

State Significant Development Application
Proposed Warehouse Development – 311 South St, Marsden Park

Traffic and Parking Assessment Report

Prepared for: Dexus Pty Ltd

May 2022

Report No: PT21076r02_V4

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1. Introduction

This report has been prepared on behalf of Dexus Pty Ltd to present findings of a traffic and parking assessment of the proposed warehouse development at the site known as 311 South Street, Marsden Park within the Marsden Park Industrial Precinct.

This Traffic Impact Assessment (TIA) report has been prepared as required by the SEARs issued for the SSDA for the proposed development of the site known as No.311 South Street, Marsden Park for a warehouse development.

The SSDA submission (SSD-29668067) is a State Significant Development Application under Section 4.12(8) of the Environmental Planning and Assessment Act & Schedule 2 of the Environmental Planning and Assessment Regulation 200083B of the EP&A Act, and addresses the SEARs issued by the Department of Planning on 15 October 2021.

The study has assessed existing traffic conditions, parking demands, access arrangements, future traffic conditions, service vehicle provision and design compliance.

The remainder of the report is set out as follows:

- Section 2 describes the existing traffic and parking conditions;
- Section 3 presents a background report review of the precinct;
- Section 4 summarises the proposed development;
- Section 5 reviews the potential traffic impacts of the proposal;
- Section 6 provides a compliance assessment of the proposed car park areas and access arrangements; and
- Section 7 presents the conclusions

1.1 SEARS Requirements Report Locations

For ease of reference, the following presents each SEARS requirements and the location within this report where the information in response to each SEARS requirements can be found.

Sears Requirement	Report Location
6. Traffic, Transport and Accessibility Provide a transport and accessibility impact assessment, which includes:	
<ul style="list-style-type: none"> • details of all traffic types and volumes likely to be generated during construction and operation, including a description of key access and haul routes. 	Section 5

<ul style="list-style-type: none"> • an assessment of the predicted impacts of this traffic on road safety and the capacity of the road network, including consideration of cumulative traffic impacts at key intersections (using industry standard modelling). 	<p>Section 5</p>
<ul style="list-style-type: none"> • plans demonstrating how all vehicles likely to be generated during construction and operation and awaiting loading, unloading or servicing can be accommodated on the site to avoid queuing in the street network. 	<p>Section 5, 6, Appendix B</p>
<ul style="list-style-type: none"> • details and plans of any proposed internal road network, loading dock provision and servicing, on-site parking provisions, and sufficient pedestrian and cyclist facilities, in accordance with the relevant Australian Standards. 	<p>Section 6, Appendix B</p>
<ul style="list-style-type: none"> • swept path analysis for the largest vehicle requiring access to the development. 	<p>Appendix B</p>
<ul style="list-style-type: none"> • details of road upgrades, infrastructure works, or new roads or access points required for the development if necessary. 	<p>Section 5</p>

2. Existing Development / Conditions

The following presents a summary of existing site and traffic conditions.

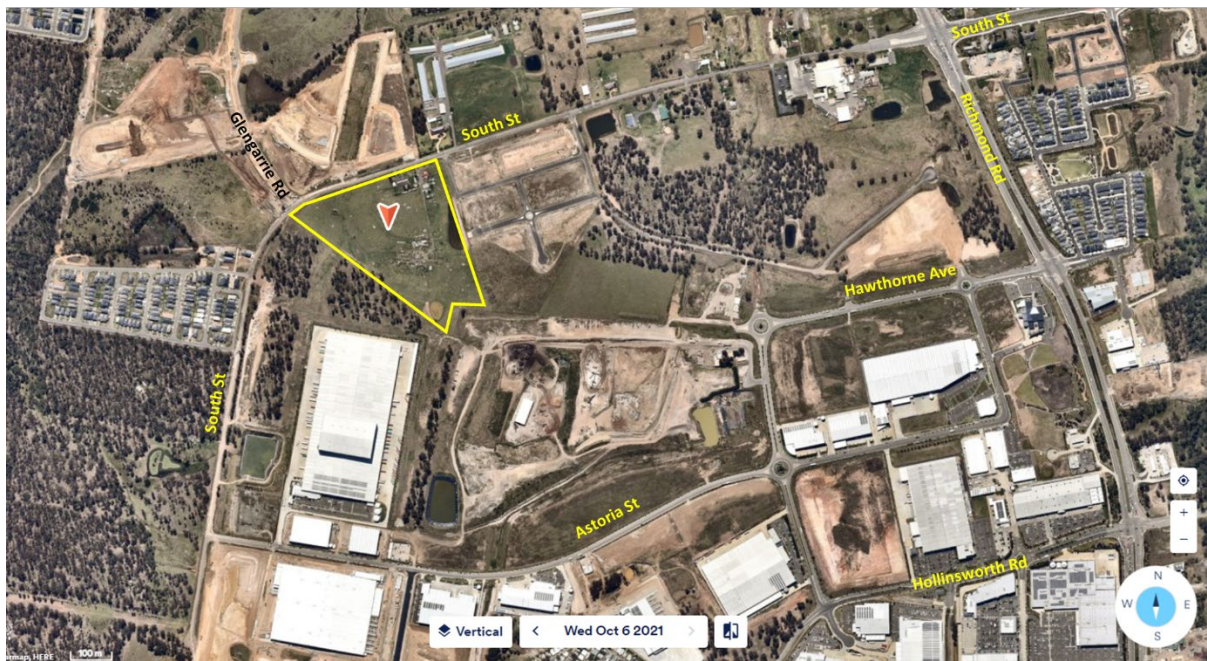
2.1 Site Location

The proposed development site is located within the Marsden Park Industrial Precinct which has been approved for redevelopment and includes its own Integrated Land Use Plan. The approval has been based on a significant volume of planning / traffic modelling studies to develop an infrastructure provision framework for the delivery of the precinct as a whole.

Of note redevelopment of a number of areas within the Marsden Park Industrial Precinct has already occurred and / or are currently under construction. The site is located within an area of B7 zoning within the precinct.

The site is located is currently a greenfield site and is shown in **Figure 1**.

Figure 1 - Site Location



Source: Nearmap

2.2 Classification Criteria

It is usual to classify roads according to a road hierarchy in order to determine their functional role within the road network. Changes to traffic flows on the roads can then be assessed within the context of the road hierarchy. Roads are classified according to the role they fulfil and the volume of traffic they should appropriately carry. The RTA has set down the following guidelines for the functional classification of roads.

- Arterial Road – typically a main road carrying over 15,000 vehicles per day and fulfilling a role as a major inter-regional link (over 1,500 vehicles per hour)

- Sub-arterial Road – defined as secondary inter-regional links, typically carrying volumes between 5,000 and 20,000 vehicles per day (500 to 2,000 vehicles per hour)
- Collector Road – provides a link between local roads and regional roads, typically carrying between 2,000 and 10,000 vehicles per day (250 to 1,000 vehicles per hour). At volumes greater than 5,000 vehicles per day, residential amenity begins to decline noticeably.
- Local Road – provides access to individual allotments, carrying low volumes, typically less than 2,000 vehicles per day (250 vehicles per hour).

2.3 Existing Road Network

South Street – is currently a local street under the care and control of Blacktown City Council and connects directly to Richmond Road, the main north-south arterial road through the area via a signalised intersection. In its current form across the site frontage South Street includes a single lane of traffic in each direction and unformed shoulders. A posted speed limit of 60km/hr applies to the street. The existing nature of the road environment near the subject site is presented below in **Figure 2**.

Figure 2 – South Street Existing Environment

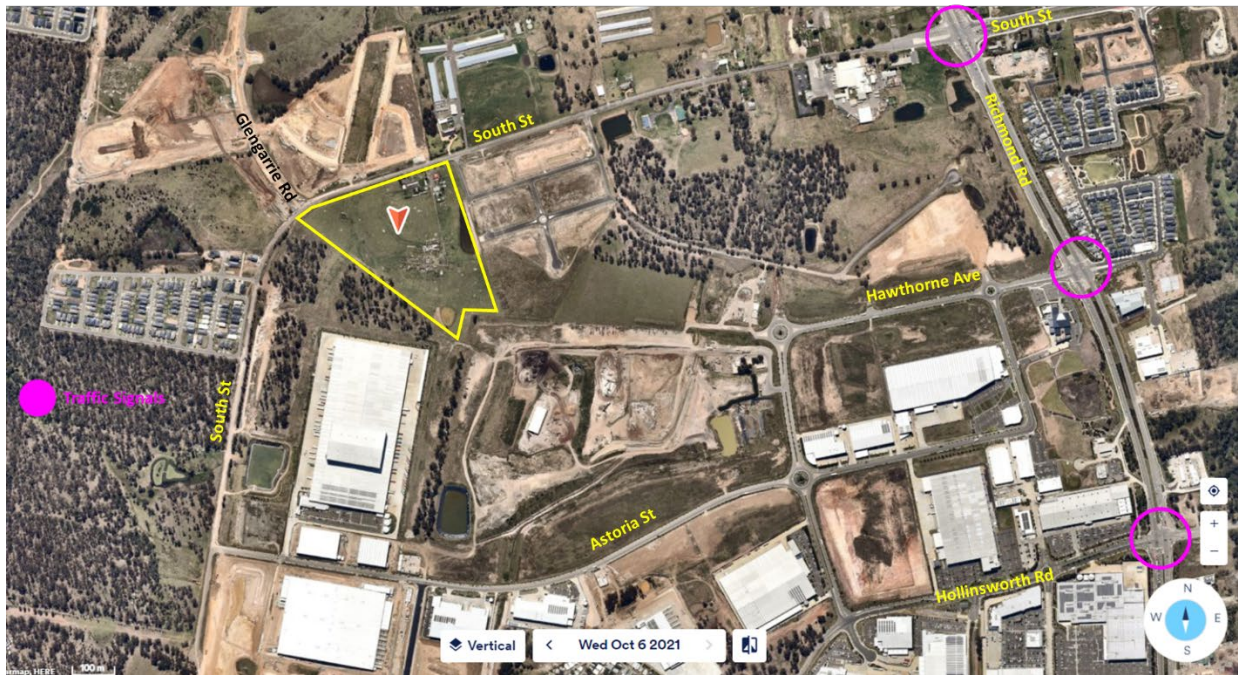


As shown above South Street in its current form does not include any formal pedestrian or cycle facilities. Further, South Street is not an identified cycle route.

Of note, South Street is a 'local road' under the care and control of Blacktown Council. In the near future the ownership of the road would be transferred to Transport for NSW at the time of upgrade.

Richmond Road – is the main north-south arterial road through the area linking the M7 Motorway in the south with Old Northern Road in the north. As part of the delivery of increased development adjacent to this corridor, the road has been subject to a significant upgrade program. In the vicinity of South Street, Richmond Road includes three (3) travel lanes in each direction and a posted speed limit of 80km/hr. All intersections are controlled by traffic signals or restricted to left in / left out only. The existing traffic controls at intersections in the vicinity of the proposed development site are presented in **Figure 3**.

Figure 3 – Existing Intersection Traffic Controls



Access to the site to the arterial road network is possible via a conveniently located signalised intersection of South Street / Richmond Road.

2.4 Existing Site Traffic Generation

As stated above the site is a greenfield site and does not generate any traffic in its own right.

2.5 Existing Traffic Flows

As stated above, the site is located within the Marsden Park Industrial Precinct and thus has been subject to significant area wide traffic analysis which has formed the basis of this assessment of potential traffic impacts of this single development site. This is discussed further in Section 3 of this report.

However, a seven (7) day tube counter was installed in South Street directly outside the proposed development site to gauge existing traffic demands. Copies of this seven (7) day tube count are provided in **Appendix C** of this report.

The following hourly flows by day of the week were recorded in South Street.

Table 1 - South Street Seven Day Count (EASTBOUND)

Hour Starting	Day of Week							W'Day Ave	7 Day Ave
	Mon 28-Mar	Tue 29-Mar	Wed 23-Mar	Thu 24-Mar	Fri 25-Mar	Sat 26-Mar	Sun 27-Mar		
AM Peak	57	52	52	58	55	39	27		
PM Peak	65	62	63	64	58	44	42	509	465
0:00	2	0	3	1	3	3	2	2	2
1:00	1	2	1	2	1	2	3	1	2
2:00	0	0	0	2	1	1	3	1	1
3:00	1	3	1	2	1	0	2	2	1
4:00	8	6	6	7	8	5	4	7	6
5:00	8	13	15	15	19	6	2	14	11
6:00	20	13	22	14	19	8	10	18	15
7:00	25	32	31	29	23	14	9	28	23
8:00	57	52	52	58	55	15	10	55	43
9:00	17	16	23	11	16	20	27	17	19
10:00	8	16	35	19	20	23	16	20	20
11:00	15	19	25	28	30	39	15	23	24
12:00	15	24	40	21	33	23	15	27	24
13:00	29	22	32	32	31	27	21	29	28
14:00	65	62	63	64	58	44	42	62	57
15:00	44	29	36	45	37	21	23	38	34
16:00	48	40	46	38	35	26	12	41	35
17:00	46	40	51	27	50	33	23	43	39
18:00	23	23	27	24	28	19	17	25	23
19:00	12	17	19	16	21	21	18	17	18
20:00	17	18	12	11	19	20	4	15	14
21:00	9	7	9	8	15	16	12	10	11
22:00	13	8	15	10	11	11	8	11	11
23:00	3	1	2	5	8	8	5	4	5
Total	486	463	566	489	542	405	303	509	465

Table 2 - South Street Seven Day Count (WESTBOUND)

Hour Starting	Day of Week							W'Day Ave	7 Day Ave
	Mon	Tue	Wed	Thu	Fri	Sat	Sun		
	28-Mar	29-Mar	23-Mar	24-Mar	25-Mar	26-Mar	27-Mar		
AM Peak	39	60	54	56	43	29	19		
PM Peak	47	43	48	43	48	42	33	526	484
0:00	3	0	4	0	5	8	8	2	4
1:00	2	5	0	2	1	6	5	2	3
2:00	1	0	1	0	2	2	5	1	2
3:00	0	3	2	1	1	0	1	1	1
4:00	4	3	6	5	3	0	3	4	3
5:00	19	24	25	26	27	16	12	24	21
6:00	31	26	30	36	30	11	3	31	24
7:00	34	33	43	38	23	9	9	34	27
8:00	39	60	54	56	43	14	11	50	40
9:00	21	25	37	35	18	19	14	27	24
10:00	23	17	25	24	20	29	19	22	22
11:00	12	18	41	17	36	27	12	25	23
12:00	31	25	26	18	30	32	21	26	26
13:00	36	37	48	36	38	42	33	39	39
14:00	27	29	37	43	37	35	18	35	32
15:00	47	43	43	38	48	23	27	44	38
16:00	33	32	41	42	28	36	21	35	33
17:00	27	32	33	24	28	36	29	29	30
18:00	33	31	30	29	25	21	15	30	26
19:00	13	14	28	27	17	20	13	20	19
20:00	19	20	17	13	21	23	11	18	18
21:00	9	10	14	16	15	17	12	13	13
22:00	5	7	12	13	11	9	8	10	9
23:00	4	2	4	7	8	6	4	5	5
Total	473	496	601	546	515	441	314	526	484

Table 3 - South Street Seven Day Count (COMBINED)

Hour Starting	Day of Week							W'Day Ave	7 Day Ave
	Mon 28-Mar	Tue 29-Mar	Wed 23-Mar	Thu 24-Mar	Fri 25-Mar	Sat 26-Mar	Sun 27-Mar		
AM Peak	96	112	106	114	98	66	41	1035	949
PM Peak	92	91	100	107	95	79	60		
0:00	5	0	7	1	8	11	10	4	6
1:00	3	7	1	4	2	8	8	3	5
2:00	1	0	1	2	3	3	8	1	3
3:00	1	6	3	3	2	0	3	3	3
4:00	12	9	12	12	11	5	7	11	10
5:00	27	37	40	41	46	22	14	38	32
6:00	51	39	52	50	49	19	13	48	39
7:00	59	65	74	67	46	23	18	62	50
8:00	96	112	106	114	98	29	21	105	82
9:00	38	41	60	46	34	39	41	44	43
10:00	31	33	60	43	40	52	35	41	42
11:00	27	37	66	45	66	66	27	48	48
12:00	46	49	66	39	63	55	36	53	51
13:00	65	59	80	68	69	69	54	68	66
14:00	92	91	100	107	95	79	60	97	89
15:00	91	72	79	83	85	44	50	82	72
16:00	81	72	87	80	63	62	33	77	68
17:00	73	72	84	51	78	69	52	72	68
18:00	56	54	57	53	53	40	32	55	49
19:00	25	31	47	43	38	41	31	37	37
20:00	36	38	29	24	40	43	15	33	32
21:00	18	17	23	24	30	33	24	22	24
22:00	18	15	27	23	22	20	16	21	20
23:00	7	3	6	12	16	14	9	9	10
Total	959	959	1167	1035	1057	846	617	1035	949

As expected, existing weekday average AM / PM peak hour flows were low at **105** vehicles two way in the AM peak and **72** vehicles two way in the PM peak.

2.6 Public Transport - Buses

At the time of preparing this report, bus operations in and around the Marsden Park Industrial Precinct were continuing to evolve and expand. A large number of bus stops are currently located some 1.0 – 1.5km walking distance to the site. These locations are shown below in [Figure 4](#).

Figure 4 – Existing Bus Stop Locations Near Development Site



A summary of the existing bus services where operate from these nearby bus stops is provided below in **Table 4**:

Table 4 - Bus Routes Operating Near Development Site

Route No.	Description
747	Mount Druitt to Rouse Hill via Marsden Park
751	Blacktown Station to Marsden Park via Colebee

From **Table 4** it can be seen that the site is located within a precinct with an evolving public transport provision which provides access to key employment / retail / transport centres including Rouse Hill and Blacktown.

2.7 Walking / Cycle Network

There are currently no formal pedestrian / cycle pathways within South Street. However, these would be delivered as part of the South Street upgrade which is discussed further in Section 3 of this report.

Richmond Road which has been subject to a significant upgrade includes a pedestrian / cycle shared pathway along its western side with further pedestrian pathways expected along the eastern side of this road corridor in the future as frontage sites develop.

3. Background Report Review

The redevelopment of the Marsden Park Industrial Precinct as a whole has been subject to significant area wide and local traffic modelling to inform the infrastructure network plan to accommodate *full* redevelopment of the precinct including the subject site at No.311 South Street.

The purpose of such modelling is to not only underpin an appropriate infrastructure plan for the precinct to accommodate existing / future demands but to present a holistic assessment of traffic impacts. A superior approach compared to a single intersection modelling assessment of potential developments. This approach both informs future decision making on appropriate infrastructure and removes the need for ongoing single site traffic impact assessments in terms of intersection counts / modelling.

The following presents a summary of the specific traffic investigations which have accounted for the proposed development site.

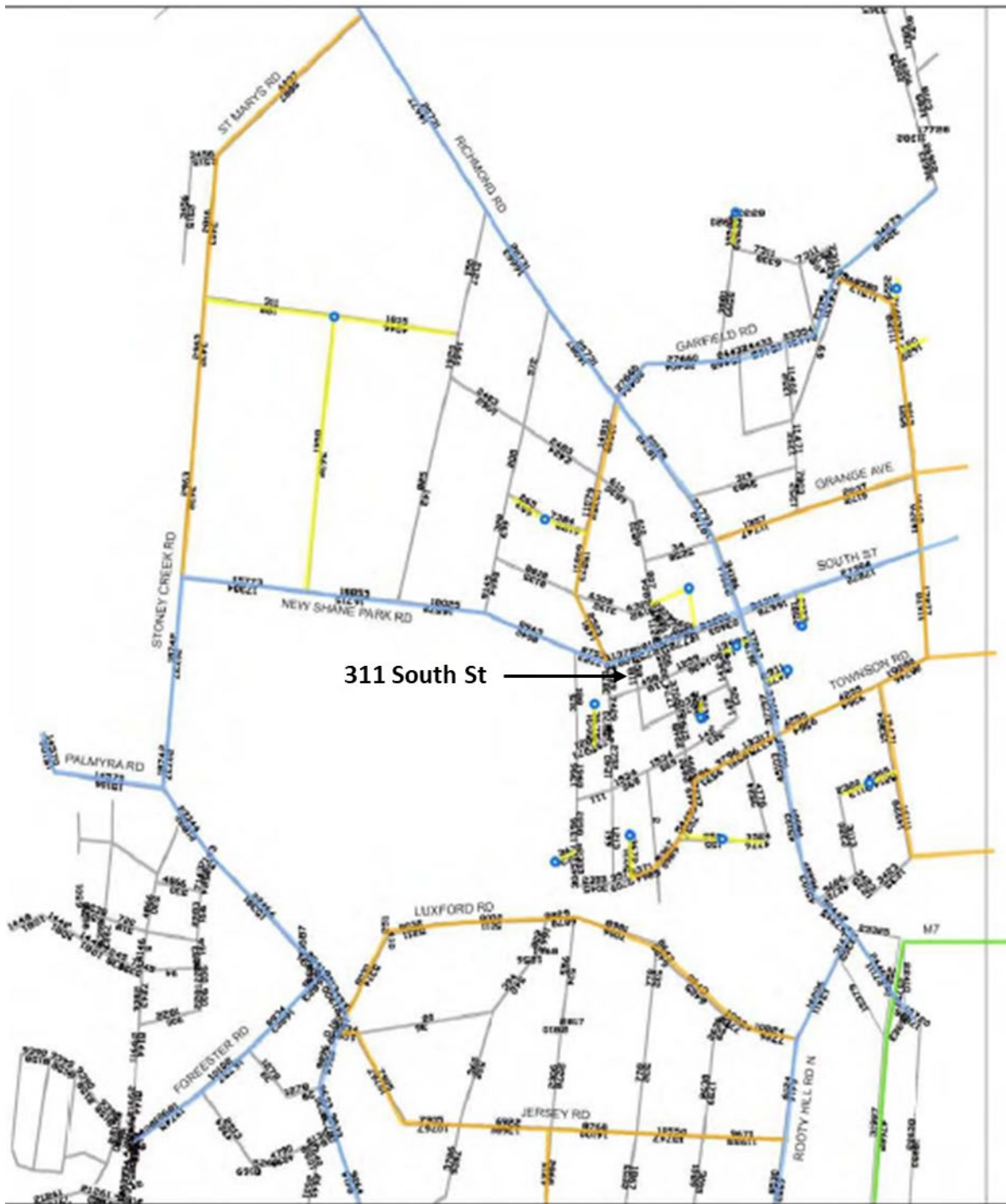
3.1 Marsden Park Industrial (Employment) Precinct Transport and Access Study – ARUP August 2009

This transport and access study is the key traffic modelling assessment report which underpinned the approval of the Marsden Park Industrial Precinct and the exhibition of the now approved Integrates Landuse Plan (ILP).

The traffic modelling report included an assessment of the full traffic impacts of the redevelopment of the Marsden Park Industrial Precinct as a whole and developed the infrastructure plan (including the upgrade of South Street) to accommodate the potential traffic impacts and background traffic growth to the year **2036**.

The modelling assessment included an area wide assessment of existing / future traffic conditions following full development of the precinct of which the area / road network included in the modelling is shown below:

Figure 5 – ARUP Report Area Wide Modelling Extents

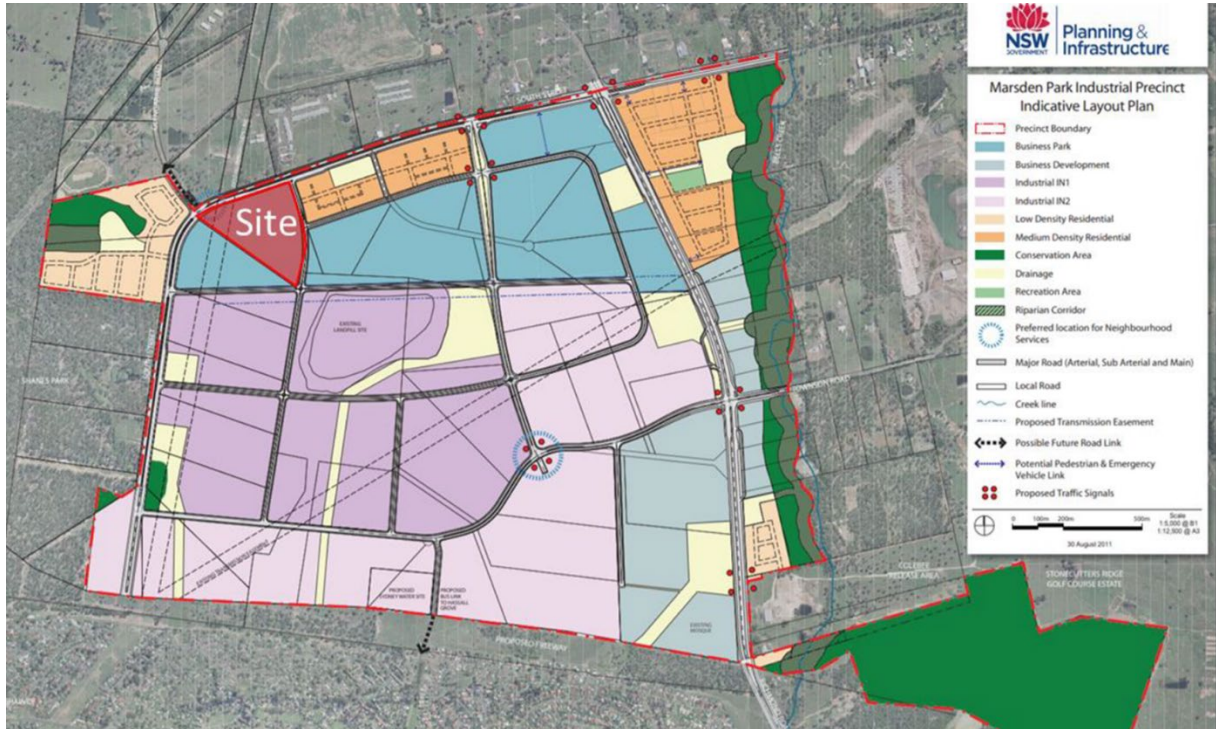


As can be seen from **Figure 5**, the adopted extents of the modelling network to assess the traffic impacts of the Marsden Park Industrial Precinct was extensive.

3.1.1 Future Road Network

The transport and access report developed a future road network for the Marsden Park Industrial Precinct along with recommendations for intersection improvements / controls. The location of the proposed site within the context of the Marsden Park Industrial Precinct future road network is shown below in **Figure 6**.

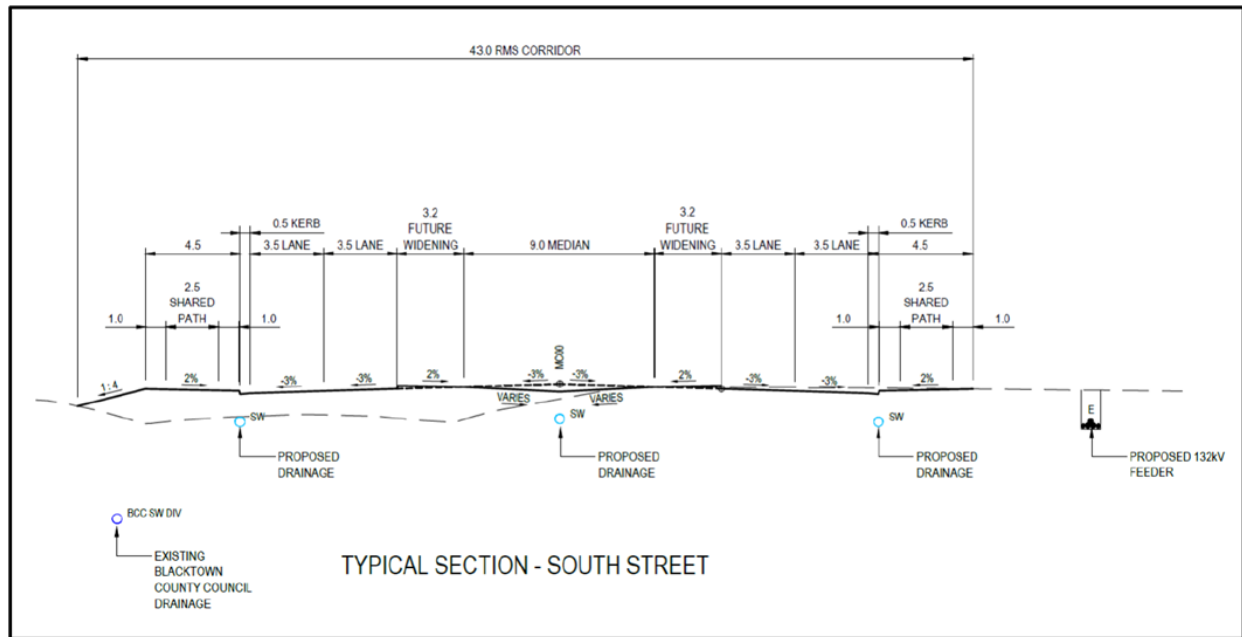
Figure 6 – Proposed Site Location within Marsden Park Industrial Precinct Future Road Network



As confirmed above, the transport and access assessment report prepared by ARUP adopted the now approved zoning for the Marsden Park Industrial Precinct including the subject site at No.311 South Street as a B7 zone. Thus, the traffic demands generated by development of the B7 zone (and surrounding land holdings) is expected to be *fully* accounted for in the future modelling assessment of the report.

As stated above, South Street has been identified as a major sub-arterial road in the future at which time the road would be under the care and control of Transport for NSW. A SIC levy applies to the Marsden Park Industrial Precinct to deliver South Street to its future form which is shown below in **Figure 7**.

Figure 7 – South Street Future Road Configuration

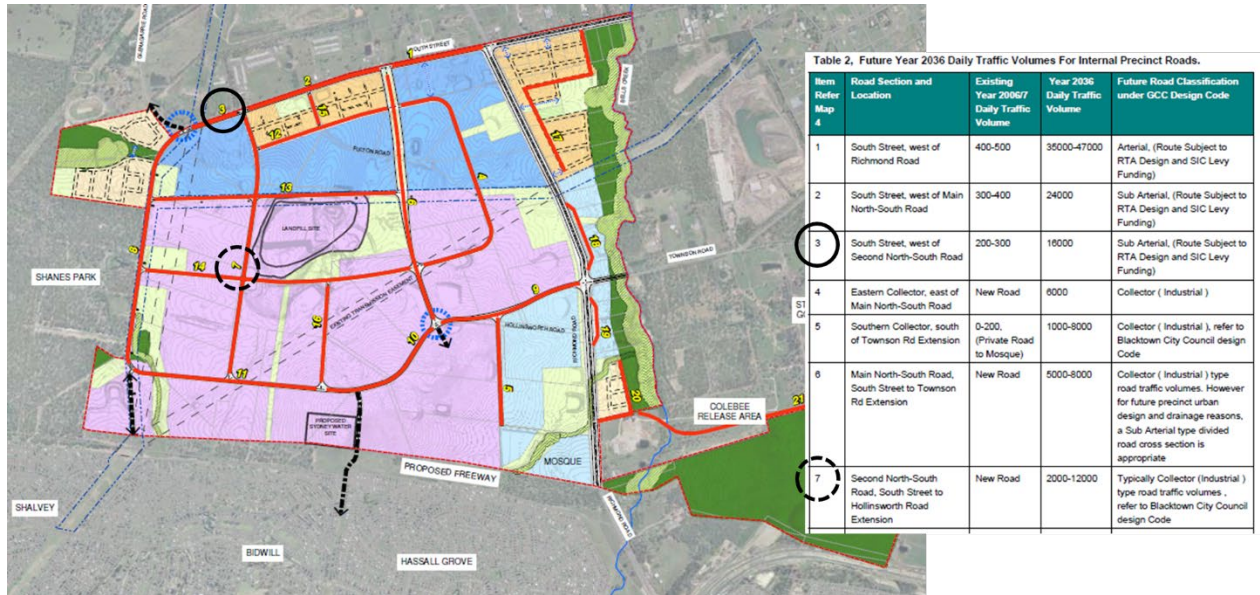


Thus, the above arrangement would result in left in / left out access arrangements for *any* developments fronting South Street following construction of the median separated road corridor along South Street.

3.1.2 2036 Forecast Mid-Block Traffic Flows

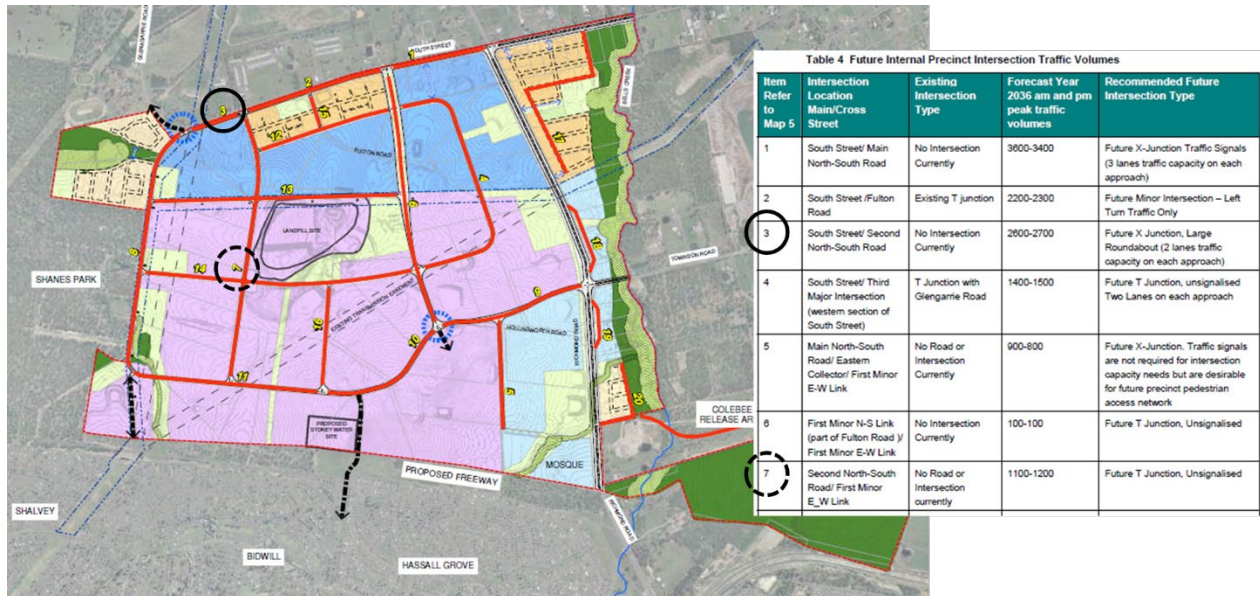
The area wide traffic modelling of the potential impacts of the full development in the traffic report included a forecast of 2036 mid-block flows. The report found that South Street across the frontage of the subject site would include some 16,000 vehicles per day with the eastern frontage local road (classified as a Collector Road) would include some 6,000 vehicles per day. Overall, the 2036 mid block traffic flows following *full* development of the precinct would remain within the environmental capacity of each respective street/ road. This is shown below in [Figure 8](#).

Figure 8 – Marsden Park Industrial Precinct Forecast 2036 Mid-Block Daily Traffic Flows



The 2036 forecast AM / PM peak hour flows on South Street across the frontage of the site and along the eastern boundary Collector Road are shown in Figure 9.

Figure 9 – Marsden Park Industrial Precinct Forecast 2036 Mid-Block Peak Hour Traffic Flows



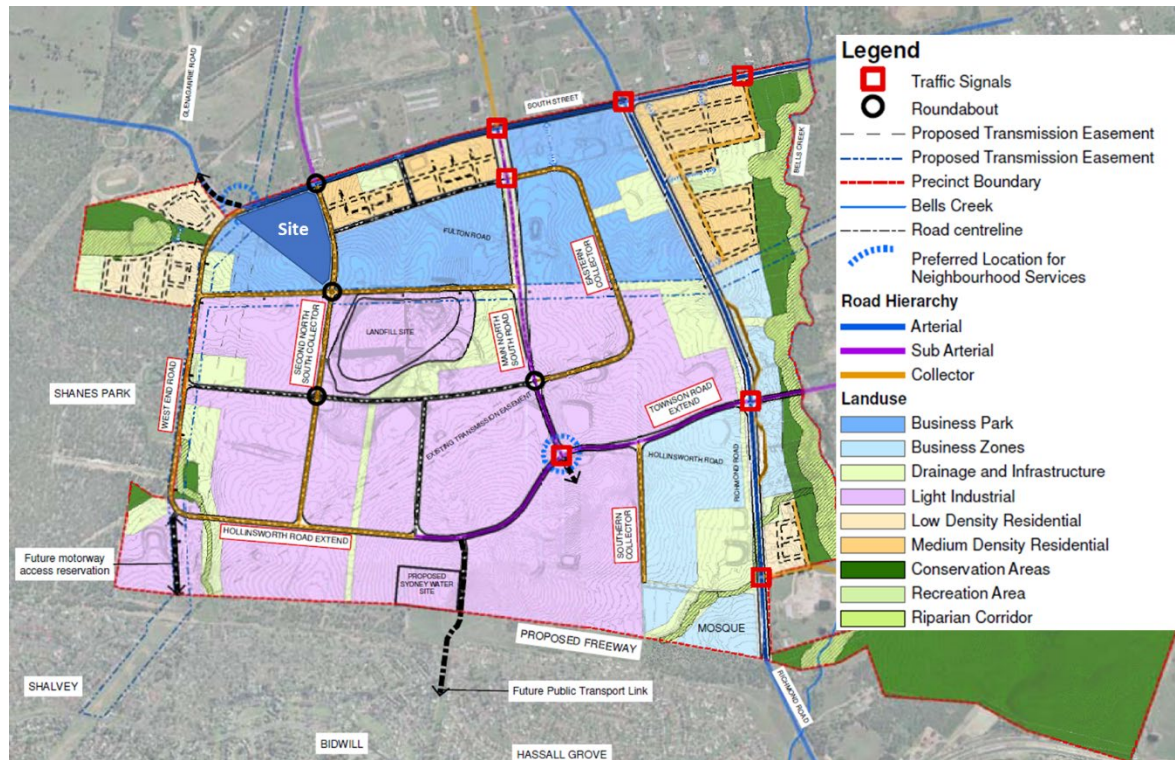
As shown in Figure 9 the 2036 forecast peak hour flow for South Street was noted to be some **2,600-2,700** vehicles per hour and within the eastern boundary collector road some **1,100 -1,200** vehicles per hour two way.

It is noted that the above peak hour flows in South Street following full development of the precinct are *significantly* greater than the current recorded peak hour two way traffic flows detailed above of **72-105** vehicles two way.

3.1.3 Future Intersection Controls

The recommended intersection control provisions within the precinct including near the subject development site are shown in **Figure 10**.

Figure 10 – ARUP Report Recommended Intersection Controls – 2036 Forecast Traffic Conditions

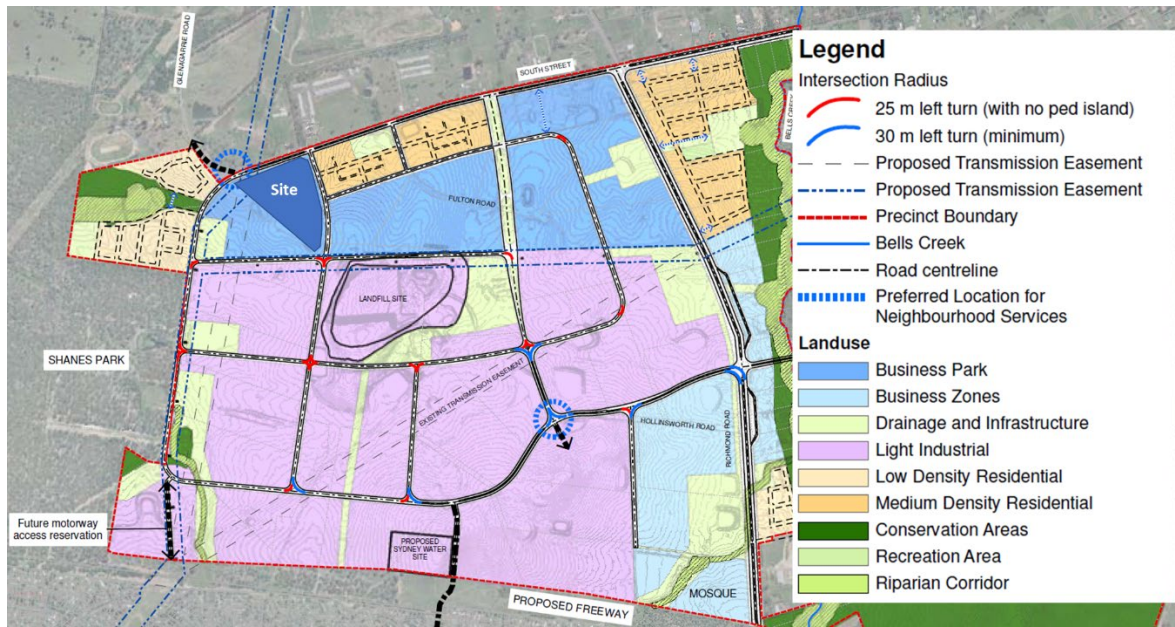


As noted from **Figure 10** that the intersection of South Street and the eastern frontage local road of the site would include a roundabout controlled intersection. The ARUP report notes this would be a dual lane roundabout. A further signalised intersection to South Street would be provided as part of the delivery of the local road network east of the subject site.

3.1.4 Recommended Heavy Vehicle Routes

As part of the development of the road hierarchy of the precinct and to inform the design of intersections, the ARUP report recommended the heavy vehicle routes for the precinct including B Double truck access for vehicles 25.0m and 30.0m in length. The intersection / route locations for B Double truck access for the precinct is shown below in **Figure 11**.

Figure 11 – ARUP Report Recommended B Double Truck Access Intersections within Precinct



Of note from **Figure 11**, no intersections in close proximity to the development site includes provision B Double vehicles turning into side streets. However, it is expected that the upgrade of South Street would include provision for B Double trucks as a corridor given it provides access to the greater road network in the future.

3.1.5 Travel Via Alternative Modes

The traffic report¹ also included mode share forecasts having regard to the nature of development which would occur within the precinct, the future permeable networks and existing travel behaviour of staff / visitors. The report forecast the following mode share targets.

Table 6 Future Target Changes For Local Area Travel Mode Share (Marsden Park Area)

Travel Mode For All Trip Purposes	Existing Travel Mode Share 2001 %	Future Travel Mode Share Target 2036 %
Car Driver	60.57%	52.09%
Car Passenger	24.44%	24.44%
Train	3.74%	5.46%
Bus	2.66%	3.88%
Bicycle	0.41%	2.00%
Walk	7.91%	11.55%
Other	0.27%	0.39%
Total	100%	100%

Source : Arup Analysis of Year 1997/2004 HTS Travel Data for Blacktown LGA

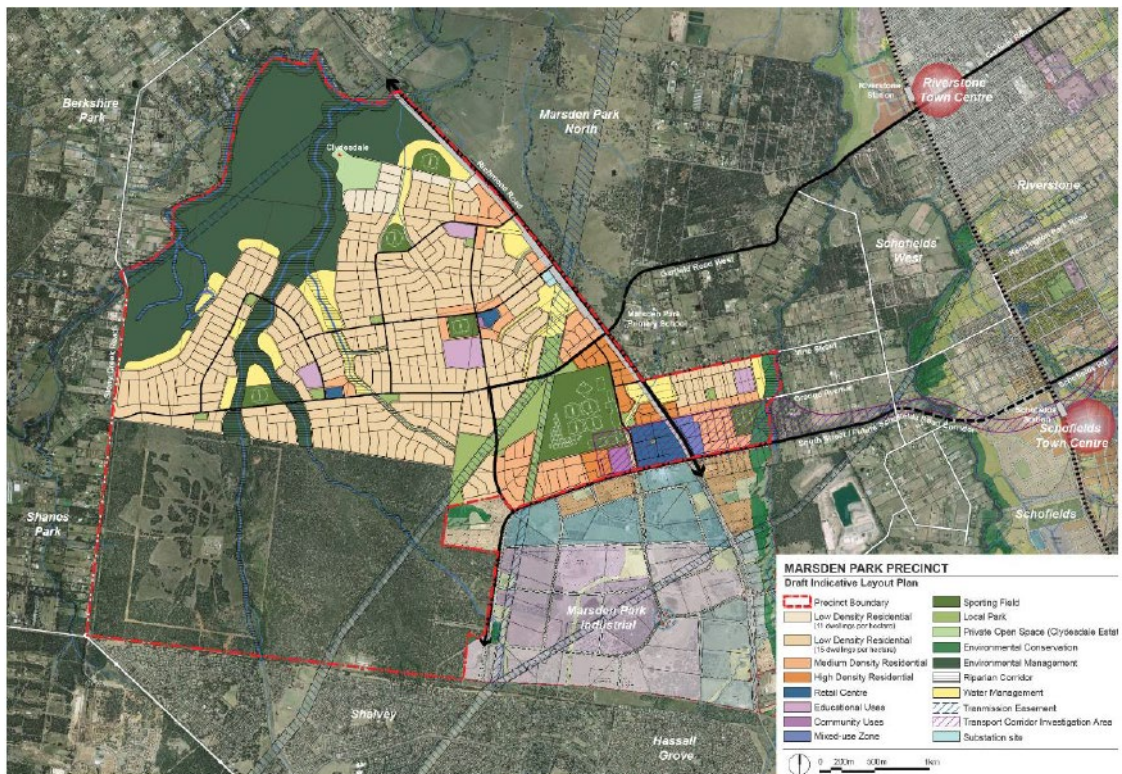
¹ Marsden Park Industrial (Employment) Precinct Transport and Access Study – ARUP August 2009

Of note, the above targets did not include the potential extension of the North West Rail Link which has been identified to pass through the Marsden Park Industrial Precinct and immediately adjacent to the eastern boundary of the subject site.

3.2 Marsden Park Precinct Traffic & Transport Assessment – AECOM 2013

The purpose of this area wide traffic modelling assessment was to investigate the potential impacts of the development of the area immediately north of the Marsden Park Industrial Precinct which included the proposed town centre located adjacent to the intersection of South Street / Richmond Road. The area of development included in this traffic impact assessment is shown below:

Figure 12 – Marsden Park Precinct Development Extents – AECOM Traffic Report 2013



The report adopted the same approach as the ARUP report with the preparation of an area wide modelling assessment of the potential impacts of the development with the inclusion of traffic generated by the Marsden Park Industrial Precinct.

The 2036 AM and PM peak hour traffic volumes forecasts in the vicinity of the development site at No.311 South Street, Marsden Park are shown below. It should be noted that unlike the ARUP report, the AECOM report adopted the extension of South Street to the main network.

Figure 13 – AECOM Report 2036 AM Peak Hour Forecast Traffic Flows

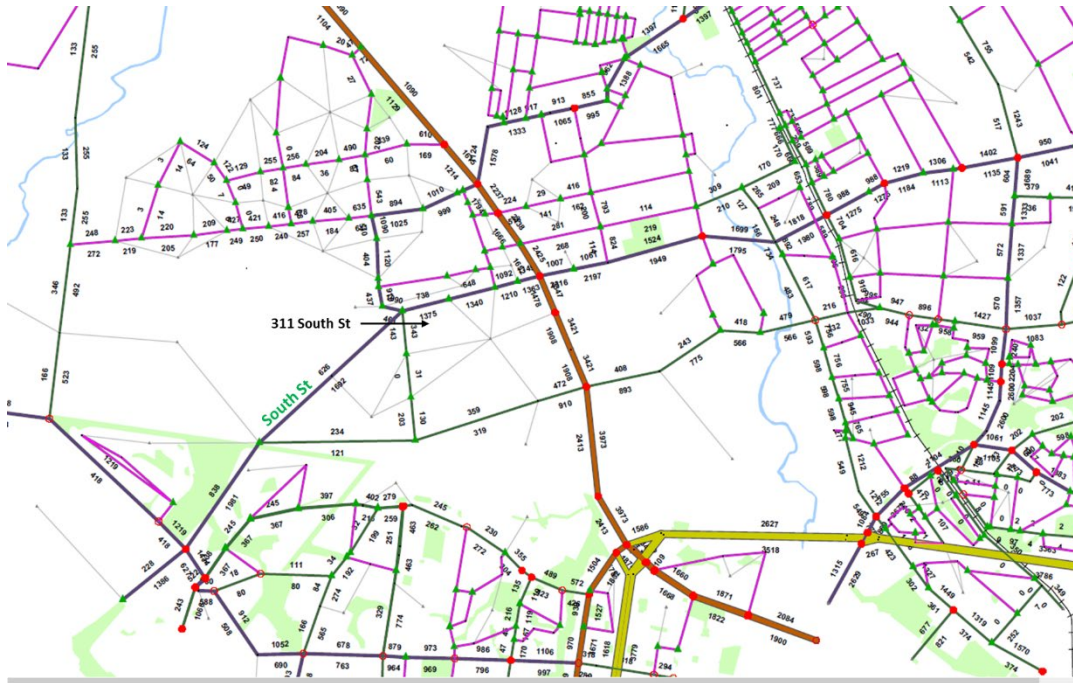
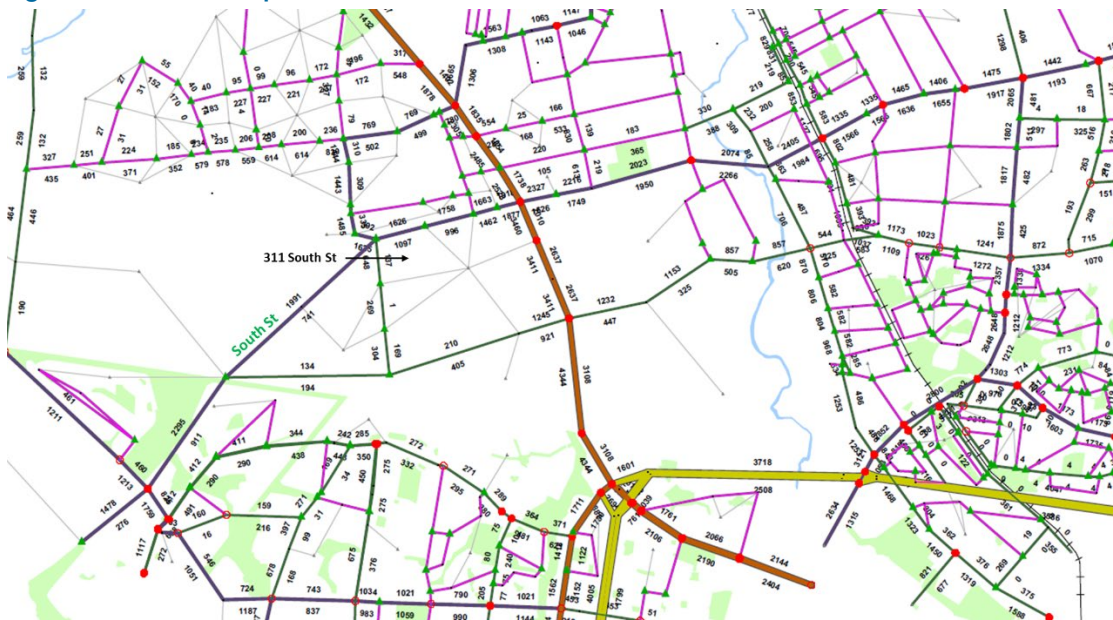


Figure 14 – AECOM Report 2036 PM Peak Hour Forecast Traffic Flows



Of note, the traffic forecasts of the AECOM report which included additional development north of South Street only included a marginal increase in 2036 mid block traffic flows in South Street.

4. The Proposed Development

The key components of the proposed development are described below.

- Construction of an industrial warehouse development with a total site area of 102,445m² and developable area of 81,039m².
- Six (6) x large floorplate warehouse units with potential building area of 41,100m² warehouse space and 2,100m² ancillary office space (overall total of 43,200m² GFA).
- Proposed construction commencement in Quarter 2 2022 with occupation of the development proposed for Quarter 3, 2023.
- Light vehicle access from four (4) driveways within eastern frontage collector road.
- Heavy / large vehicle (up to B Double trucks) access via a service vehicle only left in / left out driveway access located at the southern end of the half road construction of the eastern boundary collector road.
- Half road construction of the eastern boundary collector road across the full eastern frontage of the development site.
- 8.0m wide southern boundary roadway to provide access to centralised service vehicle / loading dock areas of proposed buildings.
- Provision of a large hardstand area adjacent to the eastern boundary of the site located within the T2SM rail corridor.
- Total on-site parking provision of **327** parking spaces.
- As stated in the Economic Assessment Report, the site has the potential to provide a total employment of **315 jobs**.

Plans of the proposed development can be found in [Appendix A](#) of this report.



5. Potential Traffic Impacts

5.1 Introduction

Of note the site is located within a B7 zoning which allows for the following uses:

- Child Care Centres
- Hotel / Motel Accommodation
- Light Industries
- Neighbourhood Shops
- Office Premises
- Passenger Transport Facilities
- Warehouse or Distribution Centres

Having regard to the potential traffic generation of permissible uses within the development site, the provision of a warehouse / distribution centre is expected to have a much lower peak hour traffic generation rate than other permitted uses. Further, the ARUP report for the Marsden Park Industrial Precinct is likely to have adopted reasonably high traffic generation rates for all B7 zoned land fronting South Street to account for the higher traffic generation uses such as retail / office developments.

5.2 Development Traffic Generation

The RTA Guide to Traffic Generating Developments suggests the following traffic generation rate for a 'warehouse' development:

- Daily vehicle trips = 4 per 100m² gross floor area
- Morning peak hour vehicle trips = 0.5 per 100m² gross floor area

Applying the above 'warehouse' traffic generation rate to the development proposal would equate to **216 trips** two way in the AM peak. As is typical of warehouse type development which operate on a shift basis, the afternoon shift changeover often avoids the afternoon road network peak hour.

As a comparison, the Transport for NSW TDT 2013-04a provides the following Sydney average traffic generation rates for a 'business park / industrial estates.

- AM Peak hour: 0.52 trips per 100m² gross floor area
- PM Peak hour: 0.56 trips per 100m² gross floor area

Applying the above traffic generation rates to the proposed development would equate to **225 AM** peak hour and **242 PM** peak hour trips or slightly more than applying the warehouse traffic generation rate of the RTA Guide to Traffic Generating Developments.

5.3 Other Potential Development Traffic Generation

Having regard to the zoning of the site (and the remaining land holdings fronting South Street east of the site), a permissible FSR of 1:1 under the Growth Centres SEPP would allow some 102,445m² of commercial floorspace. On the basis this permissible type of development was to occur, the site would generate in the order of **1,671 AM peak** and **1,254 PM peak** hour trips two-way or significantly more than the proposed development.

5.4 South Street / Collector Road Intersection Operating Conditions Assessment

As confirmed above the future intersection operating conditions for the precinct in the year 2036 confirm that upon delivery of the road network infrastructure (all subject to the existing contributions plan) the intersection of South Street / Collector Road would operate at a satisfactory level of service as a dual lane roundabout.

To confirm intersection operating conditions at the time of opening of the proposal, a SIDRA intersection assessment of the South Street / Collector Road intersection has been undertaken.

Sidra Intersection determines the average delay that vehicles encounter, the degree of saturation of the intersection, and the level of service. The degree of saturation is the ratio of the arrival rate of vehicles to the capacity of the approach. Sidra Intersection provides analysis of the operating conditions which can be compared to the performance criteria set out in [Table 5](#).

Table 5 – Level of Service Criteria

Level of Service	Average Delay per Vehicle (secs/veh)	Signals & Roundabouts	Give Way & Stop Signs
A	less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & Spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays Roundabouts require other control mode	At capacity, requires other control mode
F	> 70	Extra capacity required	Extreme delay, traffic signals or other major treatment required

Adapted from RTA Guide to Traffic Generating Developments, 2002.

For roundabouts and priority intersections, the reported average delay is for the individual movement with the highest average delay per vehicle. At signalised intersections, the reported average delay is over all movements.

At the time of opening, the future AM / PM intersection operating conditions of South Street / Collector Road intersection are presented in [Table 6](#). Average delay is expressed in seconds per vehicle.

Table 6 – Existing Weekday AM / PM Intersection Operating Conditions

Intersection	Control	Morning Peak		Evening Peak	
		Av Delay	LOS	Av Delay	LOS
South St / Collector Rd	Priority	6.2	A	6.2	A

Avg Delay (sec/veh) is over all movements at signals, and for worst movement at priority and roundabouts

From **Table 6** it is noted that upon completion of the development the intersection of South Street / Collector Road would operate at a satisfactory level of service during both the AM and PM peak periods on a weekday with spare capacity.

Thus, the traffic impacts of the proposed are considered satisfactory.

5.5 Commentary on Potential Traffic Impacts

As confirmed above, the Marsden Park Industrial Precinct and surrounding development areas within the North West Growth Centre have been subject to extensive traffic modelling assessments to underpin the road infrastructure requirements of the precinct to accommodate traffic demands following full development of the precinct in the year 2036. These studies have been approved by Transport for NSW, Blacktown Council and Hills Shire Council as fit for purpose to assess the traffic impacts of potential development, including the full development of the Marsden Park Industrial Precinct.

The subject proposal is one which would result in a significant lower site traffic generation than other permissible uses within the current zoning and in turn would be less than that which would have been assumed for the site in the historical traffic studies.

Overall, the potential traffic impacts of the proposed warehouse development at No.311 South Street have been *fully* accounted for in the modelling assessment of future traffic arrangements and therefore the traffic impacts of the proposal are considered satisfactory.

6. Parking, Access and Design Compliance Assessment

6.1 Blacktown City Council Growth Centres DCP

As the site is located within a B7 zone, the Blacktown City Council Growth Centres DCP suggests a rate of 1 space per 40m² GFA. This rate mirrors the recommended parking rate (now superseded) in the RTA Guide to Traffic Generating Developments for commercial office buildings.

Whilst an office use is permissible in the current zoning, application of an office parking rate for a warehouse development is *not appropriate*. Application of this inappropriate parking rate would require the site to provide a total of **1,075 parking spaces for 315 employees** or **3.41 spaces per employee**.

Of note, the parking rate of 1 space per 40m² GFA refers to the 'unrestrained' situation where all office parking is to be provided on site. The Guide states the following:

Distinction needs to be drawn between whether the parking demand is to be met on-site (unrestrained situation) or whether car parking supply is to be used as a policy tool to restrict commuter movement by private vehicles into a commercial centre (restrained situation).

Further the parking rate of 1 per 40m² assumes a peak hour mode split for cars of 0.62, car occupancy of 1.19 and a mean employee density of 4.75 employees per 100m² gross floor area. The unrestrained figure is based on 1979 surveys and has not been updated.

Applying the employee density basis of the rate above to the development site would equate to **2,052 employees** on site whereas the site would only include **315 employees**.

Applying the vehicle occupancy rate from the RTA Guide for a commercial office development which underpinned the parking rate of 1 per 40m² of 1.19 persons per vehicle for the 315 employees of the proposed development, would equate to a parking demand of only **265 spaces**.

Overall, it is clear from the assessment above that application of a commercial / office parking rate based on surveys undertaken in 1979 is not appropriate to determine an appropriate parking provision for the warehouse development proposed. Further, the provision of 327 parking spaces would more than cater for the demands of staff parking whilst seeking to provide a balance with the recommendations of the Green Travel Plan report to promote alternatives modes of travel to / from the development.

6.2 RTA Guide to Traffic Generating Developments Warehouse Parking Rate

The RTA Guide defines a 'warehouse' development as the following:

Warehouse: *a building or place used for the storage of goods, merchandise or materials pending their sale and distribution to persons engaged in the retail trade.*

For a 'warehouse' development, the RTA Guide recommends a parking rate of **1 space per 300m² GFA**. Thus, the proposed development with a total GFA of 43,200m² would require a total of **144 parking spaces**.

Of note, the surveys of warehouse developments within the RTA Guide which underpinned the parking rate of 1 space per 300m² noted the following:

Variations on the recommended parking rate must be considered in the context of both current and potential users. While surveys might justify a lesser parking rate for a particular development, provision must be made for future users by setting aside (but not necessarily surfacing), space for car parking. The recommended rate of parking provision is in the middle range parking rate observed in the RTA's survey.

The rates vary from one space per 80m² to one space per 960m², the mean and sample standard deviation figures being 338m² and 280m² respectively based on a sample of 10 sites. A particular situation where a parking rate greater than that recommended above is warranted, would be for a development with a greater than average employment density.

The mean floor area per employee at the warehouses surveyed by the RTA was 226m² per employee.

Noting the average floor area of 226m² per employee (which included likely warehouse / office employees), the proposed development would result in **1 employee per 133m² GFA** which is some **41.17%** more than the average recorded over the surveys of 10 sites to underpin the warehouse parking rate above.

Thus, accounting for this a possible approach would be to apply a factored warehouse rate to the proposal accounting for the greater employee density of 1 employee per 133sqm GFA resulting in a parking rate of **1 space per 178sqm GFA** compared to standard 1 per 300m² for a warehouse development. This in turn around require a provision of **243 spaces** compared to the **327 spaces proposed**.

Thus, application of the warehouse parking rate from the RTA Guide factored to account for a higher employee density at the proposed development confirms the proposed 327 parking spaces would be more than adequate to accommodate the potential parking demands of the development in accordance with the RTA Guide.

6.3 Census Assessment of Potential Parking Demands

As a further assessment of potential parking demands, the census journey to work data for comparable sites was assessed to confirm the potential parking demands of the subject site based on travel behaviour.

Parking demands are typically determined by:

- Employee density/numbers

- Mode shares

Other factors include, among other things, nature of employment – part time, casual, sub-contract etc; as well as the accessibility of the sites at the time of the commute.

The Census provides information about employment at the place of work as well as information on:

- Journey to work mode
- Hours worked
- Industry and occupation.

This assessment has identified and focused on specific areas which correspond with Census destination zones (DZN²) which have identifiable warehouses and have used the Census data to identify:

- Extract number of warehouse industry employees
- Mode choice of these workers.

From aerial photos of the area in 2016 (time of the last census) the GFA of warehouse buildings can be obtained. In turn, this allows the determination of both employee density, mode share and parking demands. This assessment has been based on an assessment of the ABS TableBuilder Pro for the 2016 Census at place of work to provide the underlying information used in this analysis. Aerial photos of warehouses were obtained from Google Maps ©.

Benera Road, Prestons

This area is travel zone 3854 and is edged in red in the following figure, which is overlaid on an aerial photograph from the Census year 2016 (sourced from Google Earth Pro).

² These are referred to by ABS as state transit agency destination zones and are non-ABS Census spatial units specified by the relevant state/territory agency responsible for transport system planning and operation, such as TfNSW,

Figure 15 – Bernera Road, Prestons Travel Zone 3854



Source: Google Earth Pro – 2016

In this travel zone are a number of warehouse facilities, including ALDI's distribution centre, Mainfreight Transport, Ingham's Cold Store. From the above aerial photograph the following floorspaces were estimated for the three main complexes of warehousing related activity:

- Hume Building Products/Ingham Coldstore/Fashion Biz: 72,500 sqm
- ALDI Distribution Centre: 50,600 sqm
- Mainfreight Transport: 41,000 sqm

The approximate total floorspace of warehouse related uses is some 164,100 sqm. The site also includes a college in the south east portion of the zone, as well as some small businesses (including transport businesses) and an electricity substation.

The NSW Government's estimates of employment by industry for this travel zone encompassing the above site boundary for 2011 and 2016 are tabulated below.

Table 7 – Estimates of employment by industry for 2011 and 2016

Industry	Employment 2011	Employment 2016	Notes – potential association with facilities
Accommodation and Food Services	0	3	
Administrative and Support Services	4	16	
Agriculture, Forestry and Fishing	16	2	
Arts and Recreation Services	0	0	
Basic Chemical and Chemical Product Manufacturing	0	4	
Beverage and Tobacco Product Manufacturing	0	0	
Construction	24	74	
Education and Training	173	168	largely associated with college
Electricity, Gas, Water and Waste Services	0	65	associated with sub-station
Fabricated Metal Product Manufacturing	7	4	
Financial and Insurance Services	0	0	
Food Product Manufacturing	117	72	
Furniture and Other Manufacturing	17	0	
Health Care and Social Assistance	12	10	
Information Media and Telecommunications	0	0	
Machinery and Equipment Manufacturing	97	126	
Mining	5	0	
Non-Metallic Mineral Product Manufacturing	8	18	
Other Services	17	17	
Petroleum and Coal Product Manufacturing	0	0	
Polymer Product and Rubber Product Manufacturing	0	0	
Primary Metal and Metal Product Manufacturing	0	12	
Printing (including the Reproduction of Recorded Media)	0	0	
Professional, Scientific and Technical Services	9	99	
Public Administration and Safety	3	0	
Pulp, Paper and Converted Paper Product Manufacturing	0	0	
Rental, Hiring and Real Estate Services	0	0	
Retail Trade	202	419	ALDI DC & Inghams
Textile, Leather, Clothing and Footwear Manufacturing	7	8	
Transport Equipment Manufacturing	3	11	
Transport, Postal and Warehousing	324	558	ALDI DC, Mainfreight Transport
Wholesale Trade	28	52	
Wood Product Manufacturing	0	0	
Total	1,072	1,739	

Source: T2P2016 v1.51 Employment by Industry and Travel Zone 2011-2056, TfNSW, tabulation by HRA

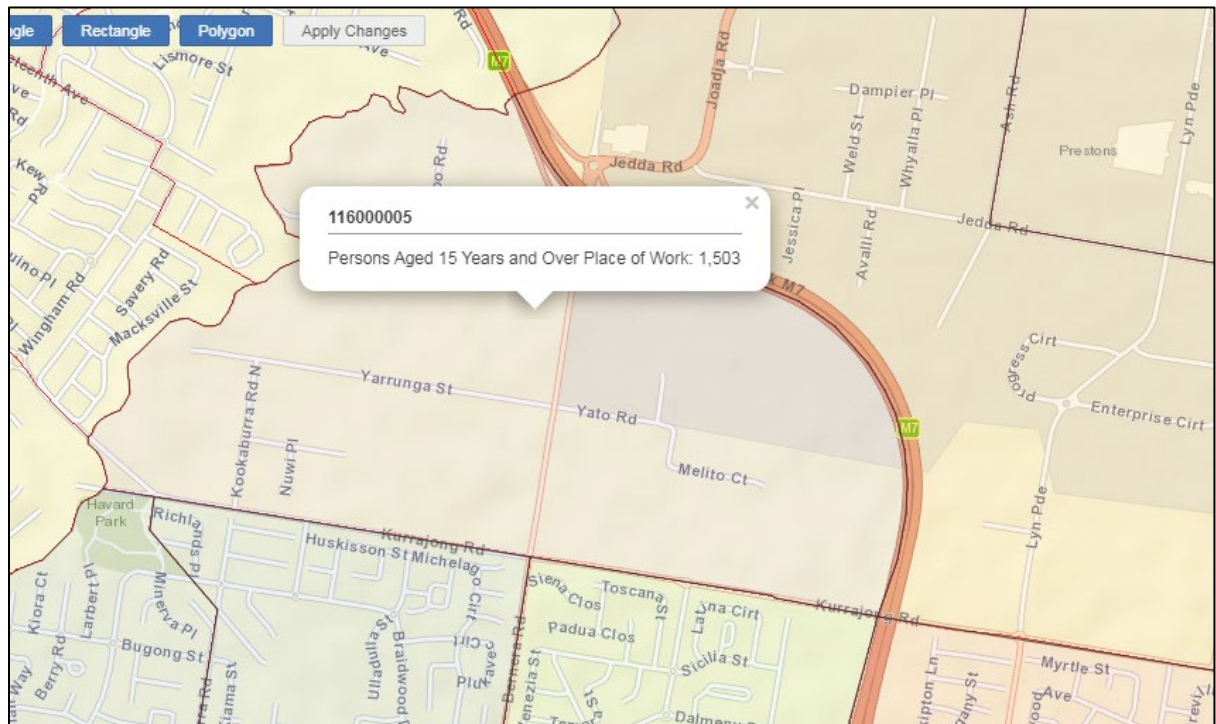
The above analysis suggests that the number of jobs associated with the three clusters of floorspace calculated was approximately 980 (Retail Trade plus Transport, Postal and Warehousing). This indicates an employee density of:

$$164,100 \text{ sqm GFA} / 980 \text{ employees} = \mathbf{167 \text{ sqm GFA /employee}}$$

Of note this compares to the employee density of the proposed development at 311 South Street which would result in 133m² GFA / employee

This travel zone coincides with a Census destination zone 116000005, which is shown on the figure below.

Figure 16 – Bernera Road, Prestons, Destination Zone 116000005



Source: ABS Tablebuilder Pro, map view– 2016

The Census indicated that there were **1,503 employed** in this area, which is comparable to the estimate produced by the State for the same area, which was prepared from the base Census data³.

The following table is from the Census data and shows the mode used for the journey to work on Census day for warehouse industry related employees in Destination Zone 116000005 and all employees in Destination Zone 116000005.

³ The state applies further information in their land use dataset processing (which start with Census data) procedures to provide a slightly more refined estimate than the Census

Table 8 – Estimates of employment by industry for 2011 and 2016

Mode	Warehouse related employees		All employees	
	#	%	#	%
Train	10	1%	16	1%
Bus	8	1%	22	2%
Tram	0	0%	0	0%
Ferry	0	0%	0	0%
Car, as driver	627	83%	1,204	83%
Car, as passenger	31	4%	69	5%
Motorbike/scooter	0	0%	0	0%
Taxi	0	0%	0	0%
Truck	28	4%	45	3%
Bicycle	0	0%	0	0%
Walked only	0	0%	10	1%
Other Mode	0	0%	0	0%
Worked at home	0	0%	0	0%
Not applicable	0	0%	0	0%
Not stated	0	0%	11	1%
Did not go to work	47	6%	79	5%
Total	751	100%	1,456	100%

The key features of the above analysis are:

- Similar mode shares for warehouse related employees and all employees in this DZN
- Around 6% of employees did not travel on Census day
- Car as driver is the mode with the highest share, at 83%
- Car as passenger has a share of 4%
- The other modes: transit, walking and bicycling account for about 2% of the warehouse-related workers.

Of note, the car mode share of 83% *mirrors* that of the mode share travel behaviour of Marsden Park recorded for the ARUP report (Section 3.1.5).

Thus, an 83% mode share to vehicle for the 315 employees would equate to a need for **262 parking spaces**.

6.4 Commentary on Parking Provision

The above assessment confirms that application of a parking rate which mirrors that of the 1979 office rate of the RTA Guide to Traffic Generating Developments is not applicable to the development subject to this application.

A comparison of both published parking rates for the use proposed and a first principles assessment of a comparable industrial precinct journey to work mode share has confirmed that the **327 parking spaces** proposed (1 per employee) would more than cater for the expected parking demands of the site.

The proposed parking provision of the development is considered satisfactory and would ensure all parking generated by the development would be catered for wholly within the site.

6.5 Bicycle Parking Provision

Bicycle parking within the development is proposed to comply with the recommendations of the Green Travel Plan report⁴ to achieve future mode share targets. That is, the following provision by proposed warehouse unit:

- 6 cycle parking spaces at Unit 1
- 4 cycle parking spaces at each of Unit 2A and Unit 2B
- 3 cycle parking spaces at each of the other units (2C, 2D and 2E)

This is a total of 23 bicycle spaces.

The bicycle parking of the proposal seeks to promote the use of alternative modes of transport to / from the site inline with the recommendations of the Green Travel Plan.

6.6 Service Vehicle Parking Provision

The Blacktown Council Growth Centres DCP does not provide any specific service vehicle parking rates for a warehouse type development.

However, as confirmed in the plans provided in **Appendix A** of this report, *all* warehouses include a minimum of three (3) roller shutter doorways which can accommodate articulated vehicles. This arrangement is considered more than appropriate to provide sufficient loading dock provision per warehouse.

6.7 Service Vehicle Access Assessment

As stated above, all service vehicle access to the site would be via the interim southern end of the eastern boundary collector road and via a service vehicle only left in / left out access driveway. The southern boundary access road would include a minimum width of 8.0m which exceeds the recommended 6.5m width of a roadway serving B Double trucks as detailed in AS2890.2.

A turning path assessment of the largest vehicle which would potentially access the site, that is a B Double passing another B Double, confirms the proposed access arrangements would allow these two (2) large vehicles to pass concurrently in *all* locations of both the access driveway and the internal access road. Further, the design ensures all vehicles servicing the site can enter and leave in a forward direction.

⁴ 311 South Street Green Travel Plan Report – High Range Analytics December 2021

All turning paths are provided in **Appendix B** of this report confirm the proposed service vehicle access driveway and internal design arrangements comply with the requirements of AS2890.2 and are considered satisfactory.

6.8 Car Park Design / Garage Design

All elements of the proposed car parking areas design and light vehicle access driveways have been reviewed for compliance with AS2890.1 and were found to be satisfactory. All parking space widths, lengths, aisle widths and ramp grades comply with AS2890.1. Overall, the car park design is considered satisfactory.



7. Conclusions

This report has reviewed the potential traffic impacts of the proposed warehouse development at the site known as 311 South Street, Marsden Park within the Marsden Park Industrial Precinct. The findings of this review are presented below:

1. The potential traffic impacts of the proposal have been *fully* accounted for in approved area wide modelling of the precinct of which underpin the road network / intersection infrastructure provision delivered through both local and state government funding mechanisms.
2. Intersections surrounding the development would continue to operate at levels of service to that which currently occurs.
3. At the time of opening the intersection of South Street / Collector Road would operate at a satisfactory level of service at the time of opening of the development in the future.
4. The proposed parking provision exceeds the expected parking demands generated by employees of the development and are considered appropriate given the nature of the development proposed.
5. The design of the service vehicle only access driveway in the eastern boundary collector road would accommodate safely the potential largest vehicle which would access the site.
6. The proposed design ensures all vehicles which wish to access the site can enter and exit in a forward direction at all times.
7. The design of the car parking areas and access arrangements complies with AS2890.1 and are considered satisfactory.

Overall, the traffic impacts of the proposal are considered acceptable.



8. Appendix A – Plans of Proposed Development



NOTES

ALL NEW CROSSOVERS IN ACCORDANCE WITH LOCAL COUNCIL REQUIREMENTS
 ALL PARKING SPACES IN ACCORDANCE WITH VICTORIAN PLANNING SCHEME
 ALL DISABLED PARKING SPACES IN ACCORDANCE WITH AUSTRALIAN STANDARD AS2890 (5.4m x 2.4m)
 SITE STORMWATER DRAINAGE IN ACCORDANCE WITH LOCAL AUTHORITY & COUNCIL REQUIREMENTS
 ALL RELATIVE LEVELS ARE SHOWN TO A.H.D. (Australian Height Datum)
 RELATIVE LEVELS SHOWN INDICATIVELY ONLY. REFER TO CIVIL DRAWINGS.

LEGEND

- INDICATES EXTENT OF HEAVY DUTY HARDSTAND TO CIVIL ENGINEERS DETAILS
- INDICATES EXTENT OF LIGHT DUTY PAVEMENT TO CIVIL ENGINEERS DETAILS
- CONCRETE PAVING WITH EXPOSED AGGREGATE FINISH OR SIMILAR
- PERMEABLE / CRUSHED ROCK FIRE TRUCK ACCESS TRACK
- AREA OF GRASS / LANDSCAPING. REFER TO LANDSCAPE ARCHITECTS DRAWINGS FOR LANDSCAPE LAYOUT AND DETAILS
- 7.9M LANDSCAPE SETBACK (5M SETBACK REQUIRED)
- LOT BOUNDARY
- DEVELOPABLE AREA BOUNDARY
- ASSET PROTECTION ZONE
- EASEMENT
- RETAINING WALL. REFER TO CIVIL DRAWINGS FOR DETAILS.
- 4.2m HIGH ACOUSTIC WALL



NO.	DATE	REVISION	BY	CHK
A	28.03.2022	ISSUED FOR APPROVAL	IO	JF

All areas indicated are indicative for design and planning purposes only and should not be used for any contractual reasons without verification by a licensed surveyor or further design development being completed.

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PROJECT:
PROPOSED WAREHOUSE DEVELOPMENT
 311 SOUTH STREET, MARSDEN PARK

TITLE:
MASTERPLAN

CLIENT:

DATE: AUGUST, 2021
 DRAWN BY: IO
 SCALE: 1:1000 @A1
 SCALE:

JOB NO:
 21259
 DRAWING NO:
 MP01
 REVISION:
 A





NOTES

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 ALL RELATIVE LEVELS ARE SHOWN TO A.H.D. (Australian Height Datum)
 RELATIVE LEVELS SHOWN INDICATIVELY ONLY. REFER TO CIVIL DRAWINGS.

LEGEND

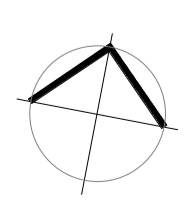
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NO.	DATE	REVISION	BY	CHK
A	28.03.2022	ISSUED FOR APPROVAL	IO	JF

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PROJECT:
PROPOSED WAREHOUSE DEVELOPMENT
 311 SOUTH STREET, MARSDEN PARK

TITLE:
**PROPOSED SITE PLAN -
 ULTIMATE ROAD**



CLIENT:
dexus

DATE: AUGUST, 2021
 DRAWN BY: IO
 SCALE: 1:1000 @A1
 SCALE:

JOB NO:	21259
DRAWING NO:	MP02
REVISION:	A



9. Appendix B –Service Vehicle Only Driveway Turning Path Analysis





NOTES

ALL NEW CROSSOVERS IN ACCORDANCE WITH LOCAL COUNCIL REQUIREMENTS
 ALL PARKING SPACES IN ACCORDANCE WITH VICTORIAN PLANNING SCHEME
 ALL DISABLED PARKING SPACES IN ACCORDANCE WITH AUSTRALIAN STANDARD AS2890 (5.4m x 2.4m)
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- LOT BOUNDARY
- DEVELOPABLE AREA BOUNDARY
- ASSET PROTECTION ZONE
- EASEMENT
- RETAINING WALL. REFER TO CIVIL DRAWINGS FOR DETAILS.
- 4.2m HIGH ACOUSTIC WALL

DEVELOPMENT ANALYSIS

BUILDING	GFA
WAREHOUSE	
UNIT 1	15,950 m ²
UNIT 2A	4,450 m ²
UNIT 2B	5,100 m ²
UNIT 2C	5,000 m ²
UNIT 2D	5,000 m ²
UNIT 2E	5,400 m ²
TOTAL	40,900 m²

OFFICE SPACE (Including Mezzanines)	
UNIT 1	390 m ²
UNIT 2A	370 m ²
UNIT 2B	470 m ²
UNIT 2C	290 m ²
UNIT 2D	290 m ²
UNIT 2E	290 m ²
TOTAL	2,100 m²
TOTAL AREA	43,050 m²

EXTERNAL AREAS (APPROX)	
CANOPIES	4,193 m ²
HARDSTAND	16,987 m ²
LIGHT DUTY	10,351 m ²
PAVING	1,494 m ²
LANDSCAPING	7,114 m ²
COMMUNAL AREA (5.5% OF TOTAL DEVELOPABLE AREA)	4,080 m ²

PARKING	
RATE REQUIRED - (Not Including 15M Loading)	
WAREHOUSE	
(1 PER 75m ² GFA <7,500m ²)	
(1 PER 200m ² GFA >7,500m ²)	
OFFICE	
(1 PER 40m ² GFA)	
BAYS REQUIRED	315
BAYS PROVIDED	327

SITE COVERAGE	
TOTAL SITE AREA	102,445 m²
TOTAL DEVELOPABLE AREA (WITHIN BLUE BOUNDARY)	73,371 m²
TOTAL BUILDING FOOTPRINT	41,480 m²

SITE COVERAGE 40.49%
 METHOD OF MEASUREMENT FOR GROSS FLOOR AREA: THE SUM OF THE FLOOR AREA OF EACH FLOOR OF A BUILDING MEASURED FROM THE INTERNAL FACE OF THE EXTERNAL WALLS. EXCLUDES STAIRS, LIFT SHAFTS, AND SERVICE SPACES.

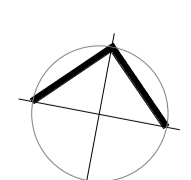
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D	13.12.2021	ISSUED FOR APPROVAL	IO	JF
E	21.03.2022	ISSUED FOR APPROVAL	IO	JF
F	28.03.2022	ISSUED FOR APPROVAL	IO	JF

All areas indicated are indicative for design and planning purposes only and should not be used for any contractual reasons without verification by a licensed surveyor or further design development being completed.

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PROJECT:
PROPOSED WAREHOUSE DEVELOPMENT
 311 SOUTH STREET, MARSDEN PARK

TITLE:
PROPOSED SITE PLAN



CLIENT: **dexus**

DATE: AUGUST, 2021
 DRAWN BY: TH
 SCALE: 1:1000 @A1
 SCALE: 1:2000 @A3

JOB NO:	21259
DRAWING NO:	DA04
REVISION:	F



SUBSTATION

PROPOSED LIMIT OF WORKS
ON SOUTH STREET

3539

COMMUNAL
AREA

24 CARSPACES

CAR ENTRY/EXIT
ALL CROSSOVER TO LOCAL
AUTHORITIES REQUIREMENT

B-double
STANDARDS 2011 (AUS)

