GUIDELINES FOR THE PLANNING, DESIGN, CONSTRUCTION AND MAINTENANCE OF RECREATIONAL TRAILS IN SOUTH AUSTRALIA

(REVISED 2016)

RECREATION SA

CONTENTS

ACKNOWLEDGEMENTS

PROJECT PARTNERS

This project is an initiative of the Recreation SA Trails Sub Committee. This committee has representatives from the following organisations:

Recreation

SA Horse SA

Canoe SA

Bicycle SA

Scuba Diver's Federation of SA

Walking SA

The trails sub committee of Recreation SA is charged to ensure that sustainable opportunities prevail through championing best practice techniques through the planning, design, management and use of recreational trails in a wide range of environments in both urban and regional areas.

We acknowledge Urban & Regional Planning Solutions as the original authors of these guidelines with previous research undertaken by John Tagliaferri, Nick Bowman of Bicycle SA and Rod Worthington.

These guidelines have been reviewed and updated by Recreation SA to reflect changes and contemporary circumstances.

The review and update was supported by the Office for Recreation and Sport (ORS)

These guidelines were updated in February 2016

1

INTRODUCTION

1.1 BACKGROUND

A recent review of the State Trails Strategy 2005-2010 (Horse SA 2013) found that a transition to an industry-led trails committee rather than state-government led model was required, which included capacity for dialogue with state & local government.

Accordingly, in 2014 The Office for Recreation and Sport funded Recreation SA to manage and develop the Trails Sub Committee. This has seen positive outcomes for some key issues identified within the review.

These guidelines were updated subsequent to the development of a 10 Year South Australian Recreational Trails Master Plan.

1.2 WHAT IS A RECREATIONAL TRAIL?

The South Australian Recreational Trails 10 Year Master Plan provides the following definition of a recreational trail: Trails – a pathway for people to explore the natural world, to connect communities together with place and to enhance peoples' lives through new perspectives gained as we bring humanity out-of-doors. Trails provide pathways to beautiful natural experiences as they, improve health and wellbeing of land and people as they benefit South Australian Residents and visitors alike through shared positive outdoor experiences.

In most cases, recreational trails are used for non-motorised recreational pursuits such as walking, running, cycling, horse riding, canoeing or scuba diving. However, in some circumstances, trails can be designed for use by small wheeled vehicles such as motorised wheelchairs to enable access for people with mobility impairments.

Photo 1: Stirling Linear Park: Semi-urban setting

Importantly, the majority of trails are focused around areas of environmental and cultural interest or near major population centres.

Photo 2: Mount Barker Linear Park: Urban setting

Photo 3: Mount Lofty to Waterfall Gully Walking Trail: Natural setting

The trail corridor of water based trails will often be the extremities of the river, creek, waterway or simply an area of water that contains a number of interest points or the open sea. The trail itself may be a mapped or frequented route through the waterway. Alternatively, a water trail may be focused on a single linear feature such as a reef or archaeological attractions such as shipwrecks.

1.3 WHAT AND WHO ARE THESE GUIDELINES FOR?

While it is acknowledged that South Australia has a strong and varied network of trails, there are many aspects of the existing trail system that can be improved through enhancements to trail design, better linkages between trails and other community assets and attractions, consistent trail policy, management, marketing and support for on-going development of the network.

These guidelines have been prepared to provide a comprehensive and coordinated document to provide standards for trails or guidelines to assist the planning, development, construction, management, and promotion of recreational trails.

The *Australian Standards 2156.1 – 2001 Walking Track Classification and Signage for Walking Tracks* have been developed however there is a requirement for these standards to be in a plain English language description

to describe the walks to the public. The development of trails to agreed standards is important for trail planning, development and maintenance and to ensure trail users get the most out of their trails and are able to pick the most appropriate trails for their abilities and enjoyment. This document will provide links to the standards and classification systems appropriate for the range of trails available in South Australia.

These guidelines have been prepared to assist all trail stakeholders involved in trail planning, development, construction, management, promotion and use. The guidelines will be of particular interest and assistance to:

- trail users
- trail builders
- trail managers
- public land managers (e.g. DEWNR, ForestrySA and Councils)
- clubs and associations that use trails
- owners of land through which trails pass or are proposed.

1.4 STRUCTURE OF THESE GUIDELINES

These guidelines have been structured into nine chapters. The first four chapters provide a concise overview of the relevant legislation, strategic documents and Government Departments which are involved in the planning, development and management of recreational trails. These chapters 'set the scene' for the remaining chapters which provide more specific detail and guidance for new trail proposals.

It is recognised that not all of these guidelines will be relevant for every proposal for a new recreational trail. Rather, it is intended that trails proponents will select what they need from the plethora of information. Also, the guidelines are designed to provide pointers to other sources of information rather than trying to encompass all existing material relating to the planning, development and management of recreational trails.

2

RECREATIONAL TRAILS OVERVIEW

2.1 WHY HAVE RECREATIONAL TRAILS?

The demand for recreational trails is growing. National physical activity trends indicate that participation in unstructured recreational activities is increasing.

In addition, trail research undertaken by Market Equity in 2004 found that trails provide a strong incentive to exercise (up to 85% of users) and were used by many as a means to spend time with family and friends (up to 89%).

Both nationally and in South Australia based on 2009 -2010 survey, walking is the most popular sport and physical activity for people over 15 years of age (15%), with jogging and cycling third and fifth respectively with jogging being the only activity to show an increase since 2005-2006. Bushwalking was ninth on the list of most popular activities and the most popular types of facilities used for sport and physical activity were parks, beaches and walking trails[1].

The 2006 data indicates that, in South Australia, there were over 120,000 cyclists and 476,000 walkers. Almost 54,000 South Australians specifically reported that they bush- walked for exercise or recreation in their leisure time[2].

Horse riding is another recreational activity pursued by many South Australians and is amongst the top 20 activities for women. Participation in canoeing and kayaking is steadily increasing, both Australia wide and in SA, while scuba diving continues to attract many enthusiasts. All these pursuits are becoming a significant component of South Australia's suite of recreational opportunities.

Recreational trails offer a diverse range of benefits to our communities and the environment. Social health, physical fitness, environmental management and awareness, cultural preservation and the economy can all benefit from the effects and experiences offered by recreational trails. The main benefits can be summarised as follows:

SOCIAL AND PHYSICAL HEALTH BENEFITS:

- Participation in trail activities improves physical and mental health, assists with disease prevention and management, particularly cardiovascular, musculoskeletal, respiratory, nervous and endocrine systems as well as reducing obesity, hypertension, depression and anxiety.
- Trail activities facilitate participation and interaction between a diverse range of community members, age groups, individuals and families and facilitate social interaction, e.g. community groups, voluntary trail maintenance and conservation work.
- Trails can offer a wide range of opportunities to a wide range of people. Depending upon design, trails can accommodate the elderly, people with mobility impairments or satisfy those seeking challenging adventures and a sense of achievement.
- Participation in trail activities is relatively low cost.
- Trails can introduce participants to other recreational and participation offerings in the community.
- Trails help to connect people and places and develop and grow community pride.

ENVIRONMENTAL AND CULTURAL BENEFITS:

- Trails provide opportunities for the community to experience natural and cultural environments.
- Trails help to protect the environment by localising impacts and managing visitation effects.
- Trails provide for educational and interpretive opportunities and increase environmental and cultural awareness and appreciation.
- Well-connected trail networks can decrease the use of motorised vehicles for transportation and recreation, therefore reducing the production of emissions that contribute to global warming and respiratory problems.
- Trail networks increase community ownership and assist to preserve natural and cultural values.
- Trails highlight our 'living heritage' by allowing the continuation of traditional activities such as horse riding.
- Trails provide opportunities for community participation in conservation and revegetation work.

1 ABS Australian Social Trends, Jun 2011 http://www.abs.gov.au
2 Statistics from ERASS Survey 2001-2006

ECONOMIC BENEFITS:

- Trails may generate intrastate, interstate and overseas tourism spending.
- Trails support and enhance local business opportunities.
- Trail visitors spend money in towns and communities along or near trails.
- Trail users spend money preparing for their trail experience or recreation activities.
- Trail construction and maintenance can generate employment opportunities.
- Participation in trail activities improves community health and reduces health expenditure.

2.2 TYPES OF TRAILS

South Australia features a variety of landscapes, population densities and climatic conditions. Patterns of settlement range from sparsely populated areas to peri-urban and suburban environments. Climatic conditions also vary significantly in both a geographic and seasonal sense. Similarly, trail opportunities and experiences vary widely and include a higher frequency of use within and around the populated areas of metropolitan Adelaide to more isolated and intimate experiences in the outback and regional areas.

The South Australian Recreational Trails 10 Year Master Plan establishes two broad categories of trails:

SOCIAL TRAIL NETWORKS

These trail systems may be accessed in any number of ways from a variety of locations with little or no signs or direction given on the ground. They are trail networks which are used by a variety of recreational users, which are not necessarily approved or sanctioned by the land owner or manager. Whatever their status in terms of access (sanctioned or otherwise) they are important recreational resources, often of significant value. They are often based around traditional access routes, desire lines or even natural corridors such as river banks, ridges, or linear features such as fences and walls.

PRESCRIBED ROUTE SYSTEMS

Prescribed route systems differ from social trail networks in that they are based on marked or signed trail routes that are clearly defined. In addition prescribed route systems have clearly defined trailheads where trails start or finish or both.

What sets them apart from social trail networks is that they are trail marked or signed and promoted in some way indicating status and responsibility to the trail provider.

Existing and proposed trails must be designed and maintained in accordance with their landscape setting and to sustain the physical demands of use and climatic conditions.

All trails will be:

SUSTAINABLE: contributing to positive social, environmental and economic outcomes

QUALITY: being accessible and meeting the needs of the user

South Australian trails are further classified into three categories for trails based on their significance as local, regional or national trails. The trail categories are determined by characteristics that focus on the trail's ability to demonstrate sustainability, experiential quality, attraction to tourists, generation of economic benefits and contribution to the lifestyle, health and social wellbeing of South Australians. A series of key indicators has also been developed to guide decision makers when determining the category of a trail. The trail category characteristics are briefly described below while the key indicators are detailed in Appendix B.

LOCAL TRAILS	REGIONAL TRAILS	NATIONAL TRAILS
Mainly attract local users	Attract interstate and intrastate visitors	Attract international and interstate tourists
Generate economic benefits to the local area	Generate significant economic benefits to the region	Generate significant economic benefits to SA
Good quality experiential values	Excellent quality experiential values	Outstanding quality of experiential values
Make a significant contribution to the lifestyle, health and social well being of the local community	Make a significant contribution to the lifestyle, health and social well being of South Australians	Make a significant contribution to the lifestyle, health and social well being of Australians

Trails that do not have the characteristics of local, regional or national trails may well be important to some users but will most likely be classed as 'unsustainable trails'. Such trails will require review and analysis by trail managers to determine if trail improvement or closure is appropriate.

2.3 GUIDING PRINCIPLES

Prior to the consideration of a new trails initiative – either improving an existing trail or constructing a new one – it is important to ensure that the proposal is both

- sustainable and
- quality

The new initiative should be accessible and clearly meet the needs of the intended users.

Adherence to these two 'guiding principles' will assist in attracting support from the user group, minimise the likelihood of environmental damage and maximise opportunities for land owner support and funding. These 'guiding principles' are discussed further below.

SUSTAINABLE TRAILS

It is fundamentally important that recreational trails are socially, economically and environmentally sustainable. Given the limited amount of natural and semi-natural landscapes remaining in South Australia, recreational activities that diminish natural values (biodiversity and landscape amenity) are inappropriate and will not be acceptable to the community or other stakeholders. It is vital, therefore, that high quality recreational experiences are developed in landscapes that are capable of supporting the activities.

The conservation and enhancement of natural areas, protection of biodiversity and raising environmental awareness should underpin the development of an environmentally sustainable trail network. This can be achieved through appropriate trail design, location selection and ongoing management.

Trails must also be economically and socially sustainable. There is a growing body of evidence which identifies the economic benefits that well developed trails can bring to a local community and/or a region through increased visitation, including tourism[3]. However, the development of recreational trails must also take into account the sensitivities and desires of local communities.

While well designed and managed recreational trails can enhance the well-being of local communities by improving access and increasing physical activity, recreational trails should not be developed at the expense and safety of local residents and adjoining property owners.

In order to achieve a network of sustainable trails, it may be necessary to review the location, design, management and use of existing trails prior to the consideration of new trail projects. The development of new trails may then be contemplated following the closure or rehabilitation of existing trails that are inappropriately located or designed.

ACCESSIBLE TRAILS

Intertwined with the objective of sustainability is the need for trails to be accessible and to meet the needs of intended users. One of the main roles of trails is to link communities to a variety of high quality experiences and interesting natural and rural landscapes. In addition, trails can improve mobility and connectivity within and between urban areas. Trails which are readily accessible and provide links between communities and landscapes can enhance lifestyles through the promotion of physical activity, reducing the reliance on motorised vehicles and improving health and fitness.

Accessibility is determined by:

- proximity to the metropolitan area, population centres or tourist attractions
- proximity to related facilities such as horse agistment areas or other popular riding areas
- proximity to transportation facilities such as railway lines or road network providing access to the site
- existing or proposed linkages to other trails and the wider trails network.
- proximity to natural attractions such as scenic views, native vegetation, waterfalls, lakes, coastline, etc.
- presence of existing facilities that may support or facilitate use of the trail such as car parks, toilets, picnic facilities, camping sites, tourist information centres, cafes, tour operators, etc.
- the nature of the terrain and landform
- access for emergency vehicles.

Proposals for new trails, or upgrades to existing trails, should clearly demonstrate that they meet at least half of the accessibility determinants expressed above. This will assist in the promotion of the trail to prospective user groups and ensure that any associated economic and social benefits are shared amongst nearby communities.

3 See, for example, Trails Research Project prepared by Market Equity Pty Ltd, June 2004

2.4 TYPES OF TRAIL USERS

Following consideration of the type of trail proposed (local, regional or national) together with an assessment against the 'guiding principles' of sustainability and accessibility, it is necessary to think about the type of recreational users who will be attracted to the trail. The types of users will strongly influence the design of the trail in terms of width, materials, slope, degree of difficulty and linkages to other attractions, public transport and services.

Trails can be designed to accommodate a broad range of user groups with varying interests and needs or, alternatively, for a small sector only. Proponents of trails should carefully consider the range of users envisaged and then design the trail accordingly.

Photo 4: Bushwalking (Photo by Michael Mullan)

Potential users may include:

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

RUNNERS: Runners like to use a variety of trails ranging from urban, hard paved trails to more challenging experiences in rural areas. Orienteering events may also traverse trails and trail running events are becoming increasingly popular.

CYCLISTS: Cycle tourers seek experiences on roads and off transport corridors on purpose built trails such as rail trails with bitumen surface or formed paths.

MOUNTAIN BIKE RIDERS: There are a range of sub-groups which sit under the broad heading of mountain bike riders:

- Family, Occasional or Beginner mountain bike riders: These riders generally like short loops of fairly level terrain, with some challenges to introduce them to off-road cycling
- Cross-country riders: Cyclists of this nature seek moderate to very challenging terrain and like to get away from busy trails to areas of more solitude. They are usually self-sufficient; carrying tools, water, food and spare tubes even maps and first aid kits. They like trails that include a variety of interconnecting loops that provide a 10 to 100 kilometre ride

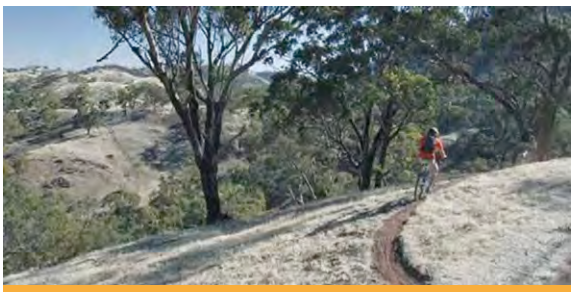


Photo 5: Mountain Bike Riding (Photo by Michael Mullan)

- Downhillers: Downhillers seek steep challenging terrain and obstacles that appear unusable to outsiders. Most ride full suspension bikes, which are not designed to efficiently ride uphill, so shuttle access to the top of the hill is preferred
- Technical/Trials riders: these riders prefer trails that provide numerous obstacles to challenge their riding skills. Such obstacles may include fallen trees, drop offs, sea saws, stairs, rocks and very difficult obstacles. These can be incorporated into cross-country trails or in special-use areas

HORSE RIDERS: Horse riders can be divided into a number of sub-groups:

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

CANOEISTS, KAYAKERS, SNORKELERS, SCUBA DIVERS: A variety of freshwater and salt water based trails provides these users with experiences which can be stand-alone water based or they can be complemented by land based trails as a walker or rider.

The path of the water, its inherent features and the surrounding environment guide these types of trail users. In some locations, land managers may provide direction, interpretive and safety information signs. Access points, including boat ramps, secure car parking, campsites accessible by water only, require due consideration when formalising water based trails.

3

STRATEGIC AND LEGISLATIVE OVERVIEW

3.1 INTRODUCTION

Recreational trails cannot be created in isolation. The State and Local Governments provide a comprehensive framework which guides the distribution of resources. In addition, State and Local Governments are responsible for the implementation of a wide range of legislation and by-laws which impact on new and existing trails. These laws have a significant influence on the location, construction and ownership as well as the ongoing management and maintenance of trails.

It is important, therefore, that careful consideration is given to all relevant Government legislation and strategies when planning for a new trail or reviewing an existing trail. While this may seem an onerous task, it is an essential one. A thorough understanding of the legislative and strategic context within which a trail proposal sits will help to avoid future pitfalls and improve the channels of communication with Government officials. Importantly, a well-researched trail proposal is likely to be taken more seriously and, if supported by relevant strategies, will be more likely to attract funding and other forms of support.

This chapter provides a concise summary of the main legislative and strategic documents which are relevant to recreational trails. These documents should be reviewed as a minimum when planning a new trail or further developing an existing trail. The flowchart below illustrates the hierarchy and interaction between the levels of Government, their various strategic plans and the legislation which may relate to trail proposals.

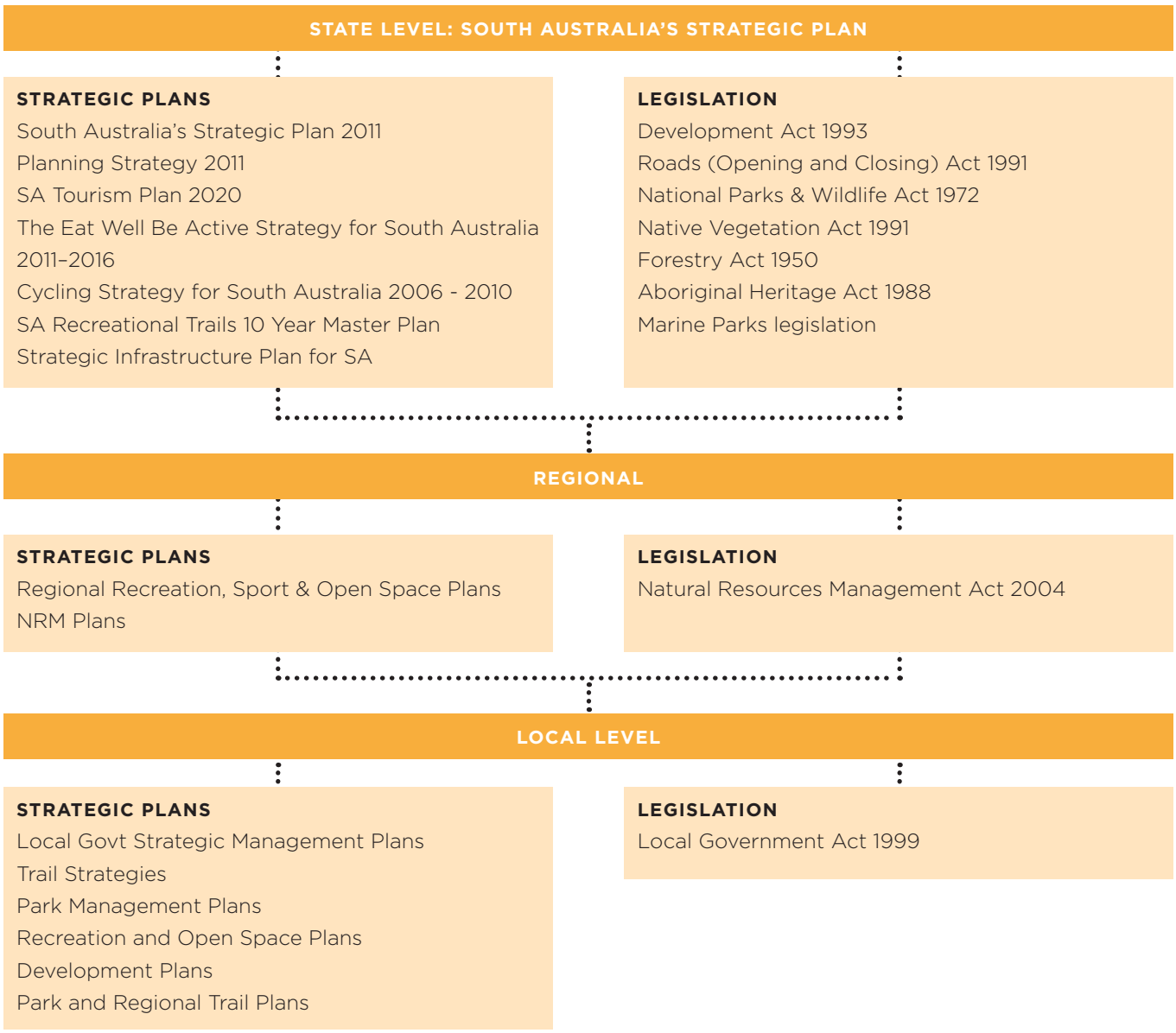


Figure 1: Strategic and Legislative Flowchart

3.2 STATE LEVEL

The State Government, through its various departments, plays a significant role in both the provision and support of recreational trails. This is most evident on public land such as national parks and forestry reserves or regional trails such as the Mawson and Heysen Trails where the State provides and maintains the trails in a partnership with the community. The State Government also plays a major role by funding significant trail proposals, providing strategic direction through policies and plans and through the promotion of the existing trail network.

3.2.1 STRATEGIC PLANS

SOUTH AUSTRALIA'S STRATEGIC PLAN

The plan has been updated twice update since it was released in 2004. Based on the feedback received from South Australians during the widespread consultation process, 21 new targets have been included in this updated Plan. The majority of the 2007 targets have been retained, to ensure progress is measured.

The Strategic Plan presents the State Government's aims to improve the wellbeing of South Australians through increased prosperity and economic growth, together with better access to important services such as health and education. The Strategic Plan also aims to preserve and improve the environment, promote innovation and creativity and extend opportunity to all South Australians.

http://saplan.org.au/pages/download-the-plan

Trails contribute to the State Strategic Plan goals and targets:

VISION: WE ARE ACTIVE IN LOOKING AFTER OUR HEALTH

- **GOAL:** We are physically active.
  - Target 83: Sport and recreation Increase the proportion of South Australians participating in sport or physical recreation at least once per week to 50% by 2020 (baseline: 2011-12)

VISION: OUR COMMUNITIES ARE VIBRANT PLACES TO LIVE, WORK, PLAY AND VISIT

- **GOAL:** We are committed to our towns and cities being well designed, generating great experiences and a sense of belonging.
  - Target 1: Urban spaces Increase the use of public spaces by the community (baseline: 2011)
- **GOAL:** New developments are people friendly, with open spaces and parks connected by public transport and bikeways.
  - Target 2: Cycling Double the number of people cycling in South Australia by 2020 (baseline: 2011)

THE PLANNING STRATEGY

The Planning Strategy is an expression of policy which sets out the State Government's vision for development in South Australia and the regions within it. The Planning Strategy covers the full range of social, economic and environmental issues. When local councils prepare and review their Development Plans they are required to maintain consistency with the visions contained within the Planning Strategy.

The Planning Strategy is comprised of three volumes: the Metropolitan Adelaide volume, the Outer Metropolitan Adelaide volume and the Regional South Australia volume.

A new planning system *Renewing Our Urban Future Unlocking South Australia's Potential* is being established that seeks to:

- provide certainty to applicants and communities through streamlined, digitally enabled processes
- promote high quality design for the built environment and public realm
- require a coordinated approach to planning and delivering infrastructure
- require that decision makers possess relevant professional qualifications or experience
- promote a culture of collaboration and community engagement in the planning and development of our State

Open space is a key component of a liveable city and the system seeks to ensure green space is protected and better utilized and concerns about the sustainability of vehicle-based transport means that cycling and walking must start to play a greater role in how we get around. Cycling and walking networks will be extended and better connections with public transport established to give commuters more options.

http://dpti.sa.gov.au/planning/planning_reform

http://www.dpti.sa.gov.au/planning

Planning strategies support the Metropolitan Open Space System (MOSS) to create a second generation

of parklands throughout Adelaide which will ultimately be a clearly defined, linked system of public and private open space in and around the whole metropolitan area. Importantly, initiatives to improve land within the MOSS are considered more likely to receive funding from the State Government's Planning and Development Fund.

https://www.sa.gov.au/topics/housing-property-and-land/local-government/grants-for-open-space-and-urban-design

SOUTH AUSTRALIAN TOURISM PLAN 2020

The South Australian Tourism Plan 2020 fits within the Australia-wide approach of Tourism 2020. This Plan is focused on achieving the South Australian tourism industry's full potential of $8.0b of visitor expenditure by 2020, which would generate nearly 10,000 additional direct jobs in the South Australian economy.

The South Australian Tourism Plan 2020 identifies that for the State to reach its expenditure potential the focus must be on five priority action areas:

- Driving demand.
- Working better together.
- Supporting what we have.
- Increasing the recognition of the value of tourism.
- Using events to grow visitation.

Recognising the need to provide a supportive environment for the tourism industry's growth, an additional two areas have been identified as areas to influence:

- The total cost of doing business.
- Investment in public infrastructure. www.tourism.sa.gov.au.

While many of the ideas contained in the Tourism Plan are of relevance for trail proposals, it is suggested that the priority action areas provide a supportive environment for significant national and international trail initiatives. Trail planners should access Tourism SA consumer insights and data when developing major trail investment projects.

THE EAT WELL BE ACTIVE STRATEGY FOR SOUTH AUSTRALIA 2011–2016

The South Australian Eat Well Be Active Strategy 2011–2016 is a 5-year blueprint for action to promote healthy eating and physical activity for all South Australians.

The strategy aims to build momentum for change in which large numbers of the population are supported to lead healthy and active lives.

The strategy looks for opportunities to build on existing systems and processes that are already proving successful, and considers expanding the range of policies, programs and services to help make healthy eating and physical activity easier.

Of interest to trail proposals is the emphasis on establishing partnerships across Government departments and between community organisations as well as encouraging the development of environments that support increased levels of physical activity amongst the community.

ACTION AREA 2 – worked toward ensuring that the places where we live, learn, work, eat, play and shop make it easy for us to be active and eat a healthy diet, including breastfeeding, by:

- investing in community-based recreation facilities through local councils and state government.

ACTION AREA 3 – implemented policies through state government departments and beyond to increase the availability of healthy food; decrease the availability, promotion, sale and consumption of unhealthy food; and enhance opportunities for physical activity participation by:

- forming a broad partnership of groups successfully building physical activity and healthy food issues into urban planning from the strategic to the operational perspective
- continuing to improve Adelaide's Bikedirect bicycle network, which has increased from 480 kilometres of bicycle paths and lanes in 2002 to around 908 kilometres by December 2010, an increase of 89%

http://www.sahealth.sa.gov.au

SAFETY IN NUMBERS – A CYCLING STRATEGY FOR SOUTH AUSTRALIA 2006-2010

In 2006, the State Government released Safety in Numbers – A Cycling Strategy for South Australia 2006-2010. The goal of the strategy is to achieve "More people cycling safely more often in South Australia, with an aim to double cycling trips by 2015".

To achieve this, Safety in Numbers promotes the objectives of:

- Effective planning and coordination for cycling
- Comprehensive cycling networks and facilities
- Safer cycling
- Successful promotion of cycling
- Government leading by example.

http://www.dpti.sa.gov.au/ data/assets/pdf_ file/0015/24360/cycling_strategy.pdf

The strategy includes specific actions to further develop the cycling network, particularly within urban settings, by extending and improving cycling routes, providing links to public transport interchanges and establishing bicycle lanes along arterial roads. The Cycling Strategy is supported by the State Bicycle Fund which assists local Councils to develop and upgrade their cycling facilities in accordance with *Austroads, Guide to Traffic Engineering Part 14 – Bicycles*. The State Bicycle Fund is administered by the Department of Planning Transport and Infrastructure.

http://www.dpti.sa.gov.au/cycling

THE DEPARTMENT OF ENVIRONMENT WATER AND NATURAL RESOURCES (DEWNR)

DEWNR have developed a number of strategies for the management and promotion of sustainable trail experiences which include public land and for the long distance Heysen Trail.

http://www.environment.sa.gov.au/parks/Visiting

ESTABLISHING THE ADELAIDE MOUNT LOFTY RANGES REGION AS AN INTERNATIONAL MOUNTAIN BIKE DESTINATION 2015 (DEWNR)

The Adelaide Mount Lofty Region (AMLR) is an emerging mountain biking destination with some high profile trail networks and many high quality but less known formal mountain bike trails.

The South Australian Government has recognised the importance of the AMLR, and its future potential to contribute to the development of Adelaide and the region as a thriving nationally and internationally competitive place to live, invest and visit. The Government has committed resources to build the AMLR as an international level mountain biking destination that they would like to see become an important driver of tourism and economic sustainability in the region.

The AMLR Mountain Biking Destination Implementation Plan (the Plan) provides the framework for building the destination over time through an integrated approach and collaboration between government agencies, local councils, the tourism industry, mountain biking organisations and the community.

http://www.environment.sa.gov.au/parks/Visiting/cycling-mountain-biking

SA RECREATIONAL TRAILS 10 YEAR MASTER PLAN

The Master Plan was developed by Recreation SA to provide a sustainable framework for the physical trails network and to serve as the bridge between the trail system and the actual visitor experience.

The Master Plan provides the tools and the framework guiding the direction of trail development from policy level through to building community level trails. It seeks to outline a staged approach over the next 10 years which should encourage the securing of funds and developing future trail user markets.

http://recreationsa.org/outdoor-overview/

3.2.2 LEGISLATION

DEVELOPMENT ACT 1993

The Development Act 1993 has been established to provide for orderly and efficient planning and development in the State by:

- establishing objectives and principles of planning and development
- establishing a system of strategic planning to guide development
- providing for the creation of Development Plans
- providing for appropriate public participation in planning and the development assessment process.

The Development Act 1993 has no direct policy role or position: its role is to establish a framework for making policy and provide for its implementation through the assessment of Development Applications. However, trail proposals should consider the documents established by the Development Act including the Planning Strategy and local Development Plans. Trails should be

consistent with the strategic direction provided by the Planning Strategy and may require formal Development Approval in accordance with local Development Plans. Further information should be sought from the Planning Section of the Council within which the trail proposal is located.

ROADS (OPENING & CLOSING) ACT 1991

The Act enables roads to be opened or closed by a Road Process Order made by the relevant authority (usually Local Government), confirmed by the relevant State Government Minister and notified in the SA Government Gazette in accordance with this Act. The application of this Act is fundamental to the utilisation of road reserves (made and unmade roads) for trails. In addition, unmade roads may be subject to a lease or permit arrangement between the local Council and adjoining property owner. Trail proposals which seek to use unmade roads should identify whether or not any leases or permits are in place and whether these alter the right of access by the public.

NATIONAL PARKS AND WILDLIFE ACT 1972

This Act provides for the establishment and management of reserves for the benefit and enjoyment of the public, to provide for the conservation of wildlife in a natural environment and for other purposes including recreational activities. The Act requires the preparation of Management Plans which set out guidelines for the management and use of National Parks.

New trail proposals that are located within National Parks must be in accordance with the Park's Management Plan. The Management Plan may also identify the type and frequency of usage of recreational trails.

NATIVE VEGETATION ACT 1991

The Act controls the clearance of native vegetation in South Australia. Under the Act, the clearance of native vegetation requires the consent of the Native Vegetation Council, unless it is covered by an exemption contained within the Native Vegetation Regulations 2003.

Native vegetation as defined by the Act includes any naturally occurring local native plants. This covers the full range of native species, from tall trees to small ground covers, native grasses, wetland plants such as reeds and rushes, as well as marine plants. The plants may comprise natural bushland or they may be isolated plants in a modified setting, such as single trees in pastured paddocks.

Vegetation "clearance" includes any activity that could cause substantial damage to native plants. This includes not just cutting down and removing plants, but also burning, poisoning, slashing of understorey, removal of branches (for example, brush cutting or woodcutting), drainage and reclamation of wetlands, and in some circumstances grazing by animals. Regulations under the Act include a number of circumstances in which native vegetation may be cleared provided all criteria under that particular exemption are complied with.

A clearance application must be made to the Native Vegetation Council for the clearance of any native vegetation that is not exempt under the Native Vegetation Act.

This Act has significant implications for trail development as any proposals which seek the removal of native vegetation will require approval unless they fall within a limited range of exemptions.

FORESTRY ACT 1950

This Act provides for the creation and management of State forests and other related matters. This Act empowers ForestrySA to regulate the way in which State forests are utilised including access and provision of recreation opportunities.

ABORIGINAL HERITAGE ACT 1988

This Act provides protection for all Aboriginal objects, remains, sites of spiritual, archaeological, anthropological and historical significance whether they are registered or not. The main features of the Act are:

- protection of all sites with Aboriginal tradition, archaeology, anthropology or history
- provision for traditional custodians to determine whether land or objects are of significance to the Aboriginal people
- provision for the developer and the public to seek a determination through the Minister for Aboriginal Affairs and Reconciliation as to whether an area or an object is of significance.

The Minister responsible for the Aboriginal Heritage Act may allow the disturbance of sites following consultation with the traditional custodians, relevant Aboriginal organisations or any other interested Aboriginal person.

Proposals for recreational trails need to consider Aboriginal Heritage matters particularly in coastal areas or along relatively undisturbed creeklines where signs of Aboriginal occupation may be present.

NATURAL RESOURCES MANAGEMENT ACT 2004

An Act to promote sustainable and integrated management of the State's natural resources through managing, protecting and, in some cases, restoring the region's precious natural resources, aiming to balance the needs of people with those of nature.

3.3 REGIONAL LEVEL

3.3.1 STRATEGIC PLANS

REGIONAL RECREATION, SPORT AND OPEN SPACE STRATEGIES

Regional recreation, sport and open space planning has been promoted by the Office for Recreation and Sport. Strategies establish partnerships with local Councils within the various planning regions to coordinate and prioritise the funding of regional recreation, sport and open space facilities.

Given the linear nature of recreational trails, they often cross Council boundaries and attract users from a wide catchment. Because of these characteristics, trails may be identified as regional facilities by Regional Recreation, Sport and Open Space Strategies and may be more likely to attract funding from a wider range of sources.

More information on these strategies can be obtained from the Office for Recreation and Sport and local Councils.

http://www.ors.sa.gov.au

NATURAL RESOURCES MANAGEMENT PLANS

Natural Resources Management Plans have been developed for the eight Natural Resources Management (NRM) regions across the State. These Plans contain strategies to better manage and improve environmental conditions in the various NRM regions.

Importantly, recreational trail proposals which contribute to the environmental rehabilitation of an area are likely to be encouraged by these plans and may be eligible for financial support.

http://www.environment.sa.gov.au/about-us/our-plans

REGIONAL TRAIL PLANS

Some local councils have developed regional trail plans. These can be sourced through local councils.

3.3.2 LEGISLATION

NATURAL RESOURCES MANAGEMENT ACT 2004

The Natural Resources Management Act, 2004 provides an integrated structure for managing South Australia's natural assets including soils, water, plants and animals as well as the diversity of landscapes and ecosystems.

The Act integrates a number of previously separate administrative arrangements into one system, establishes the Natural Resources Management Council as the statewide peak body for natural resources management and creates a number of Regional Natural Resources Management Boards.

The Act also requires the preparation of both State and Regional Natural Resources Management Plans (see 3.3.1).

The Natural Resources Management Act also prescribes that certain water affecting activities require a permit. This has implications for recreational trails which include water crossings or earthworks which may affect a watercourse.

The Natural Resources Management Act also requires that land owners must take action to destroy prescribed pest plants including olives, blackberries and gorse. With this in mind, weed control should be factored into the ongoing maintenance and management of trails.

3.4 LOCAL LEVEL

3.4.1 STRATEGIC PLANS

STRATEGIC MANAGEMENT PLANS

All Councils are required by the Local Government Act 1999 to prepare Strategic Management Plans for their areas. These documents, which usually have a three to five year planning horizon, establish a framework which guides the allocation of Council resources. Given that the provision of recreation facilities is a core responsibility of local Government, most Strategic Management Plans provide detailed objectives and strategies for the improvement of facilities.

PARK AND PUBLIC LAND TRAIL PLANS

The Department of Environment Water and Natural Resources have developed a number of trail plans for parks that have significant trail experiences and opportunities or where there is opportunity to improve the sustainability of trail networks. The trail plans are guided by the park management plans and direct future investment in trails.

When considering trail opportunities in or adjacent to parks or on public it is good practice at the earliest opportunity to discuss future trail proposals with the land manager and consider any trail plans that may be available.

For examples, see www.dcmtbarker.sa.gov.au and www.onkaparinga.sa.gov.au

TRAIL STRATEGIES

A number of local Councils have prepared trail strategies for their areas[4]. These strategies set out where, when and how trails will be developed and maintained and identify the standards which will govern their design and location. Local trail strategies will often address ongoing maintenance responsibilities as well as prioritising limited Council resources for the establishment and maintenance of existing or new trails.

RECREATION AND OPEN SPACE STRATEGY PLANS

While not a legislative requirement, many local Councils have prepared Recreation or Open Space Strategy Plans. These plans provide detailed recommendations for the management and improvement of Council's recreational and open space assets. In many cases, these strategy plans will propose new trails or identify existing trails which are scheduled to be upgraded.

Together with any local trails strategy, the Recreation or Open Space Strategy Plans are usually the first documents that the Council will use to determine whether or not they will support a new trail proposal. They are also the key documents which the State Government uses to allocate funding. Trails that are not identified in local Recreation and Open Space Strategy Plans are much less likely to receive funding than those that are.

3.4.2 LEGISLATION

LOCAL GOVERNMENT ACT 1999

In South Australia, local Councils are established by the *Local Government Act 1999*. This gives Councils broad powers to make decisions and deliver services.

Although each Council is different, all Councils should fulfil the following roles and functions:

- prepare strategic management plans and make decisions about priorities for services and facilities in the area
- provide services for the well-being of people who live and work in the local community
- represent the interests of local communities to the wider community, including to State and Commonwealth Governments
- provide open, responsive and accountable Government, and ensure that available resources are used fairly, efficiently and effectively.

Of particular interest for trail proposals is Section 196 of the Local Government Act which requires that all Councils prepare management plans for community owned land. These management plans must state the purpose for which the land is to be held by Council, as well as the Council's objectives, policies and proposals for the management of the land.

Also of interest for trail proposals is the requirement under the Local Government Act for Councils to manage made and unmade road reserves. This involves maintenance, addressing public liability issues and the leasing of unmade road reserves.

DEVELOPMENT PLANS

The Development Plan is a statutory or legally binding planning document which sets out the guidelines against which Development Applications are assessed in each Council area.

The Development Plan has two purposes. Firstly, it sets out objectives to guide the type and location of future development across the Council area. Secondly, it provides the detail for the assessment of individual development applications. The Development Plan does this by establishing a network of zones and policy areas over the Council area which describe the desired future character for that particular area. The Development Plan then sets out more detailed criteria against which development applications will be assessed in each zone and/or policy area.

Importantly, the Development Plan only comes into effect once an application has been lodged. Because of this, it cannot control existing development or influence the way existing land uses are managed. These operational issues need to be co-ordinated through the Council's Strategic Management Plan in association with the State Government and the private sector.

4 For examples, see www.dcmtbarker.sa.gov.au and www.onkaparinga.sa.gov.au

3.5 FEDERAL LEVEL

While the Federal Government does not have any direct responsibilities associated with recreational trails, it does play an important role as a source of funding for other levels of Government and community associations. Regional Development Australia Boards in South Australia are a unique tripartite partnership between the Australian and South Australian Governments, and the Local Government Association of South Australia on behalf of its members. They are administered by the Australian Government Department of Infrastructure and Regional Development, the South Australian Department of Primary Industries and Regions SA, and the Local Government Association of South Australia.

In South Australia there are eight RDA Boards covering all areas of the state including metropolitan Adelaide. South Australia's unique funding model includes substantial financial contributions by all three levels of government as well as in-kind support and cooperation.

https://rda.gov.au/

ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999

The Federal Government also has some legislative responsibilities which may influence trail proposals. Under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), the approval of the Federal Environment Minister is required if an action (i.e. a trail proposal) will have, or is likely to have, a significant impact on a matter of national environmental significance.

An action that is "likely" to have a significant impact must be referred to the Federal Minister for the Environment. If the Minister decides that the action is likely to have a significant impact on a matter of national environmental significance, then the action requires approval under the EPBC Act. If the Minister decides that the action is not likely to have a significant impact on a matter of national environmental significance, then the action does not require approval under the Act.

A preliminary indication of whether an approval under this Act is required can be found on the Federal Department of Environment website.

https://www.environment.gov.au/epbc

4

ROLES AND RESPONSIBILITIES

4.1 INTRODUCTION

There are a number of organisations that are involved in the business of recreational trail planning, development and management. These include State Government Departments, local Councils, peak recreational user groups and individual community groups and associations. This chapter provides a summary of the main organisations and their roles in trail development and management. The flowchart below illustrates the interaction between the various organisations involved in planning for trail proposals.

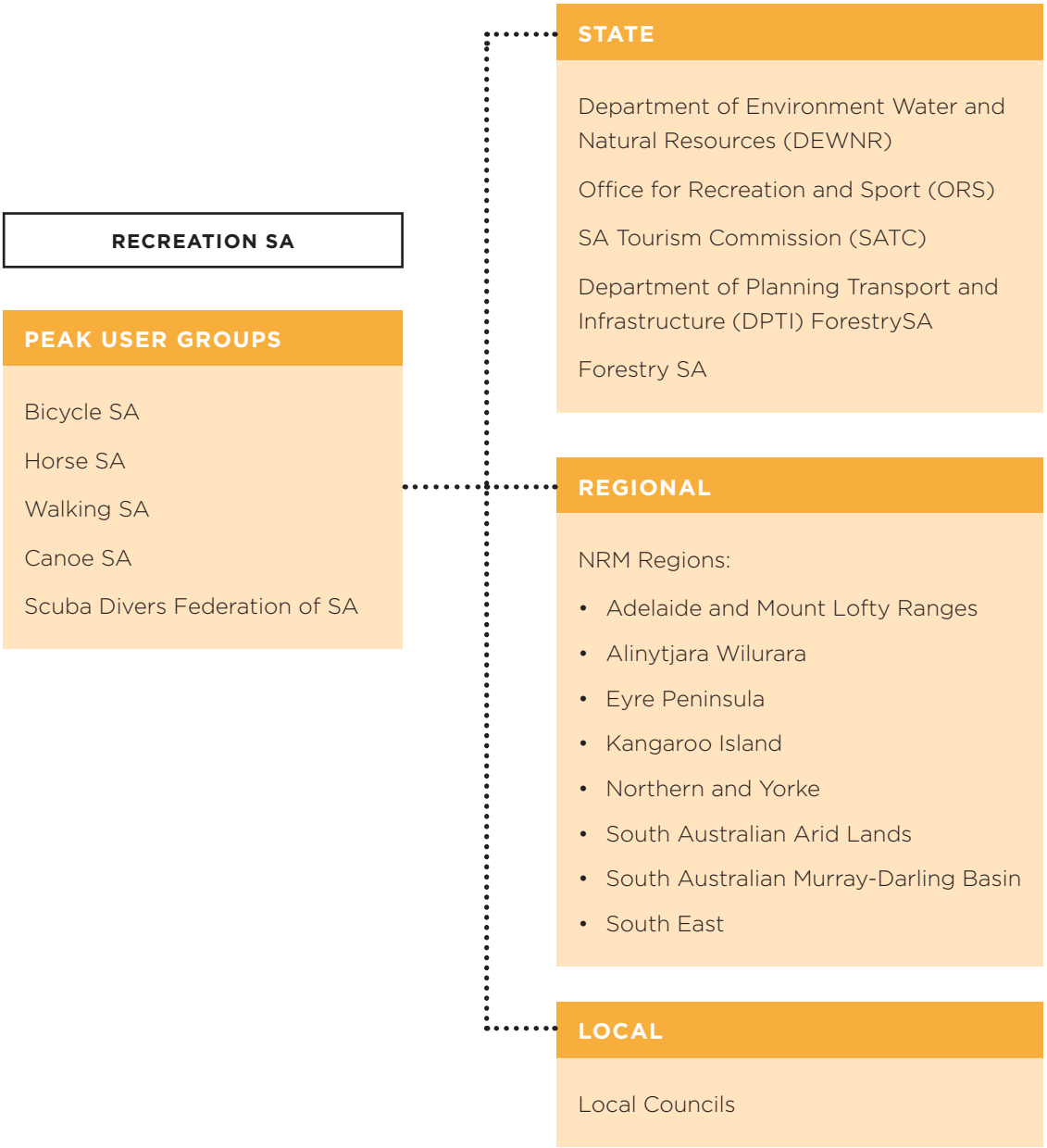


Figure 2: Roles and Responsibilities Flowchart

4.2 STATE LEVEL

The South Australian Government, through its various departments, plays an important role in the provision, planning, promotion and funding of recreational trails. Some departments, such as DEWNR are public land managers with responsibilities for planning, developing and managing trails both on and off reserves, while others, such as DPTI, provide advice, develop strategies and distribute funding.

Where a State Government Minister has management responsibility for a trail, there is provision to provide indemnity for recreation trails that are sited on or adjacent to private property.

Importantly, the funding of new recreational trail proposals can often include contributions from a range of different departments. For this reason, it is crucial that the planning and funding of large scale proposals is effectively coordinated across the various departments. There are a number of techniques available to ensure that coordination is achieved: these are discussed further in Section 5.

DEPARTMENT FOR ENVIRONMENT WATER AND NATURAL RESOURCES DEWNR

The Department for Environment & Heritage (DEH) is responsible for the management of a network of over 300 parks and reserves which cover 20% of the State's land mass[6]. The majority of these parks and reserves are covered by Management Plans which prescribes the types of uses permitted and outlines a management framework for the improvement of the area.

Management Plans recognise that recreational uses are an important and legitimate activity within parks provided that they are managed in a sustainable manner to minimise impacts on the parks' ecological and cultural integrity. Proposals for new or extended trails within parks and reserves will need to be consistent with the aims of the objectives of the relevant Management Plan.

http://www.environment.sa.gov.au/managing-natural-resources

Another important aspect of park management is the assistance provided by a network of Friends Groups. Currently, there are over 130 of these groups whose members are involved in a wide variety of activities including the removal and management of pest plants, revegetation, restoration and contributing to research through monitor wildlife and rare plants. In many parks, volunteers contribute to the design and maintenance of walking trails and often guide visitors. It is important that the relevant Friends Group, along with the Park Ranger, be consulted during any initial discussions regarding new trail proposals.

In addition to the management of parks and reserves, DEWNR is also responsible for the management and promotion of the Heysen in partnership with the Friends of the Heysen Trail and Other Walking Trails and the Yurrebilla Trails.

http://heysentrail.asn.au/heysen-trail/

http://www.southaustraliantrails.com/top_trails.asp?yurrebilla

OFFICE FOR RECREATION AND SPORT

The Office for Recreation and Sport (ORS) has worked in partnership with other agencies and the community to foster and develop recreational trail opportunities.

ORS manages a number of funding programs of importance to the development of recreational trails. These include the Community Recreation and Sport Facilities Program and the Sport and Recreation Development and Inclusion Program. These programs assist in the development of existing or new facilities that meet the active recreation and sporting needs of the community.

http://ors.sa.gov.au/funding

SOUTH AUSTRALIAN TOURISM COMMISSION

The South Australian Tourism Commission (SATC) has been established to grow the State's tourism industry. This is in recognition of the benefits of tourism to the South Australian economy including the creation of jobs and the strong prospects for long- term growth. The tourism industry contributes to the State's economic activity, generating jobs and export dollars by attracting interstate and international tourists.

It also promotes the State's cultural attributes and encourages ecologically sustainable development.

Part of SATC's role is to market the State's tourism product intrastate, interstate and internationally to ensure that South Australia is considered an important part of any Australian holiday. The SATC encourages tourism proposals which complement the State's competitive strengths of good living, festivals and events, and accessible nature. It also works to attract investment, develop strategic tourism assets, and

work with tourism businesses to assist the growth of the industry.

The South Australian Tourism Commission administers two grant funding programs for events. It also offers a range of measures to support the events industry beyond funding. This in turn helps to increase visitation to the state.

http://www.tourism.sa.gov.au/industry/funding-assistance.aspx

THE DEPARTMENT OF PLANNING TRANSPORT AND INFRASTRUCTURE (DPTI)

DPTI works as part of the community to deliver effective planning policy, efficient transport, and valuable social and economic infrastructure.

DPTI administers a number of funding programs of importance to recreational trails including the *Open Space Grant Funding* and the *Places for People Program*. DPTI also provides funding to Local Government for the purchase or development of regional open space through the *Metropolitan Open Space System* (MOSS).

Associations and community groups may choose to explore partnership arrangements with local Councils to meet the eligibility criteria for some of the funding programs.

DPTI administers two focused programs which provide funds to local Councils which have trail links: the State Bicycle Fund and the State Black Spot Program – Cycling Projects which help to implement the strategies articulated within *Safety in Numbers – A Cycling Strategy for South Australia 2006–2010* (see page 13).

Funds from the State Black Spot Program are specifically available to Councils as subsidy funding for cycling safety infrastructure projects. Such projects could include the construction of on-road bicycle lanes and off-road shared use paths.

Importantly, DPTI requires that bicycle facilities must be planned, designed and constructed in accordance with *Austroads, Guide to Traffic Engineering Practice, Part 14 – Bicycles* (1999).

DPTI also contributes funding to 'green' cycle paths within an urban setting. These paths, located along dedicated public transport corridors, offer an alternative transport option for commuters while also providing an important facility for recreational cycling.

Examples of 'green' cycle paths include the Coast to Vines Trail (Willunga - Marino Rail Corridor) and along the Glenelg Tramway Corridor.

http://www.dpti.sa.gov.au/

FORESTRYSA

ForestrySA manages over 34,000 hectares of native and commercial forests in South Australia. The agency's policy is to facilitate and manage recreation to ensure there is no adverse impact on the sustainable management of the forest reserves, including commercial timber production and the conservation of native forest reserves. Forest reserves are utilised for picnicking, bushwalking, camping, horse riding, cycling and a number of other events such as horse endurance rides, mountain bike competitions and car rallies.

ForestrySA has published recreation policies and provisions to regulate and manage recreation in accordance with the Forestry Act, 1950. Proposals for new trails within forestry reserves should be consistent with these policies and should only proceed with the appropriate authorisation from the agency.

Further information about ForestrySA can be found at www.forestrysa.sa.gov.au

4.3 REGIONAL LEVEL

NATURAL RESOURCES MANAGEMENT BOARDS

The Natural Resources Management Act establishes a number of Regional Natural Resources Management (NRM) Boards. The purpose of these NRM Boards is to better manage and care for soil, water, landscapes, marine environments, native vegetation and animals. The NRM Boards work towards achieving a set of environmental objectives established within their plans which will guide the collective efforts of rural and urban communities, farmers, conservationists and landowners.

Given the close relationship between recreational trails and the natural environment, NRM Boards are an important source of funding and advice for the planning and development of trails.

http://www.environment.sa.gov.au/about-us/boards-and-committees/natural-resources-management-boards

REGIONAL DEVELOPMENT AUSTRALIA BOARDS

In South Australia there are eight RDA Boards covering all areas of the state including metropolitan Adelaide. South Australia's unique funding model includes

substantial financial contributions by all three levels of government as well as in-kind support and cooperation. Regional Development Australia Boards have developed through amalgamations with the previous Regional Development Boards RDA.

RDA Boards in South Australia have had considerable success in developing and delivering collaborative projects which support the economic development of their regions and the state more broadly.

In South Australia RDA Boards:

- are responsible for detailed regional plans that focus on the economic development of their region, taking into account relevant Commonwealth, state, territory and local government plans
- provide independent advice to all three levels of Government on critical issues affecting their region
- work closely with community leaders to identify funding sources and develop project proposals to support economic growth
- provide assistance to local communities to develop project proposals to support economic growth, and
- promote awareness of government programmes in the RDA community.

Some RDA Boards in South Australia also deliver a range of services and programmes on behalf of other state and Australian Government departments.

4.4 LOCAL LEVEL

LOCAL GOVERNMENT

Currently, Local Government in South Australia is made up of sixty eight separate Councils covering the metropolitan area of Adelaide and the more densely populated country areas. Each Council is a different size, has a different number of people living in the area, and has different community facilities and public spaces.

The more remote areas where fewer people live are not within Local Government council boundaries. In some remote areas, certain local services are provided under arrangements with the Outback Areas Community Development Trust.

Local Government is a major provider of recreational trails. Many Councils are actively involved in the development of recreational trails and have responsibility for an extensive network of open space, reserves and road reserves. Most Councils have Strategic Management Plans and Open

Space Strategy Plans which guide the distribution of Council resources including the development of recreation facilities such as trails.

Depending on the size of the Council, proposals that relate to the development of existing or new trails are usually dealt with by the Recreation Officer or Town Planner. However, in some cases, recreational trails may fall under the responsibility of the Council's Engineer or Asset Manager.

It is likely that a range of Council officers will be involved in the planning, design, construction and management of the trail. It is important that all relevant officers are consulted during the initial consideration of a trail proposal.

http://www.lga.sa.gov.au/page.aspx

4.5 PEAK USER GROUPS

Recreation SA, Bicycle SA, Horse SA, Walking SA, Canoe SA and Scuba Divers Federation of SA (amongst others) are actively involved in the development of new recreational trail experiences and promoting, enhancing and maintaining existing trails.

These groups are advocates for trails and often lobby Government Departments and local Councils for improved trail facilities on behalf of their members. They can help develop applications for funding and can assist with submissions that comment on Government policies and strategies. Further information about peak user groups can be found at:

BICYCLE SA
www.bikesa.asn.au

HORSE SA
www.horsesa.asn.au

WALKING SA
www.walkingsa.org.au

CANOE SA
www.sa.canoe.org.au

SCUBA DIVERS FEDERATION OF SA
www.sdfsa.net

RECREATION SA
www.recreationsa.org

5

TRAIL PLANNING

5.1 INTRODUCTION

This section provides information to assist with the initial trail planning stage. This could include a new trail, an extension of an existing trail or the rehabilitation of an existing trail.

Good planning is of utmost importance and could be the difference between the projects success and failure. If undertaken correctly the planning stage will ensure the trail will be environmentally and economically sustainable and will be supported by the community and will provide popular trail experiences. Good planning will give confidence to supporters and will establish long term partnerships.

5.2 ESTABLISH A WORKING GROUP AND DEVELOP A PLAN

Once the initial idea for a recreational trail has been developed, a Working Group or Steering Committee should be formed to help manage and coordinate the trail planning process.

The Working Group should include land managers, user groups, stakeholders and, for larger proposals, community representatives which could include local government.

Wide representation will result in more effective and successful trail planning and greater community ownership of the final project.

One of the first tasks of the Working Group will be to write a clear plan so that everyone involved in the proposal has a clear understanding of the objectives of the project. The project plan should cover the following areas:

- the background and need for the trail including the kind of experience that is being sought
- the overall trail purpose, aims and objectives
- the intended user groups
- the scope including initial estimate of cost and resources required
- the community consultation approach to be taken
- any background studies or reports relating to the proposed trail or location
- the timing and staging of the development of the trail
- any potential agency or community support that may be available
- roles and responsibilities of working group members
- overview of project.

During this early planning stage, it is vitally important that the Working Group clearly identify the intended users of the trail and test whether the proposal will meet their needs. Specifically, consideration should be given to the ability of the target market to access and utilise the trail. Will the trail be attractive and interesting to this market?

Why would they want to use and visit the trail? Could the trail be too long, challenging or remote for these users? If people with mobility impairments are part of the target market, will the trail meet their specific requirements? If there is some doubt about the ability of the proposed trail to clearly address these matters, it would be wise to reconsider the merits of the proposal.

Notes from the meetings of the Working Group should be recorded and specific tasks allocated to members of the group.

5.3 REVIEW EXISTING TRAIL PROVISION

Prior to the development of a trail project, it is important to get a comprehensive picture of existing recreational trails in an area. In most cases, the local Council will be able to provide information and maps which identify existing trails. One of the first questions that Council and State Government officials will ask is "Is there a demand for this trail". Without any credible evidence to suggest that a new trail is needed and will be used, it is unlikely that it will be supported.

This review process may find that there are a number of underutilised or run-down trails already in the area which could be improved at a much lower cost than the construction of a new trail.

5.4 LOCAL GOVERNMENT ENDORSEMENT

While a representative of the local Council may have been involved in preliminary discussions about the trail project, it is important that formal endorsement be given. The Council's endorsement could include a resolution of support for the project, or take the form of a broader agreement concerning the development and maintenance of the trail.

As part of this process, the local Council will consider a number of aspects of the proposal including:

- the need for the trail from a social, environmental and economic perspective
- support given to the trail proposal by local, regional and state strategic plans
- any issues that neighboring property owners may have with the proposal and mechanisms to resolve those issues
- any up-front financial contributions that may be requested of Council, and the funding involvement of other Government Departments
- the ongoing cost of the proposal in relation to maintenance and management.

5.5 COMMUNITY CONSULTATION

As with any community project, it is best to involve the public and interested stakeholders in as many ways as possible. The investment of time and energy in community consultation is necessary to develop community support and ownership of the project.

The community may provide some useful information about the area or trail project that the working group wasn't aware of. Ideally the Working Group will have developed a clear message regarding the proposed trail and prepared answers for any possible questions. This message should then be taken to the wider community via a number of different forums or presentations. Chapter 6 provides more information about community consultation.

5.6 DECISION

A decision on whether or not to proceed further with the trail proposal including the expenditure of more time, energy and money on a feasibility study, should be made at this point. In addition, the option of abandoning the proposal in favour of upgrading an existing trail before deciding upon developing a new trail should also be considered.

5.7 FEASIBILITY STUDY

A well-researched feasibility study should be prepared in order to attract funds and other support for the trail proposal. A feasibility study will refine the concept of the trail and then test that concept to determine if it will 'perform' both practically and financially. While a feasibility study should ideally be professionally prepared by people with skills in recreation planning, engineering and landscape architecture, they can also be developed by local community groups. It should be remembered that assistance can be provided by the relevant peak user group as well as the local Council or Government Department.

The elements that should be included in a trail feasibility study will depend on the size and scale of the project, but the following topic headings give a guide as does the checklist contained in Appendix C:

1. **INTRODUCTION AND BACKGROUND:** How did the project come about? What is the proposed location? What type of recreational user is the trail designed for?
2. **SUPPLY AND DEMAND:** Is there a demonstrable need for this trail? Are there other trails in the area which may be more appropriate or could be upgraded to meet the demand?
3. **PLANNING PROCESS:** Has the project been identified as a priority in any recreational plan, open space strategy plan or any other local/regional/ state strategic plan? Has the local Council and/or land manager given their endorsement for the project? What approvals are necessary? Have they been granted or are there any obstacles that may complicate the approval process?
4. **CONNECTIONS:** How will the project provide linkages between towns or community facilities, other trails, as well as areas of natural, cultural, historical, or recreational significance?
5. **PARTNERSHIPS:** How will the project demonstrate cooperation or partnerships between trail users, trail groups, private interests within the area and public agencies? What type of funding has been promised? Has 'in-kind' labour or other support been secured?
6. **COMMUNITY INPUT AND SUPPORT:** Can the project demonstrate that it has support from the local community, trail user groups, community leaders, service organisations, recreation and environmental groups, schools, businesses and other non-Government groups? What methods have been used to gain knowledge of this support?
7. **ENVIRONMENTAL MATTERS:** How will the project protect and improve areas of environmental significance? How will it contribute to an improved knowledge of the environment and what

interpretive material will the project provide?

8. **CULTURAL AND HERITAGE CONSIDERATIONS:** How will the project recognise and reflect any Aboriginal and other local cultural and heritage factors?

9. **TRAIL ACCESS AND TRAIL SHARING OPPORTUNITIES:** Does the project accommodate a range of trail users (e.g. walking, cycling, horse riding, people with mobility impairments and educational purposes)? How will the different users share the trail?

10. **ON GROUND ASSESSMENT:** Has a preliminary assessment been made in relation to the 'on ground' conditions? Have constraints and opportunities been identified and the proposed corridor flagged in accordance with sustainable trail design principles?

11. **CONCEPT DESIGN:** What are the physical specifications of the trail: length, width, surface materials, drainage, trail heads, interpretive signage and trail markers? What are the required standards of construction?

12. **MANAGEMENT AND MAINTENANCE PLANNING:** How will usage and maintenance issues be addressed? Is there a 'friends of group' for the trail or the potential to establish one? How will public access and cooperation be ensured in the long term? Who will undertake and pay for ongoing operation and maintenance costs?

13. **CAPITAL COST:** What is the expected capital cost for the construction of the trail project? How will the construction of the trail be funded?

14. **FUNDING:** What funding opportunities are available? Can 'in-kind' support be provided from community organisations? Does the project satisfy the requirements of the funding organisations?

15. **CONCLUSION:** Why should the project proceed? What are the strengths and weaknesses of the project? What is required for the project to proceed?

Horse SA has prepared an *Action Planner for Shared Use Trails*[5]. This planner provides an excellent model and checklist for organisations and community groups who are considering the development of a shared use trail.

5.8 CONCEPT DESIGN

In order to develop a concept design for the proposed trail, consultation should occur with the various potential trail users, the local Council and land manager to identify any specific design requirements. Visits to similar trails and discussions with other trail groups will also assist in the design process.

The design should give special consideration to road crossings to ensure the safety of users. In addition, the width of the trail, type of surface and the dimensions of directional signs should satisfy any relevant Australian Standard. This will be particularly important if it is anticipated that funding for the trail will be provided by Government Agencies.

Other design considerations should include water crossings, wet areas, trail heads, parking areas, shelters and interpretive signage. The trail should seek to connect places of environmental and historical significance. It should also include attractions such as look-outs, existing recreational facilities and tourist related businesses such as eateries, bed and breakfast accommodation and hotels.

It is important to understand the role that on-ground assessments and flagging of the potential trail route have in relation to the preparation of the concept design. The concept design needs to be based on the on-ground findings as well as principles of sustainable trail design. Trail routes which are shown on maps with clearly defined control points or flagged trail corridors are easier to explain to stakeholders, land managers and funding bodies. In addition, accurate assessments of costs and timelines cannot be determined unless the physical feasibility of the trail has been considered.

Once the trail has been approved, funded or a tender awarded to a contractor, the concept design can be refined to accommodate cost restrictions and requirements set by the land manager, owner or funding body. A further review of the final design and flagged corridor by responsible parties and key stakeholders should occur before the construction begins.

5 Available at www.horsesa.asn.au

5.9 FUNDING

Sourcing appropriate levels of funding for the construction and ongoing maintenance for the trail is essential. While this can seem a daunting prospect (especially when many Government Departments will only fund 50% of the project) the best approach is to develop a Funding Strategy based on a 'cocktail' of grants and in-kind support. For example, a Funding Strategy may focus on applying for three or four different grants from Government Departments, together with assistance from the local Council and in-kind support from the community or user group. Such an approach will reduce the amount of money requested from each Government Department and, therefore, improve the chances of success.

It is also useful to break the project into stages such as; feasibility study; concept design; and construction. It may also be possible to stage the construction of the trail over a number of years. In this way, an initially large cost can be broken down into smaller 'bite-size' chunks which may be more palatable to funding agencies. Staging a project will also reduce the level of perceived risk associated with the project as each stage will only proceed once the previous stage has been successfully completed.

When seeking funding, it is important to think beyond the traditional grants which are available from the recreation and planning related Government Departments. Given the often close link that recreational trails have with the natural environment, funding from environmental organisations at a local, regional, state and federal level are becoming more and more common. A project which can demonstrate a strong component of environmental rehabilitation is likely to attract funding from a much wider range of agencies.

When preparing a Funding Strategy and when writing applications for grants, it is very important that consideration be given to the strategic objectives of the relevant Government Department. The application should clearly articulate how the project will help the Department to further its goals and, ideally, should demonstrate links to relevant strategic plans. If these links or the objectives of the Department are unclear, it is strongly recommended that a meeting be arranged between the proponents of the trail and the Government Officers who are responsible for allocating funding. Such a meeting will determine whether an application to a specific grant is worth pursuing and, if so, what the Officers will be looking for when they make their assessment. It may be appropriate to seek the assistance of the peak user group(s) when preparing funding applications.

In addition to the potential sources of funding described in Section 4, many alternative grants which should be considered can be found at the following websites:

https://www.sa.gov.au/topics/employment-and-finance/financial-support/grants

http://www.grantassist.sa.gov.au/community

http://ors.sa.gov.au/funding

6

CONSULTATION TECHNIQUES

6.1 INTRODUCTION

The planning, development and management of trails is likely to involve a number of organisations, groups and individuals who have an interest in the project. The term 'stakeholder' is commonly used to describe these groups and individuals. Stakeholders are generally directly affected or have a strong interest in the proposal. Failure to adequately consult with stakeholders is one of the most common reasons for the collapse of trail proposals. However, projects which include genuine and transparent consultation are more likely to be successful and can generate a level of goodwill which can assist in the ongoing management of the trail once construction is completed.

6.2 CONSULTATION OR COMMUNICATION?

Whenever there is a potential that a stakeholder may be affected in relation to a trail project, consultation will be required. There are two consultation processes that are available: a) Communication Only and b) Communication and Consultation. A decision should be made during the early stages of planning for the trail to determine if stakeholder issues are likely to have an impact on the outcome. This will then determine the most appropriate process of consultation. Further information on the two processes is provided on page 35.

The following flow chart identifies the key steps of the Communication and/or Consultation Process. A combined Communication and Consultation Process is highlighted in pale yellow while a Communication Only Process is highlighted in blue.

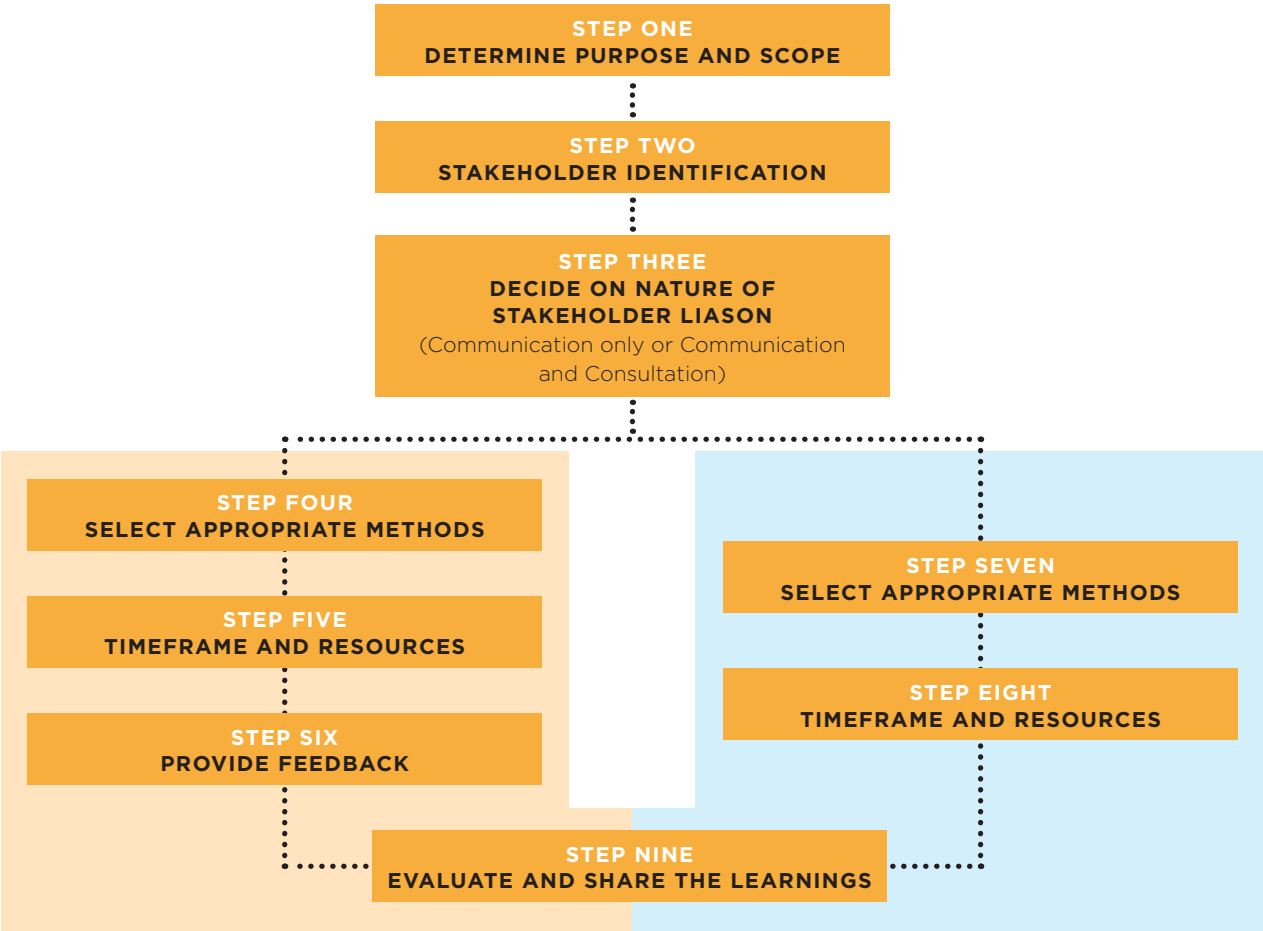


Figure 3: Communication and Consultation Determination Flowchart (Source: AHazebroek)

COMMUNICATION PROCESS

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

COMMUNICATION AND CONSULTATION PROCESS

The combined Communication and Consultation Process should be adopted when it is important or necessary that stakeholders have input which may influence a decision or outcome. Stakeholders may test ideas or options and in some cases, may contribute to a mutually acceptable outcome. It will be important to use a combination of effective communication and consultation techniques to ensure that a positive result is achieved.

The figure below is designed to assist in identifying if the Communication or the Communication and Consultation Process should be adopted. The degree of sensitivity or potential stakeholder impact (shown at left of the chart) displays the impact the stakeholder issues are likely to have on the project.

Projects that fall into this category will require only a low level plan

DEGREE OF SENSITIVITY OR POTENTIAL STAKEHOLDER IMPACT		DEGREE OF COMPLEXITY, TECHNICAL OR DESIGN DIFFICULTY: LOW	MEDIUM	HIGH
LOW	Stakeholder issues WILL NOT IMPACT on project/activity outcome	**Least** complex • Communication plan • Minimal time impact • Minimal $ impact	**Low to Moderate** complexity • Communication plan • Moderate time impact • Moderate $ impact	**High** complexity • Detailed communication plan • Moderate time impact • Moderate $ impact
MEDIUM	Stakeholder issues MAY DRIVE CHANGE to some aspects of the project/activity	**Moderate** complexity • Communication plan and consultation plan • Moderate time impact • Moderate $ impact	**Moderate** complexity • Communication plan and consultation plan • Moderate time impact • Moderate $ impact	**High** complexity • Detailed communication plan and consultation plan • Moderate–high time impact • Moderate–high $ impact
HIGH	Stakeholder issues WILL FORCE CHANGE OR DERAIL project/activity	**Moderate to High** complexity • Detailed communication plan and consultation plan • High time impact • High $ impact	**High** complexity • Detailed communication plan and consultation plan • High time impact • High $ impact	**Most** complex • Detailed communication plan and consultation plan • Extreme time impact • Extreme $ impact

Projects that fall into this category will require a detailed plan

Figure 4: Communication and Consultation Complexity Chart (Source: AHazebroek)

6.3 COMMUNICATION AND CONSULTATION TECHNIQUES GUIDELINES

The figure below highlights the key techniques that may be considered for Communication and/ or Consultation and the objectives that using those techniques will achieve.

	OBJECTIVE												
	Provide Information	Maintain awareness / Updating information	Indentify concerns and issues	Develop objectives / Issues	Develop options	Test ideas / Priortise options	Build relationships and involvement	Achieve consensus	Reach large numbers of stakeholders	Reach people who don't readily participate	Influence small groups / Individual contact	Obtain input into decision making	Satisfy statutory requirements (eg. veg clearance)
Advertisement / Media													
Letter / Phone call													
Newsletter / Brochure													
Internet													
Signs / Maps / Models													
Public Display / Exhibition													
Meetings with key individuals													
Submissions from stakeholders													
Telephone Hotline													
Surveys													
Presentations to existing groups													
Local community group meetings													
Public meetings													
Community event													
Open day information session													

Figure 5: Tools and Techniques Matrix (Source: AHazebroek)

7

TRAIL DESIGN AND CONSTRUCTION

7.1 INTRODUCTION

This section of the Trails Guidelines provides guidance on how to design and construct sustainable trails. It assumes that a decision has been made on who the target user group(s) will be and that various alternative options have been explored. Most of the information relates to providing trails in natural settings, although some of the guidelines and references are applicable to creating trails in urban settings.

The guidelines within this chapter can be applied to both single-use (walking, cycling, horse riding) and shared-use (any combination of walking, cycling or horse riding). In addition to these guidelines, it is strongly recommended that trail designers consult other recognised texts[6].

There are a number of different trail possibilities, options, and characteristics, as outlined in previous sections of the guidelines (see Appendix A for different trail classes). Most of the following information relates to the creation of shared-use trails for walkers, cyclists and horse riders. Where there are particular requirements relating to a specific user group or sub-group these have been identified and highlighted. Where possible, useful reference material or contacts are also identified.

The concept and definition of sustainable trails has been discussed in previous sections of these guidelines. It is worth reiterating that sustainable trails do not require extensive infrastructure. They make the most of the natural features of an area without introducing infrastructure that may compromise the natural appeal and character of the area: the reason users are attracted to trails in the first place. An important 'rule of thumb', therefore, is to plan the route so that the need for infrastructure, such as bridges, switchbacks, retaining walls, etc., is minimised. This will not only minimise associated visual and environmental impacts, it will also mean a cheaper trail to build and maintain.

7.2 TRAIL SYSTEM

Generally, it is preferable to design a trail system with loops that offer a number of options and a variety of experiences, while preventing the need to back track, Figure 6 illustrates the most common trail systems that can be considered during the design process. A stacked trail loop system will provide opportunities to design trails that appeal to different user groups: the core trail, which leads from the trail head, can be wide, smooth, open and flowing; while other loops branching from it can be narrower and more challenging. Intersections should occur on relatively level ground and where there is good visibility.

Linear trails generally connect two distant points, often providing an off-road alternative for users and extending over considerable distances. Because of the distances involved it may be necessary to utilise existing low traffic roads and/or unmade road reserves.

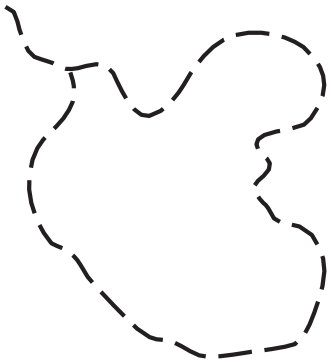
Because of the potential for conflict with other road users it will be necessary to identify the nature and volume of other road users to determine their suitability. Unmade road reserves may offer excellent opportunities for linear trails. However, they are also likely to contain significant remnant vegetation because of their historic public ownership, are sometimes licensed for use by adjoining landowners and can be located on steep terrain. The local Council should be able to provide details on traffic numbers and licence arrangements.

6 See Appendix E for a list of publications

LINEAR

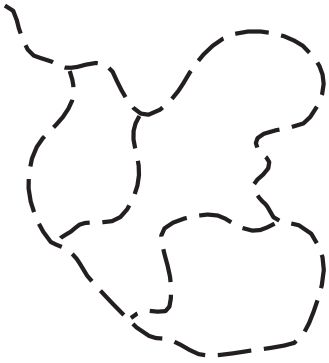
- for long distance trails
- for goal orientated trails eg. access to areas, linking facilities
- side trails can allow access to secondary recreation features, special features, interpretive information and views

LOOP



- always guides the user back to the trailhead
- no need to retrace steps so can be more interesting to use
- less physical wear

STACKED LOOP



- offers a variety of travel distances
- can be used to offer a variety of difficulties to suit user ability
- can work at different layers according to the seasons

Figure 6: Common Trail Systems (Source: Department for Environment & Heritage)

7.3 TRAIL CLASSIFICATION

Trail classification allows land managers to develop, design, build, promote and maintain trails appropriate for the anticipated trail users. *Australian Standard 2156.1 Walking Tracks Part 1: Classification and Signage* identifies six classes of walking tracks, describing each in terms of the elements used for classification and the resulting management considerations.

Public land management agencies across Australia including DEWNR have adopted the *Australian Walking Track Grading System* a plain English language description to describe walks to the public.

Under the system, walking trails are graded on a difficulty scale from grades on to five.

GRADE ONE is suitable for the disabled with assistance

GRADE TWO is suitable for families with young children

GRADE THREE is recommended for people with some bushwalking experience

GRADE FOUR is recommended for experienced bushwalkers, and

GRADE FIVE is recommended for very experienced bushwalker

Reference should be made to these documents to identify the various requirements, expectations and characteristics for each trail type.

Trails for mountain bikes use a different classification system ranging from easy to severe. The classification system for horse riding trails is different again, ranging from easy to advanced. A summary of the trail classes for the various user groups is provided in Appendix A.

If a network of trails is being proposed, the provision of a variety of trails from each classification will ensure that a range of recreational opportunities are available which are suitable for beginners through to experienced users.

7.4 SINGLE OR SHARED-USE?

The planning and design phase should clearly determine whether the trail is intended for single or shared-use. While trails can be designed to accommodate a range of users, this will depend on a number of factors including demand, cost, access and land suitability. Shared-use trails will encourage greater usage and allow increased levels of access for a wider section of the population, however, they must be carefully designed to minimise the risk of conflict

between users. In some cases, this can be achieved through appropriate trail width, separation of paths, the use of signage and the promotion of codes of practice[7]. In other cases, topographical or other constraints will not allow this to occur while also achieving environmental sustainability.

7.5 DESIGNING SUSTAINABLE TRAILS

7.5.1 GATHERING THE INFORMATION

Prior to commencing the design process, it is important to collect as much information as possible about the land. Typically this will include and involve:

- maps showing cadastral boundaries, topographic features such as drainage lines and contours
- land ownership and adjacent land uses, including opportunities for linkages to surrounding areas
- location and type of vegetation, soils and other natural features (e.g. rare or threatened species, important habitat, Phytophthora risk areas, etc.)
- aerial photographs.

Useful tools to take into the field include:

- compass, topographical map and altimeter (to determine altitude)
- GPS
- clinometer (to measure grades)
- digital camera.

7.5.2 IDENTIFYING CONTROL POINTS

This information can then be used to identify control points. These are places of interest that trail users will be attracted to (desirable) or should avoid (inappropriate). They will dictate where the trail should commence and finish, the location of parking areas, structures, slopes for turns or switchbacks, and road or watercourse crossings. Control points are also used to control the gradient of the trail.

DESIRABLE CONTROL POINTS	INAPPROPRIATE CONTROL POINTS
Scenic overlooks; long distance views	Environmentally sensitive areas (e.g. wildlife habitat, rare plant species)
Waterfalls and other water features	Steep side slopes
Rocky outcrops	Lowlying wet/boggy areas
Historical sites	Water crossings and riparian zones
Geological monuments	Sensitive archaeological sites
Archaeological sites	Known weed infested or diseased areas
Existing access points, roads or other trails	Inappropriate soils (e.g. loose sand, boggy clays)

Water crossings present particular challenges to trail designers and increase in complexity when designing Class one, two and three walking trails: ideally, water crossings should be avoided if possible. Additional information on water crossings is provided in Section 7.6.

7.5.3 SUSTAINABLE TRAILS FOLLOW THE CONTOURS

Having identified the control points, and confirmed their location in the field, mark the desirable (green marker) and inappropriate (red marker) control points on the topographic map. Connect the green dots while following the natural contours, and avoid the red dots. The most sustainable trails are those that have a low overall grade (less than 10%, or a one in 10 change in elevation) to minimise the potential for water erosion. Combined with an outslope, or 'crossfall' on the trail path which slopes gently away from the high side, and regular grade reversals or undulations, this will ensure that water flows across and not along the trail.

7 For an example see 'Horse Riders Code of Practice' at www.horsesa.asn.au

Figure 7: Drainage. Take advantage of the topography to improve drainage (Source: Department for Environment & Heritage)

If steeper sections are unavoidable they should be as short as possible (not exceeding 20 metres in length) and have a maximum gradient no more than 50% of the fall line gradient (the half rule). Steep sections should be preceded and followed by a grade reversal to shed water away from the trail. Consider armouring the trail tread with rock to minimise the potential for erosion (for further information see Section 7.6).

7.5.4 GRADE REVERSALS

A subtle left or right turn of the trail as it continues along a hillside will create grade reversals that help to divert water off the trail (see photo 6). A trail along a steep slope may require grade reversals every 10-15 metres, depending on soil type and rainfall.

Incorporating grade reversals will avoid the need to build water-diversion devices later. They also break up a climb or descent and can provide recovery sections for users.

Regular changes in grade will also assist in controlling excessive speeds by mountain bike riders. Grade reversals are also beneficial before and after steep sections, with smooth transitions between different grades; and at the approach to a watercourse, to disperse water and silt away from the watercourse.

Photo 6: Grade reversals

7.5.5 TRAIL FLOW

Mountain bike riders tend to travel faster than walkers and horse riders and therefore trails designed for them should have a certain tempo or rhythm (referred to as flow). Contour trail designs can have three basic types of flow: open and flowing, tight and technical or hybrid (a combination of both) (see Figure 8).

Open and flowing trails have wide smoother surfaces, long sight lines, sweeping turns and appeal to less skilled cyclists or those who enjoy travelling fast. Tight and technical trails have sharper turns, narrower and rougher surfaces, and sometimes include obstacles. By their very design these trails dictate that users slow down.

Hybrid trails blend the features of both with transitions between the different sections. Transitions should occur gradually with good sightlines or on top of hills to minimise the need for heavy braking and skidding. The trail flow should be planned to suit the host environment. In grassland and open woodland areas users are likely to short-cut tight corners, so open and flowing trails are preferable. In more densely vegetated areas sight lines are more limited, so it's best to keep user speeds down with tight and technical trails.

Poor design (abrupt transitions from one type of design to another)

Tight and technical

Open and flowing

Figure 8: Trail Flow (Source: adapted from IMBA, 2001)

7.5.6 WALK AND FLAG THE TRAIL CORRIDOR AND PREPARE A CONSTRUCTION PLAN

Using flagging tape, mark the trail corridor that has been mapped. Tight and technical trails probably require flags every metre or so, whereas open flowing trails will do with a flag every 5 to 10 metres. At least two consecutive flags should be visible and placed at eye level to enable grades to be identified using a clinometer.

Where possible utilise natural features in any way that helps to minimise the trail's imprint on the landscape. In particular, trails should be routed on the uphill side of large trees to minimise the impact on root

systems. Tie the flags around the tree with the knot on the side which the trail will pass. Look for natural flat spots, animal tracks or corridors (which often follow sustainable gradients), areas of exposed flat or curved rocks, and incorporate such features into the trail if possible. Trails that avoid straight lines tend to be less visually obtrusive, so plan curves in the trail that follow consistent arcs (whether sweeping or tight). The flagged route should be detailed enough to clearly delineate all features for the construction crew, including grade reversals.

Having flagged the preferred route, it will now be necessary to liaise with other key stakeholders to develop a Construction Plan. Key stakeholders might include the land managers, Local Government representatives, the trail users, adjoining landowners, Government agencies, conservation interests, etc. This will involve reaching agreement on:

- trail dimensions, including the corridor width, the path width, and the ceiling height (i.e. the area to be clear of any obstructions)
- how the trail will be built, timelines for construction, and who will be responsible
- the type and location of, and responsibilities for, associated infrastructure (e.g. signage, parking bays, watercourse crossings, stiles, etc).

It is particularly important to consider the conservation values of the area prior to finalising any trail layout. A balance needs to be achieved between providing a trail in an area that people are attracted to because of its natural assets, and protecting the long-term integrity of those assets. An evaluation which may require the assistance of experts should consider:

- the Vegetation Association Conservation Status, which rates the uniqueness or rarity of the relevant vegetation association
- the National, State and Regional conservation status of flora and fauna
- ecosystem integrity, which determines vegetation condition on a scale of one (pristine) to six (completely degraded)
- aboriginal cultural sites and European heritage sites
- critical habitat for uncommon, rare and endangered species
- presence of threats such as plant pathogens (eg Phytophthora) to natural and agricultural values.

A decision will need to be made about controlling and managing access to sensitive sites (e.g. an intact riparian zone). It may be preferable to plan for visitation and manage potential adverse impacts through the provision of suitable infrastructure rather than allow unmanaged movement through the area.

The potential disturbance of places or sites of Aboriginal cultural significance should also be considered. Particular care should be taken in coastal areas or along relatively undisturbed creeklines where signs of Aboriginal occupation may be present. These features, together with other significant landforms, also often form important elements in Aboriginal Dreaming stories which describe the creation of the landscape and establish guidelines for sustainable living.

Having completed any required studies, involved the various stakeholders, and obtained the relevant approvals, it's now possible to flag the final alignment of the trail using pin flags. The frequency of flags will depend on the nature of the trail: fewer flags for open, flowing trails; more flags for tighter, technical trails. Identify which obstacles will remain on the trail and which are to be removed. Use natural terrain features as a guide, to accentuate curves and grade reversals. Avoid long straight lines. It's preferable to locate the pin flags on the downhill edge of the path as they can remain in place during construction and assist with determining the depth of bench cut, if required.

7.5.7 OCCUPATIONAL HEALTH, SAFETY AND WELFARE

These guidelines assume that sufficient measures are taken to maximise construction crew safety during the course of building trails. In summary, this should include attention to:

- establishing/maintaining safe methods of work
- work place hazard assessment including potential environmental hazards (e.g. snakes, dehydration, heat and cold).
- crew induction
- access to first aid in the event of an emergency
- appropriate clothing and tools and a clear understanding of how to use tools, operate machinery in a safe manner and wash station for hygiene

This may require the preparation of an emergency plan prior to commencing construction, the allocation of responsibilities in the event of an emergency, and adequate briefing and appropriate training of all construction crew (paid and volunteer).

7.6 CONSTRUCTING THE TRAIL

The trail path is referred to as the tread. The width of the tread will vary depending on the intended user group(s), the type of trail being constructed and the intended degree of difficulty (see Appendix A). There may be a need to clear the tread of obstacles (trees, branches, larger rocks). Smaller trees and bushes should be dug out, roots and all. If possible, avoid the need to remove larger trees by realigning the trail around (uphill of) the tree.

Generally, in the metropolitan area and within some townships, trees with a circumference of two metres or more, measured one metre above ground level, cannot be removed or pruned without the prior approval of the relevant planning authority (usually the local Council). Additional approvals for vegetation removal may be required from the Native Vegetation Council13. It is important to note that native vegetation includes grasses, shrubs and bushes as well as trees. This means that, while a trail proposal may not involve the removal of any trees, if it includes any damage to, or removal of, native grasses and/or bushes, the approval of the Native Vegetation Council may be required.

In some, limited, situations, an approval from the Native Vegetation Council may not be necessary. Specifically, the clearance of native vegetation to establish or maintain a one metre wide walking trail may not require approval if there are no other alternative locations and the vegetation does not form part of a road reserve14. However, it is strongly recommended that advice be sought from the Native Vegetation Council prior to the clearance of any native vegetation. Significant penalties may apply if vegetation is removed or damaged without the relevant approvals (see Section 3.2 for further information).

http://www.environment.sa.gov.au/managing-natural-resources/native-vegetation

The risk of spread of plant disease should be minimised by pruning trees based on the advice of a horticulturalist. Place any cut trees and branches downhill of the trail, preferably a few metres away from the tread with the trunk end pointing away from the trail. Clear the width of the tread and rake any leaf litter and debris to one side (preferably uphill). This can be used later to cover any soil removed from the bench cut to give a more natural appearance. It is commonplace to use hand tools to make the bench cut, but the use of suitable machinery is an increasingly favoured option if done with sensitivity to the environment.

Consideration should also be given to the development of a bushfire action plan if work is carried out during the fire danger season to ensure the risk of fire starting is minimised and if a fire starts in adjacent country the crew are aware and an exit plan is established.

7.6.1 THE TRAIL CROSSSECTION

Usually trails are built on sloping ground and therefore some excavation will be required to achieve a full or partial bench construction. Full bench tread involves excavating down and into the hillside and puts the entire tread width on mineral soil, thereby maximising stability and minimising ongoing maintenance (see Figure 10 and Photo 7). Partial bench tread involves using some of the excavated soil to construct the downhill side of the tread (see Figure 11). This technique is prone to slipping and is not recommended, except in specific circumstances when done in conjunction with a retaining wall.

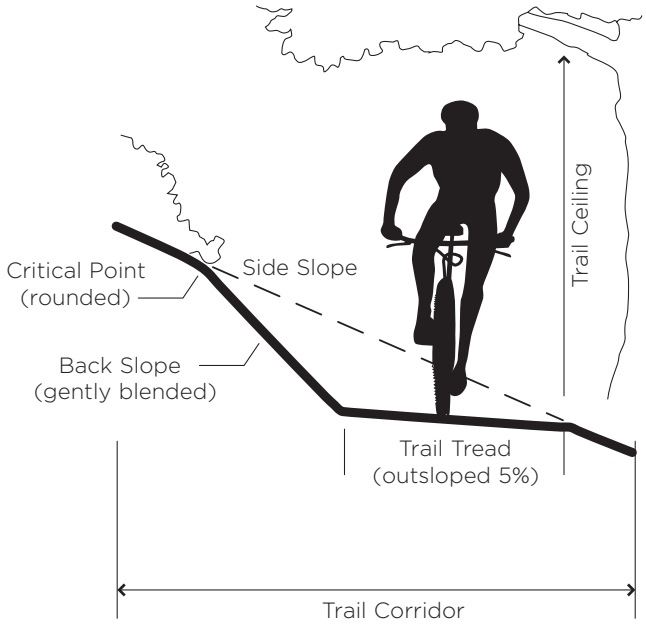
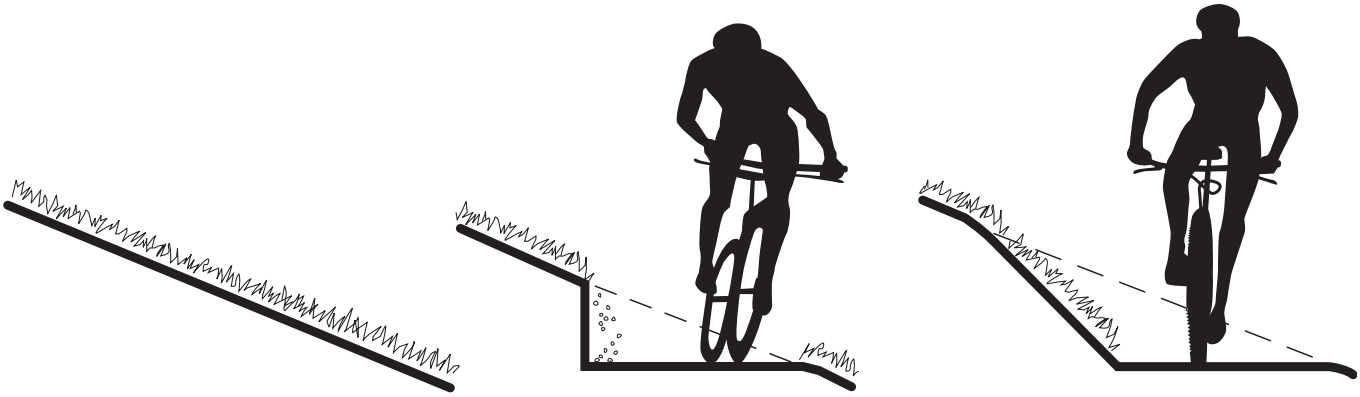


Figure 9: Trail cross section – terms and descriptions
(Source: IMBA, 2001)



Hillside before trail:
Vegetation keeps water sheeting slowly downhill

Incomplete Full Bench:
Left with unfinished vertical cut, soil will slough off, making tread narrower.

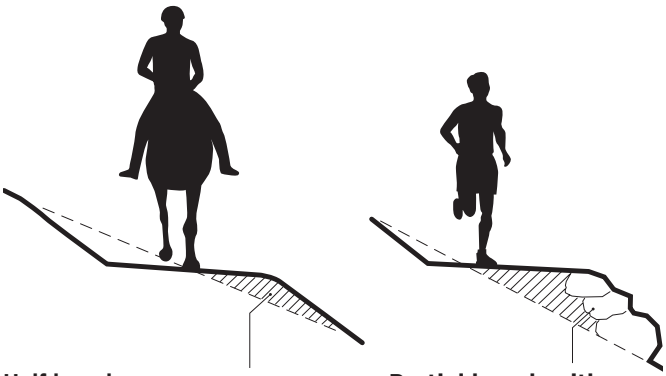
Obtrusive back cut also forces rider to outside of tread.

Full Bench Cut:
Entire tread width is cut into firm mineral soil. Tread compacts uniformly and is sustainable. 5% outslope ensures water sheets across tread. Back cut is blended into back slope. Proper back slope, out slope and full bench cut minimize maintenance.

Figure 10: Full bench construction (Source: IMBA, 2001)

Photo 7: Bench cut on a trail

When roots or impenetrable rock make it difficult to establish a full bench a retaining wall can be built to support the down slope side (see Photo 8). The retaining wall stabilises the soil, preventing it from creeping downhill. Make sure the top of the retaining wall is lower than the tread to allow water to sheet across the trail. The uphill side of the tread is called the back-cut or back slope. It's important to blend the back-cut into the grade of the hill to minimise its visual impact and prevent erosion (see Figure 10). The trail tread should have an outslope of 3-5% in the direction of the fall line. This is critical and will assist the sheeting of water across the trail. Any excavated topsoil should be thrown downhill away from the trail to avoid the creation of ridges of soil, which will deter sheet flow.



Half bench:
Relatively easy to construct, but fill soil may collapse and creep down slope, requiring excessive maintenance.

Partial bench with retaining wall:
In some cases, tread must be supported by a retaining wall. Wall holds fill soil in place and tread is out-sloped over top of wall.

Figure 11: Partial bench construction (Source: IMBA, 2001)

Photo 8: Retaining wall in association with a bench cut trail

7.6.2 THE TRAIL SURFACE

While a natural surface for recreational trails may be appropriate in many situations, the application of an artificial trail surface (e.g. bitumen, crushed rock, sand) may be required as indicated by the classification chosen for the trail and who the primary users will be, if there is anticipated high use or if sections of the natural surface is loose or prone to instability. For example, for more technical mountain bike trails, it may be preferable to leave natural obstacles such as rocks and tree roots provided that they are not safety hazards or will contribute to erosion. On bench-cut trails, it's usually preferable to remove rocks on the inside edge of the tread, otherwise users will be forced to the outside edge, possibly resulting in tread widening or break down.

Large, rounded, flat and stable rocks should generally be kept in place to assist with tread stability. Sharper and loose rocks can be removed, always filling and compacting the remaining hole with available soil.

Roots with diameters larger than pencil diameter should be removed, especially if they run parallel to the trail, to avoid the potential for erosion. Larger roots running across treads can be retained to provide a more challenging experience. Alternatively, fill over large roots, possibly using a small retaining wall or armouring, to prevent damage to larger feeder roots of trees with consideration of drainage.

Ultimately, the trail should be the 'path of least resistance' even in difficult terrain. This will ensure that users do not leave the trail and form new, easier routes.

7.6.3 SURFACE WATER CONTROL

Diverting surface water off the trail is of the highest priority in achieving sustainable trails. Running water will erode the tread and support structures and result in the deposition of sedimentation. Standing water can result in soft boggy conditions, and tread and support structure failure. The most effective way to address these risks is through designing contour trails and outsloping the tread, as previously discussed and as illustrated in Photo 9.

A grade dip is where the grade of the trail is reversed for about three to five metres and then 'rolled' back over to resume the descent. Using the existing terrain (e.g. where the trail winds around trees or rocks) as the control point for the grade reversal and building on the local drainage to remove water from the tread is the most effective means of incorporating grade dips. The drain outlet (the lowest point of the grade dip) may require some protection by the placement of guide structures, such as rocks, along the lower edge of the tread. Grade dips are best located mid-slope and frequently enough to prevent water from building enough volume and velocity to damage the tread.

Waterbars are the least preferred tread structure. Structures, such as wood or rock, are placed at an angle across and extending above the tread to direct water off the lower edge of the tread. Poorly constructed and maintained waterbars are prone to clogging or erosion and can become tripping hazards and a barrier to wheeled traffic.

Photo 9: The yellow line shows the bike/walking trail and the blue lines show drainage lines to minimise erosion on the trail. This design diverts water away from the trail to minimise erosion.

7.6.4 ARMOURING

This is the practice of using rock to harden trails. It's useful in two situations; in creating an elevated trail tread above especially soft or wet terrain where no alternative route is possible, and to harden the trail tread against user caused (as opposed to water caused) erosion. If the erosion is being caused by poor drainage then this should be rectified by placing suitable sized pipes under the tread prior to armouring otherwise the water will destroy the armouring by flowing under the rocks.

7.6.5 INCORPORATING TURNS ON HILLSIDES

Where it's necessary to gain elevation in a short distance it will be necessary to incorporate a turn into the trail alignment. Two types of turns are possible: a climbing turn or a switchback turn (see Figure 12 and Photo 10). Both are relatively difficult, expensive and time consuming to construct so it's best to plan trails with a minimum number of turns if possible. Avoid 'stacking' turns up a hill by using the full available width of the hill (see Figures 13 and 14). Always seek the flattest site to construct a turn and in the planning stage identify such sites as control points.

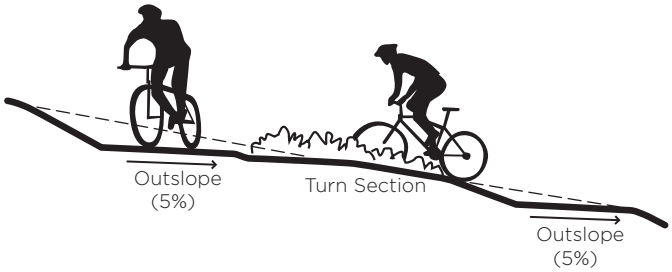
Figure 12: Switchbacks (Source: Department for Environment & Heritage)

Photo 10: Switchbacks on a walking trail

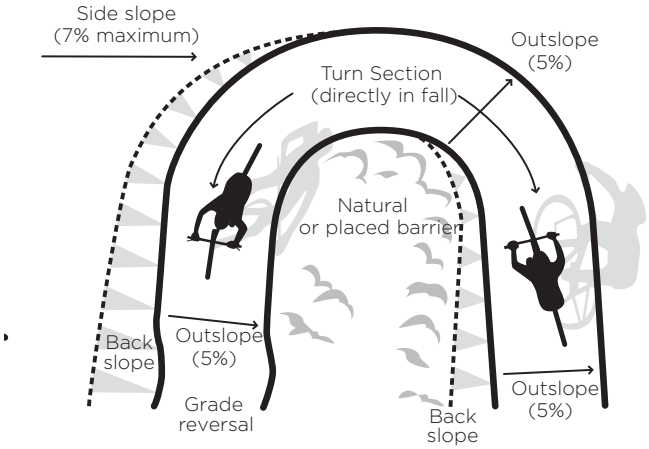
On side slopes not exceeding a grade of 7% it may be appropriate to construct a climbing turn (see Figure 13). They should be free flowing and gentle with a wide (at least 10 metre) radius.

Switchbacks are more appropriate and durable on steeper slopes. The rolling crown switchback (see Figure 14) is designed to facilitate good drainage. It usually requires the construction of a retaining wall to shore up the turning platform. In these instances it's best to use large (at least 20kg) rocks and preferably larger (70kg) rectangular shaped rocks or manufactured retaining wall interlocking blocks. This will require some excavation of the 'footings' to anchor the larger foundation rocks or blocks. The wall should tilt into the slope with a batter or tilt of 2:1 (i.e. an inward tilt of one metre for every two metres of height), but never shallower than 4:1.

By incorporating a natural or placed barrier in the apex of a turn, trail users will be deterred from taking short cuts (see Figure 15).

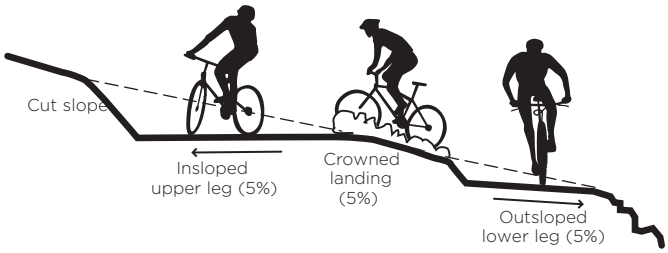


SIDE VIEW:
A climbing turn is any turn that ascends (or descends) on the fall line of a sideslope. Improve sustainability by placing climbing turns on gentle slopes and using grade reversals to drain water above them. Climbing turns should have a large turning radius and barriers between legs to prevent shortcutting

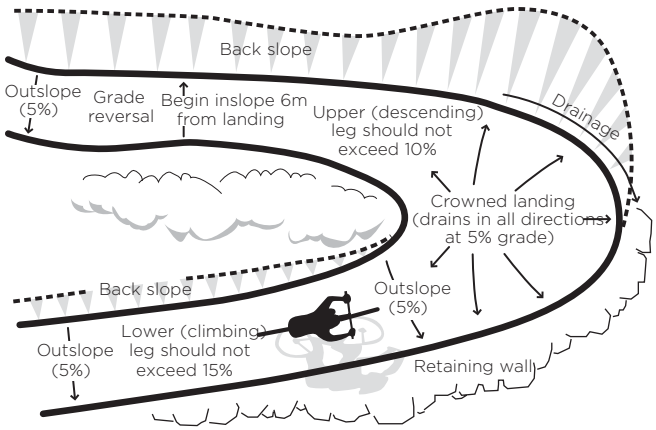


TOP VIEW:
Maintain constant grade and radius through the turn section. Climbing turns may not be sustainable on side slopes exceeding 7% grade

Figure 13: Climbing turn detail (Source: IMBA, 2001)



SIDE VIEW:
This shows the most sustainable type of turn on steep sideslopes. Inslope the trailbed on the upper leg as it transitions to the crowned landing. The landing should have a 3.5 to 5.5 metre diameter, depending on trail width. The landing is outsloped in all directions. Build a grade reversal just before the upper leg to move water off the trail before it reaches the landing



TOP VIEW

Figure 14: Rolling Crown Switchback Detail (Source: IMBA, 2001)

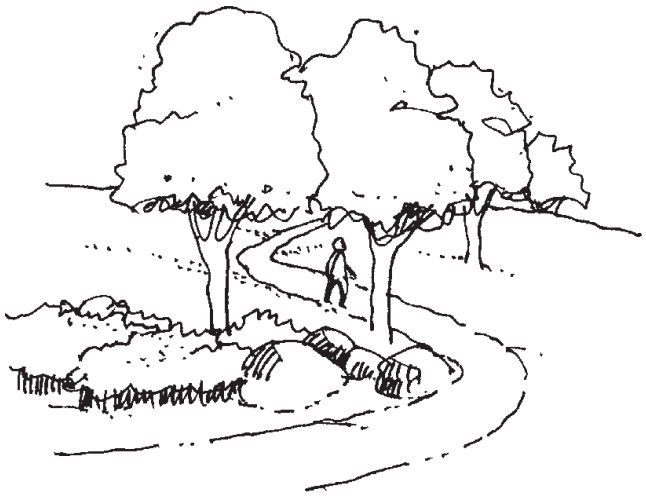


Figure 15: Blocking shortcuts. Use natural features to block shortcuts. (Source: Department for Environment & Heritage)

7.6.6 WATERCOURSE CROSSINGS

Water crossings are a critical element of trail design and construction and the type of crossing will be influenced by the trail classification you are seeking. A water crossing is the site where the trail may have the greatest impact on water quality and the site where water has the greatest potential to damage the trail. With this in mind, it is always preferable to avoid establishing new water crossings by utilising existing crossings where possible. If a new crossing is unavoidable, it is important to seek professional advice from a suitably qualified Engineer in relation to the design and construction of any structure proposed to be built over or through a watercourse. Also, it is important to note that any activity (including the construction of a trail) which has the potential to affect the natural flow of water within a watercourse may require a permit for water affecting activities from the Department of Environment Water and Natural Resources.

If a trail must cross a watercourse, it is important to design the crossing to minimise the potential for runoff (and therefore erosion and sedimentation) from the trail into the watercourse. The design and construction of the entry and exit points to the water crossing are particularly important. If the water crossing involves a ford, it is possible that the soil around the entry and exit points will become disturbed and prone to erosion. In this situation, some hardening of the trail along the entry and exist points may be required.

For trails running alongside watercourses, the impacts on water quality and the riparian zone (i.e. the land along the edge of a watercourse) will be minimised by building trails on gentle slopes and directing water flow off the trail and away from the watercourse.

If a structure is required to cross the watercourse, a number of options are available ranging from a basic culvert for minor crossings to a bridge for more substantial watercourses. Bridges can range from a simple foot bridge to multiple span, suspended, and truss structures (see Photos 11 and 12). If a bridge is the chosen option for a water crossing, then the following factors will need to be considered in conjunction with professional advice obtained from an Engineer and reference to the relevant *Australian Standards such as AS 2156.2-2001 Walking Tracks – Infrastructure Design*:

- The potential for flooding during peak storm events. This will have implications for bridge clearances. The local Council or land manager may have information on the extent of flooding during a 1 in 100 year event.

- Make the bridge high enough so that the approaches are on gentle slopes and there are no sudden transitions in grade or direction.

Photo 11: Bridge: Simple design

Photo 12: Bridge: Complex design

- Make the bridge strong enough to carry above the anticipated loads. Some engineering advice may be required.
- Use materials that blend with the natural environment, are sturdy and long lasting, and are locally sourced if possible.
- Consider the safety of users in terms of approach speeds, the need for rails, avoiding protrusions, slip resistant surfaces, and adequate sightlines.

7.6.7 LOW LYING AND BOGGY TERRAIN

Low lying and boggy sections should be avoided if possible because surface water will not adequately drain away from the tread. If there is no other option then consider the need for a boardwalk (see photos 13 and 14) or a raised reinforced tread, such as armouring. Another alternative is to consider the use of geo-textile materials that allow drainage, separate the underlying soil from the tread surface and reinforce the trail tread[8]. In some circumstances, rubber mats may be an appropriate, relatively inexpensive alternative which keeps the surface of the trail solid without intensifying erosion.

8 For an example of this approach, see information about the Brownhill Creek Recreation Park trails project on the Horse SA website www.horsesa.asn.au

Photo 13: Boardwalk through wetlands

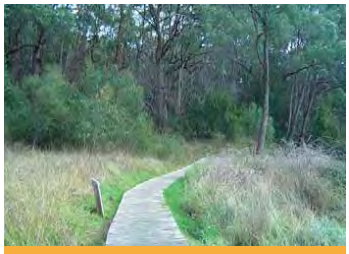


Photo 14: Boardwalk through low lying terrain

7.7 COASTAL TRAILS

Coastal locations are generally characterised by stable and unstable dunal systems and fragile vegetation and micro-environments or cliff tops. They are also landscapes that are highly valued by the public and susceptible to visual intrusion by 'foreign objects'. Given these sensitivities, additional care needs to be taken in the planning, design and construction phases to minimise environmental and visual impacts.

Factors to consider include:

- Avoid locating trails in unstable dunal systems, or where the construction of the trail is likely to contribute to such conditions.
- Coastal locations often have a high number of Aboriginal cultural sites.
- Consider the ecological sensitivity of the area and the potential impact on habitat, breeding locations, animal movement patterns, etc.
- Consider the use of raised boardwalks or 'sand ladders' to allow for shifting sand levels, the protection of sensitive vegetation, animal movement and stormwater flows. Minimise visual intrusion by keeping structures low to the ground and using materials that blend with the landscape and are durable.
- Ensure that the location of the trail will not encourage traffic onto sensitive areas. Provide for controlled access points to/from the beach and inland areas.
- Consider potential visual impacts, not only from the land, but also from the water and beach. Avoid

locating extensive infrastructure in visually prominent locations such as cliff tops, headlands, the terminal vistas of adjacent roads, etc.

- Use materials for the trail tread surface that are appropriate to the site context and anticipated user demands, and consider ongoing maintenance requirements. Paved or other sealed surfaces may be appropriate in built up, heavily trafficked areas. Natural surfaces may be more appropriate in more natural contexts.
- Explore opportunities for incorporating other infrastructure requirements (e.g. gross pollutant traps) into the trail design process.
- Don't over-engineer: stick to the trail classification and consider the needs of the user, minimise visual intrusion by keeping structures, earthworks, vegetation clearance, trail widths, signage, etc to a minimum.
- Incorporate a sense of place into the design. Reflect the unique features and character of an area by using local materials, interpreting the history of the area, public art, signage, furniture, etc.

Photo 15: Coastal trail

7.8 URBAN TRAILS

Given their location within densely populated areas, urban trails are usually heavily utilised and valued by a range of user groups for a range of reasons. Generally shared- use, urban trails often cater for cyclists, walkers, joggers, in-line skaters and the mobility impaired. Urban trails are usually of regional significance and provide inter-suburban travel opportunities for commuting, recreational or tourism purposes. They also play an important role in local trail networks by providing access for local users travelling shorter trips for a variety of reasons.

Given the range, fitness levels and number of users that are likely to be attracted to an urban trail, safety considerations take on greater importance. Similarly, access for a wider range of user groups, including those with mobility impairments, is likely to have a greater influence on the design of the trail than would be the case in a remote area such as the Flinders Ranges.

With this in mind, it is important that urban trails are designed in accordance with recognised traffic engineering standards and that special consideration is given to:

- Trail surface: Bitumen is often the most suitable surface for heavily utilised shared- use trails as it provides an even and durable pathway which can be easily repaired. The sub-surface should be suitably prepared in order to minimise cracking over time.
- Trail width: A minimum 3m wide trail is recommended for a heavily used trail in order to minimise the chance of conflict between users. Such a width is especially important if the trail is used by cyclists for commuting and where pedestrians and cyclists commonly travel in both directions. Line marking should also be considered to separate users travelling in opposite directions (see Photo 16).
- Safety: Urban trails are often used by young children learning to ride as well as parents with prams. The design of the trail should take into account the likely inexperience and vulnerability of some users by considering 'worst case scenarios'. Steeply sloping trails located near creeks and lakes should be avoided or carefully addressed with specific design solutions. Similarly, blind corners which can obscure views of oncoming, fast-moving cyclists should be avoided. Special consideration should be given to the safety aspects of bridges, boardwalks and sections of the trail located on elevated land. Access for emergency vehicles such as ambulances should also be provided.
- Lighting: It may be appropriate to light some sections of the trail, especially in close proximity to areas which people congregate at night such as shopping centres and large reserves (see Photo 17). Other measures should be adopted to improve the safety of users such as removing thick vegetation close to the trail behind which people can hide and maintaining clear and open lines of sight.
- Signage: A signage strategy should be developed to clearly mark the trail, inform users of their responsibilities and identify interpretation opportunities (see Photo 18).
- Interface with traffic: Any point where the trail crosses a public road or interacts with traffic must be designed carefully and in accordance with recognised engineering standards. Road crossings

are the responsibility of either the local Council or the Department for Transport, Energy and Infrastructure.

Photo 16: Urban trails should have an appropriate width, obvious signage and clear lines of sight around corners

Photo 17: Lighting should be considered in heavily used sections of the trail

- Provision of facilities: The location, size and design of facilities associated with urban trails are important considerations. People will be more likely to use the trail if well-designed facilities such as parking areas, seating placed at regular intervals, toilets and picnic areas are provided. Where possible, use should be made of existing facilities.

Photo 18: Signage should incorporate interpretive information

- Environmental: Urban trails are often located in environmentally degraded areas such as alongside weed invested creeks. While the construction of the trail may be the catalyst to achieve environmental rehabilitation, it is important than an ongoing maintenance regime is established. This should include the regular slashing and removal of weeds, revegetation initiatives and the monitoring of water quality.

Austroads Guide to Traffic Engineering Practice – Part 14 – Bicycles, provides guidelines for road authorities, engineers, planners and designers involved in the planning and construction of cycling facilities. It is strongly recommended that this document be used as a key reference when designing shared-use trails in urban areas.

Urban trails provide an excellent opportunity to encourage greater recreational activity amongst the general community. To ensure that this happens, urban trails should be planned to link residential areas with key attractions such as a major reserve, recreation and sport facilities, or a shopping precinct. In addition, the route should be designed to highlight interesting environmental and other attractions that may be within the locality. Urban trails should also, where possible, provide an alternative mode of transport for those wishing to commute to work. Other opportunities to increase the use of the trail should be considered including the installation of public art such as sculptures or murals (see Photo 19).

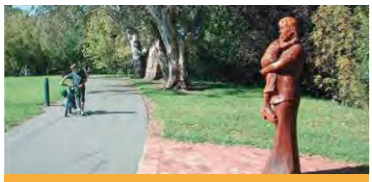


Photo 19: Public art along a shared-use trail

By linking the trail to other initiatives, such as the environmental improvement of an area, it may be possible to broaden the suite of funding opportunities available to the trail. The promotion of associated environmental benefits may also encourage other community groups to get involved in the construction and maintenance of the trails.

7.9 SIGNAGE

As described in Section 7.3, *AS 2156.1 - 2001 Walking Tracks: Classification and Signage* provides a classification system for walking tracks. The Standard also provides guidance on the design, fabrication and use of trail markers, and information signs to be used for walking trails.

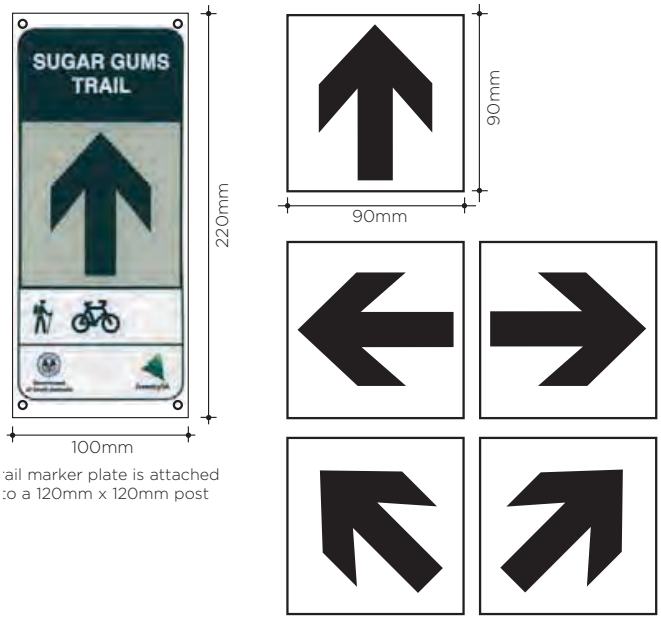
7.9.1 TRAIL MARKERS

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

- Directional arrows should be positioned on a square background of a minimum of 90mm by 90mm.

- Directional arrows should either be at ninety or forty-five degree angles only.
- Trail markers should be designed for durability and should be made of either aluminium alloy (at least 1.6mm thick) or galvanised steel (at least 1mm thick).
- Markers should have a reflective finish to assist with night-time identification and should be of a colour that is clearly visible within the landscape while also considering the effects of weathering (e.g. blue, yellow, orange and red).
- The intervals at which trail markers are placed should be in accordance with trail classification and local site conditions such as vegetation, topography and weather.
- Trail markers should be placed at a consistent height above ground (between 0-2 metres) and should relate to topographical conditions.

It is very important that trail markers are clearly visible from the point of view of the trail user. The dimensions and colours of directional arrows as well as the installation height and frequency of markers should be designed to ensure that trail users are easily able to find their way. This is equally applicable in both urban and rural settings. DEWNR and ForestrySA have adopted a style of trail marker which meets the requirements of AS 2156.1 – 2001 and have presented direction and information based on the Australian Walking Track Grading System while also providing an opportunity to include an organisational logo, trail name and description of user groups (see Photo 20).



ail marker plate is attached
o a 120mm x 120mm post

The other main options used to mark trails – direction arrows should be at either 90° or 45°

Photo 20: ForestrySA trail marker

7.9.2 INFORMATION (INTERPRETATION AND EDUCATION) SIGNS

AS 2156.1 – 2001 also provides guidance on the design of signs which provide information in relation to advisory notes, description of the trail, interpretation of attractions, relevant regulations and warnings. More commonly known as interpretive or education signs (see Section 8.5), information signs are an essential element of trail design and, while they should be individually tailored to suit the particular purpose and geographical circumstances of the trail, should include information about:

- required equipment and safety precautions (e.g. footwear, hat, water supply, etc.)
- the classification of the trail and a description of the experience and fitness level required to enjoy the trail safely
- distance and estimated completion time for the trail (including whether it is one-way or return)
- topographical and climatic conditions that should be considered prior to departure
- availability of facilities such as toilets
- opening and closing times of the trail
- the overall route of the trail (e.g. maps at the trail head and at key locations)
- environmental and cultural sensitivities such as habitat areas and places of Aboriginal significance
- dangerous places, obstacles and other elements along or adjoining the trail
- appropriate trail behaviour.

Photo 21: Interpretive sign

Reference should also be made to *Guidelines for Producing Trail Signage*[9] to assist in preparing and implementing an appropriate signage strategy for

9 Prepared by Greg Drew, Craig Grocke and Peter Cahalan for SA Tourism Commission and Recreation Trails Signage and Interpretation Working Group 2003, updated 2016.

Photo 22: Combined interpretive and trail head sign

Photo 23: Trail marker

a particular trail. The types of signs covered by the document include those intended to provide direction to users, interpretation of the trail and/or surrounding attributes, and to assist with management of the trail. DEWNR and other public land managers have developed their own standards for sign production based on Australian Walking Track Grading System and the IMBA trail difficulty rating system and corporate requirements.

Austroads: Guide to Traffic Engineering Practice Part 14 – Bicycles - also provides nationally agreed specifications for road and off-road bicycle paths. These standards are applicable to an urban context and are particularly relevant where trails intersect road crossings. Consultation with Local or State Authorities will be required in these situations.

7.10 OTHER FACILITIES

It may be necessary to provide various support facilities for trail users. These needs will vary depending on the nature of the trail, the user group(s), and the location of the trail. If possible, it may be preferable to align the trail so that it connects with already existing facilities to avoid duplication and additional costs. Generally these facilities should be located at control points. Importantly, many facilities associated with recreational trails will require the approval of the relevant planning authority (usually the local Council) as well as the land owner.

Parking facilities for cars and horse floats may need to be provided at the trail head. If so, the range of considerations will include:

- the expected volume of traffic likely to be generated at peak periods
- safe and convenient access from the adjoining road network, as well as suitable circulation space
- surface preparation of the car parking area to minimise runoff, dust, and boggy conditions
- landscaping to minimise the visual impact.

Watering points and drinking water may need to be provided, particularly for horse trails. The Friends of the Heysen Trail have constructed a range of water shelters across the 1200 kilometres of the trail particularly where water is limited. It may be necessary to consider providing rainwater tanks, which collect runoff from shelters or other structures. It is important to consider the ongoing maintenance requirements if such facilities are provided to ensure a reliable, all-year water supply. It is also important to note that the *Safe Drinking Water Act 2011* and *Safe Drinking Water Regulations 2012* commenced on 1 March 2013. Small supplies derived from rainwater tanks in low risk premises such as camping grounds and recreational areas are exempt from the regulations but to be safe most agencies provide signs advising that before drinking tank water should be boiled or treated before use.

Any shelters provided should be designed, sited and constructed to minimise their visual impact and minimise ongoing maintenance requirements. The shelter could double as a location for interpretive or directional signage (see Photos 24 and 25).

Photo 24: Trail head with shelter and interpretive information

Photo 25: Shelter and interpretive facility

7.10.1 TOILETS

The provision of toilet facilities should, generally, relate to the anticipated number of users of the trail and its proximity to urban areas or other recreational and tourist attractions. Preferably, toilets should be provided at trail heads, which, in an urban setting, are often ideally located at a larger reserve containing other structured and unstructured recreational facilities (see photo 16). In rural settings, trail heads which are located within townships, settlements, visitor information centres or other tourist attractions provide an opportunity to take advantage of existing toilet facilities. Where new toilet facilities are required, the visual impact of structures, standards for toilet design, access for maintenance, and the proximity of to watercourses should be considered. Approvals for toilets will and their associated waste treatment system will be required from the local Council and/or the SA Health.

http://www.health.sa.gov.au/pehs/publications/code-sanitation.pdf

Photo 26: Toilet facility

7.10.2 CAMPING

Camping facilities may be justified on long distance trails such as the Heysen and Mawson Trails. Development Approval from the local Council may be required for camping areas, particularly if the facility includes buildings and structures. Factors to consider in planning for such facilities will include:

- minimising visual impacts
- the need for level ground that drains well
- the need for vehicular access by maintenance crew or emergency services
- whether the levels of usage or local climatic conditions along the trail justify the provision of huts or shelters
- the potential for vandalism of camping areas and associated facilities
- the need for associated facilities such as toilets, water, fire pits, horse yards, etc. If facilities are not provided at camping areas (particularly water and toilets), this should be clearly stated on any relevant signage, maps or promotional material associated with the trail
- distances between camping areas: typically, distances between camping areas will be determined by the terrain of the trail, availability of existing infrastructure and the location of townships or attractions along the route.

Rest spots and tie up rails may be justified for horse riders. It's preferable to provide such facilities where large numbers of users are anticipated and to deter tying horses to trees. Provide a space that will adequately cater for anticipated demand otherwise adjoining areas of vegetation could be used and damaged as a result of overflow.

In some circumstances it may be necessary to install physical structures to regulate access to and along recreational trails. This could include situations where the trail travels through farming land on which stock is grazed or to prevent inappropriate access by motorised vehicles. Measures to prevent undesirable access could include the installation of stiles, step-overs, bollards or gates.

7.10.3 PLANT DISEASES AND WEEDS

Areas that are infected by diseases such as *Phytophthora cinnamoni (PC)* should be managed and monitored by avoiding contact with and transfer of affected soils and by implementing hygiene programs to prevent its introduction and spreading.

It's always preferable to locate trails away from affected areas. If this isn't possible, introduce measures such as the use of boardwalks or modified trail surfaces, such as rock and crushed gravel, to prevent soil transfer. It may also be necessary to install hygiene stations for the washing of shoes, bikes and horse hooves at key locations such as entry and exit points (see Photo 27). Provide information for trail users on adopting appropriate hygiene practices at key locations using the Department for Environment and Heritage PC Management Guidelines[10].

10 www.environment.sa.gov.au/biodiversity/pdfs/pc_management_guidelines.pdf

Photo 27: Hygiene station

While Phylloxera is not found in South Australia, a precautionar approach should be adopted and trails should not pass through areas which may be susceptible to the disease such as vineyards.

Because weeds thrive in disturbed soil, measures should be taken during and following the construction phase to prevent infestation. A vegetation restoration and weed removal and management plan should be prepared and implemented.

This might address issues such as:

- monitoring programs, possibly using photo points
- education of the trail builders on weed identification and removal techniques
- weekly to monthly follow up procedures to eradicate weeds
- Revegetation practices to out compete weeds and add to trail amenity.

It may also be necessary to provide information to trail users on appropriate hygiene practices to prevent the spread of weeds.

8

MANAGEMENT AND MAINTENANCE

8.1 INTRODUCTION

Ideally, during (or even before) the construction program, a Trail Management Plan should be prepared, incorporating elements covered in this chapter as well as broader land management policies and trail management issues. Such a document – as with all management plans – should be both flexible and responsive to change, and yet set a firm guiding outline for future directions and priorities. Trails which don't have a Management Plan suffer from decisions taken on the run, out of context or as knee-jerk responses to critical situations.

Such a plan should include the following elements as a minimum:

- philosophical background to trail development
- a statement of guiding principles (trail classification, category, etc.)
- trail construction and maintenance 'standards'
- target user groups and user experiences
- risk management policy
- hazard inspection timetable
- promotional and interpretation policy
- group usage policy and guidelines
- annual trail maintenance program
- clarification of management roles and responsibilities
- promotional mapping and brochures: guiding principles
- bushfire action plan and procedures
- Emergency evacuation procedures.

A timetable and process for reviewing and updating this Plan should be set, with annual reviews and three (or five) year updates recommended.

The Plan must outline a professional program of management and must clearly define who is responsible for what. In many cases trail projects involve a number of land managers and it is therefore crucial that all organisations know and agree what their role and responsibility is.

8.2 MEMORANDUM OF UNDERSTANDING AND PARTNERSHIP AGREEMENTS

Trail projects inevitably involve a range of partners. These could include:

- Local Government (if not already the primary land manager)
- State or Federal Government Departments
- conservation and environmental groups: both state and local
- other user groups or potential user groups, including 'peak bodies'
- education institutions, including local schools or universities
- training agencies (Green Army, etc.)
- volunteer groups (Service clubs, Green Corps, Conservation Volunteers Australia, Seniors groups, 'Friends of Trails' groups etc.)
- health agencies, including the Heart Foundation.

With so many potential partners it is crucial to establish clearly the different roles and responsibilities involved in the trail. An agreement should be drafted which identifies:

- who is legally responsible for the trail assets
- the tasks likely to be involved in the future management of the trail
- the capabilities and capacities of each group (specific skills, construction assistance, administration time, fund management, etc.)
- constraints and limitations involved (lack of skills, resource shortages, statutory responsibilities, etc.)
- roles (such as tool manager; maintenance coordinator; brochure distributor, etc.)
- how 'gaps' are going to be filled.

8.3 TRAIL MAINTENANCE AND RISK ASSESSMENT SCHEDULES

Ongoing trail maintenance is a crucial component of an effective management program. Depending on a swathe of conditions such as slope, weather, soil types, construction standards and usage patterns, trail maintenance cost can be significant. Trails are also subject to natural event such as floods, fire which can destroy trails or infrastructure. Government agencies are reluctant to take on any more responsibility for new assets and often look to rationalising assets. Community organizations that wish to take on trails need to consider the financial risks associated with developing trails.

Future maintenance demands can be reduced however through considered planning, quality construction and an effective management plan incorporating a regular maintenance program. *AS 2156.1-2001 Walking Tracks – Classification and Signage* provides guidelines for the maintenance of walking trails by specifying inspection intervals based on each classification.

Maintenance on trails can generally be divided between regular inspections and simple repairs, largely a one (or two) person job, and (say) twice yearly programs undertaking larger jobs such as significant erosion repairs or weed control. The former task is ideally suited to well-trained and regular volunteer programs, while the latter can either be a volunteer under skilled supervision, or a job for the land manager's staff or contractors.

On many, if not most trails, regrowth vegetation, damage to signage and accumulation of leaf litter and debris are likely to be the most common maintenance activities.

Providing these issues are attended to early they are largely labour intensive rather than capital expensive.

Resourcing such an ongoing program is crucial, and funds (or volunteers) will be required on an ongoing basis to enable this essential maintenance work to take place. This matter should be addressed in the overall structure of the trail manager's budget and its recurrent funding.

Crucial in the ongoing management program will be the Hazard Inspection process. Not only will this play an obvious part in defining maintenance activities and/or management decisions, it will be vital in dealing with any liability claim which may arise in the future. The identification of hazards, the controls in place and treatments (risk management audit) is an integral process to trail management. Annual reviews are desirable.

Hazard/Risk Inspection should be linked to the trail classification recognising the abilities and expectations of the of the users of the trail e.g. a class one walking trail will require a higher duty of care that a class four trail.

A typical maintenance schedule might include:

TASK	FREQUENCY
Checking trail head and other facilities for damage or vandalism	Monthly if possible
Checking all signage and trail marking and replacing any missing	Two monthly at a minimum or damaged signs
Clearing and/or repairing erosion control devices and other	Three monthly erosion/water issues (monthly if possible)
Checking and clearing all trail surfaces, especially regrowth	Annually, in spring (or when vegetation dry enough) at least
Pruning trail-side and overhanging vegetation	Annually
Checking major structures, such as bridges, boardwalks and walkways	Annually
Arranging a regular Hazard Inspection Report	Annually
Checking currency and distribution of trail brochure and updating when necessary	Annually

Annual maintenance costs can be kept at a minimum by ensuring that inspection and works programs stay on schedule.

Risk management assessment (in accordance with *AS 4360-2004 Risk Management*) should be applied to the wider range of trail risks including asset management, human resources, financial resources, OHS, communication, and contract management.

8.4 CONFLICT MANAGEMENT

Most on-trail conflict develops when information is inadequate. Sometimes conflict can occur between legitimate users, while on other occasions it may be between the legitimate user group or groups and 'illegal' users. In both cases, information and education are the key tools for trail managers.

Single-use trails should be clearly signposted as such at all access points. Brochures, maps and media material should also reinforce the message that this is a single-use trail. It is extremely helpful to explain why this is the case. For example, it may be that the trail passes through land that has limitations on access due to its tenure, or the nature of the environment or the trail design itself may preclude some users.

The design of the trail can also assist in managing unwanted user groups. Bear in mind that conflict may occur with users from beyond the common trail user groups such as trail bikes or four-wheel drives. Seek support from trail partners in managing these issues, and use the media to publicise the impacts such usage is having.

Shared-use trails should have built-in the provision of adequate information during the planning phase. Common guidelines should be developed for 'who gives way to whom' on shared use trails. Signage and information reinforcing these rules of trail etiquette should be prominent on the trail and in any public information.

If conflict develops, it is worth getting the different groups together to talk about their issues. It may be that the conflict is identifying some weakness in the trail design. Each group should help find potential solutions.

8.5 EDUCATION AND INTERPRETATION

Trails present outstanding opportunities for education and interpretation. People involved in enjoyable choice-driven activities are open to learning, or at least to being informed.

It is important to review the philosophical under-pinnings to the trail: who is it there for and what kind of experience is it seeking to provide? This will help define what level of education and interpretation is appropriate on the trail. For example, a mountain bike trail built primarily as a fun (recreational) experience may not warrant the same level or style of education and interpretation as a more gentle trail (perhaps a walk trail) passing through a stand of high-value native forest. Who is the market and what will they absorb?

To separate education from interpretation it could, perhaps, be said that education is about supplying the information which needs to get across, while interpretation is about providing information which is desirable to share. Educational messages could include:

- user etiquette or shared-use information
- minimal impact messages: both general and trail-specific
- specific local land management issues
- other specific guidelines for trail behaviour.

Education is about the user's interaction with and impact on the trail, its surrounds and the other users. Be clear, be direct, make no assumptions, but do be tactful. Use signage for short sharp clear statements (use symbols where possible) and use brochures or panels for more complex messages that take time to read and absorb. Generally, keep it simple (see Photo 28).

Photo 28: Education sign

Interpretation, on the other hand, often takes a quite different tack, seeking to engage and entertain in addition to informing. But what is interpretation? The definition provided by Freeman Tilden is useful[11]:

INTERPRETATION FORGES EMOTIONAL AND INTELLECTUAL CONNECTIONS BETWEEN THE INTERESTS OF THE AUDIENCE AND THE INHERENT MEANINGS IN THE RESOURCE.

And no longer should interpretation be considered an optional add-on. Interpretation is increasingly seen as an integral part of nature-based experiences:

NO LONGER ARE VISITORS CONTENT WITH JUST 'SEEING' THE SIGHTS. 21ST CENTURY "TOURISTS" WANT INVOLVEMENT. THEY WANT TO EXPERIENCE AND KNOW THE MEANINGS OF WHAT THEY ARE SEEING[12].

11 Freeman Tilden, Interpreting Our Heritage, 1957
12 Innovation in Interpretation, Tourism Queensland, 2000

Interpretation reveals the meanings and relationships of the cultural and natural heritage to visitors (trail users), through first hand experiences with objects, artefacts, landscapes, and sites. Interpretation tells the tales of the land, past activities and land uses, its people, animals and plants, and in the telling, helps people form connections with both the place itself and its heritage.

Interpretation can take the form of static panels, brochures, guide books, audio stories or guided experiences. Most trail projects focus on the 'classic' forms of delivering stories: panels, brochures and guide books. Delivering successful interpretation is quite an art form and specific skills are required. The siting of interpretive signs and structures is very important also: inappropriate siting can detract from the very thing that is being highlighted.

8.6 MONITORING AND EVALUATION

Trails change with time as do trail users experiences and expectations. Some changes to the physical trail are obvious, and will be noticed either by users or as part of the regular maintenance program. Some are less obvious and may not be noticed until they become an issue. The process of change can be quite subtle and, given that it can occur over extended time periods, can be hard to notice.

Through effective monitoring and evaluation the trail manager may consider changing the classification of the trail based on user comment and demand.

Keeping accurate records is an important component of any monitoring program. This will include talking to trail users. They will know what problems are developing and where. Mechanisms to encourage feedback from trail users should be developed.

This could include:

- the erection of signs encouraging feedback via telephone numbers and email addresses
- a website or social media where users can log on and report issues
- phone numbers on brochures and maps.

It is also important to evaluate a trail project to determine the impact that the trail is having on the surrounding environment, its neighbours and on the surrounding community. Impacts might be positive (reduction in unmanaged access into fragile areas; heightened awareness of ecological issues, etc.) or they might be negative (increased vandalism; increased numbers of users above the capacity of the original trail design, etc.).

Ideally, a program of monitoring and evaluation should be built into the planning phase for the trail. Many grant funding agencies will respond positively to the inclusion of such a program as it gives them reassurance that the future is of the trail will be considered and reported on.

8.7 MARKETING AND PROMOTION

Trail users are likely to come from two key groups: those living locally, who can access the trail directly or almost directly from home, and those living further a-field (usually in the city) who will travel to the area to use the trail (or to use the trail as part of a broader visiting experience).

If the majority of trail users are likely to come from beyond the immediate community, the following steps should be considered to encourage greater visitation:

- Develop a promotional brochure, guide, map for the trail (see Section 8.8).
- Ensure the new promotional material (brochure and/or map) is distributed to all major visitor information centres in the region.
- Deliver brochures to all clubs, groups and other relevant activity associations.
- Develop a list of all outdoor related magazines and newsletters and attempting to have each carry at least one story about the new trail. (Local media outlets should be approached regularly with press releases too).
- Ensure that the trail head(s) is/are clearly signposted and marked on relevant maps, so that users coming in from outlying areas can find it/them easily.
- Organise an event or activity which may attract the attention of the major State daily newspaper, and arrange for a story and photo shoot, ideally aimed at the Saturday magazine.
- Ensure that organised events are publicised in any relevant calendar(s) of outdoor activities.
- Plan an 'opening' event for when significant sections of trail construction are complete; having someone high profile officiate, and ensuring that a good press release goes out.

If, on the other hand, trail users are expected to be mainly local people, the following list of potential actions (in addition to, or instead of those above) should be considered:

- Deliver a copy of a trail brochure to all households within a comfortable distance from any point of the trail.
- Ensure the brochure is widely distributed to local relevant retail outlets.
- Prepare a press release for local papers at least once a year relating to the trail, and encourage local papers to come out and take a photograph. Releases could relate to the construction program, to an annual maintenance weekend or busy bee, to an organised group event on the trails, or to any other activity or event relating to the trails.
- Organise an annual 'event' on the trail – perhaps a complete ride or walk of the route – and publicise it locally through local papers and radio.
- Publicise the scheduled maintenance activities.
- Form a 'Friends of...' group, and undertake maintenance activities and fun walks/rides, especially for young people and new residents.

If tourists are likely to be a key user group, local accommodation outlets and those agencies promoting general visitation to the area should be involved in the promotion of the trail. The trail should be promoted as an integral part of the regional visitor experience, and should be woven into those other products which attract people to the area. Developing this integrated approach to marketing may well return greater benefits than any means of promoting the trail itself.

8.8 PREPARING PROMOTIONAL MATERIAL AND MAPS

Promotional material such as brochures and maps should be professionally prepared and designed, and should be printed in an attractive format, pleasing to the eye yet still simple to read. Generally they should have most, if not all, of the following features:

- maps which are clear and concise with distances, topographical features, scale bar, north point, legend, contours and other annotations
- trail notes, describing key points along the way and relating them to distances and directions
- background information about the trail, and the history of the area
- educational information about trail usage, safety and etiquette
- interpretive information about culture, history, geography and environmental matters
- information about management and maintenance, including phone numbers for reporting any trail related matters
- emergency contact details and directions
- clear indication of routes to and from the trail head and parking areas, and guidance on the use of this area
- trail code of practice.

Written material should be aimed at a 12 year old level of education and only cover one concept per sentence. In addition, spelling, graphics and images should always be double-checked prior to going to print. When preparing promotional material, it is worthwhile reviewing existing brochures and maps from visitor information centres to identify their strengths and weaknesses.

Promotional material and maps should be produced at either A4 or A3, printed both sides, and folded to DL (standard envelope) size. They should be produced in at least two colours and professionally printed. Per item printing costs reduce dramatically as print runs grow larger (printing 2,000 to 5,000 usually ensures a reasonably low unit cost) but trails do change and brochures need to be updated: so it is important not to print too many and having to throw out a substantial number of left-overs. Where available, include an electronic copy which can be downloaded from a home computer.

In summary, promotional material and maps must be professionally prepared (see Appendix F for an example of a promotional brochure prepared for the Riesling Trail). They should be articulate, enjoyable to read, easy to follow, informative, educational and should inspire confidence in being able to follow the trail route. Promotional material is often the primary point of contact with trail users and it should be at least as good as the trail itself. There is no more certain way of condemning a trail to an uncertain future than by producing a sub-standard brochure or map.

9

CASE STUDIES

9.1 INTRODUCTION

This chapter contains three case studies which seek to demonstrate some of the challenges involved in the planning, construction and management of recreational trails. The first case study *'Flinders Ranges by Bike'* has been written by Craig Grocke from the South Australian Tourism Commission and explains the driving force behind the trail and explains some of the experiences and lessons that were learnt during the planning phase of this exciting project.

The second case study was written by Julie Fiedler from Horse SA and describes the lengthy and often frustrating process involved in the planning and construction of the Tom Roberts Horse Trail. The third case study was prepared by Anthea Shem of the Office for Recreation & Sport. It describes the process involved in converting an un-made road into a recreational trail.

9.2 CASE STUDY 1 : FLINDERS RANGES BY BIKE

BACKGROUND

For visitors to South Australia, the Flinders Ranges is an iconic destination that has a landscape unique from other destinations in Australia. This point of differentiation is normally appreciated by day walks and camping expeditions by four wheel drive groups but rarely by the soft adventure market who seek a level of comfort, service or equipment support.

Photo 29: The ABC and Heysen Range
(Photo courtesy of SA Tourism Commission)

With local pastoralists facing a decline in income from wool and growing pressure to reduce the impact of grazing in areas with high conservation value, the need to diversify into 'sustainable tourism' is a key driver behind the *'Flinders Ranges by Bike'* trail.

Tourism is not new to the area, however there was a need to tap into new markets and create better use of farm assets, such as renovated shearer's quarters and homesteads, to add value to traditional farm gate activities. Diversifying local tourism product also helps to disperse short-term and day visitors from high volume and high impact locations to multi-day, low impact locations across a broader geographical area. This was one strategy for developing a more sustainable tourism industry through regional trail development.

The South Australian Tourism Commission (SATC) was a project sponsor providing grant funding and human resources to help facilitate the development of the business opportunity, which includes project feasibility, infrastructure and product development support, and targeted market research on soft adventure tourism. For the SATC, this new trail experience could be packaged and delivered by a local operator, from bike hire, accommodation, meals, logistical support and destination transport, all which had appeal for the inbound travel trade who had clients interested in active holidays and discovering unique parts of Australia.

DESCRIPTION OF THE TRAIL

The *'Flinders Ranges by Bike'* trail is a 200km loop trail for mountain bikes and is located in the Central Flinders Ranges, approximately five hours drive north of Adelaide. The trail experience is four days and four nights and captures the grand landscapes, big sky and peaceful isolation of the Flinders Ranges.

The trail route uses old pastoral station tracks that traverse the Flinders Ranges National Park and five pastoral properties, and a section of the Mawson Trail to link accommodation, attractions and visitor services. The geology, vegetation, scenic views and the trail condition vary from one kilometre to another just like the points of accommodation. Nothing is ever the same on this off-road journey.

Photo 30: Mawson Trail at Rawnsley Park
(Photo courtesy of SA Tourism Commission)

BENEFITS AND CHALLENGES

For the landowners and land managers, forming the trail was a business opportunity, and privately managed and guided mountain bike trails could offer the middle to mature aged soft adventure/discoverer market a more catered trail experience with a degree of privacy and exclusivity. The project is effectively a public/private partnership created to build and manage trails by developing them as a sustainable tourism product. The fees charged to use the trail cover the management, maintenance and marketing of the trail and associated trail infrastructure. This is essential, as while it may be easy to get capital funding for developing new trails, the ongoing maintenance costs become the biggest issue and potential liability for the land manager.

The primary challenge in developing the trail was gaining a commitment from each landowner to allow trail access and be part of an Incorporated Association to manage the trail and visitors who use it. Most pastoralists tend to operate as individual small businesses and the idea of working together in a cooperative arrangement creates challenges in defining how the business operates, such as:

- how fees are charged and disbursements are made for providing services to visitors
- agreeing on the style of trail markers and location of trail infrastructure
- developing a logo and brand or image for the trail
- formulating marketing and product development strategies
- deciding on whether to allow 'guided' versus 'self guided' visitors
- sorting out matters such as public liability insurance
- setting up a constitution for members of the association, particularly voting rights and membership categories.

STEPS TAKEN TO GET STARTED

In establishing the trail, the first important step after agreeing in principle to the concept was finding a route that has appeal, safe access, some challenges and forms a loop trail to improve the logistics of travel operations. Basically they needed to have the physical links (a defined route) as well and a suitable topography to make it worth driving five hours to use the trail.

Photo 31: Reedy Creek Track, Willow Springs
(Photo courtesy of SA Tourism Commission)

The second challenge was agreeing to a business structure with a business plan that served the objectives of each stakeholder. This includes a structure to best deal with marketing, visitor management, asset management and the one matter of most concern: public liability insurance. Time was spent drafting a constitution, which included the organisation's objectives, membership, meeting procedures and reporting requirements. It was during this process that it was agreed to begin using a local tour operator to provide a guided experience, at least until the business had matured and ironed out any operational matters. This also gave landholders confidence that visitors were being looked after and not getting lost: something that could be time absorbing in a semi-remote area like the Flinders Ranges.

The third important step was developing a name and brand for the cycle experience. Here it was important to not only think about the type of experience and the target market, but also how it would complement other local tourism products and regional marketing collateral.

The fourth step was the process of developing product information (maps, guidebooks, website, etc), which required research, collation of ideas, discussion on the right balance of 'content' and 'branding' and eventually investment in the design and production of the material. Along side this was the infrastructure development, primarily route markers and gates at boundary fences. Secondary infrastructure such as shelters and water tanks would be considered 'down the track' once the business was established and proven viable.

THINGS TO REMEMBER IN DEVELOPING A TRAIL FOR CYCLE TOURISM

SOFT ADVENTURE MARKET

When servicing the 'soft adventure' market, having quality accommodation, good logistical support, modern and well maintained equipment, and concise visitor information from a central query/ booking point is important in capturing the target market. The customer purchase process in particular has to be simple and responsive because the Association knew from research that they were dealing with an 'online consumer' who doesn't want to fuss around with finding answers to simple questions.

VISITOR MANAGEMENT

The landholders involved with the *'Flinders Ranges By Bike'* were realistic that the trail is one minor farm activity and most of their time is still spent managing other farm activities. So the business operation had to be structured to operate around the needs of the landowner's primary business as well as considering the needs of visitors. This can mean closing the trail when shearing occurs, or during summer when heat exhaustion is a serious visitor risk. It also means educating visitors about leaving gates as they are found and not polluting dams or springs which are essential watering points for stock and wildlife. While tourists need to be managed they can also be an asset in helping to report injured stock or a broken pump at a water hole.

The primary concern for trail users is route markers and the ease of navigation without having to pull out and study a map. This is where the design and location of route markers is critical to way finding and is the first point of criticism on any trail. Following Australian Standards will help to maintain a consistent and nationally agreed sign system and address risk management requirements. It is also a good suggestion to systematically number each marker post, in numerical order, to help sequential navigation but also as a geographical reference point if help is needed.

MARKETING, PROMOTION AND PACKAGING

'Flinders Ranges by Bike' is a soft adventure trail experience that you purchase like a tour package. One fee covers all costs and having a clearly defined 'package' that is consistent and meets the expectations created by marketing activities is very important.

In terms of marketing, the trail itself is not what should be marketed but rather the experience. Of course visitors still want to know how long, how hard, how well marked the trail is to qualify if they have the skill and fitness level to complete the trail.

However, aside from a cycling challenge, visitors want a variety of experiences and in the case of *'Flinders Ranges by Bike'*, it's the views, staying on different properties, wondering through a big ancient landscape, socializing with friends and relaxing in comfort at the end of the day, that has the greatest appeal.

The trail is a link between destination points and the mountain bike is the 'vehicle' for the experience. Together they offer an active holiday with a sense of adventure and achievement. Something visitors will promote by word of mouth when they go home. This will always be the best promotional tool and the primary reason for having a guidebook because it helps the visitor communicate their experience with friends when they get home, and they are the next potential customers to focus on.

Research into 'soft adventure' suggests two clear markets for the *'Flinders Ranges by Bike'* experience. The first are the 'mainstream' visitors who occasionally cycle and have a good level of fitness as well as a sense of adventure. However, they prefer to be guided in semi-remote areas that they are not familiar with. This market is looking to hire a bike or use an operator that provides equipment and like the idea of the logistics being sorted out for them. They are the instant 'pay and play' consumer who doesn't want to bother about trip planning and being self-sufficient. They tend to book an experience using a reputable guide and often the quality of the guide (a wards, accreditation and recommendations) will drive the final decision to book or not.

The second market is 'enthusiasts' who are keen cyclists, very fit, and have and prefer to bring all their own equipment. They appreciate logistical support but they don't want to be guided ever step of the way because a sense of freedom and discovery is a very important part of their experience. Having their gear transported, food supplied and maps provided, is often welcomed but they are seeking some free and independent travel and prefer to just participate with immediate friends.

The prime difference in these two market segments is the level of guiding preferred by participants. This is very important to recognize when marketing to each segment.

Information in marketing material needs to clearly define products and packages to suit each of these two market segments.

9.3 CASE STUDY 2 : TOM ROBERTS HORSE TRAIL

This trail network, unique in South Australia, provides a community asset for horse riders in the City of Onkaparinga and surrounding districts. Fostered by the Horse Owners of the Southern Mount Lofty Ranges, Horse SA now also partners this project. The first section was opened in 1993 at Blackwood Hill Reserve, with the Cherry Gardens section a few months later. Community volunteers have provided, and continue to, provide many hours of service to this project.

BACKGROUND

In 1993 the City of Onkaparinga gave in-principle approval to the implementation of the Tom Roberts Horse Trail Network. The Network was one of the key projects to emerge from both 'Planning Study No 4 – Equestrian Facilities Study 1985' and the efforts of the Hills Horse Action Group. This group first met in 1983 and later became the Happy Valley Horse Owners Association Inc in 1989 (more recently changing their name to the Horse Owners Association of the Southern Mount Lofty Ranges Inc.).

The network was an attempt to formalise existing routes used by horse riders and their horses with the aim of improving safety for horse riders, motorists, cyclists and pedestrians, and to encourage travelling on delineated routes.

The network plan was developed by the Happy Valley Horse Owners Association (HVHOA) in conjunction with the then Department of Recreation and Sport using principles and practices employed in the development of the Heysen and Mawson Trails. By and large, the Network followed road reserves and, in some cases, public reserves.

The Network is intended to provide a variety of loop routes of different duration as well as access to key nodes such as pony clubs and with the ultimate aim of providing a route linking Belair National Park to Kuitpo Forest.

At the time the network was approved Council was aware that there were issues which would require further investigation in relation to legal rights of access to parts of the road reserve, to reserves generally and the associated environmental impact. However, Council agreed to proceed with the implementation of the plan on those trails which were relatively easy to establish in the first instance.

To date some 37 km of the original network have been cleared and marked by volunteers of the HVHOA in conjunction with Council, with the estimated remaining length being approximately 65 km.

The Tom Roberts Horse Trail is now incorporated in the City of Onkaparinga Trails Network Strategy, the Belair National Park Management Plan and the draft Sturt Gorge Recreation Park Management Plan. In addition, promotional material has been prepared including brochures and trail head signs. An example of a trail head sign, which includes some historical information as well as a code of practice is included on page 67.

ACCESS SOLUTIONS

To bring the trail to its current near-completion status, Horse SA (which was established by Horse Owners of the Southern Mt Lofty Ranges to continue a range of projects in a more formal way) has been working with the City of Onkaparinga, through the Horse Initiatives Group, to continue to roll out the Tom Roberts Horse Trail to completion.

The following examples demonstrate a range of access solutions which have been employed.

TRAIL SECTION	DESCRIPTOR	SOLUTION
Belair National Park	Secure ongoing horse	**Participate in a number of public consultation activities** and processes relating to recreational activities taking place within the recreational reserve
Corner Cherry Gardens and Orchard Roads, Cherry Gardens	Safer passage for trail users required on a bend in the road	Discussions with landholder resulted in **"setting back" the adjacent property** fence line so that trail users can receive protection as they are now off the main carriage-way. **Private land use agreement** was required
Lovick Road, Clarendon	Access required to link Onkaparinga Hills with Clarendon	Very steep unmade road reserve is the only option. To ensure sustainability, trail **corridor is closed from June to October** each year (winter period). Signage indicating that experienced riders only to attempt trail
Weymouth Road, Coromandel East	Access required to link on area of Cherry Gardens with Coromandel East	Steep unmade road reserve, un-fenced, with creek at the bottom. **Signage** indicates that only experienced riders are to use this section, and that the trail corridor is closed when wet (sustainability). **Annual works** need to take place to keep blackberry infestation in control to ensure access along riparian zone
Mundoo Land, Adelaide Hills Council	Steep corridor, under power lines. High erosion site	This site, which was bulldozed as a 20m wide zone through native vegetation for powerline installation purposes, is located on a steep slope, in a high rainfall area. The site proved to be very prone to erosion when used as a trail and closure on environmental grounds threatened the trail network. The site is now managed (and greatly enhanced) through the **installation of infrastructure**, being horse friendly steps, which have allowed the vegetation to grow back thickly either side
Urban horse trail corridor, Happy Valley (City of Onkaparinga)	Encroaching housing had removed a range of horse riding opportunities, coupled with a change in by-laws which prohibited horse riding on Council land	A number of processes were used to engage Council and horse riders in identifying trail corridor opportunities. A special **"Horse Access Working Party"** made up of Council Staff, residents, community group representatives and horse riders, with support from a recreation consulting firm was established. Significant achievements were made to **"retrofit"** land available under a row of major power line towers, linked with local parks and a public horse riding area to produce an urban horse trail experience
Glory Road, Peter's Creek, City of Onkaparinga	Unmade road reserve had an exit point side-on to a narrow bridge	Neighbouring landholders wished to purchase a nearby unmade road reserve. Council negotiated a price adjustment in **exchange** for use of a narrow strip of land to ensure that safe access for users onto Peters Creek Road could be obtained
Land, off Piggot Range Road, Clarendon	Safe passage for riders required off a bend	Considerable public processes, including **professional mediation** between community groups, were undertaken to achieve this excellent result. The native vegetation block was scheduled for council disposal. To ensure ongoing access around the boundary, the determination was that a **strip of land was excised** from the block and a **legal access corridor** created, to adjoin the unmade road reserve on the opposite boundary. Vegetation surveys determined where a new fence should be erected and now a new boundary trail exists
Woodcroft Precinct, City of Onkaparinga	Retrofit horse access trails into suburban housing estates	A consultant has developed a "**checklist**" for horse trail recommendation to Council. This has proven to be a most successful process, with the last one providing no objections from residents

TOM ROBERTS HORSE TRAIL

TRAILS SA

THE TOM ROBERTS HORSE TRAIL

This trail network, unique in SA, provides a community asset for horse riders in the City of Onkaparinga and surrounding districts. Fostered by the Horse Owners of the Southern Mount Lofty Ranges, Horse SA now also partners this project. The first section was opened in 1993 at Blackwood Hill Reserve, with the Cherry Gardens section a few months later.

Community volunteers have, and continue to, provide many hours of service to this project. Support has also been provided through the many project partners acknowledged.

TOM ROBERTS OAM

Tom Roberts, born in 1900 in India, became the youngest certified riding instructor ever in the British Army. He migrated to South Australia in 1925. He joined the SA Police, then served in the AIF in the Middle East in World War II.

On return to SA he was appointed riding instructor for the SA Mounted Police. He founded the SA Dressage Club (with Miss Dorothy Mansom in 1959) and instructed and judged nationally. He is remembered by the horse community for laying the foundation for good horsemanship through his instruction and a love for horses and strong affinity for riders.

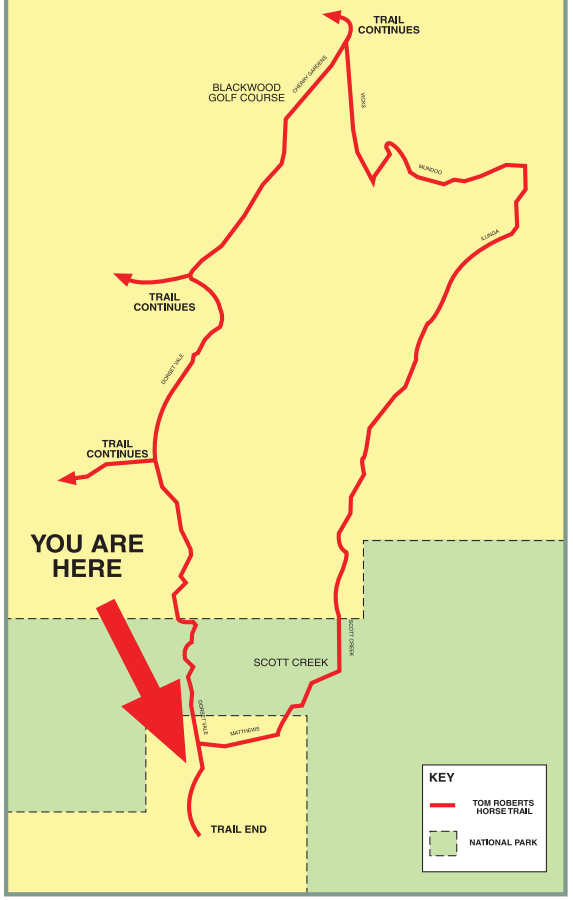
Tom is the author of four books about horses and training, sold world wide. In 1982 he was awarded the OAM for services to equestrian sport. Tom died in 1989 and the trail which bears his name is a tribute to the respect and affection in which his memory is held.

TRAIL RIDERS CODE OF PRACTICE

1. Ride only on designated trails
2. Taking short cuts or forming new trails is not friendly to the environment
3. When muddy or eroded avoid using trails
4. Comply with signage
5. Respect the rights of other trail users
6. Politely indicate to other trail users how to pass
7. Ride appropriately to suit the terrain, visibility and possible interaction with other trail users
8. Minimise impact on plants and animals by staying on the trail
9. Remove all rubbish, manure and excess feed from the float parking areas
10. Let others know of this Code

Keep trails open by setting a good example of environmentally sound and socially responsible horse riding. The Australian Road Rules apply to horse riders on roadways.

TRAIL MAP



WARNING

HORSE RIDERS AND OTHER RECREATIONAL TRAIL USERS UTILISE THIS FACILITY AT THEIR OWN RISK. HORSE RIDING INVOLVES RISKS AND SHOULD BE UNDERTAKEN WITH CARE AND REGARD FOR OTHER PERSONS AND THE ENVIRONMENT AT ALL TIMES. THE TRAIL IS SUBJECT TO NATURAL FORCES, VARYING WEATHER AND CONDITIONS. IT IS HIGHLY RECOMMENDED TO WEAR AUSTRALIAN STANDARDS APPROVED HORSE RIDING HELMETS AND BRIGHT, REFLECTIVE CLOTHING.

TOM ROBERTS HORSE TRAIL PROJECT PARTNERS

City of Onkaparinga

RECREATION & SPORT

PH. 08 8294 2460
www.horsesa.asn.au

HORSE OWNERS OF THE SOUTHERN MOUNT LOFTY RANGES

Bundaberg BUSH FUND

ENQUIRIES
CITY OF ONKAPARINGA
PH. 8384 0666

Figure 16: Trail Head sign for the Tom Roberts Horse Trail

9.4 CASE STUDY 3 : UNMADE ROAD RESERVES AS TRAIL CORRIDORS

Unmade road reserves are linear corridors that are not developed or formed. They traverse South Australia providing connections through the landscape. Many unmade road reserves have been incorporated into recreational trails providing strategic linkages along the trail or as connectors/spur trails. Some of these trails have been formalised while others have developed informally over time or are known only to local users.

Unmade road reserves have other values which need to be considered. These include biodiversity and remnant vegetation protection, watercourses, cultural (Indigenous and European) or use for services such as powerlines, cables, farmer access and buffer zones between differing land uses. With increasing pressure from peri-urban and rural development, the value of unmade roads has been enhanced.

Formalised (marked and signed) trails can offer unmade road reserves a level of management that they may not have previously experienced, including defined trail 'edges', directing users along a designated pathway and sustainable management treatments for watercourses. Entry and exit systems for proposed users, revegetation programs and maintenance schedules provide management structures aiding risk mitigation processes for Councils and adjacent landowners.

BACKGROUND

Unmade road reserves have the following characteristics:

- They are linear corridors that are not developed or formed and thus do not have a defined carriageway or verge. Other land parcels, with independent ownership, border them.
- They are public roads managed by Local Government authorities via the Local Government Act 1999.
- Local Councils are responsible for the care and control of road reserves in the absence of any agreement to the contrary.
- Local Councils manage many unmade road reserves through lease arrangements with neighbouring landowners.
- Some local Councils have Road Reserve Management Plans. Unmade road reserves may be referenced in other Council documents, including Recreation, Sport and Open Space Plans, Council Trail Strategies and Native Vegetation surveys.
- Councils can manage road reserves in a number of ways in accordance with a number of Acts, which impinge on them. These acts are available at www.parliament.sa.gov.au.

ACT	MANAGEMENT SPECIFICS FOR ROAD RESERVES
Local Government Act 1999	For the care and responsibility of road reserves, the granting of authorisations and permits, and making of by laws
Roads (Opening & Closing) Act 1991	For the closing and opening of roads
Road Traffic Act 1961	For the management of traffic on road reserves
Summary Offences Act 1953	For the management of traffic on roads in special situations
Country Fires Act 1989	For the management of fires on roads
Native Vegetation Act 1991	For the management of native vegetation on road reserves

TRAIL PLANNING

When investigating trail route options, it will be important to identify the location of road reserves with the aid of a topographical map with a cadastre overlay.

A site visit should be undertaken to provide a visual assessment of the corridor and to determine its level of opportunity for inclusion in the trail proposal. Alternative route options should also be identified.

During a site visit, the following aspects should be considered:

- Is the corridor single or double fenced?
- What is the existing use (grazing, thoroughfare for tractors, etc)?
- Is the terrain suitable for the intended use?
- What is the condition of the land in winter and summer?
- Are there natural obstacles interfering with the line of sight?
- Is there a weed management issue?
- If there is a watercourse, is there a natural crossing or will a ford or other infrastructure be required?

- What is the vegetation mix i.e. native/exotic?
- Are there possible encroachments? Boundaries may be 'fuzzy' until surveyed.
- What are the budget implications? Can the trail be constructed in stages?

A meeting with local Council Officers should be arranged to discuss the unmade road reserve and its options and implications for inclusion in a trail proposal.

Council issues may include:

- existing leases or permits on the reserve
- native Vegetation Surveys. (If a trail proposal may have a negative impact on native vegetation, there will be a need to demonstrate how the impacts will be managed)
- rare, threatened or endangered species that may be present in the locality
- indigenous and European heritage
- development proposals for the area
- how the proposal fits with existing recreational, open space and other strategic plans at a local, regional and state level
- management strategy for the corridor if utilised, and responsibilities short and long term
- cost to Council, i.e. human and financial resources.

Following the initial planning phase, it will be necessary for both the Trail Manager(s) and Council Officer(s) to complete detailed investigations and document the findings, seek approvals from Local and State Authorities and consult with the community. This will involve numerous site visits and meetings. Once the necessary approvals have been obtained, the on-ground works will need to be implemented.

With the support of trail managers and local Councils, unmade road reserves can become valuable trail connectors for the community and the regions visitors.

An unmade road reserve at Macclesfield provides one such example.

Following consultation with the District Council of Mt Barker, and their approval for the Kidman Trail to traverse the council region, the unmade road reserve off Davis Road at Macclesfield was investigated to be incorporated into the trail, providing for walkers, bike riders and horse riders.

During the planning phase of this unmade road reserve the following matters were identified:

- vegetation was overgrown with weeds
- the watercourse needed to be better managed
- double fencing existed in places (southern side fence not on reserve boundary).
- a native vegetation survey of the reserve was required
- there were Council leases
- adjacent landowners were supportive of managed recreational use.
- trail resources available: trail manager, Council Officer, budget, Green Corp team
- entry and exit stiles to cater for the three user groups were required
- vehicle gates for council access were required.

The following images illustrate the transformation to this reserve, securing it as part of the State's trail network.

Photo 32: September 2004 pathway evident, vegetation overgrown

Photo 33: March 2007 vegetation cleared, trail/ access

Photo 34: March 2007 Entry/exit access to corridor established, managed, stile to the right of the gate

Photo 35: The unmade road reserve is clearly defined by the established trees. The recreational trail corridor is sited between the trees. March 2007 (Photos 32 to 35 courtesy of Office for Recreation & Sport)

APPENDICES

APPENDIX A: SUMMARY OF TRAIL CLASSES

TRAIL TYPE: WALKING	
TRAIL CLASS	**TRAIL CHARACTERISTICS/DESCRIPTION**
Class 1	Opportunity for large numbers of visitors, including those with reduced mobility, to undertake walks which are provided with a high level of interpretation and facilities. Users can expect abundant opportunities to learn about the natural environment through interpretive signs or brochures. Users can expect frequent encounters with others.
Class 2	Opportunity for large numbers of visitors to walk easily in natural environments which are provided with a moderate to high level of interpretation and facilities. Users can expect to learn about the natural environment with moderate to abundant opportunities to learn through interpretive signs or brochures. Users can expect frequent encounters with others.
Class 3	Opportunity for visitors to walk in slightly modified natural environments requiring a moderate level of fitness and where the provision of interpretation and facilities is not common. Users can expect opportunities to observe and appreciate the natural environment with limited provision of interpretive signage. Users can expect occasional encounters with others.
Class 4	Opportunity for visitors to explore and discover relatively undisturbed natural environments along defined and distinct tracks with minimal (if any) facilities. Users can expect opportunities to observe and appreciate the natural environment without provision of interpretive signage. Users can expect opportunities for solitude with few encounters with others.
Class 5	Opportunity for visitors with advanced outdoor knowledge and skills to find their own way along often indistinct tracks in remote locations. Users can expect frequent opportunities for solitude with few encounters with others.
Class 6	Opportunity for highly experienced walkers to explore remote and challenging natural areas without reliance on managed tracks. Users can expect extended periods of solitude with few encounters with others.

Source: Refer to (AS 2156.1 – 2001)

MOUNTAIN BIKE — USER GUIDE

	VERY EASY	EASIEST	MORE DIFFICULT	VERY DIFFICULT	EXTREMELY DIFFICULT
Description	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 unavoidable obstacles. Short sections may exceed these criteria. Frequent encounters are likely with walkers, runners, horse riders and other cyclists.	Likely to be a single trail with moderate gradients, variable surface and obstacles.	Likely to be a challenging single trail with steep gradients, variable surface and many obstacles.	Extremely difficult trails will incorporate very steep gradients, highly variable surface and unavoidable, severe obstacles.
Suitable for	Beginner/ novice cyclists. Basic bike skills required. Suitable for most bikes.	Beginner/ novice cyclists. Basic bike skills required. Suitable for most bikes.	Beginner/ novice cyclists. Basic bike skills required. Suitable for most bikes.	Experienced mountain bikers with good skills. Suitable for better quality mountain bikes.	Highly experienced mountain bikers with excellent skills. Suitable for quality mountain bikes.
Fitness Level	Most people in good health.	Most people in good health.	A good standard of fitness.	Higher level of fitness.	Higher level of fitness.
Trail Width	Two riders can ride side by side.	Shoulder width or greater.	Handlebar width or greater.	Can be less than handlebar width.	Can be less than handlebar width.
Trail Surface and obstacles	Hardened with no challenging features on the trail.	Mostly firm and stable. Trail may have obstacles such as logs, roots and rocks.	Possible sections of rocky or loose tread. Trail will have obstacles such as logs, roots and rocks.	Variable and challenging. Unavoidable obstacles such as logs, roots, rocks drop-offs or constructed obstacles.	Widely variable and unpredictable. Expect large, committing and unavoidable obstacles.
Trail Gradient	Climbs and descents are mostly shallow.	Climbs and descents are mostly shallow, but trail may include some moderately steep sections.	Mostly moderate gradients but may include steep sections.	Contains steeper descents or climbs.	Expect prolonged steep, loose and rocky descents or climbs.

Taken from IMBA Australia – Trail Difficulty Rating System 2013

MOUNTAIN BIKE — LAND MANAGERS GUIDE

	VERY EASY	EASIEST	MORE DIFFICULT	VERY DIFFICULT	EXTREMELY DIFFICULT
Description	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 unavoidable obstacles. Short sections may exceed these criteria. Frequent encounters are likely with walkers, runners, horse riders and other cyclists	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 trails	Extremely difficult trails will incorporate very steep gradients, highly variable surface and unavoidable, severe obstacles. Single use and direction. Optional lines XC, DH or trails
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 or bridges. Structures can vary.	150mm plus or minus 100mm for tread or bridges. Structures can vary
Trail Surface	Hardened or smooth	Mostly firm and stable	Possible sections of rocky loose tread	Variable and challenging	Widely variable and unpredictable
Average Trail Grade	Climbs and descents are mostly shallow. Less than 5% average	Climbs and descents are mostly shallow, but may include some moderately steep 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
Natural Obstacles and Technical Trail Features (TTF's)	No obstacles	Unavoidable obstacles to 50mm (2") high, such as logs, roots and rocks. Avoidable, rollable obstacles may be present. Unavoidable bridges 900mm wide. Short sections may exceed criteria	Unavoidable, rollable obstacles to 200mm (8") high, such as logs, roots and rocks. Avoidable obstacles to 600mm may be present. Unavoidable bridges 600mm wide. Width of deck is half the height. Short sections may exceed criteria	Unavoidable obstacles to 380mm (15") high, such as logs, roots, rocks, drop-offs or constructed obstacles. Avoidable obstacles to 1200mm may be present. Unavoidable bridges 600mm wide. Width of deck is half the height. Short sections may exceed criteria	Large, committing and unavoidable obstacles to 380mm (15") high. Avoidable obstacles to 1200mm may be present. Unavoidable bridges 600mm or narrower. Width of bridges is unpredictable. Short sections may exceed criteria

Taken from IMBA Australia – Trail Difficulty Rating System 2013

HORSE TRAIL CLASSIFICATIONS

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

HORSE TRAIL CLASSIFICATIONS (CONTINUED)

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

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

APPENDIX B: TRAIL CATEGORISATION SYSTEM

TRAIL TYPE:	NATIONAL TRAILS
Examples:	Heysen Trail (Sections thereof – when Management Plan prepared) Mawson Trail HMAS Hobart dive trail
CHARACTERISTICS	**KEY INDICATORS**
1. Sustainability	• The trail has a comprehensive Management Plan that provides for compliance with social, environmental and economic expectations, sustainable design and management, maintenance, evaluation, monitoring, data collection and secure land tenure • The trail can generate economic surpluses to contribute towards trail maintenance and operation requirements • The trail has commitment at the State level for ongoing development, maintenance and the provision of appropriate infrastructure to meet the needs and expectations of the range of users • The trail raises environmental and cultural awareness through effective interpretative and educational initiatives • The trail provides positive environmental benefits
2. Quality	• The trail is iconic or uniquely South Australian in its character • The trail is associated with outstanding natural and cultural features • The trail attracts international or interstate visitors in its own right • The trail provides excellent, unique and memorable experiences that facilitate visitor recommendation and return visitation • Has a discrete identity and trail name • The trail is marketed to international and national audiences through websites, magazines, promotional brochures, travel guides and promoted internationally through inbound travel agencies • The trail is regularly connected with major events that are marketed and attract international and interstate visitation • The trail has an official trail guide published by the trail manager and interest groups may produce supplementary trail booklets and guides
3. Economic benefits to SA	• The trail attracts a high level of international and interstate visitation • The trail significantly contributes to the network of tourism and cultural attractions of the State • Local business and tourism operators support and promote the trail
4. Lifestyle, health and social well-being	• The trail is of high interest and regularly utilised by a range of users or user groups • The trail is regularly utilised for events • A community support group exists for the cooperative management of the trail; e.g. Friends of Heysen Trail • The trail provides interpretative and educational opportunities

Source: Derived from Draft Recreational Trails Strategy for South Australia 2005–2010

TRAIL TYPE:	REGIONAL TRAILS
Examples:	River Torrens Linear Park Alligator Gorge Hike Tom Roberts Trail Port Noarlunga Reef Katarapko Canoe Trail
CHARACTERISTICS	
1. Sustainability	• The trail has a Management Plan or is included in a Management Plan for an area (e.g. National Park Management Plan, Local Government Open Space or Recreation Plan) to provide for compliance with social, environmental and economic expectations, sustainable design and management, maintenance, evaluation, monitoring, data collection and secure land tenure • The trail has resources to contribute to trail maintenance and operation requirements • The trail has commitment from the land manager for ongoing development, maintenance and the provision of appropriate infrastructure to meet the needs and expectations of the range of users • The trail raises environmental and cultural awareness through effective interpretative and educational initiatives • The trail provides positive environmental benefits
2. Quality	• The trail attracts interstate and intrastate visitors • The trail is associated with excellent natural and cultural features • Trail information is available to national audiences through websites, promotional brochures, maps and travel guides • Has a discrete identity and trail name
3. Economic benefits to the Region	• The trail attracts a high level of interstate and intrastate visitation • The trail significantly contributes to the network of tourism and cultural attractions of the region • Local business and tourism operators support and promote the trail
4. Lifestyle, health and social well-being	• The trail is of high interest and regularly utilised by a range of users or user groups • The trail is regularly utilised for local events • The trail provides interpretative and educational opportunities

Source: Derived from Draft Recreational Trails Strategy for South Australia 2005–2010

TRAIL TYPE:	LOCAL TRAILS
Examples:	Christie's Creek Trail Yulti Wirra Track, Belair National Park Mitcham Quarry Trail
CHARACTERISTICS	
1. Sustainability	• The trail may (and desirably should) be included in a Management Plan for an area to provide for compliance with social, environmental and economic expectations, sustainable design and management, maintenance, evaluation, monitoring, data collection and secure land tenure; e.g. Local Government Open Space Strategy or Park Management Plan. • The trail has commitment at the community level for maintenance; e.g. local Council or Community Group performs regular maintenance work • The trail raises environmental and cultural awareness through visitation and trail experiences • The trail provides positive environmental benefits
2. Quality	• The trail attracts intrastate and local visitors • The trail is associated with good or excellent natural and cultural features • Trail information is available; e.g. a trail brochure or on-site signs provide information • The trail integrates and connects with Regional, State or National Trails where possible
3. Economic benefits to the community	• The trail attracts intrastate and local visitation • The trail contributes to the network of tourism and cultural attractions of the locality • The trail integrates with local business where possible
4. Lifestyle, health and social well-being	• The trail is of high interest and regularly utilised by the community • The trail provides interpretative and educational opportunities • The trail provides local recreational opportunities

Source: Derived from Draft Recreational Trails Strategy for South Australia 2005–2010

The key indicators should be used as a guide and not a definitive test. If a trail fails to fully meet one or two key indicators then it may still be considered to be within category but requires review or improvement in those areas. Failure to meet three or more key indicators suggests that the trail is not of that category. Trails that do not demonstrate sufficient characteristics may be classified as unsustainable trails.

APPENDIX C: TRAILS PLANNING, DESIGN AND CONSTRUCTION CHECKLIST

PLANNING	TICK BOX WHEN COMPLETED
Establish a Working Group	☐
Identify purpose of the trail	☐
Identify the target market	☐
Undertake preliminary consultation with land manager, local council and relevant Government agencies	☐
Prepare a Project Plan	☐
Assess the supply and demand for recreational trails in the area	☐
Seek 'in-principle' endorsement from land manager, local council and relevant Government agencies	☐
Undertake consultation with users, neighbouring property owners and the wider community	☐

FEASIBILITY STUDY	TICK BOX WHEN COMPLETED
Determine the need of the trail – establish trail classification	☐
Identify likely patterns of usage and needs of user groups	☐
Provide details of planning process including required approvals	☐
Identify connections and linkages to other trails, facilities and tourist attractions	☐
Identify partnerships	☐
Estimate likely community support	☐
Address environmental matters	☐
Address cultural and heritage considerations	☐
Undertake on-ground assessment	☐
Prepare concept design	☐
Consider management and maintenance matters	☐
Estimate the likely cost of construction and ongoing management	☐
Identify funding opportunities	☐
Conclusion – is the trail feasible or not?	☐

(Checklist continues on next page)

(Checklist continues from previous page)

APPROVALS	TICK BOX WHEN COMPLETED
Obtain formal approval from land manager / owner	☐
Obtain required development approvals from the local council	☐
Obtain necessary permits from Government agencies	☐
Formalise partnership agreements and MOU's	☐

DESIGN AND CONSTRUCTION	TICK BOX WHEN COMPLETED
Determine the trail system – loop or linear?	☐
Determine classification	☐
Confirm if single or shared-use	☐
Identify the route of the trail on a topographical map	☐
Follow the contours	☐
Consider erosion control	☐
Avoid areas of environmental and cultural significance	☐
Consider safety issues	☐
Flag the route of the trail on the ground	☐
Determine the surface of the trail	☐
Determine trail markers and information signage	☐
Consider other facilities such as toilets, shelters etc	☐

MANAGEMENT AND MAINTENANCE	TICK BOX WHEN COMPLETED
Confirm partnership agreements	☐
Develop maintenance schedules	☐
Monitor and evaluate the trail	☐
Prepare promotional and marketing material	☐

APPENDIX D: GLOSSARY

Backslope: The angle of the back wall of a benched trail.

Bicycle SA: The peak non-Government organisation for cycling.

Biodiversity: Meaning biological diversity, the variety of all living things and how they relate to each other in the environment.

Canoe SA: The peak non-Government organisation for canoeing.

Clinometer: A device that measures the angle of a slope or trail.

Crown land: Land under the ownership of the State of South Australia. Normally managed and administered by State Government or placed in the care and control of the relevant Local Government Authority.

DEH: Department for Environment & Heritage, South Australia now DEWN.R

DEWNR: Department of Environment Water and Natural Resources.

Ecologically Sustainable Development (ESD): ESD or 'sustainability' is the optimal balance of natural, economic, and social systems so as to meet the needs of the present without compromising the ability of future generations to meet their own needs.

ForestrySA: ForestrySA manages the state owned forest resource in South Australia. It primarily provides softwood logs to the South Australian saw milling industry. ForestrySA also manages native forest areas for conservation.

Forest Reserve: Pursuant to the Forestry Act, 1950 this is Crown land the Governor declares to be for planting with trees; protecting those trees to ensure their proper growth; and to establish, maintain, and operate mills, plant and machinery for the milling and treatment of such trees and timber.

Full bench cut: A feature of trails on steep terrain where the downward force of the trail user is directed into the hill rather than a retaining wall. The fill from the cut is removed and not used to widen the trail. This kind of trail is strong and sustainable but is still cambered (outsloped) to allow surface runoff to drain directly off the trail.

GIS: Geographic Information System (computerised mapping and data system).

Grade: Grade is the angle or steepness of a particular slope or trail. It is measured by a clinometer.

Grade reversal: A change in pitch that is used to slow bike riders down and/or drain water off the trail.

Horse SA: The peak non-Government organisation for the horse industry.

Local Government: Collective term for more than one (usually all) local Councils.

MTB: Mountain Bike.

National Park: Pursuant to National Parks and Wildlife Act, 1972 this is Crown land the Governor considers to be of national significance by reason of the wildlife or natural features of that land.

Native Forest Reserve: Pursuant to the Forestry Act, 1950 this is Crown land the Governor declares to be for the conservation, development and management of land supporting native flora and fauna.

ORS: Office for Recreation and Sport, South Australia.

Outslope: The camber of a trail which is angled from the inside down to the outside of the trail at about 3 to 5% grade. This is used to promote effective drainage.

Partial bench: This cut is not as strong as a full bench so it is used on less steep slopes to traverse the hillside. The partial bench may include a retaining wall of rocks or logs to achieve a suitable tread surface because the downward force is not as great as on the steeper terrain. The fill from the cut is often used to build up the outside of the trail.

Peak User Groups: Collective term for two or more peak non-Government organisations (e.g. Horse SA and Bicycle SA).

Phytophthora: A water borne fungus that kills certain native plants. It can be spread easily with spores in mud and soil that attach to hiking boots, bike tires and horses' feet. It is also known as dieback and PC.

PIRSA: Department of Primary Industries and Resources South Australia.

Pitch: See "grade".

Public land: Public lands includes land set aside for nature conservation and various government or public purposes, as well as vacant land.

Recreation SA: The peak body for Recreation in South Australia.

Recreation Park: Pursuant to National Parks and Wildlife Act, 1972 this is land that should, in the Governor's opinion, be conserved and managed for public recreation and enjoyment.

Riparian: The vegetation, landforms and fauna associated with a creek or tributary.

Rolling grade dip (RGDs): Trail drainage controls that are scalloped from the trail with a subsequent rise. These controls are easy to negotiate and highly sustainable.

SATC: South Australian Tourism Commission.

SATCC: South Australian Trails Coordinating Committee.

Scuba Diving Federation of SA: The peak non-Government organisation for scuba diving.

Single track: Trail just wide enough for one person or bike.

Stile: A constructed device which provides access to a user group to a trail, usually through a fence. Different designs are available to suit walkers and horse riders.

Switchback: A sharp turn, usually 180 degrees, that allows the trail user to turn on a level surface to traverse a steep slope. It is a constructed turn that drains effectively and provides enough room to change direction safely. The approach and exit will often be at an angle/grade of 5 to 15%. These turns are sometimes called a hairpin corner.

Trail Categories: Refers to the Local, Regional or National status of trails.

Trail Classifications: Refers to the nature and characteristics of trails: e.g. easy walk, technically challenging mountain bike ride or canoe trail requiring a high level of experience.

Tread: The base of the trail that users travel upon. Rocks, soil, imported aggregate, wood, grass and tree roots may be part of the tread. The width of the trail depends on the intended purpose and potential users.

Unmade road reserves: Land previously set aside or 'reserved' for road construction but not utilised for that purpose.

Walking SA: The Walking Federation of SA, peak non-Government organisation for walking.

Water bar: A traditional erosion control for steep trails which consists of a large or small lump of soil in the trail which has an angle of 30 to 45 degrees from the perpendicular bisector of the trail. This angle or skew directs water from the trail.

APPENDIX E: REFERENCES AND USEFUL WEBSITES

REFERENCES

TRAIL DESIGN AND CONSTRUCTION

Drew, Grocke and Cahalan (2003) *Guidelines for Producing Trail Signage*

Flink, Olka and Searns (2002) *Trails for the Twenty-First Century: Planning, Design, and Management Manual for Multi-Use Trails*

International Mountain Bicycle Association (2001) *Building Better Trails: Designing, Constructing and Maintaining Outstanding Trails*

International Mountain Bicycle Association (2004) *Trail Solutions: IMBA's Guide to Building Sweet Singletrack*

International Mountain Bike Association (2007) *Managing Mountain Biking: IMBA's Guide to Providing Great Riding*

Marshall (2006) *Walking Track Handbook*

National Parks and Wildlife South Australia (1998) *Planning and Design Guidelines for Visitor Facilities in South Australian Park*

Office for Recreation and Sport (2005) *Draft Recreational Trails Strategy for South Australia 2005-2010*

Parker, (2004) *Natural Surface Trails by Design*

Pine Rivers Shire Council (2004) *Recreation Trails – Planning, Construction and Maintenance*

South Australian Department for Environment and Heritage (2002) *Publications and Signs Standards Manual*

Taylor Culity Lethlean *River Murray Sustainable Recreation: Site Planning and Implementation Guide*

U.S. Forest Service (2000) *Trail Construction and Maintenance Notebook*

MISCELLANEOUS

Exercise, Recreation and Sport Survey (ERASS) (2001-2006), Australian Sports Commission

Trails Research Project (2004) Market Equity Pty Ltd

STANDARDS

AS 2156.1 – 2001 Walking Tracks – Part 1: Classification and Signage

AS 2156.2 – 2001 Walking Tracks – Part 2: Infrastructure Design Austroads, Guide to Traffic Engineering Practice, Part 14 – Bicycles (1999)

USEFUL WEBSITES

STRATEGIC PLANS

South Australia's Strategic Plan: www.stateplan.sa.gov.au

Planning Strategy for South Australia: www.planning.sa.gov.au

South Australian Tourism Plan: www.tourism.sa.gov.au

Safety in Numbers – A Cycling Strategy for South Australia: www.transport.sa.gov.au

SOUTH AUSTRALIAN LEGISLATION

www.legislation.sa.gov.au

SOUTH AUSTRALIAN GOVERNMENT DEPARTMENTS

Office for Recreation & Sport: http://ors.sa.gov.au/

Department of Environment Water & Natural Resources: http://www.environment.sa.gov.au

Tourism Commission: http://www.tourism.sa.gov.au/

Department of Planning Transport and Infrastructure DEPTI: http://www.dpti.sa.gov.au

ForestrySA: http://www.forestry.sa.gov.au

Health SA: http://www.sahealth.sa.gov.au/

LOCAL GOVERNMENT

www.lga.sa.gov.au

NATURAL RESOURCES MANAGEMENT BOARDS

http://www.environment.sa.gov.au

REGIONAL DEVELOPMENT AUSTRALIA BOARDS

https://rda.gov.au

PEAK USER GROUPS

Recreation SA www.recreationsa.org

Bicycle SA: www.bikesa.asn.au

Horse SA: www.horsesa.asn.au

Walking SA: www.walkingsa.org.au

Canoe SA: www.sa.canoe.org.au

Scuba Divers Federation of SA: www.sdfsa.net

FUNDING GRANTS

www.grants.ord.sa.gov.au

www.grantslink.gov.au

www.aph.gov.au/library/intguide/sp/spgrants.htm

http://ors.sa.gov.au/funding

APPENDIX F: EXAMPLE PROMOTIONAL BROCHURE: RIESLING TRAIL

Optional loops to cycle

These loops are public roads, thus suited to the more experienced cyclist and not recommended for groups or families with young children. Hazards include vehicles, unsealed sections, rough surfaces, narrow winding sections and steep inclines. For your safety wear high visibility vests and cycle the loops during daylight hours only.

John Horrocks loop [9km]

This loop leaves the trail at St Mark's Church, Penwortham and heads west along Horrocks Road, north along Sawmill Road and east along Spring Gully Road. The loop returns to the trail at the Sevenhill railway siding.

Father Rogalski (Polish Hill) loop [10km]

This loop starts just north of Penwortham and heads east to the Polish Hill Valley. The steep ride up the ridge to the highest point is worth the effort for the magnificent views. The Polish Hill River Church Museum offers an historical glimpse into the lives of the original Polish settler and the Annies Lane Reserve is worth a visit.

Spring Gully loop [16km]

This loop heads west along Spring Gully Road following the scenic tourist drive through the Skilly Hills, south to Spring Gully Conservation Park. The return section joins Spring Gully Road finishing at Sevenhill Hotel.

Mawson Trail [900km]

The 900km trail starts in the Adelaide Hills and ends at Blinman in the Flinders Ranges. The trail is for mountain bike enthusiasts wanting an outback challenge. The trail merges with the Riesling Trail between Auburn and Clare then diverges off towards Burra.

Riverton trails

There are five trails around Riverton to explore the historic landmarks and the picturesque Gilbert Valley. The Lookout Trail offers spectacular 360° views of the valley and the Duck Pond Trail takes you to the Gilbert River Lake.

Facilities

Drinking water is available beside the trail shelters located at Watervale, between Sevenhill and Quarry Road and at the Lennon Street car park in Clare.

Public toilets are located at Auburn Memorial Park, Watervale oval, Sevenhill cricket ground and Clare Skate Park.

Designated car parks are located at Auburn, Watervale, Sevenhill, Clare and Barinia.

Not permitted

Motor bikes (two or four wheeled), vehicles and horses are not permitted on the trail.

Bike hire

Cogwebs	**0400 290 687** (Auburn)
Discovery Holiday Park	**08 8842 2724** (Clare)
Clare Valley Cycle Hire	**0418 802 077** (Clare)
Riesling Trail Bike Hire	**0418 777 318** (Clare)
Fun Wheels Pedal Kart Hire	**0433 888 482** (Clare)

EMERGENCY SERVICES

Ambulance Police Fire	**000 [Mobile users 112]**
Clare Police Station	**08 8842 2711**
Clare Hospital	**08 8842 6500**

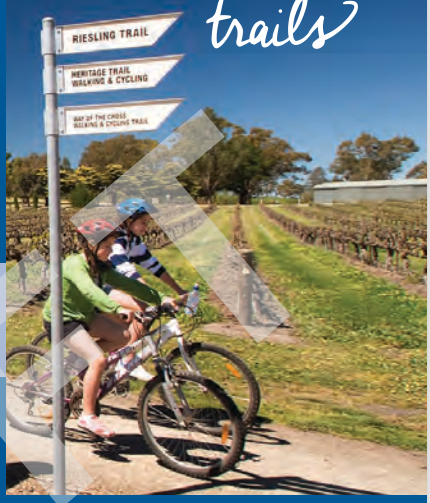
Friends of the Riesling Trail

The Riesling and Rattler Trails are not-for-profit community-based organisations managed by dedicated volunteers.
For more information please visit **www.rieslingtrail.com.au** and **www.rattlertrail.com.au**

The Riesling Trail Facebook page is **www.facebook.com/rieslingtrail**

You can also support the maintenance of the Riesling Trail by becoming a financial member or using the donation box at the Lennon Street car park in Clare.

Riesling and Rattler trails



CLARE and GILBERT VALLEYS
SOUTH AUSTRALIA

Riesling and Rattler trails

Derailed

Located 130kms north of Adelaide in the Clare Valley, the Riesling Trail was once part of the railway line from Adelaide to Spalding. Built in stages between 1860 and 1918, the railway's purpose was to ease mining transport and open up valuable agricultural land. In August 1983 the wavering future of the line was finally decided; after major sections of the track at Clare were destroyed in the Ash Wednesday fires the line was closed.

In 1994 the section from Auburn to Clare became the Riesling Trail - the first South Australian conversion of a railway line into a recreational trail for walking and cycling. The trail was instigated by the Clare Valley Winemakers with funding support from the South Australian Government through the Office for Recreation and Sport. The section from Clare to Barinia was opened in 2009.

the Riesling trail

Auburn to Barinia [33km]

The best time to use the trail is autumn and spring when the valley is at its finest while the cooler temperatures are advantageous for cycling and walking. However every season offers a different reason to visit as the countryside is ever changing and there are special events held throughout the year. Vintage is between late February and early April and the Clare Gourmet Weekend is in mid-May.

The trail is well sign-posted providing distances, directions and services as well as storyboards with information on the local history, the landscape, the Ngadjuri people, the communities and local heroes.

While the surface is well compacted making it suitable for recreational walkers, off-road bicycles, wheelchairs and prams it is advised you travel with caution at all times. Unforeseen circumstances such as adverse weather may cause damage to the surface from time to time.

The gradient is relatively easy for regular cyclists, but for those less experienced it may prove a challenge. The trail takes approximately 1.5 to 4 hours to ride one-way, depending on your fitness, diversions and breaks. The map provides an indication of the gradient and distances.

The picturesque scenery encompasses views of vineyards, bushland, farms, historical buildings and tree-lined laneways. There are plenty of photo opportunities other than just scenery as the trail is home for an abundance of native flora and fauna.

Other attractions include wineries, cafes, pubs, scenic picnic spots, art galleries, historical sites and wetlands. Sculptures are located 500m north of the Lennon Street car park as well as between Leasingham and Auburn. **For suggestions on alternative rides to suit your needs visit our website.**

You can start and finish at either end or where ever you like. As well as designated car parks, the trail can be accessed at several locations where public roads cross the trail.

the Rattler trail

Riverton to Auburn [19km]

In 2010 the section between Auburn and Riverton known as the Rattler Trail was opened. The trail, which takes its name from the rattling old train that used to work the route, passes through farming land, vineyards and near the small township of Rhynie.

Safety first

Accidents are preventable. Keep to the left, be aware of others notably runners and cyclists who may wish to pass you as well as people travelling in the opposite direction. When cycling, avoid excessive speeds and ring your bell when approaching others. Even though it is a recreational trail the wearing of helmets and a working bell are compulsory as the trail crosses public roads.

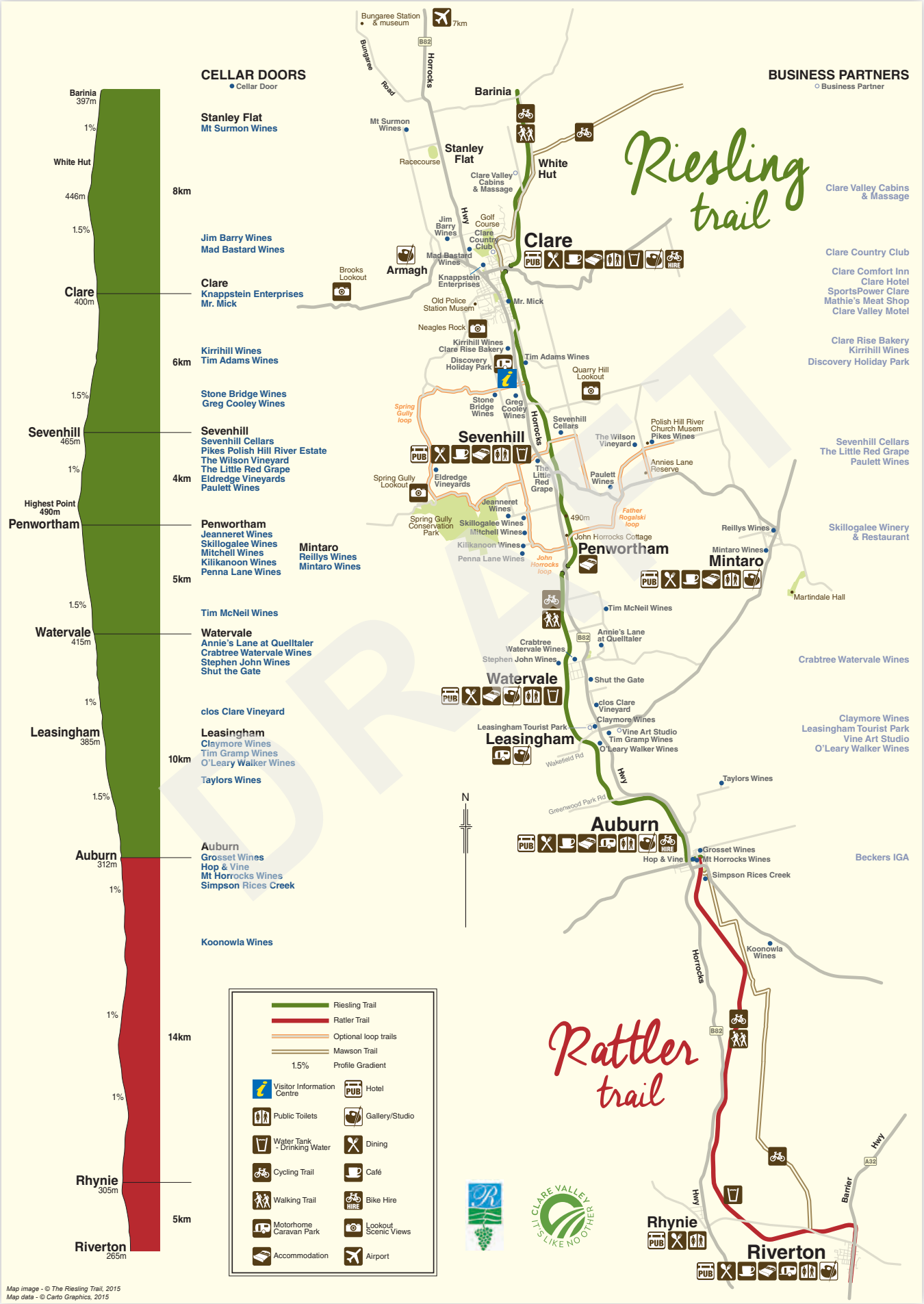
Dogs don't need to be on a lead, but need to be under control.

It is recommended you pace yourself and carry plenty of water especially in summer.

Be courteous towards others using the trail and respect private property adjacent to the trail by not entering unless you have permission.







RECREATION SA

3/95 King William Road,
Unley SA 5034

(08) 8271 6874
RECREATIONSA.ORG

TRAILS SUB COMMITTEE OF RECREATION SA

BICYCLE SA
HORSE SA
CANOE SA
WALKING SA
SCUBA DIVERS FEDERATION OF SA