



# Eastern Escarpment Conservation Area Plan: Connecting with Recreation

February 2018





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Rainforest near Buhot Creek





# Introduction

## Purpose

The purpose of this project has been to prepare a planning and design document to guide the development of the trail network within the Eastern Escarpment Conservation Area (EECA).

While it is acknowledged that there is significant potential to add value to the trails network through linking Eastern Escarpment Conservation Area by trail to other conservation areas in Redland City and Logan City this planning work has not been undertaken at this time. There are particular challenges in achieving this and Redland City Council will undertake this planning work in the future. The focus of this project has been the trails and recreational use of the Eastern Escarpment Conservation Area only.

## Background

Redland City Council has a significant portfolio of bushland and conservation areas. Council's policy has always supported public access to these areas (with a few exceptions) for recreation pursuits.

Planning for the development of the trails network within the Eastern Escarpment Conservation Area follows the recently completed Redlands Track Park at Cleveland and the developing trails network within the Bayview Conservation Area.

The Redlands Track Park should be considered as a Front Country experience and Bayview Conservation Area Trails Facility as a Back Country experience. The trails within Eastern Escarpment Conservation Area are also back country trails and given its topography, offers the only downhill mountain bike riding within Redland City and well beyond. The trails provide for people seeking that extra level of difficulty.

It is also ideally suited, when developed, to trail horse-riding, mountain biking, bushwalking, rogaining, trail running and orienteering events among others.

This plan establishes the site's master plan that will be a guide to its staged development.





Existing trail through the elevated section of EECA





# Literature Review

## Redland City Council Corporate Plan 2015

As part of the development of the 2015 Corporate Plan Council has reviewed and renewed its corporate vision, mission and values. These “articulate Council’s long-term direction”. Council’s Vision is:

*Forward thinking, engaged and focused on enriching community lifestyles.*

The development of a trails network in Eastern Escarpment Conservation Area contributes to at least two of the Plan’s eight Key Outcome Areas including:

- » #1—Healthy Natural Environment
- » #7—Strong and Connected Communities

The 2020 Outcomes under the Healthy Natural Environment Key Outcome Area are:

1. Redland’s natural assets including flora, fauna, habitats, biodiversity, ecosystems and waterways are managed, maintained and monitored.
2. Threatened species are maintained and protected, including the vulnerable koala species.
3. Community and private landholder stewardship of natural assets increases.
4. Visitors experience our natural assets through high standard facilities, trails, interpretation and low impact commercial ventures.

The first three 2020 Outcomes refer to the management of the biodiversity and conservation

values of the Eastern Escarpment Conservation Area. The fourth 2020 Outcome realises that recreation, particularly linear recreation and low impact commercial recreation, is possible in tandem with preserving and enhancing environmental outcomes. As an example it has been found that the presence of people in conservation areas that are legally using the facilities discourages the illegal use of the area such as by people on trail bikes.

The development of a trail network, apart from its recreational benefit, has key management benefits, particularly in relation to fire and weeds management.

Council’s Enhancing the Visitor Experience project embodies these concepts. This wide-ranging project has begun the process of examining low cost changes that can open the conservation estate and other natural environments for greater responsible recreation use.

The Strong and Connected Communities Key Outcome Area (#7) recognises the social and economic benefits from events held in the Redlands. It also encourages a greater volunteering culture in the Redlands and recognises the role that volunteers can take in delivering Council outcomes.

# Seven Cs Connection Strategy

The Seven Cs project is about:

*developing wildlife linkages and recreational corridors across the City harnessing the power of communities, centres, cities, catchments, culture, conservation areas and citizens to connect people, plants and animals across public and private lands.*

The network of corridors are designed to benefit animals and plants, and residents and visitors. Residents and visitors will be able to use the recreation corridors for walking, jogging, cycling and horse-riding, though the latter will be restricted to rural areas.

The stated aims of the Seven Cs Project are:

- » provide sustainable and accessible outdoor environments
- » connect people and places through recreational pathways
- » connect fauna with food, water and each other
- » create recreational, commercial, cultural, and stewardship opportunities
- » provide opportunities for people and communities to lead healthier lives.

The link of most relevance to this plan is the Avalon Road—Eastern Escarpment Conservation Area link which connects Eastern Escarpment Conservation Area into the Seven C's Network.

Eastern Escarpment Conservation Area, being at not far from the edge of the local government area, is to be connected into the network via Avalon Road and Schoek Road (which is not formed for its entire length). The Eastern Escarpment Conservation Area is a destination for trail users and the Seven C's network envisages people walking or riding to the Eastern Escarpment Conservation Area from across and outside the City.

While not discussed in any great detail in the Strategy connections beyond the Eastern Escarpment Conservation Area to Logan City and Brisbane City can be established with joint planning. For example, Schoek Road to Avalon Road Trail, Woodland Drive to Redland Track Park and other connections to the Koala Bushland Conservation Areas.

Detailed design needs to be undertaken to establish the final preferred routes.

# Conservation Land Management Strategy 2010

The Conservation Land Management Strategy 2010—A Plan for the Next 10 Years is a Redland City Council document with the intent to provide principles for the management and planning of the City's Conservation Estate.

In that light recreation is seen as a legitimate use and the Strategy has the aim to “provide recreational opportunities where possible without compromising conservation values or visitor safety”.

Various principles within the Strategy are relevant to planning of the trails within the Eastern Escarpment Conservation Area. Recreation is dealt with on pages 54-56 and the most relevant principles, by activity, are listed below.

## General

The overarching philosophy of Council is to provide ‘multiple-use’ nature-based recreation venues that appeal to, encourage and engage the community, and:

- » the management of recreation in the city should aim to meet the requirements of the SEQ Regional Plan: “Establish and maintain a network of accessible outdoor recreation areas, including regional parks, trails and waterways, as well as private lands with the voluntary agreement of landowners”
- » reserves planning for recreation should be designed to encourage recreation that does not impact on natural communities
- » public access and recreational activities for nature based recreation will be based on Local Law No. 15<sup>1</sup> (Parks and reserves).

## Walking Tracks

Where intra-reserve walking tracks are planned or managed the Australian Standards for walking tracks should be considered (AS2156.1-2001: Walking Tracks Classification and Signage).

## Mountain Bikes

Bicycle riding is an appropriate recreational activity in parks and reserves and a legitimate, nature-based activity and mountain biking will be encouraged in all parks and reserves where it is considered environmentally appropriate. Other principles are:

- » when constructing or closing mountain bike

<sup>1</sup> This local law has since been replaced with Local Law 4—Local Government Controlled Areas, Facilities and Roads



trails, consultation must occur between Council, bushcare/trailcare group and other relevant mountain bike groups

- » trails constructed for the use of mountain bikes must also be compatible with, and may be used by bushwalkers. Signage should indicate that this is dual use
- » mountain bike use should be constrained to trails designated as mountain bike compatible or general cycling compatible trails
- » where construction, upgrade or management of specially designated mountain bike trails is to be undertaken, refer to IMBA (International Mountain Bicycling Association) trail construction and management principles
- » formation and maintenance of Bushcare/ trailcare groups should be based on engaging locally run groups first
- » track closures, maintenance and design must be based on understanding of broader strategic network of tracks within and between the city's conservation reserves
- » trails should stay out of streams and wetlands unless crossing by direct route. Mountain bike tracks should not be constructed within 30m of a waterway or area identified as being a sensitive area
- » to protect water quality and habitat, only cross streams where absolutely necessary. Where crossings are necessary, use natural rock features or bridges. If it is considered essential for a track to cross a watercourse, it must be sited to cross by the shortest and most environmentally considerate route
- » bridges and other track infrastructure for dedicated mountain bike trails (single-track) should be constructed of 'natural' material.

## Horses

Horse-riding is permitted on selected conservation reserves where this use is considered environmentally and socially appropriate (note: fire road horse-riding is allowed in Eastern Escarpment Conservation Area). When considering horse-riding the following factors need to be taken into account:

- » the level of use which may be anticipated if horse-riding is officially permitted
- » alternative opportunities for horse-riding in the district
- » potential problems of access and parking.

In managing the activity consider:

- » review the existence of suitable trails and places for horses to be tethered watered and fed

- » suitable rest, picnic and toilet facilities for anticipated numbers of riders
- » the ability of management to define the permitted area and enforce any restrictions considered necessary.

Horses are to be kept to fire trails. Horses, pedestrians and bikes can use fire trails whereas 'single-track' can only be used by pedestrians and bikes.

## Orienteering and Rogaining

Council recognises the use of reserves for off-track cross country navigational activities conducted by orienteering and rogaining groups.

## Motorcycling

Motorbike activities are not allowed.

# Pest Management Plan 2012–2016

This Council prepared document sets out how Council will respond to the management of pest weeds and animals in its 17 Environmentally Sensitive Areas (of which Eastern Escarpment Conservation Area is one) and 27 Aquatic Environments.

Managing pests is key to maintaining the City's healthy and natural environment. The Plan recognises that managing pests requires a broad community and government commitment at all levels. The use of EECA for the permitted activities will introduce pests (see Figure 1) and these need to be managed.

Details on how Council will manage particular plant and animal pests known to occur in Redland City is set out within the document.

Figure 1: Example of weeds growing in horse manure dropped on a trail







Fire Trail





# Site Analysis

## Site Description

### Location

The Eastern Escarpment Conservation Area is 186.68 hectares in area. For comparison the Bayview Conservation Area, including the contiguous Carbrook Wetlands, is 920 hectares in area or 772 hectares excluding the Carbrook Wetlands.

The Eastern Escarpment Conservation Area is located to the east of both Don and Christine Burnett Conservation Area and Ford Road Conservation Area alongside West Mount Cotton Road within Mount Cotton (refer to Figure 2).

The site is generally bounded by acreage residential and small farms. The Karingal Scout Camp is adjacent to the eastern boundary. The shared boundary between the two areas is approximately 1,500 metres. The boundary is not well defined on the ground and it is suspected that some of the trails may cross between the two sites. Discussion between the two land managers is ongoing in relation to this.

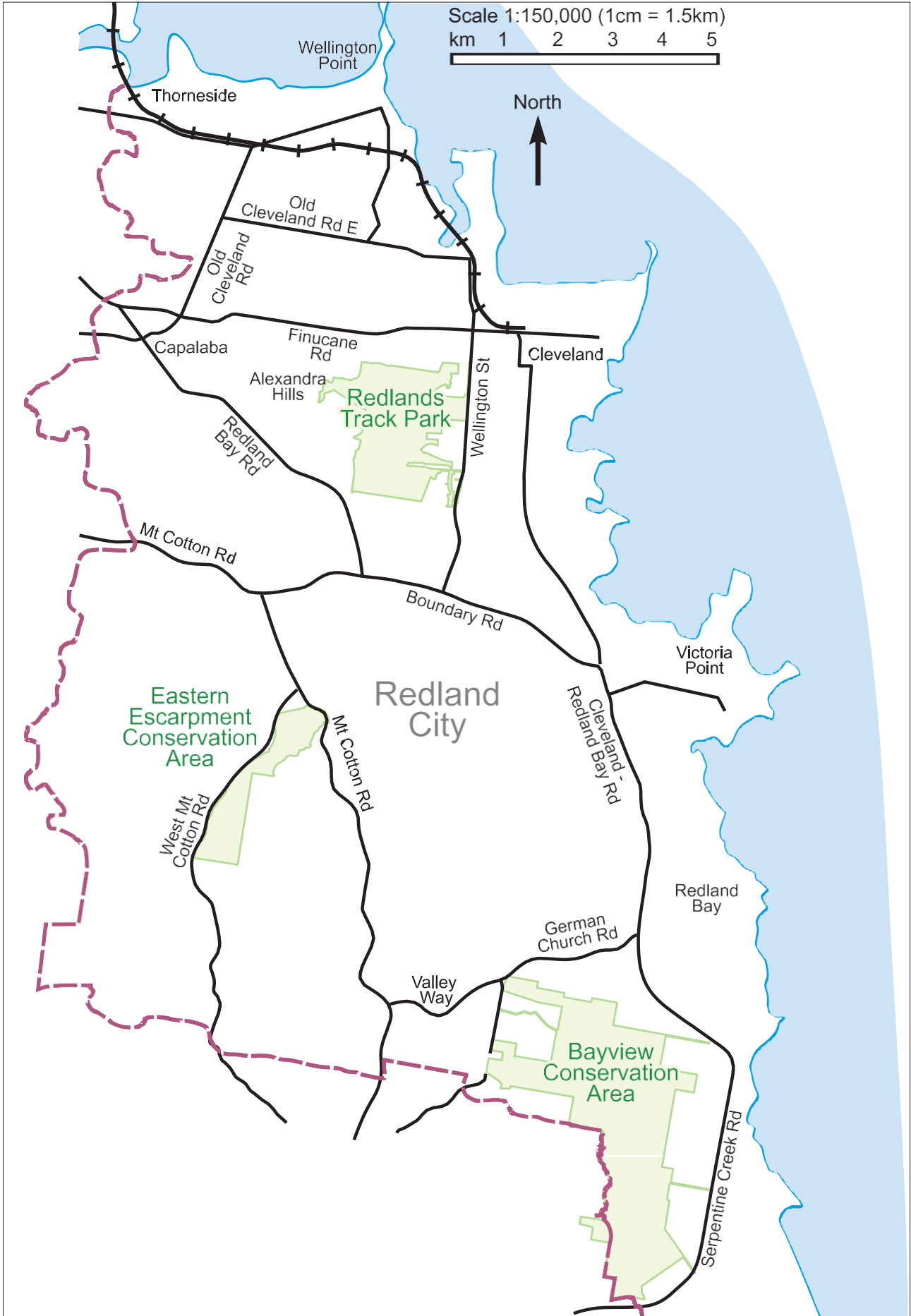
## Topography, Geology and Soils

### Topography

The Eastern Escarpment Conservation Area is aligned north-east to south-west. In the south the landform rises steeply from a creek up to the ridges of Mount Cotton. The southern slope from the creek supports a patch of endangered notophyll vine forest. A small off-shoot of Tingalpa Creek flows northwest through the Eastern Escarpment Conservation Area and then to Tingalpa Creek.

The land north of Mount Cotton and its ridges running west form part of the headwaters for Eprapah Creek and drains northeast through the Eastern Escarpment Conservation Area. Heading east from West Mount Cotton Road the land undulates and drops steeply at times before gradually flattening out to a gentle gradient at the boundary between the conservation area and the Karingal Scout Camp. The northern section of Eastern Escarpment Conservation Area is primarily open eucalyptus forest on dry Paleozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics.

Figure 2: Site location in context with other Redland track parks





## Geology and Soils

The Eastern Escarpment Conservation Area consists of a combination of red and yellow podzolic soils and lithosols on high quartzite ridges and red clays on fringing slopes according to CSIRO's Soil Association Map: Brisbane—Beenleigh Area.

Podzolic soils are acid throughout and have a clear boundary between the topsoil and subsoil. The subsoils are clayey and may be very deep, the colour of the subsoil is of a red / yellow texture. Red Podzolic soils are found in well-drained humid areas on crests and upper slopes while Yellow Podzolics are more likely on lower slopes in areas of poor drainage.

The nutrient status of these soils is typically low with a range of nutrient deficiencies the most common being nitrogen, phosphorus and molybdenum; phosphorus deficiency in particular is often severe. The physical characteristics of podzolics are usually quite fair.

Lithosols are essentially stony or gravelly soils lacking horizon development and are found on the steep slopes within Eastern Escarpment Conservation Area. They are usually shallow and contain a large proportion of fragmented rock with very little binding soil material. These soils are easily eroded. The nutrient supply is usually poor to fair due to extensive leaching and the small rooting volume.

## Ecological Values

In preparing this report BAAM Ecological Consultants prepared an ecological assessment. The full document is available upon request.

BAAM's report found that in riparian communities visitor impacts and weed infestations have the potential to affect the lowland rainforests, native jute and Milkyvine (Clear and Slender types). Illegal dumping has the potential to highly impact soft-spined sunfish in the waterways and orchids and other native species could be impacted by illegal collections.

In non-riparian areas of Eastern Escarpment Conservation Area the visitor impacts to native jute and Milkyvine (Clear and Slender types) and the possibility of illegal collection of orchids and other native species remains. Unregulated fire is a high risk to a range of animals and plants in the drier parts of the reserve. Unregulated fire poses a high risk to:

- » Native Jute (and other sensitive ecotone plants)
- » Clear Milkvine and Slender Milkvine
- » Koala (and other arboreal mammals)
- » Greater Glider (and other gliders)

- » Powerful Owl
- » Glossy Black- Cockatoo
- » Short-beaked Echidna
- » Orchids (and other native ornamental species)

Unregulated fire would have less impact on the Grey-headed Flying- Fox and other megabats but needs to be considered in any fire management regime.

## Cultural Heritage

A Cultural Heritage report was prepared for the reserve. The report found that it is likely that significant subsurface Aboriginal cultural heritage is located within parts of the reserve.

A detailed survey was undertaken over three days. Potential Aboriginal sites were recorded including a resource area along Eprapah Creek line and fifteen potential scar trees.

The report describes the resource area:

*“Along Eprapah Creek is a resource area with an abundance of readily available, good quality stone materials, such as silcrete, quartz, quartzite, greywacke and schist. These resources are distributed throughout the shallow creek line, measuring between 100 - 150 cm deep and 200 - 250 cm across. Dense vegetation prohibited a full assessment on either side of the creek but visibility within the creek suggests these resources are available throughout the Study Area”.*

The potential scar trees were located throughout the reserve and were not concentrated into a smaller area.

The report recommends that “clear communication channels between QYAC and Redland City Council need to be maintained for any proposed development plans”.

There is little European history remaining on the site of any merit. There is evidence through the reserve of past logging—stumps and logging trails—but no “built assets” such as buildings or ruins. There is some evidence of a house site in the southwest corner of the reserve with a remnant rock wall, pipes and exotic tree plantings.

Despite Council's efforts over many years to remove rubbish from the reserve (the reserve was very degraded when it was acquired by Redland City Council) there are still some pockets remaining that need to be removed.

## Weeds and Pests

While no specific survey was undertaken of weed infestations in the Eastern Escarpment Conservation Area observation indicates that the reserve was generally clear of weed infestations. Council's Bushcare Officers monitor the reserve and undertake clearing works as required.

The reserve is a large area and it is possible that dogs and cats (and possibly pigs) can and do escape into the reserve but Council's pest management appears to have this under control.

At the time that the area came under Council management it was heavily weed infested and had wild pest animals such as pigs, foxes and cats. Council officers have worked diligently to remove all traces of these weed and pest infestations.

## Fire

Fire Management within the Eastern Escarpment Conservation Area is undertaken by Council, in accordance with Council's Bushfire Action Plan 2016 and Conservation Land Management Strategy 2010.

## Usage

Within the Eastern Escarpment Conservation Area there are a number of tracks and trails that are already established.

All the tracks and trails are historic or have been developed as part of the site's management (mostly fire trails which can be 80-100 years old). All other trails have been developed by users over many years. For example the downhill mountain bike trail was constructed by the mountain bike community over about eight years.

At this point there are no trails that have been constructed by Redland City Council for recreational use.

There are no signs in the reserve and little in the way of car parking and trailheads. Despite this there is evidence of use by walkers, cyclists and horse riders. Many of these people spoke passionately of the reserve at the consultation events.

Current users could be described as those seeking greater challenges; such as taking on steeper slopes on less well formed trails.

Some users of the Eastern Escarpment Conservation Area have been accessing the summit of Mount Cotton through the reserve along a historic logging trail probably more than 100

years old. This requires crossing private land and is not authorised. It is reasonable to assume that most people would not be aware that they were crossing private land as there is no demarcation (e.g. a fence) between the sites<sup>1</sup>.

Possibly due to the lack of signage and regulation of the reserve the separation of horses from walkers and cyclists on the single track is not always adhered to either.

## Entrances

There are nine entrance points, most off West Mount Cotton Road. See Figure 3 for their locations.

Gate 2, which is opposite Schoek Road, is the most popular entrance point as it has a large area suited to car and horse float parking. Perhaps the second most popular authorised entry point is Gate 6 (known as Green Box) that has parking for several cars and/or trailers. This gate is more central to the Eastern Escarpment Conservation Area but there is little scope to create significant car parking as West Mount Cotton Road is quite close to the reserve at this point and there is little remaining space in the road reserve to fashion car parking.

## Water Catchment

Eastern Escarpment Conservation Area is the headwaters of Eprapah Creek which flows into Moreton Bay at Victoria Point. An unnamed creek also flows through the reserve and then northwest to Tingalpa Creek. There are rare fish in the creek systems so water quality must be maintained to protect these animals.

## Infrastructure and Facilities

There is no service infrastructure (electricity, water, sewerage) within the reserve.

There is electricity along West Mount Cotton Road (north side) that can be accessed at the Gate 2 Trailhead if required—though that is not planned at this stage.

There is fencing of the western boundary with gates and horse stiles and several reserve name signs. Within the reserve improvements are limited to fire trails and single track trails. There are no other improvements.

There are no formal wayfinding signs on any track or trail which makes navigation difficult for the inexperienced user.

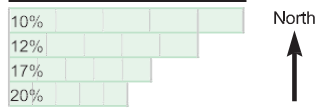
<sup>1</sup> Since this project has commenced RCC have taken steps to close this unauthorised access.



Figure 3: Existing trails and entrance points for Eastern Escarpment Conservation Area

# Eastern Escarpment Trails

Scale 1:15,000 (1cm = 150m)  
 Contours 10m : 50m  
 m 100 200 300 400 500



- Unmaintained/closed/private trails
- Existing maintained trails
  - 1 Multi-use trails (Cyclists, Horses, Walkers)
  - 2 Shared-use trails (Cyclists, Walkers)
  - 3 Single-use (Downhill) trails (Cyclists)







Eastern Escarpment Conservation Area consultation event





# Consultation

## Public Program

The project has tried to consult widely using a large number of channels. The consultation program has included:

- » Two public meetings
- » Web-page with feedback form
- » Social media updates and information distribution
- » Public on-line and mail-out community survey
- » Mail-out to 130 adjacent landholders and those in the vicinity of the Reserve on all sides
- » Meetings with adjacent landholders
- » Meetings with interested parties
- » Responses to a letter sent by the Redland Bushwalking Club
- » EECA Advisory Group meetings (2)

### Public Meetings

Consultation was held at two public events that were well attended. The first meeting raised a number of concerns within the community, nearly all of them involved factors outside of the reserve such as trails being developed through private property (and private property matters in general) to boundary fences being removed and vehicles being allowed back in the Eastern Escarpment Conservation Area.

The matters that were being canvassed were generally things that were not ever going to happen. Such was the level of misinformation that Redland City Council scheduled a second

round of consultation and provided a high level of resourcing for the event—multiple staff, maps and information handouts.

While this event proved to answer many questions in the community there was still little input into trail matters within the reserve—most of the consultation had concerned quelling fears of matters external to the reserve.

To advance the trails planning and receive feedback from the various user disciplines an Advisory Group was formed.

### Eastern Escarpment Conservation Area Advisory Group

The Eastern Escarpment Conservation Area Advisory Group was setup for the sole short-term purpose of commenting on the proposed trails map as can be seen at Figure 5.

The disciplines were represented by:

- » Mountain Bike Australia
- » Redland Bushwalkers Club
- » Redland Horse Trail Riders Club
- » Trailrunning Association (Qld)
- » Birkdale Bushcare Group

After an initial meeting the disciplines consulted within their organisations and with allied organisations about the proposed trails plan.

The following is a summary of the presentations that each group made back to the Advisory Group after consultations within their community.

## Mountain Bike Australia

- » Long term it would be ideal if access to the summit of Mount Cotton was available to make best use of the downhill trails (i.e. as a drop off point)<sup>1</sup>.
- » There are very few double black diamond downhill trails in the Brisbane region so the existing and proposed trails are important for the discipline of downhill mountain biking.
- » Agree that the trailhead should be at Gate 2 (Schoeck Road).
- » The mountain bike community would like to see a trails alliance established to assist Council in looking after the trails that included all user groups.
- » A suggestion was made to consider an additional parking area between gate 8 and gate 6 (closer to gate 8) and a short link trail from the parking area to Contour Trail 2. This would suit the downhill (DH) riders and provide closer access to Trail Hub Map 4 and up to the start of DH2/1 .
- » Multi-use Link 3 that moves through the remnant rainforest area is vital to providing connectivity to other mountain bike trail networks linking Daisy Hill, Cornubia Forest etc—a long term project for Redlands, Logan and other stakeholders. This trail, as with all trails, needs to be constructed sustainably and in consideration of its uniqueness.
- » Downhill (DH) Trails—Safety concerns if DH1/2 are shared use between mountain bikers and walkers/runners. There are only two downhill trails proposed for the whole site. The downhill trails should be one-way and for mountain bikers only. When riding a descending trail high speeds are reached and a rider does not expect to come across a walker/ runner either ascending or descending. Downhill trails require fall lines therefore they cannot be constructed anywhere and as readily as other trail types. There are not many downhill trails in the region or the whole of Brisbane. By making DH 1 and/ or DH 2 shared use trails we are effectively not providing riding opportunities for this segment of the mountain bike community—technically challenging and for gravity riders.
- » Access from the Karingal Scouts into the site will provide additional mountain bike and other event/ activity opportunities.
- » The mountain bike community ride from Ford Road through to Schoeck Rod and into the Eastern Escarpment as a training loop.

- » Signage: The mountain bike community would appreciate being consulted when naming trails/ installing signage. Also suggestion to consider Aboriginal heritage and incorporate on interpretive signage for users, particularly walkers.
- » Generally happy with the proposed separation of horses and walkers/ mountain bikers.

## Redland Bushwalkers Club

- » The bushwalkers do not see how they can share the existing downhill mountain bike track (which they call the “Mongrel”) with downhill mountain bike riders. The bushwalkers currently use this track in particular for “testing” the fitness and capability of new members. They would have 20 members per week use the trail.
- » The Club have concerns about car parking. Needs organising. Do not put any car parking at Gate 8 or Gate 9 as it is too dangerous.
- » The proposed multi-use trail between Gate 8 and 9 should not be built. The Club has concerns about the remnant rainforest in the location.

## Redland Horse Trail Riders Club

- » Members are excited about the proposals, particularly good car parking and the new trails.
- » The Club agree that the rainforest area (near Gate 8 and Gate 9) is not for horses but would appreciate a walking trail through the area.
- » Given the lack of signage and other indicators in the area members did not/ do not know where private land starts and stops.
- » There is not enough directional and information signage in the Area. Signage advising which trails horse riders can use, and when, is required. Happy to share trails, just want signage saying which trails can be used by horse riders.
- » Would like access from Woodland Drive.
- » Want trails to be established as circuits.
- » Schoeck Road trailhead is good. The car parking needs to consider the needs of cars with floats. Need pull through bays and signage to say it is for vehicles with a horse trailer only.
- » Wherever there is car parking for horse trailers there should be a tie up rail.
- » Need a stile at Schoeck Road.
- » The surface of the trails should be mulch rather than gravel (Kidd Street is a good example).
- » Clean the gutters of the Trailhead buildings so that the water quality is improved for horse (in the troughs).

<sup>1</sup> It should be noted that such a route would likely involve private land and is not proposed in the short or medium term



- » To be allowed to go through Karingal, even if a payment was required, would improve the experience substantially. Karingal could serve as a “park and ride” base.
- » Would be good to see the trails connecting out e.g. through Sirromet or to Mt Cotton and beyond in the long term.
- » Would like notice of when controlled burns are to take place so that members do not turn up on that day.

### Trailrunning Association (Qld)

- » Feedback from some of the trail running community has been positive, no issues or questions to report, apart from the no access to the top of Bilau Rd, which as advised cuts through private property
- » The only other comments were that the members were hoping that the trails will be as natural as possible, taking into consideration the environmental impacts.

### Birkdale Bushcare Group

- » The organisation is “vehemently opposed” to the whole project.
- » The Group’s main concerns are erosion and fire management.
- » There is significant erosion in the Eastern Escarpment Conservation Area and more use will exacerbate it. The area is geologically unstable.
- » Council cannot keep up with the current fire management program. If a fire broke out while there were walkers in the reserve they may be in danger.
- » It is not acceptable to have a trail cross the Creek near Gate 9. This is a sensitive environment. It is not possible to provide an adequate crossing at this point.
- » Trails cannot be made stable in this Area (i.e. so that they do not erode).

### Summary

As can be seen there are diverging opinions concerning the use of Eastern Escarpment Conservation Area and the trails network. The four disciplines—bushwalking, mountain biking, trail riders and trail runners all support the trail network’s alignment (broadly) though differing in user policies that may restrict one discipline’s access rights.

The environmental group represented on the working party though is “vehemently opposed” to the whole project. The group do not believe that it is possible that the reserve can be used without significant environmental degradation.

## Karingal Scouts

The Karingal Scouts Centre is an adjacent landholder. Karingal and Eastern Escarpment Conservation Area have been used together over many years by the trail community.

There is an existing trail along the boundary of the two sites that appears to be mostly on Karingal’s land.

This plan proposes that this trail is relocated back within Eastern Escarpment Conservation Area to keep all trail activity within the reserve.

Karingal Scout Camp is prepared to maintain dialogue with Redland City Council on how the two areas can work more closely together. Karingal is looking for opportunities to secure some income from the use of their land and facilities and future talks will be focussed on extending use of their site and achieving income from its use. Talks to date have been positive.

## Redland City Council

A number of staff involved in the management of Eastern Escarpment Conservation Area or involved in providing recreation opportunities were asked for input. A summary of the key points is:

- » Camping within Eastern Escarpment Conservation Area is not currently allowed (by regulation). There are no plans to change this.
- » Council are in the process of delineating the private land boundary of the trail that leads from the summit of Mount Cotton across private land to Eastern Escarpment Conservation Area with a view to stopping people using this access.
- » The addition of some interpretation within the reserve would be possible and would add interest.
- » Council will encourage, in the long term, the establishment of a Trailcare Group, which may involve broadening the scope of an existing group. There needs to be some consideration of where their tools are kept and how the group is managed.
- » The trailcare group needs to work with the Council employed Bushcare officers to plan and coordinate their work schedules.
- » Council’s policies and guidelines concerning the use of volunteers needs to be updated to allow the use of some powered equipment where it is deemed safe.





Remnant rock wall in the south-western section of the reserve





# Trail Descriptions

## Existing Trails

The Eastern Escarpment Conservation Area has a number of well-established trails developed over many years by local users though their overall length is not significant. There is also Redland City Council's Management Trails network. Due to the ad hoc nature of the user built trails many changes are recommended, mainly to improve the sustainability of the trails network. In total, there are approximately seven kilometres of Multi-use Trails and one kilometre of Downhill Trail (single-use trail). For comparison purposes Redland Track Park has 51 kilometres of trails and Bayview Conservation Area has approximately 53 kilometres of trails.

Descriptions of the existing trail system (refer to Figure 4) are set out below.

### Multi-use Trails

Two linear sections of fire road run from north to south that do not connect in the middle except by exiting through Gate 4 and re-entering at Gate 6. Both sections are undulating wide trails.

Links between the northern section of fire road to gates on West Mount Cotton Road are somewhat steep, reaching 20% gradient in places.

The multi-use trail running west to east from the roundabout to the summit is very steep for long sections, reaching 30% gradient. These areas are rocky and prone to erosion.

The section of fire road connecting the summit to Karingal Scout Camp is extremely steep and deeply eroded, not maintained to the standard of other wide trails. This trail provides the only exit from the end of the downhill trail, Westy's and is very difficult to climb/push up with a bicycle.

### Single-use (Downhill Trail)

The only mountain bike downhill trail, called Westy's, was constructed and maintained over the last ten years informally by bike riders. Descending from the summit on the steepest terrain available in the reserve, there are several gap jumps, including two challenging gap jumps near the finish. This downhill trail is for experienced mountain bike riders.

This trail is the only single-use trail in the City.

### Trail Audit

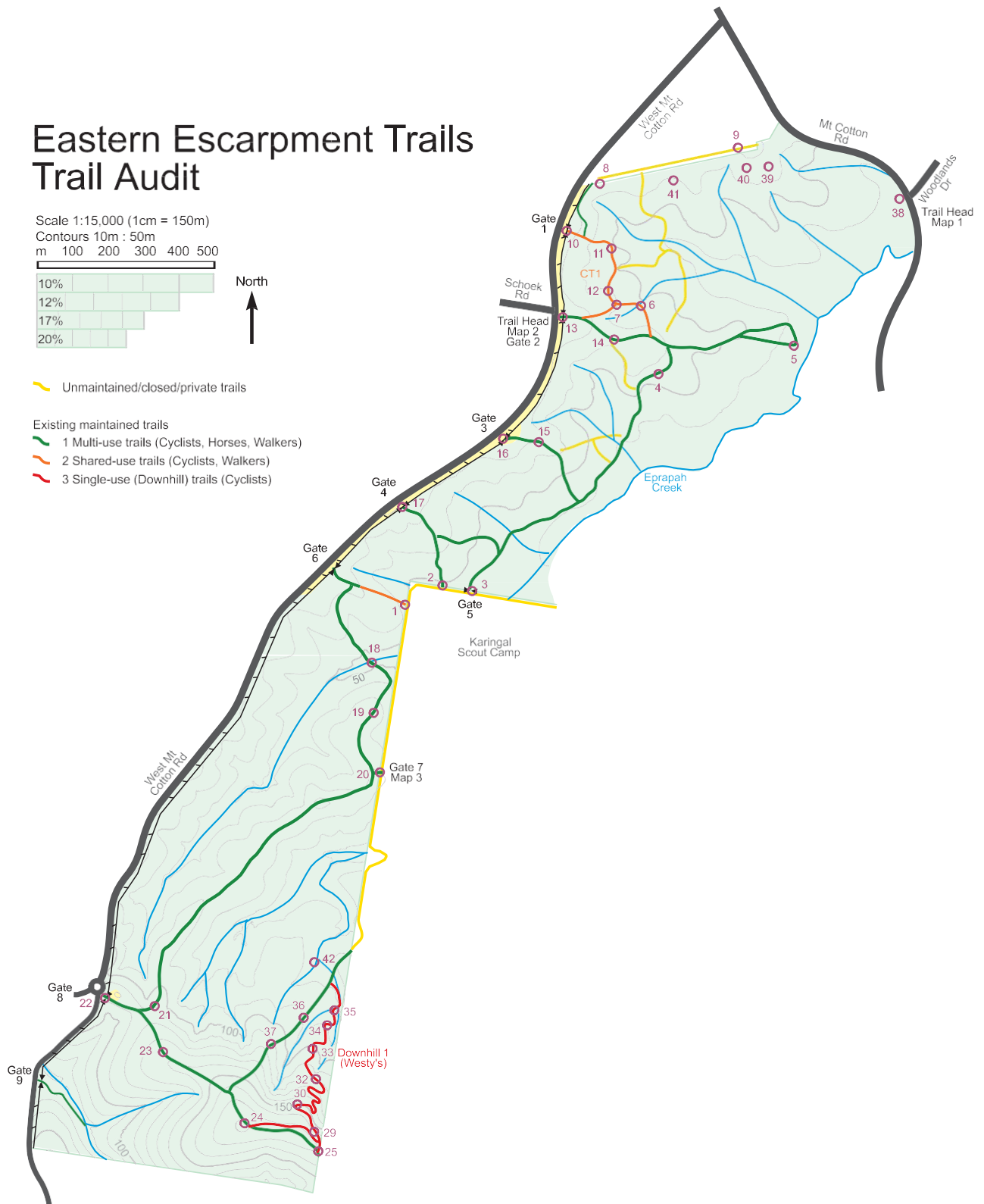
As part of the project, MAK Planning and Design's partner, Trailworx, undertook a trails audit of all trails and tracks and provided a detailed maintenance and improvement report. This report has been provided on a spreadsheet to Council separately from this report.

As a summary of the report though key items are:

### Trails in Northern Section

- » Install information kiosks at the Trailhead opposite Woodlands Drive; at Gate 2 end of Schoek Road and Gate 7 access to Karingal Scout Camp.
- » Install a horse stile at Gate 2 (Schoek Road).
- » Add water bars and drainage to fire roads at Waypoints 7, 15, 17, 18, and 19.
- » Close fire roads and narrow trail at Waypoints 1, 2, 5, 6, 7, 11 and 12.

Figure 4: Existing trails and audit reference points





- » Remove rubbish:
  - Waypoint 39—white goods
  - Waypoint 40—asbestos
  - Waypoint 41—large number of tyres
- » Remove fallen trees:
  - Near Waypoint 3 there are three small Casuarina trees
  - At Waypoint 4 there is a large tree.

## Trails in Southern Section

- » Install information kiosks near Gate 8 at cross-country trail hub; at Waypoint 24 at Downhill Trail Hub and Waypoint 27 at summit.
- » Add water bars and drainage to fire road at Waypoint 21 and Waypoint 38 (if the fire road is to be maintained).
- » Re-route fire road:
  - Waypoint 23, about 265m
  - Waypoint 24, about 340m
  - Waypoint 26, about 115m
- » Remove trees at Waypoints 32, 36 and 37.
- » Downhill 1 Track:
  - At waypoints 29, 32 (x2) and 35 (x2) make 5 x gap jumps rollable.
  - At waypoint 30 rebuild rock roll over
  - At waypoint 31 repair falling turn

## Maintenance Costs

The costs of the identified maintenance items is estimated at \$16,000. A full breakdown of that cost is contained within the spreadsheets provided to Redland City Council separately.

It is recommended that a 25% contingency be added to the figure for unexpected matters—budget should be in the order of \$20,000.

## Other Maintenance

Along the West Mount Cotton boundary there are rocks and mounds in several places that were used to stop unlawful access. These can and should now be removed. A cost of \$4,000 is suggested.

## IMBA Trail Building Philosophy

The International Mountain Bicycling Association (IMBA) are considered leaders in trail construction and teach their methodology throughout the world. The IMBA method for sustainable trail construction is widely adopted by land managers wherever trails are constructed in natural areas.

It is proposed that the IMBA method is adopted for Eastern Escarpment Conservation Area. The method is suited to trail construction for all activities in the reserve including walking trails and horse-riding trails. The following information is sourced from the IMBA publication “Building Better Trails”.

### What is a Sustainable Trail?

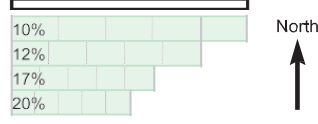
- » It supports current and future use with minimal impact to the area’s natural systems.
- » It produces negligible soil loss or movement while allowing vegetation to inhabit the area.
- » It recognises that pruning or removal of certain plants may be necessary for proper maintenance.
- » It does not adversely affect the area’s animal life.
- » It accommodates existing use while allowing only appropriate future use.
- » It requires little re-routing and minimal long-term maintenance.

IMBA works to create sustainable trails. Two key considerations are proper siting and construction to reduce erosion. Minimal maintenance is important because trails are just one of many facilities that land managers must care for. The less time, labour and money needed for trail maintenance, the more likely trails will remain open for public use.

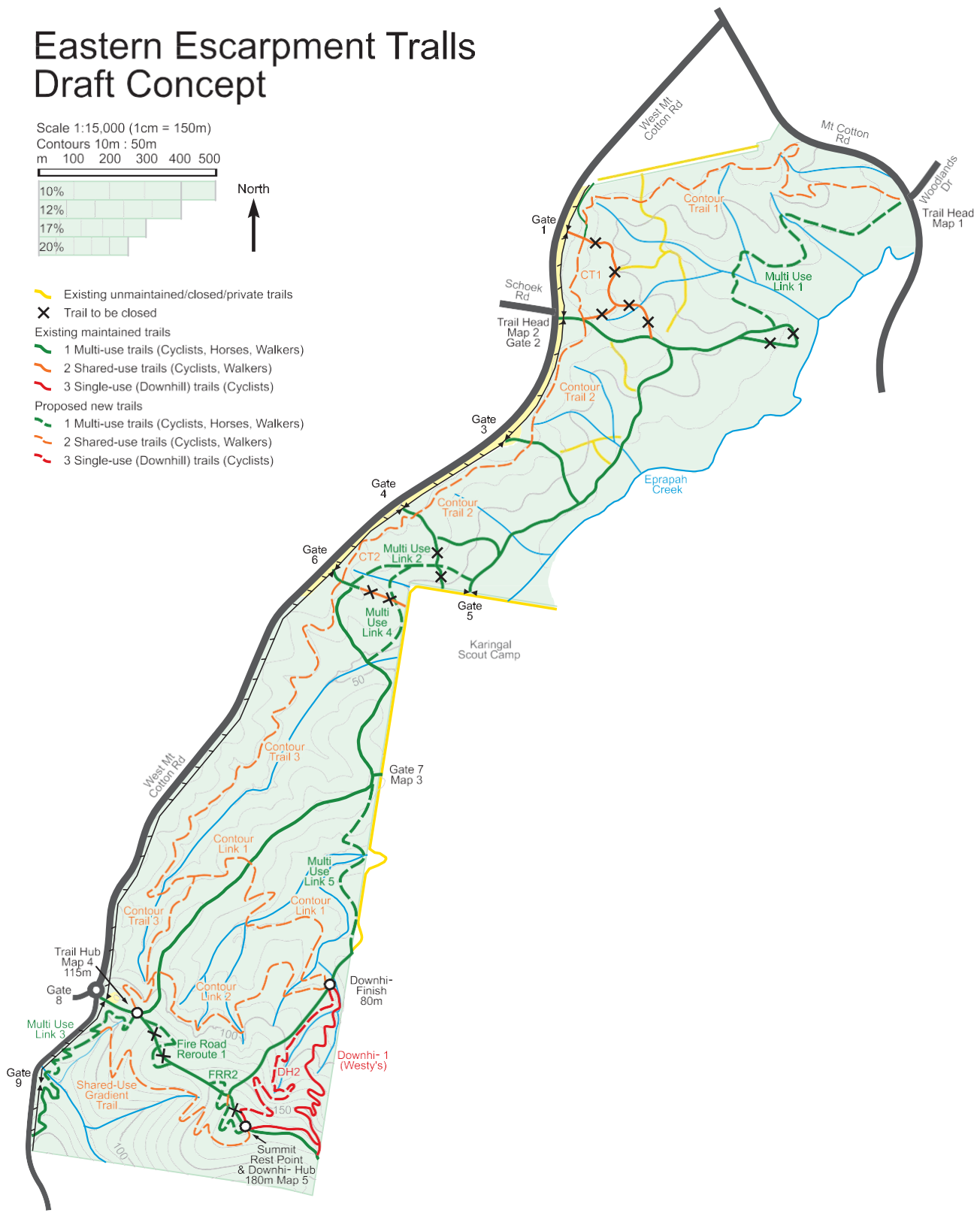
Achieving balance between soil protection and recreation is what good trail design and construction are all about. A good trail is both sustainable and fun. Trails also must be appealing enough to keep users from wandering off and increasing the risk of erosion.

# Eastern Escarpment Trails Draft Concept

Scale 1:15,000 (1cm = 150m)  
 Contours 10m : 50m  
 m 100 200 300 400 500



- Existing unmaintained/closed/private trails
- ✕ Trail to be closed
- Existing maintained trails
  - 1 Multi-use trails (Cyclists, Horses, Walkers)
  - 2 Shared-use trails (Cyclists, Walkers)
  - 3 Single-use (Downhill) trails (Cyclists)
- Proposed new trails
  - - - 1 Multi-use trails (Cyclists, Horses, Walkers)
  - - - 2 Shared-use trails (Cyclists, Walkers)
  - - - 3 Single-use (Downhill) trails (Cyclists)





# New Trails

The proposed trail network, that encompasses some existing trails, some trail closures and new trails can be found in Figure 5 and is described in more detail below.

In proposing the routing of the new trail network the planners have been conscious of:

- » Environmental values
- » Fire management
- » Reserve maintenance
- » Water quality
- » Erosion and sustainability
- » Trail maintenance
- » Volunteers
- » Construction of existing trails
- » Loops and links
- » Relative size of user groups (demand and economics)
- » Safety
- » Access

## Multi-use Trails

Within the audit there are some recommendations for short sections of new multi-use trails. These are all in response to obtaining a better trail alignment so as to avoid environmentally sensitive areas (e.g. creek lines), areas subject to erosion, areas not in character with the trail rating (e.g. a short section of blue trail within a green trail), safety, avoiding roads or similar.

Multi-use link trails are recommended for consideration to provide continuous connections from north to south and more opportunities to form circuits within the reserve.

The new trails allow for better and safer fire management within the reserve as well as to external roads, general reserve maintenance and connectivity.

The new multi-use trails that are recommended for consideration total 3,485 metres in length.

- » Fire road re-route 1 and 2 equals 600 metres
- » Multi-use link 1 - 5 equals 2,885 metres.

## Shared-use trails

Contour Trails 1, 2 and 3 provide almost 5 kilometres of easy, flowing shared-use trail accessible to novice mountain bikers and casual walkers. Sited parallel to West Mount Cotton Road, this trail will connect to several access gates and the main car park at Gate 2. Running through open eucalyptus forest this interesting contour trail dips in and out of the head of numerous gullies.

Contour Link 1 and 2 form a 2.5 kilometre circuit with Contour Trail 3. This circuit skirts along the tops of steep gullies providing an elevated view over riparian and wetland areas below.

Both Contour Link 1 and 2 provide an exit from the finish of Downhill 1 and 2, and will be more challenging trails with rock and log features.

Shared-Use Gradient Trail is a shared-use trail descending 1.25 kilometres from the Summit Rest Area to Gate 9. Situated on the wetter southern slopes of the reserve there are large trees and impressive gullies falling away below the trail which finishes through a lush rainforest with rock features. Here, Multi-use Link 3 provides a safe, off-road trail back to Gate 8.

## Single-use (Downhill Trail)

Downhill Trail 2 is a mountain bike trail professionally constructed as a difficult, challenging downhill-only trail for experienced riders. With 90 vertical metres of fall over 1km, the average gradient is 10%, making for a fast, flowing ride. The trail crosses rocky gullies that fall away below the rider like a river of rock.



# Capital Improvements

## Entrance Points

Entrance points were listed earlier in this plan and can be found at Figure 3 (Page 11).

There is no main entrance point at present though Gate 2 and Gate 6 would appear to be the most popular entrance points.

It is proposed that Gate 2, which is on West Mount Cotton Road opposite Schoek Road, should be the main trailhead. The main reason for this is that only at this point is there a wide road reserve adjacent to a disturbed area in Eastern Escarpment Conservation Area that together provides an area large enough for a trailhead.

This will be the only entrance point that provides parking for vehicles with horse floats. A design for the trailhead at Gate 2 can be found at Figure 7.

A second entrance point at Gate 6, which is central to the reserve will be maintained but will be signed to the effect that horse floats are not to be parked there. Directions to Gate 2 will be provided. The reason for this is that there is not sufficient space on the road reserve to accommodate more than a few cars, let alone vehicles with horse floats in tow.

All other entrance points will be more casual and be largely left as they are.

## Map Stands

The following entrance points will have two post map stands located in an appropriate place, usually just inside the reserve beside the trail or entrance:

- » Map 1 opposite Woodlands Drive
- » Map 2 at Gate 2 opposite Schoek Road
- » Map 3 at Gate 7 entrance to Karingal Scout Camp
- » Map 4 Trail Hub near Gate 8
- » Map 5 at Summit Rest Point

## Summit Rest Point

Within the reserve, near its highest point above the existing and proposed downhill trails, a rest point is proposed.

The rest point would include seating, a hitching rail (that also doubles as a bike rack) and a map stand.

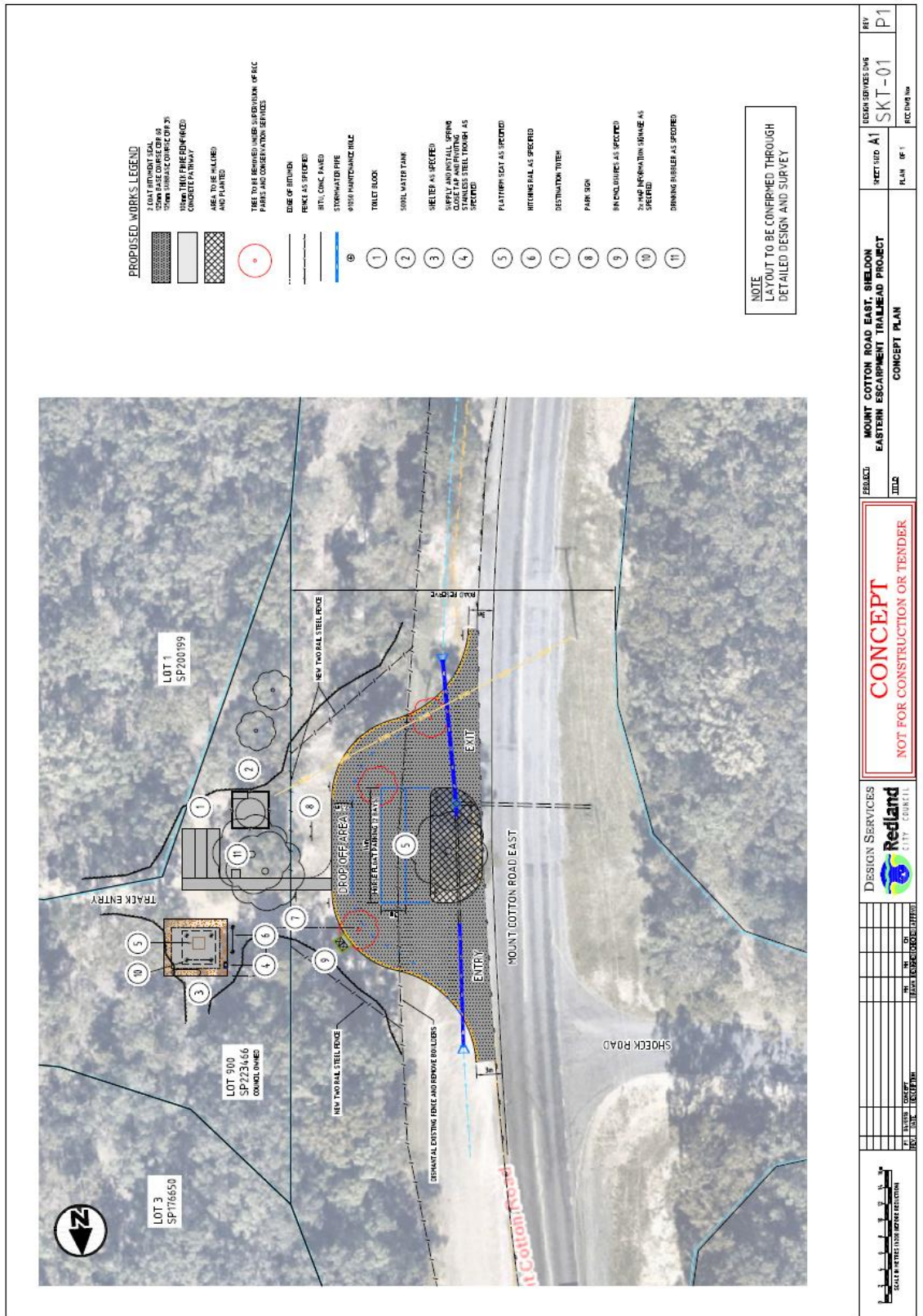
The location is at or near the convergence point of

Figure 6: Design for a rest point at the Downhill Hub





Figure 7: Design for a trailhead at Gate 2 (Schoek Road)



several trails. Apart from a rest point it will also be a meeting point.

A concept design can be found at Figure 6 which is drawn into the landscape at the recommended location.

### Signage

There is almost no signage with the reserve. What exists is entirely reserve name signage at the entrance points on the boundary. There is no directional signage within the reserve.

For safety and convenience signage needs to be rolled out across the reserve.

A signage plan has been developed using a mix of bollard style signs and finger boards along the

lines of those recently installed at Redlands Track Park (see images below).

The finger boards will be almost identical to those at the Redlands Track Park (being either 2m or 3m wide) as will the totem bollards being rectangular in shape. A 200mm x 100mm x 1500mm bollard is suggested.

Trails will be named appropriately in consultation with the Indigenous community.

Signage will carry location numbers for advising emergency services where people are located.



*Examples of bollard and finger board signage in use in the Redlands*





Table 1: Text for finger boards

Site (Refer Map)	Sign Text		
	To next trail or road	Trail Name	To next trail or road
1a	← Schoek Road x m	Multi Use Link 1	Woodlands Drive x m →
2a	← Gate 6 x m	Multi Use Link 2	Schoek Road x m →
3a	← Gate 8 x m	Main trail	Gate 6 x m →
4a	← Gate 8 x m	Multi Use Link 5	Gate 7 x m →
5a	← Summit Rest Point x m	Summit trail	Gate 8 x m →

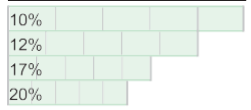
Table 2: Bollard locations (always on left at start)

Site # (refer map)	Text	Comment	Distance	(RWH) Ride, Walk, Horse
1	Contour Trail 1	From Woodlands Drive to Schoek Road	1635m	RW
2	Multi Use Link 1	From Woodlands Drive to Schoek Road		RWH
3	Contour Trail 1	From Schoek Road to Woodlands Drive	1635m	RW
4	Multi Use Link 1	From Schoek Road to Woodlands Drive		RWH
5	Contour Trail 2	From Gate 2 to Gate 6	1105m	RW
6	Multi Use Link 2	From Multi Use Link 1 to Gate 6		RWH
7	Gate 3 link	From Multi Use Link 2 to Gate 3		RWH
8	Gate 4 link	From Multi Use Link 2 to Gate 4		RWH
9	Multi Use Link 4			RWH
10	Multi Use Link 4			RWH
11	Multi Use Link 2	To Multi Use Link 1 intersection		RWH
12	Main Trail	To trail hub near Gate 8		RWH
13	Contour Trail 2	From Gate 6 to Gate 2	1105m	RW
14	Contour Trail 3	From Gate 6 to trail hub near Gate 8	2030m	RW
15	Contour Link 1	Link to Contour Trail 3		RW
16	Contour Link 1	Main trail to downhill finish		RW
17	Contour Trail 3	To trail hub		RW
18	Contour Link 2	Main trail to downhill finish	925m	RW
19	Contour Trail 3	Trail hub to Gate 6	2030m	RW
20	Main trail	Trail hub to Gate 6		RWH
21	Summit trail	West to east multi use trail		RWH
22	Multi Use Link 3	From trail hub to Gate 9	600m	RWH
23	Multi Use Link 3	Gate 9 to trail hub	600m	RWH
24	Technical Trail	Near Gate 9 to Summit Rest Point		RW
25	Technical Trail	Summit Rest Point to near Gate 9		RW
26	Downhill 2	Summit Rest Point to downhill finish	975m	R
27	Downhill 1	Summit Rest Point to downhill finish		R
28	Contour Link 2	Downhill finish to main trail	925m	RW
29	Contour Link 1	Downhill finish to main trail		RW
30	Multi Use Link 5	Summit trail to near Gate 7		RWH
31	Multi Use Link 5	Near Gate 5 to summit trail		RWH
32	Summit trail	From Gate 8 to eastern boundary		RWH

Figure 8: Locations for signage

# Eastern Escarpment Trails Signage Plan

Scale 1:15,000 (1cm = 150m)  
 Contours 10m : 50m  
 m 100 200 300 400 500



- 1 Multi-use trail (Cyclists, Horses, Walkers)
- 2 Shared-use trail (Cyclists, Walkers)
- 3 Single-use (Downhill) trail (Cyclists)
- Bo-ard always at left of start of trail
- ↔ Finger board





# Costs of Implementation

## New Trails

For this plan new single track trails are costed at \$25/m. This is an average cost derived from the industry. Fire roads are more expensive. Multi-use trails (fire roads) need to be pushed in with heavy machinery and the cost can vary significantly depending upon how much rock (and its hardness) is encountered and the gradient of the trail.

Potentially the new trails may cost in the order of \$242,000 made up of:

- » Multi-use trails—\$60,000
- » Shared use trails—\$150,000
- » Downhill trail—\$32,000

It is likely that the concept trails will be longer when they are eventually flagged in the field and the calculations above have added 20% to the mapped length.

There will also be additional costs for signage and other improvements.

## Signage

The total cost for signage will be \$23,124

This is made up of:

1. 5 x two-post map stands @ \$1,300 (total \$6,500)
2. 5 x 3m finger boards @ \$600 each (total \$3,000)
3. 32 x bollard signs @ \$207 each (total \$6,624)

## Summit Rest Point

The Summit Rest Point is made up of three platforms, a hitching rail and map signage. It is estimated that the cost to develop this area is in the order of \$40,000.

## Gate 2 Trailhead

The trailhead at Gate 2 will provide a safe area to park cars and horse trailers to access Eastern Escarpment Conservation Area as well as connect into the external horse trail network. It will also include a toilet, water facility and shelter.

The layout requires pushing back the fence and gates beyond a disturbed area that has been levelled and cleared for the car park.

The total cost is estimated at \$419,115.12 and will include items as per Table 3.

## Maintenance

Existing trail maintenance has been costed at \$20,000. The clean-up of rocks and mounds along the West Mount Cotton Boundary is costed at \$4,000.

Table 3: Items for Trailhead at Gate 2

Item
<b>1. Site Works</b>
a. Levelling of site, clearing and compacting
b. Dismantling of existing fence and boulders (length of fence)
c. Clearing and grading of exit road access
<b>2. Fences, Gates and Site Furniture</b>
a. New two-rail steel fence to edge of car park
b. Relocate Rhino gate
c. New park name signage
d. Totem
e. 2-post map stand
f. horse stile
g. Water tank
h. Shelter
i. Toilet

Table 4: General maintenance activities

Activity	Site	Frequency
Undertake full inspection of the trail	Entire trail	Every second month
Check signage and clean, replace or repair as required esp. trail crossing signage and directional markers	All locations	Every second month—at each trail inspection
Check trail surface and arrange repair as required	Entire trail	Every second month. Check for erosion at each inspection. Arrange repairs immediately if serious, or schedule maintenance for six monthly work sessions if not
Maintenance of trail surface	Entire trail	Every six months
Sweep or rake debris from trail surfaces, especially at road and trail crossing points	Various locations	Every six months
Maintenance of culverts and other drainage measures	Entire trail	Every six months
Cut back regrowth, intruding and overhanging vegetation	Entire trail	Every six months, unless obviously requiring attention at regular inspections
Check structural stability of interpretive signage, and interpretive shelters	Various locations	Every six months
Undertake Hazard Inspection and prepare Hazard Inspection Report	Entire trail	Annually
Check structural integrity of bridges	Entire trail	Every three years
Major repairs and replacements	Entire trail	Every five years



# Maintenance Planning

## Trail Maintenance

Once the maintenance of the trails has brought them up to standard (as per the trails audit) it would then be prudent to approve an annual budget to keep them fit-for-purpose. It is important that a budget is allocated to trail maintenance. Trail maintenance not only protects the asset and ensures a quality recreation experience it also mitigates any risk exposure. To be seen to have a regular maintenance program is a key part of risk management.

Maintenance will generally be undertaken through a mix of Council employees (particularly fire trail maintenance), volunteers and contractors.

It is assumed that fire trail maintenance budgets are already allocated and will continue to be as part of the management of Eastern Escarpment Conservation Area. Maintenance of the single-track is not currently allocated but will need to be as the destination is promoted more widely.

Maintenance of the trails will involve regular inspections and simple repairs with programs undertaking larger jobs to ensure the safety of the trail user and address any significant signage repairs or weed/vegetation control.

Table 4 gives a suggested schedule for general maintenance activities to achieve acceptable maintenance levels.

For Eastern Escarpment Conservation Area it is suggested that a budget of approximately \$32,000 should be allocated for single track and

fire track maintenance and this would allow for a team of three to visit the reserve twice a year for ten days (each time) with machinery. This period should allow them to get across all the single-track and fix regular maintenance items. Any major maintenance items (e.g. a new bridge crossing) may need to be negotiated outside this contract.

If the Trailcare group becomes particularly active it may be possible to pare this budget.

To keep costs down liaise with Council's Works Branch to reuse old road materials such as road scalplings and broken or damaged stormwater pipes.

Council will benefit from knowing the approximate number of trail users. This knowledge will support maintenance and capital bids during budget deliberations. It will also be useful in determining the economic and social benefits derived from providing trails in the reserve

Council should use its trail counters in the reserve from time-to-time to capture user data.

## Trailhead Maintenance

The trailhead at Gate 2 as well as other entrance points and improvements within the reserve (Summit Rest Point) will need to be maintained.

Minor maintenance may be needed on furniture and signage and other capital items. A budget in the order of \$5,000 should be set as a starting point and monitored for adequacy over the first few years.









# Recommendations

1. That the Eastern Escarpment Conservation Area Plan: Connecting with Recreation be adopted by Redland City Council and actioned in forward planning.
2. In actioning the Eastern Escarpment Conservation Area Plan: Connecting with Recreation work with all stakeholders including the potential recreational users and the indigenous community.
3. Engage with Trail Care groups as much as possible to reduce costs of implementation.
4. Undertake detailed design of the Schoek Road (Gate 2) Trailhead
5. Name trails using a feature of Eastern Escarpment Conservation Area such as plants or geographic feature. Involve the Indigenous community in the process.