

2

General management and arrangements

2.1 What's in this chapter?

This chapter reports on the effectiveness of general management and arrangements for the TWWHA. It includes reports on factors that are critical to the success of management (such as public acceptance of management, and supporting legislation and enforcement arrangements for management); the fulfilment of general management responsibilities such as public health and safety in the TWWHA; and a range of other aspects of management practice such as the management of controversial issues; community engagement; and the standard and practice of management.

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At a glance...key findings of this chapter

Just over half (55%) of the 520 actions prescribed by the 1992 management plan were fully implemented during the 1992–1999 period, with a further 29% being partially implemented (see Section 2.2 'Achievement of desired outcomes of management' and Appendix 3 'Implementation of the 1992 management plan').

A strong focus of management effort over the term of the 1992 management plan was the provision of visitor facilities and infrastructure, with half (50.3%) of all project funds being spent on visitor facilities and infrastructure (see Section 2.3 'Balance of management effort across responsibilities').

Although community acceptance of the 1992 management plan was only moderate when the plan was released (with conservation and established practices groups in particular not in agreement with how wilderness values should be managed), general community acceptance of the plan grew over time as the plan was implemented. Day-to-day management of the TWWHA was generally well received and management interactions with visitors were very positive. (See Section 2.4 'Community acceptance of TWWHA management').

The legislative powers of protection for the TWWHA and its values increased over the term of management through the passage of the Commonwealth *Endangered Species Protection Act 1992*¹⁴, the Tasmanian *Threatened Species Protection Act 1995*, and the *Historic Cultural Heritage Act 1995*. The main illegal activities in the TWWHA over the period were poaching of Huon Pine and other valuable timbers; arson; the purposeful introduction of trout into trout-free lakes and rivers; and unlicensed commercial tour operation activities (see Section 2.5 'Legislation, law enforcement and compliance').

The Commonwealth–State Regional Forest Agreement resulted in some areas adjacent to the TWWHA being included in national parks and other conservation reserves, and this provides a better buffer for the TWWHA (see Section 2.8 'Land Tenure, boundary and adjacent area management').

Surveys of the Tasmanian public revealed that young Tasmanians (16–25 year olds) generally have a poor level of knowledge of, and understanding about, the Tasmanian Wilderness World Heritage Area and its values compared with the Tasmanian general public (see Section 2.9 'Transmission of knowledge and ability to future generations').

The range of opportunities for the community to be involved in management of the TWWHA increased through the establishment of management partnership programs, more public consultation, increased participation of the Aboriginal community in Aboriginal heritage projects, and new volunteer programs. In addition, new links between the TWWHA and broader community life were forged through the introduction of cultural and artistic events and activities associated with the TWWHA (see Section 2.10 'Community engagement with the TWWHA').

There was a marked increase in cooperation between PWS and a variety of local, State and Federal agencies which resulted in enhanced integration of TWWHA management concepts into local and regional planning strategies and actions (see Section 2.12 'Integration of TWWHA management with local and regional planning').

In relation to public health and safety, there were several visitor deaths in the TWWHA over the 1992–1999 period. These occurred as a result of natural causes (e.g. heart attacks), climbing accidents and drowning. None of these deaths could reasonably have been prevented by the managing agency. All lost and/or overdue walkers were safely located and those who sustained injuries were assisted to medical care. Some walkers experienced health problems due to gastroenteritis. (See Section 2.13 'Public health and safety in the TWWHA'.)

There were no major losses or damage to buildings or other assets in the TWWHA over the 1992–1999 period (see Section 2.14 'Management of property and assets').

Staff of the then managing agency developed considerable expertise in natural and cultural heritage management and operational management over the 1992–1999 period, and demonstrated professional leadership at the national and international level in a variety of fields (see Section 2.15 'Standard and practice of management').

A system for monitoring and evaluating the effectiveness of management for the TWWHA was developed which subsequently led to the preparation of this State of the TWWHA Report. Specific monitoring projects were established to provide measured evidence about the performance of management for a range of responsibilities (see Section 2.16 'Performance evaluation and adaptive management').

14 Note that the Commonwealth Act has since been replaced by the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

2.2 Achievement of desired outcomes of management

Key Desired Outcome addressed in this section:

KDO 1.1: Achievement of all the key desired outcomes derived from the plan's objectives.

This State of the TWWHA Report documents the outcomes that were delivered under the term of the 1992 management plan for the TWWHA. The key findings are presented in the Summary Report together with an indication of the overall effectiveness of management against each objective of the 1992 management plan.

Underlying the achievement of these outcomes was the implementation of the prescribed actions of the management plan¹⁵. Appendix 3 reports in detail on the implementation of the prescribed actions of the 1992 management plan. In summary, just over half (55%) of the 520 actions prescribed by the 1992 management plan were fully implemented during the term of the plan (1992–1999), with a further 29% being partially implemented, and 16% not commenced.

The main reason why some prescribed actions were not implemented was that there was insufficient staff time and/or money to undertake the tasks. Tasks that were considered a lower priority—either by funders or managers—could not be implemented.

2.3 Balance of management effort across responsibilities

Key Desired Outcome addressed in this section:

KDO 1.2: Management of the World Heritage Area appropriately balanced across responsibilities for identification, conservation, protection, rehabilitation, and presentation of World Heritage and other natural and cultural values of the World Heritage Area.

The majority of the 520 actions prescribed by the 1992 management plan were associated with the management responsibilities of Presentation (40%) and Protection (31%). The distribution of actions to other responsibilities was Operations (12%), Conservation (9%), Rehabilitation (5%) and Identification of values (3%). For an explanation of these responsibilities and a graphic representation of the management effort across these responsibilities, see Figure 3 (a). Audits of the implementation of the 1992 management plan revealed that approximately half of the prescribed actions under each of these major areas of management responsibility had been fully implemented by the end of the management period. See Figure 3(b).

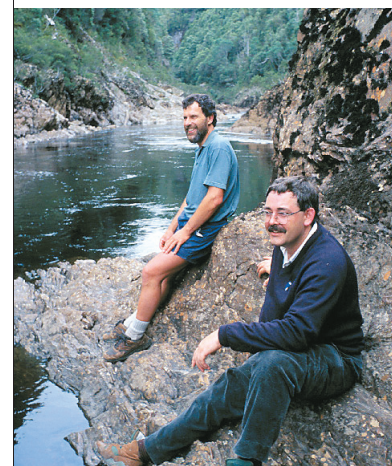
Analysis of the expenditure of project funds over the 1992–1999 management period revealed that expenditure was concentrated on the provision of visitor facilities and infrastructure (see Figure 4). Half (50.3%) of the total project funds for World Heritage management was spent on visitor facilities and infrastructure projects, including the construction of the Lake St Clair and Strahan Visitor Centres, provision of a new sewage and wastewater treatment facility at Lake St Clair, and the provision or upgrading of walking tracks and other visitor facilities across a range of sites within the TWWHA.



Photo by
Glenys Jones

Key figures in management of the TWWHA over the 1992–1999 period. Above: **Max Kitchell** was General Manager of the managing agency between 1996–1999. Below: **Bryce McNair** (Chairman of the World Heritage Area Consultative Committee) in the foreground, and **Bob Tyson** (senior manager of the Parks and Wildlife Service) photographed here beside the Franklin River.

Photo by Nick Sawyer



15 It is assumed that the delivery of outcomes is in most cases associated with the implementation of the targeted management actions; however it is recognised that in some cases the outcomes may be the result of independent factors. For example, measured increases in public awareness and support for the TWWHA (see Section 6.2 'Community awareness and support for the TWWHA') are correlated with management actions to increase community awareness; however it is uncertain whether the increase observed is directly attributable to the actions undertaken by the managing agency.

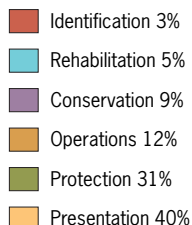
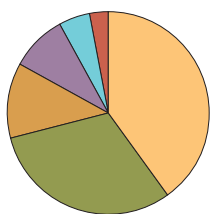


Figure 3

Balance of management effort across major responsibilities

(a) Percentage of prescribed actions in the 1992 plan for each management responsibility

The majority of the 520 actions prescribed by the 1992 management plan were associated with the management responsibilities of presenting the natural and cultural heritage (40%) and protecting the natural and cultural heritage (31%). The categories of management responsibility are explained below.

EXPLANATORY NOTES

The prescribed actions in the 1992 management plan fell into the following broad categories of management responsibility:

Identification: Actions that identify and assist the understanding of natural values (such as the flora, fauna and geoconservation values) and cultural values (Aboriginal and historic values) of the TWWHA. 13 prescribed actions in the 1992 management plan related to the identification of values.

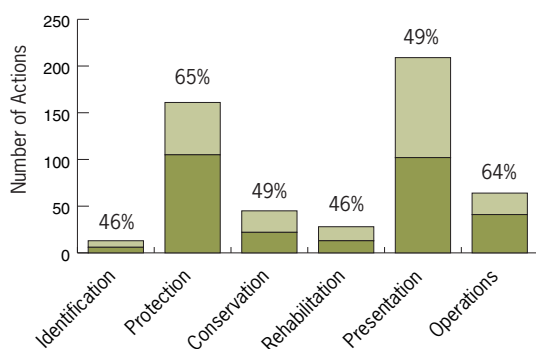
Protection: Actions that aim to prevent or minimise threats and impacts to the natural and cultural values, and recreational values of the TWWHA, e.g. management of fire, introduced species and plant diseases, and visitor impacts. 161 prescribed actions in the 1992 management plan related to the protection of values.

Conservation: Actions that help maintain natural diversity and cultural heritage; in particular actions aimed at maintaining rare and threatened species and the significance of cultural heritage of the TWWHA. 45 prescribed actions in the 1992 management plan related to the conservation of values.

Rehabilitation: Actions that assist in repairing degraded values or sites in the World Heritage Area e.g. re-establishing vegetation in disturbed sites. 28 prescribed actions in the 1992 management plan related to the rehabilitation of values.

Presentation: Actions that assist people to visit, experience and learn about the TWWHA and its natural and cultural heritage. 209 prescribed actions in the 1992 management plan related to the presentation of the area and its values. Examples include Visitor Centres, walking tracks, carparks, picnic shelters, and interpretation signs.

Operations: Actions that provide the means or support to manage the World Heritage Area e.g. maintaining equipment and vehicles. 64 prescribed actions in the 1992 management plan related to management operations.



(b) Implementation of prescribed actions for each management responsibility

Approximately half to two thirds of all the prescribed actions for each management responsibility were fully implemented over the term of the 1992 management plan, 1992–1999. Slightly higher percentages were achieved for Protection and Operations and slightly lower percentages for Identification and Rehabilitation. Note however that this chart provides only a general indication of implementation because this simple numerical analysis does not take account of the size or complexity of the prescribed actions.

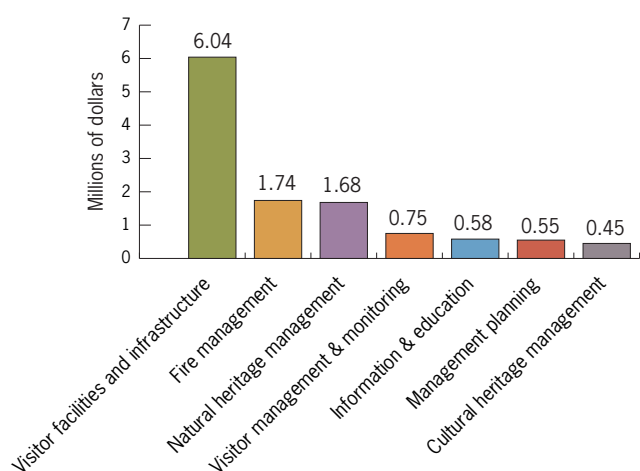
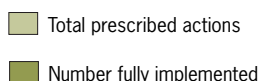


Figure 4

Balance of management expenditure across major project areas

Expenditure of funds during the 1992–1999 period was focused on the provision of visitor facilities and associated infrastructure. Note that this analysis relates only to project funds and does not include recurrent funds for staffing and day-to-day operations. The categories of expenditure shown above were based on internal PWS reports of project expenditure.

Sources: Expenditure figures 94/95 to 97/98 were calculated from the WHA Summary of Project Expenditure 94/95 to 97/98 (on departmental files). The 92/93 and 98/99 Financial Year details were calculated from a summary of WHA expenditure from those years (on departmental files). No expenditure figures were available for the financial year 93/94. The total expenditure over the management period for each major project area was calculated to derive the above expenditure figures. The recording formats for WHA project expenditure changed significantly over the period and therefore the above figures are more a representation of monies spent than a precise account.

2.4 Community acceptance of TWWHA management

Key Desired Outcomes addressed in this section:

KDO 1.3: High level of acceptance of the plan and World Heritage Area management in general by the general community and key client groups (including the Tasmanian and Australian governments and their representatives, the UNESCO-based World Heritage Committee, other authorities with interests in World Heritage Area management, and World Heritage Area management advisory committees, such as the World Heritage Area Consultative Committee).

KDO 6.3: Cooperation of visitors and other users with the Service, especially in caring for the World Heritage Area, its values, and assets.

While general community acceptance of the 1992 management plan was only moderate when the plan was released (with conservation and established practices groups in particular not in agreement with how wilderness values should be managed), community acceptance of the majority of the plan grew over time as the plan was implemented. Interactions with visitors and day-to-day management of the TWWHA were generally well received. A relatively small number of issues attracted some public controversy and these are covered in Section 2.7 'Management of controversial issues'. Lack of acceptance of management as evidenced by illegal activities in the TWWHA is covered in Section 2.5.2 'Law enforcement and compliance issues'.

The level of cooperation of visitors and other users with the managing agency was generally high and the vast majority of visitors complied with management signage, advice and requests. The cooperation of visitors was particularly evident in a number of shifts in public behaviour in response to management initiatives that sought changes in behaviour. For example:

- there was generally a shift towards more responsible usage of the TWWHA consistent with promoted Minimal Impact practices;
- visitors generally complied with the Fuel Stove Only policy initiative, which prohibited the use of open fires throughout the TWWHA except in designated fireplaces, and there was a marked reduction in firewood cutting at campsites;
- the feeding of wildlife by visitors significantly decreased in response to the 'Keep Wildlife Wild' educational program which aimed to reduce the feeding of native animals through raising awareness of its adverse consequences.

Observations by Rangers suggest that there was a reduction in the level of vandalism of assets in the TWWHA over the 1992–1999 period. In the early years of the management period, there were several incidences of vandalism to structures and interpretive signs and also instances of deliberate environmental damage caused by off-road use of 4WD vehicles and occasional dumping of rubbish e.g. at Devils Gullet. In most areas, vandalism is now virtually non-existent and at other places it is at a relatively low level, and mostly of a random rather than targeted nature. There is a continuing occasional problem with break-ins and thefts of valuable items from visitors' parked cars at the heads of walking tracks e.g. at Frenchmans Cap and Walls of Jerusalem¹⁶.

Aspects of management where the managing agency considers there was a less than desirable level of community acceptance or understanding of management provisions or proposals include fire management in general and the Fuel Stove Only policy in some areas. The need for management-initiated burning of some types of vegetation (especially fire-adapted communities such as buttongrass moorlands), and conversely the sensitivity of some other vegetation types to fire (e.g. rainforest communities) are issues that seem to be poorly understood by some sections of the community. The Fuel Stove Only Area policy was generally well accepted in most highland areas (where it was relatively straightforward to demonstrate the lack of firewood and the sensitivity of the environment); however, there was some lack of compliance with the policy in coastal areas e.g. there is continuing evidence of fires being lit at non-designated campsites along the South Coast Track. This situation may be due to a lack of public acceptance of the policy or due to some confusion as to which sites are, or are not, designated as approved fireplaces.



Sophie Underwood (Temporary Assistant, Monitoring and Evaluation) collated the financial records for this report and assisted the audit of implementation of the prescribed actions under the 1992 management plan.

Photo by Mike Driessen

¹⁶ In cooperation with PWS, Tasmania Police has established *Bush Watch* to improve security for visitors' vehicles left unattended for long periods.

2.5 Legislation, law enforcement and compliance

Key Desired Outcome addressed in this section:

KDO 1.4: Effective legislation and enforcement arrangements that support the management objectives of the plan.

2.5.1 Legislation related to management of the TWWHA

The principal Commonwealth and State legislation that applied to management of the TWWHA over the 1992–1999 period is outlined below. Note that this is not a comprehensive listing of all legislation applicable to the TWWHA.

At the Commonwealth level, the main legislation that provided protection to World Heritage Properties was the *World Heritage Properties Conservation Act 1983* and more recently the *Environment Protection and Biodiversity Conservation Act 1999*.

At the State level, the primary legislation providing protection for the natural values of the area (including flora, fauna and geoheritage etc) and governing activities within the TWWHA was the Tasmanian *National Parks and Wildlife Act 1970* and its Regulations. This Act has recently been replaced by the *National Parks and Reserves Management Act 2002* and *Nature Conservation Act 2002*.

The Aboriginal cultural values of the area were protected under the Tasmanian *Aboriginal Relics Act 1975* and were also subject to the provisions of the Commonwealth *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*. Other legislation that applied to management of the cultural heritage of the TWWHA included the *Australian Heritage Commission Act 1975*.

Some areas or activities in the TWWHA were also regulated under the Tasmanian *Crown Lands Act 1976*, *Forestry Act 1920* (relevant to Forest Reserves within the TWWHA), *Electricity Supply Industry Act 1995* (relevant to areas under the administration of Hydro Tasmania) and *Inland Fisheries Act 1995*.

The legislative powers of protection for the TWWHA and its values were significantly enhanced over the 1992–1999 period by:

- passage of the Commonwealth *Endangered Species Protection Act 1992* and the Tasmanian *Threatened Species Protection Act 1995*. (Note that the Commonwealth Act has since been replaced by the *Environment Protection and Biodiversity Conservation Act 1999*—see below); and
- passage of the *Historic Cultural Heritage Act 1995*, which affords greater protection to historic sites listed on the Tasmanian Heritage Register.

Also of significance over the 1992–1999 management period was the passage of the *Aboriginal Lands Act 1995*. This Act resulted in the transfer of title of land from the Crown to Aboriginal Land of three cave sites within the TWWHA—Kuti Kina, Wargata Mina and Ballawinne.

Other changes in legislation that related to the TWWHA and/or its values over the 1992–1999 period included:

- Amendment of the *National Parks and Wildlife Act 1970* by the *Regional Forest Agreement (Land Classification) Act 1998*. This amendment established a revised classification system for reserves under the Act with clearly identified values, purposes of reservation and management objectives that have to be satisfied for each class of reserve. One of the effects of this Act has been that the specified management objectives must be reflected in ongoing management (including management plans) for the various categories of reserve.
- Changes to the *National Parks and Reserved Lands Regulations 1971* in 1997. These changes were made to allow for horseriding in the Central Plateau Conservation Area without a permit but via registration. More recently in 1999, changes were made to

reflect the amendments to the *National Parks and Wildlife Act* in relation to revised classes of reserves (see *National Parks and Reserved Lands Regulations 1999* Part 8).

More recently, in mid-2000, passage of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* greatly enhanced Commonwealth legislative protection powers for all Australian World Heritage Properties. This Act ensures 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. Also of relevance to management of the TWWHA are the Environment Protection and Biodiversity Conservation Regulations 2000, which include management principles that establish a standard for management plans for World Heritage Areas.

2.5.2 Law enforcement and compliance issues

Over the 1992–1999 period, Rangers were authorised officers under Section 8 of the *National Parks and Wildlife Act 1970* and were required to undertake law enforcement activities as a normal part of their daily duties. Other agencies involved in the investigation and response to illegal activities within the TWWHA included the Inland Fisheries Service and Police Tasmania.

The main law enforcement and compliance issues in the TWWHA over the 1992–1999 period were:

- unlawful cutting and removal of Huon pine, King Billy pine, pencil pine, and other valuable timbers;
- arson;
- unlawful stocking of trout in trout-free lakes and rivers;
- removal of mineral specimens;
- plant and firewood collection;
- commercial tour operation activities e.g. operation of unlicensed tours, non-compliance with speed limits for boats;
- unlawful recreational activities e.g. unauthorised track cutting and/or marking; the lighting of campfires in declared Fuel Stove Only Areas; the construction of unauthorised structures (e.g. huts, bridges etc); use of off-road vehicles; unpermitted horseriding; and
- evasion of Park Entry fees.

These issues are described in greater detail below. A summary of offences over the 1992–2000 period is provided in Appendix 4. There were no investigations related to the *Aboriginal Relics Act 1975* in the TWWHA over the 1992–1999 period.

Unlawful cutting and removal of Huon pine and other valuable timbers

The main ongoing illegal activity within the TWWHA that directly affects World Heritage values is the unlawful cutting and removal of Huon pine and other valuable timbers. While salvaged Huon pine can legally be collected from selected parts of Macquarie Harbour and the coastline of the Southwest Conservation Area under permits issued by Forestry Tasmania, investigations by the Parks and Wildlife Service, Tasmania Police and Forestry Tasmania suggest that this lawful activity has established a black market demand for these timbers which encourages their illegal removal from the TWWHA and other protected areas. While the cutting of living trees is the primary concern of PWS managers, illegal poaching of driftwood also occurs.



Since joining the National Parks and Wildlife Service in 1973, **Greg Middleton** has had responsibility for a variety of matters including reserve system planning and creation, interpretation, management planning, cultural heritage and the development of parks and conservation legislation. Greg has held a number of senior management positions and has taken a particular interest in cave conservation and management. Greg left the Tasmanian public service in 2003.

Photo by Tim O'Loughlin



Colin Spry has worked with the managing agency for over 17 years, mostly as a Ranger and for the last 7 years in wildlife operations and enforcement. Colin has responsibility for coordinating statewide efforts related to law enforcement and compliance in National Parks and Reserves.

Photo by Sophie Underwood

Huon, King Billy and Pencil Pines are high value timber resources sought after for a range of uses, predominantly within the craft and furniture trade. These species are extremely slow growing and mature trees are often several hundred years old, sometimes thousands of years old. Most of the remaining stands of these trees occur within the TWWHA. To date, Tasmania has had no tagging or certification system to track the sources or chain of custody of protected species timbers¹⁷.

The main areas where timber poaching activities are suspected of occurring are Port Davey, Lake Burbury, the Queenstown area, Gordon River and Macquarie Harbour, Pine Lake, the Huon /Picton Rivers, and the Pieman River. Although some isolated stands of trees can be accessed by vehicle, access is mostly by boat to where flood timber is collected, or accessible stands of trees are cut and removed.

There is no reliable information as to the true extent of poaching or of the amounts of timber unlawfully taken from the TWWHA. However, allegations were received over the management period of container loads of poached Huon and/or King Billy Pine being exported from Tasmania.

Monitoring patrols by PWS field staff concentrated on known cutting locations; however, the remote locations of most illegal activities limited the success of surveillance and apprehension of offenders.

Over the 1992–1999 period there were only four successful prosecutions for offences related to the unlawful removal of Huon pine. The State government is currently taking steps to significantly increase the penalties under the *National Parks and Reserves Management Act 2002* for these offences from a maximum of a \$2,000 fine to \$20,000.

Source: Colin Spry (Coordinator, statewide enforcement and compliance) RMC, DPIWE.

Plant and firewood collection

In addition to the poaching of valuable timbers, ‘hooking’ of wood for firewood and/or fencing posts from the TWWHA was also documented during the management period. Some incidents involved moderately large quantities of timber as evidenced by the extent of clearing and the use of a large skidder to drag logs from Patons Road, Cradle Mountain–Lake St Clair National Park.

There were also reports of harvesting of tree ferns from roadsides within the TWWHA.

Sources: Dick Dwyer (Senior Ranger, Mole Creek) and Flora Section (RMC, DPIWE).

Arson

Unmanageable wildfires are probably the greatest realistic threat that could cause rapid, large-scale, major ecological impacts to the TWWHA and its World Heritage and other significant values. Arson is the primary source of ignition for wildfires in southwest Tasmania, accounting for about 65% of all wildfires in the region (Marsden-Smedley, 1998).

Over the 1992–1999 management period, there were four recorded wildfires started by arson in the TWWHA and these burnt a total of 675ha.

Investigations were carried out in relation to several unlawful fires in the TWWHA; however, no formal charges were laid. The management of wildfires is covered in detail in Section 4.6 ‘Wildfires’.

Sources: Colin Spry (Coordinator, statewide enforcement and compliance) RMC, DPIWE; and Jon Marsden-Smedley (Fire management officer, PWS)



King Billy Pine (*Athrotaxis selaginoides*) is one of several slow-growing endemic conifers that are targeted by poachers for their valuable timber.

Photo by Glenys Jones

¹⁷ However, following recommendations from the Special Timbers Supply Chain Review (Brueckner Leech, 1999), a ‘chain of custody’ labelling system has recently been initiated for Tasmanian special timbers through Fine Timbers Tasmania Inc.

Unlawful stocking of trout into trout-free lakes and rivers

The introduction of trout into trout-free lakes and rivers in the TWWHA is a major ecological threat to the integrity of these natural aquatic ecosystems. Trout have been implicated in the decline of several species of native fish.

Just prior to and during the early years of the 1992–1999 period, there was evidence that rainbow trout were illegally introduced into lakes in the western lakes region of the TWWHA, specifically into Lake Fox, Frozen Lagoon, Last Lagoon, Jacks Lagoon, Lake Leonis, Lake McCoy and a number of smaller unnamed waters in the Blue Peaks area and in the Wadleys–Zig Zag area.

Inland Fisheries Service officers and staff of the managing agency attempted to raise community awareness about the problems associated with the illegal introduction of trout e.g. through discussions with angling groups. However, illegal stocking of trout continued to occur through the management period.

Brown trout were illegally introduced into Lake Bill, Lake Ayr and unnamed waters in the Blue Peaks area and in the Wadleys–Zig Zag areas. There were also unconfirmed reports of illegal stocking of trout into Lake Myrtle and Lake Louisa. More recently, in 2001, Inland Fisheries Inspectors and Wildlife Officers apprehended two males intending to unlawfully introduce trout into the western lakes area. A further concern to managers was the perceived inadequate nature and level of response through the legal process to this incident.

Source: Stuart Chilcott (Inland Fisheries Service) and Mike Driessen (RMC, DPIWE)



Sports fishing for brown trout (*Salmo trutta*) is a popular recreational pastime for many Tasmanians and visitors to the state. In keeping with the long history and tradition of trout fishing that pre-dates the listing of the World Heritage Area, designated areas of the TWWHA continue to be stocked with trout by the Inland Fisheries Service. However, trout are an introduced species that threaten several native fish species and their unauthorised introduction into other trout-free lakes and rivers poses a serious threat to these natural aquatic ecosystems.

Photo by Inland Fisheries Service

Removal of mineral specimens

There were several incidents of unlawful removal of mineral specimens from sites of geoconservation significance within the TWWHA, including at Mt Oakleigh, Crystal Cave and the Wolfram Mine. Following charges being laid, one offender was given a warning; and the others were issued with \$50 fines.

Source: Earth Science Section (RMC, DPIWE)

Commercial tour operation activities

Over the 1992–1999 period, investigations were carried out into a range of matters relating to breaches of commercial tour licence conditions and the conduct of tourist operations by non-licensed operators. Examples included non-compliance with speed limits by cruise boats on the Gordon River; the operation of unlicensed or 'permitted use only' helicopters for tourist flights in the TWWHA; and the conduct of unlicensed eco-tours within the TWWHA. Following investigations, one unlicensed operator was prosecuted and found guilty of operating illegally. The operator subsequently applied for, and was granted, a licence.

Unlawful recreational activities

BREACHES OF PERMITTED RECREATIONAL ACTIVITIES

Recreational hunting of wild duck and wallaby, horse riding, off-road driving and trout fishing in specified areas within the TWWHA were permitted activities under both the 1992 and 1999 TWWHA management plans.

Over the 1992–1999 period, no breaches of permitted recreational activities were detected in Macquarie Harbour. In the Central Plateau Conservation Area, three breaches were detected in regard to horseriding activities, and one related to hunting activities. There were several reports of unlawful use of firearms and dogs.

OFF-ROAD VEHICLE USE

There were several incidents of damage caused by off-road vehicles on the Central Plateau.

Access of motorised vehicles to coastal areas poses a serious threat for the degradation of coastal vegetation and Aboriginal heritage sites. Such access also poses a significant threat of introducing plant diseases (such as *Phytophthora* root rot) into the TWWHA. Between 1997 and 1999, investigations were conducted into the alleged use of all-terrain vehicles (ATV's or quad bikes) along the western boundary of Southwest National Park within the TWWHA and the Southwest Conservation Area (south of Low Rocky Point and south of Elliott Hill). These investigations concluded that these activities had not as yet penetrated into the TWWHA. However, it was evident that extensive damage to Aboriginal sites within the Southwest Conservation Area had occurred as a result of quad bikes going through Aboriginal sites and initiating erosion (which is ongoing).

All terrain vehicles or quad bikes may recently have gained illegal access to coastal regions of the TWWHA. Programs have been developed to target quad bike users in the Southwest Conservation Area to raise awareness of the requirement not to enter the TWWHA.

UNAUTHORISED TRACK CUTTING AND/OR MARKING

Unauthorised track cutting and/or marking causes direct impacts on vegetation and is also likely to be associated with unplanned increases in access to relatively pristine and remote areas, which in turn can give rise to a range of impacts.

Unauthorised track cutting and/or marking is known to have occurred within the TWWHA over the 1992–1999 period, although there were no formal investigations and there has been no documentation of its extent.

CONSTRUCTION OF UNAUTHORISED STRUCTURES

An unauthorised bridge was constructed on the Mersey River, and Rangers discovered a partially constructed hut in the George Howes Lake area of the Walls of Jerusalem National Park. A flood washed away the bridge¹⁸, and staff of the managing agency dismantled the unauthorised hut.

LIGHTING OF CAMPFIRES IN FUEL STOVE ONLY AREAS

There were a number of reports of campfires being lit in declared Fuel Stove Only Areas. On-ground evidence confirms that there has been some degree of non-compliance with the Fuel Stove Only Area policy particularly on the South Coast Track where fires are being lit at non-designated campsites.

Evasion of park entry fees

In 1992, park entrance fees were introduced at a number of high profile sites in the TWWHA. In 1995, the park entry fee system was expanded to apply to all National Parks, and a Prescribed Infringement Notice system was introduced.

Whilst generally there was a high level of visitor acceptance of the park entry fee system, failure to pay or display a valid park pass or receipt remains the most common breach of the *National Parks and Reserved Lands Regulations 1999* in the TWWHA.

18 The construction of a bridge further downstream from the illegal bridge (close to the site of the original crossing from some years prior) was later authorised and funded by the managing agency, and constructed with the assistance of the North West Walking Club, The Launceston Walking Club, the Deloraine Walking Club and staff of the Parks and Wildlife Service.

2.6 Accordance of management with legal instruments and conservation agreements

Key Desired Outcome addressed in this section:

KDO 1.5: Management decisions and actions in accordance with, and implementing as required, the obligations of international, national and State legal instruments and conservation agreements that relate to the World Heritage Area.

The principal international agreement applying to the TWWHA is the UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage (the World Heritage Convention). The Convention aims to engage all nations in protecting those sites that are the most important examples of the world's natural and cultural diversity. For more information, see the website <<http://whc.unesco.org/>>. Also of relevance to the TWWHA are the Convention on Biological Diversity which concerns the use and conservation of biodiversity; and the Ramsar Convention on Wetlands which concerns the conservation and wise use of wetlands and their resources. For further information, see the website <<http://www.ea.gov.au/biodiversity/index.html>>.

No matters related to the obligations of the above international conventions arose during the 1992–1999 period. More recently, however, there has been a change in the status of an area in the TWWHA as detailed below.

Prior to the Tasmanian Wilderness being listed as a World Heritage Area, an area of the Southwest National Park was proclaimed in 1977 as a Biosphere Reserve¹⁹ under the UNESCO Man and the Biosphere Program (MAB). This worldwide network of sites was established to provide a systematic worldwide network of representative ecosystems ensuring the conservation of biodiversity (Bridgewater, 2002). Since listing as a Biosphere Reserve, this area was also listed as part of the Tasmanian Wilderness World Heritage Area. As such, the area came under the management provisions of the TWWHA management plan. In 2002, in considering its priorities and resources for management of the TWWHA, the Parks and Wildlife Service determined that the level of management resources and activities required to meaningfully address the objectives of the MAB program (e.g. preparing status reports on the reserve, and raising community awareness and engagement with the MAB program) required the dedication of significant resources. Given that the area was now covered by a management plan that largely addressed the objectives of the Biosphere Reserve Program, the Parks and Wildlife Service determined that resources for management of the area would be better directed to implementing the conservation and other management actions prescribed by the TWWHA management plan. Following an initial submission from the Parks and Wildlife Service, and on the subsequent request of the Australian government, the Southwest National Park was removed from the list of Biosphere Reserves under the UNESCO Man and the Biosphere Program in November 2002.

2.7 Management of controversial issues

Key Desired Outcomes addressed in this section:

KDO 1.6: Satisfactory resolution of conflicts that arise between different aspects of World Heritage Area management and/or conflicting legal mandates.

KDO 7.3: Increased understanding by the Service of the range of values which the community attaches to the World Heritage Area, and increased understanding by the community of World Heritage Area management obligations, the World Heritage Area management approach and decision-making processes.

Issues that attracted considerable public attention or controversy over the 1992–1999 management period fell into three general categories:

¹⁹ The boundary of the reserve corresponded approximately to the 1977 boundary of the Southwest National Park.

1. management or curtailment of pre-existing uses of the TWWHA that were considered to be inconsistent with the new management objectives for the area;
2. management of visitor use and/or activities that were causing a direct impact or threat to the values of the area; and
3. management of visitor facilities and/or infrastructure.

Note that several issues related to more than one of the above categories e.g. horseriding was a pre-existing recreational activity that was causing ongoing impacts to sensitive plant communities.

The main controversial issues over the 1992–1999 period are summarised below.

Management or curtailment of pre-existing uses of the TWWHA

Horseriding. On the basis of environmental impact considerations, the 1992 management plan restricted horseriding to specified areas within the TWWHA viz. a number of areas in the Cradle Mountain–Lake St Clair National Park and the Central Plateau Conservation Area (see p 87 of the 1992 plan). While riders accepted the requirement for permits to ride in National Parks, they refused a requirement under the National Parks and Wildlife Regulations 1971 to have a permit for riding on the Central Plateau Conservation Area. Riders believed a permit was not necessary as the area had been ridden for many years without permits being required. A compromise was negotiated which resulted in a change to the Regulations to allow riders to register rather than being required to have a permit to enter the Central Plateau Conservation Area. This provision—combined with the production of a Code of Practice for high country riding²⁰—put in place an agreed system for managing horseriding in the TWWHA.

Bait fishing. The 1992 plan disallowed the transportation of live bait for fishing into the TWWHA but allowed bait fishing in parts of the Central Plateau Conservation Area outside the TWWHA boundary. However, this provision was technically at variance with the National Parks and Wildlife Regulations 1971, which disallowed collection of live bait within the Central Plateau Conservation Area. The discovery of carp in the nearby Lakes Sorell and Crescent heightened controversy regarding the ecological threat that live bait fishing posed to the natural ecosystem. The situation was partially resolved under the 1999 TWWHA management plan, which restricted bait fishing to two lakes in the TWWHA under specific conditions.

Stock grazing. Farmers who traditionally grazed stock on the Central Plateau highlands generally did not accept that sheep or cattle grazing caused impacts on native vegetation communities. The moratorium on grazing in the TWWHA prescribed by the 1992 management plan was opposed by these groups. The 1999 plan disallowed the re-introduction of grazing on the basis of scientific evidence and advice regarding environmental impacts.

Closure of the limestone quarry at Lune River. A major quarry for limestone at Lune River (Bender's Quarry) which was demonstrated to be causing damage to the significant limestone karst system at Ida Bay was closed as a result of a decision by the Commonwealth government (acting under the *World Heritage Properties Conservation Act 1983*) to prohibit, except with the consent of the Federal Minister in writing, operations for the mining of limestone within Mining Lease 69M/81 at Marble Hill). A major rehabilitation program has resulted in stabilisation and revegetation of the quarry site.

Fuel Stove Only Area policy. A policy was introduced that restricted the use of open fires in the TWWHA to a small number of designated fireplaces. This policy was developed to reduce the risk of campfires escaping and causing wildfires and/or peat fires, and to reduce the impacts on vegetation around campsites from wood collection. Curtailment of this activity gave rise to controversy in some quarters, particularly amongst traditional users of the area, but has been broadly accepted by the walking community.

Traditional/established practices. The management of traditional or pre-existing uses

20 'Horse riding in the high country. A code of practice for riding in Tasmanian highland areas' (PWS, 1997)

of the TWWHA was perhaps the most significant area of ongoing contention between the managing agency and sections of the community. In a bid to move forward on this issue, the managing agency sought to increase its understanding of community values attached to the TWWHA and to inform determinations about the appropriateness of allowing some pre-existing practices in the TWWHA to continue. A social anthropologist was commissioned to undertake a study of the nature and significance of community cultural values associated with traditional practices in the TWWHA. The study report noted that all users of the World Heritage Area could be defined as 'traditional' and that the idea of traditional practice was an evolving concept (Knowles, 1997). The report suggested that where a practice is spatially specific (ie it cannot occur anywhere else) and where it is part of building community identity and solidarity, the activity should be seen as significant by land managers. The key recommendations from the report were that traditional practices zones be recognised in the TWWHA; that PWS work towards joint management of these areas with local communities; and that communication channels between local communities, user groups and the service should be improved. These recommendations have been addressed in the 1999 TWWHA management plan.



The Mt McCall track was originally constructed to support the construction of a proposed dam on the Franklin River. Amendment of the 1992 management plan to allow for retention of the Mt McCall 4WD track (rather than closing and rehabilitating the track to restore wilderness quality) was one of the issues that attracted public controversy during the 1992–1999 period.

Photo by Glenys Jones

Management of visitor use and activities

Walker permits. There was a great deal of controversy related to the proposed introduction of walker permits to limit the number of walkers in environmentally sensitive areas as foreshadowed by the WHA Walking Track Management Strategy. In particular, there was considerable opposition from local bushwalking clubs. These issues were further addressed in the 1999 management plan and processes that flowed from it; however the sustainable management of walking tracks in the TWWHA remains a significant and controversial issue.

Changes to commercial cruise operations on the lower Gordon River. Measures were introduced for commercial cruise vessels on the lower Gordon River to reduce ongoing erosion of the riverbanks. There was opposition to the closure of some areas to commercial vessels and the application of speed limits and licence conditions.

Management of visitor facilities and infrastructure

Mt McCall 4WD track. The 1992 management plan prescribed that the Mt McCall 4WD track be closed and rehabilitated to restore wilderness quality. However locals, 4WD enthusiasts and commercial rafting operators lobbied strongly for the retention of the track. An amendment to the 1992 TWWHA management plan was made in 1997 to allow for retention of the Mt McCall track.

Proposed Pump House Point development at Lake St Clair. In 1996, a proposal was considered for a 5 star tourist lodge (Buckhurst Lodge) to be developed at Pump House Point. Controversy centred on the appropriateness of allowing commercial developments inside National Parks. Although the proposal was approved, the development did not proceed for unrelated reasons. The site was subsequently considered for a variety of tourism developments and in 2003 a new proposal was under consideration.

Construction of new accommodation cabins at Cynthia Bay, Lake St Clair. Some people considered that the number and size of cabins constructed at Lake St Clair was not consistent with the provisions of the management plan or the site plan for the area.

Construction of an additional commercial bushwalkers' hut at Kia Ora on the Overland Track. Construction of an additional hut to allow for better spacing of commercial trips on the Overland Track was opposed by some sections of the community.

Lake Nameless hut. Management of the ironstone hut at Lake Nameless gave rise to some controversy regarding the relative importance of management objectives for the conservation of historic heritage versus local community objectives for the contemporary social values of the hut. Local community members were actively involved in the reconstruction of the hut and now use, value and maintain the hut. However, reconstruction of the hut resulted in the loss of some historic heritage fabric.



Mt Olympus and the Pump House at Lake St Clair, dawn, April 1995. The Pump House was originally built as part of hydroelectric power generation activities. Since 1996, Pump House Point has been the site for two proposed tourism developments although neither of these eventuated.

Photo by Barry Batchelor



Nick Sawyer, PWS Planning Officer, played a major role in analysing public submissions during the review of the 1992 management plan for the TWWHA and more recently collated the public submissions related to proposed new activities and developments for the TWWHA (including proposed helicopter landings in the TWWHA and a proposed tourism development at Cockle Creek). Nick has also been involved in planning for the Overland Track.

Photo by Nick Sawyer

Other. A number of other matters related to recreational use and activities attracted some degree of public attention and controversy over the 1992–1999 period. These included the future of the Bernacchi Centre at Lake Augusta on the Central Plateau, hunting, and the management of pre-existing shacks in the TWWHA.

A number of special events involving competitive recreation in the TWWHA (such as major orienteering events and races) also gave rise to some concerns regarding their potential impacts on the environment and on the recreational experience of other users. These concerns led to the development of a section in the 1999 TWWHA management plan dealing with the management of special events.

In addition to the above controversial issues in the public forum, a number of issues arose within the managing agency as a result of the inherent tension between the various objectives for managing the TWWHA. On occasion, actions that would best meet the objective for one area of management responsibility had some negative consequences for other areas of management responsibility. For example, the construction of barriers to halt coastal erosion and associated loss of Aboriginal midden sites on the south coast furthered the objectives for the conservation of cultural heritage; however it compromised other management objectives by causing disruption to the natural geomorphic processes in significant dune systems and reducing wilderness quality through the erection of structures in natural areas. In this particular case, an independent consultant (Helen Hocking of Landmark Consulting) was engaged to review the project. The findings of this review gave rise to the section in the 1999 TWWHA management plan that outlines the process to be followed in resolving conflict in the event of managing different objectives.

2.8 Land tenure, boundary and adjacent area management

Key Desired Outcome addressed in this section:

KDO 1.7: Land tenure, boundary and adjacent area management that affords the greatest protection to, and presentation of, the World Heritage and other natural and cultural values of the World Heritage Area, and that also satisfies land owners' and neighbours' needs.

Over the 1992–1999 management period there were a number of changes in land tenure, boundary and/or adjacent area management arrangements that variously affected the protection and presentation of the TWWHA and its values. Changes within the TWWHA and to adjacent land are briefly outlined below.

Changes within the TWWHA

- On 6 December 1995, the title of three parcels of land within the TWWHA was transferred from the Crown to the Aboriginal Land Council—Kuti Kina Cave (15ha), Wargata Mina Cave (155ha) and Ballawinne Cave (560ha) under the *Aboriginal Lands Act 1995*. The sites 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 13 November 1996, the Mole Creek Karst National Park was proclaimed. The park includes that part of the former Marakoopa Cave State Reserve within the TWWHA. (Management of Marakoopa is governed by both the TWWHA management plan and the Mole Creek management plan.)
- 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 Conservation Areas (i.e. they became Forest Reserves only—Liffey FR, Drys Bluff FR and Meander FR).

- The Hydro-Electric Commission (HEC) divested itself of land within the TWWHA that did not directly relate to its hydroelectric activities. The tenure of these areas remained the same (Conservation Area).
- The dual status of those parts of the Central Plateau that were Conservation Area and Protected Area (under the *Crown Lands Act*) was removed on 30 April 1999 and the area is now solely Conservation Area under the *National Parks and Reserves Management Act 2002*.

More recently,

- On 2 August 2000, Marble Hill Conservation Area within the TWWHA ceased to be Conservation Area and was added to Southwest National Park.
- On 13 December 2000, Maatsuyker Island (180ha) within the TWWHA (on being relinquished by the Commonwealth) ceased to be Conservation Area and was added to Southwest 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. 14.4ha remains as Hydro Tasmania administered land and Conservation Area.
- 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 not to be part of the Conservation Area.

Changes on adjacent areas to the TWWHA

- The ‘Hartz Hole’ (an area near the Hartz Mountains) and an area southeast of Cockle Creek (in total 3,298ha) were added to National Parks on 29 January 1992.
- The Commonwealth–State Regional Forest Agreement process resulted in some areas of State Forest and other public land adjacent to the TWWHA being included within National Parks or other conservation reserves. These additions comprised 15 parcels of reserved land covering 15,867ha. The protection of these adjacent areas complements and provides a better buffer for the TWWHA²¹.
- 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 and became State Forest only.
- On 27 December 2000, an acquired area of 1ha at Derwent Bridge was added to the Cradle Mountain–Lake St Clair National Park.

Changes to use and planning of adjacent areas included:

- A commercial horseriding operation adjacent to the World Heritage Area boundary at Cradle Mountain, which was causing significant environmental and aesthetic impacts, was relocated to a less vulnerable area.
- A draft site plan for Melaleuca (a designated Visitor Services Site adjacent to the TWWHA) was prepared in 1995 to provide a range of low-key recreation opportunities consistent with the area’s natural and cultural values. More recently, the plan was extensively updated and published as the Melaleuca–Port Davey Area Plan 2003.
- A visitor management strategy for the Great Western Tiers was developed by Forestry Tasmania in conjunction with PWS (McArthur & Gardner, 1993).
- Forestry activities expanded into the southeastern border region of the TWWHA.
- Vegetation clearance beside the Lake highway north of Liawenee associated with road works degraded the aesthetic natural values of this area.
- Recreation activities in the far southwest (e.g. 4WD vehicles and quad bikes at Little Deadmans Bay in the Southwest Conservation Area adjacent to the World Heritage Area) caused impacts on Aboriginal heritage and posed a significant ongoing threat of introducing plant diseases (such as *Phytophthora* root rot) into the World Heritage Area.



Cheryl Nagel joined the managing agency in 1986, working initially as a Ranger in a variety of locations around the state, and subsequently progressing to more senior positions including District Ranger at Cradle Mountain, Area Manager for the Western Area, and Manager of the Southern Region. During her time with the department, Cheryl was involved with management operations throughout the TWWHA and actively fostered community engagement through such initiatives as the Cradle Mountain Enterprise and Friends of Cradle Valley. Cheryl has recently left the department to further her career in National Park management interstate.

Photo by Sophie Underwood

²¹ Under the 1999 TWWHA management plan, these areas are covered by the management plan, and it is intended to recommend addition of these to the World Heritage Area when the values of the area are updated. It is possible to add minor areas to World Heritage Areas without going through a full-scale nomination process.

Volunteer bird observers, Melaleuca. Each year teams of volunteers assist with habitat searches to find evidence of new nesting sites of the critically endangered orange-bellied parrot. Other teams undertake observations of colour-banded orange-bellied parrots on fortnightly shifts from September to April at Melaleuca and Birchs Inlet. These observations form the basis of population estimates that help to measure the effectiveness of conservation efforts.



Photo by Graham Knot



Orange-bellied parrot hide at Melaleuca.

Photo by Barry Batchelor



Volunteers and visitors to Melaleuca can watch the endangered orange-bellied parrot from the comfort of the bird observatory. Volunteers are on hand to talk to visitors about the recovery effort for the parrots.

Photo by M. Holdsworth

2.9 Transmission of knowledge and ability to future generations

Key Desired Outcome addressed in this section:

KDO 1.8: Transmission to future generations of the knowledge and ability to protect and conserve the World Heritage Area and its heritage.

The findings of public opinion polls indicate that the transmission of knowledge about the TWWHA to the younger Tasmanians is relatively poor. Telephone surveys revealed that awareness and knowledge by Tasmanian residents about the TWWHA (and other World Heritage Areas in general) is lowest amongst young adults (Hocking 1994a, EMRS 2000a). For example, in 1999 only 53% of Tasmanians 16–25 years of age had heard of the Tasmanian Wilderness World Heritage Area compared with 87% of those over 40 years of age. There was however a slight indication from comparison of the 1993 and 1999 survey results that awareness may increase as the youth cohort ages.

Staff of the PWS Interpretation and Education Section who have first-hand experience of visiting schools and education institutes to give presentations about the TWWHA also report a low level of youth awareness of the TWWHA. Staff observations are that students at primary and secondary schools in Tasmania generally have a very poor understanding of the TWWHA: for example they generally don't know where it is; what it is; and why it is special. Similarly, students at higher education institutes such as TAFE and University (including trainee teachers) generally have a very poor level of knowledge about the TWWHA.

These findings are addressed in the proposed actions for enhancing management performance (Chapter 8).

2.10 Community engagement with the TWWHA

Key Desired Outcomes addressed in this section:

KDO 7.1: Participation of the community (including schools, community groups and volunteers) in World Heritage Area-related activities, processes and projects which assist World Heritage Area management.

KDO 7.2: Establishment of successful community–Service partnerships to assist in the management of specific parts or aspects of the World Heritage Area.

A range of structures and processes continued to support community involvement in management of the TWWHA. For example, the World Heritage Area Consultative Committee continued to provide advice and feedback to the managing agency and government in relation to policy and management for the TWWHA. Aboriginal community involvement in management of the TWWHA was supported through the Tasmanian Aboriginal Land Council (TALC) and the Aboriginal Land Council of Tasmania (ALCT).

A number of new initiatives were undertaken by the managing agency to increase community participation and involvement in the management of the TWWHA. An extensive public consultative process was undertaken during the revision of the 1992 management plan leading to the development of the 1999 management plan (Sawyer, 2000). In addition, public consultation processes were a normal component of the planning process associated with the preparation of site plans for Visitor Services Sites and Zones in the TWWHA.

Partnership and volunteer programs were developed to foster ongoing community engagement in management of specific areas of interest. For example a Community Huts Partnership Program was established in 1999 to promote community participation and



Photo by Barry Batchelor



Photo by Michael Comfort

Far left: Australian Trust for Conservation Volunteers undertaking rehabilitation of the former lakeside carpark at Cynthia Bay, Lake St Clair.

Left: Australian Trust for Conservation Volunteers planting seedlings to stabilise a degraded lunette on the Central Plateau. Lunettes are dunes bordering a lake.



Photo by Tim Pugh

Above: Ephemeral works of art by artist Tim Pugh. *Pebble Spores*, 17.4.1999, approx 2m across. Artist's notes: 'Nice introduction to Lake St Clair. Calm settled day, pebbles on edges kept falling off though and having to be replaced! Idea taken from limestone fossils of the undersea stems of crinoids.'



Photo by Barry Batchelor



Photo by Barry Batchelor

Far left: Jobskills graduation, November 1993. Jobskills volunteers assisted a variety of projects including minor constructions such as a ticket office, track work, and landscaping.

Left: Track work in progress by Jobskills volunteers.

partnership in the care of historic public huts in the TWWHA. Under the program, community groups and/or individuals take an active role in managing selected huts by becoming Hut Caretakers with a formal recognised role in monitoring and maintaining the condition of selected huts, with the support of the Parks and Wildlife Service District staff (see Parks and Wildlife Service, 1998). Over the 1992–1999 period, fifteen Hut Caretakers signed caretaker agreements with the Service and the energies and activities of community groups have helped maintain or restore historic huts especially on the Central Plateau and around Macquarie Harbour.

In December 1997 a volunteer program called WILDCARE was formed to provide and encourage volunteer assistance in the management of reserves statewide, including the TWWHA. By the end of 2002 membership was approximately 2,500. Volunteer activities in the TWWHA have included nature conservation (e.g. surveys of orange-bellied parrots), visitor information (e.g. walker educational program on the Overland Track), cultural heritage conservation, and reserve management activities (e.g. track work). WILDCARE has been formally incorporated as a community group and partner organisation to the Parks and Wildlife Service

Other initiatives aimed at promoting community engagement with the TWWHA included:

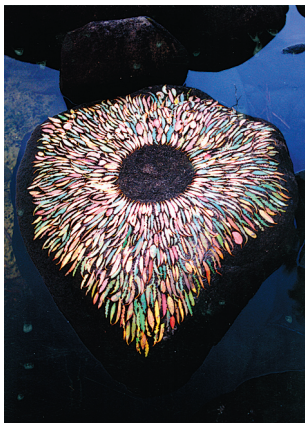
- Cradle Mountain Enterprise—a joint committee of Parks and Wildlife staff and private business volunteers—was established to improve visitor services and generate revenue to assist ongoing management of the Cradle Mountain Visitor Centre.
- District Community Consultative Committees were established to provide community input to management decisions of the Parks and Wildlife Service's seven management districts across the state. Five of these districts have management responsibilities for the TWWHA.
- The Friends of Cradle Valley formed to assist with management of the Cradle Valley area, including providing community advice and active volunteer work.
- Several joint management projects for Aboriginal heritage were undertaken between the managing agency and the Tasmanian Aboriginal community through the Tasmanian Aboriginal Land Council.

A variety of joint projects were undertaken between the managing agency, community groups and volunteers to assist with management of the area, including:

- The Surfrider Foundation and the Parks and Wildlife Service worked jointly to address sand dune degradation at Lion Rock on the south coast through erecting fencing and interpretation signs.
- Volunteers assisted the managing agency in a clean-up of marine debris on the west and south coasts of the TWWHA.
- Nora River Bridge on the Mt McCall track was rebuilt with assistance from the local community.
- Australian Trust for Conservation Volunteers and Greencorp volunteers upgraded Kelly Basin track and implemented the site plan (especially around Bird River Day Use Area) and undertook a variety of rehabilitation projects.
- The Mountain Huts Preservation Society assisted the rebuilding of Trappers Hut and the Lady Lake Hut on the Central Plateau.

Whilst the level of participation in, and activity of, the above groups provides some measure of their success, there has been little formal assessment of how effective such groups are in meeting their own and PWS's objectives for these projects.

A range of special community events, concerts, educational activities, photographic exhibitions, and art and craft displays were introduced to foster broader community involvement with the TWWHA. One artistic display that attracted considerable public interest was the ephemeral works of art created by Artist-in-Residence²² Tim Pugh at Lake St Clair. Some of Tim's striking creations—all assembled from natural on-site materials—are depicted below together with the artist's notes about each work.



Ephemeral works of art by Artist-in-Residence, Tim Pugh.
Bush Burst, 14.6.1999, over 1m across.

Artist's notes: 'Burst effect on bush leaves laid out against a boulder—the shape determined by the dimensions of the subtle rounded contours of the worn surface. An island of splintered colour set in the calm water of Platypus Bay. The black surface highlighting individual textures and colours.'

Photo by Tim Pugh

22 The Artist-in-Residence program (established through Arts Tasmania) provides grants for artists to reside and work in Tasmania's National Parks.

2.11 Management arrangements for Aboriginal heritage

Key Desired Outcomes addressed in this section:

KDO 8.2 (in part²³) Increasing involvement of the Tasmanian Aboriginal community in the conservation of Aboriginal heritage.

KDO 8.3 Presentation of Aboriginal heritage to the wider community in ways that are supported by the Tasmanian Aboriginal community.

KDO 8.4 High levels of satisfaction of the Service, the Tasmanian Aboriginal community and the wider community with the management of Aboriginal values.

Opportunities for the Tasmanian Aboriginal community to be involved in the management of the TWWHA over the 1992–1999 period included:

- representation on the Tasmanian Wilderness World Heritage Area Consultative Committee;
- representation through the Aboriginal Land Council of Tasmania and the Tasmanian Aboriginal Land Council (the land managing organisation responsible on a day-to-day basis for managing Aboriginal land vested by the *Tasmanian Aboriginal Lands Act 1995*); and
- involvement in joint management projects related to Aboriginal heritage with the managing agency.

In addition the Aboriginal Heritage Office (DTPHA) provided advice on a day-to-day basis to staff of the managing agency in regard to Aboriginal heritage issues in the TWWHA.

- A number of major joint projects related to management of Aboriginal heritage in the TWWHA were undertaken by, or in close collaboration with, the Tasmanian Aboriginal Land Council, including:
- Much of the on-site stabilisation works for actively eroding midden sites along the southwest coast of Tasmania was undertaken by TALC staff with assistance from the Aboriginal community.
- A major survey of Aboriginal heritage on the Central Plateau was conducted by TALC. The report of this study (Smith et al, 1996) identified a large number of Aboriginal sites and heritage resources and made recommendations to address specific management problems. TALC has since been directly involved in developing and implementing projects to address some of these problems.
- TALC developed for the PWS a strategy for interpreting Tasmanian Aboriginal culture and heritage, entitled 'Aboriginal Interpretation of the Tasmanian Wilderness World Heritage Area' (Lehman, 1995). The strategy has been adopted in principle by the PWS and is currently being implemented through the World Heritage Area Aboriginal Partnerships Project at three key sites in the TWWHA: Lake St Clair, Sarah Island and Melaleuca. As of 2003, a walkway and pamphlet have been completed for Lake St Clair and a pamphlet for Sarah Island.
- Development of the content for Aboriginal interpretation in a variety of media and programs was undertaken in close consultation with the Aboriginal community. The Summer Interpretation ranger program, development of the PWS web site, and interpretive signs at Kuti Kina and Liffey Falls were developed with the assistance of the Aboriginal community.
- A strategy was developed for Aboriginal management in the World Heritage Area (Collett and Lehman, 1996). The report identifies principles and requirements for Aboriginal management and makes recommendations for furthering Aboriginal management particularly in the areas of conserving Aboriginal coastal landscapes; developing and implementing Aboriginal interpretation; increasing understanding of and community participation in Aboriginal fire management; identifying Aboriginal values; and cross-cultural training of PWS staff.



Aboriginal weaving, Lake St Clair Visitor Centre.

Photo by Glenys Jones

23 The 1992 management plan did not include objectives related to the establishment of management partnerships between the Service and Tasmanian Aboriginal community. These concepts were introduced in the 1999 management plan (see KDOs 8.1–8.5).

Collaboration between the managing agency and the Aboriginal community led to the development of the section in the 1999 TWWHA management plan dealing with Aboriginal management of the TWWHA, which further progresses joint management arrangements.

2.12 Integration of TWWHA management with local and regional planning

Key Desired Outcome addressed in this section:

KDO 7.4: Integration of World Heritage Area management concepts and strategies with local and regional planning and operational strategies and instruments.

The 1992–1999 period was characterised by a significant increase in cooperation between PWS and a wide variety of local, State and Federal agencies. PWS has generally been satisfied with the degree to which other agencies have become aware of World Heritage Area values and management requirements, and responded through specific strategies and operations.

Six municipalities cover the TWWHA and adjacent areas: West Coast, Central Highlands, Meander, Huon Valley, Derwent Valley and Kentish. Membership of the World Heritage Area Consultative Committee has consistently included the Mayor, Warden or a Councillor from one of these Councils, and the Committee has regularly met with representatives from Local Government to discuss World Heritage Area management issues and implications for local communities. The level of understanding by Councils of World Heritage Area values and management has increased considerably during the 1992–1999 period, as has the appreciation of the role of local government in facilitating appropriate development adjacent to the TWWHA.

In Strahan, the West Coast Council, Forestry Tasmania, Tourism Tasmania and the West Coast Tourism Association joined with PWS in supporting the development of the Strahan Visitor Centre and together established a management committee to oversee early operation of the centre. The Council gained additional funding for extension of the centre from Regional Tourism sources. Further, the West Coast Council, recognising the important role that Strahan played as a stepping off point for the Gordon River, enabled the commercial transformation of part of the town as Strahan Village. This initiative of private enterprise and local government was exactly what the 1992 management plan sought when it spoke of directing new visitor facilities to suitable locations adjacent to the TWWHA.

Prior to the 1992 plan, the Pencil Pine Development Plan was prepared jointly by PWS, Planning Division of the then Department of Environment and Land Management (DELM) and the Kentish Council. It was a development control plan to provide for the appropriate development of the sensitive entrance area to Cradle Mountain National Park. The Kentish Council adopted the development plan as part of its planning scheme and used it as the basis for planning decisions during the 1992–1999 period. The development plan also aimed to bring all government and commercial stakeholders together in cooperative management of the area. The development plan provided a focus for Council and PWS cooperation and liaison over use and development of the entrance area. It was considered a useful planning mechanism at the time. Similar cooperative planning at reserve entrances could be undertaken for Derwent Bridge and Cockle Creek.

In addition to the Parks and Wildlife Service and its associated agencies (DPIWE and Department of Tourism, Parks, Heritage and the Arts), many other State government agencies and bodies have a role in management of the TWWHA, including the road management agency (Department of Infrastructure, Energy and Resources), Forestry Tasmania, Tourism Tasmania (now part of DTPHA), Hydro Tasmania, Inland Fisheries Service, Hobart Ports Corporation, Marine and Safety Tasmania, and Police Tasmania. In general, these agencies and bodies have demonstrated increasing understanding of World Heritage Area values and management needs during the 1992–1999 period and have

integrated WHA management concepts and strategies into their policies and operations. Notable examples include:

- Road work (including upgrading and maintenance on the Lyell Highway, Cradle Mountain Road and Lake Highway) are now undertaken in close cooperation with PWS, with specifications for sensitive areas being drawn up and implemented e.g road narrowing and sealing near Pine Lake. Rehabilitation criteria were also established for roadside quarries.
- Tourism Tasmania has increasingly recognised that the TWWHA is a key natural attraction for visitors to Tasmania. Many cooperative projects have been undertaken that have integrated World Heritage Area management concepts and strategies into tourism planning. An interdepartmental group involving PWS, Tourism and other government agencies has operated throughout the 1992–1999 period, focussing on major developments to support the tourism industry. Appropriate Crown land sites adjacent to the park at Cradle Mountain and at the Pump House Point site at Lake St Clair were made available for development as a result of this cooperative approach that reflected the World Heritage Area management plan concepts.
- Hydro Tasmania, in recognition of TWWHA management objectives, agreed to the removal of unsightly transmission towers beside the Lyell Highway through the Wild Rivers National Park and to adhere to guidelines concerning management of water levels at Lake St Clair.
- Forestry Tasmania manages three Forest Reserves in the TWWHA and during 1992–1999 did so according to management strategies consistent with conservation of World Heritage Area values. PWS and Forestry cooperate in research and management of cross-boundary issues, notably fire management and the Warra research initiative in the southeast of the TWWHA. Forestry Tasmania manages long distance walking tracks that begin in State Forest and pass into the TWWHA in accordance with the WHA Track Management Strategy. In addition, The WHA Walking Track Management Strategy, developed during the 1992–1999 period, includes a track classification system that has now been adopted statewide by PWS and Forestry Tasmania.
- Police Tasmania takes into account World Heritage Area values and management in search and rescue operations and has established Bush Watch cooperatively with PWS to improve security of visitors' vehicles left unattended for long periods.
- There is scope for improving understanding of WHA management concepts in relation to cruise vessel access arrangements for Bathurst Channel and Port Davey.

The federal agency, Air Services Australia, has actively cooperated with PWS during the 1992–1999 period in developing 'Fly Neighbourly Advice' for aircraft flying over the TWWHA. This initiative is aimed at minimising disturbance to ground users by low flying aircraft and seeks to further one of the major TWWHA objectives: the maintenance and enhancement of wilderness quality.

During the term of the 1992 management plan, the relationship between the *National Parks and Wildlife Act 1970* (NPWA) and the *Land Use Planning and Approvals Act 1993* (LUPAA) remained unclear. In particular, it was uncertain whether developments that were proposed for reserves under the NPWA (including the reserves in the TWWHA) required the approval of Local Government under the relevant Council Planning Scheme. Over the 1992–1999 period, little liaison took place between PWS and Councils regarding integration of WHA management concepts into Council Planning Schemes. This was mainly because, within the World Heritage Area, the TWWHA management plan was seen to be the pre-eminent planning instrument. Nonetheless, during the management period all Councils covering part of the TWWHA were consulted as part of the planning process for the review of the 1992 management plan.



A joint search and rescue training exercise between staff of the Parks and Wildlife Service, Police Search and Rescue and walking club members in snowy conditions on the Cheyne Range. During the 1992–1999 period, several injured and/or overdue walkers were located and assisted to safety by cooperative search and rescue operations.

Photo by Barry Batchelor

2.13 Public health and safety in the TWWHA

Key Desired Outcomes addressed in this section:

KDO 9.1 Minimal loss of life, injury and environment-related illness.

KDO 9.3 Rapid and capable response to emergency situations and identified hazards to public safety.

A variety of management actions were undertaken during the 1992–1999 period to promote and safeguard public health and safety in the TWWHA. These included educational programs and publications, improved risk management (e.g. through upgrading or improving a variety of structures, buildings, bridges, jetties etc), and cooperative search and rescue arrangements (see Appendix 3). However, data related to the nature and incidence of human death, injury or illness in the TWWHA was not consistently monitored or documented over the 1992–1999 period.

Several people died in the TWWHA during the 1992–1999 period. These deaths occurred as a result of natural causes (e.g. heart attacks), climbing accidents, and drowning²⁴. PWS considers that none of these deaths could reasonably have been prevented by the managing agency.

Over the 1992–1999 period, injuries were sustained as a result of a variety of causes. For example:

- Several visitors suffered twisted ankles and knees, sprains and in some cases fractured bones as the result of accidental falls and stumbles. Assistance at the scene of the accident was generally provided by members of the public, Ranger staff, and/or Police Search and Rescue. In several cases, airlifts of injured walkers were conducted.
- Several non-fatal vehicular accidents occurred on roads within the TWWHA.
- In February 1996, a light aircraft (a Cessna 182) crashed on landing at Melaleuca with 4 persons on board. One person was seriously injured and three received minor injuries. Park Rangers and members of the public assisted at the scene of the accident, extinguishing a fire and administering first aid to the injured before they were airlifted to hospital. The Bureau of Air Safety Investigation identified pilot error as a significant factor for the accident, concluding that the plane's approach to the landing strip was too low and too slow.

Several incidents occurred of lost and/or overdue walkers. Ranger staff conducted initial searches and assisted in providing local knowledge and in setting up logistics for extended searches by Police Search and Rescue. Several overdue walkers (some of whom were injured) were located and assisted to safety by Parks and Wildlife staff and Police Search and Rescue. All missing persons over the management period were safely located.

In relation to public health, gastroenteritis caused problems for walkers in some areas of the TWWHA. Bacterial counts in water frequently exceeded the Australian drinking water guidelines and *Giardia* (a water-borne parasite that can also cause gastroenteritis) was confirmed to be present even in remote areas of the TWWHA. The Parks and Wildlife Service has responded to these findings by providing published and verbal advice to walkers and Adventure Tour Operators to drink only boiled or chemically disinfected water.

Elevated levels of mercury have been detected in trout and eels in a number of western Tasmanian Waterways, including the lower Gordon River and Lake Gordon. The cause of these elevated levels of heavy metals is not clear although mobilisation of naturally occurring mercury in button grass swamps has been suggested. The Department of Community and Health Services has issued health advice concerning the consumption of large quantities of fish from the lower Gordon River area.

²⁴ More recently, there was a multiple-fatality bus crash on the Cradle Mountain Road. This and other accidents since 1999 will be covered in the next edition of this report.

2.14 Management of property and assets

Key Desired Outcome addressed in this section:

KDO 9.2 Minimal loss of, or damage to, property.

Several major new facilities were provided over the 1992–1999 period, including the Lake St Clair Visitor Centre and sewerage treatment facility, and many minor facilities and walking tracks were reconstructed or upgraded (see Appendix 3). There were no major losses or damage to buildings or other assets in the TWWHA over the 1992–1999 period.

There was little documentation of asset management in the TWWHA over the 1992–1999 period. For example, there was no inventory of existing facilities and no systematic documentation of new facilities. However, as of 2003, this is being addressed through the development of a major strategic asset management program.

2.15 Standard and practice of management

Key Desired Outcomes addressed in this section:

KDO 10.1: Application of best practice principles and techniques in natural and cultural heritage management.

KDO 10.3: World-class expertise in World Heritage Area management.

2.15.1 Leadership or expertise in management practice

Over the 1992–1999 period, staff of the managing agency developed considerable expertise in the management of natural and cultural heritage, and operational management for the TWWHA.

Staff cited the following examples of expertise and/or leadership at the national and/or international level:

- Walking track management and construction techniques developed for and applied in the TWWHA are leading practice. The track classification system developed as part of the WHA Walking Track Management Strategy was used as the basis for development of the Australian Standard for walking tracks.
- Tasmania is a world leader in the development of community specific operational fire behaviour prediction systems. Systems for the TWWHA have been developed and published which predict fuel characteristics, fuel moisture, rate of fire spread, fire intensity, fire extinction, prescriptions for prescribed burning and the options available for wildfire control.
- Detailed 1:25,000 vegetation mapping developed for the TWWHA has put Tasmania in the lead in vegetation mapping best practice. Best practice vegetation management guidelines are currently being developed at the national level to reflect Tasmania's approach.
- The structure that has been developed within Tasmania for weed planning ranks highly against all Australian jurisdictions in terms of efficiency, communication and integration of the various layers involved from high level policy and planning to on-ground action.
- The evaluative management system developed for the TWWHA is at the forefront of world practice in protected area management, with publications in international best practice guidelines for protected area management (see Jones & Dunn (Hocking), 2000).

This old flying fox crossing at Gordon Bend was decommissioned in 1996 to improve public safety
Photo by Barry Batchelor



New suspension bridge over the Franklin River, Frenchmans Cap Track.

Photo by Barry Batchelor

- Other areas of excellence include:
 - The application of experimental trials to determine the sustainable carrying capacities of walkers in different environments (see Whinam & Chilcott, 1999).
 - Management of streambank erosion to protect the natural banks through managing the wakes of tourist craft operations (rather than the more usual approach of hardening the banks to resist erosion).
 - Karst and cave management and rehabilitation.
 - Geodiversity protection and management of sites of geoconservation significance.
 - Methods for assessing the threat status of plant species against international criteria have been developed by the managing agency in conjunction with the ANZECC Endangered Flora Network.
 - Community involvement in the maintenance and conservation of culturally significant huts (the Community Huts Partnership Program)

More recently, the 1999 management plan was awarded the Planning Institute of Australia's state and national Award of Excellence in the category for Environmental Planning or Conservation. In addition, the plan received the Planning Minister's Award as the overall winner across all categories of the 2003 national awards for planning excellence.



Arve Falls viewing platform, Hartz Mountain National Park. Over the 1992–1999 period, there was a greater emphasis on improved risk management of facilities and compliance with engineering standards to safeguard public safety.

Photo by Parks and Wildlife Service

2.15.2 Improvements in management practice

In addition to the above areas of expertise or leadership, staff of the managing agency identified a range of improvements that they considered had occurred in the standard or practice of management for the TWWHA over the 1992–1999 period. These are outlined below.

MANAGEMENT CAPABILITY

- There was significant improvement in the managing agency's overall ability to manage the TWWHA. Management became increasingly organised, strategic and professional with the development of plans, strategies and coordinated work programs, and the development of a professional overall 'management package'. By the end of the term, the agency was working in a well-coordinated fashion.
- Towards the latter stages of the term, there was more discussion of goals within the agency and more focus on achieving goals.
- An increase in the professionalism of management, with more technically/professionally qualified ranger staff bringing a more complex understanding of ecological management, and more active involvement of natural and cultural heritage specialists.
- The introduction of the Operational Planning System to monitor and evaluate the performance of staff sections within the agency. The system was objectives-based and allowed work and budget to be tracked, providing accountability and a historical record of project management.

OPERATIONS

- An increased emphasis on the standards of design and construction of visitor facilities.
- Increasingly skilled field workers, especially in track construction techniques.
- Improvement in the environmental sensitivity of operational track work e.g. away from high impact dozers flown in to construct tracks to limited impact tunnelled pine walkways.
- Technique development for trackwork and increased learning about the appropriate use of natural materials for track construction and stabilisation.
- Trials of various toilet systems to meet environmental and management needs.
- Improvements in management arrangements for staff involved in fire-fighting e.g. the

introduction of the Fire Fighter Fitness program and database for recording the level of staff fire fighter training.

- An increase in the awareness and responsibility for public safety through active management of hazards.
- Increased ability to service remote tracks, toilets and huts within the TWWHA due to increased management use of helicopters.

CULTURAL HERITAGE MANAGEMENT

- The greater involvement of the Aboriginal community in management of the TWWHA e.g. the development of an Aboriginal Interpretation Strategy.
- The introduction of Cyclical Maintenance Planning for cultural heritage assets.
- The development of predictive mapping for Aboriginal sites.

Data that might have revealed any change in the managing agency's overall management capacity over the 1992–1999 period (e.g. changes in staffing levels or profile) cannot be cost efficiently retrieved from the agency's system of personnel records.

2.15.3 External reviews of projects and management practice

Several external reviews of management projects and/or processes were conducted over the 1992–1999 period to assist in ensuring that high levels of management standards and practice were achieved or maintained, and as necessary to make recommendations for improvement.

A review of the WHA vegetation mapping project was undertaken by an independent expert, Professor Jamie Kirkpatrick, University of Tasmania (Kirkpatrick, 1997). Staff involved in the review considered the review was constructive in refocusing the program on gaps and shortfalls that had developed over the years. The recommendations of the review have been addressed as practicable.

In 1999 at the request of the Minister for Primary Industries, Water and Environment (David Llewellyn) an independent review of management planning and development approval processes for Tasmania's National Parks and Reserves was undertaken by a committee chaired by Professor Bruce Davis. The main recommendations of the Davis Committee report (Davis et al, 1999) were that:

- management plans for reserves be subject to independent review of public representations by the Resource Planning and Development Commission; and
- development approvals for works in national parks and reserves become subject to the Resource Management and Planning System of Tasmania (RMPS) and specifically brought under the provisions of the *Land Use Planning and Approvals Act 1993* (LUPAA). The PWS would identify, in the management plan, permitted and discretionary uses for development on the land, but would remain subject to LUPAA procedures.

Legislative amendments have been made to implement these recommendations but, as of December 2003, legislation bringing reserves under LUPAA has not come into force.

Increased management use of helicopters to deliver materials and to service remote area tracks, toilets and huts in the TWWHA improved the efficiency and environmental sensitivity of operational management. Here, cordwood is being lifted in preparation for trackwork.

Photo by Parks and Wildlife Service



2.16 Performance evaluation and adaptive management

Key Desired Outcome addressed in this section:

KDO 10.2: Establishment of evaluation programs to assess management performance and the incorporation of the results of such programs into World Heritage Area management.

Over the 1992–1999 period, a framework for monitoring and evaluating management effectiveness for the TWWHA was developed. This framework led to the development of provisions for performance monitoring, evaluation and reporting being incorporated into the 1999 management plan, and subsequently to the production of this State of the TWWHA Report. (For information about the management evaluation system that was developed, refer to Section 1.4.3 ‘The management evaluation system for the TWWHA’.)

Specific monitoring projects were undertaken or established to provide measured information about the performance of management for a range of responsibilities, including:

1. Tourism and visitor impacts, e.g:

- riverbank erosion on the lower Gordon River;
- walking track system;
- impacts of horse riding on the Central Plateau Conservation Area;
- impacts of recreational caving; and
- aerial photographic monitoring of Visitor Services Zones and Sites.

2. Fire, plant diseases, introduced plants and animals, e.g:

- databases and GIS maps for monitoring wildfires, plant diseases, introduced plants and animal species;
- Pine Lake dieback; and
- erosion of organic soils.

3. Hydro-electric power generation operations, e.g:

- lake shore erosion.

4. Condition of significant values (including degraded values), e.g:

- rehabilitation of the Lune River Quarry and Ida Bay karst system;
- rehabilitation trials of sheet eroded country in the Central Plateau;
- distribution and abundance of rare and endangered species;
- stabilisation of Aboriginal midden sites in the Southwest; and
- monitoring of significant Aboriginal heritage sites.

5. Public and visitor opinion, e.g:

- market research polls of public awareness and attitudes to the TWWHA; and
- visitor surveys.

The findings of some of these projects are presented in Chapters 4, 5 and 6. Further information about the monitoring projects is provided in Appendix 3 under the heading ‘Monitoring and evaluation’.