



NSW Alpine Resorts Environmental Performance Report 2011–12



The preparation of this report has been a collaboration between the National Parks and Wildlife Service (NPWS) and the four main ski resort operators: Perisher Blue Pty Ltd (Perisher), Kosciuszko Thredbo Pty Ltd (Thredbo), Charlotte Pass Village Pty Ltd (Charlotte Pass) and Selwyn Snowfields Pty Ltd (Selwyn). Stakeholders of the Perisher Range Resorts Environmental Management System (PRREMS) have also contributed including Perisher lodges (SLOPES), Perisher Range Chamber of Commerce, Roads and Maritime Services (RMS), Essential Energy and Elgas.

The information contained in the report covers the period from 1 March 2011 to the 29 February 2012 unless otherwise stated.

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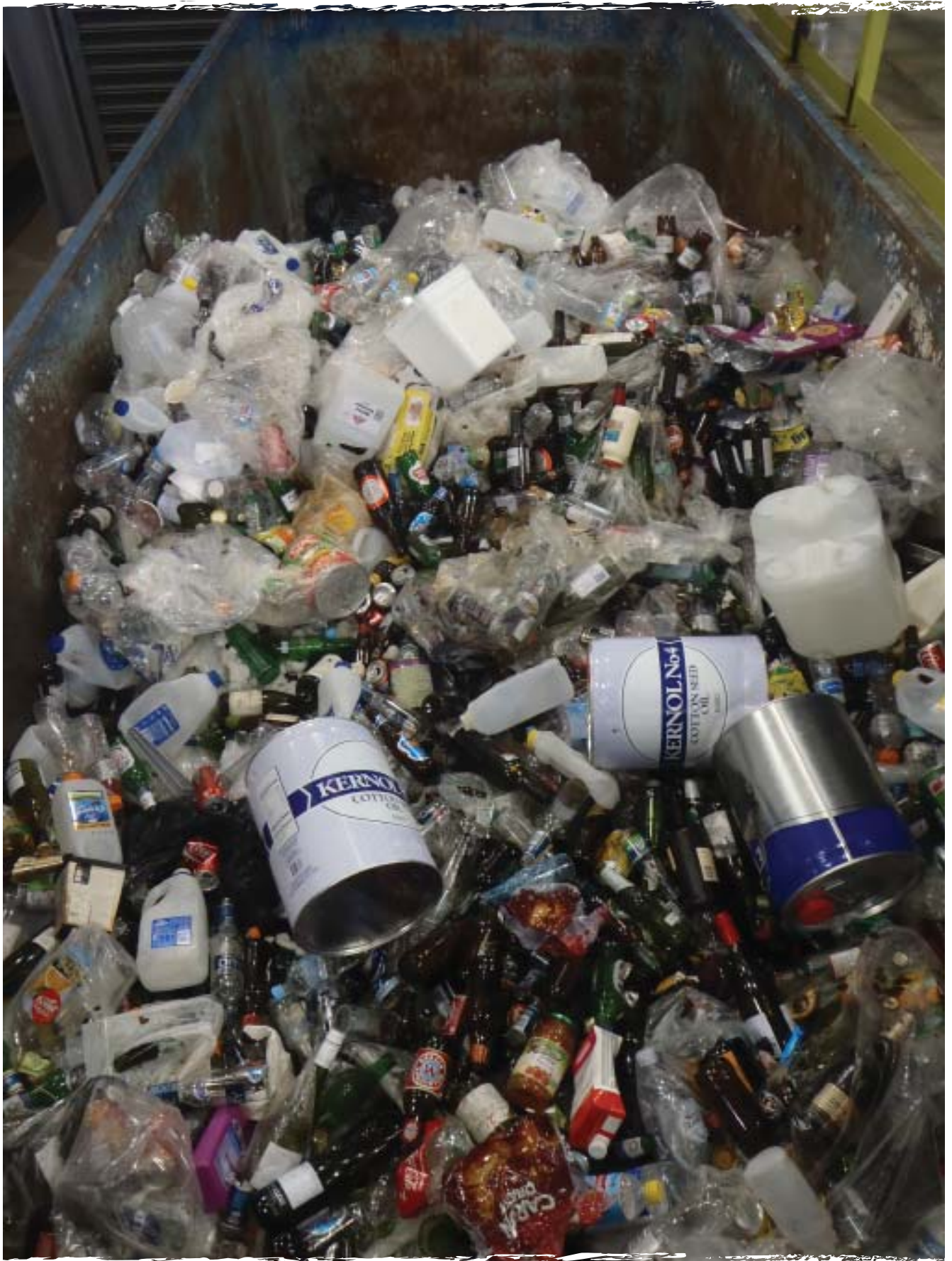
October 2012

Cover Photos: Main Photo: Mountain Pygmy-possum (MPP) (Linda Broome). From top right: Selwyn Snowfields (Helen Smith), Kyilla Lodge, Guthega (Virginia Logan), Charlotte Pass Village (Dave Woods) and Our Lady of the Snow, Catholic Church, Perisher Valley (Virginia Logan).

Contents

Executive summary	1
Introduction	6
Water quality and aquatic ecosystems	7
Pollution prevention and incident management	9
Waste management	13
Biodiversity	15
Energy conservation	21
Air quality and CO ₂ emissions	23
Cultural heritage	25
Sustainable recreation	27
Resort amenity	29
Reference tables	

1	Summary of the NSW alpine resorts environmental performance
2	Water performance and trend
3a	Recorded pollution incidents
3b	Pollution prevention performance and trend
4	Waste performance and trend
5	Biodiversity performance and trend
6	Energy conservation performance and trend
7	Air quality and CO ₂ emissions performance and trend
8	Cultural heritage performance and trend
9	Sustainable recreation performance and trend
10	Amenity performance and trend



Recycling at Perisher Waste Transfer Station, Perisher Valley, July 2012
(Photo: Virginia Logan)

Executive Summary

The "NSW Alpine Resorts Environmental Performance Report 2011-12" provides a summary of outcomes of monitoring and reporting against environmental values across the resorts for the period: 1 March 2011 to 29 February 2012.

The report allocates a performance trend for the 12 month period for each of the 33 Key Performance Indicators (KPIs). The trend was determined following evaluation of this year's performance compared to the previous year's performance and rated as either:

- ↑ Significant improvement.
- → No Significant change.
- ↓ Decline in performance.

This year saw an improvement in over 50% of the performance indicators.

The most notable improvements over this reporting period include:

- A significant increase in Mountain Pygmy-possums (MPP) recorded at Blue Cow and Charlotte Pass.
- 788 person hours spent on weed control - over 100% increase from 2010.
- The riparian restoration program was expanded with over 3300 tubestock planted.
- More than half the Perisher lodges used less than 200 litres of water per visitor night.
- A 5% reduction in total garbage and a 3% increase in recycling.
- The biosolids from the Perisher Sewage Treatment Plant (STP) were used in land rehabilitation.
- A 16% reduction in electricity consumption and an 8% decrease in LP gas consumption.
- Significant purchasing of greenpower and offsetting of nearly 2000 tonnes of CO₂ emissions.
- Perisher and Thredbo both undertook extensive work on underground fuel storage systems including installing new tanks and automated loss monitoring systems.
- Only 6 minor licence exceedances from the STPs - this is a 60% improvement compared to 2010.

Table 1 provides a summary of the alpine resorts environmental performance against all indicators. Only one indicator showed a significant decline in performance over the 12 month period and that was water quality. The greater extent of this decline can be attributed to the above average rainfall in 2011 and increased frequency of flooding across the catchments. Management actions in response to this result included improvements or modifications to stormwater infrastructure and maintenance as well as a review of stormwater management plans.



Table 1: Summary of the NSW alpine resorts environmental performance 2011- 2012

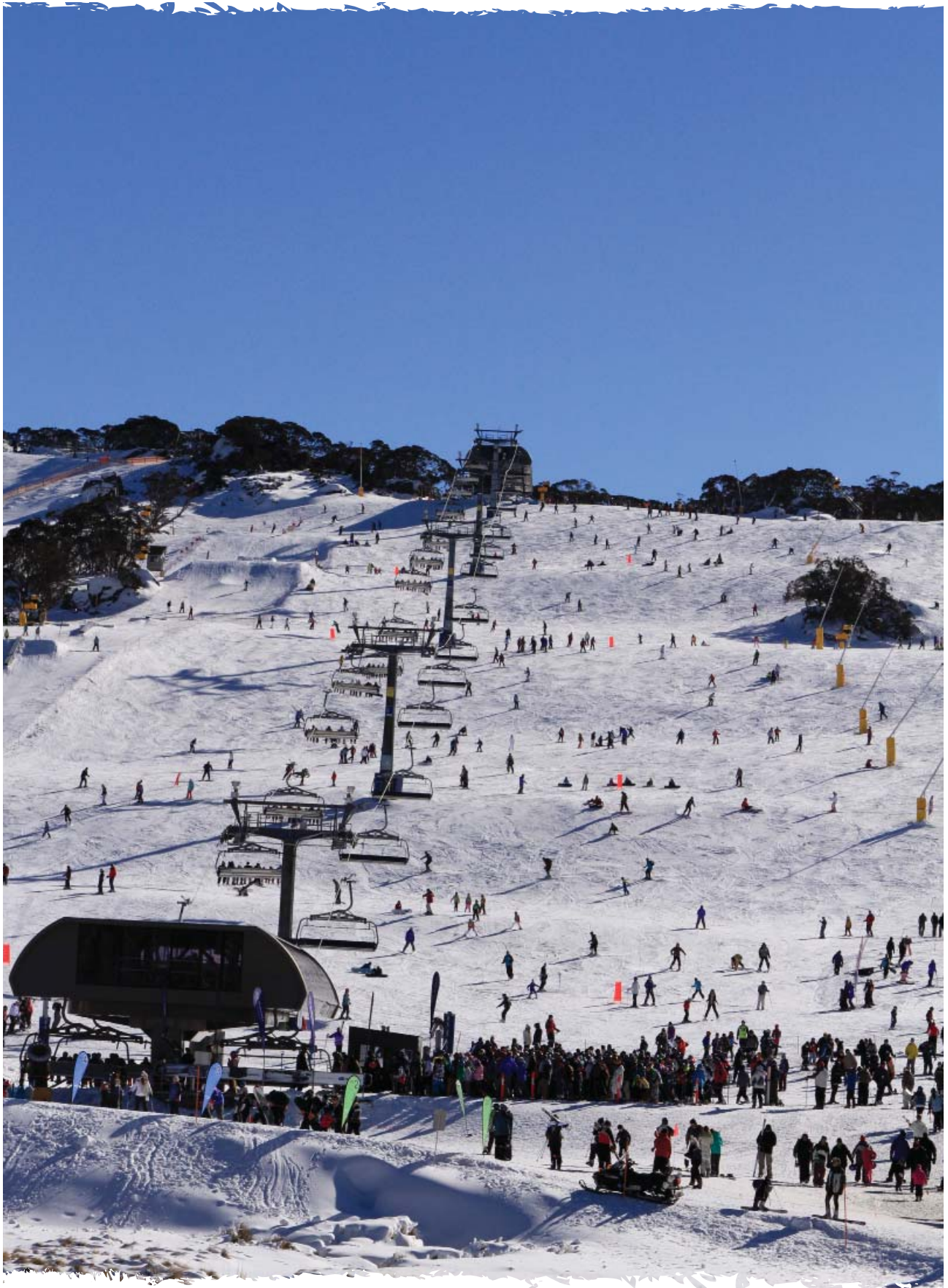
Value	Objectives	Indicator No	Key Performance Indicator (KPI)	Environmental performance 2011-12	Performance trend over 12 months
Water quality and aquatic ecosystems	To protect the environmental health and aquatic ecosystems of alpine streams from resort activities.	W1	Biological, physical and chemical indicators of resort stream health compared to ANZECC guidelines (physical and chemical measurements) and AUSRIVAS KNP model (biological condition).	In 2011-12 above average rainfall and an increased frequency of flooding resulted in a decline in water quality. Sampling, at many of the 21 sites followed significant rain events which impacted on physical, chemical and biological parameters. High conductivity from an increase in salt and turbidity from roads and carparks continued to be an issue. Works were undertaken on Burrumys road in Perisher including installation of stormwater pipes.	↓
		W2	Compliance with water extraction licences.	There are currently 24 water extraction licences across resorts. NPWS, Selwyn, Perisher and Thredbo all provided returns for their licences.	→
		W3	Water consumption in accommodation premises compared to industry benchmark (220 Litres/Visitor Night).	<ul style="list-style-type: none"> More than ½ the Perisher lodges used < 200 Litres/Visitor Night. Charlotte Pass Resort used 258 Litres/Visitor Night in August 2011. Thredbo is in the process of benchmarking water use in Kosciuszko Thredbo Pty Ltd operated accommodation. 	↑
		W4	Total Water consumption.	Perisher Resort decreased water consumption in buildings by an average of 24%.	↑
Pollution prevention and incident management	To prevent and manage leaks, spills and unlicensed discharges of potentially harmful substances to the environment.	P1	Timely management of environmental incidents in alpine resorts.	34 incidents - 3 major and 31 minor. 91% of incidents closed. The majority of incidents have been cleaned up, acted upon and/or used to inform procedural change.	→
		P2	Compliance with EPA discharge licences for Sewage Treatment Plants (STPs).	<ul style="list-style-type: none"> Perisher, Thredbo and Charlott Pass all operated within licenced conditions. There were 6 minor licence exceedences – this is a 60% improvement since 2010. Selwyn do not have an STP. 	↑
		P3	Compliance with <i>POEO Act 1997</i> , UPSS Regulation 2008.	Thredbo, NPWS, Selwyn and Charlotte Pass are fully compliant with UPSS reg. Perisher Resort undertook extensive assessment and work on all UPSS systems. This included developing Environmental Management Plans and automated loss monitoring systems.	↑
		P4	Education of staff in environmental incident management and response.	All resorts undertook incident management and response training with staff. This is comparable to previous years reporting.	→
Waste management	To minimise waste, maximise resource recovery and prevent environmental harm from waste disposal.	G1	Total amount of garbage compared to previous years.	Total waste from all resorts was 1677.06 tonnes (plus 872m ³ from Bullocks Flat and Blue Cow). This was a 5% reduction compared to 2010-11.	↑
		G2	% of waste recycled including paper, cardboard, tins, glass and plastics.	<ul style="list-style-type: none"> 30% of waste was recycled including bottles, plastic, cans, paper and cardboard. This is a 3% improvement on 2010-11. 100% of cooking oil was recycled. 	↑
		G3	% of waste composted - including biosolids from STPs.	<ul style="list-style-type: none"> 1800 kL of biosolids from Perisher STP was applied as fertiliser to degraded agricultural land using the EPA guidelines. 273 tonnes of biosolids from Thredbo was used in a compost trial at Cooma landfill. 	↑

Value	Objectives	Indicator No	Key Performance Indicator (KPI)	Environmental performance 2011-12	Performance trend over 12 months
Biodiversity	To protect flora, fauna and ecological communities, prevent loss of biodiversity and restore vegetation and ecosystem functions to previously disturbed areas.	B1	Threatened species population monitoring - MPP.	Charlotte Pass recorded 50 individuals, the highest number since 1996. Blue Cow recorded 18 individuals, an increase of 100% on the 2010 survey.	↑
		B2	Threatened species population monitoring - Broad-toothed Rat.	The Pipers Creek monitoring site at Perisher recorded an increase in numbers and new populations were recorded at Selwyn Resort.	↑
		B3	Small mammal management: <ul style="list-style-type: none"> MPP Broad-toothed Rat Dusky Antechinus Agile Antechinus Southern Bush Rat. 	Fauna crossings are scattered throughout resorts under roads and across ski slopes to allow movement between dissected habitat. This year some of the fauna crossings became heavily water logged due to increased annual rainfall. Over 120 Elliot traps (catch and release) were lent to lodges in Thredbo and Perisher. With 80 animals reported caught inside buildings at Perisher and released into surrounding native bushland.	→
		B4	Pest animal control programs.	A soft jaw trapping program was introduced near MPP habitat at Perisher and Charlotte Pass resorts – 10 cats and 15 foxes were removed. Cage trapping removed a further 12 cats from Perisher and Thredbo resorts.	↑
		B5	Loss of natural areas as a result of expansion or alteration of infrastructure.	Approximately 710m ² of ground cover was disturbed for construction of the Perisher Waste Transfer Station, the barbeque shelter at Selwyn, ski slope realignment and replacement of water mains at Thredbo. Perisher resort also removed individual trees and rocks from ski slopes and carried out trenching for snow making upgrades. All developments were subject to approval, consent and rehabilitation requirements.	→
		B6	Weed management programs.	788.5 person hours were devoted to weed control. This is more than 100% increase on last years effort. All woody weeds have been treated along riparian areas in Thredbo Resort including apple, birch, willow, blackberries, pine and scotch broom.	↑
		B7	Rehabilitation of previously disturbed areas.	All resorts are working with NPWS to develop map based rehabilitation plans. Nearly 5000 trees, shrubs and native grasses were planted.	→
		B8	Riparian restoration.	Restoration commenced on the Perisher Creek and Thredbo River in 2010. It was expanded in 2011 with an additional 3300 tubestock planted and follow up weed control.	↑
		B9	Natural Heritage Research projects supported, initiated or undertaken in alpine resort areas.	Two PhD studies on MPP and one on Alpine skinks, distribution and ecology. The latter is supported by the Glenn Sanecki scholarship. A Masters study: 'Processes explaining exotic plant occurrence in Australian mountain areas' is underway.	↑
		B10	Environmental education and awareness programs.	All resorts undertook environmental awareness training of staff. NPWS continued environmental awareness programs across all resorts.	↑

Value	Objectives	Indicator No	Key Performance Indicator (KPI)	Environmental performance 2011-12	Performance trend over 12 months
Energy conservation	To improve the efficiency of energy consumption and increase the use of renewable energy.	E1	Total consumption of energy.	Significant reductions were made in the consumption of electricity and liquid petroleum gas (LPG). Energy consumption (% change from 2010-11): <ul style="list-style-type: none"> 21,619,919 kWh of electricity (16% ↓) 1,436,276 Litres of LPG gas (8% ↓) 61,680 Litres of heating oil (7% ↑). 	↑
		E2	Energy consumption in accommodation premises compared to Earthcheck benchmark.	<ul style="list-style-type: none"> Over 75% of lodges in Perisher used an average of 161 MJ/Visitor night. Kosciuszko Thredbo Pty Ltd properties are scheduled to be benchmarked in EarthCheck by 2013. 	→
		E3	Energy efficiency initiatives.	Extensive energy efficiency savings were implemented across all resorts including: <ul style="list-style-type: none"> energy audits installation of power correction units automation of snow making installation of variable speed drives improvements to heating ventilation and air conditioning systems (HVAC) energy conversions reduced fuel consumption and continued trial of vapour gas injection on slope grooming machines LED lighting retrofits. 	↑
Air quality and CO ₂ emissions	To improve local air quality and reduce or off set carbon dioxide (CO ₂) emissions.	A1	Amount of CO ₂ offsets.	<ul style="list-style-type: none"> Perisher purchased 1000 tonnes of offset certificates. Thredbo sequestered 870 CO₂ e-tonnes through Greenfleet. Perisher lodges reduced CO₂ emissions by 4.7 kg/Visitor Night. 	→
		A2	% of renewable energy used in resorts.	Greenpower was purchased across most resorts including: <ul style="list-style-type: none"> 700 MWh (approximately 5%) by Perisher Resort 2.5% by Perisher Lodges Thredbo operated 6 of their major sites on 10% and central Spur T-bars on 100% 6% by NPWS at the Perisher STP 11,867 kWh of solar energy was also captured by the panels on the NPWS pumping station.	↑
		A3	% of visitors using Skitube.	Approximately 32% of skiers/snowboarders to Perisher Resort used Skitube from Bullocks Flat. A large % of overnight visitors to Charlotte Pass Resort also used Skitube.	→
Cultural heritage	To conserve and promote the cultural heritage values of the alpine resort areas	C1	Education, awareness and promotion of resort cultural heritage values.	<ul style="list-style-type: none"> Cultural heritage information included in induction training and available on websites across resorts. Perisher and Thredbo support and promote the Thredbo and Perisher Historical Societies. 	→
		C2	Protection of heritage sites, items and historic assets.	Cultural heritage safeguards are included in consent details for all development applications. "Archaeological sensitivity mapping" in Perisher helps guide this process.	→

Value	Objectives	Indicator No	Key Performance Indicator (KPI)	Environmental performance 2011-12	Performance trend over 12 months
Sustainable recreation	To ensure that the recreational opportunities and facilities of the alpine resorts are provided and managed sustainably.	R1	Education, awareness and promotion of sustainable tourism in resorts.	<ul style="list-style-type: none"> The "Alpine Resorts Sustainability Forum" was held at Crackenback Resort and attended by staff across all resorts. Thredbo achieved ECO Certification for its walks program. A Selwyn staff member attended "Responsible skiing conference" in London. Sustainability information was included in all resort induction programs. 	↑
		R2	Monitoring of key recreational activities: <ul style="list-style-type: none"> Snow play at Selwyn Mountain biking and walking at Thredbo Snow tubing at Perisher. 	<ul style="list-style-type: none"> Selwyn Resort monitor and manage snow cover on snow play areas to reduce impacts on bare earth. Thredbo Resort mountain bike tracks were eroded in higher sections however areas that met International guidelines remained in better condition. A minimum of 300 mm of snow was required to operate the Perisher Resort snow tubing above the ecologically threatened bog community. 	→
Resort amenity	To conserve and enhance the existing amenity of the alpine resorts.	Am1	Education, awareness and promotion of resort amenity.	Visual amenity awareness information is included in all resorts induction programs. Thredbo Resort – "We take pride in the amenity of the resort".	→
		Am2	Measures to protect the visual and acoustic environments within resorts and minimisation of any impacts to the neighbouring areas.	<ul style="list-style-type: none"> A waste collection service was introduced to Perisher and Smiggin Holes. This allowed for hopper bins to be removed from around the Perisher Resort. The entrance to Perisher services precinct was landscaped with 1000 native plants. Clean-up days and regular daily pick ups were undertaken across all resorts to reduce impacts on surrounding park areas. 	↑





Front Valley, Perisher Ski Resort, Perisher Valley, July 2010
(Photo: Robert Alexander)

Introduction

Background

The four NSW alpine resorts Charlotte Pass, Perisher (Blue Cow, Guthega, Perisher Valley and Smiggin Holes), Thredbo and Selwyn Snowfields cover a combined leased area of just under 3000 hectares of Kosciuszko National Park (KNP) and provide accommodation for nearly 10,000 people. The resorts' natural values are recognised as having international and national significance and include: restricted habitats of threatened species, subalpine and alpine plant communities, geological and geomorphological features, alpine rivers and streams and alpine humus soils. With over one million visitors a year, the resorts are also recognised for their important recreational values. They provide significant economic, employment and social benefits to NSW and the local community.

Through the implementation of Environmental Management Systems (EMSs) and by adopting a strong philosophy of continuous improvement, resort operations are endeavouring to reduce their impacts and improve the protection and restoration of the natural values of the areas while maintaining sustainable tourism destinations.

Scope of this report

This report contains information in relation to the environmental performance of the four NSW alpine resorts against 9 objectives and 33 key performance indicators (KPIs) for the period between 1 March 2011 and 29 February 2012.

Each chapter is dedicated to one of the 9 objectives. KPIs are identified for each objective as a tool to measure achievement. A performance trend has been allocated to each KPI for the 12 month period based on the monitoring and reporting data available.

The key to the performance trend is:

- ↑ Significant improvement.
- → No Significant change.
- ↓ Decline in performance.





Perisher Creek, Perisher Valley
(Photo: Mel Schroder)

Water quality and aquatic ecosystems

Objective

To protect the environmental health and aquatic ecosystems of alpine streams from resort activities.

Key Performance Indicators



W1	Biological, physical and chemical indicators of resort stream health compared to ANZECC ¹ guidelines (physical and chemical measurements) and AUSRIVAS ² KNP model (biological condition).
W2	Compliance with water extraction licences.
W3	Water consumption in accommodation premises compared to industry benchmark (220 Litres/ Visitor Night).
W4	Total Water consumption.

¹ Australian and New Zealand Environment Conservation Council

² Australian River Assessment System

Performance and trend

Table 2: Water performance and trend

Indicator	Environmental performance 2011-12	Management response and review	Performance trend over 12 months
W1	<p>Biological water quality monitoring of the Thredbo River, Spencers, Pipers, Perisher, Sawpit and Farm Creeks has been undertaken consistently since 1993. Results fluctuated throughout the 2011-12 reporting year:</p> <ul style="list-style-type: none"> High rainfall events in summer and autumn impacted on water quality across all catchments, excluding Farm Creek. The Thredbo River showed a biologically impaired condition in August 2011 and in February 2012. In November 2011 the reference site and village site demonstrated good condition whilst sites downstream of Thredbo Sewage Treatment Plant were impaired. Water quality at Spencers, Pipers and Perisher Creeks all showed impairment downstream of the resorts. The movement of silt off unsealed roads continues to be an ongoing management issue which is exacerbated during high rainfall periods. High conductivity from an increase in salt and turbidity from car park, road and workshop runoff were an issue during the 2011 winter period for Perisher and Pipers Creeks. 	<p>Water quality declines over the reporting period are likely to be associated with above average rainfall and an increased frequency of flooding in the catchments. Water quality sampling at many of the 21 sites followed significant rain events which impacted on chemical, physical and biological parameters.</p> <p>Drainage works were undertaken on Burrmys Road at Perisher to reduce water movement - two storm water pipes were fitted to redirect road runoff to disperse over vegetated areas.</p> <p>The Thredbo stormwater management plan was reviewed in 2011 and implemented actions will be reported on next year.</p>	
W2	<p>There are 24 water licences across the four alpine resorts used for extraction of water for domestic town supplies, construction, fire fighting activities and snow making.</p>	<p>All resorts are required to have extraction licences under the <i>Water Act 1912</i>. The resorts may not utilise all their licence capacity in any given year depending on their needs. The latter is</p>	

Indicator	Environmental performance 2011-12	Management response and review	Performance trend over 12 months
W2	<p>Thredbo, Perisher and Selwyn are compliant with provisions of their water licences including submitting the 2011 annual returns outlining extraction data and water quality reporting to NSW Office of Water, Department of Primary Industries.</p> <p>Charlotte Pass has not provided an annual return regarding its water licences.</p>	<p>influenced by the weather and visitor numbers. As part of water reform across the state "a water sharing plan" is schedule to be developed for the region over the next two to three years. All licences will then be converted to the <i>Water Management Act 2000</i>.</p>	→
W3	<p>At Perisher more than half the lodges have met or used less than 200 Litres/Visitor Night (L/VN) in 2011-12. Over the reporting period the combined lodge average was reduced by 40 L/VN.</p> <p>Charlotte Pass calculated water consumption for the month of August 2011 at 258 L/VN (based on STP inflow).</p> <p>At this stage there are no individual meters on buildings at Thredbo to be able to measure this performance indicator.</p> <p>Selwyn is a day use facility and this indicator does not apply.</p>	<p>Perisher lodges water use per visitor night has been gradually improving since reporting was established in 2002. The introduction of water meters, water usage charges and the earlier detection of water leaks and burst pipes has helped reduce water consumption in lodges.</p> <p>Thredbo is in the process of benchmarking water use under the three operational sectors of Activity incl. Snow making (Friday Flat base station), Accommodation (Thredbo Alpine Hotel) and Community (the rest of the resort).</p>	↑
W4	<p>Perisher: 540,465 kL (including snowmaking and 134,265 kL consumption in buildings).</p> <p>Thredbo: 337,750 kL (Thredbo village - excluding snowmaking).</p> <p>Selwyn: 42,060 kL (including 40,000 kL for snowmaking).</p> <p>Charlotte Pass: 173,000 kL (meter reading in STP - excluding snow-making).</p> <p>Perisher resort reported an average of 24% (approximately 3,511 kL) decrease in water use (excl. snowmaking). Water saving measures including the installation of the Arid Waterless urinal system across the resort have contributed to this significant reduction.</p>	<p>Water consumption across all resort premises is dependant upon visitation from year to year, maintenance/ management of facilities and guest/ staff behaviour.</p> <p>The "waterwise resorts" community awareness program aims to affect behaviour of visitors to minimise consumption while resort operators continue to implement water saving measures across their facilities.</p> <p>Approximately 95% of water used for snow making is returned to the catchment during spring thaw.</p>	↑



Pollution prevention and incident management

Objective

To prevent and manage leaks, spills and unlicensed discharges of potentially harmful substances to the environment.

Key Performance Indicators

P1	Timely management of environmental incidents in alpine resorts.
P2	Compliance with Environment Protection Authority (EPA) discharge licences for Sewage Treatment Plants (STPs).
P3	Compliance with <i>Protection of the Environment and Operations (POEO) Act 1997</i> , Underground Petroleum Storage Systems (UPSS) Regulation 2008.
P4	Education of staff in environmental incident management and response.



Megan Bennett (NPWS) and Steven Beattie (Perisher Blue Pty Ltd) undertaking Perisher EMS Audit, February 2012
(Photo: Virginia Logan)

Performance and trend

Table 3a: Recorded pollution incidents

Type of incident	No	Significance	Incident Closed	Description/Comment/Management Action
Sewer Overflow to Creek	1	Major Reported to Appropriate Regulatory Authority (ARA) Investigated	NO	<ul style="list-style-type: none"> 2.8 to 3.6 megalitres of sewage overflowed to Perisher Creek from broken Sewer Rising Main 2 Pipeline repaired with only a short term impact on Perisher Creek Water quality monitoring showed the creek conditions returned to pre-spill conditions within days Site clean-up included pump out of 70 kL material, bunding and revegetation of disturbed ground Pipe is still within design life. Rocks in ground possible cause of break Systems put in place to regularly check pump hours to detect faults earlier Pump hour checks will be automated in 2013
Hydrocarbon spills outside workshop containment areas	1	Major Investigated by ARA Preventive Action and Clean up notices issued under <i>POEO Act 1997</i>	NO – ongoing since last report	<ul style="list-style-type: none"> Fuel handling problems resulted in hydrocarbon pollution outside bunded area On-going preventive procedural changes have satisfied and closed the Preventive Action Notice. Remediation of contamination planned for 2012-13
Diesel contamination of sewerage system	1	Major Reported to ARA Investigated	YES	<ul style="list-style-type: none"> 100 to 1000 L diesel was detected at the Perisher STP Immediately following detection the operator isolated part of the STP The exact source of the diesel remains unknown other than it came from Perisher Valley Ammonia levels at the discharge point to Perisher Creek were above licence levels for 6 days
Diesel spill from boiler room into sewerage system	1	Minor Reported to ARA	YES	<ul style="list-style-type: none"> Approximately 50 L of diesel was detected in Tank 2 at the Perisher STP Once the diesel was discovered the contaminated inflow was isolated There was little or no impact on the STP operations The source was determined to be a lodge boiler room where the floor waste drain was connected to the sewerage system The lodge has since undertaken works to avoid such a spill to sewer occurring again All Perisher lodges were asked to review their boiler room drains for connections to sewer
Hydraulic fluid spills from snow groomers and ski lifts	29	Minor	YES	<ul style="list-style-type: none"> Spills range from 1 to 20 L Incidents contained and contaminated snow collected and treated through workshop oil/water separators or with spills kits appropriately disposed Machines repaired prior to use The 26% increase in the number of hydraulic fluid spills this year is due to improved reporting.
Underground fuel storage tanks popped out of ground	1	Minor Reported to ARA and Order issued under <i>Environment Planning & Assessment Act 1979</i>	NO	<ul style="list-style-type: none"> Three inactive underground storage tanks (USTs) at a Perisher lodge popped out of the ground following a period of wet weather The lodge lessee did not know about the existence of the tanks The USTs are to be decommissioned and the sites validated by 30 December 2012

Table 3b: Pollution prevention performance and trend

Indicator	Environmental performance 2011-12	Management response and review	Performance trend over 12 months
P1	91% (31 of 34) reported incidents are closed (refer to Table 3a).	The majority of incidents have been acted upon, cleaned up, and/or used to inform procedural changes to reduce the likelihood of the event recurring. Management actions for three incidents are ongoing.	→
P2	<ul style="list-style-type: none"> Perisher, Thredbo and Charlotte Pass Village STPs all operated within licence conditions for the year. Bullocks Flat STP had 3 exceedences of licence limits. These were attributed to extended periods of cold weather affecting treatment effectiveness, and one occasion from an error in sampling technique. Sawpit Creek STP had 3 reported non-compliances with licence limits (total phosphorus and total suspended solids in final effluent prior to discharge to an underground absorption trench). The catch/balance pond was taken off line and cleaned in October/November. 	<p>The six minor STP licence exceedences have been reported and closed.</p> <p>There was a 60% reduction in exceedences during this reporting period - only 6 minor exceedences as compared to 15 in the previous year.</p> <p>Selwyn do not have an STP or discharge licence - human waste is removed from the Park at the end of the season and disposed of at a licenced facility.</p>	↑
P3	<ul style="list-style-type: none"> Kosciuszko Thredbo Pty Ltd (KT), Selwyn, NPWS and Charlotte Pass Village are fully compliant with the UPSS Regulation. Perisher resort is substantially compliant - actions are still pending on 5 decommissioned underground tanks to gain full site validation. Thredbo lodges level of compliance is unknown. KT are currently confirming the status of hydrocarbon tanks (active and inactive) with sub-lessees. Perisher lodges are not fully compliant. A risk assessment of hydrocarbon tanks (active and inactive) was undertaken in 2008. A number of sites still require further actions to minimise risk and meet compliance requirements. <p>At Thredbo all single skinned steel UPSSs have been decommissioned and their sites validated. KT has three remaining fuelling systems: the Cat Shed UPSS, the Service Station UPSS and the Valley Terminal Above Ground Storage Tank (AST). All are fully compliant, including installation of Statistical Inventory Reconciliation Analysis (SIRA) and groundwater monitoring wells.</p> <p>Selwyn has two active UPSS tanks that are currently awarded a Class 4 exemption in relation to the UPSS Reg.</p>	<p>During 2011-12 Environmental Management System (EMS) Audits were conducted at each resort. The audits were conducted jointly between NPWS and resort environmental staff. The audits focussed on hydrocarbon management. In general the resorts demonstrated a high awareness and action to comply with the UPSS Reg. The UPSS decommissioning, site validation and monitoring programs established during the year, by Thredbo and Perisher, in particular demonstrate a significantly improved compliance with the Act.</p> <p>NPWS has provided all Perisher lodges with information regarding their obligations under the UPSS Reg in the form of fact sheets and articles in the PRREMS Press newsletter.</p> <p>To continue the trend and achieve 100% compliance with the UPSS Reg, specific effort is still required by some of the accommodation providers in Thredbo and Perisher to understand and implement:</p> <ul style="list-style-type: none"> Loss and leak monitoring from active tanks. Decommissioning and validation of inactive tanks. 	↑

Indicator	Environmental performance 2011-12	Management response and review	Performance trend over 12 months
P3	<p>Perisher resort has 18 active Underground Storage Tanks (USTs) across 5 sites, namely:</p> <ul style="list-style-type: none"> • Mt Perisher Triple Chair (2 x Diesel) • Mt Perisher Workshop (2 x Diesel, 2 x ULP) • Perisher Centre Loading Dock (1 x Diesel) • Smiggin Workshop (2 x Diesel, 2 x ULP, 1 x Waste Oil, 1 x Heating Oil) • Blue Cow (2 x Heating Oil, 2 x Diesel, 1 x ULP) <p>Each of the Perisher resort sites have groundwater monitoring wells, and a Environment Protection Plan (EPP). EPPs were prepared during the reporting period, and reviewed by expert consultants for the completeness of content. A program is underway to install continuous remote monitoring systems in these active USTs.</p> <p>The status of legacy sites at Perisher is:</p> <ul style="list-style-type: none"> • 11 USTs have been fully removed and their sites validated. • 5 USTs remain in-situ and their sites validated. • 5 USTs have removal and/or final validation pending. <p>NPWS has one compliant active UPSS at the Perisher Freight Shed. Groundwater monitoring results for the reporting period indicate no loss or pollution.</p> <p>Charlotte Pass have an inactive UPSS that has passed integrity testing. No CPV sublessees have an active UPSS.</p>		↑
P4	<ul style="list-style-type: none"> • Thredbo trained 100% of new staff and 95% of returning/full time staff on incident reporting and near miss/potential hazard reporting. • Selwyn trains all seasonal staff in the correct reporting procedure for identifying and taking action for any environmental risks or incidents during the winter season induction. All staff are updated on the progression of any incidents during the weekly departmental meetings. • 100% of Perisher resort staff are inducted in incident notification procedures through the completion of an annual online induction package. • At Charlotte Pass, 3 summer staff, 50% of snow sports staff plus ski patrol were trained to respond quickly to environmental incidents. • 92% of staffed Perisher lodges reported providing staff with environmental training. 	All resorts are reporting a high level of training which is comparable to the previous reporting year.	→

Waste management

Objective

To minimise waste, maximise resource recovery and prevent environmental harm from waste disposal.

Key Performance Indicators

G1	Total amount of garbage compared to previous years.
G2	% of waste recycled including paper, cardboard, tins, glass and plastics.
G3	% of waste composted - including biosolids from STPs.



Biosolids from Perisher STP being used as fertiliser to help rehabilitate agricultural land outside Kosciuszko National Park (KNP).
(Photo: Virginia Logan)

Performance and trend

Table 4: Waste performance and trend

Indicator	Environmental performance 2011-12	Management response and review	Performance trend over 12 months
G1	<ul style="list-style-type: none"> Total waste from all resorts for 2011-12 was 1677.06 tonnes, plus 872 m³ from Bullocks Flat and Blue Cow. Perisher also disposed of the following items to Jindabyne licensed landfill: <ul style="list-style-type: none"> 1.82 tonnes of e-waste (printers, photocopiers, CRT monitors, desktop computers) 6.98 tonnes and 148 m³ of mixed builders waste 9.16 tonnes of mixed unsorted waste. Thredbo resort estimates that their additional hard waste figures (not recycled and not part of construction) totalled approximately 60 tonnes. 	<ul style="list-style-type: none"> Waste collected decreased 90.95 tonnes (5%) compared to 1768.85 tonnes in 2010-11. All resorts reported a decrease in total waste: <ul style="list-style-type: none"> 2.8% decrease at Thredbo 6.1% decrease at Perisher and Charlotte Pass 20.8% decrease at Selwyn. Waste that may not be captured by the waste figures includes concrete, timber, scrap metal and batteries (which are recycled). Total waste figures are influenced by seasonal variations including the number of visitors. 	↑
G2	<p>30% (or 496 tonnes) of waste including plastic, cans, paper and cardboard were recycled across all resorts in 2011-12.</p> <p>This is a 3% increase in recycling since last year (Note: last year's reported figure of 24.8% was adjusted to 27% to exclude hard waste).</p> <p>The following items were also recycled:</p> <ul style="list-style-type: none"> 37.5 tonnes of steel. 140 tyres. 18 tonnes of clean untreated timber. 5 tonnes (estimated minimum) of recycling was picked up from Bullocks Flat by contractors, in addition to baled cardboard and general waste this includes waste from Blue Cow. 100% of cooking oil was recycled across all resorts. Thredbo recycled over 6000 litres of cooking oil and Selwyn 0.73 tonnes. There are no figures available for the quantity of oil recycled in Perisher and Charlotte Pass. 	<ul style="list-style-type: none"> Perisher and Charlotte Pass experienced a 5% increase in recycling from 27% to 32% in 2011-12. Thredbo remain constant at 29% across both reporting periods. Selwyn experienced an increase in cardboard recycling, which was the result of increased education and awareness. However they are still unable to recycle plastic, glass and cans due to operational constraints. 	↑
G3	<ul style="list-style-type: none"> At Perisher 1800 kL of STP biosolids were removed and used as fertiliser on degraded agricultural land near Berridale. After extensive testing the biosolids were ploughed directly into the ground then a crop (not for human consumption) was planted to increase nutrient levels and provide stock feed. The activity was undertaken with consent from the Snowy River Shire Council and under the guidance of the Environment Protection Authority (EPA). The activity is managed and controlled through the development and implementation of an Environmental Management Plan. The Plan closely follows the EPA's <i>Environmental guidelines: Use and disposal of biosolids products</i>. The process was independently audited. At Selwyn 33.725 tonnes of biosolid waste from the Clivus Multrum toilets was transported to the Goulburn Treatment Plant. The Bullocks Flat STP reduced the need for sludge removal from the plant by using the product "For Earth Bio Probiotic Bacteria". No biosolids removal required during 2011. At the Thredbo STP 273 dry tonnes of biosolids was transported to the Cooma Monaro Shire landfill facility for inclusion in the composting stream. Currently none of the resorts compost kitchen waste. 		↑

Biodiversity

Objective

To protect flora, fauna and ecological communities, prevent loss of biodiversity and restore vegetation and ecosystem functions to previously disturbed areas.

Key Performance Indicators

B1	Threatened species population numbers - Mountain Pygmy-possum (MPP).
B2	Threatened species population numbers - Broad-toothed Rat (BTR).
B3	Small mammal management: <ul style="list-style-type: none">• MPP• BTR• Dusky Antechinus• Agile Antechinus• Southern Bush Rat.
B4	Pest animal control programs.
B5	Loss of natural areas as a result of expansion or alteration of infrastructure.
B6	Weed management programs.
B7	Rehabilitation of previously disturbed areas.
B8	Riparian restoration.
B9	Natural Heritage Research projects supported, initiated or undertaken in alpine resort areas.
B10	Environmental education and awareness programs.



CPV boulder field (MPP habitat) (Photo: Virginia Logan)



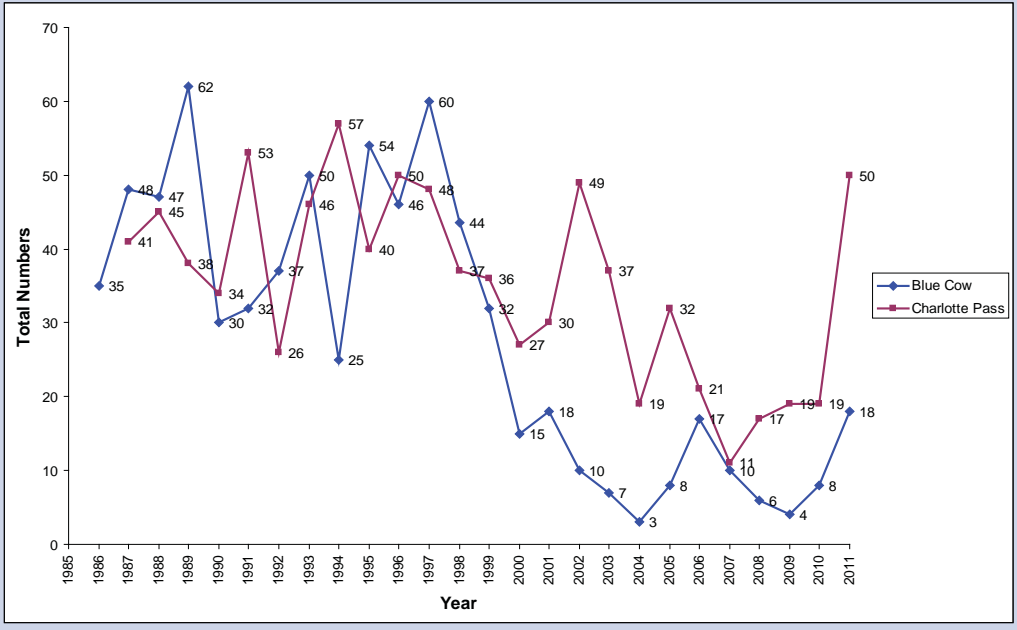
MPP (Photo: Virginia Logan)



Bogong Moth trap (Photo: Virginia Logan)

Performance and trend

Table 5: Biodiversity performance and trend

Indicator	Environmental performance 2011-12 / Management response and review	Performance trend over 12 months
B1	 <p>Mountain Pygmy-possum (MPP) population monitoring at Mt Blue Cow and Charlotte Pass, 1996-2011 (Source L Broome).</p> <p>Over the last two years populations of MPP in resorts have started to show signs of recovery after a decade of major decline. In 2011 the Charlotte Pass site recorded the highest numbers since 1996 with 50 individuals. The Mt Blue Cow numbers, whilst still substantially lower than previous averages, have also shown improvement in 2011 with 18 individuals recorded, an increase of over 100% on the previous year.</p> <p>The increase in numbers may be attributed to improved weather conditions leading to increased food availability along with enhanced predator control programs and habitat protection. Since 2002, Perisher resort has provided protection for hibernating MPP at the Mt Blue Cow site by excluding skiers, snowboarders and grooming machines from the habitat area.</p> <p>Staff at Charlotte Pass and Perisher resorts provide the National Parks and Wildlife Service (NPWS) with assistance in monitoring the MPP populations.</p> <p>There are no known populations of MPP occurring in Selwyn or Thredbo resorts.</p> <p>Small mammal crossings are located throughout the resorts to allow movement between habitat dissected by development including roads and ski slopes. There are over twenty wildlife crossings on roads and ski slopes at Perisher, Charlotte Pass and Thredbo.</p> <p>Twelve crossings are monitored twice yearly in Perisher to detect the type of animals using the crossings. Antechinus, Bush Rat and Broad-toothed Rat were detected in 2011-12. This year some of the fauna crossings became heavily water logged by the above average rainfall. Maintenance was carried out on Mt Perisher, Happy Valley and Goats Gully crossings to improve drainage.</p>	<p>↑</p>

Indicator	Environmental performance 2011-12	Management response and review	Performance trend over 12 months
B2	<p>Broad-toothed Rats occur in all four ski resorts. New populations were also detected at Selwyn resort in 2011.</p> <p>Two long term monitoring sites located at Perisher and Pipers Creeks are monitored annually. The site along Perisher Creek was impacted by flooding in 2012 and as a result BTR numbers were low compared to last year. However the Pipers Creek site which is still recovering from the 2003 fires had a higher number of animals in 2012 than 2011.</p>	<p>There have been increased signs of BTR presence over the past two seasons coinciding with the increased rainfall.</p>	↑
B3	<p>Five native species of small mammals (MPP, BTR, Dusky Antechinus, Agile Antechinus and Southern Bush Rat) are known to occur in or nearby resorts. These species often make their way into resort buildings and can be mistakenly identified as pest species. A targeted education program to increase awareness as well as providing lodges with Elliott traps (used for live capture and release) helps to protect these animals.</p> <p>In winter 2011, there was an unprecedented amount of small mammal activity around the resorts. Over 70 traps were on loan to lodges in Perisher with over 80 individual animals reported as being captured and released. Most of the animals relocated were the native Bush Rat. Thredbo have approximately 50 Elliott traps that are loaned to lodges and businesses. At Selwyn resort there were eight recorded sightings of Antechinus inside buildings - six were captured and relocated.</p>	<p>In response to the significant increase in small mammal activity around resorts, NPWS has purchased an additional 245 Elliott traps to support the capture release program with comprehensive distribution across food premises and lodges to be undertaken in winter 2012.</p> <p>NPWS continued to educate and assist all resort operators in the prevention, identification and safe removal of all small mammals in resort buildings.</p>	→
B4	<p>Pest management programs targeted feral cats, foxes, rabbits and hares.</p> <ul style="list-style-type: none"> Rabbit numbers in Perisher have remained lower than previous years due to the presence of myxomatosis over summer and autumn. Conversely Charlotte Pass observed an increase in rabbit numbers. Populations will continue to be monitored using spotlight surveys and control programs will be undertaken as required. A winter fox baiting program was implemented in and around the Perisher Range, Charlotte Pass and Thredbo. A soft jaw trapping program was undertaken in May and November 2011 near the MPP habitat areas. Ten cats and 15 foxes were removed from Mt Blue Cow and Charlotte Pass. It is believed that the introduction of the soft jaw trapping program may be contributing to the increase in MPP numbers at Blue Cow and Charlotte Pass. Cage trapping was also undertaken within the resorts with eight cats trapped in Perisher village and four trapped at Thredbo. 	<ul style="list-style-type: none"> All resorts work collaboratively with NPWS to identify pest issues including recording and reporting sightings and participating in the OEH NPWS "Regional Pest Management Strategy" stakeholder consultations. Selwyn is developing a policy to formalise the process of reporting and controlling cats in the resort. Thredbo purchased five new cage traps to expand their cat trapping program in winter 2012. Remote cameras are used around the MPP habitat areas to detect feral animals which prey on the possums including cats and foxes. 	↑

Indicator	Environmental performance 2011-12	Management response and review	Performance trend over 12 months
B5	<p>Impacts range from the authorised clearance of vegetation, to the authorised removal of individual features in the landscape, such as trees or rocks. The following consented developments occurred across resorts in 2011-12 that disturbed approximately 710m² of natural areas:</p> <ul style="list-style-type: none"> • Thredbo ski slope re-alignments (approximately 180 m²). • Replacement of water mains on the Alpine way (approximately 100 m²). • The construction of a BBQ Shelter at the top of the Toboggan slope at Mt Selwyn (approximately 30 m²) on modified ground cover adjacent to the carpark. • Perisher removed some individual trees and rocks on ski slopes. • Linear trenching routes for the relocation of snowmaking infrastructure at Blue Cow. • At the Waste Transfer Station development site 400 m² of wet heath vegetation was removed and transplanted at the Balance Tank site at North Perisher and 0.5 hectares was revegetated with 2000 tubestock. • There were no modifications made to intact vegetation in Charlotte Pass. 	<p>All resort developments are subject to the <i>Environmental Planning and Assessment Act 1997</i>. Development consent conditions include rehabilitation and/or vegetation offsets to achieve a “no net loss of biodiversity”. Future reports will attempt to quantify the amount of vegetation impacted and the extent of rehabilitation and offsets provided in the reporting year.</p>	→
B6	<ul style="list-style-type: none"> • A total of 788.5 person hours were devoted to weed management across all resorts during the reporting period. This is more than 100% increase on the previous year. • There was an increase in the detection of some species such as Goats Beard, Mullein and Vipers bugloss. • Control programs targeted broadleaf weeds (as above) and Yarrow/Milfoil, St Johns Wort, Barbarea, Potentilla, Musk Monkey flower, Lupin, Ox-eye daisy and various Thistles. <p>At Perisher, 207 person hours of weed control was completed by Perisher and NPWS and 15.5 hrs at Bullocks Flat. This is about the same amount as in the last report. In addition, over 60 of the lodges at Perisher also reported undertaking some form of weed control including hand pulling, spot spraying and mowing of exotic grasses.</p> <p>At Thredbo, 480 person hours was completed which is a 380% increase from last year. Thredbo's increased effort during this reporting period focused on blackberries and woody weeds in riparian and village areas including Apple, Birch, Willow regrowth, Pine and Scotch Broom.</p> <p>Selwyn spent 19 person hours controlling weeds.</p> <p>Charlotte Pass undertook 64 person hours of weed control on their lease and also focused on pine wilding removal below the sewage treatment plant.</p>	<p>During the reporting period two Perisher staff were trained in ChemCert AQFIII ChemCert Chemical Accreditation.</p> <p>NPWS provided information and training on weed identification and control for Charlotte Pass and Ski Rider maintenance staff. All Perisher lodges now have an “Alps Invaders” weed identification field guide to help manage weeds around lease areas.</p> <p>Weed density mapping provides an indication of success in reducing and/or eradicating weeds and was first undertaken in resorts during 2009. The next weed density mapping and report will be undertaken in 2014.</p>	↑

Indicator	Environmental performance 2011-12	Management response and review	Performance trend over 12 months
B7	<p>Perisher resort and NPWS undertook the following rehabilitation works:</p> <ul style="list-style-type: none"> Planting of 500 tubestock on Zali's ski slope to link MPP habitat areas on the lower slope as part of the "Habitat connectivity project". Maintenance of revegetation sites at Smiggin Holes and around roads at Perisher and Guthega including weed control and tubestock planting. Completion of the design and environmental impact assessment for two bridges over Perisher Creek. <p>Thredbo planted 4300 trees, shrubs and native grasses. Approximately 15% of these were used as replacement plants for previously rehabilitated areas. The planting covered approximately 1.5 hectares including the former landfill batters, car park batters and landscaping around the village. All plants were propagated from seeds sourced from KNP.</p> <p>Charlotte Pass undertook some track rehabilitation work and planting and seeding around Spencers Creek in the village.</p> <p>Selwyn undertook planning for the rehabilitation of an old ski run near the Toboggan area. One hundred snow gums are currently being propagated for planting in February 2013. The approximate size of the area to be rehabilitated is 715m².</p>	<p>NPWS is working with all resorts to develop map based rehabilitation plans that identify disturbed sites and overlay with conservation values to establish priority restoration and rehabilitation projects. Perisher has an approved plan. Charlotte Pass Village is in the final stages of its plan and Selwyn and Thredbo are in the initial development stage.</p>	→
B8	<ul style="list-style-type: none"> The riparian restoration projects commenced in 2010 along Perisher and Rock Creeks and the Thredbo River. The project aims to reduce environmental weeds and restore riparian vegetation to subalpine rivers and creeks. Work continued in 2011-12 along the Thredbo River including weed control, maintenance of sites established in 2010 and the planting of 1800 tubestock in new areas. The Rock and Perisher Creek sites were also expanded in 2011-12 with an additional 1500 tubestock planted. 	<ul style="list-style-type: none"> Riparian restoration work was expanded in 2011. Despite frequent flooding the survival rates of tubestock planted in 2010 have been very high. All Willow, Birch and Blackberries in the riparian zones in Thredbo have now been treated and or removed with scheduled annual follow up treatment. 	↑
B9	<p>The following research projects are currently being undertaken within alpine resorts in KNP:</p> <ul style="list-style-type: none"> The "Glenn Sanecki Scholarship" on Alpine Skinks commenced in 2010. The PhD study continues to improve our knowledge of the distribution and ecology of skink species as well as the population changes associated with the fragmentation of habitat from ski resort development. The study focuses on the two threatened species Guthega skink (<i>Liopholis guthega</i>) and Alpine She-oak Skink (<i>Cyclodomorphus praealtus</i>). The project is being undertaken at Charlotte Pass, Perisher and Thredbo ski resorts. Two PhD studies on MPP populations across KNP. Masters on "Processes explaining exotic plant species occurrence in Australian Mountain Systems". <p>The results of all of these studies will be considered in the on-going management of the natural heritage values of these areas.</p>		↑

Indicator	Environmental performance 2011-12 / Management response and review	Performance trend over 12 months
B9	Thredbo assisted: <ul style="list-style-type: none"> The Department of Biological Sciences at Macquarie University with access to the ski slopes to study grasshoppers. The National Botanical Gardens seed collection for their seed bank. 	↑
B10	<p>All the resorts undertook some form of environmental awareness and management training with their staff during the reporting period.</p> <p>Selwyn put all their staff through pre winter induction training which included a presentation by NPWS on the unique natural and cultural values of KNP and the responsibility they have to protect the area and help educate others.</p> <p>NPWS presented a training day for Charlotte Pass permanent staff including the importance of KNP, significant natural and cultural values, the environmental management system and staff roles/responsibilities in protecting the environment.</p> <p>Thredbo provided environmental awareness training to 100% of new staff and 95% of returning full time staff in the form of presentations on environmental management within Thredbo.</p> <p>All seasonal and permanent staff at Perisher undertook pre winter environmental awareness training through an online package and a general environmental refresher package was delivered to 14 new and permanent staff in October 2011. Fourteen Perisher staff along with six NPWS staff undertook specialised NSW TAFE competency training on "erosion and sediment control measures and activities". Staff education and involvement in environmental management continued throughout the year at Perisher with environmental information posters in staff locker rooms and lunch rooms and company-wide emails (environmental alerts) relating to turning off electronic equipment, appropriately managing small mammals, waste disposal and recycling, hazardous liquids storage and wildlife rescue.</p> <p>NPWS commenced the review of all the environmental awareness programs that have been implemented in resorts since 2002, including: litter reduction, small mammals in resorts, "Waterwise", recycling, "Keep winter cool" and "Snowsafe". A comprehensive survey of resort visitors in regard to the effectiveness of the awareness programs is scheduled for winter 2012. NPWS Kosciuszko Education Centre had more than 2500 secondary students participate in programs in 2011 that focused on the conservation and management of biodiversity values in all areas of KNP including the management of alpine resorts.</p>	↑



Carpet Heath (Photo: Zarni Bear)



Rock Creek, Perisher Valley (Photo: Mel Schroder)



Water Skink (Photo: Mel Schroder)

Energy conservation

Objective

To improve the efficiency of energy consumption and increase the use of renewable energy.


Key Performance Indicators

E1	Total consumption of energy.
E2	Energy consumption in accommodation premises compared to Earthcheck benchmark (MJ/Visitor Night).
E3	Energy efficiency initiatives.

Performance and trend

Table 6: Energy conservation performance and trend

Indicator	Environmental performance 2011-12			Management response and review			Performance trend over 12 months
E1	Energy	Thredbo	Perisher	NPWS	Selwyn	Charlotte Pass	↑
	Electricity (kWh)	8,670,784	10,800,871	943,555	378,979	825,730	
	Diesel (L)	244,112	414,229	51,770	14,209	51478	
	Petrol (L)	24,937	115,726	9,442	3045	3200	
	Auto Gas (L)	3,114	N/A	N/A	N/A	N/A	
	LP Gas (L)	699,437	506,719	182,352	43,149	4619	
	Heating oil (L)	Unknown	61,680	N/A	N/A	N/A	
	<ul style="list-style-type: none">Qualifying notes on the above energy summary table:<ul style="list-style-type: none">Perisher figures are for the Perisher ski resort operations including Bullocks Flat and Skitube and do not include Perisher lodge consumptionNPWS figures are for municipal services at Perisher and environmental and leasing services across all resorts. It does not include consumption in Jindabyne officesCharlotte Pass figures do not include lodge consumption and LP gas figure is for Kosciuszko Chalet onlyThredbo energy figures are for Ski Resort operations and do not include sub-lessee consumption.Significant reductions were made in energy consumption during this reporting period. Energy consumption totals and % change from 2010-11:<ul style="list-style-type: none">Electricity decreased by 16%. Total: 21,619,919 kWhLPG gas decreased by 8%. Total: 1,436,276 LitresDiesel increased by 1.6%. Total: 775,798 LitresULP decreased by 2.6%. Total: 156,350 LitresHeating Oil increased by 7%. Total: 61,681 LitresPerisher resort Energy Policy priorities are to “Measure - Minimise - Transfer - Offset”.						
E2	<ul style="list-style-type: none">At Charlotte Pass, the Kosciuszko Chalet used 363 MJ/VN in August 2011.Over 75% of the lodges in Perisher used an average of 161 MJ/VN.Perisher lodges reduced the amount of energy consumed by over 5% compared to last year.			Thredbo plans to have energy consumption figures for Thredbo owned properties benchmarked by early 2013.			→
E3	Energy saving initiatives implemented across the resorts during the reporting period included:						↑

Indicator	Environmental performance 2011-12 / Management response and review	Performance trend over 12 months
E3	<p>Thredbo</p> <ul style="list-style-type: none"> Conducted two Level 2 Energy Audits on the Thredbo Alpine Hotel and the Friday Flat base station area Continued improvements to the Thredbo Alpine Hotel including: Upgraded Heating Ventilation and Air Conditioning (HVAC) system in rooms, corridors and reception area to ensure more accurate control of energy use, changed out over 150 halogen lights for LED units resulting in over 5 kWh saving and modified hot water reticulation system to ensure that water is circulated at it's most efficient Upgraded the electric heat pump in the Thredbo Leisure Centre to reduce LPG use in heating the pools and halogen lights were replaced with LED equivalents Continued the trial of vapour gas injection on slope grooming machine "KB4" to reduce fuel consumption Completed the installation of Power Correction Factor equipment on all six major electricity sites - this will allow the company to reduce and regulate power used. <p>Perisher</p> <ul style="list-style-type: none"> 18 lodges participated in the Energy Efficiency for Small Business Program and undertook the audit and development of an action plan Project design was completed for the installation of heat pumps in the Perisher STP using heat from the processed sewage Smiggins workshop converted boiler for heating and hot water from diesel to a gas higher efficiency, lower carbon footprint fuel Guest services/Demonstration Centre installed new efficient LED lighting Continued automation of snowmaking infrastructure (Zali's and Lower Rollercoaster) Installed new high efficiency motor and Variable Speed Drive (VSD) at Link and Brumby T-bars At Perisher Arcade installed new efficient LED lighting Blue Cow terminal has a new heating controller 48% of Perisher lodges conducted energy audits. <p>Charlotte Pass</p> <ul style="list-style-type: none"> The Chalet's kitchen and Kosciuszko bar have been converted to gas Reduced fuel usage for the STP boiler by 30% by installing a new injector system. <p>Selwyn</p> <ul style="list-style-type: none"> Completed the installation of two Power Factor Correction Units enabling power to be used more efficiently by monitoring and regulating the power output and reducing consumption Replaced five heaters and two ovens in 2011 with energy efficient models. <p>All resorts</p> <ul style="list-style-type: none"> Actively promoted the 'Keep Winter Cool' Program to generate awareness of how climate change affects unique ecosystems and how to improve the individual's carbon footprint. 	



Air quality and CO₂ emissions

Objective

To improve local air quality and reduce or offset carbon dioxide (CO₂) emissions.

Key Performance Indicators

A1	Amount of CO ₂ offsets.
A2	% of renewable energy used in resorts.
A3	% of visitors using Skitube.



Steve Hansen (NPWS) riding a skidoo at Guthega
(Photo: Virginia Logan)

Performance and trend

Table 7: Air quality and CO₂ emissions performance and trend

Indicator	Environmental performance 2011-12 / Management response and review	Performance trend over 12 months
A1	<ul style="list-style-type: none"> In 2011, Perisher resort purchased 1000 tonnes of carbon offset certificates. Thredbo have continued to participate with the Greenfleet program and during this reporting period sequestered 870 CO₂ e-tonnes. Perisher lodges reduced the amount of CO₂ emissions by 4.7 kg/Visitor Night as compared to the previous year. Brindabella Ski Club purchased Renewable Energy Certificates from the Hepburn Community Windfarm to meet their 10% greenpower commitment. 	→
A2	<ul style="list-style-type: none"> Perisher have set a target to purchase a minimum of 700 MWh of Greenpower per year. This currently equates to about 5% of electricity consumption. Thredbo purchased 10% Greenpower for six major sites resulting in a total of 150 CO₂ e-tonnes saved and 100% Greenpower for Central Spur T-Bars totalling 14 CO₂ e-tonnes saved. NPWS purchases 6% Greenpower for the Perisher STP (27,163.62 kWh in 2011-12) and have generated 11,867 kWh of power through the solar panels attached to Pump Station 2. Perisher lodges purchased 2.5% Greenpower. 	↑
A3	<ul style="list-style-type: none"> During the 2011 ski season, approximately 32% of skiers used the Skitube for transport to Perisher. Note: this percentage does not extend to total visitors (ie. snowplay, sightseers etc) as these numbers are not recorded. The majority of overnight visitors to Charlotte Pass use the Skitube - access to the resort is by oversnow transport from Perisher resort. 	→



Passengers unloading at Bullocks Flat Skitube Terminal (Photo: Virginia Logan)

Cultural heritage

Objective

To conserve and promote the cultural heritage values of the alpine resort areas.

Key Performance Indicators

C1	Education, awareness and promotion of resort cultural heritage values.
C2	Protection of heritage sites, items and historic assets.



Sponar's Chalet, Diggers Creek
(Photo: Dave Woods)

Performance and trend

Table 8: Cultural heritage performance and trend

Indicator	Environmental performance 2011-12 / Management response and review	Performance trend over 12 months
C1	<p>Perisher staff are inducted on Aboriginal and European significance prior to project works including relevant safeguards. Information on the history of Perisher is available on the Perisher website. Perisher's Environmental Manager attended an Aboriginal land management fieldtrip at Bullocks Flat, to better understand the historical uses of the area. In 2011, a cabinet was setup in the Perisher Skitube Terminal building by the Perisher Historical Society (PHS) to display historical items and information on the history of skiing in Perisher Valley.</p> <p>Perisher's CEO and NPWS are members of the Perisher Historical Society (PHS) committee and provide other 'in kind' support. The history of the resort is promoted through the PHS newsletter and other publications.</p> <p>Thredbo provided cultural heritage awareness training as part of induction training to 100% of new staff and 95% returning staff. There are several slides that specifically mention Indigenous heritage, grazing heritage of Friday Flat, water use history (Snowy Scheme) and architectural heritage. Thredbo has a number of self guided walks that are promoted through the Thredbo website and a brochure including the "Thredbo Village self guided heritage walk".</p> <p>Thredbo resort is a corporate sponsor of the Thredbo Historical Society (THS) and provides a room for the Thredbo Museum free of charge. The museum is operated by volunteers on a part time basis. Over 4,000 people visited the Ski Museum in the 2011-2012 financial year when the exhibition featured 150 years of recreational skiing in Australia. The Museum's research library contains over 275 volumes on skiing in the Snowy Mountains.</p> <p>Selwyn's website and the Snowy Mountains Holiday Centre contain pages detailing the history of Selwyn Snowfields and the development of skiing in the northern end of KNP. Historic literature is available for sale throughout the winter season. The resort is also currently erecting one of the original Kiandra township T-Bar towers at the entrance to the resort.</p>	 <p>→</p>
C2	<p>In accordance with planning and assessment guidelines all resort development proposals are assessed against Aboriginal and European cultural heritage values. Avoiding impacts to areas of significance is dealt with in the planning stage of projects and managed throughout the works.</p> <p>"Archaeological sensitivity mapping", which identifies the potential likelihood of Aboriginal sites is used as a guide to assess any development proposals in Perisher. An example of how this is applied, is an area of potential significance at the base of Rollercoaster ski run was fenced off during a nearby construction project to prevent disturbance. Further community consultation is also triggered by the assessment process.</p>	<p>→</p>

Sustainable recreation

Objective

To ensure that the recreational opportunities and facilities of the alpine resorts are provided and managed sustainably.

Key Performance Indicators

R1	Education, awareness and promotion of sustainable tourism in resorts
R2	Monitoring of key recreational activities: <ul style="list-style-type: none"> • Snow play at Selwyn • Mountain biking and walking at Thredbo • Snow tubing at Perisher.

Performance and trend

Table 9: Sustainable recreation performance and trend

Indicator	Environmental performance 2011-12 / Management response and review	Performance trend over 12 months
R1	<p>Selwyn Approximately 60 staff attended the Staff Induction training about creating a sustainable recreational environment including information on programs such as “Keep Winter Cool” and “Waterwise”. These programs are actively promoted across the resort. The Selwyn Compliance Officer attended a one day ‘Responsible Skiing Conference’ in London, UK. The conference was based around several ski resorts from the USA and Europe discussing the affects of climate change on the ski industry and what can be done to target sustainability issues. The issues raised will be forwarded to the management of Selwyn to develop sustainability plans for the resort.</p> <p>Thredbo Kosciuszko Thredbo Pty Ltd - achieved ECO Certification at the Advanced Ecotourism level for its walks program. Thredbo has a number of self guided walks that are promoted through the Thredbo website and are covered by a brochure/map including the “Thredbo Village self guided ecowalk” and the “Thredbo Village self guided envirowalk”.</p> <p>Perisher During the 2011 ski season, a new children’s program was developed with a more significant focus on the natural environment. This included cutouts of native animals in the daycare area and at various outdoor locations. A hut in Centre Valley was also dedicated to the program, and decorated with environmental posters and animals, with some audio information on native animal facts.</p> <p>All resorts Attended and/or participated in the seventh “Alpine Resorts Sustainability Forum” hosted by NPWS on 9-10 May 2011 at Lake Crackenback Resort. Thredbo ran a workshop “Thredbo EMS: the Challenge of the EMS in an Alpine Environment” and NPWS ran a workshop on “Keys to Successful Rehabilitation in the Alps”. The forum also included an exhibition of sustainable products, services and campaigns from both privately owned businesses and government departments.</p>	↑
R2	<p>Snowplay at Selwyn The most significant impacts from the high numbers of people enjoying snowplay is litter and trampling on bare earth during periods of low snow levels. Monitoring and management of rubbish is conducted several times each day throughout the ski season, along with strategically placed waste bins. To reduce the damage to bare ground during marginal snow periods, vulnerable areas are cordoned off by temporary fencing. Overall,</p>	

Indicator	Environmental performance 2011-12 / Management response and review	Performance trend over 12 months
R2	<p>customer satisfaction of the snow play area is positive and it is anticipated it will increase with the construction of the BBQ/toilet facilities at the top of the toboggan area.</p> <p>Thredbo downhill mountain biking and walking Monitoring of the downhill mountain bike trail at Thredbo was undertaken during December 2011 and February 2012. Monitoring includes walking the trail and recording soil erosion, vegetation damage and weed location. This data is then compared over time. The trail was eroded on steeper sections from high rainfall events, however areas of slopes which met International Mountain Bike Association Guidelines remained in better condition. Tread ware and water movement through areas of native vegetation continues to be an issue and will be a priority for track remediation particularly where tree roots are exposed.</p> <p>Thredbo's bushwalk program is ECO Certified. The walks guide manager maintains a register of walks, noting any issues with walks both within the Thredbo lease area and in the KNP main range itself. The ECO Certification process for the walks program captures many aspects of the walk and environment which Thredbo uses to both improve the program and the condition of the environment.</p> <p>Snowtubing at Perisher The Tubetown facility at Piper's Gap is located on an ecologically endangered plant community, known as bog. To protect the bog, a minimum of 300 mm of snowcover is required prior to accessing the area or operating Tubetown. Operationally, a cover of less than 300 mm is not feasible for running the facility, given the open pools and wet nature of the bog. Perisher staff measure the snowcover prior to accessing and establishing the facility. Snowmaking in the vicinity of the site allows a sufficient cover of manmade snow to be established and groomed early in the season, to form access tracks as well as the tubing slopes. Permanent on-site storage structures and the lift hut mean that very few trips are needed in and out of the site to setup the facility and close it down at the end of each winter season. Access for grooming is available via the disturbed route above the tubetown facility, from the concrete North Perisher access road. During low snow periods, a grooming machine is left onsite to eliminate the need for daily access.</p>	<p>→</p>



Welcome sign, Selwyn Snowfields (Photo: Virginia Logan), Downhill mountain bike trail at Thredbo Village (Photo: Mel Schroder) and Snowtubing at Perisher Valley (Photo: Helen Smith)

Resort amenity

Objective

To conserve and enhance the existing amenity of the alpine resorts.

Key Performance Indicators

Am1	Education, awareness and promotion of resort amenity.
Am2	Measures to protect the visual and acoustic environments within resorts and minimisation of any impacts to the neighbouring areas.



Thredbo Village
(Photo: Dave Woods)

Performance and trend

Table 10: Amenity performance and trend

Indicator	Environmental performance 2011-12 / Management response and review	Performance trend over 12 months
Am1	<p>Thredbo included visual amenity awareness information in the induction training to 100% of new staff and 95% of returning/full time staff. There are several slides in this training module that specifically mention the reason why ski resorts have waste enclosures ("we take pride in the amenity of the resort"), 'Bin Your Butts' campaign and littering - with the maxim "Anything that I walk past, I accept" as the tag line.</p> <p>Selwyn actively participates in the 'Bin Your Butt' campaign and are considering implementing a "Smoke Free Workplace" in 2012. Selwyn promotes the improvement of the amenities through their website as part of the regular updates on the 'Cool News' feed.</p> <p>Perisher's e-book (Environment section) training includes preventing water pollution and spills, preventing litter and promoting recycling, and is completed by all staff annually.</p>	→
Am2	<p>Perisher</p> <ul style="list-style-type: none"> For the first time in 2011, sound (speakers) was added to the Front Valley Slopestyle terrain park for the enjoyment of guests. This was established as a trial, however no complaints were received from the public in relation to the matter, so the speakers will remain for future use. The annual Perisher Clean Up Day was held over two days with participation by both Perisher resort and NPWS staff. New bins were developed at Guthega improving the visual aesthetics of the village. A waste collection service was established for Perisher Valley and Smiggin Holes. This service reduced the number of individual oversnow trips transporting waste to the central collection bins. In conjunction with the collection service, NPWS produced a waste receptacle guideline and a number of lodges have already installed new waste huts. Waste huts reduce the potential of windblown or animal spread litter and reduce the number of unsightly skip bins around the resort. To improve the entry to Perisher Valley, the earth batter in front of the Fire Station and opposite the NPWS building was landscaped with 1000 native plant species. <p>Thredbo has design guidelines for building development that address matters such as architectural style and colours and has a signage policy in place that limits all signage. Thredbo staff also undertake daily litter pick up patrols of the carparks and public areas.</p> <p>Charlotte Pass Village established new style waste and recycling bins improving the visual aesthetics of the village and appropriate disposal of waste. On 3 November 2011, CPV held its inaugural Charlotte Pass Clean Up Day. CPV and NPWS staff collected a total of 2.5 m³/200 kg of rubbish from the chair lines, ski runs, Kosciuszko Road turning circle and Mt Stillwell.</p> <p>Selwyn commenced the first stage of a two stage development of an amenities / BBQ area at the top of the toboggan slope (near the ski hire building), with the plan to build the BBQ site before the commencement of the 2012 winter season. The amenities area is modelled on surrounding buildings and is in keeping with the need to blend into the environment. A natural colour palate has been used along with stone and natural materials to compliment the surroundings. The BBQ area will include vending machines and first aid facilities. It will benefit not only winter visitors to the area, but also visitors passing through in summer. The second stage, the amenities toilets, is due to commence construction in the summer of 2012-13. Selwyn maintains a bi-annual 'clean up' of the resort to minimise the impact on the surrounding area, along with daily 'litter patrols' of the resort during winter operation to reduce the flyaway rubbish floating into surrounding bushland.</p>	↑

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