

Transport Impact Assessment

Woodside Care Precinct

CW1120100



Prepared for
Hall & Prior

25 May 2022

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1 Introduction

1.1 Background

Cardno now Stantec was commissioned by Hall & Prior ('the Client') to prepare a Transport Impact Assessment for the residential aged care facility (RACF) located at 18 and 26 Dalgety Street and 29 Fortescue Street, East Fremantle ('the Site'). The Site boundary is shown in **Figure 1-1**.

Figure 1-1 Site Boundaries



Source: Metromap (2022)

This report aims to assess the impacts of the proposed development upon the adjacent road network and the proposed provisions for car parking for the proposed development. This report has been prepared in accordance with the Western Australian Planning Commission (WAPC) *Transport Assessment Guidelines for Developments: Volume 4 – Individual Developments (2016)*. **Appendix A** of this report includes a checklist of the WAPC guidelines.

The scope of work comprises of the following:

- > Summary of the existing and proposed infrastructure within the context of the surrounding area;
- > Background information for the proposed development;
- > Desktop assessment to determine the traffic generation, distribution and assignment for the proposed development;
- > SIDRA assessment of key intersections and accesses;
- > Assessment of the proposed provisions of car parking for the Site;
- > Mitigation measures and recommendations (if required); and
- > Conclusions and summary.

2 Existing Site Situation

2.1 Site Location

The proposed Site is located on No. 18 and 26 Dalgety Street and No. 29 Fortescue Street, in the Town of East Fremantle. The Site was the location of the former Woodside Maternity Hospital, which is listed as a heritage property. The existing structure currently has two accesses, both from Dalgety Street.

The Site is bounded by Dalgety Street to the west, Fortescue Street to the east, and residential properties to the north and south. Both Dalgety Street and Fortescue Street intersect with Canning Highway in the north and Fletcher Street in the south, as shown in **Figure 2-1**.

Figure 2-1 Site Location

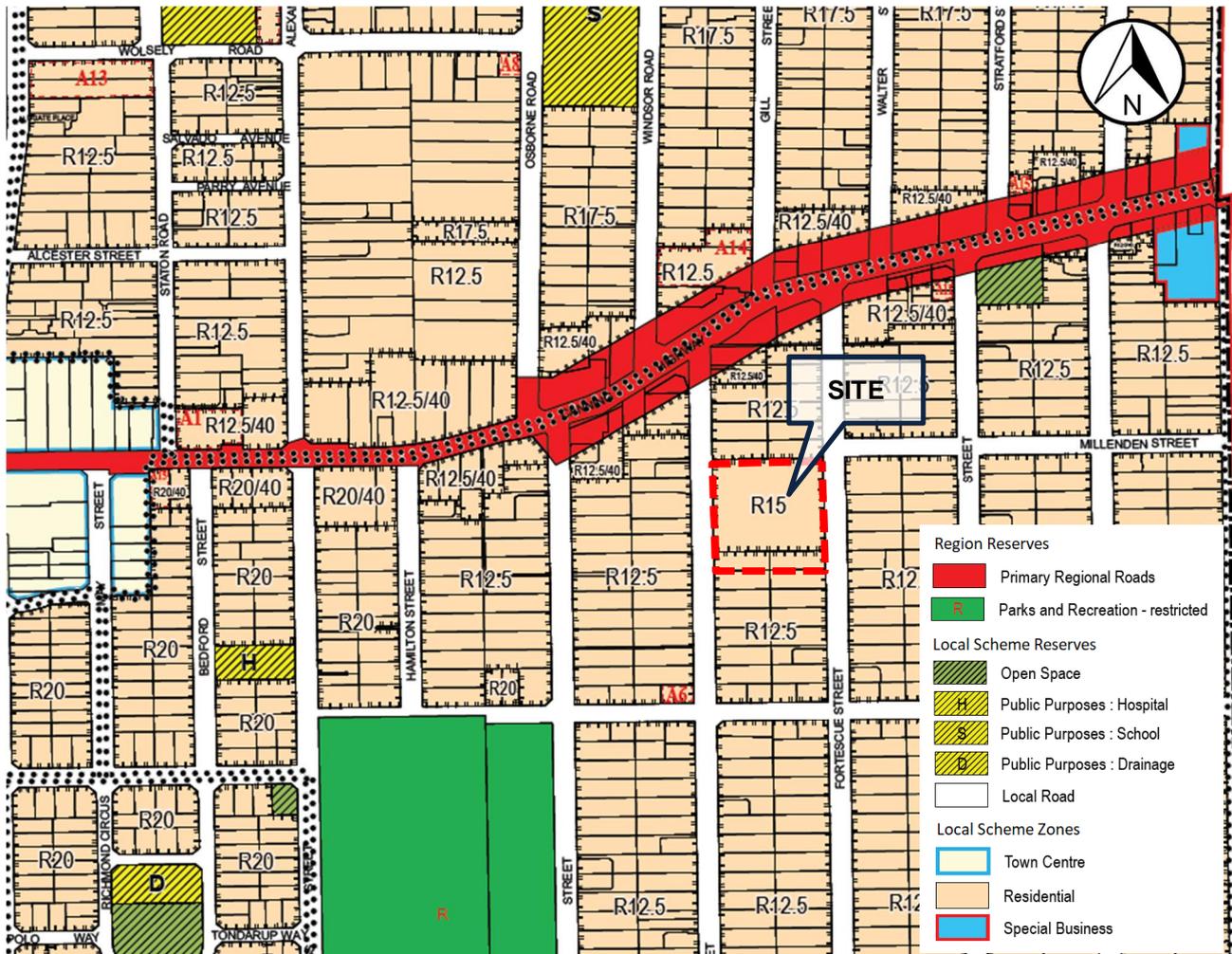


Source: Metromap (2022)

2.2 Surrounding Land Use

The Town of East Fremantle’s *Town Planning Scheme No. 3* zoning map (see **Figure 2-2**) shows that the Site is zoned as residential. The majority of land uses surrounding the Site are zoned as residential, with ‘parks and recreation’ to the southwest and ‘open space’ in the northeast and southwest directions. East Fremantle’s town centre is located west of the Site, while some properties zoned as ‘special business’ are located in the east direction along Petra Street.

Figure 2-2 Zoning Map

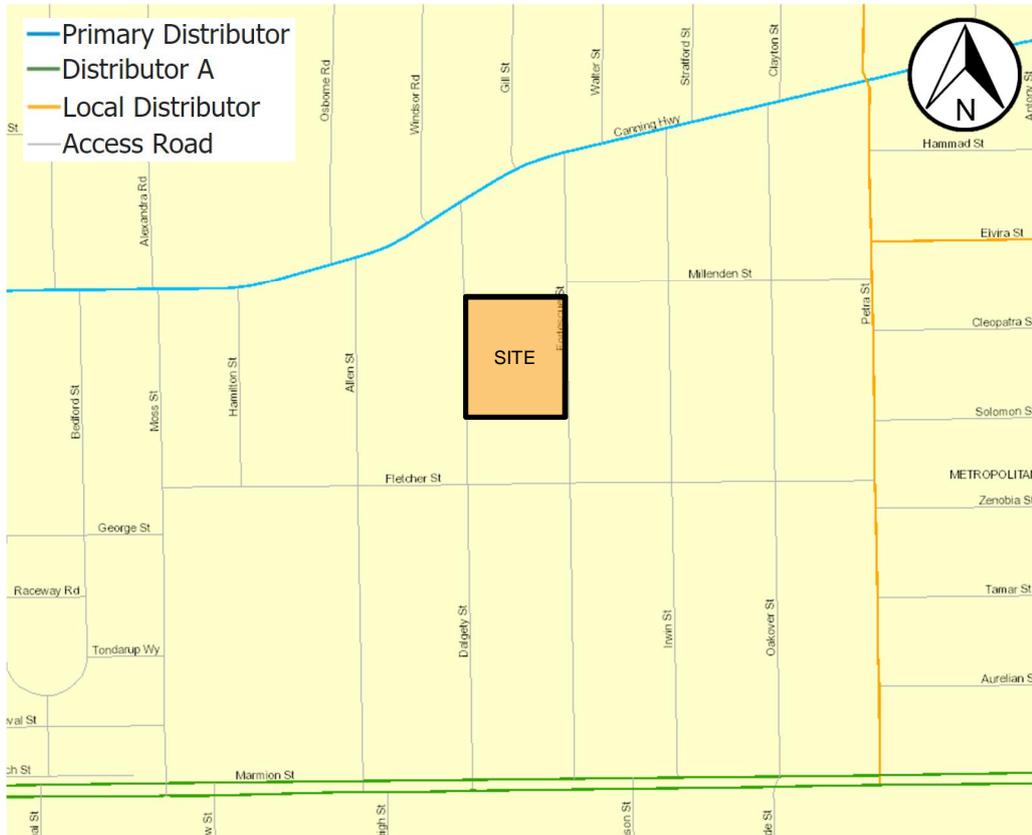


Source: Town of East Fremantle’s *Town Planning Scheme No. 3*

2.3 Existing Road Network

The layout and classification of the roads under the *Main Roads WA Road Hierarchy* surrounding the Site are presented in **Figure 2-3**.

Figure 2-3 Road Network Classification



Source: MRWA Road Information Mapping System

The characteristics of the surrounding road network are presented in **Table 2-1**.

Table 2-1 Road Network Description

Road Name	Road Hierarchy	Jurisdiction	Road Network			
			No. of Lanes	No. of Footpaths	Width (m)	Posted Speed Limit (km/h)
Canning Highway	Primary Distributor	Main Roads	4 (divided)	2	13.6 (including 1m median)	60
Marmion Street	Distributor A	Local Govt.	2 (divided)	2	21.0 (including 7.2m on-street parking/bike lane and 6.6m median)	60
Petra Street	Local Distributor	Local Govt.	2	2	9.3m (including 2.8m bike lane)	50
Dalgety Street	Access Road	Local Govt.	2	2	6.3	50
Fortescue Street	Access Road	Local Govt.	2	2	6.6	50
Fletcher Street	Access Road	Local Govt.	2	1	10	50

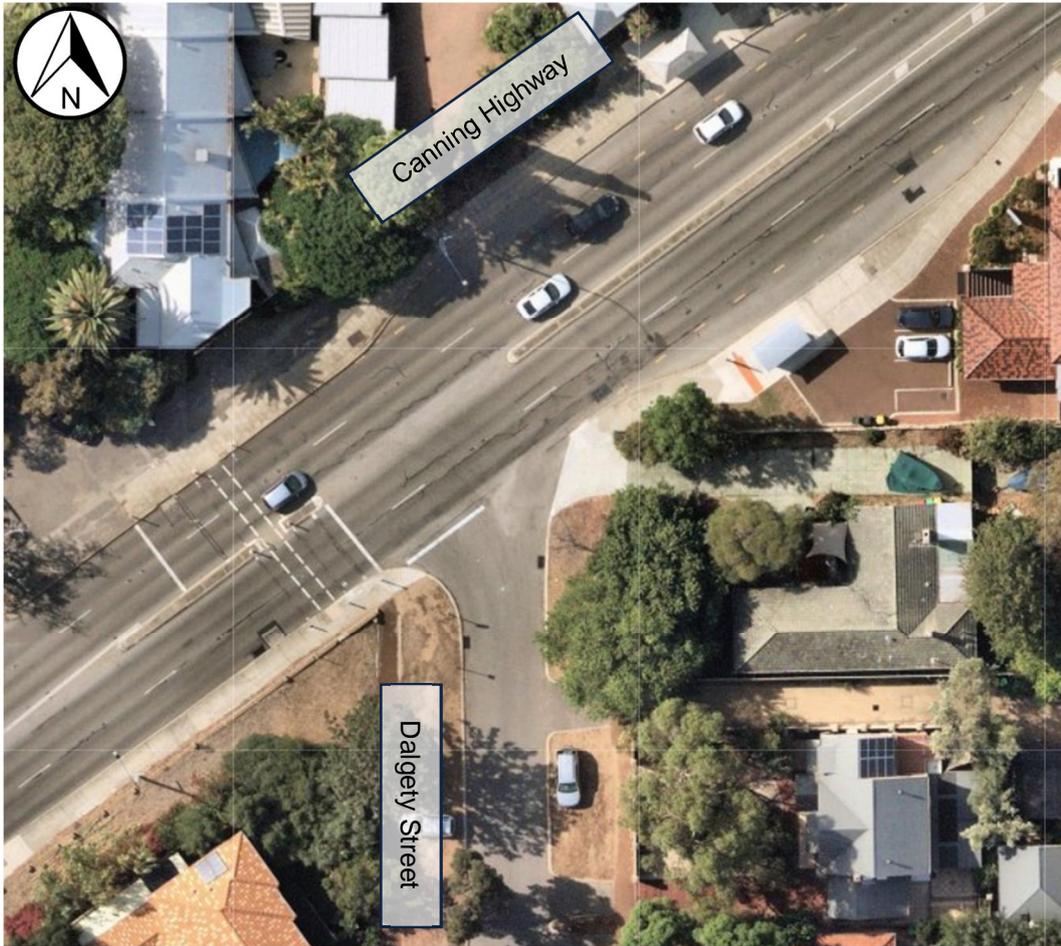
Source: Nearmap, MRWA Road Information Mapping System

2.4 Existing Intersections

2.4.1 Canning Highway/Dalgety Street

The Canning Highway/Dalgety Street intersection is a three-way stop controlled intersection located north of the Site as shown in **Figure 2-4**. A school crossing is located at the west leg of the intersection, while bus bays are located on both sides of the east leg of the intersection.

Figure 2-4 Canning Highway/Dalgety Street Intersection

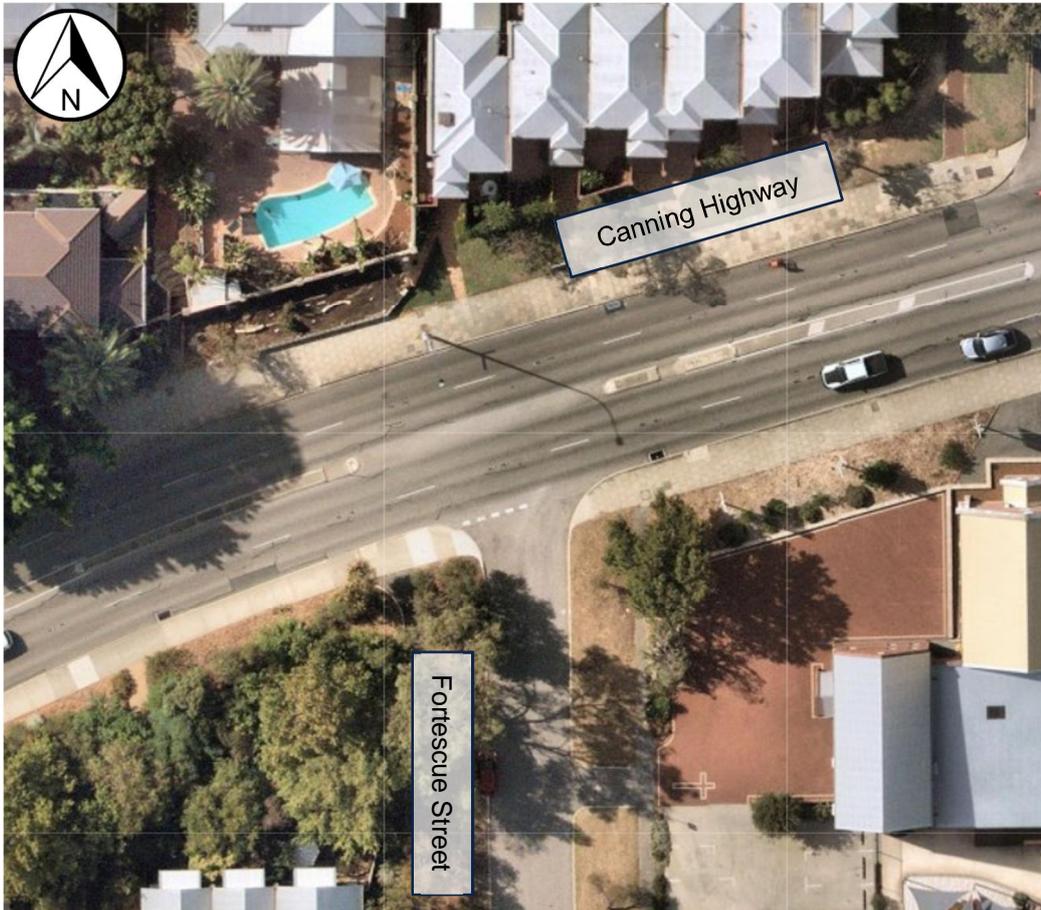


Source: Metromap (2022)

2.4.2 Canning Highway//Fortescue Street

The Canning Highway/Fortescue Street intersection is a three-way give way controlled intersection located north of the site as shown in **Figure 2-5**.

Figure 2-5 Canning Highway//Fortescue Street Intersection

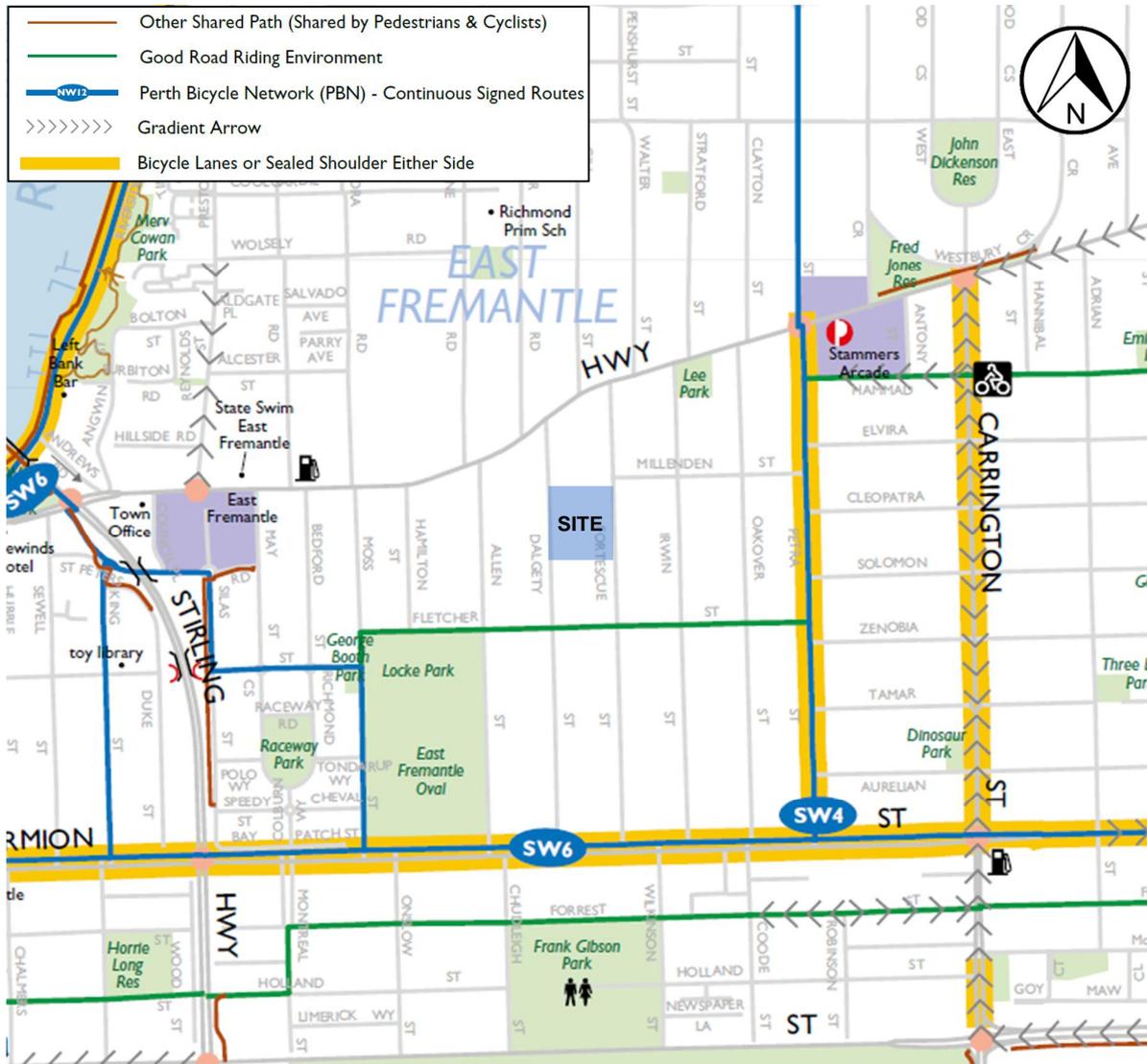


Source: Metromap (2022)

2.5 Existing Pedestrian / Cycle Networks

According to the Perth, Fremantle and Stirling Comprehensive Bike Map shown in **Figure 2-6**, bicycle lanes or sealed shoulders are present along Marmion Street in the south and Petra Street in the east. These two roads form part of the Perth Bicycle Network. Good riding environments are indicated along Fletcher Street south of the Site, while some shared paths are present in the town centre to the west.

Figure 2-6 Existing Bike Facilities in the Town of East Fremantle

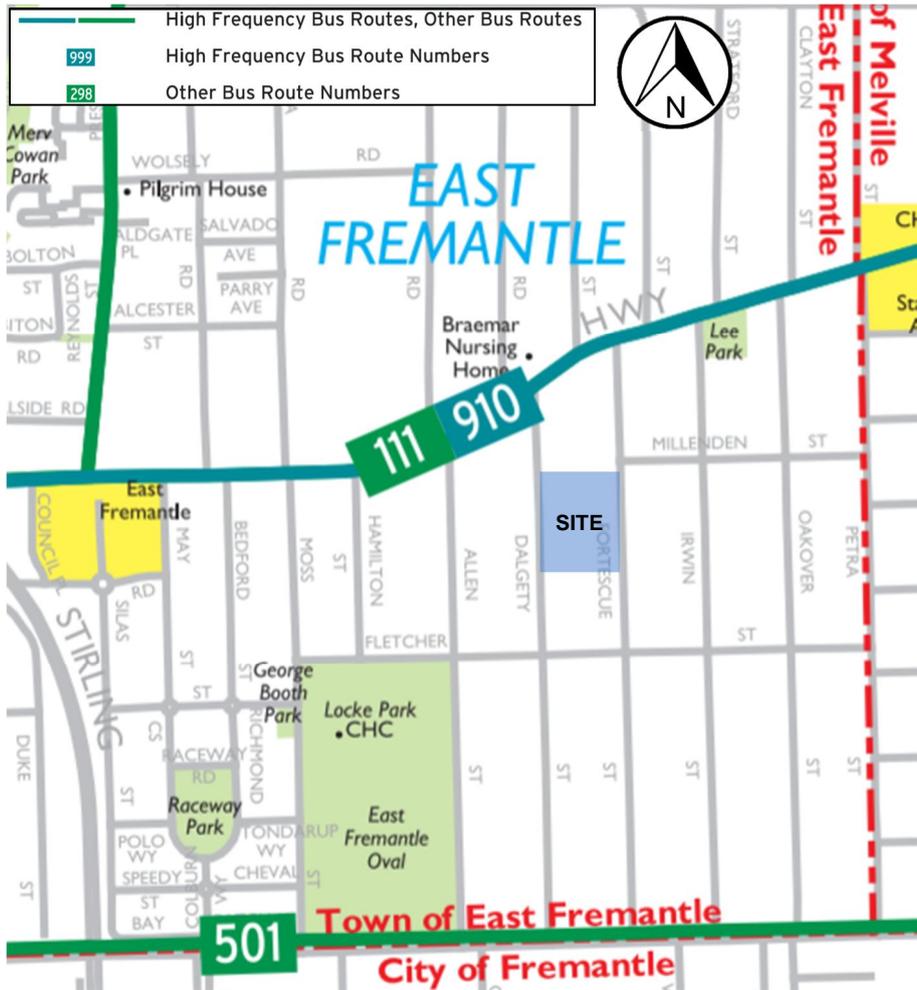


Source: Perth, Fremantle and Stirling Comprehensive Bike Map (2016)

2.6 Existing Public Transport Facilities

The *Transperth* network surrounding the Site is shown in **Figure 2-7**. The figure shows that the Site is well served by Route 910 and Route 111, which both run along Canning Highway providing easy access to Fremantle Station and Perth Busport. The nearest bus stops are Canning Highway before Dalgety Street and Canning Highway after Windsor Road, which are about 200 metres away from the Site. In addition, Route 501 runs along Marmion Street (terminating at Bull Creek Station to the East and Fremantle Station to the west), with the nearest bus stops located about 700 metres from the Site. The presence of a high frequency bus route within 200 metres from the Site provides it with excellent accessibility in terms of public transport.

Figure 2-7 Public Transport Facilities



Source: *Transperth*

The frequency of bus and train operations near the Site are shown in **Table 2-2**.

Table 2-2 Bus Route Frequency

Bus Service	Weekday Peak	Weekday Off-peak	Saturday	Sunday & Public Holiday
111 (Perth – Fremantle, via Kwinana Fwy & Canning Hwy)	10 mins	30-60 mins	No service	No service
501 (Fremantle Stn – Bull Creek Stn, via Marmion St)	10-15 mins	1 hr	15-60 mins	15-60 mins
910 (Perth – Fremantle Stn, via Canning Hwy)	10-15 mins	30 mins	15-30 mins	15-60 mins

Source: *Transperth*

2.7 Existing Traffic Volumes and Surveys

Midblock traffic data within the vicinity of the Site was obtained from Main Roads' traffic map and summarised in **Table 2-3**.

Table 2-3 Existing Traffic Volumes

Location	Direction	Year	Daily Volume (Mon-Sun)	%Heavy Vehicle
Canning Hwy West of Carrington St (SLK 13.92)	Eastbound	2018/19	9,860	6.1%
	Westbound	2018/19	9,423	6.7%
Canning Hwy West of Preston Point Rd (East Fremantle) (SLK 15.23)	Eastbound	2020/21	10,879 (cars only)	NA
	Westbound	2020/21	11,296 (cars only)	NA
Marmion St West of Carrington St (SLK 0.16)	Eastbound	2018/19	7,185	8.3%
	Westbound	2018/19	6,079	6.2%
Marmion St East of Stirling Hwy (SLK 0.56)	Eastbound	2018/19	5,670	6.3%
	Westbound	2018/19	4,643	6.6%

Source: Main Roads Traffic Map

Additionally, traffic surveys were conducted on 3 August 2020 during the AM and PM peak period for Dalgety Street and Fortescue Street and is summarised in **Table 2-4**.

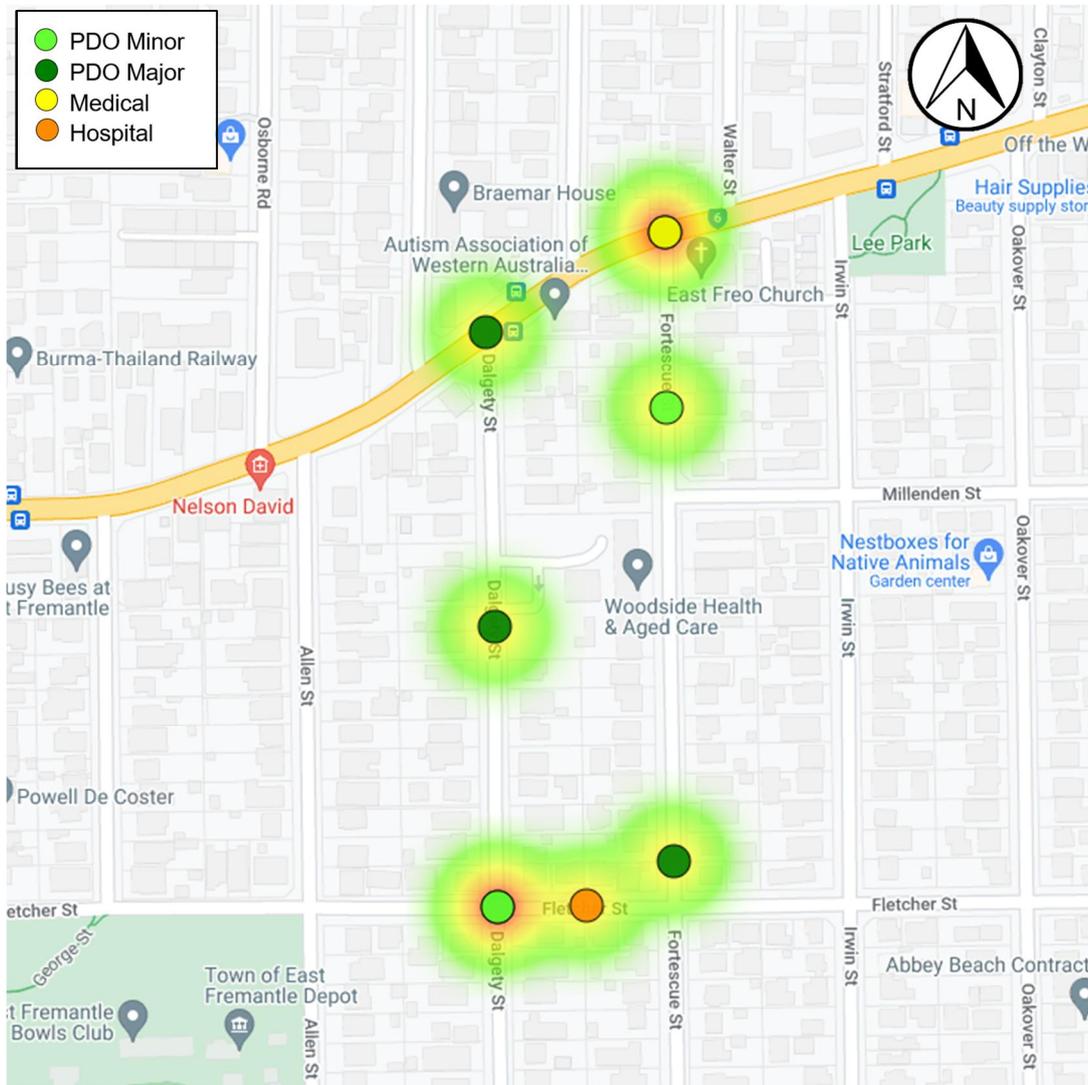
Table 2-4 Traffic Counts along Dalgety Street and Fortescue Street

Location	AM Peak Period (vph)	PM Peak Period (vph)
Dalgety Street	68	64
Fortescue Street	55	24

2.8 Crash Assessment

A search of the *Main Roads WA Reporting Centre* for crash data was undertaken. This search covered all recorded traffic accidents between 1 January 2017 and 31 December 2021, which is illustrated in **Figure 2-8**. The summary of total crashes, midblock crashes, and intersection crashes are presented in **Table 2-5**, **Table 2-6** and **Table 2-7**.

Figure 2-8 Crash Severity Heat Map



Source: Main Roads Crash Data

Table 2-5 Total Crashes

TOTAL CRASHES						
Type of Crash (RUM Code)	Fatal	Hospital	Medical	Major Property Damage	Minor Property Damage	Total Crashes
Rear End	-	1	1	1	-	3
Right Angle	-	-	-	2	-	2
Non Collision	-	-	-	-	1	1
Sideswipe Same Direction	-	-	-	1	1	2
Unspecified	-	-	-	1	-	1
Total	-	1	1	5	2	9

Table 2-6 Intersection Crashes

INTERSECTION CRASHES						
Intersection Name	Fatal	Hospital	Medical	Major Property Damage	Minor Property Damage	Total Crashes
Fletcher St - Dalgety St	-	-	-	1	1	2
Fortescue St - Canning Hwy	-	-	1	1	-	2
Dalgety St - Canning Hwy	-	-	-	1	-	1
Total	-	-	1	3	1	5

Table 2-7 Midblock Crashes

MIDBLOCK CRASHES						
Road Name	Fatal	Hospital	Medical	Major Property Damage	Minor Property Damage	Total Crashes
Fletcher St	-	1	-	-	-	1
Fortescue St	-	-	-	1	1	2
Dalgety St	-	-	-	1	-	1
Total	-	1	-	2	1	4

A summary of the crash data is as follows:

- > 9 crashes were recorded in total;
- > No fatalities were recorded; and
- > A majority of the crashes recorded resulted in major/minor property damage.

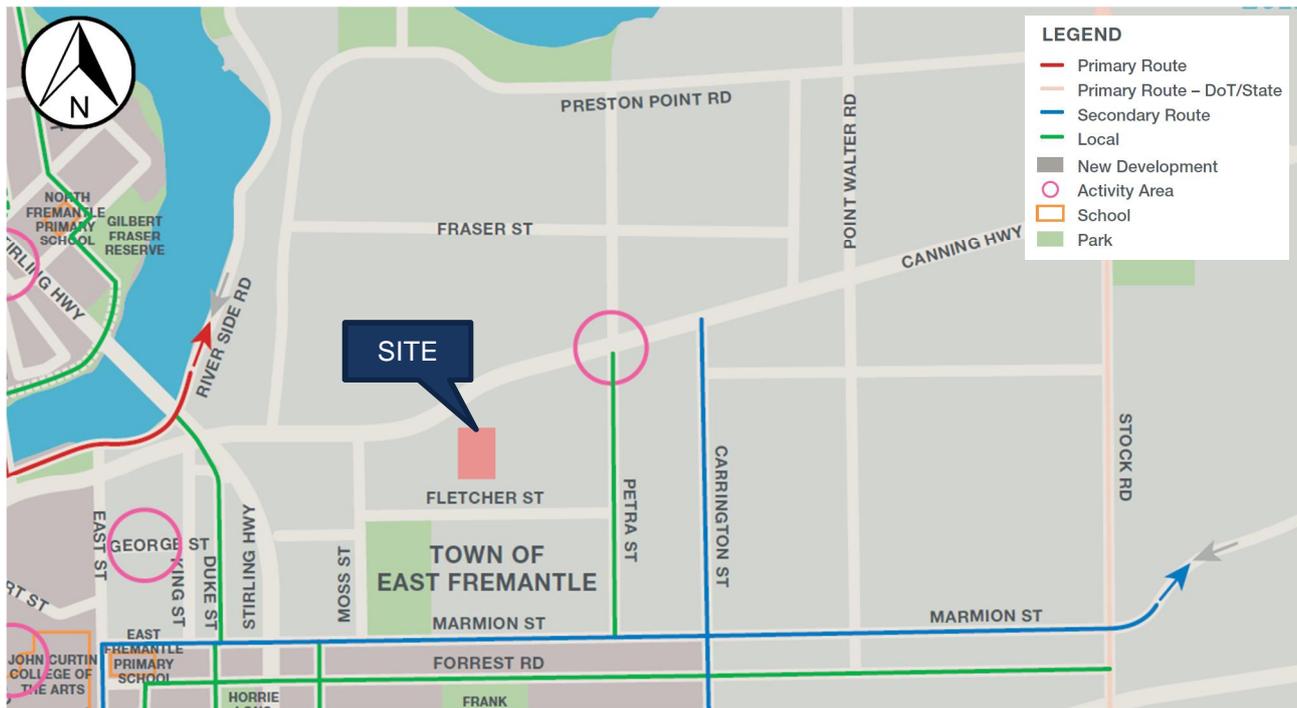
The number of recorded crashes on roads adjacent to the Site is not considered to be excessive and it is expected that the development will not cause any material change to road safety in the area.

3 Changes to Surrounding Area

3.1 Pedestrian/Cycle Networks

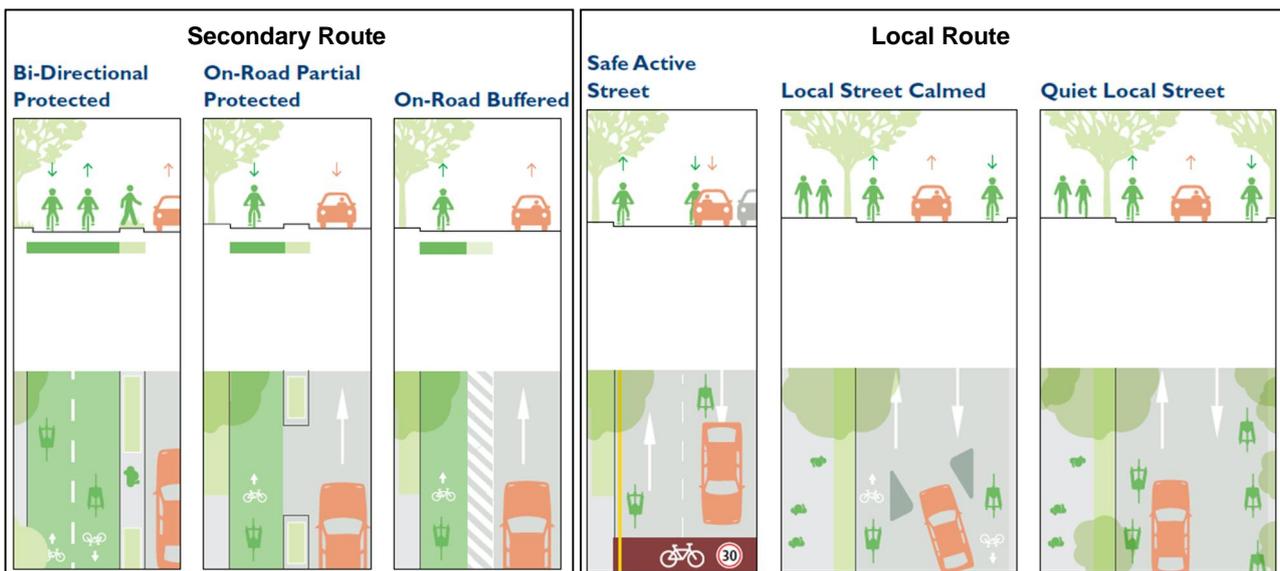
The 2019-2024 Bike Plan for the City of Fremantle is illustrated in **Figure 3-1**, shows the long term aspirational cycling network. Petra Street, located east of the Site, is designated as a local route, while Marmion Street, located south of the Site, is designated as a secondary route. **Figure 3-2** shows the cycling infrastructure cross sections associated with these route types.

Figure 3-1 Proposed Bike Facilities in the Town of East Fremantle



Source: City of Fremantle 2019-2024 Bike Plan

Figure 3-2 Cross-sections for bike routes



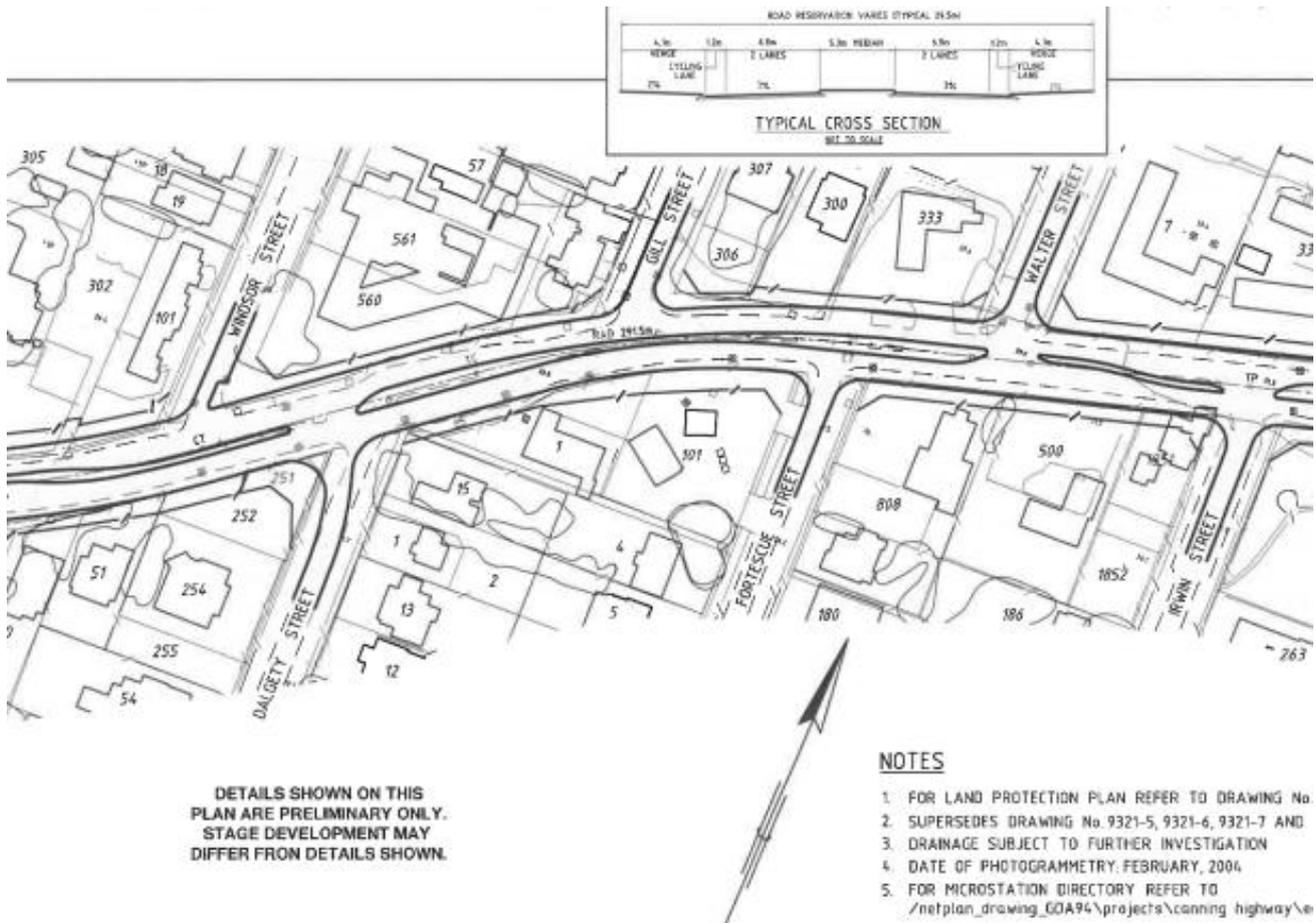
Source: City of Fremantle 2019-2024 Bike Plan

3.2 Road Network

Main Roads WA's long-term plans for Canning Highway involve upgrading the road to a dual carriageway. **Figure 3-3** shows the proposed dual carriageway concept along Canning Highway, which includes the following changes/upgrades to Dalgety Street and Fortescue Street:

- > Full movement access is retained at the Canning Highway/Dalgety Street intersection and a turning pocket is provided for the right turn movement into Dalgety Street; and
- > The Canning Highway/Fortescue Street intersection will be restricted to left in/left out only. As a result, right turning traffic will likely be split between Dalgety Street and Irwin Street.

Figure 3-3 Canning Highway Dual Carriageway Concept Layout



Source: Main Roads WA

3.3 Public Transport Services

Cardno contacted the Public Transport Authority and was informed that there were no service changes in the short term. Additionally, Route 111 primarily operates as a peak hour supplement to the 910 service along Canning Highway.

3.4 Intersection Controls

There are no changes of the intersection controls in the vicinity of the Site.

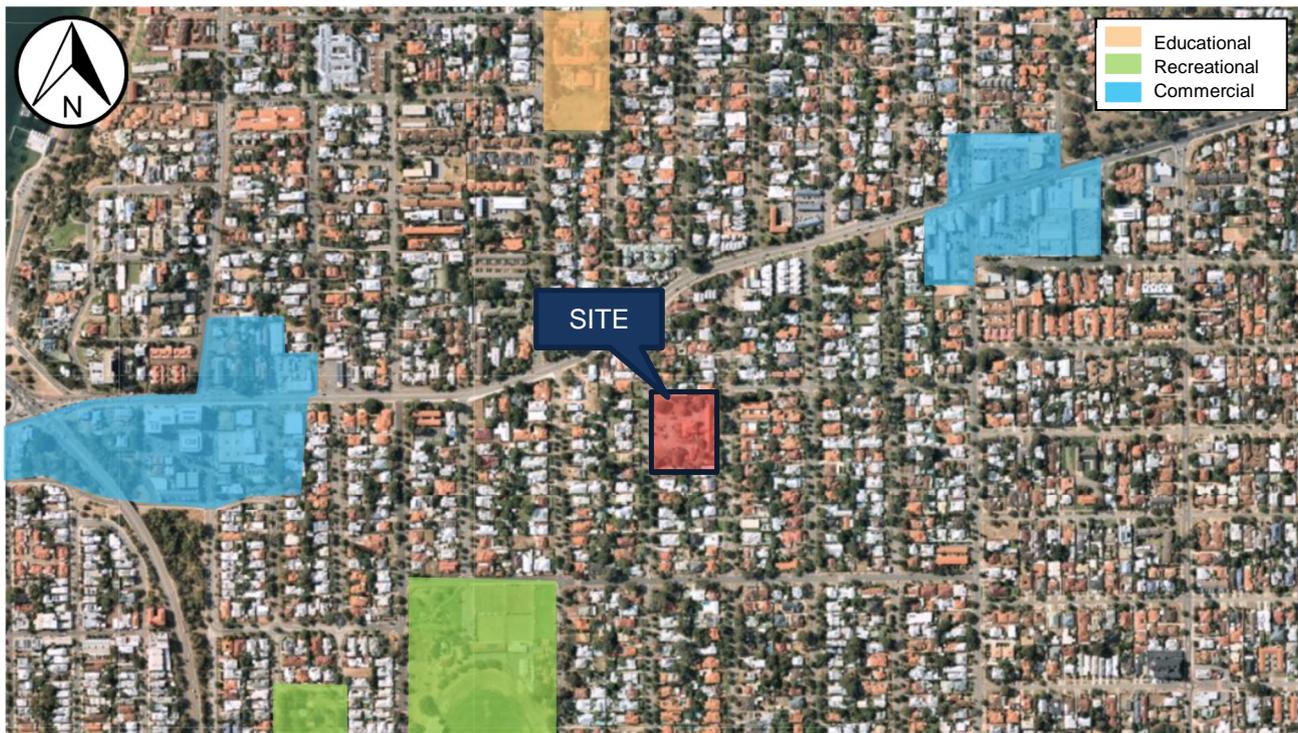
4 Integration with Surrounding Area

4.1 Surrounding Attractors/Generators

The key traffic generators near the Site are the following:

- > East Fremantle Town Centre, located west of the Site;
- > East Fremantle Oval and Raceway Park, located southwest of the Site;
- > Richmond Primary School, located north of the Site; and
- > Commercial and retail developments surrounding Canning Highway/Petra Street intersection.

Figure 4-1 Surrounding Attractors/Generators



Source: Metromap (2022)

4.2 Level of Accessibility

Trip generators and attractors discussed in the previous section are all within 800 metres of the Site. Access to the Site is not an issue in terms of mode of transportation, as it can be accessed by walking, cycling or driving. Public transport access to the Site is via the buses services operating along Canning Highway (Route 910 and 111) located approximately 150m from the Site. Overall, the Site has an excellent level of accessibility to and from the surrounding traffic generators and attractors.

4.3 Proposed Changes to Surrounding Land Use

There are no proposed land use changes within the vicinity of the Site.

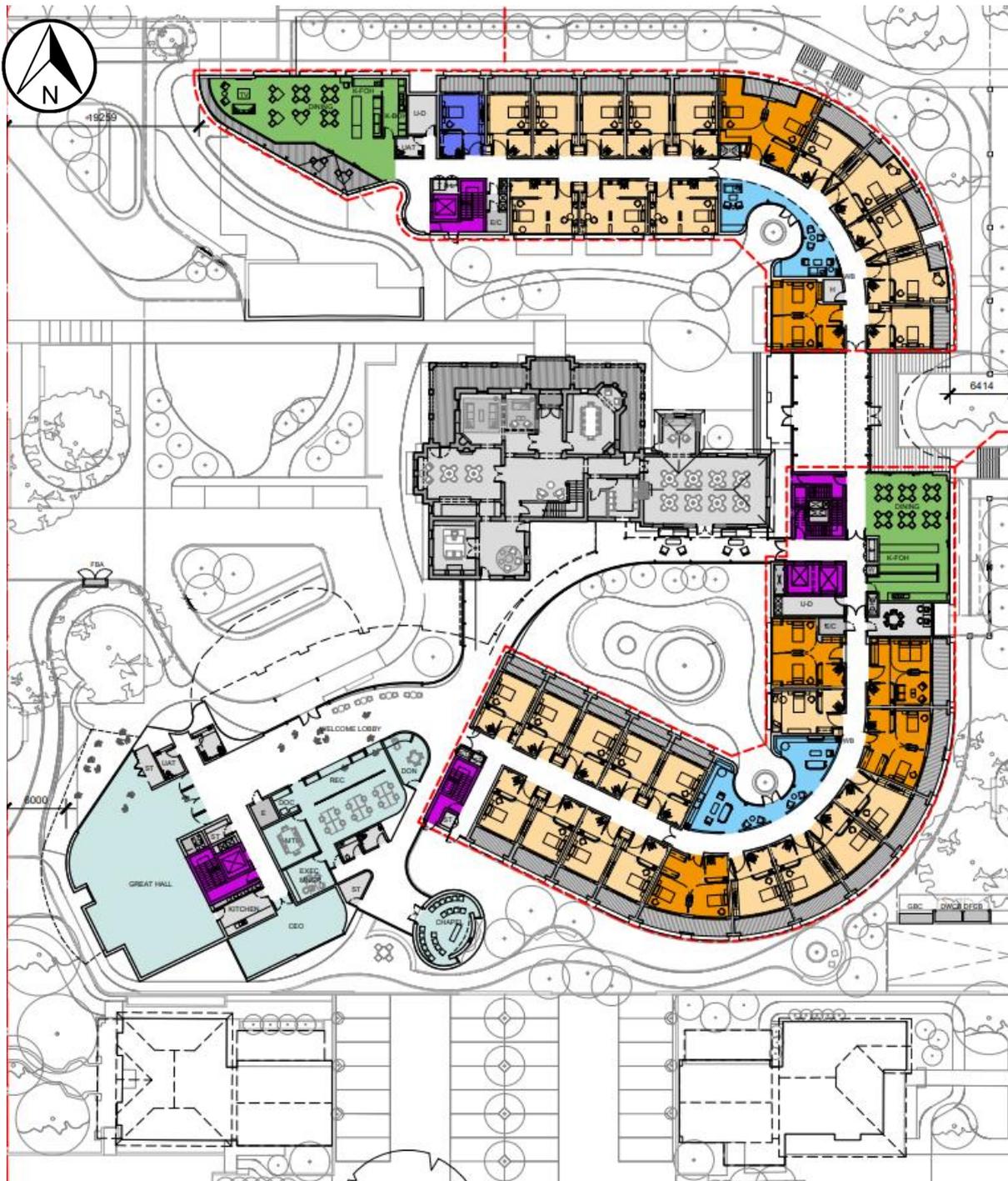
5 Development Proposal

5.1 Proposed Land Use

The proposed development is a residential aged care facility, which will deliver high care accommodation, specialist palliative care, disability and young disabled care services, and healing and wellness services. Along with the use of two existing residential dwellings that will provided for supported independent living arrangements.

Figure 5-1 shows the proposed layout of the development. The development plans are included in **Appendix B**.

Figure 5-1 Ground Floor Plan of the Site



Source: Kerry Hill Architects (2022)

5.2 Access Arrangements

Four access points are proposed for the development, with three on the western boundary (fronting Dalgety Street) and one on the eastern boundary (fronting Fortescue Street), as shown in **Figure 5-2**.

Two accesses are exclusively for pick-up/drop-off (for the wellness centre and the RACF), while the other two are entrance/exit to the basement carpark.

Additionally, the existing access locations for the the single residential dwellings will be retained.

Figure 5-2 Site Accesses



Source: Kerry Hill Architects (2022)

5.3 Car Parking Provision

The Town of East Fremantle’s Local Planning Policy No. 3 car parking requirements are as detailed in **Table 5-1**.

Table 5-1 Parking Requirements

Land Use	Rate	Yield	Car bay requirement	Car parking provision
Nursing Home	1 space per 5 beds	158 Bed	32 bays	90 bays
	1 space per staff member	58* Staff	58 bays	
Consulting Room (Wellness Centre)	2 spaces for every consulting room	5 Rooms	10 bays	
	1 space for every staff member	0* Staff	Nil	
Single Dwelling	2 car parking bays per dwelling	2 Dwellings	4 bays	4 bays
Total			104 bays	94 bays

*peak staff numbers for the entire Site is 58

A total of 94 bays are proposed on-site. 87 bays are proposed to be located on the lower ground floor and 3 bays located on the ground level. 4 bays are provided as part of the existing single residential dwellings.

The proposed parking provision is intended to meet Towns’ requirements, while also accommodating the additional requirements of the operators (as summarised in the table above). In addition, the 10 public on-street bays located along Fortescue Street can also be utilised by visitors to the Site.

This additional parking provision is also intended to minimise overspill onto kerbside street parking; a subject of previous concern by local residents along Dalgety Street where visitors from the Autism Centre currently park (as shown in **Figure 5-3**).

Figure 5-3 Kerbside Street Parking Along Dalgety Street



5.4 Service Vehicle Provision

Swept paths for the accesses to the development were checked for an 8.8m Medium Rigid Vehicle (MRV), a 10.1m refuse truck (Veolia), a 22-seater bus, and a 12-seater resident outing bus, with profiles shown in **Figure 5-4**.

Figure 5-4 Vehicle Profiles

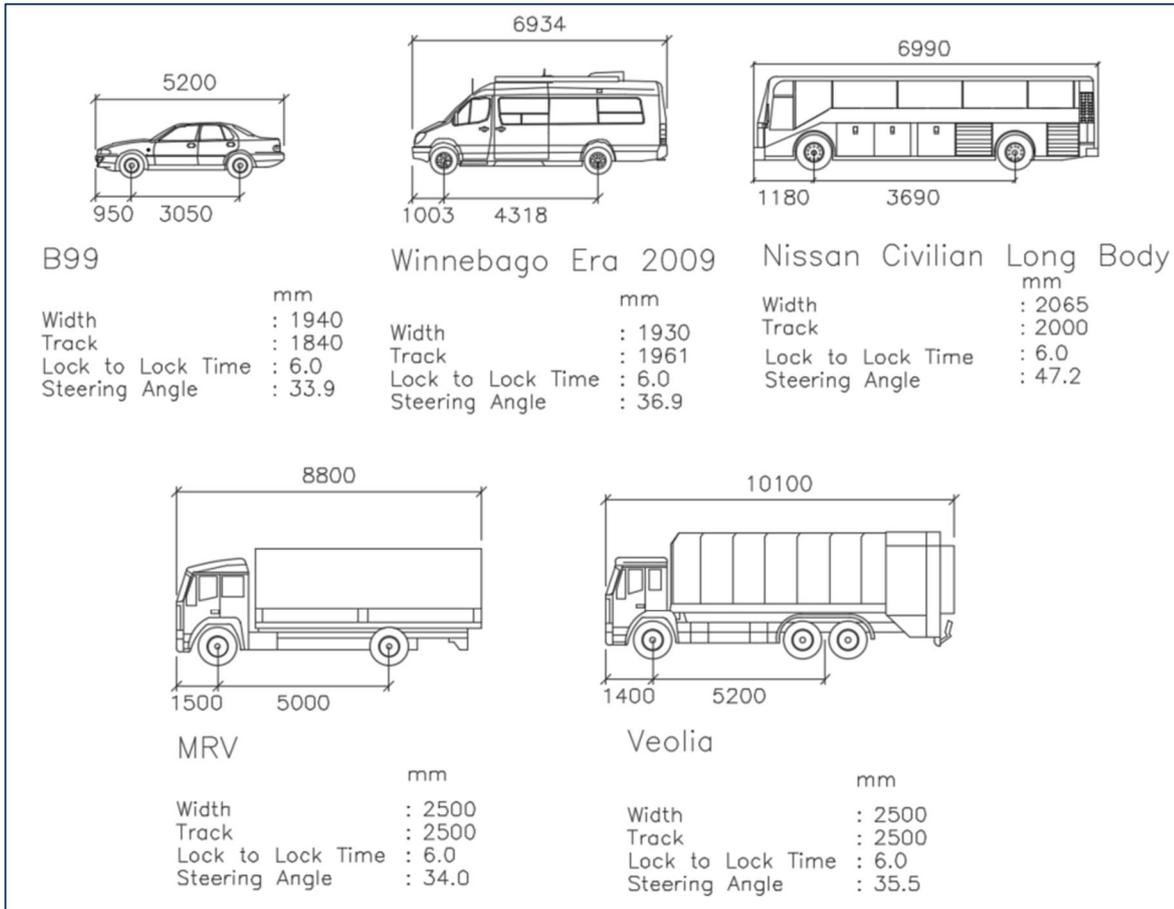


Figure 5-5 through to Figure 5-8 shown the swept path diagrams.

Figure 5-5 Veolia Access 2 Access and Egress Swept Path



Figure 5-6 MRV Access 2 Access and Egress Swept Path



Figure 5-7 B99, 12-Seater Bus and 22-Seater Bus Drop-Off (Wellness Centre)

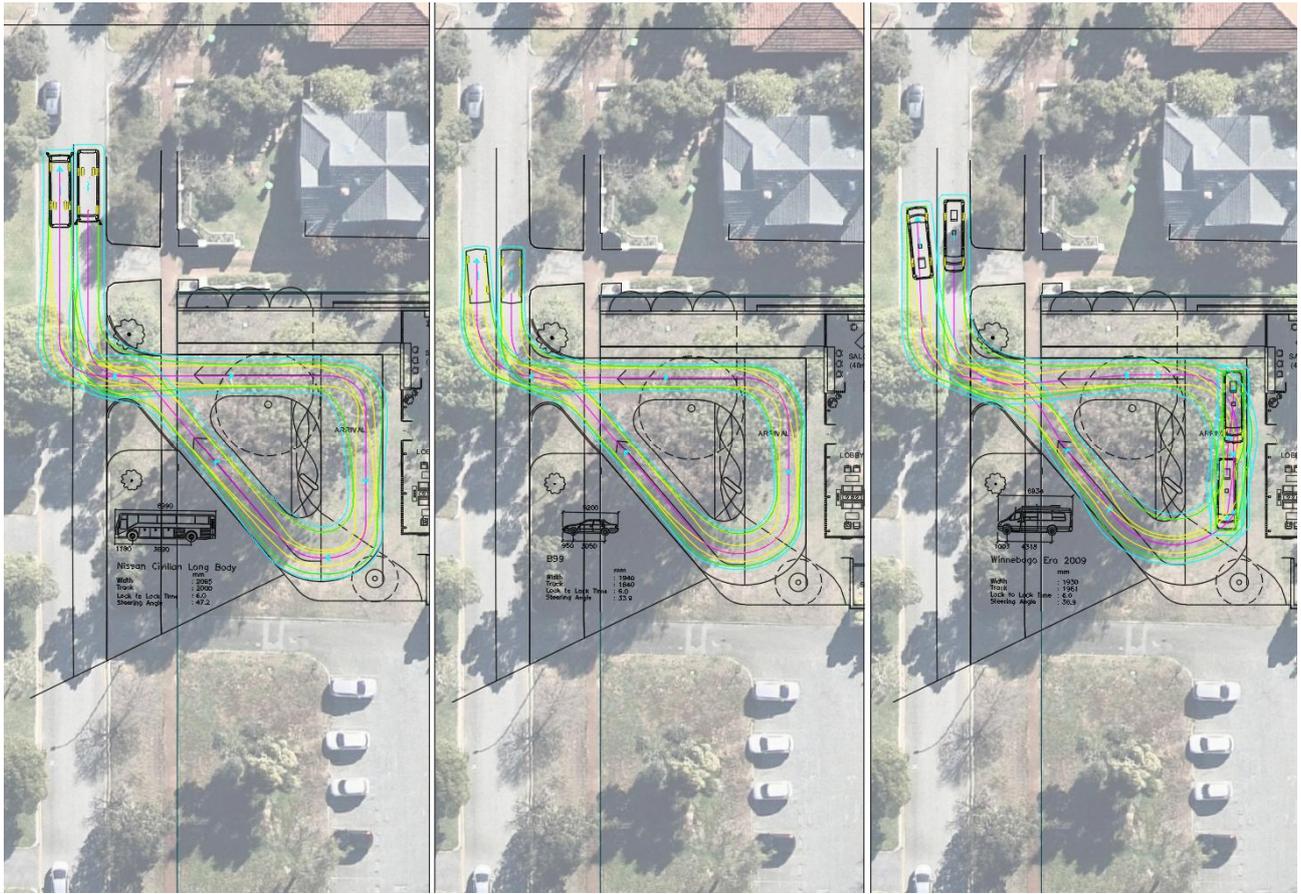
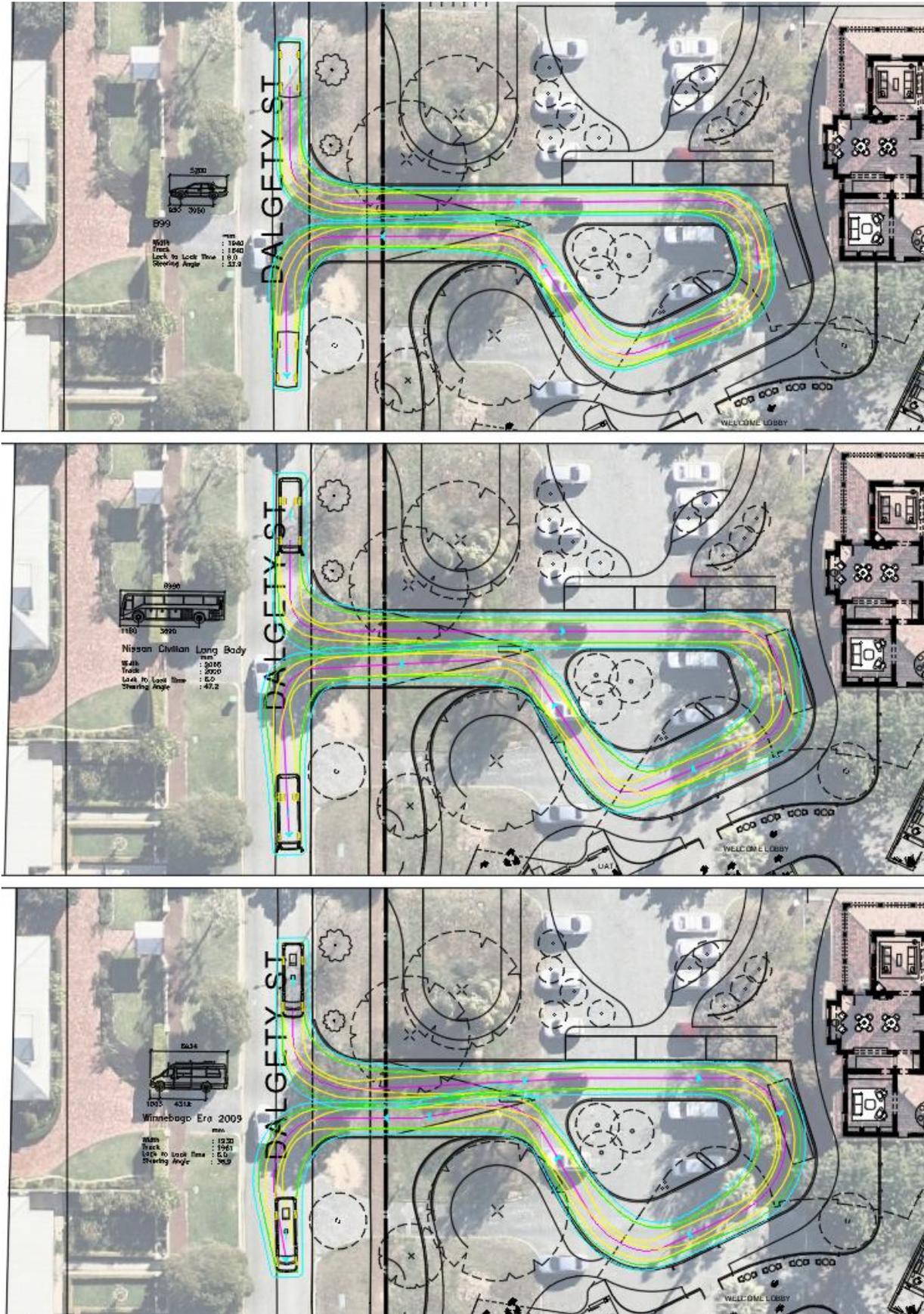


Figure 5-8 B99, 12-Seater Bus and 22-Seater Bus Drop-Off (RACF)



The swept paths show that a 10m long waste truck (largest design vehicle) and a 8.8m MRV would be able to enter and exit the loading dock without issues. Additionally, the drop off area can accommodate a standard sized car (B99) and shuttle buses up to 7m long.

6 Analysis of Transport Network

6.1 Assessment Years and Time Period

Peak times selected are 8:00 AM to 9:00 AM for the weekday AM peak hour and 4:30 PM to 5:30 PM for the weekday PM peak hour, which were based on the existing peak traffic flow data at various locations surrounding the Site. Hence, it is not necessary to analyse the network for the weekend peak scenario. The following model scenarios have been analysed as part of this assessment:

- Scenario 1 – 2020 Existing Traffic without Development (Weekday AM and Weekday PM)
- Scenario 2 – 2025 Opening Year Traffic with Development (Weekday AM and Weekday PM)
- Scenario 3 – 2035 Future Traffic with Development (Weekday AM and Weekday PM)

6.2 Modelling Assumptions

For the purpose of this assessment, the following assumptions were made:

- > Heavy vehicle volumes are based on the existing heavy vehicles percentages obtained from traffic data for the surrounding roads;
- > A 1% per annum growth rate is adopted of the future traffic growth rate;
- > The assumed opening year of the development is 2025;
- > For the purpose of a robust assessment, the existing traffic generated by the Site has not been excluded from the local road network;
- > For Scenario 3, the Canning Highway dual carriageway upgrades is assumed to have occurred and the Canning Highway/Dalgety Street and Canning Highway/Fortescue Street intersections have been modified to reflect this change;
- > Peak hour traffic volumes for Dalgety Street and Fortescue Street were obtained from on-site traffic surveys conducted on 3 August 2020;
- > As traffic entering and exiting the drop off/pick up are assumed to be low, the traffic impacts will be negligible. Therefore, the both of the drop off accesses will not be assessed; and
- > An assumption was made the 2 existing dwellings to be used for Supported Independent Living will continue to function as residential dwellings, therefore, for the purpose of this assessment have been excluded from the following analysis.

6.3 Traffic Generation

Trip generation for the proposed development has been calculated using various sources for the different components of the development:

Institute of Transportation Engineers (ITE) "Trip Generation" 10th Edition, and WAPC Transport Impact Assessment Guidelines -Volume 5 - Technical Guidance.

Table 6-1 shows the trip generation rate, **0** shows the directional split and **Table 6-3** shows the total trip generation.

Table 6-1 Trip Generation Rate

Land Use	Yield	Unit	Reference	Weekday AM Peak	Weekday PM Peak	Daily
Nursing Home	158	Beds	ITE 620	0.22 per bed	0.37 per bed	3.06 per bed
Clinic (Wellness Centre)	524	sq.m. NLA	ITE 630	5.62 per 100 sq.m	4.99 per 100 sq.m	41.08 per 100 sq.m

Table 6-2 Directional Distribution

Land Use	Weekday AM Peak		Weekday PM Peak		Daily	
	In	Out	In	Out	In	Out
Nursing Home	63%	37%	41%	59%	50%	50%
Clinic	58%	42%	46%	54%	50%	50%

Table 6-3 Total Trip Generation

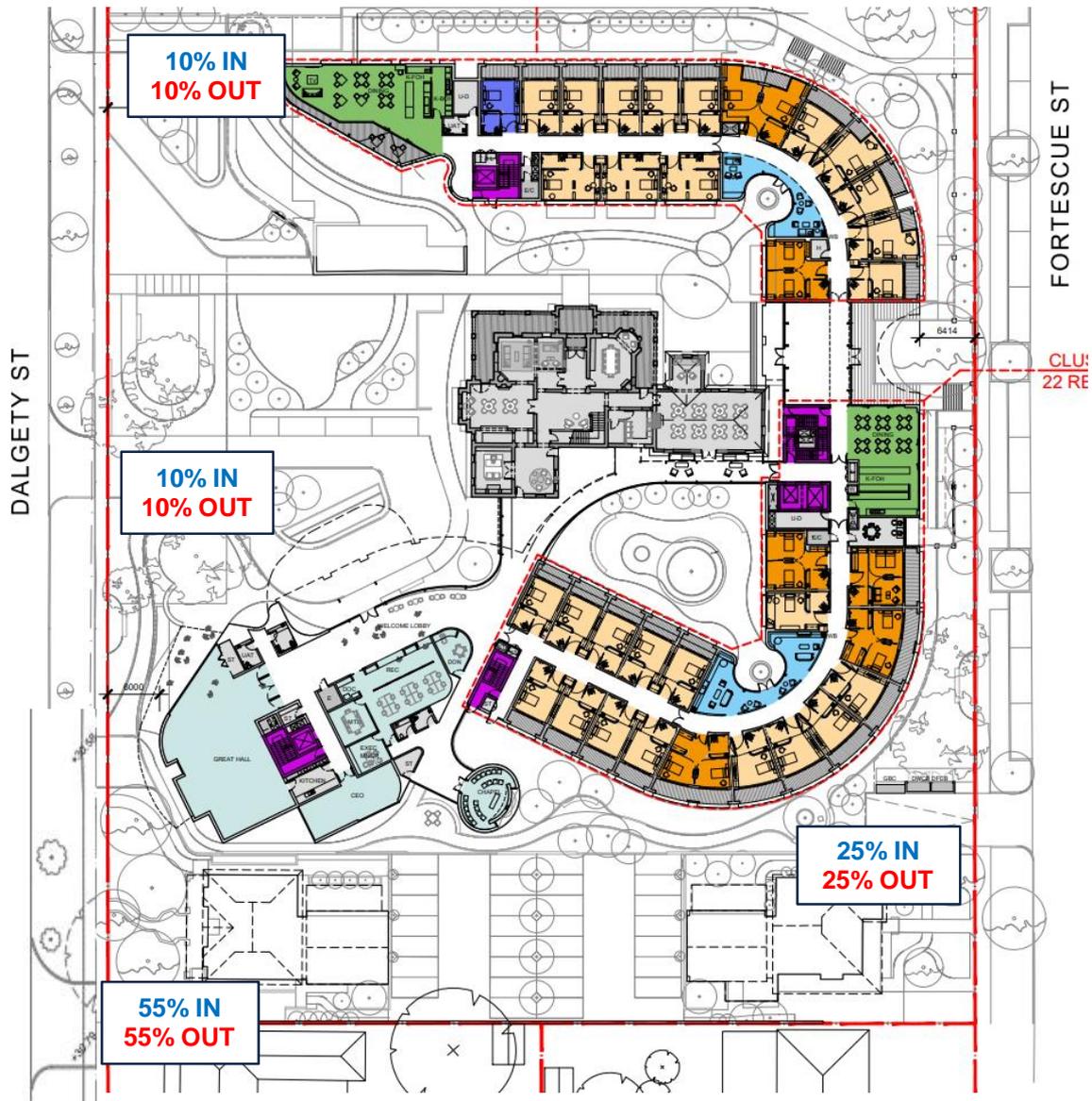
Land Use	Weekday AM Peak		Weekday PM Peak		Daily	
	In	Out	In	Out	In	Out
Nursing Home	22	13	24	34	241	241
Clinic	17	12	12	14	108	108
Total	39	25	36	48	349	349

The proposed development is expected to generate approximately 64 two-way vehicular trips in the AM peak and 84 two-way vehicular trips in the PM peak hour periods.

6.4 Traffic Distribution

The total trip generation are distributed among three different accesses based on the number of car bays they serve, as shown in **Table 6-4**. As the Dalgety Street access is expected to be the primary visitor access, it is assumed that the majority of traffic will enter and exit at this location. Additionally, traffic volumes for the pick up/drop off areas is expected to be low and have a negligible impact.

Table 6-4 Traffic Distribution among accesses



6.5 Intersection Performance

The identified intersections have been analysed using the SIDRA analysis software. This software calculates the performance of intersections based on several input parameters, such as intersection geometry, speed limit and traffic volumes, among others. As an output, SIDRA generates the Degree of Saturation (DOS), queue lengths, delays, level of service, and 95th Percentile Queue for the intersection. These parameters are defined as follows:

- > **Degree of Saturation (DOS):** is the ratio of the arrival traffic flow to the capacity of the approach during the same period. The theoretical intersection capacity is exceeded for an un-signalized intersection where $DOS > 0.80$;
- > **95% Queue:** is the statistical estimate of the queue length up to or below which 95% of all observed queues would be expected;
- > **Average Delay:** is the average of all travel time delays for vehicles through the intersection. An un-signalized intersection can be considered to be operating at capacity where the average delay exceeds 40 seconds for any movement; and
- > **Level of Service (LOS):** is the qualitative measure describing operational conditions within a traffic stream and the perception by motorists and/or passengers. The different levels of service can generally be described as shown in **Table 6-5**.

Table 6-5 Level of Service (LOS) Performance Criteria

LOS	Description	Signalised Intersection	Unsignalised Intersection
A	Free-flow operations (best condition)	≤10 sec	≤10 sec
B	Reasonable free-flow operations	10-20 sec	10-15 sec
C	At or near free-flow operations	20-35 sec	15-25 sec
D	Decreasing free-flow levels	35-55 sec	25-35 sec
E	Operations at capacity	55-80 sec	35-50 sec
F	A breakdown in vehicular flow (worst condition)	≥80 sec	≥50 sec

6.6 SIDRA Analysis Results

This section details the results of the SIDRA analysis of the *existing* and *with development* scenarios for the AM and PM peak hour periods.

6.6.1 Canning Highway/Dalgety Street

The following presents the analysis of the Canning Highway/Dalgety Street intersection. **Figure 6-1** and **Figure 6-2** shows the SIDRA layouts of the intersection and **Table 6-1** to **Table 6-3** show the SIDRA results of the analysis.

Figure 6-1 Canning Highway/Dalgety Street Intersection SIDRA layout (for Scenario 1 and 2)

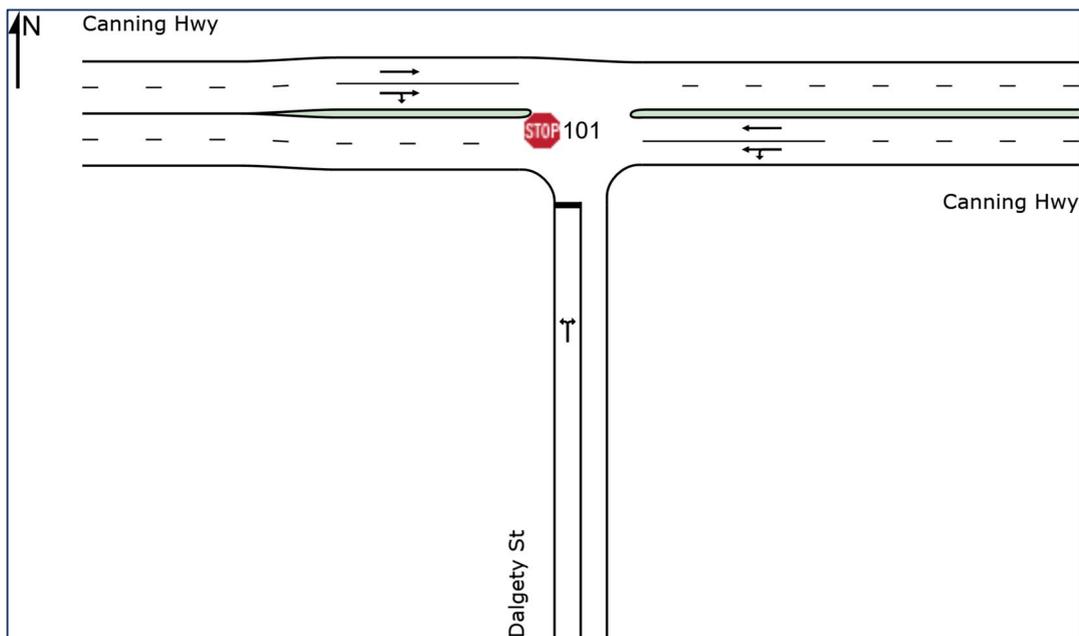


Figure 6-2 Canning Highway/Dalgety Street Intersection SIDRA layout (for Scenario 3)

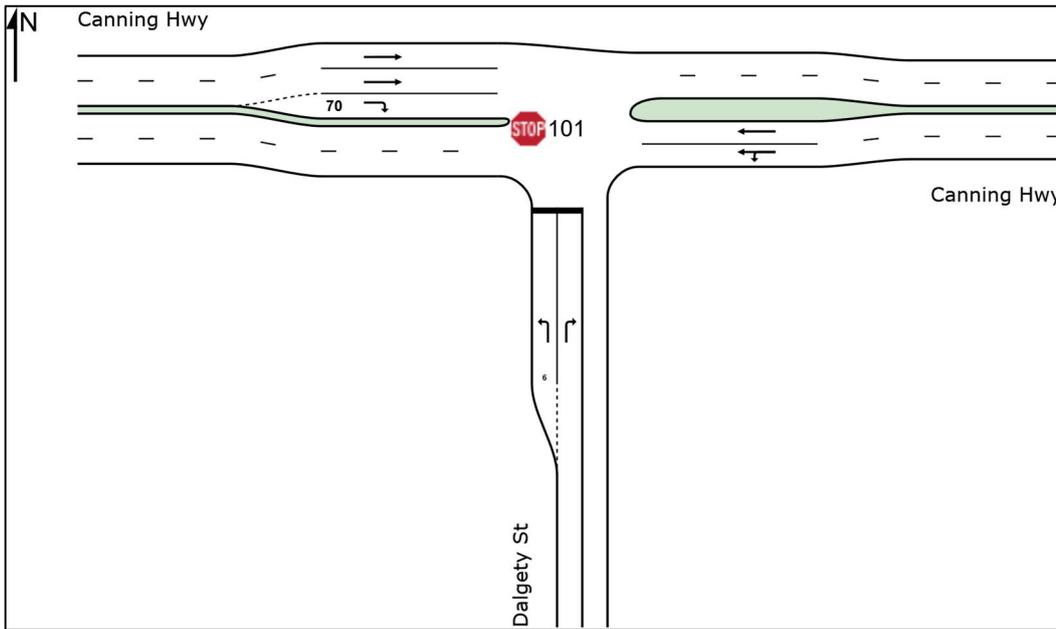


Table 6-1 SIDRA Analysis Results – Canning Highway/Dalgety Street Intersection (Scenario 1 – Existing Without Development)

Intersection Approach		AM peak				PM Peak			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
Dalgety Street (S)	L	0.035	10.1	B	0.9	0.031	9.2	A	0.8
	R	0.052	51.4	F	1.1	0.06	59.1	F	1.3
Canning Highway (E)	L	0.254	5.5	A	0	0.19	5.5	A	0
	T	0.254	0	A	0	0.19	0	A	0
Canning Highway (W)	T	0.19	0.7	A	5	0.261	0.3	A	3.7
	R	0.19	12.5	B	5	0.261	10.4	B	3.7

Table 6-2 SIDRA Analysis Results – Canning Highway/Dalgety Street Intersection (Scenario 2 – 2025 With Development)

Intersection Approach		AM peak				PM Peak			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
Dalgety Street (S)	L	0.046	10.4	B	1.2	0.047	9.4	A	1.3
	R	0.097	62.8	F	2	0.135	74.5	F	2.8
Canning Highway (E)	L	0.271	5.5	A	0	0.204	5.5	A	0
	T	0.271	0	A	0	0.204	0	A	0
Canning Highway (W)	T	0.21	1	A	7.1	0.281	0.4	A	5.3
	R	0.21	13.5	B	7.1	0.281	11.1	B	5.3

Table 6-3 SIDRA Analysis Results – Canning Highway/Dalgety Street Intersection (Scenario 3 – 2035 With Development)

Intersection Approach		AM peak				PM Peak			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)

Dalgety Street (S)	L	0.054	10.9	B	1.4	0.052	9.7	A	1.4
	R	0.41	175	F	8.3	0.357	174.7	F	7
Canning Highway (E)	L	0.299	5.6	A	0	0.225	5.5	A	0
	T	0.299	0	A	0	0.225	0	A	0
Canning Highway (W)	T	0.196	0	A	0	0.287	0	A	0
	R	0.125	13.6	B	3.1	0.063	9.9	A	1.7

6.6.2 Canning Highway/Fortescue Street

The following presents the analysis of the Canning Highway/Fortescue Street intersection. **Figure 6-3** and **Figure 6-4** shows the SIDRA layouts of the intersection and **Table 6-4 to 6-6** shows the SIDRA results of the analysis.

Figure 6-3 Canning Highway/Fortescue Street Intersection SIDRA layout (for Scenario 1 and 2)

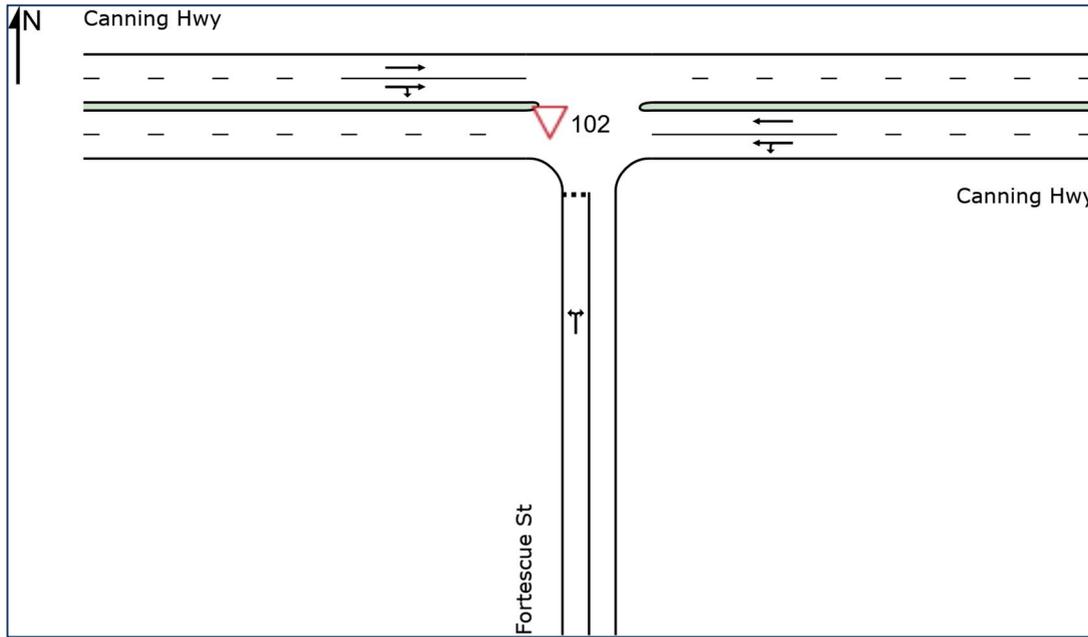


Figure 6-4 Canning Highway/Fortescue Street Intersection SIDRA layout (for Scenario 3)

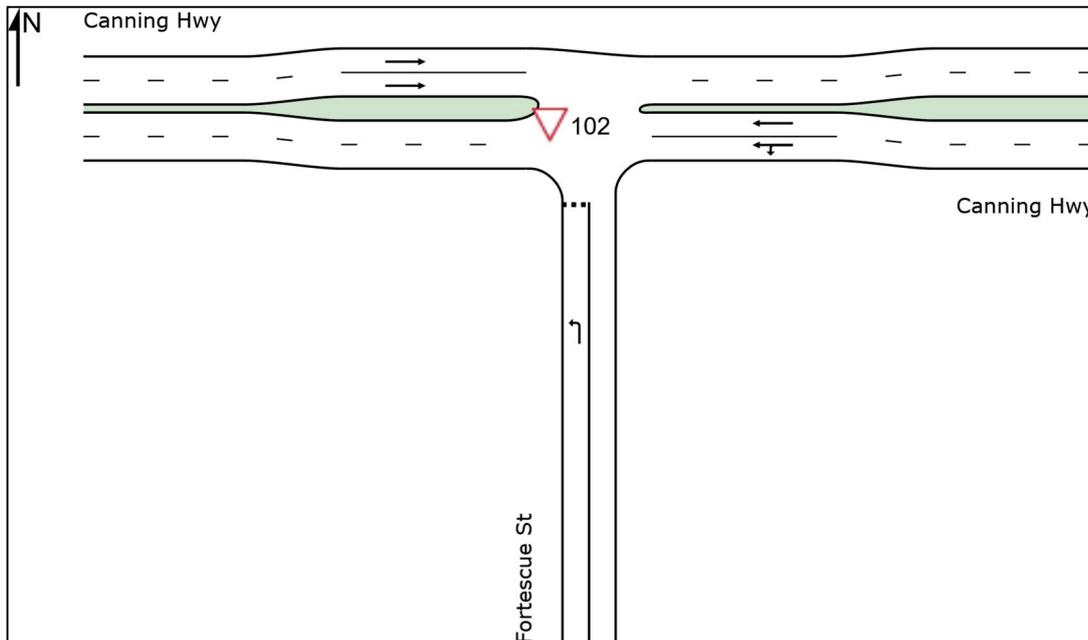


Table 6-4 SIDRA Analysis Results – Canning Highway/Fortescue Street Intersection (Scenario 1 – Existing Without Development)

Intersection Approach		AM peak				PM Peak			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
Fortescue Street (S)	L	0.026	6.9	A	0.7	0.011	6.2	A	0.3
	R	0.043	42.1	E	0.9	0.026	48.8	E	0.5
Canning Highway (E)	L	0.274	5.5	A	0	0.211	5.5	A	0
	T	0.274	0	A	0	0.211	0	A	0
Canning Highway (W)	T	0.194	0.4	A	3.1	0.27	0.1	A	1.1
	R	0.194	13.3	B	3.1	0.27	11.1	B	1.1

Table 6-5 SIDRA Analysis Results – Canning Highway/Fortescue Street Intersection (Scenario 2 – 2025 With Development)

Intersection Approach		AM peak				PM Peak			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
Fortescue Street (S)	L	0.032	7.1	A	0.9	0.017	6.3	A	0.5
	R	0.067	50.8	F	1.4	0.049	60.6	F	1
Canning Highway (E)	L	0.291	5.5	A	0	0.224	5.5	A	0
	T	0.291	0	A	0	0.224	0	A	0
Canning Highway (W)	T	0.209	0.6	A	4.3	0.289	0.1	A	1.9
	R	0.209	14.4	B	4.3	0.289	11.9	B	1.9

Table 6-6 SIDRA Analysis Results – Canning Highway/Fortescue Street Intersection (Scenario 3 – 2035 With Development)

Intersection Approach		AM peak				PM Peak			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
Fortescue Street (S)	L	0.038	7.5	A	1	0.022	6.6	A	0.5
Canning Highway (E)	L	0.323	5.5	A	0	0.248	5.5	A	0
	T	0.323	0	A	0	0.248	0	A	0
Canning Highway (W)	T	0.211	0	A	0	0.312	0	A	0

6.6.3 Dalgety Street/Access 1

The following presents the analysis of the Dalgety Street/Access 1 intersection (access to the basement car park). **Figure 6-5** shows the SIDRA layout of the intersection and **Table 6-7** and **Table 6-8** show the SIDRA results of the analysis.

Figure 6-5 Dalgety Street/Access 1 Intersection SIDRA layout

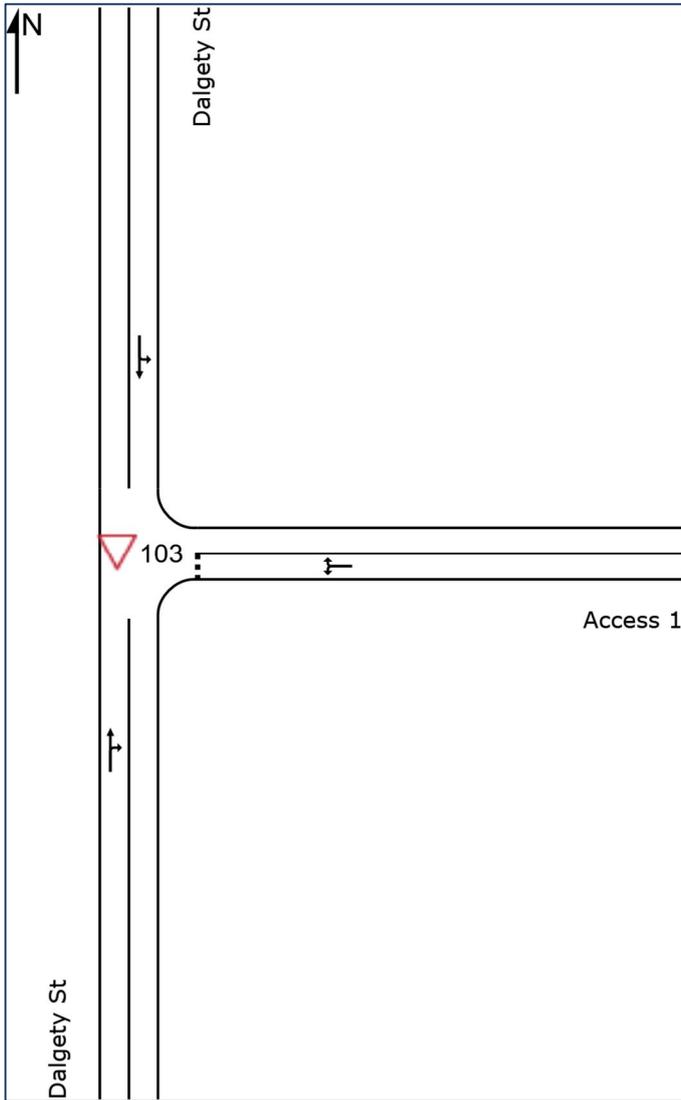


Table 6-7 SIDRA Analysis Results – Dalgety Street/Access 1 Intersection (Scenario 2 – 2025 With Development)

Intersection Approach		AM peak				PM Peak			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
Dalgety Street (S)	T	0.022	0.1	A	0.4	0.022	0	A	0.4
	R	0.022	4.7	A	0.4	0.022	4.7	A	0.4
Access 1 (E)	L	0.01	2.7	A	0.3	0.019	2.6	A	0.5
	R	0.01	2.7	A	0.3	0.019	2.6	A	0.5
Dalgety Street (N)	L	0.027	4.6	A	0	0.024	4.6	A	0
	T	0.027	0	A	0	0.024	0	A	0

Table 6-8 SIDRA Analysis Results – Dalgety Street/Access 1 Intersection (Scenario 3 – 2035 With Development)

Intersection Approach		AM peak				PM Peak			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)

Dalgety Street (S)	T	0.027	0.1	A	0.5	0.025	0	A	0.4
	R	0.027	4.8	A	0.5	0.025	4.7	A	0.4
Access 1 (E)	L	0.011	2.7	A	0.3	0.019	2.7	A	0.5
	R	0.011	2.8	A	0.3	0.019	2.7	A	0.5
Dalgety Street (N)	L	0.038	4.6	A	0	0.029	4.6	A	0
	T	0.038	0	A	0	0.029	0	A	0

6.6.4 Fortescue Street/Access 2

The following presents the analysis of the Fortescue Street/Access 2 intersection. **Figure 6-6** shows the SIDRA layout of the intersection and **Table 6-9** and **0** shows the SIDRA results of the analysis.

Figure 6-6 Fortescue Street/Access 2 Intersection SIDRA layout

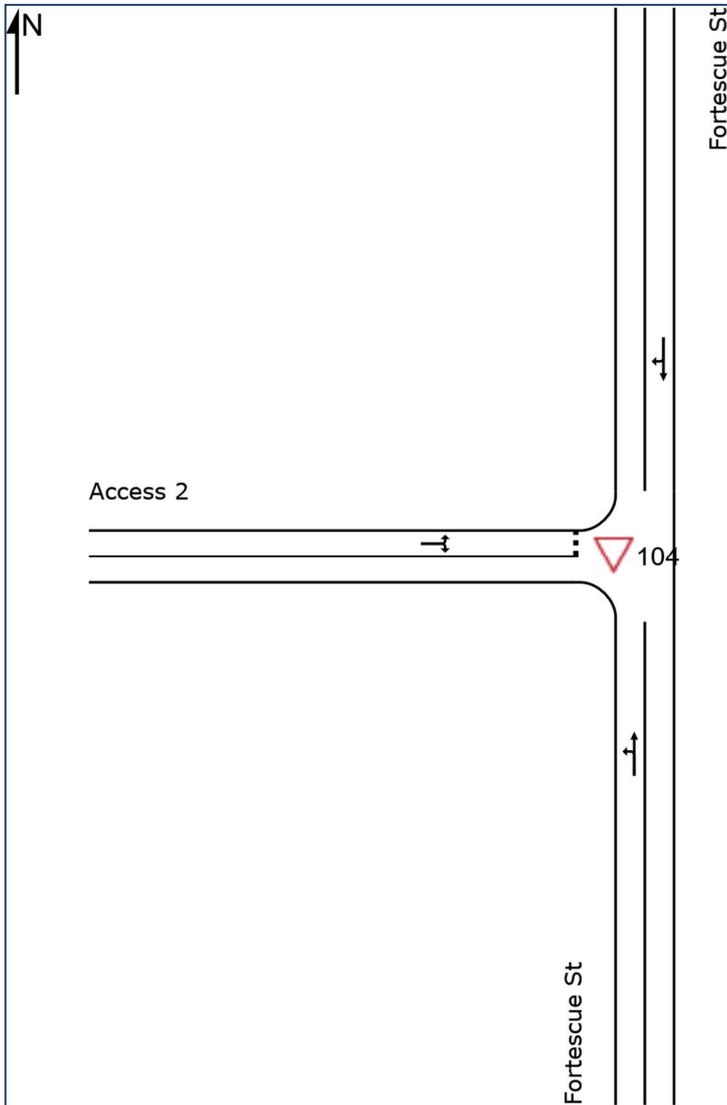


Table 6-9 SIDRA Analysis Results – Fortescue Street/Access 2 Intersection (Scenario 2 – 2025 With Development)

Intersection Approach	AM peak					PM Peak			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
Dalgety Street (S)	T	0.017	4.6	A	0	0.009	4.6	A	0
	R	0.017	0	A	0	0.009	0	A	0
Access 2 (E)	L	0.019	0	A	0.2	0.01	0	A	0.2
	R	0.019	4.7	A	0.2	0.01	4.6	A	0.2
Dalgety Street (N)	L	0.004	2.6	A	0.1	0.009	2.6	A	0.2
	T	0.004	2.6	A	0.1	0.009	2.5	A	0.2

Table 6-10 SIDRA Analysis Results – Fortescue Street/Access 2 Intersection (Scenario 3 – 2035 With Development)

Intersection Approach	AM peak					PM Peak			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
Dalgety Street (S)	T	0.016	4.6	A	0	0.009	4.6	A	0
	R	0.016	0	A	0	0.009	0	A	0
Access 2 (E)	L	0.013	0	A	0.2	0.006	0	A	0.2
	R	0.013	4.6	A	0.2	0.006	4.6	A	0.2
Dalgety Street (N)	L	0.004	2.6	A	0.1	0.008	2.6	A	0.2
	T	0.004	2.5	A	0.1	0.008	2.5	A	0.2

6.6.5 SIDRA Summary

A summary of the SIDRA results are as follows:

- > The right turn movements out of Dalgety Street into Canning Highway are forecast to experience long delays primarily caused by the high peak hour through movement traffic along Canning Highway. These are pre-existing traffic issues with the existing road network unrelated to the development. During the traffic surveys, these right turn movements were observed to be low. A reason for this may be that locals or drivers familiar with this area are aware of the difficulties with turning right onto Canning Highway during peak hour traffic and choose to use alternate routes.
- > The right turn movements out of Fortescue Street into Canning Highway intersection are also forecast to experience long delays primarily caused by the high peak hour through movement traffic along Canning Highway. Future upgrades to a left in, left out only arrangement improves the overall operation at this intersection. As a result, right turning traffic will likely be split between Dalgety Street and Irwin Street.
- > The Dalgety Street/Access 1 intersection operated at an acceptable level of service for all assessment scenarios.
- > The Fortescue Street/Access 2 intersection operated at an acceptable level of service for all assessment scenarios.

7 Site Specific Issues

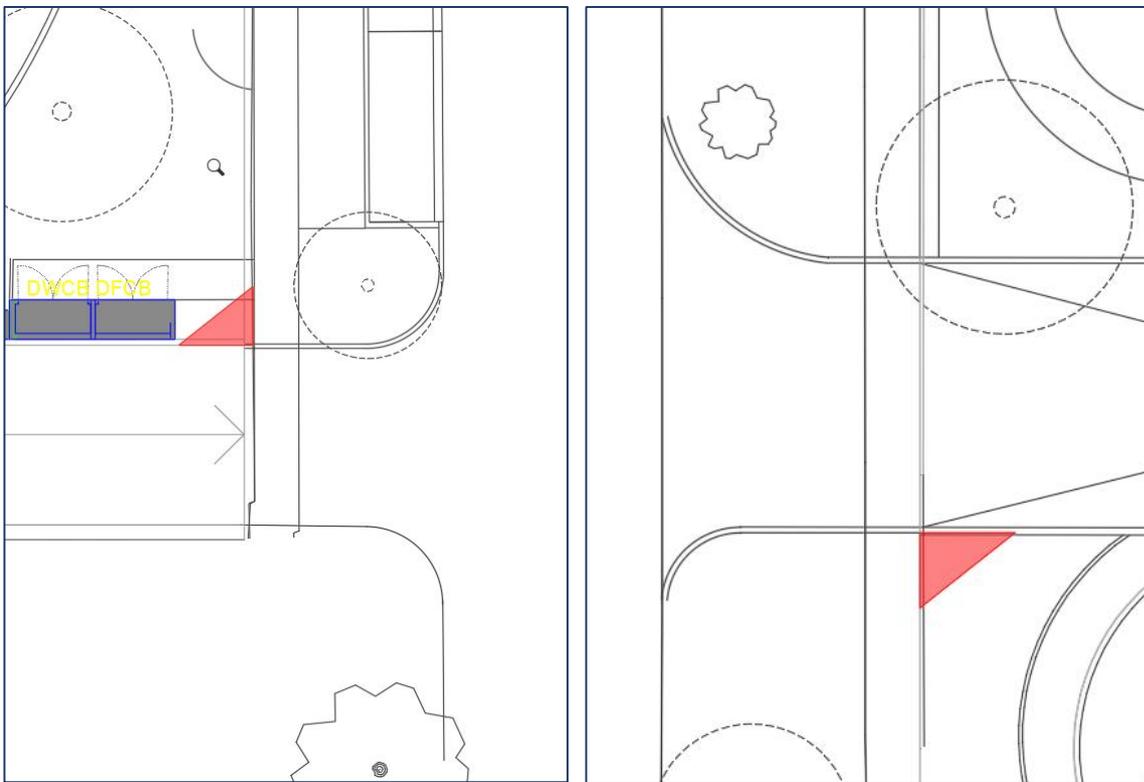
7.1 Vehicle and Pedestrian Visibility at Site Accesses

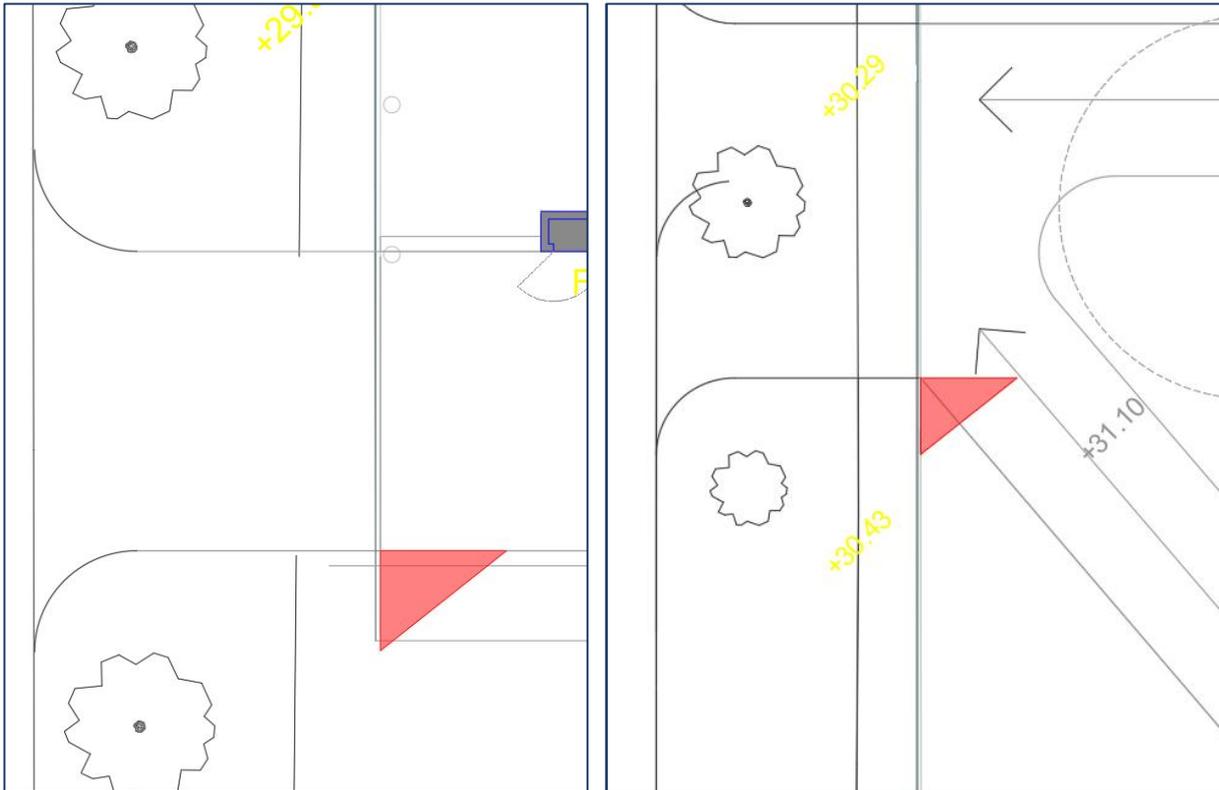
A total of 4 access points are proposed and described below:

- > Dalgety Street drop off/pick up area access and egress – provides drop off/pick up facilities for visitors and shuttle buses;
- > Dalgety Street car park access – main visitor and staff access; and
- > Fortescue Street car park access – main service/waste/delivery access and secondary access.

The footpaths along the Dalgety Street and Fortescue Street frontage will run continuously across all access points to prioritise pedestrian movement. All access points will be designed in accordance to AS2890 requirements with appropriate driver and pedestrian visibility provided at the proposed access points. **Figure 7-1** below shows the pedestrian visibility requirements.

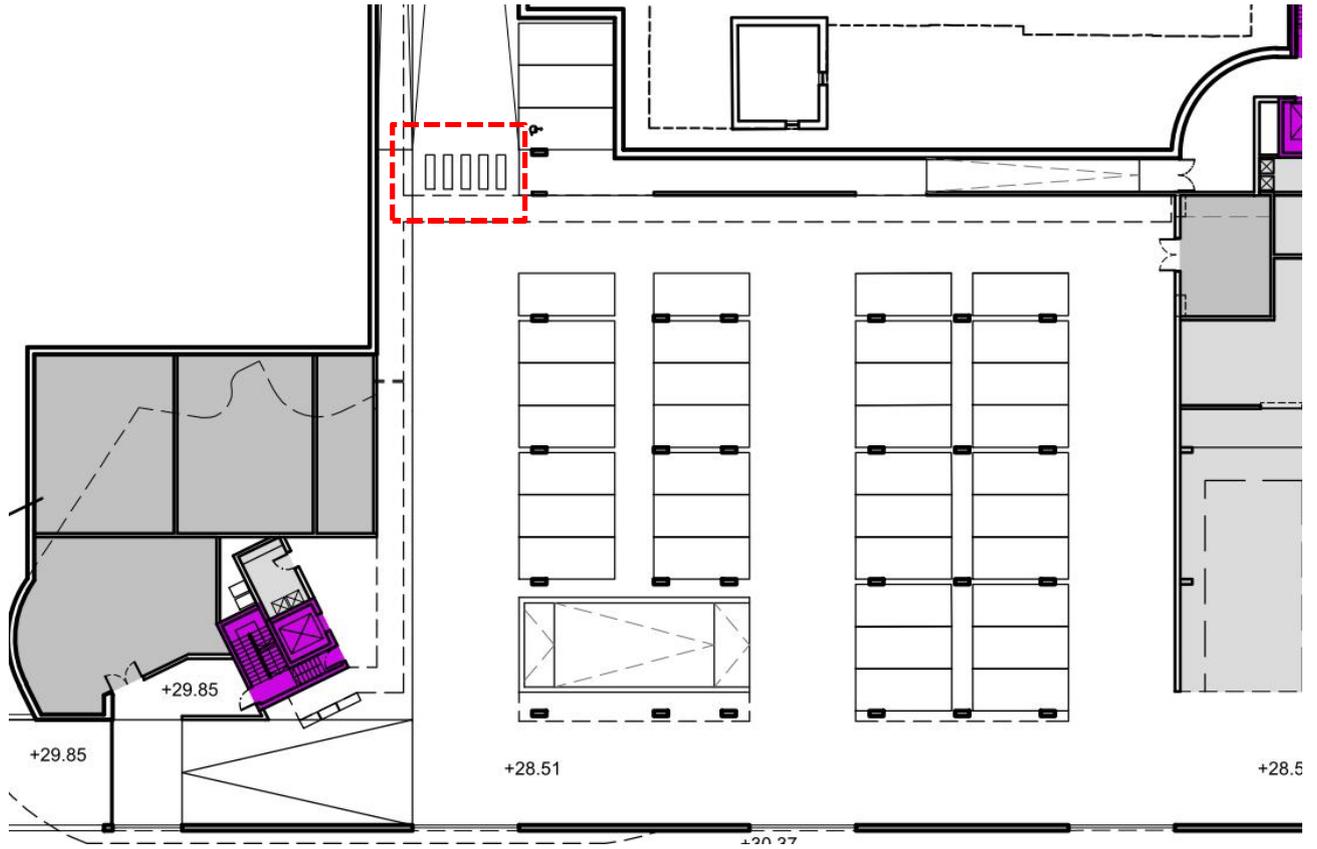
Figure 7-1 Pedestrian Visibility at Site Accesses





Within the basement carpark, marked zebra crossings are provided to indicate safe pedestrian crossing points and routes to the lifts, as shown in **Figure 7-2**.

Figure 7-2 Zebra Crossing within Car Park



In addition, the anticipated traffic generation for the Site is relatively low (<100 vehicles per hour even during peak periods), with a correspondingly low impact on the surrounding roads and pedestrian amenity at the Site accesses.

8 Conclusions

This report has been prepared in accordance with the Western Australian Planning Commission (WAPC) *Transport Assessment Guidelines for Developments: Volume 4 – Individual Development*.

The following conclusions have been made in regards to the proposed development:

- > The proposed development comprises of a residential aged care facility facility accommodating up to 158 residents with various medical and specialist facilities, along with two residential dwellings that will provide for supported independent living arrangements;
- > Overall, the public transport network is good with high frequency bus services accessible along Canning Highway;
- > Footpaths are present along the Site frontages along Dalgety Street and Fortescue Street. Bicycle lanes or sealed shoulders are present along Marmion Street and Petra Street;
- > The proposed development is expected to generate approximately 64 two-way vehicular trips in the AM peak and 84 two-way vehicular trips in the PM peak hour periods;
- > The SIDRA results show that most of the intersections will operate at an acceptable level of service for all scenarios. Right turn movements out of the side roads (Dalgety Street and Fortescue Street) onto Canning Highway will experience long delays due to the high volumes of through movement traffic along Canning Highway. However, these are pre-existing traffic issues with the existing road network which are unrelated to the development. The future road upgrades improves the operation at Canning Highway/Fortescue Street intersection while the Canning Highway/Dalgety Street intersection only sees improvements for the right turn movement into Dalgety Street; and
- > The number of recorded crashes on adjacent roads to the Site is not considered to be excessive, and it is expected that the development will not cause any material change to road safety in the area.

APPENDIX

A

WAPC TRANSPORT ASSESSMENT CHECKLIST FOR
DEVELOPMENT

WAPC Checklist for a Transport Assessment, Individual Development, August 2016

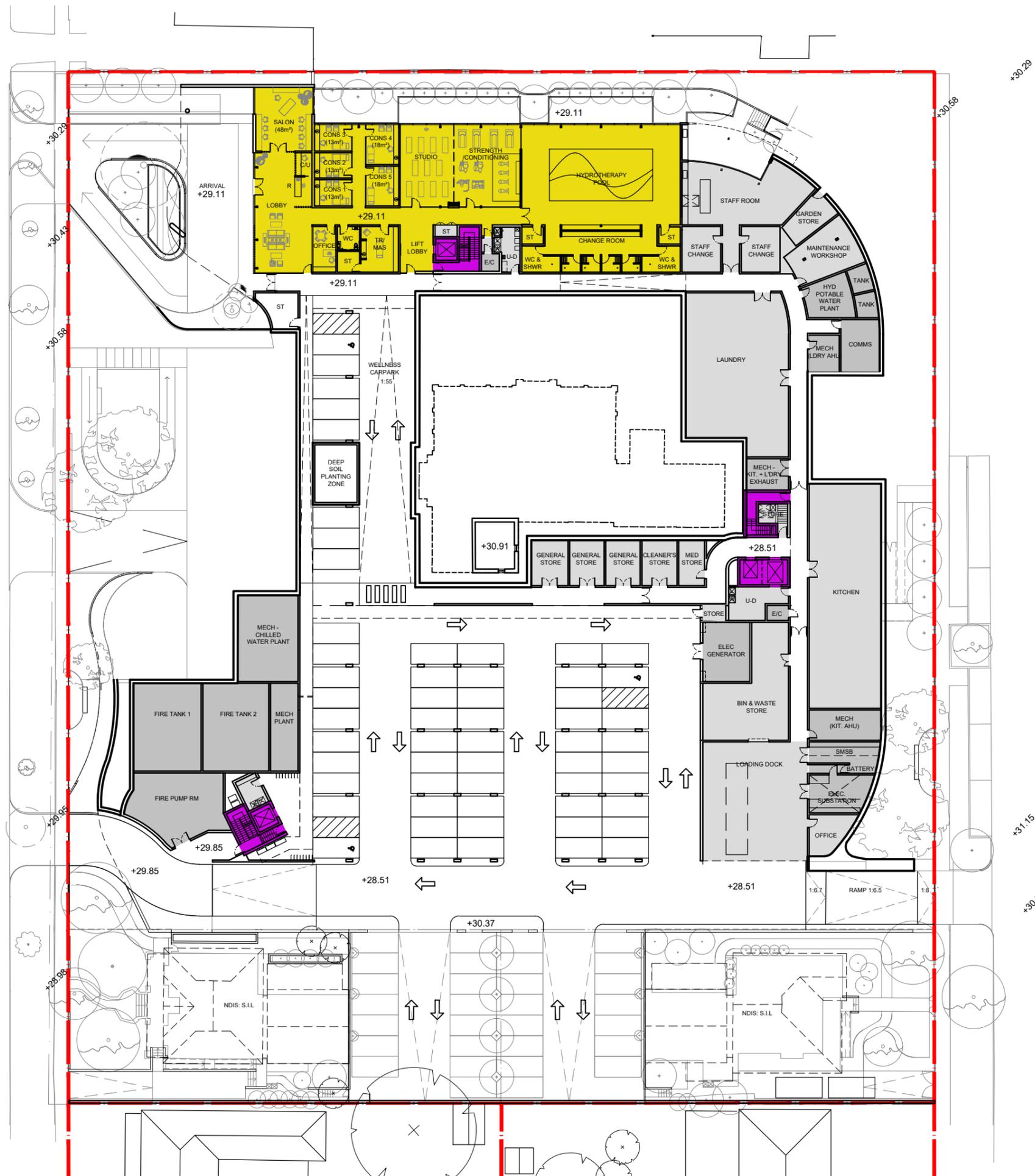
Item	Provided	Comments/Proposals
Summary		
Introduction/Background		
name of applicant and consultant	Section 1	
development location and context	Section 1	
brief description of development proposal	Section 5	
key issues	N/A	
background information	Section 1	
Existing situation		
existing site uses (if any)	Section 2	
existing parking and demand (if appropriate)	Section 2	
existing access arrangements	Section 5	
existing site traffic	Section 2	
surrounding land uses	Section 2	
surrounding road network	Section 2	
traffic management on frontage roads	Section 2	
traffic flows on surrounding roads (usually AM and PM peak hours)	Section 2	
traffic flows at major intersections (usually AM and PM peak hours)	Section 2	
operation of surrounding intersections	Section 6	
existing pedestrian/cycle networks	Section 2	
existing public transport services surrounding the development	Section 2	
crash data	Section 2	
Development proposal		
regional context	Section 5	
proposed land uses	Section 5	
table of land uses and quantities	Section 5	
access arrangements	Section 5	
parking provision	Section 5	
end of trip facilities	N/A	
any specific issues	N/A	
road network	Section 5	
intersection layouts and controls	Section 5	
pedestrian/cycle networks and crossing facilities	Section 2	
public transport services	Section 2	
Integration with surrounding area		
surrounding major attractors/ generators	Section 4	
committed developments and transport proposals	Section 4	
proposed changes to land uses within 1200 metres	Section 4	
travel desire lines from development to these attractors/ generators	N/A	

Item	Provided	Comments/Proposals
adequacy of existing transport networks	Section 2, 3, 4	
deficiencies in existing transport networks	Section 2, 3, 4	
remedial measures to address deficiencies	N/A	
Analysis of transport networks		
assessment years	Section 6	
time periods	Section 6	
development generated traffic	Section 6	
distribution of generated traffic	Section 6	
parking supply and demand	Section 6	
base and 'with development' traffic flows	Section 6	
analysis of development accesses	Section 6	
impact on surrounding roads	Section 6	
impact on intersections	Section 6	
impact on neighbouring areas	Section 6	
road safety	Section 2	
public transport access	Section 2	
pedestrian access/amenity	Section 2	
cycle access/amenity	Section 2	
analysis of pedestrian/cycle networks	Section 2	
safe walk/cycle to school (for residential and school site developments only)	N/A	
traffic management plan (where appropriate)	N/A	
Conclusions	Section 8	

APPENDIX

B

SITE PLANS

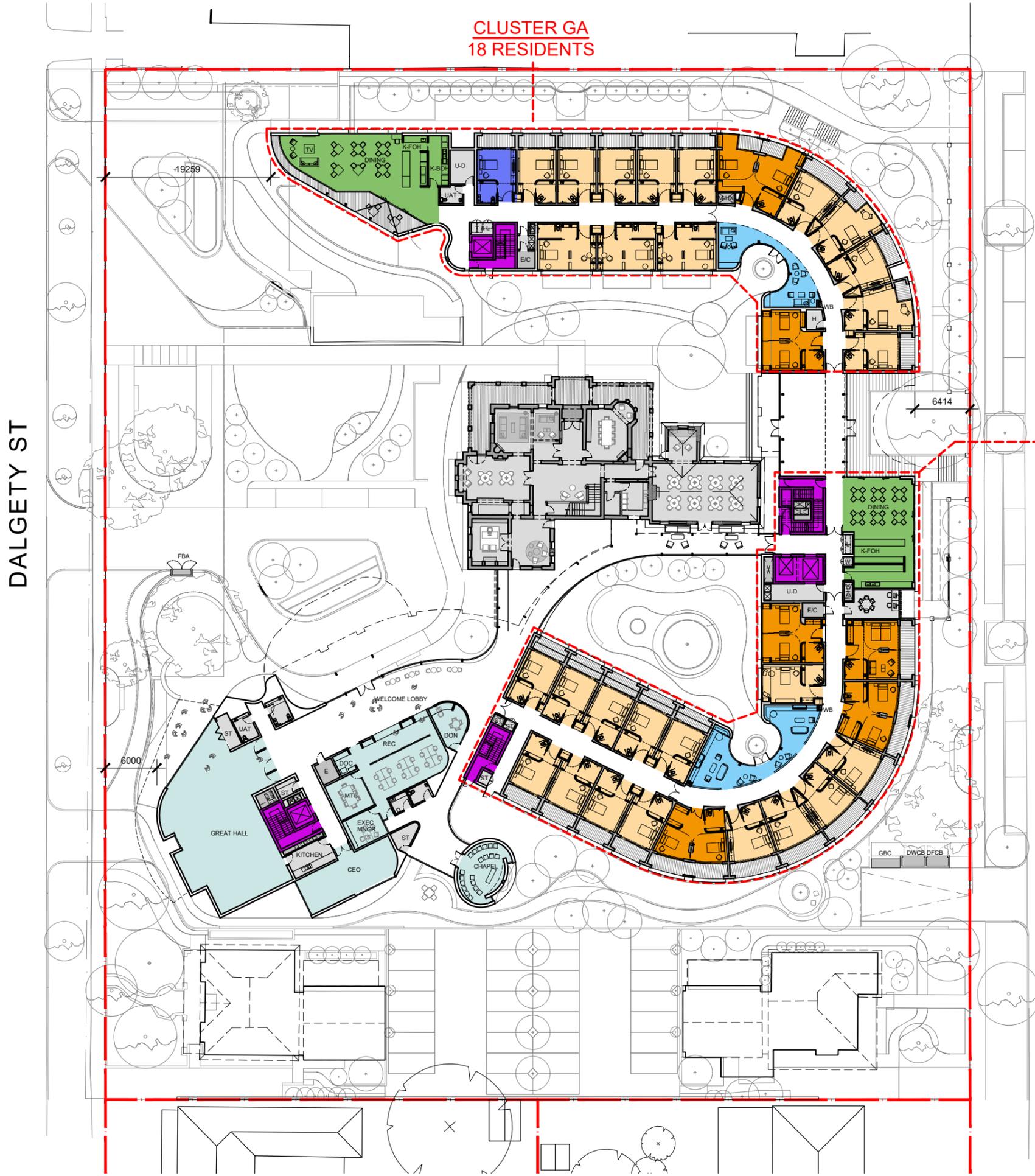


FUNCTION	No.
SINGLE ROOMS	
SINGLE ACC. ROOMS	
COMPANION ROOMS	
SUITES	
BALCONY	
COMMUNAL TERRACE	
COMMUNAL LKDT	
COMMUNAL SITTING ROOM	
WELLNESS CENTRE	
ENGAGE	
LIFT / STAIR CORE	
SERVICE	
PLANT	
CAR BAYS - STANDARD	84
CAR BAYS - ACCESSIBLE	3
LG TOTAL	87
CAR BAYS - STANDARD GF	3
TOTAL CAR BAYS	90

LOWER GROUND PLAN

1:500 @ A3

WOODSIDE CARE PRECINCT



FORTESCUE ST

DALGETY ST

CLUSTER GA
18 RESIDENTS

CLUSTER GB
22 RESIDENTS

FUNCTION	RESIDENTS	ROOM
SINGLE ROOMS	27	27
SINGLE ACC. ROOMS	1	1
COMPANION ROOMS	12	6
SUITES	0	0
BALCONY		
COMMUNAL TERRACE		
COMMUNAL LKDT		3
COMMUNAL SITTING ROOM		2
WELLNESS CENTRE		
ENGAGE		
LIFT / STAIR CORE		4
SERVICE		
PLANT		
CAR PARK (BAYS)		3
GF TOTAL	40	34

GROUND FLOOR PLAN

1:500 @ A3

WOODSIDE CARE PRECINCT

