Western Australian Horse Trail Management Guidelines

Trails Development Series

GOVERNMENT OF WESTERN AUSTRALIA

Department of **Biodiversity, Conservation and Attractions**

Department of **Local Government, Sport and Cultural Industries**

Acknowledgement

This project was jointly funded by the Department of Local Government, Sport and Cultural Industries (DLGSC) and the Department of Biodiversity, Conservation and Attractions (DBCA).

The document was produced by the Project Management Group and TRC Tourism. Support and technical guidance were provided by the Stakeholder Reference Group.

Project Management Group

- Alison Pritchard, Kerstin Stender, Sandy Robson (DBCA)
- Suzanne Andrews, Donna Sorenson, Sue Brooks (DLGSC)
- Julie Howes, Australian Trail Horse Riders Association (ATHRA) and co-chair Trail Horse Implementation Strategy WA group (THISWA)

Stakeholder Reference Group

- Ana Beaumont, Road Safety Commission
- Anna Sheehan, Serpentine ATHRA
- Carol Brice and Jo-Ann Needham, HorsePower Australia
- Carol Hammond and Kathy Miles, Australian Carriage Driving Society WA
- Denise Kowald, Riding for the Disabled Association of Australia
- Denise Legge, Pony Club WA
- Jane Radny, WA Endurance Riders Association
- Julie Fiedler, formerly Horse SA
- Kathy Klein and Diane Bennitt, WA Horse Council
- Katie McDonnell, Warren Blackwood Alliance of Councils
- Katie Stevens, Trails WA
- Kaysanne Knuckey, Outdoors Great Southern
- Megan Richards, Shire of Bridgetown-Greenbushes
- Melanie Price, Albany ATHRA
- Meranda Toner, Denmark ATHRA
- Nerissa Foster, Equestrian WA
- Noelene Scott, Casuarina ATHRA
- Pascal Veyradier and Paula Vaughan, Shire of Serpentine Jarrahdale
- Paul Brennan, Jesters Flat
- Rebecca Hamilton and Danielle Swepstone, DBCA
- Rebecca Hicks, Bec Waddington and Garry Middle, Western Australian Local Government Association
- Robin Lonsdale, Donnybrook ATHRA
- Sam Stevens and Julie de Jong, Friends of the Stidwell Bridle Trail
- Tony Gray, Midwest ATHRA
- Vanessa Slater, Co-chair THISWA
- Vivien Claughton, Department of Water and Environmental Regulation

The authors of the WA Horse Trail Management Guidelines acknowledge and value the heritage, culture and spiritual connection of Aboriginal peoples with the land, waters and communities through which trails pass. We acknowledge Aboriginal peoples as the Traditional Custodians and pay our respects to Elders both past and present.

Illustrations: Magic Dirt Trailworx and Common Ground Trails.

Cover Image: Jesters Flat, Tourism Australia.

These guidelines draw extensively from – DBCA and DLGSC, 2024. *Western Australian Hiking Trail Management Guidelines.*

DBCA and DLGSC, 2019. *Trails Development Series*, s.l.: State of Western Australia.

Contents

Tables

Figures

1. Introduction

Of the different types of equestrian activities, horse riding is the most common; enjoyed by more than 229,000 Australians annually. For WA, it is estimated that 21,154 people participate in equestrian activities each year.[1]

Taking the Reins—the WA Recreational Horse Trail Strategy 2015[2] identified a need to improve access to information on where horse riding can be conducted safely and legally. The strategy also outlined plans to enhance education, advocacy and governance for horse trails.

These improvements include guidance on necessary infrastructure, accessibility requirements, trail design features and shared trail use etiquette. Achieving these goals will safeguard participation and ensure the delivery of high quality and consistent trail experiences across the State.

In 2019, the Trails Development Series[3] was published to provide best practice guidance on the Trail Development Process, community consultation, multi-criteria decision analysis, partnerships, funding, trail models and signage.

The series includes checklists and templates to assist with planning and evaluation of the various stages of trail projects.

A suite of activity-specific trail guidelines for the range of trail-related activities will complement the series.

In 2019, the Western Australian Mountain Bike Management Guidelines[4] was launched as the first set of activity-specific guidelines and in 2024, the Western Australian Hiking Trail Management Guidelines[5] was released.

These WA Horse Trail Management Guidelines should be read in conjunction with the Trails Development Series.

1 *Ausplay Equestrian Report*, 2023

2 Australian Trail Horse Riders Association (ATHRA), *Taking the Reins—The Western Australian Recreational Horse Trail Strategy,* 2015

3 Department of Biodiversity, Conservation and Attractions (DBCA) and the Department of Local Government, Sport and Cultural Industries (DLGSC), *Trails Development Series*, 2019

4 DBCA, DLGSC and Westcycle, *Western Australian Mountain Bike Management Guidelines,* 2019

5 DBCA, DLGSC, *Western Australian Hiking Trail Management Guidelines,* 2024

Jesters Flat. *Photo—Tourism Australia*

1.1 Vision and objectives

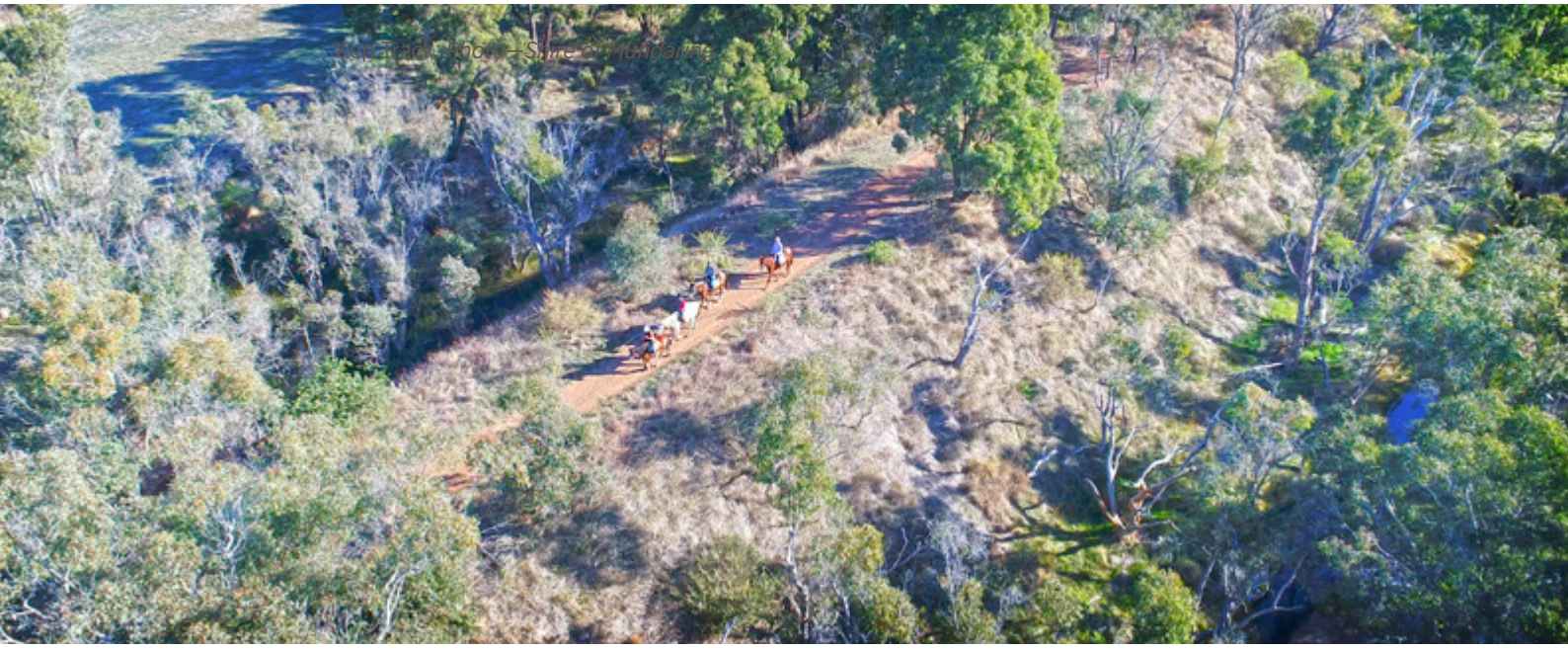
Horse trails across WA are sustainably designed and developed for the right users, in the right areas, for the right reasons.

High quality trails will enhance awareness and protection of cultural, natural and heritage values, underpinned by strong partnerships and community ownership.

The objectives are to –

- provide an understanding of various styles of trails-based equestrian activities and the differing user types and their needs
- support trail development using principles of sustainable planning, design and construction techniques
- provide a consistent approach to horse trail classifications, development, maintenance and management across WA
- ensure consistent use of the Trail Development Process for all trails.

Kep Track. *Photo—Shire of Mundaring*



These guidelines will be of value to –

- trail planners, designers, builders and maintenance teams
- land managers and landowners
- trail clubs, associations and 'friends of' groups
- State trails and outdoor recreation bodies and organisations
- training providers for trail design, construction and maintenance.

They aim to ensure horse trails are developed to meet the needs of users, manage potential degradation of natural and cultural values and meet high sustainability standards.

These guidelines provide general principles and advice. Every trail will be different and given the variety of situations and locations, each trail project needs to be considered on its own merits.

Horse trails in WA are located on various land tenures. Most horse trails however are on local government-managed land or Department of Biodiversity, Conservation and Attractions (DBCA) Parks and Wildlife Service-managed land.

Policies and information pertaining to lands managed by local governments and Parks and Wildlife Service are provided for general information.

1.2 How this fits into the Trail Development Process

These guidelines complement the Trails Development Series and provide direction on developing and managing sustainable horse trails.

Table 1 shows how the principles and advice in these guidelines align with each stage of the Trail Development Process.

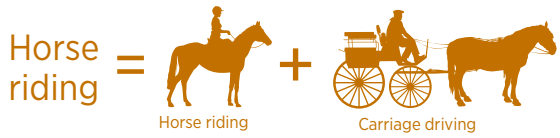
Table 1: Alignment with Trail Development Process

Stage	Key guidance provided in this document
1. Trail proposal	Understanding horse riding, strategic and legislative considerations and stakeholders.
2. Framework	Agreement on trail significance, design objectives, management models, user types, required facilities and structures, horse trail classification, building standards and relevant stakeholders, partners and collaboration.
3. Site assessment	Principles on location of control points, facilities, trail alignment, understanding landforms, topography, habitats, soil types and landscape features, environmental and heritage values and protection.
4. Concept plan	Principles on trail design and alignment corridor, water management, structures, visitor communication, interpretation and signs.
5. Corridor evaluation	Confirm location of facilities and trail alignment using control points and design elements.
6. Detailed design	Principles on design and building methodology and standards, protection of natural features and restrictions, water management, disturbance footprint and structures.
7. Construction	Principles for developing construction techniques, standards and construction ready plans and specifications, trail sign plans and standards.
8. Management	Principles on governance, business models, trail management plans, events, design and building for sustainability.

2. Understanding horse riding

What is horse riding?

Horse riding denotes the riding of a horse, and in the context of this document, also includes the driving of a horse carriage or horse-drawn vehicle. Horse riding may also include the leading of horses along a trail or riding of donkeys or mules. This document will refer to all of these activities as horse riding.



A **horse trail** is a trail designated for horse riding activities, including carriage driving where appropriate. These trails may be exclusively for horse riding or shared use trails.

WA Horse Trekkers Club, Jarrahdale.
Photo—Anna Sheehan

Horse trails cater to various users, including competitive and non-competitive riders, as well as beginners and novices, whether riding individually or in groups. Riding on a horse trail can be enjoyed as a leisure activity in nature either socially or independently, for fitness and training, or in preparation for work horse activities and competitive events such as endurance riding and cross country. It can also be organised as a commercial activity.

In addition to dedicated horse trails or shared use trails, recreational riders may also use road verges, gazetted roads, beaches, private properties, Crown land, or cross country trails.[6]

Carriage driving makes use of trails in similar ways to horse riding. It also provides accessibility to get out on the trails, for those who are no longer able to ride, or prefer driving to riding. Carriages can navigate diverse terrain and may be equipped to accommodate wheelchair users.

Horse trail users seek experiences in natural environments and access to diverse landscapes. Depending on personal abilities, the experience/capability of their horse and type of experience sought, users require a range of trail classifications and have varying needs.

Motivators are as varied as individuals and linked to a person's stage of life, interests, needs and preferences. They may include connecting to nature, seeking a challenge and experience, escapism, health benefits, social engagement and being inspired by others.

Horse trails are the primary infrastructure to providing these experiences.

6 Australian Trail Horse Riders Association (ATHRA), *Taking the Reins—The Western Australian Recreational Horse Trail Strategy*, 2015

2.1 Participation

National

Across Australia, there are approximately 260,000 participants undertaking equestrian activities annually. There is a skew towards female participation (85 per cent) with peak participation age 15 to 54 years old. Current data can be obtained from Sport Australia AusPlay data.

Among all equestrians, including horse riding, carriage driving, dressage, show jumping and others, horse riding is the most popular, with 85 per cent of participants engaging in it.

Most equestrians engage in a riding activity at least once a week, with each session averaging between one and three hours. Most participation occurs in regional and remote areas and is non-organised and not club based (54.2 per cent).

The primary motivator for participation is fun and enjoyment.[7]

Australia offers a range of special equestrian activities, including programs for school-age children, riding for people with disabilities, and guided tour experiences.

Although there is little published research on national trail-based horse riding participation, the Australian Trail Horse Riders Association (ATHRA) reports that it has provided its services to nearly 17,000 individual members during the 50 years since inception.[8]

State

In 2022–23, it was estimated that about 21,154 Western Australians (around one percent of WA's population) participated in equestrian activities, rating tenth in the top sport related activities for females aged 15-years and over.[9]

A 2018 study conducted as part of the Shire of Serpentine Jarrahdale Equine Strategy found that horse trail riding is the most popular of equestrian activities (62 per cent), followed by recreational riding (54 per cent) and dressage (35 per cent). The preferred riding distance was 6–10 km (36 per cent), followed by 10–20km (21 per cent) and 5 km (18 per cent). Eighteen per cent of riders preferred to ride distances greater than 20km.[10]

Membership to equestrian associations and clubs provides an indicator of local participation data:

- ATHRA have four WA affiliated clubs and in 2024 represented approximately 180 WA members.[11]
- The Australian Carriage Driving Society WA Branch had a total of 87 WA members in 2024, across four affiliated carriage driving clubs.[12]
- Equestrian Australia (governing body for equestrian sports) had a total of 2613 WA members in 2022, a record high association participation, followed up with 2592 members in 2023.[13]
- The WA Endurance Riders Association (WAERA) offered endurance activities to a total of 110 members in 2024.[14]
- Pony Club WA consisted of 2815 members in 2024, across 55 affiliated clubs.[15]

---

7 Ausplay Equestrian Report 2023
8 Australian Trail Horse Riders Association (ATHRA), 2024
9 Ausplay Equestrian Report 2023
10 Tourism WA, *South West Edge Trail Tourism Experience Opportunities*, 2023
11 ATHRA (personal communication, November 2024)
12 Australian Carriage Driving Society WA Branch (personal communication April 2024)
13 Equestrian WA (personal communication, April 2024)
14 WAERA (personal communication, May 2024)
15 Pony Club WA (personal communication, April 2024)

2.2 User types

Understanding the user types and target markets enables a proactive approach to ensure the right trails are developed in the right area, for the right users.

Taking the Reins—the WA Recreational Horse Trail Strategy outlined four main horse trail user groups: trail riders, endurance riders, horse trekkers and harness drivers.

Industry consultation through stakeholder reference groups informed the development of six horse trail user categories as outlined in Table 2. These align with their preferred trail classifications. More details on the Horse Trail Classification System are outlined in Section 11.

WA Horse Trekkers Club, Palmer State Forrest, Harris River. *Photo—Anita Britza*

Table 2: Description of horse trail user types and market segments

Type	Description	Preferred trail class	Market size
Local/regional riders	• Independent recreational/weekend riders. • Riders in this category regularly ride the same trail for enjoyment and horse exercise. Riders may also use trails to train for competitive events or working horse requirements. • Experiences on trails close to home or visits to regional trails. • Some participants may ride or carriage drive to the start of the trail. • Trail signage and ample and safe parking for floats will be required. • Generally spend up to 3 hours on a ride and ride up to 20km.	Easiest to moderate	Large
Inexperienced/ facilitated riders	• Riders may have very little or no experience. • This user type may participate in horse lead-line short ride, supported side-by-side riding, horse riding lesson or a commercial tour (including carriage driven tours, or unguided horse hire). • This user type will include riders participating in therapy and all abilities (e.g. HorsePower and Riding for the Disabled programs) and education groups. • This group of trail users may require infrastructure such as mounting blocks and fully accessible amenities. In some instances, provision of equipment and facilities will be the responsibility of the ride organiser. • Rides of up to 5km, may be on private property, at an equestrian centre or on a well-maintained trail.	Easiest and easy	Large
Endurance riders	• Riders participate in active and intensive recreational and competitive riding including organised endurance events. • Riders and horses will train regularly on a range of trails to improve endurance ability and progress through levels to achieve qualified endurance status. • Riders require trails with obstacles, technical challenges and mixed terrain types to develop the required speed, ability and endurance. Riders will use point-to-point trails or loop trails and combine trails to achieve their desired distance. • Space to set up check points on the trails and emergency access for event support vehicles is required. Event hub area will include start/finish, vet checks, catering, camping, parking etc. • Rides of varying distances are required, from 5km for beginners through to the penultimate championship distance of 160km. A typical event will offer a variety of marked courses, for example the Jarrahdale event in 2023 had 11km, 25km, 40km and an 80km (two laps of the 40km course).	Easy to extreme	Moderate

Type	Description	Preferred trail class	Market size
Club riders	• Riders who regularly participate in clubs such as horse trekking clubs and Pony Club WA. • Moderately experienced to highly experienced riders, however, may also include new novice riders who are mentored and supported by other club members. • Seeking an enjoyable nature experience with social opportunities and option of increased degree of technical challenge. • May travel together to regional trails, participate in horse trekking and stay overnight in campgrounds or horse friendly accommodation on private properties. • Ample and safe parking for floats, water points, and campgrounds are required. Horse yards may be needed. • Ride organisers require good pre-visit information and use trailhead information to prepare for activities. • Generally ride 20–40km per day.	Easy to extreme	Moderate
Carriage drivers	• Carriage drivers who actively participating in competitive events, carriage club activities, recreational driving, horse training and exercise. • Combined driving competitions consist of phases including dressage, cone driving, and a marathon section on roads and trails incorporating obstacles. • Carriage drivers may also use trails for OzTrek activities (tests horse and driver combinations through a range of challenges and disciplines) and Park Drives ('show and shine' opportunities that are open for the public where drivers dress up and present a range of skills). • Drive distances vary and may include recreational driving 10–15km, competition driving courses of approximately 17km and long-distance drives over multiple days covering 20–30km per day. • Read more in Section 2.5 Understanding carriage driving.	Easiest to difficult	Small
Cross country riders	• Cross country requires both horse and rider to be in excellent physical shape and to be brave and trusting of each other, riders are highly competitive and well skilled. • Cross country riders utilise designated constructed courses with built obstacles for cross country events. • Cross country events will usually be hosted on private land or a club event yards / course. • Although cross country riding does not use horse trails generally, cross country riders will utilise trails from time to time for training purposes and may be seeking out natural jumps and obstacles to develop both horse and rider skills, fitness, confidence and trust in one another.	Moderate to extreme	Small

2.3 Horse trail experiences

Horse trail experiences in WA are in rural, peri-urban, or natural settings and are primarily located on land managed by local governments or DBCA's Parks and Wildlife Service.

Horse riders may sometimes access private property with landowner permission, while commercial operators offer riding tourism products within a setting that they have obtained permission to operate in.

Some horse trails include road segments. Riders and carriage drivers are permitted to travel on WA roads, on the shoulder of a road and on footpaths and nature strips by following Road rules for horse riders and animal drawn vehicles.

Jesters Flat. *Photo—Tourism Australia*

Horse trail settings and experiences often reflect historical land-use, with routes like the 10th Light Horse Bridle Trail, Collie-Darkan Rail Trail, Shannon National Park trails and the Warren Blackwood Stock Route connecting riders to regional history.

Some local government areas with a large horse ownership population are working to facilitate connecting trails between riding nodes. For example, in the Shire of Serpentine Jarrahdale, it is possible to ride across several interconnected horse trail networks.

Short horse trails of up to 14km are usually a part of a local trail network. Most are linear out and back style trails or loop trails offering ride experiences at the easier end of the trail classification spectrum, explained in Section 11. Short trails are important local trails loved by residents and visitors alike.

Medium distance trails, typically in the 15 to 20km range are found state-wide in a variety of environments and at a range of classification levels.

Long distance trails offer multi-day experiences that can be undertaken as an end-to-end journey or in shorter segments over time. Access points along the route allows users to customise their own itineraries. Riders typically cover between 20–40km per day. These trails often cross multiple land tenures.

On long trails, riders generally arrange for a support person to move their horse float and equipment, meeting them at designated finish points or overnight campsites. They may also pre-arrange for horse and rider provisions at campsites along the route. These trails pass through a variety of rural and natural landscapes and connect to towns for essential services and support.

Long distance trails have potential to attract both local and visiting riders from interstate and beyond.

2.4 Understanding horses

Horses, donkeys and mules (a cross between a horse and donkey), like dogs, are sentient animals with different temperaments, life experiences and levels of training. Unlike dogs, a horse is categorised as a 'flight' animal, meaning that they have good hearing, sense of smell, and a wide field of vision because of the location of the eyes towards the side of the head. Flight animals have evolved to respond to threats to their survival or safety, which is noticeable by behaviour displays such as laying back of the ears or quickly jumping sideways from loud noise or an unfamiliar object. Riders train horses to respond to cues so that both rider and horse can participate in a safe trail riding experience. Horses pulling carriages often wear side blinders to limit peripheral vision, and prevent the horse being startled or distracted.

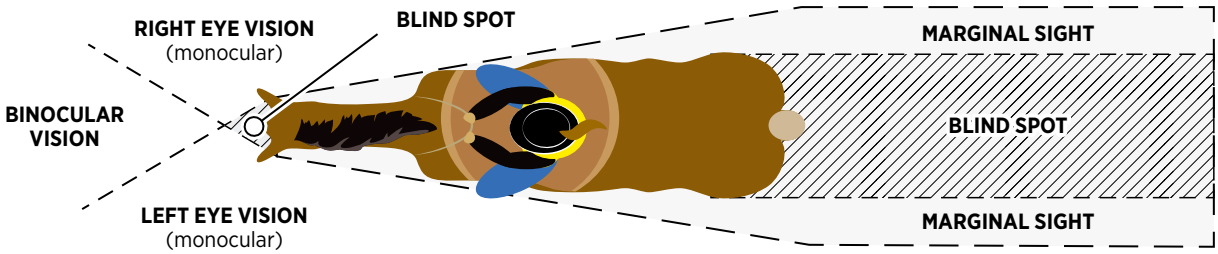
On shared use trails, some horses are accustomed to objects such as brightly coloured backpacks or bicycles, but others might have limited trail experience and appear to act in a nervous or agitated manner. To ensure the safety of all trail users, give way rules and passing etiquette should be outlined on signage and in trail codes of conduct. Read more in Section 8.6 Signs and 9.4 Codes of conduct.

Tips for trail planners and builders

Community engagement is a critical component of the Trail Development Process. Seeking advice from experienced horse owners is an excellent opportunity to ask about horse's senses (sight, smell, hearing, touch and taste) and possible horse reactions to planned infrastructure, thereby identifying possible problems and hazards.

Panton Hill, Victoria. *Photo—Karen Egan Photography*

Figure 1: How a horse sees[16]



16 Adapted from Hancock et al., *Equestrian Design Guidebook for Trails, Trailheads and Campgrounds,* 2007

Space considerations

Horse riders require more space than other trail user groups. The dimensions of horse trails will vary according to the user type and trail classification. The space required for safely passing other trail users, moving around trail infrastructure and turning need to be considered along with adequate stirrup and overhead clearance. Figures 2 to 4 provide a general guide to trail user dimensions and minimum dimensions for shared use trail. Guidance on trail dimensions is provided in Section 11 Classification and Appendix C Trail corridor.

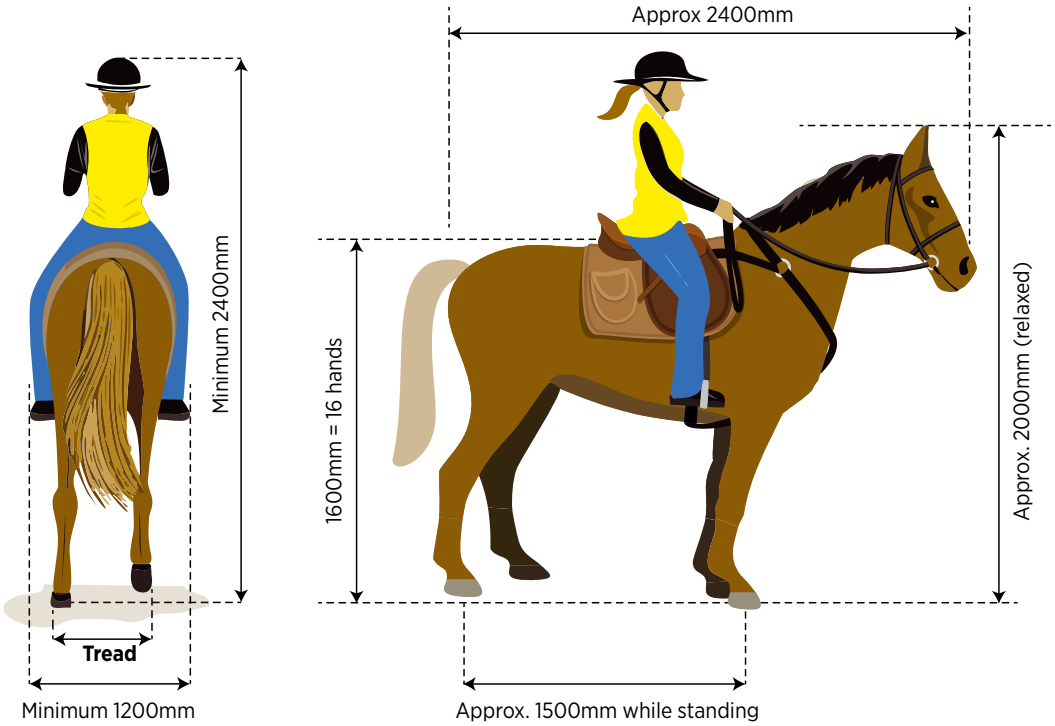


Figure 2: Typical horse and rider dimensions

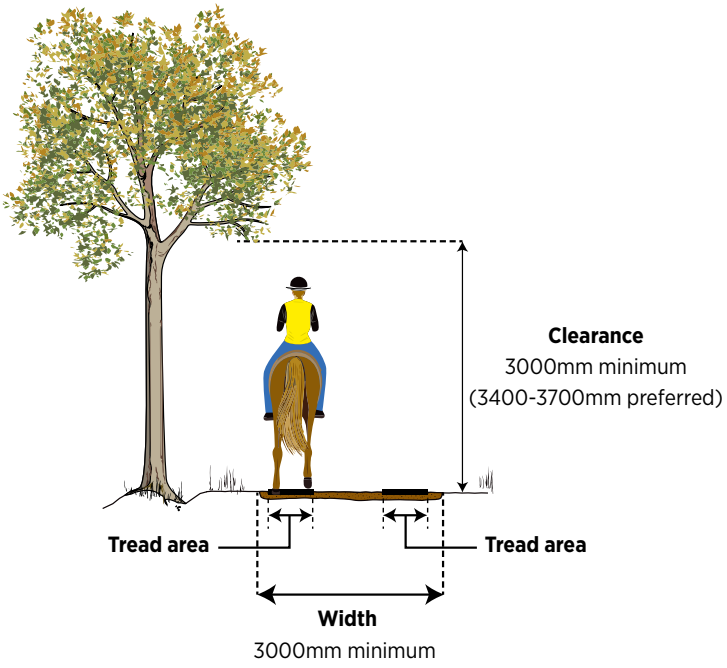


Figure 3: Shared use trail

2.5 Understanding carriage driving

Carriage driving includes activities with horse drawn carriages and carts.

Carts and carriages terminology.

The terms *cart* and *carriage* are often used interchangeably, as are *harness horse* and *carriage horse (or pony).*

A *cart*, also sometimes referred to as a *buggy,* will generally have two wheels and be drawn by a single horse. Ponies or donkeys can also be used.

A *carriage* has four wheels, and depending on its weight, may be drawn by a single horse or by a team of animals.

There are always exceptions, a big four-wheeler for working loads is also referred to as a cart.

In WA, carriages and carts are generally a minimum of 1.4 metres wide. Wider variants include wheelchair-accessible, pairs and older large carriages. Figure 4 provides some guidance on minimum dimensions for a simple two-wheel cart.

A significant portion of carriages used in WA are four-wheel marathon competition carriages, these have a central turntable providing enhanced manoeuvrability and turning capacity.

The primary limitation to carriage driving activities on WA's trails, is the availability of accessible and suitable routes. The presence of bollards, gates and step-overs frequently hinders access.

Carriages and carts are generally adaptable to various trail surfaces, though they may face difficulties on stretches of deep sand or rocky terrain, particularly if the ground is loose or uneven. Water crossings and fords are typically accessible, while bridges must be an appropriate width to accommodate.

To ensure safety, trails designed for carriage driving must be sufficiently wide and clear, allowing drivers to pass other trail users and turn around if they encounter unexpected obstacles such as fallen trees. A carriage horse can only reverse for a few strides.

The recommended minimum trail tread width for a single horse pulling a cart/carriage is two metres, while 3.6–4 metres width is preferable, providing ample space for careful passing and turning of all but the biggest horse drawn vehicles (larger vehicles are usually only used for street displays). For shared or dual direction trails, this width may need to increase to accommodate multiple users.

Outback Pioneers Cobb and Co. Stagecoach Experience.
Photo—Tourism and Events Queensland

Murray Districts Carriage Driving Club, Dwellingup.
Photo—Pat Rattenbury

Denmark-Nornalup Rail Trail. *Photo – Kathy Miles*

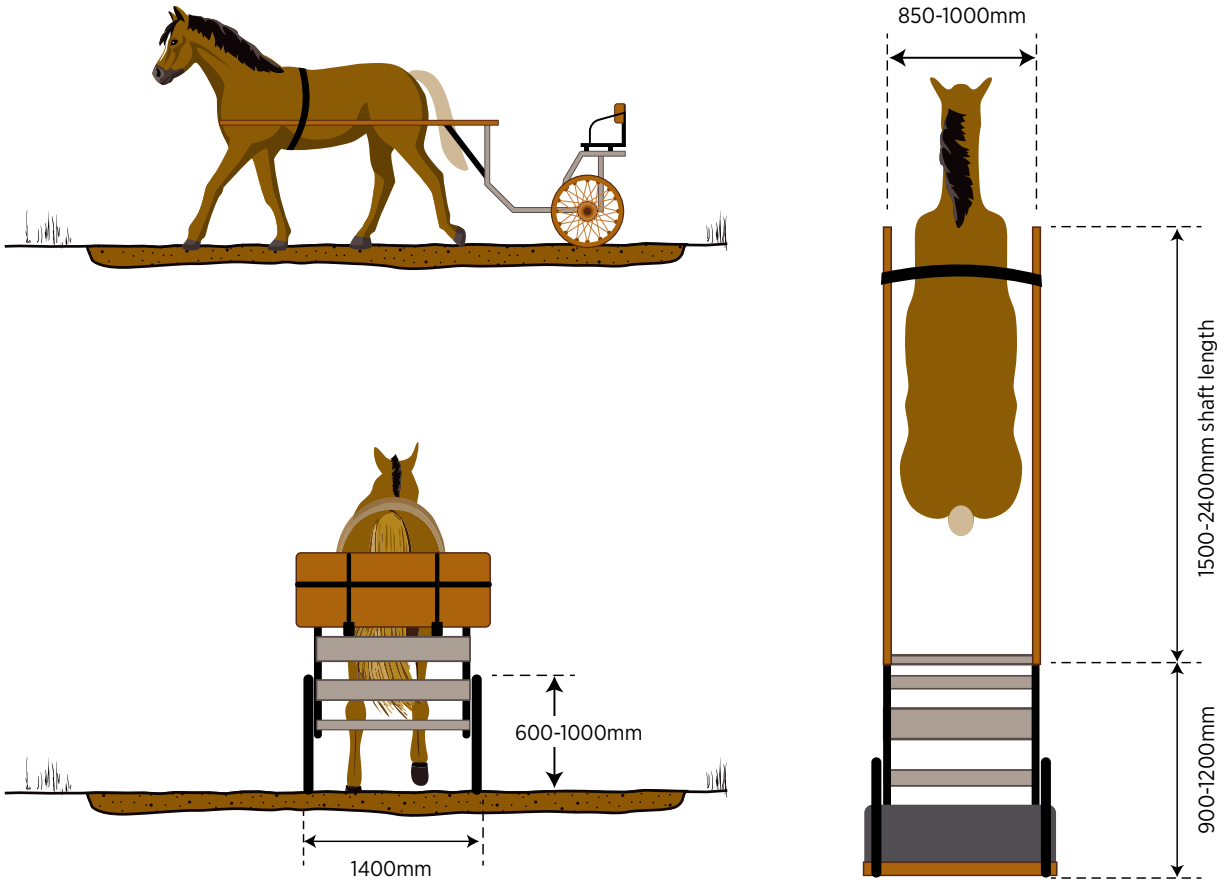


Figure 4: Simple two-wheel cart – minimum dimensions[17]

17 Adapted from Hancock et al., 2007, Chapter 4 with advice from Murray Districts Carriage Driving Club, Western Australia

2.6 Tourism markets

Tourism demand

Adventure tourism is a niche, but growing sector of the tourism industry characterised by outdoor physical or leisure activities in nature that contain some element of perceived risk or may be outside of the participant's comfort zone.

Adventure tourism in Australia was valued at $22.4 million in 2021 and estimated to grow to $33.5 million by 2027. Soft adventure tourism (which includes the sub-sector horse riding) is the biggest contributor to the sector, accounting for two thirds of all adventure tourism.[18]

The South West Edge Trail Tourism Experience Opportunities Report[19] states that horse or equestrian tourism encompasses a range of activities, including participation in competitive events and attendance at horse racing events, as well as undertaking horse tours.

Horse tour products fall into four major categories:

- guided commercial horse treks and trail rides
- farm stays, guest and working stations
- expert riding clinics and riding camps
- horse-drawn carriages where clients need no riding skills and have no direct interaction with horses.

The report also states that within horse tourism literature, a distinction is often made between horse rental, which refers to horse riding sessions less than a day, and horse trekking, referring to a trip of more than 24 hours.

Women far outnumber men in equestrian tourism activities, with some international retailers stating that 70–80 per cent of their clients are female.

Some of the benefits associated with horse trail tourism include:

- dispersion of visitors into regional areas
- increased density and diversity of tourism experiences so that visitors stay longer and spend more
- overcoming seasonality of destinations.

International horse riding

The *Future of Global Tourism Demand* report reveals that one in five 'out of region travellers' are interested in horse riding, with the greatest interest among 'luxury travellers' (24 per cent) and 'working holiday makers' (32 per cent).

Those interested in horse riding tend to be younger, typically between 18 and 29 years old, are predominantly female and have below-average incomes.

The strongest travel motivations are "into nature", "exploration" and "adventure". There is strong affinity between horse riding and adventure sports.

Boranup Karri Forest, Leeuwin-Naturaliste National Park.
Photo—Russell Ord Photography

18 Allied Market Research, *Australia Adventure Tourism Market, Opportunity Analysis and Industry Forecast, 2021—2027*

19 Tourism WA, South West Edge Trail Tourism Experience Opportunities, 2023

Table 3: Interest in horse riding across the globe [20]

Market	Interest %	Rank out of 89 Experiences	Size ('000)
Global	**20%**	**68**	**25,056**
India	32%	44	1192
USA	25%	46	6539
China	21%	52	5912
Canada	22%	53	1364
Malaysia	26%	56	433
Singapore	22%	60	334
Australia	**18%**	**66**	**1614**

Horse riding experiences rank in the top 50 in the Indian and US markets.

International destinations renowned for horse riding experiences include Alisal, California; Half Moon, Jamaica; The Silk Road in Kyrgyzstan; La Constancia, Argentina and Ishetar, Iceland.[21]

Domestic horse riding

The *Future of Global Tourism Demand* report states that 18 per cent of Australians are interested in horse riding experiences ranking the activity 66th out of 89 experiences.[22]

Limited research or data exists on visitation to Western Australia.

WA horse trail visitor markets

Research on horse tourism visitor segments is limited, but an Australian study identifies two key segments:

Tourists hiring horses—inexperienced riders with a range of motivations including 'always wanted to ride', event-focused riding such as hen's parties, and former horse riders returning to riding.

Tourists who own horses—regular riders who own their own horses or have access to horses that they use for recreational riding. Some of these riders travel regularly to ride for training, events, pleasure and holiday activities, including internationally.

However, international analysis shows that multi-day horse trekking tours cater to riders of all skill levels, including beginners, indicating that the appeal of horse trekking extends beyond those who own or regularly ride horses. Therefore, developing horse tourism experiences should consider a wide range of skill levels to accommodate diverse visitor needs.

Horse riding and trekking experiences in the Kimberley and Margaret River regions are marketed across Australia and internationally as premium nature experiences.

20 Tourism WA, *South West Edge Trail Tourism Experience Opportunities*, 2023
21 Tourism Australia, *The Future of Global Tourism Demand*, 2022
22 Ibid

Kimberley horse riding holidays. *Photo—Diggers Rest Station*

2.7 Data collection

Data collection is paramount for progressing experiences suited to the needs and demand of trail users.

To understand the demand for horse riding trails, several data sources are available.

- National surveys of physical activity participation:
  - Sport Australia AusPlay data with data visualisation by state, activity, demographics, age and health.
  - Stakeholders including ATHRA, Outdoors WA, DLGSC and DBCA can be consulted to ascertain recent participation reports and strategies.
- Tourism data including Tourism Research Australia's National Visitor Survey (NVS) and International Visitor Survey (IVS) which monitor visitors, nights and spend.

These surveys and reports form the basis of the factsheets published on Tourism WA's corporate website.

Up to date and detailed data for both residents and visitors can be obtained through:

- Fact sheets at a regional and local level at Destination insights—Tourism Western Australia that provide insights into an area's visitation breakdown such as intrastate/ interstate and international breakdowns, visitor spend, number of nights and purpose of travel. This sort of information can be useful for trails stakeholders to understand their areas current visitation profile. They are updated yearly with significant latency.
- Information on visitor experience and expectations and Aboriginal tourism snapshots can be found at WA Aboriginal tourism snapshot—Tourism Western Australia.
- Insights into the Australian domestic market and Tourism WA's 11 key international markets at Market insights—Tourism Western Australia.
- Local government planning, where available e.g. Shire of Serpentine Jarrahdale Equine Trails Master Plan Summary.

Trail design and management can be assisted by using data that has been gathered on the trail or through stakeholder engagement.

Data collection strategies include:

- motion / trail counters
- physical counting
- satisfaction surveys (online or in person) – requires approval from Visitor and Social Research Unit if on DBCA managed trails
- scientific assessment of trail surface changes, including photographic monitoring
- event participation numbers and details.

Other sources of information may include:

- Department of Biodiversity Conservation and Attractions annual reports
- Australian Bureau of Statistics
- Google Trends provides anecdotal insight
- Trails WA website and social media channels provide detailed information on trail users and demographic profiles of online users using web traffic analysis
- trail apps and websites that track and record collective activity
- organisations and volunteers involved in trail management and maintenance.

Jarrahdale. *Photo—Caren Earl*

3. Aboriginal collaboration

WA is rich with ancient trails traversing every type of landscape. Aboriginal communities and Traditional Owners across WA are responsible for these trails, as a means of connecting and caring for Country.

The Aboriginal Empowerment Strategy 2021–2029 (AES) seeks to contribute to better outcomes for Aboriginal peoples, built around genuine partnerships and engagement with Aboriginal stakeholders, strong accountability, and culturally responsive ways of working.

The WA Government Closing the Gap Implementation Plan (CTGIP) addresses the socioeconomic targets and priority reforms outlined in the National Agreement on Closing the Gap.

The AES and the CTGIP are complementary and mutually reinforcing, as they both seek to empower Aboriginal peoples to have greater control over their lives and futures, and to ensure that government policies and services are responsive, respectful and effective.

Joint management and cooperative management of the conservation estate in WA allows Aboriginal peoples to have an active role in the management of land and waters to which they have a traditional connection.

Joint management arrangements are set to expand under the WA Government's Plan for Our Parks initiative and offer a significant opportunity to work alongside Aboriginal communities in land management and trail development.

Trail development can be a very positive activity, strengthening reconciliation and adding enormous value to the experience of trail users. Trail projects also provide opportunities for Aboriginal peoples to access jobs and develop businesses.

Co-design with Aboriginal peoples through meaningful consultation, engagement and leadership strengthens partnerships and provides significant benefits to trail planning and the trail user experience.

El Questro Station. *Photo—Big Sky Horses*

Heritage and approvals

Aboriginal heritage holds significant value to Aboriginal peoples for their social, spiritual, historical, scientific or aesthetic importance within Aboriginal traditions and provides an essential link for Aboriginal peoples to their past, present and future.

The *Aboriginal Heritage Act 1972* is the legislation that manages Aboriginal heritage in Western Australia. The laws require approval for activities that may impact or harm Aboriginal heritage.

The Aboriginal Heritage Act 1972 Guidelines provide practical guidance to assist landowners on the Act and in particular the requirement for a section 18 consent. More information is available at Aboriginal Heritage Approvals.

The *Conservation and Land Management Act 1984* (CALM Act) provides the legal framework for Traditional Owners to have a formal role in the management of Western Australia's conservation estate and recognises the intrinsic connection that Aboriginal peoples have with the land and sea.

Under the CALM Act, DBCA has a legislative responsibility to ensure that the management of all CALM Act lands and waters protects and conserves the value of the land to the culture and heritage of Aboriginal peoples, particularly from material adverse effect.

Joint and cooperative management partnerships

Management partnerships are in place across the State between Aboriginal peoples and DBCA. Through the State Government's Plan for Our Parks initiative and other agreements, DBCA is working with Traditional Owners to create and jointly manage additions to the conservation estate.

One of the primary objectives of the CALM Act is to protect and conserve the value of the land to the culture and heritage of Aboriginal persons. DBCA recognises the unique role and expertise of Traditional Owners and supports the aspirations of Aboriginal peoples to be involved in the management of country and threats to biodiversity, and to carry out traditional activities on Country.

Traditional Owners and DBCA make decisions and set goals together in formal joint management partnerships. DBCA staff and Aboriginal rangers are responsible for day-to-day work in jointly managed parks.

Cooperative management arrangements are being set up to provide a voice for Noongar Traditional Owners in how CALM Act land and waters are managed in the south-west of the State.

Working on Country

Country is the term often used by Aboriginal peoples to describe the lands, waterways and seas to which they are connected. The term contains complex ideas about law, place, custom, language, spiritual belief, cultural practice, material sustenance, family and identity.

These guidelines support the protection and celebration of Country, embodied in principles of working with nature, landscape, topography and vegetation as well as ensuring cultural and environmental values are protected by following the Trails Development Series.

Cultural protocols

There are many Aboriginal groups within Australia, and each have a different way of living.

Different Aboriginal clan groups have different languages, customs and laws so what is relevant to one group may not be the same in another part of the State.

Aboriginal peoples have their own governance and decision-making processes. Aboriginal peoples are responsible for their own aspects of culture and do not speak for all Aboriginal business. Some Aboriginal community representatives can't decide immediately and need to return and discuss with their group.

Appropriate cultural protocols need to be recognised for relevant communities involved in trails projects. It may be advantageous for a trail project team to undertake cultural awareness training, which may be offered by the local community, or someone recommended by them.

Community engagement

Building relationships and partnerships require continuous engagement and is most successful when consultation is positive, open and transparent.

Traditional Owners are the authority on Aboriginal culture and heritage. Engagement with Traditional Owners and Aboriginal communities needs to be front and centre when planning and designing trails.

Traditional Owners and local Aboriginal communities should be engaged early in the Trail Development Process. This enables them to be part of the decision-making process, ensuring appropriate planning and design solutions are chosen and mitigates impacts on Aboriginal culture and heritage.

Aboriginal design elements should be lead or co-lead by appropriate community members and must be approved by consulted Aboriginal Elders. If approval is not given, the knowledge should not be used in the project.

Indigenous knowledge protocols

Indigenous knowledge refers to the range of knowledge held and continually developed by Aboriginal peoples. It includes traditional cultural expressions, such as stories, dance and art as well as traditional knowledge relating to a range of areas such as science, ecology, agriculture and medicine.

Aboriginal people's knowledge of their cultural and spiritual values must be respected as being sensitive information that may be confidential and involve intellectual property rights.

Trail projects need to ensure that Indigenous knowledge that is gathered, stored and used is managed respectfully and appropriately.

Cultural recognition and respect

Trails provide an excellent way to value, celebrate and promote Aboriginal culture, languages, relationships to Country, knowledge and heritage.

Visitors to WA are eager to immerse themselves in Aboriginal cultural experience tied to the land and its people.[23]

By involving Aboriginal peoples, their cultural knowledge and values can be acknowledged and incorporated into the design and interpretation of the trails. This can enhance the cultural identity and pride of Aboriginal peoples, as well as educate and raise awareness among non-Aboriginal visitors about the history and significance of the land.

Trail projects can incorporate Aboriginal culture, with permission, through visitor interpretation including signs, structures and displays at trailheads and along the trail at important cultural sites. Sites for immersive activities such as yarning spaces can also be incorporated as appropriate.

The aim of visitor interpretation is to enhance understanding and reveal a site's meaning and significance to Aboriginal peoples in ways which are respectful, memorable and engaging.[24]

Aboriginal languages can be kept alive through using language names for places, plants, animals or other elements along trails.

23 Tourism WA, *Jina: Western Australian Aboriginal Tourism Action Plan 2021-2025*

24 DBCA, *Corporate Guideline 45 – Protect and Conserve Aboriginal Cultural Heritage*, December 2023

Tourism

Jina: Western Australian Aboriginal Tourism Action Plan 2021–2025 incorporates recommendations relating to trails as a means of enriching the lives of Aboriginal peoples.

Aboriginal tourism services can be encouraged and supported in trail projects to create immersive and on-Country experiences. This gives Aboriginal peoples the opportunity to care for Country through tourism, while sharing the world's oldest living culture with visitors.

The Western Australian Indigenous Tourism Operators Council (WAITOC) is the peak representative body for Aboriginal tours and experiences in Western Australia, where authentic cultural experiences at a state, national and international level are promoted.

WAITOC's interactive digital map showcases more than 100 Aboriginal cultural experiences including ancient stories, art, festivals and a range of activities from bushwalks, foraging, fishing, 4WD adventure and camping through to stargazing with the world's oldest living culture.

DBCA's Culture in the Parks program encourages Aboriginal peoples and organisations who would like to conduct Aboriginal cultural events in WA's national parks and other conservation reserves to apply to become local tourism operators. Tourism opportunities may include sharing language, stories, art and culture bush tucker tasting, and Aboriginal led trail experiences.

Information on visitor experience and expectations and Aboriginal tourism snapshots can be found at WA Aboriginal tourism snapshot—Tourism Western Australia.

Equine learning program group, Broome.
Photo—Kiera Ugle, Yawardani Janga - Horses Helping

Employment and trail management

Involvement of Aboriginal peoples in trail planning, design, construction and on-going management ensures a continual and wholistic interaction between trail projects and the community.

Aboriginal peoples can benefit from the economic opportunities that arise, including direct employment in planning, design, construction, maintenance, guiding, hospitality and other services. There are also indirect benefits from increased income and spending in local communities. This can lead to the development of Aboriginal-owned and operated businesses and social enterprises that can provide culturally appropriate and sustainable services for trail users.

Aboriginal peoples being involved in trails can assist in their obligations to care for Country.

Identifying roles, responsibilities and opportunities for local Aboriginal communities occurs in the Trail Development Process.

4. Stakeholders

Like any other facility, a trail needs to be well-planned and may be subject to many approval requirements.

An appropriate consultative approach will ensure that those with an interest in a trail project receive information about the project and can provide input and feedback.

If appropriate consultation and approval processes are undertaken, projects are more likely to be successful, receive funding support and avoid lengthy delays.

The Trails Development Series provides guidance on consultation, collaboration and approvals when developing a trail.

Part B: A Guide to Community Consultation outlines various approaches to community consultation and where it fits within each stage of the Trail Development Process. The guide also provides lists of potential government and community stakeholders.

Stakeholders specific to horse trails are listed in this section.

El Questro Station. *Photo—Big Sky Horses*

Department of Local Government, Sport and Cultural Industries

The Department of Local Government, Sport and Cultural Industries (DLGSC) purpose is to foster a cohesive, prosperous, vibrant and healthy Western Australian community. Its vision is that Western Australia is celebrated as the best place to live in Australia.

DLGSC's strategic priorities of 'prosperous industries and sectors', 'healthy living' and 'connected communities' are closely aligned to the intent of the WA Recreational Horse Trail Strategy which aims to enable access and encourage participation.

With active outdoor recreation a growing trend, DLGSC plays a significant role in trails. It coordinates the Trails Reference Group, convenes WA Trails Forums statewide, provides funding and is the lead agency responsible for the coordination and oversight of the WA Strategic Trails Blueprint 2022–2027. The department works closely with other agencies and organisations to deliver community outcomes.

DLGSC develops and implements government policy and initiatives in sport and recreation, while promoting participation and achievement to support a healthy lifestyle for all Western Australians though physical activity.

Department of Biodiversity, Conservation and Attractions

DBCA's Parks and Wildlife Service promotes biodiversity and conservation to enrich people's lives through sustainable management of Western Australia's species, ecosystems, lands and the attractions in its care.

Parks and Wildlife Service manages national parks, marine parks, State forests and other reserves, conserves our world-renowned native animals and plants, supports Aboriginal peoples in protecting their culture and heritage on parks and reserves and supports access to managed use and enjoyment of the State's wildlife and natural areas.

Many different forms of recreational activities are undertaken within these areas, with Parks and Wildlife Service being the largest provider of outdoor recreation opportunities in WA. They also manage horse trails in partnership with community groups.

Department of Planning, Lands and Heritage

The Department of Planning, Lands and Heritage (DPLH) is responsible for state level land use planning and management, and oversight of Aboriginal cultural heritage and built heritage matters. The department supports three Ministers and administers a wide range of legislation.

DPLH is responsible for the registration of protected Aboriginal cultural heritage sites and issuing of approvals relating to possible impacts on these. They also are responsible for management of unallocated Crown land.

Department of Water and Environmental Regulation

The Department of Water and Environmental Regulation (DWER) supports Western Australia's community, economy and environment by managing and regulating the state's environment and water resources.

DWER plays a key role in proposals for trail development within public drinking water source areas and assessing native vegetation clearing applications as well as permitting trail impacts to bed and banks in Rights in Water and Irrigation areas.

Department of Transport

The Department of Transport (DoT) leads the development of safe, integrated and efficient transport systems for the people of Western Australia. It provides integrated transport strategy, policy, planning and programs to optimise the current and future use of the transport network for moving people across metropolitan and regional WA.

DoT develops Long Term Cycle Networks (LTCNs) in collaboration with local government and works to create scenic paths that encourage people to walk, wheel and ride. The LTCN includes a Transport Trail category, which in certain instances, may have multiple users that need to be catered for.

Private landowners

There are numerous examples worldwide of commercial trail experiences and facilities successfully developed on private or leasehold property. For instance, El Questro in the Kimberley, offers independent and guided hiking, guided horse and 4WD trail experiences, and a range of complementary activities. Combined with accommodation and dining options, this leasehold property has become a visitor destination.

Local government

Local governments provide a range of services to the local community such as infrastructure, public health, planning and recreation. They work with businesses, service providers, charities, police and other groups to determine and deliver local priorities.

Local government works largely within Federal and State legislation. Land vested in local government may be appropriate for trail development and many local governments in WA provide trail opportunities for their residents, community and visitors.

Jarrahdale Equestrian Centre. *Photo—Allie's Captured Moments*

Trails WA

Trails WA is an independent, for purpose organisation that exists to facilitate advocacy for and the marketing of a high-quality trails network across WA. Through the Trails WA website and array of social media channels, WA residents and visitors can find information about trails across the State. Trails WA acts as a central source of accurate and sanctioned trail-related information, with the ability for trail managers, local governments and visitor centres to upload details of their well-managed trails to attract visitation. The organisation has developed a Trails WA accreditation program for Trail Towns with assessment criteria developed in partnership with DLGSC and DBCA's Parks and Wildlife Service. Additionally, Trails WA also formulates and promotes a list of top trails for the State and supports a Trail Friendly Business program for local business.

Outdoors WA

Outdoors WA is the peak body for the outdoor sector in Western Australia, including recreation, education and adventure tourism. It exists to provide advocacy, leadership and support to the outdoor sector in WA. Outdoors WA's vision is to see and support an empowered community actively engaged in the outdoors.

Members of Outdoors WA include outdoor education teachers, outdoor recreation leaders and adventure tourism operators as well as clubs, outdoor event organisers, retailers and professional associations.

Outdoors WA encourages the development of professional practice in outdoor education/recreation in WA, is in regular contact with the Department of Education and is part of the Outdoor Education Curriculum Advisory Group for the School Curriculum and Advisory Standards Authority.

Trails Reference Group (TRG)

The Trails Reference Group oversees the implementation of the WA Strategic Trails Blueprint 2022–2027. Membership includes representatives from State and local government agencies and community organisations.

Representative organisations, clubs and volunteers

There are several representative organisations and clubs across WA supporting horse trails in a myriad of ways – as users, event coordinators, trail managers, trail planners, and through promotions and advocacy, trail construction and maintenance. These organisations and clubs are predominantly made up of volunteers, passionate and dedicated to sustainable, enjoyable and high-quality trail experiences. Many are experts in their preferred trail category, with a wealth of knowledge and experience in various aspects of horse riding, trail projects, management and maintenance. They are more than willing to provide their support and advocacy.

Australian Trail Horse Riders Association (ATHRA)

ATHRA is a national body recognised by all levels of government as Australia's premier representative body for trail horse riders. ATHRA is governed by a national board with regional trainers in most states and territories. ATHRA has developed a range of nationally recognised horse riding policies, procedures, insurances, event protocols, codes of conduct and accreditation programs for clubs across Australia and works with state and regional governments on various access issues related to the best practice delivery of horse riding trails.

Trail Horse Implementation Strategy WA (THISWA) group

The THISWA group was formed to oversee the implementation of Taking the Reins—WA The Recreational Horse Trail Strategy. Membership includes representatives from State and local government agencies and community organisations.

Australian Carriage Driving Society

The Australian Carriage Driving Society is the leading organisation for the development, management, and promotion of carriage driving in Australia. Representing all carriage disciplines including pleasure and endurance driving, in Western Australia the society focuses on both competitive and recreational activities through its four regional clubs.

Equestrian WA

Equestrian Western Australia (EWA) is the state sporting association for horse sports in Western Australia, focusing on dressage, eventing, interschool jumping, para-equestrian, show horse, and vaulting. They govern the sport, implement policies, and manage the State Equestrian Centre in Brigadoon. EWA promotes and advocates for equestrian sports in WA and can be consulted to support planning of horse trail initiatives.

WA Horse Council

The Western Australian Horse Council (WAHC) plays a crucial role in the equine industry by advocating for horse owners, breeders, trainers, and other stakeholders. It influences legislation and policies affecting horse welfare and management, educates the public and professionals on horse care and emergency management, and fosters community through networking opportunities. Additionally, WAHC is involved in emergency response planning, collaborating with services to ensure horse safety during crises, and is a core member of the Committee for Animal Welfare in Emergencies (CAWE) and the Animal Emergency Incident Management Network (AUS/NZ).

Pony Club Western Australia

Pony Club Western Australia is an internationally recognised, voluntary youth association that offers opportunities for young people interested in horses and riding. It promotes the development of young riders through sportsmanship and citizenship. In Western Australia, the movement began in 1959 and includes over 55 clubs across 12 zones. Pony Club WA provides a supportive environment for young riders to develop skills and friendships through activities like working rallies, camps, and trail rides, based on the Pony Club Australia Syllabus of Instruction.

WA Endurance Riders Association (WAERA)

The Western Australian Endurance Riders Association (WAERA) is dedicated to the promotion, regulation, and coordination of endurance riding events within Western Australia. Its primary purpose is to uphold the highest standards of sportsmanship and horsemanship, encapsulated in its motto 'To Complete is to Win'. As the controlling body for endurance riding in the state, WAERA formulates and enforces rules, often in alignment with the Australian Endurance Riders Association (AERA). The association oversees various endurance events, including the prestigious Tom Quilty Gold Cup and the annual Western Australian Championship Endurance Ride. WAERA also focuses on the welfare of horses, ensuring that all riding and veterinary procedures are strictly followed. Additionally, it maintains comprehensive records of endurance rides, educates and accredits officials, supports members in national and international competitions, and promotes research and education related to endurance riding.

HorsePower Australia

HorsePower Australia is a registered voluntary, charitable, not for profit organisation that empowers individuals with diverse abilities to overcome physical, cognitive, emotional, and social barriers through horse-related activities.

HorsePower Australia offers programs such as riding, carriage driving, vaulting, hippotherapy, and walking with horses. These programs are available at affiliated centres across WA. The organisation is largely volunteer operated (96 per cent) and is part of a global movement, affiliated with the Federation of Horses in Education and Therapy International (HETI), along with Disability Sports Australia.

Loading a rider at HorsePower Margaret River.
Photo—HorsePower

Riding for the Disabled Association Australia

Riding for the Disabled Association Australia (RDAA) is a voluntary, nonprofit organisation that offers safe, healthy, and therapeutic horse-related activities for individuals with disabilities in Australia. Recognised by Sport Australia as the peak body for equestrian sport for people with disabilities, RDAA supports State and associate members, including eight in Western Australia. Their programs help individuals with disabilities experience enjoyment, challenges, and a sense of achievement, improving their quality of life, attaining personal goals, and developing life skills through equestrian activities.

Tourism

Tourism WA's goal is to grow tourism by marketing WA as an incredible holiday and business events destination, attracting and promoting world-class sporting, cultural and arts events, and improving access, accommodation and tourism experiences.

Tourism Council WA (TCWA) is the peak body representing tourism businesses, industries and regions in Western Australia. Tourism WA provide funding to TCWA to deliver several industry capacity-building programs.

WA Indigenous Tourism Operators Council (WAITOC) is the peak representative body for Aboriginal tours and experiences in Western Australia and promotes authentic cultural experiences at a state, national and international level.

WA is divided into five tourism regions, each with its own Regional Tourism Organisation (RTOs), which is the peak marketing and management body for that particular region. The RTOs are an important link into the local industry. They build strong relationships with local tourism organisations and local governments to achieve better tourism outcomes and make the most of marketing activities.

Local tourism bodies such as local government authorities, local tourism organisations and visitor centres help strengthen local tourism in the region and support local tourism businesses.

WAERA Event, Jarrahdale. *Photo—Caren Earl*

Commercial operators

Horse trails provide a range of opportunities for commercial operators to host or support events, offer guided experiences and promote accessible services.

Linking with existing businesses and supporting the establishment of commercial ventures provides an opportunity for local communities to benefit from trail visitors while also providing additional reasons for visitors to travel for a trail experience.

Communities

Communities should be at the heart of trail development and management.

Trails can deliver flow-on business development opportunities from trail visitors, encourage local volunteers and advocates and provide trail experiences and health benefits for local communities.

Trails can be a supplier of local employment through trail construction and maintenance, which provide job opportunities for youth and others to remain in regional areas.

Community members will be invested for the long term if engaged throughout trail planning processes, resulting in a trail they own, have pride in, receive multiple benefits from and may volunteer to help maintain and manage.

Adjoining landowners

Neighbours and landowners that border or are close to trail developments are significant stakeholders that may be impacted by or benefit from trail developments.

5. Strategic and legislative context

State and local governments are responsible for the implementation of a wide range of laws and policies which impact new trail development and trail management. These laws and policies can have a significant influence on the location, construction, ownership and ongoing management of trails.

Trails cannot be considered in isolation and must be developed within strategic and legislative context. It is essential that careful consideration is given to all relevant legislation, policies, plans and strategies when planning a new trail or reviewing an existing one. Table 4 outlines the range of State, regional and local strategies and plans.

The Trails Development Series includes processes for checking and reviewing legislation, policies, plans and strategies. Compliance with relevant legislation is an important part of developing the Trail Proposal (Stage 1) of the Trail Development Process to ensure the project is viable.

A well-researched trail proposal aligned to relevant policies, plans and strategies will be more likely to attract funding and wider support.

Table 4: Relevant strategies and plans

State	Regional	Local
• WA Strategic Trails Blueprint 2022–2027 • State Government strategies and plans • Departmental policies and policy statements • State-wide trail strategies and plans • Trails Development Series • WA Horse Trail Management Guidelines	• Regional development commission plans • Regional tourism organisation plans	• Local Government strategies and master plans • Land and water management and business plans • Club and group strategies and plans
WA Recreational Horse Trail Strategy	**Regional master planning**	**Detailed trail planning**

Wild horses near Willie Creek Pearl Farm. *Photo—Lauren Bath*

5.1 Strategies

Western Australian Strategic Trails Blueprint

The WA Strategic Trails Blueprint 2022–2027 is an overarching guide for consistent and coordinated planning, development and management of quality trails and trail experiences across WA. It provides a vision, guiding principles, strategic directions and actions for consideration across State government, trail managers, landholders, trail support groups, tourism operators and the community. Implementation of the Strategic Trails Blueprint is overseen by the Trails Reference Group.

Taking the Reins—The WA Recreational Horse Trail Strategy 2015

Taking the Reins—The Western Australian Horse Trail Strategy outlines a strategic vision for recreational horse riding across WA. The strategy identifies the opportunities and benefits that horse riding offers the State whilst addressing key challenges.

This strategy has been developed to provide a coordinated and structured framework for decision makers, land managers, trail planners and the horse trail community, to work towards improved horse trail access, development and management whilst striving toward the overarching vision.

Jina: WA Aboriginal Tourism Action Plan 2021–2025

Tourism WA's Jina: Western Australian Aboriginal Tourism Action Plan 2021–2025 sets the direction for government and the tourism industry to deliver transformational change for Aboriginal tourism through job creation, establishing new innovative cultural experiences and positioning Western Australia as an aspirational cultural holiday destination. The plan incorporates actions that support Aboriginal employment and economic development through trails projects.

Broome. *Photo—Sheryl Carter, Yawadani Janga*

Bald Hill Lookout, *Jarrahdale Equestrian Centre. Photo—Allie's Captured Moments*

5.2 Legislation

Aboriginal Heritage Act 1972

The amended version of the Aboriginal Heritage Act 1972 has been passed.[25] All landowners, be they freehold, leasehold, licensee, invitee or citizen, at large have one simple obligation: that is, to not knowingly damage an Aboriginal cultural heritage site, which has been the law since 1972. Landowners can make applications for a section 18 consent and other approvals through ACHknowledge–a dedicated Aboriginal cultural heritage portal.

Conservation and Land Management Act 1984

The Conservation and Land Management Act 1984 (CALM Act) makes "better provision for the use, protection and management of certain public lands and waters and the flora and fauna thereof, to establish the Conservation and Parks Commission, to confer functions relating to the conservation, protection and management of biodiversity and biodiversity components, and for incidental or connected purposes."

The CALM Act applies to State forest, timber reserves, national and conservation parks, nature reserves, marine parks, management areas and other lands defined in the Act.

Under CALM Act regulations, a person must not, without lawful authority, bring an animal onto CALM land. Horse riding on trails and roads that are a part of CALM Act lands is only allowed in designated areas. In all other areas, a lawful authority may be granted in accordance with regulations.

Clearing of native vegetation

Under the *Environmental Protection Act 1986* (EP Act) the clearing of native vegetation is an offence, unless done under a clearing permit, or done after a person has received notice under section 51DA(5) of the EP Act that a clearing permit is not required, or the clearing is for an exempt purpose.

Where clearing is proposed in a gazetted *Country Areas Water Supply Act 1947* (CAWS Act) Clearing Control Catchment Area or Water Reserve:

- additional requirements for the approval to clear native vegetation under the CAWS Act is required (see Part 11A)
- if an EP Act exemption applies to a clearing proposal within a gazetted Catchment Area or Water Reserve, or the clearing falls under an EP Act section 51DA (5) notification, a CAWS Act licence to clear is then required.

Rights in Water and Irrigation Act 1914

The *Rights in Water and Irrigation Act 1914* (RIWI Act) provides for the regulation, management and protection of water resources.

A permit may be required for an activity that has the potential to damage, obstruct or interfere with water flow or the bed and banks of a watercourse or wetland, such as installing a crossing, culvert or viewing platform. A flowchart has been developed to enable a self-assessment of whether a permit may be required, see Do I need a permit?

A water licence may be required to take surface water or groundwater for construction of trails or facilities, see Do I need a water licence or permit?

DWER have also published a fact sheet to assist applicants with permits.

25 Accessed from https://www.wa.gov.au/organisation/department-of-planning-lands-and-heritage/aboriginal-heritage-laws

Road Traffic Act 1974

According to the *Road Traffic Act 1974* and the Road Traffic Code 2000 horse riders and carriage drivers are permitted to travel on roads, unless a road access sign says otherwise, or if the road is a designated freeway.

Animals and animal drawn vehicles, including horses, are treated in the same way as other vehicles under the Road Traffic Code 2000. Horse riders and carriage drivers are bound by the same rules as other road users.

Unlike most vehicle drivers, people riding animals are permitted to use footpaths and nature strips provided they give way to pedestrians.

If horse riders are walking and leading a horse, then they are defined as a pedestrian and must obey all rules relating to pedestrians.[26]

The Road Safety Commission have produced a fact sheet summarising rules and regulations applying to animals and animal drawn vehicles.

Horse riding on dedicated public roads within estate managed by DBCA must comply with the *Road Traffic Act 1974* and the CALM Act.

Local Government Act 1995

The *Local Government Act 1995* may vary vehicle access to thoroughfares managed by the local government authority as per Part 3, Subdivision 5 – Certain provisions about thoroughfares; 3.5 Closing certain thoroughfares to vehicles.

Public drinking water source area legislation

The Department of Water and Environmental Regulation legally defines public drinking water source areas to protect water quality and public health. Public drinking water source areas are constituted under the Country Areas Water Supply Act 1947 and *Metropolitan Water Supply, Sewerage, and Drainage Act 1909* and by-laws apply in these areas. The *Water Services Act 2012* and its regulations also applies to protecting water service works and water quality within public drinking water source areas.

Other legislation

Other legislation and requirements needing consideration includes:

- *Biodiversity Conservation Act 2016*
- *Environmental Protection and Biodiversity Conservation Act 1999 (Federal)*
- International agreements and treaties e.g. Ramsar wetlands, World Heritage and National Heritage
- *Planning and Development Act 2005*
- *Heritage Act 2018*
- *Disability Discrimination Act 1992*
- *Occupier's Liability Act of 1985*
- *Civil Liabilities Act 2002*
- *Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974*.

26 Road Safety Commission, *Road rules for animals fact sheet v2.pdf*, 2022

5.3 Policies and guidelines

Local government

Depending on land tenure, local governments may have their own policies and regulations to be adhered to when planning trails.

The WA Local Government Directory provides a complete listing of all of WA's local government authorities.

DBCA's Parks and Wildlife Service Policy Statement 18 Recreation, Tourism and Visitor Services

Policy Statement 18 provides the basis for planning and management for recreation, tourism and associated visitor activities on lands and waters managed by the Parks and Wildlife Service.

The policy states the Parks and Wildlife Service will ensure a diversity of sustainable nature-based recreation opportunities and high-quality visitor experiences are provided on their managed lands and waters.

Corporate Guideline 32 provides guidance to the department in the provision of world-class recreation and tourism opportunities, services and facilities for visitors to the lands and waters managed by the department.

DBCA's Parks and Wildlife Service Policy Statement 53 Visitor Risk Management

Policy Statement 53 outlines the Parks and Wildlife Service's commitment to the safety of visitors to Parks and Wildlife-managed land and waters, and the strategies the department has adopted to manage visitor risk.

The policy is supported by operational guidelines and a visitor risk management program which comprises identification, analysis and efficient control of exposure to public liability risks. The policy states the department will aim to manage the potential for injuries and misadventure to visitors in a manner that does not render the environment sterile or unnecessarily diminish visitor use and enjoyment.

Aboriginal Heritage Act 1972 Guidelines

The *Aboriginal Heritage Act 1972* Guidelines provide practical guidance to assist landowners on the Act and in particular the requirement for a section 18 consent.

The purpose of these guidelines is to assist landowners to determine whether a consent from the Minister for Aboriginal Affairs is required to undertake a proposed land use that may impact Aboriginal heritage and avoid committing an offence under the *Aboriginal Heritage Act 1972.*

State Planning Policy 2.0 Environment and natural resources policy

The Department of Planning, Lands and Heritage (DPLH) State Planning Policy 2.0—Environment and natural resources policy defines the principles and considerations that represent good and responsible planning in terms of environment and natural resource issues within the framework of the State Planning Strategy.

Public drinking water source area policy (PDWSA)

The Department of Water and Environmental Regulation (DWER) Strategic policy—Protecting public drinking water source areas in WA, provides for the continued implementation of WA's existing integrated land use planning and PDWSA protection program.

DWER's Policy: Land use compatibility in public drinking water source areas maximises the protection of water quality and public health, by having a presumption against intensifying land uses. This policy is implemented through Water quality protection note (WQPN) 25: Land use compatibility tables for public drinking water source areas.

DWER Operational Policy 13: Recreation within public drinking water source areas on crown land aims to protect drinking water quality and public health by managing recreation in PDWSAs on crown land.

For the process of assessing events or facilities within public drinking water source areas on Crown Land, see Operational Policy 13 and Water Quality information sheet 34 application form, Recreation proposals within public drinking water source areas on crown land. This process can take up to two months from the submission of all required information.

Horse riding and trails within legally constituted public drinking water source areas needs to be assessed against legislation and policy. On Crown land in public drinking water source areas, horse riding is generally incompatible unless it occurs on public roads or on approved designated sites.

The Public drinking water source areas (PDWSA) online mapping tool, is publicly available and provides the location of public drinking water source areas and protection zones.

PlanWA is a public mapping tool that provides access to planning, schemes, land and heritage data across Western Australia.

Denmark-Nornalup Rail Trail. *Photo—Meranda Toner*

5.4 Tenure compatibility (Parks and Wildlife-managed land)

The following section provides guidance on potential suitability of various tenures for horse trails on Parks and Wildlife-managed land and explains each type of tenure.

Horse riding activities are only permitted on DBCA managed lands in those locations where the impacts are considered manageable. Generally, this will mean that horse riding may be approved on land categorised under section 5(1)(g) and 5(1)(h) of the CALM Act, State Forest and timber reserves, national parks and conservation parks, provided that such activities will not detract from the overall values of the area, and subject to the DBCA policy. Horse riding may not be allowed in areas of special scientific or cultural value such as wilderness/ remote areas or other areas requiring special protection. Horse riding will generally not be permitted in nature reserves, except in certain circumstances.

Reserve boundaries on beaches, such as high or low water mark, needs to be considered. In addition, some horse riders like to take their dogs, so consideration may be given to designating areas as horse and dog areas.

National parks

National parks are areas of national significance for scenic, cultural, biological and recreational value and can accommodate recreation consistent with maintaining these values. National parks are managed to conserve wildlife and the landscape, for scientific study, to preserve features of archaeological, historical or scientific interest and to allow forms of recreation that do not adversely affect their ecosystems or landscapes.

Conservation parks

Conservation parks have the same purpose and are managed to conserve the same elements as national parks, but they have regional or local, rather than national significance.

State forest and timber reserves

State forest is managed for multiple purposes that include sustainable timber production, nature conservation, recreation and the protection of water catchments. It also provides for commercial activities such as beekeeping and the harvesting of flora. State forests containing exotic trees such as pine plantations, are managed predominantly for timber production.

Timber reserves created under the CALM Act are managed identically to State forest.

Forest conservation areas are primarily managed for biodiversity conservation, hence they will not be available for timber production, but may be available for other uses such as wildflower picking, beekeeping, recreation, craft wood collection and possibly firewood collection.

Nature reserves

Nature reserves are terrestrial areas set aside for the conservation of flora and fauna, due to their high conservation value and representation of natural ecosystems, and because they contain or provide habitat for species of plants or animals. They are managed to maintain and restore the natural environment and to protect, care for and promote the study and appreciation of Indigenous flora and fauna. Recreation that has minimal impact on the conservation values of the reserve may be considered.

Regional parks

Regional parks are open spaces identified as having regionally significant value for conservation, landscape and recreation. Regional parks are a range of protected areas including foreshores, ocean beaches, wetlands and the Darling Scarp. Regional parks may comprise lands with a variety of tenures. These may include Crown land vested in Commonwealth, State or local government authorities, and private (freehold) lands where the agreement of the landowner is obtained. They may also include unmanaged reserves or unallocated Crown land. This land management system provides the opportunity for a coordinated planning and management approach by the tenure owner and land management agencies.

Other reserves managed by the Parks and Wildlife Service

These are reserves under section 5(1)(g) or 5(1)(h) of the CALM Act, vested in or placed under the care, control and management of the Conservation and Parks Commission and managed for a variety of purposes including recreation and conservation, for example part of Lane Poole Reserve.

Land managed under other sections of the CALM Act

In accordance with section 8C of the CALM Act the Governor by order may place unallocated Crown land or unmanaged reserves under the management of the DBCA Director General (DG). On the recommendation of the Minister for Land, the Governor can specify the functions in relation to management of that land. Generally, this management will be consistent with the powers of the DG and in accordance with the CALM Act.

Land subject to management agreement under section 8A of CALM Act. Section 8A of the CALM Act allows the DG to enter into an agreement with the owner of freehold land, Crown reserves or pastoral leases for a specific purpose consistent with the CALM Act.

The bulk of land managed under section 16 is for regional parks. Some portions of pastoral leases are managed under section 16A for conservation purposes.

Miscellaneous reserves, freehold land and former leasehold land can be vested in or held in the name of the DBCA. These lands are held for specific operational purposes (e.g. departmental office sites) or pending conversion into a conservation reserve.

Unallocated Crown land and unmanaged reserves

Nearly 40 per cent of WA is unallocated Crown land (UCL) or unmanaged reserves, administered by the DPLH.

A memorandum of understanding between Parks and Wildlife and DPLH relates to such lands outside town sites and the Perth metropolitan region, where Parks and Wildlife is responsible for fire management preparedness and control of weeds and pest animals. DPLH are responsible for all other management issues, including recreation.

The coordination and control of bushfires on these lands, however, remains the responsibility of the Department of Fire and Emergency Services and local government authorities.

Jarrahdale. *Photo—Caren Earl*

6. Developing sustainable trails

Western Australia is experiencing an unprecedented investment in new trails due to rising demand.

A high standard of trail development is important to ensure trails meet best practice sustainability principles.

This section outlines principles for sustainable trail development, the significance hierarchy, trail models and systems, visitor communications, user safety, accessibility and protecting environmental values.

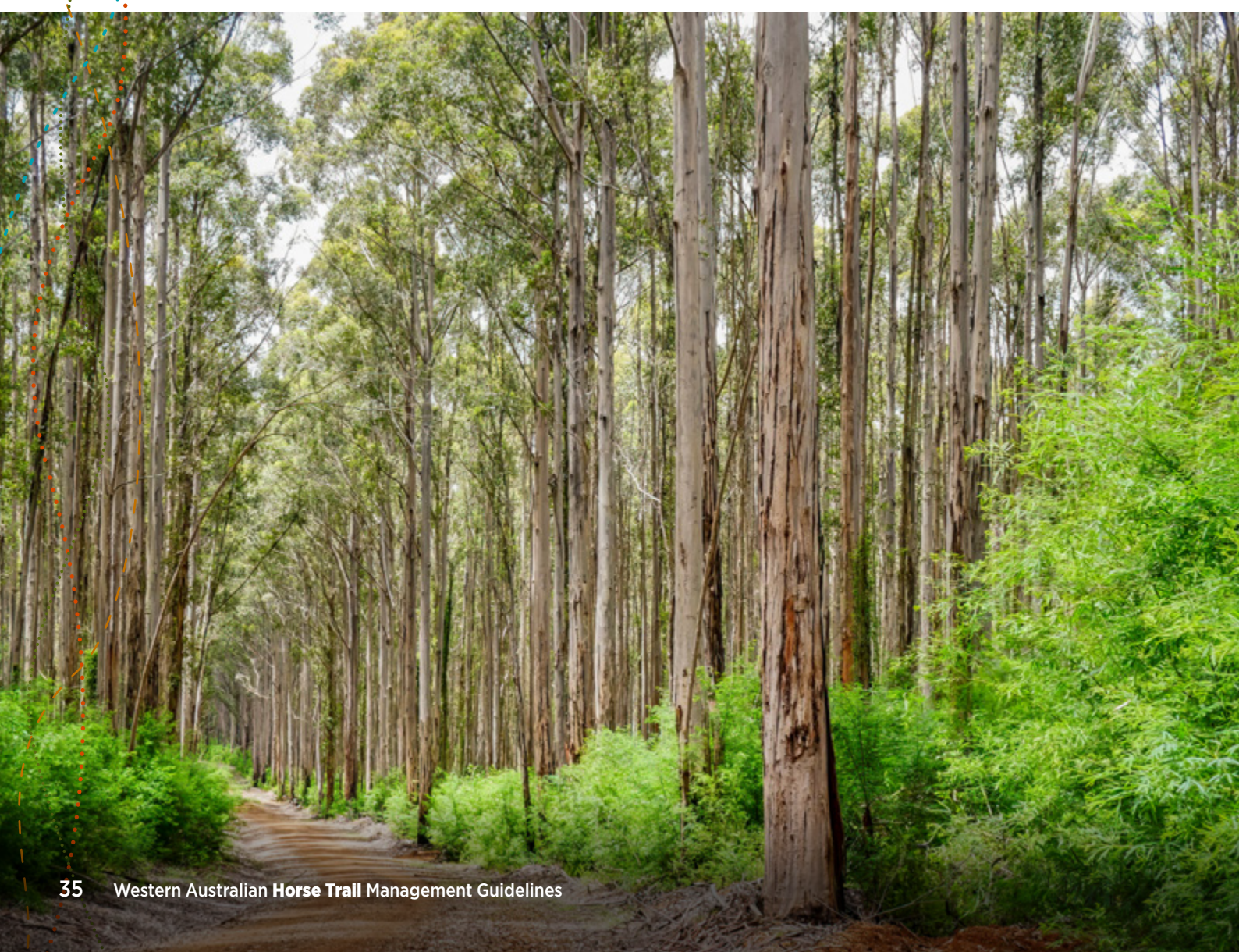
Developing trails using the Trails Development Series will ensure they are a sustainable asset, rather than a liability.

This section applies to all stages of the Trail Development Process, from Trail Proposal (Stage 1) to Management (Stage 8).

Appendix A lists Australian standards, other standards and supporting guidelines that will assist in trail projects.

> Sustainable trails means developing the right trails, in the right places, the right way and for the right reasons.

Shannon National Park. *Photo—Trails WA*



6.1 Sustainability

Sustainable trails provide a high-quality experience for the intended user and develop genuine Aboriginal relationships. They respect the community and environment, are designed for longevity, have good governance and a resourceful business model.

The principles in Table 5 guide the development of sustainable trails.

In addition, using the Trails Development Series will ensure that trails are developed and maintained in a consistent and standardised process.

Table 5: Sustainability principles

High-quality experience	High-quality experiences designed for the target market, considering those who deliver tourism experiences, supported by marketing, promotion and experience development.
Genuine Aboriginal relationships	Genuine partnerships and engagement with Traditional Owners and Aboriginal communities for better outcomes, in culturally responsive ways of working.
Respects community	Positive contribution to communities with appropriate stakeholder and community engagement and partnerships, respecting culture and heritage.
Plan, design and built for longevity	Consistent and effective trail planning, design and construction for longevity, minimal maintenance, fire resilience and ease of management, complying with standards and trails classification system.
Respects environment	Appropriate to the landscape, respecting sense of place, natural and cultural values and reducing impacts on ecosystems, habitat and wildlife.
Good governance	Governance and accountability are clear and simple to initiate and administer over the longer term.
Resourceful business model	A business model that provides ongoing resources including people, equipment and infrastructure to manage the trail, inclusive of user and community groups with the benefits visible to the community.

Palmer State Forest. *Photo—Anita Britza*

6.2 Significance

It is essential to establish the scope of new trails to ensure they are in the right locations and of the appropriate type, size, scale and extent. The significance of the trail guides decision-making and processes to ensure the trail proposal is a success.

An appropriate level of significance for new trail developments needs to be established in the Trail Proposal (Stage 1) and Framework (Stage 2) of the Trail Development Process.

Tourism WA have developed criteria to assist with identifying the suitability of individual trails for international marketing.

Horse trails and trail networks are classified into the following significance categories.

State or iconic trails	Regional trails	Local trails
An extended trail or network that is of sufficient quality and with appropriate facilities, products and services to be recognised beyond the State and to attract visitors to Western Australia. Iconic trails and networks have the highest marketability, offering and experiences that can align with WA brand positioning. Iconic trails are consistent with Tourism WA's marketing remit to attract interstate and international visitors to the State.	A major trail or trail network that services a population centre or large regional community, with facilities and services of a standard and appeal that could attract visitors from outside the region. Regional trails keep visitors in the region longer and align with the focus for regional tourism organisations.	A trail that services the local community and provides facilities suited to local use. Some local trails have potential for development to regional status. Local trails are more likely to be the focus of local tourism organisation and visitor centres and are not a focus for Tourism WA marketing.

Shannon National Park. *Photo—DBCA*

6.3 Trail models

A trail model defines how a trail project can be developed and applied to a population centre or an individual site.

Trail models heavily influence all parts of the Trail Development Process and is determined in Trail Proposal (Stage 1) and Framework (Stage 2).

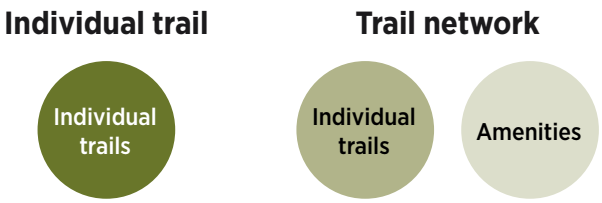
The following describes the models in Western Australia.[27]

Trail town – A population centre which has been assessed and accredited as a destination, offering high-quality trails encouraging extended stays, trail user related services, facilities, trail-related businesses, trail branding and signage.

Trail centre – A managed multiple trail facility with dedicated visitor services, supported by high quality trails, encouraging single day visits, trail user related services and trail branding and signage. A Trail Centre can stand alone in an individual location but may be positioned within a Trail Town.

Trail network – A collection of linked trails, often of the same trail type and typically accessed via a trailhead. A Trail Network may be standalone in an individual location and can form part of a larger Trail Town or Trail Centre.

Individual trails – Individual linear or looped trails are typically small individual trails that stand alone in a community setting. Long distance trails can link these trails to another trail model and can also be the precursor to developing a tourism destination.



27 Department of Local Government, Sport and Cultural Industries, *WA Strategic Trails Blueprint 2022-2027*

Trails WA programs

The Trails WA Trail Town Accreditation Program is a tailored, best practice accreditation system designed to help regions and towns build their capacity as a trails destination.

The program has been developed in partnership with DLGSC and DBCA's Parks and Wildlife Service.

The accreditation process includes an application process where critical success factors will be assessed. The accreditation process is a consultative one that requires several in-depth assessments and reviews.

The **Top Trails project** identifies the best trails across the State and promotes them cooperatively to help increase visitation rates to various regions within Western Australia.

Short-listed trails go through an in-depth assessment process to ensure they are suitable, of high-quality and provide a memorable or unique experience to the trail user.

Nominated trails are assessed against criteria including appropriate signage, interpretative material and information if appropriate, management and maintenance plans, community support and a promotional brochure.

Trails WA also administer a Trail Friendly Business accreditation program to make businesses that offer trail-specific products and services easily identifiable. The program is designed to direct trail users to businesses that offer a warm welcome, provide local information and allow them to restock, refresh and re-energise.

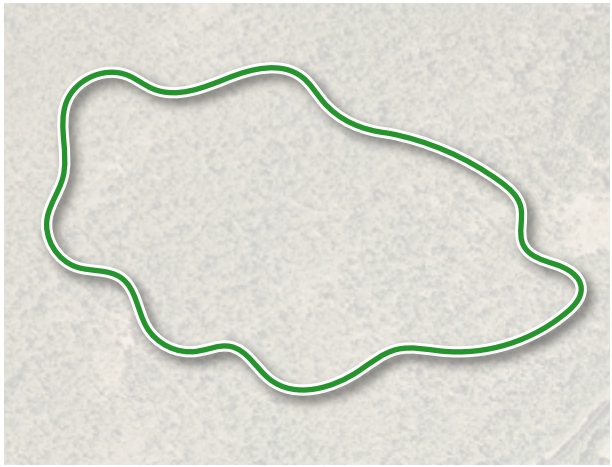
See Trails WA for more information.

6.4 Trail systems

The trail system is dependent on the location's characteristics, user type and profile and intended user experience. The trail system defines the design, layout and configuration of the trails as well as the location, nature and extent of associated facilities and infrastructure such as car parking, toilets and trailheads. The system is determined in the Framework (Stage 2) and refined in the Concept plan (Stage 4) of the Trail Development Process.

Linear trails

Linear trails are point to point alignments starting and finishing in different places or out-and-back experiences. Providing opportunities for shuttle services, they can be used to link destinations, points of interest or other trails. Trailheads are established at one or both ends.



Loop trails

Trails that start and finish in the same place with a single trailhead are the preferred system for most users. They allow one-way use which avoids retracing the same route. As the trail brings the user back to the trailhead, they are less likely to get lost. Loop trails are also an efficient design that may allow for longer trail lengths within the available space.

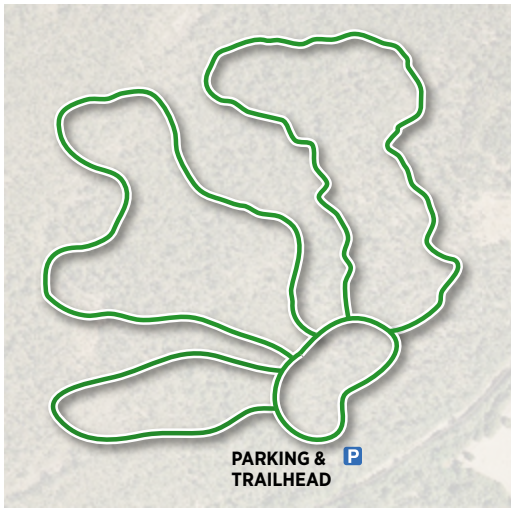
Lollipop trails

Lollipop trails start with a linear section that connects to a loop, particularly suited to hiking trails and trails designed for users to explore positive attributes and key features of a location. A lollipop trail can be stand alone or a part of a trail network.

Networks

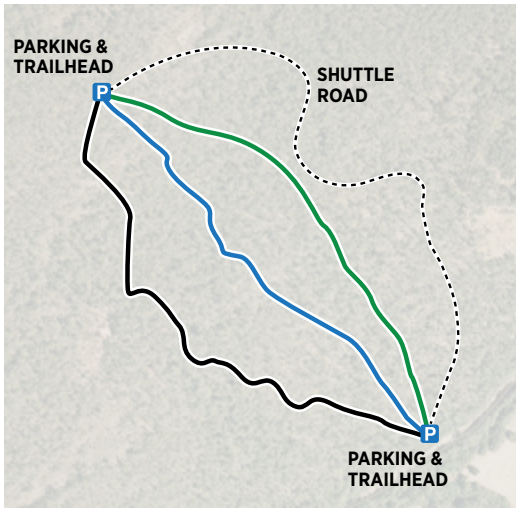
Networks make the optimal use of available space by linking several trails together from a trailhead, combining trail styles, difficulty levels and designs.

It's best to limit trail systems to one central trailhead wherever possible, although larger networks may need more than one trailhead. Trail systems may use a core trail which could lead from the trailhead and provide access to the rest of the system. As the core trail is the most used, it should accommodate a variety of trail users.



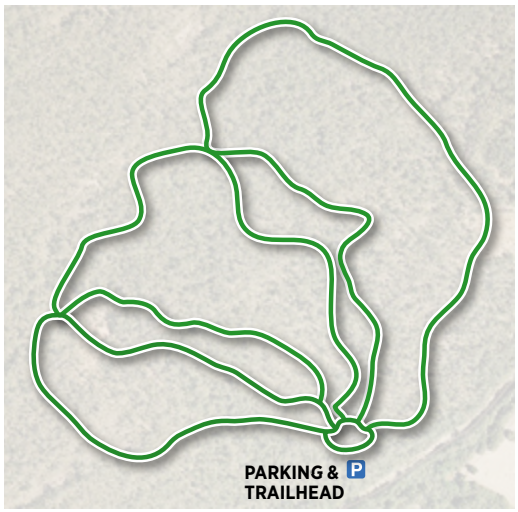
Cloverleaf

Cloverleaf designs are a series of loop trails that radiate from a central trailhead and core trail. Cloverleaf designs can cater for a range of abilities and user types.



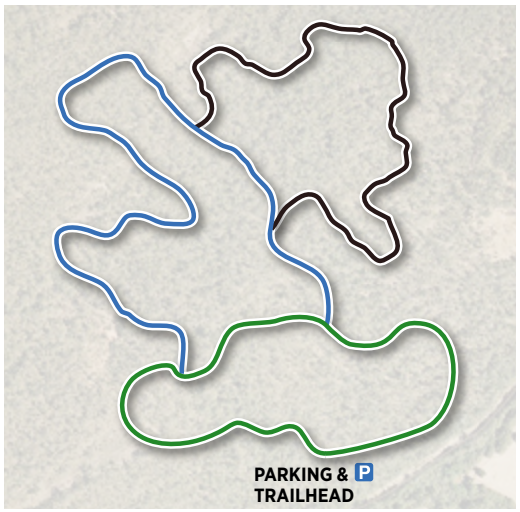
Trail finger

Trail fingers fan out from the core trail or trailhead giving users a choice of options. Trails can be loops or linear. Trail finger design lends itself to uplift facilities such as a lift or shuttle road which is popular on mountain bike trails.



Linked loop

These are like the cloverleaf design with added linkages between trails to enable users to try a different trail without having to return to the trailhead. Linked loop trails can be used in many combinations and can cater for a range of abilities and user experiences.



Stacked loop

Stacked loops can provide different length experiences. They may become more technically challenging as the distance from the trailhead increases. Stacked loops can also cater for seasonal experiences where certain sections may be closed, such as for flooding or conservation management.

Direction of travel

Single direction of travel on a trail can reduce potential collisions and the perception of overcrowding, however it may limit the user experience.

Dual direction essentially doubles the length of the trail as it provides a different return experience. It can result in trail conflict with users travelling both directions.

For either single or dual direction, it is important the direction is clearly communicated, and appropriate safety measures are put in place.

Trail classification

Horse trail classification systems are used throughout Australia and in other countries to categorise trails in a systematic way. They provide standardised, concise information regarding the difficulty and attributes of trails so that users can make informed decisions about whether a trail is suitable for them.

Trail classifications also provide a framework for trail managers to design and maintain trails to suit the desired trail experience and user group.

DBCA's Parks and Wildlife Service has adopted a five-level horse trail classification system that can be used throughout WA. Read Section 11 Horse Trail Classification System for more information.

Shared use

Shared use of trails is a way to encourage greater use by a wider section of the population. It can establish respect and mutually beneficial partnerships between user groups.

Rail trails are a good example of shared trails and the Rail Trails Australia website provides information on rail trails across Australia including WA.

Single use may be more appropriate on trails where a single trail activity is the intent, or where other users impact the intended trail experience.

User conflict on shared trails can occur if they are not well planned and the user groups are not well understood. A combination of good design, signs and codes of conduct will assist in minimising user conflict. Appropriate trail widths, sightlines, separation of paths, trail flow, passing opportunities and safe intersections will also contribute to a more harmonious experience.

Possible conflicts and risks between different users should be identified and addressed in planning and design of trails.

Single or shared use messaging must be clearly communicated at all access points through trail signs, maps and other media.

Stidwell Bridle Trail, Albany. *Photo—Lee Griffith*

Dual treadway

A dual treadway, or parallel treadway system, is sometimes used to separate horse riders from other trail user groups like hikers and cyclists by providing two adjacent trail treads as shown in Figure 5.

Separating trail traffic may be implemented where space and landscape permits. It is especially useful in areas with high multi-use trail traffic.

Each treadway is designed specifically for its user group. The horse tread usually has a softer, wider and more resilient surface for horse traffic. Adjacent tread for hikers and cyclists, for example, may be firmer and narrower.

The dual treadways can be separated with a natural buffer such as vegetation or using a physical barrier. Separation reduces interaction and potential conflicts between user groups moving at different speeds. Horses are less likely to be spooked by passing hikers or cyclists since each group has their own space.

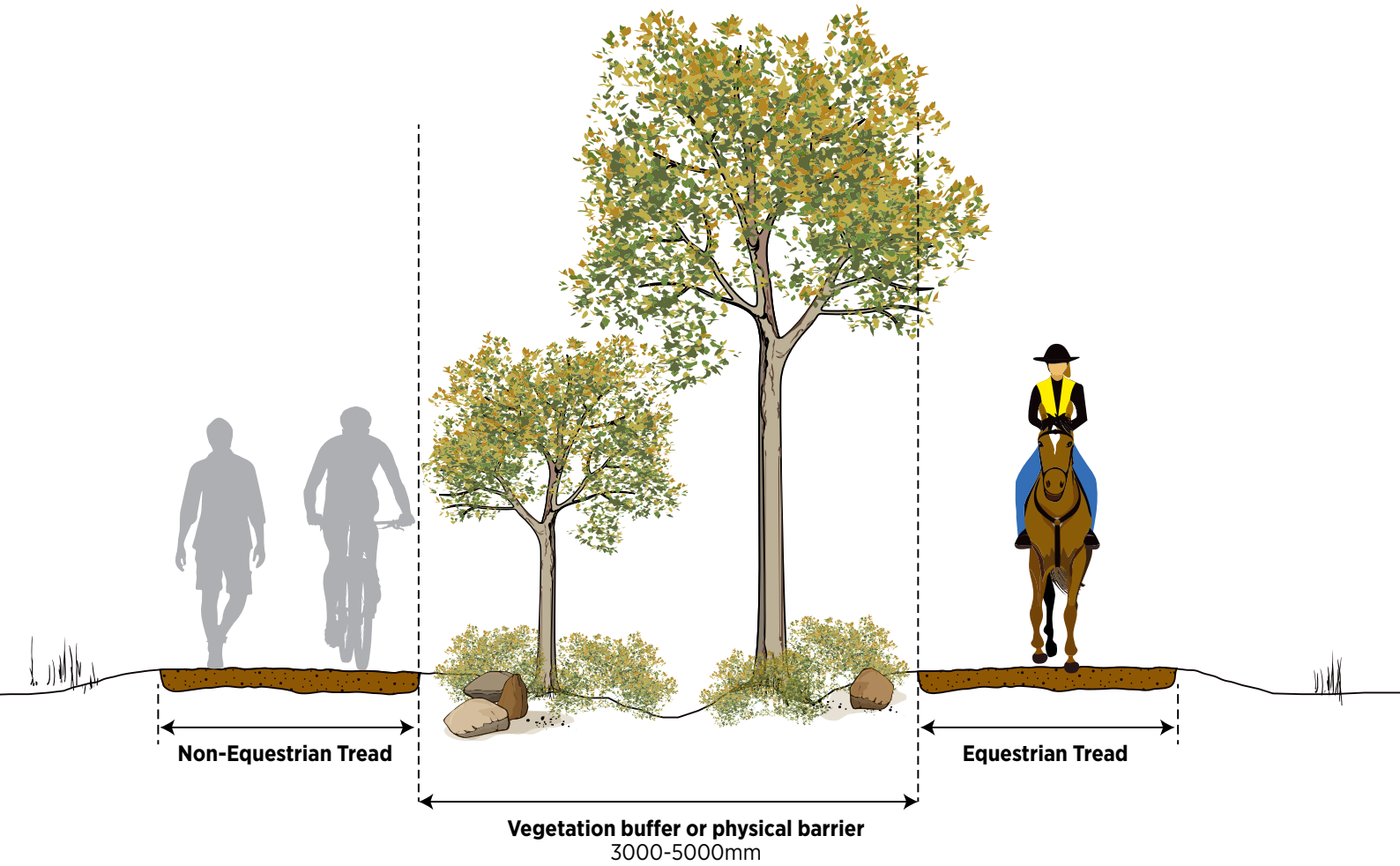


Figure 5: Dual treadway

6.5 Visitor communication

Visitor communication covers pre- and post-visit information, interpretation, wayfinding and safety messages. This is a very important part of trail planning and management and requires expert advice.

Communicating information about a trail may include on-site signs and displays, publications, digital media including mobile apps, websites and guided activities.

All trails have stories that can be shared and enjoyed by trail users. Interpretation is the process of enriching people's experience of a place by engaging through values-based storytelling. These stories may include natural features, Aboriginal cultural values, and historical or heritage aspects relevant to the area.

Wayfinding

Wayfinding is the process of ensuring trail users find and stay on the trail and return safely.

Appropriate safety advice is essential and should consider the risks and requirements of the trail, along with any necessary planning and preparation so that trail users have a safe and enjoyable experience.

Relationship to trail classes

The trail experience and classification will help determine the level of communication for key information, messages, safety advice, choice of media and type and number of signs. Trails classed easiest, easy and moderate may have more on-site information to communicate and interpret the trail features, whereas difficult and extreme trails may rely more heavily on pre-visit and post-visit information. Read more in Section 11 Horse Trail Classifications.

Systems and standards

The design and style of visitor communication can be a key component when branding, promoting and marketing a trail project. Consistent logos, colours, images and stories are strong elements that can create a better experience and more successful trail. Consistency in materials, structures and visual elements including vocabulary and symbols can be achieved using established systems, templates and standards. This approach helps to elevate the trail experience and make communication clearer.

Cultural information

Working with Aboriginal peoples to protect and interpret cultural values and stories will greatly enhance a trail project. It will also help build relationships and work towards supporting Aboriginal peoples' aspirations for better health, employment and wellbeing outcomes.

Where possible and appropriate, traditional Aboriginal language names for places and interpretive elements are to be included. Read more in Section 3 Aboriginal collaboration.

Methods and media

Given the uptake in technology by trail users and increasing coverage of mobile phone networks, providing information about trails using apps, QR codes, augmented reality, GPS triggering and digital downloads may be appropriate. These can be available to assist with pre-visit information and on-site information.

Communication and sign planning

The Trails Development Series provides information about trail signage, developing a sign plan, trailhead signs and trail marking. Read more in Section 8.5 Trailheads and 8.6 Signs for more information.

Sign planning involves site assessment, consultation and inventory of existing signs. A sign plan can then be developed that recommends what signs are needed and where they are located. Budget and ordering can be developed from the sign plan.

Translation to other languages

It may be appropriate, depending on the user group and target market, to provide visitor communications, and especially safety messages, in other languages.

The 2021 Census shows that 249 languages and dialects are spoken in WA and almost 19 per cent of Western Australians speak a language other than English (LOTE) at home including Aboriginal and sign languages. Of the language other than English speakers, 12.1 per cent reported as having low English proficiency.[28]

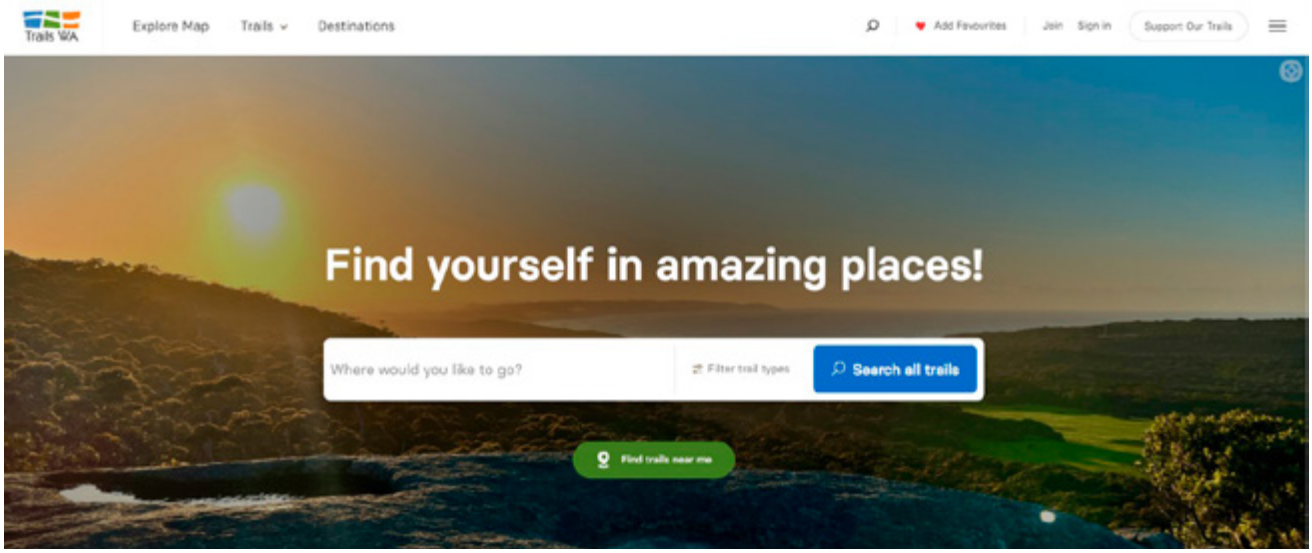
This does not mean multiple languages are needed on signs and interpretative displays on site.

However, if there are opportunities to provide translations, these can be considered through relevant platforms, such as a QR code that leads people to translated material.

Additional attention in pre-visit information, wayfinding and safety messages may be needed to ensure communications capture all visitors.

The Office of Multicultural Interests (OMI) can be contacted for more information on appropriate languages and communication strategies.

Trails WA website



The Trails WA website is the primary source of sanctioned trail information across the State. Trails WA invites local governments and trail-related organisations to become trail managers, giving them the ability to upload trails onto the website and further attract visitors to their regions.

As a central source for all WA trails, the website can be used as an exceptionally useful tool for the industry and trail planners to identify the range and types of trail experiences that exist across the State. Gaps and opportunities for new trails can be observed and where trail experiences may need to be enhanced in response to user reviews and star ratings, which are also published on the website.

In addition, the Trails WA website provides a method of evaluating how an existing or proposed trail compares with other trails and what may be needed to ensure its inclusion in the invaluable promotion provided by Trails WA.

28 Census 2021 WA's Linguistic Diversity

6.6 Trail user safety

Landowners and land managers have a duty of care under the *Occupier's Liability Act 1985* and the Civil Liabilities Act 2002 to identify potential dangers that may cause injury, death or damage to property and to take reasonable steps to eliminate or reduce those dangers to an acceptable level.

The Framework (Stage 2) of the Trail Development Process should detail who will be responsible for managing visitor safety and hazards.

Trail managers need to implement a risk management framework that identifies the risks, determines risk mitigation, outlines safety messages, signs needed, inspection and risk mitigation programs and record keeping.

Key points

- Develop a risk management framework and processes.
- Minimise potential for injuries to trail users.
- Encourage appropriate behaviours through codes of conduct.
- Develop procedures to manage visitor risk.
- Use the Horse Trail Classification System in Section 11 to help manage risk.

The international standard *ISO 31000:2018 Risk Management–Principles and Guidelines* is the relevant standard that directs and informs the risk management process.

Safety messages

Safety messages are a significant component of managing risk. Communication planning should include the key messages and media on risks and safety.

DBCA has developed approved safety messages for trails and other outdoor recreation on DBCA's Parks and Wildlife Service-managed lands and waters. The text on the safety pages of Explore Parks website is consistent with these approved safety messages and can be used as a resource for developing consistent safety messages for other trails.

Safety advice can be delivered on websites, printed publications, apps and on-site signs including trailheads and at relevant risk areas, such as cliffs. It needs to be clear, consistent and include both words and symbols that are easily understood by trail users.

Appropriate advice on what to do in case of emergencies needs to be considered as part of the risk management framework and communicated clearly for trail users.

Emergency WA is the State approved source of emergency alerts and should be promoted where appropriate.

Consider alternative languages depending on target user groups.

Bushfire

Threat of bushfire is a significant risk to trail users and trail infrastructure. Consult qualified experts on fire protection measures to incorporate into risk management procedures and infrastructure planning and design. DBCA has established operational guidelines and procedures for visitor risk management on trails, including procedures to apply during bushfires and prescribed burning.

Outdoor activities

Providers of outdoor activities with dependant participants should be aware of and understand the Australian Adventure Activity Standard (AAAS) and associated Good Practice Guides (GPG) for guidance on safety and other aspects of responsible activity delivery.

Community reporting

Encouraging the community to report issues on a trail may be an option. Trails WA website has a 'report an issue' feature.

6.7 Accessibility

In WA, there are more than 400,000 people with disability. People with disability have abilities, aspirations and contributions to make to their local communities.

A Western Australia for Everyone: State Disability Strategy 2020–2030 sets the foundation for building a more inclusive Western Australia, empowering people with disability to participate meaningfully in all parts of society and to have the resources to do so.

Accessibility for all is about providing opportunities and services for people with a range of impairments, such as mobility and can also include age, mental health, cognitive, visual or hearing impairments.

In WA, organisations such as HorsePower and Riding for the Disabled play a vital role in making equine activities, therapeutic riding programs, and hippotherapy more inclusive.

Trail design should aim to accommodate a wide range of abilities by considering rider accessibility requirements such as:

- provision of mounting blocks and/or ramps
- wide trails for riders with safety-support riders or walkers
- accommodating carriage driving
- continuous accessible paths at car parks, amenities, picnic facilities and campgrounds.

Commercial mounting block, Jarrahdale Equestrian Centre. *Photo—Allie's Captured Moments*

Mounting blocks and steps

Riding for the Disabled Association Australia (RDAA) recommends for ambulant participants either a constructed mounting step, typically timber with a steel frame with dimensions as shown in Figure 6, or a commercially available mounting step shown in Figure 7. Where steps are constructed for riders with a support person or coach, they need to be wide enough to accommodate two people. Steps should be positioned on a level surface, and it is preferable for each step to match the height of the step before it.

Strategically placed mounting blocks along trails can support riders who need assistance mounting or dismounting. Additionally, some riders may need to dismount periodically to alleviate hip or back discomfort. Accessible, well-positioned mounting blocks along a trail allows riders to plan their ride to accommodate their abilities.

Mounting blocks either side of trail entry at Albany Equestrian Centre. *Photo—Friends of the Stidwell Bridle Trail*

Ramps

Wheelchair-accessible ramps support riders with restricted mobility. Ramps should comply with design standards for gradients, landings, and handrails. A useful fact sheet from RDAA provides an overview of standards and requirements related to ramps. The standard RDAA ramp is shown in Figure 8.

Engage specialists such as architectural designers and structural engineers to ensure compliance with standards and building codes including AS1428.1 for accessibility.

Horse leading and side-by-side support

Riders with disabilities may require the support of a walker on the ground leading the horse, or by two riders providing side-by-side support. Trails catering for these experiences should be wide enough for three riders, have a gentle gradient and be free from obstacles. For shared use or dual direction trails, passing areas should be established to enable riders to safely move aside if needed.

Carriage driving

Trails designed for carriage driving, including wheelchair-accessible carriages, enable broader participation. Considerations for carriage driving are covered in Section 2.4 and outlined in Section 8 Facilities and structures where applicable.

Other considerations

Erosion, fallen trees, poor maintenance and broken facilities impact on all trail users but may be more serious for less able trail users or people with disability.

Local disability providers and groups are a great source of knowledge and experience. Consulting with community, service providers and people with disability is an important part of the Trail Development Process. Read the *Trails Development Series Part B: A Guide to Community Consultation* for more information.

People with disability often require additional information on accessibility and facilities. Visitor communication, promotional and marketing information should include information to allow trail users to make informed decisions on their ability to attempt a trail.

Including imagery of people with disability using trails in visitor communications, marketing and promotion better reflects a variety of users, is more inclusive and more representative of the activity.

To enhance trail experiences, virtual access could be provided to areas that may not be accessible by everyone through QR codes, video, livestreams, Google Street View, virtual reality and audio.

Collie. *Photo—HorsePower*

Manjimup. *Photo—Karen Niedermeyer*

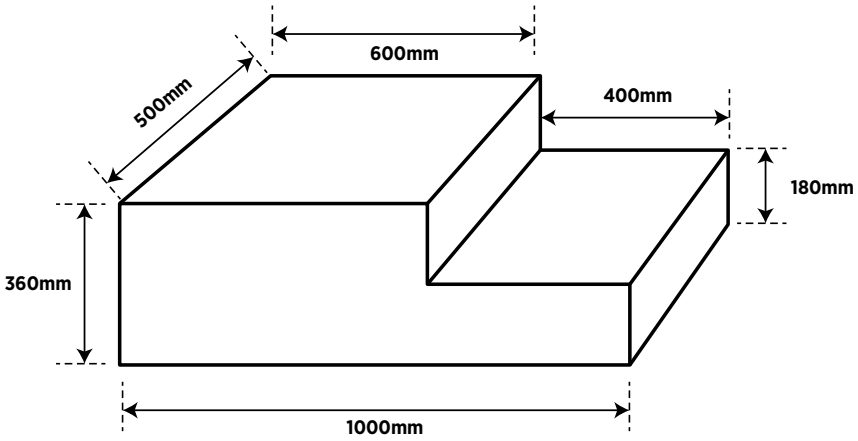


Figure 6: Constructed mounting step

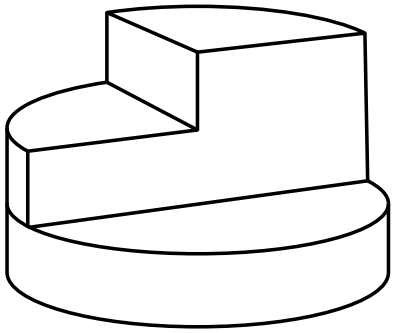
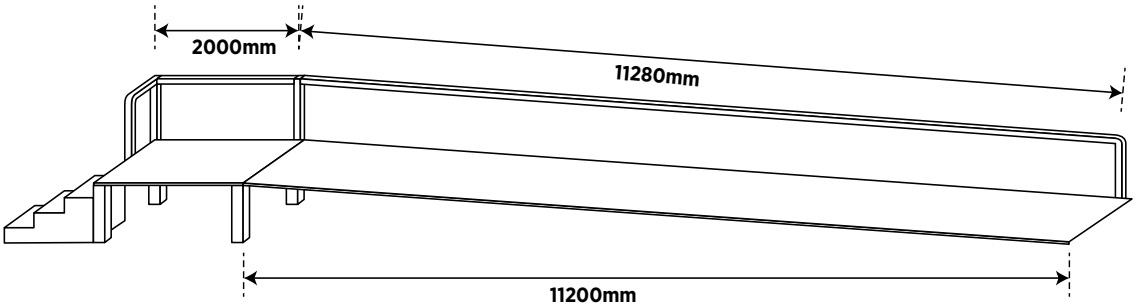


Figure 7: Commercial mounting step



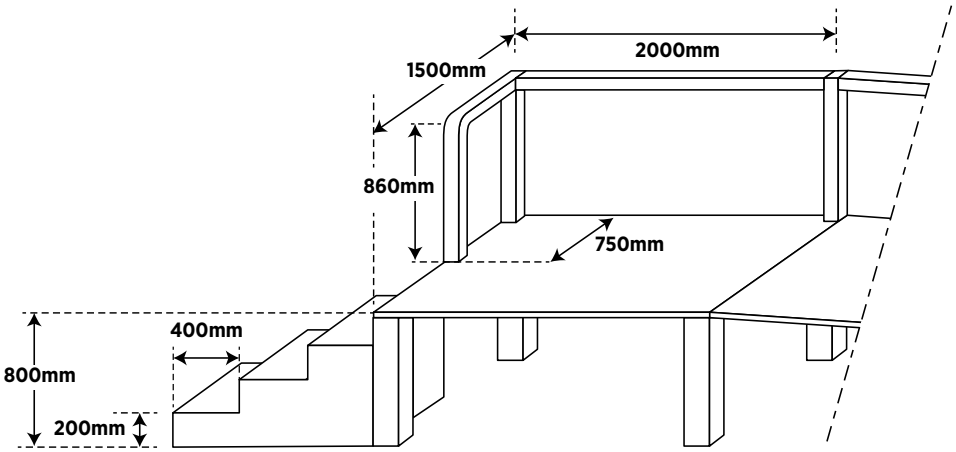


Figure 8: Mounting ramp[29]

29 Figure 6-8 Illustrations Source: RDA-Standards-for-Ramps.pdf

6.8 Protecting environmental values

The use of horses in natural areas is part of the cultural heritage of Australia and a source of pleasure and enjoyment for many people. However, active recreation in natural areas carries risks of overuse and environmental disturbance that may lead to deterioration of natural values. Trail and land managers must balance recreational benefits with the need to protect environmental values and preserve the integrity of the landscape.

Potential impacts associated with horse riding include the possible introduction of weeds or parasites, spread of disease such as dieback, trampling or browsing of native flora, soil erosion, siltation or fouling of watercourses, disturbance of native fauna and potential conflict with other users.[30]

Typical management strategies for horse trails in WA involve:

- Zoning—setting aside designated areas for horse use, locating trails near edge of protected areas or in modified zones and excluding horse riding from ecologically sensitive areas.
- Site management—locating and constructing trails using sustainable principles, managing water and drainage on trails and trail maintenance, see Section 7 Trail design and Section 9 Management for further details.
- Visitor management—providing information and education including codes of conduct that encourage trail users to adopt low-impact practices, see Section 9.4 Codes of conduct.

Trail assessment, monitoring and data collection is used to assess the effectiveness of management, evaluate level of use and ensure that impacts are being mitigated.

Environmental values are identified in Site Assessment (Stage 3) of the Trail Development Process and are further assessed during Corridor Evaluation (Stage 5).

Ensuring values are identified early will lessen or avoid any impacts of trail development and will reduce the likelihood of project delays. It will also ensure that the landscape and environment are retained and protected.

Legislation for the protection of the environment includes:

- *Conservation and Land Management Act 1984 and CALM regulations*
- *Biodiversity Conservation Act 2016*
- *Environmental Protection Act 1986*
- *Environmental Protection and Biodiversity Conservation Act 1999* (Federal).
- *Rights in Water and Irrigation Act 1914*
- *Metropolitan Water Supply, Sewerage and Drainage Act 1909*
- *Country Areas Water Supply Act 1947*
- *Waterways Conservation Act 1976*

The *Environmental Protection Act 1986* requires that any person clearing native vegetation must hold a permit unless the clearing is for an exempt purpose. These laws apply to both private and public lands throughout Western Australia. Read more about legislation in Section 5.2.

Working through the impact evaluation checklist in the Trails Development Series will assist in ensuring that assessments for relevant plant diseases, ferals, weeds, flora, fauna and ecosystem conservation are considered and where necessary undertaken. For trails proposed on DBCA managed land, the Disturbance Assessment System must be used to consider and assess any disturbance and gain approvals.

30 DBCA Parks and Wildlife, *Corporate Guideline No. 32 - Recreation, Tourism and Visitor Services*, 2017

Dieback

Trail location and alignment plays an important part in minimising the potential spread of soil-borne pathogens such as *Phytophthora* (dieback).

In WA's south-west bioregion, more than 40 per cent of native plant species are susceptible to the disease. *Phytophthora* can be spread through soil and roots by animals; however, humans have spread *Phytophthora* further and faster than any other means of spread.

The impacts of dieback are negative, permanent and irreversible and there is currently no practical broadscale method of eradication of the pathogen once an area is infected.

Dieback and where appropriate, other disease management is considered throughout the Trail Development Process. In areas susceptible to dieback disease, the status of the area should be assessed in Site Assessment (Stage 3) and disease boundaries surveyed and demarcated during Corridor Evaluation (Stage 5) of the Trail Development Process.

A dieback management plan needs to be developed and applied during the construction phase to manage the risk of disease spread. Hygiene measures should also be applied to trail maintenance activities. Within DBCA, trail managers follow the Phytophthora Dieback Management Manual.

Important factors in the construction and maintenance of trails in dieback-free areas include the importation of certified clean soil where required and the need for machinery and tools to be free of dieback infected soil prior to work.

The potential spread of *Phytophthora* by trail users can be reduced by creating free-draining trails, which have less puddles and inundated areas. This helps to lessen the amount of dirt that gets moved around.

The potential spread of dieback and other diseases can also be reduced by using signage, from the established suite of Project Dieback signs, at key locations that provide access to trails and on the trails.

Key messages to communicate to trail users include:

- staying on designated tracks and trails
- avoiding puddles or muddy ground and using trails in wet soil conditions
- abiding by management signs and not entering restricted areas, trails may be closed during particularly wet times of year
- cleaning soil from footwear/hooves or cart/vehicle wheels at the start and finish of trail visits.

See *ATHRA's Guide to combatting Phytophthora* for specific advice that may be provided to horse trail users.[31]

Learn more about dieback on DBCA website at Phytophthora dieback.

31 ATHRA, *Guide to combatting Phytophthora*, 2024

Weeds

Preventing the introduction or spread of weeds is an important consideration in trail development, particularly in areas that are undisturbed and have high conservation value.

Some weeds can also pose a hazard to trail users and increase maintenance requirements.

Weed management in relation to trail development generally involves:

- identifying and mapping populations of high priority and declared weeds in the vicinity of proposed trails
- aligning trails to avoid weed infestations where feasible
- ensuring there is no spread of soil or vegetation into uninfested sections during construction where weed infestations occur
- ensuring all trail construction materials such as soil and rock are weed free
- ensuring all machinery and equipment used in trail construction are clean on entry and are not carrying soil or vegetation prior to entry to the site
- undertaking control of weeds along a trail where feasible.

Where trails are proposed in highly disturbed environments, protect good quality remnant vegetation by avoiding those areas.

Weed identification and control requires specialist skills and knowledge, budget and focus. Trail planners should seek weed management advice from specialist staff or consultants.

Once trails are activated, the key messages to communicate to trail users include:

- ensuring horses' hooves, coats, equipment and floats are free of seeds before trail visits
- providing only weed-free feed at least 48 hours prior to entering bushland areas and if required, during trail activities
- using nosebags or feed containers and cleaning up any spillages in preference to spreading feed on the ground
- avoiding riding through patches of weeds, especially if they are seeding
- managing horse manure as specified by the land manager
- encouraging reporting outbreaks of weeds along the trail to assist in eliminating new outbreaks of problem species, particularly where the weed is the type eaten by horses.[32]

32 Pickering, *Literature Review of Horse Riding Impacts on Protected Areas and Guide to the Development of an Assessment Program*, 2008

Kimberley. *Photo—Diggers Rest Station*

Manure management

Manure management strategies will vary depending on level of use, environmental sensitivity, moisture and soil types.[33]

Horse manure has potential to spread seeds of invasive species, create nutrient-rich 'hotspots' (particularly nitrogen) that may impact native flora, and can cause unpleasant conditions for other trail users in shared spaces such as trails, campgrounds, and parking areas.

At trailheads, where horses are unloaded, manure is more likely to accumulate. Riders are generally encouraged to take manure home or deposit it in a designated area.

On the trail, horses typically defecate in the first 800 metres, after which deposition decreases. To mitigate conflict on shared trails, consider providing two short trail segments from the trailhead to the main trail, one for equestrian use and one for other users.[34]

Shared use trail users are usually informed, through signage and pre-visit information to expect encounters with horses (and manure). In many communities this level of education reduces complaints.[35]

When manure disposal facilities and equipment are provided at trailheads and campgrounds, riders are more likely to clean up after their horses.

Shannon Horse Camp. *Photo—DBCA*

Key considerations for manure management include:

- engage with local riders and community stakeholders to develop practical and acceptable solutions
- reduce potential for spread of weeds via manure by encouraging the use of non-weed feed at least 48 hours prior to trail use
- use signage and pre-visit materials to inform trail users about manure management protocols and trail etiquette
- consider providing bins or other designated disposal area at trailheads and equestrian campgrounds
- consider trail cleanup options such as horse manure 'catch it' bags strapped to the horse (not strongly supported by horse riders) or provision of wheelbarrows, rakes and shovels along horse trails with drop-off points for composting or community gardening schemes
- designate equestrian-only parking and camping nodes to minimise user conflicts
- locate hitching rails and yards away from water sources and watercourses to prevent contamination.

33 DBCA Parks and Wildlife, *Corporate Guideline No. 32—Recreation, Tourism and Visitor Services*, 2017

34 Hancock et al., 2007, Chapter 13

35 Horse SA, *Horse Trail Infrastructure Guidelines For peri-urban precincts in Australia,* 2019

7. Trail design

Once the trail framework is confirmed, the design of the trail itself can begin.

Memorable and enjoyable trails don't just appear, they come from understanding and working with all the elements that need to be considered.

The book *Natural Surface Trails by Design* explains that natural surface trails are subject to a range of human and natural forces that we cannot fully control. "Each trail both creates and is affected by an entire web of relationships between its site, visitors, alignment, soils and materials, water, management, and far more".[36]

The skill in creating excellent trails is understanding these basic forces and their relationships, then applying what they mean to the trail design.

This section provides principles on trail alignment, the trail clearance corridor, understanding soil types, trail surface, cross sections and technical aspects of water management and drainage.

This will assist in designing a trail that works for the long term, setting the foundation for trail construction, maintenance and management.

Other core concepts described in *Natural Surface Trails by Design*, such as human perception and feelings, are equally important but are not covered in these guidelines.

The Trail Development Process provides a staged approach to design including site assessment, conceptual planning, corridor evaluation and detailed design.

36 Parker, *Natural Surface Trails by Design: Physical and Human Design Essentials of Sustainable, Enjoyable Trails,* Natureshape: Boulder Colorado, 2004, p. 11

Donnybrook. *Photo—Anita Britza*

7.1 Alignment

Determining the trail alignment is fundamental to ensuring a great experience, protecting natural and cultural values and creating a sustainable trail.

Identifying the values that need to be protected and the elements that most affect trail design will help deliver a sustainable and well-designed trail.

Trail alignment is broadly defined within a corridor in the Concept Plan (Stage 4) and refined to a specific on-ground alignment at Detailed Design (Stage 6).

Key elements to consider are:

Topography and gradient are critical as sustainable trails generally follow the landform and work in with the landscape.

Control points keep users on the trail, connect desirable features and avoid undesirable sites or elements.

Demarcation and anchors are a subtle way of keeping trail users on the intended trail route using natural features or placed obstacles.

Worsley. *Photo—Kathy Miles*

Topography

Understanding topography plays an important role in building trails that are enjoyable and sustainable. Topography is the study of the landforms and features, such as hills, valleys and ridges.

Sustainable trails generally follow the landform, running across the slope rather than straight up and down a slope. This is critical to reduce the potential for erosion, one of the main causes of trail deterioration.

Contour trails or rolling contour trails, run at a slight angle to the contour incorporating frequent undulations, called grade reversals, and an outsloped trail tread, while maintaining the trail gradient to an average below 10 per cent (one in 10). A contour, in this instance, is a line of equal height that represent the landform and topography.

This ensures a smooth trail experience and plays a vital role in managing water flow and erosion, as illustrated in Figure 9.

Alignment and design, work with the slope where possible, and keep long flat stretches to a minimum. Read more about gradient below and grade reversals in Section 7.5 Water management and drainage.

When a trail is seeking to reach a summit, or traversing steeper slopes, climbing turns or switchbacks may be needed.

The topography is analysed using appropriate mapping tools in Site Assessment (Stage 3) of the Trail Development Process. The Concept Plan (Stage 4) and Corridor Evaluation (Stage 5) use this information to determine the trail alignment and design. Decisions made in these stages will influence detailed design and construction.

It's much easier to alter the alignment early in the process to avoid constructing significant infrastructure in unsuitable locations to manage grades and water flow.

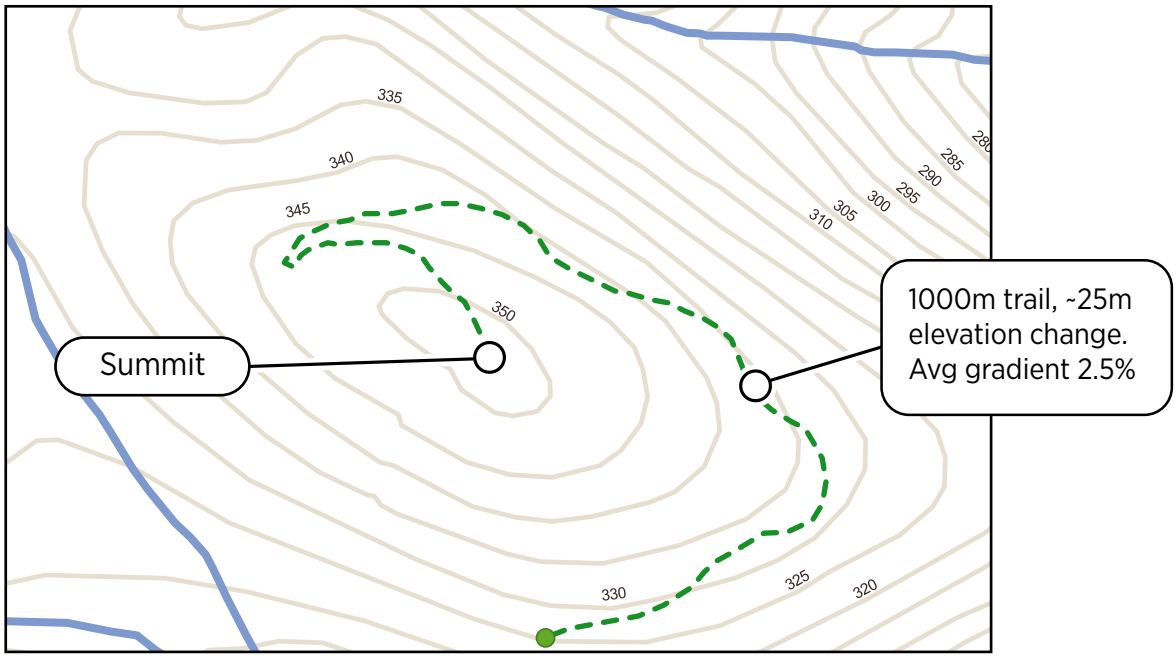


Figure 9: Rolling contour trail

Gradient

In these guidelines, gradient refers to the slope of the land or trail measured from one point to another.

The most sustainable trails are those that have an average gradient less than 10 per cent (one in 10). This ensures water sheets across and not along the trail, especially when combined with an outslope or cross fall, and regular grade reversals or undulations.

When calculating the average gradient of the trail, if the trail has horse steps as shown in Section 8.5, exclude height changes on steps. These do not contribute to the average gradient.

Read more in Section 7.5 Water management and drainage for explanations of soil types and drainage features, outslope and grade reversals.[37]

Trail classification

The gradient of a trail is a key attribute that defines the trail classification, explained in Section 11.

Easiest and easy classification trails will have gentle gradients, moderate classification trails may have short sections of steeper gradients, whilst difficult and extreme classification trails may have long, steep or arduous sections. Table 7 (page 144) provides the acceptable gradients for each trail classification.

Suitable gradients in the landscape are identified in Site Assessment (Stage 3). The trail alignment is determined in the Concept Plan (Stage 4) and refined in Corridor Evaluation (Stage 5) and Detailed Design (Stage 6) of the Trail Development Process working through options to manage the trail gradient.

Principles

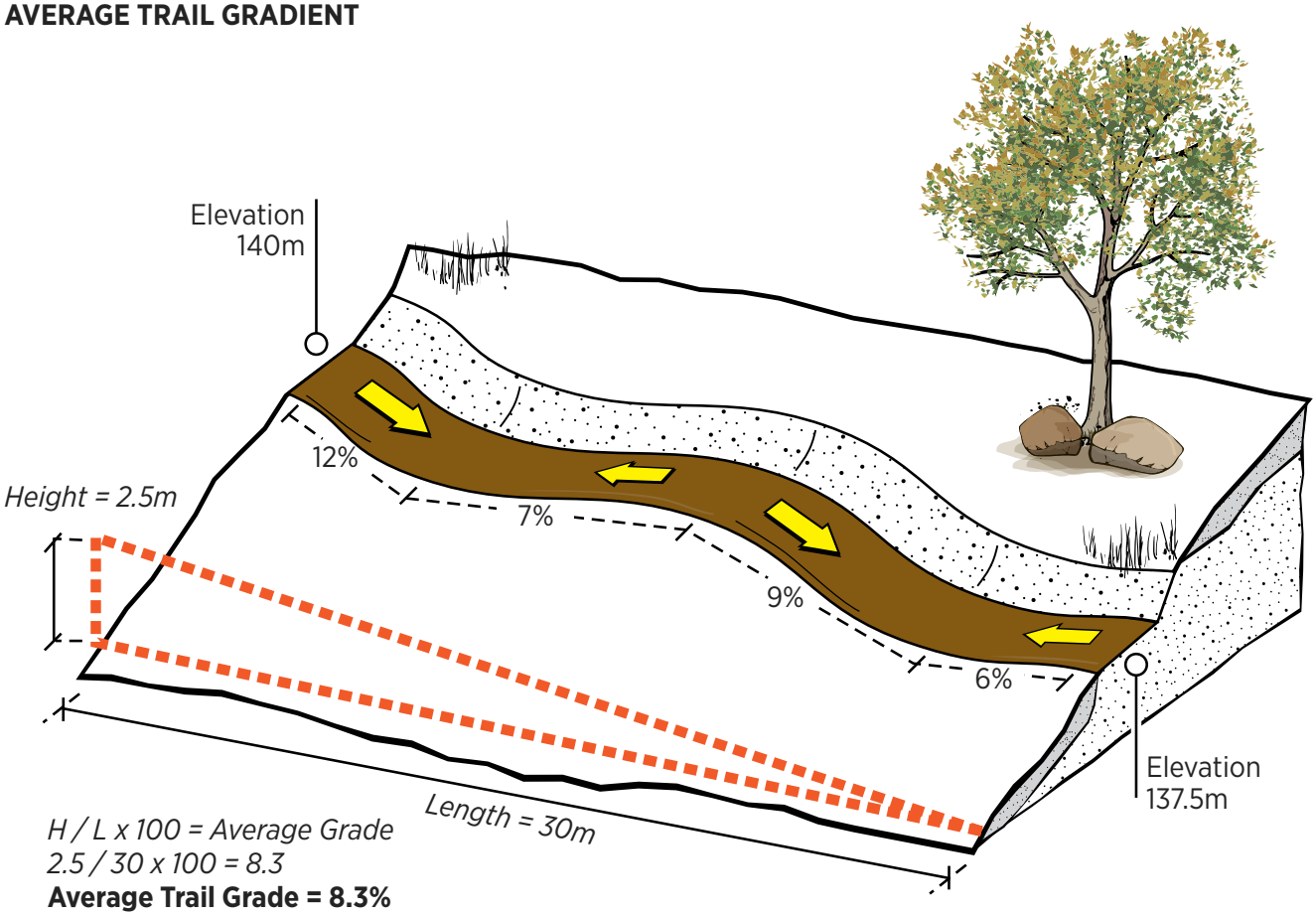
- Work to an average trail gradient less than 10 per cent (one in 10), to minimise the potential for water erosion.
- Avoid aligning the trail on or near the fall line, by following the 'half rule'–the trail gradient should be no more than half the gradient of the side slope. This ensures water is easily drained off the trail tread and does not accumulate along the trail causing erosion, explained in Section 7.5.
- Avoid flat terrain where possible as the trail surface will become compacted, collect water and create puddles and muddy sections.
- If flat areas are unavoidable, trail construction techniques such as building up and crowning the trail surface may be used, these are described in Section 7.4.

Figure 10 shows how to calculate the average trail gradient, by dividing the change of elevation by the total length of the section, then multiplying by 100.

A clinometer is a device used to measure gradient, explained in Appendix D – How to measure with a clinometer.

37 Section 7.1 draws heavily on Recreation SA, *Guidelines for the planning, design, construction and maintenance of recreational trails in South Australia*, Revised 2016

AVERAGE TRAIL GRADIENT



SIDE SLOPE

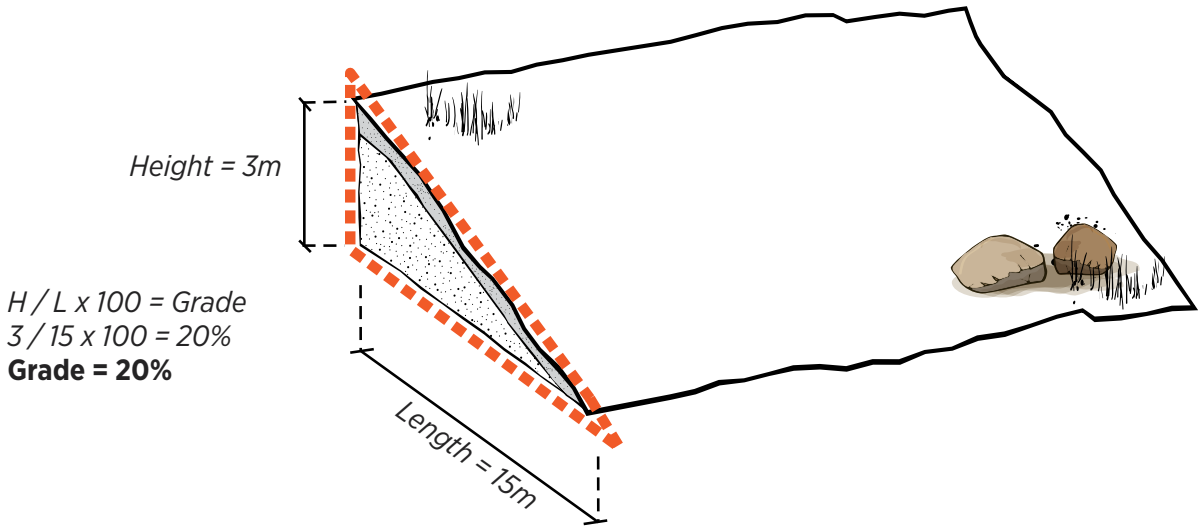


Figure 10: Determining average trail gradient

Control points

Control points influence where the trail should go and not go. Good design connects the positive and avoids the negative control points.

Positive control points heighten the trail experience and keep users on track, which reduces the likelihood of shortcuts.

Control points are identified at a broad scale in Site Assessment (Stage 3) of the Trail Development Process and are used to inform the trail alignment. Plotting control points helps define the trail route, start and finish, location of parking areas, structures, natural openings suitable for passing bays, slopes for turns or switchbacks and crossings. Control points are also used to control the gradient of the trail.

Refinement of the trail is then undertaken in Corridor Evaluation (Stage 5) where the corridor centreline is flagged connecting each positive control points and avoiding negative control points. This clearly defines the corridor for Detailed Design (Stage 6) and Construction (Stage 7). During Detailed Design, localised features such as large trees and boulders are identified and may be used as control points.

Examples of positive control points are:

- scenic views
- waterfalls, rivers, streams and water features
- attractive landscape settings, native forest, large trees, features and anchors such as rock outcrops
- places with historical, cultural or interpretive opportunity
- appealing scents and sounds
- built structures such as bridges and fords
- tracks to use for emergency access.

Negative control points are places that users should avoid as they need protecting or are inappropriate or undesirable along the trail.

Examples of negative control points are:

- unpleasant views
- road or rail crossings
- private property
- wetlands, riparian zones and sensitive wildlife habitat and plant communities.
- sensitive historical, cultural or archaeological sites
- extremely steep cross slopes or cliffs, safety hazards and unstable soils
- known weed infested or disease areas.

Jarrahdale Equestrian Centre. *Photo—Jarrahdale Equestrian*

Demarcation and anchors

The trail alignment should be the path of least resistance, even in difficult terrain. When trail users cut corners, it has a negative impact on the environment and sustainability of the trail.

Demarcation is a subtle way of keeping users on the intended trail route. This can be done by retaining vegetation or using elements such as trees, rocks and logs to anchor the trail and to set the boundary around the trail.

Anchors are distinct features that attract and hold the trail user's attention such as large rocks and trees. They create physical or visual demarcations and make the trail more enjoyable.

The amount of demarcation required will depend on the site and include natural landforms, onsite materials, vegetation or supplement planting or other material that complements the landscape.

Designed and constructed properly, demarcation techniques will blend in, and trail users will not notice. Where objects such as rocks or logs are placed to provide demarcation, they should be made to look as natural as possible. If not, it can be visually obtrusive and disruptive to the experience.

Figure 11 illustrates these elements. Anchors and demarcation methods are identified in Site Assessment (Stage 3) and refined in the Detailed Design (Stage 6) of the Trail Development Process.

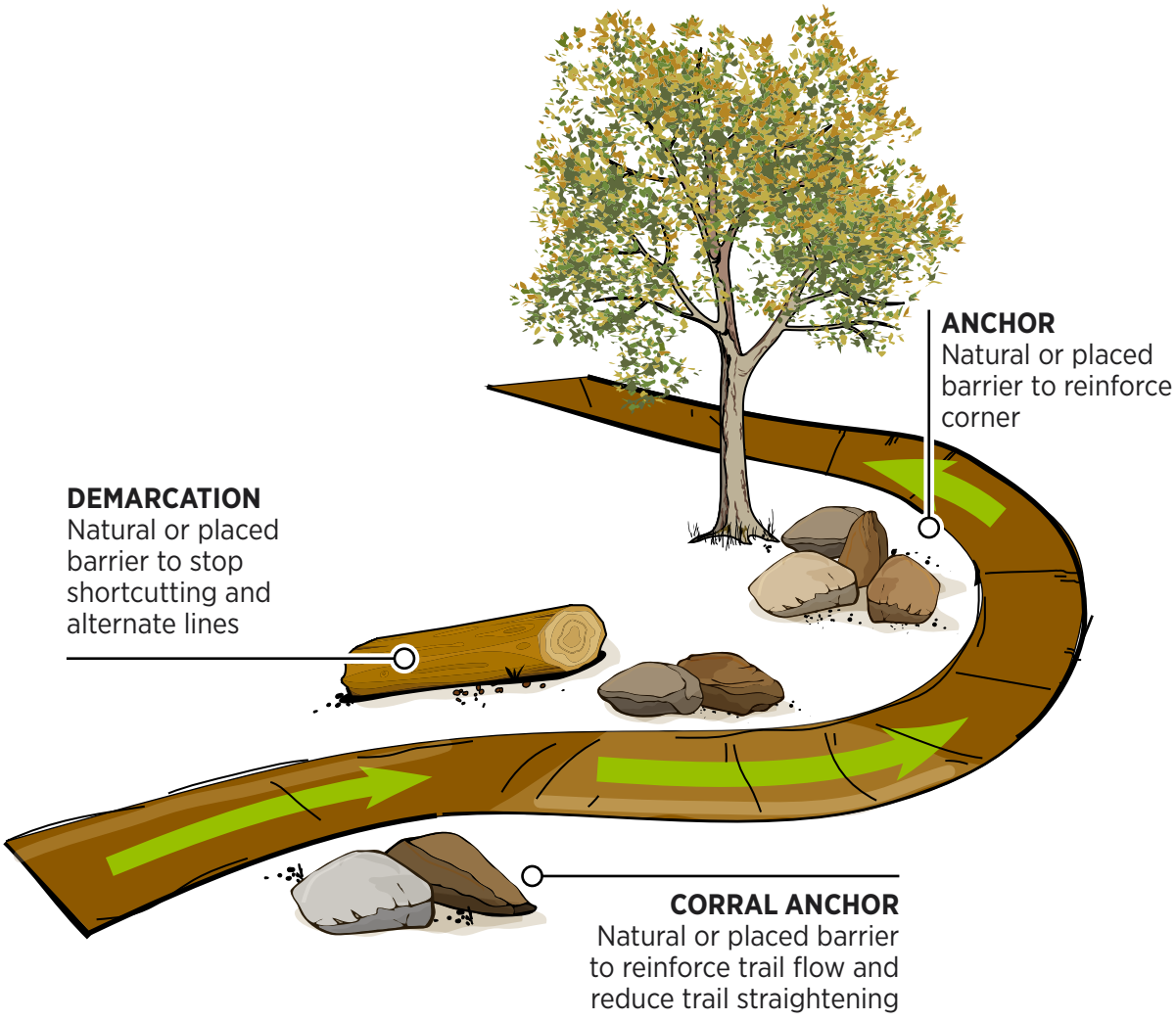


Figure 11: Demarcation and anchors

Turns and curves on horse trails

When gaining elevation over a short distance is required, incorporating turns into the trail alignment may be necessary. The design and construction of turns depend on the trail classification, landscape and topography. For horse trails, wide-sweeping turns, known as climbing turns, with a large radius and ample manoeuvring space, are preferred over tight switchbacks.

Wider turn radii enhance comfort for riders, ease for those leading horses, and accessibility for carriage driving.

Turn locations are identified and used as control points in the Concept Plan (Stage 4) and refined in the Detailed Design (Stage 6) of the Trail Development Process.

Climbing turn

A climbing turn follows the natural slope, these turns are easier and less expensive to construct due to less excavation and minimal need for fill material.

Climbing turns, illustrated in Figure 12, are best suited to slopes of seven per cent or less. In steeper areas, switchbacks are more appropriate and durable.

Switchbacks

Switchbacks are used to achieve elevation gain or descent on steeper slopes, and several turns may be required.

For horse trails, the turn radius of switchbacks should be as long as possible. The minimum turn radius recommended is 1.5 metres; any tighter and horses may stumble over their own legs. High-use trails or carriage routes may require minimum radii of 2.4–3 metres or more.[38]

The best place to locate a switchback turn is on a naturally level area where the least earthwork and soil movement is required. This increases trail sustainability and reduces the amount of construction required.

Switchbacks are built so that water from the upper leg drains freely off the corner of the landing or turn.

Retaining walls may be needed to support the trail legs or turns if trees and rocks are not available or the strength and durability of the soil is not adequate. Incorporating natural anchors such as trees, large logs or rocks into the corner of the turn is ideal, as illustrated in Figure 13.

Natural Surface Trails by Design[39] is an excellent reference to understand the feelings and perceptions of trail users generated by different switchback design elements.

38 Hancock et al., 2007, Chapter 4

39 Parker, T.S., 2004

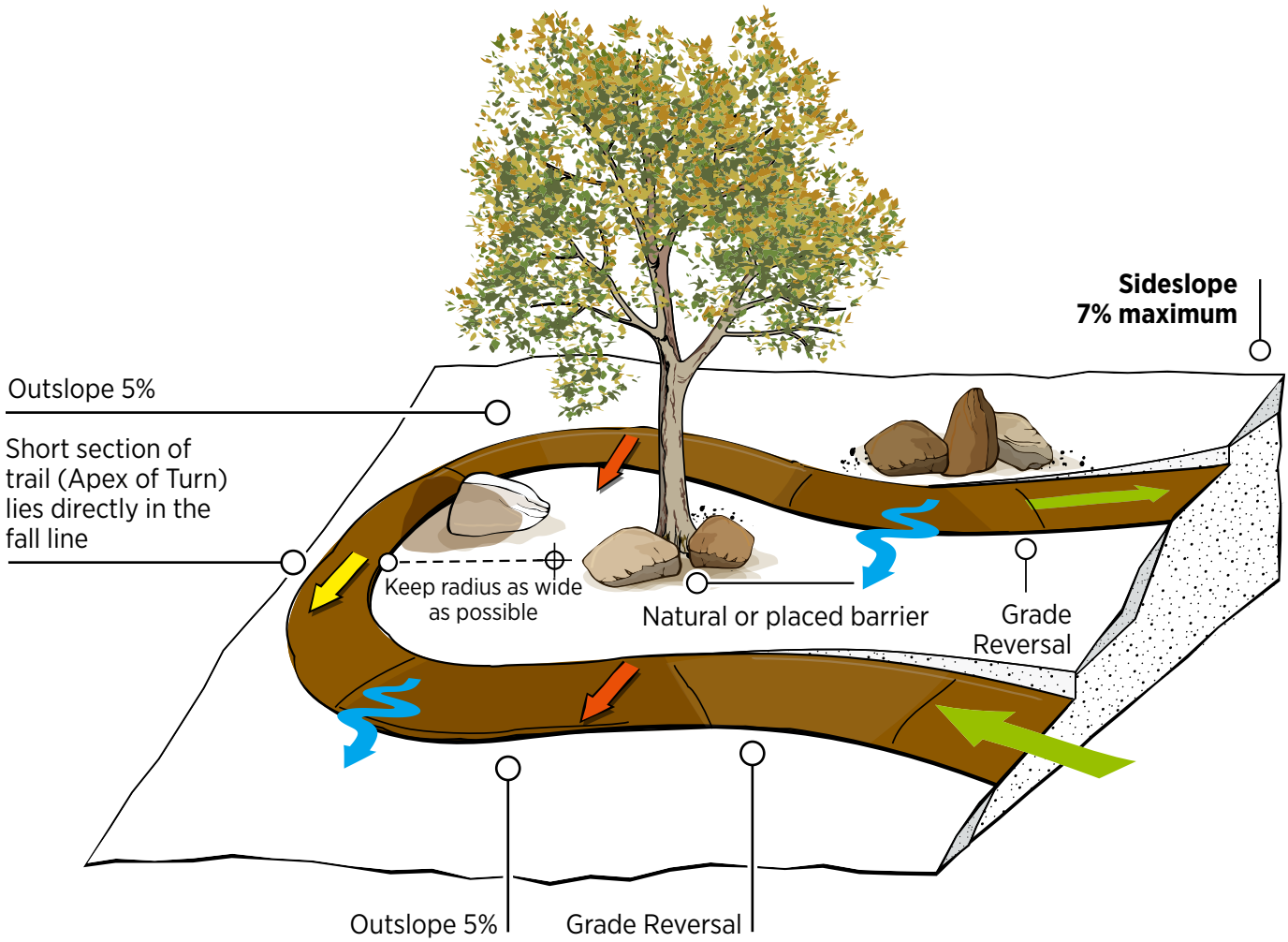


Figure 12: Climbing turn

Principles:

- Anchor the turn around a natural or placed object to reduce short cutting.
- Ensure that the trail is an adequate distance from the base of trees to reduce impact to the root system and future health of the tree.
- Keep the radius of the turn as wide as possible. Six metres or more is recommended for climbing turns on horse trails.[40]
- The trail will lie on the fall line of the slope for a short section of the corner. It is important that the side slope does not exceed seven per cent.
- The trail must be designed to shed water off the surface before it reaches the corner. Include a grade reversal, as described in Section 7.5, in and out of the turn.
- Ensure trail surface is outsloped to five per cent to assist in shedding water.

40 Hancock et al., 2007, Chapter 4

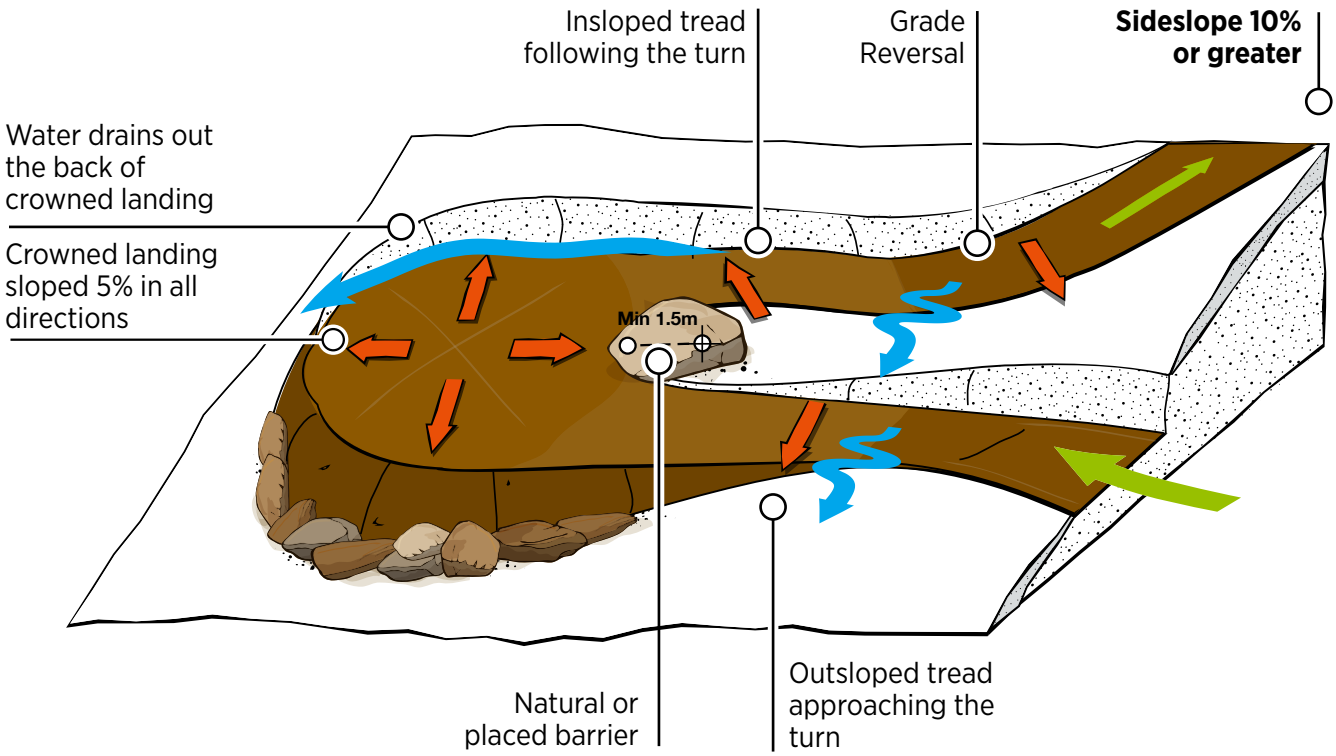


Figure 13: Switchback turn

Principles:

- This feature should be used where the sideslope is 10 per cent or greater.
- Anchor the turn around a natural or placed object to reduce short cutting.
- The wider the curve radius of the turn, the more comfortable the turn will be for horse and rider, the minimum turn radius is 1.5 metres for switchback turns on horse trails.
- Ensure that the trail is an adequate distance from the base of trees to reduce impact to the root system and future health of the tree.
- Crown the landing with five per cent sloped in all directions.
- The trail must be designed to shed water off the surface before it reaches the corner. Include grade reversal, as described in Section 7.5, in and out of the turn.
- Ensure trail surface is insloped five per cent approaching the turn and outsloped five per cent following the crowned landing to assist in shedding water. Section 7.5 has further details on outslope and inslope techniques.
- Rock retaining wall may be required.

Passing areas

Passing areas are wider sections of trail spaced at intervals, ensuring safe and comfortable passing without disrupting trail traffic flow. Passing areas can also help minimise vegetation trampling. The spacing of and need for passing areas will vary depending on the level of trail usage, the vegetation type and the terrain.

On trails with a low volume of users, typically the edge of the trail (known as the trail shoulder) is used for passing and manoeuvring space, with riders simply stepping aside and off the trail to let other users pass.

On trails with a high volume of users, appropriately sized passing areas are particularly useful, allowing faster users to safely overtake slower users without causing congestion or accidents.

On narrow trails and trails in steep terrain or dense vegetation, other trail users can find it challenging to move aside for horse riders. To mitigate this, passing areas are incorporated.

A passing area that is 1.5 metre-wide and extends for three metres alongside the trail is typically sufficient for a horse to move off the main path. Larger passing areas— around three by six metres—may be required to accommodate carriage drivers, larger groups, or riders leading horses or riding side by side for support.

Passing areas should be located within naturally occurring openings, if possible, to minimise vegetation impacts. Ideally, these areas should be in places with minimal slope and should have a stable, non-slippery surface with adequate drainage.

To improve safety, signage can be used to alert users of upcoming passing areas and to promote trail etiquette. In general hikers yield to horses and cyclists yield to both hikers and horses.

Sightlines

Sightlines are important so that oncoming trail users are clearly visible when a trail is shared use or dual directional, to avoid conflict and possible collision.

Ample sight distance gives the horse and rider time to adjust and be prepared for oncoming or passing trail traffic.

Mounted riders can see further than trail users on the ground. This added height helps others see the rider. When approaching the crest of a hill, a trail user should be able to see the head of other users over the hill, before reaching the crest. Riders training for endurance races and other trail users that travel at increased speeds require plenty of sight distance to avoid collisions. Downhill travellers need more stopping distance than uphill travellers.[41]

Where trails are curved, ensure vegetation is trimmed along the curve, or at heights where trail users still have appropriate sight distance. On corners and at passing areas, a trail user should be able to see an oncoming user through the vegetation. Sharp corners should be avoided for this reason.

Warren Blackwood Stock Route. *Photo—Kathy Miles*

41 Hancock et al., 2007, Chapter 4

7.2 Trail clearance corridor

The trail clearance corridor is the cleared space created along the trail to provide safe and enjoyable passage for trail users. The corridor has three main dimensions which are illustrated in Figure 14: tread width (A), corridor width (B) and ceiling or corridor height (C).

A well designed and crafted trail clearance corridor will enhance the trail experience, ensuring the area looks as natural as possible with a good sense of space, enclosure and views.

Dimensions for the clearance corridor will vary according to the trail design, classification and intended users. Read Appendix C for suggested dimensions in line with trail classifications.

Principles

- Keep the corridor as narrow as possible, consistent with the trail classification and intended trail users.
- Vary the width of clearing where appropriate to create an enjoyable experience.
- Provide widening along the trail for rest, and scenic views where necessary.
- Provide a larger or more open corridor to allow for passing and visibility for trails with high traffic or shared use when needed.
- Consider a wider clearing in vegetation types such as karri forest where the undergrowth will fall in and reduce the available corridor.

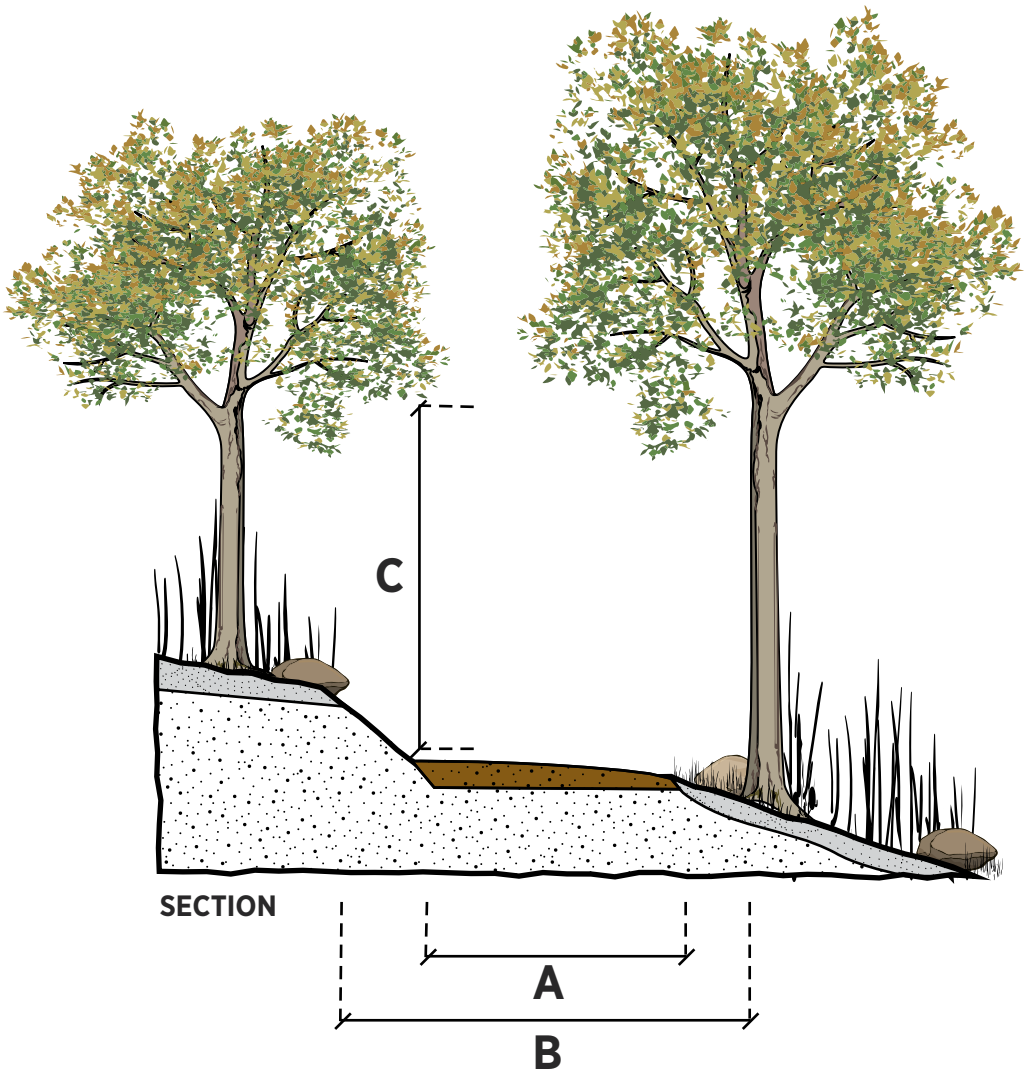


Figure 14: Trail clearance corridor

Clearing the trail corridor

The first step in constructing a new trail is to clear the agreed trail corridor of vegetation and obstacles.

It is critical that approvals and permits to clear vegetation and disturb the ground have been obtained before work commences.

Straight line pruning along the corridor boundary, known as hedging, is a common mistake in clearing the corridor. A more natural look can be achieved by pruning branches back to joints or removing whole plants. Care should be taken that sharp points are not left behind during the pruning process.

Clearing can be done by hand or machine and depends on the scale of project, logistics, budget and type of landscape and vegetation.

Open grasslands, coastal heath and woodlands will require very different techniques to dense forests with heavy understorey and canopy.

Clearing techniques need to be considered in Site Assessment (Stage 3) and Corridor Evaluation (Stage 5) of the Trail Development Process.

Once the vegetation and topography are assessed for the alignment, determine the clearing techniques in Detailed Design (Stage 6) and specify in Construction (Stage 7) documentation.

Appendix E has tips on clearing vegetation from the corridor.

John Forrest National Park. *Photo—DBCA*

7.3 Trail surface

Trail surface, or tread, needs to be durable, cost effective, suit the purpose and users of the trail, easy to maintain and blend in with surroundings.

Erosion, displacement and compaction are some of the most important forces impacting trail surfaces and need to be understood and managed. They are discussed in detail in *Natural Surface Trails by Design*.[42]

It is preferable to plan the trail alignment to take advantage of suitable natural soil types as far as practical, but alternative trail surfacing or tread treatments may be required.

Trails that do not have imported or alternative materials are referred to as natural surface trails.[43]

Choice of surface material will be influenced by the gradient, soil types, drainage needs, amount of expected use, intended trail experience and trail classification.

The choice also affects the speed at which trail users can travel. For example, materials such as fine aggregate and dry woodchips provide relatively good traction and are conducive to safe cantering. Hard surfaces, such as flat rocks, offer poor traction, and for safety reasons, limit travel to a walk.[44]

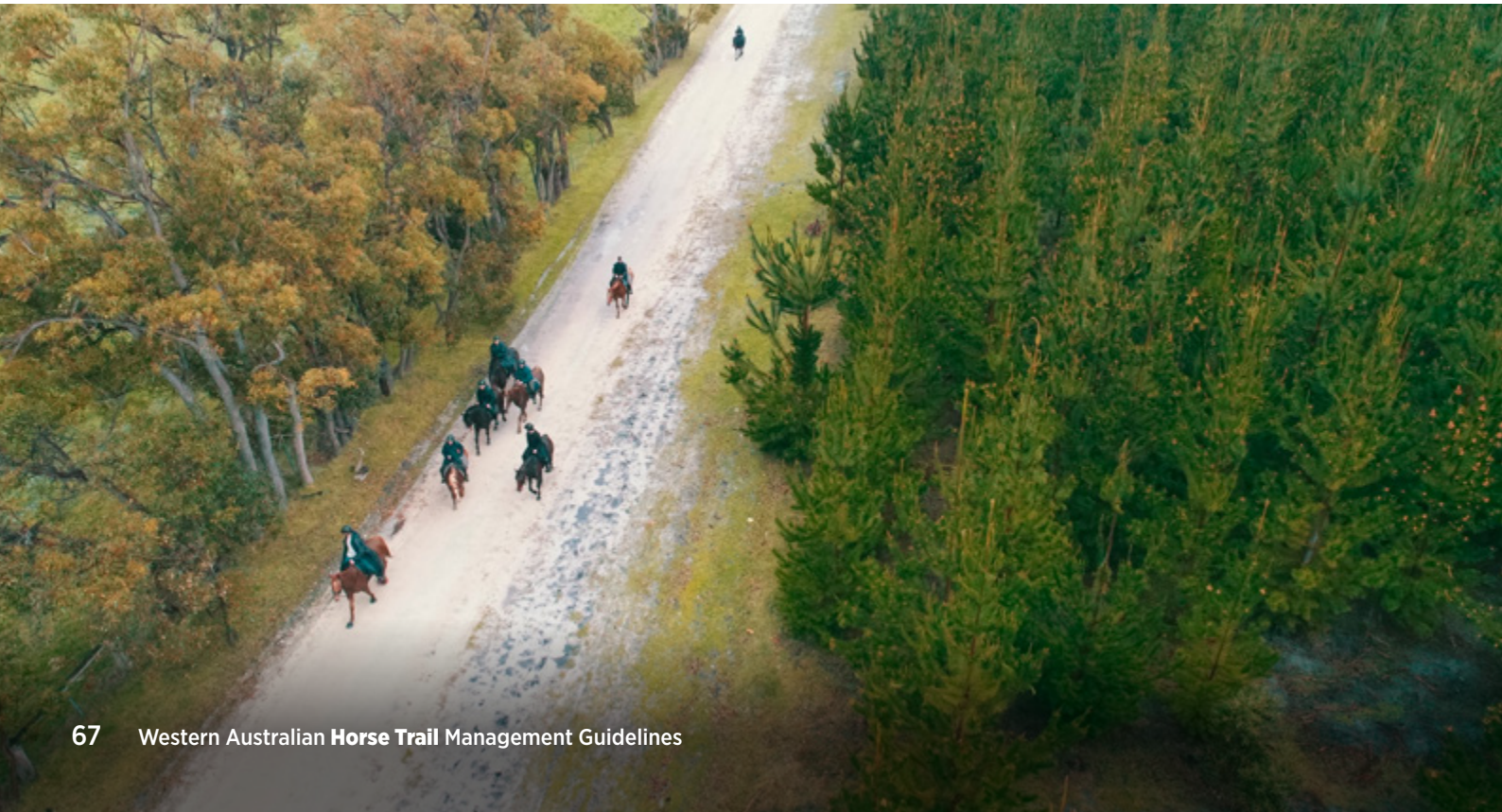
Easiest and easy classification horse trails require a firm, stable, even and well-maintained tread. Moderate classification trails will likely have modified surfaces. If the soil type can sustain the anticipated design and use, then alternative materials may not be needed. Difficult and extreme classification trails are focused on minimal modifications so favour natural earth surfaces, however, hardening may be needed in steep terrain.

Read Table 7 in Section 11 for an explanation of quality of tread for each horse trail classification.

---

42 Parker, 2004
43 Ibid
44 Hancock et al., 2007, Chapter 4

10th Lighthorse Bridle Trail. *Photo—Jay Peoples and Vineyard 28*



Understanding soils

Soil type and structure varies across landscapes, hillsides, valleys and vegetation complexes. In fact, soils can change frequently along the trail and with each soil change comes differences in trail construction and drainage requirements.

Ideally, the trail surface, or tread material, would be the natural soil especially for long distances. This reduces impacts on budget, environment and means the trail better fits into the landscape.

In general, the soils along the alignment will be clay, silt, sand, loam or a combination. Each type performs very differently so it's important to know how they will behave as a trail surface.

Different soil types will:

- vary in their ability to maintain large volumes of traffic through compaction and displacement
- resist water erosion and have varying performances when wet i.e. muddy or well drained
- have suitably smooth surfaces for specific trail use
- maintain tread stability in varying trail gradients.

Soil suitability of the proposed alignment needs to be assessed, and areas identified that require special attention or need to be avoided, such as seasonally inundated areas, in the Site Assessment (Stage 3) of the Trail Development Process. Responses to soil types will be determined in the following stages of the process.

Natural Surface Trails by Design describes the textures and behaviours of common trail tread materials. This important study describes general soil characteristics that can easily be put into practice.

Surface materials

Surface or tread materials used on horse trails can include:

- natural earth and rock when use levels and soil types are appropriate
- compacted aggregate such as gravel, road base or crushed limestone, with or without soil stabilisers
- trotting fines (also known as blue metal dust or cracker dust) is often used to surface high-use peri-urban trails
- sand (<100 mm deep)
- organic material such as woodchips when use levels and soil types are appropriate.

Natural surface trails are preferred where possible for horse trails, however compaction and the application of an artificial surface (e.g. trotting fines, crushed rock, sand, bitumen) may be required to meet the trail classification and user needs, or where sites are of higher use or where trail instability is observed. For horse confidence, consistent trail surface colour is recommended.

WA Horse Trekkers, Gidgegannup. *Photo—Noelene Scott*

Surface stabilisation systems or modular plastic cell systems may be buried to stabilise the trail, wet areas and high-use zones such as yards and hitching rails. There are numerous products available, generally consisting of plastic grids of various forms. Plastics can become brittle and fragment over time, so their use requires careful consideration. They are expensive and should be trialled in situ before committing to large areas.

Natural rock within the trail tread can enhance stability but may need to be removed or modified based on the intended trail experience and classification. Easiest and easy trails typically do not include natural rock. On moderate classification trails, flat rocks may be retained to improve tread stability. Rocks that users are likely to ride around should be removed, especially if they are protruding, sharp or loose. Natural rock on difficult and extreme trails is expected, however it may be modified to address risk management concerns or reduce ongoing maintenance.

Rock armouring is sometimes used to harden a trail in very soft or persistently wet areas where no alternative route is available. It can also be used to reduce user-created erosion and soil displacement. The reinforced surface handles the weight of horses well.

Rubber matting can be used on built surfaces such as bridge crossings to reduce the risk of slipping and dampen noise, it is also sometimes applied in yard and hitching rail areas to combat compaction. Other non-slip solutions are outlined in Section 8.4 Bridges.

Soil stabilisers or additives are liquid or powder products that bond or add structure to soils, to create a trail surface that is less prone to wind and water erosion or displacement. Cement can be used as stabiliser and there are several synthetic products available, generally polymer based. They can be expensive with a short life span and should be trialled in situ before committing to large areas.

Geotextile is commonly used in dips requiring hardening to prevent the development of boggy areas. Hardening is accomplished by lining the prepared area with non-woven geotextile and covering the material adequately with a hard-wearing surface material such as compacted road base.

Asphalt, cement and pavers may be slippery for horses. As colours, texture and the sound may startle them, they are generally avoided for horse trails due to concussion on horse legs and poor traction with metal horseshoes, noting crossing these surfaces may be required for road crossings and trail linkages. Hardened surfaces may be utilised on shared use trails such as rail trails where horses would generally walk.

Duck boarding, or timber that provides a stable surface over soft or unstable soils and **Boardwalks,** elevated structures used to minimise impacts on environmental, cultural or other values, are generally not used on horse trails. Where they are considered, refer to Section 8.4 Bridges for basic principles.

Trail designers and managers also need to ensure that the trail surface is free of elements that may injure a horse, such as metal, glass, loose wire, deep potholes, bog holes or steep slippery surfaces.

7.4 Trail cross section

Trail cross section or profile will be determined by gradient, surfacing and construction logistics.

The main choices are:

- Ground level
- Crowned surface
- Bench cut

Ground level

A ground level cross section is possible where the soil type is suitable for the user volume, the trail cross fall is at or less than five per cent (one in 20) and drainage is managed in other ways.

This cross section can be formed using the natural earth through clearing of vegetation, requiring no excavation. If an imported surface material is required, the trail area needs to be excavated and material laid to surface level, illustrated in Figure 15. Depth and width will vary and depend on trail design, soil, material and construction.

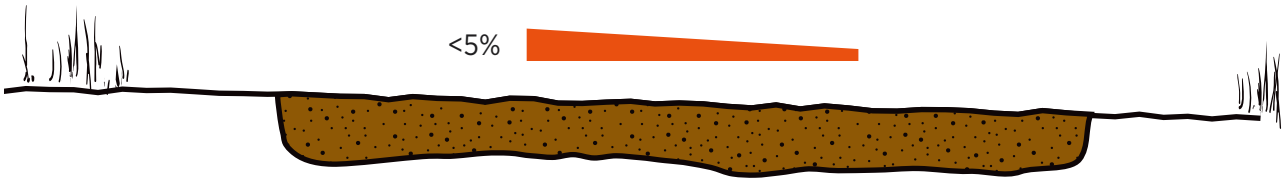
Crowned trail surface

Crowning the trail provides adequate drainage on trails that are located on flat topography, illustrated in Figure 16.

The tread material used to crown the trail is either imported or sourced from the trail corridor. Imported material needs to be from a sustainably managed source and clean of weeds and disease.

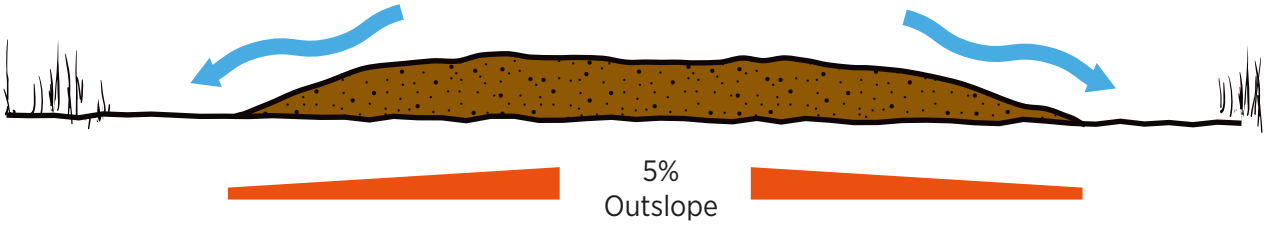
Where required, rock armouring can be used to elevate trail out of very soft or wet areas.

The shape of a crowned tread with bare soil surface is difficult to maintain under horse traffic. Unless these treads are hardened with appropriate amounts of gravel and geosynthetic materials, they tend to cup or rut easily.[45]



If natural earth tread not suitable,
box and fill to adjacent ground level

Figure 15: Ground level trail



Tread material is either imported or sourced from the trail corridor

Figure 16: Crowned trail

45 Wood, Recreational Horse Trails in Rural and Wildland Areas, Design, Construction and Maintenance, 2007, page 91

Bench cut

Cutting the trail across the side of a hill, or on the contour, is called a bench cut.

The trail tread should have an outslope of five per cent (one in 30 to one in 20), which is critical to enable water to drain across the trail.

For bench cut trails, the organic matter and vegetation covering mineral soil should be removed before further excavation. Any surplus topsoil should be dispersed where it will not impede drainage.

The uphill side is referred to as the back-cut, back-slope or batter. This area needs to be blended into the gradient of the hill to minimise visual impact and prevent erosion. A maximum gradient of 50 per cent (one in two) is generally recommended for the batter.

A **full bench trail** involves excavating the hillside and puts the entire tread on mineral soil, maximising stability and minimising ongoing maintenance, illustrated in Figure 17.

This technique results in a firm and stable tread with minimal maintenance, however there is more soil disturbance than a partial-bench construction. A significant volume of excavated soil will need to be removed off-site or dispersed downslope and this may not be appropriate or feasible.

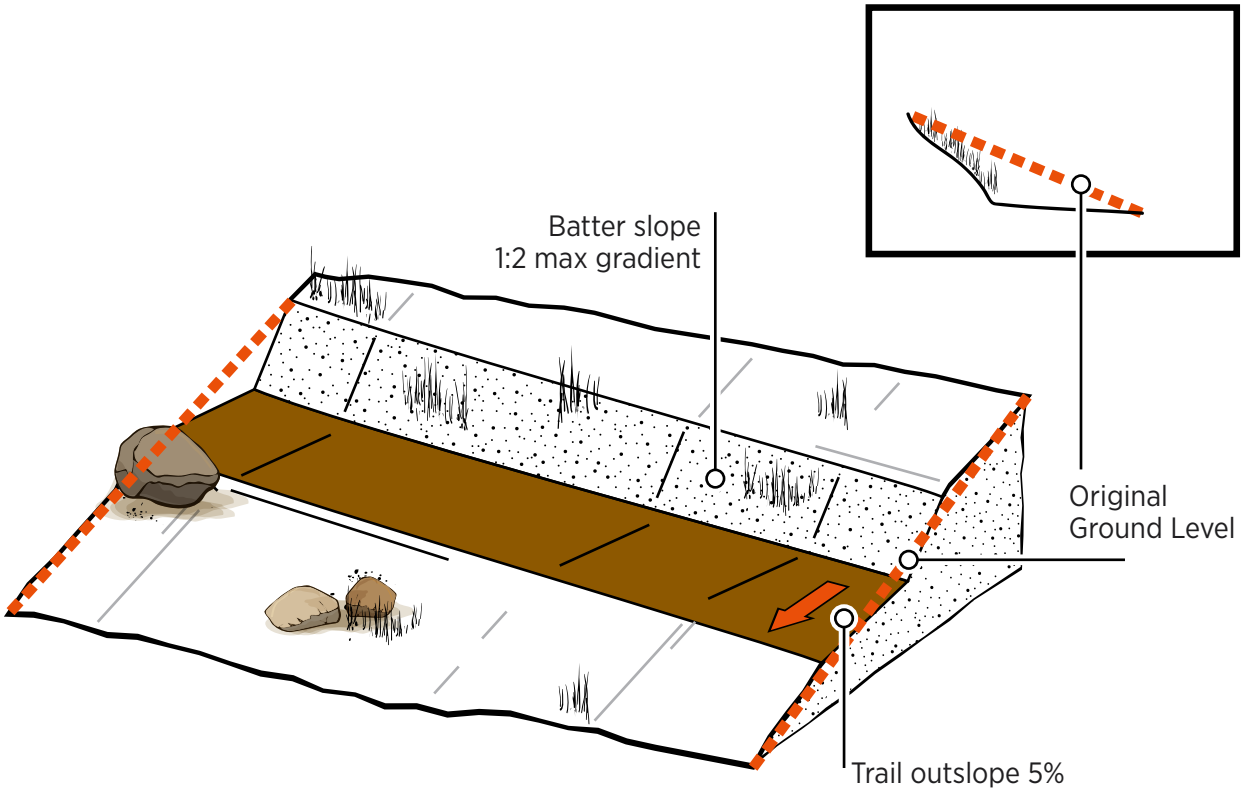


Figure 17: Full bench cut

On a **partial bench trail**, a part of the hill is cut away and the removed soil is placed at the lower edge of the trail to establish the desired width, balancing cut and fill as illustrated in Figure 18. A partial bench requires less ground disturbance due to the shallower cut and is a good solution when roots or impenetrable rock make full bench construction difficult.

However, it may not be as stable as a full bench cut trail. The fill section needs to be compacted consistently so fill-soil doesn't slip or settle and allow a berm, or ridge, to form on the lower edge of the trail and obstruct drainage. Achieving good compaction of the fill may be difficult in some soil types.

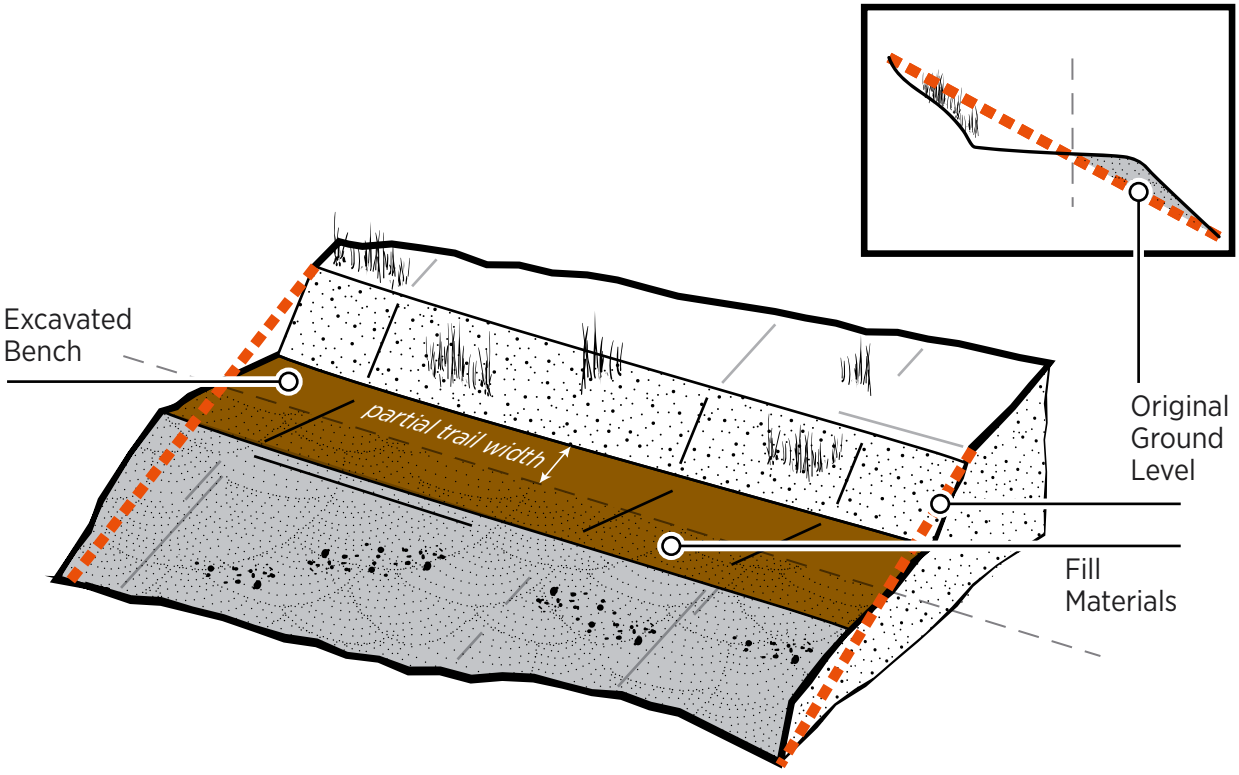


Figure 18: Partial bench cut

A **partial bench trail with retaining wall** may improve the sustainability of the technique, illustrated in Figure 19, but will add significantly to cost and timeframe.

The wall holds the fill soil in place and is installed a fraction lower than the tread so that water can still sheet off the trail.

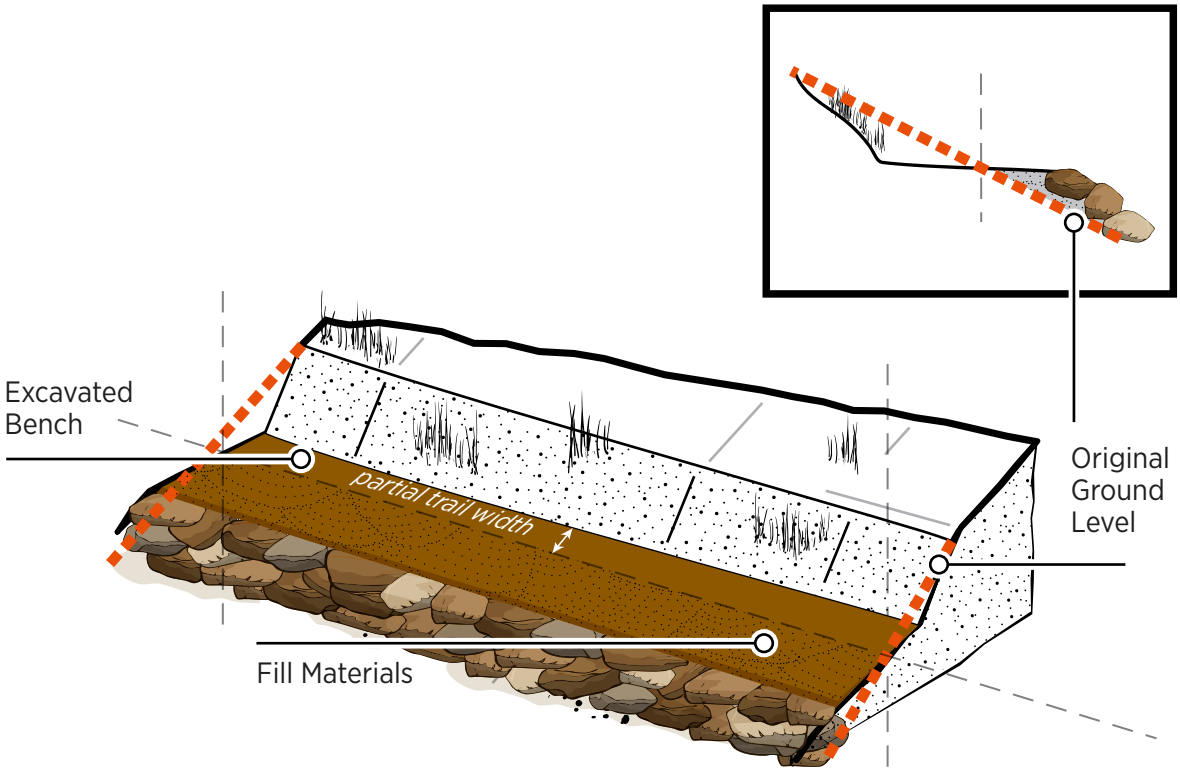


Figure 19: Partial bench cut with retaining wall

7.5 Water management and drainage

Understanding and managing rainfall and water is one of the most important factors in creating and managing sustainable trails.

Trail alignment, gradient, cross section and surface material all play a part in how water will behave on a trail and will dictate how it needs to be managed.

Erosion is a physical force that needs to be managed. Simply put, the steeper the grade and more unstable the trail surface, the more likely it is to erode.

Drainage features for horse trails include—

Grade reversals divide the trail into continuous water sheds by changing the trail gradient briefly, dropping before rising again.

Outsloping trails have a section of trail that tilts slightly down and away from the high side, promoting water to flow off the trail.

Knicks are a shaved down section of trail that intercepts water and directs it off the trail.

Rolling grade dips build on a knick by adding a gentle ramp, reinforcing the knick.

Water bars are raised barriers constructed at an angle across a sloping trail, directing water running off the trail before it gains momentum.

Principles

- Research rainfall patterns and conditions and understand how normal and extreme events will impact trail design.
- Understand how surface water moves along and around the trail, where it's coming from and where it is going or if it's not going anywhere if the trail is too flat.
- Shed water off the trail before it can gather speed and create erosion or before it can pool and create puddles.
- Use grade reversals as the primary method of water management and supplement this with other drainage features as needed.
- Apply approximately five percent (one in 20) outslope in most situations.
- Use other drainage features such as, knicks, rolling grade dips or water bars as needed.
- Drain water off flat trail sections by building up and crowning the trail surface.
- Build drainage features in ways that blend into the landscape and if done well, trail users won't notice them.
- Ensure there is an appropriate maintenance program to keep drainage features working properly.
- Monitor trail over time and build additional drainage features as needed.

Drainage intervals

The intervals for drainage features are important to consider in managing water and erosion. The combination of surface material and gradient influence the distance between features.

Natural Surface Trails by Design[46] is an important source of information on the maximum length between drainage features on common trail surface materials, according to gradient.

These drainage intervals are hypothetical as absolute numbers are not possible, especially in extreme weather events.

Therefore, the values in Table 6 are only a guide. Conditions and results on individual trail projects will vary and need to be adapted to suit.

46 Parker, 2004

Table 6: Drainage intervals on common surfaces

Surface tread	Trail gradient										
	0%*	2%	4%	6%	8%	10%	12%	14%	16%	18%	20%
Clay loam with high quantity of gravels, cobbles and stones.	65m	50m	35m	25m	20m	15m	10m	7m	5m	3m	1.5m
Gravelly clay	55m	40m	30m	21m	15m	10m	7m	4m	2.5m	1m	
Loam with high quantity of gravel and stones	50m	35m	25m	17m	11m	8m	5m	3m	2m	1m	
Clay**	45m	30m	22m	15m	10m	7m	4m	2m	1m		
Loam	40m	27m	17m	11m	7m	4m	2.5m	1m			
Crushed granite or limestone, angular particles	38m	23m	15m	9m	5m	3m	1.5m				
Organic soil	33m	20m	11m	7m	4m	2m					
Sand	30m	15m	9m	5m	2.5m	1m					

This table is derived from *Natural Surface Trails by Design* and converted to metric.

* Unless it is sustainably pitched to drain to the side, no tread should have 0% gradient. The 0% figures are listed as an upper drainage spacing limit for gradients above 0% and below 2%.

** Although compacted pure clay can be cohesive even on steep grades, it is generally too slippery when wet to be practical.

Mungalla Aboriginal Tours, Townsville. *Photo—Tourism and Events Queensland*

The half rule

The half rule states that a trail gradient should never exceed half the gradient of the side slope.

If the trail gradient is more than half the side slope gradient, water is more likely to run down the trail and not sheet off, causing erosion. It is very difficult to implement effective drainage on trails that do not fit the half rule.

The half rule is especially important when working with gentle slopes. It may be assumed that gentle slopes are less susceptible to erosion, which is not always the case.

The half rule is illustrated in Figure 20 and 21.

There are exceptions to the half rule:

- Erosion-prone soils may have a maximum sustainable gradient of just four or five per cent (one in 25 or one in 20), which can be much less than half of the gradient of the side slope.
- Soil type influences the maximum sustainable gradient for each trail location, irrespective of the side slope.
- Very steep grades will need a higher frequency of drainage features and may require surface treatments that protect the trail surface,
  such as armouring.

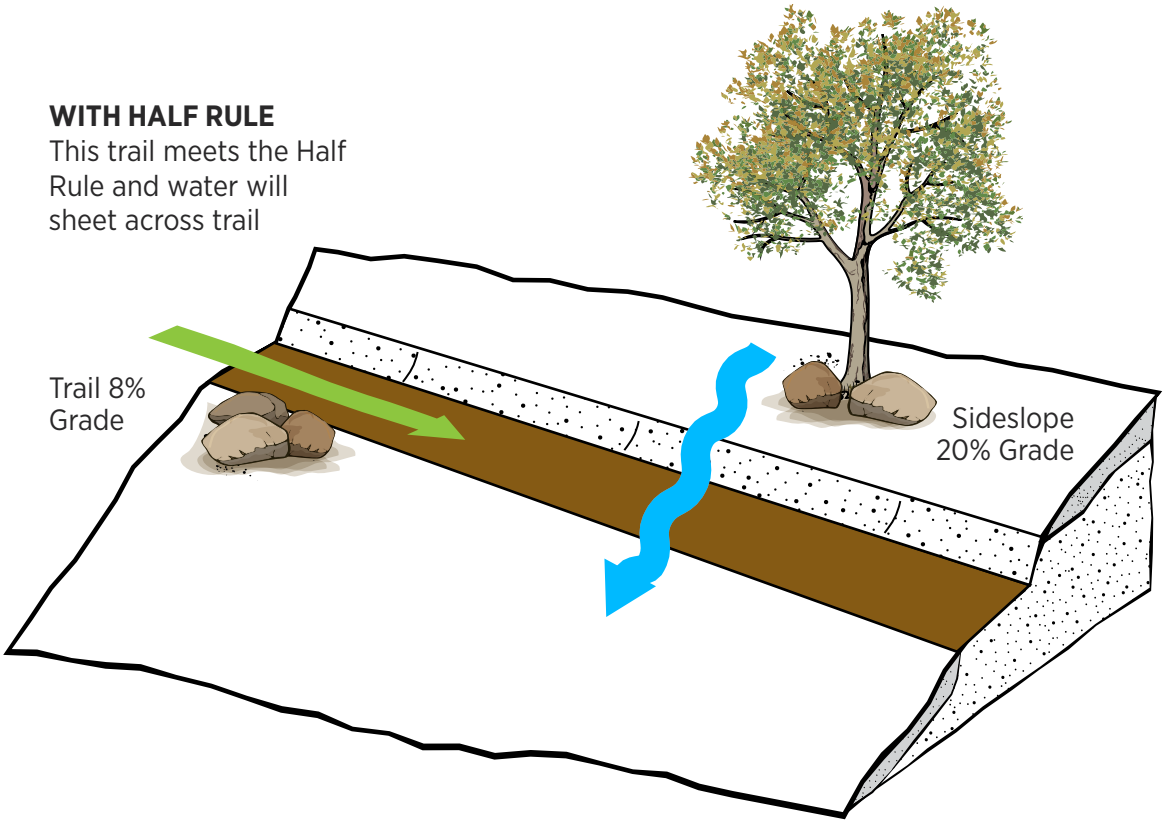


Figure 20: Half rule

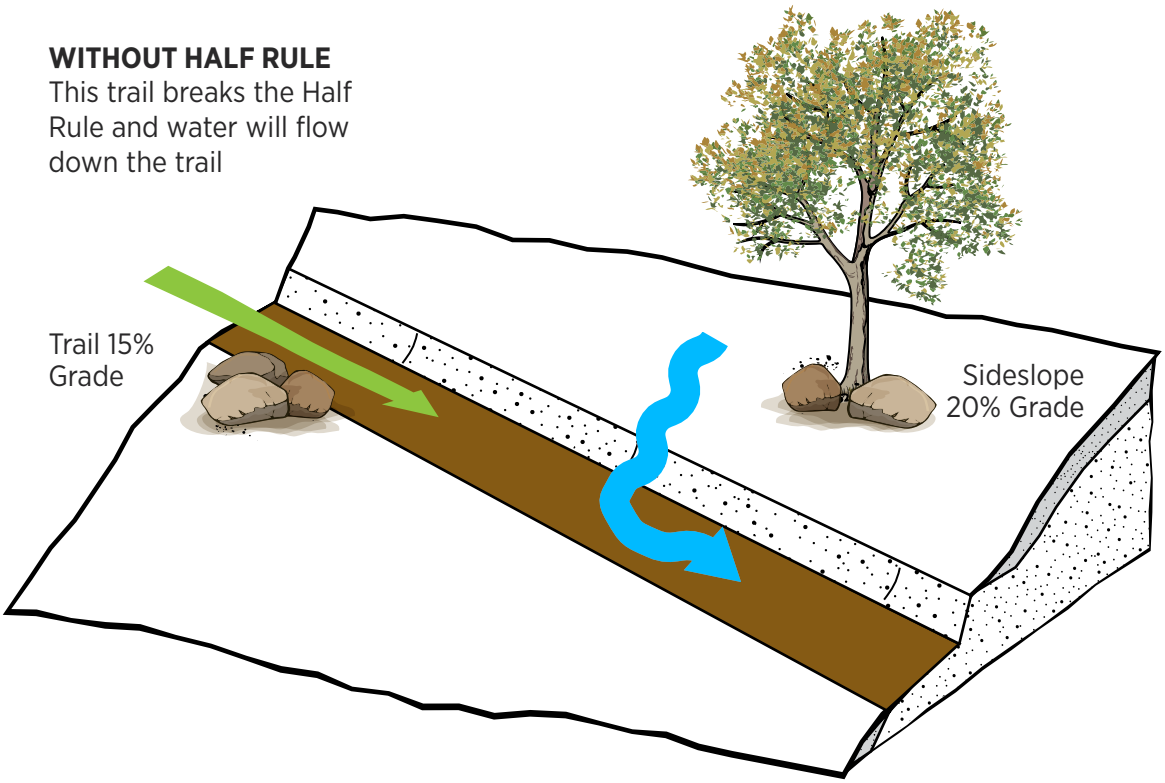


Figure 21: Without half rule

Grade reversals

Grade reversals should be planned and built into all new trails and can be added to existing trails where needed. They make trails more sustainable, provide excellent drainage solutions and should be used as the primary method of trail drainage.

A grade reversal is a place where the tread changes from descending to rising, illustrated in Figure 21, this forces water to leave the trail at the low point of the grade reversal before the water can gain enough velocity to cause water erosion.

Grade reversals divide the trail into continuous small watersheds. Drainage on one part of the trail won't affect another part. Grade reversals also reduce the effect the trail might have on the hydrology of the area.

Frequent grade reversals are critical and should be created primarily by designing an alignment with regular, subtle undulations. It is then important to ensure the trail is not levelled out during construction.

It is much easier to build grade reversals into new trails than to retrofit them into a poorly designed trail. In some cases, it may be better to realign a trail with severe erosion or water-pooling problems and rehabilitate the existing alignment.

It is important to ensure that at the low point or dip of each grade reversal there is adequate outslope and unobstructed drainage off the tread. This means there is no pooling of water adjacent to the trail.

Although maintenance is usually minimal, grade reversals will collect leaves and silt that need to be cleared out each season and after heavy rain events. They will fill up over time if not maintained and become ineffective.

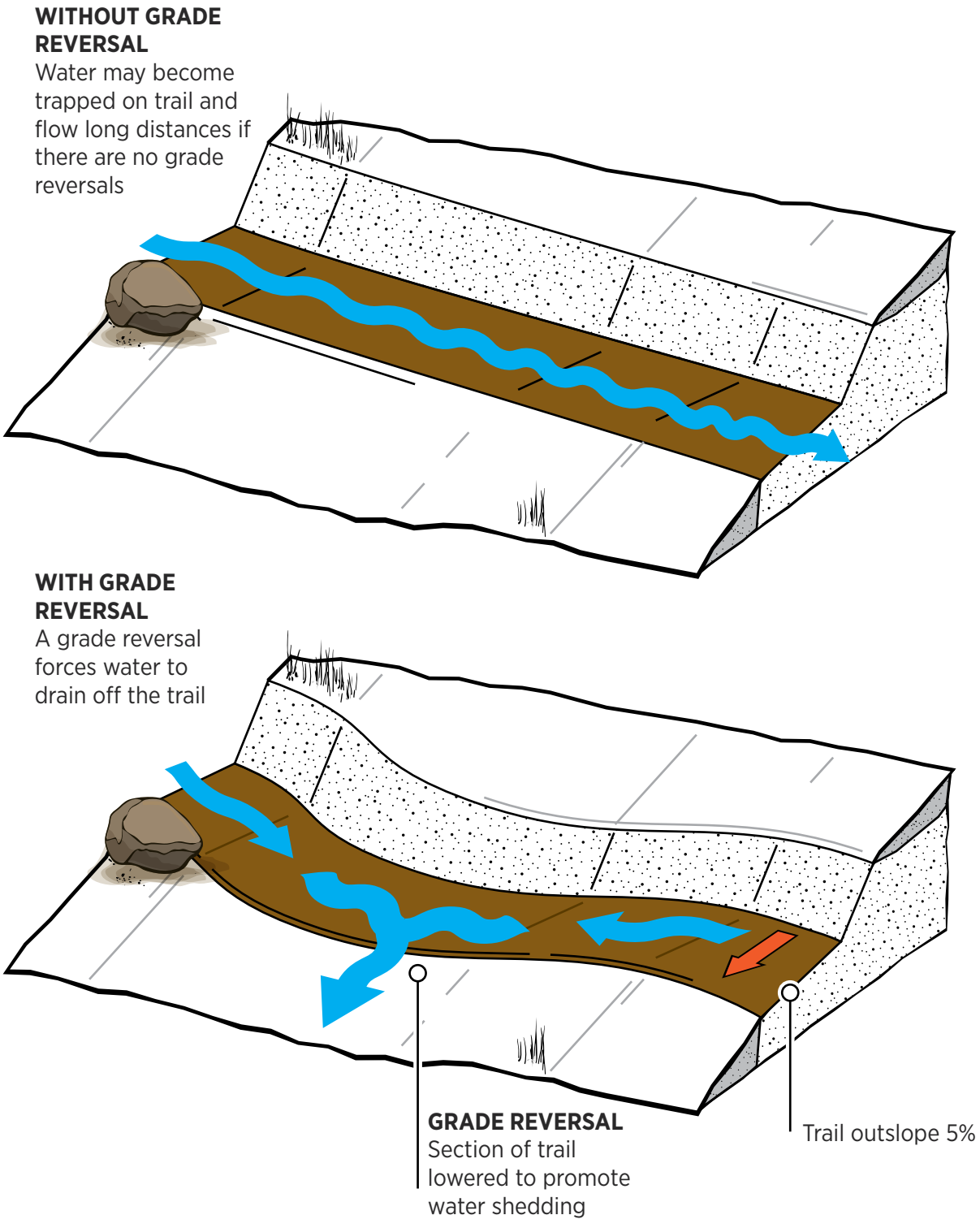


Figure 22: Grade reversal

Outslope vs inslope

Outsloping trails have a tread that tilts slightly down and away from the high side, or sideways from high to low, as illustrated in Figure 23.

This encourages water to sheet across and off the trail instead of running down the centre and causing erosion. Trail treads should be built with a five per cent (one in 20) outslope unless there is a specific need for insloped or level tread.

In loose soils like sands or pea gravel, the trail tread may require regular maintenance to maintain the outslope, as the tread will tend to 'cup' due to soil displacement.

In some situations, trails may be intentionally built with an inslope and combined with other drainage features, such as grade reversals, to shed water from the tread, as illustrated in Figure 24.

Inslope can be useful on the upslope side of switchback turns to direct drainage away from the trail below, as illustrated in Figure 13. It is also useful on wet slopes with significant surface flow or seepage, to intercept drainage and direct it to specific drainage points rather than letting it flow across the whole tread.

Where inslope is used, it is important to use regular drainage points to shed water back across the trail and downslope. Rock armouring or culvert pipes may be required.

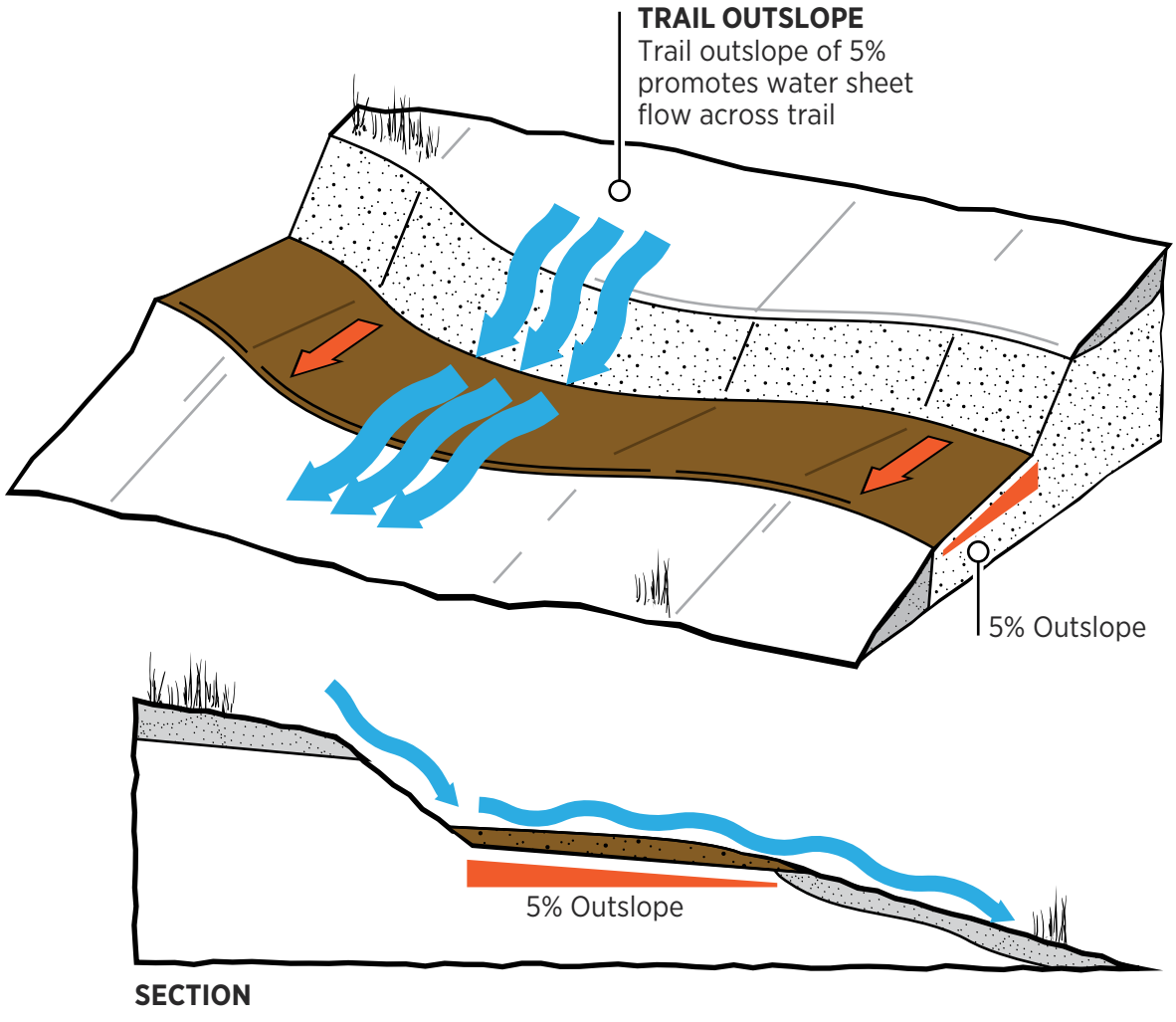


Figure 23: Outslope

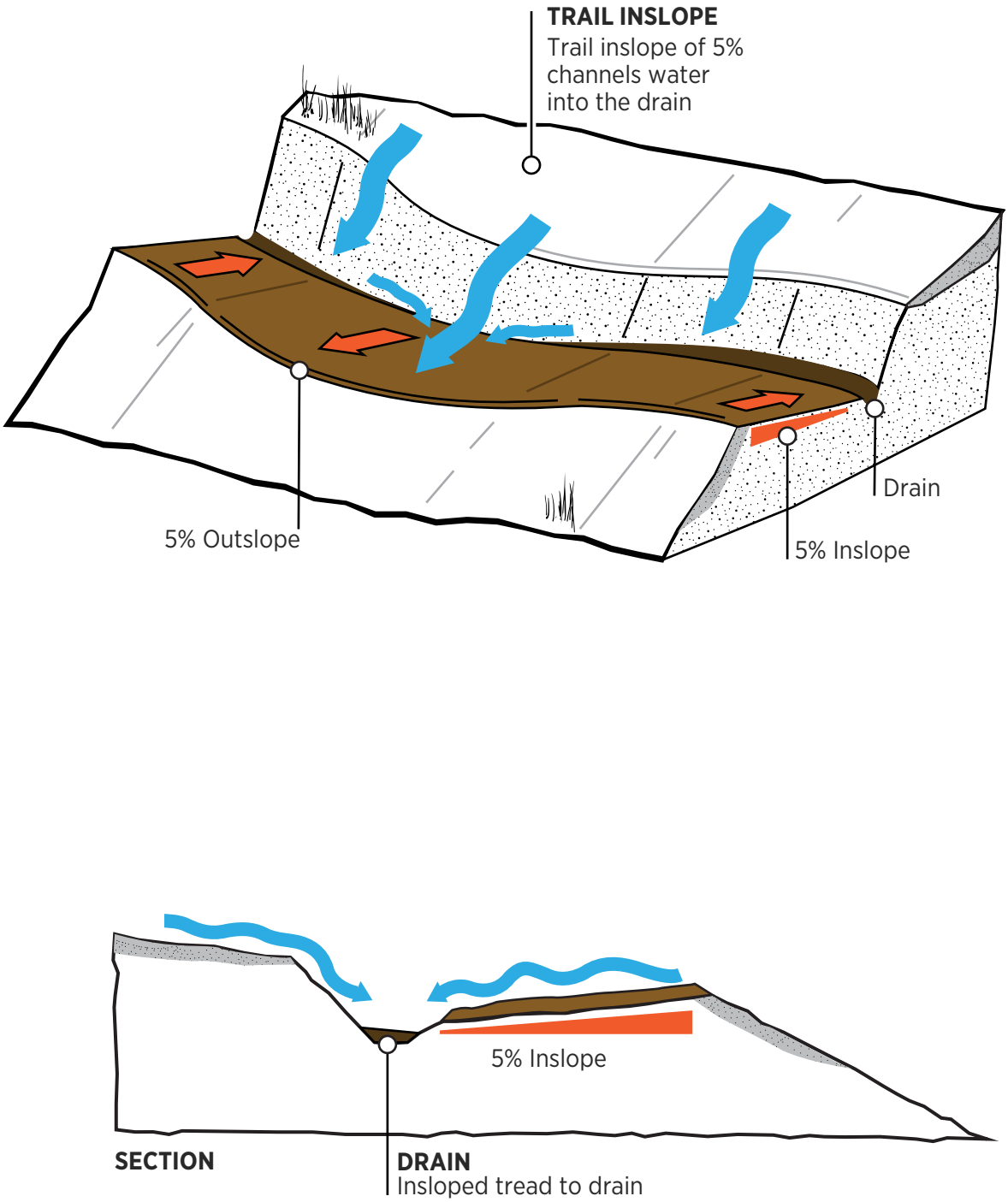


Figure 24: Inslope

Knicks

A knick is a shaved down section of trail that intercepts water running down the tread and directs it downslope. It is roughly semicircular in shape with a length of up to double the tread width, at a minimum 1.5m, as illustrated in Figure 25.

The centre of the knick is outsloped at 15 per cent (one in six) to draw the water off the tread.

There must be lower ground immediately adjacent to the knick and generally the same gradient as the knick to ensure free drainage downslope.

The ground adjacent to the knick needs to be kept clear of vegetation, taking advantage of natural depressions and clear areas adjacent to the trail tread.

Knicks that are too small will block up with leaves, silt and other surface debris after the first rain of the season.

Although maintenance is minimal, knicks will need to be cleared out each season and after heavy rain events to clear leaves and silt. They will fill up over time if not maintained and become ineffective.

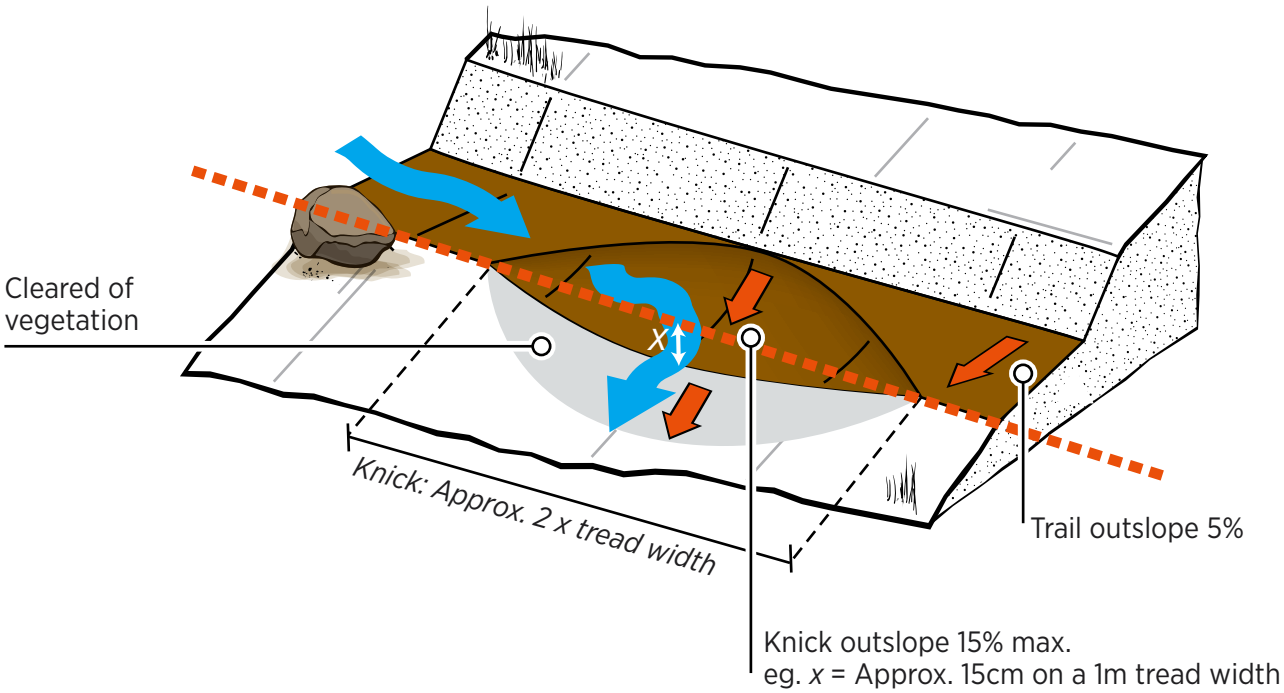


Figure 25: Knicks

Rolling grade dips

Rolling grade dips build on the knick feature, illustrated in Figure 26. The knick is built and followed by a long gentle ramp. The material excavated from the knick is used to create the ramp that reinforces the knick.

The ramp length should be approximately three times the tread width.

Proper placement of a rolling grade dip is essential. A natural roll or change in the trail gradient to be accentuated is the best place and avoid placing rolling grade dips in turns.

Properly constructed rolling grade dips are very horse friendly and tend to hold up well under horse traffic.[47]

Although maintenance is minimal, rolling grade dips need to be cleared out each season and after heavy rain events to clear leaves and silt. They will fill up over time if not maintained and become ineffective.

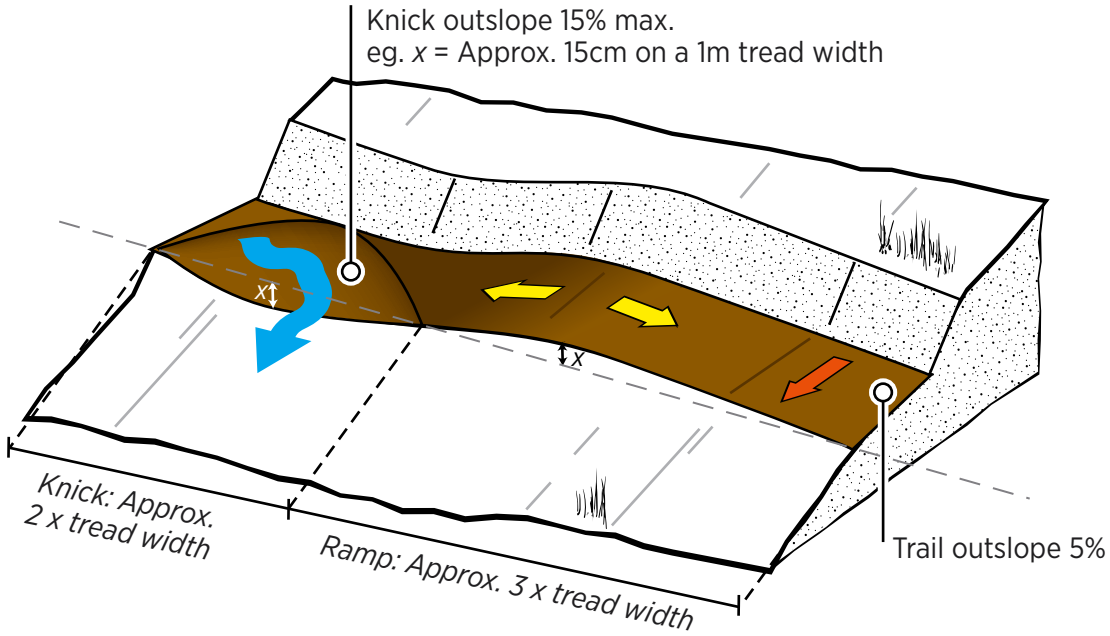


Figure 26: Rolling grade dips

47 Wood, 2007, page 96

Water bars

A water bar is a raised barrier constructed at an angle across a sloping trail. It catches water running down the trail before it gains momentum, as illustrated in Figure 27.

Only use water bars where other drainage options are not possible as they require frequent maintenance. They can also become a safety hazard, causing a trip or slip. They add cost to the project and timber water bars may be lost in a bushfire.

Water bars can be avoided by re-routing the trail to shallow trail gradients or installing rolling grade dips and knicks.

Water bars may be required where the soil type is very loose or mobile and won't hold rolling grade dips and knicks such as sandy soils or where other treatments are not practical.

Principles

- Assess the space needed for a series of water bars using Table 6 as a guide.
- Choose suitable materials that suit the trail experience such as in-situ material, logs, timber board or stone. Note that pine and softer style timbers tend to splinter under the wear of horse hooves.
- Angle bars at 30 to 45 degrees across the trail for most situations but this will vary based on slope and soil erodibility.
- Cut the trail tread upslope of the water bar so the water is guided into the drain.
- Extend the water bar beyond the edge of the trail to disperse the water on the downhill side and discourage trail users from going around it.
- Take advantage of existing depressions beside the trail to ensure water sheds freely downslope.
- Ensure a flat surface on top of a water bar wherever possible to reduce trip hazards.

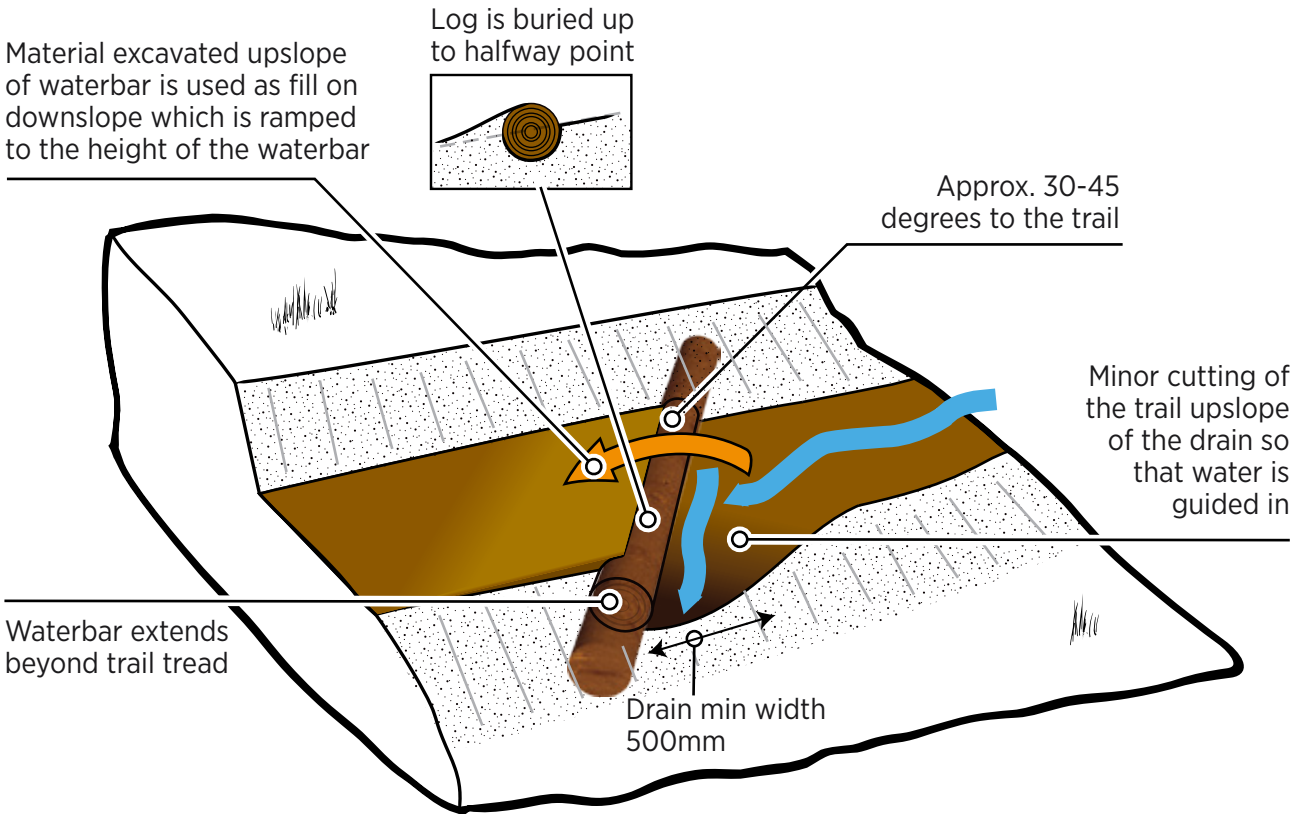


Figure 27: Water bar

Armouring natural drainage lines

Seasonal watercourses and drainage lines are common in WA. Rock armouring is one means of preserving the trail tread where sufficient rock is available locally. It also allows trail users to pass through water and wet areas, as illustrated in Figure 28.

Armouring can be applied on the trail in the drainage line, along with the approach and exit. Failing to make the armouring wide enough on the approach and exit is a common mistake.

Stones that will not dislodge are best, framed with larger shoulder rocks and hand-fit tightly together. Aggregate material needs to be packed into the gaps to tighten the formation.

In some soil types, it may be necessary to underlay stones with a base course or geotextile.

A rock spillway downhill of the trail can provide further stability and scour protection where required.

The level of peak seasonal flows and scour potential need to be assessed to determine the armouring dimensions and if a rock-lined spillway is necessary.

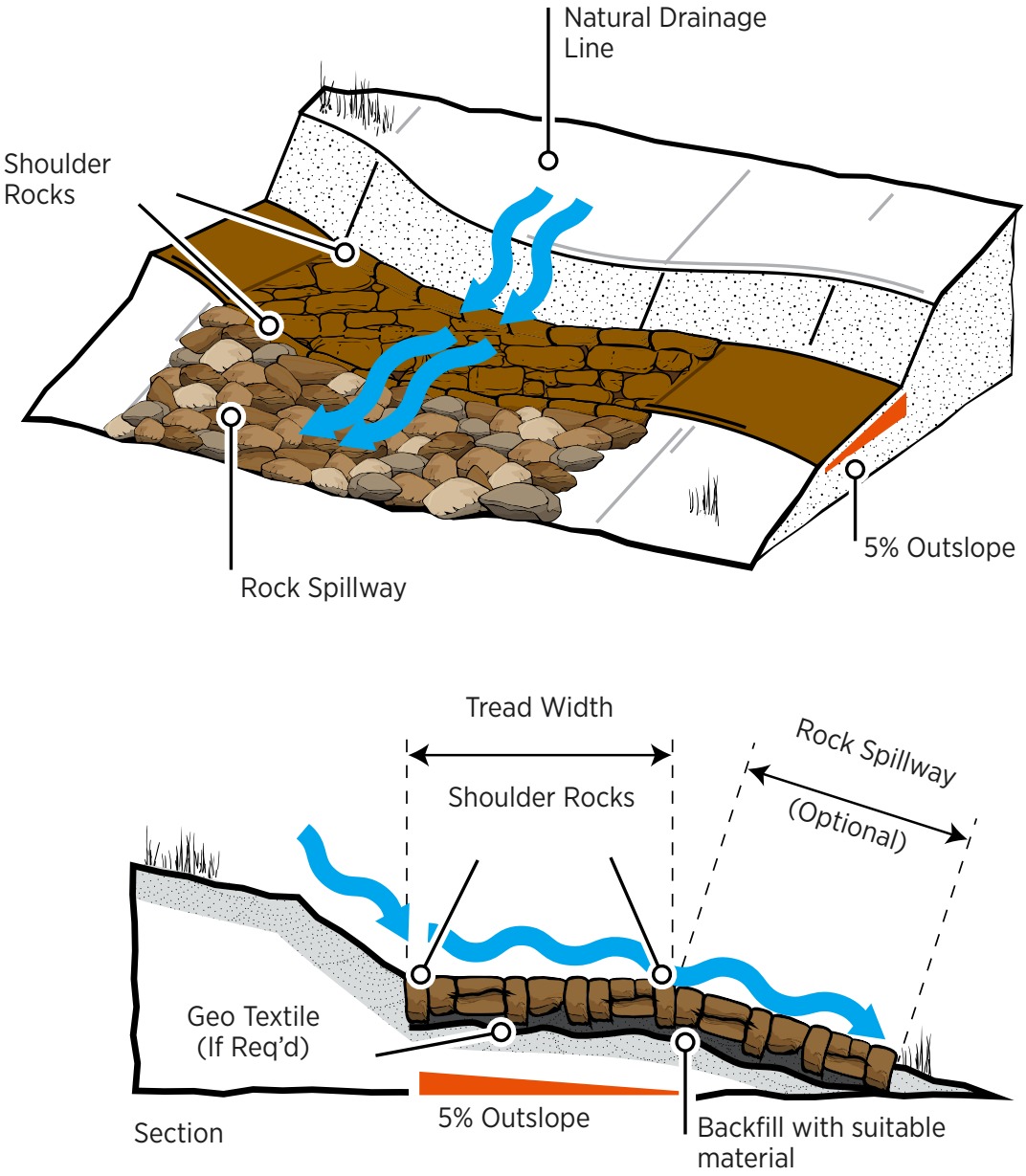


Figure 28: Armouring drainage lines

8. Facilities and structures

Trail experiences generally require more than just the trail itself and are supported by a range of facilities and structures. These are usually needed to keep users safe, reduce impact on values or provide amenity. They can be costly, increase maintenance and have a visual impact.

This section provides principles related to the key facilities and structures that might be needed when developing trails, such as overnight accommodation, yards, float parking, hitching rails, watering points, trailheads, signs, bridges and crossings, stairways, barriers, fences, lookouts, small buildings and furniture.

Developing trails using the Trails Development Series will ensure that trails are sustainable and an asset, rather than a liability.

The principles outlined below apply to all stages of the Trail Development Process, from Trail Proposal (Stage 1) to Management (Stage 8).

Appendix A lists Australian standards, other standards and supporting guidelines that will assist in trail projects.

Midwest Horse Trekkers, Dolly's Dream Charity Trek, Kojarena. Photo—Steph Bligh-Lee

8.1 Overnight accommodation

Depending on the intended trail experience, accommodating trail users overnight may be an important consideration. Trails may link to existing accommodation en route or require new facilities.

When planning overnight stays on long distance trails, consider how far trail users will travel in a day and the facilities that match the trail experience.

Distance covered is of course highly variable and will depend on the terrain, weather conditions, rest stops, and participant/horse fitness.

Based on existing long-distance rides across Australia and overseas, horse riders generally travel between 25–40 kilometres per day. Carriages and carts may cover slightly less distance due to the added weight and resistance of the carriage.

Australia's Bicentennial National Trail, a 5000km trek on the east coast of Australia, has campsites between 10–25km apart. Campsites on WA's Warren Blackwood Stock Route are generally 25–38km apart.

Overnight stays should be identified in the Trail Proposal (Stage 1) of the Trail Development Process. If new accommodation sites are needed, their location, design, construction and management will be part of the Trail Development Process. Horse riders are often seeking a bush camping experience, away from other campers. They mostly self-cater with their own portable yards, camping equipment and cooking facilities.

Booking systems can be used to ensure there is certainty for trail users and they are not overcrowded. Some long-distance trails have fee systems in place with funds returning to trail management.

Participants on tours and treks with a commercial tour operator or tour guide may utilise trail facilities or nearby accommodation. At the high end of the market, operators offer exclusive, luxury stays on the trail through agreements with the land managers, or accommodation providers en route.

Shannon Horse Camp. *Photo—Hoofin' It for Health Charity Trek 2018*

Campgrounds

Existing campgrounds or camp shelters may be linked to a new trail, or new facilities may be developed.

Existing or potential sites will be identified in Site Assessment (Stage 3) and refined in the Concept plan (Stage 4) of the Trail Development Process. Further design and construction follow in Stages 6 and 7.

Basic campgrounds with essential facilities may include:

- space for horse floats to manoeuvre, turn and park on level ground
- cleared area for portable horse yards
- designated camping sites
- toilet facilities
- water supply
- manure deposit area
- secure fencing around the camping area to contain any horse that gets out of their yard
- cooking area and fire pit (where appropriate).

Depending on the terrain and climate, shelters may also be provided to protect trail users from the elements. Some campgrounds have permanent horse yards provided.

Principles

- Determine the experience, location, size and design features of each campground.
- Determine the level of accessibility required according to the trail experience and intended users. Campground facilities should be accessible to people with disability wherever possible.
- Consider future growth and means of expansion or managing use.
- Consider the logistics, equipment, materials and skills required for construction.
- Consider mobile phone reception or provision of wi-fi at campgrounds where appropriate, for user safety, connectivity and amenity.
- Consider the threat of wildfire and discuss fire protection measures with experts and incorporate into site plan.
- Locate campgrounds at least 100 metres from lakes, dams, rivers and streams.
- Consider future management responsibilities, maintenance costs and vehicle access, particularly for pumping toilets and filling water tanks.

See Section 8.14 for more information on shelters.

Bowelling Stopover, Collie-Darkan Rail Trail. *Photo—WA Horse Trekkers*

Horse yards

Horse trekkers may come equipped with their own portable yards for an overnight stay or be travelling without a support vehicle and appreciate provision of permanent yards.

Portable horse yards include metal yards, either free-standing or attached to the horse float, or electric yards powered by batteries or solar units. Electric yards can be assembled on uneven ground, but the ground needs to be able to accommodate supporting poles hammered in to at least 150mm. Metal yards require level ground to keep them stable.

Principles

- A combination of self-reliant camping space and permanent yards provides site versatility.
- A minimum yard space of four by four metres is recommended per horse.
- Permanent yards require a minimum 1500mm access way or gate and must be strong enough to tolerate horses leaning on the rails or pushing against them. They may also be used as a hitching rail, see Section 8.3.
- Choose materials and fixings for permanent yards for longevity, safety, compatibility with overall trail design and with consideration to ongoing maintenance.
- Consider surface durability for yard areas, ensuring adequate drainage and resistance to erosion and compaction. Surface treatments such as geocell are sometimes applied.
- Provide a cleared area or naturally open area for yards. They should not be close to trees or vegetation that horses might chew on, trample or damage.
- Provide a watering point nearby where riders can fill their own buckets.
- Consider manure management which may include a disposal area and provision of shovels and wheelbarrows.
- Whilst natural shade over yards is appreciated, avoid locating yards near trees that are known to drop limbs.
- Shelters are sometimes provided for horses to avoid wind or rain.
- Separate horse trail user overnight areas from other trail user facilities, for example, the overnight area at Shannon campground is fenced off and separate from the campground for other visitors.

Shannon Camp, portable metal yards attached to horse float.
Photo—Warren Horsemen's Club

Jarrahdale Oval, portable electric yards.
Photo—Anna Sheehan

Shannon Camp, permanent yards.
Photo—Erwin and Monique van Vliet

8.2 Float parking

Well-designed parking areas with simple and functional traffic circulation enhance both safety and the overall trail experience, supporting smooth logistics for trail users and minimising impact to the natural environment.

Parking areas provided for horse trails require specific features to safely and conveniently accommodate horse floats (also known as horse trailers) and other large vehicles used by riders and carriage drivers.

Adequate space is necessary, not only for loading and unloading of animals and equipment but also for safe manoeuvring, including turning circles for large vehicles and trailers. Additionally, appropriate width is needed to allow tethering a horse to the side of the float while preparing for the ride.

Parking design will vary with the amount of use expected, the number of parking bays required and the size of the site. Some trails provide an open area, leaving parking arrangement flexible and undesignated. High-use trails may need a more structured approach with designated parking bays.

Suitable locations for parking are identified in Site Assessment (Stage 3) of the Trail Development Process, the design is determined in subsequent stages.

Principles

- To minimise the requirement for reversing, pull through bays are preferred. Figure 29 provides a sample designated parking layout for an area where space restrictions dictated the use of back-in and parallel parking in addition to the central pull-through bays.[48]
- Provide level, stable ground for parking and unloading. Well drained surfaces help prevent muddy conditions.
- Provide ample space for horse floats and large vehicles including a rear section to allow for float ramps, for example, a 5.8m vehicle towing a two-horse trailer would need a total length of 16.8m to park and unload safely. This includes the unloading area plus walking space at both ends of the vehicle. A longer length is required for three-horse and larger trailers.
- Where back-in parking is used, angle bays 45 or 60 degrees.[49]
- A compacted gravel or earth surface is recommended for float parking and unloading areas. Asphalt, concrete and paving pose slipping hazards and are not advisable.
- Where trails are shared use, separate parking for non-equestrian vehicles helps reduce congestion and keeps horses in a designated area, minimising potential conflicts.
- Consider shade and amenities such as water access, hitching rails, toilets, manure bay and provision of mounting blocks.
- Clear signage indicating parking areas for horse floats, unloading areas, trailhead access and amenities help keep traffic orderly and provide guidance for other trail users about horse-specific areas.
- Consider event requirements and if camping overnight or overflow parking is required.
- If there is a locked gate into the site, allow enough room for a vehicle with horse float to stop in front of the gate without overhang onto the adjoining road.[50]

48 Hancock et al., 2007, Chapter 8

49 Ibid

50 This section draws heavily on Horse Safety Australia and ATHRA, *Risk Management for Trail Horse-riding in Australia on Single and Shared Use Trails*, 2024

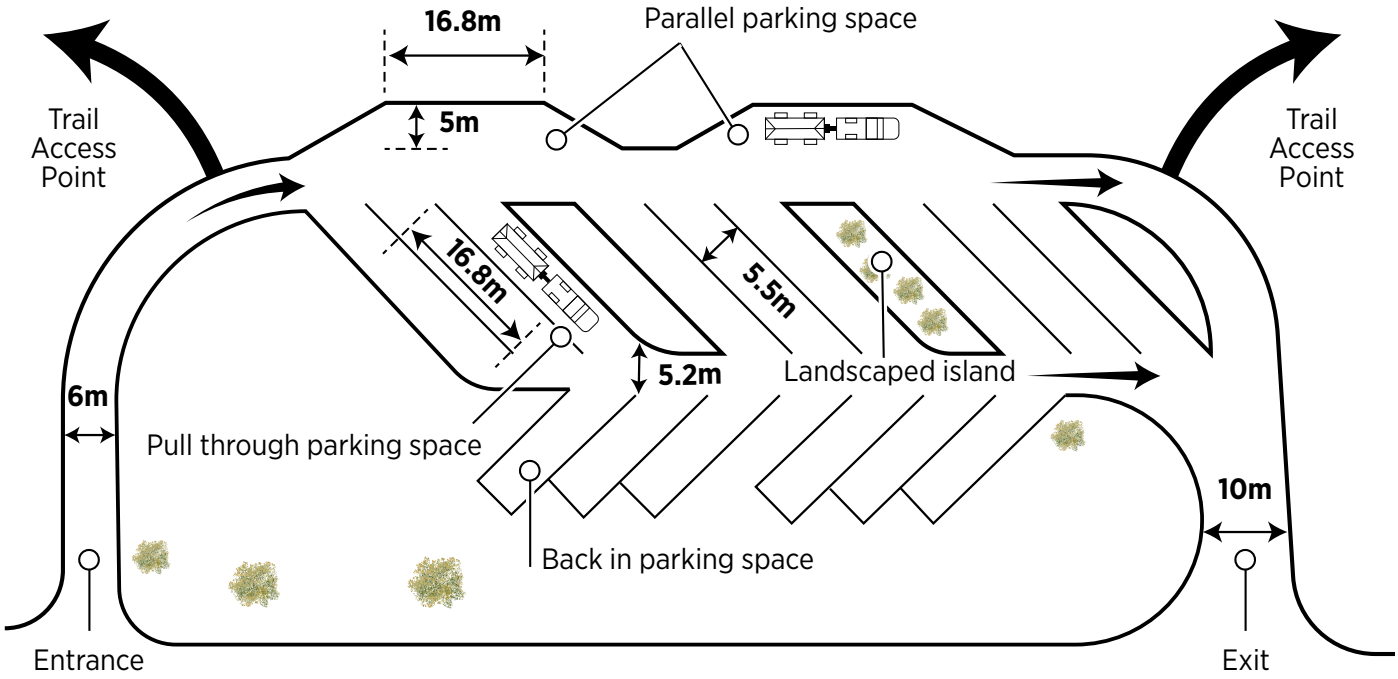


Figure 29: Sample designated parking layout[51]

Jarrahdale Oval – undesignated float parking. *Photo—Anna Sheehan*

51 Figure 29 adapted from Hancock et al., Chapter 8 and Horse Safety Australia and ATHRA, 2024

8.3 Hitching rails

Hitching rails allow riders to dismount and safely tie a horse to a sturdy and secure structure for a short period. They reduce the need to tie up to trees and other infrastructure that a horse might chew on or damage. Hitching rails are best located where riders are likely to stop, such as at trailheads, picnic areas, watering points, toilets or to explore a shorter section of trail network not accessible on horseback.

Whilst many riders arrive to the trailhead with a horse float that has a convenient hitching point, on-site hitching rails offer helpful additional tie-up space and will be used by participants riding to the trail.

Horses can sometimes become restless or startled when tied, which can cause them to "pull back". To ensure safety, it is essential hitching rails are built to a high standard and maintained regularly.

ATHRA provides sample construction drawings by request. Figures 30 and 31 illustrate layout of the hitching rail area and key concepts. Specialist advice should be engaged to ensure compliance with relevant standards and building codes.

Principles

- Ensure hitching rails are robust enough to withstand the weight of a horse leaning on them or pulling against them.
- Locate hitching rails at least six metres away from other trail infrastructure.
- Rails typically range from 1.2–3 metres in length and are approximately one metre in height. A 1.2 metre length rail can cater for one horse on either side.
- Round profile rails are preferable.
- Timber is the cheapest option but has a higher maintenance requirement and is less durable. Horses tend to chew on timber rails.
- The use of tie rings prevents ropes from slipping across the rail. See Figure 31.
- Avoid rails with overhanging ends that ropes can catch up on. The design should also prevent the rope from sliding off the horizontal rail and down the upright post.
- Choose surface materials for the hitching rail area for durability, ensuring it is well-drained and resistant to erosion and compaction.
- Select materials and fixings for longevity, safety and compatibility with overall trail design, with consideration to ongoing maintenance needs.
- Consider providing shelter over the hitching rail to protect horses from wind, rain, or sun, or position rails where natural shade is available.

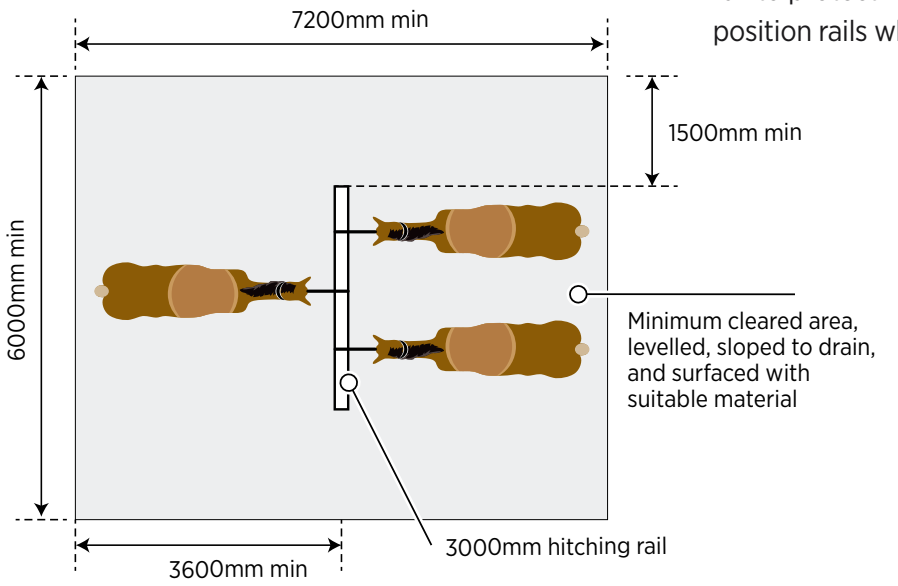
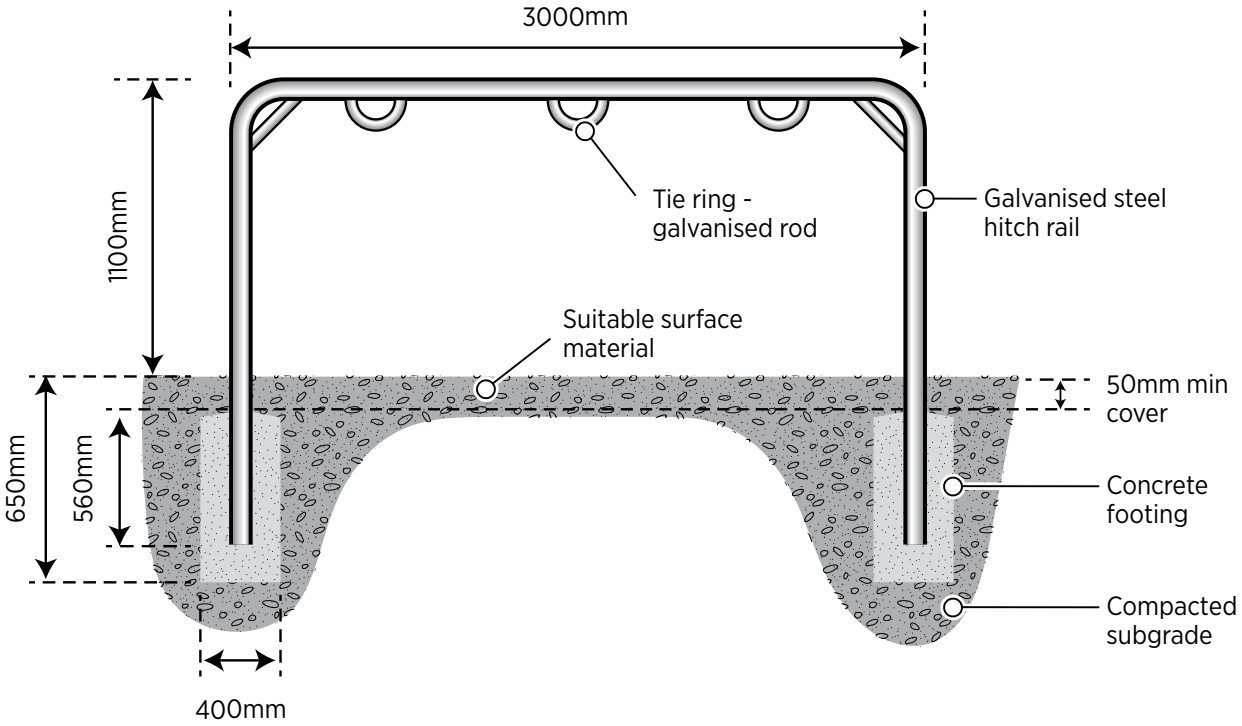


Figure 30: Hitching rail area layout[52]

52 Figure 30 adapted from Hancock et al., 2007, Chapter 10

STEEL RAIL



TIMBER RAIL

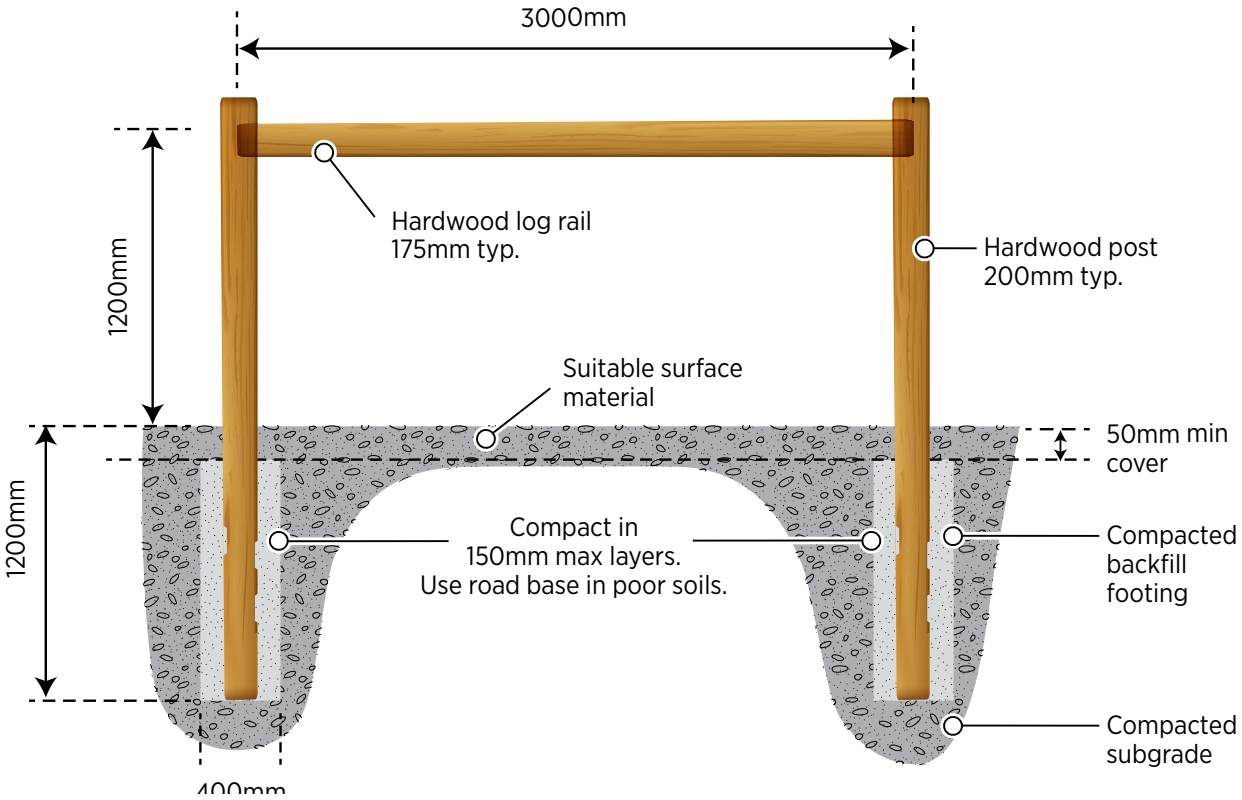


Figure 31: Hitching rails

8.4 Watering points

In remote locations and on long distance trails where water access is not readily available, watering points for horses should be provided at trailheads and at intervals not exceeding 15km.

To minimise the risk of disease transmission, many riders avoid using communal troughs. The recommended option for watering points is a water tap or a rainwater tank with a tap, allowing riders to fill their own collapsible buckets. This ensures safe, individual water access while supporting hydration needs on extended trails.

Suitable locations for watering points are identified in the Concept Plan (Stage 4) of the Trail Development Process and finalised in Detailed Design (Stage 6). Watering points will generally be installed during or following trail Construction (Stage 7).

Principles

- Constructed water points are preferred as opposed to allowing horses to drink from natural watercourses which can damage sensitive ecosystems.
- Watering points should be constructed on a well-draining surface.
- Consider locating hitching rails nearby to minimise the distance riders are carrying water.
- Keep the watering point free of manure by maintaining a distance of at least 7.6 metres between watering points and hitching rails.[53]
- Provide appropriate signage to specify clear instructions about water use and indicate if the water is untreated or not potable.
- Include available watering points in trail listings and on maps provided, including those on trailhead signs. Indicate if there are seasonal variations expected in water availability.

53 Hancock et al., 2007, Chapter 10

Bowelling Stopover, Collie-Darkan Rail Trail. *Photo—Kerryn Chia*

8.5 Trailheads

Trailheads provide a range of functions, as a welcome and starting point of a trail, a gathering space for groups, a point of orientation and trail information and interpretation. Often trailheads will incorporate other facilities such as access to parking, shelter, picnic areas and amenities.

The location, type of trail, user type and volume will determine what is provided at a trailhead. A remote trailhead may have a basic orientation sign and toilet. The trailhead for a highly popular trail may have a parking area, orientation shelter, interpretive displays, toilets, picnic and other facilities.

Trailheads can also be a pivotal site for sharing stories about the landscape, heritage, culture and other interesting aspects of the site. Interpretation is the process of enriching people's experience of a place through storytelling.

A visitor communication plan or interpretation plan should outline the role of the trailhead.

If events are an important part of a trail project, the site may need to accommodate additional temporary facilities such as staging areas, start-finish areas, portable toilets and first aid posts. Read more in Section 10.2 Planning trail events.

Suitable locations for trailheads are identified in Site Assessment (Stage 3) of the Trail Development Process, and the design determined in subsequent stages.

Principles

- Locate the trail head so it's easily accessible from roads, park entries and public transport where possible.
- Design the site to meet the needs of the trail experience, including people with disability, considering all functions and ensure they work together.
- Ensure there is adequate parking for intended use and future growth if needed.
- Consider potential impacts on neighbouring residents and businesses, especially traffic and overflow parking in peak times or events.
- Consider security of trail users, vehicles and equipment and improve existing facilities as needed.
- Ensure trails are accessible to trail users, without unnecessary barriers restricting wheelchairs or mobility aids.
- Design appropriate sign structures with relevant information and interpretation, including orientation, safety advice, what to expect, what to take and what not to do.
- Consider the need for shelter, particularly if there are groups of people using the trail.
- Ensure an accessible toilet is located conveniently for visitors.
- Consider the needs, equipment and layout of facilities for events, read more in Section 10 Events.

10th Lighthorse Bridle Trail. *Photo—Anita Britza*

8.6 Signs

Signs are a necessary part of most trail experiences and are used for:

- orientation and wayfinding
- safety and risk
- management
- interpretation.

Wayfinding is the process of ensuring trail users find the trail, stay on the trail and return safely.

Signs also play a significant role in promotion, marketing and branding. Well-designed signs at trail heads and other significant places provide photo opportunities. These make great memories and help promote trails when used in social media.

Landowners and managers may have established sign systems that are used on lands they manage. Consider this in the Concept Plan (Stage 4) of the Trail Development Process.

Signs on lands managed by DBCA's Parks and Wildlife Service must meet corporate standards and be endorsed by the department's Visitor Communication Unit.

Collie-Darkan Rail Trail. *Photo—DBCA*

Principles

- Align and design the trail to reduce the number of signs and their visual impact. Effective trail design and sign planning are the key to achieving more with less.
- Ensure all key stakeholders—users, landowners, managers and peak bodies—are engaged in sign planning.
- Think about the key messages first. For each site or larger area that you are planning for, there will be key locations where visitors need messages to get their bearings, find their way, stay safe, be suitably prepared, know how to act in a way that protects the site or trail values or in a way that does not impact adversely on other trail users.
- Put yourself in the trail users' shoes and move through a site from a logical starting point to an end point and decide what the messages are and where they need to be.
- Consider international symbology to convey messages.
- Choose materials for signs that are compatible with the rest of the trail design and are considered as a package, not in isolation.
- Choose materials and fixings for longevity, skills available for construction, fire resistance and maintenance requirements.
- Also consider these factors in choice of materials: local, embodied energy, recycled, plantation or renewable, modern alternatives and non-traditional solutions.
- Ensure built materials do not shed or emit damaging chemicals, fibres or other elements into the surrounding environment.

Read Section 6.5 for more on visitor communication.

Brigadoon Bridle Trails, City of Swan. *Photo—Sandy Robson*

Shared use trail etiquette signage. *Photo—DBCA*

Shared use trail etiquette signage. *Photo—Katie Stevens*

Shared use trail road signage. *Photo—DBCA*

Darling Downs. *Photo—DBCA*

Oakford. *Photo—DBCA*

Railway Reserves Heritage Trail. *Photo—DBCA*

8.7 Water crossings

Crossings over watercourses and wetlands are control points and a critical element of trail design. The type of crossing that may be required will be influenced by the trail experience and trail classification, user demand and environment.

Water crossings may make the trail exciting for trail users. However, they can be challenging, costly to build, negatively impact natural and cultural values and add to the cost of maintenance.

Use of culverts, bridges, shallow ford crossings or more complex water crossings depends on the scale of the crossing, the intended trail classification and the trail experience being developed.

Waterways have important cultural significance for Aboriginal peoples, so ensure that appropriate engagement is undertaken.

Creating a safe and sustainable crossing is best undertaken with professional advice and engagement with engineers, landscape architects, architectural designers and trail builders.

General principles

- Design crossings that fit the character and trail classification of the trail, do not alter the flow of the watercourse, are cost effective but have longevity and require minimal maintenance.
- Ensure that seasonal water levels and flood events are understood, and crossings are planned accordingly without impeding water flow.
- If the watercourse is impressive or the trail is busy, consider designing an appropriately located rest area off the trail to reduce the risk of environmental damage to banks.
- Keep crossings as low as possible to reduce engineering and structural intervention, heights, need for safety rails and visual impact.
- Carefully choose the crossing location and design the approaches to minimise physical disturbance to watercourse bed, banks and riparian zones.
- Align crossings perpendicular to the watercourse where possible.
- Descend and climb out of the crossing at no more than eight per cent (one in 12) gradient and be guided by the trail experience and trail classification.
- Grade reversals should be designed on both sides of the watercourse crossing approach. This will prevent large volumes of water and sediment from flowing down the trail into the watercourse.
- Geotextile or other tread stabilisers may be needed on high-use horse trails as further means of avoiding tread and bank erosion. See Section 7.3 for trail surface stabilisation options.
- Reduce the speed of the trail user when nearing the crossing, particularly on shared trails, by corralling or creating corners.
- Confirm the approvals process and obtain all necessary permits before undertaking any construction activities in or near watercourses, waterways, or foreshore areas. Read more in Section 5.2 Legislation.

Location of crossings need to be considered in Site Assessment (Stage 3) and Corridor Evaluation (Stage 5) of the Trail Development Process.

Once the alignment is determined, details on how the crossings are to be developed will be further considered in Detailed Design (Stage 6) and specified in Construction (Stage 7).

Riding across watercourses

Routing a horse trail across a watercourse may be a suitable and safe alternative for horses and preferable to creating bridges, which are expensive to build and maintain.

Some horse trails have the luxury of providing both a place to cross the watercourse on horseback and an alternate bridge crossing, allowing users to choose their preferred option. This suits trail users with horses that are hesitant about stepping onto a bridge.

Depending on the trail user and horse's experience with crossings, the depth, current, drop off and below water tread are all determining factors on whether it is safe to cross a water body.

Depth

Shallow crossings where the horse can see the depth are easier for riders to negotiate. Water crossings on horse trails are generally shallow ford crossings with a maximum depth of 600mm. Deeper, more complex water crossings are only appropriate for difficult and extreme classification trails. Land managers may at times need to close water crossings when water levels are deemed to be unsafe.

Drop off

It is important to ensure that any drop off between the water's edge and the streambed is not too steep, no more than 300mm is recommended. Too steep a drop off may make the horse reluctant to cross, attempt to jump the water crossing if it is narrow or potentially cause injury if the horse is not prepared for landing on an unknown surface.[54]

Other considerations

- Often the banks of a watercourse are naturally soft and can be boggy. This can be hazardous for horses and riders where bogginess could trap a horse's leg or exposed tree roots could cause injury. If a water crossing cannot be avoided, hardening of the area where the crossing is to occur is recommended.
- Promote minimal impact behaviours—for example, it is preferable if horses are not allowed to stop and paw at the bottom or linger on the banks.
- Where steps are required to access the water crossing, they should be designed specifically for horses, see Section 8.12.

54 Wood, 2007, page 30

Ford crossing, Darradup. *Photo—Martin Pollock*

Fords

Fords are generally suitable for slow water velocity and across shallow sections of a watercourse. Low stable banks and streambed are also important.

Existing fords are likely to be suitable for horse trails, either natural or enhanced with roughened cement for a vehicle crossing.[55]

To create a ford, stones are sunk at grade to make both the streambed and the approaches more durable, as illustrated in Figure 32.

They can be long-lasting, maintaining a natural look and minimising interference with water movement, sediment and aquatic life.

On the downside, fords may adversely affect the water quality if poorly constructed or used in areas with a high-level trail volume. Disturbance to the substrate may impact macroinvertebrates and other wildlife.

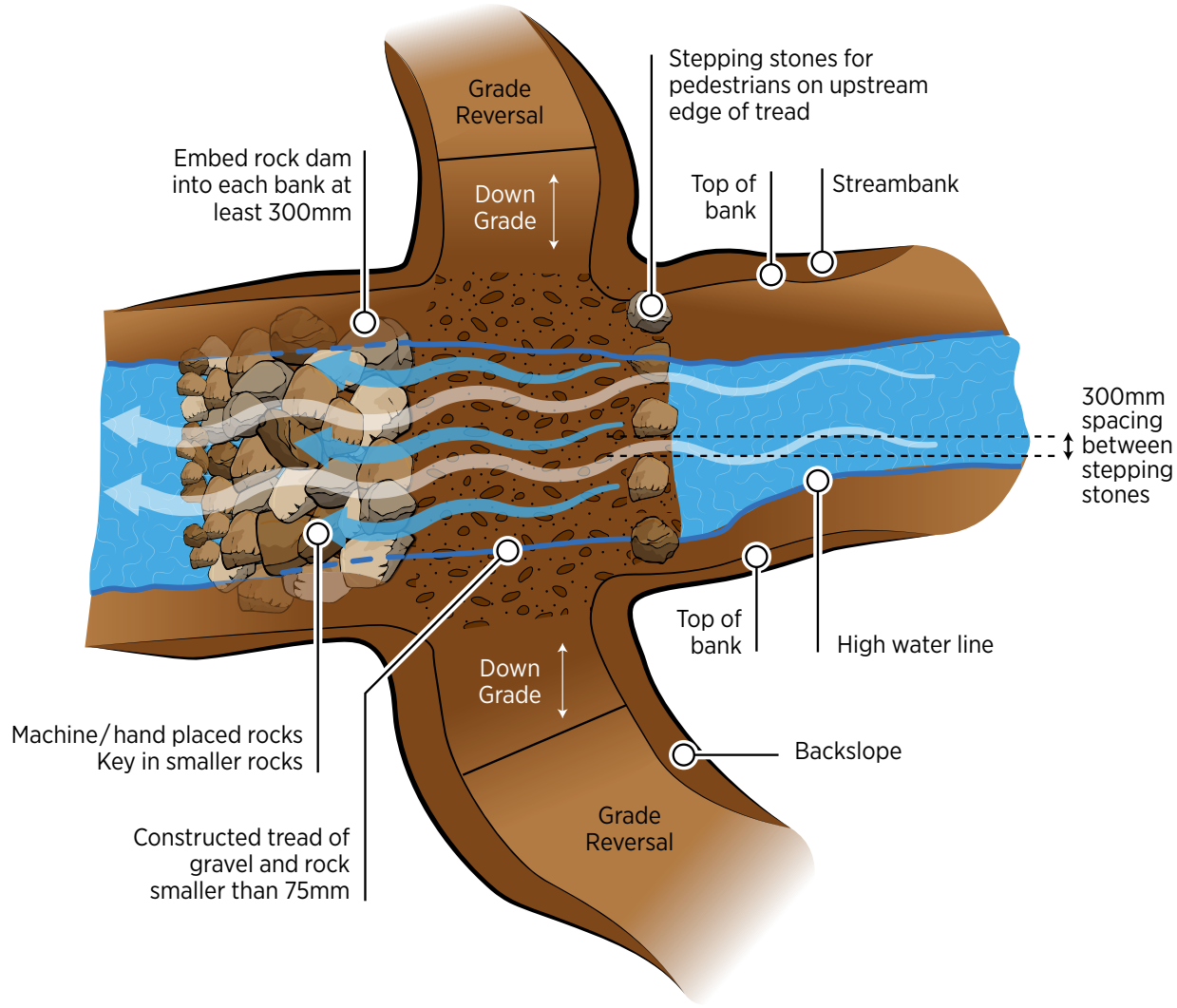
Fords need to be consistent with the trail experience and trail classification and will not be suitable for easiest classification trails. Read Section 11 for explanation of horse trail classifications.

Principles

- Armour both entry and exit of the crossing to protect water quality and harden banks against erosion.
- Use stones that won't dislodge and underlay with gravel, cobble or geotextile to stabilise where needed.[56]
- Provide solid footing, such as medium size gravel or a stabilised surface placed at a consistent depth from one bank to the other. Choose surface materials carefully as hardened surfaces can be slippery.[57]
- The underwater portion of the tread may need to be wider to accommodate horses that step to the side.[58]
- Kerbs that run across treads and smooth, hardened edges at water crossings are trip hazards and not appropriate for horse trails.[59]
- To assist riders, depth markers and any other warning information should be provided if the bottom of the watercourse cannot be seen in normal conditions. Markers for entry and exit points may be required if the crossing is greater than four metres long.[60]
- Consider marking ford locations on trailhead signage and trail maps, along with any alternate routes.

55 Horse Safety Australia and ATHRA, 2024
56 Trail Solutions, *IMBA's Guide to Building Sweet Singletrack,* 2004
57 Hancock et al., 2007, Chapter 5
58 Ibid
59 Ibid
60 British Horse Society, *Advice on bridleways and other access*, 2025, Bridges, fords, gradients and steps

PLAN VIEW



SECTION VIEW

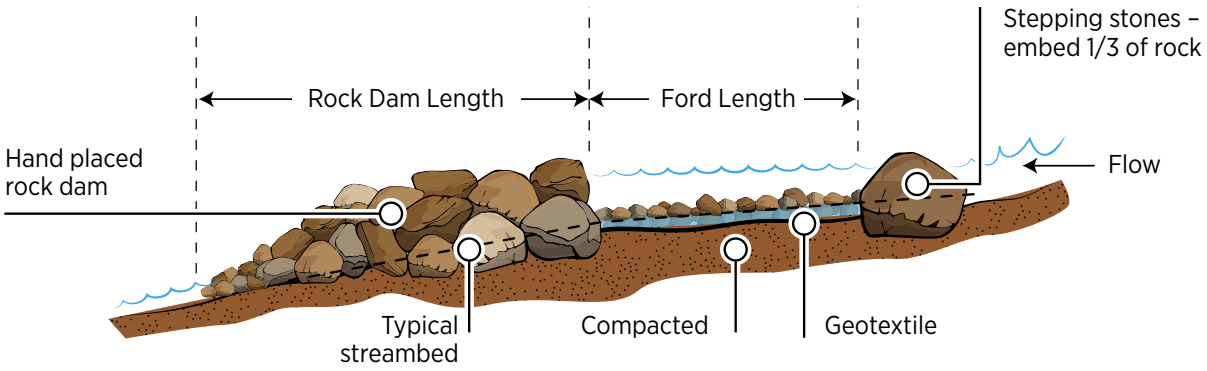


Figure 32: Fords

Culverts

Culverts are ideal for crossing small watercourses with minimal flow volumes and small, predictable flood peaks, as illustrated in Figure 33.

These are low profile instalments, with the trail surface continuing over the top ensuring that horses take to these easily.[61] They are appropriate for all horse trail classifications.

Culverts are low cost, robust, not prone to fire damage and easy to install. Lightweight pipes can be carried in for remote trail locations.

On the downside, they require ongoing maintenance to keep them free flowing and free of debris. Poor construction or lack of maintenance can lead to washout in high flows.

Culverts may be the most cost effective and durable option where the trail shares a crossing with a vehicle track.

In selecting the gauge of the pipe, consider who will be keeping it clear and what tools they will have. A culvert will be significantly easier to maintain if the pipe is of an adequate diameter, allowing access with standard maintenance tools such as a shovel.

Principles

- Choose concrete or metal pipes where loss from bushfire is possible.
- Size culverts and pipes according to the catchment area and rainfall.
- Seek expert advice if vehicles are crossing the culvert.
- Locate the pipe at a depth to collect the water with sumps on the upstream side to collect sediment and armoured on the downside to prevent scouring.
- Armour the culvert headwall with large rock for additional protection if needed.
- The sediment sump depth should be greater than or equal to the diameter of the pipe.
- Establish ongoing inspections, maintenance programs and responsibilities.
- On trail inspections, ensure the culvert pipe remains covered sufficiently. Bare culverts, particularly concrete, can be a slip or trip hazard for horses and the sound of the uncovered culvert underfoot can spook horses.

61 Horse SA, 2019

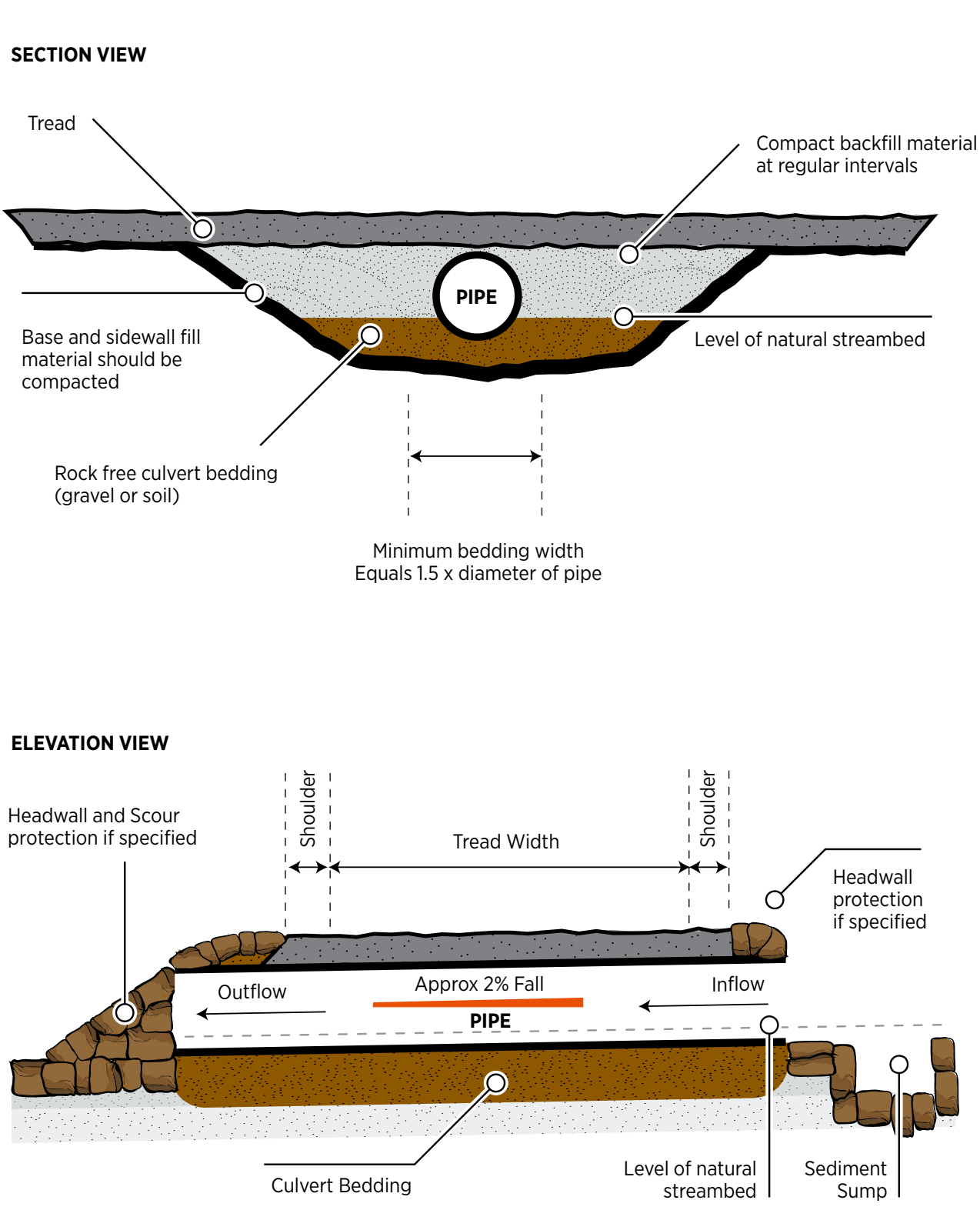


Figure 33: Culverts

Bridges

The trail alignment should avoid crossing major watercourses wherever possible, but if this is unavoidable, bridges provide a solution.

Bridges are an exciting addition to a trail experience, however they are expensive to install and maintain and can result in significant landscape, environmental and cultural impacts.

The trail experience and trail classification will direct the design and construction when a bridge is required.

If more than one bridge is required on a trail, consider developing a modular design that can be modified to suit.

DBCA's Parks and Wildlife Service has developed engineer-certified modular cycle and pedestrian bridges that assist in reducing construction timeframes and costs.

Specialist advice should be engaged, including architectural designers, structural engineers and landscape architects, to ensure the bridge is safe for equestrian use and complies with relevant standards and building codes.

Principles

- Design bridges that fit the trail experience and trail classification.
- Ensure the structure is cost effective, fire resistant, built for longevity, and requires minimal maintenance.
- Locate the crossing where there will be least disturbance to natural and cultural values.
- Ensure the structure does not alter or impede the flow of the watercourse.
- Understand flood events and design structures for future changes in flow.
- Consider construction logistics when designing structures.
- Secure appropriate funding given the high initial outlay and ongoing maintenance costs.

When incorporating an existing or historic bridge into a horse trail, specialist advice may be needed to identify any necessary modifications and ensure the bridge can safely support horses.

Overpasses are a type of bridge or elevated structure that allows horse trail users to cross above a roadway, railway or other obstacle. Bridge design principles for horse trails also apply to design of overpasses.

Torbay Rail Trail. *Photo—Julie de Jong*

Specific considerations for bridges on horse trails

- It is important to ensure that the bridge will not sway, vibrate, or become excessively noisy when in use.
- Bridge colour, traction and texture should ideally resemble the trail experience. Use of familiar materials from the trail in bridge construction will help keep horses relaxed.[62]
- The transition from trail to bridge should be as seamless as possible, requiring minimal step up.
- A width of 1.5 metres is suitable on a low-use, remote trail. Moderate-use trail bridges are generally 1.8–2.5 metres wide; 2.5 metres suits most carriages. In areas with high levels of development, and on long or high bridges 3.6–4 metres is preferred. Trail users generally avoid overtaking on bridges.
- Gradients should be no greater than five per cent (one in 20) to avoid horses slipping.
- Decking should preferably not have gaps that the horse can see through or get a shoe caught in.
- Non-skid surfaces may be needed as wet bridges can be slippery for horses. Surfaces with grooves or matting provide additional traction and stability.
- Short low bridges sometimes have a sand-box surface to provide a non-slip and noise dampened crossing.
- Bridge railings help guide the horse onto the bridge and flared approaches will assist nervous horses. Rails need to be higher than those for pedestrian bridges and should be free of protrusion that might catch on legs, feet, stirrups or tack.
- Some bridges on shared use trails incorporate optional rub rails to keep saddles, backpacks, bicycle handlebars etc from snagging on bridge posts.
- Kerbing a minimum of 200mm high, helps provide a visual guide for horses to remain in the centre line of the bridge and serves as a stopper for a skidding hoof.
- Clearance below the kerb allows water and debris to flow across the bridge. See Figure 34.
- Where it is specified that riders dismount to cross a bridge, provision of mounting blocks will improve accessibility.
- Use signage and pre-visit information to communicate how to use bridges appropriately e.g. if dismounting and walking across the bridge is required or if give-way systems are in place on shared use trails.

Denmark-Nornalup Rail Trail. *Photo—Kathy Miles*

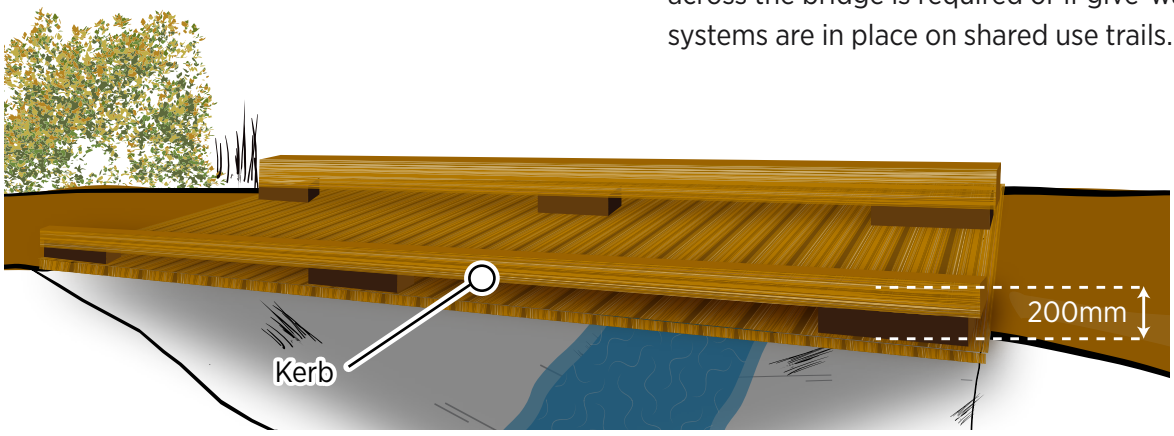


Figure 34: Low lying bridge[63]

62 Horse SA, 2019
63 Wood, 2007, page 34

8.8 Road crossings

Road crossings should be avoided wherever possible but may be unavoidable. They create a source of conflict between users but can also be a point of access for users, maintenance and emergency services.

On determining that a road crossing is needed, it's important to identify the correct road manager and consult early in the process.

Road speed and traffic volume will dictate the crossing design, sight lines and signs required for the crossing point. Figure 35 illustrates a sample layout and key elements.

Specialist advice should be engaged, including traffic engineers and designers, to ensure compliance with relevant standards and approvals processes.

Principles

- Carefully choose the crossing location and design the approaches to ensure appropriate sightlines.
- Cross at a point that allows both trail and road users a clear view and clearly signpost the crossing for both road and trail users.
- Align crossings perpendicular to the road where possible.
- Provide a waiting area on both sides of the crossing with enough space to allow trail users to safely halt and assess the traffic situation before crossing.
- Consider expanding the width of the trail surface before it meets the road, forming a rectangular or fan-shaped waiting area either side of the road as shown in Figures 35 and 36.[64]
- Consider if vegetation adjacent to the crossing needs to be thinned or trimmed to facilitate clear sightlines.
- Descend and climb out of the crossing at no more than eight per cent (one in 12) gradient and be guided by the trail experience and trail classification.
- If the trail enters and exits the crossing on a fall line, it may dump water and debris onto the road.
- Grade reversals should be designed on both sides of the crossing approach to prevent large volumes of water and sediment from flowing down the trail onto the road.
- Reduce the speed of the trail user when nearing the crossing, particularly on shared trails, by corralling or creating corners / chicanes, see Figures 35 and 36.
- Consider a non-slip surface application to improve traction on the roadway.
- Where traffic light crossings are incorporated into a crossing, ensure that the push button actuator is positioned so that the rider can easily reach it from horseback.
- Consider if lighting is needed, such as in areas with high levels of development.

Location of road crossings needs to be considered in Site Assessment (Stage 3) and Corridor Evaluation (Stage 5) of the Trail Development Process.

Once the alignment is determined, details on how crossings are to be developed will be further considered in Detailed Design (Stage 6) and specified in Construction (Stage 7).

64 Hancock et al., 2007, Chapter 5

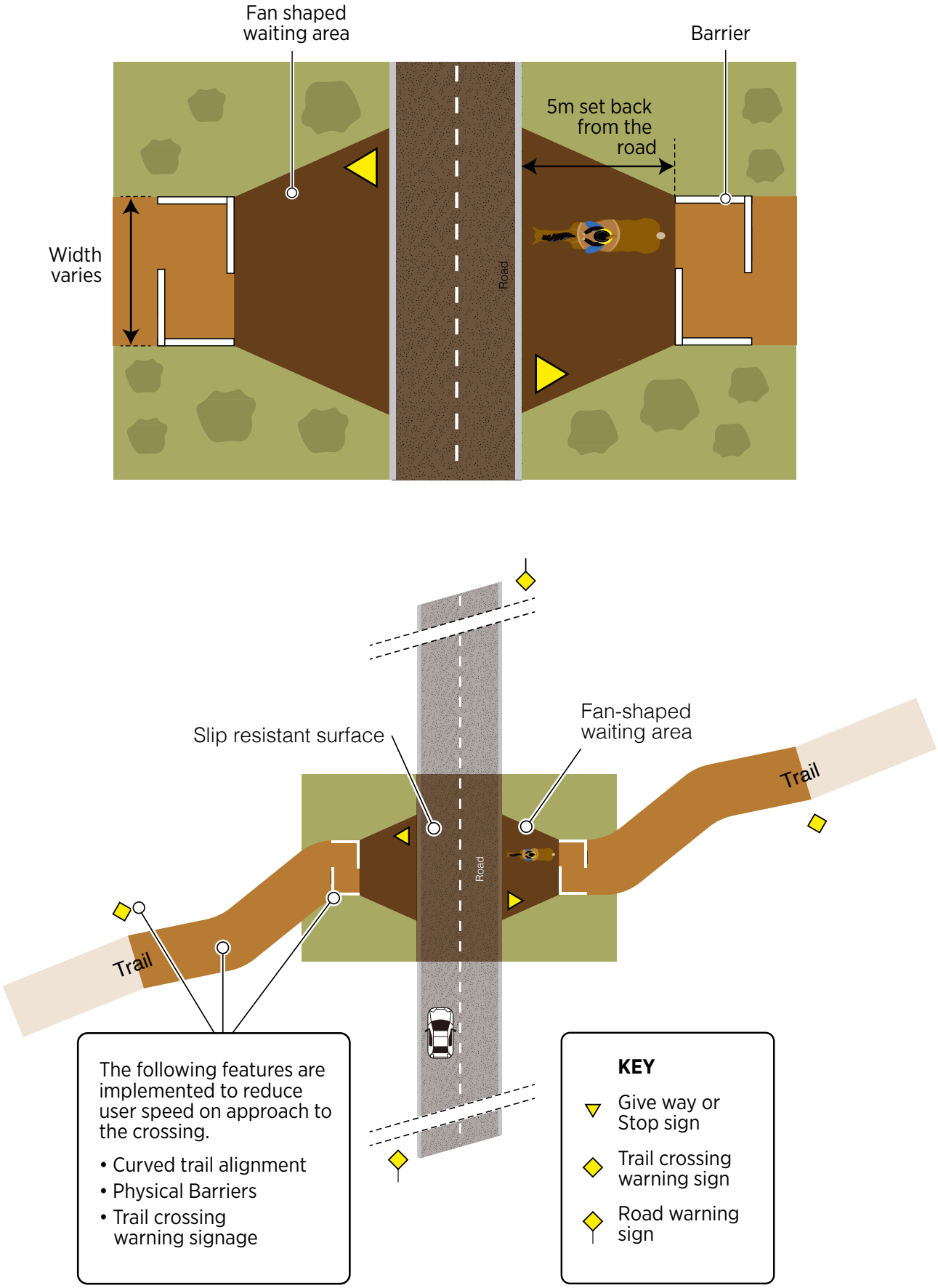


Figure 35: Road crossing sample layout[65]

65 Figure 35 adapted from *Sécurothéque, Carrefours entre le RAVel et le réseau routier motorisé*, 2024 and *Equestrian Trail Development Guide (Guide d' aménagement des sentiers équestres)*, Cheval Quebec, 2018

Chicanes

Structures are sometimes used to create chicanes on approach to a crossing. These are usually set back five metres from the road and adjoin the roadside waiting area.

Principles

- Design appropriate setback, so that groups of riders are not delayed on the road or separated by the barrier.
- Choose materials and fixings for longevity. Timber fencing is typically used, though metal may be used so long as edges and corners are rounded.
- Chicanes are not typically used on routes open to carriage drivers as the space needed to manoeuvre is too variable to easily accommodate all.[66]

There are four common variants as shown in Figure 36:

- two barriers staggered across the trail without overlap
- two barriers with an overlap
- two barriers forming a U-shaped gap around the end of a third barrier
- five barriers forming a passage around a central island.

Each variation can fill a wider trail by extending the barriers, but the gaps are the minimum required to allow the horse to easily pass through. [67]

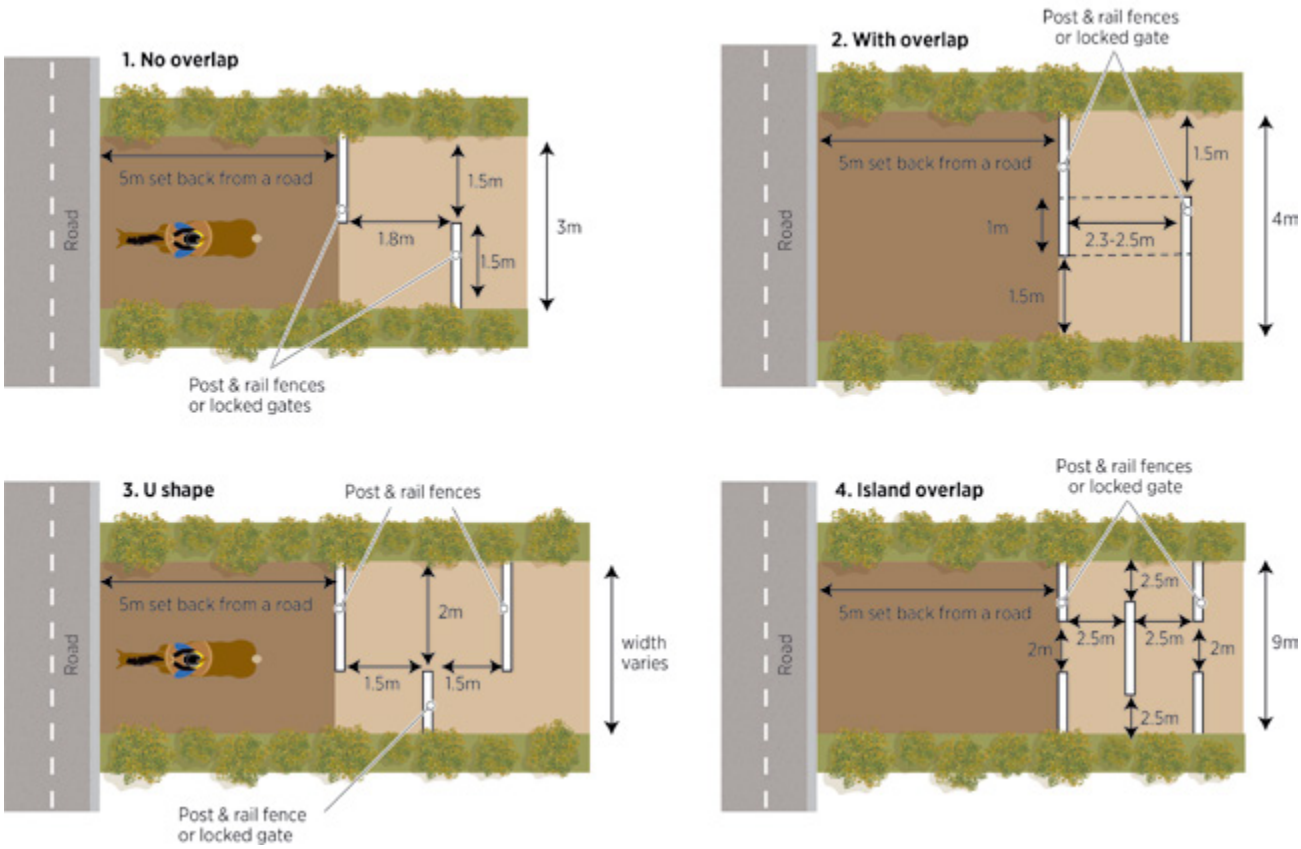


Figure 36: Chicanes

66 British Horse Society, *Advice on bridleways and other access*, 2025, Vehicle barriers

67 Figure 36 Source: British Horse Society, *Advice on bridleways and other access*, 2025, Vehicle barriers

Underpasses

At times, underpasses below traffic or other hazards may be a better option than requiring trail users to cross a road or a bridge.

Underpasses may be prefabricated and are often constructed from steel or concrete.

Liaising with the appropriate road manager will be required and specialist advice should be engaged, including engineers and designers, to ensure compliance with relevant standards and approval processes.

Principles

- Carefully choose the underpass location and design the approaches to ensure appropriate sightlines.
- Plan drainage so that water does not pool in the underpass.
- Clearly signpost the underpass for trail users so they can reduce their speed appropriately.
- Ensure adequate overhead clearance over the full width of the tread; 3–3.4 meters is recommended.
- Preferably, keep the underpass the same dimensions as the rest of the trail corridor.
- A minimum width of three metres is recommended for an underpass on a dual direction or shared use trail.
- Where a trail allows for carriage driving, a minimum width of 3.6 metres is recommended. Dual direction trails for carriages require a much wider underpass or establishment of a give-way system.
- A horses' eyes don't adjust quickly to lighting changes and this can cause them to hesitate. If an underpass is greater than 500 metres long, consider installing lighting so that riders can easily see and react to approaching trail users. Ensure lighting does not encroach on overhead clearance.
- Box or square style underpass structures with a consistent height are preferable as this enables a horse and rider to use any part of the trail tread if another trail user wants to pass. A domed structure only provides sufficient clearance height in the central section, meaning horse and rider can only ride in the centre of the tread, limiting the ability for other trail users to pass.
- Provision of mounting blocks will improve accessibility if dismounting is required.
- Secure appropriate funding with consideration of the high initial outlay and ongoing maintenance costs.

Kevin Murphy Underpass under Tonkin Highway provides a connection between Darling Downs and Oakford horse trail networks. *Photo—DBCA*

8.9 Riding along roads

Horse trails may incorporate roads or road shoulders as a part of the trail, for example:

- For connectivity between trail sections—when no off-road route exists to link separate trail segments, short sections of road may be considered to maintain trail continuity.
- To address geographical or environmental constraints—in areas where terrain, watercourses or vegetation make other routes impractical, roads may serve as the only viable route.
- On low-traffic, rural or local roads—where shared use is deemed safe for riders.
- On temporary routes—when detours are required during construction, maintenance, or trail closures, roads may serve as temporary alternatives.
- On historical or cultural trails—where the trail follows a historical or traditional route that includes sections of road.

Principles

- Where possible, keep road sections as short as possible to minimise exposure to vehicular traffic.
- Preferably, only route horse trails onto low-speed and low-traffic roads.
- Ensure the road selected has adequate space or wide shoulders to allow trail users separation from passing vehicles.
- Provide clear signage for vehicle traffic to warn of shared use.
- Provide pre-trip information for trail users so that they know in advance that a section of trail is routed along a road.
- Advise trail users to equip themselves with high visibility vests to ensure they are visible.

Herne Hill. *Photo—WA Horse Council*

8.10 Railways

Routing horse trails along active railway corridors is generally not advised and may be prohibited. Most riders don't want to ride on a trail adjacent to active rail tracks. Train speeds, sounds, vibrations and size are threatening to horses, especially if they are not familiar with them. Controlled crossings with crossing bells, alarms, horns, flashing lights, or traffic gates can also frighten horses and cause them to become uncontrollable. Where rail crossings are unavoidable, negotiations will need to occur between the trail planner, rail and road owner/operator, local government, affected horse riding associations and property owners to determine how safe a crossing can be provided.

Location of any rail crossing needs to be considered in Site Assessment (Stage 3) and Corridor Evaluation (Stage 5) of the Trail Development Process. Once the alignment is determined, details on how crossings are developed will be further considered in Detailed Design (Stage 6) and specified in Construction (Stage 7).

Principles

- Carefully choose the crossing location with consideration of the frequency and speed of passing trains.
- Provide solid and level footing at the crossing approach, departure and between the rails.
- Align crossings perpendicular to the railway where possible.
- Provide ample warning signage for the crossing and waiting space.
- The waiting area needs to be considerate of the size of rail carriages which generally overhang the tracks by one metre and may throw up loose debris.

Rail trails are a different experience where a disused rail line has been repurposed for recreational trail use, often for hikers or mountain bikers, but may also be suitable for horse riding. In these instances, the trail may be modified to reduce trip hazards and provide infill for a more seamless rail trail experience. Section 6.4 includes further detail on shared use trails and Rail Trails Australia.

Brisbane Valley Rail Trail, Queensland. *Photo—Claire Tolcher, ATHRA*

8.11 Barriers and fences

Good trail alignment and design avoids areas that pose hazards or need protecting. However, barriers and fences may be needed to manage impacts of trail users on natural and cultural values and to provide safety to trail users.

Barriers and fences are used to:

- prevent damage to natural and or cultural values, such as significant vegetation or special cultural sites
- keep trail users off an area whilst the vegetation is rehabilitating
- guide, direct or restrict trail users to a certain area or away from safety hazards
- separate horses from elements that have potential to startle or upset them, such as other trail users and vehicle traffic
- provide a secure area for horses, such as at a campground.

The trail experience and trail classification will set the type and style of barriers or fences. Types include:

- natural elements such as rocks and logs that are naturally located or introduced
- changed landforms such as mounds, swales or gullies and ditches
- bollards on their own or with wire, rope, or chain
- post and rail fencing
- walls—free-standing or retaining
- post and wire or mesh fences
- fencing that horses cannot see through.

They may be permanent or temporary. Permanent barriers should have a longer life and lower maintenance cost.

If a trail requires a significant amount of fencing or barriers, consider re-alignment as it may not be in the right place or be the right design.

Design principles

- Determine type and style of barriers based on numbers of users, specific site conditions and trail classification.
- Borrow from surrounding landscape characteristics to decide on design and materials and keep them subordinate to the natural landscape.
- Make use of natural barriers such as clumps of trees, rocks, embankments, logs and drainage lines or introduce them when not available. Use the most appropriate for the landscape character of the site.
- Take care when introducing natural elements making sure that they are sited appropriately and are buried, by at least a third their volume, so they look natural and not ‘forced’.
- Assess risks and hazards that could potentially damage barriers and fences, such as vandalism, falling rocks, storm surges or floods.
- Provide a barrier to any area with steep slopes that have a drop-off of more than 0.8 metres and when steep slopes are within 1.8 metres of the trail edge.
- Beware of too much barrier or fencing so as not to create a sheep run effect.
- Consider the impact of fences and barriers on fauna movement in and through the site.

Materials and fixtures principles

- Choose materials that are compatible with the rest of the trail design and considered as a package, not in isolation.
- Consider the variety of available materials—timber, recycled plastic, fibre-reinforced plastic (FRP), steel (untreated, galvanised or stainless steel) or concrete.
- Choose materials and fixings for longevity, skills available for construction, fire resistance and maintenance requirements.
- Consider these factors in choice of materials: local, embodied energy, recycled, plantation or renewable, modern alternatives and non-traditional solutions.
- Ensure built materials do not shed or emit damaging chemicals, fibres or other elements into the surrounding environment.
- Ensure all materials that are close to trail users are non-abrasive and non-splintering with all corners rounded off and no protruding elements. If they can be touched, ensure they do not get too hot or too cold.

Railings

Railings serve a variety of purposes. They provide a sense of safety from falling and on shared-use trails may assist pedestrians.

They also serve as a protection barrier, preventing trail users from impacting on areas with significant natural, cultural or heritage values.

Railings can be inappropriate and visually intrusive if not well designed. Their use and design should be directed by the intended trail experience and trail classification.

Mid rails and balustrades, which are vertical bars between top and bottom rails, and rub rails, can be used as additional means of protection. Read more about rub rails in Section 8.7 Bridges.

Principles

- Where it is required, use consistent railing design across the trail or trail network. Ensure that material choice is consistent with the rest of the trail design elements.
- Where there is risk of fall, railings need to be able to provide suitable load support should a horse slip, trip or lean on them.
- Railings on horse trails generally extend 2.4 metres before and after any vertical hazard.
- Railing height will need to be higher than those on trails for pedestrians.
- Specialist advice should be engaged to ensure compliance with relevant standards and building codes.
- Choose materials and fixings for longevity, skills available for construction, fire resistance and maintenance requirements.
- Consider these factors in choice of materials: local, embodied energy, recycled, plantation or renewable, modern alternatives and non-traditional solutions.
- Ensure built materials do not shed or emit damaging chemicals, fibres or other elements into the surrounding environment.
- Read barriers and fences principles above for more guidance.
- For trails shared by hikers consult the WA Hiking Trail Management Guidelines.

Buffer zones and screening barriers

Buffer zones or alternate barriers such as fences may be necessary on horse trails in certain areas to ensure safety.

Buffer zones are commonly used:

- adjacent to roads in high traffic areas
- near drop-offs or steep terrain
- where dual treadway trail is used, as shown in Section 6.4 Figure 5
- for screening of equestrian areas at trailheads, campgrounds and rest areas
- when trails are adjacent to private property or farmland.

Horses will vary in their response to motorised traffic, depending on their experience and tolerance. Generally, trails for horses should not be in proximity or parallel to roads with a high volume of traffic. Where this cannot be avoided, three to five metres of natural screening or physical barriers such as fences, can be used to provide separation as shown in Figure 37.

Areas where buffer zones or screening is required will be identified in the Concept Plan (Stage 4) and refined more specifically at Detailed Design (Stage 6).

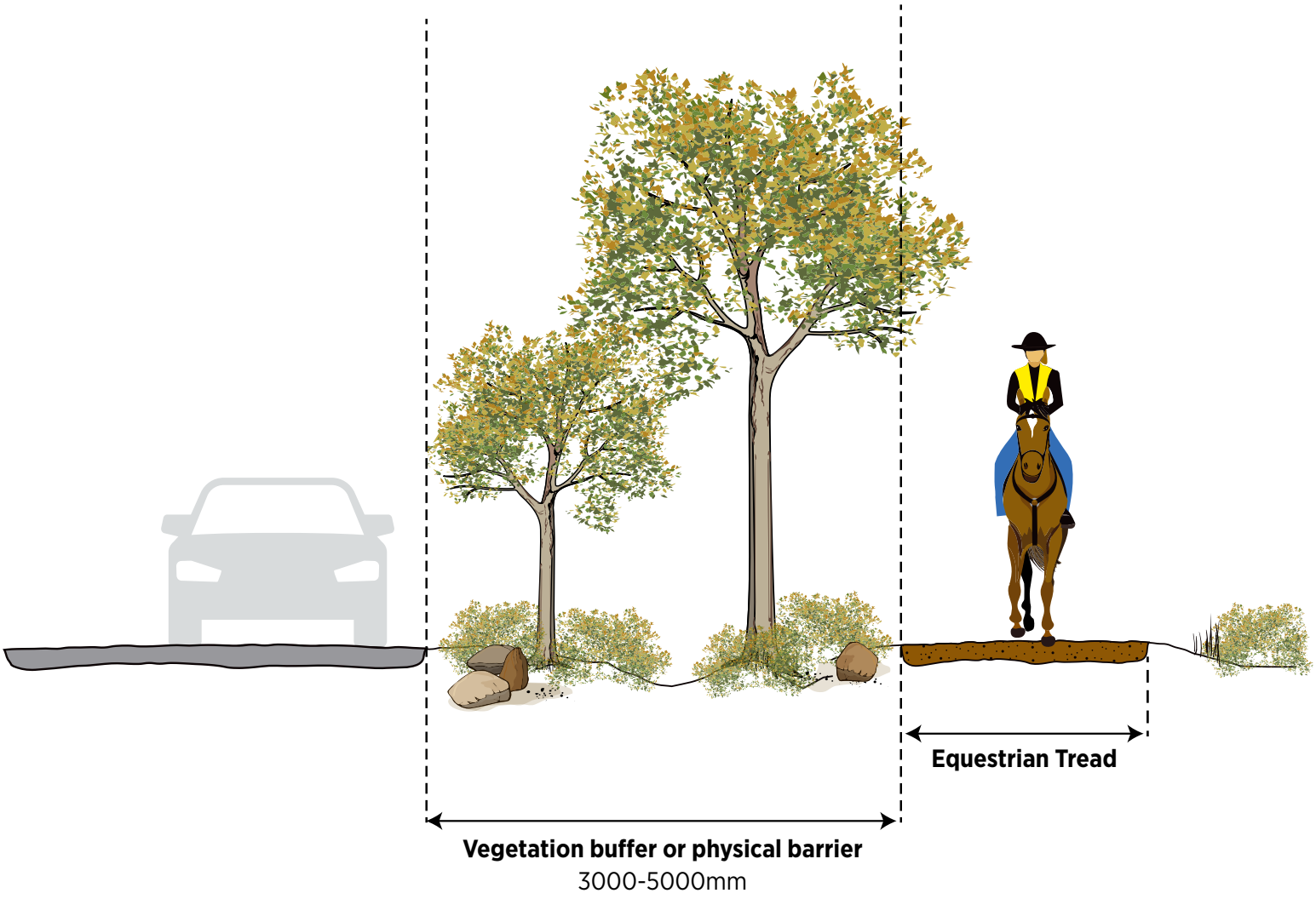


Figure 37: Trail adjacent to a road

Trail access control

This section describes infrastructure commonly used by land managers to exclude motorised users from trails, including bollards, gates and step-overs.

These structures require careful consideration due to their impact on project timelines, construction costs and ongoing maintenance and visual appearance.

Barriers like bollards, gates and step-overs can be problematic obstacles for carriage drivers and inexperienced riders. On shared use trails, they may also be troublesome for wheeled devices used by people with disability such as adaptive bicycles and wheelchairs.

Design principles

- Ensure appropriate length approach and exit from trail barriers. If in doubt, seek specialised advice, such as from landscape architects, architectural designers and the local equine community.
- Ensure barriers are free of protruding sharp edges.
- Ensure barriers are constructed on a level site with appropriate site drainage and non-slip surface material.
- Provide overhead clearance to a minimum of three metres height (in case a horse jumps the structure).
- On a trail joining a road, provide ample space for at least three horses to wait between the barrier and the road.[68]
- Location of trail access barriers needs to be considered in Site Assessment (Stage 3) and outlined in the Concept Plan (Stage 4) of the Trail Development Process. The style of barrier to be developed will be further considered in Detailed Design (Stage 6) and specified in Construction (Stage 7).

Bollards

Bollards are often thought of as the least restrictive style of access control barrier. They are commonly used where a trail crosses a sealed road and are installed to prevent unauthorised vehicles entering the trail. Sometimes large rocks are used to serve the same purpose. Bollards may not prevent access by motorcycles or quad bikes.

In some situations, bollards are used to prevent parking of vehicles in places that obstruct trail access.

Principles

- Bollards should be highly visible, typically having colourful paint and reflective bands.
- Bollards with smooth tops and rounded edges are preferred on horse trails.
- Site bollards 1.5 meters apart. This allows clearance for riders to pass through between them.
- It is recommended that the minimum height for bollards is one metre, shorter bollards are difficult for carriage drivers to keep in view.
- Install bollards on level and even ground. Uneven ground between or on approach may cause a carriage to tip and collide with the bollard.
- Vegetation must be maintained so that the space for manoeuvring is not restricted.
- Consider removable bollards that lock in place to facilitate access for maintenance and emergency vehicles.
- Consider combination locks on removable or folding bollards to give carriage drivers the option of full trail width access. Combinations may be provided to local carriage driving clubs and changed regularly.[69] Alternate gated access can also be provided as an access solution for wide carriages.

68 British Horse Society, *Advice on bridleways and other access*, 2025, Vehicle barriers

69 Ibid

Gates

Gates can prevent motorised vehicles from entering restricted areas and are often used on trails crossing multiple land tenures. They also stop livestock from escaping private properties. For horse riders, dismounting to open a gate can be problematic and may cause difficulties when remounting.

Principles

- Provide gates with a long-armed handle within easy reach, this enables a rider to open and close a gate without needing to dismount, see Figure 38. Alternatively, a mounting block will be appreciated.
- Provide a minimum 1.5 metre wide gateway, up to three metres if the trail will be used by carriages.
- For ease of use, provide gates that can swing either way and that are not self-closing. A self-closing gate can accidentally hit and startle a horse.
- As shown in Figure 38, site gates to allow adequate space for the horse's head and neck as riders open gates with the horse standing side-on.[70]
- Add combination locks or padlocks to gates where required.

Access grids

In some circumstance, a fence opening with a grid at ground level may be used to facilitate trail access. These structures are also referred to as cattle grids, stock grids or farm grids. Trail users such as hikers and cyclists can pass through without being responsible for gates. Access grids are dangerous for horses. They may try to walk or jump over the grid or walk around its ends. They can trap a hoof or leg in the grid, severely injuring themselves. On trails with access grids, installing an alternate gated access for horse riders is necessary.

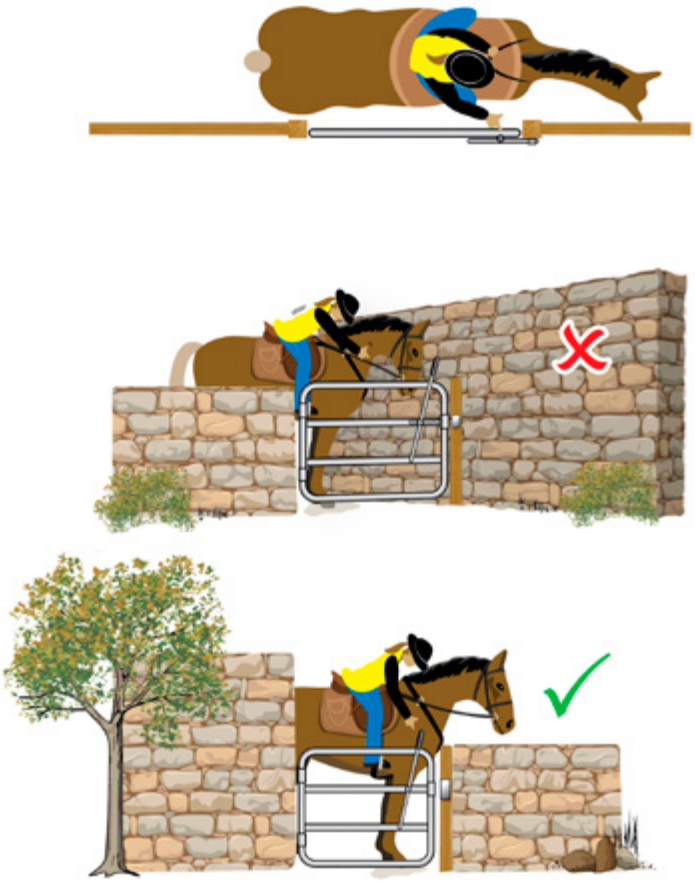


Figure 38: Gates[71]

70 Horse SA, 2019

71 Illustration adapted from Horse SA, 2019

Step-overs

Step-overs, also referred to as cavalletti or horse stiles, are a horse-friendly barrier, to deter against vehicles or motorbikes entering the trail network. Designs feature between one to four rails.[72] Photos on this page illustrate a variety of step-overs in WA.

Whilst step-overs do not exclude hikers and cyclists, they are not appropriate for accessible trails or carriage trails. Alternate access needs to be considered to provide access for all. Step-overs are also not appropriate on easiest classification horse trails. To meet the needs of this user group, bollards or gates are used if access control is required.

Step-overs are usually placed within a fence line with adjacent management gate. Sometimes a step-over is incorporated into a management gate as shown in Figure 39.

Step-overs may be included at an equestrian centre or club facility to provide access to adjoining trails. This convenient arrangement may allow trail user access to existing facilities such as float parking, yards or mounting blocks.

Horses will need to be trained to navigate step-overs. Wooden rails are preferred due to noise concerns from metal, which can, if inadvertently clipped by a horseshoe or hoof, startle the horse.

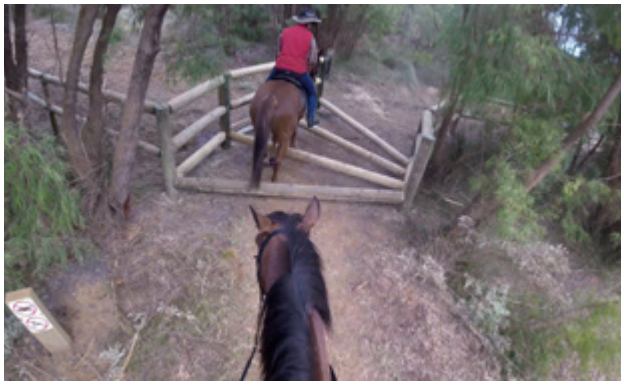
Managing step-overs can be frustrating as they are not fully effective, for example, motorbikes may be lifted or riders can fill the gap between the ground and the rail with soil, creating a ramp. Siting the step-over in a highly visible location can help reduce unauthorised access.

Specialist advice should be engaged to ensure compliance with relevant standards and building codes.

Step-over with four rails, Bungendore Bridle Trail.
Photo—DBCA

Step-over with two rails, Darling Downs Bridle Trails.
Photo—DBCA

Step-over with one rail, Magenup Equestrian Centre.
Photo—DBCA



Fan-style step-over, Albany.
Photo—Friends of the Stidwell Bridle Trail

72 Horse SA, 2019

Principles

- Ensure the step-over height is appropriate; 300–400mm high will be comfortable. When a step-over is too high, a horse may jump it. On easy classification trails, step-overs must not exceed 450mm high.
- Ensure a minimum width of 1500mm is provided, 1550–1750mm is typical.
- Consider sight lines—those entering the trail at a step-over should be clearly visible to other trail users. Avoid locating step-overs immediately after sharp turns and where vegetation obstructs visibility.
- Place step-overs on level ground rather than inclines. This reduces the chance of tripping, allows more rider control and helps minimise erosion.
- Ensure appropriate site drainage and surface material at the step-over. Trail tread on both sides of the step-over rails will wear down or become compacted over time.
- Consider if installing a concrete pad below grade and covered with tread material is required to mitigate tread-wear.
- Wooden rails are preferable. If steel is used, the rails are usually covered in cushioning material to muffle any noise from hoof or horseshoe contact.
- Consider alternate access point for riders who have horses that find step-overs difficult, carriage drivers and others seeking accessible trail access.
- Ensure step-over fixings are flush with or countersunk into the surface, preventing sharp or protruding edges.
- Provide regulatory signage to indicate both authorised trails use and those activities that are not permitted.
- Avoid leaving a wide gap between the management gate and the step-over as this can be confusing for horses.
- Establish ongoing inspection and maintenance program to ensure the structure remains intact, stable and safe.

Further design advice and feedback may be sourced from WA local government organisations that have installed step-over entries. ATHRA provides sample construction drawings by request. Step-overs are not appropriate for areas requiring a secure perimeter enclosure to contain stock.

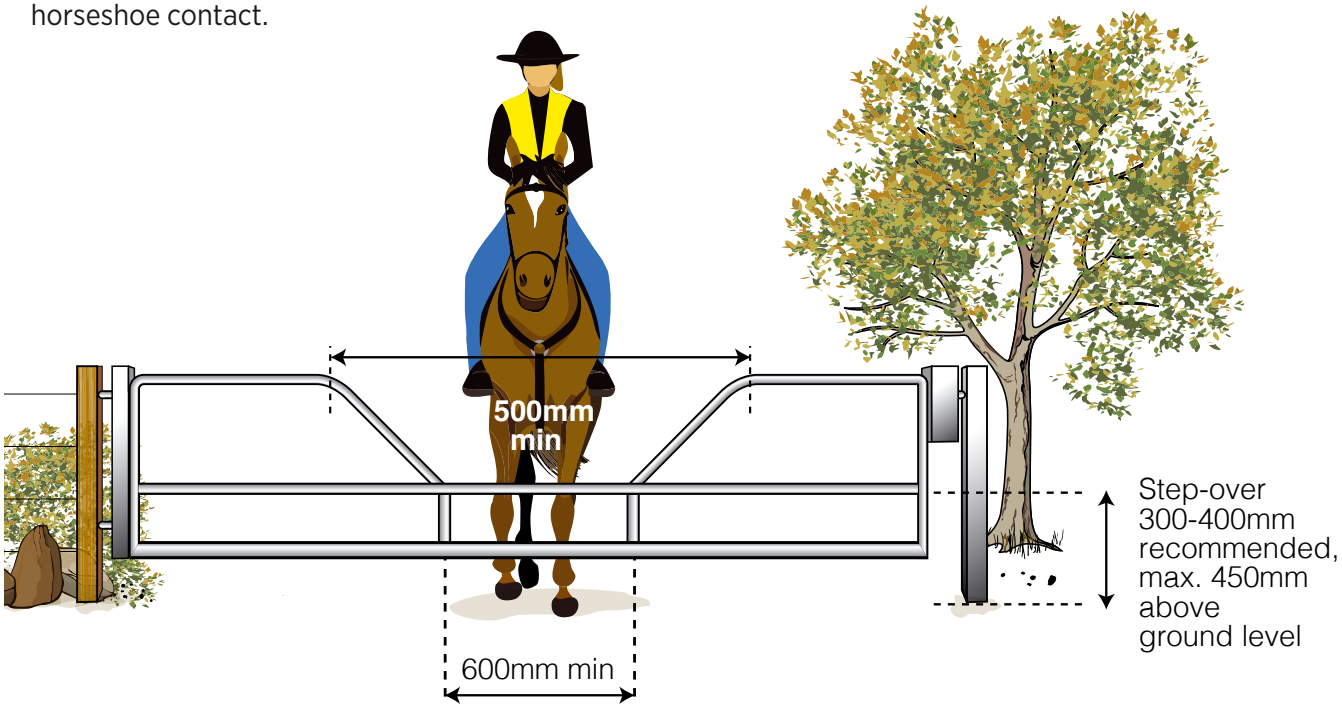


Figure 39: Step-over gate

8.12 Steps

Trail alignments that follow natural landforms are more sustainable and minimise the need for complex structures.

Steps and stairways are used where the trail alignment needs to traverse gradients that are too steep to meet the average trail gradient of less than 10 per cent (one in 10), as explained in Section 7.1.

A **step** consists of a riser and a tread and creates a surface on which a horse or pedestrian will place their feet when moving from one level to another. The vertical is called the riser and the horizontal part is called the tread.

A **stairway** has more than one step, provides access from one level to another and may incorporate wide landings used by riders to turn, pull over or take a break.

Horses can navigate steps successfully, but standard steps and stairways may be unsuitable. This section describes construction of horse steps.

For steps to even be considered on a horse trail, there are significant site constraints. South Australia's Horse Trail Infrastructure Guidelines provides an example where the only legal access corridor for the trail is on a fall line with steps providing a solution, see photo to the right.[73] Steps might also be used to negotiate steep grades over a short distance, for example an approach down a steep bank towards a water crossing.[74]

Steps are generally not recommended as they discriminate against many users, including some riders, whose horse may not have capacity for steps. Steps are not feasible on trails open to carriage driving.

Steps also add to project timelines, construction costs and ongoing maintenance expense as well as create visual impact.

Construction of steps and stairways may require approvals and permits when adjacent to watercourses, wetlands or foreshore areas.

Steps on horse trails may be a beam style construction as shown in Figure 40 or box steps with a stone or timber surround as shown by Wood[75] and by Hancock.[76]

The trail experience, environment and classification will influence the design and construction of these structures. Appendix F provides more detail about steps and stairways.

Horse trail steps, Belair NP, South Australia.
Photo—Julie Fiedler courtesy Horse SA

73 Horse SA, 2019
74 Wood, 2007, page 97
75 Ibid
76 Hancock et al., 2007, Chapter 4

Design principles[77]

- Steps for horses are ideally two metres wide or more, at a minimum 1.5 metres. Ensure they are tied into the banks on each side where possible.
- Riser height of 150mm is recommended across the site, though 170mm may be acceptable at some locations. Reducing tread length is preferred over increasing the riser height. Risers of less than 150mm are not recommended as whilst a horse could walk up them, they may find it difficult to descend.
- For safety, where possible, runs of steps should incorporate frequent passing or turning places of a minimum three by three metres. This may be accommodated using a landing on a stairway, as shown in Figure 40, or by providing access to a separate turning area connected to the stairway.
- A minimum tread length of 1.7 metres is recommended at high-use sites. Two metres is optimum as this allows space for all four legs on a single step. If there are only one or two steps in isolation, a shorter tread length may be applied, depending on the location and use.
- If insufficient space is available to gain the height required, interspersing a shorter tread step may be an acceptable solution, such as one metre tread length steps between 1.7–2 metre treads or three treads of 1.5 metres between two metre tread steps.
- Ensure installation of sufficient support to avoid the riser being pushed forwards.
- Consolidate the backfill thoroughly to reduce maintenance such as where hollows form with use over time.
- If a handrail is desired for pedestrians, the width of the steps should be a minimum of two metres to reduce the risk of a rider's foot or leg catching in the handrail. Wood [78] recommends against putting a rail alongside trail steps as it is a difficult location to include railings with sufficient strength to hold a horse that may press against it.
- To reduce risk of slipping, risers with square edges are preferable to rounded edges.
- Consider a colour contrast or nosing treatment on stairways to ensure each step is obvious.
- Add stone, rock, timber or hard material at the base of steps to prevent compaction and erosion.
- Choose materials and fixings for longevity, skills available for construction, fire resistance and maintenance requirements, for example, hardwood is preferable to soft timber which is likely to splinter if caught by a horse's hoof.
- Consider these factors in choice of materials: local, embodied energy, recycled, plantation or renewable, modern alternatives and non-traditional solutions.
- Ensure built materials do not shed or emit damaging chemicals, fibres or other elements into the surrounding environment.
- Mounting blocks will be welcome if the gradient is such that some riders feel safer leading rather than riding their horse.

77 This section draws heavily on British Horse Society, *Advice on bridleways and other access*, 2025, Bridges, fords, gradients and steps.

78 Wood, 2007, page 97

Beam steps

Beam steps use a beam as the riser, or step front, and surface material as the tread as illustrated in Figure 40.

They work well when the gradient allows a longer tread width. They are easy to align around curves and fit in well with the landscape when designed and built well.

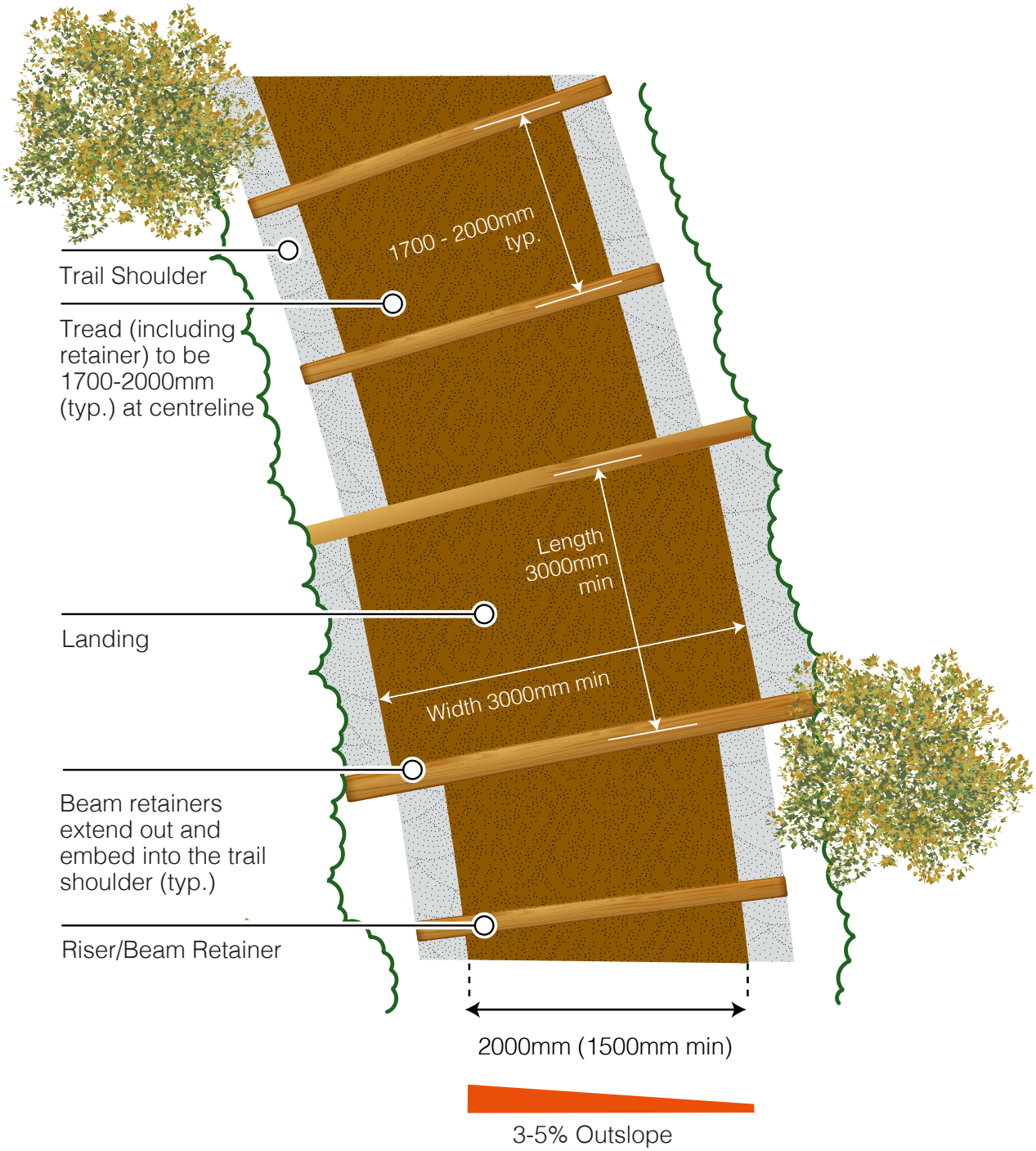
Beam steps are not always easy to get right as they require attention on the shoulders to ensure the beams are buried properly or anchored with a hard edge.

Principles

- Carefully consider surface material to ensure it is durable, meets user volume and does not create a slip hazard.
- Extend the riser beyond the trail width and bury in the shoulder of the trail, or anchor with a hard edge to reduce erosion and wear-away.
- Stabilise the shoulder and batter to reduce erosion and create a finished appearance.
- Secure the beam with a bar or rod, as illustrated in Figure 40, or from behind for safety and aesthetics.
- Outslope treads three to five per cent (one in 33 to one in 20) to shed water, reducing potential for ponding and erosion.
- Consider geo textile or other surface treatment as a component of the tread infill to reduce erosion and compaction if appropriate.

Beam Steps in Leeuwin Naturaliste National Park. *Photo—DBCA*

PLAN


1700 - 2000mm typ.
Trail Shoulder
Tread (including retainer) to be 1700-2000mm (typ.) at centreline
Length 3000mm min
Landing
Width 3000mm min
Beam retainers extend out and embed into the trail shoulder (typ.)
Riser/Beam Retainer
2000mm (1500mm min)
3-5% Outslope

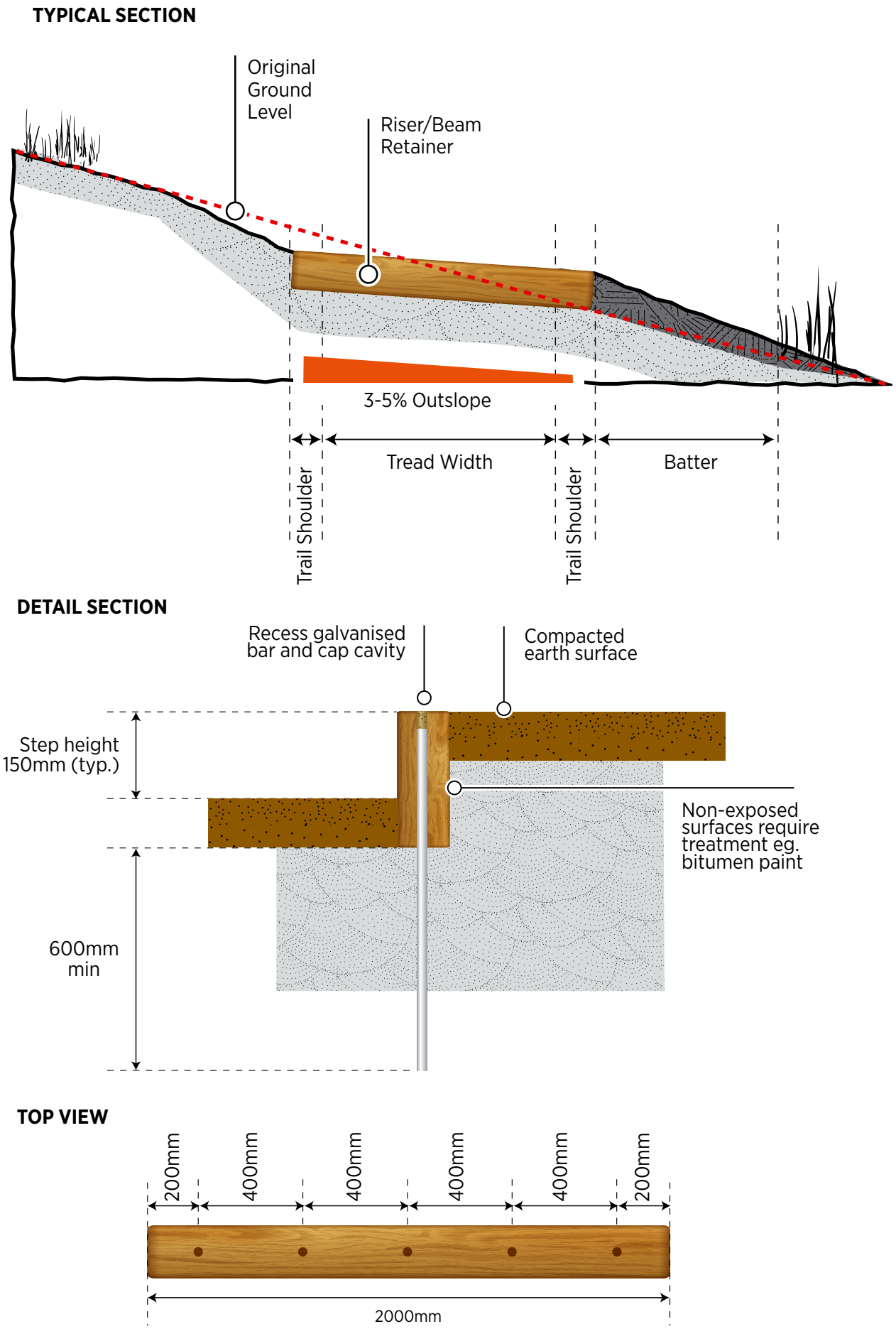


Figure 40: Beam steps

8.13 Lookouts

Lookouts provide a safe place for people to enjoy the views, rest and take photos. These are designated safe areas to protect visitors, the environment and other values whilst allowing the best viewing opportunities.

Managing visitor safety is of prime consideration. If a trail user cannot capture the best view, they may put themselves in an unsafe position increasing their risk of injury or death.

Lookouts are often a highlight of a trail user's experience. They can be as simple as a key location to capture the sunset over the surrounding landscape, or place with a rest area off the trail where riders may dismount and walk to a viewpoint. They can also be more complex with retaining walls, handrails, terracing or platforms, with cantilevers over an edge.

It is preferable to build lookouts on and into the natural ground wherever possible. This reduces construction and maintenance costs and limits landscape and other impacts.

Specialist advice may need to be engaged, such as architectural designers, landscape architects and geotechnical and structural engineers, to ensure compliance with standards and building codes.

For further information on constructing lookouts and viewing platforms please consider the information provided in the WA Hiking Trail Management Guidelines.

Principles

- Consider the intended trail experience and management of visitor risk, including the need for railings.
- Determine the capacity required for the expected visitor use, numbers and size of groups, including the space needed for dismounting safely, securing horses and where appropriate, group photos on horseback.
- Ensure the location and design provide clear sightlines to the intended viewpoint, such as the valley, river or coastline. Without this, trail users may attempt to reach unsafe positions to gain a better view.
- Consider mounting blocks, hitching rails and seats to encourage stopping and staying for some time if it's appropriate and doesn't cause congestion and conflict with other users.
- Consider construction logistics if working at height or on fragile ground.
- Carefully consider the surface material of a lookout and if appropriate use natural rock or earth if available and appropriate.
- Choose materials and fixings for longevity, skills available for construction, fire resistance and maintenance requirements.
- Consider these factors in choice of materials: local, embodied energy, recycled, plantation or renewable, modern alternatives and non-traditional solutions.
- Ensure built materials do not shed or emit damaging chemicals, fibres or other elements into the surrounding environment.
- Determine geotechnical assessment requirements if located on the edge of a cliff or other geological feature that requires assessment.

8.14 Small buildings and furniture

Horse trails may require small buildings and furniture to support them. These are an integral part of the trail experience and need to be designed as part of the trail planning process, not as an afterthought.

They can be expensive with a significant visual impact, so it's important to get them right.

They may include tables and seats, handrails, barriers and fences, toilets and ablutions, shelters, camp kitchens, camping or tent platforms and water tanks.

Principles

- Ensure furniture and small buildings are designed and located as part of an overall plan to integrate with the trail design and trail classification.
- Design all structural elements to be integrated and complementary in design, form, line, colour and materials.
- Determine the level of accessibility that is required according to the trail experience and trail classification to guide design decisions.
- Design small buildings and furniture to accommodate people with disability to ensure all trails are inclusive.
- Consider the measures needed to ensure user safety, security and deal with vandalism if prevalent.
- Ensure that maintenance and service needs are appropriate to the site and considered in the trail management plan.
- Consider choice of materials: local, embodied energy, recycled, plantation or renewable, modern alternatives and non-traditional solutions.

All small buildings should be designed by qualified professionals such as architects, engineers and landscape architects, who can ensure the design and construction conform with appropriate standards and building codes.

Lake Muir Nature Reserve. *Photo—DBCA*

Furniture

Type and style of furniture will be influenced by the trail experience, classification, significance hierarchy, user groups and volume, landscape character, maintenance, budget and site conditions.

Trails may need tables, seats, benches or rubbish bins. Careful selection and placement can help maintain an uncluttered environment. Multi-functional structures, such as a seating wall that assists water management, can serve multiple purposes while minimising visual impact.

Furniture can also incorporate artwork, visitor messaging, or interpretation to enhance the trail experience.

Existing site features can be used for informal seating and resting, such as larger rocks and rock shelves, where it meets the trail classification.

Seats provide excellent opportunities for a rest and somewhere to enjoy the landscape, view and features. They are also an important part of accessibility needs and will be influenced by the trail classification.

Enclosed landscapes, with diverse vegetation patterns, will generally absorb built structures with minimum visual impact. In contrast, exposed and horizontal landscapes with little vegetation require significantly greater attention to design and detail to ensure they do not create visual or other impacts.

Wilson Inlet Heritage Trail, Denmark. *Photo—Katie Stevens*

Location and alignment principles

- Ensure furniture is designed and located as part of an overall plan to integrate with the trail design and trail classification.
- Locate furniture with shade, shelter and attractive outlooks where it attracts maximum use and a reason for trail users to want to stop.
- Keep furniture out of the direct path of travel, so it is not an obstacle.
- Place seats at least 600mm back from the trail edge to allow legroom and leave a distance of at least 900mm space between seats and at the end of seats to accommodate wheelchairs and prams.

Design principles

- Ensure tables allow wheelchair access at various points around the table, including some tables with no seats at sites with high levels of use by people in wheelchairs so they can sit at the table in a group.
- Consider whether tables will be fixed or moveable including need for surface treatment and theft prevention.
- Consider the potential of low walls to be used as seats. They need to be between 450 and 520mm high and at least 300mm wide for best comfort and ideally have a 100mm overhang to assist standing.
- Assess risks and hazards that could potentially damage furniture such as vandalism, falling rocks and trees, storm surges or floods.

Materials and fixtures

- Choose materials that are compatible with the rest of the trail design and considered as a package, not in isolation.
- Choose designs and materials that are hard wearing and resilient to damage by weather conditions, termites, vandalism and bushfire while still complementing the natural environment.
- Ensure maintenance needs are kept as low as possible, accepting that this may involve a higher capital cost.
- Evaluate fire risks and recovery of the structure in event of wildfire.
- Consider these factors in choice of materials: local, embodied energy, recycled, plantation or renewable, modern alternatives and non-traditional solutions.
- Ensure built materials do not shed or emit damaging chemicals, fibres or other elements into the surrounding environment.
- Ensure all materials are non-abrasive and non-splintering with all corners rounded off and no protruding elements.
- Make sure materials that are to be touched do not get too hot or too cold.

Beelu National Park. *Photo—DBCA*

Toilets and ablutions

Toilets are a necessity for most trails and may be the first thing a trail user will look for on arrival, particularly if it's taken some time to travel to the trail. They may already be provided if the trail is starting from or close to other amenities.

Providing toilets can be expensive with a significant maintenance and visual impact.

Ablutions are buildings that include both toilet and shower facilities, occasionally a laundry, and are more appropriate to campgrounds.

Constraints and buffers may be required on the design and location of toilets and ablutions to protect sensitive environments such as wetlands, watercourses and reservoirs. Approvals or support from Department of Water and Environmental Regulation and Department of Health may be required.

If facilities are not being connected to reticulated sewerage, alternative treatments systems need to consider many factors. They should be approved for use by the Department of Health and installed and maintained according to manufacturer instructions.

Most visitor toilets on DBCA's Parks and Wildlife Service-managed lands are gender neutral where possible and are designed for access by wheelchairs in accordance with AS1428, including those on trails.

There are many factors to consider, and it is best to engage specialist advice, such as architectural designers, landscape architects and engineers to ensure compliance with standards and building codes.

Location principles

- Locate toilets at trail heads close to parking areas for convenience, ensuring compliance, assisting with maintenance and security and reducing antisocial behaviour.
- Determine type and style of toilet based on numbers of users, specific site conditions and trail classification.
- Ensure a continuous path of travel for people with disability from the parking area, trail and campground to the toilet.
- Consider visual impact of building and other infrastructure.
- Consider location and type of sewerage system and effluent disposal fields in relation to:
  - ability of the soil type to accommodate excavation and beware of rocky sites and those with underlying rock
  - protecting natural and cultural values from potential nutrients and pathogens
  - buffers for water resources such as reservoirs and bores.
- Ensure appropriate approvals are obtained prior to the construction and operation of toilets and ablutions.

Leeuwin Naturaliste National Park. *Photo—DBCA*

Design principles

- Determine the capacity by considering visitor numbers and use patterns, as well as capacity of the sewerage system to match the user numbers. Consider future visitor increases and expansion needs.
- Ensure toilets are accessible by people with disability and meet standards and building codes.
- Ensure there are no steps or barriers from the outside to the building, and where necessary, install ramps to standard for access by people in wheelchairs.
- Consider gender neutral toilets to cater for diversity and disperse use in busy times.
- Consider additional facilities such as change tables and sanitary bins based on location and intended users.
- Consider security in the building design, ensuring that there are no 'hiding places' or places where people can be 'bailed up' outside the cubicles.
- Ensure there is suitable access for servicing and maintenance, understanding the costs and frequency of services as well as the size of vehicles that need access.

Materials and fixtures principles

- Choose materials that are non-porous and corrosion resistant wherever possible to extend lifespan and reduce maintenance.
- Choose materials and fixings for longevity, skills available for construction, fire resistance and maintenance requirements.
- Consider these factors in choice of materials: local, embodied energy, recycled, plantation or renewable, modern alternatives and non-traditional solutions.
- Ensure built materials do not shed or emit damaging chemicals, fibres or other elements into the surrounding environment.
- Provide roof lights, skylights or translucent sheeting to improve lighting in sites with no power.

Shelters

Shelters protect visitors from the elements and have a range of flexible uses including:

- shade and shelter from the weather
- interpretation and information
- overnight use and accommodation
- a combination of any of above.

Often, a structure is designed to accommodate more than one function and can be flexible in its use.

The purpose, materials and size of a shelter will vary depending on the trail experience, trail classification and weather conditions.

Engage specialist advice including architectural designers, engineers and landscape architects to ensure compliance with relevant standards and building codes.

Location principles

- Consider prevailing wind and weather to ensure the shelter offers protection.
- Ensure the design is integrated into the trail experience, including the visual impact of the structure.
- Ensure the design and orientation, particularly when holding interpretation and information panels, is matched to the site that has been nominated.
- Deal with edge treatments and ground surfaces, ensuring the building floor is at grade, with no steps or barriers, to the surrounding area.
- Ensure a continuous path of travel for people with disability, such as from the parking area to the shelter at a trailhead.

Building design principles

- Design the size required for anticipated user numbers and proposed activities and ensure the proportions of the structure suit the site, other associated structures and landscape.
- Make the structure as accessible as possible being guided by trail experience and trail classification.
- Ensure furniture that will be installed in the structure, such as tables and seats, will fit and have enough circulation space.
- Consider sun angles throughout the seasons and ensure that protection is offered when and where it is needed.
- Consider security and reducing antisocial behaviour when locating and designing shelters.
- Accommodate the roof water drainage and ensure erosion is managed.

Materials and fixtures principles

- Choose materials and fixings for longevity, skills available for construction, fire resistance and maintenance requirements.
- Consider these factors in choice of materials: local, embodied energy, recycled, plantation or renewable, modern alternatives and non-traditional solutions.
- Ensure built materials do not shed or emit damaging chemicals, fibres or other elements into the surrounding environment.
- Choose suitable floor treatment, such as concrete slab, pavers or hardened earth and ensure that it is suited to the purpose, use levels and maintenance.

Camp shelters are usually rustic shelters, designed for sleeping for a group of people and usually open on one side.

Depending on the design brief, camp shelters may have areas for eating, cooking and sitting.

Additional principles

- Design to the group dynamic and how people will interact in the space.
- Choose materials that allow easy cleaning of surfaces and appliances.
- Consider security and privacy between sleeping and eating areas, giving sleeping areas privacy but open enough to feel secure.
- Consider changing rooms that have lockable doors, depending on the trail experience.
- Include a shower room if appropriate, where visitors hang their own water bag over a simple concrete floor with floor waste to grey water treatment.
- Consider user-friendly features that make the stay more convenient, such as hanging hooks, rails, clothesline and shelves.
- Provide a water source and grey water treatment if appropriate.
- Suppress dust and consider pest control in locating and designing camp shelters.
- Consider prevailing weather and wall side treatments.
- Install signs with the trail code of conduct for use of camp shelter.

Warren Blackwood Stock Route.
Photo—Warren Blackwood Alliance of Councils

9. Management

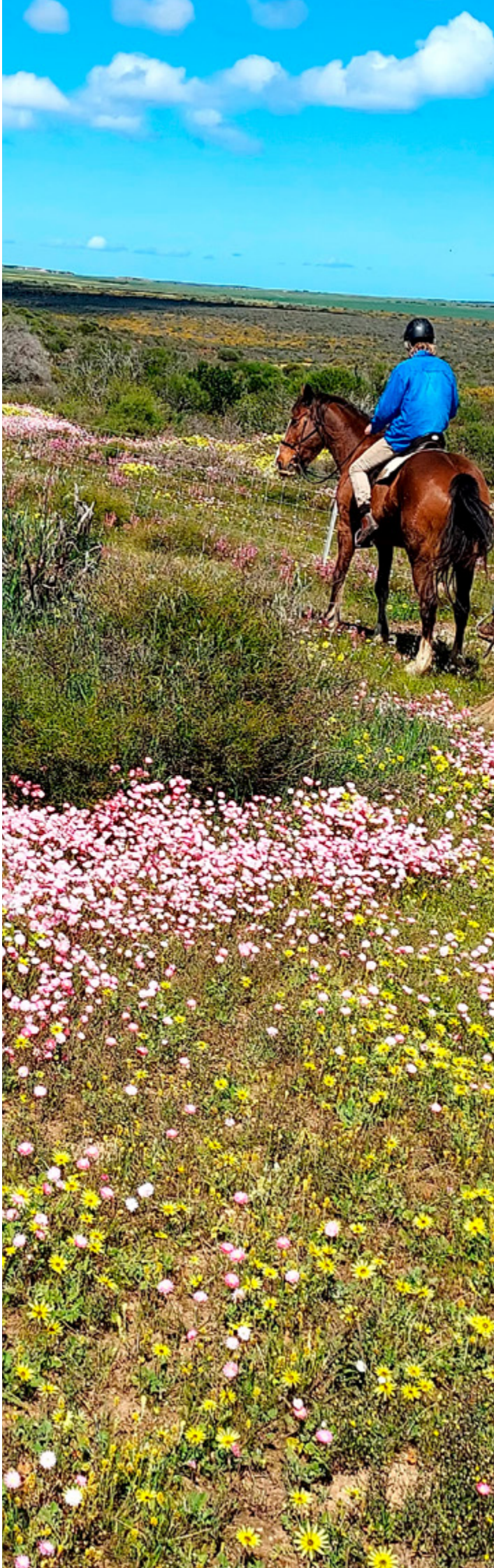
As projects move from development to operation, there are a range of roles and functions that need to be fulfilled by trail operators to ensure the new trails are fully activated and operating optimally.

These include trail and facility management, maintenance, marketing, activation and the ongoing development of the trails.

Good trail conditions also need to be maintained so that visitors continue having an excellent experience on high quality trails.

Management of trails encompasses governance, responsibilities, funding, resources, maintenance and trail adoption.

Read Management (Stage 8) of the Trails Development Series for more information.



Mid-West Horse Trekkers, Yallabatharra.
Photo—Michelle Short

9.1 Governance

Whether a trail project is a small local trail or major network at a destination, it's important to be clear about who owns the trails, who's managing them and how its condition and success will be monitored.

The Governance Institute of Australia defines governance as –

> *"... the system by which an organisation is controlled and operates, and the mechanisms by which it, and its people, are held to account. Ethics, risk management, compliance and administration are all elements of governance."*

In the trail context, it relates to who will manage and how they manage and maintain the trails and infrastructure. Sustainable governance and funding models may involve new or alternative funding streams or partnering with others to sustainably manage and maintain the trails.

The Framework (Stage 2) of the Trail Development Process determines the governance of the trail through a management model. The responsibilities, funding and resources needed are identified in Management (Stage 8).

Shannon National Park Horse Trails. *Photo—DBCA*

Options

There are a range of options used in Western Australia and around the world. Each trail or destination will have different requirements. There is no one size fits all. Western Australia has looked to other trail destinations around Australia and around the world to see what works, how and why.

Trails in WA also have some great trail management success stories with the Bibbulmun Track and Munda Biddi Trail Foundations and a range of other trail organisations and volunteer groups.

Community and volunteer groups provide support, guidance, management, marketing, fundraising and maintenance for local, regional and national level trail assets. These activities are often undertaken in partnership with the land manager.

TRC Tourism[79] outlined a range of possible models that fall into three categories:

- public delivery and operation—government builds and operates trails
- public delivery and community operation—government build trails and a community organisation or other entity operates them
- public delivery and private operation—government builds trails and a private company or organisation operates them, possibly via a lease.

They concluded there is no one-size-fits-all and the suitable model depends on a range of circumstances and the operating environment. Therefore, each project needs to develop arrangements fit for purpose for that project and community.

Collie-Darkan Rail Trail. *Photo—Rhonda Hart*

Successful governance

TRC Tourism outlined what they considered the critical factors for successful trail governance and management.

They are:

- a clear, committed, and skilled governance entity
- effective trail planning
- clear coordination function
- people dedicated to management and maintenance
- adequate resources for trail operations.
- ongoing funding
- stakeholder and community partnerships
- supportive government environment
- marketing, promotion, and experience development.

79 TRC, *Tourism for the governance and sustainability of Warburton Mountain Bike Destination*, 2017

9.2 Sustainable business models

In addition to having a clear and effective governance model, each trail project needs a sustainable business or funding model. This ensures resources are available for their management, maintenance and promotion.

The business model may include direct funding or revenue and in-kind labour or support such as through volunteers. This equally applies to small local trails and large networks and destinations to ensure the trails do not fall into disrepair.

It is also vital that trails continue to evolve and be promoted with new products and experiences to encourage people to keep returning so that the investment reaches its potential.

The range of funding or income and support options may include:

- budget and resource allocation from land manager
- entry, facility, parking or attraction fees
- leases, licences and permits
- merchandise
- sponsorship and donations
- members, volunteers and supporters
- partnerships, including trail adoption
- events.

Large trail networks and trail destinations may also consider advocating for targeted taxes on points in the market chain related to tourism and earmark the proceeds for conservation or trail management.

Dwellingup Trails Visitor Centre. *Photo—Visit Dwellingup*

9.3 Trail management plan

Trails need maintaining like any other facility. The management model, in terms of who is responsible for what, should be established in the Framework (Stage 2) of the Trail Development Process.

A concise trail management plan needs to be developed and approved by the project steering group. The management plan will encompass all aspects of managing the trail and be informed by the framework and any broader land management policies.

As a minimum, the plan should include:

- background information from the framework including trail system, trail classification, target users, expected amount and type of use
- clarification of management roles and responsibilities (from the framework)
- management responsibilities, funding and resources for individual stakeholders
- a record of the infrastructure and costs or link to the appropriate system or asset database
- maintenance program including inspection frequency, infrastructure logs, standards to be maintained, works program, funding and resources
- hazard inspection and reporting procedures
- visitor statistic recording standard and procedures
- marketing, maps and information.

A sample template is provided in Appendix G that can be modified to suit trail projects as needed.

Read more on developing a maintenance program and trail adoption in Management (Stage 8) of the Trails Development Series.

WA Horse Trekkers Club riders at Coolgardie Horse and Pony Association Communal Yards. *Photo—Roberta Bowman*

9.4 Codes of conduct

A code of conduct is a set of rules that guide behaviour. For trails, they assist in keeping people safe, create more socially harmonious trail use and protect natural and cultural values.

To be effective, the code needs to be relevant, clearly communicated and understood by trail users.

Key messages can be included on signs, publications, maps and digital media including websites.

The WA Horse Trail Management Guidelines Stakeholder Reference Group has developed core principles, shown below, that should be included in any trail code of conduct.

Individual trails may have their own principles, policies and values adapted to suit the trail experience, user groups and landscape.

The Australian Trail Horse Riders Association (ATHRA) has developed a code of conduct to be observed by their members. The comprehensive code of conduct is an excellent reference source, covering appropriate behaviours and practices surrounding:

- risk management
- ride rules
- harness driving rules
- the sixteen environmental rules, including methods to avoid weed spread
- horse health and welfare
- charity rides
- special events.

HORSE TRAIL USER CODE OF CONDUCT

Horse riding + Carriage driving

1. **Choose the right trail for you and your horse**
2. **Show mutual respect for other trail users**
3. **Follow right of way rules:**
   - **keep left unless overtaking**
   - **call out from a distance and make yourself known from behind**
   - **check the path is clear and pass wide and slow**
4. **Leave no trace – respect the environment, use non weed feed, stay on the trail, take all rubbish with you**
5. **Be safe – plan and prepare for your ride**

10. Events

Trail-based events for horse riding and carriage driving are generally club specific and may include come and try days, day rides, multi-day long distance or endurance events.

Events can provide an economic boost to communities through tourism and retail expenditure, generating greater regional awareness and growing visitation.

Events can also generate interest in trails, bring new users to trails and have mental and physical health benefits. They can also create concerns for local land managers and communities if not managed properly.

WA's Blackwood Marathon is a challenging relay event held annually and includes a 16km equestrian leg. From humble beginnings, of just 54 teams (220 competitors), it has grown from strength to strength and now boasts over 750 competitors. The unique event has attracted many top athletes.[80]

In 2021, the town of Collie was the host of the Tom Quilty Gold Cup – the National Championship event in Australian Endurance riding. First starting in 1966, every year a different state takes on the task of hosting the event and accommodates riders from across the country along with visiting international competitors. The competition is a 160 km event that is achieved in 24 hours.[81]

In 2019, the event was hosted in Imbil Queensland, bringing over 2000 visitors and a reported $2 million in economic benefit to the region.

The requirement and facilities for events on a trail or trail network should be identified at the beginning of the Trail Development Process and accommodated throughout.

Key factors when considering events on a trail or network is whether the general location and environment can accommodate events and event infrastructure. Also, if needed, that suitable accommodation options are available at the destination.

80 Outdoors WA

81 Tom Quilty Gold Cup. History of the Tom Quilty

Blackwood Marathon 2022. *Photo—Vince Evans, Down Under Images*

10.1 Developing trails for events

Events can have a significant impact on a trail and users if not considered in the Trail Development Process.

When developing or upgrading trails, consider the type and scale of events that are appropriate in the Framework (Stage 2) of the Trail Development Process. This will ensure that requirements for hosting events are provided in the trail design and development.

During the Concept Plan (Stage 4), ensure that suitable locations are identified for the event facilities. The trail and network design needs to consider the event type, scale and appropriate course design, particularly for long-distance events. Links between existing trails can also be identified and added if required.

Considerations specific to events are:

- easy access, parking space and good traffic flow that meets the needs of the planned event
- available space for event facilities including check-in, start and finish lines, vet check area, temporary toilets, first aid facilities, food vendors and stalls
- power and water supply at the event hub
- emergency access to the event course
- suitable locations and access for first aid, water and food stations along the course
- rubbish and waste management
- well located and designed spectator areas on the event course.

If possible, consider locating event villages in nearby town ovals or parks, suitable commercial properties or businesses to support local communities. Links to the trails or trail networks can be activated for events.

Negotiating 'The Steps', Shahzada 400km Endurance Marathon Event. *Photo—Sarah Sullivan Photography*

10.2 Planning trail events

Trail events can be small or large, commercial or non-commercial.

Prior to planning any event, proponents need to liaise with landowners or managers to assess suitability, permissions, licences, permits, impact assessments, emergency and traffic management and liability.

Considerations for planning events:

- Is the landscape quality, variety and points of interest attractive to horse riders?
- What is the extent, distance and connectivity of trails?
- Is there access to singletrack trails?
- Can the trail network host different distances for events so there are a range of distance options for participants, with a common start and finish location?
- Is it a loop route or point to point trail and does it suit the event?
- Are trails well maintained, especially after weather events or heavy use?
- Is there good route marking on trails?
- Is there good connectivity to towns or is the event focused on remoteness as a key attraction?
- Are there appropriate overnight accommodation options for participants if needed?
- Can routes be planned that have limited, if any, interaction with roads and crossings?
- Can traffic management requirements be minimised to reduce cost and risk?
- Is there a suitable staging area – space for event expo, start, finish and vet checks (if required)?
- Is there enough parking at event HQ or can transport be provided for spectators?
- Are key services available at the event staging area including toilets, rubbish bins, drinking water and power?
- Is there emergency access for management and aid vehicles and sites for first aid stations and ride check points?
- What is the available support, financial and otherwise, for the event?
- Will there be community support for hosting the event?
- What is the permit process and does the event need multiple permits from land managers?
- Are there positive relations with and support from the land manager?
- What are the sensitive, no-go areas that need to be avoided and protected?

Events proposed on DBCA-managed lands and waters

The landscapes of WA's protected areas are a popular setting for trail events. Legislation governing lands and waters managed under the *Conservation and Land Management Act 1984* (CALM Act land) requires the consent of DBCA for access to conduct an event.

Information on conducting events on DBCA-managed lands and waters is available online at Conducting an event in a park | Explore Parks WA.

The way consent or authority is granted depends on the nature of the event and if it is run for commercial purposes.

To determine if an event is commercial, answer the following questions:

- Will participants or spectators be charged for attending or participating?
- Will the revenue exceed cost recovery of running the event?
- Will there be profits collected for charity, fundraising or not-for-profit organisations?
- Will there be profits collected for a club account?

If the answer is yes to any of these questions, it may be a commercial event and require a commercial operations licence.

Applications can be submitted online at Commercial events | Department of Biodiversity, Conservation and Attractions .

If the answers are no to all of these questions, it may be a non-commercial event, which requires lawful authority from the relevant local DBCA district or regional office.

Applications are submitted through the non-commercial event application form, available online from Conducting an event in a park | Explore Parks WA.

Event organisers must obtain approval from DBCA before commencing any advertising or marketing, in accordance with the Conservation and Land Management Regulations 2002.

Multi-day Shahzada 400km Endurance Marathon Event, NSW.
Photo—Sarah Sullivan Photography

Other resources

The Australian Adventure Activity Standard Good Practice Guide: Horse Trail Riding provides detailed advice on recommended supervision ratios and number of supervisors required, management of risk, environmental management, equipment needs, planning and coordination.

The Core Australian Adventure Activity Standard Good Practice Guide provides overarching principles to ensure effective, responsible, sustainable and safe delivery and management of adventure activities to dependent participants.

Events or facilities within public drinking water source areas on Crown land require assessment under Operational policy 13: Recreation within public drinking water source areas on crown land.

Assessment requires the submission of a WQIS 34—Application form for recreation proposals within public drinking water source areas on Crown land.

11. Horse Trail Classification System

				
Easiest	**Easy**	**Moderate**	**Difficult**	**Extreme**

DBCA's Parks and Wildlife Service has adopted a horse trail classification system to categorise trails in a systematic way.

The system provides standardised, concise information regarding the difficulty and characteristics of trails so that users can make informed decisions about whether a trail suits them. The system also provides a framework for trail managers to design and maintain trails to suit the trail experience and user group.

There are five colour-coded levels of classification used to represent the full range of riding experiences in Western Australia.

Other land managers are encouraged to adopt this system for consistency across WA.

The two key components of the Parks and Wildlife Service system are –

Horse trail assessment matrix is used to assess a trail and determine the appropriate classification, or to guide the design of a trail to a pre-determined classification. See Table 7.

Horse trail classification descriptors provides a framework for consistent communication of trail characteristics for each classification. See Table 8.

Key features of the system are:

- colour scheme for the classification symbols, consistent with other trail types
- one-word descriptors for each class—easiest, easy, moderate, difficult and extreme
- trail distance and weather are not an attribute used to determine the classification.

Horse trail assessment matrix

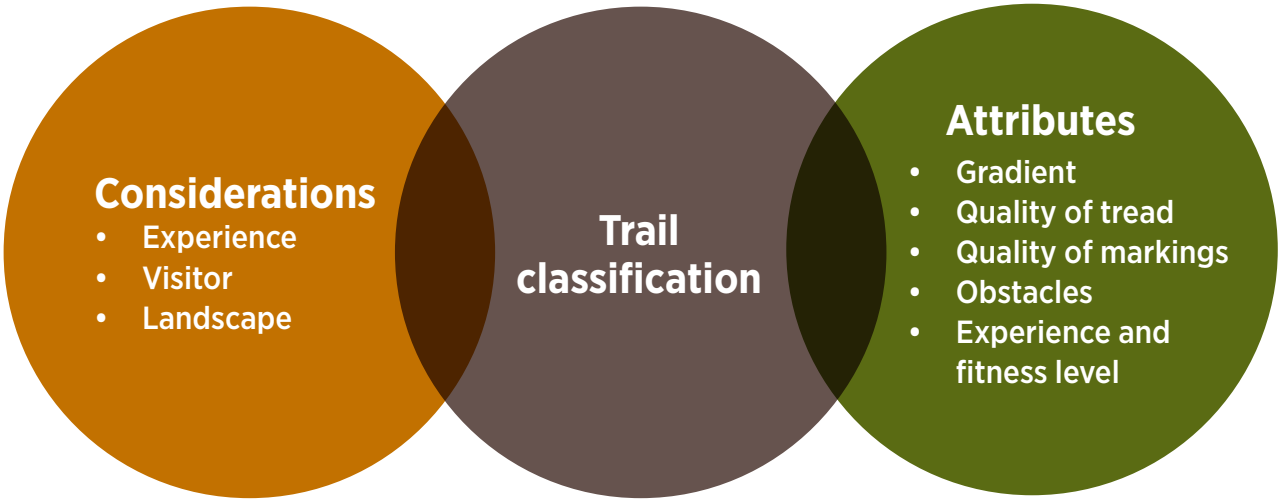
Trail classifications should be based on the desired trail experience, current or desired visitor profile and landscape characteristics.

Key considerations are:

- **Trail experience:** What is the primary attraction and purpose of the trail? What is the trail type and style?
- **Visitor profile:** Who are the visitors? What are they seeking and what are their likely abilities? Are they residents or tourists? Are they destination trail users, visiting specifically for the trail experience, or opportunistic users, integrating trail activities into a visit for other purposes?
- **Landscape:** How rugged or steep is the terrain? What types and scale of trails are possible? Can the trail be built to the desired trail classification? Consider sensitive site constraints and opportunities such as accessibility, visitor risk, Aboriginal and other heritage, flora, fauna and disease.

These factors should be considered in the early planning of a new trail or trail network, with the classification usually determined in the Framework (Stage 2) of the Trail Development Process.

For existing trails, these factors may change over time, particularly visitor profile, which could warrant a review of the classification and subsequent modification of the trail.



Applying the matrix

The physical attributes of the trail, that is the gradient, quality of tread, quality of markings and obstacles, are assessed in accordance with Table 7.

Experience and fitness level are not assessed but are a consequence of the other trail attributes. The assessment should be undertaken by someone trained an experienced in the application of the classification systems.

The trail classification is determined by the most difficult section of the trail and the most difficult attribute recorded in the assessment, not by 'averaging out' attributes recorded in the assessment.

This means that a trail may have some attributes that apply to a lower classification, but it must not have any attributes applicable to a higher classification. For example, trail managers may opt to provide trail marking on an extreme trail if the trail is likely to attract less skilled and experienced users or may provide a formed trail tread on a difficult trail. However, the easiest and easy classification trails must have minimal obstacles.

Once a trail has been assessed and classified, consider whether the classification fits the desired trail experience and visitor profile using the experience and fitness level section of the assessment matrix as a guide.

The degree of management intervention and facilities provided should align with the planned trail classification, generally with a decrease in management and facilities as the classification increases. This applies to facilities such as toilets, drinking water supply (for riders/horses), seating, shelters, yards and trailside interpretive signs.

A trail should be maintained to the classification and should be periodically reviewed to ensure the classification is still appropriate.

Classifying an existing trail

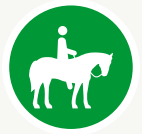
An existing trail can be assessed and assigned a classification level.

If the classification does not meet the intended trail experience and visitor profile, consider modifications to achieve the desired classification. For example, the quality of markings could be improved, trail obstacles could be removed, or the trail could be rerouted to avoid the need for a complex water crossing.

Building a new trail

For new trails, the intended trail class is determined early in the planning, normally in the Framework (Stage 2) of the Trail Development Process. Gradient limits should be considered in Concept Planning (Stage 4) and quality of tread, obstacles and sign marking in Detailed Design (Stage 6).

Table 7: Horse trail assessment matrix

					
Difficulty	**Easiest**	**Easy**	**Moderate**	**Difficult**	**Extreme**
Gradient	Generally, no steeper than 1:20 (5% or 2.9 deg). Maximum 1:12.5 (8% or 4.6 deg)	Generally, no steeper than 1:10 (10% or 5.7 deg)	May include short steep sections. Maximum 1:6.7 (15% or 8.5 deg)	May include long steep sections. Maximum 1:5 (20% or 11.3 deg)	May include long steep sections and trail sections exceeding 1:5 (20% or 11.3 deg)
Quality of Tread	Broad, firm and even surfaced trail. Well maintained and defined with minimal intrusions. Width 2000mm or more.	Stable and relatively even surface trail. Well maintained and defined with minimal intrusions. Width 1500mm or more. Short sections of narrower tread (600-1200mm) are acceptable at ground level.	Formed trail on natural surfaces and may include sections of rocky ground, sand, clay or gravel, with moderate levels of surface maintenance. Width 1200mm or more. Short sections of narrower tread (600-1200mm) are acceptable at ground level.	Generally distinct trail with variable surface that may include sections of rocky ground, sand, clay or gravel, with minimal surface maintenance. Width varies, 300mm or more.	Variable surface trail and may include sections that are not always distinct with minimal modification of the natural environment and minimal surface maintenance. Width varies, 300mm or more.
Obstacles	Maintained with minimal obstacles. Bollards, gates and culvert crossings are acceptable. No step-overs, bridges or fords. Trail ceiling cleared to min. 3000mm.	Maintained with minimal obstacles. Step-overs, gates or bollards may be present. Stepovers generally 300-400mm high, maximum 450mm. Easy shallow ford crossings with low-speed water flow may be encountered with max. depth of 400-450mm. Stirrup clearance min. 1500mm. Trail ceiling cleared to min. 3000mm.	Occasional obstacles such as rocks and logs. There may be some obstacles that require dismounting e.g. gates, bridges. Shallow ford crossings may be encountered with max. depth 600mm. Stirrup clearance min. 1500mm. Trail ceiling cleared to min. 3000mm.	Obstacles are expected, such as overhead branches, fallen debris, rocks, logs, steep ascents/descents and more complex water crossings subject to seasonal variation and may at times be greater than 600mm. Stirrup clearance generally 1500mm. Trail ceiling cleared to min. 2500mm.	Challenging obstacles are expected. Stirrup clearance variable. Trail ceiling generally cleared to 2500mm.
Quality of Markings	Regular route markers, clear marking at intersections.	Regular route markers, clear marking at intersections.	Clear route marking at intersections and where the trail is indistinct.	Minimal route markers.	Route markers may not be provided.
Experience & Fitness Level	Basic level of riding skill and fitness required. Inexperienced riders will need a trained and experienced horse.	Basic level of riding skill and fitness required. Inexperienced riders will need a trained and experienced horse.	Intermediate level of riding skill and moderate fitness required. A horse with some trail experience and training is recommended.	Experienced riders with good skills/fitness. Riders may require navigation equipment and self-reliance in managing first aid and horse health. A horse that is experienced and suitably trained is recommended.	Very experienced riders with a high level of skill/fitness. A high level of skill with navigation equipment and self-reliance in managing first aid and horse health is required. A horse that is experienced and suitably trained is highly recommended.

Notes:

1. Hardened surfaces like concrete/asphalt are generally avoided for horse trails due to concussion on horse legs and poor traction with metal horseshoes. Hardened surfaces may be utilised on some trails (e.g. rail trails) where horses would generally walk.
2. Carriage driving requires minimum tread width of 2000mm for a small trails-style carriage, 3600mm to 4000mm is preferred. Use of bollards, gates and step-overs is best avoided.
3. Trail for side-by-side riding requires minimum tread width of 3000mm.
4. Shared use trail width varies based on the amount of use and user types. Dual treadway is sometimes used to separate user groups.
5. Stirrup clearance refers to the trail corridor clearance width at the height of the riders' stirrups.
6. Rainfall conditions vary widely in Western Australia and seasonal conditions may result in a variation of water depths at water crossing points such as fords.

11.1 Communicating horse trail classes

Standardised, consistent terminology to describe a trail's classification, attributes and level of difficulty helps trail users make well-informed decisions about whether a trail suits their needs and abilities and those of their horse.

Table 8 provides a framework for consistent communication of trail classification.

The classification symbols and the single-word descriptors—easiest, easy, moderate, difficult, extreme—should be the primary communication tool.

Written trail descriptions are developed by selecting phrases from the descriptors in Table 8 that are applicable and most relevant.

Attributes that are not present can also be described as this may be helpful to trail users. For example, minimal obstacles can be important for users of easiest and easy trails.

Trail descriptions can be further customised to describe specific features or obstacles relevant to trail class, without replacing the phrases in the descriptors. Appendix H provides examples of trail descriptions.

Important information will need to be included in more detailed communication about the trail. For example, trail distance does not form part of the classification system but is essential information. The estimated time to complete a trail can also be helpful.

Other important information, particularly safety messages, should also be provided. This could include warnings regarding weather or remoteness, seasonal closures or restrictions and reference to any relevant risks associated with the terrain or route such as road crossings, bird scare guns in orchards etc.

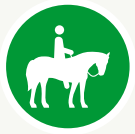
Riders will appreciate inclusion of sufficient detail about the trail and facilities. Describing the trail experience and points of interest can be woven in, however the descriptors relating to trail classification should remain clear, prominent, and consistent with those provided in Table 8.

Some preferred trail terminology for horse trails is listed below.

Preferred horse trail terminology

Horse trail	Preferred over bridle trail. Carriage driving should be specifically mentioned if it's a target activity.
Trail	Rather than track.
Shared use	Rather than dual use, multi-use or other terms used to describe trail that is shared by other user groups e.g. rail trails.
Step-over	Preferred over the terms cavalletti or horse stile. Used to deter motorised user access. Riders like to know the type, location and height of step-overs.
Horse trekking	Activity on a horse trail that involves camping or an overnight stay. Pack horses or support vehicles may be used to carry equipment and supplies.

Table 8: Horse trail classification descriptors

					
Difficulty	**Easiest**	**Easy**	**Moderate**	**Difficult**	**Extreme**
Gradient	Flat	Gentle hills	Short, steep hills	Very steep	Very steep and difficult
Quality of Tread	Wide, well-formed trail	Formed trail	Formed trail and may include sections of rocky ground and variable surface.	Rough trail with highly variable surface.	Rough trail with highly variable surface and may include unformed or natural surface.
Obstacles	Generally minimal obstacles. Gates and bollards may be present.	Generally minimal obstacles. Step-overs, gates, bollards and easy shallow ford crossings with low-speed water flow may be present.	Occasional obstacles such as rocks, logs and shallow fords may be present. There may be some obstacles that require dismounting.	Obstacles are expected. Water crossings may be present.	Challenging obstacles are expected.
Quality of Markings	Clear directional signage	Clear directional signage	Directional signage	Limited directional signage	Limited or no directional signage
Experience & Fitness Level	Basic level of riding skill and fitness required. Inexperienced riders will need a trained and experienced horse.	Basic level of riding skill and fitness required. Inexperienced riders will need a trained and experienced horse.	Intermediate level of riding skill and moderate fitness required. A horse with some trail experience and training is recommended.	Experienced riders with good skills/fitness. Riders may require navigation equipment and self-reliance in managing first aid and horse health. A horse that is experienced and suitably trained is recommended.	Very experienced riders with a high level of skill/fitness. A high level of skill with navigation equipment and self-reliance in managing first aid and horse health is required. A horse that is experienced and suitably trained is highly recommended.
General Class Description	Typically a flat, well-formed, wide trail with minimal obstacles and clear directional signage. Gates and bollards may be present. Recommended for those with a basic level of riding skill and fitness. Inexperienced riders will need a trained and experienced horse.	Typically easy trail with formed surface, gentle hills, minimal obstacles and clear directional signage. Gates, step-overs, bollards and shallow ford crossings with low-speed water flow may be present. Recommended for those with a basic level of riding skill and fitness. Inexperienced riders will need a trained and experienced horse.	Moderate trail with short, steep hills and variable surface. Occasional obstacles such as rocks, logs and shallow ford crossing may be present. There may be obstacles that require dismounting. Directional signage is provided. Recommended for riders with an intermediate level of riding skill and moderate fitness. A horse with some trail experience and training is recommended.	Difficult trail with rough, variable surface, very steep hills and obstacles to negotiate. Water crossings may be present. Directional signage may be limited. Recommended for experienced riders with good skills/fitness and self-reliance in managing first aid, horse health and navigation where required. A horse that is experienced and suitably trained is recommended.	Extreme trail with rough variable surface, very steep and difficult terrain with challenging obstacles. Limited or no directional signage. Recommended for very experienced riders with a high level of skill/fitness and self-reliance in managing navigation, first aid and horse health. A horse that is experienced and suitably trained is highly recommended.

12. Appendices

Big River Ranch, Kalbarri. *Photo—Tourism Western Australia*

Appendix A – Relevant standards and guides

Australian Standards

AS 1428.1:2021 [current]

Design for access and mobility, Part 1: General requirements for access — New building work

Specifies the design requirements for new building work to provide building designers and users (architects, property owners and regulators) with the minimum design requirements for new building work to enable access for people with disabilities.

AS 1428.2–1992 [current]

Design for access and mobility, Part 2: Enhanced and additional requirements — Buildings and facilities

Sets out requirements for the design of buildings and facilities for access for people with disabilities. Where appropriate, these requirements are additional to the minimum requirements of AS 1428.1. Also covers requirements for buildings and facilities which are not covered in Part 1.

AS 1428.4.2:2018 [current]

Design for access and mobility, Part 4.2: Means to assist the orientation of people with vision impairment — Wayfinding signs

The objective of this standard is to assist in the provision of a built environment that is legible to all people with particular attention to people who are blind or have low vision, through the provision of tactile signs. Other forms of complementary wayfinding including new technologies are not addressed.

AS 2890.1:2004 [pending revision]

Parking facilities, Part 1: Off-street car parking

Sets out minimum requirements for the design and layout of off-street parking facilities. It includes access and egress requirements for both public and private car parks, and carparking on domestic properties.

AS 2890.6:2022 [current]

Parking facilities, Part 6: Off-street parking for people with disabilities

Specifies minimum requirements for the provision of off-street parking facilities for people with disabilities.

AS ISO 31000:2018 [current]

Risk management – Guidelines

Specifies guidelines on managing risk faced by organisations with the application of these guidelines able to be customised to any organisation. As one of the risk management standards, this standard provides a common approach to managing any type of risk and is not industry or sector specific.

AS 4373–2007 [current]

Pruning of Amenity Trees

Specifies methods for pruning of trees and provides guidance on correct and uniform practices intended for use on amenity trees.

AS 4970–2009 [pending revision]

Protection of trees on development sites

Provides guidance on principles for protecting trees on land subject to development.

AS 5100.1–2017 [current]

Bridge Design, Part 1: Scope and general principles

Provides requirements for the design of new bridges and structures such as retaining structures, deflection walls and crash walls, structures built over rail tracks, culverts, structural components related to tunnels, road sign and lighting structures, noise barriers and protection screens.

Other standards and guides

Australian Adventure Activity Standard

The Australian Adventure Activity Standard (AAAS) and related Good Practice Guides (GPGs) provide a voluntary good-practice framework for safe and responsible planning and delivery of led outdoor adventure activities with dependent participants. GPGs are available for horse trail riding and camping.

Practice Note 10.6: Trails, Tracks and Paths—Institute of Public Works Engineering Australasia

Practice Note 10.6 is designed to provide subject specific management advice and guidance that addresses all aspects of trail management from planning, through to development, asset management, operations and maintenance.

Practice Note 10.1: Parks Management: Inventories, Condition & Performance Grading—Institute of Public Works Engineering Australasia

Practice Note 10.1 includes an update and replacement of the original "PRAMS" condition grading guideline, providing specific descriptions of how to assess a range of common park assets.

Rail Trails Establishment Guidelines, Rail Trails Australia

This guide provides an overview to what may be required to establish and maintain a rail trail.

Guide to managing risks when new and inexperienced persons interact with horses | Safe Work Australia

This guide provides practical guidance on how to manage health and safety risks associated with activities where workers and others interact with horses.

Australian Horse Industry Council, Code of Practice for the Horse Industry

This document sets out the components of the Code of Practice for the horse industry. The code is voluntary. Where it addresses trail riding is mainly in the context of managing beginner riders. There are also general principles in the document relating to managing events and interactions between horses and members of the public.[82]

82 Horse Safety Australia and ATHRA, 2024

Appendix B – References

Web links

Organisation	Weblink
Australian Bureau of Statistics	https://www.abs.gov.au/
Australian Carriage Driving Society	https://www.australiancarriagedrivingsociety.org
Australian Trail Horse Riders Association	https://www.athra.com.au/
ACHknowledge	https://www.wa.gov.au/government/document-collections/achknowledge-portal
Department of Biodiversity, Conservation and Attractions (DBCA)	https://www.dbca.wa.gov.au/
DBCA's Parks and Wildlife Service	https://www.dbca.wa.gov.au/parks-and-wildlife-service
Department of Local Government, Sport and Cultural Industries (DLGSC)	https://www.dlgsc.wa.gov.au/
Department of Planning, Lands and Heritage (DPLH)	https://www.wa.gov.au/organisation/department-of-planning-lands-and-heritage
Department of Water and Environmental Regulation (DWER)	https://www.wa.gov.au/organisation/department-of-water-and-environmental-regulation
Equestrian WA	https://www.wa.equestrian.org.au
Google Trends	https://trends.google.com/trends/
Governance Institute of Australia	https://www.governanceinstitute.com.au/
HorsePower Australia	https://horsepower.org.au
Local tourism bodies	https://www.tourism.wa.gov.au/industry-support-and-events/resources-for-businesses-and-operators/whos-who-in-tourism/Pages/Local.aspx#/
Office of Multicultural Interests	https://www.omi.wa.gov.au/
Outdoors WA	https://www.outdoorswa.org.au/
Pony Club WA	https://www.ponyclubwa.asn.au
Project Dieback	https://dieback.net.au/
Rails Trails Australia	https://www.railtrails.org.au/
Regional Tourism Organisation	https://www.tourism.wa.gov.au/industry-support-and-events/resources-for-businesses-and-operators/whos-who-in-tourism/Pages/Regional.aspx#/
Riding for the Disabled Australia (RDAA)	https://www.rda.org.au
Tourism WA	https://www.tourism.wa.gov.au/Pages/welcome_to_tourism_western_australia.aspx#
Trails WA	http://www.trailswa.com.au/
Tourism Council WA	https://www.tourismcouncilwa.com.au/
WA Indigenous Tourism Operators Council (WAITOC)	https://www.waitoc.com/
WA Endurance Riders Association (WAERA)	https://www.waera.au
WA Horse Council	https://wahorsecouncil.com.au
WA Local Government Association (WALGA)	https://walga.asn.au

Documents and references	Weblink
A Western Australia for Everyone: State Disability Strategy 2020–2030	https://www.wa.gov.au/government/document-collections/state-disability-strategy-2020-2030
Aboriginal Empowerment Strategy 2021–2029 (AES)	https://www.wa.gov.au/organisation/department-of-the-premier-and-cabinet/aboriginal-empowerment-strategy-western-australia-2021-2029
Aboriginal Heritage Act 1972	https://www.legislation.wa.gov.au/legislation/statutes.nsf/law_a3.html
Aboriginal Heritage Act 1972 Guidelines	https://www.wa.gov.au/system/files/2023-11/aboriginal_heritage_act_1972_guidelines.pdf
Aboriginal Heritage Approvals	https://www.wa.gov.au/government/document-collections/aboriginal-heritage-approvals#policy-and-guidelines
Allied Market Research, Australia Adventure Tourism Market, Opportunity Analysis and industry forecast, 2021—2027	https://www.alliedmarketresearch.com/australia-adventure-tourism-market-A12705
ATHRA, Guide to Combatting Phytophthora	https://athra.com.au/wp-content/uploads/2024/08/IMS-GU-015-Guide-to-Combatting-Phytophthora-V20240206.pdf
AusPlay Sport and Physical Activity Reports	http://www.clearinghouseforsport.gov.au/research/ausplay/results#sport_and_physical_activity_reports
Australian Adventure Activity Standard (AAAS) and associated Good Practice Guides	https://australianaas.org.au/
British Horse Society, Advice on bridleways and other access, 2025	https://www.bhs.org.uk/go-riding-and-learn/access-and-bridleways-advice/
Census 2021 WA's Linguistic Diversity	was-linguistic-diversity708970098a51485ea4fb0e120029c649.pdf (omi.wa.gov.au)
Closing the Gap	https://www.wa.gov.au/organisation/department-of-the-premier-and-cabinet/closing-the-gap
Conservation and Land Management Act 1984	https://www.legislation.wa.gov.au/legislation/statutes.nsf/main_mrtitle_193_homepage.html
Country Areas Water Supply Act 1947	https://www.legislation.wa.gov.au/legislation/statutes.nsf/RedirectURL?OpenAgent&query=mrdoc_25434.pdf
DBCA Annual reports	https://www.dbca.wa.gov.au/about-us/annual-reports
DBCA Commercial events	https://www.dbca.wa.gov.au/licences-and-permits/commercial-activities/commercial-events
DBCA Conducting an event in a park	https://exploreparks.dbca.wa.gov.au/conducting-event-park
DBCA Policy Statements	https://www.dbca.wa.gov.au/about-us/legislation/corporate-policies

Documents and references	Weblink
DBCA Phytophthora Dieback	https://www.dbca.wa.gov.au/management/threat-management/plant-diseases/phytophthora-dieback
DCBA Social research	https://www.dbca.wa.gov.au/management/parks/social-research
DPLH State Planning Policy 2.0—Environment and natural resources policy	https://www.wa.gov.au/government/publications/state-planning-policy-20-environment-and-natural-resources-policy
DWER Strategic policy—Protecting public drinking water source areas in WA	https://www.wa.gov.au/government/publications/strategic-policy-protecting-public-drinking-water-source-areas-wa
DWER Operational Policy 13: Recreation within public drinking water source areas on crown land	https://www.wa.gov.au/government/publications/operational-policy-13-recreation-public-drinking-water-source-areas-crown-land
DWER Policy: Land use compatibility in public drinking water source areas	https://www.wa.gov.au/government/publications/policy-land-use-compatibility-public-drinking-water-source-areas
DWER WQIS 34—Application form for recreation proposals within public drinking water source areas on Crown land	https://www.wa.gov.au/government/publications/wqis-34-application-form-recreation-proposals-within-public-drinking-water-source-areas-crown-land
DWER Water quality protection note (WQPN) 25: Land use compatibility tables for public drinking water source areas.	https://www.wa.gov.au/government/publications/wqpn-25-land-use-compatibility-tables-public-drinking-water-source-areas
DWER Fact sheet	https://www.wa.gov.au/government/publications/supplementary-information-permit-applications-interfere-bed-or-banks-of-watercourses
Destination insights – Tourism Western Australia	https://www.tourism.wa.gov.au/Markets-and-research/Destination-insights/Pages/Destination-insights.aspx#/
Do I need a permit?	https://www.wa.gov.au/service/building-utilities-and-essential-services/integrated-essential-services/checklist-do-i-need-water-permit
Do I need a water licence or permit?	https://www.wa.gov.au/government/publications/supplementary-information-permit-applications-interfere-bed-or-banks-of-watercourses
Emergency WA	https://www.emergency.wa.gov.au/
Environmental Protection Act 1986	https://www.legislation.wa.gov.au/legislation/statutes.nsf/law_a252.html
Equestrian Design Guidebook for Trails, Trailheads, and Campgrounds, Hancock et al., 2007	https://www.fs.usda.gov/t-d/pubs/htmlpubs/htm07232816/toc.htm

Documents and references	Weblink
Equestrian Trail Development Guide (Guide d' aménagement des sentiers équestres), Cheval Quebec, 2018	https://datacheval.quebec/Randonnee-Sentiers-equestres
Explore Parks website safety page	https://exploreparks.dbca.wa.gov.au/safety
Future of Global Tourism Demand	https://www.tourism.australia.com/en/insights/consumer-research/future-of-demand.html
Horse SA, Horse Trail Infrastructure Guidelines For peri-urban precincts in Australia, 2019	http://www.orsr.sa.gov.au/get-active/recreation-and-trails/documents/5519_HorseSA-Book_Web-1.pdf
Local Government Act 1995	https://www.legislation.wa.gov.au/legislation/statutes.nsf/main_mrtitle_551_homepage.html
Metropolitan Water Supply, Sewerage, and Drainage Act 1909	https://www.legislation.wa.gov.au/legislation/statutes.nsf/main_mrtitle_588_homepage.html
Pickering, C.M. Literature Review of Horse Riding Impacts on protected Areas and Guide to the Development of an Assessment Program, 2008	https://www.researchgate.net/publication/29469767_Literature_Review_of_Horse_Riding_Impacts_on_Protected_Areas_and_a_Guide_to_the_Development_of_an_Assessment_Program
Plan for Our Parks	https://www.dbca.wa.gov.au/management/parks/plan-our-parks
PlanWA	https://www.wa.gov.au/service/natural-resources/land-use-management/view-planning-data-planwa
Premium Nature, Tourism Western Australia	https://assets-us-01.kc-usercontent.com/53c284ed-8b6d-0077-d7d1-762b0c10baee/d37c29ac-3c23-47e7-9fe1-6ba831470594/Tourism%20WA%20Domestic%20Segmentation%20-%20Premium%20Nature.pdf
Public drinking water source areas (PDWSA) online mapping tool,	https://www.wa.gov.au/service/water-resources/public-drinking-water-source-area-mapping-tool
RDAA, Fact Sheet Standards for RDA Ramps	https://www.rda.org.au/wp-content/uploads/2021/02/RDA-Standards-for-Ramps.pdf
Recreation SA, Guidelines for planning, design, construction and maintenance of recreational trails in South Australia, 2016	https://southaustraliantrails.com/files/wp-content/uploads/2017/03/trail-design-guidelines.pdf
Rights in Water and Irrigation Act 1914	https://www.legislation.wa.gov.au/legislation/statutes.nsf/law_a700.html&view=consolidated
Roadside Equestrian and Mountain Bike Trails Strategy 2014–2019, Mornington Peninsula Shire	https://mornpen.vic.gov.au/About-Us/Sreategies-Plans-Policies/Strategy -Plan-Listing/Roadside-Equestrian-and--Mountain-Bike-Trails-Strategy-2014-2019
Road rules for animals, including horses and animal drawn vehicles, Road Safety Commission Fact Sheet	https://www.wa.gov.au/government/publications/road-rules-horse-riders-and-animal-drawn-vehicles

Documents and references	Weblink
Road Traffic Act 1974	https://www.legislation.wa.gov.au/legislation/statutes.nsf/law_a703.html
Road Traffic Code 2000	https://www.legislation.wa.gov.au/legislation/statutes.nsf/law_s257.html
South West Edge Trail Tourism Experience Opportunities	https://www.tourism.wa.gov.au/Markets-and-research/Specialised-Research-Reports/Pages/South-West-Edge-Trail-Tourism-Experience-Opportunities.aspx#/
Taking the Reins—The WA Recreational Horse Trail Strategy, 2015	https://www.dbca.wa.gov.au/media/3833/download
Tom Quilty Gold Cup, History of the Tom Quilty	https://www.tomquilty.com.au/index.php/abouttq/history
Tourism WA, Jina: Western Australian Aboriginal Tourism Action Plan 2023–2025	https://www.tourism.wa.gov.au/About-us/Strategies-plans-reports/Pages/Jina-WA-Aboriginal-Tourism-Action-Plan-2021-2025.aspx#
Trails Development Series, 2019	https://www.dbca.wa.gov.au/parks-and-wildlife-service/trails
Trail Friendly Business	https://trailswa.com.au/about-trails-wa/trail-friendly-business-membership
Trail Town Accreditation Program	https://trailswa.com.au/about-trails-wa/accreditation
TRC Tourism for the governance and sustainability of Warburton Mountain Bike Destination, 2017	https://www.rideyarraranges.com.au/warburton-mtb-destination/
WA Aboriginal Tourism Snapshot	https://www.tourism.wa.gov.au/Markets-and-research/Specialised-Research-Reports/Pages/WA-Aboriginal-tourism-snapshot.aspx#/
WA Hiking Trail Management Guidelines, 2024	https://www.dbca.wa.gov.au/media/4491/download
WAITOC Aboriginal experiences interactive map	https://www.waitoc.com/fast-find/digital-map
WA Local Government Directory	https://walga.asn.au/about-local-government/online-local-government-directory.aspx
WA Mountain Bike Management Guidelines, 2019	https://www.dbca.wa.gov.au/media/618/download
WA Strategic Trails Blueprint 2022–2027	https://www.dlgsc.wa.gov.au/department/publications/publication/wa-strategic-trails-blueprint-2022-2027
Water Services Act 2012	https://www.legislation.wa.gov.au/legislation/statutes.nsf/main_mrtitle_12961_homepage.html

Publications

ATHRA (2015) *Taking the Reins – The Western Australian Recreational Horse Trail Strategy.*

DBCA and DLGSC (2019) *Trails Development Series,* s.l.: State of Western Australia.

DBCA and DLGSC (2024) *Western Australian Hiking Trail Management Guidelines.*

DBCA, DLGSC and WestCycle (2019) *Western Australian Mountain Bike Management Guidelines,* s.l.: s.n.

DLGSC, DBCA and Common Ground Trails (2022) *Western Australian Strategic Trails Blueprint 2022–2027.*

Hancock J et al. (2007) *Equestrian Design Guidebook for Trails, Trailheads and Campgrounds*.

Horse Safety Australia and ATHRA (2024), *Risk Management for Trail Horse-riding in Australia on Single and Shared Use Trails*.

International Mountain Bicycle Association (2004) *Trail Solutions: IMBA's Guide to Building Sweet Singletrack.*

Parker, TS (2004) *Natural Surface Trails by Design, Physical and Human Design Essentials of Sustainable, Enjoyable Trails (see* Natureshape: Shaping Trails by Design).

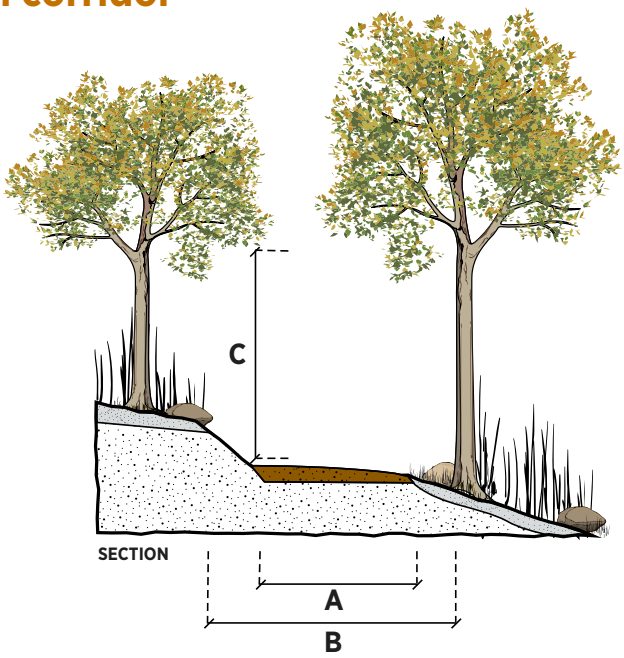
Recreation SA (2016) *Guidelines for the Planning, Design and Maintenance of Trails in South Australia*.

U.S. Forest Service (2014) *Standard Trail Plans and Specifications*.

U.S. Forest Service (2000) *Trail Construction and Maintenance Notebook*.

Wood, G.W. (2007) *Recreational Horse Trails In Rural and Wildland Areas—Design, Construction and Maintenance*.

Appendix C – Trail corridor



	 Easiest	 Easy	 Moderate	 Difficult	 Extreme
A Tread (minimum)	2000mm	1500mm Short sections of narrower tread (600-1200mm) are acceptable at ground level.	1200mm Short sections of narrower tread (600-1200mm) are acceptable at ground level.	300mm Width varies	300mm Width varies
B Corridor (minimum)	3000mm	Generally 2500mm May vary on short narrower trail sections, 1500mm is required at the height of the riders' stirrups.	Varies 1500mm is required at the height of the riders' stirrups		1500mm is recommended at the height of the riders' stirrups but may not always be possible.
C Ceiling (minimum)	3000mm (3400-3700mm preferred)			2500mm	

Notes

- Corridor pruning and scrub rolling either side of the tread varies depending on environment and expected vegetation regrowth. Sloping terrain requires more focus on the upslope side for corridor management.
- Ceiling pruning heights need to consider expected vegetation regrowth and that when vegetation is wet, it may hang down further. Remove hard branches to prevent riders from hitting their heads, especially on inclines and uneven terrain where riders may sit higher in the saddle. Where possible, retain soft leaves and smaller, flexible foliage to maintain the natural aesthetic of the trail.
- Where a horse trail will have shared use, consult with recommended trail corridor specifications for the other activities, such as WA Mountain Bike and Hiking Trail Management Guidelines.
- Section 7.2 Trail clearance corridor and Section 11 Horse Trail Classification System have further details.

Appendix D – How to measure gradient with a clinometer

1. Person 2 records the eye level of Person 1 by placing the graduated survey staff (perpendicular) in front of Person 1 and determines their eye height on the staff.
2. Person 2 moves up or down to the other side of the trail section being measured and puts their finger across the front of the staff at the height of Person 1's eyes.
3. Person 1 sights through the clinometer to their eye height on the survey staff and reads off the angle of inclination as a percentage (%) and records it.

It is important that both eyes are kept open when using the clinometer.

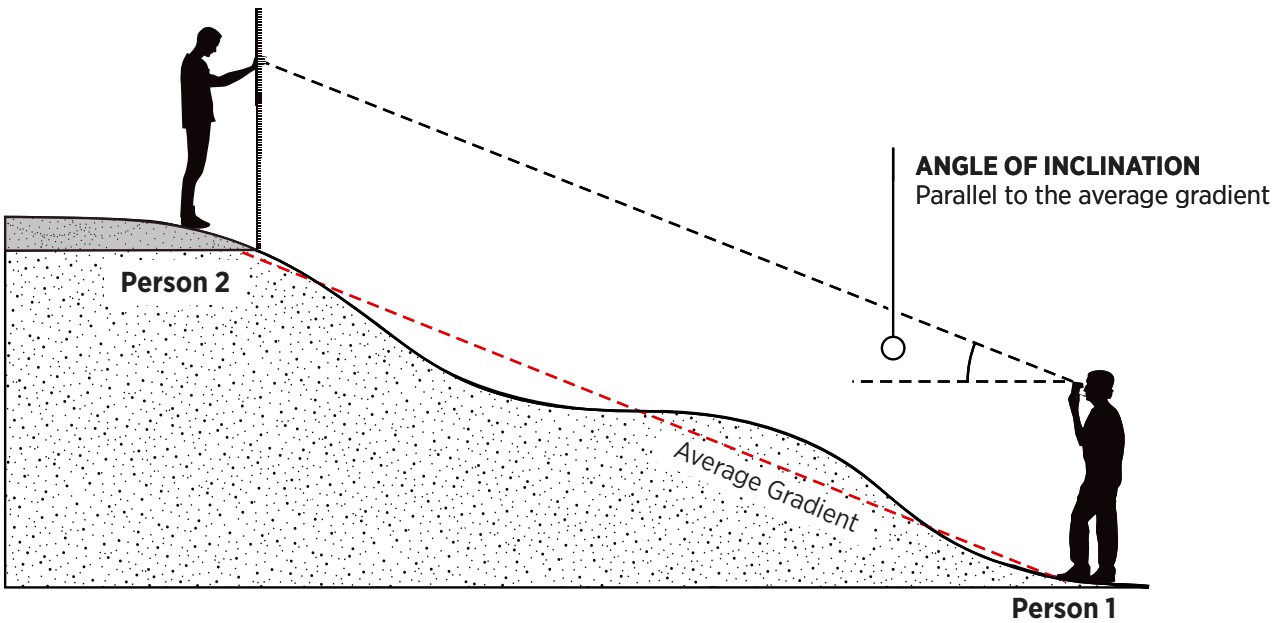
The instrument is held before the reading eye so that the scale can be read through the optics, and the round side-window faces to the left. The instrument is aimed at the object by raising or lowering it until the hairline is sighted against the point to be measured. At the same time the position of the hair line against the scale gives the reading.

Owing to an optical illusion the hair line (crosshair) seems to continue outside the frame and is thus easily observed against the terrain or the object.

An alternative to the survey staff is a length of pipe or conduit. Person 1's eye level can be marked with highly visible insulation tape. Person 2 doesn't need to put their finger across the staff.

There are many online instruction videos on how to use a clinometer.

HOW TO USE A CLINOMETER



Appendix E – Tips on clearing vegetation

Ensure relevant vegetation clearing permits, work standards, job safety assessments and operating procedures are prepared before work commences and comply with those required by the land manager.

Cut and clear the trail corridor of projecting limbs and debris that poses a safety hazard. Try to avoid hedge-style pruning to blend in with the surrounding vegetation.

Consider vegetation type and anticipated speed of regrowth when pruning and clearing. Also consider the habit of understory in vegetation types like karri forest that falls in naturally and reduces the available corridor.

Ensure tools are well maintained and clean. Tools and equipment should be thoroughly cleaned, such as with methylated spirits, to reduce the potential for the spread of plant disease.

Removing root matter from small trees, shrubs and stumps growing in the tread area will vary. Sometimes root matter is critical in holding soil together. On a hand-cleared trail, it may not be critical to remove all roots. Be aware though, where vegetation is cut off at ground level, it can become a hazard when the tread later compacts, leaving a protruding stump or spike. For this reason, on trails used by horses and cyclists, vegetation is best removed from the tread roots and all.

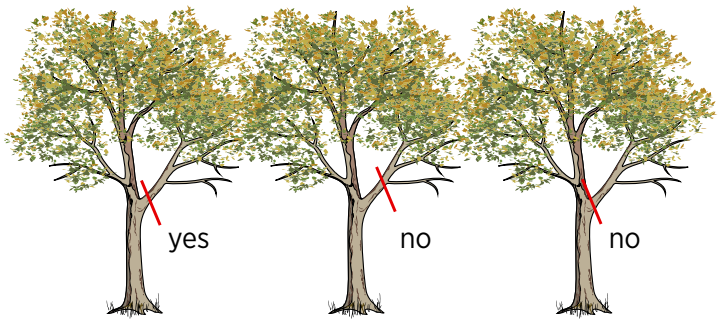
Cutting vegetation off at waist level first provides a handle to make it easier to lever and remove the root ball. Filling and compacting the resulting hole to match the tread ensures that a puddle doesn't form where it was removed.

Prune limbs back towards the trunk, leaving the collar. Try not to prune flush with the main stem as it can rip the bark and increase the risk of fungal infection to the plant. Pruning to the collar enables the tree or bush to heal quickly.

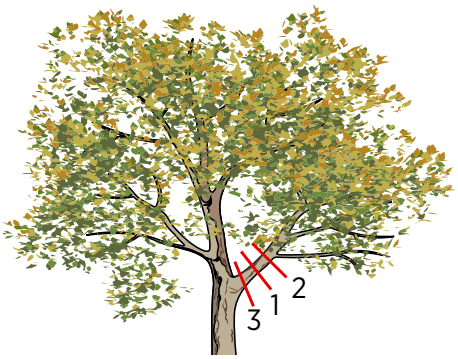
Ensure that pruned branches do not leave sharp points that could injure trail users.

Mulch and use pruning's and vegetation off-cuts to cover areas of disturbance. Avoid throwing large amounts of cuttings off the trail as they will have a visual impact, so plan for these to be removed from site.

Retain leaf litter and other organic matter raked from the tread construction area and use to finish the disturbance post-construction.



PRUNING TO THE COLLAR



THREE CUT METHOD

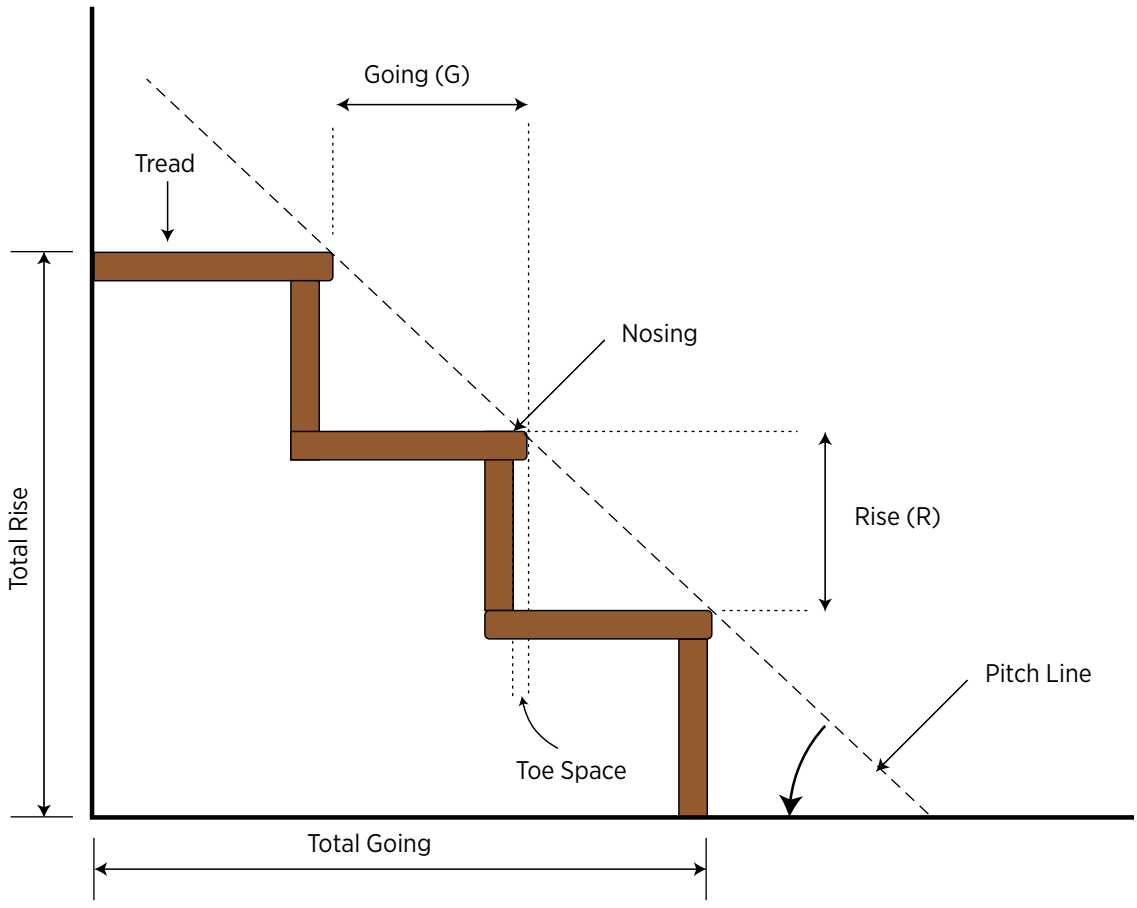
When cutting larger limbs, use the three-cut method:

1. Undercut 20-30cm from the trunk.
2. Remove limb 10cm past the undercut.
3. The final cut will be as close as possible to the branch collar.

Appendix F – Understanding steps

Terminology

Step	Consists of a riser and a tread and creates a surface on which a horse or pedestrian will place their feet when moving from one level to another. You may see this referred to as stairs.
Riser	The vertical part of the step and provides the rise or height gain.
Tread	The horizontal surface of the step.
Stairway	A series of steps, with or without landings, that provides access from one level to another. Sometimes referred to as a staircase.
Landing	An intermediate level in a stairway system.
Nosing	The name given to the very edge of the tread. Sometimes a nosing strip or treatment is added to make the edge of the tread more visible or to increase slip resistance.
Toe space	The distance that the treads overlap.



Appendix G – Template for trail management plan

This template can be used as a basis for a trail management plan and modified to suit the trail project.

Trail Management Plan

[Organisation/Agency Name] [Trail Name] [Location]

Table of Contents

Appendix H – Examples of trail descriptions

Here are examples of trail descriptors applied for each classification level. Generally, trailhead signs require brief, concise descriptions whereas other media, such as brochures or websites, may allow for a fuller description of the trail experience.

Trailhead	Brochure/website/other
Easiest	
Railroad View Heritage Trail **Class – Easiest** 10km return, allow 2–3 hours. This well-formed, wide trail is flat and has a compacted gravel surface with minimal obstacles. It follows the historic rail formation through forests and open heathland. Along the way, you will discover the rich history of the settlements that once thrived along the line and the role of horses in the region's development. Recommended for inexperienced riders, carriage driving, social groups, and those with a basic level of riding skill and fitness. Use of horseshoes or hoof boots is advised. Inexperienced riders will need a trained and experienced horse.	**Railroad View Heritage Trail** **Class – Easiest** 10km return, allow 2–3 hours. This well-formed, wide trail is flat and has a compacted gravel surface with minimal obstacles. It follows the historic rail formation, offering glimpses into the rich history of the settlements that once thrived along the line. Learn how horses played a key role in supporting the railroad and local industries as you traverse this scenic route. Riders will enjoy sweeping views of forests and open heathland, with an abundance of wildflowers in spring. The trailhead offers ample parking for horse floats. Several interpretive signs along the route highlight the areas' natural and cultural heritage. Ideal for inexperienced riders, carriage driving, social groups, and those with a basic level of riding skill and fitness. Use of horseshoes or hoof boots is advised. Inexperienced riders will need a trained and experienced horse.
Easy	
Horseshoe Hollow Trail **Class – Easy** 12km return, allow 3 hours. Welcome to the Horseshoe Hollow Trail! Begin your ride at the step-over entry and enjoy a scenic loop that meanders through tranquil forest and banksia woodlands. The trail includes gentle hills and follows a combination of sandy firebreaks and connected narrower formed trail, making it ideal for an easy, relaxed ride. Recommended for inexperienced riders, social groups, and those with a basic level of riding skill and fitness. Use of horseshoes or hoof boots is advised. Inexperienced riders will need a trained and experienced horse.	**Horseshoe Hollow Trail** **Class – Easy** 12km return, allow 3 hours. Start your adventure at the Horseshoe Hollow Equestrian Centre, which offers ample parking for horse floats, designated yards for horses, watering point and mounting blocks at the trailhead. Riders use the step-over entry to access the scenic loop trail that meanders through the adjoining forest and banksia woodlands. The trail includes gentle hills and uses a combination of sandy firebreaks and connected narrower formed trail, making it ideal for riders seeking an easy, enjoyable ride. Recommended for inexperienced riders, social groups, and those with a basic level of riding skill and fitness. Use of horseshoes or hoof boots is advised. Inexperienced riders will need a trained and experienced horse.

Trailhead	Brochure/website/other
Moderate	
Jarrah Heights Loop **Class – Moderate** 26km return, allow a full day. This moderately difficult ride, loops through the jarrah forest and river valley. The trail includes short steep hills and has a gravel surface with some rocky sections. At the half-way point, dismounting is required to cross the old timber railway bridge and a picnic area, watering point and hitching rail provide a comfortable rest stop. Returning into town, there is a short section riding along the shoulder of a sealed road, with one crossing of the road required. Use of horseshoes or hoof boots is advised. Recommended for riders with an intermediate level of riding skill and moderate fitness. A horse with some trail experience and training is recommended.	**Jarrah Heights Loop** **Class – Moderate** 26km return, allow a full day. Jarrah Heights Loop offers a unique opportunity to ride a 26km route through the jarrah forest and river valley in the reserve and back into town. The moderate trail varies in terrain which includes primarily gravel surface with some rocky sections and short steep hills. At the half-way point, dismounting is required to cross the old timber railway bridge and a picnic area, watering point and hitching rail provide a comfortable rest stop. Returning into town, there is a short section riding along the shoulder of a sealed road with one crossing of the road required. It is recommended horses are shod or wearing hoof boots. Float parking is available in the gravel carpark at the town oval. This carpark is near the trailhead and walking distance from the visitor centre where toilets, drinking water and other facilities are available. This trail is suited to riders with an intermediate level of riding skill and moderate fitness. A horse with some trail experience and training is recommended.
Difficult	
Mail Run Trail **Class – Difficult** 90km one-way, allow 3 days. This is a difficult multi-day ride on rough, highly variable terrain with some very steep sections and a river crossing subject to seasonal variations. The two campgrounds enroute are support vehicle accessible. Trail markers are limited, download the map and notes before setting out. Recommended for experienced riders with good skills/fitness and self-reliance in managing first aid, horse health and navigation where required. A horse that is experienced and suitably trained is recommended. Horseshoes or hoof boots and breastplates are advised.	**Mail Run Trail** **Class – Difficult** 90km one-way, allow 3 days. The Mail Run trail offers a challenging multi-day ride, reflecting the hardships of early overland mail services between Perth and Albany. This is a difficult, rough trail with a highly variable surface and some very steep sections. The trail includes a river crossing with water levels subject to seasonal variation. The trailhead has parking for up to six floats and two dedicated rider-friendly campgrounds are available enroute, Chippers Camp and Thomas Watson Stopover are self-reliant camping areas, accessible to support vehicles. Trail markers are limited, download the map and notes before setting out. Recommended for experienced riders with good skills/fitness and self-reliance in managing first aid, horse health and navigation where required. A horse that is experienced and suitably trained is recommended. Horseshoes or hoof boots and breastplates are advised.

Trailhead	Brochure/website/other
Extreme	
Zig Zag Ridge Trail **Class – Extreme** 10km loop, allow 2–3 hours. The Zig Zag Ridge rewards riders with a fabulous 360-degree view over Sunset Valley. The trail includes sustained very steep and difficult sections of rough, highly variable terrain, including rocky surfaces. Trail markers are limited, download the map and notes before setting out. Recommended for very experienced riders with a high level of skill/fitness and self-reliance in managing navigation, first aid and horse health. A horse that is experienced and suitably trained is highly recommended. Horseshoes or hoof boots and breastplates are advised.	**Zig Zag Ridge Trail** **Class – Extreme** 10km loop, allow 2–3 hours. Riders need to be prepared and suitably experienced to take on this extremely difficult trail from the Sunset Valley Horse Trail network, up onto the Zig Zag Ridge, where a 360-degree view over the area rewards your efforts. The trail includes sustained very steep and difficult sections of rough and highly variable terrain, including rocky surfaces. Trail markers are limited, download the map and notes before setting out. Recommended for very experienced riders with a high level of skill/fitness and self-reliance in managing navigation, first aid and horse health. A horse that is experienced and suitably trained is highly recommended. Use of horseshoes or hoof boots and breastplates is advised. Float parking is available at the Sunset Valley Trailhead. The Zig Zag Ridge Trail may be closed in extreme weather conditions, always check the weather forecast and Park Alerts before setting out.

A joint publication by the Department of Biodiversity, Conservation and Attractions and the Department of Local Government, Sport and Cultural Industries. This publication is current at May 2025.

Department of Biodiversity, Conservation and Attractions

17 Dick Perry Ave, Kensington WA 6151

Locked Bag 104, Bentley Delivery Centre WA 6983

Email: enquiries@dbca.wa.gov.au
Website: www.dbca.wa.gov.au

Department of Local Government, Sport and Cultural Industries

Perth Office
Gordon Stephenson House
140 William Street, Perth WA 6000

Leederville Office
246 Vincent Street, Leederville WA 6007

PO Box 8349, Perth Business Centre WA 6849

Email: info@dlgsc.wa.gov.au

Website: www.dlgsc.wa.gov.au

Donnelly River. *Photo—Anna Sheehan*

GOVERNMENT OF WESTERN AUSTRALIA

Department of **Biodiversity, Conservation and Attractions**

Department of **Local Government, Sport and Cultural Industries**