



Traffic Impact Assessment

Medical Centre

Howick Street
Bathurst NSW

January 2022

Prepared by:

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For:

Zauner Construction

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1 INTRODUCTION

Spotto Consulting have been engaged by Zauner Construction to complete a Traffic Impact Assessment. The study is in response to a proposed development at Howick Street, Bathurst. The development involves construction of a six level medical centre with a gross floor area of 10,299m², plus a four level off-street car park to service the proposed development and surrounding areas. Overall, the number of off-street parks on the site will increase to 915 spaces.

The purpose of the assessment is to review the existing conditions in the vicinity of the site, including traffic, parking and servicing, as well as the performance of the surrounding network. An evaluation is then required of the traffic and parking requirements for the proposed development, and the impacts on the surrounding road network.

The assessment concluded that:

- Traffic surveys and modelling of nearby intersections (including accesses to site) show that the intersections currently operate at an excellent Level of Service (LOS A, the highest level) or better. The midblock level of service on all roads surrounding the site is satisfactory (LOS C) or better;
- Parking surveys carried out on a typical weekday show that there is generally a satisfactory amount of on-street parking in the vicinity of the site to meet current demand, although the off-street parking experiences a high level of demand;
- The proposed development is anticipated to generate 571 vehicle trips per hour in the AM peak hour (321 from the proposed medical centre plus 250 from augmentation of the off-street car park) and 692 vehicle trips per hour in the PM (392 plus 300) peak hour, which will not have a significant impact on the performance of the road network in the immediate vicinity of the site (including nearby intersections, midblock sections of road and site accesses);
- The provision of 915 off-street parking spaces meets the minimum requirements for the proposed development under the *Bathurst Regional Development Control Plan 2014 Chapter 14 – Parking*, while the car parking and access driveways satisfactorily address all matters for consideration under the DCP and *Australian Standard AS2890*. Adequate provision has been made for persons with a disability;
- Adequate provision has been made for servicing and delivery vehicles; and
- Adequate provision has been made for pedestrians and cyclists.

The assessment recommended that:

- A right turn lane be provided for northbound vehicles on Rankin Street turning right into Gallipoli Lane;
- Entry into Milne Lane from Howick Street be restricted to vehicles under 6m in length and/or 2 tonnes in weight;
- Remotely-activated boom gates should be installed at both vehicle access points into the at-grade off-street car park located immediately west of the proposed medical centre; and
- Signage be installed in the parking adjacent to the medical centre designating a Loading Zone to the east (Milne Lane) and 15 Minute Parking to the south (Gallipoli Road).

2 EXISTING CONDITIONS

2.1 Site

The site is located in the Bathurst Central Business District (CBD), and is bound by Howick Street, Rankin Street, Russell Street and George Street, as shown in Figure 2-1, below.

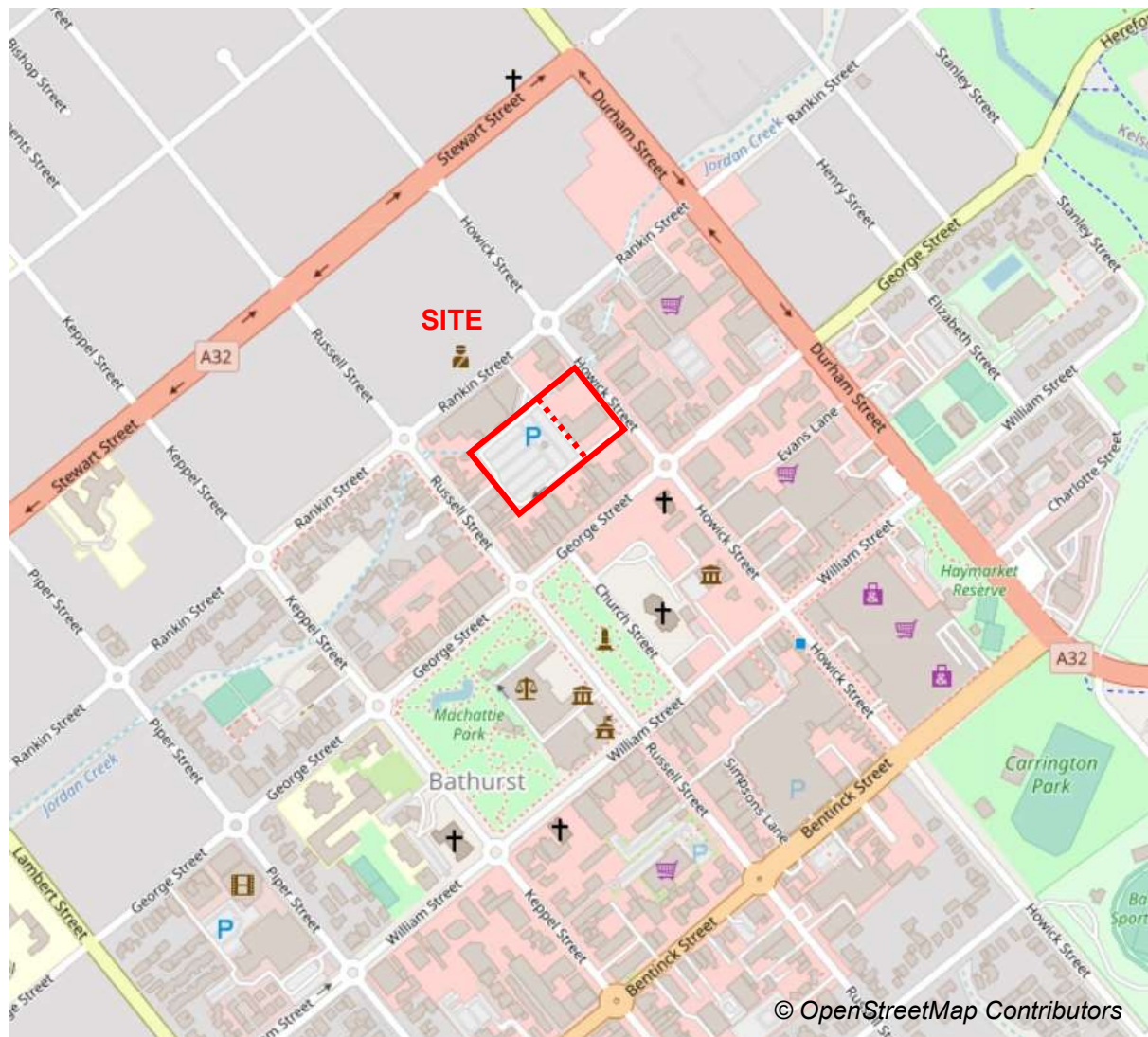


Figure 2-1: Locality Plan

The site comprises a number of lots, and is essentially divided into two main components:

- 250-252 Howick Street – Comprising Lot 2 DP568837, Lots A and B DP163425, Lot 71 DP579908, Lot 20 DP549764 and Lot 17 DP584625 and with a total area of approximately 4,100m², this part of the site was formerly used for car sales and service; and
- George Street Car Park – Comprising Lot 11 DP1160748, with a total area of approximately 1.14 hectares, this part of the site is currently used for at-grade car parking.

Vehicular access to the site is available from a number of locations, including directly from Howick Street, as well as via several laneways including Milne Lane (from Howick Street), Gallipoli road (from Rankin Street) and Rigbys Lane (from Russell Street).

In addition, pedestrian access is available via Machattie Lane (from George Street), which is closed to vehicles.

Key roads in the vicinity of the site, as well as site access arrangements, are shown in Figure 2-2, below.

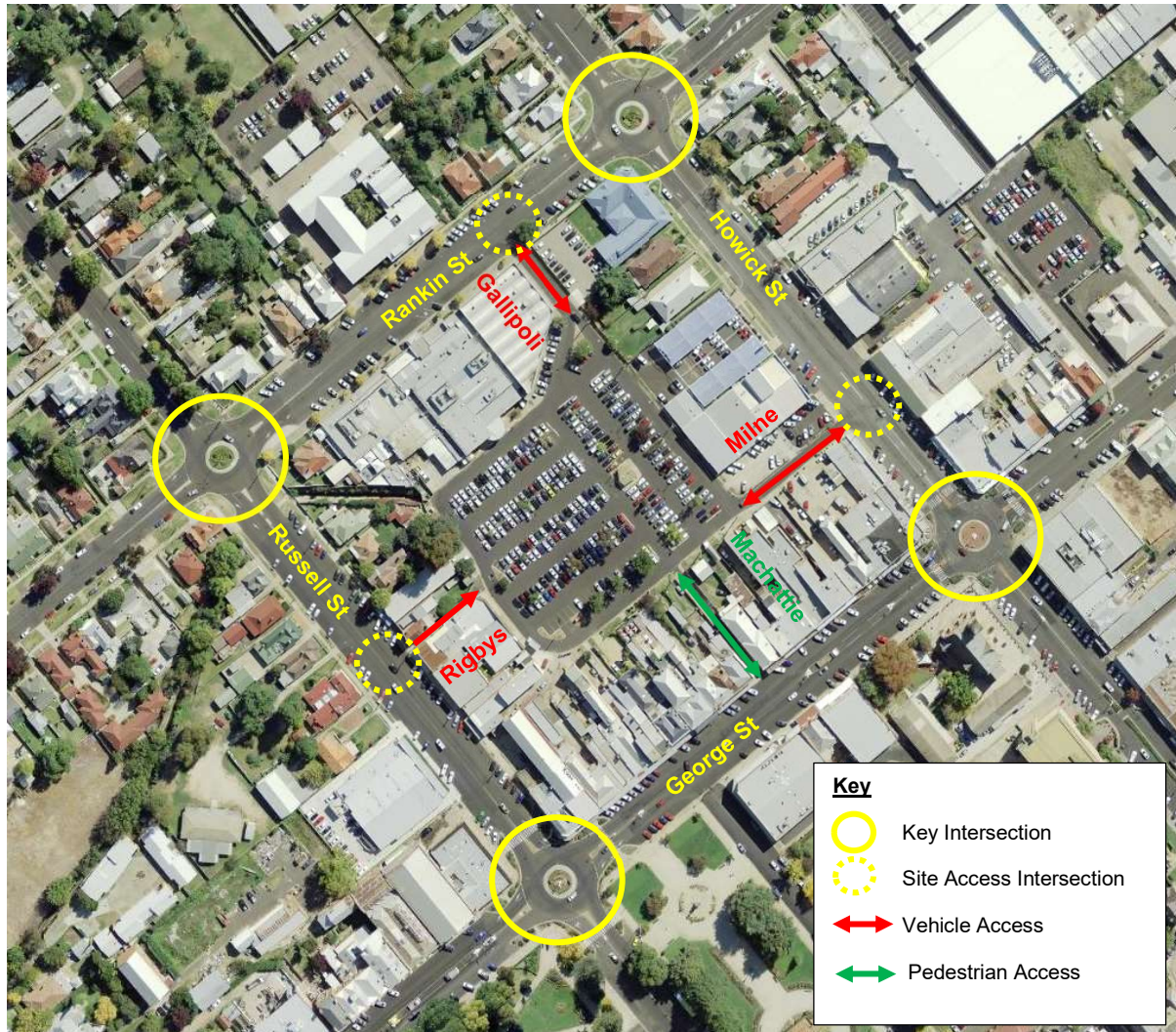


Figure 2-2: Site access and surrounds (Source: SixMaps)

2.2 Surrounding Land Use

The site and immediate surrounds are currently zoned B3 Commercial Core under the *Bathurst Regional Local Environmental Plan 2014* (as shown in Figure 2-3, below). The surrounding properties include a variety of uses typical of those found in a CBD location, including retail, commercial and dining. Other significant land uses near the site include the Bathurst RSL and Police Station, both located on Rankin Street to the north-west.

Land further to the north and west is zoned R1 General Residential, and in addition to residential housing, also incorporates a number of commercial and office properties.

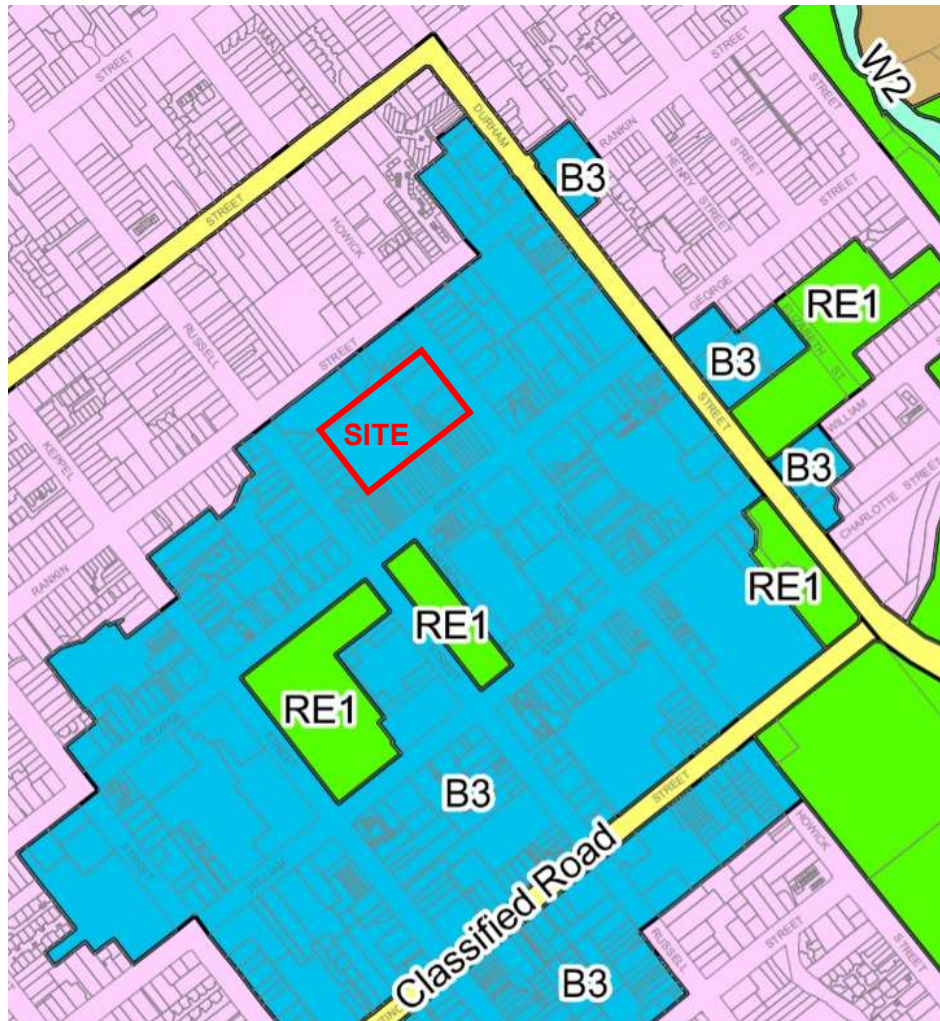


Figure 2-3: Land Zoning (Source: Bathurst Regional LEP 2014)

2.3 Consultation

In preparing this report, consultation has been undertaken with officers from Bathurst Regional Council and Transport for NSW (TfNSW). Spotto Consulting appreciates the opportunity to discuss key issues relating to the local transport network with these officers, and acknowledges the insights gained through this consultation.

2.4 Road Network

2.4.1 Surrounding Streets

The site is essentially bound by four local streets, being Howick Street, Rankin Street, Russell Street and George Street. All four streets are contained within 30m-wide road reserves, and have carriageways with widths of 22m. Each road contains a single through lane in each direction, with rear-to-kerb angle parking on-street (with the exception of some parallel parking for cars and buses in several locations). Loading zones are also provided in central median locations on Howick Street and George Street. Footpaths are provided on both sides of each road. The speed limit on each of the roads is the default urban speed limit of 50km/h.

As the Bathurst CBD street network is generally laid out in a regular grid format, there is a relatively even distribution of traffic across most roads. Roads within the Bathurst CBD balance through movement with property access. All four roads surrounding the site are under the control of Bathurst Regional Council.



Figure 2-4: Howick Street



Figure 2-5: Rankin Street



Figure 2-6: Russell Street



Figure 2-7: George Street

2.4.2 Laneways

Access to the site is available via four laneways:

- Milne Lane intersects with Howick Street via a three-leg T-intersection, with priority to vehicles travelling along Howick Street. It is a two-way sealed urban road defined by upright kerb and gutter, with a width of 6m;
- Gallipoli Road intersects with Rankin Street via a three-leg T-intersection, with priority to vehicles travelling along Rankin Street. It is a two-way sealed urban road defined by upright kerb and gutter, with a width of 6m for the first 40m of its length (thereafter splitting into two different directions of travel within the off-street car park);
- Rigbys Lane intersects with Russell Street via a three-leg T-intersection. It is a one-way road northbound from Russell Street into the off-street car park with a width of 4m; and
- Machattie Lane provides access only for pedestrians. It is a 4m-wide lane that runs from George Street for a distance of approximately 60m before accessing the off-street car park.

Due to the narrow widths, low speeds and limited lengths, the laneways favour access over through movement. All four laneways are under the control of Bathurst Regional Council.



Figure 2-8: Milne Lane



Figure 2-9: Gallipoli Road



Figure 2-10: Rigbys Lane



Figure 2-11: Machattie Lane

2.4.3 Intersections

The block of streets surrounding the site comprising Howick Street, Rankin Street, Russell Street and George Street has all roads intersecting via four-leg roundabouts. All four roundabouts have a single circulating lane and an internal island of 14m in diameter.

Three of the roundabouts have two approach lanes on each leg: a dedicated left turn lane plus a shared through/right turn lane. The exception to this is the intersection of Howick Street and George Street, which has only a single lane on each approach.

The intersection of Russell Street and George Street has zebra crossings for pedestrians on three of its four legs. The other leg on this intersection, and all of the other intersections, do not have this feature.



Figure 2-12: Howick Street and Rankin Street



Figure 2-13: Russell Street and Rankin Street



Figure 2-14: Russell Street and George Street



Figure 2-15: Howick Street and George Street

2.5 Existing Traffic Conditions

2.5.1 Data Collection

The following data was provided by Council:

- Traffic counts undertaken on Howick Street and Rankin Street in December 2020 (Metrocount files including detailed volume, speed and vehicle classification data);
- Summary data for historical traffic counts undertaken from 2003 onwards by Council on surrounding streets (AADT values only); and
- Turning counts undertaken in October 2018 at the four key intersections surrounding the site (7AM-10AM and 3PM-6PM).

Turning movement counts were also undertaken at the four key intersections surrounding the site in February 2021. These surveys were undertaken across the morning and evening peak periods, allowing the peak hour in each period to be determined.

It should be noted that as this is a CBD location, some roads and intersections experience a high volume of traffic in the middle of the day. As the proposed development involves a commercial development whose traffic generation will be highest during the morning and evening commuter peak periods, these are the peak periods that have been assessed.

2.5.2 Intersections

Using the data and methodology detailed in Section 2.5.1, the traffic movements at key intersections in 2021 can be accurately determined. The turning movements for the busiest one-hour period in the AM and PM peak periods are summarised for the four key intersections on the block surrounding the site in Figure 2-16 and Figure 2-17, below.

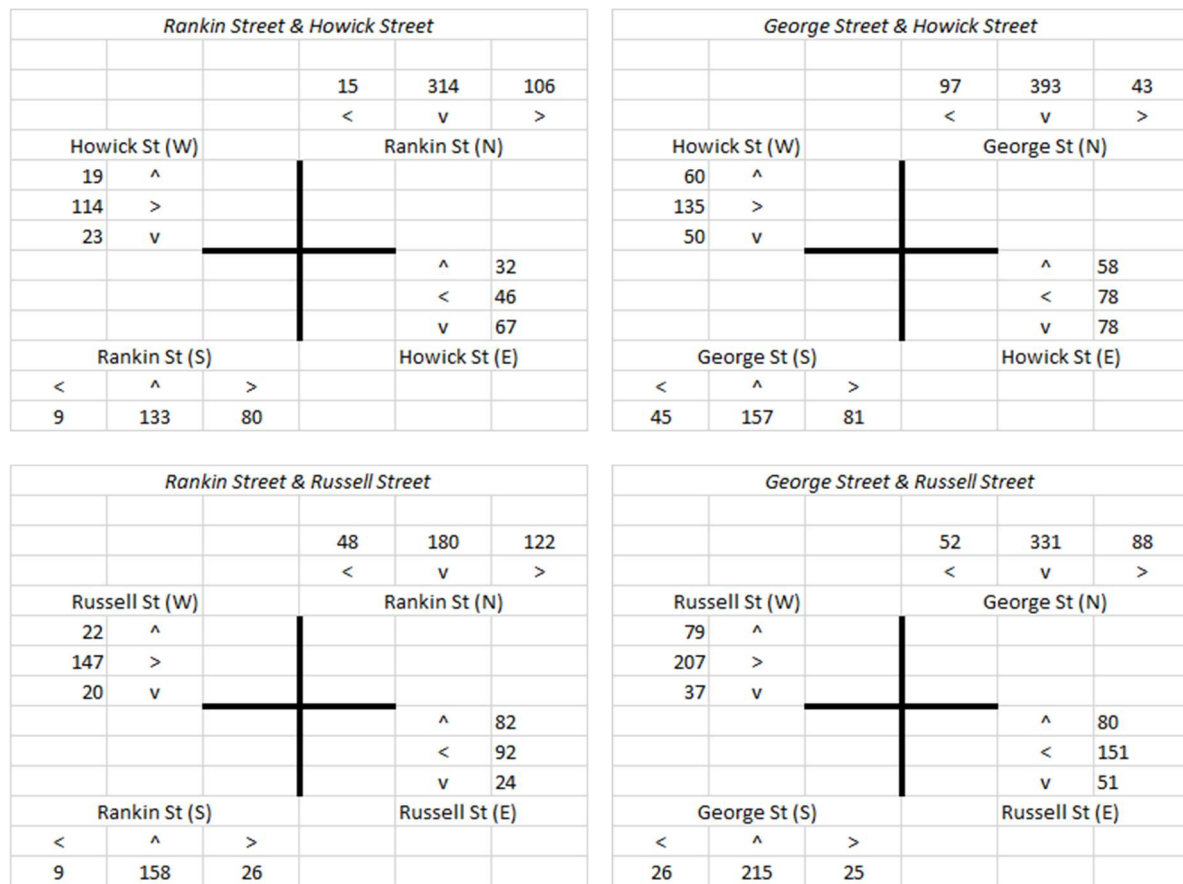


Figure 2-16: AM Peak Hour Turning Movements - Existing Conditions

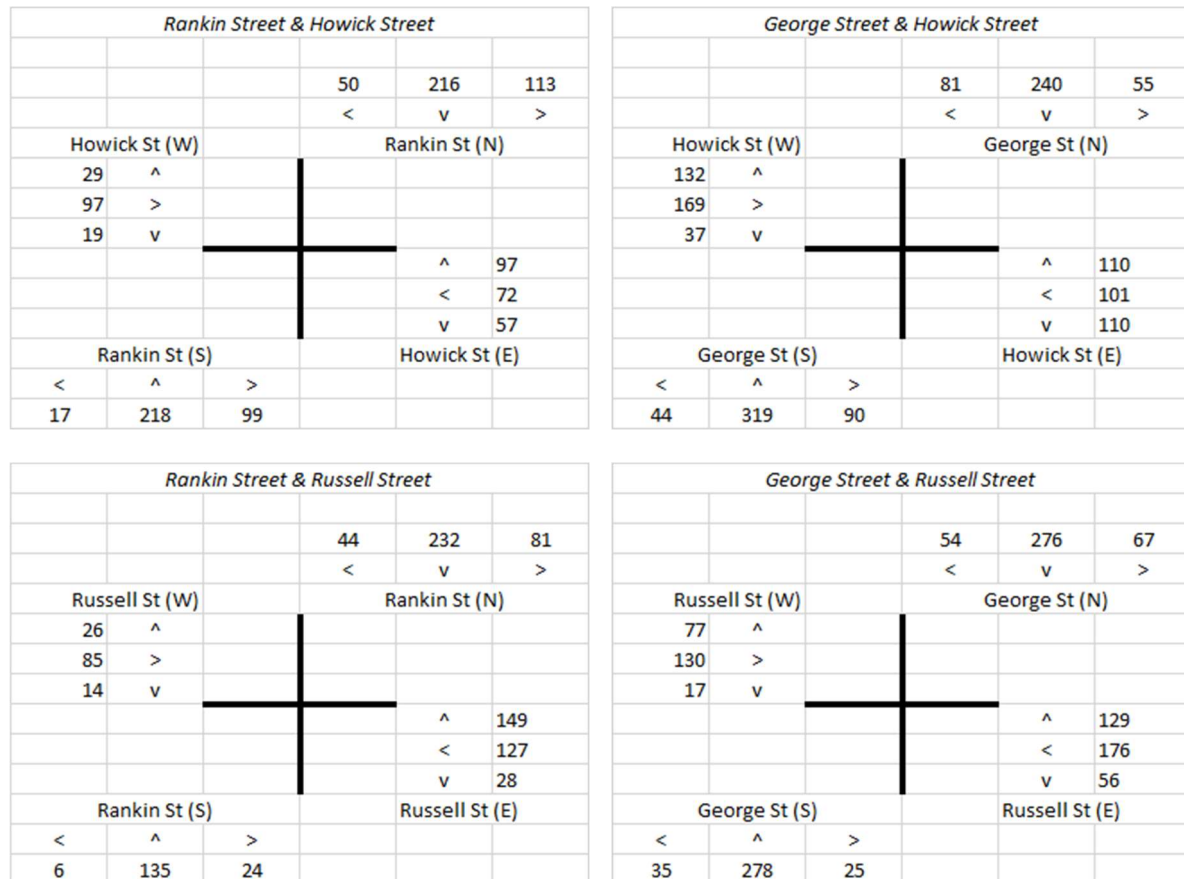


Figure 2-17: PM Peak Hour Turning Movements - Existing Conditions

The performance of these intersections was modelled using the intersection analysis program SIDRA Intersection. Full results for the existing AM and PM peak periods are included in Appendix A, and summarised in Table 2-1 below.

Table 2-1: Intersection performance summary - existing conditions

Intersection	Total Flow (veh/h)	Degree of Saturation	Average Delay (sec)	Level of Service*
Howick St & Rankin St				
AM	1,008	0.259	5.0	A
PM	1,141	0.252	5.6	A
Russell St & Rankin St				
AM	979	0.178	5.2	A
PM	1,001	0.230	5.4	A
Russell St & George St				
AM	1,413	0.318	5.6	A
PM	1,389	0.271	5.7	A
Howick St & George St				
AM	1,342	0.522	6.4	A
PM	1,566	0.464	6.9	A

* Level of Service (LOS) is a qualitative assessment of the quantitative effect of factors such as speed, volume of traffic, geometric features, traffic interruptions, delays and freedom to manoeuvre. It ranges from A (best) to F (worst), and is calculated using average delay.

The analysis demonstrates that under 2021 traffic volumes, all intersections currently operate at an excellent Level of Service (LOS A, the highest level) in both the AM and PM peak periods. This indicates intersections operating with low levels of delay and saturation, and with ample spare capacity.

A comparison of the 2021 data with the data from 2018 provided by Council is summarised in Table 2-2, below.

Table 2-2: Intersection comparison – 2021 data versus 2018 data

Intersection	2021 Total Flow (veh/h)	2018 Total Flow (veh/h)	Difference 2021 vs 2018
Howick St & Rankin St			
AM	1,008	973	+3.6%
PM	1,141	1,084	+5.3%
Russell St & Rankin St			
AM	979	933	+4.9%
PM	1,001	962	+4.1%
Russell St & George St			
AM	1,413	1,332	+6.1%
PM	1,389	1,295	+7.2%
Howick St & George St			
AM	1,342	1,322	+1.5%
PM	1,566	1,500	+4.4%

The key points to note from this include:

- PM volumes are consistently higher than AM volumes;
- The 2021 volumes at each site are generally in proportion to those seen in 2018 (in comparison to other sites), indicating consistency between the data sources; and
- The average volume at intersections in 2021 is generally 4-5% than in 2018, indicating some level of growth in background traffic volumes (of the order of 1.5% per annum).

2.5.3 Site Accesses

As noted in Section 2.4.2, above, the site is accessed directly from Howick Street, with the off-street car parking accessible from several laneways. It is important to note that the movement off traffic into and out of the site varies across the day.

AM traffic movements at the site and off-street car park consist predominantly of inbound vehicles seeking long term/all day parking, and to a lesser extent, vehicles accessing the fitness club. The number of vehicles parked at the site and off-street car park increased from 52 vehicles to 289 vehicles between 8AM and 10AM, a net increase of 237 vehicles over two hours.

Traffic movements are lower during the middle of the day, as there are fewer off-street parking spaces available. Traffic movements are relatively balanced between inbound and outbound movements, as demand at the RSL increases during the lunchtime period, while few long term/all day car parks are vacated.

PM traffic movements consist of a more balanced mixture of inbound and outbound movements, with inbound vehicles accessing the RSL and fitness club, and outbound vehicles being CBD employees departing the long term/all day parking. The number of vehicles parked

at the site and off-street car park decreased from 227 vehicles to 169 vehicles between 4PM and 6PM, a net decrease of only 58 vehicles over two hours. This indicates that although there is a significant outbound volume of commuter traffic, there is also a significant inbound volume of vehicles accessing the RSL for dinner, and to a lesser extent the fitness club. This is further reinforced by the observation that there are only 12 fewer cars observed parked in the area a further two hours later at 8PM.

The turning movements for the busiest one-hour period in the AM and PM peak periods are summarised for the key site access locations of Milne Lane and Howick Street, as well as Gallipoli Road and Rankin Street, in Figure 2-18 and Figure 2-19, below.



Figure 2-18: AM Peak Hour Turning Movements - Existing Conditions



Figure 2-19: PM Peak Hour Turning Movements - Existing Conditions

The performance of these site accesses was modelled using the intersection analysis program SIDRA Intersection. Full results for the existing AM and PM peak periods are included in Appendix A, and summarised in Table 2-1 below.

Table 2-3: Site access performance summary - existing conditions

Intersection	Total Flow (veh/h)	Degree of Saturation	Average Delay (sec)	Level of Service
Rankin St & Gallipoli Road				
AM	734	0.226	1.6	A
PM	747	0.186	1.8	A
Howick St & Milne Lane				
AM	565	0.173	1.0	A
PM	633	0.176	1.1	A

The key points from this analysis include:

- Both site accesses operate at an excellent Level of Service (LOS A, the highest level) in both the AM and PM peak periods, indicating intersections operating with low levels of delay and saturation, and with ample spare capacity;
- Similar to the surrounding key intersections, overall volumes are higher in the PM peak period than in the AM peak period (a function of both higher traffic levels on the surrounding road network, as well as the difference in traffic volumes at the site as noted above); and
- Delays are highest on the access roads (Milne Lane and Gallipoli Road), although both are relatively low in the AM and PM peak periods.

2.5.4 Midblock

Traffic volumes midblock (ie. between intersections) can be determined for the peak periods based on the turning movement data. It is also possible to estimate daily midblock traffic volume using the turning movement data: analysis of the midblock data provided by Bathurst Regional Council for Howick Street and Rankin Street shows that the AM and PM peak hour traffic volume represents approximately 16% of the total daily traffic volume, or 8% each. This is in line with guidance on traffic modelling from Austroads and TfNSW, which indicates that peak hour is typically between 8-12% of AADT (daily volume).

A summary of the midblock data for the key sections of roads in the vicinity of the site, including weekday traffic volumes (in vehicles per day), peak hour traffic volumes (in vehicles per hour) and Level of Service (LOS) is provided in Table 2-4, below.

Table 2-4: Midblock traffic data – existing conditions

Location	Weekday*	Weekday AM Peak		Weekday PM Peak	
	Veh/d	Veh/h	LOS [#]	Veh/h	LOS [#]
Howick Street (West of George)	6,440	464		566	
Eastbound		245	B	339	B
Westbound		219	B	227	B
Rankin Street (South of Howick)	7,810	624		625	
Southbound		403	C	291	B
Northbound		221	B	334	B
Russell Street (West of George)	6,500	552		488	
Eastbound		323	B	223	B
Westbound		229	B	265	B
George Street (South of Howick)	10,270	803		840	
Southbound		520	C	387	C
Northbound		283	B	453	C

* Weekday traffic volumes calculated assuming average of AM and PM peak period represents 8% each of daily total, in line with observations from midblock data on Howick Street and Rankin Street

Level of Service calculated based on typical midblock capacities for two-lane, two-way roads from Austroads Guide to Traffic Management Part 3: Traffic Studies and Analysis.

All midblock sections of road operate at a good or satisfactory level of service (LOS B or C), indicating midblock sections with adequate capacity for existing traffic volumes.

A comparison of the 2021 data with the data from 2020 provided by Council for Howick and Rankin Streets is summarised in Table 2-2, below.

Table 2-5: Midblock comparison – 2021 data versus 2020 data

Midblock Section	2021 Weekday (veh/d)	2020 Weekday (veh/d)	Difference 2021 vs 2018
Howick Street	6,440	6,504	-1.0%
Rankin Street	7,810	7,449	+4.8%

The 2021 survey data is within +/-10% of the 2020 Council data for weekdays, indicating that the count data is a good correlation with the longer term midblock counts undertaken by Council in 2020.

2.6 Parking Supply and Demand

The existing parking in the vicinity of the site was surveyed on Thursday 4 February 2021 to determine the number of available and occupied spaces.

The existing road network and off-street parking was surveyed to determine the amount of publicly-available parking spaces in the vicinity of the site. This takes into account the location of driveways, intersections and designated “no stopping” zones, as well as numbers of linemarked spaces on-street and off-street. It excludes car parking on private sites. A parking

survey was also undertaken, which involved manually counting the number of vehicles parked off-street and on-street at two hour intervals across the day (from 8AM to 8PM).

These investigations allow both the supply and demand of publicly-available parking in the vicinity of the site to be determined, as well as the usage across the day.

In addition, this data can be compared to observed rates from Council's *Bathurst CBD Car Parking Strategy 2013* – this publication reports rates by city block from surveys completed in 2010, allowing effective comparisons to be made. While the strategy does not specify the time periods for collection of parking data, it is assumed that they may be compared with the average usage during business hours (10AM-4PM) from the 2021 surveys.

Full details of the parking survey are included in Appendix B, and summarised in Table 2-6, below.

Table 2-6: Summary of Key Parking Survey Results

Area	Time of Day			From Bathurst CBD Parking Strategy (2013)
	Average Usage All Day (8AM-8PM)	Average Usage Business Hours (10AM-4PM)	Peak Usage	
Howick Street (George-Rankin)	34%	51%	67%	50%
Rankin Street (Howick-Russell)	63%	64%	75%	63%
Russell Street (George-Rankin)	44%	64%	82%	46%
George Street (Howick-Russell)	37%	48%	52%	67%
Council/RSL Off-Street Car Park	61%	79%	91%	73%
Site Off-Street Car Park	36%	55%	67%	-

Key points to note from this include:

- A peak usage of 85% is considered high (*Austroads Guide to Traffic Management Part 11: Parking*), and the peak usage of on-street parking overall in the sections surveyed was below this. The highest usages were seen in Russell Street and Rankin Street, with peak usages of 82% and 75%, respectively, although it should be noted that within these sections, there were areas of high demand (for example, the untimed parking at the Rankin Street end of Russell Street was 100% full at times);
- A comparison of on-street usage from 2013 with 2021 shows that the on-street usage rates for Howick Street (50% versus 51%) and Rankin Street (63% and 64%) were very similar. Usage rates for Russell Street had increased (46% versus 64%), while those for George Street had decreased (67% versus 48%);
- Off-street parking usage in the George Street car park was high, peaking at 91%, and higher than in 2013 (increasing from 73% to 79%). Within this car park, several areas had peak parking rates exceeding 85%, including the untimed parking (peak usage rate of 99%) and the area of four hour parking closest to the RSL (peak usage rate of 96%);
- There is some evidence of all day parking in the four hour car parking areas of the off-street car park (for example, observing the same vehicle parked in position all day with sunshades in place). In addition, streets outside the survey area were noted to be occupied later in the day (for example, Rankin Street between Russell Street and Keppel Street),

indicating longer term parking demands by people arriving later in the day and unable to secure an untimed parking space in the George Street off-street car park.

2.7 Crash Data

Data on crashes was obtained from the Transport for NSW Centre for Road Safety Interactive Crash Statistics database. In the most recent five year period for which data is available, the database showed that there were six crashes in the immediate vicinity of the site, as shown in Figure 2-20, below.



Figure 2-20: Crashes in vicinity of site 2016-2020 (Source: TfNSW Interactive Crash Stats)

These crashes resulted in a total of seven injuries.

Four of the six crashes occurred at roundabouts, with another at a T-junction, most involving multiple vehicles. One of the crashes involved a pedestrian.

2.8 Public Transport

Public buses operate in the Bathurst area, with routes operated by Bathurst Buslines providing access to all areas of Bathurst. Most run once per hour Monday to Friday (with higher frequencies during peak times), with some services also available on Saturday every 1-2 hours. The majority of bus routes run along Howick, Rankin and Russell Streets, with the remainder accessible approximately 300m south-east of the site.

Inter-city rail services are available from the Bathurst Train Station, which is located approximately 1.2km south of the site.

2.9 Pedestrians and Cyclists

Pedestrians can utilise footpaths on both sides of roads in the vicinity of the site to travel in all directions. Dedicated pedestrian crossings near the Russell Street and George Street roundabout, along with features such as the kerb extensions on George Street near Machattie Lane also assist in safe and easy movement on foot.

Cyclists are able to ride on-road, and there are no dedicated cyclist lanes, paths or other facilities in the immediate vicinity of the site.

Council has a Community Access and Cycling Plan, which identifies a number of existing shared paths through the broader area, and also prioritises future construction works.

3 PROPOSED DEVELOPMENT

The proposed development consists of two primary components:

- A six level medical centre building on the northern part of the site; and
- A four level car park on the southern part of the site.

The medical centre will be located on the site's Howick Street frontage. The ground floor will contain a restaurant/café tenancy and medical tenancies, while levels one to five will be occupied by various medical tenants. The building will have a total Gross Floor Area (GFA) of 10,299m².

The multi-level car park will have access from two locations (one in the east and one in the north-west), with ramps providing access between levels in the south-east. The multi-level car park will provide a total of 827 parking spaces.

Additional car parking will include a reconfiguration of the ground level to provide 63 spaces adjacent to the RSL building, as well as 25 spaces to the west of the medical centre (reserved for doctors and other medical centre staff). Overall the site will provide a total of 915 off-street parking spaces (including at least 27 designated for persons with a disability). Loading and servicing zones for the proposed medical centre will be located on the southern and eastern edges of the building.

Access to the precinct will continue to be via two-way access at Milne Lane (from Howick Street) and Gallipoli Lane (from Rankin Street), with Rigbys Lane remaining one-way inbound. Access around the multi-level car park will be one way (clockwise).

Pedestrian facilities will include dedicated at-grade crossings in the north and east, with a sky-bridge connecting level 2 of the multi-level car park to the medical centre building across Gallipoli Lane.

Space has been designated for parking of bicycles to the north-west of the multi-level car park, capable of accommodating 28 bicycles.

Plans of the proposed development are included in Appendix C.

4 IMPACT OF PROPOSED DEVELOPMENT

4.1 Road Network

4.1.1 Traffic Generation and Distribution

Traffic generation levels for proposed developments can typically be determined by reference to published standards such as the *RTA Guide to Traffic Generating Developments* (and its subsequent update *RMS Technical Direction TDT2013/04a Guide to Traffic Generating Developments – Updated Traffic Surveys*), or interstate and overseas guides such as the *SA DPTI Trip Generation Rates for Assessment of Development Proposals 2014* or the *US ITE Trip Generation Manual (10th Edition)*. In some instances, not all land uses are detailed in each publication, and as a result multiple reference sources can be used.

There will be two separate streams of traffic generated by the proposed development:

- New traffic generated by the proposed medical centre building; and
- Redistribution of existing CBD traffic as a result of provision of additional off-street car parking.

The amount of new traffic generated by the proposed medical centre building depends on the land use, and the relevant rates for each land use are summarised in Table 4-1, below.

Table 4-1: Traffic Generation Rates for Proposed Medical Centre

Element	Source	Trip Generation Rate	
		Weekday AM Peak	Weekday PM Peak
		Veh/h	Veh/h
Restaurant/ Dining	SA DPTI 2014	10.2 trips per 100m ² GFA	10.2 trips per 100m ² GFA
Medical	ITE 10 th Ed	3.0 trips per 100m ² GFA	3.7 trips per 100m ² GFA

The total traffic new generated by the proposed medical centre building is summarised in Table 4-2, below.

Table 4-2: Traffic Generation – Proposed Medical Centre

Element	Scale	Total Number of Trips	
		Weekday AM Peak	Weekday PM Peak
		Veh/h	Veh/h
Restaurant/Dining	180m ² GFA	18	18
Medical	10,119m ² GFA	303	373
<i>Total</i>		321	391

As noted in Section 2.6, above, there appears to be some latent demand for parking within the CBD – such as longer term parking within the CBD in streets outside those surveyed. Construction of additional off-street parking (over and above that required by the proposed medical centre building) is likely to tap into this latent demand, and result in a redistribution of vehicles already parked within the CBD. For the purposes of this assessment, the traffic volumes into and out of the precinct via Milne Lane and Gallipoli Road (detailed in Section 2.5.3, above) are assumed to double (in line with the increase in off-street car parks over and

above that required for the proposed development, as detailed in Section 4.2, below), as summarised in Table 4-3, below.

Table 4-3: Traffic Generation – Expansion of Off-Street Car Park

Element	Scale	Total Number of Trips	
		Weekday AM Peak	Weekday PM Peak
		Veh/h	Veh/h
Inbound	-	200	125
Outbound	-	50	175
<i>Total</i>		<i>250</i>	<i>300</i>

Other assumptions used to determine traffic generation and distribution for the site are that:

- For the proposed medical centre, 75% of traffic will be inbound, and 25% outbound in the AM Peak (in line with typical distributions for commercial/medical and cafe properties, as employees typically travel inbound in the morning to work, and depart in the evening), with these values reversed in the PM Peak;
- Assumptions on the split between traffic entering the site from and exiting the site to the north/east/south/west is provided in Table 4-4, below. Splits have been determined based on approximate distributions of development around the Bathurst CBD, and likely routes considering a review of existing traffic movements. It should be noted that traffic associated with expansion of the off-street car park will generally be a redistribution of traffic within the CBD, and not new traffic to the CBD;

Table 4-4: Traffic Directional Splits – Proposed Development

Origin/ Destination	Proportion	Approach Route	Departure Route
North/East (Kelso)	30%	Westbound on Durham Street Left at George Street Right at Howick Street Left at Milne Lane	Northbound Milne Lane Right at Howick Street Left at George Street Right at Durham Street
South (Bathurst, South Bathurst)	20%	Northbound on Rankin Street OR Westbound on Russell Street Through at George Street Right at Rankin Street THEN Right at Gallipoli Road	Westbound on Gallipoli Road Left at Rankin Street THEN Through at Russell Street OR Left at Russell Street Through at George Street
West (West Bathurst, Windradyne)	20%	Northbound on Rankin Street OR Northbound on Stewart Street Right at Russell Street Left at Rankin Street THEN Right at Gallipoli Road	Westbound on Gallipoli Road Left at Rankin Street THEN Through at Russell Street OR Right at Russell Street Left at Stewart Street
North/West (Llanarth, Eglinton)	30%	Eastbound on Durham Street Right at Rankin Street Through at Howick Street Right at Gallipoli Road	Westbound on Gallipoli Road Right at Rankin Street Through at Howick Street Left at Durham Street

4.1.2 Traffic Impact at Intersections

The additional traffic generated by the proposed development was added to the existing traffic flows at the four key intersections in the vicinity of the site. The performance of these key intersections were then modelled using the intersection analysis program SIDRA Intersection. Full results for the AM and PM peak periods are included in Appendix D and summarised in Table 4-5, below.

Table 4-5: Intersection performance summary – with proposed development

Intersection	Total Flow (veh/h)	Degree of Saturation	Average Delay (sec)	Level of Service
Howick St & Rankin St AM	1,188	0.360	5.0	A
PM	1,360	0.361	5.6	A
Russell St & Rankin St AM	1,220	0.228	5.5	A
PM	1,289	0.298	5.7	A
Russell St & George St AM	1,473	0.322	5.7	A
PM	1,462	0.289	5.8	A
Howick St & George St AM	1,522	0.644	7.6	A
PM	1,785	0.622	8.2	A

The analysis demonstrates that all intersections continue to operate at an excellent Level of Service (LOS A, the highest level) in both the AM and PM peak periods, even with the additional traffic generated by the proposed development. This indicates all intersections will continue to operate with low levels of delay and saturation, and with ample spare capacity.

As vehicles travel further throughout the network, traffic generated by the proposed development becomes more dispersed, and hence has a lower net impact on other intersections. Hence if the impact at nearby intersections is within acceptable limits, then beyond these the impact will be even lower.

It is concluded that traffic from the proposed development can be accommodated at key intersections in the vicinity of the site, and that there will be no significant impacts on intersections as a result of the proposed development.

4.1.3 Traffic Impact at Site Accesses

The additional traffic generated by the proposed development was added to the existing traffic flows at the two site access intersections (Milne Lane and Howick Street, as well as Gallipoli Road and Rankin Street). The performance of these key intersections were then modelled using the intersection analysis program SIDRA Intersection. Full results for the AM and PM peak periods are included in Appendix D and summarised in Table 4-6, below.

Table 4-6: Site access performance summary – with proposed development

Intersection	Total Flow (veh/h)	Degree of Saturation	Average Delay (sec)	Level of Service
Rankin St & Gallipoli Road				
AM	1,154	0.389	4.4	A
PM	1,257	0.561	5.0	A
Howick St & Milne Lane				
AM	745	0.201	2.1	A
PM	852	0.298	2.8	A

Both site access intersections continue to operate at an excellent level of service (LOS A, the highest level), even with the additional traffic generated by the proposed development.

It is noted that there is a high level of traffic turning right from Rankin Street into Gallipoli Road in the AM peak period. An assessment of the through and turning volumes at this location indicates that a right turn lane is warranted, in order to minimise delays to northbound through traffic. This should be similar to the existing treatment in place at 72 Rankin Street, north of the site, with the angle parking on the western side of Rankin Street able to be maintained as there is parallel parking on the eastern side of Rankin Street adjacent to the RSL building. All other turning movements are sufficiently low as to not warrant dedicated turning lanes.

It is concluded that traffic from the proposed development can be accommodated at key site access intersections, and subject to the provision of a right turn lane from Rankin Street into Gallipoli Road, there will be no significant impacts as a result of the proposed development.

4.1.4 Traffic Impact Midblock

The additional traffic generated by the proposed development was added to the existing traffic volumes on nearby streets. A summary of the midblock data for the key sections of roads in the vicinity of the site, including weekday traffic volumes, peak hour traffic volumes and Level of Service with the proposed development is provided in Table 4-7, below.

Table 4-7: Midblock traffic data – with proposed development

Location	Weekday	Weekday AM Peak		Weekday PM Peak	
	Veh/d	Veh/h	LOS	Veh/h	LOS
Howick Street (West of George)	8,810	636		773	
Eastbound		284	B	479	C
Westbound		352	B	294	B
Rankin Street (South of Howick)	10,180	795		833	
Southbound		535	C	358	B
Northbound		260	B	475	C
Russell Street (West of George)	7,290	609		557	
Eastbound		336	B	270	B
Westbound		273	B	287	B
George Street (South of Howick)	10,270	803		840	
Southbound		520	C	387	C
Northbound		283	B	453	C

The analysis shows that the only change as a consequence of the proposed development is a slight deterioration in Level of Service eastbound on Howick Street and northbound on Rankin Street in the PM peak period (from LOS B to LOS C). Overall all roads operate at an acceptable LOS for all time periods (LOS C or better), even with the additional traffic generated by the proposed development.

Similar to impacts at intersections, as vehicles travel further throughout the network, traffic generated by the proposed development becomes more dispersed, and hence has a lower net impact on other roads. Hence if the impact on the roads in the vicinity of the site is within acceptable limits, then beyond these roads the impact will be even lower.

It is concluded that there will be no significant impact on roads in the vicinity of the site or further afield as a result of the proposed development.

4.1.5 Sensitivity Analysis

Sensitivity analysis was undertaken to determine the likely future performance of the road network in the vicinity of the site. This involved increasing traffic levels at 1.5% pa (based on the historical increase in traffic levels observed in Section 2.5.2, above) for 10 years and evaluating the performance of intersections and midblock sections of road. The analysis found that:

- In general intersections overall continue to operate at an excellent Level of Service (LOS A, the highest level), with the exception of Howick Street and George Street, which still operates at a good Level of Service (LOS B);
- Queuing on most legs of the intersections is acceptable, with the only exception being the western leg of Howick Street and George Street, which will extend to 85.3m in the PM peak, blocking egress from Milne Lane for vehicles seeking to turn right out of the site. It should be noted that this is caused by the combination of additional traffic from the proposed development, additional traffic from providing extra public car parking (requested by Council, over and above what is required for the development) and growth in background traffic volumes. To put this in perspective, of the total vehicles on the western leg in the PM peak, 339 are existing, 84 are from the proposed development, 53 are from the extra public car parking and 51 are from growth in background traffic volumes – that is, the growth in background traffic volumes and traffic resulting from extra public car parking requested by Council exceeds the amount anticipated from the proposed development. It is concluded that the issue is not primarily caused by the proposed development;
- In general the site access intersections continue to operate at an excellent Level of Service (LOS A, the highest level);
- Queuing at site access intersections is longest on the eastern leg of Rankin Street and Gallipoli Road in the PM peak period (as vehicles are exiting the site), however at 49.3m this does not block any of the internal access roads. All other queuing levels in the AM and PM peak periods are within acceptable limits for the site access intersections; and
- All midblock road sections continue to operate at an acceptable Level of Service (LOS C) or better.

4.2 Site Access and Car Parking

Australian Standard AS2890: Parking Facilities (AS2890) specifies the requirements for off-street car parking, such as dimensions for access and circulation roads as well as car parking spaces. In addition, *Bathurst Regional Development Control Plan 2014 Chapter 14 – Parking* (DCP 14) specifies some additional requirements, such as number of parking spaces.

It is proposed that vehicular access to the site be provided from the following locations:

- Milne Lane (from Howick Street) – two way access road east of medical centre;
- Gallipoli Road (from Rankin Street) – two way access road south of medical centre;
- Rigbys Lane (from Russell Street) – one way access road northbound; and
- Medical Centre western car park – access driveways linking the car park to Howick Street and Gallipoli Lane.

The operation of these intersections has been evaluated in Section 4.1.3, above. Subsequent discussion is limited to the configuration of these roads within the site itself.

Milne Lane will run between Howick Street and Gallipoli Road in its current location. It will operate as a two-way access road, with the loading zone for the medical centre on the western side and access to the off-street car park to the south.

Gallipoli Road will connect to Rankin Street in the existing location. It will operate as a two-way access road, providing access to the off-street car park south of the medical centre, as well as to parking at the rear of the RSL building.

The car park immediately west of the medical centre will connect to both Howick Street and Rankin Street. This area is proposed to be restricted to doctors and other key staff, and in order to minimise the impact of any through traffic, it is recommended that remotely-operated boom gates be installed at either end of the car park.

Access to the off-street car park will be via a one way (clockwise) circulation road. This will run around the outside of the car park in roughly the same location as at present, and will also maintain access to the rear of properties on George and Russell Streets as well as the RSL loading dock in the south-west of the site.

AS2890.1 specifies that two-way roadways or ramps should have a minimum width of 5.5m, while one-way roadways or ramps should have a minimum width of 3.0m, (Section 2.5.2). Gallipoli Road is proposed to be 6.5m, while the two-way section of Milne Lane (Gallipoli to Howick) is proposed to be 5.5m. The one-way circulation road around the site is 5.8m minimum, while the ramps between levels of the car park are 3.9m minimum. All two-way and one-way roads and ramps therefore meet the minimum requirements.

Turning template assessment has been carried out for circulation of vehicles within the site, and is included in Appendix E. This has been carried out for a Medium Rigid Vehicle (the largest vehicle likely to use the site), and demonstrates that an MRV can complete all necessary movements through the site.

AS2890 specifies a variety of dimensions for car parking spaces and aisle widths, depending on the type of user and configuration of car parking. For a User Class 3 (specifically for parking stations and medical centres), Figure 2.2 of AS2890.1 specifies that 90 degree angle parking spaces should be 2.6m wide and 5.4m long, with a parking aisle width of 6.6m. All spaces within the various off-street parking areas (including the multi-level car park, the at-grade car

park east of the medical centre and the at-grade car parking at the rear of the RSL building) meet these criteria.

DCP 14 specifies the minimum parking spaces required for a development, depending on the land use type. The proposed building is a mixture of Medical Centre and Restaurant or Café (within the Bathurst CBD), and the number of spaces required for each component of the proposed building is summarised in Table 4-8 below.

Table 4-8: Car Parking Requirements

Use	Rate	Unit	Car Parking Spaces Required
Medical	1 per 50m ² GFA	10,119m ² GFA	202
Restaurant/café	1 per 35m ² GFA	180m ² GFA	5
<i>Total</i>			<i>207</i>

The proposed development provides a total of 915 off-street parking spaces, which is sufficient to meet the total requirement of 527 spaces for the existing off-street car parking (320 spaces) plus the proposed building (207 spaces). The provision of additional parking (a further 388 spaces above the existing level plus what is required for the proposed development) will allow Council to cater for other parking demands in the area (in line with the direction of Council's *Bathurst CBD Car Parking Strategy 2013*).

The *Building Code of Australia* specifies a minimum of one space in 50 to be designated for persons with a disability for this class of building (healthcare building). Given that a total of 915 off-street parking spaces are proposed, a minimum 19 spaces should be designated. The proposed development includes at least 27 spaces designated for persons with a disability, and therefore provides adequate parking for persons with a disability.

It is concluded that the proposed development provides adequate numbers of off-street parking spaces to meet the requirements of the *Bathurst Regional Development Control Plan 2014 Chapter 14 – Parking*, and all matters for consideration under the DCP and *Australian Standard AS2890: Parking Facilities* have been addressed. The layout of the off-street parking area and access roads complies with the requirements of *AS2890*, with adequate provision made for persons with a disability.

4.3 Service and Delivery Vehicles

Service and delivery vehicles include deliveries of goods (linen, food and drink) and services (trades or maintenance persons), as well as collection of refuse.

As demonstrated in Appendix E, vehicles up to and including an MRV are able to negotiate through the site. Loading zones have been established to service vehicles travelling eastbound on Gallipoli Road and northbound on Milne Lane, and in order to discourage delivery vehicles from trying to enter the site via Milne Lane from Howick Street, it is recommended that signage be placed at the northern end of Milne Lane to restrict entry by vehicles over 6m in length or 2 tonnes in weight.

The proposed development provides loading zone and short term parking areas immediately south and east of the proposed medical centre. It is recommended that the area to the east of the building be signposted as a Loading Zone, while the area immediately south of the building

be signposted as a 15 minute car park (maximising flexibility of this area, which could be used for loading/unloading of goods, as well as drop off/pick up and taxis).

It is considered that the development provides appropriate facilities for service vehicles.

4.4 Pedestrian and Cyclist Impact

Access to the site will continue to be available from all four roads surrounding the site. Pedestrian safety within the site will be improved through the provision of dedicated footpaths (for example, between Machattie Lane and the car park/medical centre), pedestrian crossing points plus a sky bridge linking the first floor of the car park directly with the medical centre.

Bathurst Regional Development Control Plan 2014 Chapter 14 – Parking specifies requirements for provision of facilities for cyclists for both employees and visitors. This is summarised in Table 4-9, below.

Table 4-9: Bicycle Parking Space Requirements

Use	Employee Standard	Visitor Standard	Bicycle Parking Spaces Required
Medical	10,091m ² GFA @ 1 per 300m ² GFA = 33.6	10,091m ² GFA @ 1 per 1000m ² GFA = 10.1	43.7
Restaurant/café	180m ² GFA @ 1 per 100m ² GFA = 1.8	2 + 180m ² GFA @ 1 per 200m ² GFA = 2.9	4.7
<i>Total</i>	35.4	13.0	48.4 <i>Round to 48</i>

The proposed development provides parking for a total of 28 bicycles in the area adjacent to the multi level car park. Although this does not meet the requirements of the Bathurst DCP, it is sufficient to meet the requirements of 13 spaces for visitors, and as employees who ride their bicycles would be less likely to leave their bicycles in a public area while at work, is considered sufficient.

DCP 14 also requires the provision of shower facilities and change rooms based on the number of bicycle parking spaces. If 5 or more employee bicycle spaces are required, 1 shower facility for the first 5 employee bicycle spaces is to be provided, plus 1 for each 10 employee bicycle spaces thereafter. For the required 35 employee bicycle parking spaces, this equates to a total of four showers. One change room or direct access to a communal change room is to be provided for each shower (the change room may be a combined shower and change room). The proposed development incorporates shower and change facilities on each of the five levels of the proposed medical centre, and therefore meets the requirements of DCP 14 in this regard.

It is considered that the proposed development provides appropriate facilities for pedestrians and cyclists.

5 CONCLUSIONS AND RECOMMENDATIONS

It is concluded that:

- Traffic surveys and modelling of nearby intersections (including accesses to site) show that the intersections currently operate at an excellent Level of Service (LOS A, the highest level) or better. The midblock level of service on all roads surrounding the site is satisfactory (LOS C) or better;
- Parking surveys carried out on a typical weekday show that there is generally a satisfactory amount of on-street parking in the vicinity of the site to meet current demand, although the off-street parking experiences a high level of demand;
- The proposed development is anticipated to generate 571 vehicle trips per hour in the AM peak hour (321 from the proposed medical centre plus 250 from augmentation of the off-street car park) and 692 vehicle trips per hour in the PM (392 plus 300) peak hour, which will not have a significant impact on the performance of the road network in the immediate vicinity of the site (including nearby intersections, midblock sections of road and site accesses);
- The provision of 915 off-street parking spaces meets the minimum requirements for the proposed development under the *Bathurst Regional Development Control Plan 2014 Chapter 14 – Parking*, while the car parking and access driveways satisfactorily address all matters for consideration under the DCP and *Australian Standard AS2890*. Adequate provision has been made for persons with a disability;
- Adequate provision has been made for servicing and delivery vehicles; and
- Adequate provision has been made for pedestrians and cyclists.

It is recommended that:

- A right turn lane be provided for northbound vehicles on Rankin Street turning right into Gallipoli Lane;
- Entry into Milne Lane from Howick Street be restricted to vehicles under 6m in length and/or 2 tonnes in weight;
- Remotely-activated boom gates should be installed at both vehicle access points into the at-grade off-street car park located immediately west of the proposed medical centre; and
- Signage be installed in the parking adjacent to the medical centre designating a Loading Zone to the east (Milne Lane) and 15 Minute Parking to the south (Gallipoli Road).

APPENDIX A – INTERSECTION ANALYSIS: EXISTING

MOVEMENT SUMMARY

 **Site: [Russell George_PM_Existing (Site Folder: General)]**

Russell Street and George Street, Bathurst

PM Peak Period

Existing Volumes

Site Category: (None)

Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
						v/c	sec							km/h
South: George (S)														
1	L2	35	5.0	37	5.0	0.049	6.2	LOS A	0.2	1.8	0.54	0.59	0.54	45.8
2	T1	278	5.0	293	5.0	0.271	5.1	LOS A	1.8	13.0	0.58	0.58	0.58	46.6
3	R2	25	5.0	26	5.0	0.271	9.0	LOS A	1.8	13.0	0.58	0.58	0.58	46.5
Approach		338	5.0	356	5.0	0.271	5.5	LOS A	1.8	13.0	0.58	0.59	0.58	46.5
East: Russell (E)														
4	L2	56	5.0	59	5.0	0.077	6.2	LOS A	0.4	2.8	0.53	0.61	0.53	45.8
5	T1	176	5.0	185	5.0	0.268	5.0	LOS A	1.7	12.5	0.56	0.63	0.56	46.2
6	R2	129	5.0	136	5.0	0.268	8.9	LOS A	1.7	12.5	0.56	0.63	0.56	46.1
Approach		361	5.0	380	5.0	0.268	6.6	LOS A	1.7	12.5	0.55	0.62	0.55	46.1
North: George (N)														
7	L2	67	5.0	71	5.0	0.079	4.9	LOS A	0.4	3.0	0.40	0.52	0.40	46.3
8	T1	276	5.0	291	5.0	0.252	4.1	LOS A	1.6	11.8	0.40	0.49	0.40	47.1
9	R2	54	5.0	57	5.0	0.252	8.0	LOS A	1.6	11.8	0.40	0.49	0.40	47.0
Approach		397	5.0	418	5.0	0.252	4.8	LOS A	1.6	11.8	0.40	0.49	0.40	46.9
West: Russell (W)														
10	L2	77	5.0	81	5.0	0.093	6.2	LOS A	0.5	3.7	0.58	0.63	0.58	45.8
11	T1	130	5.0	137	5.0	0.138	5.3	LOS A	0.8	6.1	0.57	0.59	0.57	46.6
12	R2	17	5.0	18	5.0	0.138	9.2	LOS A	0.8	6.1	0.57	0.59	0.57	46.5
Approach		224	5.0	236	5.0	0.138	5.9	LOS A	0.8	6.1	0.58	0.60	0.58	46.3
All Vehicles		1320	5.0	1389	5.0	0.271	5.7	LOS A	1.8	13.0	0.52	0.57	0.52	46.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 **Site: [Howick Rankin_AM_Existing (Site Folder: General)]**

Howick Street and Rankin Street, Bathurst
AM Peak Period
Existing Volumes
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Rankin (S)														
1	L2	9	5.0	9	5.0	0.010	4.3	LOSA	0.0	0.3	0.28	0.45	0.28	46.6
2	T1	133	5.0	140	5.0	0.151	3.7	LOSA	0.9	6.4	0.27	0.48	0.27	47.1
3	R2	80	5.0	84	5.0	0.151	7.6	LOSA	0.9	6.4	0.27	0.48	0.27	47.0
Approach		222	5.0	234	5.0	0.151	5.1	LOSA	0.9	6.4	0.27	0.48	0.27	47.0
East: Howick (E)														
4	L2	67	5.0	71	5.0	0.070	5.4	LOSA	0.4	2.7	0.51	0.57	0.51	46.0
5	T1	46	5.0	48	5.0	0.069	4.7	LOSA	0.4	2.8	0.50	0.57	0.50	46.4
6	R2	32	5.0	34	5.0	0.069	8.6	LOSA	0.4	2.8	0.50	0.57	0.50	46.3
Approach		145	5.0	153	5.0	0.070	5.9	LOSA	0.4	2.8	0.50	0.57	0.50	46.2
North: Rankin (N)														
7	L2	106	5.0	112	5.0	0.118	5.1	LOSA	0.6	4.4	0.43	0.55	0.43	46.2
8	T1	314	5.0	331	5.0	0.259	4.4	LOSA	1.6	11.5	0.43	0.49	0.43	47.2
9	R2	15	5.0	16	5.0	0.259	8.2	LOSA	1.6	11.5	0.43	0.49	0.43	47.1
Approach		435	5.0	458	5.0	0.259	4.7	LOSA	1.6	11.5	0.43	0.50	0.43	46.9
West: Howick (W)														
10	L2	19	5.0	20	5.0	0.024	5.3	LOSA	0.1	0.8	0.43	0.52	0.43	46.2
11	T1	114	5.0	120	5.0	0.111	4.3	LOSA	0.6	4.3	0.41	0.50	0.41	47.1
12	R2	23	5.0	24	5.0	0.111	8.2	LOSA	0.6	4.3	0.41	0.50	0.41	47.0
Approach		156	5.0	164	5.0	0.111	5.0	LOSA	0.6	4.3	0.41	0.50	0.41	46.9
All Vehicles		958	5.0	1008	5.0	0.259	5.0	LOSA	1.6	11.5	0.40	0.51	0.40	46.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 **Site: [Howick George_AM_Existing (Site Folder: General)]**

Howick Street and George Street, Bathurst
AM Peak Period
Existing Volumes
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: George (S)														
1	L2	45	5.0	47	5.0	0.277	4.8	LOS A	1.7	12.5	0.50	0.58	0.50	45.7
2	T1	157	5.0	165	5.0	0.277	4.8	LOS A	1.7	12.5	0.50	0.58	0.50	46.6
3	R2	81	5.0	85	5.0	0.277	8.7	LOS A	1.7	12.5	0.50	0.58	0.50	46.6
Approach		283	5.0	298	5.0	0.277	5.9	LOS A	1.7	12.5	0.50	0.58	0.50	46.5
East: Howick (E)														
4	L2	78	5.0	82	5.0	0.285	7.0	LOS A	1.9	13.6	0.73	0.77	0.73	44.8
5	T1	78	5.0	82	5.0	0.285	7.0	LOS A	1.9	13.6	0.73	0.77	0.73	45.8
6	R2	58	5.0	61	5.0	0.285	10.9	LOS A	1.9	13.6	0.73	0.77	0.73	45.7
Approach		214	5.0	225	5.0	0.285	8.1	LOS A	1.9	13.6	0.73	0.77	0.73	45.4
North: George (N)														
7	L2	43	5.0	45	5.0	0.522	5.5	LOS A	4.0	29.3	0.64	0.64	0.64	45.3
8	T1	393	5.0	414	5.0	0.522	5.5	LOS A	4.0	29.3	0.64	0.64	0.64	46.3
9	R2	97	5.0	102	5.0	0.522	9.4	LOS A	4.0	29.3	0.64	0.64	0.64	46.2
Approach		533	5.0	561	5.0	0.522	6.2	LOS A	4.0	29.3	0.64	0.64	0.64	46.2
West: Howick (W)														
10	L2	60	5.0	63	5.0	0.254	5.1	LOS A	1.5	11.1	0.54	0.61	0.54	45.7
11	T1	135	5.0	142	5.0	0.254	5.2	LOS A	1.5	11.1	0.54	0.61	0.54	46.7
12	R2	50	5.0	53	5.0	0.254	9.1	LOS A	1.5	11.1	0.54	0.61	0.54	46.6
Approach		245	5.0	258	5.0	0.254	6.0	LOS A	1.5	11.1	0.54	0.61	0.54	46.4
All Vehicles		1275	5.0	1342	5.0	0.522	6.4	LOS A	4.0	29.3	0.61	0.64	0.61	46.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 **Site: [Russell Rankin_AM_Existing (Site Folder: General)]**

Russell Street and Rankin Street, Bathurst
AM Peak Period
Existing Volumes
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Rankin (S)														
1	L2	9	5.0	9	5.0	0.011	5.2	LOSA	0.1	0.4	0.42	0.49	0.42	46.2
2	T1	158	5.0	166	5.0	0.147	4.3	LOSA	0.8	6.1	0.41	0.49	0.41	47.1
3	R2	26	5.0	27	5.0	0.147	8.1	LOSA	0.8	6.1	0.41	0.49	0.41	47.0
Approach		193	5.0	203	5.0	0.147	4.8	LOSA	0.8	6.1	0.41	0.49	0.41	47.0
East: Russell (E)														
4	L2	24	5.0	25	5.0	0.030	5.4	LOSA	0.1	1.1	0.45	0.53	0.45	46.2
5	T1	92	5.0	97	5.0	0.141	4.4	LOSA	0.8	5.9	0.43	0.56	0.43	46.5
6	R2	82	5.0	86	5.0	0.141	8.3	LOSA	0.8	5.9	0.43	0.56	0.43	46.4
Approach		198	5.0	208	5.0	0.141	6.1	LOSA	0.8	5.9	0.43	0.56	0.43	46.4
North: Rankin (N)														
7	L2	122	5.0	128	5.0	0.118	4.7	LOSA	0.6	4.6	0.40	0.52	0.40	46.3
8	T1	180	5.0	189	5.0	0.178	4.2	LOSA	1.0	7.6	0.39	0.50	0.39	47.0
9	R2	48	5.0	51	5.0	0.178	8.0	LOSA	1.0	7.6	0.39	0.50	0.39	46.9
Approach		350	5.0	368	5.0	0.178	4.9	LOSA	1.0	7.6	0.40	0.51	0.40	46.8
West: Russell (W)														
10	L2	22	5.0	23	5.0	0.028	5.5	LOSA	0.1	1.0	0.45	0.53	0.45	46.2
11	T1	147	5.0	155	5.0	0.137	4.4	LOSA	0.8	5.6	0.44	0.51	0.44	47.0
12	R2	20	5.0	21	5.0	0.137	8.3	LOSA	0.8	5.6	0.44	0.51	0.44	47.0
Approach		189	5.0	199	5.0	0.137	5.0	LOSA	0.8	5.6	0.44	0.51	0.44	46.9
All Vehicles		930	5.0	979	5.0	0.178	5.2	LOSA	1.0	7.6	0.41	0.52	0.41	46.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 **Site: [Russell George_AM_Existing (Site Folder: General)]**

Russell Street and George Street, Bathurst
AM Peak Period
Existing Volumes
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: George (S)														
1	L2	26	5.0	27	5.0	0.034	5.6	LOS A	0.2	1.2	0.49	0.55	0.49	46.1
2	T1	215	5.0	226	5.0	0.203	4.6	LOS A	1.3	9.1	0.50	0.53	0.50	46.9
3	R2	25	5.0	26	5.0	0.203	8.5	LOS A	1.3	9.1	0.50	0.53	0.50	46.8
Approach		266	5.0	280	5.0	0.203	5.1	LOS A	1.3	9.1	0.49	0.53	0.49	46.8
East: Russell (E)														
4	L2	51	5.0	54	5.0	0.075	6.7	LOS A	0.4	2.9	0.59	0.64	0.59	45.5
5	T1	151	5.0	159	5.0	0.217	5.4	LOS A	1.4	10.2	0.60	0.64	0.60	46.2
6	R2	80	5.0	84	5.0	0.217	9.2	LOS A	1.4	10.2	0.60	0.64	0.60	46.1
Approach		282	5.0	297	5.0	0.217	6.7	LOS A	1.4	10.2	0.60	0.64	0.60	46.0
North: George (N)														
7	L2	88	5.0	93	5.0	0.113	5.7	LOS A	0.6	4.3	0.50	0.59	0.50	46.0
8	T1	331	5.0	348	5.0	0.318	4.7	LOS A	2.1	15.6	0.53	0.55	0.53	46.7
9	R2	52	5.0	55	5.0	0.318	8.6	LOS A	2.1	15.6	0.53	0.55	0.53	46.7
Approach		471	5.0	496	5.0	0.318	5.3	LOS A	2.1	15.6	0.52	0.56	0.52	46.6
West: Russell (W)														
10	L2	79	5.0	83	5.0	0.097	5.8	LOS A	0.5	3.7	0.51	0.59	0.51	46.0
11	T1	207	5.0	218	5.0	0.210	4.8	LOS A	1.3	9.3	0.51	0.56	0.51	46.7
12	R2	37	5.0	39	5.0	0.210	8.7	LOS A	1.3	9.3	0.51	0.56	0.51	46.7
Approach		323	5.0	340	5.0	0.210	5.5	LOS A	1.3	9.3	0.51	0.57	0.51	46.5
All Vehicles		1342	5.0	1413	5.0	0.318	5.6	LOS A	2.1	15.6	0.53	0.57	0.53	46.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 **Site: [Howick Rankin_PM_Existing (Site Folder: General)]**

Howick Street and Rankin Street, Bathurst
PM Peak Period
Existing Volumes
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
						v/c	sec							km/h
South: Rankin (S)														
1	L2	17	5.0	18	5.0	0.021	5.2	LOSA	0.1	0.7	0.42	0.51	0.42	46.2
2	T1	218	5.0	229	5.0	0.252	4.4	LOSA	1.6	11.4	0.44	0.54	0.44	46.7
3	R2	99	5.0	104	5.0	0.252	8.2	LOSA	1.6	11.4	0.44	0.54	0.44	46.6
Approach		334	5.0	352	5.0	0.252	5.5	LOSA	1.6	11.4	0.44	0.54	0.44	46.7
East: Howick (E)														
4	L2	57	5.0	60	5.0	0.067	5.5	LOSA	0.3	2.5	0.48	0.56	0.48	46.1
5	T1	72	5.0	76	5.0	0.142	4.5	LOSA	0.8	6.0	0.47	0.59	0.47	46.2
6	R2	97	5.0	102	5.0	0.142	8.4	LOSA	0.8	6.0	0.47	0.59	0.47	46.1
Approach		226	5.0	238	5.0	0.142	6.4	LOSA	0.8	6.0	0.47	0.58	0.47	46.1
North: Rankin (N)														
7	L2	113	5.0	119	5.0	0.117	5.0	LOSA	0.6	4.4	0.42	0.54	0.42	46.2
8	T1	216	5.0	227	5.0	0.211	4.3	LOSA	1.2	9.0	0.42	0.51	0.42	47.0
9	R2	50	5.0	53	5.0	0.211	8.2	LOSA	1.2	9.0	0.42	0.51	0.42	46.9
Approach		379	5.0	399	5.0	0.211	5.0	LOSA	1.2	9.0	0.42	0.52	0.42	46.8
West: Howick (W)														
10	L2	29	5.0	31	5.0	0.042	6.6	LOSA	0.2	1.5	0.56	0.61	0.56	45.5
11	T1	97	5.0	102	5.0	0.107	5.1	LOSA	0.6	4.5	0.54	0.57	0.54	46.6
12	R2	19	5.0	20	5.0	0.107	9.0	LOSA	0.6	4.5	0.54	0.57	0.54	46.5
Approach		145	5.0	153	5.0	0.107	5.9	LOSA	0.6	4.5	0.55	0.58	0.55	46.4
All Vehicles		1084	5.0	1141	5.0	0.252	5.6	LOSA	1.6	11.4	0.45	0.55	0.45	46.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 **Site: [Howick George_PM_Existing (Site Folder: General)]**

Howick Street and George Street, Bathurst
PM Peak Period
Existing Volumes
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: George (S)														
1	L2	44	5.0	46	5.0	0.464	5.5	LOS A	3.4	24.7	0.64	0.65	0.64	45.3
2	T1	319	5.0	336	5.0	0.464	5.6	LOS A	3.4	24.7	0.64	0.65	0.64	46.3
3	R2	90	5.0	95	5.0	0.464	9.5	LOS A	3.4	24.7	0.64	0.65	0.64	46.2
Approach		453	5.0	477	5.0	0.464	6.4	LOS A	3.4	24.7	0.64	0.65	0.64	46.2
East: Howick (E)														
4	L2	110	5.0	116	5.0	0.357	5.8	LOS A	2.4	17.4	0.64	0.70	0.64	45.2
5	T1	101	5.0	106	5.0	0.357	5.8	LOS A	2.4	17.4	0.64	0.70	0.64	46.2
6	R2	110	5.0	116	5.0	0.357	9.7	LOS A	2.4	17.4	0.64	0.70	0.64	46.1
Approach		321	5.0	338	5.0	0.357	7.2	LOS A	2.4	17.4	0.64	0.70	0.64	45.8
North: George (N)														
7	L2	55	5.0	58	5.0	0.392	5.4	LOS A	2.7	19.8	0.61	0.64	0.61	45.4
8	T1	240	5.0	253	5.0	0.392	5.5	LOS A	2.7	19.8	0.61	0.64	0.61	46.4
9	R2	81	5.0	85	5.0	0.392	9.4	LOS A	2.7	19.8	0.61	0.64	0.61	46.3
Approach		376	5.0	396	5.0	0.392	6.3	LOS A	2.7	19.8	0.61	0.64	0.61	46.2
West: Howick (W)														
10	L2	132	5.0	139	5.0	0.435	7.4	LOS A	3.1	22.8	0.78	0.80	0.79	44.9
11	T1	169	5.0	178	5.0	0.435	7.5	LOS A	3.1	22.8	0.78	0.80	0.79	45.9
12	R2	37	5.0	39	5.0	0.435	11.4	LOS A	3.1	22.8	0.78	0.80	0.79	45.8
Approach		338	5.0	356	5.0	0.435	7.9	LOS A	3.1	22.8	0.78	0.80	0.79	45.5
All Vehicles		1488	5.0	1566	5.0	0.464	6.9	LOS A	3.4	24.7	0.67	0.69	0.67	46.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 **Site: [Russell Rankin_PM_Existing (Site Folder: General)]**

Russell Street and Rankin Street, Bathurst
PM Peak Period
Existing Volumes
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
						v/c	sec							km/h
South: Rankin (S)														
1	L2	6	5.0	6	5.0	0.008	5.8	LOS A	0.0	0.3	0.50	0.52	0.50	46.0
2	T1	135	5.0	142	5.0	0.137	4.7	LOS A	0.8	5.9	0.49	0.54	0.49	46.8
3	R2	24	5.0	25	5.0	0.137	8.6	LOS A	0.8	5.9	0.49	0.54	0.49	46.7
Approach		165	5.0	174	5.0	0.137	5.3	LOS A	0.8	5.9	0.49	0.54	0.49	46.8
East: Russell (E)														
4	L2	28	5.0	29	5.0	0.036	5.7	LOS A	0.2	1.3	0.48	0.55	0.48	46.1
5	T1	127	5.0	134	5.0	0.230	4.7	LOS A	1.4	10.2	0.49	0.61	0.49	46.2
6	R2	149	5.0	157	5.0	0.230	8.6	LOS A	1.4	10.2	0.49	0.61	0.49	46.1
Approach		304	5.0	320	5.0	0.230	6.7	LOS A	1.4	10.2	0.49	0.60	0.49	46.1
North: Rankin (N)														
7	L2	81	5.0	85	5.0	0.086	4.5	LOS A	0.4	3.2	0.33	0.49	0.33	46.5
8	T1	232	5.0	244	5.0	0.200	3.8	LOS A	1.2	8.7	0.32	0.45	0.32	47.3
9	R2	44	5.0	46	5.0	0.200	7.7	LOS A	1.2	8.7	0.32	0.45	0.32	47.3
Approach		357	5.0	376	5.0	0.200	4.5	LOS A	1.2	8.7	0.32	0.46	0.32	47.1
West: Russell (W)														
10	L2	26	5.0	27	5.0	0.033	5.8	LOS A	0.2	1.2	0.48	0.55	0.48	46.0
11	T1	85	5.0	89	5.0	0.083	4.6	LOS A	0.5	3.3	0.45	0.51	0.45	47.0
12	R2	14	5.0	15	5.0	0.083	8.5	LOS A	0.5	3.3	0.45	0.51	0.45	46.9
Approach		125	5.0	132	5.0	0.083	5.2	LOS A	0.5	3.3	0.46	0.52	0.46	46.8
All Vehicles		951	5.0	1001	5.0	0.230	5.4	LOS A	1.4	10.2	0.42	0.53	0.42	46.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

▼ Site: [Gallipoli Rankin_PM_Existing (Site Folder: General)]

Gallipoli Lane and Rankin Street, Bathurst

PM Peak Period

Existing Traffic Volumes

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
						v/c	sec							km/h
South: Rankin (S)														
2	T1	259	5.0	273	5.0	0.186	0.3	LOS A	0.5	3.4	0.17	0.10	0.17	49.0
3	R2	50	5.0	53	5.0	0.186	6.0	LOS A	0.5	3.4	0.17	0.10	0.17	48.0
Approach		309	5.0	325	5.0	0.186	1.3	NA	0.5	3.4	0.17	0.10	0.17	48.9
East: Gallipoli (E)														
4	L2	65	5.0	68	5.0	0.126	5.6	LOS A	0.5	3.4	0.41	0.65	0.41	45.4
6	R2	45	5.0	47	5.0	0.126	8.0	LOS A	0.5	3.4	0.41	0.65	0.41	45.0
Approach		110	5.0	116	5.0	0.126	6.6	LOS A	0.5	3.4	0.41	0.65	0.41	45.2
North: Rankin (N)														
7	L2	30	5.0	32	5.0	0.163	4.6	LOS A	0.0	0.0	0.00	0.06	0.00	49.1
8	T1	261	5.0	275	5.0	0.163	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	49.6
Approach		291	5.0	306	5.0	0.163	0.5	NA	0.0	0.0	0.00	0.06	0.00	49.6
All Vehicles		710	5.0	747	5.0	0.186	1.8	NA	0.5	3.4	0.14	0.16	0.14	48.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: C:\Users\steve\OneDrive\Documents\Spotto Consulting\Projects\0124_Bathurst Medical Tower\Deliverables\Bathurst.sip9

MOVEMENT SUMMARY

▼ Site: [Howick Milne_AM_Existing (Site Folder: General)]

Howick Street and Milne Lane, Bathurst
AM Peak Period
Existing Traffic Volumes
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Milne (S)														
1	L2	6	5.0	6	5.0	0.022	5.2	LOS A	0.1	0.5	0.35	0.59	0.35	45.5
3	R2	12	5.0	13	5.0	0.022	7.0	LOS A	0.1	0.5	0.35	0.59	0.35	45.1
Approach		18	5.0	19	5.0	0.022	6.4	LOS A	0.1	0.5	0.35	0.59	0.35	45.2
East: Howick (E)														
4	L2	50	5.0	53	5.0	0.124	4.6	LOS A	0.0	0.0	0.00	0.12	0.00	48.7
5	T1	169	5.0	178	5.0	0.124	0.0	LOS A	0.0	0.0	0.00	0.12	0.00	49.2
Approach		219	5.0	231	5.0	0.124	1.1	NA	0.0	0.0	0.00	0.12	0.00	49.1
West: Howick (W)														
11	T1	275	5.0	289	5.0	0.173	0.1	LOS A	0.2	1.6	0.08	0.05	0.08	49.5
12	R2	25	5.0	26	5.0	0.173	5.6	LOS A	0.2	1.6	0.08	0.05	0.08	48.5
Approach		300	5.0	316	5.0	0.173	0.6	NA	0.2	1.6	0.08	0.05	0.08	49.4
All Vehicles		537	5.0	565	5.0	0.173	1.0	NA	0.2	1.6	0.05	0.10	0.05	49.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▼ Site: [Gallipoli Rankin_AM_Existing (Site Folder: General)]

Gallipoli Lane and Rankin Street, Bathurst

AM Peak Period

Existing Traffic Volumes

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
						v/c	sec							km/h
South: Rankin (S)														
2	T1	187	5.0	197	5.0	0.176	1.0	LOS A	0.7	5.3	0.33	0.19	0.33	48.2
3	R2	75	5.0	79	5.0	0.176	6.6	LOS A	0.7	5.3	0.33	0.19	0.33	47.2
Approach		262	5.0	276	5.0	0.176	2.6	NA	0.7	5.3	0.33	0.19	0.33	47.9
East: Gallipoli (E)														
4	L2	20	5.0	21	5.0	0.039	6.0	LOS A	0.1	1.0	0.44	0.64	0.44	45.3
6	R2	12	5.0	13	5.0	0.039	8.2	LOS A	0.1	1.0	0.44	0.64	0.44	44.9
Approach		32	5.0	34	5.0	0.039	6.8	LOS A	0.1	1.0	0.44	0.64	0.44	45.1
North: Rankin (N)														
7	L2	50	5.0	53	5.0	0.226	4.7	LOS A	0.0	0.0	0.00	0.07	0.00	49.0
8	T1	353	5.0	372	5.0	0.226	0.1	LOS A	0.0	0.0	0.00	0.07	0.00	49.5
Approach		403	5.0	424	5.0	0.226	0.6	NA	0.0	0.0	0.00	0.07	0.00	49.4
All Vehicles		697	5.0	734	5.0	0.226	1.7	NA	0.7	5.3	0.14	0.14	0.14	48.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

▼ Site: [Howick Milne_PM_Existing (Site Folder: General)]

Howick Street and Milne Lane, Bathurst
PM Peak Period
Existing Traffic Volumes
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Milne (S)														
1	L2	20	5.0	21	5.0	0.082	5.3	LOS A	0.3	2.0	0.39	0.65	0.39	45.3
3	R2	45	5.0	47	5.0	0.082	7.4	LOS A	0.3	2.0	0.39	0.65	0.39	44.9
Approach		65	5.0	68	5.0	0.082	6.7	LOS A	0.3	2.0	0.39	0.65	0.39	45.0
East: Howick (E)														
4	L2	30	5.0	32	5.0	0.127	4.6	LOS A	0.0	0.0	0.00	0.07	0.00	49.0
5	T1	197	5.0	207	5.0	0.127	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	49.5
Approach		227	5.0	239	5.0	0.127	0.6	NA	0.0	0.0	0.00	0.07	0.00	49.5
West: Howick (W)														
11	T1	294	5.0	309	5.0	0.176	0.1	LOS A	0.1	1.0	0.05	0.03	0.05	49.7
12	R2	15	5.0	16	5.0	0.176	5.6	LOS A	0.1	1.0	0.05	0.03	0.05	48.7
Approach		309	5.0	325	5.0	0.176	0.3	NA	0.1	1.0	0.05	0.03	0.05	49.7
All Vehicles		601	5.0	633	5.0	0.176	1.1	NA	0.3	2.0	0.07	0.11	0.07	49.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

APPENDIX B – PARKING SURVEY DATA

Parking Study
Bathurst, NSW
Wednesday 3 February 2021

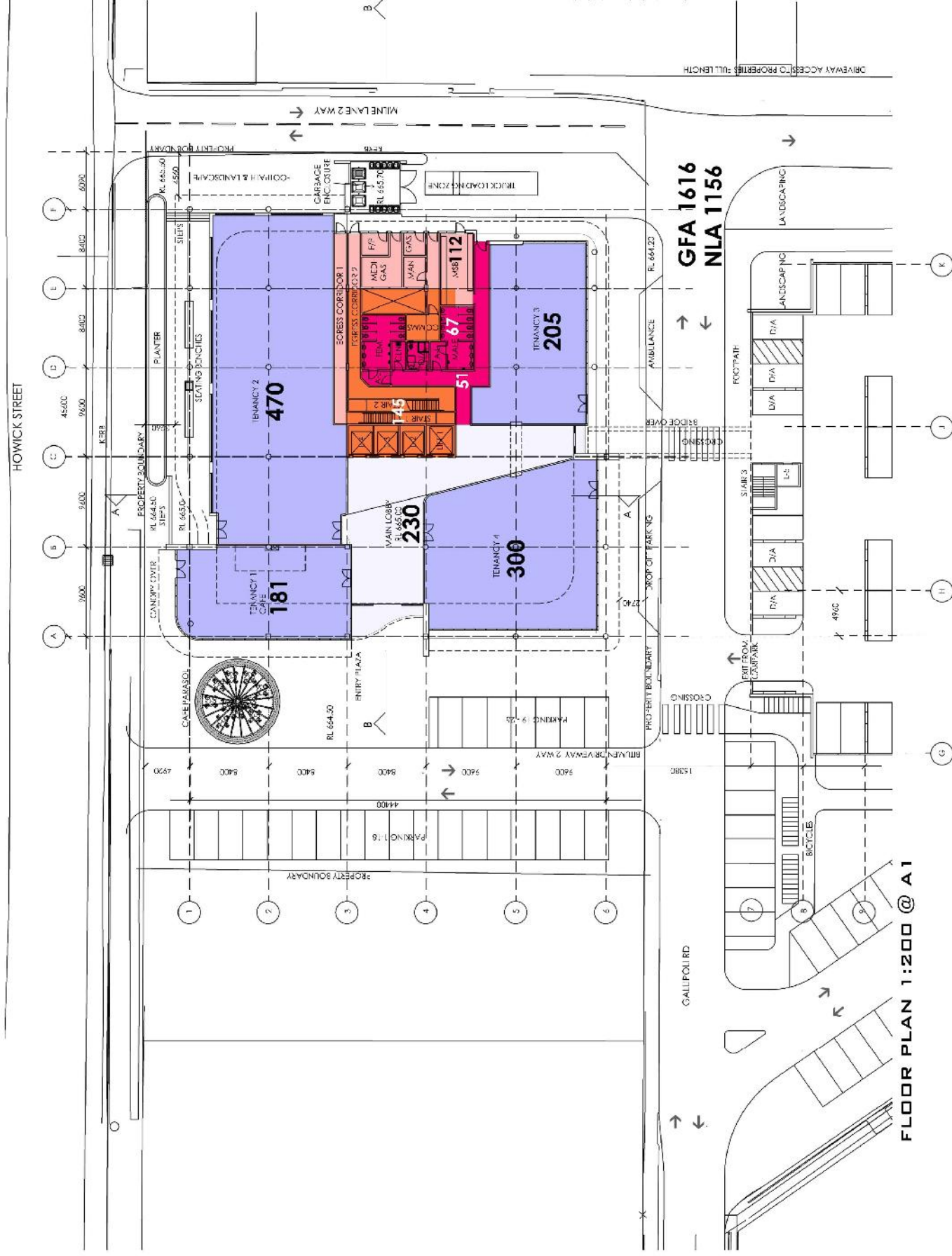
Location			Parking		8:00	10:00	12:00	14:00	16:00	18:00	20:00	Avg (All)	Avg (10-4)	Peak
Howick Street (George-Rankin)	2P	North	Spaces	No	33	33	33	33	33	33	33	33	33	33
			Occ	No	7	21	13	15	17	10	1	12	17	21
				%	21%	64%	39%	45%	52%	30%	3%	36%	52%	64%
		South	Spaces	No	27	27	27	27	27	27	27	27	27	27
			Occ	No	0	20	15	12	10	2	0	8	14	20
				%	0%	74%	56%	44%	37%	7%	0%	30%	52%	74%
	Disabled	North	Spaces	No	1	1	1	1	1	1	1	1	1	1
			Occ	No	1	0	0	0	0	0	0	0	0	1
				%	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
Rankin Street (Howick-Russell)	Untimed	East	Spaces	No	12	12	12	12	12	12	12	12	12	12
			Occ	No	9	10	11	10	8	10	11	10	10	11
				%	75%	83%	92%	83%	67%	83%	92%	83%	83%	92%
		West	Spaces	No	18	18	18	18	18	18	18	18	18	18
			Occ	No	10	15	15	12	12	10	13	12	14	15
				%	56%	83%	83%	67%	67%	56%	72%	67%	78%	83%
	2P	East	Spaces	No	8	8	8	8	8	8	8	8	8	8
			Occ	No	0	4	8	2	3	5	7	4	4	8
				%	0%	50%	100%	25%	38%	63%	88%	50%	50%	100%
		West	Spaces	No	5	5	5	5	5	5	5	5	5	5
			Occ	No	0	1	3	4	1	3	0	2	2	4
				%	0%	20%	60%	80%	20%	60%	0%	40%	40%	80%
	1/2P	West	Spaces	No	4	4	4	4	4	4	4	4	4	4
			Occ	No	2	4	4	4	4	1	1	3	4	4
				%	50%	100%	100%	100%	100%	25%	25%	75%	100%	100%
	1/4P	East	Spaces	No	5	5	5	5	5	5	5	5	5	5
			Occ	No	4	3	1	1	2	5	4	3	2	5
				%	80%	60%	20%	20%	40%	100%	80%	60%	40%	100%
	5P	East	Spaces	No	2	2	2	2	2	2	2	2	2	2
			Occ	No	0	0	0	0	0	0	1	0	0	1
				%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Disabled	East	Spaces	No	2	2	2	2	2	2	2	2	2	2
			Occ	No	1	1	2	2	1	1	2	1	2	2
				%	50%	50%	100%	100%	50%	50%	100%	50%	100%	100%
	Taxi	East	Spaces	No	1	1	1	1	1	1	1	1	1	1
			Occ	No	0	0	0	0	0	0	0	0	0	0
				%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Bus	East	Spaces	No	1	1	1	1	1	1	1	1	1	1
			Occ	No	0	0	0	0	0	0	0	0	0	0
				%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Police	West	Spaces	No	6	6	6	6	6	6	6	6	6	6
			Occ	No	6	6	4	2	5	4	5	5	4	6
				%	100%	100%	67%	33%	83%	67%	83%	83%	67%	100%
Russell Street (George-Rankin)	Untimed	North	Spaces	No	12	12	12	12	12	12	12	12	12	12
			Occ	No	4	12	12	11	8	2	1	7	11	12
				%	33%	100%	100%	92%	67%	17%	8%	58%	92%	100%
	2P	North	Spaces	No	28	28	28	28	28	28	28	28	28	28
			Occ	No	3	24	22	14	12	9	5	13	18	24
				%	11%	86%	79%	50%	43%	32%	18%	46%	64%	86%
		South	Spaces	No	31	31	31	31	31	31	31	31	31	31
			Occ	No	1	13	25	18	15	12	1	12	18	25
				%	3%	42%	81%	58%	48%	39%	3%	39%	58%	81%
	Disabled	North	Spaces	No	1	1	1	1	1	1	1	1	1	1
			Occ	No	0	0	0	0	0	0	0	0	0	0
				%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		South	Spaces	No	1	1	1	1	1	1	1	1	1	1
			Occ	No	0	0	1	1	1	0	0	0	1	1
				%	0%	0%	100%	100%	100%	0%	0%	0%	100%	100%
George Street (Howick-Russell)	1P	East	Spaces	No	38	38	38	38	38	38	38	38	38	38
			Occ	No	7	15	15	14	15	13	0	11	15	15
				%	18%	39%	39%	37%	39%	34%	0%	29%	39%	39%
		West	Spaces	No	44	44	44	44	44	44	44	44	44	44
			Occ	No	5	22	28	22	26	24	13	20	25	28
				%	11%	50%	64%	50%	59%	55%	30%	45%	57%	64%
	Disabled	West	Spaces	No	1	1	1	1	1	1	1	1	1	1
			Occ	No	0	0	0	0	1	0	0	0	0	1
				%	0%	0%	0%	0%	100%	0%	0%	0%	0%	100%

Parking Study
Bathurst, NSW
Wednesday 3 February 2021

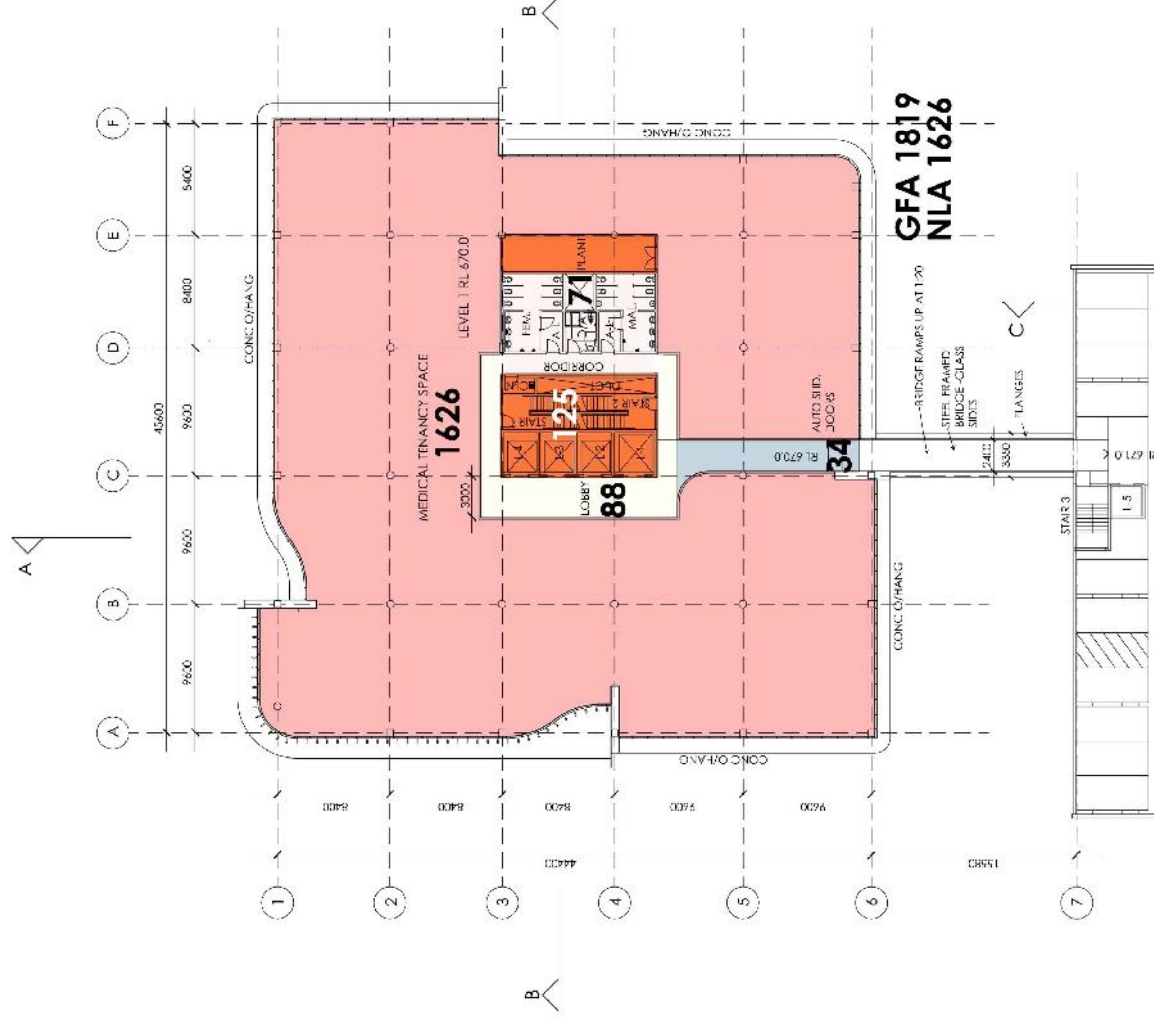
Location			Parking									Avg (All)	Avg (10-4)	Peak	
					8:00	10:00	12:00	14:00	16:00	18:00	20:00				
Council/RSL Car Park	Untime d		Spaces	No	202	202	202	202	202	202	202	202	202	202	
			Occ	No	35	198	200	181	157	103	98	139	184	200	
				%	17%	98%	99%	90%	78%	51%	49%	69%	91%	99%	
	4P	Top	Spaces	No	38	38	38	38	38	38	38	38	38	38	
			Occ	No	3	16	25	20	18	7	8	14	20	25	
				%	8%	42%	66%	53%	47%	18%	21%	37%	53%	66%	
		Bottom	Spaces	No	46	46	46	46	46	46	46	46	46	46	
			Occ	No	6	40	44	27	22	46	41	32	33	46	
				%	13%	87%	96%	59%	48%	100%	89%	70%	72%	100%	
		North	Spaces	No	20	20	20	20	20	20	20	20	20	20	
			Occ	No	0	4	14	11	11	4	4	7	10	14	
				%	0%	20%	70%	55%	55%	20%	20%	35%	50%	70%	
		1/2P		Spaces	No	8	8	8	8	8	8	8	8	8	8
				Occ	No	1	3	3	0	0	2	0	1	2	3
					%	13%	38%	38%	0%	0%	25%	0%	13%	25%	38%
	Disabled	RSL	Spaces	No	4	4	4	4	4	4	4	4	4	4	
			Occ	No	0	3	4	3	1	3	4	3	3	4	
				%	0%	75%	100%	75%	25%	75%	100%	75%	75%	100%	
		Toilet	Spaces	No	2	2	2	2	2	2	2	2	2	2	
			Occ	No	0	0	1	1	0	0	1	0	1	1	
				%	0%	0%	50%	50%	0%	0%	50%	0%	50%	50%	
Site	2P		Spaces	No	42	42	42	42	42	42	42	42	42		
			Occ	No	7	25	28	22	18	4	1	15	23	28	
				%	17%	60%	67%	52%	43%	10%	2%	36%	55%	67%	

APPENDIX C – PLANS OF PROPOSED DEVELOPMENT

GROUND FLOOR PLAN

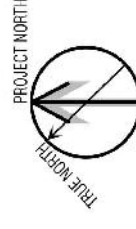


LEVEL	GFA m ²	NLA m ²
GROUND	1619	1156
LEVEL 1	1819	1626
LEVEL 2	1819	1660
LEVEL 3	1819	1660
LEVEL 4	1599	1440
LEVEL 5	1599	1440
ROOF	31	-
TOTAL	10299	8992

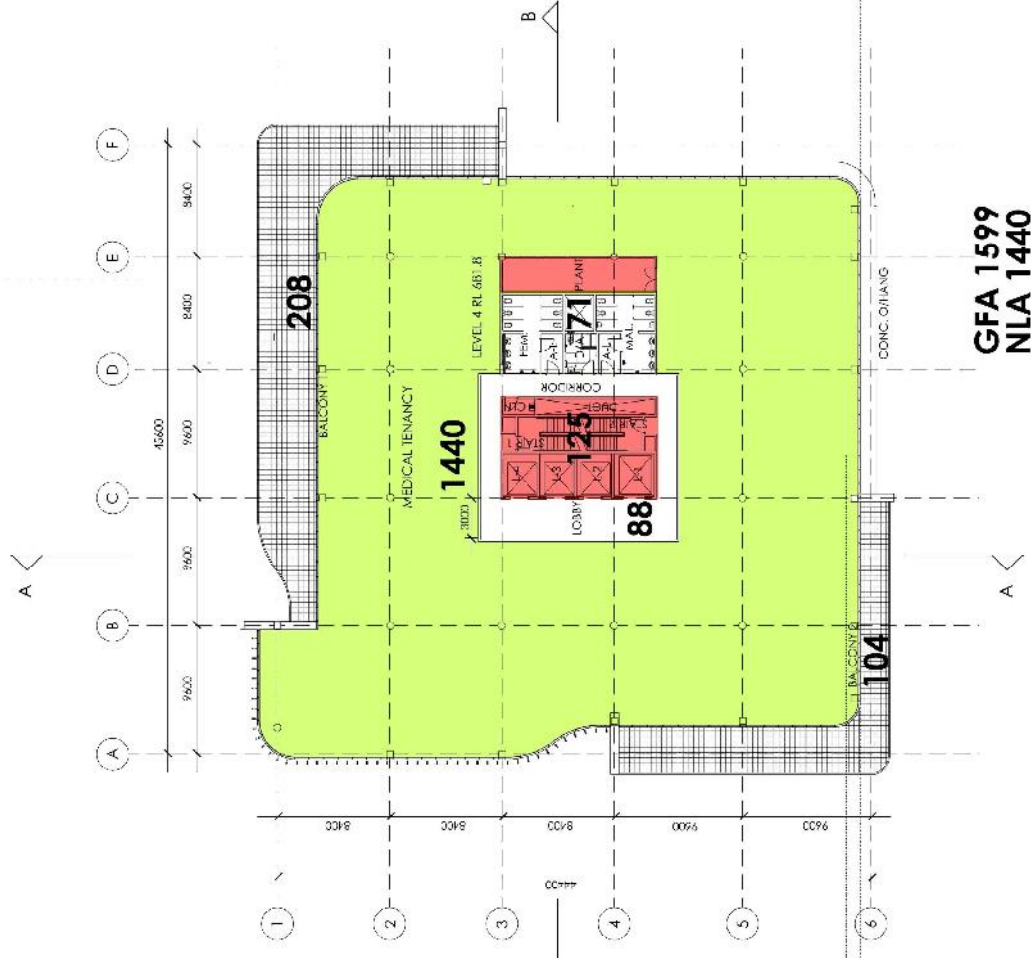


LEVEL 2 1:200 @ A1

LEVEL	GFA m ²	NLA m ²
GROUND	1615	1156
LEVEL 1	1819	1626
LEVEL 2	1819	1660
LEVEL 3	1819	1660
LEVEL 4	1599	1440
LEVEL 5	1599	1440
ROOF	31	-
TOTAL	10259	8382



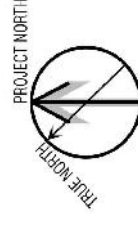
LEVEL 1 1:200 @ A1



GFA 1599
NLA 1440

LEVEL 4 1:200 @ A1

LEVEL	GFA m ²	NLA m ²
GROUND	1615	1156
LEVEL 1	1819	1626
LEVEL 2	1819	1560
LEVEL 3	1819	1560
LEVEL 4	1599	1440
LEVEL 5	1599	1440
ROOF	31	-
TOTAL	10299	8982



ZAUNER
CONSTRUCTION

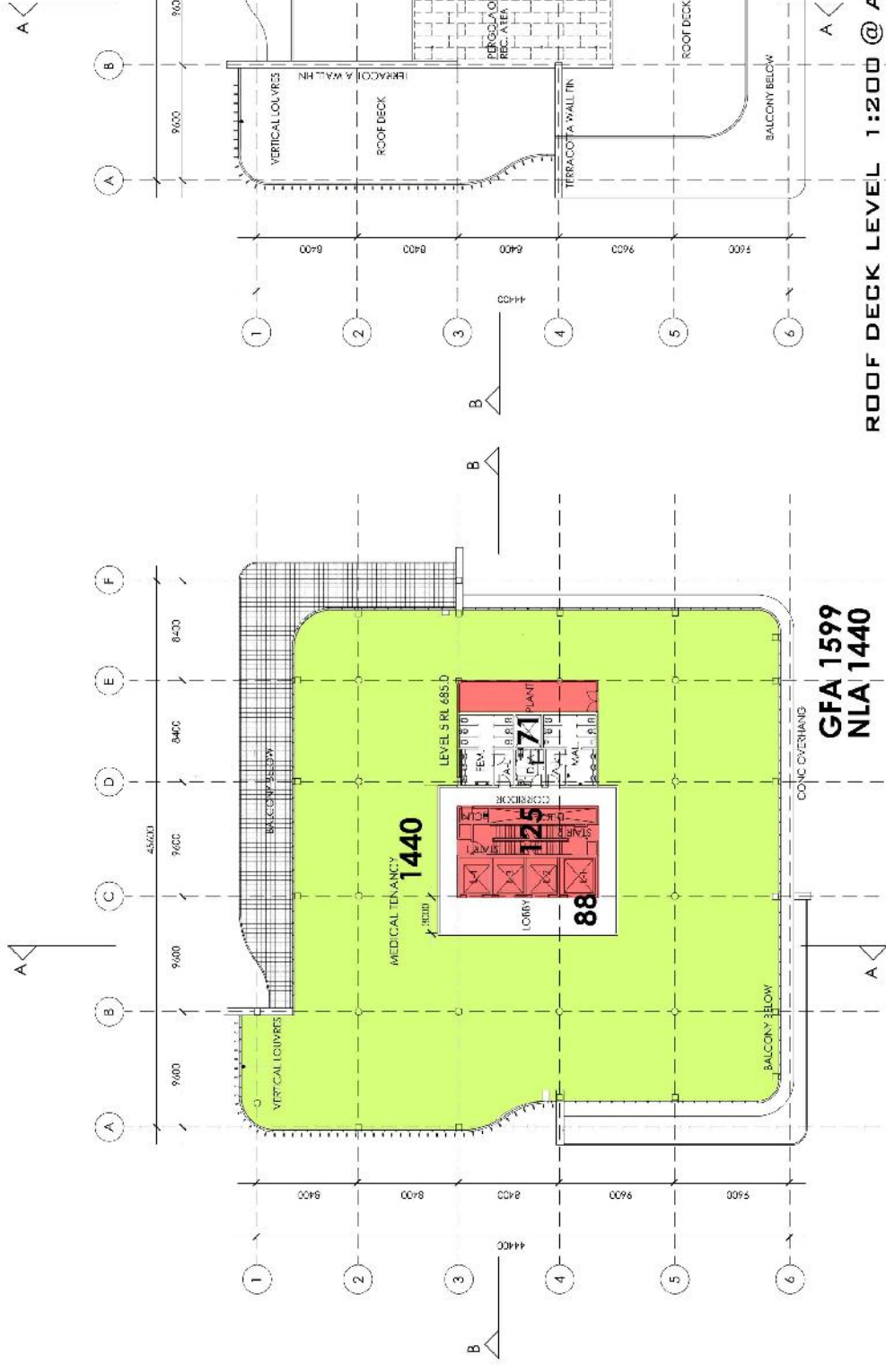
FLOOR PLANS LEVELS 3 & 4

**PROPOSED MEDICAL CENTRE
250 HOWICK ST BATHURST NSW**

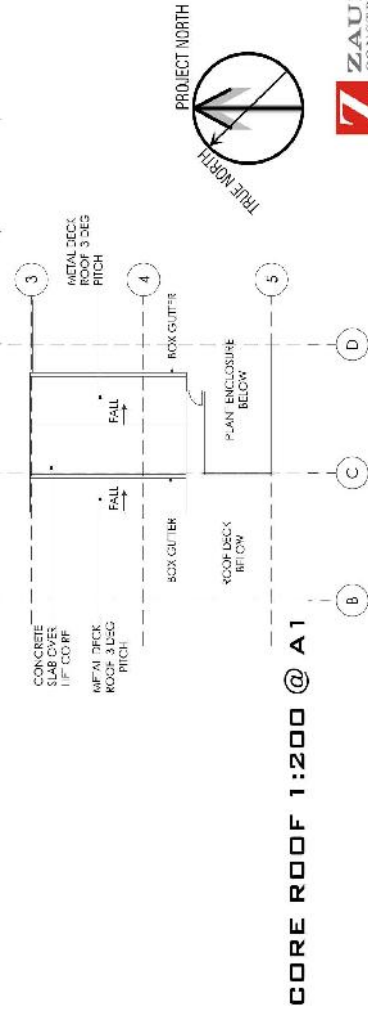
PROJ: 4926
DATE: APR 2021
DRAWN: GMR

DWG NO REV
DA 08

	0	04	08	12	16	20m	SCALE
LEIFER SWISS PTY LTD							1:200
PLAN 39 001 043 992							8A1
WEB: www.leifer.com.au							
SYDNEY	7 YOUNG ST	NEUBAL BAY NSW 2039	1:61 3 725 46344				
MELBOURNE	LEVEL 370	LLYD BURGESS ST VIC 3000	1:61 2 9909 5344				
BRISBANE	2-290	ROBINSON ST SPRING HILL QLD 4004	1:61 7 31235544				

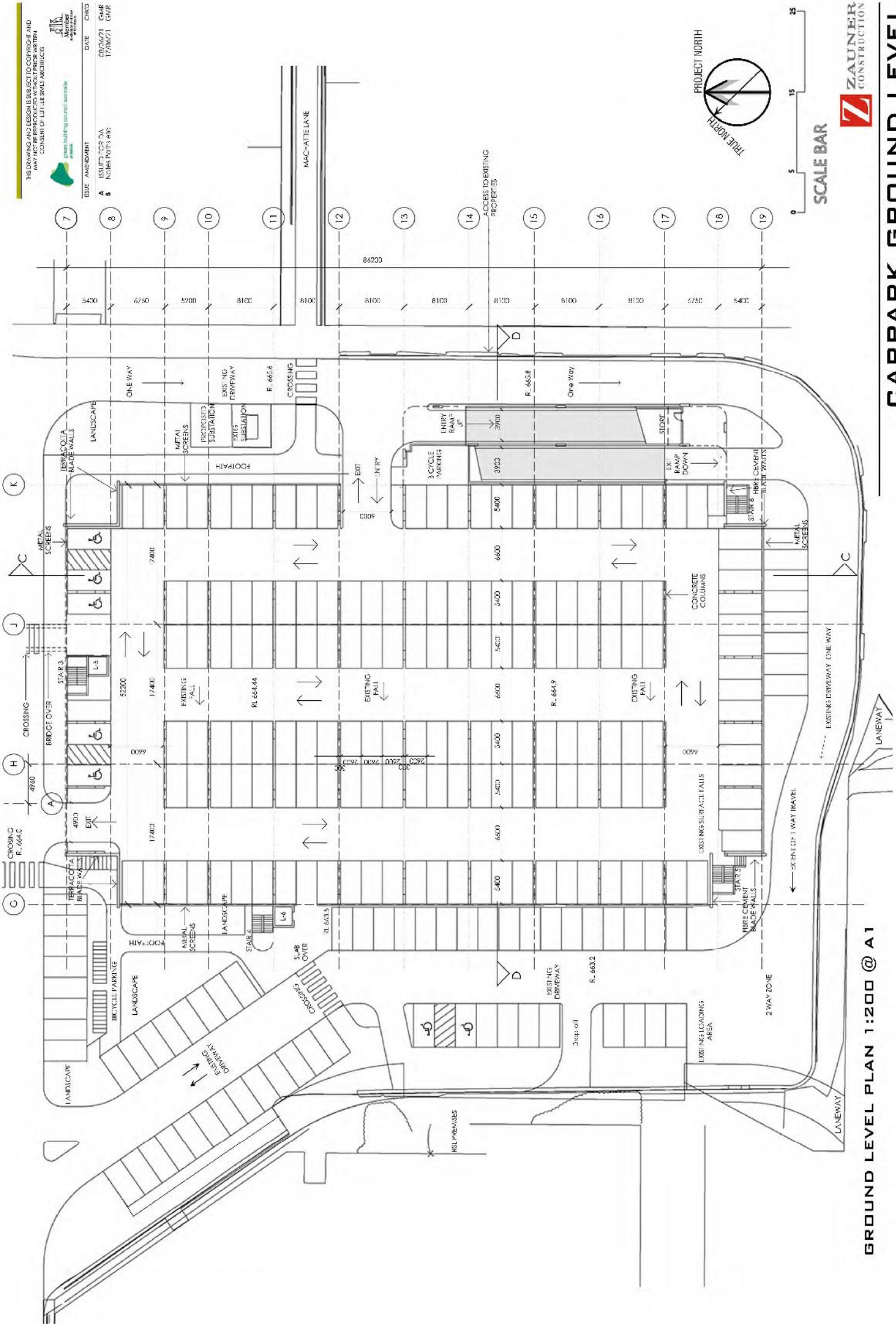


LEVEL 5 1:200 @ A1



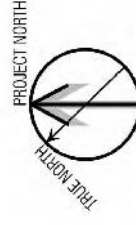
CORE ROOF 1:200 @ A1

LEVEL	GFA m ²	NLA m ²
GROUND	1616	1156
LEVEL 1	1819	1626
LEVEL 2	1819	1660
LEVEL 3	1819	1660
LEVEL 4	1599	1440
LEVEL 5	1599	1440
ROOF	31	-
TOTAL	10299	8582



GROUND LEVEL PLAN 1:200 @ A1

SCALE BAR



APPENDIX D – INTERSECTION ANALYSIS: WITH DEVELOPMENT

MOVEMENT SUMMARY

 Site: [Russell George_PM_With Development (Site Folder: General)]

Russell Street and George Street, Bathurst
PM Peak Period
With Proposed Development
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: George (S)														
1	L2	35	5.0	37	5.0	0.050	6.4	LOS A	0.3	1.9	0.56	0.60	0.56	45.7
2	T1	278	5.0	293	5.0	0.276	5.2	LOS A	1.8	13.4	0.60	0.60	0.60	46.6
3	R2	25	5.0	26	5.0	0.276	9.1	LOS A	1.8	13.4	0.60	0.60	0.60	46.5
Approach		338	5.0	356	5.0	0.276	5.6	LOS A	1.8	13.4	0.60	0.60	0.60	46.5
East: Russell (E)														
4	L2	56	5.0	59	5.0	0.077	6.2	LOS A	0.4	2.9	0.54	0.61	0.54	45.8
5	T1	198	5.0	208	5.0	0.289	5.1	LOS A	1.9	13.9	0.57	0.63	0.57	46.2
6	R2	129	5.0	136	5.0	0.289	9.0	LOS A	1.9	13.9	0.57	0.63	0.57	46.1
Approach		383	5.0	403	5.0	0.289	6.6	LOS A	1.9	13.9	0.57	0.62	0.57	46.1
North: George (N)														
7	L2	67	5.0	71	5.0	0.083	5.3	LOS A	0.4	3.1	0.45	0.55	0.45	46.2
8	T1	276	5.0	291	5.0	0.264	4.4	LOS A	1.7	12.6	0.46	0.52	0.46	46.9
9	R2	54	5.0	57	5.0	0.264	8.2	LOS A	1.7	12.6	0.46	0.52	0.46	46.8
Approach		397	5.0	418	5.0	0.264	5.0	LOS A	1.7	12.6	0.46	0.52	0.46	46.8
West: Russell (W)														
10	L2	77	5.0	81	5.0	0.099	6.4	LOS A	0.5	3.9	0.59	0.64	0.59	45.7
11	T1	177	5.0	186	5.0	0.182	5.4	LOS A	1.1	8.3	0.59	0.60	0.59	46.6
12	R2	17	5.0	18	5.0	0.182	9.3	LOS A	1.1	8.3	0.59	0.60	0.59	46.5
Approach		271	5.0	285	5.0	0.182	5.9	LOS A	1.1	8.3	0.59	0.61	0.59	46.3
All Vehicles		1389	5.0	1462	5.0	0.289	5.8	LOS A	1.9	13.9	0.55	0.59	0.55	46.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 Site: [Howick Rankin_AM_With Development (Site Folder: General)]

Howick Street and Rankin Street, Bathurst
AM Peak Period
With Proposed Development
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Rankin (S)														
1	L2	9	5.0	9	5.0	0.010	4.3	LOS A	0.0	0.3	0.28	0.44	0.28	46.6
2	T1	172	5.0	181	5.0	0.178	3.7	LOS A	1.1	7.9	0.28	0.47	0.28	47.2
3	R2	80	5.0	84	5.0	0.178	7.6	LOS A	1.1	7.9	0.28	0.47	0.28	47.1
Approach		261	5.0	275	5.0	0.178	4.9	LOS A	1.1	7.9	0.28	0.47	0.28	47.1
East: Howick (E)														
4	L2	67	5.0	71	5.0	0.080	6.3	LOS A	0.5	3.3	0.61	0.63	0.61	45.7
5	T1	46	5.0	48	5.0	0.077	5.5	LOS A	0.5	3.4	0.60	0.62	0.60	46.1
6	R2	32	5.0	34	5.0	0.077	9.3	LOS A	0.5	3.4	0.60	0.62	0.60	46.0
Approach		145	5.0	153	5.0	0.080	6.7	LOS A	0.5	3.4	0.60	0.63	0.60	45.9
North: Rankin (N)														
7	L2	106	5.0	112	5.0	0.129	5.4	LOS A	0.7	4.8	0.44	0.56	0.44	46.2
8	T1	446	5.0	469	5.0	0.360	4.5	LOS A	2.4	17.6	0.47	0.50	0.47	47.1
9	R2	15	5.0	16	5.0	0.360	8.4	LOS A	2.4	17.6	0.47	0.50	0.47	47.0
Approach		567	5.0	597	5.0	0.360	4.7	LOS A	2.4	17.6	0.47	0.51	0.47	46.9
West: Howick (W)														
10	L2	19	5.0	20	5.0	0.024	5.6	LOS A	0.1	0.8	0.46	0.54	0.46	46.1
11	T1	114	5.0	120	5.0	0.114	4.5	LOS A	0.6	4.5	0.44	0.52	0.44	46.9
12	R2	23	5.0	24	5.0	0.114	8.4	LOS A	0.6	4.5	0.44	0.52	0.44	46.9
Approach		156	5.0	164	5.0	0.114	5.2	LOS A	0.6	4.5	0.44	0.52	0.44	46.8
All Vehicles		1129	5.0	1188	5.0	0.360	5.1	LOS A	2.4	17.6	0.44	0.52	0.44	46.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 Site: [Howick George_AM_With Development (Site Folder: General)]

Howick Street and George Street, Bathurst
AM Peak Period
With Proposed Development
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: George (S)														
1	L2	45	5.0	47	5.0	0.314	5.7	LOS A	2.0	14.6	0.62	0.68	0.62	45.2
2	T1	157	5.0	165	5.0	0.314	5.8	LOS A	2.0	14.6	0.62	0.68	0.62	46.2
3	R2	81	5.0	85	5.0	0.314	9.7	LOS A	2.0	14.6	0.62	0.68	0.62	46.1
Approach		283	5.0	298	5.0	0.314	6.9	LOS A	2.0	14.6	0.62	0.68	0.62	46.0
East: Howick (E)														
4	L2	78	5.0	82	5.0	0.341	8.4	LOS A	2.4	17.5	0.84	0.86	0.84	44.2
5	T1	78	5.0	82	5.0	0.341	8.4	LOS A	2.4	17.5	0.84	0.86	0.84	45.1
6	R2	58	5.0	61	5.0	0.341	12.3	LOS A	2.4	17.5	0.84	0.86	0.84	45.0
Approach		214	5.0	225	5.0	0.341	9.5	LOS A	2.4	17.5	0.84	0.86	0.84	44.7
North: George (N)														
7	L2	43	5.0	45	5.0	0.644	6.6	LOS A	6.5	47.2	0.74	0.73	0.80	44.7
8	T1	393	5.0	414	5.0	0.644	6.6	LOS A	6.5	47.2	0.74	0.73	0.80	45.7
9	R2	229	5.0	241	5.0	0.644	10.5	LOS A	6.5	47.2	0.74	0.73	0.80	45.6
Approach		665	5.0	700	5.0	0.644	8.0	LOS A	6.5	47.2	0.74	0.73	0.80	45.6
West: Howick (W)														
10	L2	99	5.0	104	5.0	0.297	5.2	LOS A	1.9	13.7	0.57	0.62	0.57	45.7
11	T1	135	5.0	142	5.0	0.297	5.3	LOS A	1.9	13.7	0.57	0.62	0.57	46.7
12	R2	50	5.0	53	5.0	0.297	9.2	LOS A	1.9	13.7	0.57	0.62	0.57	46.6
Approach		284	5.0	299	5.0	0.297	5.9	LOS A	1.9	13.7	0.57	0.62	0.57	46.3
All Vehicles		1446	5.0	1522	5.0	0.644	7.6	LOS A	6.5	47.2	0.70	0.72	0.72	45.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 **Site: [Russell Rankin_AM_With Development (Site Folder: General)]**

Russell Street and Rankin Street, Bathurst
AM Peak Period
With Proposed Development
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Rankin (S)														
1	L2	9	5.0	9	5.0	0.012	5.5	LOS A	0.1	0.4	0.47	0.51	0.47	46.1
2	T1	247	5.0	260	5.0	0.228	4.6	LOS A	1.4	10.2	0.49	0.53	0.49	46.9
3	R2	26	5.0	27	5.0	0.228	8.5	LOS A	1.4	10.2	0.49	0.53	0.49	46.8
Approach		282	5.0	297	5.0	0.228	5.0	LOS A	1.4	10.2	0.49	0.53	0.49	46.9
East: Russell (E)														
4	L2	24	5.0	25	5.0	0.031	5.7	LOS A	0.2	1.1	0.48	0.55	0.48	46.1
5	T1	92	5.0	97	5.0	0.183	4.6	LOS A	1.1	7.9	0.48	0.60	0.48	46.1
6	R2	126	5.0	133	5.0	0.183	8.5	LOS A	1.1	7.9	0.48	0.60	0.48	46.1
Approach		242	5.0	255	5.0	0.183	6.7	LOS A	1.1	7.9	0.48	0.60	0.48	46.1
North: Rankin (N)														
7	L2	135	5.0	142	5.0	0.133	4.8	LOS A	0.7	5.3	0.41	0.53	0.41	46.3
8	T1	206	5.0	217	5.0	0.209	4.2	LOS A	1.3	9.4	0.41	0.51	0.41	46.9
9	R2	61	5.0	64	5.0	0.209	8.1	LOS A	1.3	9.4	0.41	0.51	0.41	46.9
Approach		402	5.0	423	5.0	0.209	5.0	LOS A	1.3	9.4	0.41	0.51	0.41	46.7
West: Russell (W)														
10	L2	66	5.0	69	5.0	0.082	6.1	LOS A	0.4	3.1	0.55	0.61	0.55	45.8
11	T1	147	5.0	155	5.0	0.152	5.1	LOS A	0.9	6.6	0.55	0.58	0.55	46.7
12	R2	20	5.0	21	5.0	0.152	9.0	LOS A	0.9	6.6	0.55	0.58	0.55	46.6
Approach		233	5.0	245	5.0	0.152	5.7	LOS A	0.9	6.6	0.55	0.59	0.55	46.4
All Vehicles		1159	5.0	1220	5.0	0.228	5.5	LOS A	1.4	10.2	0.47	0.55	0.47	46.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 Site: [Russell George_AM_With Development (Site Folder: General)]

Russell Street and George Street, Bathurst
AM Peak Period
With Proposed Development
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: George (S)														
1	L2	26	5.0	27	5.0	0.035	5.9	LOSA	0.2	1.3	0.52	0.57	0.52	45.9
2	T1	215	5.0	226	5.0	0.210	4.8	LOSA	1.3	9.7	0.54	0.56	0.54	46.7
3	R2	25	5.0	26	5.0	0.210	8.7	LOSA	1.3	9.7	0.54	0.56	0.54	46.7
Approach		266	5.0	280	5.0	0.210	5.3	LOSA	1.3	9.7	0.54	0.56	0.54	46.6
East: Russell (E)														
4	L2	51	5.0	54	5.0	0.075	6.7	LOSA	0.4	2.9	0.59	0.64	0.59	45.5
5	T1	195	5.0	205	5.0	0.258	5.4	LOSA	1.7	12.5	0.62	0.65	0.62	46.2
6	R2	80	5.0	84	5.0	0.258	9.3	LOSA	1.7	12.5	0.62	0.65	0.62	46.1
Approach		326	5.0	343	5.0	0.258	6.6	LOSA	1.7	12.5	0.62	0.64	0.62	46.1
North: George (N)														
7	L2	88	5.0	93	5.0	0.115	5.8	LOSA	0.6	4.4	0.51	0.59	0.51	46.0
8	T1	331	5.0	348	5.0	0.322	4.8	LOSA	2.2	15.9	0.54	0.56	0.54	46.7
9	R2	52	5.0	55	5.0	0.322	8.7	LOSA	2.2	15.9	0.54	0.56	0.54	46.6
Approach		471	5.0	496	5.0	0.322	5.4	LOSA	2.2	15.9	0.53	0.56	0.53	46.6
West: Russell (W)														
10	L2	79	5.0	83	5.0	0.099	5.8	LOSA	0.5	3.8	0.52	0.60	0.52	46.0
11	T1	220	5.0	232	5.0	0.222	4.8	LOSA	1.4	10.0	0.52	0.56	0.52	46.7
12	R2	37	5.0	39	5.0	0.222	8.7	LOSA	1.4	10.0	0.52	0.56	0.52	46.6
Approach		336	5.0	354	5.0	0.222	5.5	LOSA	1.4	10.0	0.52	0.57	0.52	46.5
All Vehicles		1399	5.0	1473	5.0	0.322	5.7	LOSA	2.2	15.9	0.55	0.58	0.55	46.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 Site: [Howick Rankin_PM_With Development (Site Folder: General)]

Howick Street and Rankin Street, Bathurst
PM Peak Period
With Proposed Development
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Rankin (S)														
1	L2	17	5.0	18	5.0	0.021	5.2	LOS A	0.1	0.7	0.42	0.51	0.42	46.2
2	T1	359	5.0	378	5.0	0.361	4.5	LOS A	2.5	18.2	0.49	0.54	0.49	46.7
3	R2	99	5.0	104	5.0	0.361	8.4	LOS A	2.5	18.2	0.49	0.54	0.49	46.7
Approach		475	5.0	500	5.0	0.361	5.3	LOS A	2.5	18.2	0.49	0.54	0.49	46.7
East: Howick (E)														
4	L2	57	5.0	60	5.0	0.072	5.9	LOS A	0.4	2.7	0.53	0.59	0.53	45.9
5	T1	72	5.0	76	5.0	0.150	4.9	LOS A	0.9	6.5	0.52	0.62	0.52	46.1
6	R2	97	5.0	102	5.0	0.150	8.8	LOS A	0.9	6.5	0.52	0.62	0.52	46.0
Approach		226	5.0	238	5.0	0.150	6.8	LOS A	0.9	6.5	0.52	0.61	0.52	46.0
North: Rankin (N)														
7	L2	113	5.0	119	5.0	0.125	5.1	LOS A	0.7	4.8	0.43	0.55	0.43	46.2
8	T1	283	5.0	298	5.0	0.263	4.3	LOS A	1.6	12.0	0.44	0.51	0.44	47.0
9	R2	50	5.0	53	5.0	0.263	8.2	LOS A	1.6	12.0	0.44	0.51	0.44	46.9
Approach		446	5.0	469	5.0	0.263	5.0	LOS A	1.6	12.0	0.44	0.52	0.44	46.8
West: Howick (W)														
10	L2	29	5.0	31	5.0	0.047	7.7	LOS A	0.2	1.8	0.65	0.66	0.65	44.9
11	T1	97	5.0	102	5.0	0.121	6.0	LOS A	0.8	5.5	0.65	0.64	0.65	46.2
12	R2	19	5.0	20	5.0	0.121	9.9	LOS A	0.8	5.5	0.65	0.64	0.65	46.2
Approach		145	5.0	153	5.0	0.121	6.9	LOS A	0.8	5.5	0.65	0.65	0.65	46.0
All Vehicles		1292	5.0	1360	5.0	0.361	5.6	LOS A	2.5	18.2	0.49	0.56	0.49	46.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 Site: [Howick George_PM_With Development (Site Folder: General)]

Howick Street and George Street, Bathurst
PM Peak Period
With Proposed Development
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: George (S)														
1	L2	44	5.0	46	5.0	0.495	6.3	LOS A	3.7	26.9	0.70	0.72	0.71	45.1
2	T1	319	5.0	336	5.0	0.495	6.3	LOS A	3.7	26.9	0.70	0.72	0.71	46.0
3	R2	90	5.0	95	5.0	0.495	10.2	LOS A	3.7	26.9	0.70	0.72	0.71	46.0
Approach		453	5.0	477	5.0	0.495	7.1	LOS A	3.7	26.9	0.70	0.72	0.71	45.9
East: Howick (E)														
4	L2	110	5.0	116	5.0	0.382	6.3	LOS A	2.6	19.2	0.71	0.75	0.71	44.9
5	T1	101	5.0	106	5.0	0.382	6.4	LOS A	2.6	19.2	0.71	0.75	0.71	45.9
6	R2	110	5.0	116	5.0	0.382	10.3	LOS A	2.6	19.2	0.71	0.75	0.71	45.8
Approach		321	5.0	338	5.0	0.382	7.7	LOS A	2.6	19.2	0.71	0.75	0.71	45.5
North: George (N)														
7	L2	55	5.0	58	5.0	0.461	5.6	LOS A	3.4	25.1	0.66	0.67	0.66	45.1
8	T1	240	5.0	253	5.0	0.461	5.6	LOS A	3.4	25.1	0.66	0.67	0.66	46.1
9	R2	148	5.0	156	5.0	0.461	9.5	LOS A	3.4	25.1	0.66	0.67	0.66	46.0
Approach		443	5.0	466	5.0	0.461	6.9	LOS A	3.4	25.1	0.66	0.67	0.66	45.9
West: Howick (W)														
10	L2	273	5.0	287	5.0	0.622	10.3	LOS A	6.3	46.1	0.89	0.98	1.10	43.5
11	T1	169	5.0	178	5.0	0.622	10.4	LOS A	6.3	46.1	0.89	0.98	1.10	44.4
12	R2	37	5.0	39	5.0	0.622	14.3	LOS A	6.3	46.1	0.89	0.98	1.10	44.3
Approach		479	5.0	504	5.0	0.622	10.7	LOS A	6.3	46.1	0.89	0.98	1.10	43.9
All Vehicles		1696	5.0	1785	5.0	0.622	8.2	LOS A	6.3	46.1	0.74	0.79	0.81	45.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 **Site: [Russell Rankin_PM_With Development (Site Folder: General)]**

Russell Street and Rankin Street, Bathurst
PM Peak Period
With Proposed Development
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Rankin (S)														
1	L2	6	5.0	6	5.0	0.009	6.3	LOS A	0.0	0.3	0.55	0.54	0.55	45.7
2	T1	179	5.0	188	5.0	0.185	5.1	LOS A	1.2	8.5	0.57	0.59	0.57	46.6
3	R2	24	5.0	25	5.0	0.185	9.0	LOS A	1.2	8.5	0.57	0.59	0.57	46.5
Approach		209	5.0	220	5.0	0.185	5.6	LOS A	1.2	8.5	0.57	0.59	0.57	46.6
East: Russell (E)														
4	L2	28	5.0	29	5.0	0.041	6.7	LOS A	0.2	1.5	0.57	0.61	0.57	45.5
5	T1	127	5.0	134	5.0	0.277	5.5	LOS A	1.8	13.2	0.61	0.68	0.61	45.8
6	R2	171	5.0	180	5.0	0.277	9.4	LOS A	1.8	13.2	0.61	0.68	0.61	45.7
Approach		326	5.0	343	5.0	0.277	7.7	LOS A	1.8	13.2	0.61	0.68	0.61	45.7
North: Rankin (N)														
7	L2	128	5.0	135	5.0	0.133	4.5	LOS A	0.7	5.2	0.34	0.49	0.34	46.4
8	T1	325	5.0	342	5.0	0.298	3.9	LOS A	2.0	14.4	0.35	0.47	0.35	47.1
9	R2	90	5.0	95	5.0	0.298	7.8	LOS A	2.0	14.4	0.35	0.47	0.35	47.1
Approach		543	5.0	572	5.0	0.298	4.7	LOS A	2.0	14.4	0.35	0.48	0.35	47.0
West: Russell (W)														
10	L2	48	5.0	51	5.0	0.056	5.8	LOS A	0.3	2.1	0.52	0.58	0.52	46.0
11	T1	85	5.0	89	5.0	0.088	4.9	LOS A	0.5	3.6	0.51	0.54	0.51	46.8
12	R2	14	5.0	15	5.0	0.088	8.8	LOS A	0.5	3.6	0.51	0.54	0.51	46.7
Approach		147	5.0	155	5.0	0.088	5.5	LOS A	0.5	3.6	0.51	0.56	0.51	46.5
All Vehicles		1225	5.0	1289	5.0	0.298	5.7	LOS A	2.0	14.4	0.47	0.56	0.47	46.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: [Gallipoli Rankin_PM_With Development (Site Folder: General)]

Gallipoli Lane and Rankin Street, Bathurst
PM Peak Period
With Proposed Development
Site Category: (None)
Give-Way (Two-Way)
Design Life Analysis (Final Year): Results for 10 years

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Rankin (S)														
2	T1	259	5.0	314	5.0	0.320	1.5	LOS A	1.8	13.0	0.43	0.25	0.46	47.7
3	R2	139	5.0	168	5.0	0.320	7.1	LOS A	1.8	13.0	0.43	0.25	0.46	46.8
Approach		398	5.0	482	5.0	0.320	3.5	NA	1.8	13.0	0.43	0.25	0.46	47.4
East: Gallipoli (E)														
4	L2	252	5.0	305	5.0	0.722	10.5	LOS A	6.8	49.3	0.65	1.10	1.43	41.8
6	R2	186	5.0	225	5.0	0.722	17.7	LOS B	6.8	49.3	0.65	1.10	1.43	41.4
Approach		438	5.0	530	5.0	0.722	13.5	LOS A	6.8	49.3	0.65	1.10	1.43	41.6
North: Rankin (N)														
7	L2	97	5.0	117	5.0	0.233	4.7	LOS A	0.0	0.0	0.00	0.15	0.00	48.5
8	T1	261	5.0	316	5.0	0.233	0.1	LOS A	0.0	0.0	0.00	0.15	0.00	49.1
Approach		358	5.0	433	5.0	0.233	1.3	NA	0.0	0.0	0.00	0.15	0.00	48.9
All Vehicles		1194	5.0	1445	5.0	0.722	6.5	NA	6.8	49.3	0.38	0.53	0.68	45.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Howick Milne_AM_With Development (Site Folder: General)]

Howick Street and Milne Lane, Bathurst
AM Peak Period
With Proposed Development
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Milne (S)														
1	L2	6	5.0	6	5.0	0.082	5.2	LOS A	0.3	2.0	0.44	0.70	0.44	45.0
3	R2	51	5.0	54	5.0	0.082	7.6	LOS A	0.3	2.0	0.44	0.70	0.44	44.6
Approach		57	5.0	60	5.0	0.082	7.4	LOS A	0.3	2.0	0.44	0.70	0.44	44.6
East: Howick (E)														
4	L2	182	5.0	192	5.0	0.201	4.7	LOS A	0.0	0.0	0.00	0.28	0.00	47.8
5	T1	169	5.0	178	5.0	0.201	0.1	LOS A	0.0	0.0	0.00	0.28	0.00	48.4
Approach		351	5.0	369	5.0	0.201	2.4	NA	0.0	0.0	0.00	0.28	0.00	48.1
West: Howick (W)														
11	T1	275	5.0	289	5.0	0.176	0.2	LOS A	0.3	1.9	0.10	0.05	0.10	49.5
12	R2	25	5.0	26	5.0	0.176	6.3	LOS A	0.3	1.9	0.10	0.05	0.10	48.4
Approach		300	5.0	316	5.0	0.176	0.7	NA	0.3	1.9	0.10	0.05	0.10	49.4
All Vehicles		708	5.0	745	5.0	0.201	2.1	NA	0.3	2.0	0.08	0.22	0.08	48.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: [Gallipoli Rankin_AM_With Development (Site Folder: General)]

Gallipoli Lane and Rankin Street, Bathurst
AM Peak Period
With Proposed Development
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Rankin (S)														
2	T1	187	5.0	197	5.0	0.389	3.7	LOS A	2.9	21.3	0.64	0.52	0.82	45.9
3	R2	251	5.0	264	5.0	0.389	8.7	LOS A	2.9	21.3	0.64	0.52	0.82	45.0
Approach		438	5.0	461	5.0	0.389	6.6	NA	2.9	21.3	0.64	0.52	0.82	45.3
East: Gallipoli (E)														
4	L2	72	5.0	76	5.0	0.189	6.1	LOS A	0.7	4.9	0.52	0.72	0.52	44.4
6	R2	51	5.0	54	5.0	0.189	11.4	LOS A	0.7	4.9	0.52	0.72	0.52	44.0
Approach		123	5.0	129	5.0	0.189	8.3	LOS A	0.7	4.9	0.52	0.72	0.52	44.3
North: Rankin (N)														
7	L2	182	5.0	192	5.0	0.304	4.7	LOS A	0.0	0.0	0.00	0.18	0.00	48.3
8	T1	353	5.0	372	5.0	0.304	0.1	LOS A	0.0	0.0	0.00	0.18	0.00	48.8
Approach		535	5.0	563	5.0	0.304	1.7	NA	0.0	0.0	0.00	0.18	0.00	48.6
All Vehicles		1096	5.0	1154	5.0	0.389	4.4	NA	2.9	21.3	0.31	0.38	0.39	46.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

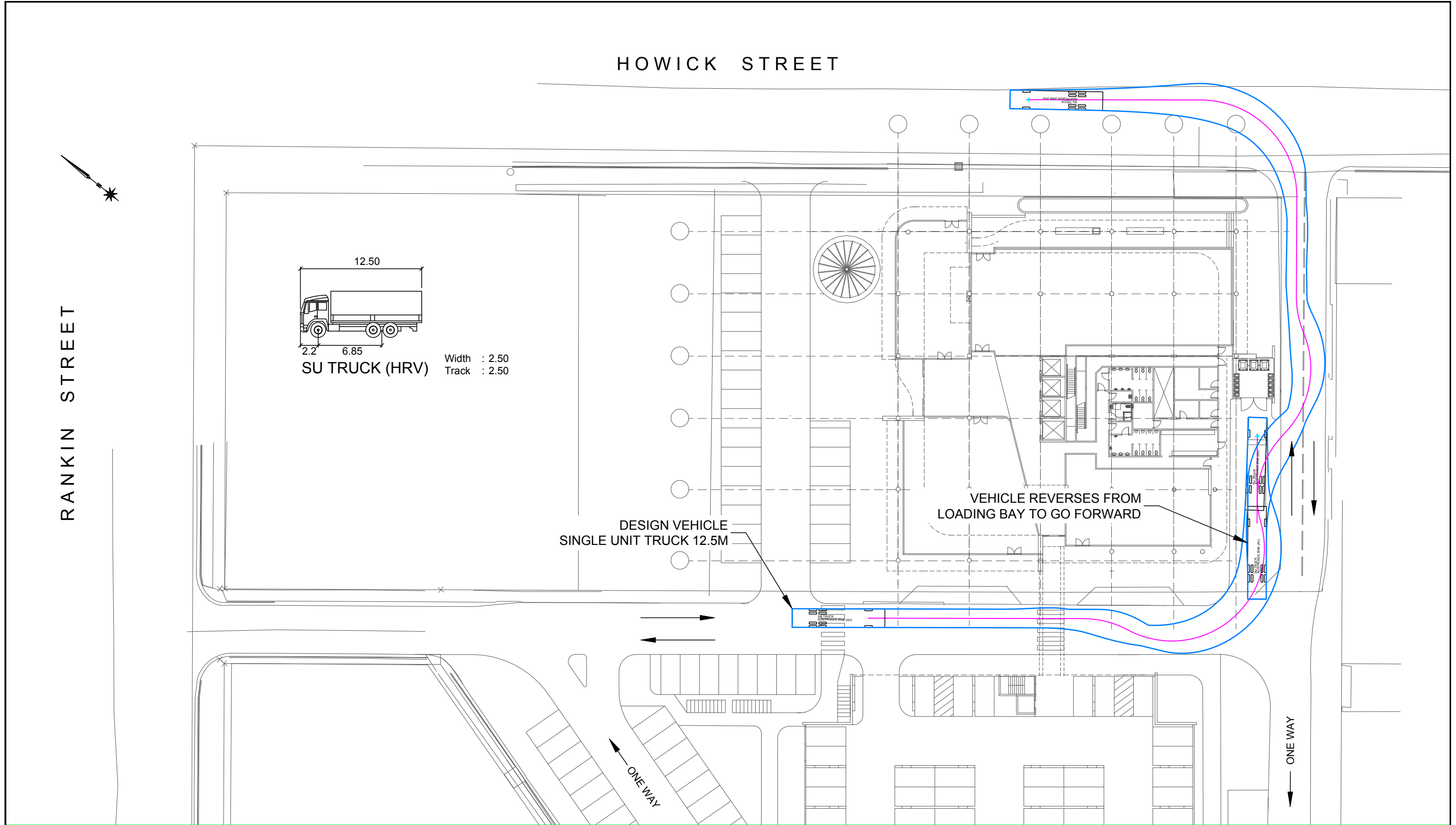
Site: [Howick Milne_PM_With Development (Site Folder: General)]

Howick Street and Milne Lane, Bathurst
PM Peak Period
With Proposed Development
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
						v/c	sec							km/h
South: Milne (S)														
1	L2	20	5.0	21	5.0	0.298	5.7	LOS A	1.2	8.8	0.51	0.79	0.58	44.5
3	R2	186	5.0	196	5.0	0.298	8.4	LOS A	1.2	8.8	0.51	0.79	0.58	44.1
Approach		206	5.0	217	5.0	0.298	8.2	LOS A	1.2	8.8	0.51	0.79	0.58	44.2
East: Howick (E)														
4	L2	97	5.0	102	5.0	0.167	4.7	LOS A	0.0	0.0	0.00	0.18	0.00	48.4
5	T1	197	5.0	207	5.0	0.167	0.1	LOS A	0.0	0.0	0.00	0.18	0.00	48.9
Approach		294	5.0	309	5.0	0.167	1.6	NA	0.0	0.0	0.00	0.18	0.00	48.7
West: Howick (W)														
11	T1	294	5.0	309	5.0	0.177	0.1	LOS A	0.1	1.1	0.05	0.03	0.05	49.7
12	R2	15	5.0	16	5.0	0.177	6.0	LOS A	0.1	1.1	0.05	0.03	0.05	48.6
Approach		309	5.0	325	5.0	0.177	0.4	NA	0.1	1.1	0.05	0.03	0.05	49.6
All Vehicles		809	5.0	852	5.0	0.298	2.8	NA	1.2	8.8	0.15	0.28	0.17	47.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

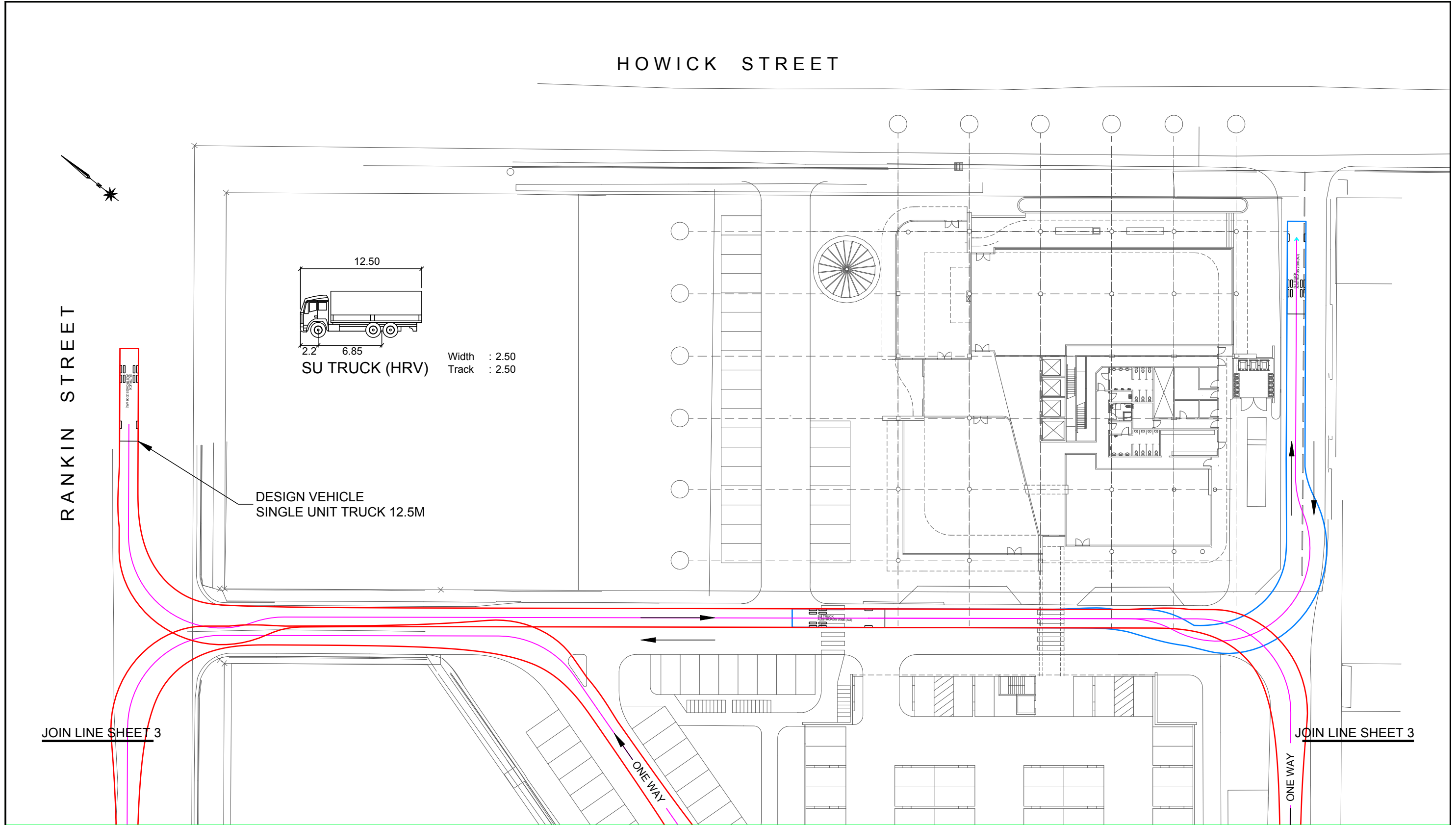
APPENDIX E – TURNING TEMPLATES



PART SITE PLAN



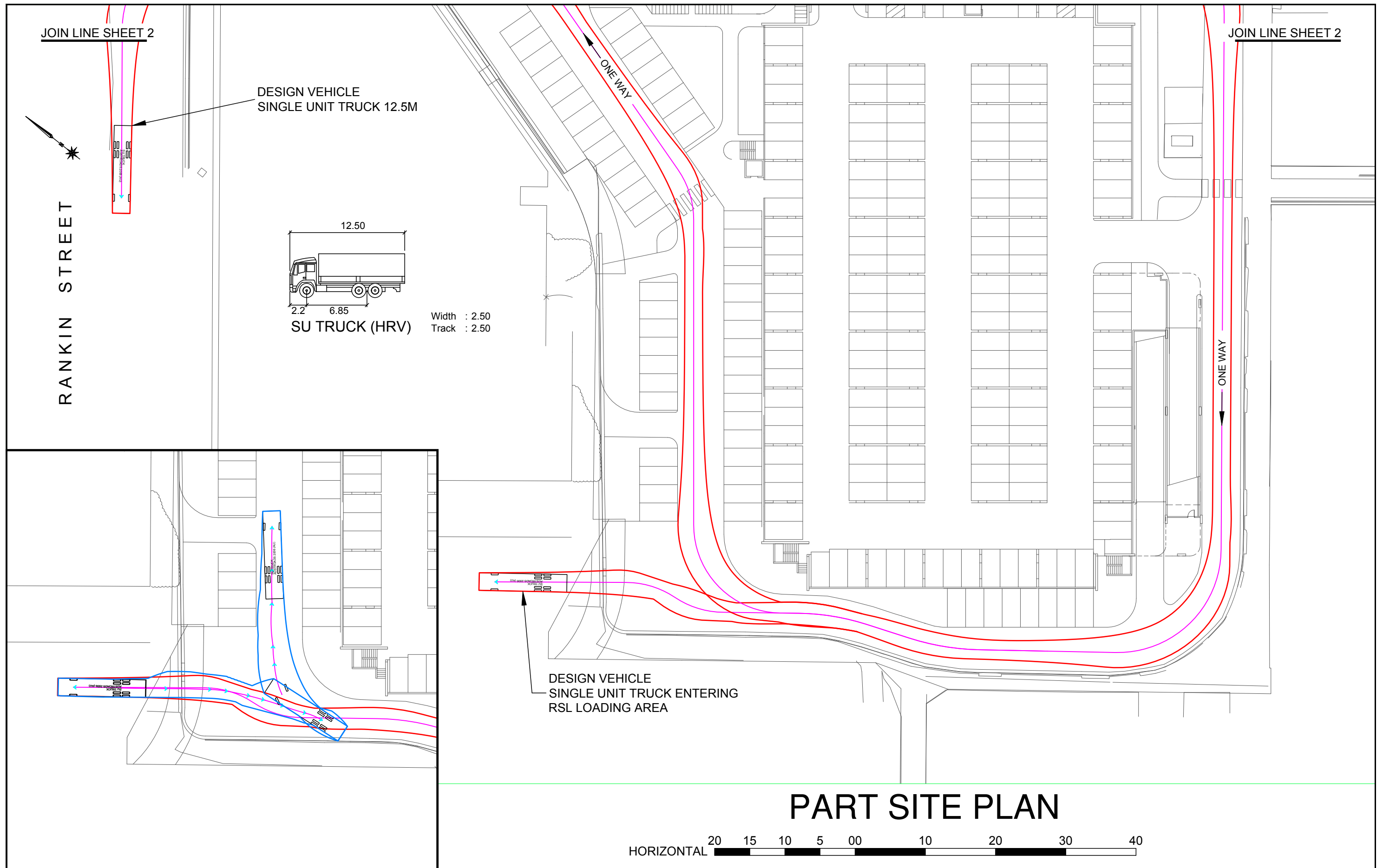
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	BDC				REV. A	A3
	DRAWN		HRV SWEPT PATHS		DRAWING NUMBER	
	BDC	APPROVED	BUILDING LOADING AREA MOVEMENTS		0000-01	




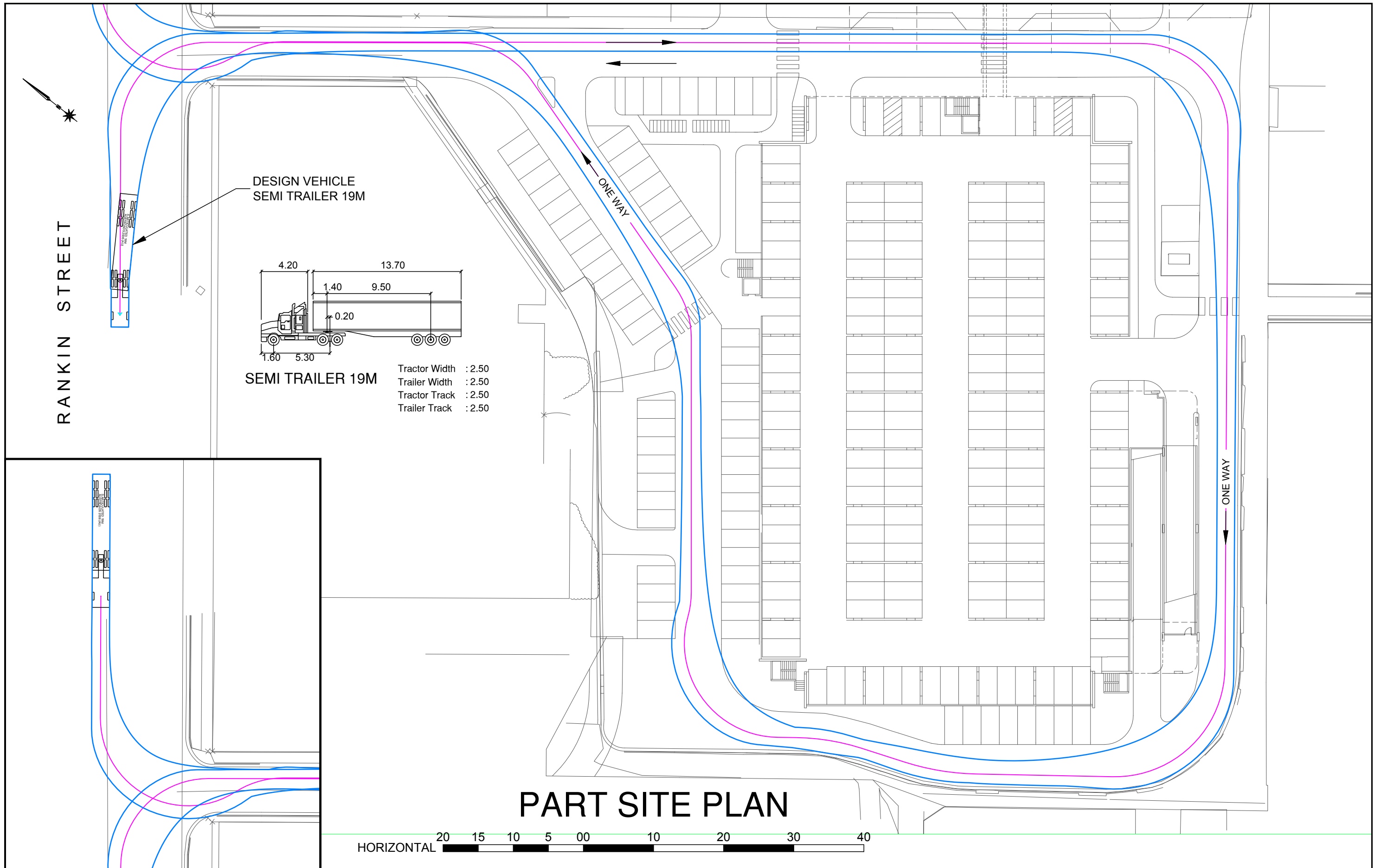
PART SITE PLAN



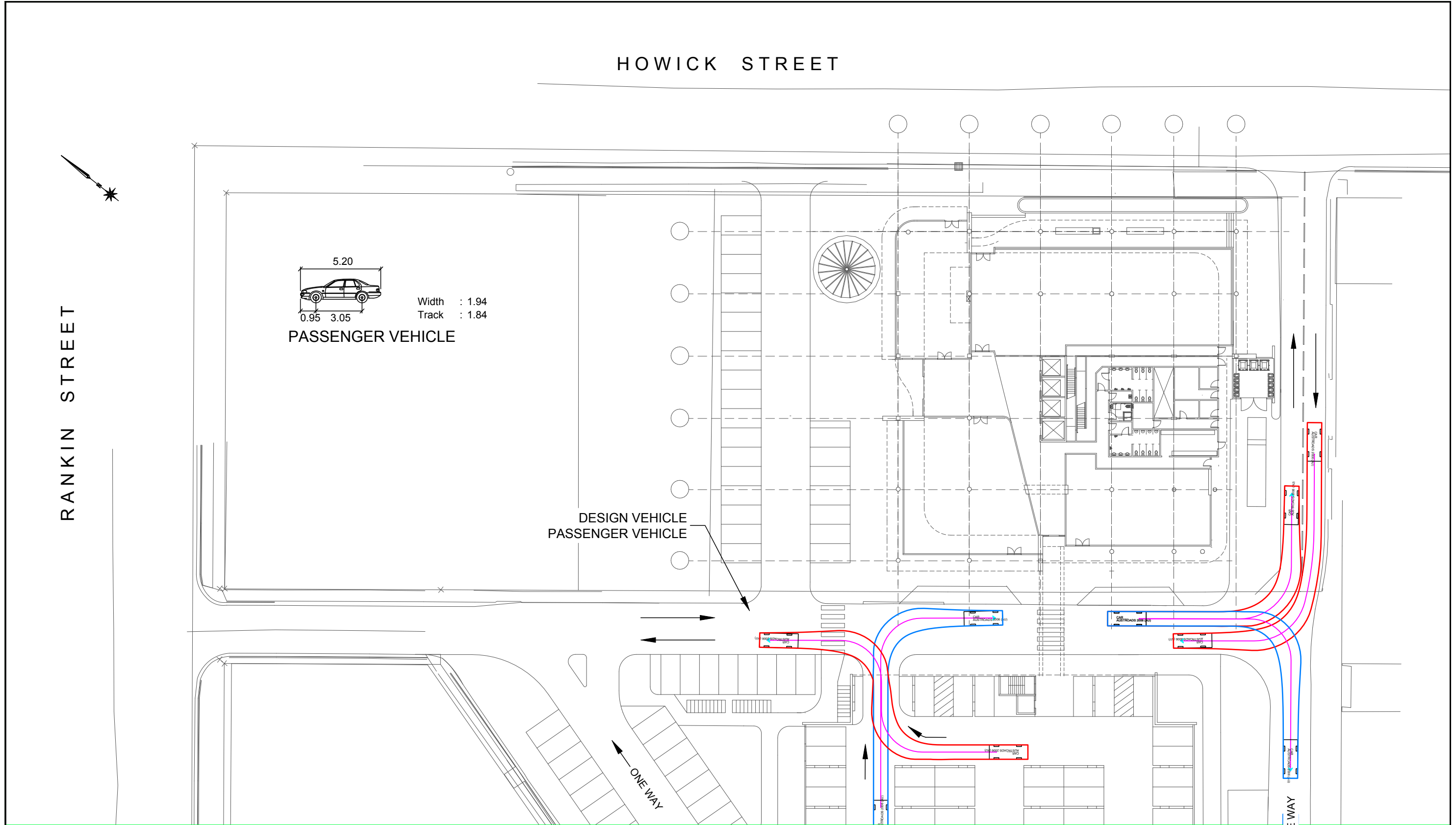
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	BDC				REV.	A	A3
	DRAWN		MOVEMENTS EXITING & CIRCULATING AROUND CAR PARK		DRAWING NUMBER	0000-02	
	BDC	APPROVED					



	DESIGNED	00 / 00 / 2021	PROPOSED MEDICAL CENTRE HRV SWEPT PATHS 2 MOVEMENTS EXITING & CIRCULATING AROUND CAR PARK	SCALE 1 : 500	
	BDC			REV. A	A3
	DRAWN			DRAWING NUMBER 0000-03	
	BDC	APPROVED			



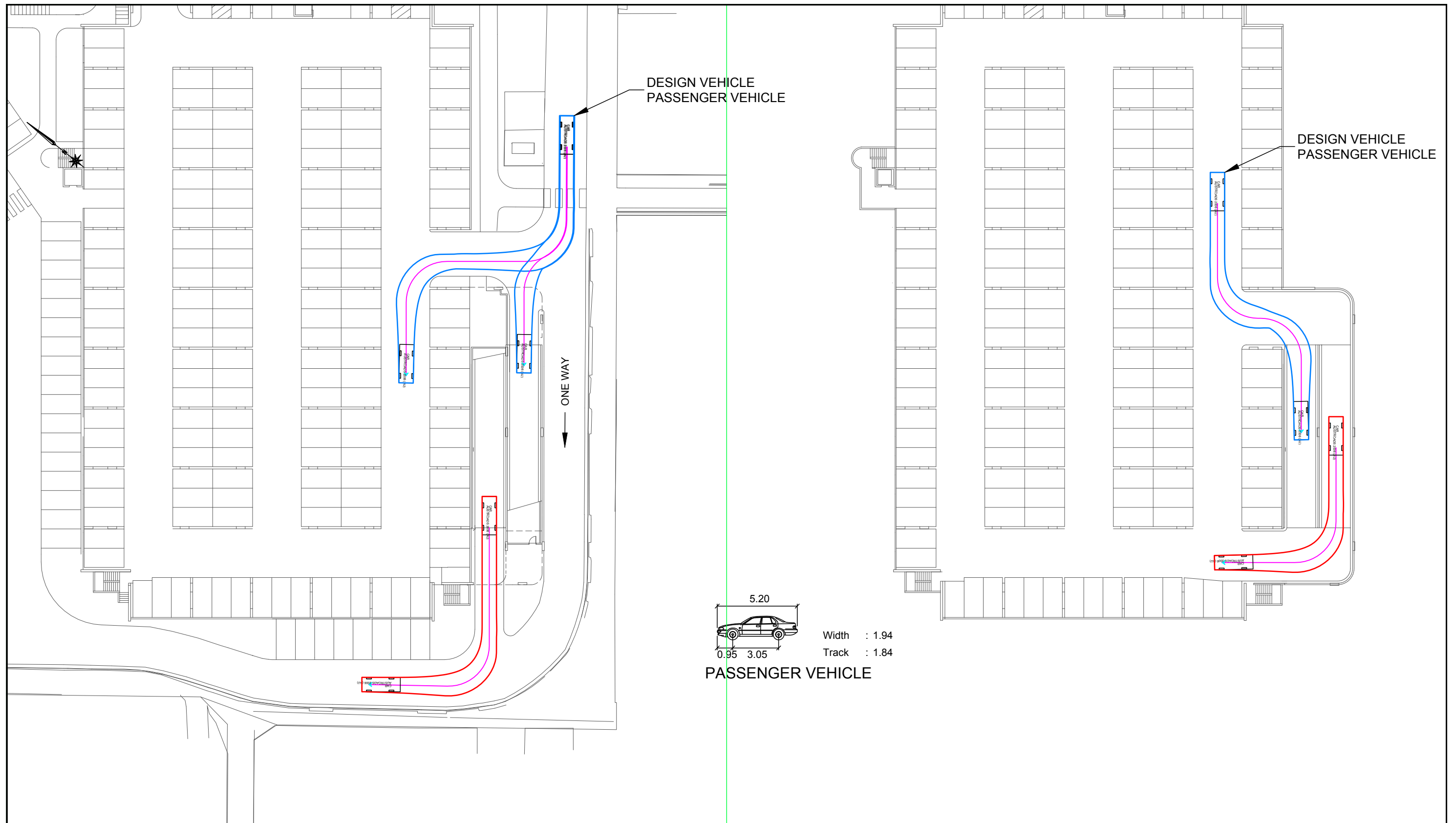
	DESIGNED	.00 / .00 / 2021.	PROPOSED MEDICAL CENTRE SEIMTRAILER SWEEP PATHS MOVEMENTS CIRCULATING AROUND CAR PARK	SCALE 1 : 500	
	BDC			REV. A	A3
	DRAWN			DRAWING NUMBER 0000-04	
	BDC	APPROVED			



PART SITE PLAN



	DESIGNED	...00... / ...00... / 2021...	PROPOSED MEDICAL CENTRE PASSENGER VEHICLE SWEEP PATHS 1 INTERNAL ROADWAY MOVEMENTS	SCALE 1 : 500	
	BDC			REV. A	A3
	DRAWN	APPROVED		DRAWING NUMBER 0000-05	
	BDC				



PART SITE PLAN

MULTI-STOREY - TYPICAL



	DESIGNED	...00... / ...00... / 2021...	PROPOSED MEDICAL CENTRE PASSENGER VEHICLE SWEPT PATHS 2 CAR PARK ECNTRY/EXIT MOVEMENTS	SCALE 1 : 500	
	DRAWN	APPROVED		REV. A	A3
			DRAWING NUMBER 0000-06		