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1.0 Introduction

The development of the Falls Creek mountain bike (MTB) trail network represents a substantial financial investment in year-round tourism infrastructure at the Falls Creek Alpine Resort. As an important component of visitor infrastructure, it will need to be well maintained to provide safety for both users and the environment.

Managing risks, both personal and environmental, are key objectives of this Management Plan. Risk management will be a result of regular monitoring and the carrying out of required remedial and maintenance works. The 2003 and 2006 fire events in the alpine areas is of particular relevance in managing tree hazards over the coming years and will be a priority in ensuring a safe environment for trail users. Similarly, the potential increased environmental threat from introduced flora and fauna and soil and sedimentation movement will need to be monitored and managed on an ongoing basis to ensure that the environmental quality of the area surrounding the trail is maintained at its current high standard.

Finally, as a key component of year round visitor experiences currently being developed by FCRM the trail network will need to be maintained to a standard that provides resort guests and residents with a quality world-class experience.

1.1 Scope

This management plan specifically addresses the MTB trail network within the Falls Creek Alpine Resort (FCAR).

Other trails such as cross-country ski trails, walking trails or other trails are not covered by this plan.

Any trails that exist outside of the resort are also excluded from this plan.

Further to the trail network, this plan will also cover all built infrastructure required to support the trail network. This will include, but is not limited to;

- Signage
- Bridges / Walkways
- Drainage Systems
- Fencing
- Bike Wash and Maintenance Stations

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1.2 Resourcing and Funding

FCRM has had considerable experience in maintaining the existing type of trails, both in the resort and in partnership with Parks Victoria in the adjacent Alpine National Park. Maintenance rosters and work programs will be incorporated into annual resort operations.

The trail network will be included on the Falls Creek Alpine Resort Asset Register and will be allocated resources appropriate with the life expectancy and the anticipated annual maintenance costs in the annual budget development cycle.

1.3 Amendments

Version Control Table

Version Number	Date of Issue	Amendment	Authorised
Draft 1.0	18/05/2017	Initial issue	СВ
2.0	25/02/2020	Revisions to MTB section: signage, weed management, hazard assessment, sediment control, removal of debris.	СВ



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2.0 Trail Management Plan - General Information

The following information will be applied to all types of trail within the resort. This plan will detail the responsibilities and frequency of which this monitor will occur.

2.1 Monitoring

All trails will be monitored on a regular basis for the following;

- Trail safety assessment
- Trail opening and closure
- Trail usage information/ data (counters)
- Trail standards cognisant with user expectations and designated trail rating

Feedback and information will also form part of the monitoring process throughout the year. Feedback can be provided back to FCRM via Works Requests, email submissions or verbal discussion with trail maintenance staff as well as incidents or issues raised by FCRM Bike/ Ski Patrollers.

FCRM is committed to ensuring the trail networks are maintained at the highest possible level, including allocation of appropriate materials and resourcing to meet or exceed international standards.

2.2 Environmental Safety

Caring for the Environment is one of FCRM's five core values. Any trail, if left unchecked has the potential to introduce weed species to the area and increase the flow of sedimentation into adjacent waterways. Of particular importance is the health of the vegetation in EVC's that are traversed by elevated structures. Extra consideration will also be given to areas adjacent to secondary vectors, such as waterways and drainage lines.

Areas of environmental safety consideration will be;

- Protection and establishment of native vegetation
- Sedimentation
- Erosion
- Fauna
- Weed management
- Hawkweed



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2.3 Hazard Management

Managing the risks regarding personal safety is a priority for outdoor activities at alpine resorts. While it cannot be expected that all risks will be mitigated, the management plan should reduce the level of risk to acceptable levels to allow for safe access through this area of Falls Creek Alpine Resort. Minimisation of tree hazards as a result of the recent alpine fires and maintenance of a safe trail surface are of particular importance.

Areas of personal safety consideration will be;

- Trail surface
- Hazardous trees
- Removal of debris
- Elevated Structures
- Hazardous weather conditions

2.4 Trail Infrastructure

All trails include numerous infrastructure items which require inspection and maintenance:

- Elevated structures (bridges and raised boardwalks)
- Drainage items
- Rock armouring
- Direction posts
- Key node information signs

These items will be inspected as part of normal operations. Key information regarding these items is contained within each defined trail type.

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3.0 Mountain Bike (MTB) Trail Management Plan

Activity	Activity Control Measure					
3.1 Monitoring & Signage Monitoring will take place to ensure the environmental and personal safety aspects of the trails and ensure that the presentation of the trail is at a level that reflects a quality activity for users.						
Trail Safety Assessments						
Opening Post Winter	 The trails will be inspected at the closure of the declared ski season and once snow had naturally cleared from the surface and remedial or maintenance actions will be detailed based on the Management Plan The trails will only be opened after remedial and maintenance works have ensured that the use of the trail does not pose a significant personal or environmental risk 	October	FCRM Resort Services Officers (With support from the Environmental Officer)			
Closure	 Signs clearly marking TRAIL CLOSED will be installed at the trail heads when the trails are deemed to be closed Trails will be closed on the first Monday of May each year regardless of weather conditions. The trails may be closed prior to or during any severe weather warning issued by the Bureau of Meteorology for alpine areas The trails will be closed under a CODE RED bushfire risk. They may also be closed due to fire threat or as determined by FCRM. 	As required May As required	FCRM Resort Services Officers FCRM Resort Services Officers FCRM Resort Services Officers			





Trail Usage Data	MTB trail counters will be deployed as per the Trail Counter Map (Appendix 1) prior to the season opening weekend	November	FCRM Resort Services Officers
	 Data from these counters will be collected each Monday. Data will be distributed weekly the following; 	Weekly	FCRM Resort Services Officers
	 Director of Infrastructure and Mountain Response Marketing and Communications Manager Bike Patrol Manager Asset & Operations Manager Environmental Officer 	Weekly	Asset Manager
	Trail Counters will be retrieved at the end of the season and reset for the next season.	Мау	FCRM Resort Services Officers
Trail Standards	 Trails will be maintained to a standard that is reflective of the advertised IMBA compliant trail rating (White, Green, Blue, Black). Key focus areas for the trail crew are green rated trail which must be maintained at this rating. NO TRAIL ALIGNMENT ALTERATIONS OR NEW FEATURES ARE PERMITTED WITHOUT THE PRIOR APPROVAL OF THE BIKE PATROL MANAGER AND DIRECTOR INFRASTRUCTURE & MOUNTAIN RESPONSE 		FCRM Resort Services Officers
	 All trail design/features must follow accepted international standards including IMBA 'Guide to Building Sweet Singletrack'. 		
	 Refer to further information contained in Attachments. 		

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3.2 Environmental Safety Caring for the Environment is one of FCRM's five core values. New developments, such as the Mountain Bike and Walking Trail Project, if left unchecked have the potential to introduce weed species to the area and increase the flow of sedimentation into adjacent waterways. Of particular importance is the health of the vegetation in EVC's that are traversed by elevated structures. Extra consideration will also be given to areas adjacent to secondary vectors, such as waterways and drainage lines. Weekly FCRM Resort Weeds Weeds will be monitored during the trail assessments and ongoing Services Officers maintenance activities. As required (With support from Weeds will be removed from trail surfaces, trail batters and the Enviro Officer) surrounding vegetation by either hand pulling, bagging and removing from the site to be disposed sanitarily disposed or sprayed with Roundup® Biactive As required Protection and Establishment of Native Vegetation • A separate process specific to Hawkweed is contained below. • Weed control will be executed in accordance with Falls Creek FCRM Enviro Officer Vegetation and Weed Management Policy (under development) and Falls Creek Weed Control Strategy (under development) Supplementary • The trail batters' will be left after construction to regenerate with **FCRM** As required **Planting** native vegetation from the surrounding seedbank. If native vegetation Environmental is not establishing on areas of the batters after two years. Officer supplementary planting with locally grown, local provenance species will be undertaken to stabilise the batters and provide further seed to the seedbank Species used for potential supplementary planting will be in As required accordance with the DELWP published Benchmark species for the EVC where the planting will occur • Only low growing grasses and forbs will be planted on the batters **Elevated Structures** Elevated structures are constructed over the areas of sensitive vegetation to limit the loss of vegetation during construction and to limit the damage of the vegetation due to traffic. Vegetation will be monitored under and adjacent to each elevated Oct / Dec / Mar / **FCRM** structure to assess the vegetation communities response to the Environmental May shading effect of the structure and damage caused by unauthorised Officer If vegetation in these areas is in decline an Action Plan will be developed in conjunction with DELWP. As required

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Sedimentation		 Sedimentation impacts will be monitored during trail assessments and ongoing maintenance activities, in particular at reverse grade drainage exit points. Where a particular site is of concern, photo points will be established to monitor the levels of sedimentation entering the adjacent waterways Remedial measures will be undertaken if significant levels of sedimentation enter any of the monitored waterways, including establishment of immediate sediment barriers (such as silt fencing). 	Oct / Dec / Mar / May As required As required	FCRM Environmental Officer FCRM Resort Services Officers (With support from the Environmental Officer)
Erosion/Wet Areas		 Erosion of batters and trail surface will be monitored during trail assessments. Wet or boggy areas will be monitored during trail assessments. Remedial works will be undertaken in the form of surface hardening (using rock or similar) or supplementary planting to reduce erosion in unstable areas 	Weekly As required	FCRM Resort Services Officers (With support from the Environmental Officer)
	Domestic Dogs	 Under the Falls Creek Alpine Resort Dogs Policy - Conditions of Authority, dogs will not be permitted on the trails at any time Persons and dogs found in breach of the Conditions of Authority will be subject to the Falls Creek Alpine Resort Dogs Policy 	As required	FCRM Authorised Officers
Fauna	Fox Baiting	 Fox baits may be placed on the trails as part of the summertime fox baiting program run in conjunction with Parks Victoria Baits will be Foxoff® Baits will be buried at a minimum of 10cm in accordance with the Spot-tailed Quoll Action Plan, DEPI 2003 Signs clearly stating the presence of fox baits will be erected at either end of the trail 	November – March	FCRM Environmental Officer/ Parks Victoria FCRM Environmental Officer
	Feral Cats	FCRM currently conducts a periodic feral cat eradication program throughout the resort in order to protect native fauna against predation. As the trails will provide cleared travel vectors for all predatory animals, this program may be included on the trail network.	As required	FCRM Environmental Officer



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	Deer	Deer management plan under development in conjunction with Parks Victoria		FCRM Environmental Officer/ Parks Victoria
	Monitoring	All trails will be monitored monthly during the non-winter period for the presence of Hawkweed from Nov to Apr.	Nov – Apr	FCRM Enviro Officer
		The areas in the proximity and adjacent to the trails will be monitored as part of the systematic program that is conducted by Parks Victoria.	Ongoing	Parks Victoria
		Refer to detail contained in Hawkweed Management on FCRM Mountain Bike Trails		FCRM Enviro Officer
Hawkweed		 If Hawkweed plants are found on or near trails that are deemed to increase the risk of spread caused by trail users then FCRM will, in conjunction with DELWP; Determine the location and number of plants found Take immediate steps to treat the plants Assess the risk of potential weed spread if the trail was to remain open. If this assessment deems the risk too high for the trail to remain open, FCRM will install TRAIL CLOSED signs and restrict public access under the Authority issued under r.8 of the Alpine Resorts (Management) Regulations 2009. Refer to Falls Creek Alpine Resort Work Practice – Works in Hawkweed Sites. 	As required	FCRM Environmental Officer / DEPI Weed Incursion Officer FCRM Enviro Officer
	Re-opening	If a trail or section of trail is closed to reduce the risk of Hawkweed spread at the direction of DELWP then the trail will only be reopened to the public on the authorisation of DELWP once the risk of spread has deemed to have been reduced through either management actions or the time of seed and plant viability has reduced to the point of minimal risk.	As required	FCRM Environmental Officer / DEPI Weed Incursion Officer



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3.3 Hazard Management

Managing the risks regarding personal safety is a priority for outdoor activities at alpine resorts. While it cannot be expected that all risks will be mitigated, the management plan should reduce the level of risk to acceptable levels to allow for safe access through this area of Falls Creek Alpine Resort. Minimisation of tree hazards as a result of the 2003 fires and maintenance of a safe trail surface are of particular importance.

importance.			
Trail Surface	 The trail surface will be kept clear of obstacles in accordance with the IMBA trail rating. Trail bed movement (erosion or minor slips) will be rectified to maintain an even and safe trail surface 	Weekly As required	FCRM Resort Services Officers
Hazardous Trees	 Hazardous trees will be assessed by a qualified Arborist prior to the opening of the trail after the closure of the ski season. This will be done in accordance with the standard Visual Tree Assessment method (Mattheck and Breloar 1994). Trees identified as a risk will be felled prior to trail opening 	Oct	Qualified Arborist
	Over the course of summer, additional inspections will be undertaken as part of normal trail works. Where risks are identified they will be managed in accordance with capability. All fallen timber across the trails will be removed from the trail.	As required	Qualified Arborist/ FCRM Resort Services Officers
	 All fallen timber across the trails will be removed from the trail alignment width. All fallen timber will remain onsite and discarded adjacent to the trail. 		
	Specific additional inspection may be undertaken after storm events prior to trails re-opening.		
Removal of Debris	Forest organic matter will be removed from the trail prior to opening the trail at the closure of the ski season, and over the course of the summer as required.	As required	FCRM Resort Services Officers
Hazardous Weather Conditions	 Trails may be closed prior to or during a weather event where the potential for the following is present: High Winds (>60 Km/h measured at BOM Weather Station) High Rain Fall (>50 mm within a 24 hour period) Severe Thunderstorm Activity Snowfall Days of 'Code Red' Fire Danger Rating or local fire threat. 	As required	FCRM Ski Patrol Manager/ Asset Manager/MERO





3.4 Trail Infrastructure

Managing the risks regarding personal safety is a priority for outdoor activities at alpine resorts. While it cannot be expected that all risks will be mitigated, the management plan should reduce the level of risk to acceptable levels to allow for safe access through this area of Falls Creek Alpine Resort. Minimisation of tree hazards as a result of the 2003 fires and maintenance of a safe trail surface are of particular importance.

importance.			
Elevated Structures	 Raised boardwalks will be assessed for structural and surface safety during weekly trail inspections or as identified Ensure decking is fixed in position with no loose sections Ensure decking material is not broken Ensure structural elements are bolted securely Ensure uprights have not moved or are off alignment Ensure bridge alignment is not twisted or angled. Remedial measures will be undertaken if required to address the above items. 	Weekly	FCRM Resort Services Officers
Rock Armouring	 Rock armoured sections will be assessed during weekly trail inspections or as identified. Ensure rock is securely in position on the trail bed Ensure trail bed has not moved Ensure rock armoured section does not need to be extended. Remedial measures will be undertaken if required to address the above items, including de-silting of accumulated soil to ensure the rock and crevices remain exposed where possible. 	Weekly	FCRM Resort Services Officers
Drainage Items	 Drainage infrastructure will be assessed during weekly trail inspections or as identified. Ensure cross drains are clear and functional Clear pits and pipes as required Remedial measures will be undertaken if required to address the above items. 	Weekly	FCRM Resort Services Officers

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		Monthly	
Directional Signage	 Directional Signage Directional signage shall be in accordance with information in the Attachments – 100 x 100 blue post, 1000 high with information stickers. 		FCRM Resort Services Officers
	 Signage on the trails must be clear of foliage, straight and free of damage prior to season opening 		
	 Signage will be inspected monthly throughout the season and replacements made as required. 		
Information Signage	 Information signage shall be in accordance with information in the Attachments – large 400 wide printed signs which location map information and links to online mapping. 	Monthly	FCRM Resort Services Officers
	 Signage on the trails must be clear of foliage, straight and free of damage prior to season opening 		
	 Signage will be inspected monthly throughout the season and replacements made as required. 		
Hazard Signage	 Signage will be inspected monthly throughout the season and replacements made as required. 	Monthly	FCRM Resort Services Officers
	 Hazard signage shall be installed in accordance with information contained in Attachments. 		
	Typical hazards include:		
	- Technical Terrain Feature ahead		
	- Vehicle crossing ahead		
	- General Hazard ahead	Weekly	
	- Trail closure		
	 Signage on the trails must be clear of foliage, straight and free of damage prior to season opening 		
Barriers/Fencing	 Fencing will only be used in a temporary capacity when required for the following purposes: Physical barrier for trail closures 	As required	FCRM Resort Services Officers
	 Marking of hazards along the trail 		
	- Temporary access prevention		
	 Requirements for barriers/fencing will be assessed during weekly trail inspections. 		



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4.0 Other MTB Infrastructure

4.1 Bike Hub Bike Wash and Maintenance Station

The MTB bike wash, drinking fountain and maintenance station located at the MTB Bike Hub on Bogong High Plains Road are to be inspected on a monthly basis to ensure functionality. This inspection will also include the sediment trap (which requires periodic cleanout) and drainage systems below the wash station - these are to be inspected for weeds periodically.

These items will be isolated and may be removed for the duration of the snow season and placed in storage.

The Bike Hub also contains seasonal signage which requires reversal during the summer months to activate the MTB trail map information panels.

4.2 Trail Access Points

There a number of mid trail access points which provide emergency and maintenance access to several longer MTB trails. These access trails may not be signed and are not publicly mapped. These access points will be maintained on a periodic basis to ensure that maintenance or emergency responders can safely traverse the trail with appropriate recovery or maintenance equipment.

5.0 Events

The MTB trail network will be used by various user groups for events throughout the year. The following steps are to ensure that these assets are not adversely impacted as well as ensuring that they are safe to use.

Preliminary/ Planning Stage

All proposed events must submit their proposed event management plan to FCRM at least four (4) weeks prior to the event date. This plan must clearly;

- Show the intended route as well as contingency routes for poor weather.
- How the event will control the course to separate competitors and spectators.
- Any and all traffic management considerations where trails interact with motorised vehicles.
- How the event will manage and minimise trail damage.

FCRM will require pre and post event trail inspections to ensure that trail wear is consistent with normal expectations.

FCRM may seek compensation from event organisers for the restoration of trails to an acceptable standard or condition.

FCRM will provide an estimate of costs to prepare, execute (where required) and pack up the event as required.

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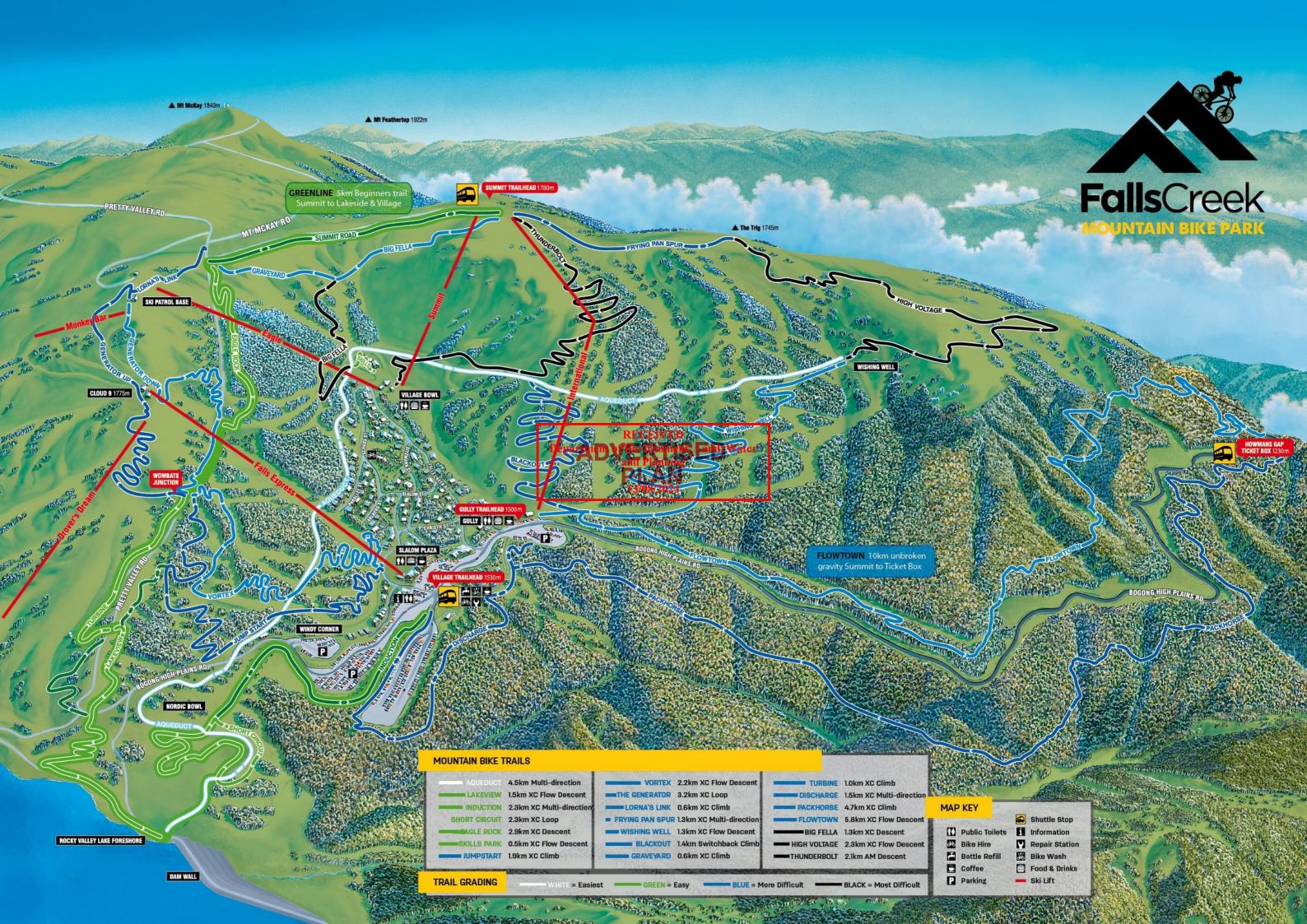


Attachments

- 1. Map Falls Creek MTB Trail Network
- 2. IMBA Trail Ratings
- 3. MTB Information Signage Report
- 4. MTB Directional Signage Example
- 5. MTB Caution Signage

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APPENDIX 2: IMBA TRAIL DIFFICULTY RATING SYSTEM

Table 20 below shows the various criteria that are used to calculate a trail difficulty rating, using the IMBA Trail Difficulty Rating System. It should be understood that this system is not a standard (like an Australian Standard) but should be treated as a guide. The final decision for rating trails belongs with the land manager.

Table 20. IMBA Trail Difficulty Rating System.

	Easiest	Easy	More Difficult	Very Difficult	Extremely
	(white circle)	(green circle)	(blue square)	(black diamond)	Difficult (double black diamond)
Symbol					
Trail Width	183cm or more	91cm or more	61cm or more	30cm or more	15cm or more
Tread Surface	Hardened or surfaced	Firm and stable	Mostly stable with some variability	Widely variable	Widely variable and unpredictable
Average Trail Gradient	5% or less	5% or less	10% or less	15% or less	20% or more
Maximum Trail Gradient	Max 10%	Max 15%	Max 15% or greater	Max 15% or greater	Max 15% or greater
Natural Obstacles and Technical Trail Features (TTF)	None	Unavoidable obstacles 5cm tall or less. Avoidable obstacles may be present. Unavoidable bridges 91cm or wider.	Unavoidable obstacles 20cm tall or less. Avoidable obstacles may be present. Unavoidable bridges 61cm or wider. TTF's 61cm high or less, width of deck is greater than half the height.	Unavoidable obstacles 38cm tall or less. Avoidable obstacles may be present. May include loose rocks Unavoidable bridges 61cm or wider. TTF's 122cm high or less, width of deck is less than half the height. Short sections may exceed criteria.	Unavoidable obstacles 38cm tall or greater. Avoidable obstacles may be present. May include loose rocks Unavoidable bridges 61cm or narrower. TTF's 122cm high or greater, width of deck is unpredictable. Many sections may exceed criteria.

The diagrams on the following pages illustrate the IMBA Trail Difficulty Rating System graphically. These diagrams have been developed by World Trail to promote a better understanding of what the ratings actually mean.

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Falls Creek MTB

Aliminium Panel Signs 2019

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300mm (w) x 300mm (h)



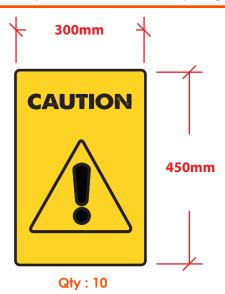
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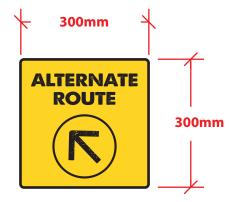


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