



EES chapter 11 – Land use and planning

Warburton Mountain Bike Destination

Table of Contents

11.0	Land use and planning	1
11.1	Overview	1
11.2	EES evaluation objectives	1
11.3	Applicable legislation and policy	2
11.4	Method	2
11.5	Avoidance and minimisation through design	5
11.6	Existing conditions	5
	11.6.1 Regional context	5
	11.6.2 Land uses and typologies	5
	11.6.3 Landscape and visual environment and sensitive receptors	8
	11.6.4 Air quality conditions and sensitive receptors	11
	11.6.5 Noise environment and sensitive receptors	12
11.7	Strategic impact assessment	14
11.8	Construction impact assessment	15
	11.8.1 Temporary disturbance to existing land uses, amenity and infrastructure	15
	11.8.2 Proposed mitigation measures	16
	11.8.3 Residual impacts	16
11.9	Operation impact assessment	16
	11.9.1 Change of land use	16
	11.9.2 Proposed mitigation measures	18
	11.9.3 Residual impacts	19
11.10	Assessment of alternative to Trail 1	19
11.11	Summary of mitigation and contingency measures	19
11.12	Conclusion	24

11.0 Land use and planning

This chapter assesses the potential land use, landscape and visual, air quality and noise impacts associated with the construction and operation of the Warburton Mountain Bike Destination (the project). The information in this chapter is a summary of the impact assessment presented in **Technical Report D: Land Use and Planning** and describes the key potential impacts arising from the project.

11.1 Overview

Project construction and operation have the potential to impact the existing land use and surrounding sensitive receptors such as residences, community buildings, outdoor recreation, wildlife and public open spaces. Understanding how the project would impact land use, landscape and visual, air quality and noise amenity is important to the development of effective mitigation measures.

The key findings of the land use impact assessment are:

- During construction, land use changes are considered to have minor land use and amenity impacts. To address foreseeable impacts, mitigation measures are proposed through implementation of a Construction Environmental Management Plan (CEMP) which is subject to approval under the Incorporated Document.
- During operation, the project is considered to have minor land use and amenity impacts. Mitigation measures are proposed through implementation of an Operations Environmental Management Plan (OEMP) which is subject to approval under the Incorporated Document.
- Noise associated with trail construction activities may be audible in the vicinity of the activity areas for up to a week as work crews move along the proposed trail network. During operation, noise from the trails could be audible and may reduce amenity somewhat at properties on Martyr Road in Warburton when trails are busy. A noise barrier has been recommended in this location; however, further design work and consultation with immediate landowners is required to define whether this approach is reasonable or feasible.
- Dust impacts during construction are not considered significant due to the nature and scale of the works being undertaken. Air quality impacts due to operation of the project were considered in terms of increased traffic volumes to the area and also ongoing maintenance activities associated with the upkeep of the trails. Air quality impacts due to operation activities were found to be negligible.
- Permanent changes to the visual landscape would occur due to new structural elements associated with the new Visitor's Hub, trail heads and bridges, as well as other associated changes to the landscape. Sympathetic design of structural elements and use of vegetation to soften structural elements would minimise residual impacts.

In response to the EES evaluation objective, impacts of the project on land use, landscape and visual, air quality and noise have been assessed and mitigation measures have been identified to avoid and minimise adverse impacts.

11.2 EES evaluation objectives

The scoping requirements for the project set out the specific environmental matters to be investigated and documented in the project's EES in order to satisfy the Commonwealth and Victorian assessment and approval requirements.

The scoping requirements include a set of evaluation objectives that identify the desired outcomes to be achieved in managing the potential impacts of constructing and operating the project.

The following evaluation objective is relevant to the land use and planning study:

- **Social, economic, amenity and land use** – minimise potential adverse social, economic, amenity and land use effects at local and regional scales.

This chapter and **Technical Report D: Land Use and Planning** address the specific land use and planning, landscape and visual, air quality and noise related matters set out in the EES scoping requirements.

11.3 Applicable legislation and policy

Table 11-1 lists the key legislation, policies, guidelines and standards relevant to the land use and planning impact assessment.

Table 11-1 Land use and planning legislation, policy, guidelines and criteria

Type	Applicable legislation, policy and guidelines
Legislation and policy	<ul style="list-style-type: none"> • <i>Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)</i> ('EPBC Act') • <i>Native Title Act 1993 (Commonwealth)</i> • <i>Environment Effects Act 1978 (Vic)</i> • <i>Aboriginal Heritage Act 2006 (Vic)</i> <ul style="list-style-type: none"> - Aboriginal Heritage Regulations 2007 • <i>Planning and Environment Act 1987 (Vic)</i> • <i>Water Act 1989 (Vic)</i> <ul style="list-style-type: none"> - By-law No. 1 Water Supply • <i>Environment Protection Act 2017 (Vic)</i> <ul style="list-style-type: none"> - Environment Protection Regulations 2021 • <i>Yarra River Protection (Willip-gin Birrarung murrong) Act 2017(Vic)</i> • <i>Heritage Act 2017 (Vic)</i> • <i>Flora and Fauna Guarantee Act 1988 (Vic)</i> ('FFG Act') • <i>Catchment and Land Protection Act 1994 (Vic)</i> • <i>Wildlife Act 1975 (Vic)</i> • <i>Road Management Act 2004 (Vic)</i> • <i>Land and Compensation Act 1986 (Vic)</i> • <i>Conservation Forests and Lands Act 1987 (Vic)</i> • <i>Crown Land (Reserves) Act 1978 (Vic)</i> • <i>Forests Act 1958 (Vic)</i> <ul style="list-style-type: none"> - Forests (Recreation) Regulations 2010 • <i>National Parks Act 1975 (Vic)</i> <ul style="list-style-type: none"> - National Parks (Park) Regulations 2003
Guidelines and advisory documents	<ul style="list-style-type: none"> • DELWP 2018 Procedure for the removal, destruction or lopping of native vegetation on Crown land • DELWP 2017 Guidelines for the removal, destruction or lopping of native vegetation • Environmental Reference Standards • Environment Protection Authority (EPA) Victoria Publication No. 1834 Environmental Guidelines for Civil construction, building and demolition

11.4 Method

The purpose of the land use and planning impact assessment was to assess the potential impacts associated with the project and inform the preparation of the EES required for the project. This was achieved by undertaking the following:

- Establishing a study area and an assessment of existing environmental conditions including desktop review of relevant datasets, review of literature, policies and legislation, and targeted site visits.
- A review of the project design and proposed activities in the context of existing environmental conditions to understand temporal and spatial distribution of project components and activities in relation to sensitive receptors.
- Use of a risk assessment as described in **Chapter 6: EES assessment framework** as a prioritisation tool to inform the impact assessment and development of mitigation measures.
- Assessment of potential direct and indirect specific land use and planning, landscape and visual, air quality and noise impacts of the construction and operation phases of the project, particularly in relation to the legislation, policy and guidelines listed in Section 11.3. This included an analysis of the spatial and temporal extent, magnitude and nature of the potential impacts, and considered the sensitivity and significance of affected receptors.

- Assessment of the alternative to Trail 1 as shown in Figure 11-1 (the combination of Trail 45, Trail 46 and Trail 47) including describing existing conditions, assessment of impacts and a comparative analysis against Trail 1.
- Development of mitigation measures for the construction and operation of the project, based around the implementation of the mitigation hierarchy.
- Evaluation of the residual environmental impacts, which describe impacts once mitigation has been implemented.

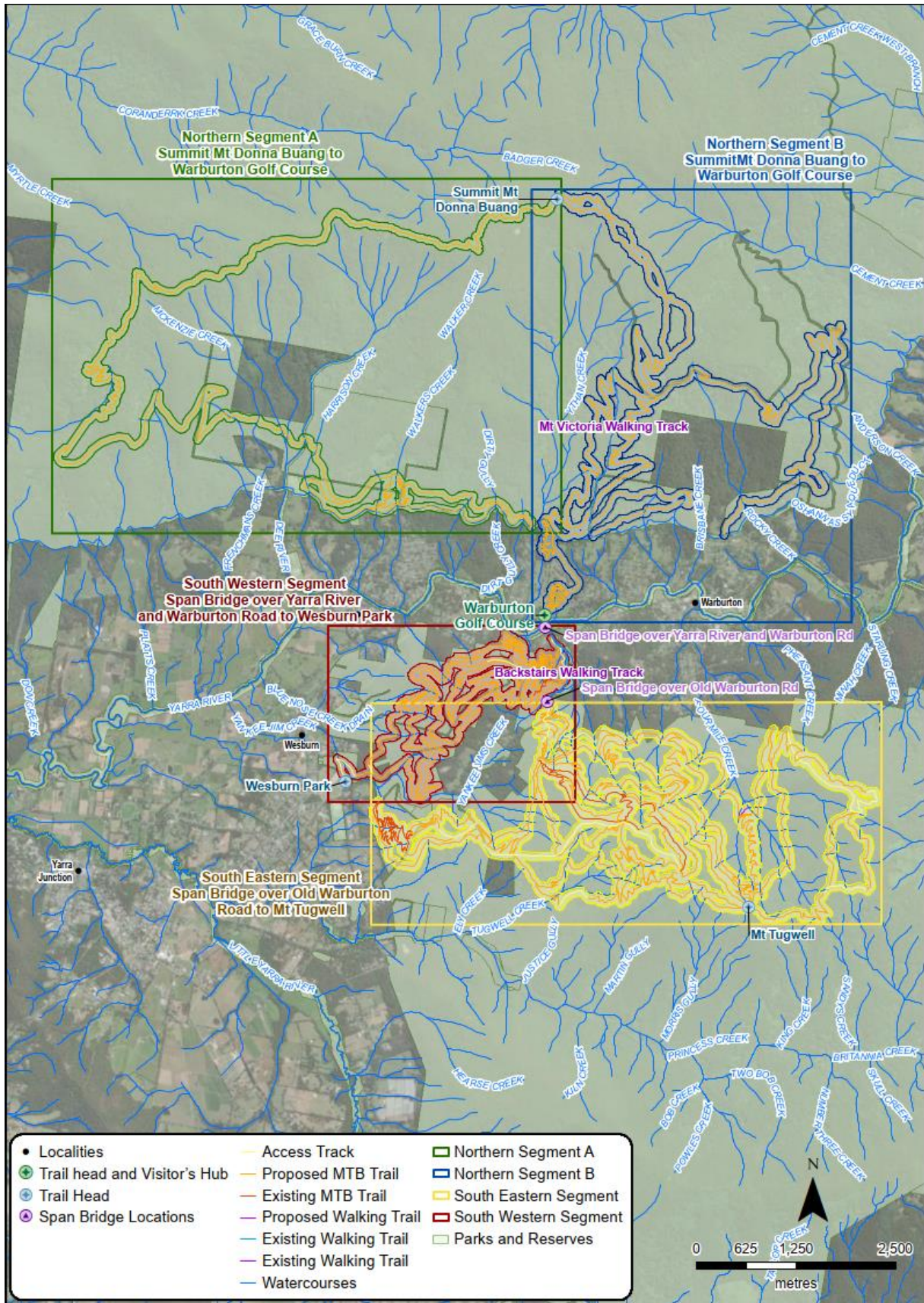


Figure 11-1 Study area

11.5 Avoidance and minimisation through design

It is recognised that there are opportunities to avoid and minimise environmental impacts during the many stages of project development which has culminated in the preparation of the project description presented in Chapter 3 of this EES. During project inception and early design development stages of the project, decisions on the location of the project, its design and construction techniques have enabled impacts to be significantly avoided and minimised in accordance with the mitigation hierarchy described in **Chapter 6: EES assessment framework**.

For land use and planning, landscape and visual, air quality and noise the key avoidance and minimisation measures that have been incorporated into the design include:

- Minimisation of trails on private property
- Minimisation of trails near residences by focusing trails in natural areas (including modifications to avoid Merlino Avenue and Old Warburton properties)
- Provision of additional parking at Warburton Golf Course and Wesburn Park to cater for peak parking demand
- Use of small construction teams and small plant and equipment for construction of trails
- Restriction of construction works to normal working hours
- Building trails to follow land contours avoiding the need for significant excavations
- Staged construction of the project over several years to enable adjustment of businesses and communities
- Micro-siting of trails to minimise vegetation loss and avoid mature trees
- Bridge design to reflect the natural setting. This would be achieved by using a variety of decking materials including timber, reinforced plastic mesh or steel mesh and would be less than one metre above the ground. The length of the bridges would also sufficiently span the encountered streams without needing footings within the waterways to avoid potential impacts.

After opportunities to avoid and minimise impact through design were exhausted, minimisation and rehabilitation measures were developed. These are described in the construction and operation impact assessment sections in Sections 11.8 and 11.9.

11.6 Existing conditions

11.6.1 Regional context

The project is located entirely within the municipality of the Yarra Ranges Shire. The Shire of Yarra Ranges has approximately 244,700 hectares of land, of which 68 per cent is Crown land comprising state government managed forests, reserves and national parks. Private landowners occupy 30 per cent of land and the Yarra Ranges Council manage the remaining two per cent of land.

The Shire of Yarra Ranges is recognised for its natural beauty and diverse habitats as well its environmentally significant factors that attract residents and tourists. Residents value the lifestyle of the Shire for its scenic bushland environment and mountainous landscape. The landscape contains significant areas of remnant native vegetation, much of which is of zoological or botanical significance. The Shire attracts over 2.2 million tourists each year.

Warburton Highway is the main major arterial road servicing the Warburton region from the west. The Maroondah Highway and Donna Buang Road are arterial roads that service the Warburton region from the north. Old Warburton Road provides an alternative link from Warburton township, past McAvoy Falls to Wesburn Park. Other arterial roads include Yarra Junction Noojee Road providing access from the south of Warburton.

The Lilydale-Warburton Rail Trail runs through the region and attracts walkers, cyclists and horse riders to the iconic 38-kilometre recreation trail, running alongside much of the Warburton Highway. Mapping of the regional context is included in **Technical Report D: Land Use and Planning**.

11.6.2 Land uses and typologies

Land use typologies were developed for the project area to assist in understanding potential impacts. Within each typology there are notable individual land uses and precincts, these are described in Table 11-2.

Table 11-2 Land use typologies throughout the study area

Typology	Context development of typology
Conservation	Areas of high policy protection reflecting a particular conservation or ecological significance. These spaces have varying degrees of public access and varying policy designations. Some conservation areas may be used for carefully managed conservation forestry purposes.
Community facilities and tourist attractions	This typology is characterised by land uses that generally provide public access for tourist attractions and recreation including public parkland, walking and cycling trails, and golf courses.
Residential	Established urban areas characterised by residential dwellings and local roads.
Commercial	Areas of land generally zoned for commercial purposes including cafes, restaurants and local businesses.
Services and utilities	Various established or planned service and utility activities.
Road	Established or planned road corridors.

To describe existing conditions, the study area was split up into geographic segments shown in Figure 11-1. Each segment is described in the following sections, with consideration of the land use typologies of the area.

11.6.2.1 Northern segment

The existing land use for the northern segment is discussed in Table 11-3 in the context of typologies identified in Section 11.6.2.

Table 11-3 Land use typologies and existing conditions – northern segment

Typology	Existing conditions
Conservation	The segment traverses forested land within the Yarra Ranges National Park and Woiwurrung State Forest. Land therefore is predominantly used for forested land that is conserved and protected for its natural assets. Annual timber harvesting is undertaken by VicForest within the vicinity of the project; however, the importance of these industries has declined in Warburton following the Victorian Government's decision to close native timber harvesting by 2030.
Community facilities and tourist attractions	The segment intersects the Warburton Golf Course that is within the Green Wedge Zone and is intended for the use of the land as a major tourist facility while ensuring it retains an open rural character and a non-urban landscape. The main trail head would be located at the south end of the Warburton Golf Course. The Mount Victoria Walking Track is located within the northern segment B and is proposed to be intersected by trails 5, 6 and 7. Pest, deer, duck and quail hunting is permitted in the Woiwurrung State Forest, through which Trail 1 and 3 of the northern segment traverses.
Residential	While there are no sensitive receptors such as residential, industrial or commercial areas located within the study area of the northern segment, there are some residential areas located south of the northern segment, towards the Warburton township as well as immediately to the east and west of the Warburton Golf Course. Residential areas are located to the west of Trail 9, approximately 100 m away, and to the south of Trail 8, approximately 100 m away. Trail 10 traverses private property (Warburton Golf Course).
Road	The segment partially follows alongside Donna Buang Road which is within the road zone. Towards Warburton township, the segment is located nearby several local roads, however, the segment does not cross these local roads.

11.6.2.2 South western segment

The existing land use for the south western segment is discussed in Table 11-4 in the context of typologies identified in Section 11.6.2.

Table 11-4 Land use typologies and existing conditions – south western segment

Typology	Existing conditions
Conservation	The segment traverses forested land within the Yarra State Forest. Land comprises existing tracks for walking, riding and driving throughout forested land.
Community facilities and tourist attractions	<p>Some existing vehicle access tracks and a walking track are located within the south western segment, including the Backstairs Walking Track.</p> <p>Existing mountain bike trails within the south western segment include trails 18 and 19 which are both existing hand-built trails. Some features of these trails would be re-built as part of the project.</p> <p>The Lilydale to Warburton Rail Trail exists over the decommissioned railway line route that runs alongside the Warburton Highway. The Rail Trail is intersected by the beginning of the south western segment where mountain bike traffic would flow from the northern segment, across the proposed span bridge over the Yarra River.</p> <p>The south western segment ends at Wesburn Park which is utilised for its multifunctional recreation facilities including sporting facilities, designated off-lead dog areas, mountain biking and walking trails.</p> <p>The Rail Trail and Wesburn Park are both within the Public Park and Recreation Zone (PPRZ) where land is currently set aside for recreational activities. It is anticipated that the use of land for public recreation at these locations would be maintained and is unlikely to change in the foreseeable future.</p> <p>Pest, deer, duck and quail hunting is permitted within areas of State Forest, through which a number of trails within the south western segment traverse.</p>
Residential	While there are no sensitive residential receptors located within the study area of the south western segment, there are some residential areas located to the north west of the segment, north east of the segment (towards the Warburton township), and to the west of the segment (nearby Wesburn Park). Residential areas are located to the north east of Trail 17 approximately 100 m away.
Commercial	Commercial areas within the Warburton township are located to the north east, along the Warburton Highway and includes cafes, restaurants and other local amenities.
Road	The south western segment is set between Warburton Highway which is located to the north, and Old Warburton Road which is located to the south.

11.6.2.3 South eastern segment

The existing land use for the south eastern segment is discussed in Table 11-5 in the context of typologies identified in Section 11.6.2.

Table 11-5 Land use typologies and existing conditions – south eastern segment




Typology	Existing conditions
Conservation	The segment comprises forested land include several existing vehicle tracks such as Mineshaft Hill Track, Justice Track, Cemetery Fireline and Cumming Spur Track. The land is zoned for public and rural conservation that protects the land for its natural assets.
Community facilities and tourist attractions	<p>Existing vehicle access tracks are located within the south eastern segment. The Cemetery Fireline Track is included, as well as other management vehicle tracks.</p> <p>Existing mountain bike trails within the south eastern segment include trails 26, 30, 31, 32, 33, 34 and 66 which are existing hand-built trails. Some features of these trails would be re-built as part of the project.</p> <p>Pest, deer, duck and quail hunting is permitted within areas of State Forest, through which a number of trails within the south western segment traverse.</p>
Residential	While there are no sensitive receptors such as residential, industrial or commercial areas located within the study area of the south eastern segment, there is residential land located nearby. North of the study area at Trail 42 immediately




Typology	Existing conditions
	north of Old Warburton Road, dwellings are located more than 100 m away. There are also dwellings located west of trails 55 and 26, approximately 100 m away.
Road	The south eastern segment crosses Old Warburton Road at which a long span bridge is proposed to cross the main road that connects Warburton to Wesburn towards the south west of Warburton township.

11.6.3 Landscape and visual environment and sensitive receptors

Landscape character types have been defined based on broadly homogenous environmental and cultural qualities and patterns in the landscape, such as topography, vegetation, hydrology, land use and settlement. The following landscape character types have been defined for this project and are summarised in Table 11-6. No camping grounds were identified within the project area.

Table 11-6 Landscape character type and photographs

Landscape character type	Description
Township	<p>Warburton is a small township within a narrow valley, with shops and restaurants clustered along the Warburton Highway. Key valued elements near the project include the swing bridge and surrounding precinct, the linear rail trail railway reserve and associated historical remnants and social facilities, and views to the forested hills.</p> 
Residential	<p>This includes predominantly single storey, low density, residential development. The key landscape values include Mount Donna Buang as a mountainous backdrop to many rural vistas in the area, the densely forested slopes of Mount Donna Buang forming a dominant visual feature in the area, the lack of visual intrusion on the forested slopes, and the management of land to preserve the forest cover of these hills.</p> 
Active recreation	<p>Active recreation occurs in a number of areas including Wesburn Park, the Warburton Golf Club, and the Warburton Recreation Reserve. This landscape is characterised by open grassed active recreation fields and associated amenity buildings. Trees within the golf course are mix of mature exotic evergreen and deciduous trees.</p> 

Landscape character type	Description
Rural valley	<p>Rural valley includes the rural residential areas on the valley floor on the north and south of the valley, close to the mountain foothills. These areas are characterised by private residences set back from the road with adjoining open paddocks typically with a variety of native and exotic vegetation. The open fields reveal expansive views to the surrounding mountain ranges.</p> 
Forested slopes	<p>This includes the forested slopes of Mount Donna Buang, Mount Little Joe and Mount Tugwell. This includes areas of the Yarra Ranges National Park, the Yarra State Forest, as well as rural residential properties on either side of Old Warburton Road. Roadways are limited to main public through-roads and gravel services roads. Walking trails and informal mountain bike trails are present, as well as other recreational features such as the Mount Donna Buang summit observation area. The forest areas primarily comprise of Mountain Ash forest with tree fern understory, gullies of cool temperate rainforest, and some sub-alpine vegetation in elevated areas.</p> 
Yarra river	<p>This includes the Yarra River and floodplain, riverfront amenities, bridges and vegetated banks. The Yarra River in this location is approximately 30 metres wide, meandering through the valley with sections of pooling and running water over volcanic rock. The banks have dense native vegetation in rural and residential areas, with recreational parkland within the Warburton township. Native riparian trees and shrubs form a vegetation buffer to the river, with deciduous parkland trees situated alongside the banks within the Warburton township.</p> 

Key views identified within the study area include the following:

- Views generally north-south across the valley between ridgelines, particularly views north towards Mount Donna Buang from settlement area within the valley where Mount Donna Buang forms the backdrop to the views from Warburton and residential areas
- Vistas through settlement areas within the Warburton township to hills, canopy trees and the surrounding landscape, which are a recognised value

- Distant ridgeline views from cleared or elevated recreation or community gathering areas in Warburton and surrounding, including from the Warburton to Lilydale Rail Trail, Wesburn Park, Warburton Recreation Reserve, and from the Warburton town centre
- Panoramic views of surrounds from the Mount Donna Buang summit observation tower.

Sensitive visual receptors were identified at eight locations, a description of the representative view is provided in Table 11-7. The location of the sensitive visual receptors are displayed in Figure 11-2.

Table 11-7 Landscape and visual sensitive receptors

Viewpoint	Location	Sensitive visual receptor
Viewpoint 1	Mount Donna Buang Summit	View representative of visitors to Mount Donna Buang Summit
Viewpoint 2	Lilydale to Warburton Rail Trail	View representative of walkers and cyclists using the Lilydale to Warburton Rail Trail
Viewpoint 3	Dammans Road Picnic Shelter	View representative of visitors to the public picnic shelter
Viewpoint 4	Warburton Highway	View representative of road users on the Warburton Highway and pedestrians using the bus stops and nearby amenities
Viewpoint 5	Old Warburton Road	View representative of road users on Warburton Road
Viewpoint 6	Mount Bride Road	View representative of road users on Mount Bride Road
Viewpoint 7	Surrey Road	View representative of surrounding residences and local road users
Viewpoint 8	Yarra River Walk	View representatives of pedestrians on the Yarra River Walk, and road users on Dammans Road

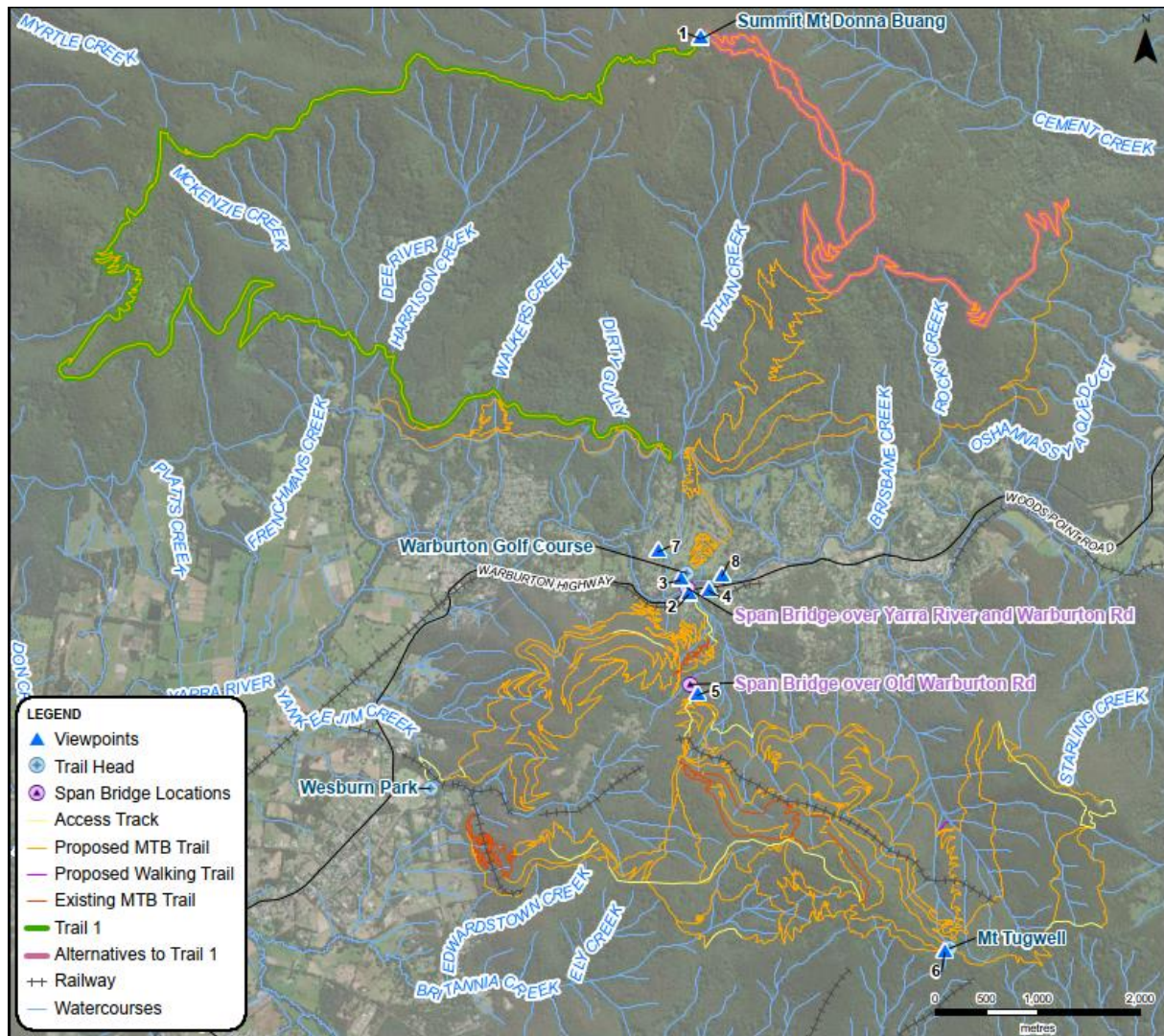


Figure 11-2 Viewpoint locations

11.6.4 Air quality conditions and sensitive receptors

Background air quality, climate and topography were reviewed to characterise the existing air quality conditions at the project site.

Overall, it was found that the air quality at the project area is expected to be good. Limited sources for air quality pollution or dust (such as large unsealed roads, or concentrated industrial land uses) were identified. Coupled with the combination of a temperate climate, uniform rainfall over the year and low to moderate winds, the air quality environment within the vicinity of the project overall is good.

Nevertheless, it is pertinent to understand what existing contributors to poor air quality may exist within the region and who they may affect.

An assessment of the sensitive receptors (i.e. those that may be impacted by poor air quality conditions) in the project area was undertaken. It was identified that the following residential properties and businesses may be exposed to air pollutants as a result of project activities:

- Six residential properties on Dammans Road immediately southwest of the proposed trail head car park
- Eight residential properties to the south of the Golf Course trail head on Warburton Highway
- Birchwood Manor Hotel and a residential property to the east on Martyr Road
- Alpine Retreat Hotel on Warburton Highway to the southeast
- Warburton Golf Club.

The existing air quality is expected to be typical of a rural environment where the main sources of air emissions are expected to be from:

- Domestic fuel burning
- Wind-driven dust from unsealed areas
- Disturbance of material due to farming activities
- Wheel-generated dust from vehicles moving along sealed or unsealed roads
- Occasional smoke from bushfires or planned burns
- Emissions from vehicles.

Particulate emissions (PM₁₀ and PM_{2.5}) were identified as the primary pollutants of concern for the project area as they have the greatest potential to impact air quality. An assessment of available data for PM₁₀ and PM_{2.5} indicates that particulate concentrations in the project area are typically lower than those measured at a suburban Melbourne location.

Additionally, a review of the National Pollution Inventory Database for 2017-2018 identified no industrial sources that report emissions to air within five kilometres of the project site. The nearest air emission sources identified were the Reid Bros Sawmill and Upper Yarra Sewage Treatment Plant located over six and 10 kilometres, respectively, to the west. Due to the distance of these sources, concentrations of air pollutants in the project area are not expected to be affected. Pollutant concentrations in the project area are expected to be lower than those measured at EPA Victoria stations and comply with ambient air quality standards.

11.6.5 Noise environment and sensitive receptors

Noise sensitive receptors in the vicinity of the project are exclusively residential and are largely concentrated in the vicinity of Warburton and the trail head at the Warburton Golf Course. Land to the north and south of Warburton is predominantly bushland. There are no significant commercial or industrial land uses in the vicinity of the project footprint. Descriptions of the nearest sensitive receptors to the project area are provided in Table 11-8.

Table 11-8 Noise sensitive receptors

Area	Description of sensitive receptors
Mountain bike trail network	
Trails north of Warburton	Residential premises are concentrated in the Warburton township and on both sides of the Warburton Golf Course. <ul style="list-style-type: none"> • Dwellings along Surrey Road and Sussex Street to the west of the golf course (dwellings located approximately 100 m from the trail network) • Dwellings along Dammans Road to the south of the golf course and along Martyr Road to the east of the golf course. Dwellings on Martyr Road are 25 m from the trail network.
Trails south of Warburton	No residential premises have been identified near the trail networks to the south of Warburton.
Trails near Wesburn	Residential premises concentrated in Wesburn. <ul style="list-style-type: none"> • Dwellings along Wylie Street and Old Warburton Road (Dwellings located approximately 100 m from the trail network)
Bridges	
Yarra River Bridge	Nearest residential premises: <ul style="list-style-type: none"> • North: within 50 m along Dammans Road (nearest identified at 16 Dammans Road, Warburton) • East: within 100 m along the Warburton Highway (nearest identified at 3315 Warburton Highway, Warburton) • South: within 200 m from the Warburton Highway (nearest identified at 3300 Warburton Highway, Warburton)
Old Warburton Road Bridge	Nearest residential premises: <ul style="list-style-type: none"> • North east: More than 450 m away along Scotchmans Creek Road (nearest identified at 70 Scotchmans Creek Road, Warburton)

Area	Description of sensitive receptors
	<ul style="list-style-type: none"> South west: More than 600 m away along Old Warburton Road (nearest identified at 380 Old Warburton Road, Warburton)
Trail heads	
Visitor's Hub and main trail head	Nearest residential premises: <ul style="list-style-type: none"> West: within 50 m along Dammans Road (nearest identified at 16 Dammans Road, Warburton) East: within 40 m / adjacent to the proposed car park area along Dammans Road and Martyr Road (nearest identified at 20 Dammans Road, Warburton) South: Within 90 m along Warburton Highway (nearest identified at 3315 Warburton Highway, Warburton)
Mount Donna Buang Trail Head	No identified noise sensitive buildings in the vicinity of the Mount Donna Buang trail head. The nearest residential receptors are located as follows: <ul style="list-style-type: none"> North: More than 14 km away, towards Narbethong (135 Maroondah Highway, Narbethong) South: more than 4 km away, at residences just north of the Warburton Gold Club (25 Sussex Street, Warburton) East: More than 5 km away (105 Hazelwood Road, East Warburton) West: more than 7 km away (1354 Don Road, Mount Toolebewong)
Mount Tugwell Trail Head	No identified noise sensitive buildings in the vicinity of the Mount Tugwell trail head. The nearest residential premises are located as follows: <ul style="list-style-type: none"> North: 2 km away (100 Old Warburton Road, Warburton) West: more than 3 km away (29 Forest Road, Wesburn) South: more than 5 km away (135 Blacksands Road, Three Bridges) East: more than 4 km away (40 Ada Street, Big Pats Creek)
Wesburn Park	Nearest residential premises: <ul style="list-style-type: none"> North: within 400 m, along Wylie St (nearest identified at 21 Wylie Street, Wesburn) East: within 150 m along Old Warburton Road (nearest identified at 670 Old Warburton Road, Wesburn) South: within 200 m along Old Warburton Road (nearest identified at 685 Old Warburton Road, Wesburn) West: within 400 m along Warburton Highway (nearest identified at 2827 Warburton Road, Wesburn)

Existing noise conditions were assessed by conducting noise measurements at three locations. The locations were:

- Mount Donna Buang, approximately 160 metres from the junction with Road 2 on the Mount Toolebewong side where there is little traffic and where sensitive receptors could include wildlife
- On the road outside 23 Sussex Street, Warburton where there is little traffic and where sensitive receptors include some of the nearest residences to future trails
- At the entrance to the Warburton Golf Club, Dammans Road, Warburton, where the nearest residences are exposed to traffic noise from Warburton Highway.

Key observations from the existing conditions noise monitoring included:

- Background noise levels throughout the project study area are typically low.
- Inspection of publicly available aerial imagery and observations made on-site show that there are no significant industrial sources of noise within the township of Warburton.
- The main source of noise in the township was observed to be Warburton Highway. However, the road has a single lane in each direction and speed is limited to 50 kilometres per hour in the township. As such, noise from the highway is dominant but not significant.

- Based on the observations made on-site, existing noise levels at residential properties that are more than 50 metres away from the highway are typical of a rural setting.
- Based on the measurements taken on Mount Donna Buang, it is considered that existing noise levels at residential properties outside of Warburton are likely to be typical of a rural setting.

11.7 Strategic impact assessment

The project is considered to be consistent with relevant policy and land uses and successfully responds to technical considerations and potential impacts on land, affecting:

- Crown land
- Road reserves and existing infrastructure alignments
- Parts of public conservation areas and reserves
- Private land.

Generally, the project supports the direction of the policy documents outlined in Table 11-9.

Table 11-9 Impact of the project on state and local planning policies

Policy document	Strategic impact considerations
Upper Yarra Valley and Dandenong Ranges Regional Strategy Plan	The project supports the ongoing implementation of the Upper Yarra Valley and Dandenong Ranges Regional Strategy Plan by promoting tourism and recreation in the Yarra Valley while also fostering positive social and economic outcomes.
Yarra Ranges National Park Management Plan	The project generally accords with the general management aims outlined within the document as relevant for the Conservation and Recreation and the Recreation Development Zones in which the project sits. It does this by providing for sustainable dispersed recreation facilities without significant impact on natural processes.
Protecting Victoria's Environment – Biodiversity 2037	The project supports the directions outlined for protecting biodiversity and encouraging access to the natural environment to enhance tourism and promote greater health and wellbeing.
Plan Melbourne	The project supports the vision and outcomes set out in Plan Melbourne by facilitating a project that aims to enhance Melbourne's liveability with the implementation of new recreational facilities while creating local and regional employment opportunities.
Clause 21.04 (Land Use)	The project supports the objectives of this clause by promoting Warburton township for tourist facilities while reinforcing links to mountain attractions including Mount Donna Buang through the proposed mountain bike trails. Through the assessments, and the proposed mitigation and management measures, the project also seeks to ensure balance is achieved between encouraging tourism and protecting the environment.
Clause 21.07 (Landscape – Objectives, Strategies and Implementation)	The project would generate tourism to areas of natural significance to the Yarra Valley and would allow recreational uses to occur on formalised trails within an established natural environment. The project area's viability as a mountain bike destination is closely tied to its landscape character and it is in the interest of the project to balance recreational activities with positive environmental outcomes.
Clause 21.09 (Environment – Objectives, Strategies and Implementation)	The project would respond to the Upper Yarra Valley's environmental sensitivities by enhancing its recreational value in a contained and managed area. Native vegetation removal would be required to create and maintain bike trails but would be limited to the smallest practical extent.
Clause 21.11 (Community Infrastructure – Objectives, Strategies and Implementation)	The project includes new community facilities including a new Visitor's Hub and trail heads to service mountain bike activities. These public facilities would be located to minimise environmental impacts and with consideration of bushfire management practices. On the whole, the project would result in a net increase to the region's community infrastructure.
Clause 22.05 (Vegetation Protection)	The project proposes to remove native vegetation to accommodate mountain bike trails and associated infrastructure. Native vegetation removal is viewed as being appropriate to facilitate a land use activity that supports leisure and

Policy document	Strategic impact considerations
	tourism outcomes for the region. Additionally, the project would limit activities during operation to defined mountain bike trails and supporting facilities to avoid the existing informal arrangement where interactions between mountain bikers and native vegetation is not monitored or controlled.
Clause 17.04-1S (Facilitating tourism)	The project would facilitate tourist development to support a competitive tourist destination by leveraging and responding to existing environmental assets.

The project is consistent with strategic directions in relation to land use and planning of the broader region and is not considered to require any change in planning policy. Further assessment against the strategic context, including the planning provisions of the Yarra Ranges Planning Scheme are included in the Planning Scheme Amendment documents.

11.8 Construction impact assessment

For land use and planning, landscape and visual, air quality, noise and bushfire risk, a range of issues associated with project construction were examined, however none were assessed to have significant impacts. Nevertheless, concerns around disturbance to existing land use and changes in land use resulting in changes in amenity are of interest to stakeholders and the community. Therefore, the assessment of these potential impacts is described in this chapter.

11.8.1 Temporary disturbance to existing land uses, amenity and infrastructure

During periods of construction, the land in each segment would be utilised in a manner inconsistent with the current established land use. The land occupancy is temporary, with construction anticipated to last for approximately 18 months, and may be staged. Impacts on sensitive receptors may occur during the construction phase due to temporary disturbance to existing land uses and amenity.

Whilst hunting is not permitted in national parks, the use of land for hunting is permitted within areas of state land and this land use occurs within parts of the project area. There may be hunting seasons specified by the Game Management Authority (depending on what is being hunted); however, pest animals can be hunted at any time. The use of land for hunting may be impacted by the temporary occupancy of land for construction of the project. Suitable maps and construction updates on the progress of the Warburton Mountain Bike Destination would be made available on Victorian government websites to provide various user groups information on the known areas of recreational use.

It is not anticipated that significant visual and landscape amenity impacts would occur during construction due to minimal removal of vegetation and the small-scale nature of construction activities.

During construction, activities such as site clearing, vehicle movements, erosion of soil stockpiles and freshly exposed areas could generate dust emissions. Due to the magnitude of works and proximity of sensitive receptors, construction of the Visitor's Hub has the greatest potential for dust impacts. However, the air emissions from construction of the Visitor's Hub are not considered significant and are unlikely to impact human health.

Air quality impacts due to exhaust emissions from trucks and mobile plant equipment would not be expected to impact receptors beyond 20 metres from the work zone or roadways that the trucks travel along.

Noise associated with trail construction activities may be audible in the vicinity of activity areas for up to a week as work crews move along the proposed trail network. During construction of bridges, trail heads and the Visitor's Hub, noise would be generated from machinery and plant, workers, additional traffic and the use of helicopters. These may be audible in the vicinity of activity areas; the duration of impact is likely to last between weeks to months. The proximity of sensitive receptors to noise-generating activities is discussed in Section 11.6.5. For details on how the amenity impacts have regard for the Environment Reference Standard under the *Environment Protection Act 2017*, particularly in relation to noise, refer to **Technical Report D: Land Use and Planning**, Appendix E.

Timber harvesting is undertaken annually by VicForest in areas that may be required for project construction. The CEMP requires consideration of current harvesting areas and construction activities would not occur in areas where timber harvesting is planned. In relation to bushfire risk, potential ignition sources related to construction are hot works associated with bridge construction, use of hydrocarbon fuels in vehicles and plant and workers smoking on-site. These risks would be managed

through measures in the CEMP, including limiting fuel stored on works sites, requiring that water sources be available and prohibiting smoking.

The project aligns with existing community infrastructure, including existing trails or roads where possible. The project has been suitably designed to ensure impacts on existing community infrastructure, or water supply conduits within the region are avoided. Given the nature of the proposed trails, the project is not expected to require any relocation of existing utilities or services, or other infrastructure.

Existing roads that intersect the project alignment would be minimally impacted, and similarly existing waterways would be crossed with new infrastructure such as bridges to minimise impacts to the waterway. In locations such as Wesburn Park and the Warburton Golf Course where more substantial works would be undertaken, minor realignment or upgrade of existing infrastructure such as utility services may be required, however this would be carefully planned and managed through the detailed design process and construction methods on-site.

11.8.2 Proposed mitigation measures

Impacts to land use and amenity due to disturbance from construction would be minimised through the implementation of the following mitigation measures:

- Off-site works would be undertaken where possible using existing disturbed areas, minimising on-site storage and structure erection, and utilising external depots for off-site pre-fabrication works, in order to minimise the intensity of construction impacts.
- Existing laydown areas are suitably located near the two proposed main bridges over the Yarra River and Old Warburton Road whereby no new laydown areas or associated vegetation clearing would be required.
- The visual impacts from construction equipment would be minimised by locating equipment and material out of view of potential sensitive receptors and using non-intrusive methods of construction that use small machinery.
- Noise would be managed and monitored in accordance with relevant EPA Victoria guidelines (such as publication 1834) and construction would only occur during normal working hours.
- Dust suppression measures would include restricting vehicle movements to within designated roads and the construction footprint, and covering loads when vehicles travel on public roads.

11.8.3 Residual impacts

Following implementation of mitigation measures, residual impacts on land use and amenity would not be significant.

Land occupancy for construction would be temporary and the intensity of construction activities would be minimised to an extent that significant residual impacts are not anticipated. Hunting may temporarily be impacted due to the potential disturbance to game (largely due to human presence).

Due to the magnitude and temporal nature of the construction activities, visual, air quality and noise-associated residual impacts are not significant. During construction, noise-generating activities would be audible to sensitive receptors, however, noise levels are not considered intrusive.

11.9 Operation impact assessment

For land use and planning, landscape and visual, air quality and noise, a range of issues associated with operation were examined, however none were assessed to have significant impacts. Nevertheless, the following issues are of most interest to stakeholders and the community and therefore the assessment of these potential impacts are described in this chapter:

- Change of land use resulting in an increase of visitors to the area
- Changes to land use resulting in changes to amenity.

11.9.1 Change of land use

The use of land for the project's operation is consistent with existing land uses within and nearby the study area. That is, the operation of the project would not prohibit the use of the land for any existing land use such as private and recreational land uses (such as bushwalking). If anything, the project would likely provide an improvement on existing recreational infrastructure. Currently, formal and informal mountain bike trails are already being used for mountain biking in the south western and south eastern segments within areas of state forest. The project design proposes trails that intersect

with approximately five private properties; however, the project would only traverse them sparingly with no impacts anticipated to the existing use of the land. Additional details on trails intersecting with private land are contained in **Technical Report D: Land Use and Planning**.

It is noted that whilst hunting is not permitted in national parks, the use of land for hunting is permitted within areas of state land and the land use occurs within parts of the project area. There may be hunting seasons specified by the Game Management Authority (depending on what is being hunted); however, pest animals can be hunted at any time.

The project constitutes a change to the use of land; however, the new land use and the operation of the project is not considered to impact on the use of land for hunting. Multiple uses of state land are common (walking or mountain bike trails and hunting, for example) and any single use cannot exclude another. Furthermore, the Victorian government has advised that there is no evidence of significant issues arising from coexistence of these uses as hunters generally avoid high use areas and game is not likely to be found in the presence of humans.

Informative signage within the project area for the project would be employed to notify various users of the presence of the trails. It is therefore considered that there are minimal impacts to the use of land for hunting, from the proposed change to the use of land for mountain biking.

Timber harvesting is annually undertaken by VicForest in areas where the trails may be constructed. The OEMP requires consideration of planned harvesting areas and trail users would be notified of areas where timber harvesting is planned.

Outside of the Yarra Ranges National Park land, the project represents an expansion of the existing formal and informal/illegal mountain bike trails within areas of state forest. This existing land use is supported by the introduction of a formalised and safer use of the area as well as better management of events and visitor access. By formalising the existing use within areas of state forest, the project would limit mountain biking to defined trails and supporting facilities, which would ensure the interaction between mountain bikers, other recreational uses and native vegetation can be monitored and controlled.

However, the change of land use would result in an increase in visitors to the area, which may have potential impacts to local amenity. These impacts are discussed in the following sections.

11.9.1.1 Change of land use resulting in an increase in visitors to the area

The project represents a continuation and expansion of existing land use of informal/illegal mountain bike trails within areas of state forests. By formalising the existing use within areas of state forest, the project would encourage mountain biking visitors to limit their activities to the defined trails and supporting facilities minimising impacts to the surrounding environment. The project also supports the development of new recreation and nature-based activities in areas of the Yarra Ranges National Park consistent with the aims and strategies for the park (as specified in Table 11-9). This change to the use of land for mountain bike trails would result in an increase in visitors to the area, which requires consideration of changes to safety or traffic. Traffic impacts are further discussed in **Chapter 13: Transport**.

Public safety associated with abandoned mine shafts is not considered to be a significant risk as no such hazardous sites are known in the immediate vicinity of the trail network and public land managers have measures in place to protect the community from these risks where land is publicly accessible.

Due to the seasonal nature of mountain biking, the project would have seasonal operation peaks. Shuttle buses are proposed to reduce traffic and pressures on parking associated with the project. Car parking occupancy is not anticipated to exceed capacity during peak periods, however, should parking be over capacity due to high demand, Mount Donna Buang car park or Wesburn Park would be used as an overflow car park to accommodate visitors. It is expected that the Mount Donna Buang car park would remain under-utilised during the warmer months of the year as this car park is typically used to service the adjacent ski field. Driving visitors would be directed to park at Mount Donna Buang or Wesburn Park and utilise the shuttle buses to reach other head trails.

When local and regional events are held at the Warburton Mountain Bike Destination it is anticipated that ample parking spaces would be available. Should state and national events be held, a specific event management plan would be required to manage traffic associated with these events.

Future land use development and growth of Warburton may impact the capacity of existing car parking within Warburton. In addition, as the project develops over the years, it may encourage further development within the township such as accommodation and food and drink related uses which may also impact car parking capacity.

By attracting additional visitors to the project area, bushfire risk would be expected to increase somewhat because additional people would be in the area if a bushfire started, increasing possible demand on emergency services. To mitigate this risk an Emergency Management Plan is being prepared in consultation with relevant fire authorities. The Emergency Management Plan would include procedures for monitoring of bushfire threat, closure of the network due to fire risk, evacuation in the event of a fire and shelter in place as a last resort. Subject to the adoption of the proposed mitigations, it is considered that the risk from bushfire associated with the project can be acceptably managed.

11.9.1.2 Changes to land use resulting in changes to amenity

Changes to land use would result in amenity impacts, particularly in relation to visual, air quality and noise amenity. The key landscape values and the existing landscape character of the project area would be retained. However, permanent changes to 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 (i.e. vegetation removal).

The sensitive receptors that would potentially be impacted the most from a landscape and visual perspective would be users of the Lilydale to Warburton Rail Trail (Viewpoint 2), the Dammans Road Picnic Shelter (Viewpoint 3) and the Warburton Highway (Viewpoint 4) (refer to Table 11-7 and Figure 11-2). This is typically due to the development of the proposed bridge over the Yarra River and Warburton Highway that would be visible from these viewpoint locations. However, the bridge and trail heads are in keeping with the features typically seen in the vicinity of natural areas associated with tourism activities and would not represent unexpected visual intrusion. The proposed trails are not considered to be a source of large visual impact due to the small scale of these elements and their integrated design into the existing environment. The Visitor's Hub car park would be partially visible from the Yarra River Walk (Viewpoint 8) but would be visually screened through the retention and enhancement of buffer planting.

Vehicle exhaust and non-exhaust emissions such as particulate matter, nitrogen dioxide, sulphur dioxide and polycyclic aromatic hydrocarbons are expected to be a minor contributor to the environment. Air emissions due to increased traffic during operation 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, wheel-generated dust from mountain bikes using the trails are not expected to cause dust emissions discernible at sensitive receptors. Where impacts may occur on biodiversity such as native flora and fauna, these impacts are discussed in **Chapter 8: Biodiversity and habitats**.

For the majority of residences located in proximity to the trails, noise due to mountain bikes would be occasionally audible. Descent trails located close to residences (i.e. 25 metres away) would be low speed sections. Features and jump sections that would have a higher level of associated noise would not be located within 200 metres of the nearest residence. The magnitude of noise, when compared to the existing background noise level indicates that the noise level would not be considered intrusive. The exception to this is at properties on Martyr Road, which are approximately 25 metres from the nearest trail. At this location, noise due to bike pass-bys would be clearly audible, however, this would only occur for short periods of time during daylight hours.

It is not expected that local events would have a significant noise footprint. Small-scale local events would largely attract participants with only a small number of spectators and assistants. Larger events, including regional, state and national events have the potential to involve temporary public address systems and music as part of the event. For details on how the amenity impacts have regard for the Environment Reference Standard under the *Environment Protection Act 2017*, particularly in relation to noise, refer to **Technical Report D: Land Use and Planning**, Appendix E.

11.9.2 Proposed mitigation measures

Overall, impacts to land use, air quality and noise are expected to be short-term, intermittent and minimal with the implementation of mitigation measures.

Impacts from a change in land use and the associated increase in visitors or impacts to amenity would be mitigated by adoption of a number of measures as follows:

- Consultation with the affected landowners and stakeholders would be undertaken in accordance with the OEMP. Consultation would ensure appropriate outcomes are achieved throughout the life of the project, and relevant management plans would continue to minimise impacts and manage the project throughout its operation.

- Minor surfacing of roads, upgrades to pedestrian paths and cyclist routes would enhance network efficiency and safety to manage increased vehicles on local roads.
- Development of an operational parking management plan would manage parking whilst maintaining parking availability for residents and visitors.
- An Emergency Management Plan would be prepared and approved before use of the land for the project commences to ensure that risks to life are reduced and managed appropriately.

Amenity impacts from changes to the landscape and changes to noise would be mitigated through the implementation of the following measures:

- During occasional planned events and peak visitor times, crowds would be managed so that noise is generated away from sensitive receptors and so that staff and patrons are aware of their potential noise impact
- Subject to consultation with immediate landowners, noise mitigation in the form of noise barriers would be applied to the section of trails through the golf course, adjacent to properties on Martyr Road to reduce noise to the nearest dwellings
- Changes to views of significant landscapes would be mitigated through design, with tree removal being limited where possible
- New planting would soften views to new structures
- Development of site plans for structural elements to ensure that the landscape response is fully considered prior to operation commencing
- Selection of colour palettes, materials and lighting that sympathetically respond to the visual landscape.

11.9.3 Residual impacts

Following implementation of mitigation measures, residual impacts on land use, landscape and visual, air quality and noise during operation would not be significant. Residual impacts include:

- The land would be used for leisure and recreational purposes which are consistent with established land uses or strategic directions. The existing road network and parking capacity is sufficient to manage the anticipated increase in demand from visitors to the project. In addition, it is anticipated that potential upgrades to roads, pedestrian paths and cyclist routes would enhance network efficiency and safety for visitors.
- The key landscape values and existing landscape character would be retained during operation. Changes to visual amenity would be permanent but localised, residual impacts would not be significant. Vehicle emissions and dust-generating activities are short in duration and would not cause discernible changes to air quality at sensitive receptors. Impacts from noise would be audible and intrusive at properties on Martyr Road. A noise barrier has been recommended in this location; however, further design work and consultation with the immediate landowners would be required to define whether this approach is reasonable or feasible.

11.10 Assessment of alternative to Trail 1

Trail 1 and the alternative to Trail 1 are shown in Figure 11-1. The assessment and comparison of Trail 1 and the alternative to Trail 1 is based on the assessment described in **Technical Report D: Land Use and Planning**.

The comparison is based on the residual impact of these options assuming effective implementation of the proposed mitigation and contingency measures described in the construction and operation impact assessment sections.

No new impacts have been identified in relation to the alternative to Trail 1.

It is noted that due to the existing conditions and the proposed land use changes, the impacts do not differ substantially and the results of selecting Trail 1 or the alternative would be relatively similar.

11.11 Summary of mitigation and contingency measures

Table 11-10 summarises the mitigation measures developed to avoid and minimise the land use and planning, landscape and visual, air quality and noise impacts within the project area which are

described in the construction and operation impact assessment sections above. Monitoring and contingency measures form part of the mitigation measures described below.

Table 11-10 Mitigation and contingency measures

Mitigation measure number	Stage	Mitigation measure
Land use		
LP01	Construction	Minimise amenity impacts through the CEMP and consultation with affected landowners and stakeholders.
LP02	Operation	Minimise amenity impacts through the OEMP and consultation with affected landowners and stakeholders.
Air quality		
AM01	Construction	Dust suppression would be used at construction areas as required using water sprays, water carts or other devices on unpaved work areas, spoil and aggregate stockpiles during the loading and unloading of dust generating materials.
AM02	Construction	Restricted vehicle movements. After arrival at the project site, vehicles, plant and equipment would remain within the construction footprint and on designated roads and tracks.
AM03	Construction	Construction vehicles with potential for loss of loads (such as dust or litter) would be covered when using public roads.
AM04	Construction	Weather conditions would be monitored for extreme heat and/or wind events using systems such as the Bureau of Meteorology forecasts and works would be modified if conditions are likely to result in air quality impacts at sensitive receptors.
AM05	Construction	Vehicles and equipment would be maintained as per manufacturer's specifications to ensure minimal exhaust emissions.
AM06	Construction	Land clearance would be minimised during construction to reduce the likelihood of wind-blown dust. Rehabilitate as soon as practicable.
AM07	Operation	A traffic management plan would be developed for major mountain biking events which considers the reduction of exhaust emissions related to queuing and congestion.
AM08	Construction	For trails under active construction, undertake air quality monitoring on a daily basis in accordance with the CEMP by visual observation for dust and emission plumes on-site associated with construction works and vehicles.
Visual		
LM01	Design	<p>Mountain bike trail design</p> <ul style="list-style-type: none"> Trails would be designed to avoid large tree removal, where trail interventions require more space (for example switchbacks) these should be sited within existing clearings where possible. Trail alignment would make use of natural landscape and minimise substantial earthworks that would cause landscape and visual impacts. Materials selection, including rocks and timber, for the proposed trails would respond to the local environment and be locally sourced where possible. Supplementary planting (where required) would use indigenous species appropriate to the setting, in consultation with an ecologist.
LM02	Design	<p>Visitor's Hub design</p> <ul style="list-style-type: none"> The design of Visitor's Hub and associated facilities would respond sensitively to its unique environmental setting (including materiality, lighting and colour). The design would retain views towards Mt. Donna Buang range and canopy vegetation within the golf course, when viewed from Dammans Road (proposed built form should not obstruct views). Minimise visual clutter to the entrance to the Warburton Golf Club, and utilise planting to soften any potential new built form. Minimise tree removal; any new landscape planting would be appropriate to the environmental and golf course setting and reflect the existing species palette within the surrounding context.

Mitigation measure number	Stage	Mitigation measure
		<ul style="list-style-type: none"> Permanent lighting would be in accordance with AS 4282-1997 Control of obtrusive effects of outdoor lighting to avoid light spill into adjacent residential properties and the Yarra River corridor. Retain and enhance visual screening, such as buffer planting, to existing and proposed car parking area when viewed from Dammans Road / the Yarra River Walk.
LM03	Design	<p>Bridge design</p> <ul style="list-style-type: none"> The design of bridges would respond sensitively to their unique environmental setting, including the materiality, lighting and colours (giving consideration to the Yarra River, Warburton to Lilydale Rail Trail and context with the other existing bridges) and function within existing movement networks. All bridge design and construction would be undertaken in accordance with relevant government and land managers. The bridge design would minimise the requirement for additional road signage, particularly overhead signage on the bridge itself. Lighting would be minimised and if required permanent lighting would be in accordance with AS 4282-1997 Control of obtrusive effects of outdoor lighting to avoid light spill into adjacent residential properties and the surrounding bush environment. <p>Warburton Highway / Yarra River Bridge:</p> <ul style="list-style-type: none"> Minimise disturbance to the Yarra River. All replacement planting would use indigenous species and be selected in consultation with an ecologist. Incorporate new planting where appropriate to assist with visual mitigation of the bridge within its setting. The bridge form and structure would be simple and visually transparent to allow the natural surroundings to take visual prominence; avoid obstructing views across the Yarra River from sensitive visual receptor locations. The bridge design would not result in the requirement for roadside barriers or similar infrastructure. <p>Old Warburton Road Bridge</p> <ul style="list-style-type: none"> Minimise tree removal; replacement planting would use indigenous species, to be selected in consultation with an ecologist. The bridge would be sited well within the existing landform with an aim to minimise changes to the natural topography. Allow the natural features of the site (the forest setting) to take visual precedence over the bridge design; the bridge would be simple and visually transparent, with minimal visual clutter.
LM04	Design	<p>Trail head design</p> <ul style="list-style-type: none"> Minimise tree removal and use an indigenous landscape planting palette only of local provenance, in consultation with ecologist. Proposed materiality and colour palette would be responsive to the sensitive landscape setting, and lighting would be minimised. <p>Mount Donna Buang Trail Head</p> <ul style="list-style-type: none"> Ensure the site design minimises earthworks to retain the natural topographic characteristics of the summit location.
LM05	Construction	<p>Construction phase</p> <ul style="list-style-type: none"> The approach to trail construction would be one that minimises the requirement for storage areas and new clearings within the National Park and Yarra State Forest not associated with the final trails themselves. The focus should be on non-intrusive methods of construction, use of small machinery that can utilise the mountain bike trails under construction, and material transfer via helicopter or on foot.

Mitigation measure number	Stage	Mitigation measure
		<ul style="list-style-type: none"> Construction equipment, stored materials and other visible elements would be located away from views from sensitive visual receptors. Should such equipment or stored materials be located in visually prominent locations for any reasonable period of time, screening measures such as hoarding or temporary plantings, and practices would be incorporated to ensure sites are kept tidy.
Noise		
NM01	Construction	<p>Managing noise and vibration from construction activities</p> <p>Construction noise would be managed in accordance with EPA Publication 1834, giving particular regard to noise control at the source (Section 4.3.3).</p> <p>This includes the development of a plan to manage noise during construction in consultation with the relevant agencies and stakeholders.</p> <p>The plan would include the following general good practice techniques:</p> <ul style="list-style-type: none"> Undertake preparatory work off-site where there is low potential for impacting people (e.g. formwork, cutting or prefabrication of materials off-site prior to transporting to the construction-site) Connect to the electricity grid as early as possible to avoid the use of diesel generators Restrict areas where mobile plant can operate so that it is away from people who could be affected by noise Locate site vehicle access and waiting areas away from people who could be affected by noise Plan vehicle movements to avoid manoeuvres and idling at location nearest to nearby people Minimise the number of noise-emitting equipment in use at once Use quieter equipment or methods. This may require considering: <ul style="list-style-type: none"> buying or leasing quieter equipment avoiding metal-to-metal and metal-to-stone contact installing mufflers reducing throttle and turning off equipment when not in use placing things down rather than throwing educating drivers to use driving practices that minimise noise. Use low-noise saw blades Use electrical equipment rather than equipment driven by a diesel generator Use low-noise emitting generators Use effective alternatives to 'beeper' alarms (e.g. broadband alarms, proximity sensors) Avoid using reversing alarms by designing site layout to avoid reversing (e.g. drive-through for parking and deliveries) Maintain equipment by: <ul style="list-style-type: none"> regularly inspecting and maintaining equipment to ensure good working order checking machines with enclosures, including doors and door seals and that the door closes properly against seals maintaining air lines on pneumatic equipment so they do not leak. Maintain vehicles by: <ul style="list-style-type: none"> considering good working conditions of mufflers securing loose parts that may rattle. Limit noise caused by people on-site. This may include procedures to: <ul style="list-style-type: none"> avoid yelling and shouting on-site (note: if people on-site need to shout to hear each other over the site ambient noise, it is possible the noise level may be putting their hearing at risk)

Mitigation measure number	Stage	Mitigation measure
		<ul style="list-style-type: none"> - minimising the use and volume of any electrical amplified sound-reproducing equipment, for example radios, stereos, televisions or public address systems. • Plan transport and haulage routes to minimise the number of trucks/vehicles. Where there are large numbers of truck movements, consider truck route and truck waiting protocols (e.g. engines on/off and restart requirements) • Implement substitute methods taking into consideration: <ul style="list-style-type: none"> - alternatives to rock-breaking work methods, such as hydraulic splitters for rock and concrete, hydraulic jaw crushers, chemical rock and concrete splitting, and controlled blasting such as penetrating cone fractures. The suitability of alternative methods should be considered on a case by case basis, including what potential risks they involve. - alternatives to diesel and petrol engines and pneumatic units, such as hydraulic or electrical generator located away from nearby people. • In terms of vibration, any works that are required to be undertaken within the safe working distances should be assessed further. • Include a review program for verification that the described good practice measures are in place and adhered to, and managed in accordance with EPA Publication 1834.
NM02	Construction	<p>Baseline noise monitoring</p> <p>Noise monitoring would be undertaken prior to construction if works are planned occur outside of normal working hours.</p> <p>The purpose of the monitoring would be to confirm the applicable noise criteria for evening and night-time works. Noise monitoring would be undertaken at the nearest noise sensitive residential properties to any out-of-hours works.</p> <p>A response plan would be developed to manage potential impacts if the nominated criteria are exceeded, including:</p> <ul style="list-style-type: none"> • Actions taken to rectify the exceedance • Actions to minimise risk of reoccurrence • Name of the person(s) responsible for undertaking the required actions • The duration of the monitoring would be determined by a suitably qualified acoustic consultant.
NM03	Construction	<p>Helicopter noise</p> <p>Helicopters may be required for the construction of long bridge spans at the Yarra River and Old Warburton Road bridges and have the potential to cause adverse noise impact to the local community.</p> <p>The following mitigation measures have been developed with reference to Section 4.3.2 of EPA 1834 and Section 16 of EPA Publication 1254.2:</p> <p><u>Community consultation</u></p> <ul style="list-style-type: none"> • Residents and community stakeholders that may be impacted would be informed at least 24 hours prior to the event of helicopter operations being conducted to support bridge construction works. • Works notification may include letter drops, specific notifications and individual briefings. • All noise complaints would be investigated and monitoring undertaken where necessary. <p><u>Hours of operation:</u></p> <ul style="list-style-type: none"> • Helicopters would only be used during normal working hours as defined in EPA Publication 1834 (Monday to Friday 7am to 6pm, Saturday 7am to 1pm).
NM04	Operation	<p>Operational noise – Bike washes</p>

Mitigation measure number	Stage	Mitigation measure
		<p>The main trail head / Visitor's Hub bike wash stations are located at least 100 metres away from the nearest residents.</p> <p>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 would be given consideration at the detailed design stage.</p> <p>The bike wash station at the Wesburn Park trail head would be located at least 50 metres away from the nearest residences to comply with EPA publication 1826 <i>Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues</i>.</p>
NM05	Operation	<p>Operational noise – Noise barrier to Martyr Road</p> <p>Noise due to bike pass-bys could be clearly audible at properties on Martyr Road which are approximately 25 metres from the nearest trail.</p> <p>Therefore, noise mitigation, in the form of noise barriers to this section of trails would be installed, subject to consultation with the immediate landowners.</p> <p>Noise barriers would be built from a non-porous material with no gaps, including at the base and a surface density of at least 15 kg/m² at its thinnest point.</p> <p>Indicative materials include 17 mm plywood, 25 mm timber, concrete, glass or 1 mm steel.</p> <p>The barrier should be at least 1.8 m higher than the trail surface and be located as near to the trail as possible.</p> <p>The exact extent and location of the barrier should be defined in the detailed design stage.</p>
NM06	Operation	<p>Events noise</p> <p>Larger events, including regional, state and national competitions have the potential to involve public address systems and music as part of the event.</p> <p>Larger events, including regional, state and national competitions that include public address systems and music as part of the event would be assessed and approved in accordance with the Environment Protection Regulations 2021.</p> <p>Participant and staff briefings for large events would 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.</p> <p>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.</p>

11.12 Conclusion

The land use and planning assessment has shown that the construction and operation phases of the project could be managed such that the objective of minimising potential adverse social, economic, amenity and land use effects at local and regional scales can be achieved.

To avoid and minimise impacts on land use and amenity, there would be minimisation of trails on private property and near residences, additional parking, small construction teams and equipment, restriction of construction to normal working hours, staged construction, minimised vegetation loss and sympathetic design.

The assessment considered potential impacts to land use, landscape and visual, air quality and noise during both construction and operation of the project including on existing land uses and sensitive receptors, finding that there are not anticipated to be significant impacts due to the project.

Following the implementation of measures described in Section 11.11, the following residual impacts have been identified:

- During construction:
 - Land occupancy for construction would be temporary and the intensity of construction activities would be minimised to an extent that significant residual impacts are not anticipated. Hunting may temporarily be impacted due to the potential disturbance to game (largely due to human presence), however would be managed by ensuring users are informed through the publication of suitable maps to be made available on the Victorian government websites.
 - Due to the limited and temporary nature of the construction activities, visual, air quality and noise associated residual impacts are not significant. During construction, noise-generating activities would be audible to sensitive receptors, however, noise levels are not considered intrusive.
- During operation:
 - The land would be used for leisure and recreational purposes which are consistent with established land uses or strategic directions. As such, no significant impacts to land use are anticipated. In addition, the project does not prohibit the use of the land for bushwalking. Both the road network and parking have the capacity to absorb visitors to the area. It is anticipated that potential upgrades to roads, pedestrian paths and cyclist routes would enhance network efficiency and safety for visitors.
 - The key landscape values and existing landscape character would be retained during operation. Changes to visual amenity would be permanent but localised, residual impacts would not be significant due to the minor nature of the proposed infrastructure. Vehicle emissions and dust-generating activities are short in duration and would not cause discernible changes to air quality at sensitive receptors. Impacts from noise would be audible and potentially intrusive at properties on Martyr Road. A noise barrier has been recommended in this location; however, further design work and consultation with immediate landowners would be required to define whether this approach is reasonable or feasible.

All other potential impacts would not contribute to a significant change to existing conditions and are able to be managed through mitigation measures. No significant residual impacts are anticipated for these other impacts.

In response to the EES evaluation objective described at the beginning of this chapter, impacts of the project on land use and planning have been assessed, and mitigation measures have been identified to avoid and minimise adverse impacts.