



Sustainable Mountain Biking Strategy

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Minister's foreword



**Robyn Parker, Minister
for the Environment and
Minister for Heritage**

NSW has one of the most magnificent networks of national parks in the world, with a diversity of landscapes covering over seven million hectares. The NSW Government is committed to providing experiences that help all groups in our community visit these remarkable places so they can appreciate why it is important we continue to protect them. We are also committed to helping people of every age enjoy a healthy lifestyle.

People can already walk, camp, picnic, kayak, swim and cycle in many special places in our parks. Mountain biking is growing in popularity every year. These activities are a great way to appreciate nature while also staying healthy.

More than 1,000 people have provided input to the NSW National Parks and Wildlife Service (NPWS) on the issue of managing mountain biking in national parks. Most comments overwhelmingly supported providing better access for mountain biking.

At the same time, we need to make sure any activity is sustainable.

This strategy represents a new way forward. It will help guide the provision of high quality mountain biking experiences that riders of all levels of experience will continue to use and enjoy, and at the same time ensure they will be provided only where they are appropriate and safe according to the most stringent environmental standards.

The strategy outlines what planning requirements will be needed for any new trails, specifies track design requirements and highlights a small number of priority projects. It also encourages continued partnerships between the NPWS and mountain biking groups to improve and maintain mountain biking tracks and adopts a code of conduct so all visitors can enjoy their time in our parks.

We will work with other land managers and local communities to identify opportunities in the most appropriate sites and create linkages between existing trails that improve the quality of the ride and sustainability of the track.

We will create exciting experiences to entice cyclists and mountain bikers to visit NSW, and stay longer, to enjoy all our national parks have to offer. We will do this in partnership with recreation and tour operators and local accommodation providers.

This strategy has a ten-year timeframe. A five-year review will be conducted to evaluate the success of priority projects and to make sure we are delivering on our promise to create high quality, sustainable mountain biking experiences in NSW national parks and reserves for the community and visitors to our state to enjoy.

Glossary

Armouring: reinforcement of a surface with rock, brick, stone, concrete or other paving material

Berm: a ridge on the outer edge of a track that is higher than the centre of the track

Drop: a constructed or natural feature where the slope drops away steeply

IMBA: International Mountain Bicycling Association, the international peak body for mountain biking with members in 31 countries

LED: light emitting diode, a high efficiency light source

Management (or fire) trail: a vehicle trail in a reserve that is maintained to facilitate management activities and is not available for general public vehicle use (except for non-motorised vehicles such as bicycles); licensed access to in-holdings, apiary sites or similar may be allowed.

MTBA: Mountain Bike Australia

Multi-use (or shared-use) track: a track that is available for walkers and cyclists, and may also be available for other users such as horse-riders

North shore: elevated trails made of interconnecting bridges and logs

NPW Act: *National Parks and Wildlife Act 1974* (see 'References' section)

NPWS: NSW National Parks and Wildlife Service

NPWS parks: lands reserved under the *National Parks and Wildlife Act 1974* and managed by the NPWS which include national parks, historic sites, state conservation areas, regional parks, karst conservation areas, nature reserves and Aboriginal areas

NSWMTB: NSW Mountain Bike Association

OEH: Office of Environment and Heritage

Parks Eco Pass: a licence scheme for recreation and tour operators working in NPWS parks

Plan of management: see POM

Policy: a statement of a decision to undertake a set course of action. Government policies interpret and bring into effect legislation and its operations.

POM: plan of management. All NPWS parks are required under the *National Parks and Wildlife Act 1974* to have a plan of management. Plans of management provide a vision of the values of the parks, the objectives for management and how those objectives will be met. All operations in NPWS parks must be in accordance with the applicable plan of management.

Preferred-use track: a track that is clearly marked as being designed for one type of use but that other users are permitted to use

Public access road: provides vehicle access to the general public; public roads which are managed by the NPWS are also available for cycling and walking.

Rollover: a constructed or natural feature that can be rolled over on a bike

Single-track: a narrow track that is only wide enough to accommodate riders in single file

Single-use track: a track that is only available for one type of use

Tenures: in this publication, 'other land tenures' refer to public lands not owned by NPWS and privately-owned lands, with 'park tenures' including NPWS parks, state forests, state parks and Crown land.

Track: tracks are generally used by bushwalkers, pedestrians, horse riders and cyclists and are not available for motorised vehicle use

Trail: see 'Management trail'

NB. The terms 'track' and 'trail' are regularly interchanged in common parlance. This document adopts the above definitions to ensure consistency in meaning and to distinguish tracks from management trails. Furthermore, to avoid repetition of 'track' and 'trail', the word 'track' is used where no distinction is being made between the two.

Summary of new directions: actions and responses

1. Where regional planning identifies a high demand for new mountain bike experiences in a NPWS park that does not currently permit mountain biking in its plan of management (POM), and the proposed experiences satisfy criteria in the NPWS Cycling Policy, a draft amendment to the POM will be prepared for public exhibition.
2. Where cycling is permitted on land that becomes gazetted as a park under the NPW Act, this activity will be assessed against the NPWS Cycling Policy criteria to determine whether it should be allowed under the new park's POM.
3. The NPWS will provide a few high quality single-track experiences. Cycling will only be permitted on single-track in parks when the track is designated as suitable for cycling and clearly signposted.
4. Subject to the NPWS Cycling Policy criteria, the NPWS will provide a diversity of cycling experiences that suit a variety of people, including families with children, road cyclists and mountain biking enthusiasts.
5. The NPWS will assess proposed mountain biking experiences against a set of planning, development and management criteria identified in the NPWS Cycling Policy, including considering:
 - opportunities and demand for mountain biking across the region, including other land tenures
 - appropriateness of the site
 - ecological sustainability
 - provision of a quality experience for riders
 - balancing competing visitor demands
 - availability of resources to provide and maintain the experience
 - visitor safety.
6. The NPWS will participate in whole-of-government, cross-tenure planning to pursue a variety of mountain bike experiences on publicly- and privately-owned lands.
7. Where a mountain bike experience that passes through one or more other land tenures could be particularly enhanced by providing a link or section through NPWS parks, creating such a link will be considered a priority, subject to assessment in accordance with the criteria set out in the NPWS Cycling Policy.
8. The NPWS will consider opportunities for creating longer tracks that can contribute to regional tourism, as well as 1–4 hour single-track loops situated near urban centres. Where necessary, the NPWS will work in partnership with other land managers to deliver these experiences.
9. To determine whether a proposed mountain biking experience integrates with the existing site character and landscape context, relevant sections of the *Sustainability assessment criteria for visitor use and tourism in New South Wales national parks* will be consulted.
10. The NPWS will consider providing mountain biking experiences near existing facilities, car parks, mobile phone access, bike racks and railway stations or links to railway stations.

11. The NPWS will follow International Mountain Bicycling Association (IMBA) track standards for design, construction and maintenance, and will monitor mountain bike experiences in parks to identify conditions specific to NPWS parks, adapting IMBA standards as necessary.
12. The capacity to maintain and resources for maintaining existing tracks will be assessed before constructing new tracks.
13. Experts in trail design, planning and construction will be engaged on large projects that go beyond the skills set of NPWS staff. Consultants may also provide environmental or sustainability assessment.
14. The NPWS encourages staff to develop their skills in construction and maintenance of mountain biking tracks.
15. The NPWS may seek the involvement of mountain biking groups in design, construction and maintenance of cycling tracks.
16. All proposed technical track features will be assessed against criteria identified in the NPWS Cycling Policy and approved through the POM process.
17. Where possible, mountain bike tracks and maintenance regimes will be designed to allow wet weather riding.
18. Environmental assessment of a prospective mountain bike experience will consider the impact of wet weather and any necessary programs that will assist with compliance during wet weather closures.
19. Specific criteria for wet weather track and trail closures will be discussed with mountain biking groups on a case-by-case basis.
20. Wet weather closures will be communicated using track signage, websites and, where appropriate and available, social networks.
21. Visitor groups may be consulted to develop agreed methods of notifying riders of closures.
22. NPWS cycling tracks may be closed at night, according to the relative park opening and closing times, plus at other times of the day if required to protect wildlife, to reduce disturbance to park neighbours and for visitor safety.
23. All tracks will be recorded in OEH's asset management database and have a regular maintenance program established.
24. Where a mountain bike experience may displace another activity, the following will be considered in the decision making process: the level of participation in the other activity, the supply of other opportunities for the other activity in the park or nearby area, the importance or uniqueness of the location for the other activity, the opportunities for providing mountain biking elsewhere in the park or nearby area, and measures available to manage any conflicts.
25. Existing walking tracks may be designated 'multi-use' to also allow cycling and mountain biking where a track meets IMBA standards for visibility, width, surface condition and gradient for multi-use tracks.
26. Cyclists must give way to walkers on multi-use tracks.
27. Multi-use tracks and preferred-use tracks must be adequately signposted to ensure visitor safety. Additional awareness programs may be considered.

28. Multi-use tracks and preferred-use tracks may be designated one-way to ensure visitor safety or optimise the experience for visitors.
29. The NPWS will seek partnerships to resource project implementation. A cost–benefit or social return on investment analysis will be undertaken when assessing prospective mountain bike experiences and events.
30. The NPWS will continue to create mutually beneficial partnerships in areas of specialist knowledge and interest such as mountain biking, to enhance recreational experiences for all visitors.
31. The NPWS will build on its volunteering programs to engage the assistance of volunteers in the creation and maintenance of mountain biking experiences.
32. Standardised safety information will be developed for use on the relevant web page and on track head signs.
33. The NPWS will undertake research into cycling and mountain biking in NPWS parks.
34. The NPWS has adopted the IMBA Australia Trail Difficulty Rating System as the classification system for mountain bike tracks (see Appendix V), and this system is being incorporated into OEH signage procedures.
35. The NPWS will review and standardise the presentation of maps of cycling routes to be used on track head signs and the NPWS website, through digital technology and through other publications.
36. Information on cycling and mountain biking experiences in NPWS parks will be placed on appropriate OEH and NPWS website pages.
37. The NPWS will adopt the IMBA Rules of the Trail. The NPWS may seek the involvement of visitor groups in developing additions to the code of conduct for particular NPWS parks, using the IMBA Rules of the Trail as a basis.
38. The IMBA Rules of the Trail will be promoted on track head signs, in printed guide materials, on the NPWS website, and in other collateral from authorised organisations promoting mountain biking in NPWS parks.
39. Additional education programs or *Discovery* tours will be considered.
40. Prospective mountain bike events will be assessed under the NPWS Events, Functions and Venues Policy. They will also be assessed for their potential impacts on natural or cultural heritage values, susceptibility of soils to erosion, the presence of natural hazards, potential conflicts with other visitors and available facilities in the park; and in the context of other available venues.
41. The NPWS will consider developing additional mountain biking events, potentially in collaboration with the private sector, including a mini festival of mountain biking that encourages family involvement in cycling in national parks; a competitive mountain biking race series in parks around the state, including warm up and novice rides to encourage children to experience recreation in parks on mountain bikes; and cycling holidays with camping, cabin or hotel accommodation provided.

1. Mountain biking in NSW national parks and reserves

Note: Website links to policies, procedures and publications cited in this strategy are in the 'References and further reading' section at the end of this document.

1.1 Strategy development and consultation

On 10 September 2010, the National Parks and Wildlife Service (NPWS), part of the Office of Environment and Heritage (OEH), released the *Discussion paper: national parks and wildlife service cycling policy review and sustainable mountain biking strategy*. NPWS invited public comment on the potential establishment and augmentation of mountain biking tracks in national parks and reserves.

The discussion paper was informed by research carried out by the NPWS, which showed mountain biking to be an increasingly popular recreational activity in parks.

The consultation generated 2,310 comments and 191 submissions. It included seven public forums held around the state and three targeted meetings with conservation groups. The findings were summarised and verified by an independent analyst. The resulting report has provided direction for this strategy.

1.2 Current status

In NSW national parks and reserves (NPWS parks), cycling, including mountain biking, is allowed on all public access roads managed by the NPWS and on most management trails, subject to specific requirements in the reserve's plan of management (POM) or signage.

Illegal cycling in prohibited areas and creation of unauthorised tracks is common in some NPWS parks, particularly those near towns and cities. Walking tracks appropriated for mountain biking and poorly-designed user-built tracks are significantly more dangerous for riders than tracks designed specifically for mountain biking, and could lead to conflict with other park visitors. The NPWS is unable to provide direction on or design these tracks, so they can cause extensive local damage to fragile environments and cultural sites.

Cycling, including mountain biking, is a rapidly growing recreational activity in NSW. There is unmet demand for opportunities for cycling and mountain biking on an unsealed road or track, with most mountain bike riders beyond novice level seeking single-track experiences (see Section 2.4).

Single-track experiences exist at Yellowmunde Regional Park, Livingstone National Park and State Conservation Area, Kosciuszko National Park and Glenrock State Conservation Area and are also being trialled at Royal National Park (see 7. Priority projects).

The NPWS has an established and rewarding history of working in partnership with community groups, including volunteers. Existing partnerships between the NPWS, mountain bike clubs and individual volunteers have achieved mutual understanding of mountain biking issues and have helped to reduce illegal mountain biking and track creation. A desire for increased partnership between the NPWS and park visitors, particularly with mountain biking groups, has been clearly and widely expressed through consultation.

Local councils and the NPWS have collaborated to develop meaningful cycling experiences of varying length and degrees of difficulty.

Competitive mountain bike race organisers are attracted to NPWS parks, as highlighted by the inaugural 'Kanangra Classic' race in Kanangra Boyd National Park. Similarly, a large number of Parks Eco Pass licensed tour operators assist visitors to enjoy the wealth of nature experiences accessible by bicycle in NSW national parks and reserves.

1.3 Vision

Our vision is:

Excellence in mountain biking is a normal part of recreation management in NSW national parks and reserves, where high quality mountain biking experiences are provided in an ecologically and socially sustainable manner across the landscape, and where riders are advocates for parks acknowledging that the NPWS provides some of the best mountain biking experiences in NSW.

The NPWS can provide a range of high quality mountain biking experiences using existing planning, environmental assessment and risk management procedures, combined with expertise from third parties in trail design and construction, and in many instances supplemented by resources from volunteer community groups.

Creating partnerships with organisations such as the International Mountain Bicycling Association (IMBA) Australia, will allow the NPWS to draw on expertise in track design, trail advocacy, construction standards, trail classification, signage and the internationally recognised Rules of the Trail (see Appendix III).

While illegal mountain biking has had a negative impact on some NPWS parks, well-planned and well-managed enjoyable cycling experiences enable the NPWS to engage a wider audience. The NPWS believes that engaging people through relevant, contemporary park experiences is the best way to foster public appreciation and understanding of nature and cultural heritage and to strengthen support for protecting and extending the park system.

Meaningful recreational experiences also have positive health benefits for park visitors. Many mountain bike riders already frequently visit parks to walk, climb, paddle and go canyoning. Other riders who do not frequently visit parks may be attracted through their interest in cycling, and ultimately become strong advocates.

1.4 International context

The NPWS recognizes the high level of organisation in the mountain biking world. IMBA, the international peak mountain biking body, was formed in 1988 and has members in 31 countries. It has devised track design and construction standards (see Appendix IV); a difficulty rating system (see Appendix V); and other innovative trail management solutions that are internationally recognised and widely adopted by land managers. IMBA also advocates at grass roots level by encouraging cooperation among different visitor groups and volunteer participation in track maintenance work. IMBA has an Australian chapter, which offers training sessions in track design and construction, and the promotion of positive track ethics through the IMBA Rules of the Trail (see Appendix III). Other organisations such as Mountain Bike Australia (MTBA) and NSW Mountain Bike Association (NSWMTB) provide further cohesion in standards and approaches for local clubs.

Partnerships forged by the NPWS with local mountain biking groups benefit from operating in an international context. Mountain bikers, as with 4WD enthusiasts and participants of other recreational activities in parks, are often highly motivated to become involved in track construction and maintenance work via volunteer programs.

1.5 Strategic approach

Positive advocacy for the NPWS among mountain biking groups is the most effective mechanism for reducing illegal mountain biking and track creation and will stimulate continued support for conservation. To achieve this, the NPWS must plan for and provide legitimate mountain biking experiences.

To remain relevant and effective in its management of mountain biking, the NPWS will continue to investigate successful experiences, both overseas and around Australia, and similar features and facilities will be incorporated into NPWS experiences.

The NPWS will promote cycle access to and through designated NPWS parks, including the use of sustainable mountain bike tracks, to provide linkages across national parks and publicly managed lands.

The NPWS will adopt a whole-of-government cross-tenure planning approach to encourage additional mountain bike experiences on other land tenures that will contribute towards reducing illegal use of NPWS parks. Where a mountain bike experience through one or more other land tenures could be particularly enhanced by providing a link or section through NPWS parks, creating such a link will be prioritised.

When planning and designing track networks, the NPWS will consider the requirements of particular segments of the cycling community and will market the experiences accordingly. Target market segments will include:

- a) families and travellers seeking cultural recreational and holiday experiences, for instance, nature tours or food and wine tours
- b) recreational mountain bikers (and in certain locations, competitive race event organisers) seeking 1–4 hour single-track loops, for instance via community events that introduce new visitors to parks and encourage younger people to become involved in healthy recreational activities and to enjoy parks via legitimate channels.

Development of mountain biking experiences throughout NPWS parks may be realised while maintaining ecological and sustainability values and will be considered on a case-by-case basis. Some mountain biking experiences will not be suitable in certain areas. The involvement of and communication with visitor groups will help create positive advocacy for cycling in parks.

Partnerships with communities, including mountain biking clubs and volunteer groups, will be further developed. NPWS will continue to support licensed recreation and tour operators who help people enjoy cycling experiences in natural surroundings and event organisers who establish high-profile competitions or charity races in NPWS parks.

A key strategy for reducing illegal mountain biking and unauthorised track creation will be for NPWS to provide a small number of high quality single-track mountain bike experiences that will be clearly signposted and designated one-way.

This strategy incorporates priority projects that have been identified for development within a ten-year timeframe (see 7. Priority projects). An evaluation and review of the strategy, including progress in delivering priority projects, will be conducted after five years.

2. Planning for mountain biking

2.1 Policy

OEH park management policies guide appropriate conduct in national parks and reserves to protect native plants, animals and ecosystems. The NPWS Cycling Policy clarifies the NPWS's responsibilities for provision of cycling experiences, including mountain biking. The policy seeks to balance conservation objectives of parks with the needs of visitors by providing specific guidance on the conditions under which cycling may be permissible and the management of cycling experiences.

The objectives of the policy are:

- ecologically sustainable cycling in parks
- recreational cycling activities that provide a safe quality experience for all park visitors and foster public appreciation, understanding and enjoyment of nature and cultural heritage
- proactive and responsive management of cycling in parks
- effective communication between the park authority, cycling communities and other land managers.

2.2 Frame of reference

The first step in planning is to set a frame of reference by considering factors relating to sustainability, liability, infrastructure management and maintenance. By answering questions about the proposed development early on and sticking to the framework provided by the answers, unexpected liabilities may be avoided.

The frame of reference questions address the following issues, which are detailed in Appendix II:

- scope and scale
- objectives
- market
- product
- standards
- delivery
- management
- funding and resources.

2.3 Plans of management

1. **Where regional planning identifies a high demand for new mountain bike experiences in a NPWS park that does not currently permit mountain biking in its plan of management (POM), and the proposed experiences satisfy criteria in the NPWS Cycling Policy, a draft amendment to the POM will be prepared for public exhibition.**

Relatively small-scale physical works may be required to create a sustainable mountain biking experience, such as providing a short linkage between sections of track crossing other land tenures.

Some POMs were prepared several years ago and may restrict cycling, for example, because measures now used to manage environmental impacts were not previously available. These POMs will be reviewed and if necessary, amendments will be drafted. Similar amendments in a number of parks, that is, allowing mountain biking on tracks, may be grouped together for public exhibition for reasons of efficiency.

However, if a restriction is in place for sound reasons, there is no requirement to amend the POM. New parks typically do not yet have a POM that can be amended. In this instance, the appropriate park authority, usually the Regional Manager, may allow cycling in certain areas indicated with relevant signage.

2. Where cycling is permitted on land that becomes gazetted as a park under the NPW Act, this activity will be assessed against the NPWS Cycling Policy criteria to determine whether it should be allowed under the new park's POM.

Case study: Livingstone National Park and State Conservation Area

Before gazettal as a national park and state conservation area on 1 January 2001, over 30 kilometres of single track had been created by motor cyclists. As mountain biking became more popular, enthusiasts started to ride on this track.

The plan of management (POM) for Livingstone National Park and State Conservation Area was developed in consultation with stakeholder groups. The POM states that the NPWS will close all unsustainable tracks, thereby allowing those areas to rehabilitate. Meanwhile, the NPWS will formalise a new multi-use track network in the reserve that provides a reasonable level of access while not compromising the park's natural and cultural heritage values or significantly increasing management requirements.

Members of a local mountain biking club who regularly used the old track network supported the NPWS decision to close most tracks in unsustainable locations once the POM review process had been concluded. Following an assessment by IMBA consultants, it was also agreed that the remaining old tracks will be closed once the multi-use track network is finalised.

The route for a new track has been identified and will be assessed by a review of environmental factors.

2.4 The importance of single-track

Some iconic mountain biking experiences exist in NPWS parks, for example, stretches of trail at Conway Gap in Wadbilliga National Park. However, the practice of directing riders to management trail networks as a solution to providing satisfactory mountain biking experiences has failed to remain relevant to the rapidly developing needs and expectations of mountain bike riders.

It is imperative to develop an effective approach to managing mountain biking to reduce illegal use and associated risks and impacts. The NPWS Cycling Policy clarifies that mountain biking is a legitimate recreational activity in parks and that single-track may be provided to meet demand for certain mountain biking experiences in particular circumstances.

Single-track is desirable because it allows more intimate experiences of the setting, a better connection between the rider and the environment and relatively high levels of technical challenge at relatively low speeds, which reduces the actual risk by increasing the perceived challenge.

In NSW, demand for increased opportunities for riding on single-track is evident in discussions between the NPWS and peak and local mountain bike groups and submissions to planning processes.

3. The NPWS will provide a few high quality single-track experiences. Cycling will only be permitted on single-track in parks when the track is designated as suitable for cycling and clearly signposted.

Case study: Glenrock State Conservation Area

The NPWS has provided more than 14 kilometres of high quality legal single-track in Glenrock State Conservation Area, which had experienced a rapid expansion of illegal mountain biking and track construction over a six-year period.

The NPWS aim to minimise the negative impact of mountain biking and reduce illegal track creation by providing authorised single-track, hiring internationally recognised mountain bike track designers to assist in engaging local mountain bike riders in the design and upgrade of the network and training volunteers in sustainable track construction techniques so they can undertake ongoing maintenance on a well-designed track network they helped to create.

Results achieved to date indicate the success of this approach with a significant decline in the creation of illegal tracks and the support of a highly engaged local mountain biking volunteer group.

2.5 Mountain biking styles

Mountain biking can be classified into a number of broad styles (see Appendix I). In general, cross-country and all-mountain experiences are likely to be the best match with NPWS parks, as they have the least possible infrastructure and environmental management requirements and are particularly suited to fostering public appreciation, understanding and enjoyment of nature and cultural heritage and their conservation.

In certain limited instances, such as designated areas in Kosciuszko National Park, some specialist styles of mountain biking such as Downhill (see Glossary and Appendix I) are provided and will continue to be maintained. However, mountain biking styles evolve over time and recreational riding is often a combination of several styles, so all proposed mountain bike experiences will be assessed against the NPWS Cycling Policy criteria and approved through the POM process.

- 4. Subject to the NPWS Cycling Policy criteria, the NPWS will provide a diversity of cycling experiences that suit a variety of people, including families with children, road cyclists and mountain biking enthusiasts.**

3. Managing the environment

This section should be read in conjunction with the IMBA publications: *Trail solutions: IMBA's guide to building sweet singletrack* and *Managing mountain biking: IMBA's guide to providing great riding* (see References and further reading).

3.1 Planning, development and management criteria

5. **The NPWS will assess proposed mountain biking experiences against a set of planning, development and management criteria identified in the NPWS Cycling Policy, including considering:**
 - **opportunities and demand for mountain biking across the region, including other land tenures**
 - **appropriateness of the site**
 - **ecological sustainability**
 - **provision of a quality experience for riders**
 - **balancing competing visitor demands**
 - **availability of resources to provide and maintain the experience**
 - **visitor safety.**

3.2 Opportunities and demand for mountain biking experiences, including other land tenures

Regional planners should consider opportunities for providing mountain biking experiences where the NPWS is the dominant holder of land, as well as opportunities for positioning the NPWS as an active partner with other NSW land management agencies.

A cross-tenure approach is essential to planning quality mountain bike experiences as in many regions, the NPWS cannot provide the required track length or linkages solely in national parks and reserves.

6. **The NPWS will participate in whole-of-government, cross-tenure planning to pursue a variety of mountain bike experiences on publicly- and privately-owned lands.**

Where appropriate, the NPWS will suggest opportunities for other land managers to provide additional mountain bike experiences that will contribute towards reducing illegal use of NPWS parks.

7. **Where a mountain bike experience that passes through one or more other land tenures could be particularly enhanced by providing a link or section through NPWS parks, creating such a link will be considered a priority, subject to assessment in accordance with the criteria set out in the NPWS Cycling Policy.**

Track length is an important determinant of the quality of a mountain biking experience. Most demand for non-competitive, recreational mountain biking experiences is for 1–4 hour single-track loops, situated near urban centres.

Long distance mountain biking experiences that cross NPWS parks, public roads and other land tenures can contribute to regional tourism growth and local and regional economies. Longer tracks can reduce the intensity of use on a given section of track, which helps reduce maintenance requirements.

- 8. The NPWS will consider opportunities for creating longer tracks that can contribute to regional tourism, as well as 1–4 hour single-track loops situated near urban centres. Where necessary, the NPWS will work in partnership with other land managers to deliver these experiences.**

3.3 Appropriateness of the location

In determining the most appropriate location for proposed mountain biking experiences, both the site character (the actual physical location of the proposed site) and landscape context (the broader park surroundings) will be considered.

- 9. To determine whether a proposed mountain biking experience integrates with the existing site character and landscape context, relevant sections of the *Sustainability assessment criteria for visitor use and tourism in New South Wales national parks* will be consulted.**

Matters relating to the cultural and heritage context of a site, such as the presence of areas of Aboriginal significance, biodiversity values and potential impacts on other park visitors of the development of a track network, will be considered during the review of environmental factors.

Case study: Northern Sydney

In recognition of ever-growing demand for legitimate mountain biking experiences and to address continued illegal mountain biking and track creation in northern Sydney, the NPWS has contracted landscape architects to plan, design and document a single-track sustainable mountain bike experience for possible implementation in a number of NPWS parks in the region, which will incorporate some existing management trails. The brief required consideration of the following factors:

- provision of an ecologically sustainable mountain biking experience
- provision of a high quality experience through which riders can enjoy and appreciate parks
- opportunities and demand for mountain biking across the region, including other land tenures
- minimisation of conflict between park visitors
- provision of a single-width loop track or a series of connecting loops that provide a total minimum distance of approximately 7–10 kilometres in length
- provision of a track that will offer variety and challenge to a beginner cross country rider and an intermediate level cross country rider by providing natural technical challenges (A and B lines)
- identification of positive control points such as natural rock outcrops, scenic view points and natural features
- identification of negative control points that are to be avoided such as riparian zones, wetlands and flat areas.

The planners face the challenge of situating mountain bike loop tracks in the topography of the region which does not easily lend itself to such track configurations and covers other land tenures. The sustainability assessment criteria and public consultation (among other criteria) will be employed in the choice of location.

3.3.1 Nature reserves and wilderness areas

Mountain biking single-track will continue to be prohibited in nature reserve and wilderness areas as it is inconsistent with the management principles for these areas. However, cycling may be allowed on certain management trails in nature reserves and wilderness areas where specified in the POM and where signposted.

3.3.2 Transport and facilities

Linkages to public transport or opportunities to ride to a mountain bike track can improve the accessibility of experiences, especially for younger riders. Car parking and access to public transport will be considered when planning mountain biking experiences. Trail heads will be located near facilities such as toilets, potable water and picnic areas where possible and subject to environmental assessment.

- 10. The NPWS will consider providing mountain biking experiences near existing facilities, car parks, mobile phone access, bike racks and railway stations or links to railway stations.**

3.4 Minimisation of environmental impacts

3.4.1 Track design and construction skills

Sustainable mountain biking tracks that minimise negative environmental impacts can be constructed. Mountain bike experiences can be developed by either constructing new tracks or modifying existing tracks in accordance with the POM.

The use of IMBA standards will help minimise impacts such as disturbance of soils and vegetation, reduced water quality, disturbance of wildlife, and damage to cultural and historical sites and park infrastructure. Evaluation and monitoring of existing mountain bike experiences may provide additional standards that can be implemented with the adopted IMBA track standards.

- 11. The NPWS will follow International Mountain Bicycling Association (IMBA) track standards for design, construction and maintenance, and will monitor mountain bike experiences in parks to identify conditions specific to NPWS parks, adapting IMBA standards as necessary.**

Individual features of prospective mountain bike experiences will be subject to environmental assessment to gauge their potential effect on the conservation, heritage and ecology values of the park and their appropriateness within the surrounding landscape.

Mountain bike tracks must be designed and constructed so water flows are managed and riders and other users are kept on the tracks, to reduce erosion, sediment travel, track widening and proliferation, vegetation damage and associated maintenance requirements.

Walking tracks are not usually sustainable for mountain biking, as they often travel steeply up and down hills or have sharp turns that force riders to brake hard, both of which increase erosion. New track construction for cycling may be required where existing tracks are unsuitably located or are not designed for cycling.

Careful planning and quality construction by skilled track workers, who may include both professionals and trained volunteers, can greatly reduce costs and the amount of maintenance required. Planning for ongoing maintenance is essential.

- 12. The capacity to maintain and resources for maintaining existing tracks will be assessed before constructing new tracks.**

3.4.2 Partnerships in design, construction and maintenance of mountain bike experiences

Several Australian consultancies offer specialised services in mountain bike track design and construction. NPWS staff have considerable skills in the design and construction of walking tracks and in some cases, mountain bike tracks. Volunteer groups also have knowledge of and experience in providing and maintaining sustainable mountain biking experiences. Training packages and sessions are available.

- 13. Experts in trail design, planning and construction will be engaged on large projects that go beyond the skills set of NPWS staff. Consultants may also provide environmental or sustainability assessment.**
- 14. The NPWS encourages staff to develop their skills in construction and maintenance of mountain biking tracks.**
- 15. The NPWS may seek the involvement of mountain biking groups in design, construction and maintenance of cycling tracks.**

Public consultation on the discussion paper discussed in Section 1.1 produced many valid suggestions for track construction and maintenance from both mountain bikers and environmental groups. These included wheel washing stations, chemical troughs, boardwalks, volunteer weed control, regular track repairs, use of recycled materials, rotation of areas and management of sedimentation.

3.4.3 Designing technical track features

Technical track features provide fun and challenge for riders and reduce the incentive for them to create their own track features. Technical track features require expert design to manage risk to individuals and to the environment.

Technical track features may include a number of track options, or lines, so riders can choose the level of difficulty they ride. For example, a technical track feature may have a C line that goes around the technical feature, a B line that involves a rollover and an A line that involves a drop (in this example, C = easy, whereas A = difficult/more challenging). Accordingly, the C line should be the most obvious line for riders to take. Constructed lines that go around technical track features avoid track widening caused by riders walking or riding around the feature.

The start of a track may involve navigating a technical track feature that matches the highest level of skill required for the particular difficulty rating of the track. This is known as a filter. If a rider does not have the skill to navigate the filter then they presume they do not have the skill required to complete the track.

Fall zones will be incorporated in appropriate locations, so if a rider falls off they will not land on sharp sticks or rocks.

Technical track features are very varied. In general, in NPWS parks, objects such as rocks and logs that are already on the track may be left in place to create interesting challenges and reduce speed where their use will not cause negative environmental impacts. Subject to environmental assessment, it may also be appropriate for NPWS to move such objects to different positions on the track to ensure visitor safety, improve the sustainability of the track or to provide a more enjoyable experience for cyclists. Constructed, imported infrastructure such as ramps, saws and north shore are not considered appropriate in parks. However, all proposed technical track features will be

assessed against the criteria detailed in the NPWS Cycling Policy and approved through the POM process.

- 16. All proposed technical track features will be assessed against criteria identified in the NPWS Cycling Policy and approved through the POM process.**

3.4.4 Wet weather and track closures

Mountain bike riding remains popular even in wet weather. Wet tracks are more susceptible to erosion than dry tracks. Well-designed mountain bike tracks, potentially including armouring of sensitive areas, and regular maintenance can reduce the impact of riding on wet tracks and allow tracks in certain soil types to be ridden sustainably in wet weather. Tracks may need to be closed during prolonged or severe episodes of wet weather in areas where soil types are easily eroded.

- 17. Where possible, mountain bike tracks and maintenance regimes will be designed to allow wet weather riding.**
- 18. Environmental assessment of a prospective mountain bike experience will consider the impact of wet weather and any necessary programs that will assist with compliance during wet weather closures.**

Wet weather closures of mountain bike tracks have proved difficult to enforce. It is the responsibility of the NPWS to close tracks when required to protect the environment, track infrastructure and for visitor safety. However, agreed criteria for closures with mountain biking groups may increase support for and compliance with wet weather closures. The procedure for the closure of trails is currently covered by the NPWS Vehicle Access – General Policy.

- 19. Specific criteria for wet weather track and trail closures will be discussed with mountain biking groups on a case-by-case basis.**
- 20. Wet weather closures will be communicated using track signage, websites and, where appropriate and available, social networks.**
- 21. Visitor groups may be consulted to develop agreed methods of notifying riders of closures.**

3.4.5 Night riding

High-powered LED light systems are now available that allow mountain bike riding after dark. Night riding is popular with riders who work during the day, as well as riders training to compete in 24-hour endurance events. Noise and lights from night riding may disturb park neighbours and wildlife. Currently, the environmental impacts of night riding are poorly understood.

- 22. NPWS cycling tracks may be closed at night, according to the relative park opening and closing times, plus at other times of the day if required to protect wildlife, to reduce disturbance to park neighbours and for visitor safety.**

3.5 Cyclic maintenance

The specifics of the track must be entered into the Asset Maintenance System (AMS) and a program for cyclic maintenance established for all tracks.

- 23. All tracks will be recorded in OEH's asset management database and have a regular maintenance program established.**

4. Managing the experience

4.1 Provision of a quality experience and balancing competing visitor demands

Successful management of mountain biking in NPWS parks requires high quality track networks at selected locations where the landscape is accessible and suitable for mountain biking and there is a strong demand for the activity. The enjoyment of a ride can be enhanced by designing experiences to incorporate topography, special points of interest, loop tracks, vegetation and wildlife. Mountain bikers will travel considerable distances for exceptional riding experiences. For example, IMBA promotes IMBA epic rides that attract riders from all over the world. Spectacular landscape features are key criteria for selection as an epic ride.

The spectacular landscapes found in NPWS parks attract visitors who engage in recreational activities or who simply wish to relax and enjoy the environment. Unfortunately, this occasionally leads to conflict between visitor groups.

Conflicts between park visitors can be divided into two categories: those arising from one visitor group having a general objection to another group, and direct conflicts arising from meetings on tracks. General conflicts can be overcome by strategies that build understanding between mountain bike riders and other visitors, such as volunteer days that bring all visitor groups together to work on a track. Direct conflicts can be managed through track design or separation of track users.

There are three types of tracks: multi-use (or shared-use) tracks; preferred-use tracks; and single-use tracks. Multi-use tracks allow walkers and mountain bikers on the same track and may allow other activities as well. Single-use tracks allow only one type of activity. Preferred-use tracks are marked as preferred for one activity but others are not excluded: for example, a track may be marked as being recommended for mountain biking but walkers are not excluded.

24. Where a mountain bike experience may displace another activity, the following will be considered in the decision making process: the level of participation in the other activity, the supply of other opportunities for the other activity in the park or nearby area, the importance or uniqueness of the location for the other activity, the opportunities for providing mountain biking elsewhere in the park or nearby area, and measures available to manage any conflicts.

Direct conflicts on multi-use tracks can be managed by establishing a one-way system so mountain bike riders travel in one direction and walkers travel in the opposite direction, ensuring adequate sightlines on corners and designing the track to control the riders' speeds. Direct conflicts can also be managed through signs warning visitors that the track is multi-use and advising them of the appropriate response when meeting other visitors: for example, cyclists must give way to walkers and walkers should keep left.

Single-use tracks solve direct conflicts by separating track users. However, other visitors may object to being excluded from tracks. Preferred-use tracks can solve this problem by not excluding other visitors but making it clear the track is designed for a specific use, such as walking or mountain biking.

25. Existing walking tracks may be designated 'multi-use' to also allow cycling and mountain biking where a track meets IMBA standards for visibility, width, surface condition and gradient for multi-use tracks.

If a track is specified for walking in the POM, an amendment will be required to designate the track 'multi-use'. Works will be undertaken to ensure the track meets best practice sustainable track standards to minimise environmental impact and conflicts between park visitors.

26. Cyclists must give way to walkers on multi-use tracks.
27. Multi-use tracks and preferred-use tracks must be adequately signposted to ensure visitor safety. Additional awareness programs may be considered.
28. Multi-use tracks and preferred-use tracks may be designated one-way to ensure visitor safety or optimise the experience for visitors.

4.2 Availability of resources to provide and maintain the experience

4.2.1 Funding

Mountain biking in NPWS parks is a legitimate recreational activity and as such the NPWS will implement priority projects as resources allow.

29. The NPWS will seek partnerships to resource project implementation. A cost–benefit or social return on investment analysis will be undertaken when assessing prospective mountain bike experiences and events.

4.2.2 Partnerships

Partnerships between the NPWS and visitor groups are encouraged as a way of promoting park values to the community and providing additional resources to implement projects. Partnerships between other agencies with an interest in outdoor recreation may also lead to sources of funding or joint venture proposals. These may include land management agencies, regional tourism organisations and private sector companies such as mountain bike equipment suppliers, mountain bike tour operators, accommodation and food service providers and event organisers.

Case study: Kanangra-Boyd National Park

The NPWS proposed to promote the trail network in Kanangra-Boyd National Park in partnership with Oberon Plateau Tourist Association (OPTA) by raising the matter at a meeting where the local council and other stakeholders were in attendance. The project was supported and it was decided that the NPWS would be responsible for ground works and OPTA would make a financial contribution to the production of cycle trail brochures. The trails are promoted on the Oberon Council website.

Use of the trails and demand for brochures have exceeded expectations. The project has significantly raised the profile of mountain biking in Kanangra-Boyd National Park and has raised awareness of the other recreational opportunities in the park and in the wider Oberon local government area.

Many Parks Eco Pass operators provide exciting cycling and mountain biking experiences in NPWS parks, increasing the number of visitors participating in recreational activities in a legitimate and rewarding setting.

For effective environmental management and compliance, it is essential to consistently communicate a best practice ethos among riders through consultation with mountain bike clubs and individuals.

The NPWS will continue to consult with environmental groups to achieve a balance of opinions when planning mountain biking experiences.

30. The NPWS will continue to create mutually beneficial partnerships in areas of specialist knowledge and interest such as mountain biking, to enhance recreational experiences for all visitors.

4.2.3 Volunteering

Partnerships provide more than funding. It is likely that volunteers will assist with track construction, closure of illegal tracks, track maintenance and track monitoring. Inviting the involvement of a variety of visitor groups reduces the burden on resources and helps to resolve any ideological conflicts among visitor groups.

31. The NPWS will build on its volunteering programs to engage the assistance of volunteers in the creation and maintenance of mountain biking experiences.

In many cases, mountain bike riders will be more successful than the NPWS in encouraging other mountain bikers to abstain from using illegal tracks and to comply with environmental requirements. Mountain bike riders are more likely to take advice from peers than from authority figures.

The NPWS may enter into memorandums of understanding with visitor groups on the maintenance of local cycling tracks.

Mountain biking club volunteer groups can be self-managing, but first need to be trained and certified, and 'captains' need to be identified to manage the groups in accordance with the NPWS Volunteer Policy and Procedures. The NPWS strives to encourage more volunteers, generate new and innovative projects and ensure the highest standards in training and volunteer safety.

Case study: The Royal National Park

At the Royal National Park, a crew of mountain biking community volunteers under the supervision of a ranger or field officer regularly engage in trail maintenance days to help keep the local tracks in good condition and safe for riders.

The volunteers share information on sustainable, cooperative riding in the Royal National Park through mountain biking social networks.

The volunteers have gained a sense of ownership and responsibility for the tracks and help manage unauthorised trail building and inappropriate rider conduct. Volunteers are registered and have signed agreements as part of the NPWS Volunteer Policy and Procedures. They are trained on the job, receive a job safety briefing at the start of each activity and are de-briefed at the end of each activity.

The crew meet monthly and provide valuable feedback on short-term, medium-term and long-term issues of sustainability and relevance to NPWS staff. The crew are involved in community events and consultation forums to balance conservation and recreational aspects of the national park.

4.3 Visitor safety

Visitor safety can be ensured by providing well-designed tracks and trails, promoting IMBA's Rules of the Trail (see Appendix III), engaging volunteer groups and consulting with mountain biking clubs.

These measures will be supported by continued law enforcement and appropriate regulatory measures. These regulatory measures include:

- education
- spoken warnings
- issuing a direction
- written cautions
- issuing penalty infringement notices
- prosecution.

A standardised script will be used on the website and on track head signs for communicating additional visitor safety information such as the need to wear a helmet and appropriate clothing, carry water and a first aid kit and, when in remote areas, a puncture repair kit and a personal locator beacon.

32. Standardised safety information will be developed for use on the relevant web page and on track head signs.

If the 'degree of difficulty' of the track has been altered according to the IMBA classification (see Appendix V), action will be taken to either bring the track back to the identified rating, or change all communications relating to the degree of difficulty, including changing signage. Track closure will be considered if the likelihood of consequences is ranked as moderate or above, until the mitigating circumstances are addressed.

4.4 Research

To assess the ecological sustainability and outcomes of recreation, and to plan for the future, the NPWS will conduct research into cycling, including mountain biking, in NPWS parks.

Research topics may include assessing the costs of maintaining track networks; a cost–benefit analysis of events, including a review of hire charges and revenue-raising factors; investigating the impacts and negative impact mitigation of various track designs and track features on selected features of tracks and ecosystems; and the social aspects of mountain biking and mountain bike rider behaviour.

33. The NPWS will undertake research into cycling and mountain biking in NPWS parks.

5. Communication

5.1 Communicating existing and new opportunities

The NPWS will identify meaningful mountain biking experiences that can be provided using existing infrastructure and will communicate both these and new opportunities to riders. The NPWS will identify and utilise appropriate channels to communicate these opportunities, for example through the use of online and digital technology as well as implementing track signage.

5.1.1 Signage

Sufficient information will be provided on technical tracks to allow riders to make informed decisions about their ability to undertake a technical track.

34. The NPWS has adopted the IMBA Australia Trail Difficulty Rating System as the classification system for mountain bike tracks (see Appendix V), and this system is being incorporated into OEH signage procedures.

Case study: Glenrock State Conservation Area (SCA)

The IMBA Trail Difficulty Rating System has been implemented at Glenrock SCA on trailhead signs at the start of the network, where maps and track information are provided, and on way-finding markers throughout the network. Recycled plastic totem poles are being trialled at Glenrock SCA. These enable communication of 'A', 'B' and 'C' lines to be updated at low cost as tracks are upgraded or new track lines developed.

All signage used must comply with OEH's policies on appropriate signage. Signs will be installed after an analysis of needs for the site, and will include a generic symbol for mountain biking and directional signs showing the degree of difficulty. Statutory signs including hazard warning, regulatory and advisory signs will be installed as required for safety and legal reasons and to avoid unnecessary risks.

Templates will be made available for the standard signage using the relevant symbols, including:

- IMBA symbols to be used on trackside directional totems
- hazard warning signs, such as 'dip' or 'creek crossing'
- regulatory signs, including 'track closure'
- advisory signs, such as 'shared track' and 'walkers keep left'
- track head layout and standardised safety information and the key to the IMBA difficulty rating, with opportunities for including localised information.

Some of these signs are provided in Appendix V.

5.1.2 Maps

Guidelines for a standardised interpretive map to assist less experienced visitors will be made available for staff so they can adapt the map for their individual parks. The guidelines will include:

- orientation, to ensure the map is oriented to the view seen by the visitor on-site
- standardised symbols, using the IMBA symbols – for example, each track and any section where the difficulty rating changes will have the degree of difficulty clearly displayed

- how to display the 'you are here' marker
- a clear and large distance scale to assist in estimating distances.

35. The NPWS will review and standardise the presentation of maps of cycling routes to be used on track head signs and the NPWS website, through digital technology and through other publications.

5.1.3 Connecting to other experiences in parks

The quality and variety of cyclists' and mountain bike riders' park experiences may be increased by promoting opportunities for picnicking or bushwalking on track head signs, the NPWS website, the NPWS visitor guide and other publications.

5.1.4 Website

An easily accessible online guide to cycling and mountain biking experiences in NPWS parks and reserves will be provided. Information about Parks Eco Pass operators (offering mountain bike tours in NPWS parks) and event organisers who also run mountain biking activities on other land categories will be included to place NPWS sustainable mountain biking experiences in the context of available experiences on other land tenures.

36. Information on cycling and mountain biking experiences in NPWS parks will be placed on appropriate OEH and NPWS website pages.

5.2 Rules of the Trail (Code of Conduct)

The sustainability and safety of mountain bike experiences will rely on the diligent application of NPWS Cycling Policy criteria and on rider compliance with environmental requirements. All park visitors are expected to behave in a manner appropriate to the setting and to be aware of other park visitors.

Adopting a code of conduct is commonplace among mountain biking communities. Experience at trial sites in NPWS parks concurs with international evidence that compliance with environmental requirements may be more successful if a code of conduct is developed, sometimes in agreement with visitor groups.

IMBA has developed Rules of the Trail that are recognised around the world as the standard code of conduct for mountain bike riders (see Appendix III).

37. The NPWS will adopt the IMBA Rules of the Trail. The NPWS may seek the involvement of visitor groups in developing additions to the code of conduct for particular NPWS parks, using the IMBA Rules of the Trail as a basis.

It is important to allow for individual park management teams to adopt, in consultation with local groups if appropriate, additions to the IMBA rules that reflect local circumstances. For example, existing and accepted slogans such as 'No sign, No ride' will continue to be used on signs, on websites and in park publications.

38. The IMBA Rules of the Trail will be promoted on track head signs, in printed guide materials, on the NPWS website, and in other collateral from authorised organisations promoting mountain biking in NPWS parks.

Local or peak mountain bike associations and well known mountain bike individuals may be invited to indicate their support for the code of conduct.

5.3 Education

Mountain bike tours and education programs can encourage compliance, improve safety and increase understanding of the natural and cultural values of parks.

The NPWS currently offers a small number of mountain bike tours through its *Discovery* program.

39. Additional education programs or *Discovery* tours will be considered.

6. Events

NPWS parks host several mountain bike events, including the following adventure races and large orienteering events:

- Kosciuszko National Park – Thredbo Australian Open of Mountain Biking
<http://www.mountainbiking.com.au/thredbo.html>
- Kanangra Boyd National Park – Kanangra Classic
http://www.mountainsports.com.au/ms_cms/kanangraclassic/
- Wadbilliga National Park – Mountain to Beach
<http://www.wildhorizons.com.au/mountains-to-beach>
- Yengo National Park – Dirt Works 100km Classic
<http://www.maxadventure.com.au/100kmclassic/nsw/what-is-it.html>

Appropriately designed mountain bike facilities may attract further interest from event organisers. Mountain bike events can attract large numbers of riders and visitors, offering a platform for engagement via volunteering groups and for novice riders in national parks to start off on the right foot. Mountain bike events held in NPWS parks can raise the park profile, provide revenue for the NPWS and benefit local economies.

However, mountain bike events can cause damage to the local environment because of the high numbers of riders, the potential for high speeds, littering by riders and visitors and trampling of vegetation by spectators.

- 40. Prospective mountain bike events will be assessed under the NPWS Events, Functions and Venues Policy. They will also be assessed for their potential impacts on natural or cultural heritage values, susceptibility of soils to erosion, the presence of natural hazards, potential conflicts with other visitors and available facilities in the park; and in the context of other available venues.**
- 41. The NPWS will consider developing additional mountain biking events, potentially in collaboration with the private sector, including a mini festival of mountain biking that encourages family involvement in cycling in national parks; a competitive mountain biking race series in parks around the state, including warm up and novice rides to encourage children to experience recreation in parks on mountain bikes; and cycling holidays with camping, cabin or hotel accommodation provided.**

7. Priority projects

This strategy provides the framework for implementing mountain biking experiences in NPWS parks once they are identified. Priority projects will be identified to provide a range of mountain biking experiences and meet a variety of skill levels as outlined in this strategy, including provision of single-track, shared-use trails, and cross-tenure trails that contribute to local and regional tourism. All projects will need to be assessed against the criteria identified in the NPWS Cycling Policy and will be subject to a cost–benefit analysis. Priority will be given to areas where there is strong community support for developing and maintaining trails in partnership with NPWS. Projects will only be commenced once appropriate resources are realised for the development and ongoing maintenance of the trail.

Progress against the provision of suitable and sustainable mountain biking experiences across NPWS parks will be monitored as part of the five-year review of this strategy.

Several projects are underway that demonstrate the NPWS’s commitment to providing high quality sustainable mountain biking experiences in suitable settings. These include the following projects.

Northern Sydney

In this area there is both high demand for mountain biking experiences and enthusiasm from the local mountain bike community to provide support. Mountain biking facilities could be provided either entirely within NPWS parks or by crossing other land tenures to connect sites with attractive natural features in NPWS parks.

The NPWS has already begun a project to investigate potential sites for a mountain bike loop track in Garigal National Park, Ku-ring-gai Chase National Park and Berowra Valley Regional Park. Key criteria for selecting a site include:

- the capacity for a loop of at least 8 kilometres in length
- a high quality experience for participants, in a good quality bushland setting and with interesting views
- a track route that caters for beginners and moderate level mountain biking participants
- a track entry to be accessible from public transport and near safe car parking
- a track route that is ecologically sustainable
- a track route that allows for the separation of mountain biking activities from other track network visitors.

Consultants with specialist skills in developing, designing and environmentally assessing tracks in national parks were engaged to identify suitable sites for the proposed track. They have now undertaken a first stage of assessment at three potential pilot sites, two in Garigal National Park and the third in Berowra Valley Regional Park.

The next stages in the project are:

1. Consult with external stakeholders on the three potential sites.
2. Prepare detailed specifications for the construction of the mountain bike track at the selected site or sites.
3. Conduct a detailed environmental impact assessment for the preferred site or sites.

4. Prepare a draft amendment to the relevant POM to ensure that the proposed route is legally permissible.
5. Publicly exhibit the draft POM amendment and environmental impact assessment.
6. Modify the POM and finalise environmental approvals.
7. Construct the track.

Royal National Park

This park already has a very popular network of paved roads and management trails that provide high quality cycling and mountain bike routes. Stretches of single-track are being trialled and monitored for environmental impact and these in particular are regularly maintained by NPWS staff with the support of an organised and enthusiastic volunteer track maintenance team. Ongoing upgrades to the track network are required to ensure ecological sustainability and a high quality experience for riders and other park visitors.

Glenrock State Conservation Area

A network of high quality single-track was trialled at Glenrock State Conservation Area and has subsequently been formalised in the POM. Various upgrades to the network include technical features catering to a variety of skill levels. An active volunteer track maintenance group regularly works in partnership with the NPWS. Park staff also trialled and have now implemented the IMBA Track Difficulty Rating System and relevant signage, and are testing a design for recycled plastic way-finding posts that allow for signs to be updated in a cost-effective manner when modifications are made to the track that affect the difficulty rating.

Blue Mountains Region

Opportunities across the Blue Mountains Region include upgrading existing management trails providing mountain biking experiences that showcase the unique and spectacular landscape in several national parks. Licensed tour operators in the local community are interested in leading mountain biking tours and are supported by other visitor services that offer a wide selection of food and accommodation. A cross-tenure approach is crucial to developing experiences that appeal to riders seeking multi-day trips that bring benefits to the local economy. The provision of improved information about cycling and mountain biking experiences via the NPWS's websites and other communication channels will be a priority in this region.

Kosciuszko National Park

Well-known to mountain bikers and highly popular with tourists, Kosciuszko National Park boasts some of the most exhilarating mountain biking experiences available in NPWS parks, including the downhill track at Thredbo. The Thredbo Valley shared-use track is a 17-kilometre shared-use track for walkers and mountain bike riders that is currently being built. The trail will cater for family/entry level to mid-level mountain biking skills and is located in a scenic sub-alpine environment. Approximately 4 kilometres of the trail are open for use at present (2.6 kilometres all year round). Three bridges are being constructed that will extend the track to its full potential length. These are due for completion this coming summer.

Livingstone National Park and State Conservation Area

A rigorous environmental assessment is being conducted in this park to test potential sites for a multi-use trail network, which will incorporate the existing management trail and the potential for new single-track. Stakeholder consultation and involvement of the local community mountain bike riders during the planning process have ensured a reduction in illegal riding and support for the project's sustainability objectives.

Yellowmunde Regional Park

At this very popular destination for mountain bikers, funding has been applied for via the Aboriginal Parks Partnership to carry out an archaeological assessment of cultural artefacts in the mountain bike precinct along the existing trail network. Following the assessment, which will involve the Aboriginal community, recommendations may be made to alter or move parts of the trail to minimise erosion and avoid culturally sensitive locations. Approval for future recreational use and to enable visitor groups to apply for grants will be facilitated through this survey. A local mountain bike club conducts regular minor track maintenance under an existing agreement. The NPWS have formalised a temporary car parking area to cater for mountain bike events. To further cater for visitors' needs, a large picnic shelter and toilets are scheduled for construction. The NPWS have conducted erosion control and track construction training courses for members of local mountain bike clubs who volunteer in the park.

Other areas of focus for the NPWS include developing touring cycling experiences in the recently gazetted River Red Gums National Park in the Murray and Riverina regions and exploring partnerships with Western Sydney Parklands and The Royal Botanic Gardens (Mt Annan Enduro Trail) in Western Sydney.

8. Evaluation

The vision for sustainable mountain biking in NPWS parks (see 1.3 Vision) may be realised through achieving the objectives to:

- provide high-quality, safe and sustainable mountain biking experiences in a variety of NPWS park settings
- build mutual respect and a shared appreciation of NPWS parks among all park visitors participating in recreational activities.

The success of these objectives will be measured using the following techniques and indicators:

- ongoing monitoring of mountain biking experiences in NPWS parks, including a comparison with benchmarks set in parks managed by other organisations, both interstate and overseas
- a reduction in illegal mountain biking and track creation, particularly in areas where the NPWS has addressed the issue by providing legitimate experiences and incorporated appropriate regulatory measures
- an increase in the number of people participating in cycling and mountain biking in NPWS parks
- an increase in the number of people participating in volunteer working groups providing support to NPWS staff in track maintenance
- monitoring of visitation to the NPWS's website to access information on cycling and mountain biking experiences, including associated accommodation
- increased positive media coverage of sustainable mountain biking experiences in NSW national parks
- an evaluation and review of the progress made on priority projects after five years.

Appendices

Appendix I: Mountain biking styles

Cross-country

Riding involves riding point-to-point or on a circuit and includes both uphill and downhill sections. It includes a broad spectrum of terrain from management trails to single-track, and may include technical challenges suiting a wide range of skill levels. Rides can be anywhere from an hour to several days.

All-mountain

Riding is a more technical form of cross-country riding that can include more advanced technical challenges and steeper hill sections.

Downhill

Riding involves a point-to-point ride that is predominantly downhill. Tracks are usually single-track with technical challenges. Downhill mountain bikes are generally too heavy for serious climbing, so riders usually travel to the start of the descent by car or ski lift, requiring supporting infrastructure. Downhill tracks generally require greater armouring and more frequent maintenance to protect the environment than cross-country tracks as they descend more steeply. They also present a greater risk to participants than cross-country tracks.

Free riding

Free riding involves riding tracks or doing stunts that require more skill and involve more technical features than cross-country. Some free riders prefer riding in stand-alone challenge parks or skills areas, while others prefer technical challenges in cross-country rides. Free riding encompasses a number of other styles such as downhill, north shore (riding on elevated tracks made of interconnecting bridges and logs) and slopestyle (combining stunts and tricks).

Dirt jumping

Dirt jumping involves riding bikes over shaped mounds of dirt or soil to become airborne. Dirt jumpers prefer dedicated jumping areas.

Trials

Riding involves hopping and jumping bikes over obstacles, without a foot touching the ground. It can be performed either off-road or in an urban environment.

Further detail is contained in the IMBA guide books (see 'References and further reading').

Appendix II: Frame of reference questions

Scope and scale

- What length of track or trail to build/adapt?
- Will the network cover other land tenures?
- Will the network cover one or more sites?
- Is there a particular zone within the park which is most suitable for this infrastructure?

Objectives

- How is existing visitation managed?
- Will the track network adequately cater for anticipated demand?
- How will the track minimise existing or anticipated financial, environmental and safety risks?
- Will the track network be an asset to NPWS, the park visitor and local community, and will it add value to the landscape?
- Will the track network create business opportunities?
- How will the track network benefit local and stakeholder communities?

Market

- Identify market segments – who is the track for?
- What other recreational experiences are available for the identified market segments in the area?
- How will the track network be communicated to the market?

Product

- What kind of tracks are required (single-track, shared-use, preferred-use, high or low difficulty rating)?
- How will the track design help manage how the track is used, and by whom?

Standards

- Which set of standards will guide planning, design and construction? (see Section 3.4.1)
- How will the standards be implemented, audited and reviewed over time?

Delivery

- Who will do the work – NPWS staff, consultants, experts, volunteers?
- What are the roles, responsibilities and tasks?

Management

- Who will manage the project?
- Who will manage the tracks?
- How will the track network be managed?
- How will the track network be managed in the wake of future population growth and increased participation in the recreational activity?
- Will the track resolve, rather than create management and maintenance issues?
- What role will the track play in managing the interface between park visitors and nature?
- How will the track network contribute to the safety of park visitors?

Funding and resources

- What size is the budget?
- What are the funding sources?
- Are there covenants on spending available funds?
- Where will the resources come from?
- Is there scope to recover income from associated infrastructure that may contribute to ongoing management and maintenance of the track network?
- Is the proposed cost realistic?
- Does the budget fit with the scope and scale of the project and its objectives?
- How will costs be controlled?

Appendix III: IMBA Rules of the Trail

1. Ride on open trails only

Respect trail and road closures (ask if uncertain); avoid trespassing on private land; obtain permits or other authorisation as may be required. The way you ride will influence trail management decisions and policies.

2. Leave no trace

Be sensitive to the dirt beneath you. Recognise different types of soils and trail construction; practise low-impact cycling. Wet and muddy trails are more vulnerable to damage. When the trailbed is soft, consider other riding options. This also means staying on existing trails and not creating new ones. Don't cut switchbacks. Be sure to pack out at least as much as you pack in.

3. Control your bicycle!

Inattention for even a second can cause problems. Obey all bicycle speed regulations and recommendations.

4. Always yield trail

Let your fellow trail users know you're coming. A friendly greeting or bell is considerate and works well; don't startle others. Show your respect when passing by slowing to a walking pace or even stopping. Anticipate other trail users around corners or in blind spots. Yielding means slow down, establish communication, be prepared to stop if necessary and pass safely.

5. Never scare animals

All animals are startled by an unannounced approach, a sudden movement, or a loud noise. This can be dangerous for you, others and the animals. Give animals extra room and time to adjust to you. When passing horses, use special care and follow directions from the horseback riders (ask if uncertain). Disturbing wildlife is a serious offence. Leave gates as you found them or as marked.

6. Plan ahead

Know your equipment, your ability, and the area in which you are riding – and prepare accordingly. Be self-sufficient at all times, keep your equipment in good repair, and carry necessary supplies for changes in weather or other conditions. A well-executed trip is a satisfaction to you and not a burden to others. Always wear a helmet and appropriate safety gear. Keep trails open by setting a good example of environmentally sound and socially responsible off-road cycling.

Appendix IV: IMBA Principles of track design and location

IMBA lists 11 principles for designing and locating sustainable mountain bike tracks to allow water to drain off the track and keep users on the track.

1. Locate the track on a sidehill: It is much easier to drain water away from a track located on a slope than one on flat ground, and it is easier to keep users on the track.
2. Avoid the fall line: Tracks should always climb or descend a slope gradually, rather than travelling directly up or down it. Tracks that travel directly up or down hills (fall-line tracks) create a path for water that erodes soil and creates gullies. Riders may then widen tracks by riding around gullies.
3. Use the 'half rule' to guide track alignment: A track's grade should never exceed half the grade of the sidehill it is located on. Grade is the elevation gained divided by the distance of the segment of the track (expressed as a percentage). A track across a sideslope of 20% should not exceed 10%.
4. Follow the 'ten percent average' guideline for sustainable grade: The average track grade is the slope of the track for an entire uphill section. Generally, an average grade of 10% or less is most sustainable.
5. Maximum sustainable grade: typically, the maximum sustainable track grade is about 15% for a short distance, but it is site-specific and varies with track alignment, use of the half rule, soil type, annual rainfall, vegetation, use of grade reversals, type of users, number of users and level of difficulty.
6. Grade reversals: most tracks benefit from grade reversals every 6–16 metres. A grade reversal is a spot at which a track drops subtly and rises again, which forces water to drain off the track.
7. Outslope: most tracks should be built with a 5% outslope. An outslope is a tilt on the downhill or outer edge of the track, which encourages water to sheet across and off the track in a gentle manner instead of funnelling down the track's centre.
8. Adapt track design to soil texture: uniform soils dominated by one particle type such as sand are most sensitive. A mix of different types of soil particles drains well and holds together. The presence of rock and gravel can improve a soil's ability to withstand erosion.
9. Minimise user-caused soil displacement: Soil displacement by users can be reduced by three tactics: consistent flow, insloped turns and armouring. Consistent flow avoids abrupt and inconsistent turns that make riders brake hard or skid. Insloped turns (or bermed turns) improve track flow and reduce skidding. They must be carefully designed to drain water and withstand user impacts. Armouring involves hardening the surface with gravel, rocks, synthetic materials or wooden boardwalks. It can be used to elevate the track tread, especially in soft or wet terrain, or to armour the track against user-caused erosion.
10. Prevent creation of unauthorised tracks: unauthorised track creation can be reduced by having a stable and predictable surface and providing a high quality experience that meets riders' needs.
11. Maintenance: track maintenance, as well as track design, should focus on allowing water to drain off the track and containing users on the track.

Detailed guidelines for implementing these principles are presented in *Trail solutions: IMBA's guide to building sweet singletrack* and *Managing mountain biking: IMBA's guide to providing great riding* (see 'References and further reading' section).

Appendix V: IMBA Australia Trail Difficulty Ratings

Trail Difficulty Rating System – User Guide

	Very easy  White circle	Easy  Green circle	Intermediate  Blue square	Difficult  Single black diamond	Extreme  Double black diamond
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 and 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 surfaces and obstacles.	Likely to be a challenging single trail with steep gradients, variable surfaces and many obstacles.	Will incorporate very steep gradients, highly variable surfaces and unavoidable severe obstacles.
Suitable for:	Beginner/novice cyclists. Basic bike skills required. Suitable for most bikes.	Beginner/novice mountain bikers. Basic mountain bike skills required. Suitable for off-road bikes.	Skilled mountain bikers. Suitable for mountain 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.	A high level of fitness.	A high 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 and unavoidable obstacles.

	Very easy  White circle	Easy  Green circle	Intermediate  Blue square	Difficult  Single black diamond	Extreme  Double black diamond
Trail gradient	Ascents and descents are mostly shallow.	Ascents 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 ascents.	Expect prolonged steep, loose and rocky descents or ascents.

Trail Difficulty Rating System Land Managers Guide

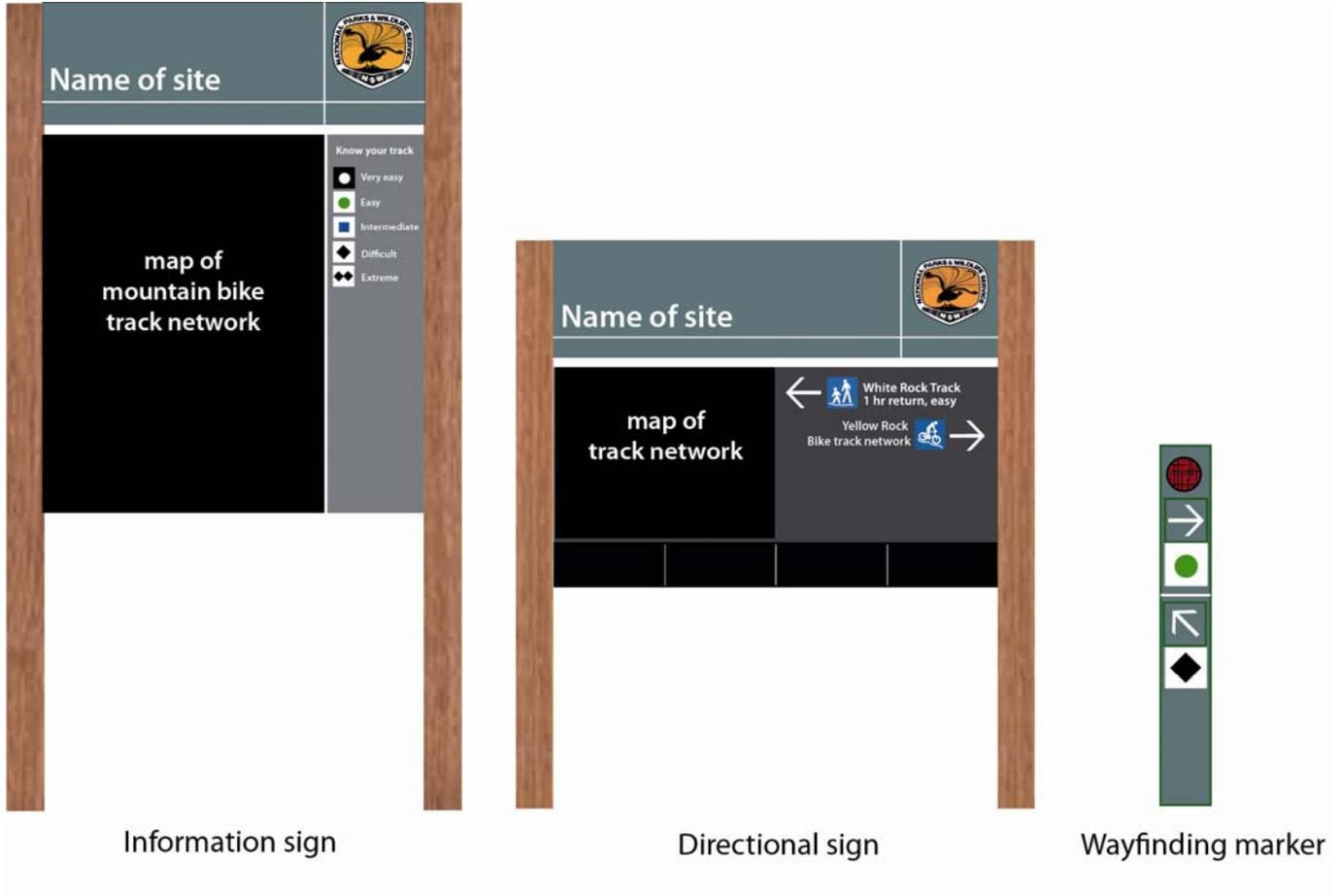
	Very easy  White circle	Easy  Green circle	Intermediate  Blue square	Difficult  Single black diamond	Extreme  Double black diamond
Description	Likely to be a fire road or wide single track with a gentle gradient, smooth surface and free of obstacles. Frequent encounters are likely with other cyclists, walkers, runners and horse riders.	Likely to be a combination of fire road or wide single track with a gentle gradient and smooth surface, and relatively free of obstacles. Short sections may exceed these criteria. Frequent encounters likely with other cyclists, walkers, runners and horse riders.	Likely to be a single trail with moderate gradients, variable surfaces and obstacles. Dual use or preferred use Optional lines desirable	Likely to be a challenging single trail with steep gradients, variable surfaces and many obstacles. Single use and direction Optional lines XC, DH or trials	Will incorporate very steep gradients, highly variable surfaces and unavoidable severe obstacles. Single use and direction Optional lines XC, DH or trials
Trail width	2100 mm plus or minus 900 mm	900 mm plus or minus 300 mm for tread or bridges.	600 mm plus or minus 300 mm for tread or bridges.	300 mm plus or minus 150 mm for tread and bridges. Structures can vary.	150 mm plus or minus 100 mm for tread or bridges. Structures can vary.
Trail surface	Hardened or smooth.	Mostly firm and stable.	Possible sections of rocky or loose tread.	Variable and challenging.	Widely variable and unpredictable.

	Very easy  White circle	Easy  Green circle	Intermediate  Blue square	Difficult  Single black diamond	Extreme  Double black diamond
Average trail grade	Ascents and descents are mostly shallow. Less than 5% average.	Ascents 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 ascents. 20% or less average.	Expect prolonged steep, loose and rocky descents or ascents. 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 (TTFs)	No obstacles.	Unavoidable obstacles to 50 mm (2") high, such as logs, roots and rocks. Avoidable, rollable obstacles may be present. Unavoidable bridges 900 mm wide. Short sections may exceed criteria.	Unavoidable, rollable obstacles to 200 mm (8") high, such as logs, roots and rocks. Avoidable obstacles to 600 mm may be present. Unavoidable bridges 600 mm wide. Width of deck is half the height. Short sections may exceed criteria.	Unavoidable obstacles to 380 mm (15") high, such as logs, roots, rocks, drop-offs or constructed obstacles. Avoidable obstacles to 1200 mm wide may be present. Unavoidable bridges 600 mm wide. Width of deck is half the height. Short sections may exceed criteria.	Large and unavoidable obstacles to 380 mm (15") high. Avoidable obstacles to 1200 mm wide may be present. Unavoidable bridges 600 mm wide or narrower. Width of bridges is unpredictable. Short sections may exceed criteria.

Appendix VI: Signage

Examples of signs used in NPWS parks

IMBA degree of difficulty totems



Closure sign



Hazard sign



Advisory signs



References and further reading

Acts

[NSW National Parks and Wildlife Act 1974](#)

Policies

[NPWS Cycling Policy](#)

[NPWS Events, Functions and Venues Policy](#)

[NPWS Vehicle Access – General Policy](#)

[NPWS Volunteer Policy and Procedures](#)

[Visitor Safety Policy and Procedures](#)

Research

[Nature-based outdoor recreation demand study](#)

[People and outdoor recreation in natural areas](#)

Manuals and guidance documents

[Responsible road and mountain cycling](#)

[Sustainability assessment criteria for visitor use and tourism in New South Wales national parks](#)

IMBA publications

[Managing mountain biking: IMBA's guide to providing great riding.](#)

[Rules of the Trail](#) (also see Appendix III)

[Trail solutions: IMBA's guide to building sweet singletrack](#)

