve;
- minimise impacts on reserve values;
- promote sound, sustainable, environmental behaviour and practices;
- contribute directly to meeting the costs of researching, protecting, and managing the reserve; and
- provide economic benefit to the community.

Policies

• All visitor activity will accord with any requirements and codes established by the Parks and Wildlife Service for sustainable environmental practices and behaviour and protection of heritage values.

• Consistent with this plan, tourism and recreation facilities and services will be provided, principally in the Visitor Services Zones.

• The range of visitor facilities provided will complement rather than replicate those which are or could be provided in nearby areas.

• In the Visitor Services Zone and Site, development of facilities will be guided by site plans for each zone or site, prepared in accordance with Section 4.5.

5.5.1 Lavinia Visitor Services Zone

Located in the north of the reserve, Lavinia Visitor Services Zone provides access for King Island residents to one of only a few easily accessible east coast beaches on the island. The area is popular with a range of recreationalists, surfers, anglers, campers, day visitors and to a lesser extent interstate and overseas tourists to the island.

Within the zone is Lavinia Beach and two fresh water lakes; Lake Martha Lavinia and Pennys Lagoon. The area includes a picnic area with toilets and barbecues at Pennys Lagoon, carparking and informal camping. See Map 3

Policies

• Overnight and day visitors will be provided for in this zone.

• Facilities in this zone may include camp sites, visitor information and interpretation shelters, picnic facilities, nature trails, interpretive displays, toilets and roof water collection.

• Construction and maintenance in the zone will be sufficient to withstand the impact of the anticipated number of visitors.
• Camping in this zone will be available only in designated camping areas.

• Rubbish bins will not be provided and visitors will be required to remove their rubbish.

• Vehicular access and boat launching will be permitted in accordance with Sections 5.4.1 and 5.4.3.

• Only non-motorised watercraft are permitted on Lake Martha Lavinia and Pennys Lagoon.

• Campfires will not be permitted.

• Dogs will not be permitted.

• Concessions may be granted in this zone for eco-tourism operations.

• The provision of standing camps or buildings for accommodation purposes will not be permitted in this zone.

• Habitat may be managed to reduce fire risks, or to maintain a low risk environment for the public in accordance with Section 4.1

• Registered vehicles are permitted on Lavinia Beach between Lavinia Point and Boulder Point all year round in accordance with section 5.4.3.

Actions

• Prepare and seek resources to implement a site plan for the Lavinia Visitor Services Zone in consultation with the local community, King Island Council and key users to identify the future management of:
  - signage,
  - roading; and
  - the provision of amenities such as campsites, toilets, carparking and gas barbecues.

• Encourage campers to bring fuel stoves.

• Relocate and upgrade the toilet at Pennys Lagoon.

• Investigate options for undertaking and upgrading the carpark and turning circle at the end of the Martha Lavinia Road.

• Monitor vehicle impacts on Lavinia Beach in accordance with section 5.4.3.

• Remove the wood fire barbecues at Pennys Lagoon and investigate replacing with gas barbecues.

5.5.2 Sea Elephant River Visitor Services Site

Located in the southern end of the reserve, the Sea Elephant River estuary site is adjacent to critical feeding and roosting habitat for the orange-bellied parrot between March and July.

This area provides an opportunity for visitors to learn about the orange-bellied parrot and observe many species of waterbirds. Currently it is mainly used for fishing and oyster farming.

The Sea Elephant River area is to be managed as a day use area and with fewer facilities than in the Lavinia Visitor Services Zone. Currently at the site, there is a pit toilet, picnic tables and boat launching site. See Map 4.

The viewing platform and walking track adjacent to the site are not within the reserve. Consultation with the landowner to determine future management of the structure is necessary.

Policies

• Day visitors only will be provided for in this site.

• Facilities in this site may include picnic shelters and gas barbecues, nature trails, interpretive displays, toilets, and roof water collection.

• Camping will not be permitted.

• Dogs will not be permitted.

• Rubbish bins will not be provided and visitors will be required to remove their rubbish.
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• Vehicular access and boat launching will be permitted in accordance with Sections 5.4.1 and 5.4.3.

• Concessions for eco-tourism operators may be granted in this zone.

• The provision of standing camps or buildings for accommodation purposes will not be permitted in this site.

**Actions**

• Prepare and seek resources to implement a site plan for the Sea Elephant River Visitor Services Site in consultation with the local community, King Island Council and key users to identify the future management of:
  - signage,
  - roading,
  - the provision of amenities such as toilets, carparking and boat launching site, and
  - development of a high quality walking track in accordance with Section 4.4.

• Relocate and upgrade the toilet near the Sea Elephant River in accordance with Section 4.4

• In accordance with section 5.4.4 investigate the development of a high quality – walking track in the Sea Elephant River Visitor Services Site.

• Maintain the identified boat-launching site. Close and rehabilitate alternative sites in accordance with section 5.4.1.

• Liaise with the adjacent landowner on the future of the viewing platform adjacent to the Sea Elephant River estuary.

• Construct and maintain a gate to prohibit vehicle access onto the Sea Elephant estuary below the boat launching area in accordance with Sections 4.1 and 5.4.3.

**5.5.3 Recreation Zone**

The Recreation Zone within the reserve provides a corridor for recreational travel and beach access enabling visitors to access popular surfing areas and fishing spots between Lavinia Point and Cowper Point. See Map 5.

**Policies**

• Facilities in this zone, depending on the location, will be limited to walking tracks and vehicle tracks for management purposes and signs.

• Track marking and upgrading will accord with prescriptions set out in sections 4.5 and 5.4.4.

• The provision of standing camps or buildings for accommodation purposes will not be permitted in this zone.

• Vehicles are not permitted on Nine Mile Beach between Lavinia Point and Cowper Point between October and March inclusive in accordance with section 5.4.3.

• Concessions for eco-tourism operators may be permitted in this zone.

• Signs will be limited to those giving information on directions, historic features, and safety of users, or protection of the reserve.

• Where necessary, actively rehabilitate closed track sections and informal campsites.

• Inform and promote appropriate minimal impact behaviour and practices to visitors.

**Actions**

• Clearly mark tracks in accordance with section 5.4.4.

• Monitor vehicle impacts on Nine Mile Beach.

• Undertake periodic surveys of *Phytophthora* prone areas to monitor the disease status of the Recreation Zone.

**5.5.4 Natural Zone**
This zone covers a substantial area of Lavinia Nature Reserve, which is in a relatively unmodified condition and contains important natural and cultural values. See Map 5.

This zone is particularly significant for flora and fauna conservation and is to be managed principally for the conservation of natural values.

**Policies**

- Except for safety, environmental or heritage protection and fire management, structures or any other type of development (including tracks) will not be permitted in the zone.
- Concessions will not be permitted in this zone.
- Habitat management will occur only if essential for the protection of rare/threatened species or cultural heritage.
- Standing camps, equipment cache, or similar accommodation provisions will not be permitted in the zone.

**Actions**

- Monitor user impacts.
- Discourage the use of walking routes in areas identified as being highly susceptible to *Phytophthora cinnamomi*.
- Liaise with adjacent landowners on maintaining boundary fences.
- Undertake periodic surveys of *Phytophthora* prone areas to monitor the disease status of the Natural Zone.

5.5.5 Special Management Area

The orange-bellied parrot one of Australia’s most endangered bird species with a population of less than 200 birds roost in *Acacia* and *Melaleuca* scrub adjacent to the Sea Elephant River estuary. The birds feed on saltmarsh and coastal strandline plants on the Sea Elephant River estuary for several months between March and July before they migrate to mainland Australia for winter.

Disturbance to the orange-bellied parrot during roosting and feeding is considered a significant threat to the species when on the island.

Damage to the saltmarsh habitat, an extremely fragile and easily destroyed plant community is also a threat to the survival of the orange-bellied parrot. In the past, fire has burnt several roosting sites causing the birds to travel further between roost and feeding areas.

In order to reduce the disturbance to the feeding and roosting habitat of the orange-bellied parrot and protect the saltmarsh habitat, an area adjacent to the Sea Elephant River estuary has been identified as a Special Management Area (see Map 6).

**Policies**

- The Special Management Area will be managed to ensure the long term survival and conservation of the orange-bellied parrot.

- In accordance with Section 25 of the *National Parks and Wildlife Act 1970* and by virtue of this Management Plan, the Special Management Area shown in Map 6 is declared to be a ‘restricted area’ to which the public has not a general right of access between March and July annually.

- A member of the public may only enter a restricted area under Regulation 11 of the *National Parks and Reserved Land Regulations 1999*, if that person has authority granted under Regulation 17 of the *National Parks and Reserved Land Regulations 1999*.

- Access to the Special Management Area will not be permitted between March and July inclusive.

- Management access to the area will be kept to a minimum.

- Limited access for scientific research,
educational and bird observation purposes may be permitted with appropriate authority from the Director.

**Actions**

- Provide information to the public on the restricted access within the Special Management Area.

- A firetrail between Bicentennial Road and the Sea Elephant River will be maintained and gated in accordance with Section 4.1.

**5.5.6 Assessing Visitor Access Proposals**

**Policies**

- Proposals to provide visitor facilities or services at Lavinia Nature Reserve will be considered if they:

  - ensure the viability, diversity, and values of environmental features and processes are not damaged;
  - adopt environmentally sustainable operating practices and use environmentally “best practice” goods and technologies;
  - behave and operate in a manner compatible with protection of Aboriginal and historic heritage features and values;
  - explain the principles of minimal impact on environmental and heritage values to visitors;
  - avoid impact on the legitimate enjoyment and experience by others of the reserve’s features and values;
  - contribute to any external costs (for example road or sewerage upgrading) resulting from the proposal; and
  - accord with the management plan, being sustainable achievable within the realistic capacity of management resources.

- All facilities and services in the reserve will adopt environmental "best practice" methods for:

  - plant disease hygiene control
  - sewage treatment;
  - fire prevention;

  - water runoff management;
  - vehicle use;
  - machinery installation and maintenance;
  - storage and disposal of solid and liquid waste.

- Depending on the proposal, additional assessment guidelines and criteria may be required.

- Facilities and services proposals will provide a clearly demonstrated benefit to the Tasmanian community.

- Tourism and recreation in the reserve will directly and identifiably make a contribution to research, conservation or management of the reserve.

- Ensure all applicable statutory requirements and approvals are met or obtained.
6 Involving the Community

6.1 Community Support

Community support is critical to good management of the reserve. A number of community groups and organisations make regular use of the reserve, including field naturalists and landcare groups, which are active in conservation management.

Objectives

The objectives of fostering community support are to:

- develop community appreciation of and support for reserve values;
- promote a positive image of the reserve and its contribution to the community; and
- encourage community involvement in reserve management.

Policies

- Relevant people, communities and groups will be consulted when their interests may be affected.
- Partnerships will be developed with local and other communities and groups that wish to be involved in the management of the reserve in accordance with this management plan.
- Volunteers will be encouraged when suitable, planned and programmed works and adequate supervision are available.

Actions

- Encourage and support the development of friends and volunteer programs in the reserve.
- Develop good working relations with adjacent land managers, the local community and the Aboriginal community in matters of mutual interest.
- Liaise with the tourism industry, recreational and educational groups regarding commercial and non-commercial uses of the reserve.
- Consult and cooperate with other authorities in relation to fire protection and search and rescue.
- Liaise with the King Island Council to ensure consistency, as far as possible between this plan, site plans and the municipal planning scheme.
- Encourage community involvement through the Wildcare structure.

6.2 Working with Neighbours

The reserve to the west and north is fringed by private land, primarily rural, and unallocated Crown land. To the south, the reserve is adjacent to a current mining lease.

An area with significant values for the orange-bellied parrot exists in freehold land block AAHO2 adjacent to the Sea Elephant River estuary.

Objectives

The objectives of working with neighbours are to:

- take account of concerns of neighbours in managing the reserve;
- encourage conservation and sound land management practices on lands adjoining the reserve, and
- enlist cooperation of neighbours in conserving reserves values.

6.2.1 Mineral Exploration and Mining

A mining lease to the south of the Lavinia Nature Reserve and covers an area of 2km² from Cowper Point to Naracoopa. The reserve is excluded from this licence.

Tasmanian Titanium Pty Ltd. is currently in the process of submitting a development application to seek approval for the establishment of a mining operation, which
will cover the entire deposit.

The company has agreed to a Mining Exclusion Zone (MEZ) in the northern deposits for the life of the mining lease. This will provide a significant buffer between the mining operation and the orange-bellied parrot feeding and roosting areas on the Sea Elephant River.

The MEZ will protect existing and potential orange-bellied parrot roosting sites, and will provide protection for significant vegetation communities, and flora and fauna species in the area.

In addition to the Mineral Exclusion Zone, Tasmanian Titanium Pty Ltd. has also committed to donating a block of freehold land (block AAHO3) adjacent to the Sea Elephant River for inclusion in the reserve.

The Mineral Exclusion Zone has been identified as a priority fauna and flora area and it is unlikely that it will ever be mined.

**Policies**

- Neighbouring land owners and land managers will be consulted when their interests may be affected.

- Management agreements may be developed with neighbours.

- Land management practices which require off-reserve or cross-tenure implementation to protect natural and cultural values will be developed cooperatively with neighbours.

**Actions**

- Regularly liaise and develop good working relations with adjacent land owners and land managers on management issues and projects of common interest.

- Liaise with the landowners of block AAHO2 regarding future management of the area for the protection of habitat for the orange-bellied parrot.

- Liaise with Tasmanian Titanium Pty Ltd. in the management of the Mining Exclusion Zone (MEZ) and orange-bellied parrot conservation.

- Liaise with Tasmanian Titanium Pty Ltd. on the transfer of freehold land into the reserve.

- Liaise with Tasmanian Titanium Pty Ltd., Mineral Resources Tasmania, King Island Council, the community and other stakeholders in seeking to incorporate the Mining Exclusion Zone (MEZ) into the reserve.
7 Other Issues

7.1 Boundaries

The eastern boundary of the reserve follows the low water mark from approximately 2km south of Boulder Point south to Cowper Point. The land boundary to the west and south is adjoined primarily by private land (Map 2). Three blocks of unallocated crown land adjoin the reserve west of the reserve's southern section adjacent to the Nook Swamps and the Sea Elephant River. All unallocated Crown land is covered with native vegetation, as is the majority of adjacent private land (Rando 1987).

Areas of cleared private land have been sown with pasture grasses and are used for grazing sheep and cattle. Artificial fertilisers and lime-sand are regularly spread over these pastures to increase grass productivity. Any runoff from these areas flows into the Lavinia Nature Reserve.

Mining leases have been granted to Tasmanian Titanium Pty Ltd. to mine mineral sand south of the Lavinia Nature Reserve and near the township of Naracoopa.

The marine environment around Lavinia Nature Reserve is a complementary and interdependent part of the terrestrial environment of the reserve. However, it is not included in the reserve.

There are several unallocated Crown land blocks adjacent to reserve (AAH00 and AAE99) to the west and south west of the reserve, one in the northern part of the reserve in the vicinity of Meatsafe and Granite Lagoons (AAF44) and Councillor Island east of Cowper Point which has been identified as an important bird breeding area.

• If the opportunity arises, incorporate within the reserve any areas, including marine areas, which will provide opportunities for or improve presentation of the reserve and provision of visitor services and facilities.

Actions

• Investigate the values of, and possible addition to the reserve of the three unallocated Crown land blocks and Councillor Island adjacent to Lavinia Nature Reserve.

7.2 Leases, Licences and Permits

There are currently two licenced commercial operators running bus tours in Lavinia Nature Reserve and an access licence for the marine farm lessee is being drafted.

Objectives

The objectives of leases, licences and permits are to:

- provide efficient high quality facilities and services to the public;
- manage and control uses and activities not undertaken by the managing authority;
- contribute to recovery of costs arising from leased, licensed or permitted uses; and
- ensure Lavinia Nature Reserve values are protected.

7.2.1 Marine Farming Lease

An oyster farm is located on the Sea Elephant River within the boundaries of the reserve (see Map 4). The Department of Primary Industries, Water and Environment considers that the long term productivity of the site to be uncertain given the dynamics of the salinity of the river which is affected by movements and closure of the river mouth.

However, it is considered important in the
King Island community because it adds to the diversity of fresh produce for export and is the only oyster farm on the island.

The farming lease was initially granted in 1981 over a four-hectare area of water and exists within the reserve as a pre-existing right, the area being proclaimed a nature reserve in 1988.

The lease has recently been renewed until 2031. The oyster farm is adjacent to saltmarsh vegetation, which is critical feeding habitat for the endangered orange-bellied parrot. Disturbance during roosting and feeding is considered a key threat to the species when it is on the island.

Currently the operators of the oyster lease gain vehicle access to the racks along the edge of the Sea Elephant River estuary at low tide.

Vehicular access to the oyster lease and other recreational vehicular traffic has contributed to the degradation of the saltmarsh. In addition, the movement of vehicles through the estuary may disturb orange-bellied parrot feeding sites.

Adjacent to the marine farm outside the lease area is equipment associated with farming operations and includes; oyster holding racks, table and a small steel punt. In addition, a holding rack is located near the existing launch ramp upstream from the lease area.

In the last ninety years, there has been considerable change in the position of the Sea Elephant River mouth.

The natural movement or closure of the river mouth is of major concern to the lessees, as the oysters cannot survive with prolonged exposure to fresh or brackish water. In time the natural movement of the mouth may affect the economic viability of the farm.

The river mouth is very dynamic, and unless extensive engineering works are carried out the river mouth will continue to open and close.

Periodic opening of the Sea Elephant River mouth may alter the hydrology and salinity in the river, which may have implications for vegetation, including the important saltmarsh communities.

In November 1996, the farm operator with the permission of the Parks and Wildlife Service excavated a channel through the beach approximately 800m from the river mouth in an attempt to allow tidal flushing to maintain oyster health. However, this was unsuccessful and the channel closed during the next high tide. In January 1997 the river mouth was again opened up by machine and has remained open.

**Policies**

- All leases, licences and permits will be consistent with the goals, objectives, and prescriptions of this management plan.

- Subject to the *National Parks and Wildlife Act 1970* and this management plan, leases and licences to provide services within the reserve may be issued for tourism, recreation, or education purposes.

- Authority to conduct infrequent, organised events or activities within the reserve, of not more than one-week duration, may be issued by the Director. Where Section 25B of the *National Parks and Wildlife Act 1970* applies, a business licence will be required.

- Leases, licences and permits may be issued for any zone in the reserve, provided that they conform with the objectives and prescriptions for that zone.

- Consistent with Section 4.5 of this plan, an environmental and heritage effects assessment may be required before lease, licence or permit proposals are considered. A detailed, proposal specific, site plan may also be required.

- Compliance with the terms and conditions of leases, licences and permits will be monitored and reviewed prior to any renewal.

- The oyster farm on the Sea Elephant River exists as a prior right and may
continue to operate within the nature reserve for the life of the lease, including the renewal of the lease within ten years before the lease expires in accordance with the Marine Farm Planning Act 1995.

- Access to service the oyster farm by the operator and his/her employees will be through an access licence with conditions under section 17(1) (a) of the National Parks Reserved Lands Regulations 1999.

- Interference with the natural processes causing movement and periodic closure of the Sea Elephant River mouth is not permitted unless authorised by the Director.

- Oyster farm infrastructure and operations will be limited to within the leased area.

- An oyster holding rack outside the lease area may be considered, if it is identified as assisting in reducing the number of trips the lessee makes to the marine farm lease.

**Actions**

- Liaise with the marine farm operators to facilitate access to the lease.

- Consider formalising an oyster holding rack upstream from the marine farm lease adjacent to the boat ramp in consultation with the marine farm lessees and the Marine Farm Planning Branch of DPIWE.

- Liaise with the operators of the marine farm to minimise the effects of the farm on the environment.

- Development activities, which may disturb the orange-bellied parrot, may only be conducted between August and February when the birds are not present in the area.

- Liaise with the Marine Farming Branch of DPIWE regarding any issues relating to the operations of the marine-farming lease.

### 7.3 Research

In order to understand ecological processes involved in maintenance of the flora, fauna and communities in the reserve it is essential that research and ongoing monitoring is conducted. The data is essential for informed decision making by management, and until studies have been completed, definitive prescriptions cannot be made for many plant and animal species and communities requiring habitat management. It is necessary that funding for such research and monitoring be of a high priority.

Research is essential to identifying, understanding and conserving the natural and cultural values of the reserve, and sustainably managing human use.

**Objectives**

The objectives of research in the reserve are to:

- improve the inventory and understanding of environmental and heritage features and processes;
- use the reserve as a scientific reference area;
- monitor the natural rates and magnitudes of change;
- improve knowledge and understanding of visitor behaviour;
- assess impacts of and long term cumulative changes caused by development or use of the reserve; and
- assist and improve management of the reserve.

**Policies**

- All proposed research, which may have an impact on the reserve, will require written approval of detailed study proposals and methods before research begins, and be subject to this management plan.

- Researchers will submit to the managing authority not less than three copies of all work produced during the period of the research. The Director will determine requirements for the
form of submission, its timing, confidentiality, and any other matters.

- Authorities for the collection of research material within the reserve will not be issued where the Director determines that it is possible and appropriate to collect the material outside them.

- Only research that does not have long term adverse effects on the environmental, heritage, or aesthetic values of the reserve will be permitted.

- The approval of the Tasmanian Aboriginal community will be obtained for any research involving Aboriginal heritage.

- Research that improves the inventory and understanding of the natural and cultural values of the reserve, or assists management of them will be encouraged.

- Research that improves the inventory and understanding of visitor numbers and characteristics, behaviour, needs and expectations, or assists visitor management will be encouraged.

- Use and development practices will be monitored for their effects on reserve values, and where necessary, modified.

- The efficacy of management practices in the reserve and the effects of management actions on reserve values will be monitored, and where necessary, modified.

- Any cumulative changes in reserve values will be documented at regular intervals.

### 7.4 Statutory Powers

Under section 24 (1) of the *National Parks and Wildlife Act* 1970, certain statutory powers may not be exercised in a nature reserve unless authorised in a management plan.

A provision in a management plan which authorises the exercise of any such statutory power (in effect, for the purpose of permitting the use or development of a nature reserve otherwise than under the powers conferred by the *National Parks and Wildlife Act* 1970) will not take effect unless it has the approval of both Houses of Parliament.

### Food, Agriculture and Fisheries Division of the Department of Primary Industries, Water and Environment

The Minister administering the *Living Marine Resources Management Act* 1995 is authorised to exercise all of the Minister’s powers under that Act in relation to the granting of marine farm licences (Section 64) to carry out marine farming operations subject to written approval and consultation with the Director.

The Minister administering the *Marine Farming Planning Act* 1995 is authorised to exercise all of the Minister’s powers under Sections 66, 67, 72, 73, 74 and 79 of the Act in relation to the daily management of sustainable existing marine farming activities subject to written approval and consultation with the Director.

#### 7.5 Administration

The management of Lavinia Nature Reserve is undertaken by Service staff from the North West District. The Director, being the managing authority under Section 22 of the *National Parks and Wildlife Act* 1970 is responsible for implementing the prescriptions of the management plan.

**Objectives**

The objectives of administration of the reserve are to:

- coordinate and integrate management and implementation of the management plan;
- ensure management responsibilities are efficiently and effectively carried out;
- ensure public safety and prompt response in emergencies; and
- enforce the management plan and relevant Acts and Regulations.

#### 7.5.1 Implementation
Policies

• The prescriptions of this plan will be subject to the provision of funding and other resources sufficient to meet them, and may be prioritised by the Director of National Parks and Wildlife at the Director’s discretion according to resource availability.

• To coordinate effective implementation of this management plan, a rolling implementation program of at least three years duration, and linked to internal operational planning processes will be developed.

• The implementation program will identify:
  - all development and other works planned,
  - scientific studies required,
  - those responsible for each stage of implementation,
  - the anticipated costs,
  - the staff requirements, and
  - ongoing maintenance and monitoring requirements.

• The implementation program will conform with the management plan and other plans for the reserve.

Actions

• Train staff to understand and implement the management plan.

• Review the implementation of the management plan annually and revise the implementation program if necessary. Base any revision on analysis of past progress and incorporate newly identified requirements. Add a further year’s program at each annual review.

• Annually evaluate the outcomes of management against the objectives of the management plan.

• Take into account any findings and recommendations from research, monitoring and evaluation of the condition and management of the reserve.

7.5.2 Search and Rescue, First-Aid

Tasmania Police and the State Emergency Service have primary responsibility for all search and rescue within the reserve.

Policies

• Resources for the reserve will be maintained at a level sufficient to provide a reasonable response to emergencies.

Actions

• Cooperate with Tasmania Police and State Emergency Services in search and rescue operations.

• Educate and encourage visitors to adopt safe practices and provide them with sufficient information about potential hazards to enable them to make responsible decisions.

• Establish a risk management system that provides for regular identification, inspection, reporting and amelioration of existing and potential risks to public and staff safety.

7.5.3 Enforcement

Policies

• Within the reserve, authorised staff of the Parks and Wildlife Service will be responsible for enforcing the provisions of the National Parks and Wildlife Act 1970, the Aboriginal Relics Act 1975, Whales Protection Act 1988, the National Parks and Reserved Land Regulations 1999, the Wildlife Regulations 1999, the Aboriginal Relics Regulations 1978, and any other Acts for which staff may be authorised.

• The Director of National Parks and Wildlife has delegated powers to enforce provisions of the Commonwealth of Australia Historic Shipwrecks Act 1976.

• Staff may be authorised to enforce provisions of the Marine and Safety
Authority Act 1997 and associated by-laws.

• Other law enforcement will be the responsibility of Tasmania Police.

7.6 Plan Evaluation and Review

This management plan sets out how the vision for the reserve will be achieved. To check the effectiveness of the management plan in doing this, indicators can be used to evaluate implementation of the plan and to check if the vision and management objectives have been achieved.

Policies

• Review the plan ten years after gazettal of its approval by the Governor, or sooner if research, monitoring, or other circumstances show this to be needed.

• In the review of the plan, evaluate the implementation of the management prescriptions and their effectiveness in achieving the vision and management objectives of the plan.

• As a minimum, use the performance indicators set out in Appendix 6 when evaluating the plan’s implementation and outcomes.

• Utilise any relevant, additional monitoring and evaluation procedures developed during the period of the plan when evaluating the plan implementation and outcomes.
Glossary

**Biodiversity** (biological diversity) means the variety of life forms: the different plants, animals and microorganisms, the genes they contain, and the ecosystems they form. It is usually considered at four levels: genetic diversity, species diversity, and ecosystem diversity and community diversity.

**Conservation** means all the processes and actions of looking after a place so as to retain its significance, always including protection, maintenance and monitoring.

**Earth processes** means the interactions, changes and evolutionary development of geodiversity over time.

**Geodiversity** means the range or diversity of geological (bedrock), geomorphological (landform) and soil features, assemblages, systems and processes which exist naturally.

**Indigenous species** means a species that occurs at a place within its historically known natural range and that forms part of the natural biodiversity of a place.

**Introduced species** means a translocated or alidn species occurring at a place outside its historically known natural range as a result of intentional or accidental dispersal by human activities.

**Natural integrity** means the degree to which a natural system retains its condition and natural rate of change in terms of size, biodiversity, geodiversity and habitat.

**Natural landscape** means large, relatively undisturbed area with topographic and catchment integrity where natural processes continue largely unmodified by human intervention.

**Protection** means taking care of a place by maintenance and by managing impacts to ensure that significance is retained.

**Threatened species** means a species listed in the Schedules of the *Threatened Species Protection Act* 1995.
References


MARQUIS-KYLE, P., & WALKER M., 1992; *The Illustrated Burra Charter, Making good decisions about the care of important places*; Australia ICOMOS Inc, Sydney.

McGARVIE and TEMPLETON 1974 *Additions to the birds of King Island*, Bass Strait. Emu, 74, pp91-96.


PARKS AND WILDLIFE SERVICE, in prep; *Statewide Visitor Strategy*; Parks and Wildlife Service, Department of Primary Industries, Water and Environment, Tasmania.


Department of Parks, Wildlife and Heritage, Tasmania.


TOURISM, SPORT & RECREATION, DEPT OF, 1990; *The Implications of the Emerging Market for Tasmanian Tourism*; Department of Tourism, Sport and Recreation, Hobart.

TOURISM, SPORT & RECREATION, DEPT OF, 1994; *Ecotourism: Adding value to tourism in natural areas*; A discussion paper on nature based tourism, Department of Tourism, Sport and Recreation, Hobart.

TOURISM TASMANIA, 1997; *Tasmanian Visitor Survey, 1996-97 Results*; Tourism Tasmania, Hobart.

### Appendix 1 Reservation History

<table>
<thead>
<tr>
<th>Reserve</th>
<th>Proclamation</th>
<th>Date</th>
<th>Rule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Elephant River</td>
<td>510 hectares gazetted under <em>The Animals and Birds Protection Act 1928</em></td>
<td>1959</td>
<td></td>
</tr>
<tr>
<td>Wildlife Sanctuary</td>
<td>Four separate blocks were proclaimed including 627 ha at Lake Martha Lavinia and Pennys Lagoon plus three other blocks totaling 1543 ha</td>
<td>1971</td>
<td>79</td>
</tr>
<tr>
<td>Lavinia Sanctuary</td>
<td>The Sea Elephant River Wildlife Sanctuary and Lavinia Sanctuary became Conservation Areas under the <em>National Parks and Wildlife Act 1970</em></td>
<td>1971</td>
<td></td>
</tr>
<tr>
<td>Conservation Areas</td>
<td>208 ha acquired and added to Lavinia Sanctuary</td>
<td>1973</td>
<td></td>
</tr>
<tr>
<td>Lavinia Nature Reserve</td>
<td>3910 ha added to the Lavinia Sanctuary and area was proclaimed as a State Reserve and renamed under the <em>National Parks and Wildlife Act 1970</em></td>
<td>1975</td>
<td>99</td>
</tr>
<tr>
<td></td>
<td>A further 515 ha added to Lavinia Nature Reserve</td>
<td>1976</td>
<td>239</td>
</tr>
<tr>
<td></td>
<td>A further 200 ha added to Lavinia Nature Reserve</td>
<td>1980</td>
<td>265</td>
</tr>
<tr>
<td>Lavinia Nature Reserve</td>
<td>Boundaries of the Sea Elephant River Wildlife Sanctuary were realigned and the two adjoining reserves, the Sea Elephant River Wildlife Sanctuary and Lavinia Nature Reserve were proclaimed as one. The reserve is 6800ha in area</td>
<td>1988</td>
<td>119</td>
</tr>
</tbody>
</table>
Appendix 2  Lavinia Nature Reserve
- Ramsar Site Listing

1. Name
Lavinia Nature Reserve, Tasmania

2. Date this sheet was completed/updated
February, 2000

3. Name of wetland
Lavinia Nature Reserve, Tasmania

4. Geographic coordinates
394500 1440500

5. Altitude
20 m  ASL.

6. Area
6904 ha

7. Overview
The Lavinia Nature Reserve (King Island, Tasmania) includes the Sea Elephant River estuary and associated samphire mud flats, areas of coastal swamp, lagoons and areas of drier marsh inland from the coast. The area is an important refuge for a collection of state and nationally threatened species. Access to the reserve is by 4-wheel drive.

8. Wetland type
F,G,H,K,M,O,Sp,Ts,W,Xf

9. Ramsar criteria
2a, 2c, 2d

11. Name and address of the compiler of this form
Stewart Blackhall, Anne McEntee and Elizabeth Rollins
Department of Primary Industries, Water and Environment
134 Macquarie Street
Hobart 7000

12. Justification of the criteria selected under point 9
The wetland area supports species and communities, which are threatened in both Tasmania and or globally. The area provides a critical feeding site for the endangered orange-bellied parrot (*Neophema chrysogaster* - Endangered; Se, Ne;TSPA 1995, ESPA 1992) which is critically endangered, during its annual migration between south-eastern Australia and Tasmania.

The species *Puffinus tenuirostris* (short-tailed shearwater), also found within the reserve, is listed under the JAMBA agreement. The reserve is one of the few largely unaltered areas of native vegetation remaining on the island and is therefore a very important area of habitat for both flora and fauna.
13. General location
Lavinia Nature Reserve is situated on the north east coast of King Island between Boulder Point and Cowper Point, approximately 12 km north of Naracoopa. The northern section extends approximately 8km inland.

14. Physical features
The Sea Elephant River, the largest on King Island, drains into Bass Strait midway along the east coast. The shifting sands of the river mouth have caused a substantial back up of brackish water, creating the saltmarsh which extends up to five kilometres from the river mouth. The coastal strip of the area is sand dunes and beaches with Quaternary coastal calcareous sands. Further inland is Quaternary sand plains with mostly deep organic sandy soils.

Outcrops of Precambrian granite occur west of Lake Martha Lavinia, on the coastline near Penny's Lagoon and near the junction of Sea Elephant River and Saltwater Creek. The present landscape is the result of several distinct episodes of dune formation. The extensive Nook Swamps, which run roughly parallel to the coast along much of the reserve's length, occupy a flat depression which separates the new system of parallel dunes from the old parabolic dunes further inland.

15. Hydrological values
The water catchment draining into the reserve has an area of approximately 280 sq. km and covers nearly a third of King Island. A wide range of activities occurs in this area and therefore water entering the reserve may have an altered chemical, nutrient or turbidity level. The reserve is comprised of an assortment of water features including the Sea Elephant River Estuary (the island's largest river), areas of coastal swamp, and lagoons.

The permanent waters of Nook Swamp have a maximum depth of c 1.5 m with a pH of 7.5 and a conductivity of 2700EC. The climate of King Island is temperate maritime, the average annual rainfall of the area being 750 -1000 mm. On private land adjacent to the northern section of the reserve drains have been constructed to lower the water table. Water has been directed into the nature reserve via these drains.

16. Ecological features
Much of King Island once supported massive eucalyptus forests, however, wildfires and large scale clearing have meant that very few mature trees remain today, the island being dominated by pasture and rapidly diminishing scrub/heathland. The Lavinia Nature Reserve is one of the few largely unaltered areas of the island and contains much of the remaining native vegetation on King Island. The major wetlands in the reserve are the Sea Elephant River estuary area, Lake Martha Lavinia, Penny's Lagoon, and the Nook Swamps.

There are also numerous smaller wetland areas, most of which are seasonally inundated. The freshwater areas of the Nook Swamps are dominated by swamp forest, the closed canopy of which exceeds 30m in places. The reserve contains about 200 hectares of quality feeding habitat for nationally endangered orange-bellied parrots (Neophema chrysogaster- Se/Ne, TSPA 1995).

17. Noteworthy flora
The reserve protects largely undisturbed remnants of previously widespread natural communities. There are a number of important plant communities present, one of particular interest being the closed swamp forest which dominates the freshwater regions of the Nook Swamps and locally elsewhere in the reserve. The dominant species of this community, Melaleuca ericifolia, is associated with Leptospermum scoparium, Acacia melanoxylon and Eucalyptus ovata. A number of plants are considered rare or threatened: the scrambling ground fern (Hypolepis distans, vulnerable, Sv, TSPA 1995) is considered vulnerable and Lavinia
Nature Reserve is the only reserve in Tasmania in which it has been recorded (Flora Advisory Committee 1994).

Species which are considered rare include; tiny caladenia (Caladenia pusilla; Sr TSPA 1995), common sneezewood (Centipeda cunninghamii, Sr, TSPA 1995), starwort (Callitriche sonderi, Sr TSPA 1995), and blueberry ash (Elaeocarpus reticulatus, Sr TSPA 1995). Other species considered rare but not listed under the TSPA 1995 include; bog clubmoss (Lycopodiella serpentina), tiny selaginella (Selaginella gracillima), sticky daisy bush (Olearia glutinosa), purple cudweed (Gamochaeta purpurea) hyssop loosestrife (Lythrum hyssopifolia) and violet (Viola cleistogamoides).

18. Noteworthy fauna
The orange-bellied parrot is listed as endangered as the total population is presently estimated to be as low as 100-200 birds. Flocks of up to 40 juveniles are heavily dependent upon the samphire plant (Sarcocornia quinqueflora) for food during migration. They also roost at night in the trees and scrub surrounding the Sea Elephant River estuary and south of it.

Their movements during the day encompass areas north of the estuary, possibly as far as Nook Swamps. Another endangered bird on the island is the King Island subspecies of the brown thornbill (Acanthiza pusilla). The short-tailed shearwater (Puffinus tenuirostris) breeds on the island with at least two rookeries within the reserve, (one at Lavinia Point, one at Cowper Point and another reported to be just south of Nook Swamps.

Other birds of interest include the dusky moorhen (Gallinula tenebrosa), the nankeen or Australian kestrel (Falco canchroides), the rufous night heron (Nycticorax caledonicus), the fairy tern (Sterna nereis) and the golden-headed cisticola (Cisticola exilis). These are among several species found here which are rarely observed on the Tasmanian mainland. The masked woodswallow (Artamus personatus) and rainbow lorikeet (Trichoglossus haemodotus) have bred on the island but are thought to have been vagrants. A terrestrial snail, the southern hairy red snail (Austrochloritis victoriae, rare, Sr, TSPA 1995), previously thought to be extinct in Tasmania, was rediscovered in the nature reserve in November 1996.

19. Social and cultural values
The largely unspoiled nature of this reserve and its variety of interesting features make it an important area for scientific study, recreation and education. It is thought that there may be archaeological sites connected with colonial whaling and sealing operations in the area around Cowper’s Point. Two sites of Aboriginal significance are located within the Lavinia Nature Reserve, one is located near Martha Lavinia and the other at Pennys Lagoon.

20. Land tenure/ownership
On site: The area within the present boundary was proclaimed a State Reserve in 1988. This area includes the previously smaller Lavinia Nature Reserve and the Sea Elephant Nature Reserve, plus additional surrounding areas.
Surrounding area: Private freehold (some agricultural) and some unallocated Crown land (native vegetation).

21. Current land use:
On site: Nature conservation, recreation (boating, fishing, camping, off-road driving).

22a. Factors (past and present) adversely affecting the sites ecological characters, including changes in land use and development projects
On site: Inappropriate fire regime is one of the main threats to vegetation. The root rot fungus Phytophthora cinnamomi is present along access tracks in the reserve and is a threat to many of the vegetation communities. Off-road vehicles and motorbikes have caused considerable damage to the saltmarsh community along the Sea Elephant River estuary.
Surrounding area: Large scale sand mining is to occur on land to the south of the Lavinia Reserve. The Tasmanian Department of Primary Industries, Water and the Environment opposed this and a buffer zone has been negotiated in an attempt to protect the values of the Reserve.

22b. Factors (potential) adversely affecting the sites ecological characters, including changes in land use and development projects
Null

23 and 24 Conservation measures taken and measures proposed
Conservation Measures: Land south of the Sea Elephant River mouth has been added to the Nature Reserve, and some private land adjacent to the reserve has been acquired and incorporated into the Reserve. Regular trapping of feral cats is undertaken. A draft management plan has been written for the area.

Conservation Measures Proposed: It is proposed that the ranger employed by the Tasmanian Department of Primary Industries, Water and the Environment receive an increased level of funding so that he is able to manage all areas under the Department’s jurisdiction including Lavinia Nature Reserve.

25. Current scientific research and facilities:
There is ongoing monitoring of the orange-bellied parrots and their habitat availability by staff of the Tasmanian Department of Primary Industries, Water and the Environment.

26. Current conservation education:
On site interpretive information on orange-bellied parrots is present in the area, the wetland also features in educational leaflets developed by the Tasmanian Department of Primary Industries, Water and the Environment.

27. Current recreation and tourism:
Information signs, a picnic area and facilities have recently been erected in the Penny’s Lagoon region and a picnic area. Roads in this and the Lake Martha Lavinia vicinity have been upgraded.

28. and 29. Jurisdiction and management authority:
Jurisdiction: Territorial: King Island Municipal Council.
Functional and Management: Department of Primary Industries, Water and the Environment, 134 Macquarie Street, Hobart, Tasmania, 7000

30. Bibliographical references


Threatened Species Protection Act 1995 Department of Primary Industries, Water and Environment.
## Appendix 3 Flora recorded in Lavinia Nature Reserve

### DICOTYLEDONAE

<table>
<thead>
<tr>
<th>Species</th>
<th>Common Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acacia mucronata</td>
<td>variable sallow wattle</td>
</tr>
<tr>
<td>Acacia sophorae</td>
<td>coast wattle, false boobyalla</td>
</tr>
<tr>
<td>Acacia suaveolens</td>
<td>sweet wattle</td>
</tr>
<tr>
<td>Acacia verticillata</td>
<td>prickly mimosa, echidna wattle</td>
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<tr>
<td>Allocasuarina verticillata</td>
<td>drooping sheoak</td>
</tr>
<tr>
<td>Allocasuarina zephyrea</td>
<td>western scrub sheoak</td>
</tr>
<tr>
<td>Amperea xiphoclada</td>
<td>broom spurge</td>
</tr>
<tr>
<td>Apium prostratum</td>
<td>sea parsley</td>
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<tr>
<td>Atriplex cinerea</td>
<td>grey saltbush</td>
</tr>
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<td>Bauera rubioides</td>
<td>silver banksia</td>
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<td>Boronia anemonifolia</td>
<td>bauera</td>
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<td>Boronia parviflora</td>
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<td>Callitriche sonderi</td>
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<td>Cassytha pubescens</td>
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<td>Centipeda cunninghamii</td>
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<td>Correa reflexa</td>
<td>hairy dodder-laurel</td>
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<td>Correa reflexa var. reflexa</td>
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<td>Comesperma volubile</td>
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<tr>
<td>Eucalyptus globulus</td>
<td>velvet correa</td>
</tr>
<tr>
<td>Eucalyptus nitida</td>
<td>native fuchsia</td>
</tr>
<tr>
<td>Eucalyptus ovata</td>
<td>common correa</td>
</tr>
<tr>
<td>Eucalyptus viminalis ssp. viminalis</td>
<td>water-buttons</td>
</tr>
<tr>
<td>Elaeocarpus reticulatus</td>
<td>creeping crassula</td>
</tr>
<tr>
<td>Epilobium billardierianum</td>
<td>swamp stonecrop</td>
</tr>
<tr>
<td>Epacris impressa</td>
<td>Australian stonecrop</td>
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<tr>
<td>Eucalyptus brookeriana</td>
<td>Smooth parrot pea</td>
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<tr>
<td>Eucalyptus globulus</td>
<td>hop bush</td>
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<tr>
<td>Eucalyptus nitida</td>
<td>forked sundew</td>
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<tr>
<td>Eucalyptus ovata</td>
<td>pale sundew</td>
</tr>
<tr>
<td>Eucalyptus viminalis ssp. viminalis</td>
<td>tall sundew</td>
</tr>
<tr>
<td>Gamochaeta purpureaum</td>
<td>dwarf sundew</td>
</tr>
<tr>
<td>Gompholobium huegelii</td>
<td>blueberry ash</td>
</tr>
<tr>
<td>Haloragis brownii</td>
<td>common willowherb</td>
</tr>
<tr>
<td>Hibbertia empetrifolia</td>
<td>common heath</td>
</tr>
<tr>
<td>Hibbertia procumbens</td>
<td>rocka rivulet gum</td>
</tr>
<tr>
<td>Hibbertia prostrata</td>
<td>King Island blue gum</td>
</tr>
<tr>
<td>Lampranthus dubius</td>
<td>Smithton peppermint</td>
</tr>
<tr>
<td>Leptospermum scoparium</td>
<td>Marrawah gum</td>
</tr>
<tr>
<td>Leucopogon gramineus</td>
<td>white gum</td>
</tr>
<tr>
<td>Lomatia ilicifolia</td>
<td>purple cudweed</td>
</tr>
<tr>
<td>Ptilotus subaculeatus</td>
<td>bladder-pea</td>
</tr>
<tr>
<td>Psoralea trichocarpa</td>
<td>Brown’s rapwort</td>
</tr>
<tr>
<td>Psoralea diaphana</td>
<td>scrambling guinea-flower</td>
</tr>
<tr>
<td>Rumex serpyllifolius</td>
<td>spreading guinea-flower</td>
</tr>
<tr>
<td>Scrophularia multicaulis</td>
<td>prostrate guinea-flower</td>
</tr>
</tbody>
</table>
Lavinia Nature Reserve
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Hydrocotyle hirta  
Hydrocotyle muscosa  
Hydrocotyle pterocarpa  
Hypolepis distans  
Lagenifera stipitata  
Leptinella longipes  
Leptospermum concavum  
Leptospermum gladiatum  
Leptospermum laevigatum  
Leptospermum scoparium  
Leucopogon collinus  
Leucopogon ericoides  
Leucopogon parviflorus  
Lilacopsis polyantha  
Limonia australis  
Limosella australis  
Lobelia alata  
Lythrum hyssopifolia  
Mazus pumilio  
Melaleuca ericifolia  
Melaleuca squarrosa  
Mentha diemenica  
Mitraeacme pilosa  
Monotoca glauca  
Myoporum insulare  
Myriophyllum pedunculatum  
Myriophyllum pedunculatum var. pedunculatum  
Olearia floribunda  
Olearia glutinosa  
Olearia lepidophylla  
Ozothamnus turbinatus  
Oxalis perennans  
Plantago bellidioides  
Pelargonium australe  
Persicaria hydropiper  
Persicaria prostrata  
Peronicia juniperina  
Phebalium squameum  
Pimelea linifolia ssp. linifolia  
Pomaderris apetala  
Poronthera microphylla  
Pultenaea daphnoides var. obcordata  
Pultenaea juniperina  
Ranunculus amphitrichus  
Samolus repens  
Sarcocornia quinqueflora  
Sclerostegia arbuscula  
Selliera radicans  
Senecio odoratus  
Senecio spathulatus  
Sprengelia incarnata  
Stackhousea monogyna  
Stylidium graminifolium  
Swainsona lessertifolia  
Suaeda australis  
Utricularia dichotoma  

hairy pennywort  
mossy pennywort  
wing pennywort  
Scrambling ground fern  
blue bottle daisy  
long cotula  
hill sword sedge  
coast sword sedge  
coastTea-tree  
manuka  
white beard-heath  
pink beard-heath  
currant bush, coast beard-heath  
common beard-heath  
Australian liaeopsis  
sea lavender  
mudwort  
angled lobelia  
hyssop loosestrife  
swamp mazus  
swamp paperbark  
scented paperbark  
slender mint  
hairy mitrewort  
golden wood  
boobyalla  
mat water-milfoil  
mat water-milfoil  
heath daisy Bush  
sticky daisy bush  
clubmoss daisy bush  
coast everlasting  
native oxalis  
herbfield plantain  
wild geranium  
waterpepper  
creeping persicaria  
prickly geebung  
lancewood  
slender rice-flower  
dogwood  
small poranthera  
native daphne  
prickly beauty  
water buttercup  
creeping brookweed  
beaded glasswort  
shrubby glasswort  
swamp-weed  
scented groundsel  
spathulate groundsel  
pink swamp heath  
creamy candles  
grass trigger plant  
poison pea  
seablite  
bladderwort
Utricularia laterifolia
Villarsia reniformis
Viola cleistogamoides
Viola hederacea
Wahlenbergia gracilenta
Xanthosia dissecta
Xanthosia pusilla
Zieria arborescens

tiny bladderwort
running marsh-flower
cryptic violet
ivy-leaf violet
annual bluebell
cut-leaf xanthosia
small xanthosia
stinkwood

MONOCOTYLEDONAE

Agrostis avenacea
Austrostipa littoralis
Baumea acuta
Baumea arthropylla
Baumea juncea
Caladenia latifolia
Caladenia pusilla
Carex appressa
Carex fascicularis
Centella cordifolia
Centrolepis fascicularis
Centrolepis strigosa
Dianella Tasmanica
Dichelachne crinita
Distichlis distichophylla
Drymophila cyanocarpa
Ehrharta distichophylla
Eleocharis acuta
Empodisma minus
Gahnia grandis
Isolepsis cernua
Isolepsis inundata
Juncus buxifolius
Juncus kraussii ssp. australiensis
Juncus pallidus
Juncus pauciflorus
Juncus planifolius
Juncus procerus
Laxmannia orientalis
Lemma dispersa
Lepidosperma concavum
Lepidosperma gladiatum
Lepyroditia muellerae
Lepyroditia tasmanica
Patersonia fragilis
Poa labillardieri
Pyrochis nigricans
Restio tetraphyllus
Schoenus maschalinus
Schoenus nitens
Spinifex sericeus
Stipa flavescens
Stipa stipoides
Tetragonia implexicoma
Thelymitra caespitosum
Thelymitra flexuosa

blown grass
coast fescue
pale twig-rush
articulate twig rush
bare twig-rush
pink fairies
tiny caladenia
tall sedge
tassel sedge
centella
tufted centrolepis
brisstlewort
blue berry
long hair plume grass
Australian salt-grass
turquoise berry
hairy rice-grass
common spike rush
spreading rope-rush
cutting grass
grassy club rush
swamp club rush
toad rush
sea rush
pale rush
loose flower rush
broad leaf rush
great rush
dwarf wire-lily
common duckweed
sand or hill sword-sedge
coast sword-sedge
common scale rush
branching scale rush
short purple-flag Iris
tussock grass
fire orchid	
tassel cord-rush
dwarf bog-rush
shiny bog-rush
spinifex
yellow spear grass
coastal spear-grass
ice plant
tufted blue lily
twisted sun orchid
Triglochin procerum  
Xyris gracilis  
Xyris marginata  

PTERIDOPHYTA

Azolla filiculoides  
Gleichenia microphylla  
Hypolepis distans  
Lindsaea linearis  
Lycopodiella serpentina  
Lycopodiella fastigiata  
Lycopodiella lateralis  
Pteridium esculentum  
Schizaea fistulosa  
Selaginella uliginosa  
Selaginella gracillima  

water - ribbons  
slender yellow eye  
emarginate yellow-eye  

red azolla  
scrambling coral-fern  
scrambling ground-fern  
screw fern  
bog club moss  
mountain club moss  
slender club moss  
bracken  
narrow comb-fern  
swamp selaginella  
tiny selaginella
## Appendix 4 Recorded Fauna in Lavinia Nature Reserve (excluding birds)

### Terrestrial Mammals

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platypus</td>
<td>Ornithorhynchus anatinus</td>
</tr>
<tr>
<td>Echidna</td>
<td>Tachyglossus aculeatus setosus</td>
</tr>
<tr>
<td>Swamp Antechinus</td>
<td>Antechinus minimus minimus</td>
</tr>
<tr>
<td>Spotted-tailed Quoll</td>
<td>Dasyurus maculatus maculatus</td>
</tr>
<tr>
<td>Ringtail Possum</td>
<td>Pseudocheirus peregrinus viverrinus</td>
</tr>
<tr>
<td>Bristle-tailed Possum</td>
<td>Trichosurus vulpecula fuliginosus</td>
</tr>
<tr>
<td>Eastern Pygmy Possum</td>
<td>Cercartetus nanus nanus</td>
</tr>
<tr>
<td>Bennett's Wallaby</td>
<td>Potorous tridactylus apicalis</td>
</tr>
<tr>
<td>Southern Potoroo</td>
<td>Macropus rufogriseus rufogriseus</td>
</tr>
<tr>
<td>Blotched Blue-Tongue Lizard</td>
<td>Thylotragulus spilota spilota</td>
</tr>
<tr>
<td>Water Rat</td>
<td>Hylposcincus lesueurii</td>
</tr>
<tr>
<td>Swamp Rat</td>
<td>Rattus lutreolus</td>
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</tbody>
</table>

### Bats

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lesser Long-eared Bat</td>
<td>Nyctophilus geoffroyi</td>
</tr>
<tr>
<td>Gould's Wattle Bat</td>
<td>Chalinolobus gouldii</td>
</tr>
</tbody>
</table>

### Aquatic Mammals

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
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</thead>
<tbody>
<tr>
<td>New Zealand Fur Seal</td>
<td>Arctocephalus forsteri</td>
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<tr>
<td>Leopard Seal</td>
<td>Hydrurga leptonyx</td>
</tr>
<tr>
<td>Southern Elephant Seal</td>
<td>Mirounga leonina</td>
</tr>
</tbody>
</table>

### Reptiles

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three-lined Skink</td>
<td>Bassiana duperryi</td>
</tr>
<tr>
<td>White's Skink</td>
<td>Egernia whitei</td>
</tr>
<tr>
<td>Metallic Skink</td>
<td>Niveoscincus metallicus</td>
</tr>
<tr>
<td>Tasmanian Tree Skink</td>
<td>Niveoscincus pretiosus</td>
</tr>
<tr>
<td>Southern Grass Skink</td>
<td>Pseudemoia entrecasteauxii</td>
</tr>
<tr>
<td>Blotched Blue-tongue Lizard</td>
<td>Tiliqua nigrolutea</td>
</tr>
<tr>
<td>Copperhead Snake</td>
<td>Austrelaps superbus</td>
</tr>
<tr>
<td>White-lipped Whip Snake</td>
<td>Drysdalia coronoides</td>
</tr>
<tr>
<td>Tiger Snake</td>
<td>Notechis ater</td>
</tr>
</tbody>
</table>

### Amphibians

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
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</thead>
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<tr>
<td>Brown Froglet</td>
<td>Crinia signifera</td>
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<tr>
<td>Brown Tree Frog</td>
<td>Litoria ewingi</td>
</tr>
<tr>
<td>Green and Gold Frog</td>
<td>Litoria raniformis</td>
</tr>
<tr>
<td>Eastern Banjo Frog</td>
<td>Limnodynastes dumerili</td>
</tr>
<tr>
<td>Striped Marsh Frog</td>
<td>Limnodynastes peroni</td>
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<tr>
<td>Smooth Froglet</td>
<td>Geocrinia laevis</td>
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### Exotic And Feral Species

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
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<tbody>
<tr>
<td>House Mouse</td>
<td>Mus musculus</td>
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<tr>
<td>Black Rat</td>
<td>Rattus rattus</td>
</tr>
<tr>
<td>Cat</td>
<td>Felis catus</td>
</tr>
</tbody>
</table>
Freshwater Fish
Anguilla australis  
short-finned eel
Galaxias truttaceous  
spotted galaxis
Galaxias maculatus  
jollytail
Galaxias brevipinnis  
climbing galaxis
Retropinna tasmanica  
Tasmanian smelt
Nannoperca australis  
pgymy perch
Pseudorhitis urvillii  
freshwater flathead
Oncorhynchus mykiss  
rainbowtrout

Invertebrates

Acarina
Ixodes tasmani
Ixodes hirsti
Ixodes uriae
Ixodes sp.

Araneae
Nama tasmanica

Decapoda
Cyclograpsus granulosus
Leptograpsodes octentatus
Pseudocarcinus gigas

Diptera
Ornithoica stipituri
Ornithomya avicularia
Ornithomya areolata

Geophilomorpha
Zelanion sp.

Hymenoptera
Ameis tasmanica

Isopoda
Haswellia sp.

Lepidoptera
Hipponyx scrofa

Phthiraptera
Acanthopsylla rothschildi

Molluscs
Acanthochitonidae
Acanthochiton australis
Aplysiidae
Dolabrifera norfolkensis
Batillariidae
Batillaria diemenensis

Buccinidae
 Fusinus undulatus

Cypraeidae
 Cypraea piperita

Conidae
Conus anemonace

Cryptoplacidae
Cryptoplax striata

Fissurellidae
 Scutus antipodes

Glycymeridae
Glycymeris striatula

Helicidae
Haliotis laevigata

Littorinidae
Littorina unifasciata

Marginellidae
Marginella muscoria

Mitridae
Volvarina columnaria
Lavinia Nature Reserve
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*Mitra australis*
*Mitra glabra*
*Mitra rhodia*

**Muricidae**
Bedeva paivae
lepsiella vinosa
lepsiella reticulata
Phyllocoma eburneus
Pterynotus triformis
Pterynotus angasi

**Mytilidae**
Brachidontes rostratus
Hormomya erosus
Modiolus albicostus

**Nacellidae**
Cellana solida

**Naticidae**
Natica euzona
Polinices conicus
Polinices umbilicatum

Polinices didyma
Polinices incei

**Octopodidae**
Hapalochlaena maculosa

**Patellidae**
Scutellastra peronii
Scutellastra squamifera

**Phasianellidae**
Phasianella ventricosa
Phasianella australis

**Planorbidae**
Glyptophysa pyramidata

**Psammobiidae**
Gari kenyoniana

**Pterotracheidae**
Pterotrachea kingicola

**Ranellidae**
Cabestana tabulata
Sassia eburnea
Sassia subdistorta

**Solenidae**
Solen vaginoides

**Trigoniidae**
Neotrigonia margaritacea

**Trochidae**
Astele subcarinatum
Calliostoma armillatum
Cantharidus iridosontes
Cantharidus eximius
Cantharidus bellulus
Clanculus aloysii
Clanculus plebejus
Clanculus undatus
Clanculus limbatus
Diloma concamerata
Diloma odontis
Euchelus aspersa
Euchelus scabriuscula
Appendix 5  Birds Recorded on King Island

*introduced bird species
Note: bird species names follow the taxonomy of Christidis & Boles (1994)

**Acanthizidae**
- *Sericornis frontalis*  
  Tasmanian scrubwren
- *Acanthornis magnus*  
  scrub tit
- *Acanthiza pusilla archibaldi*  
  brown thornbill
- *Acanthiza ewingii*  
  Tasmanian thornbill

**Accipitridae**
- *Accipiter fasciatus*  
  brown goshawk
- *Accipiter novaehollandiae*  
  grey goshawk
- *Aquila audax fleayi*  
  wedge-tailed eagle
- *Haliaeetus leucogaster*  
  white-bellied sea-eagle
- *Circus approximans gouldi*  
  swamp harrier

**Alcedinidae**
- *Dacelo novaeguineae*  
  laughing kookaburra

**Anatidae**
- *Cygnus atratus*  
  black swan
- *Cereopsis novaehollandiae*  
  Cape Barren goose
- *Tadorna tadornoides*  
  Australian shelduck
- *Anas superciliosa*  
  Pacific black duck
- *Anas gracilis*  
  grey teal
- *Anas castanea*  
  chestnut teal
- *Anas rhynochotis*  
  Australasian shoveler
- *Oxyura australis*  
  blue billed duck
- *Biziura lobata*  
  musk duck

**Aplodidae**
- *Hirundo neoxena*  
  welcome swallow
- *Hirundo nigriceps*  
  tree martin
- *Hirundapus caudacutus*  
  white-throated needletail

**Ardeidae**
- *Ardea pacifica*  
  Pacific heron
- *Ardea novaehollandiae*  
  white faced heron
- *Ardeola ibis*  
  cattle egret
- *Nycticorax caledonicus*  
  Nankeen night heron
- *Botaurus poicillilis*  
  Australasian bittern

**Artamidae**
- *Artamus cyanopterus*  
  dusky wood swallow

**Columbidae**
- *Phaps chalcoptera*  
  common bronzingw
- *Phaps elegans*  
  brush bronzingw

**Charadriidae**
- *Charadrius ruficapillus*  
  red-capped plover
- *Charadrius bicinctus*  
  double-banded plover
- *Charadrius cucullatus*  
  hooded plover
- *Charadrius mongolus*  
  lesser sand plover
- *Elseornis melanops*  
  black fronted dotterel
- *Pluvialis fulva*  
  pacific golden plover
- *Vanellus miles novaehollandiae*  
  masked lapwing
- *Vanellus tricolor*  
  banded lapwing

**Cracticidae**
- *Cracticus torquatus*  
  grey butcherbird
<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strepera fuliginosa</td>
<td>black currawong</td>
</tr>
<tr>
<td>Strepera versicolor</td>
<td>grey currawong</td>
</tr>
<tr>
<td>Corvus tasmanicus</td>
<td>forest raven</td>
</tr>
<tr>
<td>Corvus mellori</td>
<td>little raven</td>
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<tr>
<td>Gymnorhina tibicen</td>
<td>Australian magpie</td>
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<tr>
<td><strong>Cuculidae</strong></td>
<td></td>
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<tr>
<td>Cuculus pallidus</td>
<td>pallid cuckoo</td>
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<tr>
<td>Cacomantis flabelliformis</td>
<td>fan-tailed cuckoo</td>
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<tr>
<td>Chrysococcyx basalis</td>
<td>Horsfields bronze-cuckoo</td>
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<td>Chrysococcyx lucidus</td>
<td>shining bronze-cuckoo</td>
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<tr>
<td><strong>Diomedeidae</strong></td>
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<td>Diomedea cauta cauta</td>
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<td>wandering albatross</td>
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<td>Diomedea melanophris malanophris</td>
<td>black – browed albatross</td>
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<tr>
<td><strong>Falconidae</strong></td>
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<tr>
<td>Falco berigora tasmanica</td>
<td>brown falcon</td>
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<td>Falco peregrinus macropus</td>
<td>peregrine falcon</td>
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<tr>
<td>Falco longipennis</td>
<td>Australian hobby</td>
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<tr>
<td>Falco cenchroides</td>
<td>Nankeen kestrel</td>
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<td><strong>Fringillidae</strong></td>
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<td>Carduelis chloris</td>
<td>European greenfinch*</td>
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<td>Carduelis carduelis</td>
<td>European goldfinch*</td>
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<td><strong>Haematopodidae</strong></td>
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<tr>
<td>Haematopus longirostris</td>
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<td>Haematopus fuliginosus</td>
<td>sooty oystercatcher</td>
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<tr>
<td><strong>Laridae</strong></td>
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<tr>
<td>Larus pacificus</td>
<td>Pacific gull</td>
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<td>Larus novaehollandiae</td>
<td>silver gull</td>
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<td>Larus dominicanus</td>
<td>kelp gull</td>
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<td>Sterna caspia</td>
<td>caspian tern</td>
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<td>Sterna bergii</td>
<td>crested tern</td>
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<td>Sterna nereis</td>
<td>fairy tern</td>
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<td><strong>Maluridae</strong></td>
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<td>Malurus cyaneus</td>
<td>superb fairy-wren</td>
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<td><strong>Meliphagidae</strong></td>
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<tr>
<td>Anthochara paradoxa</td>
<td>yellow wattlebird</td>
</tr>
<tr>
<td>Lichenostomus flavicollis</td>
<td>yellow-throated honeyeater</td>
</tr>
<tr>
<td>Melithreptus validirostris</td>
<td>strong-billed honeyeater</td>
</tr>
<tr>
<td>Melithreptus affinus</td>
<td>black-headed honeyeater</td>
</tr>
<tr>
<td>Phylidonyros pyrrhoptera</td>
<td>crescent honeyeater</td>
</tr>
<tr>
<td>Phylidonyros novaehollandlae</td>
<td>New Holland honeyeater</td>
</tr>
<tr>
<td>Phylidonyros melanops</td>
<td>tawny crowned honeyeater</td>
</tr>
<tr>
<td><strong>Muscicapidae</strong></td>
<td></td>
</tr>
<tr>
<td>Myiagra cyanoleuca</td>
<td>satin flycatcher</td>
</tr>
<tr>
<td>Rhipidura fuliginosa</td>
<td>grey fantail</td>
</tr>
<tr>
<td>Alauda arvensis</td>
<td>skylark</td>
</tr>
<tr>
<td>Anthus novaeseelandiae</td>
<td>Richard’s pipit</td>
</tr>
<tr>
<td>Zoothera lunulata</td>
<td>bassian thrush</td>
</tr>
<tr>
<td>Petroica phoenica</td>
<td>flame robin</td>
</tr>
<tr>
<td>Melanodryas vittata</td>
<td>dusky robin</td>
</tr>
<tr>
<td>Colluricinclia harmonica</td>
<td>grey shrike-thrush</td>
</tr>
<tr>
<td>Ephianura albigrons</td>
<td>white-fronted chat</td>
</tr>
<tr>
<td>Pachycephala olivacea</td>
<td>olive whistler</td>
</tr>
<tr>
<td>Pachycephala pectoralis</td>
<td>golden whistler</td>
</tr>
<tr>
<td>Turdus merula</td>
<td>common blackbird*</td>
</tr>
<tr>
<td><strong>Phalacrocoracidae</strong></td>
<td></td>
</tr>
</tbody>
</table>
Lavinia Nature Reserve  
Draft Management Plan 2000

Leucocarbo fuscescens  
black-faced shag 
Morus serrator  
Australasian gannet 
Phalacrocorax varius  
pied cormorant 
Phalacrocorax melanoleucus  
little pied cormorant 
Phalacrocorax sulcirostris  
little black cormorant 
Phalacrocorax carbo  
great cormorant 

Pardalotidae 

Pardalotus punctatus  
spotted pardalote 
Pardalotus striatus  
striated pardalote 

Passeridae 

Passer domesticus  
house sparrow* 

Phasianidae 

Coturnix ypsilophora  
brown quail 
Coturnix pectoralis  
stubble quail 
Turnix varia  
painted quail 
Coroturnix chinesis  
king quail* 
Pavo cristatus  
Indian peafowl* 
Phasianus colchicus  
common pheasant* 
Lophortyx californicus  
Californian quail* 
Meleagris gallopava  
wild turkey* 
Threskiornis aesthiope  
Australian white ibis 
Threskiornis spinicolor  
straw necked ibis 

Ploceidae 

Emblema bella  
beautiful firetail 

Podicipedidae 

Tachybaptus novaehollandiae  
Australasian grebe 
Polioccephalus poliocephalus  
hoary-headed grebe 

Procellariidae 

Daption caoense  
cape petrel 
Macronectes halli  
northern – giant petrel 
Puffinus tenuiostris  
short – tailed shearwater 
Puffinus griseus  
sooty shearwater 
Puffinus gavia  
fluttering shearwater 
Pachyptila turtur subantarctica  
fairy prion 
Pelecanoides urinatrix urinatrix  
common diving petrel 
Pelagodroma marina  
white faced storm petrel 

Psittacidae 

Calyptorhynchus funereus  
yellow-tailed black cockatoo 
Cactua galerita  
sulphur crested cockatoo 
Platycercus caledonicus  
green rosella 
Neophema caledonica  
blue winged parrot 
Neophema chrysogaster  
orange – bellied parrot 

Rallidae 

Rallus philippensis  
buff banded rail 
Rallus pectoralis  
Lewin’s rail 
Porzana tabuensis  
spotless crake 
Porzana pusilla palustris  
ballion’s crake 
Gallinula mortierii  
Tasmanian native hen 
Porphyrio porphyrio  
purple swamphen 
Gallinula tenebrosa  
dusky moorhen 
Fulica atra  
Eurasian coot 

Scolopacidae 

Arenaria interpres  
ruddy turnstone 
Numenius madagascariensis  
eastern curlew 
Tringa nebularia  
commun greenshank 
Gallinago hardwickii  
Latham’s snipe 
Limosa lapponica  
bar tailed godwit
Calidris ferruginea  
calidris acuminata  
Calidris ruficollis  
Spheniscidae  
Eudyptula minor  
Aptenodytes patagonicus  
Strigidae  
Ninox novaeseelandiae  
Sylviidae  
Megalurus gramineus  
Cisticola exilis  
Zosteropidae  
Zosterops lateralis  
curlew sandpiper  
sharp tailed sandpiper  
red necked stint  
little penguin  
king penguin  
southern boobook  
little grassbird  
golden – headed cisticola  
silvereye
Appendix 6 Performance Indicators

Performance indicators provide a guide for measuring progress in implementing the management plan and evaluating how well the management objectives of the plan have been achieved. During the life of this plan, further, more detailed research and monitoring programs, policies or procedures approved by the managing authority may be applied for the evaluation of this plan and its implementation. As a minimum, the following performance indicators will be used when evaluating the plan’s implementation and outcomes.

- The natural biological diversity of the indigenous flora and fauna in the reserve is equal to that which occurred at the commencement of the plan.
- Populations of threatened species within the reserve are stable or increasing upon that which occurred at the commencement of the plan.
- The significant natural landscapes and catchments in the reserve are intact or restored.
- Water quality in the reserve has not deteriorated or has improved.
- Geological diversity and sites of geodiversity significance in the reserve are intact or reserved.
- Sites and areas of historic heritage are protected, managed and, in appropriate circumstances, interpreted.
- An interpretation plan for the reserve has been prepared, implemented and reviewed.
- Research is available which improves the knowledge of the reserve.
- Research and monitoring results are available which assist effective management decision making on conservation and management of the reserve.
- Damaged or degraded areas of the reserve have been stabilised or rehabilitated and restored.
- Fire management programs for the reserve have been undertaken
- Reserve values and neighbouring lands have not been adversely impacted upon by fire.
- *Phytophthora* and other plant diseases have not spread into areas unaffected at the commencement of the plan.
- Introduced flora and fauna are controlled or have been eradicated.
- The recreational and tourism character of the reserve is one of quietness and relaxation in an attractive natural setting.
- Coordinated and integrated site planning has been undertaken and implemented for all developments.
- Recreation and tourism opportunities and facilities identified in the management plan or in site planning have been developed in accordance with the plans.
• Visitor impacts on reserve values are at sustainable levels for the zone or area in which they occur.

• Visits to the reserve have increased since approval of the plan.

• Visitor and community interest and involvement in, and comment upon, the state of the reserve, and its management, is regular and predominantly favourable.