

Operations Environmental Management Plan

Warburton Mountain Bike Destination –
Southern Network

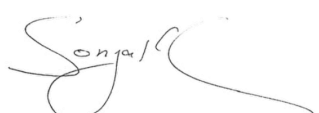
PLANNING AND ENVIRONMENT ACT 1987			
YARRA RANGES PLANNING SCHEME			
CONDITION 7.7 OF THE Warburton Mountain Bike Destination Project (Southern Network) Incorporated Document, October 2023			
ENDORSED REPORT			
SHEET	1	TO	98
			
SIGNED.....	MINISTER FOR PLANNING		
DATE.....	21/04/2025		

Table of Contents

1.0	Introduction	1
1.1	Background	1
1.2	Project overview	2
1.2.1	Project Staging	3
1.3	OEMP objectives	4
1.4	Process for OEMP reviews and updates	4
2.0	Environment Strategy	5
3.0	Roles and responsibilities	6
4.0	Operation activities	8
4.1	Overview of activities	8
4.2	Mountain bike trail visitation and operation	11
4.3	Inspections and maintenance	12
4.3.1	Trail and associated infrastructure inspections	13
4.3.2	Maintenance works and Operational Activities	14
5.0	Risk assessment	21
5.1	Risk assessment method	21
5.1.1	Assigning a consequence level	21
5.1.2	Assigning a likelihood level	23
5.1.3	Risk matrix	23
5.2	Risk register	23
6.0	Environmental management measures	24
6.1	Biodiversity	24
6.1.1	Background	24
6.1.2	Objectives	24
6.1.3	Relevant legislation, policy and standards	24
6.1.4	Proposed mitigation and contingency measures arising from the EES	25
6.1.5	Other proposed mitigation and contingency measures	32
6.1.6	Monitoring and reporting	33
6.2	Surface water, groundwater and geotechnical hazards	34
6.2.1	Background	34
6.2.2	Objectives	35
6.2.3	Relevant legislation, policy and standards	35
6.2.4	Proposed mitigation and contingency measures arising from the EES	36
6.2.5	Monitoring and reporting	41
6.3	Heritage	44
6.3.1	Background	44
6.3.2	Objectives	44
6.3.3	Relevant legislation, policy and standards	45
6.3.4	Proposed mitigation and contingency measures arising from the EES	45
6.3.5	Monitoring and reporting	46

6.4	Transport	46
6.4.1	Background	47
6.4.2	Objectives	47
6.4.3	Relevant legislation, policy and standards	47
6.4.4	Proposed mitigation and contingency measures arising from the EES	47
6.4.5	Monitoring and reporting	50
6.5	Land use, noise, air quality and visual	50
6.5.1	Background	50
6.5.2	Objectives	51
6.5.3	Relevant legislation, policy and standards	51
6.5.4	Proposed mitigation and contingency measures arising from the EES	51
6.5.5	Monitoring and reporting	54
6.6	Socio-economic	55
6.6.1	Background	55
6.6.2	Objectives	55
6.6.3	Relevant legislation, policy and standards	55
6.6.4	Mitigation and contingency measures arising from the EES	55
6.6.5	Monitoring and reporting	57
6.7	Bushfire and Emergency Management	58
6.7.1	Background	58
6.7.2	Objectives	58
6.7.3	Relevant legislation, policy and standards	58
6.7.4	Mitigation and contingency measures arising from the EES	58
6.7.5	Other mitigation and contingency measures	58
6.7.6	Monitoring and reporting	59
6.8	Waste	60
6.8.1	Background	60
6.8.2	Objectives	60
6.8.3	Relevant legislation, policy and standards	60
6.8.4	Proposed mitigation and contingency measures arising from the EES	61
6.8.5	Other proposed mitigation and contingency measures	61
6.8.6	Monitoring and reporting	61
7.0	Induction and training	63
8.0	Emergency and incident response	64
8.1	Emergency and incident response procedures	64
8.2	Emergency contacts	65
9.0	Environmental auditing and verification	66
9.1	Internal environmental verification	66
9.2	Independent audit	66
10.0	Stakeholder consultation	67
10.1	Notification of operational activities	67
10.1.1	Land managers	67

10.1.2	Businesses and community groups	67
10.1.3	General community information	67
10.2	Complaint management	68
Attachment 1 – Weed management		
Attachment 2 – Hygiene protocol		
Attachment 3 – Unexpected finds protocol		
Attachment 4 – Risk register		
Attachment 5 – Environmental management checklists		

1.0 Introduction

This Operations Environmental Management Plan (OEMP) is the primary mechanism for environmental management during operation of the Warburton Mountain Bike Destination (the project).

This OEMP identifies the project operational activities that have the potential to impact on the physical, biological, social and cultural aspects of the environment and establishes the process by which these will be managed.

1.1 Background

An environment effects statement (EES) has been prepared to assess the potential for the project to have significant effects on the environment. The technical studies undertaken as part of the EES process identified specific mitigation measures and performance monitoring requirements associated with the operation of the project, to manage the potential environmental effects identified in the assessments.

Yarra Ranges Council has identified mountain biking as an opportunity for tourism growth within the region, which would also support the health and well-being of its residents. The project would create iconic trails eligible for International Mountain Bike Association Gold Level Ride Centre status which would position Warburton as an internationally significant mountain biking destination.

The project objectives are to:

- Facilitate tourism growth and associated positive economic and jobs growth in the Yarra Valley region
- Create iconic mountain bike trails eligible for International Mountain Bike Association Gold Ride Centre status
- Create spectacular riding experiences that have a competitive advantage over existing mountain bike destinations and leverage Warburton's beautiful township, rural valley and surrounding forested slopes
- Enhance the health and well-being of the community
- Maintain the significant biodiversity and heritage values within the project area and provide opportunities for the community to connect with and appreciate their importance.

1.2 Project overview

The project is a proposed world class mountain biking destination centred around Warburton, approximately 70 kilometres east of Melbourne as shown in Figure 1-1. A significant informal network of mountain bike trails exists within the region and there is evidence of increasing use of these trails by local and visiting riders. Mountain biking in this locality started around 15 years ago and was concentrated in the Yarra State Forest in the vicinity of Mount Tugwell.

The project consists of up to 160 kilometres of mountain bike trails providing a range of mountain bike experience to suit all levels of riding as shown in Figure 1-2. The project also includes a new Visitor's Hub and main trail head at the Warburton Golf Course and other trail heads at Mount Tugwell, and Wesburn Park.

The project also includes two new bridges, namely the Yarra River Bridge (shared use), crossing over the Yarra River, Warburton Highway and Dammans Road and the Old Warburton Road Bridge (mountain bike use only), crossing over Old Warburton Road.

The northern section of the trail network is located north of the Warburton Highway within the Yarra Ranges National Park. The southern section of the trail network is located south of the Warburton Highway within the Yarra State Forest.

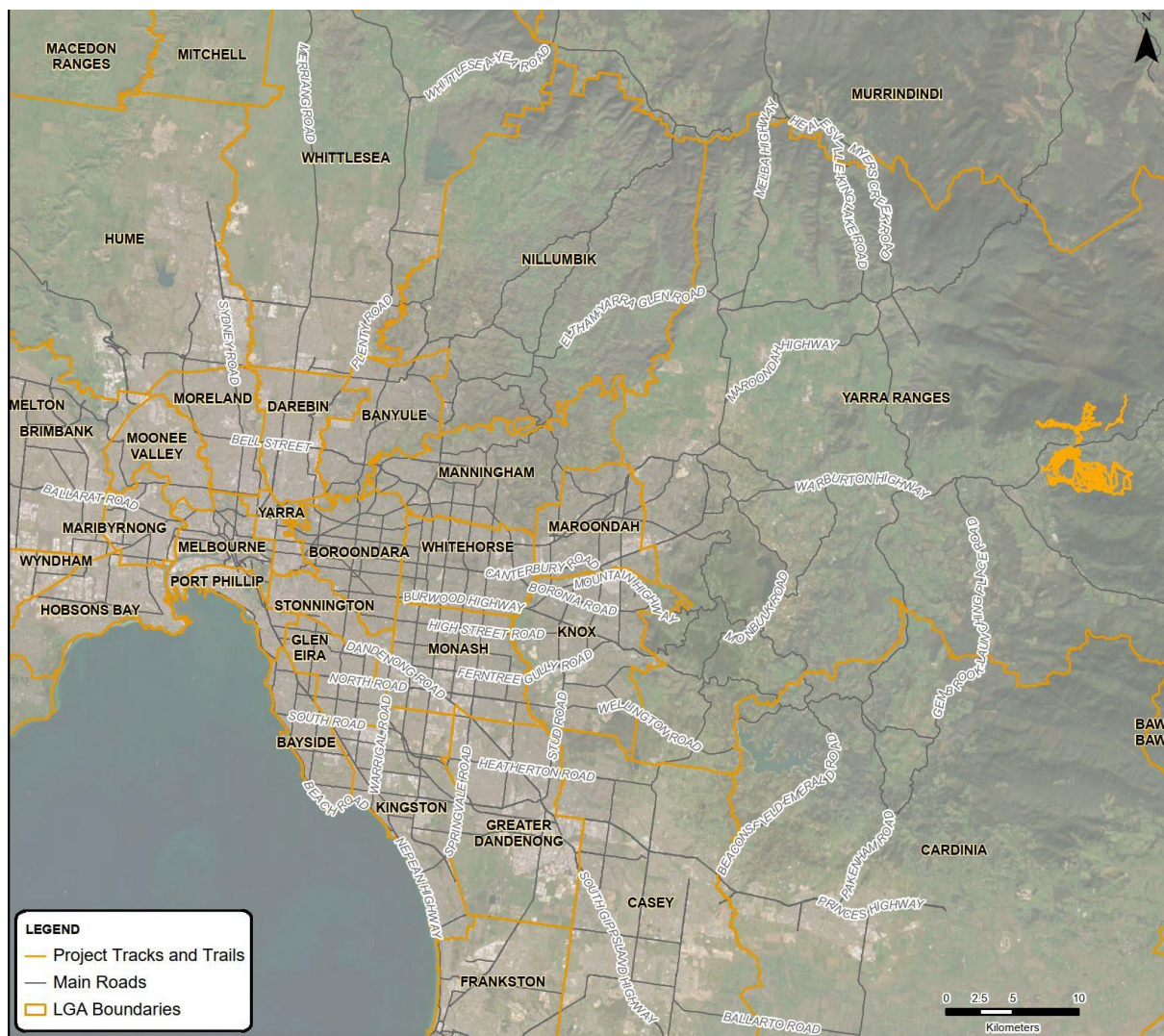


Figure 1-1 Warburton Mountain Bike Destination location in relation to Melbourne CBD

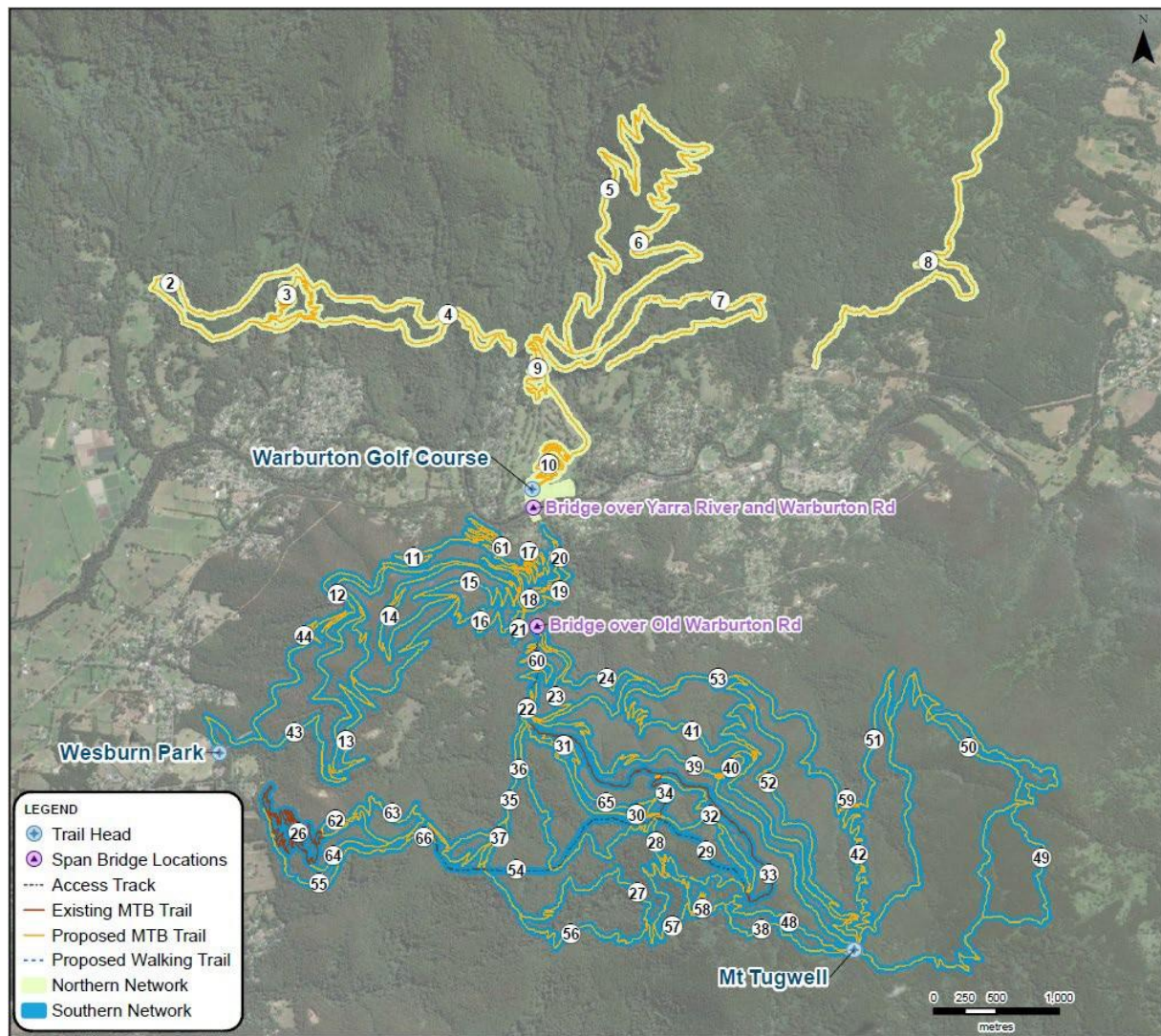


Figure 1-2 Project overview

1.2.1 Project Staging

Overall, project implementation is split into two distinct stages, the Northern Network and the Southern Network. This is to allow efficient and timely project development and operation. While this OEMP covers the Southern Network of the project development only, it is the intent to ultimately build the entire project as outlined in Figure 1-2, Section 4.0 and Table 4-1.

The Southern Network of the project includes the following main components:

- Development of the mountain bike trail network, specifically Trails 11–44 and 48-66, consisting of:
 - Upgrade of existing mountain bike trails – approximately 12 kilometres
 - New mountain bike trails – up to 101 kilometres (65 per cent of project length)
 - Existing vehicle roads and tracks to be incorporated into the mountain bike trail network - approximately 10 kilometres
- New infrastructure :
 - Old Warburton Road Bridge (mountain bike use only), crossing over Old Warburton Road
 - New trail head facilities at Mount Tugwell and Wesburn Park.

The Northern Network of the project proposes the following main components:

- Development of the mountain bike trail network, specifically Trails 2-10, consisting of:
 - New mountain bike trails – up to 32 kilometres

A new bridge (shared use), crossing over the Yarra River, Warburton Highway and Dammans Road

- New Visitor's Hub and main trail head at the Warburton Golf Course. An additional network access point to the network will be at Dee Road, which is an established access point for the O'Shannassy Aqueduct Trail.

1.3 OEMP objectives

This OEMP sets out the processes to manage potential environmental effects identified through the EES process associated with operation and maintenance of the project. It also identifies actions required to comply with applicable environmental legislation, policy and standards. The OEMP has been prepared based on typical operation activities envisaged for the development (refer to Section 4.0).

The OEMP objectives are to:

- Avoid and minimise the risk of harm to human health and the environment from operations activities as far as reasonably practicable
- Continuously improve environmental management practices
- Ensure that commitments to mitigation of effects identified during EES preparation are implemented
- Ensure compliance with applicable environmental legislation policy and standards
- Provide personnel involved in project operation and maintenance with the guidance and tools to support effective environmental management.

The OEMP addresses:

- Yarra Ranges Council's Environment Strategy
- Roles and responsibilities
- Scope of operation activities
- Mitigation measures, monitoring and contingency measures
- Induction and training
- Emergency and incident response
- Environmental auditing and verification
- Stakeholder consultation.

1.4 Process for OEMP reviews and updates

In accordance with the Planning Scheme Amendment and Incorporated Document, the OEMP requires approval of the Minister for Planning.

This OEMP is a dynamic document that will be updated during the operation period in response to:

- Modifications to operation methods
- Identification of new environmental risks
- Results of environmental monitoring
- Environmental incidents, non-conformances and audit findings
- Feedback from stakeholders
- Identified opportunities for improvement.

Additionally, the OEMP will be reviewed at least every year following commencement of operation to verify that the OEMP remains fit for purpose. Any material changes to the OEMP that elevate

environmental risks or provide a lower level of assurance would require the approval of the Minister for Planning.

All pages of the OEMP are to be clearly marked with the OEMP version number and the approval date.

DEECA and relevant authorities including Melbourne Water would be advised of updates to the OEMP when they occur.

2.0 Environment Strategy

Environmental management throughout Yarra Ranges Council operations including the delivery of the Warburton Mountain Bike Destination is guided by the Yarra Ranges Council's Environment Strategy 2015-2025. The vision outlined in the Environment Strategy is presented in Figure 2-1.

We are dedicated to making Yarra Ranges a place of thriving communities, at home in healthy landscapes.

This vision for our environment has three elements: our place in healthy landscapes; thriving communities; and a sense of home.



Our place, our healthy landscapes

This element includes our place within our community and our environmental assets such as the diversity of landscapes, waterways, plants and animals.



Thriving communities

This element represents the choices and opportunities we have in relation to these assets and resources, and includes the way local economies and communities respond to, and work with, our environment.



My home

This element is about the way each one of us lives with, and belongs and responds to, our environment.

Figure 2-1 Yarra Ranges Council Environmental Strategy Vision

3.0 Roles and responsibilities

Effective environmental management requires roles and responsibilities to be clearly specified. This section defines the roles and responsibilities for environmental management during project operation.

Implementation of the OEMP is the responsibility of the Yarra Ranges Council Warburton Mountain Bike Destination Project Manager. The responsibilities in relation to environmental management are presented in Table 3-1.

Table 3-1 Roles and responsibilities for environmental management

Role	Responsibilities
Yarra Ranges Council CEO	- Overall responsibility for environmental management for the project - Provision of adequate Yarra Ranges Council resources to support effective environmental management
Yarra Ranges Council Warburton Mountain Bike Destination Project Manager	- Overall implementation of the OEMP - Ensuring that environmental obligations are specified in contract arrangements with contractors. - Oversight of environmental management performance of contractors involved in project operation - Establishment of environmental auditing and reporting processes - Facilitation of environmental training for Yarra Ranges Council personnel involved in project operation - Implementation of stakeholder engagement during project operation including liaison with regulatory agencies and land managers - Periodic reviews of the OEMP.
Yarra Ranges Council environmental representative	- Establishment of environmental monitoring programs and review of monitoring data - Maintaining the environmental risk register for the project - Implementation of an environmental audit program to verify compliance with the OEMP - Investigation and close out of environmental incidents and complaints - Notifying the Registered Aboriginal Party or appropriate Victorian Government agencies in the event of an unexpected find
Yarra Ranges Council maintenance crew	- Trail inspections and maintenance - Responsible for recording trail conditions and corrective actions required
Arborist	- Provide induction training on identifying significant tree species and tree protection - Provide induction training in Myrtle Beech wound management, pruning and application of anti-fungal agents - Provide induction training in structural root zone and root protection methods - Provide induction training for identification of hazardous trees - Inspection of significant or hazardous trees prior to, during and after works as required - Responding to incidents and complaints that relate to tree management
Ecologist ¹	- Provide induction training to identify significant species, habitat and protection - Provide induction training to identify known weed species - Provide induction training to identify potential groundwater seeps/springs - Inspection of areas of environmental sensitivity prior to, during and after works, as required - Responding to incidents and complaints that relate to biodiversity

¹ Several mitigation measures require supervision, oversight or advice from an ecologist. The Project ecologist must be independent, and suitably qualified. It is understood, that "independent" in this context means a person that is not a direct employee of Yarra Ranges Council or the operation contractor. The Project ecologist would seek the views of other suitably qualified ecologists in the event that particular specialist advice is required.

Role	Responsibilities
Heritage advisor	• Provide induction training for identification of heritage features • Inspection of identified areas of archaeological potential prior to, during and after works • Responding to incidents and complaints that relate to heritage
Geotechnical advisor	• Assessment of risk and remediation measures in in the event of a large-scale failure which has resulted in significant damage to the trail and natural landform • Responding to incidents and complaints that relate to geotechnical hazards
Road safety auditor	• Undertake a Road Safety Audit (RSA)
Independent auditor	• Undertake independent audits of OEMP implementation

4.0 Operation activities

This section details the operation and maintenance activities to be undertaken for the project covered by this OEMP.

The following external references provide guidance on sustainable mountain bike trails and have informed the project design and operation:

- Australian Mountain Bike Trail Guidelines, Mountain Bike Australia, 2019
- Bike Parks: IMBA's Guide to New School Trails, International Mountain Bicycling Association, 2014
- Managing Mountain Biking: IMBA's Guide to Providing Great Riding, International Mountain Bicycling Association, 2007
- Trail Solutions: IMBA's Guide to Building Sweet Singletrack, International Mountain Bicycling Association, 2004

4.1 Overview of activities

This OEMP encompasses the Southern Network of the network development, as outlined in Section 1.2.1 including up to 125 kilometres of trails and the supporting infrastructure.

The main project components are as follows:

- The mountain bike trail network, namely trails 11-44 and 48-66
- The new Old Warburton Road Bridge (mountain bike use only), crossing over Old Warburton Road
- New trail head facilities at Mount Tugwell and Wesburn Park (which includes an additional 120 car parking spaces).

Table 4-1 below summarises the proposed trail network, providing indicative lengths, proposed trail difficulty ratings and the type of trail experience for the Northern Network and Southern Network.

Table 4-1 Trail network summary

No.	Length (m)	Notes	Trail style	Proposed trail difficulty rating
Northern Network				
1	22540	Drop-a-K - Descends from top of Mount Donna Buang to golf course.	Wilderness	Intermediate
2	4534	Undulating trail running parallel to O'Shannassy Aqueduct linking to Dee Rd car park and then to Drop-a-K.	Adventure	Intermediate
3	2580	Loop trail located between Trail 1 and 2.	Adventure	Intermediate
4	92	Short link between Trail 1 and 2.	Adventure	Intermediate
5	5586	Gravity trail from Mount Donna Buang Rd down to O'Shannassy Aqueduct.	Gravity	Intermediate / Difficult
6	4700	Gravity trail from Mount Donna Buang Rd down to O'Shannassy Aqueduct.	Gravity	Difficult
7	4006	Loop trail, starting and finishing on O'Shannassy Aqueduct.	Adventure	Easy / Intermediate
8	4888	Easy descending trail from Mount Donna Buang Rd down to O'Shannassy Aqueduct.	Flow	Easy
9	1975	Loop trail located on private property (Eco Lodge) above golf course.	Adventure / Flow	Easy
10	3804	Golf course loop. Concept only.	Adventure / Flow	Easy
Southern Network				

No.	Length (m)	Notes	Trail style	Proposed trail difficulty rating
11	5806	First loop on Mount Little Joe.	Adventure / Flow	Easy
12	2829	Second loop on Mount Little Joe.	Adventure	Easy
13	4488	Third loop on Mount Little Joe.	Adventure	Easy
14	4720	Loop to summit of Mount Little Joe.	Adventure / Flow	Easy / Intermediate
15	1921	Descending trail on the north/east face of Mount Little Joe.	Gravity	Intermediate
16	1549	Descending trail on the east face of Mount Little Joe.	Gravity	Difficult
17	2606	Climbing link from old Warburton Chalet into trail network.	Adventure	Easy
18	805	Descending trail through Backstairs corridor.	Gravity - existing hand-built trail (some features to be re-built) ²	Difficult
19	794	Descending trail through Backstairs corridor.	Gravity - existing hand-built trail (some features to be re-built)	Intermediate
20	1431	Descending trail through Backstairs corridor.	Flow	Intermediate
21	503	Access linkage between Backstairs trail junction and vehicle track.	Adventure	Easy
22	2790	Climbing linkage from Old Warburton Rd crossing up to Edwardstown Rd.	Adventure	Intermediate
23	1305	Descending trail from Edwardstown Rd to Old Warburton Rd crossing.	Flow	Intermediate
24	2647	Descending trail from Edwardstown Rd to Old Warburton Rd crossing.	Flow	Easy
26	5144	Existing mountain bike trail - Hey Hey My My	Adventure - existing hand-built trail (some features to be re-built)	Intermediate
27	7462	Main climbing trail to summit of Mount Tugwell.	Adventure	Intermediate
28	4636	Descending style descending trail from summit of Mount Tugwell.	Flow	Intermediate
29	2084	A-line style jump track using top portion of Cemetery Track.	Air Flow	Difficult
30	3031	Gravity descent from summit of Mount Tugwell using mix of new and existing mountain bike trails (Top Track).	Gravity - existing hand-built trail (some features to be re-built)	Difficult
31	580	Alternate end section on 30.	Gravity - existing hand-built trail (some features to be re-built)	Difficult

² Note that some features will be rebuilt on existing trails to bring them in line with current design standards.

No.	Length (m)	Notes	Trail style	Proposed trail difficulty rating
32	1665	Gravity descent from summit of Mount Tugwell using mix of new and existing mountain bike trails.	Gravity - existing hand-built trail (some features to be re-built)	Difficult
33	3266	Gravity descent from summit of Mount Tugwell using mix of new and existing mountain bike trails (Matt's Track).	Gravity - existing hand-built trail (some features to be re-built)	Intermediate
34	645	Linkage trail between 30 and 32.	Gravity - existing hand-built trail (some features to be re-built)	Difficult
35	1701	Linkage from Edwardstown Rd into Mineshaft Hill area.	Adventure	Intermediate
36	149	Linkage between Trails 28 and 35.	Adventure	Intermediate
37	416	Linkage between Trails 27 and 35.	Adventure	Intermediate
38	1575	Linkage between summit of Mount Tugwell and Tugwell trail head.	Adventure	Intermediate
39	5208	Long climbing trail, from Edwardstown Rd to Mount Tugwell trail head, parallel below Mount Bride Rd.	Adventure	Easy / Intermediate
40	1109	Link trail between 40 and 42.	Flow	Easy
41	5848	Descending trail below Mount Bride Rd.	Flow	Easy
42	5410	Long descending trail from Tugwell trail head wrapping around onto Mount Bride.	Wilderness	Intermediate / Difficult
43	2479	Gentle descending trail into Wesburn Rec Reserve. Uses portion of old tramway.	Adventure	Easy
44	2592	Climbing trail out of Wesburn Rec Reserve.	Adventure	Easy
45	4060	Alternative to Trail 1. Commences at the summit of Mount Donna Buang, moderate with steep sections it flows down the southern fall of the ridgeline joining up with Trails 5 and 6.	Wilderness	Difficult
46	5511	Alternative to Trail 1. Commences at the summit of Mount Donna Buang, moderate with steep sections winds down the northern fall of the ridgeline, under Mount Victoria, joining up with Trails 5 and 6.	Wilderness	Intermediate
47	5617	Alternative to Trail 1. Commences at Mount Donna Buang Rd, moderate with steep sections, joining up with Trail 8.	Adventure	Easy
48	1283	Forms a loop between the summit of Mount Tugwell and the Mount Tugwell trail head on Mount Bridge Rd.	Adventure	Intermediate
49	7043	Climbs to the top of Mount Bride, before a flowing descent and short climb to reach Groom Hill. Descends from Groom Hill to eventually merge onto Trail 42.	Wilderness	Difficult
50	2821	Less challenging option to Trail 49, avoiding summits of Mount Bride and	Wilderness	Intermediate / Difficult

No.	Length (m)	Notes	Trail style	Proposed trail difficulty rating
		Groom Hill, eventually merging onto Trail 49.		
51	4059	Descending trail starting at Mount Tugwell shuttle drop-off on Mount Bride Rd and finishes on Trail 42.	Gravity	Difficult
52	3754	Starts at Mount Tugwell shuttle drop-off and merges onto Trail 42, 4 km and 400 m of descent	Flow	Intermediate
53	1320	Short descending link trail, starting at junction of 40 and 41, and dropping down onto 52.	Flow	Easy / Intermediate
54	1170	Continues from Trail 29, repurposes the steep and deeply eroded lower section of Cemetery Track.	Air flow / Gravity	Extreme
56	1598	Climbing trail that short cuts some of the more meandering parts of Trail 27.	Adventure	Difficult
57	713	Climbing trail that short cuts some of the more meandering parts of Trail 27.	Adventure	Difficult
58	211	Climbing trail that short cuts some of the more meandering parts of Trail 27.	Adventure	Difficult
59	136	Walking track link down to La La Falls from Trail 42.	Not applicable	Walking track
60	529	Climbing trail near Old Warburton as an optional A-line climb on Trail 22, follows an existing management vehicle track.	Adventure	Difficult
61	1567	Contingency trail providing exit onto Warburton-Lilydale Rail Trail just near Trail 11 start.	Adventure	Easy
62	678	Extends Hey Hey My My to the top of Mineshaft Hill, where it also links into Trail 63.	Adventure / Flow	Intermediate
63	2184	A loop trail that connects Mineshaft Hill with Old Warburton Road and Edwardstown Road.	Adventure	Intermediate
64	785	Descending trail from Edwardstown Rd/Cemetery Track, connecting directly to the top of the descending portion of Trail 26.	Flow	Intermediate
65	1359	Descending trail between existing trails 30 and 33, above Mount Bridge Rd, and connecting into the end of Trail 31.	Gravity	Difficult
66	306	Existing motorbike trail. Provides short connection between 54 and 55, allowing riders to bypass the trail head / junction area at Cemetery Track / Edwardstown Rd.	Gravity	Difficult

4.2 Mountain bike trail visitation and operation

The trail network will be open from sunrise to sunset year-round. Night riding would be prohibited across the projects entire trail network as detailed in Section 4.3.2.10.

Based on the modelling of trail operations, the annual number of trail users are estimated to increase from 100,730 in year 1 to 140,014 in 2031. Around two thirds are estimated to be day visitors and one third overnight visitors.

Visitor numbers are anticipated to be higher on weekends, particularly in good weather conditions. In year 1, visitor numbers are estimated to be 450-650/day on weekends and 150-250/day on weekdays. January is anticipated to be the month of peak usage at 10% of the expected annual visitation. June and July are anticipated to be the months with minimum usage at 7% of annual visitation. Anticipated visitor numbers are shown in Table 4-2.

Table 4-2 Anticipated visitor numbers

Visitor origin	Type of visit	Year 1	Year 5	Year 10
Yarra Ranges	Day	22,871	24,537	27,008
	Overnight	-	-	-
Victoria (outside Yarra Ranges)	Day	40,740	49,804	57,884
	Overnight	14,806	18,311	21,089
Interstate and overseas	Day	4,463	6,454	6,807
	Overnight	17,851	25,815	27,227
Total		100,730	124,921	140,014

As per table 4-2, visitors of the WMBD are split into two categories, day visitors and overnight visitors. Day visitors are anticipated to primarily access the trail network via parking at Wesburn Park and entering the network via trail 43. Overnight visitors are anticipated to park at their accommodation and access the trail network via the closest trail entrance point. E.g. overnight stays within the Warburton area will either ride into trail network via trail 11 or catch the shuttle bus from the Warburton pick-up spot.

A small visitor information area will be provided within the existing Council building at Wesburn Park to service the Southern Network. This will ultimately be replaced by a larger visitor information centre at the Golf Course trailhead as part of the Northern Network. An additional 120 car parks would be available at Wesburn Park for use of mountain bikers. Limited car parking is also available at Mount Tugwell. Shuttle buses would move riders and their bikes between the Warburton, Wesburn Park trail head and Mount Tugwell.

It is envisaged that local and regional scale events will be regularly conducted throughout the year. These small-scale events are generally a single discipline and will attract mainly participants, with only a very small number of spectators or assistants. There is also potential for large-scale events, which may require additional investment and development of suitable infrastructure to support the event.

All formal events conducted on the trails will require appropriate permits from Yarra Range Council and land managers as required. This process ensures that event organisers have taken appropriate actions to ensure environmental, safety and community risks are appropriately managed.

4.3 Inspections and maintenance

Yarra Ranges Council is responsible for the management of the mountain bike trail network and associated infrastructure, including trail heads. This section outlines how trails and associated infrastructure, once approved and constructed, will be inspected and maintained during the project operation phase.

Up to eight full time staff are anticipated to be required to undertake regular inspections and maintenance for the Southern Network. Maintenance works would generally be undertaken by a small team of two to four people with the appropriate skills, equipment and qualifications for the required works. Additional staff or contractors may also be required after severe weather or fire events. Temporary closure of individual trails may be required to undertake maintenance works.

When carrying out inspections and maintenance, all necessary safety precautions would be taken. Appropriate Personal Protective Equipment (PPE) would be used for all works. Any tasks requiring machinery operation (excavator, chainsaw etc) would only be undertaken by suitably qualified and licenced individuals. All works would be undertaken in accordance with industry standards and agreed land manager plans.

4.3.1 Trail and associated infrastructure inspections

Regular inspections are a critical part of the strategy to monitor and control potential environmental impacts associated with the operation of the mountain bike trail network and associated infrastructure. Whilst mountain bike trails have been located, designed and built to avoid and minimise environmental impacts, monitoring through an effective inspection program enables unforeseen impacts to be detected and adaptive management to be adopted. Systematic and timely inspections provide a means to identify and address any problems with contingency measures.

All trails and associated infrastructure will be inspected at least quarterly and more frequently where required to investigate any damage caused by extreme weather events or concerns raised by stakeholders. The aspects to be addressed in the inspection program and the purpose of the inspections are set out in Table 4-3. Checklists to record the findings of inspections are provided at Attachment 5.

Table 4-3 Aspects to be addressed in inspection program

Aspect	Purpose of inspection
Illegal trail building	Whilst the development of a high quality mountain bike trail network at Warburton is likely to alleviate rather than exacerbate the current problem of illegally built trails in the region, periodic inspections will be undertaken to monitor for illegal trails or activities relating to the mountain bike network that go beyond the project footprint.
Unauthorised users	Motorbike riders, four wheel drives and horses are prohibited from using the trail network. Unauthorised users will be monitored through regular trail inspections, in response to stakeholder notifications and camera traps at key locations.
Prohibited night riding	The prohibited use of the trail network for night riding will be monitored through trail inspections, in response to stakeholder notifications and camera traps at key locations).
Short cuts and trail widening	Monitor for the formation of short cut diversions and any areas where trail widening is occurring due to riders not remaining on formed trail.
Weeds	The presence of weeds will be monitored through periodic trail inspections and in response to stakeholder notifications. Refer to section 4.3.2.13 for details.
Predators	The presence of predators (cats foxes and deer) will be monitored in accordance with Pest Animal Adaptive Management Plan.
Myrtle wilt	The presence of myrtle wilt will be monitored through periodic trail inspections and in response to stakeholder notifications.
Hazard trees	The presence of hazardous trees will be monitored through periodic trail inspections, following extreme weather events and in response to public notifications.
General tree health	Periodic inspections will also be undertaken to monitor for obvious signs of tree health decline that may have resulted from trail construction and operation.
Noise, vibration, dust and emissions to air	No material impacts have been identified on amenity in relation to noise, vibration, dust and emissions to air. Nevertheless, any stakeholder concerns in relation to noise, vibration, dust and emissions to air will be captured and inspections undertaken as necessary.
Public health and safety	Public health and safety will be monitored through periodic trail inspections and in response to stakeholder notifications.
Runoff, erosion and sediment control and geotechnical hazards	Effective function of drainage in the vicinity of the trails and sediment controls built into trail design and the potential for erosion, landslips or rockfalls will be monitored by periodic inspections, following extreme weather events and in response to stakeholder notifications.
Solid and liquid waste	Effective function of the toilets and bike wash facilities, adequacy of rubbish bin systems and prevalence of litter will be monitored by periodic inspections and in response to stakeholder notifications.
Aboriginal cultural heritage values	No material impacts have been identified on significant heritage values. Nevertheless, any public concerns in relation to heritage values will be captured and inspections undertaken as necessary.

Aspect	Purpose of inspection
Historic heritage values	No material impacts have been identified on significant heritage values. Nevertheless, any public concerns in relation to heritage values will be captured and inspections undertaken as necessary.
Traffic and road management measures	Parking availability will be monitored periodically through inspections and any unforeseen incidents or concerns will be captured and inspections undertaken as necessary.
Disruption of and hazard to existing infrastructure	No disruption of or hazard to existing infrastructure is envisaged. Nevertheless, any unforeseen incidents will be captured, and inspections undertaken as necessary.
Socioeconomic and land use values	No material impacts have been identified on significant socio-economic values. Nevertheless, any public concerns in relation to socio-economic conditions and land use values will be captured and inspections undertaken as necessary.
Landscape and visual values	No material impacts have been identified on significant landscape and visual values. Nevertheless, any public concerns in relation to landscape and visual values will be captured and inspections undertaken as necessary.
Project area rehabilitation	There is no plan to decommission the project. As there is no plan for closure, no inspections are proposed in relation to project area rehabilitation, unless any unauthorised trails to be closed are identified that require vegetation regeneration. Trails will be inspected following construction for vegetation regeneration.
Waterways	- Check waterway crossings for impediments. - Check for new springs or soaks affecting trail surface. - Structural inspection of bridge structures by qualified personnel as required.

A wide range of potential environmental impacts are monitored through the inspection program described above. These issues are variously addressed by routine maintenance activities that are planned and others that are specifically initiated to address issues identified through inspections. These maintenance works are described in Section 4.3.2.

4.3.2 Maintenance works and Operational Activities

A wide range of maintenance works and activities will be required to support operation of the project. Many of these activities are routine and are conducted on a planned basis, whilst others are initiated in response to issues detected through the inspection program.

The following routine maintenance activities will be undertaken proactively across the project to maintain the facilities in a safe and serviceable condition for users:

- Vegetation pruning to remove vegetation that is encroaching on trails, including using hand tools in sensitive areas such as where Myrtle Beech occurs.
- Trail sweeping to remove surface deposits along trails
- Trail edge mowing and brush cutting to keep vegetation from encroaching on trails
- Weed control (chipping and spraying)
- Clearing of drains and debris build-up beneath bridges to ensure water flow is maintained
- Minor drainage measures to remove water that is pooling on the surface, including cleaning and maintaining drains and sediment structures by hand.
- Minor trail repairs, such as patching of depressions or removing protrusions from the trail surface
- Measures to remedy user-created shortcuts or detours by blocking alternative routes with sticks, branches, leaf litter or rocks
- Removal of litter, including leaf litter.

Maintenance will be planned on a regular basis for non-urgent works such as those listed in Table 4-4.

Table 4-4 Examples of non-urgent maintenance works

Problem	Solution	Tools required
Organic material and/or soil is blocking the egress of water off the track.	Remove soil and organic matter blocking the grade reversal outlet.	Shovel, rake hoe
Fallen sticks / branches / leaves obscuring the trail surface, making it slippery and hard to see trail surface.	Remove sticks / branches / leaves from the trail surface.	Leaf blower, grass rake, hand saw
Important directional or advisory signs graffitied.	Use a chemical solvent to remove spray paint.	Solvent
Important directional signposts removed.	Install new signposts or symbols (arrows, trail identification numbers etc) as required.	Solvent, auger, drill
Plants growing beside the trail are blocking the trail corridor, making it difficult to pass.	Prune/cut any vegetation protruding into the trail corridor. Pull out any plants growing on the actual trail surface.	Hand saw, chainsaw, hedge trimmer
Loose rocks in the trail head.	Remove any loose or unstable rocks from the trail surface. Fill hole with soil and compact.	Shovel, mattock.
Trail has become cupped instead of out sloped.	Remove soil that has built up on the lower edge of the trail.	Rake hoe, shovel, mattock
Handrail on bridge is showing signs of decay.	Remove old rotten handrail and fastenings and replace with new handrail and fastenings.	Drill, saw, carpentry tools.

Other maintenance works however may need to be undertaken urgently, where they pose a potential safety risk, make the trail unusable or lead to significant damage if not rectified. Examples of works that would likely be considered urgent are listed in Table 4-5. If an urgent problem cannot be rectified immediately, then the trail will be closed until it can be rectified.

Table 4-5 Examples of urgent maintenance works

Problem	Solution	Tools required
Following extreme rain event, the trail is substantially damaged by water.	Run-off channels need to be filled in, compacted and smoothed over. Puddles need to be drained, allowed to dry, filled in, compacted and smoothed over.	Shovel, rake, rake hoe
After heavy winds or storms, trees often fall across trails.	Trees need to be cut into smaller pieces and removed. Assessments by qualified arborists may be required of trees adjacent to the trail appear to be damaged. Any trees that fall across the trail will be removed from the trail alignment and be left on-site. Where appropriate, fallen trees will be incorporated into the trail and become a feature of the trail itself.	Chainsaw
Trail slip. Trails built alongside slopes can be prone to slipping. This usually occurs after heavy rain and can be caused by the top batter slumping onto the trail, or the lower batter slipping down the hill.	Upper batter slips can be easily fixed by removing the fallen soil and rocks and re-shaping the trail tread and batter. If the lower batter slips down the hill, the trail may need to be rebuilt with rocks or a different alignment.	Shovel, mattock, rake hoe, rake
Tree has fallen and broken a timber bridge or berm.	Cut and remove tree. Replace timber member if possible.	Chainsaw, drill, saw, other carpentry tools

A range of other maintenance activities may be initiated as a result of trail inspections or where concerns have been raised by stakeholders. A number of these are described in the following sections.

4.3.2.1 Vegetation pruning

A well-maintained trail should have a clear corridor, free of vegetation. The trail corridor should be as wide as the ride line of 0.6 to 1.2 metres and approximately 2.5 metres high. Although heavy trail use tends to discourage heavy vegetation growth, over time vegetation lining the trail is likely to grow into

the trail corridor. On trails that are rarely used, new plants can even become established in the trail tread itself. This vegetation poses a number of problems:

- It can be dangerous to users if it protrudes into the trail corridor near eye height
- It can be annoying to trail users, detracting from the overall trail experience
- Some vegetation can be sharp or hard and can be extremely painful to push past
- It can block the line of sight for trail users
- It can push riders towards the outside edge of the trail, instead of the middle part of the trail. This part of the trail is often less stable than the middle and can lead to potential slumping of the lower batter.

These are just some of the changes that can occur to trails over time. This is not an exhaustive list. The actions of water, wind, animals and trail users are difficult to predict over long periods of time, hence the need to monitor and inspect the trails regularly.

As the trails are built in dense vegetation areas, any vegetation that is encroaching onto the trail corridor should be pruned back to provide a clear and safe trail corridor. Pruning of encroaching vegetation, should be carried out in accordance with AS 4373-2007, i.e. prune to the collar of any branch stem to allow the wound to heal naturally, and under-cut larger and/or heavy and/or awkward branches first to prevent bark tearing and reduce risk of infection. Specific biodiversity measures to be adhered to in regard to vegetation pruning (such as in sensitive habitats) are noted in Section 6.1.

Any removed vegetation should be disposed of away from the track edge and to ensure no sharp protrusions (e.g. cut stumps) are left within the track corridor or rider fall zone.

4.3.2.2 Hazardous tree monitoring

The presence of hazardous trees will be monitored through periodic trail inspections, following extreme weather events and in response to public notifications. Should a potentially hazardous tree be identified that presents an unacceptable risk council will consult with an arborist, as well as complete the hazardous tree inspection checklist, as attached in Attachment 5.

The intent is to avoid the removal of any potential habitat tree. If a potential habitat tree is identified as hazardous and presenting an unacceptable risk, Council will aim to re-route the trail safely around the tree to avoid any need to remove it.

Should this not be possible the steps outlined in the hazardous tree inspection checklist, in combination with the required mitigation measures in section 6.1 will be followed.

4.3.2.3 General Tree Health

Assess canopy tree health along the trail network using high resolution aerial photography on an annual basis for the first 5 years post construction and every 5 years thereafter.

For sections of trail where tree root impacts or tree root protection measures were implemented during construction, have an arborist assess general tree health condition to monitor for decline. The assessments would occur at post construction year 1, year 3 and then every 5 years subject to adaptive management guided by results of assessments. Should tree health issues be identified during monitoring, an arborist will be engaged to provide advice on appropriate treatment. Treatment options include (but are not limited to):

- Proactive measures to improve tree health
- Increasing soil depth over roots at affected site
- Installation of a raised platform or other designed solution
- Realignment of the trail within the 20m SCO corridor

4.3.2.4 Treating exposed tree roots

Over time roots can become exposed by the gradual removal of soil from the trail tread. Exposed tree roots can lead to health issues for trees and often be very slippery and thus present a hazard to some users on some classes of trail. The best treatment is to use soil to re-cover them as this avoids doing damage to the tree. Large roots within the SRZ should be protected with 100 millimetres or soil inlayed with a geotextile fabric.

Where Myrtle Beech roots are exposed, anti-fungal agents will be applied to prevent the spread of Myrtle Wilt.

4.3.2.5 Trail sweeping

Over time leaf litter accumulates on trail surfaces. A moderate amount of leaf litter is acceptable, as it can slow the flow of water, thus protecting the actual trail surface, and it can also provide an enjoyable riding surface and a natural appearance. However, large sticks, branches or trees must be removed as soon as possible. Such items pose a hazard to the trail users and can also provide cause for users to detour around them, widening the trail or creating a new route.

The trail surface will be swept or blown as required to remove any surface deposits to keep the trail surface clear and safe for users. Fallen branches or trees across the trail will also be removed, some of which may first require hand or chain sawing.

4.3.2.6 Maintaining drainage

Effective maintenance of drainage is critical because it stops water pooling on the trails, minimises changes to the natural drainage regime and minimises erosion. Where a trail traverses a side slope, it is typically slightly tilted or 'cambered' towards the downhill side. This is called outslope and ensures that any surface water flowing onto the trail from above will flow across the trail and continue down the hill (sheet flow), instead of being diverted along the trail (channelling). Over time, outsloped trails can become flat or even slightly 'cupped' or concaved. This 'cupping' is caused by the downward force of mountain bikes compacting soil in the middle of the trail and organic material migrating towards the edge of the trail causing the edge of the trail to become higher than the middle of the trail. Minor maintenance of outslope can be undertaken with hand tools during regular inspections and maintenance activities. Over time trails will require major maintenance, usually conducted with mini excavators. This major maintenance would be scheduled approximately every two to five years depending on trail usage and environmental conditions.

A grade reversal is essentially a point where the trail changes from downhill to uphill. Any water flowing down the trail reaches the grade reversal and can go no further and so is forced off the trail. At the lowest point of the grade reversal, the edge of the trail should be scalloped out to ensure that there is a wide, clear outlet for the water. This outlet must be kept clear of organic material (leaves, bark, sticks) and soil in order for it to continue functioning properly.

This is a key maintenance task, as any organic material that falls anywhere on the trail will eventually be pushed towards the outside of the trail or to a grade reversal outlet by the action of water and trail users. This is an ongoing and essential maintenance task. No matter how well constructed the trail is, in time the grade reversals will become clogged with organic material and soil. How quickly this occurs depends on the surface material of the trail, the amount of use the trail receives, the volume and frequency of rainfall and even the surrounding vegetation.

Silt or other materials will be cleared from drainage structures to ensure water can flow clearly through the drain and continue to operate effectively (i.e. the low point on grade reversals). Minor drainage works will be undertaken where simple measures (e.g. trail knick, drain re-shaping) can remove water that is pooling on the trail surface. Significant or persistent drainage problems that require substantial drainage measures will be identified for trail improvement works.

4.3.2.7 Managing erosion

The trails incorporate erosion protection measures that are designed to push water off the trail or protect the surface. Despite this, extreme weather events may cause damage to the trail. Extremely heavy rainfall events, due to the sheer volume of water unleashed, can overcome these erosion prevention measures and end up eroding the trail surface and batters. Eroded surfaces may also contribute to dust generation once the surface has dried. All trails and waterway crossings should therefore be inspected for water damage after heavy rainfall events and remedial action taken where required.

4.3.2.8 Addressing loose rocks

The movement of bike tyres and water can occasionally cause large rocks (100 millimetres or larger) embedded in the trail tread to become loose. On the surface of the trail, such loose rocks can pose a hazard to riders. Rocks pulled out of the trail surface can also leave significant holes, which in turn become hazards or hold water. Holes should be filled with soil and compacted. The urgency of this problem is dependent on the class of the trail. A large hole in the middle of an 'Easy' trail is a significant issue, whereas on a 'Difficult' trail it is not so urgent.

4.3.2.9 Minor trail surface repairs

Minor trail surface repairs will be undertaken during the regular inspections (or as needed and identified during the inspections). This will include patching depressions or removing protrusions on the trail surface, trail edges, and drainage structures.

Basic, small-scale surface repairs can often be done simply by reworking that direct area – i.e. breaking the surface up, reshaping, watering and re-compacting. A shovel and watering can would often be sufficient for these minor repairs.

4.3.2.10 Unauthorised users

Recreational trails are occasionally used by unauthorised trail users, such as motorbike riders, four-wheel drives and even horse riders. This is particularly a problem in urban areas. In some instances, the trail is robust enough to withstand usage by these other users, but in many cases trail damage occurs, especially from motorised vehicles. These users exert more pressure on the trail and can damage the trail surface. Motorbikes and four-wheel drives in particular can cause substantial displacement of the trail surface. Once a rut appears this can then affect the correct drainage patterns of the trail, causing water to pool on the trail. Water pooling on the trail can cause legitimate trail users to detour off the trail and can also lead to softening of the trail surface.

To prevent unauthorised use of the trail network, signage will be erected at strategic locations throughout the network and trail heads for public information. Other publication material will be made available on accessible platforms such as the projects website, outlining potential risks and impacts of unauthorised trail use.

In addition, camera traps will be placed along the network at key locations to monitor unauthorised use, including main network entrance points. The outcomes of the monitoring may be made available on accessible platforms, for public information and to discourage unauthorised use. Targeted compliance patrols will be used in areas if consistent unauthorised use is identified.

WMBD will work closely with the DEECA to report unauthorised users within the State Forest and put in place measures to prevent access, e.g. bollards, fencing or rockwork.

4.3.2.10.1 Night riding

Night riding is prohibited across the entire trail network. To ensure there is no night use of the trail network, signage will be erected at strategic locations throughout the network and trail heads for public information. Other publication material will be made available on accessible platforms such as the projects website, outlining potential risks and impacts of night riding. In addition camera traps will be placed along the network at key locations to monitor night time use, including main network entrance points and popular trails.

The outcomes of the monitoring may be made available on accessible platforms, for public information and to discourage night time use. Targeted compliance patrols will be used in areas if consistent night riding is identified.

4.3.2.11 Addressing detours and shortcuts

Minor works to remedy user-created detours and shortcuts will be undertaken where they are identified during inspections. This would typically involve laying nearby sticks, branches and leaf litter onto the shortcut. Large rocks and or strategic planting may be required to close off any persistent detours and shortcuts.

4.3.2.12 Removing waste

General litter and rubbish will be removed from within the trail corridor during each inspection as required. Significant litter or waste dumps will be reported to the land manager as soon as possible.

4.3.2.13 Maintaining signage

Signage plays an important role in aiding navigation along trails and risk management. Unfortunately, it is subject to damage, through natural causes or human intervention. Natural causes include branches/limbs of trees falling and damaging signs, bushfires, strong winds etc. In urban areas, signage may incur some form of vandalism. Typically, signage may be defaced or graffitied, damaged or even stolen.

As it forms a key tool in communicating the risks of the trail to the users, it is important that the signage is maintained so that it remains clear and legible. Any missing or damaged signage will be reported and replaced as soon as possible.

4.3.2.14 Managing weeds

Consistent with the Victorian Government's Invasive Plants and Animals Policy, a four-tiered approach is proposed to manage invasive species along the bike trails and near the associated infrastructure:

- Prevention is the most cost-effective form of weed control as weeds are absent and monitoring is the control method.
- Eradication of a new introduced species (smaller number of localised populations) is also good value as once eradicated; prevention is the control method.
- Containment of rapidly increasing or abundant species (many populations) is worthwhile to manage the impacts of a weed-on-weed free areas.
- Asset based protection is the most appropriate control method when a weed is widespread and abundant.

Each weed species has a different ecology and phenology. Therefore, the best approach to control the spread of a weed and ultimately eradicate it differs from species to species. Methods such as application of weed spray, hand removal of weeds and cut and paint would be used to manage and control weeds.

Invasive weed species will be chipped or sprayed from the track edges or track surface. If removal is done by mechanical chipping (e.g. pick) care should be taken not to damage the trail surface. Where spraying is used to treat weeds care will be taken to use herbicides registered for use near waterways (where relevant) and no spraying will occur in windy conditions to avoid impacts on surrounding vegetation. Regard to environmental sensitivities would also be considered when determining the weed control method. The actual ride lines will typically be kept clear by the mechanical shearing action of riding over any germinating weeds, however spraying is likely to be needed to keep weed species from encroaching on to the track edges.

Additional weed control techniques are provided in Attachment 1. Hygiene protocols for maintenance staff are included in Attachment 2.

Noxious weeds are notably sparse throughout the majority of the project corridor. The main noxious weeds identified are small areas of Common Blackberry *Rubus anglocandicans* and patches of Ragwort *Jacobaea vulgaris*. These weeds have been observed in areas of sparser canopy where there was enough light to penetrate the forest floor.

Other woody weeds (not declared noxious) have been observed in the vicinity of high use areas (existing public trails or adjacent to open spaces). Species observed included Sweet Pittosporum *Pittosporum undulatum*, English Holly *Ilex aquifolium*, Wild Tobacco Tree *Solanum mauritianum*, Japanese Honeysuckle *Lonicera japonica* and Red Cestrum *Cestrum elegans*. These woody weeds are listed on DELWP's Advisory list of environmental weeds (White et al. 2018).

Seven declared noxious weed species have been recorded in the vicinity of the project as follows:

- Spear Thistle *Cirsium vulgare*
- Common Blackberry *Rubus fruticosus* agg.
- Cut-leaf Bramble *Rubus laciniatus*
- Ragwort *Jacobaea vulgaris*,
- Hemlock *Conium maculatum*
- Tutsan *Hypericum androsaemum*
- Asparagus Fern *Asparagus scandens*.

Most of the weeds recorded occur at existing disturbed sites within the project area and intact forest areas are relatively weed free. Areas with the highest weed cover and potential source locations for weed invasion include Wesburn Park, Scotchmans Creek Reserve and along forest tracks in the Yarra State Forest.

WMBD Operational staff will be trained as part of site induction to identify common and high threat environmental weeds within the project area. Operational staff will identify weeds during general operational activities and trail inspections which will be undertaken on a quarterly minimum frequency.

4.3.2.15 Inspection and maintenance of trail heads

In addition to the inspection and maintenance works carried out on the trail network, regular inspections and maintenance would occur at the main Mount Tugwell trail head and Wesburn Park trail head, including at:

- Toilet facilities
- Bike wash facilities
- Car parking
- Waste bins
- Signage.

Trail head facilities such as toilets and bike washes are autonomous and would be inspected and maintained in accordance with manufacturer's specifications. Cleaning of facilities would be undertaken on a scheduled basis, or in response to user complaints.

Waste receptacles would be provided at the Wesburn Park Trail Head. It is expected that inspections of trail head facilities and waste collection would be conducted more frequently during summer months, when visitor numbers are expected to be higher. In addition, specific management plans would be required for events, depending on the scale of the event, where additional waste receptacles may be required and emptying of waste may be needed on a daily basis. The project would also promote a 'carry in, carry out' policy by including signage at Mount Tugwell trail heads, to account for where bins may not be available to users (i.e. along trails).

5.0 Risk assessment

An environmental risk assessment has been completed to identify environmental risks associated with operation of the project. The risk-based approach was integral to the EES as required by section 3.1 of the Scoping Requirements and the *Ministerial guidelines for assessment of the environmental effects under the Environment Effects Act 1978*.

Specifically, the EES risk assessment:

- Provided a consistent evaluation tool that is used for all assessments to systematically rate the key issues associated with the project.
- Identified key risks associated with the project that may require further examination through the detailed impact assessments
- Informed project development and/or development of measures to avoid, mitigate and manage environmental impacts.

This risk assessment method used during the EES will continue to be used during project implementation to monitor and evaluate environmental risks. The method is outlined in Section 5.1.

5.1 Risk assessment method

The risk assessment process adopted is consistent with AS/NZS ISO 31000:2018 Risk Management Process. The following tasks were undertaken to identify, analyse and evaluate risks:

- Use existing environmental conditions and identify applicable legislation and policy to establish the context for the risk assessment
- Develop likelihood and consequence criteria and a risk matrix
- Consider construction, operational and decommissioning activities in the context of existing conditions to determine risk pathways
- Identify standard controls and requirements to mitigate identified risks
- Assign likelihood and consequence ratings for each risk to determine risk ratings considering design, proposed activities and standard mitigation.

5.1.1 Assigning a consequence level

Consequence refers to the outcome of an event affecting an asset, value or use. Table 5-1 presents the consequence framework describing the consequence levels from 'insignificant' to 'severe'. The consequence criteria have been developed in the form of project-wide criteria rather than discipline specific, to enable a consistent assessment of consequences across a range of potential environmental effects.

Consequence criteria is assigned based on the maximum credible consequence of the risk pathway occurring. Where uncertainty regarding consequences existed, a conservative approach to assessing risk has been adopted.

Consequence criteria considered the following characteristics:

- Spatial extent of impact
- Duration and reversibility of potential impacts
- Sensitivity and significance of the receiving environment
- Magnitude, or severity of potential impact.

Each risk pathway will be assigned a level of consequence taking into account the guidance in Table 5-1. That consequence level, together with the likelihood level will be used to determine a risk rating in accordance with the risk matrix presented in Section 5.1.3.

Table 5-1 Guide to consequence levels

Level	Criteria
Insignificant	- No detectable changes or very short-term and localised - Readily reversible (insignificant) impact (<1 year for recovery). - Resilient or highly disturbed receiving environment or population. - No impact to native vegetation or habitat. - No impact to Cool Temperate Rainforest, or Leadbeater's Possum. - Heritage: No observable impact to heritage, sites remain intact and unaffected. - Social: No measurable impact to local character, amenity and access to public space/facilities. General community support, no impact to economy. - Transport: Existing transport services unaffected and transport infrastructure can comfortably accommodate the project. Transport safety unaffected. - Surface water / groundwater: No detectable changes to water levels, flow or quality with no measurable effect on assets, values or uses. - Geotechnical hazards: No detectable changes to land stability/erosion.
Minor	- Short-term localised detectable changes. - Impact likely to be readily reversible (within 5 years for recovery). - Resilient or disturbed receiving environment or population. - No impacts on critical habitats such as Cool Temperate Rainforest, or Leadbeater's Possum. - Heritage: Low degree of disturbance or low degree of observable impact to locally significant heritage. No impact to state or nationally significant heritage. - Social: Low degree of impact to local character, amenity and access to public space/facilities. Individual opposition to project, short term isolated economic issues. - Transport: Existing transport services experience isolated and short-term disruption and transport infrastructure can accommodate the project. Transport safety not materially affected. - Surface water / groundwater: Changes to water levels, flow or quality with isolated and short-term effect on assets, values or uses. - Geotechnical hazards: Changes to land stability/erosion with isolated and short-term effect on assets, values and uses.
Moderate	- Short or medium-term detectable changes at a number of locations within the study area. - Impact likely to be medium-term and reversible (5–10 years for recovery). - Undisturbed receiving environment or population. - Short-term, localised impacts on critical habitats such as Cool Temperate Rainforest, or Leadbeater's Possum. - Heritage: Limited degree of impact to heritage of state or local significance. - Social: Limited degree of impact to local character, amenity and access to public space/facilities, some community resistance, economic pressure on community. - Transport: Existing transport services experience minor but ongoing disruption or transport infrastructure can accommodate the project except for occasional short periods. Transport safety reduced somewhat but safety levels are satisfactory. - Surface water / groundwater: Changes to water levels, flow or quality with moderate effect on assets, values or uses. - Geotechnical hazards: Changes to land stability/erosion with moderate effect on assets, values or uses.
Major	- Long-term changes that are significant regionally - Impact likely to be medium to long-term and potentially irreversible (> 10 years to recover). - Sensitive receiving environment or population. - Material impacts on critical habitats such as Cool Temperate Rainforest, or Leadbeater's Possum. - Heritage: High degree of impact to heritage of State or local significance. - Social: High degree of impact to local character, amenity and access to public space/facilities. Vocal community conflict, declining economic stability. - Transport: Existing transport services experience significant and ongoing disruption or transport infrastructure is strained for extended periods due to the project. Transport safety reduced with the potential for injuries. - Surface water / groundwater: Significant changes to water levels, flow or quality with assets, values or uses significantly compromised. - Geotechnical hazards: Significant changes to land stability/erosion with assets, values or uses significantly compromised.
Severe	- Permanent changes that are significant at a Victorian or Commonwealth level. - Impact likely to be long-term and irreversible. - Highly sensitive receiving environment or population.

Level	Criteria
	- Significant impacts on critical habitats such as Cool Temperate Rainforest, or Leadbeater's Possum. - Heritage: Very high degree of heritage destruction or loss of heritage values. - Social: Very high degree of impact to local character, amenity and access to public space/facilities. Public backlash, economic distress. - Transport: Existing transport services cease to function, and transport infrastructure is constantly overextended due to the project. Transport safety reduced with the potential for fatalities. - Surface water / groundwater: Extensive changes to water levels, flow or quality with assets, values or uses irreversibly compromised. - Geotechnical hazards: Extensive changes to land stability/erosion with assets, values or uses irreversibly compromised.

5.1.2 Assigning a likelihood level

'Likelihood' refers to the chance of an event and the chance of the identified consequence occurring. The likelihood criteria range from 'rare' where the event and consequence may occur only in exceptional circumstances to 'almost certain' where the event and consequence is expected to occur in most circumstances. Likelihoods are assigned for the maximum credible consequence according to the levels presented in Table 5-2.

Table 5-2 Guide to likelihood levels

Level	Description
Rare	The event could occur but only in exceptional circumstances
Unlikely	The event could occur but is not expected in the course of normal circumstances
Possible	The event may occur in the course of normal circumstances
Likely	The event will probably occur in the course of most normal circumstances
Almost Certain	The event is expected to occur in the course of most normal circumstances

5.1.3 Risk matrix

Risk is defined as combination of the likelihood of an event occurring and the consequence of that event occurring. A risk rating was determined by these factors using the risk matrix in Table 5-3.

Table 5-3 Risk matrix

		Consequence level				
Likelihood level		Insignificant	Minor	Moderate	Major	Severe
	Rare	Very Low	Very Low	Low	Medium	Medium
	Unlikely	Very Low	Low	Medium	Medium	High
	Possible	Very Low	Low	Medium	High	High
	Likely	Low	Medium	High	High	Very High
	Almost certain	Low	Medium	High	Very High	Very High

When risks are rated as medium or above, the impacts associated with the risk pathway are assessed in an increasing level of detail and will prompt further exploration of potential mitigation and management actions to reduce the overall impact.

5.2 Risk register

The risk register containing the results of the risk assessment conducted as part of EES preparation is provided in Attachment 4. The risk register will be updated during the project operation phase in response to additional information that becomes available on the environmental risks in accordance with the internal environmental verification process (refer to Section 9.1).

6.0 Environmental management measures

This section describes the environmental management measures identified through the EES and the proposed monitoring and reporting mechanisms to be implemented during the operation phase.

The *Environment Protection Act 2017* requires that the General Environmental Duty (GED) be applied as follows:

- The GED is a concurrent separate obligation in relation to the proposed mitigation measures outlined in the OEMP.
- Additional mitigation measures may be required to minimise the risk of harm to human health or the environment so far as reasonably practicable under the GED.
- These additional measures may evolve over time as the 'state of knowledge' evolves.

6.1 Biodiversity

The existing environment and an assessment of potential impacts to biodiversity are discussed in EES **Technical Report A: Biodiversity and Habitats**. This section summarises the objectives to manage impacts relating to the operation phase and the mitigation and contingency measures to be applied.

6.1.1 Background

Locations for vehicle access and large congregations of trail users will be restricted to sites that are already highly disturbed and experience significant visitation and therefore human presence (e.g. Wesburn Park). Existing access roads will be used for all access to the trail network by shuttle services or private vehicles. These include regularly used main roads and forest tracks such as Mount Bride Road, Old Warburton Road and Edwardstown Road. In this context regular human presence and activities are already apparent across significant parts of the project area.

The key ecological values identified that are subject to residual operation impacts are Leadbeater's Possum, Cool Temperate Rainforest and Cool Temperate Mixed Forest threatened communities, , significant flora and fauna, aquatic ecosystems, groundwater dependent ecosystems (GDEs), native vegetation and migratory species.

Noise, vibration and disturbance impacts on native fauna generated from trail operation are considered manageable due to the dispersed nature of trail use.

Trail maintenance will require minimal soil and vegetation disturbance, which may have a minor impact on significant fauna and flora. Weed and pathogens along the trails will be controlled on scheduled maintenance days. The project will implement an Interim Pest Animal Adaptive Management Plan no later than the commencement of the Action and continue to implement the Interim Pest Animal Adaptive Management Plan until the implementation of an approved Comprehensive Pest Animal Adaptive Management Plan in accordance with the EPBC approval conditions.

6.1.2 Objectives

The environmental management objective for biodiversity is: *Avoid, and where avoidance is not possible, minimise potential adverse effects on native vegetation and animals (particularly listed threatened species and their habitat and listed ecological communities), as well as address offset requirements consistent with state and Commonwealth policies.*

Specific objectives for each biodiversity mitigation measure are described in Section 6.1.4.

6.1.3 Relevant legislation, policy and standards

Table 6-1 lists the key legislation, policies, guidelines and standards relevant to biodiversity. A detailed description of the applicable legislation and policies and their implications on the project is provided in **Technical Report A: Biodiversity and Habitats**.

Table 6-1 Relevant legislation, policy and guidelines - biodiversity

Type	Applicable legislation, policy and guidelines
Legislation and policy	• <i>Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)</i> ('EPBC Act') • <i>Flora and Fauna Guarantee Act 1988 (Vic)</i> ('FFG Act') • <i>Water Act 1989 (Vic)</i> • <i>Environment Protection Act 2017 (Vic)</i>

Type	Applicable legislation, policy and guidelines
	- Environment Reference Standard (ERS) - General Environmental Duty • <i>Planning and Environment Act 1987</i> - Yarra Ranges Shire Planning Scheme • <i>Catchment and Land Protection Act 1994</i> • <i>Fisheries Act 1995</i> • <i>Wildlife Act 1975</i> • <i>National Parks Act 1975</i> • <i>Yarra River Protection (Willip-gin Birrarung murrn) Act 2017 (Vic)</i> • Forests (Fire Protection) Regulations 2014 • <i>Prevention of Cruelty to Animals (POCTA) Act 1986</i>
Guidelines and advisory documents	• DELWP 2017. <i>Guidelines for the removal, destruction or lopping of native vegetation</i> • Commonwealth of Australia 2013. <i>Matters of National Environmental Significance. Significant impact guidelines 1.1.</i> • DELWP 2019. <i>Early invader manual: managing early invader environmental weeds in Victoria</i>, Weeds at the Early Stage of Invasion (WESI) Project • DEWLP 2021. <i>Flora and Fauna Guarantee Act 1988 – Threatened List.</i> • DPI 2010. <i>Invasive plants and animals policy framework</i> • EPA Victoria 2003. <i>Guidelines for Environmental Management – Rapid Bioassessment methodology for rivers and streams</i> • White, et al. 2018. <i>Advisory list of environmental weeds in Victoria</i> • DEE 2018. National Recovery Plan for Macquarie Perch (<i>Macquaria australasica</i>) • Victorian Government 2010. National Recovery Plan for the Tall Astelia <i>Astelia Australiana</i> • DELWP 2016. National Recovery Plan for the Spotted-tailed Quoll <i>Dasyurus maculatus</i> • Doran N 2001. Burrowing Crayfish Group Recovery Plan 2001-2005 • Koehn J & Clunie P 2010. National Recovery Plan for the Murray Cod <i>Maccullochella peelii peelii</i>. • Macfarlane, M.A., Smith, J. & Lowe, K. 1997. Leadbeater's Possum Recovery Plan. • Saunders, D and Tzaros, C 2011. National Recovery Plan for the Swift Parrot <i>Lathamus discolor</i>. • DEPI 2014. Action Statement No. 62 Leadbeater's Possum <i>Gymnobelideus leadbeateri</i>. • DSE 2009. Action Statement No. 238 Human activity which results in artificially elevated or epidemic levels of Myrtle Wilt within Nothofagus dominated Cool Temperate Rainforest.

6.1.4 Proposed mitigation and contingency measures arising from the EES

Table 6-62 lists the mitigation and contingency measures for potential biodiversity impacts.

Table 6-2 Mitigation and contingency measures – biodiversity

Mitigation measure ID	Mitigation and contingency measures
General	
BM01	Independent auditing Objective: To ensure environmental objectives and approval conditions are met Undertake independent auditing of trail operation against environmental objectives and approval conditions. Independent auditor will have power to stop work / use of trails should the project be non-compliant.
BM02	Update environmental issues on GIS Objective: To ensure all trail alignments and environmental issues are updated

Mitigation measure ID	Mitigation and contingency measures
	All trail alignments and all known site-specific environmental issues will be incorporated into the GIS platform accessible to maintenance staff.
BM04	Management of potential impacts to biodiversity values Objective: To ensure environmental objectives and approval conditions are met The OEMP sets out the requirements and processes for the project with regards to the management of potential impacts to biodiversity values. Follow the OEMP monitoring, reporting, auditing and complaint management processes (refer to Sections 9.0 and 10.2).
BM05	Natural materials Objective: To minimise the use / removal of natural materials from the site Minimise use / removal of natural materials such as rocks, woody debris, fallen timber, organic litter during operation and maintenance of trails. Natural materials will not be collected from outside of the trail construction area. Any material removed must be retained on-site nearby.
BM06	Chemicals, fuel and waste management Objective: To avoid and manage the potential for spills Implement standard controls for chemicals (including fungicides), fuel and waste management including procedures for spill containment and clean-up as per SWM10.
BM07	Environmental induction Objective: To minimise risks to biodiversity by providing an induction on biodiversity values for workers Compulsory in-person environmental induction and assessment for operations phase workers. Induction to cover all biodiversity values present in the project area. An environmental advisor with appropriate ecological qualifications will be appointed to assist with inductions and to provide ecological advice throughout the course of the project.
BM09	Landform stability Objective: To maintain landform stability and avoid / minimise landslips, erosion and sedimentation. Measures to maintain landform stability include the following: • Seasonal closure of selected trails • Incorporate management measures outlined in GTM01, GTM02 & GMT03 • Remediation of areas where landslips and / or erosion and sedimentation occur as a result of the trail.
BM10	Trail maintenance Objective: To maintain trail condition during operation Full time maintenance workers will maintain the trails to ensure they remain in good condition. Trail maintenance will continue for the entire life of the project i.e. as long as the trails remain in use. Ensure all chainsaw equipment is maintained appropriately to avoid generating fine sawdust. Monitor chainsaw activities, cease work and make necessary adjustments should fine sawdust become an issue. Should a significant amount of woodchips be generated through works, as determined by a suitably qualified independent ecologist, they should be removed from site.
BM11	Existing tracks Objective: To minimise erosion and sedimentation issues associated with existing tracks Existing vehicle roads and tracks e.g. Cemetery Track to be incorporated into the trail network. Upgrades associated with incorporating these tracks will reduce existing erosion and sedimentation issues.
BM12	Existing trails

Mitigation measure ID	Mitigation and contingency measures
	Objective: To minimise erosion and sedimentation issues associated with existing trails Existing mountain bike trails in the vicinity of Mount Tugwell will be incorporated into the trail network. Upgrades associated with incorporating these trails will reduce existing erosion and sedimentation issues.
BM13	Trail closure Objective: To minimise erosion and sedimentation issues or safety hazards associated with extreme weather Trail closure during periods of extreme weather as per SWM15 and in accordance with the Emergency Management Plan and any additional directions required under the Forests Act.
BM15	Trail inspections Objective: To inspect trails and identify potential issues Regular trail inspections undertaken to identify any problems or changes to the trails that need to be repaired. This includes after extreme weather events. Refer to Section 4.3.1.
BM16	Biodiversity observations Objective: To collect relevant data on biodiversity finds Document and deal with biodiversity finds, including to collect relevant data for: 1) Significant flora observations 2) Significant fauna observations 3) Nests / burrows / roosts used by native fauna 4) Dealing with injured / killed / displaced fauna 5) GDEs, seeps / springs and associated vegetation communities / species. Observations of the above will be entered into the GIS platform and records of significant flora, significant fauna and threatened ecological communities will be periodically uploaded to the Victorian Biodiversity Atlas (VBA).
BM17	Vegetation regeneration Objective: To allow vegetation regeneration within the operation footprint Allow and assist native vegetation to regenerate within operation footprint to a 30 to 60 centimetre wide tread width.
BM18	Monitoring of off-trail tracks Objective: To monitor and rehabilitate off-trail tracks where required. Monitor (including after heavy rainfall and storm events and implement processes for clearing formal trails as soon as practicable after tree fall is detected) and rehabilitate off-trail tracks and implement a process for closing unauthorised trails for assisted regeneration.
BM19	Vegetation removal Objective: Removal of vegetation to the minimum extent possible Removal of vegetation will be to the minimum extent required, according to variable trail operation footprint which is a function of slope class. Accidental / excessive clearing will be remediated through assisted regeneration or additional offsets.
BM21	Environmental enhancement works Objective: To undertake environmental enhancement works Conduct environmental enhancement works such as species monitoring programs and installation of nesting boxes for significant fauna.
Pests, weeds and pathogens	
BM20	Pest animal program Objective: To manage pest animals The project will commence implementing an Interim Pest Animal Adaptive Management Plan no later than the commencement of the construction works and continue to implement the

Mitigation measure ID	Mitigation and contingency measures
	Interim Pest Animal Adaptive Management Plan. No later than 18 months following the commencement of the construction works, the approval holder must submit to the department for the federal Minister's approval a Comprehensive Pest Animal Adaptive Management Plan. The pest animal adaptive management plans will be implemented as approved in accordance with the EPBC conditions.
BM22	Weed management program Objective: To manage weeds A comprehensive weed management program will be implemented along and in the immediate vicinity of trails. The program will be developed in consultation with land managers and will continue for as long as the trails remain in use.
BM23	Environmental induction - weeds Objective: To minimise risks to biodiversity by providing an induction on high threat environmental weeds for workers Operation phase staff trained as part of site induction to identify common and high threat environmental weeds within the project area and to implement procedures to minimise risk of spread. Training will include distribution of fact sheets, Yarra Ranges Weed ID guide and CaLP Act obligations. Refer to Section 4.3.2.14 and Attachment 1. The induction will be delivered by Council's environmental representative and cover: • Identification techniques for a wide variety of weeds, including common, emerging and high threat species. • Use of resources such as Yarra Ranges Weed ID guide and CaLP Act obligations. • Procedures for reporting and tracking weed populations to guide eradication or control measures. • Management measures as defined with Attachment 1.
BM25	Hygiene protocols Objective: To minimise impacts to biodiversity by implementing hygiene protocols Implement appropriate hygiene procedures for weeds and pathogens throughout the trail alignment. Refer to Attachment 2.
BM26	Environmental induction - pathogens Objective: To minimise risks to biodiversity by providing an induction on pathogens for workers Operation phase staff trained as part of site induction to identify signs of plant pathogens e.g. Myrtle Wilt and to implement procedures to minimise risk of spread.
BM27	Maintenance schedule for bike washing facilities Objective: To minimise impacts to biodiversity by maintaining bike washing facilities Implement commissioning and maintenance schedule and procedures for bike washing facilities as per SWM14. These facilities will be maintained for the entire life of the project i.e. as long as the trails remain in use. The washdown facility should be regularly restocked with the required fungicide. Provide adequate communication and education to washdown facility users on how and why bike washing facilities must be used.
BM28	Fill material quality Objective: To minimise introduction of weeds and pathogens Any fill material introduced to the site must be certified clean and be weed and pathogen free and exhibit similar properties to natural soils e.g. pH, drainage, texture. Any fill material introduced to the State Forest will be undertaken according to DELWP FFM procedures and exhibit similar properties to local natural soils e.g. pH, drainage, texture. Fill areas should be monitored for germination of weeds.
BM29	Minimise fill material Objective: To minimise the introduction of fill material

Mitigation measure ID	Mitigation and contingency measures
	Minimise the introduction of fill material for the construction and ongoing management of the trail.
BM30	Environmental induction - pests Objective: To minimise risks to biodiversity by providing an induction on pest animals for workers Operation phase staff trained as part of site induction to identify pest animals and signs of their presence to inform the pest animal adaptive management plan. This data will be recorded in the GIS platform for the project.
Aquatic ecosystems	
BM34	Inspections of waterway crossings Objective: To inspect waterway crossings are suitably maintained All waterway crossings must be inspected and maintained by a suitably qualified person as per GTM05.
BM35	No-go zones – waterways Objective: To avoid impacts to waterways All waterways are designated no-go zones during construction and operations unless works are required directly in / adjacent to waterway.
BM39A	Burrowing crayfish species Objective: avoid and minimise impacts on Curve-tail burrowing crayfish and Tubercle burrowing crayfish Implement the following measures: • When clearing vegetation, leave root system intact to reduce erosion and damage to burrows. • Reduce chemical use when controlling weeds, use safe chemicals for waterways even at high altitudes as crays can collect run-off in their burrows. • Where possible, use light machinery, travel on well-established roads and avoid working near burrows. • Minimise removal and disturbance of rotting logs and leaf litter. • Frequent or intense fire can have negative long-term effects on soil quality and vegetation in crayfish habitat, increasing erosion and reducing sources of food. A fire management plan incorporating use of low intensity reduction burns may be appropriate in crayfish habitat. Where destruction of a crayfish burrow is unavoidable, or if a crayfish is inadvertently excavated, trained fauna salvagers (with appropriate fauna handling permits) should excavate burrows, collect the crayfish and relocate them to nearby suitable habitat.
Cool Temperate Rainforest (CTR) / Cool Temperate Mixed Forest (CTMF)	
BM42	Disturbance to Myrtle Beech Objective: To minimise impacts to Myrtle Beech Where areas containing Myrtle Beech cannot be avoided, minimise disturbance within the drip line of all Myrtle Beech trees using a design/engineered solution.
BM43	Pruning of Myrtle Beech Objective: To minimise pruning impacts to Myrtle Beech Where pruning or wounding of Myrtle Beech trees and / or roots is likely to occur trail crews will be trained in pruning methods and application of anti-fungal agents to prevent the spread of Myrtle Wilt. Seek the views of a suitably qualified independent ecologist before conducting pruning of Myrtle Beech in the autumn or winter to confirm the level of risk to Myrtle Beech is acceptable in light of any available airborne spore counts and the length of the spore production season for Myrtle wilt.

Mitigation measure ID	Mitigation and contingency measures
	Consult an ecologist/plant pathologist on the most appropriate topical fungicide to be used and the most appropriate application methods to avoid spread beyond the wound and minimise impact to microbial organisms.
BM44	Fill material – CTR / CTMF Objective: To minimise impacts to CTR / CTMF No imported fill material (including gravel, rock and soil) is to be used within CTR / CTMF.
BM45	Environmental induction – CTR / CTMF Objective: To minimise impacts to Myrtle Beech, CTR and CTMF by providing an induction for workers Operation phase staff trained as part of site induction to identify Myrtle Beech, CTR and CTMF.
BM46	Maintaining ground surface gradients within CTR / CTMF Objective: To minimise changes to existing ground surface gradients within CTR / CTMF No machinery excavation is to be undertaken within CTR / CTMF. Where soils are damp and boggy, trail must be elevated using boardwalk or another appropriate engineered/design solution.
BM47	Hand building trails within CTR / CTMF Objective: To minimise trail impacts within CTR / CTMF Trail maintenance is to be undertaken using hand tools only within CTR / CTMF.
Groundwater dependent ecosystems	
BM49	Management of GDEs Objective: To minimise impacts on GDEs Implement measures outlined in GWM01 to manage potential impacts to GDEs / seeps / springs.
BM50	Environmental induction – GDEs Objective: To minimise impacts to GDEs by providing an induction for workers Operation phase staff trained as part of site induction to identify GDEs, seeps / springs and associated vegetation communities / species.
Leadbeater's Possum (LBP)	
BM51	Environmental induction – LBP Objective: To minimise impacts to LBP by providing an induction for workers Operation phase staff trained as part of site induction to identify high quality LBP habitat indicators. Training will include distribution of fact sheets including notes and photos.
BM52	Objective: To minimise removal of vegetation within suitable LBP habitat Removal of vegetation within suitable Leadbeater's Possum habitat will be subject to the following constraints: 1) In State Forest where there is a stand of single age <i>Eucalyptus</i> sp. and mid-storey (i.e. regrowth following bushfire), trees < 20 cm DBH may be removed 2) No removal of dense stands of montane thickets (comprising Bottlebrush <i>Callistemon</i> spp. and / or Tea-tree <i>Leptospermum</i> spp.) anywhere in the project area. Minor pruning of these species may occur at the edges of these thickets. 3) Avoid the removal of mid-storey trees greater than 10cm DBH within the State Forest along trails which are in the vicinity of known record of Leadbeater's Possum.
Other significant flora and fauna	
BM62	Habitat trees

Mitigation measure ID	Mitigation and contingency measures
	Objective: To minimise impacts to habitat trees No removal of existing habitat trees unless deemed hazardous in which case an appropriate outcome should be reached in consultation with the land manager, arborist and a suitably qualified independent ecologist. Appropriate outcomes should include consideration of pruning, track realignment or track closure depending on the significance of the habitat provided (eg if the tree provides Leadbeater's Possum habitat, the track should be closed until the hazard has naturally abated). Any realignment of the trails shall be undertaken in accordance with relevant approval and consent requirements. Any hazardous tree considered for removal will be assumed to be a habitat tree unless deemed otherwise. Wildlife rescue personnel should be present during hazardous tree works on habitat trees to ensure the wellbeing of native fauna.
BM63	Habitat for epiphytic / lithophytic species Objective: To minimise impacts to suitable habitat for epiphytic / lithophytic species Minimise disturbance to suitable habitat for epiphytic / lithophytic species e.g. avoid use of boulders covered with bryophytes and / or ferns.
BM64	Environmental induction – significant flora Objective: To minimise impacts to significant flora by providing an induction for workers Operation phase staff informed as part of site induction regarding potential presence of significant flora species (including epiphytic / lithophytic species) in order to minimise risk of damage to species or suitable habitat.
BM65	Environmental induction – rare or threatened flora Objective: To minimise impacts to rare or threatened flora by providing an induction for workers Operation phase staff trained as part of site induction to identify any additional high-risk habitats rare or threatened flora e.g. wet gullies, rainforests, etc. Training will include distribution of fact sheets including notes and photos.
BM67	Native vegetation removal Objective: To minimise removal of native vegetation Native vegetation (trees including mid-storey species) removal is subject to the following constraints: 1) Within State Forest trees < 20 centimetres DBH in single age stands of <i>Eucalyptus</i> spp. and mid-storey (i.e. regrowth following bushfire) may be removed. 2) Excluding areas of suitable habitat for Leadbeater's Possum, any small dead trees (< 20 centimetres DBH) within 2 metres of the trail may require removal if significant defects are identified. Such trees would be felled and kept nearby as habitat logs (coarse woody debris).
BM67A	Clearing or pruning of EPBC Act listed flora species: Objective: to minimise impacts to rare or threatened flora. No clearing or pruning of any Round-leaf Pomaderris or Tall Astelia or other EPBC Act listed flora species, during operation of the project.
BM68	Environmental induction – trees Objective: To minimise impacts to trees by providing an induction for workers Operation phase staff trained as part of site induction in tree protection methods, SRZ and root protection methods and identification of hazardous trees.
BM69	Minimise impacts to trees

Mitigation measure ID	Mitigation and contingency measures
	Objective: To avoid and minimise impacts to trees Minimise impacts to trees through adequate implementation of sympathetic mitigation measures.
BM70	Recording of tree impacts Objective: To record potential impacts to trees Capture relevant data where direct tree impacts are possible, where tree root protection is required, or where hazardous tree removal or excessive pruning is required. If hazardous tree removal or excessive pruning is required then a suitably qualified independent ecologist should be consulted on potential habitat values and the need for additional offsets to be provided. These must be reported to DEECA in accordance with the biodiversity monitoring and reporting requirements.
BM72	Large trees Objective: To avoid impacts to large hollow-bearing canopy trees All large hollow-bearing canopy trees (dead and alive) are to be retained with no substantial works encroachment that would compromise the health and viability of such trees.
BM73	Night riding Objective: To avoid and minimise disturbance to fauna Night riding is prohibited across the project's entire trail network.
BM75	Slow-start construction measures Objective: To enable fauna time to disperse Maintenance activities, to use slow-start construction measures to enable both aquatic and terrestrial fauna time to disperse.
BM77	Noise, vibration and air quality management Objective: To avoid and minimise impacts to biodiversity from noise, vibration and air quality Management of potential impacts from noise, vibrations and air quality as outlined in NM01 to NM06 and AM01 to AM07. In addition to these measures, project activities should minimise amount of equipment / machinery in use at any one time to reduce intensity of noise, vibrations and / or reduced air quality. Consideration should be given to faunal type before conducting work resulting in noise and vibration, and disturbance of nocturnal fauna during daytime works should be minimised.
BM78	Environmental induction – fauna habitat Objective: To minimise impacts to fauna by providing an induction for workers Operation phase staff trained as part of site induction to identify signs of native fauna habitation including, but not limited to: 1) Lyrebird display mounds 2) Roosting or nesting sites for forest owls 3) Platypus burrows 4) Habitat indicators for Curve-tail Burrowing Crayfish and Tubercle Burrowing Crayfish 5) Burrows used by ground-dwelling fauna e.g. wombats. Training will include distribution of fact sheets including notes and photos.

6.1.5 Other proposed mitigation and contingency measures

A range of other mitigation and contingency measures have been identified for implementation during operation as set out in Table 6-3.

Table 6-3 Other mitigation and contingency measures – biodiversity

Aspect	Requirements
Fauna management and reporting	• If during site works any fauna species are identified and require relocation, an accredited Wildlife spotter/catcher will manage these fauna relocations. • Any fauna that is injured or killed will be reported to Council/DEECA as an environmental incident. • Native fauna will not be fed by employees. No food scraps to be left on-site. • In the event that a koala is encountered within works areas, works will cease to allow the koala to move on of its own accord.
Minimise vegetation removal	• Lichen, moss and filmy fern sites – Manage rock outcrops that support this flora as carefully as possible to minimise the risk of stripping such flora during works. • No vegetation to be cut, removed or damaged outside of the trail corridor. • Where logs are cross-cut and a section removed, where possible place the cut section back against the original log to maintain continuity of the local habitat.
Machinery and equipment hygiene	• Boots, clothing and other personal items belonging to workers to be maintained in a clean and generally soil/mud free condition. Workers to be encouraged to clean boots daily. Refer to Attachment 2. • Mountain bikes, E-mountain bikes and motorbikes used for transportation to be maintained in a clean and generally soil/mud free condition.

6.1.6 Monitoring and reporting

The monitoring parameters, location and frequency to evaluate environmental performance and initiate contingency measures where required is set out in Table 6-4.

Table 6-4 Monitoring and reporting – biodiversity

Action	Measures
Biodiversity	
Objective	To prevent impacts to threatened flora and fauna and implement contingency measures where required in a timely manner
Performance indicators	• No impact on native vegetation outside of the trail corridor. • Areas of vegetation disturbance minimised and existing vegetation adjacent to the works protected. • Disturbed areas stabilised or revegetated. • No reports of injury or death of fauna. • No increase in the presence of weeds, pathogens or pests. • No complaints received regarding native flora or fauna. • No non-conformances raised at site audits regarding native flora or fauna. • Personnel responsible for maintenance will be adequately trained in identifying significant flora and fauna, habitat and weeds and appropriate measures are adopted to avoid locations or minimise impacts during maintenance works.
Monitoring (Parameters, location and frequency)	Monitoring over the course of the operation phase or in response to complaints will include: • Regular trail inspections at a quarterly minimum frequency, and after extreme weather events (such as sustained snow/rain conditions or 25 mm of rain in the preceding 24 hours), to identify problems or changes to the trails that need to be repaired (refer to Section 4.3). • Monitor for any off-trail tracks and close unauthorised trails and rehabilitation where appropriate (BM18). During regular trail inspections and scheduled maintenance, record visual inspections and observations of: • Presence of fauna, including pest species • Presence of significant flora, fauna or nests/burrows/roosts used by native fauna • Presence of weeds or pathogens, such as Myrtle Wilt • Presence of GDEs, seeps / springs and associated vegetation communities / species

Action	Measures
	• Presence of obvious tree hazards presenting a clear and present danger or roots that require management. Council will monitor, control, and where possible, eradicate, pest animals in the trail network in accordance with the Pest Animal Adaptive Management Plan.
Reporting	• Information pertaining to inspections, monitoring and pre-emptive measures will be recorded within inspection and maintenance record sheets. This will include maintenance actions required and undertaken. • Flora and fauna observations will be entered into the GIS platform and records of significant flora, significant fauna and threatened ecological communities will be periodically uploaded to the VBA. • Any monitoring data (including sensitive ecological data), surveys, maps, and other spatial and metadata required under the conditions of the EPBC approval are prepared in accordance with the Guidelines for biological survey and mapped data, Commonwealth of Australia 2018, or as otherwise specified by the Minister in writing. • Any monitoring data (including sensitive ecological data), surveys, maps, and other spatial and metadata required are prepared in accordance with the Guide to providing maps and boundary data for EPBC Act projects, Commonwealth of Australia 2021, or as otherwise specified by the Minister in writing. • All monitoring data (including sensitive ecological data), surveys, maps, other spatial and metadata and all species occurrence record data (sightings and evidence of presence) will be submitted electronically to the department within 20 business days annually of 17 July (EPBC approval date). • Any issues requiring management or similar are to be documented and reported to Yarra Ranges Council and rectified in a timely manner. • Relevant land managers and regulatory authorities responsible for secondary approvals will be notified of issues as required.
Contingency measures	• Communicate fauna and flora protocols to all staff. • If an incident occurs or a complaint is registered, the following procedure should be followed: - Cease works and report any breaches of the OEMP or other environmental issues to Council. - Undertake an investigation of any non-compliance and determine appropriate course of action to remedy impacts in consultation with a suitably qualified independent ecologist or arborist. - Transport injured fauna to an appropriate veterinarian or carer as soon as possible.
Responsibilities	Fauna and flora management is the responsibility of the Yarra Ranges Council Project Manager. All staff and sub-contractors are responsible for reporting environmental incidents and complaints to their supervisor including the nature and circumstances in which the incident happened (including an immediate verbal/email notification and completion of relevant incident notification forms).

6.2 Surface water, groundwater and geotechnical hazards

The existing environment and an assessment of potential impacts to surface water, groundwater and geotechnical hazards are discussed in EES **Technical Report B: Surface Water, Groundwater and Geotechnical Hazards**. This section summarises the objectives to manage impacts relating to the operation phase and the mitigation and contingency measures to be applied.

6.2.1 Background

The project is set in a mountainous area with many waterways that may be impacted as a result of the installation of trail heads or trails. Use of the trail network and supporting facilities have the potential to impact surface water and groundwater and present geotechnical hazards.

The main potential impact of the project during operation is changes to surface water hydrology and increased sedimentation of waterways due to trail use. Other potential impacts to include

contamination or sedimentation to waterways due to septic and bike washing facilities, or weather events causing damage and erosion hazards.

6.2.2 Objectives

The environmental management objective for surface water, groundwater and geotechnical hazards is: *To maintain the functions and values of groundwater, surface water and floodplain environments and minimise effects and risk of harm on water quality and beneficial uses.*

Specific objectives for each surface water, groundwater and geotechnical hazard mitigation measure are described in Section 6.2.4.

6.2.3 Relevant legislation, policy and standards

Table 6-5 lists the key legislation, policies, guidelines and standards relevant to the surface water, groundwater and geotechnical hazards impact assessment.

Table 6-5 Relevant legislation, policy and guidelines - surface water, groundwater and geotechnical hazards

Type	Applicable legislation, policy and guidelines
Legislation and policy	• <i>Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)</i> ('EPBC Act') • <i>National Environment Protection Council Act 1994 (Commonwealth)</i> ('NEPC Act') • <i>Flora and Fauna Guarantee Act 1988 (Vic)</i> ('FFG Act') • <i>Water Act 1989 (Vic)</i> • <i>Environment Protection Act 2017 (Vic)</i> - Environment Reference Standard (ERS) - General Environmental Duty • <i>Heritage Rivers Act 1992 (Vic)</i> • <i>Yarra River Protection (Willip-gin Birrarung murrn) Act 2017 (Vic)</i> • <i>Safe Drinking Water Act 2003 (Vic)</i> • <i>Planning and Environment Act 1987</i> - Yarra Ranges Shire Planning Scheme
Guidelines and advisory documents	• Ministerial Guidelines for Groundwater Licensing and the Protection of High Value Groundwater Dependent Ecosystems 2015 • EPA Victoria 2006 Guidelines for Hydrogeological Assessments (Water Quality) • EPA Victoria 2014 The clean-up and management of polluted groundwater • EPA Victoria 1991 Construction techniques for sediment pollution control • EPA Victoria Publication 1834 2020 Civil construction, building and demolition guide • EPA Victoria Publication 1287 2009 Guidelines for risk assessment of wastewater discharges to waterways • Landslide Risk Management Guidelines 2007 – Australian Geomechanics Society, Vol. 42 No 1 March 2007 • Waterway Determination Guidelines (DNRE 2002) • EPA Publication 1820.1 – Construction – Guide to preventing harm to people and the environment. • EPA Publication 1983 Erosion, sediment, and dust: treatment train • EPA Publication 1894 Managing soil disturbance • EPA Publication 1895 Managing stockpiles • EPA Publication 1896 Working within or adjacent to waterways • EPA Publication 1897 Managing truck and other vehicle movement

6.2.4 Proposed mitigation and contingency measures arising from the EES

Table 6.6 lists the mitigation and contingency measures for potential surface water, groundwater and geotechnical hazard impacts.

Table 6-6 Mitigation and contingency measures – surface water, groundwater and geotechnical hazards

Mitigation measure ID	Mitigation and contingency measures
Surface water	
SWM02	Erosion and sediment controls Objective: To minimise erosion and sedimentation impacts to waterways Follow the EPA publications: • EPA publication 1894 Managing soil disturbance • EPA publication 1895 Managing stockpiles • EPA publication 1896 Working within or adjacent to waterways • EPA publication 1897 Managing truck and other vehicle movement • EPA publication 1893 – Erosion, sediment and dust treatment train. Soil and sediment management: • Identify suitable locations for material stockpiles (if required) and ensure appropriate sediment controls are in place prior to stockpiling. • Plan works to provide for the progressive and timely stabilisation and rehabilitation of disturbed areas as required. • Balanced cut and fill construction is to be used. No spoil is to be spread down slope, minimising damage to adjacent vegetation below the trail. • Where the trail runs alongside a waterway, excavated spoil material should not be placed such that it enters the waterway or impedes natural drainage. • Rock armouring to be used on the entry and exit to any low-level bridges or boardwalks and on some steep sections of trail chutes and may be used on sections of boggy ground. • Topsoil will be retained in stockpiles on any cleared areas not required for construction of the trail tread or batter slopes. Materials will be reused on the site where possible. • In areas of high erodibility soils cut batters must be near vertical, and where possible retained by logs or rock facing. Site by site assessment on the requirement for retaining walls will be required. Batters will be stabilised appropriately to reduce potential slippage and erosion. Appropriate silt control mechanisms will be applied where necessary to control and minimize scour and silt movement. • Cut batters to be less than 2 m in vertical height. • Silt fences to be installed on all grade reversal outlets within 50 m of a waterway where access allows. • All trails to comply with International Mountain Bicycling Association trail construction guidelines, especially: - The Half Rule - 10% Average Guideline - Maximum Sustainable Trail Grades - Grade Reversals - 5% outslope as appropriate • Maintain all erosion and sediment controls in effective working order as required. • Vehicle entry and exits will be via designated areas only. • Identify all designated 'no go zones' on the plans. • Materials stockpiled on-site will be stored in a designated storage location with silt fencing on down slope areas where the stockpiles are within 30 m of a waterway. • Coir logs or silt fences will be maintained on slopes below bare soil areas at drainage flow path outlets where it is within 30 m of a waterway. • Ensure all temporary erosion and sediment controls are removed and relevant rehabilitation undertaken at the completion of works or when sufficient ground cover for stabilisation is achieved. Waterway Crossings • Where a waterway crossing is required, identify the narrowest practicable location. • Low level bridges must be designed to cope with peak flows for the catchment they are located in and must not impede flow in any way.

Mitigation measure ID	Mitigation and contingency measures										
	• Low level bridges must be compliant with the relevant Australian Codes and Standards.. • Approaches to waterway crossings will as much as possible be at right angles to the waterway and minimise the length of track within the immediate riparian zone. • Rock armouring to be used as appropriate on either side of bridge/boardwalks to prevent soil being carried onto the bridge/boardwalk. • Works near waterways will be scheduled appropriately. For example, works will be timed to coincide with periods of low flow and completed quickly. Works will be stopped if conditions are not suitable, such as during and after heavy rain. • Any removal of fallen timber within the waterway must be to the minimum extent necessary and any material removed must be retained on-site, downstream from the crossing point. Drainage • If areas of erodible soils are found in the trail surface, the area must be armoured with rock, gravel or low erodibility soils. • Drainage must be installed on approaches to waterway crossings so that where possible a 30 m buffer of vegetation is achieved to act as a filter strip. • All drainage must direct water onto vegetation and not exposed fill material. • Unless the trail tread is out-sloped (i.e. it drains to the lower side of the track) and no table drain is required on the upper side, cross drains/water bars/grade reversals must be installed at no greater distance apart than shown below: <table border="1" data-bbox="454 891 1072 1093"> <thead> <tr> <th>Trail gradient</th><th>Maximum drain spacing</th></tr> </thead> <tbody> <tr> <td>1-5%</td><td>70 m</td></tr> <tr> <td>6-10%</td><td>40 m</td></tr> <tr> <td>11-20%</td><td>30 m</td></tr> <tr> <td>>20%</td><td>20 m</td></tr> </tbody> </table> Corrective actions to control erosion: • Repair/maintain existing drainage, erosion and sediment controls. • Clean up or rehabilitate any impacts and exposed areas. • Install additional erosion and sediment controls where issues have been identified. • Consider the deployment of alternative erosion and sediment control devices where issues have been identified with the existing devices. • Ensure all personnel involved in the deployment and maintenance of erosion and sediment control measures are appropriately trained in their use and deployment. • Communicate changes with all relevant staff.	Trail gradient	Maximum drain spacing	1-5%	70 m	6-10%	40 m	11-20%	30 m	>20%	20 m
Trail gradient	Maximum drain spacing										
1-5%	70 m										
6-10%	40 m										
11-20%	30 m										
>20%	20 m										
SWM06	Monitoring of waterways Objective: To monitor effectiveness of mitigation measures A waterway monitoring program will be developed in consultation with Melbourne Water. The key potential stressor to waterways for the project is sedimentation and therefore turbidity is the key metric of interest. In addition, monitoring of macroinvertebrates will provide evidence of any longer-term project effects. Subject to consultation outcomes with Melbourne Water, the monitoring program will have the following key features: • Monitoring scopes in alignment with the ANZG (2018) guidelines for water quality monitoring (covering such aspects as spatial extent, parameter selection, scale, duration, frequency, cost effectiveness of the monitoring program) • Macroinvertebrate monitoring in selected waterways to provide evidence of any longer-term effects. The monitoring program will cover the construction and operations phases of the project, and be 'adaptive' – i.e. be responsive to the results to optimise the monitoring effort. Periodic monitoring of turbidity will be undertaken in the Yarra River and tributaries with a high number of crossings: Britannia, Four Mile and Scotchmans Creeks using a turbidity meter, to identify any increases in turbidity. Monitoring will commence prior to operation. Macroinvertebrate monitoring will be undertaken in accordance with EPA Publication 604 Guideline for Environmental Management: Rapid bioassessment methodology for rivers and										

Mitigation measure ID	Mitigation and contingency measures
	streams in the early stages of the operations phase. Monitoring will be undertaken at sites in the Yarra River upstream and downstream of tributaries which may be impacted by the Project and in selected tributaries which have the highest risk of impact (tributaries with a high number of crossings: Britannia, Four Mile and Scotchmans Creeks). Where monitoring detects impacts due to the project, contingency measures will be implemented such as remedial actions listed in EPA publication 1834 Civil construction, building and demolition guide. Modifications to waterway crossing structures will also be considered where appropriate. Any corrective actions taken will be recorded including the location of actions taken.
SWM09	Operational maintenance measures Objective: To monitor effectiveness of mitigation measures Inspection of the trails will be undertaken for the identification of new spring activity or other changes to catchments in which a channel becomes a waterway. Although springs can occur any time, there is likely to be a correlation with recent rainfall. Inspections for springs will occur after rainfall events (trigger to inspect 3-7 days after > 10 mm rainfall in 24 hours). Where identified, trail treatments, e.g. armouring or an elevated structure, may be required to control erosion. • Undertake a site inspection of all water crossing and high-risk sections of track after a rainfall event (e.g. >25 mm in 24 hours). • Implement measures to rectify issues if crossings present an erosion risk after heavy rainfall. • Undertake inspections four times per year and adapt the monitoring program frequency once sufficient data is gathered with regards to spring activity. • Record inspections on a form (or other measure) and list any corrective actions to be undertaken as a result of the monitoring. • A crossing agreement will be required to be entered into with Melbourne Water, outlining ongoing ownership and maintenance responsibilities. If a spring is detected: • Document the spring activity and location (following GWM01, which also covers the identification of springs and establishes appropriate treatments to protect groundwater and the down-gradient discharging environment) • Review the trail design in this localised area and consider opportunities for micro-siting (SWM01) • Implement the CEMP and requirements stipulated in SWM02 • Implement a trail control to ensure that spring flow is not dammed, and that downstream water quality and erosion hazards are minimised. This will require the installation of drained berms, rock armouring, or in extreme cases of high flow, bridging structures. • Confirm the acceptability of the control through monitoring / inspection during operation, as per SWM09 and GWM01.
SWM10	Spill management Objective: Minimise the likelihood and impact of a spillage and establishing controls to contain and clean-up • Follow EPA publication 1698 Liquid storage and handling guidelines (EPA 2018) • Australian Standard AS 1940- Storage and handling of flammable and combustible liquids to be adhered to. • All storage and transport of chemicals will be undertaken in accordance with the relevant Australian standards. • Current safety data sheets (SDS) will be kept on-site wherever hazardous materials are being stored. • A register of all chemicals and SDS for these chemicals will be held on-site. • Spill kits will be present on-site during these works.

Mitigation measure ID	Mitigation and contingency measures
	All personnel will be trained in spill response procedures and in the use of spill kits.
SWM12	Operation of trail heads Objective: Minimise the likelihood and impact of human waste, littering and illegal rubbish dumping impacting surface water Ensure trailhead facilities have adequate toilets that cater for the expected number of users. Bins would be provided at Wesburn Park. Facilities must be appropriately maintained and cleaned. Signage or 'track etiquette' rules may be appropriate. Refer to Section 4.3.3 for the inspection and maintenance activities proposed for the trail heads.
SWM13	Gully erosion management and monitoring Objective: To monitor effectiveness of mitigation measures Follow EPA publication 1894 Managing soil disturbance Erosion monitoring: Photo-point monitoring of selected gully crossing points to identify gully erosion. Flow monitoring: Place field cameras or appropriate flow monitoring equipment at selected gully crossing points (i.e. three or four of the most used or highest risk sites) to identify rainfall events which will cause water to flow in gullies or rock armouring to be overtopped. Sediment and debris observations will be made at other gully crossings during post rainfall assessments. Adaptive management can then allow for a decision to temporarily close tracks based on forecast rainfall events, if required. Undertaken periodical inspection of trails to assess condition and need for maintenance or additional trail treatments, particularly after severe weather events. Mitigation selection may depend upon the size of the affected area. Inspections of trail conditions will be undertaken in parallel with the spring monitoring activities listed above (i.e. an all-encompassing track inspection regime, to check for track condition, spring emergence, soil erosion, boggy areas, litter, vandalism etc). As per the spring monitoring, it is likely best undertaken after rainfall (e.g. 1-7 days after > 10 mm rainfall in 24 hours) at a minimum 4 times per year, but the frequency of the monitoring program may be adapted once data has been gathered to make informed changes. Record the condition in a form or report, list the corrective actions and then act on them. Reviews of photo-point flow monitoring data will be completed under the same frequency, with emphasis placed on assessment of flow conditions during and following rainfall events (>10 mm in 24 hours). The key metric for monitoring will be to select the waterways with the highest number of crossings and then to locate a single monitoring point for that waterway below the lowest crossing in its sub-catchment. The waterways with the highest number of crossings are: Four Mile Creek (37 crossings), Scotchmans Creek (30 crossings) and Britannia Creek (20 crossings) and Yankee Jim Creek (12 crossings). The crossings with the highest anticipated usage will be included in the monitoring program. Initially these are assumed to be located nearest to the trail heads, but this may be adapted if trail usage data shows other tracks being more frequently used.
SWM14	Bike wash system Objective: Minimise the likelihood and impact of grey water on surface water Ensure the bike wash system and water recycling/treatment unit is functioning as designed. Trapped sediment to be removed and disposed of appropriately in accordance with manufacturer's specifications.
SWM15	Track closure during periods of snow or high rainfall Objective: Minimise impacts of erosion and turbidity during periods of snow or high rainfall

Mitigation measure ID	Mitigation and contingency measures
	Yarra Ranges Council will proactively monitor trail conditions and close trails under adverse conditions to avoid damage and associated environmental impacts during these periods. Closures could be at a network scale or individual trail level. These decisions will be made by Yarra Ranges Council based on: • A trigger of 25 mm of rain in the preceding 24 hours for a network closure, or • Observations of staff indicating sustained wet/snow conditions likely to impact trails (could be individual trails, areas, or complete network) Trail closures will be communicated to mountain bikers by: • Active social media and electronic communications • Signage at trail heads and strategic locations around the network • Signage at start of trail for individual trail closures
Groundwater	
GWM01	Spring management Objective: Identify springs and establish appropriate treatments to protect groundwater and down-gradient discharging environment. Periodical inspections during the operation phase are required to assess for the presence of new springs and seeps. Where identified, trail treatments, e.g. armouring, may be required to control erosion. Treatments are documented in CEMP and SWM01, SWM02 and SWM09. Where a new spring has emerged as a result of the excavations, or unexpectedly through climate variation, an assessment will be made regarding: • Potential treatments to control sedimentation and erosion • Impact to behaviour of nearby springs, and need for treatment, e.g. diversion of discharge to the same area. When treated, inspection and maintenance are undertaken periodically during the operation phase to assess effectiveness of the treatment. Although springs can occur any time, there is likely to be a correlation with recent rainfall. Inspections for springs will occur after rainfall events (trigger to inspect 3-7 days after > 10 mm rainfall in 24 hours). Inspections will also be undertaken at a minimum of 4 times per year and the frequency of inspection will be adjusted once sufficient data is gathered with regards to spring activity. Record the inspection in a form or by another measure and also list corrective actions to be undertaken as a result of the monitoring and act on those.
Geotechnical hazards	
GTM01	Slope stability management Objective: Reduce and manage the occurrence of slope instability during excavation works for trail construction. • Plan construction works to provide for the progressive and timely stabilisation and rehabilitation of disturbed areas as required • Rock armouring to be used on some steep sections of trails • Site by site assessment on the requirement for retaining walls will be required • Batters will be stabilised appropriately to reduce potential slippage and erosion • Cut batters to be less than 2 m in vertical height • Construction activities creating any soil disturbance to cease during extreme rainfall events • Works near waterways will be scheduled appropriately. For example, works will be timed to coincide with periods of low flow and completed quickly. Works should be stopped if conditions are not suitable, such as during and after heavy rain • Avoid excessive excavation when working near waterways or gully systems • Inspection of completed sections of the trail will be undertaken following heavy rainfall events to observe potential slope failures of newly formed batters.

Mitigation measure ID	Mitigation and contingency measures
	If a large-scale failure has occurred which has resulted in significant damage to the trail and natural landform, an inspection will be undertaken by a geotechnical specialist to assess the risk and remediation measures.
GTM03	Trail formation management Objective: Reduce and manage the risk of poor trail formation resulting in ineffective drainage leading to instability and erosion • Ensure trail tread is compact • Use rock armouring to protect areas of the trail subject to erosion • Use of raised embankments to promote effective drainage where the trail is flat • Preferred method of drainage from the trail is grade reversal and out sloping trail head but culverts and water bars may be used from time to time • All drainage must direct water onto vegetation and not exposed fill material • Trail design and construction is to minimise any changes to surface water flows • Periodic inspections of the trail following heavy rainfall events to assess the effectiveness of the trail drainage and observe areas subject to erosion or unfavourable water flow downslope of the trail. Remediation to prevent further impact will be required.
GTM04	Rockfall risk Objective: Reduce and manage the risk of rockfalls below or above the trails • Ensure that boulders placed on the out slope as part of the construction process are secure and not likely to roll down the slope.
GTM05	Debris flow Objective: Manage the build-up of debris material at the location of bridge structures to reduce the risk of debris flows • Periodical inspections of the bridge structure, particularly following heavy rainfall events to assess potential build-up of debris material • Removal of debris material from bridge structure. Where possible, debris material will be placed downstream from the bridge structure.

6.2.5 Monitoring and reporting

The monitoring parameters, location and frequency to evaluate environmental performance and initiate contingency measures where required is set out in Table 6-7.

Table 6-7 Monitoring and reporting – surface water, groundwater and geotechnical hazards

Action	Measures
Surface water	
Objective	To prevent contaminant spills or sediment entering waterways and implement contingency measures where required in a timely manner
Performance indicators	• No visual evidence of any contaminants or uncontrolled release entering the waterways • All spill related environmental incidents are closed out in a timely manner • No evidence of erosion on-site or sediment/sediment laden runoff entering the downslope waterways • No complaints received regarding erosion and sediment control • No non-conformances raised at site audits regarding erosion and sediment control.
Monitoring (Parameters, location and frequency)	A waterway monitoring program will be developed in consultation with Melbourne Water. The key potential stressor to waterways for the project is sedimentation and therefore turbidity is the key metric of interest. In addition, monitoring of macroinvertebrates will provide evidence of any longer-term project effects. Subject to consultation outcomes with Melbourne Water, the monitoring program will have the following key features: • Monitoring scopes in alignment with the ANZG (2018) guidelines for water quality monitoring (covering such aspects as spatial extent, parameter selection, scale, duration, frequency, cost effectiveness of the monitoring program)

Action	Measures
	• Macroinvertebrate monitoring in selected waterways to provide evidence of any longer-term effects in accordance with EPA Publication 604 Guideline for Environmental Management: Rapid bioassessment methodology. • The monitoring program will cover the construction and operations phases of the project and be 'adaptive' – i.e. be responsive to the results to optimise the monitoring effort. • All operational monitoring will be reviewed annually by an environmental engineer (or equivalent) to assess the requirement for ongoing monitoring. Monitoring will be undertaken at sites in the Yarra River upstream and downstream of tributaries which may be impacted by the project and in selected tributaries which have the highest risk of impact (tributaries with a high number of crossings: Britannia, Four Mile, Scotchmans and Yankee Jim Creeks): • Monthly monitoring of turbidity using a turbidity meter, to identify any increases in turbidity. Monitoring will commence prior to operation. • Photo-point monitoring at selected points, particularly those points which have larger and steeper catchments, prior to operation and collected during periodic site inspections. Evidence of deer impacts at waterway crossings will also be recorded in line with the requirements outlined in the Interim- and Comprehensive Pest Animal Adaptive Management Plan. • Flow monitoring at key points in the track network where gullies are crossed but no boardwalk or bridge has been proposed. • Macroinvertebrate monitoring during spring to assess waterways following winter flow conditions. Visual inspection of the trails will be undertaken for the identification of new spring activity, for waterways with the highest number of crossings, or other changes to catchment in which a previously undefined waterway becomes a defined waterway. • Undertake a site inspection of all water crossing and high-risk sections of track after a rainfall event (e.g. >25 mm in 24 hours) • Inspections will initially be undertaken four times per year. This will inform adjustments to the monitoring program. • The following locations will be inspected for track condition, spring emergence, soil erosion, bogginess, litter, vandalism etc, likely best undertaken after rainfall e.g. 1-7 days after > 10 mm rainfall in 24 hours: - Four Mile Creek (37 crossings) - Scotchmans Creek (30 crossing) - Britannia Creek (20 crossings) and - Yankee Jim Creek (12 crossings). • Reviews of photo-point flow monitoring data will be completed under the same monitoring frequency, with emphasis placed on assessment of flow conditions during and following rainfall events (>10 mm in 24 hours).
Reporting	• Information pertaining to inspections, monitoring, pre-emptive measures and corrective actions will be recorded within inspection and maintenance record sheets. This will include maintenance actions required and undertaken. • Any non-conformances are to be documented and reported to Yarra Ranges Council and rectified in a timely manner.
Contingency measures	The monitoring plan for the project will include triggers that warrant further investigation. For water quality, exceeding background levels will be used as a trigger for further investigation. If evidence of impacts is observed that can be attributed to operation of the project, Yarra Ranges Council will consider amending waterway crossing structures where impacts are observed. Should monitoring indicate that corrective or remedial actions are required, actions will be undertaken by the maintenance crew. The corrective actions will be recorded, including the location of the actions taken. Where identified, trail treatments, e.g. armouring or an elevated structure, may be required to control erosion.

Action	Measures
Responsibilities	Management and maintenance of erosion and sediment control is the responsibility of the Yarra Ranges Council Project Manager and maintenance crew. All staff and sub-contractors are responsible for reporting environmental incidents and complaints to their supervisor including the nature and circumstances in which the incident happened (including an immediate verbal/email notification and completion of relevant incident notification forms).
Groundwater	
Objective	To protect groundwater springs and implement contingency measures where required in a timely manner
Performance indicators	- No impact to behaviour of nearby springs - All spill related environmental incidents are closed out in a timely manner - No complaints received regarding impacts to springs - No non-conformances raised at site audits regarding spring management.
Monitoring (Parameters, location and frequency)	Periodical inspections (at least 4 times a year) or after rainfall events (3-7 days after > 10 mm rainfall in 24 hours) of during the operation phase are required to assess for the presence of new springs and seeps (refer to GWM01). Where identified, trail treatments, e.g. armouring, may be required to control erosion. Treatments documented in CEMP and SWM01, SWM02 and SWM09. Where a new spring has emerged as a result of the excavations, or unexpectedly through climate variation, an assessment will be made regarding: - Potential treatments to control sedimentation and erosion - Impact to behaviour of nearby springs, and need for treatment, e.g. diversion of discharge to the same area. When treated, inspection and maintenance are undertaken periodically during the operation phase to assess effectiveness of the treatment.
Reporting	Information pertaining to inspections, monitoring, pre-emptive measures and corrective actions will be recorded within inspection and maintenance record sheets. This will include maintenance actions required and undertaken. Any non-conformances are to be documented and reported to the Yarra Ranges Council environmental representative and rectified in a timely manner.
Contingency measures	If a spring is detected: - Document the spring activity and location (GWM01) - Implement a trail control to ensure that spring flow is not dammed, and that down-stream water quality and erosion hazards are minimised. This will require the installation of drained berms, rock armouring, or in extreme cases of high flow, bridging structures. - Confirm the acceptability of the control through monitoring / inspection during operation, as per SWM09 and GWM01.
Responsibilities	Management of groundwater springs is the responsibility of the Yarra Ranges Council Project Manager and maintenance crew. All staff and sub-contractors are responsible for reporting environmental incidents and complaints to their supervisor including the nature and circumstances in which the incident happened (including an immediate verbal/email notification and completion of relevant incident notification forms).
Geotechnical hazards	
Objective	To prevent geotechnical hazards and implement contingency measures where required in a timely manner
Performance indicators	- No visual evidence of loose boulders on batter faces - No evidence of slope failures - No complaints received regarding slope failures or geotechnical hazards - No non-conformances raised at site audits regarding geotechnical hazards.
Monitoring (Parameters,	Yarra Ranges Council will proactively monitor trail conditions and close trails under adverse conditions to avoid damage and associated environmental impacts during these periods.

Action	Measures
location and frequency)	Following significant/heavy rainfall events (e.g. >25 mm in 24 hours), undertake inspections of: - Effectiveness of the trail drainage and observe areas subject to erosion or unfavourable water flow downslope of the trail (GTM03). - Periodical inspections of the bridge structures, particularly following heavy rainfall events to assess potential build-up of debris material (GTM05).
Reporting	Information pertaining to inspections, monitoring, pre-emptive measures and corrective actions will be recorded within inspection and maintenance record sheets. This will include maintenance actions required and undertaken. Any non-conformances are to be documented and reported to Yarra Ranges Council and rectified in a timely manner.
Contingency measures	Should monitoring indicate that corrective or remedial actions are required, actions will be undertaken by the maintenance crew. The corrective actions will be recorded, including the location of the actions taken. If observed, debris material will be removed from bridge structures. Where possible, debris material will be placed downstream from bridge structures. Trail closures due to geotechnical hazards or inclement weather could be at a network scale or individual trail level. These decisions will be made by Yarra Ranges Council based on: - A trigger of 25 mm of rain in the preceding 24 hours for a network closure, or - Observations of staff indicating sustained wet/snow conditions likely to impact trails (could be individual trails, areas, or complete network) Trail closures will be communicated to mountain bikers by: - Active social media and electronic communications - Signage at trail heads and strategic locations around the network - Signage at start of trail for individual trail closures
Responsibilities	Management of geotechnical hazards is the responsibility of the Yarra Ranges Council Project Manager and maintenance crew. All staff and sub-contractors are responsible for reporting environmental incidents and complaints to their supervisor including the nature and circumstances in which the incident happened (including an immediate verbal/email notification and completion of relevant incident notification forms).

6.3 Heritage

The existing environment and an assessment of potential impacts to Aboriginal cultural heritage and historic heritage are discussed in EES **Technical Report C: Heritage**. This section summarises the objectives to manage impacts relating to the operation phase and the mitigation and contingency measures to be applied.

6.3.1 Background

No specific intangible Aboriginal cultural heritage stories or oral traditions were identified by the Traditional Elders for the Warburton area that would be impacted by project construction. Consultation and engagement with Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation (WWCHAC) will continue to provide recommendations on future community engagement and to manage potential impacts to intangible Aboriginal cultural values.

Additional visitors to the project area during operation could result in permanent harm to Aboriginal or historic cultural places or removal of Aboriginal or historic cultural heritage material. This risk would be mitigated by the installation of signage to encourage visitors to stay on designated trails and the monitoring of known sites and places.

6.3.2 Objectives

The environmental management objective for heritage is: *To avoid, or minimise where avoidance is not possible, adverse effects on Aboriginal and historic cultural heritage.*

Specific objectives relevant to each heritage mitigation measure are described in Section 6.3.4.

6.3.3 Relevant legislation, policy and standards

Table 6-8 lists the key legislation, policies, guidelines and standards relevant to the heritage impact assessment.

Table 6-8 Relevant legislation, policy and standards – heritage

Type	Applicable legislation, policy and guidelines
Legislation and policy	• <i>Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)</i> ('EPBC Act') • <i>Environment Effects Act 1978</i> • <i>Aboriginal Heritage Act 2006</i> - Aboriginal Heritage Regulations 2018 • <i>Heritage Act 2017</i> - Heritage Regulations 2017 • <i>Traditional Owners Settlement Act 2010</i> • <i>Planning and Environment Act 1987</i> - Yarra Ranges Shire Planning Scheme • <i>Yarra River Protection (Willip-gin Birrarung murrn) Act 2017(Vic)</i>

6.3.4 Proposed mitigation and contingency measures arising from the EES

Table 6-9 lists the mitigation and contingency measures for potential heritage impacts.

Table 6-9 Mitigation and contingency measures – heritage

Mitigation measure ID	Mitigation and contingency measures
MM- HM01	CHMP management conditions Objective: To avoid or minimise impacts on Aboriginal cultural heritage Comply with all management conditions and contingencies of the approved CHMP 15276.
MM- HM05	Unknown historic heritage sites and identified areas of archaeological potential Objective: To avoid or minimise impacts on unknown historic heritage sites and identified areas of archaeological potential To mitigate possible impact to unknown historic sites and identified areas of archaeological potential, the following protocol will be followed. The Areas of Archaeological Potential and Points of Archaeological Potential are shown in the project ArcGIS. <i>Inductions</i> All workers involved must undertake a heritage induction prior to commencing works. This induction will be presented by a suitable experienced and qualified archaeologist. The induction will include the following topics: • A brief history of the area and types of sites that are present • The existence of the EES and the management conditions • Landforms and artefacts that may be present that indicate an archaeological site • The contingency measures that need to be followed in the case of an unexpected find (see Attachment 3) <i>Areas of Archaeological Potential</i> Areas of identified archaeological potential will be subject to the following protocol. • Limit works to the removal of vegetation if possible. • If works cannot be limited to vegetation removal and ground disturbing works must take place, the works must be supervised by an archaeologist • If archaeological features are uncovered during works, the contingency protocol must be followed. <i>Contingencies</i>

Mitigation measure ID	Mitigation and contingency measures
	The following contingency measures will be undertaken if archaeological features or artefacts are found. • Stop works if archaeological features are uncovered • Recording the features/artefacts by a suitable qualified and experienced archaeologist • Submission of a site card to Heritage Victoria • Abide by all conditions on Heritage Victoria site card
MM- HM06	Operational controls Objective: To protect and provide information on HO sites Signage will be installed in accordance with management conditions of any consents from Heritage Victoria. Monitoring or checks of known historic sites and features will be carried out as part of general trail upkeep during operation.

6.3.5 Monitoring and reporting

The monitoring parameters, location and frequency to evaluate environmental performance and initiate contingency measures where required is set out in Table 6-10.

Table 6-10 Monitoring and reporting – heritage

Action	Measures
Objective	To prevent harm to items of Aboriginal cultural heritage and historic heritage and implement contingency measures where required in a timely manner
Performance indicators	• Adherence to conditions in the CHMP • Adherence to conditions in the Historic heritage statement
Monitoring (Parameters, location and frequency)	• Check known historic sites and features that are intersected by trails for damage during regular trail inspections (minimum frequency of four times a year)
Reporting	• Information pertaining to inspections, monitoring and pre-emptive measures will be recorded within inspection and maintenance record sheets. This will include maintenance actions required and undertaken. • Any non-conformances are to be documented and reported to Yarra Ranges Council and rectified in a timely manner • Any items of cultural heritage encountered must be reported to the Aboriginal Party and/or appropriate Victorian government agencies. The discovery of cultural heritage artefacts or archaeological artefacts must be reported to Yarra Ranges Council through a formal reporting process. • Discovery of archaeological sites will be reported in accordance with the unexpected finds protocol.
Contingency measures	• When an unanticipated discovery is made, personnel will immediately stop work in the vicinity of the discovery (MM-HM05) • If ground-disturbing works are required at a VHI site, consent approval will be sought from Heritage Victoria prior to commencement. • Notify the Yarra Ranges Council's environmental representative • For Aboriginal heritage items, the Council environmental representative will notify the Aboriginal Parties.
Responsibilities	All staff and sub-contractors have a duty of care to protect cultural heritage.

6.4 Transport

The existing environment and an assessment of potential impacts to transport are discussed in EES **Technical Report F: Transport**. This section summarises the objectives to manage impacts relating to the operation phase and the mitigation and contingency measures to be applied.

6.4.1 Background

Operation of the project would increase vehicle and cycle traffic around Warburton due to the predicted number of visitors. A traffic impact assessment was conducted to assess the potential future peak demand on the transport network factoring as a result of the project in order to determine whether these increases would result in an unacceptable impact such as congestion. The assessment found that, despite the increase in demand, the existing transport network could accommodate this increase within its existing capacity.

During operation of the project, parking availability may be impacted at trail heads and in the Warburton town centre, which could affect the ability of local residents and businesses to find parking. An operational parking management plan would be developed and implemented to manage parking, especially during periods of peak demand.

Project operation may increase the potential for crashes due to increased interactions between cyclists and vehicles on the road network, shuttle bus drop-off points and at intersection points. Interactions between vehicles and cyclists would be minimised through road safety audits and associated implementation of safer treatments.

6.4.2 Objectives

The environmental management objective for transport is: *To minimise potential adverse social, economic, amenity and land use effects at local and regional scales.*

Specific objectives relevant to each transport mitigation measure are described in Section 6.4.4.

6.4.3 Relevant legislation, policy and standards

Table 6-11 lists the key legislation, policies, guidelines and standards relevant to the traffic and transport impact assessment.

Table 6-11 Relevant legislation, policy and standards – traffic and transport

Type	Applicable legislation, policy and guidelines
Legislation and policy	• <i>Road Management Act 2004 (Vic)</i> - Road Management Act (General) Regulations 2016 - Road Management Act (Works and Infrastructure) Regulations 2015 • <i>Transport Integration Act 2010 (Vic)</i> • <i>Road Safety Act 1986 (Vic)</i> - Road Safety Road Rules 2017 - Road Safety (Traffic Management) Regulations 2009
Guidelines and advisory documents	• AS1742.3 2009 – Traffic control for works on road • Austroads – Guide to Road Design Part 4: Intersections and Crossings • Towards Zero 2016-2020 – Victoria's Road Safety Strategy and Action Plan

6.4.4 Proposed mitigation and contingency measures arising from the EES

Table 6-12 lists the mitigation and contingency measures for potential traffic and transport impacts.

Table 6-12 Mitigation and contingency measures – traffic and transport

Mitigation measure ID	Mitigation and contingency measures
MM-TP1	Operations Traffic Management Plan (TMP) Objective: To minimise traffic impacts during Project operations Prior to the commencement of operations, a TMP will be developed and implemented to minimise disruption to existing land uses, traffic, car parking, on-road public transport, pedestrian and bicycle movements and existing public facilities during operation. The TMP will be developed in consultation with the relevant road management authorities. The TMP must be integrated with the Parking Management Plan required under TP6, and must include: • Further detailed investigation of the current traffic and parking conditions in Warburton. • Consideration of cumulative impacts of other projects and events occurring in the local area.

Mitigation measure ID	Mitigation and contingency measures
	• Traffic management measures identified through TP2 to TP7 inclusive. • A program to monitor impacts of operational activities on all modes of transport. Where monitoring identifies adverse impacts, practicable mitigation measures will be developed and implemented. The above list is indicative, and further measures may be identified during the development and maintenance of the TMP.
MM-TP2	Stakeholder communication plan Objective: To minimise traffic impacts on stakeholders through consultation During operation, regular meetings should occur with Council, residents, businesses and emergency services to identify and respond to traffic impacts including any modifications that might be required to the Traffic Management Plan. An agreement should be reached with DEECA to confirm pavement upgrades of impacted local roads around the study area, subject to the pavement strength survey results. For declared roads, regular road maintenance and inspections should be discussed and agreed with VicRoads.
MM-TP3	Road Safety Audit Objective: To verify the traffic risks can be managed A Road Safety Audit (RSA) will be undertaken by a VicRoads accredited Road Safety Auditor independent of the project team at the following locations prior to project opening: • Detailed design of the Lilydale-Warburton Rail Trail/road crossings proposed • Existing Warburton Highway signalised crossing. • Key road intersections that will experience an increase in cyclist volumes (given aspects of these intersections are unknown such as sight lines). • At the trail/road crossing points. Consideration to be given to visual obstructions to ensure a safe crossing location for cyclists. • The Lilydale-Warburton Rail Trail between Station Road, Wesburn and the eastern end of the rail trail at Warburton Highway, Warburton. The audit should focus on surface quality, areas of narrow width and poor sight distance. • At the proposed shuttle drop off locations. Consideration will be taken into the sight distance of road traffic and their ability to see the drop off points to avoid the risk of crashes. • Along the length and intersections of Edwardstown Road and Cemetery Track to confirm adequate emergency access and identify any sight and surface issues.
MM-TP4	Improvement works Objective: To avoid or minimise road infrastructure impacts • Subject to the results of the RSAs undertaken at various locations in the study area, improvements may be required prior to project opening. • Review and implement wayfinding and/or signage treatments that will encourage visitors by car to Wesburn Park Trail Head from the south to use Old Warburton Road.
MM-TP5	Cyclist and pedestrian safety improvements Objective: To ensure safe pedestrian and cyclist movements within the study area during the operational phase of the project. Measures include: • Yarra Ranges Council to assess bike parking provision after 12 months of operation in busier summer months to ensure that adequate bike parking is available to visitors. Additional bike parking should be provided, subject to the results of this assessment. • Drink taps/water bottle filling locations should be located in close proximity to the car park and bike path for the Wesburn trail heads to prevent dehydration. • Prior to opening of the project signage should be installed to warn drivers of cyclist presence in accordance with road standards.

Mitigation measure ID	Mitigation and contingency measures
	- The Yarra Ranges Council Paths and Trails Strategy will investigate collection of data and monitoring cyclist road crossing locations to determine when and what type of formalised crossing is required at the following locations: - Station Road, Wesburn - Hooks Road, Warburton - Station Road, Warburton - Warburton Highway, Warburton (This treatment will require approval from DTP) - Collection of data and monitoring cyclist road locations to determine if future formalised crossings or upgrades for cyclists need to be implemented. This will also help inform other mitigation measures in the future where there are risks of cyclist interactions with vehicles. - Implement wayfinding to guide cyclists to formal safer intersections and links - Yarra Ranges Council Paths and Trails Strategy will investigate how and when to implement: - shared streets along local roads within Warburton - safe cyclist connections between Wesburn, East Warburton, Warburton, and Millgrove to/from the trails - At the proposed shuttle drop off locations. Consideration should be taken into the sight distance of road traffic and their ability to see the drop off points to avoid the risk of crashes. - The shared path bridges need to provide a minimum of 2.5 metres between the handrails. - Yarra Ranges Council Paths and Trails Strategy to include investigation into a connection between the Lilydale-Warburton Rail Trail at Station Road and the northern side of Warburton Highway
MM-TP6	Operational parking management Objective: To ensure that parking congestion does not exceed acceptable limits for visitors or residents Yarra Ranges Council will establish a parking management plan for the operation of the Mountain Bike Project. It will include: - Arrangements for overflow car parking to include using the Wesburn Park car park as an overflow car park. Appropriate signage and wayfinding should be provided to adequately direct visitors, VMS boards should be placed at key locations to inform visitors on where to park in peak periods when the car parks are expected to be full - Installation of bike parking in the town centre to allow visitors to safely park their bikes - The impact on the town centre parking should be monitored in the first 12 months of project opening. This will be done by parking surveys (including duration of stay and occupancy surveys) to understand the usage and available spaces - The Warburton Local Movement and Transport Report (SALT, 2019) actions and strategy on improving car parking in Warburton should be considered to improve the utilisation of parking currently and into the future. - Monitoring of kerbside parking at roadside areas where trails intersect. Where parking is causing safety concerns, action to be taken to discourage this behaviour. - Monitoring of parking demand in the Wesburn Park trail head carpark until the Golf Course trail head carpark is completed. If parking demand in Wesburn Park is approaching capacity, additional parking must be provided on an interim basis until such time as the Golf Course carpark is completed
MM-TP7	Emergency access plan Objective: To ensure that emergency access is available during operation An Emergency Access Plan for the project must be established and approved before opening. The plan will include staff training in relation to emergency access arrangements for

Mitigation measure ID	Mitigation and contingency measures
	the Project. The plan must be referenced or contained in the Emergency Management Plan required under the Warburton Mountain Bike Destination Project Incorporated Document.

6.4.5 Monitoring and reporting

The monitoring parameters, location and frequency to evaluate environmental performance and initiate contingency measures where required is set out in Table 6-13.

Table 6-13 Monitoring and reporting – transport

Action	Measures
Objective	To minimise potential adverse transport impacts and implement contingency measures where required in a timely manner
Performance indicators	- No validated complaints received by members of the public. - Safety maintained for vehicles, cyclists, pedestrians and public transport users. - Adequate parking spaces are available.
Monitoring (Parameters, location and frequency)	- The Yarra Ranges Council Paths and Trails Strategy will investigate collection of data and monitoring cyclist road crossing locations to determine when and what type of formalised crossing is required at the following locations: - Station Road, Wesburn - Hooks Road, Warburton - Station Road, Warburton - Warburton Highway, Warburton (This treatment will require approval from DTP) - Parking surveys (including duration of stay and occupancy surveys) to understand the usage and available spaces in the town centre over the first 12 months of project opening.
Reporting	- Information pertaining to inspections, monitoring and pre-emptive measures will be recorded within inspection and maintenance record sheets. This will include maintenance actions required and undertaken. - Any non-conformances are to be documented and reported to Yarra Ranges Council and rectified in a timely manner.
Contingency measures	If complaints are received, the issue should be investigated and rectified as required.
Responsibilities	Traffic management is the responsibility of the Yarra Ranges Council Project Manager

6.5 Land use, noise, air quality and visual

The existing environment and an assessment of potential impacts to land use, noise, air quality and visual are discussed in EES **Technical Report D: Land Use and Planning**. This section summarises the objectives to manage impacts relating to the operation phase and the mitigation and contingency measures to be applied.

6.5.1 Background

Project operation has the potential to impact the existing land use and surrounding sensitive receptors such as residences, community buildings, outdoor recreation and public open spaces. During operation, land use changes are considered to have minor land use and amenity impacts, including from noise, air quality and visual.

Noise associated with trail operation activities would be occasionally audible from residences located in proximity to the trails. The noise level would not be considered intrusive when compared to existing background levels.

During operation, air emissions would be very localised and short in duration. Pollutant concentrations and impacts to sensitive receptors are expected to remain well below relevant air quality standards. Additionally, dust generated from mountain bikes using the trails is not expected to cause discernible impacts to sensitive receptors.

The key landscape values and existing landscape character of the area would be retained. However, permanent changes to the visual amenity would occur due to new structural elements associated with the project's trail heads and bridges, as well as other associated changes to the landscape such as vegetation removal.

6.5.2 Objectives

The environmental management objective for land use, noise, air quality and visual is: *To minimise potential adverse social, economic, amenity and land use effects at local and regional scales.*

Specific objectives relevant to each mitigation measure are described in Section 6.5.4.

6.5.3 Relevant legislation, policy and standards

Table 6-14 lists the legislation, policies, guidelines and standards relevant to the land use, noise, air quality and visual impact assessment.

Table 6-14 Relevant legislation, policy and standards – land use, noise, air quality and visual

Type	Applicable legislation, policy and guidelines
Legislation and policy	• <i>Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)</i> ('EPBC Act') • <i>Native Title Act 1993 (Commonwealth)</i> • <i>National Environment Protection Council Act 1994 (Commonwealth)</i> ('NEPC Act') • <i>Environment Effects Act 1978 (Vic)</i> • <i>Environment Protection Act 2017 (Vic)</i> - Environment Reference Standard (ERS) - General Environmental Duty • <i>Aboriginal Heritage Act 2006 (Vic)</i> - Aboriginal Heritage Regulations 2007 • <i>Planning and Environment Act 1987 (Vic)</i> • <i>Water Act 1989 (Vic)</i> - By-law No. 1 Water Supply • <i>Yarra River Protection (Willip-gin Birrarung murrn) Act 2017(Vic)</i> • <i>Heritage Act 2017 (Vic)</i> • <i>Flora and Fauna Guarantee Act 1988 (Vic)</i> ('FFG Act') • <i>Catchment and Land Protection Act 1994 (Vic)</i> • <i>Wildlife Act 1975 (Vic)</i> • <i>Road Management Act 2004 (Vic)</i> • <i>Land and Compensation Act 1986 (Vic)</i> • <i>Conservation Forests and Lands Act 1987 (Vic)</i> • <i>Crown Land (Reserves) Act 1978 (Vic)</i> • <i>Forests Act 1958 (Vic)</i> - Forests (Recreation) Regulations 2010 • <i>National Parks Act 1975 (Vic)</i> • National Parks (Park) Regulations 2003 • Environment Protection Regulations 2021
Guidelines and advisory documents	• EPA Publication 1826.4 Noise limit and assessment for the control of noise from commercial, industrial, and trade premises and entertainment venues • EPA Publication 1254, 2008, Noise Control Guidelines (as amended or replaced from time to time) • EPA Publication 1834, 2020, Civil construction and demolition guide • EPA Publication 1961, 2021, Guide to assessing and managing air pollution in Victoria (GAMAPV) • EPA Publication 1820.1 Guide to preventing harm to people and the environment.

6.5.4 Proposed mitigation and contingency measures arising from the EES

Table 6-15 lists the mitigation and contingency measures for potential land use, noise, air quality and visual impacts.

Table 6-15 Mitigation and contingency measures – land use, noise, air quality and visual

Mitigation measure number	Mitigation measure
Noise	
NM01	Managing noise and vibration from maintenance activities during operation Objective: To manage noise and vibration, related to trail maintenance activities in accordance with Section 4.3.3 of EPA Publication 1834. Manage noise during operation in alignment, as relevant, with the project's construction noise management plan, including the following general good practice techniques: • Undertake preparatory work off-site where there is low potential for impacting people (e.g. formwork, cutting or prefabrication of materials off-site prior to transporting to the construction site) • Connect to the electricity grid as early as possible to avoid the use of diesel generators • Restrict areas where mobile plant can operate so that it is away from people who could be affected by noise • Locate site vehicle access and waiting areas away from people who could be affected by noise • Plan vehicle movements to avoid manoeuvres and idling at location nearest to nearby people • Minimise the number of noise-emitting equipment in use at once • Use quieter equipment or methods. This may require considering: - buying or leasing quieter equipment - avoiding metal-to-metal and metal-to-stone contact - installing mufflers - reducing throttle and turning off equipment when not in use - placing things down rather than throwing - educating drivers to use driving practices that minimise noise • Use low-noise saw blades • Use electrical equipment rather than equipment driven by a diesel generator • Use low-noise emitting generators • Use effective alternatives to 'beeper' alarms (e.g. broadband alarms, proximity sensors) Avoid using reversing alarms by designing site layout to avoid reversing (e.g. drive-through for parking and deliveries) • Maintain equipment by: - inspecting regularly and maintaining equipment to ensure good working order - checking machines with enclosures, including doors and door seals and that the door closes properly against seals - maintaining air lines on pneumatic equipment so they do not leak • Maintain vehicles by: - considering good working conditions of mufflers - securing loose parts that may rattle • Limit noise caused by people on-site by: - avoiding yelling and shouting on-site (note: if people on-site need to shout to hear each other over the site ambient noise, it is possible the noise level may be putting their hearing at risk) - minimising the use and volume of any electrical amplified sound-reproducing equipment, for example radios, stereos, televisions or public address systems. • Plan transport and haulage routes to minimise the number of trucks/vehicles. Where there are large numbers of truck movements, consider truck route and truck waiting protocols (e.g. engines on/off and restart requirements) • Implement substitute methods taking into consideration: - alternatives to rock-breaking work methods, such as hydraulic splitters for rock and concrete, hydraulic jaw crushers, chemical rock and concrete splitting, and

Mitigation measure number	Mitigation measure
	controlled blasting such as penetrating cone fractures. The suitability of alternative methods should be considered on a case by case basis, including what potential risks they involve - alternatives to diesel and petrol engines and pneumatic units, such as hydraulic or electrical generator located away from nearby people. • In terms of vibration, any works that are required to be undertaken within the safe working distances should be assessed further. Include a review program for verification that the described good practice measures are in place and adhered to, and managed in accordance with EPA publication 1834.
NM04	Operational noise – Bike washes Objective: To ensure noise from bike washes does not disturb nearby residents and complies with EPA publication 1826 <i>Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues</i>. Bike wash stations shall be constructed and maintained in accordance with the product specifications and requirements. Regular inspections shall be undertaken to ensure that bike wash stations are performing adequately without excessive noise or issues. If the bike wash stations are to be located closer than 100 metres from the nearest resident at the trail head then shielding in the form of noise barriers around the wash area and the orientation of the bike washes will be given consideration at the detailed design stage. The bike wash station at the Wesburn Park Trail Head will be located at least 50 metres away from the nearest residential to comply with EPA publication 1826 <i>Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues</i>.
NM06	Events noise Objective: To ensure noise from events is sufficiently located away from residents and complies with the Environment Protection Regulations 2021. Larger events, including regional, state and national competitions have the potential to involve public address systems and music as part of the event. Larger events, including regional, state and national competitions that include public address systems and music as part of the event will be assessed and approved in accordance with the following policy and guidelines: • Public address systems: EPA Publication 1254 Section 13: Public Address Systems. • EPA Publication 1826 <i>Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues</i>. Participant and staff briefings for large events will provide guidance with respect to the potential impact of noise to nearby residences. The briefings should include guidance on the mindful use of competitor equipment such as compressors. In addition, areas where there are likely to be large congregations of people, such as the pits and the area around the finish line, should be located as far from the nearest residents as is reasonably practicable.
Air quality	
AM01	Dust suppression Objective: To minimise air quality impacts from dust Implement dust suppression at construction areas as required using water sprays, water carts or other devices on unpaved work areas, spoil and aggregate stockpiles during the loading and unloading of dust generating materials

Mitigation measure number	Mitigation measure
AM02	Restrict vehicle movements Objective: To minimise air quality impacts from dust generated from moving vehicles and plant After arrival at the project site, vehicles, plant and equipment will remain within the construction footprint and on designated roads and tracks
AM03	Cover construction loads Objective: To minimise air quality impacts from loss of loads Cover construction vehicles with potential for loss of loads (such as dust or litter) when using public roads
AM04	Monitoring of weather conditions Objective: To minimise air quality impacts during extreme weather conditions generating dust Monitor weather conditions for extreme heat and/or wind events using systems such as the Bureau of Meteorology forecasts and modify works if conditions are likely to result in air quality impacts at sensitive receptors
AM05	Exhaust emissions Objective: To minimise air quality impacts from exhaust emissions Vehicles and equipment will be maintained as per manufacturer's specifications to ensure minimal exhaust emissions
AM06	Rehabilitation Objective: To minimise air quality impacts from land clearance generating dust Land clearance will be minimised during construction to reduce the likelihood of wind-blown dust. Rehabilitate as soon as practicable

6.5.5 Monitoring and reporting

The monitoring parameters, location and frequency to evaluate environmental performance and initiate contingency measures where required is set out in Table 6-16.

Table 6-16 Monitoring and reporting – land use, noise, air quality and visual

Action	Measures
Noise	
Objective	To minimise disturbance to surrounding land users for noise and implement contingency measures where required in a timely manner
Performance indicators	No validated complaints received by members of the public.
Monitoring (Parameters, location and frequency)	Monitor for complaints.
Reporting	- Information pertaining to inspections, monitoring and pre-emptive measures will be recorded within inspection and maintenance record sheets. This will include maintenance actions required and undertaken. - Any non-conformances are to be documented and reported to Yarra Ranges Council and rectified in a timely manner.
Contingency measures	If complaints about noise are received, investigations into the source of noise must be undertaken.

Action	Measures
	Corrective actions may include repair or replacement of defective noise barriers or undertake noise monitoring and control measures where noise levels exceed the relevant criteria.
Responsibilities	Noise management is the responsibility of the Yarra Ranges Council Project Manager

6.6 Socio-economic

The existing environment and an assessment of potential socio-economic impacts and benefits are discussed in EES **Technical Report E: Socio-economic**. This section summarises the objectives to manage impacts relating to the operation phase and the mitigation and contingency measures to be applied.

6.6.1 Background

The project has the potential to bring substantial economic and social benefits to the local and regional economy through direct and indirect expenditure from visitors and local residents and associated job and wealth creation and through the increasing health and wellbeing of those people that use the mountain bike trails.

Project operation has the ability to have an overwhelmingly positive impact on local businesses by bringing a new group of consumers with new preferences and tastes to Warburton. However, increased traffic and changed visual amenity would affect neighbouring residents. Trails would also bisect a portion of some residents' properties or run directly adjacent to their land, creating a risk of loss of privacy. Conflict with existing land uses such as bushwalkers, horse riders and hunters may also be a result of the operation of the project.

6.6.2 Objectives

The environmental management objective for socio-economic issues is: *To minimise potential adverse social, economic, amenity and land use effects at local and regional scales.*

Specific objectives relevant to each mitigation measure are described in Section 6.6.4.

6.6.3 Relevant legislation, policy and standards

Table 6-17 lists the legislation, policies, guidelines and standards relevant to the socio-economic impact assessment. A detailed description of the applicable legislation and policies and their implications on the project is provided in **Technical Report E: Socio-economic**.

Table 6-17 Socio-economic legislation, policy, guidelines and criteria

Type	Applicable legislation, policy and guidelines
Legislation and policy	N/A
Guidelines and advisory documents	- Homes for Victorians, 2017 - Yarra Ranges Planning Scheme 31/07/2018 VC148 21.04-1 – Residential, Objective 2 – Housing Diversity 21.04-1 – Residential, Objective 4 – Green Wedge Residential - General Provisions Local Law 2012 – (No 1 of 2012) - Yarra Ranges Integrated Transport Strategy

6.6.4 Mitigation and contingency measures arising from the EES

Table 6-18 lists the mitigation and contingency measures for potential socio-economic impacts.

Table 6-18 Mitigation and contingency measures – socio-economic

Mitigation measure ID	Mitigation measure
MM-SM2	Assist local businesses to adapt to changing market Objective: Provide businesses with assistance in adapting to the changing market. Yarra Ranges Council will advocate for and facilitate access to business adaptation programs and government grants to help businesses adapt to the changing market and benefit from the opportunities provided by the Warburton Mountain Bike Destination.

Mitigation measure ID	Mitigation measure
MM-SM3	Minimise impact of project operations in Wesburn on residents' privacy and amenity Objective: To minimise impacts to Wesburn residents' privacy and amenity. Council will: - Engage with each landholder directly impacted by trail operation to build trust, better understand their concerns and develop appropriate responses collaboratively. - Investigate appropriate screening and noise reduction measures, potentially including choke points to mitigate amenity and privacy concerns.
MM-SM6	Maintain access, safety and enjoyment of other recreational users Objective: To ensure access, safety and enjoyment for other recreational users is maintained To maintain access, safety and enjoyment of other recreation users, Yarra Ranges Council will: - Appropriate signage is established at trail heads and popular trails to advise riders of the code of conduct (always give way) and to ride on marked trails only - Choke points/slowing techniques are used before intersection with another track/trail - Intersection points are clearly marked on trail maps and marketing collateral including details of other likely users - An extensive education campaign is conducted and all user groups (such as Bushwalking Victoria and local horse-riding groups) are regularly updated, to ensure they are aware of intersections between trail types and to minimise users mistakenly accessing mountain bike trails - Yarra Ranges Council works with land managers to install appropriate signage and barriers to prevent bike riding on intersecting walking trails and monitor compliance. 4WD organisation representatives are engaged to discuss the implications of closing Cemetery Trail - Increased monitoring of trail bike riding activity, ensuring appropriate mountain bike trails are only used by mountain bike riders.
MM-SM7	Minimise impacts to liveability for Warburton residents from increased traffic Objective: Minimise impacts to the Warburton transport network To ensure that increased traffic does not impact liveability in Warburton, Yarra Ranges Council will complete the recommendations set out in the Yarra Ranges Integrated Transport Strategy (2020-2040) and the Local Movement and Transport Report as important mitigation strategies. In particular, this includes: - Undertake a Road Safety Audit to ensure that roads, intersections and the Lilydale-Warburton Rail Trail are designed and constructed to provide safe vehicle movements during both construction and operation. - Undertake improvement works where necessary based on the pavement conditions survey. - Implement mitigation measures to ensure safe pedestrian and cyclist movements during the operational phase of the project. - Establish a parking management plan to implement appropriate measures for the operation of the project to ensure that parking congestion does not exceed acceptable limits for visitors or residents. - Establish an Emergency Access Plan.
MM-SM8	Increase affordable rental housing stock Objective: Increase affordable rental accommodation for visitors Yarra Ranges Council will: - Investigate potential to increase social housing in or near Warburton through applying affordable housing provisions as part of both rezoning, and permit applications for major developments. - Work with accommodation providers to increase the supply of visitor accommodation to absorb some of the impact of the additional visitors in Warburton.
MM-SM9	Maintain Warburton residents' access to appropriate community infrastructure

Mitigation measure ID	Mitigation measure
	Objective: Ensure Warburton residents' access to community infrastructure is not diminished To ensure that the project does not diminish Warburton residents' access to appropriate community infrastructure, Yarra Ranges Council will: - Proposed community infrastructure works, including construction of toilets at the Mount Tugwell, will be completed as priorities. - Monitor the impact of the project on dog walkers at Wesburn Park and provide additional areas elsewhere if necessary. - Work with relevant authorities to ensure that Country Fire Authority (CFA) capacity and medical emergency capacity are assessed to ensure that essential emergency management services are maintained.
MM-SM10	Maximise the benefits of job creation for Warburton youth and disadvantaged Objective: Support job creation for Warburton youth and disadvantaged Yarra Ranges Council will: Through a partnership model, coordinate employment and education opportunities with appropriate wrap around services to facilitate employment opportunities for local unemployed people.
MM-SM11	Improve trust, connection and cohesion Objective: Improve trust, connection and cohesion in the Warburton community To improve trust, connection and cohesion in Warburton, Yarra Ranges Council will: - Support and promote social enterprises locally. - Support community events and initiatives separate from mountain biking to sustain community diversity and engagement. - Promote the Warburton Mountain Bike Destination to families, with a particular focus on diversity of riders (women, children, ages).

6.6.5 Monitoring and reporting

The monitoring parameters, location and frequency to evaluate environmental performance and initiate contingency measures where required is set out in Table 6-19.

Table 6-19 Monitoring and reporting – socio-economic

Action	Measures
Socio-economic	
Objective	To minimise potential adverse socio-economic effects at local and regional scales and implement contingency measures where required in a timely manner.
Performance indicators	- No validated complaints received by members of the public. - Implementation of Communications and Community Engagement Plan.
Monitoring (Parameters, location and frequency)	- Monitor trail bike activity during regular trail inspections, ensuring appropriate mountain bike trails are only used by mountain bike riders - Monitor the impact of the project on dog walkers at Wesburn Park and provide additional areas elsewhere if necessary.
Reporting	- Information pertaining to inspections, monitoring and pre-emptive measures will be recorded within inspection and maintenance record sheets. This will include maintenance actions required and undertaken. - Any non-conformances are to be documented and reported to Yarra Ranges Council and rectified in a timely manner.
Contingency measures	If complaints are received, the implemented mitigation measures should be reviewed and updated to rectify the issue.
Responsibilities	The Yarra Ranges Council Project Manager is responsible for ensuring socio-economic impacts are minimised.

6.7 Bushfire and Emergency Management

This section summarises the objectives relating to bushfire prevention and response during the operation phase and the mitigation and contingency measures to be applied.

6.7.1 Background

Bushfires pose a significant risk to human safety, for both the operational personnel working on the trails but also local residents and other workers. The project is located in bushland that is classified as having a high bushfire risk. The main hazards related to bushfire are the risk of works on-site being an ignition source for a bushfire and the risk of a bushfire in the region impacting on-site works. Ignition sources could include:

- Hot works during the operation or maintenance of trails or bridges
- Presence of petrol-powered machines with hot exhausts
- Smoking on-site
- Hot mountain bike brake rotors.

6.7.2 Objectives

The environmental management objective relevant to bushfire is: *To put in place plans to minimise and respond to bushfire risks.*

6.7.3 Relevant legislation, policy and standards

Table 6-20 lists the key legislation, policies, guidelines and standards relevant to bushfire prevention.

Table 6-20 Relevant legislation, policy and guidelines - bushfire

Type	Applicable legislation, policy and guidelines
Legislation and policy	• Country Fire Authority Act 1958 (Vic) • Country Fire Authority Regulations 2014

6.7.4 Mitigation and contingency measures arising from the EES

Table 6-21 lists the mitigation and contingency measures for potential bushfire risks which were raised through the EES process. These measures relate to the biodiversity and traffic assessments.

Table 6-21 Mitigation and contingency measures - bushfire

Mitigation measure ID	Mitigation measure
BEM01	Emergency Management Plan Objective: To manage bushfire risks from the project An approved Emergency Management Plan will be implemented. The plan will include measures to manage bushfire risk from project activities including compliance with any requirements under the <i>Forests Act (Fire Protection Regulations) 2014</i> for operational activities in Fire Protected Areas.
MM-TP7	Emergency access plan Objective: To provide sufficient access in the event of an emergency Emergency access plan for the project will be reviewed before opening.

6.7.5 Other mitigation and contingency measures

A range of other mitigation and contingency measures have been identified for implementation during operation as set out in Table 6-22.

Table 6-22 Other mitigation and contingency measures – bushfire

Aspect	Requirements
Appropriate chemical handling and fire	• All chemical storage and handling will be in accordance with material SDS, with appropriate firefighting equipment (e.g. specific fire extinguisher types) identified in the SDS to be maintained on-site.

Aspect	Requirements
suppression equipment	- Adequate fire suppression equipment should be on-site as per the requirements of Regulation 111 of the Country Fire Authority Regulations 2014. - Fire extinguishers to be kept in all vehicles, as well as the project site office.
Work methodology	- No burning of any substances, including wooden debris or products, will be undertaken as part of this project. - Smoking to be prohibited on construction sites and any butts to be disposed of appropriately.
Working during the Fire Danger Period	- Reporting to the relevant land managers (i.e. DEECA or Council) regarding works in the trail network during fire danger periods will be undertaken in alignment with the requirements of the project EMP. - At the start of each working week, check the weather forecast and note any potential elevated fire risk/spike days (i.e. elevated fire risk/spike days are those with high temperatures, low humidity, and high winds. Check to ensure a TFB has not been declared before commencing works for the day. Th - On the day before any anticipated high-risk days, check to see if a Total Fire Ban (TFB) has been called for the area. Local fire bans will be checked to see if they are in place (phone 1800 020 440), with any project works that pose a high fire risk not performed during this time (e.g. on-site refuelling, etc.). - On days declared as a Total Fire Ban – No maintenance or construction work is to commence. During the Fire Danger Period, each team must have the following equipment on hand at all times: - Viable, functioning, two-way communications – e.g. mobile phone, UHF radio or satellite phone. Each team needs to be able to contact each other team and external contacts and each team needs to be contactable - One filled and operational knapsack pump or charged air-water extinguisher (not less than 9L capacity) - Two rake hoes - During the Fire Danger Period, the following protocols apply: - On days declared as a Total Fire Ban - No work is to commence. - On days with a fire danger rating of High – Contact the Chief Warden to discuss suitability of the conditions to commence or continue working. - Remain vigilant and respond to changes in weather conditions. Be alert for warnings via phone and monitoring the VicEmergency App. - Prior to starting chainsaw work: - Chainsaws are not to be used on days of TFB. - Ensure chainsaws are operable and in good order and working condition. Check exhaust system and muffler. - Clear the immediate work area of twigs, leaves, scrub and other flammable material before commencing operation. - Ensure that a knapsack or air-water type extinguisher is on hand, filled, serviceable and ready for use.
Total Fire Ban Days	On days declared as a Total Fire Ban – No maintenance or construction work is to commence.

6.7.6 Monitoring and reporting

The monitoring parameters, location and frequency to evaluate environmental performance and initiate contingency measures where required is set out in Table 6-23.

Table 6-23 Monitoring and reporting – bushfire

Action	Measures
Bushfire	
Objective	To minimise bushfire risk and implement contingency measures where required in a timely manner
Performance indicators	Bushfire risk is not increased due to project works.

Action	Measures
	• Works at the site are not impacted by bushfire risk or fire management. • Adequate fire protection equipment onsite. • On days declared as a Total Fire Ban – No maintenance or construction work is to commence.
Monitoring (Parameters, location and frequency)	• Monitoring of fire bans. • Monitoring of planned burns. • Weather monitoring: - Remain vigilant and respond to changes in weather conditions. Be alert for warnings via phone and monitoring the VicEmergency App.
Reporting	• Information pertaining to inspections, monitoring and pre-emptive measures will be recorded within inspection and maintenance record sheets. This will include maintenance actions required and undertaken. • Any non-conformances are to be documented and reported to Yarra Ranges Council and rectified in a timely manner.
Contingency measures	• If a TFB day has been declared, no construction or maintenance works are to occur. • If activities spark a fire, immediately implement fire suppression methods and contact emergency services. • Evacuate the site.
Responsibilities	Bushfire prevention and response is the responsibility of the relevant authorities as defined within the Emergency Management Plan. All staff who are required to perform tasks that may impact or be impacted by bushfire during their work are responsible for implementing appropriate bushfire control measures.

6.8 Waste

This section summarises the objectives to manage wastes relating to the operations phase and the mitigation and contingency measures to be applied.

6.8.1 Background

Waste will be managed at appropriate waste receptacles at the Wesburn Park trail head facility. There are no rubbish bins within the trail network. Visitors will be directed to take their rubbish home or use the rubbish bins provided at Wesburn Park trail head or in Warburton.

During inspections and maintenance activities, maintenance staff will collect and remove general litter and trash from within the trail corridor. Significant litter/waste dumps will be reported to the land manager as soon as possible.

6.8.2 Objectives

The environmental management objectives relevant to waste are:

- *Avoid, and where avoidance is not possible, minimise potential adverse effects on native vegetation and animals (particularly listed threatened species and their habitat and listed ecological communities), as well as address offset requirements consistent with state and Commonwealth policies.*
- *To maintain the functions and values of groundwater, surface water and floodplain environments and minimise effects on water quality and beneficial uses.*
- *To minimise potential adverse social, economic, amenity and land use effects at local and regional scales.*

6.8.3 Relevant legislation, policy and standards

Table 6-24 lists the key legislation, policies, guidelines and standards relevant to waste management.

Table 6-24 Relevant legislation, policy and guidelines - waste

Type	Applicable legislation, policy and guidelines
Legislation and policy	• <i>Environment Protection Act 2017 (Vic)</i>

Type	Applicable legislation, policy and guidelines
	- Environment Protection Regulations 2021 - EPA Publication 1820.1 Guide to preventing harm to people and environment.

6.8.4 Proposed mitigation and contingency measures arising from the EES

Table 6-25 lists the mitigation and contingency measures for potential waste impacts which were raised through the EES process. These measures relate to the biodiversity and surface water assessments.

Table 6-25 Mitigation and contingency measures – waste

Mitigation measure ID	Mitigation measure
BM06	Chemicals, fuel and waste management Objective: To avoid and manage the potential for spills Implement controls for chemicals, fuel and waste management including procedures for spill containment and clean-up as per SWM10: - All regulated and hazardous waste would be stored in a bunded area as far as practical from the waterways. - All hazardous materials will be removed from site and disposed of appropriately.
SWM12	Operation of trail heads Objective: Minimise the likelihood and impact of human waste, littering and illegal rubbish dumping impacting surface water - Ensure trailhead facilities have adequate toilets that cater for the expected number of users. Bins would be provided at Wesburn park. Facilities must be appropriately maintained and cleaned. - Signage or 'track etiquette' rules may be appropriate.

6.8.5 Other proposed mitigation and contingency measures

A range of other mitigation and contingency measures have been identified for implementation during operation as set out in Table 6-26.

Table 6-26 Other mitigation and contingency measures – waste management

Aspect	Requirements
Waste management	- The sites will be kept in a clean and tidy state. - Appropriate waste receptacles will be provided at Wesburn Park trail head facility, including recycling bin/s. All waste containers must be fitted with secure lids at all times to ensure native fauna and/or pest species are not attracted to the site. - Additional waste receptacles and collections should be considered for peak season visitation periods. - Cigarette butts will be disposed of appropriately, to prevent pollution and the occurrence of fire. - All waste will be removed during inspections and will be disposed of appropriately. - Use signage to manage waste produced by visitors.

6.8.6 Monitoring and reporting

The monitoring parameters, location and frequency to evaluate environmental performance and initiate contingency measures where required is set out in Table 6-27.

Table 6-27 Monitoring and reporting – waste management

Action	Measures
Objective	To minimise and appropriate dispose of wastes and implement contingency measures where required in a timely manner
Performance indicators	- No validated complaints received by members of the public. - Waste is being separated and disposed of into the appropriate receptacle.

Action	Measures
	- No contamination of soil, water or air as a result of inappropriate waste management. - The site is maintained in a clean and tidy state throughout the project activities. - Continuous improvement of waste avoidance, reduction and recycling throughout the project.
Monitoring (Parameters, location and frequency)	- Visual inspection of trails and waste collection areas on a regular basis (at a minimum frequency of quarterly for trails). - Visual inspection to ensure that waste is being recycled and disposed of appropriately in line with the Yarra Ranges Council waste collection cycles.
Reporting	- Information pertaining to inspections, monitoring and pre-emptive measures will be recorded within inspection record sheets. This will include maintenance actions required and undertaken. - Significant litter/waste dumps will be reported to the land manager as soon as possible. - Any non-conformances are to be documented and reported to Yarra Ranges Council and rectified in a timely manner.
Contingency measures	- If complaints about waste are received or an incident occurs, the waste management system will be investigated and rectified as required. - Corrective actions may include repair or replacement of defective waste receptacles, providing additional waste receptacles, or undertaking clean-up activities.
Responsibilities	Waste management is the responsibility of the Yarra Ranges Council Project Manager. All staff are responsible for implementing appropriate waste management measures.

7.0 Induction and training

Prior to participation in project operation and maintenance, all staff members including Yarra Ranges Council staff, contractors and subcontractors will be required to attend a project induction.

Key items within the project induction will be:

- Project location – review the location of the trails to be maintained
- Project scope of works – review the scope of works, including schedules, resources, equipment, container/compound locations, days/hours of work, productivity targets, reporting milestones etc.
- Discussion of key environmental issues and procedures for monitoring and control, including (but not limited to):
 - Legal and environmental approvals obligations
 - Field identification of flora species and the mechanisms to avoid impacts on key species, including fact sheets of significant flora and weed species
 - Field identification of significant fauna species and habitat and the mechanisms to avoid impacts on key species, including platypus, threatened crayfish, and Leadbeater's Possum.
 - Locations of listed heritage sites, areas of archaeological potential and identification of historic heritage features
 - Locations of areas of significant Aboriginal cultural heritage and identification of cultural heritage sites
- OEMP requirements for environmental management
- Health and Safety Management Plan (including key project contacts, evacuation plan, Safe Method Work Statements)

Representatives from Yarra Ranges Council and DEECA will be present at the initial induction and may choose to include organisation-specific induction material. Fact sheets of key environmental issues will be provided by the technical specialists.

At the completion of the project induction training, all staff members will be required to sign an attendance form acknowledging that they have been informed of their environmental management responsibilities. Records of induction and training will be kept in a register, including the type and topic of training undertaken, dates, names and trainer details.

This training is one of the key mechanisms by which we will ensure that environmental issues and ameliorative measures identified in the OEMP are clearly understood by all staff members. In addition to the project induction, job-specific environmental management training relevant to the role will be provided if and when required.

Any new staff members arriving throughout the duration of the project will be required to undertake a project induction with the Yarra Ranges Council Warburton Mountain Bike Destination Project Manager. Daily toolbox meetings will be held on scheduled maintenance days to highlight relevant environmental and safety issues.

Staff members involved in handling and application of chemicals will be required to have the following minimum accreditations:

- Chemical certification
 - AHCCHM101A – Follow basic chemical safety rules
 - AHCCHM201A – Apply chemicals under supervision
 - AHCCHM303A – Prepare and apply chemicals
 - AHCCHM304A – Transport, handle and store chemicals.
- First aid
- Drivers licence.

8.0 Emergency and incident response

8.1 Emergency and incident response procedures

Emergency and incident responses will vary depending on the nature of the incident.

Incidents in relation to the project would be managed through the project's Construction Environmental Management Plan, Operations Environmental Management Plan, Emergency Management Plan and the Yarra Ranges Council Complaint Policy. The EMP is a complementary plan to the Yarra Ranges Municipal Emergency Management Plan (MEMP) and includes adherence to emergency response planning, such as trail network closures.

Incidents would be escalated within Yarra Ranges Council in accordance with Council procedures and to regulatory agencies in accordance with legal requirements. Landowners or land managers potentially affected by incidents would be informed as soon as practicable by Yarra Ranges Council.

When reporting environmental incidents, the following information will be recorded:

- The name and contact details of the reporting person
- The date and time the environmental incident occurred
- The activity that was being undertaken when the incident occurred
- How the incident occurred
- Any containment measures put in place to reduce or contain environmental harm
- An assessment of the amount of environmental harm that occurred
- Details of stakeholders potentially affected.

Environmental incidents would be investigated to ensure that appropriate follow up actions are taken where required to prevent recurrence. The status of follow-up actions would be monitored and once all planned follow up actions have been completed the incident would be closed.

Emergency situations including in relation to fire, flood, storm and extreme heat would be managed in accordance with the Emergency Management Plan. For each high-risk emergency, procedures would be established to prevent or mitigate environmental impacts arising from the emergency or from the response.

All notifications to relevant authorities (e.g. DEECA) will be undertaken by Yarra Ranges Council.

Environmental incidents and emergencies have been identified within the individual environmental risk management plans above. However, proactive environmental risk management measures should be undertaken wherever possible, if events such as extreme rainfall or flooding are forecast. Temporary signage would be erected as required to provide users with additional warnings and advice on incidents and emergencies requiring trail closures or park closures, for example, on days declared a Total Fire Ban.

Some examples of environmental risk responses are provided below in Table 8-1.

Table 8-1 Examples of environmental risk responses

Incident	Response	Reporting
Failure of trail slope following rainfall event or flooding	Undertake trail surface repairs or treatments	Report to Yarra Ranges Council
Contamination of waterway with suspended solids or chemicals	Deploy spill-kit/containment measures	Report to Yarra Ranges Council EPA to be notified where appropriate
Non-compliance detected during monitoring program (e.g. water quality)	Perform root-cause analysis and undertake corrective actions	Report to Yarra Ranges Council
Identification of cultural heritage aspects during excavation	Protect site and follow cultural heritage reporting procedure	Report to Yarra Ranges Council

Incident	Response	Reporting
Noise or air quality complaints	Record complaint in on-site complaints register and inform Council	Report to Yarra Ranges Council
Injured fauna encountered	Transport injured fauna to an appropriate veterinarian or carer as soon as possible	Report to Yarra Ranges Council
Damage to vegetation	Make arrangements to protect impacted vegetation. Attempt to stabilise damage, engage with ecologist or arborist	Report to Yarra Ranges Council DEECA to be notified where appropriate
Bushfire	Refer to Emergency Management Plan.	Report to Yarra Ranges Council

8.2 Emergency contacts

Emergency contacts for the project are listed in the EMP.

9.0 Environmental auditing and verification

9.1 Internal environmental verification

Trail inspection records are a critical means to verify that environmental management is effective and to achieve compliance with the OEMP. Maintenance staff would use checklists to verify site controls are being adhered to. Refer to Attachment 5 for an example checklist.

The checklists, in addition to site inductions, other daily toolbox observations and monitoring data, would form the basis of the internal environmental verification process. The Yarra Ranges Council environmental representative would review these documents to check compliance with the OEMP on a monthly basis. In the event of non-compliances, the environmental representative will seek rectification.

The effectiveness of the OEMP will be reviewed by the Yarra Ranges Council Warburton Mountain Bike Destination Project Manager at least yearly and may be also updated in response to:

- Modifications to construction methods
- The currency of the risk register including identification of new environmental risks
- Results of environmental monitoring
- Environmental incidents, non-conformances and audit findings
- Feedback from stakeholders
- Identified opportunities for improvement.

9.2 Independent audit

Compliance with the OEMP would be verified through periodic independent environmental audits coordinated by Yarra Ranges Council. An audit would be conducted at the commencement of operations to verify all relevant environmental/social documentation and approvals are in place for operations. Audits would be conducted at least annually thereafter by suitably qualified and experienced environmental auditors that are otherwise not involved in the project's construction and operation.

Environmental audits would gather information through:

- Interviews with staff and contractors
- Reviews of documentation
- Observation of practices.

Audit reports would be submitted to Yarra Ranges Council by the environmental auditor. Reports would record details of any nonconformances identified during the audit and corrective actions required to address the nonconformance. For each corrective action, the responsible person and target completion date would be specified.

Yarra Ranges Council would publish a summary of the results of each environmental audit report on the Council website within three months of the environmental audit report being finalised. The focus and frequency of audits would be reviewed annually in the light of audit results.

10.0 Stakeholder consultation

Yarra Ranges Council seeks to ensure stakeholders, the local community and authorities are satisfied by the manner in which operational activities and tasks are managed. Council will develop a detailed Communications and Community Engagement Plan, which stakeholder consultation will be undertaken in accordance with. Key elements of the plan are summarised below

10.1 Notification of operational activities

Prior to commencement of the project and any major events, Council would consult with and notify land managers, landowners and occupiers, and the local community. Focus would be on operations which have the potential to cause disruption or disturbance, for example, traffic changes.

10.1.1 Land managers

Council would provide periodic briefings for Yarra Ranges Council partner agencies (DEECA and Melbourne Water) on operation of the project.

A designated contact for each land manager would be consulted with to ensure the orderly transmission of information between Yarra Ranges Council and the partner agencies.

10.1.2 Businesses and community groups

Council would engage with business and community groups prior to and during operation of the project in accordance with the Communications and Community Engagement Plan to ensure the safe operation of the trails and capacity of the community to absorb additional visitors to Warburton. This would include, but is not limited to, the following stakeholders:

- Warburton Golf Club representatives
- User groups, such as Bushwalking Victoria and local horse-riding groups
- Four-wheel drive representatives
- Local accommodation providers and businesses
- CFA and emergency services.

10.1.3 General community information

During project operation, updates on activities and events would be made available to the general community through the following means:

- Regular updates on upcoming events on the Yarra Ranges Council website
- Provision of contact information on the Yarra Ranges Council website for any enquiries.

10.2 Complaint management

Responding to stakeholder complaints would be undertaken in accordance with the Yarra Ranges Council Complaint Policy. This policy sets out procedures that:

- Provide a standardised approach to managing complaints
- Provide a framework for the management of complaints and feedback with a view to continually improving services, systems and capabilities
- Increase the level of satisfaction by resolving issues in an effective, fair, respectful and professional manner
- Ensure all statutory requirements are satisfied, and escalation options are communicated clearly.

The procedures under Yarra Ranges Council Complaint Policy require that:

- Complaints are recorded in a register including the date and time of the complaint, details of the complainant (if known) and the nature of the complaint
- The complainant be contacted directly (where possible) to discuss and better understand the concerns raised
- An investigation of the complaint is undertaken proportionate to the nature and the severity of the issues raised in the complaint
- A written response is provided to the complainant to communicate the findings in relation to the investigation of the complaint and details of any actions taken by Yarra Ranges Council in response to the issues raised.

Attachment 1 – Weed management

Weed management

Weed control methods

The most cost effective and successful weed control is achieved through an integrated weed control program, using a number of complementary methods together to achieve sustainable, long-term weed control. There are a variety of non-chemical and nonmechanical weed control methods which can be used as part of a sustainable, integrated weed control program. The weed control method would be selected based on the target weed species and surrounding environmental sensitivity of the site.

Chemical Use near waterways:

The use of chemical weed treatments shall be avoided wherever possible near waterways. If necessary, only safe chemicals for waterways shall be used in the vicinity. Consideration shall be given to the presence of burrowing crayfish in the selection of chemical weed treatments. The SDS shall be reviewed for all proposed chemical weed treatments prior to use.

Chipping

Chipping with a mattock or similar tool to manually chip out weeds is very effective for smaller weed infestations. When chipping, it is important to minimise soil disturbance to avoid stimulating the weed seed bank. Ideally, chipping should be undertaken when weeds are not in seed to minimise accidental spread. Chipped weeds are normally left to rot in the paddock.

Hand pulling

Hand pulling weeds can be done at any time of the year, however, it is easiest when the soil is soft just after rain. Care needs to be taken to extract the whole plant and root system because many plants can regenerate from root fragments left in or on the ground. Hand-pulled weeds can be disposed of in the same way as chipped weeds.

Cultivation

Cultivation and ploughing are effective means of weed control and are usually used as a preparation for sowing or planting pastures and crops.

Grooming

Grooming is carried out by a specialised machine or an attachment on an excavator. Groomers are commonly used to mulch large woody weed infestation, such as gorse and hawthorn, minimising soil disturbance and the use of chemicals. This technique is usually followed up with spot-spraying of any re-growth. Ideally, this technique should be undertaken in stages and the weed infestation substituted with native vegetation in order to replace lost habitat for native animals.

Brushcutting/slashing

Brushcutting/slashing is used primarily to reduce overall weed cover or as a short-term measure to stop seed-set on a particular weed. Any resulting re-growth will need to be followed up with weed control, e.g. spraying, grazing.

Chemical

Used correctly, herbicides can be a very effective tool to control weed infestations. It is important to select the most appropriate chemical for your circumstances. Selective herbicides only target weeds with a certain characteristic, e.g. broad leaves, leaving grasses unaffected. This is very useful when dealing with broadleaved weeds in pasture or areas of native grass. Non-selective herbicides will control a wide variety of weeds.

Chemical safety: Always follow the recommendations on the label to achieve the best results. Do not be tempted to alter the amount of chemical recommended on the label by adding 'a little bit more just to make sure'. Often, such practices can lead to substandard results, sometimes even making the herbicide inactive or dangerous. Many chemicals require the user to have an Agricultural Chemical Users Permit (ACUP), which is a certificate attained following training on safe use and handling of chemicals. When using chemicals, always wear personal protective equipment such as overalls, PVC or rubber gloves, PVC or rubber boots, washable hat, face mask/respirator, and if necessary, breathing apparatus.

Always take note of withholding periods for chemicals when spraying amongst crops or in areas used by livestock. Care should be taken to ensure that there is no spray-drift to 'off-target' plants on your own property or neighbouring properties. Particular care needs to be taken near waterways to avoid

contamination. Restrictions also apply on the types of chemicals that can be used in the Agricultural Chemical Control Area (CCA).

There are a variety of chemical application techniques used for weed control. It is important to consider the target weed and desired outcome before selecting your technique. Be aware that the risk of weeds developing herbicide resistance is increased if the same chemical is used repeatedly on the same weed in the same location. It is advisable not only to vary the herbicide used but also the control method as part of an integrated control program.

Spot spraying

Spot spraying can be undertaken using a hand-held spray unit, backpack, or large or small tanks fitted to a quad-bike, ute or trailer. An applicator such as a gun or a wand is used to direct the spray onto the target plant. Spot spraying is suitable for small outbreaks of weeds or when applying herbicide amongst desirable plants such as improved pasture or native vegetation. Foliar spraying is a form of spot spraying typically used on larger woody weeds such as gorse, blackberry and hawthorn (this weed is mainly cut & paint, or drill/fill).

Boom spraying

Boom spraying requires specialised equipment fitted to a quad-bike or tractor, and is used for the application of herbicide on dense infestations of weeds or on large areas of weed infestation. Boom spraying is often undertaken prior to pasture renovation or cropping.

Cutting and painting

Cutting and painting is generally performed on trees and shrubs with smaller trunks and stems using secateurs, loppers, handsaw or chainsaw. The main stem of the plant must be cut as close as possible to ground level to prevent potential suckering. To ensure the plant takes up the herbicide, paint the stump with undiluted herbicide within 15 seconds of the initial cut. If this procedure takes longer or the surface becomes contaminated with dirt, it may be necessary to re-cut or scrape the cut surface before applying the herbicide. A paint brush, atomiser or sponge can be used to apply the herbicide.

Drilling/frilling and filling

Drilling/frilling and filling is generally performed on trees and shrubs with thick trunks or where habitat for fauna needs to be maintained. Using a cordless, electric drill or hand drill, holes are made into the trunk on an angle 2-3cm deep and 5-10cm apart around the circumference. Alternatively, a hammer and chisel, an axe or tomahawk can be used to create wounds around the trunk. This technique is called 'frilling and filling'.

Within 15 seconds of the holes being drilled, or the frills being made, undiluted herbicide is injected/poured into each hole. To avoid suckering, the holes must be as close to the base of the plant as possible. It is important to treat every stem/trunk originating from the ground to prevent re-growth. Large multi-stemmed trees may also require the main branches to be drilled/frilled and filled. Deciduous trees should only be treated when they are actively growing, i.e. during spring and summer to ensure the plant takes up the herbicide.

Stem scraping

Stem scraping is a technique that is often used on vines or when trees are growing horizontal to the ground, preventing drilling or frilling around the entire trunk. Simply scrape back the bark using a chainsaw or hand-tools, then apply herbicide as described for 'cutting and painting'.

Solarisation

Solarisation involves laying sheets of black plastic over weed infestations and letting the sun effectively 'cook' the plants. Best results are achieved on weeds growing in full sun, however, the sheet of plastic will need to remain securely in place for some time.

Mulching

Mulching with a 10 cm layer of mulch will help reduce the chance of weed seeds germinating. Securely placed old carpet or underlay, or a thick layer of newspaper, presoaked in water, can also be an effective way to smother weeds.

Biological weed control

Biological weed control using a biological control agent is an effective way to reduce the size and density of large weed infestations. Biological control should be viewed as a long-term weed control method that must be used in conjunction with other control techniques for an effective outcome.

Results can sometimes take long periods of time before they become obvious. Biological control has the benefit of reducing the amount of chemicals required, minimising environmental impacts and reducing costs. All biological control agents must undergo stringent testing to ensure there are no detrimental impacts on agriculture or the environment.

Fire

Fire can be used to control and suppress weeds, however should only be used as a last resort because of the inherent risk of using fire. It generally does not kill the targeted weed, but is primarily used to reduce the overall cover of weeds and the need for large amounts of chemical. Fire can also be used to deliberately stimulate germination of weed seeds in the soil. The resulting new weed growth must then be controlled with follow-up weed control. It is important to note that using fire as a weed control technique may risk damaging or destroying all vegetation, including desirable plants, and can result in re-invasion of weeds.

Competition/replacement

One of the most effective weed control techniques is to prevent or minimise weed invasion by providing competition with desirable plants, e.g. pasture or native vegetation. Implementing replacement and management techniques is a long-term, cost effective and sustainable approach to weed management, and can enhance and protect natural resources. Providing competition will also ensure valuable resources such as water and nutrients are unavailable to weeds.

Pasture improvement/management

Healthy, well-managed pastures resist weed invasion far better than those that are rundown and poorly managed. Through appropriate management, including rotational grazing, resting paddocks and monitoring soil fertility, healthy and drought-hardy pastures can be achieved. It is important to allow pastures to rejuvenate from time to time. Removing stock during late spring-early summer will allow native pasture a chance to set seed and maintain adequate cover. This is an important strategy for encouraging competition against existing weeds and further weed invasion.

Revegetation

When controlling large infestations of weeds, particularly woody weeds such as gorse and blackberry, it is important to undertake it in stages. This allows the woody weeds to be substituted with native vegetation, replacing valuable habitat for native animals. Replacing woody weeds also provides valuable competition against re-invasion of weeds.

Follow-up

To achieve successful weed control, regular monitoring of treated areas must be undertaken for any re-growth or new germinations of weeds. New outbreaks of weeds must be controlled before they have a chance to reproduce and re-infest the site. Monitoring and follow-up weed control may need to occur for many years in order to eliminate an infestation completely.

Timing and control methods

Each weed species has a different ecology and phenology. Therefore, the best approach to control or eradicate differs from species to species.

It is important for example, to consider whether a species is dormant at certain times of the year (and less susceptible to weedicide sprays) or is more vulnerable when flowering. Method and vectors of weed spread must also be considered as plants which reproduce through vegetative propagules need to be treated differently from those which promulgate themselves by seed only.

Timing and control methods recommended for weeds are shown in the table below.

Species	Common name	Timing	Suggested method of control	Indications of effective management	Location
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass	Sep – Dec	Spray		Mt Tugwell
<i>Arctotheca calendula</i>	Cape weed	Dec – Jun	Spray		Mt Tugwell
<i>Asparagus scandens</i>	Asparagus Fern	June – Dec	Spray		Mt Tugwell

Species	Common name	Timing	Suggested method of control	Indications of effective management	Location
<i>Cirsium vulgare</i>	Spear Thistle	Aug – Dec	Spray	Reduced in abundance and controlled in extent	Mt Tugwell
<i>Conium maculatum</i>	Hemlock	Aug – Dec	Spray		Mt Tugwell
<i>Digitalis purpurea</i>	Foxglove	Sep – Dec	Spray		Mt Tugwell
<i>Galium aparine</i>	Cleavers	Sep – Feb	Hand weed, spray		Mt Tugwell
<i>Hypochaeris glabra</i>	Smooth Cat's-ear	All year	Spray		Mt Tugwell
<i>Hypochaeris radicata</i>	Flatweed	All year	Spray		Mt Tugwell
<i>Ilex aquifolium</i>	English Holly	Sep – Apr	Cut & paint, drill/fill		Mt Tugwell
<i>Lonicera Japonica</i>	Japanese Honeysuckle	Aug – Feb	Cut & paint, spray		Mt Tugwell
<i>Myosotis sylvatica</i>	Wood Forget-me-not	Sep – Mar	Spray, hand weed		Mt Tugwell
<i>Plantago coronopus</i>	Buck's horn Plantain	Sep – Mar	Spray		Mt Tugwell
<i>Plantago lanceolata</i>	Ribwort	Sep – Mar	Spray		Mt Tugwell
<i>Rubus fruticosus agg.</i>	Blackberry	Oct – Apr	Spray, cut & paint	Populations reduced in abundance and extent	Mt Tugwell
<i>Solanum mauritianum</i>	Wild Tobacco Tree	All year	Hand weed, cut & paint, drill/fill		Mt Tugwell
<i>Trifolium spp.</i>	Clover	Sep – Mar	Spray		Mt Tugwell
<i>Zantedeschia aethiopica</i>	White Arum-lily	All year	Hand removal, cut & paint, spray		Mt Tugwell

Blackberry *Rubus fruticosus* spp. aggregate



Woody shrub with erect prickly cane stems that form dense thickets. Fruit spread by birds and foxes. Canes and root fragments form new plants.



Spear Thistle *Cirsium vulgare*



Erect annual/biennial herb matures from ground rosette to 2m. Showy red/purple flower heads on top of spine tipped stem. Widespread in pastures.



Ragwort *Jacobaea vulgaris*



Erect perennial herb to 1.2m. Initial rosette of leaves then produces erect stems. Numerous yellow daisy shaped flower heads. Poisonous. Can be confused with indigenous *Senecio* species.



Calendar key

Flowering Seeding Treatment

Attachment 2 – Hygiene protocol

Protocol for hygiene during construction and maintenance

1. Objective

To implement hygiene measures that minimise risk of pathogen introduction and weed spread during construction and maintenance.

2. Scope

This protocol applies to construction and maintenance works associated with the Warburton Mountain Bike Destination.

The protocol targets the introduction of pathogens (*Phytophthora cinnamomi*, myrtle wilt and chytrid fungus) and invasive plants (weeds) into new areas especially those with susceptible threatened species and threatened ecological communities.

3. Responsibilities

The contractor site supervisor is responsible for ensuring that this protocol is implemented during construction.

The Yarra Ranges Council environmental representative is responsible for ensuring that this protocol is implemented during operation.

The contractor site supervisor is responsible for ensuring that all construction personnel attend the project induction before commencement of work where the requirements of the protocol are explained.

The Yarra Ranges Council environmental representative is responsible for ensuring that all maintenance personnel attend the project induction before commencement of work where the requirements of the protocol are explained.

All construction and maintenance personnel are to comply with the requirements of this protocol.

4. Requirements

Hygiene refers to specific measures to prevent the spread of pathogens and invasive plants by removing seeds, spores, contaminated soil, water, and organic materials from machinery, vehicles, equipment, footwear and clothing.

The requirements for construction and maintenance personnel clothing and footwear and for vehicles, machinery and equipment are set out below.

Construction and maintenance personnel

- Maintain boots, clothing and other personal items in a clean and generally soil and mud free condition.
- Check boots, clothing and other personal items for soil and plant material and other debris.

Vehicles, machinery and equipment

- Prior to allowing entry of vehicles, machinery and equipment to enter a works site in a natural area not accessible to public vehicles, undertake checking and appropriate cleaning.
- Cleaning to take place at a depot or designated location, not on the edge of the road
- If machinery and equipment have been working in high risk locations, treat them with Phytoclean prior to entering the project area.
- Check the exterior and interior of vehicles, machinery and equipment for soil, plant material and other debris.
- Remove soil, plant material and other debris from the interior using a vacuum or dustpan and brush, with particular focus on the cabin floor, floor mats and pedals.
- Remove large clods of dirt and soil from the exterior using a stiff brush or crowbar.
- Wash the exterior at a commercial washdown facility, washdown facility at the Yarra Range Council works depot or appropriately established field washdown site.
- Record details of checking and cleaning of vehicles, machinery and equipment.
- After the project construction is completed, all vehicles, machinery and equipment should be cleaned down before entering other sites.

5. Training

Details of the hygiene protocol are to be communicated to construction and maintenance personnel at the project induction.

Attachment 3 – Unexpected finds protocol

Protocol for unexpected historic heritage finds

1. Objective

To ensure that any unexpected historic heritage finds are evaluated and suitably protected.

2. Scope

This protocol applies to construction and maintenance works associated with the Warburton Mountain Bike Destination.

The protocol applies to the unexpected discovery of previously undocumented archaeological sites during construction and maintenance works that may contain an artefact, deposit or feature which is 75 or more years old with potential to provide information of past activity in the area.

This protocol does not cover discovery of Aboriginal heritage artefacts, which are addressed under mitigation and contingency measures arising from the Cultural Heritage Management Plan prepared for the project.

3. Responsibilities

The site supervisor is responsible for ensuring that this protocol is implemented.

The site supervisor is responsible for ensuring that all construction personnel attend the project induction before commencement of work where the requirements of the protocol are explained.

All construction and maintenance personnel are to comply with the requirements of this protocol.

The heritage advisor is to provide heritage advice as set out in this protocol.

4. Requirements

Unexpected historic heritage finds may include works, structures, buildings or movable objects, particularly associated with historic gold mining and forestry activities in the vicinity of the project.

The requirements to be followed upon discovery of items suspected to have historic heritage value are set out below.

Construction and maintenance personnel

- Stop work, protect item and inform the contractor site supervisor and the Yarra Ranges Council environmental representative
- Establish a 'no-go zone' around the item. Use high visibility fencing, where practical.
- Inform all site personnel about the no-go zone.
- Contact heritage advisor to seek advice (send photos if appropriate)
- Comply with the advice of the heritage advisor in relation to protection of the find.

Heritage Advisor

- Notify Heritage Victoria of the find in accordance with the *Heritage Act 2017*
- Undertake an evaluation of the item that has been identified and document advice to the construction team regarding legal obligations and management.
- Provide advice on any permits or consents required under the *Heritage Act 2017* in relation to the find
- Provide advice on the recommencement of construction works including any required measures to protect the find.

5. Training

Details of the unexpected historic heritage finds protocol are to be communicated to construction and maintenance personnel at the project induction.

Attachment 4 – Risk register

Land Use and Planning risks – Operation

Risk ID	Risk pathway	Initial mitigation	Initial risk level			Final mitigation	Residual risk level		
			Likelihood	Consequence	Risk		Likelihood	Consequence	Risk
Operation									
LR07 Land Use	The proposed location and siting of the project results in land use changes that are inconsistent with existing land uses and policy (in the local or regional setting), or reasonably foreseeable future land use directions for public or private land.	Minimise amenity impacts through OEMP and consultation with affected landowners and stakeholders.	Rare	Minor	Very low	No project-specific mitigations are planned.	Rare	Minor	Very low
LR08 Event noise	Noise from events during operation results in noise affecting amenity at sensitive noise receptors.	A plan is to be developed to manage noise in accordance with EPA guidelines and in consultation with the EPA. The plan would be informed by noise monitoring.	Unlikely	Minor	Low	Noise from events would be managed by locating large crowds away from sensitive receptors and by briefing event staff and participating on potential noise impacts.	Rare	Minor	Very low
LR09 Bike pass-by noise	Noise from bike pass-bys during operation results in noise affecting amenity at sensitive noise receptors, specifically	Minimise amenity impacts through OEMP and consultation with affected landowners and stakeholders.	Possible	Minor	Low	Noise suppression barriers would be installed to the section of trails at Martyr Road, subject to consultation with the immediate	Possible	Minor	Low

Risk ID	Risk pathway	Initial mitigation	Initial risk level			Final mitigation	Residual risk level		
			Likelihood	Consequence	Risk		Likelihood	Consequence	Risk
	properties on Martyr Road.					landowners. Noise barriers must be built from a non-porous material with no gaps, including at the base and a surface density of at least 15 kg/ m2 at its thinnest point. Barriers should be at least 1.8 m higher than the trail surface and be located as near to the trail as possible.			
LR10 Visual impacts	New built form elements change the visual amenity at sensitive areas of land (ie areas of landscape significance, or areas of cleared land where new built form will be more prominent).	Project elements would be designed to mitigate tree removal and would be sited in existing clearings where possible.	Possible	Moderate	Medium	Site plans would be developed for the bridges, Visitor's Hub and trail heads. Native vegetation planting would be used to soften views of new built form elements. Materiality, lighting and colour palette at the Visitor's Hub and trail heads would respond sensitively to the environmental setting.	Possible	Minor	Low

Risk ID	Risk pathway	Initial mitigation	Initial risk level			Final mitigation	Residual risk level		
			Likelihood	Consequence	Risk		Likelihood	Consequence	Risk
LR11 Traffic	Increased vehicles on local roads results in real or perceived changes to access to public and private land or increased safety concerns for road users including pedestrians and cyclists.	An emergency access plan would be developed and approved prior to the commencement of project operation.	Unlikely	Moderate	Medium	Upgrades to roads, pedestrian paths and cyclist routes may be undertaken to improve local transport efficiency and safety during project operation.	Unlikely	Minor	Low
LR12 Operation emissions	Exhaust emissions from increased vehicles resulting in queuing and congestion during major mountain biking events may result in poor air quality affecting amenity at sensitive air quality receptors including residential and recreational land uses.	A traffic management plan for major mountain biking events would be prepared.	Possible	Minor	Low	No project-specific mitigations are planned.	Unlikely	Minor	Low
LR13 Parking	Increased tourist and visitor numbers to Warburton results in parking congestion, impacting the ongoing use of land.	An operational parking management plan would be developed to ensure that parking congestion does not exceed acceptable limits for visitors and residents.	Unlikely	Minor	Low	No project-specific mitigations are planned.	Unlikely	Minor	Low

Risk ID	Risk pathway	Initial mitigation	Initial risk level			Final mitigation	Residual risk level		
			Likelihood	Consequence	Risk		Likelihood	Consequence	Risk
LR14 Bushfire	Use of land for mountain biking and associated tourist activities results in risk to life from threat of bushfire, impacting the ongoing use of land.	Preparation of an Emergency Management Plan to manage bushfire risks during project operation.	Rare	Moderate	Low	No project-specific mitigations are planned.	Rare	Moderate	Low

Traffic risks – Operation

Risk ID	Environment al value	Risk name	Risk pathway	Initial mitigation	Initial risk level			Final mitigation	Residual risk level		
					C	L	Ri s k		C	L	Ri s k
Operation											
TP10	Safety	Cyclist interaction with vehicles	Risk of crashes due to increased interactions on road network, trail heads and crossing points and non-compliant intersections	MM-TP5 Cyclist and pedestrian safety improvements - including cyclist connection studies, implementing wayfinding and signage.	S e v e r e	P o s s i b l e	H i g h	MM-TP5 Cyclist and pedestrian safety improvements - physical infrastructure such as priority crossings, shared use paths and signalised crossings. MM-TP3 Road Safety Audit - Lilydale-Warburton Rail Trail and crossing points.	M a j o r	U n l i k e l y	M e d i u m

								- On road intersections in the study area that would experience an increase in cyclist volumes. - Trail road crossing points. - Shuttle drop off points			
TP11	Safety	Safety and amenity risks to pedestrian and cyclists due to inadequate end of trip facilities	Facilities for mountain bike visitors are not adequate, this includes bike parking, drink taps, toilets and bike wash stations	MM-TP5 Cyclist and pedestrian safety improvements: - Yarra Ranges Council to assess bike parking provision after 12 months of operation. - Drink taps/water bottle filling locations would be located in close proximity to the car park and bike path for the Golf Course and Wesburn trail heads. This would include an assessment of bike wash station recycled water use risks and management (contaminated water) to ensure drinking taps have potable water supply and ensure new or existing toilet provision has capacity to manage wastewater loads.	Moderate	Unlikely	Low	No additional mitigation measures identified	Moderate	Unlikely	Low
TP12	Safety	Risk of crashes due to increased interactions on paths and bridges	Crashes occur between pedestrians and cyclists due to increased volumes and interactions on paths and bridges	MM-TP3 Road Safety Audit – Warburton-Lilydale Rail Trail MM-TP5 Cyclist and pedestrian safety improvements - bridge clearances would be provided.	Moderate	Possible	Medium	MM-TP4 Improvement works	Moderate	Unlikely	Low
TP13	Road network and intersection performance	Capacity of road network to accommodate workforce, shuttles and visitor traffic	Additional traffic during operation may result in increased congestion exceeding level of service D.	No initial mitigation measures	Minor	Possible	Low	No additional mitigation measures identified	Minor	Unlikely	Low

		generated by the project				le					
TP14	Accessibility	Impacts to emergency access due to the project operations	Inadequate emergency vehicle access at trail heads or trails	MM-TP3 Road Safety Audit	Moderate	Possible	Medium	MM-TP4 Improvement Works – upgrade of roads subject to the results of the Road Safety Audit MM-TP7 Emergency management plan	Minor	Unlikely	Low
TP15	Road network infrastructure performance	Insufficient road network infrastructure to accommodate operations traffic in the local road network	Deficient width and road surface along Cemetery Trak and Edwardstown Road for shuttles.	MM-TP3 Road Safety Audit for Cemetery Track and Edwardstown Road	Moderate	Possible	Medium	MM-TP4 Improvement works - Subject to the Road Safety Audit findings, physical improvements to Cemetery Track and Edwardstown Road may be required.	Minor	Unlikely	Low
TP16	Road network infrastructure performance	Road surface/pavement deterioration	Local roads experience deterioration in the quality of the pavement due to the movement of shuttle buses and visitor vehicles	No initial mitigation measures	Minor	Possible	Low	No additional mitigation measures identified	Minor	Possible	Low
TP17	Road performance	Parking at trail heads	Parking supply at trail heads is insufficient leading to illegal parking impacting	MM-TP6 Operational Parking Management Plan	Moderate	Possible	Medium	MM-TP6 Operational Parking Management Plan – At/approaching, information and appropriate signage to be provided to redirect driving visitors to overflow at Wesburn Park.	Minor	Possible	Low

			residents and business		t e	l e				l e	
TP18	Road performance	Parking in Warburton town centre	Parking supply in Warburton town centre is insufficient and would be at-capacity due to the project	MM-TP6 Operational Parking Management Plan - - Install bike parking in the town centre to allow visitors to safely park their bikes - The impact on the town centre parking would be monitored in the first 12 months of project opening.	M o d e r a t e	P o s s i b l e	M e d i u m	MM-TP6 Operational Parking Management Plan	M i n o r	P o s s i b l e	L o w
TP19	Road performance	Events	Events would cause unacceptable road and parking congestion	All events would require a specific Traffic Management Plan (MM-TP1) and in the case of state and national events specific traffic impact assessments would also be required.	M o d e r a t e	P o s s i b l e	M e d i u m	No additional mitigation measures identified	M i n o r	P o s s i b l e	L o w

Attachment 5 – Environmental management checklists

Draft trail inspection record sheet

Date: _____ Inspection conducted by: _____

Trail number/location: _____

Area contains significant biodiversity or heritage values (check ArcGIS): Y / N

Item	Comments / condition	Action / maintenance required
Significant flora/fauna/habitat or other observations		
Hazardous trees		
Vegetation protruding into the trail corridor		
Exposed tree roots		
Build up of sticks/branches/leaves or loose rocks		
Weeds or pathogens		
Predators (cats, foxes or deer)		
GDEs seeps / springs		
Trail surfaces		
Water damage/ drainage		
Loss of outslope		
Blockage of grade reversal		

Item	Comments / condition	Action / maintenance required
Damage to signage		
Usage by unauthorised users		
Detours and short-cuts		
Litter/waste		

Draft trail maintenance record sheet

Date: _____

Undertaken by: _____

Date	Trail name	Describe tasks undertaken	Further action required

Washdown checklist

CLEANING/INSPECTION CHECKLIST FOR UTILITY/4WD				
Date:		Location:		
Vehicle:		Registration/ID:		
Area	Contamination point	Inspected	Cleaned	Method
Engine bay	Front grill			
	Radiator and other cooling cores or fins			
	Grill or recess under wipers			
Cabin	Footwells			
	Carpets and mats			
	Seats			
Wheels and arches	Tyre treads			
	Wheel arches			
	Mud flaps and brackets			
Tray	Body of tray (especially any recesses)			
	Mats and toolboxes			
	Around fuel tank caps			
Under carriage	Chassis and undercarriage			
	Fuel Tank			
Attachments	Bull bar			
Cleaning method: Mechanical (M), Compressed Air (CA), Vacuum (V), High Pressure Water (HPW), Low Pressure Water (LPW)				
Inspected by:		Signature:		
Cleaned by:		Signature:		

Hazardous Tree Inspection Checklist

Date of inspection: _____

Inspection conducted by: _____

Site description (Trail/location): _____

Section of trail: _____

Step	Item	(Y/N)	Notes
Hazardous Tree Inspection			
1	Has inspecting officer undertaken induction training on identification of hazardous trees by a suitably qualified arborist?		If yes, proceed with inspection. If no. Stop inspection and arrange inducted personal to undertake inspection.
2	Trail extent inspected for presence of hazardous trees. Were any hazardous trees identified in the extent of inspected works?		If yes, move to step 3 If no, no further action required.
3	Can the trail alignment be adjusted to achieve sufficient separation from hazardous tree within SCO corridor.		If yes, record hazardous tree location on GIS system and adjusted trail alignment. Mark hazardous tree and adjusted trail alignment on ground. If no, move to step 4.
4	Arrange inspection of identified hazardous tree/s by a qualified arborist. Arborist to confirm tree is hazardous.		If yes, move to step 5. If arborist deems tree non-hazardous, record arborist findings and proceed with works.
5	Arborist to be consulted regarding most appropriate approach for treatment of hazardous trees. Does arborist advice require excessive pruning or removal of hazardous tree?		If yes, move to step 6 If no, adopt appropriate approach for treatment of hazardous tree which does not require removal or excessive pruning.
6	Consult with the land manager, arborist and a suitably qualified independent ecologist on requirement to remove or excessively prune tree. Agreement received to remove or excessively prune tree.		If yes, move to step 7 If no, escalate and further consultation required.

Step	Item	(Y/N)	Notes
Hazardous Tree Removal			
7	Consult an ecologist for assessment of 'tree values' and the need for additional offsets if hazardous tree removal or excessive pruning is necessary.		
8	Wildlife rescue personal should be present during hazardous tree removal to ensure the wellbeing of native fauna.		
9	Arrange for removal of hazardous tress.		Record removed tree on GIS system.
10	Report hazardous tree removal to DEECA in accordance with the biodiversity monitoring and reporting requirements.		