

RMCG

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Wallan to Heathcote Rail Trail

Feasibility report – Volume I

Mitchell Shire Council

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Executive Summary

This report explores the feasibility of a 78 km rail trail joining the towns of Heathcote Junction (and nearby Wandong and Wallan) north to Kilmore, Pyalong, Tooborac and Heathcote. The report was commissioned by Regional Development Victoria, Mitchell Shire Council and the City of Greater Bendigo to help local and state governments decide whether to progress with the planning, funding and development of the rail trail.

The feasibility of a rail trail hinges on many different factors. The main findings from this study are as follows:

1. The trail is estimated to cost \$17.8 million to construct, including the gravel path as well as highway underpasses, creek bridges and ancillary items. This estimate excludes land acquisition, cultural heritage management planning and ongoing maintenance and is therefore an underestimate of the full cost.
2. The economic benefits from tourism expenditure and health benefits are estimated to be \$23.1 million, indicating a benefit: cost ratio of 1.3.
3. Usage of the nearby Great Victorian Rail Trail appears to be much higher where the trail is close (<5km) to a town than where it passes through remote stretches of countryside. To maximise the return on its investment, Mitchell Shire Council should investigate trail near population centres before constructing the more remote parts of the trail.
4. Private individuals own 45% of the railway formation length; the initial reaction of most private landowners when interviewed early in 2017 was concern or opposition to the trail being constructed on the old alignment through their land.
5. Access to the 55% of the railway formation that is publicly owned is favourable.
6. Support from the wider community is very strong.
7. From an engineering perspective, the trail would be technically straightforward to construct along the old railway formation.
8. If the trail were constructed along the old railway formation, it would cause little harm to any local ecology or Aboriginal cultural heritage sites.
9. If Council chooses to proceed with implementation, further detailed studies are recommended, along with engagement of dedicated officers to progress land management and project management aspects of the project.
10. A review of all highway crossings is recommended, along with reconsideration of the route between the commercial part of Pyalong and Percivals Creek railway bridge.

Overall, this study has found that the Wallan to Heathcote Rail Trail is feasible when compared to other recent local rail trail developments.

1 Introduction

1.1 BACKGROUND

In the late 19th century, a worldwide spate of rail development saw many railway lines built in Australia, including in Victoria. Many of the lines built in central Victoria are now disused, having been closed and dismantled early in the second half of the 20th century. One of these lines was the Heathcote line, built in the 1880s to convey trains from a new junction on the busy Melbourne-Seymour-Sydney line (located on top of the Great Dividing Range, now known as Heathcote Junction), through to Bendigo. The line operated from 1888 to 1968.

In the past decade, many disused railway lines have been repurposed as trails for cyclists and walkers - tourists and locals alike. The O'Keefe Trail between Bendigo and Heathcote, the Great Victorian Rail Trail linking Tallarook, Yea, Alexandra and Mansfield, and the Waranga Trail linking Murchison and Rushworth are examples of nearby recently established rail trails. The graded rail formations, embankments and cuttings, forged by our early settlers, provide a solid base on which to create an ideal cycling and walking environment free from cars and trucks, with gentle slopes and gradients.

Sponsored by Regional Development Victoria, Mitchell Shire Council and City of Greater Bendigo, this report explores the feasibility of a 78 km long rail trail joining the towns of Heathcote Junction (and nearby Wandong and Wallan) north to Kilmore, Pyalong, Tooborac and Heathcote. The trail is estimated to cost \$17.8 million to build excluding land acquisition and cultural heritage management, and the economic benefits are estimated to be \$23.1 million.

The study explores the

- engineering feasibility;
- landholder views;
- environmental impact;
- cultural impact;
- economic consequences; and
- community feeling towards a rail trail.

This is a summary of those elements of the report. Further details on each of these elements are contained in VOLUME II.

1.2 RAIL TRAILS

Rail trails are shared-use paths along former railway corridors. They can be used for walking, cycling and horse riding. There are now rail trails around Victoria and Australia. Rail trails link big and small country towns. Features of rail trails include:

- Most have a gravel or dirt surface.
- They cut through hills, under roads, over embankments and across gullies and creeks and form linear conservation corridors.
- They often link to and from wineries and other attractions such as B&B's and other places to stay.

- Heritage remnants of former railway cuttings and bridges often remain in place along the route for people to see.

1.3 STRATEGIC MERIT

The Wallan to Heathcote Rail Trail is not a new idea, nor one without strategic merit. There are various policy and planning references in support of the trail, and these are summarised below.

The Wallan to Heathcote rail trail was identified as a trail development opportunity in the *Hume Region Significant Track and Trails Strategy 2014-2023*. This strategy (refer extract shown in Figure 1-1) was adopted by all Hume Region local government authorities and Regional Development Victoria. Public support for the trail was identified during consultation in workshops, surveys and submissions. This development would extend the O'Keefe Rail Trail and has the potential to also link to the Great Victorian Rail Trail.

Mitchell Shire's Economic Development Strategy 2016 recognises the benefits of rail trails and includes a specific strategy '*Deliver infrastructure such as the Wallan to Heathcote Rail Trail*'

The Wallan to Heathcote Rail Trail also aligns with a goal of the Council Plan 2015/16 under *Healthy and Vibrant Communities* to enhance the off-road pathway connections and trails between towns. In the new Council Plan 2017-2021, it is stipulated that the Council will:

- Facilitate and advocate for investment in strategic infrastructure that supports the economy and liveability of Mitchell Shire;
- advocate and work with providers to support the establishment of new tourist attractions in the shire, and;
- review and progress Wallan to Heathcote Rail Trail feasibility study results.

In the Shire of Mitchell's - *Mitchell Open Space Strategy 2013*, the rail trail is part of the goal to deliver a Shire-wide network of off-road trails.

The Kilmore Structure Plan, adopted by Mitchell Shire Council in August 2016, identifies a Shared Path Network through Kilmore in accordance with the alignment that has been examined, as well as other routes that could be alternatives for the Rail Trail. Figure 17 of the structure plan (refer Figure 1-2 in this report) shows the 'Shared Path Network' through the town and the proposed rail trail approaching from the south and northwest.

The Wallan Structure Plan also identifies future off road shared paths that correspond to the route adopted for the Wallan to Heathcote Rail Trail.

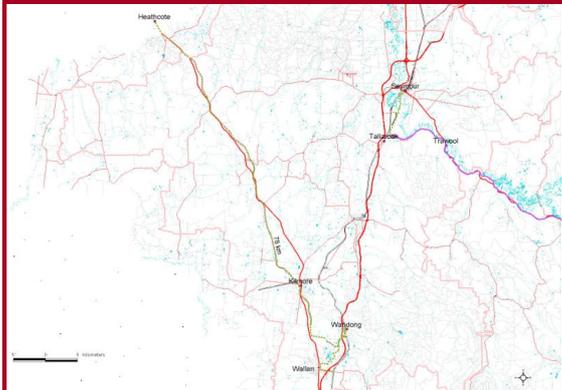
The section of the trail located in the City of Greater Bendigo aligns with their strategy – *Greater Bendigo Integrated Transport and Land Use Strategy*, and is an obvious extension of the now complete O'Keefe Rail Trail between Bendigo and Heathcote.

Wandong to Heathcote Rail Trail

Distance: 78km

Surface: Tertiary quartz gravel

User Groups: Walkers, Horse riders and Cyclists



Location:

Wandong and Wallan (Mitchell Shire) and Heathcote (City of Greater Bendigo).

Key Features and Attractions:

Attractive small towns, wineries, boutique breweries, variety of natural environments, Lake Eppalock, goldfields history, railway trestle bridges.

Opportunities:

Would ultimately provide connections to O'Keefe Rail Trail, Goldfields Track, Bendigo Bushland Trail, Bendigo Creek Trail, Great Victorian Rail Trail, proposed Rushworth-Murchison Rail Trail and Craigieburn Bypass Trail.

Challenges:

Land tenure— rail reserve from Heathcote Junction to Kilmore has sections under VicTrack plus some privately owned. The Kilmore to Heathcote section has been mostly sold, with crown reserves in place. Road reserves possible yet with potential vegetation clearance issues. May be private land barriers.

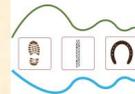
Estimated Cost to Construct:

\$9.4M*

Score: 64%

Support by Key Stakeholders:

Supported by Mitchell Shire (#2 priority), Mitchell BUG, BEAM Environmental Group, Wandong Heathcote Junction Community Group, Pyalong Restoration Group, Friends of the Bendigo-Kilmore Rail Trail and City of Greater Bendigo.



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Appealing to Trail Users:

This trail will have wide appeal as it has potential to connect a number of regionally important trails thereby offering a great range of trip lengths and experiences. Features include a number of attractive small goldfields towns with short connection trail distances interesting histories and architecture, wine districts of Bendigo and Heathcote, attractive and varied natural environments with wildlife viewing opportunities, historic railway attractions such as trestle bridges and replica platforms. Transport connections available at both end points including passenger rail and freeways connected to Melbourne. Will appeal to walkers, cyclists and horse riders.

Strengthens Tourism Potential of a Region and Creates Opportunities for Economic Development:

This trail will attract high usage from both Bendigo and Melbourne into the region via improved access to a large suite of attractions and experiences. Increased visitation to townships along the trail and demand for services in these towns is likely to have a very positive economic impact on these towns and the broader region. As usage develops, opportunities for new tourist ventures will arise and viability of existing enterprises will be strengthened.

Protects and Enhances the Natural Environment and / or Cultural Heritage of a Region:

Sections of the trail traversing State Forest and other Crown land will follow an alignment designed to minimise impact on environmental and cultural values and will be guided by conditions set out in the planning permit and cultural heritage management plan (if applicable). Sections running through farmland offer opportunities for revegetation and enhancement of the natural environment. Educational / interpretive opportunities are also likely to increase trail user's appreciation and respect for these values.

Supported through Planning:

Feasibility not yet undertaken so not incorporated into planning. Potential importance of this trail is identified in the Loddon Mallee Regionally Significant Trails Strategy (2009).

Designed According to Industry Standards and Best Practice Methods:

Completion of the trail between Axedale and Heathcote is presently underway at a cost of \$3.22M. This section is being constructed according to industry standards and best practice methods; which would also apply to this future connecting trail.

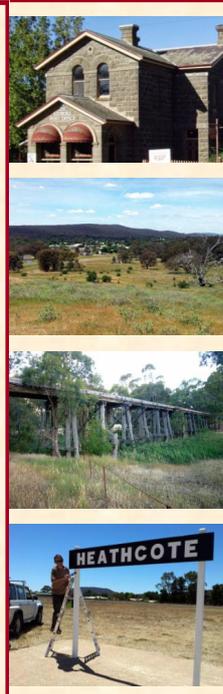
Connected to Communities, Existing Infrastructure, Transport and Other Tracks / Trails:

The complete trail (Bendigo-Wallan/Wandong) would become the only Victorian long distance rail trail to have practical public transport connections at both trail end points. This would include passenger rail services, buses, freeway connections to Melbourne, other provincial cities and Tullamarine Airport. The communities of Heathcote, Kilmore, Wallan and Wandong as well as the smaller settlements of Pyalong and Tooborac already have good tourist infrastructure with a variety of accommodation options, cafes, restaurants and wineries. The trail will provide a physical trail connection between these small towns and the larger population centre of Bendigo as well as an easy transport connection to Melbourne at both ends.

Connections to existing trails will be provided including: Goldfields Track at Bendigo, Great Victorian Rail Trail at Tallarook, Bendigo Bushland Trail, Rushworth-Murchison Rail Trail via off road connection from Heathcote, Craigieburn Bypass Trail and Melbourne trails network via a connecting link to Craigieburn plus other local and municipal trails.

Images courtesy of Friends of the Bendigo Kilmore Rail Trail

*Cost estimate based on 78 km of unscaled trail at \$80/metre, plus 50% mark-up for planning, management, engineering and infrastructure.



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Figure 1-1 Extract from Hume Region Significant Tracks and Trails Strategy 2013-22 (Appendix)

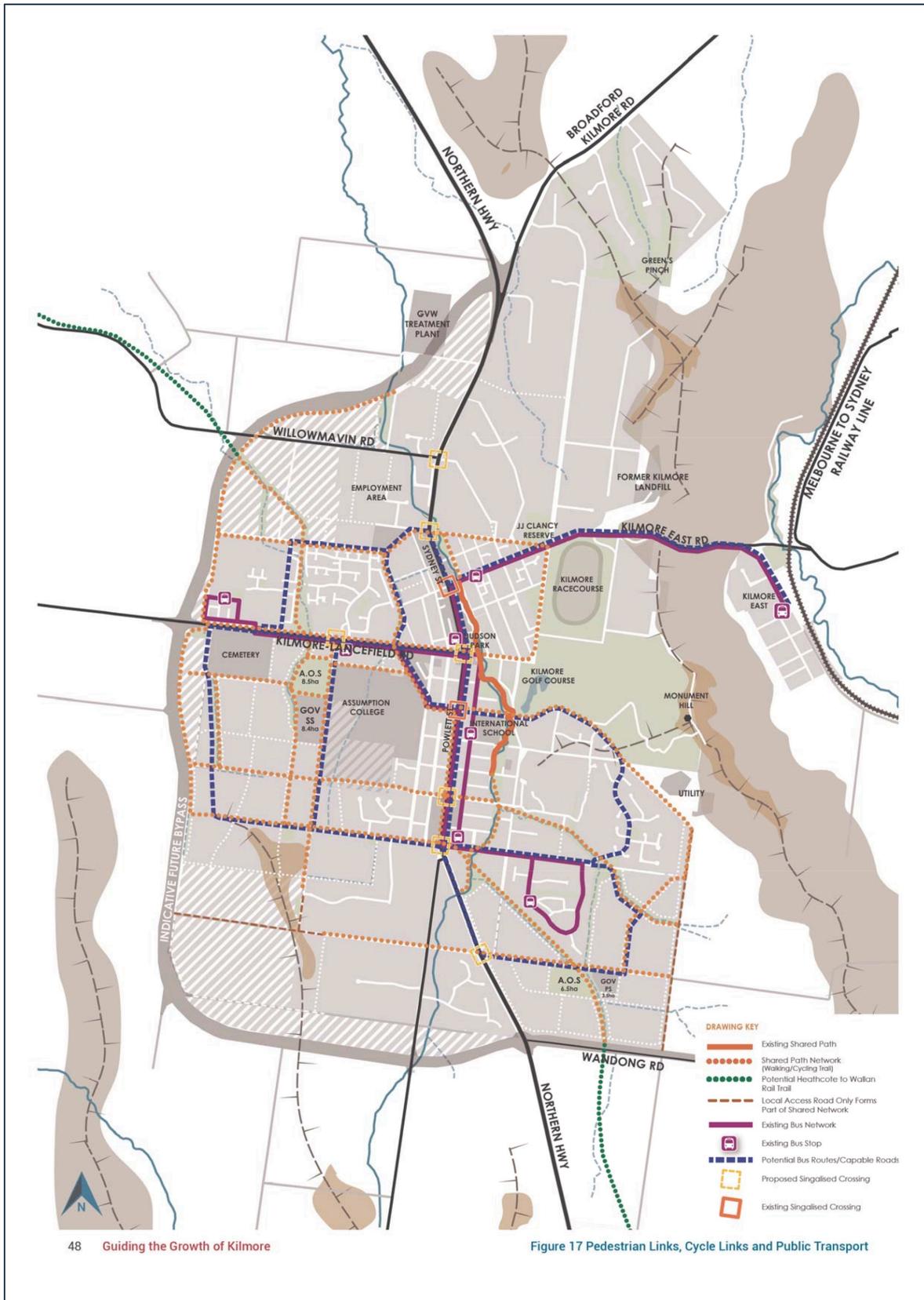


Figure 1-2 Extract from Mitchell Shire’s Kilmore Structure Plan showing the proposed rail trail extending into Kilmore from the south and north west, and the proposed connecting network of shared paths within Kilmore.

1.4 EXISTING RAIL TRAILS

Cycling tourism is growing worldwide and rail trails cater to this expansion of cycling tourism. Victoria is leading Australia in the construction of multi-day rail trails. Figure 1-3 shows the location and lengths of the existing network of regional rail trails in Victoria (black lines) and the possible Wallan to Heathcote Rail Trail (shown in green).

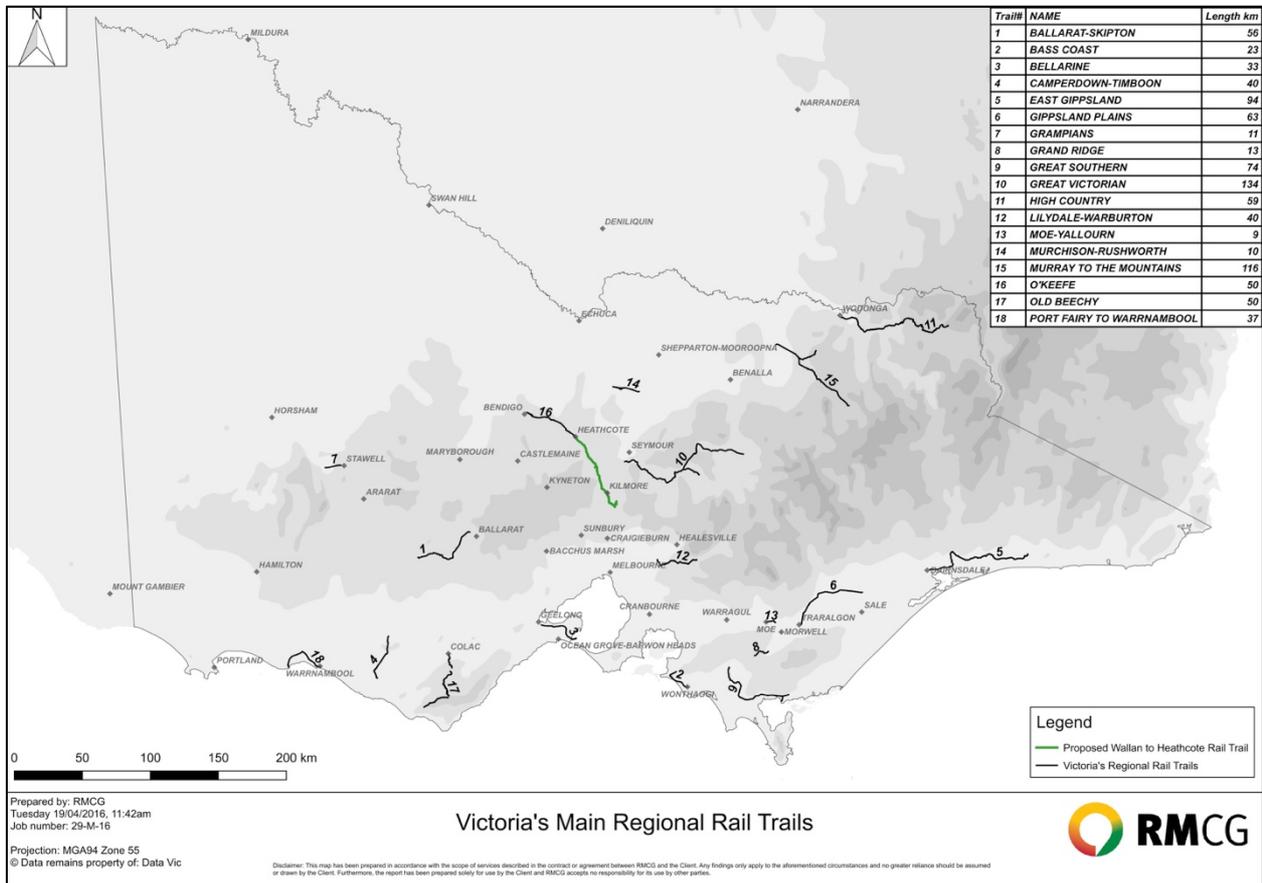


Figure 1-3: Rail trails of Victoria

In Central Victoria, rail trails already exist between Bendigo and Heathcote (O'Keefe Rail Trail), and between Tallarook and Mansfield / Alexandra (Great Victorian Rail Trail). More information about these existing trails can be found at the following websites:

- Rail Trails Australia: <https://www.railtrails.org.au>
- Friends of the O'Keefe Trail: <https://bendigokilmorerailtrail.com>
- Great Victorian Rail Trail: <http://www.greatvictorianrailtrail.com.au>

1.5 LESSONS FROM THE O'KEEFE RAIL TRAIL

Over the past two decades, a rail trail linking Bendigo, Axedale and Heathcote known as the O'Keefe Rail Trail, progressed from concept to realisation. Given the strong parallels between this Wallan to Heathcote project and the O'Keefe Trail, an effort was made to draw on the knowledge and experience from that project. A workshop held in April 2016, attended by officers of City of Greater Bendigo and the Friends of the Bendigo Kilmore Rail Trail and the consultant team, explored the following topics:

- consultation
- design
- land acquisition
- staged implementation
- resources
- cost.

1.6 FEASIBILITY METHODOLOGY

The aim of this feasibility study is to explore the potential development of the 78 km rail trail joining Wallan (and nearby Heathcote Junction and Wandong) north towards Kilmore, Pyalong, Tooborac and Heathcote along a route alignment following the original railway line.

To investigate the feasibility of this project, we undertook the following:

- An investigation into the engineering and construction requirements of the project based on the design elements of previous projects and local input into project management and design.
- Analysis of the economic impacts, including a cost benefit analysis.
- Consultations with landowners, the general community and key stakeholder groups.
- A desktop environmental assessment including relevant government policy and legislation and impacts on local native vegetation and fauna habitat.
- A desktop cultural assessment to investigate local Aboriginal Cultural Heritage and European Cultural Heritage on and near the site.

This report presents the findings from the feasibility study and provides next steps for implementation of a rail trail.

1.7 SUPPORTING INFORMATION

The following reports and documents have been prepared and compiled in VOLUME II.

1. Community Engagement Report, Communityvibe, June 2017
2. Desktop Cultural Heritage Assessment, Biosis, October 2016
3. Desktop Ecological Assessment, Biosis, September 2016
4. Engineering Report, Spiire, June 2017
5. Trail Benefits, RMCG, September 2017

2 The route alignment

2.1 CONTEXT

Construction of the Heathcote Junction to Bendigo railway line was completed by 1890 and trains ran along most of the route into the late 1960s. (A quick history of the railway line can be seen at: [https://bendigokilmorerailtrail.com/history-resources/quick-history/.](https://bendigokilmorerailtrail.com/history-resources/quick-history/))

The rails and sleepers are now gone, however the extensive earthworks (embankments, cuttings, culverts, berms and drains) remain intact and provide a smooth and level base upon which a graded path for a rail trail can be installed.

Disused rail lines make very good routes for cyclists, wheelchairs and pedestrians. Rail trails provide an effective means for people to enjoy landscape vistas, such as those over the ranges and hills between Wallan and Heathcote.

The optimal experience for users is a trail that largely follows the original rail formation. Diversions from the railway line diminish the experience of being on a rail trail, bring users into contact with cars, involve steeper grades and can disturb adjacent flora, fauna and cultural artefacts.

2.2 PRELIMINARY ROUTE

2.2.1 OVERVIEW

High-resolution aerial imagery was used along with historical detailed railway design plans to map the alignment of the rail trail along the route. This provides a sufficient level of accuracy for this study.

The preliminary route and link up options were prepared in consultation with a reference group of interested stakeholders. Figure 2-1 shows an overview of the route.

The trail route follows the original rail line except for where there is intensive residential development or other reasons for deviation as described in Section 2.2.2. The reaction of landowners to this route is reported in Chapter 4.



Figure 2-1: Overview of route

2.2.2 DEVIATIONS FROM OLD RAIL LINE

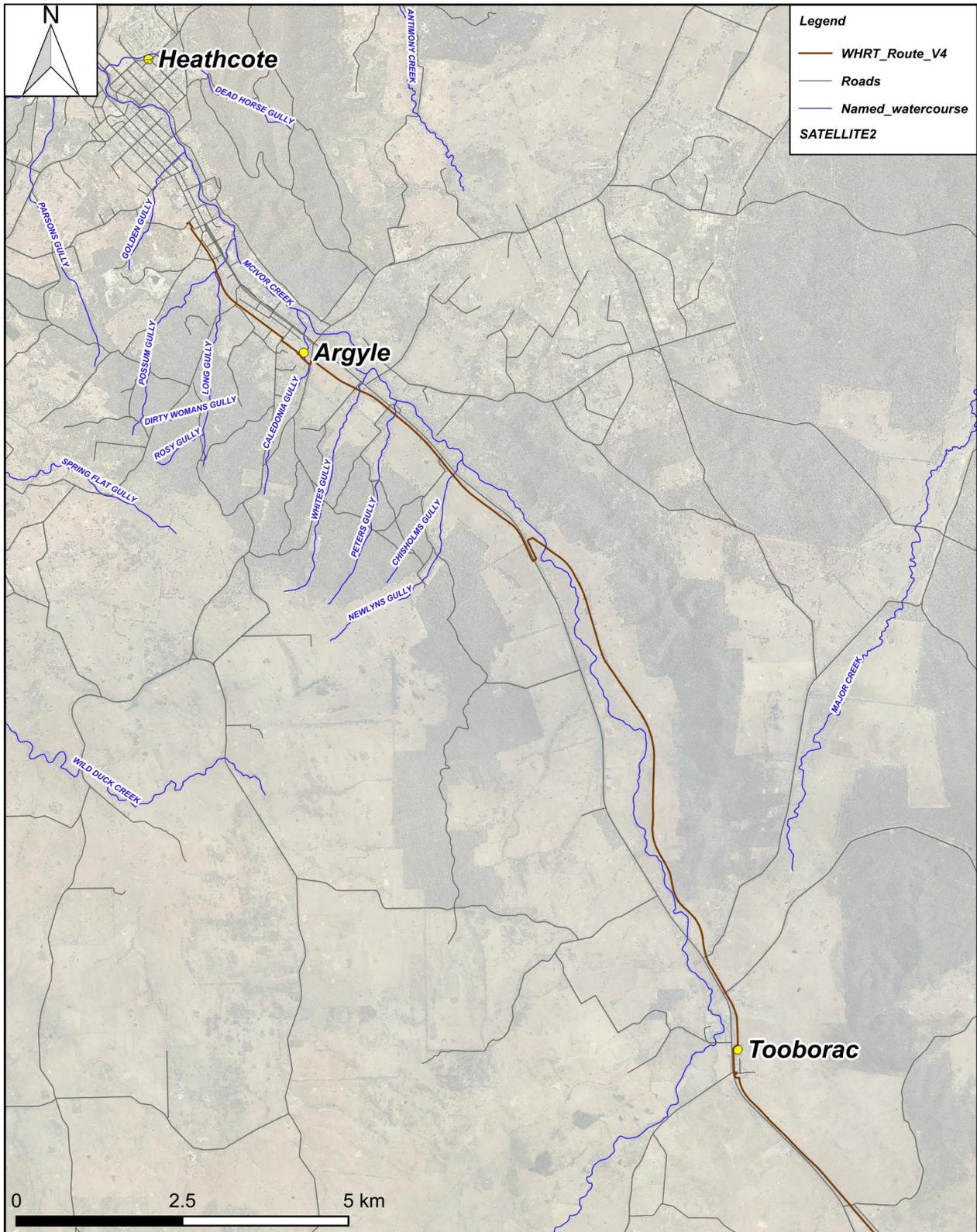
A more detailed map of the route alignment is presented in a series of four maps (Maps 1, 2, 3 & 4) on the following pages. This preliminary route was established before community and landholder consultation. The purpose of defining a route was so that it could be the basis for consultation, engineering, cultural and environmental investigations. The logic underlying the preliminary route is as follows:

1. Table 2-1, the route follows the old railway formation because:
 - a. Favourable grade – train tracks have steady grade which makes them attractive to walkers, cyclists and other means of transport.
 - b. Safety and amenity – trails along rail lines are typically separated from roads and the noise and danger of motor vehicles and trucks and allow the user to enjoy the amenity.
 - c. Few constraints – because the earthworks are largely complete, establishing a trail along the old railway line usually creates little disturbance to cultural and ecological features.
 - d. Minimise cost – trails on the rail alignment take advantage of the original drainage infrastructure and a solid base upon which to construct a gravel pavement.
2. Experience from other trails has found that deviations, where necessary, work best as continuous through routes (detours that leave the rail line at one point and re-join further on) rather than side tracks (out and back to same point).
3. Reasons for deviations include:
 - a. Route has been built out with existing incompatible development (e.g. housing, industrial land, horse training grounds)
 - b. Link population centres to the trail.
 - c. Link the trail to commercial opportunities, existing amenities and transport connections, such as operating railway stations.

Table 2-1 Summary of deviations from old railway alignment

MAP NUMBER	DEVIATION	REASON FOR DEVIATION
1	Between Dairy Flat Road and Joes Road, Heathcote	Avoid the old Argyle siding, which is developed for industrial purposes. An alternative via Ayres Street is proposed.
1	Northern Highway near McIvor Creek	Access a site where a shorter subway could be incorporated into an existing road embankment. (Note the engineering costing for this crossing is based on a long subway along the rail alignment). This site is known as Dickinsons Crossing.
1	Tooborac town	Link trail to commercial part of town (hotel and store) and link residents to the trail. Avoids existing urban development in Station Street.
2	Pyalong town (Bridge Street to south of Romano Drive)	Link trail to commercial part of town (hotel and store) and link residents to the trail. Retains two key trail features - Mollison Creek Bridge and Pink Cliffs (Halpin Court East). Avoids a new bridge across Mollisons Creek.
2	Northern Highway Handfords Creek	Utilise existing Percival Creek culvert as an underpass under the Northern Highway.

MAP NUMBER	DEVIATION	REASON FOR DEVIATION
2	Northern Highway at Fullards Road	Access a site where a shorter subway could be incorporated into an existing road embankment.
2	Northern Highway at High Camp	Access a site where a shorter subway could be incorporated into an existing road embankment.
3	Moranding Road	Avoid horse training facility adjacent to rail alignment 350 metres north of Moranding Road.
3	Willomavin Road, Boundary Road to Campaspe Road	Avoid developed horse precinct. Route is located in eastern edge of Willomavin Road road reserve.
3	Kings Lane to Tootle Street, Kilmore	<p>Link trail to commercial centre of Kilmore, link residents to the trail, avoid urban developed land.</p> <p>The route between Tootle Street along Kilmore Creek to Union Street is straightforward because it follows open space and the creek.</p> <p>Various routes are available from the Kilmore CBD to join up with the rail trail proper at the corner of Kings Lane and Willomavin Road. A route along Union Street, John Street and Highgate Road has been chosen and is shown on Map 3, however Council will explore the final route through northern Kilmore, taking into account the Kilmore Structure Plan (especially the shared path cycling infrastructure shown on Figure 17) and proposed pedestrian bridge crossing of Kilmore Creek adjacent to the Northern Highway. For example, Clarke and Murray Street might prove to be a better route than Union Street and John Street.</p>
4	McKerchers Road to Union Lane, Bylands	Avoid operational tram tracks and old Bylands station buildings. Route is located within old railway reserve, adjacent to operational tram tracks.
4	Union Lane to 500 m south of Union Lane, Bylands	Avoid existing house and driveway built on old embankment. Route is located within private land adjacent to and east of old rail line and rail reserve.
4	Hume Freeway to Wandong Station	Utilise existing culvert under the Hume Freeway, located 300 m north of railway formation. Then connect to Wandong township along eastern edge of freeway reserve north to Union Lane, then along Epping Kilmore Road to the Wandong Railway Station.
4	Arkells Lane to Wallan town and Wallan Station	<p>Branch off from the rail formation at a point 800 m south of Arkells Lane, link via disused road reserve to Hidden Valley (Eastern Ridge Road), then follow existing and proposed open space links south through Hidden Valley and along eastern edge of Wallan to join with existing shared path in Watson Street and east over the Hume Freeway to the Wallan Railway Station.</p> <p>This section of the trail provides a direct link between the rail trail proper and the growing population centres of Hidden Valley and Wallan, and proposed Merri Creek Trail linking to Melbourne.</p>
4	Hume Freeway to Heathcote Junction (not shown on map)	<p>The old railway formation between the Hume Freeway and Heathcote Junction Railway Station is heavily treed and has been closely developed for housing, and so was assessed to be not feasible for constructing a rail trail.</p> <p>Nonetheless, a connection between the Hume Freeway underpass and Caladenia Court is highly desirable and should be further explored, because it would link the residents of Heathcote Junction to the rail trail. Further investigation is needed to find a suitable deviation.</p>



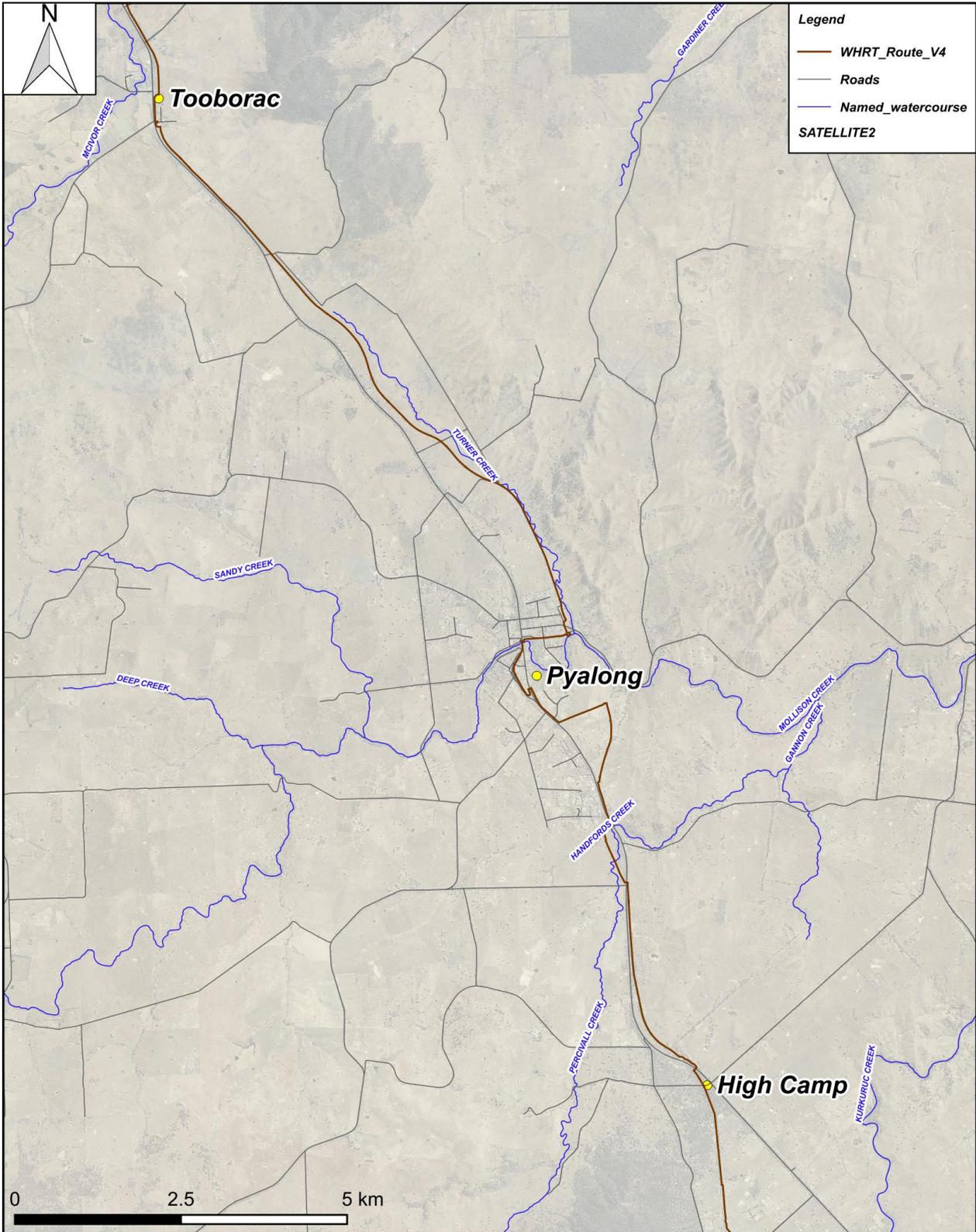
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Wallan to Heathcote Rail Trail Feasibility Map 1



Projection: MGA94 Zone 55
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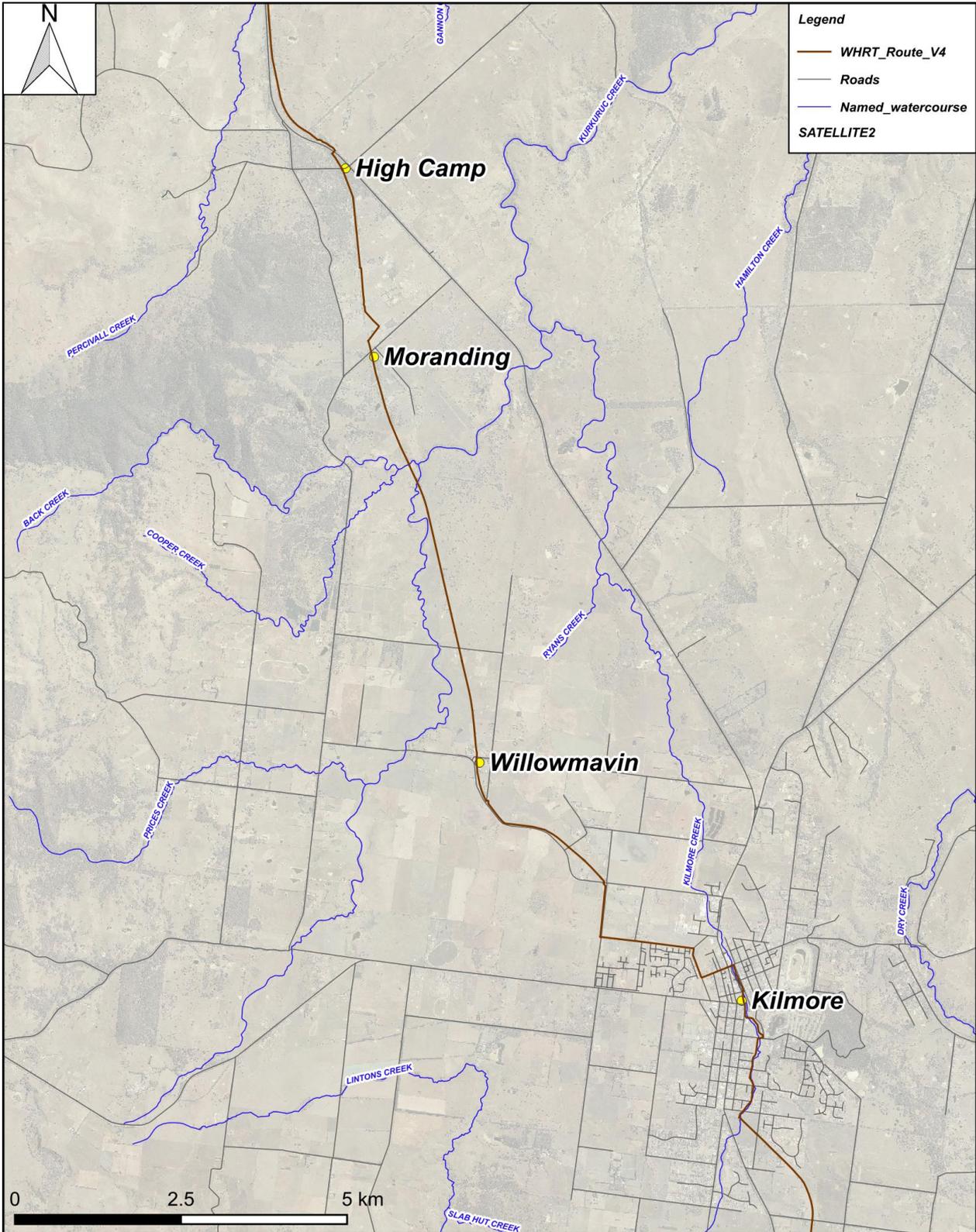
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Wallan to Heathcote Rail Trail Feasibility Map 2



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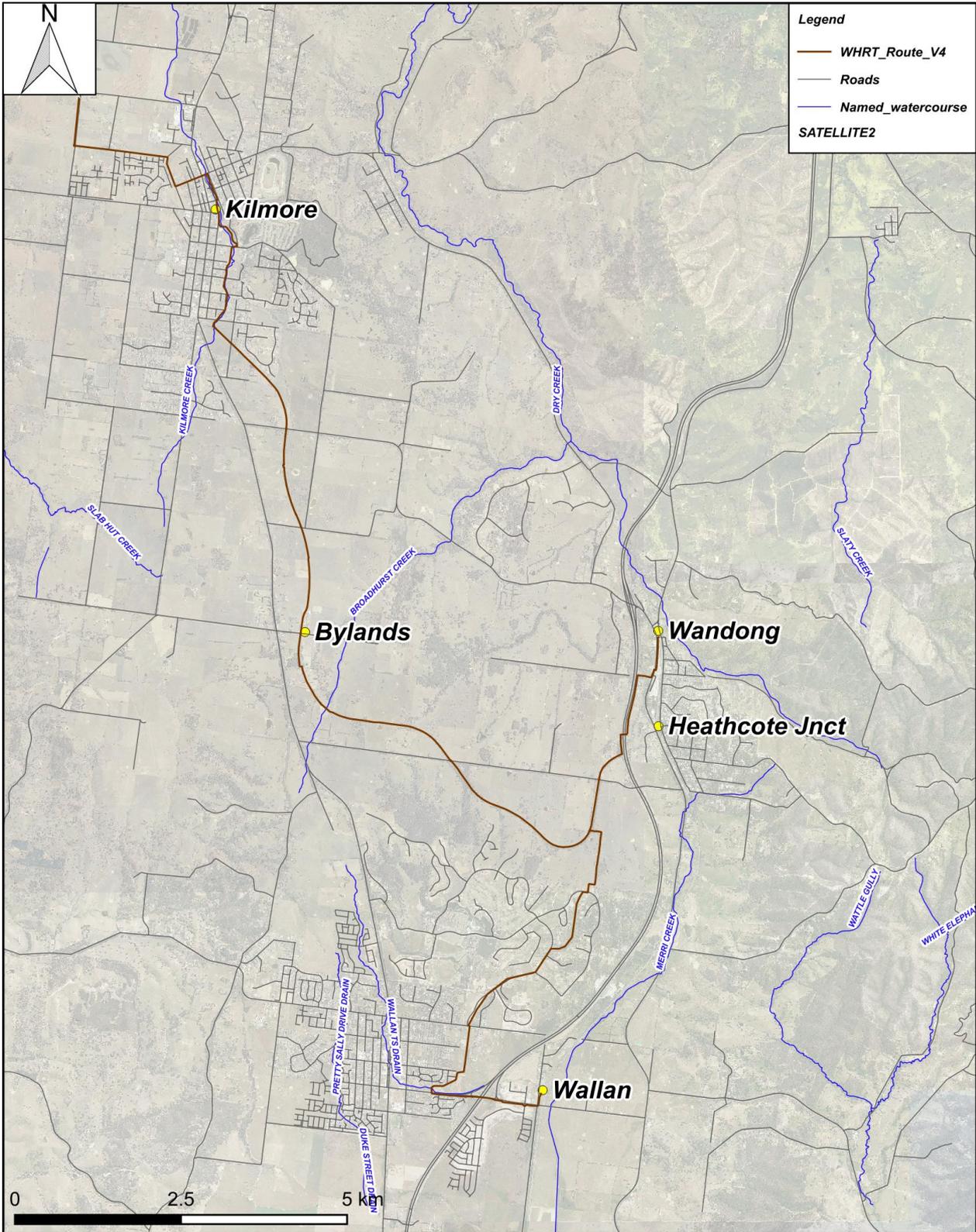
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Wallan to Heathcote Rail Trail Feasibility Map 3



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Wallan to Heathcote Rail Trail Feasibility Map 4



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2.2.3 LAND TENURE

This section of the report discusses the tenure of the land along the corridor. The preliminary route is approximately 78 km long, and assuming a corridor 20 m wide, this represents an area of approximately 160 ha. The land tenure along the corridor has been established using the Victorian Land Use Information System (VLUIS). After reviewing the tenure, classifications were changed for this study from “private” to “public” at the following locations:

- Ladderhill Road, north of Pyalong is private land owned by Mitchell Shire for use as a road reserve. This land tenure is considered “public”.
- VicTrack land south of Kilmore is considered “private” by VLUIS, but because VicTrack is a government owned enterprise, for this study this land is considered “public”.
- Through Hidden Valley the route follows an open space corridor, which because of the nature of the Hidden Valley development, VLUIS classes as “private”. For this study, we consider this land to be “public”.
- From Hidden Valley to Wallan, the route follows undeveloped residentially zoned land. As this land develops, the route would be located on road reserves or within contributed open space, so is considered “public”.

With these adaptations, approximately 88 ha (55%) of the route is public ownership and the balance (72 ha or 45%) is in private ownership. Figure 2-2 shows a map of the route, coloured according to land tenure.

The publicly controlled land has various classifications including crown land, road reserve or owned by a government body such as VicTrack. This land is generally available for a rail trail, although sections with current grazing licences would need to be negotiated.

Access to the privately-owned land needs to be negotiated with the land owners. Options for access include Council purchase or Council lease of the strip of land.

2.3 LINKS TO OTHER TRAILS

The Wallan to Heathcote Rail Trail, combined with the existing O’Keefe Rail Trail, would provide a 128 km spine from which other trails could extend. Options for links between rail trails and other destinations were explored and are presented in Figure 2-3. The alignment provides links from the main route to:

- Rushworth via existing bush tracks (Route 1 on Figure 2-3), and on towards Shepparton, via the existing Waranga Rail Trail.
- Broadford and Tallarook, via existing back roads or adjacent to railway or freeway (Route options 2, 3 or 4 on Figure 2-3) and on to the existing Great Victorian Rail Trail to Yea, Mansfield and Alexandra.
- Lancefield (Route 5 on Figure 2-3), via the dismantled railway between Kilmore and Lancefield, and possibly on to Romsey.
- Local existing trails in Heathcote Junction (Route 6 on Figure 2-3).
- Heathcote Junction to Wallan East, via upper Merri Creek, local roads or adjacent to railway or freeway (Route 7 on Figure 2-3).
- Melbourne, via the proposed Merri Creek Trail to Craigieburn (Route 8 on Figure 2-3).
- Mt Disappointment from Heathcote Junction via an existing bush track (Route 9 on Figure 2-3).

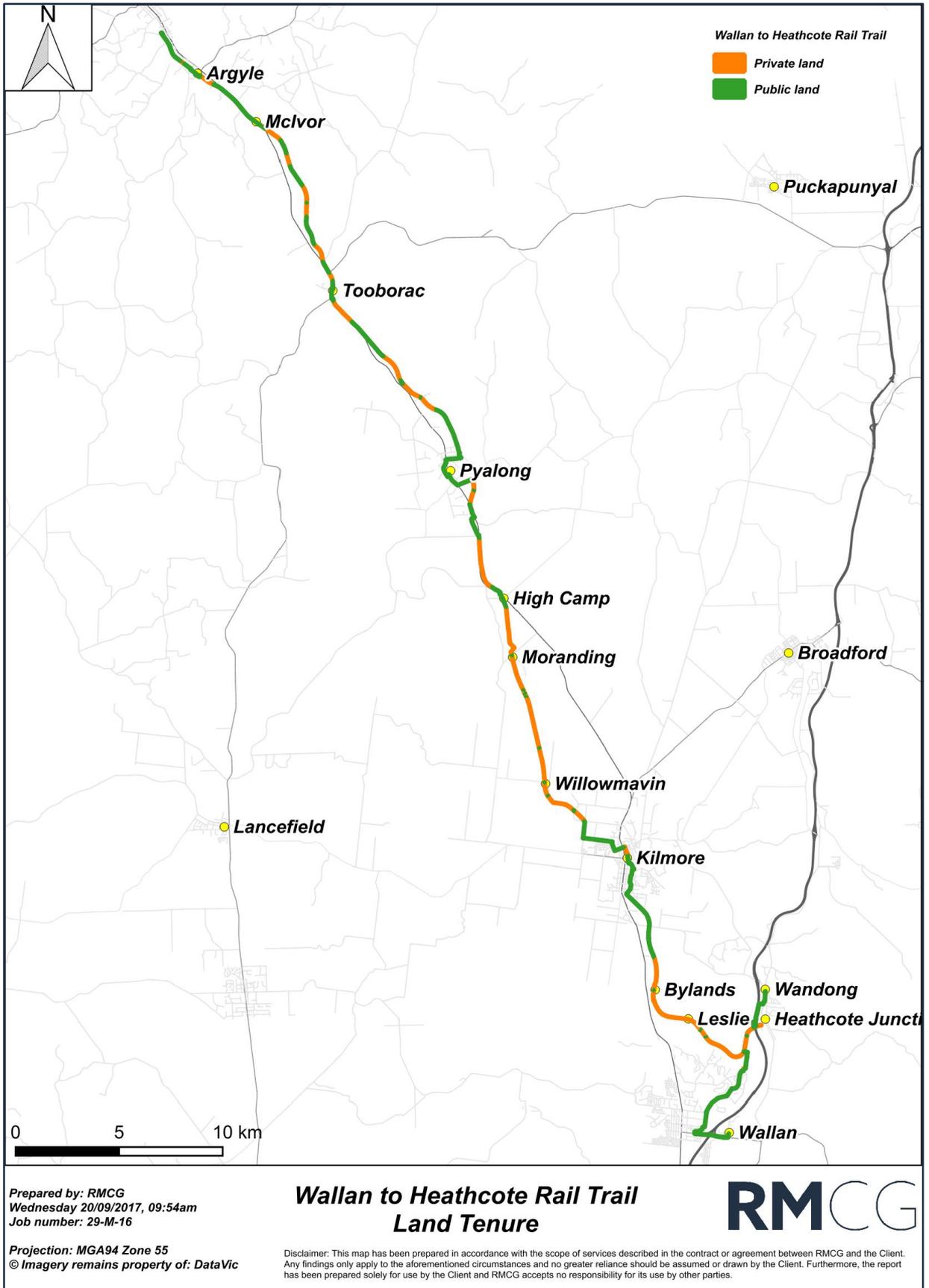


Figure 2-2: Wallan to Heathcote Rail Trail Land Tenure



Figure 2-3: Links to other trails

2.4 CONCLUSIONS

A route was selected to provide a basis for engineering concept design and costing, ecological and cultural assessments, economic analysis and consultation.

The route has been selected to prioritise use of the existing rail line. Deviations occur to link the trail to population centres and commercial opportunities, and to work around areas where the rail line has been built out. Potential linkages to other trails have also been considered.

3 Engineering assessment

3.1 INTRODUCTION

The project team investigated the construction of the trail from an engineering point of view. A detailed engineering report¹ is contained in Volume II. This section of the feasibility report summarises the key engineering assumptions, discusses land access, presents the estimated costs and makes a statement about the engineering feasibility of the trail.

3.2 ASSUMPTIONS

The following assumptions were made when assessing the engineering feasibility and schedule of works for the rail trail project:

1. The route assessed is as described in Chapter 2.
2. Design elements were estimated from recent experiences. In particular, the 50 km O’Keefe Rail Trail that has been built in the past 15 years (between Bendigo and Heathcote, and from which this trail would extend), and the Great Victorian Trail (Tallarook to Mansfield / Alexandra), which was officially opened in June 2012. Using the experience of the designers and builders from recently constructed trails we could predict with confidence what would be required for the Wallan to Heathcote trail. These estimates are informed by:
 - Visual appraisal from the roadside,
 - Close interpretation of aerial imagery,
 - Interpretation of other map layers such as contours and streams, property boundaries, land zoning and overlay controls,
 - Heritage and environmentally sensitive constraints identified by desktop studies,
 - Evaluation of options for sourcing of suitable quarry materials and haulage distances,
 - Realistic assessments of project management and property conveyance and administration costs and resourcing,
 - Unit rates for standard items such as bridge spans, re-sheeting, drain trimming, fencing, etc.
3. Local input was incorporated into project management and construction. We have assumed that the resurrection of a rail formation into a shared path would be built in a way that maximises involvement of the community and potential users, in partnership with local government, state government and federal government. This approach has worked well in the two adjacent trails and is more cost effective than large contract, publically tendered schemes. The most cost-effective way to build a trail is for Council to contract two dedicated people to oversee the task, one of whom would be an expert in private and crown property conveyancing and law. The other would be a practical project manager / engineer who can engage well with the council officers, landowners, local contractors, community volunteers and enthusiasts.

¹ Wallan-Heathcote Rail Trail, Engineering Report, Spiire June 2017

3.3 LAND ACCESS

Establishing land access is a key pre-requisite for constructing a trail. As will be seen later in this report, the community and most land owners support the concept of a trail in principle, but when we discussed it with them in early 2017, most land owners had strong reservations about the trail running through their land. An important aspect of implementing the project is to liaise closely with affected land owners in an open and iterative way. If the project is to proceed, Council's dedicated engineer and land management officer would liaise closely with land owners to address concerns, consider alternative routes, negotiate land tenure (whether it be along the old railway formation or another through route). This section presents some engineering historical context that may assist with this process of negotiation.

Before colonisation by the British in the late 1700s, Aboriginal people were the custodians of all Australian land. By the 1880s, private land titles had been established across the district by the then newly created Victorian Government. Whether the landowners affected by the government's plans were happy with the proposal to build the railway has not been explored, but presumably the government of the day either negotiated or compelled owners to surrender title along the chosen route. Trains were considered important to the development of the growing state and the government used its powers to acquire rail reserves along the length of the route to accommodate construction of the railway line, railway stations and sidings which would operate from the 1890s to the 1960s.

In April 1975, the Victorian Government passed legislation to dismantle the line and its associated infrastructure. At that time, the government had decided that there was no further need for a railway along the route and probably gave no thought to future transport opportunities along the corridor, such as walking, cycling, horse riding, or even reopening for steam driven tourist trains.

Now however, in 2017, the community realises that trails along old railway lines provide a great opportunity to connect people and provide enjoyment and fitness benefits for locals and tourists alike.

If land access can be negotiated, previous experience has demonstrated that the engineering, ecological, cultural and other issues can all be satisfactorily resolved.

3.4 COST ESTIMATE

3.4.1 OVERVIEW

A preliminary estimate of the cost to construct the trail is \$17.8 million. This estimate includes all direct construction costs set out in Table 3-1 and described in detail below. The estimate does not include the following non-capital, but related, costs:

- Acquisition of private land
- Cultural heritage management plan
- Upgrade or maintenance of historic bridges
- Ongoing maintenance

This estimate is preliminary only. Some elements of this estimate will be revised as the project progresses. Further details are contained in Volume II Engineering Report, and an explanation of the major cost items is set out below. The cost per metre averages \$228 per metre, and varies from \$118 per metre for the Hidden Valley to Wallan Station section to \$393 per metre for the Pyalong to Moranding Road section.

Table 3-1: Summary of estimated trail costs

Capital Cost items (\$M)	Heathcote to Tooborac	Tooborac to Pyalong	Pyalong to Moranding Road	Moranding Road to Tootle Street	Tootle Street to Wandong Station	Hidden Valley to Wallan Station	Total (\$M)	Percent of total (%)
General conditions	0.13	0.10	0.10	0.10	0.11	0.08	0.63	4%
Earthworks	0.98	0.58	0.73	0.99	1.44	0.50	5.21	29%
Drainage	0.11	0.05	0.04	0.06	0.07	0.02	0.36	2%
Road crossing	1.33	0.02	2.30	0.03	0.07	0.02	3.76	21%
Bridges	1.63	0.52	0.52	0.93	0.34	-	3.93	22%
Amenities	0.09	0.08	0.12	0.08	0.08	0.01	0.47	3%
Signage	0.12	0.08	0.08	0.09	0.10	0.06	0.53	3%
Fencing	0.29	0.21	0.21	0.29	0.25	0.14	1.39	8%
VicRoads fees	0.09	-	0.21	0.03	0.05	-	0.38	2%
Project management	0.26	0.09	0.23	0.14	0.14	0.04	0.90	5%
Detailed design (underpasses and road crossings)	0.07	0.03	0.07	0.04	0.04	0.01	0.26	1%
Total construction cost (including 30% contingency)	5.10	1.77	4.62	2.78	2.69	0.88	17.84	100%
Percent of total (%)	29%	10%	26%	16%	15%	5%	100%	
Length (km)	17.4	11.4	11.8	15.4	14.8	7.4	78.1	
\$/m	294	155	393	181	182	118	228	
Uncosted items:	-	-	-	-	-	-	-	n/a
. Land acquisition								
. Cultural heritage management plan								
. Native vegetation offsets.								
. Preservation of historic bridges.								

3.4.2 DESCRIPTION OF CAPITAL COST ITEMS

The preliminary cost estimate in this report is based on engineering judgement and experience with actual recent rail trails in Victoria, including the O’Keefe Rail Trail and Great Victorian Rail Trail. Further information about each cost item is presented below:

- **GENERAL CONDITIONS** - This includes site preparation, tree clearing, provision and implementation of an environmental management plan and traffic management for the site.
- **EARTHWORKS** - This includes supply and placement of compacted materials and any required shaping of new and existing formations. Assessment of the condition of the rail trail has been based on aerial photographs and photographs taken at various points along the proposed trail.
- **DRAINAGE** - This includes the provision and installation of new culverts. The quantity and size of culverts that will be required has been based on historical railway engineering drawings and an estimate has been provided that 50% of culverts will need to be replaced based on the proposed alignment.
- **ROAD CROSSINGS** - This includes the installation of post and gate crossing barriers where the rail trail crosses minor roads. The design standard employed for this feasibility study assumes that the crossing of major roads will be via highway underpasses, although at grade crossings may be possible in some instances subject to further investigation. The length of underpasses has been based on measurements from AutoCAD and Google Earth. No allowance has been made for the construction of an underpass at a future Kilmore – Wallan bypass or at grade crossing at Willowmavin Road. The cost estimate and concept design are based on best practice highway underpasses. Whilst crossings of minor roads are inexpensive, the route crosses the Northern Highway several times and these have been designed as underpasses so that the rail trail is safe for a wide range of users. These items make up 22% of the total construction cost. Modifying the design to reduce the number of highway underpasses or adopting level crossings could significantly reduce the capital cost of the project.

- **BRIDGES** - This includes the construction of bridges (footbridge standard) along the rail trail. The price per meter of the bridges has been based a quote from Open Spaces Infrastructure Australia based on the construction of bridges for the O'Keefe rail trail. The length and height of openings has been based on historical railway engineering drawings. There has also been an allowance made for concrete bases to facilitate horses using the bridges in areas where they are likely to make up a large proportion of the rail trail usage.
- **AMENITIES** - This includes toilets, rest stops and seating (every 5km along the trail).
- **SIGNAGE** - This includes a trail head sign at the entrance of the trail, private property warning signs, way- finding signs (every 500m), road crossing warning signs and no trail bike warning signs.
- **FENCING** - This includes fencing along both sides of sections of the rail trail, the placement of stock grids and counters to monitor patronage of the rail trail. The amount of fencing is based on an estimate of approximately 50% of both sides of the rail trail as sections of the current alignment are already fenced.
- **VICROADS FEES** - This includes a preliminary estimate of fees provided by VicRoads based on the current alignment. Some of these bonds are refundable.
- **DESIGN & MANAGEMENT** - This includes project management by a dedicated full time and part time council employee for a duration of 5 years. This also includes detailed design of the underpasses and road crossings.
- **CONTINGENCY** - a 30% contingency has been applied to all cost items to reflect the fact that this cost estimate is based on a desktop engineering assessment.

3.5 ENGINEERING FEASIBILITY

From an engineering perspective, if land tenure can be established, the trail can be built with relative ease. The major construction tasks are tidying up the line formation and topping it with gravel, minor drainage works, crossing minor roads and replacing missing bridges. An estimate of the capital items has been made based upon recent experience.

4 Economic assessment

4.1 INTRODUCTION

The trail will provide benefits in the form of additional tourist expenditure in the local economy, and social and health benefits as a result of greater recreation opportunities. This chapter summarises the usage, benefits and benefit cost analysis for this project. The full report is contained in Volume II.

4.2 USAGE

To generate usage estimates for the Wallan to Heathcote trail, we gathered detailed usage estimates from the Great Victorian Rail Trail (Tallarook to Mansfield), and the O’Keefe Trail (Bendigo to Heathcote).

We estimated that on a daily basis, the Wallan to Heathcote trail would have 10 ‘long distance users’ (those who travel along the length of the trail and stay overnight, usually bike riders), 35 ‘short-trip visitors’ (who make a short-trip from their base location), and 67 ‘short trip locals’ (local resident users).

Table 4-1: Daily usage estimates, Heathcote to Wallan Rail Trail

LONG DISTANCE USERS	SHORT TRIP VISITORS	SHORT TRIP LOCALS
10	35	67

4.3 BENEFITS

The benefits that would accrue to the broader community if a rail trail were built include; increased tourism spending in towns and user experience, health and wellbeing benefits and historical learning opportunities.

We estimated the benefits of the trail for additional tourist expenditure in the local economy, and social and health benefits as a result of greater recreation opportunities. The benefit of the trail in economic terms is estimated at \$23.1 million.

The economic benefits are derived as follows:

1. Usage - The forecast number of users on the trail is derived from usage data of the Great Victorian Rail Trail and the O’Keefe Trail, adapted for the number of residents and tourists along the two trails.
2. Additionality - It is estimated that half of the short trip visitors will stay an extra night in the region, whereas for the other half using the trail, will not affect their expenditure. The evidence on additionality as a result of the construction of active transport infrastructure is mixed, with some studies showing an increase in exercise as a result of infrastructure investment and others showing none. However, evidence from the local area demonstrates that there is a high demand for recreational paths, so we have assumed a reasonably high figure. A figure of 40% means that 33 trips per day, or 12,000 per year will be an increase in activity
3. Value per use - Expenditure by additional visitors is sourced from Tourism Research Australia data, translated into Gross Regional Product. The health benefit of local users is derived from a New Zealand study of the health benefits of cycling, with the estimated average trip at 20km.
4. Growth in usage is assumed based on an increasing population in Wallan and Kilmore and a general increase in cycling tourism.

5. The estimates are translated into present day figures using a discount rate of 7% over 30 years.
6. Tourism expenditure supports existing businesses in nearby towns, as well as trail specific business such as accommodation, guiding services, transport and equipment hire. If the trail attracts sufficient numbers, trail-specific businesses will emerge in response to the increasing numbers.

Health benefits are derived as follows:

1. Exercise reduces the risk of numerous chronic conditions and there is strong evidence that people who live in environments that support walking and cycling have better health than those in neighbourhoods without active transport options
2. The impact of a new recreational infrastructure has the potential to increase the number of active people in the community. A local example of this impact is provided by a redeveloped playground in Wallan where usage increased from 30 per day to 400 per day in the summer months.
3. According to a 2008 New Zealand study, the benefit of increased cycling was \$2.14 per km (when translated into Australian dollars and accounting for inflation). We assume that each short trip cyclist undertakes a 20km trip on the trail, translating to a benefit per user of \$43.

The calculation of the benefits as per the description above is shown in Table 4-2. Refer to VOLUME II for a detailed description of the benefit calculation.

Table 4-2: Estimated benefits of the Heathcote to Wallan Rail Trail

EXPENDITURE	LONG DISTANCE USERS	SHORT TRIP VISITORS	SHORT TRIP LOCALS	TOTAL
Users per day	10	35	67	112
Proportion of users additional	100%	50%	40%	-
Additional visitors per day	10	18	27	54
Value per use	\$91	\$91	\$43	-
Benefit per day	\$914.40	\$1,602	\$1,154	-
Benefit over 2016	\$333,756	\$584,695	\$421,041	\$1,339,492
Growth rate per year	2%	2%	5%	-
Present value (\$million)	5.1	8.9	9.1	23.1

4.4 COST BENEFIT ANALYSIS

The preliminary costs are estimated to be \$17.8 million (see Section 3.4). This cost estimate does not include several items, importantly ongoing maintenance, and is therefore an underestimate of the trail cost. However, if this estimate is used, the estimated benefits of the trail are greater than the preliminary costs, with a benefit:cost ratio of 1.3 (a ratio of 1 or greater indicates that the benefits exceed the costs).

Table 4-3: Preliminary benefit cost analysis

ITEM	VALUE
Benefit (\$million)	23.1
Cost (\$million)	17.8
B/C ratio	1.3

5 Landowner and community views

5.1 INTRODUCTION

Consultation is a key element of all public projects. An extensive consultation phase formed a central part of this study, including face to face meetings with most of the directly affected landholders, combined with electronic and direct engagement with the wider community. The results of the consultation are detailed in Volume II².

The consultation sought answers to two questions:

- Will landholders along the route of the old formation support the trail?
- What benefits or drawbacks could the trail bring to other members of the community?

It was also designed to identify any potential issues or opportunities presented by the rail trail.

Approximately 45% of the route is in private ownership and there are 54 directly affected landowners.

5.2 WIDER COMMUNITY FEEDBACK

Table 5-1 describes the variety of tools used to engage with the community.

Table 5-1 Tools for communication with Wallan to Heathcote Rail Trail stakeholders

	TOOLS FOR COMMUNICATION
Written information and promotional materials	<ul style="list-style-type: none"> ▪ Executive Summary document – which provided an overview of the desk top study ▪ FAQ document ▪ Information bulletin ▪ Maps of the possible route ▪ Postcards ▪ Posters
Written feedback materials	<ul style="list-style-type: none"> ▪ Surveys as hard copies ▪ Feedback forms
Mitchell Shire Council website (Engaging Mitchell) and City of Greater Bendigo website	<ul style="list-style-type: none"> ▪ Information to promote the listening posts ▪ Link to online surveys ▪ Invitation to prepare a written submission / provide feedback ▪ Information materials available to read online or download (bulletin, FAQ, maps and executive summary)
Media promotion	<ul style="list-style-type: none"> ▪ Press releases ▪ Radio interviews

² Community Engagement Report, Wallan to Heathcote Rail Trail Feasibility Study, Communityvibe, June 2017

Through the community surveys, listening posts and written submissions, 588 community members provided feedback and views regarding the trail. 83% of the community support the development of a rail trail between Wallan and Heathcote. 12% oppose and 5% were unsure (Figure 5-1).

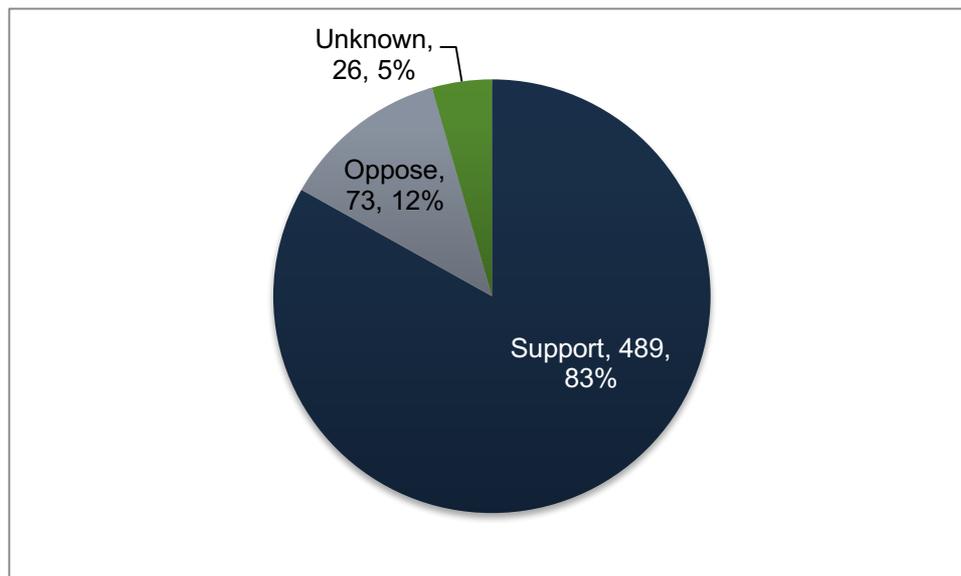


Figure 5-1: Community views towards the rail trail

Those in support of the rail trail cite the following benefits:

- Health and wellbeing benefits through participation in physical activity
- New recreational activities
- Development of paths where there are none currently available
- Safer horse riding and cycling facilities for people of all ages
- Increased tourism and economic benefits to the region
- Opportunity to run events
- Improved liveability and potential to attract new residents
- Opportunity to learn about pre-European contact and the historical origins of post-European contact and development (including railway history)
- Opportunity to educate locals and visitors about key historical and archaeological attributes of the region, including Aboriginal and post-European settlement
- Opportunity for nature enthusiasts to experience the ecology of the region, including diverse landscapes, flora and fauna.

Reasons for opposing the trail included:

- Other financial priorities for ratepayer and taxpayer dollars
- Negative impact on flora and fauna
- Concerns for landholders along the trail route (see Section 5.3 for more detail).

Community members who responded to the survey indicated what their primary activity would be if the proposed rail trail progressed. Almost half (44%) of the respondents would use the trail for cycling, 17% for walking/running, 15% for horse riding and 24% for bird watching or something else (Figure 5-2).

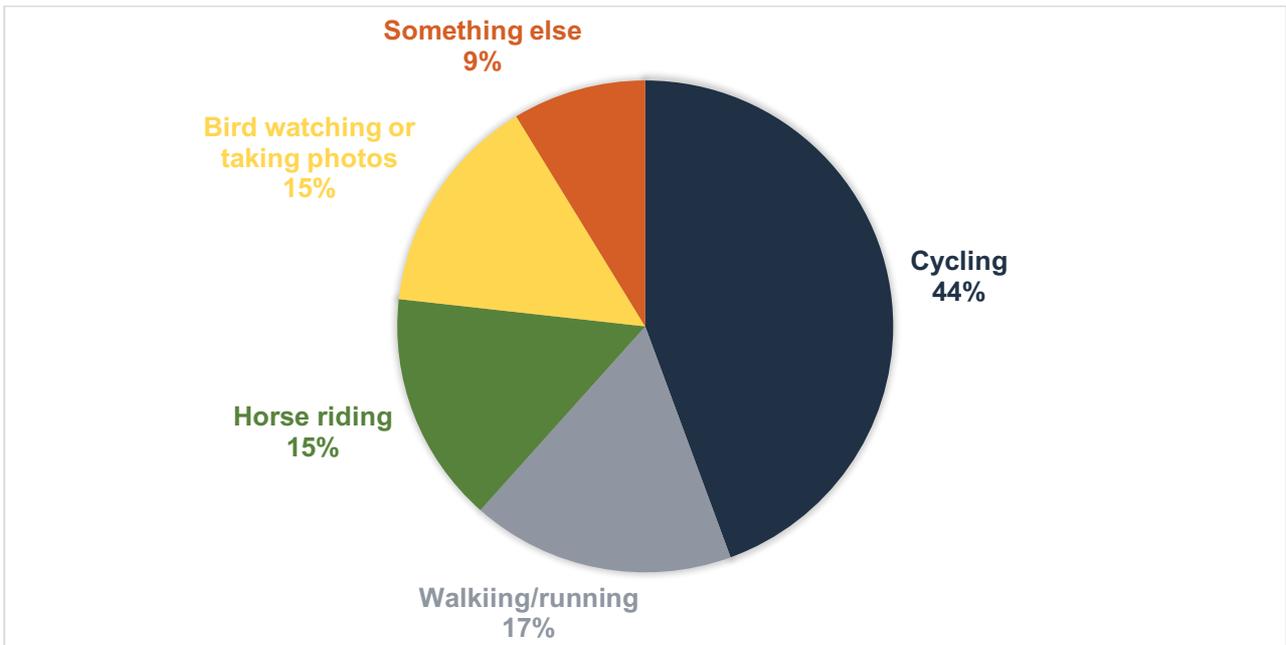


Figure 5-2 Primary activities of community members

5.3 LANDHOLDER FEEDBACK

The privately-owned land is freehold land now resting with adjacent landowners. In most cases the land titles remain as intact strips of former rail reserve; only in a few cases has the land been amalgamated with adjacent land. The area of private land needed for the rail trail is approximately 72 ha, assuming a corridor width of 20 m.

37 of the 54 directly affected landowners were interviewed. The remaining 17 were not able to be contacted. At least two attempts and often four were made to contact all landowners directly affected by the possible route. Landowners were provided with an information bulletin, an executive summary of the feasibility work undertaken up until the consultation and detailed maps.

3 landowners supported the proposal; 27 of them do not support the development of the trail on the former rail alignment; 7 were not sure; and 17 were unable to be contacted (Figure 5-3). While many of the landowners were opposed to the trail traversing directly across their land, they would generally be ok with its development if it was re-aligned to the road or front of their property. This indicates that they are not objecting to the principle of the rail trail development, just its intended route.

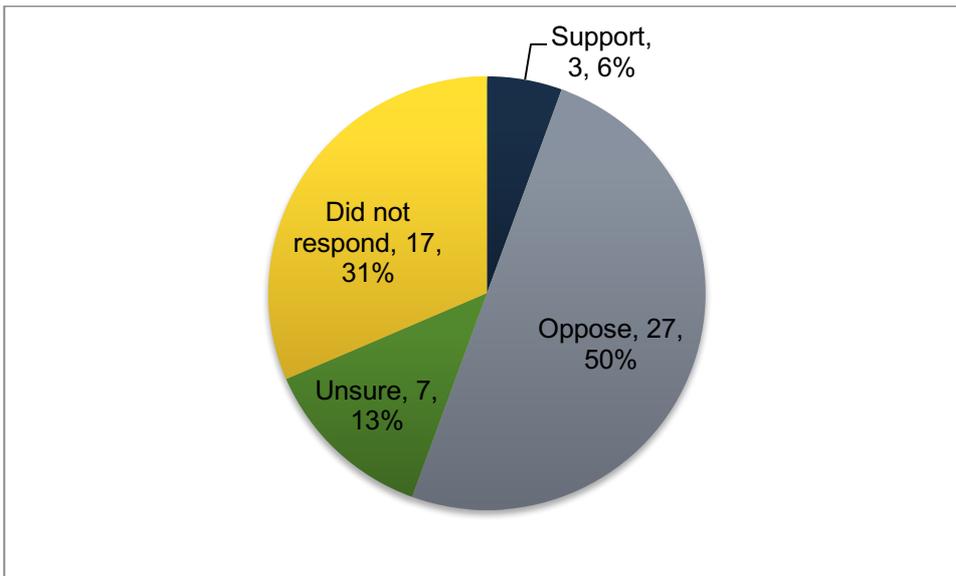


Figure 5-3: Landholder views towards the rail trail

Reasons for opposing the rail trail included:

- potential for theft / vandalism on landowners' properties
- loss of privacy
- impact on farming practices
- impact on stock
- other and more important financial priorities for ratepayer and taxpayer dollars
- negative impact on flora and fauna
- concerns over fire risk, rubbish, unauthorised uses, etc.
- uncertainty about compensation.

City of Greater Bendigo's experience with the O'Keefe Trail was that landowners took time to come to terms with the idea of the trail and how they could live and operate in harmony with it. Initially they opposed the trail, but during the project most landowners eventually did agree to either sell a strip of their land or enter a lease with the Greater Bendigo Council. This was also the experience with the Great Victorian Rail Trail. Without underestimating the strength or validity of landowners' concerns along this rail trail, the experience on other trails is that these concerns can be resolved.

5.4 KEY STAKEHOLDER GROUPS

34 people from the 80 invited, attended key stakeholder sessions to discuss key ideas and issues for the rail trail. Two one-on-one meetings were held with staff from the Taungurung Clan Aboriginal Corporation. The following organisations represented by attendees at the sessions were:

- | | |
|---|---|
| ▪ Australian Trail Horse Riders Association | ▪ Mitchell Environmental Advisory Committee |
| ▪ Country Fire authority | ▪ Mitchell Shire |
| ▪ BEAM | ▪ Rail Trails Australia |
| ▪ City of Greater Bendigo | ▪ Regional Development Victoria |

- Friends of Bendigo Kilmore Rail Trail
- Friends of Merri Creek
- Great Dividing trail
- Hidden Valley Association
- Kilmore and district Adult Riding Club
- Kilmore Historical Society
- SWG Landcare
- Taungurung Clan Aboriginal Corporation
- Victoria Police
- VicRoads
- Wallan Environment Group
- Wallan Neighbourhood House

The key issues arising from the sessions were related to design and management issues. There were also discussions of a possible realignment in some areas to create a link to Melbourne via Merri Creek and to avoid areas of environmental significance. Overall, the key stakeholder groups were overwhelmingly positive about the possible development and would be willing to work together if it progresses.

Consultation with Victorian Government Agencies (including VicRoads and the Department of Environment Land Water and Planning) determined that there are few impediments to a trail. Other stakeholders such as horse riders, cyclists and walkers were supportive of the possible trail.

5.5 SUMMARY

Many stakeholders were positive about the possible rail trail because of the health and wellbeing aspects, recreational opportunities and potential economic benefits. The main concerns were from landowners where the trail intends to cross through the middle of their properties.

Landowners when interviewed for the first time were concerned about the loss of privacy, impacts on stock, theft and impact on property values. However, experience indicates that landowners' opinions can change over time as they become more familiar with other rail trails.

More information can be found in the Community Engagement Report compiled by Communityvibe in Volume II.

6 Ecological assessment

6.1 INTRODUCTION

A desktop ecological assessment (included in Volume II) has shown that there is likely to be remnant vegetation and fauna habitat within the proposed rail trail corridor, however to what extent is unknown. This area needs to be subjected to a detailed on-site assessment if the trail proceeds to gain approvals.

The proposed trail mostly follows the rail alignment. Native vegetation and/or fauna habitat on this route is expected to be low because it would have been removed when the trail was originally developed, therefore impacts are likely to be minimal. If the trail deviates from the original alignment, there could be impacts on significant species or habitats that have previously been undisturbed. Although the trail is narrow, it covers a long distance and is likely to pass through remnant vegetation, which will need to be considered during the final design of the trail.

6.2 GOVERNMENT LEGISLATION AND POLICY

The area for the proposed trail is highly modified and it is likely that the adjacent broader area contains threatened ecological communities or provides habitat for threatened species. Given the location and the ecology of the rail trail, the following legislation/policy will apply if the project proceeds:

- Environment Protection Biodiversity Conservation Act 1999 (EPBC Act)
 - 15 flora species, 18 fauna species and 4 listed communities have been predicted to occur in or near the rail trail site
- Flora and Fauna Guarantee Act 1988 (FFG Act)
 - Listed and protected flora species are likely to be present
- Planning and Environment Act 1987
 - Scattered trees and native vegetation are likely to occur within the rail trail site
- Catchment and Land Protect 1994 (CaLP Act)
 - Noxious weed species management
- Water Act 1989
 - Crossing numerous waterways throughout the rail trail site

6.3 NATIVE VEGETATION AND FAUNA HABITAT

There are 14 ecological vegetation classes (EVCs) throughout or directly adjacent to the proposed rail trail site. Within these EVCs there are 4 communities listed on the EPBC Act 1999:

- Grassy Eucalyptus Woodland of the Victorian Volcanic Plain
- Grey Box (*Eucalyptus microcarpa*) Woodland and Derived Native Grasslands of South-Eastern Australia
- Natural Temperate Grasslands of the Victorian Volcanic Plain
- White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland

In addition, there are 2 communities listed on the FFG Act:

- Creeklime Grassy Woodland (Goldfields Community)
- Grey Box-Buloke Grassy Woodland Community

In some instances, particularly if the rail trail deviates from the proposed route, it is possible that construction will impact on species listed on the EPBC Act or FFG Act. Table 6-1 shows the species likely to occur within 5 kilometres of the site.

Table 6-1 Flora and fauna species listed on the EPBC Act and the FFG Act in close proximity to the proposed Wallan to Heathcote Rail Trail

FLORA SPECIES	LISTING	FAUNA SPECIES	LISTING
Crimson Spider-orchid <i>Calandenia concolor</i>	EPBC Act (Vulnerable) FFG Act (Listed)	River Swamp Wallaby- grass <i>Amphibromus fluitans</i>	EPBC Act (Vulnerable)
Matted Flax-lily <i>Dianella amoena</i>	EPBC Act (Endangered) FFG Act (Listed)	Swift Parrot <i>Lathamus discolor</i>	EPBC Act (Endangered) FFG Act (Listed)
Purple Eyebright <i>Euphrasia collina subsp. muelleri</i>	EPBC Act (Endangered) FFG Act (Listed)	Painted Honeyeater <i>Grantiella picta</i>	EPBC Act (Vulnerable) FFG Act (Listed)
Clover Glycine <i>Glycine latrobeana</i>	EPBC Act (Vulnerable) FFG Act (Listed)	Grey-headed Flying-fox <i>Pteropus poliocephalus</i>	EPBC Act (Vulnerable) FFG Act (Listed)
Spiny Rice-flower <i>Pimelea spinescens subsp. spinescens</i>	EPBC Act (Critically Endangered) FFG Act (Listed)	Striped Legless Lizard <i>Delma impar</i>	EPBC Act (Vulnerable) FFG Act (Listed)
Swamp Fireweed <i>Senecio psilocarpus</i>	EPBC Act (Vulnerable)	Golden Sun Moth <i>Synemon plana</i>	EPBC Act (Critically Endangered) FFG Act (Listed)
Swamp Everlasting <i>Xerochrysum palustre</i>	EPBC Act (Vulnerable) FFG Act (Listed)	Plump Swamp Wallaby- grass <i>Amphibromus pithogastrus</i>	FFG Act (Listed)
Small Scurf-pea <i>Cullen parvum</i>	FFG Act (Listed)	Eastern Great Egret <i>Ardea modesta</i>	FFG Act (Listed)
		Square-tailed Kite <i>Lophoictinia isura</i>	FFG Act (Listed)
		Brush-tailed Phascogale <i>Phascogale tapoatafa</i>	FFG Act (Listed)
		Brown Toadlet <i>Pseudophryne bibronii</i>	FFG Act (Listed)

Overall the impacts on fauna habitats are expected to be low to moderate. However, the final design and alignment should consider the impacts relating to fragmentation. The removal of small areas of native vegetation over the entire length of the trail has the potential to add up and require significant offsets.

6.4 SUMMARY AND RECOMMENDATIONS

A rail trail would provide an interface by which users could access nature and scenery. Recommendations to minimise the overall impacts on ecological values include:

- Undertaking further detailed surveys to map areas of native vegetation and determine significant flora, fauna and ecological communities
- Avoid deviating from the original rail alignment where possible
- Design the final alignment to avoid impact on the local ecosystems
- Design the final alignment to avoid large areas of intact vegetation, particularly areas within road reserves or other reserves that provide wildlife corridors
- Minimise the construction footprint, including areas for storing equipment and materials on site
- Protect surrounding native vegetation and fauna habitat with appropriate temporary fencing to prevent access of construction equipment
- Design waterway crossings in accordance with relevant guidelines to minimise the impacts to aquatic and riparian vegetation and habitat.
- On-site flora and fauna surveying once the preferred construction alignment is finalised

A detailed environmental impact report compiled by Biosis Pty Ltd is presented in VOLUME II and includes more information on recommended surveying should the rail trail proceed.

7 Cultural assessment

7.1 DISCUSSION AND SUMMARY OF FINDINGS

A desktop cultural assessment (Volume II) has found that Aboriginal and European cultures are important considerations for the project, both in terms of their protection but also as a means of improving access for the community to see and appreciate.

Aboriginal cultural heritage exists across the landscape in central Victoria and needs to be protected. If the Wallan to Heathcote Rail Trail is constructed along the old formation, it would cause little harm to any Aboriginal sites as the new works would occur on land already disturbed by the original railway construction. If the route deviates from the original rail alignment, then Aboriginal Cultural Heritage assessments will need to take place, particularly near water courses and roadways.

The railway line itself is the dominant European cultural heritage feature along the line. Heritage enthusiasts are interested in the remaining fabric of the old railway. Though not listed on the historical registers, most people appreciate the significance that old formations, sidings and brick structures contribute to the European history of our region. Construction of a trail would disturb little of the heritage and would open access to it and also to passive views of the countryside.

Some important historical bridges near Pyalong remain intact but are in poor repair. The Mollison Creek Bridge is iconic and needs urgent restoration works, as do the twin bridges 5 km south that cross Percivals Creek and Handifords Creek. These bridges would not form part of the rail trail. Restoring and maintaining these bridges is not costed because that is a separate obligation and separate project, independent of the rail trail project. Nonetheless, construction of the rail trail would raise the profile of these heritage bridges and might enable related projects to preserve and restore rail related infrastructure.

The cultural heritage assessment indicated that parts of the project could potentially impact the cultural heritage features, however further assessments would need to be undertaken as part of the detailed design and implementation of the project. Cultural heritage management plans would need to be prepared as part of implementation.

7.2 RECOMMENDATIONS

This report has identified statutory heritage requirements under the *Aboriginal Heritage Act 2006*, the *Aboriginal Heritage Regulations 2007*, the *Heritage Act 1995*, and the *Planning and Environment Act 1987*. The report has identified a number of recommendations for the proposed development.

It is recommended that:

- A Cultural Heritage Management Plan (CHMP) is prepared for the entire site area under the *Aboriginal Heritage Act 2006*. There are two options: one CHMP prepared for the site area, or the site area can be split into two corresponding CHMPs with one for each Registered Aboriginal Party area.
- If the proposed development impacts a place on the Victorian Heritage Inventory, such as H7823-0028, H7823-0047, H7823-0080 or H7823-0082, then consent under the *Heritage Act 1995* is required.

- If the proposed development impacts a place on the Victorian Heritage Register, such as H0564, H0905, H0930, H1190, H1451, H1695, then a permit under the *Heritage Act 1995* is required.
- If the proposed development impacts a place within a Heritage Overlay, such as HO21, HO22, HO50, HO52, HO58, HO64, HO73, HO77, HO79, HO83, HO84, HO86, HO87, HO88, HO89, HO90, HO92, HO93, HO94, HO97, HO98, HO99, HO121, HO122, HO123, HO125, HO190, then permit under *Planning and Environment Act 1987* is required.
- A site survey should be carried out to ascertain the heritage values of the dismantled railway and record and register any further historic heritage remains.
- Consultation should be undertaken with local communities and interest groups about the historic values of the dismantled railway line, including railway enthusiasts and local historical societies.

A detailed cultural assessment report compiled by Biosis is included in VOLUME II.

8 Conclusion and next steps

8.1 CONCLUSION

The decision to undertake this feasibility study into a rail trail between Wallan and Heathcote was motivated by three main factors::

- a dismantled railway line exists along the route
- conversion of nearby dismantled rail lines to rail trails has been successful in recent times
- benefits of rail trails to society have been demonstrated.

Many factors need to be taken into account when developing a rail trail, and these have been addressed in this feasibility study. A strong negative opinion from most landowners is the main concern identified in this study. However, experience indicates that many landowners would change their opinion as they become more aware of the proposal and speak to other landowners along nearby operational rail trails. Through a process of genuine collaboration, landowners' concerns can be met through design modifications and route changes, without compromising the overall integrity of the rail trail.

At the end of the study, the consultant team believes that the Wallan to Heathcote Rail Trail has strategic merit and is viable where access to land can be gained. In summary, the logic leading to this conclusion is:

- A route has been identified, largely based on the former rail line alignment. It deviates at certain points to link the trail to population centres and commercial opportunities, and to work around areas where the rail line has been built out.
- In engineering and cost terms, the trail is feasible to construct, based primarily on recent experience with other nearby trails.
- In terms of ecology and cultural heritage, the risks are expected to be manageable, particularly where the route remains on the old rail way formation.
- In social, economic and health terms, the trail would achieve benefits for users and the local community.
- The benefit cost ratio is 1.3, and there may be scope to reduce costs.
- Community feedback showed strong support among the general population but significant concern amongst landowners along the trail route.

If Council chooses to pursue implementation of the Wallan to Heathcote Rail Trail, the next steps include:

- resourcing
- establishing land access and safeguarding the route
- identifying sections for staged implementation
- refinement of alignment route and design standards

Each of these steps is discussed below, along with a suggested Implementation Plan.

8.2 NEXT STEPS

8.2.1 RESOURCING

As identified in Section 3.2, the most cost-effective way to build a trail is for Council to contract dedicated people to oversee the task. For the O’Keefe Rail Trail, the City of Greater Bendigo employed one expert in private and crown property conveyancing and law, and one practical project manager or engineer who engaged well with the council officers, landowners, local contractors, community volunteers and enthusiasts.

Harnessing the energy, experience and knowledge of volunteer groups like Friends of the Bendigo Kilmore Rail Trail and Mitchell Bicycle Users Group should be maximised to ensure the trail is practically designed and built.

8.2.2 LAND ACCESS AND SAFEGUARDING THE ROUTE

If Council decides that the trail is feasible and chooses to move ahead with implementation, then an important task will be to employ a land management officer and project engineer to work progressively along the route seeking to secure land access. This process involves systematic and detailed discussions with land owners to clarify their concerns and develop options to overcome these concerns.

Land access for the route is critically important, and if a trail is to be built then steady progress needs to be made to secure a route. Staged implementation is recommended and is described in Section 8.2.3. For Phase 1 sections, land access will occur as part of the implementation process. For Phase 2 sections, it will be necessary to set in place some safeguards to ensure that possible options (both on and off the old rail alignment) are not closed off any further.

For public land, detailed discussions with DELWP land managers should take place, and for private land discussions with land owners will be required.

Various planning and legal mechanisms are available for Council to consider such as planning overlays or possibly rezoning. It is not anticipated that public acquisition overlays would be used to secure land for the project. As an example, the O’Keefe Rail Trail was constructed without any need for compulsory acquisition. A detailed assessment of these options is outside the scope of this feasibility study, but the proposed land management officer could progress this.

8.2.3 STAGED IMPLEMENTATION

If Council chooses to implement parts of the trail, then it makes sense to start with those that are higher priority, easier to install, most likely to be utilised and less likely to meet land owner opposition. The 50 km O’Keefe Rail Trail between Bendigo and Axedale took more than fifteen years to complete. A rail trail between Heathcote and Wallan could take a similar length of time.

The Great Victorian Rail Trail statistics show that trail usage within 5km (or less) of a population centre can be up to 10 times higher than trail usage in more remote locations. For instance, usage of the trail in Mansfield is estimated to be 103 per day, while usage at Yarck is 10 per day. Given similar unit construction costs, the economic return from a trail in a town would be higher than that outside of a town. To maximise the return on its investment, Mitchell Shire Council should investigate trail near population centres before constructing the more remote parts of the trail.

From a practical point of view, sections of the Wallan to Heathcote Rail Trail would likely need to be implemented in stages. Based on the findings from this feasibility study, the most feasible sections for implementation in the short term (Phase 1) are shown on Figure 8-1, and described below:

- a. Heathcote to Tooborac
- b. McMasters Road to High Camp Flora Reserve
- c. Kings Lane to Tootle Street
- d. Tootle Street to Union Lane
- e. Wandong to Wallan

The balance of the trail (Phase 2) may not proceed for many years, but it would be advisable to protect these remaining sections as far as possible by precluding further development on the route, through negotiating with land owners to obtain easements, leases or to purchase the land.

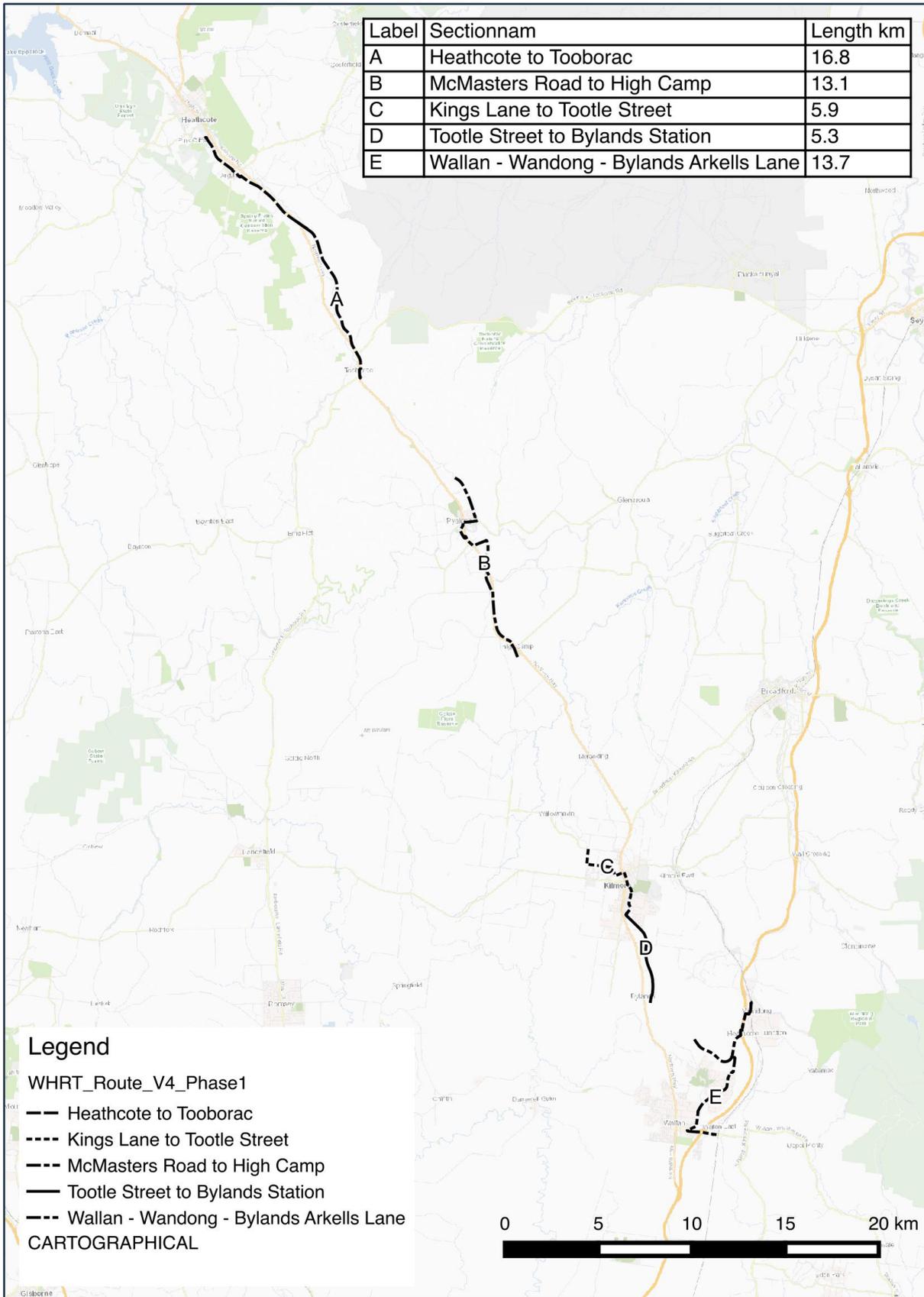


Figure 8-1 Map showing five sections recommended for Phase 1 development

8.2.4 REFINEMENT OF ALIGNMENT AND DESIGN STANDARDS

The route developed for this feasibility study, as described earlier in the report, adheres closely to the old railway. The design principles and logic for the deviations made were established early in the study (and described in Chapter 2) and the route described in this report was used as the basis for consultation, engineering, ecology and cultural studies.

However, subsequent to the public consultation, some locations have been identified where the route design could be changed to improve the overall route and reduce the project costs. Options that can be evaluated as part of the next stage of development of the trail include:

1. Highway underpasses – the design standard adopted for this study included underpasses at all highway crossings because the Northern Highway is a busy interstate route with many trucks and high traffic loads – even on weekends and holiday seasons when rail trail use might also be expected to be highest. Nonetheless, with further detailed investigation, less expensive alternatives (such as at-grade crossings or modified underpass arrangements) may be identified. Options worthy of reconsideration are:
 - a. Northern Highway at Dickinson's Crossing - \$1.3 million has been allowed for an oblique underpass coincident with the railway alignment. An at grade crossing was dismissed due to the high speed and curved nature of the road. Cheaper sites for underpasses might be available approximately 500 m to the south or 300 m to the north.
 - b. Northern Highway at High Street Pyalong - \$0.65 million has been allowed to cross from Pyalong commercial area towards Romano Drive and Pink Cliffs. As discussed below, this underpass (and the proposed culvert upgrade at Percivals Creek) could be avoided if the trail route was realigned.
 - c. Northern Highway at Fullards Road - \$0.65 million has been allowed for an underpass. A traffic assessment may find that a level crossing may be satisfactory at this location.
 - d. Northern Highway at High Camp - \$0.91 million has been allowed for this underpass. A level crossing was considered further south near Whitegate Road, and could be further evaluated.
2. Pyalong route realignment – south of Pyalong, between the Pyalong Store and Hotel, and the Percivals Creek Bridge, the preliminary route crosses the Northern Highway twice within a very short distance primarily just to include the Pink Cliffs at the east end of Halpin Court. Simpler routes exist and should be explored, such as remaining on the west side of the highway reserve, or perhaps via back roads along Hodges Lane and Ryan Court.
3. Kilmore route options – through Kilmore a route was selected based on a cursory analysis of the constraints and objectives. Council's Structure Plan has more detailed plans for the Kilmore Creek reserve and for a shared-path network in the town and a new pedestrian overpass over Sydney Road. A review of the alignment for the trail should be undertaken in concert with Council's other plans for Kilmore.
4. Heathcote Junction link – a link direct from the Hume Freeway underpass to Heathcote Junction would be very desirable.
5. Wallan – the route between William Street and Watson Street would need to be developed in conjunction with residential land subdivision.

Some of these options could reduce the cost of the project. Underpasses represent 22% of the total cost of the project, so it might be possible to save up to 10% of the total project cost by adopting a more creative approach to this element of the project. This could save \$1.8 million and drop total cost to \$16.0 million. If the changes did not detract from the benefits, then the benefit: cost ratio would increase to 1.44 (=23.1/16.0).

8.3 IMPLEMENTATION PLAN

In order for Council to review and progress the results from the Wallan to Heathcote Rail Trail Feasibility Study (as per Mitchell Shire Council's 2017-21 Shire Plan), the following Implementation Plan has been developed to guide the development of a rail trail:

1. Decide whether to proceed with the project or not.
2. If proceeding, implement the following actions:
 - a. Employ a land management officer and a project engineer dedicated to this project.
 - b. Prepare business cases for each Phase 1 section.
 - c. Lobby state and federal government for funding support.
 - d. Conduct detailed land access negotiations for Phase 1 and Phase 2.
 - e. Assess the planning and legal mechanisms available to safeguard the route (Phase 1 and Phase 2).
 - f. Prepare Cultural Heritage Management Plans for the route, stage by stage.
 - g. Carry out a site survey to ascertain the heritage values of the dismantled railway and record and register any further historic heritage remains.
 - h. Import the preliminary alignment presented in this report into Council's GIS system as proposed future trail, and keep the route up to date once negotiations commence and alternative route options are developed, evaluated and decided upon.
 - i. Re-assess all Phase 1 highway crossings by conducting a road safety audit of all high-speed crossings.
 - j. Investigate options to link directly from the Hume Freeway underpass to Caladenia Court in Heathcote Junction.
 - k. Reassess the route between Pyalong commercial area and the Percivals Creek railway bridge.
 - l. Develop a strategy for maintenance of the three historical timber railway bridges near Pyalong.
 - m. Refine the Phase 2 trail alignment in light of land access negotiations and highway crossings assessment.

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