10

LOCAL ACCESS THEME OPTIONS

7.0 LOCAL ACCESS THEME OPTIONS

The Local Access Corridor Theme aims to provide maximum station coverage by penetrating as far as possible into residential areas and local activity centres. The proposed service seeks to maximise potential patronage through the provision of a large number of stations in densely populated areas. Greater numbers of passengers would be able to walk to stations when compared with the Rapid Transit Corridor Theme, reducing the need for park-and-ride facilities. It is expected that the Local Access Options would generate distributed land use uplift across a number of local activity centres, providing local business and investment opportunities across the study area.

The theme follows only one alignment from Doncaster as far as East Kew (Harp Road). At this point, two possible options are proposed, both of which extend further west and ultimately allowing passenger interchange with the City Loop. These options are considered in more detail below.

7.1 ROUTE ALIGNMENTS AND STATION LOCATIONS

7.1.1 LOCAL ACCESS 1 ROUTE OPTION (LA1)

The Local Access 1 (LA1) Option would provide a high quality, fast, heavy rail service from Doncaster Hill to a new station in Franklin Street (near Melbourne Central station). The alignment proposed commences at Doncaster Hill and connects with the new Doncaster Park-and-Ride, Leigh Park, Burke Road, Kew East (Harp Junction), Kew Junction, Victoria Street and St Vincent's (Victoria Parade) stations before terminating at a new station on Franklin Street, one city block north of the existing Melbourne Central station on the City Loop.

The LA1 Option provides a fully underground railway from Doncaster Hill to the city, along an alignment that generally follows Doncaster Road, High Street Kew and Victoria Street Richmond, to its CBD terminus in Franklin Street:

The proposed railway line would start at Doncaster Hill, with a station located deep below Doncaster Road accessible from street level and directly accessible from the Westfield Doncaster Shopping Centre. From here, the line would run westwards under Doncaster Road towards the Doncaster Park-and-Ride.

A station at the Doncaster Park-and-Ride would comprise an underground station located beneath a multi-storey car park and bus interchange.

From this location, the line would continue westwards along Doncaster Road to an underground station near Leigh Park in North Balwyn.

The line would then continue to a station near the intersection of High Street and Burke Road, Kew.

Heading westwards along High Street, the next station would be located at Kew East, near the intersection of High Street and Harp Road, where it would serve the mixture of commercial, industrial and residential zones in the area, as well as Kew High School.

The line would then follow High Street, Kew, to a station at Kew Junction. Kew Junction is a strong commercial centre and residential development, with existing tram connections to the eastern suburbs and the city. The station would be located so as to maximise these connections.

From Kew Junction the alignment would turn to follow Victoria Street, Richmond. A station would be located near the corner of Victoria and Church streets to serve the Victoria Street shopping precinct, provide connections to the Church Street trams and serve surrounding residential areas.

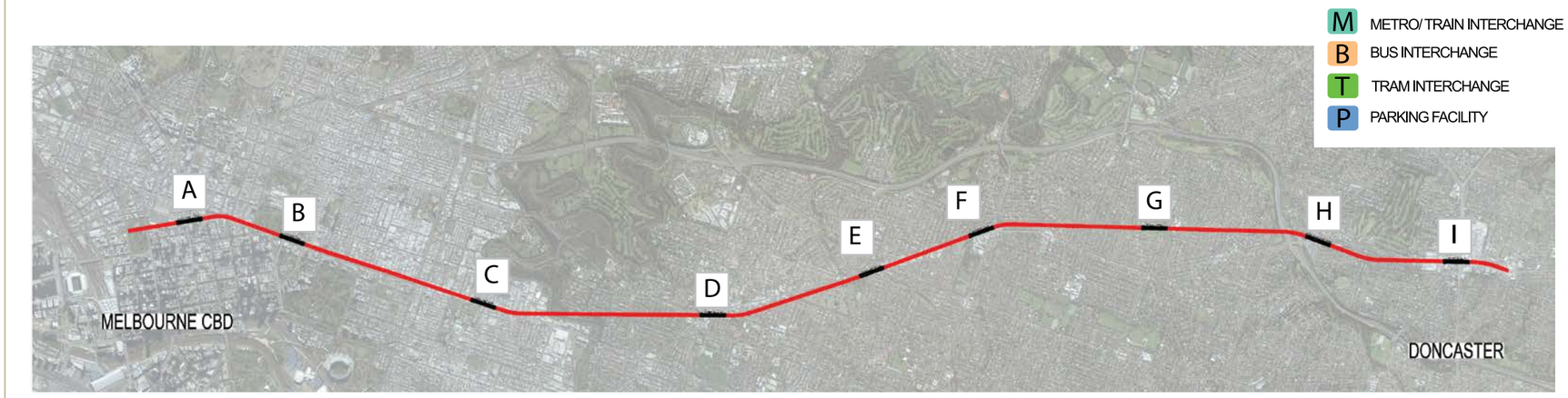
The line would proceed under Victoria Street and Victoria Parade to a station located near St Vincent's Hospital at the corner of Nicholson Street and Victoria Parade.

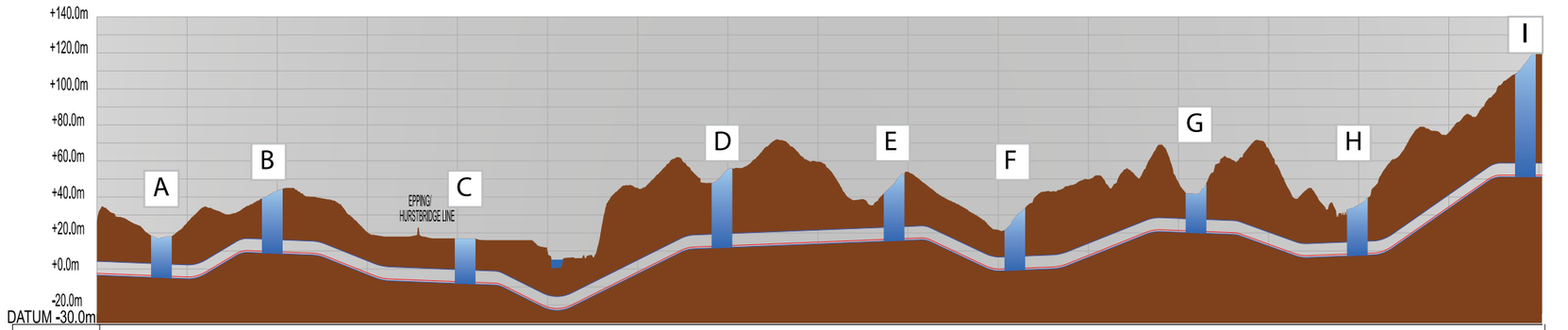
From here, the line would continue parallel to Victoria Parade, to the last station on the line at Franklin Street, located on the north side of the CBD. The station would be located to connect directly to the proposed CBD North station that is planned as part of the proposed Melbourne Metro Project.

Figure 7-1: The Local Access Corridor Theme

The theoretical travel time between Doncaster Hill and Franklin Street along the proposed alignment would be around 20 minutes (including station stops). Because the proposed alignment would run in a manner that is totally segregated from Melbourne's existing metropolitan rail network, removing the need to interface with other timetabled services, this travel time would likely be reliably achieved in service.

A total of nine new stations are proposed as part of this potential alignment, located at Doncaster Hill, Doncaster Park-and-Ride, Leigh Park, Burke Road, Kew East, Kew Junction, Victoria Street, St Vincent's and Franklin Street. Further details of the proposed stations are included below, although it should be stressed that these options are based upon a limited, high-level assessment of possible station types and positions. Further work would be required before station designs and locations could be finalised.





DEPTH (m)	22.3m		35.1m		24.3m			43m		36.4m	33.5m		27.1m		30.8m	68.3m
ROADS	QUEEN ST		NICHOLSON ST		HODDLE ST	CHURCH ST	YARRA RIVER	COTHAM RD		HARP RD	BURKE RD		BALWYN RD		EASTERN FWY	WILLIAMSONS RD
CHAINAGE	0.0km	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0 16.0

LOCAL ACCESS OPTION 1 (LA1)

FRANKLIN STREET TO DONCASTER HILL

Figure 7-2: Proposed Local Access 1 Route Option

Doncaster Hill Station

Located in the same place proposed by the Rapid Transit Corridor Theme, around the intersection of Doncaster Road and Tram Road, the station proposed by the study team at Doncaster Hill would have an entrance centrally located over deep underground platforms. Due to alignment constraints under the Eastern Freeway, this option would be deeper than the alignment proposed for the Rapid Transit Corridor Theme, at around 68 metres below ground.

Like the Rapid Transit Options, the main entrance to the station is proposed as being on the south side of Doncaster Road, where it could become the focal point of a newly created quality public realm. Provision would be included for kiss-and-ride drop-off and pick-up, as well as for taxi use. The space could connect to a possible multi-storey car park integrated with a bus terminal located further south if desired.

The surrounding environment is largely commercial and dominated by the Westfield Doncaster Shopping Centre, with the wider surrounding area largely consisting of residential detached housing. Pedestrian connectivity could be improved through the provision of a public underpass across the busy Doncaster Road, connecting to a further station entrance to the north. A potential connection with a dedicated entrance from Westfield Doncaster Shopping Centre could also be possible with this solution, should that be desirable.

Doncaster Park-and-Ride Station

Located in Doncaster to the east of the Eastern Freeway intersection with Doncaster Road, the park-and-ride station proposed for this option would be located in a tunnel approximately 31 metres beneath High Street and Doncaster Road. The intersection is a major road connection from the eastern suburbs and is an expanding transfer point, with the surrounding area being mixed use although dominated by detached residential housing.

The existing DART park-and-ride car park provides opportunity for expansion to multi-storey car parking and this is included as part of this option, with a number of major bus routes available to provide connectivity to the surrounding suburbs. A large number of kiss-and-ride and taxi bays are proposed and secure bicycle parking would be expected to be in high demand at this location.

The proposed solution has a single entrance located centrally to the platform serving the underground platforms, with the station building being the focus of a proposed multi-storey, park-and-ride hub. Regardless of the final form of this station, there exists significant opportunity to integrate car parking with significant bus facilities and the potential for future expansion to provide a major bus interchange, should that align with future needs.

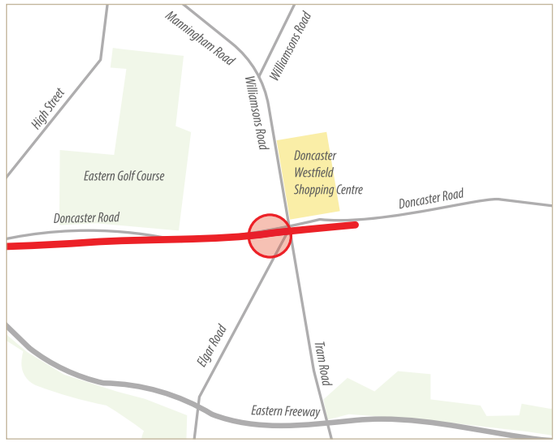


Figure 7-3: Proposed Doncaster Hill station location

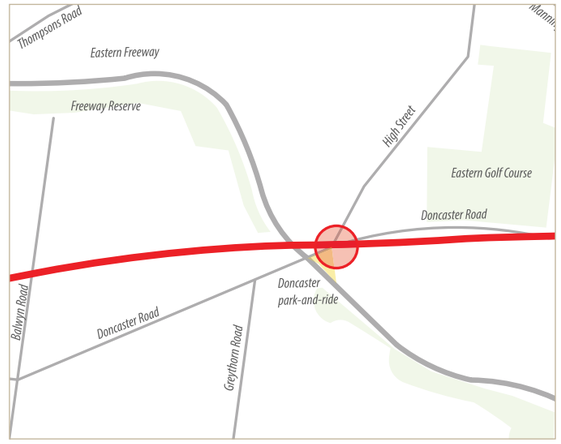


Figure 7-5: Proposed Doncaster Park-and-Ride station location

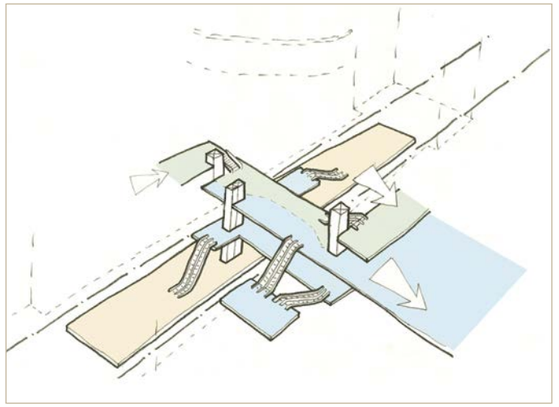


Figure 7-4: The depth of the Doncaster Hill station would likely require two levels of escalators to reach the platform, as shown in this sketch. Alternatively, high capacity lifts may be used.

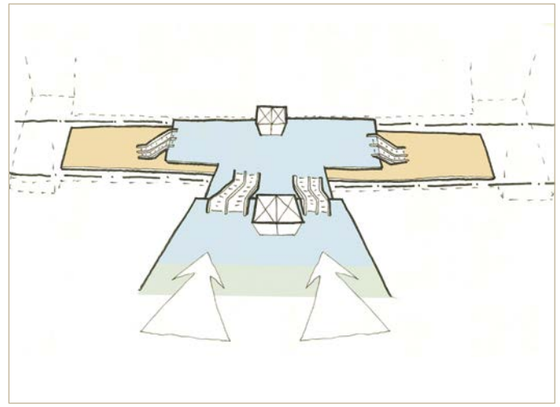


Figure 7-6: The option developed by the study team for the Doncaster Park-and-Ride station envisages passengers entering the station building through an underground connection between the car parking area and the station platforms

Leigh Park Station

Located in Balwyn North in the vicinity of the existing Leigh Park sports oval, the station proposed at this location would focus upon a walk-up catchment, with kiss-and-ride and taxi drop-off facilities also provided. The existing tram network is located within a 10-minute walk and secure bicycle parking is expected to be in high demand at this location. The surrounding area is dominated by detached residential housing, with the Boroondara Primary School situated nearby.

A single station entry from the edge of the Park on Balwyn Road is proposed, likely to be located to the eastern end of the deep underground platforms. A dedicated free-standing entrance building would provide the opportunity to sensitively integrate the station access into the landscape, while maintaining the integrity of the sports oval. A further vent structure would likely be required, which could be integrated into the park area to the west. A lift and escalators would be necessary to serve the platform.

Burke Road Station

Located in Kew East at the High Street intersection with Burke Road, the proposed Burke Road station would be located approximately 34 metres below ground. The Kew High School is within a five-minute walk to the south and the surrounding environment of mixed use commercial, industrial and residential land is expected to result in demand for both car parking and kiss-and-ride facilities alongside the provision of taxi bays and secure bicycle parking.

Existing tram and bus routes run parallel to the proposed alignment, providing the opportunity for passengers to interchange at this location.

The proposed station location could provide the opportunity for a larger commercial development around the High Street/Burke Road intersection, which could potentially facilitate the integration of shopping, offices and residential accommodation. The development could include a single station entrance and the required tunnel. The required platforms would be located deep underground and would likely be served centrally by both lifts and escalators.

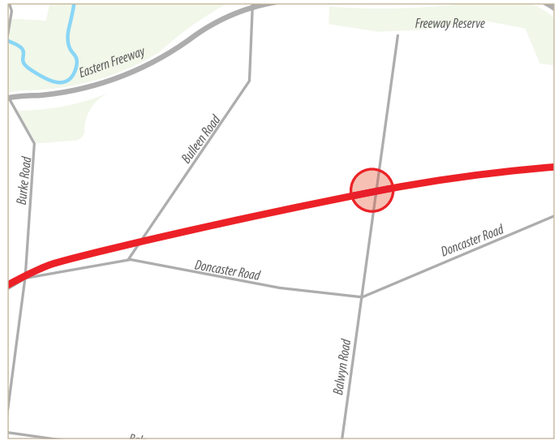


Figure 7-7: Proposed Leigh Park station location

Figure 7-9: Proposed Burke Road station location

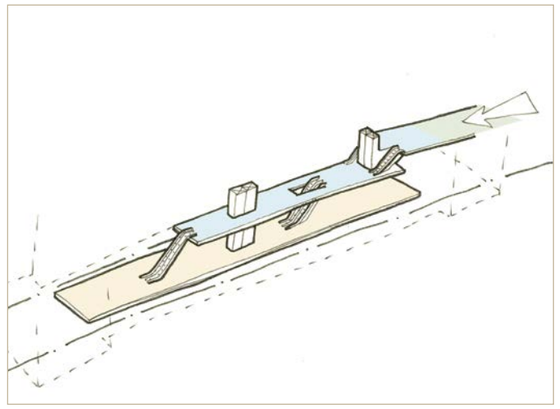


Figure 7-8: The proposed Leigh Park station is anticipated to require a single entrance, located at one end of the platform

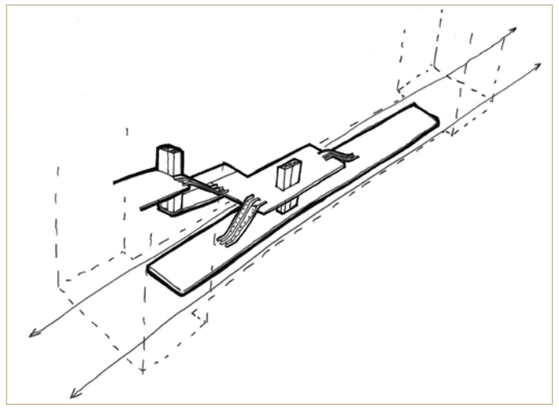


Figure 7-10: The Burke Road station is anticipated to require a single entrance, located at one end of the platform, with the new train tracks passing on either side of the platform

Kew East Station

Located in Kew East near the intersection of High Street and Harp Road, the proposed Kew East station would focus upon a walk-up passenger catchment, with dedicated kiss-and-ride and taxi bays also proposed. Secure bicycle parking is also expected to be in high demand.

The area surrounding the proposed station compromises mixed use commercial and residential areas. An existing tram line runs parallel to the proposed alignment, which would provide public transport access to the station. Boroondara cemetery and the public recreational park and sports facilities of Victoria Park are located within walking distance.

A single station entrance could provide direct access into the High Street shopping area.

The station entry from the corner of High Street and Harp Road could serve the eastern end of the deep underground platforms. This would provide the opportunity for a dedicated entrance with potential development above and adjacent to this entrance, which could integrate into a future commercial fabric in continuation from the north. A lift and escalators would be required to serve the single platform.

Kew Junction Station

Located near Kew Junction and the corner of Kew High Street and Cotham Road, the proposed Kew Junction station could provide prime access to the shopping area of Kew High Street. The area comprises strong mix use commercial and residential development, with existing tram lines that connect the eastern suburbs to the city and provide interchange opportunities. The tram lines are located opposite the proposed station location.

An existing car park south of the proposed entrance would provide the potential opportunity to develop a multi-storey car park. In addition, dedicated kiss-and-ride and taxi bays are proposed. Like most of the station locations nominated as part of the Local Access Corridor Theme, secure bicycle parking is expected to be in demand.

A proposed single station entry on the corner of High Street and Cotham Road could serve the eastern end of the deep (43 metre) underground platforms at this location. The provision of a corner station entry could provide the opportunity for potential development above and adjacent to the entry, integrating into the existing commercial fabric. A further vent structure is likely to be required, which could be integrated into further development at the corner of Kew Junction. A lift and escalators would likely be required to serve the proposed single platform.

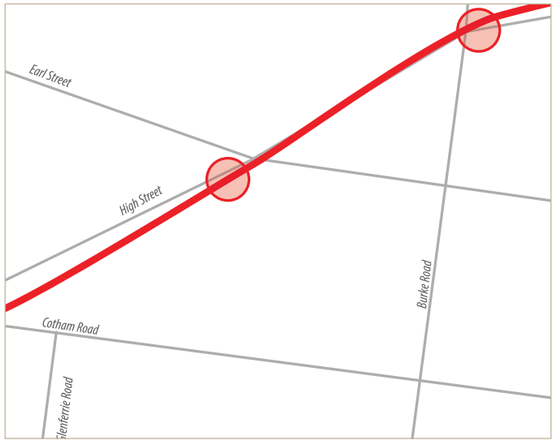


Figure 7-11: Proposed Kew East station location

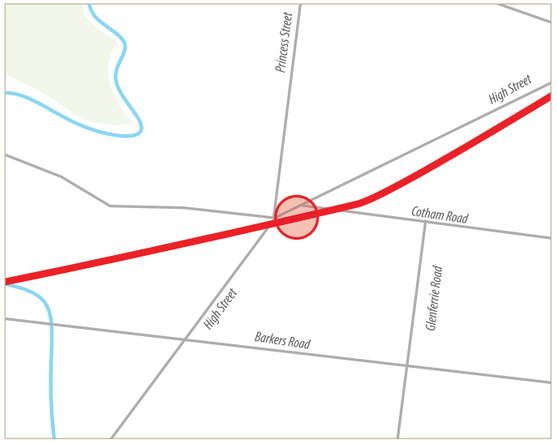


Figure 7-13: Proposed Kew Junction station location

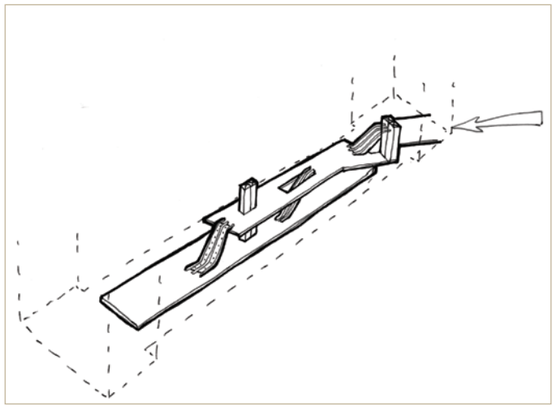


Figure 7-12: Similar to the proposed Burke Road station, the Kew East station is anticipated to require a single entrance, located at one end of the platform

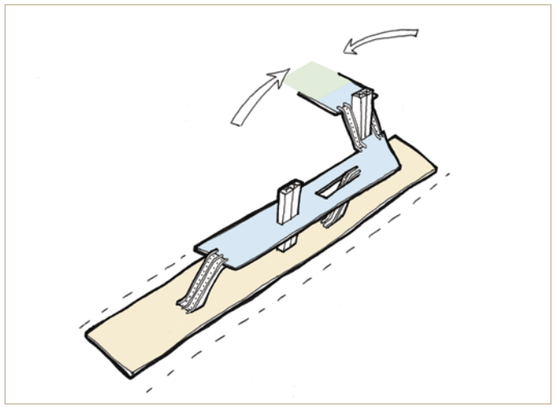


Figure 7-14: The proposed Kew Junction station is anticipated to require only one entrance, and an 'island' platform with tracks passing on either side

Victoria Street Station

Located in North Richmond, adjacent to the intersection of Victoria Street with Church Street, the proposed location for the Victoria Street station is in the vicinity of both east-west and north-south tram connections. North Richmond train station is located within a 10-minute walking distance.

The local area is predominantly residential in nature, however also includes areas of mixed use commercial and industrial activity. The public recreational green of the Yarra Bend Park is located within walking distance.

It is not proposed that car parking is encouraged in this location, but that dedicated kiss-and-ride and taxi bays are provided. Secure bicycle parking is again expected to be in demand at this location.

The proposed single station entry from the corner of Church and Victoria Streets would serve the eastern end of the deep underground platforms. The corner station entry would provide the opportunity for a dedicated entrance with potential development above and adjacent to integrate into the existing commercial fabric. It is likely that both lifts and escalators would be required to serve the single underground platform.

St Vincent's Station

Located in close vicinity to Carlton Gardens and St Vincent's Hospital at the northern perimeter of the CBD, the proposed location for St Vincent's station is on Victoria Parade, near the intersection with Nicholson Street. The station location would serve the CBD as a major entrance and exit of the alignment.

A multiple number of main tram lines are located in close proximity to the station and Parliament station is a within a five-minute walking distance. For these reasons, dedicated kiss-and-ride and taxi bays are not proposed. Car and bicycle parking is also not expected to be in demand, with the majority of passengers walking to or from the station.

The west-bound road lane of Victoria Street and adjacent tram tracks would likely require re-alignment to give space for a station entrance north of the Royal Australasian College of Surgeons if this option was pursued further. This area would provide the opportunity for a dedicated entrance, sensitively located within an improved landscape north of the existing College buildings. Lifts and escalators would be used to serve the deep underground platforms from the western end of the station.

Franklin Street Station

Located in close vicinity to the Queen Victoria Markets at the northern perimeter of the CBD, the proposed Franklin Street station platforms would lie 22 metres below Franklin Street, between Swanston Street and Elizabeth Street. The station location would serve the CBD as the terminus, similar to the RT3 alignment, although empty trains could then continue west to stabling and maintenance facilities on the existing rail network north of Southern Cross Station.

The station could provide excellent interchange opportunities, with almost all major north-south tram lines situated in close proximity to the proposed location. Melbourne Central station and the proposed Melbourne Metro CBD North stations would both be located within a five-minute walk of the proposed station entrance.

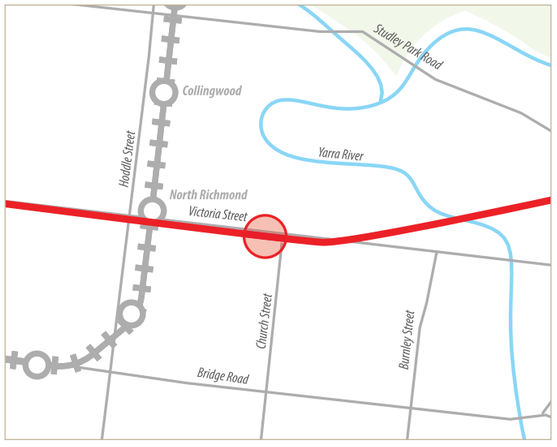


Figure 7-15: The proposed Victoria Street station location

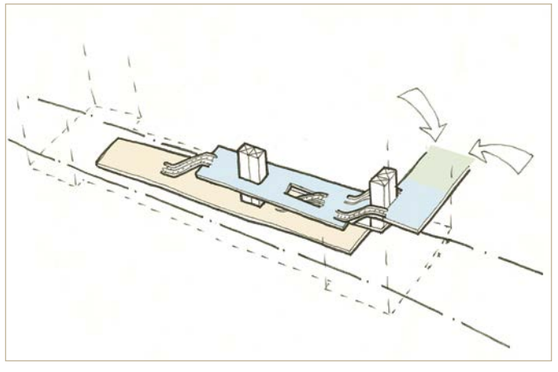


Figure 7-16: The proposed Victoria Park station is anticipated to have a single entrance at the eastern end

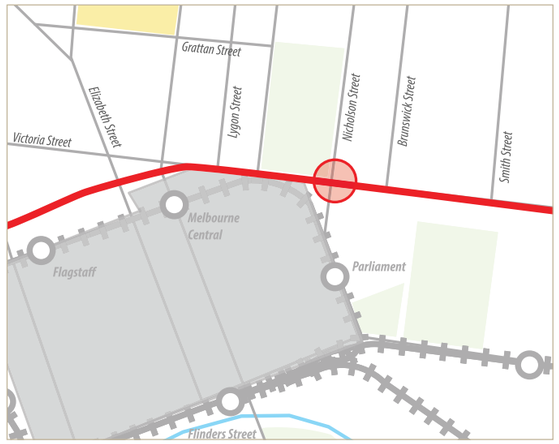


Figure 7-17: Proposed St Vincent's station location

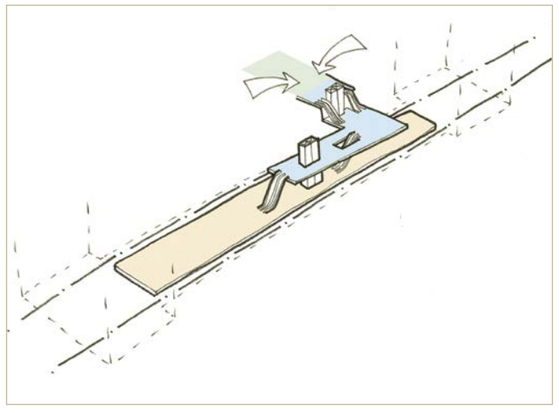


Figure 7-18: The proposed St Vincent's station would be accessed from a single entrance to the south of the station platform

Figure 7-19: Proposed Franklin Street station location

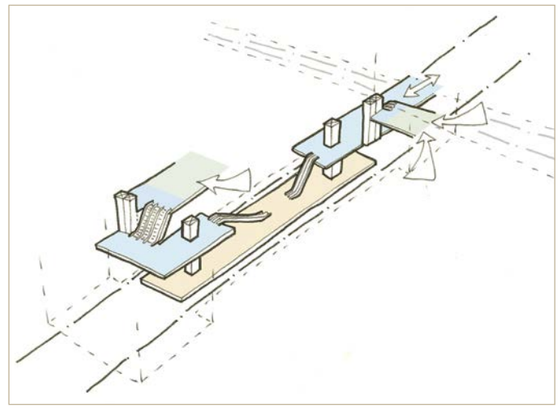


Figure 7-20: The proposed platforms are located underground, providing the opportunity to connect with the proposed Melbourne Metro CBD North station. Access would be provided through the use of escalators or lifts.

6.1.2 LOCAL ACCESS 2 ROUTE OPTION (LA2)

The Local Access 2 (LA2) Route Option proposed by the study team would provide a similar level of potential walk-up catchment as the LA1 Route Option.

The route follows the same alignment as LA1 from Doncaster Hill to the Kew East station, but would differ in the way it entered into the inner-Melbourne area:

At Harp Road this line would head southwards, running under the Kew cemetery before aligning with Glenferrie Road. Underground platforms would be added beneath the existing Glenferrie station, allowing for interchange with the Belgrave and Lilydale lines as well as access to the area's shopping precinct and Swinburne University.

The line would then run eastwards, running under the Yarra River north of the Monash Freeway and connecting to the existing Burnley group of lines south of Swan Street. From here trains would run to Flinders Street and the City Loop using the existing rail network and including Richmond station and Flinders Street Stations.

The connection with the existing Burnley group of lines is proposed to occur to the east of Burnley station. This would require significant engineering work to be undertaken upon the existing Glen Waverley line in order to lower that line and allow the proposed new Doncaster rail line to pass over the top of it at existing ground level. These works would be significant in nature and further work would be required to develop this complex interface if this option was to proceed.

It is expected that the travel time from Doncaster Hill to Burnley would take around 17 minutes. Timetabling restrictions would dictate the travel time from here to Flinders Street Station, but it is expected that the total travel time would be in the order of 24 to 25 minutes.

Alongside the stations at Doncaster Hill, Doncaster Park-and-Ride, Leigh Park, Burke Road and Kew East, an additional station is proposed underneath the existing Glenferrie station, enabling passengers to interchange between services.

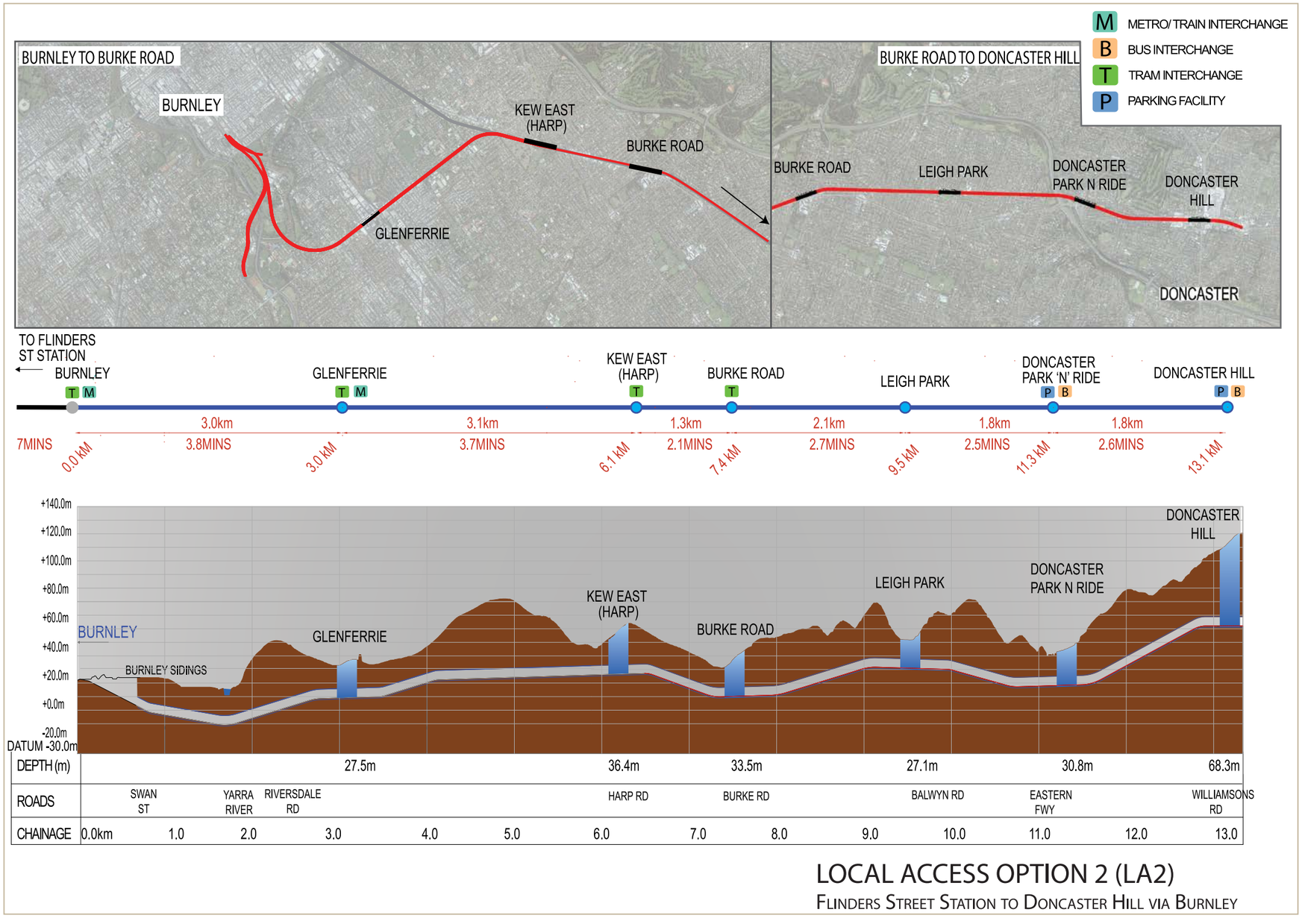


Figure 7-21: Proposed LA2 Route Option. between Doncaster Hill and the Kew East station, LA2 is identical to LA1. Beyond that point, the alignment continues in a tunnel along the alignment of Glenferrie Road, before emerging from the tunnel to the east of Burnley, crossing over the Glen Waverley Line and connecting with the existing tracks at Burnley.

Glenferrie Station

Located in Hawthorn on Glenferrie Road, the proposed station is located in close proximity to Burwood Road. The surrounding area is a mix of commercial and residential detached housing, with a commercial strip along Glenferrie Road and housing to the north of the existing rail line. Secure bicycle parking is expected to be in demand, but car parking would not be encouraged at this location.

Station entrances are proposed to be located at either side of Glenferrie Road at the southern end of the station box, to connect via a below-ground concourse. An area that allows for kiss-and-ride and taxi bays is proposed to be installed adjacent to the existing car park on Serpells Lane.

7.2 ENGINEERING/ENVIRONMENTAL ASSESSMENT AND COST ESTIMATES

7.2.1 ENGINEERING CHALLENGES

Many of the engineering challenges that would be faced in implementing the Local Access corridor themes are similar to those that would be faced by the Rapid Transit Corridor Option. Of particular note is the complex and expensive tunnelling that would be required along the entire length of all options proposed, as well as the challenges in constructing underground stations. A further significant engineering issue is the complex connection to the existing rail network at Burnley.

Connection to Existing Burnley Group

Any option that follows the LA2 option alignment would be required to connect into the existing Burnley group of rail lines to the east of Burnley station. This would be difficult to implement.

Burnley station sits on the eastern side of a major rail junction, with the Belgrave and Lilydale lines heading north under the Swan Street Bridge and over the Yarra River.

Here the tracks of the Glen Waverley line take different alignments, with the city-bound track crossing Madden Grove, the M1 Freeway and the Yarra River. The outbound track climbs over the Belgrave and Lilydale tracks before joining the city-bound track at the Madden Grove level crossing.

East of the Madden Grove level crossing are the Burnley Sidings, which provide trains to the Glen Waverley line city-bound track. Trains cross on to the city-bound track on the western side of the level crossing.

There are a few fundamental issues with the connection of a Doncaster rail line to the Burnley group, meaning this would not be a simple 'plug-in' of the Burnley group. This is indicated in Figure 7-24.

1) The Doncaster city-bound track needs to connect on to the Glen Waverley city-bound track, with the new Doncaster line first passing under the Yarra River. This is because any new bridge over the Yarra in this location would require significant land and property acquisition, with associated community impacts.

   To facilitate a plug-in solution, after passing under the Yarra and turning towards Burnley, the new Doncaster line would have to rise sharply to be located just below the Madden Grove level crossing. With the current alignment of the Glen Waverley line there is insufficient length of track to allow the Doncaster and Glen Waverley lines to then merge prior to Burnley station. This is because the Doncaster line would have to rise up from eight to nine metres below ground to meet the existing track infrastructure less than 300 metres beyond the crossing on a curved section of track. This is not possible to achieve within current track and rolling stock constraints.

   The other associated issue with plugging-in at this location is that the existing Madden Grove road would need to be realigned to accommodate the new Doncaster city-bound track. This would also have a significantly adverse impact upon residential properties in the area.

2) At Point 2 in Figure 7-24, the existing Glen Waverley line climbs up and over the Belgrave/Lilydale lines. In contrast, the Doncaster-bound line would need to descend under these lines and continue in a tunnel under the Yarra River. The distance between the bridge and the start of track crossing work east of Burnley Station is 140 metres. This means that within this 140 metres of available space, the new Doncaster line would need to connect to the Glen Waverley bound track and then drop some eight metres below the Belgrave and Lilydale lines. This is again beyond the safe operating capabilities of current rolling stock and does not comply with VRIOG railway standards.

3) The third significant engineering issue with connecting to the existing track arrangement at Burnley station is a combination of gradient issues and a lack of track length between Madden Grove and the Yarra River. The tunnelling required to pass under Madden Grove would have to be kept at a minimum depth in order to try and connect with the Burnley line as described in Point 2 above. This creates compromise at the Yarra end, however, with the tunnels then lacking sufficient cover to pass under the Yarra River and the nearby sports fields.

In summary, the study team found that while the city-bound track could be made to connect with the Burnley line with some track realignments and land acquisition, the outbound track would simply not be feasible from an engineering and technical viewpoint without the lowering of the Glen Waverley bound track. Such a solution also has significant engineering and operational challenges, which would have to be overcome if this option was to be implemented. For this reason, it is recommended that if this option is to be considered further, particular emphasis is placed upon developing the optimum alignment in this highly constrained location.

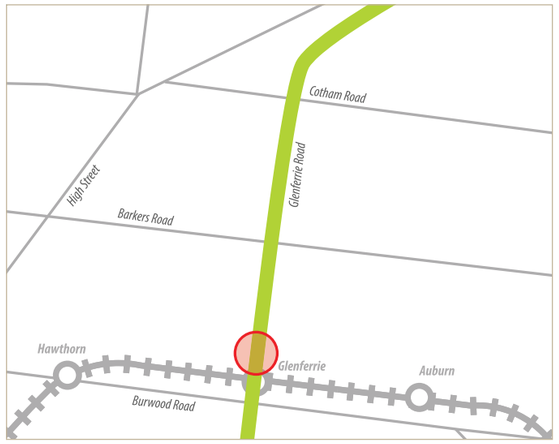


Figure 7-22: Proposed Glenferrie station location

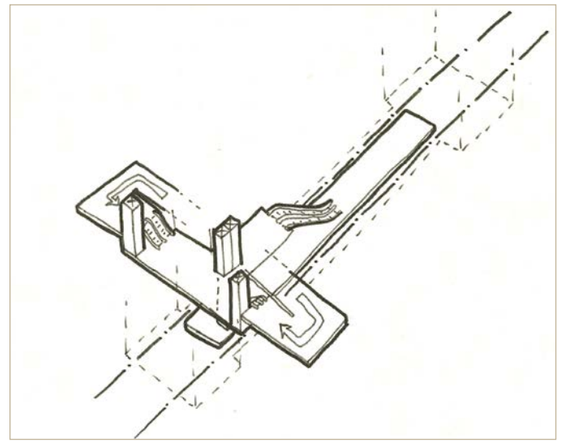


Figure 7-23: The proposed Glenferrie station entrances would be connected via escalators or lifts to the central 'island' platform

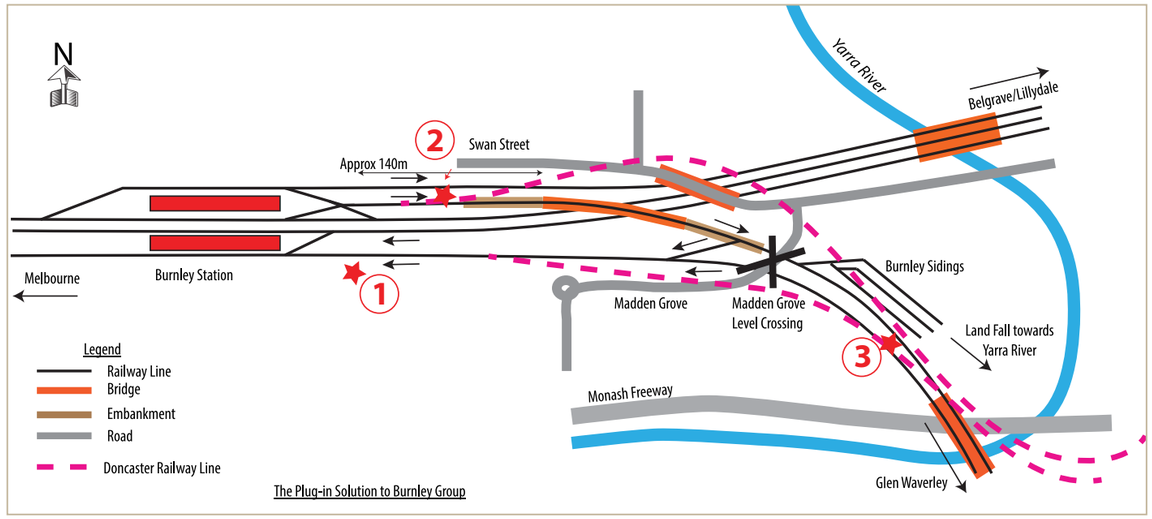


Figure 7-24: Complex engineering would be required to connect to the existing Burnley Station

7.2.2 ENVIRONMENTAL IMPACTS

Flora and Fauna Effects

Being located solely in tunnels, the Local Access Options largely avoid impacts to flora and fauna values along their alignments. As such, potential impacts to flora and fauna values are confined to the location of stations and associated construction sites. Most of the proposed stations are located in highly urbanised and built up areas and construction is unlikely to cause significant flora and fauna impacts in these areas. Two of the proposed stations (Leigh Park and Kew East) are in areas of public open space, although even these areas, despite having some influence on local flora and fauna values, are considered to be generally less significant than those identified in the Rapid Transit Corridor Theme Options.

1) Kew East Station

The proposed Kew East station is located along High Street in an area of parkland abutting the Kew Cemetery. This parkland is currently used as public open space, hosting several sporting and recreational facilities. The parkland is noted to contain treed vegetation in the area of the proposed station. The origin of this vegetation is unknown and may consist of native and exotic species. Current environmental mapping does not indicate the presence of native vegetation, however the area may provide opportunities to native fauna. Likely impacts from constructing this station would include the clearance of vegetation and the loss of marginal quality habitat.

2) Leigh Park Station

The proposed Leigh Park station and its associated construction site is currently proposed within an area of parkland in Balwyn North. The parkland contains a sporting field with tree vegetation evident along its perimeter. The origin of this vegetation is unclear, with the vegetation likely to consist of planted exotic and native species. Environmental mapping does not indicate the presence of remnant vegetation, however the trees present are likely to provide opportunities for common local fauna. Likely impacts at this site include the loss of planted vegetation and moderate quality fauna habitat.

Historical Heritage

As with the Rapid Transit Corridor Theme discussed previously, no significant historical heritage impacts are expected to result from the proposed local access alignments. This is largely as a result of the alignments being located in tunnels or along existing rail corridors for their entire length.

The proposed St Vincent's station location is classified under the 'World Heritage Environs Precinct—Royal Exhibition Building and Carlton Gardens' in the Melbourne Planning Scheme. Although this is not expected to present a risk to the proposed form of the station, it is recommended that further analyses of the effects of this station are undertaken should this alignment be preferred.

Aboriginal Cultural Heritage

The only potential area of Aboriginal cultural heritage identified by the study team that could be affected by the Local Access Corridor Theme Options is an area around the proposed Victoria Street station. This area falls within 200 metres of a watercourse and for this reason could hold cultural heritage sensitivities that should be investigated if this option is considered further.

7.2.3 COST ESTIMATES

As discussed within Section 6.0, the study team has developed high-level, indicative cost estimates to allow for the fair comparison of the various route options considered here. The assessment was based largely based upon the lengths of tunnel required and indicative unit costs for the major construction components required to build the proposed rail lines. The estimates quoted are total project costs, including new rolling stock requirements, planning and design costs and are based upon 2012 prices. They include provision for uncertainty associated with such preliminary design and other allowances typical for projects in the very early stages of development.

The estimates provided here should not be considered as detailed cost estimates for the route options considered, as only high-level assessments of the route options have been carried out as part of this study process. More detailed cost estimates would need to be developed for any options which are taken through to Phase Two for further investigation.

Local Access 1

The LA1 Route Option is approximately 15 kilometres in length, all of which is located in tunnels. It also requires the construction of nine new underground stations, some at considerable depth.

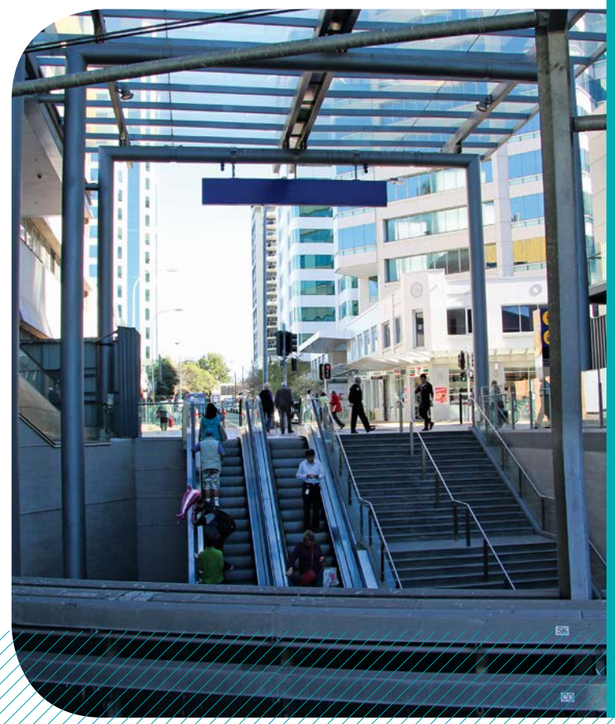
The estimated, comparative cost of this option is expected to be as follows:

TOTAL ESTIMATED COMPARATIVE COST OF LA1:
$9 billion — $11 billion

Local Access 2

The LA2 Route Option is significantly shorter than the LA1 Route Option, at around 13 kilometres, and requires the construction of only six stations instead of nine. The connection at Burnley station is complex, however, with significant additional works required to the Glen Waverley line. This offsets some of the potential savings accrued through constructing fewer stations:

ESTIMATED COMPARATIVE COST OF LA2:
$7 billion — $10 billion



CASE STUDY—EPPING TO CHATSWOOD RAIL LINE, SYDNEY, NSW

The Epping to Chatswood Rail Line (ECRL) is a railway line in the northern suburbs of Sydney, which connects the suburbs of Epping on the Northern line to Chatswood on the North Shore line.

Like the local access options proposed by the study team, ECRL is completely underground, and comprises twin rail tunnels some 12.5 kilometres in length, with three brand-new stations at Macquarie University, Macquarie Park and North Ryde. Junction stations at Epping and Chatswood also underwent major redevelopment to incorporate the new link.

ECRL provides rail access to an entirely new growth area of Sydney, benefiting 30,000 Macquarie University students and staff and 30,000 Macquarie Park workers. Over the next 25 years Macquarie Park is set to become Australia's fourth largest business district.

ECRL has created the capacity for an additional 12,000 rail passengers a day with train services running approximately every 15 minutes in each direction.

In terms of scale of investment, the ECRL represents one of the most significant rail infrastructure project ever undertaken in the Sydney Metropolitan Network. The link is also crucial to the further development of the rail network into Sydney's North Western Sector.

ECRL has many similar characteristics to the Local Access Corridor Theme, and it provides an insight into the type of land use change that can be initiated through the provision of a new rail line into established neighbourhoods. Direct comparison between the two railways should be made with caution however, given the different construction, economic and demographic environments.

7.3 TRAVEL DEMAND AND TRANSPORT INTEGRATION

Expected Patronage Levels

As described in Section 6.3 of this report, VITM analysis was undertaken for the corridor themes on an unconstrained basis and this has permitted an evaluation of the likely passenger demand in 2031. The results of this analysis can be seen in Table 7-1.

The demand for passenger boardings at each station and associated modes of access and egress was developed by the study team for the LA1 option, with the results for LA2 expected to be very similar. These are shown in Figure 7-25, where a significant focus on the Doncaster Park-and-Ride station can be seen in both the morning and afternoon peak periods. This is consistent with feedback received from the community that this existing car parking facility servicing the DART is currently at capacity before the weekday morning peak concludes. These results are very useful in providing an indication of the magnitude of passenger numbers that may be expected at these stations. However, there are two important features of the VITM model that must be kept in mind when considering these results:

1) When modelling the Doncaster Park-and-Ride station, the VITM model did not take into account physical constraints upon the size of the car park that could realistically be located there. This has resulted in the model suggesting that over 5,000 people would use the park-and-ride facility at this location. This is useful as it provides an indication of the level of demand that is possible in this location, however it is likely that limitations on the number of parking spaces made available would mean users would travel to other rail stations,or use other means to travel to that station (e.g. a revised DART SmartBus service).

2) It was assumed within the model that there is no facility for parking at any stations that are not designated as being for park-and-ride. This will have the effect of reducing the reported patronage levels at these stations, although some parking will be available in the vicinity. Such a constraint also means that the model will not permit 'kiss-and-ride' to occur at these stations, where this would likely be a significant source of patronage.

Potential Changes to the Bus Network

As described in Section 6.0, an analysis of potential changes to the existing bus network was undertaken for each of the proposed corridor themes. As the Local Access Corridor Theme shares station locations with the previously discussed Rapid Transit Theme at Doncaster Hill and Doncaster Park-and-Ride, the findings presented there are still applicable to these options and this assessment does not consider them again.

Generally, bus coverage within the areas serviced by the LA1 Route Option is good and only minor amendments are recommended to create improved interchange possibilities between the bus stops and rail stations.

The LA2 Route Option also has generally good coverage, although connectivity to the north of the Eastern Freeway is poor near Leigh Park station (although this is mitigated to some extent by good connectivity from adjacent station locations). It is recommended that a new bus route be developed along Belmore Road which could cater for more passengers south of the proposed Leigh Park station.

Walking and Cycling Opportunities

An assessment of the walking and cycling potential of each of the stations was undertaken for the Local Access Options in a similar manner to that completed for the Rapid Transit Corridor Theme. Again, as the assessment of Doncaster Hill and Doncaster Park-and-Ride stations would not change from that discussed in Section 6.0, this assessment begins at Leigh Park station.

The proposed Leigh Park station has no proposed or existing Principle Bicycle Network (PBN) connections. As such, it is recommended that a link be introduced with the PBN at Bulleen Road, specifically to improve connectivity to the north and west. Various other minor amendments and extensions were considered to provide improved connectivity between the stations and the PBN. These would have to be investigated in more detail once a preferred alignment is known.

	2031 PATRONAGE ON THE BUSIEST INBOUND SECTION OF LINE DURING THE MORNING PEAK PERIOD (7.00 AM TO 9.00 AM)	2031 PATRONAGE ON THE BUSIEST OUTBOUND SECTION OF LINE DURING THE MORNING PEAK PERIOD (7.00 AM TO 9.00 AM)	2031 DAILY TRIPS IN EACH DIRECTION
Local Access 1	11,000	6,900	38,000
Local Access 2	11,000	6,900	38,000

Table 7-1: Expected patronage levels for Local Access Options in 2031

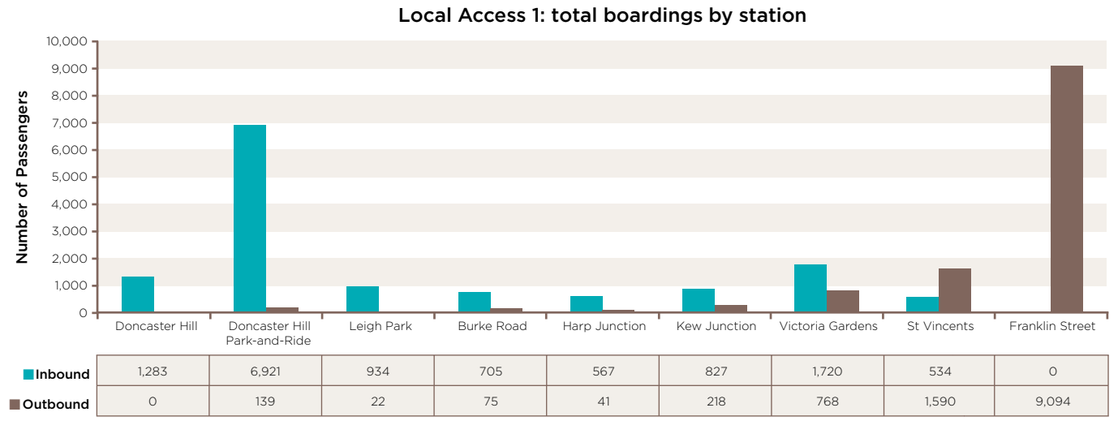


Figure 7-25: Expected passenger boardings for Local Access 1 Option in 2031

7.4 RAIL OPERATION IMPACTS

The LA1 Route Option proposed here would operate as a stand-alone line within the Melbourne metropolitan train network and so is unlikely to have any significant impact on the operational patterns of the remainder of the network. The LA2 Route Option, however, would require that a number of train paths between Burnley station and Flinders Street Station are assigned to the new Doncaster line. There is expected to be capacity within the rail system for these additional trains to operate without any significant problems, although there could be some minor timetabling issues that may require further investigation should this option be considered further.

The operation of any of the proposed local access options will change passenger demand throughout the existing rail and tram network, as some passengers who are currently using existing public transport will switch to this new service as it suits their travel needs better. The VITM modelling undertaken by the study team suggests that the following changes in loading would occur across the existing train and tram network:

	CHANGE IN PASSENGER LOADING DURING THE MORNING PEAK (7.00 AM TO 9.00 AM) (2031)	
	Local Access 1	Local Access 2
Lilydale/Belgrave line	-2,462 (-9%)	-2,000 (-7%)
Glen Waverley line	-246 (-4%)	-200 (-3%)
Hurstbridge line	-138 (-1%)	-100 (-1%)
South Morang line	-179 (-1%)	-179 (-1%)
Route 48 Tram	-565 (-77%)	-500 (-65%)
Route 109 Tram	-50 (-5%)	-50 (-5%)

Table 7-2: Change in loading on existing rail and tram networks after the opening of a Local Access Theme Doncaster rail line

The reductions in loading expected along parallel train and tram routes would be considered as a significant benefit, as these would help address any overcrowding issues that may be faced by these corridors. In the case of the Route 48 tram, which would be expected to see a significant reduction in patronage should a Local Access solution be constructed, the reduced passenger numbers could provide the opportunity to develop a new timetable and potentially reallocate trams to other parts of the network.

7.5 LAND USE, DEMOGRAPHIC CHANGE AND SOCIAL CONNECTIONS

The Local Access Theme Options are considered to support an increase in urban growth and employment potential along the corridor. They will have a positive impact in facilitating government policy to integrate land use and transport planning outcomes by concentrating increased residential and employment intensity within designated activity areas.

The LA1 Route Option has the benefit of providing a rail connection in the vicinity of Victoria Gardens, which is the subject of current land use change towards increased densities. This connection would offer further potential within the City of Yarra, as it is estimated that the provision of a rail connection at Victoria Gardens would further increase development potential by around 2,000 additional residents within the walkable catchment area by 2031.

Likewise, similar positive benefits are projected for urban growth development potential at Kew Junction, with another 2,000 additional residents potentially being added to the walkable catchment area within the existing activity centre by 2031. This is consistent with the Structure Plan to improve resident accessibility.

For both Local Access Options 1 and 2, substantial but lesser population growth potential is anticipated around the proposed Burke Road and East Kew stations with an estimated 500 new residents being added to each walkable catchment area by 2031.

The Doncaster Park-and-Ride station presents the least development potential in terms of urban renewal opportunities, with only a small increase of about 150 new residents likely to be added to the walkable catchment area by 2031 for both Local Access Options. Doncaster Hill would also experience only limited growth potential (up to 250 new residents), as it is considered that much of the land use change that has commenced in this activity area will continue irrespective of a new rail connection.

The population and employment growth potential projections for the Local Access Options which were developed by the study team can be seen in Table 7-3.

Social Connections

It is considered that the LA1 and LA2 Options would substantially improve social connections by providing better access to regional and higher order community services, recreational facilities and existing well-established residential areas throughout Doncaster, North Balwyn, Balwyn and Kew.

The LA1 Option would also experience the same social and community benefits as the RT3 Option, improving access to higher order health and education facilities at the proposed St Vincent's station and Franklin Street station. The LA2 Option would improve access to the existing Glenferrie activity area in Hawthorn and particularly strengthen opportunities for travel related to education services at Swinburne University.

CORRIDOR OPTION	NO. OF HOUSEHOLDS WITHIN WALKABLE CATCHMENT AREA		POPULATION		FURTHER INCREASE ATTRIBUTED TO RAIL	
	2006	2031 (forecast)	2006	2031 (forecast)	Possible additional population in 2031	Total forecast population
Local Access 1 (LA1)	45,213	77,732	108,353	187,078	7,350	194,428
Local Access 2 (LA2)	24,302	33,101	63,435	88,496	4,200	92,696

Table 7-3: Projected walkable resident population and household growth between 2006 and 2031 (walk-up population assumed to live within 800 metres and one kilometre of station locations)

LOCAL ACCESS—AT A GLANCE

- **Peak Hour Frequency:** 5 minutes minimum
- **Doncaster to City Journey Time:** around 20 minutes
- **DART Service:** altered to feed Doncaster Park-and-Ride station
- **Patronage:** forecast to be 76,000 average weekday boardings in 2031
- **Car Parks:** only at Doncaster Park-and-Ride station
- **Network Enabling Works:** none required
- **Cost Estimates:**

  Local Access 1: ..... $9 billion — $11 billion

  Local Access 2: ..... $7 billion — $10 billion

7.6 COMMUNITY AND STAKEHOLDER FEEDBACK

The feedback collected and analysed throughout the study to date can be grouped into two parts: the initial feedback received related to issues, as well as ideas-gathering to address the community's concerns and understand potential opportunities and constraints. The engagement feedback process then moved on to responding to the three corridor themes that were launched for community input in March 2012.

Throughout the engagement process relating to the three potential corridor themes, community and stakeholder views were particularly sought in relation to three key viability drivers. These were determined by the study team to be the most significant factors in assessing the viability of each option. These were:

- **Customers:** the level of patronage each option could be expected to attract
- **Cost:** the estimated cost of constructing and operating each option
- **Land Use Potential:** the types of changes around station locations that could make best use of existing infrastructure and help off-set the costs of constructing the new rail line.

The principal aim of gaining community and stakeholder input on each theme using this structured format was to explore how each option could be strengthened by reducing its weaknesses and highlighting the positive aspects. At the three community workshops held in March 2012, a series of prompt questions were used by table facilitators to help generate group discussion. For the Local Access Theme, these were:

- How far can people be expected to walk to stations?
- How could connections to other modes of public transport be maximised?
- How might the cost of implementing this theme be reduced?
- What are the implications for the types of investment and development around stations that this theme has the potential to stimulate?

The following is a summary of feedback regarding the Local Access Theme which relates to the three viability drivers of customers, cost and land use potential.

Customers

Participants identified a key benefit of the Local Access Options was the ability to walk and ride to the stations. It was noted that amenities would be required at stations for bicycle users, including showers and bicycle cages. However, some concerns was expressed about the time it might take to walk to and from stations from key destinations such as activity centres, retail shopping strips and school.

The ability of older people, people with young children, people with a disability and/or people with restricted mobility to access stations was regarded as very important and seen as a clear benefit of this theme compared to the Rapid Transit Theme Options. It was recognised that students can access schools in the Boroondara area more directly. However, there was also concern that underground stations could make it difficult for people who were older or with a disability to reach the platform as there would be a considerable distance to travel to access the platform.

Workshop participants acknowledged both the positives and negatives of the lack of parking availability in relation to the Local Access Options, with the positives being that this would encourage active transport or public transport interchange to support access to the station. However, there was a more general view that the lack of car parking would be detrimental for the Local Access Options.

Ensuring there are good tram and bus connections to stations was regarded as being very important. However, it was acknowledged that the area is already well serviced by public transport services and these services may impact on future train patronage.

In general, more stations were welcomed as this improves connectivity and likely patronage and it was considered that train travel time would be significantly better than travelling by tram. Concerns were expressed, however, regarding the possibility of slower travel times due to more stops compared with the Rapid Transit Theme Options. This was qualified by comments that either of the local access rail options would still provide better travel times than currently experienced by bus, tram, train or car.

The issue of safety at stations was raised, with participants noting that this option would provide stations perceived to be safer than those of the Rapid Transit Options due to their locations in established and populated areas.

Cost

It was generally acknowledged that the Local Access Options would be very expensive to build due to the substantial tunnelling requirements. Comments highlighted the amount of time required to complete the project and the additional costs required to modify/amend the existing public transport network. Comments indicated that given these costs, improvements to existing public transport should be considered.

Participants did highlight some benefits of this option, which included reduced road congestion, less land acquisition, high patronage levels and the benefits of the economic stimulus it could provide to local areas that would off-set the construction costs.

There was generally recognition that this option would contribute to less overcrowding on the existing public transport services. A risk that was commonly identified was that the overall cost may not be beneficial, as the Local Access Options would largely attract mode shift from existing bus and tram passengers and not new customers.

Land use potential

Overall, there were strong views regarding land development and the role a potential new rail connection would play in stimulating urban renewal. The positive views were that development would support population growth and contribute to economic and retail growth. However, the negative counter-view was that high density development is not supported and there were concerns regarding the area being overdeveloped.

There was also a high level of concern regarding the loss of green space and land with this option. There was also concern regarding impacts on residents during the construction phase due to development occurring in already built-up areas and possible vibration once train services commenced.

VIABILITY DRIVERS	POSITIVES	NEGATIVES
Customers	• Accessible and safe stations • Encourages walking or cycling to stations • Improved travel time over current tram service • Improved connectivity with more stations and connections to existing trams and buses	• Slower travel time compared to Rapid Transit options • Underground stations could pose access problems • Difficult to build car parks • Time to walk to stations
Cost	• Less land acquisition required • Relieves pressure on existing trams at capacity • Higher patronage to offset cost compared to Rapid Transit options • Will provide economic stimulus to local areas	• Tunnels are very expensive • Long construction period • Duplicating existing tram service not seen as cost efficient
Land Use Potential	• Support economic growth in local areas • Potential for development above and around stations • Less car parking required than Rapid Transit options	• High impact of construction on nearby residents • Long term vibration issues • Loss of open space/parks • High density development not supported

Table 7-4: Summary of feedback relating to the proposed Local Access: Stopping All Stations Theme from the three community workshops undertaken in March 2012

Summary

From the quantitative data collected from a total of 133 community participants during the engagement activities relating to the three theme options, it can be determined that:

- 29 per cent of respondents rated the Local Access Theme as their first preference
- 50 per cent of respondents rated the Local Access Theme as their second preference
- 21 per cent of respondents rated the Local Access Theme as their third preference

Overall, the Local Access Options received a positive community response, with the improved accessibility to a greater number of stations in existing residential and employment areas seen as the key benefit compared to the Rapid Transit Options.

There was not clear community consensus surrounding the issue of increasing urban renewal and land use change within the walkable catchment of stations. It would be reasonable to conclude there were mixed community views, both supporting and opposing this proposition. The main weakness identified by the community was that the Local Access Options were regarded as the most expensive to construct due to extensive tunnelling and therefore were considered potentially unrealistic.

Throughout the study, numerous detailed written submissions were received from members of the community that demonstrated a deep understanding of the issues, opportunities and challenges associated with a new rail line to Doncaster. Some of these submissions addressed the potential to develop a 'hybrid option' rail alignment which would utilise a combination of elements of the Rapid Transit and Local Access Themes. Essentially this suggested option would involve an underground tunnel between the CBD and Kew Junction and would use the Eastern Freeway alignment between Kew and Doncaster. This solution was seen by community members as a good way of reducing the cost of a Local Access option, while still maximising the potential patronage demand.

7.7 KEY OPPORTUNITIES

Tunnel to Doncaster Hill

All Local Access Options have the same issues surrounding the expensive connection between the proposed Doncaster Park-and-Ride and Doncaster Hill stations. With the significant costs attributed to this link and the limited patronage levels expected (see Figure 7-25), it is recommended by the study team that, similar to Rapid Transit options, both the Local Access Routes are terminated at Doncaster Park-and-Ride station.

Reducing Cost

It is clear that, while the proposed LA1 option provides the most potential benefits as a new rail line, it is also the most expensive option of those considered by the study team. It is therefore recommended that further consideration is given to ways of potentially reducing the cost of LA1, while seeking to maintain the significant travel benefits that this alignment was seen to provide. This opportunity had been identified in a number of the submissions which the study team received from members of the community during the study process, where two key methods for reducing cost were proposed:

- Adjustments to the ***alignment*** of LA1 were proposed by some, with a 'hybrid' alignment put forward which followed the LA1 route from the CBD to the vicinity of Kew Junction, before heading north to join the Eastern Freeway. The alignment then followed the RT1 option to Doncaster Park-and-Ride station. This concept has the benefit of reducing the length of expensive tunnel required, but would have an impact upon travel time. Further assessment is recommended regarding the nature of costs savings which could be accrued using this alignment and the potential reduction in travel benefits which may result.
- A number of submissions were received which recommended the use of ***alternative rail technologies*** to the study team. Although it was a requirement of Phase One of the Doncaster Rail Study that all options which are considered must be capable of connecting with Melbourne's existing heavy rail network, there may be significant savings in developing a Doncaster rail line which is entirely segregated from the existing system. This would allow the new line to operate with newer, cheaper technologies; requiring smaller diameter tunnels and smaller stations, and utilising smaller trains. Sometimes known as 'metro-style' trains, these can operate at significantly increased frequencies when compared with existing rolling-stock, with trains passing through each station every few minutes. Such systems are generally not suited to carrying very large numbers of passengers over long distances, or at very high speeds, but may be appropriate for the nature and passenger numbers and trips expected along the LA1 alignment (see Figure 7-26). It is recommended that further analysis is undertaken regarding the likely benefits that such a system could provide, along with a review of any negative effects which may result from introducing a new technology to the existing public transport network in Melbourne.

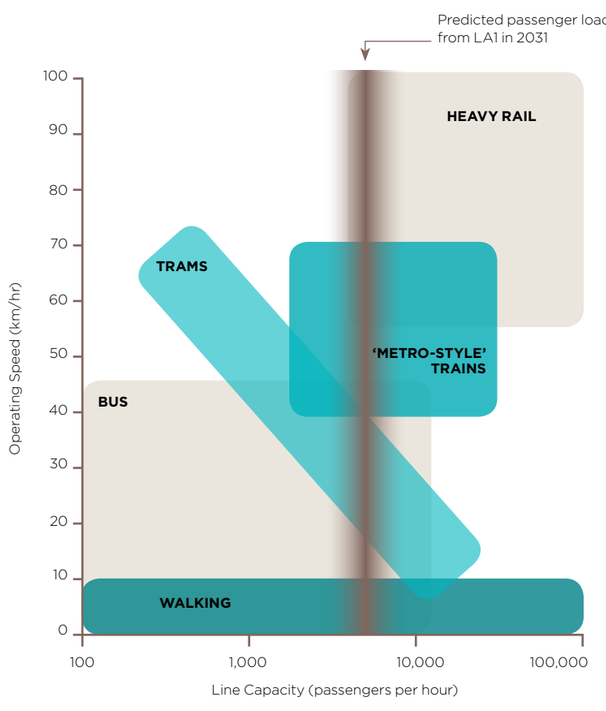


Figure 7-26: Optimum operating conditions for common types of public transport (derived from information provided by Bombardier—a manufacturer of 'metro-style' trains)