



Review of Environmental Factors
for
The Construction of a Mountain Bike Track
Bantry Bay
Garigal National Park

May 2013

13/008

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1. Brief description of the proposed activity

Please provide a brief description of the work to be conducted:

Description of proposed activity(s)*	<p>The proposed activity is the construction of a purpose-built mountain bike track in the Bantry Bay area of Garigal National Park.</p> <p>The outcome of extensive analyses, including landscape scale assessments of suitability, preliminary environmental impact assessments, and user demand, directed the selection of this location for the construction of a single-width, cross-country / all-mountain bike track.</p> <p>This area has also experienced increased pressure from the construction of unauthorised bike trails which have impacted on Aboriginal rock engravings and caused erosion and vegetation loss. A component of the proposed activity includes a rehabilitation plan which will address this issue by closing and allowing revegetation of these tracks, once the purpose-built track is operational.</p> <p>The proposal also incorporates improvements to the western section of the Natural Bridge walking trail, which will be intersected by the proposed cycling track. This walking trail currently experiences surface issues associated with erosion, sedimentation and surface water flow. Improvements will include the installation of surface drainage structures to ensure water and sediment is dispersed along the length of the track, and also the replacement of steps (as required).</p> <p>Despite all best efforts it proved impossible to completely avoid passing through the Coastal Upland Swamp EEC due to its greater than anticipated distribution within the area. The track will pass through the EEC in two locations: 100 metre long section under Bluff Lookout, and a 250 metre long section which joins the new track onto the Engravings Trail (see map in Appendix A). The route of the latter section was influenced by research that showed this area of EEC has previously experienced disturbance, evidenced in the form of rubbish and weeds (which will be removed during construction). Impacts on the EEC will be minimised by the incorporation of a 'floating' fibreglass deck platform which will provide the best access opportunities across the sensitive vegetation community with the least impact (7-part Test results in Appendix F).</p> <p>The track design incorporates two loops: Currie Rd/Cook St Trail (Western Loop) and the Engravings Trail (Eastern Loop) which when combined will form a track length of 6.45km. Track construction will incorporate a combination of adaptation works to sections of existing management trails (Engravings Trail and Cook St/Currie Rd trails) and the construction of new sections of purpose-built mountain bike track.</p> <p>The primary objectives of the proposed activity are to:</p> <ul style="list-style-type: none">- construct a high quality, predominantly single width sustainable mountain bike track, with a location, alignment, and design that minimises environmental, cultural heritage and social impacts;- provide a high quality experience for beginner to intermediate-level mountain bikers to enjoy and appreciate the park;- reduce the current impacts on environmental and natural and cultural heritage values caused by unauthorised track usage; and- improve the safety of walkers and mountain bikers through track design and routing that, wherever possible separates these pursuits and controls excessive speed.
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	<p>The new track will follow International Mountain Bicycling Association (IMBA) track standards for design, construction and maintenance (Appendix I), and best practice principles will be applied.</p> <p>In order to minimise environmental impact and enhance the riding experience for the user, the track design and construction will:</p> <ul style="list-style-type: none"> - Where appropriate, use sections of current management/fire trails; - Follow the contour lines where possible and use other natural features of the existing landscape, including the establishment of sustainable trail gradients that are not prone to water erosion; - Have the same finished appearance as a bush walking trail, measuring approximately 600 mm wide; and - Endeavour to avoid or minimise impacts (noise etc) on adjacent park neighbours and other users of the park. <p>The total finished track length is 6.45 km, with 2.7 km utilising existing management/fire trails and the remaining 3.75 km requiring new single track construction works.</p> <p>Track construction will require some clearing of vegetation however this will be restricted to the understorey. No mature trees will be removed and the majority of works will be completed using hand tools.</p> <p>Impacts on the surrounding environment will be minimised through a combination of diverting the route away from vulnerable areas and the incorporation of design and construction techniques to prevent erosion, siltation and waterflow.</p> <p>The project is to be developed in a staged manner and there are options for complementary cross tenure additions to the length of the trail in collaboration with other local government land managers who have been working with NPWS throughout the planning process.</p> <p>Once the track is operational a cyclic monitoring, maintenance, and management plan (possibly utilising the assistance of volunteer mountain bike riders) will be adopted to ensure that the track continues to meet with operational standards and impacts to the surrounding environment are monitored and managed effectively.</p>
Estimated commencement date?	October 2013 (Western Loop)
Estimated completion date?	March 2014 (Eastern Loop)

*Note a comprehensive description of the proposal is contained at section 5.2 of this form.

2. Proponents details

Name	Mr	Given name: Peter
	Surname: Bergman	
Organisation	Office of Environment and Heritage	
ACN /ABN (if applicable)	ACN:	ABN:
Section/Division (OEH proponents only)	PWD	
Position	Manager, Ku-ring-gai Chase Area	
Address	P O Box 3031	
	Suburb: Asquith	
	State: NSW	Postcode: 2077
Phone numbers	Business:	Mobile:
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Email	mne.planning@environment.nsw.gov.au	

3. Permissibility

3.1 Legal permissibility

Indicate whether the activity is permissible under the legislation. Section 1.10 and Appendix 1 of the *Proponents Guidelines for the Review of Environmental Factors* provides guidance on permissibility. Include explanation where necessary.

<input checked="" type="checkbox"/>	<p><i>National Parks and Wildlife Act 1974 (NPW Act)</i> The location of the proposed activity is on land under control of the NPWS, therefore the NP&W Act applies.</p> <p>The current Plan of Management for Garigal National Park (adopted in 1998) does not allow for this activity within the park however an enabling amendment will be sought concurrently with the exhibition of this Review of Environmental Factors (REF). Conditional approval for the REF may be granted subject to adoption of the proposed POM amendment. However, an enabling amendment is being sought concurrently.</p> <p>This REF considers and addresses the identified environmental and other impacts of the proposed activity and thus serves as the application for approval of the proposed activity.</p>
<p>Justification: consider the following matters</p>	
<input checked="" type="checkbox"/>	<p>Objects of the Act (s.2A)</p>
<p>This activity is permissible within a National Park under Objects of the Act (s.2A) under management principles as outlined:</p> <p>(1)(c) fostering public appreciation, understanding and enjoyment of nature and cultural heritage and their conservation.</p> <p>(1)(d) providing for the management of land reserved under this Act in accordance with the management principles applicable for each type of reservation.</p> <p>The aim of the activity is to provide a current best practice, environmental and financially sustainable well-managed and well-planned cycling experience which will enable NPWS to provide a wider range of opportunities for public appreciation, understanding, and enjoyment of the park system.</p>	
<input checked="" type="checkbox"/>	<p>Reserve management principles (s.30E-30K)</p>
<p>Permissible under s30E (2) management principles:</p> <p>(d) the promotion of public appreciation and understanding of the National Park's natural and cultural values.</p> <p>(e) provision for sustainable visitor or tourist use and enjoyment that is compatible with the conservation of the national park's natural and cultural values.</p> <p>The creation of a sustainable, well planned and managed cycling track system will fulfill the NPWS's obligations under the NPW Act by increasing opportunities for the public to enjoy and appreciate park values and addressing the associated risks and impacts caused by the current creation and use of unauthorised tracks, and minimise the potential for further creation and use of such tracks.</p>	
<input checked="" type="checkbox"/>	<p>Title and relevant sections of plan of management or Statement of Interim Management Intent (or drafts):</p>
<p>The current Plan of Management for Garigal National Park 1998 4.3.2. Recreation Opportunities: Use of Tracks states: Bicycle riding will be permitted on roads and management tracks only.</p> <p>An amendment to the current Plan of Management is being sought concurrently with this proposal. This amendment may be approved by the Minister for the Environment after public exhibition, the receipt of representations on the exhibited draft, amendment, and consideration and advice from the relevant regional advisory committee and the National Parks and Wildlife Advisory Council.</p>	
<input type="checkbox"/>	<p>Leasing, licencing and easement provisions of Part 12</p>
<p>N/A</p>	
<input checked="" type="checkbox"/>	<p>Management powers and responsibilities of NPWS (s.8 and s.12) – for internal NPWS projects</p>
<p>The activity is permissible under s.8 (3)(b) <i>arrange for the carrying out of such works as the Director-General considers necessary for or in connection with the management and maintenance thereof,</i></p>	

and s.12 (f) *the provision of facilities and opportunities for sustainable visitor or tourist use and enjoyment on land reserved under this Act.*

The provision of a well-managed cycle track fulfills management responsibilities under s.8 and s.12.

Special note: for lease proposals under s.151 NPW Act involving new buildings or structures

Section 151A(5) of the NPW Act states that the Minister must not grant a lease under s.151 for visitor or tourist uses that authorises the erection of a new building or structure unless the plan of management identifies the purpose as permissible and the general location for the new building. If relevant to the proposal indicate whether this requirement has been met, or will be.

N/A – no new buildings or structures proposed.

Wilderness Act 1987 (for activities in wilderness areas consider objects of the Act, management principles, s.153, etc)

Justification: N/A - this area is not a declared a wilderness area.

Environmental Planning and Assessment Act 1979 (EP&A Act) (consider aims and objectives of relevant environmental planning instruments, zoning and permissible uses, development controls, etc)
Explanatory note: Clause 65 of State Environmental Policy (Infrastructure) 2007 provides that development for any purpose may be undertaken within specified OEH lands without consent. This removes the need for development consent under Part 4 of the EP&A Act, meaning that most activities within NPWS land are assessed under Part 5. However, proponents should still confirm that the SEPP is applicable to their particular proposal, and provide consideration of other environmental planning instruments that would otherwise apply to the proposal if it were not occurring on NPWS land.

Justification: Part 5 of the *EP&A Act 1979*, requires the NPWS to assess the likely environmental impacts of activities proposed to be undertaken on NPWS land.

This REF serves as the application for approval of the proposed activity, of which the NPWS is the determining authority.

No areas listed under any State Environment Planning Policy will be affected by the activity.

Heritage Act 1977 (for activities likely to affect items or places of historic cultural heritage value)

Justification: The activity site is not listed on the State Heritage Register

A search of the NPWS Historic Places Register & GIS data indicated no items are listed for the works site. The activity does not require an excavation permit or other form of approval under the Heritage Act.

Threatened Species Conservation Act 1995 (TSC Act) (is the activity consistent with the biodiversity conservation objectives of the Act?)

Justification: The results of the seven-part tests conducted as a component of this REF indicate that the proposed activity is not expected to significantly affect any species scheduled in the TSC Act 1995.

Threatened species have been recorded in the vicinity of the proposed activity. A comprehensive flora and fauna survey was conducted in the area in order to accurately map the locations of identified species, and potential habitat. Seven-part tests were conducted in order to measure the significance of effects on threatened species, populations, ecological communities and their habitats.

The proposed activity is consistent with the objectives of the Threatened Species Conservation Act

Rural Fires Act 1997 (is the activity consistent with the objectives of protecting life and property and protection of the environment?, is it consistent with bush fire management plans?)

Justification: N/A

Fisheries Management Act 1994 (will the activity affect fish or marine vegetation, including threatened species? Is approval required under the Act?)

Justification: N/A

Commonwealth legislation (including the Environment Protection and Biodiversity Conservation Act 1999 (EP&BC Act) and the Telecommunications Act 1997)

Justification: Under the EPBC Act, matters of National Environmental Significance relevant to this proposal include:

- Threatened species and ecological communities
- National Heritage places

These have been addressed by the following:

- Threatened species have been identified and addressed by the 7– part tests, the results indicated that the proposed activity would not have a significant impact
- The Bantry Bay Explosives Depot was listed on the Register of national Estate in 1980. This activity does not take place in the vicinity of the depot.

The proposed activity will not have a significant impact on National heritage or Threatened Species as included in the EPBC Act 1999.

No telecommunications facilities or infrastructure will be impacted or built as part of this activity, and therefore the Telecommunications Act 1997 is not relevant.

3.2 Consistency with NPWS policy

Indicate whether the activity is consistent with NPWS policy, including an explanation where necessary:

Provide details of relevant NPWS policy	This activity is consistent with NPWS Cycling Policy (2011) and NPWS Sustainable Mountain Biking Strategy (SMBS) adopted in 2011.
	This policy clarifies the NPWS’s responsibilities for the provision of cycling experiences, including mountain biking. The policy also seeks to balance conservation objectives of parks with the needs of visitors by providing specific guidance on the conditions under which cycling may be permissible and the management of cycling experiences.
	<p>The objectives of this policy are:</p> <ul style="list-style-type: none"> - ecologically sustainable cycling in parks - recreational cycling activities that provide a safe quality experience for all park visitors and foster public appreciation, understanding and enjoyment of nature and cultural heritage - proactive and responsive management of cycling in parks - effective communication between the park authority, cycling communities and other land managers <p>The proposed activity to construct a purpose built mountain bike track is in accordance with the objectives as listed in the policy.</p>
	<p>The activity is also consistent with the NPWS Vehicle Access General Policy (2010)</p> <p>General principles under this policy state: Vehicle access and associated infrastructure should:</p> <ol style="list-style-type: none"> a. not cause unacceptable impacts on nature and cultural heritage; b. be designed with sensitivity to the landscape; c. promote the principles of energy conservation and sustainability; d. be appropriate and necessary to meet park management needs or to provide for visitor use and enjoyment; e. be designed to supply opportunities for understanding, appreciation and enjoyment of visitors, and take maximum advantage of interpretive opportunities and scenic values; and f. provide access to a range of visitor experiences in parks for people with disabilities <p>Under this Policy the proposed activity is in accordance with the general principles related to vehicle access and associated infrastructure.</p>

3.3 Type of approval sought

OEH proponents

<input checked="" type="checkbox"/>	Internal NPWS approval* or authorisation, including expenditure
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***Note:**

- NPWS does not grant park approvals (eg. leases, licences, consents, etc) to itself.
- NPWS has a range of general powers to undertake activities on-park, for example sections 8 and 12 of the NPW Act.

External proponents

Appendix 1 of *Proponents Guidelines for the Review of Environmental Factors* provides a list of the types of approval that may be obtained from the NPWS.

Provide a brief description of the type of approval sought: e.g. a lease for visitor accommodation under s.151 NPW Act	
<input type="checkbox"/>	Section/clause of Act/Regulation

4. Consultation

Specify the details of consultation, including who was consulted, how, when and the results of the consultation. Section 2.6 of *Proponents Guidelines for the Review of Environmental Factors* provides guidance on consultation.

<p>Provide details of consultation*:</p>	<p>In 2010, in response to feedback from the field and research conducted by the NPWS which showed mountain biking to be a rapidly increasing, and popular recreational activity in parks, a discussion paper: <i>National Parks and Wildlife Service Cycling Policy Review and Sustainable Mountain Biking Strategy</i> was released and public comment was invited on the potential establishment and augmentation of mountain biking tracks in National Parks.</p> <p>Responses included 2,310 comments and 191 submissions many of which supported the provision of better access for mountain biking.</p> <p>In September 2011, the <i>NPWS Sustainable Mountain Biking Strategy (SMBS)</i> was adopted with the aim to provide guidance and strategies to support a vision for sustainable mountain biking in NPWS parks statewide.</p> <p>In October 2011 the Northern Sydney Mountain Bike Consultation Strategy was implemented, with objectives to:</p> <ul style="list-style-type: none"> - ensure that all people with an interest in the future of mountain biking in Northern Sydney are aware of the public consultation processes and how they can contribute to these; and - to provide a framework and procedures for managing issues as they emerge during the course of the public consultation process. <p>One of the main aims of this strategy was to engage with stakeholders (both internal and external), and the community in a manner that was open and transparent.</p> <p>In keeping with this, the consultation process relating to this project has been ongoing and involved a wide variety of internal and external stakeholders. These include mountain bike clubs, local government, Aboriginal representatives including the Metropolitan Local Aboriginal Land Council (MLALC), a variety of public interest and conservation groups, and NPWS staff.</p> <p>In October 2011, NPWS formalised the Northern Sydney Mountain Bike Stakeholder Advisory Group (details and minutes are provided in Appendix G).</p> <hr/> <p>Community field days were held at both the Berowra Regional Park (December 2011) and the Garigal National Park - Bantry Bay sites (February 2012).</p> <hr/> <p>Consultation and Cultural Heritage The Metropolitan Local Aboriginal Land Council has been consulted regarding all stages of the project, including invitation to attend all stakeholder meetings and on-site inspection days (further details provided in Appendix G).</p> <p>Consultation has also been conducted with the Aboriginal Heritage Office, who have reviewed the heritage assessment studies, conducted as a part of the site assessment process, and provided valuable feedback (see Appendix G for report).</p>
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	<p>Consultation with Local Councils</p> <p>In accordance with strategies outlined in the SMBS, potential for track linkages with land on other tenures is a priority in the site determination process with local government being actively involved in the consultation process.</p> <p>NPWS has been working closely with local government, exploring options for linkages, and the utilisation of public facilities (including parking, toilets, entry points etc). The development of a highly effective collaborative approach to managing illegally constructed bike tracks, protecting Aboriginal sites and meeting public needs for recreational facilities has resulted from this level of consultation.</p> <p>Due to the larger areas managed by NPWS it was agreed in principle at an early stage in these discussions that track construction efforts within local government owned land would focus on providing for advanced rider down hill experiences while NPWS would seek to provide for longer beginner and intermediate cross-country, all - mountain experiences.</p> <p>Consultation during this process has included a combination of private meetings between local government and NPWS staff, phone discussions and representation within the Northern Sydney Mountain Bike Stakeholder Advisory Group.</p> <p>Warringah Council and Hornsby Shire Council currently have plans underway to provide facilities for riding mountain bikes within their local government areas.</p> <p>Hornsby Shire Council has already implemented and along with a group of volunteers, are currently managing Stage 1 of their mountain bike track, with Stage 2 due to commence shortly. Feedback provided by Hornsby Shire Council has helped greatly with the identification of on-ground implementation and management strategies that may be applicable for the proposed track in Bantry Bay.</p> <p>Warringah Council are currently exhibiting a Draft Plan of Management for Forestville Park. It incorporates a redirected mountain bike track route which will divert riders away from important Aboriginal heritage sites and which also has the potential to complement the proposed NPWS track, with a cross tenure route that would extend the length of the track loop through Council managed land (Appendix A).</p> <p>Discussions have also been held with representatives from Manly Council, who also have an interest in the proposed activity. Further feedback is anticipated from Manly Council once the REF is open to public exhibition.</p> <hr/> <p>NPWS Website</p> <p>Consultation and feedback has also been facilitated through the NPWS website which provides a link to the mountain bike project and key information, updates and contact details. This website has been updated and monitored by a NPWS Officer on a regular basis.</p> <hr/> <p>Public Exhibition</p> <p>As a component of the determination process the REF (including all maps and design specifications) will be exhibited on public display concurrently with the proposed amendments to the Plan of Management for a period of 45 days. Feedback and comments will be encouraged, and all input resultant from this exposure will be collated and included as part of the determination process.</p>
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***Notes:**

- Proponents should provide evidence that the relevant NPWS (Parks & Wildlife) office supports the proposal in-principle.
- There are specific consultation and referral requirements for certain proposals requiring a lease or licence under s.151A of the NPW Act. Refer to the *Leases and Licences Referral Policy and Procedures* for more information.

5.0 Proposed activity(s)

5.1 Location of activity

Please attach a locality plan, map, photographs, diagrams and a site plan showing the location and layout of the proposed activity, and provide the following details of the location of the proposed activity site.

Site commonly known as (if applicable)		
Street address (if available)	No:	Street Name:
	Suburb:	
	State:	Postcode:
Title reference	Folio identifier or volume-folio (if Torrens Land System)	
	Registered deed number (if Old Land System)	
Site reference	Easting: (6 digits)	Northing: (7 digits)
	AMG zone: (54, 55, 56 or 57)	Reference system: (eg. GDA94, WGS84, AGD)
Local Government Area		
NSW State electorate		
Catchment		
National Park		

OR

If the site does not have a street address and title reference, please provide a description of the location.

Description of premises location	Bantry Bay lies within the southern limit of Garigal National Park.	
	The proposed track will encompass the Bantry Bay Engravings Trail and the Cook Rd/Currie St Fire Trails (entry point coordinates provided below) – see map (Appendix A) for location	
Site reference	Easting: Engravings trail 336347 (6 digits) Cook St/Currie Rd: 335075	Northing: 6262421 (7 digits) 6262172
	AMG zone: (54, 55, 56 or 57) 56	Reference system: (eg. GDA94, WGS84, AGD) GDA94
Local Government Area	Warringah	
NSW State electorate	Wakehurst	
Catchment	Middle Harbour	
National Park	Garigal National Park	

5.2 Description of the proposed activity

Include a full and comprehensive description of the activity. All aspects of the proposed activity should be described. See Section 3.2 of *Proponents Guidelines for the Review of Environmental Factors* for further guidance.

Description of the proposed activity – include pre-construction, construction, operation and remediation:

Pre-construction Background

As the popularity of mountain biking has increased so too has the demand for dedicated, purpose-built mountain bike trails, especially in urban areas.

Recognition of this demand and providing increased opportunities for cycling and mountain biking in NSW parks are key priorities under the NSW State Plan (March, 2010), NSW Bike Plan (May, 2010) and also in the current NSW 2021 Plan.

These Plans set priorities and targets for the NSW public sector to deliver government services and manage visitation to NSW parks.

These priorities recognise the importance of cycling for transport and recreation, and the role of parks in developing a strong sense of community through providing opportunities for the community to engage with the natural environment.

In keeping with these priorities the NPWS released the Sustainable Mountain Bike Strategy (SMBS), approved by the Minister for the Environment in August 2011. The SMBS has a ten year timeframe and introduces a number of changes to NPWS policies relating to the use of mountain bikes in reserves gazetted under the *NSW National Parks and Wildlife Act 1974* with the aim to provide high quality mountain biking experiences that are appropriate, safe and environmentally sensitive.

Currently, cycling (including mountain bikes) is restricted on NPWS lands to public access roads and most fire/management trails (subject to specific requirements in the relevant park's plan of management). Increasing demand and pressure on these areas has led to the creation and proliferation of unauthorised tracks, increased conflict between riders, bush walkers and horse riders, increased illegal motor bike access and also added pressure on the local environments.

Increased demand and usage placed upon these tracks has in some circumstances contributed to increased erosion and siltation into the surrounding bushland. The creation, proliferation and increasing use of unauthorised tracks has further added to problems of erosion, impacted on cultural sites, and damage to native flora (including threatened species) as well as increased safety concerns for park visitors.

Management of unauthorised tracks has traditionally involved location, closure and revegetation of these tracks, in combination with partnering mountain biking organisations to educate and inform riders, and compliance activity and regulatory patrols by NPWS Officers.

These actions have proven to be time consuming, costly and largely ineffective. In order to meet with increased demand and mitigate the environmental, cultural heritage and social impacts, it is vital that NPWS finds a way to successfully manage mountain biking in such locations.

Evidence from NSW, interstate, and international experience, suggests that providing legal opportunities for riding on mountain bike single-track routes and working collaboratively with mountain bike clubs and organisations may significantly reduce use of these unauthorised tracks and their associated impacts.

In 2010, a NPWS Project Control Group (PCG) was appointed which comprised Area Managers, Regional Assets Manager, Senior Ranger Community Partnerships, GIS Officer, Regional Operations Coordinator and Regional Manager. A detailed regional planning assessment was also embarked upon by the NPWS Metro North East Region, which was designed to assess existing tracks and trails and identify site suitability for a new mountain bike track in the region. This assessment involved a desktop investigation incorporating the analysis of spatial data with a variety of criteria including: preference for ridge top and following existing contours, grade 5-10%, maximise use of existing trails, links to existing access and parking, avoidance of sensitive environmental locations, cross tenure (local government open space), avoidance of horse trails, minimum foot print, potential sites for co-development with local government, consider under high voltage power lines, existing cycle pathways (off park, on road) to identify linkages, other infrastructure, drainage lines and car parking.

The PCG reviewed this assessment and each track/trail was individually assessed in conjunction with local knowledge. Three sites were identified as appropriate for further investigation:

- Berowra Valley Regional Park – Schofields Rd area, Pennant Hills;
- Garigal National Park – Bantry Bay, Forestville; and
- Garigal National Park – Kamber Fire Trail area.

An environmental consultant was engaged to conduct a more intensive investigation was then in order to ascertain suitability for the development of a sustainable mountain bike track.

Consequently Kamber was excluded from further consideration due to the presence of endangered ecological communities (EECs), Aboriginal heritage, and potential construction and maintenance cost. Further assessments continued of Bantry Bay and Berowra Valley Regional Park, with identified user demand the primary factor in the eventual selection of Bantry Bay.

In keeping with the directions outlined in the SMBS, prior to approval for construction a detailed environmental assessment process was required.

Detailed on-site investigations, which included a comprehensive flora and fauna survey of the site where the proposed track was to be constructed, were conducted by the consultants. This investigation also included a detailed Aboriginal cultural heritage survey utilising data from the Aboriginal Heritage Information Management System (AHIMS) and a thorough field inspection in order to confirm the locations of known and potential items of cultural Aboriginal heritage value (**Appendix C & D**).

The results of these surveys indicated a high density of Aboriginal engravings in the area and also confirmed the presence and distribution of threatened species and EECs.

In order to avoid impacting on these the track direction was re-routed at various locations. Despite best efforts, it proved impossible to completely avoid passing through the Coastal Upland Swamp EEC due to the fact that its distribution proved to be much greater than initially mapped by CMA.

The final route for the proposed track passes through two section of the EEC, with incursions comprising a 100 metre long section under the Bluff Lookout, and a 250 metre section which joins the new track to the Engravings Trail. The latter section passes through an area which has been previously disturbed, evidenced by weed plumes and rubbish. During track construction the rubbish will be removed from this area and the weeds treated.

The new sections of track total 360 metres in length, which when multiplied by the track construction width, total an area of 432 square metres. This figure represents 0.63% of the total extent of the EEC at this site.

A 7-part test was conducted on the EEC in order to assess the impacts of the proposed track. This concluded that the incorporation of specialist track construction techniques, including the use of a raised fibreglass floating track on recycled plastic bearers across the EEC, would result in the proposed activity deemed unlikely to have a significant impact on the EEC and that further environmental assessment was not required (**Appendix F**).

The outcome of these investigations indicated that by re-directing the route of the track where possible, and the incorporation of environmental mitigation measures into the design and construction, that the proposed activity was unlikely to have a significant impact on threatened species, EECs or Aboriginal cultural heritage.

The Project

Aim

To provide an appropriate, current best practice, high-quality, safe and sustainable mountain biking experience in a national park environment.

Design

The following guiding principles apply to the track design for Bantry Bay:

- Mountain bike trails to be developed and maintained in NSW National Park estate should be consistent with their immediate surrounds and the values associated with that area.

- A trail in a substantially unmodified natural environment should not involve significant artificial structures. An exception to this may be the use of an elevated surface/structure to manage environmental impacts.
- Currently there is limited experience with the use of earthmoving machines for the construction of narrow trails in unmodified environments, until this method is better understood, construction of new trails should be undertaken substantially using manual techniques.

The IMBA is the international peak body for mountain biking and includes members from 31 countries. Track design will follow IMBA principles graded according to the IMBA difficulty rating system (**Appendix J**) and will incorporate best practice guidelines in order to ensure that the track is safe, environmentally sustainable and meets with demand.

The track design comprises two loops: Currie Rd/Cook St (Western Loop), and the Engravings Trail (Eastern Loop), which in combination will form a figure eight track which extends for 6.45km (excluding potential for future linkages with other tenures).

The track design incorporates sections which are dedicated single track (finished width approximately 600-700mm) and joint use (existing access track). New sections will:

- be designed to follow the contours and natural features of the terrain in order to minimise the environmental impact; and
- retain the aesthetic value and provide a challenging experience for the rider.

Incorporating a classification system for communicating the level of difficulty of track experiences to riders is imperative in order to allow the riders to judge whether a particular track is within their skill range.

The IMBA Australia Trail Difficulty Rating System (**Appendix J**) is recognised by mountain bike riders internationally and has been adopted by Tasmania, South Australia and West Australia, and will also be adopted for the proposed trails in Garigal.

Due to the variations in terrain and the restrictions imposed by topography and vegetation, the two sections of track are envisaged to be graded to different levels: Currie Rd/Cook St – Beginner/Intermediate (IMBA grading green/blue); Engravings Trail – Intermediate (IMBA rating blue). Signage will be erected at the entry points to reflect these ratings and also promoted online.

Construction

Construction activity will be restricted wherever possible, to low level understorey clearance of vegetation and surface track works the majority of which may be accomplished using hand tools and the use of heavy machinery is not anticipated.

As track construction will involve adaptation of an existing access track and the construction of sections of new single lane mountain bike track it is anticipated that a combination of track construction techniques will be utilised (more detail is provided under construction methods, materials and equipment).

Due to the nature of the terrain and variability in soil types, drainage patterns, and the sensitivity of the surrounding bushland, track design and construction will need to be adaptive and incorporate measures to focus on the minimisation of impacts to the surrounding environment. This will involve the identification of sections with vulnerable soil surfaces which will require suitable surface armouring in order to provide adequate drainage and erosion protection to make it suitable for use by bike riders.

In order to maintain a minimal footprint it may also be necessary for to use helicopters to deliver tools and materials into pre-arranged drop zones. The identification of suitable drop zones will form a component of the design/construction specifications.

Approximately 3.75km of new track will need to be constructed, the remainder will require modifications to existing trail where required.

The finished track width will measure 600-700mm (single-track) and will follow natural landscape contours and other environmental constraints, this will ensure minimal vegetation clearing, involving only the understorey and shrub layers and no trees >50mm diameter will be removed.

During construction it is anticipated that in some areas the width of impact may be up to 1.5 - 2 metres to allow for access and construction works.

The track is designed to pass through bushland and incorporate, and in some circumstances highlight for interpretive purposes, the natural features of the landscape, as such it is anticipated that upon completion, visually it may have a lower impact than a walking track.

Detailed track construction specifications will be provided by professional mountain bike track designers engaged to ensure that the best outcome is achieved and that all best practice guidelines are followed.

Operation

As with all NPWS managed tracks and trails, access to the bike tracks will be restricted to day time operation and will only be open from sunrise to sunset. This will be managed through signage and promotion on electronic media, and if required, compliance activity.

A mountain bike signage plan and schedule will be incorporated and based on IMBA standards

Tracks may be closed during extreme wet weather or high fire danger (managed through signage, website, exclusion barriers)

A cyclic maintenance and track monitoring plan will be designed and adopted which will cover all monitoring and maintenance activities required to keep the trail in a stable condition and meet the international standards of maintenance and repair for mountain bike tracks

A volunteer group will be formed to provide assistance through raising awareness, track condition and usage monitoring, and possibly maintenance. (Refer to **Appendix H** – IMBA Rules of the Trail).

Circuit counters may be installed at entry points in order to gauge the level of usage and compliance (night time, wet weather)

Monitoring and surveys may also be conducted in order to determine usage patterns, rider origins, user satisfaction and any potential parking issues.

Remediation

Adaptive management may be implemented – it is anticipated that initially the level of visitation will be high and during this settling-in period the track will need a higher level of inspection and maintenance in order to ensure track standards are maintained.

Flora and fauna surveys (eg photo points) already conducted prior to construction may be used to provide base data for comparison in follow-up studies to enable a measure of impact post-excavation and at intervals post-operation.

Weed and pathogen surveys will also be conducted. Any remediation works should aim to focus around the track entry points prior to operation, and monitored as a component of the management program

A volunteer program involving local MTB groups (eg as used by Hornsby Council) to be formed and involved with all aspects of track monitoring and maintenance, including removal of rubbish, identification of potential problems, and monitoring track condition, usage and compliance

A rehabilitation plan for the closure of unauthorised mountain bike tracks will be implemented once the new track is operational. This will include works to improve drainage and the erection of appropriate barriers to prevent access and allow regeneration to occur.

The size of the proposed activity footprint:

Approximately 3.75 km of new track construction is required, with the remaining 2.7 km requiring the adaptation of existing access trails. Construction of the new track will involve some clearing of vegetation and surface works to improve drainage and minimise erosion from track usage. Vegetation will be minimised where possible and will be restricted to vegetation < 5m in height. No mature trees, or trees measuring >50mm (trunk diameter) will be removed, and the tree canopy will remain intact and interlocking.

The proposed activity footprint constitutes the construction of 3.75 km of new single width mountain bike track, initially the impact will equate to a width of 1.5-2.00 metres, but will reduce to an operational footprint of 600-700mm. This variation is due to the increased width of the activity footprint for new sections to allow for construction works, however the completed track width will be no wider than 600-700mm as an operational standard (allowing for edge regeneration).

360 metres of new track will require construction through sections of Coastal Upland Swamp EEC, which constitutes 0.63% of the total of the EEC on this site. A raised 'floating' fibreglass deck will be utilised where the track passes through EEC. This type of track does not require complete vegetation removal or soil disturbance, and will enable access with a minimal impact to the surroundings.

Any impact will be off-set by the closure and rehabilitation of unauthorised tracks through EEC which comprise 0.75 km.

Ancillary activities, such as advertising or other signage (including any temporary signs, banners or structures promoting an event or sponsorship arrangements), roads, infrastructure, bush fire hazard reduction:

A track signage plan and schedule forms an essential component of the proposed activity. Signage will be influenced by IMBA standards and be consistent with the NPWS Park Signage Manual (2011). Signage will be placed at entrance points to the track and these will include information for riders including:

- Code of conduct
- Hours of operation
- Track classification
- Awareness to the sensitivity of the surroundings
- Hazard awareness

Tyre scrubbers and installation of a suitable collection bay may be used at entry/exit points in order to address the issue of spreading pathogens and weeds into bushland.

Under the NPWS Vehicle Access General Policy (2010) track closures may be implemented due to various factors such as wet weather, high fire danger and track damage. Notification of closures will be provided by erecting signage and website notification, and may further be supported by the erection of temporary fence structures.

Proposed construction methods, materials and equipment:

The International Mountain Bicycling Association (IMBA) has released several publications guiding the design, construction and maintenance of trails. The IMBA principles are sound but require additional detail for works in specific environments.

Natural surface trails

Trail metrics (width, grade, allowable obstacles etc) are well described and these should be adhered to in order to maintain a consistency of expectation among users. In general, the tread width of the trails in Bantry Bay should be 600mm with a maximum grade of 10%. There are many places (particularly corners) where the trail surface will need to be 'rock armoured' (the surface will be paved with a compatible natural rock such as sandstone). This rock may be sourced from the immediate vicinity of the trail if its origin is within the trail envelope, however it will most likely be imported from an external quarry.

Built and elevated sections of trail

Where formal construction is required a preference will be given to materials that match those at the site. In general, working with natural imported rock/sandstone material that is compatible with local stone. There will be a range of acceptable practices for ensuring long term stability of built areas and these may include 'invisible' strategies such as hidden pinning and grouting of large rocks.

Elevated sections of trail may be required to span gaps between rock platforms or to keep the tread above a sensitive site. Large sections (5m long) should not require ground anchors and should be able to float in place. Short sections will require some form of anchoring (either fixed to bedrock or installed piers).

Best practice guidelines are to be incorporated into design and construction. This will include detailed specifications on materials and equipment to be used.

Design/construction may involve the following:

- Some areas may require cross-slope track construction which involves slight raising of one side which in most places can be achieved through use of soil and/or rock.
- To avoid disturbance to local bushrock, sandstone will be imported to the site. Any material brought into the area is subject to the normal certification requirements (from approved source, weed/soil free, no contaminants).
- The use of wood and metal – use of wood will be avoided in all instances as there is the risk of increased fire hazard potential. Use of small flame and heat resistant fibreglass mesh structures may be required in order to provide 'bridge-like' structures over waterlines or gullies. **Details of where and if this will be necessary are yet to be finalised. All efforts will be made to have the lowest possible impact (visually and environmentally).**
- Drainage – in order to minimise erosion and siltation, patterns of drainage control to be incorporated will be mostly sheet flow design across a sloped track, with frequent grade reversals to prevent water from running along the track.
- The track construction works will be conducted primarily by hand and in order to minimise impacts, heavy materials such as sandstone may need to be heli-lifted into the area.

- In order to prevent soil erosion and deposition issues and to protect the track, rock armouring may be required in some areas.
- All measures will be taken to ensure erosion is minimised, paying particular attention to sections of the track that pass above areas of vulnerable vegetation. Identification of these areas, and mitigation measures will form an essential component of the design and construction process.
- The potential for increased erosion from the construction and use of the track is a primary concern given the nature of the surrounding environment. Design and construction specifications must also consider the future impacts of climate change scenarios relevant to the region. All efforts should be made to ensure the track is able to withstand extreme weather events with minimal impact.
- There will be no large-scale clearing required and it is anticipated that no heavy machinery will be required to be brought onto site, with the majority of works to be achieved using hand tools.

An increase in recreational use of any natural area will inevitably result in some degree of change to the surrounding environment.

Many of the impacts associated with the creation of a mountain bike track in sensitive areas may be minimised and managed through informed design, high quality construction, and an appropriate maintenance regime.

Receival, storage, and on site management for materials used in construction:

A component of the track design plan will be to identify potential drop zones should it be necessary to transport equipment, tools or materials by helicopter.

The design and construction specifications will be detailed and section works will be provided with chainage measurements. This will allow accurate calculations to be made regarding the construction equipment and amount of materials required within each section.

Earthworks or site clearing including extent of vegetation to be removed:

The track passes through native vegetation communities which vary from heath to woodland, including a section of Coastal Upland Swamp.

Vegetation removal will be minimised and restricted to understorey and shrub layers only, no mature trees (>50mm diameter) will be removed for the purposes of this track construction.

Track design will involve working within the current landscape constraints where possible, and to retain and protect the surrounding natural bushland.

3.75 km of single width new track is to be created through bushland, vegetation removal will be restricted to what is required to permit the construction of a track measuring a final width of 600-700mm in these areas.

Removal of vegetation where it may be required will be restricted to a maximum height of 5 metres. The existing canopy throughout the project area will remain intact and interlocking.

Environmental safeguards and mitigation measures:

Design

Issue: potential to impact on flora/fauna and cultural heritage sites.

- detailed on-ground and desktop surveys have been conducted in order to locate the track along the best possible route to avoid impacting on these sensitive areas.
- where topography prevents relocation of the track, appropriate construction methods will be adopted in order to mitigate impacts on sensitive areas. For sections that pass through swamp or across drainage lines, the use of structural features such as free-standing weldlock mesh platforms will be used in order to avoid impacting the ground surface.
- the track will divert rider use away from platforms containing engraving sites.
- *vulnerable areas will be identified and protection measures increased accordingly in sections that have high potential for impacts from track construction and use.

*particular attention will be paid to preventing surface erosion and runoff in sections of track that pass upslope from EECs and/or threatened specie. Solutions may involve additional armouring of the track. These areas will be identified as a component of the design process and appropriate specifications provided prior to construction.

Construction

Issue: potential for introduction of pathogens/weeds.

- the project manager will ensure that all equipment, tools and clothing/footwear is clean and free of soil prior to entering and exiting the area.
- prior to entering the area, all construction workers are to be briefed about the sensitive nature of the surroundings.
- all introduced construction materials will be appropriately licensed and sourced from local approved suppliers.
- track design and construction will aim to prevent increases in water flow downslope from built up areas.
- any vegetation removed that comprises weed species will be bagged and removed from site.
- trimmed vegetation to be used wherever possible to brush-mat closed (unauthorised) tracks and other denuded areas.

Issue: potential for increased erosion and sedimentation.

- small-scale track clearing will be required and will be conducted by hand using hand tools and minimal machinery.
- work will stop during periods of wet weather in order to prevent increased erosion and siltation into the surrounding bushland.
- any sections that require minor surface excavation works will incorporate siltation protection measures (siltation fences).
- soil vulnerability will be assessed within each section where track construction is required, and appropriate surface protective measures will be utilised in order to minimise erosion.

Maintenance

Issue: track deterioration leading to erosion/increased sedimentation into surrounding bushland.

- issues will be identified early via regular monitoring and maintenance patrols conducted by staff and volunteers in order to rectify and minimise the impact.
- potential use of marker locations as an indicator for temporary track closure due to wet weather.
- promotion of group volunteer days and involvement of track users in maintenance and self-regulation in order to ensure early identification of problem areas.
- the track will also be incorporated into the NPWS Asset Management System (AMS) to ensure that regular maintenance checks are conducted.

Operation

Issue: increased noise and congestion.

- use of the track will be limited to operational hours (sunrise to sunset) – this will be managed through signage and promoted through electronic media and mountain biking websites.
- much of the proposed track route utilises sections of existing management/walking trails and the level of noise is not anticipated to increase significantly from what is currently experienced in this area.
- signage will also reflect the need for riders to limit their noise while accessing the track.
- the design of the new track sections will not incorporate features to facilitate or encourage congregation of riders, and will be composed primarily of a narrow one-directional route.
- there is potential for parking related issues to arise, especially during peak usage times. In consultation with local councils it is anticipated that as parking space is available over a wide area, and the majority of riders will ride to the tracks, that this will be minimal. A review may be required once the tracks are operational.
- requests for prospective mountain bike events may be received once the track is operational and these will be individually assessed under the NPWS Events, Functions and Venues Policy by management. Potential impacts on natural and cultural heritage values, the potential for conflicts with other visitors and available facilities in the park, and in the context of other available venues, will all be components of the consideration process prior to issuing consent.

Issue: increased potential for feral animal movement from the formation of a new track.

- fauna surveys will be incorporated into the management plan in order to measure impacts from feral animals. Data from the initial survey conducted prior to construction will provide a baseline for future studies, which should be repeated once the track becomes operational and followed periodically.
- normal pest management strategies which may include camera monitoring, baiting and surveying will be incorporated into the management plan for the track.
- the increased level of visitation within the area may increase the potential for sightings of feral species or their impacts in the area and this information may be used to guide and adapt the pest management strategies over time.

Issue: the intensity of use of the track is an unknown factor that could exacerbate the impacts.

- although all measures will be incorporated at the design and construction stages to protect the environment and minimise impacts, adaptive management strategies may be required to address any physical damage to the track surface as a result of intense use.
- regular track inspections will be conducted in order to identify and address issues. Initially this will require frequent inspections and mitigation works but is anticipated to decrease over time.

- the location of the track was influenced by many factors, including the presence of an existing mountain bike track network in the area at Manly Dam, the new sections of tracks in Garigal National Park were designed to complement this network. Although it is anticipated that use may initially be high once the track is opened, it is expected to plateau as riders vary their use pattern in order to provide variety to their riding experience. The level of difficulty assigned to the Eastern loop will also be restrictive and is intended to appeal to a smaller group of more experienced riders, who are capable of riding this level of trail.
- initially track counters may be installed to measure the level of visitation and compliance (park closure times etc), the results of this data will be used to direct appropriate management strategies.

Issue: increased spread of pathogens and weeds from bicycle tyres and riders clothing.

- the presence of Phytophthora will be monitored in the vegetation along the track as per existing NPWS protocols.
- the presence of Myrtle rust will be monitored in the vegetation along the track as per existing NPWS protocols.
- regular monitoring of the presence of weed species along the track length will be carried out and any new weed incursions treated promptly.
- signage will be erected at the entry points to the track educating users about the risks of spreading weed and pathogens into the area.
- tyre scrubbers, and scrub down bays together with educational signage, may be incorporated at entry points to raise awareness of the risk of spreading pathogens and weeds into the bushland.
- the risk of potential spread may also be limited to the first 100m section of track by the incorporation of track surface structures designed to shake loose material (including seeds and weed material) from wheels and riders clothing.

Sustainability measures – including choice of materials (such as recycled content) and water and energy efficiency

The nature of the track design indicates that the use of materials will be minimal, however where possible recycled materials will be sourced and utilised.

Due to the nature of the environment, the use of surrounding bushrock for the purposes of track construction and/or armouring will be avoided, unless it already forms part of the existing track tread, where it may be reused within the footprint of the trail.

Any sandstone or other material brought into the area for the purposes of trail construction must be certified and sourced from a reliable provider.

Construction timetable and staging, hours of operation:

Construction: It is anticipated that a staged approach will be adopted for track works, which are scheduled to commence October 2013 (subject to approvals). Construction hours would be limited to normal working hours: Mon-Fri 7:00am – 5:00pm and some Saturdays.

Operation: The proposed hours of operation will be in accord with the general opening times for a National Park, that is, closed sunset to sunrise. In keeping with visitor access and use of tracks in national parks, the mountain bike track may be closed during periods of extreme fire danger, declaration of Park Closure, or in order to minimise track damage due to wet weather events.

Signage, electronic media and Information lines will be used in order to notify visitors of track closures combined with enforcement patrols.

Note: if the activity involves building or infrastructure works, it may require certification to Building Code of Australia or Australian Standards prior to commencement. Further information on the types of projects requiring certification, and how to obtain certification, is contained the NPWS *Construction Assessment Procedure* at: <http://www.environment.nsw.gov.au/protectedareas/developmentadjoiningdecc.htm>

5.3 Objectives of the proposal

Clearly state the objectives of the proposal. See section 3.2 of *Proponents Guidelines for the Review of Environmental Factors* for further guidance.

Provide details of objectives of the proposal	<p>The primary objectives of the proposal are to:</p> <ul style="list-style-type: none"> - address the rapidly increasing need for appropriate and sustainable recreational cycling opportunities within the national park; - construct a best current practice, well-planned, well-managed, purpose-built mountain bike track in consideration of rider expectations within the Bantry Bay area of Garigal National Park; - construct and manage a mountain bike trail in an environmentally, ecologically and financially sustainable manner; - close, rehabilitate and discourage the use of unauthorised mountain bike tracks through sensitive bushland; - develop ongoing partnerships with mountain bikers to jointly and sustainably manage and maintain the track; and - work collaboratively with other stakeholders to enable future expansion and cross tenure links between accessible tracks throughout the region.
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6. Reasons for the activity and consideration of alternatives

Section 3.2.1 of *Proponents Guidelines for the Review of Environmental Factors* provides further guidance

Reasons for activity:

In order to address the rapidly increasing demand for cycling opportunities in national parks, the design, environmental assessment, construction and operation of a environmentally and financially sustainable mountain bike loop track in a northern Sydney park or reserve has been identified as a priority project in the *NPWS Sustainable Mountain Bike Strategy (SMBS)*.

Extensive analyses of national parks and reserves in Northern Sydney have been conducted using geographic information systems (GIS), a variety of spatial data, and community consultation.

Features studied included landform, slope and proximity to recorded natural and cultural heritage sites, road access, existing trails, potential for future linkage with other bike trails. Social factors were also analysed including user demand, availability of public transport, proximity to housing, parking and public facilities.

The Bantry Bay site was selected as the preferred choice for the construction of a purpose-built single track loop trail (7-10 km) as it satisfied all of the above criteria, with a higher level of user demand than the other sites.

Bantry Bay also has an existing issue with unauthorised mountain bike trails causing damage to Aboriginal engravings and vulnerable species. The proposed activity at Bantry Bay will incorporate a rehabilitation plan to close these tracks and divert mountain bike activity away from these vulnerable sites.

The NPWS has an obligation under the NPW Act to provide for sustainable and environmentally compatible visitor use of the park. The design of the new cycling track will ensure that it meets with best practice sustainable track standards for design construction and maintenance in order to minimise impacts on the environment, neighbours and other park users and yet optimise the experience for the user.

Alternatives:

Do nothing: Cycling, including mountain biking would continue to be restricted to public roads and a select number of fire/management trails within the park. In order to manage the impacts, current efforts to identify, discourage use, and close unauthorised tracks/trails would need to be significantly increased.

This option is unacceptable. By not providing a managed sustainable mountain bike track, an unmet and escalating need for adequate tracks will persist, and the issue of unauthorised and inappropriate tracks and trails being constructed and used in sensitive bushland areas is very likely to worsen. Enforcement is difficult, time-consuming and is greatly limited by staff availability, and the sheer size of the areas of land managed by NPWS. This approach also fails to address the safety and conflict issues for park visitors arising from the current levels of pressure on existing trails due to shared use and increased mountain bike riding activity.

Allow mountain bikes greater access to existing walking trails: Access could be extended to provide a greater area of tracks for cycling by opening up tracks currently classified as walking tracks within the park.

This option is unfeasible as it would significantly increase the potential for user (walkers and bike riders) conflict and safety issues. The majority of the walking tracks within the park are also not suitable for bike riding due to a variety of reasons including: track design width (needs to be > 2.1m wide for shared use), vulnerability to erosion, proximity to heritage, grade, and topography.

Use of alternative sites for track construction: Relocate the proposal to an area that does not exhibit as many potential environmental constraints.

Extensive research and planning has already been conducted into possible sites for the construction of a purpose-built mountain bike track. A large number of factors were assessed in order to identify the best possible location, including: addressing user demand and needs, accessibility, environmental impact, additions to existing tracks, safety, and conflict with other park visitors. The outcome of this research indicated that the site at Bantry Bay was the most suitable for a new mountain bike track.

Justification for preferred option:

The preferred option:

- is the outcome of extensive investigation and research into the role and impact of mountain biking in national parks;
- will address the identified need for increased accessible and safe mountain bike riding opportunities in the area;
- will help address the environmental impacts of current unauthorised track construction and use on bushland and cultural heritage sites;
- will fulfil the objectives under the statewide promotion of cycling opportunities through collaboration and partnerships between NPWS and other agencies; and
- will reduce the potential for conflict and address safety issues currently associated with mountain bike riders and other park users.

The construction of a sustainable purpose-built, effectively managed mountain bike track, which incorporates design and construction measures to mitigate environmental impacts on the surrounding environment, also fulfils the NPWSs obligations under the NPW Act (1974) 30E (e) *in providing for sustainable visitor use and enjoyment that is compatible with the conservation of the national park's natural and cultural values.*

Special note: for visitor use, tourism and other proposals requiring a lease or licence under s.151 NPW Act

Proposals seeking a lease or licence under s.151 NPW Act must address the site suitability requirements of the sustainability assessment criteria adopted by the Director General of NPWS (**see below**). For further information on completing the assessment of site suitability, refer to the criteria and supporting guidelines at: <http://www.environment.nsw.gov.au/protectedareas/developmntadjoiningdecc.htm>

Site suitability (lease or licence proposals under s.151 NPW Act)

Site character	N/A – the proposal is not subject to the provisions of s.151
Landscape context	
Application of site suitability matrix	
Strategic site assessment (if required by the matrix) <i>Attach any separate assessment report</i>	

7. Description of the existing environment

Include a comprehensive description of the existing environment and surrounds that will be, or are likely to be, affected by the proposed activity. Sensitive areas of the environment should be identified in this section.

Section 3.4 of *Proponents Guidelines for the Review of Environmental Factors* provides further guidance

Description of the existing environment:

Garigal National Park is a large area (2,150 hectares) of bushland in the Sydney Metropolitan Area (see map **Appendix A**). It embraces the upper reaches of Middle Harbour, including Bantry Bay, and part of the catchment of Narrabeen Lakes.

There are two proposed sections of track within the Bantry Bay area, which in combination will form a figure-of-eight encompassing approximately 6.45 km of mountain bike track.

The site is surrounded by residential areas to the south, north and west, with some within less than 1km of the site. They include parts of Killarney Heights, Forestville and North Balgowlah.

The main access points to the proposed 'figure-of-eight' loop will be at the Forestville Park playing fields at the end of Currie Road, and also the entry to the Bluff track at the end of Grattan Crescent.

Warringah Council manages this park along with the parking and visitor facilities available in these areas. Under the currently exhibited Warringah Council Draft Forestville Park Plan of Management, there is potential for linkages between the NPWS and Warringah Council tenures, which would extend the length of the cycling track route and further divert cycling away from important heritage and conservation areas.

A very popular established and Council managed mountain bike trail network lies to the east of the proposed site, across the Wakehurst Parkway at Manly Dam.

Currently riders approaching this area from the west are frequently using unmapped and unauthorised tracks through the Bantry Bay area of Garigal National Park and Warringah Council. Use of these unauthorised tracks has caused damage to the bushland and to Aboriginal rock engravings. This project incorporates closure of these unauthorised tracks in order to enable rehabilitation of the bushland and to protect the engravings.

Sections of existing track within the proposed project area include the Engravings Trail and the Cook St and Currie Rd fire/management trails which provide access for emergency and management vehicles, bushwalkers and cyclists.

Meteorological data:

Sydney has a temperate climate with warm summers and mild winters. Temperatures are moderated by proximity to the ocean. Average temperatures in the winter months of June through to August are around 9 to 17 degrees C. Average summer temperatures are 17 to 24 degrees C.

Rainfall is fairly evenly spread through the year, but is slightly higher during the first half of the year, when easterly winds dominate. The average annual rainfall, with moderate to low variability, is 1,217 mm, falling on an average 138 days a year.

Current climate change projections suggest that there will be a tendency for average warmer and drier conditions with a greater proportion of rain falling during summer (Hennessy et al 2004; DECC 2008b). In Sydney, extreme heat days (over 35 degrees C) are also likely to increase from 3.5 days per year to up to 12 days by 2070 (Dept. of Climate Change & Energy Efficiency, 2012).

Topography:

Bantry Bay represents the southern limit of Garigal National Park.

The Bantry Bay section of the park incorporates a deep valley encompassing two permanent creeks, with steep slopes and high ridges surrounding the waters of Bantry Bay.

The area is characterised by broad ridges and steeply sloping rocky creek lines. Rock cover is extensive and cliffs in the sandstone are common.

Surrounding land uses:

Much of the park is bounded by residential development along the ridge tops and it is easily accessible at numerous points by road and water.

Several other conservation reserves and areas of bushland are adjacent or close by Garigal National Park, including Ku-ring-gai Chase National Park, Sydney Harbour National Park, Manly Warringah War Memorial Park (commonly known as Manly Dam Reserve) and a number of areas of Crown land and other reserves in Warringah, Ku-ring-gai and Willoughby local government areas.

Geology/Geomorphology:

The park lies predominantly on Hawkesbury sandstone, a massive Triassic sandstone which covers large areas of the Sydney Basin.

The rock type is composed mainly of coarse-grained quartz sandstone with minor shale lenses and several Jurassic igneous intrusions cross the area (NSW NPWS 1998).

In the lower reaches of Deep Creek and Middle Creek erosion and the deposition of marine sediments over time have resulted in extensive sections of siliceous sands.

Soil types and properties:

The type of parent rock found in an area has a major influence over the soil types that are found in the locality.

The predominant soil type in this section of Garigal National Park is classified as the Hawkesbury Soil Landscape. This soil landscape type occurs on Hawkesbury Sandstone where slopes are mostly > 25%, and can comprise a high diversity of soil types. It consists of narrow crests and ridges, deep, narrow valleys, and steep slopes with a characteristic sequence of sandstone benches and rocky outcrops.

The shallow <50cm, discontinuous soils associated with the extensive rock outcrops are lithosols and siliceous sands. The deeper soils are earthy sands, yellow earths and some yellow podzolic soils. Localised yellow and red podzolic soils occur on shale lenses, and siliceous sands and secondary yellow earths occur along drainage lines.

The Hawkesbury Soil Landscape is vulnerable to extreme soil erosion, especially after clearing and bushfires and mass movement (including rock fall).

Numerous layers of soil materials on the upper slopes of the Hawkesbury Soil Landscape have been identified; these layer descriptions are outlined below (P. Mitchell, pers. comm.):

- Layers 0 and 1. Loose, dry leaf litter consisting of entire leaves, twigs, and bark; 3 to 5 cm thick. Typically underlain by a 5mm layer of decaying leaf litter (layer 1) that is matted by fungi and penetrated by surface feeding plant roots. These two layers are the first level of soil protection from the action of raindrop splash erosion. They are also ephemeral and can move around under normal slope processes. In general it is a good idea not to disturb them but in track construction this is almost unavoidable.
- Layers 2 and 3. Charcoal fragments and incoherent, subangular to subrounded clean quartz sand. This layer is found almost everywhere and is created by rainsplash and/or rainwash as a shallow surface lag. It is usually less than 5mm thick and as an indicator that soil is being moved on the ground its presence/absence and thickness may be useful as a monitoring parameter.
- Layers 4, 5 and 6. Weakly coherent, organic crust of algae sometimes with lichens and mosses. Another fragile protective surface on the natural soil that is particularly well developed after a fire and that may also be useful as a monitoring parameter.
- Layer 7. A very important layer of active surface feeding plant roots, especially proteoid roots. This material strongly binds the more incoherent topsoil layers and is typically found within and beneath Layer 1 and may be up to 180mm thick. It is commonly water repellent and this causes surface flow even in very porous sands. Once breached by track construction or surface wear then the deeper soil materials are exposed and these are readily subject to rill and gully erosion.
- Layer 8. Surface mantle of loamy sands, clayey sands, or sandy loams with porous grain support fabric. Typically about 100-200mm thick this forms the A₂-horizon of most soil profiles. The layer is not water repellent and in fact readily passes surface water downslope as through-flow and is responsible for most areas of surface seepage and saturation. It has a very low bearing capacity and is easily eroded when disturbed.
- Layer 9. Stone layer; stones may be sandstone or ironstone (<100 mm long) and can form a coherent layer between the A₂ and B-horizons. Layers are not continuous but can be more extensive as low angle fan shaped features downslope of joint crevices in sandstone outcrops or as channel like deposits across the slope. The formation of these layers may be either as a former surface lag that has been buried by a topsoil mantle or they may form within the profile when finer grained material is moved upward to the surface by burrowing organisms. Of all the surface materials on the typical hillslope this is the only layer that is reasonably resistant to erosion once exposed. Unfortunately it is not a good surface to ride or walk on mainly because the stones are unsorted (in size) and often not well embedded in the subsoil surface.

- Layers 10 to 12. All the remaining materials are subsoil layers formed by weathering of sandstone (and some thin shale beds) *in situ*. They vary from loamy sands to pedal clay and usually have fabrics that are very similar to the parent rock. Their bearing capacity is higher than any of the other layers except layer 9 but when wet the clayey variants can be very slippery. They are generally relatively resistant to erosion but when exposed to traffic and water flow they do degrade and typically form small gullies.

Detailed studies of the soils present along the proposed track route will be undertaken at the design and documentation phase of the project, and these will influence final track construction methodologies and materials used.

Waterways including wild and scenic rivers:

Bantry Bay is located within Middle Harbour.

The mangrove and seagrass communities in Bantry Bay, while not within the Garigal National Park boundary, are significant within the Harbour because of their health and size. They are protected by retention of the adjacent bushland in the park

Catchment values:

The creeks within Bantry Bay flow directly into Middle Harbour.

The water quality at this location is prone to some sedimentation loads due to its highly developed urban surroundings.

The seagrass beds in the bay itself are considered significant and can be impacted by siltation flows.

These areas are best protected by the retention of adjacent bushland which can provide a natural buffer to minimise the impact from siltation.

Coastal risk areas:

N/A

Wetland communities including SEPP 14 wetlands:

There are extensive areas of Coastal Upland Swamp through the area.

This community was declared an Endangered Ecological Community in March 2012.

This vegetation is dominated by sclerophyll shrubs and/or sedges, with dynamic mosaics of structural forms that may include tall scrub, open heath and/or sedgeland.

Flora (including flora of conservation significance):

The vegetation communities of the area have been mapped most recently by the Department of Climate Change & Water (currently NPWS) in 'The Native Vegetation of the Sydney Metropolitan Catchment management Authority Area' (OEH, 2009).

The Bantry Bay study area contains 9 vegetation communities:

- Coastal Enriched Sandstone Sheltered Forest
- Coastal Sandstone Foreshores Forest
- Coastal Sandstone Riparian Forest
- Coastal Sandstone Sheltered Peppermint – Apple Forest
- Hornsby Sandstone Heath-Woodland
- Sydney Ironstone Bloodwood-Silvertop Ash Forest (Duffys Forest EEC)
- Coastal Upland Damp Heath Swamp
- Coastal Sandstone Plateau Rock Plate Heath
- Weeds and exotics

The core of the area is predominantly weed free and in excellent condition, however the surrounding area has an extensive urban interface which inevitably leads to weed species propagation along reserve edges, tracks, powerline easements and creeklines.

Threatened plant species recorded within the project area include: *Tetratheca glandulosa* (V), and *Pimelea curviflora* var. *curviflora* (V).

Flora surveys conducted for the purpose of this project indicated that the proposed route would pass through seven native vegetation communities, one weed dominated community and a small part of the Coastal Upland Swamp EEC. The proposed route of the track was diverted away from most areas that contained EECs or threatened species.

An individual *Melaleuca deanei* plant was found during the on-site survey and the track was diverted away from this area. (complete survey information including species lists included in **Appendix B**).

The results of 7-part tests indicated that the proposed track would not have a significant effect on threatened flora (**Appendix E & F**).

Fauna (including fauna of conservation significance):

Threatened fauna species (status shown in brackets; V–vulnerable; E–Endangered) previously recorded in the study area include:

- Powerful Owl (*Ninox strenua*) (V)
- Grey-headed Flying Fox (*Pteropus poliocephalus*) (V)
- Eastern Bentwing Bat (*Miniopterus schreibersii oceanensis*) (V,)
- Spotted-tailed Quoll (*Dasyurus maculatus*) (V,E)
- Superb Fruit Dove (*Ptilinopus superbus*) (V)
- Koala (*Phascolarctos cinereus*) (V)
- Red-crowned Toadlet (*Pseudophryne australis*) (V)
- Rosenberg's Goanna (*Varanus rosenbergi*) (V)
- Glossy Black Cockatoo (*Calyptorhynchus lathami*) (V)
- Scarlet Robin (*Petroica boodang* sp.) (V)

A fauna survey conducted along the proposed track route detected 36 bird species, 18 mammal species (incl 5 feral species), and 13 reptile and amphibian species. (full details included in **Appendix B**)

Two threatened species were recorded during the survey: the Grey-headed Flying Fox and the Red-crowned Toadlet.

The results of 7-part tests indicated that the proposed track would not have a significant effect on threatened fauna (**Appendix E**).

Ecological communities (endangered ecological communities and regionally significant communities):

There are two types of EECs within the project area: Sydney Ironstone Bloodwood-Silvertop Ash Forest (classified as Duffys Forest EEC) and also Coastal Upland Damp Heath Swamp.

Aerial photographs (current and 1940s), digital mapping and on-ground survey techniques were utilised in order to obtain an accurate representation of the distribution of the EEC's within the study area. Both are represented in other areas throughout the Sydney Basin.

Coastal Upland Damp Heath Swamp is found in: Brisbane Water, Heathcote, Ku-ring-gai Chase, Lane Cove, Popran, Sydney Harbour, Royal and Yengo National Parks, Dharawal and Muogamarra Nature Reserve and Dharawal and Garawarra State Conservation Areas. Approximately 5,360 ha of Coastal Upland Swamp have been mapped in the Sydney Basin Bioregion at present.

The total area of Duffy's Forest which has been mapped is approximately 239.9 ha of which 49% is in NPWS reserves, 15% is in reserves managed by local councils and 36% is unreserved (Smith & Smith, 2000). Representation of the Duffy's Forest vegetation community can be found in Belrose, Frenchs Forest, Ingleside, Seaforth, Bilgola Plateau, Ku-ring-gai Chase National Park, St Ives, South Turramurra and Lane Cove National Park. The Duffy's Forest EEC is not anticipated to be impacted by the proposal.

On ground surveys indicate that significant areas of Coastal Upland Damp Heath Swamp exist along the ridgelines throughout the project area. Despite all best efforts to re-route the track and avoid impacting upon this EEC, due to the greater than anticipated level of distribution of this EEC, the proposed track will pass through two small sections.

The total area involving track incursions equates to 0.63% of the total extent of this EEC within the site. 7-part tests have been conducted on the Coastal Upland Damp Heath Swamp (**Appendix F**) in order to assess the environmental impacts of this level of incursion. With remedial measures the impact has been assessed as minimal.

Critical habitat declared under the TSC Act:

No critical habitat has been declared in the area.

SEPP 26 littoral rainforest (or equivalent):

N/A – Not present in the area.

SEPP 44 koala habitat:

No feed trees/core habitat as listed in Schedule 2 in SEPP 44 were found along the proposed track route and no current records for Koalas exist in the area.

Wilderness (either nominated or declared):

Not declared or nominated as a wilderness area

Aboriginal cultural heritage:

There are a significant number of Aboriginal cultural heritage recordings in Garigal National park, including engravings and grinding grooves in the project area's vicinity.

An archaeological assessment was conducted in order to verify the locations of heritage sites (see **Appendices C & D**), the results of which confirmed that there is a high density in the area.

Given the density of known engravings in the area it should be assumed that landscape significance of the area may be high, and for this reason it is important to minimise the impact from mountain bike activity on these rock platforms.

The proposed project endeavours to do this by diverting bike riders away from these areas, in conjunction with closing illegal tracks that cut through important areas of Aboriginal significance.

Signage and social media will also be used to educate visitors about the importance of these sites and how they should be protected.

National/state/local natural or cultural heritage values:

The earliest recorded land owner in the Bantry Bay area was John Spencer on the western slopes above the bay in 1842. In 1853 Simeon and James Pearce purchased 200 acres in the forest north of Bantry Bay.

Simeon arranged construction of a road to the bay and a wharf. James French acquired land north of Bantry Bay in 1856 and established sawmills. Logs were hauled along the road and down to the wharf at Bantry Bay by bullocks. The bullock track at Bantry Bay is still in use by bushwalkers.

Middle Harbour was a popular picnic area from the 1800s. The New Balmain Ferry company began cruises to Bantry Bay and Flat Rock in 1906 and constructed terraced picnic grounds, a dance hall, cottages and jetty on the eastern side of the bay. Most of these were removed when the explosives complex was constructed.

A site for an explosives magazine complex was surveyed in Bantry Bay in 1907 following concern about the danger presented by the various explosive storages in Sydney and an inquiry into storage requirements. Construction was completed in 1915.

The complex operated safely until it was closed in 1974 because of changes in technology and handling of explosives, and the increasing cost of the operation.

The site comprises thirteen magazines and some other buildings, nine of which were used to store dangerous explosives. These magazines were recessed, designed and constructed to satisfy very specific safety and design criteria to minimise the likelihood of explosion and amount of damage which would be caused in that event.

They have thick walls and floors which maintain even internal temperatures, light roofs and other appropriate materials. These buildings are a good example of the public utility architecture of Federation Sydney, much of which has been lost.

The remains of a slipway and an explosives testing station are located on the eastern side of Bantry Bay. (NSW NPWS 1998)

The buildings on the western side of Bantry Bay are architecturally significant both for their rare and specialised design and as examples of the public utility architecture of Federation Sydney, most of which is now either gone or threatened.

The buildings have a high degree of architectural unity and rarity. They have been classified by the National Trust (1975) and listed in the Australian Heritage Commission's Register of the National Estate (1977).

A detailed description of their significance is set out in the conservation plan for Bantry Bay.

Bantry Bay as a whole, through its role as a reserve for the storage of explosives and earlier as a staging point for the supply of timber, played an important part in the establishment of Sydney as Australia's premier port and in Sydney's growth in the early twentieth century.

Bantry Bay is the last deepwater inlet to retain a character similar to when Captain Arthur Phillip sailed his fleet through the Heads of Port Jackson (Sydney Harbour) in 1788 (Graham Brooks & associates, et al 2002)

Vegetation of cultural landscape value:

(e.g. gardens and settings, introduced exotic species, or evidence of broader remnant land uses)

The site is significant for its demonstration of the principal characteristics of Sydney pleasure grounds, with its waterside location, remnant garden landscaping, isolated aspect and bush views (Brooks and Assoc et al, 2002).

Other cultural heritage values:

Bantry Bay played a significant role in the Aboriginal and European history of early Sydney. The largest of the known rock engraved sandstone ledges is also believed to have been the first seen and described by British Officers (Hinkson, M. 2001. *Aboriginal Sydney. Aboriginal Studies Press*). *Footprints on Rock, Aboriginal Rock Art of Sydney* (1997) also reports that the site has significance in that it was the first to be officially described by Governor Phillip.

Hinkson and others have also estimated some of the engravings to be over 4000 years old.

The area is also significant in the similarities some of the engravings have to a site in Allambie, suggesting ancient engravers worked a number of sites as they moved around.

The engravings at Bantry Bay are an important and rich surviving part of Aboriginal cultural heritage and the heritage of the nation.

For Aboriginal people the engravings provide a link with the past, and a link with ancestors.

The engravings may also be a component of the landscape significance to Aboriginal people and the spiritual significance the area holds. To define what is significant to Aboriginal people you must include Aboriginal language, areas, places, and sites, Aboriginal cultural landscapes, Aboriginal story of place, people, and landscape, cultural values and knowledge associated with the natural environment.

Recreation values:

A small picnic area with walk-in or boat access is provided on the eastern bank of Bantry Bay. Tracks and walking trails cover many parts of the park allowing a considerable variety of walks, many of which provide scenic views of the waterway.

Recreational activities that are popular in the area include bushwalking, cycling, picnicking and boating, with Davidson Park particularly popular for these activities on the weekend and during holidays.

Scenic and visually significant areas:

The park provides a pleasant visual break between the urban landscapes to the east and west. The steep forested slopes provide a magnificent backdrop to the waterways of upper Middle Harbour and area a significant asset to Sydney.

Parts of the Middle Harbour Creek and the steep vegetated slopes of Bantry Bay give an impression of natural bushland which is rare within a city as large as Sydney.

The visual quality of Bantry Bay is exceptionally high and derives from the combination of narrow waterways and steep foreshores with dense bush extending right to the waterline.

This is coupled with an atmosphere of relative tranquillity and silence, in an area only 8 kilometres from the centre of Sydney.

The explosives magazines are attractive and architecturally unified, contributing to the scenic quality of the bay. Maintenance of the forest cover on the ridges around Bantry Bay is essential to protection of its landscape character.

Education and scientific values:

There is great potential for both scientific and education activities within the area. The surrounding bushland offers unique opportunities for the study of a variety of flora and fauna in an environment which is in relatively close proximity to a large city.

The abundance of Aboriginal heritage sites within the area also indicates that there is also potential value for surveys and research to be conducted on a variety of aspects of Aboriginal occupation and use of the environment in the region.

Interests of external stakeholders (eg adjoining landowners, leaseholders):

The park is surrounded by urbanisation and is accessed by many residents for a variety of recreational pursuits. The park is valued by local residents as a quiet bushland backdrop, providing visual and auditory respite from urban life.

Warringah Council is an adjoining landowner and has been actively involved in all stages of consultation relating to the proposed mountain bike track. Council is presently exhibiting a draft Plan of Management for the Forestville Park area, which incorporates proposals for cycling tracks. Forming partnerships and communication are keys to the success of the project and it is envisaged that through this continued coordinated approach, the current demands for the provision of challenging and interesting mountain bike trails in the region can be attained. Collaboration enables a cross-tenure approach which is being applied in the management of unauthorised tracks, protection of Aboriginal heritage sites, and addressing community impacts associated with the creation of new tracks in terms of the provision of parking, public facilities and water.

The Rural Fire Service is also a stakeholder in this area and has access to the Cook, Currie and Engravings Fire Trails. The RFS has been consulted about the proposed activity.

Scouts Australia owns a Scout Hall in Utyana Place, Frenchs Forest, with surrounding land that abuts an unauthorised track which connects to the Bluff Trail. The District Commissioner responsible for this Hall, and also the District Commissioner for the Northern Beaches Area have been notified of the intent to close and rehabilitate this, and other unauthorised tracks in the area (pers. comm.).

Matters of National Environmental Significance under the EPBC Act:

The EPBC Act identifies seven matters of national environmental significance:

- World heritage properties;
- National Heritage places;
- Wetlands of international importance (Ramsar wetlands);
- Threatened species and ecological communities;
- Migratory species;
- Commonwealth marine areas; and
- Nuclear actions (including uranium mining).

The relevant matters for this area are:

- threatened species and ecological communities

8. Impact assessment

This part of the REF provides an analysis of all possible impacts from the proposed activity and a description of any proposed mitigation measures. Section 3.7 of *Proponents Guidelines for the Review of Environmental Factors* provides further guidance on impact assessment and mitigation measures.

8.1 Physical and chemical impacts during construction and operation				
Section 3.8 of <i>Proponents Guidelines for the Review of Environmental Factors</i> provides further guidance				
	Applicable?*	Impact level (negligible, low, medium or high; negative or positive; or N/A)	Reasons (describe the type, nature and extent of impact, taking into account the receiving environment & proposed safeguards which will limit the impact)	Safeguards/Mitigation Measures
1. Is the proposal likely to impact on soil quality or land stability?	<input checked="" type="checkbox"/>	Low Negative Low Positive	Increased use in the area has the potential to impact on soil quality due to compaction and erosion. Currently there are a number of unauthorised tracks in the project area which have caused detrimental impacts on soil quality and stability.	The proposed track design and construction plan includes mitigation features including armouring of the track surface, which will minimise the potential for increased erosion. The proposed activity incorporates a management plan to close and rehabilitate unauthorised tracks in the Bantry Bay area. Closure and rehabilitation of these tracks, combined with the construction of a sustainable well-managed, dedicated single track mountain bike route, aims to satisfy a currently unmet demand and have a positive effect on soil quality and land stability.
2. Is the activity likely to affect a waterbody, watercourse, wetland or natural drainage system?	<input checked="" type="checkbox"/>	Low Positive	The design of the proposed track will prevent or minimise any potential sediment runoff and impacts on any watercourses. The current unauthorised tracks are poorly planned and constructed and contribute to sediment runoff impacting watercourses.	The proposed track design and construction plan includes mitigation features to prevent or minimise any potential sediment runoff and impacts on surrounding watercourses. The closure of unauthorised tracks will reduce the current level of sediment runoff impact from these tracks.
3. Is the activity likely to change flood or tidal regimes, or be affected by flooding?	<input type="checkbox"/>	N/A	N/A	

8.1 Physical and chemical impacts during construction and operation

Section 3.8 of *Proponents Guidelines for the Review of Environmental Factors* provides further guidance

	Applicable?*	Impact level (negligible, low, medium or high; negative or positive; or N/A)	Reasons (describe the type, nature and extent of impact, taking into account the receiving environment & proposed safeguards which will limit the impact)	Safeguards/Mitigation Measures
4. Is the activity likely to affect coastal processes and coastal hazards, including those projected by climate change (e.g. sea level rise)?	<input type="checkbox"/>	N/A	N/A	
5. Does the activity involve the use, storage, or transport of hazardous substances or the use or generation of chemicals, which may build up residues in the environment?	<input type="checkbox"/>	N/A	N/A	
6. Does the activity involve the generation or disposal of gaseous, liquid or solid wastes or emissions?	<input type="checkbox"/>	N/A	N/A	
7. Will the activity involve the emission of dust, odours, noise, vibration or radiation in the proximity of residential or urban areas or other sensitive locations?	<input checked="" type="checkbox"/>	Low Negative	<p>During construction there is potential for increased noise from the use of machinery.</p> <p>Increased visitation to the area also has the potential to increase noise.</p>	<p>The majority of track construction works will be conducted using hand tools, and the use of noisy machinery will be minimal and away from residential areas.</p> <p>Temporary short term noise impacts from the use of a helicopter to transport equipment into the area may be heard by residences in the area.</p> <p>Much of the proposed track utilises existing management trails and their entry points.</p> <p>Due to the proposed design and management regime it is not anticipated that the level of noise from increased visitation by mountain bikers will differ greatly from the levels experienced by current use of</p>

8.1 Physical and chemical impacts during construction and operation

Section 3.8 of *Proponents Guidelines for the Review of Environmental Factors* provides further guidance

	Applicable?*	Impact level (negligible, low, medium or high; negative or positive; or N/A)	Reasons (describe the type, nature and extent of impact, taking into account the receiving environment & proposed safeguards which will limit the impact)	Safeguards/Mitigation Measures
				<p>the trail.</p> <p>Entry points are located in public areas which are subject to noise from normal levels of traffic and visitation. The design of the new sections of track which are narrow and one-directional, do not encourage or facilitate the congregation of riders.</p> <p>Trail signage will also reflect the need for riders to be sensitive to their surroundings and keep noise to a minimum.</p>

* If yes, all columns need to be completed. If no, write 'N/A' in the second and third columns

8.2 Biological impacts during construction and operation

Section 3.9 of *Proponents Guidelines for the Review of Environmental Factors* provides further guidance

	Applicable?*	Likely impact (negligible, low, medium or high negative or positive; or N/A)	Reasons (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	Safeguards/Mitigation Measures
1. Is any vegetation to be cleared or modified? (includes vegetation of conservation significance or cultural landscape value)	<input checked="" type="checkbox"/>	Low Negative	Small amounts of vegetation modification will be required in order to construct the areas of new track.	<p>Careful track design and alignment including redirecting the route of the trail away from threatened species and EECs helps to minimise impacts and reduce the need for vegetation clearing.</p> <p>The track design seeks to incorporate the natural landscape features, including trees and rock faces, which further minimises the level of clearance</p>

8.2 Biological impacts during construction and operation

Section 3.9 of *Proponents Guidelines for the Review of Environmental Factors* provides further guidance

	Applicable?*	Likely impact (negligible, low, medium or high negative or positive; or N/A)	Reasons (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	Safeguards/Mitigation Measures
				<p>required.</p> <p>Vegetation clearance will be restricted to the removal of small sections of understorey and shrubs in order to facilitate the construction of a track measuring a finished width of 600-700mm.</p> <p>Mature trees and shrubs >5m in height will not be removed, and the interlocking canopy layer will be maintained.</p> <p>Impacts of vegetation clearance may be partially off-set with the closure and rehabilitation of unauthorised tracks (approximately 0.75km), which will have a positive effect on vegetation in these areas.</p>
<p>2. Is the activity likely to have a significant effect on threatened flora species, populations, or their habitats, or critical habitat? [refer to threatened species assessment of significance (7-part test)]</p>	<input checked="" type="checkbox"/>	<p>Low Negative</p>	<p>Threatened species of flora have been identified in the area.</p> <p>During the construction phase and also once the track is operational there is potential for impact from an increased level of use in the area.</p> <p>No critical habitat has been identified in the area.</p>	<p>Where possible the track route has been diverted away from identified threatened species.</p> <p>Where diversions are not possible due to the topographic constraints, impacts on threatened flora (including EECs) will be mitigated by the incorporation of design and construction techniques.</p> <p>A small section of EEC (0.63%) will be modified to allow the installation of a raised fibreglass floating track. No significant areas of habitat will be removed or permanently modified.</p> <p>The results of the 7-part tests indicate that there will</p>

8.2 Biological impacts during construction and operation

Section 3.9 of *Proponents Guidelines for the Review of Environmental Factors* provides further guidance

	Applicable?*	Likely impact (negligible, low, medium or high negative or positive; or N/A)	Reasons (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	Safeguards/Mitigation Measures
				<p>not be a significant effect on threatened flora species, populations, or their habitats (section 10).</p> <p>A monitoring program will be incorporated into the management of the track in order to assess impacts on flora species once the track is operational.</p>
<p>3. Does the activity have the potential to endanger, displace or disturb fauna (including fauna of conservation significance) or create a barrier to their movement?</p>	<input checked="" type="checkbox"/>	<p>Low Negative</p>	<p>Threatened fauna species have been identified in the area, increased use of the area both during construction and operation has the potential to disturb fauna.</p> <p>The clearing of vegetation has the potential to displace fauna and create a barrier to their movement.</p>	<p>Construction work will be restricted to the use of hand tools and equipment, minimal clearing of vegetation will be required and access limited to walk-in through sections of new trail.</p> <p>7-part tests were conducted on threatened fauna species the results of which indicate that the proposed activity is unlikely to have a significant impact on these species (section 10).</p> <p>The track width is narrow (600-700mm) and is designed to incorporate existing features of the landscape, and is not anticipated to create a barrier or prevent fauna movement.</p> <p>The potential for noise and increased activity to impact on native species will be minimised by restricting the hours of operation from sunrise to sunset.</p> <p>Signage, including a Code of Conduct and education through social media will also be used to inform riders about the sensitive nature of their surroundings.</p>

8.2 Biological impacts during construction and operation

Section 3.9 of *Proponents Guidelines for the Review of Environmental Factors* provides further guidance

	Applicable?*	Likely impact (negligible, low, medium or high negative or positive; or N/A)	Reasons (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	Safeguards/Mitigation Measures
				A regular monitoring program including a bi-yearly fauna surveys should be incorporated as a component of the management plan in order to measure impacts on native fauna.
4. Is the activity likely to have a significant effect on threatened fauna species, populations, or their habitats, or critical habitat? (refer to threatened species assessment of significance (7-part test))	<input checked="" type="checkbox"/>	Low Negative	<p>Some clearing of vegetation is required in order to construct the new track, therefore there is potential for impact on fauna species and their habitat.</p> <p>There is potential for significant impact from the introduction of weeds and pathogens into the area.</p> <p>No critical habitat has been identified in the area.</p>	<p>The presence and location of threatened species in the area have been identified through a fauna survey.</p> <p>Where possible, the track route has been diverted in order to avoid impacting on threatened species.</p> <p>Where this was not possible construction mitigation measures have been incorporated into the design of the track in order to minimise impact.</p> <p>7-part tests have been conducted and the results indicate that the activity will not have a significant effect on threatened fauna species or their habitats.</p> <p>Monitoring will be conducted to assess the impacts from weeds and pathogens, once the track is operational.</p>
5. Is the activity likely to impact on an ecological community of conservation significance?	<input checked="" type="checkbox"/>	Low Negative	<p>Patches of EECs including Duffys Forest Ecological Community and Coastal Upland Damp Heath Swamp have been identified in the area.</p> <p>The proposed track will pass through two sections of Coastal Upland Damp Heath Swamp, therefore there is potential for impact.</p>	<p>Part of the comprehensive flora survey included detailed analyses and field inspections, providing accurate information relating to the exact boundaries of the identified EECs.</p> <p>Wherever possible the track was re-routed away from these sites. Where this was not feasible due to restrictions imposed by the terrain, mitigation</p>

8.2 Biological impacts during construction and operation

Section 3.9 of *Proponents Guidelines for the Review of Environmental Factors* provides further guidance

	Applicable?*	Likely impact (negligible, low, medium or high negative or positive; or N/A)	Reasons (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	Safeguards/Mitigation Measures
		Low Positive	The closure of current unauthorised tracks that run through EEC will stop the present level of impact on the EEC.	<p>measures to protect these areas will be incorporated into the design and construction of the track.</p> <p>Measures may include armouring the track surface with natural rock, and the use of a floating fibreglass platform for the section that passes through the EEC.</p> <p>Impacts were assessed using 7-part tests (section 10) and the results indicated that the impact would not be significant.</p> <p>Unauthorised tracks that pass through sections of EEC will be closed and rehabilitated, which will reduce the impact on the EEC in these areas.</p>
6. Is the activity likely to have a significant effect on an endangered ecological community or its habitat? (refer to threatened species assessment of significance [7-part test])	<input checked="" type="checkbox"/>	Low Negative	<p>Patches of EEC including Duffys Forest and Coastal Upland Damp Heath Swamp have been identified in the area. The distribution of Upland Swamp was much greater than initially mapped, extensive surveying indicated that it was impossible to conduct the proposed activity without passing through this EEC.</p> <p>New track sections totalling 0.34 km will pass through this EEC, therefore there is potential for the activity to impact on these communities</p>	<p>Components of the comprehensive flora survey included detailed analyses and field inspections which provided accurate information relating to the exact boundaries of the identified EECs in the area.</p> <p>All options for re-directing the track route away from these areas have been explored in order to minimise the impacts. 0.34 km of track will pass through EEC and this is unavoidable. The greater length of incursion (250m) passes through a section of the EEC which has been previously disturbed, evidenced by weed plumes and rubbish.</p> <p>Aerial images from the 1940's also indicate that this route was previously used as a vehicle access trail.</p>

8.2 Biological impacts during construction and operation

Section 3.9 of *Proponents Guidelines for the Review of Environmental Factors* provides further guidance

	Applicable?*	Likely impact (negligible, low, medium or high negative or positive; or N/A)	Reasons (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	Safeguards/Mitigation Measures
				<p>During construction the weeds and rubbish in this area will be removed.</p> <p>In order to minimise the impact of the bike track passing through the EEC, surface protection measures including the incorporation of raised platforms constructed from free-standing weldlock mesh, will be utilised in the construction plan. Impacts may be off-set with the 0.75km closure and revegetation of unauthorised track sections the currently pass through EEC in the project area.</p> <p>7-part test were conducted in order to measure the impacts on the EECs and the results indicated that the proposed activity will not have a significant effect on an EEC or its habitat.</p>
7. Is the activity likely to cause a threat to the biological diversity or ecological integrity of an ecological community?	<input checked="" type="checkbox"/>	Low Negative	A new track will be routed through some areas of natural bushland, the track will result in an increased level of visitation to the area and also has the potential to facilitate the movement of feral species.	<p>Vegetation clearance will be restricted to low levels of understorey clearance to facilitate the construction and operation of single lane mountain bike track.</p> <p>The final width of this track will be narrow (600-700mm), and the track has been routed to ensure minimal impact to the surrounding natural bushland.</p> <p>Monitoring will be conducted to detect any increase in feral animal movements, and pest management strategies will be implemented when necessary. The footprint of this area relative to the surroundings is</p>

8.2 Biological impacts during construction and operation

Section 3.9 of *Proponents Guidelines for the Review of Environmental Factors* provides further guidance

	Applicable?*	Likely impact (negligible, low, medium or high negative or positive; or N/A)	Reasons (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	Safeguards/Mitigation Measures
				small and it is not anticipated to cause a threat to the biological diversity or ecological integrity of an ecological community.
8. Is the activity likely to introduce noxious weeds, vermin, feral species or genetically modified organisms into an area?	<input checked="" type="checkbox"/>	Low Negative	<p>During construction there is potential for vehicles and machinery to spread weeds and pathogens through the area.</p> <p>Increased public use of the area does increase the potential for the introduction of weeds and pathogens into the area. Pathogens can be spread in accumulated soil and mud, and tracked into the area on tyres.</p> <p>Some species of feral animals are known to utilise existing trails to gain access to bushland, creating a new track could therefore lead to increased mobility for these species.</p>	<p>Supervisors will be responsible for ensuring all machinery, tools and equipment involved in the construction process are inspected and, where necessary washed down before and after being used on site.</p> <p>All construction staff will be briefed prior to entering the area of the need to work with care and the importance of their surroundings.</p> <p>Interpretive/information signage will be placed at entry and exit points to the track, to inform users of the potential impacts of weed and pathogen spread and the need to clean accumulated debris from bikes prior to entering and leaving the track.</p> <p>Monitoring and management practices will be adopted including ongoing surveying and baiting programs in order to identify and address changes to feral species movements in the area.</p>
9. Is the activity likely to affect critical habitat?	<input type="checkbox"/>	N/A	N/A	

8.2 Biological impacts during construction and operation

Section 3.9 of *Proponents Guidelines for the Review of Environmental Factors* provides further guidance

	Applicable?*	Likely impact (negligible, low, medium or high negative or positive; or N/A)	Reasons (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	Safeguards/Mitigation Measures
10. Is the activity consistent with any applicable recovery plans or threat abatement plans?	<input checked="" type="checkbox"/>	Low Negative	Threatened species have been identified in the area and the recovery plans and threat abatement plans have been consulted in order to assess potential impact.	This activity is consistent with the objectives outlined in all current recovery plans and threat abatement plans applicable to the area. This is supported in the results of the 7-part tests (section 10).
11. Is the activity likely to affect any joint management agreement entered into under the TSC Act?	<input type="checkbox"/>	N/A	N/A	

* If yes, all columns need to be completed. If no, write 'N/A' in the second and third columns

8.3 Community impacts during construction and operation

Section 3.10 of *Proponents Guidelines for the Review of Environmental Factors* provides further guidance

	Applicable?*	Likely impact (negligible, low, medium or high negative or positive; or N/A)	Reasons (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	Safeguards/Mitigation Measures
1. Is the activity likely to affect community services or infrastructure?	<input checked="" type="checkbox"/>	Low Negative	There is potential for an increased pressure on roads and parking created by increased visitation to the area once the track is operational.	<p>The choice of site for the construction of the single width mountain bike track was the outcome of a detailed selective process.</p> <p>One of the primary reasons the Bantry Bay area was selected for this project was due to the high and increasing demand for a purpose-built track in this locality. As such it is anticipated that the majority of riders utilising the track will ride to the area, however vehicles will be restricted to street parking at the entry points to the track and the area around Forestville Park.</p> <p>Monitoring will be required to assess these impacts and continued liaison with Warringah Council in order to address potential issues.</p>
2. Does the activity affect sites of importance to local or broader community for their recreational or other values or access to these sites?	<input checked="" type="checkbox"/>	Low Negative	<p>A component of the proposal is to close and rehabilitate unauthorised tracks through sensitive bushland.</p> <p>Currently, most of these tracks are used by both bushwalkers and bike riders.</p>	<p>These tracks are not managed tracks and their use is causing damage to vulnerable habitats. Unauthorised tracks will be closed and allowed to regenerate.</p> <p>This will be enforced using a combination of brush matting and fencing (using 1.8 metre chain wire fence), and signage. The installation of erosion control structures across at regular intervals in these areas will also be considered in order to improve drainage.</p> <p>There are alternative authorised and well-used walking tracks available within the area that access popular</p>

8.3 Community impacts during construction and operation

Section 3.10 of *Proponents Guidelines for the Review of Environmental Factors* provides further guidance

	Applicable?*	Likely impact (negligible, low, medium or high negative or positive; or N/A)	Reasons (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	Safeguards/Mitigation Measures
				<p>lookouts, include narrow sections for immersive contact with nature, and traverse locations.</p> <p>A component of the proposed activity is to upgrade currently degraded sections of a popular trail 'Natural Bridge Track', which will improve safety and access for visitors.</p>
3. Is the activity likely to affect economic factors, including employment, industry and property value?	<input type="checkbox"/>	N/A	N/A	
4. Is the activity likely to have an impact on the safety of the community?	<input checked="" type="checkbox"/>	Low Positive	Currently, increased congestion by mountain bikers and walkers on existing shared trails, and the use of unauthorised tracks, causes conflict and safety concerns.	<p>The proposed activity will result in a purpose-built mountain bike track which will display signage to warn walkers that they are entering a MTB track and to advise of nearby walking tracks.</p> <p>Some sections of the proposed track will be classified as 'shared' zones, in these areas safety will be addressed by the following:</p> <ul style="list-style-type: none"> - the trail is wider in these sections and provides good visibility; - track design will result in a reduction in the speed of riders (uphill and one-direction); and - trail codes of conduct will reinforce the need for riders to give way to walkers. <p>It is anticipated that these measures will ensure a</p>

8.3 Community impacts during construction and operation

Section 3.10 of *Proponents Guidelines for the Review of Environmental Factors* provides further guidance

	Applicable?*	Likely impact (negligible, low, medium or high negative or positive; or N/A)	Reasons (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	Safeguards/Mitigation Measures
				positive impact on the safety and enjoyment of the park for the community, and reduce the level of potential conflict in this area.
5. Is the activity likely to cause a bushfire risk?	<input type="checkbox"/>	N/A	N/A	
6. Will the activity affect the visual or scenic landscape? This should include consideration of any permanent or temporary signage (eg. signs advertising an event and related sponsorship).	<input checked="" type="checkbox"/>	Low Negative	There will be minor clearing of vegetation in order to create the new sections of track. As such it is unlikely that the route of the new track will be visible from lookouts or nearby residential properties. Permanent signage will be erected at the entry points to the track to provide visitors with information about the track and the surroundings.	Clearing will be minimal and will not involve the removal of any mature trees or impact the canopy layer. The majority of the track will be constructed to follow natural contours and landscape features. Interpretive signage informing visitors about correct use of the track, environmental impacts and the sensitive nature of the surrounding area will be erected at entry points. All signage will adhere to the guidelines in the Parks Signage Manual and is unlikely to affect the visual or scenic landscape of the area.
7. Is the activity likely to cause noise, pollution, visual impacts, loss of privacy, glare or overshadowing to members of the community, particularly adjoining landowners?	<input checked="" type="checkbox"/>	Low Negative	During construction there will be a minor increase in noise due to an increase number of field staff and the use of hand-held track construction machinery. Due to an increase in the level of visitation to the area there will be a minor increase in noise levels resultant from the operation of the new track. It is anticipated that noise will be limited to the type expected from non-motorised bicycles being ridden on the track, talking and general visitor noise.	Construction requires additions to existing tracks, this work will involve hand clearing, use of hand tools and minimal use of motorized machinery. Works will be limited to normal work hours Mon-Fri 7:00 – 5:00 pm with some possible Saturday work, with only a small proportion of track works taking place within proximity to urban dwellings. Mountain bikes are pedal-driven and not motorised, therefore it is anticipated that noise resultant from their

8.3 Community impacts during construction and operation

Section 3.10 of *Proponents Guidelines for the Review of Environmental Factors* provides further guidance

	Applicable?*	Likely impact (negligible, low, medium or high negative or positive; or N/A)	Reasons (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	Safeguards/Mitigation Measures
			<p>There is potential for increased noise resultant from groups of cyclists gathering in the area.</p>	<p>use will be low.</p> <p>The track will be designed and constructed for mountain bike usage only. Motorised bikes of any kind will be prohibited. Signage will be erected at all entry points to the trail to inform visitors that penalties apply for non-compliance.</p> <p>The majority of the track utilises an existing walking route along a fire/management trail. As such the route already experiences a degree of visitation from bushwalkers, joggers and birdwatchers. It is not anticipated that the noise level will vary significantly from this use.</p> <p>The new sections of the bike route will be a single lane track which is very narrow (max 600-700mm), providing no opportunity for cyclists to congregate along the track.</p>

* If yes, all columns need to be completed. If no, write 'N/A' in the second and third columns

8.4 Natural resource impacts during construction and operation

Section 3.11 of *Proponents Guidelines for the Review of Environmental Factors* provides further guidance

	Applicable?*	Likely impact (negligible, low, medium or high negative or positive; or N/A)	Reasons (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	Safeguards/Mitigation Measures
1. Is the activity likely to result in the degradation of the reserve or any other area reserved for conservation purposes?	<input checked="" type="checkbox"/>	Low Negative	The proposed activity involves the removal of vegetation within a national park, and an increased usage on an area, therefore there is potential for impact.	<p>Removal of vegetation will be minimal and restricted to sections of the understorey and shrub layer in order to permit the construction and operation of a single-width mountain bike trail.</p> <p>The track design and construction will involve mitigation measures to ensure that the impacts to the surrounding environment are minimised.</p> <p>A trail maintenance and management plan will be adopted upon completion to ensure that the track is maintained to appropriate standards.</p> <p>This activity is not anticipated to result in the degradation of the area.</p>
2. Is the activity likely to affect the use of, or the community's ability to use, natural resources?	<input type="checkbox"/>	N/A	N/A	
3. Is the activity likely to involve the use, wastage, destruction or depletion of natural resources including water, fuels, timber or extractive materials?	<input checked="" type="checkbox"/>	Negligible Negative	<p>Surface works will in some areas require the use of extractive materials such as sandstone for the purposes of armouring the track.</p> <p>If power tools are required then fuel will be used.</p>	<p>All materials will be sourced from a reliable supplier and will be required to be appropriately certified.</p> <p>The majority of track construction work will be conducted by hand, fuel in most instances therefore will not be used.</p>

8.4 Natural resource impacts during construction and operation

Section 3.11 of *Proponents Guidelines for the Review of Environmental Factors* provides further guidance

	Applicable?*	Likely impact (negligible, low, medium or high negative or positive; or N/A)	Reasons (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	Safeguards/Mitigation Measures
This should include opportunities to utilise recycled or alternative products.				
4. Does the activity provide for the sustainable and efficient use of water and energy? Where relevant to the proposal, this should include consideration of high efficiency fittings, appliances, insulation, lighting, rainwater tanks, hot water and electricity supply.	<input type="checkbox"/>	N/A	N/A	

* If yes, all columns need to be completed. If no, write 'N/A' in the second and third columns

8.5 Aboriginal cultural heritage impacts during construction and operation

Section 3.12 of *Proponents Guidelines for the Review of Environmental Factors* provides further guidance. Addressing matters 1-5 will assist in meeting requirements set out in OEH's 'Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW'.

	Applicable?*	Likely impact (negligible, low, medium or high negative or positive; or N/A)	Reasons (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	Safeguards/Mitigation Measures
1. Will the activity disturb the ground surface or any culturally modified trees?	<input checked="" type="checkbox"/>	Low Negative	In order to construct the new sections of track there will be some level of ground clearing required.	The alignment of the new sections of track has been subjected to both a desktop survey and a field survey in order to identify and map the locations of cultural heritage sites. Where sites have been verified, the track has been re-directed to avoid passing through these areas.
2. Does the activity affect known Aboriginal objects or Aboriginal places? Include all known sources of information on likely presence of Aboriginal objects or places, including AHIMS search results.	<input checked="" type="checkbox"/>	Low Positive	The area contains a high density of Aboriginal engraving sites and an increased level of visitation to the area is anticipated once the track has been built.	Aboriginal heritage sites in the area are currently suffering damage caused by mountain bikes riding over them. This project will provide a purpose built mountain bike track which will encourage riders to remain on the track and divert activity away from these sites. This will occur concurrently with the closure and rehabilitation of illegal tracks which currently impact upon heritage sites. A signage plan will also be incorporated into the project to raise awareness and educate visitors about the sensitive nature of their surroundings and the need to protect heritage sites in the area.
3. Is the activity located within, or will it affect, areas containing the following landscape features? <ul style="list-style-type: none"> • within 200m of waters*; • within a sand dune 	<input checked="" type="checkbox"/>	Low negative	The proposed activity passes through various landscape features, including on a ridge top, and above a cliff face.	A significant part of the proposed track utilises pre-existing ridge-top management trails. A comprehensive survey of the area was conducted which included an assessment of previously recorded sites and archaeological reports. The results of this survey directed the location of the best possible route

8.5 Aboriginal cultural heritage impacts during construction and operation

Section 3.12 of *Proponents Guidelines for the Review of Environmental Factors* provides further guidance. Addressing matters 1-5 will assist in meeting requirements set out in OEH's 'Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW'..

	Applicable?*	Likely impact (negligible, low, medium or high negative or positive; or N/A)	Reasons (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	Safeguards/Mitigation Measures
<p>system*;</p> <ul style="list-style-type: none"> • on a ridge top, ridge line or headland; • within 200m below or above a cliff face; or • within 20m of or in a cave, rock shelter or a cave mouth. <p>*see REF Proponents Guide for definitions.</p>				for the new sections of track in order to avoid impacting on Aboriginal heritage sites in the area.
4. If Aboriginal objects or landscape features are present, can impacts be avoided?	<input checked="" type="checkbox"/>	Low Negative	Due to the topography of the area it will be necessary for the proposed track to pass within the vicinity of rock platforms which contain Aboriginal engravings.	<p>The results of the heritage survey ensure that the track route is re-directed away from heritage sites or where the potential for sites is deemed high.</p> <p>A signage plan will form a component of the proposal and will aim to educate visitors about the sensitive nature of the surroundings and the need to protect the heritage sites in the area.</p>
5. If the above steps indicate that there remains a risk of harm or disturbance, has a desktop assessment and visual inspection^ been undertaken (refer to the Due Diligence Code)?	<input checked="" type="checkbox"/>	Low Negative	Given the identified high density of Aboriginal engravings in the area increased use has the potential to impact on these sites.	<p>A comprehensive archaeological survey has been conducted by the environmental consultant which included both a desktop survey and visual inspection of the area.</p> <p>A field assessment was also conducted with representation from the MLALC, RAC, NPWS and the consultant archaeologist. The report including</p>

8.5 Aboriginal cultural heritage impacts during construction and operation

Section 3.12 of *Proponents Guidelines for the Review of Environmental Factors* provides further guidance. Addressing matters 1-5 will assist in meeting requirements set out in OEH's 'Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW'..

	Applicable?*	Likely impact (negligible, low, medium or high negative or positive; or N/A)	Reasons (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	Safeguards/Mitigation Measures
<i>^ for activities proposed by OEH, at a minimum this should be undertaken by a OEH employee with Aboriginal Site Awareness training and relevant practical experience, as approved by an Area Manager</i>				recommendations was also provided for review to the MLALC. (Full reports are provided in the Appendices C & D)
6. Is the activity likely to affect wild resources or access to these resources, which are used or valued by the Aboriginal community?	<input type="checkbox"/>	N/A	N/A	Wild resources have not been identified in the area and access to the area will not be restricted.
7. Does the activity affect areas subject to Native Title claims?	<input type="checkbox"/>	N/A	N/A	This area is not subject to a native Title claim.

* If yes, all columns need to be completed. If no, write 'N/A' in the second and third columns

Notes:

- if the above assessment indicates that there is still a reasonable risk or potential that Aboriginal objects, Aboriginal places or sensitive landscape features could be adversely affected by a proposal, then consistent with the precautionary principle it should either be re-considered or further detailed investigations undertaken.
- if it is concluded that an activity will have unavoidable and justified impacts on Aboriginal objects or Aboriginal places then the proponent should consider applying for an AHIP under Section 90 of the NPW Act.

8.6 Other cultural heritage impacts during construction or operation

Section 3.13 of *Proponents Guidelines for the Review of Environmental Factors* provides further guidance

	Applicable?*	Likely impact (negligible/ maintenance, minor, major, contentious; or N/A)	Reasons (describe the type, nature and extent of impact, taking into account the receiving environment & proposed safeguards which will limit the impact)	Safeguards/Mitigation Measures
1. What is the impact on places, buildings, landscapes or moveable heritage items?	<input type="checkbox"/>	N/A	N/A	
2. Is any vegetation of cultural landscape value likely to be affected (eg. gardens and settings, introduced exotic species, or evidence of broader remnant land uses)?	<input type="checkbox"/>	N/A	N/A	

*If yes, all columns need to be completed. If no, write 'N/A' in the second and third columns

8.7 Matters of national environmental significance under the EPBC Act

Section 3.14 of *Proponents Guidelines for the Review of Environmental Factors* provides further guidance. Also refer to guidelines produced by the Commonwealth Department of Sustainability, Environment, Water, Population and Communities

	Applicable?*	Impact level (negligible, low, medium or high; negative or positive; or N/A)	Reasons (describe the type, nature and extent of impact, taking into account the receiving environment & proposed safeguards which will limit the impact)	Safeguards/Mitigation Measures
1. Is the proposal likely to impact on matters of national environmental significance under the EPBC Act, as follows:				
<ul style="list-style-type: none"> Listed threatened species or ecological communities 	<input checked="" type="checkbox"/>	Low Negative	Threatened species listed under the EPBC Act (1999) have been identified in the proposed project area.	Impacts have been addressed in 7-part tests (section 10) the results of which indicate that if the appropriate mitigation methods are incorporated, that the

8.7 Matters of national environmental significance under the EPBC Act

Section 3.14 of *Proponents Guidelines for the Review of Environmental Factors* provides further guidance. Also refer to guidelines produced by the Commonwealth Department of Sustainability, Environment, Water, Population and Communities

	Applicable?*	Impact level (negligible, low, medium or high; negative or positive; or N/A)	Reasons (describe the type, nature and extent of impact, taking into account the receiving environment & proposed safeguards which will limit the impact)	Safeguards/Mitigation Measures
				<p>proposed activity will not have a significant impact on threatened species or ecological communities.</p> <p>Recommendations which will be incorporated into the design, construction and operation of the proposed track include:</p> <ul style="list-style-type: none"> - track alignment to avoid threatened species; - minimise vegetation clearance and retain mature trees and existing interlocking canopy structure; - utilise existing tracks to minimise habitat fragmentation; - where possible construct track on bedrock to maintain water quality and minimise sedimentation; - use appropriate construction measures to protect vegetation and maintain current water flows and quality; - construction work to be restricted to daylight hours in order to minimise impact from disturbance to nocturnal wildlife; and - inclusion of a regular monitoring program to monitor any potential impacts on fauna and vegetation.
• Migratory species	<input type="checkbox"/>	N/A	N/A	

8.7 Matters of national environmental significance under the EPBC Act

Section 3.14 of *Proponents Guidelines for the Review of Environmental Factors* provides further guidance. Also refer to guidelines produced by the Commonwealth Department of Sustainability, Environment, Water, Population and Communities

	Applicable?*	Impact level (negligible, low, medium or high; negative or positive; or N/A)	Reasons (describe the type, nature and extent of impact, taking into account the receiving environment & proposed safeguards which will limit the impact)	Safeguards/Mitigation Measures
protected under international agreements				
• Ramsar wetlands	<input type="checkbox"/>	N/A	N/A	
• Commonwealth marine environment	<input type="checkbox"/>	N/A	N/A	
• World heritage properties or national heritage places	<input type="checkbox"/>	N/A	N/A	

Note:

- referral to the Commonwealth may be required if the activity is likely to have a significant affect of matters of national environmental significance. Refer to the Significant Impact Guidelines at: <http://www.environment.gov.au/epbc/publications/nes-guidelines.html>

9. Proposals requiring additional information

Only complete the following sections if **applicable** to the proposal.

9.1 Lease or licence proposals under s.151 NPW Act

Section 2.2 of *Proponents Guidelines for the Review of Environmental Factors* provides further guidance

Proponents must complete and submit a **Sustainability Assessment** together with the REF. This also applies where OEH is the proponent for projects of the kind listed in s.151A, NPW Act.

For information on the sustainability assessment criteria and guidelines, including assessment templates, go to: <http://www.environment.nsw.gov.au/protectedareas/developmentadjoiningdecc.htm>

Note that for **minor activities and uses** (usually events and similar proposals involving less than 400 people) a streamlined and combined REF and Sustainability Assessment template is available (**Template 1**).

Sustainability assessment attached as follows:

- Special activities and uses (involving more than 400 people) – Sustainability Assessment **Template 2**
- Built structures and facilities – Sustainability Assessment **Template 3**

9.2 Telecommunications facilities (s.153D, NPW Act)

Section 2.2 and Appendix 1 of *Proponents Guidelines for the Review of Environmental Factors* provide further guidance

1. Are there feasible alternative sites for the facility on land that is not reserved under the NPW Act?	
2. Does the site of any above ground facility cover the minimum area possible?	
3. Is the facility to be designed and constructed to minimise risk of damage to the facility from bushfires?	
4. Has the site and construction of the facility been selected to, as far as practicable, minimise visual impacts?	
5. Is it feasible to use an existing means of access to the site?	
6. Is the facility essential for the provision of telecommunications services for land reserved under the NPW Act or for surrounding areas to be served by the facility?	
7. Will the facility be removed and	

the site restored as soon as possible after the facility becomes redundant (eg. due to changes in technology)?	
8. Has the site been selected after taking into account the objectives set out in any plan of management relating to the land?	
9. If feasible, will the facility be co-located with an existing structure or located at a site that is already disturbed by an existing lease, licence, easement or right of way?	

If co-location is proposed, please indicate if:

- The proponent will be the owner of the facility
- The proponent will be a co-user of the facility

9.3 Activities within the Sydney Drinking Water Catchment

Activities within the catchment are subject to the provisions of the Drinking Water Catchments REP No.1

1. Does the activity incorporate any current recommended practices and performance standards endorsed or published by the Sydney Catchment Authority that relate to the protection of water quality?	
2. If the activity does not do so, how will the activity achieve outcomes not less than these?	
3. Will the activity have a neutral or beneficial effect on water quality?	

10. Threatened species assessment of significance (7 part test)

Address each of the factors set out in s 5A EP&A Act to decide whether there is likely to be a significant effect on threatened species, populations, ecological communities or their habitats, as set out below, or alternatively address the factors in a separate document. In preparing this section, refer to any relevant guidelines published by the OEH.

Threatened species, populations and communities and critical habitats listed under both the *Threatened Species Conservation Act 1997* and *Fisheries Management Act 1994* should be included. Those listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) should not be included. Impacts on EPBC listed species should be addressed in section 8 above, or in a separate attached assessment. The proponent will still need to separately consider whether referral to the Commonwealth is required.

When you have completed the threatened species assessment of significance (7-part test), include the findings in Biological Impacts section.

7-Part Tests were conducted on Threatened Species and the Coastal Upland Swamp EEC and the full reports are included in **Appendices E and F**. ***The outcome of these assessments indicated that the proposed activity will not have a significant effect on threatened species or EEC.*** The findings, and recommended environmental safeguards, have been included in the Biological Impacts section (Section 8.2) of this REF.

11. Summary of impacts

Summarise the impacts and consider the cumulative impacts of the activity based on the classification of individual impacts as low, medium or high adverse, negligible or positive.

Section 3.15 of *Proponents Guidelines for the Review of Environmental Factors* provides further guidance.

Category of Impact	Significance of impacts		
	Extent of impact	Nature of impact	Environmentally sensitive features
Physical and Chemical	Low	Negative	Low
Biological	Low	Negative	Low
Natural Resources	Low	Negative	Low
Community	Low	Negative/Positive	Low
Cultural Heritage	Low	Negative/Positive	Low

12. Conclusions

In conclusion indicate if:

- there is likely to be a significant effect on the environment and an environmental impact statement is required?

No

Yes

Reason(s):

The outcome of this assessment indicates that although there will be some impact on the environment resultant from the proposed activity, that the scale of the impact, with implementation of the proposed mitigation measures, will not be of such significance that an environmental impact statement is required.

- there is likely to be a significant effect on threatened species, populations, ecological communities or their habitats and a species impact statement is required?

No

Yes

Reason(s):

The outcome of this assessment indicates that the proposed activity to construct a mountain bike track in Bantry Bay will impact on threatened species, including the Coastal Upland Swamp EEC.

The scale of the impact in the context of the surrounding environment, combined with the proposed mitigation measures indicate that the impact is unlikely to be viewed as a significant impact, and a species impact statement is therefore not required.

- the activity is in respect of land that is, or is part of, critical habitat and a species impact statement is required?

No

Yes

- the activity will require certification to Building Code of Australia or Australian Standards in accordance with the OEH *Construction Assessment Procedure*?

No

Yes

13. Supporting documentation

Please provide details of documentation included with this application. Supporting information may include, but is not limited to, a Sustainability Assessment (for proposals requiring a lease of licence under s.151A NPW Act), threatened species assessment of significance (7 part test), LEP land use tables, AHIMS search, engineering plans, maps, specialists studies etc.

Document Title	Author	Date
1. Appendix A – Map of proposed track location	NPWS/NPWS	2013
3. Appendix B – Detailed Fauna and Flora Surveys	Epacris Consulting	2012/13
4. Appendix C – Heritage Assessment 1	Epacris Consulting	2012/13
5. Appendix D – Heritage Assessment 2	Epacris Consulting	2013
5. Appendix E – 7-Part Tests – Threatened Species	Epacris Consulting	2012
6. Appendix F – 7-Part Tests – Coastal Upland Swamp EEC	Epacris Consulting	2013
7. Appendix G – Consultation and Meetings	NPWS/AHO	2011-13
8. Appendix H – IMBA Rules of the Trail	IMBA	Current
9. Appendix I – Principles of track design and location	IMBA	Current
10. Appendix J – IMBA Australia Trail Difficulty Ratings	IMBA	Current

14. Fees

Proponents are required to pay an initial fee of \$170 (a final fee is also required before determination of the REF).

If the activity consists of environmental remediation and the proponent is a community group, OEH may waive the fees on request.

<input type="checkbox"/>	\$170 payment/cheque for initial fee is enclosed
<input type="checkbox"/>	A waiver of fees is requested. Please provide reasons:

15. Signature of proponent

The REF must be certified by the proponent – not the consultant(s) where consultant(s) are used.

Signature		Signature	
Name (printed)	Peter Bergman	Name (printed)	
Position	Area Manager	Position	
Date	28 May 2013	Date	

Seal (if signing under seal):

References and Further Reading

Legislation

NSW National Parks and Wildlife Act 1974

Policies, Strategies and Plans

DECC (2008) *NPWS Park Visitor Facilities Policy*. Department of Environment and Climate Change, NSW, Hurstville.

NSW Government (2011) *NSW 2021 A Plan to Make NSW Number One*. Department of Premier and Cabinet, NSW, Sydney.

<http://www.2021.nsw.gov.au/>

OEH (2009) *NPWS Visitor Safety Policy and Procedures*. Office of Environment and Heritage, NSW, Sydney.

<http://www.environment.nsw.gov.au/policies/VisitorSafetyPolicy.htm>

OEH (2010) *NPWS Vehicle Access – General Policy*. Office of Environment and Heritage, NSW, Sydney.

<http://www.environment.nsw.gov.au/policies/VehicleAccessPolicy.htm>

OEH (2011) *NPWS Cycling Policy*. Office of Environment and Heritage, NSW, Sydney. <http://www.environment.nsw.gov.au/policies/CyclingPolicy.htm>

OEH (2011) *NPWS Sustainable Mountain Biking Strategy*. Office of Environment and Heritage, NSW, Sydney.

<http://www.environment.nsw.gov.au/parkmanagement/SustainableMtBStrategy.htm>

Premier's Council for Active Living (2010) *NSW Bike Plan*. Roads and Traffic Authority NSW, North Sydney.

http://www.rta.nsw.gov.au/roadprojects/projects/bicycle_projects/documents/nsw_bike_plan.pdf

Research and Reports

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Manuals and Guidance

OEH (2011) *Management plan for myrtle rust on national park estate*. Office of Environment and Heritage, NSW, Sydney.

IMBA Publications

Managing mountain biking: IMBA's guide to providing great riding

Rules of the Trail

Trail solutions: IMBA's guide to building sweet singletrack

FOR OEH USE

- **External proponent REF or major REF**
 - ▶ proceed to prepare determination report and determination notice
- **Internal minor REF**
 - ▶ proceed to prepare determination notice (no determination report required)

Determination report templates, determination notices and model conditions are available at: <http://deccnet/epa/REFGuidelines.htm>