

DA 9 Precinct, BelmontProposed Rezoning Application

TRANSPORT IMPACT STATEMENT









Prepared for:

PHB01 Pty Ltd

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DA 9 Precinct, Belmont

Prepared for: PHB01 Pty Ltd
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1. Introduction

This Transport Impact Statement has been prepared by Urbii on behalf of PHB01 Pty Ltd, with regards to the proposed scheme amendment application for the DA 9 Precinct within the City of Belmont.

The subject site is situated at the corner of Fauntleroy Avenue and Hay Road, as shown in Figure 1, and forms part of the Development Area 9 (DA 9) Structure Plan. The site is mostly vacant with some residential buildings and is zoned R20. The site is surrounded by a range of land uses including mixed use to the south-east and residential to the north-west.

The DA 9 Structure Plan was prepared in 2013 on behalf of the City of Belmont and designated the subject site area to be zoned R20/R60 (Appendix A). Based on advice from the project proponents, due to legislative changes that altered the status of structure plans to 'due regard' in 2015, a scheme amendment is now required to re-establish the R60 density coding.

Detailed design issues such as car park design and swept path analysis of service vehicles is not a critical consideration at this stage and will be considered at Development Application stages.

The key issues that will be addressed in this report include the net change in potential site traffic as a result of the proposed scheme amendment, access and egress movement patterns and access to the site for alternative modes of transport.









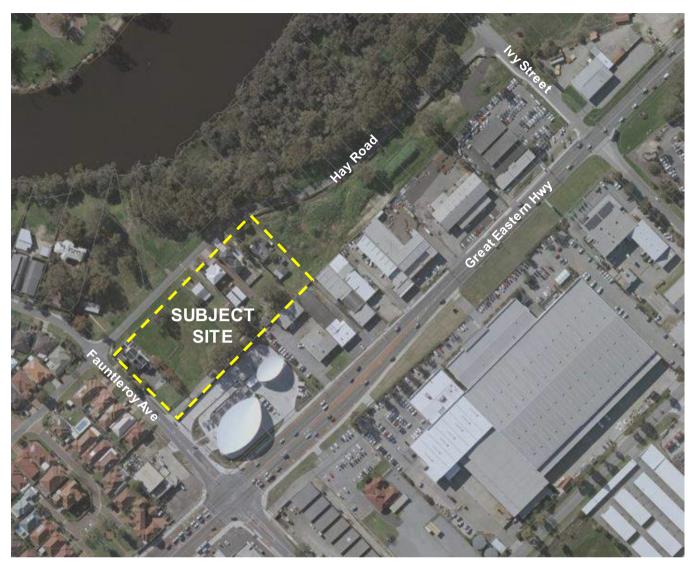


Figure 1: Subject site

2. Proposed scheme amendment

Based on planning advice provided to Urbii, the existing permitted residential R20 zoning potentially allows for the development of around 27 dwellings.

The proposed R20/R60 zoning could yield up to 120 multiple dwellings. Individual developments would be subject to detailed parking, access and swept path design considerations at Development Application and Detailed Design stages.

Car parking, bicycle parking and service vehicle movements will be considered in further detail at Development Application stages.









3. Vehicle access and parking

Vehicle access

The Structure Plan proposed the extension of Hay Road to Ivy Street to provide vehicle access to DA 9. Vehicle access for the neighbouring mixed use sites to the south-east was encouraged to be ultimately facilitated by an access ROW along the Great Eastern Highway frontage of the sites. This access arrangement was encouraged in order to separate residential traffic from DA 9 and commercial traffic from the abutting mixed-use land to the south-east.

Based on site observations, the Hay Road extension has been constructed since the Structure Plan was prepared. The alignment of the extension appears to be outside the original road reserve (presumably due to floodway considerations), with the dual use path now constructed within the original Hay Road reserve alignment. Hay Road now connects all the way between Fauntleroy Avenue and Ivy Street.

Vehicle access to the subject site will be accommodated on Hay Road, with a possible vehicle access point on Fauntleroy Avenue. There are a number of vehicular access routes available to and from the wider road network, with traffic being able to dissipate via a number of points on Greater Eastern Highway (Figure 2). The key access intersection for the site is the signalised intersection of Great Eastern Highway and Fauntleroy Avenue.

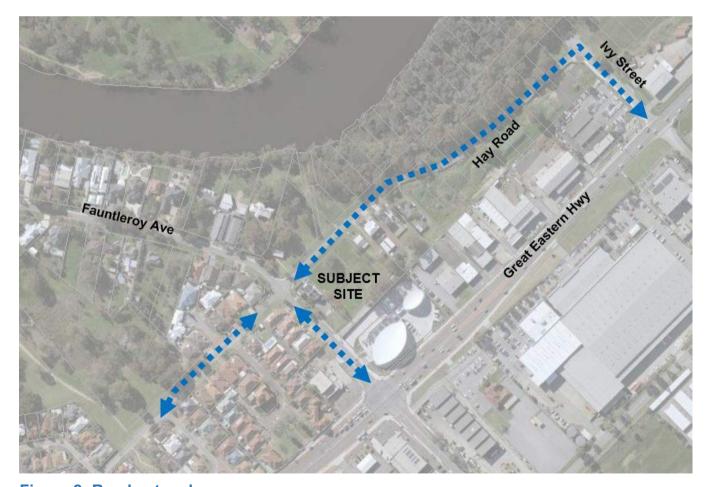


Figure 2: Road network access

Any access crossovers proposed at the northern corner of the subject site will need to consider horizontal sightlines at Development Application stages.

Parking supply and demand

Car parking supply will be confirmed at Development Application stage. There is opportunity to consider limiting car parking supply due to the proximity of excellent cycle facilities, bus services on Great Eastern Highway, and connectivity to the future Forrestfield-Airport rail link via Redcliffe Station.









4. Provision for service vehicles

The proposed zoning is for residential uses. Residential land use primarily requires service access for waste collection vehicles and occasionally for delivery vehicles. Service vehicle access will be via Hay Road with site-specific considerations given at Development Application stages.

5. Hours of operation

Peak traffic hours for residential land uses typically coincide with weekday AM and PM peak hour traffic on the adjacent road network.

Review of Main Roads WA SCATS intersection traffic data for the intersection of Great Eastern Highway / Fauntleroy Avenue indicates that the AM peak hour occurs between 7:30am and 8:30am and the PM peak hour occurs between 4:30pm and 5:30pm on weekdays.

The proposed zoning of residential R20/R60 will exhibit peak traffic characteristics which coincide with the road network peak hour.









6. Daily traffic volumes and vehicle types

Existing traffic flows

Existing traffic was estimated through analysis of data from the following sources:

- Traffic data for Great Eastern Highway / Fauntleroy Avenue obtained from Main Roads WA; and,
- Traffic count surveys at the intersections of Hay Road / Fauntleroy Avenue and Great Eastern Hwy / Fauntleroy Avenue on a standard weekday in February 2020 (during the school term).

The existing peak hour traffic flows at key intersections are presented in Figure 3.

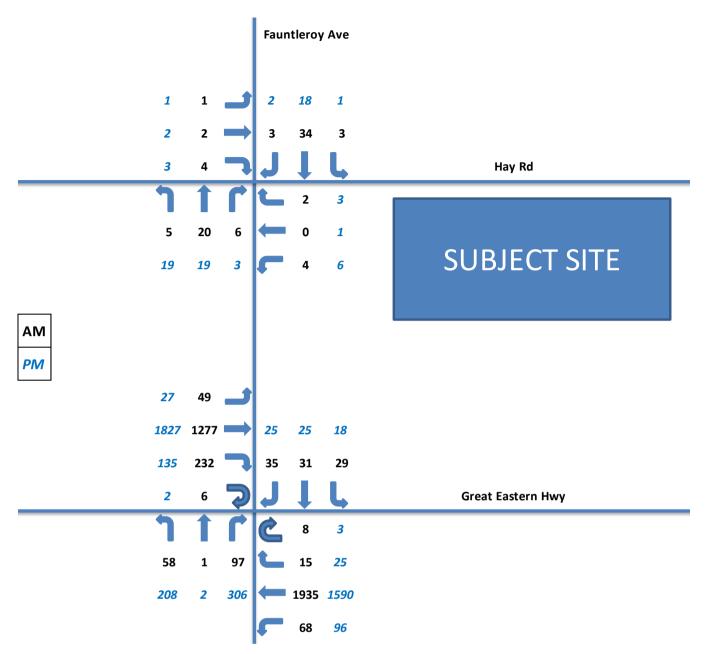


Figure 3: Existing traffic flows at key intersections – Weekday peak hours







Traffic generation

The traffic volume that will be generated by the subject site (before and after scheme amendment) has been estimated using trip generation rates derived with reference to the following sources:

- Roads and Traffic Authority of New South Wales *Guide to Traffic Generating Developments* (2002); and
- RTA TDT 2013/ 04a.

The trip generation rates adopted are detailed in Table 1. The net change in traffic estimated on the external road network as a result of the proposed scheme amendment is detailed in Table 2.

If fully developed at the proposed maximum zoning of R60, the subject site can generate a potential 550 vehicles per day (vpd), 64 vehicles per hour (vph) and 38 vph in the AM and PM peak hours respectively.

These trips include both inbound and outbound vehicle movements. It is anticipated that most of the vehicle types would be passenger cars and SUVs.

The net estimated change in traffic on the surrounding road network, when allowing for the existing potential yield of the site is **+261vpd**, **+38vph** in the AM peak hour and **+11vph** in the PM peak hour.

Table 1: Adopted trip rates for traffic generation

Land use	Trip rate source	Daily rate	AM	PM	AM in	AM out	PM in	PM out
Residential R20	TDT 2013/04a - Low density residential dwellings	10.7	0.95	0.99	25%	75%	67%	33%
rresidential Rbu	TDT 2013/04a - High density residential flat dwellings	4.58	0.53	0.32	25%	75%	67%	33%

Note: The percentage distribution in/out is based on PARTS percentages quoted in the WAPC Transport Impact Assessment Guidelines 2016

Table 2: Traffic generation – Comparison of existing zoning and proposed zoning

Londuce	Potential No. of	Daily	AM	PM	AM Trips		PM Trips	
Land use	Dwellings	Trips	Trips	Trips	IN	OUT	IN	OUT
Existing Residential R20	27	289	26	27	6	20	18	9
Proposed Residential R60	120	550	64	38	16	48	25	13
Net change in traffic		+261	+38	+11	+10	+28	+7	+4







Trip distribution and assignment

The distribution of site traffic has been modelled based on consideration of catchment areas and available traffic routes.

The estimated site traffic distribution is detailed in Figure 4.

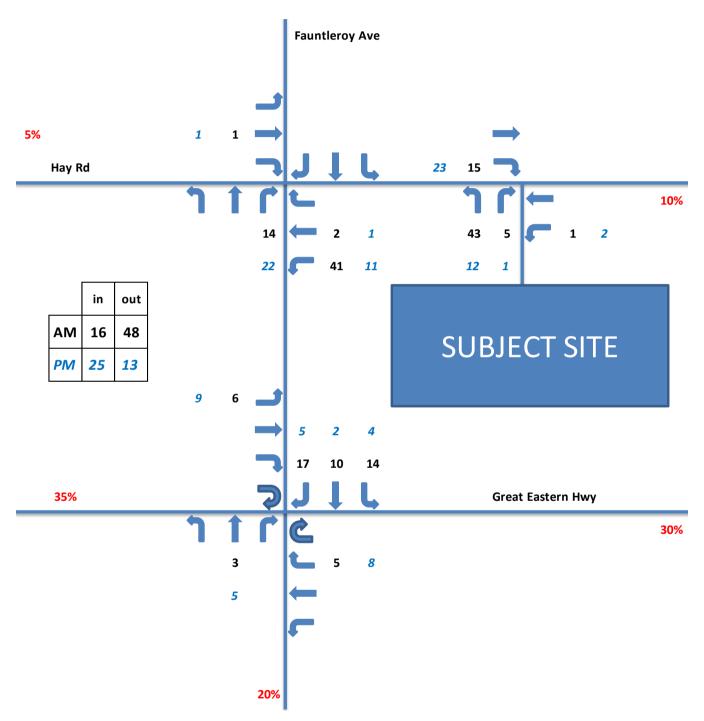


Figure 4: Potential site traffic distribution and assignment (after rezoning)

Impact on surrounding roads

The WAPC Transport Impact Assessment Guidelines for Developments (2016) provides the following guidance on the assessment of traffic impacts:

"As a general guide, an increase in traffic of less than 10 percent of capacity would not normally be likely to have a material impact on any particular section of road but increases over 10 percent may. All sections of road with an increase greater than 10 percent of capacity should therefore be included in the analysis. For ease of assessment, an increase of 100 vehicles per hour for any lane can be considered as equating to around 10 percent of capacity. Therefore, any section of road where development traffic would increase flows by more than 100 vehicles per hour for any lane should be included in the analysis."

The proposed scheme amendment will not increase traffic flows on any roads adjacent to the site by the quoted WAPC threshold of +100vph to warrant further analysis. Therefore, the impact on the surrounding road network is minor.









7. Traffic management on the frontage roads

Information from online mapping services, Main Roads WA, Local Government, and/or site visits was collected to assess the existing traffic management on frontage roads.

Hay Road

Hay Road near the subject site is an approximately 6m wide, two-lane undivided road.

Hay Road is classified as an Access road in the Main Roads WA road hierarchy (Figure 9) and operates under the default built up area speed limit of 50km/h as detailed in Figure 10. Access Roads are the responsibility of Local Government and are for provision of vehicle access to abutting properties (Figure 11).

Traffic surveys undertaken in February 2020 indicate that Hay Road carries 17 vehicles per hour in the weekday AM peak hour and 16vph in the PM peak hour, east of Fauntleroy Avenue. It is estimated that Hay Road carries under 1,000 vehicles per day.

A pedestrian crossing with kerb ramps is provided at the intersection with Fauntleroy Avenue (Figure 15).



Figure 5: Hay Road adjacent to the site (looking east)



Figure 6: Hay Road adjacent to the site (looking west)

Based on site observations, the Hay Road extension has been constructed after the Structure Plan was prepared. The alignment of the extension appears to be outside the original road reserve (presumably due to floodway considerations), with the dual use path now constructed within the original Hay Road reserve alignment. Hay Road now connects all the way between Fauntleroy Avenue and Ivy Street.

Fauntleroy Avenue

Fauntleroy Avenue near the subject site is an approximately 6m wide, two-lane undivided road, with a footpath provided on the eastern side of the road (Figure 7).

Fauntleroy Avenue is classified as an Access Road in the Main Roads WA road hierarchy (Figure 9) and operates under a default built up area speed limit of 50km/h (Figure 10). A 20km/h slow point is in place approaching Great Eastern Highway (Figure 8). Access Roads are the responsibility of Local Government and are for provision of vehicle access to abutting properties (Figure 11).

Traffic surveys undertaken in February 2020 indicate that Fauntleroy Avenue carries 73 vehicles per hour in the weekday AM peak hour, south of Hay Road. It is estimated that this section of Fauntleroy Avenue carries under 2,000 vehicles per day.









Figure 7: Fauntleroy Avenue looking north from Hay Road



Figure 8: Fauntleroy Avenue looking south from Hay Road



Figure 9: Main Roads WA road hierarchy plan

Source: Main Roads WA Road Information Mapping System (RIM)











Figure 10: Main Roads WA road speed zoning plan

Source: Main Roads WA Road Information Mapping System (RIM)

ROAD HIERARCHY FOR WESTERN AUSTRALIA ROAD TYPES AND CRITERIA (see Note 1)

		KUAD	IYPES AND CRITERIA (see	Note ij		
CRITERIA	PRIMARY DISTRIBUTOR (PD) (see Note 2)	DISTRICT DISTRIBUTOR A (DA)	DISTRICT DISTRIBUTOR B (DB)	REGIONAL DISTRIBUTOR (RD)	LOCAL DISTRIBUTOR (LD)	ACCESS ROAD (A)
Primary Criteria						
Location (see Note 3)	All of WA incl. BUA	Only Built Up Area.	Only Built Up Area.	Only Non Built Up Area. (see Note 4)	All of WA incl. BUA	All of WA incl. BUA
2. Responsibility	Main Roads Western Australia.	Local Government.	Local Government.	Local Government.	Local Government.	Local Government.
3. Degree of Connectivity	High. Connects to other Primary and Distributor roads.	High. Connects to Primary and/or other Distributor roads.	High. Connects to Primary and/or other Distributor roads.	High. Connects to Primary and/or other Distributor roads.	Medium. Minor Network Role Connects to Distributors and Access Roads.	Low. Provides mainly for property access.
Predominant Purpose	Movement of inter regional and/or cross town/city traffic, e.g. freeways, highways and main roads.	High capacity traffic movements between industrial, commercial and residential areas.	Reduced capacity but high traffic volumes travelling between industrial, commercial and residential areas.	Roads linking significant destinations and designed for efficient movement of people and goods between and within regions.	Movement of traffic within local areas and connect access roads to higher order Distributors.	Provision of vehicle access to abutting properties
Secondary Criteria						
Indicative Traffic Volume (AADT)	In accordance with Classification Assessment Guidelines.	Above 8 000 vpd	Above 6 000 vpd.	Greater than 100 vpd	Built Up Area - Maximum desirable volume 6 000 vpd. Non Built Up Area - up to 100 vpd.	Built Up Area - Maximum desirable volume 3 000 vpd. Non Built Up Area - up to 75 vpd.
Recommended Operating Speed	60 – 110 km/h (depending on design characteristics).	60 – 80 km/h.	60 – 70 km/h.	50 – 110 km/h (depending on design characteristics).	Built Up Area 50 - 60 km/h (desired speed) Non Built Up Area 60 - 110 km/h (depending on design characteristics).	Built Up Area 50 km/h (desired speed). Non Built Up Area 50 – 110 km/h (depending on design characteristics).
7. Heavy Vehicles permitted	Yes.	Yes.	Yes.	Yes.	Yes, but preferably only to service properties.	Only to service properties.
8. Intersection treatments	Controlled with appropriate measures e.g. high speed traffic management, signing, line marking, grade separation.	Controlled with appropriate measures e.g. traffic signals.	Controlled with appropriate Local Area Traffic Management.	Controlled with measures such as signing and line marking of intersections.	Controlled with minor Local Area Traffic Management or measures such as signing.	Self controlling with minor measures.
Frontage Access	None on Controlled Access Roads. On other routes, preferably none, but limited access is acceptable to service individual properties.	Prefer not to have residential access. Limited commercial access, generally via service roads.	Residential and commercial access due to its historic status Prefer to limit when and where possible.	Prefer not to have property access. Limited commercial access, generally via lesser roads.	Yes, for property and commercial access due to its historic status. Prefer to limit whenever possible. Side entry is preferred.	Yes.
10. Pedestrians	Preferably none. Crossing should be controlled where possible.	With positive measures for control and safety e.g. pedestrian signals.	With appropriate measures for control and safety e.g. median/islands refuges.	Measures for control and safety such as careful siteing of school bus stops and rest areas.	Yes, with minor safety measures where necessary.	Yes.
11. Buses	Yes.	Yes.	Yes.	Yes.	Yes.	If necessary (see Note 5)
12. On-Road Parking	No (emergency parking on shoulders only).	Generally no. Clearways where necessary.	Not preferred. Clearways where necessary.	No – emergency parking on shoulders – encourage parking in off road rest areas where possible.	Built Up Area – yes, where sufficient width and sight distance allow safe passing. Non Built Up Area – no. Emergency parking on shoulders.	Yes, where sufficient width and sight distance allow safe passing.
13. Signs & Linemarking	Centrelines, speed signs, guide and service signs to highway standard.	Centrelines, speed signs, guide and service signs.	Centrelines, speed signs, guide and service signs.	Centrelines, speed signs and guide signs.	Speed and guide signs.	Urban areas – generally not applicable. Rural areas - Guide signs.
14. Rest Areas/Parking Bays	In accordance with Main Roads' Roadside Stopping Places Policy.	Not Applicable.	Not Applicable.	Parking Bays/Rest Areas. Desired at 60km spacing.	Not Applicable.	Not Applicable.

Figure 11: Road types and criteria for Western Australia

Source: Main Roads Western Australia D10#10992









Midblock road capacity

The post development midblock capacity of the frontage roads was assessed against the thresholds in Table 3.

Level of Service (LOS) (A) represents a free flow condition where drivers can choose their preferred speed and are not affected by other vehicles. LOS (F), on the other hand, represents a congested traffic situation where drivers have no choice of speed and are frequently forced to stop. Anything above the LOS (E) is LOS (F) which is the point of forced traffic flows where congestion occurs.

All frontage roads are expected to operate under conditions below their maximum midblock operating capacity after the subject site is developed with the proposed scheme amendment uses.

Table 3: Upper limits of daily traffic volumes per lane for each level of service

Road type	Upper limits of daily traffic volumes per lane for level of service					
	Α	В	С	D	Е	
2-lane undivided road	5 100	5 950	6 800	7 650	8 500	
2-lane divided road	5 700	6 650	7 600	8 550	9 500	
4-lane undivided road	5 250	6 125	7 000	7 875	8 750	
4-lane divided road	6 600	7 700	8 800	9 900	11 000	
6-lane divided road	6 600	7 700	8 800	9 900	11 000	
4-lane expressway	7 800	9 100	10 400	11 700	13 000	
4-lane freeway	6 000	10 000	14 000	18 000	20 000	
6-lane freeway	6 000	10 000	14 000	18 000	20 000	
8-lane freeway 1	6 000	10 000	14 000	18 000	20 000	

Source: Review of Major Roads in the South West Metropolitan Corridor: Traffic congestion Technical Paper, Local Impacts Committee, December 2004

8. Public transport access

Information was collected from Transperth and the Public Transport Authority to assess the existing public transport access to and from the site.

The subject site has access to the following bus services within walking distance:

- Bus Route 36: Perth Midland Stn via Great Eastern Highway.
- Bus Route 295: Perth Walliston.
- Bus Route 296: Perth Kalamunda via Gooseberry Hill Rd.
- Bus Route 299: Perth Walliston via Kalamunda Rd.

Bus services provide a viable alternative mode of transport for future residents. There are bus stops located on Great Eastern Highway, less than 400m walk or 5 minutes from the site. Bus lanes are provided on Great Eastern Highway to improve reliability and speed of bus services (Figure 12).

The public transport network plan is shown in Figure 13.



Figure 12: Bus and cycle lanes on Great Eastern Highway









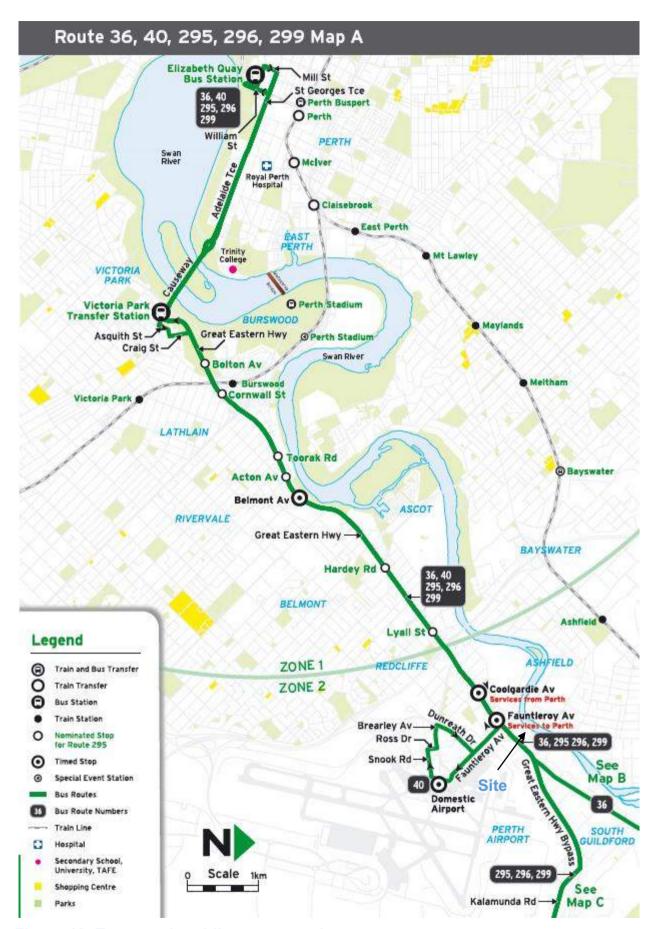


Figure 13: Transperth public transport plan

Source: Transperth

The Forrestfield-Airport rail link is presently under construction and is expected to be operational in late 2021. This project is part of the State Government's METRONET project to connect suburbs and reduce road congestion. It has also been identified as a national priority infrastructure project. The project will provide a rail link from Forrestfield to Perth CBD. The proposed Redcliffe Station will be closest to the subject site with feeder bus services.

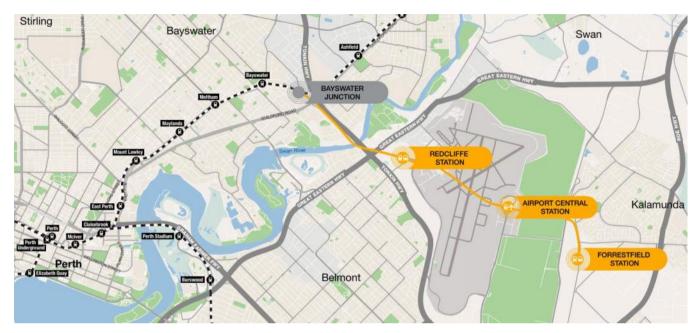


Figure 14: Forrestfield-Airport rail link plan

Source: Metronet Project overview Fact Sheet | December 2018







9. Pedestrian access

Information from online mapping services, Main Roads WA, Local Government, and site visits was collected to assess the pedestrian access for the subject site.

Pedestrian facilities and level of service

A footpath is provided on the eastern side of Fauntleroy Avenue near the subject site. A dual use path is provided along the newly constructed portion of Hay Road (Figure 16).

A pedestrian crossing with kerb ramps is provided on Hay Road at the intersection with Fauntleroy Avenue (Figure 15). The WAPC Transport Impact Assessment Guidelines for Developments (2016) provide warrants for installing pedestrian priority crossing facilities. This is based on the volume of traffic as the key factor determining if pedestrians can safely cross a road. The guidelines recommend pedestrian priority crossing facilities be considered once the peak hour traffic exceeds the volumes detailed in Table 4.

The traffic volumes in this table are based on a maximum delay of 45 seconds for pedestrians, equivalent to Level of Service E. Traffic volumes adjacent to the site are expected to be below the threshold for safe pedestrian crossing after ultimate development of the site. Therefore, pedestrian crossing level of service is expected to be satisfactory on the adjacent roads.

Table 4: Traffic volume thresholds for pedestrian crossings

Road cross-section	Maximum traffic volumes providing safe pedestrian gap			
2-lane undivided	1,100 vehicles per hour			
2-lane divided (with refuge)	2,800 vehicles per hour			
4-lane undivided*	700 vehicles per hour			
4-lane divided (with refuge)*	1,600 vehicles per hour			



Figure 15: Pedestrian crossing on Hay Road south of Fauntleroy Avenue









Figure 16: Dual use path next to Hay Road

Geospatial analysis was undertaken to estimate the walkable 500m and 800m catchments from the subject site. As detailed in Figure 17, there are some existing attractions and potential future development which is located within the catchments. Bus services are accessible within the catchments however the future Redcliffe Station is further away. Access to the future Redcliffe Station is within cycling or micro-mobility distance at approximately 1.5km travel distance from the site.

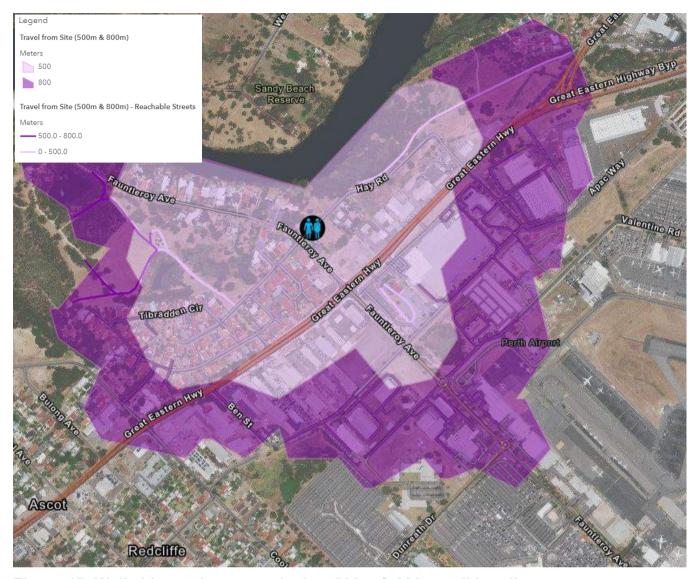


Figure 17: Walkable catchment analysis – 500m & 800m walking distance







10. Bicycle access

Information from online mapping services, Department of Transport, Local Government, and/or site visits was collected to assess bicycle access for the site.

Bicycle network

The Department of Transport Perth Bicycle Network Map (see Figure 18) shows the existing cyclist connectivity to the subject site. Shared paths are provided along parts of Hay Road (Figure 16) and within short cycling distance along the Swan River. Cycle lanes are provided on Great Eastern Highway. Hay Road is rated as a 'good road riding environment'.

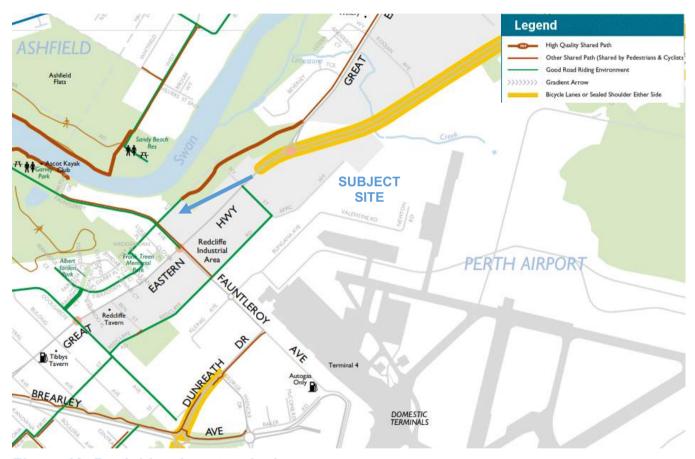


Figure 18: Perth bicycle network plan

Bicycle parking and end of trip facilities

Bicycle parking should be considered at Development Application stages.

11. Site specific issues

No additional site-specific issues were identified within the scope of this assessment.

12. Safety issues

As detailed in Figure 19, there has been only one crash recorded at the intersection of Hay Road / Fauntleroy Avenue in the last 5 years.

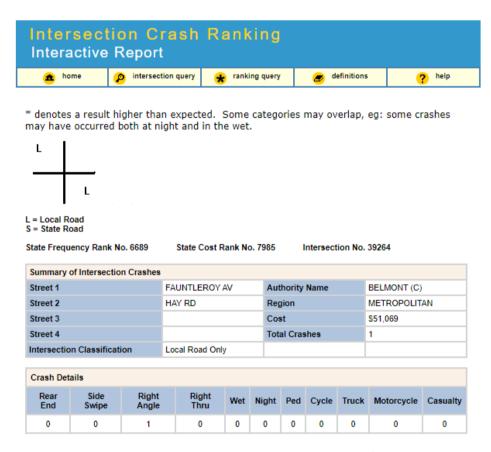


Figure 19: 5-year crash history – intersection of Hay Rd / Fauntleroy Ave









13. Conclusion

This Transport Impact Statement has been prepared by Urbii on behalf of PHB01 Pty Ltd, with regards to the proposed scheme amendment application for the DA 9 Precinct within the City of Belmont.

The subject site is situated at the corner of Fauntleroy Avenue and Hay Road and forms part of the Development Area 9 (DA 9) Structure Plan. The DA 9 Structure Plan was prepared in 2013 on behalf of the City of Belmont and designated the subject site area to be zoned R20/R60. Due to legislative changes that altered the status of structure plans to 'due regard' in 2015, a scheme amendment is now required to re-establish the R60 density coding.

Detailed design issues such as car park design and swept path analysis of service vehicles is not a critical consideration at this stage and will be considered at Development Application stages.

The site features good connectivity with the existing road network. There is good public transport coverage through nearby bus and future train services.

The traffic analysis undertaken in this report shows that the net change in traffic generation as a result of the proposed scheme amendment is minimal (less than 100vph on any lane) and as such would have insignificant impact on the surrounding road network.

It is concluded that the findings of this Transport Impact Statement are supportive of the proposed scheme amendment.

Appendices









Appendix B: Site Plan









