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Transport Impact Assessment

Hollywood Private Hospital South Block

CW1083200

Prepared for

Georgiou Group

13 September 2019

Cardno

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1 Introduction

1.1 Background

Cardno has been commissioned by Georgiou Group ('the Client') to prepare a Transport Impact Assessment (TIA) for the development of a new ward block and emergency department, located within the Hollywood Private Hospital Precinct, Nedlands.

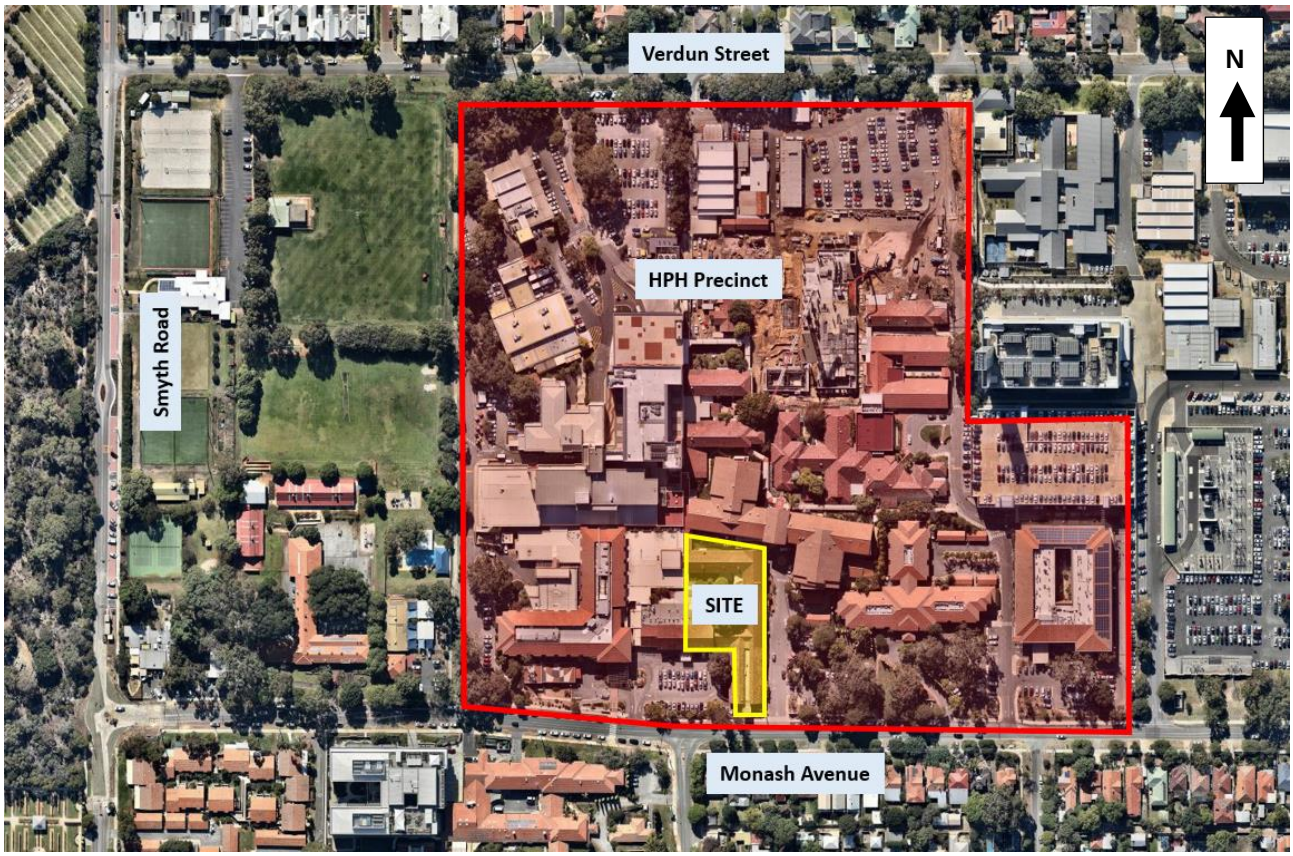
This report aims to assess the impacts of the proposed development upon the adjacent road network, with a focus on traffic operations, circulation, and car parking requirements. This report has been prepared in accordance with the Western Australian Planning Commission (WAPC) *Transport Assessment Guidelines for Developments: Volume 4 – Individual Developments* (2016) and the checklist is included in **Appendix A**.

2 Existing Site Situation

2.1 Site Location

The Site is located within the Hollywood Private Hospital Precinct which is bounded by Verdun Street to the north and Monash Avenue to the south as indicated in **Figure 2-1**.

Figure 2-1 Site Location

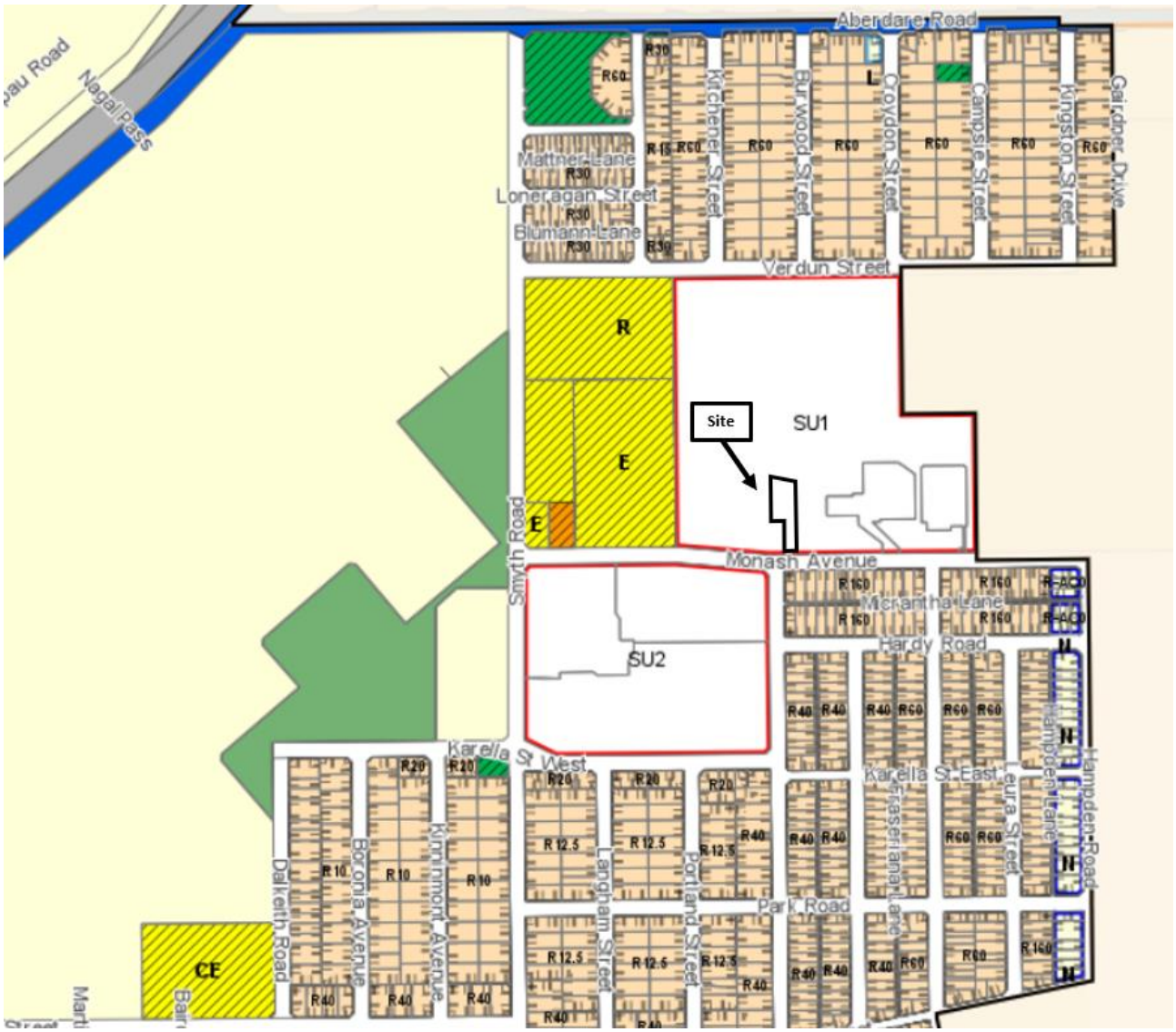


Source: Nearmap

2.2 Zoning

In the City of Nedlands *Local Planning Scheme No. 3*, the Site is zoned as "Special Use". The adjacent land uses consists of the hospital (QEIIMC) to the east, a primary school and public open space in the west and residential dwellings in the north and south. **Figure 2-2** shows the land use zones surrounding the Site.

Figure 2-2 Zoning Map



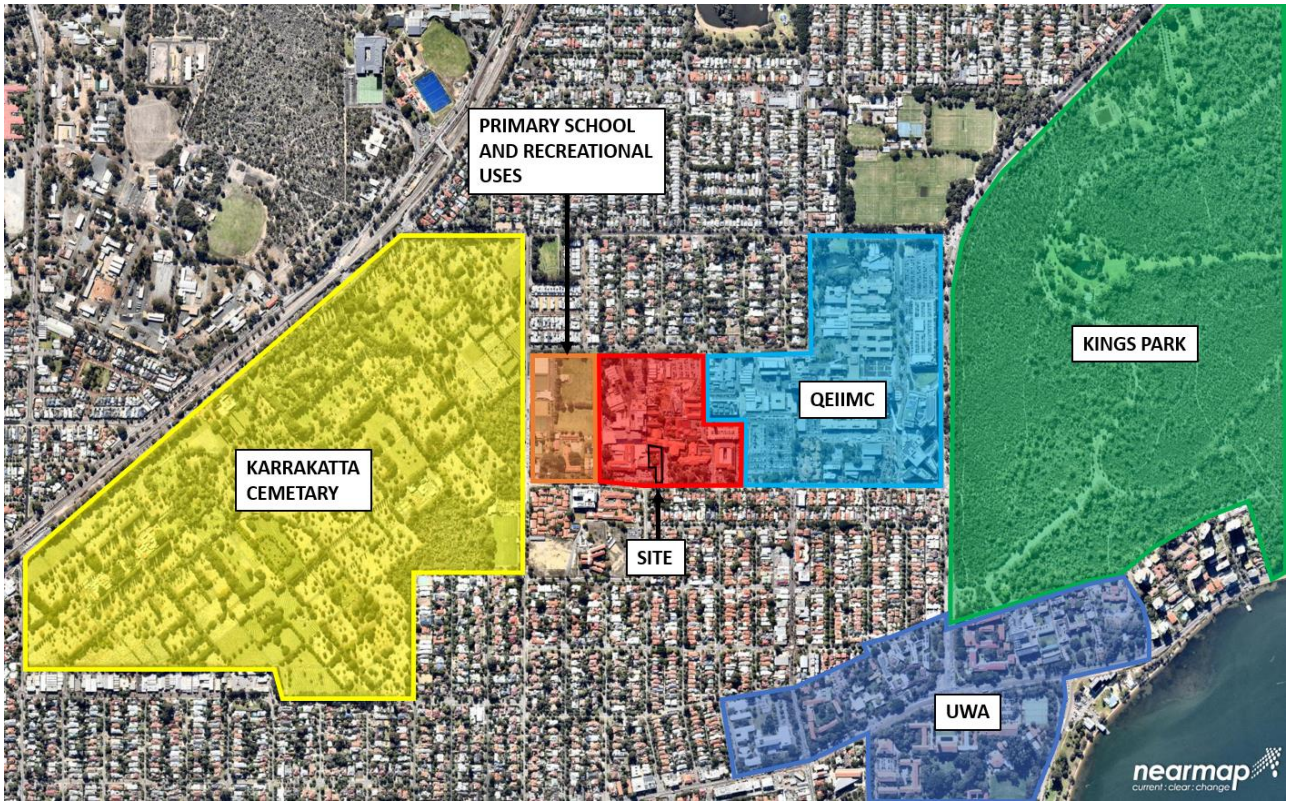
Source: City of Nedlands Local Planning Scheme No. 3 (2019)

2.3 Context with Surrounds

The site is located within the Hollywood Private Hospital Precinct. The surrounding land uses consist of the following, as indicated on **Figure 2-3**.

- Kings Park
- QEIIMC
- UWA
- Karrakatta Cemetery
- Hollywood Private Hospital Precinct
- Hollywood Primary School
- Various recreational/sporting land uses

Figure 2-3 Surrounding Area Key Generators



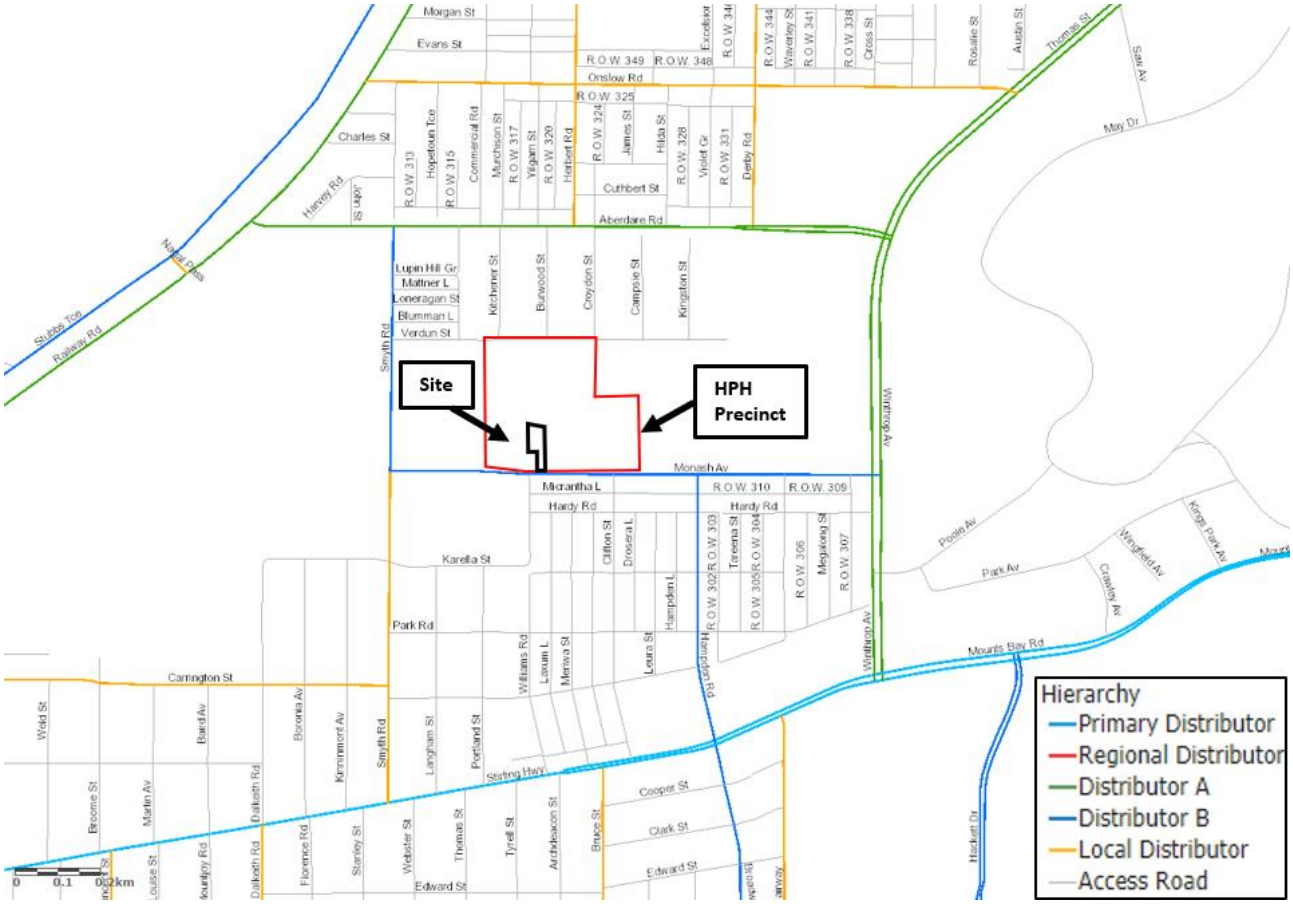
2.4 Existing Road Network

The layout and classification of the roads surrounding the Site is presented in **Figure 2-4**.

Road classifications are defined in the Main Roads Functional Hierarchy as follows:

- **Primary Distributors (light blue):** Form the regional and inter-regional grid of MRWA traffic routes and carry large volumes of fast-moving traffic. Some are strategic freight routes, and all are National or State roads. They are managed by Main Roads.
- **Regional Distributors (red):** Roads that are not Primary Distributors, but which link significant destinations and are designed for efficient movement of people and goods within and beyond regional areas. They are managed by Local Government.
- **District Distributor A (green):** These carry traffic between industrial, commercial, and residential areas and connect to Primary Distributors. These are likely to be truck routes and provide only limited access to adjoining property. They are managed by Local Government.
- **District Distributor B (dark blue):** Perform a similar function to “District Distributor A” but with reduced capacity due to flow restrictions from access to and roadside parking alongside adjoining property. These are often older roads with traffic demand in excess of that originally intended. District Distributor A and B roads run between land-use cells and not through them, forming a grid that would ideally be around 1.5 kilometres apart. They are managed by Local Government.
- **Local Distributors (orange):** Carry traffic within a cell and link District Distributors at the boundary to access roads. The route of the Local Distributor discourages through traffic so that the cell formed by the grid of District Distributors only carries traffic belonging to or serving the area. These roads should accommodate buses but discourage trucks. They are managed by Local government.
- **Access Roads (grey):** Provide access to abutting properties with amenity, safety and aesthetic aspects having priority over the vehicle movement function. These roads are bicycle and pedestrian friendly. They are managed by Local government.

Figure 2-4 Existing Road Network Classification



Source: Main Roads Road Information Mapping System (2019)

The characteristics of the surrounding road network are summarised 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)
Monash Avenue	Distributor B	Local Govt.	2	2	6.8-9.4	50 (40 during school periods)
Smyth Road	Distributor B	Local Govt.	2	2	7.2	50
Verdun Street	Access Road	Local Govt.	2	1	6	50

2.5 Traffic Volumes

Existing traffic volumes were sourced from the Main Roads WA Traffic Map. The data is summarised in **Table 2-2** below.

Table 2-2 Existing Traffic Volumes (two-way)

Road Name	Date	Average Weekday Two-way Traffic Volume	Vehicles - AM Peak Hour	Vehicles - PM Peak Hour
Monash Avenue, west of Hampden Road	2014	8,918	701	568
Smyth Road, north of Monash Avenue	2018	12,061	1,173	1,041
Hampden Road, south of Monash Avenue	2014	7,420	596	572
Smyth Road, south of Monash Avenue	2018	9,812	979	891
Monash Avenue, east of Smyth Road	2018	6,156	608	465

Source: Main Roads Traffic Map accessed 17 July 2019

2.6 Existing Parking

Parking throughout the HPH precinct is available with the closest visitor and employee parking is located at the frontages of the development as shown in **Figure 2-5** and **Figure 2-6**. Paid parking is in place throughout the HPH precinct for both visitor and employee parking.

Figure 2-5 Visitor Parking

Figure 2-6 Medical Specialists Parking

3 Public Transport Facilities

3.1 Existing Public Transport Facilities

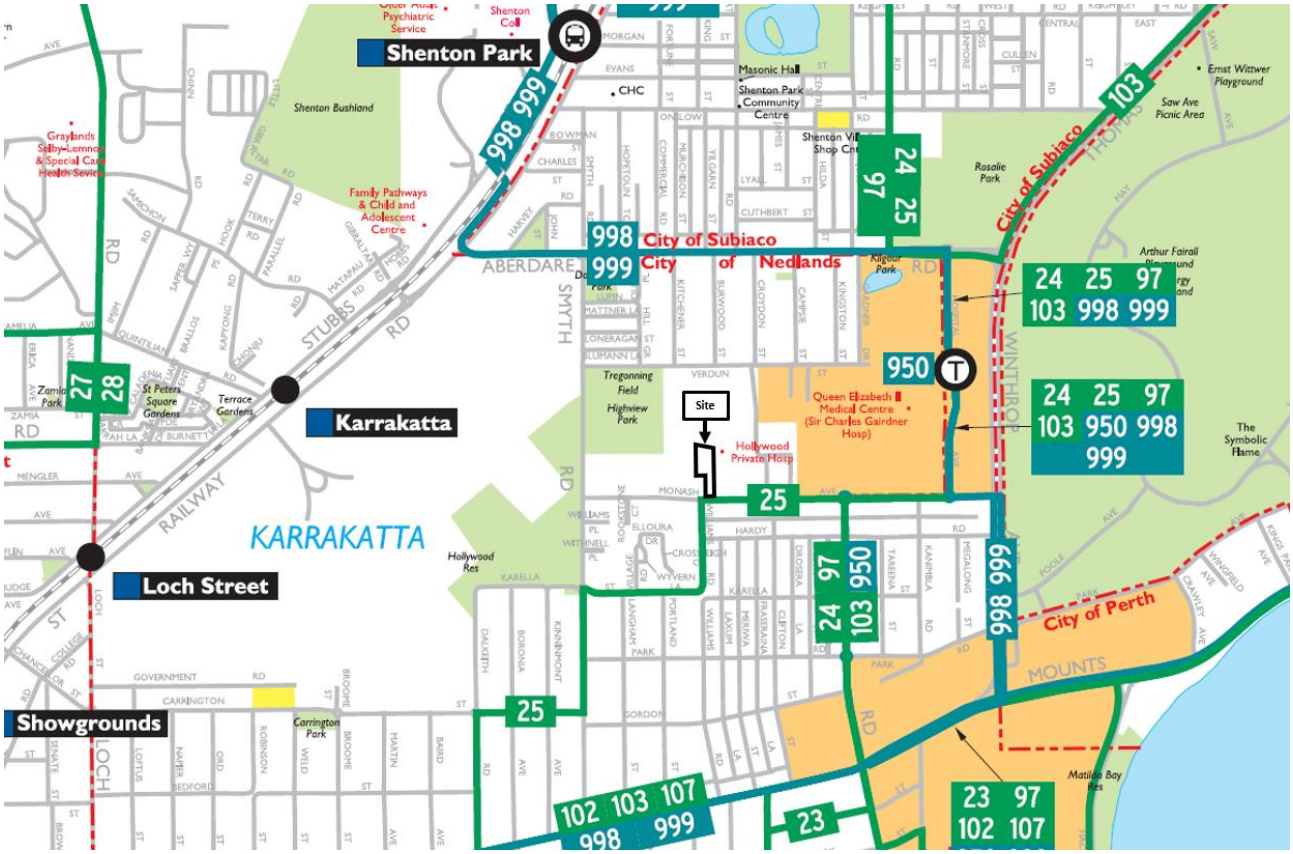
3.1.1 Service frequency

The current bus services available to staff and visitors to the HPH include the following routes:

- Route 24 (Claremont Station to East Perth);
- Route 25 (Claremont Station to East Perth);
- Route 97 (UWA to Subiaco via QEII Medical Centre) with train connection at Subiaco Train Station;
- Route 998/999 (Circle Routes);
- Route 103 (East Perth to Fremantle);
- Route 950 (Morley to QEII Medical Centre via Beaufort Street/Perth City/UWA).

The above routes provide services to Perth CBD and surrounding areas. Existing bus services can be identified in the network map from the Public Transport Authority, as shown in **Figure 3-1**, while the service frequencies are shown in **Table 3-1**.

Figure 3-1 Transperth Network Map



Source: Transperth (2019)

Table 3-1 Bus Routes surrounding the proposed development

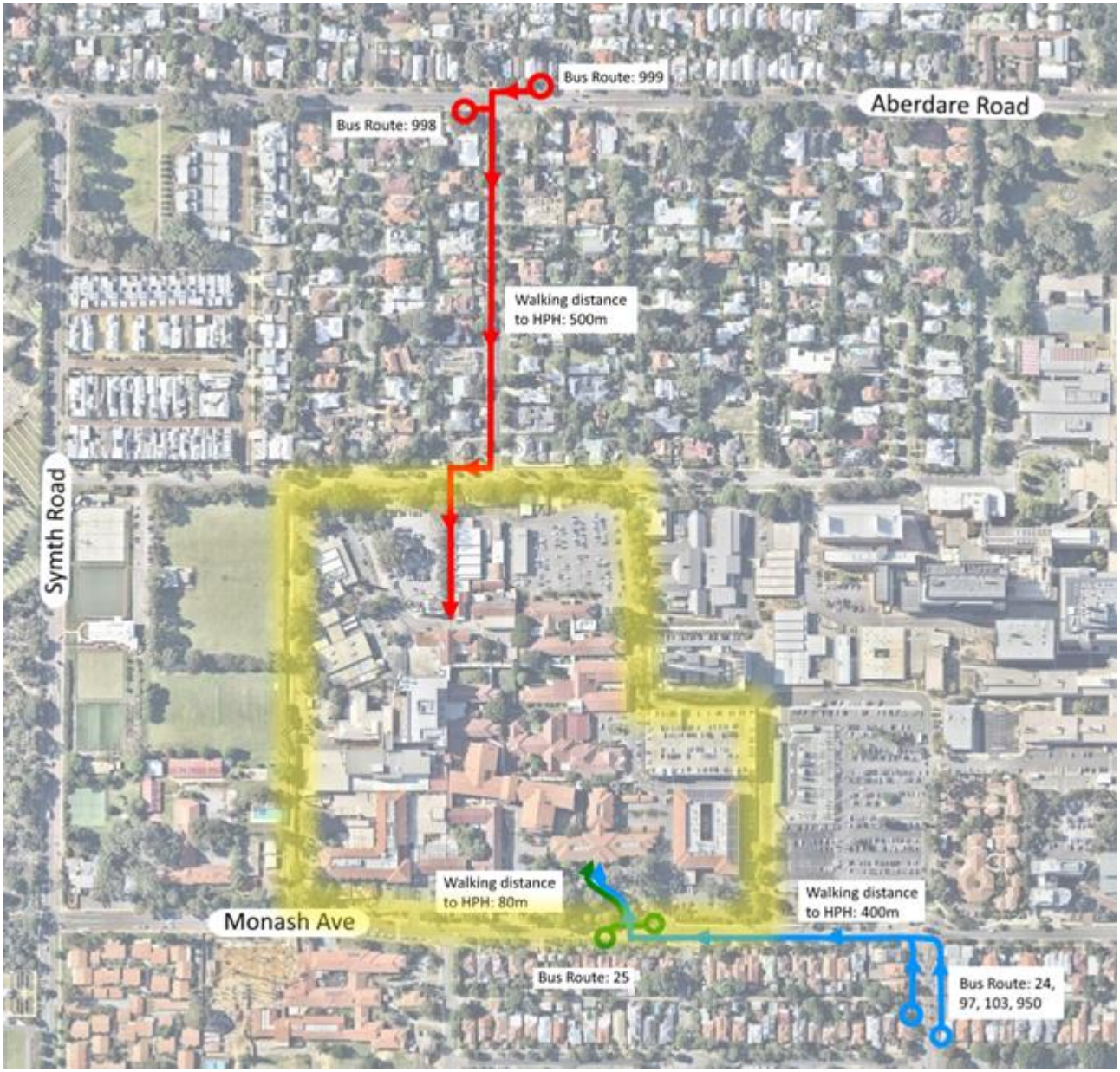
Route No.	Route Description	Weekday Frequency	Saturday Frequency	Sunday Frequency
24	Claremont Station - East Perth	Every 10 minutes in the AM peak and every 15 minutes in the PM peak periods	Every 1 hour	Every 1 hour
25	Claremont Station - East Perth	Hourly; 30 minutes in peak periods	Every 1 hour	N/A
97	UWA to Subiaco via QEII Medical Centre	Every 15 minutes in the peaks	N/A	N/A
998/999	Circle Routes	Varies between 10-15 minutes in peak periods	Every 30 minutes	Every 30 minutes
103	East Perth to Fremantle	Varies between 10-20 minutes in peak periods	Every 30 minutes	Every 1 hour
950	Morley to QEII Medical Centre via Beaufort Street/Perth City/UWA	Every 5-10 minutes in peak periods	Every 10 minutes	Every 10-15 mins

3.1.2 Service Location

Bus services in the vicinity of HPH are centred on QEII Medical Centre and the main interchange on Hospital Avenue. This interchange is located approximately 15 minute walk from HPH; however there are bus stops located closer to HPH for most of these services which would reduce the walking time for HPH staff and visitors.

Figure 3-2 illustrates the location of the nearest bus stops for each bus route serving HPH.

Figure 3-2 Bus stop locations and walking distances



As shown above, the closest bus stops available to HPH are as follows:

- Monash Avenue (Route 25) ~75m from the main building entrance.

  This stop only serves Route 25 which is an infrequent, coverage service that is generally unattractive for potential commuters.

- Hampton Road (Routes 24, 97, 103 and 950) ~ 425m from the main building entrance.

  This stop provides HPH commuters access to the most frequent routes, including the high-frequency Route 950. However, it is at the edge of a reasonable 400m walking catchment for staff.

- Aberdare Road (Route 998/999) ~500m from the rear entrance (via Verdun Street).

  This stop serves only the Circle Route which provides a coverage service to the inner-middle metropolitan area. It creates an important local opportunity for community and staff transport, but is generally too slow to support high demand origin-destination use.

3.2 Future Public Transport Facilities

3.2.1 Perth Orbital

According to the Perth and Peel *Transport Plan* which was published prior to the change in State Government in 2017, a new orbital service is proposed to complement Perth's robust rail network and provide easier access between major activity centres without requiring transfers through CBD stations. The first stage of Metronet has excluded this proposal and it is unknown whether or not this plan will be included in later stages, however this opportunity has been mentioned for completeness.

4 Pedestrian/Cycle Networks and Facilities

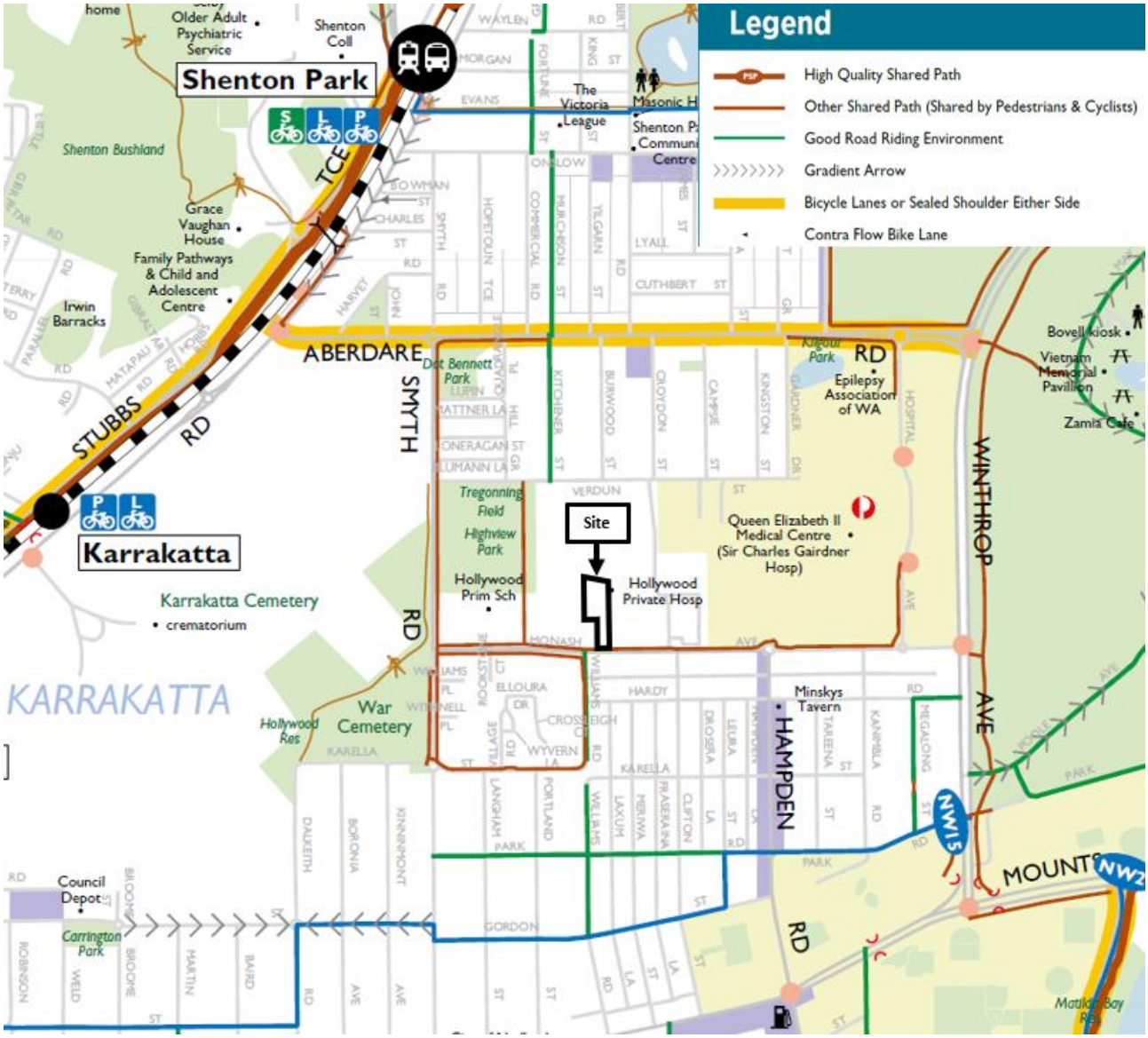
4.1 Existing Pedestrian/Cycle Network Facilities

Existing external cycling facilities are shown in **Figure 4-1**, from an excerpt from the Department of Transport's cycling maps. It should be noted that a reasonable quality shared path also exists along the northern side of Monash Avenue, between Smyth Road and Winthrop Avenue, which is not shown on the map.

These external facilities connect to HPH through a series of path and roadway access points along Monash Avenue and Verdun Street, providing convenient access for pedestrians and cyclists. Once inside the site, cyclists can utilise the low speed internal road network to reach the bicycle parking and pedestrians can utilise the internal path network.

Cycling can potentially be intimidating for less confident cyclists, particularly if they have not yet cycled the routes. However, there are several quiet street approach routes to HPH which could be used by less confident cyclists, e.g. Williams Road, Kitchener Street and Burwood Street/Herbert Road. Additionally, there are several shared paths through Kings Park which provide convenient routes away from traffic to the Perth CBD.

Figure 4-1 Excerpt from Department of Transport Cycling Map



Source: Department of Transport WA (2016)

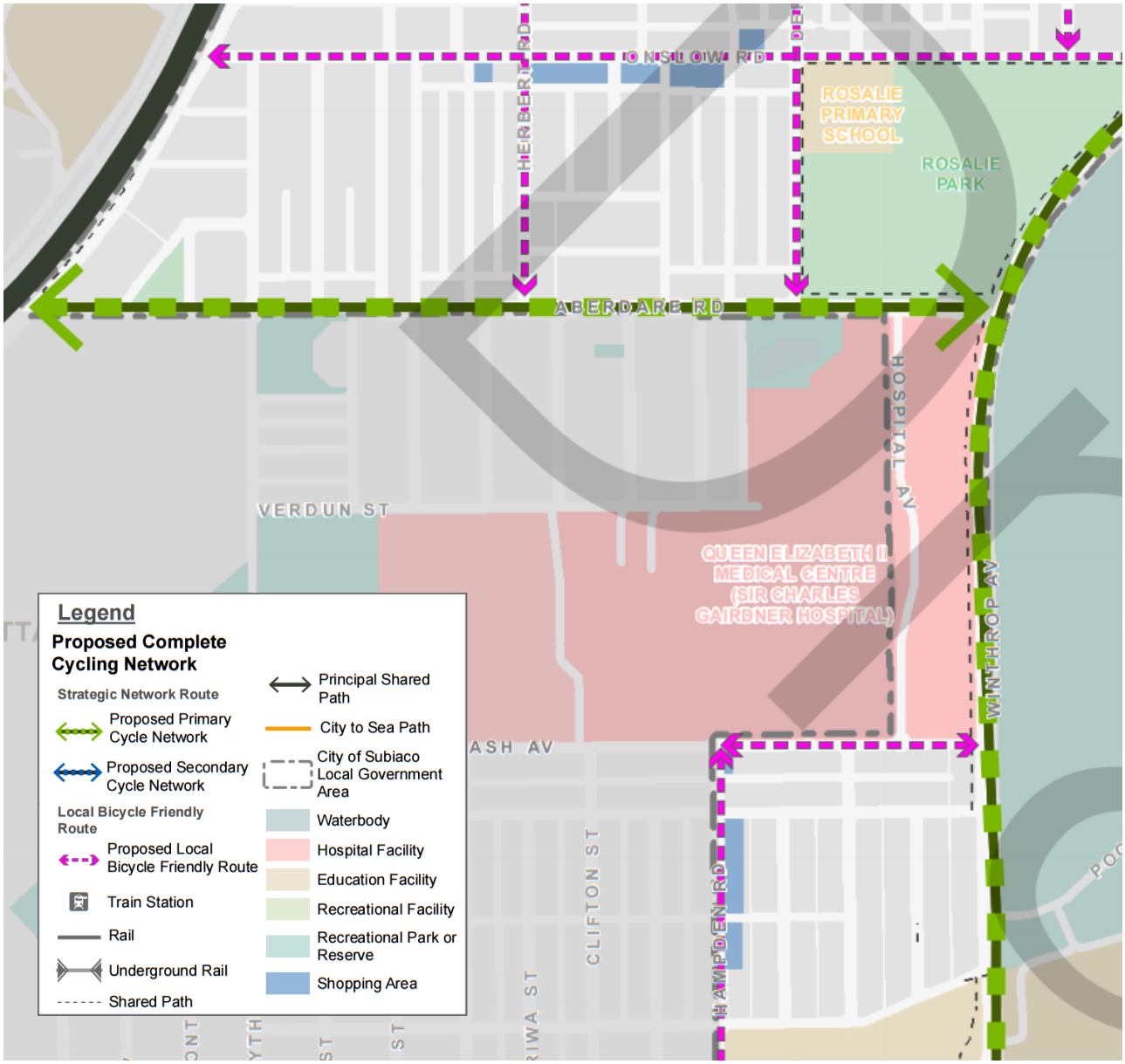
Overall, the local bike network is disjointed and lacks high quality connections from major cycling corridors including the Fremantle Rail Line PSP and the Freeway PSP (via Winthrop Avenue). Additional infrastructure is desirable along Aberdare Road, Winthrop Avenue and Monash Avenue, as well as improved accessibility and wayfinding along approach routes and at the site boundary.

4.2 Future Pedestrian/Cycle Network Facilities

It is understood that the City of Nedlands has proposed shared paths along Carrington Street and Park Road, in the vicinity of HPH.

The City of Subiaco has also prepared a Bike Plan which includes the following network, **Figure 4-2**.

Figure 4-2 Excerpt from the Draft City of Subiaco Bike Plan, Ultimate Network



5 Proposed Development

5.1 Proposed Land Uses

The proposed development consists of the demolition of the existing block to create the following:

- A small emergency department of approximately 700m²
- 3 levels of wards with a combined total of 90 beds (30 beds on each level)
- Relocation of pharmacy, pathology and nuclear medicine. The ground floor will also encompass a café.

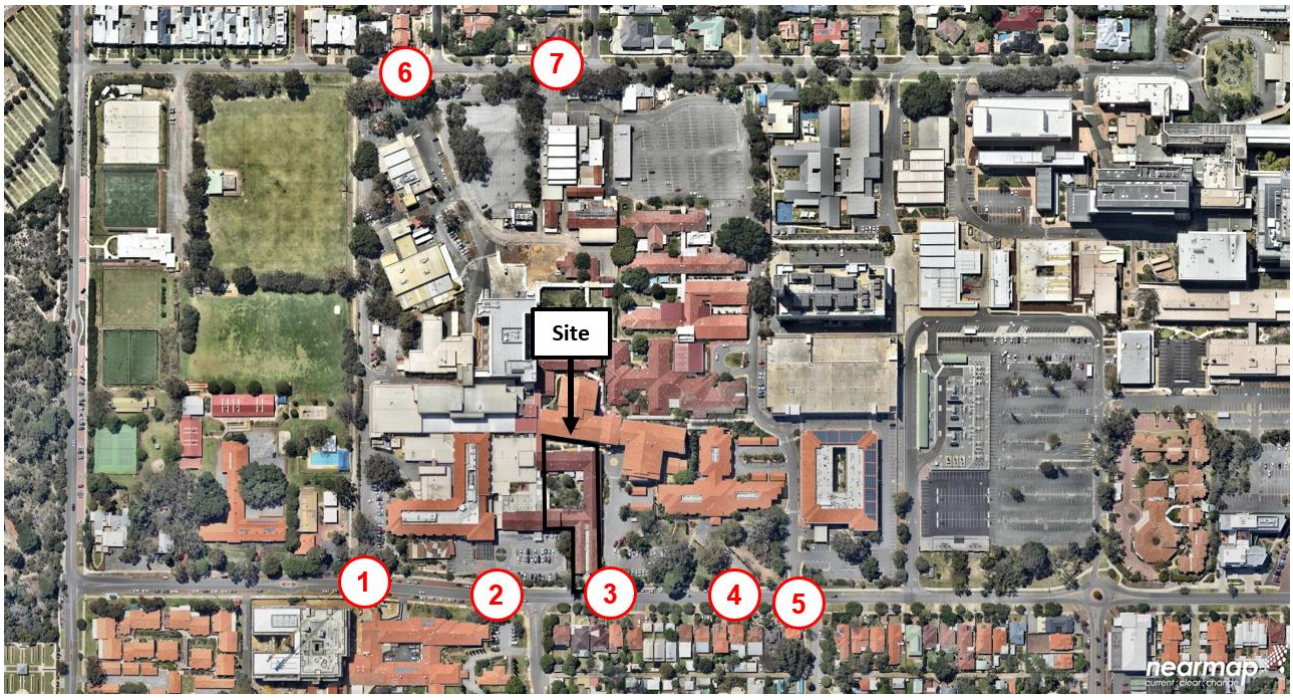
5.2 Access Arrangements

Site access to the proposed development will use the existing accesses into the Hollywood Private Hospital Precinct via Monash Avenue. Current access arrangements will remain generally unchanged in all future scenarios, with the bulk of the vehicle traffic generated by HPH entering and exiting via Monash Avenue.

Figure 5-1 shows the existing location of the accesses to the Hollywood Private Hospital.

- Monash Avenue/Site Access Entry 1 – For service, ambulance and staff
- Monash Avenue/Site Access Entry 2 – Vivian Bullwinkel Entry/Drop-off
- Monash Avenue/Site Access Entry 3 – Majorie Brislee Entry/Drop-off
- Monash Avenue/Site Access Entry 4 – One-way entry to the Specialist centre
- Monash Avenue/Site Access Entry 5 – Main visitor staff entrance
- Verdun Street/Site Access Entry 6 – Staff and service entrance
- Verdun Street/Site Access Entry 7 – Staff and service entrance

Figure 5-1 Site Accesses



Source: Nearmap (2019)

5.3 Provision for Service Vehicles

Refuse collection is expected to occur at the dedicated collection area located near the Site. During collection days, the bins would be moved to the collection area for collection and returned once they have been emptied. **Figure 5-2** and **Figure 5-3** shows the location of the bin collection area.

Figure 5-2 Service Area Location

Figure 5-3 Bin Collection Area

5.4 Parking

5.4.1 Car Parking Provision

As a component of the proposed development, an additional 14 bays will be constructed. The usage of these bays are strictly for doctors only and appropriate measures will be in place to enforce this restriction. The main access to the car park will be from Monash Avenue.

5.4.2 Car Parking Cap

Under the Nedlands Local Planning Scheme No.3 (LPS3), HPH is zoned a Special Use Zone. While the parking requirements for "hospital' uses are generally set at 1 parking bay per 3 beds and 1 parking bay per 2 staff members, parking at HPH is restricted by the WAPC-imposed cap for the UWA-QEII to 1800 parking spaces.

HPH has numerous off-street car parks spread out over the site. Details of the current parking quantum are summaries in **Table 5-1** and **Figure 5-4**.

The existing multi-storey car park in HPH operates on a swipe in and swipe out basis where all employees of HPH, tenants, and staff of the Medical and Specialist Centres are granted an access card.

Table 5-1 Hollywood Private Hospital Car Parking Details

Car Parking Description	Number of Bays
Existing Bays	1,520
Consulting Centre and Car Parking (JDAP approved October 2018)	+262 (originally 264 bays, however 2 bays were changed to motorcycle bays)
Mental Health Unit (JDAP approved 2019)	+4
Modifications to Existing Car Park (approved June 2019)	+15
Ward and Emergency Department (This development)	+14
Total	**1,815 bays**

Source: Hollywood Private Hospital

The current form of allocation provides dedicated parking to individual groups according to a permit system. Staff parking and public parking is maintained in separate areas, with the exception of the Main Parking multi-deck car park.

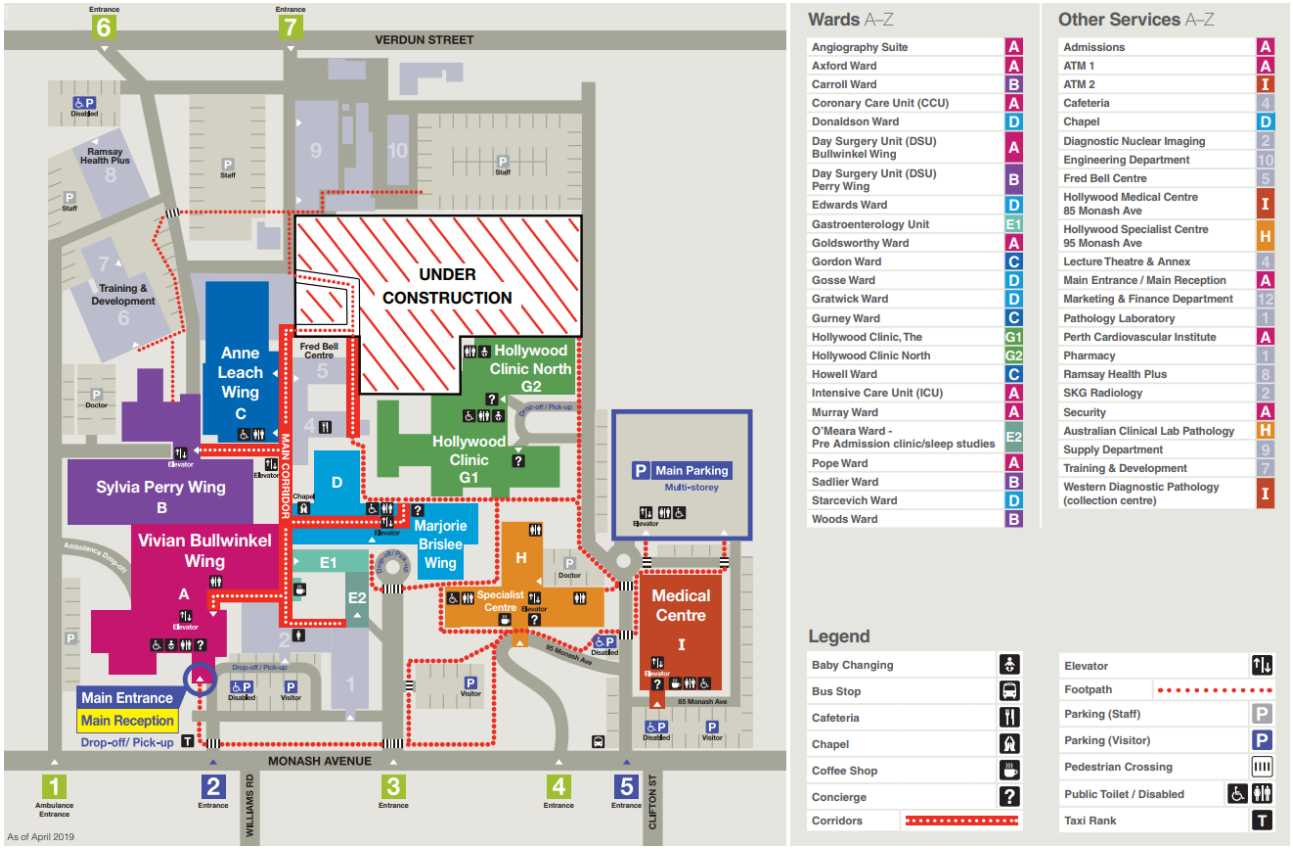
With the exclusion of on-street bays along Monash Avenue and Verdun Street, ACROD bays, pick-up/drop-off, catering/loading areas and informal parking areas the supply which contributes to the parking cap for the entire HPH precinct is currently approximately 1,520 bays.

Additionally, the parking quantum will be increased as a result of the following upcoming developments:

- The HPH Consulting Centre and Car Parking, which is currently under construction, will add 262 bays to the existing parking quantum.
- The Mental Health Unit approved earlier this year will add 4 additional bays.
- The modifications to the existing car park located in front of the Specialist Centre will add 15 additional bays.

The proposed development contributes 14 bays towards this total which results in a total parking provision of 1,815.

Figure 5-4 Existing Car Parking Layout for Hollywood Private Hospital



Source: http://www.hollywoodprivate.com.au

There are free, time restricted (2 hour) on-street parking bays available on Verdun Street and Monash Avenue which is monitored and enforced by the City of Nedlands.

5.4.3 Bicycle Facilities and Parking

The pedestrian and cycling facilities described in **Section 4** of this report are generally adequate for present demand for walking and cycling, and no short-term changes are therefore proposed. In future years, as demand for cycling grows, improvements to the on-street cycling environment will be desirable to encourage cyclists to use the road and reduce the potential for conflicts with pedestrians on the path network. However, this should form part of a new precinct-wide Bike Plan.

Within the site, various pedestrian routes are presently provided which links the main buildings. Visitors can continue to use the internal road network to circulate around the site and reach their individual building, as well as using the path along Monash Avenue.

5.4.3.1 End-of-trip Facilities

As mentioned in the Hollywood Private Hospital Master Plan, the existing end of trip facilities at the HPH include:

- Over 500 lockers, currently used mainly by theatre and ward staff who get changed and/or shower before or after a shift
- Approximately 25 showers, including a mixture of male, female and unisex facilities
- Approximately 50 u-rail bicycle parking spaces
- Hairdryers, irons and laundry service (for theatre staff)

The HPH Master Plan mentions that for future development progresses beyond 2018, further end of trip facilities shall be provided in existing and new buildings to cater for the increase in staff and expected increase in staff cycling to work.

5.5 Other Developments

5.5.1 HPH Medical Consulting and Mental Health Centre

This medical centre comprises new consulting rooms, hospital services, a multi-level car parking and a separate mental health unit (shown as “under construction” in **Figure 5-4**). Construction of the development is currently in progress and due to open in early 2020.

6 Analysis of Transport Network

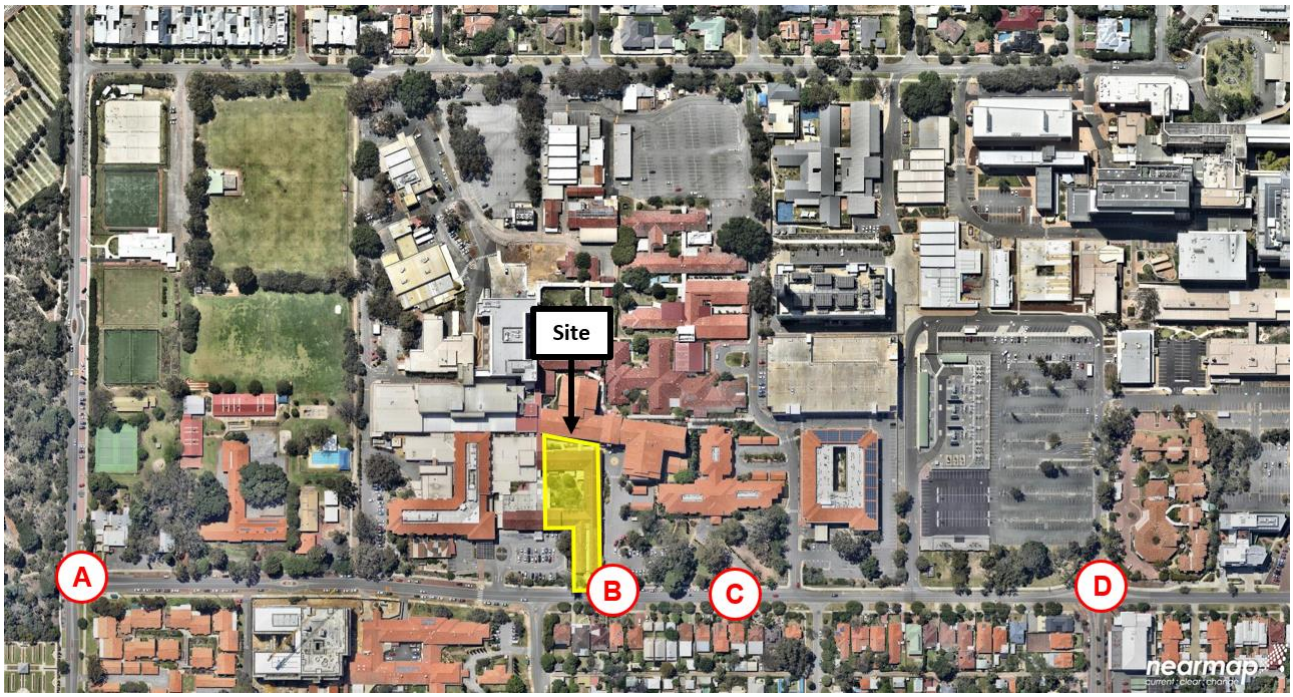
6.1 Analysis Overview

6.1.1 Key Intersections

A SIDRA analysis has been undertaken for the following intersections to assess the potential impact of Site-generated traffic on the surrounding road network as shown in **Figure 6-1**.

- Monash Avenue/Smyth Road (A)
- Monash Avenue/Site Access Entry 1 (B)
- Monash Avenue/Site Access Entry 2 (C)
- Monash Avenue/Hampden Road (D)

Figure 6-1 Key Intersections and Accesses



Source: Nearmap (2019)

6.1.2 Assessment Years

As identified in the WAPC's *Transport Impact Assessment Guidelines: Individual Developments* (August 2016), it is recommended that, for analysis purposes, the appropriate assessment years include the year of full opening of the development and 10 years after full opening. The anticipated opening date of the completed development is 2022.

A growth rate of 2% per annum was applied to the background traffic to estimate the 2032 background traffic volumes.

6.1.3 Assessment Scenarios

6.1.3.1 *Scenario 1: 2019 Assessment Year*

Existing traffic data was obtained from various sources which included Main Roads Traffic Map and traffic counts conducted on several intersections. The combination of this data forms the background traffic network for 2019.

6.1.3.2 *Scenario 2: 2022 Assessment Year + Development*

The anticipated opening year of the development is 2022. Therefore, a background traffic growth of 2% was applied to the 2019 background traffic to obtain the background traffic for 2022. The development trip

generation is added on top of this to estimate the traffic impact of the proposed medical block on the surrounding road network.

6.1.3.3 *Scenario 3: 2032 Assessment Year + Development*

This assessment scenario includes the 10 year horizon assessment from 2022 with the inclusion of the development generated traffic.

6.2 Development Trip Generation

Trip generation has been calculated for the Site, utilising the trip generation rates from the *Institute of transportation Engineering (ITE) "Trip Generation" 10th Ed*.

Table 6-1 shows the trip generation, **Table 6-2** shows the directional distribution of the traffic and **Table 6-3** presents the total potential trip generation of the proposed development for the full development buildout.

Table 6-1 Trip Generation Rates

Land Use	ITE Code/Source	AM Peak	PM Peak
Hospital	610	1.89 trip per bed	2.09 trips per bed
Emergency Room	650	2.22 trips per 100m^2	2.41 trips per 100m^2

Table 6-2 Directional Distribution

Land Use	AM Peak		PM Peak	
	In	**Out**	**In**	**Out**
Hospital	71%	29%	30%	70%
Emergency Room	64%	36%	46%	54%

Source: ITE "Trip Generation" 10th Ed

Table 6-3 Estimated Net Trip Generation of the Proposed Development

Land Use	AM Peak		PM Peak	
	In	**Out**	**In**	**Out**
Hospital*	121	49	56	132
Emergency Room	9	5	7	8
Total	**130**	**54**	**63**	**140**

The proposed redevelopment represents a two-way trip generation of approximately 184 vehicles in the AM peak and 203 vehicles in the PM peak hour for the full development buildout.

Note that the traffic generation does not include the reduction of trips as a result of the removal of the existing buildings. Therefore, the traffic volumes for the proposed medical centre will be higher than expected which provides a robust assessment.

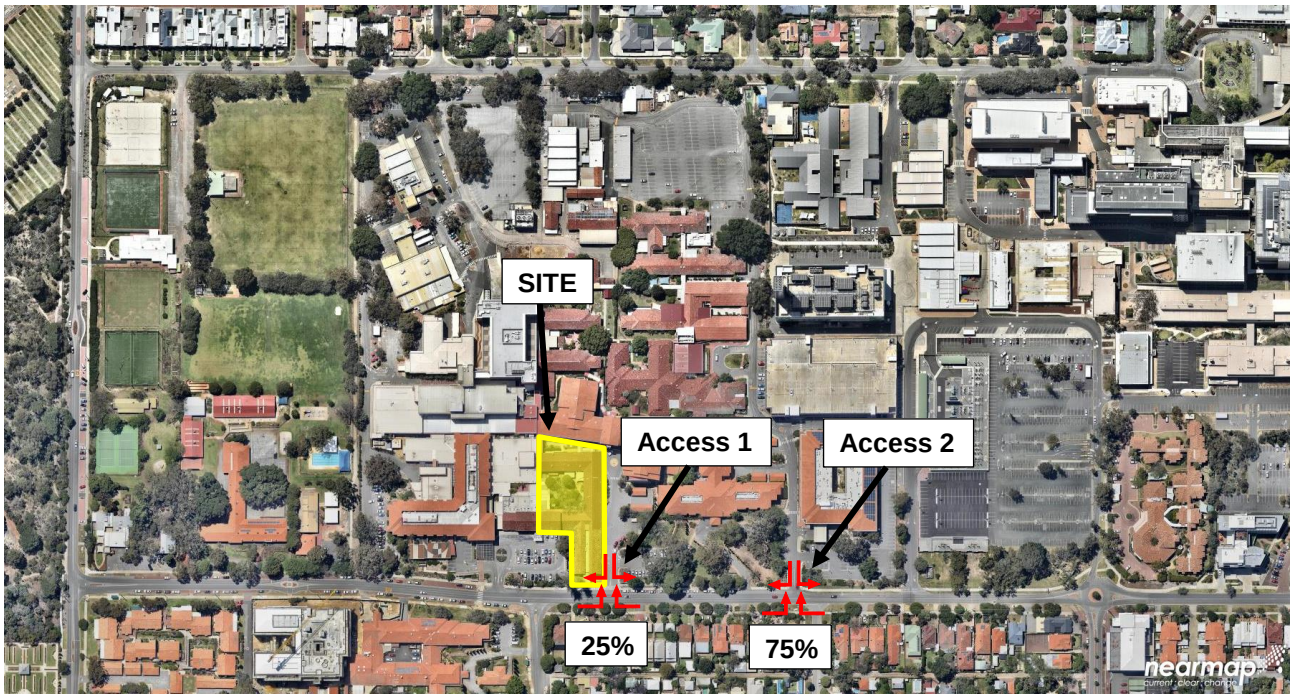
6.3 Development Traffic Distribution

The main routes of access to the proposed medical centre is via the following accesses;

- Monash Avenue/Site Access 1
- Monash Avenue/Site Access 2

Therefore, inbound and outbound traffic will be directed to these accesses. **Figure 6-2**, shows the development trip distribution at these accesses.

Figure 6-2 Development Trip Distribution at the Site Accesses



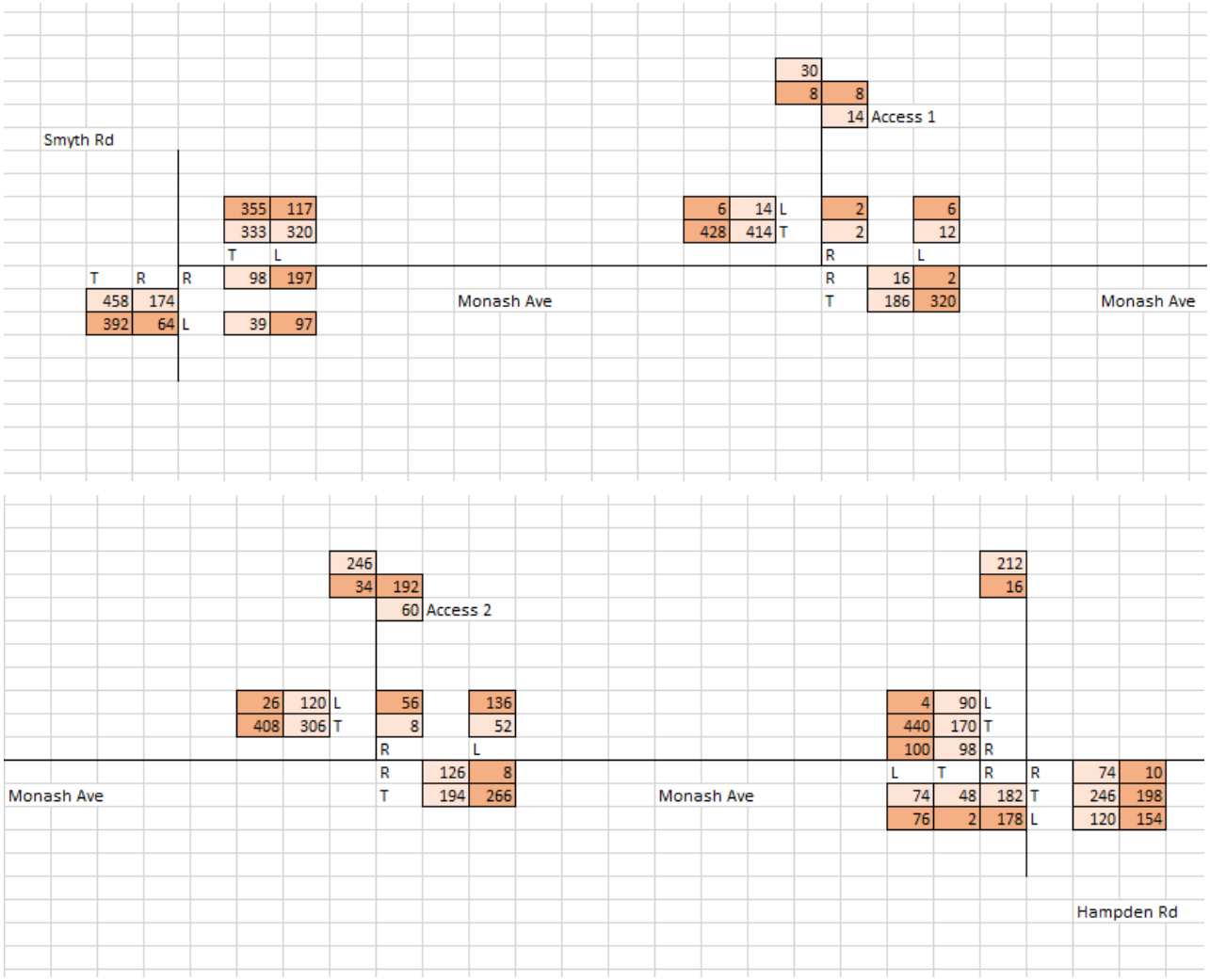
Source: Nearmap (2018)

Traffic distribution along the surrounding road network has been derived from the existing distribution flows of Monash Avenue, Smyth Road and Hampden Road sourced from on-site traffic counts. In addition, consideration has also been given to the expected origin and destination of each trip in the context of the surrounding area.

6.4 Background Traffic

Background without development traffic adopted for the assessment is shown in **Figure 6-3.**

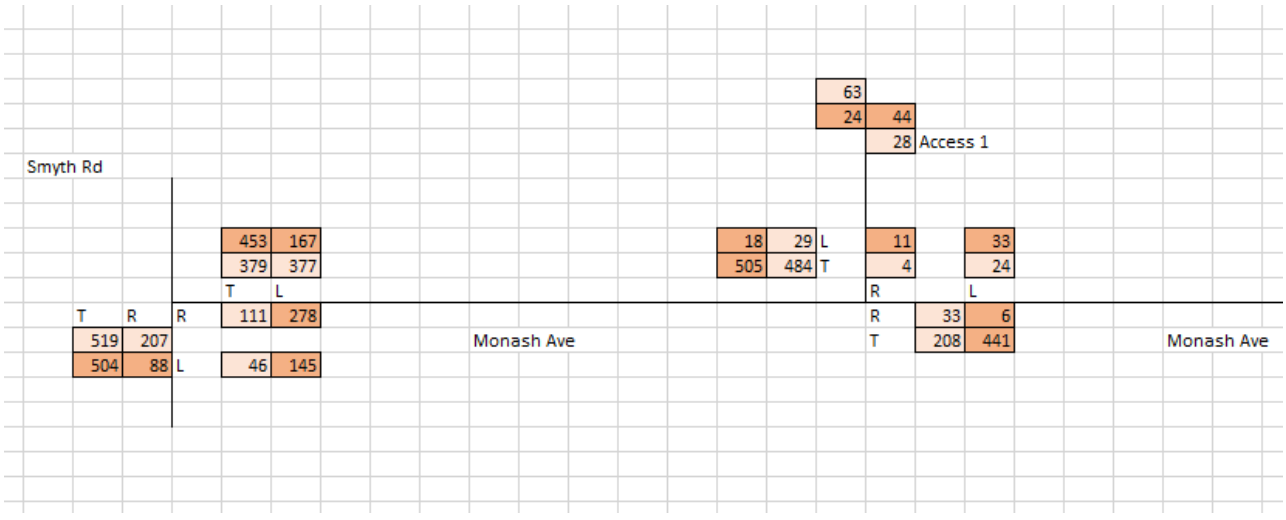
Figure 6-3 2019 Assessment Year Weekday AM and PM Peak



6.5 Background and Development Traffic

Background with development traffic adopted for the assessment are shown in **Figure 6-4** and **Figure 6-5**.

Figure 6-4 2022 Assessment Year + Development – Weekday AM and PM Peak



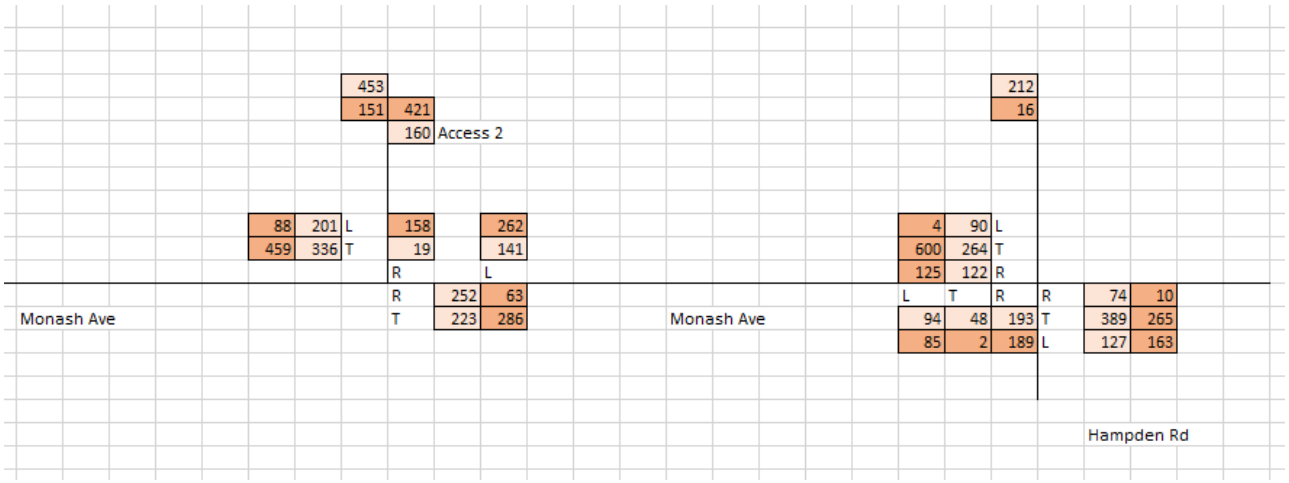
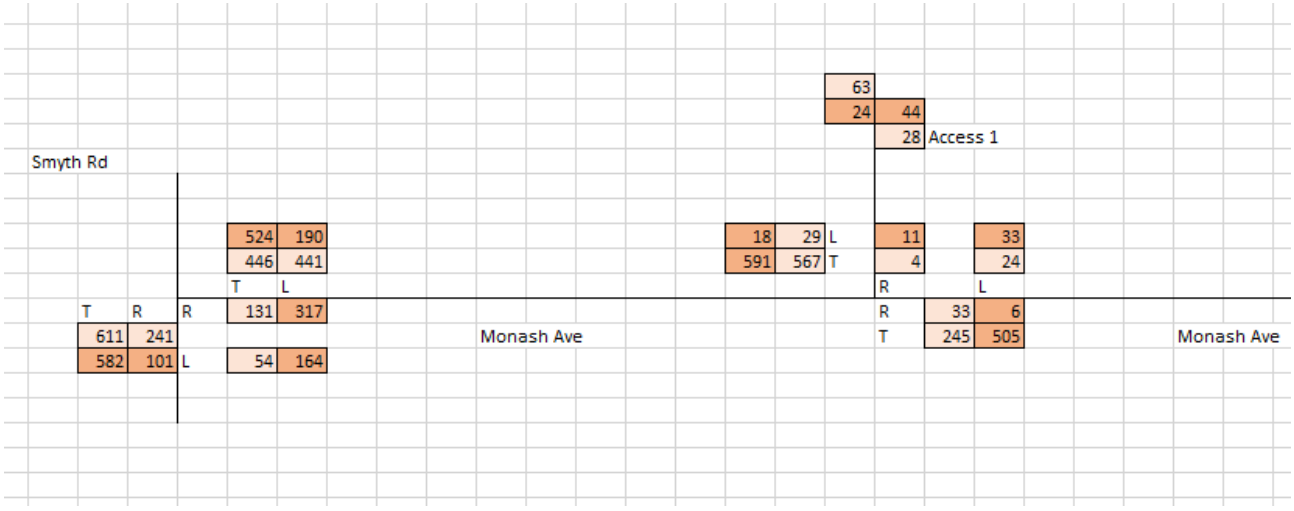
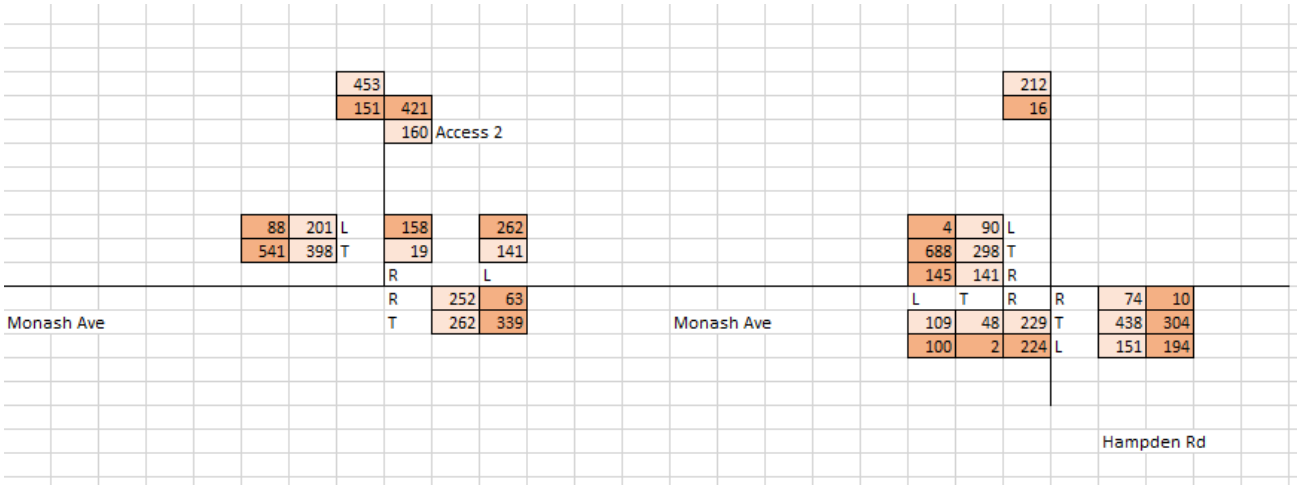


Figure 6-5 2032 Assessment Year + Development – Weekday AM and PM Peak





6.6 Intersection Performance

Analysis of the intersection performance has been carried out under the three scenarios, Scenario 1 (2019 assessment year), Scenario 2 (2022 assessment year + development) and Scenario 3 (2032 assessment year + development):

- Monash Avenue/Hampden Road
- Monash Avenue/Smyth Road
- Monash Avenue/Site Access 1
- Monash Avenue/Site Access 2

The identified intersections and accesses have been analysed for the proposed scenarios using the SIDRA analysis program. This program calculates the performance of intersections based on input parameters, including geometry and traffic volumes. As an output SIDRA provides values for the Degree of Saturation (DOS), queue lengths, delays, level of service, and 95th Percentile Queue. 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 unsignalised 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 6-4**.

Table 6-4 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

A DOS exceeding these values indicates that the intersection is exceeding its practical capacity. Above these values, users of the intersections are likely to experience unsatisfactory queueing and delays during the peak hour periods. All SIDRA outputs referenced herein are included at **Appendix C**.

6.6.2 Scenario 1: 2019 Assessment Year

The performance of the critical intersections adjacent to the HPH for Scenario 1, is shown in **Table 6-5** to **Table 6-8** including the intersection layouts.

The intersection layout for the Monash Avenue/Hampden Road Intersection is shown in **Figure 6-6** below.

Figure 6-6 Monash Avenue/Hampden Road Intersection Layout

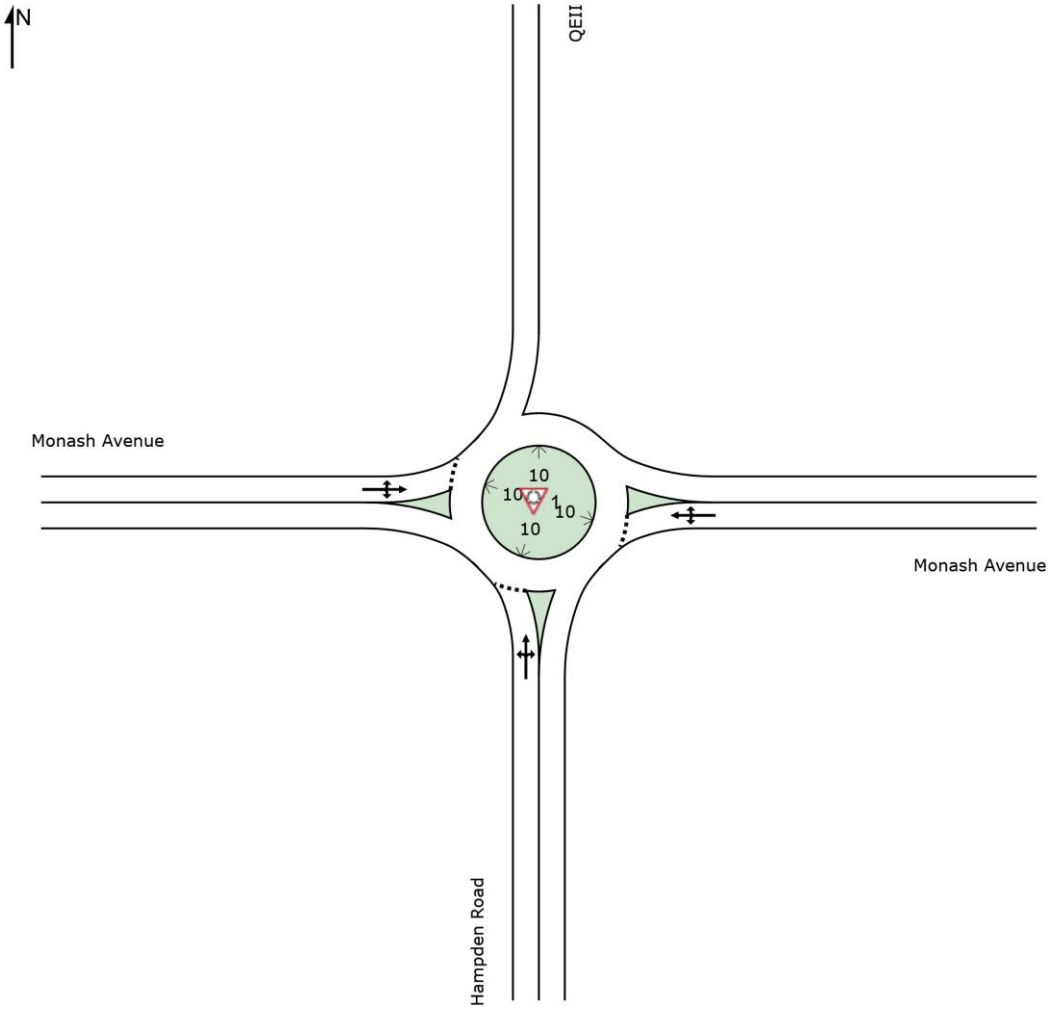


Table 6-5 Monash Avenue/Hampden Road Intersection Performance – Scenario 1

Intersection Approach		Weekday AM Peak Hour				Weekday PM Peak Hour			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
Hampden Road (S)	L	0.337	7.3	A	16.6	0.254	6.2	A	11.8
	T	0.337	7.4	A	16.6	0.254	6.4	A	11.8
	R	0.337	10.7	B	16.6	0.254	9.7	A	11.8
Monash Avenue (E)	L	0.352	5.3	A	19	0.294	5.2	A	14.6
	T	0.352	5.4	A	19	0.294	5.4	A	14.6
	R	0.352	8.7	A	19	0.294	8.7	A	14.6
Monash Avenue (W)	L	0.388	7.3	A	20.1	0.498	6.4	A	30.3
	T	0.388	7.5	A	20.1	0.498	6.6	A	30.3
	R	0.388	10.7	B	20.1	0.498	9.9	A	30.3

From above it is noted that the intersection operates well within acceptable capacity limits during both peak hour periods. Therefore, no modification to the intersection geometry is required at this location.

The intersection layout for the Monash Avenue/Smyth Road Intersection is shown in **Figure 6-7** below.

Figure 6-7 Monash Avenue/Smyth Road Intersection Layout

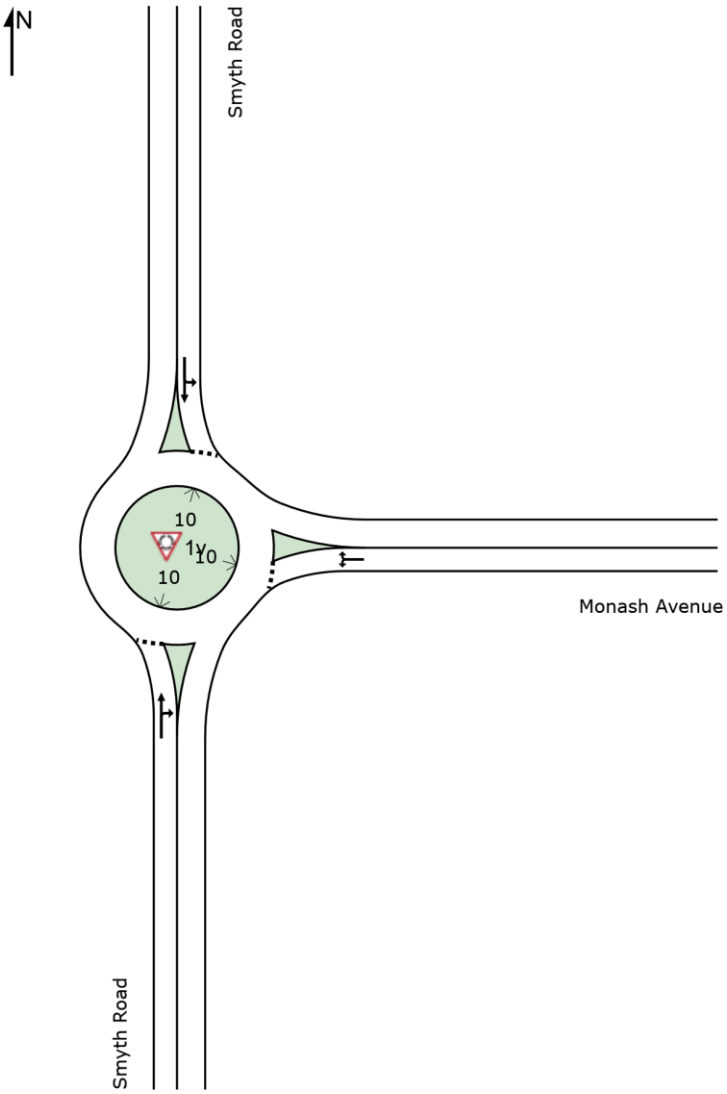


Table 6-6 Monash Avenue/Smyth Road Intersection Performance – Scenario 1

Intersection Approach		Weekday AM Peak Hour				Weekday PM Peak Hour			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
Smyth Road (S)	L	0.511	5.7	A	36.4	0.442	6.6	A	26.7
	R	0.511	8.9	A	36.4	0.442	9.9	A	26.7
Monash Avenue (E)	L	0.163	7.3	A	7.5	0.347	8	A	17.2
	T	0.163	10.5	B	7.5	0.347	11.2	B	17.2
Smyth Road (N)	T	0.593	6.7	A	42.3	0.362	5.2	A	22
	R	0.593	6.7	A	42.3	0.362	5.2	A	22

From above it is noted that the intersection operates well within acceptable capacity limits during both peak hour periods. Therefore, no modification to the intersection geometry is required at this location.

The intersection layout for the Monash Avenue/Site Access 1 Intersection is shown in **Figure 6-8** below.

Figure 6-8 Monash Avenue/Site Access 1 Intersection Layout

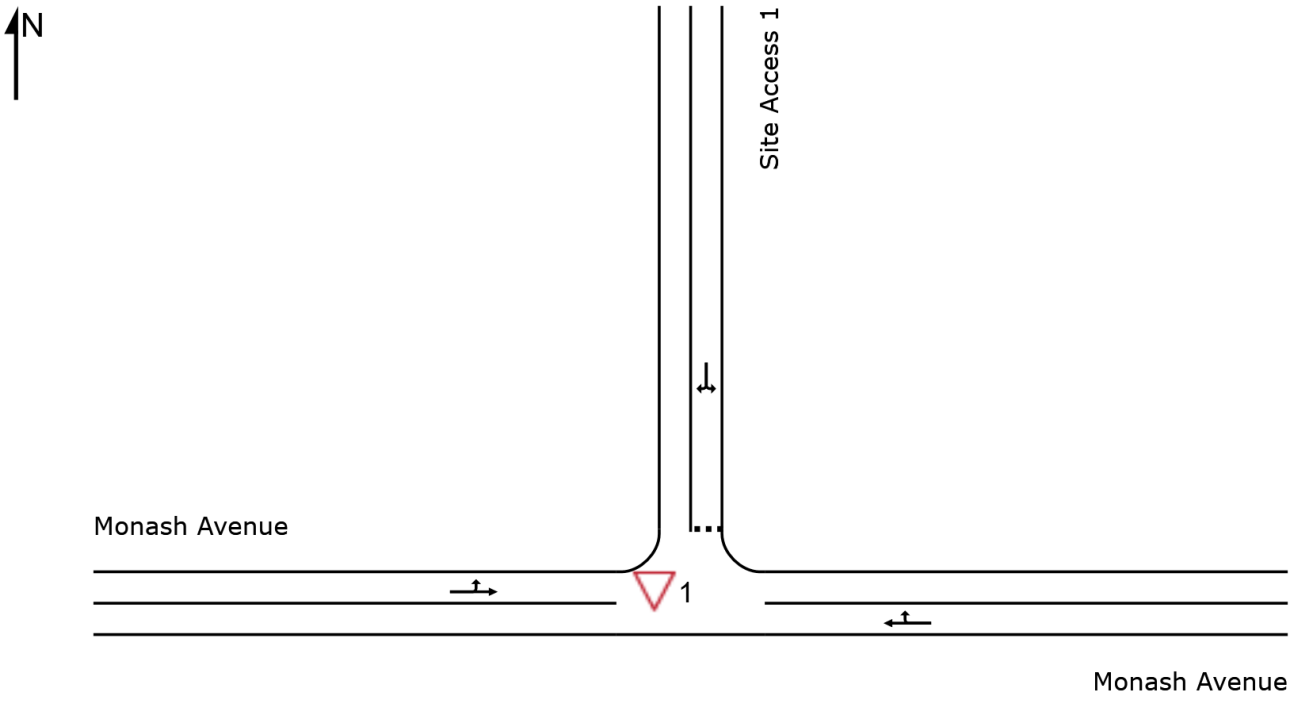


Table 6-7 Monash Avenue/Site Access 1 Intersection Performance – Scenario 1

Intersection Approach		Weekday AM Peak Hour				Weekday PM Peak Hour			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
Monash Avenue (E)	T	0.111	0.2	A	1.1	0.169	0	A	0.2
	R	0.111	7.3	A	1.1	0.169	7.5	A	0.2
Site Access 1 (N)	L	0.014	7	A	0.3	0.009	7	A	0.2
	R	0.014	8.4	A	0.3	0.009	9.3	A	0.2
Monash Avenue (W)	L	0.222	5.6	A	0	0.225	5.6	A	0
	T	0.222	0	A	0	0.225	0	A	0

From above it is noted that the intersection operates well within acceptable capacity limits during both peak hour periods. Therefore, no modification to the intersection geometry is required at this location.

From above it is noted that the intersection operates well within acceptable capacity limits during both peak hour periods. Therefore, no modification to the intersection geometry is required at this location.

The intersection layout for the Monash Avenue/Site Access 2 Intersection is shown in **Figure 6-9** below.

Figure 6-9 Monash Avenue/Site Access 2 Intersection Layout

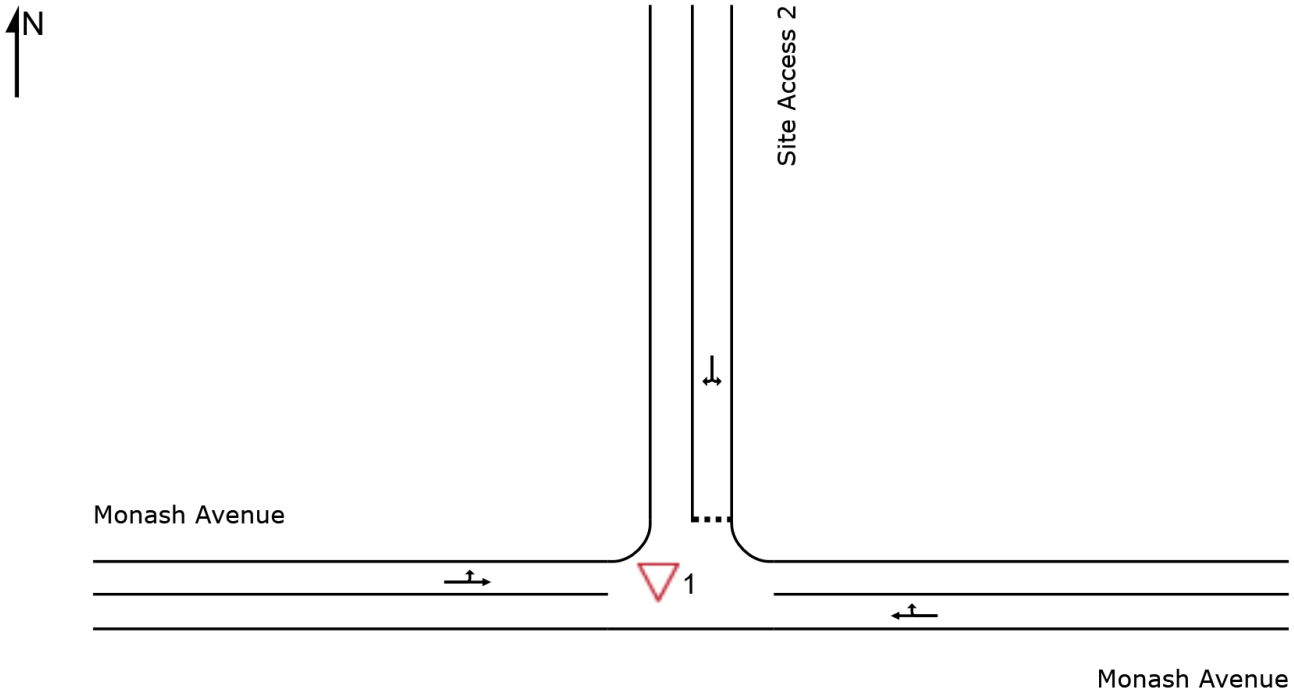


Table 6-8 Monash Avenue/Site Access 2 Intersection Performance – Scenario 1

Intersection Approach		Weekday AM Peak Hour				Weekday PM Peak Hour			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
Monash Avenue (E)	T	0.208	1.3	A	7.3	0.144	0.1	A	0.6
	R	0.208	7.4	A	7.3	0.144	7.4	A	0.6
Site Access 2 (N)	L	0.055	6.6	A	1.4	0.212	7.3	A	5.7
	R	0.055	9	A	1.4	0.212	9.6	A	5.7
Monash Avenue (W)	L	0.223	5.6	A	0	0.226	5.6	A	0
	T	0.223	0	A	0	0.226	0	A	0

From above it is noted that the intersection operates well within acceptable capacity limits during both peak hour periods. Therefore, no modification to the intersection geometry is required at this location.

6.6.3 Scenario 2: 2022 Assessment Year + Development

The performance of the critical intersections and accesses adjacent to the HPH for Scenario 2 is shown in **Table 6-9** to **Table 6-12.**

Table 6-9 Monash Avenue/Hampden Road Intersection Performance – Scenario 2

Intersection Approach		Weekday AM Peak Hour				Weekday PM Peak Hour			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
Hampden Road (S)	L	0.431	8.8	A	22.8	0.295	6.8	A	14.2
	T	0.431	8.9	A	22.8	0.295	7	A	14.2
	R	0.431	12.2	B	22.8	0.295	10.3	B	14.2
Monash Avenue (E)	L	0.484	5.6	A	30.7	0.367	5.5	A	20.2
	T	0.484	5.7	A	30.7	0.367	5.6	A	20.2
	R	0.484	9	A	30.7	0.367	8.9	A	20.2
Monash Avenue (W)	L	0.521	7.9	A	31.4	0.666	7.4	A	53.5
	T	0.521	8.1	A	31.4	0.666	7.6	A	53.5
	R	0.521	11.4	B	31.4	0.666	10.8	B	53.5

From above it is noted that the intersection continues to operate well within acceptable capacity limits during both peak hour periods. Therefore, no modification to the intersection geometry is required at this location.

Table 6-10 Monash Avenue/Smyth Road Intersection Performance – Scenario 2

Intersection Approach		Weekday AM Peak Hour				Weekday PM Peak Hour			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
Smyth Road (S)	L	0.597	6	A	47.9	0.641	9.3	A	52.9
	R	0.597	9.2	A	47.9	0.641	12.5	B	52.9
Monash Avenue (E)	L	0.201	7.7	A	9.7	0.56	11.3	B	38
	T	0.201	11	B	9.7	0.56	14.6	B	38
Smyth Road (N)	T	0.718	8.7	A	68.4	0.494	5.5	A	36.4
	R	0.718	8.7	A	68.4	0.494	5.5	A	36.4

From above it is noted that the intersection continues to operate well within acceptable capacity limits during both peak hour periods. Therefore, no modification to the intersection geometry is required at this location.

Table 6-11 Monash Avenue/Site Access 1 Intersection Performance – Scenario 2

Intersection Approach		Weekday AM Peak Hour				Weekday PM Peak Hour			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
Monash Avenue (E)	T	0.14	0.6	A	2.6	0.236	0.1	A	0.6
	R	0.14	7.9	A	2.6	0.236	8.4	A	0.6
Site Access 1 (N)	L	0.031	7.4	A	0.8	0.058	7.5	A	1.4
	R	0.031	9.4	A	0.8	0.058	11.7	B	1.4
Monash Avenue (W)	L	0.266	5.6	A	0	0.271	5.6	A	0
	T	0.266	0	A	0	0.271	0	A	0

From above it is noted that the intersection continues to operate well within acceptable capacity limits during both peak hour periods, with queuing and long delays are unlikely to occur. Therefore, no modification to the intersection geometry is required at this access location.

Table 6-12 Monash Avenue/Site Access 2 Intersection Performance – Scenario 2

Intersection Approach		Weekday AM Peak Hour				Weekday PM Peak Hour			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
Monash Avenue (E)	T	0.363	2.9	A	18.5	0.21	0.9	A	5.3
	R	0.363	8.9	A	18.5	0.21	8.3	A	5.3
Site Access 2 (N)	L	0.157	6.8	A	4.3	0.559	9.8	A	25.4
	R	0.157	11.7	B	4.3	0.559	14.6	B	25.4
Monash Avenue (W)	L	0.282	5.6	A	0	0.286	5.6	A	0
	T	0.282	0	A	0	0.286	0	A	0

From above it is noted that the intersection continues to operate well within acceptable capacity limits during both peak hour periods, with queuing and long delays are unlikely to occur. Therefore, no modification to the intersection geometry is required at this access location.

6.6.4 Scenario 3: 2032 Assessment Year + Development

The performance of the critical intersections and accesses adjacent to the HPH for the 2032 scenario with development traffic is shown in **Table 6-13** to **Table 6-16**.

Table 6-13 Monash Avenue/Hampden Road Intersection Performance – Scenario 3

Intersection Approach		Weekday AM Peak Hour				Weekday PM Peak Hour			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
Hampden Road (S)	L	0.53	10.9	B	34.2	0.367	7.3	A	18.9
	T	0.53	11.1	B	34.2	0.367	7.5	A	18.9
	R	0.53	14.4	B	34.2	0.367	10.7	B	18.9
Monash Avenue (E)	L	0.559	5.9	A	39	0.439	5.7	A	26.9
	T	0.559	6	A	39	0.439	5.9	A	26.9
	R	0.559	9.3	A	39	0.439	9.2	A	26.9
Monash Avenue (W)	L	0.608	9.7	A	45	0.803	11.5	B	100.7
	T	0.608	9.9	A	45	0.803	11.7	B	100.7
	R	0.608	13.2	B	45	0.803	15	B	100.7

From above it is noted that the intersection continues to operate well within acceptable capacity limits during both peak hour periods. Therefore, no modification to the intersection geometry is required at this location.

Table 6-14 Monash Avenue/Smyth Road Intersection Performance – Scenario 3

Intersection Approach		Weekday AM Peak Hour				Weekday PM Peak Hour			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
Smyth Road (S)	L	0.72	6.6	A	69.8	0.784	14	B	93.1
	R	0.72	9.8	A	69.8	0.784	17.3	B	93.1
Monash Avenue (E)	L	0.261	8.5	A	13.3	0.699	16.4	B	62.3
	T	0.261	11.7	B	13.3	0.699	19.6	B	62.3
Smyth Road (N)	T	0.883	16.9	B	157.8	0.582	5.8	A	49
	R	0.883	16.9	B	157.8	0.582	5.8	A	49

From above it is noted that the intersection continues to operate well within acceptable capacity limits during both peak hour periods. Therefore, no modification to the intersection geometry is required at this location.

Table 6-15 Monash Avenue/Site Access 1 Intersection Performance - Scenario 3

Intersection Approach		Weekday AM Peak Hour				Weekday PM Peak Hour			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
Monash Avenue (E)	T	0.164	0.7	A	3	0.271	0.1	A	0.7
	R	0.164	8.6	A	3	0.271	9.3	A	0.7
Site Access 1 (N)	L	0.035	7.9	A	0.8	0.069	8.1	A	1.6
	R	0.035	10.7	B	0.8	0.069	14	B	1.6
Monash Avenue (W)	L	0.309	5.6	A	0	0.315	5.6	A	0
	T	0.309	0	A	0	0.315	0	A	0

From above it is noted that the intersection continues to operate well within acceptable capacity limits during both peak hour periods. Therefore, no modification to the intersection geometry is required at this location.

Table 6-16 Monash Avenue/Site Access 2 Intersection Performance - Scenario 3

Intersection Approach		Weekday AM Peak Hour				Weekday PM Peak Hour			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
Monash Avenue (E)	T	0.405	3.6	A	22.7	0.245	1.1	A	6.4
	R	0.405	9.8	A	22.7	0.245	9.2	A	6.4
Site Access 2 (N)	L	0.171	7.1	A	4.6	0.653	12	B	31.8
	R	0.171	13	B	4.6	0.653	18.5	C	31.8
Monash Avenue (W)	L	0.314	5.6	A	0	0.328	5.6	A	0
	T	0.314	0	A	0	0.328	0	A	0

From above it is noted that the intersection continues to operate well within acceptable capacity limits during both peak hour periods. Therefore, no modification to the intersection geometry is required at this location.

7 Site-Specific Issues

7.1 Crash Data

Assessment of the crash data for the five year period between 2014 and 2018 has been undertaken for Monash Avenue (between Smyth Road and Winthrop Ave) and Verdun Street (between Smyth Road and Burwood Street).

The crash database separates Monash Avenue into two sections which has been designated as Monash Avenue West (between Smyth Street and east of Clifton Street) and Monash Avenue East (between west of Hampden Road and Winthrop Avenue). 70 crashes were recorded for the Monash Avenue section and 5 crashes were recorded for the Verdun Street section. Summaries of the crash data analysis are presented in **Table 7-1**, **Table 7-2** and **Table 7-3**.

Table 7-1 Monash Avenue (West) Crash Statistics 2014-2018

Type of Crash	Fatal	Hospital	Medical	Major Property Damage	Minor Property Damage	Total Crashes
Rear End	-	-	1	4	1	6
Right Angle	-	-	1	2	2	5
Sideswipe Same Direction	-	-	-	3	2	5
Hit Pedestrian	-	-	1	-	-	1
Other Crashes	-	-	-	1	3	4
Total	**0**	**0**	**3**	**10**	**8**	**21**

Table 7-2 Monash Avenue (East) Crash Statistics 2014-2018

Type of Crash	Fatal	Hospital	Medical	Major Property Damage	Minor Property Damage	Total Crashes
Rear End	-	1	7	15	8	31
Right Angle	-	-	-	3	3	6
Right Turn Thru	-	-	-	1	1	2
Sideswipe Same Direction	-	-	-	-	1	1
Non Collision	-	-	1	2	1	4
Hit Object	-	-	-	1	-	1
Other Crashes	-	-	-	-	4	4
Total	**0**	**1**	**8**	**22**	**18**	**49**

In summary for Monash Avenue;

- No fatalities were recorded.
- One crash required hospital admittance resulting from a rear end crash.
- 11 crashes that required medical treatment but not hospital admittance with the majority resulting from rear end crashes
- The remaining crashes were major/minor property damage crashes with most of them being rear end crashes.
- It is noted that crashes classified “Rear End” appear over-represented compared to the network average along this section of road. The crash numbers indicate that a road safety investigation of this section of road may be justified.
- Future hospital developments are expected to increase the pedestrian and vehicle movements along Monash Avenue, therefore it is recommended that a Road Safety Audit be undertaken in the future to

ensure any safety concerns have been identified and mitigated, and to ensure the risk of crash occurrence is reduced.

Table 7-3 Verdun Street (between Smyth Road and Burwood Street) Crash Statistics 2014-2018

Type of Crash	Fatal	Hospital	Medical	Major Property Damage	Minor Property Damage	Total Crashes
Rear End	-	-	2	-	-	2
Head On	-	-	1	-	-	1
Right Turn Thru	-	-	1	-	-	1
Hit Object	-	-	-	1	-	1
Total	**0**	**0**	**4**	**1**	**0**	**5**

In summary for Verdun Street; almost all of the recorded crashes required medical treatment but not hospital admittance, plus a single crash that resulted in major property damage. This rate is significantly above the expected severity for a road of this type and supports the needs for a RSA.

7.2 Other Site-Specific Issues

There were no additional site-specific issues identified for this development.

8 Summary

This Transport Impact Assessment outlines the transport aspects of the proposed development focusing on traffic operations, loading vehicle operations, access and car parking. Provided also are walking, cycling, and public transport considerations.

This statement has been prepared in accordance with the WAPC *Transport Assessment Guidelines for Developments: Volume 4 – Individual Developments (2016)*.

The following conclusions are regarding the proposed development:

- The proposed medical redevelopment consists of 3 level with a total of 90 beds, an emergency department, a cafe and other medical tenancies.
- There is currently good footpath connectivity to a number of local bus stops from the Site. The bus stops cater for a number of local bus services including routes to Fremantle, Claremont, Subiaco, Morley and the CBD.
- Cycling infrastructure within the surrounding area of the Site is average with disjointed paths and a lack of high quality connections.
- The proposed development will have a trip generation of approximately 184 vehicles in the AM peak and 203 vehicles in the PM peak hour. Note that the traffic generation does not include the reduction of trips as a result of the removal of the existing buildings. Therefore, the traffic volumes for the proposed medical centre will be higher than expected which provides a robust assessment.
- Site access to the consulting centre will use the existing accesses into the Hollywood Private Hospital Precinct. Current access arrangements will remain generally unchanged in all future scenarios, with the bulk of the vehicle traffic generated by HPH entering and exiting via Monash Avenue.

Hollywood Private Hospital South Block

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 4	
existing public transport services surrounding the development	Section 3	
crash data	Section 7	
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	Section 5	
any specific issues	N/A	
road network	Section 5	
intersection layouts and controls	Section 6	
pedestrian/cycle networks and crossing facilities	Section 4	
public transport services	Section 3	
Integration with surrounding area		
surrounding major attractors/ generators	Section 2	
committed developments and transport proposals	Section 5	
proposed changes to land uses within 1200 metres	Section 5	
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 7	
public transport access	Section 3	
pedestrian access/amenity	Section 4	
cycle access/amenity	Section 4	
analysis of pedestrian/cycle networks	Section 3,	
safe walk/cycle to school (for residential and school site developments only)	Section 3, 4	
traffic management plan (where appropriate)	N/A	
Conclusions	Section 8	

Hollywood Private Hospital South Block

APPENDIX B

PROPOSED DEVELOPMENT LAYOUT PLANS

silver thomas hanley
ARCHITECTURE

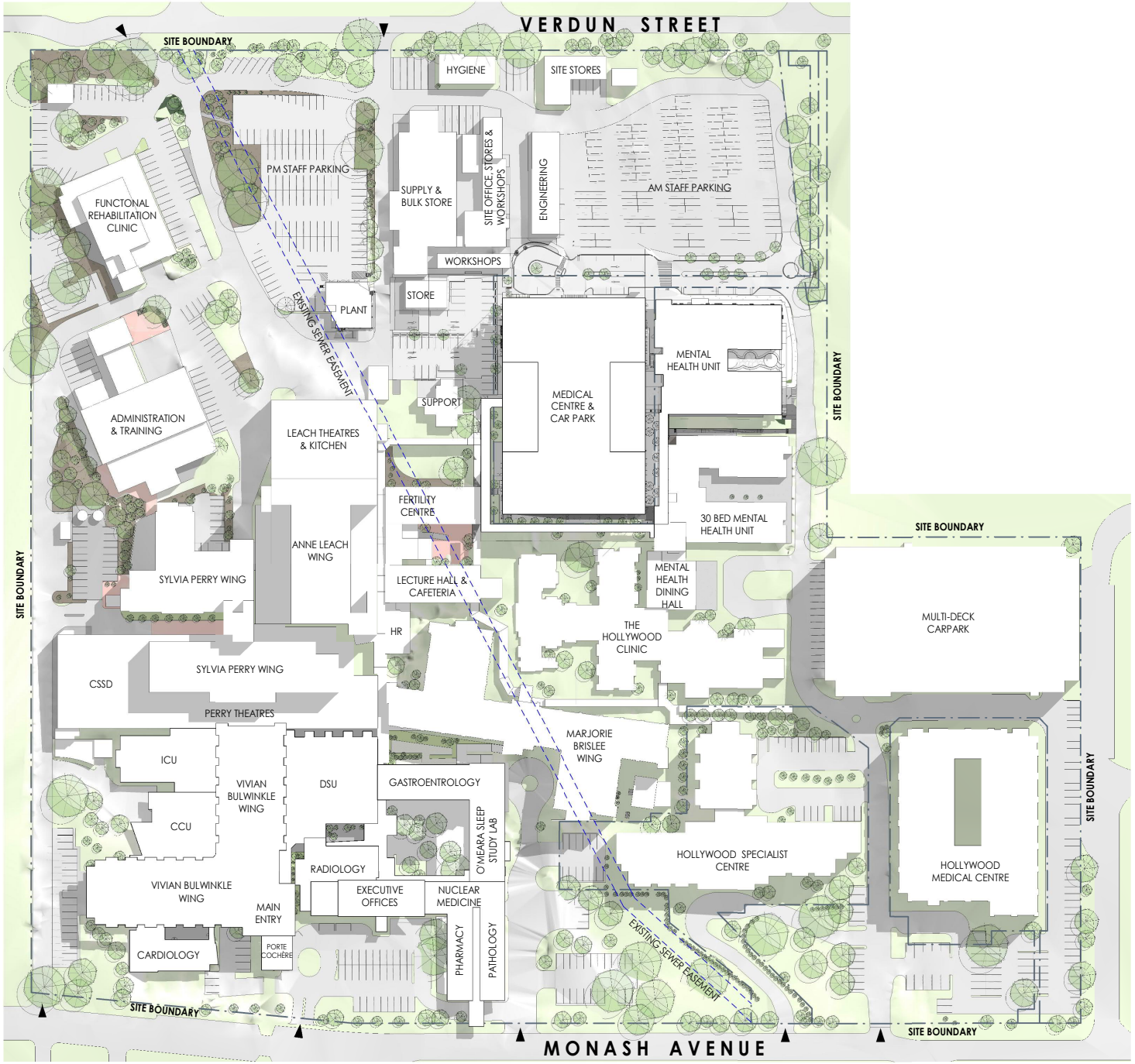
COVER SHEET - 3D IMAGE
HPH SOUTH BLOCK DEVELOPMENT
LOT 564 MONASH AVE, NEDLANDS WA

Scale	Date	Project No.	Sheet No.	Revision
@ A1	12/09/19	3155	SD.00	A

silver thomas hanley
ARCHITECTURE

3D IMAGE
HPH SOUTH BLOCK DEVELOPMENT
LOT 564 MONASH AVE, NEDLANDS WA

Scale	Date	Project No.	Sheet No.	Revision
@ A1	12/09/19	3155	SD.01	A

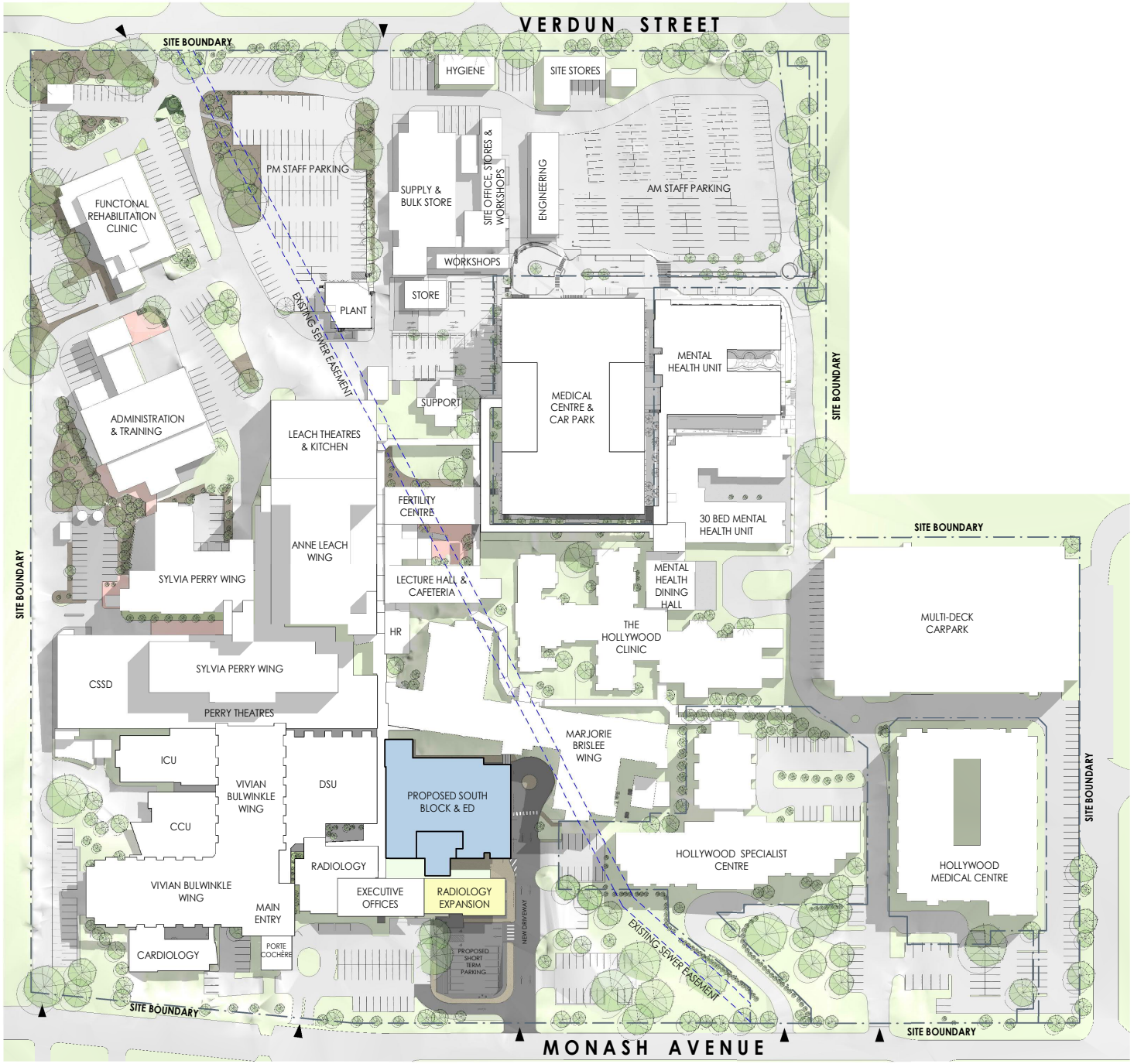


silver thomas hanley
ARCHITECTURE

OVERALL EXISTING SITE PLAN
HPH SOUTH BLOCK DEVELOPMENT
LOT 564 MONASH AVE, NEDLANDS WA

Scale 1 : 750 @ A1 **Date** 05/09/19

Project No.	Sheet No.	Revision
3155	SD.02	A



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ARCHITECTURE

OVERALL PROPOSED SITE PLAN
HPH SOUTH BLOCK DEVELOPMENT
LOT 564 MONASH AVE, NEDLANDS WA

Scale 1 : 750 @ A1 **Date** 05/09/19

Project No.	Sheet No.	Revision
3155	SD.03	A

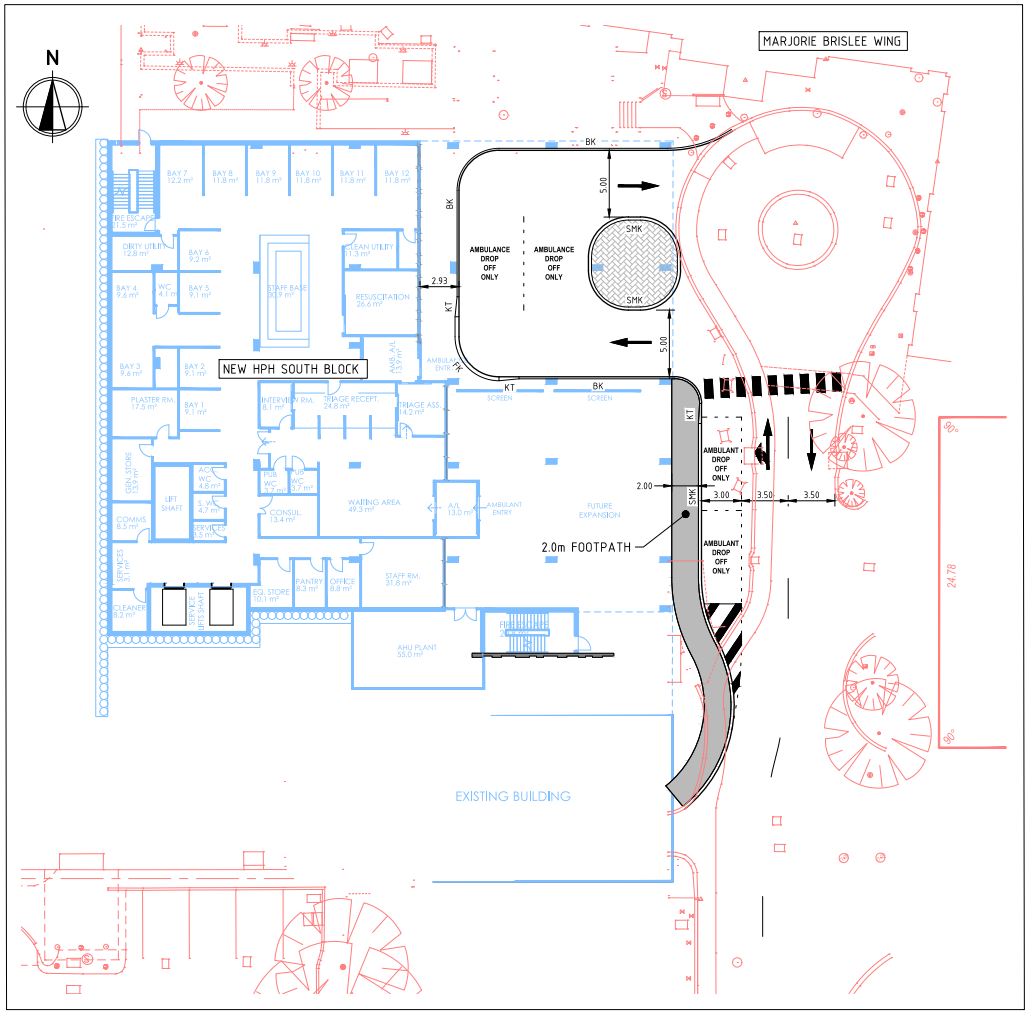
silver thomas hanley
ARCHITECTURE

PROPOSED SITE PLAN

HPH SOUTH BLOCK DEVELOPMENT
LOT 564 MONASH AVE, NEDLANDS WA

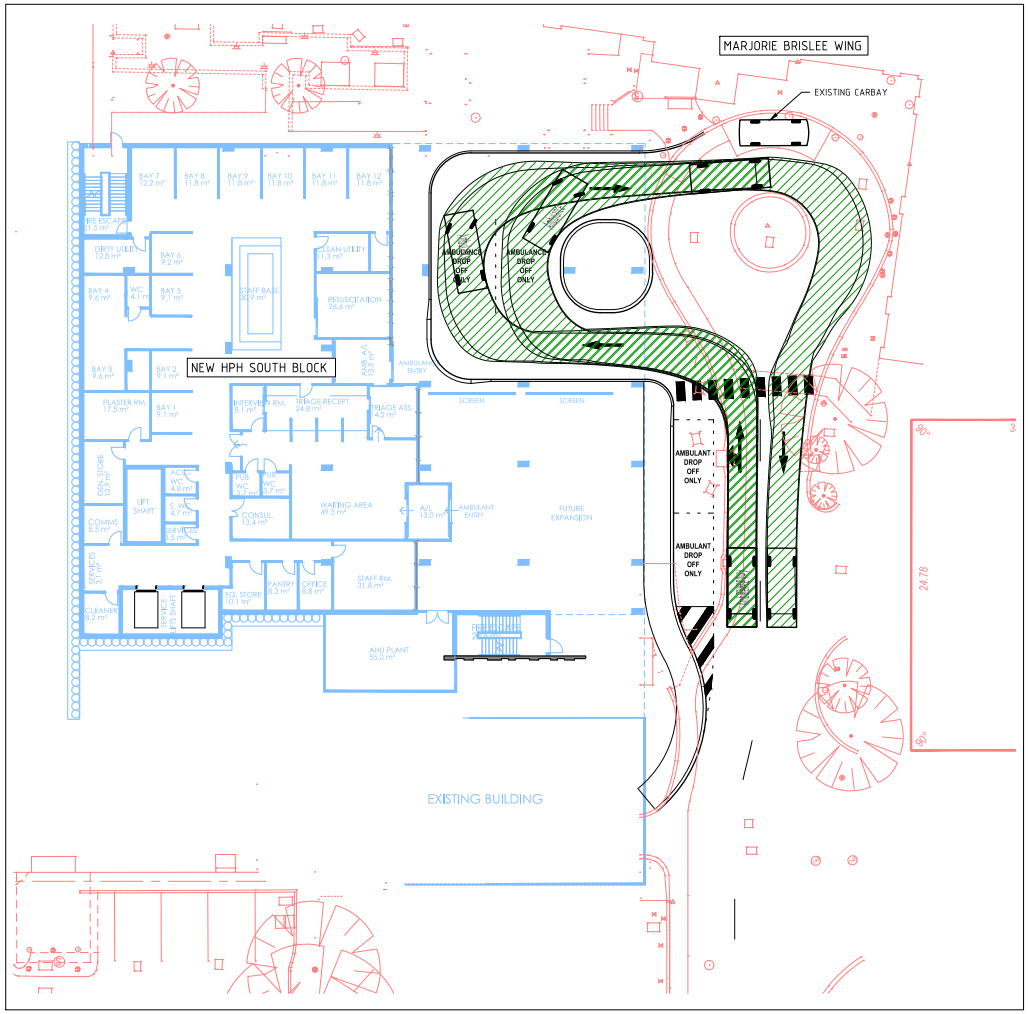
Scale 1 : 200 @ A1
Date 12/09/19
SCALE BAR 1:200

Project No.	Sheet No.	Revision
3155	SD.04	A



PLAN

SCALE 1:200



TURNING PATHS

SCALE 1:200

LEGEND

BK	BARRIER KERB
SMK	SEMI-MOUNTABLE KERB
FK	FLUSH KERB
KT	KERB TRANSITION

Ambulance	
Overall Length	5.932m
Overall Width	2.175m
Overall Body Height	2.351m
Min Body Ground Clearance	0.280m
Track Width	2.175m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	7.200m

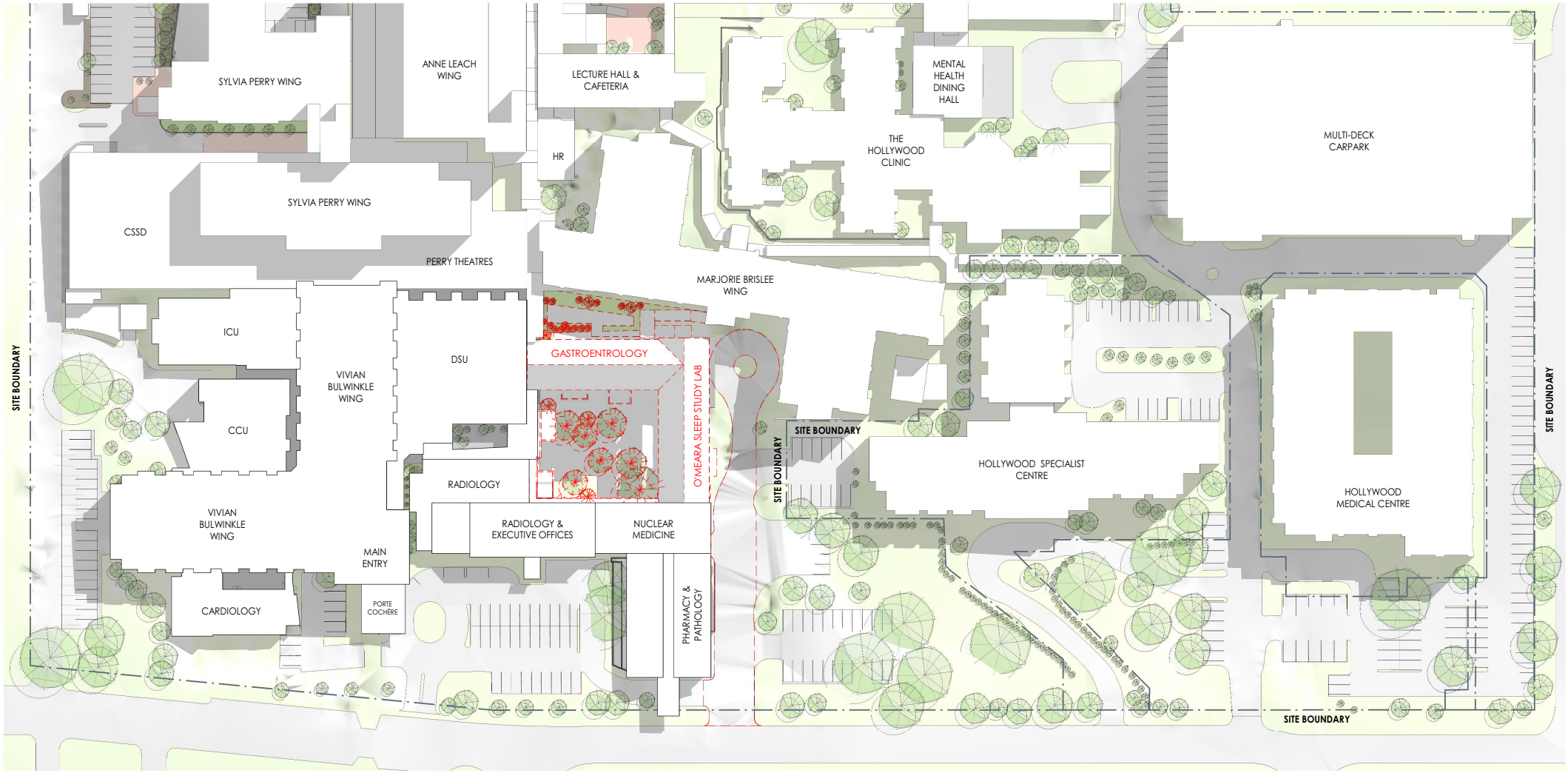
DESIGN VEHICLE

0 2 4 6 8 10 12m

SCALE 1:200 AT A1 SIZE

BG&E	DATE 28/08/2019	PROJECT HPH SOUTH BLOCK AND EMERGENCY DEPARTMENT	
	SCALE 1:200	TITLE CIVIL WORKS ROAD LAYOUT ISSUED FOR DEVELOPMENT APPROVAL	
	GRID PCG94		
	PREPARED LG		
	SHEET 1 OF 1	PROJECT No. P19098	SKETCH No. SK-C-0003 REV A

DATE PLOTTED 28 August 2019 2:58:01 PM



DEMOLITION LEGEND

DEMOLISH AND REMOVE WALLS, FLOORS, CEILINGS AND ROOVES. MAKE GOOD TO ALL AFFECTED WORKS TO REMAIN.

silver thomas hanley
ARCHITECTURE

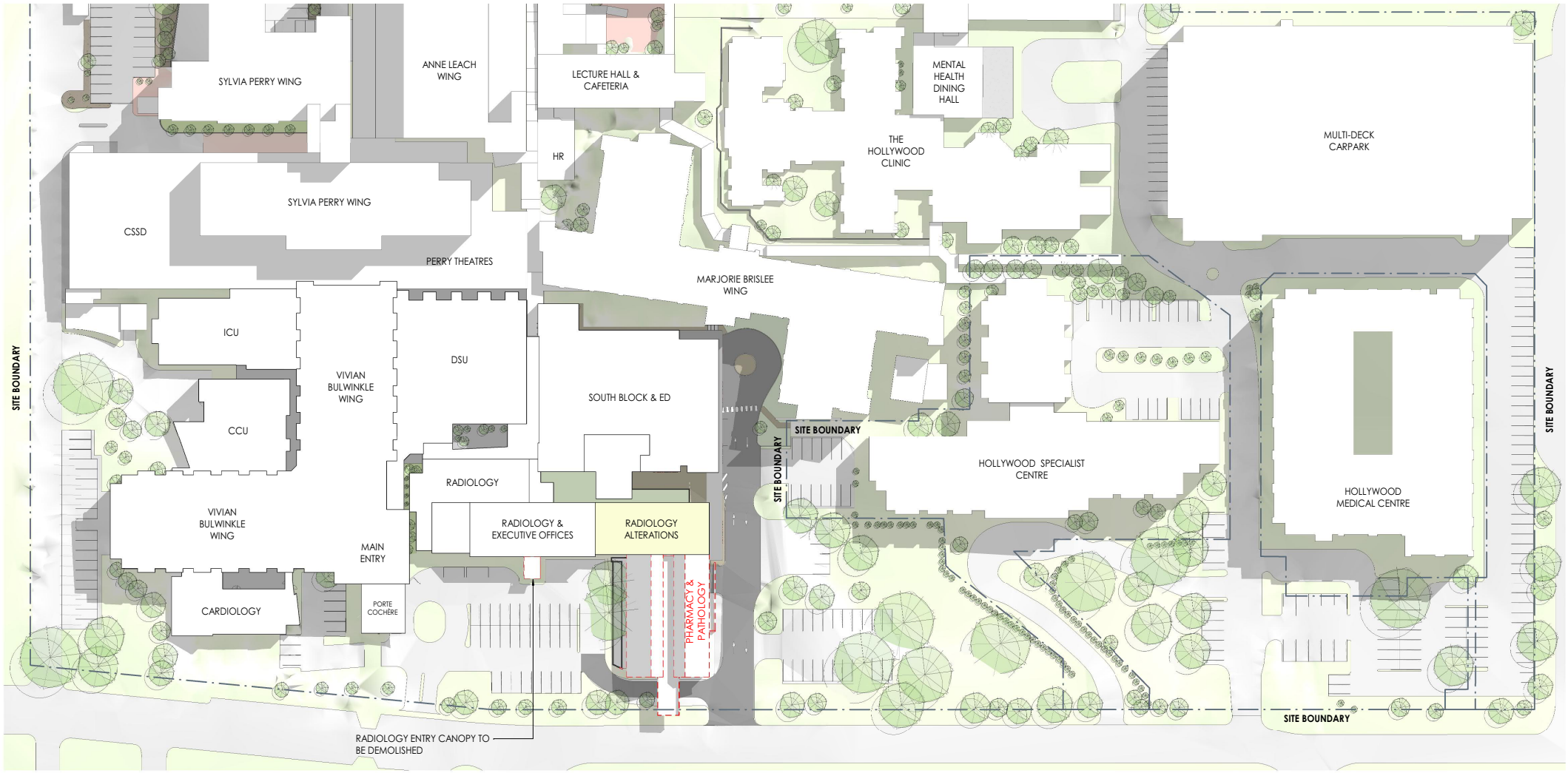
DEMOLITION PLAN - STAGE 1

HPH SOUTH BLOCK DEVELOPMENT
LOT 564 MONASH AVE, NEDLANDS WA

Scale As indicated @ A1 **Date** 12/09/19

20m 5m 10m 5m 0m 40m
SCALE BAR 1:500

Project No.	Sheet No.	Revision
3155	SD.05	A



DEMOLITION LEGEND

DEMOLISH AND REMOVE WALLS, FLOORS, CEILINGS AND ROOVES. MAKE GOOD TO ALL AFFECTED WORKS TO REMAIN.

silver thomas hanley
ARCHITECTURE

DEMOLITION PLAN - STAGE 2

HPH SOUTH BLOCK DEVELOPMENT
LOT 564 MONASH AVE, NEDLANDS WA

Scale As indicated @ A1 **Date** 12/09/19

20m 5m 10m 5m 0m 40m
SCALE BAR 1:500

Project No.	Sheet No.	Revision
3155	SD.06	A

Hollywood Private Hospital South Block

APPENDIX C

SIDRA OUTPUTS

1 Background 2019

MOVEMENT SUMMARY

Site: 1 [Monash Ave/Hampden Rd - Back 2019 AM]

Hollywood Hospital Traffic Study
Monash Avenue/Hampden Road Intersection
2017 Weekday AM Peak Existing Traffic Volumes
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Hampden Road												
1	L2	74	8.9	0.337	7.3	LOS A	2.2	16.6	0.61	0.73	0.61	50.5
2	T1	48	8.9	0.337	7.4	LOS A	2.2	16.6	0.61	0.73	0.61	51.4
3	R2	182	8.9	0.337	10.7	LOS B	2.2	16.6	0.61	0.73	0.61	51.0
Approach		304	8.9	0.337	9.4	LOS A	2.2	16.6	0.61	0.73	0.61	50.9
East: Monash Avenue												
4	L2	120	3.8	0.352	5.3	LOS A	2.6	19.0	0.37	0.53	0.37	52.4
5	T1	246	3.8	0.352	5.4	LOS A	2.6	19.0	0.37	0.53	0.37	53.4
6	R2	74	3.8	0.352	8.7	LOS A	2.6	19.0	0.37	0.53	0.37	53.0
Approach		440	3.8	0.352	5.9	LOS A	2.6	19.0	0.37	0.53	0.37	53.1
West: Monash Avenue												
10	L2	90	3.8	0.388	7.3	LOS A	2.8	20.1	0.65	0.71	0.65	51.2
11	T1	170	3.8	0.388	7.5	LOS A	2.8	20.1	0.65	0.71	0.65	52.1
12	R2	98	3.8	0.388	10.7	LOS B	2.8	20.1	0.65	0.71	0.65	51.7
Approach		358	3.8	0.388	8.3	LOS A	2.8	20.1	0.65	0.71	0.65	51.8
All Vehicles		1102	5.2	0.388	7.7	LOS A	2.8	20.1	0.53	0.64	0.53	52.0

MOVEMENT SUMMARY

Site: 1 [Monash Ave/Hampden Rd - Back 2019 PM]

Hollywood Hospital Traffic Study
Monash Avenue/Hampden Road Intersection
2017 Weekday AM Peak Existing Traffic Volumes
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Hampden Road												
1	L2	76	8.9	0.254	6.2	LOS A	1.6	11.8	0.48	0.66	0.48	51.0
2	T1	2	8.9	0.254	6.4	LOS A	1.6	11.8	0.48	0.66	0.48	51.9
3	R2	178	8.9	0.254	9.7	LOS A	1.6	11.8	0.48	0.66	0.48	51.5
Approach		256	8.9	0.254	8.6	LOS A	1.6	11.8	0.48	0.66	0.48	51.3
East: Monash Avenue												
4	L2	154	3.8	0.294	5.2	LOS A	2.0	14.6	0.35	0.52	0.35	52.8
5	T1	198	3.8	0.294	5.4	LOS A	2.0	14.6	0.35	0.52	0.35	53.8
6	R2	10	3.8	0.294	8.7	LOS A	2.0	14.6	0.35	0.52	0.35	53.4

Approach		362	3.8	0.294	5.4	LOS A	2.0	14.6	0.35	0.52	0.35	53.4
West: Monash Avenue												
10	L2	4	3.8	0.498	6.4	LOS A	4.2	30.3	0.60	0.62	0.60	51.5
11	T1	440	3.8	0.498	6.6	LOS A	4.2	30.3	0.60	0.62	0.60	52.4
12	R2	100	3.8	0.498	9.9	LOS A	4.2	30.3	0.60	0.62	0.60	52.0
Approach		544	3.8	0.498	7.2	LOS A	4.2	30.3	0.60	0.62	0.60	52.3
All Vehicles		1162	4.9	0.498	7.0	LOS A	4.2	30.3	0.50	0.60	0.50	52.4

MOVEMENT SUMMARY

Site: 1v [Monash Ave/Smyth Rd - Back 2019 AM]

Hollywood Hospital Traffic Study
Monash Avenue/Smyth Road Intersection
2017 Weekday AM Peak Existing Traffic Volumes
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Smyth Road												
2	T1	458	3.6	0.511	5.7	LOS A	5.0	36.4	0.49	0.55	0.49	52.6
3	R2	174	3.6	0.511	8.9	LOS A	5.0	36.4	0.49	0.55	0.49	52.3
Approach		632	3.6	0.511	6.6	LOS A	5.0	36.4	0.49	0.55	0.49	52.5
East: Monash Avenue												
4	L2	39	4.7	0.163	7.3	LOS A	1.0	7.5	0.61	0.71	0.61	50.4
6	R2	98	4.7	0.163	10.5	LOS B	1.0	7.5	0.61	0.71	0.61	50.8
Approach		137	4.7	0.163	9.6	LOS A	1.0	7.5	0.61	0.71	0.61	50.7
North: Smyth Road												
7	L2	320	3.3	0.593	6.7	LOS A	5.9	42.3	0.67	0.62	0.67	51.9
8	T1	333	3.3	0.593	6.7	LOS A	5.9	42.3	0.67	0.62	0.67	52.7
Approach		653	3.3	0.593	6.7	LOS A	5.9	42.3	0.67	0.62	0.67	52.3
All Vehicles		1422	3.6	0.593	6.9	LOS A	5.9	42.3	0.58	0.60	0.58	52.2

MOVEMENT SUMMARY

Site: 1v [Monash Ave/Smyth Rd - Back 2019 PM]

Hollywood Hospital Traffic Study
Monash Avenue/Smyth Road Intersection
2017 Weekday AM Peak Existing Traffic Volumes
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Smyth Road												
2	T1	392	3.6	0.442	6.6	LOS A	3.7	26.7	0.61	0.63	0.61	52.4
3	R2	64	3.6	0.442	9.9	LOS A	3.7	26.7	0.61	0.63	0.61	52.0
Approach		456	3.6	0.442	7.1	LOS A	3.7	26.7	0.61	0.63	0.61	52.3
East: Monash Avenue												
4	L2	97	4.7	0.347	8.0	LOS A	2.4	17.2	0.67	0.76	0.67	50.0

6	R2	197	4.7	0.347	11.2	LOS B	2.4	17.2	0.67	0.76	0.67	50.4
Approach		294	4.7	0.347	10.2	LOS B	2.4	17.2	0.67	0.76	0.67	50.3
North: Smyth Road												
7	L2	117	3.3	0.362	5.2	LOS A	3.1	22.0	0.33	0.49	0.33	52.9
8	T1	355	3.3	0.362	5.2	LOS A	3.1	22.0	0.33	0.49	0.33	53.7
Approach		472	3.3	0.362	5.2	LOS A	3.1	22.0	0.33	0.49	0.33	53.5
All Vehicles		1222	3.7	0.442	7.1	LOS A	3.7	26.7	0.52	0.60	0.52	52.3

MOVEMENT SUMMARY

Site: 1 [Monash Ave/Site Access 1 - Back 2019 AM]

Hollywood Hospital Traffic Study
Entry 5/Monash Avenue Intersection
2017 Weekday AM Peak Existing Traffic Volumes
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Monash Avenue												
5	T1	186	3.8	0.111	0.2	LOS A	0.2	1.1	0.10	0.05	0.10	59.1
6	R2	16	0.0	0.111	7.3	LOS A	0.2	1.1	0.10	0.05	0.10	57.2
Approach		202	3.5	0.111	0.8	NA	0.2	1.1	0.10	0.05	0.10	59.0
North: Site Access 1												
7	L2	12	0.0	0.014	7.0	LOS A	0.0	0.3	0.43	0.61	0.43	52.3
9	R2	2	0.0	0.014	8.4	LOS A	0.0	0.3	0.43	0.61	0.43	52.0
Approach		14	0.0	0.014	7.2	LOS A	0.0	0.3	0.43	0.61	0.43	52.3
West: Monash Avenue												
10	L2	14	0.0	0.222	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	58.2
11	T1	414	3.8	0.222	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.8
Approach		428	3.7	0.222	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.7
All Vehicles		644	3.5	0.222	0.5	NA	0.2	1.1	0.04	0.04	0.04	59.3

MOVEMENT SUMMARY

Site: 1 [Monash Ave/Site Access 1 - Back 2019 PM]

Hollywood Hospital Traffic Study
Entry 5/Monash Avenue Intersection
2017 Weekday AM Peak Existing Traffic Volumes
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Monash Avenue												
5	T1	320	3.8	0.169	0.0	LOS A	0.0	0.2	0.01	0.00	0.01	59.9
6	R2	2	0.0	0.169	7.5	LOS A	0.0	0.2	0.01	0.00	0.01	58.0
Approach		322	3.8	0.169	0.1	NA	0.0	0.2	0.01	0.00	0.01	59.9
North: Site Access 1												
7	L2	6	0.0	0.009	7.0	LOS A	0.0	0.2	0.45	0.62	0.45	52.1

9	R2	2	0.0	0.009	9.3	LOS A	0.0	0.2	0.45	0.62	0.45	51.8
Approach		8	0.0	0.009	7.6	LOS A	0.0	0.2	0.45	0.62	0.45	52.0
West: Monash Avenue												
10	L2	6	0.0	0.225	5.6	LOS A	0.0	0.0	0.00	0.01	0.00	58.3
11	T1	428	3.8	0.225	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.9
Approach		434	3.7	0.225	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.9
All Vehicles		764	3.7	0.225	0.2	NA	0.0	0.2	0.01	0.01	0.01	59.8

MOVEMENT SUMMARY

Site: 1 [Monash Ave/Site Access 2 - Back 2019 AM]

Hollywood Hospital Traffic Study
Entry 5/Monash Avenue Intersection
2017 Weekday AM Peak Existing Traffic Volumes
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Monash Avenue												
5	T1	194	3.8	0.208	1.3	LOS A	1.0	7.3	0.41	0.28	0.41	56.3
6	R2	126	0.0	0.208	7.4	LOS A	1.0	7.3	0.41	0.28	0.41	54.6
Approach		320	2.3	0.208	3.7	NA	1.0	7.3	0.41	0.28	0.41	55.6
North: Site Access 2												
7	L2	52	0.0	0.055	6.6	LOS A	0.2	1.4	0.38	0.62	0.38	52.4
9	R2	8	0.0	0.055	9.0	LOS A	0.2	1.4	0.38	0.62	0.38	52.2
Approach		60	0.0	0.055	6.9	LOS A	0.2	1.4	0.38	0.62	0.38	52.4
West: Monash Avenue												
10	L2	120	0.0	0.223	5.6	LOS A	0.0	0.0	0.00	0.17	0.00	56.9
11	T1	306	3.8	0.223	0.0	LOS A	0.0	0.0	0.00	0.17	0.00	58.4
Approach		426	2.7	0.223	1.6	NA	0.0	0.0	0.00	0.17	0.00	58.0
All Vehicles		806	2.4	0.223	2.8	NA	1.0	7.3	0.19	0.24	0.19	56.6

MOVEMENT SUMMARY

Site: 1 [Monash Ave/Site Access 2 - Back 2019 PM]

Hollywood Hospital Traffic Study
Entry 5/Monash Avenue Intersection
2017 Weekday AM Peak Existing Traffic Volumes
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Monash Avenue												
5	T1	266	3.8	0.144	0.1	LOS A	0.1	0.6	0.04	0.02	0.04	59.7
6	R2	8	0.0	0.144	7.4	LOS A	0.1	0.6	0.04	0.02	0.04	57.7
Approach		274	3.7	0.144	0.3	NA	0.1	0.6	0.04	0.02	0.04	59.6
North: Site Access 2												
7	L2	136	0.0	0.212	7.3	LOS A	0.8	5.7	0.49	0.73	0.49	51.8

9	R2	56	0.0	0.212	9.6	LOS A	0.8	5.7	0.49	0.73	0.49	51.5
Approach		192	0.0	0.212	8.0	LOS A	0.8	5.7	0.49	0.73	0.49	51.7
West: Monash Avenue												
10	L2	26	0.0	0.226	5.6	LOS A	0.0	0.0	0.00	0.04	0.00	58.0
11	T1	408	3.8	0.226	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	59.6
Approach		434	3.6	0.226	0.4	NA	0.0	0.0	0.00	0.04	0.00	59.5
All Vehicles		900	2.8	0.226	2.0	NA	0.8	5.7	0.12	0.18	0.12	57.7

2 Background 2022 + Development

MOVEMENT SUMMARY

Site: 1 [Monash Ave/Hampden Rd - Back 2022 + Dev AM]

Hollywood Hospital Traffic Study
Monash Avenue/Hampden Road Intersection
2017 Weekday AM Peak Existing Traffic Volumes
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Hampden Road												
1	L2	94	8.9	0.431	8.8	LOS A	3.0	22.8	0.76	0.83	0.76	49.6
2	T1	48	8.9	0.431	8.9	LOS A	3.0	22.8	0.76	0.83	0.76	50.4
3	R2	193	8.9	0.431	12.2	LOS B	3.0	22.8	0.76	0.83	0.76	50.0
Approach		335	8.9	0.431	10.8	LOS B	3.0	22.8	0.76	0.83	0.76	50.0
East: Monash Avenue												
4	L2	127	3.8	0.484	5.6	LOS A	4.2	30.7	0.49	0.55	0.49	52.1
5	T1	389	3.8	0.484	5.7	LOS A	4.2	30.7	0.49	0.55	0.49	53.1
6	R2	74	3.8	0.484	9.0	LOS A	4.2	30.7	0.49	0.55	0.49	52.7
Approach		590	3.8	0.484	6.1	LOS A	4.2	30.7	0.49	0.55	0.49	52.8
West: Monash Avenue												
10	L2	90	3.8	0.521	7.9	LOS A	4.3	31.4	0.75	0.75	0.76	50.8
11	T1	264	3.8	0.521	8.1	LOS A	4.3	31.4	0.75	0.75	0.76	51.7
12	R2	122	3.8	0.521	11.4	LOS B	4.3	31.4	0.75	0.75	0.76	51.3
Approach		476	3.8	0.521	8.9	LOS A	4.3	31.4	0.75	0.75	0.76	51.4
All Vehicles		1401	5.0	0.521	8.2	LOS A	4.3	31.4	0.64	0.69	0.64	51.6

MOVEMENT SUMMARY

Site: 1 [Monash Ave/Hampden Rd - Back 2022 + Dev PM]

Hollywood Hospital Traffic Study
Monash Avenue/Hampden Road Intersection
2017 Weekday AM Peak Existing Traffic Volumes
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed

		veh/h	%	v/c	sec		veh	m				km/h
South: Hampden Road												
1	L2	85	8.9	0.295	6.8	LOS A	1.9	14.2	0.56	0.70	0.56	50.7
2	T1	2	8.9	0.295	7.0	LOS A	1.9	14.2	0.56	0.70	0.56	51.6
3	R2	189	8.9	0.295	10.3	LOS B	1.9	14.2	0.56	0.70	0.56	51.2
Approach		276	8.9	0.295	9.2	LOS A	1.9	14.2	0.56	0.70	0.56	51.0
East: Monash Avenue												
4	L2	163	3.8	0.367	5.5	LOS A	2.8	20.2	0.43	0.54	0.43	52.5
5	T1	265	3.8	0.367	5.6	LOS A	2.8	20.2	0.43	0.54	0.43	53.5
6	R2	10	3.8	0.367	8.9	LOS A	2.8	20.2	0.43	0.54	0.43	53.1
Approach		438	3.8	0.367	5.7	LOS A	2.8	20.2	0.43	0.54	0.43	53.1
West: Monash Avenue												
10	L2	4	3.8	0.666	7.4	LOS A	7.4	53.5	0.76	0.68	0.78	50.9
11	T1	600	3.8	0.666	7.6	LOS A	7.4	53.5	0.76	0.68	0.78	51.8
12	R2	125	3.8	0.666	10.8	LOS B	7.4	53.5	0.76	0.68	0.78	51.4
Approach		729	3.8	0.666	8.1	LOS A	7.4	53.5	0.76	0.68	0.78	51.7
All Vehicles		1443	4.8	0.666	7.6	LOS A	7.4	53.5	0.62	0.64	0.64	52.0

MOVEMENT SUMMARY

Site: 1v [Monash Ave/Smyth Rd - Back 2022 + Dev AM]

Hollywood Hospital Traffic Study
Monash Avenue/Smyth Road Intersection
2017 Weekday AM Peak Existing Traffic Volumes
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Smyth Road												
2	T1	519	3.6	0.597	6.0	LOS A	6.6	47.9	0.59	0.57	0.59	52.3
3	R2	207	3.6	0.597	9.2	LOS A	6.6	47.9	0.59	0.57	0.59	51.9
Approach		726	3.6	0.597	6.9	LOS A	6.6	47.9	0.59	0.57	0.59	52.2
East: Monash Avenue												
4	L2	46	4.7	0.201	7.7	LOS A	1.3	9.7	0.67	0.74	0.67	50.1
6	R2	111	4.7	0.201	11.0	LOS B	1.3	9.7	0.67	0.74	0.67	50.5
Approach		157	4.7	0.201	10.0	LOS B	1.3	9.7	0.67	0.74	0.67	50.4
North: Smyth Road												
7	L2	377	3.3	0.718	8.7	LOS A	9.5	68.4	0.84	0.73	0.91	51.0
8	T1	379	3.3	0.718	8.7	LOS A	9.5	68.4	0.84	0.73	0.91	51.8
Approach		756	3.3	0.718	8.7	LOS A	9.5	68.4	0.84	0.73	0.91	51.4
All Vehicles		1639	3.6	0.718	8.0	LOS A	9.5	68.4	0.71	0.66	0.74	51.7

MOVEMENT SUMMARY

Site: 1v [Monash Ave/Smyth Rd - Back 2022 + Dev PM]

Hollywood Hospital Traffic Study
Monash Avenue/Smyth Road Intersection
2017 Weekday AM Peak Existing Traffic Volumes
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Smyth Road												
2	T1	504	3.6	0.641	9.3	LOS A	7.3	52.9	0.85	0.80	0.94	51.1
3	R2	88	3.6	0.641	12.5	LOS B	7.3	52.9	0.85	0.80	0.94	50.7
Approach		592	3.6	0.641	9.7	LOS A	7.3	52.9	0.85	0.80	0.94	51.0
East: Monash Avenue												
4	L2	145	4.7	0.560	11.3	LOS B	5.2	38.0	0.85	0.92	0.99	47.9
6	R2	278	4.7	0.560	14.6	LOS B	5.2	38.0	0.85	0.92	0.99	48.2
Approach		423	4.7	0.560	13.4	LOS B	5.2	38.0	0.85	0.92	0.99	48.1
North: Smyth Road												
7	L2	167	3.3	0.494	5.5	LOS A	5.1	36.4	0.47	0.51	0.47	52.4
8	T1	453	3.3	0.494	5.5	LOS A	5.1	36.4	0.47	0.51	0.47	53.2
Approach		620	3.3	0.494	5.5	LOS A	5.1	36.4	0.47	0.51	0.47	53.0
All Vehicles		1635	3.8	0.641	9.1	LOS A	7.3	52.9	0.71	0.72	0.78	50.9

MOVEMENT SUMMARY

Site: 1 [Monash Ave/Site Access 1 - Back 2022 + Dev AM]

Hollywood Hospital Traffic Study
Entry 5/Monash Avenue Intersection
2017 Weekday AM Peak Existing Traffic Volumes
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Monash Avenue												
5	T1	208	3.8	0.140	0.6	LOS A	0.4	2.6	0.19	0.09	0.19	58.4
6	R2	33	0.0	0.140	7.9	LOS A	0.4	2.6	0.19	0.09	0.19	56.5
Approach		241	3.3	0.140	1.6	NA	0.4	2.6	0.19	0.09	0.19	58.2
North: Site Access 1												
7	L2	24	0.0	0.031	7.4	LOS A	0.1	0.8	0.47	0.66	0.47	52.0
9	R2	4	0.0	0.031	9.4	LOS A	0.1	0.8	0.47	0.66	0.47	51.7
Approach		28	0.0	0.031	7.7	LOS A	0.1	0.8	0.47	0.66	0.47	52.0
West: Monash Avenue												
10	L2	29	0.0	0.266	5.6	LOS A	0.0	0.0	0.00	0.03	0.00	58.0
11	T1	484	3.8	0.266	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.6
Approach		513	3.6	0.266	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.5
All Vehicles		782	3.4	0.266	1.0	NA	0.4	2.6	0.08	0.07	0.08	58.8

MOVEMENT SUMMARY

Site: 1 [Monash Ave/Site Access 1 - Back 2022 + Dev PM]

Hollywood Hospital Traffic Study
Entry 5/Monash Avenue Intersection
2017 Weekday AM Peak Existing Traffic Volumes
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Monash Avenue												
5	T1	441	3.8	0.236	0.1	LOS A	0.1	0.6	0.02	0.01	0.02	59.8
6	R2	6	0.0	0.236	8.4	LOS A	0.1	0.6	0.02	0.01	0.02	57.9
Approach		447	3.7	0.236	0.2	NA	0.1	0.6	0.02	0.01	0.02	59.8
North: Site Access 1												
7	L2	33	0.0	0.058	7.5	LOS A	0.2	1.4	0.52	0.72	0.52	51.3
9	R2	11	0.0	0.058	11.7	LOS B	0.2	1.4	0.52	0.72	0.52	51.1
Approach		44	0.0	0.058	8.6	LOS A	0.2	1.4	0.52	0.72	0.52	51.3
West: Monash Avenue												
10	L2	18	0.0	0.271	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	58.1
11	T1	505	3.8	0.271	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.7
Approach		523	3.7	0.271	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.7
All Vehicles		1014	3.5	0.271	0.6	NA	0.2	1.4	0.03	0.05	0.03	59.3

MOVEMENT SUMMARY

Site: 1 [Monash Ave/Site Access 2 - Back 2022 + Dev AM]

Hollywood Hospital Traffic Study
Entry 5/Monash Avenue Intersection
2017 Weekday AM Peak Existing Traffic Volumes
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Monash Avenue												
5	T1	223	3.8	0.363	2.9	LOS A	2.6	18.5	0.59	0.46	0.72	54.5
6	R2	252	0.0	0.363	8.9	LOS A	2.6	18.5	0.59	0.46	0.72	52.8
Approach		475	1.8	0.363	6.1	NA	2.6	18.5	0.59	0.46	0.72	53.6
North: Site Access 1												
7	L2	141	0.0	0.157	6.8	LOS A	0.6	4.3	0.43	0.66	0.43	52.2
9	R2	19	0.0	0.157	11.7	LOS B	0.6	4.3	0.43	0.66	0.43	51.9
Approach		160	0.0	0.157	7.4	LOS A	0.6	4.3	0.43	0.66	0.43	52.2
West: Monash Avenue												
10	L2	201	0.0	0.282	5.6	LOS A	0.0	0.0	0.00	0.22	0.00	56.4
11	T1	336	3.8	0.282	0.0	LOS A	0.0	0.0	0.00	0.22	0.00	57.9
Approach		537	2.4	0.282	2.1	NA	0.0	0.0	0.00	0.22	0.00	57.3
All Vehicles		1172	1.8	0.363	4.4	NA	2.6	18.5	0.30	0.38	0.35	55.0

MOVEMENT SUMMARY

Site: 1 [Monash Ave/Site Access 2 - Back 2022 + Dev PM]

Hollywood Hospital Traffic Study
Entry 5/Monash Avenue Intersection
2017 Weekday AM Peak Existing Traffic Volumes
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Monash Avenue												
5	T1	286	3.8	0.210	0.9	LOS A	0.7	5.3	0.27	0.13	0.27	57.8
6	R2	63	0.0	0.210	8.3	LOS A	0.7	5.3	0.27	0.13	0.27	55.9
Approach		349	3.1	0.210	2.3	NA	0.7	5.3	0.27	0.13	0.27	57.5
North: Site Access 1												
7	L2	262	0.0	0.559	9.8	LOS A	3.6	25.4	0.65	0.98	1.07	49.2
9	R2	158	0.0	0.559	14.6	LOS B	3.6	25.4	0.65	0.98	1.07	49.0
Approach		420	0.0	0.559	11.6	LOS B	3.6	25.4	0.65	0.98	1.07	49.1
West: Monash Avenue												
10	L2	88	0.0	0.286	5.6	LOS A	0.0	0.0	0.00	0.10	0.00	57.5
11	T1	459	3.8	0.286	0.0	LOS A	0.0	0.0	0.00	0.10	0.00	59.0
Approach		547	3.2	0.286	0.9	NA	0.0	0.0	0.00	0.10	0.00	58.8
All Vehicles		1316	2.2	0.559	4.7	NA	3.6	25.4	0.28	0.39	0.41	55.0

3 Background 2032 + Development

MOVEMENT SUMMARY

Site: 1 [Monash Ave/Hampden Rd - Back 2032 + Dev AM]

Hollywood Hospital Traffic Study
Monash Avenue/Hampden Road Intersection
2017 Weekday AM Peak Existing Traffic Volumes
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Hampden Road												
1	L2	109	8.9	0.530	10.9	LOS B	4.5	34.2	0.84	0.93	0.97	48.2
2	T1	48	8.9	0.530	11.1	LOS B	4.5	34.2	0.84	0.93	0.97	49.0
3	R2	229	8.9	0.530	14.4	LOS B	4.5	34.2	0.84	0.93	0.97	48.6
Approach		386	8.9	0.530	13.0	LOS B	4.5	34.2	0.84	0.93	0.97	48.5
East: Monash Avenue												
4	L2	151	3.8	0.559	5.9	LOS A	5.4	39.0	0.58	0.58	0.58	51.8
5	T1	438	3.8	0.559	6.0	LOS A	5.4	39.0	0.58	0.58	0.58	52.8
6	R2	74	3.8	0.559	9.3	LOS A	5.4	39.0	0.58	0.58	0.58	52.4
Approach		663	3.8	0.559	6.4	LOS A	5.4	39.0	0.58	0.58	0.58	52.5
West: Monash Avenue												
10	L2	90	3.8	0.608	9.7	LOS A	6.2	45.0	0.84	0.86	0.95	49.7
11	T1	298	3.8	0.608	9.9	LOS A	6.2	45.0	0.84	0.86	0.95	50.5
12	R2	141	3.8	0.608	13.2	LOS B	6.2	45.0	0.84	0.86	0.95	50.2
Approach		529	3.8	0.608	10.8	LOS B	6.2	45.0	0.84	0.86	0.95	50.3
All Vehicles		1578	5.0	0.608	9.5	LOS A	6.2	45.0	0.73	0.76	0.80	50.7

MOVEMENT SUMMARY

Site: 1 [Monash Ave/Hampden Rd - Back 2032 + Dev PM]

Hollywood Hospital Traffic Study
Monash Avenue/Hampden Road Intersection
2017 Weekday AM Peak Existing Traffic Volumes
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Hampden Road												
1	L2	100	8.9	0.367	7.3	LOS A	2.5	18.9	0.64	0.74	0.64	50.3
2	T1	2	8.9	0.367	7.5	LOS A	2.5	18.9	0.64	0.74	0.64	51.2
3	R2	226	8.9	0.367	10.7	LOS B	2.5	18.9	0.64	0.74	0.64	50.8
Approach		328	8.9	0.367	9.7	LOS A	2.5	18.9	0.64	0.74	0.64	50.7
East: Monash Avenue												
4	L2	194	3.8	0.439	5.7	LOS A	3.7	26.9	0.52	0.56	0.52	52.2
5	T1	304	3.8	0.439	5.9	LOS A	3.7	26.9	0.52	0.56	0.52	53.2
6	R2	10	3.8	0.439	9.2	LOS A	3.7	26.9	0.52	0.56	0.52	52.8
Approach		508	3.8	0.439	5.9	LOS A	3.7	26.9	0.52	0.56	0.52	52.8
West: Monash Avenue												
10	L2	4	3.8	0.803	11.5	LOS B	13.9	100.7	0.97	0.87	1.18	48.7
11	T1	688	3.8	0.803	11.7	LOS B	13.9	100.7	0.97	0.87	1.18	49.5
12	R2	145	3.8	0.803	15.0	LOS B	13.9	100.7	0.97	0.87	1.18	49.2
Approach		837	3.8	0.803	12.3	LOS B	13.9	100.7	0.97	0.87	1.18	49.5
All Vehicles		1673	4.8	0.803	9.8	LOS A	13.9	100.7	0.77	0.75	0.87	50.7

MOVEMENT SUMMARY

Site: 1v [Monash Ave/Smyth Rd - Back 2032 + Dev AM]

Hollywood Hospital Traffic Study
Monash Avenue/Smyth Road Intersection
2017 Weekday AM Peak Existing Traffic Volumes
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Smyth Road												
2	T1	611	3.6	0.720	6.6	LOS A	9.7	69.8	0.77	0.60	0.77	51.8
3	R2	241	3.6	0.720	9.8	LOS A	9.7	69.8	0.77	0.60	0.77	51.4
Approach		852	3.6	0.720	7.5	LOS A	9.7	69.8	0.77	0.60	0.77	51.7
East: Monash Avenue												
4	L2	54	4.7	0.261	8.5	LOS A	1.8	13.3	0.75	0.79	0.75	49.6
6	R2	131	4.7	0.261	11.7	LOS B	1.8	13.3	0.75	0.79	0.75	50.0
Approach		185	4.7	0.261	10.8	LOS B	1.8	13.3	0.75	0.79	0.75	49.9
North: Smyth Road												
7	L2	441	3.3	0.883	16.9	LOS B	21.9	157.8	1.00	0.98	1.43	45.8
8	T1	446	3.3	0.883	16.9	LOS B	21.9	157.8	1.00	0.98	1.43	46.4
Approach		887	3.3	0.883	16.9	LOS B	21.9	157.8	1.00	0.98	1.43	46.1
All Vehicles		1924	3.6	0.883	12.1	LOS B	21.9	157.8	0.87	0.80	1.07	48.8

MOVEMENT SUMMARY

Site: 1v [Monash Ave/Smyth Rd - Back 2032 + Dev PM]

Hollywood Hospital Traffic Study
Monash Avenue/Smyth Road Intersection
2017 Weekday AM Peak Existing Traffic Volumes
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Smyth Road												
2	T1	582	3.6	0.784	14.0	LOS B	12.9	93.1	1.00	1.00	1.32	47.9
3	R2	101	3.6	0.784	17.3	LOS B	12.9	93.1	1.00	1.00	1.32	47.6
Approach		683	3.6	0.784	14.5	LOS B	12.9	93.1	1.00	1.00	1.32	47.8
East: Monash Avenue												
4	L2	164	4.7	0.699	16.4	LOS B	8.6	62.3	0.97	1.11	1.37	44.9
6	R2	317	4.7	0.699	19.6	LOS B	8.6	62.3	0.97	1.11	1.37	45.2
Approach		481	4.7	0.699	18.5	LOS B	8.6	62.3	0.97	1.11	1.37	45.1
North: Smyth Road												
7	L2	190	3.3	0.582	5.8	LOS A	6.8	49.0	0.58	0.53	0.58	52.1
8	T1	524	3.3	0.582	5.8	LOS A	6.8	49.0	0.58	0.53	0.58	52.9
Approach		714	3.3	0.582	5.8	LOS A	6.8	49.0	0.58	0.53	0.58	52.7
All Vehicles		1878	3.8	0.784	12.2	LOS B	12.9	93.1	0.83	0.85	1.05	48.8

MOVEMENT SUMMARY

Site: 1 [Monash Ave/Site Access 1 - Back 2032 + Dev AM]

Hollywood Hospital Traffic Study
Entry 5/Monash Avenue Intersection
2017 Weekday AM Peak Existing Traffic Volumes
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Monash Avenue												
5	T1	245	3.8	0.164	0.7	LOS A	0.4	3.0	0.19	0.08	0.19	58.4
6	R2	33	0.0	0.164	8.6	LOS A	0.4	3.0	0.19	0.08	0.19	56.5
Approach		278	3.3	0.164	1.6	NA	0.4	3.0	0.19	0.08	0.19	58.2
North: Site Access 1												
7	L2	24	0.0	0.035	7.9	LOS A	0.1	0.8	0.52	0.70	0.52	51.6
9	R2	4	0.0	0.035	10.7	LOS B	0.1	0.8	0.52	0.70	0.52	51.3
Approach		28	0.0	0.035	8.3	LOS A	0.1	0.8	0.52	0.70	0.52	51.5
West: Monash Avenue												
10	L2	29	0.0	0.309	5.6	LOS A	0.0	0.0	0.00	0.03	0.00	58.0
11	T1	567	3.8	0.309	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.7
Approach		596	3.6	0.309	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.6
All Vehicles		902	3.4	0.309	1.0	NA	0.4	3.0	0.07	0.07	0.07	58.9

MOVEMENT SUMMARY

Site: 1 [Monash Ave/Site Access 1 - Back 2032 + Dev PM]

Hollywood Hospital Traffic Study
Entry 5/Monash Avenue Intersection
2017 Weekday AM Peak Existing Traffic Volumes
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Monash Avenue												
5	T1	505	3.8	0.271	0.1	LOS A	0.1	0.7	0.02	0.01	0.02	59.8
6	R2	6	0.0	0.271	9.3	LOS A	0.1	0.7	0.02	0.01	0.02	57.8
Approach		511	3.8	0.271	0.2	NA	0.1	0.7	0.02	0.01	0.02	59.8
North: Site Access 1												
7	L2	33	0.0	0.069	8.1	LOS A	0.2	1.6	0.56	0.76	0.56	50.6
9	R2	11	0.0	0.069	14.0	LOS B	0.2	1.6	0.56	0.76	0.56	50.4
Approach		44	0.0	0.069	9.6	LOS A	0.2	1.6	0.56	0.76	0.56	50.6
West: Monash Avenue												
10	L2	18	0.0	0.315	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	58.1
11	T1	591	3.8	0.315	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.8
Approach		609	3.7	0.315	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.7
All Vehicles		1164	3.6	0.315	0.6	NA	0.2	1.6	0.03	0.04	0.03	59.3

MOVEMENT SUMMARY

Site: 1 [Monash Ave/Site Access 2 - Back 2032 + Dev AM]

Hollywood Hospital Traffic Study
Entry 5/Monash Avenue Intersection
2017 Weekday AM Peak Existing Traffic Volumes
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Monash Avenue												
5	T1	262	3.8	0.405	3.6	LOS A	3.2	22.7	0.63	0.46	0.83	54.0
6	R2	252	0.0	0.405	9.8	LOS A	3.2	22.7	0.63	0.46	0.83	52.4
Approach		514	1.9	0.405	6.7	NA	3.2	22.7	0.63	0.46	0.83	53.2
North: Site Access 1												
7	L2	141	0.0	0.171	7.1	LOS A	0.7	4.6	0.48	0.70	0.48	51.9
9	R2	19	0.0	0.171	13.0	LOS B	0.7	4.6	0.48	0.70	0.48	51.6
Approach		160	0.0	0.171	7.8	LOS A	0.7	4.6	0.48	0.70	0.48	51.8
West: Monash Avenue												
10	L2	201	0.0	0.314	5.6	LOS A	0.0	0.0	0.00	0.20	0.00	56.6
11	T1	398	3.8	0.314	0.0	LOS A	0.0	0.0	0.00	0.20	0.00	58.1
Approach		599	2.5	0.314	1.9	NA	0.0	0.0	0.00	0.20	0.00	57.6
All Vehicles		1273	2.0	0.405	4.6	NA	3.2	22.7	0.31	0.37	0.40	55.0

MOVEMENT SUMMARY

Site: 1 [Monash Ave/Site Access 2 - Back 2032 + Dev PM]

Hollywood Hospital Traffic Study
Entry 5/Monash Avenue Intersection
2017 Weekday AM Peak Existing Traffic Volumes
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Monash Avenue												
5	T1	339	3.8	0.245	1.1	LOS A	0.9	6.4	0.27	0.11	0.28	57.7
6	R2	63	0.0	0.245	9.2	LOS A	0.9	6.4	0.27	0.11	0.28	55.8
Approach		402	3.2	0.245	2.4	NA	0.9	6.4	0.27	0.11	0.28	57.4
North: Site Access 1												
7	L2	262	0.0	0.653	12.0	LOS B	4.5	31.8	0.74	1.12	1.44	47.4
9	R2	158	0.0	0.653	18.5	LOS C	4.5	31.8	0.74	1.12	1.44	47.2
Approach		420	0.0	0.653	14.4	LOS B	4.5	31.8	0.74	1.12	1.44	47.4
West: Monash Avenue												
10	L2	88	0.0	0.328	5.6	LOS A	0.0	0.0	0.00	0.08	0.00	57.6
11	T1	541	3.8	0.328	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	59.1
Approach		629	3.3	0.328	0.8	NA	0.0	0.0	0.00	0.08	0.00	58.9
All Vehicles		1451	2.3	0.653	5.2	NA	4.5	31.8	0.29	0.39	0.49	54.7

About Cardno

Cardno is a professional infrastructure and environmental services company, with expertise in the development and improvement of physical and social infrastructure for communities around the world. Cardno's team includes leading professionals who plan, design, manage and deliver sustainable projects and community programs. Cardno is an international company listed on the Australian Securities Exchange [ASX:CDD].

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