



NSW NATIONAL PARKS & WILDLIFE SERVICE

Guidelines for Implementation

NSW Cycling Strategy



© 2022 State of NSW and Department of Planning and Environment

With the exception of photographs, the State of NSW and Department of Planning and Environment are pleased to allow this material to be reproduced in whole or in part for educational and non-commercial use, provided the meaning is unchanged and its source, publisher and authorship are acknowledged. Specific permission is required for the reproduction of photographs.

The Department of Planning and Environment (DPE) has compiled this report in good faith, exercising all due care and attention. No representation is made about the accuracy, completeness or suitability of the information in this publication for any particular purpose. The department shall not be liable for any damage which may occur to any person or organisation taking action or not on the basis of this publication. Readers should seek appropriate advice when applying the information to their specific needs.

All content in this publication is owned by the department and is protected by Crown Copyright, unless credited otherwise. It is licensed under the [Creative Commons Attribution 4.0 International \(CC BY 4.0\)](#), subject to the exemptions contained in the licence. The legal code for the licence is available at [Creative Commons](#).

The department asserts the right to be attributed as author of the original material in the following manner: © State of New South Wales and Department of Planning and Environment 2022.

Cover photo: Gulpa Creek Walking and Cycling Track. Gavin Hansford/DPE

Published by:

Environment and Heritage Group
Department of Planning and Environment
Locked Bag 5022, Parramatta NSW 2124
Phone: +61 2 9995 5000 (switchboard)
Phone: 1300 361 967 (Environment and Heritage enquiries)
TTY users: phone 133 677, then ask for 1300 361 967
Speak and listen users: phone 1300 555 727, then ask for 1300 361 967
Email: info@environment.nsw.gov.au
Website: www.environment.nsw.gov.au

Report pollution and environmental incidents
Environment Line: 131 555 (NSW only) or info@environment.nsw.gov.au
See also www.environment.nsw.gov.au

ISBN 978-1-922840-92-9
EHG 2022/0566

First published in October 2022; reprinted November 2022 with corrections to Table 4.

Find out more about your environment at:

www.environment.nsw.gov.au

Contents

Definitions and abbreviations	vi
Purpose	1
How to use the guidelines	1
1. Current state of play	2
1.1 Existing cycling experiences on park	2
1.2 Adaptive cycling experiences on park	3
1.3 Commercial cycling experiences on park	3
1.4 Impacts of unauthorised tracks in our parks	4
1.5 Community involvement	6
2. How we work with others	7
2.1 Proposals from external parties	7
2.2 Commercial opportunities in parks	7
2.3 Working across tenures	8
2.4 Public roads	9
2.5 Cycling events	9
2.6 Commercial cycling tours	9
2.7 Stakeholder and volunteers	10
3. Enabling cycling experiences on park	12
3.1 What experiences we provide	12
3.2 Cycling policy requirements	12
3.3 Minor adjustments to tracks and trails	14
3.4 Process to assess and enable cycling experiences on park	15
4. Design and construction of cycling experiences	20
4.1 Cycling track design and construction	20
4.2 Supporting facilities	21
5. Management of cycling experiences	22
5.1 Visitor safety	22
5.2 Managing cycling tracks in our parks	22
5.3 Maintenance	24
Appendix A. Cycling market overview	26
Appendix B. Site suitability assessment	30
Appendix C. Multi-criteria assessment method	35

Appendix D. Prioritising development of cycling experiences on park	42
More information	43
Bibliography	44

List of tables

Table 1	Site character and landscape context	31
Table 2	Benchmark scores and recommendation	35
Table 3	Criterion 1 – Routes are in appropriate locations where park values are protected, and ongoing use is ecologically sustainable	36
Table 4	Criterion 2 – Routes facilitate an enjoyable and safe visitor experience	39
Table 5	Criterion 3: Construction and maintenance costs are reasonable and sustainable	41
Table 6	Factors for consideration when prioritising the development of possible cycling experiences on park	42

List of figures

Figure 1	Assessing and enabling cycling experiences on park	16
Figure 2	Environmental impact assessment process for enabling new cycling experiences on park	19
Figure 3	Suitability assessment process	30
Figure 4	Site suitability matrix	34

Definitions and abbreviations

Adaptive bicycle: a range of bicycles including hand cycles, knee cycles, tandem cycles, tricycles, quadricycles or other cycles modified to suit a person's physical, intellectual, neurological and sensory abilities.

Bicycle: any pedal-powered vehicle with wheels, including road bicycles, tricycles, power-assisted pedal cycles (see definition below), adaptive bicycles and mountain bikes.

Cycling: riding a bicycle in any style. Cycling does not include the riding of motorised bicycles other than those defined as a 'power-assisted pedal cycle' (see definition below).

Department: the NSW Department of Planning, Industry and Environment.

E-bike: power-assisted pedal cycle.

IMBA: International Mountain Biking Association

Management trail: vehicle trails on lands reserved or acquired under the *National Parks and Wildlife Act 1974* and which are maintained by National Parks and Wildlife Service (NPWS) for the purpose of park management activities. They are generally not open to public motor vehicle access.

Mountain bike riding: riding on unsealed trails and off-road tracks, and may be on single-use, preferred-used or multi-use tracks.

MTBA: Mountain Bike Australia (now AusCycling)

Multi-use track: a track designated for shared use by multiple forms of activity. In some instances, multi-use tracks may be limited to just 2 uses, such as cycling and walking.

NPW Act: *National Parks and Wildlife Act 1974*

NPW Regulation: National Parks and Wildlife Regulation 2019

NPWS: NSW National Parks and Wildlife Service

Parks: lands reserved under the National Parks and Wildlife Act, including a national park, nature reserve, historic site, Aboriginal area, state conservation area, karst conservation reserve, or regional park; or any land acquired by the Minister under Part 11 of the Act. It includes a park managed jointly with the Aboriginal community under Part 4A of the Act.

Power-assisted pedal cycle: a form of bicycle defined by the NSW Road Rules in accordance with Commonwealth law (Vehicle Standard [Australian Design Rule – Definitions and Vehicle Categories] 2005) and *Motor Vehicle Standards Act 1989*. This bicycle type may also be called an electrically power-assisted cycle, pedelec or e-bike. This definition does not include any form of vehicle that has an internal combustion engine.

Preferred-use track: a multi-use track designed primarily for cycling, but other users are not excluded from using.

Road cycling: riding on sealed roads, often public roads, which traverse parks.

Single track: a narrow track that is only wide enough to accommodate cyclists or walkers in single file.

Single-use track: a track designated for use by only one form of activity. In this strategy, the term is used to describe cycling-only tracks.

Track: an access way that is not open to motorised vehicles (other than motorised wheelchairs and other mobility devices).

Trail: see 'management trail'.

Unauthorised tracks: Any track created without permission from NPWS.

Purpose

This *Cycling Strategy: Guidelines for Implementation* supports the NPWS Cycling Strategy. It details the processes and procedures which the NSW National Parks and Wildlife Service (NPWS) will undertake to deliver the vision and objectives outlined in the Cycling Strategy. The guidelines provide the statewide framework for the sustainable management of cycling experiences in our parks to ensure the conservation of the natural and cultural heritage values that make our parks unique.

The guidelines also provide details on:

- how NPWS determines which parks are appropriate for cycling activities
- the development and assessment process for new authorised tracks and networks
- processes for the closure and rehabilitation of unauthorised tracks
- how proponents of cycling proposals and other stakeholders can work with us
- how we will plan for and assess cycling proposals and manage cycling experiences.

How to use the guidelines

These guidelines have been developed to provide a framework for planning, designing and managing cycling experiences in NPWS parks. **It is recommended that readers refer to the NPWS Cycling Strategy** to understand our vision, objectives and priority actions for on-park cycling experiences.



Photo 1 Family mountain biking on Muurlay Baamgala cycle trails, Bongil Bongil National Park. Jay Black/DPE

1. Current state of play

1.1 Existing cycling experiences on park

The number of people visiting NSW national parks is increasing. In 2018, our parks received an estimated 45.33 million visits from Australian adults and 14.9 million visits from Australian children, plus an estimated 2.7 million visits from international visitors. This is almost double our visitation levels in 2010.

Visitors are attracted to our parks to appreciate nature and participate in numerous recreational activities, including bushwalking, picnicking, camping, water activities, horse riding and cycling. Participation in cycling activities remains significant and across Australia has also been rapidly increasing (see Appendix A).

NPWS parks currently offer exceptional cycling experiences for all levels. Our cycling experiences include purpose-built single tracks, multi-use tracks, accessible tracks, sealed tracks and management trails. Part of the cycling network that runs through our parks are public roads, which are not owned or managed by NPWS. These roads provide access for road cyclists looking to enjoy riding in natural settings.

NPWS is responsible for over 30,000 kilometres of management trails (see Box 1). This provides an extensive network of cycling trails suitable for 'leisure' mountain bikers, which make up the largest portion of the mountain biking market (GHD 2021). The primary purpose of these trails is for the management of parks, particularly fire management. However, they also offer great experiences for a range of different cyclists and cycling activities, including adaptive cycling, e-bikes, touring and gravel riding.

The existing cycling experiences offered by NPWS are distributed throughout the state. Reserves such as Kosciuszko National Park offer technical downhill tracks in Thredbo Mountain Bike Park and cross-country experiences along the Thredbo Valley Track. Royal National Park offers easy family riding experiences and single tracks experiences for mountain bikers. Several parks offer technical mountain biking experiences, including Glenrock State Conservation Area, Garigal National Park and Murray Valley Regional Park. Offering and expanding these unique opportunities in parks, including working with land managers across different land tenures, will be key to the further provision of cycling networks on park.

Box 1. Cycling on management trails

Management trails form an important component of the NPWS recreational track network. While we understand that these trails do not fulfil the desired experience of all mountain bike riders, they offer a number of benefits in a national park setting.

Management trails are shared use and as such are more cost effective to maintain, and can accommodate more users and users of a different type. Using management trails as multi-use tracks can reduce the number of tracks required in a park and hence the amount of land impacted (Davies 2009). An example of a well-used and enjoyed management trail experience is the Woodford-Oaks Trail in Blue Mountains National Park. With the increased popularity of e-bikes, and NPWS aim to improve the accessibility of experiences to users such as adaptive cyclists, it is expected that management trails will become more important for providing a range of recreational activities in our parks in the future.

Cycling is guided by our Cycling Policy and is generally permitted on management trails in all park categories, except for nature reserves and wilderness areas, where it must be specifically permitted in the plan of management and signposted. For parks without a plan of management, decisions about cycling are made in accordance with the *Managing parks prior to a plan of management policy*.

1.2 Adaptive cycling experiences on park

The NPWS Cycling Strategy highlights the importance of creating accessible cycling experiences, which includes designing tracks and facilities for people that use adaptive bicycles. This is a key consideration for the future provision of cycling tracks on park, and NPWS will consult with key user groups in the development of cycling opportunities on parks.

The multi-use Thredbo Valley Track in Kosciuszko National Park incorporates a variety of experiences along its 35-kilometre length, from blue (intermediate) and green (easy) mountain bike sections, to a short section of wheelchair-accessible track.

NPWS also provide 'TrailRider' all-terrain wheelchairs, which offer accessible experiences for people with mobility restrictions, in Kamay Botany Bay National Park, Dorrigo National Park, Royal National Park and Kosciuszko National Park.

For further information regarding access-friendly experiences in our parks, visit the NPWS Access-friendly experiences webpage.

1.3 Commercial cycling experiences on park

Road cycling events, mountain biking events and multi-sport events, ranging from club to national level events, are held in parks. Examples of popular events held within or traversing our parks include:

- Port to Port in Glenrock State Conservation Area
- Snowy Mountain Bike Festival, using the Thredbo Valley Track in Kosciuszko National Park
- Woodford to Glenbrook Classic in Blue Mountains National Park
- Tour de Gorge in Timmallallie National Park
- Convict 100 in Dharug and Yengo national parks.

A range of cycling tour operators also lead tours on park, including in the Blue Mountains, Kosciuszko and Royal national parks and Glenrock State Conservation Area.



Photo 2 TrailRider, all-terrain wheelchair, Kamay Botany National Park. Alison Morgan

1.4 Impacts of unauthorised tracks in our parks

The development and use of unauthorised tracks is a significant issue in our parks, regardless of whether the use is for bushwalking, cycling or other activities. It is an offence to damage land reserved or acquired under the NPW Act. This includes the development of cycling tracks without consent. There are penalties under both the *National Parks and Wildlife Act 1974* and National Parks and Wildlife Regulation 2019 for removal of vegetation, ground disturbance, erection of structures, riding in unauthorised areas, risking the safety of other users and other matters. There are also penalties under the *Biodiversity Conservation Act 2016* for harming threatened species or threatened ecological communities.

NPWS has observed a significant increase in the creation of unauthorised tracks for the purpose of mountain biking in recent years. These tracks often proliferate through national parks and are constructed without due consideration of important environmental or cultural values or user safety.

NPWS recognises that demand for single track and more technical cycling experiences has driven the creation of unauthorised tracks in some parks. As NPWS looks to establish sustainable track networks in selected parks, we will be engaging early with stakeholders to explore sustainable experiences that protect the natural and cultural values of our parks and ensure NPWS legislative requirements are being met.

Clearing in a park is an offence under the *National Parks and Wildlife Act 1974* (see Section 5.2.3), and unauthorised tracks can have significant impacts on environmental and cultural values. These effects on the environment are often cumulative, including habitat loss, erosion, reduced water quality, changes in plant community structure and the spread of weeds.

Responses of fauna to cycling activities may differ, with reptiles, bird roosting and small mammals particularly vulnerable to mountain biking activities. These impacts impose long-term issues that are difficult and costly to manage. There can also be significant impacts on culturally important objects such as scar tree and rock engravings as well as places of spiritual value.

Cycling Strategy - Guidelines for Implementation

To ensure the protection of environmental and cultural values, track networks need to be appropriately situated and designed by professionals. Any tracks assessed to be causing damage to park values will be closed and rehabilitated.

In addition to environmental concerns, poorly designed user-built tracks can be significantly more dangerous for riders than professionally designed tracks. Unauthorised tracks commonly contain technical features (e.g. jumps, ramps and mounds) constructed on or near tracks to increase the technical difficulty of tracks. In many cases, safety aspects have not been fully explored (see Section 5.1).

National parks also experience issues with cycling on existing tracks not designed for cycling, for example, cycling on walking-only tracks. This unauthorised use can create conflict between different user groups, and safety issues, and may also cause environmental damage as the tracks have not been adequately designed for cycling needs.

The development and use of unauthorised tracks will be prevented through the prioritisation and closure of unauthorised tracks, the establishment of properly planned, constructed and authorised track networks and through ongoing education and compliance of park users.

The planning and assessment processes required to enable authorised cycling experiences on park are detailed in Section 3. Section 5 of this document outlines how NPWS will manage track development.



Photo 3 Unauthorised track in Ku-ring-gai National Park. Jacqueline Hindmarsh/DPE

1.5 Community involvement

An important part of planning for the provision and management of sustainable on-park cycling experiences is engaging with the community early. Positive experiences for cyclists and NPWS can be forged through the creation of partnerships to ensure all perspectives are considered. There are currently numerous great examples in our parks of community groups working with parks to maintain and monitor tracks and reduce unauthorised tracks.



Photo 4 Mountain bikers, Ku-ring-gai Chase National Park. Clare Manson Photography

2. How we work with others

2.1 Proposals from external parties

NPWS receives proposals for new on-park cycling experiences from NPWS project sponsors and external parties, including local councils, mountain biking stakeholder groups and members of the cycling community. A standard process to assess and enable proposed new cycling experiences in a park will provide certainty for proponents of cycling experiences on the process to be undertaken and the issues that need to be considered. A consistent approach for assessment ensures that all appropriate environmental and cultural values, as well as visitor needs, are considered.

Not all cycling activities will be appropriate in all our parks, particularly the full range of mountain biking experiences. While NPWS will continue to support sustainable mountain biking experiences on parks, in some instances, mountain bike experiences off park may provide more suitable lands for particular experiences (e.g. highly technical gravity runs). In these instances, collaboration with other landowners will be encouraged. NPWS will seek to support a number of highly technical trails and gravity experiences in a range of parks in New South Wales, with Thredbo Mountain Bike Park being a good example of such an experience.

Where there is strong latent demand for cycling infrastructure and facilities, NPWS supports local groups and associations in initiating feasibility studies and then preparing a proposal using these guidelines (see sections 4 & 5). Early consultation with local NPWS staff is encouraged when preparing proposals.

2.2 Commercial opportunities in parks

NPWS provides commercial opportunities in NSW parks for private businesses. Any commercial activity in a park must be permissible under the *National Parks and Wildlife Act 1974* (NPW Act) and consistent with the park's plan of management. Lease arrangements can increase opportunities for people to engage with parks and enable visitors to benefit from other parties' skills and experience in delivering quality visitor experiences, and can support funding for additional facilities. Thredbo Mountain Bike Park in Kosciuszko National Park is an example of a commercial lease.

The process for granting or renewing commercial leases over park infrastructure is outlined in the Property Leasing Guidelines. Licences to operate commercial activities in parks, such as commercial tours and events, are outlined on the NPWS Commercial activities in parks webpage.

NPWS usually offers leases to the market through a competitive selection process, advertised on the NSW Government eTendering website. In exceptional circumstances, NPWS may directly negotiate with a proponent; or individuals and companies can approach NPWS directly with business opportunities. To be considered in this way, the proposal must be submitted to the Department of Premier and Cabinet, not NPWS, and must meet the requirements detailed in the Unsolicited Proposals Guide for Submission and Assessment, including the criteria of uniqueness, value for money and strategic fit.

Proponents can visit our website to find out more about commercial opportunities in national parks, or to apply for a Parks Eco Pass that allows their business to operate commercial, recreational and educational activities.

Lease proposals that include the development of a new cycling experience, or the inclusion of unauthorised tracks, will also be subject to the assessment processes outlined in Section 3 of these guidelines.



Photo 5 Rider at Thredbo Mountain Bike Park. Elinor Sheargold/DPE

2.3 Working across tenures

Cycling and mountain biking experiences often traverse a range of public and private lands, with different land managers able to enhance and provide different experiences, levels of difficulty and distance of cycling experiences.

NPWS will work with other land managers and landowners to explore and progress opportunities for cross-tenure experiences and cycling infrastructure that:

- are environmentally and financially sustainable
- are consistent with the park's plan of management, precinct plans or other strategic plans, such as the NPWS Cycling Strategy
- deliver high quality and diverse park visitor experiences
- support optimal cycling connectivity
- avoid replicating similar cycling experiences on and off park in the same region.

Where appropriate, NPWS will be represented in forums and working groups where cross-tenure proposals are being considered. This will include consultation with other government agencies when proposing facilities that utilise surrounding areas, for example, council car parks to support networks (see Section 4.2).

Any new cycling experiences in parks that are proposed through a cross-tenure planning process will also be subject to the assessment process outlined in Section 3 of these guidelines.

2.4 Public roads

Public roads that traverse NPWS parks provide popular, scenic cycling routes for road cyclists and often connect mountain bike riders to on-park trails and tracks. Most public roads within parks are not part of NPWS estate and are the responsibility of Transport for NSW, local government or other public authority.

NPWS is not responsible for the management of cycling on public roads that are not reserved or acquired under the NPW Act but may advocate for and work with park visitors to present concerns around safe cycling experiences to the relevant road authority, such as providing cycle lanes or changing the speed limit.

2.5 Cycling events

A pillar of the NSW Government's *NSW Visitor Economy Strategy 2030* (Destination NSW, 2021) is to invest in world-class events, including regional and local events that attract local or interstate visitors and help to define the local character of a town or region. This includes an action to activate government-owned assets, including NPWS parks, with compelling new event content.

Events can bring economic benefits to local communities and contribute towards the costs of maintaining cycling facilities. NPWS does not provide cycling facilities designed specifically for events, but cycling facilities designed for locals and visitors can be of interest to private sector event organisers. An example is the annual Snowies Mountain Bike Festival held in Kosciuszko National Park.

The *Australian Adaptive Mountain Biking Guidelines* provide guidance on event and race accessibility. While focused on mountain biking events, much of the guidance would be relevant to a range of other cycling events.

Management of all events in parks is guided by the *Events, Functions and Venues Policy*. Under this policy, cycling events must be consistent with the management principles of the park category. Cycling events are subject to environment assessment (see Section 3 of these guidelines) and the *Cycling Policy*. For further information on the requirements for holding a road cycling, mountain bike or multi-sport event in a park, see the NPWS Host an event webpage.

2.6 Commercial cycling tours

Commercial cycling tours are popular activities in parks and offer opportunities to people who may not otherwise be able to enjoy a cycling experience. In addition, tour operators can encourage people to ride safely with minimal impact on the environment and educate people about the natural and cultural values of parks.

NPWS licences commercial recreation and tour operators in parks through the Parks Eco Pass Program. This system sets requirements for commercial tour operators regarding:

- interpretation of Aboriginal cultural heritage
- accreditation
- minimisation of impacts on natural and cultural values
- managing potential issues associated with other visitor uses
- minimisation of risks to public safety
- promotion of environmental sustainability
- public liability insurance.

To find a tour, see the NPWS Guided tours webpage.

2.7 Stakeholder and volunteers

NPWS is continuously evolving the methods through which we connect with our stakeholders to ensure we are making sound, representative planning and management decisions. The development of a plan of management and volunteer programs are two ways in which we get stakeholders involved in the planning and management of our parks to ensure we continue to protect the environmental and cultural values in our parks and provide optimal visitor experiences.

2.7.1 Aboriginal engagement

Aboriginal communities have an association with and connection to the land. Aboriginal heritage and connection to nature are inseparable from each other and need to be managed in an integrated manner across the landscape.

Engagement with the Aboriginal community, the traditional custodians of the land on which our parks are established, provides us with the foundation for planning and managing our parks to protect cultural and environmental values. NPWS recognises that engaging with the Aboriginal community involves connecting through different levels of engagement, in different areas, through traditional customs and with the appropriate bodies, groups and key individuals.

We endeavour to engage in a culturally appropriate manner with peak bodies such as the NSW Aboriginal Land Council, local Aboriginal land councils, Elders and youth, and other Aboriginal people and groups with interest.

2.7.2 Community involvement

Stakeholders can be involved in the planning and management of cycling experiences in several ways. This includes engaging in the plan of management process, commenting on draft publications (e.g. cycling plans) or volunteering in activities such as rehabilitation of unauthorised tracks and maintenance of authorised tracks (see Section 5.2.4).

NPWS will engage with stakeholders in the early stages of planning and developing new track networks. NPWS will provide opportunities to comment and, where appropriate, assist with the design, construction and maintenance of tracks as well as rehabilitation of unauthorised tracks.

2.7.3 Plans of management

Plans of management provide details on permissible visitor experiences within parks and their management. As with walking tracks, authorised cycling tracks and experiences need to be enabled in a park plan of management.

Any new plans of management or plan amendments require a mandatory public exhibition period which provides an opportunity for stakeholders to offer comment on draft proposals. Additional cycling plans (which provide more operational detail outside of a plan of management) can also be created to detail and support track networks within a park.

In addition to the mandatory consultation phases associated with new or amended plans of management, NPWS considers it best practice to engage with key stakeholders early. We aim to do this prior to formal public exhibition periods by identifying and engaging with peak bodies and representative organisations to assist us in ensuring our outcomes are transparent and balanced.

2.7.4 Volunteer programs

NPWS has established and will continue to develop volunteer programs that encourage stakeholders to connect with our parks. For example, in Glenrock State Conservation Area in the Hunter region, volunteers assist with maintaining tracks and disseminating information about track closures and safety issues.

Stakeholder user groups that frequent our parks provide an important role in alerting NPWS to track issues, such as illegal vegetation clearing and safety issues, and can help us to broadcast information with greater influence in the community. Other cycling user groups also maintain relationships with NPWS through discussing the needs of road cyclists on park roads, as well as advocating for changes to public roads to increase safety through national parks land.

Our aim is to create a culture of stewardship (see Section 5.2.4) through community and volunteer involvement. This has many benefits, including:

- connecting users with nature
- developing a system of self-regulation that supports our compliance efforts and assists us in focussing our finite resources on the protection of natural and cultural values
- creating optimal visitor experiences.



Photo 6 Volunteer bush regeneration activity, Nature Nomads, Hat Head National Park. Nick Cubin/DPE

3. Enabling cycling experiences on park

This section outlines the process to assess and enable authorised on-park cycling experiences and the management of unauthorised tracks. This process incorporates detailed environmental and heritage assessments. NPWS will apply this process equally to new experiences proposed by internal and external stakeholders.

3.1 What experiences we provide

Under the *National Parks and Wildlife Act 1974*, NPWS is required to protect and conserve environmental and cultural heritage as well as foster public appreciation, understanding and enjoyment of our parks. NPWS recognises that there are a number of different cycling experiences that can be achieved on park, whilst still maintaining conservation and environmental requirements. However, not all cycling activities will be appropriate in all of our parks, or in all areas of our parks. This is consistent with other activities like horse riders, rock climbers, and bushwalkers, where only certain NSW parks cater to their needs.

When considering experiences in park, NPWS will seek to provide a mix of experiences across the NSW park system, including those that cater for the majority of users and specialised tracks for different cycling experiences. NPWS also recognises the importance of having a mix of local, regional and destination tracks.

NPWS will seek to support a number of highly technical tracks and gravity experiences in selected parks in New South Wales. It is not possible to provide these experiences in all parks. Collaboration with other landowners and managers, such as councils, Crown Land and Forestry may result in localised and more technical experience not appropriate for protected areas such as national parks. NPWS will seek to achieve positive tourism outcomes for local economies, by carefully considering the locations of networks in areas of demand.

3.2 Cycling Policy requirements

Management of cycling, including mountain biking, in parks managed or jointly managed by NPWS is guided by the *Cycling Policy*. This policy outlines a number of criteria to guide decisions about the planning, development and management of cycling experiences. Where a new cycling experience may displace an existing use of the area, the policy requires further consideration of several factors.

Box 2. Changes to cycling access

NPWS *Cycling Policy* states that periodic, occasional or permanent closure of park roads and management trails may be undertaken in accordance with the Vehicle Access Policy. The process outlined in the Vehicle Access Policy will also apply to the closure of tracks to cycling.

Mountain bike tracks in parks are often closed during and after wet weather. Wet tracks are more susceptible to erosion than dry tracks and some tracks may be more dangerous to ride in wet weather. Tracks may also be closed during total fire bans and upon direction from the Rural Fire Service (RFS). All users are encouraged to check local park alerts prior to entering parks.

Some tracks or trails in parks may need to be closed to cycling at night because noise and lights from night riding may disturb park neighbours and wildlife. Some parks containing cycling experiences are closed at night (for example, the Glenbrook section of Blue Mountains National Park). Some mountain biking tracks managed by other land managers are also closed at night (for example, the Hornsby Mountain Bike Trail managed by Hornsby City Council).

Closures will be communicated on the NPWS website and may be communicated through on-park signage, where appropriate. Key stakeholder groups can also greatly assist with the dissemination of information about tracks.



Photo 7 Mountain bikers, Muurlay Baamgala cycle trails, Bongil Bongil National Park. Jay Black/DPE

3.3 Minor adjustments to tracks and trails

NPWS Cycling Policy provides for the minor adjustment of the network of tracks and management trails available for cycling additional to what is identified in a park plan of management or subsidiary plan. Minor adjustments may occur to address specific overriding safety concerns, protect park values or improve visitor experiences. These issues may be a result of landscape changes such as rockfalls or landslip; or the aftermath of fire, flood or other natural or human-induced causes.

Minor adjustments for the purposes set out above may be authorised using appropriate signage, including the temporary diversion or redirection of cycling onto other tracks or trails previously not authorised for cycling, or construction of small-scale additions to the network (e.g. to provide a new link between tracks and reduce environmental risks associated with use of an existing track).

The following conditions apply to these minor adjustments:

- all relevant environmental assessment requirements must be met
- more substantial changes to the network, including those requiring larger-scale construction, must be reflected in the plan of management or may be detailed in a subsidiary park cycling plan – this includes changes that might have significant impacts
- on park values, visitors or neighbours, or are likely to be of concern to the broader community
- changes to the network driven primarily by user-demand must be reflected in the park plan of management or subsidiary plan.

Management trail construction and maintenance works must be undertaken in accordance with the *NSW Rural Fire Service Fire Trail Standards (2016)*.



Photo 8 Deniliquin mountain bike trails, Murray Valley Regional Park. Ain Raadik/Edward River Council

3.4 Process to assess and enable cycling experiences on park

3.4.1 Steps to be undertaken

There are a number of processes required to establish new tracks on parks. These processes are the same, whether considering a new cycling, walking, horse riding or management trail on park lands. The following section describes the processes to be followed to assess and enable authorised cycling experiences on park. This includes:

- assessment of suitability of the park for cycling experiences (Figure 1)
- auditing, assessment and management of unauthorised tracks
- development of authorised cycling experiences on park
- assessment of cycling experiences provided off park within the region
- assessment of tracks in a newly reserved park where mountain biking is an existing use
- realignment of existing, authorised tracks.

The prioritisation factors for track development (Appendix D) need to be considered at all stages within the assessment processes. This will ensure that tracks meet environmental, cultural and visitor use considerations as well as aligning with state government policies, objectives and management priorities.

Assessing and enabling cycling experiences on park

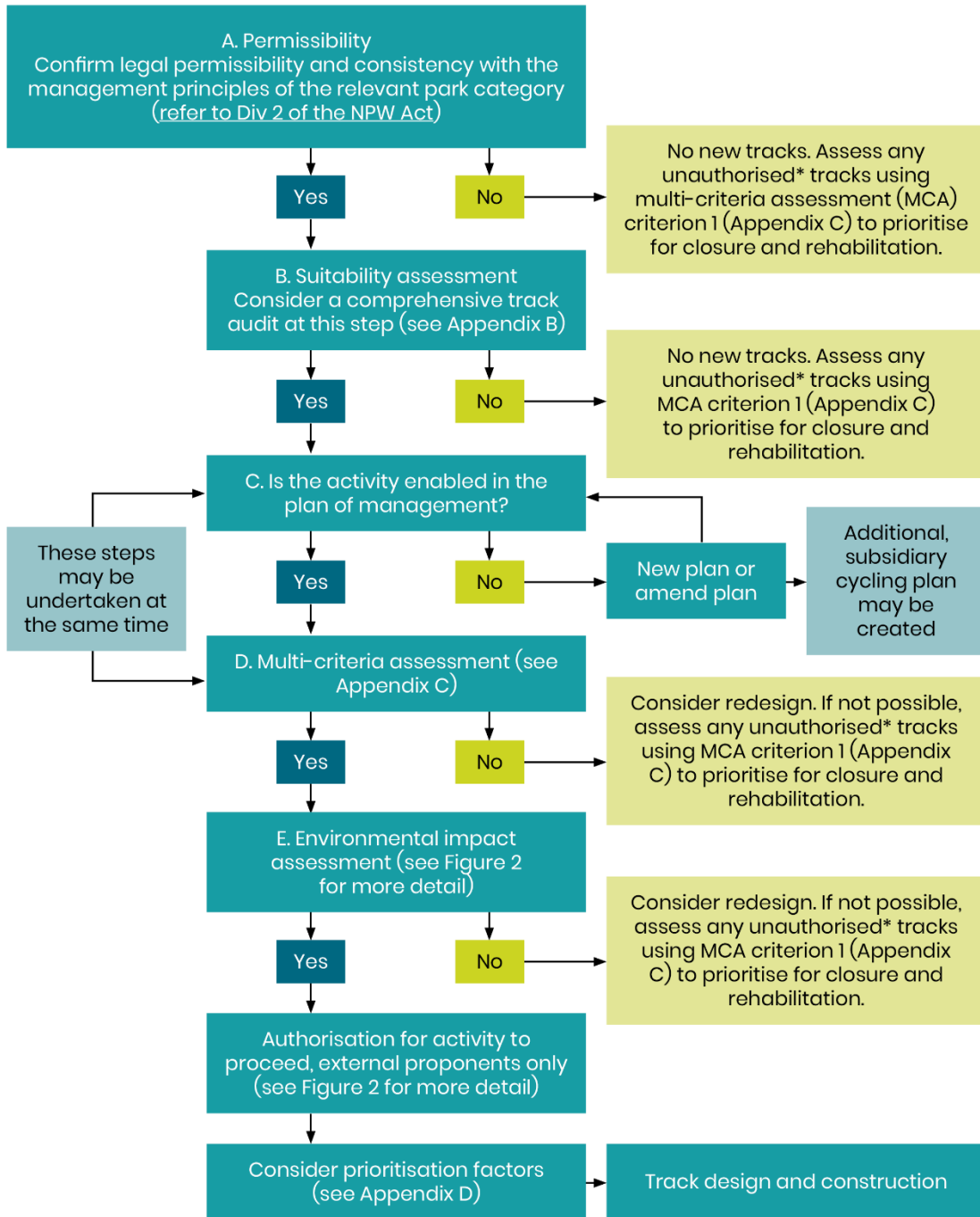


Figure 1 Assessing and enabling cycling experiences on park

* prioritisation factors should be read before step B, but are not implemented until after detailed assessments have been completed.

A Permissibility

Division 2 of the NPW Act details the legal permissibility and management principles for different types of parks (park categories). An activity must be permissible in the relevant park category to be enabled in a plan of management.

A cycling experience can only be considered further if the activity is permissible in the park.

B Suitability assessment

Once legal permissibility has been confirmed, a suitability assessment is required to determine if and where cycling activities are suitable in the park. Not all parks, or areas of parks, will be suitable for cycling activities due to other park values.

Undertaking a suitability assessment ensures that only those proposals that are capable of meeting NPWS environmental and park management objectives are progressed for more detailed consideration (see Figure 2). Other relevant policies and strategies such as the Cycling Policy, NPWS Cycling Strategy, subsidiary park plans and park precinct plans should be considered for consistency at this step.

Appendix B outlines the steps to be undertaken for the suitability assessment. The assessment process is described in detail in the Sustainability Assessment Criteria for Visitor Use and Tourism in New South Wales National Parks.

The conclusions of the suitability assessment will inform a decision by NPWS on whether a proposal should proceed for more detailed investigation and consultation. Where NPWS determines that a proposal is not to proceed, reasons will be provided to the relevant proponent or external party.

C Plan of management

NPWS are required to prepare plans of management for every gazetted park under Part 5 of the NPW Act. Plans of management are statutory documents that outline the values of the park and management priorities, including the management of visitor experiences. Once adopted, activities inconsistent with the plan are not permitted. Where newly proposed activities are not enabled in a plan of management, but are considered permissible and suitable in the park, an amendment to the plan of management may be possible. New plans of management and any amendments to plans must be publicly exhibited, providing an opportunity for public comment.

A plan of management may enable a new cycling experience by:

- indicating the location of tracks and trails on a map (e.g. the Garigal National Park Plan of Management)
- indicating the location of tracks and trails in the text (e.g. the Yellomundee Regional Park Plan of Management)
- indicating areas or zones within which tracks and trails may be constructed, or unauthorised tracks may be considered for inclusion into a track network (e.g. Bouddi National Park Plan of Management). These plans of management may refer the detail to a subsidiary park cycling plan. Zoning may allow modest changes to the track network (such as track realignments to improve environmental sustainability) without the need for a plan of management amendment.

D Multi-criteria assessment of tracks

Where a park is considered suitable for cycling, individual tracks or track networks, including any unauthorised tracks, will be evaluated using a multi-criteria assessment. This assessment determines if tracks are located to prevent disruption to park values and maximise rider experience.

The 3 assessment criteria used are:

- Criterion 1 – Routes are in appropriate locations where park values are protected, and ongoing use is ecologically sustainable.
- Criterion 2 – Routes facilitate an enjoyable and safe visitor experience.
- Criterion 3 – Construction and maintenance costs are reasonable and sustainable.

Appendix C outlines the individual factors considered under each criterion and describes how the assessment is used to recommend the inclusion or closure of unauthorised tracks, construction of new tracks and the appropriate track alignments. The results of this analysis may be detailed in a subsidiary park cycling plan and will form part of the information considered in the more detailed environmental impact assessments.

The multi-criteria assessment is also used to prioritise the closure and rehabilitation of unauthorised tracks. This is completed by evaluating the tracks against Criterion 1 to provide a detailed assessment of the likely impacts of tracks on environmental and cultural values (see Table 4 in Appendix C), as well as assessing safety concerns. Unauthorised tracks located in areas with environmental and cultural sensitivities, and which are causing impacts on these values will be prioritised for rehabilitation.

E Environmental impact assessments

An environmental impact assessment (EIA) is required under NPWS statutory obligations for new tracks, including the inclusion of any unauthorised tracks into a track network. An EIA is also required for cycling events in a park.

Part 6 of the NPW Act provides specific protection for Aboriginal objects and declared Aboriginal places. Harm to significant Aboriginal objects and declared Aboriginal places should be avoided as the first priority. Where harm cannot be avoided, the results of a site assessment and recommended actions to reduce the extent and severity of harm should be developed and detailed in an Aboriginal Cultural Heritage Assessment (ACHA) report. An Aboriginal Heritage Impact Permit (AHIP) may be required. More information is available on this process, and the definition of 'harm' under the NPW Act, on the NSW Department of Planning and Environment website.

Proposals for new cycling experiences that involve a change in use (e.g. a multi-use track to a single-use track), but no new physical works may also require an EIA depending on the scale of the change of use, the volume of the increased use, changes in environmental impacts and competing visitor demands. The EIA process only commences once all other assessments have been completed and NPWS is willing to progress with a tracks or events (see Figure 1).

Figure 2 outlines the steps, in order, required to prepare an EIA. For further information about the different EIA pathways, see the Department's Development Guidelines webpage or contact the relevant NPWS Park Operations Branch or email npws.envplanningadvice@environment.nsw.gov.au

Environmental impact assessment (EIA) process

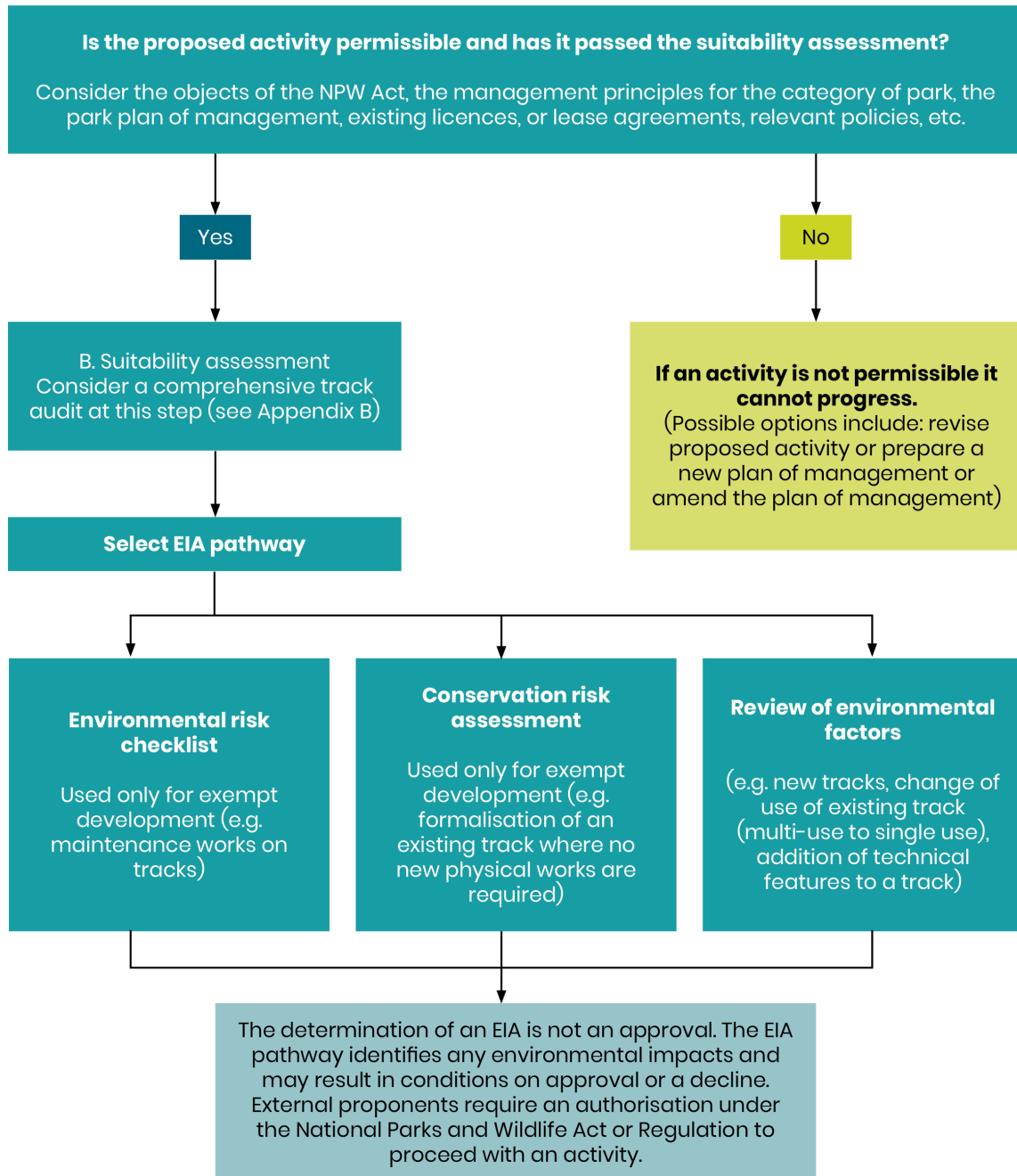


Figure 2 Environmental impact assessment process for enabling new cycling experiences on park

4. Design and construction of cycling experiences

4.1 Cycling track design and construction

Cycling in our parks is recognised by NPWS as an enjoyable visitor experience that allows users to connect with nature and, when well-planned, professionally constructed and managed effectively, can coexist with other recreational interests.

NPWS aims to provide high quality cycling experiences. Cycling infrastructure needs to be accessible, and supported by track heads, parking and other amenities. NPWS will make informed decisions using appropriate standards and guidelines for the development of on-park cycling experiences.

Mountain bike track design and construction are particularly important to minimise erosion, ensure good sight lines and optimise user experience and safety.

4.1.1 Mountain bike track design guidelines

In 2019, Mountain Bike Australia Ltd (now AusCycling) published the *Australian Mountain Bike Trail Guidelines* (MTBA 2019), which have been developed to meet the needs and environment of Australia. The *Australian Adaptive Mountain Biking Guidelines* (Break the Boundary 2018) provide guidance on the minimum requirements necessary for a mountain bike track to suit the widest possible range of adaptive cycles, including power-assisted pedal cycles (see Box 3).

Box 3. Power-assisted pedal cycles (e-bikes)

Power-assisted pedal cycles, commonly called e-bikes or pedelecs, have electric propulsion motors attached to assist the rider. Power-assisted cycles enable a spectrum of users to enjoy cycling and mountain biking experiences, including those who require adaptive cycles and those who want to cover greater distances or ascend hills with greater ease.

Power-assisted cycles that align with NSW Road Rules are permitted where bicycles are permitted in parks.

On some tracks, power-assisted cycles may exacerbate safety issues, such as increased potential for collisions or additional erosion issues. Specific tracks may be designed to enable riding by power-assisted pedal cycles (see the *Australian Adaptive Mountain Biking Guidelines*).

These guidelines have been adopted by NPWS and provide a framework for planning, designing, constructing and managing sustainable mountain bike tracks on park. They are aligned with much of the guidance provided by the International Mountain Bicycling Association (IMBA). Mountain biking facilities and features, including technical track features (see Box 4), should be designed by a staff member or contractor with appropriate expertise to ensure track sustainability and visitor safety and to reduce impacts on park values.

Track design should also consider the use of bicycle cleaning station at track heads to prevent weeds and pathogens from establishing and spreading. An educational program for users and on-site signage would assist in the importance of using such facilities. Weed and pathogen containment should also form part of the risk assessment process for all NPWS staff and contractors using plant equipment and vehicles to access parks for the purpose of track construction and maintenance works.

Box 4. Technical track features

Technical track features are objects that are introduced to a track to provide a challenge for riders. They include rock gardens, drop-offs, step ups, rollers, gap jumps and tabletops, which may be created through built structures or natural features (MTBA 2019).

Technical track features require expert design to manage risk to individuals and to the environment. Design should include the consideration of filters, lines and fall zones to ensure rider safety. The inclusion of technical track features is subject to environmental assessment. Not all cycling activities will be appropriate in all parks.

4.1.2 Sharing tracks

The ability of a track to safely support multiple users will depend on track design, type of use and level of use. Management trails are a good example of multi-use tracks. Management trails contribute greatly to many of the cycling experiences in NPWS parks (see Box 1, Section 1).

When designing tracks and networks, NPWS will consider whether tracks will be designated as:

- multi-use – shared by cyclists and other users, such as walkers
- cycling preferred-use – designed primarily for cycling, but other users are not excluded from using
- cycling single-use – designated for use by cyclists only
- single direction
- dual direction.

The *Cycling Policy* procedures indicate when tracks may be designated as multi-use. The *Australian Mountain Bike Trail Guidelines* provide further information on track types and those considered to be incompatible for multi-use due to the nature of the tracks, speed and actions of riders. NPWS may change the designation of a track if safety, environmental or other issues arise, for example, if increased use means the track can no longer safely support multiple users.

4.2 Supporting facilities

Supporting facilities should be considered in planning a cycling or mountain biking experience.

The *Australian Mountain Bike Trail Guidelines* identify the supporting facilities required based on the level of significance of the mountain biking facility:

- for a facility of national level significance (meeting a number of requirements including more than 80 kilometres of track) – a car park, toilets, trail head signage, trail markers, accommodation, bike hire, cafe and event hosting capabilities
- for a facility of regional significance (meeting a number of requirements including 20–80 kilometres of track) – a car park, trail head signage and trail markers are required, and toilets are also required for facilities with 50–80 kilometres of track
- for a facility of local significance (meeting a number of requirements, including up to 20 kilometres of track) – a car park, trail head signage and trail markers are required, and toilets are desirable.

The *Australian Adaptive Mountain Biking Guidelines* also provide recommendations for minimum requirements for accessible amenities. NPWS will use these guidelines to aid in the planning of inclusive cycling experiences on park. All signage on NPWS estate is to be in accordance with the NPWS signage manual.

5. Management of cycling experiences

5.1 Visitor safety

Visitor safety in parks managed or jointly managed by NPWS is guided by the *Visitor Safety Policy*. Under this policy, we have a legal duty to take steps to reduce the risk of harm to visitors where:

- the risk is foreseeable
- the risk was not insignificant
- a reasonable person in our position would have taken additional precautions to limit or remove the risk.

We do not, in most circumstances, owe a duty of care:

- to warn park visitors of an obvious risk
- in respect to recreational activities where we have given adequate warnings about the known or site-specific risks involved with those recreational activities.

NPWS provides general safety information about cycling on our website. NPWS will also provide site-specific safety information on our website, and general and site-specific safety information via on-park signage, as appropriate. NPWS also works with cycling user groups to help effectively disseminate information about track issues on park. During periods of total fire bans and upon direction from the Rural Fire Service (RFS) parks may be closed. All users are encouraged to check local park safety alerts prior to entering parks.

Signage on tracks is important to indicate flow direction where tracks are directional, to indicate multi-use, to identify hazards or technical features and to distinguish authorised tracks. To ensure visitors can make informed decisions about their ability to undertake a track, all mountain biking experiences on the website should be classified using the track classification systems detailed in the track design guidelines referred to in Section 4.1.1. Rider etiquette and compliance with a recognised code of conduct (see also Section 5.2.4) are also essential in ensuring the safety of all users and maximising their enjoyment.

Visitor safety risks are assessed through a formal risk management system, and each NPWS Area office maintains a visitor safety regional risk register to record all identified visitor safety risks and their assessed risk rating. In accordance with the *Civil Liability Act 2002*, NPWS has no liability for harm suffered from obvious risks of dangerous recreational activities (that is, those which involve a 'significant risk of physical harm').

NPWS is not responsible for cycling on public roads (see Section 2.4).

5.2 Managing cycling tracks in our parks

The management of cycling networks is essential to the long-term sustainability of the tracks and minimises damage to park values. Tracks that are not adequately constructed and maintained or are used inappropriately can result in erosion. For example, impacts of sliding and braking on wet or poorly designed tracks can loosen track surfaces, displace soil down slope, create ruts, berms or cupped tracks and cause water erosion problems. Professionally built tracks, when used and managed appropriately, can minimise these impacts comparable to that of a walker (Pickering et al. 2010).

Unauthorised tracks create a number of environmental issues and direct management resources away from maintaining the authorised track networks (see Section 1.4). NPWS aims to reduce the development of unauthorised tracks through well-considered planning and stakeholder engagement. A mixture of track closures and rehabilitation, decommissioning of authorised

tracks, compliance programs and the development of a culture of stakeholder stewardship is required to adequately manage cycling experiences in parks.

5.2.1 Closure and rehabilitation of unauthorised tracks

When designing new cycling track networks, NPWS will assess unauthorised tracks to determine their suitability for inclusion in an authorised network (see Section 3.3.1, B. Suitability assessment and D. Multi-criteria assessment). Unauthorised tracks that are inappropriately located will be closed and rehabilitated, as resources allow, to reduce the opportunity for continued use.

Factors to consider in the closure of unauthorised tracks include user education through a well-considered communication plan; the use of robust, safe and appropriately placed physical barriers; water management to enable natural regeneration and assisted revegetation; and use of surveillance cameras. Where a track is to be closed suitable alternatives on or off park will be communicated where possible.

To develop a culture of stewardship, volunteer groups will be encouraged to rehabilitate unauthorised tracks to balance the creation of new biking opportunities.

5.2.2 Decommissioning of authorised tracks

Over time, the demand for cycling experiences may change due to societal changes such as changes in:

- equipment
- recreational interests
- visitor expectations
- travel patterns
- population demographics
- major disruptions (e.g. the 2019–20 bushfires and the COVID-19 pandemic).

In addition, some cycling facilities may be difficult to maintain to a suitable quality due to environmental or other factors.

NPWS use a strategic assessment process for assessing the relevance and performance of NPWS assets. Where it is considered that authorised cycling infrastructure and supporting facilities are no longer meeting requirements it should be assessed through this process.

Tracks with low relevance and/or poor environmental performance may be decommissioned.

Authorised tracks that are decommissioned will be communicated on the NPWS website and may require a communication plan to ensure key stakeholders are informed.

5.2.3 Compliance programs

The successful management of our parks depends on good planning, and education of and rapport with visitors and local communities. We rely on user groups and individuals that frequently use our tracks and trails to support our compliance efforts by providing feedback on inappropriate use as well as safety issues.

Law enforcement is a necessary part of our park management and essential in ensuring the safety of visitors and protection of park values. NPWS is committed to ongoing improvements in compliance and recognises that a combination of compliance initiatives are required to manage issues. NPWS will seek to utilise new technologies to understand where unauthorised tracks are being created and used this may include this use of heat maps, drones and surveillance cameras.

Compliance initiatives used in parks to deter the development of unauthorised tracks or prevent inappropriate cycling on authorised tracks include:

- signage
- assessment of unauthorised tracks for closure or inclusion into the authorised track network, as appropriate, and subject to the processes outlined in Section 3
- encouraging stakeholder participation in the rehabilitation of closed, unauthorised tracks, see Section 5.2.1
- encouraging self-regulation among user groups through a culture of stewardship for parks and etiquette for other users, see Section 5.2.4.

There are penalties under the National Parks and Wildlife Regulation for removal of vegetation, ground disturbance, erection of structures and risking the safety of other users. There are also penalties under the *Biodiversity Conservation Act 2016* for harming threatened species or threatened ecological communities.

5.2.4 Encouraging cyclist stewardship of our parks

NPWS has adopted the *IMBA Rules of the Trail* as the standard code of conduct for mountain bike riders in NPWS parks. These rules aim to keep all users safe and to minimise impacts on the natural environment and should be promoted on the NPWS website and on-park signage, where appropriate.

There are a number of government campaigns that aim to work with the mountain bike community to show riders how to explore our parks while appreciating, respecting and protecting park values. Riders and other users play an important role in monitoring and reporting on the state of tracks, including any concerns with signage or infrastructure, as well as informing NPWS of any new unauthorised tracks.

Volunteers play a significant role in maintaining mountain biking facilities in some parks (e.g. Glenrock State Conservation Area and Yellomundee Regional Park). Volunteer involvement requires NPWS staff time to manage but increases the likelihood of growing a culture of stewardship for parks among cyclists. NPWS strongly encourages user groups and individuals to partake in planning opportunities, self-regulation and volunteering activities such as track construction and maintenance programs. Volunteers can also contribute to:

- maintenance works
- rehabilitation of unauthorised tracks requiring closure
- building partnerships with the cycling and wider community
- educating other members of the cycling community on how to ride safely with a minimal impact on the environment
- encouraging compliance and self-regulation within the cycling community to reduce riding on walking-only tracks and the creation of unauthorised tracks.

5.3 Maintenance

5.3.5 Scheduling

Ongoing monitoring of cycling track networks is an essential component of responsible park management. Tracks will be monitored for safety issues, environmental and cultural impacts, as well as user needs and benefits. If any issues arise in tracks that are causing damage or safety concerns, tracks may be closed and rehabilitated. NPWS uses a scheduling tool to efficiently allocate resources and prioritise asset maintenance tasks. Maintenance of cycling infrastructure and associated facilities will be scheduled through this system.

Users of the network are in the best position to monitor tracks, and NPWS seeks the cooperation of all riders to advise the relevant NPWS Area office in a timely manner about the state of tracks, the creation of new unauthorised tracks, signage and other infrastructure through regular reporting of issues.



Photo 9 Welcome to Dharawal Country interpretive sign, Dharawal National Park. Nick Cubbin/DPE

5.3.6 Funding

The multi-criteria assessment, Appendix C, is used to cost the full lifespan of cycling experiences to ensure viability and environmental sustainability. NPWS will seek opportunities to offset some of the costs of maintaining mountain biking facilities through 'user-pay' systems, community partnerships and commercial events and tours where appropriate (refer to Sections 1.3, 2.5 and 2.6).



Photo 10 Campground facilities, Little Beach, Bouddi National Park. John Spencer/DPE

Appendix A. Cycling market overview

The following infographics provide an overview of the current participants, demand and experiences sought by cyclists. These experiences aid NPWS in determining the future needs for cycling within parks, and where opportunities can be created. NPWS is uniquely positioned to provide nature-based experiences within New South Wales and can provide sustainable cycling networks that meet both the demands of cyclists as well as ensuring the protection of park values.



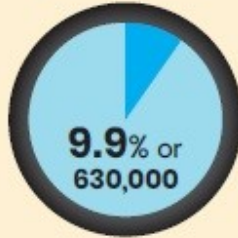
Cycling in Australia and NSW



How many people cycle?



AUSTRALIA



NSW



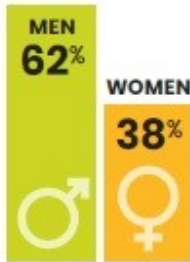
NSW NPWS VISITORS

The cycling market*

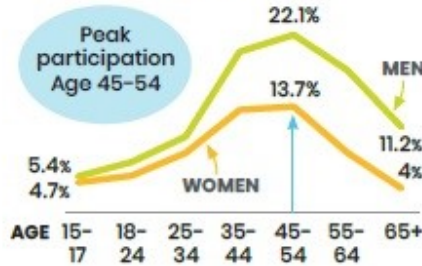
Participation in the last 12 months	2,310,170
Considering cycling	+ 409,608
At risk of dropping out or have dropped out	- 53,898
Total market opportunity	= 2,674,880

* opportunities in the next 12 months

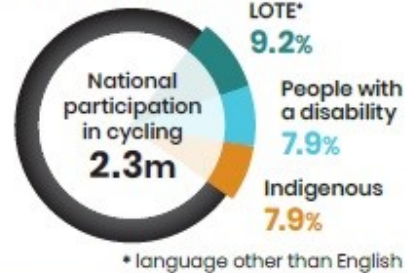
Cycling by gender



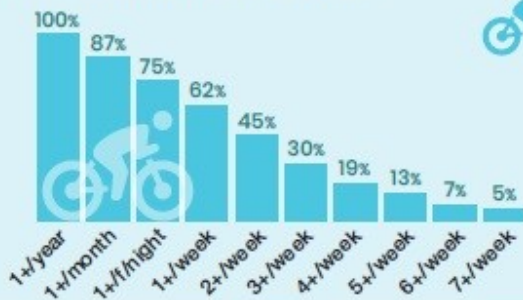
Cycling by age



Cycling incidence by population group



How often do people cycle?



And for how long?



Top 6 reasons people cycle*



* Multiple response question

Domestic tourism and cycling – overnight trips (2018)

Total domestic overnight trips: **105m**



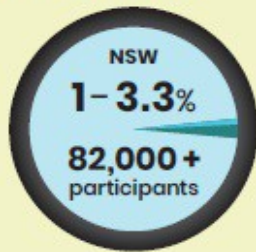
665,000 international visitors undertook some form of cycling during their trip – approximately **7%** of the total market



Mountain biking in Australia and NSW



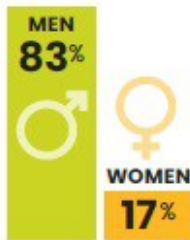
How many mountain bikers are there? (Proportion of population – estimate range)



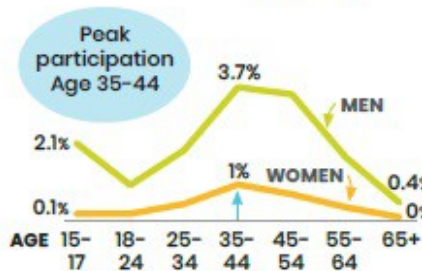
NSW national parks have over **30,000 kms** of management trails generally open to and suitable for the **leisure market** and **less experienced riders**.

This fills a **recognised gap** in the national and state trail network.

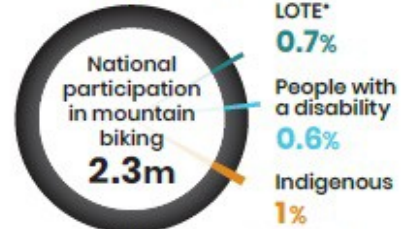
Mountain biking by gender



Mountain biking by age

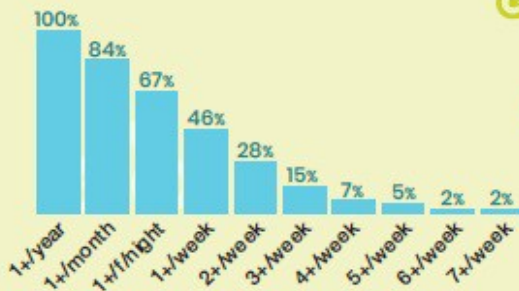


Mountain biking incidence by population group

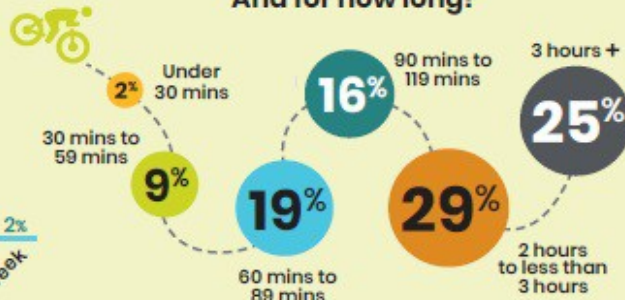


* language other than English

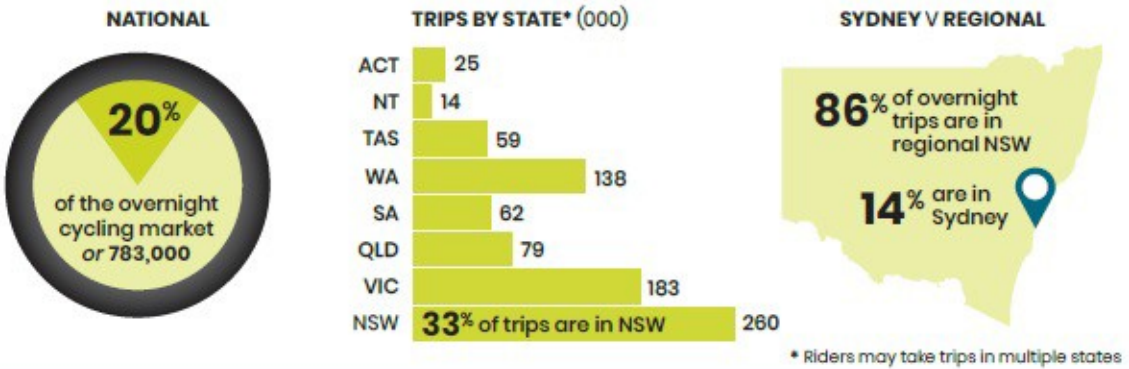
How often do people participate?



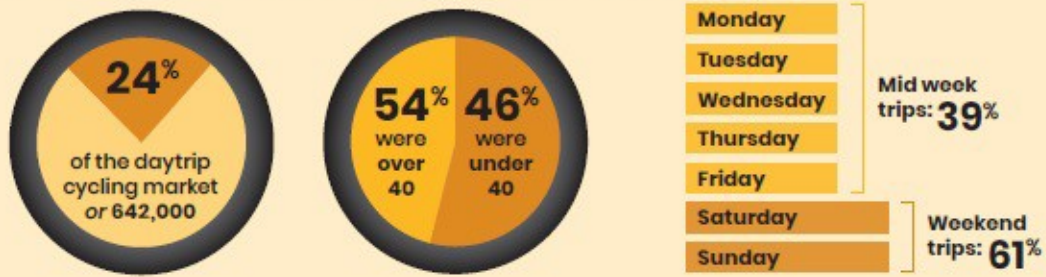
And for how long?



Domestic tourism and mountain bike riding – overnight trips (2018)



Domestic tourism and mountain bike riding – day trips (2018)



Domestic overnight trips • International tourism and mountain bike riding (2018)



MTBA membership profile (2020)



Population and tourism based data relates to Adults over 15 years of age. Key Sources: Cycling State of Play Report, Sport Aus (Ausplay Series) April 2019; Mountain Biking Report, Sport Aus (Ausplay series) Oct 2015–April 2019; Annual Report MTBA Australia 2020; Mountain Biking Profile (Additional Analysis of Y/E 2018 NVS/IVS sourced data) Peter Valerio 2019; Mountain Biking in Australia: An Economic and Participation Analysis GHD Advisory 2021

Appendix B. Site suitability assessment

A site suitability assessment is undertaken once the activity is confirmed as legally permissible in a park. The assessment provides an initial, landscape view, for all proposed cycling experiences. At this stage, an audit of the park's unauthorised tracks is recommended, and a review of relevant policies, strategic plans and precinct plans should be completed to ensure proposals are consistent with NPWS objectives.

The site suitability assessment is aimed at assessing the broadscale suitability of visitor uses in NPWS parks (including cycling). This assessment process is described in detail in the *Sustainability Assessment Criteria for Visitor Use and Tourism in New South Wales National Parks* and is summarised in Figure 3.

The results of the suitability assessment will inform a decision by NPWS on whether a proposal should proceed for more detailed investigation and community consultation. A proposal that does not meet the site suitability criterion will not be considered further by NPWS.

Once the suitability of a site has been determined, a multi-criteria assessment of individual tracks and networks is completed, which assesses environmental, cultural and financial considerations (see Appendix C).

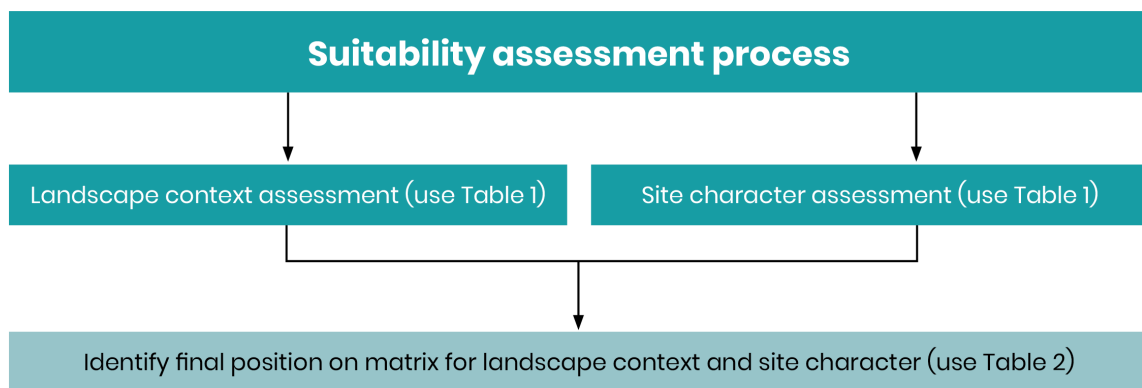


Figure 3 Suitability assessment process

Table 1 Site character and landscape context

Use this table to identify the site character and landscape context for a proposal

Highly unmodified natural and cultural heritage condition	Largely unmodified natural and cultural heritage condition	Partially modified natural and cultural heritage condition (transitional setting)	Largely modified natural and cultural heritage condition	Highly modified natural and cultural heritage condition
Physical character				
<p>The natural environment is largely unaltered by human influence and natural processes completely dominate. Vegetation cover where present is fully intact, soils processes occur naturally, and waters are pristine. Land uses such as grazing, mining, roads and wood production have barely or not touched these places, and pest species are virtually non-existent. Visitors have left little or no trace. These are wild and remote places.</p>	<p>There is evidence of temporary to moderate human impacts; however, the landscape remains largely intact and unaltered. Some loss of vegetation has occurred and water quality may not be pristine. There may be evidence of past uses such as agriculture, although regeneration may be occurring. Pest species may be present but do not dominate. If built structures are present they tend to be rare, unobtrusive and rustic and restricted to a few dispersed nodes (such as walking tracks, timber picnic tables).</p>	<p>Impacts of human use on the environment are obvious and widespread, and natural elements may not dominate the landscape. There is vegetation loss and probable changes to streams and beaches (such as nutrients and turbidity). Non-endemic and pest species are present and require active control programs. Built structures may be obvious and quite common (including heritage places), such as sealed roads and paved picnic areas, but still blend in with the surroundings.</p>	<p>Changes to the environment are obvious and permanent, although pockets of natural bushland may still be apparent among larger areas of managed open space style parkland. Vegetation may be dominated by non-endemic species but some small areas remain intact or are regenerating. Streams and beaches may have been permanently altered. Built structures and other modifications tend to be obvious and in some locations may dominate the landscape (including heritage places).</p>	<p>A history of past use means the natural environment may be substantially altered with changes obvious, widespread and permanent. These are highly managed parklands with open space and play areas. Built structures and other modifications dominate (including heritage places). Natural elements are largely non-existent.</p>
Social character				
<p>Few people visit, and when they do they come in small numbers –it is a long way from the nearest small</p>	<p>People visit, and while numbers are generally low, there is a reasonable prospect</p>	<p>Many people visit and some nodes and locations are particularly popular destinations. The sense of</p>	<p>Evidence of people is clearly apparent and some popular areas have particularly high concentrations of people and</p>	<p>These areas are very popular at all times of the year, with little to no sense of isolation. Human use is extensive and</p>

Cycling Strategy - Guidelines for Implementation

Highly unmodified natural and cultural heritage condition	Largely unmodified natural and cultural heritage condition	Partially modified natural and cultural heritage condition (transitional setting)	Largely modified natural and cultural heritage condition	Highly modified natural and cultural heritage condition
<p>community. The sights and sounds of people are rare, and there is an overwhelming sense of isolation. Access will typically be by foot, with visitors sometimes covering significant distances. Visitors will be self-reliant.</p>	<p>of seeing and hearing other people at least some of the time. Some attractions may be accessible by vehicles (sometimes 4WD), including some cultural Heritage places, but in most cases, it will be necessary to walk for moderate distances. Visitors don't need a high level of self-reliance but should have undertaken some preparation.</p>	<p>isolation is low and little opportunity exists for solitude. Almost all visitors come by vehicle (although a small number will walk or cycle), and there is little need to prepare for the visit or have outdoor skills.</p>	<p>activities. There is little sense of isolation and frequent human contact is unavoidable. Cars and buses are usually the dominant form of travel, supported by car parks and other infrastructure. Visitors need no preparation or outdoor skills and group sizes tend to be large.</p>	<p>there is continuous and regular contact. Cars and other vehicles are the dominant means of access, although high quality bike and pedestrian paths may encourage extensive cross-park travelling.</p>
Management character				
<p>There is little if any physical evidence of an on-site management presence with no signs, visitor or management infrastructure. When management intervention is required it is mainly to reduce environmental risks, such as bushfire hazard reduction or targeted pest species control programs. Staff visit these areas primarily to monitor resource and asset condition (such as biodiversity survey and boundary fencing). Information about these places (rules and regulations) are found off-site.</p>	<p>There are roads and tracks, although some may be rough and unsurfaced. There is evidence of management presence, including signage and small-scale infrastructure at key locations. Staff undertake necessary construction and maintenance works, together with active management of environmental risks. Some on-site information is available, particularly for safety and sustainability purposes.</p>	<p>Most roads are tracks which are regularly maintained, with a high proportion of them being sealed. There is an active management presence with regular signage, including interpretation, regulatory notices and boundary signs. Staff regularly visit the site, and there is frequent on-site communication of rules and regulations. Structures are readily apparent, and while most blend in to the surroundings, some stand out.</p>	<p>The vast majority of roads, tracks and paths are sealed or paved. Management actions are obvious, and staff are highly visible at most times. Park signage is extensive. Rules and regulations are regularly communicated on-site, and education, reinforcement or enforcement actions are common. Built structures from previous use are readily apparent and may not have been designed to blend in.</p>	<p>All roads and paths are sealed or paved. Park staff and are obvious and visible at most times. Signage is frequent and there is a high level of education, reinforcement or enforcement of regulations. Visitors need no preparation or knowledge to access these areas safely. Built structures may be large and dominant. Infrastructure to support park visitation, such as shelters and picnic facilities, is usually provided in key locations.</p>

Cycling Strategy - Guidelines for Implementation



Avoid activities that would promote an inadvertent or unplanned shift towards a more modified state.

From Sustainability Assessment Criteria for Visitor Use and Tourism in New South Wales National Parks

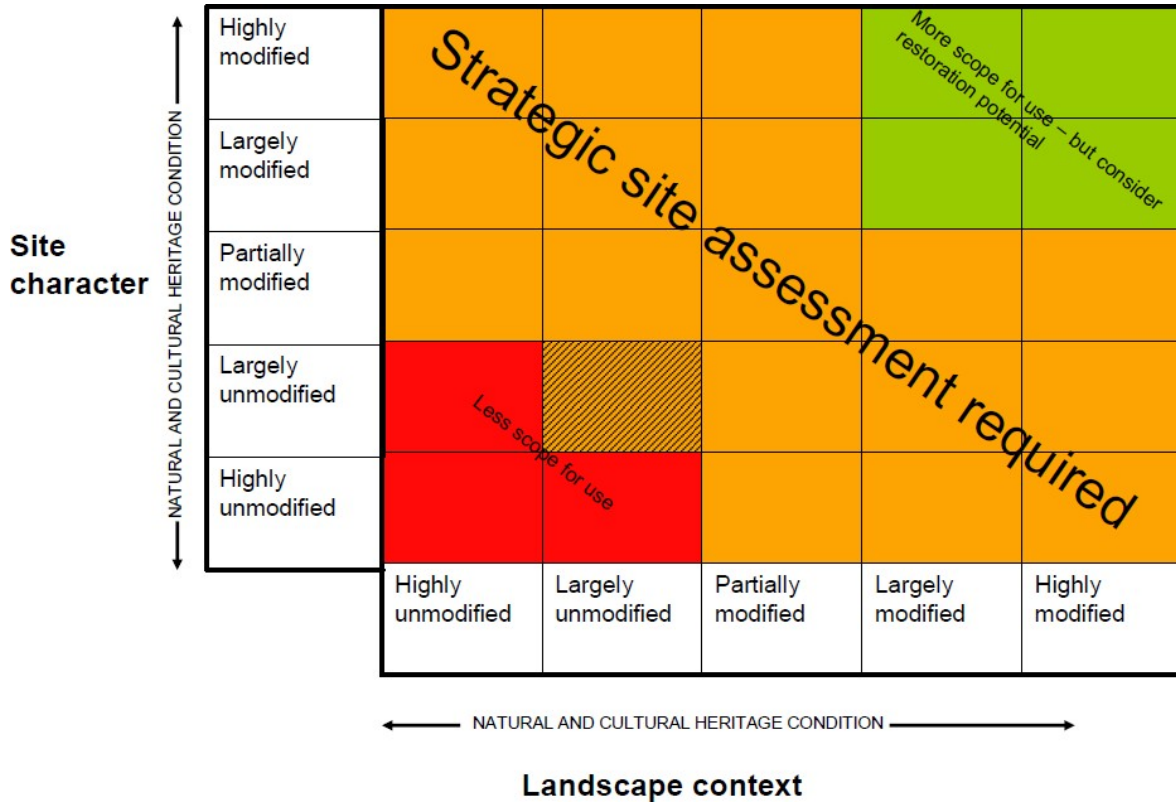


Figure 4 Site suitability matrix

From Sustainability Assessment Criteria for Visitor Use and Tourism in New South Wales National Parks.

Explanatory notes – using the matrix

Compare site character and landscape context – either existing or planned future (but not both).

Refer to site suitability guides to interpret colour codes.

Note that specific consultation with the Aboriginal community may be required as cultural heritage values are not necessarily related to the degree of modification.

Appendix C. Multi-criteria assessment method

Where a park is considered suitable for cycling activities (Appendix B – Site suitability assessment), individual authorised and unauthorised tracks or networks will be evaluated using a multi-criteria assessment. This assessment determines if proposed and/or unauthorised tracks/networks are located appropriately within a park to prevent disruption to park values and maximise rider experience.

The following 3 criteria form the basis of the multi-criteria assessment:

Criterion 1 – Routes are in appropriate locations where park values are protected, and ongoing use is ecologically sustainable.

Criterion 2 – Routes facilitate an enjoyable and safe visitor experience.

Criterion 3 – Construction and maintenance costs are reasonable and sustainable.

The assessment results in an indicative benchmark score for each of the 3 criteria to give a final overall score for each individual track out of 15. Table 2 is provided to assist decision-making and rank the proposed cycling tracks once the multi-criteria assessment scores have been collated for each criterion. Criteria and benchmarks are intended as a guide and may be altered to meet individual park requirements.

The 3 criteria (Tables 3, 4 and 5) assessed are given equal weighting, however, immediate dismissal of a track or track network occurs if either:

- tracks are likely to cause extensive and irreversible damage to cultural heritage artefacts
- tracks are likely to cause extensive and irreversible damage to natural, environmental park values
- there is an incompatibility with park management actions.

In some instances, park managers may decide to include tracks or trails in the network that do not meet the scores in Table 2, for example, if they are identified as necessary for fire management. Alternatively, on rare occasions, other tracks that rank highly in the multi-criteria analysis may be excluded for park management reasons.

The multi-criteria assessment is also a valuable tool used to prioritise the closure and rehabilitation of unauthorised tracks. This prioritisation is completed by evaluating the tracks against Criterion 1 (Table 3), which assesses environmental and cultural values.

Table 2 Benchmark scores and recommendation

Score or reason	Recommendation
Overall score greater than 12/15	Formalise/construct
Overall score 8–12/15	Consider formalising/constructing
Overall score less than 8/15	Close/do not construct
Score for Criterion 1 less than 3.5/5	Close/do not construct
Score for Criterion 2 less than 2.5/5	Close/do not construct
Outside area enabled in plan of management	Close/do not construct
Likely to cause significant fragmentation of habitat	Close/do not construct

Table 3 Criterion 1 – Routes are in appropriate locations where park values are protected, and ongoing use is ecologically sustainable

Note: Individual park circumstances may vary and criteria can be adjusted accordingly

Indices	Desired outcome	Benchmark principles	Score
Aboriginal cultural values	Protect Aboriginal object, place, or site	Establish buffers zones for <ul style="list-style-type: none"> isolated objects (e.g. modified trees) closed sites (e.g. shelters) open sites (e.g. middens) 	1 = new/existing track intersects sites 2 = new track within buffer 3 = existing track within buffer but not impacting 5 = track outside buffer
Historic heritage values	Protect listed heritage item, property, or place	Establish buffers zones for <ul style="list-style-type: none"> isolated artefact local or state heritage listed item 	1 = new/existing track intersects sites 2 = new track within buffer 3 = existing track within buffer but not impacting 5 = track outside buffer
Natural values	Protect significant landscapes or geological form	Establish buffers zones for <ul style="list-style-type: none"> significant landscape features specific geological forms 	1 = new/existing track intersects sites 2 = new track within buffer 3 = existing track within buffer but not impacting 5 = track outside buffer

Cycling Strategy - Guidelines for Implementation

Indices	Desired outcome	Benchmark principles	Score
	Protect threatened flora species and ecological communities	Establish buffers zones for <ul style="list-style-type: none"> • threatened flora species or population • EEC Tracks situated to avoid new vegetation clearing for areas in biodiversity values maps Track situated to avoid new vegetation clearing in threatened ecological communities (TECs)	1 = new/existing track within TEC or in close proximity to threatened flora species 2 = new track within buffer but no likely impact; existing track in buffer and potential for impact on TEC 3 = existing track within buffer but no likely impact 5 = outside buffer
	Protect threatened fauna species habitat	Establish buffers zones for <ul style="list-style-type: none"> • protected species (except bird species and species with large home range) • priority fauna habitat Other species-specific limitations may apply	1 = new/existing track within buffer of priority habitat or known location of threatened fauna 2 = new track in buffer but no likely impact 3 = existing track in buffer or new track within priority habitat: no likely impact 4 = existing track in priority habitat but no likely impact 5 = outside buffer
	Maintain habitat connectivity	Establish buffers zones for <ul style="list-style-type: none"> • undisturbed habitats Tracks situated to avoid undisturbed habitat	0 = new track likely to fragment tracts of vegetation 1 = new track within undisturbed vegetation, but on edge so only edge effect 2 = existing track causing fragmentation 3 = existing track with edge effect 5 = outside undisturbed habitat
	Avoid soil erosion	Tracks should be located to avoid erosional soils	1 = track within erosional zone and steep topography 2/3 = track within erosional zones 5 = track outside erosional soils

Cycling Strategy - Guidelines for Implementation

Indices	Desired outcome	Benchmark principles	Score
	Avoid damaging watercourses, wetlands and waterbodies	Establish buffers zones for <ul style="list-style-type: none"> • 1st and 2nd order watercourses • 3rd order watercourses 4th order and above Tracks situated to avoid upland, fresh and saline swamps or wetlands	1 = track inside 3rd order or above or swamp/freshwater wetland 2 = inside buffer on 1st or 2nd order 3/4 = multiple crossing required 5 = not within buffer and no crossing required
			Criterion 1 score = x / 40 (Divide by 8 to convert to score out of 5) Benchmark score = y / 5

Table 4 Criterion 2 – Routes facilitate an enjoyable and safe visitor experience

Note: Individual park circumstances may vary, and criteria can be adjusted accordingly

Indices	Desired outcome	Benchmark principles	Score
Track suitability	Ensure track durability	Capacity of tracks to sustain ride traffic and condition	1 = very poor (alignment and construction poor) 2 = poor (not conducive to sustainable track) 3 = average (some sections poorly aligned and/or constructed) 4 = good (offers good level of long-term sustainability) 5 = excellent (track offers best level of long-term sustainability)
	Ensure emergency access	Capacity to access tracks for ease of emergency or medical evacuation including response time as well as road, trail and air accessibility	1 = very limited (no emergency access by road or foot) 2 = limited (limited emergency access but time critical requires air) 3 = moderate (reasonable level of access, 4WD and/or short hike) 4 = high (good level of access, 2WD or short hike) 5 = very high (located close to main road, direct 2WD vehicle access)
	Maintain track over a long lifecycle	Capacity of the tracks to be sustained in the long term, assesses maintenance costs including accessibility, soil and climatic factors	1 = very poor (track poorly sited, beyond practical repair, and costly to upkeep) 2 = poor (poorly sited and requires significant upgrades, upkeep costly) 3 = average (general sound alignment, but remediation/realignments required) 4 = good (good alignment, minor repairs and remediation required) 5 = excellent (designed and built to best practice Australian Mountain Bike Trail Guidelines).
User experience	Provide quality ride experiences	Capacity of tracks to provide high quality ride experiences	1 = very poor (flow/dynamics are very poor causing very low quality experience) 2 = poor (low quality ride experience) 3 = average (some quality riding experiences but not particularly high standard) 4 = good (predominantly quality riding experience, some work required) 5 = excellent (track offers very high quality ride experience)
	Provide enjoyable environmental experiences	Capacity of tracks to offer a diversity of aesthetic and environmental experiences (diversity of plant communities, viewpoints, waterways and other related environmental experiences)	1 = very poor (little to no positive qualities, e.g. powerline easement, weeds) 2 = poor (generally poor environmental experience) 3 = average (unremarkable landscape, few features of interest) 4 = good (range of environmental attributes) 5 = excellent (offers memorable riding experiences, sense of remoteness)

Cycling Strategy - Guidelines for Implementation

Indices	Desired outcome	Benchmark principles	Score
	Social value Maintain market appeal	Capacity of tracks to cater for a broad market of riders	1 = very limited (track doesn't offer experience that is widely sort after) 2 = limited (limited attributes desirable to market) 3 = moderate (moderate level of appeal to market) 4 = high (offers significant value to network with range of desirable attributed) 5 = very high (track is of highest importance to network)
	Provide connected networks	Capacity of the tracks to link with a broader network and ensure importance to the network	1 = very limited connectivity to network or transport (closure and rehabilitation recommended) 2 = limited connectivity to network or transport (closure and rehabilitation may be warranted) 3 = moderate connectivity (some value to network, inclusion should be explored) 4 = high connectivity (track is of significant value to network) 5 = very high connectivity (track essential to network and or connects to transport)
	Minimises user conflict	Capacity of the tracks to impact on the social values of the park or location, considering other user groups, adjoining landownership and uses	1 = very poor (located close to neighbours or adversely impacts other users) 2 = poor (adversely impacts other users or residents) 3 = average (user conflict may arise, track not categorised as multi-use or single-use) 4 = good (track located away from neighbours, multi-use and no conflict) 5 = excellent (track clearly defined for purpose and doesn't adversely impact residents or other users)
			Criterion 2 score = $x / 40$ (Divide by 8 to convert to score out of 5) Benchmark score = $y / 5$

Table 5 Criterion 3: Construction and maintenance costs are reasonable and sustainable

		Cost required to bring track up to standard (for existing track) or to construct track (for proposed track)			
		under \$5,000	\$5,000–10,000	\$15,000–20,000	over \$20,000
Maintenance costs/km/annum	<\$1K	5	4	3	3
	\$1-5K	5	3	2	2
	\$5-10K	3	2	2	1
	\$15K plus	2	2	1	1

The figures used in Table 5 are provided as an example only. Costs will vary depending on the length of a track, number of tracks, technical features and environmental factors such as the soil type. Estimates of costs should be calculated on a case-by-case basis. Associated track head costs may be added. Potential or dedicated funding for particular experiences may also alter the matrix.

Criterion 3 benchmark score = y/5

Appendix D. Prioritising development of cycling experiences on park

Cycling experiences assessed as suitable and sustainable (Appendix B and C) are prioritised for development at a regional level through consideration of factors outlined in Table 6 and relevant national and statewide strategies, plans and policies.

The factors for consideration are aligned with the objectives of the NPWS Cycling Strategy and assume the protection of the natural and cultural values of a park (Strategy Objective 1) as a precedent, as well as the legalities of permissibility. The description provides further detail and examples of what should be considered under each factor and, where relevant, links are provided to resources to assist the process. Prioritisation of the development of a cycling experience should be considered before the track design and construction phase (see Section 2, Figure 1).

Table 6 Factors for consideration when prioritising the development of possible cycling experiences on park

Factors for consideration	Alignment with strategy objectives	Description
1. Demand	4, 5 & 6	User-demand and market analysis including participation numbers, demographic and types of experiences. Early consultation with key stakeholder groups may assist.
2. Ease of access	2, 3	Proximity to public transport, parking or distance from a local community. Consider track difficulty and opportunity for adaptive cyclists. Refer to <i>Australian Adaptive Mountain Biking Guidelines</i> .
3. Uniqueness	4 & 6	Assess the 'experience' provided and whether the proposed network enhances an existing opportunity both on and/or off park.
4. Connectivity	3, 4 & 6	Consider the connection of the track or track network across different land tenures and within parks. Undertake an audit of surrounding experiences.
5. Size and scale	4 & 6	Consider the significance hierarchy criteria in <i>Australian Mountain Bike Trail Guidelines</i> .
6. Economic benefit	6	Consider potential benefits for the local and regional economy, including accommodation, food and potential tour group operators. Refer to Destination NSW website.
7. National and state strategies, plans and policies	4 & 6	For example, refer to Destination NSW website, including <i>NSW Visitor Economy Strategy 2030</i> , and <i>Statewide Destination Management Plan</i> .
8. Compatibility with other uses and park management operations	3, 4, 5 & 7	Consider the compatibility with other user groups, e.g. walkers, horse riders, 4WD groups, as well as any management priorities e.g. fire management activities.

More information

- [Alerts for NSW National Parks](#)
- [Australian Adaptive Mountain Biking Guidelines](#)
- [Australian Mountain Bike Trail Guidelines](#)
- [Biodiversity Conservation Act 2016](#)
- [Bouddi National Park Plan of Management](#)
- [Civil Liability Act 2002](#)
- [Commercial activities in parks](#)
- [Cycling policy](#)
- [Destination NSW website](#)
- [Development Guidelines webpage](#)
- [Events, Functions and Venues Policy](#)
- [Garigal National Park Plan of Management](#)
- [Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales](#)
- [IMBA Rules of the Trail](#)
- [Managing parks prior to a plan of management policy](#)
- [Motor Vehicle Standards Act 1989](#)
- [National Parks and Wildlife Act 1974](#)
- [National Parks and Wildlife Regulation 2019](#)
- [NPWS Access-friendly experiences](#)
- [NPWS Guided tours](#)
- [NPWS Host an event](#)
- [NPWS Park Operations Branch](#)
- [NSW Government eTendering](#)
- [NSW Road Rules](#)
- [NSW Rural Fire Service Fire Trail Standards \(2016\)](#)
- [NSW Visitor Economy Strategy 2030](#)
- [Parks Eco Pass](#)
- [Property Leasing Guidelines](#)
- [Statewide Destination Management Plan](#)
- [Sustainability Assessment Criteria for Visitor Use and Tourism in New South Wales National Parks](#)
- [Thredbo Valley Track](#)
- [Unsolicited Proposals Guide for Submission and Assessment](#)
- [Vehicle Access Policy](#)
- [Vehicle Standard \(Australian Design Rule – Definitions and Vehicle Categories\) 2005](#)
- [Visitor Safety Policy](#)
- [Yellomundee Regional Park Plan of Management](#)

Bibliography

- Australian Bureau of Statistics (ABS) 2019, www.abs.gov.au/statistics/health/disability/disability-ageing-and-carers-australia-summary-findings/latest-release
- Bicycle NSW, 14 October 2020, <https://bicyclensw.org.au/new-rail-trail-for-nsw/>
- Break the Boundary Inc 2018, *Australian Adaptive Mountain Biking Guidelines*, <https://breaktheboundary.com.au/resources/guidelines/>
- Burgin S & Hardiman N 2012, Is the evolving sport of mountain biking compatible with fauna conservation in national parks?, *Australian Zoologist*, vol. 36, issue 2, p.201–208, <http://dx.doi.org/10.7882/AZ.2012.016>
- Camp E, Spencer-Smith T, Chapple R, Eccles S, Spindler R & Varcoe T 2020, *Healthy People in a Healthy Environment: Key directions statement*, Australian Committee for IUCN, Sydney, https://7c18c43a-7a38-4aa8-b5a5-b3d699a5aa60.filesusr.com/ugd/f443f7_632031d8492a4a589f4a9db4132a6b9c.pdf?fbclid=IwAR0S4KrQ-Q94BXZ1D57bENAXkaAt1IWPKYhXK-DttO6HqqZagjTzdY0oMmo
- Childs C 2020, Macro Trends Report Update 2020, MyTravelResearch.com Pty Ltd, prepared for National Parks and Wildlife Service.
- Davies C 2009, Mountain bike activity in natural areas: impacts, assessment and implications for management: a case study from John Forrest National Park, Western Australia.
- Destination NSW (no date), *NSW Visitor Economy Strategy 2030: A roadmap for growing the NSW visitor economy*, Destination NSW, www.destinationnsw.com.au/wp-content/uploads/2020/12/nsw-ves-2030.pdf
- Dirt Art 2016, Australian Mountain Bike Market Profile: Survey data, available at www.dirtart.com.au
- Felton K, Rasmussen S & Mayne V 2018, *Segmenting the Cycle Tourism Market*, © Faster Horses, prepared for Tourism Western Australia, www.tourism.wa.gov.au/Publications%20Library/Research%20and%20reports/Faster%20Horses_TWA_Cycle%20Tourism%20Segmentation%20Executive%20Summary%208Feb2018.pdf
- GHD 2021, *Mountain Biking in Australia: An economic and participation analysis*, report prepared for AusCycling, <https://assets.auscycling.org.au/s3fs-public/2021-03/mountain-biking-in-australia-final-report-march-2021.pdf?sOhdYZLJUG1eZnmPE8yYmFQbbuOqrfm4=>
- Hardwick J 2015, *All About e-Bikes*, Mountain Biking Australia, www.mtbiking.com.au/how-to/bike-tech/all-about-e-bikes
- Hodge C & Jones L 2015, *Growing Cycling Tourism in Victoria – Research Report*, Ernst & Young – EY Sweeney, prepared for Tourism Victoria and Tourism Research Australia <https://www.tourismnortheast.com.au/wp-content/uploads/sites/54/24681-Cycling-Tourism-Full-Report-FINAL-16-NOV-2015.pdf>
- McHugh G & Jeffries D 2016, *Glenrock State Conservation Area, NSW Mountain Bike Trail Concept Plan*, World Trail Pty Ltd, prepared for National Parks and Wildlife Service.
- Mitchell R & Poplan F 2008, Effects of exposure to natural environment on health inequalities: an observational population study, *Lancet*, 372, pp.655–660.
- MTBA 2019, *Australian Mountain Bike Trail Guidelines*, Mountain Bike Australia, www.mtba.org.au/news/australian-mountain-bike-trail-guidelines/
- Munro C 2019, *National Cycling Participation Survey 2019: New South Wales*, Austroads https://austroads.com.au/publications/active-travel/ap-c91-19/media/AP-C91-19_National-Cycling-Participation-Survey-2019-NSW.pdf

Newsome D & Davies C 2009, A case study in estimating the area of informal trail development and associated impacts caused by mountain bike activity in John Forrest National Park, Western Australia, *Journal of Ecotourism*, vol. 8, issue 3, pp.237–253, <https://doi.org/10.1080/14724040802538308>

NSW Department of Industry 2018, *Visitor Economy Industry Action Plan 2030*, Department of Industry, www.dssn.com.au/app/uploads/2018/09/Visitor-Economy-Industry-Action-Plan-2030.pdf?utm_source=Stakeholders&utm_campaign=c9c947b489-EMAIL_CAMPAIGN_7_30_2018_13_0_COPY_01&utm_medium=email&utm_term=0_a12d2de139-c9c947b489-

NSW Department of Industry 2020, *A 50 Year Vision for Greater Sydney's Open Space and Parklands: A discussion paper*, Department of Industry, www.planning.nsw.gov.au/-/media/Files/DPE/Strategy-documents/50-Year-Open-Space-and-Parklands-Vision-2020-08-14.pdf

NSW Department of Industry 2021, *Visitor Economy Strategy 2030*, Department of Industry, www.destinationnsw.com.au/wp-content/uploads/2020/12/nsw-ves-2030.pdf

DPE 2020a, *Cycling Policy*, sections 8–18: How are cycling experiences developed?, NSW Department of Planning, Industry and Environment, www.environment.nsw.gov.au/topics/parks-reserves-and-protected-areas/park-policies/cycling

DPE 2020b, *Development Guidelines*, NSW Department of Planning, Industry and Environment, www.environment.nsw.gov.au/topics/parks-reserves-and-protected-areas/development-guidelines

DPE 2020c, *Domestic visitation*, NSW Department of Planning, Industry and Environment, www.environment.nsw.gov.au/research-and-publications/our-science-and-research/our-research/social-and-economic/social/domestic-visitation

NSW Rural Fire Service 2016, *Fire Trail Standards 2016*, version 1.1, www.rfs.nsw.gov.au/data/assets/pdf_file/0009/69552/Fire-Trail-Standards-V1.1.pdf

OEH 2016a, Guidelines for preparing a Review of Environmental Factors. How to assess the environmental impacts of activities within national parks and other reserves, Office of Environment and Heritage, www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Parks-reserves-and-protected-areas/Development-guidelines/guidelines-for-preparing-review-of-environmental-factors-160447.pdf

OEH 2016b, *National Parks and Wildlife Service Compliance Strategy – Regional Priorities 2016–2017*, Office of Environment and Heritage, <https://environmentnsw.gov.sharepoint.com/sites/INSITE-EHG/OEH/NPWS/WorkSpace/SitePages/NPWS%20Law%20Enforcement%20and%20Compliance.aspx>

OEH 2016c, National Parks and Wildlife Service Sustainable Mountain Biking Review, Office of Environment and Heritage.

Oja P, Titze S, Bauman A, de Geus B, Krenn P, Reger-Nash B and Kohlberger T 2011, Health benefits of cycling: a systematic review, *Scandinavian Journal of Medicine & Science In Sports*, www.researchgate.net/publication/51054095_Health_benefits_of_cycling_A_systematic_review

Pickering CM, Hill W, Newsome D & Leung Yu-Fai 2010, Comparing hiking, mountain biking and horse-riding impacts on vegetation and soils in Australia and the United States of America, *Journal of Environmental Management*, vol. 91, pp.551–562.

Pickering C M & Norman P 2017, Comparing impacts between formal and informal recreational trails, *Journal of Environmental Management*, vol. 193, pp.270–279, published by Elsevier Ltd.

Pickering C M & Rossi S 2016, Mountain biking in peri-urban parks: Social factors influencing perceptions of conflicts in three popular National Parks in Australia, *Journal of Outdoor Recreation and Tourism*, vol. 15, pp.71–81, published by Elsevier Ltd.

Cycling Strategy - Guidelines for Implementation

RMS 2014, *Vehicle standards information: Mopeds and power-assisted pedal cycles*, Roads & Maritime Services, www.rms.nsw.gov.au/documents/roads/safety-rules/standards/vsi-27-mopeds-power-assisted-pedal-cycles.pdf

Roy Morgan Research 2018, *Park Visitor Survey*, prepared for NSW National Parks and Wildlife Service, summary information at www.environment.nsw.gov.au/-

[/media/OEH/Corporate-Site/Documents/Research/Our-science-and-research/nsw-npws-visitor-insights-2019.pdf?la=en&hash=5FACD839AB7E15F5CD42B61F7982F485A3C82252](http://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Research/Our-science-and-research/nsw-npws-visitor-insights-2019.pdf?la=en&hash=5FACD839AB7E15F5CD42B61F7982F485A3C82252)

Valerio P 2019, *Cycling Market*, summary report based on 2018 national and international visitor survey data.