

Snow Management Policy
Pinnacle Road, Mount Wellington

July 2003



Introduction

The Pinnacle Road Snow Management Policy has been prepared by the Wellington Park Management Trust and the Hobart City Council in response to a desire to improve the management of Pinnacle Road during snow events. Snowfalls are increasing erratic in nature however maintain the potential to disrupt community, maintenance and safety access to Mount Wellington.

The policy was prepared in consultation with user groups and the general community. The policy is based upon a background report prepared by independent traffic consultants, and recommends actions ranging from improvement of operational measures to public awareness of snow safety issues.

Aim

To provide for the safe and sustainable access to Mount Wellington for both the community and management staff during snow events.

The Trust and Council acknowledge the expectation of the community that the Pinnacle be accessible during snow times, however have an obligation to ensure that such access is managed in such a way that does not provide a danger to others.

Recreation Access

The snow management policy seeks to improve public and maintenance access however does not attempt to further identify snow recreation areas. Identification of such areas is considered to be unnecessary and would invite further management responsibilities. During heavier falls, the policy recommends the retention of some snow for a defined period on sections of Pinnacle Road to allow for snow recreation.

Maintenance Access

The snow management policy seeks to ensure the availability of access to Pinnacle Road for maintenance purposes, particularly given the location of telecommunication facilities on the Pinnacle. Telecommunications agencies have previously advised that 24hr access is required, and the Tasmania Fire Service, the lead agency for emergency response on Mount Wellington, have advised that the risk to the operational integrity of such facilities is significantly higher if road access is not available.

Recommended Actions

1 Traffic Planning

- 1.1 Investigate the introduction of educational and road signs as recommended in the Background Report of the Snow Management Policy, including:
 - A new Electronic variable message sign located on Strickland Avenue, preferably outside Mountain Park depot;
 - The redesign and possible relocation of the existing "*Barrier Closed*" sign on Pillinger Drive;
 - The placement of fold-down "*Pinnacle Road Closed*" signs in advance of Huon Road / Pillinger Drive junction e.g. Lintern Ave and Strickland Avenue
 - The formalisation of the detour system at the Springs for snow events; and
 - The placement of "*Slow Ice Snow*" signs at various locations along Pinnacle Road as required.
- 1.2 Investigate the placement of detour signs at the junction of major intersections leading to the Huon Road / Pillinger Drive intersection during closures of Pinnacle Road.
- 1.3 Investigate the reconstruction and/or relocation of the vehicle lay-by in Pillinger Drive near the existing "*Barrier Closed*" sign.
- 1.4 Ensure that all signs are consistent with relevant state-wide or other sign strategies.

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- 1.5 Investigate the construction of an information lay-by within the Fern Tree area containing detailed Park and snow management information.
- 1.6 Seek the assistance of the Hobart City Council to carry out a review of existing road, traffic and parking conditions along Pinnacle Road and the Fern tree area to ensure safe and efficient two-way traffic and parking by vehicles, including:
 - The potential for “*No Stopping*” areas along Pinnacle Road, Pillinger Drive and Huon Road;
 - The maximisation and safety of existing verge parking opportunities along Pinnacle Road;
 - The labelling of dangerous drainage drop offs along Pinnacle Road, and the directing of road drainage away from drinking water catchments;
 - The enhancement of existing parking opportunities in the Fern Tree area, and the consideration of alternatives to existing parking arrangements, including new parking areas and/or alternative transport possibilities;
 - The effectiveness of the existing signs on the Huon Highway approach to the Pillinger Drive junction; and
 - Liaison with the Tasmania Police to address issues relating to vehicle and pedestrian management on Pillinger Drive (refer 5.1)

2 Operations

- 2.1 Implement the Snow and Ice Management Procedure as contained in the Background Report to the Snow Management Policy.
- 2.2 Ensure Springs car parks and roadways are cleared as a matter of priority to ensure maximum access.
- 2.3 Where possible, ensure that snow is not bladed or heaped into areas that drain into drinking water catchments.
- 2.4 Carry out all road clearing works in accordance with Australian Standards AS1742.3.
- 2.5 When the opportunity presents itself and snow cover is of sufficient depth, limit the clearance of snow above nominated barricades to half the width of Pinnacle Road for a maximum 36hr period to allow for recreational access. Total clearance of the road surface is to be undertaken prior to ice being formed and at the discretion of the Council Field Supervisor. Vehicle access during this period shall be permitted for maintenance purposes only.
- 2.6 For the purposes of snow clearing and the safety of the the community and field staff, community access shall be restricted from areas between nominated barricades where clearing is being undertaken.
- 2.7 Prepare a plan to allow for the removal of obstructing vehicles left in a hazardous position.
- 2.8 Seek a financial contribution from telecommunications operators requiring access to the Pinnacle scheme to cover snow clearing costs.

3 Communications and Education

- 3.1 Utilise a recorded message service at the Mountain Park depot for dispersal of up-to-date information to the public. Ensure the message is updated on a regular basis.
- 3.2 Notify, in advance where possible, media and tourism outlets of road closure details. Ensure that such outlets are kept informed of any changes to closure details and delays or increases to traffic flow.
- 3.3 Investigate inclusion of road condition and closure / opening details on media weather reports.
- 3.4 Include distance to lowest level of snow cover on road barriers on Pinnacle Road and in general media information.

PINNACLE ROAD SNOW MANAGEMENT POLICY - BACKGROUND

- 3.5 In conjunction with the University of Tasmania, investigate the potential for the use of alternative measures to assist in the clearance of snow and ice from Pinnacle Road. Such studies shall include: the consideration of sub-surface hydrology; the retention of heavy metals; and any potential for impact on drinking water catchments.

4 Community Access

- 4.1 Do not allow snow recreation and pedestrian access on Pinnacle Road between nominated barricades during snow clearing operations between those barricades (Refer 2.6).
- 4.2 Subject to the opinion of the works supervisor, and when the opportunity presents itself, permit community access to the uncleared portions of Pinnacle Road (refer 2.5). Place suitable warning and management signage in uncleared areas. Community access shall be restricted from areas being cleared (refer 2.6).
- 4.3 Investigate the placement of temporary information signs at suitable parking areas during heavy snow falls. Signs to include warning and safety information, and basic directions to walking tracks.

5 Emergency Management

- 5.1 Seek a formal agreement with the Tasmania Police regarding their proactive involvement in management of vehicles and the general community during road closures due to snow falls.
- 5.2 Carry out a quantified risk assessment to determine the suitability of all actions contained in this policy.
- 5.3 Ensure that all emergency services are informed and aware of potential impacts of emergency operations on drinking water catchments and the local environment.
- 5.4 Develop, in conjunction with the Hobart City Council, Tasmania Police, Tasmania Fire Service, and State Emergency Service, a complete emergency management risk assessment, including potential impacts on drinking water catchments, for Mount Wellington. Issues include:
- Vehicle accidents
 - Rain
 - Fog / low cloud
 - Snow and ice
 - Bush fire
 - Falling trees
 - Rock falls
 - Landslides
 - Telecommunications assets incidents

6 Monitoring and Review

- 6.1 Review and refine the snow management policy as required based upon the impacts of the proposed Springs Hotel development.
- 6.2 Carry out an annual review of the policy to determine the effectiveness of recommended snow management procedures and operations, and to determine amendments or additions as required

PINNACLE ROAD SNOW MANAGEMENT POLICY BACKGROUND DOCUMENTATION

1. INTRODUCTION

The Wellington Park Management Trust and the Hobart City Council have identified a need to formalise a policy for the winter management of Pinnacle Road, Wellington Park.

This report brings together the research that has been undertaken to date and makes recommendations for an improved snow management policy for Pinnacle Road, Mount Wellington. The final policy shall need refinement by an Emergency Risk Management Assessment, which includes structured consultation with key stakeholders.

2. BACKGROUND

The Council, as landowner, carries out on-ground management duties, and has the responsibility for determining management works and the necessity for road closure. Council officers are empowered under the *Wellington Park Regulations 1999* to close roads on Mount Wellington.

The community have an expectation that the Pinnacle should be accessible during snow times for recreational and tourism pursuits; this results in frustration when the road is closed for snow clearing. The build up of traffic and increased visitation during snowfall events creates access and safety issues in the Fern Tree area, particularly around the Huon Road / Pillinger Drive intersection, and along Pillinger Drive itself.

The operators of telecommunications facilities that are located at the Pinnacle have stated a need to have unlimited vehicle access to the Pinnacle access for maintenance purposes. The Tasmania Fire Service have advised that any restriction to maintenance access to the facilities may result in an increased risk to the operational integrity of those facilities.

Pinnacle Road also traverses a small section of Browns River catchment, used by Hobart Water for drinking water supply to Fern Tree (Fern Tree is totally reliant on Wellington Park as a resource for drinking water). Hobart Water have prepared a Drinking Water Catchment Management Strategy that seeks to provide guidance for the management and protection of the catchment areas. To a large degree, the recommendations relate to community education as to the value of the Wellington Park as a source of drinking water, however enforcement of existing Regulations and the preparation of contingency plans are also key components of the Strategy.

The Hobart City Council currently provides information via a listed telephone directory and a "Barrier Closed" combined information and guide sign at the Pillinger Drive entry to the Park on the status of the road access to Mount Wellington.

The *Wellington Park Management Plan 1997* outlines the goals and objectives for the area. The Plan specifies the following observations in relation to snowfall management: -

“The Park attracts considerable numbers of people after heavy snow falls. At these times, most visitors reach the snow via Pinnacle Road, parking there to enjoy a range of snow activities. At peak times there are considerable traffic problems along Pinnacle Road and at the Springs and often conflicts between visitors. Vehicular use of Pinnacle Road depends on the clearing of snow so that access can be maintained to the summit area for emergency services and maintenance of the telecommunication facilities there. Tasmania Police have requested that access to the summit of Mt Wellington remain where possible during periods of heavy snowfall.

Although the Park is considered to be unreliable and generally unsuitable for downhill skiing owing to insubstantial, quick melting, infrequent and unpredictable snow falls, the lack of suitable runs and the likely environmental impacts involved in constructing such runs, cross country skiing is increasingly popular and suited to the conditions within the Park. Access to the open alpine areas is usually by the Pinnacle Road. However, skiing on this road poses safety problems with the large number of other visitors on foot or in vehicles.

4.3.24 *Develop and implement a traffic control plan for Pinnacle Road, Pillinger Drive, Huon Road and Bracken Lane after/during heavy snowfalls when high vehicle numbers are expected.*

5.3.9 *Trial the limitation of ski and snowboard use on Pinnacle Road to an area 500m above the lowest continuous snow cover on the Road. Reserve the area for family uses. Dedicated areas for use should be sign posted.”*

3. RISKS

There are numerous risks associated with the public use of Pinnacle Road and Pillinger Drive. Typical of these risks are:

- ❑ Vehicle accidents
- ❑ Rain
- ❑ Fog / low cloud
- ❑ Snow and ice
- ❑ Bush fire
- ❑ Falling trees
- ❑ Rock falls *
- ❑ Landslide
- ❑ Contamination of drinking water catchments

** There have been ten incidents of rock falls since 1986 and the details of these are summarised in Table 3.1.*

Whilst this report only deals with the management of snow and ice risks both these and the other risks are worthy of inclusion in a more detailed emergency risk management assessment.

Date	Location	Size of Rock Fall
26 August 1986	Below Chalet – landed on roadway.	Not specified – removed by blasting.
9 November 1996	Near Organ Pipes - landed below roadway.	15 tonne boulder.
16 August 1998	Rock fall in area known as the slide.	Not specified – large rock hit vehicle.
17 August 1998	No location recorded.	Not specified – two rocks landed in roadway.
2 October 1998	Dolerite sign area.	120 kg boulder.
6 July 2000	500m from Pinnacle.	200 kg boulder.
11 March 2000	Between Springs and Chalet.	Three boulders: 280, 400 & 500kg.
8 October 2001	400m above Sawmill Track.	250kg boulder.
24 November 2001	300m above Chalet.	Several large boulders.
22 September 2002	Below Chalet.	1 tonne boulder.

Table 3.1 Rock Fall Incidents (Extract HCC records)

This report assists in the development of Snow Management Policy that has been specifically designed to address the management of snow and ice risks on Pillinger Drive and Pinnacle Road. The Policy will also consider the following specific issues from the Wellington Park Management Plan:

- ❖ Tasmania Police request that access to the summit of Mt Wellington remain where possible during periods of heavy snowfall
- ❖ Traffic control plan for Pinnacle Road, Pillinger Drive, Huon Road and Bracken Lane after/during heavy snowfalls as recommended in section 4.3.24 of the Plan
- ❖ Dedicated ski and snowboard area sign posting.

4. EMERGENCY RISK MANAGEMENT

Emergency risk management parallels both risk management as outlined in “AS/NZS 4360:1999 Risk Management” and normal management practice. All of these three components of management are most effective when based on stakeholder consultation and participation, are multi-faceted, and may be performed by multi-disciplinary teams.

The following summarise the main elements of the emergency risk management process: -

- ❑ **Establish the context** – identify issues and establish a management framework, i.e. define the nature and scope of the problem to be solved, and identify a framework in which the emergency risk management process will be undertaken. Define the community expectation of acceptable risk for the problem.
- ❑ **Identify risks** – identify and describe the nature and scope of the hazards, community and environment that provide the setting for the established problem.

- ❑ **Analyse risks** – analyse the risk associated with the problem using a modelling process and determine the vulnerability of the community and/or environment to hazards.
- ❑ **Evaluate risks** – compare risks against risk evaluation criteria, prioritise the risks, and decide on risk acceptability.
- ❑ **Treat Risks** – respond to the level of risk by deciding which factors in the problem (hazard, environment or community) can be changed to reduce the risk, test the changes in the model to obtain an estimate of the level of risk, and determine which factors should be changed.

The equivalents of the three management components are outlined in Table 4.1.

MANAGEMENT	RISK MANAGEMENT (AS/NZ 4360)	EMERGENCY RISK MANAGEMENT
Problem definition	Establish the context <ul style="list-style-type: none"> ❖ Establish strategic, organisational & risk management contexts ❖ Develop risk evaluation criteria ❖ Decide the structure 	Establish the context <ul style="list-style-type: none"> ❖ Define the problem ❖ Establish emergency risk management framework ❖ Develop risk evaluation criteria
Research	Identify risks <ul style="list-style-type: none"> ❖ What can happen? ❖ How can it happen? 	Identify risks <ul style="list-style-type: none"> ❖ Identify & describe hazards, community & environment ❖ Scope vulnerability ❖ Describe risks
Analysis	Analyse risks <ul style="list-style-type: none"> ❖ Determine existing controls ❖ Determine likelihood & consequence ❖ Estimate level of risk 	Analyse risks <ul style="list-style-type: none"> ❖ Determine likelihood & consequence
Decision making	Evaluate risks <ul style="list-style-type: none"> ❖ Compare against criteria ❖ Set risk priorities ❖ Decide on risk acceptability Treat Risks <ul style="list-style-type: none"> ❖ Identify treatment options 	Evaluate risks <ul style="list-style-type: none"> ❖ Compare risks against criteria ❖ Set risk priorities ❖ Decide on risk acceptability Treat Risks <ul style="list-style-type: none"> ❖ Identify options
Implementation	<ul style="list-style-type: none"> ❖ Prepare treatment plans ❖ Implement Plan 	<ul style="list-style-type: none"> ❖ Plan and implement risk treatments
Monitor & review	Monitor & review	Monitor & review
Communicate & consult	Communicate & consult	Communicate & consult

Table 4.1 Alignment of management, risk management & emergency risk management

Underpinning the emergency risk management process is a requirement for:

- ❑ **Communication and consultation** – where all stakeholders contribute to the decision-making process there is a much larger pool of information and expertise to enable valid solutions to be developed. Further any decision, to be successfully implemented, must engender ownership and commitment from all parties that are influenced by it.

- ❑ **Documentation** – appropriate documentation, to retain knowledge and satisfy audit, should be integrated within the process at all stages and maintained.
- ❑ **Monitor and review** – factors, which may affect the problem, may change, as may the factors, which affect the suitability of the various risk treatment options. Therefore systems that monitor and review risk and its management must be established and maintained. Where risk treatments leave a residual risk, a decision should be taken as to whether to retain or re-enter the emergency risk management process.

The emergency risk management process is schematically presented in Fig. 4.1

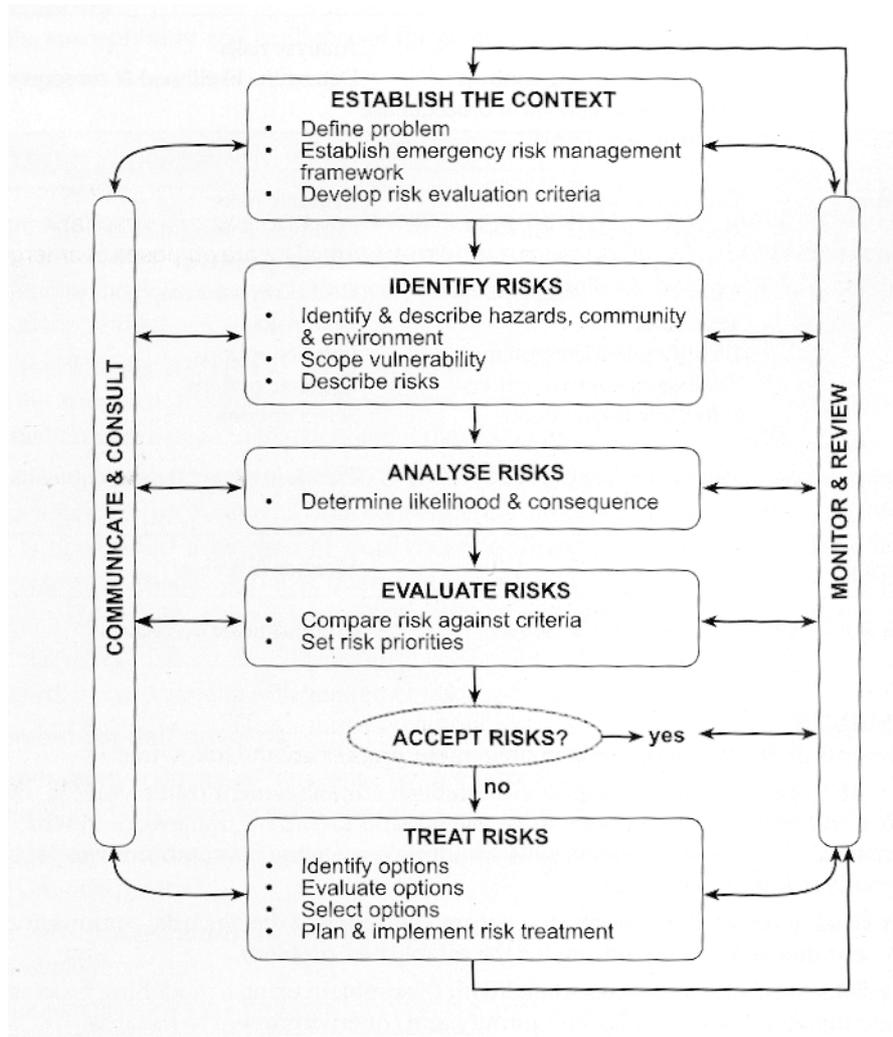


Fig. 4.1 Emergency Risk Management Process

The emergency risk management process may be undertaken a number of times to ensure that interventions can accommodate change and uncertainty. The process should be re-entered at any point when the in-built review mechanisms indicate a need.

The State Emergency Services group encourages and works closely with Local Government in the preparation of localised emergency plans. The Hobart City Council's Michael Street is an experienced emergency planning officer. Both the

Hobart Council and State Emergency Service should be available to assist with the advancement of the Mount Wellington emergency planning process.

5. ROAD ENVIRONMENT

The road network, which is relevant to the policy, is depicted on the site and signage plan that is appended as Attachment A to this report.

Huon Road is the old highway connection between Hobart and the Huon however of recent years this role has been superseded by the construction of the Southern Outlet. Huon Road now serves as a secondary collector road between Hobart, Fern Tree, Mount Wellington and Lower Longley.

Pillinger Drive provides the sole connection from Huon Road to the Bracken Lane residential enclave and the Pinnacle Road recreational road. The horizontal and vertical alignment of the Pillinger Drive junction with Huon Road is such that it is difficult to make left hand turns out onto Huon Road without crossing the Huon Road centre line. Whilst this manoeuvre has not created any reported accidents it is unacceptable for larger vehicles, such as buses, that may need to make a three point turn to get around the junction.

The Hobart City Council has overcome this problem by requiring all buses to continue along Huon Road and turn at the Fern Tree Tavern, accessing the junction by left in and right out turns only. Road works at this junction have improved the vertical alignment and improved the turns for light vehicles however the ban on large vehicle turns still applies.

The Hobart City Council also investigated a preliminary concept plan for the bypass of the section of Pillinger Drive in the vicinity of Bracken Lane. No commitment, however, has been made for the detailed design and construction of the bypass, pending a review of the success of the above road works.

Pinnacle Road is the upward continuation of Pillinger Drive and provides both a tourist scenic route with observation points and access to the top of Mount Wellington. The road also provides service vehicle access to the television towers on the top of the mountain. A 50 km/hr sign posted regulatory speed limit applies to this road link. The Department of Infrastructure Energy and Resources have applied this limit as special consideration for the mountainous road conditions.

Just below the Springs, Pinnacle Road passes through the northern reaches of the Browns River water catchment, used by Hobart Water for drinking water supply purposes. This may

Under the criteria provided in "Part 2 - Roadway Capacity" of the NAASRA Guide to Traffic Engineering Practice publication, both Pillinger Drive and Pinnacle Road would be classified as Mountainous Terrain two-lane two-way rural roads. For a level of Service C and ratio of design hour volume to annual average daily traffic of 0.10, which is considered to be operationally acceptable for these roads, the maximum desirable AADT is 2,400 vehicles per day.

Typical traffic volumes for Pillinger Drive, north of Bracken Lane are depicted in Fig. 5.1 "Typical week day daily traffic profile" and Fig. 5.2 "Typical week end daily traffic profile".

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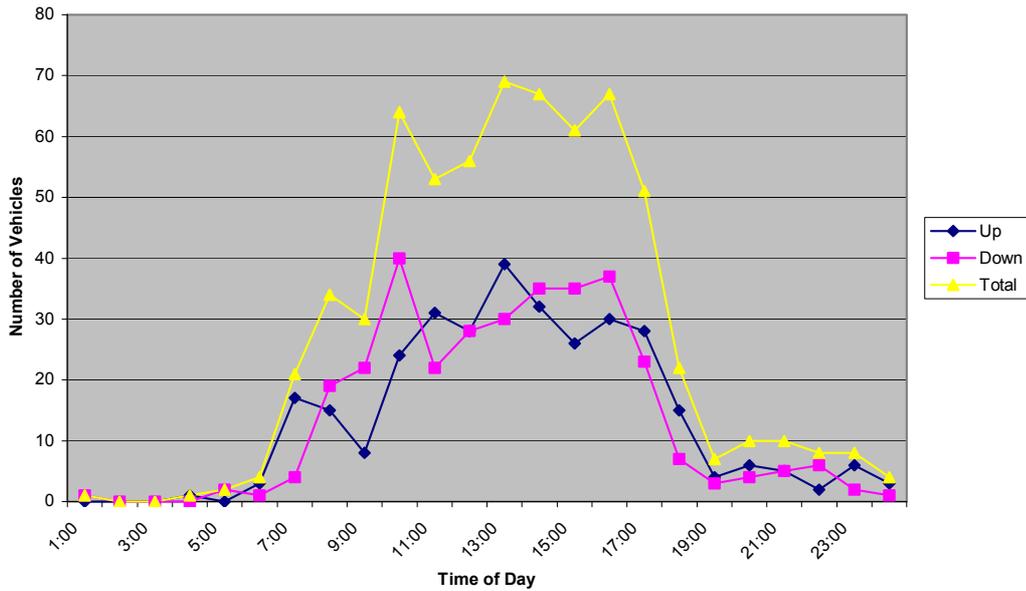


FIG. 5.1 TYPICAL WEEK DAY DAILY TRAFFIC PROFILE

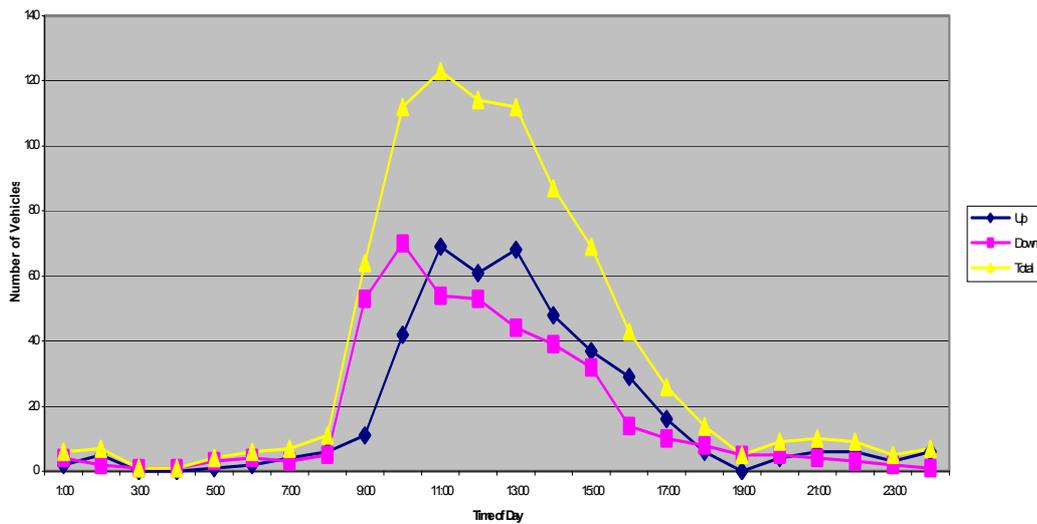


FIG. 5.2 TYPICAL WEEK END DAILY TRAFFIC PROFILE

Typical average daily traffic flows of around 700 vehicles per day have been recorded with a maximum of around 1854 vehicles per day recorded in 1999.

6. ROAD SAFETY

It is a legal requirement in Tasmania for all road crashes that result in personal injury to be reported to Tasmania Police. In addition to recording injury accidents Tasmania Police, as a matter of policy, also record all accidents that they attend or that are reported to them. All of the reported accident data is stored on a computerised accident database that is maintained by the Road Safety Branch of the Department of Infrastructure, Energy and Resources. The road accidents on

PINNACLE ROAD SNOW MANAGEMENT POLICY - BACKGROUND

the Department's database are recorded under various categories typical of which are fatal, major injury (requires hospital admission), minor injury (requires first aid) and property damage.

A search of the Department's accident data base for the area (including both links and nodes) between Huon Road and the ex Springs Hotel road junctions revealed no reported node accidents and no link accidents for 1995. The reported link accident frequency for the 7-year period from 1996 to 2003 is listed in Tables 6.1.and 6.2.

Year	Month	Number of Vehicles Involved	Accident		
			Type	Manoeuvre	Severity
1996	January	Single (bicycle)	Loss of control	Slid off road	Property damage
	August	Single	Loss of control	Avoiding animal	Property damage
	December	Single	Loss of control	Hit road edge	Property damage
1997	May	Three	Rear end	Avoiding animal	Property damage
	April	Two (Bus and bicycle)	Side swipe	Bus forced cyclist off road	Property damage
1998	July	Two	Side swipe	Car crossed over centreline	Property damage
	October	Single	Loss of control	Slid off road	Property damage
1999	June	Single	Loss of control	Slid on ice off road	Property damage
	October	Single	Loss of control	Hit guard-rail	Property damage
	November	Two	Rear end	Avoiding animal	Property damage
2000	January	Two	Side swipe	Car crossed over centreline	Property damage
	December	Single	Loss of control	Driver drunk – ran off road	Injury
2001	November	Two (Car and bicycle)	Head on	Unknown	Injury
2002	February	Two	Side swipe	Collision with parked vehicle	Property damage
	June	One	Loss of control	Driver drunk – ran off road	Property damage
	August	Two	Side swipe	Vehicle overtaking moving vehicle	Property damage
2003	January	One	Loss of control	Vehicle run off road	Property damage
	February	Two	Rear end	Vehicle slowing	Property damage

TABLE 6.1 - REPORTED PINNACLE ROAD LINK ACCIDENT FREQUENCY 1996 to 2003

PINNACLE ROAD SNOW MANAGEMENT POLICY - BACKGROUND

Year	Month	Number of Vehicles Involved	Type	Accident Manoeuvre	Severity
1998	July	Two	Side swipe	Travelling opposite direction and hit when passing	Property damage
1999	June	Single	Loss of control	Slid on ice off road	Property damage
2001	May	Two (bus and car)	Side swipe	Travelling opposite direction and hit when passing	Property damage

TABLE 6.2 - REPORTED PILLINGER DRIVE LINK ACCIDENT FREQUENCY 1996 to 2003

In addition to the above reported accident data Council's records indicate only three incidents in the past five years that council officers attended. The details of these incidents are summarised in Table 6.3.

Year	Month	Number of Vehicles Involved	Type	Accident Manoeuvre	Severity
1996	July	Single	Loss of control	Slid off road into ditch	Property damage
1998	September	Single	Loss of control	Slid into embankment due to ice on road verges	Property damage
1999	June	Single	Loss of control	Slid into safety cable	Property damage

TABLE 6.3 – COUNCIL REPORTED PILLINGER DRIVE LINK ACCIDENTS 1996 to 2003

The recorded link accident history does not exhibit a rate or road crash status that would warrant special corrective action as an accident black spot.

7. WEATHER

The Hobart City Council's Mountain Park Depot's staff maintains records of the number of hours per month by year that Pinnacle Road was closed due to snow and ice conditions.

Fig. 7.1 has been produced from Council's records and provides a graphic representation of the temporal distribution of snow forced road closures. Whilst Fig. 7.1 provides an overview of the time Pinnacle Road was closed, the graph can also be interpreted to provide an indication of snowfall intensity by month and year.

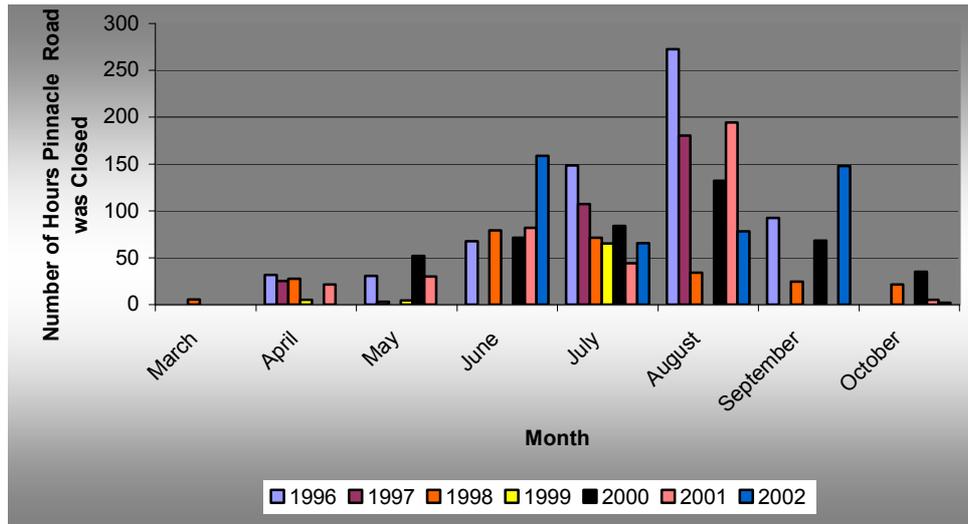


FIG. 7.1 – NUMBER OF HOURS PINNACLE ROAD WAS CLOSED BY MONTH AND YEAR

The following information has been obtained from Fig. 7.1:

- ❑ Snowfalls that cause traffic disruptions can occur on Mount Wellington typically between March and October.
- ❑ The peak occurs in the July/August period, however significant closures can still occur as late as October.
- ❑ There is a variability of an annual snowfall by month with July being the only month that has a consistent annual snowfall.
- ❑ 1999 was a fairly mild winter with few monthly snowfalls.

8. USER GROUPS

There are several user groups, which require or desire access to the Mount Wellington. Each of these groups has different needs and expectations and these are summarised under the following user group headings:

- ❑ **Communication Tower service personnel** – this group includes service and maintenance personnel who would be expected to use vehicles that are equipped to handle snow and ice conditions.
- ❑ **Local residents** – there are 32 residences that directly access off Pillinger Drive and 19 off Bracken Lane. These generate between 512 and 640 vehicle trips per day. The residents are experienced with the topographic and weather conditions and expect access to their residence to be maintained at all times.
- ❑ **Tourists** – this group is taken to mean people who reside outside of the Greater Hobart area and travel by car or bus. Whilst it could be reasonably expected that bus drivers will be certified for Alpine condition driving the car drivers will on the whole be not equipped or experienced with driving in such conditions.

- **Visitors** – this group are local residents from the Greater Hobart area who, in many cases, visit the mountain on the spur of the moment and have a high expectation of access and invariably are the least equipped to drive in snow or ice conditions. This group visits the mountain on weekends and public holidays and make up the majority of snow condition visitors. The group includes pedestrians, snow boarders and skiers. Collectively this group is often difficult to manage and for this reason warrants a special mention in any snow management policy.

- **Emergency Services**

Pinnacle Road provides the only vehicle access for traffic, natural and telecommunications incident response. The Tasmania Fire Service, the Tasmania Police, the Ambulance Service, and the State Emergency Service all have statutory requirements to manage a variety of incident responses on the Mountain.

- **The proposed “Springs” site development** - the proposed “Springs” development site is located on the southern side of Pinnacle Road opposite the access road to the old Springs Hotel site and towards the lookout, toilet block and visitor interpretation centre.

The lower site is proposed to be developed for an eco-tourist resort with 50 rooms (14 family and 36 double), a 150-seat restaurant, a bar and a 100-person convention facility. No parking will be allowed outside of the accommodation units and the road access to the units will be restricted to service and emergency vehicle use. Provision has been made for two three-space bus lay-by and drop off areas, 50-space car park and an overflow car park of around 20 spaces. The overflow car park will be operated, as and when required, by a valet management system with jockey parking to achieve a higher than normal density of parking.

The middle site is the day use area and it is proposed to develop a kiosk, information/interpretation centre, public toilets and informal outdoor eating facilities at this location. A separated one-way entry and exit will be provided to the area with 20 right angle car parking spaces and parallel parking for four buses. The one-way arrangement will also act as turn around circle for those occasions when the road to the top of the mountain is closed.

The development proposal includes junction improvements that will assist emergency planning in the event of a road closure. It is also anticipated that the management will be familiar with snow condition driving and will make available appropriate 4WD transport arrangements for their guests if and when required.

9. EXISTING MANAGEMENT OF SNOW AND ICE CONDITIONS

The Hobart City Council's existing snow management operations are based on equipment, signage, manpower and procedural components. A brief summary of each of these components is contained below:

(a) Equipment

The Council has the following plant that is dedicated for the removal of snow on the mountain:

- Toyota four wheel drive land cruiser fitted with a snow plough;
- Four-wheel drive tractor fitted with linkage mounted rear blade and front bucket; and
- Rotary snowplough of 1 200 tons per hour capacity.

Metal dust is spread to assist with vehicle traction in ice conditions. There is strong evidence, from mainland experience, to suggest that this practice, whilst improving vehicle traction, does not satisfactorily address the de-icing problem.

The Council, based upon the advice of mainland contractors, leased de-icing plant for the 2001-02 winter period, including a 4wd truck fitted with a ploughing blade and a spreader for the metal dust. Plans to trial the use of de-icing chemical additives were cancelled due to insufficient available information on the potential impacts of the chemicals on the local environment and water quality.

(b) Vegetation Management

At present Council maintains a program of vegetation trimming that is consistent with environmental sensitivities. It is important that this program be continued and upgraded to include a proactive approach for the maintenance of effective sight lines, with particular emphasis across the Mount Wellington road curves, and for maximum sunshine on the road surface.

(c) Barricades

Five barricades are erected at various levels on the Mountain to facilitate road closures, however not all have suitable parking and turn-around facilities (refer Attachment A). Photograph 9.1 depicts the barricade north of "The Springs" and is typical of the barricades used to close the road. No change to the basic construction, presentation, operation or location of these barricades is recommended, however further information signage regarding the distance to, and level of, snow cover may be of assistance to Park visitors.

PHOTOGRAPH 9.1 TYPICAL ROAD CLOSURE BARRICADE

(d) Signage

The four signs that are currently located to alert motorists to the road conditions and these are depicted in Photographs 9.2, 9.3, 9.4 and 9.5.

**PHOTOGRAPH 9.2 SIGN A
OUTSIDE OF MOUNTAIN PARK DEPOT, HUON ROAD**

Sign A is a fold down sign that has been constructed to Australian Standard 1742 specification. The purpose of this sign is to alert motorists to the potential of slippery road and ice conditions past the sign. Whilst arguably the sign refers to Huon Road it can also be taken as applying to Pillinger Drive and Pinnacle Road. It is recommended that this sign be replaced with a variable message sign in order to provide a more proactive and flexible messages to the public.

**PHOTOGRAPH 9.3 SIGN B
PILLINGER DRIVE, NEAR JUNCTION WITH HUON ROAD**

The sign is located off a substandard vehicle pull over area and a close up view is provided in Photograph 9.4. The vehicle pull over area at least needs to be reconstructed to an improved standard, or may be relocated.

PHOTOGRAPH 9.4 SIGN B

It will be noted from Photograph 9.4 that Sign B is a composite sign, which is trying to convey not only the status of snow barrier road closures to moving motorists but also a range of tourist information such as scenic lookouts. The sign is confusing, virtually illegible and needs to be replaced. The revised sign should have only a basic level of information relating directly to road closures.

PHOTOGRAPH 9.5 NEAR TURN OFF TO UPPER SPRINGS AREA

The rectangular sign on the right of the Photograph 9.5 is designated as Sign C and is a flap sign which when activated reads:



This sign should be retained, however may require repositioning.

(e) Staffing

On-ground staff are required for both the snow and ice clearing, and traffic control to supplement the signage. Around four staff are required in peak periods.

(f) Communication and Information

The Hobart phone book contains a contact number for information regarding conditions on Pinnacle Road. Information is regularly relayed to officers in the Council building and also to the Tasmanian Visitor Information Centre.

(g) Procedure

The Hobart City Council has a clearly defined emergency plan for managing snow conditions, ice and associated traffic conditions on the Mount Wellington access roads.

Snow and ice control procedures are specified for light and other snowfalls, ice formation conditions and falling temperatures.

The traffic control procedure has been broken down into weekday and weekend actions. The difference in procedure is occasioned by the relative ease of traffic control and lesser parking demand during the week. The road is closed at the appropriate snow barrier, depending on the road conditions, during the weekend with closures at the old Springs hotel access and as a last resort at the Huon Road junction on weekends. A special mention is made for the safety and management of pedestrians.

The Council's "Procedures - Mountain Road Closures" specifies a contact and sign placement action checklist for attention immediately after any road closure. There has been some suggestion that the public, at times, may not have been able to contact the Council for advice on the Mountain road conditions.

10. ADDITIONAL ROAD SIGNS

It is proposed that five new signs be provided as part of an upgraded snow management policy: 'Variable Message' (Sign 1), three direction signs (Sign's 2, 4 & 5) and a warning sign (Sign 6). The suggested locations of these signs is shown in Attachment A. Further detailed design will be required for all proposed signs.

A brief description of each sign is provided below:

Sign 1 - Variable Message Sign

It is proposed to replace the existing Sign A – "Slippery when wet / CAUTION ICE" with a variable message sign outside of the HCC Mountain depot. This sign could be programmed with a variety of information messages – e.g. "Access to Mt Wellington Closed for Approx 4 Hours" to "Weather on Mount Wellington Fine and Clear". The activation and programming of this sign could be remotely controlled from the HCC Davey Street head office or manually from the depot.

Sign 2

The existing Sign B in Pillinger Drive is inadequate and should be replaced ideally with a new diagrammatic sign that has been constructed along the lines of Sign 2.

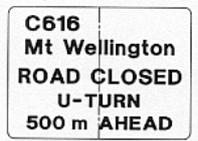
It is recommended that the proposed sign be around 4.8m (w) x 4.5m(h) with black on white lettering. It is proposed that the road closures be flashing red lights that are remote switch activated. There is 240-volt power located nearby and this together with an emergency battery pack could be used to feed the animated signal display. Additional information such as scenic lookouts or drinking water catchment areas could also be included on the sign although care will be required to ensure that the sign does not become cluttered and illegible like the existing sign.

Sign 3

As per existing sign C at Springs site, although the sign may require relocation.

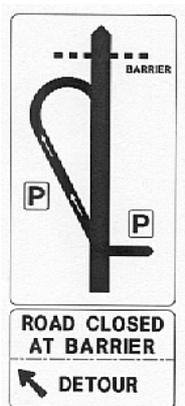


Sign 4



It is proposed to erect this sign on the southern side of Huon Road, facing the City and in advance of the Huon Road/Pillinger Drive junction. The sign is 2.0m(w) x1.45m (h) and is to be vertically hinged with black letters on yellow background.

Sign 5



It is proposed to erect this sign on the northern side of the gore between the old Springs Hotel access road and Pinnacle Road (Reference photograph 9.5 – in front of the parked red station wagon). This sign would be around 1.8m (w) x 3.2m (h) with black on white lettering and white on blue parking area designator “P” symbols. The horizontally hinged plate “Road Closed at Barrier Detour Left” message would be black on yellow and of 1.8m (w) x 1.1 (h) size.

Sign 6

Concern has been expressed at the apparent speed of motorists driving on Pinnacle Road during and after a snow events. It has been suggested that a 40 km/hr speed limit be applied using a hinge plated sign during hazardous periods. The Department of Infrastructure Energy and Resources, the authority responsible for the application of speed limits, has, however, indicated that the existing 50km/hr speed limit is appropriate, and that a variable speed limit is unfavourable.

Having due regard for the Department’s position it is recommended that a sign along the lines of the above be used. This sign complies with the Australian Standard AS1742 specification with black on yellow background, flashing yellow lights in the top left and right corners (optional), and a horizontal folding advisory plate. The sign would be 1.5m (w) X 2.4m (h), and located around 100 metres south of “The Chalet” on the left hand side of the road facing uphill. In the absence of 240-volt AC power the lights could be supplied from a battery that is charged from a solar cell.

If after an initial trial period the sign proves to be effective in containing vehicle speeds then additional signs could be provided at other strategic locations further down the mountain.

11. PROPOSED SNOW MANAGEMENT OPERATIONS

A proposed procedure for snow management operations, based on upgraded signage, removal of snow and ice, and improved public communication is presented in this section.

EMERGENCY PROCEDURE SNOW AND ICE MANAGEMENT

1.0 Pre Ice Formation

This action is typically instigated when snow and/or ice are forecast and following a sudden drop in temperature.

Prior to any action being taken the supervisor should check weather forecasts with Weather Bureau and inspect the road to ascertain the potential for ice formation. If ice is likely to form then:

- Activate Sign 1, outside of the depot on Huon Road to alert the public of the potential for slippery road conditions.

- Activate Sign 6 to alert the public of the potential for slippery road conditions.
- Use anti-icing procedures on Pinnacle Road in those areas most prone to icing.

If there is any doubt on the effectiveness of the anti-icing treatment the appropriate barricade should be closed immediately pending a drive through test.

2.0 Light Snow Formation

During light snowfalls it is possible to leave the road open providing that the snow is slushing and dispersing. Activate Signs 1 and 6 advising of slippery road conditions.

The supervisor should inspect the road to see if the snow is padding down hard and freezing; if this occurs the appropriate barricade is to be closed and anti-icing applied. Sign 2 (Barricade Status) should be activated.

3.0 Snow Cover Above 40mm Depth

Snow on the roadway above 40mm depth shall be bladed off at the earliest opportunity, using either the tractor and blade, or the snowplough. The plant operator shall advise the supervisor of this action. When the opportunity presents itself and snow cover is of sufficient depth, limit the clearance of snow above nominated barricades to half the width of Pinnacle Road for a maximum 36hr period to allow for recreational access (Refer 8.0).

Hard snow left on the road after blading should be treated with anti-icing prior to opening the road to the public, and pedestrians should be advised that the road is open. When the road is safe to open limit the number of vehicles through the barricade to around 10; if these vehicles travel without difficulty on the cleared sections then the barricade can be opened to all traffic.

During periods of mechanised snow clearing operations, vehicular and pedestrian traffic should be prevented from accessing the work area. Access should be prevented at the nearest possible barricade to the clearing operations to allow a clear work-site.

The operators of the snowplough and tractor will determine when visibility or weather conditions are too hazardous to continue operating.

4.0 Ice Conditions

Ice that has formed on the road surface from melting snow and light rain must be treated with the appropriate de-icing agent prior to vehicles using the road.

During days of low temperature the road should be monitored on a regular basis for ice forming above the 700m level.

5.0 Snowfalls Below 500m

Due to the limited parking in the vicinity of the first snow barricade at Bracken Lane, a temporary barricade at the junction of Huon Road and

Pillinger Drive should be erected to prevent vehicle access to Pillinger Drive with the exception of authorised and residents' vehicles.

Sign 3 should be activated to provide advance warning of this action.

6.0 Monitoring

Monitoring of the road should be carried out regularly after snow removal to ensure that there are no ice patches forming particularly during the afternoon when temperatures fall, with close scrutiny given to shaded areas. If in doubt the appropriate barricade should be closed, Signs 1, 2 and 6 activated, and motorists above the closed barricade notified as soon as possible.

During days of low temperature the road should be monitored on a regular basis for ice forming above the 700 metre level.

7.0 Pedestrians

Pedestrians and vehicles shall not be allowed on sections of Pinnacle Road during de-icing or snow clearing operations. All traffic shall be prevented from access beyond the closest barricade to clearing operations.

During periods that the snowplough is operating, on weekdays, above the barricade near "The Chalet", vehicular traffic shall be held at "The Chalet" to lessen the chance of pedestrians walking to the Pinnacle as this creates a further hazard for the snowplough and considerably slows down the road clearing.

Prior to opening the road after a closure pedestrians must be advised that the road is to be opened to vehicles and motorists warned of the likelihood of pedestrians on the road.

8.0 Recreational Access

When the opportunity presents itself and snow cover is of sufficient depth, limit the clearance of snow above nominated barricades to half the width of Pinnacle Road for a maximum 36hr period to allow for recreational access. Total clearance of the road surface is to be undertaken prior to ice being formed. Vehicle access shall be permitted on the cleared portion of the Road for authorised maintenance purposes only.

Temporary warning and safety signage should be erected in those areas where snow is left uncleared.

ATTACHMENT A

RECOMMENDED SIGNS FOR SNOW MANAGEMENT