Back-country walking track management
IN THE TASMANIAN WILDERNESS WORLD HERITAGE AREA
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MONITORING AND REPORTING SYSTEM FOR TASMANIA’S NATIONAL PARKS AND RESERVES

PERFORMANCE ARENA: 4. MANAGEMENT OF TOURISM, RECREATION AND OTHER USES

Key Performance Area: 4.8 Sensitivity and sustainability of human use

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Cover photo: The iconic Overland Track passes through the heart of the Tasmanian Wilderness World Heritage Area and is one of Australia’s most renowned long-distance bushwalks.

Photo: Heath Holden
Evaluation report:
Back-country walking track management in the Tasmanian Wilderness World Heritage Area

This report examines the performance of management for back-country (generally overnight) walking tracks in the Tasmanian Wilderness World Heritage Area (TWWHA). The evaluation concludes that the extensive walking track network in the TWWHA provides a diverse range of recreational walking opportunities which are highly valued by Tasmanian bushwalkers, and attract significant numbers of interstate and international visitors. Management performance in relation to the sustainability of walking tracks has been mixed. Good progress has been made in stabilising and improving some badly degraded sections of walking tracks, and excellent results have been achieved for extensively hardened tracks that have an ongoing works and maintenance program, such as the Overland Track and Frenchmans Cap Track. However numerous back-country tracks throughout the TWWHA are in substandard condition, and some tracks and campsites are actively eroding and degrading (e.g. South Coast Track, Port Davey Track, and tracks in the Arthur Range). There are ongoing issues associated with successfully managing environmentally sustainable levels of walker usage in sensitive areas of the TWWHA, and unplanned tracks and routes are continuing to expand. Recent recreation planning and investment in tracks, supported by an ongoing works program, are anticipated to improve management performance for back-country walking tracks in several areas including the Walls of Jerusalem.

Introduction

About the threat or issue

Recreational walking is a major attraction and popular use of the Tasmanian Wilderness World Heritage Area (TWWHA). It is estimated that about 25,000 bushwalks involving at least one overnight stay are undertaken in the TWWHA each year (2008–2014 data). ‘Back-country’ is generally defined as areas predominantly accessed on overnight bushwalks. Back-country walking tracks are the primary focus of this report.

There is an extensive network of walking tracks within the TWWHA, currently totalling almost 1,300 km, with an additional 1,100 km of recognised walking routes, i.e. informal walking corridors often displaying some discontinuous track development. On a state-wide basis, 82% of the Parks and Wildlife Service (PWS) walking track network remains in an unimproved condition i.e. not ‘hardened’ or stabilised. A substantial proportion of these unimproved tracks lie in the TWWHA back-country. About 20% of tracks within the TWWHA have been assessed as being in poor condition and an additional 36% are considered ‘marginal’, i.e. significant deterioration has occurred and further deterioration is likely in the short term (PWS 2011).

Walking tracks are generally subject to ongoing physical deterioration unless they are artificially stabilised or hardened, for example by installation of steps and drains, or surfacing with boardwalks or stone paving. Tracks may also be stable if they occur on self-maintaining substrates such as natural stone or root-stabilised forest floor. Less than 20% of the TWWHA track network has been hardened. Of the 80% that has not been hardened, many sections of back-country tracks are located
in areas where fragile vegetation and soils, steep gradients, poor drainage and high rainfall contribute to track instability.

Recreational walking can give rise to a variety of management issues and impacts. Negative impacts can range from biophysical damage caused by excessive trampling of fragile areas, to social impacts, such as the effect of crowding or poor track condition on the quality of visitors' recreational experience. Walkers may also pose a risk for indirect impacts, e.g. biosecurity concerns such as the spreading of the root rot disease *Phytophthora cinnamomi* or the Chytrid fungus affecting frogs, or the degradation of water quality in lakes and streams as a result of human waste.

Excessive use by walkers of sensitive areas of the TWWHA is associated with the following direct biophysical impacts:

- track erosion, which is often made worse if water flows along tracks;
- track widening, braiding and quagmire formation;
- broad-scale trampling damage to vegetation, especially trampling-sensitive alpine vegetation;
- the proliferation, expansion and deterioration of back-country campsites; and
- the formation of unplanned tracks and pads in formerly trackless areas.

These impacts mostly affect back-country areas where tracks have not been hardened to withstand walker impacts. Due to the low resistance to trampling of some vegetation types and environmental thresholds, such impacts can escalate in some areas, even though visitor numbers may be static or declining.

The characteristics, scale and rate of change of track impacts are influenced by both walker use and the environmental setting—specifically gradient, drainage and substrate, characterised as track Type by Dixon et al (2004). For long-established tracks in the TWWHA, high-use tracks are on average 50% deeper and/or wider than low-use tracks, and erosion-prone track Types are on average 50% to 150% deeper than more stable Types (PWS 2011). Examples of different types of track impacts are illustrated in the Photo Gallery at the end of this report.

Remote-back-country walking tracks are highly valued by Tasmanian bushwalkers. This track is at Port Davey, in the far south-west of the Tasmanian Wilderness World Heritage Area.

Photo: Glenys Jones
What natural or cultural values are affected?

Excessive trampling by walkers can lead to damage and/or loss of alpine and montane plant communities. These communities are particularly significant in the TWWHA because they contain many endemic plant species. Once damaged, the recovery of these communities is very slow—on the scale of decades or—if most soil has been lost through erosion - probably centuries. The formation of unplanned new tracks in previously trackless areas degrades naturalness and remoteness and hence the wilderness quality of the TWWHA.

Walker impacts and associated management measures may also impact the quality of walkers’ recreational experience. For example, walkers will generally be less likely to enjoy their experience if tracks are eroded, braided or muddy, or overgrown with trackside vegetation. Conversely, visitors’ experience can be altered if the ‘primitive’ character of tracks in remote areas is altered to less natural-looking hardened tracks as part of management efforts to limit walker impacts.

This report examines the effectiveness of back-country walking track management in relation to the management of the direct biophysical impacts of walkers.

Background to management

An inventory of the World Heritage Area track network undertaken in 1990–91 identified the scale and extent of impact problems, with more than half the network then considered either unstable or in unacceptable condition (PWS 1994). Tracks in southwest Tasmania were generally in worse condition than elsewhere in the TWWHA, while tracks in the Central Plateau/Great Western Tiers/Upper Mersey region tended to be more robust and so in better than average condition. Across the TWWHA, there were occurrences of bare and eroded campsites and there was evidence of new, unplanned tracks being formed. These observations from more than twenty years ago still generally apply.

Hardening and upgrading of back-country walking tracks (as well as some campsites) in many parts of the TWWHA has been undertaken since the 1980s (see below), but the track network remains mostly unimproved. The proportions of various tracks that have been hardened or stabilised varies considerably, for example by 2014, 60% of the 63km Overland and 67% of the 23km Frenchmans Cap tracks had been hardened or stabilised, but only 29% of the 72km South Coast track and 16% of the 24km Western Arthurs traverse had been hardened. The long-term costs of stabilising and maintaining an extensive track network that is actively eroding and potentially expanding is of significant management concern.
Overall management goal

The overall goal of the PWS track management program is:

- To provide a range of recreational walking opportunities whilst maintaining wilderness values and managing walker usage of the TWWHA within ecologically sustainable limits.

Management actions and significant events

- During the 1992–1998 period, a major Walking Track Management Strategy for the Tasmanian Wilderness World Heritage Area and linked monitoring system, were developed to manage the physical and environmental sustainability of the entire walking track network within the TWWHA (PWS 1994). The strategy recommended a series of approaches combining on-ground works, education and regulation which, when integrated, aimed to address the environmental and recreational impacts associated with walking in the TWWHA. A major but controversial plank of the strategy was a regulatory system for controlling walker numbers as a means of limiting impacts. The other strategy components were a major on-ground works program to stabilise tracks, an education program, research and monitoring.

- A substantial multi-year funding program under the Natural Heritage Trust allowed extensive track works in the TWWHA to proceed until the early 2000s, in accordance with the Walking Track Management Strategy.

- In-keeping with the Strategy, track work focused on arresting track erosion in high priority areas—much in alpine areas above 1,000m elevation. (In these areas, vegetation recovery rates are very slow and so action is critically needed to prevent trampling damage leading to the formation of large bare areas.)

- Upgrading works were undertaken in many areas to lessen environmental impacts and, on higher class tracks, to also improve the recreational experience, for example on the Overland Track. Work on hardening some highland campsites has also been undertaken to reduce high levels of environmental impacts at popular overnight sites, commencing in the Western Arthur Range in 1994. More than 200km of track have been hardened or stabilised. While some of this work was undertaken during the 1980s, the most extensive works program occurred through the 1990s.

- A Walking Track Classification System (PWS 2014a) was developed as part of the 1994 Walking Track Management Strategy and, in revised form, continues to provide an important prescriptive basis for track management.

- A Track Monitoring System, involving both on-ground measurements (Dixon et al 2004) and aerial photography, was designed and established during 1992–94 to assess the extent, degree and rates of change of track impacts, including erosion and unplanned track development.

- The monitoring program was further expanded in the late 1990s to provide on-going data on track and campsite condition and impacts. Additional monitoring techniques were developed to provide data to characterise the condition of entire tracks—not just the most eroded sections—and so supplement the program (e.g. Hawes et al 2006, Dixon 2012, 2013). All the major back-country walking tracks have now been assessed along their entire length. The monitoring program provides data that can be linked to the relevant track standard defined in the Track Classification System (PWS 2014a).

- Analysis of long-term data from the clustered transect monitoring program led to a better understanding of the relationship between environmental conditions, track orientation, use levels and observed impacts (Dixon et al 2004, Hawes et al 2013, Dixon and Hawes 2015).

- Experimental walker impact trials were undertaken in representative alpine environments on the Central Plateau, Western Arthur Range and (mount) Tim Shea, to measure impacts of...
known numbers of walkers on vegetation, and to determine how long it takes for vegetation to recover. These experiments demonstrated that the environmental carrying capacity for some vegetation types in the TWWHA (especially alpine and montane communities) is low—less than 100 passes per year in the most fragile environments—and that recovery following disturbance is very slow (Whinam and Chilcott 1999, 2003).

- Public consultation on track management issues was undertaken on several occasions, with comments sought on the 1994 Walking Track Management Strategy, and the design of a possible walker regulation system. Consultation included focus group discussions and public forums as well as calls for written comment.

- Controversy over the proposed regulation of walkers led to the PWS establishing the Track Assessment Group (TAG), a group largely composed of bushwalker stakeholders. TAG met over a two-year period to address the task of developing a solution to the environmental impact problem that was workable, cost-effective, environmentally-effective and supported by walkers. TAG’s final report (TAG 2001) advocated a Limits of Acceptable Change (LAC) planning approach. The subsequent Bushwalking and Track Review (BATR) process involved all stakeholders in thoroughly reviewing the management options for particular walking areas. It provided the opportunity for stakeholders to reach an informed and agreed solution to providing walking opportunities and sustainably managing walker impacts. The approach was trialled for the Western Arthur Range (BATR 2004). However this approach was not implemented in a meaningful way due to the impracticality of some prescriptions and provision of only limited funding for track hardening.

- While the 1992 and 1999 TWWHA Management Plans provided for the implementation of ‘use restrictions to limit environmental impacts and reduce unplanned track formation’, there was significant opposition to regulating visitor numbers from parts of the Tasmanian bushwalking community and the proposed permit system was not implemented. Representations during the Bushwalking and Track Review led to a proposal to rule out such restrictions on track use. Relevant changes were incorporated in the 1999–2007 draft update to the TWWHA Management Plan but this was not finalised and has now been overtaken by the development of a new TWWHA Management Plan, a process that commenced in 2013 and is in progress at the time of writing (April 2016).

- A Tracks Education Officer was employed from 1995 to 1999 and also 2002–03, to support implementation of the Walking Track Management Strategy. Educational material was produced including ‘Walking the Fine Line’ and ‘The Science behind the Strategy’ brochures and videos. A seasonal track ranger program in major back-country areas was also an important part of the education program until the early 2000s. Since 2003, walker education has been mostly limited to promotion of generic ‘Leave No Trace’ principles.

- During the late 1990s, guidebook authors and magazine editors were encouraged to limit publication of descriptions of walking tracks and routes within the TWWHA to those areas considered by PWS management as appropriate for promotion, i.e. areas that were robust and could handle an increase in walker numbers. This strategy met with limited success. With the rapid expansion of the World Wide Web, it is now impractical to attempt to control or significantly influence information sources.

- With the exception of the introduction of a permit system to limit the number of walkers in environmentally sensitive areas, all the major recommendations from the 1994 Walking Track Management Strategy have been at least partially implemented.

- By 2004, funding available for track works in the TWWHA had decreased significantly. At the same time, changes in the agency’s budget priorities resulted in works being undertaken on front-country tracks (day-walking and short walk areas) and selected higher class back-country walking tracks. As a result of this shift, little or no further work has since been undertaken on implementing the prioritised works program for back-country tracks or other components of the Walking Track Management Strategy.

- From 2005, significant management effort turned to developing a new management approach for the Overland Track—an internationally recognised 65km multi-day ‘Great Bushwalk’
through the TWWHA from Cradle Mountain to Lake St Clair. A Draft Recreation Zone Plan was prepared to outline and guide management directions for the Overland Track (PWS 2006). A departure booking system and associated fee was introduced in 2005. This booking system has facilitated the sustainable management of walker numbers on the track. The system also supports an on-going program of repair and upgrade of the track and associated infrastructure plus a summer track ranger program (PWS 2008, 2014).

- From 2008, major private philanthropic donations were provided to Wildcare Inc. to support the Parks and Wildlife Service to repair and upgrade the Frenchmans Cap Track. This works program is continuing.
- An updated strategy for managing the entire PWS walking track network state-wide (i.e. not just the TWWHA) was prepared in 2010–11 (PWS 2011). The strategy proposed a 10-year prioritised works program for track repair, as well as consolidating information on track work techniques, ongoing monitoring and reinvigorated educational components. To date, the strategy has not been implemented.
- In 2013, a joint government-proposed boundary adjustment to the TWWHA was accepted by the UNESCO World Heritage Committee and 170,000 hectares of additional lands were included in the TWWHA. This resulted in additions to the TWWHA walking track network, including some tracks already managed by the PWS (e.g. tracks within Mt Field National Park) and also some tracks on lands previously managed by Forestry Tasmania (e.g. in the Great Western Tiers).
- Recreation Zone Plans have been developed or are in preparation to articulate back-country management objectives and future practice in the Walls of Jerusalem (PWS 2013) and Frenchmans Cap (PWS, in prep.) areas.

Experimental walker impact trials were undertaken in representative alpine environments to measure the impacts of known numbers of walkers on vegetation. These experiments demonstrated that the environmental carrying capacity for some vegetation types in the TWWHA (especially alpine and montane communities) is low—less than 100 passes per year in the most fragile environments—and that recovery following disturbance is very slow.

Photo: PWS
**Monitored results for performance indicators**

*Table 1: Performance indicators and monitored results*

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<th>Performance Indicators (and how they are monitored)</th>
<th>Targets and/or Limits (and how performance is assessed)</th>
<th>Monitored Results (detected over the management period)</th>
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<td><strong>PRESSURE INDICATORS</strong>&lt;sup&gt;1&lt;/sup&gt;</td>
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<tr>
<td>1. Walker numbers/usage</td>
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<tr>
<td>Log book registration records and infra-red track counters are used to estimate walker usage of various tracks and areas.</td>
<td>• Environmentally sustainable levels of walker usage (i.e. usage levels that maintain or achieve condition indicator targets).</td>
<td>Walker numbers in the back-country steadily increased during the 1990s. However, since 2005, data collection and analysis has been inconsistent and poor in places due to a lack of staff and resources. It is therefore difficult to discern any overall trend during the last 10 years or so, except for some specific areas. Broadly speaking, there have been notable increases in visitation to some areas since the late 1990s or early 2000s e.g. Overland Track (current use 8000 walkers/yr vs 7,000 to 7,300 walkers/yr in the late 1990s), Walls of Jerusalem (&gt;4,500 vs 3,500 walkers/yr), South Coast Track (1,200 vs 700-900 walkers/yr in the early 2000s) and dramatic recent increases at a couple of places since 2013, for example Frenchmans Cap (1,500 vs 800 walkers/yr) and Denison Range (500 vs 200-300 walkers/yr). Conversely, limited data suggest some decline in use compared to the 1990s at a couple of places, e.g. Arthur Ranges (about 500 walkers/yr vs &gt;600 in the mid-1990s). Refer to Figures 1-3.</td>
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<td>2. Track condition</td>
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<td>Monitoring</td>
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<td>The Track Monitoring System involves several components. Most components are designed to measure the condition and/or rate of change of unimproved tracks (which still comprise the bulk of the TWWHA)</td>
<td>• A stable track network (i.e. minimal erosion or excessive widening over the long term); and • Achievement of the desired or prescribed</td>
<td>Continuing erosion and deterioration of the existing unimproved track network has been documented in many areas. An early analysis for the 1994–1998 period showed that for tracks of all</td>
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<sup>1</sup> ‘Pressure indicators’ relate to activities, processes and/or agents that are considered to pose a threat of degradation to reserves or reserve values (either directly or indirectly).

<sup>2</sup> ‘Condition indicators’ relate to the condition of reserves or reserve values (e.g. natural or cultural resource assets and features).

PWS Planning and Evaluation
Department of Primary Industries, Parks, Water and Environment
### Performance Indicators (and how they are monitored)

2.1 **Clustered transect monitoring sites** involve the re-measurement, at 2–4 year intervals, of more than 500 fixed but widely-dispersed monitoring sites, located on a range of unimproved tracks, in various walking areas across the TWWHA. Monitoring involves the measurement of track depth and width parameters at ten transects at each site (Dixon et al 2004). Rates of change in track condition can be calculated from clustered transect monitoring results remeasured over several years.

2.2 **Distance sampling** involves recording categorical measurements of various impact parameters at regular spatial intervals (usually 50m) along a track. It allows for the assessment of track condition over extended distances (Hawes et al 2006).

2.3 **Spatial track condition surveys** are undertaken with a GPS-enabled PDA. Tracks are segmented based on changes in condition, surface infrastructure or environment, which allows the continuous mapping of the condition of both unimproved and hardened sections (e.g. Dixon 2015b).

### Targets and/or Limits (and how performance is assessed)

- Condition targets for tracks as specified in the Walking Track Classification System (PWS 2013).

### Monitored Results (detected over the management period)

- Types and usage categories, depth increased by 11% per year and width increased by 4% per year. Rates of change vary across track types and walking areas, however, track widths in some areas increased by 50%.

- More than 80% of the TWWHA track network remains unimproved. Some areas (e.g. woody, lowland sites) are robust and/or stable, but substantial proportions are highly susceptible to deterioration, especially in the southwest region. For example, >50% of the main Western Arthur Range route and 40% of the route through the Anne Range comprise erosion-prone track Types (PWS 2011). Refer to Figures 4–6.

- On-going deterioration of unimproved tracks across the TWWHA continues to be observed, although rates of change vary notably with track Type. In part of the Western Arthur Range an average track width increase of 13% occurred during 2007–14. Conversely, some unimproved tracks in other areas (e.g. Walls of Jerusalem) appear partially stable or have very slow rates of deterioration.

- On the Overland Track, a deteriorating trend up to 2009 has been reversed, as ongoing track hardening/repair works progress, and only 2.8 km remained in poor or very poor condition by April 2015. Refer to Figures 7–9.

- More extensive problems exist on tracks lacking any maintenance program, for example, 8km of the South Coast Track and 18 km of the Port Davey Track are (in 2014) in poor or worse condition, and prescribed widths have been dramatically exceeded on tracks at Mt Anne and Lake Judd.

- Photos of track and campsite conditions are provided in Figures 10–12 while the condition classes of various campsites are shown in Figures 13–14. Figure 15 shows trends over time in the unauthorised use of campfires in the Walls of Jerusalem.
3. Extent of unplanned track network and rate of formation

Monitoring

3.1 Aerial photographs: 1:5,000 scale colour aerial photographs (flown for this purpose) supplemented by ground inspections of selected areas, were used to determine the extent, and monitor changes in, parts of the TWWHA track network from 1994-2000. Reduced resourcing has not permitted the continuation of this program.

Since 2000, monitoring has been opportunistic rather than comprehensive. However ground-based GPS logging has been used to delineate and characterise the extent of pad/track development in selected areas since that time.

3.2 A ‘fan-out monitoring technique’ was developed to monitor impacts across broad tracts of open terrain considered to be at risk of walker impacts. This technique involves establishment and remeasurement of transects oriented perpendicular to the direction in which it is likely that most people walk. Transects are located on some alpine moorlands near campsites and where a fan-out strategy is or was promoted to reduce walker impacts.

Target

- No unplanned track extension.
- Track (pad) development on corridors classified as Routes is consistent with that classification, i.e. discontinuous and very limited.
- Broadscale trampling impacts on (for example) alpine moorlands reducing or stable.

Results

It is estimated that up to 150km of unplanned track formation may have occurred throughout the TWWHA between 1980 and the late 1990s. This includes approximately 50km of track in previously trackless country. For example, between the late 1980s and 2000, there is evidence of up to 9km of pad development on low-use routes in the Frankland Range and 4km in the Southwest Cape area.

Active pad or track development, including unauthorised track cutting and marking, has continued to be noted in other areas e.g. the Never Never, Southeast Cape, Arm River, Arthur Plains, Picton Range, Schnells Ridge and between Rocky Hill and the Eldon Range.

Monitoring of most designated fan-out areas in the Arthur Ranges indicated escalating impacts from 1994-99. Most of the fan-out sites in the ranges were closed and a single route was hardened by 2000.

Also in the Arthur Ranges, at the alpine camping areas at Lake Oberon and Hanging Lake, hardening of tent sites and access tracks has focussed people’s use and so allowed broadscale trampling impacts on adjacent moorland to decline from 1996-2014.

OTHER INDICATORS (e.g. social or economic)

None appropriate for this project, which is focused on physical impacts.
**Supporting evidence**

**Walker numbers/usage**

In some back-country areas there are good data that show clear, long-term use trends and provide a sound basis for considering future management. An example is walker numbers for the Frenchmans Cap track where consistently collected data record an indistinct trend of slowly increasing walker numbers over the last thirty years—see Figure 1 below. The very recent spike in visitation is most likely related to track upgrade works, in particular the realignment of the track away from, or hardening of, the ‘Sodden Loddons’. In other areas, changes in the agency’s budget priorities since the early 2000s and associated staff changes have led to gaps in the collection and analysis of visitor use data. The data for the Western Arthur Range (Figure 2) has several gaps, although a trend of reducing walker numbers since 1998/99 is apparent.

![Figure 1. Frenchmans Cap track visitation history.](image)

A major upgrade of the Frenchmans Cap Track was undertaken as the result of a 10 year partnership between entrepreneur and philanthropist Dick Smith, the Tasmania Parks and Wildlife Service, and the volunteer organisation Wildcare Inc. This photo shows Dick Smith in 2013 opening a re-routed section of the track around the notoriously muddy South Loddon Plains (commonly referred to as the ‘Sodden Loddons’).

Photo: PWS
Figure 2. Western Arthur Range visitation history. Data derived from logbook registrations of walkers’ intentions. The 1960s estimate has been derived from bushwalking literature from that period.

Further analysis of logbook data has been possible for a limited number of areas, allowing a more sophisticated interpretation of how use relates to track condition with, for example, changes observed in where people are intending to walk within a region. In the Western Arthur Range over the last 10–15 years, there is a trend towards shorter walks i.e. people are walking for fewer days—see Figure 3 below. This means, as more people are finishing their walk at Moraine K, and combined with the reduction in overall visitation to the range (Figure 2), the eastern part of the range has seen a reduction by 40% or more in visitor numbers since the late 1990s. In this time however, mean track depth and width have increased faster in the eastern part of the range than in the higher-use western part (see Figure 5).

Figure 3. Proportion of walking parties intending to visit different parts of the Western Arthur Range (from walker logbooks, 1992/93 to 2011/12).
A similar analysis of log book data for the Eastern Arthur Range indicates a significant increase (35% to 55%) in the proportion of walkers accessing the Federation Peak area from Farmhouse Creek, compared to northern approach routes, since the mid-1990s. Combined with a similar reduction in overall visitation to that noted above for the Western Arthurs, this suggests that walking traffic through the Eastern Arthur Range north of Thwaites Plateau may now have reduced by 40% compared to that recorded in 2000–01.

**Track condition**

**Clustered transect monitoring sites**

Analysis of data from 1994 to 2008 for almost 400 fixed monitoring sites shows strong evidence that sites on back-country tracks across the TWWHA have become more deeply eroded and wider over that time. There is also strong evidence that rates of change vary between environments (Dixon et al 2004). Examples of track erosion and widening are shown in the Photo Gallery, at the end of this report.

The two examples presented below (Figures 4 and 5) show deterioration (increasing track width and depth) at monitoring sites on unimproved tracks over a 16–20 year period, with the levels of impact and rates of change consistent with the TWWHA-wide observations noted above.

**Anne Range**

Monitoring sites on unhardened track sections in the Anne range have displayed a trend of increasing track depth and width since 1995 (Figure 4). The average track depth for Type 3 sites exceeds 14cm and average width of Type 2 sites exceeds one metre.

Note that the monitoring sites are intended to be statistically representative and so do not indicate the extremes of track condition—hence track sections both significantly deeper and wider than these average values exist.

![](Image)

**Figure 4. Anne Range walking track clustered transect monitoring results, 1995 to 2011.**
Western Arthur Range

In the example from the Western Arthur Range, Figure 5, it can be seen there is an overall increasing trend in both track depth and width measurements, averaged for sites of similar Type (see additional notes, below), since 1994. Some track sections have now been eroded on average to over 30cm depth below the original ground surface and some sections are up to one metre wide. Also, the less-visited eastern part of the range (beyond Moraine K) has deteriorated at a proportionally faster rate than the more highly visited western parts. This observation is consistent with international findings of low usage typically causing a relatively higher level of impact.

This data relates to track sections that have not been hardened. As noted above, the monitoring sites do not indicate the extremes of track condition—for example, there are some track sections in the Western Arthurs more than 60cm deep.

**Figure 5.** Changes in track depth and width at clustered transect sites of different Types in the Western Arthur Range over the 20-year period to 2014.

**Additional notes:** Track depth and rates of erosion are strongly influenced by bogginess, slope and woody roots (Type) and to a lesser extent by usage, while track width is influenced mainly by usage and track bogginess. Sites were classified by Type based on track gradient, drainage (boggy or with water flowing over the track, or normal drainage), and substrate i.e. whether there were tree roots stabilising the surface. Broadly speaking, the higher the Type number the less stable the track; Type 4 sites are unstable and erodible, Type 3 and 2 sites less so. Each Type is associated with a characteristic pattern of track deterioration over time (Dixon et al 2004).
Distance sampling

Distance-based sampling, at regular 50 metre intervals, has been undertaken in some areas with an extensive unimproved track network within the TWWHA. The aim is to characterise track conditions along the entire track length and to relate them to the limits prescribed by the track’s classification (PWS 2014a). This primarily involves recording track depth and width. As an example, distance sampling data from the Anne range collected in 2007 indicated that 57% of sites on the Mt Anne track, 44% of sites on the Anne circuit, and 42% of sites on the Lake Judd track exceeded the maximum widths prescribed by the tracks’ classification. Over-width track sections were often concentrated in certain areas, shown by clusters of red dots, in Figure 6.

Figure 6. Track width at distance-based sampling sites in the Anne Range, November 2007.
(Site spacing = 50 metres)

Multiple surveys have been undertaken in the Western Arthur Range and it is hence possible to undertake a comparative analysis. The maximum prescribed widths vary from 0.5 to 1m through the range. Over a third of the main traverse exceeded the maximum width prescribed by the relevant track classification, the worst result (39%) occurring in the mostly unimproved central region (Lk Cygnus to Moraine K). The proportion of track that exceeded the specified width standard increased from 26% to 39% between 2007 and 2014 in the 18.5km central region, and from 27% to 33% between 2004-2014 in the 13.9 km eastern region (Dixon 2015a). In the high-use western region (Moraine A – Lk Cygnus), the proportion of over-width track declined from 44% to 34% during 2007-14, probably due to recovery of peripheral trampled vegetation following track hardening. These changes are all statistically significant.
Spatial surveys of track condition
The locations and extent of problems that require management attention on major back-country tracks within the TWWHA have been mapped using condition categories defined by the PWS Information Management System. This mapping indicates the nature and scale of problems associated with various surfacing techniques (or unimproved track sections). Where mapping has been undertaken on more than one occasion, it also shows the changes due to track maintenance, hardening, or absence of treatment. An example of such mapping for the Overland Track is shown in Figure 7 below.

![Figure 7. Spatial survey map example showing location and condition of track surface infrastructure on the Waterfall Valley to Lake Will turn-off section of the Overland Track, March 2012.](image-url)
Following from this, Figure 8 below summarises the condition of the track surface along the entire Overland Track in 2015. A substantial proportion of track surface is unimproved ‘natural surface’, and much of this is in good condition (blue colour). Six of the eight hardened or otherwise improved track surface types, are also mostly in good condition. In April 2015, 2.8km of the Overland Track (just over 4% of its total length) was considered in poor or very poor condition (red or black). Almost half of this now comprises deteriorating unimproved (i.e. previously unsurfaced) sections; the remainder is mostly dilapidated track surface infrastructure (mostly old cordwood, see Photo 6, Photo Gallery) now overdue for replacement.

**Figure 8. Length of the Overland Track in different condition classes in April 2015.** The blue and green bars indicate the proportion of the track type in good or excellent condition respectively.
Where multiple spatial surveys have been undertaken, the data can also be utilised for monitoring purposes. The Overland Track has had regular funding since the introduction of a booking fee system in 2005 and hence an ongoing works and maintenance program. Figure 9 below indicates that the Overland Track works and maintenance program did not keep pace with the rate of deterioration from 2007 to 2009 (mostly due to failing older infrastructure), but the trend had been reversed by 2012 and 2015. Clearly, the extra regular investment paid dividends in halting the decline and producing the subsequent positive trend of improving track condition.

![Graph showing track condition](image)

**Figure 9.** Track length in poor or very poor condition along the Overland Track between Marions Lookout and Lake St Clair over four sampling periods. This graph shows that the declining trend in track condition (indicated by the upward slope of the lines) has been successfully reversed since the introduction of additional regular investment in an ongoing track works and maintenance program.
Photo-monitoring of track condition

While there is no formal photo monitoring component of the track monitoring system (unlike campsite monitoring, see below), in several cases where early photos were taken to aid site relocation it has been possible to retake these in later years, providing qualitative visual evidence that supports the quantitative trends described above. In the examples below, it can be seen that there has been a dramatic deterioration in track condition at some sites.

Figure 10. Track widening and quagmire development at monitoring site SCO-1342, South Cape Range, South Coast Track; October 1992 (left) vs December 2008 (right).

Figure 11. Track widening and erosion in alpine area at monitoring site WAR-1098, Western Arthur Range; February 1994 (left) vs January 2014 (right).
Condition of campsites
Back-country campsite conditions have been recorded utilising both photographic and condition class techniques. Examples of each are given below. Many alpine and montane campsites that have been monitored within the TWWHA have deteriorated in condition during the last twenty years, except where hardening works have prevented further damage. Conversely, many lowland campsites in forest areas tend to be quite robust. Where hardened campsites exist, they appear to be favoured by walkers, and in areas with both hardened and unhardened campsites, the unhardened sites may show signs of recovery as use reduces, i.e. their condition class improves (but see previous note regarding the slow rate of natural revegetation, page 3).

Photographic Recording
Photographic recording of the condition of a campsite at Waterfall Valley, on the Overland Track, shows that this popular campsite had lost most of its original grassy vegetation cover by the time it was closed in 2006.

![Figure 12. Waterfall Valley campsite deterioration from 1995 (left) to 2003 (right).](image)

Photos: Rob Beedham & Grant Dixon

Condition Class Assessment
The condition class system describes a range of campsite impact levels. Campsite condition can range from near-pristine (class 0) to mostly bare soil and seriously eroded (class 5). Each campsite is assigned only one class at each assessment. Campsite condition data can be analysed in various ways, as illustrated by the examples below.

The proportion of the campsites in each condition class, at the same 21 campsites in the Eastern Arthur Range, has been recorded on five occasions since 1995. Hardening of campsites at four camping nodes (20 % of the 21 campsites and denoted H in Figure 13 below) was completed by the early 2000s. Hardening of the campsites, by constructing tent platforms over the damaged areas, reduced the number of very seriously impacted campsites. The proportion of class 4 condition campsites, which have near total loss of vegetation and where the area of bare soil is obvious and extensive, has decreased considerably over the 19 years since works were undertaken. Some formerly degraded areas adjacent to the new tent platforms are slowly recovering through natural revegetation.
In some areas an improvement in campsite condition unrelated to site hardening has been observed. Lake Elysia is the major camping area in The Labyrinth (near Lake St Clair) and 22 mostly-small (1-2 tents), unhardened campsites have been recorded there. There is also an extensive network of interlinking tracks and pads. Repeated observations since 1999 indicate an increasingly-bimodal distribution of the campsite condition classes, evident from 2005 to 2015 in Figure 14. This can be explained by an improvement at most previously little-impacted sites at Lake Elysia (with a number of sites now considered disused), no change in previously seriously-impacted sites, and some further deterioration in previously moderately-impacted sites, all occurring over the 16 years of observations. This trend is probably related to a decline in overnight (camping) use of the area, and walker registration data provides some evidence for this.

![Figure 13. Proportion of the same 21 campsites in the Eastern Arthur Range showing condition class categories in different survey years. Lower condition classes indicate campsites that are in better condition, H means hardened tent platforms.](image)

![Figure 14. Condition class for 22 campsites at Lake Elysia (in The Labyrinth near Lake St Clair) at four sampling times.](image)
Fires at campsites pose a significant risk to sensitive alpine environments and evidence of campfire use is routinely recorded as part of campsite monitoring data. At the Walls of Jerusalem, there was a notable reduction since 1989 (and evident by 1995) in campfire and associated impacts, as a result of Minimal Impact Bushwalking (MIB) education and declaration of the Fuel Stove Only Area in 1989. Some old fire sites remain visible but most show some revegetation and no evidence of recent use. However, since 2004 (the last time a track ranger worked in the area), a significant reappearance of campfire use in the Walls of Jerusalem area has been noted (Figure 15).

![Figure 15. Campfire use at monitored campsites in the Walls of Jerusalem National Park from 1989 (when the area was declared Fuel Stove Only) to 2012.](image)

This small wildfire at Damascus Gate (Walls of Jerusalem National Park) in January 2013, which is thought to have been caused by walkers, was located immediately upwind of the Dixons Kingdom pencil pine forest—an outstanding ancient vegetation community that is extremely vulnerable to fire. This fire, together with an illegal campfire at the Pool of Bethesda which singed adjacent vegetation, provide timely reminders of the risk posed by campfire use in unauthorised sites in the Tasmanian Wilderness World Heritage Area (Parks and Wildlife Service 2013a).

Photo: PWS
Extent of unplanned track network and rate of formation

It is not practical to survey and document the full extent of unplanned track formation, either from evolving walkers’ routes or unauthorised track cutting/marking, across the entire TWWHA. However, data on the location and extent of unplanned tracks has been captured in areas of particular management concern. During the 1990s high resolution aerial photography was used to delineate walker pad development both around campsites and along route corridors. More recently, monitoring has used on-ground spatial capture using a GPS unit. Figure 16 below indicates the extensive network of pads and social tracks around the High Moor campsite, in the Western Arthur Range, using both these methods. The 2014 mapping shows both the track and campsite hardening works undertaken in 2001 to prevent further escalation of trampling impacts, but also the extent of remnant pad and informal track development remaining. These two images of the same place are not meant to be compared directly, but indicate the different ways of recording pad development.

![Figure 16. Pad network at High Moor; 1995 aerial photo (left), 2014 on-ground pad mapping (right).](image)

Where multiple measurements of the extent of pad or track development on a route have been undertaken, evolution over time can be quantified. For example, Figure 17 below suggests there is the potential for up to 13km of poorly-sited new track to develop from an evolving walker’s route between Noyhener Beach and the Port Davey Track.
Multiple measurements on this route, summarised in the Table 2 below, indicate that active track development has indeed been occurring since 2000. In Figure 18, there is a clear trend of increasing extent of pad development, with 2.68km of the route evolving into a track, i.e. a continuous trampled corridor with bare ground >25cm in width. Some areas were also displaying notable gouging and erosion by 2012.

Table 2  Extent of pad and track development between Noyhener Beach and Port Davey Track, 2000-2012

<table>
<thead>
<tr>
<th>Inspection date</th>
<th>Track</th>
<th>Well-developed pad</th>
<th>Light pad</th>
<th>Light pad segments (25-50%)</th>
<th>TOTAL (Km and %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept 2000</td>
<td></td>
<td>2.8 km</td>
<td>1.4 km</td>
<td></td>
<td>4.2 km; 32%</td>
</tr>
<tr>
<td>Nov 2003</td>
<td></td>
<td>3.45 km</td>
<td>1.67 km</td>
<td>0.08 km</td>
<td>5.16 km; 40%</td>
</tr>
<tr>
<td>Dec 2007</td>
<td></td>
<td>0.21 km</td>
<td>3.67 km</td>
<td>1.23 km</td>
<td>5.62 km; 42%</td>
</tr>
<tr>
<td>Nov 2012</td>
<td></td>
<td>2.68 km</td>
<td>2.29 km</td>
<td>1.15 km</td>
<td>6.27 km; 47%</td>
</tr>
</tbody>
</table>
Outcomes

Table 3: Expected and actual outcomes

<table>
<thead>
<tr>
<th>Expected outcomes</th>
<th>Actual outcomes/outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. GOAL</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Overall Management Goal:**

- To provide a range of recreational walking opportunities whilst maintaining wilderness values and managing walker usage of the TWWHA within ecologically sustainable limits.

- The TWWHA walking track network provides a diverse range of recreational walking opportunities which are highly valued by Tasmanian bushwalking groups and individuals, and also attract significant numbers of interstate and international visitors. The large number of walking tracks provide experiences ranging from developed tracks with extensive lengths of hardened surface, to opportunities for remote, ‘wilderness’ experiences in areas with undeveloped tracks and trackless areas.

- The number of walkers in the TWWHA significantly increased over the 1992–1999 period, thereby increasing pressures on the walking track system. Data since 2000 is patchy but increasing use has been noted on some major back-country tracks. Use may have declined in some more remote areas.

- A comprehensive monitoring program has been implemented in the TWWHA which has allowed the collection of a wide range of data on walker impacts on tracks, routes and campsites. This data has revealed that while selected tracks have improved in condition, there has been a range of increasing impacts on the TWWHA track network over the last 20 years.

- On-ground works programs have had some success in managing walker use and impacts within ecologically sustainable limits. For example:
  - Management works over the term of the 1999 TWWHA Management Plan stabilised parts of many badly degraded and actively eroding back-country walking tracks in the TWWHA, including works on the Overland Track and Frenchmans Cap track, and priority erosion control works in parts of the Arthur Range and on the South Coast Track.
  - Many walking tracks in high-use visitor areas of the TWWHA and some back-country camping sites have been hardened to withstand high levels of visitor use. As a result of these works, some of these tracks and sites are now being sustainably managed.
  - A booking system has been established on the popular Overland Track which has been effective in controlling the number of visitors departing each day. However, due to opposition from parts of the Tasmanian walking community, there has been no regulation or other effective mechanism put in place for limiting the number of walkers in other sensitive areas.
## Expected outcomes

<table>
<thead>
<tr>
<th>Actual outcomes/outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Over the 1992–2014 period, many tracks continued to erode and some back-country campsites continued to expand and deteriorate, especially in alpine areas. On many sections of the TWWHA walking track network, track conditions are sub-standard with respect to the standards prescribed in the PWS track classification system (PWS 2014a) and many tracks throughout the TWWHA are not currently being sustainably managed. This includes both unimproved tracks and hardened track sections that have not been subsequently maintained.</td>
</tr>
<tr>
<td>• Most of the TWWHA track network (&gt;80%) remains unimproved and a significant proportion of this is prone to erosion (PWS 2011).</td>
</tr>
<tr>
<td>• There is evidence of damage to some alpine and montane plant communities due to the levels of use by walkers resulting in the formation of unplanned walking tracks, including around campsites. Alpine environments take decades or centuries to recover. Degraded camping areas reduce wilderness values and the quality of recreational experiences.</td>
</tr>
<tr>
<td>• Extensive development of new pads and tracks in previously trackless areas has occurred, hence diminishing wilderness values.</td>
</tr>
<tr>
<td>• A sound scientific base has been established to inform and guide sustainable environmental management of the entire TWWHA walking track network. The sustainable carrying capacities for walkers on routes in various alpine and montane vegetation types have been determined, based on the findings of experimental trials. Factors that contribute to track deterioration in various settings have been reaffirmed based on long-term track monitoring data.</td>
</tr>
</tbody>
</table>

## B. OTHER ANTICIPATED OUTCOMES/IMPACTS

• The tourism sector that relies on use of back-country walking areas has benefited from the investment in sustainable walking track management and maintenance.

## C. UNANTICIPATED OUTCOMES AND/OR LEGACY

• A considerable amount of infrastructure (including track surfacing and drainage, and hardened campsites) was built in many back-country areas of the TWWHA during the 1990s and earlier, largely to protect the environment. As much of this infrastructure has not been adequately maintained, it poses an increasing future liability.
Assessment and commentary on management performance

Table 4: Assessment of management performance

<table>
<thead>
<tr>
<th>LEVEL OF PERFORMANCE</th>
<th>EFFECTIVENESS</th>
<th>EFFICIENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>To what extent did the project achieve its objectives?</td>
<td>To what extent was the project delivered on time and on budget? Were resources, including time and effort, used wisely and without wastage?</td>
</tr>
<tr>
<td>Great result</td>
<td>Mixed results</td>
<td></td>
</tr>
<tr>
<td></td>
<td>For extensively hardened tracks with an ongoing works and maintenance program (e.g. Overland Track) and some (usually hardened) campsites.</td>
<td></td>
</tr>
<tr>
<td>Satisfactory/Acceptable result</td>
<td>For back-country tracks with past works and where planning or ongoing works support effectiveness into the future (e.g. Walls of Jerusalem, Frenchmans Cap).</td>
<td>The very extensive and heterogeneous nature of the back-country walking track management programs means that program efficiency has varied considerably.</td>
</tr>
<tr>
<td>Unsatisfactory/Unacceptable result</td>
<td>For many back-country tracks and campsites which are actively degrading or have not been maintained adequately (e.g. South Coast Track, Arthur Range), and the expanding network of unplanned routes.</td>
<td></td>
</tr>
</tbody>
</table>

Comments on management performance

Summary statement on performance

The overall performance of the back-country walking track management program has been mixed. This is not surprising given the extent and heterogeneous nature of the track network and the programs to manage it. In some areas there have been some great results achieved, and recent planning and investment may facilitate good performance in other areas in future; however in many areas problems persist because past investment has not been followed up and/or resources have not been available to address the ongoing issues.

Until the early 2000s, PWS track management activities had a TWWHA-wide focus, facilitated and guided by the Walking Track Management Strategy which provided a co-ordinated, effective and efficient approach to achieving prioritised targets across the TWWHA, based on identified maintenance needs. Since then, walker impact management has been re-focused on improving management and conditions for selected sites and tracks (e.g. the Overland Track). While area-specific management models are working well for these tracks, other areas of the TWWHA are receiving less attention. Attempts at limiting unsustainable numbers of walkers visiting environmentally sensitive areas have proved to be problematic due to opposition from some walker user groups. Without a change in management approach, the impacts of walkers in many sensitive areas of the TWWHA is likely to continue to be on-going degradation of existing unimproved tracks and campsites, and unplanned formation of new tracks.
In relation to the TWWHA track monitoring program, some great achievements have been made. For example, it is one of the longest-running programs of its type in the world and is internationally recognised as an exemplary model. It is a comprehensive system, containing many elements which provide for systematic monitoring and reporting of track, route and campsite conditions and changes. The resultant cataloguing and analysis of data can help inform the allocation of scant resources towards the most needy areas, as and when the management context allows for prioritisation of the program goal, i.e. providing a range of recreational walking opportunities whilst maintaining wilderness values and managing walker usage of the TWWHA within ecologically sustainable limits. The monitoring program effectively informed the development of the state-wide walking track strategy (PWS 2011). However, the data analysis is yet to be harnessed to best effect within the TWWHA.

**Key factors contributing positively to management performance**

- Development of the 1994 Walking Track Management Strategy provided an integrated management strategy to address the problem of unsustainable levels of walker impacts.
- With the exception of the walker regulation system, all the major recommendations of the Walking Track Management Strategy, including walker education, track and campsite hardening and priority erosion control works, were implemented, although the prioritised works program was not completed (see below).
- Employment of staff with relevant specialist skills and personal commitment to support the project needs, for example:
  - PWS Track Monitoring Officer (temporary appointment in 1990, permanent from 1997) who identified the nature and extent of the walker impact problem.
  - PWS Track Management Officer (1993–2004) who oversaw the works program and track management issues generally (before these responsibilities were regionalised).
  - PWS Track Education Officer (1995–99 and 2002–03) who developed materials to promote minimal impact walker practices, raise awareness of track management issues and encourage preferred walker behaviour. This was a temporary position which has not been continued.
  - PWS Engineer from 2008 who has facilitated improved design and maintenance of many walking track-related structures.
- Increased PWS staff expertise and improved documented procedures, e.g. for monitoring, track work techniques and engineering inspections.
- Sound scientific research including walker impact trials which measured walker impacts and subsequent recovery rates, undertaken in collaboration with botanists from the Resource Management and Conservation division of DPIPWE. This work provided a quantitative basis from which to model sustainable carrying capacities and recovery rates in different environments. Other research findings from the monitoring program increased understanding of track deterioration and helped inform the prioritisation of walker impact issues.
- Development and ongoing implementation of a multi-faceted track impact monitoring program.
- A strong minimal impact education program during the 1990s.
- The Track Ranger Program (undertaken by seasonal positions during the early 2000s) helped to communicate minimal impact messages to walkers. However, these seasonal positions have not been continued since the early 2000s, except on the Overland Track.
- Development of Recreation Zone Plans for the Overland Track and selected other areas (as resources permitted), which included a review process by both internal and external stakeholders. These plans provide a considered and strategic basis for future management.
- Since 2005, the Overland Track has had regular funding from booking fees and hence the capacity to plan and implement an efficient, ongoing infrastructure maintenance and upgrade program.
Key factors limiting or threatening management performance

- Significant opposition from walker user groups\(^3\) to the proposed walker regulation system precluded the full implementation of the recommendations of the Walking Track Management Strategy. Alternative options for limiting walker numbers have not been supported by these stakeholders.
- Loss of specific funding allocations for track management from 2004. Combined with changes in the agency’s budget priorities, this led to the loss of staffing capacity to continue implementing the prioritised track works program across the TWWHA. There was a subsequent loss of internal (staff) and external (back-country track workers) track management expertise and experience.
- Lack of any maintenance on many tracks in recent years has rendered previous investments less efficient. For example no maintenance of the South Coast Track occurred during 2008-2014 and this has resulted in a significant deterioration of both built infrastructure and unimproved sections of the track.
- The investment in communication of minimal impact messages (e.g. Leave No Trace) has significantly declined, especially on-the-ground personnel, since 2003.
- An effective Limits of Acceptable Change or Performance Management system (e.g. PWS 2013b) has not as yet been adopted to adaptively manage performance within identified targets and acceptable limits.
- In general, there has been reluctance to implement a precautionary management approach to sustainable human use in the TWWHA, where there is resistance from stakeholder groups. This limits the options available to the PWS for managing walker impacts within environmentally sustainable limits.

Suggestions for improving management performance

- Take account of the results of the walker impact monitoring program to prioritise investment and focus management efforts and resources where they are most needed.
- Regular and reliable on-going funding for implementing priority track work and associated education would assist this program’s performance.
- Adequate, secure staffing and financial resources are necessary for monitoring the sustainability of visitor use in the TWWHA.

Lessons learnt and/or additional comments

1. Since 1999, alternative approaches to limiting visitor numbers in environmentally sensitive areas have been investigated. Partnership approaches were established between the Parks and Wildlife Service and bushwalkers (TAG and BATR, refer to page 7) in an attempt to resolve the impasse surrounding walker regulation and to develop possible ways forward in sustainably managing walker usage. This approach ultimately proved ineffective. One reason was probably that the BATR process did not provide adequate guidance to the stakeholders involved in terms of what would be practical to implement on the ground. Without a suitable ‘reality check’ on what was proposed, there was little prospect of the process achieving the intended outcomes. Combined with reduced funding and a change in overall management priorities, there were only very limited on-ground outcomes achieved from this process.
2. Opportunistic observations associated with the campsite monitoring program have noted an increase in unauthorised campfire use since the early 2000s. Note: with the exception of designated fireplaces and campfire sites, the entire TWWHA is a declared Fuel Stove Only Area.

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\(^3\) Key stakeholders who do not support the regulation of walkers include Bushwalking Tasmania (previously Federation of Tasmanian Walking Clubs), some walking clubs, and some individual walkers.

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Department of Primary Industries, Parks, Water and Environment

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Investment in this project

Comprehensive data are not available to fully document the investment in walking track management across the TWWHA. Walking track management has involved many separate on-ground works projects undertaken across the PWS management regions and also some dedicated staff positions. Track management also formed part of the responsibilities of many PWS field staff. Staff resources applied to walking track management include:

- Employment of a TWWHA Track Monitoring Officer to survey and report on condition of the track network (since 1994, 0.7 FTE since 1998, and from 2005–2015 with a more state-wide focus with up to 50% of time spent on planning). This position formed part of the ‘Track Team’ which included other positions during the 1990s (see above). Note that this position no longer exists.
- Employment of many casual track workers on dozens of individual works projects across the TWWHA, since the 1980s.
- Management of the Overland Track by dedicated staff since 2005, including seasonal track rangers.

Consolidated records of expenditure have not been kept for the two decades of track works. However, some examples of expenditure on back-country works include:

- approximately $1.5 million in the Arthur Ranges during 1994-2006;
- $800,000 at Frenchmans Cap during 1993-2005 and another $800,000 since 2006 (the latter supported by philanthropic funding); and
- $800,000 on the Overland Track during 2006-14 (funded by fees from the booking system introduced in 2005).

Sources and acknowledgements

Project Manager/ Responsible Officer (track monitoring)
Name: Grant Dixon
Position title: Track Monitoring Officer, PWS Asset and Information Services section
Email address: (Grant Dixon no longer works with the PWS and the position no longer exists.)

Evaluation Report
Glenys Jones and Christine Corbett (PWS Planning and Evaluation) facilitated and guided preparation of this report, working collaboratively with Grant Dixon (PWS Track Monitoring Officer) who provided the report content.

Dixie Makro (PWS Interpretation Officer – Publications) assisted with graphic design.

References and further information

Click on the links below for more information on the following topics:

- Tasmanian Wilderness World Heritage Area
- Performance monitoring, evaluation and reporting for Tasmania’s national parks and reserves

Photo: Trixie O’Sullivan

Grant Dixon (Track Monitoring Officer) worked for the Parks and Wildlife Service for over 26 years. His pioneering work in systematic track monitoring and strategic planning for sustainable management of walking tracks has been internationally recognised as providing an exemplary model.
References


TAG 2001. A Way through the Wilderness - An approach for a socially, environmentally and economically acceptable solution to problems of environmental degradation in the Tasmanian Wilderness World Heritage Area. Final report by the Track Assessment Group to the Minister, DPIWE.


Photo gallery

Examples of impacts on unimproved tracks and campsites in the TWWHA, and some hardening techniques utilised to address these problems are provided in Parts A and B below. Examples of the development of unplanned tracks and pads are provided in Part C.

Part A: Tracks

Impacts on unimproved tracks

Photo 1: Track erosion in alpine vegetation, Anne Range. This environment has very high conservation values. Such erosion is essentially irreversible.

Photo: Grant Dixon

Photo 2: Water flow along eroded track, Frenchmans Cap. Water flow is captured by entrenched tracks and erosion is then further accentuated. Track works since 2008 have hardened this particular site.

Photo: Grant Dixon
Photo 3: Quagmire development, Frenchmans Cap. Wide and widening tracks develop as walkers attempt to skirt the periphery of boggy areas. Track works since 2008 have hardened this particular site.

Photo: Grant Dixon

Photo 4: Track widening and entrenchment, Mt Oakleigh. Widening or braided tracks develop once the eroding track becomes so entrenched it is difficult to walk in. This is a particular concern in an alpine area such as, even if stabilisation works are undertaken, revegetation rates are extremely slow.

Photo: Grant Dixon
**Track surface infrastructure**

Examples of track and campsite surfacing and hardening techniques employed in the TWWHA.

Photo 5: Boardwalk construction over quagmire, Loddon Plains, Frenchmans Cap, 2013.
Photo: Ben Hill

Photo 6: Double planking, Overland Track, 2015. Here, the new double planking has been constructed over old dilapidated cordwood surfacing installed in the 1980s.
Photo: Grant Dixon
Photo: Martin Hawes

Photo 8: Stone pitching on steep alpine track, Western Arthur Range, 1996.
Photo: Grant Dixon
Photo: Grant Dixon

Photo 10: A new surfacing technique, a narrow FRP (fibreglass reinforced plastic) decked walkway, South Coast Track, 2015.
Photo: Matt McCormick
Part B: Campsites

Impacts at unimproved campsites

Photo 11: Bare and eroded highland campsite, with considerable soil loss evident, Western Arthur Range, 2014. While such campsites remain in use, further erosion is likely until, at some point, the site may become so eroded it is abandoned and new visitor-created campsites appear. At this point, revegetation of the eroded site is unlikely (see below) and the new sites will likely be on a deterioration trajectory. The combined result is an escalation in the extent of impacts.

Photo: Grant Dixon

Photo 12: Bare alpine campsite, Western Arthur Range. Despite almost complete vegetation loss, minimal soil erosion had occurred at the time of photography in the late 1990s. This campsite was closed in 1999 but as of 2014, minimal revegetation had occurred.

Photo: Grant Dixon
Photo: Grant Dixon

Photo 14: Closed alpine campsite showing minimal revegetation, Lake Oberon; 1992 (left) vs 2014 (right). Impacted campsites at Lake Oberon were closed soon after construction of tent platforms in 1994-95. While this campsite was not particularly eroded and retained soil cover, little natural revegetation has occurred despite the passage of more than twenty years.  
Photos: Ted Mead & Grant Dixon

Photo 15: Camping platforms and associated access boardwalks, constructed over an eroded and unusable alpine campsite, High Moor, Western Arthur Range, 2002.  
Photo: Grant Dixon
Part C: Development of unplanned tracks and pads

Photo 16: Network of unplanned social tracks and pads around High Moor campsite, Western Arthur Range, 1995. The unplanned tracks and pads access viewpoints, water sources and toileting sites. A hardened campsite and formal tracks were constructed here in 2002 (see photo 13) but the unplanned track/pad network remains.

Photo: DELM/DPIPWE

Photo 17: Evolving unplanned track, Eastern Arthur Range, 2005. Substantial alpine vegetation loss has occurred on the trampled corridor with the resultant depression now channelling water flow; erosion and track development is therefore imminent. This site was subsequently closed in the early 2000s. The incipient track has not deteriorated further but neither has it recovered.

Photo: Grant Dixon