Marsden Park Developments

4 Darling Street

Traffic Report

Issue | 12 April 2018

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 253779

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ARUP

Contents

1 Introduction

Marsden Park Developments has commissioned Arup to carry out a traffic and transport assessment for the proposed industrial development in the Marsden Park Industrial Precinct, 4 Darling Street. This report will assess the traffic and transport impacts of the in proposed development (the site), and supports the Development Application (DA) submission.

Figure 1: Proposed industrial development, 4 Darling Street

1.1 Scope

This report will cover the following scope of works:

- Generation of people and car trips
- Any required road/intersection upgrades
- Vehicle access
- Car parking arrangements
- Pedestrian and bicycle access
- Outline construction traffic management plan

1.2 SEARs

The Department of Planning and Environment has issued Secretary's Environmental Assessment Requirements for the proposal.

- Application Number: SSD 9153
- Proposal Name: ASICS Warehouse and Distribution Centre
- Location: 4 Darling Street, Marsden Park
- Applicant: Sydney Business Park
- Date of Issue: 22 March 2018

The following details in Table 1 respond to the requirements raised in the SEARs report.

Table 1: Secretary's Environmental Assessment Requirements and response

SEARs requirements	Addressed
A quantitative Traffic Impact Assessment prepared in accordance with the relevant Council, Austroads and Roads and Maritime Services guidelines using current traffic counts and cumulative traffic from surrounding existing and approved development and the proposed development.	This report details a transport and accessibility impact assessment of the proposed development
Details of all daily and peak traffic and transport movements likely to be generated by the development during construction and indicative operation (vehicle type, public transport, pedestrian and bicycle trips).	Discussed in Section 4
An assessment of impacts to the safety, capacity and function of the surrounding road network and key intersections.	Discussed in Section 4
Details of the largest vehicle anticipated to access and move within the site, including swept path analysis.	Discussed in Section 4.4
Details of the likely arrival and departure times for vehicles for all components of the proposed development.	Discussed in Section 4.4
Details and plans of the internal road network, loading dock servicing and provisions and on-site parking provision in accordance with the relevant Australian Standards.	Discussed in Sections 4.2 and 4.3
Details of any necessary road upgrades, new roads or access points required for the proposed development.	Section 4.5

1.3 Background

The vision for the Marsden Park Industrial Precinct is to create an attractive employment precinct that provides for a diverse range of job opportunities to support the growing residential areas in Sydney's North West. The precinct will be characterised by a mix of employment generating uses such as general and light industrial, business parks, and commercial uses. It will also consist of some smaller medium and low density residential areas near the future Marsden Park Town Centre to the north.

Industrial land will form the majority of the precinct. It is intended to support a range of light and general industrial uses from large floor-plate warehousing and storage facilities which capitalise on the precinct's location near Richmond Road, to smaller factory unit style developments for more intensive trade based activities.

Industrial uses are to operate to best practice industry standards and not impose any adverse impacts on the nearby residential lands. Buildings are to be appropriately designed to address the street and other public domain areas, and all street frontages will contain quality landscaping that establishes a high standard of character and design.

The precinct will accommodate 6-7storey buildings set in a campus environment. This area is envisaged to be vibrant and pedestrian friendly, focused along a main street with key active frontages along South Street. The business parks are to complement Marsden Park Town Centre by providing a commercial focus of high value employment within short walking distance of the retail activity provided in the Town Centre.

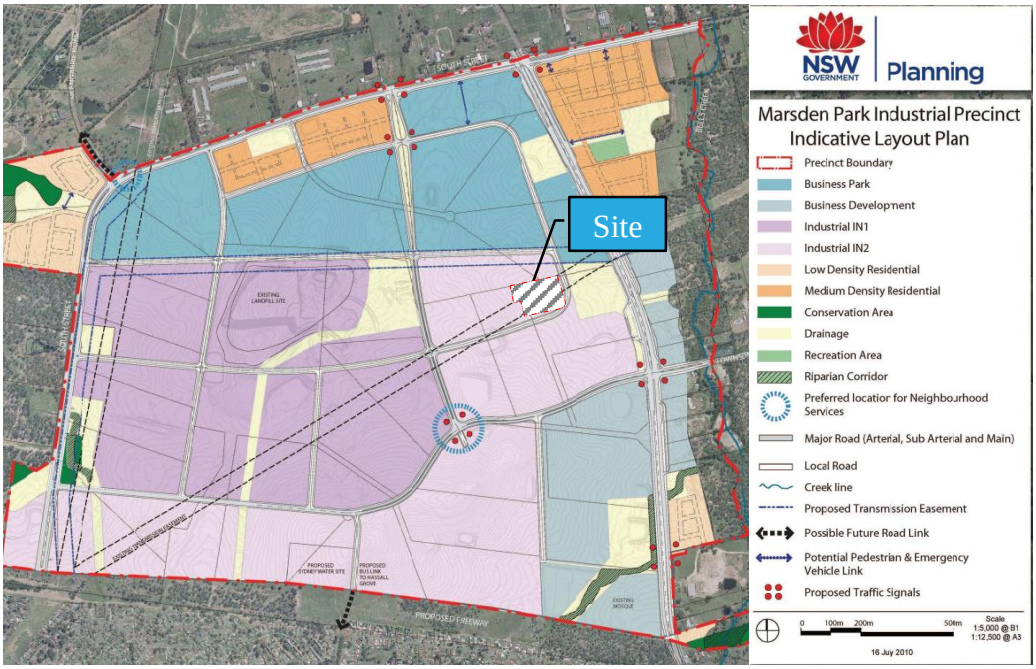


Figure 2: Site location

1.3.1 Stage 1 Transport Impact Assessment

A transport impact assessment master plan has been developed for the Stage 1 phase in 2010, by AECOM. The report was submitted to Blacktown City Council as documentation for the Statement of Environmental Effects for Stage 1 of the Marsden Park Employment Area (Lot 1 and Townson Road intersection).

1.3.2 Stage 2 Transport Impact Assessment

The Stage 2 report builds on the work previously undertaken in Stage 1. It was prepared to determine the internal intersection layouts required to support development for a 10 year horizon (2021), and to support full development of the Marsden Park Industrial Precinct (2036).

The report carried out traffic modelling for the interim 2021 and final 2036 intersection layout requirements for the internal road network to perform satisfactorily.

The report stated that the provision of South Street and Townson Road intersections along Richmond Road would have insufficient capacity for the demand forecasted to access the Marsden Park Industrial Precinct by 2036.

The report identified the need to provide additional accesses to Richmond Road between Bells Creek and South Street. It recommended a new central collector road and intersection along Richmond Road be built, now known as Hawthorne Road.

1.3.3 Stage 2b Transport Impact Assessment

The Stage 2b conducted SIDRA traffic modelling for the new Richmond Road / Hawthorne Road intersection. The model indicated a level of service C for 2036.

Figure 1: Proposed intersections along Richmond Road, Marsden Park.

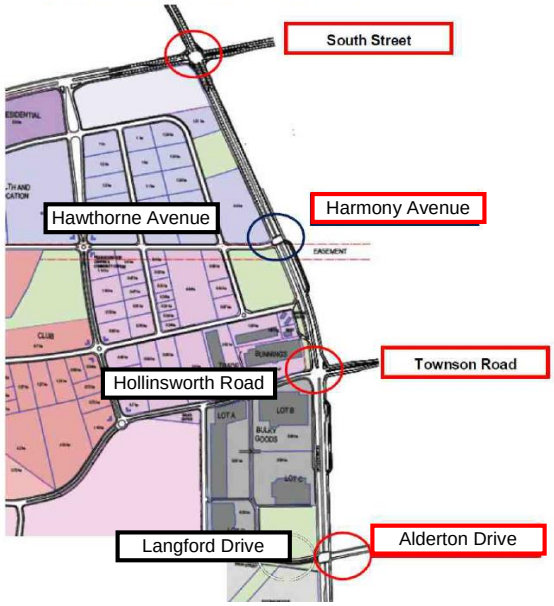


Figure 3: Eastern entry points

1.3.4 Report findings

Traffic modelling has gone through an iterative process in order to accommodate the forecast 2021 interim and 2036 final growth numbers. The intersections are predicted to operate efficiently according the AECOM reports with the results summarised in Table 2.

Table 2: Summary of intersection performances

No.	Intersection Name	Level of service and control type	
		2021	2036
1	Main North South Road / Central Collector	A/A Roundabout	A/A Roundabout
2	Main North South Road / Eastern	A/A Roundabout	A/A Roundabout
3	Townson Road / Southern Collector	B/B Priority Controlled	B/B **Signalised**
4	Townson Road / Main North - South Road	B/B Priority Controlled	A/B **Signalised**
5	Richmond Road / Hawthorne Road	N /A. New intersection added as it was later in the project it was modelled for 2036	C/C Signalised

Figure 4: Intersection locations

2 Existing Conditions

2.1 Location

The site is located in Marsden Park Industrial Zone in the Blacktown City Council LGA. The relative location of Marsden Park is shown in Figure 5. The 4 Darling Street site illustrated in Figure 6.

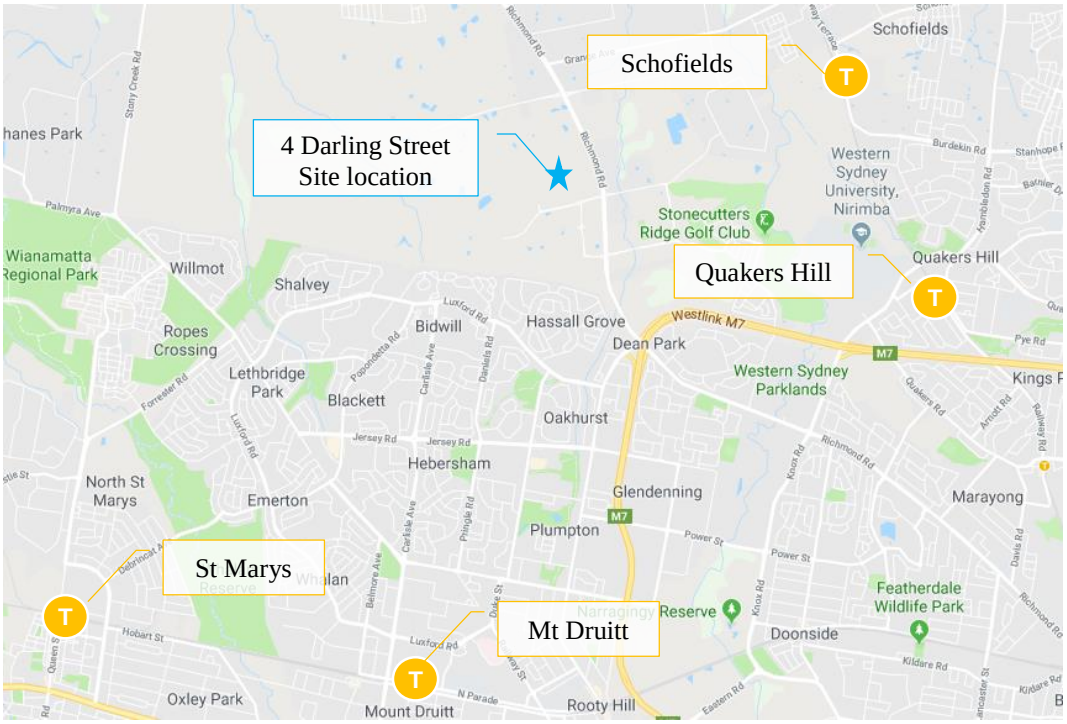


Figure 5: Marsden Park, 4 Darling Street location

Figure 6: Proposed industrial development, 4 Darling Street

2.2 Public transport

Bus 757 provides access from the site to Riverstone Station and to Mt Druitt Station while bus 751 provides access to Blacktown Station. Both services typically operate with one bus every hour. The bus stops on Hollinsworth Avenue and on Richmond Road are within easy walking distance of the site.

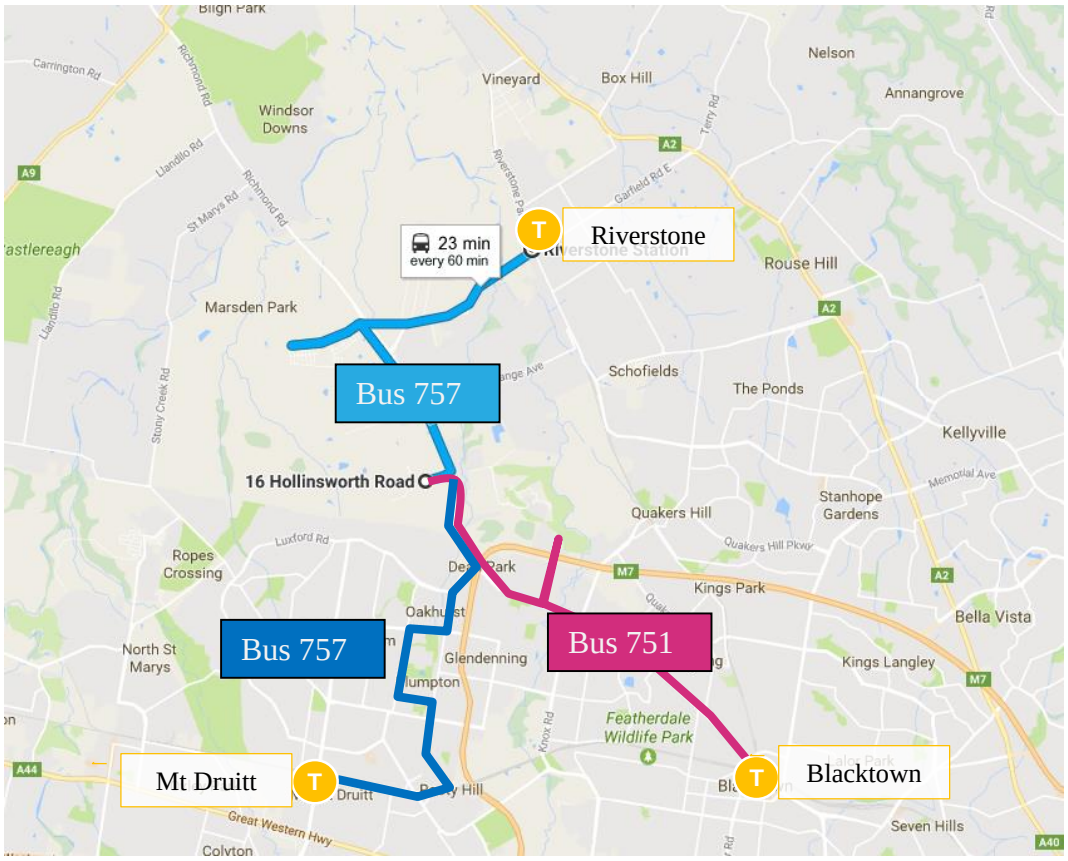


Table 3: Existing public transport accessibility to site

2.3 Road network

The site is accessed from Richmond Road which is classified as a state road. Rooty Hill Road North and the M7 meet at an intersection with Richmond Road, south of the site. Other lower order roads around the site are unclassified.

The internal road network consisting of Hawthorne Avenue and Hollinsworth Road, both connecting to Richmond Road as signalised intersections, connect through to Harris Avenue. Internal intersections are priority controlled by roundabouts and give-way intersections.

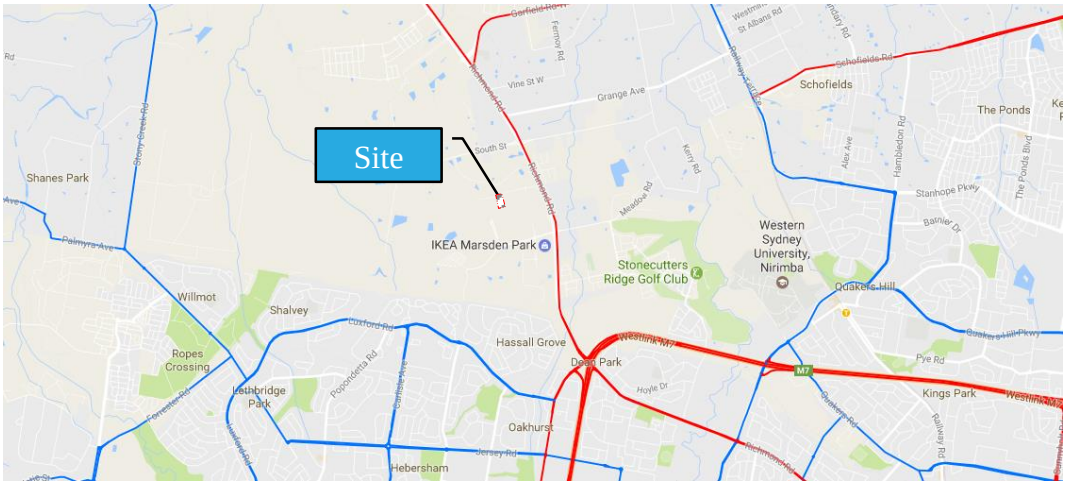


Figure 7: Road classification

2.4 Pedestrians and cyclists

Pedestrian access to the site is good with a comprehensive network of footpaths and signalised crossing locations. Richmond Road has a shared pedestrian and bicycle path providing access to the site shown in Figure 8.

Figure 8: Pedestrian and bicycle shared path along Richmond Road

3 Proposed Development

The proposed development predominantly consists of a warehouse, a two storey office and a show room / retail space. The breakdown of the floor area for each component is shown in Table 5.

Table 4: Breakdown of the proposed development

Site breakdown	Area
Warehouse	24,965 m^2
Office, 2 storey including dock office	4,000 m^2
Show room / retail	1,500 m^2
Total building area	**30,500 m^2**
Sports field	4,500 m^2
Total site area	56,400 m^2

3.1 Proposed site access

Private vehicles

Car parking designated for staff and occasional visitors, is located at the south eastern area of the site along Darling Street. The car park has two access points shown in Figure 9, both allowing entries and exits along Darling Street. Both left and right turn manoeuvres into and out of the site will be permitted. The two driveways are well separated along Darling Street.

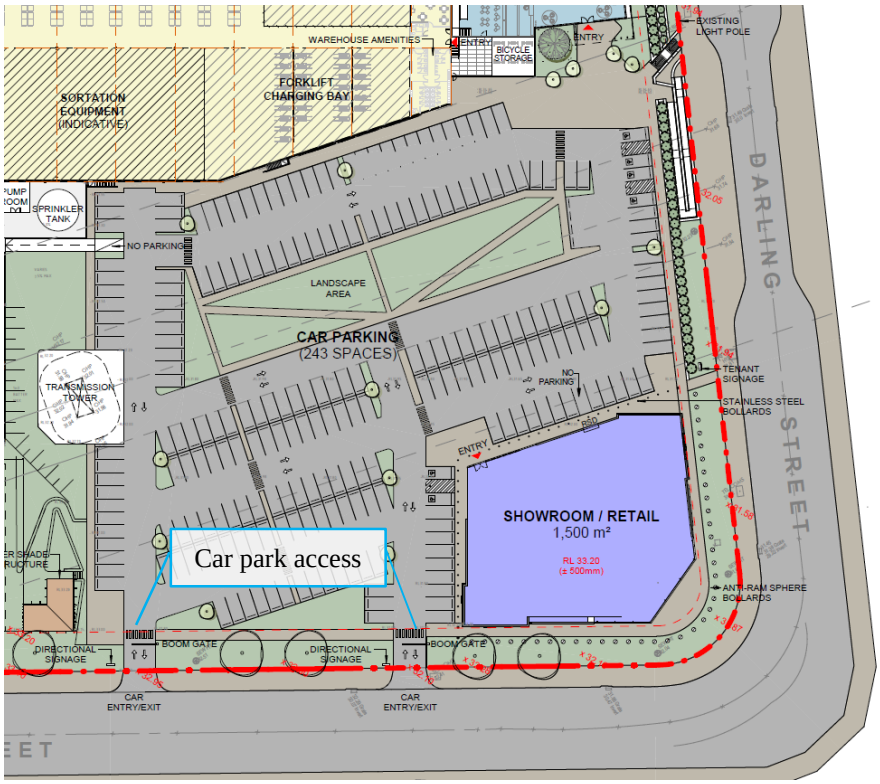


Figure 9: 4 Darling Street car park

Loading vehicles

Loading vehicles are proposed to access the site off Darling Street, with the entry located 250 metres west of the car park entry. This provides a sufficient safe sight distance from the car park entrance. The loading vehicle access would be accessible from both directions as shown in Figure 10.

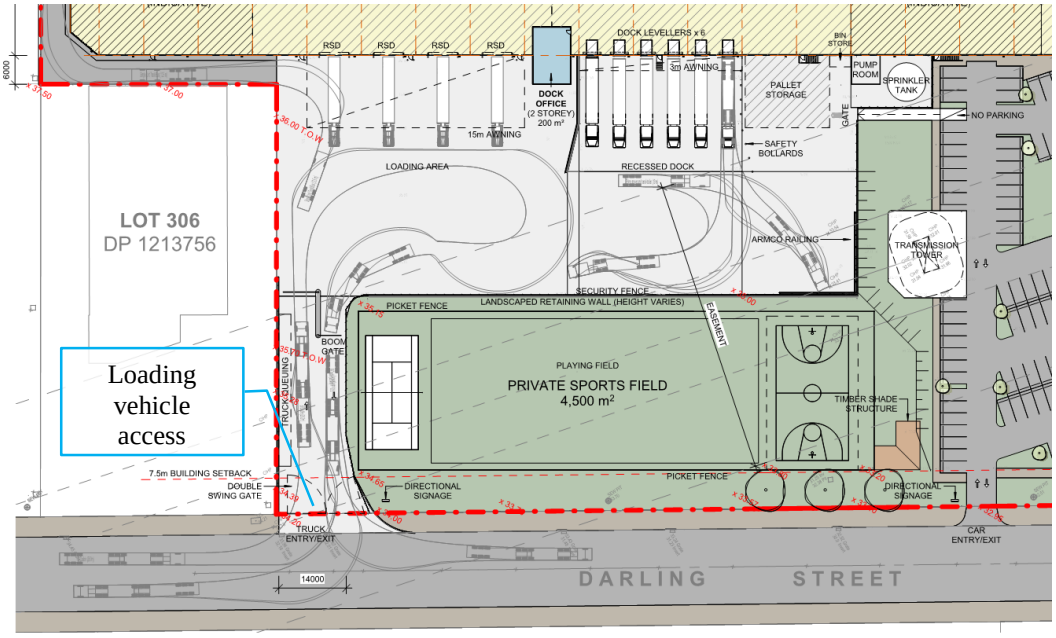


Figure 10: Loading vehicle access

Emergency vehicles

Emergency vehicles will have access from both the eastern and southern side of the site, shown schematically below.

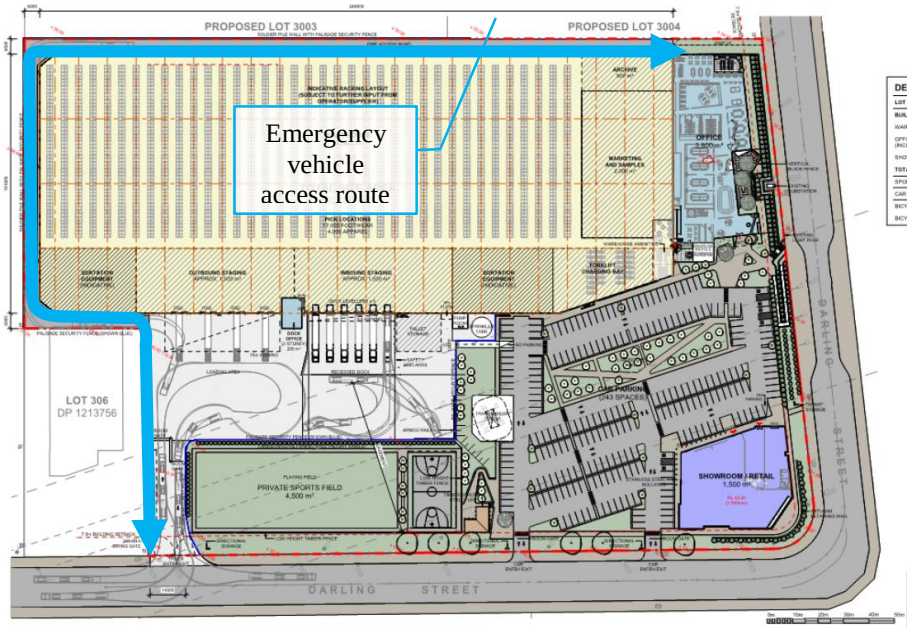


Figure 11: Emergency vehicle access

4 Transport and Parking Assessment

The Blacktown City Council Growth Centre Precincts Development Control Plan (DCP) was adopted by the Deputy Director General Strategies and Land Release (or delegate) of the Department of Planning on 14 May 2010 and came into force on 19 May 2010. Marsden Park Industrial Precinct applies to this DCP.

4.1 Parking guidlines

The parking rates recommended by the DCP is shown in Table 5.

Table 5:Parking rates Blacktown City Council Growth Centre Precincts DCP

Zone	Car Parking Requirements	Bicycle Parking Requirements
IN2 (Light Industrial) IN1 (General Industrial)	Buildings 7,500sqm or less – 1 space per 75sq m GFA	Employees: 1 bicycle locker or other suitable form of secure bicycle accommodation is to be provided per 200m^2 GFA
	Buildings greater than 7500sq.m – 1 space per 200sq.m GFA only for the area in excess of 7500sq.m where there is a specific end user which would not demand a higher rate and where employee parking is adequately catered for. 1 space per 40sq.m GFA of Office Component	
B7 (Business Park)	1 space per 40sq.m GFA	
B5 (Bulky Goods Retailing)	1 space per 45sq.m GFA	

The Blacktown Development Control Plan 2015 also provides parking guidelines for bulky goods premises. The rates are shown in Table 6

Table 6: Parking rates Blacktown DCP 2015

Category	Car Parking Requirements	Bicycle Parking Requirements
Bulky goods premises	1 space per 45sq.m GFA	No specified number

The retail component of the development has a mixed function of showcasing Asics products and providing sales at the warehouse location. The retail area will therefore not be an intensive retail fitout which would be found in a typical shopping centre location. As such we have adopted the bulky goods retail parking rate to apply for weekday retail activity.

4.2 Parking Assessment

4.2.1 DCP guideline provision

Based on the DCP guidelines, the site should provide a minimum of 321 parking spaces, with the breakdown shown in Table 7.

Table 7: DCP guideline requirements

Use	Area	DCP Rate	Car parking required
Warehouse	Initial 7,500m^2	1 space per 75m^2	100
Warehouse	Remaining 17,465m^2	1 space per 200m^2	87
Office	4,000m^2	1 space per 40m^2	100
Retail	1,500m^2	1 space per 45m^2	33
Total DCP requirement			**321**

4.2.2 RMS guideline provision

Based on the RMS Guide to Traffic Generating Developments for a warehouse facility, the site should provide 217 parking spaces, with the breakdown shown in Table 8. The bulky goods retail rate (Blacktown DCP) has been applied here as the RMS do not specify a rate.

Table 8: RMS guideline requirements

Use	Area	DCP Rate	Car parking required
Warehouse	24,965m^2	1 space per 300m^2	83.2
Office	4,000m^2	1 space per 40m^2	100
Retail	1,500m^2	1 space per 45m^2	33.3
Total DCP requirement			**~217**

4.2.3 Actual provision

The DCP guidelines provided are based on the assumption that the size of each component of a mixed use building is directly proportional to the number of employees, and hence car spaces. These guidelines are useful when the number of employees within a future development is unknown, and as such a best guess for the number of parking spaces required can be provided using the guidelines.

The site will be a new office, warehouse and retail space for Asics. A majority of the 120 current staff are anticipated to migrate to the new site. It is anticipated that there will be an increase of no more than 65 staff within the new site.

Asics would therefore have no more than 185 staff, at any one time, with the following assignments:

- 65 warehouse staff (of which a large proportion would be shift workers)
- 100 office staff
- 20 retail staff

Assuming all 185 staff drive (highly conservative), this number is significantly smaller than the DCP guidelines of 321 car spaces required.

Based on conservative estimates, the site will provide a total of 243 car spaces, with the breakdown shown in Table 9. This number is consistent with the RMS guideline rate and considered to be sufficient based on the fact that:

- Not all staff will drive to work, for example some might take public transport or carpool. The assumption of 1 space per staff is highly conservative.
- Shift workers arrive at different times and hence would not need one space. The assumptions however still consider a conservative estimate of 1 space per staff.
- The calculations do not take into account that warehouse and office workers do not work on weekends, however weekends would see an increase in customer numbers. Conversely, the site would also have more workers and fewer customers during the weekends. The calculations are therefore conservative.

Table 9: Car parking provided by site

Use	Measure	Rate	Car parking required	Car parking provided
Warehouse	65 staff	1 space per staff	65	65
Office	100 staff	1 space per staff	100	100
Retail	20 staff	1 space per staff	20	20
Retail (customers)	1,500m^2	1 space per 45m^2	33	58
Total DCP requirement			**218**	**243**

Subject to monitoring, there is potential to supply additional on-site parking in the landscape area or on sports field as shown in

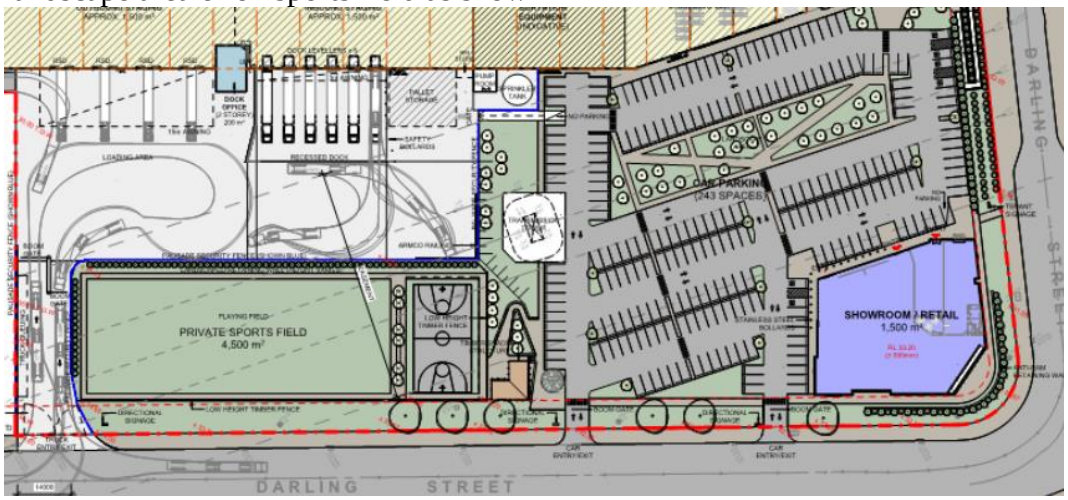


Figure 12. These areas could also be used should a future tenant of the site require additional care parking to suit their site use.

Based on a measure of these areas, an additional 150 car parking spaces can be provided if required for other future use.

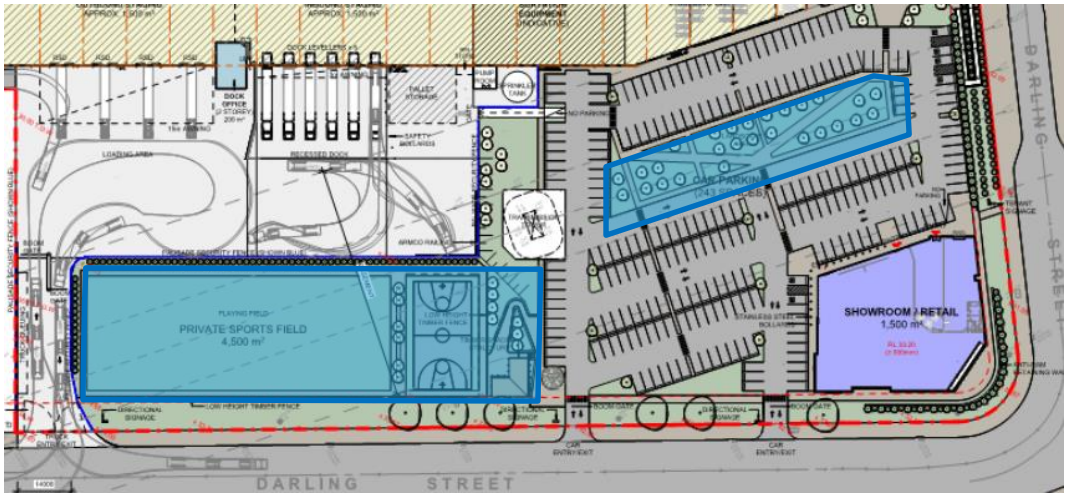


Figure 12: Potential to provide additional parking on-site

4.2.4 Bicycle parking

A total of 65 bicycle parking spaces are required by the DCP. However, with 20% of the total staff adopting a shift work schedule, 50 bicycle parking spaces will be provided to better allocate resources.

4.3 Access

Sight distance

The driveway access to the two car parks and the loading dock access are separated by over 250m. They have been designed to comply with the Austroads Guide to Road Design – Part 4A, Equation 2, which requires 70m of Safe Intersection Sight Distance (SISD).

No obstructions should be placed along Darling Street which might obstruct sight triangles for vehicles accessing the site.

Loading

Loading provision has been designed for 19 metre Articulated Vehicles (AV) and 26m B-Double trucks. Entry will be via the Darling Street driveway to be designed in accordance with AS2890.2 for articulated vehicle access, illustrated in

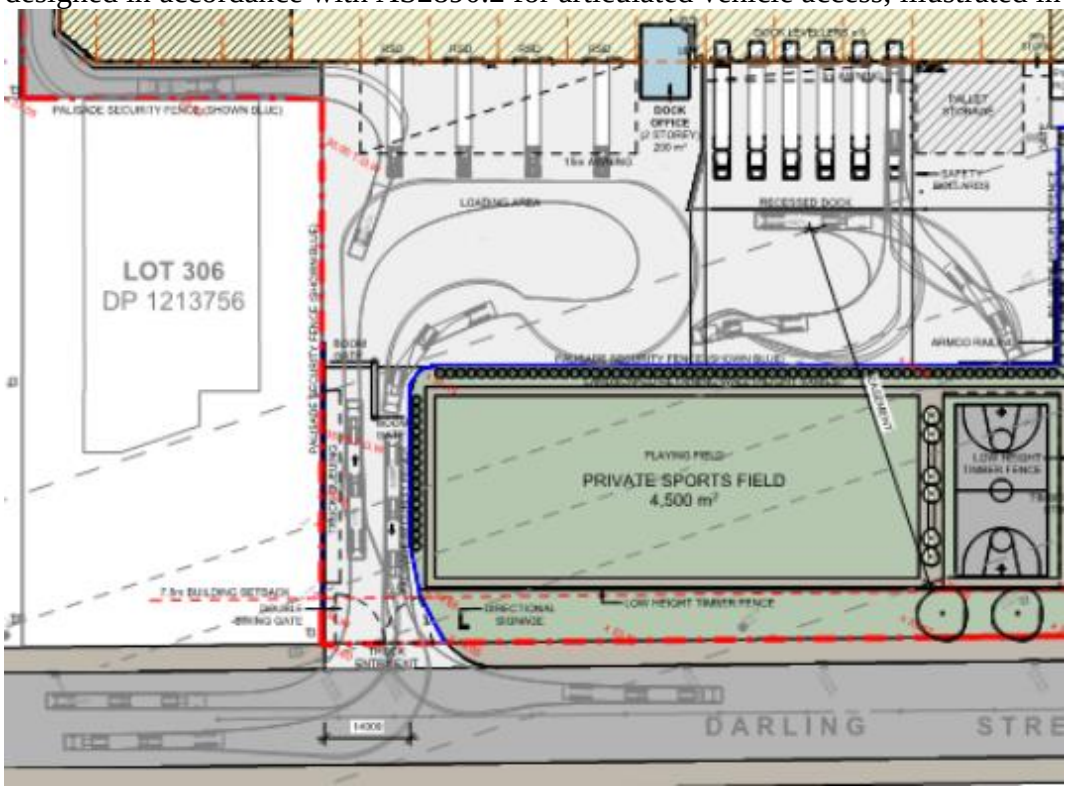


Figure 13.

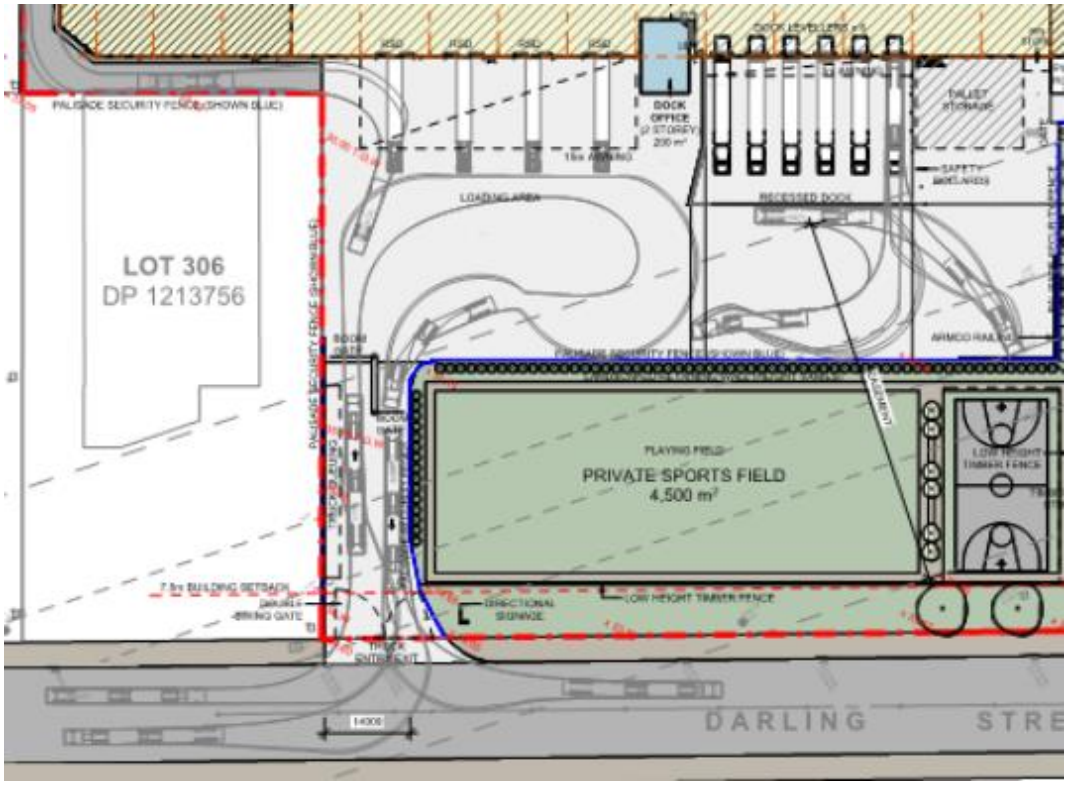


Figure 13: Loading dock 19m AV and 26m B-Double swept paths

The trucks will reverse into the on grade loading docks and will exit in a forward manoeuvre. B-Double vehicles will execute a u-turn and load from the apron thereby requiring on reversing movements. Detailed drawings can be found in Appendix A.

Trucks will access the site from Richmond Road, the designated PBS route, utilising the Hawthorne Avenue intersection via Darling Drive. The estate roads have been designed to accommodate these larger vehicles and Sydney Business Park is progressing the National Heavy Vehicle Registration of the estate roads.

4.4 Traffic generation

Traffic generated from the Sydney Business Park (SBP) within the Marsden Park Industrial Precinct was based on the land use assumptions identified in AECOM's Sydney Business Park – Road Network Staging Modelling Report (June 2014). The SBP ultimate development form is assumed in 2036.

Traffic generated by the site is based on the RMS Technical Direction: Guide to Traffic Generating Developments – Updated Surveys (May 2013), the generation of traffic from "business parks" and "industrial estates"

The proposed yield for this site is consistent with the FSR and DCP controls for the site and the permitted land use. On this basis the site will generate the following trips during the peak hours, shown in Table 10.

Table 10: Peak hour traffic generation from site

Peak	Area	Trip rate (GFA)	Site	Marsden Park total[1]
AM	30,500 m^2 (GFA)	0.52 trips / 100m^2	158 trips / hour	4,021 trips / hour
PM		0.56 trips / 100m^2	170 trips / hour	4,487 trips / hour
Weekend		0.35 trips / 100m^2	106 trips / hour	5,227 trips / hour

The site contains 6 inbound docks and 4 outbound docks for the warehouse. On the basis of a 30 minute frequency of use for each dock, the maximum number of truck movements that could be expected in one hour is 20 trucks/hour. The remainder of the movements are by car generated by staff or visitors.

The table also shows the number of trips generated by the entire Marsden Park area. In relation to the entire Marsden Park area, the site is expected to generate a minimal number of trips.

It should be noted that the Marsden Park generated traffic assumes multi-trip discount rates adopted by AECOM's 10 July 2014 report, Quarry Road Intersection Development Application. (Note Quarry Road was the previous name for the Hawthorne Avenue).

4.5 Traffic impacts

Traffic modelling has been undertaken through an iterative process in order to determine the road improvements needed to accommodate the forecast 2021 interim and 2036 final growth numbers. The intersections are predicted to operate efficiently according the AECOM reports with the results summarised in Table 2, in section 1.3.

The forecast traffic generation for the site is consistent with the AECOM modelling inputs and hence no negative impacts are expected on the Richmond Road intersections. The site will have minimal impacts on the surrounding road network performance, which is anticipated to perform efficiently in the 2021 interim and 2036 final built form.

4.6 Public transport and pedestrian cycle network

The DCP has the objective of encouraging the use of public transport through the provision of integrated bus routes, pedestrian and cycle routes, improving accessibility to the site.

The general schematic of the bus routes and stops planned are shown in Figure 14, with a potential to connect the southern residential precinct in the south. This is subject to discussion with bus operators and Blacktown City Council.

[1] AECOM - Quarry Road Intersection Development Application, 10 July 2014

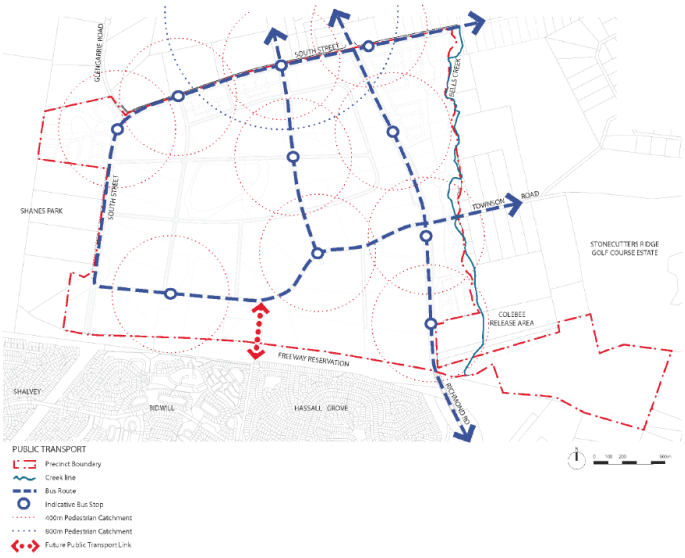


Figure 14: Public transport access, Marsden Park Industrial Precinct, Schedule 3 DCP

Pedestrian and cycle plans for Marsden Park are shown in Figure 15. Richmond Road forms the main pedestrian and bicycle access spine throughout the industrial precinct.

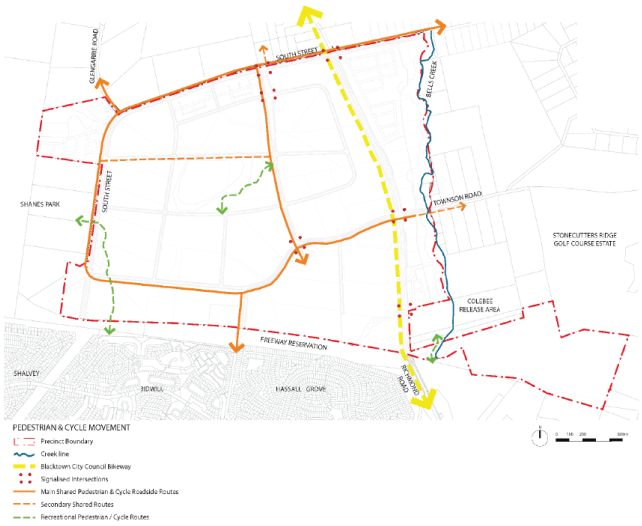


Figure 15: Pedestrian and cycle routes, Marsden Park Industrial Precinct, Schedule 3 DCP

5 Outline Construction Traffic Management Plan (CTMP)

The following proposed traffic management principles would be adopted during the construction period:

- Disruption to all road users during the construction period would be kept to a minimum.
- Traffic control would need to be provided to manage and regulate traffic movements during construction.
- Construction and delivery vehicles entering or leaving the site compound and/or stockpile sites would use arterial roads. These movements would be restricted to non-peak traffic periods.
- In most cases property access would be maintained throughout the construction period with suitable alternative access arrangements provided otherwise.
- Clear signage and alternate pedestrian routes should be organised if footpaths are affected.
- It is recommended that a detailed CTMP is developed as part of the detailed design stage.

5.1 Proposed Working Hours

Depending on the construction stage, the workforce which includes both construction and design personnel, will vary. Construction would be undertaken during standard working hours which are assumed to be as follows:

- Monday to Friday: between 7am-6pm.
- Saturday: between 8am-1pm.
- Sunday and public holidays: no work.

In some cases, it may be necessary to undertake night works to minimise disruption to traffic. Further assessments of these requirements would be undertaken once the detailed design stage is undertaken and the requirements are known. All night works would be undertaken in accordance with the Roads and Maritime Services Environmental Noise Management Manual (RTA 2001): Practice Note vii – Road works outside normal working hours, as well as the Office of Environment and Heritage Interim Construction Noise Guideline (DECC 2009).

Prior notice would be given to the community if any works are planned to be undertaken outside normal construction hours.

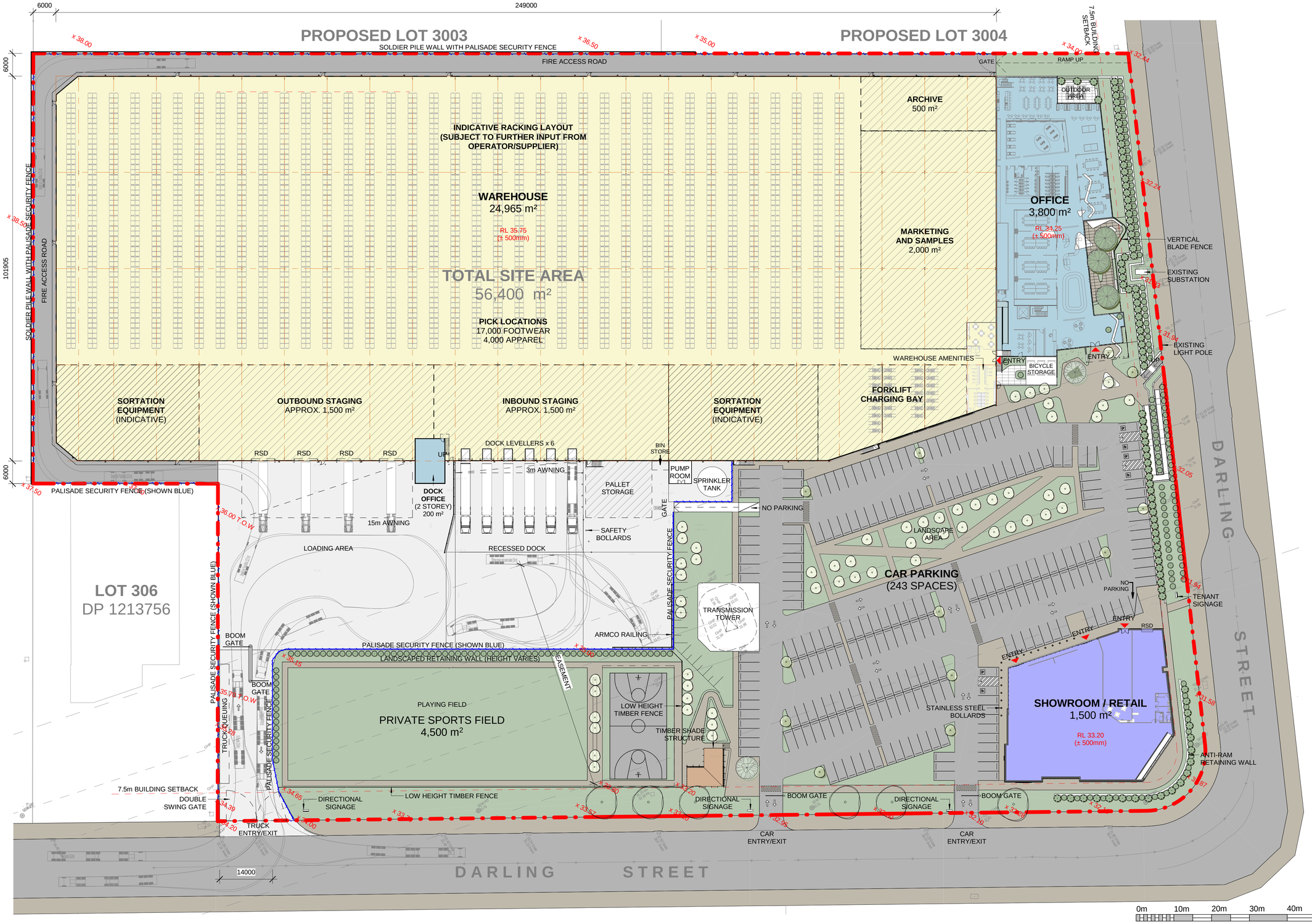
6 Conclusion

A traffic and transport assessment for the proposed industrial development in the Marsden Park Industrial Precinct, 4 Darling Street has been prepared. The report assesses the traffic and transport impacts of the in proposed development (the site), and supports the Development Application (DA) submission.

- The site will consist of a 24,965m^2 warehouse, 1,500m^2 showroom/retail space and a 4,000m^2 office.
- Access, internal circulation and parking arrangements have been designed in accordance with relevant standards including AS 2890.1 and AS 2890.2.
- Prior traffic and transport reports have been reviewed. Traffic modelling has been undertaken through an iterative process in order to determine the road improvements needed to accommodate the forecast 2021 interim and 2036 final growth numbers. The intersections are predicted to operate efficiently according the AECOM reports.
- Bus 757 provides access from the site to Riverstone Station and Mt Druitt Station, while bus 751 provides access to Blacktown.
- The site will provide 243 car spaces and 50 bicycle spaces which will adequately accommodate the requirement of Asics and its customers.
- Traffic generated by the site is expected to be minimal and consistent with traffic generation assumptions for the site in the wider estate traffic modelling with a maximum of 170 vehicle trips per hour expected during the PM peak hour
- The site is consistent with the original traffic modelling forecasts and will have minimal impacts on the surrounding road network performance, which is anticipated to perform efficiently in the 2021 interim and 2036 final built form.
- Part of the 2036 final built form of Marsden Park Industrial Precinct includes the signalisation of intersections on Hollinsworth Road, which will accommodate anticipated traffic growth efficiently.
- The Marsden Park Industrial Precinct DCP has the objective of encouraging the use of public transport through the provision of integrated bus routes, pedestrian and cycle routes, improving accessibility to the site which have been accommodated.

Appendix A

Swept Paths



DEVELOPMENT TABLE

LOT SITE AREA (APPROX.)	**56,400 m²**
BUILDING AREAS (GFA)	
WAREHOUSE	24,965m²
OFFICE - 2 STOREY (INCLUDING DOCK OFFICE)	4,000m²
SHOWROOM / RETAIL	1,500m²
TOTAL BUILDING AREA	**30,465m²**
SPORTS FIELD	APPROX. 4,500m²
CAR PARKING PROVIDED	243 SPACES
BICYCLE PARKING REQUIRED	65
BICYCLE PARKING PROVIDED	51

0m 10m 20m 30m 40m 50m

SCALE 1:500 @ A1

NOTES:

1. ALL LEVELS ±500mm
2. ALL LEVELS AND EXTENTS ARE INDICATIVE & SHOULD BE READ IN CONJUNCTION WITH CIVIL ENG. DWGS FOR FINAL LEVELS OF ALL EARTH WORKS AND EXCAVATION.
3. ALL LANDSCAPING TO LANDSCAPE ARCHITECT'S DETAILS.
4. INTERIOR LAYOUT SUBJECT TO FURTHER DETAIL DESIGN DEVELOPMENT.

Notes

This drawing and design is subject to Reid Campbell (NSW) Pty Ltd copyright and may not be reproduced without prior written consent.
Contractor to verify all dimensions on site before commencing work.
Report all discrepancies to project manager prior to construction.
Figured dimensions to be taken in preference to scaled drawings.
All work is to conform to relevant Australian Standards and other Codes as applicable, together with other Authorities' requirements and regulations.

Issue	Description	Date	Ver	Auth
B	PRELIMINARY PLANS	29.01.18		
C	SITE PLAN	30.01.18		
D	FOR INFORMATION	02.02.18		
E	FOR INFORMATION	06.02.18		
F	FOR INFORMATION	21.02.18		
G	SITE PLAN TO LANDSCAPE ARCHITECT	27.02.18		
H	FOR INFORMATION	28.02.18		
I	SSD SET	05.03.18		
J	SSD SET	07.03.18		
K	FOR INFORMATION	07.03.18		
L	FINAL SSD SET	22.03.18		
M	RETAIL DESIGN CHANGES	26.03.18		
N	REVISED PLAYING FIELD	05.04.18		

North Point

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STATE SIGNIFICANT DEVELOPMENT

NOT FOR CONSTRUCTION

Client: sydney business park

Managing Consultant

Project: **PROPOSED INDUSTRIAL DEVELOPMENT**
4 DARLING ST, SYDNEY BUSINESS PARK, MARSDEN PARK

Drawing: **SITE PLAN**

Drawn	Checked	Print Date	Scale @ A1
BF	SK	5/04/2018 9:12:05 AM	As indicated

Drawing Number: 118101_A100 Issue: N

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