

Trails Strategy

Part 3 – Examples and Resources

K 2012



About this document

This document is Part 3 of East Gippsland Shire Council Trails Strategy. Other Parts included in this strategy are Part 1 Policy and planning context and Part 2 Issues and strategic guidelines. These documents have been prepared by @leisure on behalf of East Gippsland Shire Council, and in conjunction with staff and other stakeholders.

This strategy sets out:

- The benefits of trails
- Policy principles underpinning this plan
- A process for planning trails
- A trails hierarchy
- Methods and information required to prioritise trail projects
- Issues and strategic guidelines to address these. It also provides examples and a list of resources that can be used to design and construct trails.

A checklist and summary of each is provided in Appendix 7.

Due to the depth of information already available, this document does not seek to provide details about the construction of trails, rather it provides links to where such information is available.

Groups interested in partnering with Council in the development and management of trails can understand Council preferences and policy objectives through reading the strategic guidelines in this document.

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Contents

ER1: EXAMPLES AND RESOURCES FOR PLANNING AND DEVELOPING TRAILS.....	3
ER2: EXAMPLES OF TRAIL INVENTORY AND CONDITION ASSESSMENTS.....	5
ER3: TRAIL GRADING SYSTEM.....	10
ER4: PRINCIPLES FOR DESIGNING AND LOCATING SUSTAINABLE MOUNTAIN BIKE TRAILS.....	13
ER5: COMMUNITY AND STAKEHOLDER ENGAGEMENT.....	14
APPENDICES.....	19
Appendix 1: Glossary of terms.....	19
Appendix 2: Benefits of offroad trails.....	21
Appendix 3: Demographics and demand for facility types.....	25
Appendix 4: Trail users and compatibility between trails.....	28
Appendix 5: Participation in Mountain bike/cycling as sport or physical activity.....	32
Appendix 6: Trail evaluation criteria.....	36
Appendix 7: Summary of strategy information/checklist for community organisations planning trails.....	40

ER1: Examples and resources for planning and developing trails

The following table outlines some examples and resources that may be valuable for Council and community groups in the planning, design and construction of trails.

Planning Tool	Examples	Other Sources
Federal Government Strategy	Gearing up for Active and Sustainable communities: Australian National Cycling Strategy 2011-16	
	AustRoads Guide to Road Design Part 6A: Pedestrian and Cyclist Paths	
State Government Strategies/Policies	The Victorian Pedestrian Access Strategy 2010 Victorian Cycling Strategy, Victorian Government 2009 Victoria's Cycle Tourism Action Plan 2011 Tourism Victoria, Victoria's Nature-based Tourism Strategy 2008-2012 Department of Sustainability and environment, Victorian Trails Strategy 2005–11	
Trail Signage and Interpretation Guidelines	Warringah Council, Warringah Regional Multiple – Use Trail Strategy, 2007	
Community Engagement Framework	See ER5 Community and stakeholder engagement	School of International and Public Affairs, Columbia
Bicycle Industry Growth and Marketing	Sport and Recreation Tasmania, Dept. of Economic Development, Tourism and the Arts, Tasmanian Mountain Bike Plan – Marketing Strategy, 2010	Australian Cycling Promotion Fund Alta Planning and Design, Bicycle-Related Industry Growth in Portland, 2006
Offroad Shared Paths Planning, Construction and Guidelines	Regional Development Victoria and Bicycle Network Victoria. Ten Information brochures for the development of trails in regional areas: Path Surfaces, Path Widths, Curves & Bends, Hills & Gradients, Road Crossings, End-of-Path Treatments & Obstacles, Navigation & Signage, Lateral Clearances, Bridges & Boardwalks, Fences & Safety Barriers www.bv.com.au	
Walking Trail and Mountain Bike Trail Planning, Construction and Guidelines	F, Vernon, Trail Solutions, IMBA Guide to Building Sweet Singletrack, 2004 Mountain Bike Australia, National Mountain Bike Technical Regulation – The Rules, 2006 Trail Building and Maintenance Robert Proudman & Reuben Rajala (Appalachian Mountain Club. 1981 2nd Edition) United States Department of Agriculture and Forest Service, Trail Construction and Maintenance Notebook, 2004 Tennessee Department of Environment and Conservation – Recreational Educational Services Division Greenways and Trails Program, 2007	Walker, L, Fundamentals of Bicycle Boulevard Planning and Design, 2009 Alta Planning and Design, Cycle Tracks – Lessons Learned, 2009 McNeil, N, Bikeability and the Twenty-Minute Neighbourhood – How Infrastructure and Destinations Influence Bicycle Accessibility, 2010 Webber, P, Managing Mountain Biking, IMBA Guide to Providing Great Riding, 2001 City of Vancouver, Paths and Trails Element of the Vancouver Walking & Bicycle Master Plan, 2004
Trail Inventory and Improvement Records	U.S. Department of Transportation, Federal Highway Administration	

Planning Tool	Examples	Other Sources
Grading and Classification of Trails -	Australian Standard, Design for Access and Mobility, AS 1428.1 Part 1: 2009 Accessibility: Definition of "Accessible Path of Travel"	
	Australian Walking Track Classification See ER3 Trail grading system	Australian Walking Track Grading System Discussion Paper. The State of Victoria Department of Sustainability and Environment, 2010
	Australian Standard, Walking Tracks, AS2156.2 Part 2: Infrastructure Design, 2001	
	Australian IMBA classification of Mountain Bike Trails. See ER3	International Mountain Bicycling Association Australia, Trail Difficulty Rating System, 2009
	Government of South Australia, Sustainable Recreational Trails – Guidelines for Planning, Design, Construction and Maintenance of Recreation Trails in South Australia, 2011	Fromme Mountain Sustainable Trail Use and Classification Plan 2007- District of North Vancouver
Mapping of Trails	www.rideforrest.com.au/trails Porirua City Council Pathfinder http://pathfinder.pcc.govt.nz/ See figure 3	
Packaging of Tourism Product around Trails	Victorian High Country Adventures Happen: Freewheeling Adventures www.victoriahighcountry.com.au Tourism Destination Management Pty Ltd, East Gippsland Strategic Tourism Plan Report, 2006 - 2011	
Management Plan for Trails	East Gippsland Rail Trail Management and Development Plan, 2010 Government of South Australia, Sustainable Recreational Trails – Guidelines for Planning, Design, Construction and Maintenance of Recreation Trails in South Australia, 2011	

ER2: Examples of trail inventory and condition assessments¹

Trail Condition Assessment

Condition assessment is an inventory of the physical character of a trail alignment. It documents conditions and problems and provides a baseline for monitoring changes over time. This assessment can be used to set priorities for trail prescription mapping (next section) and provide general information for future trail improvement work.

The assessment should evaluate the entire trail length, not just problem sites. This ensures that the assessment will provide a basis for evaluating condition trend during future monitoring efforts. Condition assessments can be conducted with manual data collection using a measuring wheel, tape measure, or odometer in the traditional "trail log" approach.

For quick assessments, trail segments can be classified using classes A to E. For more detailed assessments, the numeric subclass designators can be used.

Trail segments with class A impacts have yet to experience significant degradation.

Class B segments are generally new trails or lightly travelled routes.

Segments with class C impacts, display the beginnings of detrimental impacts, but have not yet been seriously degraded. Monitoring these sites should be a high priority.

Segments with class D impacts, display degradation due to poor site conditions or excessive use. Mitigation may be needed to stabilise impacts.

Segments with Class E impacts are seriously degraded trails, probably with significant environmental impacts. These sites should receive a high level of management attention.

Table 1: Example trail impact classes

Impact class	Sub-class	Description
A	1	Minor loss of original surface vegetation (over 80 percent remaining)
	2	Moderate loss of original surface vegetation (40 to 80 percent remaining)
B	3	Most original surface vegetation stripped away (less than 40 percent remaining)
	4	Exposed roots on trail surface
C	5	Almost total loss of root mass
	6	Only exposed mineral or organic soil at surface
	7	Erosive loss of less than 50mm of soil, or compaction and subsidence less than 50mm deep
D	8	Erosive loss of 50 to 200mm of soil, or compaction and subsidence 50 to 200mm deep
E	9	Erosive loss of 200 to 400mm of soil, or compaction and subsidence 200 to 400mm deep
	10	Erosive loss of more than 400mm of soil, or compaction and subsidence more than 16 inches deep
	11	Trail segment intermittently passable during dry conditions
	12	Trail segment impassable at all times

¹ Managing Degraded Off-Highway Vehicle Trails in Wet, Unstable, and Sensitive Environments. US Federal Department of Transport. Federal Highway Administration 2002

Example of trail inventory collection form

The following form provides an example of data collection for a trail inventory and condition assessment.

Table 2: Trail condition mapping legend

FEATURE ELEMENT	MENU SELECTION OPTIONS
LINE FEATURE	
TRAIL SEGMENT	
Trail segment type	Single track, double track, or multibraid
Trail track type	Primary, secondary, abandoned, access, cutoff, spur
Trail surface grade (percent)	Zero to 6, 7 to 20, 21 to 40, steeper than 40
Side slope (percent)	Less than 20, 21 to 60, 61 to 100, steeper than 100
Trail surface	Vegetated, native organic, wetland vegetated, floating organic, native fine mineral, mixed fines and gravel, sand, gravel, cobble/brick, imported gravel, gravel over geotextile, wood chips, timbers/planking, corduroy, sealed, preformatted metal, wire mesh, porous pavement panel, rock, water crossing, other
Trail impact rating	None Loss of surface vegetation Exposed roots Less than 50mm erosive loss or surface subsidence 50 to 200mm erosive loss or surface subsidence 225 to 400mm erosive loss or surface subsidence more than 400mm
Mud/sand index	None, muddy, extremely muddy mud holes, seasonally impassable, impassable at all times Sandy, extremely sandy, deep sand patches, all sand
Trail drainage	Well drained, moderately well drained, poorly drained, saturated, ponded, water running across surface
Stone hindrance (percent)	None, less than 10, 11 to 25, 26 to 75, 76 to 100
Track width (m)	< than 1m, One to 2m, 2-3m, more than 3m
Vegetation stripping	Single track, wheel track only, full width of trail
Type of use	Multiuse, foot only, bicycle only, equestrian only, motorised and non-motorised
Season of use	Multiseason, winter, summer
ROAD SEGMENT	
Road type	Management/Public, Private
Road surface	Sealed, gravel, dirt
Road width (m)	2.4-3.9, 4 to 5.5, 5.6 to 7, >7m
LINE GENERIC	
Line type	Text entry

FEATURE ELEMENT	MENU SELECTION OPTIONS
POINT FEATURE	
WATER MANAGEMENT	
Type	Water bar, grade dip, rolling dip, round culvert, box culvert, open drain, sheet drain, check dam, ditch
Condition	Serviceable, poor
Culvert size (mm)	Numeric entry
CREEK CROSSING	
Type	Unimproved ford, improved ford, bridge, culvert
Creek/River name	Text entry
Creek/River width (feet)	Numeric entry
Approximate flow (cubic metre per second)	Numeric entry
PHOTO POINT	
Frame/reference No.	Numeric entry
Bearing (degrees)	Numeric entry
ANCHOR POINT	
Type	Beginning, middle, intersection, angle, end
REFERENCE POINT	
Type	Milepost, trailhead, trail marker, survey marker, property marker, road crossing, junction, gate or barrier, other
Distance/location	Numeric entry
POINTS OF INTEREST	
Type	Scenic vista, pullout, shelter, campsite, cabin, structure, power line, fence, staging area
HAZARD	
Type	Text entry
SIGNS	
Type	Interpretative/informational, directional, regulatory, warning
Text	Text entry
POINT GENERIC	
Type	Text entry
AREA FEATURE	
PARKING AREA	
BRAIDED IMPACT AREA	
GENERIC AREA	
TRAIL STRUCTURES: ladder bridges, ramps, teeter totter, free riding stunt structures A frames	
STAIRS	

Example of trail improvement identification form

Table 3: Example trail prescription mapping legend (bold text identifies the more important data fields).

Feature element	Menu selection options
LINE FEATURE	
TRAIL SEGMENT	
Trail type	Active, inactive, new segment, access, water crossing, other
Surface Treatment	No treatment, light water management, heavy water management, grading/leveling, gravel cap, gravel/geotextile, porous pavement, corduroy, turnpike, puncheon-boardwalk, abandon-no treatment, abandon with light rehabilitation, abandon with heavy rehabilitation
Gravel cap depth (cm)	None, 2 to 4, 5 to 8, 9 to 12, 13 to 18, deeper than 18
Trail width (m)	Numeric entry
Surface treatment priority	High, medium, low
Ditching	None, left (outbound), right (outbound), both
Ditching priority	High, medium, low
Brush control	None, left, right, both
Brushing priority	High, medium, low
Root removal	None required, required
Cut-and-fill section (percent side slope)	None, less than 15, 16 to 45, 46 to 100, more than 100
LINE GENERIC	
Type	Text entry
POINT FEATURES	
ANCHOR POINT	
Type	Beginning, middle, intersection, angle, end
REFERENCE POINT	
Type	Distance marker, trailhead, trail marker, survey marker, property marker, road crossing, junction, gate or barrier, other
Distance	Numeric entry
REQUIRED WATER MANAGEMENT	
Type	Water bar, grade dip, rolling dip, culvert (diameter in inches, less than 8, 9 to 16, 17 to 36, larger than 36), check dam, open drain, other
WATER CROSSING	
Type (feet)	Unimproved ford, improved ford, bridge (shorter than 12, 13 to 24, longer than 24)
PHOTO POINT	
Reference number	Numeric entry
Bearing	Numeric entry

Feature element	Menu selection options
POINT-OF-INTEREST DEVELOPMENT	
Type	Scenic vista, pullout, shelter, campsite, cabin
FIX HAZARD	
Type	Tree removal, stump removal, rock removal, guard rail, fill hole, other
SIGN NEEDED	
Type	Informational, directional, regulatory, warning
Text	Text entry
SIDE SLOPE FEATURE	
Type	Switchback centre point, climbing turn centre point
GRAVEL SOURCE	
TIMBER SOURCE	
STAGING AREA	
POINT GENERIC	
AREA FEATURE	
GENERIC AREA	

ER3: Trail grading system²

Australian Walking Track Grading System

The trail classifications are based on the following characteristics:






- Distance
- Gradient
- Quality formed i.e. any obstacles
- Quality of markings
- Experience required
- Time - high and low estimate of time
- Presence of steps

Grading of tracks is outlined below:

- Grade One is suitable for the people using a wheelchair with assistance
- Grade Two is suitable for families with young children
- Grade Three is recommended for people with some bushwalking experience
- Grade Four is recommended for experienced bushwalkers
- Grade Five is recommended for very experienced bushwalkers






The following tables outline a technical decision matrix for grading walking trails

Table 4: Australian Walking Track Grading System Decision Matrix for the public

	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Symbol					
Distance	Distance to complete walk xx km	Distance to complete walk xx km	Distance to complete walk xx km	Distance to complete walk xx km	Distance to complete walk xx km
Gradient	Flat	Gentle hills	Short steep hills	Very steep	Very steep and difficult
Quality of path	Well formed track	Formed track	Formed track, some obstacles	Rough track, many obstacles	Rough unformed track
Quality of markings	Clearly sign posted	Clearly sign posted	Sign posted	Limited signage	No directional signage
Experience required	No experience required	No experience required	Some bushwalking experience recommended	Experienced bushwalkers	Very experienced bushwalkers
Time	High and low estimate of time needed to complete track (e.g. 1.5-2hrs)	High and low estimate of time needed to complete track (e.g. 1.5-2hrs)	Time needed to complete track (hours/days)	Time needed to complete track (hours/days)	Time needed to complete track (hours/days)
Steps	No steps	Occasional steps	Many steps	N/A	N/A

²Australian Walking Track Grading System DSE May 2010

Table 5: Land Manager Technical Decision Matrix for Grading Walking Tracks

Technical description					
Grade of walk	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Symbol					
Distance	Total distance of track must not exceed 5km	Total distance of track must not exceed 10km	Total distance of track must not exceed 20km	Total distance of track may be greater than 20km. Distance does not influence grading	Total distance of track may be greater than 20km. Distance does not influence grading
Gradient	Grades in accordance with the AS 1428 series. (AS 2165.1). A ramp at 1:14 (7.14% slope or 4.1 degrees) is the maximum slope/gradient suitable for a person in a wheelchair	The gradient is generally no steeper than 1:10 (or 10% or 5.7 degrees). (AS 2165.1)	May exceed 1:10 (or 10% or 5.7 degrees) for short sections but generally no steeper than 1:10. (AS 2165.1)	May have arduous climbs and steep sections. May include long steep sections exceeding 1:10 (or 10% or 5.7 degrees)	May have very arduous climbs and steep sections. May include long steep sections exceeding 1:10 (or 10% or 5.7 degrees)
Quality of path	Broad, hard surfaced track suitable for wheelchair use. Width: 1200mm or more. Well maintained with minimal intrusions. (AS 2165.1)	Generally a modified or hardened surface. Width: 900mm or more. Well maintained with minimal intrusions. (AS 2165.1)	Formed earthen track, few obstacles. Generally a modified surface, sections may be hardened. Width: variable and less than 1200mm. Kept mostly clear of intrusions and obstacles. (AS 2165.1)	Generally distinct without major modification to the ground. Encounters with fallen debris and other obstacles are likely. (AS 2165.1). Walkers may encounter natural obstacles (eg tides)	No modification of the natural environment. (AS 2165.1)
Quality of markings	Track head signage & route markers at intersections	Track head signage & route markers at intersections	Track head signage & route markers at intersections and where track is indistinct	Track head signage & route markers	Signage is generally not provided. (AS 2165.1)
Experience required	Users need no previous experience and are expected to exercise normal care regarding their personal safety. (AS 2165.1)	Users need no previous experience and are expected to exercise normal care regarding their personal safety. (AS 2165.1). Suitable for most ages and fitness levels	Users need no bushwalking experience and a minimum level of specialised skills. Users may encounter natural hazards such as steep slopes, unstable surfaces and minor water crossings. They are responsible for their own safety. (AS 2165.1)	Users require a moderate level of specialised skills such as navigation skills. Users may require maps and navigation equipment to successfully complete the track. Users need to be self-reliant particularly in regard to emergency first aid and possible weather hazards. (AS 2165.1)	Users require previous experience in the outdoors and a high level of specialised skills such as navigation skills. Users will generally require a map and navigation equipment to complete the track. Users need to be self-reliant, particularly in regard to emergency first aid and possible weather hazards. (AS 2165.1)

Technical description					
Grade of walk	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Time	30 minute increments (e.g. 1-1.5hrs) or if the predicted time is less than an hour in 15 minute increments (e.g. 30-45 minutes)	30 minute increments (e.g. 1.5-2hrs) or if the predicted time is less than an hour in 15 minute increments (e.g. 30-45 minutes)	Hour/days (e.g. 9hrs) or if the predicted time is less than an hour to the nearest 15 minute interval (e.g. 45 minutes)	Not applicable	Not applicable
Steps	Steps allowed only with alternate ramp access. (AS 2165.1)	Minimal use of steps. (AS 2165.1)	Steps may be common. (AS 2165.1)	N/A (AS 2165.1). Steps do not influence grading	N/A (AS 2165.1). Steps do not influence grading

ER4: Principles for designing and locating sustainable mountain bike trails

The International Mountain Biking Association (IMBA)

The International Mountain Biking Association (IMBA) lists 11 principles for designing and locating sustainable mountain bike tracks to allow water to drain off the track and contain users on the track.³

1. Locate the track on a side hill: It is much easier to drain water away from a track located on a slope than one on flat ground, and it is easier to keep users on the track.
2. Avoid the fall line: Tracks should always climb or descend a slope gradually, rather than travelling directly up or down it. Tracks that travel directly up or downhills (fall-line tracks) create a path for water that erodes soil and creates gullies. Riders may then widen tracks by riding around gullies.
3. Use the 'half rule' to guide track alignment: A track's grade should never exceed half the grade of the side of the hill it is located on. Grade is the elevation gained divided by the distance of the segment of the track (expressed as a percentage). A track across a side slope of 20% should not exceed 10%.
4. Follow the 'ten percent average' guideline for sustainable grade: The average track grade is the slope of the track for an entire uphill section. Generally, an average grade of 10% or less is most sustainable.
5. Maximum sustainable grade: Typically, the maximum sustainable track grade is about 15% for a short distance, but it is site-specific and varies with track alignment, use of the half rule, soil type, annual rainfall, vegetation, use of grade reversals, type of users, number of users and level of difficulty.
6. Grade reversals: Most tracks benefit from grade reversals every 6–16 metres. A grade reversal is a spot at which a track drops subtly and rises again, which forces water to drain off the track.
7. Out slope: Most tracks should be built with a 5% outslope. An outslope is a tilt on the downhill or outer edge of the track, which encourages water to sheet across and off the track in a gentle manner instead of funnelling down the track's centre.
8. Adapt track design to soil texture: Uniform soils dominated by one particle type (such as sand) are most sensitive. A mix of different types of soil particles drains well and holds together. The presence of rock and gravel can improve a soil's ability to withstand erosion.
9. Minimise user-caused soil displacement: Soil displacement by users can be reduced by three tactics: consistent flow, insloped turns and armouring. Consistent flow avoids abrupt and inconsistent turns that make riders brake hard or skid. Insloped turns (or bermed turns) improve track flow and reduce skidding. They must be carefully designed to drain water and withstand user impacts.
10. Armouring involves hardening the surface with gravel, rocks, synthetic materials or wooden boardwalks. It can be used to elevate the track tread, especially in soft or wet terrain, or to armour the track against user-caused erosion.
11. Prevent creation of unauthorised tracks: Unauthorised track creation can be reduced by having a stable and predictable surface and providing a high quality experience that meets riders' needs.
12. Maintenance: Track maintenance, as well as track design, should focus on allowing water to drain off the track and containing users on the track.

³ <http://www.imba.com>

ER5: Community and stakeholder engagement

The planning, development and management of trails is likely to involve a number of organisations, groups and individuals who all have a contribution to make.

Failure to adequately engage and consult with stakeholders is one of the most common reasons for trail proposals not to proceed or to get bogged down. However, projects that include genuine and transparent engagement are more likely to be successful and can generate a level of goodwill, which can assist in the ongoing management of the trails once construction is completed.

Consultation process

Communication processes concerning trail developments

The communication only process should be adopted when the stakeholder has no, or minimal ability to influence the decision or outcome. However, it will be important to get a message across in a consistent way ensuring that the stakeholder is kept informed. This will assist in building a positive relationship that may impact favourably on future activities.

Consultation should be a two-way information flow and that mutual learning about, and understanding of the issues and needs of different groups, will lead to a commitment to actions and their implementation.

In consulting with community groups there should be three main aims:

- to seek out preferences, requirements and information needs
- to make sure that directions are feasible, sensible and relevant
- to create ownership of the process and the outcomes

Who needs to be involved

A project manager needs to involve a wide range of people in trail development planning, funding, construction and management.

A guide to who is provided for by the following questions.

- Who are the potential users?
- Who will be affected by the proposal i.e. adjacent residents?
- Who needs to approve the route, design, construction etc.?
- Who could help with different elements: planning, design, construction, and maintenance?
- Whose support do we need to get the project constructed and implemented?
- Who will champion the cause?
- Who do you need to consult with, engage and empower?

Whenever there is a potential that a stakeholder may be affected by the new development of a trail, consultation will be required.

Organisations that have an interest in improving existing trails and the development of new networks include:

- East Gippsland Shire Council (the following areas)
 - Strategic and Social Planning
 - Arts and Culture
 - Rural Access
 - Parks
 - Major Projects and Economic Development
 - Environmental
 - Transport Connections
- Land and Fire Department of Sustainability and Environment
- Omeo District Health
- East Gippsland Rail Trail Committee of Management

- Adjacent Councils (where trails may cross into another municipality)
- Parks Victoria (where trails are situated in state parks)
- VicRoads (where trails are located on or next to arterial roads)
- Water authorities (where trails are located on waterways or on land controlled by water authorities)
- Community Planning Groups and Friends Groups (where trails are located in towns)
- Landcare Groups (where trails have an environmental focus)
- Tourism businesses (where trails are desired or located in areas of tourist importance)
- Schools (for commuter and educational purposes)
- Local businesses (where trails are located next to local businesses and provide positive promotional opportunities)
- Funding bodies, e.g. Department of Planning and Community Development and Regional Development Victoria (to assist with funding of the tracks and trails)
- Country Fire Authority
- VicTrack/V Line where trails utilise or abut rail corridors or connect with railway stations

Communication and consultation process associated with trails should involve at least three stages:

Stage 1. Identifying stakeholders and keeping them informed. Seeking background information and ideas from relevant groups. Inviting submissions, comment and ideas from individuals and clubs, peak bodies etc.

Stage 2. Discussing options and details, including group processes. This might involve on site investigations, walk and talk, etc.

At this stage consideration of concrete partnerships for funding design, construction and management should be progressed. This will allow sufficient time for the partners to be involved in the process.

Stage 3. Commenting on draft plans and alignments

The following table may be useful in determining a community engagement processes.

Table 6: Community engagement framework

Issue	Stakeholder Group	Objectives per Stakeholder Group (generally per Issue) Extent of engagement: inform, consult collaborate, empower	Targeted Tools & Techniques	General Tools & Techniques
1	General Community/adjacent residences	<ol style="list-style-type: none"> 1. To inform that the general community are aware of the project, project initiatives to date and key project milestones 2. To consult with the community on key project deliverables 3. To inform the community of the outcomes 4. Empower community reps to assist with fundraising, planning, construction and management 	Letter drop Events Public forum Notices posted on existing trail Refer General Tools & Techniques	Project launch Press Release Paid newspaper Advertisement Dedicated Webpage Facebook link Blog link Submission link
	Land Managers/adjacent property owners	<ol style="list-style-type: none"> 1. To inform these managers of the project and relevance to them 2. To collaborate with land managers and seek and support for trail 3. To consult with these groups on key project deliverables 	Interviews Key Stakeholder Reference Group (KSRG)	Mailing list link Proposed route mapped Direct email Meetings / interviews Promotional brochure
2	State and local land and management agencies Regarding site information, planning permits, approvals, design, sites of significance, in kind support	<ol style="list-style-type: none"> 1. To inform these authorities of the project and relevance to them 2. To collaborate with agencies and seek support for the trail 3. To consult with these groups on key project deliverables 	Interviews with key staff	Meetings / interviews Promotional brochure
	Potential riders/trail users Clubs Peak bodies Related sports	<ol style="list-style-type: none"> 1. To inform potential users of the project 2. To involve user groups on key project deliverables particularly with respect to routeways, trail design etc. publicity and fund raising 3. To collaborate with user groups in seeking funds and approvals 4. Empower riders to assist with fundraising, planning, construction and management 5. To encourage local community organisations of all types to collaborate in the sharing of knowledge and in support of key infrastructure projects for the region 	Interviews Meetings/presentations	

Issue	Stakeholder Group	Objectives per Stakeholder Group (generally per Issue) Extent of engagement: inform, consult collaborate, empower	Targeted Tools & Techniques	General Tools & Techniques
	Tourism Bodies	<ol style="list-style-type: none"> 1. To inform Tourism Bodies of the project 2. To consult with Tourism Bodies on matters relating to accommodation capacity and marketing 3. To involve Tourism Bodies with key project deliverables 4. To collaborate with Tourism Bodies for the promotion and marketing of the trail and future events as infrastructure evolves 	Interviews	
	Councillors	<ol style="list-style-type: none"> 1. To inform internal Stakeholders (including Councillors) of the project, its relevance and synergies with other projects 2. To collaborate with Councillors to ensure consistency of information provided to the public 3. To empower Councillors with reliable and relevant information to make important strategic decisions relating to the project 	Interviews Project Team Workshops See General Tools	
3	Council Officers	<ol style="list-style-type: none"> 1. To provide consistent and informative information to the public 2. To inform internal Stakeholders (including Councillors) of the project, its relevance and synergies with other projects 3. To collaborate with trail organisers to solve specific problems as they arise 4. To collaborate with staff over the feasibility test, mapping, evaluation of routes and publicity and marketing of the trail 	Interviews Key Stakeholder Reference Group See General Tools KSRG	
	State Members	<ol style="list-style-type: none"> 1. To inform all relevant state members of the project 		
	Federal Members	<ol style="list-style-type: none"> 1. To inform all relevant federal members of the project 		
4	Media	<ol style="list-style-type: none"> 1. To inform all media of the project 2. To inform media of project deliverables 3. To collaborate with key media on community engagement and project marketing campaigns 	Press release Interviews	

Issue	Stakeholder Group	Objectives per Stakeholder Group (generally per Issue) Extent of engagement: inform, consult collaborate, empower	Targeted Tools & Techniques	General Tools & Techniques
5	Commercial Sector Bike shops/cafes/tour operators/potential sponsors	<ol style="list-style-type: none"> 1. To inform the commercial sector of the project 2. Seek collaboration in sponsorship/in kind assistance, and as project champion 3. To consult with the commercial sector in planning and funding of infrastructure in the region, and future packaging of visitor services 	Launch and closeout gathering	
6	Potential sponsor agencies: Dept. of Planning and Community Development VicHealth Dept. Transport Dept. Health & Ageing	<ol style="list-style-type: none"> 1. To inform State Government officers of the project 2. To involve regional offices to seek support and future funding 	Press release Interviews	

Appendices

Appendix 1: Glossary of terms

Term	Definition used in this document
Accessible path of travel	Ground surface abutting the sides of the trails provides a firm and level surface of a different material to that of the trail at the same level of the walkway, following the grade of the trail and extend horizontally for a minimum of 600m unless one of the following is provided: i) Kerb with minimum of 65mm in height ii) Kerb rail and handrail iii) A wall not less than 450mm in height
Bicycle motocross (BMX)	A form of cycling that uses a small framed and wheeled bicycle. Types of BMX competition include Supercross and Freestyle. There are a number of separate freestyle disciplines. There are two main types: BMX (racing track) Supercross circuit and Dirt jumps
Bicycle path	A "bicycle path" (is a path signposted with bicycle path signs: RR.239)
BMX dirt jumps	Consist of a series of jumps in a run separated by several metres. Jumps are typically double, each with a launch and landing jump. Riders are judged on the successful execution of several figures during the jumps, coupled with their degree of difficulty
BMX (racing track) Supercross circuit	BMX (racing track) Supercross circuit 350m. Eight riders launch themselves from an eight-metre high ramp and race over a formed earth track with alternating bumps, banked corners and flat sections
Cross-Country (MTB)	Cross-country races are held over undulating circuits (with technical descents, forest roads, rocky paths and obstacles) of 5 to 9 km. Cross country competition races varies from 1 h 45 minutes to 2 h 30 minutes depending on the category
Cross-country marathon (MTB):	The marathon event is a long version of cross-country held over a course of 60 to 120 km. The marathon event is held in a mountainous region. In contrast to the Olympic cross-country format, the riders never pass the same point twice
Double track	Trail designed for the passage of two or more users, that allow users to pass in opposite directions
Downhill (MTB):	Downhill is a race against the clock in which the rider negotiates a succession of fast and technical passages. The participant must affront tree roots, banked sections, bumps, jumps and other natural obstacles along the trail. Speeds reach around 80km/h in the men's races and 70km/h for women
Free riding (MTB):	Free riding mountain biking is similar to downhill mountain bike riding where the focus is on technical trail features, jumps etc., and riding both uphill and down. Free riding bikes are typically lighter and have less suspension and shorter wheel based than downhill bikes to enable greater maneuverability
Footpath	A public path servicing a residential street typically provided along the building line and provided in concrete at a width of 1.2m. Note: Under the Australian Road Rules riders of bicycles who are "12 years or older must not ride on a footpath" (RR.250 (1); unless they are intellectually disabled (RR.150 (1A)(b); or they are over 18 and are accompanying a child under the age of 12 who is riding on the footpath
Four-cross (4C) MTB	In four-cross (often abbreviated to "4-cross" or "4X"), four participants set off together to ride down a track that alternates banked corners and jumps. Competition races are very rapid (between 30 seconds and one minute)

Term	Definition used in this document
Mountain bike (MTB)	"Mountain Bike" refers to any bicycle designed for off-road riding. According to international governing body for cycle sports, the Union of Cycliste Internationale defines the facilities for four mountain bike competition disciplines: Downhill, Cross-country, Cross-country marathon, and Four-cross.
On-road route/bicycle lane	A lane for bicycles typically separated from vehicle lanes by a line or coloured surface. Where there is a "bicycle lane" (see: RR.153 (4)) on the road the cyclist must ride in that lane, "unless it is impracticable to do so" (RR.247)
Pump track	A very small circuit used by BMX and mountain bikes where riders push through a series of low jumps and turns
Rail trail	Cycling/walking trail built along a disused railway line
Right of way	The cleared area in which the trail sits (including space on either side of the treadway) to accommodate the passage of the user
Routeway	The alignment or route the trail will take
Separated footpaths	On "separated footpaths" (areas with marked lanes for both riders and pedestrians: RR.239 (4)) pedestrians and riders must keep to their designated lane (RR.239 (1); max. penalty: 2 pu). Exceptions for pedestrians are: if the pedestrian is on rollerblades, rollerskates or a similar "wheeled recreation device" (for example, a skateboard or scooter), or is in or pushing a wheelchair (RR.239(2))
Shared path	A path "designated for use by both riders and pedestrians"(RR.242 (2))
Single track	Trails designed for the passage of a single user at a time. These may also be one way.
Trail	A defined route or off-road pathway, which has been specifically designed for non motorised recreation
Trail corridor	The corridor in which a trail is located. This includes the treadway, the right of way, the buffer or zone of protection
Track	These are unsealed trails. They can be either Unformed trails (typically single width) or routes that may develop as a desire line for example along a road verge or river; Reinforced where such tracks are managed for use by reinforcing corners, additions to manage erosion or water crossings etc., but are generally not formed along their entire length; Formed defined runs or circuits made for BMX (pump, raining dirt jump), or MTB (4x tracks)
Treadway	The treadway or "tread" is the surface of the trail on which you walk or ride

Appendix 2: Benefits of offroad trails

Recreational trails offer a range of benefits to communities. These include: social, health and well being, physical fitness, environmental management, cultural preservation and the economy can all benefit from the effects and experiences offered by recreational trails.

Physical activity, health and recreation benefits

The key physical activity benefits of trails include:

- Trail based activity improve users health and fitness levels
 - Physical activity reduces the cost of the burden of disease, particularly heart disease; obesity; stroke and diabetes; among others
 - The construction of trails by users will provide social capital and personal benefits through volunteerism and a sense of achievement when completed
 - Trail use increases participants self-esteem and confidence that emanates from physical fitness and completion of physical challenges
 - A broad range of health benefits of cycling and walking include improved coordination, muscle tone improvement, lower risk of heart disease and higher energy levels
 - Regular cycling is reported to provide a net health benefit that out weighs risk by a factor of 20:1⁴
 - Mental health benefits from trail activities
 - Trails help people develop skills associated with particular recreation activities such as MTB, bush walking etc. that may become life long healthy and fulfilling recreation experiences
- Walking and cycling are currently the most common physical activity participated in by people over 15 years of age, (If you include dog walking and some skating and running)

Life skills and independent mobility

- Shared trails (and the convenient location of those adjacent to where people live) encourage residents who are otherwise less likely to cycle and walk (women and children), as they provide an opportunity for children to learn to ride a bicycle in the first instance.
- Early establishment of routine exercise (such as riding to school or childcare, going to the park or sport facilities, or visiting friends and relatives in the neighbourhood). These help instill healthy patterns of behaviour, and physical activity in children, and reduce reliance on private vehicles. These values are likely to be carried over into other areas of life and into adulthood.
- Mobility in children promotes exercise, independence and self-confidence, as well as the enhancement of way-finding skills, and provides an ability to expand leisure interests, accrue the psychological benefits of being outdoors and in nature, and safely visit friends and family members.

⁴ The Facts Have Spoken. The Wheeler Issue 5, 2011

- Children's (and people with a disability) independent mobility, their "active exploration" of neighbourhood rather than mobility in cars, has its own place and importance in children's overall development⁵. Confinement to specific places, on the other hand will create a discontinuous sense of the larger world, and limited mobility affects social relations, learning and access to opportunities.
- Low levels of independent mobility can negatively influence children's emotional, social, and cognitive development through limiting play opportunities and social interaction.

Separation from traffic

The separation of children from high speed traffic is desirable due to an undeveloped sense of judgment and therefore the inherent dangers.

Until 11 or 12 years, a child's sense of judgement is not adequately developed enough to readily distinguish between fast and slow or near and far, so the importance of retrieving a ball for example, in an instant, may be perceived more important than the implications of an approaching car⁶.

As indicated in Rose (2000)⁷, during the period between 1990 and 1996, primary and secondary school-age children accounted for about 30% of pedestrian accidents in Victoria. For children aged 4-12 years, about 65% of pedestrian accidents occurred immediately before or after school opening time, while for older children aged 13-18 years old, the comparable figure was 49%.

⁵School Children's Travel Patterns – A Look Back and A Way Forward; Jenny Morris, Fei Wang, Lottalilja Transport Research Centre, RMIT University 2001

⁶Children in Traffic; Sandels, Stina; 1975

⁷'Safe Routes to School' Implementation in Australia. Australia Road and Transport Research 9 (3), pp3-16; Rose, G (2000).

Placing shared paths along major roads instead of lower order roads or through open space corridors, provides exposure to nitrogen dioxide, ozone and particulate matter that are the major air pollutants associated with motor vehicle exhaust. These have been shown to have adverse effects in children in terms of decreased growth and lung function, bronchitis, allergies and immune suppression, and exacerbation of existing conditions such as asthma.

The main benefits of trails relate to the physical exercise and challenge associated with the activity, the resultant sense of accomplishment at the end, the social activity associated with activity, as well as the benefits of getting to where one is going, and the interest, stimulating or restorative qualities of the environment that the trail passes through.

Social and recreational benefits

The key social benefits of trails include:

- Interaction opportunity with friends and family through use of trails
- Affordable accessible linkages and connection of towns
- Strengthening Community and Building Capacity – Trails provide the opportunity for communities to plan and construct locally relevant facilities, and those that can generate social and economic benefits. The process can be empowering and contribute to the equitable distribution of resources to all communities regardless of their size
- As a type of outdoor recreation facility, trails accommodate the bulk of outdoor recreation participation (ie walking, cycling, skating, horse riding and dog exercise, that collectively have more people participating than all other recreation categories of facilities).
- Local events and activities strengthening community relationships

- Connectedness and ownership of community sections through land management and maintenance of these trails
- Trails provide for activities such as skating and BMX which are prohibited from dedicated foot ways and cycle way
- Pedestrians and cyclists, are both vulnerable road users compared to the occupants of a motor vehicle, trails provide separation of cyclists and walkers from roadways
- Trails are a lower stress, more attractive environment than a street, with better air quality that is more conducive to physical activity and use by people with disability
- A cheaper alternative to roads
- Trails provide important training for young cyclists and pedestrians in relation to codes of conduct and road rules e.g. keep to the left road rule also applies to shared paths
- Trail activities and the construction of trails have minimal impact on the environment, as compared to motorised recreation and road based activities
- Create Supportive Environments - Trails help connect people and create links between people and their environment
- Build Healthy Public Policy - Trails are part of sustainable transport initiatives and provide an alternative to high carbon generating transport

Environmental benefits

The key environmental benefits of trails include:

- Appreciation and education of the natural environment as part of the activity
- Enhancement of the knowledge about natural processes
- Trail activities provide a pollution free, 'green' form of transport that enable an alternative to high carbon generating transport
- The use of walking and cycling as transport modes substitute a number of car journeys undertaken, such as trips to school or shops, which leads to better air quality and sustainable land-use planning⁸

⁸Pedestrian-Cyclist Conflict Minimisation on Shared Paths and Footpaths, Ausroads, 2006

Economic benefits

There are considerable economic benefits of supporting trails (especially for visitors), and for cycling

There is strong evidence from studies of rail trails that recreational cyclists are a high yield, high spending market, and one that is predominantly highly educated. This segment provides numerous economic and social opportunities, but at the same time must be well serviced.

Opportunities that some riders identified related to support services on the trail, such as the need for collection services to assist fatigued cyclists and carry luggage.⁹

In a study commissioned by Bicycle Industries Australia, it was estimated that each bike sold contributes approximately \$1000 to the Australian economy. From this study, it is estimated that the bicycle industry has contributed over \$11 billion to the Australian economy since 2000.¹⁰

⁹Associate Professor Sue Beeton, PhD School of Management La Trobe University, Australia. Cycling In Regional Communities: A Longitudinal Study Of The Murray To The Mountains Rail Trail, Victoria, Australia

¹⁰Cycling issue Sheet Bike Sales 2009 Cycling Promotion Fund

The key economic benefits of regional trails such as rail trails include:

- Increase in local retail trade at key destinations on trails through a higher demand of products for trail related activities
- Local employment opportunity and increased income from trail related activities accommodation, food, transport, and tourism activities
- Stimulation of local tourism and employment related to associated services and for trail construction and maintenance
- Increased value of land adjacent to trails

In the ten year period since 2000, over 11,000,000 bikes have been sold in Australia, 2,000,000 greater than the car industry.¹¹

The Australian Bicycle Industry is worth approximately \$1 billion per year to the Australian economy and employs an estimated 6,000 people.¹²

Cyclists alone save the economy an estimated \$64m a year in reduced congestion costs and \$72m in reduced health costs. Significant benefits also flow from reduced car use, with a 10% reduction in vehicle kilometres estimated to cut road trauma costs by between \$850m and \$1.7bn a year.¹³ “By 2010, the Bureau of Infrastructure, Transport and Regional Economics estimates that congestion costs in our capital cities will soar to \$20.4 billion.”¹⁴

¹¹Cycling issue Sheet Bike Sales 2009 Cycling Promotion Fund

¹²Bicycle Sales, Cycling Promotion Fund, 2009

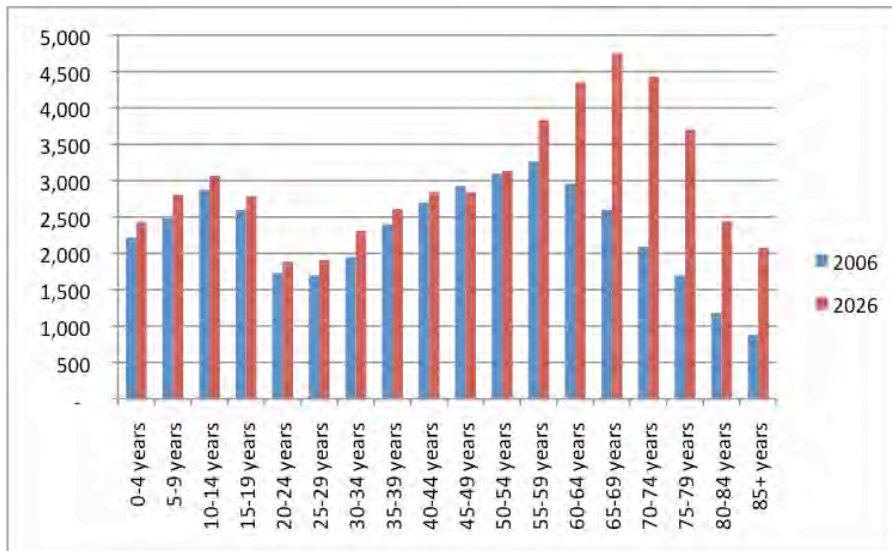
¹³Bicycle Sales, Cycling Promotion Fund, 2009

¹⁴Bicycle Sales, Cycling Promotion Fund, 2009

Appendix 3: Demographics and demand for facility types

The graph below demonstrates the projected population of East Gippsland:

Table 7: Projected population change by 5-year age cohorts, East Gippsland Shire Council (2006–2026)¹⁵



As demonstrated by this table, the most significant increase in population is expected to be in those aged 55 and above which indicates an ageing community.

The current population of the key towns in East Gippsland is shown in the following table. Key towns that also experience a considerable influx of visitors during peak seasons.

Table 8: Population of key towns, East Gippsland (2006)¹⁶

Tier	Key Towns	Total Population	Towns with significant visitors
Tier 1. 5000+	Bairnsdale	11,026	✓
	Lakes Entrance	5,645	✓
Tier 2. 1000-5000	Paynesville	3,233	✓
	Orbost	2,055	✓
Tier 3. 500-1000	Mallacoota	932	✓
	Metung	712	✓
	Bruthen	600	
	Lake Tyers Beach	528	✓
Tier 4. 100-500	Omeo	272	
	Cann River	242	
	Swifts Creek	163	
	Buchan	119	
	Nowa Nowa	144	

¹⁵Victoria in Future, Department of Planning and Community Development, 2008

¹⁶Population data supplied by East Gippsland Shire Council, (9 August 2011)

Table 9: Projected population increase by 5 year cohorts, East Gippsland Shire Council (2006–2026)

Age (years):	2006	2026	Change	Change %
0-4 years	2,220	2,436	216	9.7%
5-9 years	2,483	2,806	323	13.0%
10-14 years	2,878	3,068	190	6.6%
15-19 years	2,598	2,785	187	7.2%
20-24 years	1,732	1,888	156	9.0%
25-29 years	1,699	1,907	208	12.3%
30-34 years	1,949	2,311	362	18.6%
35-39 years	2,399	2,611	212	8.8%
40-44 years	2,701	2,843	142	5.3%
45-49 years	2,930	2,842	(88)	-3.0%
50-54 years	3,097	3,134	37	1.2%
55-59 years	3,265	3,836	571	17.5%
60-64 years	2,959	4,351	1,392	47.0%
65-69 years	2,599	4,754	2,155	82.9%
70-74 years	2,091	4,430	2,339	111.8%
75-79 years	1,698	3,702	2,004	118.0%
80-84 years	1,183	2,440	1,257	106.3%
85+ years	880	2,080	1,200	136.4%
Total	41,361	54,224	12,863	31.1%

The following table shows the projected number of children aged 5 to 14 years in East Gippsland, who are likely to use off- road activities, compared to other facility types. Off-road trails are likely to be used by more than other facility types.

Table 10: Projected number of children 5 – 14 years likely to use recreation facility types East Gippsland Shire Council (2006–2026)¹⁷

Demand for facility types	2006	2011	2016	2021	2026
Onroad/offroad trails	3,254	3,225	3,332	3,474	3,565
Indoor court sport facilities	638	632	653	681	699
Swimming pools	1,013	1,004	1,037	1,082	1,110
Gym/group fitness facilities	574	569	587	612	628
Outdoor court sports	874	866	895	933	957
Outdoor playing fields	2,262	2,242	2,316	2,415	2,479
Skate/rollersports	2,648	2,625	2,711	2,827	2,902
Equestrian sports facilities	70	69	71	74	76
Ice/snow sports facilities	21	21	22	23	23

The following table displays the projected demand for recreation facilities by adults in East Gippsland. The demand projected for onroad/offroad trail is the highest of all activities and is almost twice that of the next facility type.

¹⁷Victoria in Future, Department of Planning and Community Development, 2008

Table 11: Projected demand for facilities for adults (15 years and over), East Gippsland Shire Council (2006–2026)¹⁸

Demand for facility types	2006	2011	2016	2021	2026
Onroad/offroad trails	19,935	21,712	23,284	24,866	26,477
Indoor court sports facilities	4,351	4,564	4,608	4,685	4,850
Swimming pools	4,785	5,165	5,470	5,789	6,126
Gym/group fitness facilities	10,276	11,066	11,714	12,396	13,112
Outdoor sports courts	4,469	4,858	5,188	5,543	5,944
Outdoor playing field sports	6,410	6,866	7,145	7,460	7,864
Other outdoor water based sports/facilities	1,559	1,665	1,740	1,816	1,900
Skate/roller sports facilities	142	149	152	157	164
Equestrian sports facilities	291	302	305	312	324
Ice/snow sports facilities	530	563	584	605	629
Motor sports facilities	339	356	366	380	393
Shooting sports facilities	171	186	198	212	225

¹⁸Victoria in Future, Department of Planning and Community Development, 2008

Appendix 4: Trail users and compatibility between trails

The following is an overview of the key visitor activity groups:

Urban residents exercising, or getting around

- Short, accessible, local trail circuits desirable 2-4km in length
- Routes away from roads, along green or scenic corridors, or park perimeter paths
- Opportunities to take a dog, run with a pusher or take a child with a bicycle or wheeled toy
- Flat surface of either consolidated gravel or sealed path
- Access to periodic breakout spaces off the path for rest, stretching or adjusting equipment or assist children etc.
- Opportunities for young people to use these trails for getting around on a bike, skate board, inline skates or scooter

A segment of this group can be categorised as target groups; those potential users that are marginalised by limited resources or abilities, and who would benefit most from local urban exercise circuits.

“Target groups”

There are a number of groups Councils typically target to encourage participation because they are least likely to, or would benefit from additional, social and physical activities. Trails can provide important opportunities for target groups to get to local community services and recreation opportunities, or easy ways to get out into the outdoors, exercise in an affordable way and exercise pets.

Marginalised groups who are less likely to participate; would benefit from additional physical and social activities; provide affordable participation opportunities; and convenient off-road access to community and recreation services include:

- older adults
- people with disabilities
- young people
- people from culturally and linguistically diverse backgrounds
- women

For these groups the follow track and trails consideration should be made:

- Good information about trails so potential users can determine suitability to their individual needs
- Accessible paths of travel or at least relatively flat gradient that is well maintained and free of trip hazards or sudden changes in gradient
- A firm surface made of asphalt, concrete or gravel pavement to allow ease of wheelchairs, walking frames, prams, etc.
- Integrated circuits to allow people to choose the length of their cycle, walk, horse ride or canoe trip
- Linked to desired destinations, e.g. shops, schools, recreation centres, parks, etc.
- Well signposted routes and destinations using international symbols, clear lettering and plain English
- Signage that provide potential users with a description about length of trail, estimated time to complete section, terrain, hazards, etc.
- Access to suitable supporting infrastructure, for district and regional trails e.g. car parks, parking for mini buses, toilets, rest areas, shade, etc.

- Tracks and trails that in urban areas are well lit, without low overhanging branches and long stretches with dappled shade and clear sight lines

Hikers (Urban fringe walkers)

People who undertake long recreational walks (but less than four hours) generally require:

- Looped or connecting trails
- Directional and safety signage
- Trailhead facilities or defined start and end with shelter, parking facilities or access to a train station
- Trail classification information
- Amenities suitable to the trails purpose

Bush walkers

According to Bushwalking Victoria people who undertake a day walk generally require (or prefer):

- Off-road tracks – tracks next to roads are the least appealing
- Unformed bush tracks
- Some variability to the track, i.e. some bends in the track, rises etc.
- Changing scenery, e.g. vistas, wildflowers, historical features, rivers or wildlife
- Bushland, rivers and wineries are of most interest, with farming land offering the least interest
- Tracks that have a level of challenge and a sense of ambience associated with them, i.e. interest levels are sustained sufficiently to encourage the walker to want to see what is over the next rise or around the next bend
- Use a range of different tools to find out about trails, e.g. websites, maps, brochures, park notes, Bushwalking Victoria information (before they go and onsite orientation e.g. at trailheads)

- Information about distances, degree of difficulty, accessibility, any amenities etc.

People who undertake a several day walk, generally require:

- Accommodation options every 15-17km along the route (this is the average distance covered per day for walkers who are carrying tents, bedding, food, stoves, etc. – day walkers can generally cover up to 22km per day)
- Preferred accommodation is generally camping, caravan parks or cabin style accommodation
- Access to water– consider bottled water in towns or rain water tanks
- Access to food outlets (shops or roadside stalls)

Touring cyclists in peri-urban/bushland areas

According to Bicycle Victoria¹⁹, trails for touring cyclists should:

- Be at least 30km in length
- Be able to be used by local residents for recreational purposes, but have features that attract visitors from further away
- Provide a traffic-free experience
- Pass through scenic, attractive, interesting areas
- Have features that can't be accessed by car
- Have appealing stops such as wineries, museums and natural features
- Have access to tourism infrastructure such as accommodation
- Pass sites with high conservation values such as significant flora or fauna

¹⁹Building Better Paths That Attract Riders. Bicycle Victoria website 2011

- Have local support and commitment to maintenance and promotion
- Have a cleared height of 2.5 metres to prevent cyclists hitting their heads on overhead branches
- Have sight lines of at least 30 metres to any road crossings

Horse riders using rail trails ²⁰

If horse riders use trails such as rail trails, horse riders are most likely to undertake short journeys of less than one hour, or take longer trips of several days or more. In general, horse riders will need trails that:

- Are well formed and soft to reduce the chance of damage to environmentally sensitive areas through grazing and trampling
- Are located away from riparian areas so as to prevent the introduction/spread of exotic weeds.
- Are unsealed to minimise injury to horses' hooves
- Have limited road crossings
- Have limited water crossings to help prevent potential environmental damage
- Are not steep, rocky slopes due to potential difficulties for horses and their riders to navigate and also the potential negative impact on the environment
- Are wide so as to allow separation from walkers and cyclists to reduce potential conflict
- Feature space for car parking and horse floats at entry points/trailheads
- Are well signposted and provide clear instructions to promote appropriate use of the trail

- Provide loops of varying lengths to cater for short or longer rides
- Provide access to drinking water and hitching posts at trail heads or nodes where warranted
- Should be approximately 2.5m wide for single lane sections and 3.7m wide to allow two people to travel side by side in other sections
- A cleared height of 3.5m is required to ensure that riders do not knock their head on overhanging branches.

Mountain bike riders

There are a number of mountain bike disciplines (see glossary of terms) that use trails. Those provided in a public setting tend to be used primarily for cross-country riding.

Purpose-built MTB trails tend to be single track; offering a number of interconnected circuits to serve a range of cross country or free riders with different levels of proficiency; downhill; competition 4x tracks which are short circuits catering for four riders at a time; and pump tracks which are even shorter and provided primarily in urban areas.

In addition to a network of other trails suitable for mountain bikes, various combinations of MTB tracks and dirt jumps are commonly provided at the one location, examples of these include: Lysterfield Park and locally at Nowa Nowa.

The compatibility of bushwalking and mountain bike tracks

Many walking tracks have evolved along the shortest route, along the easiest way around, or through vegetation or other obstacles etc.

These often are too steep, have tight turns, or go to sensitive areas that cannot withstand wear from mountain bike tyres.

²⁰Parks Victoria – "Horse Riding" - website: www.parks.vic.gov.au

The compatibility of BMX and mountain bike tracks

Most BMX jump/trail facilities are smaller scale (shorter distance) than those constructed for mountain bikes. However both bikes tend to use jump parks, pump tracks and 4x tracks for example. BMX bikes are less likely to use long distance cross-country trails, although children at bike parks may use shorter distance trails.

The primary difference between the disciplines, apart from the size of the bikes, is that for BMX, it is not acceptable to have rough surfaces on racing tracks or dirt jump tracks (for example protruding rocks and stones) as it is for mountain bike tracks.

The compatibility of ski trails and walking/cycling trails

Ski trails are relevant here as they are often used in the summer for cycling and walking. Many mountain bike trails are graded in the same way as ski trails.

Ski runs are graded according to comparative difficulty so that skiers can select routes according to individual skill level. The grading schemes around the world are similar, although can have significant variations. They are not classified to an independent standard; but are likely to be similar. Grades used are green for easy; blue for more difficult; and black for very difficult.

Looped trails are always favoured over linear trails, as are connections and cut offs for larger circular trails to allow easy return for skiers. Many short loops with a single access point are preferred to one long loop. When selecting trail routes, favour northeast facing slopes, where the snow cover remains the longest.²¹

General clearing width of a ski trail is 2.4m for one-way traffic and 3.2m for two-way traffic with a clearing height of 3.04m. This compared with shared/offroad/recreational trails that are recommended to be a minimum of 2.5m wide for double track (with a vertical clearance of 2.5m).²²

The length of ski trail loops usually ranges from 6.4km to 12.8km (which is about a two to four hour ski trip).

²¹http://www.prm.nau.edu/prm423/xc_ski_trail_design.html

²² Bicycle Network Victoria

Appendix 5: Participation in Mountain bike/cycling as sport or physical activity

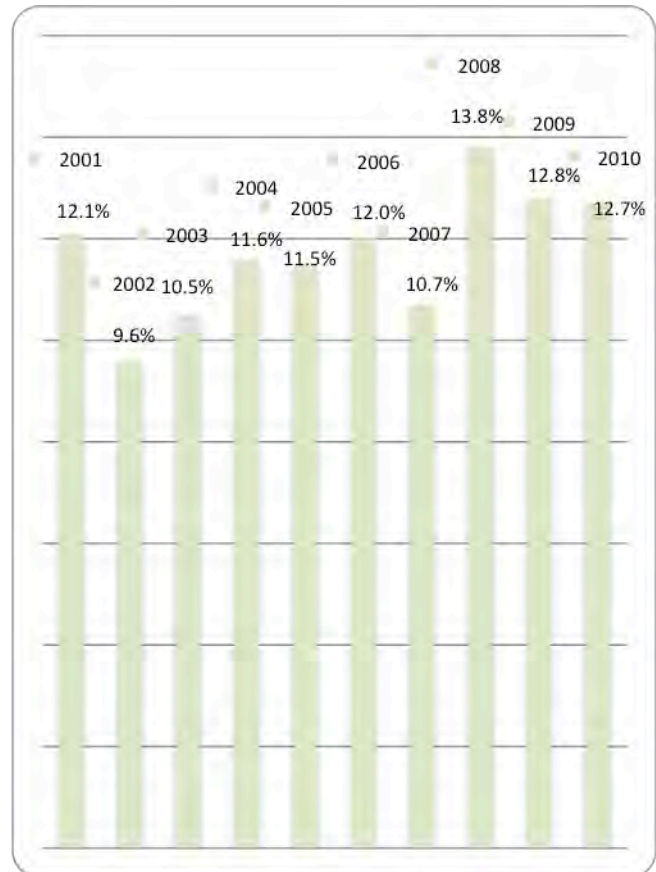
In 2010, ERASS figures estimated that cycling (incorporating cycling, BMX and MTB) had a 12.7% total participation rate in Victoria for those aged 15 years and over. These figures consist predominantly of non-organised participation (12.1%), which is defined as ‘physical activity for exercise, recreation or sport that was not fully organised by a club, association or other type of organisation, as opposed to a 1.6% organised participation rate.

Further breakdown of the ERASS activity of cycling into its three categories indicates that in 2010, the Victorian cycling participation rate for people 15 years and over was 11.3%, whilst BMX was at 0.1% and MTB at 1.5%.

As shown in the following figure, cycling has experienced fluctuating participation rates over the past 10 years, recording an all-time low in 2002 of 9.6% and an all-time high in 2008 of 13.8%.

However, overall cycling has seen an increase of in excess of 94,000 participants in Victoria between 2001 and 2010, equating to a near 20% increase in the numbers of people over 15 years cycling.

Table 12: Total participation rate for cycling (15 + years), Victoria (2001-2010)²³



As shown in the following table, BMX, mountain bike and cycling have experienced differing trends in relation to national participation rates.

Cycling experienced an all-time low in 2002 of 7.5%, and an all-time high in 2010 of 10.5%. Mountain bike riding had lower participation rates between 2003 and 2006 reaching a low of 0.7%, before gradually increasing to an all-time high in 2009 of 1.6%.

²³Exercise, Recreation and Sport Survey (ERASS), Standing Committee on Recreation and Sport (SCORS), 2001–10

The small sample size recorded in ERASS for BMX doesn't provide for indicative comparison of participation rates over time, however total number of participants shows an all time high in 2009 with 274,000 participants nationally, and the lower participation by 109,500 people in 2003.

Table 13: Total participation rate for cycling's three categories (15+ years), Australia (2001-2010)²⁴

Code	2001	2002	2003	2004	2005
Cycling	8.1%	7.5%	8.7%	9.8%	9.4%
BMX	0.2%	0.2%	0.1%	0.1%	0.1%
Mountain Bike	1.3%	1.6%	0.7%	0.7%	0.8%

Code	2006	2007	2008	2009	2010
Cycling	9.5%	8.7%	10.3%	9.4%	10.5%
BMX	0.1%	0.1%	0.2%	0.2%	0.1%
Mountain Bike	0.7%	0.9%	1.2%	1.6%	1.5%

ABS data indicates cycling (including BMX) has seen an increase in participation rates from 6.4% in 2005-06 to 7.5% in 2009-10 in Victoria.²⁵

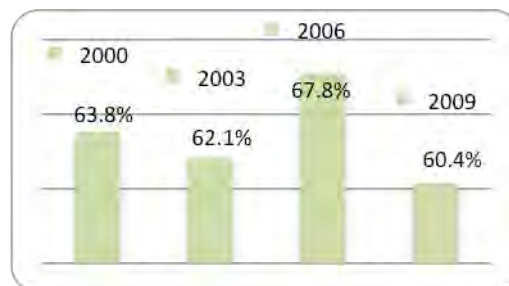
As shown below, children's (5-14 years) participation in bike riding (as a leisure activity) was estimated to be at 60.4% in 2009, an all-time low. It has experienced a decrease of 7.5% from 2006, and 3.4% from 2000. Other literature suggests a recent decline in participation rates due to increased urbanisation and traffic, and fewer children riding to school.²⁶ A comparison between the travel mode choices in Essendon, Victoria, shows 25% of children being driven to school in 1974 and 89% in 2005.

²⁴ ERASS Cycling by subcategory 2011-2010, Newspoll (email), received 22 August 2011

²⁵ Participation in Sport and Physical Recreation, Australian Bureau of Statistics, 2009-10

²⁶ DOI 2005 Cited in Travel Behavior Change through School Travel Planning: Mode Shift and Community Engagement – Results from 33 Schools in Victoria, Brian Peddie, Craig Somerville Department of Infrastructure, Vic, Australia.

Table 14: Total participation rate for bike riding (5-14 years), Australia (2000-2009)²⁷



A study conducted in NSW identified that cycling was one of the most popular recreational activities in NSW national parks in 2008, being as popular as camping (Table 1).

However, there is evidence of unmet demand for opportunities for cycling and mountain biking on an unsealed road or track, with between 9% and 30% of NSW residents saying they were interested in participation more frequently but identifying a lack of local opportunities or awareness of local opportunities as the barrier stopping them from participating.²⁸

In most regions of NSW, males aged 18 to 44 years are more likely to participate in cycling and mountain biking on an unsealed road or track, while females over 45 years are significantly less likely to participate. There is also a case for a shift in the near future towards greater participation by young women, with females 18-24 years significantly more likely to express interest in participating more frequently in cycling and mountain biking.

²⁷ Children's Participation in Cultural and Leisure Activities, Australian Bureau of Statistics, 2000-2009

²⁸ Nature-based outdoor recreation demand and preferences quantitative research findings, 2009, prepared by Ipsos-Eureka Social Research Institute for the Department of Environment, Climate Change and Water NSW

Table 15: Activities undertaken during visits to national parks (ranked by % of visitors NSW (2008)²⁹

Activity	(%)Visitors participating
Walking	54%
Water-based recreation	17%
Picnicking and dining	14%
Touring and sightseeing	12%
Cycling	4%
Exercise and sport	4%
Camping and accommodation	4%
Snow sports	2%
Rest and relaxation	2%
Enjoyment/nature appreciation	2%
Driving and motorbiking	2%
Climbing, caving and canyoning	2%
Children's play	2%

Australian Bicycle Sales

For the tenth year in succession, Australians have purchased more bicycles than cars, purchasing 1,154,077 bicycles in 2009. In the ten-year period since 2000, over 11 million bikes have been sold in Australia, 2 million greater than the car industry.³⁰

During the period of 1998 to 2005, annual bicycle sales were estimated at 348,974 units for Victoria and Tasmania, equating to 28.9% of the total annual bicycle sales in Australia.³¹

As shown below, the majority of adult bicycles sold in Victoria and Tasmania are of the MTB variety, some 65.2%.

On average, the MTB variety of bicycles was the cheapest option, costing only \$535. In contrast, the cost of a road bicycle was estimated to be in excess of 4 times that of MTB, coming in at \$2,212 on average across Australia.

Comfort/City/Hybrid bicycles were also more expensive than the MTB variety, costing \$548 on average. Adult's bicycle sales were also found to outweigh that of kids/children by more than 2 to 1.³²

Table 16: Annual Bicycle Sales, Victoria & Tasmania (1998-2005)³³

	VIC & TAS	AUS total
All bicycles total	348,974	1,209,000
Adult bike total	232,994	753,843
■ MTB	65.2%	69.8%
■ Road	14.2%	11.5%
■ Comfort/City/Hybrid	20.6%	18.7%
Kids/youths' bikes total	115,980	455,157
Ratio of adult to kids' bikes	2.01	1.66

Analysis of the specialty bicycle retail store industry in the US indicates MTBs represented 22% of all bicycles sold in 2010.³⁴ This figure has been relatively stable this decade, but down from a high of approximately 60% in the mid 1980's, when there were fewer types of bicycles available.

²⁹ Annual visit to PWG Managed Parks in New South Wales – Final Report, 2009, prepared by Roy Morgan Research for the Department of Environment and Climate Change NSW

³⁰ Bicycle Sales, Cycling Promotion Fund, 2009

³¹ Bicycle Sales in Australia, Cycling Promotion Fund, 2006

³² Bicycle Sales in Australia, Cycling Promotion Fund, 2006

³³ Bicycle Sales in Australia, Cycling Promotion Fund, 2006

³⁴ Industry Overview, National Bicycle Dealers Association (NBDA), 2010

This decline in proportion may be misleading, because the "comfort bike" category could be considered a subset of the mountain bike, and these bikes are comparable in many ways to low-end mountain bikes. 'Comfort' bicycles look a lot like mountain bikes, but feature soft saddles, more upright seating positions and easier gearing than the traditional mountain bike.

The key growth area in 2010 was a road bike with the increase being attributed primarily to consumer reaction to high gas prices.

Retailers also reported an increase in service and repair work during this period as people were bringing bicycles they already owned out of storage and wanted to make them road-worthy. The unit sales trends by category are shown in the following table.

Table 17: Specialty bicycle sales by year (percentage of market share), USA (2005-2010)³⁵

Type	2005	2006	2007	2008	2009	2010	Change 09 - 10	Change 05 - 10
Road/700c	16%	18%	21%	20%	20%	23%	+3	+7
Mountain bike	29%	24%	25%	26%	24%	22%	-2	-7
Hybrid/cross	14%	19%	17%	18%	21%	21%	--	+7
Comfort	14%	17%	15%	16%	15%	13%	-2	-1
Youth	15%	14%	12%	12%	13%	12%	-1	-3
Cruiser	6%	6%	7%	6%	6%	6%	--	--
Recumbent/Tandem	2%	1%	3%	1%	1%	2%	+1	--

³⁵ Industry Overview, National Bicycle Dealers Association (NBDA), 2010

Appendix 6: Trail evaluation criteria

Before a trail proposal is evaluated against others it should first go through a feasibility test to ensure it is possible and feasible to build.

	Score				
Community Benefits	5	4	3	2	1
Numbers of likely people served (visitors and residents or only residents (tier of town))	Serves high number of residents and visitors both within and outside the municipality	Serves residents and visitors across the municipality	Serves residents from beyond the township/locality	Serves residents from within the immediate town or locality	Serves low number of residents or from the immediate streets
Likely to provide economic benefit through serving tourists, and/or ability to be packaged or located to create business opportunities (cycle services, cafes, accommodation, attractions or events)	Highly likely to produce economic benefit	Very likely to produce economic benefit	Somewhat likely to produce economic benefit	Less likely to produce economic benefit	Not likely to produce economic benefit
Location has population growth, and/or high seasonal visitor numbers	High population growth and high number of visitors	Reasonable population growth and number of visitors	Some population growth or number of visitors	Little growth or few visitors	No growth or visitors
Principle 1. Sustainability					
Adds value to, extends length (or width) of, connects, create a circuit from, or fills known gaps in existing trails or routes	Fills an identified gap, extends width and length and creates a circuit from existing trails	Extends an existing trail into a circuit from existing trails	Extends and makes a connection from an existing trail	Extends the length or width of an existing trail only	Does not fill gaps, extend, create a circuit or connects existing trails
Doesn't create major environmental impacts	No environmental impact	Unlikely to cause any environmental impacts	Possible environmental impacts	Some environmental impacts identified	Potential to cause significant environmental impacts
Likelihood that the local community, local businesses and champions of cycling are/will be involved to support and promote a culture of cycling	A wide range of local and Shire-wide groups and organisations will support and promote	Both local and Shire-wide groups and organisations will support and promote	Local groups and organisations will support and promote	Possibility of local groups and organisations will support and promote	Not likely to gain support and promotion from local groups and organisations

Community Benefits	Score				
	5	4	3	2	1
Principle 2. Diversity					
Enhances choice of trails <u>locally</u> by: increasing range of users, different types of activities and experiences, degree of difficulty (one point for each aspect)	Add to range of types of trails locally (1)	Range of users (1)	Different types of activities (1)	Degree of difficulty (1)	Doesn't meet any of these criteria
Route provides a diversity of experiences along it, including high quality scenery or iconic setting	High diversity of scenic quality and setting	Reasonable diversity and scenic quality and setting	Passes through some scenery and a diversity of settings	Low diversity and scenic quality and settings	No scenic quality or diversity along trail
Increases access to a diversity of settings, e.g. urban locations, peri-urban or coastal, or bushland trails	Significantly adds to diversity of settings and trails are provided in the most important setting where there is currently a gaps	Adds to diversity of settings trails are provided in (where major gaps)	Somewhat adds to diversity of settings trails are provided in	Adds little to diversity of settings trails are provided in	Doesn't add to diversity of settings trails are provided in
Principle 3. Accessibility					
Adds to a range of trails accessible to people with all abilities/older adults	Accessible path of travel	Path with high degree of accessibility	Reasonable degree of accessibility	Low degree of accessibility	Not accessible at all for wheeled devices
Connecting to a train station, residential area, school, community or sporting facilities, visitor accommodation or attraction (this reflects possible use and active transport opportunity)	5 or more connections	3-4 connections	1-2 connections	Only one or less	Does not connect to facilities
Provides a circuit or interconnected loop rather than simple line or point to point	Multiple circuits	Provides a circuit	Line with multiple connections	Line with connections	Point to point trail with no connections

Community Benefits	Score				
	5	4	3	2	1
Principle 4. Stakeholder ownership/stewardship					
Evidence that resources will be committed from the community, user or peak bodies to contribute to planning, design and managing the resource	High level of commitment likely from multiple stakeholders	High level of commitment likely from one stakeholder	Some level of commitment likely from multiple stakeholders	Some level of commitment likely	No commitment likely
Evidence the trail can be managed and constructed in partnership with another agency, user group, the landowner, or an entity established for their provision and management	Strong evidence of support from landowner/other government agency	Some evidence of support from government agency	Evidence of support from multiple user groups or other entity	Evidence of support from a user group other entity	No evidence of support from an agency, user group or other entity
Meets a direction in an existing regional, Council and/or Community Plan	Meets direction in multiple strategies including Regional plan or strategy	Meets direction in multiple strategies including Council strategy	Meets direction in a Council strategy or plan	Meets direction in a Community plan	Does not meet any direction in any plan
Principle 5. Marketing and communication					
The proposal provides for offsite and onsite information about suitability for use by people of different abilities, nature of the trail, gradients, distance, surface and degree of difficulty	Extensive offsite and onsite information	High degree of offsite and onsite information	Reasonable degree of onsite information, little or no offsite information	Little onsite information	No offsite and onsite information
The proposal includes a marketing component to encourage use in the long term	Includes a marketing plan in the proposal	Includes a reasonable degree of marketing in the proposal	Includes some marketing in the proposal	Little mention of marketing in the proposal	No mention of marketing in the proposal
The trail is of regional significance that will contribute to marketing of the Shire	Trail is iconic and will contribute to marketing of the Shire	Trail is important and can assist marketing of the Shire	Trail has some role in the marketing of the Shire	Trail is of local significance but will not contribute to the marketing of the Shire	Trail is not significant enough to contribute to marketing of the Shire

Community Benefits	Score				
	5	4	3	2	1
Principle 6. Equitable distribution					
Increases the number of localities in the Shire served by trails	Adds many localities (higher-tier towns) not already served by a trail	Adds many localities (lower-tier towns) not already served by a trail	Adds several localities not already served by a trail	Adds a locality not already served by a trail	Doesn't add to the number of localities served by a trail
Provides trails not currently present in the Shire e.g. a perimeter pathway around large urban reserve and designed as exercise circuit	Adds more than one form of trail not found elsewhere in the Shire	Adds one form of trail not found elsewhere in the Shire	Adds form of trail under-provided for in that locality	Adds form of trail of limited need in that locality	Adds form of trail not required
Increases the hierarchy of trails in a given area e.g. local, district and municipal/regional	Provides a regional level of trail not available in the local area	Provides a municipal level of trail not available in the local area	Provides a district level of trail not provided for in the wider area	Provides any level of trail not provided for in the local area	Does not increase the hierarchy of trails in the local area

Appendix 7: Summary of strategy information/checklist for community organisations planning trails

Principles	
1. Sustainability	<input type="checkbox"/>
2. Diversity change number to be #2 in list	<input type="checkbox"/>
3. Accessibility and connectivity	<input type="checkbox"/>
4. Stakeholder ownership/stewardship	<input type="checkbox"/>
5. Marketing and communication	<input type="checkbox"/>
6. Equitable distribution	<input type="checkbox"/>
Benefits	
1. Physical activity and health benefits	<input type="checkbox"/>
2. Life skills and independent mobility	<input type="checkbox"/>
3. Social and recreational benefits	<input type="checkbox"/>
4. Environmental benefits	<input type="checkbox"/>
5. Economic benefits	<input type="checkbox"/>
Trail hierarchy	
1. Which setting does the trail fall into (urban, peri-urban or bushland)?	<input type="checkbox"/>
2. What catchment does it serve (local, district or municipal/regional)?	<input type="checkbox"/>
3. How accessible will the proposed trail be (is it an accessible path of travel, relatively accessible, easy, more difficult or difficult)?	<input type="checkbox"/>
Planning process stages	
1. Project planning	<input type="checkbox"/>
2. Trail feasibility and location	<input type="checkbox"/>
3. Community and stakeholder engagement	<input type="checkbox"/>
4. Routeway design and site assessment	<input type="checkbox"/>
5. Trail funding/business development/programming	<input type="checkbox"/>
6. Construction and development	<input type="checkbox"/>
7. Information, marketing and communication	<input type="checkbox"/>
8. Site management and maintenance	<input type="checkbox"/>
9. Monitoring and evaluation	<input type="checkbox"/>

Issues and directions	
<i>Trail planning and design</i>	
1. Economic and tourism development	<input type="checkbox"/>
2. Routeway planning	<input type="checkbox"/>
3. Land management and tenure	<input type="checkbox"/>
4. Routeway planning in bushland settings/sensitive areas	<input type="checkbox"/>
5. Road reserves and private interfaces	<input type="checkbox"/>
6. Vegetation	<input type="checkbox"/>
7. Trail width	<input type="checkbox"/>
8. Surfaces and accessible design	<input type="checkbox"/>
<i>Trail management</i>	
1. Asset management	<input type="checkbox"/>
2. Wet trails	<input type="checkbox"/>
3. Impacts on residents and wildlife	<input type="checkbox"/>
4. Managing conflicts	<input type="checkbox"/>
5. Dogs	<input type="checkbox"/>
6. Risk management	<input type="checkbox"/>
7. Pre-trip information	<input type="checkbox"/>
8. Graded challenges	<input type="checkbox"/>
9. Management of treadway surface	<input type="checkbox"/>
10. Waterway crossings and clearances	<input type="checkbox"/>
11. MTB technical features	<input type="checkbox"/>
12. Unauthorised trails	<input type="checkbox"/>
13. Monitoring	<input type="checkbox"/>
<i>Information, communication and marketing</i>	
1. Information	<input type="checkbox"/>
2. Trail signage	<input type="checkbox"/>
3. Interpretative information	<input type="checkbox"/>
4. Community engagement	<input type="checkbox"/>
5. Communication with users	<input type="checkbox"/>
6. Volunteers	<input type="checkbox"/>

Resources and examples	
1. Reference documents i.e. construction guidelines	<input type="checkbox"/>
2. Inventory and condition assessment forms	<input type="checkbox"/>
3. Trail grading systems	<input type="checkbox"/>
4. Siting and design of MTB tracks	<input type="checkbox"/>
5. Community and stakeholder engagement	<input type="checkbox"/>
6. Prioritising trail developments: evaluation criteria	<input type="checkbox"/>

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