

**FEASIBILITY
STUDY FOR
MULTI-PURPOSE
TRAIL LOWER
PLENTY TO
VIEWBANK**

MAY 2019



Banyule
CITY COUNCIL



Feasibility undertaken by Parks and Recreation
Consulting on behalf of Banyule City Council

Executive Summary

The Lower Plenty to Viewbank Multi-purpose Trail Feasibility Study has been prepared to generate information, responses and opinions from community groups, individuals and stakeholders in relation to a possible multi-purpose trail development along the existing pipeline reserve between Lower Plenty and Viewbank. The process provides an initial assessment as to the merits of the proposed trail and the challenges or opportunities that it might generate for the surrounding residents and for the wider community.

The proposed multi-purpose trail will run along the Melbourne Water pipeline reserve between the Bonds Road Rosehill Road corner in Lower Plenty and the Plenty River Trail crossing on Martins Lane, Viewbank. The proposed trail will follow the water pipeline reserve heading west from Lower Plenty down to the Plenty River, across a new pedestrian bridge crossing with raised deck trail sections, and continue to the west along the existing gravel Martins Lane roadway to the Plenty River Trail intersection. The trail will offer a picturesque and aesthetic experience for all those who travel along it.

The consultation process generated a positive response to the proposal, with a range of benefits suggested as a result of the trail development. A large number of community responses were compiled, that when tested in conjunction with an analysis of the surrounding residential catchment, suggested that the trail would have an estimated 280 uses per week. This usage would likely be shared between those walking or running along the trail and those riding a bike. A small number of horse riders may utilise the trail but this would depend on the final infrastructure provided and how that supports the accessibility for horse and riders.

The trail use would be busiest on weekends, with many users seeking to link up to existing trail networks or the parklands at the Viewbank end of the trail. An analysis of the pipeline reserve and adjacent land uses confirms that the trail alignment would be an aesthetic travel path that would encourage walkers to walk the trail purely for the experience. Although the steepness of one section along the trail adjacent to the Heidelberg Golf Course would create some challenge for bike riders due to the long steep rise.

The proposed trail will pass through land that is subject to flooding adjacent to the Plenty River. A proposed flat steel beam pedestrian bridge crossing will be 2.5

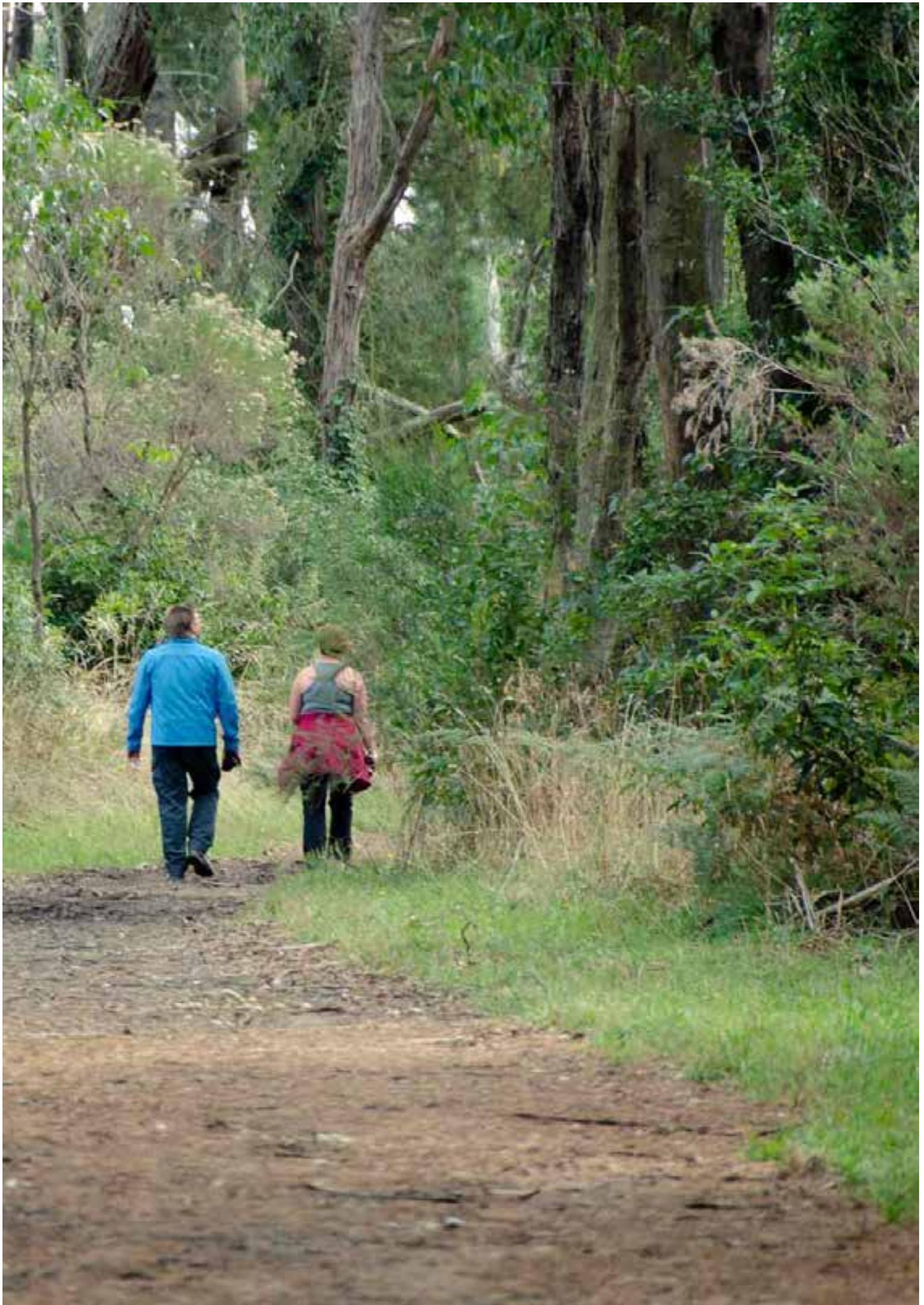
metres wide and will span 40 metres across the river in order to sit above the Melbourne Water 1 in 100 flood requirements. On either side of the pedestrian bridge structure will be raised deck transition sections leading onto the bridge, designed to comply with the 1 in 100 flood level infrastructure controls. The raised sections will extend for 40 metres on either side of the pedestrian bridge. The trail surface east of the pedestrian bridge crossing and raised section will be a 3-metre-wide granitic sand or toppings surface through to Bonds Road. The western section of the trail from the river crossing west to the Plenty River Trail intersection will follow the existing 3-metre-wide gravel roadway and will not need any new surface treatment.

The total cost of the proposed trail is estimated at \$537,000. The largest investment component of the project being the pedestrian bridge crossing over the Plenty River and the raised decking transitions up to the bridge. Although this cost is significant, it compares well with other river-based trail projects due to the pipeline reserve course being clear and gradual. The opportunity also exists to share some costs with funding partners that have accessibility to open spaces and trails as part of their charters.

The feasibility examined the proposed multi-purpose trail on the basis of five key criteria being:

1. Response to Identified Community Need
2. Future Use Potential
3. Project Cost Consideration
4. Project Risk
5. Project Funding Potential

On the basis of these five criteria, the project is considered highly feasible. The trail will traverse along a lineal reserve, through conservation parklands, a river crossing and alongside a golf course and Council park. This location provides the ideal scenario for a local trail to provide health and social benefits for the local community as well as providing a link for transit onto the Plenty River Trail and to other community resources and facilities. In this way the proposed trail will be a welcome piece of infrastructure that is consistent with the directions presented in Council's long-term community plans and strategies.



Contents

1. Introduction & Background	2
1.1 Feasibility Study Purpose	3
1.2 Project Aims	3
1.3 Methodology	4
1.4 Consultation and Engagement Process	4
1.5 Project and Site History	4
2. Strategic Context	6
2.1 Review of previous studies or concepts	7
2.2 Reference to Council Strategy Documents	8
2.3 Planning Controls	9
3. The Proposed Trail Purpose and Potential Use	12
3.1 Proposed Trail Users	13
3.2 Proposed Trail Values & Benefits	14
3.3 Consultation & Stakeholder Feedback	15
3.4 Defining Shared Trail Development Requirements	22
3.5 Shared Trail Design Standards	24
3.6 Community profile around the Lower Plenty and Viewbank region	25
3.7 Current Recreation Trends	27
4. Proposed Trail Alignment Analysis	28
4.1 Trail Alignment	29
4.2 Trail Head Accessibility	34
4.3 Pipeline Reserve Infrastructure	43
4.4 River Crossing Analysis	44
4.5 Shared Use of Proposed Trail Analysis	47
5. Summary of Key Issues	48
6. Options Assessment	50
6.1 Options for Consideration	51
6.2 Infrastructure Options	52
6.3 Recommended Development	54
7. Feasibility Assessment	56
7.1 Response to Identified Community Need	57
7.2 Future Use Potential	58
7.3 Project Cost Consideration	59
7.4 Project Risk Assessment	60
7.5 Project Funding Potential	61
8. Possible Implementation Process and Strategy	62
9. List of Summary Findings and Recommendations	64
10. Appendices	66
10.1 List of Tables	67
10.2 List of Figures	67
10.3 List of Consultations	67
10.4 References	67
10.5 Images	67

1

Introduction & Background

This section provides an introduction into the feasibility study analysis. The main drivers and the objective of the project is described to provide context to the study. This section also confirms the methodology and the process by which key stakeholders have been engaged in the study process.

1.1 Feasibility Study Purpose

This feasibility study provides a situation analysis and feasibility assessment for a proposed multi-purpose trail development between Lower Plenty and Viewbank along the Melbourne Water pipe track reserve. The investigation and consultation process assesses the scale of community need, identifies the options and considerations for the trail infrastructure and acknowledges constraints or challenges that may exist along the proposed trail path.

The document includes an assessment of the overall feasibility of the proposed trail in response to the needs analysis findings, the location and site specifics, the scope of the trail infrastructure required, the feedback from stakeholders and the relationship to other trails and pathways. The feasibility also provides information as to the implications for Council including an assessment of capital investment required and a description of the relationships required to develop a community trail on government agency land.

1.2 Project Aims

1. To assess, analyse and document the capability of the proposed Lower Plenty to Viewbank multi-purpose trail to deliver community benefits and opportunities.
2. To investigate and examine the infrastructure requirements to implement a proposed Lower Plenty to Viewbank multi-purpose trail.
3. To collate feedback of stakeholders and the general community in order to inform Council as to the community response to the proposed multi-purpose trail.
4. To provide an assessment of the feasibility of the proposed multi-purpose trail on the basis of cost and benefit analysis.

Figure 1 - Proposed Multi-purpose Trail Alignment



1.3 Methodology

The development of this document includes a number of defined processes. These processes gather information, feedback and opinion and then analyse the collected data into a set of conclusions from which to recommend future directions for the multi-purpose trail. The methodology included the following:

1. Stakeholder consultation, engagement and needs investigation
2. Examination of potential future use
3. Trail connections and capabilities review
4. Trail infrastructure requirements investigation
5. Resident and community engagement and feedback
6. Trail reserve condition analysis
7. Options assessment and discussion
8. Design review and costing
9. Feasibility assessment

1.4 Consultation and Engagement Process

The consultation and engagement process for this study involved an initial individual consultation with stakeholder groups and authorities to ascertain the possibilities and needs in relation to the proposed trail. This was followed by locality specific consultations for those closest to the proposed trail to acknowledge and reflect on their suggestions, concerns or objections. A broad community wide consultation was also undertaken, which provided the opportunity for all residents, or visitors, to provide feedback in to the feasibility process. Opportunities to provide feedback was therefore provided through set engagements, through topical letters of engagement and also through general community consultation via the 'Shaping Banyule' community engagement site.

1.5 Project and Site History

Council's process of community engagement for its public open space strategy and also for its Walking Strategy raised the concept of a possible trail along the Melbourne Water pipeline reserve from Lower Plenty to Viewbank. Specific requests have also been received from the local equestrian Club and from local horse owners in relation to safe access to the club grounds on Banyule Road in Viewbank.

The pipeline reserve is currently assessable to walkers or bike riders from Bonds Road through to the eastern side of the Plenty River bank. This pathway is not formalised, save for the depressions caused by vehicles moving along the pipeline reserve by utility companies or residents accessing rear boundaries. From the western side, a roadway exists from Martins Lane heading east through to a position approximately 60 metres from the river bank. From this point, the western side of the river bank can be accessed by a narrow walking trail. The river has no formal or informal crossing point at the river banks and is impassable for pedestrians, cyclists or horse riders without entering into the water.

Historically, the river crossing had a bridge crossing in place for local farmers and surrounding district property owners to get from the east to the west side of the river. The bridge was destroyed in flood waters at some point and was not replaced. A more formal crossing point was constructed in the form of a bluestone bridge further to the north at the Main Road Plenty River crossing point.

Eastern trail head location
- Intersection of Rosehill Road and Bonds Road in Lower Plenty



River crossing point adjacent to Cleveland Wetlands conservation area



Western trail head at Martins Lane and Plenty River Trail



A large, bold, white number '2' is centered in the upper left quadrant of the page. The background is a dark, textured surface, possibly stone or bark, with a vertical band of lighter, more detailed texture running down the right side of the page.

2

Strategic Context

The strategic context provides an appraisal between the proposed trail project benefits and the broader strategies and plans of Council. It also provides a reference to the origins of the project and the wishes expressed by the community in relation to multi-purpose trails.

2.1 Review of previous studies or concepts

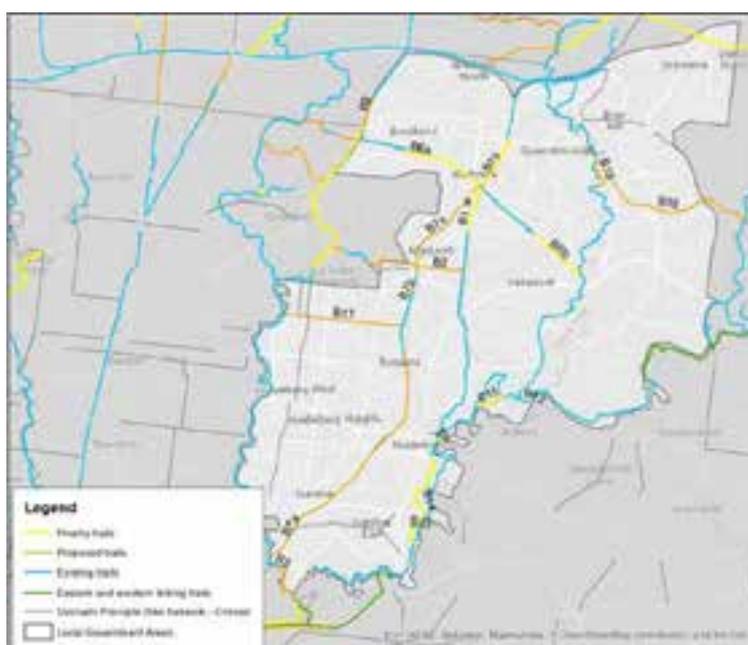
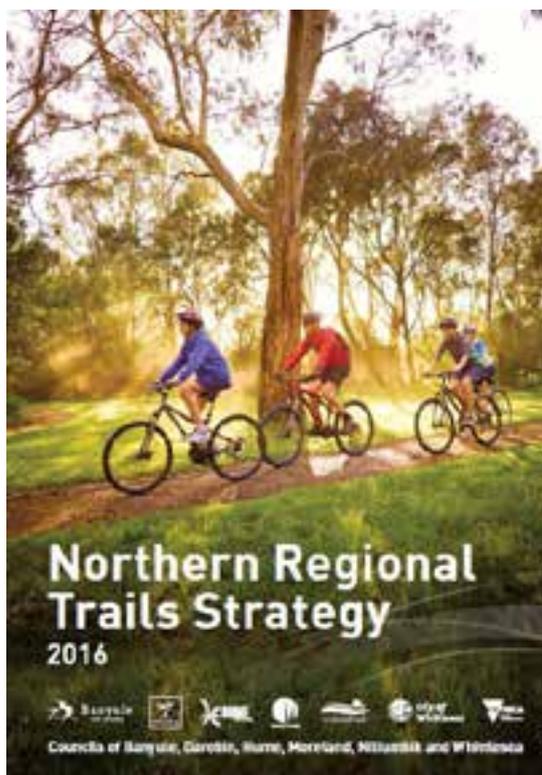
The proposed trail alignment has not been specifically identified in trails studies at a regional or local level. However, community interest in the provision of off-road trails through the Lower Plenty area has been ongoing for many years and residents have engaged with Council seeking to have a safe off-road connection on Council's open space planning agenda. The strongest advocates being the bicycle representative groups and the equestrian community seeking a safe link from Lower Plenty to the Horse and Pony Club.

The Northern Regional Trails Strategy (2016) provides a regional reference for trail connectivity and identifies key trail works across the 6 municipalities that the strategy represents. For Banyule, the Yarra Trail is the main trail along the southern boundary of the municipality and the Plenty River Trail provides a trail connection running north-south through the municipality. With the Darebin Creek Trail along parts of the western boundary and the M80 Ringroad Trail along the northern boundary, the municipality is well served by regional trails. Other trails also provide an internal network within the municipality.

The Northern Regional Trails Strategy recommends additional future regional trail connection works for five locations within Banyule. The five priority trails projects in the municipality of Banyule are listed below and shown as yellow connection lines on the Banyule map below :

- » Banyule Shared Trail (through Watsonia)
- » East-West Power Easement (Yallambie section and Watsonia/ Bundoora Section)
- » Main Yarra Trail Bridge (at Heidelberg)
- » Main Yarra Trail (at Banyule Flats)
- » Banyule Shared Trail (at Heidelberg)

Whilst these trail priorities are not in the Lower Plenty area, they do provide links into the existing trail networks of the region, in the same way as the proposed trail does.

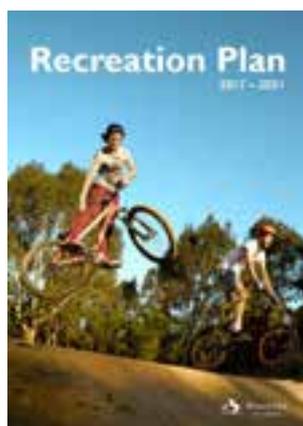


Regional Trail Reference – from Northern Regional Trails Strategy (2016)

2.2 Reference to Council Strategy Documents

The process of investigating opportunities for enhancing health and wellbeing of residents is incorporated within, and reflected in, the Banyule Council Plan (2017-2021). The objective to “Support and Strengthen the Health and Wellbeing of the Banyule Community” is highlighted as a key direction of Council. Aligned to this objective are a range of strategies including to “encourage walking, cycling and public transport use” and to “develop detailed designs for future shared trail projects”. Whilst these strategies do not specifically reference the proposed trail between Lower Plenty and Viewbank they do indicate that

people and therefore encourages development of environments that enhance walking opportunities within the municipality. The creation of suitable walking environments includes where participants are safe, where it is easier to walk for a range of health levels, and where it is convenient to participate. As such, a goal of the Walking Strategy is to “Create a comprehensive walking network including shared trails”. The shared trail network provides the ability to reduce the mix of walkers with car traffic, as well as connecting walkers with natural environments that encourage walking participation.



the proposed trail is consistent with Council's objectives for connectivity and healthy activity for the municipality.

The Banyule Recreation Plan (2017-2021) also acknowledges the Council objectives by referencing 4 key goals for recreation provision in Banyule. One of these goals (no.3) encourages actions and planning so that “Our community can access and participate in diverse activities that enhance their wellbeing.” The feasibility investigation for the proposed trail is a process that aligns to that goal through the potential creation of an environment that supports these activities. The Recreation plan also recognises and highlights the social shift toward informal recreation participation, including the growth in fitness, cycling activity and walking that can be engaged in at times that suit the participant lifestyle.

The Banyule Walking Strategy (2018) recognises the benefits of walking to the health and wellbeing to all

The Banyule Open Space Strategy (2016-2031) describes the benefits of open space from which six pillars are established in the plan. The benefits include health and wellbeing, encouraging play and creativity, creating a sense of place and providing connectivity across the community. The focus of the actions in the strategy is around creating diverse environments for the community to engage with. The trails network, whether at a regional level or a local level are significant contributors in bringing the open space actions alive.

The Council Plans and Strategies show that whilst specific actions noting the particular trail project being investigated are not evident, there is strong alignment to the outcomes of each of those plans and strategies

Zone	Relevant location	Implications
Public Use Zone 1	Pipeline Reserve	Land available for public purposes use and development including recreation purposes.
Public Conservation and Recreation Zone	Yarra Valley Metropolitan Park	Significant land use restrictions apply to building development considerations and to vegetation removal.
Special Building Overlay	Section of land adjacent to the trail head at the corner of Bonds Road and Rosehill Road	Protection of water course from all developments at Bonds Road trail head
Environmental Significance Overlay	Pipeline and all adjoining properties from western trail head through to alignment of the bowl of Roseburn Court	Overlay designated to protect areas along watercourses from development and loss of vegetation that may damage the streamside environment as a visual, conservation, ecological and recreation resource. Also, to enhance and encourage the conservation and maintenance of the streamside environment
Vegetation Protection Overlay	Area east of alignment through court bowl of Roseburn Court including section of pipeline reserve to Bonds Road trail head	Overlay designated to conserve the existing pattern of vegetation, landscape quality and ecosystems within the area. Also to address the threatening processes associated with widespread habitat loss and degradation
Land Subject to Inundation Overlay	Section of land bordering the Plenty River to a ground level of height of 22.78 metres (AHD)	Overlay designated to ensure that any proposed construction in areas subject to inundation are referred to the floodway management authority
Significant Landscape Overlay	Covers all area of proposed trail including all properties adjoining or surrounding the pipeline reserve	Overlay designated to protect and enhance the natural landscape character of the Yarra River corridor where the river, its topography, adjacent public open space and a continuous corridor of vegetation and canopy trees are the dominant features
Incorporated Plan Overlay	All of the Cleveland Estate properties	Overlay designated to ensure that specific development sites have nominated controls that consider the amenity of an estate and the surrounding area

Table 1 – Planning Zone and Overlay Implications Summary

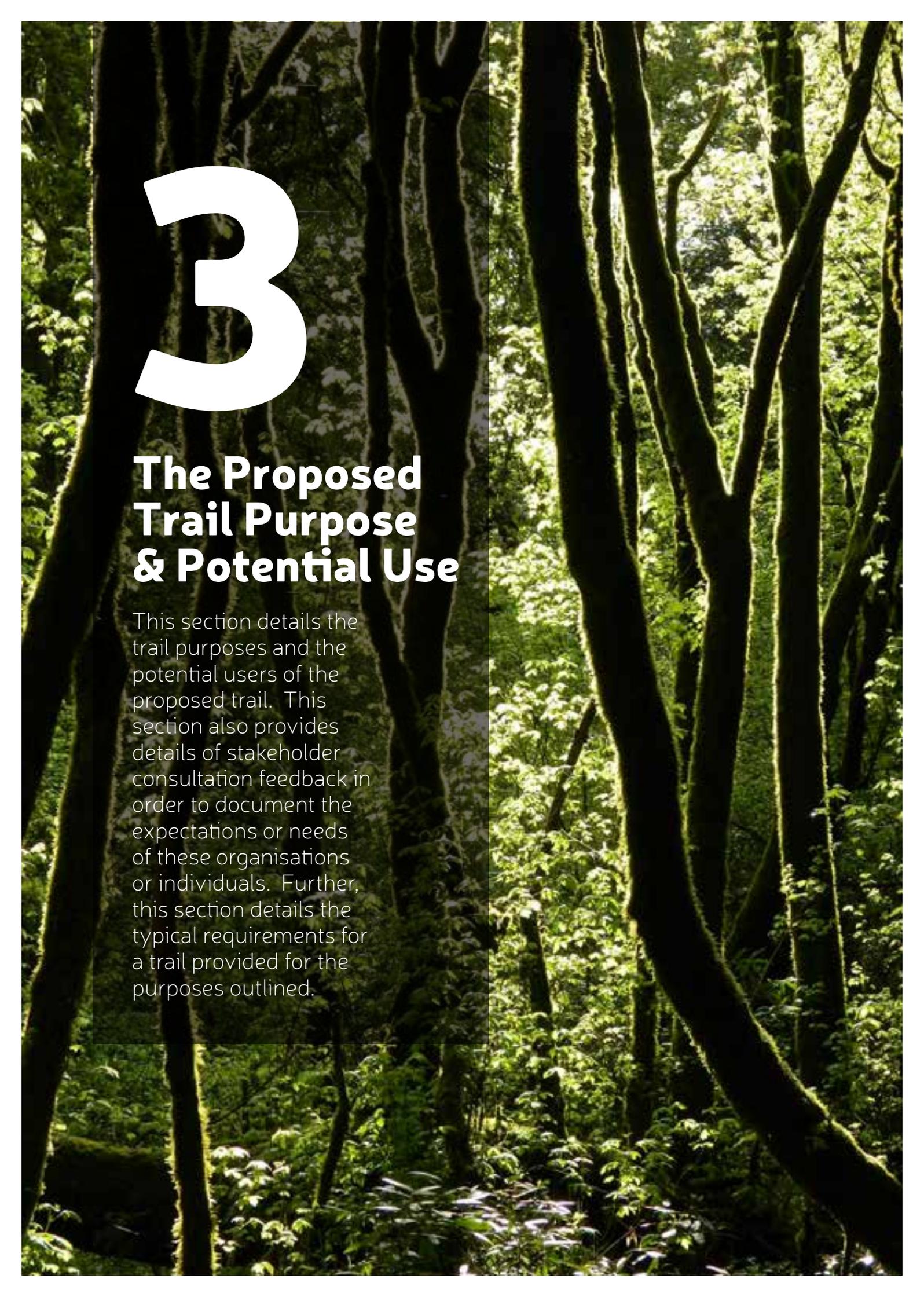
It should also be noted that a public acquisition overlay also exists, which includes parcels of low density residential zoned land south of the pipeline reserve. The section of public acquisition land on this overlay adjoins both sides of the Plenty River near the pipeline reserve and extends on the south-east side right through to Henty Road where the existing road bridge crossing is situated. This suggests that at some point in future public access may be possible along the south-east side of the Plenty River between the existing road bridge and the proposed trail alignment.

The region through which the pipeline reserve crosses the Plenty River is also significant in terms of cultural heritage. This may result in the requirements for a cultural heritage study to be undertaken as part of the planning application process for works on the river crossing and the river surrounds.

What the planning controls indicate is that it is unlikely that there will be change in the number of properties or housing type and size within the surrounding area in the future. Controls over potential subdivision are highly restrictive and are designed to protect the river catchments and the environmental values of the river catchment.

It also indicates that there will be significant investigation and evidence requirements associated with the detail planning and design of the proposed trail if it moves to this phase. The need for identification and assessment of vegetation, ecological impacts of the crossing works and floodway impacts will be significant beyond that which is required at a site without the same level of overlay planning considerations.



A vertical photograph of a forest. The image is split vertically. The left half is a darker, more shadowed view of tree trunks, while the right half is a brighter view of the same forest with sunlight filtering through the leaves. The tree trunks are covered in moss and lichen. A large white number '3' is overlaid on the left side.

3

The Proposed Trail Purpose & Potential Use

This section details the trail purposes and the potential users of the proposed trail. This section also provides details of stakeholder consultation feedback in order to document the expectations or needs of these organisations or individuals. Further, this section details the typical requirements for a trail provided for the purposes outlined.



3.1 Proposed Trail Users

The study is examining the catchment feasibility from three primary trail users perspectives. These are the equestrian users, the off-road cycling users and the pedestrian users. The initial request for consideration of an off-road trail along the pipeline reserve came from horse owners in the area seeking safer off-road equestrian movement. This was to connect properties in Lower Plenty to the North Eastern Pony Club site in Banyule Road, Viewbank.

The trail is also assessed as an off-road cycling trail to provide connection between Lower Plenty and the Plenty River regional shared trail network at Viewbank. The Plenty River regional trail runs north-south through the municipality with one end starting on the east side of Banyule Flats Reserve and heading north through to Greensborough. Along this journey the trail intersects with the proposed trail at the Parks Victoria land at Martins Lane in Viewbank. There are on road connections to the Plenty River Trail, but not off-road connections.

A third purpose is assessed around the pedestrian use of the trail as a walking trail. Walking trail use can be for specific commute between two points, for exercise purposes, or to simply to be in the outdoors. The aesthetic values along the journey, as well as transit values in getting between locations in Lower Plenty and Viewbank are evident. Whilst no cycling or walking representative groups have petitioned Council to consider the particular trail location proposed, there has been engagement over time in relation to safer road verges in the Lower Plenty residential areas.

Images of the typical trail users as representative of the trail purposes



3.2 Proposed Trail Values & Benefits

Off-road shared trails can serve many purposes and can provide many benefits. Table 1, provides a description of a range of trail benefits and purposes as well as an assessment as to whether that benefit will be derived from the proposed trail between Lower Plenty and Viewbank.

Trail Purpose	Y/N	Description
Direct access to schools or school walking route		There are no schools in close proximity to trail heads. However, Viewbank Primary School is relatively accessible from the trail head and also via the Plenty River Trail. Whether the trail is used by students will more likely be a result of the perception of parents of the safety along the route.
Direct access to community clubs or assets		The trail provides direct access to rear gate of the North Eastern Horse and Pony Club lease property from Lower Plenty. The trail is possibly an alternate route to some Yallambie sports venues, but is a no more accessible method than current routes
Direct access to shopping centre or shopping precinct		No shopping precincts exist nearby to the trail heads at either end, so it is unlikely that the trail will support access for shopping centre or commercial centre use.
Direct access to train or bus route		The proposed trail is a significant walking distance to train and main road bus services. Alternate routes are more likely to be preferred by residents seeking to link to public transport
Access to natural or conservation environments		The proposed trail provides connection to the Plenty River and Parks Victoria sites and traverses through sections of conservation or natural environment land
Access to recreation, fitness or exercise route		The proposed trail avoids major road crossings to link to other main trail routes at Viewbank and as such would likely be a preferred route for recreation or exercise activity
Cycling commuter route		The trail would link to the main Plenty River and Yarra trails which are prominent commuter routes. It is likely that the proposed trail would be used as a commuter route to work sites due to the fact that it is off road. Other slightly more direct routes are available, but these have on-road sections on these routes
Cycling connection route		The off-road connection to Plenty River Trail and possible connectivity to other routes along Yarra River Valley would be attractive to recreation cyclists. The steepness of the trail may be a limiting factor in the choice as to where to connect to regional trails
Access to regional parks		The proposed trail provides direct connection to the Yarra Valley Metropolitan Park from Lower Plenty. Alternate routes are also available for connection to regional parks including to Westerfolds Park, Eltham Lower Park and Banyule Flats Reserve
Visual amenity along the trail (trail use for its own purpose)		The river crossing, open spaces, adjoining golf course and conservation parklands all provide an aesthetic experience for trail users so this would be an attraction of the proposed trail

Table 2 – Trail benefits assessment

3.3 Consultation & Stakeholder Feedback

A Consultation Plan was prepared to guide the community engagement for the feasibility study. The consultation process was defined by three engagement processes. The first being specific engagement with stakeholders relative to the proposed trail. The second engagement was with landowners directly adjacent or nearby to the proposed trail. A third broader engagement was a wider community consultation for residents from throughout the municipality.

The first engagement process involved meetings with key local stakeholder groups engaged in activities relative to the proposed trail purpose or those authorities where partnerships, agreements or statutory processes need to be undertaken. The consultations were conducted individually to ascertain and evidence the needs of the groups, to assess the potential future use of the trail and to acknowledge the opportunities and challenges of the project in relation to stakeholder expectations. Primary stakeholder groups included:

- » Ward Councillor
- » North Eastern Horse and Pony Club
- » Riding for the Disabled
- » Nillumbik Shire Council
- » Melbourne Water
- » Friends of Yarra Valley Parks
- » Eltham District Horse and Pony Club
- » Parks Victoria

Consultation was then undertaken with landowners in the adjoining residential estates including those that live adjacent to the proposed trail alignment. A general consultation was undertaken via web site information to the wider Banyule community. The secondary stakeholder groups included:

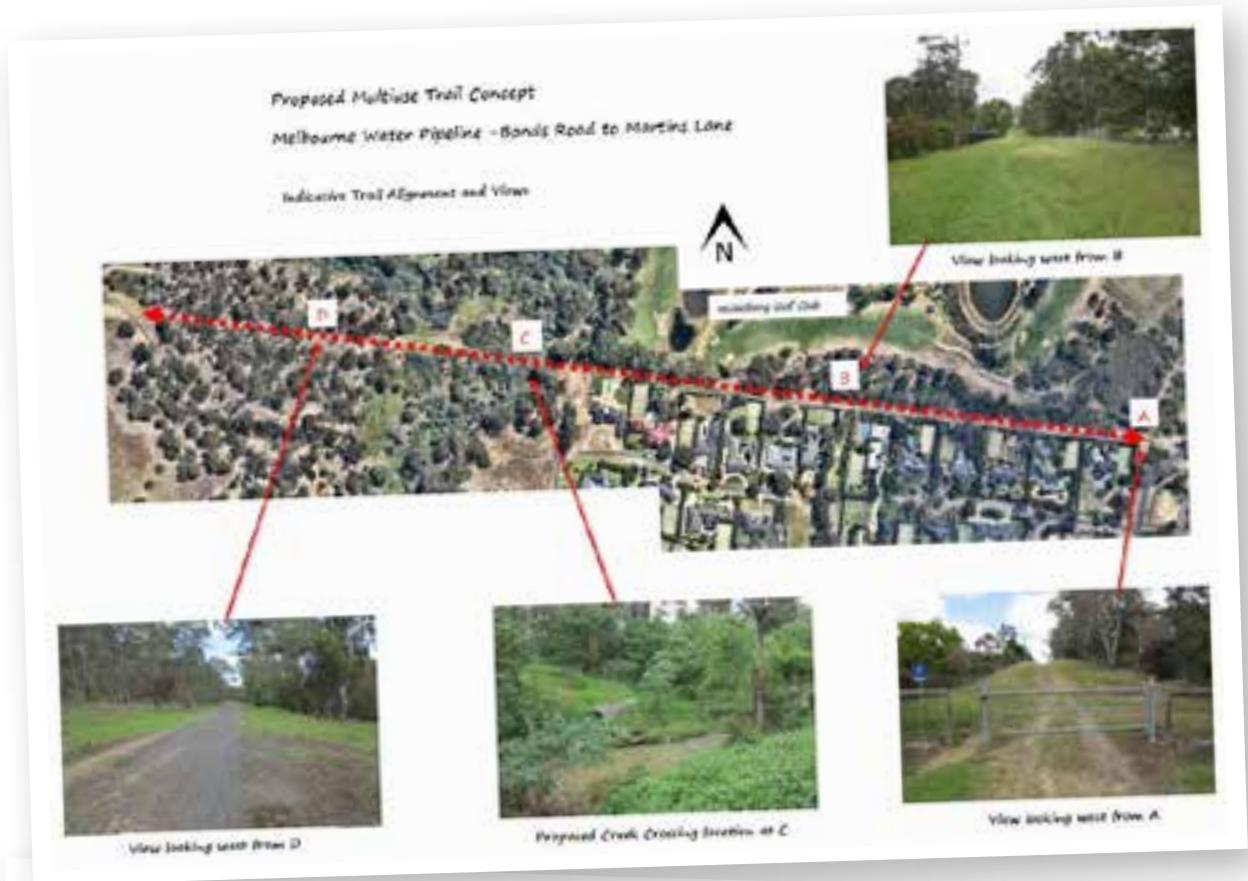
- » Cleveland Avenue residents' group
- » Adjoining landowners
- » General Banyule Community

The consultation process was underpinned by the preparation of concept schematic plans and diagrams documenting the alignment, purpose and look and feel of the proposed trail. These plans are shown as figure 2. A summary of the stakeholder, local resident and community consultation findings follows.



North Eastern Horse and Pony Club site in Banyule Road and existing Banyule Road verges

Figure 2 – Concept information presented to community



North Eastern Horse and Pony Club

The North Eastern Horse and Pony Club indicated strong support for the project, suggesting that it would provide a safer point of access for horse owners from the surrounding region to bring horses to the horse and pony club grounds via the back gate of the site at Martins Lane. The consultation also identified the following:

- » At 123 members, the North Eastern Horse and Pony Club has the largest membership of any horse and pony club in Victoria
- » The Horse and Pony Club has a ten-year lease with Parks Victoria to utilise the site on which they operate in Viewbank
- » The Club currently has 28 horses agisted at the site, which is the maximum allowed under Parks Victoria lease conditions
- » The Club has experienced membership growth of 7% between 2013 and 2018, a time when many horse and pony clubs have experienced membership decline
- » 67% of Club members do not have their own horse or pony and utilise those owned by the Club or other club members
- » Of the Club members, 15 live in the neighbouring suburbs (9 live in Viewbank, 2 in Lower Plenty and 4 in Yallambie)
- » Of the members with horses, one person lives within the catchment relative to the proposed trail
- » Of the members without horses, zero live in properties that appear suitable to accommodate horse agistment within the catchment relative to the proposed trail
- » The Club conducts 2 main events during the year at the Banyule Road site, during which over 100 horses or pony's and their riders will attend from throughout the Northern Melbourne region
- » Riding lessons and training activities are conducted across most weekends of the year, as well as various times during week days, at which up to 30 participants are evident
- » The Club currently conducts trail rides for members utilising trails in Oaklands and Kinglake, but would prefer to have a trail option from the Club site. The Club see the proposed trail as a potential first link for an equestrian trail throughout the area

Riding for the Disabled

The riding for the disabled group conducts programmed riding activities from the ménage on their 50-acre property leased from Parks Victoria on the eastern side of Banyule Road, Viewbank. The activities conducted follow specific safety procedures and utilise horses trained and assessed specifically for the purposes of their program. The riding for the disabled group agreed that equestrian trails providing connection to the club are beneficial, but would offer no direct benefit for their group due to their current membership and programming patterns. Other aspects acknowledged include:

- » Some short trail riding activities are conducted within the boundaries of their lease site
- » No horse riding activities are conducted outside of the grounds of the riding for the participant groups at present
- » The group conducts programmed sessions during school terms on Tuesday mornings and afternoons and also on Saturday morning and afternoons
- » There is currently a 3 year waiting list for access to the Saturday morning and afternoon programs
- » The group has between 12 and 16 horses agisted at the Viewbank site at present

Melbourne Water

A meeting was conducted with Melbourne Water to confirm the requirements if a trail were to be situated on Melbourne Water property along the pipeline reserve. The following was indicated:

- » Melbourne Water provides in principal support for the trail projects along pipeline reserves provided that they are in accordance with Melbourne Water guidelines
- » All hard surface trail infrastructure must be located to protect the Melbourne Water infrastructure along the pipeline reserve and preference is for a minimum of 5 metre offset from any Melbourne Water assets. This also must be adopted in reference to potential damage to trail surface as a result of pipeline maintenance
- » The Plenty River Crossing point must be designed to ensure there is no potential infrastructure obstructions situated below the Melbourne Water flood levels and in compliance with the Melbourne Water 'Constructing Waterways Crossing's and 'Shared Pathways Guidelines'
- » Electricity supply infrastructure and easement rights exist along the southern alignment of the pipeline reserve. The power company is granted access to the pipeline reserve to undertake inspections and maintenance under the easement rights
- » If equestrian movement is to be provided along the proposed trail or a hard surface trail is proposed, Melbourne Water's preference is to establish a midline fence along the alignment of the pipeline reserve to provide a demarcation between the trail or equestrian use and MW maintenance zones. There is concern in relation to risk associated with equestrian use of the pipeline reserve as a result of a change to ground conditions resulting from pipeline maintenance
- » Australian Height Datum flood levels for 1 in 10-year flood occurrence (AHD level 19.44 metres) will dictate the river crossing pedestrian bridge requirements
- » Australian Height Datum flood levels for 1 in 100-year flood occurrence (AHD level 22.78 metres) will dictate the trail infrastructure requirements to ensure that overland flows are not impeded during flood occurrences.
- » Melbourne Water will not allow a ford crossing due to the impacts on the river bank stability and water course health
- » Melbourne Water maintenance crews would seek a separate line of access to the pipeline for conducting maintenance is a hard surface trail is installed. That is due to concerns in relation to trail surface damage and potential claims for rectification costs

Melbourne Water guideline references and standards



Parks Victoria

Parks Victoria own the land on either side of the pipeline reserve along the trail alignment from the western side of the river bank to Martins Lane. The following was indicated:

- » Parks Victoria have no objection to the proposed trail, however were categoric that they have no allocated funds to contribute to works at present
- » There are no plans for trail works through any of the sections of land on either side of the proposed trail
- » Parks Victoria preference is for a granitic sand or similar toppings trail surface so that the trail surface is consistent with the existing trails in the Banyule Flats and Yarra Valley parklands
- » The proposition of a hard surface trail through the conservation and recreation parkland on the west side of the Plenty River would seem contrary to the natural environment conservation being promoted
- » Consideration should be given to protection of the conservation lands in terms of usage and how that will impact vegetation, escarpments and other environmental features
- » Trail design should consider the protection of vegetation along the trail alignment

Friends of Yarra Valley Parks

The Friends of Yarra Valley Parks have a focus on environmental protection of landscapes and vegetation throughout the Yarra Valley Parklands. This group was engaged to ascertain support or otherwise for the proposed trail project. In response the group indicated that accessibility to park environments was important to use of the parks, but assessment needs to be undertaken to ensure there are no negative effects from that access. The following was discussed:

- » The group supports trails projects provided that they do not result in degradation to vegetation or landscapes
- » The group provides re-vegetation projects on selected sites
- » The group lobbies state departments for support on projects or on key local environmental issues when required

Cleveland Avenue residents' group

The Cleveland Residents Group is a representative group established to provide a point of contact with Council and other authorities on behalf of residents in the Lower Plenty area where Cleveland Avenue exists.

- » The residents group identified traffic issues as most important at present, in particular around the use of Cleveland Avenue as a 'rat run' for traffic avoiding the Main Road and Fitzsimons Lane intersection
- » Some concerns were expressed over the privacy of the interface between trail users and the rear boundaries of adjoining residences along Roseburn Court and Lakeside Drive
- » Raised the issue of cyclists and cars using Cleveland Avenue in large numbers and need for traffic calming measures
- » Identified concerns about people accessing the river and problems this might create

Adjoining Property landowners

All property owners within a catchment of 20-30 minutes' walk from the proposed trail were specifically consulted to seek feedback in relation to the trail. This included residents with properties adjoining the pipeline reserve and those living around the eastern and the western ends of the proposed trail. Those in adjoining estates where access to the trail may be through roads or parks along the trail course were also consulted directly.

The mechanism used to consult with these residents was a letter drop addressed to each home describing the proposed trail alignment and directing residents to the online feedback questionnaire available on the Shaping Banyule website if they seek to provide feedback. The following reflects the feedback obtained as a result of the resident survey.

- » 857 letters were distributed and 265 on-line responses were received
- » Of the 265 responses, 246 indicated that they would use the proposed trail and 19 indicated that they would not use the trail
- » Of the 246 responses that indicated they would use the proposed trail, 132 nominated horse riding as an intended use, 104 nominated cycling as an intended use, 142 nominated walking as an intended use and 20 nominated an alternate use. Respondents were able to nominate multiple uses
- » Of the 20 respondents that nominated an alternate use for the trail, 15 of these indicated running and 5 indicated a nature-based activity such as birdwatching
- » In relation to support for the particular trail location, 239 responses indicated support whilst 18 indicated no support.

Nillumbik Shire Council

The boundary between Banyule and Nillumbik is along Fitzsimons Lane and Main Road. As such, the Nillumbik trails study was reviewed to examine the potential for connectivity benefits between the proposed trail into the adjoining network. Engagement with the Nillumbik Open Space planner acknowledged the following:

- » Nillumbik has a number of equestrian trails in the north of the municipality
- » The Diamond Creek Trail head is located at Eltham Lower Park and provides a 12 km trail to Diamond Creek. The trail is not utilised for equestrian activities but is well used by recreation and commuter cyclists and walkers.
- » There is currently no suitable off-road equestrian connection between Lower Plenty and Eltham.

- » Those that did not support the trail location identified the mix between horses and cyclists or horses and pedestrians as the concern, as well as the lack of connection to other trails or pathways at the Bonds Road end of the proposed trail

The consultation questionnaire asked respondents to identify planning and construction considerations for the proposed trail if it were to proceed. The key responses focused on a need for:

- » Ensuring design considers safety for trail sharing
- » Trail surface suitability for all users
- » Safety for trail users, particularly children, in terms of vegetation and sight lines
- » Trail extension planning, particularly from the Bonds Road trail head
- » Management of dogs and horses in the same location

As a concluding statement in the questionnaire cover letter, the consultation with local residents invited them to contact Council staff to seek further information or to express specific feedback in response to the trail proposal. Four residents availed themselves of this opportunity and highlighted the following feedback for consideration.

- » The proposed trail and in particular the opening up of the access points at Bonds Road, may result in use of the pipeline reserve by motorcycles and other motorised vehicle users
- » The trail is seen as problematic for those with properties backing onto the trail in relation to property security and loss of privacy due to overlooking into back yards

However, there is cycling and walking trail access via the Yarra Trail and the pedestrian bridge crossing points between the Yarra Trail and Eltham Lower Park

- » The proposed trail from Lower Plenty to Viewbank does not provide an alternate route for Nillumbik residents cycling or walking to access the Yarra Trail or the Plenty River Trail due to the fact that there are more direct routes already existing
- » There is currently no trail connection leading towards the Bonds Road and Rosehill Road intersection acknowledged in any of Nillumbik Council strategies for Open Space, Trails or Recreation

Eltham District Horse and Pony Club

The Eltham District Horse and Pony Club are situated at the Eltham Lower Park where they lease a site from Nillumbik Council. As an alternative Club location to the North Eastern Horse and Pony Club, this Club were engaged to assess their proposed future directions.

- » The Club do not have agistment on site and as such recognise that members float to either the Club site or to the horse trails further afield (eg: Kinglake)
- » The current membership is at 24, which has declined slightly in the last 5 years
- » The loss of agistment throughout the Eltham region is the main contributor to a lower membership since the 1980's
- » Membership data indicates that members float horses or ponies to the site for Club activities
- » The Club have been involved in trail planning for the Diamond Creek Trail but acknowledge that it is not suitable for equestrian use through Eltham

Banyule Community

A consultation process targeting the general community was conducted by Banyule Council through Banyule's web site Shaping Banyule. The consultation was undertaken using a "QuickPoll" which included access to view the concept plans shown in section 3.3 of this feasibility. The QuickPoll sought a response to the question "Do You support the proposed concept of a horse, cycling and walking trail?" at the specified location. The following represents a summary of the feedback received.

Peak response periods were experienced on the particular days of February 17th and on March 3rd and 4th, suggesting an advocacy and sharing of information to encourage particular responses on these days. Indications were that this was by the equestrian club

The QuickPoll was open for the period 12 February, 2019 to 11 March, 2019.

263

responses were received

255

responders were in support of the proposed trail

8

responders did not support the proposed trail

The survey data recorded

592

visitors to the proposed trail web page site

16

responders left more detailed feedback and sought additional information, or subscribed to future information on the project

3.4 Defining Shared Trail Development Requirements

To ascertain the feasibility of the proposed trail an assessment of the specific requirements of trail infrastructure and safety design is provided for each of the suggested multi-purpose trail user groups, being equestrian trail users, the off-road cyclists and the pedestrians.

A defining element determining trail requirements for many uses is the classification of that trail. A regional trail, that connects key recreational or suburban locations and has a high number of movements along it will have a greater level of infrastructure, or greater development standard, than a local or neighbourhood trail. A regional trail development will adopt standards relating to surface type, trail width, trail grade and safety infrastructure that might not be applicable for a local trail with low volume use and irregular use.

The elements that define the classification of a trail include its length, its connection to other places, what exists at the start and end points of the trail. Most important however, is the potential volume of use, whether that use be for commuter travel, for connection to shops, transport, schools or parklands. For the proposed trail alignment between Lower Plenty and Viewbank the volume of use is likely to be relatively low compared to the Plenty River Trail or the Yarra Trail. The Lower Plenty Trail end has a reasonable residential catchment, but accessibility to the trail head has challenges for some users, whether they be on bicycles, walking or on horseback. There are also alternate road side routes through Lower Plenty to the east and south to get to the main regional trail connections and regional parklands in the area. These alternatives could be used for recreation movement, or for commuter travel on foot, or by bicycle. On this basis it is proposed to define the proposed trail as a “local” standard trail and review a development scope that reflects that classification.

Tables 3, 4 and 5 provide a description of the trail development requirements for a local trail.

Table 3 - Walking Trail (pedestrian use) – Requirements for local trails

Design Element	Description / Response
Preferred surface type	Granitic sand, crushed rock toppings or natural surface
Trail width	2 metres minimum width
Trail grade	1 in 10 maximum
Clearance requirements	No defined exclusion zone clearance from trail sides
Sighting requirements	4 metres minimum – 6 metres for shared path
Additional Requirements	<ul style="list-style-type: none"> » Trail design to minimise vegetation removal » Consideration of erosion control in trail design including culverts, swales or embankments » Modified trail surface in steep or wet sections, through design of raised trail surface » Ensure design responds to environmentally sensitive areas including areas of vegetation, gullies and river banks » Waterway crossings to conform to MW Constructing Waterway Crossing Guidelines, 2011 » Trails on land subject to flooding to meet the requirements outlined in the MW Guidelines for Development in Flood-prone Areas » Preference for raised decking sections to overcome wet areas along trail route

Table 4 - Off-Road Cycling Trail (cyclist use) – Requirements for local trails

Design Element	Description / Response
Preferred surface type	Asphalt, concrete, granitic sand or crushed rock toppings
Trail width	2.5 metres minimum
Trail grade	1 in 10 maximum
Clearance requirements	Exclusion zone clearance of 1 metre from trail surface
Sighting requirements	8 metres
Additional Requirements	<ul style="list-style-type: none"> » Trail design to avoid long steep inclines without rest opportunities » Trail design to minimise vegetation removal » Consideration of erosion control in trail design including culverts, swales or embankments » Modified trail surface in steep or wet sections, through design of raised trail surface, culverts or open swale drains » Ensure design responds to environmentally sensitive areas including protection of vegetation, gullies and river banks » Waterway crossings to conform to MW Constructing Waterway Crossing Guidelines, 2011 » Trails on land subject to flooding to meet the requirements outlined in the MW Guidelines for Development in Flood-prone Areas » Trail design to avoid fast bend sections » Trail design to avoid fast speed sections at intersections

Table 5 - Equestrian Trail (horse and rider use) – Requirements for local trails

Design Element	Description / Response
Preferred surface type	Natural ground, bark chips or crushed rock toppings
Trail width	2.5 metre minimum
Trail grade	1 in 15 maximum
Clearance requirements	6 metre exclusion zone from trail centre line
Sighting requirements	12 metre forward visibility zone along trail length
Additional Requirements	<ul style="list-style-type: none"> » Trail design to avoid steep inclines » Consideration of erosion control in trail design including culverts, swales or embankments » Modified trail surface in steep or wet sections, through design of raised profile crushed rock surface » Ensure design responds to environmentally sensitive areas including areas of vegetation, gullies and river banks » Waterway crossings to conform to MW Constructing Waterway Crossing Guidelines, 2011 » Trails on land subject to flooding to meet the requirements outlined in the MW Guidelines for Development in Flood-prone Areas

The trail head location and its capacity to provide connecting linkages to other trails or other key community destinations is an important aspect in trail planning requirements. The proposed trail head at Viewbank connects with the Plenty River Trail, as well as to local trails or paths leading to schools and other community facilities. The Lower Plenty end of the proposed trail will require additional planning and road verge development to provide any degree of linkage to other community resources to the east. This is largely due to the informal footpaths and hazards along road verges heading from the trail head back along Bonds Road and Rosehill Road and along other adjoining roads. Therefore, trail development requirements might also extend to improvement of surrounding paths or trails.

The use of the proposed trail for equestrian purposes increases the requirements for ensuring a safe ground condition across the whole of the pipeline reserve. This fact was highlighted in engagement with Melbourne Water, where concerns were raised about safety where shared trails along pipelines are used by horses and riders. Melbourne Water highlighted their concerns about potential hazards to horses, given their need to service the pipeline for maintenance works that can result in changed ground conditions. Melbourne Water's request for division of the reserve through internal fencing along the proposed trail to divide horse riders and other trail users away from the pipeline infrastructure has been acknowledged, but is not considered feasible for the proposed trail project.

The use of the trail for equestrian purposes also requires the design and introduction of larger opening points at the trail heads to facilitate horse movement onto the trail path. This raises concerns for the access onto the trail by illegal users such as motorbikes. This aspect of the trail development requirements will need to be assessed against the realistic potential use by horses and riders or alternately to identify a method of user management that will support the trail users, but prohibit other illegal users.

In some trail developments adjoining golf courses, high fencing has become a development requirement. With the Heidelberg Golf Course adjoining the pipeline reserve there is some potential for a trail user to be hit by a stray golf ball along a small section of the trail adjacent to the fifteenth fairway and green. However, there is a section of vegetation between 15 and 35 metres wide between the fairway and the existing chain wire boundary fence which will minimise the potential risk. It is unlikely that any new high fencing should be required as part of the development requirements.

3.5 Shared Trail Design Standards

There are a number of reference documents in relation to requirements for shared trails. Although references include design principles, there is no one standard that details what is the specific requirements for a local trail of the nature of the one proposed between Lower Plenty and Viewbank. There are elements in many of the references that can influence the design recommendations, but none that will dictate design.

For example, the 'Austroads Guide to Road Design - Part 6A: Pedestrian and Cyclist Paths' and the 'VicRoads Traffic Engineering Manual - Volume 3 – Additional Network Standards & Guidelines - Design Guidance for strategically important cycling corridors', both provide recommendations for regional and major commuter trails with high volume use and focus on design of hard surface trails in urban environments where there is an interplay with traffic. The focus of the roads standards is on commuter trail provision through both on-road and off-road shared trails. Trail grades of no more than 3% is recommended where possible as well as provision of flat sections in long rises to allow for rest opportunities. These recommendations cannot be met within the current proposed trail situation.

Design guidelines and Australian Standards (Australian Standards for Walking Trails -AS2156-2001), provide guidance to off-road walking trails in a rural or bush setting. These guidelines and standards are generally associated with bushwalking and detail elements such as wayfinding signage, amenities, trail safety, surface type and sight lines. The walking trail guidelines do not set any particular standards or parameters for trail width, trail grade or other elements that would dictate design aspects of the proposed trail. A trail width of 2 metres is generally acknowledged in the various standards as suitable for a local level trail where a hard surface, or a soft surface, is proposed.

It is clear that the steeper sections of the proposed trail have a significantly higher gradient than is recommended. However, the narrow pipeline reserve does not allow for a trail alignment to zig zag across the grade in order to ease the amount of rise and fall. This will result in more difficult uphill sections and faster downhill sections. The trail alignment does offer the opportunity to have straight flatter sections of trail at the foot of the steep trail sections to provide graduated run offs, which add an element of safety to the trail design where higher speeds are experienced down the declines.



3.6 Community profile around the Lower Plenty and Viewbank region

The majority of the Lower Plenty suburb contains areas of low density residential and rural conservation zoned land that includes overlay provisions for conservation and vegetation protection. The area is within the Yarra River catchment and has tight environmental controls within the state and local frameworks within the planning scheme. As such, the land holdings around the area of the proposed trail tend to be larger residential or semi-rural sites, as well as some bushland sites and public authority lands.

All the zoning elements place limitations on block size for residential development and so the population density is relatively sparse per square kilometre in comparison to the metropolitan suburbs that surround the Lower Plenty area. For this reason, the Lower Plenty area is much sought after, and houses or land values are extremely high. Since the 1980's the area has seen a significant gentrification from semi-rural farm style properties to large more urban style properties.

A key feature of the geography of the region is the rolling hills surrounding the river flats and river valleys. Major roads, including the Fitzsimons Lane river crossing, Main Road and Lower Plenty Road arc around the Lower Plenty and Viewbank suburbs and form the east and northern suburb boundaries. This has traditionally limited the amount of through traffic experienced within these suburbs, as has the indirect path of travel of the internal roadways. However, this is changing as the main roads around Lower Plenty become blocked in peak periods.

The location of the proposed trail head at the Lower Plenty end is fairly central to that suburb's boundaries, whereas the Viewbank end of the proposed trail is at the eastern edge of the suburb boundary. The Viewbank end has higher density housing nearby due to the neighbourhood and general residential zoned land through much of that suburb.

The housing stock in the Lower Plenty area is large detached housing on large blocks between 0.4 of a

hectare and 2 hectares. The older housing is situated on the semi-rural farmlets throughout the area and the newer housing stock is on the residential zoned sections, some of which have resulted from subdivisions over the last 15 years. These newer houses are more likely to have elaborate gardens, tennis courts and swimming pools, more so than the horse properties that once would have been consistent through the area. Alternately the housing stock in Viewbank is typical residential housing blocks of 550m² to 864m². The Viewbank section of the proposed trail has very few houses that interface with the trail head. This is because the proposed trail ends within a section of the Yarra Valley Metropolitan Parklands.

The demographics of the region are not a particularly influential aspect of the feasibility. However, the demographics of the trail catchment may suggest something of the potential for the surrounding residents to want to use the proposed trail and for the number of potential users. In this regard to proposed trail catchment has been noted as the sections of Lower Plenty and Viewbank south of Main Road. The population of this catchment is estimated at 11,160.

Population density of the catchment is 11 persons per ha compared to the Banyule average of 21 persons per ha. In Lower Plenty this density is just 5.7 persons per ha. The number of dwellings in the catchment is 4,100 and 37% of these are occupied by couples with children.

The population is defined as 21% under the age of 18, 39% between 18 and 50 years of age and 40% over 50 years of age. Participation in sport is generally at its

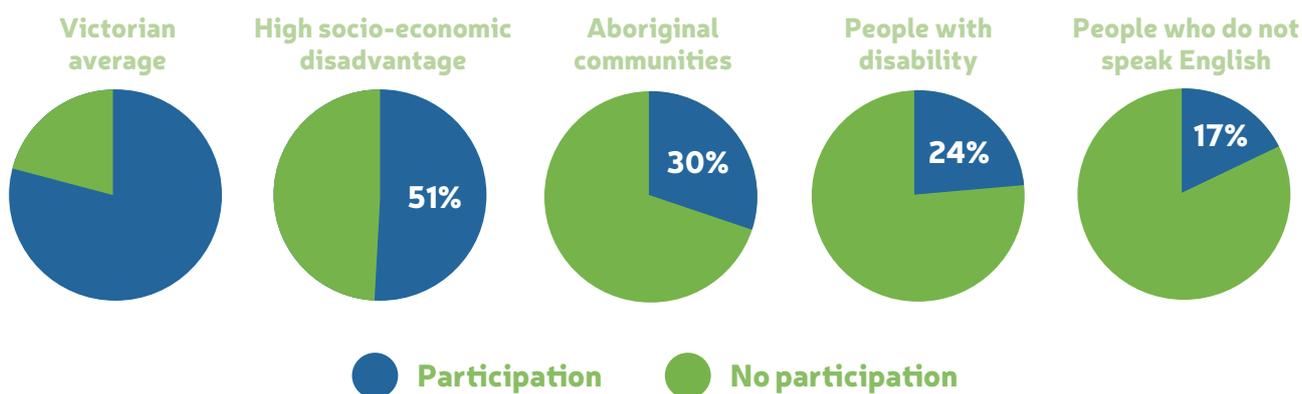
highest between 6 and 16 and recreation activities has a highest participation level between the ages of 30 to 47. This indicates that there are plenty of people living in the catchment that would be seeking access to sporting and recreational pursuits and opportunities.

The catchment has a higher tertiary educated population and a lower unemployment level than the Melbourne averages. As expected, this contributes to average income levels that are higher than the Melbourne average income levels by around 18%. Higher disposable income potential and semi-rural land and housing stock could possibly have a bearing on horse and pony ownership in the region, but the impact of these demographic statistics on trail use is not really clear.

A final element of the catchment profile is that public transport usage is lower than the Melbourne average. Whether the Lower Plenty and Viewbank locations have particular challenges accessing public transport options, or have preference for car use is difficult to assess. The distances to train and bus routes from some parts of these suburbs is significant, and so it is not surprising that this statistic exists. The proposed trail route does not tie into specific public transport options and so is unlikely to change this.

The graph below indicates which population characteristics have lower levels of sport and recreation participation. None of these particular population characteristics are high within the catchment, suggesting that trail participation should be equivalent to evidence from typical per capita participation rates.

Figure 3 - Factors influencing lower levels of participation in sport and recreation – Ref: ABS 2012



Population projections or forecasts for the region indicate that a slight increase in the overall number of people will occur throughout the catchment in the coming two decades. Whilst this increase is not significant, at around 4% between 2018 and 2036, there is likely to be additional demand for recreation facilities to accommodate formal and informal participation needs. The demographic mix of the catchment population, in terms of age brackets and ethnicity, will incur very little change during the coming two decades. This is due to the likely retention of the green wedge zoning controls on residential development and also the household size is likely to remain at current levels.

3.7 Current Recreation Trends

Whilst the consultation acknowledged the needs and wishes of the stakeholders and the community in relation to the proposed trail, it is also pertinent to recognise the wider activity trends to see if those factors support trail development. In this regard there has been a societal trend towards a preference for more informal and individual recreation participation. The desire to engage in fitness activities within a timeline set by the individual is one reason for this trend. Another is the preference to fit exercise around work commitments without being locked into weekly competition timetables. Examples of this is the growth in walking, jogging, cycling, personal training sessions and health-based events.

Whilst junior sport still has very high levels of participation, the drop out rate after 14 years of age is much more pronounced than in past. This dropout rate, as well as the preference to transition towards recreation rather than formal sport is highlighted in the figures below. The implications for the feasibility of the proposed multi-purpose trail is that this infrastructure supports the societal trend towards self-health activity and the right trails in the right locations will likely attract significant ongoing trail use.

Figure 4 - Participation rate in sport by age and gender – Ref: ABS 2014

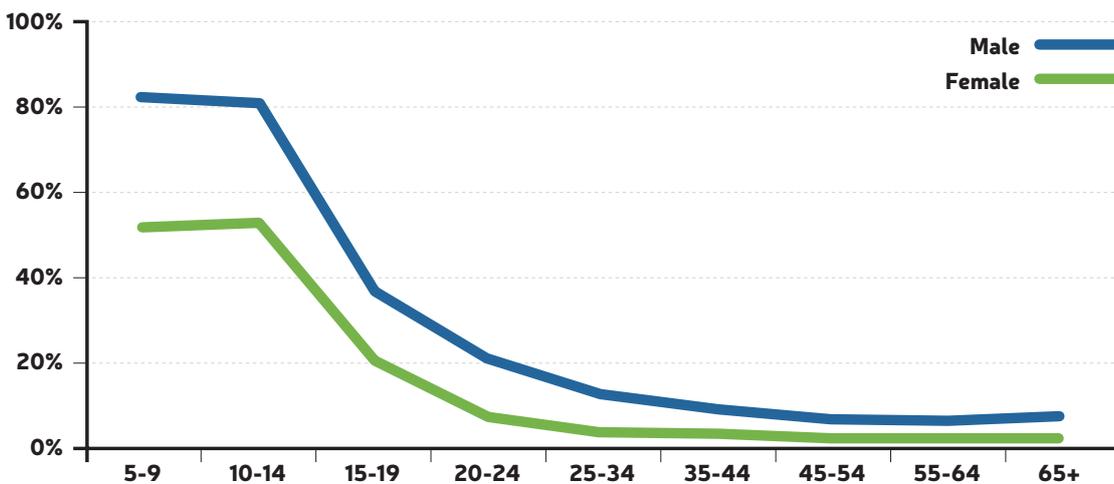
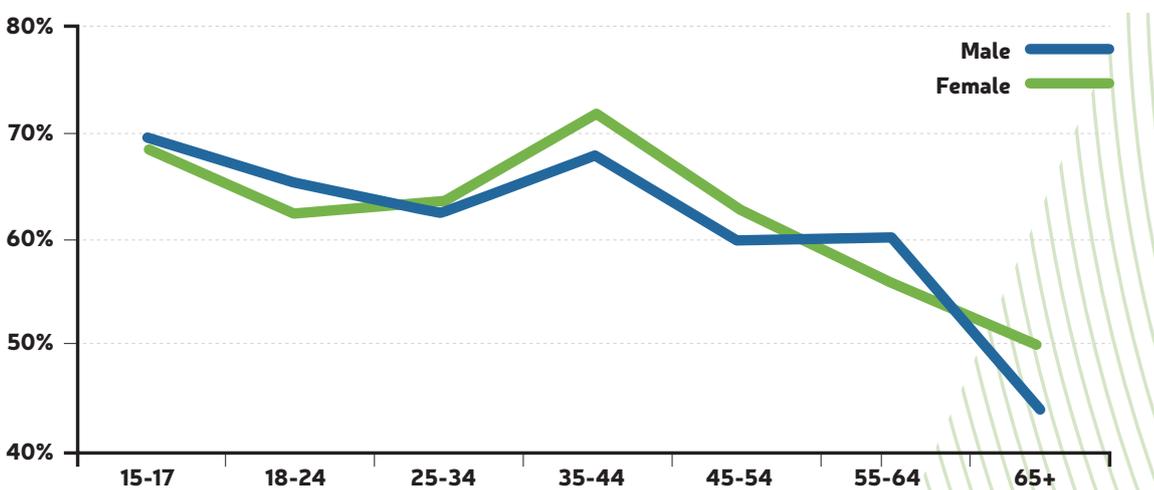


Figure 5 - Participation rate in sport and recreation by age and gender – Ref: ABS 2014



Specific use trends in relation to trail use are also evident. A significant increase in bike riding activity amongst the 35-65 age group has been a strong trend. The benefits are being observed in both a health and fitness context and in a social context. This increase has also been evident in the women in the same age bracket (Bicycle Victoria Data 2018). Whilst there has been a massive fall in independent bike use amongst children between this and the last generation, there has been large increase in the number of adults riding. The trail network is a great facilitator in support of this trend, as it provides a measure of safety over and above on-road riding. This is further supported by the growth in the use of regional and local trails for commuting purposes to work locations, which has increased by 20% in general terms over the last decade.

Walking activity for health also continues to increase. Whilst less walking for commuter purposes is evident in the current generation, walking specifically for health is increasing and is by far the highest participation activity in participation statistics (ABS 2018).



4

Proposed Trail Alignment Analysis

This section provides analysis of the trail alignment in context with the infrastructure requirements, the suitability of the topography, the accessibility for nominated user types and the impacts of existing pipeline reserve infrastructure. The findings in this section will have significant impact on the cost implications for trail development and therefore will have a major bearing on feasibility.

4.1 Trail Alignment

The Melbourne Water pipeline through Lower Plenty to Preston was constructed in 1970 to link and integrate Melbourne's water supply in the east from Silvan and Upper Yarra Reservoir's with the water supply line in the north from Yan Yean Reservoir. The supply pipe was to add to the surety of Melbourne's water supply as development increased throughout the north and north west region. Sections of pipeline reserve was established as part of an acquisition overlay during the initial Melbourne Metropolitan Board of Works planning for the supply connections through the 1950's.

The eastern end of the proposed trail is to start at the intersection of Rosehill Road and Bonds Road in Lower Plenty. From this point the trail will follow the pipeline reserve in a westerly direction towards the Plenty River. The pipeline reserve is 20.12 metres wide at this point, with the pipeline infrastructure situated approximately 6.5 metres from the northern fence line that abuts the Heidelberg Golf Club. On the south side of the pipeline reserve is an electricity supply line and easement. The line of supply poles for the electricity lines is approximately 2 metres offset from the southern boundary fence line.

Aerial view of trail alignment and adjoining properties between Bonds Road and Martins Lane



The pipeline reserve land rises steadily from the trail head up to a ridge line approximately 118 metres along to the west. This is the highest point of the proposed trail and the grade between the trail head and the ridge line is approximately 1 in 14. From this point the trail alignment can be seen by looking west right through to the point where the pipeline intersects with Plenty River Trail. The pipeline infrastructure is evident at an offset of approximately 6.5 metres from the north side fence line at this point. The southern boundary fence of the pipeline reserve is also the rear fence lines of residential properties of the adjacent estate.

Trail head at intersection of Rosehill Road and Bonds Roads and trail ridge line



From the top of the ridge line the pipeline reserve land grades downhill towards the rear boundary between the residential properties numbered 5 and 7 Roseburn Court. The grade of this 342-metre-long section is 1 in 11 and presents the most challenging aspect of the proposed trail for cyclists due to the long length of the 1 in 11 section. There is an existing informal track along the length of this section of pipeline reserve running along the centre line of the reserve, indicating that it is currently used by people. There is also some evidence of maintenance vehicle access and maintenance works along the pipeline reserve at specific above ground infrastructure points such as valves and inspection openings.



Trail heading west towards Plenty River Crossing from ridge line

From this point heading west the topography flattens out through to the boundary of the last of the residential properties on the south side, where it intersects with the 'Cleveland Wetlands' Council reserve. The Heidelberg Golf Course remains as the northern boundary neighbour right through to the Plenty River. The grade of this 160-metre-long stretch between the bottom of the ridge and the Cleveland Wetlands is 1 in 27. The pipeline reserve is relatively clear of trees or shrubs right through until this point, where it becomes more vegetated through to the river bank.

The last 35 metres of the pipeline reserve, before reaching the river bank, grades at 1 in 12 and this section is subject to flood inundation. This section of the trail will need to be raised or concreted to avert flood issues and to transition into the creek crossing pedestrian bridge. Once the edge of the river bank is reached there is a drop off of approximately 3 metres down to the river water level. Under normal flow conditions the river is around 2.5 metres across with graded embankments extending

for approximately 4 metres wide on either side to reach the natural surface of the surrounding land.

From the western side of the river bank the pipeline reserve is vegetated with shrubs and small trees for a distance of approximately 60 metres. This section has only a narrow walking access with no vehicle access through to the river bank. The grade away from the river to the west climbs at 1 in 20 through this section, and part of this section of trail will also need to be raised or concreted to avert flood issues as per the eastern side of the river. This raised section will also transition onto the proposed creek crossing pedestrian bridge.

The land on either side of the pipeline reserve adjacent to the river bank is managed by Melbourne Water for a setback of approximately 20 metres from the river bank, or alternately for an applicable width of flood zoned land to enable Melbourne Water to manage the mitigation of flooding along this section in the river.

River crossing point from eastern embankment looking west



River crossing point from western embankment looking east



After the vegetated section, the land on either side of the pipeline opens out into a more open bushland setting with the pipeline reserve forming a clearing through the centre and an access roadway along the pipeline reserve. This section is relatively flat with only 1 in 27 rise. It is from this point that a vehicle access road up to Martins

Lane is evident, running through to a gate at the western end of the proposed trail, a distance of approximately 300 metres. The first 80m section of this roadway is quite steep at a grade of 1 in 10 after which it flattens out to 1 in 42 for the next 126 metres. The last 100 metres through to the Plenty River Trail intersection gate is flat.



Gravel access trail along pipeline reserve through Parks Victoria land looking west



River crossing point from western embankment looking east

End of gravel trail at intersection with Martins Lane and Plenty River Trail looking west

On the north boundary side of the pipeline reserve from the river through to the Plenty River Trail intersection and beyond is Parks Victoria land. The land adjoining the southern boundary of the pipe reserve is also a part of the Parks Victoria land, with the site set aside for conservation and forming part of the Yarra Valley Parklands.



At the western end of the proposed trail, the pipeline reserve land intersects with Martins Lane and also the Plenty River Trail. From this point the pipeline appears to sit within the road reserve as it follows Martins Lane. This point also adjoins the rear boundary of the North Eastern Horse and Pony Club site, which is a reference point for the request to consider an equestrian trail connecting to this location.



Existing gravel trail looking east towards river crossing



Rear gate of North Eastern Horse and Pony Club and Plenty River Trail

4.2 Trail Head Accessibility

A significant aspect of the feasibility of the trail is the accessibility to the trail head on the corner of Rosehill Road and Bonds Road from surrounding properties. For the trail to be feasible there must be safe and suitable connection to this location. In this regard, three assessments were completed. The first an assessment of suitability for riders and horses to transition from various properties in the surrounding area to the trail head. The second assessment is for off road cyclists to access the trail head point. The third assessment is for walkers or joggers to access the trail head point. In all instances the assessment was for safe off-road accessibility applying the recommended safe trail widths and heights for the applicable activity. These assessments are shown on the following pages and labelled as figures 8, 9 and 10.

The equestrian connection trail analysis indicates that the majority of road side verges do not present a safe or suitable connection to the proposed trail head. In particular, there are long stretches of main road that are only accessible for horses if they move onto the roadway. The Banyule Road section of road heading northwest from the road bridge crossing has no road verges for any purpose along a narrow and winding section of road. This section leads to the North Eastern Horse and Pony Club site and so it is easy to see why an alternative option is being sought. However, the proposed route also has some challenges in safely reaching the trail head.

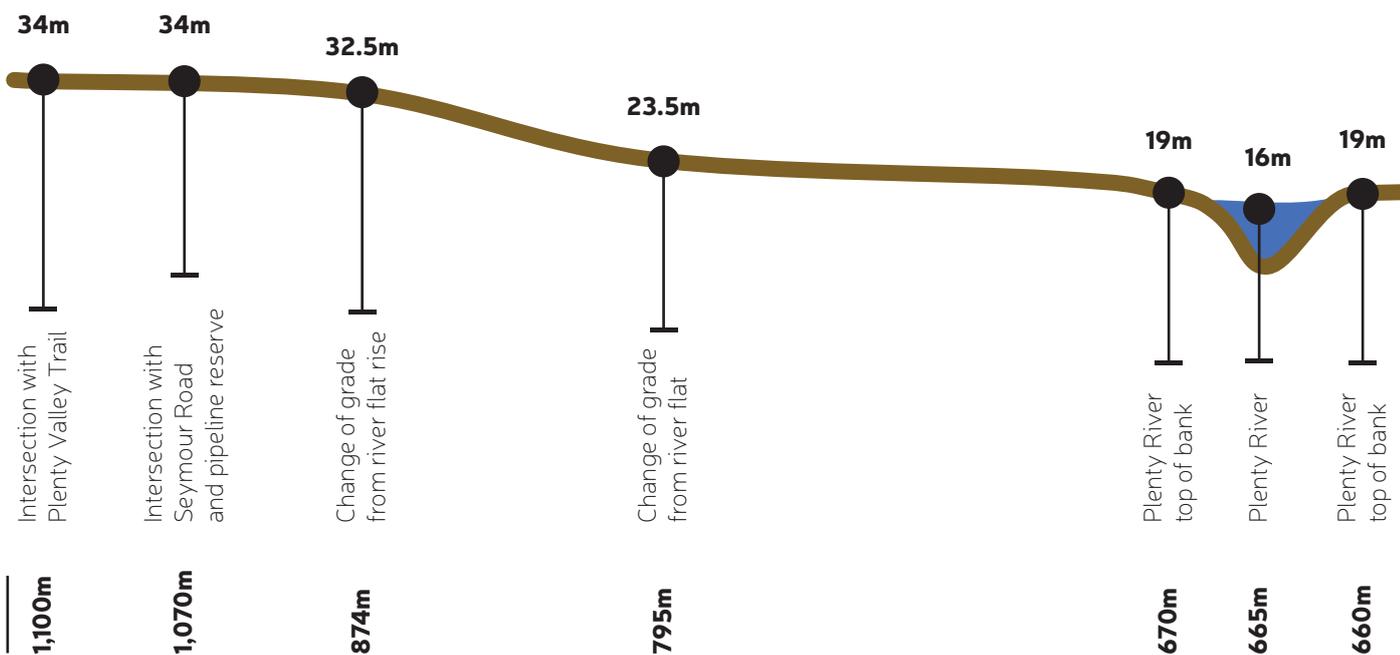
The off road cycling connection trail analysis indicates that cycle connections are possible throughout most of the residential catchment surrounding the proposed trail

head. However, there remains a couple of sections where off road cycle accessibility is not possible and cyclists would need to go on road to traverse these sections. It is important to note the current high use by cyclists on road along Henty Road and Banyule Road. In this context the proposed trail creates a safer alternative for east-west off road cycling connection between Lower Plenty and Viewbank for casual cyclists.

The walking connection trail analysis indicates that almost all sections are accessible for pedestrians to remain off road in connecting to the proposed trail head. A small section along Cleveland Avenue has extensive verge planting with no pathway through the planting, thereby requiring pedestrians to move onto the roadway to move past this. Also, a section along Banyule Road has either trees and shrubs blocking the road verge or has steep inclines away from the road edge. Pedestrians are forced onto the roadway to move along this section.

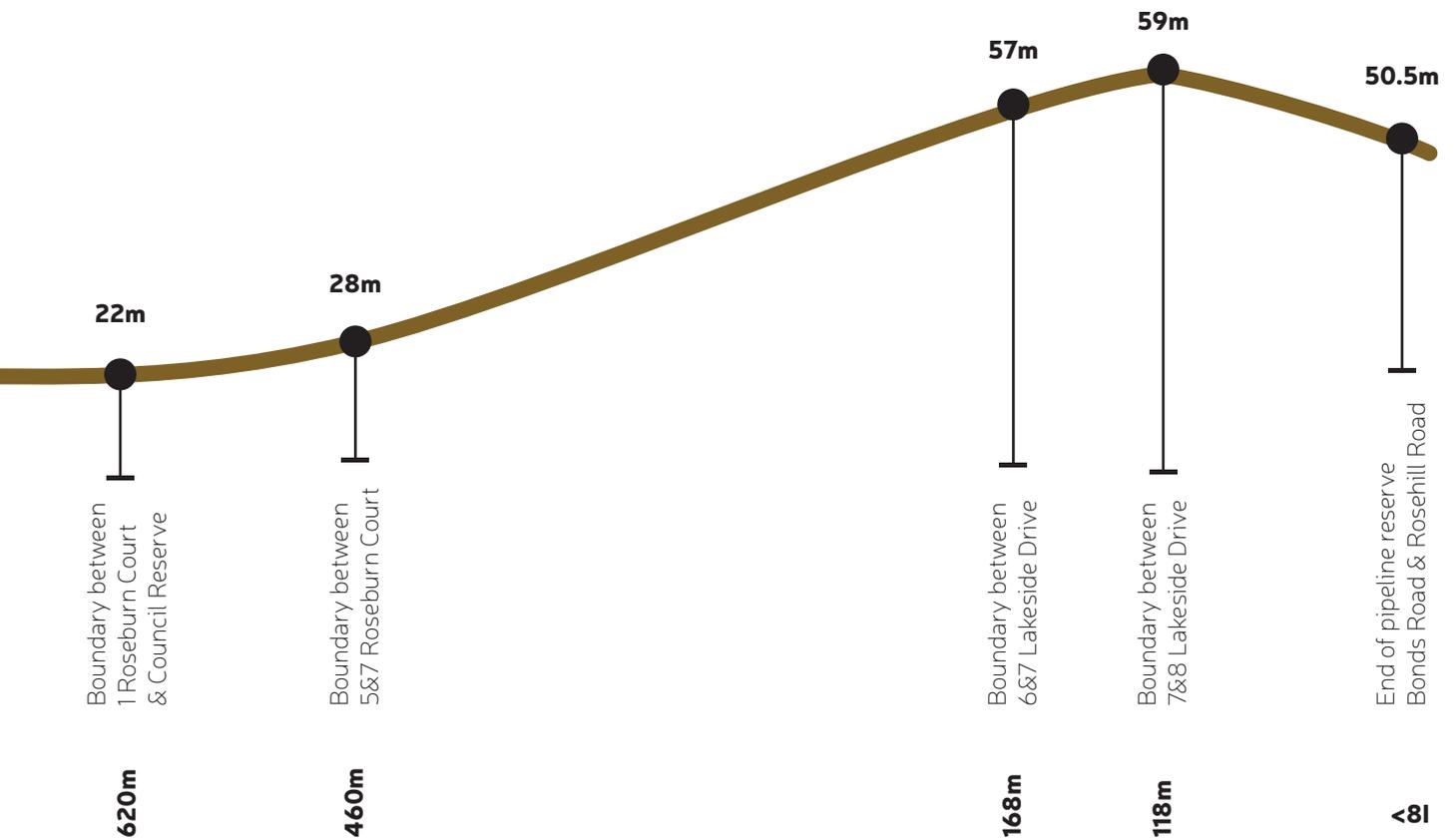
The trail head assessment also considers whether people will drive to the trail head, park and undertake their journey from that point. Whilst the Bonds Road trail head offers an alternative connection to the Plenty River Trail it is unlikely that people will expect to drive to the end of the trail as other far more suitable regional trail connection points exist in the surrounding area. This includes Westerfolds Park, Eltham Lower Park and Banyule Flats Reserve. These parks have infrastructure (toilets, water taps, carparks) to support their use as a base for regional trail network connection. The Viewbank end of the trail is also unlikely

Figure 6 - Long Sectional alignment and elevation chart for proposed Lower Plenty to Viewbank multi-purpose trail





Car moving past on road cyclists on Banyule Road





Narrow and planted road verges along Cleveland Avenue

Agistment Accessibility

One of the factors determining use of the proposed trail for equestrian purposes is the accessibility to horse agistment. The availability of agistment is the dominant factor in the strength of pony club membership in the metropolitan region. An assessment of agistment in the catchment shows that there are seven locations currently agisting horses (excluding the Horse and Pony Clubs). Three of these options appear to be structured to provide agistment to other private parties, as well as for the property owner. Of these, all three have a ménage incorporated into the agistment site. The number of horses observed during an assessment of horse numbers across the catchment was 14. Whilst this number is by no means definitive, it suggests that a total number of between 15 and 20 horses being agisted in the area.

The small number of agistments and the challenges in getting to the trail head at Bonds Road indicate that it is unlikely that the trail will be used to access the horse and pony club site (as shown on figure 11).



Sections of road verge where access is only possible via on road travel



Figure 7 - Suitability of road side verges for access to proposed trail – equestrian assessment

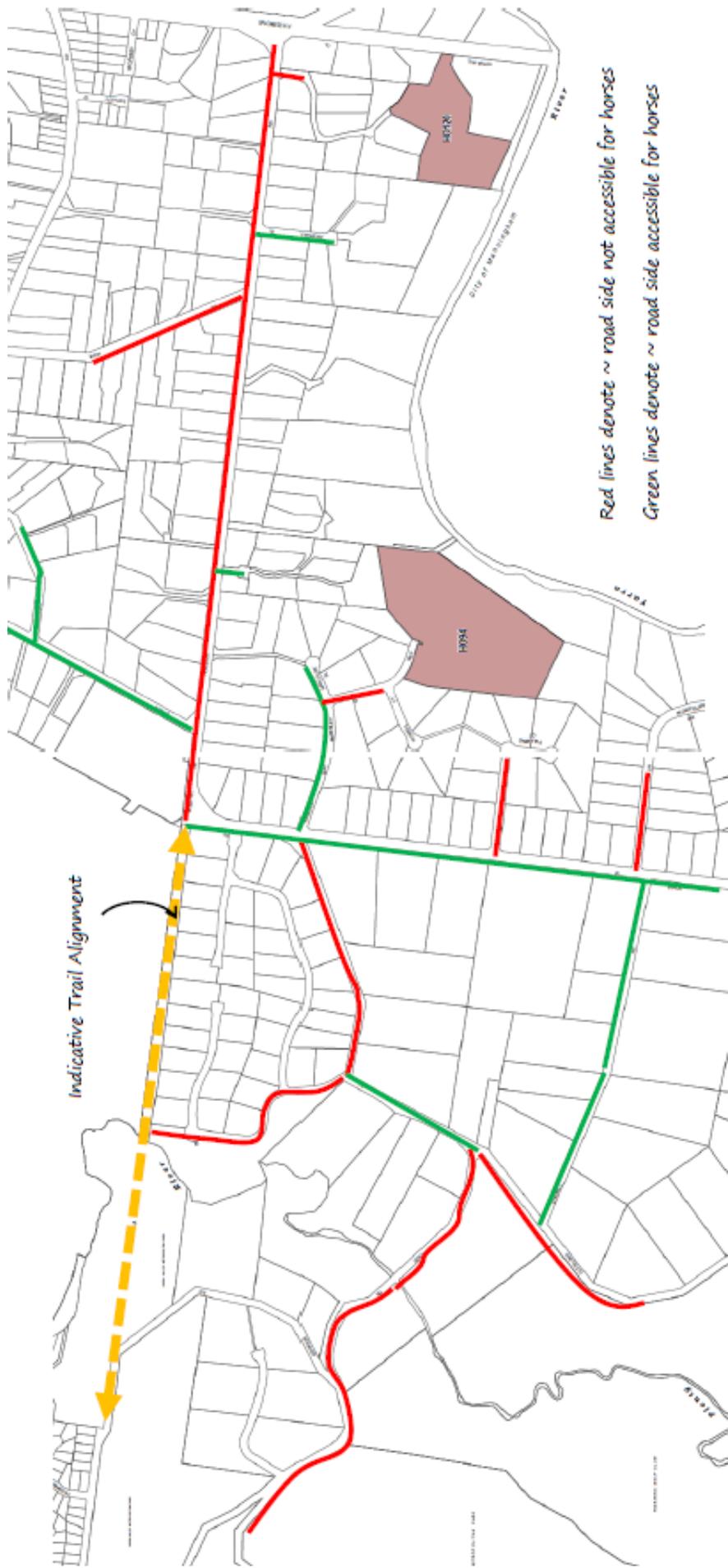


Figure 8 - Suitability of road side verges for access to proposed trail – bicycle assessment

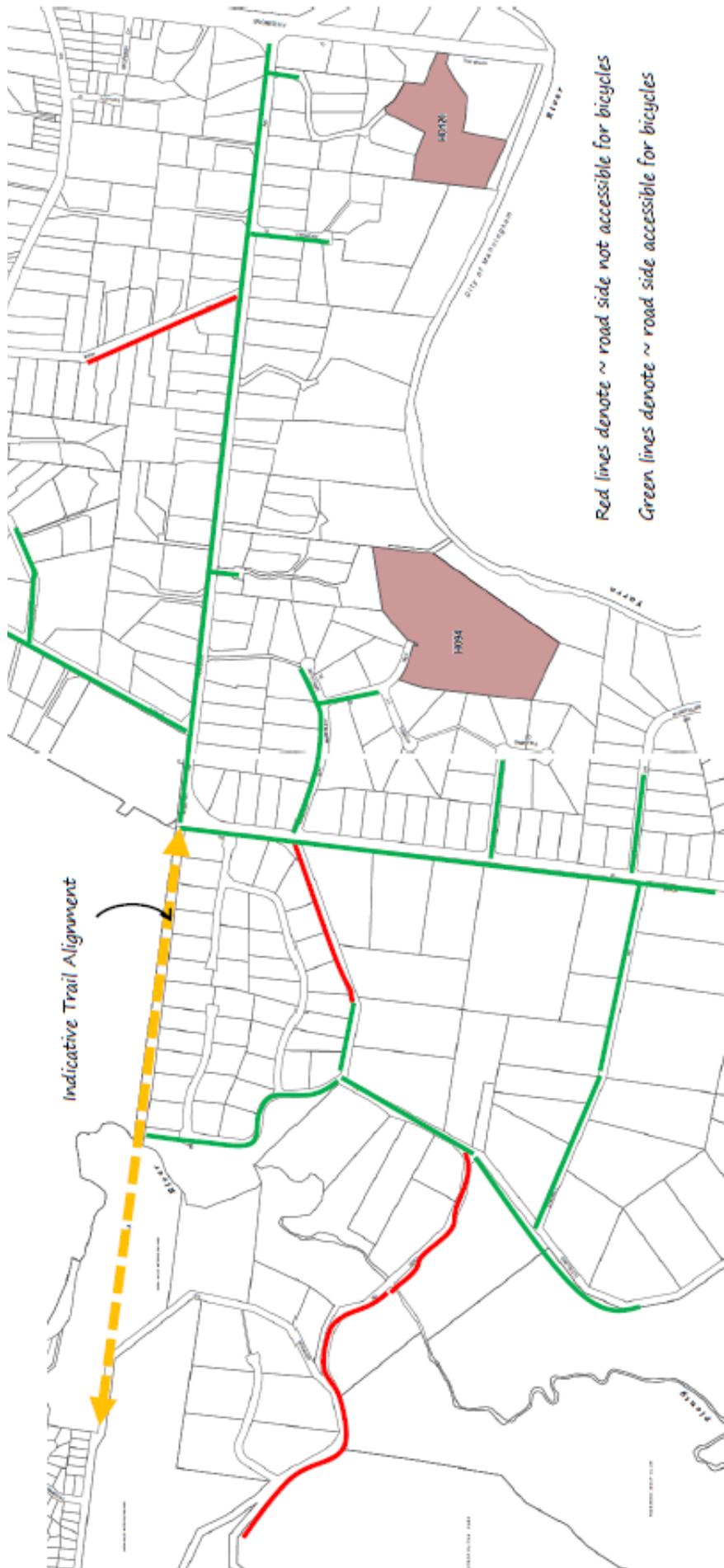


Figure 9 - Suitability of road side verges for access to proposed trail – pedestrian assessment

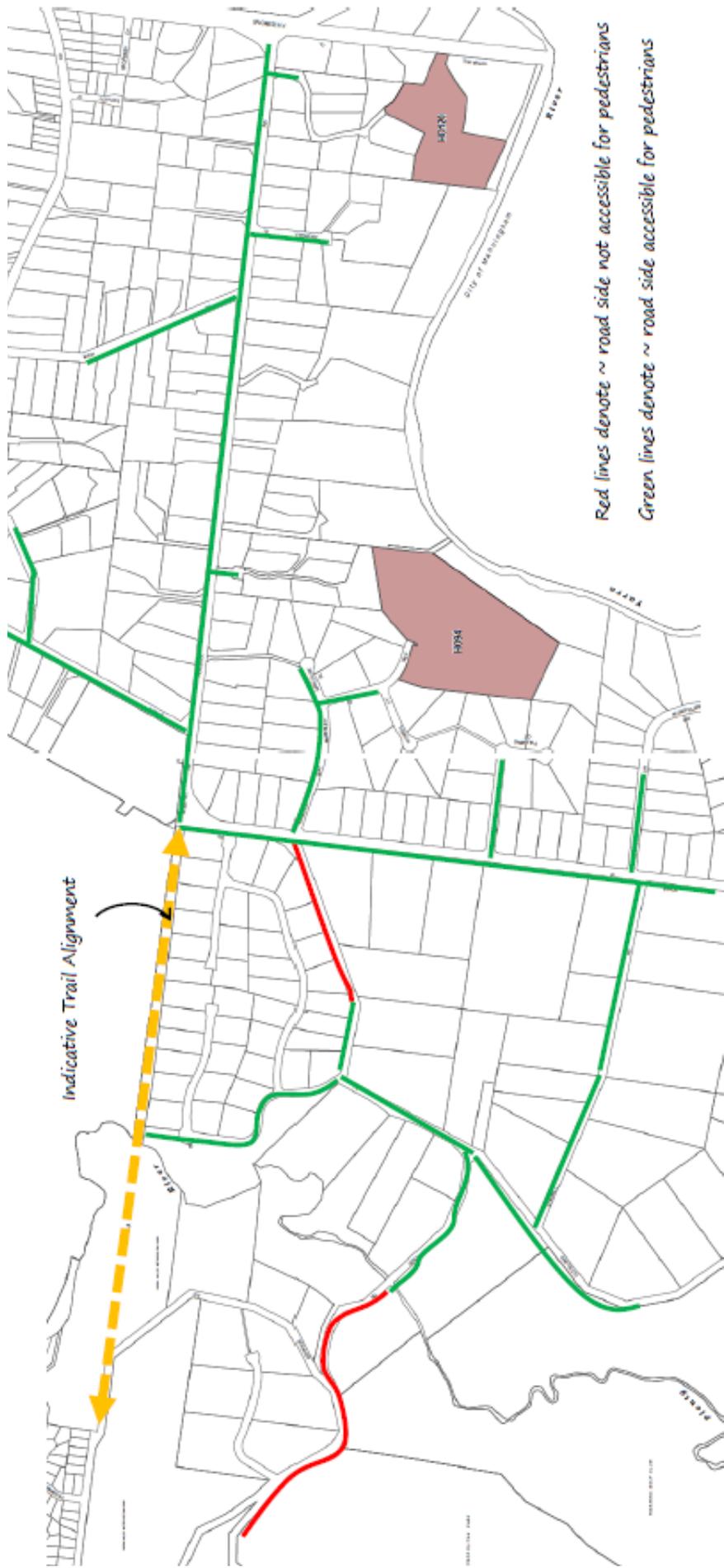
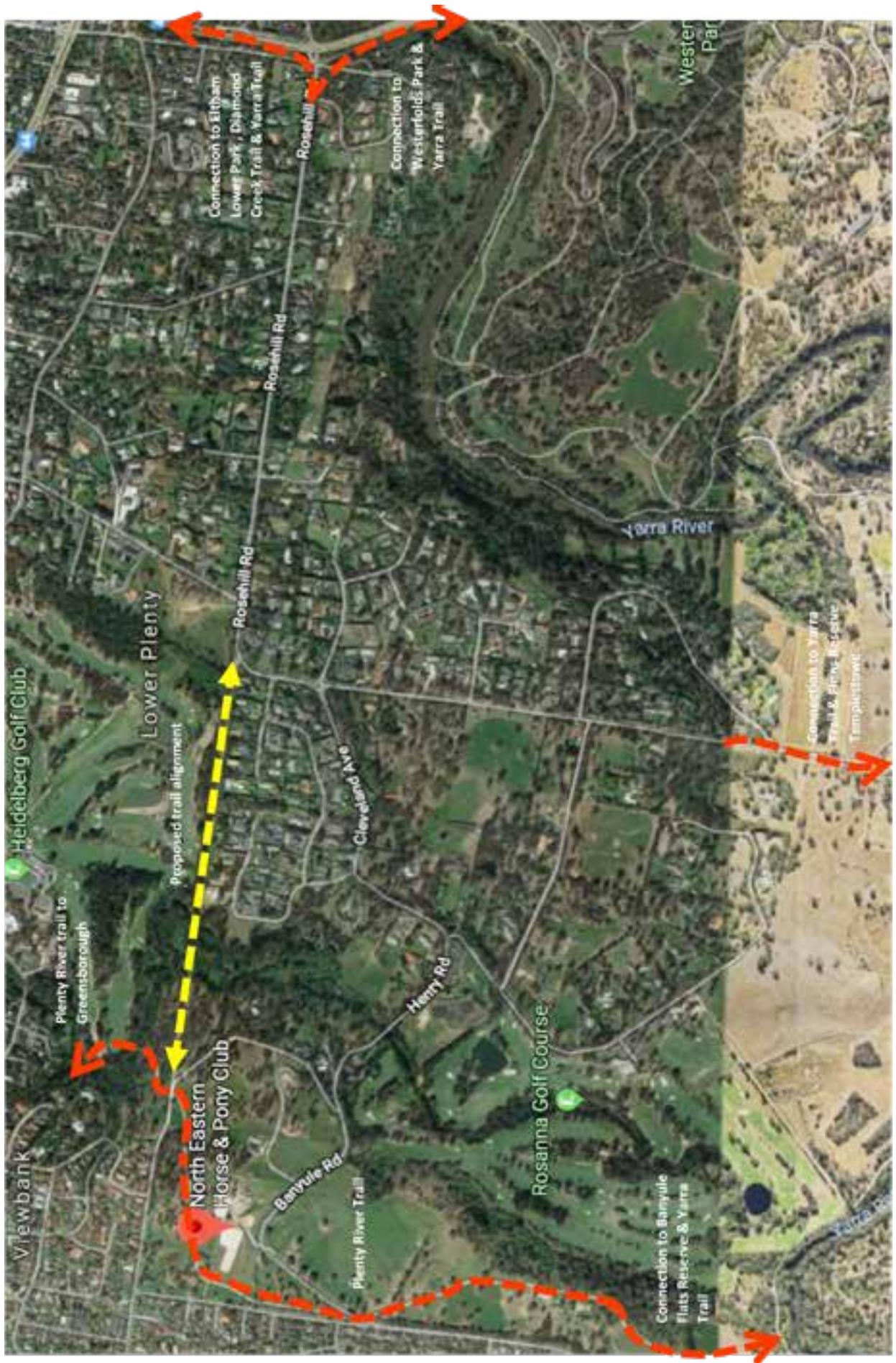


Figure 10 - Current agistment locations in Lower Plenty area



Figure 11 - Connection to regional trails



4.3 Pipeline Reserve Infrastructure

The pipeline runs along the reserve at a 5.5 to 6.5 metre offset from the northern boundary alignment and is situated approximately 600-1200mm below the surface.



Photo of infrastructure along pipeline

Photo of infrastructure along pipeline

The eastern trail head at the corner of Bonds Road and Rosehill Road, has an open space where parking could be established. However, an old watercourse drains across this section of land and this watercourse is protected by a Special Building Overlay. The recent installation of a new gate structure at this point does not include an opening for users seeking to move along the pipeline reserve. This appears to prohibit access for motorcycles or bicycles and makes it more difficult for walkers. Whether by design, or just coincidence, the new gate type creates the perception that the pipeline reserve is not accessible.

The section of pipeline reserve from the Bonds Road trail head through to 60 metres short of the river is clear of vegetation and is relatively flat in cross section. The last 60 metres of reserve adjacent to the river on the eastern side and then the first 60 metres of reserve from the

The pipeline has a number of pressure release valve heads along the pipeline alignment. These valves are generally protected by chain wire cages.



river heading to the west has low shrubby vegetation and dotted eucalypts along the reserve alignment. Some of the vegetation will need to be removed to facilitate the trail construction and to ensure sight lines are suitable leading into the pedestrian bridge crossing section.

From the point 60 metres to the west of the river, travelling on in a westerly direction, the pipeline reserve is again clear of vegetation. A trail or gravel roadway already exists along this section as an access road for utilities authorities accessing infrastructure in the pipeline reserve and also for Parks Victoria to access the conservation land on either side of the pipeline. A gate is installed at the west end of the proposed trail alignment, restricting vehicle access to stakeholders with key access.

4.4 River Crossing Analysis

Pedestrian Bridge Crossing

Where the proposed trail will cross the Plenty River a pedestrian bridge crossing is required. The span of the bridge is dependent upon the 1 in 10-year (10%) flood level heights that apply to the site and the relationship of that level to the river surrounds. The 1 in 10-year flood level applicable to the proposed crossing site is 19.44 metres measured on the Australian Height Datum.

By interpolating the where the 19.44 metre AHD level height intersects with the ground level along the pipeline reserve alignment on either side of the river, it is evident that the pedestrian bridge sections will need to be a total

of 40 metres between these points, so as to not impede flood flows in a 1 in 10-year flood occurrence. At the river water level, the flood level height is also interpolated to establish the bridge height at that point and to use that as a guide for the bridge span length required over the river surface. In this regard the pedestrian bridge will need to sit 3.24 metres above the normal flow water level, and as such, a flat bridge structure across the river will need to span 15 metres to extend across the river from one bank to the other. Therefore, the bridge is proposed to be 1 X 15 metre sections and 2 X 12.5 metre sections.



Plenty River crossing point

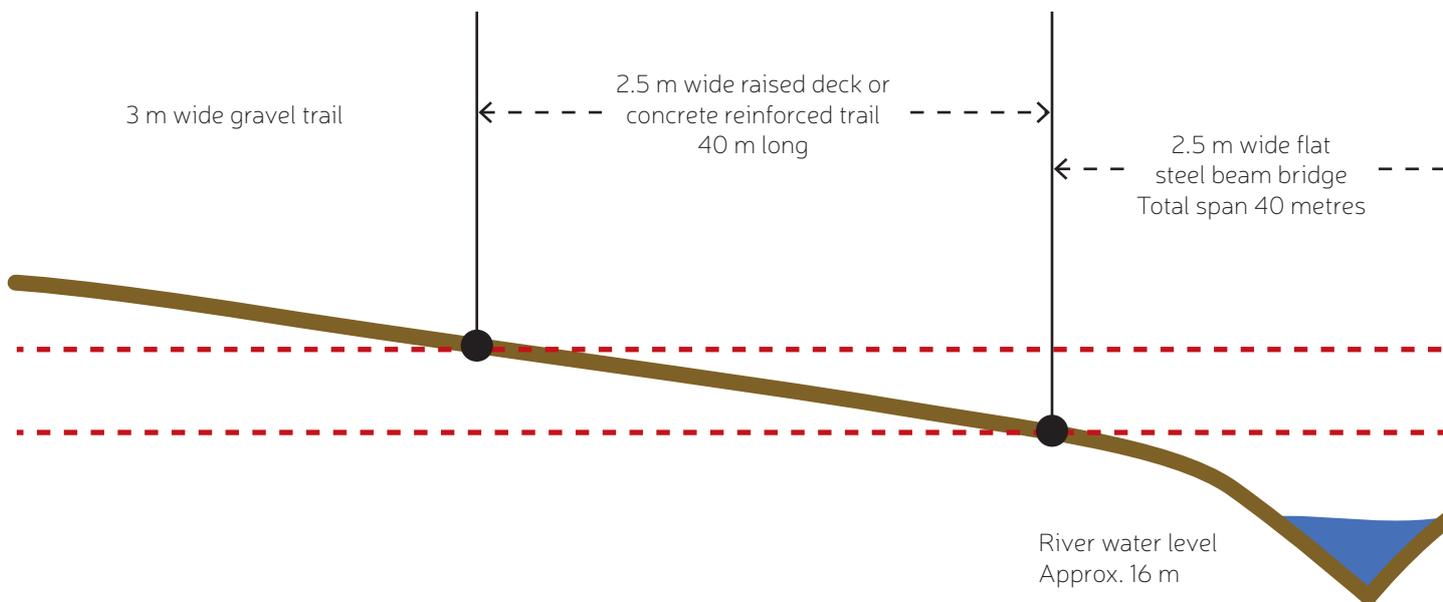


Figure 12 – Flood Levels and Transition to Pedestrian Bridge Structure

The eastern trail head at the corner of Heads Road and Rosehill Road, has an open space where parking could be established. However, an old watercourse drains across this section of land and this watercourse is protected by a Special Building Overlay. The recent installation of a new gate structure at this point does not include an opening for users seeking to move along the pipeline reserve. This appears to prohibit access for bicycles and makes it more difficult for walkers. Whether by design, or just coincidence, the new gate type creates the perception that the pipeline reserve is not accessible.

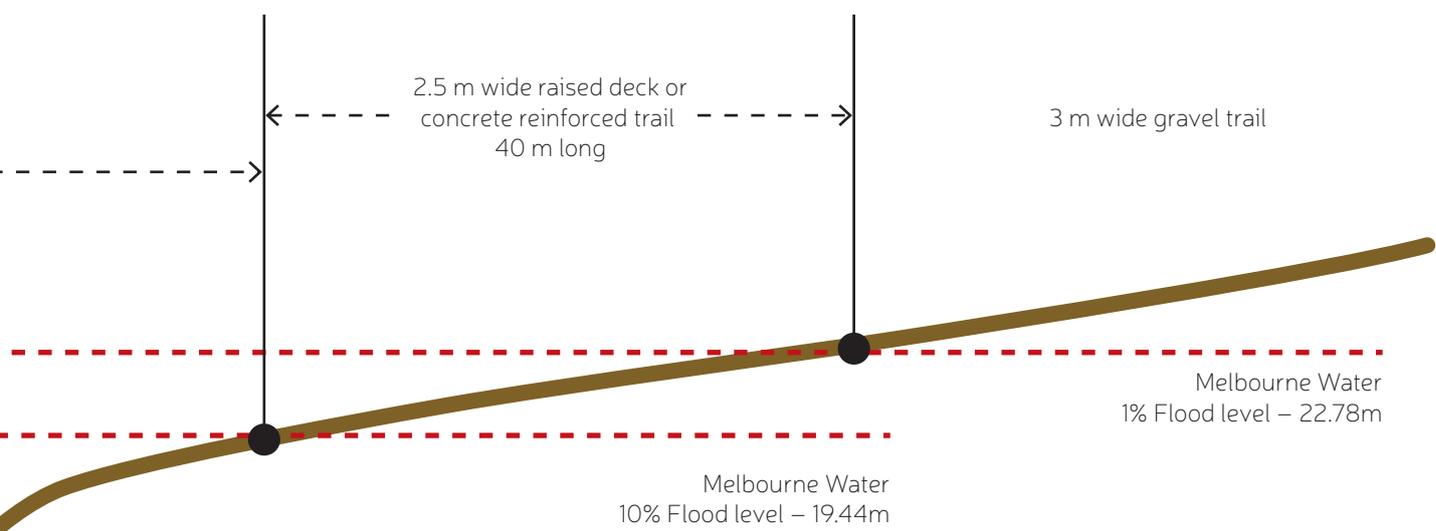
The section of pipeline reserve from the Bonds Road trail head through to 60 metres short of the river is clear of vegetation and is relatively flat in cross section. The last 60 metres of reserve adjacent to the river on the eastern side and then the first 60 metres of reserve from the river heading to the west has low shrubby vegetation and dotted eucalypts along the reserve alignment. Some of the vegetation will need to be removed to facilitate the trail construction and to ensure sight lines are suitable leading into the pedestrian bridge crossing section.

From the point 60 metres to the west of the river, travelling on in a westerly direction, the pipeline reserve is again clear of vegetation. A trail or gravel roadway already exists along this section as an access road

for utilities authorities accessing infrastructure in the pipeline reserve and also for Parks Victoria to access the conservation land on either side of the pipeline. A gate is installed at the west end of the proposed trail alignment, restricting vehicle access to stakeholders with key access.

The 1:100 flood level height point (22.78m AHD) adjacent to the Plenty River has also been established for the purposes of assessing what part of the proposed trail could be subjected to overland flows in the event of a 1 in 100-year flood (1%). In this regard the interpolation of contour information confirms that flooding would occur across a 120-metre-wide area, in other words, 40 metres on either side of the proposed pedestrian bridge crossing.

To ensure that the proposed trail is not washed away in flood events, and that trail users can safely transition onto the pedestrian bridge in wet conditions, two construction alternatives are suggested for these sections. Either a reinforced 125mm thick concrete path, where flood water can flow over the trail surface, or a raised trail decking structure where the flood water can flow underneath the structure, should be constructed. This type of transition onto a bridge crossing point is common in many trail settings and provides a much safer flow across river trail sections.



Pedestrian Bridge Location

The pipeline reserve alignment is the most suitable river crossing point within the general zone where the river intersects the pipeline reserve. Not only is it the most suitable in terms of direct alignment, but also at this point the river banks and floodplain surround is at its most level and clear of topographical challenges. To the south of the pipeline reserve, the river bank rises to form a steep escarpment that would be a significant challenge for trail design and construction. To the north of the pipeline reserve, the river bank is situated on golf course land, which also has steeper graded embankments to the river on both sides.

Approximately 50 metres north of the pipeline reserve the river alignment changes to flow east west and parallel to the pipeline. This makes the establishment of a direct crossing point more difficult at this location. Therefore, the place where the pipeline reserve crosses the Plenty River is the most suitable position to consider a pedestrian bridge crossing point for the proposed trail.



High escarpments north and south of proposed crossing point

Existing Crossing Locations or Alternate Trail Routes

The proposed trail provides a potential pedestrian crossing point that would be situated between the existing crossing points over the Plenty River. An existing pedestrian crossing point exists along the Plenty River Trail course at the western end of the Heidelberg Golf Course, which is approximately 350 metres north of where the pipeline reserve crosses the river. Approximately 580 metres south of the pipeline reserve is the vehicle and pedestrian crossing point where Henty Road becomes Banyule Road. However, at present there is no direct, or suitable, line of travel to get to either of these crossing points from the eastern side of the pipeline reserve.

Adjacent to the east side of the river, on the south side of the pipeline reserve, is the Cleveland Wetlands Reserve. This Council reserve connects through to Cleveland Avenue and provides an alternate option for the public to access the proposed pipeline reserve trail if a pedestrian crossing were to be constructed at the Plenty River. This link would provide a safer trail connection than the existing on-road method to Viewbank via Banyule Road.



Existing river crossing points – Henty and Banyule Roads and Plenty River Trail at Heidelberg Golf Course

4.5 Shared Use of Proposed Trail Analysis

The shared use of the proposed trail creates the situation where there is the possibility of horses and people walking or riding converging on the same section of trail. This requires a design that enables the riders or walkers to pass safely, or alternately to move off the shared path for a distance to enable safe passing. For equestrian use this is considered to be 6 metres either side of the shared path. For cyclists or walkers a minimum path width of 2.5 metres allows for passing and flat verges on either side of the trail allows for additional passing safety.

The level cross-section surface and open ground (unencumbered by vegetation) of the pipeline reserve enables any trail users to easily move off the trail and avoid other trail users where required. The exception to this may occur at the river crossing point where the raised or lead up trail sections and the pedestrian bridge section are likely to be raised with handrails on either side of the path. At this point the trail will need to have longer sight lines if equestrian users are likely to be using the pedestrian bridge crossing and wait zones on either side of the raised trail sections.

A trail use requirement or condition would be for signage to be installed requiring horse-riding users of the trail to move off the trail towards the southern side of the trail alignment when passing other trail users. This would apply to sections of the pipeline reserve where Melbourne Water infrastructure was located and would allow for a minimum of 6 metre offset from the alignment of Melbourne Water infrastructure to be maintained.



Pipeline reserve topography – cross section of reserve



Figure 13 – Proposed Trail and Pipe alignment

5

Summary of Key Issues

The current use patterns, the stakeholder engagement, the assessment of likely use, the analysis of the catchment area and assessment of pipeline reserve site all provide information that can guide decision making. The key issues identified in the sections above have been tabled below for discussion purposes and will be a crucial element in the future directions considered in the following sections of this study.

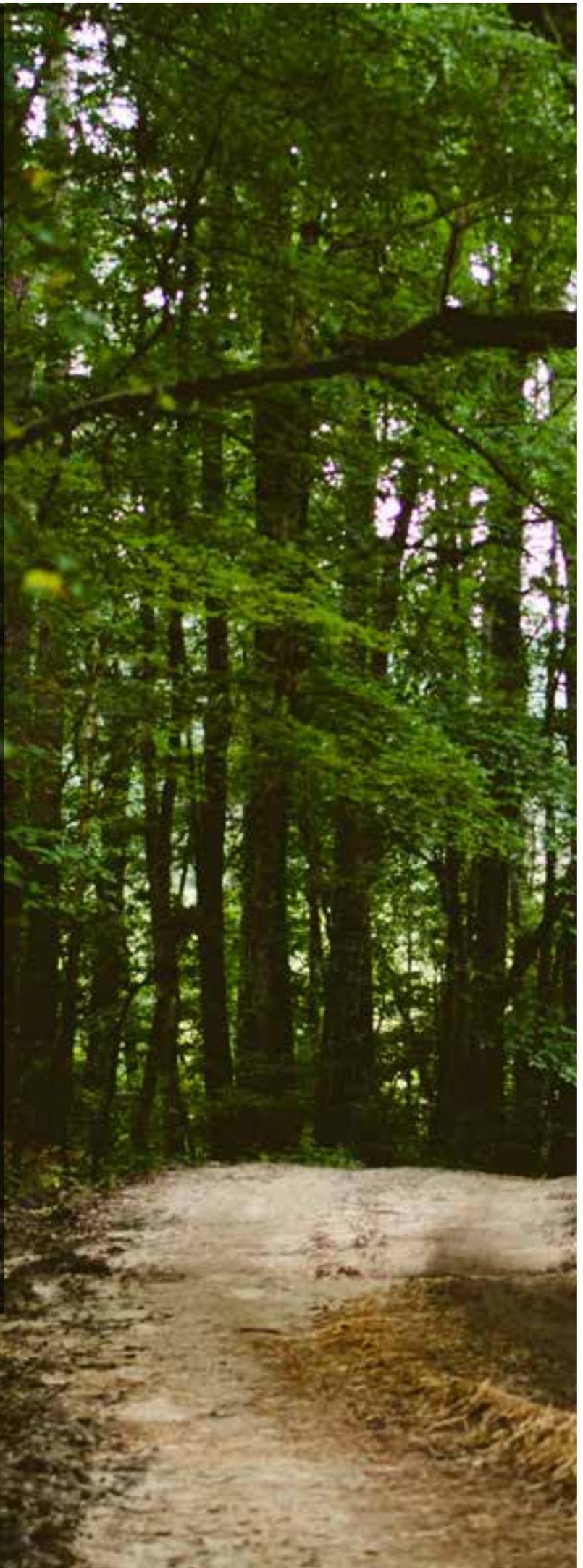
Table 6 – Key Feasibility Issues

Issue	Discussion Points and Comments
Community response to consultation	The community response to the consultation was predominantly in favour of the proposed trail, with 92% of local and city wide feedback supporting the trail concept. A slight majority of responses indicated that they would use the trail for walking, but high numbers were also recorded for equestrian and bicycle use of the trail
Gentrification of catchment and changes of use of area	The Lower Plenty area is changing in nature from large plot semi-rural living to high end large residential living. The land use is increasingly far less for small farms and more for large residences and leisure infrastructure such as pools and tennis courts. As evidence is the number of tennis courts on properties is now 7 times the number of horse agistment properties, where as in the 1980's this number was relatively even. This means that walking or bicycling trail needs are now far more evident than equestrian trail needs
Analysis of horse and pony club membership	A large amount of feedback supported the use of the trail for equestrian purposes, which is somewhat contrary to the equestrian club data. An analysis of current horse club membership indicates that there is no members living within the vicinity of the Lower Plenty trail head that own horses, or that own properties that could agist horses. Whilst horse access between Lower Plenty properties and the North Eastern Horse and Pony Club was emphasised as driver for the trail proposal, there is no current evidence that this specific use will occur
Melbourne Water requirements	The requirements of Melbourne Water for use of the pipeline reserve include significant infrastructure if a formal trail is constructed and if equestrian trail use is proposed. This includes minimum offsets between trail infrastructure and pipeline infrastructure as well as dividing fences along the alignment of the pipeline. These requirements are less pronounced if an informal trail (soft surface) is implemented and the equestrian use is not provided for, or limited
Trail head accessibility challenges	The access to the eastern end of the proposed trail for equestrian or bicycling users is hazardous due to unformed paths, roadside vegetation and narrow or non-existent road verges in some places surrounding the trail head. This means that safety is an issue for some local users getting to the trail head and planning and works would likely need to be considered to support trail access
Local trail purpose not regional	The prospective use of the trail would reflect a local trail designation and not a regional trail. As such, the investment return from a fully constructed hard surface trail would not be as applicable as a soft surface trail

6

Options Assessment

The following section identifies three options to be considered for the project and provides an assessment and discussion on the key elements of the design or development of the proposed trail. The options assessment discusses the advantages or disadvantages why one option might be considered or preferred above others.



6.1 Options for Consideration

Option 1

Option 1 for consideration is to leave the pipeline track as it currently exists with informal and irregular use between Bonds Road and the Cleveland Wetlands on the eastern side of the river and no river crossing or connection to Viewbank, with informal access to the western side of the river bank from the Plenty River Trail along Martin's Lane. This option maintains the status quo.

Advantages	Disadvantages
Ensures limited possible travel along pipeline reserve	Does not utilise existing pipeline reserve as resource to provide positive outcomes for community
Leaves the existing natural surface along the pipeline reserve	No current access to the Plenty River banks for connection to the water
Limits potential access to the Plenty River banks that could result in bank degradation	No current access to the Plenty River banks for river or embankment maintenance
Maintains greater level of privacy for adjoining residential property owners.	Leaves on-road connection to Viewbank from Lower Plenty via Henty Road/ Banyule Road

Option 2

Option 2 for consideration is to totally formalise the proposed trail alignment from Bonds Road trail head right through to the Martin's Lane trail head with a full length 2.5-metre-wide concrete trail between Martins Lane and Bonds Road and install a 2.5-metre-wide pedestrian bridge linking the trail paths at the Plenty River. This option is consistent with some of the regional and local trails that exist to the north of the proposed trail along the Plenty River valley.

Advantages	Disadvantages
Minimises future requirements for maintenance	Path type does not fit with existing regional trail connections to the south through Parks Victoria parklands
Provides guarantee of access in all weather conditions	Is not preferred surface for equestrian users or for environmental or fitness walkers
Provides for a greater range of activities to be conducted along the trail such as skating or in-line skis	Requires 5 metre formal offset to MW infrastructure to be maintained along the trail
Flood waters could flow over the concrete path without damaging them.	Does not fit in with natural amenity of the area adjoining and surrounding the pipeline reserve
	The trail does not link directly to another regional trail at the eastern end and therefore does not necessarily warrant full hard surface construction
	Hard surface may attract motorbike users to traverse the trail as a road shortcut
	Creates access challenges for Melbourne Water and Energy Companies in relation to truck movement over trail and possible damage to constructed path
	Is the costliest option for consideration

Option 3

Option 3 for consideration is for the trail to be constructed with a granitic sand or toppings surface on the east side of the river with the existing gravel road surface retained on the west side of the river and a section of 2.5-metre-wide raised trail decking and pedestrian bridge crossing the Plenty River to join the east and west side trails.

Advantages	Disadvantages
<p>Provides a safer lead onto the proposed new pedestrian bridge through the raised decking.</p> <p>Provides all weather access through the flood zone during flood occurrences</p> <p>Is preferred trail surface by Melbourne Water and Parks Victoria to coexist in pipeline reserve and adjoining conservation landscape</p> <p>The 3-metre trail width allows for shared service authority maintenance access via the path without concern about damage and high cost rectification</p> <p>Is more suited to shared use with users being able to pass along the path, or to move onto the natural surface on either side of the path</p> <p>Removes the need for the consideration of a new intermediate fence through the centre of the pipeline reserve</p> <p>Is the most suitable formalisation of the trail sections in consideration of the estimated number of potential users</p> <p>Provides the most aesthetic trail development</p> <p>Floodwaters can flow under the raised deck sections during 1 in 100 flood occurrences</p>	<p>Does not provide all weather path along full length of trail</p> <p>Has gravel surface on the steepest sections of trail</p> <p>The raised trail decking can add cost to the trail project</p> <p>Makes a longer transition section between the east and west sides of the Plenty River</p>

6.2 Infrastructure Options

Trail Surface

The most crucial question to be answered in examining trail surface is who are we designing for? The bicycling and walking requirements are relatively simple in context with trail surface, gate openings, river crossings etc. However, the use of the trail for horses in an urban setting raises additional requirements from the perspective of the horse rider, the shared trail user and also the land owner.

Further complicating the decision in regard to the possible horse use of the trail is the fact that the membership data of the horse and pony club suggests that there will be no demand for use of the trail to access the horse and pony

club grounds from surrounding residences where horses may be agisted. However, the fact that considerable support for horse use of the proposed trail was recorded during the consultation phase suggests that the horse and pony club would wish to use the trail for trail riding purposes. This would be for a short 2.2 kilometre 'out and back' trail course from the club site. Therefore, the option to construct a 3-metre-wide gravel surface trail sitting flush with the pipeline reserve surface is the preferred option. This enables shared use of the trail and for horses or riders to safely move off the trail surface onto the surrounding ground if necessary.



Trails on existing Melbourne Water pipeline reserves - Gravel trail – Bitumen trail – Concrete trail

River Crossing Type

The horse and pony club initially requested that a ford river crossing be developed to enable horses to cross the river at the pipeline reserve location. This option has been rejected by Melbourne Water as the authority responsible for the river and river bank protection. They have indicated that this type of crossing has been eliminated from consideration due to damage that is caused to the river and banks from the horse traffic. They have stated that only a compliant pedestrian bridge crossing will be considered. A 2.5 metre wide triple span steel beam bridge will provide a bridge crossing suitable to the three user groups. For it to be situated above the 1 in 10-year flood level of 19.44 metres to Australian Height Datum will require a 40 metre total length so as to not inhibit downstream flows during flood occurrences.



Bridge crossing examples - Cantilever cable supported bridge and steel beam base supported bridge

Transition onto the Pedestrian Bridge Crossing

The fact that the area adjacent to the proposed bridge crossing is land subject to inundation due to flood levels warrants consideration of the treatment of trail sections leading onto the proposed pedestrian bridge. A 40-metre length of trail on either side of the proposed pedestrian bridge will potentially sit below the 1 in 100-year flood level of 22.78 metres to Australian Height Datum. The preferred option to respond to this is to construct two raised deck trail sections to sit above the ground level and allow flood water to pass underneath the trail.

The benefit of the raised sections to be constructed on either side of the pedestrian bridge is that they provide an all-weather surface that provides safe and smooth transition onto the bridge section. The raised deck sections also provide environmental benefits to the surrounding river banks as they draw users onto the trail and away from the bridge bank surrounds.

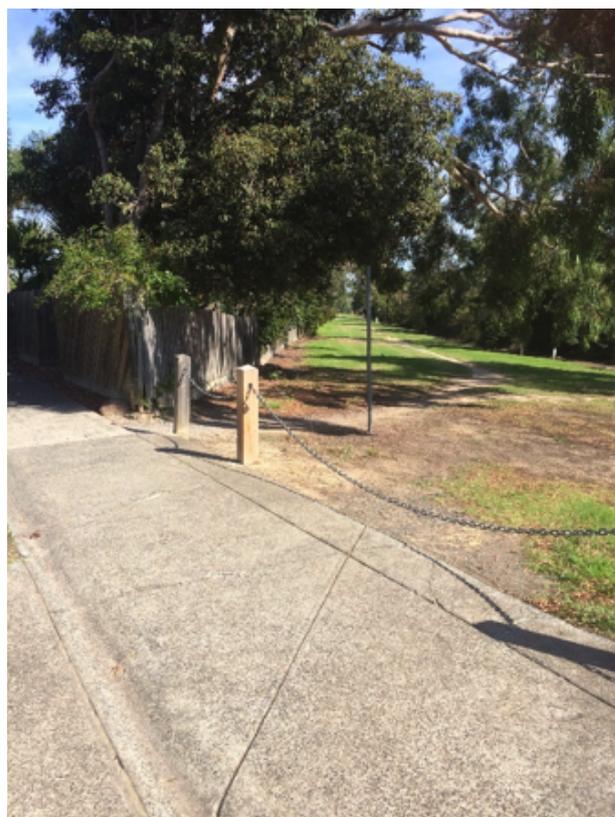


Raised deck section leading onto bridge crossing and concrete trail leading into bridge crossing

Access Gates and Fencing

One of the challenges of the trail head gate opening widths required for equestrian access onto the proposed trail is the increased accessibility it avails to motorbike users. For this reason, a recommended solution would be to have a narrow bicycle and pedestrian only openings installed at either end of the trail and a wider gate opening and locking horizontal rail installed as part of the fence section running across the pipeline reserve. This would require the horse club to unlock and lock the gate to access the trail for shared use. The use and management of shared user gate openings is an approach that is applied at many Parks Victoria and Melbourne Water sites through interlocking multiple pad locks.

An option to minimise the potential for the trail to be used by motorised trail bikes is the introduction of chicanes to slow movements along the trail, such as the crest of the hill and near to the raised transitive section. These sections are slow movement sections of the trail for bicycle users and so chicanes can disrupt motorbikes trying to use the trail.



Example pipeline reserve fencing – Horizontal gate and pedestrian opening and bollard and chain fencing

6.3 Recommended Development

The options outlined above were presented and discussed with key stakeholders in relation to feasibility consideration. A clear preference from these discussions was for the following options to be adopted and considered as the basis for the feasibility.

1. A 3-metre-wide granitic sand, toppings or crushed rock trail surface for the full length of the section of trail east of Plenty River
2. Retention and use of the existing 3-metre-wide gravel access roadway on the western side of the Plenty River
3. The construction of a flat steel beam pedestrian bridge crossing the Plenty River with three sections totalling a 40-metre span
4. The construction of two 40 metre raised trail decking sections, one on either side of the proposed pedestrian bridge
5. Installation of narrow access gates for pedestrians and bicycle users to be installed at either end of the proposed trail with equestrian access via locked horizontal rail gates



7

Feasibility Assessment

The feasibility of an applicable project often lies in the values or views of those entities or individuals with a stake in a proposal or project. However, an objective assessment provides a basis on which to make informed recommendations. In the Lower Plenty to Viewbank Multi-purpose trail Feasibility study proposal, feasibility is assessed by a measure of five key aspects.

These are:

1. Response to Identified Community Need
2. Future Use Potential
3. Project Cost Consideration
4. Project Risk
5. Project Funding Potential

7.1 Response to Identified Community Need

In essence this measure is in relation to the question, do the community want the proposed trail? In this regard there is a very positive response to the proposed trail with 92% of feedback supporting the proposal. The feedback supporting the proposal emphasised the health and environmental connection activities that would be supported by the trail. The activities that the proposed trail seek to accommodate, including walking, cycling and running are consistently promoted themes in recreation, community wellbeing and community access strategies of Council.

The trail proposal responds to specific community needs expressed in recent community engagement undertaken by Council. In particular this has been from equestrian participants in the Lower Plenty area, that expressed needs around trail connection to the Club venue in Viewbank. Although there is conjecture as to the way in which the trail may be used for equestrian access, a large amount of feedback from community members did indicate support for the trail for equestrian use. The conjecture arises due to the expressed needs appearing somewhat contrary to the equestrian club membership data and also the changing nature of the Lower Plenty urban environment.

Those from the community that were against the proposal, identified the use of the trail by motorbikes as a key concern. Most of the objectors had residences with back fences adjoining the pipeline reserve and were concerned about the loss of privacy and security into their rear yards if a formal trail were developed. These aspects will need to be managed if the feasibility leads to a detail design process.

The proposed trail traverses alongside open space lands owned by Parks Victoria and also the Heidelberg Golf Course. In this regard the trail alignment has aesthetic views of trees and green open spaces and has particular values in regard to the trail environment. Trail use may also be purely for the purposes of getting away from roads and traffic and into a more passive environment, or to access the river bank for the peace and quiet at the Cleveland Wetlands reserve.

In summary the proposed trail responds to identified community needs, both from a local perspective and from a wider Banyule community perspective.



7.2 Future Use Potential

The future use potential examines whether the level of investment required for the proposed trail is worthwhile. In this regard, the number of users active along the trail is a pertinent measure of use potential. The table below provides an estimate of trail use based on current Plenty River Trail use, consultation feedback and analysis of movements along roadways and road verges near to the trail heads. The table identifies the purpose of travel along the trail based on community feedback. The ticks or crosses indicate whether this use is likely.

Table 7 – Potential Use Assessment

User type	Likely use?	Evidence from	Estimate of weekly trips along trail
Trail use for connection to local agistment for Club development and membership		Club membership data	0
Connection to regional trail network for cycling, walking and running		Community consultation	80
Trail use for accessibility to community resources, locations and infrastructure (eg: public transport, shopping precinct, school sport activities)		Community consultation	60
Trail use as local exercise, dog walking or activity trail		Community consultation	80
Trail use for access to Plenty River banks and conservation lands for environmental appreciation purposes		Community consultation	20
Trail use as an equestrian trail between Viewbank and Lower Plenty		Stakeholder consultation	10
Trail use as a transit path (as a safer off road alternate to Banyule Road / Cleveland Road.)		Community consultation	30
Total weekly trips along trail estimate			280

The estimate of total weekly trips along the trail reflects users seeking to connect to other trails, other community venues and environments as well as use of the trail as a local environment for the aesthetics and opportunity it provides. The volume of trips estimated is comparative with other local trail locations and as such the future use potential indicates a positive and worthwhile outcome from investment in the proposed trail.



7.3 Project Cost Consideration

The cost to construct the trail infrastructure is a key element of feasibility assessment. With classification of the trail as a local connection trail at present, there is always some question as to the social return on the investment. The proposed trail cost, as estimated from the recommended trail implementation option in section 6.2, is tabled below.

Table 8 – Capital Cost Estimates

Capital Cost area	Estimate of cost
Bridging of Plenty River @ 40 metre total pedestrian bridge (Flat steel beam bridge - 3 sections with 1 X 15 metre span and 2 x 12.5 metre spans).	\$185,000
Option A - Raised decking pedestrian bridge approach @2 x 40 metres length	\$140,000
Option B - Concrete trail 2.5 metres wide @ 2 X 40 metres (125mm thick)	\$28,000
Gravel trail 3.0 metres wide @ 500 metres	\$47,000
Trail head access gates	\$14,000
Trail head approach works	\$10,000
Pipeline infrastructure protection	\$5,000
Culverts and drainage	\$15,000
Fencing	\$8,000
Preliminary earthworks	\$15,000
Vegetation removal and replacement	\$8,000
Engineering assessments & Design @ 10%	\$45,000
Project Management Costs @ 10%	\$45,000
Total project cost estimate – Option A	\$537,000
Total project cost estimate – Option B	\$425,000

Where trail projects are implemented along linear river parklands the cost is always significant due to river crossings and the terrain that the trail traverses through. In this instance the trail alignment follows existing access roadway on the western side of the Plenty River and follows the cleared pipeline reserve along the eastern side of the Plenty River. This provides good cost effective infrastructure development potential on normal cost per metre of trail installation in other locations. Cost effectiveness is further supported by the selection of gravel surface for the trail.

Whilst the cost of the river pedestrian crossing is a significant capital investment, the selection of suitable construction materials and methodology will guarantee that the bridge will have a 50-100-year life span, requiring maintenance works at 10-year intervals. This means that the community will receive ongoing benefit from the investment. The cost of the project infrastructure against the number of trail trips annually compares well against some other recreation and open space infrastructure projects that require regular maintenance or greater initial capital investment. The recommended trail infrastructure is also the most cost-effective methodology for implementation of this trail project.



7.4 Project Risk Assessment

Implementing the proposed trail also has some risks relating to the execution of the project and the future use of the trail. These risks are identified as an element of feasibility to ensure that unintended consequences are not created or are at least considered as part of the assessment.

Table 9 – Project Risk Assessment

Project Risk	Project Likelihood	Project Consequence	Mitigation strategy/methodology?
Residents adjoining the proposed trail objecting on the basis of amenity loss resulting from the proposed trail	H	L	Propose a trail alignment that is not right next to the southern fence line of the pipeline reserve Ensure that there is chicanes installed in the trail alignment to disrupt possible motorbike access along the trail Ensure that trail head access points have appropriate access options to manage users gaining access onto trail Work with residents on boundary fencing options to increase privacy
Reluctance to grant approval by key trail stakeholder groups due to risks identified in feasibility process	L	H	Shift engagement strategy with Melbourne Water and Parks Victoria from proposal considerations to request for project permission and support. Ensure that detail planning process, if commenced, includes clarification of statutory authority requirements.
Cost of river crossing infrastructure when assessed against likely return on investment	M	L	Ensure that social connectedness and community health messages are central to trail benefits conversations and evidence
Level of detail, investment and consideration that will be applied to the planning process	H	M	Ensure that statutory planning department are engaged prior to a planning application to detail requirements relating to zone and overlay mechanisms
Cost blowout at construction phase of project affecting budget	L	M	The level of planning required to facilitate the proposed trail development will ensure identification of all potential costs and will limit unknown cost items.

Assessing project risk is a measure of feasibility as it examines what the potential is for a particular aspect to derail any proposed development if a commitment is made to proceed. In this regard where risks identified can be mitigated through thorough engagement and commitment to open consideration of concerns that arise. In particular this is with stakeholders and neighbouring residents where the planning may include influencing these stakeholders towards certain outcomes.

Risks associated with the planning process can also be mitigated by recognition of the formal requirements of the planning scheme and what information will be required to respond to that process. It is likely to add considerable time to the project planning phase if this is instigated.

In summary, there are no risks that can be acknowledged as high likelihood and high consequence. As such there are no major risks that would cause Council to reconsider any further investigation into the proposed trail.



7.5 Project Funding Potential

A final element to be considered in the feasibility assessment is the potential to obtain project funding amongst stakeholders and partners with common community values or objectives. This provides for a sharing of the cost of the project and the possible tapping into grant programs established for trail project delivery. This also ensures that the feasibility of the project in relation to cost benefit dynamics presents a strong case for all partners.

The most suitable funding support partner is via the Melbourne Water Liveability program. This program focuses on environmental improvements and access improvements to rivers, creeks and watercourses. Projects that model themselves on Melbourne Water objectives and meet the expectations of guidelines are most supported. The Parks Victoria programs for shared trail or environmental programs has also historically supported shared trail developments that open up opportunities for communities to connect with parkland environments. These programs are established to encourage healthy engagement with places and protection of environments and includes funding for trails programs or re-planting projects. At this stage there is no definitive programs specifically aligned to the proposed project.

Another funding option is through the Sport and Recreation Victoria suite of programs. The Community Sports Infrastructure Fund provides the most common source of project support funding to local government projects. Major Facilities Grants warrant up to \$800,000. However, this funding program targets regional and sub-regional projects, a level beyond what the Lower Plenty to Viewbank Multi-purpose trail project may be listed as. The Minor Project Grants provide up to \$250,000 for community sport and recreation facility upgrades also nominate projects that improve community participation and health. The proposed trail project is a better fit with the criteria applied to this program as it can evidence improved participation potential aligned to the project.

Table 10 – Stakeholder Capital Funding Assessment

Stakeholder	Likely Capital Contribution	Funding Program
Banyule Council		Capital Works Budget
Melbourne Water		Possible contribution
Parks Victoria		Unlikely
Sport and Recreation Victoria		Unlikely to meet funding criteria
General community partners		Limited 'specific' community group benefits that warrant funding contribution
Commercial sector support		Environmental and historical aspects of trail river crossing may elicit support but unlikely.

In summary, there is potential to submit applications or partnering opportunities for the proposed project. Council, and the potential partners, will need to base their responses on priorities within their organisations. However, the evidence of similar projects fitting within grant programs in past, which is a strong indicator to potential support funding in future.



8

Possible Implementation Process and Strategy

An indicative list of project phases is provided below. This sequence of activities provides a typical process or progression of actions towards implementation of the project. The reference to hold points is an indication of where key determinations or decisions must be made whether to continue to progress or hold progress pending further considerations or prioritisation by Council and other stakeholders.

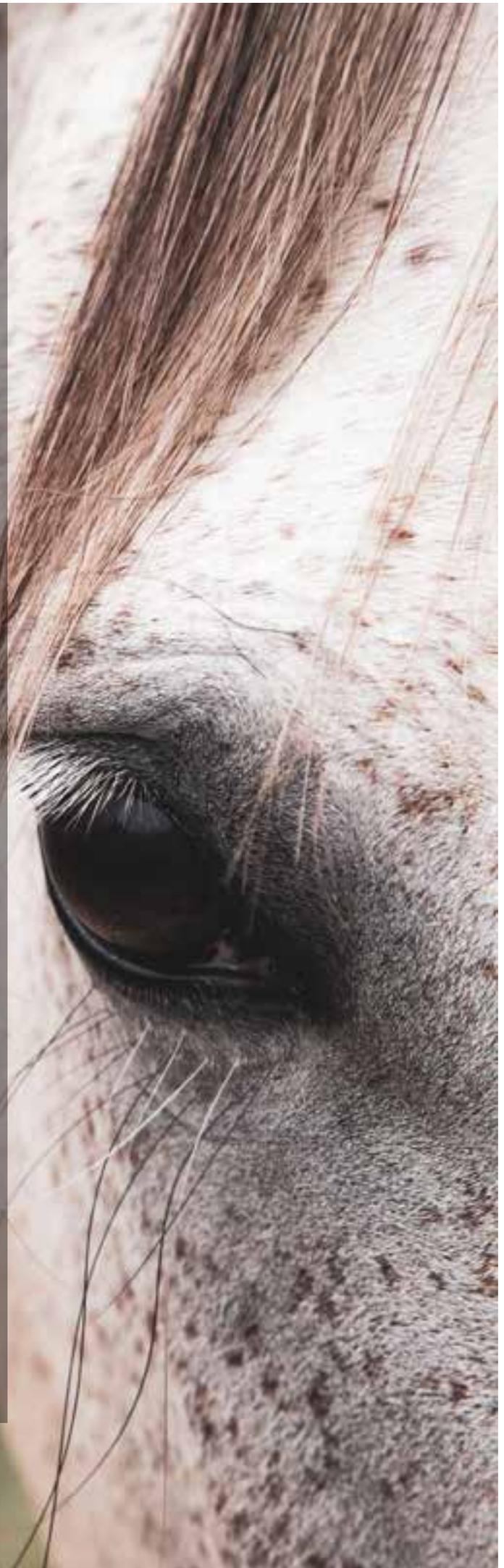
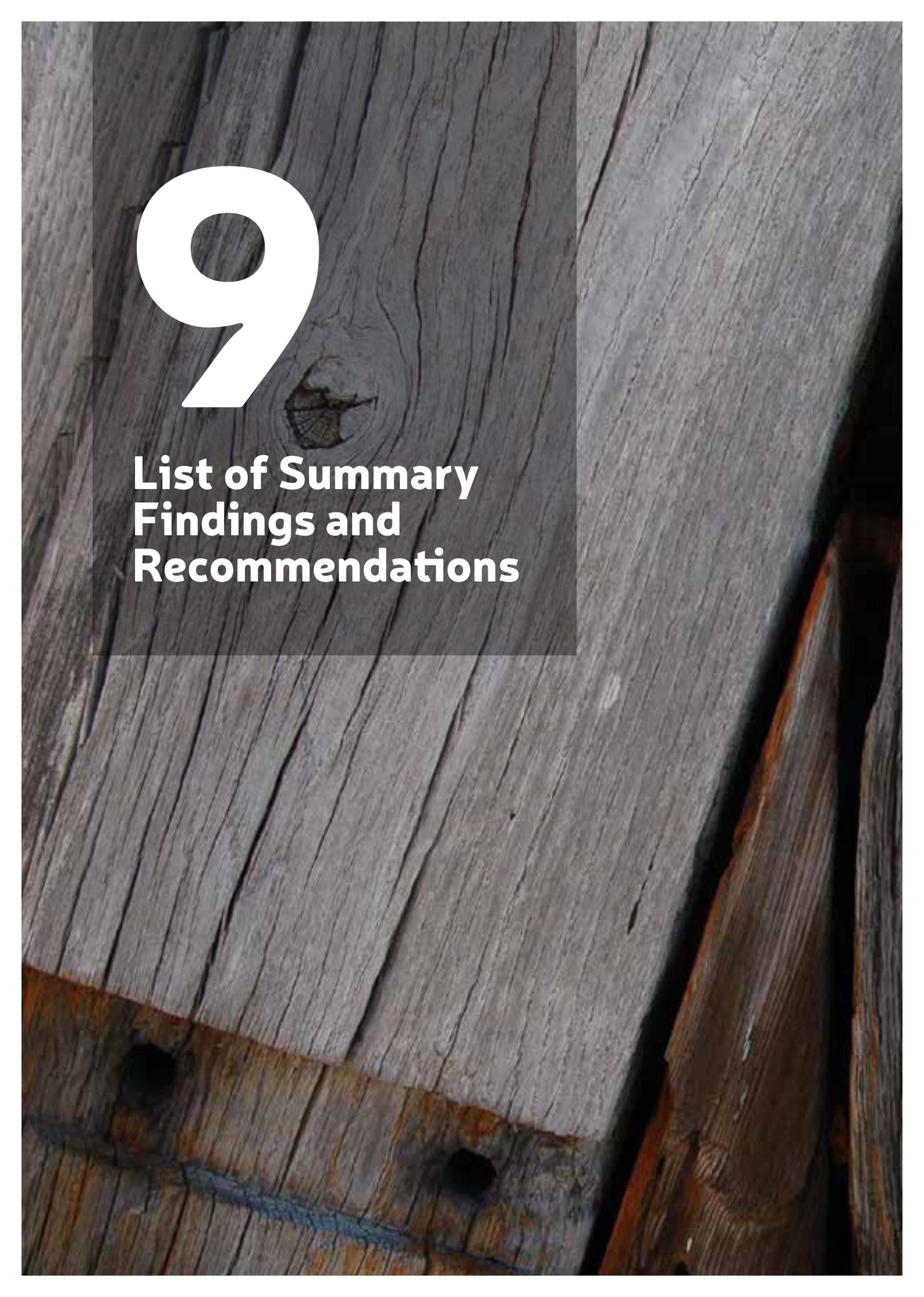


Table 11 – Potential Project phasing list

	Project phase	Hold Point Reference
1	Preliminary assessment and stakeholder consultation	Completed
2	Feasibility Study	Hold Point 1
3	Partner terms of reference, agreement and funding discussions	
4	Grant Application preparation & Business Case	Hold Point 2
5	Detail planning assessment, vegetation review and infrastructure design	
6	Preliminary Town Planning application	Hold Point 3
7	Compilation of internal/external project control group	
8	Detail design development – specifications and plans	
9	Detail Design refinement & Town Planning Application	
10	Tender Contract for Construction works and appoint contractor	Hold Point 4
11	Commence site works	
12	Infrastructure works completed	
13	Formal Opening & Commence usage of trail	



9

List of Summary Findings and Recommendations

1. The consultation process demonstrated that there is considerable support for the development of the proposed trail across the community stakeholder groups and amongst the majority of residents that offered feedback to the proposed trail concepts.
2. The objections to the proposed trail highlighted the impact to amenity of residents of the Cleveland Estate adjoining a section of the southern boundary of the pipeline reserve. Objections also identified the lack of a connecting trail at the Bonds Road trail head as a weakness of the trail proposal.
3. The nominated proposed 'use' of the proposed multi-purpose trail was fairly evenly spread between pedestrian use, bicycle use and equestrian use. However, the equestrian use was not defined in terms of horse and rider access to the horse and pony club, or use by club members for trail riding purposes. The analysis of membership data raises questions as to the potential use by horse and riders specifically to access the club premises from Lower Plenty residences.
4. The catchment that will be supported by the proposed trail is evolving gradually, with the semi-rural focus slowly gentrifying towards residential family occupation. As a result, the use of the trail for walking, cycling, running and connecting to surrounding urban locations is likely to increase over time. The use of the trail for equestrian use is likely to diminish over time. The demographics of people living in the catchment will remain similar in the coming years in terms of total population and age group breakdown.
5. The catchment demographics and characteristics are typical of a community that engages in high levels of health, recreation and sport activity. The catchment demographics are going to experience very little change throughout the next two decades in Lower Plenty and Viewbank.
6. The proposed trail contributes to the outcomes and objectives documented in Council's community plans including Banyule Walking Strategy, Banyule Council and Community Plan, the Banyule Recreation Plan and the Banyule Public Open Space Plan. Whilst these plans do not nominate the proposed trail as a specific project, the strategies present directions for improving health and fitness, for minimising vehicle transit, for encouraging connection with nature and encouraging community connection. All outcomes potentially resulting from the implementation of the proposed project.
7. The active uses promoted by trail systems in major urban environments is increasing in popularity in conjunction with a long-term shift towards informal recreation participation rather than formal sport participation. For those above 15 years of age there is a significant growth in informal trail use. This means that trail use in Banyule will likely continue to increase as a result of this trend.
8. The consultation findings, the stakeholder engagement, the neighbourhood analysis and the trail potential lead to the conclusion that a gravel trail surface of 3 metre width is most suited to the trail alignment. The provision of 2.5-metre-wide raised platform trail sections and a 2.5-metre-wide pedestrian bridge river crossing at the low-lying flood zone sections of the trail alignment is also recommended.
9. The cost of provision of the proposed trail and river crossing infrastructure as recommended is estimated at \$537,000. The majority of the project cost, at 70%, is attributable to the river crossing. The remaining 30% is attributable to the trail surface and improvements situated above the Melbourne Water flood level for 1 in 100 year flood incidents. This cost is below the average cost of a typical trail network installation of similar length along and through a river parkland setting due to the trail following an existing cleared pipeline reserve.
10. The five criteria applied to assess feasibility for the proposed trail confirm that the proposed trail compares well against other similar recreation and open space projects and favourably against some sporting infrastructure investments. Council will need to determine the priority setting of this project against many others it prepares within the open space and recreation environment.

10

Appendices



10.1 List of Tables

Table 1	Planning Zone and Overlay Implications Summary
Table 2	Trail benefits assessment
Table 3	Walking Trail (pedestrian use) Requirements for local trail
Table 4	Off-Road Cycling Trail (cyclist use) Requirements for local trail
Table 5	Equestrian Trail (horse and rider use) Requirements for local trail
Table 6	Key Issues
Table 7	Potential Use Assessment
Table 8	Capital Cost Estimates
Table 9	Project Risk Assessment
Table 10	Stakeholder Capital Funding Assessment
Table 11	Potential Project Phasing list

10.2 List of Figures

Figure 1	Proposed Multi-purpose Trail Alignment
Figure 2	Initial Proposed Trail Concept Sketches Concept information presented to community
Figure 3	Factors influencing lower levels of participation in sport and recreation – ABS 2012
Figure 4	Participation rate in sport by age and gender – ABS 2014
Figure 5	Participation rate in recreation by age and gender – ABS 2014
Figure 6	Long Sectional alignment and elevation chart for proposed trail
Figure 7	Suitability of road side verges for access to proposed trail equestrian assessment
Figure 8	Suitability of road side verges for access to proposed trail bicycle assessment
Figure 9	Suitability of road side verges for access to proposed trail pedestrian assessment
Figure 10	Current agistment locations in Lower Plenty area
Figure 11	Connection to regional trails options
Figure 12	Flood levels and transition to pedestrian bridge structure
Figure 13	Trail and Pipeline separation alignment

10.3 List of Consultations

In the preparation of this feasibility study the following organisations and departments were engaged.

We thank all parties for their contributions.

- » Ward Councillors
- » Banyule Council – Parks & Open Space Department
- » North Eastern Horse and Pony Club
- » Riding for the Disabled
- » Nillumbik Shire Council
- » Melbourne Water
- » Parks Victoria
- » Friends of Yarra Valley Parks
- » Cleveland Avenue residents' group
- » Eltham Horse and Pony Club
- » Adjoining landowners
- » Banyule community

10.4 References

Information contained in this study is generated from a range of internal and external resources.

External resources include:

- » Profile ID data and forecasts
- » Conversations and interviews with stakeholders, community members, and interested parties
- » City of Banyule Council Reports, Council Strategies and Plans
- » Research references from on line and previous collated public research documents

Information obtained in these references have been used to provide general comments and insights within this study. This study has not been prepared for academic purposes, but is intended to inform the study partners in relation to the feasibility of the Lower Plenty to Viewbank Multi-purpose trail. As such, specific external information is not referenced in this study document.

10.5 Images

Images used in this document were collected during site inspections and assessment by the project consultant. Where images of participation or similar infrastructure have been used, they are for indicative purposes and represent a visual connection to the information described.

