

AUSTRALIAN NATIONAL PERIODIC REPORT

SECTION II

**Report on the State of Conservation of the
Tasmanian Wilderness**

II.1 INTRODUCTION:

a. State Party:

Australia.

b. Name of World Heritage property:

Tasmanian Wilderness World Heritage Area (TWWHA)

c. Geographical coordinates to the nearest second:

Between latitudes 41 degrees 35 minutes south and 43 degrees 40 minutes south, and longitudes 145 degrees 25 minutes east and 146 degrees and 55 minutes east.

d. Date of inscription on the World Heritage List:

December 1982, Extended December 1989

e. Organisation(s) or entity(ies) responsible for the preparation of the report:

The Heritage Management Branch of Environment Australia (Commonwealth), and the Parks and Wildlife Service, a Division of the Tasmanian Department of Tourism, Parks, Heritage and the Arts

II.2 STATEMENT OF SIGNIFICANCE:

Criteria

The Tasmanian Wilderness World Heritage Area was inscribed on the World Heritage List in recognition of its outstanding universal values under the then natural and cultural criteria listed below (these criteria have since been revised):

- is an outstanding example representing the major stages of the earth's evolutionary history;
- is an outstanding example representing significant ongoing geological processes, biological evolution and humanity's interaction with the natural environment;
- contains superlative natural phenomena, formations or features, or areas of exceptional natural beauty; and
- contains the most important and significant natural habitats where threatened species of animals or plants of outstanding universal value still survive.

and in recognition of its outstanding cultural universal values:

- bears a unique or at least exceptional testimony to a civilisation which has disappeared;

- is an outstanding example of a traditional human settlement which is representative of a culture and which has become vulnerable under the impact of irreversible change; and
- is directly or tangibly associated with events or with ideas or beliefs of outstanding universal significance.

The current (revised) equivalent natural criteria (*Natural Criteria i-iv*) are:

- As an outstanding example representing the major stages in the earth's evolutionary history;
- As an outstanding example representing significant ongoing biological processes;
- As an example of superlative natural phenomena; and
- Containing important and significant habitats for in situ conservation of biological diversity,

The current (revised) equivalent cultural criteria (*Cultural Criteria iii, v and vi*) are:

- Bearing an exceptional testimony to a civilisation or cultural tradition;
- As an outstanding example of a type of landscape which illustrates significant stages in human history; and
- Being directly and tangibly associated with living traditions of outstanding universal significance.

Justification for Listing

The Tasmanian Wilderness World Heritage Area comprises most of the last great temperate wilderness in Australia, and is one of only a few such regions in the world. It extends over 1.38 million hectares, covering around 20 per cent of the land area of the island state of Tasmania. In this context, the area should be viewed as a whole – not merely as the sum of its specifically identified values, but in their interrelation and dependency on one another. The geology, glacial systems, karst, vegetation, fauna and the distribution and integrity of the archaeological sites, are all facets of the dynamic ecosystem development located within one largely continuous tract of primitive land.

It is this pristine ecological quality which underpins the success of the area in meeting all four criteria as a natural property and which is the foundation for the maintenance of the integrity of the natural and cultural values which are displayed.

Natural Values

Rocks from virtually every geological period are represented in the area, the oldest being formed about 1 100 million years ago during the Precambrian period. Some of the rock types, such as limestone and dolomite, are soluble in water, which has resulted in the development of various karst features such as sinkholes and caves. These are some

of the deepest and longest caves in Australia. Exit Cave, near Lune River has over 20 kilometres of passageways and spectacular cave formations.

The area contains a wide variety of vegetation including closed forest (temperate rain forest), open forest (eucalypt forest), buttongrass moorland and alpine communities. The flora occurs in a unique mosaic of Antarctic and Australian elements with the Antarctic element consisting of species descended from the super-continent of Gondwana.

Because of the diversity of its vegetation the region is recognised as an International Centre for Plant Diversity by the World Conservation Union (IUCN). Some of the oldest known trees in the world grow in the area, such as Huon pines. The area contains approximately 240 (or two thirds) of Tasmania's higher plant species, of which about half have most of their distribution in the World Heritage Area.

The fauna is of world importance because it includes an unusually high proportion of endemic species and relict groups of ancient lineage. The diverse topography, geology, soils and vegetation, in association with harsh and variable climatic conditions, combine to create a wide array of animal habitats. The fauna is correspondingly diverse. Two main faunal groups can be recognised: one group, including the marsupials and burrowing freshwater crayfish, has survived as relicts of the Gondwana fauna; the other group, including rodents and bats, invaded Australia from Asia millions of years after the break up of Gondwana.

The insularity of Tasmania, and of the Tasmanian Wilderness in particular, has contributed to its uniqueness and has helped protect it from the impact of exotic species that have seriously affected the environment of the Australian mainland. The Tasmanian Wilderness is a stronghold for several animals that are either extinct or threatened on mainland Australia. The world's largest marsupial carnivores, the Tasmanian devil, spotted-tailed quoll and eastern quoll are commonly seen at night.

Fauna endemic to the region include the green rosella and orange-bellied parrot; frogs, such as the moss froglet and Tasmanian tree frog; the Tasmanian cave spider; burrowing crayfish; and peripatopsid velvet worms.

Cultural Values

Archaeological surveys of inland valleys such as the Gordon, Franklin, Andrew, Acheron, Weld, Cracroft, Denison and Maxwell rivers have revealed an exceptionally rich and important collection of Aboriginal sites, including Kutikina Cave. These places, along with all of the World Heritage Area's Aboriginal sites are extremely important to the Tasmanian Aboriginal community, having exceptional cultural, emotional and spiritual value.

More than 40 sites have been located in the south-west inland river valleys, with human occupation dating to at least 30 000 years ago. At the time these places were occupied the climate was significantly colder and drier than it is now and the sites reveal the special ways that the Aboriginal community developed to deal with these conditions. The severity of the climate reached a peak 18 000 years ago, at the height of the last Ice Age.

This group of places, which also include rock art sites, forms one of the richest and best-preserved collection of Ice Age sites found anywhere in the world. As well, during the periods of earliest occupation, the Aboriginal people of the region may have been the most southerly peoples on earth.

Together with other more recent Aboriginal places throughout the World Heritage Area (including those coastal areas), the sites show how the Tasmanian Aboriginal people have developed a distinctive way of life in a rugged and harsh landscape.

Additional Information on significance since listing

A number of significant additional discoveries have been made regarding the Tasmanian Wilderness since its listing as a World Heritage Area. Amongst the most important of these are;

- Significant new marine communities were discovered in the Bathurst Channel - Bathurst Harbour area. These normally live at much greater depths off shore but also occur in the shallow, dark tannin-stained waters of Bathurst Channel. A new species of skate and a species of sea pen, which is a colonial invertebrate have been discovered.
- Genetic research indicated that the plant *Lomatia tasmanica* is a sterile triploid clone of considerable significance to science. It appears to have been in existence as a sterile clone for at least 43,000 years — making it the oldest documented such vascular plant clone in the world.
- Several new species of plants and animals were discovered, including the moss froglet (*Bryobatrachus nimbus*), the mountain skink (*Niveoscincus orocryptus*), the Bathurst Harbour skate (*Raja* sp), a fern ally, a new lichen, and many invertebrates.

These discoveries further validate the listing of the Tasmanian Wilderness under current criteria. The managing agency is currently undertaking a project to update the values of the World Heritage Area. It is anticipated that this will result in a minor expansion of the area (approximately 20,000 additional hectares) and an up-to-date listing of all its values.

Indicative World Heritage Values Table

The Environment Protection and Biodiversity Conservation Act 1999 prohibits actions that have "a significant impact on the World Heritage values of a declared World Heritage property" unless the action is approved or in accordance with an accredited management plan. The World Heritage values of a property are the natural heritage and cultural heritage contained in the property, which have the same meaning given by the World Heritage Convention.

The following indicative World Heritage values table includes examples of the World Heritage values for which the Tasmanian Wilderness was listed for each World Heritage List criterion. These are, in the Commonwealth's view, the statements of the outstanding universal values of each World Heritage property. While these examples are illustrative of the World Heritage values of the property, they do not necessarily constitute a comprehensive list.

Criteria against which the Tasmanian Wilderness was inscribed on the World Heritage List in 1989 following extension of the original area listed in 1982.	Examples of World Heritage natural values of the Tasmanian Wilderness for which the property was inscribed on the World Heritage List in 1989 following extension of the original area listed in 1982.
<p>Natural criterion (i) outstanding examples representing the major stages of the earth's evolutionary history.</p>	<p>The Tasmanian Wilderness is an outstanding example representing major stages of the earth's evolutionary history. The World Heritage values include:</p> <ul style="list-style-type: none"> • geological, geomorphological and physiographic features, including: <ul style="list-style-type: none"> - rock formations including Precambrian rocks and Cambrian rocks; - Late Cambrian to Early Ordovician sequences of the Denison Range; - fossiliferous Ordovician limestone; - Permian-Triassic sediments and associated Jurassic dolerite intrusions; - Darwin Crater and Lake Edgar fault; - karst systems including glacio-karstic features; - karst geomorphology and karst hydrology; - glaciation, including glacial deposits of the Late Cainozoic, Permo-Carboniferous and Precambrian; - extraglacial areas (eg solifluction sheets, block streams, rock glaciers, landslip deposits); - periglaciation (e.g. Mt Rufus, Frenchman's Cap); - soils (e.g. peatlands); and - undisturbed river systems which show particular geomorphological processes; • relict biota which show links to ancient Gondwanan biota including: <ul style="list-style-type: none"> - endemic conifers (including the King Billy pine <i>Athrotaxis selaginoides</i>, the Huon pine <i>Lagarostrobos franklinii</i> and the genera <i>Diselma</i>, <i>Microcachrys</i>, <i>Microstrobos</i>); - plant species in the families Cunoniaceae, Escalloniaceae and Winteraceae; - the plant genera <i>Bellendenia</i>, <i>Agastachys</i> and <i>Cenarrhenes</i> in the Proteaceae; - other plant genera with Gondwanan links (e.g. <i>Eucryphia</i>, <i>Orites</i>, <i>Lomatia</i> and <i>Nothofagus</i>); - monotremes (e.g. platypus <i>Ornithorhynchus anatinus</i>, short beaked echidna <i>Tachyglossus aculeatus</i>); - dasyurid species; - parrots (e.g. orange-bellied parrot and the ground parrot); - indigenous families of frogs with Gondwanan origins (e.g. Tasmanian froglet <i>Ranidella tasmaniensis</i>, brown froglet <i>Ranidella signifera</i>, Tasmanian tree frog <i>Litoria burrowsi</i>, brown tree frog <i>Litoria ewingi</i>); - invertebrate species in the genera <i>Euperipatoides</i> and <i>Ooperipatellus</i>; - the Tasmanian cave spider (<i>Hickmania troglodytes</i>); - aquatic insect groups with close affinities to groups found in South America, New Zealand and Southern Africa (e.g. dragonflies, chironomid midges, stoneflies, mayflies and caddisflies); - crustaceans (e.g. <i>Anaspidacea</i>, <i>Parastacidae</i>, <i>Phreatoicidae</i>); - primitive taxa showing links to fauna more ancient than Gondwana (e.g. Anaspids, <i>Trogloneta</i> (a mysmenid spider), species of alpine moths in the subfamily Archiearinae, species in the genus <i>Sabatinca</i> of the primitive lepidopteran sub-order Zeugloptera).
	<p>The Tasmanian Wilderness has outstanding examples representing significant ongoing geological processes and ongoing ecological and biological processes in the evolution and development of terrestrial, fresh water and coastal ecosystems and communities, including:</p> <ul style="list-style-type: none"> • sites where processes of geomorphological and hydrological evolution are continuing in an uninterrupted natural condition (including karst formation, periglaciation which is continuing on some higher summits (e.g. on the Boomerang, Mount La Perouse, Mount Rufus, Frenchmans Cap), fluvial deposition, evolution of spectacular gorges, marine and aeolian deposition and erosion, and development of peat soils and blanket bogs); • ecosystems which are relatively free of introduced plant and animal species; • coastal plant communities free of exotic sand binding grasses which show

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<p>Natural criterion (ii) outstanding examples representing significant ongoing geological processes, biological evolution and man's interaction with his natural environment.</p>	<p>natural processes of dune formation and erosion;</p> <ul style="list-style-type: none"> • undisturbed catchments, lakes and streams; • alpine ecosystems with high levels of endemism; • the unusual 'cushion plants' (bolster heaths) of the alpine ecosystems; • ecological transitions from moorland to rainforest; • pristine tall eucalypt forests; • examples of active speciation in the genus <i>Eucalyptus</i>, including sites of: <ul style="list-style-type: none"> - hybridisation and introgression; - clinal variation (e.g. <i>E. subcrenulata</i>); - habitat selection (e.g. <i>E. gunnii</i>); and - transition zones which include genetic exchanges between <i>Eucalyptus</i> species; • plant groups in which speciation is active (e.g. <i>Gonocarpus</i>, <i>Ranunculus</i> and <i>Plantago</i>); • conifers of extreme longevity (including Huon pine, Pencil pine and King Billy pine); • endemic members of large Australian plant families (e.g. heaths such as <i>Richea pandanifolia</i>, <i>Richea scoparia</i>, <i>Dracophyllum minimum</i> and <i>prionotes cerinthoides</i>); • endemic members of invertebrate groups; • invertebrate species in isolated environments, especially mountain peaks, offshore islands and caves with high levels of genetic and phenotypic variation; • invertebrates of unusually large size (e.g. the giant pandini moth - <i>Proditrix sp.</i>, several species of Neanuridae, the brightly coloured stonefly - <i>Eusthenia spectabilis</i>); • invertebrate groups which show extraordinary diversity (e.g. land flatworms, large amphipods, peripatus, stag beetles, stoneflies); • skinks in the genus <i>Leiopisma</i> which demonstrate adaptive radiation in alpine heaths and boulder fields on mountain ranges; • examples of evolution in mainland mammals (e.g. sub-species of Bennett's wallaby - <i>Macropus rufogriseus</i>, swamp antechinus - <i>Antechinus minimus</i>, southern brown bandicoot - <i>Isodon obesulus</i>, common wombat - <i>Vombatus ursinus</i>, common ringtail possum - <i>Trichosurus vulpecula</i>, eastern pygmy possum - <i>Cercartetus nanus</i>, the swamp rat - <i>Rattus lutreolus</i>) in many birds (e.g. the azure kingfisher - <i>Alcedo azurea</i>) and in island faunas; • animal and bird species whose habitat elsewhere is under threat (e.g. the spotted-tail quoll - <i>Dasyurus maculatus</i>, swamp antechinus - <i>Antechinus minimus</i>, broad-toothed rat - <i>Mastacomys fuscus</i> and the ground parrot - <i>Pezoporus wallicus</i>); and • the diversity of plant and animal species.
<p>Natural criterion (iii) contains superlative natural phenomena, formations or features, for instance outstanding examples of the most important ecosystems, areas of exceptional natural beauty or exceptional combinations of natural and cultural elements.</p>	<p>The landscape of the Tasmanian Wilderness has exceptional natural beauty and aesthetic importance and contains superlative natural phenomena including:</p> <ul style="list-style-type: none"> • viewfields and sites of exceptional natural beauty associated with: <ul style="list-style-type: none"> - flowering heaths of the coastline; - the south and south-west coasts comprising steep headlands interspersed with sweeping beaches, rocky coves and secluded inlets; - eucalypt tall open forests including <i>Eucalyptus regnans</i>, the tallest flowering plant species in the world; - rainforests framing undisturbed rivers; - buttongrass, heath and moorland extending over vast plains; - wind-pruned alpine vegetation; - sheer quartzite or dolerite capped mountains (including Cradle Mountain, Frenchmans Cap, Federation Peak and Precipitous Bluff); - deep, glacial lakes, tarns, cirques and pools throughout the ranges; - the relatively undisturbed nature of the property; - the scale of the undisturbed landscapes; - the juxtaposition of different landscapes; - the presence of unusual natural formations (e.g. particular types of karst

Criteria against which the Tasmanian Wilderness was inscribed on the World Heritage List in 1989 following extension of the original area listed in 1982.	Examples of World Heritage natural values of the Tasmanian Wilderness for which the property was inscribed on the World Heritage List in 1989 following extension of the original area listed in 1982.
	<p>features) and superlative examples of glacial landforms and other types of geomorphic features; and</p> <ul style="list-style-type: none"> - rare or unusual flora and fauna.
<p>Natural criterion (iv) contain the most important and significant habitats where threatened species of plants and animals of outstanding universal value from the point of view of science and conservation still survive.</p>	<p>The ecosystems of the Tasmanian Wilderness contain important and significant natural habitats where threatened species of animals and plants of outstanding universal value from the point of view of science and conservation still survive, including:</p> <ul style="list-style-type: none"> • habitats important for endemic plant and animal taxa and taxa of conservation significance, including: <ul style="list-style-type: none"> - rainforest communities; - alpine communities; - moorlands (e.g. in the far south-west); - riparian and lacustrine communities (including meromictic lakes). • habitats which are relatively undisturbed and of sufficient size to enable survival of taxa of conservation significance including endemic taxa; • plant species of conservation significance • animal species of conservation significance, such as: <ul style="list-style-type: none"> - spotted-tail quoll <i>Dasyurus maculatus</i>; - swamp antechinus <i>Antechinus minimus</i> - broad-toothed rat <i>Mastacomys fuscus</i> - ground parrot <i>Pezoporus wallicus</i> - orange-bellied parrot <i>Neophema chrysogaster</i> - Lake Pedder galaxias <i>Galaxias pedderensis</i> - Pedra Branca skink <i>Niveoscincus palfreymani</i>.
<p>Cultural criterion (iii) bear a unique or at least exceptional testimony to a civilisation which has disappeared.</p>	<p>The Tasmanian Wilderness bears a unique and exceptional testimony to an ancient, ice age society, represented by:</p> <ul style="list-style-type: none"> • Pleistocene archaeological sites that are unique, of great antiquity and exceptional in nature, demonstrating the sequence of human occupation at high southern latitudes during the last ice age.
<p>Cultural criterion (v) an outstanding example of a traditional human settlement which is representative of a culture which has become vulnerable under the impact of irreversible change.</p>	<p>The Tasmanian Wilderness provides outstanding examples of a significant, traditional human settlement that has become vulnerable under the impact of irreversible socio-cultural or economic change. The World Heritage values include:</p> <ul style="list-style-type: none"> • archaeological sites which provide important examples of the hunting and gathering way of life, showing how people practised this way of life over long time periods, during often extreme climatic conditions and in contexts where it came under the impact of irreversible socio-cultural and economic change.
<p>Cultural criterion (vi) directly or tangibly associated with events or with ideas or beliefs of outstanding universal significance.</p>	<p>The Tasmanian Wilderness is directly associated with events of outstanding universal significance linked to the adaptation and survival of human societies to glacial climatic cycles. The World Heritage values include:</p> <ul style="list-style-type: none"> • archaeological sites including Pleistocene sites, which demonstrate the adaptation and survival of human societies to glacial climatic cycles and periods of long isolation from other communities (e.g. the human societies in this region were the most southerly known peoples on earth during the last ice age).

II.3 STATEMENT OF AUTHENTICITY/INTEGRITY

**(Note: information in the rest in this report on the management of World Heritage values should be read in conjunction with the current Tasmanian Wilderness World Heritage Area Management Plan:
<http://www.dpiwe.tas.gov.au/inter.nsf/WebPages/UTAR-52W6VG?open>)**

Authenticity/Integrity

At the time of the original listing, in 1982, the IUCN review suggested that an even larger area, incorporating places such as the Walls of Jerusalem National Park, should have been put forward for nomination. In terms of possible impacts to the then listed area, the most significant at the time was the construction of the proposed 'Gordon-below-Franklin' dam. The dam was the subject of wide-ranging discussion, including whether the listing should be deferred until the question of the dam had been resolved and whether the property should be placed on the list of World Heritage in Danger. Ultimately the dam did not proceed.

In terms of other issues relating to the integrity of the property, IUCN recognised that there was continuing exploitation of forests and minerals in the buffer zone, but felt that, if managed appropriately, these should not cause problems for the World Heritage property. The question of a more formal mechanism for coordinating the management of the individual parks within the TWWHA and the staffing of the parks comprising the listing were also raised.

The 1989 extension of the 1982 inscription greatly increased the integrity of the property, by including important additional areas and increasing the representation of important values. As well, the IUCN technical evaluation of the extension noted the very positive impact on the integrity of the property resulting from the cancellation of the Gordon-below-Franklin hydro-electric scheme, and a number of improvements in management, addressing the problems identified at the time of the original listing.

Maintenance of Values

The condition of the natural and cultural heritage of the TWWHA has generally remained stable since listing of the area. Specific changes in the condition of some values are noted at the end of this section.

The vast majority of the TWWHA is in pristine ecological condition, and the integrity condition of the natural diversity and processes is largely very good. There are a limited number of sites of specific disturbance and weeds, and some plant diseases and introduced animals occur in particular areas. Wilderness identification studies conducted since listing, such as those conducted during the Comprehensive Forest Assessment-Regional Forest Agreement process and by the Australian Heritage Commission, have reconfirmed the extremely high wilderness quality of most of the TWWHA and the national and international significance of the extent of those lands.

A number of areas carry some impacts from earlier land uses, including hydro-electric development, mining, logging and visitation. However the condition of large tracts of forests, plains and alpine areas is pristine, with fire providing the greatest threat to these more remote areas.

While there are some viewfield impacts from the hydro-electric developments in the Strathgordon-Scotts Peak, Mount Arrowsmith, Lake St Clair, Lake Augusta and Lake Mackenzie areas, these were already present at the time of inscription and their impact on the integrity of the World Heritage Area has not changed. The Middle Gordon power scheme has had some downstream impacts, including destabilisation of the river bed and loss of biodiversity, although there have been only minor changes to this development since the time of listing. Small-scale clearing on the Gordon-below-Franklin scheme was undertaken and then the dam scheme was stopped. The area was rehabilitated, which has served to improve the integrity of the region.

Other pre-existing impacts include:

- The pronounced sheet erosion of the Central Plateau, linked to previous grazing and firing land-uses, remains a significant feature.
- Water quality in Macquarie Harbour continues to be affected by heavy metals and acidic drainage from the polluted King and Queen Rivers – a legacy of past mining activities at Mount Lyell.
- Rare meromictic¹ lakes adjacent to the Gordon River are affected as a result of the regulation of river flows by hydro-electric power generating operations. Meromixis has been destroyed in Lake Morrison, Sulphide and 'Marble' Pools; while meromictic stability in Lake Fiddler has been reduced and the depth of the chemocline has lowered.

Recent Changes in the Condition of Values

Specific improvements in the monitored condition of natural and cultural values since 1992 (date of first statutory management plan) include;

- A major quarry for limestone at Marble Hill, Lune River (Bender's Quarry), which had been shown to be causing damage to the significant limestone cave system at Ida Bay, was closed and a major rehabilitation program was implemented. The rehabilitation program resulted in stabilisation of the former quarry, establishment of vegetation cover on the quarry benches, and significant measured improvements in the water quality and ecology of cave streams in the downstream Exit Cave system.

¹ Meromixis arises where incomplete mixing occurs in a water body such that some part of the water mass remains isolated throughout the year. These lakes were characterised by salinity-induced stratification and abrupt physico-chemical changes across a shallow chemocline that were associated with a unique micro-biota. Meromixis in all the meromictic lakes on the lakes adjacent to the Gordon River has been lost or reduced due to hydrological modification associated with hydro power generation operations which reduce the frequency of certain flow events required to periodically recharge the saline bottom waters and so maintain meromixis. See Hodgson and Tyler (1996).

- The population size of the endangered Pedder galaxias fish significantly increased over the management period following the purposeful introduction of a small group of individuals to a natural lake which simulated the species' natural habitat (the original [pre-dam] Lake Pedder). A breeding population of fish is now established in the new lake. This result provides real hope for the future conservation security of the Pedder galaxias.
- Surveys revealed that the distribution and abundance of the pencil pine moth and the blind cave beetle (both species listed as vulnerable under the *Tasmanian Threatened Species Protection Act 1995*) were greater than previously known, and consequently the threat of extinction is not as high as previously considered. The pencil pine moth has been de-listed as a result of this finding.
- The breeding range and production of the New Zealand fur seal (listed as rare under the *Tasmanian Threatened Species Protection Act 1995*) has increased in the south-west of Tasmania since monitoring commenced in 1989. The breeding range of fur seals has expanded from Maatsuyker Island to other islands within the Maatsuyker group.

Specific losses or declines in the monitored condition of natural and cultural values since 1992 include;

- The endangered orange-bellied parrot continued to decline in numbers and distribution, not just in Tasmania but also interstate. Over the last 10 years, the breeding range of orange-bellied parrots in Tasmania contracted to Melaleuca alone. Over the 1992-1999 management period, the Melaleuca breeding population remained stable at approximately 90-120 individuals. The total population of orange-bellied parrots is estimated to remain less than 200 mature individuals. The interstate distribution of the wintering population appears to have declined over this period.
- Plant diseases were responsible for further dieback in plant communities in the TWWHA. The distribution of the introduced root rot disease *Phytophthora cinnamomi* increased over the management period, spreading into new catchments and extending along some walking tracks. A new high altitude dieback at Pine Lake on the Central Plateau was responsible for localised dieback in endemic Pencil Pine communities.
- The distributions of some weeds and introduced animal species have expanded. Weeds that are spreading in the TWWHA include Spanish heath, gorse, ragwort, broom, blackberries, Canadian pond weed, and holly. Introduced animal species that are known to have expanded their distributions since 1992 include trout, bumblebees, lyrebirds and kookaburras². However, a state-wide feral goat eradication program achieved the elimination of goats from the TWWHA (as well as significant reductions in the distribution and abundance of goats elsewhere). Other feral animal control programs reduced the distribution of starlings and rabbits in sensitive areas.

² Neither lyrebirds nor kookaburras occur naturally in Tasmania. They are believed to have been purposefully introduced to Tasmania from mainland Australia.

- A number of significant Aboriginal heritage sites along the southwest coast of Tasmania have been lost as a result of coastal erosion processes (both wind and wave).

II.4 MANAGEMENT:

International obligations and Commitments

National Legislation and Controls

Since the inscription of the Tasmanian Wilderness on the World Heritage List, there have been two main pieces of legislation protecting it at a Commonwealth Level. These are *The World Heritage Properties Conservation Act 1983*, and *The Environment Protection and Biodiversity Conservation Act 1999*. In addition, *The Environment Protection (Impact of Proposals) Act, 1974* provided protection in regards to some types of proposals in the area.

The World Heritage Properties Conservation Act 1983 provided protection to World Heritage Properties in Australia, by allowing the Commonwealth to make regulations to protect Australia's World Heritage Properties from threatening actions identified in the regulations. The first time this Act was used, and the most significant in Tasmania, was when it was used by the Commonwealth to stop the Gordon below Franklin hydro-electric power scheme from proceeding.

The Environment Protection and Biodiversity Conservation Act 1999 is the most significant current legislation to protect the values of Australia's World Heritage Properties. As discussed in section 1, this Act provides protection for World Heritage Properties by ensuring that an environmental impact assessment process is undertaken for proposed actions that will, or are likely to, have a significant impact on the World Heritage values of a declared World Heritage Property. Through this procedure, the Commonwealth Minister for the Environment and Heritage can approve or refuse approval for an action to proceed, and can impose conditions on the taking of an action to ensure that world heritage values are not significantly impacted.

Since this legislation came into effect in July 2000, there have been seven referrals in relation to the Tasmanian Wilderness World Heritage Area. Six of these have been in relation to activities taking place outside the World Heritage Area, including the development of visitor facilities, collection of seismic data, the building of a wood processing site, the development of an eco-tourism facility, and the building of a small dam for irrigation purposes. None of these developments were found to be likely to result in the loss, degradation or damage of any world heritage values. Additionally, a further proposal for development of infrastructure within the World Heritage Area at Cradle Mountain has been referred. This proposal is still under assessment.

The Australian Heritage Commission Act 1975 gives heritage places protection through obligations placed on Commonwealth Agencies. The Act includes reference to Ministers or Commonwealth Departments not taking an action that adversely

affects a place on the Register of the National Estate unless they are satisfied that there is no prudent and feasible alternative. Before undertaking an action that might affect to a significant extent a place in the Register of the National Estate, a Minister or Commonwealth Department must inform the Australian Heritage Commission and give the Commission an opportunity to provide advice or comment on the action.

The areas which form Australia's World Heritage properties are covered by listings in the Register of the National Estate, although the latter's names, descriptions, boundaries and justifications for listing can vary compared to World Heritage List inscriptions.

Since 1996 the Commission has provided advice on 10 referrals in the part of the World Heritage property listed on the Register as 'South-West Tasmania'. These have related to telecommunications infrastructure, timber harvesting, access routes by rail and road, and grants programs. Additionally, advice has been provided on ten referrals in the part of the World Heritage property listed as 'Western Tasmania': timber harvesting, rail and road transport routes, energy proposals, and grants programs. (The boundaries of these areas do not necessarily coincide exactly with the boundaries of the World Heritage Area.)

The management of the World Heritage property is also subject to the provisions of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*. This Act provides for the preservation and protection from injury or desecration of areas and objects that are of particular significance to Aboriginals in accordance with Aboriginal tradition.

State Legislation and Controls

There are many different pieces of legislation which are used in the management of the Tasmanian Wilderness World Heritage Area at a State level. The legislation was designed not to be specifically applicable to World Heritage, but rather to the land tenure and conservation status of areas.

The primary piece of legislation that is used to protect the World Heritage Area, is the *National Parks and Wildlife Act 1970*. This applies to all areas within the TWWHA that are State Reserves, Game Reserves, or Conservation areas, which together make up more than 90% of the TWWHA. The level of protection that this legislation provides, depends on the status of each area. National Parks, State Reserves, Historic Sites or Nature Reserves, are fully protected under this Act. It states that no statutory powers can be exercised within a state reserve, unless authorised by a management plan. Since the declaration of a state reserve cannot be reversed without the approval of both houses of parliament, this provides high levels of protection to these areas. Game reserves are given the same level of protection, except that the taking of game on an ecologically sustainable basis can occur.

Conservation Areas within the World Heritage Area also come under the *National Parks and Wildlife Act 1970*. These areas provide protection for flora, fauna, geodiversity and cultural relics from the actions of the public. Protection from actions being taken in line with rights granted under any other legislation is not provided, unless specified in a management plan.

Other pieces of State legislation apply in other small parts of the World Heritage Area, or adjacent areas.

- Protected Areas are given protection under the *Crown Lands Act 1976*.
- Forest Reserves are managed under the *Forestry Act 1920*.
- Areas under the control of the Hydro-Electric Corporation come under the *Electricity Supply Industry Act 1995*.
- Aboriginal Land is protected under the *Aboriginal Lands Act 1995*.

Local Government and Regional statutory controls

Local Council areas that the TWWHA covers include West Coast, Kentish, Meander Valley, Northern Midlands, Central Highlands, Derwent Valley and Huon Valley.

Council has a say in developments within the TWWHA via the *Land Use Planning and Approvals Act 1993*. Where major developments within the TWWHA are proposed (such as resorts) these are assessed under both the LUPAA and the New Proposals and Impact Assessment process defined in the TWWHA management plan.

Management Arrangements

Administrative and contractual arrangements

The Tasmanian Wilderness is managed under joint Commonwealth and State government arrangements. A Council of Ministers (the Tasmanian World Heritage Area Ministerial Council) comprises 2 Ministers each from the commonwealth and state governments. The Ministerial Council advises and makes recommendations to both governments on management plans and requirements, annual and forward programs of expenditure, and scientific studies. A Standing Committee of government officials advises the Ministerial Council and oversees policies, programs, funding arrangements and administration and preparation of management plans. A 15 member Consultative Committee of community representatives provides advice to the Ministerial Council and Standing Committee on matters relating to the development and management of the World Heritage Area. Membership of the Consultative Committee is broadly-based and includes members from the scientific community, Aboriginal community, recreational interests, local government, conservation interests, industry and tourism. Half the members of the committee are appointed by each of the state and commonwealth governments, with the chair being appointed by Ministerial Council.

The majority of the land within the World Heritage Area is protected under the Tasmanian *National Parks and Wildlife Act 1970* and primary responsibility for managing the area is with the Tasmanian government department responsible for administering this Act. Currently, this is the Parks and Wildlife Service — a division of the Department of Tourism, Heritage and the Arts (formerly Department of Primary Industry, Water and Environment).

Management Planning

TWWHA Management Plan

The main document that guides management of the area is the World Heritage Area Management Plan. This plan is a statutory document under the *National Parks and Wildlife Act 1970*.

The first Tasmanian Wilderness World Heritage Area Management plan came into effect in 1992, and ran for seven years. During this period it was amended once, in 1997, with the agreement of the State and Commonwealth governments to allow for an additional commercial hut on the Overland Track and to retain the Mt McCall four wheel drive track rather than to rehabilitate it.

Work to evaluate the management performance of the TWWHA's first Management Plan (completed in 1992 and in use until superseded by the current plan in 1999) has been undertaken and will be published when completed.

The second and current management plan is the 1999 Tasmanian Wilderness World Heritage Area Management Plan. This is intended to operate for ten years, with a limited review after 5 years. A copy of the plan can be found at:

<http://www.dpiwe.tas.gov.au/inter.nsf/WebPages/UTAR-52W6VG?open>

The plan has been amended once (in 2002) to allow for the development of an ecotourism lodge at Cockle Creek East.

The 1999 Management Plan is an extensive document (215 pp), which covers issues for management across the whole World Heritage Area, and some surrounding areas, managed as buffer zones. It outlines general management strategies for the TWWHA, priorities for the identification, protection, conservation, rehabilitation and presentation of the values of the TWWHA, policies on primary production and the exercising of private rights and statutory powers within the TWWHA.

Two other management plans also impact on the TWWHA, the Mt Field National Park management plan (2002) (this park is as a gateway to the world heritage area and interprets world heritage values) and the Mole Creek Karst National Park and Conservation Area management plan (2001) which includes the Marakoopa Cave area - a part of the TWWHA.

Site/Area Plans

There are also a number of subsidiary plans, which come under the main Management Plan. These relate to more specific areas, or issues. Subsidiary site plans include;

- Pencil Pine–Cradle Valley Visitor Services Zone Plan 1993 (Cradle Mountain) [currently being updated 2002-03],
- Cynthia Bay Site Plan 1993 (Lake St Clair), [currently being updated 2002]
- Kelly Basin/Bird River Bridge Site Plan 1993

- Huon Campground Site Plan 1993
- Wedge River Site Plan 1993
- Franklin River Visitor Services Site Plan 1994
- Kia Ora Commercial Hut Site Plan 1997
- Pump House Point Site Plan 1996A management strategies document (similar to a site plan) was produced for Maatsuyker Island in 1993.

Site planning also commenced for numerous other sites including Hartz Mountains, Liffey Falls, Nelson Falls, Cockle Creek–Recherche Bay, Liawenee, Melaleuca, Sarah Island, Collingwood Bridge, and Meander Forest Park.

A recreation plan was produced for the Lower Gordon River (Lower Gordon River Recreation Zone Plan, 1988)

Planning is nearing completion for the Melaleuca - Port Davey Area plan (essentially a site plan covering a number of sites and management issues relating to the aquatic environment (eg cruise boats), this is due for completion in late 2002, early 2003.

In addition to these area plans, several strategic documents have been prepared to address specific management issues. For example: A three volume *Walking Track Management Strategy for the Tasmanian Wilderness World Heritage Area* (1994) and linked monitoring system were developed to manage the physical and environmental sustainability of the walking track network within the TWWHA. The strategy included an inventory of the condition of the main walking tracks and routes, an assessment of use levels, trends in use, projected changes in track condition and appropriate management responses (available on the World Wide Web at <http://www.parks.tas.gov.au/manage/tracstrat/trkteam.html>).

Contact Details of Manager

The Parks and Wildlife Service, GPO Box 44, Hobart, Tasmania, Australia 7001

Changes in Ownership and or Legal Status

A number of changes in Land Tenure have occurred since the 1989 World Heritage listing, which have resulted in most of the TWWHA being managed on an integrated basis and under the control of the Tasmanian Parks and Wildlife Service (a division of the Department of Tourism, Parks, Heritage and the Arts).

At the time of listing over 33,000 hectares of land were vested in the Hydro-Electric Commission. Now, only two small parcels at Scotts Creek, 14 hectares at St Clair Lagoon and 32 hectares at Lake Murchison remain vested in the Commission.

Recent changes include the proclamation of the Mole Creek Karst National Park on 13 November 1996. The park includes that part of the former Marakoopa Cave State Reserve within the TWWHA.

The TWWHA plan area also includes 21 small areas of National Park and one area of State Reserve (amounting to 20,114 ha) that are not within the TWWHA but are contiguous with it.

Since 1992, changes in land tenure, boundary and/or adjacent area management arrangements have included:

- The Commonwealth-State Regional Forest Agreement process resulted in some areas of State Forest and other public land adjacent to the World Heritage Area being included within national park and other conservation reserves. These additions comprise 15 reserves covering 15,867ha adjacent to the World Heritage Area. The protection of these adjacent areas complements and provides a better buffer for the values within the Tasmanian Wilderness³.
- On 6 December 1995, Kutikina Cave (15 ha) within the TWWHA was revoked from the Franklin-Lower Gordon Wild Rivers National Park under the Aboriginal Lands Act. These parcels of land are held by the Aboriginal Land Council of Tasmania for the Aboriginal community, and are managed on a day-to-day basis by the Tasmanian Aboriginal Land Council.
- On 30 April 1999, the three areas in the TWWHA that had dual Conservation Area and Forest Reserve status in the TWWHA ceased to be Forest Reserve (i.e. they became Conservation Areas only).
- On 30 April 1999, several areas totalling some 52, 929ha of the Southwest Conservation Area that had dual status as State Forest and Conservation Area on the eastern boundary of the TWWHA (but outside the TWWHA) were revoked from the Conservation Area (i.e. they became State Forest only).
- On 2 August 2000, Marble Hill Conservation Area within the TWWHA ceased to be Conservation Area and was added to the Southwest National Park.
- On 13 December 2000, Maatsuyker Island (180ha) within the TWWHA ceased to be Conservation Area and was added to the Southwest National Park.
- On 27 December 2000, an acquired area of 1 ha at Derwent Bridge was added to the Cradle Mountain–Lake St Clair National Park.
- On 4 July 2001, the majority (240ha) of St Clair Lagoon Conservation Area in the TWWHA was added to the Cradle Mountain–Lake St Clair National Park.

³ Under the 1999 WHA management plan, these areas are covered by the management plan.

- On 26 December 2001, freehold areas on the Central Plateau surrounded by the TWWHA and included mistakenly in the boundaries of the Conservation Area were proclaimed to not be part of the Conservation Area.
- The Mole Creek Karst National Park was proclaimed on 13 November 1996. The park includes that part of the former Marakoopa Cave State Reserve within the TWWHA.

Staffing Financial and Training Resources

Funding for Management of the TWWHA

Prior to listing of the TWWHA, State funding for management of the national parks in southwestern Tasmania was less than \$1 million per year. Funding for management of the area increased dramatically following the recognition of the area as a World Heritage Area in 1982 and the decision of the High Court of Australia in July 1983 that resulted in cessation of the Lower Gordon power development. These decisions were accompanied by the provision by the Commonwealth government of a significant package of funds to Tasmania to undertake alternative works to the power development.

Joint Commonwealth/State management arrangements for the World Heritage Area were negotiated in 1986/87. These arrangements provided for a rolling program of Commonwealth and State funding for planning and management of the area.

Funding levels increased in 1989-90 following the extension of the World Heritage Area, and reached a peak during 1989-1993 when the first (1992) management plan for the area was developed and significant capital works were undertaken (eg the construction of Cradle Mountain Visitor Centre).

The level of funding for management of the Tasmanian Wilderness World Heritage Area provided by the state and commonwealth governments has in recent years been based on the estimated requirements to adequately implement the jointly approved management plan for the area.

The level of funding for management of the World Heritage Area remained stable between 1993 and 2002 at approximately \$8.4 million per year (approximately \$US4.5 million), comprising about \$5 million from the Australian federal government, and \$3.4 million from the Tasmanian state government.

In 2002, the Commonwealth government announced a change to World Heritage funding arrangements reducing the direct contribution to baseline funding for the property but making additional funds available through a regional planning mechanism. The Tasmanian government responded to this announcement by increasing its contribution to funding by \$1 million for 12 months to cover any immediate potential shortfall in funding.

Over the next five years, Australian Government funding for World Heritage will be provided through the extension to the Natural Heritage Trust – a national, integrated initiative to restore and conserve Australia's environment and natural resources. An important element of the new Trust arrangements will be a more focused and

strategic approach to meeting World Heritage management needs. The Australian Government will continue to provide a strong leadership role while, at the same time, giving greater responsibility to the states and the community in determining priorities for investment in World Heritage management.

Operational and Staffing Resources

Operational management of the Tasmanian Wilderness World Heritage Area is primarily the responsibility of the Tasmanian Parks and Wildlife Service.

In 1992, there were 86 permanent employees of the Service. Additional temporary staff (eg. project officers, summer interpretive rangers, track rangers and walking track construction workers) are also regularly employed.

Since listing of the TWWHA, there has been a significant increase in staff with responsibilities for managing the area. In 1999, there were 112 permanent employees of the Service with responsibilities for planning, managing and providing specialist advice regarding the natural and cultural heritage of the Tasmanian Wilderness World Heritage Area. 66 (59%) are based in field centres and 46 (41%) are based in the Hobart office.

In recent years, there has recently been a shift towards the greater utilisation of volunteers from both Tasmania and overseas to undertake a wide range of activities that assist park management. Volunteers have included trainees, work experience students and various community groups.

Visitation

Visitor Facilities and Services

A range of new facilities, supporting infrastructure and visitor services has been provided or upgraded in and adjacent to the Tasmanian Wilderness World Heritage Area to attract visitors, enhance their experience, and minimise their impacts. Recent initiatives have included upgrading access roads, construction of Visitor Centres (which include educational displays and visitor information, toilets, parking areas etc); provision of camping areas and visitor accommodation cabins, walking tracks, picnic facilities, information and educational signage and construction of sewerage treatment plants. As well, numerous degraded and eroding walking tracks throughout the TWWHA have been stabilised, upgraded or re-constructed. A range of new commercial visitor services (eg adventure tour operations) has also been provided.

Sites plans have been prepared to guide the provision of the above facilities and services in the key visitor access nodes to the TWWHA.

In addition to the above initiatives inside the TWWHA, the number and capacity of tourist accommodation facilities in areas adjacent to the TWWHA have also increased.

Numbers of Visitors to the TWWHA

The Tasmanian Wilderness World Heritage Area is a significant attraction for local, interstate and international visitors, and the number of visitors to the area has notably increased since 1992.

The most visited sites⁴ in the TWWHA are Cradle Mountain (with a total of about 200,700 person visits⁵ a year) and Lake St Clair (with about 104,000 person visits a year).

Visitation to both the Cradle Mountain and Lake St Clair sites increased by about 30–35% between 1992 and 1999.

Significant increases also occurred in the usage of major walking tracks. For example, the number of walkers on the Overland Track (from Cradle Mountain to Lake St Clair) increased by about 35% (from about 5,400 per year in 1992/93 to about 7,300 in 1999/2000); those on Walls of Jerusalem tracks increased by 23% to about 3,200 per year; and those on the Frenchmans Cap Track increased 17% to about 800 per year. The recently constructed Dove Lake Circuit Track at Cradle Mountain is attracting more than 45,000 visitors each year.

Education, interpretation and awareness training

A range of initiatives has been taken by the Parks and Wildlife Service, funded in part by the Commonwealth, to provide better information and education about the Tasmanian Wilderness World Heritage Area and its natural and cultural heritage. Some initiatives focus on catering for on-site visitors while other initiatives are aimed at the general public. Major initiatives in education and interpretation include:

- Major Visitor Centres have been provided at or near all the major entrances to the TWWHA, viz. Cradle Mountain, Lake St Clair, Strahan, Geeveston, Mt Field and Hastings.
- A website for the Parks and Wildlife Service has been developed which provides a wealth of information about the TWWHA and its natural and cultural heritage. (Go to www.parks.tas.gov.au)
- Organised programs of visitor activities, educational talks and slideshows are regularly provided by staff of the Parks and Wildlife Service on-site in the TWWHA through the popular summer months.
- Educational panels, signs and brochures have been provided in a variety of locations to assist visitors to learn about and enjoy the TWWHA.

⁴ 1999/2000 figures

⁵ A 'person visit' occurs whenever a person enters a site for the first time for the reason of participating in protected area activities. This terminology is consistent with the recommendations of the ANZECC Benchmarking and Best Practice Program see 'National Data Standards on Protected Areas Visitation (Victorian National Parks Service, September 1996).

Cultural and Social Effects

Market research⁶ has demonstrated that there has been a significant increase in public awareness and support for the Tasmanian Wilderness World Heritage Area over recent years. For example, the percentage of Tasmanians who considered World Heritage listing to be ‘a good thing’ increased from 63% in 1993 to 76% in 1999 (a statistically significant change.) The percentage who considered World Heritage listing to be ‘a bad thing’ remained stable at about 4%.

The main benefits from World Heritage listing identified by the Tasmanian public were:

- preserving the environment (51%)
- preserving the area for future generations (39%)
- promoting tourism (28%)
- protecting species (13%)
- recognising special areas (8%)
- better management of the area (7%)
- getting an international focus (6%)

Visitor surveys⁷ revealed that visitors are overwhelmingly positive about their visit to the Tasmanian Wilderness World Heritage Area. On a personal level, the main benefits that visitors identified from their visit to the TWWHA were:

- beauty (44%)
- getting close to nature (27%)
- getting away from the rat-race (24%)
- relaxation (22%)
- solitude, peace and quiet (21%)
- exercise (18%)
- new experiences or places (15%)
- challenge or achievement (12%), and
- satisfaction (12%)

Economic Effects

Nature-based tourism to Tasmania is increasingly being recognised as an integral component of the state’s future economic well-being. Tasmania’s natural and cultural heritage is the most important attraction for visitors to the state, and the TWWHA is regarded as the centrepiece of the state’s nature-based tourism strategy.

The Tasmanian government is strongly committed to promoting the natural and cultural heritage of Tasmania, and to ensuring that increasing numbers of people know about the TWWHA, understand it and have the opportunity to visit and enjoy the area.

⁶ Phone surveys of 500 randomly selected Tasmanian residents were undertaken by a market research firm (Enterprise Market and Research Services) on behalf of the managing agency in 1993 and 1999.

⁷ Hocking, Helen (Landmark Consulting) 1995 The concept, importance, value and recreational use of wilderness: a survey of knowledge and opinion of visitors to the Tasmanian Wilderness World Heritage Area. Unpublished report to the Department of Parks, Wildlife and Heritage, September 1995.

II.5 FACTORS AFFECTING THE PROPERTY

Development Pressures

- Logging in surrounding areas. Logging and associated roading in State Forests adjacent to the property are regarded as not enhancing the wilderness quality and remoteness of lands both adjacent to and within the TWWHA.

Hydro-electric power generating operations. Regulation of river flows by hydro-electric power generating operations can cause unnatural erosion of lakes and downstream river banks, and in some cases may lead to the loss of significant hydrological features such as meromixis. The proposed Basslink power operations (and associated regulation of river flows) have a potential to adversely impact on the ecosystems of outflow rivers, such as the Gordon River, and the Great Lakes area. A range of measures have been designed to mitigate these potential impacts and appropriate environmental assessment and management will continue to be used.

Environmental Pressures

The main environmental threats and pressures to the natural and cultural heritage of the TWWHA are:

- Wildfire – especially the risk of ‘landscape-scale fires’ and peat fires. Wildfires pose one of the most serious threats to the natural and cultural heritage of the TWWHA. In particular, a significant risk exists of ‘landscape-scale’ fires ie. fires that are not stopped by normal fire boundaries such as wet forests or major rivers. Such fires have the potential to cause large-scale major ecological impacts to the TWWHA, including destruction of fire-sensitive alpine vegetation and rainforest (with ancient stands of Pencil Pines, King Billy Pines and Nothofagus). Peat fires are also a significant threat because they can smoulder underground for months and act as a continuing ignition source for new above-ground wildfires. The existence of large areas of ‘old-growth’ buttongrass in the TWWHA (i.e. buttongrass that has not been burnt for more than 35 years) is considered by the managing agency to be a major risk factor for landscape-scale fires. However since 1992, there have been no major landscape-scale fires in the TWWHA.
- Inappropriate fire regimes. Different ecological communities require different fire frequency to maintain their biodiversity. Lack of knowledge about fire regimes – and possibly the inappropriateness of current regimes – required for maintaining the optimal mix of ecological communities in the TWWHA has significant implications for the long-term conservation of biodiversity in southwest Tasmania. Fire issues are currently being dealt with via a major cross discipline study of the impact of burning on the values of the area. The results of this will be used to avoid landscape scale fires and optimise burning for ecological diversity and values protection.
- Plant diseases – especially the root rot disease *Phytophthora cinnamomi*. Root rot disease is spread by water, with human activities often accelerating the spread of the disease e.g. though infected mud on walkers’ boots or on vehicles. The agency has taken a number of steps to minimise the spread of this disease including educational

information, washdown stations for walkers and procedures to prevent vehicles and helicopters from spreading the disease.

- Weeds – especially those that are spreading including Spanish heath, gorse, ragwort, broom, blackberries, Canadian pond weed, and holly. Two recent new weed invasions in the area (marram grass and sea spurge) pose a serious threat to coastal ecosystems. These are currently being targeted with eradication programs.
- Introduced animals (including the potential establishment of new introduced species). Established introduced animal species of management concern for the TWWHA include goats, trout, starlings, rabbits, cats, wasps and bumblebees. Along the coastal reaches of the TWWHA, there is an imminent threat of marine weed and pest invasion (e.g. Northern Pacific seastar, Roger's sea urchin and European shore crab). A significant threat is also posed by the potential establishment of new introduced species, especially the European fox which has recently been introduced to Tasmania. The establishment of foxes in Tasmania would have disastrous impacts on Tasmania's native fauna, especially on those Tasmanian species that are now either absent or virtually absent from mainland Australia due to predation from foxes. There is also the potential for the purposeful (illegal) or natural spread of other introduced species into the TWWHA from other parts of Tasmania (e.g. fallow deer, redfin perch and carp). There is a major program in place to track down and eradicate foxes from Tasmania before they gain a foothold in the State. Other introduced species within the TWWHA are targeted where they could have a significant effect on values and effective mechanisms to remove them are available (eg recent goat and rabbit eradication programs)
- Coastal erosion. Coastal erosion processes (both wind and wave) threaten numerous Aboriginal heritage sites along the southwest coast of Tasmania. However, since 1992, a number of large eroding Aboriginal midden sites along the southwest coast of Tasmania have been successfully stabilised.

Visitor / Tourism Pressures

The main threats and pressures associated with visitors and tourism to the TWWHA are:

- Visitor facilities and infrastructure. Visitor facilities and infrastructure within and adjacent to the TWWHA have a potential to cause direct impacts on natural and cultural values, and also indirect impacts on adjacent areas through changing the levels and nature of visitor use. The management plan requires all proposals for developments in the TWWHA to be formally assessed through a rigorous process that includes environmental impact assessments and public consultation. A number of developments have either completed this process (such as Cockle Creek East, an ecotourism lodge development approximately 750 m beyond the current road head at Cockle Creek), or are mid process (such as another ecotourism lodge at Pump House Point [Lake St Clair] and visitor services works being conducted by the Parks and Wildlife Service at Cradle Mountain).

Such tourism developments could be expected to result in further increases in the overall levels of visitor use of the TWWHA. While such increases offer many

tangible benefits, there is a need for comprehensive management so as to address any potential impacts.

As mentioned previously the *Environment Protection and Biodiversity Conservation Act 1999* provides protection for World Heritage Properties by ensuring that an environmental impact assessment process is undertaken for proposed actions that will, or are likely to, have a significant impact on the World Heritage values of a declared World Heritage Property. Through this procedure, the Commonwealth Minister for the Environment and Heritage can approve or refuse approval for an action to proceed, and can impose conditions on the taking of an action to ensure that world heritage values are not significantly impacted.

- Visitor use. A number of levels and types of visitor use have begun to cause some environmental impacts in some parts of the TWWHA (e.g. walker impacts on sensitive alpine plant communities) and the degradation and erosion of walking tracks. If not effectively addressed by management, unsustainable visitor use has the potential to cause progressive and serious environmental degradation of the TWWHA. Visitor activities that require careful management to achieve environmental sustainability include commercial cruise boat operations on the Lower Gordon River (vessel wakes have been shown to cause erosion of the river banks). Since 1992, marked streambank erosion of the banks of the lower Gordon River has been either completely halted or dramatically reduced as a result of the active management of speed and access conditions for commercial cruise boat operations on the Lower Gordon River. Scientific research and monitoring programs are providing sound information that informs a variety of management matters.
- Increasing mechanised access to remote areas. Increasing mechanised access within and adjacent to the TWWHA has the potential to impact on World Heritage values. For example, increasing cruise ship operations and increased boat visits to Port Davey have the might affect the unique marine and terrestrial biota within the Port Davey area. Increasing 4WD bike use south of Macquarie Harbour poses a risk for the spread of *Phytophthora* root rot disease and also disturbance to Aboriginal heritage sites (which disturbance often gives rise to subsequent erosion). Increasing scenic flights and visitors to Melaleuca have the potential to disturb the breeding grounds of the endangered orange-bellied parrot while increasing visitor access to previously remote beaches around Port Davey poses a significant threat of disturbance to fragile historic and Aboriginal heritage values.
- Increasing noise. Increases in scenic flights, helicopters and/or power-boat usage in the TWWHA have the potential to increase noise and impact on the aesthetic quality of the area.

Other Pressures

- Illegal activities – they include the illegal cutting and removal of valuable timbers (especially huon pine, King Billy pine, and pencil pine); the purposeful introduction of exotic species (e.g. the introduction of trout into trout-free waters); and arson and other unlawful lighting of fires (e.g. the lighting of campfires in prohibited areas).
- Global warming. Global warming has the potential to cause impacts on alpine and other ecological communities in the TWWHA (since alpine communities on

mountain tops have nowhere higher/cooler to retreat to). In addition, potential rises in sea level could result in increased coastal erosion thereby leading to loss of coastal Aboriginal heritage sites.

Number of Inhabitants Living Within the Property

Apart from short-term overnight visitors to the TWWHA, the number of inhabitants living in the TWWHA is limited to a small number of parks staff and their families, and a variety of intermittent casual workers and volunteers.

Residents within the TWWHA include:

- At Lake St Clair there are 5 rangers and their families, and up to 5 other staff (including field officers, Visitor Centre staff, seasonal staff and trainees).
- At Cradle Mountain, there are 4-6 ranger staff and up to 8 casual staff (including track workers, Summer Rangers and other casual staff);
- At Marakoopa House, up to 4 parks staff are accommodated on an intermittent basis.
- On Maatsuyker Island there are 2 resident volunteers (operating on 3 monthly shifts) who are responsible for operating the lighthouse and recording weather conditions for the Bureau of Meteorology.
- Other intermittent residents in the TWWHA include artists who have applied for and been selected to participate in the Arts Tasmania Wilderness Residencies Program. This program allows selected artists to stay in cabins at Cradle Mountain or Lake St Clair and to pursue their artistic work immersed in the inspirational settings of the World Heritage Area.

The number of residents in the TWWHA is likely to increase in the next few years if a proposed tourist development at Pumphouse Point (at Lake St Clair) proceeds. This development (which is expected to accommodate about 100 overnight visitors) could add another 20 or so residential support staff and their families. It is expected that these residents would occupy existing buildings on the site that were formerly used by the Hydro-Electric Commission.

II.6 MONITORING

The TWWHA has a monitoring system built into the management plan. This requires major reports on the state of the TWWHA every five years. These detailed reports form a baseline of data from which long term changes in the TWWHA can be assessed. The first of these, the State of the Tasmanian Wilderness World Heritage Area (Australia) Report No. 1 is due for publication in the near future. This is consistent with the advice provided to the Bureau by the Australian Delegate at the twenty-fourth session of the Bureau of the World Heritage Committee in Paris on 26 June – 1 July 2000.