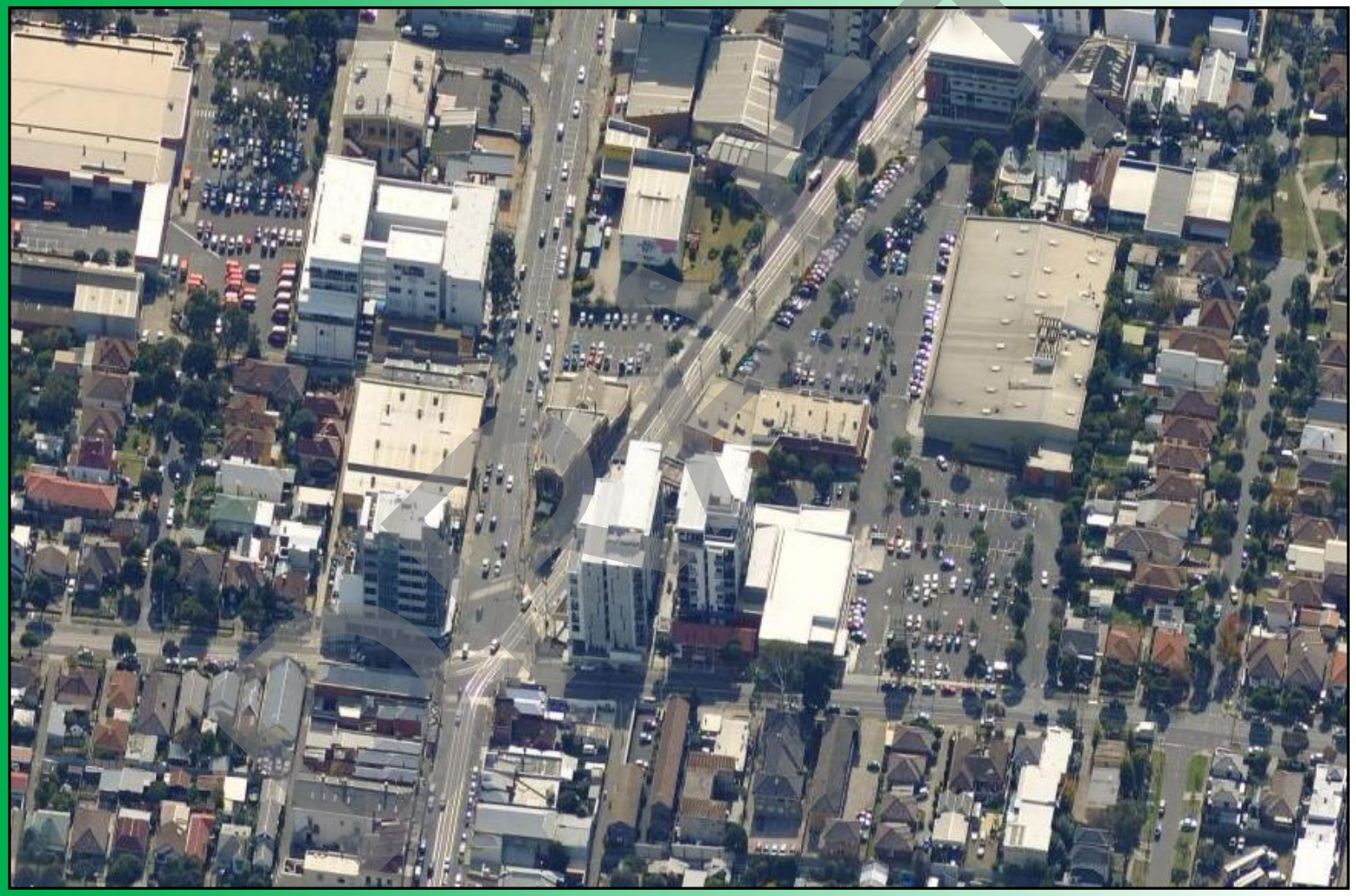
Preston Junction Urban Master Plan Transport Study



20 January 2014

Executive Summary

The City of Darebin is a richly diverse community and includes the suburbs Preston, Thornbury, Reservoir, Northcote and Kingsbury and in part, Alphington, Bundoora, Macleod and Fairfield. The Council Plan 2009-2013 refers to a number of commitments relevant to the planning and delivery of services, with a current objective to delivery an Urban Master Plan for the Preston Junction Precinct.

The Urban Master Plan will be delivered in early 2014 together with a number of key reports that facilitate its overarching objectives. Cardno has been engaged by Darebin City Council to prepare a high level Transport Study for the Junction Precinct, with recommendations and outputs to assist development of the Urban Master Plan.

The Preston Junction Precinct has undergone significant change since the completion of the Preston Junction Structure Plan in 2001, seeing the area transform from a light industrial precinct to a mix of mid-rise residential and retail / commercial uses.

This Transport Study considers existing transport, pedestrian, parking and vehicle characteristics and provides high level recommendations for future infrastructure that will facilitate and encourage opportunities for streetscape improvements, increased pedestrian and cyclist activity, integration of land uses with people and appropriate, usable connectivity for public transport. Cardno appreciates the importance of the Urban Master Plan to transform the Junction Precinct to a highly desirable future destination for the local and wider community – including residents, employees and visitors.

Key findings and recommendations provided in this Transport Study include the following:-

- Excellence in public transport accessibility, the pedestrian and public realm and safe connectivity to Bell Railway Station (and Thornbury Railway Station). Activation and/or passive surveillance is paramount to achieving the vision for Bell Railway Station access.
- Future residential development envisaged for the Precinct should encourage sustainable travel, achieved through the above.
- Accessible/improved tram stops on Plenty Road.
- Parking provision for future residents and visitors needs consideration for any modifications to the Precinct network. For residential development, long term resident parking should be self-sufficient and/or catered for off street, with car ownership potentially suppressed by limitations placed through Council local policy and/or empirical projections.
- Local Area Traffic Management should be explored and implemented to discourage rat running and help manage vehicle speeds.
- New cross-sections for High Street and Plenty Road should be implemented to encourage lower speed environments, encourage pedestrians and sharing of space with cyclists.
- Introduce new crossing opportunities on High Street and Plenty Road.
- Improved east-west connection to St Georges Road cycle path.
- Improved cyclist priority at intersections.
- Improved end of trip facilities at key destinations and throughout the Precinct.
- Improved wayfinding signage for pedestrians and cyclists.
- Significant modifications at High Street/Plenty Road junction to improve pedestrian and cycling movements and increase public realm space and opportunities.
- Significant modifications to improve pedestrian connectivity between High Street and Plenty Road, considering future use of Junction Hotel car park (and front courtyard) and other east-west streets including land use activation where appropriate.

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Introduction

Cardno was retained by Darebin City Council to undertake a Transport Study for the Preston Junction Precinct to inform the Master Plan for the area.

The Preston Junction Precinct is generally bound by Bell Street in the north, Dundas Street and Miller Street in the south, the South Morang railway line in the west and Plenty Road in the east, as shown in Figure 1. The area generally encompasses land parcels that front the eastern side of Plenty Road.

The core study area has undergone significant development in the last decade since the completion of the Preston Junction Structure Plan in 2001, which has seen the area transform from a light industrial precinct to a mix of mid-rise residential and retail / commercial uses. Despite the more vibrant feel of the area, general public amenity remains aligned with its former industrial nature.

The intent of the Urban Master Plan is to address the public realm issues in the area, including streetscape improvements, traffic management and parking improvements, and improvements to the pedestrian and cyclist environment.

The scope of this Transport Study is to:

- Assess existing transport facilities within the precinct to form a baseline for identification of future transport improvements;
- Determine the transport impact of future development based on Council's expected development yields; and
- Identify future transport improvements.

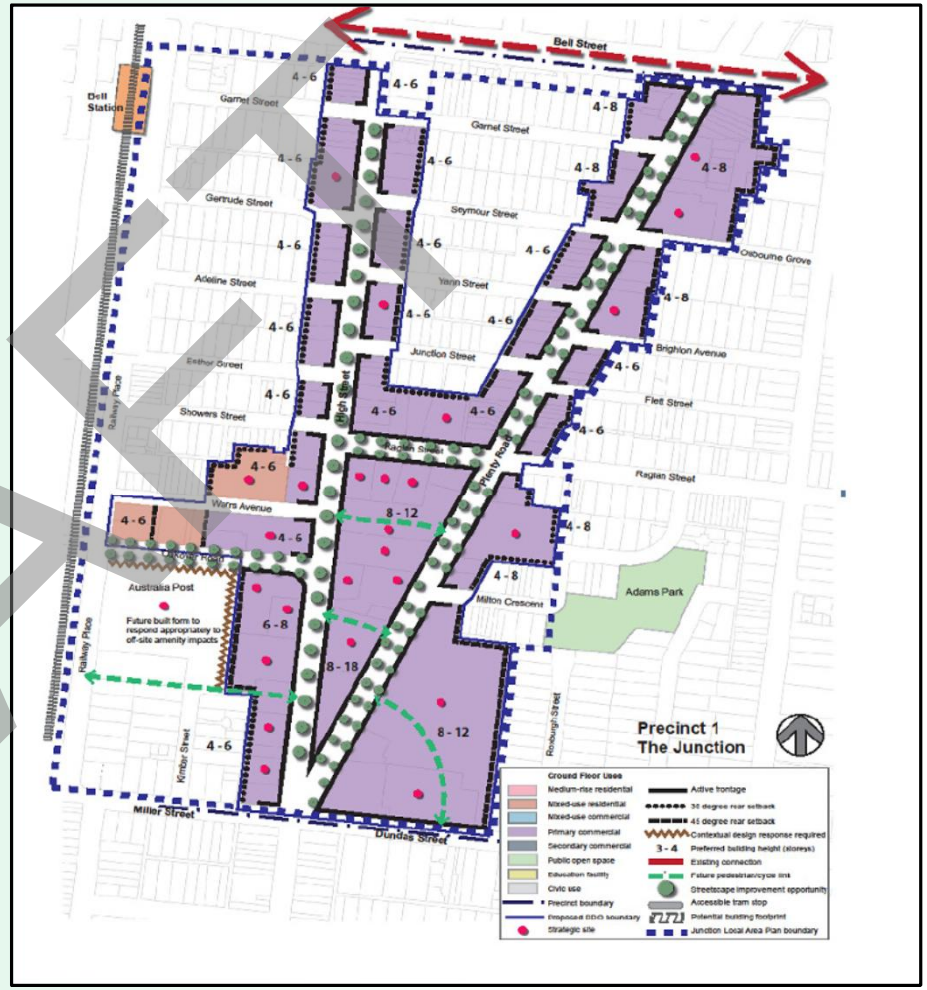


Figure 1: Preston Junction Study Area

Land Use / Places of Interest

Land use within the study area generally comprises a mixture of residential uses, retail uses, commercial uses, and light industrial uses.

Towards the northern end of the study area, residential uses generally take the form of detached houses fronting local access streets, while in the southern end of the study area newer multi-storey residential developments off High Street and Plenty Road are more prevalent.

A number of light industrial uses front High Street and Plenty Road within the study area, while to the north and south of the study area High Street forms a busy shopping strip. The primary retail area within the study area is South Preston Shopping Centre in the southwest corner of the area, which comprises a Woolworths supermarket and other smaller retail outlets. An Aldi supermarket is also located nearby to the north of Dundas Street.

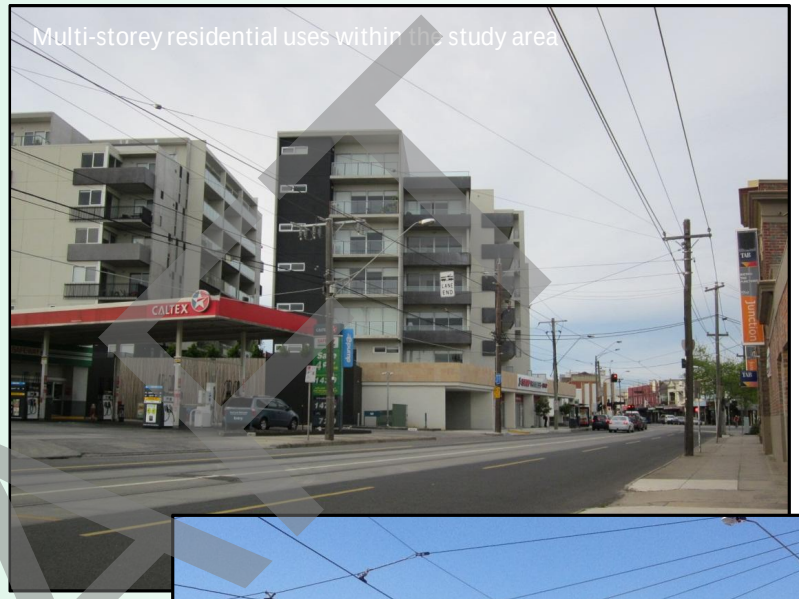
The Junction Hotel holds a prominent position within the study area, situated between High Street and Plenty Road, with off-street car parking accessible from both streets.

Bell Railway Station is located in the northwestern portion of the study area and features off-street car and bicycle parking accessible from Garnett Street.

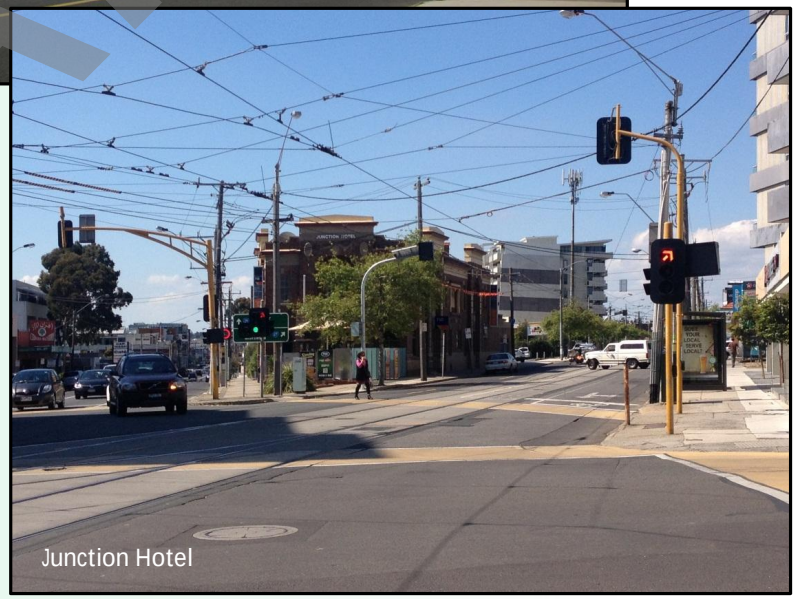
Beyond the study area boundary, education uses such as St John's College, NMIT and Sacred Heart School are key destinations.

A number of park areas and sporting facilities are also located around the study area.

Figure 2 overleaf shows the locations of key land uses and places of interest with respect to the study area.



Multi-storey residential uses within the study area


Junction Hotel

Places of Interest and Trip Generators

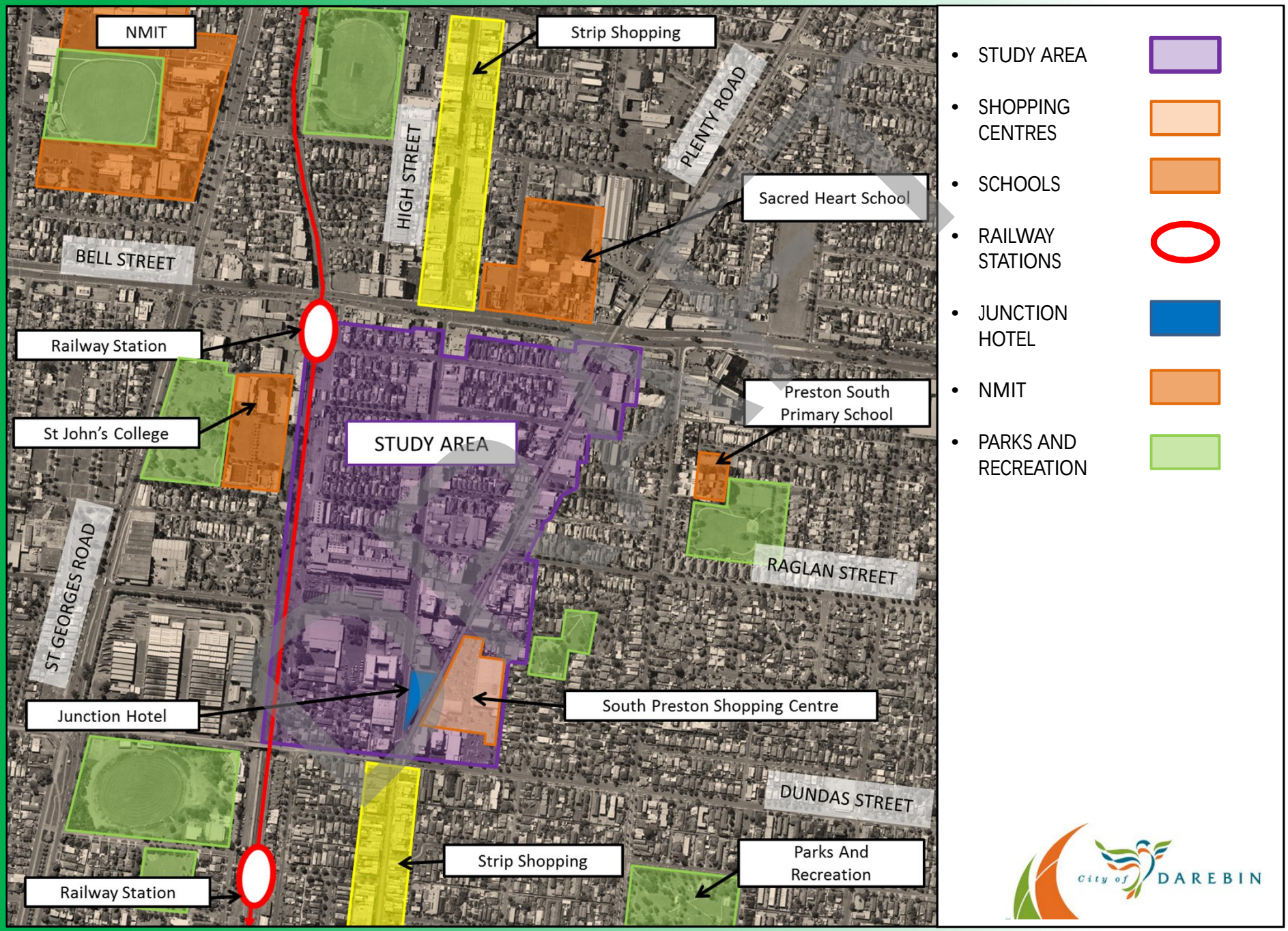


Figure 2: Community Facilities, Points of Interest and Travel Generators

Road Network

All roads within the precinct are under the jurisdiction of Darebin City Council. The two main roads within the study area are High Street and Plenty Road which provide connections between the northern and southern ends of the study area. Raglan Street and Dundas Street form the primary connections to the east, while Oakover Road forms the main connection to the west over the railway line. Bell Street, to the north of the study area, is the major east-west arterial road in the area and is managed by VicRoads.

The extent of the road network is shown in Figure 3.

High Street is aligned north-south and generally comprises two traffic lanes in each direction, with the kerbside lanes shared with parallel parking provisions (subject to restrictions). A 40 km/h speed limit applies to High Street within the study area from 7:00 AM to 7:00 PM Monday to Saturday with a 60 km/h speed limit in place at other times.

Plenty Road is a local road that runs approximately northeast - southwest through the study area. Plenty Road generally comprises a single carriageway with two traffic lanes in each direction and central tram lines that share the carriageway. Kerbside parallel parking is permitted on both sides of the road outside of Clearway times. A 60 km/h speed limit applies to Plenty Road within the study area.

Raglan Street is a local road that runs east from High Street to Chifley Drive approximately 2.2 km east of the study area. To the east of Plenty Road, Raglan Street carries a single traffic lane in either direction with kerbside parallel parking provided clear of the through traffic lanes. To the east of Plenty Road, Raglan Street features an on-road cycle lane in both directions, however between Plenty Road and High Street it features a cycle lane in the eastbound direction only. The default 50 km/h speed limit applies.

Dundas Street is aligned east-west and forms the eastern leg of Preston Junction. Dundas Street generally comprises a single traffic lane and a dedicated cycle lane and parking lane in each direction. On approach to Preston Junction the cycle and parking lanes terminate.

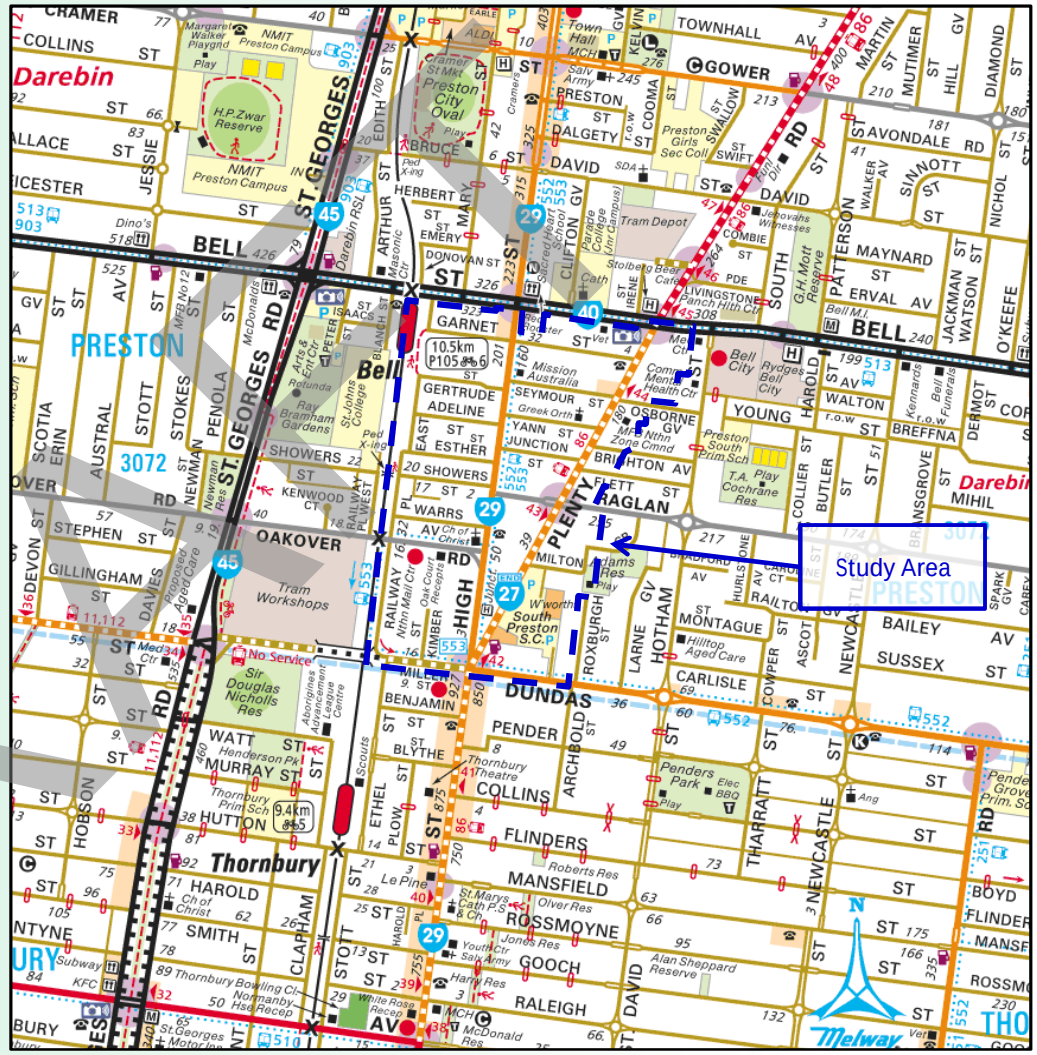


Figure 3: Road Network

SmartRoads Operating Plans

SmartRoads Network Operating Plans have been developed through extensive consultation with local councils, government agencies and relevant stakeholders, and illustrate which transport modes have priority on the road at different times of the day. The plan identifies preferred tram routes, bus routes, cycle routes, pedestrian areas and traffic routes.

Figure 4 identifies the Network Operating Plan in the vicinity of the study area, and indicates that High Street is defined as a bus priority route between Preston Junction and Bell Street, while Plenty Road is defined as a priority tram route.

It can be seen that to the south of Preston Junction and to the north of Bell Street, High Street is also a priority pedestrian area, however it does not carry this classification within the study area.

The primary north-south traffic route in the broader area is St Georges Road, with the off-road cycle path along St Georges Road forming the preferred north-south cycle route.

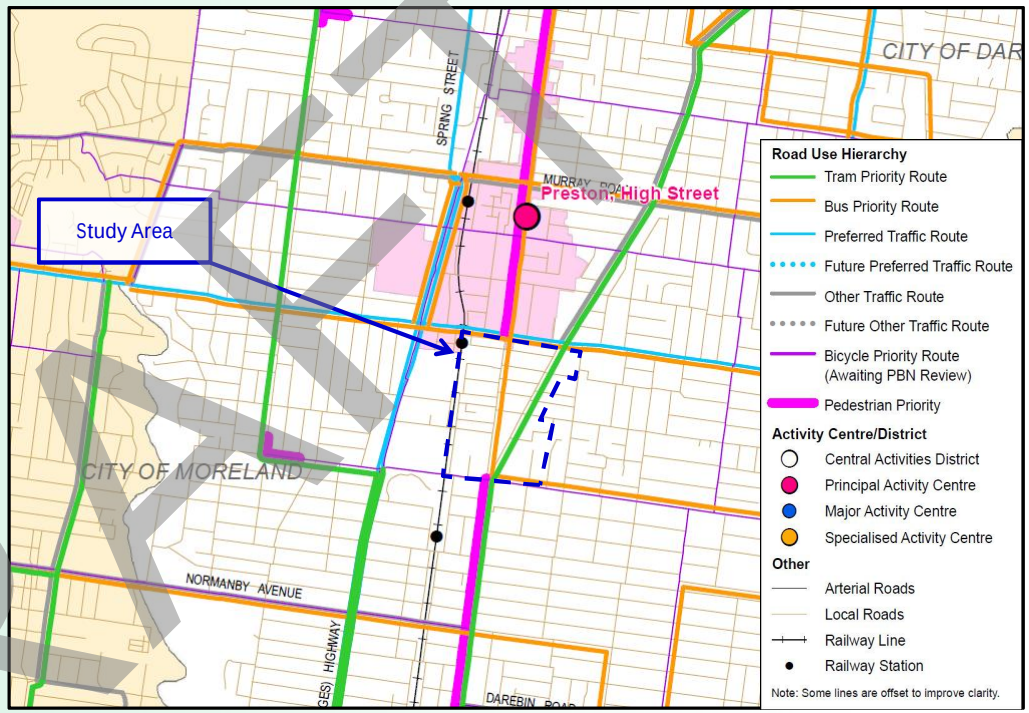


Figure 4: SmartRoads Network Operating Plan

Traffic Volumes and Parking Characteristics

Traffic Volumes

Figure 5 shows existing weekday average peak hour traffic volumes within the study area. This data has been collated from tube counts undertaken at various times in the last 10 years and VicRoads' SCRAM counts undertaken from Monday 2 September to Sunday 9 September 2013 at the following intersections:

- High Street / Plenty Road / Dundas Street / Miller Street;
- High Street / Bell Street;
- Plenty Road / Raglan Street; and
- Plenty Road / Bell Street.

Parking Facilities

Public car parking within the precinct is generally provided on-street, with off-street car parks generally privately owned and associated with commercial uses such as the Preston South Shopping Centre car park and the Junction Hotel car park.

On-street parking along High Street and Plenty Road is generally subject to short term (1P) restrictions. Clearways are in place on Plenty Road during AM and PM peak periods.

Observations of parking during the day indicates that parking is generally well utilised with some spare capacity. During the evening it was observed that parking is typically underutilised with spare capacity available.

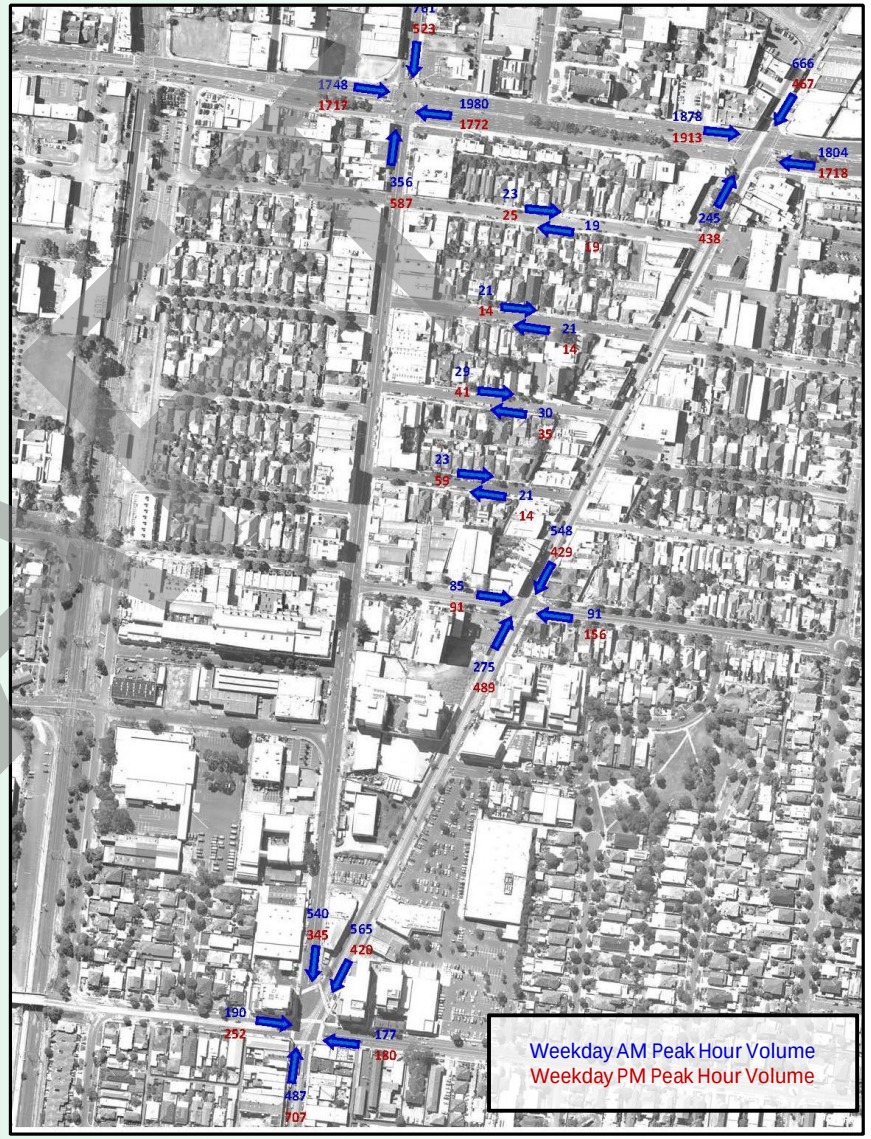


Figure 5: Weekday Peak Hour Traffic Volumes

Accident Statistics

Accident statistics for the study are have been sourced from VicRoads' CrashStats database for the 5 year period from 1 January 2008 to 31 December 2012 (the most recent 5 year period for which data is available).

It was identified that 23 casualty accidents were reported within the study area in this 5 year period, involving 62 people, including 1 fatality and 109 vehicles. There were 7 motorcycles, 8 bicycles and 1 bus involved in accidents, with the remaining 93 vehicels being cars, vans, utes and taxis etc.

Within the study area, the location that recorded the highest number of accidents was the junction itself, with 6 accidents, including the abovementioned fatality, recorded. Two of these accidents involved a northbound vehicle turning right from High Street into Plenty Road colliding with a southbound vehicle on High Street. One of these accidents was a result of the northbound motorist travelling through a red turn arrow, while the other involved the southbound motorist travelling through a red light on the northern approach to the intersection.

While it is outside of the study area, 19 accidents were recorded at the Bell Street / Plenty Road intersection.

Figure 6 shows accident locations within the study area.

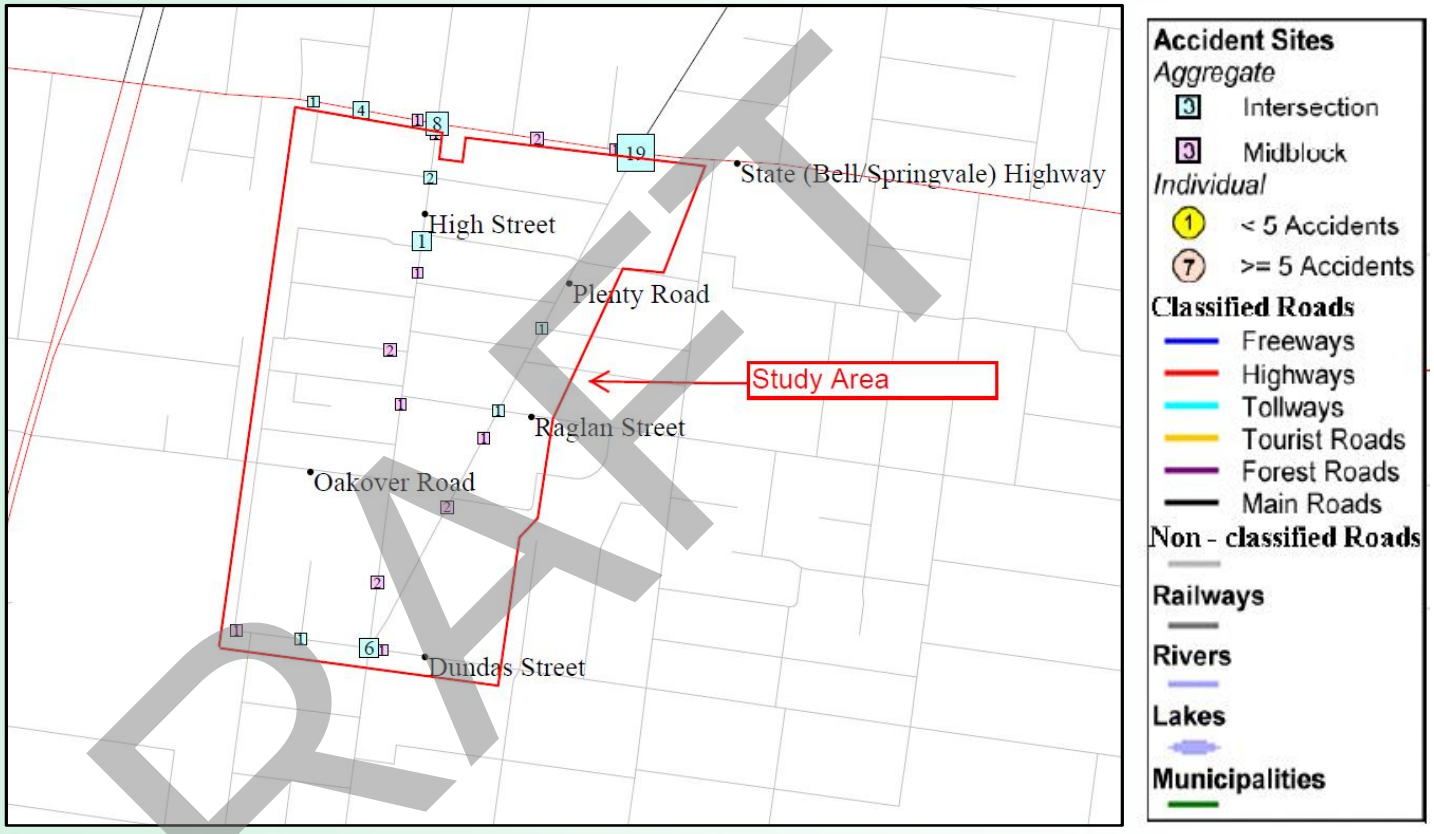


Figure 6: Accident Locations 1 January 2008 to 31 December 2012

Traffic and Parking Issues

Existing Issues

On-site observations and community feedback have identified the following issues with respect to the road network in the study area.

- *Rat Running* – Garnet Street is used as a rat run between Bell Street and High Street. Oakover Road forms a connection between St Georges Road and High Street although motorists may be using Railway Place East and an adjoining residential street in preference to High Street.

- *Vehicle Speeds* – Observations indicate that the 40 km/h speed limit on High Street is rarely abided by. This is likely a function of the wide open feel of the road in this area and the lack of pedestrian activity compared to High Street to the north and south of the study area. The 40 km/h speed limit applies at different times of the day to other sections of High Street, which may be confusing to motorists. Residents have raised concern about vehicle speeds in some residential streets.

- *Through Traffic Volumes* – It is expected that much of the traffic currently using High Street and Plenty Road is through traffic, with origins and destinations outside of the study area.

- *Parking Provision* – Community feedback indicates that there is a perception that there is an undersupply of car parking in the area, and that the shortfall will be exacerbated by new development. Observations undertaken by Cardno indicate that there is currently spare parking capacity within the study area along High Street and Plenty Road, although this is likely a function of current land uses that front these particular sections of each road.

Observations indicate that 40 km/h speed limit is not adhered to

Traffic and Parking Opportunities

Opportunities and Potential for Improvement

- *Local Area Traffic Management (LATM)* – Options for LATM should be explored to discourage rat running and assist in lowering vehicle speeds in the area. From a review of the road network, it is hypothesised that Railway Place East, Showers Street, Adeline Street and Gertrude Street are used as a connection between High Street and Oakover Road, which in turn connects to St Georges Road. Similarly, Garnet Street may be used as a link between High Street and Bell Street, while Hotham Street and Osborne Grove could be used as a connection between Bell Street and Plenty Road. It is recommended that traffic surveys be undertaken to confirm existing rat run routes and identify specific treatments for affected areas. Treatments to be considered could include slow points, speed humps, partial closures etc.

- *Alternative Cross-Sections for High Street*– Alternative cross-sections for High Street should be explored. It is suggested that future modifications should look to narrow the through traffic lanes, with space given to pedestrians and / or cyclists to improve the general amenity along the road. Narrower through traffic lanes could also help to reduce vehicle speeds along this stretch of road and reduce crossing distances for pedestrians. This could also encourage north-south through traffic onto St Georges Road which is the preferred traffic route under SmartRoads Operating Plan. Further investigations would be required, however it is suggested that the narrowing effect could be achieved in a number of ways including:
  - Reducing the road surface width, with the additional space given to the footpath on either side of the road;
  - Cycle lanes adjacent to kerbside parallel parking provisions;
  - Central medians.
  - Combination of localised kerb extensions with central median (painted or constructed).

  Other measures should also be considered to give the perception of narrower streets, such as landscaping and street furniture.

  Existing cross-sections along High Street further south within the City of Darebin suggests that central separation between the north and south bound lanes and narrow traffic lanes provides a for lower speed environment. For example, High Street immediately north of Westgarth Street (with parking lane outside clearway times) and High Street near Bastings Street has a painted median with narrow traffic lanes. Further north of Bell Street, which is a bus route with no tram reservation (similar to High Street within the study area) also provides for a low speed environment. Factors that facilitate this environment include overhanging feature lamp posts, narrow traffic lanes and a central constructed median. Accordingly, there are several examples within Darebin that provide for a low speed pedestrian friendly environment and allow shared car and bike travel. Accordingly any long term implementation of on-road bike lanes through the study area should be carefully considered and alternative solutions sought.

- *Alternative Cross-Sections for Plenty Road* – Alternative cross-sections for Plenty Road should also be considered with a view to improve the general amenity in the area and also improve tram priority. The proposed tram stop upgrades will go some way to improve Plenty Road in both of these respects.

- *Parking Provisions for New Development* – New residential developments within the area should be self-sufficient in terms of parking provisions, at least for residents. Residents of new developments would be ineligible for parking permits should Council impose permit zones in the future. It is important that measures are put in place to ensure that owners and tenants are made aware of this before purchasing or occupying a dwelling. Larger scale commercial uses should also provide car parking on-site, however it may be appropriate to waive or reduce car parking requirements for smaller developments or change of use applications where existing car parking credits can be applied.

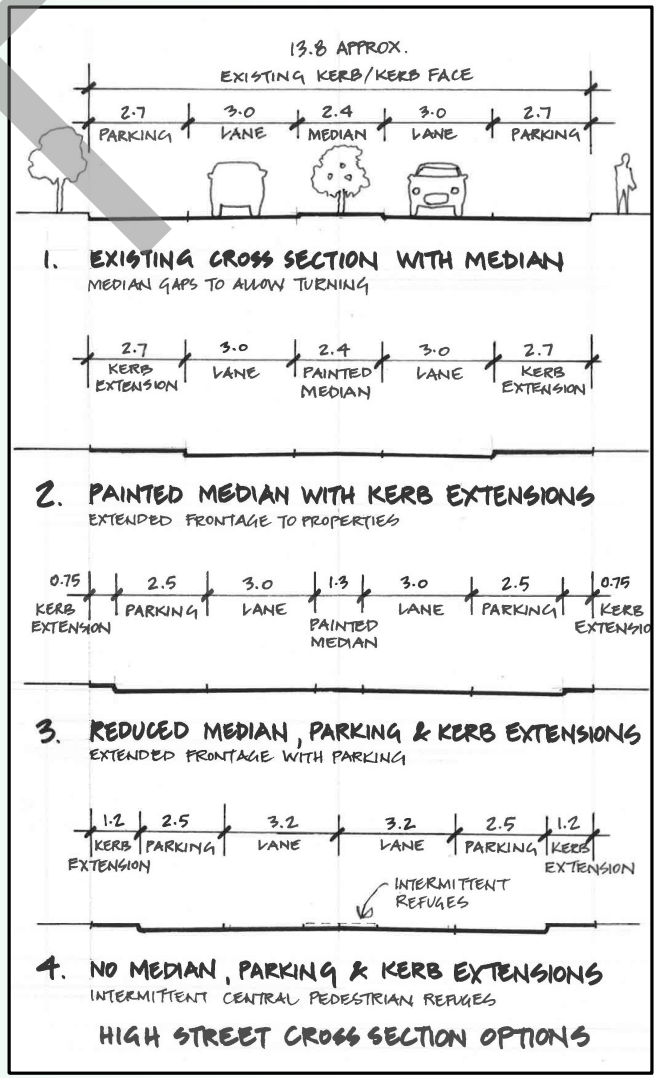


Figure 7: Possible High Street Cross-Sections

Public Transport Services

The study area enjoys good access to public transport services with the South Morang railway line skirting the western edge of the area, and tram route 86 and bus routes 552 and 553 operating within the study area on Plenty Road and High Street respectively.

Additionally, bus routes 513, 553 and the 956 NightRider operate on Bell Street to the north of the study area, while tram routes 11 and 112 operate along St Georges Road approximately 400 m west of the study area.

Figure 8 overleaf shows the public transport network in and around the study area, while Table 1 details services that operate in the locality.

Table 1: Public Transport Route Information

Service	Route No	Route Description	Nearest Stop
Train	South Morang		Bell Station
Tram	11	West Preston - Victoria Harbour Docklands	St Georges Road
	86	Bundoora RMIT - Waterfront City Docklands	Plenty Road
	112	West Preston - St Kilda	St Georges Road
Bus	513	Eltham - Glenroy via Greensborough, Lower Plenty	Bell Street
	552	North East Reservoir - Northcote Plaza via High Street	High Street
	553	Preston - West Preston via Reservoir	High Street
	903	Altona to Mordialloc (SMARTBUS Service)	Bell Street
	956	City - Epping via Lygon Street, High Street (NightRider Service)	Bell Street

Public Transport Network

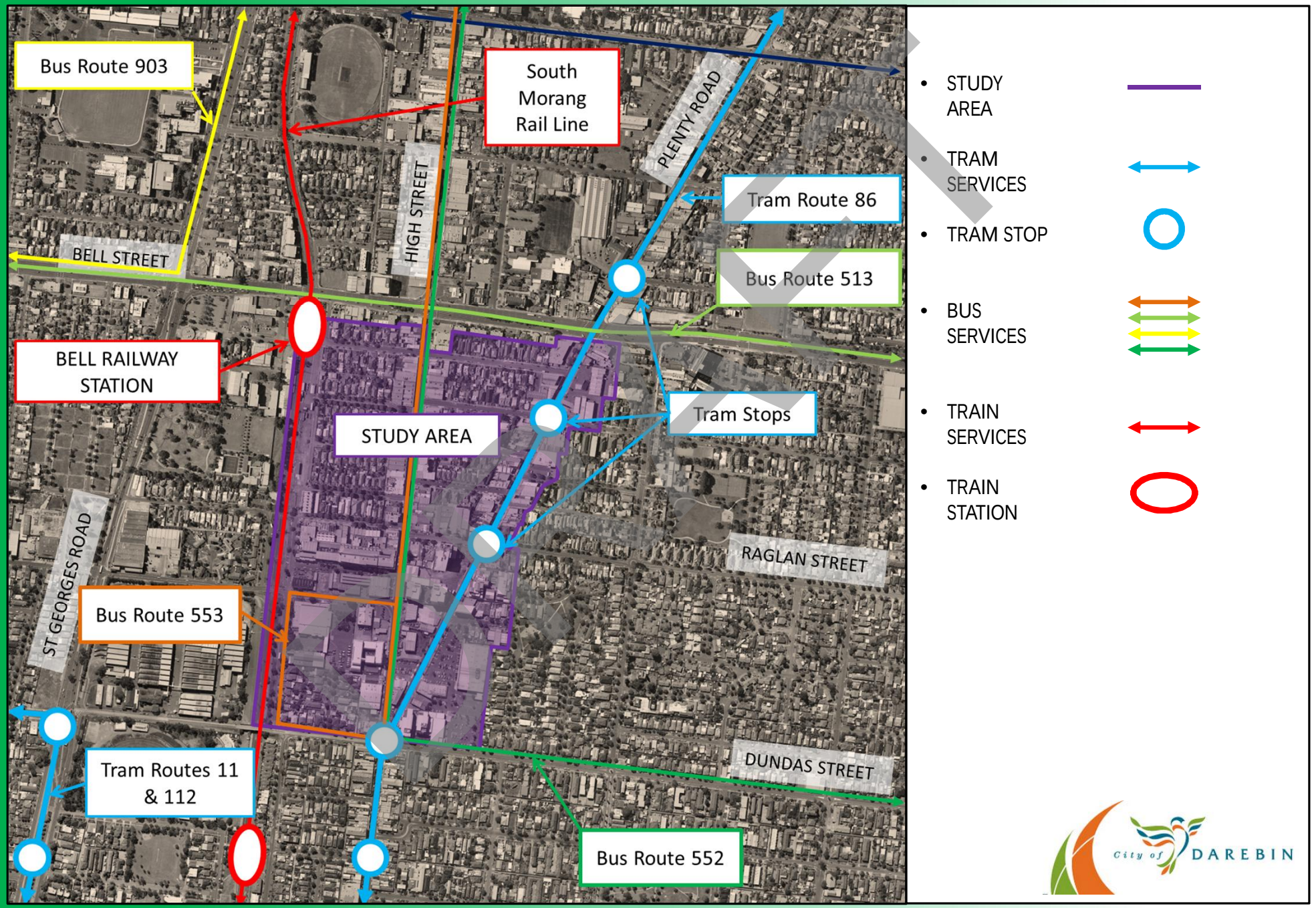


 Figure 8: Public Transport Network

Public Transport Issues

On-site observations and community feedback have identified the following issues with respect to the public transport network in the study area.

- *Access to Bell Station* – Vehicle access to Bell Station from within the study area is limited to Garnet Street, which is a residential street. Pedestrian and cyclist access is also provided via a pathway from Railway Parade East, however this path is uninviting and poorly lit, and can feel unsafe with no line of sight (and therefore passive surveillance) to / from the station itself. Furthermore, there are no footpaths on the stretch of Railway Parade East that it connects to.

- *Intermodal Connectivity and Lack of Wayfinding Signage* – Bell Station is removed from connecting bus and tram services within the study area, and there is a lack of wayfinding signage to direct users between different modes of transport. As mentioned above, pedestrian and cyclist connections to Bell Station could be improved.

- *Lack of DDA Compliant Tram Stops* – Tram stops within the precinct are all kerbside stops which do not facilitate wheelchair access to trams.

Pedestrian connection to Bell Station


Existing kerbside tram stops restrict wheelchair access to trams

Public Transport Opportunities

- *Plenty Road Tram Stop Upgrades* – Central island tram stops are proposed for all stops along Plenty Road within the Preston Junction Precinct. This will improve amenity for tram users and improve wheelchair accessibility to trams.

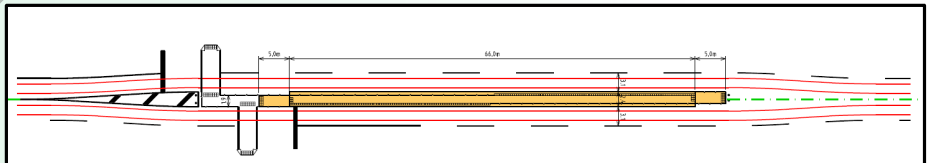
- *Improved Pedestrian Amenity Around Bell Station* – There is potential to improve the pedestrian amenity along links to Bell Station, particularly the link from Railway Parade East. At present there is no footpath on Railway Parade East north of Esther Street and lighting along this stretch and the pathway to Bell Station could be improved. Consideration should be given to the use of the land adjacent to the pathway off Railway Parade East, and the containers blocking sightlines between the pathway and the station removed.

- *Improved Wayfinding Signage* – It is suggested to install wayfinding signage to direct people between the various travel modes on offer, and also to key destinations within the precinct. This way finding signage should be installed at Bell Station, bus stops and tram stops. The wayfinding signage should include approximate travel distances and / or times to key destinations.

- *Improved Car and Bicycle Parking Facilities at Bell Station* – Community feedback indicates that users have concerns over the safety and security of parking facilities at Bell Station. This could be improved by ensuring lighting is up to appropriate standards, and other security measures such as more prevalent CCTV systems and ensuring sightlines between the station and its access points are not restricted. Additional bicycle parking facilities such as storage lockers and bicycle rails in more prevalent locations could encourage cyclists to the station.

- *Encouraged Use of Public Transport Services through Smart Travel Initiatives for New Development* – New developments in the precinct should encourage use of public transport services (and other sustainable travel modes) through measures such as Green Travel Plans and providing new residents / employees with a prepaid myki card and route maps for public transport in the area to encourage familiarity with the network.


Improve safety and security of car and bicycle parking facilities at Bell Station


Typical central island tram stop arrangement

Bicycle Facilities

In addition to the cyclist connectivity generally provided by the road network, Raglan Street and Miller Street feature on-street cycle lanes providing east-west connections through the study area. There are no formal north-south cycle lanes in the study area, however Railway Parade East operates as an informal cycle route between Bell Street and Miller Street. Cyclists are generally encouraged to use St Georges Road for north-south bicycle travel.

The High Street / Plenty Road / Dundas Street / Miller Street intersection features cyclist head start areas, as do the northern and southern legs of the High Street / Bell Street and Plenty Road / Bell Street intersections to the north of the study area.

Bicycle parking within the study area is typically provided in the form of in-ground hoops which are generally installed on footpaths along High Street or Plenty Road. A number of the multi-storey residential / mixed use developments towards the southern end of the study area feature visitor bicycle parking either on-site or along the site frontage.

The bicycle network is shown in Figure 9.

Bicycle parking at South Preston Shopping Centre

On-road cycle lane on Raglan Street

Railway Parade East is an informal north-south cycle route

Bicycle Network

Figure 9: Bicycle Network

Bicycle Issues

On-site observations and community feedback have identified the following issues with respect to bicycle facilities in the study area.

- *Connectivity and Continuity of Cycle Routes throughout Study Area* – Cycle connections running east-west through the precinct terminate at High Street, with no formal connections on the west side of High Street. The westbound cycle lane on Raglan Street stops at Plenty Road and is not continued through to High Street. Additionally, feedback from the community suggests that cyclists have difficulty crossing High Street when travelling east-west through the study area.
- *North-South Cycle Connections* – There are currently no formal north-south cycle connections in the precinct.
- *Lack of Wayfinding Signage* – There is a lack of wayfinding signage to direct cyclists to key destinations within the precinct (such as Bell Station and Preston South Shopping Centre), and also to key cycle routes such as the St Georges Road off-road bike path.
- *Lack of Appropriate End of Trip Facilities* – Whilst there are bicycle parking opportunities scattered throughout the precinct, these facilities are unlikely to be sufficient to cater for the needs of users in the future when vacant shops are filled and with future development in the area. Community feedback indicates that users have concerns over the security of bicycle storage facilities at Bell Station.
- *Preston Junction Unfriendly for Cyclists* – Community feedback indicates that Preston Junction is not cyclist friendly due to traffic volumes, tram tracks and the physical size of the intersection.

Raglan Street features only an eastbound lane to the west of Plenty Road

Preston Junction can cause issues for cyclists due to tram tracks and the physical size of the intersection

Bicycle Opportunities

- *Potential for Bike Lanes to be Incorporated with Future Road Works* – There is the potential for cycle lanes to be included within roadways with future roadworks or modifications to existing cross-sections. It is understood that Council is currently considering the implementation of on-road cycle lanes on High Street.

- *Improved East-West Connection to St Georges Road Cycle Path* – Council is proposing to install central islands on High Street at Raglan Street / Showers Street to improve the cycle connection across High Street. This location also improves the link to the St Georges Road cycle path, which is the preferred north-south route for travel to and from Melbourne.

- *Improved Cyclist Priority at Intersections* – Measures such as cyclist jump start signal phasing could be implemented to improve cyclist priority at intersections. This could also improve cyclist safety by allowing cyclists to proceed through the intersection before other vehicles. This helps to reduce conflict between vehicles turning left and cyclists. It is considered that cyclist head start storage areas are most appropriate on preferred cyclist routes where cycle lanes are featured on the approach and departure sides of the intersection.

- *Improved End of Trip Facilities at Key Destinations and Throughout the Study Area* – As the precinct is developed there is the opportunity to improve end of trip facilities for cyclists visiting the area. This includes additional parking facilities for visitors and shower / change room facilities for employees. It is expected that in the short to medium time, much of the rejuvenation of the area will be in the form of changes of use of existing buildings rather than new development. In these instances it is likely that the statutory requirements for bicycle parking, stipulated under Clause 52.34 of the Darebin Planning Scheme, would not be triggered. As such Council may need to install additional public bicycle parking facilities for use by visitors to the area.

- *Improved Wayfinding Signage* – it is recommended to install wayfinding signage throughout the precinct to direct cyclists to key destinations such as Bell Station and Preston South Shopping Centre, and also key routes such as the St Georges Road bike path. This wayfinding signage should direct cyclists along the preferred cycle routes and should include distances and / or approximate travel times to destinations.

- *Encouraged Use of Bicycles through Smart Travel Initiatives for New Development* – There is the opportunity to promote and encourage bicycle use for residents / staff of new developments within the study area. New developments should provide appropriate and secure bicycle parking facilities for residents and staff, along with bicycle parking for visitors which should be undercover wherever possible. Employees should have access to shower and change room facilities. Residents and employees should be provided with information on cycle routes within the precinct and to / from the precinct, as well as information as to the location of nearby bicycle repair / service centres.

Pedestrian Facilities

Pedestrian movement in the study area is generally facilitated by footpaths on both sides of High Street and Plenty Road, and footpaths running along the majority of local access streets.

Pedestrian crossings are provided at signalised intersections, however there are no other formal pedestrian crossings within the study area.

Figure 10 shows the location of pedestrian crossing facilities with respect to the key land uses within the study area.

Pedestrian crossing facilities at the junction

Aerial view of Preston Junction showing existing pedestrian crossing routes

Pedestrian Attractors and Crossings

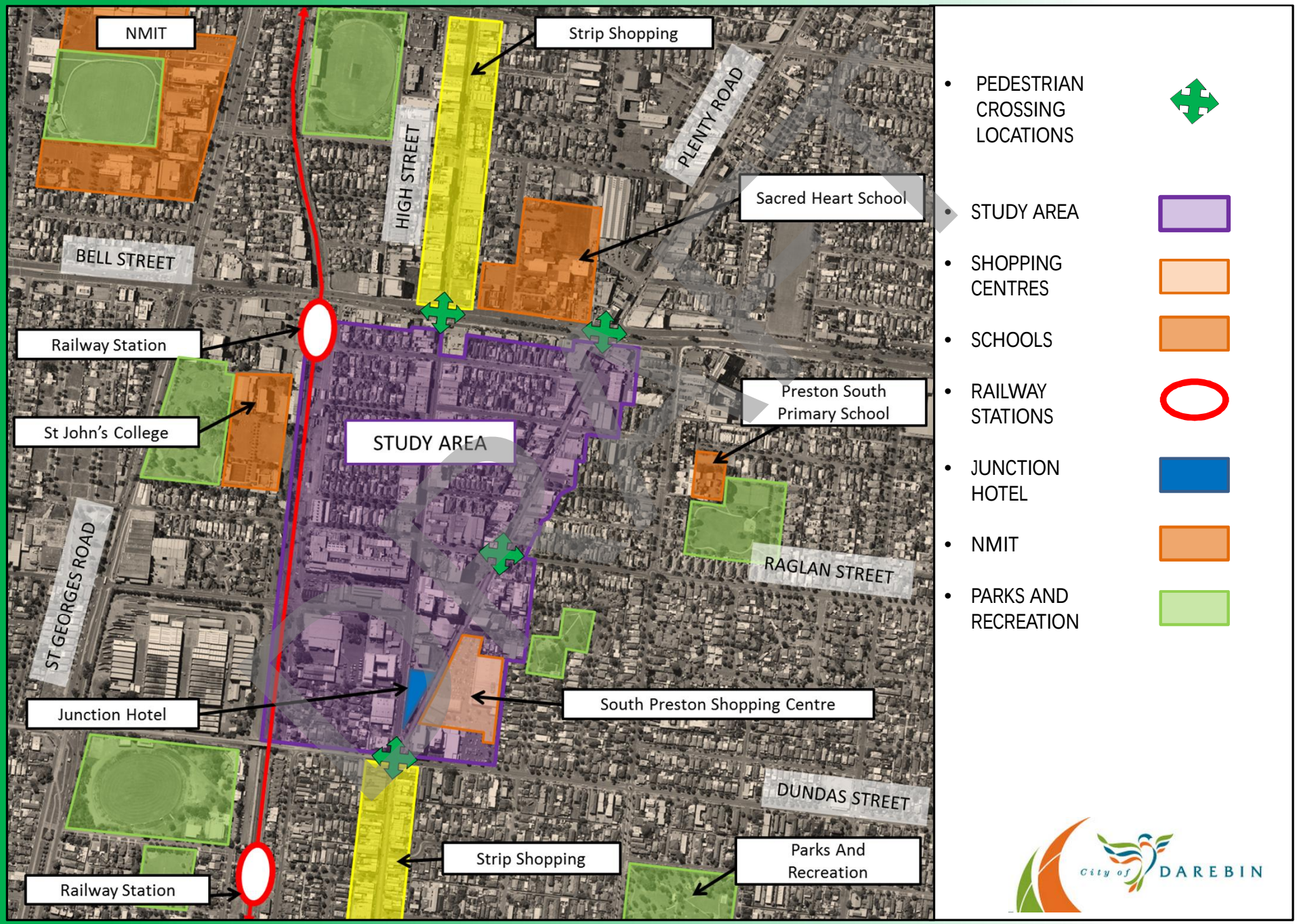


Figure 10: Pedestrian Crossing Locations

Pedestrian Issues

On-site observations and community feedback have identified the following issues with respect to pedestrian connections in the study area.

- *Lack of Crossing Points on High Street and Plenty Road* – At present there are only two formal pedestrian crossing points on High Street, located at the extreme north and south ends of the precinct. Similarly, while there are three signalised crossing points on Plenty Road, these are placed at approximately 400 m intervals.

- *Limited Pedestrian Connectivity between High Street and Plenty Road* – There is a lack of a formal pedestrian route between High Street and Plenty Road to the south of Raglan Street through the triangular shaped block which is a function of the alignment of Plenty Road. At present, the Junction Hotel car park forms an informal connection, however should a pedestrian route not be allowed for with future development there would be no through route between High Street and Plenty Road for approximately 400 m between Raglan Street and the junction.

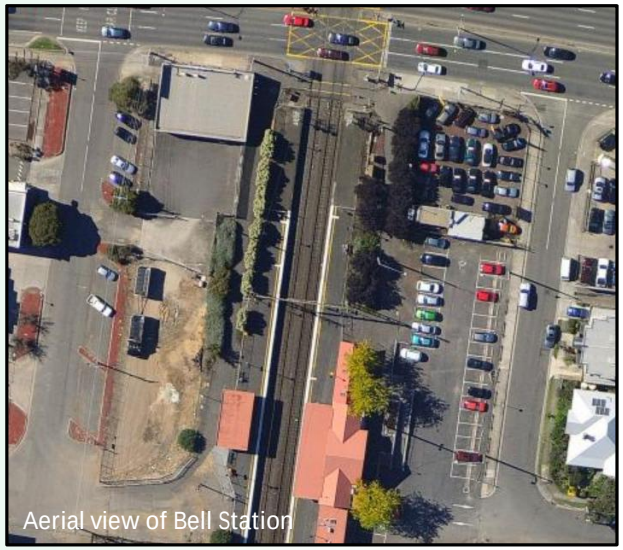
- *Poor Pedestrian Connections to Bell Station* – Railway Parade East forms a north-south connection to Bell Station from within the precinct, however there is no footpath on Railway Parade East to the north of Esther Street. Additionally, lighting along this stretch of Railway Parade East and the adjoining pathway to the station could be improved.

- *Lack of Wayfinding Signage* – There is a lack of wayfinding signage to direct people to key destinations within the precinct and public transport services.

- *Poor General Pedestrian Amenity* – General pedestrian amenity in some areas of the precinct could be improved through measures such as improved lighting, awnings along High Street and Plenty Road, additional street furniture and streetscape beautification works.

- *Layout of Preston Junction Unfriendly for Pedestrians* – Community feedback indicates that residents feel that Preston Junction can be difficult for pedestrians and can take too long to cross.

Aerial view of Preston Junction



Aerial view of Bell Station

Pedestrian Opportunities

- *Alternative Cross-Sections for High Street to Improve Pedestrian Amenity* – Alternative cross-sections for High Street should be investigated to provide improved pedestrian amenity. Measures that should be investigated include narrowing the road pavement by modifying the kerblines to give more space for pedestrian movements, central islands to enhance crossing opportunities and assist in reducing traffic speeds, and kerb outstands to reduce crossing distances.

- *Additional Crossing Opportunities on High Street* – Measures to provide additional crossing points on High Street should be investigated. Council's proposed bicycle crossing at Raglan Street / Showers Street will create an opportunity in this location. Other measures that should be investigated include kerb outstands to reduce crossing distances and central islands.

- *Tram Stops on Plenty Road to Improve Pedestrian Crossing Opportunities* – The proposed central island tram stops on Plenty Road will improve pedestrian crossing opportunities as they will generally feature pedestrian operated signals.

- *Improved Wayfinding Signage* – Wayfinding signage should be installed throughout the precinct to direct pedestrians to key destinations within the centre and to public transport facilities. Wayfinding signage should include distances and / or approximate travel times to key destinations.

- *Encourage Walking through Smart Travel Initiatives for New Development* – New developments in the area should encourage walking, particularly amongst residents and staff, through measures such as displaying information as to the locations of key destinations such as supermarkets with respect to the development and associated walk times in common areas.

- *Pedestrian Improvements at Preston Junction* – Measures to improve pedestrian connections through Preston Junction should be investigated. These measures could range from pedestrian jump start signal phasing to improve pedestrian priority (particularly against right turning vehicles that filter through the traffic stream) to reconfiguration works to reduce crossing distances. Reconfiguration measures that should be investigated include:
    - Separating the junction into two separate intersections, being a cross -intersection comprising High Street (south approach), Plenty Road, Miller Street and Dundas Street, and a T-intersection comprising Plenty Road and High Street (north approach);
    - Realigning the pedestrian crossings on the High Street north approach and the Plenty Road approach to reduce crossing distances;
    - A Barnes Crossing or upper level activation.

- *Pedestrian Connection Between High Street and Plenty Road* – It is important to maintain pedestrian access from High Street to Plenty Road between Raglan Street and Preston Junction. At present this is facilitated informally by the Junction Hotel car park, however provision should be put in place for a formal connection that should be maintained throughout development of the area.

- *Ensure that Pedestrian Connections are DDA Compliant / Accessible* – It should be ensured that transport infrastructure within the centre supports safe and comfortable travel to allow independent accessibility for people with disabilities and people with prams. Most journeys within the area will start and / or conclude with a pedestrian leg and as such it is important to reduce transport disadvantage and improve the journey experience for people with disabilities.

Future Development

Council has advised as to the expected extent of future development within the precinct. The majority of development is expected to take the form of commercial (retail) developments at ground level with residential dwellings above. Some office uses are also expected.

The development yields supplied by Council have been calculated based on a building site coverage of 75%, the assumption that ground floor will be occupied by commercial uses with the upper levels occupied by apartments, and an average apartment size of 80 m^2. Details of Council's anticipated development yields are provided in Table 2 overleaf. It should be noted that these are ultimate yields for each site and not the increase in floor area or apartments over the existing use of each site.

The anticipated traffic generation for each site has been calculated based on the following assumptions based on case study data held by Cardno for similar uses:

Office

- Office parking will be supplied at a rate between 2.5 spaces per 100 m^2 of floor area and the statutory rate of 3.5 spaces per 100 m^2 of floor area.
- 60% of parking spaces will be filled during the AM peak hour, with a counter peak traffic generation equating to 10% of the flow in the peak direction.
- 50% of parking spaces will be vacated during the PM peak hour, with a counter peak traffic generation equating to 10% of the flow in the peak direction.

Retail

- Retail uses will generate 2.0 vehicle movements per 100 m^2 during the AM peak hour.
- Retail uses will generate 6.0 vehicle movements per 100 m^2 during the PM peak hour.
- Retail traffic will be split 90-10 inbound-outbound during the AM peak hour.
- Retail traffic will be split 50-50 outbound-inbound during the PM peak hour.

Residential

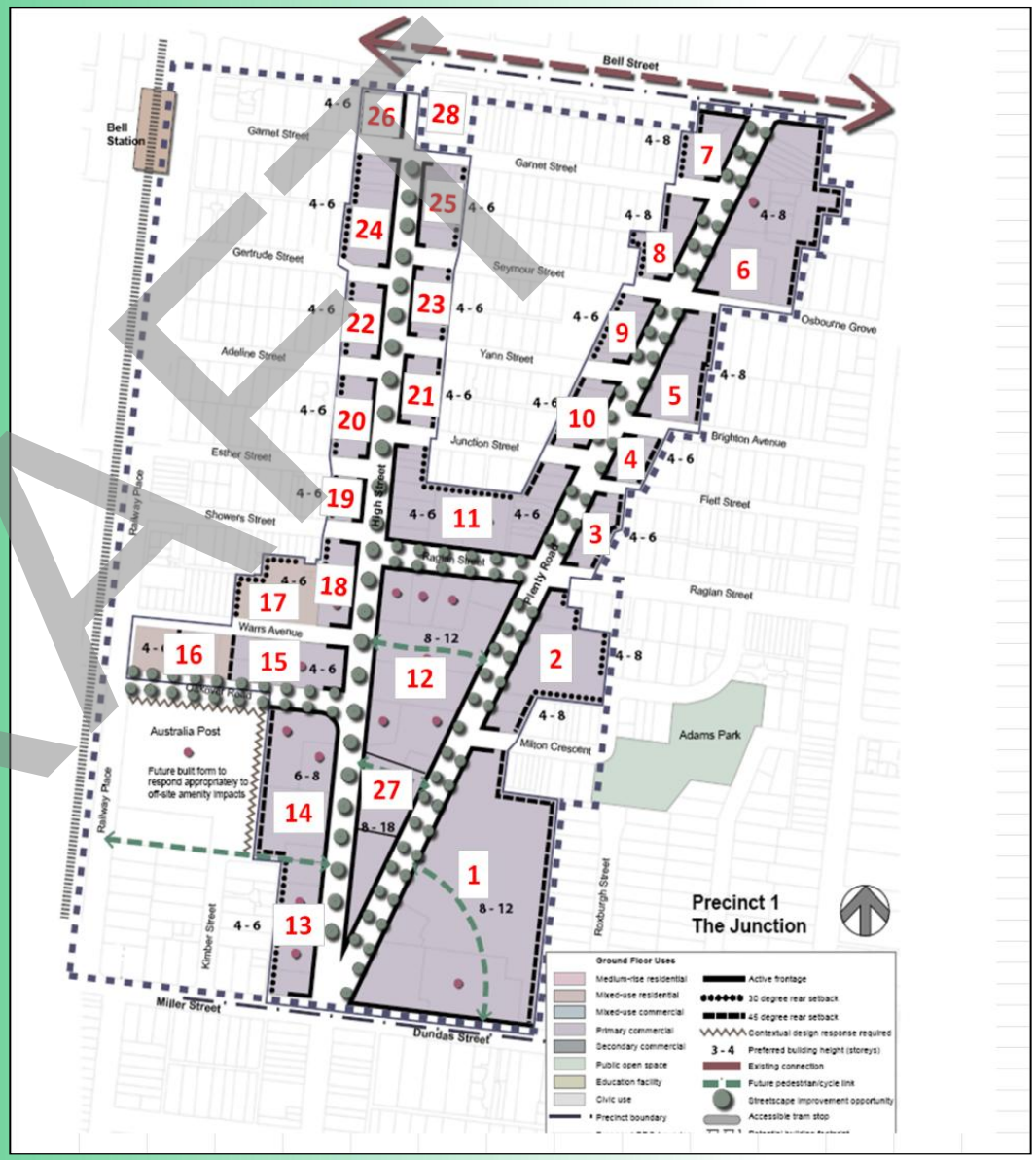
- Residential dwellings will generate 0.7 vehicle movements per dwelling during both the AM and PM peak hours. This is considered to be conservative for medium density residential uses within close proximity of public transport services.
- Traffic will be split 80-20 outbound-inbound during the AM peak hour.
- Traffic will be split 40-60 inbound-outbound during the PM peak hour.

Details of anticipated traffic generation for each lot are provided in Table 3, with values for the upper limit and lower limit expected traffic volumes detailed.

Future Development (continued)

Table 2: Assumed Development Yields (Supplied by Council)

Map Location	Use Type	Office Floor Area (m^2)	Retail Floor Area (m^2)	Apartments
1	Primary Commercial	0	18,763	1,806
2	Primary Commercial	0	5,143	315
3	Primary Commercial	0	1,431	90
4	Primary Commercial	0	1,049	70
5	Primary Commercial	0	3,013	200
6	Primary Commercial	0	7,517	460
7	Primary Commercial	0	1,858	120
8	Primary Commercial	0	1,873	170
9	Primary Commercial	0	1,541	100
10	Primary Commercial	0	1,557	100
11	Primary Commercial	0	6,590	350
12	Primary Commercial	0	11,179	1,076
13	Primary Commercial	0	3,171	160
14	Primary Commercial	0	5,895	361
15	Primary Commercial	0	2,727	119
16	Mixed Use Residential	1,154	1,154	110
17	Mixed Use Residential	1,325	1,325	116
18	Primary Commercial	0	1,683	74
19	Primary Commercial	0	677	40
20	Primary Commercial	0	1,686	100
21	Primary Commercial	0	1,450	63
22	Primary Commercial	0	1,541	100
23	Primary Commercial	0	1,461	70
24	Primary Commercial	0	2,770	170
25	Primary Commercial	0	1,974	100
26	Primary Commercial	0	1,051	60
27	Primary Commercial	0	3,928	584
28	Primary Commercial	0	1,352	90



Developable parcels for future development

Future Development (continued)

Table 3: Anticipated Traffic Generation for Ultimate Development Yields

Map Location	Use Type	AM Peak Hour Volume (Lower)			PM Peak Hour Volume (Lower)			AM Peak Hour Volume (Upper)			PM Peak Hour Volume (Upper)		
		In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
1	Primary Commercial	446	436	882	888	780	1668	591	1,049	1,640	1,321	1,069	2,390
2	Primary Commercial	112	77	189	211	192	403	137	186	323	286	242	528
3	Primary Commercial	31	22	53	59	54	113	39	53	92	81	68	149
4	Primary Commercial	23	17	40	44	39	83	29	41	70	60	51	111
5	Primary Commercial	66	49	115	126	114	240	82	118	200	174	146	320
6	Primary Commercial	163	112	275	309	281	590	199	273	472	419	355	774
7	Primary Commercial	40	29	69	78	70	148	50	71	121	106	90	196
8	Primary Commercial	44	41	85	87	76	163	58	99	157	127	104	231
9	Primary Commercial	34	24	58	64	58	122	42	59	101	88	74	162
10	Primary Commercial	34	24	58	65	59	124	42	59	101	89	75	164
11	Primary Commercial	140	85	225	261	240	501	168	209	377	345	296	641
12	Primary Commercial	266	260	526	529	464	993	352	625	977	787	636	1,423
13	Primary Commercial	67	39	106	124	114	238	79	96	175	162	140	302
14	Primary Commercial	128	88	216	242	220	462	157	214	371	329	278	607
15	Primary Commercial	56	29	85	103	96	199	66	72	138	132	115	247
16	Mixed Use Residential	45	28	73	56	62	118	60	66	126	83	86	169
17	Mixed Use Residential	51	30	81	63	71	134	68	71	139	91	95	186
18	Primary Commercial	34	18	52	63	59	122	40	44	84	81	71	152
19	Primary Commercial	14	10	24	27	25	52	18	23	41	37	31	68
20	Primary Commercial	36	24	60	69	63	132	44	59	103	93	79	172
21	Primary Commercial	30	15	45	54	51	105	35	39	74	70	61	131
22	Primary Commercial	34	24	58	64	58	122	42	59	101	88	74	162
23	Primary Commercial	30	17	47	57	52	109	36	42	78	73	64	137
24	Primary Commercial	60	41	101	114	103	217	74	101	175	154	131	285
25	Primary Commercial	42	24	66	77	71	148	50	60	110	101	87	188
26	Primary Commercial	23	14	37	43	39	82	27	36	63	57	49	106
27	Primary Commercial	106	141	247	223	188	411	153	335	488	363	282	645
28	Primary Commercial	29	22	51	57	52	109	37	53	90	79	66	145
Total	-	2,184	1,740	3,924	4,157	3,751	7,908	2,775	4,212	6,987	5,876	4,915	10,791

Future Development Implications - Traffic

The foregoing analysis identifies that if the precinct were to be fully developed, land uses in the area have the potential to generate substantial traffic volumes during both the AM and PM peak periods. The analysis identifies that Council's projected land use yields have the potential to generate between 3,924 and 6,987 vehicle movements during the AM peak hour and between 7,908 and 10,791 vehicle movements during the PM peak hour, subject to the level of car usage in the area.

Typically, the largest capacity constraints in any road network are intersections. Based on network operations under current traffic volumes and the traffic volumes anticipated to be generated by development within the study area, it is recommended to maintain two lanes on approach to and through intersections on High Street and Plenty Road. Alternative cross-sections, such as a reduced roadway width or parking provisions, could be investigated for mid-block locations.

A reduction in single occupancy car travel should be encouraged to reduce the traffic impact of new development in the area. This could be achieved through green travel initiatives for new developments and education campaigns for existing residents and staff of existing businesses, through to improvements to public transport, bicycle and pedestrian infrastructure. Additionally, it is recommended to encourage through vehicle traffic onto St Georges Road in preference to High Street or Plenty Road.

Future Development Implications - Parking

With gentrification of the High Street corridor spreading north towards the study area, there is data to support consideration of lower parking provision than planning scheme rates in the study area. The table below demonstrates that with similar proportions of families with or without children car ownership in the Preston statistical area is currently higher than suburbs immediately to the south. With improved access to transport, amenity, public realm aesthetics and general community and commercial improvements, there is a strong case for reduced on-site parking provision.

Statistical Local Area - by State Suburb	Average Motor Vehicles Per Dwelling	Couples With Children	Couples Without Children
Preston	1.4	44.5%	34.9%
Thornbury	1.3	42.5%	40.6%
Northcote	1.3	45.3%	38.3%
Clifton Hill	1.3	38.4%	45.8%
Brunswick	1.1	36.3%	48.0%
Fitzroy North	1.2	38.3%	46.9%

It is considered that new development in the area should be self-sufficient in terms of parking provisions, at least for residents. Having said that, as mentioned above, it is suggested that there is scope to vary the car parking requirements set out under Clause 52.06 of the Darebin Planning Scheme. Review of Australian Bureau of Statistics (ABS) data for Preston identifies that the average number of vehicles to a studio flat, unit or apartment is 0.47 vehicles. The average number of vehicles for one-bedroom flats, units or apartments is 0.72 vehicles, while the average for two-bedroom and three bedroom apartments are 1.03 and 1.32 vehicles respectively. It is considered that there is scope to lower the car parking requirements for residential uses in line with these ABS car ownership and potentially lower still.

This can be implemented with appropriate restrictions in surrounding streets to encourage car parking is available for short term needs and suppress higher than average resident demands.

Parking provision should be reviewed in parallel with commercial development opportunities and investors within the study area.

As an example,

- All studio apartments with no parking;
- A significant proportion of one apartments provided with no parking (depending on commercial factors between 0.0 and 0.6 spaces per apartment); and
- Two-bedroom apartments with 1 car space each.

Nevertheless, it is recommended that measures are put in place to ensure that owners and occupiers are aware that they would not be eligible for parking permits should Council impose such restrictions in the future.

It is suggested that car parking requirements for various other uses could also be varied from the Clause 52.06 requirements through the measures specified within the Planning Scheme, such as an assessment of the likely car parking demands on the basis of case study data collected at a similar use.

To provide a consistent means by which to vary the car parking requirements of new developments it is suggested that a Parking Overlay for the area could be incorporated to Clause 45.09 of the Darebin Planning Scheme. A Parking Overlay specifies alternative rates for applicable land uses (be they higher or lower than those specified under Clause 52.06 of the Planning Scheme) that are specific to the prescribed area.

Urban Design Framework

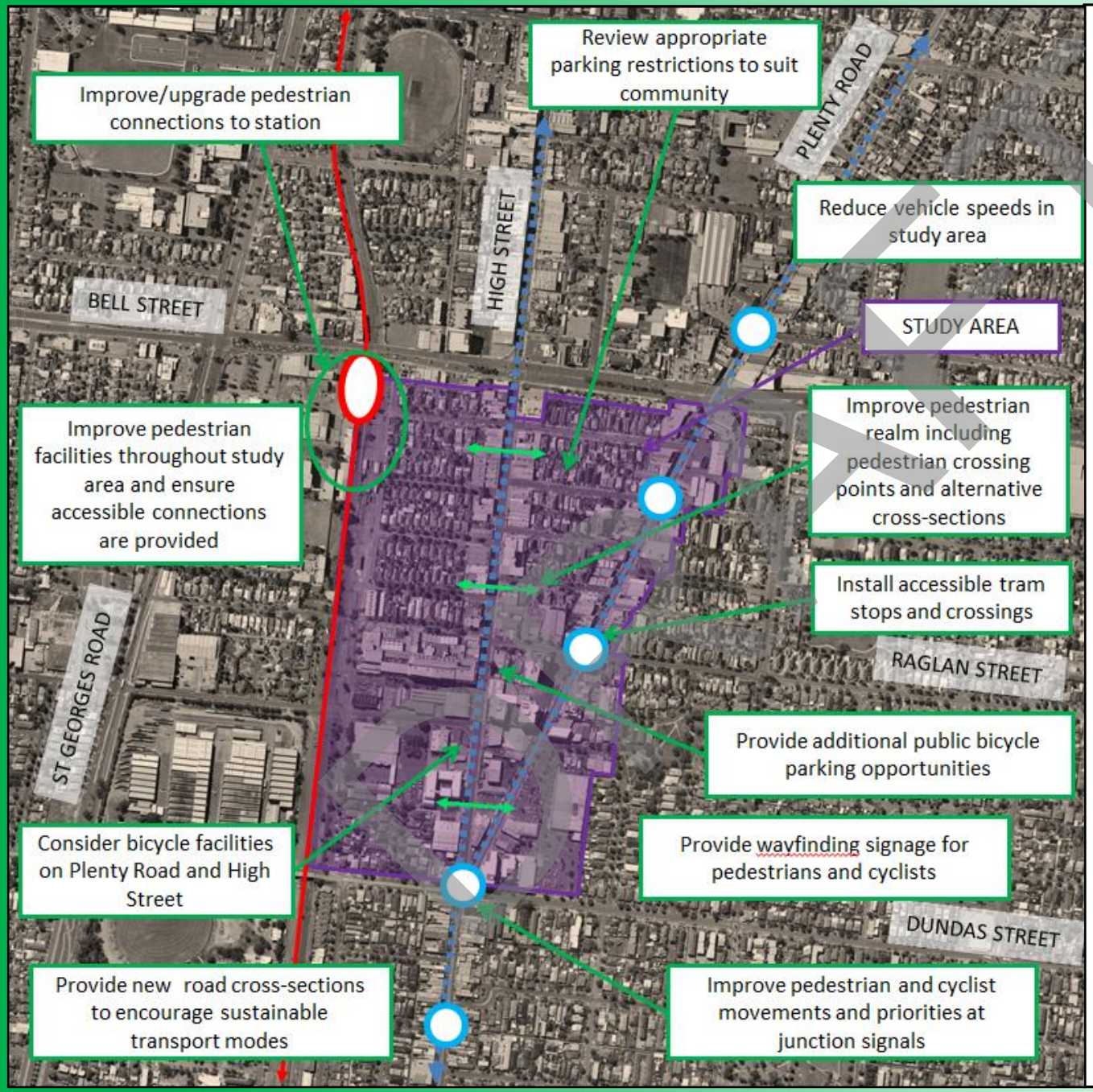
Plenty Road Corridor – Urban Design Framework 2013

The Plenty Road Corridor – Urban Design Framework 2013 (UDF) sets out a number of Design Guidelines for the Plenty Road Corridor and the Junction Precinct. The Design Guidelines are intended to ensure that ongoing transformation and development of the area contributes to public realm improvements and the creation of a sense of place, creates a high standard of amenity for future residents and ensures development minimises negative amenity impacts for existing residents.

Cardno has reviewed the UDF and provides the following comments, observations and recommendations regarding traffic and transport matters covered in the Framework:

Urban Design Framework Section	Urban Design Framework 2013	Comments/Recommendations
Car parking and vehicle access		
Off-Street Car Parks at grade	Access to off-street car parks should be clearly marked from Plenty Road but managed in a way to minimise the intrusion on quieter residential streets, especially if it is servicing uses that extend outside usual business hours.	A distinction should be made between the types of car parks that are clearly marked. While there is merit in marking directions to retail and public car parks, it is not considered beneficial to highlight the location of private, residential car parks.
	Where car parks are provided at the rear of shops or other active ground floor uses a secondary entrance direct from the car park should be provided, that is clearly identifiable as an entry point, is well-lit and is not confused with a service and loading bay.	The UDF should clarify that the secondary entrance is intended for pedestrians accessing the "shops or other active ground floor uses", rather than to provide a secondary entrance for vehicles to the car park.
Off-Street Car Parks at grade & Car Parking in taller buildings	If there is no rear laneway or side street access then a centrally located loading bay that services several business should be considered on-street. Delivery times may need to be restricted to times outside the peak traffic flows. Within the site or footprint of taller buildings it is necessary to provide for car parking, freight and goods deliveries as visitors/people using the businesses. Each of these uses has a different need and access requirement which could be accommodated within separate locations in the building. It is desirable to minimise the potential for conflict between pedestrian access and movement through parking areas and the loading and unload of goods and the movement of larger vehicles.	Rather than basing the various parking requirements on the height of a building or the presence of a rear laneway or side street, the UDF should consider the relative requirements based on the size of a site and the physical ability to provide on-site parking, loading, cycle facilities etc. If a large site is able to provide on-site parking and loading areas then it should do so. If is it not possible to provide on-site parking or loading areas on a small site, allowance should be made for the sharing of nearby on-street facilities if they exist. Any application to change the use of a smaller site should consider the historical operation of previous uses on that land. Conversely, if smaller sites are to be consolidated to form a larger land parcel, the provision of on-site parking, loading and necessary facilities should be encouraged.
Movement Network	As a major arterial road containing the Route 86 tram (part of the Principal Public Transport Network) there is a reduced opportunity for additional on-street car parking.	The UDF should clarify that there is not a reduced opportunity for additional on-street car parking, but rather, there is no opportunity for additional on-street car parking.
	VicRoads has indicated that traffic volumes on Plenty Road will continue to increase as a result of its function as a major arterial north/south link and population growth outside the municipality. This increase also places additional pressure on local transport trips across the municipality and traffic trying to access key destinations such as La Trobe University and Bundoora Park. This raises the need to provide adequate pedestrian protection/environment near fast moving traffic, along the edge of main roads and at recognised crossing points.	It is likely that the population growth will generate increased traffic volumes on Plenty Road, as asserted by VicRoads. It is unlikely that this would increase traffic speeds and would more than likely result in lower average vehicle speeds along Plenty Road. It is unlikely that the need for pedestrian protection features would increase without an increase in vehicle speeds and the subsequent clear zone that would be required. It is more likely that the increased traffic volumes would increase delays for cyclists and trams on Plenty Road, while additional crossing points for pedestrians would be beneficial.
The Junction Precinct		
Car Parking	Where practical on-site car parking should be provided at a reduced rate to acknowledge the high level of access to goods, services and facilities within easy walking distance. This reduces the need for private car ownership and will encourage the use of more sustainable forms of transport.	The provision of on-site parking at a reduced rate for residential developments will act to attract residents with lower car ownership levels and encourage the use of more sustainable forms of transport. In order to support this initiative, it will also be necessary for Council to implement appropriate on-street restrictions and limit the issue of resident parking permits to prevent resident parking infiltration into on-street parking areas.

Summary of Transport Opportunities



- PROVIDE EAST-WEST PEDESTRIAN CONNECTIONS
- IMPROVE PEDESTRIAN PERMEABILITY WITHIN STUDY AREA
- PROVIDE ACCESSIBLE TRAM STOPS ON PLENTY ROAD
- CONSIDER BICYCLE FACILITIES ON PLENTY ROAD AND HIGH STREET
- PROVIDE ROAD CROSS-SECTIONS TO ENCOURAGE SUSTAINABLE TRANSPORT MODES
- NEW DEVELOPMENTS TO ENCOURAGE SUSTAINABLE TRAVEL

Summary of Transport Opportunities

Table 4: Summary of Opportunities and Potential for Improvement

Item	Opportunities and Potential for Improvement	Covered in Urban Design Framework 2013
Traffic and Parking	• Local Area Traffic Management (LATM)	No
	• Alternative Cross-Sections for High Street	Partial (Streetscape)
	• Alternative Cross-Sections for Plenty Road	Partial (Streetscape)
	• Parking Provisions for New Development	Partial
Public Transport	• Plenty Road Tram Stop Upgrades	No
	• Improved Pedestrian Amenity Around Bell Station	No
	• Improved Wayfinding Signage	Partial
	• Improved Car and Bicycle Parking Facilities at Bell Station	No
	• Encouraged Use of Public Transport Services through Smart Travel Initiatives for New Development	Partial
Bicycle Facilities	• Potential for Bike Lanes to be Incorporated with Future Road Works	Yes
	• Improved East-West Connection to St Georges Road Cycle Path	No
	• Improved Cyclist Priority at Intersections	No
	• Improved End of Trip Facilities at Key Destinations and Throughout the Study Area	No
	• Improved Wayfinding Signage	Partial
	• Encouraged Use of Bicycles through Smart Travel Initiatives for New Development	Partial
Pedestrian Facilities	• Alternative Cross-Sections for High Street to Improve Pedestrian Amenity	Partial (Streetscape)
	• Additional Crossing Opportunities on High Street	Yes
	• Tram Stops on Plenty Road to Improve Pedestrian Crossing Opportunities	Yes
	• Improved Wayfinding Signage	Partial
	• Encourage Walking through Smart Travel Initiatives for New Development	Partial
	• Pedestrian Improvements at Preston Junction	Yes
	• Pedestrian Connection Between High Street and Plenty Road	Yes