THE BOX HILL TO RINGWOOD RAIL TRAIL

A proposal by
Whitehorse Cyclists Incorporated
July 2010

CONTENTS

FOREWORD

As president of Whitehorse Cyclists I am delighted to endorse this proposal for a Box Hill to Ringwood Rail Trail.

Whitehorse Cyclists with over 200 members is the largest recreational bicycle club in eastern suburbs of Melbourne. We are fortunate to have three socially minded engineers, David Simm Dip. Building Technology, Michael Hassett MIE Aust, CP Eng (Ret) and David Hall Dip Mech Eng, MIE Aust (Ret) who are regular riders with our club and have volunteered considerable time and expertise to produce this feasibility study.

It seems understandable that there is considerable synergy between rail lines and bike paths. Train lines have low gradients which are welcomed by cyclists; compared with roads train lines intersect with few cross roads and are therefore safer for cyclists; and usually there is a considerable distance between railway stations which allows cycling to be effective.

These bike paths could be used as an environmentally friendly means for both train travellers to reach their local station as well as for bike commuters and recreational cyclists to travel along rail lines.

One would hope that in the future all current as well as any new rail lines will include associated facilities for bike paths.

I trust that serious consideration will be given to this comprehensive proposal.

Michael Wellard

Michael Wellard

President
Whitehorse Cyclists Inc.

www.whitehorsecyclists.org.au
www.bhrrt.org

EXECUTIVE SUMMARY

The Springvale Road grade separation project, a major investment of some $140M by the Commonwealth and Victorian governments to eliminate the Springvale Road level crossing was a catalyst for a campaign by Whitehorse Cyclists Inc (WCI) to promote cycling facilities in the City of Whitehorse. It was felt that such a project should include an underpass beneath Springvale Road for a shared use path to integrate with the notional Eastern Rail Trail (ERT).

The Springvale Road project is now complete but regrettably and despite vigorous advocacy, without an underpass. The principle reason given for this unfortunate outcome was that there was no firm plan in existence for the ERT and therefore it could not be factored in to the design of the project. This follows on the heels of a similar project at Middleborough Road in 2006 where cycling facilities, except for a pedestrian underpass beneath Middleborough Road, were also overlooked.

The City of Whitehorse made a request to the Victorian government in March 2009 for a grant of $40,000 to carry out a survey of the ERT within Whitehorse. This request was refused. WCI therefore resolved to conduct a survey itself on a voluntary basis to contribute to the planning effort and to show that prima facie, the project is feasible.

This proposal will assert that a 9.9km rail trail linking Box Hill and Ringwood, now titled the Box Hill to Ringwood Rail Trail (BHRRT) is feasible. This takes account of a possible 3rd rail line to Ringwood, but notes that some relaxation of VicTrack's clearance requirements will be essential.

A 'basic' concept, comprising 4.4kms on rail reserve, 2.7kms of on-road routes and the rest mainly comprising existing and upgraded paths, can be built, we believe, for approximately $4.9M. An 'ultimate' concept, involving additional sections on the rail reserve at Blackburn and Ringwood (and correspondingly less sections on road) can be constructed for a further $2.3M.

WCI advocates that the City of Whitehorse and VicRoads take up the broad plans contained herein, engage with VicTrack and proceed with the necessary detailed design and planning activities to bring this project to fruition progressively within the next few years. WCI will be pleased to cooperate in any way possible to fulfil the vision of this proposal.

INTRODUCTION

Cycling is now recognised by all levels of government as a popular recreational activity for families and as an increasingly important transport option as planners grapple with addressing increasing road congestion, reducing carbon emissions and catering for steady population growth. The benefits of cycling are very well documented in the 2009 Victorian Cycling Strategy.

Historically, urban development took place with little consideration of cycling as a serious transport mode and recreational activity. More recently, state and local governments have begun to redress this oversight and have increasingly recognised cycling paths within infrastructure budgeting and spending. Generally, this has concentrated on using available land in parks and along creeks and rivers. Commendably, the Victorian government now has a policy of including cycle paths within major arterial road projects as a matter of course.

Despite these welcome developments, major obstacles still exist in finding adequate reserves or sufficiently wide arterial roads to enable the interconnection of existing and future cycle paths to provide an efficient and safe network for the increasing number of cyclists. The use of rail reserves offers an option for at least a partial solution to this problem. As noted in the Victorian Cycling Strategy 2009[1] (p29) *"Trails along major roads and rail lines can be used to provide arterial commuting routes and to link networks together."*

Recent studies show a steady increase in the number of cyclists, and projections show that demand will continue to rise as the cycling network is developed and linkages are provided. At present cycling in Whitehorse is limited by a lack of interconnected paths.

The cycling population encompasses the most competent road cyclists, regular commuters, leisure cyclists of all ability levels, shoppers, families and children on their way to school. More competent cyclists will be served by the Principal Bicycle Network which will be an on-road network of cycle routes and dedicated lanes. Many other cyclists, who are not confident to ride among the traffic on the road, even with dedicated cycle lanes, need the safety of a network of shared paths to encourage them to ride. This group encompasses the whole age range, from families with young children, secondary school children too old to ride on footpaths, novice cyclists of all ages, retirees and even octogenarians.

The Eastern Rail Trail (ERT)

The Eastern Rail Trail has long been seen as an important element of Melbourne's future bicycle network. The concept is for a cycle route along the Ringwood rail line between Hawthorn and Heatherdale stations providing off road paths along the rail reserve and in adjacent parks where feasible and signed on-road links or cycle lanes where off road trails are impractical.

The ERT has been the subject of at least two studies, Parklinks 1996[2] and Boroondara BUG 2005[3]. Additionally, The City of Boroondara is supportive of the ERT, building sections of it into future development plans within the city, for example the Glenferrie Oval and Grace Park master plans.

The ERT is also supported by the City of Whitehorse and is included in the 2007 Whitehorse Bicycle Strategy[4] as a medium priority project (medium priority routes 1, 5, 7 and 8) programmed for construction from 2012.

It is understood that the draft revised VicRoads Principle Bicycle Network (PBN) includes the ERT as a primary route for east-west bicycle travel in the City of Whitehorse.

1 http://www.transport.vic.gov.au/doi/internet/ict.nsf/headingpagesdisplay/victorian+cycling+strategy

2 Feasibility Study for Eastern Rail Trail, Parklinks Pty Ltd for the Cities of Whitehorse and Boroondara, June 1996.

3 Eastern Rail Trail bicycle path proposal, Peter Campbell December 2005, http://www.lexicon.net/~lis01101/Eastern_Rail_Trail/Eastern_rail_trail.html visited 4th February 2010.

4 http://www.whitehorse.vic.gov.au/SPContent.aspx?PageID=1250&ItemID=122

THE BOX HILL TO RINGWOOD RAIL TRAIL (BHRRT)

The BHRRT is the Eastern half of the ERT and is the subject of this proposal. An alternative name for this part of the trail has been adopted to differentiate it from the Hawthorn–Box Hill segment and to avoid negative perceptions that may apply to the ERT because of practical obstacles that may exist to a rail trail in parts of Boroondara. By contrast, the Box Hill to Ringwood segment is, we believe, entirely feasible, albeit with special treatment required at a few locations.

The BHRRT is illustrated on page 7. It involves an overall length of 9.94km comprising initially:

- 947 metres of existing shared use paths;
- 4.46km of new shared paths on the rail reserve;
- 713 metres of new shared path on other than rail land;
- 2.76km of on road paths;
- 563 metres through rail station car parks;
- 486 metres of upgraded and widened existing paths;
- An overpass above Cochrane Street Mitcham; and
- An underpass beneath the rail lines in Nunawading.

In order to make the trail viable at the earliest possible time, some sections are initially planned to be on road. These sections are in the Blackburn area from Laburnum Street to South Parade and in the Ringwood area from Heatherdale Road to Thanet Street.

The 'ultimate' long term trail would entail provision of some of these sections both on and off the rail reserve to maximise the extent of separation of cycle and motor traffic. The ultimate trail entails an additional

- 463 metres of paths on the rail reserve;
- 292 metres on road, including a short section through Laburnum Station car park;
- 137 metres of shared path outside the rail reservation in Blackburn;
- An underpass in Blackburn at Sergeant Street; and
- An overpass at Wantirna Road Ringwood.

Justification and rationale

The City of Whitehorse is not well served by off-road cycle paths. The Koonung Trail, at the Northern boundary of Whitehorse serves the North of the municipality, and the Gardiners Creek Trail, again very popular, serves the Southwest quarter of Whitehorse. These two trails are very popular and demonstrate the public response when adequate facilities are installed. The remaining off road paths in Whitehorse are fragmented, limited and fall far short of providing adequate and safe connected routes.

Linking Central Activity Districts

Melbourne 2030 identifies the concept of Central Activity Districts (CADs) as a strategy to address population growth and urban sprawl. The Victorian Transport Plan 2008 supports the strategy of moving away from a mono-centric concept with radial transport links to a polycentric model with CADs linked by efficient transport services. The need for paths such as the BHRRT will increase substantially as Box Hill becomes a Central Activity District, and the centre of its own 10km radius bicycle network.

The BHRRT would provide an ideal cycling linkage between the CADs of Box Hill and Ringwood. It would also provide a means for school children and workers commuting to schools and work places along the corridor. Businesses and workplaces include the Nunawading megamile and adjacent Blackburn and Mitcham commercial areas.

Serving schools and colleges

There are about 20 schools and colleges whose students would have an additional travel option provided by the BHRRT. East to West commencing from Station Street Box Hill:

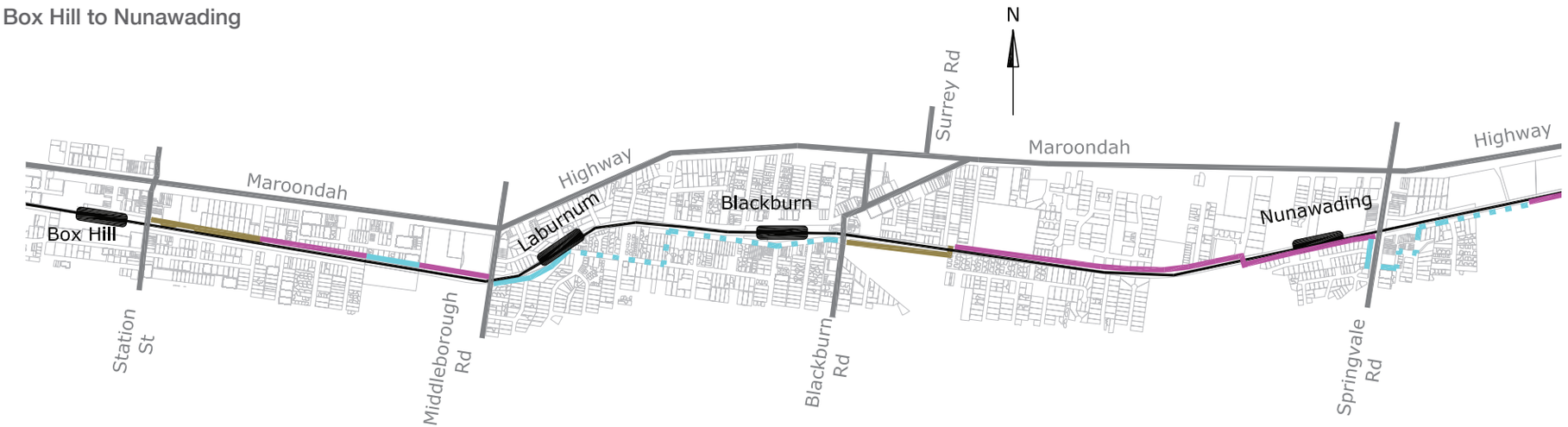
A) Those with trail on their boundary or opposite their boundary;

- Box Hill TAFE College
- Box Hill High School
- St Thomas Primary
- Nunawading Christian College
- St Johns Mitcham

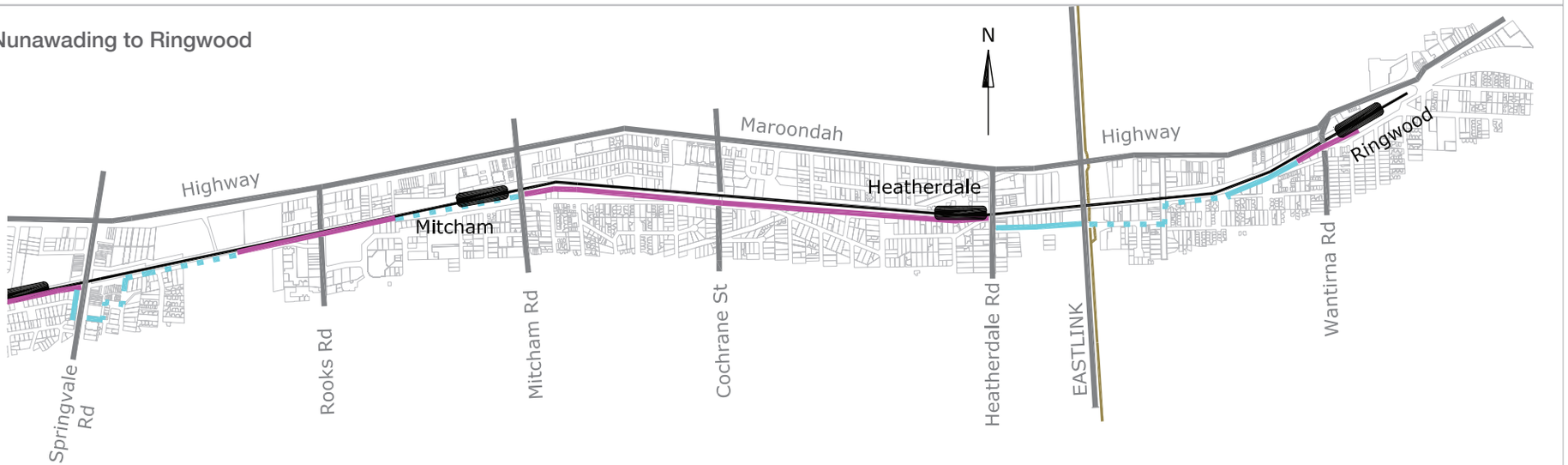
B) Those further afield but within 1km

- Box Hill Catholic Girls' College *200 metres*
- Box Hill Catholic Primary *200 metres*
- Yarra Theological Union *500 metres*
- Laburnum Primary *500 metres*
- Blackburn High *1km*
- Blackburn Primary *200 metres*
- Blackburn Lake Primary *500 metres*
- Nunawading Primary *600 metres*
- Nunawading Adult Training Service *700 metres*
- Mt Pleasant Primary *1km*
- Mullauna College Mitcham *1km*
- Mitcham Primary *1km*
- Antonio Park Primary *250 metres*
- Our Lady's Primary Ringwood *250 metres*
- Ringwood Secondary College *800 metres*

Box Hill to Nunawading



Nunawading to Ringwood



0 metres 500

Existing shared use path

New OFF rail reserve shared path

New ON rail reserve shared path

Signed on-road route

Linking major cycling paths

In recent years shared paths have been constructed in many creek valleys in other parts of Melbourne, and these now form the backbone of the network of shared paths. The Feasibility Study for the ERT recognised that there are no natural valleys in Whitehorse between Gardiners Creek and Koonung Creek which could accommodate an east-west cycle path.

The BHRRT will form the East – West off-road cycling arterial in the City of Whitehorse. In addition to serving local cycle traffic it will provide the following major connections:

- West to Box Hill and Boroondara via Churchill Street or Mont Albert Road;
- East to Ringwood, the Belgrave Rail Trail and the Upper Mullum Mullum Creek Trail to north Croydon;
- North to the Ringwood Bypass Trail, lower Mullum Mullum Trail and Eastern Freeway Trail;
- South to Wantirna South, Dandenong and beyond, including the Knox cycleway;
- Cycle lanes in Heatherdale Road connecting south to Dandenong Creek Trail;
- South on the Heatherdale to Syndal pipe track, (partly constructed) to Forest Hill and beyond when constructed;
- Cycle routes to Blackburn Lake and Forest Hill;
- Recently implemented cycle lanes in Surrey Road connecting north to the Eastern Freeway Trails;
- Cycle route south along Main Street Blackburn to Blackburn Creeklands, Orchard Grove and Burwood East;
- Cycle route north along Williams Road to Springfield Road cycle path and Koonung Road cycle route to the Eastern Freeway Trails;
- South from Laburnum to Middleborough Road Path and Gardiners Creek Trail to Ashwood and beyond; and
- North from Linsley Street along Dorking Road cycle route to Brushy Creek/ Springfield Road Cycle Path and Koonung Creek Trail.

A commuter route and an element of the PBN

Whitehorse currently lacks efficient East-West commuting routes, except perhaps for the on road route along Springfield Road. The arterial roads such as Maroondah Highway, Canterbury Road and Burwood Highway are unsuitable for cycling due to high level of vehicular traffic volumes and speed. They also tend to be hilly which reduces cyclists' speed and exacerbates the speed difference between cyclists and cars. Cyclists are forced to devise routes through residential streets. The street patterns are such that routes tend to be circuitous and disjointed.

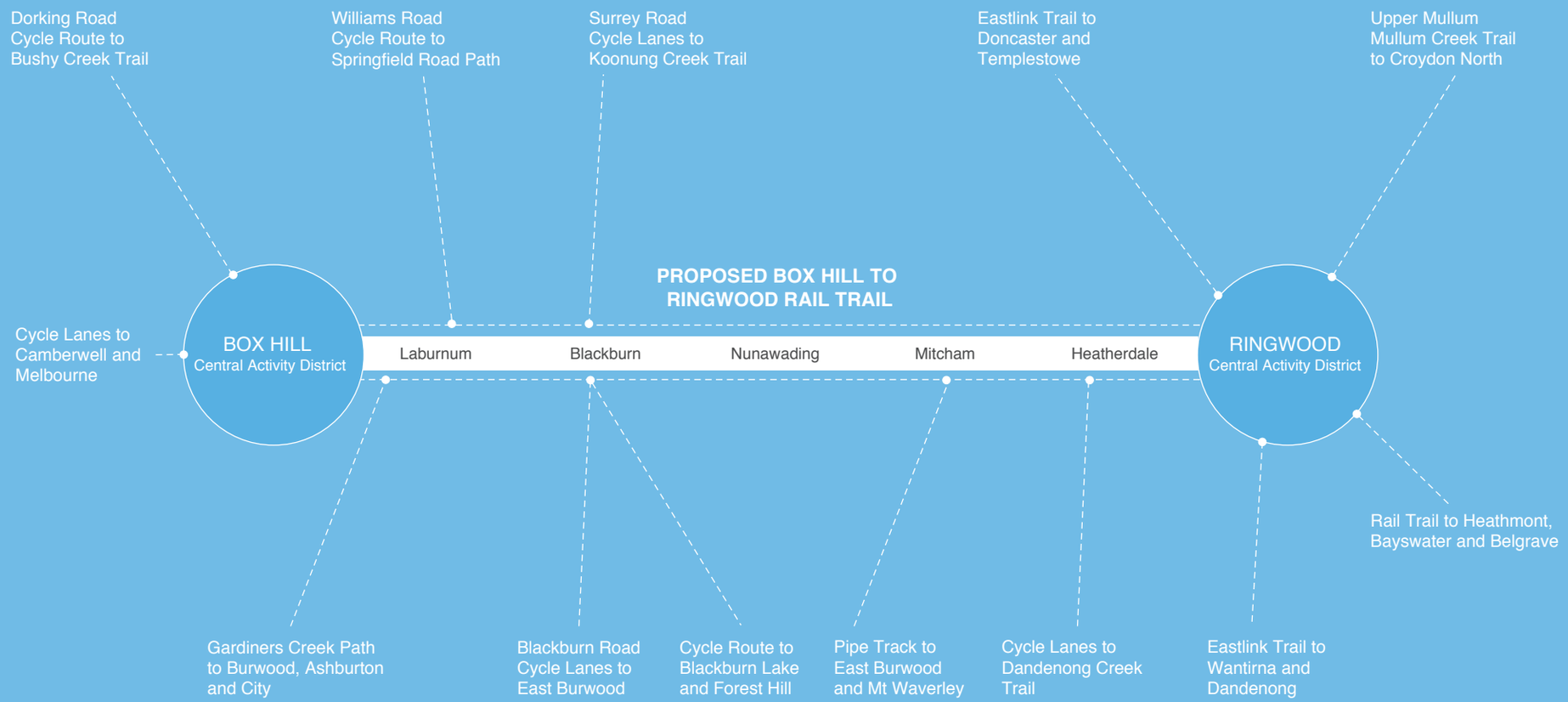
The BHRRT would provide an excellent commuting link to Box Hill and thence to the CBD along streets and paths forming the inner segment of the ERT on Mont Albert Road, Packington Street, Wellington Street and Stevenson Street to the Gipps Street Bridge.

The draft revised VicRoads principle bicycle network (PBN) shows a primary route along the Ringwood rail corridor, coinciding with proposed BHRRT through Whitehorse.

Dual mode travel

The BHRRT which would pass beside seven railway stations, provides an ideal opportunity for dual mode (bike/train) travel. This would provide a useful transport option for people working in the light industrial, retail businesses and offices in the eastern suburbs.

BICYCLE NETWORK LINKS



Practical Issues

Space within the railway reservation

Recently doubts have been expressed about the availability of space within the Railway Reservation for a shared use path. Plans for a third line between Box Hill and Ringwood are not included in the 2008 Victorian Transport Plan[5], which covers transport plans to 2017 and beyond. However, it anticipated that the government will want to allow for a third line at some stage in the future.

The railway reservation varies in width significantly, from just over 20m around Nunawading to over 33m at spots in Mitcham and Ringwood. Generally, the reservation is 22m to 28m wide.

If a third track is to be constructed, the minimum space required for the rail tracks (based on Public Transport Corporation Clearance diagrams issued in 1995) would be 16m based on 4m between track centres and 4m either side of the outer tracks (from the track centres). Even at the narrowest places, this would leave 4m for the shared use path. Where space is limited, the shared use path could be reduced in width to 2.4m or even two metres to provide a maximum buffer space between the path and the closest rail track.

The path could serve also to provide vehicle access for rail track maintenance. Where necessary, barriers or fencing could be constructed to separate path users from the rail tracks. Design of the fencing would need to allow opening or removal of panels to allow track maintenance access.

VicTrack guidelines

VicTrack issued in June 2009, a publication entitled *'Shared User Pathways on VicTrack Land – Design Guidelines for Applicants'* In its introduction, the guide states encouragingly *"Wherever possible, VicTrack will facilitate shared user pathways and rail trails within its land that forms part of an operational railway corridor or a disused rail line provided that the rail and tram operators who also have a role determining the outcome of applications also agree."*

The guidelines set out the steps in the approval process, starting with 'in principle' approval, followed by VicTrack engineering and rail operator assessments. This proposal is intended to support the 'in principle' process.

The requirements in the Guidelines relating to clearances impose requirements that would not be achievable for much of the Box Hill to Ringwood rail corridor. In particular, the requirements for 8m clearance from the centre of the nearest track and 5m clearance from the top of a cutting and toe of an embankment would mostly not be possible.

These clearances appear to be very conservative, noting that there are many examples of existing shared paths that do not meet these criteria, for example on Diamond Creek path between Eltham and Diamond Creek (Melway 12 A10) and the Upfield path near Brunswick Station as illustrated. Further discussions will be necessary to determine what treatments and precautions will be required for these clearances to be reduced.

Bridges and underpasses

This proposal includes two bridges (at Cochrane Street Mitcham and Wantirna Road Ringwood) and two underpasses (at Sergeant Street Blackburn and Moncrief Road Nunawading). It is suggested that economical designs for these be pursued based on a modern approach to similar structures built some years ago on the shared path along the Belgrave railway line.

Route description

The proposed route is described in detail in the following twenty maps, together with descriptions, drawings and photographs that have been compiled based on a physical inspection of the route from Box Hill to Ringwood.

5 http://www.transport.vic.gov.au/web23/home.nsf

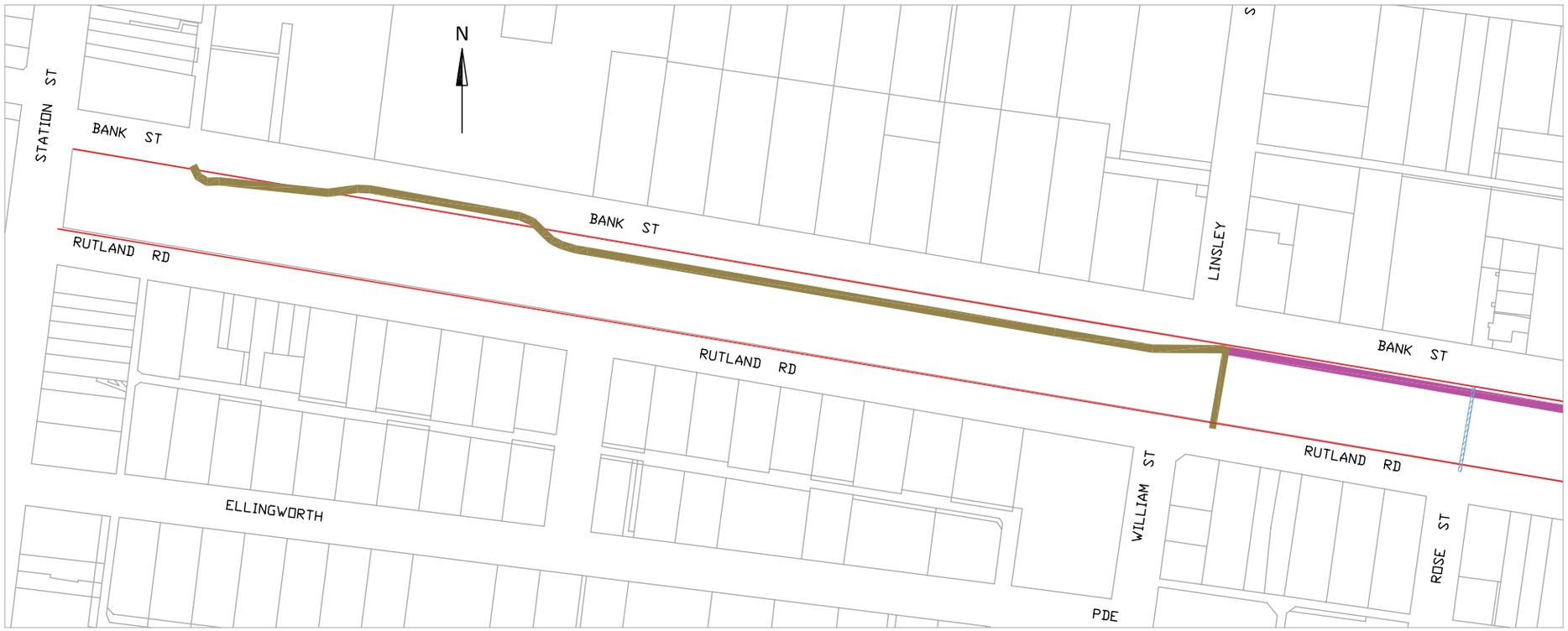
Diamond Creek path between Eltham and Diamond Creek

Upfield path near Brunswick Station

Shared path along the Belgrave railway line

Overpass above Forest Road, Ferntree Gully

1 STATION STREET TO OPPOSITE ROSE STREET



0 metres 100

Existing shared use path
New OFF rail reserve shared path
New ON rail reserve shared path
Signed on-road route
Rail reservation boundary

The section from Station Street to Linsley Street is an existing asphalt path in serviceable condition. The only improvement required is to paint a dividing line down the centre. The new section of proposed shared path begins at Linsley Street heading east. The path would be positioned as close as possible to the north boundary of the rail reserve.

2 OPPOSITE ROSE STREET TO SAGOE LANE

- Existing shared use path
- New OFF rail reserve shared path
- New ON rail reserve shared path
- Signed on-road route
- Rail reservation boundary

Progressing east, a culvert will be required to carry an existing drain under the proposed path. The path would continue along the north boundary of the rail reserve between the chain wire fence above the cutting and the boundaries of adjoining properties. Provision will be required to cover the drain running parallel to the boundary of the reserve. Construction of the path will need to be carried out so as not to disturb the buried cables below. Generally there is ample room along this section to accommodate a 3 metre wide path.

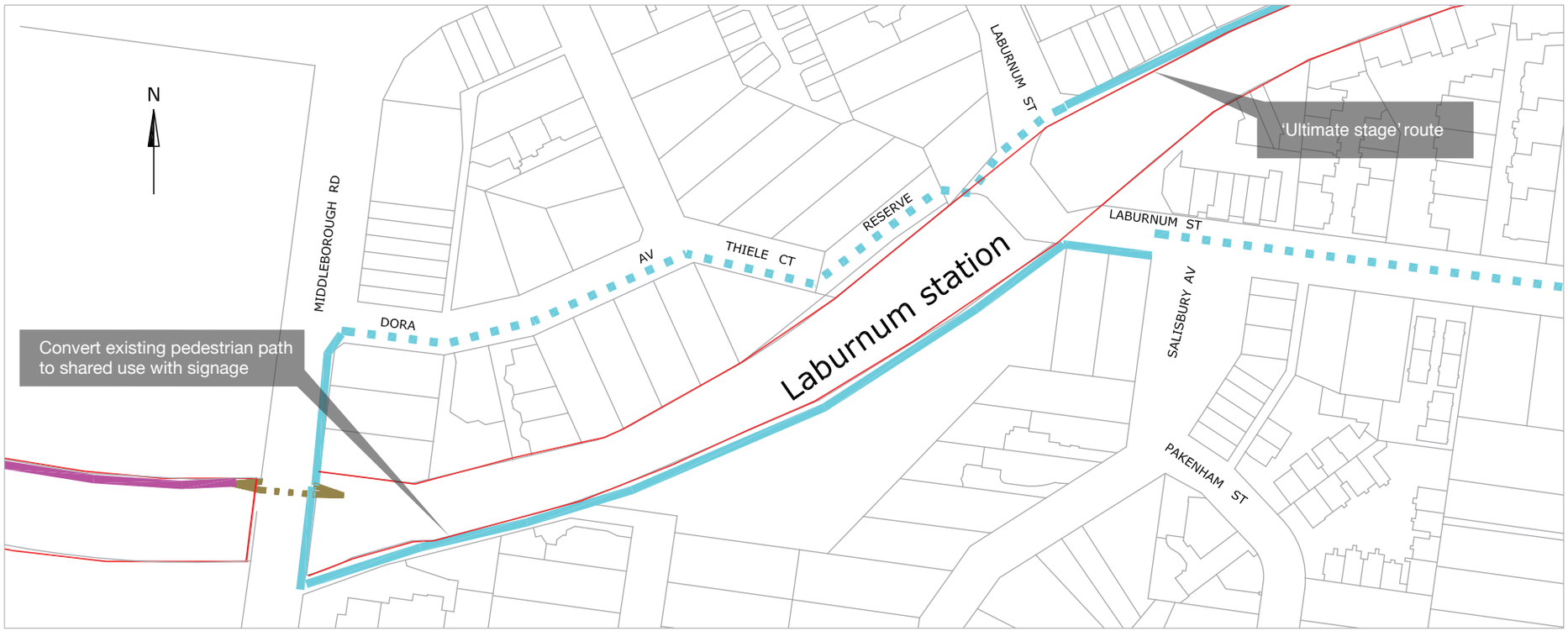
3 SAGOE LANE TO MIDDLEBOROUGH ROAD

0 metres 100

- Existing shared use path
- New OFF rail reserve shared path
- New ON rail reserve shared path
- Signed on-road route
- Rail reservation boundary

This section which passes behind Box Hill High School is considerably wider than the previous section. Underground cables continue along this section. The descent to Middleborough Road will need to be graded appropriately and barriers provided to prevent cyclists spilling out onto Middleborough Road.

4 MIDDLEBOROUGH ROAD TO LABURNUM STREET

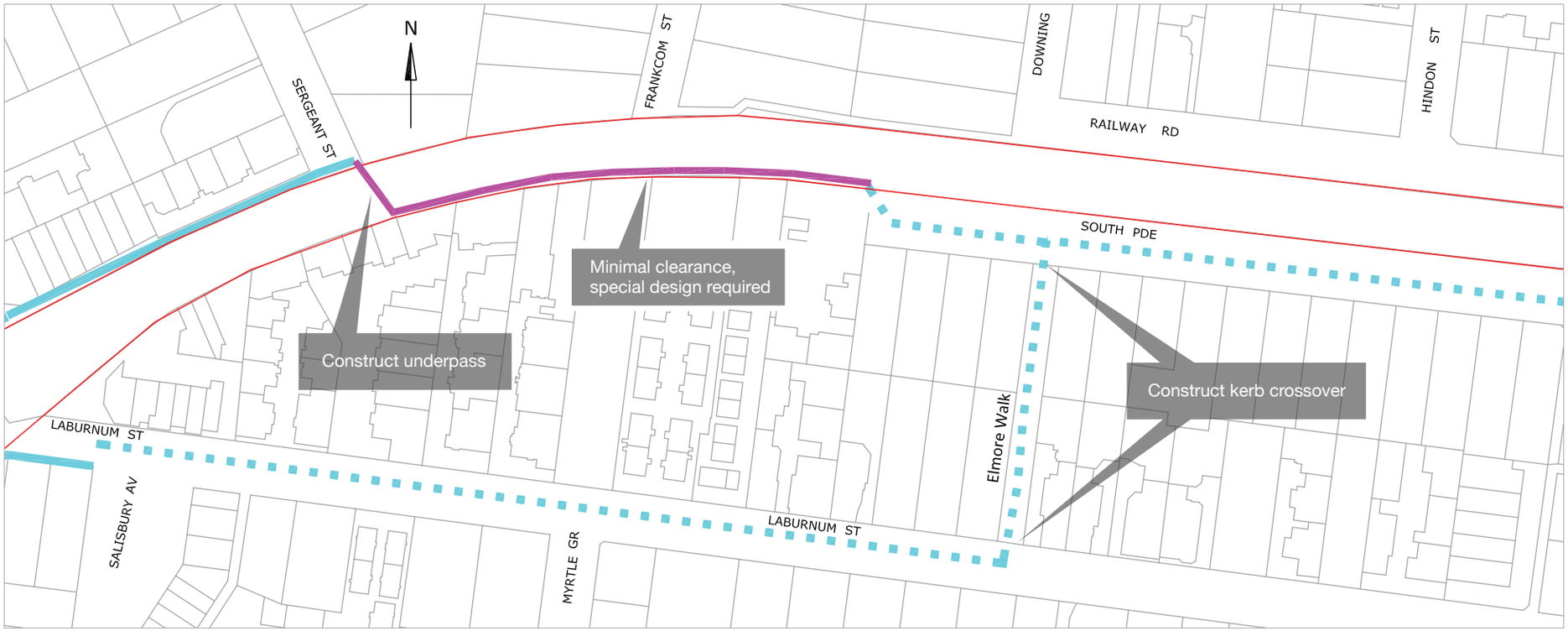


Existing shared use path
New OFF rail reserve shared path
New ON rail reserve shared path
Signed on-road route
Rail reservation boundary

The 'basic' trail concept involves an upgrade of the existing path on the south side of the railway through parkland outside the rail reserve. The path is currently for pedestrians only. It would need to be upgraded to shared use by a slight widening at the western end. The newer section constructed in 2006 as part of the new Laburnum Station and Middleborough Road Grade separation project, could either be widened or a separate path constructed in the parkland. The former option would be less likely to attract opposition from nearby residents.

Under the 'ultimate' concept, a route along Dora Street, Thiele Court and the Laburnum Station car park to Laburnum Street would connect with a continuation of the trail north of the rail reserve (see next section). Under both options, safety issues associated with crossing Laburnum Street where traffic visibility is restricted by the curve in the road, will need to be addressed.

5 LABURNUM STREET TO SOUTH PARADE



- Existing shared use path
- New OFF rail reserve shared path
- New ON rail reserve shared path
- Signed on-road route
- Rail reservation boundary

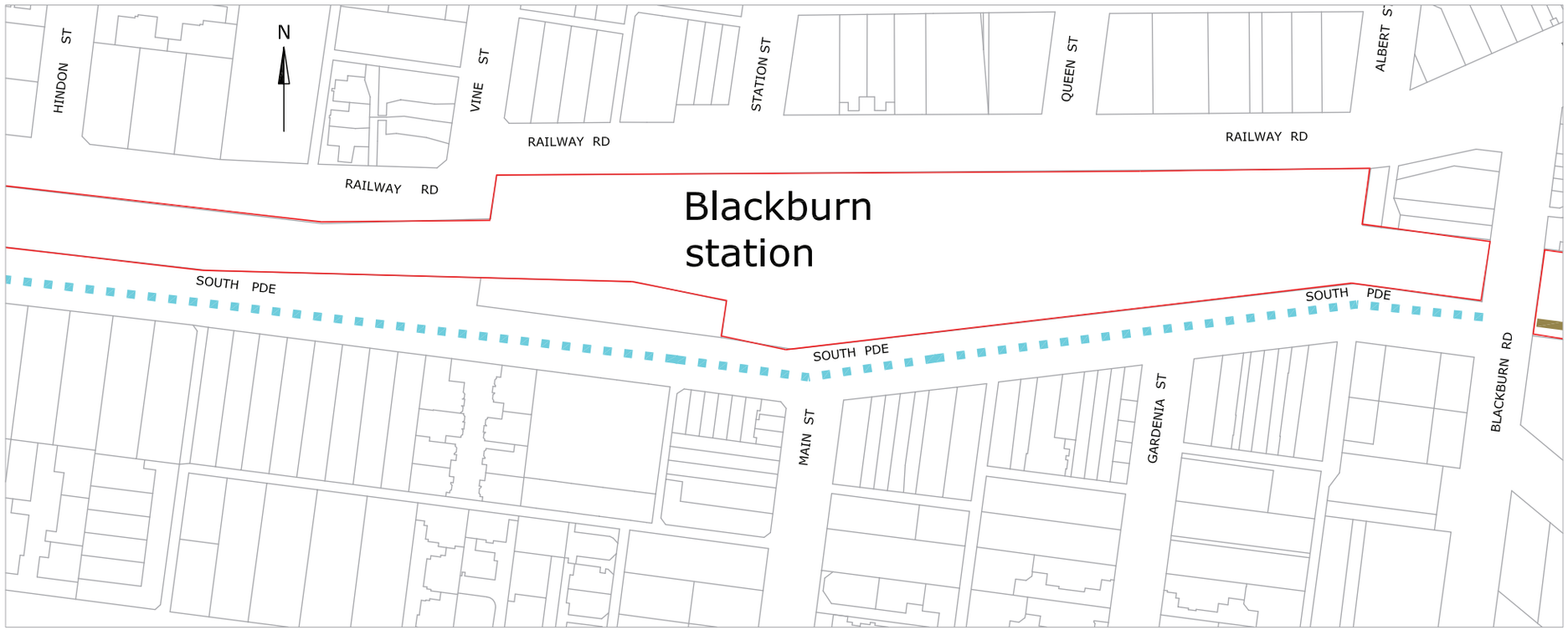
Under the 'basic' trail concept, an on-road section would run along Laburnum Street to Elmore Walk and thence to South Parade. Kerb crossovers will be required at both ends of Elmore Walk. This option is adversely affected by traffic and parked cars on Laburnum Street.

The 'ultimate' concept comprises a path on the north side of the rail reserve through a right of way between the residential units and the rail reserve to Sergeant Street.

An underpass would be constructed at Sergeant Street to take the path to the south side of the tracks. The path would then continue east within the rail reserve until South Parade. Space in the rail reserve is quite limited opposite Sergeant Street, but widens progressively heading east. This section of path would have to be an elevated structure as it would have to be located on the slope of the rail embankment.

Elmore Walk

6 SOUTH PARADE TO BLACKBURN ROAD



0 metres 100

- Existing shared use path
- New OFF rail reserve shared path
- New ON rail reserve shared path
- Signed on-road route
- Rail reservation boundary

This section is on-road. Some modification to the line markings and traffic lights will be necessary at the intersection with Blackburn Road, to mark a pedestrian and bike crossing adjacent to the boom gates. A 'bike box' line marking is necessary and a bicycle sign on the traffic lights would be desirable.

7 BLACKBURN ROAD TO ALFRED STREET

0 metres 100

- Existing shared use path
- New OFF rail reserve shared path
- New ON rail reserve shared path
- Signed on-road route
- Rail reservation boundary

A crossover will need to be constructed on the east side of Blackburn Road to provide an unobstructed approach to the existing path through Morton Park. This path runs parallel to the railway line up to the pedestrian crossing to Cottage Street. This crossing will carry the proposed shared path across to the north side of the rail reserve. The existing 1m concrete path beside the substation will need to be widened to 2.4 or 3 metres. There is sufficient space for this widening.

8 ALFRED STREET TO KING STREET

Existing shared use path
New OFF rail reserve shared path
New ON rail reserve shared path
Signed on-road route
Rail reservation boundary

The path continues east in the rail reserve along the north boundary intersecting with the existing pedestrian crossing at Oliver Avenue/King Street and continuing along the north side of the rail reserve.

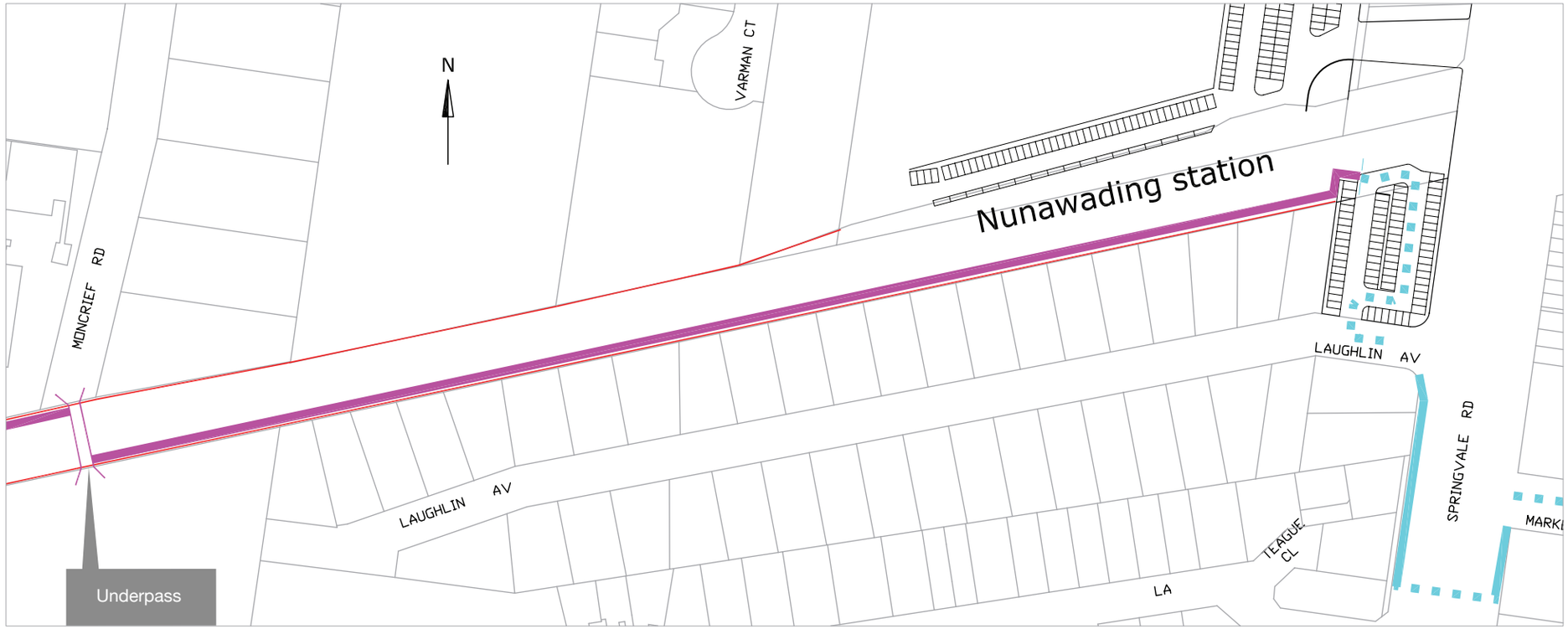
9 KING STREET TO MONCRIEF ROAD

0 metres 100

Existing shared use path
New OFF rail reserve shared path
New ON rail reserve shared path
Signed on-road route
Rail reservation boundary

The main path continues along the north side of the lines until Moncrief Road. The main path must then cross back to the south side because of the lack of space further east behind the Boral concrete plant caused by the relocated rail lines near the new Nunawading Station. An underpass is proposed as a grade separated means of crossing the rail lines. A natural valley at the end of Moncrief Road makes this a convenient location for the underpass.

10 MONCRIEF ROAD TO SPRINGVALE ROAD



Existing shared use path
New OFF rail reserve shared path
New ON rail reserve shared path
Signed on-road route
Rail reservation boundary

The path will run along the south of the railway reservation and as it approaches the new Nunawading Station it will run along the existing maintenance road above railway power and signalling conduits, to the new car park on the corner of Springvale Road and Laughlin Avenue. Cyclists will exit this car park to Laughlin Avenue and proceed south along the footpath to cross Springvale Road at the Market Street pedestrian crossing.

When and if rail traffic increases to the stage that a third rail line is to be installed from Box Hill to Ringwood, an additional rail tunnel under Springvale Road will be required. The incorporation of a shared path within such new tunnel should be an essential component of the design so as to improve cycling safety and eliminate the delay inherent in the on-road detour and dual carriageway pedestrian lights.

11 SPRINGVALE ROAD TO STATION STREET

0 metres 100

Existing shared use path
New OFF rail reserve shared path
New ON rail reserve shared path
Signed on-road route
Rail reservation boundary

Having crossed Springvale Road, the on-road route would go along Market Street and Wood Street to Station Street. Initially there will be a signed cycle route along Station Street past the car parking bays and then divert on to the rail reserve some 40 metres east of Norcal Road.

The signed cycling route along Station Street Nunawading will be somewhat hazardous as heavy vehicles use this road, and as eastbound cyclists will cross close to the rear of numerous cars square parked at the roadside. A preferable option would be a two-way shared path on the south side of Station Street from Wood Street to the point where the path enters the rail reserve as mentioned above.

12 STATION STREET TO ROOKS ROAD

0 metres 100

Existing shared use path
New OFF rail reserve shared path
New ON rail reserve shared path
Signed on-road route
Rail reservation boundary

The path would proceed east on the rail reserve to Rooks Road. Due to the heavy industrial traffic on Rooks Road, pedestrian lights will be required to provide safe crossing for Cyclists.

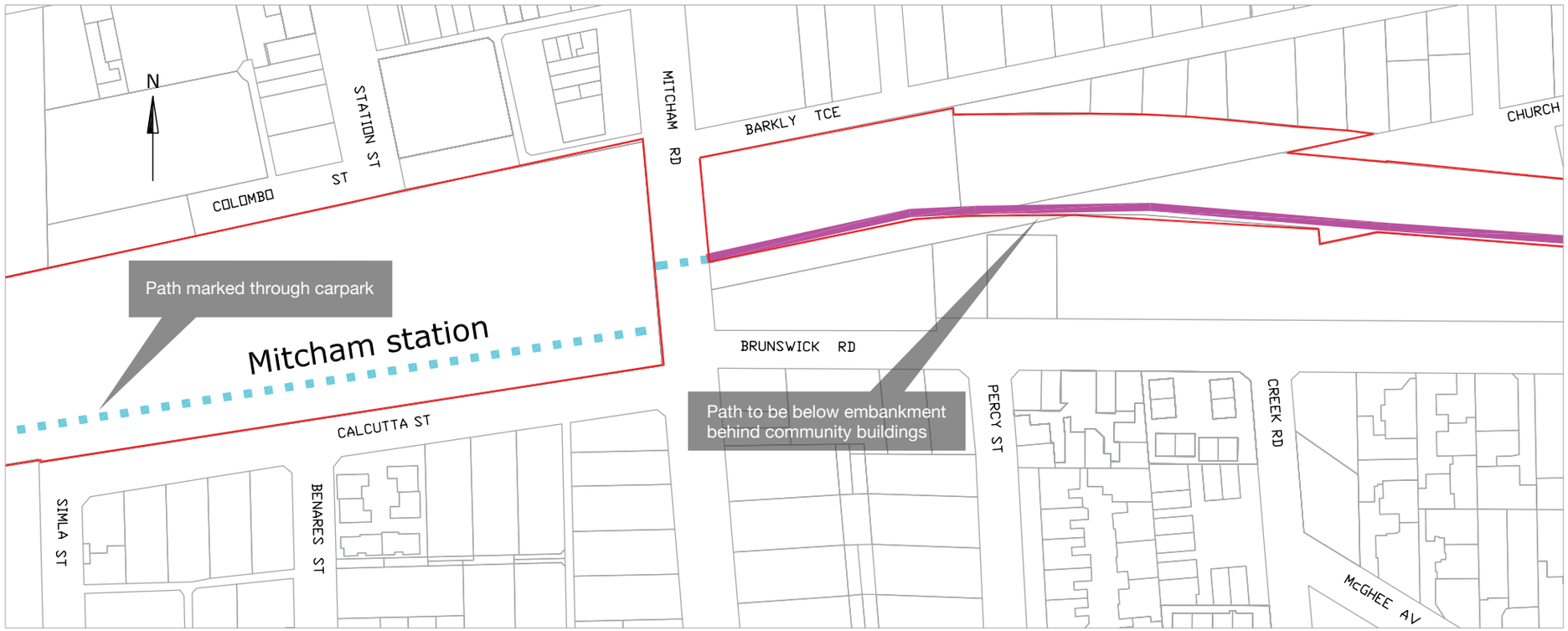
13 ROOKS ROAD TO MITCHAM STATION CAR PARK

0 metres 100

- Existing shared use path
- New OFF rail reserve shared path
- New ON rail reserve shared path
- Signed on-road route
- Rail reservation boundary

The path continues east behind the industrial buildings in Rooks Road and Thornton Crescent linking up with the Mitcham Station car park. The western end of the car park is currently unpaved. The path would continue through the car park, emerging at the pedestrian lights beside the boom gates at Mitcham Road.

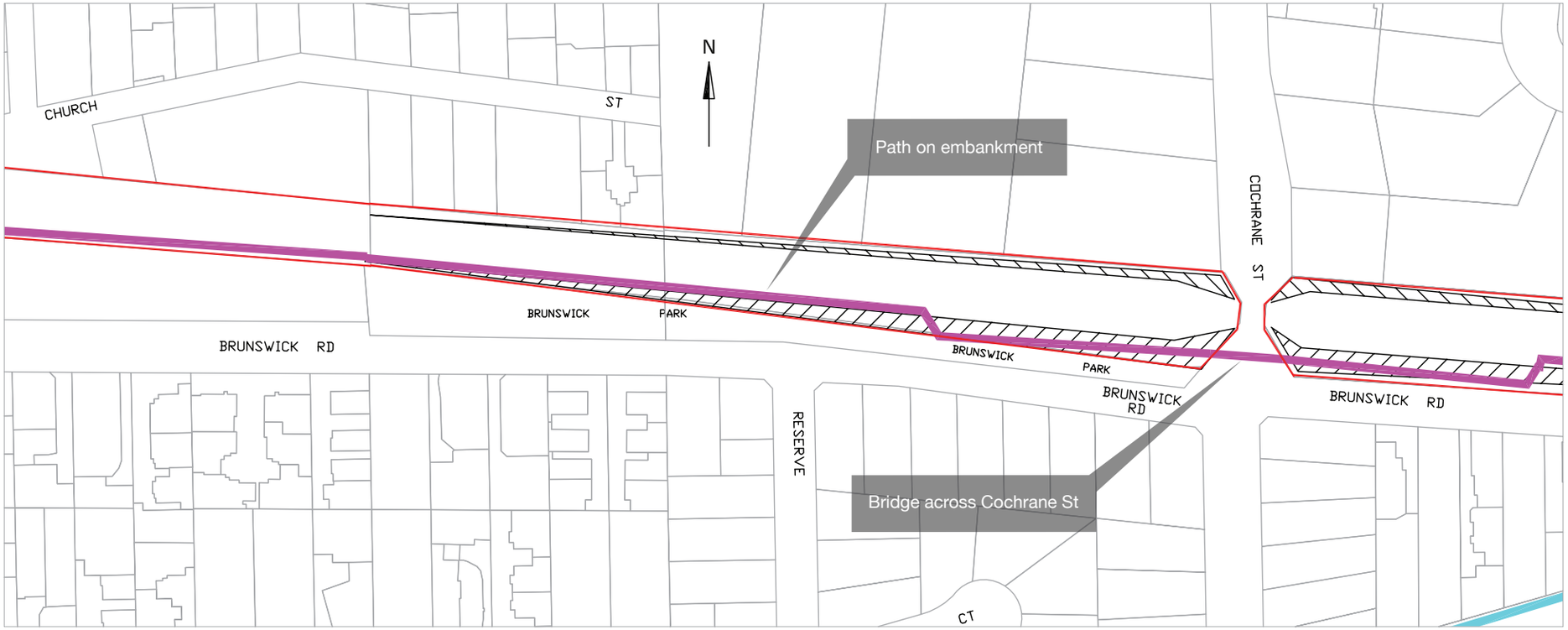
14 MITCHAM STATION TO BRUNSWICK PARK



Existing shared use path
New OFF rail reserve shared path
New ON rail reserve shared path
Signed on-road route
Rail reservation boundary

Upon crossing Mitcham Road, the path enters the wide rail reserve behind the Senior Citizens' Centre car park and continues behind the community buildings in Brunswick Road. The natural ground level falls in this area meaning that the path would be located hard against the foot of the embankment, between it and the rear boundary of the community buildings. It may be necessary to relocate the above ground railway cable ducts in this area, to accommodate the path. After about 300 metres, the path emerges into Brunswick Park.

15 BRUNSWICK PARK TO COCHRANE STREET



Existing shared use path
New OFF rail reserve shared path
New ON rail reserve shared path
Signed on-road route
Rail reservation boundary

There is an option here for the path to leave railway land and traverse through the park. Equally, it could stay on railway land. The latter option would appear preferable so as not to attract opposition from local residents. The natural land falls toward the busy Cochrane Street. An overpass is considered essential to carry the path over Cochrane Street due to traffic volume and the lack of visibility because of the rail bridge abutments. The overpass envisaged is a light weight structure with approaches at each end of about 100 metres and a span over Cochrane Street of 30 metres.

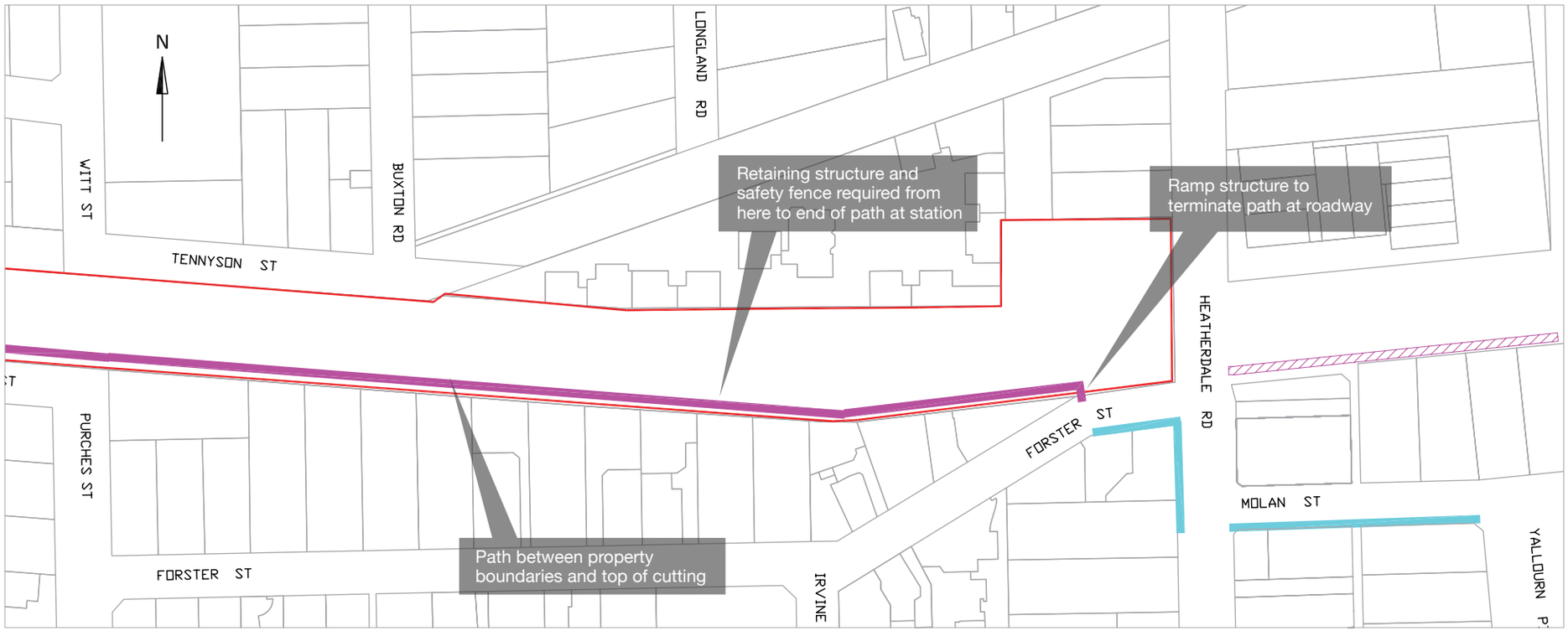
16 COCHRANE STREET TO PURCHES STREET

0 metres 100

- Existing shared use path
- New OFF rail reserve shared path
- New ON rail reserve shared path
- Signed on-road route
- Rail reservation boundary

The overpass eastern approach would transfer back to the top of the rail embankment some 100 metres east of Cochrane Street. The embankment is quite wide at this location. The path continues east along rail reservation (which is quite wide and unobstructed) past Purches Street.

17 PURCHES STREET TO HEATHERDALE STATION



Existing shared use path
New OFF rail reserve shared path
New ON rail reserve shared path
Signed on-road route
Rail reservation boundary

The natural land level progressively rises above the rail line which descends into a cutting approaching Heatherdale Station. The path would be located above the cutting, between it and the rear property boundaries abutting the rail reservation. There is about 3.6 metres of space along the top of the cutting except for about the last 160 metres where the space becomes narrower above Heatherdale Station platform. A safety fence will probably be required along the top of the cutting. For the last 160 metres, some additional retaining structure as well as a fence will be necessary.

An engineered ramp structure will be required to bring the path out behind the station waiting room and onto Forster Street. A short length of shared path is required on the opposite side of Forster Street opposite this ramp, continuing around the corner and then south along the West side of Heatherdale Road to the pedestrian lights.

18 HEATHERDALE ROAD TO EASTLINK

0 metres 100

Existing shared use path
New OFF rail reserve shared path
New ON rail reserve shared path
Signed on-road route
Rail reservation boundary

A new off road shared path would be constructed along the south side of Molan Street to Newman Street. From here, the existing wide footpath meets up with the exit ramp from the Eastlink trail.

19 EASTLINK TO ALBERT STREET

0 metres 100

Existing shared use path
New OFF rail reserve shared path
New ON rail reserve shared path
Signed on-road route
Rail reservation boundary

This section is all on road as far as the footpath through the linear park between Albert and Thanet Streets.

20 ALBERT STREET TO RINGWOOD STATION

0 metres 100

Existing shared use path
New OFF rail reserve shared path
New ON rail reserve shared path
Signed on-road route
Rail reservation boundary

The footpath through the linear park would be widened to 3m width to a point near the end of Thanet Street. At this point, the path would continue on road along Thanet Street, Wantirna Road and Station Street to Ringwood Station.

Under the 'ultimate' concept, the path would diverge back on to the rail reserve and continue through to Ringwood Station car park. A new overpass would be required to carry the path across Wantirna Road, ending at a suitable location in the Ringwood Station car park.

COST ESTIMATES AND IMPLEMENTATION PROPOSAL

Construction stages

It is suggested the basic path be constructed in the following stages.

Stage 1 – Station Street to Blackburn Road

This stage is the most straight forward in so far as adequate space exists on the rail reserve between Box Hill and Middleborough Road, mostly above the rail cutting, which is already fenced off. It connects with the existing underpass beneath Middleborough Road which is currently little used. The section from Middleborough Road to Blackburn Road requires minimal additional construction work – just the upgrade of the path by Laburnum Station. The rest is on road.

Stage 2 – Blackburn Road to Springvale Road

This stage entails mostly newly constructed paths plus an underpass beneath the rail lines at Moncrief Road. It has however great benefits as it opens up the industrial and commercial areas of Nunawading to bicycle access.

Stage 3 – Springvale Road to Heatherdale Station

This stage is a mix of on road routes, new construction and includes an overpass above Cochrane Street. Its major benefit is that it largely completes the connection to the Eastlink trail and completes the section of the BHRRT within the City of Whitehorse.

Stage 4 – Heatherdale Road to Ringwood

This stage completes the trail under the 'basic' concept, with significant sections on road. This section lies within the City of Maroondah.

Stage 5 – 'Ultimate proposal' Blackburn

This stage achieves an off road link from Laburnum Station to South parade, including an underpass beneath the rail lines at Sergeant Street.

Stage 6 – 'Ultimate proposal' Ringwood

This stage achieves an off road link from Thanet Street to Ringwood and includes an overpass above Wantirna Road.

COST ESTIMATES AND IMPLEMENTATION PROPOSAL

Cost estimates

Construction stage		Cost	Cumulative cost
Stage 1	(Station Street to Blackburn Road)	$534,850	$534,850
Stage 2	(Blackburn Road to Springvale Road)	$1,328,450	$1,863,300
Stage 3	(Springvale Road to Heatherdale Road)	$2,948,100	$4,811,400
Stage 4	(Heatherdale Road to Ringwood Station)	$150,240	$4,961,640
Stage 5	(Ultimate stage, Blackburn)	$1,269,010	$6,230,650
Stage 6	(Ultimate stage, Ringwood)	$1,065,200	$7,295,850

Detailed costs are given in Appendix 1.

Path type and lengths

Path characteristics	Length (m)
New shared paths on rail reserve	4464
Signed on road routes	2766
Existing shared paths	947
Routes through station car parks	563
New shared paths off rail reserve	713
Upgrade to existing footpaths	486
Totals	**9939**

BHRRT DETAILED COSTING: APPENDIX 1

Item	Segment	Stage	Category	Length (m)	Qty	Path characteristics	Rate $/m	$ Cost
1	Station Street to Linsley Street	1	exist	422		3m wide standard paved shared path	20.00	8,440
2	Linsley Street to Sagoe Lane (on rail segment)	1	on rail	396		3m wide standard paved shared path	450.00	178,200
3	Linsley Street to Sagoe Lane (off rail segment)	1	off rail	208		3m wide standard paved shared path	450.00	93,600
4	Linsley Street to Sagoe Lane	1	on rail			Culvert over drain		2,200
5	Linsley Street to Sagoe Lane	1	on rail		234	Cover for drain beside path	50.00	11,700
6	Sagoe Lane to Middleborough Road	1	on rail	251		3m wide standard paved shared path	450.00	112,950
7	Middleborough Road to Laburnum Station pedestrian path	1	upgrade	120		3m wide standard paved shared path	20.00	2,400
8	Laburnum Station pedestrian path	1	upgrade	193		3m wide standard paved shared path	120.00	23,160
9	Laburnum Street	1	off rail	32		3m wide standard paved shared path	450.00	14,400
10	Laburnum Street to Elmore Walk	1	on road	330		Signage and linemarkings for on road path	80.00	26,400
11	Elmore Walk	1	off rail	117		Gravel pathway		5,000
12	South Parade from Elmore Walk to Main Street	1	on road	412		Signage and linemarkings for on road path	80.00	32,960
13	South Parade from Main Street to Blackburn Road	1	on road	293		Signage and linemarkings for on road path	80.00	23,440
14	Blackburn Road traffic light upgrade	2	other					100,000
15	Blackburn Road to Cottage Street crossing	2	exist	373		3m wide standard paved shared path	20.00	7,460
16	Cottage Street crossing to Alfred Place	2	off rail	84		3m wide standard paved shared path	450.00	37,800
17	Alfred Place to Oliver Street crossing	2	on rail	514		3m wide standard paved shared path	450.00	231,300
18	Oliver Street crossing to Moncrief underpass	2	on rail	513		3m wide standard paved shared path	450.00	230,850
19	Moncrief underpass	2	on rail	20				500,000
20	Moncrief underpass to Nunawading Station car park	2	on rail	472		3m wide standard paved shared path	450.00	212,400
21	Nunawading Station car park	2	car park	108		Signage and linemarkings through carpark	80.00	8,640
22	Station Street Eastwards of Springvale Road	3	on road	672		Signage and linemarkings for on road path	80.00	53,760
23	Station Street to Rooks Road	3	on rail	336		3m wide standard paved shared path	450.00	151,200
24	Rooks Road traffic lights	3	other					250,000
25	Rooks Road to Mitcham car park	3	on rail	273		3m wide standard paved shared path	450.00	122,850
26	Mitcham Station car park	3	car park	455		Signage and linemarkings through carpark	80.00	36,400
27	Mitcham Road to West end of proposed overpass over Cochrane Street	3	on rail	607		3m wide standard paved shared path	450.00	273,150

Item	Segment	Stage	Category	Length (m)	Qty	Path characteristics	Rate $/m	$ Cost
28	West approach to overpass	3	on rail	98		3m wide elevated shared pathway	4,000.00	392,000
29	Cochrane Street overpass	3	on rail	30		Bridge span	20,000.00	600,000
30	East approach to overpass	3	on rail	96		3m wide elevated shared pathway	4,000.00	384,000
31	East end of proposed overpass over Cochrane Street to Heatherdale Station	3	on rail	858		3m wide standard paved shared path	450.00	386,100
32	At Heatherdale Station entrance	3	other		120	Retaining works and fence above Heatherdale Station	2,000.00	240,000
33	At Heatherdale Station entrance	3	other			Ramp to street level		50,000
34	Forster Street and Heatherdale Road	3	off rail	72		Upgrade footpath	120.00	$8,640
35	Molan Street from Heatherdale Road to Yallourn Parade	4	off rail	90		3m wide standard paved shared path	120.00	10,800
36	Molan Street from Yallourn Parade to Eastlink bridge	4	off rail	110		3m wide standard paved shared path	120.00	13,200
37	Eastlink bridge	4	exist	152				0
38	Molan Street – New Street – Albert Street	4	on road	571		Signage and linemarkings for on road path	80.00	45,680
39	Albert Street to Thanet Street	4	upgrade	173		Upgrade footpath	240.00	41,520
40	Thanet Street to Ringwood Station carpark	4	on road	488		Signage and linemarkings for on road path	80.00	39,040
Totals				9939				4,961,640

Ultimate stage

50	Dora Avenue and car park	5	on road	292		Signage and linemarkings for on road path	80.00	23,360
51	Laburnum Street to Sargeant Street underpass	5	off rail	137		3m wide standard paved shared path	450.00	61,650
52	Sargeant Street underpass	5	on rail	25				500,000
53	Sargeant Street underpass to South Parade	5	on rail	171			4,000.00	684,000
54	Thanet Street to Wantirna Road Bridge approach	6	on rail	136		3m wide standard paved shared path	450.00	61,200
55	Elevated approach to bridge	6	on rail	36			4,000.00	144,000
56	Wantirna Road Bridge	6	on rail	30			20,000.00	600,000
57	Descending ramp to carpark	6	on rail	65			4,000.00	260,000
Totals				892				2,334,210

THE BOX HILL TO RINGWOOD RAIL TRAIL

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