# DRAFT - Operations Environmental Management Plan

## Warburton Mountain Bike Destination

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# 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 have 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 177 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, Mount Donna Buang and Wesburn Park.

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

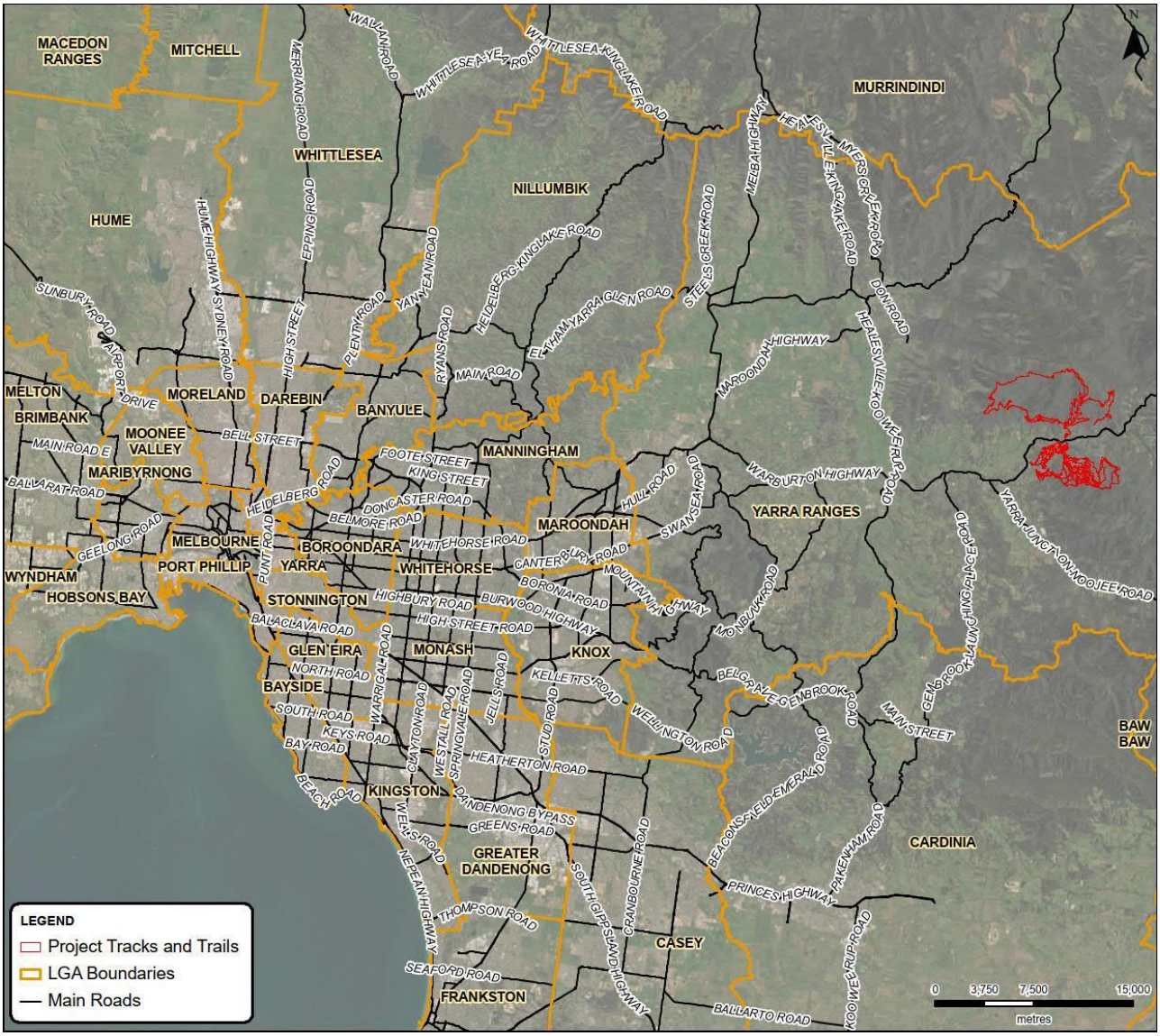


**Figure 1-1 Warburton Mountain Bike Destination location in relation to Melbourne CBD**

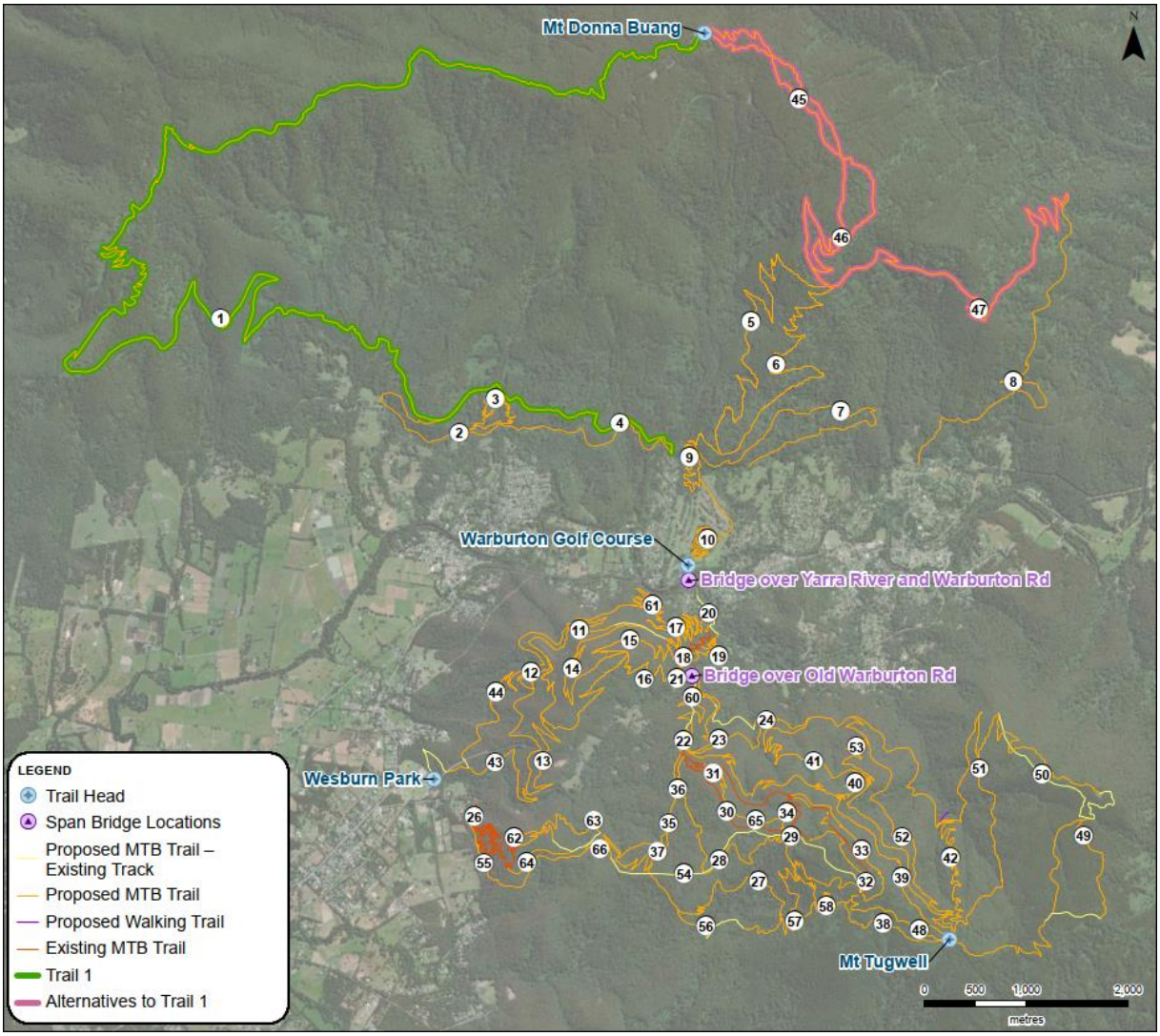


**Figure 1-2 Project overview**

## 1.3 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. Changes to the OEMP are required to be approved by the Yarra Ranges Council Warburton Mountain Bike Destination Project Manager. 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.

Parks Victoria and DELWP 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.

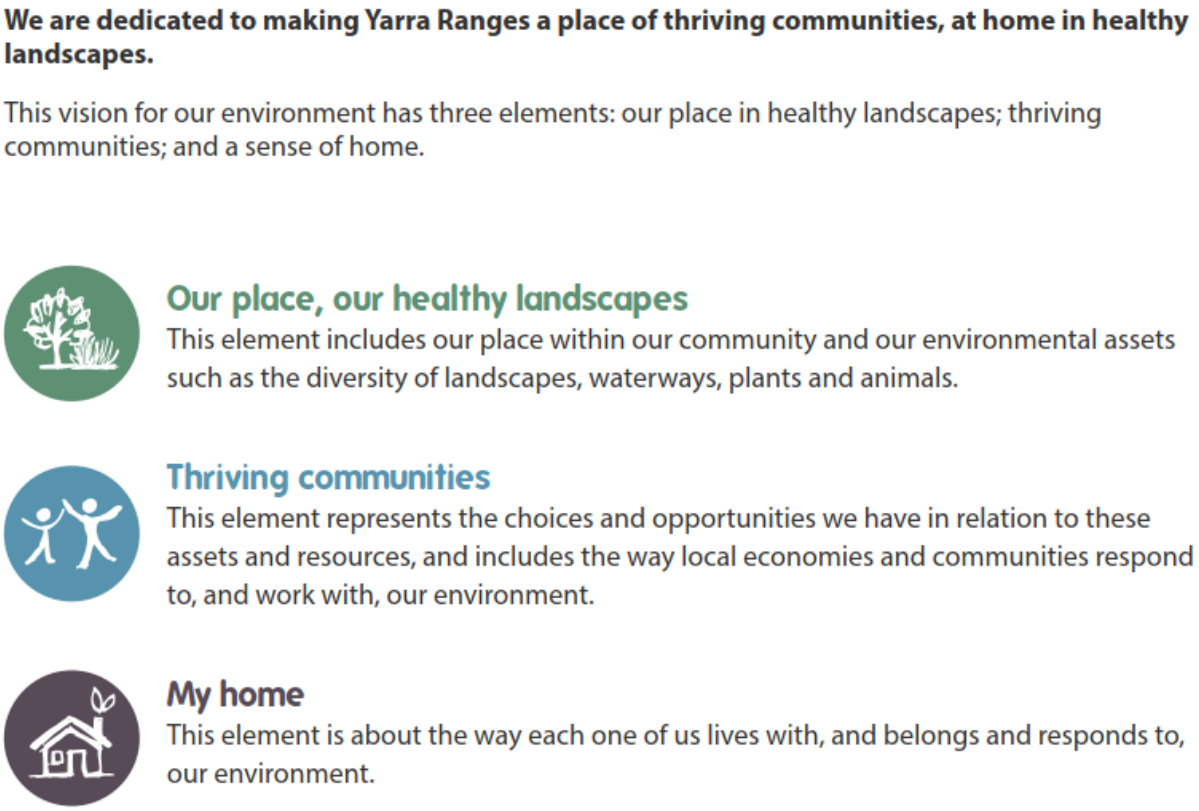


**Figure 2-1 Yarra Ranges Council Environmental Strategy Vision**

# 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<br>• 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<br>• Ensuring that environmental obligations are specified in contract arrangements with contractors.<br>• Oversight of environmental management performance of contractors involved in project operation<br>• Establishment of environmental auditing and reporting processes<br>• Facilitation of environmental training for Yarra Ranges Council personnel involved in project operation<br>• Periodic reviews of the OEMP and approval of updates to the OEMP. |
| Yarra Ranges Council environmental representative | • Establishment of environmental monitoring programs and review of monitoring data<br>• Maintaining the environmental risk register for the project<br>• Implementation of stakeholder engagement during project operation including liaison with regulatory agencies and land managers<br>• Implementation of an environmental audit program to verify compliance with the OEMP<br>• Investigation and close out of environmental incidents and complaints<br>• 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<br>• Responsible for recording trail conditions and corrective actions required |
| Arborist | • Provide induction training on identifying significant tree species and tree protection<br>• Provide induction training in Myrtle Beech wound management, pruning and application of anti-fungal agents<br>• Provide induction training in structural root zone and root protection methods<br>• Provide induction training for identification of hazardous trees<br>• Inspection of significant or hazardous trees prior to, during and after works as required<br>• Responding to incidents and complaints that relate to tree management |
| Ecologist (Biodiversity advisor) | • Provide induction training to identify significant species, habitat and protection<br>• Provide induction training to identify known weed species<br>• Provide induction training to identify potential groundwater seeps/springs<br>• Inspection of areas of environmental sensitivity prior to, during and after works, as required<br>• Responding to incidents and complaints that relate to biodiversity |
| Heritage advisor | • Provide induction training for identification of heritage features<br>• Inspection of identified areas of archaeological potential prior to, during and after works<br>• 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 |

| Role | Responsibilities |
|---|---|
| | • 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
- Victorian State Public Land Mountain Bike Guidelines, Parks Victoria, 2020.

## 4.1 Overview of activities

This OEMP applies to the operation of the mountain bike trail network and associated infrastructure. The proposed mountain bike trail network comprises 61 individual trails, totalling up to 177 kilometres of trails.

The main project components are as follows:

- The mountain bike trail network – approximately 177 kilometres in length
- Two bridges, as follows:
  - Yarra River Bridge (shared use), crossing over the Yarra River, Warburton Highway and Dammans Road
  - Old Warburton Road Bridge (mountain bike use only), crossing over Old Warburton Road
- Visitor's Hub and main trail head at the Warburton Golf Course, trail head facilities at Mount Tugwell, Mount Donna Buang and Wesburn Park. 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.
  - Bike wash facilities are provided at all trail heads to manage the risk of weeds and pathogens being introduced.

Table 4-1 below summarises the proposed trail network, providing indicative lengths, proposed trail difficulty ratings and the type of trail experience. This also includes Trails 45-47 with a combined length of approximately 15 kilometres that are proposed as an alternative to Trail 1.

**Table 4-1 Trail network summary**

| No. | Length (m) | Notes | Trail style | Proposed trail difficulty rating |
|---|---|---|---|---|
| 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 |

| No. | Length (m) | Notes | Trail style | Proposed trail difficulty rating |
|---|---|---|---|---|
| 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 |
| 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)[1] | 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 |

[1] 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 |
|---|---|---|---|---|
| 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 |
| 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 |

| No. | Length (m) | Notes | Trail style | Proposed trail difficulty rating |
|---|---|---|---|---|
| 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 Groom Hill, eventually merging onto Trail 49. | Wilderness | Intermediate / Difficult |
| 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 |

| No. | Length (m) | Notes | Trail style | Proposed trail difficulty rating |
|---|---|---|---|---|
| 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. Night riding would be prohibited in the Yarra Ranges National Park and in the high-quality forest areas within the Yarra State Forest. Trails within the Yarra State Forest that would be suitable for night riding include lower trails in the vicinity of Mount Tugwell and Mount Little Joe. These areas are remote from the key areas known to be used extensively by threatened fauna. Details of which trails would be provided to trail network users on signage and on the Yarra Ranges Council website.

High elevation trails in the Yarra Ranges National Park (generally located above Mount Donna Buang Road) would be seasonally closed in wet and cold months (winter) and after extreme rainfall events, to minimise the risk of sedimentation events and trail damage. These closures would be determined by Yarra Ranges Council based on trail inspections and weather forecasts and will use an adaptive management approach to refining seasonal closure dates as network performance knowledge is gained.

Based on the modelling of trail operations, the annual number of trail users are estimated to increase from 131,217 in 2022 to 221,454 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. January is anticipated to be the month of peak usage at 11% of the expected annual visitation. Anticipated visitor numbers are shown in Table 4-2.

**Table 4-2 Anticipated visitor numbers**

| Visitor origin | Type of visit | 2022 | 2026 | 2031 |
|---|---|---|---|---|
| Yarra Ranges | Day | 26,538 | 31,641 | 42,150 |
| | Overnight | - | - | - |
| Victoria (outside Yarra Ranges) | Day | 54,773 | 70,995 | 91,843 |
| | Overnight | 19,906 | 26,103 | 33,461 |
| Interstate and overseas | Day | 6,000 | 9,200 | 10,800 |
| | Overnight | 24,000 | 36,800 | 43,200 |
| **Total** | | **131,217** | **174,793** | **221,454** |

The visitor centre is anticipated to be attended by two administrative staff members and would provide comprehensive visitor information that is related to the mountain bike trails.

Users are anticipated to primarily access the visitor centre via Mayer Bridge and Dammans Road. This would connect them to the main trail head at Warburton Golf Course which can accommodate around 245 cars, with room for future expansion if required.

An additional 120 car parks would be available at Wesburn Park for use of mountain bikers. Limited car parking is also available at Mount Donna Buang and Mount Tugwell.

Shuttle buses would move riders and their bikes between the trail heads at Mount Donna Buang 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 four full time staff are anticipated to be required to undertake regular inspections and maintenance. 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. |
| 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. |
| Predators | • The presence of predators (cats foxes and deer) will be monitored through periodic trail inspections and in response to stakeholder notifications. |
| 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. |
| 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. |

| Aspect | Purpose of inspection |
|---|---|
| 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. |
| 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.<br>• Check for new springs or soaks affecting trail surface.<br>• 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

A wide range of maintenance 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
- 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
- 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.

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.<br>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 within the Yarra Ranges National Park should be removed from the trail alignment however must be left on-site. Wherever possible, 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 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.

#### 4.3.2.3 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.

#### 4.3.2.4 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.

#### 4.3.2.5 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.

#### 4.3.2.6 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.

#### 4.3.2.7 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.

#### 4.3.2.8 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.

#### 4.3.2.9 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.

#### 4.3.2.10 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.

#### 4.3.2.11 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.

#### 4.3.2.12 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 – it is noted that Parks Victoria's preference is that weed control within the National Park focus on eradication wherever possible
- 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 (such as Mount Donna Buang Wingless Stonefly habitat) 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 fruiticosis 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 Mount Donna Buang Summit, along Donna Buang Road, Warburton Golf Course, Wesburn Park, O'Shannassy Aqueduct Trail, the lower slopes of Yarra Ranges National Park, Scotchmans Creek Reserve and along forest tracks in the Yarra State Forest.

### 4.3.3 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 Warburton Golf Course trail head, the Mount Donna Buang trail head, Mount Tugwell trail head and Wesburn Park trail head, including at:

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

Facilities at Mount Donna Buang visitor site would be continued to be maintained by Parks Victoria, with Yarra Ranges Council maintaining project-specific infrastructure such as the bike parking, wash bay and 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 Warburton Golf Course Trail Head and 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 the Parks Victoria 'carry in, carry out' policy by including signage at the Mount Donna Buang and 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 mange 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<br>● Readily reversible (insignificant) impact (<1 year for recovery).<br>● Resilient or highly disturbed receiving environment or population.<br>● No impact to native vegetation or habitat.<br>● No impact to Cool Temperate Rainforest, Mount Donna Buang Wingless Stonefly or Leadbeater's Possum.<br>● Heritage: No observable impact to heritage, sites remain intact and unaffected.<br>● Social: No measurable impact to local character, amenity and access to public space/facilities. General community support, no impact to economy.<br>● Transport: Existing transport services unaffected and transport infrastructure can comfortably accommodate the project. Transport safety unaffected.<br>● Surface water / groundwater: No detectable changes to water levels, flow or quality with no measurable effect on assets, values or uses.<br>● Geotechnical hazards: No detectable changes to land stability/erosion. |
| Minor | ● Short-term localised detectable changes.<br>● Impact likely to be readily reversible (within 5 years for recovery).<br>● Resilient or disturbed receiving environment or population.<br>● No impacts on critical habitats such as Cool Temperate Rainforest, Mount Donna Buang Wingless Stonefly or Leadbeater's Possum.<br>● Heritage: Low degree of disturbance or low degree of observable impact to locally significant heritage. No impact to state or nationally significant heritage.<br>● Social: Low degree of impact to local character, amenity and access to public space/facilities. Individual opposition to project, short term isolated economic issues.<br>● Transport: Existing transport services experience isolated and short-term disruption and transport infrastructure can accommodate the project. Transport safety not materially affected.<br>● Surface water / groundwater: Changes to water levels, flow or quality with isolated and short-term effect on assets, values or uses.<br>● 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.<br>● Impact likely to be medium-term and reversible (5–10 years for recovery).<br>● Undisturbed receiving environment or population.<br>● Short-term, localised impacts on critical habitats such as Cool Temperate Rainforest, Mount Donna Buang Wingless Stonefly or Leadbeater's Possum.<br>● Heritage: Limited degree of impact to heritage of state or local significance.<br>● Social: Limited degree of impact to local character, amenity and access to public space/facilities, some community resistance, economic pressure on community.<br>● 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.<br>● Surface water / groundwater: Changes to water levels, flow or quality with moderate effect on assets, values or uses.<br>● Geotechnical hazards: Changes to land stability/erosion with moderate effect on assets, values or uses. |
| Major | ● Long-term changes that are significant regionally<br>● Impact likely to be medium to long-term and potentially irreversible (> 10 years to recover).<br>● Sensitive receiving environment or population.<br>● Material impacts on critical habitats such as Cool Temperate Rainforest, Mount Donna Buang Wingless Stonefly or Leadbeater's Possum.<br>● Heritage: High degree of impact to heritage of State or local significance.<br>● Social: High degree of impact to local character, amenity and access to public space/facilities. Vocal community conflict, declining economic stability.<br>● 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.<br>● Surface water / groundwater: Significant changes to water levels, flow or quality with assets, values or uses significantly compromised.<br>● 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.<br>● Impact likely to be long-term and irreversible.<br>● Highly sensitive receiving environment or population. |

| Level | Criteria |
|---|---|
| | • Significant impacts on critical habitats such as Cool Temperate Rainforest, Mount Donna Buang Wingless Stonefly or Leadbeater's Possum.<br>• Heritage: Very high degree of heritage destruction or loss of heritage values.<br>• Social: Very high degree of impact to local character, amenity and access to public space/facilities. Public backlash, economic distress.<br>• 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.<br>• Surface water / groundwater: Extensive changes to water levels, flow or quality with assets, values or uses irreversibly compromised.<br>• 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 | | | | |
|---|---|---|---|---|---|---|
| | | Insignificant | Minor | Moderate | Major | Severe |
| Likelihood level | 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.

## 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. Mount Donna Buang summit, Warburton Golf Course and 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 Donna Buang Road, Dee Road, 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, Mount Donna Buang Wingless Stonefly, 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 support existing programs implemented by land managers to monitor and control introduced pest animals that are known to be present in the project area, including cats, foxes and Sambar deer.

### 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 | • *Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)* ('EPBC Act')<br>• *Flora and Fauna Guarantee Act 1988 (Vic)* ('FFG Act')<br>• *Water Act 1989 (Vic)*<br>• *Environment Protection Act 2017 (Vic)*<br>- Environment Reference Standard (ERS)<br>- General Environmental Duty<br>• *Planning and Environment Act 1987*<br>- Yarra Ranges Shire Planning Scheme<br>• *Catchment and Land Protection Act 1994*<br>• *Fisheries Act 1995*<br>• *Wildlife Act 1975*<br>• *National Parks Act 1975*<br>• *Yarra River Protection (Willip-gin Birrarung murron) Act 2017 (Vic)*<br>• Forests (Fire Protection) Regulations 2014 |

| Type | Applicable legislation, policy and guidelines |
|---|---|
| | • *Prevention of Cruelty to Animals (POCTA) Act 1986* |
| Guidelines and advisory documents | • DELWP 2017. *Guidelines for the removal, destruction or lopping of native vegetation*<br>• Commonwealth of Australia 2013. *Matters of National Environmental Significance. Significant impact guidelines 1.1*.<br>• DELWP 2019. *Early invader manual: managing early invader environmental weeds in Victoria*, Weeds at the Early Stage of Invasion (WESI) Project<br>• DEWLP 2021. *Flora and Fauna Guarantee Act 1988 – Threatened List*.<br>• DPI 2010. *Invasive plants and animals policy framework*<br>• EPA Victoria 2003. *Guidelines for Environmental Management – Rapid Bioassessment methodology for rivers and streams*<br>• White, et al. 2018. *Advisory list of environmental weeds in Victoria*<br>• Parks Victoria 2002. Yarra Ranges National Park Management Plan.<br>• DEE 2018. National Recovery Plan for Macquarie Perch (*Macquaria australasica*)<br>• Victorian Government 2010. National Recovery Plan for the Tall Astelia *Astelia Australiana*<br>• DELWP 2016. National Recovery Plan for the Spotted-tailed Quoll *Dasyurus maculatus*<br>• Doran N 2001. Burrowing Crayfish Group Recovery Plan 2001-2005<br>• Koehn J & Clunie P 2010. National Recovery Plan for the Murray Cod *Maccullochella peelii peelii*.<br>• Macfarlane, M.A., Smith, J. & Lowe, K. 1997. Leadbeater's Possum Recovery Plan.<br>• Saunders, D and Tzaros, C 2011. National Recovery Plan for the Swift Parrot *Lathamus discolour*.<br>• DEPI 2014. Action Statement No. 62 Leadbeater's Possum *Gymnobelideus leadbeateri*.<br>• DSE 2003. Action Statement No. 125 Mount Donna Buang Wingless Stonefly *Riekoperla darlingtoni*.<br>• 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 6-6 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**<br>**Objective**: To ensure environmental objectives and approval conditions are met<br>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**<br>**Objective**: To ensure all trail alignments and environmental issues are updated<br>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**<br>**Objective**: To ensure environmental objectives and approval conditions are met |

| Mitigation measure ID | Mitigation and contingency measures |
|---|---|
| | 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**<br>**Objective**: To minimise the use / removal of natural materials from the site<br>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**<br>**Objective**: To avoid and manage the potential for spills<br>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**<br>**Objective**: To minimise risks to biodiversity by providing an induction on biodiversity values for workers<br>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. |
| **BM08** | **Emergency Management Plan**<br>**Objective**: To manage fire risks from the project<br>An Emergency Management Plan will be implemented. The plan will include measures to manage fire risk from project activities including compliance with any requirements under the Forests (Fire Protection) Regulations 2014 for operational activities in Fire Protected Areas. |
| **BM09** | **Landform stability**<br>**Objective**: To maintain landform stability and avoid / minimise landslips, erosion and sedimentation.<br>Measures to maintain landform stability include the following:<br>• Seasonal closure of selected trails<br>• Incorporate management measures outlined in GTM01, GTM02 & GMT03<br>• Remediation of areas where landslips and / or erosion and sedimentation occur as a result of the trail. |
| **BM10** | **Trail maintenance**<br>**Objective:** To maintain trail condition during operation<br>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. |
| **BM11** | **Existing tracks**<br>**Objective**: To minimise erosion and sedimentation issues associated with existing tracks<br>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**<br>**Objective**: To minimise erosion and sedimentation issues associated with existing trails |

| Mitigation measure ID | Mitigation and contingency measures |
|---|---|
| | 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**<br>**Objective**: To minimise erosion and sedimentation issues or safety hazards associated with extreme weather<br>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**<br>**Objective**: To inspect trails and identify potential issues<br>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**<br>**Objective**: To collect relevant data on biodiversity finds<br>Document and deal with biodiversity finds, including to collect relevant data for:<br>1) Significant flora observations<br>2) Significant fauna observations<br>3) Nests / burrows / roosts used by native fauna<br>4) Dealing with injured / killed / displaced fauna<br>5) GDEs, seeps / springs and associated vegetation communities / species.<br>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**<br>**Objective**: To allow vegetation regeneration within the construction footprint<br>Allow and assist native vegetation to regenerate within construction footprint to a 30 to 60 centimetre wide tread width. |
| **BM18** | **Monitoring of off-trail tracks**<br>**Objective**: To monitor and rehabilitate off-trail tracks where required<br>Monitor for any off-trail tracks and implement a process for closing unauthorised trails and assisted regeneration. |
| **BM19** | **Vegetation removal**<br>**Objective**: To avoid removal of vegetation to the minimum extent possible<br>Removal of vegetation will be to the minimum extent required, according to variable trail construction footprint which is a function of slope class. Accidental / excessive clearing will be remediated through assisted regeneration or additional offsets. |
| **BM21** | **Environmental enhancement works**<br>**Objective**: To undertake environmental enhancement works<br>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**<br>**Objective**: To manage pest animals<br>The project will work with relevant land managers to support existing pest animal programs. Support will be provided for the entire life of the project i.e. as long as the trails remain in use. |
| **BM22** | **Weed management program**<br>**Objective**: To manage weeds |

| Mitigation measure ID | Mitigation and contingency measures |
|---|---|
| | 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**<br>**Objective**: To minimise risks to biodiversity by providing an induction on high threat environmental weeds for workers<br>Operation phase staff trained as part of site induction to identify 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 4.3.2.12 and Attachment 1. |
| **BM25** | **Hygiene protocols**<br>**Objective**: To minimise impacts to biodiversity by implementing hygiene protocols<br>Implement appropriate hygiene procedures for weeds and pathogens throughout the trail alignment. Refer to Attachment 2. |
| **BM26** | **Environmental induction - pathogens**<br>**Objective**: To minimise risks to biodiversity by providing an induction on pathogens for workers<br>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**<br>**Objective**: To minimise impacts to biodiversity by maintaining bike washing facilities<br>Implement commissioning & 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. |
| **BM28** | **Fill material quality**<br>**Objective**: To minimise introduction of weeds and pathogens<br>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**<br>**Objective**: To minimise the introduction of fill material<br>Minimise the introduction of fill material for the construction and ongoing management of the trail. |
| **BM30** | **Environmental induction - pests**<br>**Objective**: To minimise risks to biodiversity by providing an induction on pest animals for workers<br>Operation phase staff trained as part of site induction to identify pest animals and signs of their presence to inform pest management program e.g. locating traps near feral cat sightings. This data will be recorded in the GIS platform for the project. |
| **Aquatic ecosystems** | |
| **BM34** | **Inspections of waterway crossings**<br>**Objective:** To inspect waterway crossings are suitably maintained<br>All waterway crossings must be inspected and maintained by a suitably qualified person as per GTM05. |
| **BM35** | **No-go zones – waterways** |

| Mitigation measure ID | Mitigation and contingency measures |
|---|---|
| | **Objective**: To avoid impacts to waterways<br>All waterways are designated no-go zones during construction and operations unless works are required directly in / adjacent to waterway. |
| **Cool Temperate Rainforest (CTR) / Cool Temperate Mixed Forest (CTMF)** | |
| **BM42** | **Disturbance to Myrtle Beech**<br>**Objective**: To minimise impacts to Myrtle Beech<br>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**<br>**Objective**: To minimise pruning impacts to Myrtle Beech<br>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. |
| **BM44** | **Fill material – CTR / CTMF**<br>**Objective**: To minimise impacts to CTR / CTMF<br>No imported fill material (including gravel, rock and soil) is to be used within CTR / CTMF. |
| **BM45** | **Environmental induction – CTR / CTMF**<br>**Objective**: To minimise impacts to Myrtle Beech, CTR and CTMF by providing an induction for workers<br>Operation phase staff trained as part of site induction to identify Myrtle Beech, CTR and CTMF. |
| **BM46** | **Maintaining ground surface gradients within CTR / CTMF**<br>**Objective**: To minimise changes to existing ground surface gradients within CTR / CTMF<br>No machinery excavation is to be undertaken within CTR / CTMF.<br>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**<br>**Objective**: To minimise trail impacts within CTR / CTMF<br>Trail maintenance is to be undertaken using hand tools only within CTR / CTMF. |
| **Groundwater dependent ecosystems** | |
| **BM49** | **Management of GDEs**<br>**Objective**: To minimise impacts on GDEs<br>Implement measures outlined in GWM01 to manage potential impacts to GDEs / seeps / springs. |
| **BM50** | **Environmental induction – GDEs**<br>**Objective**: To minimise impacts to GDEs by providing an induction for workers<br>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**<br>**Objective**: To minimise impacts to LBP by providing an induction for workers<br>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** | **LBP habitat management** |

| Mitigation measure ID | Mitigation and contingency measures |
|---|---|
| | **Objective**: To minimise removal of vegetation within suitable LBP habitat<br><br>Removal of vegetation within suitable Leadbeater's Possum habitat will be subject to the following constraints:<br>1) In the National Park no removal of trees, including mid-storey trees, with > 10 cm DBH,<br>2) In State Forest where there is a stand of single age *Eucalyptus* sp. and mid-storey (i.e. regrowth following bushfire), trees < 20 cm DBH may be removed,<br>3) No removal of dense stands of montane thickets (comprising Bottlebrush *Callistemon* spp. and / or Tea-tree *Leptospermum* spp.) anywhere in the project area. Minor pruning of these species may occur at the edges of these thickets. |
| **Mount Donna Buang Wingless Stonefly (MDBWS)** | |
| **BM56** | **Minimise habitat disturbance – MDBWS**<br><br>**Objective**: To minimise impacts to MDBWS habitat<br><br>Any work within the potential range of the species must minimise habitat disturbance e.g. soil compaction and sedimentation by elevating the trail to cross waterways, bogs, damp areas or seasonal drainage lines within the mapped suitable habitat zone. Any elevated trail must be constructed to maintain natural light levels. |
| **BM57** | **Sediment management from Mount Donna Buang Road – MDBWS**<br><br>**Objective**: To minimise impacts to MDBWS habitat<br><br>Operation of the trails managed to decrease sediment from Mount Donna-Buang Road or surrounds flowing into the adjacent springs downstream of the road as per SWM07. |
| **BM58** | **Avoid and minimise sedimentation – MDBWS**<br><br>**Objective**: To minimise impacts to MDBWS habitat<br><br>Avoid and minimise sedimentation into permanent or ephemeral waterbodies within potential range of the species through appropriate procedures for erosion and sedimentation as per SWM02. |
| **BM59** | **Avoid and minimise pollution – MDBWS**<br><br>**Objective**: To minimise impacts to MDBWS habitat<br><br>Within potential range of MDBWS, avoid and minimise pollution from trail use that can soak into soil through implementing appropriate procedures for leaks / spills as per SWM02 & SWM10. |
| **BM60** | **Minimise groundwater impacts – MDBWS**<br><br>**Objective**: To minimise impacts to MDBWS habitat<br><br>Ensure trail use does not interrupt flow rate of ground water within or upslope of potential range of the species. |
| **BM61** | **Environmental induction – MDBWS**<br><br>**Objective**: To minimise impacts to MDBWS by providing an induction for workers<br><br>Operation phase staff trained as part of site induction to identify MDBWS habitat indicators. Training will include distribution of fact sheets including notes and photos. |
| **Other significant flora and fauna** | |
| **BM62** | **Habitat trees**<br><br>**Objective**: To minimise impacts to habitat trees<br><br>No removal of existing habitat trees unless deemed hazardous in which case treatment of these trees will be discussed with land manager, arborist and an ecologist e.g. habitat pruning of tree. Any hazardous tree considered for removal will be assumed to be a habitat tree unless deemed otherwise. |
| **BM63** | **Habitat for epiphytic / lithophytic species**<br><br>**Objective**: To minimise impacts to suitable habitat for epiphytic / lithophytic species |

| Mitigation measure ID | Mitigation and contingency measures |
|---|---|
| | 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**<br>**Objective**: To minimise impacts to significant flora by providing an induction for workers<br>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**<br>**Objective**: To minimise impacts to rare or threatened flora by providing an induction for workers<br>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**<br>**Objective**: To minimise removal of native vegetation<br>Native vegetation (trees including mid-storey species) removal is subject to the following constraints:<br>1) No trees (including mid-storey trees) with DBH > 10 centimetres are to be removed in the National Park (unless condition 3) applies).<br>2) Within State Forest trees < 20 centimetres DBH in single age stands of *Eucalyptus* spp. and mid-storey (i.e. regrowth following bushfire) may be removed.<br>3) 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). |
| **BM68** | **Environmental induction – trees**<br>**Objective**: To minimise impacts to trees by providing an induction for workers<br>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**<br>**Objective**: To avoid and minimise impacts to trees<br>Minimise impacts to trees through adequate implementation of sympathetic mitigation measures. |
| **BM70** | **Recording of tree impacts**<br>**Objective**: To record potential impacts to trees<br>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. |
| **BM72** | **Large trees**<br>**Objective**: To avoid impacts to large hollow-bearing canopy trees<br>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**<br>**Objective**: To avoid and minimise disturbance to fauna<br>No use of trail infrastructure in the Yarra Ranges National Park at night. Night riding allowed for selected trails within State Park. |
| **BM75** | **Slow-start construction measures**<br>**Objective**: To enable fauna time to disperse |

| Mitigation measure ID | Mitigation and contingency measures |
|---|---|
| | Maintenance activities, particularly in proximity to the Yarra River or sensitive areas within Yarra Ranges National Park, to use slow-start construction measures to enable both aquatic and terrestrial fauna time to disperse. |
| **BM77** | **Noise, vibration and air quality management**<br><br>**Objective**: To avoid and minimise impacts to biodiversity from noise, vibration and air quality<br><br>Management of potential impacts from noise, vibrations and air quality as outlined in NM01 to NM06 and AM01 to AM07.<br>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. |
| **BM78** | **Environmental induction – fauna habitat**<br><br>**Objective**: To minimise impacts to fauna by providing an induction for workers<br><br>Operation phase staff trained as part of site induction to identify signs of native fauna habitation including, but not limited to:<br>1) Lyrebird display mounds<br>2) Roosting or nesting sites for forest owls<br>3) Platypus burrows<br>4) Habitat indicators for Curve-tail Burrowing Crayfish and Tubercle Burrowing Crayfish<br>5) Burrows used by ground-dwelling fauna e.g. wombats.<br>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.<br>• Any fauna that is injured or killed will be reported to Council/DELWP as an environmental incident.<br>• Native fauna will not be fed by employees. No food scraps to be left on-site.<br>• 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.<br>• No vegetation to be cut, removed or damaged outside of the trail corridor.<br>• 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.<br>• Mountain bikes, E-mountain bikes and motorbikes used for transportation to be maintained in a clean and generally soil/mud free condition. Motorbikes will not be permitted off-road within the Yarra Ranges National Park unless authorised by Parks Victoria. |

### 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.<br>• Areas of vegetation disturbance minimised and existing vegetation adjacent to the works protected.<br>• Disturbed areas stabilised or revegetated.<br>• No reports of injury or death of fauna.<br>• No increase in the presence of weeds, pathogens or pests.<br>• No complaints received regarding native flora or fauna.<br>• No non-conformances raised at site audits regarding native flora or fauna.<br>• 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:<br>• 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).<br>• Monitor for any off-trail tracks and close unauthorised trails and rehabilitation where appropriate (**BM18**).<br>During regular trail inspections and scheduled maintenance, record visual inspections and observations of:<br>• Presence of fauna, including pest species<br>• Presence of significant flora, fauna or nests/burrows/roosts used by native fauna<br>• Presence of weeds or pathogens, such as Myrtle Wilt<br>• Presence of GDEs, seeps / springs and associated vegetation communities / species<br>• Presence of obvious tree hazards presenting a clear and present danger or roots that require management.<br><br>Council will support existing programs implemented by land managers to monitor, control, and where possible, eradicate, pest animals in the trail network. |
| 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.<br>• 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.<br>• Any issues requiring management or similar are to be documented and reported to Yarra Ranges Council and rectified in a timely manner.<br>• 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.<br>• If an incident occurs or a complaint is registered, the following procedure should be followed:<br>- Cease works and report any breaches of the OEMP or other environmental issues to Council.<br>- Undertake an investigation of any non-compliance and determine appropriate course of action to remedy impacts in consultation with an ecologist or arborist.<br>- 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.<br>All staff and sub-contractors are responsible for reporting environmental incidents and complaints to their supervisor including the nature and circumstances in which the |

| Action | Measures |
|---|---|
| | 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 | • *Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)* ('EPBC Act')<br>• *National Environment Protection Council Act 1994 (Commonwealth)* ('NEPC Act')<br>• *Flora and Fauna Guarantee Act 1988 (Vic)* ('FFG Act')<br>• *Water Act 1989 (Vic)*<br>• *Environment Protection Act 2017 (Vic)*<br>- Environment Reference Standard (ERS)<br>- General Environmental Duty<br>• *Heritage Rivers Act 1992 (Vic)*<br>• *Yarra River Protection (Willip-gin Birrarung murron) Act 2017 (Vic)*<br>• *Safe Drinking Water Act 2003 (Vic)*<br>• *Planning and Environment Act 1987*<br>- Yarra Ranges Shire Planning Scheme |
| Guidelines and advisory documents | • Ministerial Guidelines for Groundwater Licensing and the Protection of High Value Groundwater Dependent Ecosystems 2015<br>• EPA Victoria 2006 Guidelines for Hydrogeological Assessments (Water Quality)<br>• EPA Victoria 2014 The clean-up and management of polluted groundwater<br>• EPA Victoria 1991 Construction techniques for sediment pollution control<br>• EPA Victoria Publication 1834 2020 Civil construction, building and demolition guide<br>• EPA Victoria Publication 1287 2009 Guidelines for risk assessment of wastewater discharges to waterways<br>• Landslide Risk Management Guidelines 2007 – Australian Geomechanics Society, Vol. 42 No 1 March 2007<br>• Waterway Determination Guidelines (DNRE 2002) |

### 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**<br><br>**Objective**: To minimise erosion and sedimentation impacts to waterways<br>Follow the EPA publications:<br>• EPA publication 1894 Managing soil disturbance<br>• EPA publication 1895 Managing stockpiles<br>• EPA publication 1896 Working within or adjacent to waterways<br>• EPA publication 1897 Managing truck and other vehicle movement<br><br>Soil and sediment management:<br>• Identify suitable locations for material stockpiles (if required) and ensure appropriate sediment controls are in place prior to stockpiling.<br>• Plan works to provide for the progressive and timely stabilisation and rehabilitation of disturbed areas as required.<br>• 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.<br>• Where the trail runs alongside a waterway, excavated spoil material should not be placed such that it enters the waterway or impedes natural drainage.<br>• 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.<br>• 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.<br>• 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.<br>• Cut batters to be less than 2 m in vertical height.<br>• Silt fences to be installed on all grade reversal outlets within 50 m of a waterway where access allows.<br>• All trails to comply with International Mountain Bicycling Association trail construction guidelines, especially:<br>- The Half Rule<br>- 10% Average Guideline<br>- Maximum Sustainable Trail Grades<br>- Grade Reversals<br>- 5% outslope as appropriate<br>• Maintain all erosion and sediment controls in effective working order as required.<br>• Vehicle entry and exits will be via designated areas only.<br>• Identify all designated ‘no go zones’ on the plans.<br>• 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.<br>• 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.<br>• 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.<br><br>Waterway Crossings<br>• Where a waterway crossing is required, identify the narrowest practicable location. |

<table>
<tr><th>Mitigation measure ID</th><th>Mitigation and contingency measures</th></tr>
<tr><td></td><td>
<ul>
<li>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.</li>
<li>Low level bridges must be Building Code of Australia (BCA) compliant.</li>
<li>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.</li>
<li>Rock armouring to be used as appropriate on either side of bridge/boardwalks to prevent soil being carried onto the bridge/boardwalk.</li>
<li>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.</li>
<li>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.</li>
</ul>
<br>Drainage
<ul>
<li>If areas of erodible soils are found in the trail surface, the area must be armoured with rock, gravel or low erodibility soils.</li>
<li>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.</li>
<li>All drainage must direct water onto vegetation and not exposed fill material.</li>
<li>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:</li>
</ul>
<table>
<tr><th>Trail gradient</th><th>Maximum drain spacing</th></tr>
<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>
</table>
<br>Corrective actions to control erosion:
<ul>
<li>Repair/maintain existing drainage, erosion and sediment controls.</li>
<li>Clean up or rehabilitate any impacts and exposed areas.</li>
<li>Install additional erosion and sediment controls where issues have been identified.</li>
<li>Consider the deployment of alternative erosion and sediment control devices where issues have been identified with the existing devices.</li>
<li>Ensure all personnel involved in the deployment and maintenance of erosion and sediment control measures are appropriately trained in their use and deployment.</li>
<li>Communicate changes with all relevant staff.</li>
</ul>
</td></tr>
<tr><td>SWM06</td><td>
Monitoring of waterways<br><br>
Objective: To monitor effectiveness of mitigation measures<br><br>
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:<br><br>
<ul>
<li>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)</li>
<li>Macroinvertebrate monitoring in selected waterways to provide evidence of any longer-term effects.</li>
</ul>
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.<br><br>
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.
</td></tr>
</table>

| Mitigation measure ID | Mitigation and contingency measures |
|---|---|
| | Macroinvertebrate monitoring will be undertaken in accordance with EPA Publication 604 Guideline for Environmental Management: Rapid bioassessment methodology for rivers and 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).<br><br>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.<br><br>Any corrective actions taken will be recorded including the location of actions taken. |
| SWM07 | **Adhere to Stonefly no-go zones**<br><br>**Objective**: To avoid water quality or hydrological changes to Stonefly habitat<br><br>• Establish no-go zones in the vicinity of Sites WP1 and WP2 (as identified by Tsyrlin, 2019) |
| SWM09 | **Operational maintenance measures**<br><br>**Objective**: To monitor effectiveness of mitigation measures<br><br>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.<br><br>• 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).<br>• Implement measures to rectify issues if crossings present an erosion risk after heavy rainfall.<br>• Undertake inspections four times per year and adapt the monitoring program frequency once sufficient data is gathered with regards to spring activity.<br>• Record inspections on a form (or other measure) and list any corrective actions to be undertaken as a result of the monitoring.<br>• A crossing agreement will be required to be entered into with Melbourne Water, outlining ongoing ownership and maintenance responsibilities.<br><br>If a spring is detected:<br><br>• 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)<br>• Review the trail design in this localised area and consider opportunities for micro-siting (SWM01)<br>• Implement the CEMP and requirements stipulated in SWM02<br>• 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.<br>• Confirm the acceptability of the control through monitoring / inspection during operation, as per SWM09 and GWM01. |
| SWM12 | **Operation of trail heads**<br><br>**Objective**: Minimise the likelihood and impact of human waste, littering and illegal rubbish dumping impacting surface water<br><br>Ensure trailhead facilities have adequate toilets that cater for the expected number of users. Bins would be provided at Wesburn park and the main trail head. Facilities must be appropriately maintained and cleaned.<br><br>Signage or ‘track etiquette’ rules may be appropriate. |

| Mitigation measure ID | Mitigation and contingency measures |
|---|---|
| | Refer to Section 4.3.3 for the inspection and maintenance activities proposed for the trail heads. |
| SWM13 | **Gully erosion management and monitoring**<br><br>**Objective**: To monitor effectiveness of mitigation measures<br><br>Follow EPA publication 1894 Managing soil disturbance<br><br>Erosion monitoring: Photo-point monitoring of selected gully crossing points to identify gully erosion.<br><br>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.<br><br>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.<br><br>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, bogginess, litter, vandalism etc).<br><br>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.<br><br>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).<br><br>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).<br><br>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**<br><br>**Objective**: Minimise the likelihood and impact of grey water on surface water<br><br>Ensure the bike wash system and water recycling 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**<br><br>**Objective:** Minimise impacts of erosion and turbidity during periods of snow or high rainfall<br><br>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:<br><br>• A trigger of 25 mm of rain in the preceding 24 hours for a network closure, or<br>• Observations of staff indicating sustained wet/snow conditions likely to impact trails (could be individual trails, areas, or complete network)<br>Trail closures will be communicated to mountain bikers by:<br>• Active social media and electronic communications<br>• Signage at trail heads and strategic locations around the network |

| Mitigation measure ID | Mitigation and contingency measures |
|---|---|
| | • Signage at start of trail for individual trail closures |
| SWM16 | **Monitor rider behaviour**<br>**Objective:** Minimise impacts to drinking water quality within the Coranderrk Creek catchment<br>Monitor rider behaviour along the section of trail network within the Coranderrk Creek catchment (for off trail activities and toileting) to verify absence of significant risk to drinking water quality. |
| **Groundwater** | |
| GWM01 | **Spring management**<br>**Objective**: Identify springs and establish appropriate treatments to protect groundwater and down-gradient discharging environment.<br>Periodical inspections during the operation phase are required to assess for the presence of new springs and seeps.<br>Where identified, trail treatments, e.g. armouring, may be required to control erosion. Treatments are documented in CEMP and SWM01, SWM02 and SWM09.<br>Where a new spring has emerged as a result of the excavations, or unexpectedly through climate variation, an assessment will be made regarding:<br>• Potential treatments to control sedimentation and erosion<br>• Impact to behaviour of nearby springs, and need for treatment, e.g. diversion of discharge to the same area.<br>When treated, inspection and maintenance are undertaken periodically during the operation phase to assess effectiveness of the treatment.<br>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** | |
| GTM03 | **Trail formation management**<br>**Objective**: Reduce and manage the risk of poor trail formation resulting in ineffective drainage leading to instability and erosion<br>• Ensure trail tread is compact<br>• Use rock armouring to protect areas of the trail subject to erosion<br>• Use of raised embankments to promote effective drainage where the trail is flat<br>• 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<br>• All drainage must direct water onto vegetation and not exposed fill material<br>• Trail design and construction is to minimise any changes to surface water flows<br>• 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**<br>**Objective**: Reduce and manage the risk of rockfalls below or above the trails<br>• 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**<br>**Objective:** Manage the build-up of debris material at the location of bridge structures to reduce the risk of debris flows<br>• Periodical inspections of the bridge structure, particularly following heavy rainfall events to assess potential build-up of debris material |

| Mitigation measure ID | Mitigation and contingency measures |
|---|---|
| | • 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<br>• All spill related environmental incidents are closed out in a timely manner<br>• No evidence of erosion on-site or sediment/sediment laden runoff entering the downslope waterways<br>• No complaints received regarding erosion and sediment control<br>• 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:<br>• 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)<br>• 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.<br>• 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.<br>• All operational monitoring will be reviewed annually by an environmental engineer (or equivalent) to assess the requirement for ongoing monitoring.<br><br>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):<br>• Monthly monitoring of turbidity using a turbidity meter, to identify any increases in turbidity. Monitoring will commence prior to operation.<br>• 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 when analysing photo-point images to provide an understanding of deer presence on-site.<br>• Flow monitoring at key points in the track network where gullies are crossed but no boardwalk or bridge has been proposed.<br>• Macroinvertebrate monitoring during spring to assess waterways following winter flow conditions.<br><br>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. |

| Action | Measures |
|---|---|
| | • 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)<br>• Inspections will initially be undertaken four times per year. This will inform adjustments to the monitoring program.<br>• 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:<br>- Four Mile Creek (37 crossings)<br>- Scotchmans Creek (30 crossing)<br>- Britannia Creek (20 crossings) and<br>- Yankee Jim Creek (12 crossings).<br>• 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.<br>• 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.<br><br>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. |
| Responsibilities | Management and maintenance of erosion and sediment control is the responsibility of the Yarra Ranges Council Project Manager and maintenance crew.<br>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<br>• All spill related environmental incidents are closed out in a timely manner<br>• No complaints received regarding impacts to springs<br>• 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**).<br><br>Where identified, trail treatments, e.g. armouring, may be required to control erosion. Treatments documented in CEMP and SWM01, SWM02 and SWM09.<br><br>Where a new spring has emerged as a result of the excavations, or unexpectedly through climate variation, an assessment will be made regarding:<br>• Potential treatments to control sedimentation and erosion<br>• Impact to behaviour of nearby springs, and need for treatment, e.g. diversion of discharge to the same area.<br>When treated, inspection and maintenance are undertaken periodically during the operation phase to assess effectiveness of the treatment. |

| Action | Measures |
|---|---|
| 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.<br>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:<br>• Document the spring activity and location (**GWM01**)<br>• 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.<br>• 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 Yara Ranges Council Project Manager and maintenance crew.<br>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<br>• No evidence of slope failures<br>• No complaints received regarding slope failures or geotechnical hazards<br>• No non-conformances raised at site audits regarding geotechnical hazards. |
| Monitoring (Parameters, location and frequency) | Yarra Ranges Council will proactively monitor trail conditions and close trails under adverse conditions to avoid damage and associated environmental impacts during these periods.<br>Following significant/heavy rainfall events (e.g. >25 mm in 24 hours), undertake inspections of:<br>• Effectiveness of the trail drainage and observe areas subject to erosion or unfavourable water flow downslope of the trail (**GTM03**).<br>• 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.<br>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.<br>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:<br>• A trigger of 25 mm of rain in the preceding 24 hours for a network closure, or<br>• Observations of staff indicating sustained wet/snow conditions likely to impact trails (could be individual trails, areas, or complete network)<br>Trail closures will be communicated to mountain bikers by:<br>• Active social media and electronic communications<br>• Signage at trail heads and strategic locations around the network |

| Action | Measures |
|---|---|
| | • 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.<br><br>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 | • *Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)* ('EPBC Act')<br>• *Environment Effects Act 1978*<br>• *Aboriginal Heritage Act 2006*<br>- Aboriginal Heritage Regulations 2018<br>• *Heritage Act 2017*<br>- Heritage Regulations 2017<br>• *Traditional Owners Settlement Act 2010*<br>• *Planning and Environment Act 1987*<br>- Yarra Ranges Shire Planning Scheme<br>• *Yarra River Protection (Willip-gin Birrarung murron) Act 2017(Vic)* |

### 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**<br><br>**Objective**: To avoid or minimise impacts on Aboriginal cultural heritage<br><br>Comply with all management conditions and contingencies of CHMP 15276.<br><br>Management measures (not confirmed at this stage) are likely to include inductions to construction crews undertaking ground disturbing works, compliance checks before, during and after the project construction. The CHMP also includes contingency plans in the case of unexpected finds. |
| MM- HM05 | **Unknown historic heritage sites and identified areas of archaeological potential**<br><br>**Objective**: To avoid or minimise impacts on unknown historic heritage sites and identified areas of archaeological potential<br><br>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.<br><br>*Inductions*<br><br>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:<br><br>• A brief history of the area and types of sites that are present<br>• The existence of the EES and the management conditions<br>• Landforms and artefacts that may be present that indicate an archaeological site<br>• The contingency measures that need to be followed in the case of an unexpected find (see Attachment 3)<br><br>*Areas of Archaeological Potential*<br><br>Areas of identified archaeological potential will be subject to the following protocol.<br><br>• Limit works to the removal of vegetation if possible.<br>• If works cannot be limited to vegetation removal and ground disturbing works must take place, the works must be supervised by an archaeologist<br>• If archaeological features are uncovered during works, the contingency protocol must be followed.<br><br>*Contingencies*<br><br>The following contingency measures will be undertaken if archaeological features or artefacts are found.<br><br>• Stop works if archaeological features are uncovered<br>• Recording the features/artefacts by a suitable qualified and experienced archaeologist<br>• Submission of a site card to Heritage Victoria<br>• Abide by all conditions on Heritage Victoria site card |
| MM- HM06 | **Operational controls**<br><br>**Objective**: To protect and provide information on HO sites<br><br>Signage will be installed in accordance with the CEMP and the management conditions of any consents from Heritage Victoria.<br><br>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<br>• 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.<br>• Any non-conformances are to be documented and reported to Yarra Ranges Council and rectified in a timely manner<br>• 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.<br>• 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**)<br>• If ground-disturbing works are required at a VHI site, consent approval will be sought from Heritage Victoria prior to commencement.<br>• Notify the Yarra Ranges Council's environmental representative<br>• 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, at the main trail head at Warburton Golf Course, 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 | • *Road Management Act 2004 (Vic)*<br>- Road Management Act (General) Regulations 2016<br>- Road Management Act (Works and Infrastructure) Regulations 2015<br>• *Transport Integration Act 2010 (Vic)*<br>• *Road Safety Act 1986 (Vic)*<br>Road Safety Road Rules 2017<br>Road Safety (Traffic Management) Regulations 2009 |
| Guidelines and advisory documents | • AS1742.3 2009 – Traffic control for works on road<br>• Austroads – Guide to Road Design Part 4: Intersections and Crossings<br>• 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-TP2 | **Stakeholder communication plan**<br>**Objective**: To minimise traffic impacts on stakeholders through consultation<br>During operation, regular meetings should occur with Council and an agreement should be reached with DELWP to confirm pavement upgrades of impacted local roads around the study area, subject to the pavement strength survey results. Regular road maintenance and inspections should also be discussed for declared roads with VicRoads. |
| MM-TP3 | **Road Safety Audit**<br>**Objective**: To verify the traffic risks can be managed<br>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:<br>• Detailed design of the Lilydale-Warburton Rail Trail/road crossings proposed<br>• Existing Warburton Highway signalised crossing.<br>• Key road intersections that will experience an increase in cyclist volumes (given aspects of these intersections are unknown such as sight lines).<br>• At the trail/road crossing points. Consideration to be given to visual obstructions to ensure a safe crossing location for cyclists.<br>• 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.<br>• 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.<br>• 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**<br>**Objective**: To avoid or minimise road infrastructure impacts<br>• Subject to the results of the RSAs undertaken at various locations in the study area, improvements may be required prior to project opening. |

| Mitigation measure ID | Mitigation and contingency measures |
|---|---|
| MM-TP5 | **Cyclist and pedestrian safety improvements**<br><br>**Objective**: To ensure safe pedestrian and cyclist movements within the study area during the operational phase of the project.<br><br>Measures include:<br><br>• 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.<br>• Drink taps/water bottle filling locations should be located in close proximity to the car park and bike path for the Golf Course and Wesburn trail heads to prevent dehydration.<br>• Prior to opening of the project signage should be installed to warn drivers of cyclist presence in accordance with road standards.<br><br>• Given the scale of this project on cyclist generated trips, Yarra Ranges Council will develop a plan to upgrade road crossings along the Lilydale-Warburton Rail Trail to Strategic Cycling Corridor (SCC) standard beginning with crossings deemed more critical. This plan will identify critical crossings which need to implemented prior to opening of the project, and less critical crossings that can be implemented in a staged approach post opening.<br><br>• 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:<br><br>- Station Road, Wesburn<br>- Hooks Road, Warburton<br>- Station Road, Warburton<br>- Warburton Highway, Warburton (This treatment will require approval from DoT)<br>• 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.<br>• Implement wayfinding to guide cyclists to formal safer intersections and links<br>• Yarra Ranges Council Paths and Trails Strategy will investigate how and when to implement:<br><br>- shared streets along local roads within Warburton<br><br>- safe cyclist connections between Wesburn, East Warburton, Warburton, and Millgrove to/from the trails<br><br>• A sealed shoulder feasibility study along the length of Mount Donna Buang Road to advocate safer cyclist connection with the DoT<br>• 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.<br>• At the Golf Course Trail Head a designated shared use path (not mixed with golf users) which matches the desire lines of those heading to the trails should be provided including raised priority treatments at intersections with the private roads. Path(s) should be wide enough to accommodate golf carts, pedestrians and cyclists. The design of the paths should be developed in consultation with stakeholders and will likely have a minimum width of 3.5 metres.<br>• The shared path bridges need to provide a minimum of 2.5 metres between the handrails.<br>• 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**<br><br>**Objective**: To ensure that parking congestion does not exceed acceptable limits for visitors or residents |

| Mitigation measure ID | Mitigation and contingency measures |
|---|---|
| | Yarra Ranges Council will establish a parking management plan for the operation of the Mountain Bike Project. It will include:<br>• 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<br>• Installation of bike parking in the town centre to allow visitors to safely park their bikes<br>• 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<br>• 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. |
| MM-TP7 | **Emergency access plan**<br>**Objective**: To ensure that emergency access is available during operation<br>An Emergency Management Plan for the project should be established and approved before opening. The plan will include staff training in relation to emergency access arrangements. |

### 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.<br>• Safety maintained for vehicles, cyclists, pedestrians and public transport users.<br>• 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:<br>- Station Road, Wesburn<br>- Hooks Road, Warburton<br>- Station Road, Warburton<br>- Warburton Highway, Warburton (This treatment will require approval from DoT)<br>• 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.<br>• 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, with the exception of properties located along Martyr Road which are approximately 25 metres from the nearest trail.

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 Visitor's Hub, 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 | • *Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)* ('EPBC Act')<br>• *Native Title Act 1993 (Commonwealth)*<br>• *National Environment Protection Council Act 1994 (Commonwealth)* ('NEPC Act')<br>• *Environment Effects Act 1978 (Vic)*<br>• *Environment Protection Act 2017 (Vic)*<br>- Environment Reference Standard (ERS)<br>- General Environmental Duty<br>• *Aboriginal Heritage Act 2006 (Vic)*<br>- Aboriginal Heritage Regulations 2007<br>• *Planning and Environment Act 1987 (Vic)*<br>• *Water Act 1989 (Vic)*<br>- By-law No. 1 Water Supply<br>• *Yarra River Protection (Willip-gin Birrarung murron) Act 2017(Vic)*<br>• *Heritage Act 2017 (Vic)*<br>• *Flora and Fauna Guarantee Act 1988 (Vic)* ('FFG Act')<br>• *Catchment and Land Protection Act 1994 (Vic)*<br>• *Wildlife Act 1975 (Vic)*<br>• *Road Management Act 2004 (Vic)*<br>• *Land and Compensation Act 1986 (Vic)*<br>• *Conservation Forests and Lands Act 1987 (Vic)*<br>• *Crown Land (Reserves) Act 1978 (Vic)*<br>• *Forests Act 1958 (Vic)* |

| Type | Applicable legislation, policy and guidelines |
|---|---|
| | - Forests (Recreation) Regulations 2010<br>• *National Parks Act 1975 (Vic)*<br>• National Parks (Park) Regulations 2003 |
| 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<br>• EPA Publication 1254, 2008, Noise Control Guidelines<br>• EPA Publication 1834, 2020, Civil construction and demolition guide<br>• EPA Publication 1961, 2021, Guide to assessing and managing air pollution in Victoria (GAMAPV) |

### 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** | |
| NM04 | **Operational noise – Bike washes**<br>**Objective:** To ensure noise from bike washes are sufficiently located away from residents and comply with EPA publication 1826 *Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues*<br>The Main trail head / Visitor's Hub bike wash stations are likely to be located at least 100 metres away from the nearest residents.<br>If the bike wash stations are to be located closer than 100 metres from the nearest resident at the main trail hub 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.<br>The bike wash station at the Wesburn Park Trail Head will be located at least 50 metres away from the nearest residentials to comply with EPA publication 1826 *Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues*. |
| NM05 | **Operational noise – Noise barrier to Martyr Road**<br>**Objective**: To minimise noise at properties on Martyrs Road from bike pass-bys<br>Noise due to bike pass-bys could be clearly audible at properties on Martyr Road which are approximately 25 metres from the nearest trail.<br>Therefore, noise mitigation, in the form of noise barriers to this section of trails will be installed, subject to consultation with the immediate landowners.<br>Noise barriers will be built from a non-porous material with no gaps, including at the base and a surface density of at least 15 kg/m$^2$ at its thinnest point.<br>Indicative materials include 17 mm plywood, 25 mm timber, concrete, glass or 1 mm steel.<br>The barrier should be at least 1.8 m higher than the trail surface and be located as near to the trail as possible.<br>The exact extent and location of the barrier should be defined in the detailed design stage. |
| NM06 | **Events noise**<br>**Objective**: To ensure noise from events is sufficiently located away from residents and complies with the Environment Protection Regulations 2021.<br>Larger events, including regional, state and national competitions have the potential to involve public address systems and music as part of the event. |

| Mitigation measure number | Mitigation measure |
|---|---|
| | 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:<br>• Public address systems: EPA Publication 1254 Section 13: Public Address Systems.<br>• EPA Publication 1826 *Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues.*<br>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.<br>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** | |
| AM07 | **Events Traffic Management Plan**<br>**Objective**: To implement a Traffic Management Plan for events that reduces exhaust emissions.<br>A traffic management plan will be developed for major mountain biking events which considers the reduction of exhaust emissions related to queuing and congestion. |

### 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) | • Installed noise barriers should be inspected yearly for any damage or required maintenance work (**NM05**). |
| 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.<br>• 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.<br>• 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<br>● Yarra Ranges Planning Scheme 31/07/2018 VC148<br>- 21.04-1 – Residential, Objective 2 – Housing Diversity<br>- 21.04-1 – Residential, Objective 4 – Green Wedge Residential<br>● General Provisions Local Law 2012 – (No 1 of 2012)<br>● 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**<br>**Objective**: Provide businesses with assistance in adapting to the changing market.<br>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. |
| MM-SM3 | **Minimise impact of project operations in Wesburn on residents' privacy and amenity**<br>**Objective**: To minimise impacts to Wesburn residents' privacy and amenity.<br>Council will:<br>● Engage with each landholder directly impacted by trail operation to build trust, better understand their concerns and develop appropriate responses collaboratively.<br>● Investigate appropriate screening and noise reduction measures, potentially including choke points to mitigate amenity and privacy concerns.<br>● Continue negotiations with Warburton Golf Club representatives to identify mutually beneficial outcomes for the proposed mountain bike trail head. |
| MM-SM4 | **Maintain appeal and sustainability of the Warburton golf club**<br>**Objective**: To minimise impacts to the Warburton golf club |

| Mitigation measure ID | Mitigation measure |
|---|---|
| | ● Continue to negotiate with Warburton Golf Club representatives to identify mutually beneficial outcomes.<br>● Provide appropriate screening and protection of trails running through the course. |
| MM-SM6 | **Maintain access, safety and enjoyment of other recreational users**<br><br>**Objective**: To ensure access, safety and enjoyment for other recreational users is maintained<br><br>To maintain access, safety and enjoyment of other recreation users, Yarra Ranges Council will:<br><br>● Appropriate signage is established at trail heads and popular trails to advise riders of the MTBA code of conduct (always give way) and to ride on marked trails only<br>● Choke points/slowing techniques are used before intersection with another track/trail<br>● Intersection points are clearly marked on trail maps and marketing collateral including details of other likely users<br>● 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<br>● Yarra Ranges Council works with land managers to install appropriate signage and barriers to prevent bike riding on intersecting walking trails and monitor compliance.<br>● 4WD organisation representatives are engaged to discuss the implications of closing Cemetery Trail<br>● 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**<br><br>**Objective**: Minimise impacts to the Warburton transport network<br><br>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:<br><br>● 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.<br>● Undertake improvement works where necessary based on the pavement conditions survey.<br>● Implement mitigation measures to ensure safe pedestrian and cyclist movements during the operational phase of the project.<br>● 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.<br>● Establish an Emergency Access Plan. |
| MM-SM8 | **Increase affordable rental housing stock**<br><br>**Objective**: Increase affordable rental accommodation for visitors<br><br>Yarra Ranges Council will:<br><br>● 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.<br>● 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**<br><br>**Objective**: Ensure Warburton residents' access to community infrastructure is not diminished<br><br>To ensure that the project does not diminish Warburton residents' access to appropriate community infrastructure, Yarra Ranges Council will:<br><br>● Proposed community infrastructure works, including toilet upgrades at Mount Donna Buang and construction of toilets at the Mount Tugwell and Golf Club trail heads, will be completed as priorities.<br>● Monitor the impact of the project on dog walkers at Wesburn Park and provide additional areas elsewhere if necessary. |

| Mitigation measure ID | Mitigation measure |
|---|---|
| | ● 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.<br>● An Emergency Management Plan will be prepared and approved before use of the land for the project commences to ensure that risks to life are reduced and managed appropriately. The Emergency Management Plan will include specific bushfire response measures developed in consultation with the CFA. |
| MM-SM10 | **Maximise the benefits of job creation for Warburton youth and disadvantaged**<br>**Objective**: Support job creation for Warburton youth and disadvantaged<br>Yarra Ranges Council will:<br>● 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**<br>**Objective**: Improve trust, connection and cohesion in the Warburton community<br>To improve trust, connection and cohesion in Warburton, Yarra Ranges Council will:<br>● Support and promote social enterprises locally.<br>● Support community events and initiatives separate from mountain biking to sustain community diversity and engagement.<br>● 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.<br>● 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<br>● 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.<br>● 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

This section summarises the objectives relating to bushfire prevention and response during the construction 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)*<br>• 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 |
|---|---|
| **BM08** | **Emergency Management Plan**<br>**Objective**: To manage bushfire risks from the project<br>An 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 *Forests Act (Fire Protection Regulations) 2014* for operational activities in Fire Protected Areas. |
| **MM-TP7** | **Emergency access plan**<br>**Objective**: To provide sufficient access in the event of an emergency<br>Emergency access plan for the project will be established and approved before opening. This includes staff training for the project. |

### 6.7.5 Other mitigation and contingency measures

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

**Table 6-22 Other mitigation and contingency measures – bushfire**

| Aspect | Requirements |
|---|---|
| Appropriate chemical handling and fire suppression equipment | • 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.<br>• Adequate fire suppression equipment should be on-site as per the requirements of Regulation 111 of the Country Fire Authority Regulations 2014.<br>• 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.<br>• Smoking to be prohibited on construction sites and any butts to be disposed of appropriately. |

| Aspect | Requirements |
|---|---|
| Working during the fire season | • Ensure that each team has at least one team member who has been trained in basic bushfire awareness with the appropriate skills to undertake fire weather monitoring and calculation of the Forest Fire Danger Index (FFDI).<br>• At the start of each working week (or some other agreed schedule) provide reports to relevant land managers (i.e. DELWP or PV depending on work locations) stating the trails being worked on, their location and the number of personnel working on each. Report to provide contact details for key personnel including Project Manager and Team Leaders.<br>• At the start of each working week, check the weather forecast and note any potential high-risk days (i.e. high-risk days are those with high temperatures and high winds. They generally only occur during the hot summer months or during periods of drought)<br>• 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.).<br>• If a TFB day has been called, contact Yarra Ranges Council immediately to discuss whether it is safe/appropriate to work.<br>• During the fire season, each team must have the following equipment on hand at all times:<br>- 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<br>- One filled and operational knapsack pump or charged air-water extinguisher (not less than 9L capacity)<br>- Two rake hoes<br>- Weather instruments capable of measuring temperature, wind speed and humidity<br>- Fire weather log book.<br>• During the fire season, the following weather monitoring protocols apply:<br>- At arrival to site in the morning and after main rest breaks, check weather observations and calculate FFDI and record in fire weather log book;<br>- If the FFDI is equal or greater than 12 (High), consider implementing protocols below as per TFB day.<br>• Prior to starting chainsaw work:<br>- Ensure that the immediate area has been manually cleared of twigs, leaves, scrub and other flammable material<br>- Ensure that the knapsack is on hand, filled and ready for use. |
| Total Fire Ban Days | • If Yarra Ranges Council approves work to go ahead, then the following rules must be applied:<br>- Only work in areas with good communication including mobile phone reception<br>- Only work in areas with quick/easy access where vehicles can be parked close by<br>- No operating excavators, chainsaws, brushcutters, or any other machinery/equipment that could conceivably emit sparks during operation<br>- Generally, all work should be conducted with hand tools only<br>- Ensure all workers have adequate sun protection<br>- Ensure all workers work to the conditions and drink plenty of water.<br>• On TFB days, the following weather monitoring protocols apply:<br>- At arrival to site in the morning and after any rest breaks, check weather observations and calculate FFDI and record in fire weather log book<br>- If the FFDI is equal or greater than 20 (High), consider suspending operations and leaving site. |

### 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.<br>• Works at the site are not impacted by bushfire risk or fire management.<br>• Adequate fire protection equipment onsite.<br>• No machinery which could cause a spark to be operated on TFB days. |
| Monitoring (Parameters, location and frequency) | • Monitoring of fire bans.<br>• Monitoring of planned burns.<br>• Weather monitoring:<br>- During the fire season, check weather observations, calculate FFDI and record in fire weather log book on arrival to site in the morning and after main rest breaks (e.g. lunch).<br>- On TFB days, weather monitoring frequency to increase to after any rest break. |
| 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.<br>• 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 called, contact Yarra Ranges Council immediately to discuss whether it is safe/appropriate to work in the event of high FFDI calculated.<br>- If the FFDI is equal or greater than 12 (High), consider implementing protocols as per TFB day.<br>- If the FFDI is equal or greater than 20 (High), consider suspending operations and leaving site.<br>• If activities spark a fire, immediately implement fire suppression methods and contact emergency services.<br>• Evacuate the site. |
| Responsibilities | Bushfire prevention and response is the responsibility of the site supervisor.<br>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 Visitor Centre and Warburton Golf Course and Wesburn Park trail head facilities. 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 the Visitor Centre at the main trail head, 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 | • *Environment Protection Act 2017 (Vic)*<br>• Environment Protection Regulations 2021 |

### 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**<br>**Objective**: To avoid and manage the potential for spills<br>Implement controls for chemicals, fuel and waste management including procedures for spill containment and clean-up as per SWM10:<br>• All regulated and hazardous waste would be stored in a bunded area as far as practical from the waterways.<br>• All hazardous materials will be removed from site and disposed of appropriately. |
| SWM12 | **Operation of trail heads**<br>**Objective**: Minimise the likelihood and impact of human waste, littering and illegal rubbish dumping impacting surface water<br>• Ensure trailhead facilities have adequate toilets that cater for the expected number of users. Bins would be provided at Wesburn park and the main trail head. Facilities must be appropriately maintained and cleaned.<br>• 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 construction 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.<br>• Appropriate waste receptacles will be provided at the Visitor Centre and Wesburn Park trail head facilities, 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.<br>• Additional waste receptacles and collections should be considered for peak season visitation periods.<br>• Cigarette butts will be disposed of appropriately, to prevent pollution and the occurrence of fire.<br>• All waste will be removed during inspections and will be disposed of appropriately.<br>• 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.<br>• Waste is being separated and disposed of into the appropriate receptacle.<br>• No contamination of soil, water or air as a result of inappropriate waste management.<br>• The site is maintained in a clean and tidy state throughout the project activities.<br>• 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).<br>• 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.<br>• Significant litter/waste dumps will be reported to the land manager as soon as possible.<br>• 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.<br>• 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, Leadbeater's Possum and Mount Donna Buang Wingless Stonefly
    - 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, PV and DELWP 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.

Any environmental incidents in relation to the project would be managed through the project's Emergency Management Plan and the Yarra Ranges Council Complaint Policy. The Emergency Management Plan would be developed with consideration of the existing Yarra Ranges Council Municipal Emergency Management Plan and Parks Victoria Yarra Ranges National Park Emergency Management Plan. This would include adherence to emergency response planning, such as park 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.

Council's representatives will be verbally notified of an incident within two hours of the responsible person becoming aware of the incident, and in writing within 24 hours. All notifications to authorities (e.g. Department of Environment, Land, Water and Planning) 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 of Code Red fire danger.

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<br>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 |

| Incident | Response | Reporting |
|---|---|---|
| Identification of cultural heritage aspects during excavation | Protect site and follow cultural heritage reporting procedure | Report to Yarra Ranges Council |
| 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<br>DELWP/Parks Victoria to be notified where appropriate |
| Bushfire | Evacuate site, and notify emergency services | Report to Yarra Ranges Council |

## 8.2 Emergency contacts

Emergency contacts for the project are listed in Table 8-2.

**Table 8-2 Emergency contacts**

| Emergency service / Authority | Phone number |
|---|---|
| Fire brigade / police / ambulance | 000 |
| Country Fire Authority District | 8739 1300 |
| Environment Protection Authority pollution hotline | 1300 372 842 |
| Wildlife Victoria wildlife emergencies | 8400 7300 |
| Melbourne Water | 131 722 |
| Parks Victoria Information Centre | 13 19 63 |
| DELWP Fire Regional Duty Officer | 1300 782 980 |
| DELWP Yarra District Duty Officer | 5965 9907<br>0417 325 970 |
| Poisons Information | 13 11 26 |

# 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. Stakeholder consultation would be undertaken in accordance with the Communications and Community Engagement Plan.

## 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 (Parks Victoria, DELWP 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
- VicForests
- 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.

### 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 truck. 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 |
|---|---|---|---|---|---|
| *Anthoxanthum odoratum* | Sweet Vernal-grass | Sep – Dec | Spray | | Mt Tugwell |
| *Arctotheca calendula* | Cape weed | Dec – Jun | Spray | | Mt Tugwell |
| *Asparagus scandens* | Asparagus Fern | June – Dec | Spray | | Mt Tugwell |
| *Cirsium vulgare* | Spear Thistle | Aug – Dec | Spray | Reduced in abundance and controlled in extent | Drop-a-K South/East<br>Mt Tugwell |

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

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.
- Establish boot-cleaning arrangements, to be used prior to entry of works sites each day within the Yarra Ranges National Park.

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 in the national park.
- If machinery and equipment have been working in high risk locations, treat them with Phytoclean prior to entering the project area.
- Clean machinery and equipment before moving between the national park and the state forest areas and vice versa.
- 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

To be compiled from EES Technical Reports when final

# 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 |
|---|---|---|---|
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## 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: | | |

## Fire weather log book

Location: _____

Recorded by: _____

| Date | Time | Temperature (°C) | Wind speed (km/hr) | Relative Humidity (%) | FFDI |
|---|---|---|---|---|---|
| | | | | | |
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| Date | Time | Temperature (°C) | Wind speed (km/hr) | Relative Humidity (%) | FFDI |
|---|---|---|---|---|---|
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