



DEPARTMENT OF PLANNING, INDUSTRY & ENVIRONMENT

# NSW Alpine Resorts Environmental Performance Report 2016–2019



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Cover photo: Frozen snow gum (*Eucalyptus pauciflora*) above Charlotte Pass Snow Resort in Kosciuszko National Park. Photo: M Hopkins/CPSR.

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# Foreword

Kosciuszko National Park (KNP) is home to four alpine resorts in New South Wales (NSW) – Perisher, Thredbo, Charlotte Pass and Selwyn. In total the alpine resorts cover a combined leased area of just under 3000 hectares within the largest national park in NSW and contain internationally significant natural values, including restricted habitats of threatened species and endangered ecological communities.

The National Parks and Wildlife Service (NPWS) is responsible for the implementation of the Kosciuszko National Park Plan of Management (KNPPOM) (DEC 2006). NPWS maintains an oversight of environmental management within KNP and is obligated to ensure all operators within KNP undertake environmental management, monitoring and reporting appropriately and in accordance with the KNPPOM.

This Alpine Resort Environmental Performance Report has been prepared by NPWS in collaboration with the four ski resort operators of Charlotte Pass Snow Resort, Kosciuszko Thredbo (Thredbo), Perisher, and Selwyn Snow Resort (Selwyn).

This report demonstrates a commitment to the environment from the ski resort operators. This commitment is shown through the:

- ongoing monitoring of the biological and physical water quality conditions of the resort streams
- implementation of measures to reduce air and noise pollution and improve scenic quality
- ongoing improvements to the sustainable management practices surrounding water conservation, energy conservation and waste minimisation
- ongoing management of biological waste volumes treated at each of the sewage treatment plants in the park
- timely management of pollution incidents and the implementation of appropriate improvement actions.

NPWS would like to thank the resort operators for their willingness to work collaboratively with NPWS to ensure the significant environmental values of KNP are maintained. Together we can strive for continuous improvement in our environmental management of the resorts to maintain this pristine environment for generations to come.

Mick Pettitt  
Director  
Southern Ranges Branch  
NSW National Parks and Wildlife Service  
Department of Planning, Industry and Environment



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## Executive summary

The environmental performance of the alpine resorts within Kosciuszko National Park (KNP) is imperative in maintaining the pristine environments they operate within. This *NSW Alpine Resorts Environmental Performance Report 2016–2019*, for the three-year period between 1 March 2016 and 28 February 2019, combines information provided to the NSW National Parks and Wildlife Service (NPWS) by the four ski resort operators in their annual environmental performance reports. Information has also been obtained from the NPWS Perisher Team who operate municipal services within Perisher alpine resort, NPWS Resorts Environmental Services Team (REST) and from the club and commercial lodges (Perisher lodges) that operate in Perisher alpine resort via NPWS leases.

In accordance with management objective 12.1.1.8 of the Kosciuszko National Park Plan of Management (KNPPOM) the key environmental reporting for the resorts is in relation to:

- water quality monitoring results
- measures applied to reduce air and noise pollution and improve scenic quality
- water conservation, energy conservation, waste minimisation, reduction in light spillage and scenic quality enhancement results
- human waste volumes treated at each of the sewage treatment plants
- quantities of rubbish and recyclable material collected and its ultimate destination
- remediation progress at contaminated sites
- information relating to the nature of pollution incidents, how they have been managed, and the corrective action taken to prevent their recurrence.

The performance of the resorts in relation to Chapter 12 of the KNPPOM is summarised in Table 1.

The key to the performance trend is:



**significant improvement:** this can be due to a single event or a steady upward trend



**no significant change:** this can mean the objective continues to be achieved or may mean continued impairment or poor performance during the reporting period



**decline in performance:** this can be due to a single event or a steady downward trend.

**Table 1 Summary of NSW alpine resorts environmental performance 2016–2019**

Annual report requirement	Section in this report	Environmental performance 2016–2019	Performance trend		
			2016–17	2017–18	2018–19
Water quality monitoring results	Section 2	There were fluctuations in biological health and water quality within all sites (including control sites) during the reporting period. Alpine resorts are continuing to work on improving water quality on an annual basis.			
Measures applied to reduce air and noise pollution and improve scenic quality	Sections 8 and 9	Alpine resorts are continuing to implement a range of proactive measures to maintain air quality, reduce noise pollution and improve scenic quality.			
Water conservation, energy conservation, waste minimisation, reduction in light spillage and scenic quality enhancement results	Sections 2, 3, 7, 8 and 9	Alpine resorts have demonstrated their commitment to improving their energy and waste management through a range of implemented initiatives. Water conservation and waste reduction is a key focus area for improvement over the coming years.			
Human waste volumes treated at each of the sewage treatment plants in the park	Sections 4 and 9	Human waste volumes treated at each of the sewage treatment plants is monitored according to the respective Environmental Protection Authority (EPA) licence parameters by the alpine resorts and NPWS.			
Quantities of rubbish and recyclable material collected and its ultimate destination	Sections 3 and 9	Each alpine resort is responsible for the management of rubbish and recyclable material and its ultimate destination. All alpine resorts are managing their waste with the increasing number of visitors each year. Waste minimisation techniques are regularly implemented, and alpine resorts are actively participating in waste reduction programs.			
Remediation progress at contaminated sites	Section 6	Potential for contaminated sites in the alpine resorts typically occurs around underground petroleum storage systems (UPSSs). There have been no major contamination events from UPSSs reported and all recommendations from the UPSS decommissioning reports are followed up to ensure they are implemented. However, it is timely with the introduction of new regulations in 2019 that auditing is undertaken by NPWS for future reporting periods.			
Information relating to the nature of pollution incidents, how they were managed, and the corrective action taken to prevent their recurrence	Section 5	Various pollution incidents have occurred in the alpine resorts throughout the reporting period, the majority relating to small hydrocarbon spills. All minor spills appear to have been managed in a timely and appropriate manner. Several major incidents relating to the sewage treatment plants occurred during the reporting period, some resulting in prosecution. NPWS, the alpine resorts and the EPA are working together to avoid any further incidents.			



# 1. Introduction

The NSW Alpine Resorts Environmental Performance Report 2016–2019 for the period 1 March 2016 to 28 February 2019 provides a summary of reporting against the environmental quality requirements as outlined by section 11.6 and Chapter 12 of the KNPPOM across the alpine resorts in KNP (see location map in Figure 2). The report combines the information provided to NPWS by resort operators, via their annual reporting framework, for the three-year period between 1 March 2016 and 28 February 2019; as well as from NPWS and independent operators. To the best of NPWS’s knowledge, information has been provided in good faith, as true and correct.

Previous environmental performance reports have combined information from NPWS and Charlotte Pass, Perisher, Thredbo and Selwyn alpine resorts and reported against nine objectives and 33 key performance indicators (KPIs). These KPIs were compiled in 2012 and are based on the KNPPOM and policy objectives outlined in the Perisher Ranges Resort Environmental Management System (PRREMS).

This annual environmental performance report for 2016–2019 has been adapted to align with the specific KNPPOM requirements for annual reporting as outlined in Chapter 12, Management Objective 12.1.1.8 (see Table 2). This is interlinked with the environmental quality section 11.6 of the KNPPOM. Environmental quality refers to the natural attributes and parameters that lead to the environmental character and sustainable use of KNP. These have been identified as:

- water quality
- water consumption
- soil contamination
- waste generation
- energy consumption
- air pollution
- light pollution
- noise pollution, and
- scenic quality.

The change in reporting approach has been adopted to enable a concise summary of key environmental quality objectives as set out in section 11.6 for the alpine resorts; as is required under Chapter 12 of the KNPPOM. Aligning the environmental performance report to section 11.6 and Chapter 12 of the KNPPOM retains the integrity and permits NPWS and the alpine resorts to simplify their annual reporting framework in accordance with the KNPPOM. For example, in 2018 the alpine resorts participated in the triennial State of the Parks reporting, which is an extensive reporting framework based on the natural and cultural values and conditions of parks. This information will soon be publicly available through the State of the Environment reporting and will cover all of the national parks across New South Wales. NPWS and the alpine resorts are seeking to enhance their environmental management systems and further improvements may be considered in future years.

In addition to the specific requirements for reporting in the KNPPOM, this report also includes details on the ongoing collaborative environmental management and regulatory work that the NPWS Resorts Environmental Services Team (REST) undertakes within the alpine resorts.

**Table 2 KNPPOM annual reporting requirements 2016–2019**

KNPPOM section	NPWS requirement
Chapter 12 Management Objective 12.1.1.8	<p>Report annually on environmental quality based on reporting associated with all environmental management systems that apply to the park (Chapter 16 of POM). With respect to environmental quality, include in the report:</p> <ul style="list-style-type: none"> <li>• water quality monitoring results</li> <li>• measures applied to reduce air and noise pollution and improve scenic quality</li> <li>• water conservation, energy conservation, waste minimisation, reduction in light spillage and scenic quality enhancement results</li> <li>• human waste volumes treated at each of the sewage treatment plants in the park</li> <li>• quantities of rubbish and recyclable material collected and its ultimate destination</li> <li>• remediation progress at contaminated sites</li> <li>• information relating to the nature of pollution incidents, how they were managed, and the corrective action taken to prevent their recurrence.</li> </ul>



**Figure 1 Silver daisy. Photo: J Morrell/DPIE**



Figure 2 Location map

## 2. Water

This section reports on environmental quality as per section 11.6 and Chapter 12 of the KNPPOM, which specifically requires the inclusion of water quality monitoring results and an outline of water conservation efforts.

The alpine streams in the KNP are located near the top of water catchments and provide water for lower catchment use including domestic, agriculture and hydro electricity generation. These water catchment areas also support endemic and threatened vegetation communities, which includes a rich diversity of in stream and terrestrial biota. The alpine resort operations were they not managed appropriately could potentially impact on both the availability of water resources and the biodiversity of the streams. NPWS and the resorts are required to monitor water quality and consumption in accordance with regulatory requirements. A summary of the findings of water quality monitoring is provided below.

### 2.1 Water quality monitoring

#### Resort stream health

Biological and physical water quality monitoring is undertaken at the Thredbo River (Thredbo alpine resort) and the Spencers, Pipers, Rock, Perisher, Diggers, Farm and Sawpit creeks (Perisher and Charlotte Pass alpine resorts). Monitoring reports provide a river health card based on how the water quality measurements compare against the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG 2018); that is, temperature, turbidity, total dissolved solids, electrical conductivity, pH and dissolved oxygen.

There is no water quality monitoring that occurs at Selwyn ski resort as it does not have a stream in or adjacent to the resort area that permits monitoring. Also, it does not have a reticulated sewerage system (sewer main) and wastewater is managed via a combination of methods: septic system and adsorption trenches, compost toilet system and a pump-out. All reports also provide biological health based on the Australian River Assessment System (AUSRIVAS) model, which measures presence/absence of different species of macroinvertebrates.

A summary of the results from Thredbo, Perisher and Charlotte Pass can be found in the sections below.

#### Thredbo

Ongoing monitoring and management of Thredbo River within the resort area is done by Kosciuszko Thredbo Pty Ltd. The biological and physical condition of the Thredbo River environment is monitored by the University of Canberra Institute for Applied Ecology four times each year (February, May, August and November). A summary of the findings from the reporting period can be found below; it should be noted that results are highly variable over seasons and years:

- The sampling sites downstream of the village and the sewage treatment plant (STP) showed consistently elevated levels (outside guideline levels) of total nitrogen, nitrates and nitrites during most sampling events, with the exception of November. The sites upstream and immediately below the village also showed elevated levels of nitrates in the May and August sampling periods.
- Nutrients (specifically total nitrogen and nitrates) continued to fluctuate over the reporting period at the three sites downstream from the village. This is likely due to their proximity to the village and the location of the lower two sites downstream of the STP.
- pH, electrical conductivity and turbidity varied throughout the reporting periods, with fluctuations occurring over all four monitoring sites.

## Perisher and Charlotte Pass

The biological and physical condition of the waterways with potential to be influenced by the Charlotte Pass and Perisher alpine resort areas is monitored by NPWS in conjunction with the Environment, Energy and Science (EES) Group. Bi-annual monitoring occurs at a total of 18 sites within the Charlotte Pass and Perisher alpine resort areas; this is supplemented with additional fortnightly sampling during winter and spring at a further nine sites along Perisher, Pipers, Diggers and Sawpit creeks. A summary of the findings from 2016–2019:

- The sites located along Perisher Creek downstream of the Perisher carpark and the STP consistently showed the most contamination. Elevated levels of total nitrogen, nitrous oxides and ammonia were detected, particularly in the autumn monitoring events. The sources of these levels may have been naturally occurring; however, they do warrant further investigation. Macroinvertebrate indices continue to fluctuate across all seasons at all sites with the exception of the site 100 metres downstream of the STP.
- Rock Creek had an elevated level of total nitrogen at one site downstream of the water supply weir in autumn 2016 and 2017, and for sites located above and below the weir in spring 2017. Total phosphorus was elevated in the sampling sites above and below the weir in autumn 2017. One downstream site had more than two times the ANZECC guideline level; this improved closer to the baseline and control site conditions during 2018. During 2018, all five sites along Rock and Perisher creeks displayed elevated levels of total nitrogen in autumn, with most showing improvements closer to guideline levels during the spring. Macroinvertebrate counts continued to be below the baseline and control site conditions at all sites, except for the site 100 metres downstream from the STP in the 2018 monitoring period.
- Pipers and Smiggin creeks sites, above and below the water supply weir (on Pipers Creek) and above and below the resort area (on Smiggin Creek) displayed elevated nitrogen levels for the 2016 autumn sampling event and for all sampling events in 2017 and 2018. Total phosphorus was elevated at all sites for the 2017 autumn monitoring event, but showed improvements at most sites in 2018, with all but two sites (below the water supply weir on Pipers Creek and Smiggin Creek below Kosciuszko Road) recording levels being within guideline levels. Spikes in salinity, nitrogen oxides and ammonia were noted in Smiggin and Pipers creeks. The potential contributing factors were: snow clearing and salt application on Kosciuszko Road; loose surfacing on ageing carparks; the absence of stormwater management and pollutant traps; bare earth areas; old sewer pipes; and litter. Macroinvertebrate counts within these streams subsequently scored below the NSW AUSRIVAS guideline.
- Spencers Creek showed elevated total nitrogen and nitrogen oxides in the autumn sampling events, with all levels recovering over the winter period. The autumn 2017 sampling events noted elevated levels of total phosphorus and turbidity at all sites; while the spring monitoring showed elevated total nitrogen across all sites. The macroinvertebrates showed a decline in condition between the autumn and spring events, indicating a potential seasonal influence on populations. Water quality from the spring 2018 sampling indicates that nutrient concentrations in Spencers Creek, which possibly had been elevated due to a discharge from the Charlotte Pass STP, had then returned to the baseline and control site conditions. A trend of slightly elevated nutrients downstream from the STP discharge remains, but in most cases, except for total nitrogen, the nutrient concentration was within ANZECC guidelines.
- The Farm Creek sites (Guthega) showed total nitrogen and phosphorus levels as being slightly above the ANZECC guideline levels. Total nitrogen has shown some variability since 2010 but there does not appear to be a strong temporal or seasonal trend. There was a total phosphorus spike in autumn at the sites located above and below the water supply weir. This was measured at more than twice the trigger value of guideline levels; however, the concentration levels returned to be within guideline levels during subsequent monitoring. This followed a similar pattern to the 2016 results for both sites,

suggesting there may be some seasonality to total phosphorus concentrations of Farm Creek. All other parameters were mostly equal to or better than reference conditions with very minor variations.

- Sawpit Creek was consistent in displaying elevated levels of total phosphorus, total nitrogen and electrical conductivity across all three sampled sites, with this including up and downstream of the Ski Rider Motel and downstream of the STP. Turbidity levels were also elevated across all sites for 2017. The continued impairment of all these sites will require further investigation.



**Figure 3** Snow push from the Perisher carpark into the Perisher Creek  
Photo: T Scanlon/DPIE

## 2.2 Water conservation

Water conservation in the resort operators' premises and on ski slopes is dependent upon interrelated factors that include visitor numbers and behaviour, infrastructure, maintenance, weather conditions and the extent of snowmaking.

The ski resort operators and NPWS are committed to increasing the sustainability of the alpine resorts through campaigns aimed at reducing water consumption. The ski resort operators have implemented initiatives such as:

- installation of low flow showers, waterless urinals, dual flush toilets and water efficient washing machines at Thredbo and Perisher
- participation in a Waterwise program. Thredbo currently works in conjunction with local stakeholders to promote water conservation within the resort
- addition of mulch to landscaped and rehabilitated sites, which reduces the summer watering requirements.

## 2.3 Management response and review

- The measured elevated water quality parameters and fluctuations of macroinvertebrate populations indicate impairments of the Rock and Perisher creeks at Perisher; Pipers and Smiggin creeks at Smiggin Holes; and Sawpit Creek that warrant investigation. This should assist in determining the point sources of pollutants and enable effective management measures to be developed.
- It is also recommended that further upstream and downstream monitoring of the Thredbo River be conducted to increase the extent and frequency of monitoring in the vicinity of the Thredbo village. An expanded program would provide for further investigation of the elevated water quality parameters within the Thredbo River. Increased water monitoring will also provide background monitoring data to assist with the identification of contamination sources and the development of additional water quality controls.
- The asphalt removed from carpark surfaces, an unintended consequence of snow clearing activities, remains an ongoing issue for the resorts and NPWS. The Perisher snow clearing manual has been reviewed, with additional snow stockpile areas identified to minimise potential impacts in the waterways and riparian areas. This will require NPWS to continue to monitor the stockpiled snow sites.
- Further investigation by NPWS in consultation with Transport for NSW (TfNSW) should continue into the use of salt on the main roads of Kosciuszko Road and Alpine Way by TfNSW and the effect on the water quality.

### 3. Waste

This section reports on environmental quality as per section 11.6 and Chapter 12 of the KNPPOM; specifically, the quantities of collected rubbish and recyclable material and their ultimate destination.

Ongoing management of solid waste generated within the alpine resorts is linked to the levels and availability of recycling and reuse of materials. NPWS and the ski resort operators are working at increasing the levels of recycling within the alpine resorts and have implemented various waste minimisation improvements during the reporting period.

#### 3.1 Waste production

Each ski resort operator monitors their waste production including the destination of waste produced. The main waste collection streams include general garbage to landfill; paper and cardboard recycling; glass bottles, cans and plastic recycling; and cooking oil recycling. Ski resort operators report further waste information based on their specific waste management practices and methods of disposal.

General waste will fluctuate depending on visitation numbers and the amount of construction activity in the alpine resort areas. It is noted that within the alpine resort areas individual lodge construction projects are managed separately to the ski resort operations and the contractors are required to remove and dispose of any waste generated by their development. Information about such waste is not reported to the ski resort operators.

#### Thredbo

Thredbo's general waste is disposed of at Snowy Monaro Regional Council's Cooma Landfill facility. Recycling materials are transported to a commercial recycler and processed for further use. Scrap metal is collected and either reused on site or is transported to Cooma for recycling. Some food organics are composted on site with the current organics recycling program targeting village restaurants and lodges with commercial kitchens. An overview of Thredbo's waste production is provided in Table 3 with the overall trend one of decrease in the total waste tonnes and a decline in organic tonnage.

**Table 3 Thredbo resort waste figures (tonnes)**

Waste type	2016–17	2017–18	2018–19
Putrescible	586.68	643.18	597.25
Building waste	10.01	14.38	1.58
Comingled recycling	158.57	192.00	168.48
Paper and cardboard	68.09	63.14	70.16
Organics	7.24	8.94	5.90
Cooking oil	10,000 litres	11,500 litres	12,000 litres
Steel	24.00	32.79	0.00
Batteries	Not available	Not available	Not available
<b>Total waste tonnes (excluding litres)</b>	<b>854.59</b>	<b>954.43</b>	<b>843.37</b>



## Perisher and Charlotte Pass

Perisher and Charlotte Pass waste is primarily managed by NPWS Perisher Services Team through the waste transfer station at Perisher (apart from commercial bulk or hazardous waste, which is removed directly by the resort operator or individual lodges and their contractors). General waste is disposed of at Jindabyne landfill and recycling is collected by a licensed waste contractor and transported to a materials recovery facility in Canberra, ACT. In some specific areas of Perisher (Perisher Valley and Smiggin Holes) an organic waste collection service operates in winter with this material transported to Sawpit Creek for processing into compost by NPWS. Waste from Blue Cow is managed directly by Perisher ski resort and is transported via Skitube to Bullocks Flat where the general waste, recycling and organics are collected by the Snowy Monaro Regional Council. There are also systems in place at Perisher to recycle waste generated by staff, including electronic waste, mobile phones and printer cartridges.

An overview of Perisher and Charlotte Pass waste production data during the reporting period can be found in Table 4. Overall, there has been a slight decrease in the total waste tonnes collected during the reporting period, made up of a slight decrease in putrescible waste and an increase in comingled recycling.

**Table 4 Perisher and Charlotte Pass resorts combined waste figures (tonnes)**

Waste type	2016–17	2017–18	2018–19
Putrescible	480.13	463.18	470.40
Building waste (Perisher only)	63.00	117.00	Not available
Comingled recycling	116.00	126.34	130.24
Paper and cardboard	45.66	56.18	61.05
Organics	76.00	90.00	72.10
Cooking oil	2.60	12.10	11.90
Steel	Not available	Not available	4.30
Batteries	Not available	Not available	Not available
<b>Total waste (tonnes)</b>	<b>783.39</b>	<b>864.80</b>	<b>745.69</b>

## Selwyn

Selwyn has experienced a decrease in total waste over the 2016–2019 period. Waste management practices are improving and odour during peak seasons has been reduced by using hydrated lime applications in waste receptacles. Monitoring of waste is undertaken by cleaners making regular patrols of areas that are known litter hotspots and bins have been strategically located with high visibility to encourage the responsible disposal of waste.

An overview of Selwyn alpine resort waste production during the reporting period can be found in Table 5. Overall, there has been a decrease in the total waste tonnes during the reporting period. It should be noted that Selwyn does not have overnight accommodation and therefore, the waste data is not a congruous comparison to the other ski resorts.

**Table 5 Selwyn resort waste figures (tonnes)**

Waste type	2016–17	2017–18	2018–19
Putrescible	42.00	42.00	30.00
Building waste	Not applicable	Not applicable	Not applicable
Comingled recycling	Not applicable	Not applicable	Not applicable
Paper and cardboard	1.31	1.33	1.00
Organics	Not applicable	Not applicable	Not applicable
Cooking oil	0.98	0.99	1.20
Steel	Not applicable	Not applicable	Not applicable
Batteries	Not applicable	Not applicable	Not applicable
<b>Total waste tonnes (excluding litres)</b>	<b>44.29</b>	<b>44.32</b>	<b>32.20</b>

## 3.2 Waste minimisation

Increasing visitor numbers to the ski resorts every year is resulting in higher waste production, with this in turn requiring cost-effective waste minimisation practices that can manage the generated waste. NPWS works alongside the ski resort operators and other independent lodges to improve waste management and various campaigns have been undertaken in the reporting period.

### Organic food waste collection

The NPWS Perisher Team undertakes an organic food waste collection program in Perisher Valley and Smiggin Holes that has resulted in food waste being collected from lodges, mixed with woodchip before being composted at Sawpit Creek depot to produce a material suitable for reuse on revegetation projects. In 2016, 55 tonnes of organic waste was collected, with this increasing to 76 tonnes in the 2017 winter collections.

The compost facility is a former landfill site and was chosen for the following reasons:

- good drainage and leachate controls
- established groundwater monitoring wells
- sufficient cleared area to store compost piles over time
- proximity to the resorts and waste source
- containment fencing for pest control.

The future of the composting project will include more resort collection areas and the incorporation of biosolids from septic toilet pump-outs.

### Hey Tosser! campaign

NPWS receives funding from the NSW Environmental Protection Authority (EPA) to run a Hey Tosser! radio campaign to promote litter awareness. In the 2017 winter, radio advertisements targeted people over 18 travelling to the NSW alpine resorts. The advertisements received air-time on regional radio stations at times when people were most likely to be travelling to the snow and at the end of the day were heading back to their accommodation.

In addition to the radio campaign NPWS displayed Hey Tosser! banners in the alpine resorts and other areas of Kosciuszko National Park. Hey Tosser! posters and 'Report a Tosser' cards were distributed at the Snowy Region Visitors Centre and the vehicle entry stations.

The TfNSW roadside variable messaging signs were also used to display litter information during times when the TfNSW road operations were not being conducted. Due to the success of the radio campaign NPWS has continued to fund a stop litter advertising campaign on regional radio.

The waste initiatives were a strategy developed to increase awareness, provide infrastructure and if required to enforce compliance to bring about improvements in the amount of littering in KNP.

### Coverage of waste receptacles

The Department of Planning, Industry and Environment (DPIE), in conjunction with NPWS, requires solid waste development consent conditions be placed on planning permits for construction works. These conditions require the location onsite of lidded waste receptacles to prevent waste from blowing away during strong wind events and at the end of the day.

### Perisher zero waste targets

Perisher is part of the Vail Resorts group and has an 'Epic Promise Commitment to Zero' with the aim of reducing waste to landfill to zero by 2030. This is to be achieved by diverting 100% of the waste from the group's operations to more sustainable pathways. As part of the Vail commitment to eliminate waste from their global operations, the Perisher ski resort has undertaken to:

- improve the recycling and composting program
- engage with vendors to reduce packaging and to source recyclable and compostable products
- work with local resort communities to increase options for reuse and diversion
- increase awareness and engagement with employees and guests through signage, labelling and training.

## 3.3 Management response and review

- Windblown rubbish remains an issue within all resort areas. This is being addressed through additional community awareness initiatives and post-winter clean-up days; however, more work is required in this area by the resorts.
- Improving visitor awareness of the benefits of recycling, to reduce the contamination of waste receptacles, will become a key focus for NPWS in the alpine resorts. This will include further work on improving signage and in positioning bins.
- NPWS Perisher Team have recently acquired a soft plastics baler and this is expected to enhance the separation of waste streams by consolidating soft plastics and diverting them away from landfill. The baler is expected to be in operation by the winter of 2020 and soft plastic bales will be transported to Albury for recycling. Initial collections are likely to focus on the larger Perisher businesses that generate the most substantial amount of soft plastics; but it is also considered likely that these will have the least contamination.
- Alpine resorts will be encouraged to continue to maintain a detailed waste register for the purpose of annual waste tracking.

## 4. Sewage treatment plants

This section reports on environmental quality as per section 11.6 and Chapter 12 of the KNPPOM. It addresses the volume of human waste treated by each of the sewage treatment plants (STPs) in an alpine resort area as well as addressing STP incident management issues.

The management of human waste generated by visitors in KNP poses both water safety and water quality issues. The EPA is the responsible regulatory authority for the STPs within KNP. There are five licensed STPs within the alpine resorts of KNP (including NPWS operated Sawpit Creek STP); Thredbo, Perisher and Charlotte Pass each have an STP.

Biosolids from resort STPs have been diverted to a land rehabilitation project near Berridale and are also used by local farmers for soil conditioning. In accordance with EPA guidelines, the biosolids are directly ploughed into the soil as a fertiliser for stock fodder crops. A summary of the biosolids produced throughout the reporting period from each STP can be found in Table 6.

Selwyn Snow Resort had as a Clivus Multrum composting toilet system and the data below reflects the amount removed from this system.

**Table 6 Resorts biosolids 2016–2019**

STP	2016–17	2017–18	2018–19
Charlotte Pass STP	Not available	58 kilolitres (wet)	64 kilolitres (wet)
Perisher STP	45.8 dry tonnes	40.5 dry tonnes	28.3 dry tonnes
Sawpit Creek STP	1.10 dry tonnes	1.35 dry tonnes	1.98 dry tonnes
Bullocks Flat STP	Not available	92.64 kilolitres (wet)	65 kilolitres (wet)
Thredbo Village STP	22.60 dry tonnes	20.82 dry tonnes	53.61 tonnes
Selwyn	6.51 tonnes (0.01 tonnes of urea acid waste)	6.21 tonnes (0.01 tonnes of urea acid waste)	17.70 tonnes (0.01 tonnes of urea acid waste)

### 4.1 Sewage treatment plant incidents

Annual reports submitted to the EPA for Perisher, NPWS, Charlotte Pass and Thredbo STPs reveal various non-compliances with the environment protection licences (EPL) issued under the *Protection of the Environment Operations Act 1997* (POEO Act). An outline of these non-compliances is provided below.

#### **Kosciuszko Thredbo Pty Ltd, Thredbo Village Sewage Treatment Works (STW) EPL no. 1599:**

- Thredbo Village STW had four non-compliances during the 2016–17 period. These were for exceeding the total load limits for total nitrogen and suspended solids. The total discharge volume was also over the limit for two consecutive days.
- During the 2017–18 period four non-compliances with EPL no. 1599 occurred at Thredbo. These were related to three instances of elevated ammonia levels over the concentration limit and one instance of exceeding volume discharge.
- In 2018–19 there were three non-compliances of EPL no. 1599; one incident where the load limit for suspended solids was above the licence limit and two incidents where the concentration limit for phosphorus (total) was above the 90th percentile concentration limit.

### **NPWS, Perisher Sewage Treatment Plant (STP) EPL no. 1797:**

- During 2016–17 the Perisher STP had six non-compliances that involved exceeding concentration limits, and an overflow of sewage from two non-licensed points after a significant rainfall event.
- In 2017–18 the Perisher STP had significant non-compliances on six occasions relating to elevated ammonia and total nitrogen levels discharged into Perisher Creek between June and August 2017. This was found to be due to an insufficient feed program prior to winter that resulted in the STP not having the capacity to effectively treat nitrogen loads that were subsequently experienced on the ski season opening weekend and in the July school holiday period. NPWS was prosecuted by the EPA for these non-compliances, with the findings being that while the incidents caused limited environmental harm NPWS had not been as comprehensive as reasonably practicable in preventing the harm. Significant measures have been implemented by NPWS to prevent a recurrence.
- The performance of the Perisher STP over 2018–19 was significantly better than the previous year with only two non-compliances with EPL no. 1797. These were for exceeding the concentration limits for phosphorus (total).

### **Perisher Blue Pty Ltd, Bullocks Flat Terminal Sewage Treatment Plant (STP) EPL no. 2274:**

- For 2016–17 and 2017–18 Bullocks Flat STP had a total of 75 non-compliances with their EPL. These were for exceeding the concentration limits for suspended solids, biological oxygen demand, ammonia, total nitrogen, total phosphorus, and faecal coliforms.
- During 2018–19 Bullocks Flat STP had nine administrative non-compliances with their EPL. Newly added faecal coliform monitoring at monitoring points 3 and 4 was not conducted due to an error in the sampling chain of custody form.
- A POEO Act Section 91 notice for a 'clean-up action' was issued to Bullocks Flat STP on 23 August 2018. The notice stated that a pollution incident had occurred due to a level of ammonia that exceeded the licence limit (above the 90th and 100th percentile concentration limit stated within EPL no. 2274). Additional samples were taken by Perisher Blue Pty Ltd with all the actions outlined by the notice being implemented by October 2018.

### **NPWS, Sawpit Creek Sewage Treatment Plant (STP) EPL no. 447:**

- During the 2016–2017 reporting period, a total of four non-compliances with the EPL occurred at the Sawpit Creek STP. The 100th percentile concentration limit for nitrogen (ammonia) was exceeded on one occasion and the 90th percentile concentration limit for total suspended solids was exceeded on three occasions. Appropriate action was taken by NPWS to address these non-compliances.
- Four exceedances of the 90th percentile concentration limits occurred during the 2017–19 reporting period, two involving total suspended solids and another two involving total phosphorus.
- The 2018–19 period did not record any licence discharge limit non-compliances.

## **Charlotte Pass Snow Resort Pty Ltd, Charlotte Pass Village Sewage Treatment Plant (STP) EPL no. 1591:**

- Two non-compliances occurred at Charlotte Pass Village STP during 2016–17. High faecal coliform concentration resulted due to a major flood that increased discharges and damaged the sewage treatment plant sludge digester.
- During the 2017–18 reporting period one non-compliance occurred due to the mishandling of samples. Only eight of nine required samples were collected during a fortnightly sample period.
- Four non-compliances occurred during 2018–19 including one non-compliance for a high pH and three non-compliances for exceeding faecal coliform limits at monitoring point 2. A POEO Act Section 58 notice was issued that varied the licence conditions to include a pollution reduction program (PRP) based on recommended STP upgrade works.

### **4.2 Management response and review**

In response to the poor performance of the Perisher STP during the 2017 winter, NPWS completed a review at the request of the EPA that included:

- A capability assessment and robustness review assessed the ability of the STP to meet the current design load and that of future predicted loads. The review concluded that the treatment plant was adequately designed for its rated treatment capacity but did note that raw sewage being processed by the treatment plant during the 2017 and 2018 ski seasons deviated from the design parameters due to the peak concentrations caused by day-visitors over the weekends. The report has recommended additional modifications to the STP to improve its operability.
- A review into the management practices and operational resources found that resourcing was appropriate but recommended retaining an external consultant to provide advice on an as-needs basis. It was also recommended that an operations and maintenance financial budget be adopted that was appropriate for the scale of the operations. The review also recommended consolidating some standard operating procedures and updating certain documents in the operations manual.
- An evaluation of sewage treatment technologies was undertaken to assess the suitability of the currently in-use technologies. The conclusion was that the STP could operate within its licence conditions but there was scope for improvement in the robustness and ease-of-control of the current systems.
- An environmental risk assessment was conducted to assess each aspect of the treatment process, with this ultimately leading to additional control measures aimed at minimising potential environmental risks.

NPWS and the alpine resorts will continue to work on improving the management of the STPs in a manner that reduces the number and frequency of non-compliances.

## 5. Pollution incidents

This section reports on environmental quality as per section 11.6 and Chapter 12 of the KNPPOM. It includes information about pollution incidents and the corrective action taken, and how incidents were managed with a view to preventing a recurrence (see also section 4 for STP incidents).

The resorts have a commitment to prevent leaks, spills and unlicensed discharges, and to manage isolated incidents where they occur in an environmentally sensitive manner. The main sources of potential pollution in resorts are:

- transportation, storage and use of hydrocarbons
- operation and management of STPs
- stormwater runoff from roads and carparks
- vehicles including snow grooming machines
- waste and litter.

The tables below outline the nature of pollution incidents across the reporting period. Most incidents are of a minor nature and involve a small amount of clean-up, causing no material harm to the environment.



**Figure 4** Incorrect storage of lead batteries and petroleum products.  
Photo: P McCarthy/DPIE

**Table 7 Pollution incidents recorded in NSW alpine resorts 2016–2019**

Nature of incident	Summary of incidents	Approx. number of incidents and significance	Incidents closed	Management and corrective actions
Hydrocarbon spills and contamination	Hydraulic hose breaks and diesel leaks from minor breakdowns of snow grooming machines resulted in the spilling of hydrocarbons on snow. All individual incidents were <20 litres.	39 minor	Yes	Spills mostly occurred on snow and were contained using spill kits and S200 OilGone (encapsulates hydrocarbons). All contaminated snow was transported to workshops and processed through workshop filtration systems. No further actions required.
	Blown/broken hose, 30–50 litres spilt, various locations	1 moderate	Yes	Spill kit deployed, S200 applied, collected impacted snow and melted through workshop filtration systems to retrieve hydrocarbons. No further actions required.
	Minor hydrocarbon issue caused by flooding within Blue Cow workshop	1 moderate	Yes	Spill kit deployed and drains cleared. No further actions required.
	Hydrocarbon sheen from Mt Perisher workshop	1 moderate	Yes	S200 applied and spill cleaned appropriately. No further actions required.
	Long-term minor leak from Perisher chairlift	1 moderate	Yes	Soil collected, treated with S200 and turned over six-month period. No further actions required.
	Main hydraulic hose failure (Cat 966 loader), 60 litres of oil spilt	1 moderate	Yes	Spill kit deployed and S200 applied. Snow collected for disposal. No impact to waterways. No further actions required.
	Minor oil spill on train platform at Bullocks Flat	1 minor	Yes	Spill kit deployed and spill cleaned appropriately. No further actions required.
Paint flaking	Paint flaking from terrain park features	1 minor	Yes	Site inspected. No further action required.
Water leak/egress	Excessive water consumption in quad chair building, leaking toilet	1 minor	Yes	Leak repaired. No further action required.
Litter complaint	Guest complaints about litter	3 minor	Yes	Minor. Three separate litter incidents. Cleaned up appropriately by staff.
<b>TOTAL</b>		<b>50 incidents</b>		



**Table 8 Pollution incidents recorded in NSW alpine resorts 2017–2018**

Nature of incident	Summary of incidents	Approx. number of incidents and significance	Incidents closed	Management and corrective actions
Hydrocarbon spills and contamination	Hydraulic hose breaks and diesel leaks from minor breakdowns of snow grooming machines resulted in the spilling of hydrocarbons on snow. All individual incidents were <20 litres.	49 minor	Yes	Spills mostly occurred on snow and were contained using spill kits and S200 OilGone (encapsulates hydrocarbons). In Thredbo and Perisher all contaminated snow was transported to workshops and processed through workshop filtration systems. Incidents have been closed accordingly.
	Guest vehicle leaking fuel, response by NSW Rural Fire Service, Bullocks Flat	1 moderate	Yes	Responded to by NSW Rural Fire Service. No volume recorded. No further actions required.
	Broken fitting, 50 litres hydraulic fluid spilt, Early Starter	1 moderate	Yes	Spill kit deployed and drains cleared. No further actions required.
	Blown drive hose, 40 litres Hyspin spilt, Toppas ski run	1 moderate	Yes	Spill kit deployed, collected impacted snow and melted through workshop filtration system. No further actions required.
	Cracked fuel tank on snow groomer resulting in diesel spill. The spill occurred over several locations as operator moved it before crack was detected – quad chair and loading dock. Undetermined amount spilt.	1 moderate	Yes	Spill kits deployed, snow collected, pooled spill pumped out by contractor, Pollution Response Plan reviewed, staff training in spill response updated. No further actions required.
	Major diesel spill occurred at the Thredbo snow cat shed refuelling station. Following on from the annual refilling of the UPSS tanks fuel spilled out of one of the tank hatches and into the bunded area (approx. 1350 litres). Approximately 250 litres was uncontained and spilt to surrounding soil. The cause of the spill was a faulty pump valve – when the operators tried to transfer fuel from one tank to another.	1 major	Yes	Bunding was used to contain the spill to the immediate site and 1100 litres were removed from the pump well into fuel drums. The fault was fixed, and the pump fully serviced. All contaminated soil was removed and sprayed with EN2000, covered, bunded and stored for later disposal. No further actions required.

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Nature of incident	Summary of incidents	Approx. number of incidents and significance	Incidents closed	Management and corrective actions
Water leak/egress	Freshwater backwash into STP at Bullocks Flat, no releases to environment	1 minor	Yes	No actions required.
Cooking oil	Cooking oil storage and removal procedures were not adhered to resulting in used (full) cooking oil drums buried under snow not discovered until subsequent snowmelt. Some oil was lost to the surrounding area.	1 minor	Yes	Charlotte Pass Village immediately removed the used cooking oil drums to the Perisher NPWS waste transfer station. Cooking oil removal procedures were updated for the 2018 season to ensure proper temporary storage.
Absorption trench	During winter 2017 at Selwyn there was a failure of the absorption trench	1 minor	Yes	Failure was contained and monitored as it was not possible to repair.
Litter complaint	Guest complaints about litter	3 minor	Yes	Minor. Three separate litter incidents. Cleaned up by staff.
<b>TOTAL</b>		<b>60 incidents</b>		

**Table 9 Pollution incidents recorded in NSW alpine resorts 2018–2019**

Nature of incident	Summary of incidents	Approx. number of incidents and significance	Incidents closed	Management and corrective actions
Hydrocarbon spills and contamination	Hydraulic hose breaks and diesel leaks mostly from minor breakdowns of snow grooming machines resulted in the spilling of hydrocarbons on snow. All individual incidents were <60 litres.	61 minor	Yes	Spills mostly occurred on snow and were contained using spill kits and S200 OilGone (encapsulates hydrocarbons). All contaminated snow was transported to workshops and fed through filtration systems. Incidents have been closed accordingly.  Due to a large number of spills in Thredbo last winter a new system was implemented for winter 2019 with the aim to reduce the likelihood of any spills.
Chlorine leaks	Thredbo Leisure Centre and the sewage treatment plant both experienced chlorine leaks during the reporting period. Both incidents were minor spills/leaks and were cleaned and managed appropriately.	2 minor	Yes	Both incidents were minor spills/leaks and were cleaned and managed appropriately. Leaking equipment at Thredbo Leisure Centre was replaced in March 2019.
Oil spills	Oil spill within workshop at Perisher. Spill entered drain; however, drain led to oil separator and was managed appropriately.	1 minor	Yes	Spill kit to stop remaining liquid entering drain, confirmed with plumber that drain leads to a separator.
	Oil spill in Thredbo's engineering lube bay. Absorbent material used to soak up oil spilt. Minimal oil went into drain that leads to hydrocarbon separator.	1 minor	Yes	Review large number of products stored to reduce numbers to rationalise where possible. Store portable generator sets elsewhere. Dispose of old oils and paint products if no longer required. Renewed shelving.
Cooking oil spill	Minor cooking oil spill at Thredbo Alpine Hotel loading dock	1 minor	Yes	Bag of absorbent peat and absorbent pads used to soak up the oil spilt. Saturated peat and pads put into a bin bag for disposal. Verbal reminder to hotel staff to make sure all oil, chemical and fuel lids are on securely.

Nature of incident	Summary of incidents	Approx. number of incidents and significance	Incidents closed	Management and corrective actions
Desert sand pigment spill	Spill of desert sand pigment within the Thredbo Alpine Hotel loading dock	1 minor	Yes	Attempt by staff to clean up sand using hose, which led to the sand spreading further. Street sweeper was used to clean up all remaining debris. In the future block drains using absorbent socks and find out what the substance is before starting a clean-up.
Sewage reticulation system	Dry weather overflow from the sewage reticulation system at Thredbo	1 moderate	Yes	Line was cleared and overflow stopped. Main line cleaned and investigation conducted via camera to check for damage or other issues.
<b>TOTAL</b>		<b>68 incidents</b>		

## 5.1 Management response and review

- NPWS and the alpine resorts continue to work on the ongoing improvement of environmental management systems to reduce the frequency and severity of environmental incidents.
- NPWS is planning on reviewing and updating its environmental incident management procedures and protocols to improve the ongoing management of corrective actions and the consultation with the resorts.



**Figure 5** Refuelling station near the Perisher Centre, Perisher ski resort  
Photo: P McCarthy/DPIE

## 6. Contamination

This section reports on environmental quality as per section 11.6 and Chapter 12 of the KNPPOM; specifically, remediation progress at contaminated sites.

The potential presence of contaminated sites within the resorts is mainly associated with past or ongoing storage of hydrocarbons and in situ underground petroleum storage systems (UPSSs). NPWS and resorts work alongside DPIE and the EPA to manage the UPSSs within KNP. The following information summarises the current state of UPSSs within the ski resort areas of KNP.

### 6.1 Thredbo

Active UPSS sites are regulated by the new Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2019. In Thredbo this includes the Mountain Cat shed with 100,000 litres of diesel and 30,000 litres of unleaded petrol under storage; and the Thredbo Service Station with two tanks with 25,000 litres of unleaded petrol and one tank of 10,000 litres of diesel. There are also two lodges in the village with UPSS systems storing heating oil and the Thredbo Alpine Hotel has one tank of 600 litres of diesel to be used as a back-up for a generator. Currently UPSS types that are used solely for the storage of heating oil in residential premises and solely used for a back-up generator are the subject of an order under the regulation exempting them from the requirement to have an environmental management plan, leak detection systems and from much of the record keeping provisions. There is a total of 30 identified UPSS sites in the Thredbo resort, belonging to lodges and other sub-lessees.

So far 17 UPSSs have been removed, with this occurring before the validation stipulation of UPSS legislation, and a further 13 UPSSs still require their status confirmed for decommissioning and validation purposes. NPWS, in consultation with Kosciuszko Thredbo, is in the process of following up with all sub-lessees to ensure compliance with the UPSS regulation within its head lease area.

### 6.2 Perisher

Perisher Blue resort operates five UPSS sites containing a total of 16 storage tanks and with a total capacity of approximately 417,600 litres. It also operates one 5400 litre waste oil tank at Smiggin Holes workshop. All UPSSs have in place an automatic tank gauge (ATG) loss monitoring system, leak detection ground monitoring wells and fuel service operation plans (FSOPs). Qualified groundwater consultants undertake six-monthly testing of the leak detection system and scheduled integrity testing occurs every three years. The last integrity testing report in 2019 found all the UPSS sites were operating in compliance with the UPSS regulation.

NPWS also has a UPSS site that consists of one 10,000 litre unleaded petrol tank and one 5000 litre diesel tank. There are an additional identified 35 UPSSs in the Perisher/Smiggin Holes/Guthega region that are the responsibility of sub-lessees. Of these, nine are still active and used for storing heating oil; 16 are removed and either validated or prior to the validation requirement; and a further 10 still require to be confirmed for decommissioning and validation considerations.

### 6.3 Selwyn

During the reporting period Selwyn resort had a 4000 litre diesel UPSS and 4000 litre unleaded petrol UPSS, which were used for snow grooming and resort operations. During the reporting period Selwyn conducted a self-audit with the EPA on the compliance of their UPSSs.

## 6.4 Charlotte Pass

Charlotte Pass UPSS has three 13,000 litre diesel tanks located at the workshop and these are utilised for refuelling over snow transport. Groundwater monitoring conducted in 2018 did not identify any evidence of petroleum hydrocarbon impact to groundwater at the monitoring locations.

## 6.5 Management response and review

- It is imperative that where contamination is identified it is managed in accordance with the new Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2019 and relevant Australian Standards.

## 7. Energy conservation

This section reports on environmental quality as per section 11.6 and Chapter 12 of the KNPPOM; specifically, it deals with energy conservation initiatives and results.

### 7.1 Thredbo

From 2018 in collaboration with Red Energy, Thredbo purchased 9 gigawatt hours of renewable energy per year, equivalent to the electricity consumed by 1500 average homes. Several investigations have been undertaken both into new energy efficient technologies and to confirm existing infrastructure is operating as efficiently as possible.

Thredbo continues an incremental roll-out of energy savings initiatives in the resort such as the installation of lighting and water saving devices. Solar street lighting was installed along Friday Drive in front of the Thredbo Alpine Apartments in 2016. Solar panels have also been installed at the Thredbo Leisure Centre in April 2018. In the first year of generation these were on average able to provide 30% of the venue's electricity requirements.

### 7.2 Perisher

During the reporting period, an audit was undertaken of all lighting at Perisher, with a view to converting to low-energy technologies. Works commenced on the extensive retrofit of current lighting with low-energy alternatives across Perisher's operations. Work is continuing as operational areas are scoped and assessed for inclusion. A purchase of 13 snow groomers were purchased that had low emission technology and the AdBlue emission reduction additive.

Perisher ski resort also implements its EpicPromise initiative, which is to conserve the natural environment and support the local community towards a sustainable future with community grants, environmental initiatives and educational scholarships. EpicPromise is Perisher's umbrella brand for the company's environmental and community giving efforts. As part of this initiative, Perisher, together with Vail Resorts, has set their sights on zero net emissions by 2030.

### 7.3 Selwyn

Since the installation of two power correction units in 2011–12 for the snowmaking system, Selwyn has been able to regulate and reduce the power used by these snowmaking systems during the winter period. Selwyn has also replaced all inefficient gas heaters and ovens over a four-year period, with six heaters being replaced during the reporting period. Each department has shut-down procedures to ensure no unnecessary equipment is left running overnight to ensure Selwyn remains energy efficient.

### 7.4 Charlotte Pass

Charlotte Pass has committed to a 10-year capital investment program of \$10 million that includes providing for a range of initiatives to improve the environmental performance of the resort. These include upgrades to the STP that will improve the overall energy efficiency as well as a range of other energy efficiency initiatives.



## 7.5 Management response and review

- In accordance with Chapter 12 of the KNPPOM, NPWS and the alpine resorts have put in place a large range of energy conservation measures, displaying their commitment to reducing energy consumption into the future.
- Energy consumption figures will continue to be monitored to ensure energy savings initiatives are being implemented.

## 8. Scenic quality and enhancement, air quality and noise pollution

This section reports on environmental quality as per section 11.6 and Chapter 12 of the KNPPOM; specifically, measures applied to improve air quality and noise pollution in the alpine resorts.

### 8.1 Scenic quality

Unlike other alpine resorts in mainland Australia, in New South Wales the resorts are located within a national park. The three southern resorts are adjacent to some of the most scenic landscapes in Australia. Maintaining the scenic quality of these landscapes is a key objective of the KNPPOM and remains a high priority for NPWS and the resorts themselves.

The alpine resorts, with assistance from NPWS, aim to reduce their impacts to the natural environment via the management of new developments, rehabilitation and landscaping of sites (including weed management), and the management of litter.

Under the planning scheme, all resorts must consider the visual impact of their proposed development when making a development application (DA), particularly if it will be visible from the main range. DAs are required to include a Statement of Environmental Effects, which will consider the impact of the development on scenic values, and any odour and noise intrusion factors. The consent condition of the DA will frame conditions that place obligations on the applicant to mitigate and manage a potential nuisance impact.

All the alpine resorts are proactive in maintaining the landscaped area and ski slopes of the resorts. The restriction on billboard and signage usage in the resorts in KNP is an example of DPIE preventing development from having a deleterious effect on the natural landscape.

#### Thredbo

Thredbo's property department liaises with its sub-lessees in developments to ensure the visual character of the village is maintained; this includes reducing light spillage throughout the resort. Thredbo resort continues to work closely with NPWS on the reduction of waste via campaigns such as the Hey Tosser! radio campaign and by conducting post-winter clean-ups of the village. Thredbo also imposes a restriction on the use of billboards within the village, to assist with promoting the natural beauty of the environment. Thredbo is proactive in maintaining the landscaped area of the resort by being active in rehabilitation and weed management programs; for example, in 2017–18, 3000 native trees, shrubs and grasses were planted. Approximately 10% of these were used as replacement plants for rehabilitated areas. The new plantings were part of a program to reinforce batters and revegetate along the 1B mountain bike trails. In 2017–18, 257 contracted hours of weed control targeted blackberry and holly bushes throughout the village and on the ski slopes.

#### Perisher

Perisher ski resort has a range of rehabilitation project sites that aim to reduce the visual impact of developments. This is complemented by offset plantings and revegetation using native species to assist in improving the natural environment.

NPWS continues to implement the Perisher village rehabilitation and landscape program on previously disturbed sites. This program aims to improve the overall environment by reinstating a connectivity between the existing habitat and the expanding village. It remains a primary focus of NPWS work teams when undertaking municipal services upgrade works.

Achievements in the 2016–18 period include approximately 14,230 plants added to rehabilitation sites. Additional plantings included:

- 390 wet area species planted to replace *Juncus effuses*
- 2650 mixed dry health planted as habitat connectivity on ski slopes
- 200 native grass (poa) tubestock.

Every year Perisher resort, in conjunction with NPWS, conducts a volunteer clean-up after the snowmelt that has been hugely successful in removing large quantities of rubbish discarded in the resort.

## Selwyn

Selwyn Snow Resort conducted the following programs during the reporting period to assist with scenic quality and improve the environment:

- a bi-annual clean-up of the resort to minimise the impact of visual waste within the surrounding area. Daily litter patrols of the resort during winter operations aimed at reducing the possibility of flyaway rubbish entering the surrounding bushland
- a building maintenance program directed at improving the building facades and consequently, the built environment on the natural landscape
- the summer weed management program that provided approximately 75 hours of weed control in strategic locations, i.e. the carpark boundary, building surrounds, and spot spraying of ski runs including racecourses, footpaths and walkways, lift tower bases and the north boundary bushland.

## Charlotte Pass

NPWS over the 2016–2019 period continued implementing the Charlotte Pass rehabilitation plan to disturbed areas that have been a by-product of village development. This program aims to improve the overall environment of the village area by providing a connectivity between the built environment and the natural landscape. This led to approximately 600 plants being added to key rehabilitation sites within the resort.

The resort actively participates with NPWS in programs aimed at promoting an awareness of littering in KNP and the effect of this on the environment; for example, the 'Bin Your Butts' program was successful in leading to Charlotte Pass no longer selling cigarettes within the village.

## 8.2 Air quality

Thredbo has partnered with Greenfleet, a not-for-profit environmental organisation, in planting native forests to offset carbon emissions generated at the resort. Thredbo offsets its carbon emissions from its Kosciuszko Thredbo vehicle fleet via Greenfleet. The program gives guests an option when purchasing chairlift passes to offset their emissions by purchasing a tree for \$4.

Perisher has initiatives in place to manage air quality by incremental improvements of their heating, lighting and energy management systems. Perisher also implements dust management procedures that apply for all construction works.

### 8.3 Noise pollution

All outdoor events such as concerts or festivals are required to complete a Noise Management Statement as part of their planning process. Noise Management Statements address the likely noise level, the potential for intrusive noise to lead to a nuisance for residents and guests, and provide for a complaint register.

The Statement of Environmental Effects, provided as an adjunct to all DAs, requires applicants to address the potential intrusive noise effects of their development and to detail how these are to be managed. If the noise impact is likely to be severe or to impact sensitive receivers, a noise impact assessment report will need to be prepared by a noise consultant.

### 8.4 Management response and review

Some key objectives for each of the resorts to continue improvement in scenic quality, air quality and noise pollution are:

- ensuring colours, materials and machinery used for all new developments are complementary to the existing natural environment and have low emissions ratings and noise impact
- the location planning of new developments must continue to consider scenic quality, environmental enhancement, air quality and noise pollution impacts
- use of natural features for screening developments
- co-location of facilities with existing facilities especially for any telecommunications infrastructure
- continuing landscaping and rehabilitation programs that use native species and comply with the *Rehabilitation Guidelines for the Resort Areas of Kosciuszko National Park* (DECC 2007)
- continuation of weed management programs.

## 9. EarthCheck

### 9.1 Thredbo alpine resort

Thredbo has been partnered with EarthCheck since 2012, a program that aims to improve environmental performance and provides for certification under EarthCheck's destination standard. In 2017 Thredbo gained Silver certification, which has been maintained for 2018 and 2019.

Thredbo provides benchmarking data annually to EarthCheck including information about energy and water usage, waste generation and sustainability policies. EarthCheck then conducts an onsite audit to verify Thredbo's data. The onsite audit provides valuable feedback to Thredbo on ways it can improve its operations.

### 9.2 Perisher lodges

The term 'Perisher lodges' is used to refer to all the ski clubs/lodges, chalets and commercial lodges leased directly from NPWS. Currently there are approximately 121 lodges.

Under the Perisher Range Environmental Management System (PRREMS), which began in the early 2000s, the Perisher lodges have been using EarthCheck for annual reporting of their EMS compliance. NPWS uses EarthCheck as a reporting instrument only with regard to benchmarking against industry standards, but does not undergo an EarthCheck certification process.

Each lodge provides its individual annual report via an online portal and these results are compiled and an 'All lodges report' generated. A summary of the 'All lodges report' for the 2018–19 period is provided in Appendix A, and this provides a summary of environmental performance for the 2016–17 and 2017–18 periods.

### 9.3 Management response and review

- EarthCheck is a leading scientific benchmarking certification and advisory group for the travel and tourism industry. EMS reporting is a requirement under management objective 10.2.1(1) of the KNPPOM.
- Onsite auditing and feedback provides environmental improvements and in view of this continuing the use of EarthCheck is supported. Thredbo is to be commended for achieving Silver Certification during the reporting period.
- NPWS is currently undertaking a review of PRREMS and the EarthCheck online reporting tool used for the Perisher and Charlotte Pass lodges.

## 10. Monitoring, research, rehabilitation and resort community liaison projects

In addition to the specific requirements for annual reporting under Chapter 12 of the KNPPOM, REST is responsible for working with the ski resort operators and others to foster environmental stewardship, community liaison and environmental management for the alpine resort areas of KNP.

### 10.1 Threatened species population programs

The *Saving our Species* (SoS) team within NPWS is primarily responsible for threatened species monitoring and management within the alpine resorts. Annual programs are conducted to monitor the health of threatened species populations including the mountain pygmy-possum (*Burramys parvus*), broad-toothed rat (*Mastacomys fuscus*), Guthega skink (*Liopholis guthega*) and the anemone buttercup (*Ranunculus anemoneus*). The information obtained from monitoring the mountain pygmy-possum and broad-toothed rat populations for 2017–18 and 2018–19 is reported below.

2017–18	2018–19
Mountain pygmy-possum: 190 animals trapped across 5 sites, including 63 at Blue Cow and 38 at Charlotte Pass	Mountain pygmy-possum: 119 animals trapped across 3 sites in southern KNP, including 54 at Blue Cow and 45 at Charlotte Pass
Broad-toothed rat: 5 animals trapped across 3 sites	Broad-toothed rat: 38 animals trapped across 3 sites

Perisher ski resort has delineated a ‘no-go zone’ at Blue Cow ski area that is a known mountain pygmy-possum habitat.

### 10.2 Fauna crossing monitoring

A monitoring program was initiated in 2009 to evaluate the effectiveness of fauna crossings installed within the Perisher resort. The program’s focus was on newly installed crossings and creating artificial habitats. The most recent monitoring in 2017, on a crossing installed as a component of the Freedom quad chair at Guthega, detected a total of 32 animals using these newly constructed areas.

### 10.3 Mountain bike trail monitoring

Monitoring of the mountain bike tracks within Thredbo has been undertaken since 2009, with the program most recently expanded to include the Thredbo Valley Track. The program captures information on the location and extent of erosion, weeds and user related impacts. Findings from the monitoring will assist with ongoing management and directing required maintenance of the tracks.

### 10.4 Research initiatives

NPWS provides access and licence assistance to students from the University of Canberra for the purpose of undertaking research into the effects of road de-icing salts used in 2018–19 in the Perisher and Thredbo valleys.

## 10.5 Pest control programs

The pest control programs currently run within and adjacent to the resorts include the control of foxes, cats and rabbits, which have been identified as primary pests within the alpine resort areas. Strategic fox baiting has been carried out since 1996 and is now coordinated by the NPWS SoS team, in areas adjacent to the alpine resort areas at Thredbo, Charlotte Pass and Perisher. Within the alpine resorts a cooperative trapping program between the resort operators and NPWS for the control of cats and foxes is carried out over both the winter and the summer. Rabbit control is undertaken as a cooperative program between the resort operators and NPWS, and this occurs throughout the summer months using a range of control techniques. In 2018–19 at Thredbo alpine resort approximately 48 hours of rabbit monitoring was undertaken and culminated in the release of the biological control agent RHDV.

The results from specific programs undertaken in 2017–18 and 2018–19 are summarised below.

2017–18	2018–19
50 days of targeted cat and fox control at Perisher and Whites River areas resulted in a total of 5 cats and 11 foxes being removed	50 days of targeted cat and fox control at Perisher and Whites River areas resulted in a total of 4 cats and 2 foxes being removed
Approx. 60 hours of rabbit control at Perisher and Charlotte Pass village areas resulted in 128 rabbits being removed	Approx. 60 hours of rabbit control at Perisher and Charlotte Pass village areas resulted in 104 rabbits being removed

## 10.6 Environmental community liaison projects

REST has initiated the following projects during the reporting period:

- In 2018–19 restoration programs for weed control and plantings were completed at four lodges in Perisher, one lodge in Guthega and one lodge in Charlotte Pass.
- Environmental education programs including displays, workshops, activities and presentations were conducted by the REST Environmental Liaison Officer as part of community annual events, i.e. Snowy Ride, Back to Perisher and Peak Festival.
- REST worked with the Canberra region joint organisation roadside litter program along Kosciuszko Road. As part of the project monitoring of litter was undertaken to assist with future strategies on preventing littering.
- *Resort Roundup* is a newsletter published each summer and winter. The newsletter includes news from resorts and NPWS as well as safety alerts, wildlife and environmental information for the resort community.

Continued assistance and guidance was also provided by REST's Environmental Liaison Officer in the following areas of the alpine resorts:

- Native mammals occupying kitchens, electrical equipment, roofs and under buildings were captured and released. The main capture techniques used were Elliott traps (catch and release) and freeing animals caught up in electrical equipment.
- At Perisher alpine resort assistance was provided with scraping snow from asphalted carparks and the storage of snow created from this action, to reduce the impacts from hydrocarbons, litter, gravel and bitumen in waterways.
- Advice was also provided to lodges and resort operators on reducing fire risk; the establishment of asset protection zones around buildings; and 49 approvals were issued for the removal of dangerous trees and limbs.

REST's Environmental Liaison Officer is also an ex-officio member of the Perisher Historical Society. Over this period the society published *A history of the early development of Perisher-Smiggin* by John Davis and facilitated several events such as the annual dinner at the Australian Alpine and Snowsports History Association Conference and an annual general meeting in May 2018.



## 11. References

ANZG 2018, *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia, available at [www.waterquality.gov.au/anz-guidelines](http://www.waterquality.gov.au/anz-guidelines).









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DEC (Department of Environment and Conservation NSW) 2006, *2006 Plan of Management Kosciuszko National Park (as amended in 2010 and 2014)*, Department of Environment and Conservation NSW, Sydney, available at [www.environment.nsw.gov.au/research-and-publications/publications-search/kosciuszko-national-park-plan-of-management](http://www.environment.nsw.gov.au/research-and-publications/publications-search/kosciuszko-national-park-plan-of-management).

DECC (Department of Environment and Climate Change NSW) 2007, *Rehabilitation Guidelines for the Resort Areas of Kosciuszko National Park*, Department of Environment and Climate Change NSW, Sydney, available at [www.environment.nsw.gov.au/research-and-publications/publications-search/rehabilitation-guidelines-for-the-resort-areas-of-kosciuszko-national-park](http://www.environment.nsw.gov.au/research-and-publications/publications-search/rehabilitation-guidelines-for-the-resort-areas-of-kosciuszko-national-park).











































## Appendix A – All lodges report 2016–2019 summary of results

### SUMMARY OF RESULTS
















 Below the target	 Meets the target	 Exceeds the target	 No quantitative data collected in lodge reports for this target
 Improving	 Steady	 No change	 Declining

PRREMS target	Performance					
	2016–17 performance indicator	Target status	2017–18 performance indicator	Target status	2018–19 performance indicator	Target status
1. Lodges only using local native plants for landscaping						
2. All lodges located in high priority areas on the Perisher Rehabilitation Plan to have rehab plans developed for their lease						
3. No lodges using baits, snares, traps or rat poison as pest control without NPWS approval						
4. 60% of lodges undertaking weed control						
5. 100% of hydrocarbon storage containers compliant and managed appropriately						
6. All redundant hydrocarbon fuel storage tanks decommissioned and sites validated						
7. Zero pollution incidents						
8. 100% of significant incidents reported to NPWS						
9. 100% of incidents managed in a timely manner						
10. 100% of lodges that store chemicals/fuel to have well equipped spill kits						

NSW Alpine Resorts Environmental Performance Report 2016–2019

PRREMS target	Performance					
	2016–17 performance indicator	Target status	2017–18 performance indicator	Target status	2018–19 performance indicator	Target status
11. 100% of lodges that store chemicals/fuel clearly displaying PRREMS Lodge Incident Procedure		✘		✘		✘
12. 100% of grease traps working effectively		✘		✘		✘
13. Reduce amount of CO <sub>2</sub> equivalent emitted per visitor night		✔		✘		✔
14. Less than 10% of lodges using open fireplaces as their primary source of heating		✔		✔		✔
15. Less than 20% of lodges using ODS (ozone depleting substance) appliances		✘		✘		✘
16. Reduce the amount of waste produced						
17. 100% of lodges recycling		✘		✔		✔
18. Recycle more than 50% of total waste		✔		✔		✔
19. Energy use per visitor night to be better than PRREMS lodge sector average (based on 2018 benchmarking report)		✘		✘		✘
20. More than 5% of total energy used to come from renewable sources		✘		✘		✘
21. Less than 200 litres of water used per visitor night		✔		✔		✔
22. More than 90% of lodges implementing water saving measures		✘		✘		✘
23. 100% of lodges regularly inspecting their lease for erosion problems		✘		✘		✘
24. 100% of lodges with erosion issues taking actions to prevent and manage the erosion		✘		✘		✘

NSW Alpine Resorts Environmental Performance Report 2016–2019

PRREMS target	Performance					
	2016–17 performance indicator	Target status	2017–18 performance indicator	Target status	2018–19 performance indicator	Target status
25. 75% of lodges educating guests and staff about PRR cultural heritage values		✘		✘		✘
26. 100% of lodges have lease areas free from excess building materials, equipment, garbage, weeds and other items that negatively affect scenic value		✔		✔		✘
27. 100% of staff EMS awareness trained		✘		✘		✘
28. 100% of organisations with fully implemented EMSs for their operations within Perisher Range resorts		✘		✘		✘
29. 100% of lodge committees annually review and discuss their environmental risks		✘		✘		✘