



# Draft South East Queensland active trails implementation guideline 1

June 2010

Draft for public comment

A guideline for non-motorised, multi-use, land-based trail development and planning for local governments and trail planners.



## **Draft South East Queensland active trails implementation guideline 1**

The Department of Infrastructure and Planning brings together planning, local government and infrastructure responsibilities into one department enabling government to deliver integrated solutions, face the state's population and economic challenges and secure a sustainable future for Queensland.

©The State of Queensland (Department of Infrastructure and Planning) 2010.

Published by the Queensland Government, June 2010, 100 George Street, Brisbane Qld 4000.

The Queensland Government supports and encourages the dissemination and exchange of information. However, copyright protects this document. The State of Queensland has no objection to this material being reproduced, made available online or electronically but only if it is recognised as the owner of the copyright and this material remains unaltered. Copyright inquiries about this publication should be directed to the Crown Copyright Administrator via email, [crown.copyright@qld.gov.au](mailto:crown.copyright@qld.gov.au) or in writing to PO Box 15168, City East, Queensland 4002.

The Queensland Government is committed to providing accessible services to Queenslanders from all culturally and linguistically diverse backgrounds. If you have difficulty understanding this document and need an interpreter, please call the Translating and Interpreting Service (TIS National) on 131 450 and ask them to telephone the Queensland Department of Infrastructure and Planning on 07 3227 8548.

SIP\_0353\_01 June 2010

Disclaimer: This document is produced to convey general information. While every care has been taken in preparing this document, the State of Queensland accepts no responsibility for decisions or actions taken as a result of any data, information, statement or advice, express or implied, contained within. The contents of this document were correct to the best of our knowledge at the time of publishing.

Any reference to legislation contained within is not an interpretation of the law. It is to be used as a guide only. The information contained within does not take into consideration any reference to individual circumstances or situations. Where appropriate independent legal advice should be sought.



# Contents

<b>1. Introduction</b>	<b>1</b>
1.1 Have your say on this guideline.....	1
<b>2. Background</b>	<b>2</b>
2.1 SEQ Active Trails Strategy .....	2
2.2 SEQ Regional Plan .....	3
2.3 Planning context .....	3
2.4 Environmental, economic and cultural benefits of trails.....	3
2.5 Objective of these guidelines .....	4
<b>3. Trail planning</b>	<b>5</b>
3.1 Develop a current trails' inventory .....	5
3.2 Identifying and assessing current and potential recreation trails networks .....	6
3.2.1 Guiding principles.....	6
3.2.2 Assessment criteria .....	6
3.2.3 Strategic recreation trail assessment process .....	7
3.2.4 Scoring system .....	7
3.2.5 The assessment scoring processes .....	7
3.2.6 Derivation of the overall score for each principle .....	8
3.2.7 Score entry, automatic exclusions and ranking .....	8
<b>4. Trail design and construction considerations</b>	<b>9</b>
4.1 Risk management .....	9
4.1.1 Risk management process .....	9
4.1.2 Risk Identification and safety management report processes .....	10
4.1.3 Risk rating .....	12
4.1.4 Risk analysis .....	14
4.1.5 Risk management systems .....	15
4.1.6 Communication, marketing and interpretation (Primary Administrative Control) .....	15
4.1.7 Incident response .....	16
4.1.8 Monitoring & review .....	16
4.2 Design considerations .....	17
4.2.1 Trail user groups .....	18
4.2.2 The environment .....	19
4.2.3 Adjoining landowners .....	19
4.2.4 User preference .....	19
4.3 Construction considerations .....	19
4.3.1 Choice of trail classification.....	20
4.3.2 Trail width and height .....	20
4.3.3 Screening for privacy .....	21
4.3.4 Trail surface material .....	22
4.3.5 Erosion control and water crossings .....	22
4.3.6 Mitigating unwanted trail users .....	22
4.3.7 Trail furniture and infrastructure .....	22
4.4 Trail signage .....	23
4.4.1 Adherence to recognised standards .....	23
4.4.2 Trail markers .....	25
4.4.3 Code of Conduct signage .....	25
4.4.4 Emergency response signage .....	25
4.4.5 Trailhead signage .....	25
4.4.6 Promotional signage .....	26
4.4.7 General trail signage maintenance .....	26
4.4.8 Optimum viewing distances signage .....	26



<b>5. Trail management and maintenance .....</b>	<b>27</b>
<b>5.1 Trail management plan .....</b>	<b>27</b>
5.1.1 A statement of guiding principles .....	27
5.1.2 Trail protection policies and programs .....	27
5.1.3 Property management plan .....	28
<b>5.2 Trail maintenance .....</b>	<b>28</b>
5.2.1 General ongoing maintenance .....	28
5.2.2 Trail signage .....	29
5.2.3 Vegetation .....	29
5.2.4 Trail surfaces .....	29
<b>5.3 Marketing and promotion.....</b>	<b>30</b>
5.3.1 Marketing plan .....	30
5.3.2 Marketing collateral .....	30
5.3.3 Trail interpretation plan .....	30
5.3.3 Community engagement and consultation .....	30
5.3.4 Volunteer opportunities .....	33
5.3.5 Trail volunteer .....	31
<b>References .....</b>	<b>32</b>
<b>Appendix 1: Recreation trail assessment form.....</b>	<b>37</b>
<b>Appendix 2: Screening.....</b>	<b>38</b>
<b>Appendix 3: Cross section multi-use recreation trail.....</b>	<b>39</b>
<b>Appendix 4: Horse stile plans.....</b>	<b>40</b>
<b>Submission form.....</b>	<b>41</b>



# 1. Introduction

## Toward Q2: Tomorrow's Queensland

### Protecting our lifestyle and environment

The Queensland Government has five ambitions for the future of this state.

**Strong:** We want to create a diverse economy powered by bright ideas

**Green:** We want to protect our lifestyle and environment

**Smart:** We want to deliver world-class education and training

**Healthy:** We want to make Queenslanders Australia's healthiest people

**Fair:** We want to support a safe and caring community

*Toward Q2: Tomorrow's Queensland* establishes targets for environment and lifestyle, economy, education and skills, health and community. The green ambition makes a commitment to achieve a state-wide target to protect 50 per cent more land for nature conservation and public recreation by 2020.

A great deal depends on ensuring that the growing population of South East Queensland (SEQ) has adequate high quality land for public recreation and places to play, near to where people live. SEQ has more than 3100 kilometers of recreation trails that include local, district and regional trails. Connecting green space with recreation trails is vital to a regional green space network.

Green space represents those places where people play, recreate and socialise. It includes council parks, public gardens, playing fields, children's play areas, foreshore areas, bushland and linear reserves, national parks, state forests and conservation reserves. The definition excludes roads and marine areas.

There are many opportunities to extend the current trail network in SEQ, enhancing the opportunities for physical activity and improving connections to green space. Combined with diverse landscapes—forests, mountains, coasts, river valleys and historic areas—the network has the potential to offer a great variety of experiences and opportunities for economic, cultural and environmental growth in SEQ.

Outdoor recreation plays an increasingly important role in improving our health outcomes through active recreation. Recreation trails are a relatively low cost but effective way to significantly enhance outdoor recreation opportunities for people across the region, particularly for cycling, horse riding and walking.

By providing the tools to identify develop and protect recreational trails and land for public recreation, the Queensland Government will continue its commitment to providing places in which to live, work and play.

## 1.1 Have your say on this guideline

Readers are invited to comment on this guideline and tell the Department of Infrastructure and Planning what you think about the information and guidance provided. Responses can be made by using the submission form at the end of this document. You'll also find details about where to send your submission and how to receive further information.

You are also invited to use the Blackbutt trail network and have your say on each trail, the signage, facilities, trail accessibility and what you think could be improved. Groups and organisations wishing to use the track must contact South Burnett Regional Council or complete the application form online at [www.southburnett.qld.gov.au](http://www.southburnett.qld.gov.au).

Your submission will help us finalise the SEQ active trails implementation guidelines and provide a new recreation trail network for non-motorised trail users. Submissions close on **6 August 2010**.



## 2. Background

### 2.1 SEQ Active Trails Strategy

The South East Queensland Regional Trails Strategy (SEQRTS) was developed by the Queensland Outdoor Recreation Federation (QORF), as Project Managers for the Council of Mayors (SEQ), (formerly the South East Queensland Regional Organisation of Councils) and four Queensland Government agencies (Health, Sport and Recreation Queensland, Natural Resources and Mines, and the Environmental Protection Agency).

SEQ has more than 600 regional and district trails, with a total length of more than 3100km.

The purpose of the SEQRTS was to inform and guide future investment in recreation trail planning, development and management. A task within the SEQRTS project was to provide local councils with the tools to identify and protect local, district and regional trails. These trails are essential in planning for a successful green space network. Without connecting green space with trails and protecting lineal corridors for future trail and commuter pathways, achieving an effective SEQ Regional Greenspace Network will not be possible.

From short suburban loops to longer shared paths and trails taking one or more days to traverse, the region's trail network offers a wide range of physical challenges.

The Department of Infrastructure and Planning (DIP) is the state government department responsible for delivering the SEQRTS recommendations and three of the nine regional trails identified in the strategy. They are:

- Brisbane Valley Rail Trail
- Maroochy River Trail
- Boonah to Ipswich Trail.

Since the completion of the strategy in 2007, population growth projections for SEQ have increased, the 18 local councils at the time have amalgamated into 11, the state government has announced its Q2 targets and held a Growth Summit to address the challenges of a growing population. There has also been increased pressure and concern from the community to ensure protection of green space and to develop strategies to minimise impacts of urban development and population growth on the landscape.

In the SEQRTS it was a recommendation that co-ordinated action be undertaken to achieve consistent information to assist regional trails planning and management including:

- developing consistency in definitions and methodology associated with the collection of outdoor recreation demand and participation data
- developing consistent terminology and guidelines for spatial representation of digital trails data
- using the SEQRTS trail assessment criteria and methodology
- securing potential trail alignments and future trail alignment corridors identified within the SEQRTS.

In 2009, in light of the investment, growth and development that had occurred in SEQ since 2006, DIP identified a need to review the implementation of the strategy and future trails development and management priorities.

To consider the implications of these pressures on green space and land for public recreation, DIP and QORF held public consultation workshops throughout SEQ with all local governments, other state government departments, community and outdoor industry organisations. The purpose of these workshops was to provide DIP with feedback and recommendations on the original SEQRTS.

The original SEQRTS provided recommendations for nine regional trails. The strategy also included a methodology to identify local, district and trails networks. This program and strategy are now referred to as the SEQ Active Trails Strategy (SEQATS) and will provide the basis for recreation trail planning and promotion of SEQ Active Trails.





## 2.2 South East Queensland Regional Plan 2009–2031

The purpose of the *South East Queensland Regional Plan 2009–2031* (SEQ Regional Plan) is to manage regional growth and change in the most sustainable way in order to protect and enhance quality of life in the region.

The state government reviewed the *South East Queensland Regional Plan 2005–2026* to determine the appropriate action to address emerging regional growth management issues such as continued high population growth, housing affordability, transport congestion, climate change and employment generation.

The SEQ Regional Plan sits within the Queensland land use planning framework and reflects and informs state planning policy and priorities. It also informs local government plans and policies. The SEQ Regional Plan also informs non-statutory processes, such as planning for natural resource management, rural futures, traditional owner engagement, public transport, urban renewal and new growth areas at the district and neighbourhood levels.

Residents and visitors value the combination of diverse and culturally significant landscapes that shape the region's economy, culture, liveability and lifestyles. This quality and diversity of the region's landscapes are major reasons for migration into and within the region. To remain attractive and functional, the regional landscape must continue to support values such as biodiversity, rural production, scenic amenity, landscape heritage and outdoor recreation.

## 2.3 Planning context

Provision of recreation trails is enshrined within SEQ regional planning processes through principle 3.7.6 of the SEQ Regional Plan 2009–2031 to 'review, refine and implement the South East Queensland Active Trails Strategy in consultation with local government'. Recreation trails also contribute to the integrated regional community green space network policy 3.4.4 to 'define, identify and map a preferred future regional community green space network, including new regional parks, regional trails and corridors.' Trail development in SEQ and will complement the Queensland Greenspace Strategy.

The strategy also supports other strategies and policies of the SEQ Regional Plan 2009–2031, including the SEQ Outdoor Recreation Strategy, the SEQ Natural Resource Management Plan and the SEQ Rural Futures Strategy.

Other guidelines such as Open Space for Recreation and Sport: Planning Principles 2003 will also assist planners preparing planning schemes.

## 2.4 Environmental, economic and cultural benefits of trails

Recreation trails deliver recreation, social and health benefits to urban users as well as adjacent rural and rural residential communities. Trails offer excellent recreational opportunities to families, bicycle tourists, mountain bike riders, historical enthusiasts, horse riders, and walkers.

Recreation trails provide communities (both residents and visitors) with a diverse, free opportunity to explore and enjoy healthy recreational pursuits. Active recreation, in any form, will improve health. Trails help save 'health dollars'. About \$75 million annually can be saved if an extra 10 per cent of the SEQ population becomes more physically active. People can use trails in a variety of ways, depending on their abilities and preferences. They yield significant health benefits both to the individual and the wider community. Because trails can provide hope of a healthier

Recreation trails provide a significant economic benefit to the communities where they are located. For example:

- In the US, a comprehensive health economics study showed every \$US1 invested in recreational trails for physical activity yielded a direct medical benefit of \$US2.94 (Wang et al 2005).
- The Riesling Trail (a 27 km shared use rail trail in South Australia) injects \$1.08 million per year into the Clare region (Market Equity 2004).
- Visiting trail users on the Mundaring (WA) trails network, which includes the Mundaring Railway Reserves Heritage Trail, inject a total of \$10.39 million annually into the local economy (Jessop and Bruce 2001).
- The Murray to the Mountains Rail Trail in north eastern Victoria is one of the better known rail trails in Australia. Recent research done on this trail (Beeton 2006) found that average expenditure was \$258 per person per day.



community and relief from spiralling medical costs, they should be seen as an essential component of the health care system, and warrant funding accordingly (Maher Brampton Associates, 2001).

Through service industry opportunities such as refreshments, meals, accommodation, camping supplies and group transport, regional and district recreation trails have the potential to bring focused economic benefits to the communities in and through which the trails travel.

## 2.5 Objective of these guidelines

These guidelines assist developers, planners, consultants, managers, businesses, community groups, residents and other interested stakeholders in planning and developing a network of regional, district trails and local trails. These trails will be known as SEQ Active Trails.

The Queensland Outdoor Recreation Federation (QORF) stakeholder consultation report identified a number of constraints and impediments which directly or indirectly affect the development of recreation trails and trail networks. These guidelines address the report's recommendation to establish information and implementation guidelines or manuals for regional trails planning, design, construction and management.

This draft guideline is intend to serve as a basis for discussion and comment and for further input into the final SEQ Active Trails Implementation Guidelines to be released in late 2010. They also provide the foundation for the three month pilot project at Blackbutt which provides an on-ground recreation trail network to further develop recommendations and information in these guidelines.

There are also examples and case studies from one of the current funding priority regional trails, the Brisbane Valley Rail Trail.





## 3. Trail planning

The delivery of successful recreation trails requires planners to identify the needs and preferences of the community, environmental considerations and cultural heritage.

The 2007 South East Queensland Outdoor Recreation Demand Study investigated the nature and extent of participation in outdoor recreation activities by the residents of SEQ. Relevant planning bodies responsible for recreation services should note the key findings of the study and how they relate to trail based trends and demand. The demand study also provides state and local government agencies with the information to coordinate planning and delivery of outdoor recreation services to maintain current outdoor recreation opportunities.

Prior to the development of a recreation trail, future goals and priorities for all land for public recreation must be determined. Recreation trails have different uses in locations and regions. A variety of trail users need to be considered such as horse riders, mountain bikers, hikers, nature watchers and dog walkers. These users must be determined before a trail inventory is completed and planning begins.

It is also of great important to know what kind of trail the local community and visitors want and where. A survey of local users, residents and business could help to determine demand for certain uses, what users will be permitted on the trail and where it will be located.

### 3.1 Develop a current trail inventory

Creating a trail inventory of existing trails in the area is essential in order to effectively plan, maintain and manage green space, recreation trails and land for public recreation. Trail inventories should also provide information on conditions of trails, what problems are occurring, and what maintenance issues are likely to occur in the future. The inventory helps in planning immediate and future maintenance needs. Poor trail maintenance can quickly lead to deterioration of the quality and aesthetics of trails and result in user dissatisfaction. The inventory also identifies opportunities for potential trail networks.

SEQRTS includes an inventory of current district and regional trails in SEQ and in each local government area. The complete recreation trails inventory, supporting data and a trail assessment form template are contained within the technical report to the SEQRTS entitled *Inventory of recreation trails in and around SEQ* and *A summary of trail availability in SEQ: Technical Report No 2 to the SEQ Regional Trails Strategy* (QORF 2006).

By the end of 2010, the Queensland Government will deliver a statewide inventory of land available for public recreation. A summary of each trail will be used as a complementary measure for this inventory.



## 3.2 Identifying and assessing current and potential recreation trail networks

The priorities of SEQRTS are to:

- 1) create an inventory of existing or previously proposed trails
- 2) identify potential new local, district, regional and recreation trail networks
- 3) standardise data collection and GIS mapping systems to enable effective planning.

In developing new recreation trails, opportunities to consider should include:

- linking existing trails systems across administration boundaries
- higher connectivity within existing local and district networks
- use of non-motorised commuting facilities and networks
- making multiple links with public transport
- linking existing and proposed horse trails and the bicentennial national trail
- using disused rail corridors to link existing and proposed trails and open spaces
- the availability of land under 'developers' contributions'
- using stock routes and unformed roads
- focusing on strong connections with towns in rural areas
- linking to rural and regional tourism businesses
- landscape and cultural heritage
- multiple use of infrastructure corridors.

The trails assessment process developed as part of the SEQRTS provides methodology to assess a potential recreation trail's suitability. The methodology is user-friendly and allows for the protection of future trail alignments.

The trail assessment criteria in SEQRTS should be adopted for use in all future trails development in SEQ and be used to guide identification of additional recreation trail opportunities. Additionally, all data associated with a trail assessment process should be recorded and provided to substantiate the decision-making process including the inventory for land for public recreation.

### 3.2.1 Guiding principles

The Department of Infrastructure and Planning uses a set of guiding principles when considering developing any recreation trail or trail network. They incorporate the policy and principles set out in the SEQ Regional Plan and the SEQ Natural Resource Management Plan. They are:

1. protecting environmental, cultural and recreational amenity values
2. feasibility of development, management and use
3. providing high quality recreational opportunities (including planning and facilities)
4. providing net community benefit (including health, social and economic benefits).

### 3.2.2 Assessment criteria

The assessment criteria are grouped within each of the four guiding principles as detailed above and in the SEQRTS. The criteria address all relevant aspects of the recreation planning principles set out in the document *Planning Principles and Implementation, Notes for Local Government* (Sport and Recreation Queensland 2003). As the criteria are for assessments of both existing and proposed trails, the term 'trail' should be interpreted also to include 'trail proposal'. Within each of the criteria, a set of issues is presented for consideration to assist in the assessment process. This allows for identification of local, district and regional recreation trails that are opportunities for existing and future recreational trails and trail networks.



### 3.2.3 Strategic recreation trail assessment process

Strategic recreation trail assessment establishes the feasibility and significance of existing trails and assists prioritising future recreational trail planning. Strategic trail assessment should address strategic level planning rather than providing an assessment of detailed design, construction and operation. The strategic assessment technique is based on a set of principles and criteria that address strategic trail planning issues by considering the attributes of a trail such as biophysical location and landscape.

The ranked list can then indicate which existing recreation trails, or proposed trail alignments should be prioritised to secure the trail corridor for future planning and development. It also provides a foundation for the development of more detailed trail feasibility studies, risk management plans and strategic outdoor recreational planning policy.

### 3.2.4 Scoring system

SEQRTS outlines a semi-quantitative scoring system with general categorised assessments easily convertible into a qualitative score (See Table 1).

This semi-qualitative approach to determine broad categories of support is justified because:

- many of the assessments on the criteria were subjective and a continuous numeric scoring system is therefore inappropriate
- trails in different areas may be scored by different staff and this method leads to greater consistency in assessments
- the final list of ranked groups of trails (or groups of trails) is easier to interpret at a strategic planning level, avoiding the problem of distinguishing between subjectively assessed trails with only slightly differing scores.

**Table 1: Scoring system for a recreational trail assessment.**

<b>Degree of agreed support by managers, users and communities for trail use and/or development in relation to criteria, as determined by assessment panels</b>	<b>Unique score code* (to allow numeric replacement)</b>	<b>Numeric score and range</b>
Very high support	V	100 (76-100)
High support	H	75 (51-75)
Moderate support	M	50 (26-50)
Low support	L	25 (1-25)
Nil support	N	0

\*The use of unique assessment codes will allow automatic numeric substitution for categorical values. The numeric range is for conversion of the overall weighted score for each trail into a final categorical support class.

### 3.2.5 The assessment scoring processes

The assessment scoring system allows for recording of a set of individual 'degree of support' ratings against the applicable criteria from which the overall 'degree of support' scores for each of the four guiding principles can be determined (typically by consensus). As the assessment scoring form presents a reduced version of the complete list of issues and criteria, assessors should read the full text of the assessment issues.



In some areas, it is likely that trail networks, rather than individual trails, should be assessed. Network examples include the Toowoomba City shared pathways, the Toowoomba Escarpment Parks trails and the current pilot project in Blackbutt.

### **3.2.6 Derivation of the overall score for each principle**

The score entered for each principle is guided by the distribution of the scores for each of the corresponding criteria. The score should be an overall assessment rather than an attempt at deriving a precise 'average' of the scores for the issues. In some cases, a 'nil' level of support for one criterion could result in a low score for a principle regardless of 'very high' and 'high' support recorded for other related issues.

### **3.2.7 Score entry, automatic exclusions and ranking**

For each proposal, scores for each principle should be entered on a spreadsheet.

If the initial scores for both the protection and feasibility principles are not moderate or higher, the trail should not be considered. Further, regardless of the scores for the protection and feasibility principles, if the unweighted score for recreation opportunities score is not moderate or higher, the trail should not be further considered.

Finally, once a trail has been developed, details about the trail should be updated in relevant databases (including GIS databases) to ensure current information is available for future trails planning.



## 4. Trail design and construction

Each trail should be designed, constructed, and maintained to meet certain specifications. These specifications are based on the recreational activities the trail is intended to provide, the amount of use, and the physical characteristics of the land, any existing recreation trail standards, and ecological and esthetic considerations.

Identifying and managing risks associated with a trail is an extremely important element which requires attention before any design or construction processes commence.

### 4.1 Risk management considerations

Risk management is a process of systematically assessing all possible risks, problems or disasters before they happen and establishing procedures that will avoid, minimise or mitigate the risk. It requires a process where risks can be recognised and a strategy to address identified risks can be prepared. It is also about making a realistic evaluation of the true level of risk.

Effective risk management:

- improves stakeholder relationships—risk management encourages the local authority to identify its internal and external stakeholders and to develop a two-way dialog with them. This communication channel provides informed insight into how the stakeholders will respond to new policies, projects or decisions, and allows stakeholders to understand why particular actions have been taken
- improves information for decision making—risk management provides more accurate information and analysis in support of strategic decision-making, such as major projects and significant plans
- enhances reputation—clients, interest groups and stakeholders have increased trust and confidence in a local authority that is known to have a sound process for managing risk.
- promotes personal wellbeing—effective risk management of personal risk generally improves health and wellbeing of self and others.

A risk management strategy is the method commonly utilised to mitigate all potential risk.

#### 4.1.1 Risk management process

A Health and Safety Assessment should be based on the Australian and New Zealand Standard for Risk Management (AS/NZS 4360/2004), outlined in Figure 1, and completed by a Workplace Health and Safety Officer. These generic processes provide a structured framework for managing strategic, operational and project management risks across your organisation, and for external stakeholders.

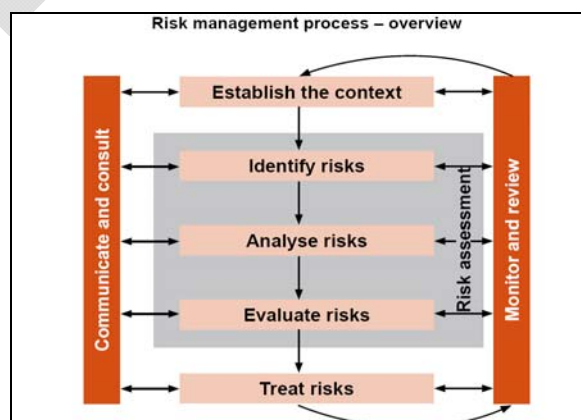


Figure 1: Risk management process



As with any planning, project management and decision-making process, communication and consultation play an important role in all stages of the risk management process. The effective management of risk and identification of business opportunities cannot be achieved without ensuring all parties with a vested interest, including both internal and external stakeholders, are consulted.

Such consultation ensures that any differences of opinion or different perceptions of the risk are considered, understood and addressed. Similarly, it provides two-way communication to identify opportunities for business improvement. In summary, management has a responsibility to ensure that all relevant stakeholders are identified and consulted as part of the risk management process.

The following should be included in a risk management strategy:

1. risk identification and safety management reporting processes
2. risk assessment table
3. management systems
4. communication and marketing
5. organisational code of conduct
6. organisational risk warning signage
7. incident response
8. monitoring and review.

### **4.1.2 Risk identification and safety management reporting processes**

Risk scores are assigned to each risk issue according to:

- frequency of occurrence
- likelihood and severity of the consequences
- likely visitor awareness of hazard
- degree of controls associated with the hazard.

There are two indicators used in determining risk—likelihood and consequence.

Risk analysis aims to:

- establish an understanding of the risk
- identify and evaluate existing control measures
- determine consequences and likelihood to assess the level of risk.

#### **Likelihood**

The likelihood rating refers to the potential for the risk to happen—that is, its probability or frequency. The likelihood that an event will occur is not always easy to assess and subjective biases may give rise to different assessments by different people. Table 2 provides a guide to ensure consistency in assessment.





**Table 2: Risk management process**

Rating	Frequency
Almost certain	Is expected to occur several times in the next 12 months
Likely	Will probably occur in most circumstances at least once in the next 12 months
Possible	Might occur at some time in the next 1-5 years
Unlikely	Could occur at some time in the next 5-10 years
Remote	Probably not occur, i.e. less than once in 10-20 years

In determining the likelihood of a hazard being a danger to people, a variety of factors need to be considered.

Likelihood factors that a consequence will occur include:

- how often the situation occurs
- how many people are exposed
- the skills and experience of people involved
- any special characteristics of the people involved
- duration of exposure
- position of risk relative to participants and other hazards
- distractions and complexity of tasks
- environmental conditions

When considering risks on recreation trails, specific factors need to be addressed, including:

- trail conditions
- gradient, width, surface
- signage
- infrastructure design and condition
- weather or seasonal changes
- user experience.

### Consequences

The consequence—that is, the outcome or impact of an event—should be determined against the relevant criteria below for a consistent approach to determining risk.

Overall risk levels

Level	Description
5	Catastrophic
4	Major
3	Moderate
2	Minor
1	Insignificant

Workplace health and safety (WH&S)

Level	Description
5	Loss of life
4	Permanent injury
3	Hospital treatment required
2	First aid/doctor required
1	No medical treatment—WH&S report required to address problem

Integrity and reputation

Level	Description
3	Serious and extended public or media outcry/long-term reputation damage
2	Adverse national/state-wide publicity in short to medium-term
1	Attention from media and/or heightened concern by local community



#### Natural environment

Level	Description
4	Serious long-term environmental impairment of ecosystems functions requiring extensive remedial action
3	Serious long-term environmental impairment of ecosystems functions requiring major remedial action
2	Serious medium-term environmental effects requiring major remedial action
1	Moderate short-term effects but not affecting ecosystem functions and only requiring minor or no remedial action

#### Finance

Level	Description
3	Extensive financial loss—loss of program or business operation
2	Significant financial loss—considerable impact on program or business operations
1	Minor financial loss—minimal impact on program or business operations

#### Legal and contractual

Level	Description
3	Extensive litigation through class action and/or criminal claim. Court imposed serious penalties on personnel
2	Major litigation involving a person/corporate entity. Serious breach of legislation with investigation or report to authority with prosecution and/or moderate fine
1	Legal issues involving minor non-compliance with legislation and regulatory requirements

#### Information, communications and technology

Level	Description
3	Loss of critical functions across multiple areas of the organisation, long-term outage—extensive management required and external resources
2	Significant downtime or outage in multiple areas of the organisation, substantial management required and local resources
1	Minor downtime or outage in single area of the organisation

#### Operations

Level	Description
3	Operations/projects rendered totally ineffective in medium to long-term. Unexpected loss of essential personnel with expected delay (more than 6 months) to finalise recruitment of replacements. Permanent impediment to achieving long-term objective
2	Significant short-term disruption to a single operation/project. Short-term objective cannot be achieved, possible impact on long-term objective. Unexpected loss of essential personnel with expected delay (less than 6 months to finalise recruitment of replacements)
1	Slight effect on operation/project capability with short term recovery action necessary. Short-term impact on an objective Unexpected loss of a single key personnel with expected delay (less than 3 months) to finalise recruitment of replacement

### 4.1.3 Risk rating

The overall risk rating is determined by finding the point of intersection between the likelihood rating (vertical axis) and the consequence rating (horizontal axis). List the likelihood, consequence and risk rating under the relevant headings of your organisation's risk assessment worksheet.

To determine the consequences, a judgement on the severity of the potential outcome of an incident is required. Review any information gathered during the identification stage, including incident statistics as this information is important in making an educated assessment. While the estimation of the potential consequences of an incident is a relatively subjective judgement, commonly agreement can be reached reasonably easily due to the nature of the environment and activities.

As with likelihood, there are five levels of consequence when assessing criteria for risk.



### Qualitative measure of consequence or impact

	<b>Insignificant— Level 1</b>	<b>Minor— Level 2</b>	<b>Moderate— Level 3</b>	<b>Major— Level 4</b>	<b>Catastrophic— Level 5</b>
User/person	First aid treatment no lost time, insignificant financial loss and or environmental damage	Medical treatment required or hospital visit but no overnight stay. Notable financial loss and/or environmental damage	Serious bodily injury/illness requiring hospitalisation overnight stay or longer. Substantial financial loss and/or environmental damage	Single fatality or permanent disability, significant financial loss, and/or serious environmental loss	Multiple fatalities, extensive financial loss, disruption to services and/or disastrous environmental damage
Animal	Insignificant interaction by animal	Minor interaction by animal	Moderate interaction by animal	Moderate or major interaction by animal	Death
Cyclone/storm	Property damage, insignificant Disturbance to walkers	Minor disturbance, need to find shelter	Moderate injuries resulting from storm or seeking shelter	Major injury resulting from cyclone or seeking shelter	Death
Weather extremes (hot/cold)	Visitor discomfort	Minor disturbance, need to find shelter from heat or cold	Moderate injuries such as dehydration	Major Injury such as frostbite or heat exhaustion requiring hospitalisation	Death
Contact with water bodies	Property damage	Minor discomfort, need to dry off, may have minor injuries	Moderate Injuries such as near drowning or broken limbs	Major injury resulting from fall or contact with objects in the water e.g. spinal injury or near drowning - water in lungs	Death
Fire	Property damage	Minor discomfort associated with small burns, minor dehydration	Moderate burn injuries, dehydration	Major burn injury and/or dehydration requiring hospitalisation	Death
Infrastructure such as bridge (slip, fall, unsafe or un-maintained)	Property damage, minor visitor discomfort	Minor discomfort, sprained joint, cuts or bruising	Moderate injuries such as broken limbs, concussion and/or severe cuts	Major injury such as spinal injury, impaling, or amputation	Death



Other factors that may be considered include:

- the height of a fall and the resulting damage
- the fall surface, for example shrubs or rocks
- the potential for causing a chain reaction
- hot and cold environments
- remote locations
- isolated conditions
- availability of emergency rescue
- environmental conditions like water.

To determine the level of risk, the likelihood and consequences of an incident are correlated. Levels of risk range from very low to extreme with different responses required for each level.

#### 4.1.4 Risk analysis

The risk assessment should be phased to reflect:

1. Pre-construction phase:
  - identifies the action, process and reporting procedure
  - identifies staff involvement and responsibilities
  - indicates risk assessment tools required for process.
2. Construction phase:
  - identifies the action, process and reporting procedure
  - identifies staff involvement and responsibilities.
3. Post construction or public-use phase:
  - identifies the action, process and reporting procedure
  - identifies staff involvement and responsibilities.
4. Continuous assessment and improvement:
  - identifies the action, process and reporting procedure
  - identifies staff involvement and responsibilities.

##### **Phase 1—Pre-construction description and action**

1. The entire length of proposed new track construction, reconstruction and infrastructure construction (on and off-park) has been assessed for hazards and risks assessed (carry out initial, comprehensive risk assessments and risk register work up).
2. An Australian Standard approved risk calculator is used to assess environmental and expected construction hazards.
3. Hazards have been identified and recorded and recommendations made to manage risk in accordance with risk score and priority level.
4. High priority risks have indicated where a formal risk assessment is required.
5. An emergency response procedure has been developed for phases 1–4
6. A safety management plan has been developed for:
  - a. site assessment
  - b. construction
  - c. visitor use.

##### **Phase 2—Construction description and action**

1. Implement safety management plan.
2. Proceed through construction phase observing controls identified in safety management plan.
3. Perform ongoing risk assessments as necessary.

##### **Phase 3—Post construction and public use phase**

1. Review safety management plan implementation.
2. Re-assess entire length of track and infrastructure (on and off-park).
3. Use organisational/departmental approved risk calculators to re-assess high risk sites.
4. Implement emergency response procedures.



#### Phase 4—Continuous assessment and improvement

- Conduct safety audit within two years of opening the trail.
- Conduct yearly inspections with a focus on:
  - schedule refinement and development
  - inspection checklist refinement and development
  - review maintenance scheduling through an approved strategic asset management system
  - implement, maintain and review engineers recommendations on maintenance.

A safety management plan (SMP) looks to provide an initial response procedural guideline for all land managers, key stakeholders and commercial operators for a work place health and safety related incident within the trail.

Emergency response for critical incidents and infrastructure construction and maintenance in remote areas can be experienced by recreational land managers. Addressing this requires specific policy and procedure to be developed and implemented. The SMP should look to incorporate best practice as demonstrated by peak recreational land managers such as the Queensland Parks and Wildlife Service for the purpose of procedural guidance and structural methodology.

Entry and exit points, evacuation and safety points, helicopter landing pads, GPS reference tagging, distance tagging and communication black spots should be identified across the whole trail and be incorporated into logistical information and incident procedures.

**Table 3: Risk assessment table**

<b>Likelihood</b>	Almost Certain	Medium	High	High	Extreme	Extreme
	Likely	Low	Medium	High	Extreme	Extreme
	Possible	Low	Medium	Medium	High	Extreme
	Unlikely	Low	Low	Medium	Medium	High
	Remote	Low	Low	Low	Medium	High
		Level 1 Insignificant	Level 2 Minor	Level 3 Moderate	Level 4 Major	Level 5 Catastrophic
		<b>Consequence</b>				

### 4.1.5 Risk management systems

Risk management systems require written procedures to ensure you know what, how, and when action has been undertaken or is to be undertaken, and by whom. While it is important that your risk management plan takes in as many possibilities as possible, it is also important that your system be easily understood by your management team. To be effective, it has to be workable.

### 4.1.6 Communication, marketing and interpretation (primary administrative control)

Key factors in these communication processes that assist management of risk will be to:

- Develop communication materials that help visitors make informed decisions about how best to use the trail.
- Place critical safety messages in different languages.
- Use pictograms of critical safety messages.
- Provide pre-visit information that fully explains facilities, including toilets, shelter and water.
- Provide pre-visit information that fully explains how users should equip themselves for an activity on the trail.
- Market interpretative material about risk prevention at all stages of the visitors' trip.

A variety of mechanisms should be used, including online content, brochures, maps and signage.



### Risk warning signage

Example 1:



Example 2:

#### **Exclusion of Right to Sue**

**These conditions affect your legal rights.**

**PLEASE READ CAREFULLY**

1. **Australian Trail Horse Riders Association their employees and agents shall have no liability howsoever caused to YOU or any dependant for personal injury or death suffered by YOU or any dependant arising in any way whatsoever from the supply by Australian Trail Horse Riders Association – Queensland Branch of recreational services, including but not limited to Horse trail riding and associated activities (“Recreational Services”).**
2. **YOU acknowledge that Recreational Services are dangerous activities with many inherent risks as a result of which personal injury (and sometimes death) are common. YOU by your participation in such recreational activities accept all risks of personal injury or death in any way whatsoever arising from your participation in such recreational activities and YOU and any dependants release and forever discharge Australian Trail Horse Riders Association and its employees and agents from all and any liability and claims arising from the supply of the Recreational Services.**

#### **NOTICE dated:**

**Authorised by Australian Trail Horse Riders Association**

### **4.1.7 Incident response**

Although every effort is made to minimise the risk of injury to users, the trail manager must recognise accidents may happen and is prepared if an incident occurs.

In cooperation with Police and SES a safety and incident response plan should be developed for each Trail. The plan should detail the procedures users and stakeholders must follow when undertaking a recreational activity, preparations and procedures for key personnel, Police and SES to manage incidents.

### **4.1.8 Monitoring and reviews**

Monitoring and reviews play a vital and important role in ensuring risk management remains relevant to trail conditions and provides an ongoing positive experience for all users.

When to monitor and review risk management:

- when a change occurs, such as after cyclonic activity or a change in user practice
- after a reported incident of injury or near injury
- should it appear the risk management plan is ‘insufficient’
- regularly scheduled times as each risk requires and is described in the risk control plan





- infrastructure condition risk should be reviewed every five years in line with recognised strategic asset management system audits
- before a recognised increase in trail activity or use.

Ongoing hazard identification and risk assessment should also be undertaken during normal operations.

The Australian Standard 2156 for walking tracks provides an inspection schedule for the management of trails as follows:

Track/Trail Class	Schedule
Class 1	Tracks and adjacent natural and built elements will be inspected and maintained regularly. Inspection interval: 30 days or less.
Class 2	Tracks and adjacent natural and built elements will be inspected and maintained regularly. Inspection interval: 90 days or less.
Class 3	Built elements will be inspected and maintained regularly. Any built facilities will be managed for public risk. Inspection interval: 6 months or less.
Class 4	Tracks will be inspected on a regular basis and after major natural events such as cyclones or fires. Any built facilities will be managed for public risk. Inspection interval: 6 to 12 months.
Class 5	Tracks will be inspected on a regular basis and after major natural events such as cyclones or fires. Any built facilities will be managed for public risk. Inspection interval: 6 to 18 months.
Class 6	Tracks will not be managed for public risk. Users will be responsible for personal safety and need to exercise appropriate care.

Where monitoring identifies that the risk has changed or an incident occurs the risk will be reassessed and control options identified.

## 4.2 Design considerations

Trail design, construction and infrastructure will be governed by the types of users, environmental impact and adjacent landowner's needs.

A recreation trail needs to support its main users; however, this does not mean that trails must support its core users in all sections or locations. In the case of the Brisbane Valley Rail Trail (BVRT), horse riding is not permitted on some sections of the trail for safety reasons whereas other sections actively encourage horse riding.

In the case of non-motorised, multi-use trails, the design must consider potential conflict between users. For example, there is often conflict between bike riders and horse riders due to the potential speed at which cyclists can travel without providing warning of their approach.

Safety provisions for trail users must be considered should a trail utilise a public road corridor or state forest access road. All trails must accommodate access for emergency and maintenance vehicles.

The intensity of use and user demand for recreation trails will have a substantial influence on design, construction and management considerations. Establishing current use and future demand through a trail inventory, by undertaking surveys and identifying potential trail networks will assist in designing for user demand.

Trail users are generally categorised into two user groups: local residents and tourists. The use of local and district trails by local residents and visiting family and friends should not be underestimated.



Prior to commencing the design process, it is important to collect as much information as possible about the proposed trail. The trails assessment sheet will be a valuable tool in providing the information required. In addition it is recommended that the following also be collated prior to initiating design or construction of a trail:

- comprehensive maps showing cadastral boundaries, topographic features such as drainage lines and contours and aerial photos.
- lot and plan numbers and ownership and uses of land adjacent to the trail.
- linkages to other green space and land for public recreation.
- information about the landscape and cultural heritage of the trail.

## 4.2.1 Trail user groups

Multi-use, non motorised recreation trails inherently attract core user groups based on the geography of the land and include trail horse riding, mountain biking, hiking/walking. However other user groups to be considered include orienteering, rogaining, trail running and nature watching. Below is an overview of key user groups.

**Walkers**—a ‘walker’ broadly describes anyone who travels by foot on recreational trails. Walking includes all forms of recreational walking and a variety of trail experiences from a leisurely stroll in the local park to strenuous treks across rugged terrain. Walking may also involve exercising dogs, nature appreciation/ bird watching or overnight stays. Walkers use both urban and rural trails. The majority of these types of walkers use trails for fitness and social reasons. Walkers in rural areas often seek a variety of trail experiences including more challenging trails that visit interesting natural features. They may be self-sufficient and carry adequate clothing, food and water for sustained and demanding walks. As individual fitness and expertise increase, these walkers often seek experiences in more remote and difficult terrain.

**Mountain bike riders**—there are a range of sub-groups which sit under the broad heading of mountain bike riders:

- Family, occasional or beginner mountain bike riders—these riders generally like short loops of fairly level terrain, with some challenges to introduce them to off-road cycling.
- Cross-country riders—cyclists of this nature seek moderate to very challenging terrain and like to get away from busy trails to areas of more solitude. They are usually self sufficient; carrying tools, water, food and spare tubes, even maps and first aid kits. They like trails that include a variety of interconnecting loops that provide a 10 to 100 kilometre ride.
- Down-hillers—these riders seek steep challenging terrain and obstacles that may appear unrideable to outsiders. Most ride full suspension bikes, which are not designed to efficiently ride uphill, so shuttle access to the top of the hill is preferred.
- Technical/trials riders—these riders prefer trails that provide numerous obstacles to challenge their riding skills. Such obstacles could include fallen trees, drop offs, stairs, rocks and other difficult obstacles. These can be incorporated into cross-country trails or in be incorporated into special-use areas.

**Runners**—runners like to use a variety of trails ranging from urban, hard paved trails to more challenging experiences in rural areas. Orienteers and rogainers may also traverse trails as part of longer distance navigation through the environment.

**Horse riders**—horse riders can be divided into a number of sub-groups:

- Recreational or ‘weekender’ riders—these users will be looking to exercise their horses and ride in attractive rural settings for a few hours to a day-long ride. Traditionally their trails exist on roadsides and unmade roads. Trails with a durable tread that contain watering points are suitable for these riders.
- Endurance riders—these competitive riders like very large circuits to train on but events are usually held on temporary loops.
- Long distance riders—these are non-competitive riders who often travel long distances along linear trails or on daily loops of up to 30 kilometres from a base. Their trail experience can range from overnight to rides that last a number of weeks



## 4.2.2 The environment

The physical environment dramatically influences the opportunities and constraints applying to a potential trail. Poorly designed and maintained recreational trails can have a significant impact on the environmentally sensitive areas through which they pass. Trails that have inadequate drainage and weed management will contribute to soil erosion and the degradation of water quality within wetlands, waterways and drinking water reservoirs. Litter from campsites, inappropriate disposal of human waste and poorly maintained visitor amenities can also negatively impact on the experience of visitors and the health of the environment.

Some natural features will provide both a constraint and opportunity for trail development. Careful planning and management strategies should be devised to both protect indigenous vegetation and allow trail users to enjoy it.

Trail design and construction also needs to consider the local environment, specifically when trails are traversing land adjacent to the rivers or waterways. It is also important that the trail is designed and constructed to maintain the character and landscape heritage of the surrounding countryside.

To ensure the long term environmental impacts and regeneration of a trail a property management plan should be developed.

## 4.2.3 Adjoining landowners

Stock management and access for adjacent landowners must be considered should a pre-existing lease or adjustment arrangement be in place. Access gates, type of fencing used and self-closing gates are design techniques that can be used to reduce the impact that the trail will have on the adjoining landowners. If required, stock crossings should be installed to increase durability of the trail surface.

The use of adjoining land should be considered and may assist to mitigate potential issues through design response such as buffer zones. Where conflicting use of the land cannot be resolved, diversion of the trail should be considered.

Many adjacent landowners have concerns regarding privacy and inappropriate behaviour by users of the trail. Dwellings close to the trail should be adequately screened with appropriate vegetation to reduce overlooking from trail users and enhance the aesthetic value of the trail. This should be part of the property management plan.

## 4.2.4 User preference

Users will prefer a recreation trail that:

- complements and adds to existing high quality tourism product—for example the trail is well integrated with key tourism destinations along the trail or infrastructure is developed specifically for the trail such as a bike hire outlet/café
- applies themes and design characteristics that relate to the local environment. For example, a range of themes was selected for the Murray to the Mountains Rail Trail which was then incorporated into the Murray to the Mountains Rail Trail Brand. The brand must further reinforce an image for the trail region
- is educational and acknowledges the historical context of the railway itself—for example, the provision of information boards as well as sculptures or art works that relate and explain the local history as well as providing points of interest
- enhances the natural environment through landscaping and planting—for example introducing trees for shade where large sections of the trail are currently devoid of trees or using vegetation to provide a wind break.

## 4.3 Construction considerations

Building a trail that is appropriate for a site and its intended users will reflect a comprehensive and considered planning and design process. It is however recommended that use of the Australian Standard™ AS 2156.2-2001 Walking tracks - Infrastructure Design will provide minimum standard in trail construction techniques.



The United States Forest Service has trail construction related CAD drawings and specifications that can be downloaded from [www.fs.fed.us/database/acad/dev/trails/trails.htm](http://www.fs.fed.us/database/acad/dev/trails/trails.htm). More information can also be found on the American Trails website [www.americantrails.org/resources/trailbuilding/index.html](http://www.americantrails.org/resources/trailbuilding/index.html)

Groups such as Australian Trail Horse Riders Association (ATHRA) have produced recommendations for needs, specifications and infrastructure requirements for horse recreational horse riding trails. The following section provides some considerations when constructing multi-use trails with minimal disturbance to the natural environment and highlights multi-use trail considerations.

### 4.3.1 Choice of trail classification

When constructing a recreation trail, the choice of trail classification will direct construction and should take into account type of user, the expected number of users and the recreational opportunities to be provided through the trail network.

There is an Australian Standard™ AS 2156.1—2001 Walking tracks classification and signage that provides a classification system as a basis for multi-use trail standards. The standard provides guidance on the design, fabrication and use of trail markers and signage to be used for walking tracks.

There is however, no Australian standard for multi-use trails and non-motorised trails. In producing a recommendation on trail class or standard, documentation developed in the SEQRTS addressing multi-use trail standards has been reviewed. The review includes the existing and commonly used ‘six class’ and ‘three derivative class’ systems in order to produce a general standard for multi-use trails.

The proposed classification system has been developed by the Department of Environment and Resource Management to rate trails on the South East Queensland Horse Trail Network according to international standards in use throughout the recreation industry. Ratings are assigned under ideal conditions and are based on technical difficulty rather than physical exertion. Accordingly, track length is not generally considered when assigning a difficulty rating. Conditions are always subject to change due to weather and other acts of nature.



**Easy**—this classification is used to identify the easiest tracks that are suitable for users who don’t have the skill or desire for more challenging trails. They have a lower level of risk for the user, and consequently offer less variety than those of greater difficulty. These tracks are appropriate for novice through to advanced users and require little skill or physical challenge to complete. They generally follow obvious, well marked tracks and roads. Grades on average are gentle (up to 5 per cent), although short sections of up to 15 per cent may be encountered. The track surface is generally smooth, level and wide with generous clearing of trees, limbs, and other vegetation. Few obstacles will be encountered. Changes in elevation are minimal. Streams are most often crossed with bridges.



**Moderate** —tracks in this classification rating are designed to meet the expectations of the majority of trail users. They require skills beyond that of a novice and will at times challenge the average trail user. These routes are suitable for intermediate through to advanced users. Users should expect to encounter terrain that is on average moderate (up to 10 per cent); although some short steeper sections of up to 25 per cent may be encountered. These trails are generally narrower, and may contain obstacles such as fallen trees or exposed roots and rocks. Changes in elevation are moderate. Streams are most often crossed by fording.



**Advanced**—these trails are designed for users with advanced skills who are seeking a higher risk level. They are recommended for advanced through to expert users only and will provide a definite physical challenge. The terrain on average is steep (up to 15 per cent), although users should expect to encounter very steep and long sections up to 30 per cent. Users contemplating these tracks should have considerable skill in their chosen activity and have a high level of competence in outdoor skills such as navigation, first-aid and survival. Trails in this category are rarely graded and may be indistinct or not be well marked in places. Minimal clearing of trees, limbs or other vegetation may result in hampering the progress of the user. Expect to encounter frequent and sometimes difficult obstacles.



Changes in elevation are usually severe. Streams are most often crossed by fording and are sometimes difficult.

**Note**—an option also exists to add a category at either end of this spectrum consisting of a white circle (Easiest), or double black diamond (Extreme). However it is believed that the vast majority of South East Queensland Horse Trail Network trails will fall within the proposed three-tiered system.

**Table 4—Trail classification grade comparisons**

Organisation	Easy	Moderate	Advanced
ATHRA	Max 10%	Max 15%	Max 20%
IMBA	Max 10%	Max 15%	Max 20%
US Forest Service (Mountain Bikes)	Less than 5% (average) Max. 10% up to 30m	Less than 10% (average) Max. 30% up to 100m	Less than 15% (average) Max. 30+% up to 150m
US Forest Service (Horses)	Less than 5% (average) Max. 15% up to 70m	Less than 10% (average) Max. 25% up to 100m	Less than 15% (average) Max. 30+% up to 150m
US Forest Service (Hiking)	Less than 5% (average) Max. 20% up to 30m	Less than 12% (average) Max. 30% up to 100m	Less than 18% (average) Max. 30+% up to 150m
US Forest Service (multi-use)	Less than 5% (average) Max. 15% up to 70m	Less than 10% (average) Max. 25% up to 100m	Less than 15% (average) Max. 30% up to 150m
<b>SEQ Active Trails</b>	<b>Less than 5% (average) Max. 15% up to 100m section</b>	<b>Less than 10% (average) Max. 25% up to 150m section</b>	<b>Less than 15% (average) Max. 30% up to 200m section</b>

### 4.3.2 Trail width and height

It is recommended multi-use trails have a standard trail width of 2–3 metres. Overhead clearance should be maintained to approximately three metres from the trail surface, to ensure that horse riders have clear 'head space'.

Drawings 1 and 2 of Appendix 3 illustrate typical cross sections for multi-use recreation trails.

### 4.3.3 Screening for privacy

Adjacent landowners often have concerns in both urban and rural environments. Drawings attached in Appendix 2 illustrate two options for the protection of privacy of adjoining landholders. One involves the planting of screen vegetation, while the other relates to the Brisbane Valley Rail Trail and involves locating the trail on the edge of the rail corridor on the far side of adjoining houses. In some locations, both techniques may need to be negotiated with the adjacent landowner and incorporated in the design stage of the trail and included in the property management plan. Negotiation has been recommended where it is felt that screen revegetation will interrupt views and may not be something that a landowner necessarily wants.





#### 4.3.4 Trail surface material

Varieties of surfaces are used for trails and include earth, grass, bark and sand. Hard surface materials include stone, brick, concrete, wood and asphalt. Choosing appropriate materials for the trail's sub-base and topping (surface layer) is critical to the longevity and suitability of the trail for the intended user groups. Other considerations of surface material include terrain, climate, design life, maintenance, cost, and availability.

Soft sand may be comfortable for horses but is not acceptable to cyclists or walkers. Water-logged trails are quickly damaged and degraded and are difficult to negotiate. Loose surfaces such as ball-bearing gravel are also undesirable as they pose safety risks to all main user groups.

A smooth compacted surface is generally recommended for a multi-use recreation; however, choice of trail surface should be based on individual trail assessment to establish the most appropriate surface.

A natural trail surface should have good drainage to protect it from erosion. It is appropriate to develop drainage channels particularly on steep slopes that are highly susceptible to erosion.

Horses' hooves damage unsealed trail surfaces to the detriment of other trail users and it is recommended where possible that a separate horse trail adjacent to the main with the main bicycle/walking trail surface be established and considered in the initial planning and design.

Appendix 3 illustrates one method for accommodating a horse trail in suitably wide sections of a trail that provides a walking/cycling trail surface that will avoid damage to the main trail surface.

#### 4.3.5 Erosion control and water crossings

Proper drainage is of considerable importance in constructing a lasting, maintenance-free facility. Water should be removed from trail surfaces as fast as possible with an appropriate slope of the trail (generally 1 per cent). The steepness of the trail and the type of soil will dictate site requirements for the frequency of draining water from the trail. Allowing water to stand on a trail surface or run down even a gentle slope will cause surface damage.

Installing bridges (in compliance with Australian standards for bridges) to traverse waterways or river crossings is a good way of crossing waterways without disturbing the riparian zone, but is a major cost of trail construction.

Lower level crossings will need reinforcing or culverts installed at a height that ensures that the crossing is not regularly flooded.

#### 4.3.6 Mitigating unwanted trail users

The unauthorised use of motorised vehicles on sections of non-motorised recreation trails is regarded as a major problem to adjoining landowners and trail users. In addition to regulatory signage and trail supervision by local authorities, trail infrastructure can make access to unwanted motorised vehicles such as trail bikes and quad bikes very difficult.

A number of options have been used in other trails with varying degrees of success. Queensland Parks and Wildlife have utilised stiles while on the BVRT, chicanes and management gates have been successful. Plans for horse stiles and chicanes can be found in Appendix 4

#### 4.3.7 Trail furniture and infrastructure

There are a number of locations, such as trailheads, well suited to the placement of facilities which would benefit all trail users such as picnic tables, hitching rails, bike racks and exercise stations.

Trailheads are the main entrance and identification of recreation trails and should include or provide access to toilet and reliable drinking water facilities. Other important considerations include the ability to provide parking for vehicles with trailers and space for unloading trailers and stock trucks, as well as the safety of unattended vehicles.





When space is available, consider separate parking facilities for certain uses, such as horseback riding and bicycle riders. Provide access to separate facilities within walking distance of areas of high public use, such as campgrounds, accommodation, toilet facilities and local amenities.

For horse riders, needs at trailheads vary with the type of vehicles used for transportation, the number of animals being handled, and the length of stay in the region. Many animals are transported in trailers or trucks equipped with portable ramps so unloading ramps are not needed at every trailhead. However, it is recommended that loading ramps are considered based on the high use of trucks to transport horses to trails and trail networks.

Along the trail there may be distances between trail heads that require the need for other facilities and infrastructure such as shelters, picnic tables, seating, bike racks, hitching rails and toilets. These facilities and associated constructed features must comply with the relevant Australian safety standards and meet the needs of the intended trail user.

Provision of trail infrastructure should be located at regular intervals depending on the types of users and at locations with a high scenic amenity.

## 4.4 Trail signage

When developing recreation trails signage, the following should be considered:

**Adherence to recognised standards**—trail construction, signage and trail markers, and trail classification will comply with recognised Australian standards, thereby ensuring a high quality and safe experience for all trail users.

**Consistency and uniformity of signage**—signage is recognised as an essential element of a quality trail, and all signage erected at trailheads, along nearby and adjoining roads conform to accepted standards, and will maintain a consistent theme along the entire trail.

**Quality information**—including brochures and mapping will have quality on-trail information. All means of distribution of these products need to be utilised.

**Outstanding interpretive material**—trails should have on-trail interpretive material, and will be included within other trail and publicity brochures, providing trail users with a greater appreciation of the more interesting features to be found along the trail.

Several kinds of signage are required on recreation trails, including distance, directional, warning, promotional, etiquette and interpretive signs. Each should be standardised along the trail and, where appropriate, concordant with relevant local or Australian standards or practices.

### 4.4.1 Adherence to recognised standards

AS 2156.1—2001 Australian Standard™ Walking tracks classification and signage provides a classification system for walking tracks and is the basis for these signage guidelines. The standard provides guidance on the design, fabrication and use of trail markers and information signs to be used for walking trails. There are no Australian standards for multi-use trails classification or signage so signage has been developed based on the Australian standards for walking tracks as follows.

1. information signs
2. descriptive signs
3. interpretive signs
4. warning or risk signs
5. regulatory signs.

A sixth type of sign—event and temporary signs, has been included as an independent category.

**Information signs** provide information related to the trail and its use, including:

- registration and reporting recommendations
- equipment recommendations
- personal safety precautions



- environmental protection (minimal impact practices)
- skill and fitness level required
- specific conditions.

**Descriptive signs** specify information necessary for the safe and enjoyable use of the trail. Signs should be large enough to be read at some distance and can be mounted in some form of attractive shelter at the trail-head if it is the primary sign for trail information. Descriptive signs may include:

- track rating (grades 1-6 or walk, hike, trek)
- type of trail (loop, one-way, return)
- effect of weather conditions
- elements of interest, trail conditions or difficulties (facilities, waterfall, slippery rocks)
- opening and closing hours of the trail
- distance to designated point
- estimated completion time
- direction of the initial course of the track
- graphic images or a map for orientation.

**Interpretive signs** on the cultural and landscape heritage of a trail cannot only provide added interest to the trail, but also engage the trail user in other aspects of the trail and encourage increased use of the trail. Interpretation signs convey educational material about a natural or cultural feature on a trail. An interpretive plan including signage should part of overall trail plan.

Point of interest markers can also be used to identify a point or feature along a trail where there is insufficient information about the site to warrant the production of an interpretive sign.

Free-standing outdoor art, murals on outdoor furniture or buildings in the towns near the trail also provide interpretation of the landscape and cultural heritage and can also provide a point of difference.

**Regulatory signs** specify legal requirements and regulations associated with the use of a track.

**Warning or risk signs** advise users to particular danger or risk and should include the following information:

- appropriate pictogram identifying the hazard
- statement of danger or hazard
- statement of consequence
- statement of precautionary action.

Warning signs play an important role in risk and safety management of recreational areas such as trails for three principal reasons:

1. It informs users of dangers, safety issues and other relevant information.
2. It offers some protection to the land manager who is required to warn users of dangers, prohibitions other safety information.
3. It provides an economic alternative to staffing visitor areas where there is a risk. There are a number of locations along the trail corridor which demand warning signage, primarily at the many road crossings facing trail users and road traffic.

**Event signs/temporary signs** be appropriate where an event or visitor attraction or service has limited and seasonal opening times. Costs are paid by the applicant including the sign and advertising costs.

If a sign is erected for a period of less than nine months of the year it is classed as a temporary sign. A temporary tourist sign, however, can only be erected if the attraction is open to the public for more than three months of the year. The location and period of the event or road closure should be advertised through local print media and local visitor centres prior to the event or road closure. This requirement, however, will vary with local planning laws.



## 4.4.2 Trail markers

In relation to trail markers, the key recommendations of Australian Standard 21.56.1 – 2001 are that:

- directional arrows should be positioned on a square background of a minimum of 90mm by 90mm
- directional arrows should either be at 90 or 45 degree angles only
- trail markers should be designed for durability and should be made of either aluminium alloy (at least 1.6mm thick) or galvanised steel (at least 1mm thick)
- markers should have a reflective finish to assist with night-time identification and should be of a colour that is clearly visible within the landscape while also considering the effects of weathering—for example, blue, yellow, orange and red)
- intervals at which trail markers are placed should be in accordance with trail classification and local site conditions such as vegetation, topography and weather
- trail markers should be placed at a consistent height above ground (between 0–2 metres) and should relate to topographical conditions
- directional markers do not need to be placed at frequent intervals along straight sections of trail as the formation is clear and obvious, and even the most inexperienced of users will feel confident that they can remain 'on track'. They only need to be placed where the main trail deviates from the corridor or intersects with another trail network

Multi-use recreation rails usually accommodate two-way traffic so trail markers need to be bi-directional. Directional markers and way markers should only include the trail logo and directional information for the safety of the trail user. All other logos and branding, such as government or land manager logos, should be located on other signage at trail heads, information stops, shelters and major trail intersections

## 4.4.3 Code of conduct signage

Recognising that users will join a rail trail at any number of points, installing distance and direction signs all trail entrances and road crossings is required. This provides information to users joining the trail at locations other than at trail heads and provides additional information for users already on the trail.

The full code of conduct signage must be installed at every nominated trail head and should inform all groups about appropriate behaviour when sharing the trail to alleviate trail user conflict.

## 4.4.4 Emergency response signage

An emergency response plan should indicate that all major road crossings have a GPS reference/identifier on the post (underneath the Give Way sign) for use in emergencies, again as a location aid for those in stress. There is also a need to include the emergency telephone number at all trailheads (on the trailhead sign) and clearly identify that one number will contact all three emergency services.

Trail signs should also clarify to trail users the owner or manager of the trail. This allows recognition of which agency or body is responsible for the trail and associated infrastructure if there is a problem that needs to be rectified.

## 4.4.5 Trailhead signage

Given that much of the usage of a trail is likely to be users from other areas, signage at trail-heads is important. All trailheads will need trailhead signage—map panels, interpretive material and information. Trailhead signage should also include emergency information.

Trailheads on the Brisbane Valley Rail trail have been located at former railway stations as these are easily accessible and already have facilities already in place.



#### 4.4.6 Promotional signage

A district or local recreation trail will be quite familiar to many local residents, but it is recommended that a number of 'promotional' signs be erected at major road crossings to give prominence to the trail for tourists. Installation of these signs provide information to motorists and other road users about the trail and the potential to increase trail usage if placed close to trail head or trail points of interest.

Promotional signage has been used to great effect on other trails throughout Australia including the Bicentennial National Trail and has increased general awareness of the trail among the broader community.

#### 4.4.7 General trail signage maintenance

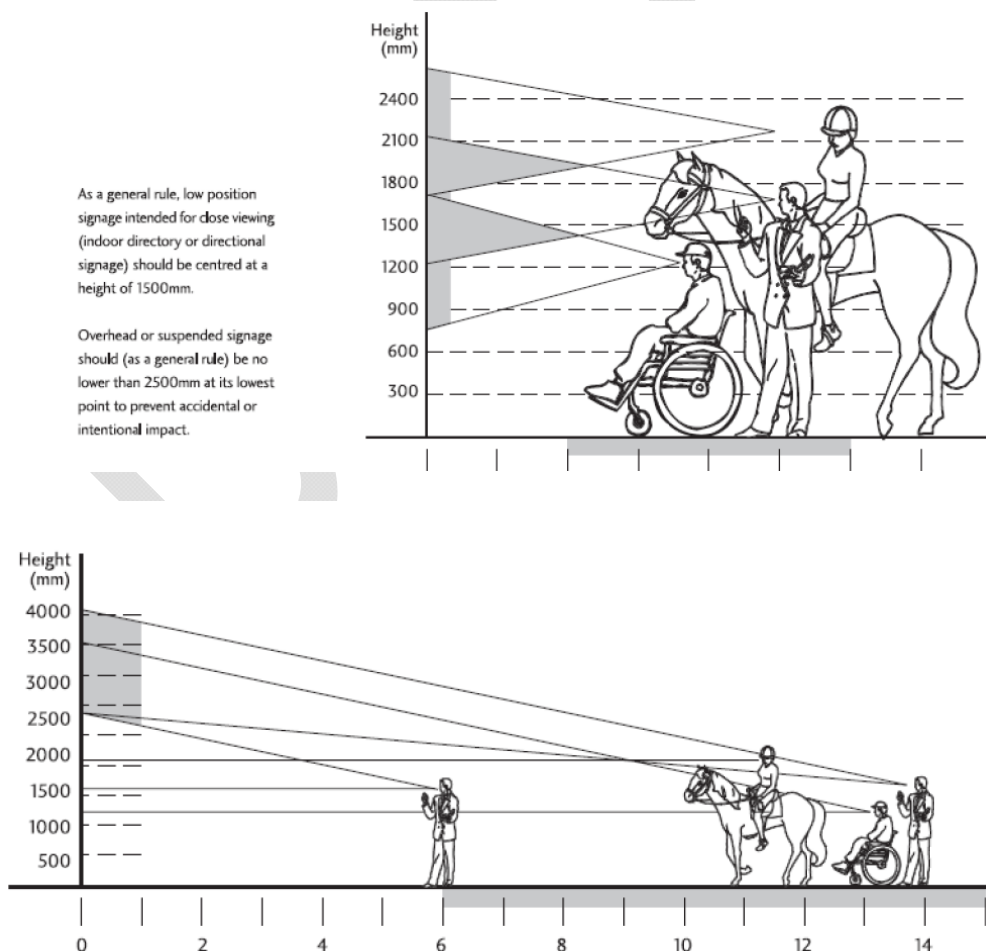
The majority of signs will occur at trailheads. Each trailhead should be carefully checked to ensure that all signage is present, and that all signs are clearly visible and legible.

Particular attention needs to be given to signs at road crossings or junctions. Each crossing should be carefully checked to ensure that all signage is present, and that all signs are clearly visible. Ensure 'trail crossing ahead' signs (on roadside at approach to trail crossing) are not obscured by overhanging vegetation.

An inventory of locations needs to be prepared to assist in regular maintenance.

#### 4.4.8 Optimum viewing distances for trail head or roadside signage

The diagrams below are a guide to the preferred heights that offer optimum viewing to trail users.





## 5. Trail management and maintenance

### 5.1 Trail management plan

The development of a trail management plan is an important process in the planning and development of a trail. A trail management plan provides long-term and day-to-day management objectives for the trail. The plan should be flexible and responsive to change and set a clear management framework for future planning and priorities.

#### 5.1.2 A statement of guiding principles

It is suggested the following overarching principles are appropriate to guide trail management. Using these principles will assist with management of trail users, upgrading, maintenance, management, marketing and community engagement. They are:

- ensure community involvement in all stages of trail development and management
- minimise potential conflict between trail users and adjacent landowners
- ensure minimum standards are applied from planning, design construction and effective ongoing maintenance
- provide high quality information and interpretive material
- develop style guide for consistency of signage, marketing material and communication tools
- adherence to recognised standards
- provide access to and develop the landscape values of the trail including biodiversity, scenic amenity and cultural heritage.

#### 5.1.2 Trail corridor protection policies and programs

The SEQRTS recommended that potential and future trail alignments be appropriately secured to meet increased recreational user demand in the future. Potential trail corridors should at least be described in strategic plans (e.g. Local Trails Strategy) and management plans (Park/Reserve Management Plans), and where appropriate, included in local and regional statutory plans to encourage preservation of alignments.

The SEQRTS trail assessment methodology enables the identification and evaluation of future opportunities and provides the basis for a trail corridor protection policy. The Rails-to-Trails Conservancy (USA) suggests that trail planning include the development of a trail protection policy to prevent damage to current or potential recreation trail corridors.

The policy should set out primary uses of the existing or potential trail corridor—for example recreation, transportation and cultural heritage preservation, and ensure these uses are consistently recognised in the definitions and provisions of regional plans and local planning schemes made under the *Sustainable Planning Act 2009*.

A comprehensive policy should also provide direction on the management of secondary uses as follows:

- regulate all secondary uses of the trail corridor in a fair and consistent manner
- minimise inconvenience to trail users, and assure protection of biodiversity, scenic amenity, cultural heritage, rural production and other identified landscape values within and adjacent to the trail corridor
- minimise damage to the trail corridor at all times
- establish uniform standards for construction and restoration of the trail corridor if it is damaged by a secondary use
- ensure that the managing agency recovers administrative costs and receives appropriate compensation for use of, and damage to, the trail corridor by secondary uses
- inform all public and private interests of the expectations and intentions of the trail managing agency with respect to secondary uses
- issue permits and licences for secondary uses; and manage the transfer of ownership rights, where appropriate, through the use of easements or other mechanisms.





### 5.1.3 Property management plan

In recent times, the direct connection between outdoor recreation opportunities, including trails, and the management of natural resources, has been recognised by the inclusion of outdoor recreation targets in natural resource management (NRM) plans.

For example, work underway as part of the development of the South East Queensland Natural Resource Management Plan Atlas will produce maps of regional outdoor recreation settings and existing and potential future SEQ regional trails.

Integrating trails planning with natural resource management planning makes sense because the same suite of natural resources addressed in an NRM plan, such as land, water and natural habitats, substantially underpins the function, form and attractiveness of trails.

Developing a set of strategic directions, precise objectives and scheduled actions to sustainably and effectively manage public parks is common practice across various land management agencies. In a similar vein, trails also need management tasks to be designed and implemented as part of a coordinated framework to ensure trail development principles are effectively addressed and desirable trail outcomes achieved.

The recommended approach is to develop a property (trail) management plan. Undertaken in close consultation with the community and neighbouring landowners, property management plans are a valuable tool to ensure trails function and operate as high quality experiences, and that management is coordinated with local, district and catchment-wide management plans influencing the trail corridor.

Ultimately, the basis of property management planning is to develop a future plan of operation based on the recreation trail objectives and an assessment of the available resources.

## 5.2 Trail maintenance

### 5.2.1 General maintenance

Ongoing trail maintenance is an essential component of an effective management program and to ensure effective risk management obligations. It is therefore essential that funds be set aside in yearly budgets for maintenance of trails—to ensure user safety and enjoyment and minimise liability risk.

Careful planning, design, construction and community engagement will minimise future maintenance demands, problems and costs. Maintenance on the trail must involve regular inspections and simple repairs with programs undertaking larger jobs to ensure the safety of the trail user and address any significant signage repairs or weed/vegetation control.

Table 4 below gives a suggested schedule for general maintenance activities to achieve acceptable maintenance levels.

**Table 5: General maintenance activities**

Activity	Site	Frequency
Undertake full inspection of the trail	Entire trail	Every second month
Check signage and clean, replace or repair as required esp. road crossing signage and directional markers	All locations	Every second month—at each trail inspection
Check trail surface and arrange repair as required	Entire trail	Every second month. Check for erosion at each inspection. Arrange repairs immediately if acute, or schedule maintenance for six monthly work sessions if not
Maintenance of trail surface	Entire trail	Every six months
Sweep or rake debris from trail surfaces,	Various	Every six months





especially at road crossing points	locations	
Maintenance of culverts and other drainage measures	Entire trail	Every six months
Cut back regrowth, intruding and overhanging vegetation	Entire trail	Every six months, unless obviously requiring attention at regular inspections
Check structural stability of interpretive signage, and interpretive shelters	Various locations	Every six months
Undertake Hazard Inspection and prepare Hazard Inspection Report	Entire trail	Annually
Check structural integrity of bridges	Various locations	Every 3 years
Major repairs and replacements	Entire trail	Every 5 years
Major repairs and replacements	Entire trail	Every 10 years

(It should be noted that this schedule does not allow for repair works above and beyond normal minor activities. For example, if a section is subject to heavy rain, and erosion control fails, additional repair works will need to be undertaken).

## 5.2.2 Trail signage

An inventory of locations needs to be prepared to assist in regular maintenance. Sign maintenance generally consists of remounting loose or fallen signs, repairing or replacing signs, and resetting or replacing leaning, damaged, rotting, or missing posts. All signage should be carefully checked to ensure that all it is all still in place and that all information is clearly visible and legible.

Particular attention needs to be given to signs at road crossings or junctions. Each crossing should be carefully checked to ensure that all signage is present, and that all signs are clearly visible. 'Trail crossing ahead' signs on roadside at approach to trail crossing must not be obscured by overhanging vegetation

If a sign is missing, make an assessment of why the sign is missing before a replacement sign is installed. If a sign has been stolen, an alternative site might be considered or theft-resistant hardware should be used. If weather has damaged or affected a sign use more durable materials, a different location or a different system for mounting the signs.

## 5.2.3 Vegetation

A well prepared property management plan is essential in maintaining this aspect of the trail maintenance. Undergrowth vegetation such as lantana grows quickly, and over time will continue to intrude into the trail 'corridor'. Sight lines must be kept clear either side of road crossings as a part of this process, to ensure that users can clearly see a safe distance either way at road crossings.

## 5.2.4 Trail surfaces

Easy to medium trail surfaces could require regular surface maintenance caused by erosion, water damage or illegal motor vehicle use. An inspection of the trail would be recommended after severe weather conditions to ensure that the trail is safe and any repairs to the trail are initiated.



## 5.3 Marketing and promotion

Marketing and promotion of the trail is essential and is often not considered an important part of the trail planning and development process. It is important to inform trail users, develop user surveys, encourage local community support and use of the trail and ensure community capacity and stewardship of the trail.

Successful marketing and promotion will result in improved and increased engagement by users, local community and businesses in marketing the trail and may even provide long term management links with the trail users and the community. It must however enhance any current marketing and community engagement initiatives being undertaken in the region.

### 5.3.1 Marketing plan

A comprehensive marketing plan will assist with the integration of a total marketing effort. It provides a means for a systematic approach to promoting the trail and surrounding region, but needs to be based on a clear understanding of the qualities and potential of the trail, the needs of the users, and the commitment of the local community.

In rural and regional locations, it is recommended that more practical, less theoretical marketing strategies are developed as part of the marketing plan as they have the best chance of success in the rural, resource-limited environments. The plan needs to support other communications, community engagement and consultation initiatives being undertaken.

### 5.3.2 Marketing collateral

Websites can be redesigned as trail completion occurs, to highlight the short and long trail experiences available across activity user groups. For example, consideration should be given to creation of a trails website that enables intentional users to plan overnight or multi-day trail use, linking into other opportunities in the area such as dams. Further, a linkage to GPS coordinates and interpretive information needs to be included in internet-based communications.

Roadside signage, brochures and information from visitor information centres are considered as minimal sources of information. These have historically offered prime opportunities for the passing or casual visitor to be informed of local opportunities to guide visitors to the trail. More information on brand development and examples of marketing collateral can be found in the BVRT style guide at [www.dip.qld.gov.au/resources/guideline/brisbane-valley-trail-graphic-guidelines.pdf](http://www.dip.qld.gov.au/resources/guideline/brisbane-valley-trail-graphic-guidelines.pdf)

Word of mouth is an important and valuable means of information dissemination and this should continue to grow in an organic manner if expectations are managed.

### 5.3.3 Trail interpretation plan

The trail interpretation plan provides recommendations for the development of interpretive signage and contains a recommended list of stories that should be told along the trail. If interpretive signage is to be successful there are at least three important considerations in relation to the delivery of the message:

1. something original and attention-grabbing about the primary signage
2. sufficient challenge in processing the significance for it to require central processing in long term memory
3. interaction in a cognitive, effective and tangible fashion with some features of the message.

### 5.3.4 Community engagement and consultation

The involvement and enthusiasm of the local community are vital to the success of any recreation trail. If the local community takes ownership of a trail or trail network from the beginning, issues including management, maintenance, marketing and use of the trail can be minimised.

Trails present a wealth of opportunity for community involvement and interaction, through volunteer programs, social events and general usage. By involving people in planning and developing trails, they feel more a part of the social fabric in which they live. As Burke (1998) points out, 'An engaged citizenry is a critical determinant of the health of a nation's stock of social capital'. Trails can also



provide cross-cultural experiences, particularly in small rural areas as trails draw urban residents, domestic and international visitors.

It is essential that local residents are involved in the planning process and feel that their voices are being heard as soon as possible. The local community needs to be provided the opportunity to raise their concerns and hopefully become enthused about the potential of the trail, in relation to health and fitness, educational benefits and other features as they arise from the research.

Ideally, it is anticipated that local residents can be involved with all aspects of the trail and the champions or ambassadors and beneficiaries of the trail. All consultation with residents will be designed to develop an 'agreed vision' amongst both the community and its stakeholders.

### 5.3.5 Trail volunteers

The Queensland Government's Towards Q2 fair ambition is to support safe and caring communities and the target to increase by 50 per cent the proportion of Queenslanders involved in their communities as volunteers. According to the Australian Bureau of Statistics, the type of organisations that individuals volunteer for is as diverse as our culture but people are most likely to volunteer for sport and physical recreation organisations.

Recreation trails that engage the community encourage greater involvement and volunteer opportunities in every aspect of the planning, delivery, marketing, maintenance and advocacy of a trail.

The best summary of the roles of volunteer groups comes from the Rails-to-Trails Conservancy in the USA. From *Designing Rail Trails for the 21<sup>st</sup> Century* (Flink et al 2001) comes the following advice:

*The single most important function of a friends organisation is to act as an advocate for the trail, defending it when necessary and promoting it the rest of the time. Funding decisions often depend on public pressure, and money is generally allocated to projects with high public visibility.*

The Rails-to-Trails Conservancy recommends the use of an adopt-a-trail (or section of trail) program—a good approach for trails of anything over 5 km. The Appalachian Trail, the Bibbulmun Track, and the Gippsland Trail all use this particular approach.

Volunteer trails groups undertake any number of tasks but it should be noted that, in many instances, the volunteer groups are not the trail manager. This responsibility often falls to a formal committee of management, a government agency or a local government.



## References

Some useful recreation trail references include:

Klein, J. (2003) **Sustainable Mountain Bike Trails**. PowerPoint presentation for the International Mountain Bike Association (IMBA). [www.mtbdirt.com.au](http://www.mtbdirt.com.au)

(Queensland) Department of Communities, **Sport and Recreation Services** (website: [www.sportrec.qld.gov.au/](http://www.sportrec.qld.gov.au/) ) has links to information on outdoor recreation activities and issues including:

- outdoor recreation demand and trends in demand  
[www.sportrec.qld.gov.au/Outdoorrecreation/OutdoorRecreationTrends.aspx](http://www.sportrec.qld.gov.au/Outdoorrecreation/OutdoorRecreationTrends.aspx)
- trail bike riding [www.srq.qld.gov.au/Outdoorrecreation/TrailbikeridinginQueensland.aspx](http://www.srq.qld.gov.au/Outdoorrecreation/TrailbikeridinginQueensland.aspx)

Queensland Government and the Council of Mayors - South East Queensland (2007) **Active Trails – a Strategy for Regional Trails in South East Queensland**. Available online from Queensland Department of Infrastructure and Planning at: [www.dip.qld.gov.au/regional-planning/active-trails-strategy.html](http://www.dip.qld.gov.au/regional-planning/active-trails-strategy.html) . This is a set of six documents:

1. The executive summary - *Active Trails – a Strategy for Regional Trails in South East Queensland*
2. *Active Trails – a Strategy for Regional Trails in South East Queensland Project Report*
3. *Review of Recreation Participation and Demand Studies for Trail-Based Recreation Activities – Technical Report No 1 to the SEQ Regional Trails Strategy*
4. *Inventory of Recreation Trails in and around SEQ and a Summary of Trail Availability in SEQ – Technical Report No 2 to the SEQ Regional Trails Strategy*
5. *Development of a Strategic Trail Assessment Methodology - Technical Report No 3 to the SEQ Regional Trails Strategy*
6. *Review of Considerations Applicable to Recreational Trails Planning, Development and Management in South East Queensland – Technical Report No 4 to the SEQ Regional Trails Strategy*

**Queensland Outdoor Recreation Federation website** ([www.qorf.org.au](http://www.qorf.org.au)) has links to information on outdoor recreation activities and issues including:

- mountain bike riding [www.qorf.org.au/01\\_cms/details.asp?ID=725](http://www.qorf.org.au/01_cms/details.asp?ID=725)
- trail bike riding [www.qorf.org.au/01\\_cms/details.asp?ID=738](http://www.qorf.org.au/01_cms/details.asp?ID=738)
- adventure activity standards [www.qorf.org.au/01\\_cms/details.asp?ID=830](http://www.qorf.org.au/01_cms/details.asp?ID=830)
- risk management [www.qorf.org.au/01\\_cms/details.asp?ID=615](http://www.qorf.org.au/01_cms/details.asp?ID=615)
- recreation track/trail design and construction [www.qorf.org.au/01\\_cms/details.asp?ID=912](http://www.qorf.org.au/01_cms/details.asp?ID=912)

**Standards Australia** website online order for Australian Standards for walking track classification, signage and design:

- **AS 2156.1-2001** Walking tracks - Classification and signage
- **AS 2156.2-2001** Walking tracks - Infrastructure design

### Benefits – Health – physical, psychological, social and spiritual

Australian Bureau of Statistics (2006) **National Health Survey – summary of results 2004-05**. [www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4364.02004-05?OpenDocument](http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4364.02004-05?OpenDocument)

Dickson, T.J.; Gray, T and Mann. K (2008) **Australian Outdoor Adventure Activity Benefits Catalogue**. University of Canberra. Available online at: [www.qorf.org.au/01\\_cms/details.asp?ID=1066](http://www.qorf.org.au/01_cms/details.asp?ID=1066)

California State Parks (2005) **Health and Social Benefits of Recreation** California State Parks, Planning Division P.O. Box 942896 Sacramento, CA 94296-0001 [www.parks.ca.gov/planning](http://www.parks.ca.gov/planning)

Fuller, Richard A.; Irvine, Katherine N.; Devine-Wright, Patrick; Warren, Philip H.; and Gaston, Kevin J. (2007) **3 , Psychological benefits of green space increase with biodiversity**. *Biology letters (Community Ecology)* doi:10 1098/rsbl.2007.0149 pp. 390-394.



Louv, R (2008) **Last Child in the Woods - Saving our Children from Nature Deficit Disorder**. Algonquin Books of Chapel Hill, North Carolina, USA. ISBN 13:978-1-56512-605-3

Maller, C; Townsend, M; St Leger, L; Henderson-Wilson, C; Prosser, L; Pryor, A; and Moore, M (2008) **Healthy Parks, Healthy People - The Health Benefits of Contact with Nature in a Park Context - A Review of Current Literature 2<sup>nd</sup> Ed**. Victorian Government, Parks Victoria and Deakin University [www.parkweb.vic.gov.au/1process\\_content.cfm?section=99&page=16](http://www.parkweb.vic.gov.au/1process_content.cfm?section=99&page=16)

Queensland Government **Eat Well Be Active Queensland**, website: [www.your30.qld.gov.au/Home/tabid/36/Default.aspx](http://www.your30.qld.gov.au/Home/tabid/36/Default.aspx)

Queensland Public Health Forum (2004) **Strategic Statement – Active Living** [www.health.qld.gov.au/qphf/key\\_priorities/active\\_living.asp](http://www.health.qld.gov.au/qphf/key_priorities/active_living.asp)

Queensland Public Health Forum (2006), **Be Active Queensland 2006–2010 – a framework for health sector action** for physical activity in Queensland, available online at: [www.health.qld.gov.au/qphf/documents/31830.pdf](http://www.health.qld.gov.au/qphf/documents/31830.pdf)

Stephenson J, Bauman A, Armstrong T, Smith B and Bellew B (2000), **The costs of illness attributable to physical inactivity in Australia**. A report prepared for the Commonwealth Department of Health and Aged Care and the Australian Sports Commission.

Russell, K.C. and Hendee, J.C. **Wilderness Therapy as an Intervention and Treatment for Adolescents with Behavioural Problems**. in Watson, Alan E., Aplet, Greg, and Hendee, John C. (1999) *Personal, Societal, and Ecological Values of Wilderness*: 6th World Wilderness Congress Proceedings on Research Management and Allocation. Volume II, Proc. RMRS-P-000. Ogden, UT: USDA Forest Service, Rocky Mountain Research Station.

Ulrich, RS, Simons, RF, Losito, BD, Fiorito, E, Miles, MA and Zelson, M 1991, **Stress recovery during exposure to natural and urban environments**. *Journal of Environmental Psychology* 11: 201-230.

VicHealth (2003) Mental health and wellbeing, VicHealth Letter, Issue No 21 Spring.

## Ecological impacts

Bamford, A.R., Davies, S.J.J.F. & Van Delft, R. (1990) **The effects of model power boats on waterbirds at Herdsman Lake, Perth, Western Australia**, *Emu*, Journal of the Royal Australasian Ornithologists Union, vol. 90, no. 4, pp. 260-265, 1990.

Buckley, R **Breakdown of Human Waste in Three Sub-Tropical Australian Ecosystems**. Available online from the National Outdoor Leadership School website at: <http://www.nols.edu/>

Burger, J., (1998) **Effects of motorboats and personal watercraft on flight behaviour over a colony of Common Terns**. *Condor*, vol. 100 no. 3. pp. 528 - 534, August 1998.

Cessford, G.R., (1995), **Off-Road Impacts of Mountain Bikes: A review and discussion**. *Science and Research Series No. 92*, Department of Conservation, Wellington, New Zealand.

Cilimburg, A; Christopher Monz, C; and Kehoe, S (2000) **Wildland Recreation and Human Waste: A Review of Problems, Practices, and Concerns**. *Environmental Management* Vol. 25, No. 6, pp. 587–598 DOI: 10.1007/s002670010046

Leon, L.M and Warnken, J (2008) **Copper and sewage inputs from recreational vessels at popular anchor sites in a semi-enclosed Bay (Qld, Australia): Estimates of potential annual loads** *Marine Pollution Bulletin*, Volume 57, Issues 6-12, 2008, Pages 838-845

Ells M.D. 1997. **Impact of Human Waste disposal on surface water runoff**. *J. Env. Health*, 59, 8:6-12.

Hammit, W.E. and Cole D.N. (1987) **Wildland Recreation : ecology and management**. John Wiley and Sons, New York.





Hammit, P; Freimund, W; Watson, A; Brod, R; and Monz, C. **Responsible Environmental Behaviour – Metaphoric Transference of Minimal Impact ideology** Available online from the National Outdoor Leadership School website at: <http://www.nols.edu/>

Jones, M.E., (2000). **Road upgrade, road mortality and remedial measures: impacts on a population of eastern quolls and Tasmanian devils.** *Wildlife Research Journal*, Vol. 27, 2000, pp. 289-296.

Liddle, M.J (1991) **Recreation Ecology: Effects of trampling on plants and corals**, *Tree*, Vol. 6, no. 1, January 1991, pp. 13-17.

Liddle, M.J (1997) **Recreation ecology: the ecological impact of outdoor recreation and ecotourism.** Chapman & Hall, Melbourne ISBN: 0412 266 30X

Mosisch, TD; Arthington, AH (1998) **The impacts of power boating and water skiing on lakes and Reservoirs**, *Lakes & Reservoirs: Research and Management*, vol. 3, no. 1, pp. 1-17, Mar 1998. ISBN 0 7242 9713 8

Temple K.L., Camper A.K. and McFeters G.A. 1980. **Survival of Two Enterobacteria in Feces Buried in Soil Under Field Conditions.** *Appl. Env. Microbiology*. 40, 4:794-797.

Temple K.L., Camper A.K. and Lucas R.C. 1982. **Potential health hazard from human wastes in wilderness.** *J. Soil and Water Cons.* 37:357-359.

Sun, D and Walsh, D (1998) **Review of studies on environmental impacts of recreation and tourism in Australia.** *Journal of Environmental Management* 53, 323-338.

#### Economic impacts

American Hiking Society (2002) **The Economic Benefits of Trails.** [www.AmericanHiking.org](http://www.AmericanHiking.org)

Kinhill Economics, Kinhill Pty Ltd (1998a) **The Value of Protected Areas to Queensland** – Final report. Prepared for the Queensland Department of Environment (in 2009, incorporated within the Queensland Department of Environment and Resource Management). Document reference #: BU80094-DO-002 Rev 0

Kinhill Economics, Kinhill Pty Ltd (1998b), **Assessment of the significance of forests to the recreation and tourism industries of South East Queensland**, prepared for the (Commonwealth) Bureau of Agricultural and Resource Economics.

Lazarow, N (2007) **The value of coastal recreational resources: a case study approach to examine the value of recreational surfing to specific locales.** *Journal of Coastal Research*, SI 50 (Proceedings of the 9th International Coastal Symposium), pg – pg. Gold Coast, Australia, ISBN 1-891276-54-9

Queensland Government, Treasury, Office of Economic and Statistical Research (2006) **The Contribution of Domestic Visitor Queensland Economy: 2003–04.** [www.oesr.qld.gov.au/publications/single-publications/index.shtml](http://www.oesr.qld.gov.au/publications/single-publications/index.shtml)

Campbell, D and Murphy, J.J (2005) **The 2000-01 National Recreational Fishing Survey Economic Report.** Australian Government, Department of Agriculture Fisheries and Forestry. GPO Box 858, Canberra ACT 2601 Web: [www.daff.gov.au/data/assets/pdf\\_file/0014/23522/economic\\_report\\_july05.pdf](http://www.daff.gov.au/data/assets/pdf_file/0014/23522/economic_report_july05.pdf)

#### Laws

Queensland Government. **Civil Liability Act 2003** GPOPRINT, Brisbane, Australia.

Queensland Government. **Brisbane Forest Park Act 1977.** GPOPRINT, Brisbane, Australia.

Queensland Government. **Forestry Act 1959.** Sections 33 and 40. GPOPRINT, Brisbane, Australia.





Queensland Government. **Integrated Planning Act 1997**, Chapter 2 Part 1 GOPRINT, Brisbane, Australia.

Queensland Government. **Marine Parks Act 1984**. GOPRINT, Brisbane, Australia.

Queensland Government. **Nature Conservation Act 1992**. Parts 2, 3 and 4. GOPRINT, Brisbane, Australia.

Queensland Government. **Police Powers and Responsibilities Act 2000**.

Queensland Government. **Recreation Areas Management Act 2006**

Queensland Government. **Transport Operations (Road Use Management) Act 1995**

Queensland Government. **Transport Operations (Marine Safety) Act 1994**

### Planning documents

Queensland Government. (1993) **Open Space and Recreation – a policy paper of the SEQ 2001 Project**. Regional Planning Advisory Group, GOPRINT, Queensland. ISBN 0 7242 5457 9

Queensland Government, Department of Infrastructure and Planning (2009) **South East Queensland Regional Plan 2009 – 2031** ISBN 978-0-9805449-1-6 [www.dip.qld.gov.au/regional-planning/regional-plan.html](http://www.dip.qld.gov.au/regional-planning/regional-plan.html)

Queensland Government, Department of Infrastructure and Planning (2005) **South East Queensland Regional Plan 2005 – 2026** ISBN 1 9210557 02 05 [www.dip.qld.gov.au/regional-planning/seq-regional-plan-2005-26.html](http://www.dip.qld.gov.au/regional-planning/seq-regional-plan-2005-26.html)

Wood, J and Swartz, L (1993) **A Strategic Overview of Recreation Opportunity Settings in South East Queensland**. Unpublished report for the Department of Tourism Sport and Racing prepared by Loder and Bayly Consulting Group. Unpublished technical paper. Available on request from the Department of Infrastructure and Planning: [dave.batt@dip.qld.gov.au](mailto:dave.batt@dip.qld.gov.au)

Queensland Government, Sport and Recreation Queensland (2003) **Open Space for Sport and Recreation – Planning Principles and Implementation Notes for Local Government**. ISBN: 0 7242 9703 0 [www.sportrec.qld.gov.au/Industryinformation/Recreationplanning/Planningnotes.aspx](http://www.sportrec.qld.gov.au/Industryinformation/Recreationplanning/Planningnotes.aspx)

### Policy, planning and management concepts and issues

Clark, R N & Stankey, H (1979) **The Recreation Opportunity Spectrum: A Framework for Planning, Management, and Research**. U.S. Department of Agriculture, Forest Service, General Technical Report, PNW-98.

Conroy, R. and Harden, R. (1997) **Horses for courses? Recreational horse riding in New South Wales National Parks, Australia**. *Proceedings of the Tread Lightly! On the World Conference*. Tread Lightly! Australia PL, Corinda, Queensland, Australia.

Low Choy, D. and Prineas, T. (2006) **Parks for People – meeting the outdoor recreation demands of a growing regional population**. *Annals of Leisure Research* Vol 19 No.1 pp. 86-109

McCool, S F; Clark R N; & Stankey G. H (2007) **An Assessment of Frameworks Useful for Public Land Recreation Planning**. *General Technical Report, PNW-GTR-705* Portland, Oregon. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station

Queensland Government, Environmental Protection Agency (2001) **Master Plan for Queensland's Park System**. ISBN: 0-7345-1060-8. pp 52.

Queensland Government, Environmental Protection Agency (2003) **Operational Policy: Landscape classification system for visitor management**.



Stankey, G.H, Cole D. N, Lucas R. C, Petersen, M E & Frissell, S S (1985) **The Limits of Acceptable Change (LAC) System for Wilderness Planning**. U.S. Department of Agriculture, Forest Service, *General Technical Report, INT-176*, January 1985.

Victorian Government, Department of Sustainability and Environment (2002) **Policy for Sustainable Recreation and Tourism on Victoria's Public Land** ISBN 1 74106 1849 (*Note*: Originally published by Department of Natural Resources and Environment which was subsequently re-named Department of Sustainability and Environment)  
[www.dse.vic.gov.au/DSE/nrenrt.nsf/LinkView/9AF29927FB6EF83CCA256C61001794D640805DA7754769794A256DEA00241084](http://www.dse.vic.gov.au/DSE/nrenrt.nsf/LinkView/9AF29927FB6EF83CCA256C61001794D640805DA7754769794A256DEA00241084)

### Recreation conflict

Tumes, K. (2007) **Out of my way: Using qualitative methods to understand recreation conflict between bushwalkers and mountain bike riders**. *Anthropological Notebooks* 13 (1): 45–55. ISSN 1408-032X

Wisconsin Department of Natural Resources: **Recreation Conflict – a review of research in USA**.  
[www.wisc.edu/urpl/people/marcouiller/projects/clearinghouse/Applied%20Research%20Clearinghouse.html#clearinghouse](http://www.wisc.edu/urpl/people/marcouiller/projects/clearinghouse/Applied%20Research%20Clearinghouse.html#clearinghouse)

### Risk management

Australian Government, National health and Medical Research Council (2008) **Guidelines for Managing risks in Recreational Water** ISBN Print: 1864962666  
[www.nhmrc.gov.au/publications/synopses/eh38.htm](http://www.nhmrc.gov.au/publications/synopses/eh38.htm)

Batt, D (ed) (1997) **Proceedings of the 1997 South East Queensland Rockclimbing and Abseiling Risk Management and Litigation Conference**. ISBN 0-7242-7992-X

### Statistics

Australian Sports Commission (2001-2008) **Exercise Recreation and Sport Surveys**  
[www.ausport.gov.au/information/scors/ERASS](http://www.ausport.gov.au/information/scors/ERASS)

Australian Bureau of Statistics (2004-05) **Participation in sports and physical activity**  
[www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4177.02005-06?OpenDocument](http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4177.02005-06?OpenDocument)

Bryden, N (2002) **Does your survey include the canary factor? Measuring displacement and succession at recreation sites**. *Parks and Leisure Australia* June 2002 pp 22 - 23.

Henry, G and Lyle, J (2003), **The National Recreational and Indigenous Fishing Survey**, Fisheries Research and Development Corporation, Natural Heritage Trust and NSW Fisheries, ACT.

Queensland Government (2008) **Outdoor Recreation Trends in South East Queensland 1997-2007**.  
ISBN: (paperback) 978-0-9805015-2-0; ISBN:(electronic) 978-0-9805015-3-7.

Queensland Government (2008) **South East Queensland Outdoor Recreation Demand Study 2007** ISBN 978-0-9805015-1-3.  
*Note*: Surveys were completed in 1997, 2001 and 2007 with reports for each published respectively in 1998, 2002 and 2008.



## Appendix 1: Recreation trail assessment form

**Trail name**

**Local government area(s)**

Assessment number	
Region/ROC	
LGA (boundaries)	
LGA (Community of Interest)	
Reserve/Precinct	
Trail name/Network	
Trail section	
Status (e.g. existing)	
Tenure	
Trail 'Category' as an individual trail	
Trail 'Category' in an identified network	
World Heritage Area (yes/no/part)	
Managing agency	
Data source	
Description	
UBD reference	
Type	
Length (infrastructure)	
Length (experience)	
Walking ( ), Bicycles ( ), Mountain bikes ( ), Horses ( ), 2WD ( ), 4WD ( ), Trail bikes ( ), Canoes ( ), Other ( )	
Shared-use trail ( )	
Date:	Panel:
Assessment principle 1 score (circle score)	Very high / High / Moderate / Low
Assessment principle 2 score	Very high / High / Moderate / Low
Assessment principle 3 score	Very high / High / Moderate / Low
Assessment principle 4 score	Very high / High / Moderate / Low
Future options principle score	

Comment:  
Including  
Tenure  
Recreational reward  
Regional Ecosystems  
Biodiversity Planning



## Appendix 2: Screening

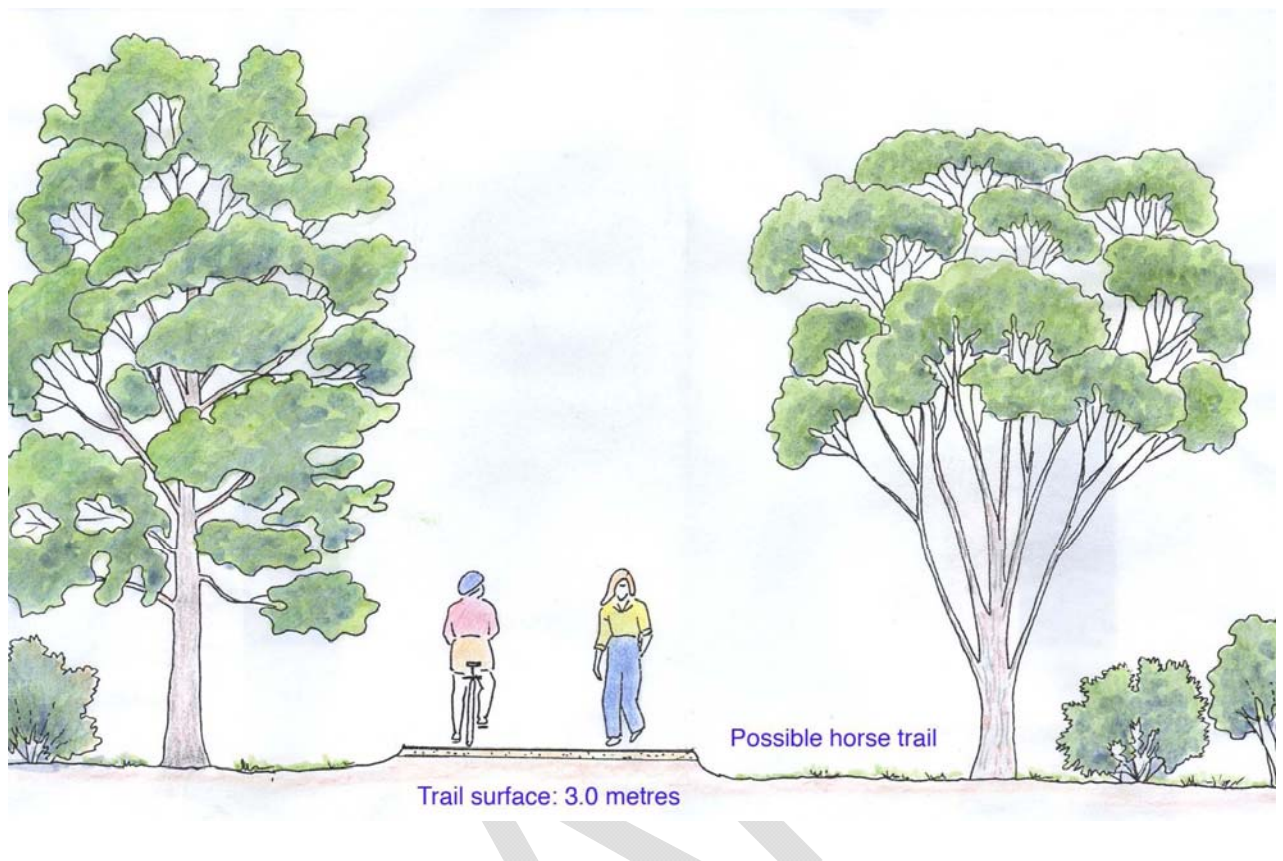


DRAFT



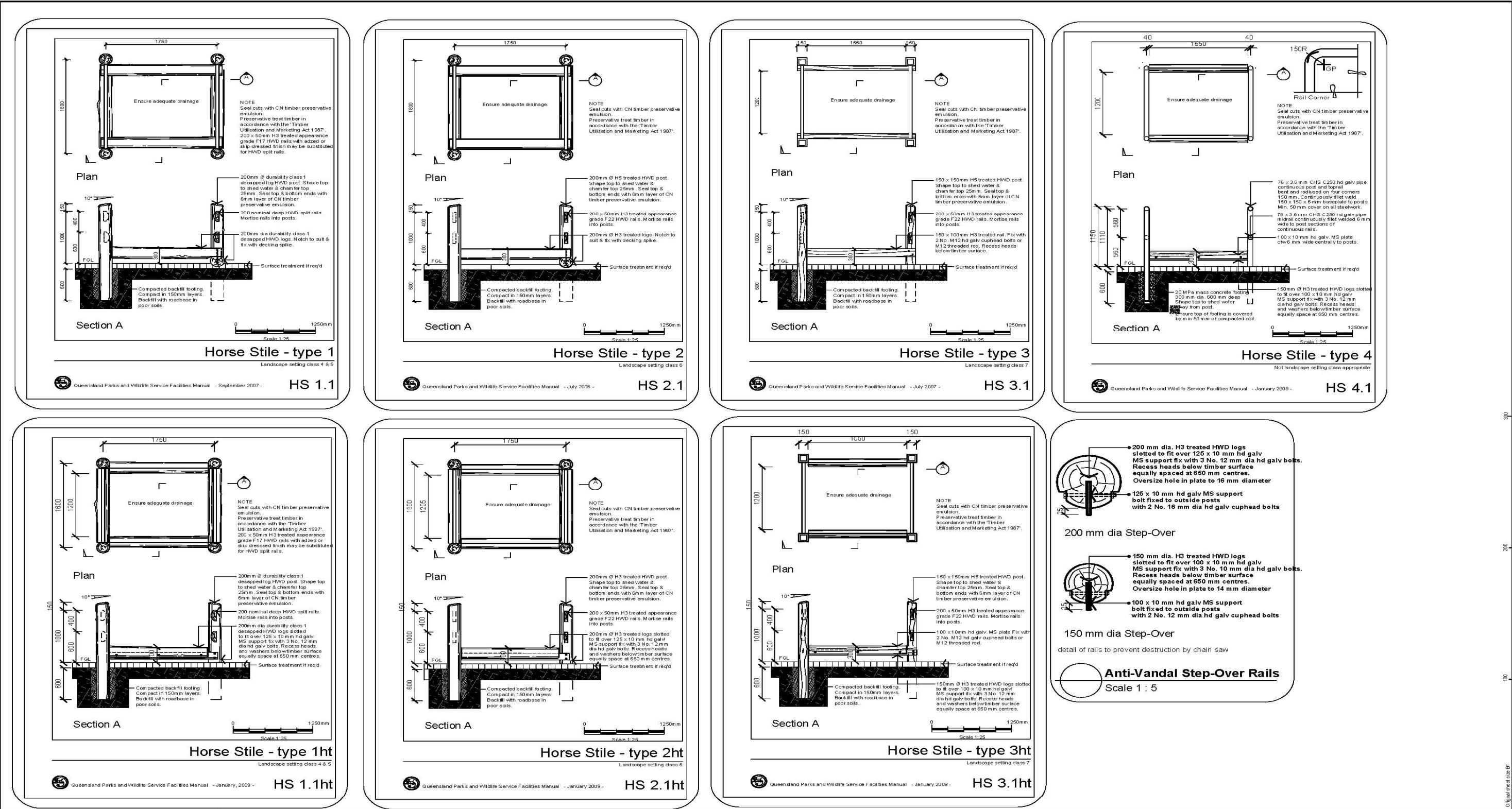


### Appendix 3: Cross section multi-use recreation trail





Appendix 4: Horse stile plans



QUEENSLAND  
PARKS AND  
WILDLIFE  
SERVICE

**Landscape Architectural Services**  
District Manager  
Manager (Park Services)  
Regional Landscape Architect  
Regional Service Director

**Horse Trail Network**  
**South Coast and**  
**Sunshine Coast Section**

**Project**  
**Proposed Horse Trail**  
**Access Stiles**

Amendments


Date **January, 2009**

Scale **1 : 25 1 : 5**

Drawn **DW MBH**

Checked

Surveyed



**J 2062**

Location Code  
Drawing No

**D 01**

Issue

Sheet No

**11**





## Submission form

### Draft South East Queensland active trails implementation guideline 1—land based multi-use recreation trail guidelines

*Protecting our lifestyle, environment and places to play*

#### Closing date for submissions: 6 August 2010

You are invited to have your say on the Draft South East Queensland active trails implementation guideline 1—land based multi-use recreation trail guidelines. There is also the opportunity to use a pilot trail project from the recommendations of the guideline—the Blackbutt trails network.

Tell us what you think about the information and guidance provided in the guideline, use the Blackbutt trail network and have your say on each trail, signage, facilities, trail accessibility and what you think could be improved.

Your submission will help us finalise the SEQ active trails implementation guidelines and provide a new recreation trail network for non-motorised trail users.

For more information, go to [www.dip.qld.gov.au/seqactivetrails](http://www.dip.qld.gov.au/seqactivetrails)

#### Share your views

You are welcome to use this form to respond or to use it as a cover sheet and attach it to a more detailed response.

Responses must:

- be made by **5pm on Friday 6 August 2010**
- include the name and address of the respondent
- be a structured response under the headings of the supplied submission form.

Submissions can be made by completing the submission form and sending your response via:

- **Email:** [seqactivetrails@dip.qld.gov.au](mailto:seqactivetrails@dip.qld.gov.au)
- **Fax:** +61 7 3237 1812
- **Post:**  
Draft SEQ active trails implementation guideline 1 feedback  
Resource and Landscape Planning  
Department of Infrastructure and Planning  
PO Box 15009  
City East Queensland 4002

Please provide your feedback on these guidelines and your priority for the development of guidelines for the following. Please rate the following according to your priority of what guidelines should be provide for better planning and delivery of an active trails and networks

Click in the boxes below to mark your priority.

	Very low	Low	Medium	Priority High	Very high	Unsure
Water-based recreation trails						
Trial feasibility studies						
Marketing and sponsorship						
Community engagement and volunteering						
Long-term trail management and funding						
Identifying cultural and landscape heritage						

If you have any additional suggestions please write them down in the space below

SIP\_0353\_01

**Department of Infrastructure and Planning**  
 PO Box 15009 City East Qld 4002 Australia  
**tel** +61 7 3227 8548  
**fax** +61 7 3224 4683  
 info@dip.qld.gov.au

[www.dip.qld.gov.au](http://www.dip.qld.gov.au)