

Review of Environmental Factors
for
Proposed
Cross Country and Downhill Bike Tracks
Knapsack Reserve

Date: 11 July 2011
Prepared for: Blue Mountains City Council
Prepared by: Abel Ecology Pty Ltd

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LIST OF ABBREVIATIONS

BMCC	Blue Mountains City Council
BMORC	Blue Mountains Off Road Cyclists
DH	Downhill
EEC	Endangered Ecological Community
ESD	Ecologically Sustainable Development
IMBA	International Mountain Biking Association
KTP	Key Threatening Process
LEP	Local Environmental Plan
lm	linear metre
LGA	Local Government Area
MTB	Mountain Bike
MTBA	Mountain Bike Australia
MTBP	Mountain Bike Plan
NP	National Park
NR	Nature Reserve
ROTAP	Rare or Threatened Australian Plant
SSTF	Shale/Sandstone Transition Forest
STIF	Sydney Turpentine Ironbark Forest
TEC	Threatened ecological community
XC	Cross Country

Note regarding maps in this report

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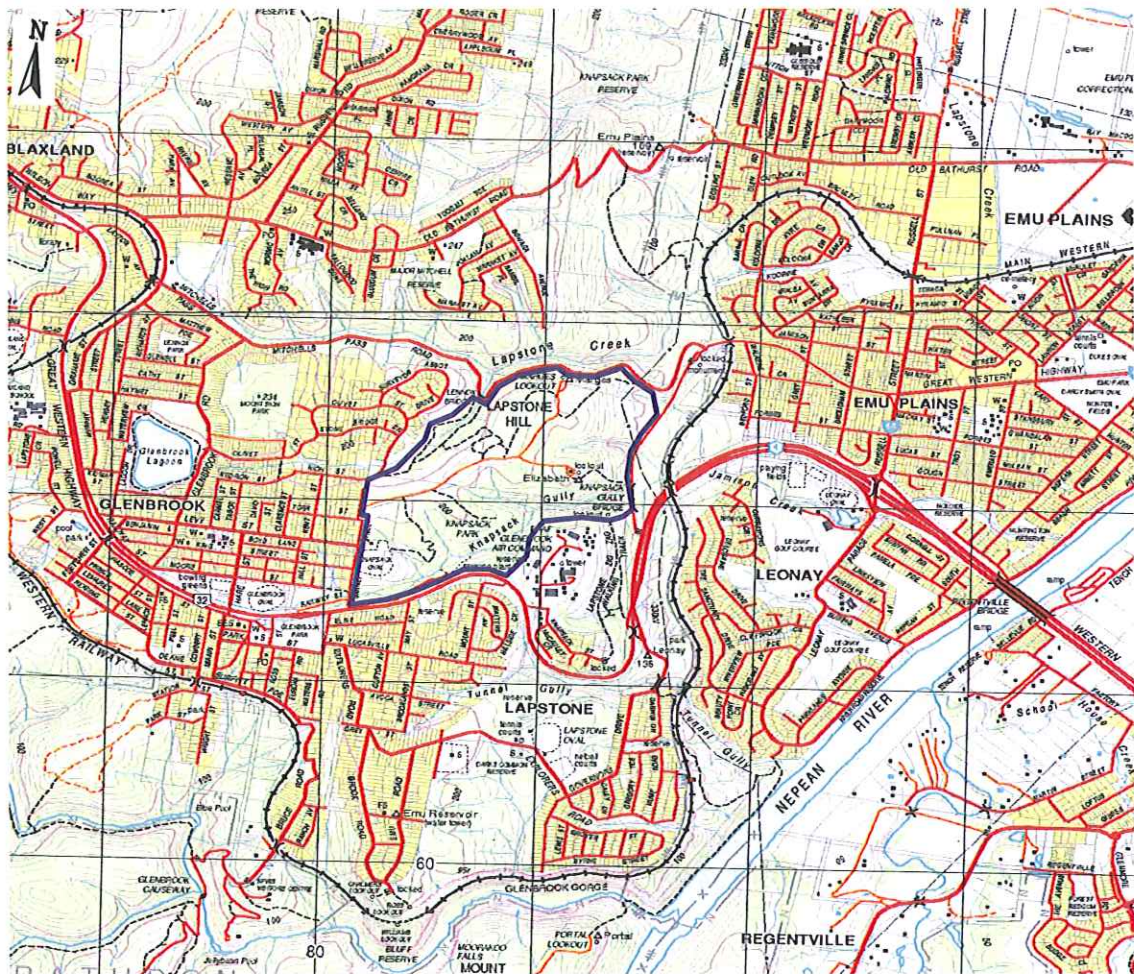
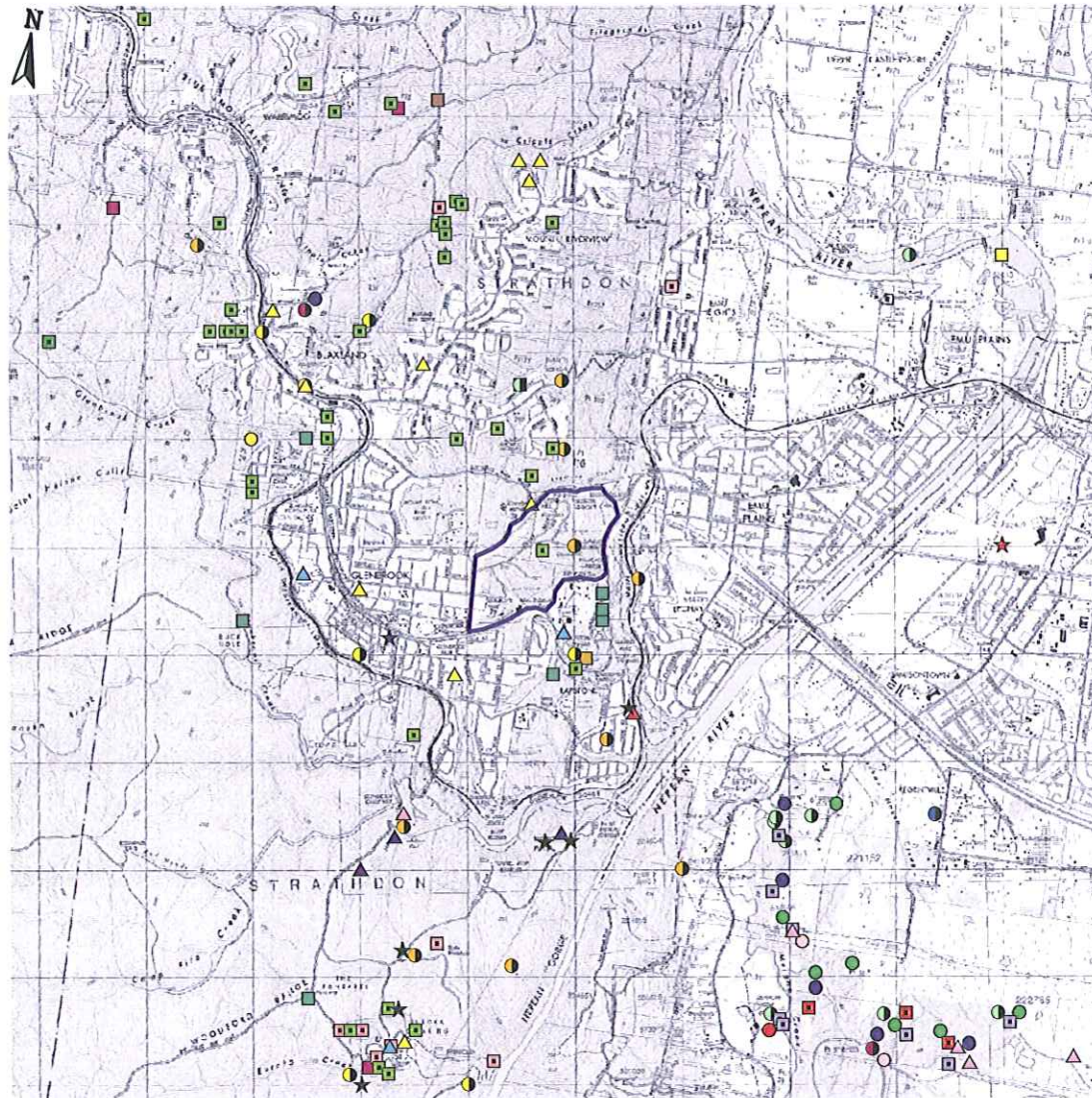


Figure 1. Locality map

 Site Locality

Scale: grid square = 1 km

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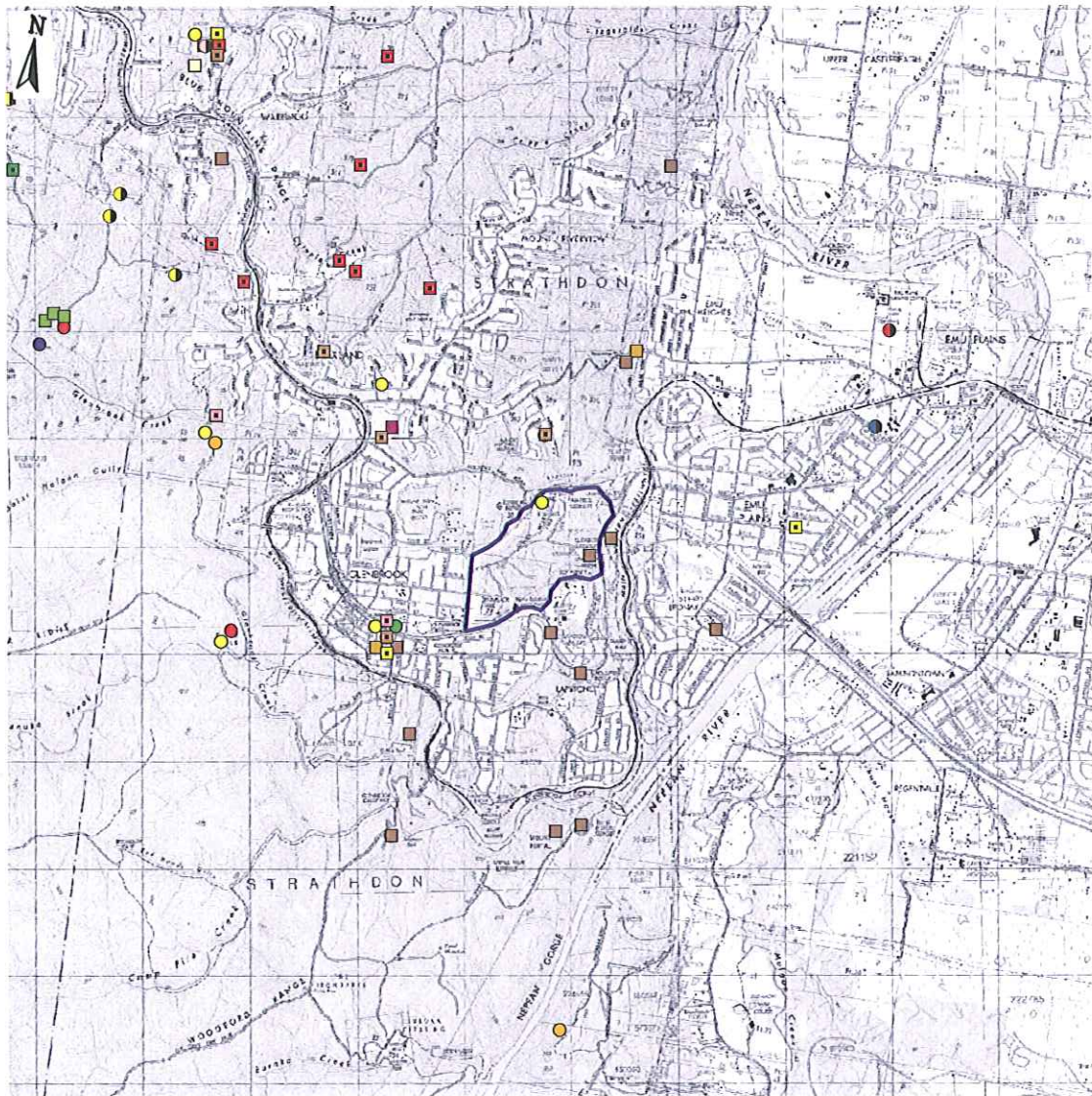


Scale: grid square = 1 km

Figure 2. Threatened fauna species records within 5 km of the study site

- | | |
|----------------------------------|----------------------------|
| Site locality | Grey-headed Flying-fox (V) |
| Barking Owl (V) | Koala (V) |
| Broad-headed Snake (E1) | Large-eared Pied Bat (V) |
| Cumberland Plain Land Snail (E1) | Little Lorikeet (V) |
| Eastern Bentwing-bat (V) | Masked Owl (V) |
| Eastern Freetail-bat (V) | Powerful Owl (V) |
| Eastern Pygmy-possum (V) | Red-crowned Toadlet (V) |
| Freckled Duck (V) | Regent Honeyeater (E1) |
| Gang-gang Cockatoo (V) | Sooty Owl (V) |
| Giant Burrowing Frog (V) | Southern Myotis (V) |
| Giant Dragonfly (E1) | Spotted-tailed Quoll (V) |
| Glossy Black-cockatoo (V) | Square-tailed Kite (V) |
| Greater Broad-nosed Bat (V) | Swift Parrot (E1) |
| Green and Golden Bell Frog (E1) | Turquoise Parrot (V) |
| | Yellow-bellied Glider (V) |

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Scale: grid square = 1 km

Figure 3. Threatened flora species records within 5 km of the study site

- | | |
|---|--|
| □ Site locality | ■ <i>Lissanthe sapida</i> (3RCa) |
| ● <i>Acacia subtilinervis</i> (3RCa) | ■ <i>Lomandra brevis</i> (2RC-) |
| ● <i>Asplenium aethiopicum</i> (RC-) | ■ <i>Lomandra fluviatilis</i> (3RCa) |
| ● <i>Atkinsonia ligustrina</i> (2RCa) | ■ <i>Melaleuca deanei</i> (V, 3RC-) |
| ● <i>Boronia fraseri</i> (2RCa) | ■ <i>Ozothamnus adnatus</i> (3KC-) |
| ● <i>Cyphanthera scabrella</i> (2RC-) | ■ <i>Persoonia hirsuta</i> (E1, 3KCi) |
| ■ <i>Dillwynia tenuifolia</i> (V, 2RCa) | ● <i>Pterostylis saxicola</i> (E1, 2E) |
| □ <i>Eucalyptus apiculata</i> (3RC-) | ● <i>Pultenaea villifera</i> (E2) |
| ■ <i>Eucalyptus burgessiana</i> (2RCa) | ● <i>Rupicola sprengelioides</i> (2RC-) |
| ■ <i>Hibbertia puberula</i> (E1) | ● <i>Syzygium paniculatum</i> (E1, 3VCi) |

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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 following is largely an abstract from the brief provided by Blue Mountains City Council. Additional details are provided in <i>italics</i>.</p> <p>There are 2 components to the proposed works:</p> <ol style="list-style-type: none">1. Cross country (XC) bike track (shared with walkers) which is 6.5 km long. This track is located predominantly on existing tracks except for approx 900 m of proposed realignment in some sections. These realignments will be off set by closure of unsuitable and duplicate tracks. <p><i>Note there are actually two cross-country trails in the activity, the Primary Cross Country Trail and the Secondary Cross Country Trail.</i></p> <ol style="list-style-type: none">2. A downhill (DH) track which is 1.4 km. About 600m of this track coincides with an existing track, and 800m will be realigned through bushland where there is currently no track. 300m of existing DH track will be closed. <p><i>There are two potential sites for the downhill trail, Option A and Option B. Only option A was evaluated during the site visit as it the proposed route was marked with flagging tape. Option B was not marked with flagging tape so it was not surveyed.</i></p> <p>As part of the proposed works there will be further "offsets" through width reduction of wide sections of track on the cross-country track.</p> <p>The Plan involves the closure of 1,526 linear metres (lm) of cross-country track and 270 lm of DH track for environmental outcomes. A further 1,615 lm of track will have its width reduced. Together this will achieve 2,010 m² or 0.2 ha of track being restored to bushland, the majority of which is a threatened ecological community (TEC).</p> <p><i>Track construction will involve the removal of vegetation in both threatened ecological communities and non-threatened ecological/vegetation communities. Similarly closure and rehabilitation of tracks as well as the track width reduction and rehabilitation is also proposed in both threatened ecological communities and non-threatened ecological communities.</i></p> <p>The proposed DH and XC track will be designed and constructed to International Mountain Biking Association</p>
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	<p>(IMBA) Standards. Design and construction of the track will be undertaken at the direction of Council in conjunction with input from the riding community and IMBA. The proposed method of construction will be using manual labour, with Council's track team overseeing volunteer labour sourced from the riding community.</p> <p>Blue Mountains Council will require all watercourse crossings to have improved crossings consisting of a hardened sandstone block base or a bridge. Signs will be erected covering a code of conduct, which will include no unauthorised works and closure during wet weather.</p> <p>Cross-country bike riding is currently a popular activity in Knapsack Reserve and Blue Mountains Council has stated that it is currently a permissible and legal activity. An individual may ride a bike in any council reserve unless signage states otherwise. Thus this REF is a review of both the changes to the tracks caused by realignments and track extensions/construction or reconstruction, as well as the possible increase in activity associated with the bike track extensions. It is not a review of the current bike riding activities at Knapsack Reserve.</p> <p>Blue Mountains Council have also stated in Item 12 Ordinary Meeting 14 December 2010 that,</p> <p>“the construction of any new trail would need to be assessed and approved under Part 5 of the EP&A Act and does not require Development Approval due to SEPP (Infrastructure) 2007 provisions. Council would prepare a Review of Environmental Factors (REF) that includes an assessment of whether the activity will have a significant impact on threatened species or ecological communities. Council is only required to prepare a Species Impact Statement (SIS) or refer the proposed activity to the Commonwealth if in preparing the REF it is determined that the proposed activity is likely to have a significant impact on a threatened species or ecological community.”</p> <p>Regardless of this Council has stated that it is its intention to refer the REF to the Commonwealth.</p>
Estimated commencement date:	To be determined
Estimated completion date:	To be determined

2. Proponent's Details

All correspondence and notices will be sent to the address of the proponent.

Name	Dr Daniel McDonald
Position title	Senior Botanist
Organisation	Abel Ecology Pty Ltd, (trading as Abel Earthcare and Abel EarthScape)
Australian Company Number	079 079 762
Australian Business Number	72 516 253 751
Postal address	113 Chapman Parade, Faulconbridge NSW 2776
Telephone number	(02) 4751 9487
Mobile phone number	
Facsimile number	(02) 4751 9497
E-mail address	info@abelecolology.com.au
Signature of proponent	
Date	11 July 2011

3. Legal Permissibility

3.1 Permissible under legislation

Indicate whether the proposed activity is permissible under the legislation. Section 1.2.5 and Appendix 1 of Proponents Guidelines for the Review of Environmental Factors provides guidance on permissibility. Include explanation where necessary.

National Parks and Wildlife Act 1974 (NP&W Act) (consider objects of the Act, reserve management principles, provisions of Part 12, etc);

Justification:	The proposed activity is currently generally consistent with conservation objectives of the Act.
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Title and relevant sections of plan of management:	<p>Knapsack Reserve Plan of Management (2007) Section 2.1.9 (p. 21). The proposed activity is broadly consistent with this Act. This activity is under review in this document to ascertain if it is consistent with the principles of ecologically sustainable development. The background document "Proposed Mountain Bike Tracks at Knapsack Reserve October 2,010" includes the statement "The Blue Mountains Off Road Cyclists (BMORC) group has been engaged by Council and Staff to provide input into the preferred XC and DH trails in the reserve, with the view of establishing legitimate and sustainable trails in the Blue Mountains." This statement indicates that the Off Road Cyclists association is keen to incorporate sustainability principles within their proposed activity. The proposed activity includes weed management and methods to reduce the impact on watercourses.</p> <p>Walking and Bike Tracks are permissible within the Knapsack Reserve Plan of Management (Section 4.5, p. 57). Thus the overall concept of including bike tracks is permissible within Knapsack Reserve.</p>
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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);

Justification:	Seven-part tests of significance, as per EP&A Act, Section 5A, are provided within this report.
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Threatened Species Conservation Act 1995 (TSC Act);

Justification:	<p>The Critically Endangered Ecological Community Sydney Turpentine Ironbark Forest and the Endangered Ecological Community Shale/Sandstone Transition Forest are present on the site. The proposed activity includes construction of tracks through these endangered ecological communities. A number of threatened faunal species have been observed on the site.</p> <p>Seven-part tests of significance as per EP&A Act, Section 5A are provided within this report. No significant effect was found on threatened species or populations or ecological communities listed under the TSC Act 1995.</p>
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Wilderness Act 1987 (consider objects of the Act, management principles, s.153, etc);

Justification:	Not applicable. Approximately two-thirds of the Greater Blue Mountains World Heritage area is either declared or assessed as wilderness, however, this does not include Knapsack Reserve.
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Rural Fires Act 1994;

Justification:	No hazard reduction burn is included in the proposed activity. There is the slight possibility that an increase in public activity in the park may increase the fire risk. However, the increase in risk above existing levels is not considered significant.
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Heritage Act 1977;

Justification:	There is a range of items of Aboriginal and European heritage value. It is unknown whether the proposed activity will impact on these site values. It is recommended that the proposed activity be assessed by a qualified archaeologist. The archaeologist may be able to provide information on where tracks must not be located.
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Fisheries Management Act 1994 (FM Act);

Justification:	The proposed activity is distant from marine environments. The proposed off road tracks will be designed and constructed to IMBA Standards. Sandstone block crossings or bridges will be used for all watercourse crossings.
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Commonwealth legislation (including the *Environmental Protection and Biodiversity Conservation Act 1999* (EP&BC Act) and the *Telecommunications Act 1997*).

Justification:	<p>The EPBC listed threatened fauna species, Spotted-tail Quoll (endangered) and Glossy Black-cockatoo (endangered), have been observed on the site (Knapsack Reserve POM). Additionally the following EPBC listed fauna species have been observed nearby, Broad-headed snake (vulnerable), Giant Burrowing Frog (vulnerable), Grey-headed Flying-fox (vulnerable), and the Regent Honeyeater (endangered).</p> <p>Some of these other EPBC listed threatened faunal species may also use the site. The Knapsack Reserve Plan of Management also states that the site contains habitat for the Broad-headed Snake. The proposed off road cyclist's tracks are highly unlikely to have a significant impact on any of these species.</p> <p><i>Dillwynia tenuifolia</i> is displayed on the NSW wildlife atlas as occurring on the site and is listed as vulnerable under the EPBC Act. It was not observed during a site visit conducted as part of this REF. Thus it is highly unlikely that the proposed activity will have an adverse impact on</p>
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	<p>this species.</p> <p>EPBC listed plant species in the surrounding area include <i>Amperea xiphoclada</i> var. <i>papillata</i> (considered extinct), <i>Melaleuca deanei</i> (vulnerable), <i>Persoonia acerosa</i> (vulnerable), <i>Persoonia hirsuta</i> (endangered), <i>Pterostylis saxicola</i> (endangered) and <i>Zieria saxicola</i> (vulnerable). Neither the existing trails nor the new proposed off road trails are likely to place any of the these species at an increased risk of extinction as they are not known in Knapsack Reserve.</p> <p>Two EPBC listed ecological communities are present within Knapsack Park. The majority of the reserve is mapped as the EPBC-listed, Endangered Ecological Community, Shale/Sandstone Transition Forest, although currently this listing is under review. The reserve also contains mapped areas of the EPBC-listed, Critically Endangered Ecological Community, Sydney Turpentine Ironbark Forest. The proposed activity is unlikely to cause a significant impact on either of these listed endangered ecological communities. However, the proposed activity in its current form will result in a net loss of the mapped area of this community on the site. In contrast the proposed activity will rehabilitate areas of Shale/Sandstone Transition Forest increasing the area of this Endangered Ecological Community on the site and overall increasing the areas of threatened ecological communities above the area that will be lost.</p> <p>While it is highly unlikely that the proposed activity will cause a significant impact on any threatened population, species or community, it is the intention of Blue Mountains City Council to refer this REF to the Commonwealth for review.</p>
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3.2 Consistency with DECCW Policy

Indicate whether the proposed activity is consistent with DECCW policy, including an explanation where necessary, e.g. Field management policies, NPWS Area strategies or plans, Plan of management (adopted or draft), SEPPs, Conservation management plans (www.environment.nsw.gov.au/policies/ParkManagementPolicies.htm):

<p>Provide details of relevant DECCW policy:</p>	<p>Recovery plans, priority actions and key threatening processes (KTP's) have been reviewed to assess the impact of the proposed off road bike trails.</p> <p>The KTP, "Invasion of native plant communities by exotic perennial grasses" is relevant to the proposed off road bike trails. African Love Grass is listed as one of the KTP species and it is reasonably common alongside some of the roads within the Reserve. Other exotic perennial grasses listed as in this KTP and present in the Reserve include Kikuyu <i>Pennisetum clandestinum</i> and Vasey Grass <i>Paspalum urvillei</i>. Vasey Grass is not included on the flora list for the Reserve included in the Plan of Management, but it was observed during the site survey for this REF. A Vegetation Management Plan is included as part of the proposed activity which will address this key threatening process.</p> <p>The KTP "Clearing of Native Vegetation" is also relevant to this proposed activity. To off set the clearing the proposed activity has included the</p>
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	<p>closing of tracks. Clearing of the Endangered Ecological Community, Shale/Sandstone Transition Forest appears to be able to be off set through the closure of tracks. The rehabilitation of tracks to increase the area of Shale/Sandstone Transition Forest will provide a better outcome for this community on the site. The proposed activity also includes the clearing of the Critically Endangered Ecological Community, Sydney Turpentine Ironbark Forest, and the area to be cleared of this vegetation community is significantly greater than the area of this particular community that is proposed to be regenerated. However, overall the proposed activity will rehabilitate a greater area of threatened plant communities than that will be removed or modified by the proposed activity.</p> <p>The current proposed activity fails to demonstrate the criteria “like for like”. Clearing of the Critically Endangered Ecological Community is unable to be completely off set by regeneration of this same Critically Endangered Ecological Community on the site.</p> <p>The KTP “Infection of native plants by <i>Phytophthora cinnamomi</i>” is relevant to the proposed activity. <i>Phytophthora cinnamomi</i> has been recorded at Knapsack Reserve, although it is unclear how widespread this plant pathogen is in the reserve. The existing activities of walking and bike riding already have the potential to spread this pathogen around the reserve. Blue Mountains Council has stated that bridges or sandstone crossings will be constructed over watercourses for the proposed cross-country and downhill mountain bike trails. In addition Blue Mountains Council has stated that it will erect signs stating the no unauthorised works are to occur and that the site will be closed during wet weather. These two undertakings will reduce the likelihood of spread of <i>Phytophthora cinnamomi</i> within Knapsack Reserve, possibly decreasing it below the current threat.</p>
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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>Note: proponents should provide evidence that the relevant DECCW (Parks & Wildlife) office supports the proposal in-principle</p>	<p>Item 12, Ordinary Meeting 14.12.2,010, Subject 12 Mountain Bike Track Planning – Knapsack Reserve, File Number F05689 – 10/181145, page 94, paragraph 5 states:</p> <p>“In response to the aforementioned resolutions, Council undertook further assessment and consultation with stakeholders concerning the formalisation of MTB tracks in Knapsack Reserve, as provided in the existing Knapsack Reserve Plan of Management.”</p> <p>Details of consultation are provided below: (page 100-101 of Item 12 Ordinary Meeting 14.12.10)</p> <p>“Extensive external consultation was carried out in preparation and public presentation of the MTBP and is summarised below:</p>
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	<p>Council staff and members of BMORC met on site at Knapsack to allow Council to clearly define Council issues and environmental constraints prior to mapping of trails;</p> <p>BMORC members met on site with Mountain Bike Australia (MTBA) staff who specialise in trail construction in order to define the most sustainable downhill route;</p> <p>A further on site meeting was held between Council staff and BMORC to discuss issues post mapping;</p> <p>Council staff met with members of Blue Mountains Conservation Society where Council presented the MTBP;</p> <p>Invitations to attend the Public Meeting were directly mailed to 16 residents closest to prominent reserve entry points;</p> <p>A Public Meeting to present the MTBP was advertised for two weeks in the Gazette and was held at Blaxland Library on 19th October 2,010. This meeting included an open discussion session where individuals could raise issues with Council, and was attended by 34 individuals;</p> <p>Council liaised with the Commonwealth EPBC Act Compliance Section to confirm the existing environmental assessment and regulatory process associated with impacts on threatened ecological communities; and</p> <p>Council received four written submissions, which included two submissions provided by the Blue Mountains Conservation Society.”</p> <p>Consultation with Local Aboriginal Communities Currently, the author is not aware of any recent consultation regarding the proposed activity with Aboriginal Communities.</p> <p>Previous consultation with Aboriginal Communities has occurred prior to this proposed activity. Three local Aboriginal groups, namely, Deerubbin Local Aboriginal Land Council (DLALC), Darug Tribal Aboriginal Corporation (DTAC) and Darug Custodian Aboriginal Corporation (DCAC) as well as Archaeological and Heritage Management Solutions (AHMS) have all previously participated in a field survey of Knapsack Reserve. Fifteen sites of Aboriginal significance were located within Knapsack Reserve.</p>
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5. Description of the proposed activity(s)

5.1 Location of proposed 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)	Knapsack Reserve
Street address (if available)	Knapsack Reserve is large and is located on the eastern escarpment of the Blue Mountains and overlooks the Cumberland Plain. The northern boundary of the Reserve appears to extend to Mt Riverview; the Great Western Highway and railway forms the majority of the boundary on the south and east, while residential properties and bushland adjoin the Reserve on the west.
	Suburbs: Lapstone, Glenbrook and Mt Riverview.
	State: NSW Postcodes: 2773 and 2774
Title reference	The site covers forty two (42) parcels of land owned by four (4) different agencies (Knapsack Reserve Plan of Management August 2007, page 7).
Site reference	Easting: 281 000 Northing: 6262 250
	AMG zone: 56 Reference system: AGD
Local Government Area	Blue Mountains Council
NSW State electorate	Penrith
Catchment	Knapsack Creek, Hawkesbury Nepean CMA
National Park	N/A

5.2 Description of the proposed activity

Include a full and comprehensive description of the proposed activity. All aspects of the proposed activity should be described. See section 3.1 of *Proponents Guidelines for the Review of Environmental Factors* for further guidance.

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

<p>There are 2 components to the proposed works:</p> <p>The following is an abstract from a document provided by Blue Mountains City Council. Additional details are provided in <i>italics</i>.</p> <p>1. Cross country bike track (shared with walkers), which is 6.5 km long. This track is located predominantly on existing tracks except for approx 900m of proposed realignment in some sections. These realignments will be off set by closure of unsuitable and duplicate tracks.</p> <p><i>Note there are actually two cross-country trails in the proposed activity, the Primary Cross Country Trail and the Secondary Cross Country Trail.</i></p> <p>2. A downhill (DH) track which is 1.4 km. About 600m of this track coincides with an existing track, and 800m will be realigned through bushland where there is currently no track. 300m of existing DH track will be closed.</p> <p><i>There are two potential sites for the downhill trail Option A and Option B. Only option A was evaluated during the site visit as it the proposed route was marked with flagging tape. Option B was not marked with flagging tape so it was not surveyed.</i></p>
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As part of the proposed works there will be further "offsets" through width reduction of wide sections of track on the cross country track. The Plan involves the closure of 1,526 linear metres (lm) of cross country track and 270 lm of DH track for environmental outcomes. A further 1,615 lm of track will have its width reduced. Together this will achieve 2,010 m² or 0.2 ha of track being restored to bushland, the majority of which is a threatened ecological community (TEC).

The proposed DH and XC tracks will be designed and constructed to IMBA Standards. Design and construction of the track will be undertaken at the direction of Council in conjunction with input from the riding community and IMBA. The proposed method of construction will be using manual labour, with Council's track team overseeing volunteer labour sourced from the riding community.

The size of the proposed activity footprint:

The off road bike tracks are spread over an area of approximately 82 ha. However, there are many existing trails within the reserve. The proposed activity will involve the clearing of approximately 900 lm for extension to the cross-country track and approximately 800 lm for extensions/realignment to the downhill track. Over 90% of the new tracks are either within the Endangered Ecological Community, Shale/Sandstone Forest or the Critically Endangered Ecological Community, Sydney Turpentine Ironbark Forest.

Approximately 2,010 linear metres of the site will have tracks closed.

Ancillary activities e.g. roads, infrastructure, bush fire hazard reduction:

No activities, apart from track construction, constructed watercourse crossings, track closure and associated ripping and brush-matting sometimes including logs, are included within the proposed activity.

Proposed construction methods, materials and equipment:

The proposed DH and XC tracks will be designed and constructed to IMBA Standards. Design and construction of the tracks will be undertaken at the direction of Council in conjunction with input from the riding community and IMBA. The proposed method of construction will be using manual labour, with Council's track team overseeing volunteer labour sourced from the riding community. Specific details of these construction methods were not included within the proposed activity.

A description of the methods used for track closure and regeneration of indigenous vegetation has not been provided.

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

The proposed method of construction will be using manual labour, with Council's track team overseeing volunteer labour sourced from the riding community.

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

The construction of the tracks will require minor earthworks. Vegetation will be removed along the new track alignments. The extent of vegetation removal will be 1,700 lm (equivalent to 1,700 m²).

Environmental safeguards and mitigation measures:

Blue Mountains City Council will provide staff to oversee all track construction and track closure.

Council has provided the following details to demonstrate their planning, including financial planning for undertaking the rehabilitation works on the escarpment.

Tracks will be constructed according to the guidelines provided by IMBA.

Blue Mountains City Council has supplied the following information to demonstrate their financial commitment to restoration works (see below; Financial implications for the Council).

Financial implications for the Council

The financial cost to Council in funding the implementation of the MTBP over a three-year period is \$ 38,000, sourced from existing Bushland Management and Environmental Levy operating budgets. Council will be required to commit a further 36 staff days towards management and supervision of track care days, and expects to receive 300 person days in volunteer labour valued at \$ 45,000.

Mountain biking is a growing sport with high regional demand. As such, there is a strong opportunity to attract external funding that may reduce or eliminate some direct financial cost to Council. The significant volunteer labour contribution further enhances this potential to gain external funding. It would be Council's preference to fund the MTBP through external funding. If this cannot be achieved then other existing environmental management programs will have to be delayed or have reduced budgets for a three-year period in order to fund the MTBP.

At the completion of the three-year program of works Council will have an improved standard of trail network in Knapsack Reserve. At this point, Council's direct financial costs should reduce to approximately \$ 2,000 in materials/contractors and six staff days per annum. These costs would be met by the recurrent Bushland Management operational budget. Volunteer Track care days would be anticipated to continue at two days per annum.

Action	Cost	Source of Funding
Undertake Review of Environmental Effects	\$ 1,050	BMCC staff time (3 days)
Track Signage	\$ 8,000	BMCC operational budget
Management of cross country trails (inc. stabilisation of retained tracks, closure and rehabilitation of sections and construction of new sections as shown in enclosed maps)	\$ 6,300 labour \$ 15,000 materials/ contractors \$ 22,500 volunteer labour	BMCC staff time (based on 3 staff attending two Track care days per annum for three years) BMCC operational/ environment levy budgets (existing expenditure). Volunteer contribution to Track care days (based on 2 days/annum for 3 years assuming participation of 25 persons/day at 6 hrs/day @ \$ 25/hr)

Action	Cost	Source of Funding
Management of Downhill Trails (inc. construction of Option A and closure and rehabilitation of existing trail)	\$ 6,300 labour \$ 15,000 materials/ contractors \$ 22,500 volunteer labour	BMCC staff time (based on three staff attending two Track care days per annum for three years). Grant funding preferred, however if unsuccessful, BMCC operation/environment levy volunteer contribution to Track care days (based on 2 days/annum for 3 years assuming participation of 25 persons/day at 6 hrs/day @ \$ 25/hr)

Construction timetable and staging, hours of operation:

It is unclear how long the proposed new track construction will take.

Blue Mountains City Council have envisioned that implementation of the Mountain Bike Plan (MTBP) will take three years.

5.3 Objectives of the proposed activity

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

Provide details of objectives of the proposed activity:	Blue Mountains City Council's objective is to formalise the existing track network in Knapsack Reserve for use by mountain bikes. The council has recognised a need to formalise Mountain Bike riding sites within its Nature Based Recreation Strategy 2005-2015.
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6. Reasons for Proposed activity and Consideration of Alternatives

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

Reasons for proposed activity:

Blue Mountains City Council in their Nature Based Recreation Strategy 2005-2015 have recognised a need to identify and formalise suitable sites for MTB riding.

Alternatives:

There are existing sites at Old Bathurst Road, East Blaxland and Nichols Parade, Mt Riverview.

Justification for preferred option:

"At the Ordinary Meeting of the Council of 16 March 2,010, the Council resolved:

1. That Council closes all downhill mountain bike tracks on the eastern escarpment and adjoining ridges;

2. That Council moves to rehabilitate all closed tracks utilising local bush care groups and volunteers as a priority;

3. That Council liaises with NSW Police in order to enforce track closures;

4. That Council works with local riders to find a new location for downhill bike riding in a non-environmentally sensitive and non-residential area. That a report comes to Council on this issue within three months and the report considers funding support from user groups; and

5. That Council conducts community consultation, including but not limited to, public meetings, letter box drops, online discussion and liaison with Councillors and residents about any new location for downhill bike riding.

[Minute No: 103]

At the Ordinary Meeting of the Council of 29 June 2,010, the Council resolved

1. That Council receives the report and notes the information;

2. That Council endorses further assessment and consultation with stakeholders concerning the formalisation of mountain bike tracks in Knapsack Reserve, as provided for in the existing Knapsack Reserve Plan of Management; and

3. That Council receives a further report by 12 October 2,010 addressing the assessment of tracks, consultation outcomes and proposed usage strategy at Knapsack Reserve.

[Minute No: 284]"

Minute No: 502 and Minute No: 503 state additional resolutions regarding the proposed off road cyclists tracks at Knapsack Reserve.

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:

Knapsack Reserve is a large reserve in the lower Blue Mountains. A soccer club and playing field is present in the south-western corner of the park. The remainder of the park (>95%) consists largely of remnant bushland with many tracks.

The tracks comprise pre-existing 4WD tracks (now largely unused as unauthorised 4WD is prohibited), some vehicle access tracks, walking/running tracks and bike tracks.

Topography:

The site contains level areas and areas with steep topography >18°. Rocky outcrops are present on some parts of the site.

Surrounding land uses:

Residential, playing fields, a former sewerage treatment plant, mushroom farm, transport corridors for example railway line and the Great Western Highway, and remnant bushland.

Geology/Geomorphology:

The site is characterised by Hawkesbury sandstone, and sandstone scarps and outcrops are reasonably common.

Soil types and properties:

Primarily Sandstone Soils with influence of some shale derived soils.

Waterways including wild and scenic rivers:

Lapstone and Knapsack Creeks both flow through Knapsack Reserve. The Plan of Management for the site states that the water quality of both creeks is considered poor to very poor.

Catchment values:

Water from Knapsack Creek eventually flows to the Nepean River. Lapstone Creek flows to a dam in Emu Heights and may also eventually flow to the Nepean River.

Wetland communities including SEPP 14 wetlands:

No SEPP 14 mapped wetlands or natural wetlands exist on the site. A former sewerage treatment plant occurs on part of the southern boundary. The Plan of Management does not record it as a wetland habitat.

Flora (including flora of conservation significance):

No threatened floral species listed on the TSC Act or the EPBC Act has been recorded on the site. However, the NSW wildlife atlas displays the vulnerable *Dillwynia tenuifolia* and the ROTAP *Boronia fraseri* occurring on the site. The ROTAP species *Lissanthe sapida* (3Rca) has previously been recorded at the site, and during the survey for this REF two individuals were observed. One was near Margie's lookout and the other along the proposed option A preferred downhill Mountain Bike Trail.

Fauna (including fauna of conservation significance):

The following TSC and/or EPBC listed species have been observed in Knapsack Reserve: Spotted-tailed Quoll, Powerful Owl, Glossy Black-cockatoo and Little Lorikeet according to the Knapsack Reserve Plan of Management. The NSW Wildlife Atlas has records for Koala and Red-crowned Toadlet in Knapsack Reserve.

It is also possible that the Broad-headed Snake and Grey-headed Flying-fox are present, although they have not been observed.

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

The site contains mapped areas of the TSC and EPBC listed Critically Endangered Ecological Community, Sydney Turpentine Ironbark Forest and the TSC and EPBC listed Endangered Ecological Community, Shale/Sandstone Transition Forest.

The Blue Mountains City Council Scheduled Vegetation Community, Blue Mountains Riparian Complex is present on the site. No new tracks are proposed for construction within this vegetation community, although some existing tracks are already present. The proposed cross-country trails are located on some of the existing tracks through Blue Mountains Riparian Complex.

Critical habitat declared under the TSC Act:

No critical habitat for any species, population or community occurs on the site.

SEPP 26 littoral rainforest (or equivalent):

The site does not contain any SEPP 26 littoral rainforest

SEPP 44 koala habitat:

The site contains the SEPP44 scheduled feed tree Grey Gum *Eucalyptus punctata*, the secondary food tree species Blue Mountains Mahogany *Eucalyptus notabilis*, the supplementary species Thin-leaved Stringybark *Eucalyptus eugenioides*, and Narrow-leaved Stringybark *Eucalyptus sparsifolia*. Koalas have been reported on the site.

No survey for Koalas or assessment of habitat according to SEPP 44 requirements was undertaken as part of this REF.

No trees are proposed for removal for the construction of any new trails.

Wilderness (either nominated or declared):

Knapsack Reserve is not part of the nominated or declared wilderness within the Greater Blue Mountains World Heritage Area.

Aboriginal cultural heritage:

Issue 12 on page 98 of Item 12, Ordinary Meeting 14.12.10 recommends: "The preparation of the Review of Environmental Factors will consider Aboriginal heritage values and the Plan amended to avoid impacts on such values." This was not considered in the current scope of works for this REF. A recommendation of this REF is that a qualified archaeologist surveys the site to determine the likelihood of the proposed tracks negatively impacting on any Aboriginal heritage values while also reviewing European heritage values (see below). The archaeologist may also provide recommendations regarding the location of the off road bicycle track.

Fifteen sites of Aboriginal significance have already been identified within Knapsack Reserve during a field survey attended by representatives of Deerubbin Local Aboriginal Land Council (DLALC); Darug Tribal Aboriginal Corporation (DTAC); and Darug Custodian Aboriginal Corporation (DCAC) and Archaeological and Heritage Management Solutions (AHMS).

A document named "Heritage Assessment Vol 1" exists which provides further information on the site. It was not viewed while writing this REF. This document is mentioned in the Plan of Management for Knapsack Reserve.

National/state/local natural or cultural heritage values:

Thirty-nine heritage sites have been identified within Knapsack Reserve, some of which are listed on the register of the national estate, and many on the state register and local heritage register.

A recommendation of this REF is that a qualified archaeologist surveys the site in conjunction with the survey for Aboriginal Heritage values to determine the likelihood of the proposed tracks negatively impacting on any European or cultural heritage values.

A document named "Heritage Assessment Vol 1" exists which provides further information on the site. It was not viewed while writing this REF. This document is mentioned in the Plan of Management for Knapsack Reserve.

Vegetation of cultural landscape value:

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

Abel Ecology is not aware of any vegetation of cultural landscape value on the site.

Other cultural heritage values:

Abel Ecology is not aware of any other cultural heritage values existing on the site apart from the extensive cultural heritage values discussed above.

Recreation values:

The Reserve is used for running, walking, off road bicycling, and organised team activities, such as cricket and soccer. The reserve also provides the opportunity for observing local flora and fauna.

Scenic and visually significant areas:

Knapsack Reserve contains a number of scenic and visually significant locations. These include, but are not limited to, Elizabeth's Lookout, Margie's Lookout and Knapsack Viaduct.

Education and scientific values:

The Reserve contains areas of remnant bushland, including two Commonwealth and NSW listed ecological communities as well as habitat for both common and threatened fauna. The European cultural heritage values of the Reserve are considered significant.

Interests of external stakeholders (e.g. adjoining landowners, leaseholders):

The local residents and bushwalkers use tracks through the bushland, sporting groups and local residents use the playing fields, off road cyclists also currently use the tracks. The site also contains both European and Aboriginal cultural heritage values that are likely to be of interest.

Matter of National Environmental Significance under the EPBC Act:

Two listed Threatened Ecological Communities exist on the site. The current proposed activity does not provide an adequate off set for the loss of the Critically Endangered Ecological Community, Sydney Turpentine Ironbark Forest on the site.

8. Describe the Impacts of the Proposed activity

The 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.

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
<input checked="" type="checkbox"/>	Negligible to medium positive.	The proposed downhill and cross-country tracks will be designed to IMBA standards.	On steep slopes, downhill sections will be minimised. At the bottom of "switch-back" (corners where the direction changes) sections of the track will be built slightly upslope to stop water continuing to flow down the track. It is likely that track construction according to IMBA standards will improve soil stability compared with the present condition.
<input checked="" type="checkbox"/>	Negligible to medium positive.	The proposed cross-country primary trail either crosses a drainage line or is very close to the head waters of a drainage line at eight locations. These locations are all existing tracks/crossings. There are two new drainage line crossings resulting from the new alignments of the proposed cross-country primary trail, in addition to the eight locations mentioned above. The proposed cross-country secondary trail crosses or is	A recommendation of this report is that a letter from the IMBA or an engineer be attached to this REF, stating the qualities of track construction in relation to erosion. Blue Mountains Council has stated that constructed crossings will be a requirement for all watercourse crossings. This will improve existing crossings and minimise the impact at new crossings. The majority of the crossings of the drainage lines are at existing crossings.

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>very close to a drainage line at four locations.</p> <p>Proposed downhill track option A travels very close to a watercourse for approximately 80 m and crosses the watercourse three times over the 80 m section.</p> <p>The alignment proposed downhill track option B is identical to that of option A at the beginning of this section where it crosses the drainage line. Thus it also crosses the watercourse three times over an 80 m section.</p>	
3. Is the proposed activity likely to change flood or tidal regimes, or be affected by flooding?	<input type="checkbox"/>	No	N/A	N/A
4. Does the proposed 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 checked="" type="checkbox"/>	Negligible, Negative.	It is likely that small amounts of synthetic rubber from the bicycle tyres will wear off the tyres during riding on the tracks. This will only increase above existing levels if additional bike riders or walkers use the site.	
5. Does the proposed activity involve the generation or disposal of gaseous, liquid or solid wastes or emissions?	<input checked="" type="checkbox"/>	Negligible to low, negative.	Soil and rocks will be excavated by hand during the track-building phase.	The excavated material will be used in track construction and will be used within ten metres from where it was excavated.

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
6. Will the proposed 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"/>	Negligible, Negative.	Very small amounts of dust may be created during the track-building phase.	Temporary impact only.

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

Biological impacts during construction and operation

Section 3.9 of *Proponent's 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"/>	Medium-Negative to low positive.	The majority of the proposed constructed tracks are located in either the Critically Endangered Ecological Community, Sydney Turpentine Ironbark Forest (STIF) or in the Endangered Ecological Community, Shale/Sandstone Transition Forest (SSTF).	No trees will be removed for the construction of the tracks. Areas of both STIF and SSTF will be rehabilitated. The proposed activity will still result in a net loss of Sydney Turpentine Ironbark Forest on the site. Overall, there will increase in the area of threatened ecological communities on the site through rehabilitation.
2. Is the proposed 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))	<input checked="" type="checkbox"/>	Negligible to low negative	One individual of the ROTAP species <i>Lissanthe sapida</i> may be removed for option A, the preferred realignment of the downhill track. Additionally the track will remove some habitat for this plant. <i>Lissanthe sapida</i> is not listed as a threatened species under the TSC Act. The NSW wildlife atlas displays <i>Dillwynia tenuifolia</i> as occurring on the site. No individuals of this species were observed during the site visit. A seven-part test for this species concludes "No Significant Effect".	It may be possible to re-locate the track and avoid the individual of <i>Lissanthe sapida</i> . Closing of existing tracks, overall will possibly provide a greater area of habitat for this species than currently exists.
3. Does the proposed activity have the potential to endanger, displace or disturb fauna (including fauna of conservation significance) or create a barrier to their movement?	<input checked="" type="checkbox"/>	Negligible to low positive.	The removal of some existing areas of habitat by the construction of tracks may very slightly reduce connectivity Existing crossings at drainage lines may impact upon Red-crowned Toadlet potential nesting habitat and nursery pools.	The closure of some tracks and the reduction in width of other tracks will overall slightly increase connectivity in the reserve. Constructed crossings at existing watercourse crossings will reduce erosion and slightly improve habitat for the Red-crowned Toadlet.

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
4. Is the proposed 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"/>	Negligible to medium, positive.	Existing tracks already cross watercourses which in some locations may provide habitat for Red-crowned Toadlet. Erosion may occur at these crossings; the sediment created may damage both egg deposition sites and ponds. Red-crowned Toadlet has been recorded in the Reserve.	Tracks will be constructed according to IMBA standards. Constructed crossings at existing watercourse crossings will reduce erosion and slightly improve habitat for the Red-crowned Toadlet.
5. Is the proposed activity likely to impact on an ecological community of conservation significance?	<input checked="" type="checkbox"/>	Medium negative and medium positive.	Two Threatened Ecological Communities exist on the site. Tracks will be constructed in both of these ecological communities. The Blue Mountains City Council scheduled ecological community Riparian Complex also exists on site and an existing track travels through approximately 200 m of this ecological community. Weeds may spread along the bike tracks and then enter other areas of remnant bushland.	Track closures and reducing width along tracks will overall have a positive impact on the Shale/Sandstone Transition Forest. There is an inadequate area of track closures or track width reductions to off set the loss of the Critically Endangered Ecological Community, Sydney Turpentine Ironbark Forest. A Vegetation Management Plan will be prepared to reduce the threat of weeds. Blue Mountains Council has stated that current weed management in the reserve has already achieved a substantial decline in weeds and this will continue.

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
6. Is the proposed 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"/>	Medium negative and medium positive	Weeds are present on the site and in some locations they are common. Both bike riding and walking are existing activities within the reserve and it is likely that weed spread is already occurring through these activities. If bike riding increases this may increase weed spread. Also the new tracks may open up areas for weed infestation. The VMP may over the long term reduce the threat of weeds in the reserve to below that currently existing.	Weed control is a component of the proposed activity
7. Is the proposed activity likely to cause a threat to the biological diversity or ecological integrity of an ecological community?	<input checked="" type="checkbox"/>	Medium negative and medium positive	Weeds pose a threat to the ecological community over the longer term, however weed management is incorporated within the proposed activity. The plant disease <i>Phytophthora cinnamomi</i> has been detected at a number of locations on the site. This disease has a broad host range. It is unclear how widespread the disease is at the site. There are currently many uncertainties in understanding the impact of <i>Phytophthora cinnamomi</i> on indigenous vegetation communities. It is also unclear whether off road bicycling is of greater threat than bushwalking. One method of spreading <i>Phytophthora cinnamomi</i> is "infected mud" sticking to boots or tyres and dropping off in other uncontaminated locations. Note: "Infection of native plants by <i>Phytophthora cinnamomi</i> " is listed as a key threatening process under both the EPBC Act and the TSC Act. Current activities on the site such as bike riding and	Weed control is a component of the proposed activity, and is likely to be improved after the construction of the tracks. The publication "Best Practice Management Guidelines for <i>Phytophthora cinnamomi</i> within the Hawkesbury Nepean Catchment Management Authority Area" (2008) by Therese Suddaby and Edward Liew provides the following recommendations: "Cycling, 4W-driving and horse riding <ul style="list-style-type: none"> • Avoid riding or driving in bushland immediately following rain or when the soil is wet. • Avoid muddy tracks and puddles • Clean mud and dirt from hooves, wheels and footwear before entering and after leaving the bushland • Obey signage which restricts access • Keep to existing tracks"

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
			walking may transfer <i>Phytophthora</i> around the site. As the proposed activity will include measures to reduce access to mud it may reduce this threat.	This publication provides additional advice regarding the construction of tracks while minimising the spread of <i>Phytophthora cinnamomi</i> . It is recommended that a more comprehensive survey for <i>Phytophthora cinnamomi</i> be undertaken indicating areas to avoid in constructing off road bicycle tracks. Blue Mountains Council requires that all crossings over watercourses be constructed and signs erected to state that the tracks will be closed during wet weather. Both of these actions will reduce the threat of mud being transported around the reserve, possibly to below the existing level.
8. Is the proposed activity likely to introduce noxious weeds, vermin, feral species or genetically modified organisms into an area?	<input checked="" type="checkbox"/>	Medium, negative	Mountain bike riders may inadvertently introduce/spread weed propagules, particularly along tracks. The weeds may establish in new locations and eventually spread.	Weed control is a component of the proposed activity
9. Is the proposed activity likely to affect critical habitat?	<input type="checkbox"/>	No	No critical habitat has been declared for any of the ecological communities or species recorded or likely to occur on the site.	
10. Is the proposed activity consistent with any applicable recovery plans or threat abatement plans?	<input checked="" type="checkbox"/>	Medium negative to medium positive	The Cumberland Plain Recovery Plan includes Shale/Sandstone Transition Forest. This Recovery Plan includes "Recovery Objective 2: To deliver best practice management for threatened biodiversity across the Cumberland Plain, with a specific focus on the priority conservation lands and public lands where the primary management objectives are compatible with biodiversity	Areas of Shale/Sandstone Transition Forest and Sydney Turpentine Ironbark Forest on the site will be rehabilitated through deep ripping and brush matting. Tracks will be constructed according to IMBA Standards. The areas of Shale/Sandstone Transition Forest to be rehabilitated will be greater than the area lost. While some Sydney Turpentine Ironbark Forest will be rehabilitated

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>conservation". The removal of habitat through the construction of tracks is unlikely to be consistent with this recovery objective. However, the rehabilitation of an area larger than that removed for track construction will result in a net improvement for this Endangered Ecological Community on the site.</p> <p>No recovery plan exists for Sydney Turpentine Ironbark Forest. However, nine recovery strategies have been identified for this community. The proposed activity to create bike tracks is unlikely to be consistent with the strategy: Habitat management: Other: Manage, to best practice standards, areas of EECs which have conservation as a primary objective, or where conservation is compatible. Priorities are to be based on DEC conservation significance assessment.</p> <p>Similarly, indirect impacts of the proposed activity including the potential spread of weeds or <i>Phytolthora cinnamomi</i> along tracks is unlikely to be consistent with the recovery plan or recovery strategies for either of these endangered ecological communities. However, the inclusion of a VMP and the reduced likelihood of the transfer of mud around the site may provide a positive benefit for both of these communities.</p>	<p>through track closures there will be a net loss of this community on the site. Overall, there will be a net gain for Threatened Ecological Communities on the site.</p>

Biological impacts during construction and operation

Section 3.9 of *Pragments 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
11. Is the proposed activity likely to affect any joint management agreement entered into under the TSC Act?	<input type="checkbox"/>	Abel Ecology is not aware of any joint management agreements.	N/A	N/A

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

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; o 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 proposed activity likely to affect community services or infrastructure?	<input checked="" type="checkbox"/>	Negligible, negative	Track construction is likely to create noise and small amounts of dust. The impact is only temporary and will be highly localised.	The proposed activity will be publicly exhibited allowing local residents to be aware of track construction.
2. Does the proposed 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"/>	Negligible, negative	Track construction will occur as a staged process. Only small sections of track will be constructed at any one time. Any recreational users of the Reserve will be able to travel around any areas where track construction is taking place.	A recommendation of this REF is that a sign stating that track construction is occurring must be erected at each point of entry to the Reserve. Once the proposed activity has been adequately developed it is recommended that a walkover be conducted showing the location of the proposed tracks, track closures, width reductions and proposed mitigation where required.
3. Is the proposed activity likely to affect economic factors, including employment, industry and property value?	<input checked="" type="checkbox"/>	Medium, positive	The off road cyclists who visit the reserve may also make purchases from local businesses.	
4. Is the proposed activity likely to have an impact on the safety of the community?	<input checked="" type="checkbox"/>	Low, negative	There is the possibility of off road cyclists having a crash or alternatively crashing into a pedestrian.	BMCC has stated that "Knapsack Reserve is of sufficient size that interaction between riders and walkers is likely to be minimal". "Reserve/MTB signage will include a Code of Conduct that identifies responsible riding practices and provides mapping showing the location of double and single tracks." The two quotes above are sourced from p. 97, Item 12, Ordinary Meeting 14.12.10.

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
5. Is the proposed activity likely to cause a bushfire risk?	<input checked="" type="checkbox"/>	Negligible, negative	Off-road cyclists may inadvertently start a fire, perhaps through the disposal of a cigarette. While this remains a slight possibility, the Reserve has been used by off-road cyclists for many years and the author is not aware of any suspected initiation of fire by users of the Reserve.	
6. Will the proposed activity affect the visual or scenic landscape?	<input checked="" type="checkbox"/>	Negligible, negative and positive. Low, negative.	Some new tracks will be created and some old tracks will be closed or reduced in width. The overall area of tracks that will be closed or reduced in width is greater than the area of tracks to be created. Thus over the medium-term, approximately 5-20 years, the scenic values of the Reserve are likely to slightly improve. Potential weed impacts have been addressed above; these may have a negative impact on the visual landscape..	Weed control and track closure and track width reduction has been included in the budget for the Reserve.
7. Is the proposed 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"/>	Negligible, negative	Small amounts of noise and dust are likely to be created during track construction. Off road cyclists may also make some noise during their use of the Reserve.	Reserve/MTB signage will include a Code of Conduct. This will promote responsible use of the Reserve by MTB riders and will overall reduce the amount of noise they are likely to make.
8. Is the proposed activity likely to affect the use of, or the community's ability to use, natural resources?	<input checked="" type="checkbox"/>	Negligible, positive and negative.	The main values of the natural resource at the site are the scenic/aesthetic values of the site. The proposed activity will impact on a very small area. Apart from the generation of noise and dust discussed above, community use is not likely to be affected.	

Natural resource impacts during construction and operation

Section 3.11 of Proponent's 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 proposed activity likely to result in the degradation of the reserve or any other area reserved for conservation purposes?	<input checked="" type="checkbox"/>	Low, negative to positive.	Tracks will be constructed or upgraded according to the guidelines of the IMBA. Blue Mountains Council require a constructed crossing at all watercourses. Weeds will be managed through a VMP. While both erosion and weeds are potential threats, both will be managed.	Tracks will be constructed according to IMBA Standards. Weed control is included as a part of this proposed activity.
2. Is the proposed 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	Vegetation removed as part of track construction will be reused within the site for brush matting. Any soil excavated during the construction of tracks will be reused for track construction.	

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

Aboriginal cultural heritage impacts during construction and operation

Section 3.12 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. Does the proposed activity affect places of significance or importance to the Aboriginal community or other cultural values?	<input type="checkbox"/>	Unknown	A recommendation of this report is that an Archaeologist identifies possible areas that are best avoided as part of the proposed track construction. Additionally the archaeologist must review the location of the proposed use of existing tracks to identify location that are sensitive.	An Archaeologist must review the proposed activity.
2. Is the proposed activity likely to affect wild resources or access to these resources, which are used or valued by the Aboriginal community?	<input type="checkbox"/>	Unknown	Unknown	
3. Does the proposed activity affect areas nominated or declared as Aboriginal Places?	<input type="checkbox"/>	Unknown	The Plan of Management states that 15 sites of Aboriginal significance have been identified in the Reserve.	An Archaeologist must review the proposed activity.
4. Does the proposed activity affect areas subject to Native Title claims?	<input type="checkbox"/>	Unknown	Unknown	

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