Hume Region Significant Tracks and Trails Strategy 2014-2023 Basic Planning & Design Considerations

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Images

Front cover photos courtesy of Mt Buller-Mt Stirling Resort (horse riding) and Finish Line Events (mountain bike riding). All other photos courtesy of communityvibe unless otherwise stated.

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Contents

1.0 Introduction

Regionally significant tracks and trails in the Hume region should aim to meet any relevant industry track / trail gradings such as the Australian Walking Track Grading System for walking tracks / trails; the International Mountain Bicycling Association gradings for mountain bike riding; the Horse SA Horse Trail Classifications for horse riding trails; a well as relevant Australian Standards, regulations and guidelines for track / trail construction (especially on road cycling paths and shared off road paths). Regionally significant tracks / trails in the Hume region should also adhere to current best practice in terms of planning and design.

This document provides an overview of current gradings, Australian Standards, regulations and best practice design. It must be noted that such systems and standards change regularly; hence the currency of such information provided cannot be guaranteed for any length of time.

2.0 Track / Trail Gradings

2.1 Walking Tracks / Trails

The Australian Walking Track Grading System[1], developed by Department of Environment and Primary Industries, funded by the Victorian Government's *Go for Your Life* initiative and endorsed by Parks Forum as a voluntary industry standard in 2010, is comprised of five different grades:

Grade	Symbol	Walk Description for Public Information
Grade One is suitable for the disabled with assistance		Less than 5km Flat Well formed track Clearly sign posted No experience required No steps
Grade Two is suitable for families with young children		Less than 10km Gentle hills Formed track Clearly sign posted No experience required Occasional steps
Grade Three is recommended for people with some bushwalking experience		Less than 20km Short, steep hills Formed track, some obstacles Sign posted Some bushwalking experience recommended Many steps

[1] DSE Website: http://www.dse.vic.gov.au/recreation-and-tourism/australian-walking-track-grading-system

Grade Four is recommended for experienced bushwalkers		Track may be more than 20km Very steep Rough track, many obstacles Limited signage Experienced bushwalkers
Grade Five is recommended for very experienced bushwalkers		Track may be more than 20km Very steep and difficult Rough, unformed track No directional signage Very experienced bushwalkers

These symbols and descriptions should be incorporated onto trail head signage for all regionally significant walking tracks / trails in the Hume region where possible. It is also important to ensure that trails comply with relevant standards, such as the Australian Standard for walking trail construction (AS 2156.1).

Figure 1: Hikers on Mt Buffalo

2.2 Mountain Bike Tracks / Trails

The International Mountain Bicycling Association[2] Grading comprises of five different levels:

	Very easy  White Circle	Easy  Green Circle	Intermediate  Blue Square	Difficult  Black Diamond	Extreme  Double Black Diamond
Descript-ion	Likely to be a fire road or wide single track with a gentle gradient smooth surface and free of obstacles. Frequent encounters are likely with other cyclists, walkers, runners and horse riders.	Likely to be a combination of fire road or wide single track with a gentle gradient, smooth surface and relatively free of obstacles. Short sections may exceed these criteria. Frequent encounters are likely with other cyclists, walkers runners and horse riders.	Likely to be a single trail with moderate gradients, variable surface and obstacles. Dual use or preferred use Optional lines desirable	Likely to be a challenging single trail with steep gradients, variable surface and many obstacles. Single use and direction Optional lines XC, DH or trials	Extremely difficult trails will incorporate very steep gradients, highly variable surface and unavoidable, severe obstacle. Single use and direction Optional lines XC, DH and Trials
Trail Width	2100mm plus or minus 900mm	900mm plus or minus 300mm for tread or bridges.	600mm Plus or minus 300mm for tread or bridges.	300mm Plus or minus 150mm for tread and bridges Structures can vary.	150mm Plus or minus 100mm for tread or bridges. Structure can vary
Trail Surface	Hardened or smooth	Mostly firm and stable	Possible sections of rocky or loose tread.	Variable and challenging.	Widely variable and unpredictable.

[2] http://www.imba.com/resources/maps/trail-difficulty-ratings

	Very easy White Circle	Easy Green Circle	Intermediate Blue Square	Difficult Black Diamond	Extreme Double Black Diamond
Average Trail Grade	Climbs and descents are mostly shallow Less the 5% average.	Climbs and descents are mostly shallow, but may include some moderately step sections. 7% or less average.	Mostly moderate gradients but may include steep sections. 10% or less average	Contains steeper descents or climbs. 20% or less average.	Expect prolonged steep loose and rocky descents or climbs. 20 % or greater average
Maximum Trail Grade	Max 10%	Max 15%	Max 20% or greater	Max 20% or greater	Max 40 % or greater
Level of Trail Exposure	Firm and level fall zone to either side of trail corridor	Exposure to either side of trail corridor includes downward slopes of up to 10%	Exposure to either side of trail corridor includes downward slopes of up to 20%	Exposure to either side of trail corridor includes steep downward slopes or freefall	Exposure to either side of trail corridor includes steep downward slopes or freefall

Figure 2: Mountain Bike Rider at Mt Buller Mt Stirling Mountain Bike Trails

2.3 Horse Riding Tracks / Trails

Horse Riding Trail Classifications have been developed by Horse South Australia[3]. These classifications are widely accepted throughout Australia. There are three gradings in total, based on the International Trail Marking System used at ski fields.

Grade	Class 1: Easy – green circle	Class 2: Intermediate – blue square	Class 3: Advanced – black diamond
Overview	Easy Trails are most suitable for novices; social groups and others seeking a relatively short distance trail requiring a basic level of skill and horse & rider fitness. Easy Trails are most likely to be fire roads or wide single tracks (bridlepaths) with a gentle grade (not exceeding 10%) and a relatively obstacle free, hardened natural surface. Easy Trails are likely to be multi-use and frequent encounters with other users including cyclists, walkers & runners can be expected.	Intermediate Trails are most suitable for individuals and smaller social groups seeking a short to medium distance trail requiring a moderate level of skill and fitness. Intermediate Trails are most likely to be a combination single trail and/or fire road with obstacles, variable surface, and a moderate slope. Intermediate Trails are likely to be multi-use so encounters with other users including cyclists, walkers, runners and horse riders should be expected.	Advanced Trails are suitable for individuals and small social groups seeking a very challenging trail requiring a high level of skill, fitness, and basic navigation skills. Advanced Trails are most likely to consist of challenging single trail and/or fire road with many obstacles, variable surface, and steep sections. Some trail routes may not be marked at all. Advanced Trails may possibly be multi-use so encounters with other users possibly including cyclists, walkers, vehicles and other stock should be expected, however, many of these trails may be located in remote areas and encounters with others is expected to be minimal.
Corridor Width	(Min.) 3 m	(Min.) 1.5m	(Min.) 1.5m
Corridor Height	(Min.) 3.7 m	(Min.) 3.7m	(Min.) 2.5m
Tread (minimum width)	1.5 m Note: Short sections of	1.5 m Note: Short sections of	Min. 30 cm Note: 1.5 metres is

[3] Horse SA: http://www.horsesa.asn.au/zeolite/zsection/11 (viewed 4 June 2013)

Grade	Class 1: Easy – green circle	Class 2: Intermediate – blue square	Class 3: Advanced – black diamond
	narrower tread (.60 m to 1.2 m) are acceptable at ground level however 1.5 metres is required at the height of the rider's stirrups.	narrower tread (.60 m to 1.2 m) are acceptable at ground level however 1.5 metres is required at the height of the rider's stirrups.	recommended at the height of the riders stirrups .
Surface	Generally a natural surface (topped with dolomite) or compacted surface if desired. Hardened surfaces like concrete or asphalt to be avoided due to concussion on horse legs and poor traction with metal horseshoes. Hardened surfaces may be utilised on Rail Trails or other tracks where horses would generally only walk.	Generally a natural surface is desired and may include sections of rocky ground, sand, clay or gravel. Obstacles such as rocks, logs and gates that require dismounting are likely. Shallow ford crossings are acceptable. (Note: SA rainfall conditions vary widely - seasonal conditions may water depths significantly).	Usually a variable surface with sections of rock, sand, clay gravel, etc. Obstacles may include challenging rocks, logs, Fording creeks.
Distance	0 – 14 km	Maximum 40 km	Advanced Trails can be any length.
Gradient	Desired gradient 0 – 10% Maximum 10% Maximum sustained pitch 5% Out slope 4% maximum	Maximum 15% Maximum sustained pitch 10%. Out slope 4% maximum	Maximum 20% (Max. sustained pitch 10%.)
Minimum turning radius	N/a	N/A	N/A
Level of skill / experience	Novices will require a basic level of riding skill and fitness is required coupled with riding on a trained, experienced horse.	An intermediate level of riding skill & fitness is required, and a horse with some trail experience & training is recommended. Knowledge of Basic horse health including	A higher level of skill and fitness is required. Navigation and personal survival skills are highly desirable. Previous riding experience essential. Packing skills may be

Grade	Class 1: Easy – green circle	Class 2: Intermediate – blue square	Class 3: Advanced – black diamond
		first aid and conditioning requirements is highly desirable.	required. Map reading skills and horse health knowledge is essential. An experience guide is recommended for riders with limited remote area experience.
On-trail facilities	Facilities along the trail may include mounting blocks, step-overs, shallow fords, bridges, watering points, interpretative and/or management signs.	Facilities along the trail may include lookouts, bridges, watering points, interpretative and/or management signs, step overs, shallow ford crossings.	Generally facilities are not provided except in relation to specific safety or environmental considerations. Stock holding yards and watering points will be identified on maps but may not necessarily be specifically provided as part of the trail. Permission to access these facilities may be required.
Trailhead facilities	The trailhead will be marked with a sign, specifying the name, distance, classification, multi-use code of conduct and other relevant information. Trailhead facilities may include car and separate horse float parking, manure receptacle, map dispensers, toilets, drinking water and information shelters. Trailhead facilities may include overnight yarding for horses. (Facilities will be dependent on the number of visitors	The trailhead will be marked with a sign, specifying the name, distance, classification, multi-use code of conduct and other relevant information. Trailhead facilities may include car parking and separate horse float parking, toilets, drinking water, map dispensers and information shelters. (Facilities will be dependent on the number of visitors using the trail or other attractions in the area.)	The trailhead will be marked with a sign, specifying the name, distance, classification, multi-use code of conduct (if relevant) and possibly management information. Trailhead facilities may include car and float parking, drinking water. (Facilities will be dependent on the number of visitors using the trail or other attractions in the area.)

Grade	Class 1: Easy – green circle	Class 2: Intermediate – blue square	Class 3: Advanced – black diamond
	using the trail or other attractions in the area.)		
Recommended trail flow	Open and Flowing	Generally flowing with some more challenging sections.	None.
Notes	There may be circumstances where trails with a surface and slope similar to Class 1 exceed the suggested distance. These trails should be upgraded to Class 2 or 3.	There may be circumstances where trails with a surface and gradient similar to Class 2 exceed the suggested distance. These trails should be upgraded to Class 3.	

Figure 3: Razorback Yards, Mt Stirling. Photo courtesy of Mt Buller Mt Stirling Alpine Resort

3.0 Basic Planning and Design Considerations

A series of basic guidelines has been developed to assist in the development of quality regionally significant tracks and trails in the Hume region. The following table provides a summary of the key aspects that need to be considered for each track or trail. Note that this information should only be used as a guide, as current thinking on best practice alters periodically. Not all design aspects will be relevant for all tracks / trails.

Design Aspect	Details	
Track / Trail Location	Rationale	The location of tracks and trails plays a major role in whether or not a track or trail is utilised.
	Considerations	Some things to avoid in the design of tracks and trails is to make sure that the trail: • Is not located next to a busy road or highway if possible (if it is an off-road track / trail). • Is not longer than necessary or takes unnecessary diversions. • Is not located in areas considered to be unsafe. • Does not involve multiple highway or railway crossings. • Does not commence in out of the way locations. • Does not have an unclear beginning and / or end. • Is not located in areas with poor landscape amenity.
Connectivity	Rationale	It is important that regionally significant tracks and trails that are developed link to existing local and municipal tracks and trails networks wherever possible. This helps to create valuable linear pathways, provides great access and also opportunities for tourism and events.
	Considerations	Self contained loops should be considered as part of the overall regionally significant track / trail where possible. Tracks and trails also need to connect with key services and attractions along the way, including bicycle hire venues, accommodation, cafes, tourist attractions, natural features, bushland, mountains, rivers, parks, wineries, etc in order to encourage maximum usage.
Legibility	Rationale	Legibility of a route refers to the ease of following the intended route. Good legibility reduces the need for explicit directional signage.
	Considerations	Good legibility is achieved by: • Clear, direct track / trail alignment along a logic desire line. • Continuous track / trail surface of the same material, where possible. • Clearly visible continuation of the track / trail, e.g. on the other side of a road or around a bend.

Design Aspect	Details	
		• Visibility of a track / trail marker, in a location where you would expect it. • Avoidance of elements that discourage users to progress: closed gates, crossing of fence lines, fallen logs protruding into the path, rocks placed across a path. • Avoidance of elements that signal "neglect": old infrastructure in disrepair (like unusable seats), litter, leaning sign posts, outdated signage, old footings etc. Where legibility cannot be achieved by the track / trail itself, directional signage is required. Examples are: • Where a track / trail leaves a concrete footpath and is continued as a gravel surface. • Where a track / trail deviates from a logic route away from a key feature. • Where a track / trail crosses a road, but does not continue directly opposite.
Track / Trail Width	Rationale	The width of a track / trail will be dependent upon the level and type of use expected and the type of track / trail developed (e.g. single track mountain bike track compared with a rail trail). If a track / trail is not sufficiently wide, there is potential for conflict between track / trail users and injuries.
	Considerations	Ideally a highly utilised rail trail should be a minimum of 2.5m wide (preferably 3m) to allow people to travel side by side and to pass oncoming track / trail users. If sealed, they may have a line painted down the centre of the trail so that people are aware of which side of the trail they are permitted to use. Grade four and five hiking tracks / trails are likely to be quite narrow, however highly utilised areas may be much wider. Similarly, with horse riding tracks / trails, easy grades are likely to be quite wide, whereas more difficult grades are likely to be narrower. On road bike lanes should be at least 1.5 metres wide on roads carrying vehicles at up to 60km per hour; 2.0m wide in 80km per hour zones and 2.5m wide in 100km per hour zones. Width of mountain bike tracks / trails will vary according to the type of opportunity that the track / trail has been designed for, e.g. a double black diamond single track / trail may only be 15cm wide.
Track / Trail Surface	Rationale	Trail surfaces vary according to the type of use planned for the trail. An all abilities accessible trail for example is likely to be compacted, wide and relatively flat, whereas a mountain bike

Design Aspect	Details	
		single track is more likely to be narrow, windy, steep in places and made of dirt and other natural materials.
	Considerations	Sealed tracks / trails are more likely to attract a greater amount of use than unsealed tracks / trails. Such tracks / trails are unlikely to hold a great deal of appeal to horse riders. Concrete off road tracks / trails, whilst more expensive to construct than asphalt off road tracks / trails, have the advantage of greater visibility at night, the opportunity to develop coloured sections and lower ongoing maintenance costs. Regardless of the surface of the track / trail, it is important to construct the track / trail well, taking into consideration issues such as drainage, cross fall, etc. Mountain bike tracks / trails should be properly constructed in order to minimise damage to the environment; to provide a high quality and enjoyable experience for mountain bike riders and to ensure that tracks / trails are developed in a strategic manner.
Bike Parking	Rationale	Unless people feel comfortable that there will be a secure place to store their bicycle at the end of their trip, or at a designated stopping point along the way (e.g. a cafe or winery), they may choose not to ride.
	Considerations	Consideration should be given to the following: • Bicycle racks / rails should be located in convenient and highly visible positions at tourist attractions, wineries, breweries, shopping areas / centres, key scenic destinations and picnic facilities. • The racks / rails should be easy to use by people of all ages and abilities and allow the bicycle frame and wheels to be locked securely. • The bicycle rack / rail needs to be sturdy and as vandal resistant as possible, with good passive surveillance opportunities.
Car Parking	Rationale	A number of people who use regionally significant tracks / trails will travel by car or mini bus as the destination may be a significant distance from their home, or not easily accessible. Similarly, often people who use tracks / trails for horse riding will drive to the site with a vehicle and horse float. Hence car parking needs to be considered for regionally significant tracks / trails.
	Considerations	Consideration should be given to the following: • Car park designs should complement surrounding built

Design Aspect	Details	
		structures and landscapes. • Car parks should be planted with shade trees at a ratio of one canopy tree for every six vehicles. • Car parks should be sealed where possible and line marked. • Disabled car parking should be provided to support regionally significant tracks / trails, along with full width access ramps. • Car park designs should minimise the opportunity for conflicts between pedestrians and motorists. • Car parks should be designed in such a way as to allow vehicles to enter and exit car parks in a forward direction (i.e. one entrance point and one exit point). • Ideally some car parks would be made wider to accommodate visitors to the site who may have a pram.
Structures	Rationale	Structures such as bridges and boardwalks need to be constructed on some tracks and trails to enable cyclists, walkers and horse riders to cross over roads, rivers, drains, railway lines and areas of significant vegetation which needs to be protected. Such structures can also provide a short cut or easier passage for track / trail users.
	Considerations	Consideration needs to be given to the following: • The surface of the bridge or boardwalk needs to be smooth and non-slip (concrete and new composite surfaces are ideal surfaces as they are far less slippery than wood). • Bridge or boardwalk needs to be sufficiently wide so that track / trail users do not collide with others and so that there is no squeeze point • Providing good sight distances so that track / trail users can see the bridge / boardwalk in advance and see other track / trail users whilst on the structure • Ensuring that there is adequate clearance to fencing, walls, barriers, etc along the structure. • Providing adequate vertical distance for underpasses • Constructing the bridge so that it is able to cater for the load of maintenance vehicles periodically
Driveway Crossings	Rationale	Due to space limitations or the best alignment, some tracks / trails will be constructed in roadside reserves between residential properties and roads; hence track / trail users will occasionally be required to cross private driveways on their journey.
	Considerations	Consideration needs to be given to the following: • Providing good sight lines for both track / trail users and motorists

Design Aspect	Details	
		• Ensuring that items that can block vision such as trees and fences are limited • Providing signage on tracks / trails to warn users that they need to exercise additional caution when travelling along sections that cross over private driveways • Providing signage and promotional material to inform track / trail users and motorists of who has right of way where a track / trail crosses private driveways • Providing a surface that is as smooth and straight as possible • Keeping changes of gradients to a minimum • Trying to avoid lips and edges that could cause a cyclist to fall from his or her bicycle
Lighting	Rationale	Lighting may be provided on some high use sections of regionally significant tracks / trails within towns or cities to allow people to use these facilities in the early evenings or mornings. Lighting may also help people to see hazards more clearly during dusk and dawn and also help them to feel safer.
	Considerations	Consideration needs to given to the following: • Track / trail lighting needs to be an average of 5 lux; vertical and horizontal. Occasionally this can be achieved from lighting spilt over from roadways, if the roadway is less than 5 metres away. • Consider the use of solar lighting mounted on poles. However, note that solar lighting at ground level does not illuminate tracks or trails; it only helps to delineate the edge of a path. • Lighting with timer automated cut-off sensors should be considered along tracks / trails. • Where lighting is provided along tracks / trails, it is important that the lights also illuminate supporting infrastructure such as toilets, signage and BBQ / picnic area. • Lighting should be even and consistent. • The style of lighting should reflect the theme of the track / trail (if there is a theme). • Light poles need to be a minimum of 1.0 m away from the track / trail.
Toilets	Rationale	Some people choose to undertake cycling or walking trips of several hours duration, or visit such sites with young children. These extended visits may also include having a picnic. Hence it may be necessary to provide toilet facilities on such tracks / trails.
	Considerations	When developing toilets, consider the following:

Design Aspect	Details	
		• Where toilets are not provided along tracks / trails, and where there are public toilets nearby, signage should be made available to indicate the direction and the distance to the nearest toilet block. • Clear signage needs to be provided on the exterior of the toilet using internationally recognised symbols for toilets as well as Braille signage for people with vision impairments. • Signage should be installed inside toilet blocks with contact phone numbers for Council or management authority to allow members of the public to report a maintenance issue. • Toilet blocks should include toilets that are accessible for people with disabilities. • Toilet blocks should feature baby change facilities where possible. • Toilets should be designed in such a way as to provide ease of maintenance. • Toilets should be kept in an attractive and clean state as much as possible. • Toilets should be located in a visible location, free of bushes and potential hiding spots. • Entrances to toilets need to face the track / trail so that people can be seen entering or leaving the facility. • Entrance to toilet buildings should be a minimum of 1500mm wide to allow two people to pass each other and to allow enough space for a pram to be brought into the building. • If the toilets are used at night time, lighting is required. Consider the use of solar lighting where possible. • If the toilets are not required 24 hours per day, they need to be locked with galvanized iron gates when not in use. • All fittings should be vandal resistant. • The toilet block should be designed so that people are protected from the weather as much as possible, i.e. it should have a roof and be designed so that leaves and rubbish are not blown into the building. • Natural light and ventilation should be used as much as possible in the design of the facility. • Consider use of environmentally friendly design and materials in the construction of toilet facilities, e.g. rainwater tanks for flushing of toilets and hand washing, self-composting toilets, etc. • Low flow taps or sensor taps or automated cut off taps, as well as dual flush toilets must be incorporated into the design. • New toilets developed should be unisex where possible.

Design Aspect	Details	
		• Preference is for open wash basin areas which provide maximum visibility to the toilet cubicles and are likely to reduce crime and other inappropriate behaviours.
Seats	Rationale	Seats are particularly important on regionally significant tracks / trails frequented by walkers, particularly older adults and younger children who may need to rest frequently.
	Considerations	Consideration should be given to the following: • Seats should be developed to a high standard, using quality materials (including recycled materials where possible). • Seats should be constructed of materials that are hard wearing and resilient to vandalism. • Seats should reflect the theme of the track / trail (if there is one) wherever possible. • Seats should be developed with backs and arms to allow people to lift themselves out of seats easily. • Seats should be provided in a variety of sizes to cater for different users, from children to adults. • Seats should be constructed on a compact surface so that people with wheelchairs, prams or mobility aids can park themselves next to the seat. • Seats constructed on a concrete pad should have additional space next to it to allow for the parking of a wheelchair or pram. • Seats should be positioned in a location which maximises usage. • Seats should be positioned near trees to maximise the opportunity for afternoon shade. • Seats should be made using Australian materials where possible. • Seats should be cost effective to repair and replace, and parts should be readily available.
Bins	Rationale	Bins should generally be provided on regionally signficiant tracks / trails which feature BBQ or picnic facilities so that cyclists, walkers or horse riders can dispose of their waste (unless signage and marketing materials inform track / trail users that they must remove all of their own rubbish).
	Considerations	Where bins are placed at picnic areas, they should be placed in discrete positions (which are still accessible to rubbish trucks), but should not dominate the landscape at the track / trail entry point. Alternatively, signs encouraging users to take rubbish home could be installed, so as to remove requirement for bin pick-ups.
Doggie Bags	Rationale	A significant number of people walk their dogs along tracks /

Design Aspect	Details	
		trails, particularly within or on the edge of towns or cities. Those tracks / trails that are most popular with dog walkers should incorporate doggie bags and bins to allow for easy disposal of waste and to ensure a cleaner path for other track / trail users.
	Considerations	Consideration should be given to the following: • Doggie bags should be located in strategic locations along a track / trail – the beginning, the end and in the middle. • Where doggie bags are provided, there should also be bins. • Doggie bags need to be regularly replaced by Council or State Government staff; hence the location of such facilities needs to be carefully considered due to cost implications. • It may be worthwhile installing signage to inform people that it is compulsory to pick up after dogs and to detail the penalties if people do not abide by this local law.
Picnic Tables	Rationale	Picnic tables should be provided on regionally significant tracks / trails to allow cyclists, walkers and horse riders to have a comfortable place to eat or drink during their trip.
	Considerations	Consideration should be given to the following: • Picnic tables need to be positioned close to BBQs (if provided) and seats and may be covered by shade. • It may be necessary to sign post the position of picnic tables if not clearly visible from track / trail. • Where feasible, bins should be provided close to picnic tables (unless it is clearly signed that track / trail users must take all of their rubbish with them) • Picnic tables should be identified on maps and trail head signs. • Picnic tables should be designed to be as vandal-proof and graffiti resistant as possible. • Picnic tables should feature recessed table legs to allow wheelchairs to be parked at the short ends of the table.
Shelters	Rationale	Shelters should be provided at key destinations to provide a comfortable place for cyclists, walkers and horse riders to shelter from wind, rain or sun during their trip.
	Considerations	Consideration should be given to the following: • Shelters need to be positioned close to or over seats, BBQs and picnic facilities. • It may be necessary to sign post the position of shelters if

Design Aspect	Details	
		not clearly visible from the track / trail. • Shelters should be identified on maps and trail head signs. • Depending upon the design, opportunities may exist to provide some interpretive information in or on shelters.
Shade Trees	Rationale	The provision of shade trees along regionally significant tracks / trails (where practical) will be of significant benefit to cyclists, walkers and horse riders in terms of comfort and also in terms of general track / trail amenity.
	Considerations	In relation to shade trees, consideration needs to be given to the following: • Trees planted should, where possible, be native indigenous species. • Trees should be planted close enough to the trail so that they provide shade for cyclists, walkers and horse riders, but not so close as to cause root damage to the trail surface or to encroach on the path (i.e. a minimum of 2.0m). • At rest stops, trees should be planted close to seating, BBQs and picnic tables to enable these areas to receive benefit from shade provided by trees in the afternoon. • Trees along tracks / trails should be regularly inspected and any overhanging branches trimmed so as not to be a hazard to track / trail users. • The minimum vertical clearance from overhanging tree branches is 2.4 metres.
Drinking Water	Rationale	Access to drinking water will be an important factor for many cyclists, walkers and horse riders when choosing whether or not to utilise a specific track / trail, particularly in the hotter months. Water will therefore need to be made available (either free of charge or for purchase) along well utilised tracks / trails.
	Considerations	There are both practical and public liability concerns associated with the provision of drinking water including: • Contamination of water by vandals. • Tanks emptied by other users. • Tanks emptied due to lack of rain. • The need to regularly inspect tanks. • Users expecting to be able to access water when there is none. • The need to purchase water to top up tanks. • Shops selling bottled water in towns not open. • Contamination of water from vegetation overhanging catchment area.

Design Aspect	Details	
		It is therefore recommended that discussions take place with local businesses along regionally significant tracks / trails to ensure that water is available for cyclists, walkers and horse riders, either from taps or from bottled water sales. Further, opportunities to fill drink bottles should be considered at key destinations and at all key end of trip facilities. All marketing material should state where water is able to be obtained, but also recommend that people take sufficient water with them in case it is not available.
Public Art	Rationale	Public art along a track / trail, such as sculptures, murals, water features, text or poetry on pavements, tiled seating, carved bollards, special lighting, landscaping, etc can help to create a sense of place and community identity for cyclists, walkers and horse riders. It can be used to commemorate certain events or people; be used to make a place more attractive; to celebrate local traditions or unique aspects of a community, etc. Such features can be an attraction in themselves and can also assist with wayfinding.
	Considerations	Consideration should be given to: • Art work that reflects the theme or responds to the location in which it exists. • Art work designed in consultation with the local community and developed with children. • Ensuring that any art work developed along tracks / trails is vandal resistant, weather resistant and easily maintained. • Preparing an engineering prior to installation of sculptures if required. • Retaining details of the art work including artist, materials and a maintenance plan for future reference on Council's Public Art Register.
Universal Design	Rationale	It is important to design track s / trails (or at least sections of tracks / trails) according to universal design principles where possible to help ensure that as many people as possible can use regionally significant tracks / trails in the Hume region.
	Considerations	The following should be considered: • Relatively flat paths with a compacted surface such as asphalt, concrete or granitic sand where appropriate (not on grade 4 or 5 walking tracks or double black diamond mountain bike tracks for example). • High standard drainage to avoid the forming of erosion corrugations. • Regular maintenance of granitic sand to repair soft spots

Design Aspect	Details	
		or scouring. • Signage that is clear and easy to read with a contrast luminance of greater than 30%. • Directional signage at key intersections. • Raised tactile information with adjacent Braille signage where appropriate. • Disabled toilets. • Bollards that are easily distinguishable from the path with a contrast luminance of greater than 30%. • Picnic tables designed to allow a person in a wheelchair to sit at the table. • Seats with arm rests and backs. • Parking at trail heads suitable for mini buses. • Disabled car park at trail head. • Paths sufficiently wide to allow people in wheelchairs to pass oncoming track / trail users. • Paths with sufficient flat run-off at the sides (to allow someone to regain control of a motorized wheelchair or scooter if need be). • Tactile ground surface indicators where appropriate.

Figure 4: Bridge on High Country Rail Trail. Photo courtesy of Wodonga City Council.

4.0 Signage

The types of signs used on a track / trail and their location will be dependent of a variety of factors including the purpose of the track / trail, proposed users, surface, amount of usage, presence of hazards, number of intersections, etc.

Signs need to be conspicuous, legible, coherent and functional and should be clearly branded.

Consideration will need to be given to providing the following signs where appropriate:

- Trail head signage
- Directional signage
- Reassurance signage
- Regulatory signage
- Behavioural signage
- Warning signage
- Interpretive signage

Other things to consider:

- Signage needs to be installed using Universal Design Principles, so that people of all ages and abilities (including a seven year old child and a person in a wheelchair) can see the sign.

- Wording on signage should be in simple, plain English. Depending upon the area in which signs are located, there may also be a need to replicate wording in other languages.
- Consider use of universally recognised symbols on signage where appropriate to assist with interpretation of a message.
- Signage should be suitable for people with vision impairments, i.e. incorporate tactile and Braille components where possible.
- The luminance factor of the surface of writing or symbols on a sign should be a minimum of 30% different from a non-reflective background. To achieve this, it is recommended that a light background is used and dark lettering, e.g. black on white, black on yellow or ultramarine blue on white.
- Recycled material should be considered in the development of signage.
- Signage must be hard wearing and resistant to vandalism and graffiti.
- Vinyl adhesive lettering should not be used on signage.
- The height, spacing and weighting of letters on a sign needs to be carefully considered so that people can both read and understand the information contained on the sign.
- Glass panels and light reflective backgrounds on signage should be avoided.
- Too many signs can detract from the overall experience of the track / trail and should be avoided.
- Signs should, wherever possible, have a positive focus rather than a negative focus.

4.1 Trail Head Sign

These are large free standing signs installed at the beginning of a regional track / trail or at each end of the track / trail if it has a linear design. These signs typically feature the following information:

- Track / trail name
- A map of the route, including a 'you are here' marker
- Information about the track / trail level or standard and a description of that level
- The length of the track / trail and the estimated time to complete the track / trail
- Key destinations
- Identification of sections suitable for all abilities access
- Code of conduct if it's a shared path
- Any rules, regulations or potential hazards
- Contact details to report incidents or issues
- Emergency contact details
- Possibly some interpretive information. If the sign does not contain interpretive information, this may be provided at key destinations along the trail on specific signs designed to inform and educate trail users.

4.2 Directional Sign

Directional signs may be medium sized free standing signs made of wood (often called plank signs) or recycled plastic which indicate the name of the track / trail and both the distance and direction to key features or locations. Each plank should only have one line of wording. The first plank should incorporate the name of the track / trail in 70mm high capitalised lettering, centred. The wording on the other planks should be 50mm high for capital letters and 35mm for lower case letters. Plank signs should be installed at all t-intersections where cyclists or walkers could travel in either a left or right direction.

Alternatively, directional signs may be a blade or finger board sign (similar in size to a street sign) attached to a galvanised steel pole between 2.5m and 3.0m high. These signs are located at key intersections along the track / trail to indicate direction to a significant destination, or along roadways to indicate the location of a track / trail. These signs may be made of materials such as extruded aluminium or plastic. Lettering should be 100mm high and the sign should be at least 150mm deep.

Another form of directional signage is a reassurance marker. These are small signs installed at various points along the track / trail, either as a free standing sign or attached to another item such as a fence, pole, etc which reassures users that they are still on the track / trail and still travelling in the correct direction. These signs may include an arrow to indicate direction and some sort of branding to indicate that the marker relates to the track / trail, e.g. logo, set of colours, etc. Reassurance markers are typically placed every 12-15 minutes of travelling time or approximately 1km apart.

4.3 Regulatory Sign

Regulatory signs are installed at the beginning of a shared off road track / trail or at key intersections where people may join the track / trail. They are used to inform potential track / trail users of appropriate and inappropriate uses for a specific track / trail. The example shown here of Red Hills Equestrian Trail indicates that walking and horse riding is permitted and that dogs must be on a leash. It does not permit trail bike riding. Sometimes this regulatory signage is included on the trail head sign.

4.4 Warning Sign

These signs are used to warn track / trail users of a specific danger, e.g. flood waters, or about unsafe conditions such as steep descent, steep climb, slippery road, cross with care, reduce speed, etc. They can be either permanent or temporary and can be found on either on or off road tracks / trails either at the beginning of the track / trail or at the site of the danger (if appropriate). These signs may take the format of a free standing sign (as is the case in the example provided) or may take the form of a standard warning sign, i.e. yellow diamond with black lettering. Warning signs should be removed when the issue is resolved.

4.5 Behavioural Sign

Behavioural signs provide users with information about how to use a specific track / trail, e.g.

- all users to keep to the left unless overtaking
- cyclists to ring their bells when approaching other track / trail users from behind
- move off the path when not walking or riding
- ensure dogs are on leashes (where required) and under voice control.

These signs can be found on or off road trails and may be in the format of free standing signs or as pavement markings (on sealed tracks). Sometimes information about behaviour or etiquette will also feature on trail head signs as well as maps / brochures about a specific track / trail or network.

There may also be other signs to consider such as those installed during construction, listing funding partners and potentially advertising signs promoting food, beverage and accommodation options for example. Advertising signs need to be carefully considered to determine whether or not they fit within the overall vision for the track / trail.

The information required should be bundled onto as few sign boards as possible to avoid visual littering. It is also recommended to remove any superseded signage, as its information content may be outdated and confusing.

Further, any signage developed on tracks and trails should reflect the relevant national trail standards (refer to Section 9.2) as well as Australian and industry standards.

4.6 Emergency Management Signs

Victoria's Emergency Services Telecommunications Authority4 (ESTA) is currently in the process of installing alphanumeric signs on key off road tracks / trails throughout Victoria. These signs, which look like a street sign, are supported by GPS coordinates and directional instructions so that ESTA operators can provide advice to police, fire or ambulance services about the exact location of an injured person.

To assist with emergency management procedures in the Hume region, it is recommended that each track / trail is numbered and that the number of each track / trail is incorporated into trail head signage or at key points along the track / trail. This may assist emergency units to locate cyclists, walkers or horse riders or other track / trail users who are lost or injured.

4.7 Signage Maintenance

As with all infrastructure along trails, it will be important to regularly maintain trail signage by repairing any vandalised or damaged signs and by replacing old signs or signs that are missing. This particular example no longer has the red line across the motorbike rider, hence there may be some confusion about what type of use is allowed on this particular track / trail.

[4] Bicycle Network website: https://www.bv.com.au/general/bike-futures/91744/

5.0 Industry Standards

Regionally significant tracks and trails need to be designed according to industry standards, regulations and guidelines. Reference should be made to the following documents:

- Australian Standard – Walking Tracks Part One: Classification and Signage (AS 2156.1-2001)
- Australian Standard – Walking Tracks Part Two: Infrastructure Design (AS 2156.2-2001)
- Australian Standard – Signage (AS 1428.1)
- Australian Standard – Seating (AS 1428.2)
- Australian Standard AS 2890.3 1993 Parking facilities Part 3: Bicycle parking facilities.
- AS/NZS 1158 (AS/NZS 1158.3.1:2005, Pedestrian area (Category P) lighting
- AS/NZS 1158.0 Illumination
- Design for Access and Mobility – AS1428.
- Australian Standard AS4419 Soils for Landscaping and Garden Use
- Australian Standards AS 1428 – Parts 1 and 2 Design for Access and Mobility (General requirements for access – new building work and Enhanced and additional requirements – buildings and facilities).
- Australian Standard AS2890.1 –2004, Parking facilities, Part 1: Off-street car parking.
- Australian Standard AS/NZS 2890.6 – 2009 Parking facilities – Off-street parking for people with disabilities.
- AS 1172.1 – 2005 Water Closets.
- AS 1371-1973 Toilet seats of moulded plastics.
- AS/NZS 1730 – 1996 Washbasins.
- AS/NZS 3500.2 – 2003 Plumbing and Drainage – Sanitary Plumbing and Drainage.
- AS/NZS 3718: 2005 Tap Ware.
- AS 5200.000 – 2006 Technical specification for plumbing and drainage products - Procedures for certification of plumbing and drainage products.
- AS1428 – disabled toilets
- Disability Discrimination Act (1992)
- Austroads Guide to Road Design (2010): Part 2 – Design Considerations; Part 4 – Intersections and Crossings; Part 6A – Pedestrian and Cyclist Paths; Part 6B – Roadside Environment
- Austroads Guide to Traffic Management (2010): Part 4 – Network Management; Part 5 – Road Management; Part 6 – Intersections, Interchanges and Crossings; Part 7 – Traffic Management in Activity Centres
- Cycling Aspects of Austroads Guide
- VicRoads Cycle Notes: http://www.vicroads.vic.gov.au/Home/Moreinfoandservices/Bicycles/StrategicDirectionsForCycling/BicycleFacilityDesignStandards.htm
- Austroads Guide to Traffic Engineering Practice, Part 14 – Bicycles
- Australian Standard 1742.9, Manual of Uniform Traffic Control Devices, Part 9 – Bicycle Facilities
- Road Safety Road Rules (2009)
- Road Safety (Traffic Management) Regulations (2009)

- Users Guide to the Australian Walking Track Grading System: http://www.dse.vic.gov.au/__data/assets/pdf_file/0003/104754/dse_trail_grade_brochure_tagged.pdf
- DEPI – Road Management Plan
- Council Road Management Plans
- Bicycle Network: http://www.bv.com.au/general/bike-futures
- NSW Bicycle Guidelines (RTA): http://www.rta.nsw.gov.au/doingbusinesswithus/downloads/technicalmanuals/nswbicyclev12aa_i.pdf
- Australian Bicycle Council (including Cycling Resource Centre): http://www.austroads.com.au/abc/
- Department of Transport: You are Here – A Guide to Developing Pedestrian Wayfinding: http://www.transport.vic.gov.au/__data/assets/pdf_file/0004/46570/PedestrianWayfindingGuide.pdf
- Horse South Australia (2010) Horse Trail Infrastructure – Guidelines for Peri-Urban Precincts: http://www.horsesa.asn.au/zdocument/file/1931/Horse_Trail_Infrastructure_A4.pdf
- Other relevant industry documents and planning processes.

NB: Industry standards and regulations are regularly upgraded; hence it will be necessary to review the list above on a regular basis to ensure that these documents remain valid.

6.0 Evaluation Tool - Prioritisation of Trail Developments

CRITERIA / SCORE	0	1	2	3	WEIGHT	TOTAL SCORE	COMMENTS
Support by key stakeholders	Track / trail has minimal or no support at the local, regional and state level with minimal or no ongoing support likely.	Track / trail has limited support at the local, regional and state level with ongoing support not certain.	Trail / trail is well supported at the local, regional and state level with ongoing support likely.	Track / trail is very well supported at the local, regional and state level with ongoing support likely. Stakeholders have, or are very likely to make a funding commitment to the trail. Stakeholders have developed or are committed to developing relevant processes to assist with ongoing management and maintenance.	3		
Appealing to trail users	Track / trail has limited appeal and is likely to attract only users from the local or municipal level.	Track / trail has some appeal but is likely to attract only users from local and municipal levels and potentially regional areas.	Track / trail has high appeal and is likely to attract users from local, municipal, regional and potentially state level.	Track / trail has very high appeal and is likely to attract users from local, municipal, regional, state, national and international levels.	3		
Strengthens tourism potential of a region and	Track / trail unlikely to present opportunities	Track / trail presents limited opportunities	Track / trail presents good opportunities for economic or	Track / trail presents significant opportunities for economic or tourism development, e.g.	3		

CRITERIA / SCORE	0	1	2	3	WEIGHT	TOTAL SCORE	COMMENTS
creates opportunities for economic development	for economic or tourism development.	for economic or tourism development.	tourism development.	development of accommodation, tours, shuttle services, increased visitation and expenditure in areas, etc.			
Protects and enhances the natural environment and / or cultural heritage of a region	Negative impact on environmental / cultural heritage values.	Minimal negative impact on environmental / cultural heritage values.	No negative impact on environmental / cultural heritage values.	Works along the track / trail enhances and protects environmental / cultural heritage values, e.g. tree planting, interpretive information, diverts users away from highly significant sites or degraded areas, etc.	3		
Supported through planning	No planning has occurred or only preliminary investigations conducted.	Feasibility study / relevant planning has been undertaken	Feasibility study undertaken and planning permits issued	Planning permits issued and the following plans developed: • Feasibility Study • Trail Management Plan • Maintenance Plan • Marketing Plan • Memorandum of Understanding.	2		
Designed according to industry standards and current best	No designs or specifications developed.	Designs or specifications developed, but do not adhere to industry	Track / trail mostly aligns with industry standards and current best	Track / trail designed according to industry standards and current best practice methods, e.g. Australian Standards,	2		

CRITERIA / SCORE	0	1	2	3	WEIGHT	TOTAL SCORE	COMMENTS
practice methods		standards and current best practice methods.	practice methods.	IMBA standards, DSE walking track classifications, VicRoads Cycle Notes, etc.			
Connected to communities, existing infrastructure, transport and other tracks / trails	Track / trail is not connected to local communities, existing infrastructure, other tracks / trails or transport options in accordance with the type of trail experience planned.	Track / trail is somewhat connected to local communities, other tracks / trails, existing infrastructure and transport options in accordance with the type of trail experience planned.	Track / trail is reasonably well connected to local communities, other tracks / trails, existing infrastructure and transport options in accordance with the type of trail experience planned.	Track/ trail is very well connected to local communities, other tracks / trails, existing infrastructure and transport options in accordance with the type of trail experience planned.	1		
TOTAL							

Evaluation Tool Instructions:

Provide a score for each existing or potential trail against each of the criteria by determining if the response to each of the criteria is a 0, 1, 2 or 3. Multiply this score by the weighting to get the total score. If the existing or potential trail scores a zero in a red box, it is not likely to be of regional significance. However, it may still be of municipal or local significance.