*Addendum May 2016

The Guidelines for Producing Trail Signage was produced to assist government, industry, community and recreation trail groups to develop and produce effective trail. This most useful document was produced in 2003 and there have been some changes to how we manage trails. Rather than update the whole document please find addendum footnotes that reflect the most significant changes that influence how we manage trails.
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*Addendum May 2016
GUIDELINES FOR PRODUCING TRAIL SIGNAGE

1. INTRODUCTION

These guidelines have been prepared to assist government, industry, community and recreation trail groups to develop and produce effective trail signs for direction, interpretation, and management. The guidelines are structured into stages, which relate to the development process that should be followed to achieve quality outcomes.

The guidelines aim to answer the common questions about sign development and production without significantly replicating information from other sign standard manuals. Detailed specifications for font size, font style, installation and materials for trail signs are more extensively covered in the National Parks and Wildlife “Publications and Signs Standard Manual 2002”.

1.1 Definition of a Trail

A trail in terms of this document is a corridor, route or pathway that will have strong linkages with the natural environment, open space networks and cultural heritage. Land based trails typically have a trail corridor that is distinguishable from the surrounding landscape. There is normally a visible trail surface, pathway or a series of signs, trail markers or landmarks. Regular use of the trails will often ensure the trail retains a visible difference from the adjacent environment. Aquatic trails, however, may be a mapped or frequented route through the waterway or focus on a single linear feature such as a reef or archaeological attraction such as a shipwreck.

2. TRAIL SIGNAGE – THE CONCEPT

Self-guided trails and signs are a popular means of promoting the State’s recreation opportunities. Trail signage can:

- Provide a recreational and educational experience;
- Improve recreational access and responsible visitor behavior;
- Increase visitors’ understanding of the local environment;
- Promote an area’s history and heritage;
- Add to an area’s tourism potential; and
- Decrease risk to visitors.

In developing trail signage there are a number of fundamental conceptual issues that need to be addressed before proceeding. These issues are discussed in detail by Carter (1997) and listed below:

1 National Parks and Wildlife “publications and Sign Standards Manual”. The Department of Environment Water and Natural Resources through National Parks SA (2016) have produced an updated publications and sign standards manual which includes up to date information and resources for the planning and production of trail signs including; creating trail head signs, emergency location markers, sign descriptions, symbols, trail marking examples and trail markers. The National Parks and Wildlife referred to throughout this document are now known as the Department of Environment Water and Natural Resources and National Parks SA.

2 Self-guided trails and signs are a popular means of promoting the State’s recreation opportunities. Advances in information technology have opened up new ways of interpreting and promoting experiences and complement the use of signs. New technology utilising iPhones with GPS technology provides opportunity for “virtual” tours enabling sites to come alive for visitors through their iPhones.

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Why do you want to provide a trail with signage?
Who is your target audience?
What will be the main activity or theme?
What are you going to interpret along the trail?
What unforeseen and unobvious risks need to be identified?
Are there any local planning or environmental issues that need to be addressed?
How will the trail signage be produced?
What materials will be used?
Who will own, manage and maintain the trail and trail signs?

2.1 Land Tenure and Agency/Authority Requirements

One of the first steps in developing a trail or trail signage, is to confirm who owns the land, as well as who manages the land. Where a trail is to be developed on public land such as the coastline, a road reserve or conservation area, it must be designed so as to minimise impact on the environment. This may involve the need to construct boardwalks, bridges and viewing platforms, which may require permission of a statutory body such as the Coastal Protection Board or the Environmental Protection Agency (EPA). Approval may also be required for infrastructure constructed on public land owned or vested in a government authority such as a local council, Forestry SA, Transport SA, SA Water or the National Parks and Wildlife SA.

Various government agencies and authorities often have pre-determined sign systems or graphic design requirements for signs that connect their sign system or land under their control. Such agencies and authorities should be consulted prior to planning a trail and designing a sign system.

2.2 Trail Signage – Preliminary Investigations

Once an existing trail or a new trail opportunity has been identified and there is a strong level of community interest and management support to drive the project, preliminary planning for the trail signage can commence.

The basic steps (and checklist) in developing recreational trail signage are:

- Form a team with a range of expertise to identify trail hazards, local cultural and natural heritage, and locations and species of flora and fauna with high conservation value that will form the subjects for interpretation and protection.
- Consider the environmental and cultural impacts (landscape, wildlife, erosion, heritage sites.)
- Visit the site as a team and walk the proposed trail to get a good feel for the site and develop a common vision for the trail.
- Identify your audience – what do they want to know?
- What is the nature of the trail? What's better suited – signs or publications or guided walks?
- Brainstorm for ideas and compile a list of possible sites for directional signs and themes of interest for interpretive signs.
- Prepare a trail route linking the selected sites in a logical sequence. Identify any risks or hazards that need to be posted.
- Select the interpretive message or topic for each site receiving interpretive

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3 The basic steps (and checklist) in developing recreational trail signage include an understanding of the Walking Track Grading System and the classification of the trail.
information. Each stop can have its own theme or topic but together they should support the overall purpose and theme of the trail.

- Research and document relevant information including photos and illustrations to develop the sign system.
- Review the information available for each proposed site and assess the suitability of each. (Use the message pyramid: Focus – 3 seconds, explain – 30 seconds, connect – 3 minutes)
- Make a final selection of sites based on suitability, visitor safety and budget.
- Write and design rough drafts for each sign. It will take a number of drafts and refinements until an agreed combination of words and graphics is produced. Design and produce artwork for each sign from rough drafts. (A sign consultant/graphic designer can be an option for this step)
- Evaluate final drafts with potential visitors on site.
- Produce and install signage.
- Consider promotional opportunities through newsletters and media or consider a launch to highlight the trail.

**2.3 Other considerations for sign system**

Sign systems for trails must also satisfy a number of other fundamental requirements  

**2.3.1 Parking**

Car parking facilities are essential at the beginning of a trail or at major road/trail junctions. If a parking area doesn’t already exist, one will need to be created. Roadside parking areas are needed in a number of locations for long distance trails where visitors need to access and egress one section only. Pull-off pedestrian and cycle areas are important where there are interpretive signs at key attractions or where trail-head signs exist.

**2.3.2 Stops (points of interest)**

Ideally self-guided trails should have between 6 and 15 stops or points of interest, whereas a nature-based or mountain bike trail would have less signs because the focus is on the activity or viewing the natural scenery.

For walking a self-guided heritage trail of 2 km this means an average spacing of about 100-300 metres between signs. The first of these stops generally should be located within view of the trail-head information sign to encourage potential walkers to at least start the trail. If the first sign generates enough interest they may decide to continue and complete the trail and stop at interpretive signs along the way. Interpretive signs are also useful in conjunction with printed material to add greater depth of information to interpretive panels that should not be too wordy (refer to Section 4).

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4 A trail sign system includes a hierarchy of signs depending on the level of use and trail classification (more information is provided in 3.2 Types of Trail Signs)

**Major and Minor Trail Head Signs** - In general trails will include major and minor trail head signs which generally provide information to trail users. Major trail head signs apply to popular trails with large numbers of users. Minor trail head signs provide information on less used trails or where other trails or access points connect with popular trails. Minor trail head signs provide basic information for the trails.

**Intersection Marking Signs** – are placed at key intersections and provide directional information in more detail than way marking signs.

**Property Boundary Signs** – are generally for long distance trails such as the Heysen Trail where it is useful for walkers to understand the change in land management be it public or private and the behavior required.

**Way Marking** – provide direction for walkers on the trail for safety and reassurance.
The majority of interpretive signs should be placed early on the trail but avoid placing signs in view of each other unless they are trail markers. Where possible, interpretive sign should be placed at natural stopping points or features such as a heritage site or the top of a hill where people rest. Each stop needs sufficient space for a small group of people (say 3-5 people) to be able to stand and read a sign without obstructing other trail users.

2.4 Trail Classifications and Standards

The degree of trail signage will vary with the classification and standard of the trail. Generally the higher the trail’s profile, the greater the level of visitation and the more urban the trail location the greater the level of signage at trail heads, trail intersections and key points of feature or hazard. For more specific information on the Australian Standards for Walking Tracks, refer to AS 2156-2001 on the Standards Australia Website www.standards.com.au.

National Parks and Wildlife SA (NPWSA) has developed a user-friendly indicator of bushwalking difficulty that relates directly to the Australian Standards with its six classifications. Similarly standards for trail-head signs and directional markers have been developed for the Walk, Hike and Trek classification in conjunction with the NPWSA Publications and Signage Standards Manual. The NPWSA bushwalking classification system is briefly summarised below:

**WALK (Australian Standards Class 1 and 2) - EASY**
A walk is designed to be accessible to people of all ages and fitness levels, including those with reduced mobility. These are short trails of less than three kilometres in length and often link to significant features or attractions. The pathway is well defined and well formed with a smooth obstacle free surface making for easy walking. A walk is ideal for interpretive signs and brochures and tends to have a high level of use.

**HIKE (Australian Standard Class 3 and 4) - HARD**
A Hike requires some experience and a reasonable fitness level. These trails can be any length, are well defined but may have a rough and uneven surface with sections that are relatively steep for short distances. Hikes can have moderate to high use and are normally in natural environments. Provision of interpretative signs and facilities are normally at the head of the trail or at major features along the trail.

**TREK (Australian Standard Class 5 and 6) - CHALLENGING**
A Trek may be physically demanding and users should be experienced with navigational skills. These trails are often of a length that requires several days to complete and often pass through remote areas where there may be no defined trail route. The trail surface can be very uneven with steep grades. Popular Treks may have high use but often provide frequent opportunities for solitude with few encounters with other trail users. A Trek normally has minimal signage, which is normally located at the trail-head only.

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5 In 2010 the Australian Walking Track Grading System was endorsed by the parks Forum (the peak body for park management organisations) as a voluntary standard to provide technical grading of walks and ensure walkers can make informed choice as to sustainable trails for their level of experience. The grading system can be applied through a range of differing media to provide on-trail and pre visit trail information.

More information can be obtained through:

3. TRAIL SIGNAGE^A-PLANNING

Signs can convey information on trails in a number of ways. They should be planned as part of a range of interpretive services, including brochures and publications, or simply communicate a direction to follow or hazard to avoid.

3.1 What to Consider in Developing a Sign System

Before deciding whether to install a series of signs, a number of criteria need to be met. Signs should:

- be attractive and informative with interesting text and graphics;
- be easy to follow and understand;
- be weatherproof and vandal resistant; and
- Blend sympathetically with the environment.

Signs have a number of advantages over other information media such as:

- improve visitor enjoyment and appreciation of a site;
- the information is always available at any time at a specific location;
- they are cost effective over a length of time;
- they can focus on a specific theme;
- they can integrate text and graphics into interpreting a view or site; and
- they can be used to minimise visitor risk and reduce the level of public liability.

However, signs also suffer a number of potential problems including:

- poor signage can detract from enjoyment of a site;
- poorly written or designed signs may not get the message across;
- unsuitable for greeting large numbers of visitors at once;
- need for ongoing maintenance;
- potential graffiti and vandalism; and
- too many signs can clutter the landscape.

3.1.1 Position and Placement of Signs

Signs should be located at major trail-heads, significant features or intersections and be relevant to the purpose or focus of the trail. Specifically, signs should be placed with consideration of approach speed, space to manoeuvre without obstruction or blocking the pathway for other users, offer clear visual lines of other trail signs and minimise the potential impact on the views of the landscape.

The approach speed should allow three seconds for people to view and read the sign and also enough time to make a decision on the relevant action prompted by the sign. As a general rule, signs should be placed at a height within half a meter above or below the forward line of vision, depending on the angle of the sign.

Signs should also be located and positioned where their attention does not create a hazard or obscure a hazard. Surrounding vegetation or environmental effects such as sun glare should also not impact on the visibility, legibility and durability (fading of the text) of the sign information.

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^A This section is in line the Australian Standards as published by Standards Australia (AS2156.1-2001)
Trail markers should be placed between 0-1.5 metres above the ground (900mm recommended) depending on the terrain and the seasonal effects of vegetation. The height chosen should remain consistent and the marker (triangle or arrow) should be mounted with the apex pointing toward the direction to be followed. The spacing of markers should depend on the trail classification, topography and weather. As a general rule, unless there is a well-defined path, a person standing at one marker should easily be able to see the next marker. The exceptions are class 3 to 5 trails under the Australian track classification system where markers are often not installed.

Where one pathway is the reciprocal route for more than one trail, all trail markers with information such as a logo, direction arrow or distance figure, should be located on the one post but defined under a different colour code. In such cases a square alloy stake should be used with adhesive/reflective sticker for each trail. This reduces the visual clutter of having numerous trail markers on the same alignment.

![Trail Marker for a shared trail route](image)

### 3.2 Types of Trail Signs

There are five types of trail signs that form part of the Australian Standards for trails. A sixth type of sign (Event and Temporary Signs) has been included as an independent category\(^6\).

#### 3.2.1 Information Signs

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

- **Advisory signs**, which may include:
  - Registration and reporting recommendations
  - Equipment recommendations;

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\(^6\) As discussed in 2.3 a hierarchy of trail signs apply to trails and the Australian Walking Track Grading System, Cycling Trail Difficulty Standards and Horse Riding Standards contribute valuable information to trail information. The types of trail signs incorporate the information provided by the standards and should be incorporated.
- Personal safety precautions;
- Environmental protection (minimal impact practices);
- Skill and fitness level required; and
- Specific conditions.

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

- Track rating (Grades 1-6 or Walk, Hike, Trek);
- Type of trail (e.g. loop, one-way, return);
- Effect of weather conditions;
- Elements of interest, trail conditions or difficulties (e.g. facilities, waterfall, slippery rocks).
- Opening and closing hours of the trail;
- Distance to designated point;
- Estimated completion time;
- Direction of the initial course of the track; and
- Graphic image/map for orientation.

3.2.2 Interpretive signs
Interpretation signs convey educational material about a natural or cultural feature on a trail. The content is the prerogative of the land managing authority and the trail proponent.

Interpretive signs are used for points of interest on self-guided trails, scenic lookouts and roadside parking bays. They should be planned and designed as part of an overall site interpretive plan including orientation signs, markers, and directional signs, and other interpretive media.

3.2.3 Regulatory signs
Regulatory signs specify legal requirements and regulations associated with the use of a track. The content is the prerogative of the land managing authority and statutory bodies.

3.2.4 Warning or Risk signs
These signs warn of a particular danger or risk and should include the following information:

- Appropriate pictogram identifying the hazard;
- Statement of danger or hazard;
- Statement of consequence; and
- Statement of precautionary action.

Warning signs play an important role in risk and safety management of recreational areas such as trails for three principal reasons:
1. It informs users of dangers, safety issues and other relevant information;
2. It offers some protection to the land manager who is required to warn users of dangers, prohibitions and other safety information; and
3. It provides an economic alternative to staffing visitor areas where there is a risk.

3.2.5 Point of Interest Markers
Point of Interest Markers are used to identify a point or feature along a trail where there is insufficient information about the site to warrant the production of an interpretive sign. Point of Interest markers can name an historic building or a geographical feature.
The simplest and cheapest forms of site markers are:

- wooden routed signs fixed to treated pine posts
- vinyl lettering on galvanised steel planks fixed to steel posts

Point of Interest markers, however, are much smaller in size - generally 100 mm letters on 150 mm wide planks.

3.2.6 Event signs / Temporary signs

Temporary signs may be appropriate where an event or visitor attraction or service has limited and seasonal opening times. These signs may be subject to the approval of the land manager, the local planning authority for public roads and easements or Transport SA if it is on a major arterial road. Costs are paid by the applicant including the sign and advertising costs.

If a sign is erected for a period of less than nine months of the year it is classed as a temporary sign. A temporary tourist sign, however, can only be erected if the attraction is open to the public for more than three months of the year.

The location and period of the event or road closure should be advertised through local print media and local visitor centres prior to the event or road closure. This requirement, however, may vary with local planning laws.

3.3 Directional Signs

3.3.1 Trail Markers

Trail or route markers are used to mark the route of the trail itself so that there is no confusion as to which direction to take at any point on the trail. They ensure that the trail is obvious but the cost of manufacture, installation and maintenance needs to be considered. Trail markers can be placed on posts or incorporated into the path itself in the case of a paved footpath.

The spacing of markers should also reflect the track classification, definition, continuity, and the effects of local site conditions such as vegetation cover, topography and weather.

Trail markers should have the shape of a directional arrow or an isosceles triangle:

- Directional arrow: should be on a square background of minimum size 90mm x 90mm, and can be aligned at 45 degrees.
- Isosceles triangle: should have a base of 80mm and a height of 110 mm.
- Many metal trail markers on land managed by National Parks and Wildlife SA have a directional arrow on a 40mm X 40mm square reflective background.

Materials

Trail markers should be made of either aluminum alloy not less than 1.6mm thick or galvanised low carbon steel not less than 1.0mm thick. If other materials are used they should be durable and resistant to both corrosion, rotting and fire.

Colour and Finish

The colour of a marker should be consistent on a trail for a given direction. The colors chosen need to consider the seasonal colours of the landscape, the background colour

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7 DEWNR and NPSA now incorporate trail markers as a standard on 90x90mm timber posts and utilise colour coding on the arrows to represent cycling trail grades as indicated in the Cycling Trail Difficulty Standards (see Appendix C).

28/03/2003
of the mounting surface (including fading and weathering of the background over time) and other signs in the same location.

The following colours are typically used and specified in Australian Standards 2700:

- Blue: Colour B21, Ultramarine
- Yellow: Colour Y14, Golden Yellow
- Orange: Colour X15, Orange
- Red: Colour R13, Signal Red

Trail markers will benefit by having a retro-reflective finish to assist walkers in identifying a trail at night or in conditions of reduced visibility. Retro-reflective finishes should comply with requirements for Class 2 materials in Australian/New Zealand Standard 1906.1. To reduce the cost of trail markers, only the directional arrow or its background requires a reflective finish.

**Types of Trail Markers**

Common types of trail markers are:

- **Painted symbols** - using a stencil onto paved surfaces. The cheapest method and quite effective but needs continuous maintenance due to rapid deterioration of the image.
- **Wooden posts** - using routed letters and symbols, or attached plastic or metal markers. Cheaper to manufacture than metal markers, but with a shorter life and more difficult to maintain.
- **Metal posts** - which are fabricated from various standard profiles and galvanised for long life. Lettering and symbols are added using computer cut long-life vinyl or painted on with stencils. Initial costs may be of the order of $50 - $100 each but they should last indefinitely.

**Placement**

Trail markers are usually located on the left side of the main trail direction for loop trails. Two-way trails will require bi-directional markers.

According to Australian Standards, the apex point of the isosceles triangle or arrow should point towards the direction to be followed. Markers should be attached to structural elements or suitable physical features along the track whilst having regard for environment considerations. Wherever possible, they should face the trail user and be at a consistent level and standard.

Placement of the marker post to give good direction should be the priority with markers pointing either vertically, horizontally or at a 45 degree angle only.

Where a managing authority wishes to use a logo or number for a particular track, this should be placed with the trail markers. To avoid potential injuries from sharp edges or nails/screws used to attach the trail marker, markers should not be placed in positions where a post will be used as a hand-hold.
Clear placement of markers to give good direction: Heysen Trail
4. WRITING AND DESIGNING INTERPRETIVE SIGNS

Trail signs can combine text, photographs, maps, and illustrations. The information needs to be original, interesting and, if possible, capture the visitors' attention. A number of publications provide excellent guidelines on how to produce effective interpretive signs. Two excellent examples are Ham (1992) and Trapp (1994).

A good interpretive sign communicates its message to each reader quickly and to do this the sign must be:

- attractive – well designed and pleasant to look at;
- brief – the content must be well organised and concise; and
- have a clearly defined theme.

4.1 Theme Title

On interpretive trails, the sign title or heading should convey the main message or theme of the trail. Wherever possible, these titles should be short and catchy. The title text needs to be large with letters up to 30 mm high.

4.2 Text

The following tips will help produce clear and concise text for signs:

- Use a maximum of 150-200 words;
- Use simple and readable language that is commonly used in speech;
- Avoid technical terms and jargon;
- Arrange text in blocks or short paragraphs;
- Subheadings attract attention and allow readers to scan and find information of interest;
- Short sentences of 10-15 words are easier to read;
- Use active not passive verbs, e.g. The National Trust manages this site - not - this site is managed by the National Trust;
- Ask questions to make the text more interactive;
- Where possible try to refer to people in the text or illustrations;
- Text should be 24-36 point (7-10 mm high) and captions 18-20 point at final size;
- Proofread and check the final text many times using different readers; and
- Check the text against standard readability tests.

4.3 Graphic Images

Graphic images can be used very effectively to convey the main theme of a sign with text as the supporting element. Don't use illustrations or photos, which simply show what the reader can see for themselves unless annotated. Historic images, which show what a site looked like at an earlier time, can be very effective but avoid using poor quality or uninteresting photos just because they are available. Line drawings are good at showing reconstructions and how things worked or were formed – graphics are much more effective than a verbal description.

4.3.1 Maps

Two dimensional maps and plans are useful and necessary to provide basic information on the trail location at trail-heads, and interpretive details at stops on a trail. However, visitors generally have difficulty reading and understanding maps so
they need to be easy to read and should include only what the visitor needs. Maps taken from published sources will almost certainly need simplification.

Where possible (within technical and budget constraints) use 3D pictorial sketch maps, which give an oblique view of the site, and are much easier to read and look more attractive. Although the artwork is more expensive to produce, there may be other creative uses for it in publications etc.

The following are considered to be important elements for maps:

- Scale and north sign;
- Plan should be laid out in same orientation as the proposed sign, i.e. if sign faces south then the plan should be drawn facing south so that people looking at the map are facing in the right direction;
- A ‘YOU ARE HERE’ to enable the reader to locate themselves;
- Appropriate sized line thicknesses;
- The ‘key’ of the map should be compatible with Australian Standards for marking roads, tracks and points of feature (refer to a street directory or recognised road map as an example); and
- Lettering of a modern simple style and appropriate size.

4.4 Design

Creative design is important in making an interpretive sign attractive and easy to read and more likely to attract a visitor’s interest. Basic design elements that need to be taken into account for the production of signs are:

- Include some form of interesting graphic in addition to text;
- Appropriate text sizes and styles;
- Break up text by using it as a caption to a photo or graphic;
- Don’t clutter;
- Allow a constant band of void space around the margins of signs;
- Be creative in the use of colour. If restricted in the use of colour by cost or printing method, consider the use of screens to give the impression of extra colour;
- Maintain consistency in design across a set of signs;
- Make sure the designer is familiar with the printing method to be used for the production of the sign. Different printing methods will create various design restrictions, e.g. Silk-screening versus direct printing from a digital image; and
- Remember to allow for mounting holes.

Once the initial design for the signs is completed, produce good quality half size prints and have various people evaluate them, including the target audience.
5. PRODUCING TRAIL SIGNS

When commencing any sign project, first consider the range of available sign materials and production methods. This will help you understand the advantages and limitations of the various materials and printing techniques and avoid disappointments with the finished sign. If you are using a contracted designer, make sure that they contact the selected manufacturer to ensure that the artwork will be suitable for the printing method to be used.

5.1 Printing

Most exterior signs are printed using one of two printing methods: screen printing or digital printing.

5.1.1 Screen printing

Silk screening is by far the most common form of printing method used for signs. It allows the reproduction of artwork containing text, line drawings, and illustrations with the finest of quality and no loss of detail. Half tones and mono-colour photographs can be superbly printed at resolutions of about 70 dpi. Silk screening is generally not suitable for full colour printing.

Screen-printing begins by creating the film work from the digital artwork and is comprised of a piece of clear film that has the image to be printed as a positive in black. The film is usually printed directly from digital files. In some cases the final film work may be produced by photographically enlarging negative film to the required size.

A single piece of film work can be used to print several colours (e.g., title, text and graphics) as long as the various items to be printed are separated and can be masked off for printing. Each colour will therefore incur a separate cost to print. To print touching or overlapping colours will require the production film work for each colour and additional cost. Screening techniques in the form of duotones, tritones etc. can expand the tonal range of monochrome images to give the effect of more colours. To reduce costs, it is recommended that sign designs be limited to 2-3 spot colours on a coloured base. Make sure that your designer has experience in producing film work that involves the reproduction of photographs and half tones.

5.1.2 Digital printing

Digital printing is used for toned artwork and full colour images direct from digital files. Digital printing techniques are generally unsuitable for outdoor use as they have severe limitations in terms of lightfastness and may fade or yellow significantly when exposed to sunlight for a period of years. However, new materials are continually being developed which may be more suitable for certain outdoor applications.

5.2 Materials

The materials used for exterior signs must be attractive and durable. Durability is by far the hardest criterion to satisfy, and affects/impacts of the following need to be considered in the choice of signage materials:

- Moisture;
- Sun;
- Wind;
- Salinity from sea spray;
- Graffiti; and
- Vandalism.

Before making a final decision on the sign material to be used, consider the following:

- Long term maintenance requirements;
- Budget limitations;
- Life expectancy required;
- Cost benefits of the various materials; and
- Graphics requirements including colour.

A number of materials are available for interpretive signs including:

5.2.1 Vitreous (porcelain) Enamel

These signs are produced by silk screening vitreous inks onto pre-formed 1.6 mm thick enameled steel bases. The sign is then fired at high temperature (760 degrees) to bond the image to the base producing a hard, non-porous, glossy finish. Costs are similar to other screened signs except for the additional cost of the vitreous enamel base (about $100 each). However, their extended life and low maintenance requirements make them an attractive option and less expensive over the long term compared to other materials especially if vandalism is not a significant issue. For this reason, vitreous enamel is by far the most commonly used sign material in North America.

Vitreous enamel signs are:

- Graffiti proof - all forms of graffiti can be easily removed with razors and solvent without damage to the surface. No other material can offer this;
- Vandal resistant - glassy surface is highly scratch resistant with a hardness similar to glass;
- Extremely long lasting with no loss of colour. Mineral-based inks are immune to UV degradation. Guaranteed legibility of 20 years;
- Unaffected by heat, cold, sea spray, acid etc.;
- Easy to maintain - the unique hardness and abrasion resistance of vitreous enamel allows cleaning methods that would destroy other materials.

Disadvantages of vitreous enamel signs include:

- The enamel surface is subject to chipping if struck by objects exposing the underlying steel base, which then will rust. If this type of vandalism is likely to be a problem, shorter-life cheaper materials are probably a better choice;
- Small number of suppliers because of the specialist nature of the material;
- Need to produce base panels prior to printing complete with fixing holes etc;
- Panel edges need to be concealed by framing of some kind to cover any possible chips and rusting;
- Time frame for production may be longer than for other materials – 3-4 weeks from completion of artwork; and
- Limited range of standard vitreous inks.
5.2.2 Two-Pack or Similar Finish

These signs are produced by silk screening onto aluminium sheets and are used in a range of outdoor applications. Like vitreous enamel signs, they are suitable for text, line drawings, illustrations and photos. They are printed on 1.6 mm marine grade aluminium bases using a range of inks including enamel paint, vinyl and two-pack polyurethane, and then fixed at temperatures of up to 150-200 degrees.

Signs produced by this method are especially suited for multi-colour work where vivid colour is vital – just about any PMS colour can be reproduced.

These signs are not vandal-proof and do not possess the same durability of vitreous enamel. When coated with a tough clear finish or covered with clear Perspex or similar material to protect the surface they are:

- Vandal resistant. Minor scratches can be polished out;
- Graffiti resistant. Certain solvents may be able to remove some graffiti without damaging the sign. Minor surface damage may be repaired using normal automotive finishing techniques; and
- Have a life of 5-10 years.

5.2.3 Anodised Aluminium (Metal Photo)

The sign is produced by etching the image into marine grade 1.6 mm thick aluminium sheets photographically using photosensitive silver compounds. The image is produced on the surface of the aluminium by exposure of light through the same positive film work used for silkscreen printing and dyes impregnated below the surface. This method provides excellent reproduction (120-150 dpi) of photographs and line work but is single colour only – black on the silver-coloured aluminium. The maximum size of the aluminium sheet is 1000x500 mm.

After printing, the sign is boiled and sealed in an anodising solution which locks in the special organic dyes producing a hard, impervious surface which is:

- Weather-proof but subject to fading;
- Scratch resistant. The anodised surface is apparently harder than most soft metals but can be scratched with the point of a knife or a key;
- Moderately graffiti proof. Paint and felt-tipped pens can be removed; and
- Moderate life with suppliers giving a ten-year performance warranty. Life 10-20 years.

5.2.4 Etched Metal

Etched or engraved metal signs are produced in brass, aluminium and stainless steel. They are an alternative to cast metal signs when more detailed graphics and photos are needed.

The raw metal panel is covered with photosensitive acid resistant film and exposed to light passing through the sign film work. When immersed in an acid bath, the exposed metal of the image is chemically eaten away or etched to provide a clean, crisp relief image, which will hold ink. The depth of the image is controlled by the time in the acid and type of metal, and varies from 1 mm for aluminium to 0.25 mm for stainless steel.

The etched image is then in-filled with enamel inks and dried at 150-200 degrees. These inks have a life of 4-7 years depending on the conditions where installed. Near the ocean, etch primers must be used under the infill ink. Although the inks
used have a relatively short life, etched metal signs can be re-in filled, if the panels can be detached from the frames and returned to the factory.

Quality of images produced in etched metal signs is similar to that of signs printed using silkscreen methods. They are generally only used for one-colour work.

5.2.5 High Impact Acrylic
High impact acrylic is a clear material, which has been toughened to withstand the impact from stones etc. The sign graphics are applied directly to the reverse side of the transparent sheet (acrylic or polycarbonate can be used) by either silk screening or digital printing. This provides the image with the full protection of the clear material (normally about 5 mm thick).

Digital printing techniques are generally unsuitable for outdoor use as the inks involved have limitations in terms of light-fastness and will fade when exposed to sunlight for a period of a few years. They do however allow reproduction of full colour images. The expected life of these types of signs is 5-10 years.

This type of sign is common overseas especially in the UK but is relatively uncommon in Australia with its harsh sunlight.

5.2.6 Digital Prints
Digital printing allows the production of highly professional full colour images directly from computer generated files. The downside is that they will probably only last 3-5 years before needing replacement. This may not be an issue in certain circumstances e.g. areas of high vandalism where frequent less expensive replacements will be needed, or where the information needs continual updating.

The finished computer file is used to produce a full colour electronic (electrostatic) print on paper or vinyl. Digital printing technologies are continuously improving and currently solvent-based printing is producing prints that:

- Are designed for outdoor use;
- Have strong hues and colours;
- Have no streaking or banding; and
- Have indoor inkjet resolution.

The printed image is encapsulated in film and then stuck onto a suitable mounting sheet, usually aluminium or polycarbonate. Where printed on self-adhesive vinyl, the print is bonded directly to the mounting sheet. De-lamination of the print from the backing board can be a problem if moisture is able to penetrate at the edges.

Once mounted, the sign is surfaced with anti-graffiti film or covered with a 5 mm sheet of polycarbonate to provide some graffiti and scratch resistance. However, because of the relatively short life of the image before fading in sunlight, these are not major concerns compared with other sign materials that have a much longer life.

5.2.7 Cast Metal
Metal casting has been long used for commemorative plaques, the most common metal being bronze. Cast signs are produced by pouring molten metal into a form or mould. They are only suitable for reproduction of text and simple line-work. Their main advantage is their extremely long life and durability. They also do not require framing or backing as do most other types of signs.
5.3 Panel Dimensions

The following guidelines may assist in selection of sign panel shapes and sizes:

- Don’t use square panels;
- Rectangular shaped panels which range between a 5 to 3 and 5 to 4 ratio are visually more pleasing to the eye;
- These panels should be in portrait format when mounted vertically in information bays or landscape when mounted at an angle along trails;
- Irregular shapes can be laser cut but present problems for printing and mounting, and may substantially increase the cost of production. Vitreous enamel may be unsuitable for irregular shapes unless the edges can be concealed;
- Panel sizes generally range between A3 and A0 the most common size being 900x600 mm;
- Avoid using large sizes which may give a billboard appearance;
- If mounting holes are required, it is preferable that these are cut prior to printing. This is essential for vitreous enamel;
- The number of mounting holes will vary from four to eight depending on the panel size; and
- Remember to allow for mounting holes in the design stage.
<table>
<thead>
<tr>
<th>Sign material</th>
<th>List of Suppliers Supplier or manufacturer</th>
</tr>
</thead>
</table>
GLD Enterprises, 25 Rokewood Ave Belair SA 5052, Ph 82786732 |
| Two-pack polyurethane or similar | Armsign, PO Box 7003 Lismore Heights NSW 2480, Ph 02 66251122 [www.armsign.com.au](http://www.armsign.com.au)  
DeNeefe Signs, 1 Wright Rd. Walkley Heights, Ph 82623211 [www.deneefe.com](http://www.deneefe.com)  
Heatpac Safety Signs, 15 William St., Mine End S., Ph 82340322 |
| Anodised aluminium | Armsign, PO Box 7003 Lismore Heights NSW 2480, Ph 02 66251122  
SA Photoengravers, U6/4 Iris St. Melrose Pk, Ph 82770966  
Photo Mechanical Products, 14 Gaelic Ave Holden Hill, Ph 82660200 |
| Etched metal | Allied Metal Printers and Engravers, 4 McInnes St. Ridleyton, Ph 82691364  
SA Photoengravers, U6/4 Iris St. Melrose Pk, Ph 82770966 |
| Digital print | The following produce suitable prints from digital files:  
Ochre Digital, 45 Woodforde Rd. Magill 5072 [www.ochredigital.com](http://www.ochredigital.com)  
Several suppliers will arrange printing and mounting  

8 It is not the intention of this addendum to review the whole list of suppliers and indicative costs however to assist in sign development web sites have been provided for suppliers or manufacturers.
6. MOUNTING TRAIL SIGNS

The production of trail sign should not be considered without consideration of the mounting system or structure to which the panels will be fixed i.e.

- The materials;
- The form; and
- The impact of the mounting system.

The mounting system should frame the sign and protect the edges from damage or rusting. It should also be sufficiently fixed so as to reduce the possibility of the sign being dented with objects or bent. For added protection from vandalism and graffiti, the panels can be faced with high impact clear polycarbonate sheets but these need to be properly sealed to exclude moisture, leaves, dirt etc. However, it must be accepted that no sign and/or mounting system will be totally immune from certain forms of vandalism.

Sign manufacturers will supply sign panels unmounted to customers to mount by whichever method they please. However, it is preferable to purchase the manufacturer's mounting system that has been designed to suit the specific sign shape and material. The other advantage is that such systems are ready to mount immediately.

When selecting or designing sign mounting systems they should be:

- Constructed of long-life, low maintenance materials, e.g. hot-dipped galvanised steel or aluminium extrusions;
- Finished in durable coatings – two-pack polyurethane is recommended;
- Supplied in pieces for ease of transport;
- Easy to install with all required fixing materials supplied;
- Allow the easy removal of sign panels independently from the mounting structure for replacement or repair; and
- Have theft-resistant fittings.

Trail signage should be placed so that it does not detract from visitors' appreciation of a site. Individual signs installed along self-guided trails should be:

- Angled at 40 degrees from the horizontal;
- Set low with the bottom of the sign about 600 mm above the ground. This makes them easy for children to read as well;
- Located directly in front of the feature to be interpreted with a connection made with a photo or illustrations; and
- Sited carefully so as not to interfere or obscure the view by siting signs against a bank, wall or vegetation.
7. THE COSTS OF TRAIL SIGNS

It is extremely difficult to provide a cost other than indicative costs for trail signs due to the large number of variables involved\(^9\). The cost of a sign will depend on the:

- time to research and write the sign or compile a sign plan;
- complexity of design and printing method;
- sign materials;
- how it will be mounted; and
- who will manage the project.

The cost of a sign may seem expensive, but when compared with the number of visitors who will use it over the life of the sign it is probably good value compared to other communication methods. The following guidelines are based on 2001 prices and exclude GST. There are five components that need to be considered when costing a program of interpretive signs.

7.1 Research and Writing

A major part of any interpretive sign project is the research to provide suitable information, and writing and editing of suitable text. This stage also involves sourcing of photographs, illustrations and other graphics to compliment the text. Arranging permission to use copyright images will also be required. Many hours will be spent writing and rewriting text and circulating drafts for review and comment. It may be necessary to consult with technical or historical experts at this stage, or obtain community approval. This will eventually lead to the production of a rough layout, which is the starting point for the next stage. Although often overlooked, research and writing is probably the most important stage of sign production, as no matter how good a sign looks it will not be successful if it cannot get its message across.

The time involved in this process is considerable and usually underestimated. It can amount to as much as 50% of the time and therefore the cost of interpretive signs. Often the initial research and writing will be done by local volunteers or perhaps a paid staff member and so the cost is not included. In some cases a consultant (perhaps the same person who will do the design work) will be engaged and the cost will need to be included in the project. At $50+ per hour, this may cost $200-$400 per sign.

7.2 Design and Artwork

Once a rough draft for a sign has been completed and approved, it is ready for design and production of final artwork. The designer will also arrange the creation of good quality illustrations and line drawings from supplied approved drafts. These can be relatively time consuming and expensive, but are essential in many circumstances and must be allowed for in the budget. A 3D perspective or reconstruction could cost as much as $500 but can be very effective.

Make sure that the designer is aware of the printing method to be used for the sign production. Silkscreen printing will impose certain design restrictions compared with digital printing where full colour work is possible. For all methods except digital printing, the designer will be responsible for producing the printing film-work. This will cost $70-$100 per full sheet (i.e. $70-$100 per colour if overlapping colours).

\(^9\) It is not the intention of the addendum to review all indicative costs of trail signs and the information provided in this section are based on 2001 prices and as advised would need to be reviewed for a more accurate assessment of cost.
The cost of the design stage is quite variable depending on the complexity of the design, the number of colours, photographs and illustrations. For a two or three colour sign the cost including film-work will be in the range of $200-$500

7.3 Panel Production

There are a number of different materials that can be used for sign production but only five generally available in South Australia. These are shown below with indicative costs. The costs are based on:
- film-work supplied to manufacturer;
- supply of standard 600x900 mm panel;
- printing in two colours; and
- application of anti-graffiti film, polycarbonate sheeting etc. as required.

<table>
<thead>
<tr>
<th>Material</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitreous enamel</td>
<td>$400</td>
</tr>
<tr>
<td>2 pack polyurethane or similar</td>
<td>$200-$300</td>
</tr>
<tr>
<td>Anodised aluminium</td>
<td>$350</td>
</tr>
<tr>
<td>Etched metal</td>
<td>$500-$700</td>
</tr>
<tr>
<td>Digital print</td>
<td>$300</td>
</tr>
</tbody>
</table>

As can be seen, panel production costs are in the range $200-$700.

7.4 Mounting System

Standard mounting systems supplied by sign manufacturers range from $200-$400.

7.5 Project Management

Many sign companies will take your draft layouts and arrange production and supply of the signs and mounting system. Some companies may only handle the sign production from the final film-work and leave you to arrange your own designer. Interpretive consultants can manage an interpretive sign project from rough text and graphics to finished product. They are able select from a range of designers, materials and producers but will charge an additional fee for the service. This fee could be up to $400 per sign.
<table>
<thead>
<tr>
<th><strong>Research and writing</strong></th>
<th>Final text to rough layout stage</th>
<th>Up to $400</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Design and artwork</strong></td>
<td>(includes 1 piece of film-work)</td>
<td>$200-$500</td>
</tr>
<tr>
<td><strong>Sign production</strong></td>
<td>Costs allow for:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- 600x900 mm panel</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- 2 colours</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- printing or fixing to base plate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- anti-graffiti film or polycarbonate sheet if needed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vitreous enamel</td>
<td>$400</td>
</tr>
<tr>
<td></td>
<td>Life 20+ years</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Two pack polyurethane</td>
<td>$200-$300</td>
</tr>
<tr>
<td></td>
<td>Life 5-8 years</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Anodised aluminium</td>
<td>$350</td>
</tr>
<tr>
<td></td>
<td>Life 10-20 years</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Etched metal</td>
<td>$500-$700</td>
</tr>
<tr>
<td></td>
<td>Ink life 4-7 years</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Digital print</td>
<td>$300</td>
</tr>
<tr>
<td></td>
<td>Life 3-5 years</td>
<td></td>
</tr>
<tr>
<td><strong>Mounting system</strong></td>
<td>Cost allows for</td>
<td>$200-$400</td>
</tr>
<tr>
<td></td>
<td>- hot-dipped galvanised steel</td>
<td></td>
</tr>
<tr>
<td></td>
<td>or</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- extruded aluminium</td>
<td></td>
</tr>
<tr>
<td><strong>Project management</strong></td>
<td></td>
<td>Up to $400</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td>Within the range $500-$2000</td>
</tr>
</tbody>
</table>

7.6 Indicative Costs for Interpretive Sign Production
<table>
<thead>
<tr>
<th>Sign Type</th>
<th>Description/Purpose</th>
<th>Sign Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fingerboard/Position Signs</strong></td>
<td>Placed at minor road intersections to indicate a turn-off to a tourist attraction or service facility.</td>
<td>Paid for by the applicant, except for signing non-commercial facilities or attractions. The sign is approximately $50 and $80 for post and brackets and a further $100 to $200 for installation depending on location.</td>
</tr>
<tr>
<td><strong>Advance Warning Signs</strong></td>
<td>Placed before an intersection or when the entrance or intersection cannot be easily seen by approaching motorists and, therefore may constitute a hazard.</td>
<td>Paid for by the applicant, except for signing non-commercial facilities or attractions. Manufacturing costs are $180 a square metre and $200 for installation depending on location.</td>
</tr>
<tr>
<td><strong>Direction Signs</strong></td>
<td>Placed to provide directions to towns or cities, facilitating traffic movement in the safest and most direct way. They are used in conjunction with maps to reassure the direction of travel. Most include a route numbering system.</td>
<td>Directional signs are provided by the relevant road authority. There may be situations where the applicant would pay some or all the costs associated with the directional sign. Manufacturing costs are $180 a square metre and $200 for installation depending on location.</td>
</tr>
<tr>
<td>(white lettering of a green background)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Tourism Attraction Signs</strong></td>
<td>Placed to provide a direction to features and tourist attractions of significant recreation and cultural interest. Where appropriate, these signs also make use of tourist attraction and service symbols</td>
<td>In order to qualify for tourist signing, the core business must be tourism based with strong commitment to service visitors. The South Australian Tourism Commission and Transport SA establish the criteria that determine whether a business qualifies for tourist attraction signing. With exception of signs to natural and geographic features, which may be provided for by the appropriate road authority, the applicant pays for Tourist Attraction Signs. Depending on the size of the sign, costs vary from $250 to $600 inclusive of manufacturing and installation.</td>
</tr>
<tr>
<td>(white lettering on a brown background)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Examples:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Entry point markers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Route markers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Tourist/scenic drive signs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Geographic and natural feature signs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Temporary signs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**7.7 Indicative Costs of Tourist Signs on Roads**
8. MANAGEMENT OF TRAIL SIGNS

8.1 Use of Branding and Logos

Directional markers and way markers should include the trail name, trail logo and directional information for the safety of the trail user. All other logos and branding (i.e. Government/land manager logos) should be promoted on all other levels of signage such as trail heads, information stops, shelters and major trail intersections. In general, trail signs should clarify to trail users the owner or manager of the trail. This allows recognition of which agency or body is responsible for the trail and associated infrastructure if there is a problem that should be rectified.

8.2 Frequency of Trail Signage

The level of trail signage needs to correspond to the nature of the experience being offered. A remote wilderness area is unlikely to have formal signage or trail markers whereas a more urban or peri-urban area will require a system of signs to effectively direct trail users in a safe manner.

Interpretive signs should be located relatively close to the point of focus without obstructing the movement of other trail users. The greater the visitor risk, the more frequent the trail signage to ensure a safe experience unless a Class 5 or 6 trail. Generally, the higher the level of participation the more frequent the number of interpretive signs to spread visitors along the trail to reduce crowding at any one point.

Trail signage should be located at key features, major trail heads and trail intersections only as a priority. Trail markers should be spaced to allow a clear indication of the direction to travel while minimising the visual impact on the landscape.

A highly formed pathway normally guides trail users enough to not warrant trail markers every 30 -100 meters unless there are many other informal pathways crossing each other, then trails markers need to be spaced so that a person can easily follow a defined route.

8.3 Understanding Target Markets

The development of trail signs requires an understanding of the type of trail user, the nature of their participation and the typical themes of interests for that user group.

Trail signs should not only take a focus on common themes relating to cultural heritage, natural history and conservation, but consider the mode of travel (horse, bicycle, kayak, walking, running, scuba diving etc.) and the speed and height at which they travel to enable a clear visual contact with signs for a period of time that allows comprehension of sign information.

Trails with a tourism focus will also need to provide information on tourist attractions and support infrastructure such as accommodation, food and wine opportunities, transport, toilets and parking. For example, there is a growing market demanding catered overnight walks extending up to three days and day walks where little trip planning, expertise and outdoor equipment is needed. There is also a preference for trail loops in priority to long distance linear trails and participants tend to seek more knowledge about a destination before they leave home. Therefore trail signs should extend and enhance information communicated by trail brochures, web sites and
Regional marketing collateral rather than repeat descriptive information unless it is to improve visitor safety.

8.4 Sign Standards for Shared-use and Overlapping trails

Shared-use and overlapping trails may require a number of trail signs to meet the needs of different user groups (sign height and font size for the speed of travel etc.) and to inform users of the appropriate behaviour to reassure all users of behavioural expectations. One of the most common issues is the warning time before intersecting another trail and trail users understanding when to yield to different user groups. As a general rule, cyclists yield to walkers and both cyclists and walkers yield to horses.

Trail markers for shared-use trails should aim to combine information on the one post to avoid cluttering the trail easement with posts. Where a trail easement or alignment is shared by trails under different names and/or use, a combination of symbols, trail names and font/arrow colours should be used to coordinate a common direction or change of direction for any one trail.

8.5 Visitor Safety and Liability

Risk signs identify potential or actual risks to trail users and should include relevant international pictograms under a “Danger” or “Warning” headers. These signs are used where risks to life and property might occur, but not in situation where a degree of risk is normally anticipated and accepted by the trail user. International sign symbols (or pictograms) alone are not enough to meet Australian Standards for risk signs.

Aside from ‘Danger’ and ‘Warning’ headers, a risk sign should include:

- A statement of the exact nature of the risk;
- The consequence of the risk; and
- How to avoid the risk.

(Refer to Appendix B: Danger and Warning Signs developed by National Parks and Wildlife SA for further information)

8.6 Trail Infrastructure (Upgrade and Maintenance)

Trail signs are the responsibility of the land management agency or the trail group responsible for establishing the trail. Funding for capital upgrades and new signs can often be gained through the Department of Recreation, Sport and Racing and Local Government under certain conditions. The South Australian Tourism Commission funds new signs and considers significant upgrades where there is a predominant tourism focus or purpose to the trail. Recorded visitor numbers and having a management plan and / or an operations plan in place to define a maintenance program will assist a case for funding assistance for signs from government agencies (refer to Section 8.8).

8.7 Environmental and Planning Guidelines

Trails sign are subject to policies and guidelines of the relevant land manager and statutory guidelines such as Australian Standards.

The South Australian Tourism Commission and Transport SA is jointly involved in guiding the development and installation of brown and white tourism signs on major
Public roads through the “Tourism and Service Sign Posting Policy”. The policy is used to provide a more consistent, equitable and integrated approach to tourism and service signing, which is important in connecting people to trail heads and destinations that provides trail opportunities and support services.

Signs on minor public roads, road reserves or easements that are not a major arterial road are subject to the objectives and principles of development control outlined in the Development Plan for the relevant local authority within which the trail sign is located.

In the case of trail signs on land under the care or control of National Parks and Wildlife, the “Publication and Signs Standards Manual (2002)” is the primary reference used to guide sign design, location and construction.

For signs on land managed by Forestry SA, the “Forestry SA Corporate Standards” manual is the primary reference used for the planning, ordering and construction of signs. Reference is also made to the NPWSA “Publication and Signs Standards Manual (2002)” for more specific details.

8.8 Funding of Signs

Funding for the maintenance or development of new trail signs is an initiative of a number of government agencies. Each government agency has a slightly varied focus but interested in partnerships to generate synergies in the development of trail signage. This includes pooling funds supporting common goals and coming to agreement on sign related issues10.

A number of government agencies fund sign development. Trails that have a management plan and program for funding the maintenance of trail infrastructure such as signs will be given priority. Government agencies include:

Office of Recreation, Sport: funding is available to Local Government, incorporated not for profit groups and community groups through the Community Recreation and Sports Facilities Program. Applicants must meet 50% of the costs.

South Australian Tourism Commission: funding is available to Local Government, community groups and in exceptional circumstances private tourism operators, via the Tourism Development Fund. These funds are generally applied on a dollar for dollar basis up to $50K. In-kind contribution from the proponent is recognised as part of their 50% contribution. Two funding rounds are conducted annually with applications closing in April and September. Sign development may include roadside signage (in conjunction with Transport SA) as well as interpretive signs.

Transport SA: Bike South of Transport SA administers the State Bicycle Fund, which provides subsidy funding to Local Government for initiatives that provide bicycle facilities or promotes cycling in the community. Funding is on a dollar for dollar basis and infrastructure must meet the requirements of the Australian Standards endorsed Austroads Guide to Traffic Engineering Practice, Part 14 – Bicycles. Applications for funding are requested in March and close in June each year.

Department of Environment and Heritage: the National Parks and Wildlife SA develop and maintain trail signs in partnership with Walking SA and local Friends Groups. Funding is not available to external agencies but part of operational work done in parks.

10 The Department of Environment and Heritage now DEWNR also has developed a strong partnership with the Friends of the Heysen Trail and Other Walking Trails to work cooperatively in the management and promotion of Heysen Trail.
Planning SA: funding is available through the Planning and Development Fund which is used to subsidize Local Government to facilitate open space projects in high focus areas, particularly those designated as part of the Metropolitan Open Space System (MOSS).

Local Government: funding is generally not provided to external organisations rather annual budgets include parks and reserve development and maintenance allocation. Local Government can, however, offer in-kind support including project management, development advice and coordination of volunteer and community based resources.

Regional Development Boards: although funding is not directly available for sign development and maintenance, there is associated financial support for trail development though a number of funding programs. Regional Development Boards can broker various Federal and State Government funding schemes on behalf of community groups, and assist with developing funding applications and pool resources within a regional by working across various interest groups and businesses.

8.9 Sponsorship and Commercial Partnerships

Sponsorship and commercial partnership can effectively assist the cost of developing and maintaining trail signs. A clear example is the “Adopt a Trail” scheme in North America, which has been successful in gaining consumer ownership as well as funding for trails.

Sponsorship and commercial partnerships should reflect or promote the theme or focus of the trail and not be of a scale, function or design that does not reflect the character of the environment and the desired visitor experience. An agreement on the obligations and terms of the sponsorship relationship needs to be ratified between the landowner and/or the trail manager and the sponsor to define the contract relationship.

Sponsor’s names and logos should be located at major trail-head and intersections only and on a separate post or marker to be funded by the sponsor. Given sponsorship can be short or medium term and names, brands and logo’s change or date, the sponsorship sign should either be a sticker or badge that can be removed if required.

8.10 Community Involvement and Ownership

Government agencies that fund trail signage rely on the community and Local Government to be proponents for trail signage proposals. A bottom up approach whereby the community takes ownership and responsibility for trail signage increases the lifecycle of the sign system by improving the responsiveness to dealing with trail signs that are removed or vandalized over time.

Stewardship by friends groups can for many years has enhanced asset management through working with land managers to improve the State’s trail network. Forming alliances between trail user groups and conservation groups for example, can create a larger independent voice to Government on trail related issues such as signs and assist in their upkeep.
8.11 Internationally recognised Signs Symbols  (Pictograms)

Sign symbols help communicate to visitors of any language, the services, attractions, hazards and behaviour requirements to follow when using trails.

White symbols on a black or dark background are preferred for pictograms because they are visually clear to distinguish at a greater distance and at first glance. Sign symbols used by Transport SA and National Parks and Wildlife Service support the use of the dark background, which should be in keeping for other trails in the State.

Sign symbols confirming with Australian Standards should always be used. Sign symbols currently used by the relevant land management agency will take precedence over other variations. Industry user groups such as Bike SA, Horse SA, Walking SA and the Scuba Divers Federation of SA should also be consulted on appropriate types and location of symbols on trails specific to each user group.

8.12 Sign Manuals and Guidelines - Other References

The most detailed and relevant sign manual is the National Parks and Wildlife SA, “Publications and Signs Standards Manual” (May 2002) which can be viewed at National Parks and Wildlife Regional Offices or The Environment Shop at 77 Grenfell Street, Adelaide SA 5000, phone: (61 8) 8204 1910, fax: (61 8) 8204 1919.

For information on signs and sign symbols for coastal areas and beaches where water activities take place, please refer to the “Aquatic and Recreational Signage Manual” (2001), published by Surf Life Saving Victoria. (Email: slsv@slsv.asn.au)

Standards Australia publish the current “Australian Standards for Walking Trails” in

8.12 New and updated information

For updated sign information contact:

Trails SA
http://www.southaustraliantrails.com/trail_experiences.asp?type=cycling

DEWNR or National Parks SA
Natural Resources Centre - Adelaide
Ground Floor, 81-95 Waymouth Street
Adelaide, SA, 5000
Phone: (+61 8) 8204 1910
http://www.environment.sa.gov.au/contact-us

National Aquatic and recreational Sign Manual 2006

The Australian Walking Track Grading System

Cycling Standards
http://www.bikesa.asn.au/
Mountain Bike - Trail Difficulty Rating System – User Guide see Appendix C

Horse standards
Trail Difficulty Rating System - Horse Trail Classifications see Appendix D
two parts, however, a fee is charged for a copy. Part 1 relates to trail classifications and signage and part 2 relates to infrastructure design. Refer to www.standards.com.au

The Interpretation Australia Association website: www.interpretationaustralia.asn.au, also has lists of resources, conference proceedings, publications for sale and a consultants and suppliers register. Additionally, the Queensland Institute of Technology www.interpretivesigns.qut.edu.au has a very good summary of information on interpretive signs.
9REFERENCES


   A good introduction and very good as a planning guide. Look to Trapp et al and Ham for practical ideas.

   A useful Australian text available freely on the Internet at www.heritage.nsw.gov.au/pub/free/fpub.htm. Some of the examples are ‘good’ as an example of ‘what not to do’ eg. too many dates.

   Detailed sign manual with specifications for most types of signs.

   An interpretive “bible” for people on budgets that is very good at showing how to interpret with not much money. Somewhat dated on new technologies.

   A very easy to use manual that is full of practical examples

   Relates to signs on roads both public and commercial.


APPENDIX A

Examples of Trail Infrastructure, Interpretive Signs, Mounting Systems and Cycling and Horse Riding Degree of Difficulty for trail sign use\textsuperscript{12}

\textsuperscript{12} Including Cycling and Horse Riding Trail Difficulty Rating Systems
Boardwalk and safety fencing along fragile cliff top, Hallett Cove Geological Trail

Site name sign for historic mine site. Replaceable vinyl lettering on galvanised steel. Low cost and maintenance.
Trailhead information bay, Brachina Gorge geological drive trail

Vitreous enamel visitor orientation signs, Mount Gambier
Trail marker, Blinman Mine Trail. Vinyl lettering on galvanised steel.

Point of Interest Marker, Brachina Gorge geological drive trail. Vinyl lettering on galvanised steel.
Basic interpretive sign content and design. Title, text and illustration silkscreened in two colours, Almanda Mine Trail

Use of reconstruction drawing to interpret how the ruins (shown in brown) were originally arranged, Burra Mine Museum
High quality illustration showing how a glacial lake was formed, Grand Tetons National Park,

Effective use of graphics and text, 17 Mile Drive, Monterey
Simple but extremely effective use of an illustration to get the message across, Bow Valley Parkway, Canada.

A well crafted and designed sign with interesting title and effective use of sub-headings and graphics, Hiawatha bike trail, Idaho.
Tubular steel post and framing system designed for use in modern streetscape, Broken Hill Heritage Walk

Standard rectangular sign installed in steel framing system which conceals the edges of the vitreous enamel panel, Brachina Gorge Geological Trail
Double-sided sign mounted in tubular steel, New Zealand.

Vertically mounted signs, Flinders Ranges.
Low set interpretive sign does not detract from the view, Icefield Parkway, Canada.

Two-colour vitreous enamel panel set into low stone wall at scenic lookout, Washington State.
APPENDIX B:

Danger And Warning Signs Developed By National Parks And Wildlife Sa
## Mountain Bike Trail Difficulty Rating System – User Guide

<table>
<thead>
<tr>
<th>Description</th>
<th>Very easy White Circle</th>
<th>Easiest Green Circle</th>
<th>More Difficult Blue Square</th>
<th>Very Difficult Single Black Diamond</th>
<th>Extremely Difficult Double Black Diamond</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td>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.</td>
<td>Likely to be a single trail with moderate gradients, variable surface and obstacles.</td>
<td>Likely to be a challenging single trail with steep gradients, variable surface and many obstacles.</td>
<td>Extremely difficult trails will incorporate very steep gradients, highly variable surface and unavoidable, severe obstacles.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fitness Level</td>
<td>Most people in good health.</td>
<td>Most people in good health.</td>
<td>A good standard of fitness.</td>
<td>Higher level of fitness.</td>
<td>Higher level of fitness.</td>
</tr>
<tr>
<td>Trail Width</td>
<td>Two riders can ride side by side.</td>
<td>Shoulder width or greater.</td>
<td>Handlebar width or greater.</td>
<td>Can be less than handlebar width.</td>
<td>Can be less than handlebar width.</td>
</tr>
<tr>
<td>Trail Surface and obstacles</td>
<td>Hardened with no challenging features on the trail.</td>
<td>Mostly firm and stable. Trail may have obstacles such as logs, roots and rocks.</td>
<td>Possible sections of rocky or loose tread. Trail will have obstacles such as logs, roots and rocks.</td>
<td>Variable and challenging. Unavoidable obstacles such as logs, roots, rocks drop-offs or constructed obstacles.</td>
<td>Widely variable and unpredictable. Expect large, committing and unavoidable obstacles.</td>
</tr>
<tr>
<td>Trail Gradient</td>
<td>Climbs and descents are mostly shallow.</td>
<td>Climbs and descents are mostly shallow, but trail may include some moderately steep sections.</td>
<td>Mostly moderate gradients but may include steep sections.</td>
<td>Contains steeper descents or climbs.</td>
<td>Expect prolonged steep, loose and rocky descents or climbs.</td>
</tr>
</tbody>
</table>

Taken from IMBA Australia – Trail Difficulty Rating System 2013
## Appendix C

### Trail Difficulty Rating System - Horse Trail Classifications

<table>
<thead>
<tr>
<th>Description</th>
<th>Easiest Green Circle</th>
<th>Intermediate Blue Square</th>
<th>Advanced Single Black Diamond</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>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</strong></td>
<td></td>
<td></td>
<td><strong>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.</strong></td>
</tr>
<tr>
<td><strong>Frequent encounters are likely with other users including cyclists, walkers and runners.</strong></td>
<td><strong>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.</strong></td>
<td><strong>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.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Suitable for</strong></td>
<td>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.</td>
<td>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.</td>
<td><strong>Intermediate Trails are suitable for individuals and small social groups seeking a very short to medium distance trail requiring a basic level of skill and fitness.</strong></td>
</tr>
<tr>
<td><strong>Level of skill / experience</strong></td>
<td>Novices will require a basic level of riding skill and fitness is required coupled with riding on a trained, experienced horse.</td>
<td>An intermediate level of riding skill &amp; fitness is required, and a horse with some trail experience &amp; training is recommended. Knowledge of Basic horse health including first aid and conditioning requirements is highly desirable.</td>
<td><strong>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.</strong></td>
</tr>
<tr>
<td><strong>Trail Corridor (Width) (Height)</strong></td>
<td>(Min.) 3m (Min.) 3.7m</td>
<td>(Min.) 1.5m (Min.) 3.7m</td>
<td>Min. 1.5m Min. 2.5m</td>
</tr>
<tr>
<td><strong>Tread (Minimum Width)</strong></td>
<td>1.5 m</td>
<td>1.5 m</td>
<td>Min. 30 cm</td>
</tr>
<tr>
<td><strong>Note:</strong> 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.</td>
<td><strong>Note:</strong> 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.</td>
<td><strong>Note:</strong> 1.5 metres is recommended at the height of the riders stirrups</td>
<td></td>
</tr>
<tr>
<td><strong>Trail Surface</strong></td>
<td>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.</td>
<td>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)</td>
<td><strong>Usually a variable surface with sections of rock, sand, clay gravel, etc. Obstacles may include challenging rocks, logs, fording creeks</strong></td>
</tr>
<tr>
<td>Distance</td>
<td>Minimum 0-14km</td>
<td>Maximum 14km</td>
<td>Advanced Trails can be any length.</td>
</tr>
<tr>
<td>---------------</td>
<td>----------------</td>
<td>--------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td><strong>Trail Gradient</strong></td>
<td>Desired gradient 0 – 10%  Maximum 10%  Maximum sustained pitch 5%  Out slope 4% maximum</td>
<td>Maximum 15%  Maximum sustained pitch 10%.  Out slope 4% maximum</td>
<td>Maximum 20% (Max. sustained pitch 10%).</td>
</tr>
<tr>
<td><strong>On-trail facilities</strong></td>
<td>Facilities along the trail may include mounting blocks, step overs, shallow fords, bridges, watering points, interpretative and/or management signs.</td>
<td>Facilities along the trail may include lookouts, bridges, watering points, interpretative and/or management signs, step overs, shallow ford crossings.</td>
<td>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.</td>
</tr>
<tr>
<td><strong>Trailhead facilities</strong></td>
<td>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.)</td>
<td>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.)</td>
<td>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.)</td>
</tr>
<tr>
<td><strong>Recommended trail flow</strong></td>
<td>Open and Flowing</td>
<td>Generally flowing with some more challenging sections</td>
<td>none</td>
</tr>
</tbody>
</table>

* 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.