

**Risk Management
for
Trail Horse-riding in Australia
on
Single and Shared Use Trails**



Acknowledgements

We acknowledge the Traditional Owners, their Elders past, present and emerging, for the important role indigenous people continue to play in Australia, and most especially linked to the land used for outdoor activities and recreation.

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Trail riding outback Australia, Leigh Creek SA Photo N Arnott

OVERVIEW

The purpose of this document is to outline how the risks associated with horse trail riding on single and multiple use trails can be managed effectively.

Australians love their horses...and a large portion of the keen and adventurous horse-riding population is asking for ongoing access to the beautiful and safe trails which they use and development of new trails. The existing trails, which permit access for horses, are seeing a high level of use by horse enthusiasts alongside many other participants. There are many shared trails across Australia, where all types of users enjoy the experience of interacting with different types of users along the way.

Horse use in Australia is an important part of our heritage, with horses viewed with affection for their part in our ANZAC and outback histories. They are still the focus for many people in their workplaces, with the continuing Australian tradition of using them when working with stock on farms and stations. They are watched with enthusiasm by the public during the Olympic Games, at major events, and at Royal Shows and regional events.

There is a need for horse-riding trails

Like the pressure to walk your dog daily, there is an impetus to exercise your horse regularly as working the horse is both good for the animal and the human. As well as facilitating exercise for their animals and people involved, access to safe trails across the Australian countryside provides opportunities for horse riders to vary their routes. It also removes the risks of riding on roads amongst vehicles which are travelling at high speeds, and from encountering drivers who do not understand safe behaviours around horses. To be able to experience a variety of safe and beautiful trail environments also provides opportunities for horse riders to enjoy the interactions with other users and plays a significant part in the horse riders' wellbeing.

Horse riders utilise both horse only and shared use trails that may cross multiple tenures, including but not limited to national parks and forests, rail trails, beaches, road reserves, council reserves, and private properties.

Which horse riders use these trails?

There are three main groups of horse riders who regularly use structured trails:

1. **Non-commercial groups**, the largest being the Australian Trail Horse Riders Association (ATHRA), a national association which has many affiliated clubs across the country. For these types of groups, the participants own their own horse and have varying riding experience levels, from intermediate to advanced. Formal riding schools which concentrate on skill development, often include trail riding in their activities for their regular clients. Their riders can have similar skills to the owner/riders from groups like ATHRA.
2. **Commercial trail riding businesses** which primarily work in the tourism industry, (running short, half, full and multi-day rides). For these businesses, the majority of their clients are beginner riders who are not able to manage a horse in many situations. In these groups a lack of control by a rider can apply even to moderately skilful clients, as even if they have ridden previously, they normally have no bond or experience with their mounts. Qualified staff members are responsible for the safety of the clients, members of the public who they may encounter, as well as the suitability and wellbeing of their horses.
3. **Private groups of friends and people riding alone**, whose riding activities are motivated by their social, recreational and/or fitness needs. For these people, riding experience and skills range from complete beginners to advanced and highly skilled individuals.

How are trails classified?

Trails are often multipurpose and part of a general community resource. However, there can be limitations on who can access them as they can vary in difficulty and/or accessibility. The suitability of individual trails for multiple users is linked to:

- their gradients (steep, through to flat),
- surfaces (rough terrain through to asphalt or compressed road base),
- hazards (river and creek crossings and ravines, rocky areas, through to well-made and easy-going terrain),
- construction (rough, narrow pathways, through to wide roads and tracks),
- location (remote or near towns) and
- length (short distances, through to linked trails across Australia).

A useful trail classification system¹ has been developed for horses in a document produced in conjunction with the Horse Federation of SA which links the trails' suitability for equines to a number of variables. It addresses the experience and skills of the riders, the width and height of the trail corridor, its tread, gradient, dimensions, the surrounding vegetation, and covers both on-trail and trail head facilities. A full version of this classification system is provided in Appendix F.

HORSE TRAIL CLASSIFICATIONS

	EASIEST 	INTERMEDIATE 	ADVANCED 
Description	Most likely to be fire roads or wide single tracks (bridlepaths) with a gentle gradient (not exceeding 10%), smooth surface and a relatively obstacle free, hardened natural surface Frequent encounters are likely with other users including cyclists, walkers and runners.	Intermediate Trails are most likely to be a combination single trail and/or fire road with obstacles, variable surface, and a moderate slope. Intermediate Trails are likely to be multi-use so encounters with other users including cyclists, walkers, runners and horse riders should be expected.	Advanced Trails are most likely to consist of challenging single trail and/or fire road with many obstacles, variable surface, and steep sections. Some trail routes may not be marked at all. Advanced Trails may possibly be multi-use so encounters with other users possibly including cyclists, walkers, vehicles and other stock should be expected, however, many of these trails may be located in remote areas and encounters with others is expected to be minimal.

In addition to the areas covered in the abovementioned classification system, when considering risk factors associated with horse-riding on a trail there are other factors which also need to be considered. These link directly to the experience and skills of the riders, the behaviour and training of their horses, whether a rider is on their own or in a group, how organised the riders are, and whether those responsible for their activities are aware of and managing risks for themselves as well as other trail users.

Do shared trails work?

Shared trails are positive, as they meet the needs of multiple groups, and they save on the costs of providing individual facilities to meet the recreational requirements of each sector of the community.

As shared trails are a popular approach to outdoor activities, and to ensure that all users positively benefit from these interactions it is necessary to educate the:

- **trail builders:** on the special needs of each type of user, including specific conditions which make them safe and effective for horse trail riding;
- **horse-riding participants:** on good practices in their use of the trails, their treatment of the tracks and surrounds, and especially regarding the safety of all users when sharing trails with others; and
- **non-horse-riding users:** so they understand how to be safe in their approaches and contacts with horses.

Shared trails occur worldwide, and in the majority of cases work very well. Conservation and environmental groups are the main opponents to horse riders sharing trails, due to the perceived damage done by them.

As in most recreational activities there are some risks involved where horses share trails with others. However, research has shown that most of the risks to the environment which are attributed to horses, are comparable to those caused by the weather and other users, primarily cyclists and motorised vehicles. If trails are to be available to a variety of users, including horse riders, then there will be wear and tear on them, but this can be well controlled by good trail construction, and maintenance which effectively manages the damage caused by all users.

Education of all participants is important. Cyclists need to know to call out when approaching horses; umbrellas need to be kept still, not waved around, and those with wheelchairs and prams need to stand still while a horse passes (as an unfamiliar moving object can be threatening to horses); parents or carers need to stop the child from throwing sticks and rocks and running around until the horses have passed; and those with dogs need to put them on a lead. It is also helpful if other users talk to the horse rider, so the horse recognises that there are humans involved.

Polite and friendly interactions between users can be a positive aspect of shared trails, where everyone who is involved enjoys the experience and surroundings in an encouraging atmosphere. Requesting that the other users give way to horses is not too much to ask, considering the pleasure so many people experience when they see the horses on the trails. In the same way, the horse riders need to consider and accommodate the needs of those in wheelchairs, children, cyclists, and all other users.

In places where shared trails are working well, the needs of horse riders have been accommodated along with all other user groups, so the finished trail works for all.

There are great advantages to shared trails: they are less expensive than multiple trails, good for community relationships between different groups, and overall, better for the environment, as only one area is being used for this purpose.



ATHRA group: rest stop.

INTRODUCTION

Due to the benefits of horse-riding, the impact of urban expansion and forest tenure transfers, there is a need to protect existing access to trails for horse riders; and to develop new trails to ensure a legitimate and safe framework for horse-riding is available in the short and long term future.

Trail horse-riding is a recreational activity that is a popular way to experience and enjoy natural environments. It facilitates participation and interaction between diverse community members and provides opportunities to experience natural and cultural heritage environments. As with hiking and mountain biking on trails, horse-riding is known to provide social, physical, health, cultural and economic benefits to individuals and the community.

Trail horse-riding can have positive effects on the rider's physical and mental health and sense of wellbeing. In fact, horses are known to be effective in their impact on humans as they are regularly used for mental and emotional therapy, through "Equine Assisted Learning" businesses, helping a variety of people including returned soldiers with Post Traumatic Stress. Additionally, interactions with horses have impacted positively on others living with disabilities through the work of Riding for the Disabled for many years.

Its health benefits are significant, as riding is an activity which exercises the whole body. In addition to providing a release from personal and work-related stresses, and enabling physical exercise, trail horse-riding is also often a family friendly, enjoyable activity, being a great challenge for children.

The access to safe places for horse people to ride is decreasing as the population in Australia increases. The suburbs around our cities are expanding into the peri-urban areas. Many horse trail riders live and ride in these peri-urban areas. To protect the remaining forest areas from urban encroachment, some are being transferred to protected tenure such as National or Conservation Park, which can restrict access to horse riders.

When investigating ongoing usage of existing trails, as well as the development of new trails and their suitability for shared use, it is important to consider not only the land tenure, terrain and surrounding land use, but also risks and how they may be managed when including horse riders.

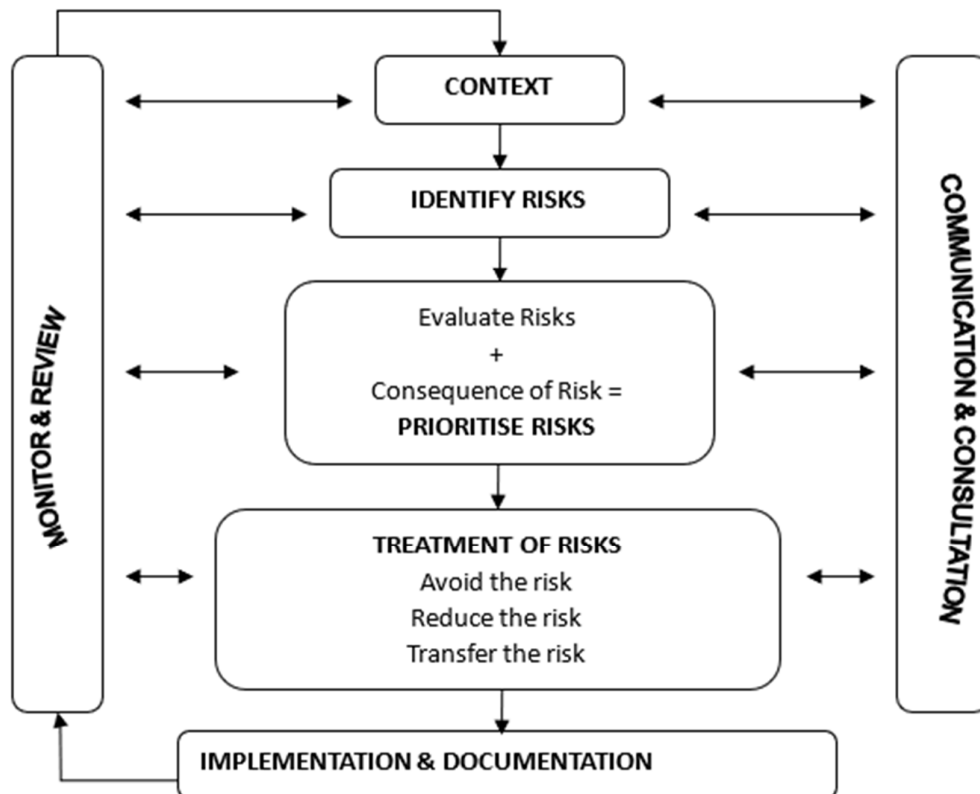


The primary purpose of this document is to support land managers providing single use or shared use horse-riding trails by addressing risk management of this activity. The objectives are to provide:

- Land managers, trail builders, trail users, and horse-riding clubs, with a resource and information to manage the safe use of horse specific and shared trails.
- Explanations which provide an understanding of different horse-riding groups, their needs and challenges.
- A useful risk management tool for those developing trails.
- Explanations which demonstrate that horses, if properly organised and managed, do not need to be considered as a threat to other users, and thereby encouraging more horse inclusive shared trails across Australia.
- Examples of credible Australian scientific research which demonstrate that horse-riding on shared trails does not result in significantly greater damage to the environment than the effects from weather extremes and other trail users.
- A resource for users to enable them to consider the significance of the variables which exist in the areas of both horse and rider skills, fitness and experience, trail construction and maintenance, weather impacts, and other factors, when planning trail horse-riding.

We will look at these areas through a focus on risk management: the process of understanding the context, identifying, analysing, then evaluating and treating risks, as depicted in figure 1.

Figure 1 *Risk Management Model*



What is trail horse-riding?

When looking at the risk management model we first need to identify the “context”? What are the environments in which trails are located and who uses them? Are the risks changed due to the differences between horse-riding group types, and individuals riding alone or with a friend?

Trail horse-riding can be defined as riding in varying environments away from the small, enclosed areas used for training, competing, and exercising horses (i.e., riding arenas, racetracks, yards). It is an activity which occurs worldwide, with many keen horse enthusiasts spending their holidays trail riding away from home in other parts of Australia and overseas.

Where are horse-riding trails?

Horse trail riders utilise both ‘horse only’ and shared use trails that may cross multiple tenures, including but not limited to national parks and forests, rail trails, beaches, road reserves, council reserves, and private properties. The trails are diverse in type and length including:

- short distance trails on a rider’s or a business’ own property
- linkage trails that provide links between beaches, forests and towns
- short and long-distance rail trails
- local forest trails of varying style and accessibility
- long distances trails such as the 5,330km National Trail, the 269km Kidman Trail in South Australia, the 161km Brisbane Valley Rail Trail and the 120km Noosa Trail Network in Queensland, which are chosen by the more adventurous or motivated riders.

A more detailed description of each is provided in table 1 below.

Table 1: Trail Types

Trail type	Description
Beaches	Private beaches: with no time limits on access. Public beaches: may have limited horse access times to ensure separate access for public use. Normally access is permitted along the water’s edge. Environmental damage prevented: No access to sandhills, nesting birds, environmentally delicate areas. Businesses usually are located near beaches and need local licences/permits from councils. Rides either begin at business home base or at a designated site next to beach (ideally a secure area which is free from public access)
Forest and Parks	Managed by government departments: supervised by rangers, licences /permits required for commercial activities; variety of terrains and tracks.
Wilderness areas	Environmental damage prevented: Limited numbers involved. Delicate areas avoided. Licences/permits required
Rail trails and other designated shared trails	Between or on the edge of private properties, may utilise unmade road reserves, often linked and running for long distances, with local roads, tracks and town parks/reserves used for start and finish points.
Back roads	Unsealed with little traffic - shared road with vehicles.
Local non-major roads	Little traffic/shared roads with vehicles. Usually with verges and/or tracks on their edges. Often these serve as routes to designated trails and tracks.
Major roads	Used for access and crossing between tracks, avoided for normal trail riding if other options are available.
Freeways	No access for horses
Private properties	Varied according to terrain, could be tracks through paddocks, beaches, creeks, and rivers, bushland etc. Unlikely to be unforeseen problems as these tend to be managed and controlled areas.

What types of horse riders use the trails?

A wide variety of horse people are involved in trail horse-riding in Australia, including:

- those who belong to the Australian Trail Horse Riders Association (ATHRA) clubs
- other non-affiliated adult horse trail riding clubs which can be involved in many different types of activities including trail riding
- pony clubs
- individuals out riding on their own, or with friends
- competitive endurance riding events
- organised charitable fund-raising rides
- commercial businesses who provide trail riding for locals and tourists, running from one hour to all day rides, with some groups offering multi day package tours
- equine programs (including formal riding schools), camps available to school students which incorporate horse-riding in their activities, and commercial holiday camps which include trail riding as one of their activities.

A more detailed description of the rider groups is provided in table 2 below.

Table 2 Horse trail riding groups

User Type	Description	Numbers overall
Clubs (Organised, usually not for profit) recreational riding	• Made up of horse owners and their horses, includes: ○ ATHRA: regular events, participants are members of clubs across Australia which are affiliated with this organisation. ATHRA provides personal accident and public liability insurance for sanctioned events, liaises with government departments, has in-house qualifications for its officials, provides standard operating procedures. Club members are educated in treating other trail users with politeness and respect, following a strict Code of Conduct. ○ Local (non-affiliated) trail riding groups ○ Endurance Riding Clubs (including recreational and competitive endurance events) ○ Pony Club (planned trail rides, camps) • Consider the needs of their members, as well as those of the shared users in the places where they are riding. • Normally comprise experienced owner/riders whose horses are familiar with trail riding. • Structured in how trail rides are managed. • Insured for Public Liability (though this does not always apply to the independent local groups) • On shared use trails these groups are normally obvious, with other users generally stopping to allow them to pass. <u>Key features which distinguish this group from other users:</u> This group is composed of clubs from across Australia, with a large majority of the participants being experienced and capable riders. They are riding their own horses, they are accountable to their officials, organizers are volunteers, participants are riding primarily for recreation, WHS is important due to their commitment to safety and interest in the wellbeing of their members and longevity of their association. The risks to other users are minimal, as normally these are owner/riders who have very good control of their horses.	Significant numbers

Table 2 continued: Horse trail riding groups

User Type	Description	Numbers overall
Commercial businesses (for profit)	- The majority of businesses which fall into this area are tourism-based <u>trail riding only</u> businesses (clients are either local, interstate, or international). They arrange for their clients to go on trail rides for a fee. - They often take their riders along various routes including public roads, tracks through national and state parks, rail trails, and to beaches. - Mostly these groups run routine short rides (1-2 hours), some do half or all-day rides, and a small number offer multi-day trekking. - On shared use trails these groups are very visible (due to their numbers) with other users generally stopping to allow the group to pass. - Commercial businesses involved in trail riding include riding schools, where horse riding skills are taught, and regular clients of all ages and varying skills are occasionally taken out on trails. Usually these businesses ride on tracks within their own properties, and they only take riders out from enclosed areas when they have good basic skills. Normally these groups do not interact with members of the public. <u>Key features which distinguish the trail riding only businesses from others:</u> Their riders are <u>dependent</u>, and a large majority of their clients are beginner riders. The horses are provided by the businesses. The organisations have set Standard Operating Procedures. It is a work-related activity as a supply of a service is involved and they are accountable for their 'product' (the trail ride). WHS Codes and Guides say there should be a ratio of 1 qualified trail guide staff member for every 6 clients, with a minimum of two staff on all rides; as well as many other appropriate procedures. The risks tend to be higher in this group than in the previous one (clubs involving owner/riders), as a large proportion of their clients are inexperienced riders and none of them are riding their own horses.	Large numbers in specific locations where a business is based
Individuals or groups of friends: private riders	- Ride for recreation or fitness. - They ride individually or in small friendship groups - They utilise a multiple of trail types and locations - The level of skills of the riders may range from very experienced riders using horses which are confident, calm, and relaxed, through to beginners, whose horses may be inexperienced, and nervous in a new environment. - Riders generally are aware of their potential impact on other users. - On shared use trails other users generally keep going when they pass a single rider or a few people on horseback. Risks to other users varies from low to high in this sector, as the danger to others depends on the skills and awareness of the riders and the experience of the horses.	Small numbers

Why have shared trails?

Shared trails have many good features. They:

- meet the needs of multiple groups,
- save on the costs of providing individual facilities to meet the recreational requirements of each user group in the community,
- take greater advantage of the available space,
- reduce maintenance costs compared with providing a single use trail for each activity,
- serve destinations and points of interest more effectively,
- help build relationships and cooperations between different groups,
- use less area compared with multiple single use trails, so there is less impact on the environment and the ecosystems involved, and
- are more attractive to funding bodies.

Queensland Parks and Wildlife Service, in their notes from a Newspoll Community Survey in 2012, found that 84% of Queensland parks users agreed that horse-riding should be allowed on designated trails through national parks.²

Research on user attitudes

From 2011 to 2013 there was a Griffith University based investigation of the South East Queensland Horse-riding Trail Network (SEQ-HTN) measuring the attitudes of local park visitors, local communities, and stakeholders. The survey revealed most of the visitors of the SEQ-HTN were highly educated people between 24 and 54 years old. A high number of the 715 visitors who were surveyed, reported that they encounter horse riders in the Horse Trail Network. Only 12 horse riders were surveyed as part of this group. Overall, the most popular activities in these areas were mountain biking and bushwalking, which were common to all parks/reserves.

Attitudes of local park visitors: – assessing social impacts of the SEQ-HTN

Attitudes towards other activities in the SEQ-HTN and surrounding parks/reserves were:

- Most respondents tended to have slightly positive or neutral attitudes to most non-motorised activities.
- Motorised activities negatively affected most respondents (60%).
- The few horse riders who used the SEQ-HTN, did not report conflicts with nearly all non-motorised activities, but were negatively affected by motorised activities.
- Most respondents (55%) had a neutral attitude to horse-riding, 34% were positive about it and a few had negative attitudes (11%).³

Figure 16 in the report (p.28) identified there were a small number of respondents (9%) who considered horse-riding to have environmental and/or social impacts. The executive summary of this survey went on to conclude (pp vi-vii):

The attitudes to non-motorised activities conducted in the Horse Trail Network were overall positive or neutral. However, many visitors had negative or strongly negative attitudes towards motorised activities. Activities considered having the largest number of social and environmental impacts were trail bike riding and four-wheel driving. Commonly perceived impacts were making too much noise, the potential for collision or injury, damaging plants or animals and frightening wildlife.⁴

Attitudes of local communities: assessing the social impacts of the SEQ-HTN

For this section, 386 surveys were returned, mostly from participants who were over 44 years old (81%). Common activities undertaken in the parks/reserves for the respondents were: bushwalking (62% of users), mountain bike riding (7%), picnicking (7%), sightseeing (6%), running (4.6%), dog walking (3.5%), photography (3.5%) and horse-riding (2.7%).

Generally, attitudes towards bushwalking, running and picnicking were neutral or positive; mountain biking, horse-riding and dog walking were mostly neutral; although some people felt negatively affected, and some positively affected. Around 60% of respondents were negatively affected by trail bike riding and four-wheel driving, with only 5% positively affected. The activities considered to have few environmental and/or social impacts were bushwalking, running, and picnicking, while mountain biking, horse-riding and dog walking were considered by around one fifth of respondents to have impacts. In contrast, trail bike riding and four-wheel driving were considered to have impacts by over half of all respondents, with many listing multiple impacts. An exception to this was the attitude of recreation organisations and conservation organisations to mountain biking and horse-riding, with conservation organisations often listing these activities as negatively affecting them.⁴

Conclusions from perceptions provided by stakeholder organisations – assessing social impacts of the SEQ-HTN

This study sampled 90 relevant organisations. Completed surveys were received from half of this group representing: bushwalking (10), mountain biking (8), conservation (9), orienteering (6), horse-riding (3), running (3), bird watching (2) and other interests (2). Non-motorised, authorised activities (including horse-riding) in the Horse Trail Network were not a source of conflict among surveyed recreation-based organisations. Activities considered by most respondents to have the highest number of impacts on parks (environmental and social impacts) were trail bike riding and four-wheel driving. The surveyed recreation-based organisations were positive about the Horse Trail Network. Only conservation-based organisations were non-supportive of some authorised activities in the Horse Trail Network, such as mountain bike riding, running and horse-riding.⁵

Overall, these investigations demonstrated that the users, the general community, and a variety of stakeholder organisations were mostly neutral or positive towards horse trail riding, with only a small proportion of respondents being negative. These were primarily those who were concerned about the environmental impacts of horse activities. In the section below (identification of the risks), there is an overview of research into the environmental impacts caused by horse activities on trails. The evidence shows that horses are not unique in that they cause similar impacts to most other users, particularly cycling and motorised vehicles.

IDENTIFICATION OF RISKS

Risk Assessment Matrices for horse-riding on single and shared use trails are provided in Appendices B and C, with Appendix A containing a table showing the risk management process. In these, three main risk areas are considered:

- Members of the public: Non horse-riding users
- Riders (non-commercial groups, commercial trail riding businesses)
- The Environment

Strategies to mitigate the identified risks are provided. It should be noted that in some instances the risks differ between the rider types (non-commercial groups made of up owner/riders, compared with commercial trail riding businesses). Also, below the perceived risks to the environment caused by horses on trails, and misunderstandings about horse behaviours are addressed.

Does horse trail riding significantly damage the environment?

Extensive university research in the USA draws the conclusion that managed access by trail horse riders does not cause significant damage ... and that horse trail riding is compatible with *“ecological integrity, stability and the beauty of the matrix.”*⁶

The NSW National Parks and Wildlife Service examined a series of wilderness horse-riding pilots in 2017, and agreed with this conclusion, stating that horse-riding activities were feasible (even in the wilderness) if limited and controlled. They concluded: *“Critically, the objectives of the program were met, and the wilderness values of these areas were not compromised throughout the horse-riding trial”.*⁷

Those concerned with the wellbeing of the environment often influence where and how horse-riding can occur, sometimes basing their efforts to curtail horse activities on the belief that horses significantly damage our ecosystems, more than other trail users.

Some references below are from the USA, as there has been a great deal of scientific research linked to trail riding (a very popular activity there for many years). They have investigated many issues similar to those raised as concerns in Australia and have concluded that trail horse-riding does not damage even wilderness areas, if undertaken judiciously, and when following agreed limitations.

The article by C Carter et al, produced by CRC Sustainable Tourism 2008, looked at existing trails and best management practices in Australia and worldwide. Rather than prohibiting horse access and removing horse-riding from trails, this document recognised the importance of management of access by horse-riders on constructed trails and described a series of effective management solutions which could be utilised depending on the situation:

- *education e.g., trailside signs...*
- *zoning—setting aside areas for horse use only: for example, bridle trails; locate trails near perimeter of reserves and/or in modified zones; exclude horseriding from ecologically sensitive areas*
- *trail hardening/surfacing techniques: for instance, use materials such as gravel, earth, crushed stone, and geosynthetics such as geotextiles*
- *water control: for example, bridges, drainage dips, out sloped treads, water bars and earth or rock ditches*
- *short trail reroutes used to stop trail degradation in problem areas*
- *reinforce soil structure that is, use of chemical binders such as liquid concentrates and latex polymer products*

- *vegetation management e.g., clearing overhanging vegetation on trails.*
- *limit the number of horses that visit per year*
- *limit the number of groups with horses*
- *limit the length of time horse users can access the natural area (this is usually used to limit the length of stays in campsites...)*⁸

In 2010 the Queensland Department of Environment and Resources committed to a detailed scientific program to monitor potential impacts that result from horse-riding on SEQFA lands over a 20-year period. This covered 547 km of the South East Queensland Horse-riding Trail Networks between Gympie and the state's southern border. The monitoring and evaluation program was set up to inform the Scientific Advisory Committee (SAC) about impacts of the Horse Trail Network (HTN) and its users on the state's interests.⁹

The SAC's assessments is based on the results of the monitoring and evaluation conducted over a period long enough to assess the likely impacts of horse-riding use and to take account of the cumulative impacts of this and other activities conducted in the HTN trails and adjacent areas and vegetation communities. The assessment covers amongst other things an analysis of water quality in streams and water bodies; changes in patterns and distribution of weeds including evidence of vectors of weed dispersal; the invasion and extent of non-native plant species along the management roads designated as horse trails; changes in Bio Condition over time of vegetation adjacent the horse trails; trail conditions including soil stability on trails and adjacent vegetation and communities; and evidence of cause of changes to trail stability. Studies relating to the social, erosional and water quality impacts of horses and horse-riding are available on the DES website - [Monitoring and managing potential impacts | Parks and forests | Department of Environment and Science, Queensland \(des.qld.gov.au\)](http://des.qld.gov.au/monitoring-and-managing-potential-impacts-parks-and-forests)

Are there biosecurity issues to allowing horses on shared trails?

Detailed educational resources for *Phytophthora* for horse riders are provided by Horse SA.¹⁰

Diseases which are endemic to the local area are considered to be a higher risk in public trails. One of the main plant diseases which concerns people is *Phytophthora*, known as 'dieback', which is spread by infected soil and mud, particularly during rainfall events and the wetter months. This is a problem common to all users (not just horse riders) and can be managed by not carrying mud into the area either on boots, vehicle wheels or horse hooves.

When planning infrastructure in a *Phytophthora* prone area, risk mitigation techniques include the use of dolomite surfacing around trail entry points, ensuring drainage over the trail, and closing infected trails in the wet season. It is also useful to ensure all users are educated in the problems relating to *Phytophthora* and undertake appropriate hygiene practices on footwear, wheels of vehicles and in the case of horses cleaning hooves.¹¹

Does horse-riding on trails cause more erosion than other sources?

Several university studies have confirmed that horses have no more impact on nature trails or road surfaces when compared with other users. Preliminary findings from the SEQ scientific program to monitor potential impacts that result from horse-riding on SEQFA lands over a 20-year period which commenced in 2010 have identified any impact on shared trails cannot be solely attributed to horse riders.

In a five-year study, Summer concluded that horse traffic was not the dominant process causing erosion on trails.

Disturbances related to the impact of horses on trails in Rocky Mountain National Park vary across the landscape. Geomorphic monitoring of permanent sites suggests that horse traffic is not the single, dominant process active on trails, nor is degradation always a direct result of horse use' ...Trail degradation was a function of landform, climatic and catastrophic events, and geomorphic processes. Data suggested that foot traffic produced effects similar to horse traffic in exposing the trail to the effects of geomorphic process or climatic events.¹²

When looking at patterns of road surface movement after three endurance horse-riding events in protected areas in South East Queensland (June 2012) Fairfax *et al* concluded:

This study demonstrated that after three major horse-riding events on dirt roads built for vehicles the majority of sampled areas exhibited no change in the areal extent of eroded area or depth of erosion. Where soil movement was observed, it was positively related to slope or a softer substrate. The number of horses was not significant in soil redistribution. If other maintained vehicle tracks elsewhere within protected areas are like those studied here, high-use horse-riding events would be expected to have little impact on erosion per se additional to other road users. Sites adjacent to sandy creek crossings and personal observations suggest that these places are most significantly affected, and any efforts to manage road users for soil movement should target such areas.¹³

International studies of tracks and trail erosion have agreed that concentrated traffic from hikers, mountain bikers, runners, horse riders and other users all remove or prevent the establishment of vegetative and organic litter cover on treads, compact substrates and increase water runoff and the erosion on soils, rutting and exposure of rocks. These issues can be managed by scientific approaches covered in an article by Marion and Wimpey which assesses the influence of trail design and maintenance on trail loss.¹⁴

Do horses adversely affect water supplies?

The implications from the reports below (and many internationally) are that there are many sources for the spread of weeds on trails, and to attribute this problem singly to horses is not appropriate.

In her landmark article on environment and horses Quinn describes her consultation with many people who were researching these issues in USA. Based on extensive information and resources she concluded:

While horses do defecate on trails, they do not readily urinate there... and it is easy for a rider to spur a horse out of a stream bed to avoid urination in a water body. Horses urinate primarily in their pastures and paddocks. No studies implicate equines in groundwater contamination other than in feedlots, where there are multiple horses living in small areas.¹⁵

Griffith University research on stream health impacts: *Detecting stream health impacts of horse-riding and 4WD vehicle water crossing in SW Queensland* October 2011 concluded that:

*Although impacts were found, the runoff during storms and floods, especially in National Parks that are downstream of pastures and residential areas, was potentially much greater than anything that occurred during the anthropogenic disturbances captured during the events. Therefore, as long as careful monitoring is maintained, horse-riding along these trails should be allowed to continue.*¹⁶

Do horses bring in more weeds than other users?

All trail users (including walkers, cyclists, and horse riders) as well as wildlife, and maintenance vehicles spread weeds, and there is no evidence that horses are more inclined to contribute to the spread of weeds than other users.

The risks associated with horse-riding include seed movements through horse dung, hair, hoof debris, riders, and riding equipment. With proper management of horse feed prior to riding in native vegetation, careful control of the hygiene of float/horse truck tyres, horse grooming, and cleaning horse hooves and human boots prior to traversing vulnerable areas, there is minimal evidence of non-native species invading areas lining trails being caused by horses alone.

In relation to the spread of weeds, the conclusions (p.14) included an article by M.R Ngugi et al was that:

*There was a rapid decrease in number of non-native species with increasing distance from the trail edge but relatively few species seem capable of invading adjacent vegetation. [Additionally], among the observed non-native species, only Sonchus oleraceus and Plantago major are currently known to be dispersed via horse dung, whereas 15 of the recorded species, including these two, are known to be dispersed by vehicles.*¹⁷

Specific assessments in Bellthorpe and D'Aguilar national parks reported:

*There is a variable degree of incursion of non-native species within Bellthorpe National Park that **could not be** directly attributed to horse-riding. The incursion may be in part due to continued and active usage of trails for recreation and mechanical maintenance of the trails...*¹⁸

*There is a moderate degree of non-native plant species incursion in D'Aguilar National Park along the forest trails. This is likely because of continued and active usage of trails for recreation and essential maintenance of the trails. For a few sites, the proximity of freehold properties along Boundary Road to the national park may be a source of non-native species as many of the species were similar to weeds found on cultivated farms.*¹⁹

In 2022 the official scientific monitoring program which was investigating horse-riding in SE Queensland Horse-riding Trail Network (to identify any impacts of the trail use and recommend management actions to address the impacts) provided an interim assessment of their observations in an overall summary p.12

*The construction, maintenance and use of horse trail networks that traverse regions of native vegetation may predispose these ecosystems to invasion by non-native plant species (Ngugi et al. 2014). However, following comprehensive sampling of four sites (eight transects) across three sampling time points (2012/2013, 2017 and 2020), the majority of sites along designated horse trails in Tewantin National Park and Eumundi Conservation Park showed either no invasion or low levels of invasion by non-native species.*²⁰

Are horses dangerous to other users?

Horses are not normally a risk to humans, so long as those interacting with them understand their possible responses. As in most recreational activities, experienced horse people can plan and manage their horses to ensure their own safety and the safety of others.

Horses do not purposely knock over or attack people. The trained domesticated horse is easily handled by an experienced horseperson. However, a person with no experience with horses should not rush forward to catch a loose horse, as the horse might not see the person coming if approached from the wrong direction, or the horse may be agitated having been separated from its group and not be calm and still, or it may be upset because it is injured. The best action for other users is to stand back and warn people not to approach the horse. The most useful action is likely to be to check if a fallen rider is OK and help them or call for assistance if necessary. This information needs to be conveyed through education (refer to examples of Education of other trail users below and in Appendix D).

The risks to riders, horses and the public are increased if the trail is beyond the skills and experience of the rider and/or horse, if either is not fit or skilled enough to manage the challenges of the track. If a horse/rider combination is struggling, there is a greater chance of a rider falling off, and of people being hurt.

Ratings for horse-riding apply to trails in the same way as they do for other activities, and applying a universal standard to this process helps manage the risks involved in horse activities. It is recommended that trails are rated using a recognised system (refer to Appendix F as an example), as this will help in the management of the risks to horse riding users.

Are there problems with horses on Rail Trails?

On a rail trail (often travelling between private properties and farms and through built up areas) the biggest hazards (not regularly encountered elsewhere) are wheelchairs and prams. The wise horse rider planning to travel on multi-use trails like this, will desensitize their horse prior to encountering these 'hazards' on unfamiliar territory, or at least ensure that they are riding with other horses which do not react to these objects as if they were a threat. It also helps to have the people who are there with prams or wheelchairs to be made aware of the possible reactions by horses, and to understand that their actions can cause a dangerous response. This is an example where signs at the trail entry points can be of value (refer to Education of other trail users below and in Appendix D).

Are there risks at trailheads when riders are unloading and loading horses?

A well-designed parking area at a trailhead is an asset, allowing for easy access for the vehicles and horse floats and room to saddle up horses, with fences and gates to secure the area if adjacent to busy public roads. (The AHIC Code 5.5.2.6 describes the desirability of a separate -and secure- designated area for the loading and unloading horses.)²¹

Signs should be present to deter non riding members of the public from approaching or trying to pat the horses during this process, as there is always the possibility of an equine becoming agitated in a new environment. A horse can also pull free from their handler when being loaded onto or unloaded from their float/truck; and a loose horse is a risk to inexperienced people nearby. There are safety rules about how to approach horses, where to stand, and how to lead them etc. which a person with no horse experience is unlikely to know. Education strategies and tools can inform people about what to do and what not to do.

Is there a risk when horses interact with cyclists?”

Cyclists coming up unannounced around corners or behind horses can frighten them, as their approach can be virtually silent. Electric vehicles (soon to be widespread in all domains) are similar. In both these circumstances, there is a simple solution. Cyclists and E vehicle riders (if educated about this problem) can easily identify their presence by calling out to the horse rider/s while they are still a reasonable distance away – See the brochure: Slow and Say Hello. (Appendix D) The horses can then be shown the vehicles by their riders, at which point (so long as the horse is desensitized to these, or with another horse which is not reacting) the horse riders can position themselves to enable a safe passage for all. There are options as to how this is managed, which vary according to the terrain and numbers involved. For example: While the general principle on trails is that everyone keeps to the left to allow others to pass if they wish, a decision may be made to manage the circumstances differently. For example, if there is a steep drop on one side of the track and others need to pass, the horse people are likely to opt for the side away from the drop and stand facing inward towards the track and the passing traffic. The majority of participants already do collaborate in this way on shared trails. Education will assist trail users make informed decisions which work for all.

Can horses safely go through tunnels?

Horses’ normal experiences include living outside in paddocks (or at least in places without lighting) every night, and in fact they see very well in the dark. Many live in areas which include trees, rocks, and uneven terrain, and on a dark night they can see their way to race around their paddocks with no problems. Many other equines happily live in stables with no nighttime illumination. Horses travel at nighttime in floats and trucks (also often with no lighting). They do not fear the dark. In fact, competitive endurance horse-riding events often extend overnight, and participants safely use head torches during night riding with no adverse effects on the performance of their horses.

Preparation for riding through long tunnels (>500m) can easily be organised by users. If riders need to negotiate a very dark tunnel where additional light is needed, they can use head torches, or glow sticks (available from outdoor-supply stores). When activated, the glow sticks emit a dusk-like luminescence that lights an area for some hours and are well accepted by equines. The light is needed for the riders, not the horses.

Is it a hazard to ride horses after dark?

In normal circumstances, riding at night on roads can be dangerous, not because the horse will be upset or unable to see, rather because it is hard for drivers of vehicles to see the horse. The solution is simple. If trail riding occurs at night, lights which attach to stirrups are available. Riders can also wear vests with reflective sections which will show up in the vehicle’s headlights. The efficacy of these tools is demonstrated when riders are clearly visible during ‘Endurance’ events, which often include riding in the dark as part of a pre-set course.

Do horses react badly to snakes?

While a threat to human foot traffic, snakes are not normally a threat to horses, which often see snakes in their home environments, where they normally just ignore each other.

Can horses react badly to dogs off their leads?

Horses tend to react to a dog snapping at their heels and may try to run away (putting their rider at risk) or kick out at the dog (potentially injuring the dog). Either way, on shared trails the owner must control their dog. Dogs should be kept on the lead for the sake of all users, not just the horse riders. Containing a dog will protect it from a horse’s kick, and at the same time avoid the risks to the rider, and other users in the path of the horse, should the horse try to run away if it is attacked.

Excluding horses is not the only way forward! For example, the South East Queensland Department of Environment and Science is working on protecting ecological values in national parks through monitoring and adopting management practices to address impacts where identified. The intention is to accept horse-riding on their shared use trails as a social activity, a decision which is widely accepted by the local community. They have implemented various on-site strategies to manage the impacts on their trails:

- fencing critical habitats
- hardening of track surfaces
- improving drainage
- establishing silt traps and other infrastructure
- providing designated watering areas for horses
- restricted use of trails
- temporary closure of trails.²²

RISK TREATMENTS

As identified in Figure 1, risk management requires that we recognise and mitigate identified risks. Some risks should be avoided, some reduced mechanically, others managed administratively, and others can be transferred. In brief:

- Extreme risks to the environment can be avoided by ensuring trail horse riders are not trampling delicate areas but remain on the trails provided for them.
- Erosion risks to trail surfaces can be reduced by ensuring they are constructed with horse usage in mind. Trail design advice is provided in Appendix E.
- Public safety at trail heads can be managed by providing basic facilities at trail heads which meet the horse-riding public's safety needs.
- Procedures for interactions between users have been proven to work to keep different types of users safe on shared trails. The education of all users contributes significantly to smooth operations.
- Where degradation, over usage, or extreme weather conditions are issues, numbers can be managed administratively by requiring groups to obtain permits to use the trails (thus controlling numbers) and seasonally limiting access.
- Risk can be transferred by ensuring official groups have Public Liability insurance and using signs and waivers.

It is clear from some of the risks identified above that there are things which can be done by trail builders to ensure a safer environment for the horse-riding users. These are outlined in Appendix E.

Education of other trail users

Most members of the public are not knowledgeable about horses, how to approach them, or how to pass if cycling, walking, or pushing a pram or a wheelchair, and do not know how a horse might respond to them. So, some form of basic education is needed to ensure interactions are effective, peaceful, and uneventful. Knowledge is the key to safe and happy trail sharing between all involved.

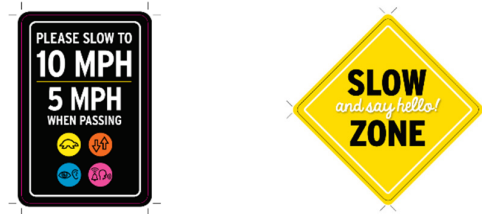
The risk matrices in Appendices B and C identify education as a key strategy to reduce and avoid incidents between horse riders and other users. The education process in shared trails should be designed to inform people about polite interactions and potential dangers. Just as the trail user is informed about not going near wildlife and taking their rubbish home, they can be educated on how to interact with horse riders if they come across them on the trails.

The information at trailheads is important, and modern technology in the form of QR codes as an addition to signs, can ensure more explanations can be readily available.

The type of information that trailhead signs can include is listed below, and examples are provided in Appendix D.

- Information on the grade (rating) of the trail for horse riders.
- Directional, risk, and warning information.
- Dog owners should be informed that their dogs must be in control and on leashes when near horses.
- Tips for encountering horses on trails : “Smile, Slow and Say Hello”
 - When you see a horse and rider, especially if you are behind them or are pushing a pram or wheelchair
 - Pass slowly – Ask the rider if they would like you to stop or if passing is okay
 - Keep talking – It lets the horse know you are not a predator
 - Avoid speed around blind corners – make a noise, alert riders you are coming around the corner
 - Take the low road – If you are on a slope and trying to move past a horse rider, take the downhill side
 - Keep a distance of at least 2 metres from horses, be slow in your movement so as not to startle or alarm the horse
 - Stand clear if there is a riderless horse approaching at speed. It will stop of its own accord once the reason for its flight has subsided.
 - Keep dogs on leads, your umbrella still, and children under control. Do not let children approach the horse.

It is essential to provide comprehensive but simple signs on the trail as a reminder to trail users of key messages. Explain that non riders should not approach horses, that dogs should be kept on their leads when near horses, and cyclists should call out and warn of their approach.



Horse specific symbols and descriptions already exist and are universally accepted as a way of expressing the information for general consumption by members of the public who have no history of interactions with horses. Here are a few examples:



Workplace, Health and Safety

The legal context relating to horse activities is relevant for those constructing trails for horse-riding, in order that they might understand issues relating to the safety of all users. The following are the existing codes and guides which link to interactions between horses, businesses and the public.

In relation to general Work, Health and Safety (WHS) for horse riders, there are several codes and guides available:

- Australian Horse Industry Council's **"Code of Practice for Horse Activities *HorseSafe*"**²³
This was developed to cover all horse-riding activities (first released in 2003 and revised in 2009) and was funded by the Australian federal government. Where it addresses trail riding it does so mainly in the context of managing beginner riders. However, there are also general principles in the document relating to the management of events and interactions between horses and members of the public. It is a voluntary code.
- Safe Work Australia's **"Guide to managing risks when new and inexperienced persons interact with horses"** (June 2014)²⁴
This Guide is for all businesses in Australia working with children, beginner riders, inexperienced staff members and members of the public who are interacting with horses. It includes a section on riding in the open (trail riding), and also covers things like staff qualifications, ratios, training, fit for purpose horses, and general issues on the safety of people interacting with horses. It is seen as a national guide for any business working with anyone who is new to horses.
- Outdoors Australia **"Australian Adventure Activity Good Practice Guide 'Horse Trail Riding'"**²⁵
These standards are nationally accepted as appropriate for those managing dependent riders on trails and cover businesses which manage a wide range of hazards, as well as the risks for inexperienced riders. It also covers general areas (which apply to all horse trail riding) such as environmental issues like weather, terrain, and wildlife, horse and rider needs, overnight requirements for camping and generally good planning processes for trail horse-riding. (A "dependent" participant is a person owed a duty of care by the activity providers. Normally the degree of dependency is linked to the person's level of competency in the activity. This is particularly relevant to commercial horse-riding operations where the participants often are beginner riders. Organisations which provide guidance for an event involving their members who are owner/riders still have a role in managing their participants, and a degree of responsibility for them, though clearly the participant's level of dependency is far less, as they are usually experienced riders and using their own horses.)
- Safe Work NSW Code **"Managing risks when new or inexperienced riders or handlers interact with horses in the workplace"** (2016).²⁶
This code is relevant to horse activities within NSW, is linked to legislation, and relates to businesses working with those inexperienced in their interactions with horses (staff, clients, and member of the public).

The primary emphasis in most of the WHS documents is on protecting beginner riders, and members of the public (where they are not used to interacting with horses). It is important to note that the guidelines are either voluntary or apply (in the case of the WHS documents) to Persons Conducting a Business or Undertaking (PCBU), not to private individuals.

Group Rides: Commercial Operators

The WHS and other codes and guides require that Trail Guides running trail rides for businesses must have formal, relevant and recognised qualifications. Their horses need to be tested and well trained and suitable for their work, and the staff must be trained in first aid, and carry both first aid kits and communications. There should be good policies and procedures including ratios of 1 qualified staff member for every 6 clients, and at least 2 staff members on all rides. To protect the public, they should also have public liability insurance.

Education of Horse Riders

As outlined in the WHS section above there are several well accepted codes for horse riders. For non-commercial group rides: (owner/rider organisations) the ATHRA Code of Conduct is a good example. It includes information advising horse riders:

- On busy roads, wait for gaps in the traffic. Use procedures for groups to cross together.
- To carry first aid and communications.
- Have someone in the group to be trained in first aid and emergency management.
- To keep to the trail.
- To have a dedicated observer managing the public as required.
- To place horses, floats, trucks etc. in separate areas from other visitors' vehicles.
- To ensure their horses are familiarized with vehicles of all types and not reactive to them.
- To clean riding boots, horse hooves and tyres to prevent the spread of weeds.
- That they need to understand and manage the behaviour of their horse/s.
- That their horses need to be calm and familiar with loading and unloading activities.
- Group riding is restricted to walking wherever visibility is restricted or when near members of the public.
- ATHRA carries Public Liability insurance.

ATHRA also has Standard Operating Procedures ensuring no whole grains are in manure. This is achieved through advice on feeds to riders prior to events.

Where relevant, ATHRA clubs collect horse movement records which gather vaccination status and have tick mitigation strategies. ATHRA policies include:

- checking controls for ticks,
- disinfecting, and protecting against *Phytophthora*,
- vaccinating horses, or with members checking for symptoms of Hendra and not attend rides if Hendra has recently been in their district.

Other existing codes relevant to access to parks and forest include the:

- NSW National Parks and Wildlife Service Code of Practice for Horse-riding in Parks April 2014 <https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Policy-and-law/horse-riding-in-parks-code-of-practice-140324.pdf>
- Great Victorian Rail Trail Code of Conduct - <https://www.greatvictorianrailtrail.com.au/code-of-conduct/>

Trail rating

As referred to above a recognised horse trail difficulty rating system has been used widely in South Australia's trails. It was created by Horse SA in conjunction with Bicycle SA, Canoe SA, Walking SA and the Scuba Divers Federation of SA¹ with full details provided in Appendix F.

CONCLUSION

When horse riders are shared users of a trail there is a need for members of the public to be informed - with effective education being important for all users. Explanatory signs at trail heads (with further details easily accessible through QR codes), information on websites, and education campaigns can make a difference, ensuring that all users are informed about sharing and how to have minimal impact.

It is important that horses are not excluded from trails because of claims of how they damage the environment (spread of weeds, damage to flora and fauna, causing erosion, pollution to the waterways etc.) where evidence shows that all trail users contribute significantly to most of the damage through their activities

Evidence shows that shared trails work well and provide enjoyment, exercise and new experiences including opportunities to appreciate natural environments for a variety of users across Australia and worldwide.

Sustainable trails are ones which are designed, constructed, and managed to accommodate their intended type and amount of use, to provide high quality visitor experiences while protecting the trail infrastructure and adjacent natural resources.

Extensive research has been accumulated to provide useful guidelines for practical and in some cases innovative construction techniques using new as well as conventional materials. Modern well-designed trails are fit for purpose, and while they need maintenance, they are not liabilities.

Risk mitigation strategies are available to ensure ongoing access to trails. Strategies include a range of options such as:

- signage and education
- construction techniques
- rating trails, or parts thereof, for different users
- different routes for cyclists and horse riders (sometimes rerouting these groups from vulnerable areas)
- potential for closure in specific weather conditions
- permits for larger groups/events
- limits to lengths of stay at campsites
- ongoing monitoring to ensure longevity

Many of the risks raised are applicable to all users e.g. weed transfer, removal of rubbish, respect for wildlife, staying on tracks, awareness of the variety of users to expect rules for passing, dogs to be controlled, emergency contacts, etc.

The extra work needed to accommodate horses on the trails, involves small changes to their construction and maintenance, and represents only minimal costs, while it enables legitimate members of the community to engage in and use the facilities which are provided to others for their recreational use.

There are many existing multi-use trails already serving Australia, and worldwide, which effectively include local horse-riding communities, providing safe routes for the many horses owned in peri-urban and rural areas. Providing access for horses to trails is especially important for younger riders, as it

means that there are safe riding alternatives available, which are away from the hazards of cars and trucks on busy roads.

It is essential that horses, and their owners, have the same availability as other users (cyclists, walkers, joggers etc.) and opportunities to enjoy and be involved in their chosen form of recreation, exercise, and healthy activities.



School group trail riding in South Australia- Wirraway Homestead.

APPENDIX A: RISK ASSESSMENT TABLES

PROBABILITY RATING TABLE

Frequent	Exposure to hazard likely to occur frequently
Occasional	Likely to occur but <u>not</u> frequently
Remote	Exposure <u>unlikely</u> to occur
Improbable	So unlikely you can assume it will not happen

HAZARD RATING

RATING	Resulting in....
CATASTROPHE	Death or total loss of one or more bodily functions (e.g., loss of use of arm, sight etc.)
CRITICAL	Severe injury, permanent or partial loss of one or more bodily functions (hearing loss, permanent back injury, significant property damage)
MAJOR	“Reportable” accident: person unable to continue with normal duties/lifestyle for more than 7 days
MINOR	Minor injury or property damage (broken window, bruising, minor sprain)
NEGLECTIBLE	First aid only, less than 30 minutes of time out due to accident (cut needing washing and band aid)

CONSEQUENCE RATING TABLE

Consequence \ Probability	FREQUENT/ VERY LIKELY	OCCASIONAL / LIKELY	REMOTE/ UNLIKELY	IMPROBABLE/ UNLIKELY
Catastrophic	Extremely serious	Extremely serious	Very serious	Serious
Critical	Extremely serious	Very serious	Serious	Not serious
Major	Very serious	Serious	Not serious	Not serious
Minor	Serious	Not serious	Not serious	None
Negligible	Not Serious	Not serious	Not serious	None

PRIORITY RATING:

Extremely serious	EXTREME	These are the first issues to deal with, as soon as possible
Very serious	HIGH	As soon as possible after anything listed as extreme
Serious	MEDIUM	Important but can wait until extreme and high-risk matters are resolved
Not serious	LOW	Important but can wait its turn
None	NONE	No action required

APPENDIX B: NON COMMERCIAL GROUPS OF RIDERS

This FIRST risk matrix covers non-commercial groups of riders (using ATHRA as an example of an organized group). The participants would be owner/riders with horseriding skills and knowledge (This matrix can apply either to individuals on their own horses or formal groups of experienced riders). For commercial trail riding businesses there are different risks and ratings...see separate risk matrix in Appendix C

RISK GROUP	RISK	PROBABILITY	HAZARD RATING	RISK RATING BEFORE MITIGATION IN PLACE	MINIMIZATION/MITIGATION STRATEGIES (e.g. ATHRA group rides)	PRIORITY RATING
Members of the public: Non horse-riding users	Observers are knocked over or kicked while horses are unloaded or loaded at trail heads	Occasional/likely	Critical	Very Serious: HIGH	- Education of horse-riding users and the broader community - Infrastructure at trail heads to separate horse loading and unloading activities - Signage at trail heads and on websites - Buddy systems and procedures to keep members of the public away from horses - Assistance available from group members and ATHRA officials if needed	LOW
	Non riding users are knocked over by a loose horse on trail due to a rider falling off	Occasional/likely	Critical	Very Serious: HIGH	- Education of the user community not to interact with loose horses - Signage at trail heads and on websites - Buddy systems and procedures to keep group of horses together (horses less likely to react to things and cause a fall) - Assistance available from group members to catch loose horse	LOW
	Non riding trail users are kicked by horse when users are passing each other	Unlikely/remote	Critical	Serious: MEDIUM	- Education of the broader community on how to pass horses on trails - Signage at trail head - Buddy systems and procedures to keep group of horses together - Officials ensure other users are kept separate from horses - Officials wear designated hi vis vests to identify them for other users	LOW
	Damage to vehicles or people by loose horse: in parking areas/ beyond the grounds causing damage on public areas/roads near trails	Unlikely/remote	Catastrophic	Very Serious: HIGH	- Infrastructure at trail heads for secure horse loading and unloading activities - Entrance to trails with gates/ step overs likely to deter loose horse from escaping from the trail into traffic - Assistance available from group members to catch loose horse; horse is drawn to the herd and not likely to run away from other horses	LOW
	Mountain biker comes around a corner at speed, brakes seeing horse and falls off	Likely/occasional	Major	Serious: MEDIUM	- Education of cyclists to slow down on corners or where visibility is limited - Website and Trailhead signs identifying shared trails - Code of conduct for all users - Officials assist with managing incidents as required	LOW

RISK GROUP	RISK	PROBABILITY	HAZARD RATING	RISK RATING BEFORE MITIGATION IN PLACE	MINIMIZATION/MITIGATION STRATEGIES (e.g. ATHRA group rides)	PRIORITY RATING
Riders	Rider falls off because horse jumps when frightened by unexpected situations (prams, wheelchairs, umbrellas, loose dogs attacking)	Likely/occasional	Catastrophic	Extremely serious EXTREME	- Assessment of riders' ability to control their horses before departure: assignment of buddy if horse is nervous, so that the horse can take the cues from other horses and be less likely to jump and cause fall. - Signs and trail head and on websites -education of all users (when near horses dogs must be on leashes, public should stop and wait if they have a wheelchair or pram, and not open umbrellas suddenly etc.) - Members educated to desensitize their horses to foreseeable hazards and risks prior to attending official trail rides - Officials rate trails for type and length of route and hazards etc. - Officials can call for help and apply first aid if there is an injury. - Knowledge of routes by officials, including access for emergency vehicles	MEDIUM* <i>*A fall from a horse can never be completely ruled out.</i>
	Injury to horse or rider resulting from one horse reacting to aggressive behavior from another horse	Likely/occasional	Critical	Very Serious: HIGH	- Assessment of riders' ability to control their horses before departure: - Officials assess rider/horse combinations and discourage them from attending if they are deemed dangerous to themselves or others - ATHRA procedure: horse inclined to kick has a red ribbon on its tail to warn other members. - First aid kit and assistance are available - Communication with emergency services and to home available - Knowledge of routes by officials, including access for emergency vehicles	LOW
	Horse causes commotion not wanting to cross a bridge, horse slips on surface at creek crossing, rider injured by protrusions of branches on trails etc. potential rider injury or fall and possibly a loose horse	Likely/occasional	Critical	Very Serious: HIGH	- Assessment of riders' ability to control their horses before departure - Assignment of buddy if horse is nervous, so that the horse can take the cues from other horses which are confident, experienced in trails and calm - Owners know their horse and are experienced working with them - Maintenance of equipment so it does not fail if put under pressure - Trails rated: appropriate activities for level of riders' skills - Officials investigate route and notify participants of expected hazards along the way - Members educated to desensitize their horses to foreseeable hazards and risks prior to attending trail rides - Communications and first aid assistance available if there is an injury - Maintenance of track, creek crossings etc. by landowner/rangers etc.	LOW

RISK GROUP	RISK	PROBABILITY	HAZARD RATING	RISK RATING BEFORE MITIGATION IN PLACE	MINIMIZATION/MITIGATION STRATEGIES (e.g. ATHRA group rides)	PRIORITY RATING
Riders continued	Environment – injury or illness due to hypothermia/sunstroke, allergic reactions, dust, fatigue, preexisting conditions	Likely/occasional	Critical	Very serious: HIGH	• Education: members responsible for own protection from weather as needed • First aid kit carrying basic needs including insect and sun protection • Preexisting medical conditions of riders known by officials • Members advised of distance and length of rides • First aid kit and assistance are available • Communication with emergency services and to home available • Knowledge of routes by officials, including access for emergency vehicles • Event can be cancelled if weather extremes are likely to occur	LOW
	Perception: horses are likely to behave dangerously if they are in dark conditions (after dusk, in the dark on roads and tracks, going through tunnels.) creating risks for shared users or their own riders	Remote/unlikely	Critical	Serious: MEDIUM	• Horses can travel through dark tunnels with no problems: and horses new to these can be buddied with others which are calm and unconcerned • Horses are desensitized to tunnels through travelling in floats, trucks and being placed in sheds without lighting overnight and are used to being in the dark • Officials carry glow sticks and/or head torches if tunnels are long and dark • Officials use reflective vests so cars can see them in the distance if they are riding in dark conditions • Lights to be attached to stirrups, and headlights worn by riders if riding on roads in the dark • Education of the public that horses see better than humans in the dark	LOW
	Vehicles/cycles/motor bikes passing or approaching around corners at speed on back roads and tracks where there is no place to go off road to avoid the traffic: causing agitation of horses and potential fall of rider	Likely/occasional	Catastrophe	Extremely serious: EXTREME	• Education of the public in how to pass horses on roads • Education of shared users of trails (trucks, cycles, 4WD, rangers etc.) to slow down when passing or if they come across a group around a corner • Officials inspect (rate) new trails to ensure they know in advance if planned ride includes routes with noisy or fast vehicles and members are advised in advance: and only attend if their mounts are used to traffic • Horses travel in pairs with experienced/calm horse on traffic side • Officials (on horses used to traffic) travel with a gap between them and the group, and wave to slow traffic • Warning signs of horse use on regular tracks used by motorized or fast vehicles • Speed limits on roads where horses cross or travel regularly • If dangers are too great event is cancelled or re routed	MEDIUM <i>Some risks are impossible to completely remove from recreational /sporting activities</i>

	RISK	PROBABILITY	HAZARD RATING	RISK RATING BEFORE MITIGATION IN PLACE	MINIMIZATION/MITIGATION STRATEGIES • (e.g. ATHRA group rides)	PRIORITY RATING
Riders continued	Wildlife (e.g., kangaroo, deer, wombat, wild boar) or cyclists suddenly appearing causing reaction from horses – shying or spooking and/or bolting with potential for rider to fall and be seriously injured	Occasional /likely	Catastrophe	Extremely serious: EXTREME	- Officials investigate route, rate trails, and notify participants of expected hazards along the way - Members educated to desensitize their horses to foreseeable hazards and risks prior to attending trail rides - Officials assess rider/horse combinations and discourage them from attending if they are deemed dangerous to themselves or others - Assessment of riders' ability to control their horses before departure: assignment of buddy if horse is nervous, buddy is allocated so that the horse can take the cues from other horses - Owners know their horse and are experienced working with them - Maintenance of equipment so it does not fail if put under pressure - Communications and first aid assistance available if needed - Education of all users of safe codes of conduct when passing others	MEDIUM <i>Some risks are impossible to completely remove from recreational /sporting activities</i>
	Extreme weather conditions: hail, high winds, extreme heat or cold etc. Human hypothermia, heat stroke etc.	Occasional /likely	Critical	Very serious: HIGH	- Education: members responsible for own protection from weather - Event is cancelled if extreme weather is predicted (members notified) - Preexisting medical conditions of riders known by group - Members advised of distance and length of rides - First aid kit carrying basic needs, - First aid kit carried, communication with emergency services available - Knowledge of routes by officials, including access for emergency vehicles	LOW
	Remote ride: Lack of access by emergency vehicles in the event of an injury to horse or rider	Occasional /likely	Catastrophe	Extremely serious: EXTREME	- Members advised of distance and length of rides - Officials check trails and access; members are notified of distance and if the route is inaccessible in places and take responsibility for own involvement - Preexisting medical conditions of riders known by group - Assessment of ability to control horses and fitness of horse and rider before departure (if members not known to officials). - First aid kit carrying basic needs, officials trained in first aid - Personal Locator Beacons are carried by officials where mobile coverage is not available - Communication with emergency services and to home available	HIGH <i>Some risks are impossible to completely remove from recreational /sporting activities</i>

This section of the matrix can apply to **ALL EXPERIENCED** horse riders who use trails (non-commercial groups, and individuals or small groups of friends) and to **commercial trail riding organizations** which have good horses and staff, and appropriate SOPs in place.

RISK GROUP	RISK	PROBABILITY	HAZARD RATING	RISK RATING BEFORE MITIGATION IN PLACE	MINIMIZATION/MITIGATION STRATEGIES • (experienced and responsible riders and pro-active organisations)	PRIORITY RATING
Environment	Weed spread though depositing manure	Occasional/likely	Major	Serious: MEDIUM	• Users are educated in prevention of weed control • Horses used on trails have appropriate feed 24 hours prior to travel (and during travel if camping) so they don't spread weeds • Riders ensure horses do not go off marked and formal horse approved trails • Research shows weed spread from manure is minimal, primarily on edge of tracks, with very limited impact • Regular maintenance (weed spraying/removal) and monitoring	LOW
	Damage from horses' hooves	Occasional/likely	Major	Serious: MEDIUM	• Riders ensure that their horses do not go off official trails • No horse travel in delicate/prohibited areas (e.g. sand dunes, bird nesting areas, delicate vegetation, native title areas etc.) alternate routes for horses provided if appropriate • Trail Design and maintenance following accepted practices • Trail building using materials which do not degrade from horse hooves more than all other users impacts	LOW
	Spread of <i>Phytophthora</i>	Occasional/likely	Major	Serious: MEDIUM	• All users are educated on how to prevent spreading of <i>Phytophthora</i> (cleaning horse hooves, cycle tyres, walkers' boots, vehicle tyres before entry) • Horse riders clean their horses' hooves before riding. • Trail maintenance to reduce wet areas • If <i>Phytophthora</i> is in the area closure of trails in wet weather	LOW
	Spread of ticks	Occasional/likely	Major	Serious: MEDIUM	• Horses travelling within Queensland and between states obtain movement records. https://www.business.qld.gov.au/industries/farms-fishing-forestry/agriculture/animal/move/guidelines/horse al/nlis • ATHRA has policies for members to follow to prevent spread of ticks	LOW

RISK GROUP	RISK	PROBABILITY	HAZARD RATING	RISK RATING BEFORE MITIGATION IN PLACE	MINIMIZATION/MITIGATION STRATEGIES (experienced and responsible riders and pro-active organisations)	PRIORITY RATING
Environment continued	Damage to waterways from access by horses	Occasional/likely	Critical	Serious: MEDIUM	- Preparation of waterways to ensure minimum damage when used e.g. correct footings, following advised guidelines in preparations, depth markers - Bridges provided in some areas as alternative - Provision of watering sources in troughs at trail heads to discourage delays and milling in waterways - Education of riders to ensure no horses stopping or urinating during crossing - Maintenance as required - Signage to assist with compliance	LOW
	Complications due to effects of weather (poor and damaged surfaces, significant weather changes, e.g. hail or high winds and branches falling down)	Occasional/likely	Critical	Very serious: HIGH	- Regular maintenance of trails - Rerouting tracks to avoid damaged areas - Closing trails due to dangerous weather conditions or damage - Permit system to prevent overuse of trails - ATHRA officials cancelling planned events due to state of tracks/ weather conditions - If caught unexpectedly in freak weather conditions, officials have communication resources, knowledge of emergency access, first aid	LOW

APPENDIX C: COMMERCIAL GROUPS RUNNING TRAIL RIDES

Different types of horse-riding groups:

There is a clear distinction between the risks linked to organized groups of owner/riders and commercial trail rides in which clients ride the business' horses. In the commercial/ tourist scenario, a large proportion of riders are inexperienced, often they are people who have never ridden a horse before, however usually they are riding horses suited and trained to accommodate beginner riders and the many hazards encountered on a trail. These commercial trail rides, if following WHS requirements, must have staff qualified by a recognised body, horses appropriate for their clients' skills and needs, a suitable ratio of staff to clients (1:6) as well as many other procedures in place. When considering the risks for these groups, the risk ratings *before* the WHS requirements (mitigation strategies) are in place, are considerably higher than the risks for a group of owner/riders being led by trained officials from a group like ATHRA. On commercial trail rides the clients may not have good control of their horses. The following matrix highlights the importance of these groups following WHS requirements (i.e., that they apply mitigation strategies to bring the risks down to a reasonable level).

Many of the risk ratings highlighted in this section also apply to an inexperienced owner/ rider when they ride alone or with friends. Often, they are not skillful enough to manage the risks or respond as described in the mitigation strategies below.

RISK GROUP	RISK	PROBABILITY	HAZARD RATING	RISK RATING BEFORE MITIGATION IN PLACE	MINIMIZATION/MITIGATION STRATEGIES Commercial Trail rides	PRIORITY RATING
Members of the public: Non horse-riding users	Observers are knocked over or kicked while horses are unloaded or loaded and while riders are assessed at the start of the trail ride	Occasional/Likely	Critical	Very Serious: HIGH	- Infrastructure at trail heads to separate horse loading and unloading activities from other vehicles and users - Signage at trail heads and on websites stating to keep away from the horses - Horses on and off floats and clients being mounted and assessed are activities undertaken in a secure area (WHS) - Trail Guides (Staff) manage this and are experienced and trained in working in the location, and in their job, to keep control of the horses (WHS)	LOW
	Non riding users are knocked over by a loose horse on trail due to rider falling off	Occasional/ Likely	Critical	Very Serious: HIGH	- Rider falls are possible in commercial trail rides. Trail Guides (if in correct ratios) are available to catch the riderless horse unless the fallen rider is seriously injured, or other clients are at risk - Trail Guides are trained in emergency procedures (fall of a client) - Signage at trail heads and on websites for public to keep clear of horses - Horses tend to stay near their herd	MEDIUM
	Non riding trail users are kicked by horse when users are passing each other	Occasional/ Likely	Critical	Very Serious: HIGH	- Education available for all user interactions - Signage for other users to stay clear of horses unless invited to interact - Horses should be tested as suitable and well behaved for client use - Trail Guides are qualified and trained in controlling their riders and horses - Staff ensure other users are kept separated from passage near horses - Staff wear designated hi vis vests to identify them for other users	MEDIUM

RISK GROUP	RISK	PROBABILITY	HAZARD RATING	RISK RATING BEFORE MITIGATION IN PLACE	MINIMIZATION/MITIGATION STRATEGIES Commercial Trail rides	PRIORITY RATING
Members of the non horse-riding public	Damage to vehicles by loose horse: in parking areas or beyond the trails causing damage in public areas or to vehicles on roads near trails	Occasional /Likely	Catastrophic	Extremely serious: EXTREME	- Infrastructure at trail heads for secure area for loading/unloading, mounting/dismounting and assessment activities (required for commercial riding by WHS) - Entrance to trails with gates/ step overs likely to deter loose horse from trails escaping into traffic - Education of all users to stay clear of horses - Trail Guides are trained to manage horses - Horses are tested and suitable for their work in an accident, horse is drawn to herd and not likely to run away - Business has trained staff to manage foreseeable contingencies	HIGH <i>Controlling client behaviour prior to and after a ride is challenging for staff</i>
	Mountain biker comes around a corner at speed, brakes seeing horse and falls off	Likely/occasional	Major	Serious: Medium	- Education of the broader community - Website and Trailhead signs identifying shared trails - Code of conduct for all users - Trail Guides assist with managing incidents as required - Staff carry first aid and communication devices	LOW
Riders	Person falls off because horse jumps when frightened by unexpected situations (prams, wheelchairs, umbrellas, loose dogs attacking)	Likely/occasional	Catastrophic	Extremely serious: EXTREME	- Assessment of riders' ability to control their horses before departure - Stock saddles (or equivalent) to help riders stay on the horse - Horses are tested and desensitized and suitable for their work - In accident, assistance is available from staff trained in first aid. - Knowledge of routes by staff, including access for emergency vehicles - Signs and trail head and on websites -education of all users (when near horses dogs must be on leashes, public should stop and wait if they have a wheelchair or pram, and not open umbrellas suddenly etc.	HIGH <i>A fall from a horse can never be completely ruled out for beginner riders.</i>
	Injury to horse or rider resulting from one horse reacting to aggressive behavior from another horse	Likely/occasional	Critical	Very Serious: HIGH	- Assessment of riders' ability to control their horses before departure - Horses are tested, desensitized and suitable for use by beginners (not behaving aggressively) - Trail Guides are monitoring and assisting riders during the trail ride - Ratio of staff to clients is 1:6 to provide ready help as needed - First aid kit and assistance are available - Communication with emergency services and to home available	MEDIUM <i>beginners often do not control their horses effectively</i>

RISK GROUP	RISK	PROBABILITY	HAZARD RATING	RISK RATING BEFORE MITIGATION IN PLACE	MINIMIZATION/MITIGATION STRATEGIES Commercial Trail rides	PRIORITY RATING
Riders continued	Horse causes commotion not wanting to cross a bridge, a creek or other obstacle, wandering out among protrusions on sides of tracks, into low boughs and overhanging sharp branches: potential for rider injury	Likely/ occasional	Critical	Very Serious: HIGH	- Assessment of riders' ability to control their horses before departure - Horses are tested, desensitized and suitable for use by beginners - Horses are used to route and all obstacles likely to be encountered - Trail Guides assisting riders to control their horses - Ratio of staff to clients is 1:6 to provide help if needed - First aid kit and assistance are available - Communication with emergency services and to home available - Knowledge of routes by officials, including access for emergency vehicles - Upkeep of track, creek crossings, vegetation by landowner/rangers etc.	MEDIUM <i>beginners often cannot control their horses effectively</i>
	Environment – injury or illness due to hypothermia/sunstroke, allergic reactions, dust, fatigue, preexisting conditions...	Likely/ occasional	Critical	Very serious: HIGH	- Preexisting medical conditions of riders known by business - Trail rides cancelled in extreme weather conditions - Clients provided with protection from weather before departure (clothing/sunscreen) - Staff carry water, sunscreen and insect repellent etc. - First aid training for staff and first aid kit carried - Communication with emergency services and to home available - Knowledge of routes by officials, including access for emergency vehicles	MEDIUM <i>clients often do not provide thorough health information nor do they understand restrictions or circumstances</i>
	Vehicles/cycles/motor bikes passing or approaching around corners at speed on back roads and tracks, where there is no place off road to go to avoid the traffic: causing agitation of horses and potential fall of rider	Likely/ occasional	Catastrophic	Extremely serious: EXTREME	- Roads with fast, noisy vehicles are avoided or crossed when stopping traffic - If rides include roads where risks of noisy or fast vehicles are included horses provided to clients are tested and desensitized to traffic/noise etc. - Assessment of riders' ability to control their horses before departure - If travelling along roads, horses travel in pairs with experienced/calm horse on traffic side - Staff (on horses used to traffic) travel with a gap between them and the group, and wave to slow traffic (or business uses signs, flashing lights, other slowing mechanisms while trail ride is along or crossing roads) - Education of shared users of trails (trucks, cycles, 4WD, rangers etc.) to slow down when passing or if they come across a group around a corner - Speed limits on roads where horses cross or travel regularly	HIGH <i>Taking beginner riders into this environment is a high risk situation</i>

	RISK	PROBABILITY	HAZARD RATING	RISK RATING BEFORE MITIGATION IN PLACE	MINIMIZATION/MITIGATION STRATEGIES	PRIORITY RATING
Riders continued	Wildlife suddenly appearing (eg, kangaroo, deer, wombat, wild boar) causing reaction from horses – shying or spooking and/or bolting with potential for rider to fall and be seriously injured	Occasional / likely	Catastrophe	Extremely serious: EXTREME	- Commercial Trail rides - Assessment of riders' ability to control their horses before departure: - Stock saddles are used to assist riders stay in place if the horse stops suddenly or jumps - Staff know their horses and are experienced working with them - Horses are desensitized to foreseeable hazards and business does not use equines which are nervous or shy easily - Trail rides always have a Trail Guide as the front rider so they can lead others past unusual obstacles or wildlife etc. - Correct ratio of staff to clients to enable people available to assist - Maintenance of equipment so it does not fail if put under pressure - Communications and first aid assistance available	HIGH <i>Beginner riders fall off easily even when all the mitigation strategies are in place.!</i>
	Extreme weather conditions: hail, high winds, extreme heat or snow. hypothermia, heat stroke etc.	Occasional / likely	Critical	Very serious: HIGH	- Weather is monitored by business - Trail ride is cancelled if extreme weather is predicted - First aid training for staff and first aid kit is carried to cover basic needs - Preexisting medical conditions of clients known by staff - Communication with emergency services and to home available - Knowledge of routes by staff, including access for emergency vehicles	LOW
	On remote ride, there is a lack of access by emergency vehicles in the event of an injury to horse or rider	Occasional / likely	Catastrophe	Extremely serious: EXTREME	- Assessment of riders' ability to control their horses before departure: normally only experienced riders involved in these types of trail rides - Preexisting medical conditions of clients known by staff - Clients advised of distance and length of rides - First aid kit carrying basic needs, staff trained in first aid - Back up staff in vehicles for long riders - Communication with emergency services and to home available - Personal satellite beacons are carried by staff where mobile coverage is not available - Knowledge of routes by staff, including access for emergency vehicles - Clients are notified if the route is likely to be inaccessible in places and they take responsibility for their involvement	MEDIUM

APENDIX D: TRAIL HEAD SIGNAGE AND EDUCATIONAL MATERIALS



RESPECT AND PROTECT OUR TRAILS AND ALL USERS



With good trail etiquette all users can enjoy multi-use trails.

There are many users of our open spaces and trails. These include horse riders, push-bike riders, e-bike riders, motorbike riders, mobility restricted, trekkers, hikers, dog walkers and runners, as well as the trail residents and the local fauna. All of which use the natural environment for their preferred recreation, health, and well-being. This information aims to provide a guide on good trail etiquette so that we can continue to respect and protect each other and the environment.

EVERYONE IS A VISITOR

Enjoy your experience and be aware of the wildlife that inhabits the area.

Stay on designated trails to avoid damaging any flora or coming into conflict with any fauna. A great phrase to stick by is "enjoy the space but leave no trace!"

Always expect to encounter others moving slowly. It's polite to give way to uphill users.

Ensure you give way to horse riders; ask if you need to stop, keep talking so the horse knows you are a person not a predator.

Here are some tips to ensure access to trails for all users continues into the future:

- Take your rubbish and waste with you
- Close any gates you open behind you
- Stay off wet roads and trails to minimise damage
- Share the trail with other users
- Stay alert and be respectful of others
- Keep within the regulations of the land manager
- Keep on the look-out and hear-out

www.athra.com.au

slow &
say
hello!



FOR PEDESTRIANS

Stay alert. Be on the lookout and hear-out for faster trail users.

Allow bike riders, runners, horse riders and motorcyclists to pass. If you have your pet with you, ensure you abide by the regulations and control your pet. You are responsible for their actions.

If you are faster than others on the trail, make sure you 'slow and say hello', let your presence be known so as not to startle other users and ask for the best way to pass on narrow trails.

FOR HORSE RIDERS

Horses can be intimidating to others, if you stay calm, it helps your horse remain calm.

Other users are expected to give way to horses; however, it can be safer to give way to other users if you can. Your horse will hear and sense others before you do. Call out "I'm on a horse; please say 'hello'".

Others may be unfamiliar with horses and horse safety, so take the lead to direct a safe passing.

FOR BIKE RIDERS

Whether you are under human power, electric or petrol, respect those slower than you.

Always reduce your speed and stop if necessary, allowing your machine to idle if its petrol powered, to allow for safe and respectful passing.

It is best to be guided by the horse riders when you approach, as you may need to turn your bike off completely to allow them to pass, restarting your bike only after the horses are well past. Maintain control and be aware of blind corners.

Avoid startling other trail users by using communication, not a bell or horn and be aware that horses and dogs can be startled by your presence. Respect can alleviate issues.

www.athra.com.au



Trail head signage used at Onkaparinga River National Park in South Australia

I share my trail



✓ Keep left



✓ Ride slow



✓ Say g'day

Onkaparinga River National Park allow walkers, runners and cyclists to connect with nature via a network of shared and walking only trails.

The National Parks Code

- Take your rubbish with you.
- Bike riding is only allowed on designated trails in the park.
- Horse riding is only allowed on the Tom Roberts Trail in the park.
- Leave pets at home, they're not allowed in the park.
- Motorcycles are not permitted in the park.
- Wood and solid fuel fires are prohibited throughout the year.
- On days of Catastrophic Fire Danger the park will be closed to all visitors (and may be closed on days of Extreme Fire Danger or during serious storms).
- Camping is not permitted in the park, except in the campground.
- Fishing is not allowed in the park.
- Keep our wildlife wild. Do not feed or disturb animals.
- Do not remove plants or rocks.

Code of Practice for Trail Users

To protect the surrounding environment and to ensure the safety of all trail users, please be aware of the international Trail Users Code of Practice when using shared trails. Important points to remember include:

- Plan your ride or walk.
- Comply with all signs.
- Walk and ride on formed trails only.
- Do not take short cuts or form new trails.
- Avoid riding in wet, muddy conditions.
- Tread or ride lightly and leave no trace or rubbish.
- Control your bike and walk, run or ride within your limits.
- Clean your bike, shoes and/or horse's hooves. Don't spread weeds or plant diseases.
- Carry sufficient food and drinking water.
- Respect the rights of others.
- Tell others about the code.

Give way rules

Cyclists must give way to walkers. Everyone gives way to horse riders.



Know where you can ride

Make sure you check the map so you know where you can ride your bike or horse before you set off.

Horse riding is only allowed in the park on the Tom Roberts Trail. Some trails are for bushwalkers only for safety or conservation reasons.

Stop the plant killer!

Phytophthora (fy-TOFF-thoa), also called root-rot fungus, is killing our native plants. It also threatens the survival of animals that depend on these plants for food and shelter. This introduced fungus can be found in soil and water.



Please help stop the spread by staying on tracks and trails and by complying with all Phytophthora management signs.

Become involved

To become involved with conservation activities in the park, visit the Friends of Onkaparinga Park website at <http://www.communitynests.org/OnkaparingaParks/>

Thank you for leaving the bush in its natural state for the enjoyment of others.

In a life-threatening emergency call 000

Report hazards and other issues to the Natural Resources Adelaide and Mt Lofty Ranges Willunga Office on 8550 3400.

For more information please visit
www.parks.sa.gov.au



Great Victorian Rail Trail Code of Conduct

<https://www.greatvictorianrailtrail.com.au/code-of-conduct/>

Code of Conduct

A shared use trail

The Great Victorian Rail Trail is a multi-use recreational pathway for cyclists, walkers and horse riders. Please respect each other's right to enjoy a safe and pleasant journey.

For your safety and enjoyment please observe the following:

CYCLISTS

- Keep left and give way to walkers and horses
- Approach horses with care and notify in advance of your approach
- Warn others when approaching from behind and passing
- Keep left and don't obstruct the Rail Trail



HORSES

- Ride horses off the bike/walking track unless signage indicates otherwise
- Horses must be ridden at a walking pace when on the track formed for cycling and walking
- Remove horse manure from the bike/walking track
- Horses must not be tied within a 10 metre radius of signage or seat structures



WALKERS

- Keep left and give way to horses on bridges and squeeze points

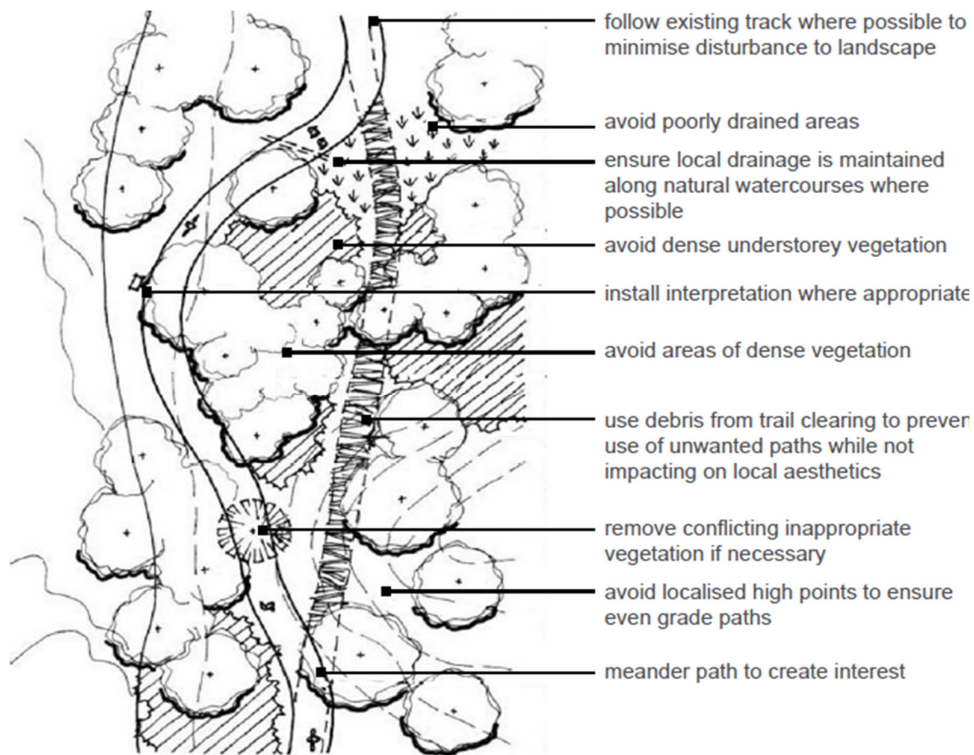


APPENDIX E: Trail Design and Infrastructure for horse-riders

The following information on Trail Design is from Sunshine Coast Recreational Trail Design

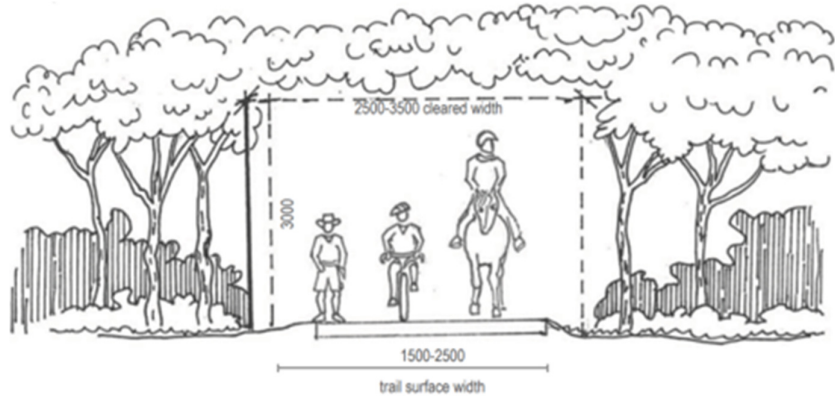
Guidelines:2011 p.5 ²⁷ – a comprehensive document which covers many aspects of horse trail design.

Trail Siting Guideline (adapted from Redland Shire Council 1998)



Trail Width/Clearance

- No national standards establish the width and clearance of shared trails as this can depend on many factors including the types of users, the level of development, the setting, land availability, safety, potential conflicts, local expectations and maintenance concerns. Various States and Countries such as the US have adopted slightly differing numbers.
- The trail width shown will vary depending on these levels. Low use trails should generally be cleared to the minimum width (1500mm) while medium and high use trails should be cleared to the maximum width shown (2500mm). An alternative trail clearing envelope for multi-use trails involves creating a separate and adjacent trail for horses. The horse trail would be 1200 mm wide while the trail width to cater for shared use between walkers and cyclists will be 1500mm – 2500mm depending on trail use.
- All overhanging vegetation - and that which intrudes from the sides into this 'envelope' should be pruned on a regular basis. Care should be taken that sharp and dangerous 'points' are not left in this pruning process.
- General standards include:
 - A horse only single use trail has a min width of 1.2m and clearance height of 3m
 - For shared use trails with low usage levels the trail has a min width of 1.5m and height of 3m. Other standards suggest a higher headroom of 3.7m in case the horse jumps.



- Removal of low branches across tracks
- Removal of sharp ends of branches at head height for riders
- For shared use trails with high usage levels the trail has a min width of 1.5m and height of 3m²⁸

Trail Surface

For horse only or low use trails, surfaces can be unmodified with a natural surface. It is necessary if natural trail surface is to be used that any storm water is diverted off the trail.

The trail surface for shared used trails with horses can be unsealed and lightly compacted.

There are many options for trail materials that often depend on local availabilities. Examples:

- Class 2.5 road base maintenance gravel
- 20-25 mm unspecified road base with a binder product (Dustac and Ecotrax or similar approved product) runnelled through (on flat slopes only). Subgrade to be 50-75mm sized aggregate or 75-150mm sized aggregate for wet areas.
- Decomposed granite stabilised with cement additive (dry cement, mix to be 6:1 granite to cement). Do not use this option on trails greater than 5% or in high use wet areas.
- Coarse sand with a binding agent could be used for a horse trail, but this is not a suitable surface for trails to be used by walkers and cyclists.

Trail designers for horses also need to ensure that there is nothing on the track which could damage the horse's hooves. The types of problems faced by a horse rider would also cause issues for most other users (metal, glass, loose wire, deep potholes or ruts, bog holes from 4-wheel drives, steep slippery surfaces etc.)

Trail Drainage

Wet and Sensitive areas

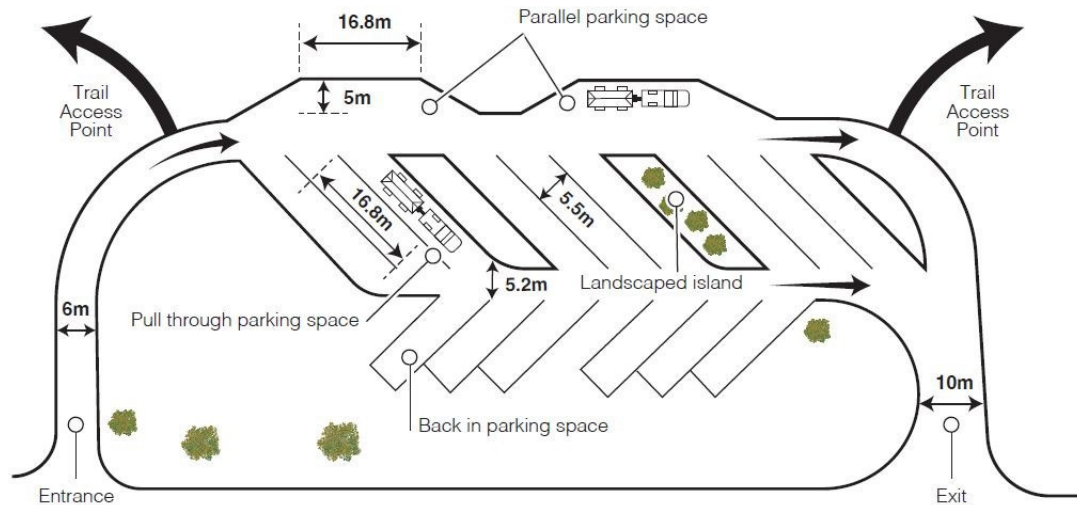
- Water to be diverted in areas which easily become boggy
- Sensitive areas can have a separate route for horses that bypasses the delicate vegetation

Float Parking

A 5.8m vehicle towing a bumper-pull, two-horse trailer would need a total length of 16.8 metres to park and unload safely. This includes a 4.6 m unloading area plus walking space at both ends of the vehicle. A longer length is required for three-horse and larger trailers.

When considering float parking the following should be incorporated:

- Providing a safe parking area for horse floats and other related vehicles. If possible, a secure area (at least separate from other vehicles) for the loading and unloading of animals, including enough space for preparing the horses for the ride (preferably with no slippery slopes).
- Carparks for horse areas should be paved with road base and/or gravel - not in asphalt or concrete which horses find slippery.
- Horse trailers and trucks are large vehicles and require large spaces for turning and parking.
- If there is a locked gate into the site, allow enough room for a vehicle with horse float to stop in front of gate and not overhang onto the adjoining road.
- Minimise requirement for reversing where possible - pull through bays preferred²⁹



Horse Yards/fences

Horse yards contain a horse without having to tie it up, providing separation from the public and an overnight accommodation option. The rails of horse yards may also double as a tie-up rail for the site. Yards need to be of solid construction, as horses will rub, push and lean on the railing.³⁰

Design considerations for yards:

- 4 m x 4 m is ideal, maybe larger
- solid well-drained base, e.g., dolomite over crushed rock or geocell
- solid rails of timber, metal or there may be a suitable recycled plastic product
- gateways wide enough to lead a horse through easily, a minimum of 1.5 m



Tie up rails and horse yards at Kuitpo Forest, South Australia
Photos J Fiedler

Hitching Rails

Horses can be tied up to infrastructure known as a hitching rail which caters for two or more horses. A hitching ring attached to a wall or post caters for a single horse. On public horse trails, there is a need to cater for more than one horse; therefore, tie-up rails are better suited for the purpose. Horses are tied up to the rail via a lead rope attached to a halter/head collar.

While tied up, horses may become restless or startled and 'pull-back'. If the rope does not break and a sub-standard rail snaps, this can be extremely dangerous as the horse can be free with a rail dragging along next to it. This becomes a significant danger to the horse and others nearby, as the animal is running away but not looking where it is going, being fixated on the rail which is bouncing next to it! It is for this reason that hitching rails need to be built super-strong and maintained.

It is good to have shelter over a hitching rail, if maintenance budgets allow. Positioning rails where there is shade from trees is a reasonable alternative.

Horse Steptovers

See below for examples of access control (e.g., cavaletti / horse steptovers) for the trail's entry point, to control the types of users who can access the trails (e.g., trails where motor bikes are not permitted) ³¹



Step-over (4 rails) of timber with steel framework, Canberra, Australian Capital Territory.



Step-over (2 rails) of metal with rubber sleeves to reduce noise, South-East Queensland.



Step-over (1 rail) of timber with an informal 'ramp' stone to assist cyclists. Kuitpo Forest, South Australia. Photo: J Fiedler

Bridges

When planning for a bridge that will cater for horse riders, it is important to ensure that the final installation will not sway, vibrate, and become excessively noisy when in use. The horse will be assisted to stay relaxed if bridge construction features materials which are encountered elsewhere on the trail, and the trail surface continues over the deck. The bridge may need to cope with the weight of two or more horse riders, which is a similar weight to a small maintenance vehicle. Railings can be used as an aid to guide horses onto the bridge and protrude from the parapet (railings on the bridge) to guide horses away from the edge. Infill along the base of the parapet and the bridge deck may prevent a hoof slipping off should a horse become startled.³²

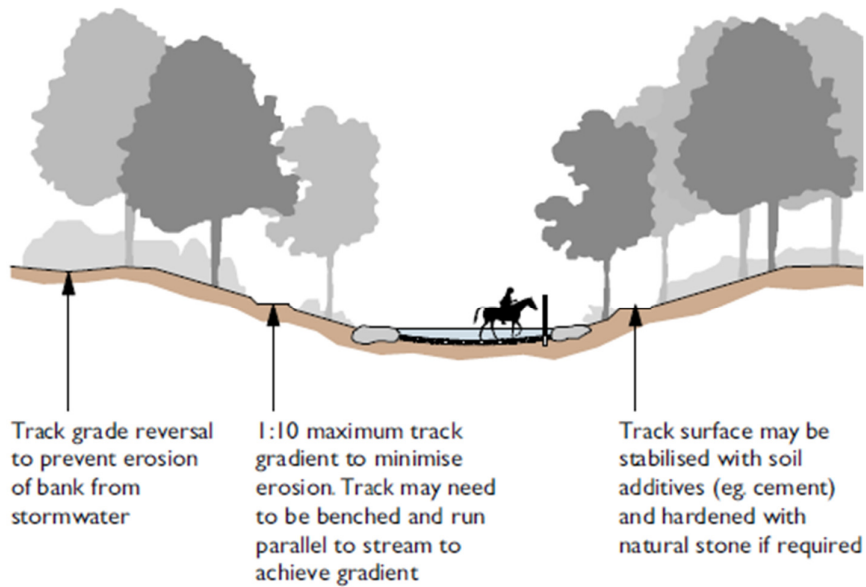
Bridge over a winter creek suitable for horse-riders, Sturt Valley Trail Coromandel Valley South Australia



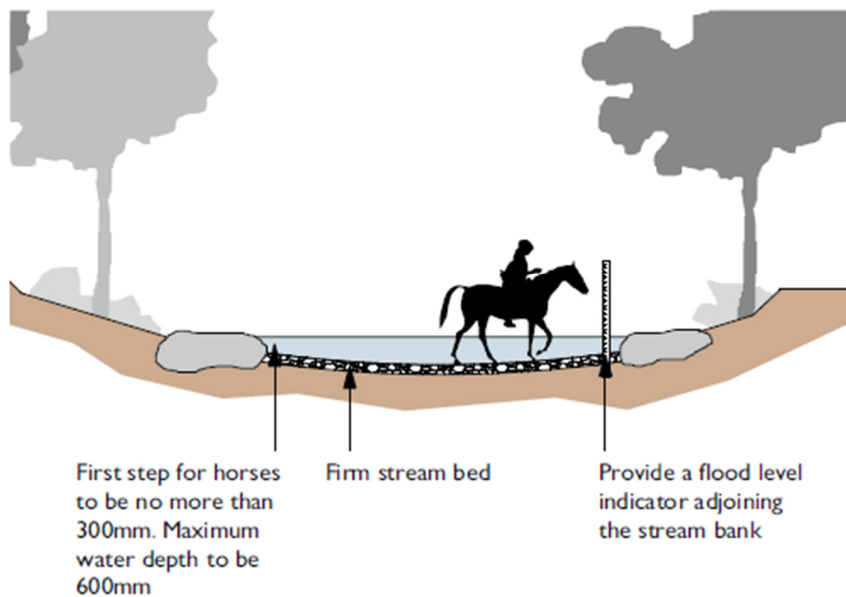
Creek crossings

Creek crossings are often a suitable and safe alternative for horses to bridges, as they are inexpensive to build and maintain. Creek crossings suitable for horses need low gradient approaches into a creek at a point where the creek bed has a firm, obstacle-free base. Existing fords are likely to be suitable, either natural or enhanced with a roughened cement vehicle crossing. Ideally these should also be designed so that the first step for horses into the stream should be no deeper than 300mm, the ford locations should be marked with appropriate signage and shown on trail network maps. Fords should not contain sharp, flat and slippery rocks.

Stream crossings where tracks and trails cross natural streams with stable stream bed and banks, and water depth is less than 600mm³³



Typical cross section



APPENDIX F Horse Trail Rating System

A recognised horse trail difficulty rating system by Horse SA in conjunction with Bicycle SA, Canoe SA, Walking SA and the Scuba Divers Federation of SA¹ and is provided herein.

HORSE TRAIL CLASSIFICATIONS

	EASIEST 	INTERMEDIATE 	ADVANCED 
Description	Most likely to be fire roads or wide single tracks (bridlepaths) with a gentle gradient (not exceeding 10%), smooth surface and a relatively obstacle free, hardened natural surface Frequent encounters are likely with other users including cyclists, walkers and runners.	Intermediate Trails are most likely to be a combination single trail and/or fire road with obstacles, variable surface, and a moderate slope. Intermediate Trails are likely to be multi-use so encounters with other users including cyclists, walkers, runners and horse riders should be expected.	Advanced Trails are most likely to consist of challenging single trail and/or fire road with many obstacles, variable surface, and steep sections. Some trail routes may not be marked at all. Advanced Trails may possibly be multi-use so encounters with other users possibly including cyclists, walkers, vehicles and other stock should be expected, however, many of these trails may be located in remote areas and encounters with others is expected to be minimal.
Suitable for	Most suitable for novices; social groups and others seeking a relatively short distance trail requiring a basic level of skills and horse and rider fitness.	Intermediate Trails are most suitable for individuals and smaller social groups seeking a short to medium distance trail requiring a moderate level of skill and fitness.	Advanced Trails are suitable for individuals and small social groups seeking a very challenging trail requiring a high level of skill, fitness, and basic navigation skills.
Level of skill / experience	Novices will require a basic level of riding skill and fitness is required coupled with riding on a trained, experienced horse.	An intermediate level of riding skill & fitness is required, and a horse with some trail experience & training is recommended. Knowledge of Basic horse health including first aid and conditioning requirements is highly desirable.	A higher level of skill and fitness is required. Navigation and personal survival skills are highly desirable. Previous riding experience essential. Packing skills may be required. Map reading skills and horse health knowledge is essential. An experience guide is recommended for riders with limited remote area experience
Trail Corridor			
(Width)	(Min.) 3m	(Min.) 1.5m	Min. 1.5m
(Height)	(Min.) 3.7m	(Min.) 3.7m	Min. 2.5m
Tread	1.5 m	1.5 m	Min. 30 cm
(Minimum Width)	Note: Short sections of narrower tread (.60 m to 1.2 m) are acceptable at ground level however 1.5 metres is required at the height of the riders stirrups.	Note: Short sections of narrower tread (.60 m to 1.2 m) are acceptable at ground level however 1.5 metres is required at the height of the riders stirrups.	Note: 1.5 metres is recommended at the height of the riders stirrups
Trail Surface	Generally a natural surface (topped with dolomite or compacted surface if desired). Hardened surfaces like concrete or asphalt to be avoided due to concussion on horse legs and poor traction with metal horseshoes. Hardened surfaces may be utilised on Rail Trails or other tracks where horses would generally only walk.	Generally a natural surface is desired and may include sections of rocky ground, sand, clay or gravel. Obstacles such as rocks, logs and gates that require dismounting are likely. Shallow ford crossings are acceptable. (Note: SA rainfall conditions vary widely - seasonal conditions may water depths significantly)	Usually a variable surface with sections of rock, sand, clay gravel, etc. Obstacles may include challenging rocks, logs, fording creeks

HORSE TRAIL CLASSIFICATIONS (CONTINUED)

	EASIEST 	INTERMEDIATE 	ADVANCED 
Distance	0-14km	Maximum 14km	Advanced Trails can be any length.
Trail Gradient	Desired gradient 0 – 10% Maximum 10% Maximum sustained pitch 5% Out slope 4% maximum	Maximum 15% Maximum sustained pitch 10% Out slope 4% maximum	Maximum 20% (Max. sustained pitch 10%.)
On-trail facilities	Facilities along the trail may include mounting blocks, step overs, shallow fords, bridges, watering points, interpretative and/or management signs.	Facilities along the trail may include lookouts, bridges, watering points, interpretative and/or management signs, step overs, shallow ford crossings.	Generally facilities are not provided except in relation to specific safety or environmental considerations. Stock holding yards and watering points will be identified on maps but may not necessarily be specifically provided as part of the trail. Permission to access these facilities may be required.
Trailhead facilities	The trailhead will be marked with a sign, specifying the name, distance, classification, multi-use code of conduct and other relevant information. Trailhead facilities may include car and separate horse float parking, manure receptacle, map dispensers, toilets, drinking water and information shelters. Trailhead facilities may include overnight yarding for horses. (Facilities will be dependent on the number of visitors using the trail or other attractions in the area.)	The trailhead will be marked with a sign, specifying the name, distance, classification, multi-use code of conduct and other relevant information. Trailhead facilities may include car parking and separate horse float parking, toilets, drinking water, map dispensers and information shelters. (Facilities will be dependent on the number of visitors using the trail or other attractions in the area.)	The trailhead will be marked with a sign, specifying the name, distance, classification, multi-use code of conduct (if relevant) and possibly management information. Trailhead facilities may include car and float parking, drinking water. (Facilities will be dependent on the number of visitors using the trail or other attractions in the area.)
Recommended trail flow	Open and Flowing	Generally flowing with some more challenging sections	none

There may be circumstances where trails with a surface and slope similar to Class 1 exceed the suggested distance. These trails should be upgraded to Class 2 or 3.

REFERENCES

1	Horse trail rating classifications retrieved from https://www.southaustraliantrails.com/files/wp-content/uploads/2017/03/horse-rating-system.pdf
2	Queensland Parks and Wildlife Service Community Survey 2012 (snapshot of Newspoll report summary) p7 https://parks.des.qld.gov.au/_data/assets/pdf_file/0021/158232/community-survey-snapshot.pdf
3	Griffith University, 2013 : Executive summary p.vi-vii Attitudes of local park visitors: Assessing the social impacts of the South East Queensland Horse-riding Trail Network
4	Griffith University, 2013 : Executive summary p. vii Attitudes of local communities: Assessing the social impacts of the South East Queensland Horse-riding Trail Network
5	Griffith University, 2013 : Executive summary p.vi - vii Perceptions of stakeholder organisations: Assessing the social impacts of the South East Queensland Horse-riding Trail Network (des.qld.gov.au)
6	Gene W Wood (Ed) Recreational Horse Trails in Rural and Wildland Areas Department of Forestry and Natural Resources, Clemson South Carolina 2007 prologue p. ix
7	NSW National Parks and Wildlife Service Horse-riding in Wilderness Trail Monitoring Program (2017) p.41 State of New South Wales and Office of Environment and Heritage 2017. ISBN 978-1-76039-819-4 OEH 2017/00293
8	Cater. C et al, High Impact Activities in Parks: Best Management Practice and Future Research CRC for Sustainable Tourism Pty Ltd 2008 https://www.researchgate.net/publication/29469765_High_Impact_Activities_in_Parks_Best_management_practice_and_future_research
9	Queensland Department of Environment and Resource Management produced a number of resources summarised in Scientific Monitoring Program for the South East Queensland Horse-riding Trail Network 2010 https://parks.des.qld.gov.au/_data/assets/pdf_file/0027/168462/scientific_monitoring_program_horse_trail_network.pdf
10	2 page flyer on Phytophthora produced by HorseSA https://cdn.environment.sa.gov.au/parks/docs/belair-national-park/horse-riding-in-parks_fact.pdf?v=1610572405
11	HorseSA, Horse Trail Infrastructure Guidelines for peri-urban precincts in Australia https://www.orsr.sa.gov.au/get-active/recreation-and-trails/documents/5519_HorseSA-Book_Web-1.pdf P13
12	R.M Summer "Impact of horse traffic on trails in Rocky Mountain National Park" Journal of Soil and Water Conservation Vol 35, issue 2, 1980 pp 75-85 and R.M. Summer, 1996. Geomorphic Impacts of horse traffic on montane landforms 41(2): 126-128.
13	Fairfax, Neldner, Nguigi and Dowling Australasian Journal of Environmental Management 19 (2):122-132 June 2012 :10.1080/14486563.2012.664949
14	J Marion and J Wimpey "Assessing the influence of sustainable trail design and maintenance on soil loss" Journal of Environmental Management 2017 https://appalachiantrail.org/wp-content/uploads/2020/04/marion-wimpey-sustainable-trail-design-2017.pdf
15	A. Quinn Environmental Aspects of Horses on Trails American Trails refers to (Gosselin and Wolford - 2001) https://www.americantrails.org/resources/environmental-aspects-of-horses-on-trails MS Quinn quoted a number of researchers and particularly referred to in Gosselin, Dr. Larry DVM, pers. comm. 4-10-01; Dr. Larry Wolford specializing in equids, pers. comm. 4-5-01. In his belief that waterways were not adversely impacted by horse urine or faeces.

16	S. Redfearn et al <u>Detecting stream health impacts of horse-riding and 4WD vehicle water crossings in South East Queensland: an event based assessment.</u> (2012) p.19 https://www.google.com/search?client=firefox-b-d&q=Detecting+stream+health+impacts+of+horse+riding+and+4WD+vehicle+water+crossings+in+South+East+Queensland%3A+an+event+based+assessment
17	Ngugi, V Neldner, R Dowling, <u>Australasian Journal of Environmental Management</u> 21(4) DOI: 10.1080/14486563.2014.952788 September 2014 abstract "Non native plant species richness adjacent to a horse trail network in seven National Parks in southeast Queensland Australia."
18	Department of Environment and Science Qld <u>South East Queensland Horse Trail Network Interim Assessment: Bellthorpe National Park 2022</u> https://parks.des.qld.gov.au/_data/assets/pdf_file/0021/290325/bellthorpe-np-horse-trail-network-assessment-report.pdf
19	Department of Environment and Science Qld <u>South East Queensland Horse Trail Network Interim Assessment: D'Aguilar National Park 2022</u> https://parks.des.qld.gov.au/_data/assets/pdf_file/0022/290326/daguilar-np-horse-trail-network-assessment-report.pdf
20	<u>South East Queensland Horse Trail Network Interim Assessment: Tewantin National Park & Eumundi Conservation Park 2022</u> https://parks.des.qld.gov.au/_data/assets/pdf_file/0025/290329/tewantin-eumundi-horse-trail-network-assessment-report.pdf
21	Australian Horse Industry Code of Practice for Horse Activities <u>HorseSafe</u> (rev 2009) https://www.horsesafeyaustralia.com.au/wp-content/uploads/2009/03/AHIC-Code-of-Practice-revised-091009-.pdf
22	Department of Environment and Science: Parks and Forests "Monitoring and managing potential impacts" https://parks.des.qld.gov.au/things-to-do/activities/horseriding/strategic-framework/monitoring
23	AHIC Code <u>ibid</u>
24	Safe Work Australia's <u>Guide to managing risks when new and inexperienced persons interact with horses</u> (June 2014) https://www.safeworkaustralia.gov.au/system/files/documents/1702/horse-guide-v1.pdf
25	Outdoors Australia <u>Adventure Activity Standards: Good Practice Guide - 'Trail Riding'</u> (2019) https://www.horsesafeyaustralia.com.au/regulations/attachment/horse-trail-ride-gpg-v1-0/
26	Safe Work NSW Code <u>Managing risks when new or inexperienced riders or handlers interact with horses in the workplace</u> (2016) SW08262-Code-of-Practice-Managing-risks-when-new-or-inexperienced-riders-or-handlers-interact-with-horses-in-the-workplace ver pdf
27	<u>Sunshine Coast Council Recreational Trail Construction Guidelines 2011</u> p.5
28	<u>Sunshine Coast Council Recreational Trail Construction Guidelines 2011</u> p.28
29	NSW National Parks and Wildlife Service: <u>Parks Facilities Manual: Horse-riding Designing for Horses</u> p. 8
30	HorseSA, <u>Horse Trail Infrastructure Guidelines for peri-urban precincts in Australia.</u> https://www.orsr.sa.gov.au/get-active/recreation-and-trails/documents/5519_HorseSA-Book_Web-1.pdf p.17
31	HorseSA_ <u>ibid</u> p.20
32	HorseSA_ <u>ibid</u> p.22
33	NSW National Parks and Wildlife Service <u>Parks Facilities Manual Designing for Horses</u> p. 7