

**MOUNT STIRLING ALPINE RESORT
INFORMATION AND RESOURCE KIT**

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BACKGROUND

The Concept

Alpine Resorts are areas of Crown Land designated primarily for recreation and tourism, with a developed focus on winter snow-based recreation.

The Legislative Basis

Victoria's Alpine Resorts (7 in total as at 1 October 1992) were managed by various statutory bodies prior to the formation of the Alpine Resorts Commission in accordance with the Alpine Resorts Act

1983. The Commission managed the Resorts for the period 1985 to March 1998. Section 8 of the Resorts Act outlines the Objects of the Commission to be:

- (a) to plan the proper establishment development, promotion and use of alpine resorts having regard to environmental, ecological and safety considerations and so as to encourage their use in all seasons of the year.
- (b) to undertake the orderly establishment, continuation and development of
 - (i) alpine resorts;
 - (ii) a range of tourist accommodation and other facilities and services for tourists which will encourage all persons irrespective of their income to use and enjoy alpine resorts;
 - (iii) facilities and services for persons who live or work in alpine resorts;
- (c) to control and manage alpine resorts and their use; and
- (d) to carry out the functions of a planning authority and a responsible authority for alpine resorts in accordance with the Planning and Environment Act 1987.

In addition, the Commission has powers stipulated under Section 9 of the Act which authorise it to:-

- propose to the Minister areas of Crown Land (not being land in a national park) to be added to existing alpine resorts or declared as further alpine resorts;
- control, by the issue of leases and permits, the nature and extent of development in alpine resorts and the conduct of business undertaken therein;

- investigate, assess and document significant environmental and ecological features in alpine resorts;
- provide for the protection of significant environmental and ecological features in alpine resorts;
- carry out and co-ordinate surveys, investigations and tests for determining the suitability of areas as alpine resorts;
- provide information and assistance to the public regarding the proper safe and beneficial use of alpine resorts; and
- publish reports and information relating to environmental and ecological features in alpine resorts and any special aspects of alpine resort development, management or improvement or activities at alpine resorts.

In 1997 a review of the Alpine Resorts Commission, the act was amended to give resorts more autonomy by establishing independent management boards. The Alpine Resorts (Management) Act 1997 (<http://www.dms.dpc.vic.gov.au/pdocs/pdhome>) established a set of Statutory Rules under which Victorian Resorts are now operated. These are detailed in the Alpine Resorts (Management) Regulations 1998 (<http://www.nre.vic.gov.au>).

The management goals and direction are very similar under the new act as they were in the old. The major change being to promote a greater degree of self governance and competition between resorts.

The Management of alpine resorts is also subject to the provisions of other state and commonwealth legislation including as the Planning and Environment Act 1987, and the Conservation Forests and Lands Act 1987 Management responsibilities under these respective legislation's ensure formal liaison with a broad range of agencies with specific charters, and provide for public input into decisions on significant development proposals.

Management

The Commission's management and administration of Alpine Resorts is subject to the direction and control of the Minister for Natural Resources.

The Governor in Council appoints the body corporate known as the Alpine Resorts Commission which is capable by law of suing and being sued, able to purchase, take, hold, sell, lease, take on lease, exchange or dispose of real or personal property. The Commission consists of up to five members one of whom is elected Chairman, each having experience in one or more of the following:

- knowledge of alpine areas and the protection of alpine environments;
- experience in land management;
- experience in the planning and development of larger resorts;
- experience in business relevant to the function of the Commission;
- knowledge of sports and other recreations pursued in alpine areas.

The Commission is serviced by the Chief Executive Officer (CEO) and staff, who is responsible for:-

- the corporate operation of the Commission;
- advice and recommendations to the Commission and the Minister;
- consultation with all appropriate Government agencies, industry and other user and interest groups.

The Manager, Resort Operations is responsible for:-

- oversight and co-ordination of Resort operations across all alpine resorts; and development and implementation of Corporate operational policy.

The Manager, Resort Planning and Development is responsible for:-

- planning for the development of alpine resorts; and processing of development and business

proposals.

The Resort Manager is responsible at the Resort for:-

- day-to-day management of Commission functions at the Resorts, including supervision of recreational use, and budget management;
- liaison with commercial operators, site holders emergency services and user groups; operational liaison with other land management authorities;
- implementation of land management policies and guidelines.

The Administration Centre for the Mt. Stirling Resort is at Mt Buller and at the Nordic Day Centre at Telephone Box Junction. The Works Supervisor and staff at Mt. Stirling are responsible to the Resort Manager.

GENERAL DESCRIPTION AND LOCATION

The Mt. Stirling Alpine Resort shares a common boundary with the Mt Buller Resort in the upper Delatite Valley and occupies an area of 2,700 ha. The Resort is located 240kms north east of Melbourne and is characterised by twin peaks and reaches an altitude of 1747m (ASL).

TENURE AND CLASSIFICATION

The Resort is Crown Land controlled by the Commission. There is no freehold land within the Resort area.

There is only one leasehold site on Mt. Stirling occupied by the Stirling Bistro at Telephone Box Junction. The Ski School/Ski Hire/Bistro, are the only winter commercial operations in the Resort. The Ski Hire and Ski School sharing the day base facility with the Resort management personnel at

Telephone Box Junction. Commercial summertime operators include horse and camel riding safaris, 4WD tour operators, outdoor education operators. The creation of additional leaseholds remains an option at Mt. Stirling.

RESORT VALUES

Community expectations of Alpine Resorts are based on a variety of values, particularly recreational (winter and summer), conservation, aesthetic and commercial, relating both to cultural and natural features.

The range of major community values attributable to Mt. Stirling include the following:

Opportunities for Recreation:

Those especially appropriate to this resort include nordic skiing, ski touring, tobogganing, snow recreation, sightseeing, picnicking, camping, bushwalking, Horse riding, cycling, fishing, photography, nature study, painting.

Water Catchment:

The Mt. Stirling Alpine Resort contains the headwaters of the Delatite, Howqua, Broken and King Rivers. The Delatite and Howqua catchments comprise a significant portion of the Resort, with the proclaimed Delatite catchment carrying with it considerable legislative responsibilities for both the Mt. Stirling Alpine Resort Management Board and DC&NR. Each of the rivers is an important component of the controlled water resources of the State.

Landscapes/scenery:

Mt. Stirling is prominent from within the sub-alpine region providing, on a clear day, a view of snow covered peaks.

From within the Resort, there are spectacular views from the summit and, from strategic vantage points, views are available of the surrounding alps including rugged gorges, forested and (in winter) snow covered peaks and ranges. To the east of the Great Dividing Range is a significant ridge comprising Mt Howitt, the Crosscut Saw, Mt Bogong and Mt Speculation.

Education:

Ease of access into Mt. Stirling facilitates the potential of the resort for use in environment education including geological processes, physiography, vegetation communities, impacts of various forms of land use including forestry, alpine resort development, recreation and cattle grazing.

The Resort Management Board has a responsibility to protect environmentally sensitive areas and species requiring special management approaches where applicable, in balance with its other Alpine Resort management responsibilities defined under the Act.

Much of the Mt. Stirling area is land that is and will remain in its present forested state. The majority of the land within the Mount Stirling Alpine Resort is regrowth forest following logging operations throughout the first half of the century. There are virtually no stands of virgin timber within the resort area.

Only a minor proportion of the total area of the Resort is or will be specifically dedicated to resort development in the form of ski slopes, ski trails, roads, day base area and infrastructure services. In relation to any specific development proposal where there is potential for conflict between Resort development and conservation management, the Resort Management Board must assess its obligations under the Act in the making of sound decisions.

In any major development proposals, the Resort Management Board will seek the advice of relevant agencies with expertise in specialist fields of land management. Resort development and operational activity by the Resort Management Board and commercial operators will be managed to protect sensitive and significant natural features.

Occasions may also arise when, for major works, it is necessary to consult with the Minister for Planning to seek advice on whether or not Environment Effects Statements may need to be prepared under the Environment Effects Act 1978.

Further, Alpine Resorts have natural attributes which may require specialist investigations and management approaches, and other legislation may, from time to time, emerge which requires the Resort Management Board to consult with other agencies.

MANAGEMENT OBJECTIVES

As the manager of alpine land, the Resort Management Board has a responsibility to protect its natural resources while providing for appropriate use by the public. To do this, the ARC objectives are:-

- to encourage the development of the Alpine Resorts in a planned and responsible manner for year-round use;
- to encourage and facilitate public use and enjoyment of the Resort;
- to ensure public safety;
- to protect water quality and mountain catchments;
- to ensure that Resort operations do not cause undue disturbance to flora and fauna, ecological associations, landscape values and the environment;
- to provide a range of quality services and Resort infrastructure needs.
- to protect and manage scenic, historic, archaeological, biological, geological and other scientific features to an extent consistent with the first objective (above);
- to encourage appreciation, understanding and enjoyment of the natural and cultural features and recreational opportunities by the public.

HISTORY

General

Prior to its proclamation as an Alpine Resort in 1983 and subsequent transfer of management responsibility to the Alpine Resorts Commission, Mt. Stirling was under the management control of the (former) Forests Commission of Victoria (FCV).

The modern history of Mt. Stirling prior to 1983 is dominated by forestry for timber production, and cattle grazing with a growth in nordic skiing in latter years particularly through the 1970's and 1980's. Since its proclamation, however, Mt. Stirling has become established as a major cross-country venue, with timber production essentially phased out. Only one grazing lease persists. While several major downhill skiing development strategies have been proposed, none has, at this stage, resulted in development.

The future options for the management and use of Mt. Stirling were formalised in the late 1970's by the Government following study by the Land Conservation Council which had been established in 1972 to review and recommend on the future management of all Public Land within the State.

In 1977, the LCC published a comprehensive study of the Victorian alpine area. Following extensive public comment, the Report was followed by the LCC's Final Recommendations which recommended that Mt. Stirling be designated as an Alpine Resort. Significantly, Mt. Stirling was proposed as a downhill and cross-country ski resort with development being phased in to follow the achievement of optimum capacity at Mt. Buller and in such a way that its development should not prejudice progressive development of other Resorts.

Following the LCC recommendations, the FCV in 1982 commissioned consultants to prepare a development proposal for the Resort. This work was completed in 1983, which coincided with the results of a special LCC investigation of the Alpine Area which endorsed its 1979 recommendations for Mt. Stirling. The Government in turn endorsed the recommendations as in-principle policy in 1983 and again in June 1989 when a further Mt. Buller/Mt. Stirling Development Strategy was released by the ARC for public comment.

In May 1990 the Government 'shelved' any immediate prospect for the development of the Mt. Stirling component of the Development Strategy by indicating that public funds would not be available for infrastructure development, however the in-principle support for downhill development at Mt. Stirling remains.

Mt. Stirling

Mt Stirling was named after James Stirling (1852-1909). He was born in Geelong in 1852. After leaving the National Grammar School, he moved on to become a draftsman in Geelong.

In 1873 he became a surveyor with the Lands Department and in 1875 was appointed District Surveyor and Lands Officer for the Omeo district of the Australian Alps. As well as much administrative work, James undertook geological, botanical and meteorological research in the Australian Alps. His ability and diligence led to his appointment as Government Geologist in 1897.

Cattle Grazing

Mt. Stirling was first grazed by cattle in the latter portion of the nineteenth century. Summer grazing continued on a yearly leasing system until after the 1939 bushfires when an agistment system was adopted in response to the need for stricter fire regulations. No firing of alpine and sub-alpine vegetation was henceforth permitted.

The granting of agistment rights continued through until the 1980's with cattle numbers and runs being approved by a committee of local graziers and the (FCV) with advice from the Soil Conservation Authority (SCA) - both the FCV and SCA are now incorporated into the Department of Conservation and Environment. The SCA was given supervising control over all grazing above the 1220m contour (approximately the snow line) by a Premier's Directive in 1960 and cattle numbers on Mt. Stirling became restricted to about 390 head for many years. Cattle presence has always been restricted to a period between November/December following snow thaw to April/May, depending on seasonal conditions.

The Resort Management Board is now requiring the lessor to take certain steps to minimise damage by cattle to the ski trails at Mt Stirling. This includes restricting cattle on the actual Summit of Mt Stirling to 160 head.

Three alpine huts are located within the Mount Stirling Alpine Resort boundary.

The Razorback Hut was constructed by the Purcell family and has been used for decades as a base from which their cattle grazing operation is controlled.

The Geelong Grammar School hut located just below the Summit of Mt Stirling was constructed in 1965 and has been used since then as a focal point from which the Timbertop School's outdoor activities programme operates.

Bluff Spur was constructed in 1986 as a shelter for skiers accessing the southern side of the Summit. The hut was constructed following the death of two boys who died in the Stanley Bowl area after becoming lost in the Bluff Spur Summit area in severe weather conditions.

Just outside the northern boundary of the resort is the Clear Hills Hut. This hut was constructed as a film set for the films 'Man From Snowy River I and II. It is now a major tourist attraction for the area.

Timber production

Prior to the 1940's, the mixed species forest within the Delatite Valley were extensively logged with timber being processed at a sawmill located at Mirimbah. Following the 1939 fires a change in Government policy resulted in the closure of the sawmill at Mirimbah and movement of mills to the main township.

Logging operations in the upper Delatite areas, mostly for Alpine Ash commenced in the late 1940's in response to the post-war housing boom.

Selective logging was practised with the best quality mature trees being felled. These operations resulted in spasmodic regeneration and during the 1960's the FCV introduced clear-felling to promote better regeneration.

Between 1968 and the early 1980's about 40-50% of the montane forests were clear-felled and are in various stages of regrowth following regeneration burning and seeding. Much of the cleared forest consisted of mature even aged Alpine Ash partly originating from severe wild fires in 1851.

In 1979, the Land Conservation Council produced its Final Recommendations for the Alpine Area study. These recommendations which were subsequently endorsed, proposed that the area to be designated as Alpine Resort should be closed to forestry for timber production with the exception of the only remaining stand of older regrowth within the resort - a stand of 1926 regrowth on the Circuit Road designated for 'once only' logging.

This area was subsequently logged in the mid 1980's.

Roads Access Tracks

Circuit Road, the major access road on Mt. Stirling, was completed in the 1950's as a key logging road. The road circumnavigates Mount Stirling and is approximately 50km long. The road has been heavily used by logging traffic through the summer months, and increasingly for recreational use particularly by

four-wheel drive vehicles. Most of the remaining main four-wheel drive access roads were completed in the 1960's. Considerable deterioration of many tracks subsequently occurred and four-wheel drive access became tightly regulated with tracks being closed through the winter months (by proclamation by DC&NR) generally between late April to late October. Four-wheel drive recreational activity increased dramatically through the 1980's.

Ski Trails

The major development of nordic ski trails has occurred since the 1970's in response to the growing interest in the sport. Many of the 65kms (approx.) of trails have been developed on already existing access tracks and old logging tracks, which have required varying degrees of modification. Others have required clearing of snow gum and scrub, but where possible tree clearing and associated earthworks have been kept to a minimum.

Until 1981, trail clearing and maintenance of ski trails was undertaken by the Mansfield Nordic Ski Club, however this was then resumed by the FCV and subsequently the ARC. The Mansfield Nordic Ski Club continues to provide voluntary labour to maintain trails.

MODERN HISTORY OF SKIING DEVELOPMENT AT MT STIRLING.

1960 GGS Timbertop first started skiing Mt Stirling in 1960 as an optional winter activity. At this stage there was no trail network and skiing was mainly done on open natural areas and areas created by recent logging. The skis used were downhill skis with cable bindings.

Early 70's Management of Mt Buller started talking of the possibility of turning Mt. Stirling into a ski area and several visual surveys were done to ascertain the snow retention.

1977 In June the Mansfield Nordic Ski Club was formed after a public meeting to ascertain the community interest in the formation of a cross country ski club.

In the early days of the Club, members prepared, marked and maintained much of the present trail network on Mt. Stirling and acted as guides for members of the public who wished to ski tour on the mountain. As the road was not cleared of snow in the early days, most of the Club's skiing was done on

the existing road and it was only the fittest who skied the several kilometres to Telephone Box Junction.

Few members of the Club possessed skis at that time but arrangements were made to hire skis from GGS Timbertop.

Access to Mt Stirling was rugged due to the absence of any snow clearing, with most people driving as far as they could, parking and skiing from there. TBJ and King Saddle were considered good destinations.

1978 Mansfield Nordic Ski Club members started to purchase their own gear as stocks became available in Australia. Summer working bees held by the Club had been well attended and some new trails had been opened up in the King Saddle, Razorback Hut and TBJ areas using old logging tracks.

The first Stirling Silver Race was held on August 5th. A submission by the Club was forwarded to the Land Conservation Council which was looking into the future land use of the mountain. The 'Age' Newspaper on 10/7/78 told Victorians about the Forests Commission plans to develop Stirling for both cross-country and downhill skiing after the LCC had made its final recommendation.

1979 For the first time track clearing was done by the bulldozer. This was mainly Alby's Drop and Hut Trails. The number of skiers using the trails increased greatly and the need for a trail map was important so the MNS Club decided to produce one for use in the 1980 season.

This resulted in the naming of trails (after Club Members). Some names were:

- | | |
|----------|-------------------------|
| (Arthur) | Flett's Loop Baldy Loop |
| (Colin) | Heath's Trail |
| (Graham) | Godber's Trail |
| (Ragnor) | Bjaaland Trail |

1980 Interest in cross-country skiing at Mt Stirling exceeded all expectation and the MNS Club's summer working bees had created many kilometres of new trails. The Forests Commission, for the first time, assisted with heavy machinery on trail extensions. These trails included "River Spur Trail", "Falls Nest Spur Trail" (Bluff Spur Trail) and "Link Trail"

For the first time, the Circuit Road (to King Saddle) and the No. 3 Roads were gazetted as being closed for winter in the interests of safety and convenience for the vastly increased numbers of skiers using the roads.

In this year a Government Working Party was set up to look at the possible development of Mt Stirling as a future downhill ski resort.

1981 The MNS Club map of the area was revised to include many new tracks. A "long drop" toilet was constructed at TBJ. The Stirling Silver Ski Race was held for the second time. The Circuit Road was also closing during the winter to Howqua Gap. A snowmobile was purchased by the Forests Commission to help with safety and maintenance work and for transportation .

An announcement was made in January of plans to open up Mt. Stirling for alpine skiing in 1985.

Trail works included the construction of Upper Baldy Trail and work was started on Razorback Trail. One kilometre was constructed from the TBJ end but due to the steepness of the terrain, the bulldozer was re-directed to the Bus Huts end where another kilometre was constructed before the bulldozer was called away to a fire. This left one kilometre unmade in the middle.

Hans Grimus was contracted by the Forests Commission to collect snow depths and conditions at various locations around Mt Stirling as base data for future development. A Water Quality Monitoring Programme was undertaken by the Rural Water Commission on the Delatite River.

1982 On the 16th June, 1982 the Stirling area (comprising 2700 hectares) was declared an Alpine Reserve. For the first time a Ranger was appointed to the area. His duties were to upgrade the ski trails, collect data for the proposed downhill development and look after the day-to-day running of the area. Triangular reflective trail markers were used to mark the trails. Toilets were constructed at the Razorback Hut.

During the winter, a take-away food caravan operated at Telephone Box Junction, proving popular

with visitors.

Visitor statistics were not collected due to the poor snow season. Throughout the year FCV Consultants (Loder and Bayly) collected data for the Development Plan for Mt Stirling.

The MNS Club paid for the construction of a link trail between Falls Nest and River Spur Trails.

1983 The major trail work prior to winter involved the widening of trails to allow vehicle access for maintenance.

A new shelter for the catering staff and Forests Commission casual staff was constructed at TBJ. Toilets were constructed at King Saddle.

1984 A new toboggan area was constructed in the clearing near Baldy Creek Chairman's Ridge area. The many other clearings around the lower trails were cleaned for teaching and practice areas. Re-alignment of the steeper sections of Howqua Gap, Stirling, Upper Baldy and Hut Trails was carried out together with extensive drainage works. Razorback Trail was finally completed allowing spectacular access to the Mt No. 3 area. The link between Howqua Gap and River Spur and the link between Falls Nest Spur and Stirling Trail Spur were abandoned as they could not be easily developed as ski trails.

The shelter at TBJ was extended to house 3 caravans.

On the 29th of November the Reserve was officially declared an Alpine Resort, the responsibility for its maintenance and operation being transferred to the newly formed Alpine Resorts Commission.

1985 When the Alpine Resorts Commission took over in 1985 many new changes were instigated, the most major being the construction of a building at TBJ housing the ski hire and the ski patrol. The building also incorporated a public shelter with a fireplace and had space for the food van. The carpark was signposted properly and major drainage works were carried out on Fork Creek Loop and Chairman's Ridge trails. Minor drainage works were carried out on other trails. Falls Creek Loop was changed to Fork Creek Loop to reduce the confusion between it and Fall Nest Spur and to highlight the fact that it loops around Fork Creek. Many new ski trails were developed in the Mt No. 3 Razorback Spur area.

A new vehicle and skidoo were purchased with the ARC takeover and the Mt Stirling Ticket Office was set up at Mirimbah in the old log checking station and an assistant was employed to help with car parking on weekends.

This was the first year of the voluntary ski patrol which was set up by the Victorian Nordic Rescue Service using mainly Mansfield Nordic Ski Club members. Two youths, Xavier Clemann and Robert Harris, died when they returned to the Summit on one of the worst days for high winds and heavy rain experienced in the area. They were found in the Stanley Bowl area after an extensive search. Their deaths highlighted many important things, foremost of which was the need for people to be better educated in snow safety. This assisted in instigating the production of a "Snowsafe" booklet and "Let Someone Know Before You Go" leaflet.

The inaugural Klingsporn Classic ski race was held from Buller to Stirling and attracted 50 entrants. The race was named after the Klingsporn family, early district pioneers who helped to transport skiers and their gear to the snowfields and also ran cattle around the Corn Hill area. This year the Stirling Silver race attracted 100 competitors.

1986 The 1986 snow season saw the culmination of a year during which many subtle changes had occurred to make Mt. Stirling Alpine Resort a safe and more enjoyable place to cross country ski. It was the first season that the Resort was widely recognised and appreciated by both the media and the skiing public as a major Victorian cross country ski resort. This was partly due to the benefits derived by smaller resorts from the formation of the Alpine Resorts Commission, the publicity received from the loss of two lives on the mountain the previous season and the efforts made by Government departments and others to educate people about snow safety and resorts.

Summer works in preparation for the 1986 season included the extension of the Telephone Box Junction visitor centre to include changing rooms and a separate ski hire area. The public shelter area had a concrete floor and benches were installed. Retaining walls and other landscaping improved the appearance of the area.

A ticket office was built at the entrance to the Resort at Mirimbah.

Trail improvements included the re-aligning and widening of Fork Creek Loop, Upper Baldy Loop and the link between Fork Creek Loop and Chairman's Ridge Trail. Small sections of Stirling, Hut, Clear Hills and Chairman's Ridge Trails were realigned. Drainage was improved on some trails by installing culvert pipes.

Safety improvements included the formation of "catch all" trails in Stanley Bowl, Stirling Creek and Dugout Creek. These allow easy access (and escape) during searches and rescue. Falls Nest Spur was renamed Bluff Spur (its original name) to prevent the confusion that arose with Fork Creek Loop (which was originally Falls Creek Loop). The pole line around the Summit was enlarged to encompass the False Summit and the spaces between poles was halved. New reflectors and reflective arrows were fitted .

An Axetrack oversnow vehicle was ordered to enable snow grooming and for search and rescue but it did not arrive in time for this season.

However, some snowgrooming and tracksetting was done with the skidoo when time permitted. A Bombardier vehicle on loan from Lake Mountain was used for part of the season.

Construction of a new refuge hut also commenced on Bluff Spur. This was built with funds raised by the parents of the two youths who died the previous season - its site chosen (between carparks and summit) in the hope of preventing a re-occurrence of the previous year's tragedy. A new hut was also built out at Mt. No 3 by the MNS Club.

This season was the first time a private contractor was used for snow-clearing on the access road and this proved more efficient and cost-effective than using the Department of Conservation, Forests and Lands grader. A Ski School operated for the first time this season.

It was the second year of operation of the Ski Patrol. There were 35 active volunteer patrollers assisted periodically by Mt Buller Patrollers. It was finally properly equipped except for parkas. A Committee consisting of Leader, Secretary, Equipment Officer, Training Officer, representative from the Mt. Buller Ski Patrol and the Mt. Stirling Ranger was responsible for the running of the Patrol. A professional, efficient and controlled approach was cultivated. A U.H.F. radio system was hired for use by the Patrol with a base station at the Mt Buller Patrol Base resulting in much improved communication.

The two ski races held during the season were well patronised. The Klingsporn Classic Race (Mt. Buller to Mt Stirling) had 71 entries on a perfect course that had been groomed by a Kassbohrer. Many expert racers insisted that it was the best race and course they had ever skied! The Stirling Silver had 74 entries and due to poor snow conditions on the usual course, it was held on the Circuit Road towards River Spur. This proved to be a great course for skaters with some very fast times.

1987 Works undertaken in preparation for the season were not as visually obvious as those to the 1986 season, but they did help to consolidate and upgrade both the safety and the standards of trails and facilities within the resort.

Improvements to facilities included the provision of public toilets in the Summit area - adjacent to the GGS Hut. The completion of the refuge hut on Bluff Spur, provided a dry, warm resting place between the carparks and the summit area and the Howqua Gap and Clear Hill Huts were renovated.

Trail improvements included the re-alignment of a section of Bluff Spur around the new hut, installation of boom gates on some trails to prevent summer use by 4WD vehicles and encourage grass cover and hence snow retention. Drainage on all trails was improved with the installation of more culvert pipes and safety was improved with the installation of more trail markers and the removal of more dangerous rocks and snags.

A new oversnow vehicle was delivered, and although its primary purpose was as a rescue vehicle, it was also used for trail packing and grooming. This resulted in a good, even snow surface and better snow retention.

All commercial franchises on Mt Stirling operated 7 days a week for the first time. A shuttle bus operated from TBJ to King Saddle for the last few weeks of the season to reduce the long walk to the snowline.

1988 Works undertaken by the Alpine Resorts Commission on Mt Stirling for the season dramatically improved the skiing facilities available near Telephone Box Junction.

Virtually the entire works programme concentrated on the Baldy Loop Trail and a new beginner/teaching area near Telephone Box Junction. The Baldy Loop was originally two logging tracks on opposite sides of Baldy Creek, connected by a rough track down to the creek and an old narrow bridge. As its original purpose was for logging, not skiing, it had several steep sections and many areas of poor snow retention due to bad aspect and poor drainage. Sections of the track were re-aligned to make the trail of an even skiing standard (beginner - intermediate) and the whole trail was piped, graded, rolled, landscaped, re-marked and re-vegetated. It is now possible to ski on this trail with a minimum snow cover,

The trail itself was re-aligned to bring it back through the "old toboggan run" This toboggan run was re-worked, with all stumps removed to form an ideal cross country beginner teaching area and practice area.

1989 Major works undertaken this year included works on extension of car parking below Telephone Box Junction. Some improvements were made on the Telephone Box Junction Building.

The Mount Stirling Trail Maps had developed to a form that is used as both a user-friendly map and promotional document.

1990 The 1990 snow season proved to be a boon for Mt Stirling's cross country ski trails. Not only was there an excellent cover for the season on all trails but the snow remained at lower elevations such as Telephone Box Junction for most of the season.

Mount Stirling recorded a significant increase in visitor numbers during the 1990 season. The visitor level represented a significant proportion of the cross country ski market. There was a 47% increase in visitor numbers over the previous year - the greatest increase of any Australian ski area.

During the year it was felt that there was a need to encourage the formation of a Liaison Group involving the major user groups of Mount Stirling. The Committee's membership comprised commercial interest, Victorian Ski Association, Department of Conservation and Environment, Mt Buller Committee of Management, the Ski Touring Association of Victoria and Mansfield Nordic Ski Club.

The primary objectives of the Liaison Committee were:

- improve liaison between Mount Stirling management and interested groups;
- to make recommendation on works programs and priorities; and
- to advise the ARC (at Resort level) on matters related to the development and promotion of cross country skiing.

The summer works programme saw major trail work undertaken on the following areas of nordic trail. Realignment of a short section of Hut Trail; realignment to a section of Stirling Trail; realignment to a section of Fork Creek Trail where the Fork Creek Loop and Chairman's Ridge to Fork Creek Loop Link Trail were combined to form Fork Creek Trail.

Pole line in the Summit area was realigned to cross the Summit Saddle rather than around the False Summit thereby providing a more skiable route around the Summit.

Other works undertaken included: Geelong Grammar School Timbertop extended the G.G.S. Hut on Stirling Trail by enclosing the verandah to provide increased storage space for over-nighter's packs.

In association with Mount View Horse Riding Safaris, the A.R.C constructed horse yards at Razorback

Hut to reduce the damage to the area by horses being yarded overnight.

Several walking trails were prepared in the area of Telephone Box Junction to separate winter walkers from skiers.

Boom gates were installed on several trails to complete the project of closing nordic ski trails to summer vehicular traffic. The only trails which now remain open during summer are the Howqua Gap Trail and the Clear Hills Trail.

The A.R.C. undertook an extension of the space made available to Mount Stirling Ski Hire and Ski School within the Telephone Box Junction building.

Toilets: two relocatable toilet buildings (male and female) with flush toilets and change rooms were installed at Telephone Box Junction during the summer period.

1991 The season saw many significant changes to the resort. In an effort to have the resort "pay its own way", Trail Use Fees were charged for skiers using the trails. The \$5 per head charge assisted in the purchase of a Rolba Snow Groomer which worked extensively in maintaining the snow cover and grooming for excellent skiing conditions throughout the season.

The Mansfield Nordic Ski Club assisted in the construction of a Race Loop on the Stirling Trail. This provides a high level loop for races at times when snow is limited on the lower trails.

The commercial operator, Stirling Experience, constructed a Bistro with kitchen at Telephone Box Junction to replace the caravan that existed to house the food outlet.

1992 The TBJ bistro opened during the summer to service a growing number of 4WD visitors and the ski hire commenced hiring mountain bikes.

Summer works at the Resort were scaled down owing to a reduction of available funding with the move to a user pay system of management. Public facilities were serviced by Mt.Buller Resort staff once per week during the non snow period

1993 Telephone and Security systems were installed at TBJ

The Mt. Stirling Development Taskforce was formed with the aim of developing a viable tourism model for the mountain which could satisfy all existing users of the mountain

1994 The Mt. Stirling Development Taskforce and Stirling Experience took out an interlocutory injunction against the Alpine Resorts Commission for failure to comply with the Alpine Resorts Act. The result being that the Government directed that a full and independent Environment Effects Study be conducted on the future outcome for the development of Mt.Stirling.

1995

1996 The Mt.Stirling EES was completed and an independent panel appointed by government to review and make recommendations as to the future direction for development

1997

1998 A new Interim Mt.Stirling Resort Management Board was appointed under the Alpine Resorts (Management) Act 1997 to oversee operation of the Resort.

An 11 KVA Hydro Electricity generator was installed under the waterfall downstream of TBJ by Stirling Experience. The system provides continuous 240 volt power to the Resort buildings at Telephone Box Junction.

SOILS, GEOLOGY AND GEOMORPHOLOGY

Both Mt Buller and Mt. Stirling are the result of numerous uplifts and deformations from mid-Devonian times which have resulted in the exposure of granitic outcrops.

The Mt. Stirling summit, which is a large rounded mountain top, has five main spurs leading off it. With

a similar geology to Mt. Buller, outcrops of granodiorite are common.

The most common soil type in the alpine area is the alpine humus soil with a lesser incidence of skeletal soils in rocky positions and peats in depressions. The alpine soils are commonly shallow and have high levels of organic matter with a coarse mineral fraction (sandy loams). They are often friable, have a fine crumb structure and low bulk density, and, while of moderate permeability, are highly erodible once disturbed.

Soils on the lower slopes are somewhat deeper where mineral-dominant horizons are associated with weathering of granitic parent materials. These are generally moderately deep, structured brown gradational soils, of moderate permeability and are moderately erodible once disturbed.

Resort Management Board policy is to conserve soil resources by implementing sound soil management and erosion control measures.

Soil disturbance is required for road and village infrastructure works, landscaping and works associated with ski slope development stabilisation and maintenance. However alpine soils are often poorly developed, poorly structured and shallow and are subject to extreme climate variables. Thus careful management of earthworks is required to protect and maintain the resource.

Under Section 66 of the Conservation Forests and Lands Act 1987 the Resort Management Board, as a Public Authority, is required prior to the commencement of any soil and vegetation disturbance above 1220m elevation above sea level, to submit an annual plan of works to the Director-General for comment on any necessary measures to be taken for the protection of land, waters and wildlife. Further to this as a result of the notification, the Director General may comment on any necessary measures to be taken for the protection of land, waters, flora and fauna, and the Director-General must ensure that the Resort Management Board receives a copy of any comments so made.

Regular earthworks is necessary by the Resort Management Board and other agencies for installation and maintenance of service installations including stormwater drainage, and sewerage and water, electricity and gas reticulation, and for road maintenance. This work tends to be confined to point locations or trenches and can be tile source of instability if inadequate remedial measures are not adopted.

Broadacre soil disturbance is generally associated with ski slope development and maintenance. This includes super grooming of ski slopes which is the smoothing of the ski slope surface to pursue skiing on lesser coverings of snow and to improve skier safety. The implementation of ski slope works is the responsibility of the ski lift companies at respective resorts under approval of the Resort Management

Board and it is important that accepted standards be set and complied with to minimise impact on soil condition, hydrology and slope stability. Comprehensive guidelines are being developed with DC&NR including approvals procedures for proposed works.

Management action:

- Prohibits the use of non-alpine soil within any Alpine Resort area;
- Closely supervises the importation of any alpine soil into the Resort from other alpine areas to minimise the risk of introducing soil bacteria and fungi.
- Stockpiles surplus topsoil excavated during approved works for use in subsequent works;
- Manages excess soil and fill for stock-pile, reuse or disposal;
- Ensures rehabilitation costs are included in the budget for all works proposals, including those of lessees;
- Will routinely address remedial measures for degraded sites or sites with potential to degrade in annual works programs as identified by the Area Manager;
- Will contribute to joint efforts with DC&NR to facilitate the use of native species in revegetation works.

FLORA

Vegetation at Mt. Stirling can be described as specialised and varied with sub-alpine woodland predominating. The sub-alpine woodland is associated with alpine herbfield and grasslands in frost pockets on higher areas, and peat bogs in drainage lines. On the lower fringe there are tall woodlands of mountain gum and snow gum, whilst on the highest peaks are grassland, alpine herbfield and fjeldmark formations.

The vegetation in the Upper Delatite Catchment which is representative of the remainder of the Resort areas is broadly categorised as follows:-

Snow Gum - Mountain Gum Tall Woodland

Sub-alpine woodlands of snow gum occur at an altitude of about 1400m and can also be found in tall woodland or open forest formation on ridges between 1200 metres and 1350, if such areas are exposed.

Snow Gum Sub-alpine Woodland

Occupying the higher areas above 1600m, the trees are typically shorter, more widely branched and open crowned in sub-alpine woodland form.

The dense shrub or heath layer which is found under the coppice and often surrounding it for a short distance, is composed mainly of alpine oxycobium (*Oxylobium alpestre*) at lower levels, shaggy peas (*Hovea loneifolia*) at higher levels and mountain pepper (*Drimys lanceolata*) in moister places.

Alpine Grasslands and Herbfields

Sod tussock grasslands, dominated by interlacing tussocks of snowgrass (*Pea australis* sp. agg.) are found in cold air drainage basins at altitudes as low as 1000m but more commonly above 1600m, occupying slopes between snow gum sub-alpine woodlands and peat bogs in the depressions. They extend also above the limit of snow gum at 1900m. The grasslands are closely associated above 1600m with alpine herbfields which are communities dominated by snow grass and by the snow daisy.

Responsible management of the resort's forest and vegetation resource in accordance with accepted government policy is a high priority of the Alpine Resorts Act. Close liaison with DC&NR is required in all aspects of management of the resource. Any works or practices which involve soil and vegetation disturbance above 1220m require formal liaison through submission of works plans to DC&NR for comment.

The Flora and Fauna. Guarantee Act 1988 caters for the preservation of rare or endangered species through a process of listing taxa and communities of flora and fauna where shown to be in a demonstrable state of decline likely to result in extinction or if significantly prone to future threats which are likely to result in extinction.

Also, a potentially threatening process is eligible for listing if, in the absence of appropriate management it poses or has the potential to pose a significant threat to the survival or evolutionary development of a range of flora or fauna.

Under either of the above circumstances the Scientific Advisory Committee appointed under the Flora and Fauna Guarantee Act is responsible for managing the process by which the eligibility of taxa or communities of flora or fauna, or processes for listing under the act can be determined.

FAUNA

The Fauna of Mt. Stirling is generally typical of other high country areas in Victoria, however detailed information on the Resort is limited as no comprehensive fauna survey has been done on the mountain.

An extensive literature search and discussions with zoologists and botanists were conducted by the forests Commission in 1982 in association with field work done at that time, and much information generated from that work is deductive.

The work identified actually recorded species, and species likely to exist on Mt. Stirling matched against the major land unit types - Alpine area, Sub-alpine spurs, Sub-alpine valleys and montane slopes and valleys. Thirty-five species of bird were recorded out of a likely list of 69 species, however a wider variety may be present. Likewise the range of likely native mammals was identified as 23 including 6 species of bat. Fourteen reptiles are considered likely of which five were identified, and of nine likely amphibians (frogs, toads and toadlets) only two were identified,

The major area of the Resort is under forest and subject to no further logging and under a reasonable level of management the future habitat of existing fauna can be assumed to be secure. This includes stream biota given that under current management practices levels of siltation are reduced from when logging operations were predominant, and that water quality studies have indicated water within the Mt. Stirling streams as being of in 'near pristine' condition.

It is the Alpine Resorts Resort Management Board policy to protect and where appropriate enhance the habitat of rare and endangered fauna and, within the broader objectives of Alpine Resort management under the Act, to plan and implement resort management activities in a manner which enhances the habitat of native fauna which are not rare and endangered.

At this point the Stone fly (*Thaumatoperla flaveola*) is the only identified species classified as 'rare' under the International Union Conservation of Nature and Natural Resources (IUCN) definition - ie a species whose population is small but not, at present, endangered. Studies are underway into its habitat and distribution.

Where any further rare and/or endangered species are discovered management practices can be implemented to protect, enhance or artificially replicate identified specialised habitat features, to allow the co-existence of species and resort use.

HYDROLOGY

Mt. Stirling forms part of the upper catchments of four stream systems being the Delatite, Howqua, Broken and King rivers. The Delatite and Howqua Rivers flow in an easterly direction to feed into the lake Eildon Catchment and hence the Goulburn River. The Broken River flows north easterly from Mt. Stirling before turning north through Benalla before joining the Goulburn River at Shepparton. The King River flows north from the north face of Mt. Stirling into the Ovens River which in turn joins the Murray River. Each system performs an important role in the controlled management of the States water resources.

The snowfields are a major water catchment resource for the slow release of precipitation (rainfall and snow) into the river systems. Mt. Stirling has particular values in that the Upper Delatite Valley which occupies a portion of the Resort is a proclaimed water supply catchment, providing for Mansfield and surrounding areas. The headwaters of the Howqua, Broken and King Rivers lie within the Resort boundaries.

Within an Alpine Resort substantial development such as road works, service infrastructure installation and operation, and ski slope works, together with the use they attract, has potential to impact on water quality. In the past, broadacre forestry operations have also impacted on catchment and stream condition. The development of a data base is therefore important to monitor the impact of existing development and to assist in predicting the impact of proposed works on water quality.

The Commission has been developing a Water quality database for selected Mt. Stirling sub-alpine streams since 1986. These studies have been undertaken by the Rural Water Commission for the Alpine Resorts Commission. The data collected demonstrate minimal impact on water quality from existing Resort development to the point where the Delatite River leaves the Mt. Buller/Mt. Stirling Resorts at Mirimbah. It is intended that a sampling program from selected representative points will be continued in collaboration with the RWC.

CLIMATE

Temperature/ Humidity

The alpine climate is characterised by warm, dry summers and cold, wet winters.

Midday Temperature readings from Mt. Buller/Mt. Stirling at 1707 metres elevation from early June to late September over a 10 year period from 1979 to 1988 have indicated a mean temperature of 1 degree Celsius. The June noon temperature averaged -1 degree Celsius, increasing to 0 degree C in July and 3 degrees in September. Mean temperatures in January vary between a maximum/minimum of 19 degrees C/10 degrees C. Extreme temperatures are likely to range from 31degrees C to -12 degrees C.

Relative humidity is typical of the alpine situation, being reasonably high and uniform for most of the year. Average relative humidity increases from 60 percent in summer to 90 percent in winter for 9 am. reading, which are 10 percent lower at 3 am. Frost occurs on average 150 mornings per year.

Winds

The main precipitation bearing winds come from the west and south-west, with westerlies being the most persistent winds year-round. The average wind speed in the summit areas during the ski season is about 18 knots.

Precipitation

Annual average precipitation is between 1600 and 2000 mm with a winter maximum of 200 mm/month and a summer minimum of 100 mm/month. Snow falls on average 60 days per year mainly in 3uly and August.

The June snowfall average is 33cm. July and August peak to an average of 75cm, while September decreases to an average of 28cm. By the end of August, 87 percent of the total snow fall has fallen, with the remaining 13 percent falling in September. Over ten years from 1979-1988 the average snow fall was 212cm.

Snowpack

Ski areas are generally considered feasible if there is at least 90 percent probability of 60 to 75 cm of snowpack for a period of three months during the winter season. Snowpack levels increase through the winter reaching a maximum in August and September. As experience demonstrates snowpack can be limiting in poor snowfall seasons on the Resorts, however slope grooming of ski trails markedly improves skiability performance.

Microclimate

Microclimate is the climate near the ground where surface influences of any sort (e.g. topography, aspect, vegetation etc.) can significantly influence local climate conditions. As a general rule north slopes are the warmest, followed by eastern and western slopes, with southern slopes being the coolest.

In snowfields microclimate is important and given the opportunity skiers will follow the sun around the mountain except when intense solar radiation adversely reacts on snow conditions. Snowpack retention is critical and for this reason slopes and trails should naturally be located where snowpack remains for the longest portion of the season. This is particularly important at lower elevations where the amount of natural snow is least and saving what is there is of paramount importance. Conversely, in the alpine area sun exposure during July to September, is very important to skiers.

SKI FIELD MANAGEMENT

Skifield management includes cross-country skiing, alpine skiing and snow recreation within the Resorts.

Cross-country Skiing is the major recreational activity enjoyed by winter visitors to Mt. Stirling.

Resort development plans have been prepared for Mt Stirling however no action is currently being taken by the Government in the development of alpine skiing facilities at Mt.Stirling

Skifield management embraces:

- Works associated with the development, maintenance and stabilisation of Ski slopes

- Snow management
- Public safety

Ski Trails are the key component of a nordic ski resort. Under normal circumstances trail development requires earth, drainage and rehabilitation works to improve skier capacity, safety and facilities. Annual trail maintenance and upgrading may also involve earthworks, drainage and rehabilitation, vegetation management (eg. slashing, cutting etc,) and rock removal to improve Skier capacity and safety,

Trail development or trail maintenance must be carried out to acceptable skifield design and environmental standards which take into account skier safety, landscape values, slope stability, soil conservation, hydrology and ecology.

SKI TRAILS

Mt. Stirling has over 60km of marked and maintained cross-country ski trails covering the full range of experience ' This is the most extensive cross-country ski trail network in Australia. Access Onto the trail network is normally via the Telephone Box Junction day base at the 1200 meter elevation level. Approximately 25km of trails are continually snow groomed.

A trail grooming standard has been developed for Mount Stirling noting the priorities for which each trail will be groomed.

SKI PATROL

The Ski Patrol services in the Resort within the Declared Snow Season operate in accordance with a Ski Patrol policy and Procedures Code.

Skier accidents require competent personnel to administer First Aid and to provide evacuation services using specialised equipment. Ski Patrolling aims to reduce the likelihood of accidents by establishing strong visible presence within the Resorts and by promoting skier safety.

The Commission prepared a 'Ski Patrol Policy and Procedures Manual' to apply across all Victorian Alpine Resorts. This document provides all detail of Ski Patrol policy and operation.

The Australian Ski Patrol Association (ASPA) is the nationally accredited body responsible for co-ordinating ski patrol standards. All Ski Patrols are affiliated with ASPA and their members are required to have ASPA or recognised equivalent qualifications.

In addition, prospective patrollers must complete an on-slope skills training program to the standards required by the Resort Ski Patrol Director before being admitted as a full-time or part-time patroller.

With this background each of the Resorts operate a Alpine Resorts a highly skilled Ski Patrol. In 1997 responsibility for the ski patrol was handed over to the respective lift companies in the large resorts, however within the Cross Country Resorts the function remains the responsibility of the Management Board.

RESORT INFRASTRUCTURE

Administration

The Alpine Resorts Management Board provides all municipal services and all village infrastructure excepting electricity reticulation and telecommunications. This includes Sewerage reticulation and treatment, water supply, waste disposal, roads and carparks.

The Board is required to liaise with other government agencies with overlapping responsibilities in alpine areas.

Access Rooding

Access to Mt. Stirling is achievable throughout the year Via Mirimbah. Access from Mt.Stirling to Mt Buller can be made during Summer by 4WD vehicle and through winter by

authorised oversnow vehicles. Access can be achieved via the Corn Hill trail on Mt.Buller which meets the Mt. Stirling Circuit Road at Howqua Gap.

Regulation 26(a) Of the Alpine Resorts (Entry) Regulations specifies that all vehicles entering Mts.Buller and Stirling Resorts during the declared snow season must carry a pair of wheel chains that are capable of being securely fitted to one pair of drive wheels of the vehicle. This is in the event of the road becoming unsafe due to icy conditions. 4WD vehicles, while required to fit chains less often than 2WD vehicles, are not exempt from the regulation and are often required to fit chains in a normal snow season.

Car Parks

There are two car path at Mt. Stirling, both unsealed. The larger car park at Telephone Box Junction has a capacity of 150 cars (450 - 525 people), the smaller approximately 170 metres further down the access road has a capacity Of 100 (300 - 350 people) car parking spaces

Water Supply

Mt. Stirling is not serviced by a reticulated water supply system. However, a locally pumped supply from Falls Creek is used to service the ARC office and amenities block at the adjacent Telephone Box Junction,

Sewerage

At Mt. Stirling, new male and female transportable toilet units have been installed at Telephone Box Junction 1990. Effluent is collected in an enclosed storage tank which is pumped to sullage lines within granitic sand at a higher elevation.

Solid Waste Disposal

Garbage from Telephone Box Junction on hit. Stirling is taken off-site by Resort staff.

Power/Electricity:

Mt. Stirling's electricity at TBJ is supplied by a 11 KVA Hydro Electricity generator located 600mts below TBJ on Falls Creek. The system was installed by Stirling Experience and commissioned in 1998. It supplies continuous 240 volt power to TBJ, excess supply being dumped into heating elements within the building. A back up 45 KVA Generator is also located on site.

Gas:

A bulk gas cylinder is located on site at Telephone Box Junction.

Buildings and Constructions

The major ARC building at Telephone Box Junction has been constructed by the Alpine Resorts Commission and the Bistro Proprietor over a number of years. The building has now developed to a stage where it houses an resort staff lunchroom, information room, ski patrol area, ski hire, public shelter with fireplaces and bistro.

Other buildings maintained by the ARC at Mt Stirling include a toilet at TBJ, "long drop" toilets at tile GGS Hut, Razorback Huts, Bluff Spur Hut and King Saddle and a Groomer/Storage shed at Fork Creek Trail.

Fire Protection:

Fire protection within the Resorts is totally the responsibility of DC&NR. it is expected however that future legislation will provide that within the prescribed areas the CFA will assume fire protection and mitigation responsibilities subject to the adequacy of facilities.

Telecommunications:

Mt. Stirling currently has Telecom communications facilities including two private lines connected by solar powered radio link to Mt Buller.

A UHF Radio network is operated by ARC within the Mt. Buller/Stirling area, utilising 2 channels for Ski Patrol and Resort management purposes. This provides for excellent communications throughout the Resort and, in addition, caters for search and rescue needs .

Aerials located on Mt Buller's Mt. Baldy service this network.

Picnic Facilities/Passive Recreation Facilities:

No picnic facilities (ie seating tables or BBQ) are available within the Resort at this stage.

At Mirimbah, the Mt.Buller Resort maintains an area of 4 hect. which contains seating tables and solid fuel BBQ's. A modern toilet block is also on site. The Mirimbah site was formerly the site of a timber mill and settlement.

MOUNT STIRLING ALPINE RESORT

SUGGESTED READING/REFERENCE LIST

Copies of the reports listed hearunder are available for perusal at the Commission's Office (1013 Whitehorse Road, Bo: Hill (ph: 03 895.6900) or can be copied at 30 cents pr sheet,

Alpine Study Area - Various reports

(Land Consertvation Council, Victoria) 1977/79

Alpine Area Special Investigation

(Land Consertvation Council, Victoria)

Mt Stirling Alpine Resort Study, Working Papers

(Loder & Bayly Pty. Ltd.)

Mt Stirling Development Proposal and Environment Effects Statement -

Interim Assessment Report

(Ministry for Planning and Environment)

Mt Stirling Alpine Resort - Review Report

(Loder & Bayly Pty Ltd)

The Victorian Alps - A resource base.

(The Forest Industries Management Group 1975)

The Alps in Flower

(I. R. McCann)

Beyond the Snowgums

(The Alpine Area - Kosciusko National Park)

Kosciusko Alpine Flora

(A. B. Costin, M. Gray, C. J. Totterdell, D. J. Wimbush)

The South East Australian Alpine Climate Study

(A report by the Meteorology Department, University of Melbourne for the Alpine Resorts Commission - August 1990)

The Biology & Chemistry of Selected Mount Stirling Sub-Alpine Streams

(Survey & Monitoring 1986-87)

(Rural Water Commission of Victoria - Report No. 91, November 1987)

The Biology & Chemistry of Selected Mount Stirling Sub-Alpine Streams (Survey & Monitoring 1986-87)

(Rural Water Commission of Victoria - Report No. 100, July 1989)

The Alps at the Crossroads

(Dick Johnson, September 1974)