TRANSPORT AND TRAFFIC PLANNING ASSOCIATES
Established 1994

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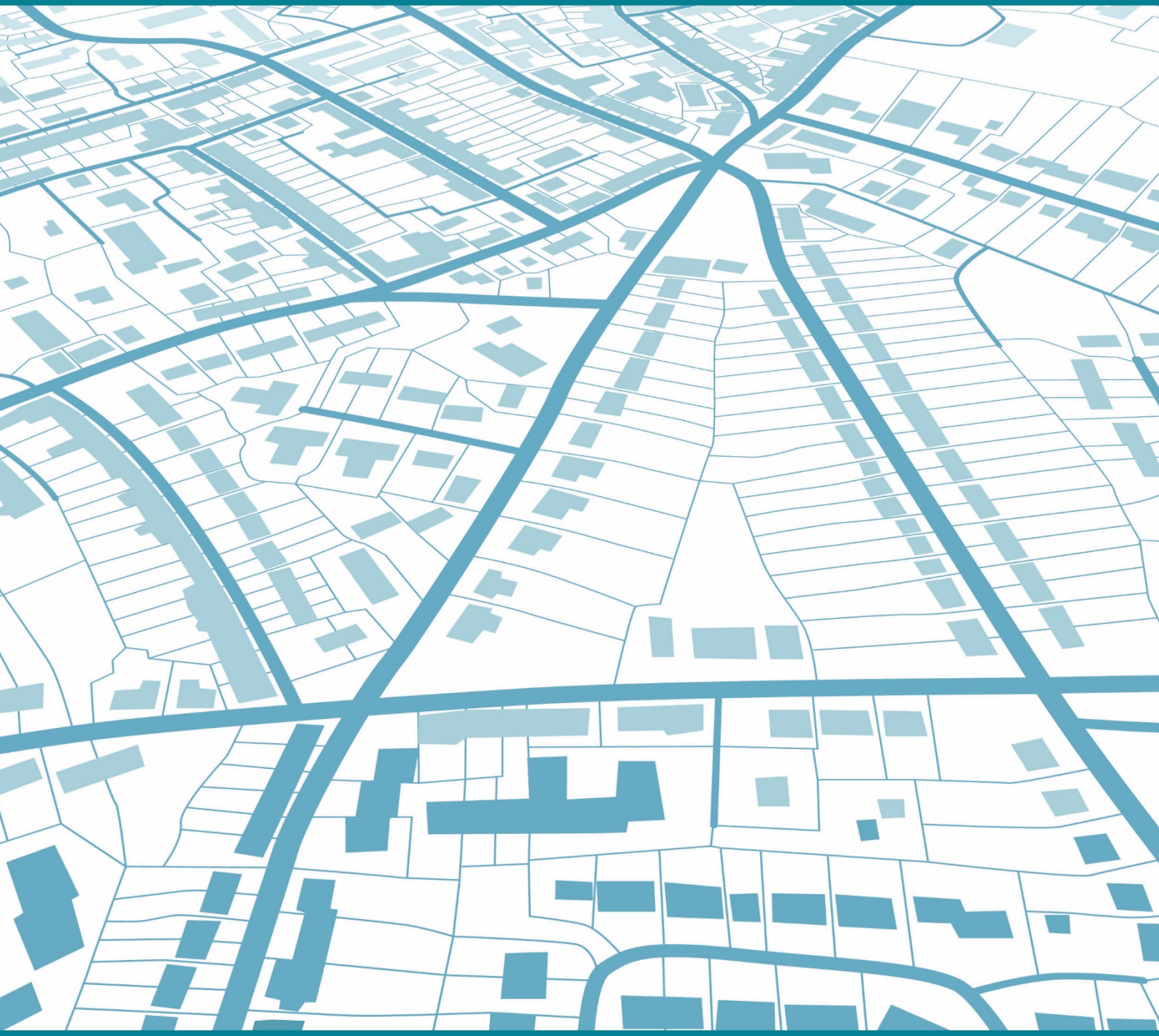

ESR

Proposed Industrial Development
Bringelly Road Business Hub

Traffic and Parking Impact Assessment

Ref: 21421
Date: May 2022
Issue: D

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1 Introduction

Consent for a staged Development Application (SSD 6324) was approved by the Minister for Planning and Environment for a Concept Plan for Bringelly Road Business Hub (BRBH) as part of the Western Sydney Parklands landholding on Bringelly Road at Leppington.

This Traffic Impact Assessment has been prepared in respect to a proposed industrial warehouse with associated administrative facility on Lot 1 in the BRBH (Figure 1).

Figure 1 Location

The proposed development scheme will involve:

Warehouse	4,470m^2 GFA
Ancillary administrative office	1,000m^2 GFA
Car park	41 spaces

The report has regard to the SSD Consent which specifies the following traffic and access elements for the site:

- *B7: Future development applications shall be accompanied by a detailed assessment of the traffic, and transport impacts on the surrounding road network and intersection capacity and shall detail provisions demonstrating that sufficient loading/unloading, access and car parking has been provided having regard to the RMS' Guide to Traffic Generating Developments, and details to promote non-car travel modes. The traffic and transport impact assessment shall also have specific regard to the scope and timing of road infrastructure works in the surrounding road network.*
- *B8: To ensure that potential conflicts between heavy vehicles and light vehicles are minimised, future development applications for large format retail development shall include details demonstrating satisfactory arrangements have been made to separate heavy and light vehicle movements via a truck service lane or the like.*
- *B9: To ensure that sustainable transport modes are supported, all future development applications for new built form shall include a sustainable travel plan and details that pedestrian and cyclist facilities have been incorporated into the proposed development.*
- *B10: Future development applications must provide car parking at the following rates:*

Land Use	***Minimum Car Parking Requirement***
Large Format Retail	• *1 space per 50m^2 of GFA*
Industrial/Warehouse	• *1 space per 40m^2 of office GFA* • *1 space per 100m^2 of factory GFA for the 100m^2, then 1 space per 200m^2 of GFA (includes office component)* • *1 space per 300m^2 of warehouse GFA, plus 1 space per 40m^2 of office GFA*
Other Retail	• *1 space per 6 seats (external and internal) of takeaway food and drink premises GFA, plus queuing* • *2 spaces per service station fuel outlet, 1 space per 20m^2 of ancillary convenience store GFA, 3 spaces per service bay plus 1 space per employee; and* • *1 space per 20m^2 of restaurant or café GFA.*

The purpose of this report is to:

- describe the site and the proposed development scheme
- describe the road network serving the site and the prevailing traffic conditions
- assess the adequacy of the proposed parking provision
- assess the potential traffic implications
- assess the suitability of the proposed vehicle access, internal circulation and servicing arrangements

2 Proposed Development

2.1 Site, Context and Existing Circumstances

The Bringelly Road Business Hub occupies a total area of some 21ha incorporating some 8,000m^2 of the former Bringelly Road reservation. The development site (Figure 2) is Lot 1 DP 1266533 within the BRBH subdivision bearing an irregular-shaped and vacant allotment of 12,892m^2. The site is bounded by Skyline Crescent to the north and the east, Bringelly Road to the south, and Stuart Street to the west.

Figure 2 Site

The Leppington future commercial centre and its railway station are located some 2.5 km to the west and the the surrounding uses comprise:

- the northern adjoining allotments (within the BRBH), which are now developed and occupied

- the adjoining rural residential property to the west with access provided by Bringelly Road and the Horningsea Park residential area on the eastern side of Cowpasture Road
- the rural residential lands to the west and south
- the Carnes Hill residential area and Western Sydney Parklands extending to the north

2.2 Bringelly Road Business Hub

The approved SSD permits the development of a range of industrial/commercial land uses on the BRBH, including large format retail, light industry and service centre.

The majority of the BRBH are now developed (see Figure 2), with the subject site being the last allotment for development. Other notable tenants in the BRBH include DHL, Bunnings Warehouse, and Steelforce.

The access intersection, i.e. Bringelly Road/ Skyline Crescent traffic signals have been constructed and in operation since 2018.

2.2 Proposed Development

The proposed development scheme involves minor earthworks to provide a level building platform for the warehouse and hardstand areas to accommodate onsite car parking spaces and circulation facilities.

The proposed warehouse will comprise 4,470m^2 in GFA complemented by a 2 storey administrative office (1,000m^2 GFA). The proposal will involve the provision of 41 angled parking spaces. There will be 2 vehicle access points on Skyline Crescent: one providing access to the car park, and another will serve as truck access to/from the warehouse roller shutter docks.

Details of the proposed development are provided on the plans accompanying the Development Application and are reproduced in Appendix A.

3 Road Network and Traffic Conditions

3.1 Road Network

The existing road network serving the site comprises:

- *Camden Valley Way* – a State Road and arterial route which connects to Hume Highway at Casula and Camden
- *Cowpasture Road* – a State Road and arterial route which connects to Horsley Drive at Bossley Park and Camden Valley Way at Horningsea Park
- *Bringelly Road* – a State Road and sub-arterial route which connects between Cowpasture Road / Camden Valley Way at Horningsea Park and The Northern Road at Bringelly
- *Cowpasture Road (South)* – a State Road and Collector route which connects to Camden Valley Way and Bringelly Road
- The collector road systems serving Horningsea Park, Carnes Hill and Edmondson Park
- *Skyline Crescent* – a local access road connecting to Bringelly Road.

The Bringelly Road upgrade works, which span over 10km between Camden Valley Way and The Northern Road, are essentially complete.

3.2 Traffic Controls

The existing traffic controls on the road network comprise:

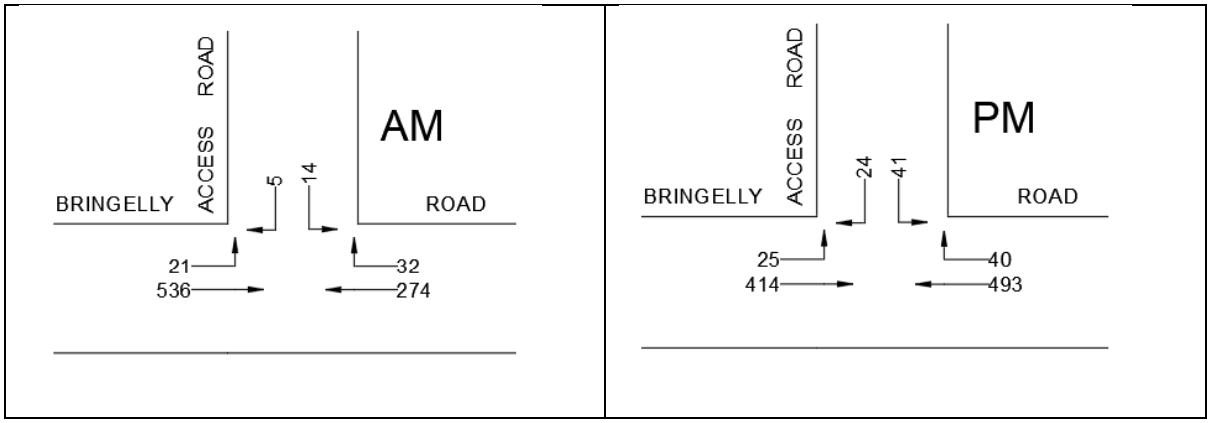
- the traffic signals at the Bringelly Road/ Skyline Crescent intersection
- the traffic signals at the Bringelly Road, Cowpasture Road and Camden Valley Way intersection

3.3 Traffic Conditions

The assessment relied on TfNSW's SCATS traffic data to provide an indication of the present traffic circumstance at the BRBH's access, i.e. the Bringelly Road/ Skyline Crescent intersection. The SCATS data are reproduced in Appendix B and illustrated in Figure 3 below.

Figure 3 SCATS Traffic Volumes

2022 Existing Traffic Movements (~ 60% site development)



The intersection's operation was assessed using traffic modelling program SIDRA. The model results, which are reproduced in Appendix C, are summarised below:

	AM		PM	
	LOS	**AVD**	**LOS**	**AVD**
2022	A	9.3s	A	8.6s

The assessment found the intersection to be operating satisfactorily with ample spare capacity.

3.4 Transport Services

The Leppington Railway Station, some 2.7km to the west, provides frequent train services while twice hourly Interline bus services operate along Camden Valley Way (routes 851, 855, 856 and 857) and Horningsea Park Drive (routes 852, 854 and 864) within 600m from the site.

4 Sustainable Travel Plan

Achieving a sustainable non-car travel mode outcome for the proposed development will be facilitated by:

- The bus stops that will be provided in the bus bays located on both sides of Bringelly Road adjacent to the BRBH access intersections. The bus services will provide connections to the surrounding residential areas, the railway stations at Leppington and Liverpool and inter-connection with other regional bus services.
- The shared path provided along the northern side of Bringelly Road which will connect to the regional bicycle and pedestrian network
- The traffic signals at the Bringelly Road and Skyline Crescent access intersection which incorporates pedestrian and cyclist crossing facilities
- The provision of lockers and shower facilities
- The provision for bicycle parking

A Green Travel Plan incorporating a Transport Access Guide will be prepared and submitted as part of the Construction Certificate documentation process.

5 Parking Assessment

The governing parking rates are provided in the approved SSD as follows:

		Applicable Rate
Warehouse	4,470m^2	1 per 300m^2
Office	1,000m^2	1 per 40m^2

Application of the above rates to the proposal would indicate the following requirement:

			Requirement
Warehouse	4,470m^2	@ 1 per 300m^2	14.9 (15) spaces
Office	1,000m^2	@ 1 per 40m^2	25 spaces
		Total:	**40 spaces**

The proposed provision of 41 parking spaces onsite will satisfy this requirement.

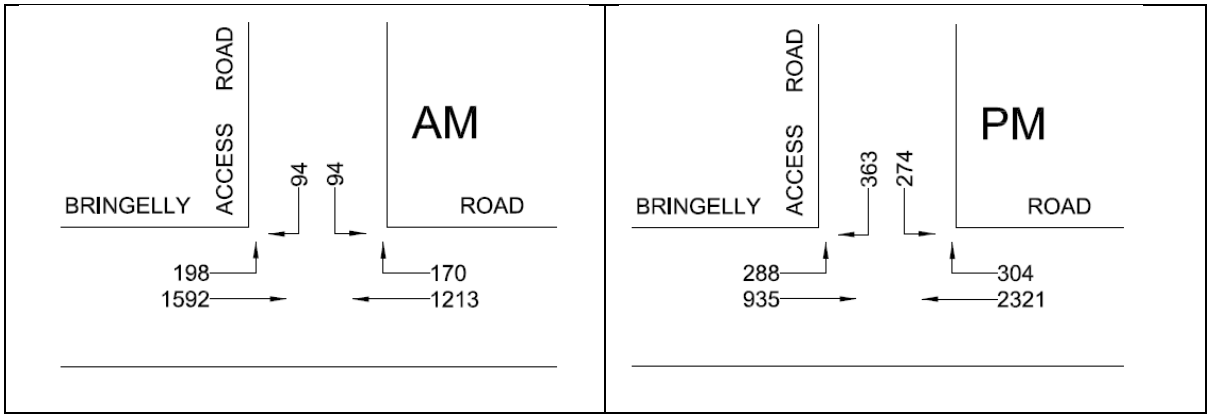
6 Traffic Assessment

6.1 Approved Traffic Generation Basis

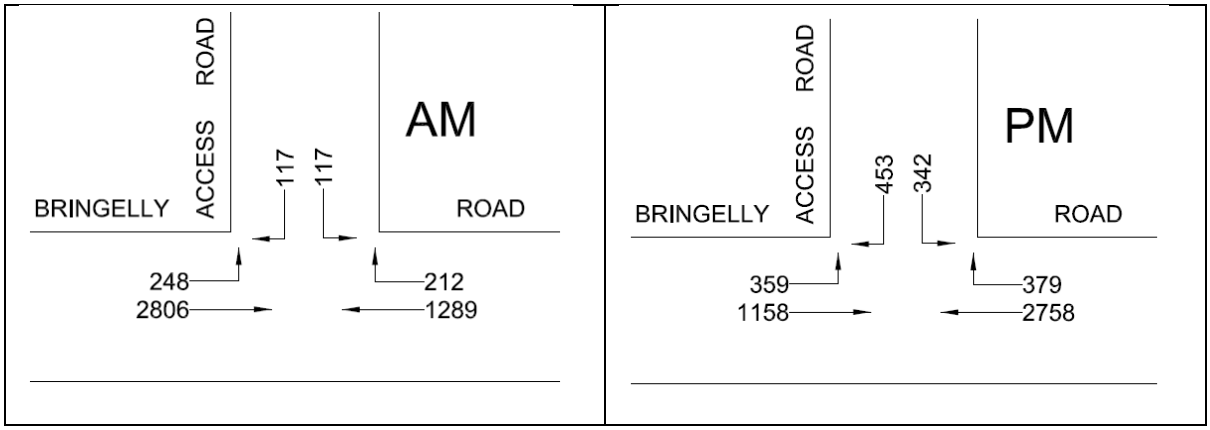
The BRBH's underpinning Traffic Impact Assessment[1] considered the partial and full development traffic projections, including that associated with the Bringelly Road upgrade. The 2026 (80% development completed) and 2031 (full development) forecasts which ultimately informed the access intersection's layout are reproduced in Figure 4:

Figure 4 Forecast Traffic Flows

2026 Traffic Projections (80% site development)



2031 Traffic Projections (100% site development)



[1] *Western Sydney Parklands*
Bringelly Road Business Hub
Traffic Impact Assessment
TTPA Dec. 2014

The accompanying SIDRA assessment concluded the intersection would operate satisfactorily under those future year traffic projections, as follows:

	AM		PM	
	LOS	**AVD**	**LOS**	**AVD**
2026	A	10.5	B	22.4
2031	A	11.1	C	25.6

6.2 Site Development Traffic

The TfNSW (formerly RTA, then RMS) Guideline provides an indication of the average traffic generation rates relevant to the proposed land use, as follows:

Warehouse
(based on RTA Guide 2002) — 0.50 vtph per 100m^2 (AM)

Industrial Estates/Business Parks
(based on TfNSW 2013/TDT 04a) — 0.52 vtph per 100m^2 (AM)
0.56 vtph per 100m^2 (PM)

Application of the above criteria to the proposal of 5,470m^2 GFA would indicate the following traffic generation outcome:

Warehouse
(based on RTA Guide 2002) — 28 vtph (AM)
N/A (PM)

Industrial Estates/Business Parks
(based on TfNSW 2013/TDT 04a) — 28 vtph (AM)
31 vtph (PM)

Notwithstanding, the approved traffic generation basis is associated with the BRBH's developable area, i.e. 18.5ha. The approved traffic generation outcome is 536 vtph in the AM peak and 1,064 vtph in the PM peak. On this basis, the approved average traffic generation rate per hectare can be derived as follows:

Approved Traffic Outcome	Traffic Generation Rate
536 vtph (AM)	29 vtph per ha (AM)
1,064 vtph (PM)	57.5 vtph per ha (PM)

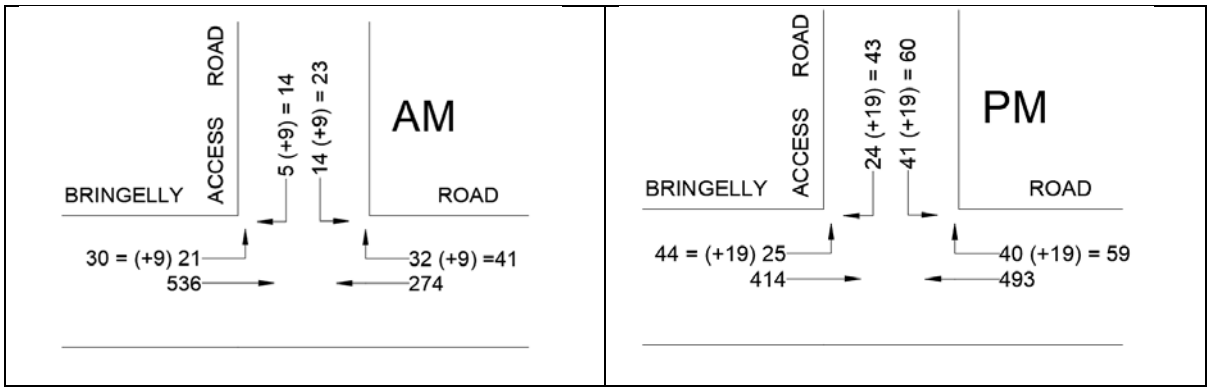
It follows that the 1.28ha site was envisaged to generate the following peak period traffic movements:

AM Peak	(1.28 x 29 =) **37 vtph**
PM Peak	(1.28 x 57.5 =) **74 vtph**

For both peak periods, the envisaged traffic load 'entitled' to the subject site are comparatively higher than the outcome derived using both the original and updated TfNSW traffic generation criteria. For this assessment, it is deemed more appropriate to use the higher traffic generation outcome as a basis for consideration.

As a result, the projected development and background traffic are reflected in Figure 5 below:

Figure 5 Existing + Development Traffic



Notably, the above traffic movements are significantly lower than those projected for 2026 and 2031 during the SSD's assessment (see Section 6.1). The recorded lower-traffic outcome indicates that the now developed, operational, and established BRBH sites have not eventuated in generating traffic at the level envisaged by the SSD formerly.

Notwithstanding, the development site will result in a traffic generation that is either consistent with the approved forecast or less. It is concluded on this basis that the proposal will have no adverse/undue effect on the local and surrounding road network.

7 Preliminary Construction Traffic Management Plan

A detailed Construction Traffic Management Plan is to be provided as part of the construction documentation process. However, the following provides an indicative and guiding principle to the development's construction processes.

7.1 Site/Workers Management

All workers and visitors employed on the site by the appointed contractor (including sub-contractors) will be required to undergo a formal 'site induction' process, and all the inductions will be performed to each trade according to Workcover OH & S requirements. The induction will include details of approved access routes to and from the construction site for site staff and delivery vehicles, parking arrangements, and standard environmental, WHS, driver protocols and emergency procedures. In addition, the agreed work hours must be included as part of this induction.

7.2 Workers' Transport Options

A tool drop-off and storage facility to be provided on-site to allow workers to drop off and store their tools and machinery, enabling them to use public transport to travel to/ from the site daily. Workers will also be informed of the appropriate tool/ equipment drop-off and storage arrangement made within site sheds and amenities provided on-site. In addition, bus and train schedules will be provided to all workers during the site induction to promote alternative modes of transport.

7.3 Traffic Guidance Scheme

A site-specific TGS is to be prepared by a Certified Traffic Controller (under RMS regulations) in accordance with Australian Standards 1742.3 upon confirmation of the nominated contractor, relevant work hours, and truck types.

The TGS must include at the minimum the following details:

- The proposed works site
- The proposed Access Strategy
- Accredited site personnel at the site vehicle access
- Truck (crossing and entering) and traffic controller signage

7.4 Construction Hours

To be as per Consent Condition.

7.5 Hoarding/Fencing

Provision is to be made for ‘A’ Class fencing along site boundaries.

7.6 Protection of Adjoining Properties and Public Assets

The contractor will liaise with the electricity network operator to ensure that tiger tails are fitted to the overhead powerlines along the frontage roads. The operator must visually inspect the temporary covers before commencing work each day. The contractor will contact the operator if the tiger tails have moved to allow the operator to replace the cable covers in their correct position. When working near overhead powerlines, the contractor must comply with Workcover and maintain the minimum safe approach distances defined in the code.

7.7 Access Locations

It is expected that vehicle access will be located at Skyline Crescent consistent with the proposed access.

7.8 Vehicle Types/Truck Access

The nominated contractor will determine the specific truck types later and will be the subject of a detailed construction traffic management plan. Nevertheless, large bulky goods deliveries/materials transport are expected to involve 12.5m HRVs or 19m semi-trailers.

7.9 Site Loading Management

All materials/goods are expected to be loaded and managed onsite.

7.10 Materials Handling and Storage

To be confined within site boundaries.

7.11 Truck Routes

Truck movements associated with the construction processes will approach and depart the site along Bringelly Road All trucks involved with the processes will access the site using the classified State and Regional Road system and ingress/egress the site via the designated construction driveways.

7.12 Works Program

Site Establishment, Earthworks and Services: 3 weeks with 10-15 truck visitations per day

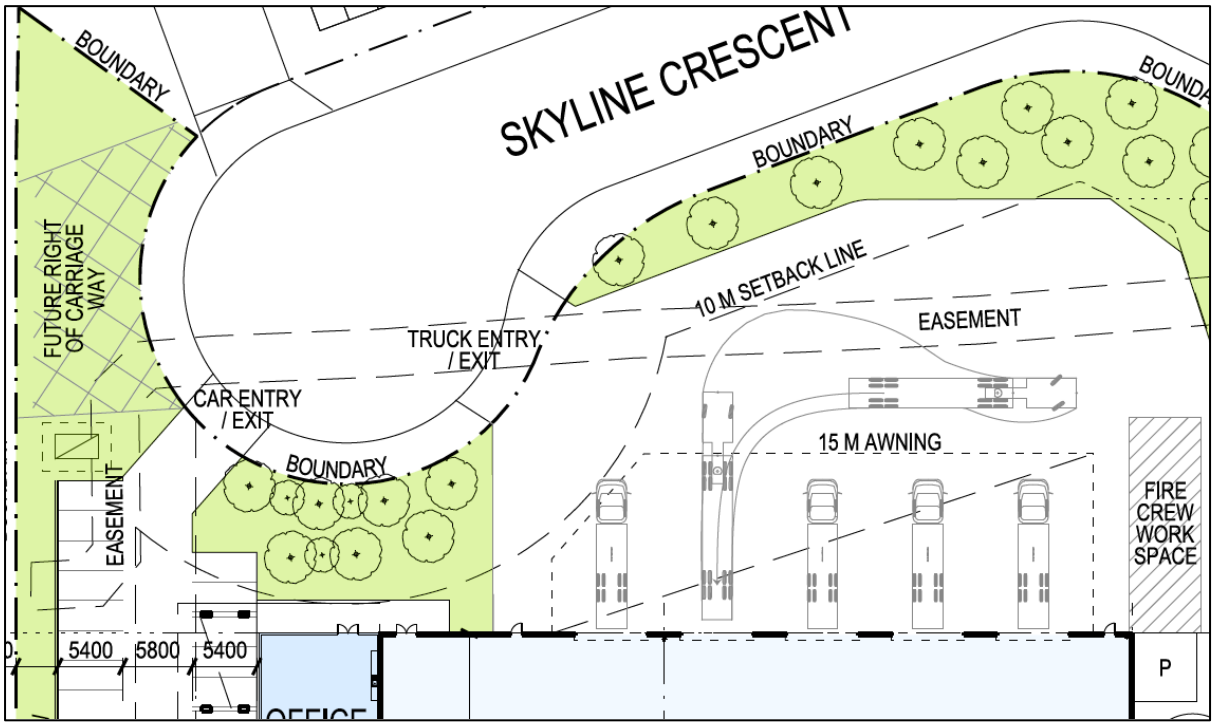
Construction: 35 weeks with 4-5 truck deliveries per day (more during major concrete pours)

8 Access, Internal Circulation and Servicing

8.1 Access

The proposed vehicle access arrangement (Figure 6) for the development comprise:

Figure 6 Site Access



Source: ESR

- a 7m wide combined ingress/egress driveway for the car park
- A 12m wide combined ingress/egress driveway for truck access

The proposed driveways will adequately separate light and heavy vehicles and comply with the AS2890.1 and 2 design requirements.

8.2 Internal Circulation

The design of the internal arrangements, including truck manoeuvring, carpark aisles/bays, etc., have been designed according to AS2890.1, AS2890.2 and AS2890.6. Truck turning paths demonstrating an adequate provision for circulation movements are provided in Appendix D.

8.3 Servicing

The warehouse will have a dedicated internal loading/goods handling area while recessed docks will be provided on the northern side of the building to accommodate 12.5m HRVs and 19m semi-trailers. Refuse removal will be undertaken by contract vehicles standing on the expansive hardstand area.

The proposed servicing arrangements will be adequate for the needs of the envisaged operations at the site.

9 Consultation

A copy of this Traffic Impact Assessment has been provided to the TfNSW for review via its Sydney development email portal:

Email: Development.Sydney@transport.nsw.gov.au

Details of the correspondence are reproduced below for reference.

From: Bernard Lo
To: Development Sydney
Cc: Olivia Ridgewell
Subject: Re: Lot 1 Bringelly Road, Leppington
Date: Wednesday, 13 April 2022 6:01:18 PM
Attachments: BRINGELLY ROAD BUSINESS HUB - PROPOSED INDUSTRIAL WAREHOUSE APRIL 2022 TRAFFIC REPORT ISSUE A.pdf

Dear Colleague,

I refer to the above subject matter concerning a proposed Industrial Warehouse Development within the Bringelly Road Business Hub estate.

I attach herewith our draft Traffic Impact Assessment report for TfNSW's review, as part of our consultation process.

I trust the TIA provides the necessary details for your purposes. Otherwise, please do not hesitate to contact me via the following office contact number to discuss further.

Thank you

My kind regards,

Bernard Lo | Director

TRANSPORT AND TRAFFIC PLANNING ASSOCIATES Established 1994

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And TfNSW's acknowledgement of receipt and response is reproduced overleaf:

From: Laura Van putten
To: Bernard Lo
Cc: Olivia.Ridgewell@esr.com; Zhaleh Najari alamouti
Subject: FW: Re: Lot 1 Bringelly Road, Leppington
Date: Tuesday, 10 May 2022 7:02:25 PM
Attachments: image005.png

Hi Bernard

Thank you for clarifying via phone. TfNSW notes that the report was provided to TfNSW pre-lodgement. TfNSW will undertake a detailed review following formal assessment of a submitted development application from the appropriate consent authority.

Kind Regards,

Laura van Putten
A/Senior Land Use Assessment Coordinator
Planning and Programs
Greater Sydney
Transport for NSW

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NSW GOVERNMENT Transport for NSW

10 Conclusion

The Traffic and Parking assessment presented in this report has established that:

- the proposal will be consistent with the traffic analysis undertaken for the approved SSD 6324 (although the overall traffic generation outcome will be less)
- the proposal will not have any adverse traffic implications on the surrounding road network
- the proposed parking provision will be quite adequate and appropriate for the development and compliant with the SSD 6324 criteria
- the proposal will adequately provide for access, internal vehicle circulation and servicing

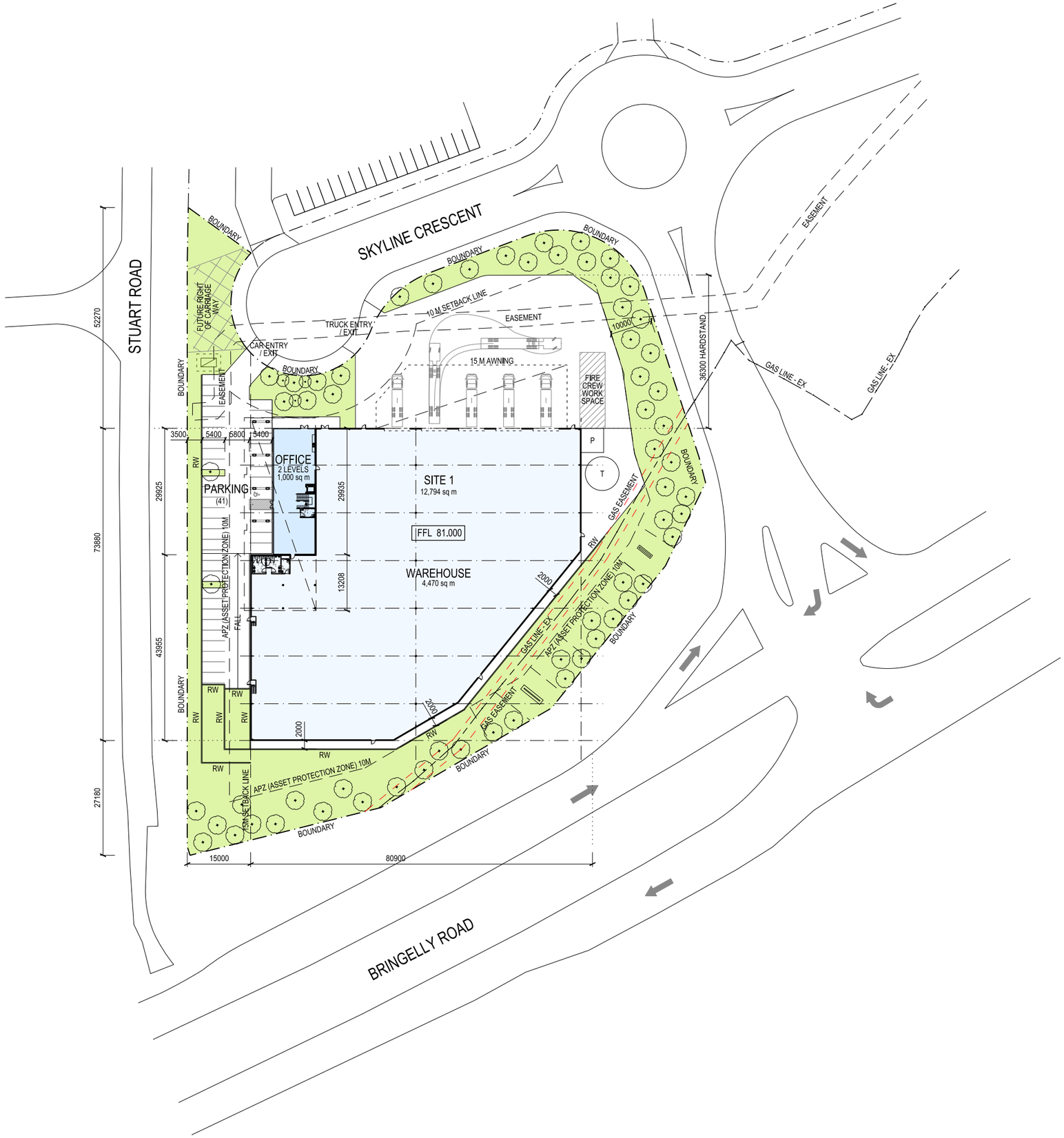
Appendix A

Architectural Plans

ESR

AREA SCHEDULE

SITE AREA	12,794m2
WAREHOUSE AREA	4,470m2
OFFICE (2 LEVELS)	1,000m2
TOTAL GFA	5,470m2
FLOOR SPACE RATIO	0.43:1
SITE COVERAGE	37%
LANDSCAPE AREA	4,482m2
PARKING REQURIED	41
PARKING PROVIDED	41



DEVELOPMENT APPLICATION

SBA ARCHITECTS
Commercial Industrial Residential Retail Interior Design
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E: info@sbaarch.com.au W: www.sbaarch.com.au

ISSUE	REV.	DESCRIPTION	DATE
P4		ISSUED FOR DA	21.03.2022
P3		ISSUED FOR DA	18.03.2022
P2		ISSUED FOR CO-ORDINATION	14.03.2022
P1		ISSUED FOR CO-ORDINATION	09.03.2022

PROPOSED INDUSTRIAL DEVELOPMENT

LOT 1 - BRINGELLY ROAD BUSINESS HUB, NSW

NORTH

DRAWING TITLE: SITE PLAN

DATE	SCALE	JOB NO.	DRAWING NO.	
FEB 2022	1:1000 @ A3 1:500 @ A1	22118	DA 03	P4

Appendix B

SCATS Traffic Data

TCS 4589

LEPPINGTON 267 A16

CAM SS=44

4 PHASES

Site	Date	Interval start	Interval end	Dete	Dete	Dete	Dete	Dete	Dete	Dete	Dete	Dete	Dete	Dete	Total
4589	Thursday, 3 March 2022	6:00:00 AM A	6:15:00 AM A	0	50	28	27	24	0	3	0	0	5	2	139
4589	Thursday, 3 March 2022	6:15:00 AM A	6:30:00 AM A	0	59	23	24	26	1	3	0	0	4	2	142
4589	Thursday, 3 March 2022	6:30:00 AM A	6:45:00 AM A	0	68	26	32	41	7	10	0	1	7	7	199
4589	Thursday, 3 March 2022	6:45:00 AM A	7:00:00 AM A	0	76	32	29	41	5	6	2	2	9	1	203
4589	Thursday, 3 March 2022	7:00:00 AM A	7:15:00 AM A	0	84	34	30	31	0	5	0	2	3	6	195
4589	Thursday, 3 March 2022	7:15:00 AM A	7:30:00 AM A	0	90	49	24	38	2	5	0	0	2	2	212
4589	Thursday, 3 March 2022	7:30:00 AM A	7:45:00 AM A	0	108	46	23	39	2	4	1	2	6	5	236
4589	Thursday, 3 March 2022	7:45:00 AM A	8:00:00 AM A	0	79	47	41	40	4	4	0	0	5	3	223
4589	Thursday, 3 March 2022	8:00:00 AM A	8:15:00 AM A	0	83	34	27	42	4	7	1	1	8	4	211
4589	Thursday, 3 March 2022	8:15:00 AM A	8:30:00 AM A	0	65	30	37	42	4	16	0	1	2	7	204
4589	Thursday, 3 March 2022	8:30:00 AM A	8:45:00 AM A	0	61	16	31	47	8	9	1	2	10	5	190
4589	Thursday, 3 March 2022	8:45:00 AM A	9:00:00 AM A	0	53	24	26	44	2	8	1	0	10	10	178
4589	Thursday, 3 March 2022	9:00:00 AM A	9:15:00 AM A	1	54	25	31	30	3	7	1	7	6	10	175
4589	Thursday, 3 March 2022	9:15:00 AM A	9:30:00 AM A	0	67	29	33	24	3	4	1	0	6	7	174
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Appendix C

SIDRA Modelling Results

MOVEMENT SUMMARY

Site: 101 [BRINGELLY ROAD | SKYLINE CRESCENT AM 2022 EXISTING]

BRINGELLY ROAD | SKYLINE CRESCENT
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 50 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
NorthEast: BRINGELLY ROAD												
25	T1	274	5.0	0.113	0.2	LOS A	0.1	0.5	0.02	0.02	0.02	59.8
26b	R3	32	5.0	0.085	26.0	LOS C	0.3	2.4	0.80	0.68	0.80	34.1
Approach		306	5.0	0.113	2.9	LOS A	0.3	2.4	0.10	0.09	0.10	56.9
North: SKYLINE CRESCENT												
7b	L3	14	5.0	0.074	29.3	LOS C	0.3	2.4	0.91	0.68	0.91	34.0
9a	R1	5	5.0	0.011	26.2	LOS C	0.1	0.4	0.90	0.61	0.90	34.3
Approach		19	5.0	0.074	28.5	LOS C	0.3	2.4	0.91	0.66	0.91	34.1
SouthWest: BRINGELLY ROAD												
30a	L1	21	5.0	0.095	27.0	LOS C	0.5	3.5	0.92	0.69	0.92	33.9
31	T1	536	5.0	0.355	11.6	LOS B	4.7	34.2	0.74	0.62	0.74	50.4
Approach		557	5.0	0.355	12.1	LOS B	4.7	34.2	0.75	0.62	0.75	49.9
All Vehicles		882	5.0	0.355	9.3	LOS A	4.7	34.2	0.53	0.44	0.53	51.7

Site Level of Service (LOS) Method: Delay (SIDRA). 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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P61	NorthEast Stage 1	50	19.4	LOS B	0.1	0.1	0.88	0.88
P62	NorthEast Stage 2	50	19.4	LOS B	0.1	0.1	0.88	0.88
P3	North Full Crossing	50	19.4	LOS B	0.1	0.1	0.88	0.88
P3B	North Slip/Bypass Lane Crossing	50	19.4	LOS B	0.1	0.1	0.88	0.88
P81	SouthWest Stage 1	50	19.4	LOS B	0.1	0.1	0.88	0.88
P82	SouthWest Stage 2	50	19.4	LOS B	0.1	0.1	0.88	0.88
P8B	SouthWest Slip/Bypass Lane Crossing	50	19.4	LOS B	0.1	0.1	0.88	0.88
All Pedestrians		350	19.4	LOS B			0.88	0.88

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [BRINGELLY ROAD | SKYLINE CRESCENT PM 2022 EXISTING]

BRINGELLY ROAD | SKYLINE CRESCENT
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 40 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
NorthEast: BRINGELLY ROAD												
25	T1	493	5.0	0.237	0.2	LOS A	0.1	0.9	0.03	0.02	0.03	59.8
26b	R3	40	5.0	0.085	20.4	LOS C	0.3	2.2	0.74	0.68	0.74	37.2
Approach		533	5.0	0.237	1.7	LOS A	0.3	2.2	0.08	0.07	0.08	58.1
North: SKYLINE CRESCENT												
7b	L3	41	5.0	0.174	24.1	LOS C	0.8	5.5	0.91	0.72	0.91	36.8
9a	R1	24	5.0	0.043	21.1	LOS C	0.2	1.5	0.88	0.66	0.88	37.2
Approach		65	5.0	0.174	23.0	LOS C	0.8	5.5	0.90	0.70	0.90	36.9
SouthWest: BRINGELLY ROAD												
30a	L1	25	5.0	0.090	21.4	LOS C	0.4	3.3	0.89	0.69	0.89	37.0
31	T1	414	5.0	0.438	14.4	LOS B	3.6	26.3	0.89	0.72	0.89	48.5
Approach		439	5.0	0.438	14.8	LOS B	3.6	26.3	0.89	0.72	0.89	48.0
All Vehicles		1037	5.0	0.438	8.6	LOS A	3.6	26.3	0.47	0.39	0.47	52.1

Site Level of Service (LOS) Method: Delay (SIDRA). 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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

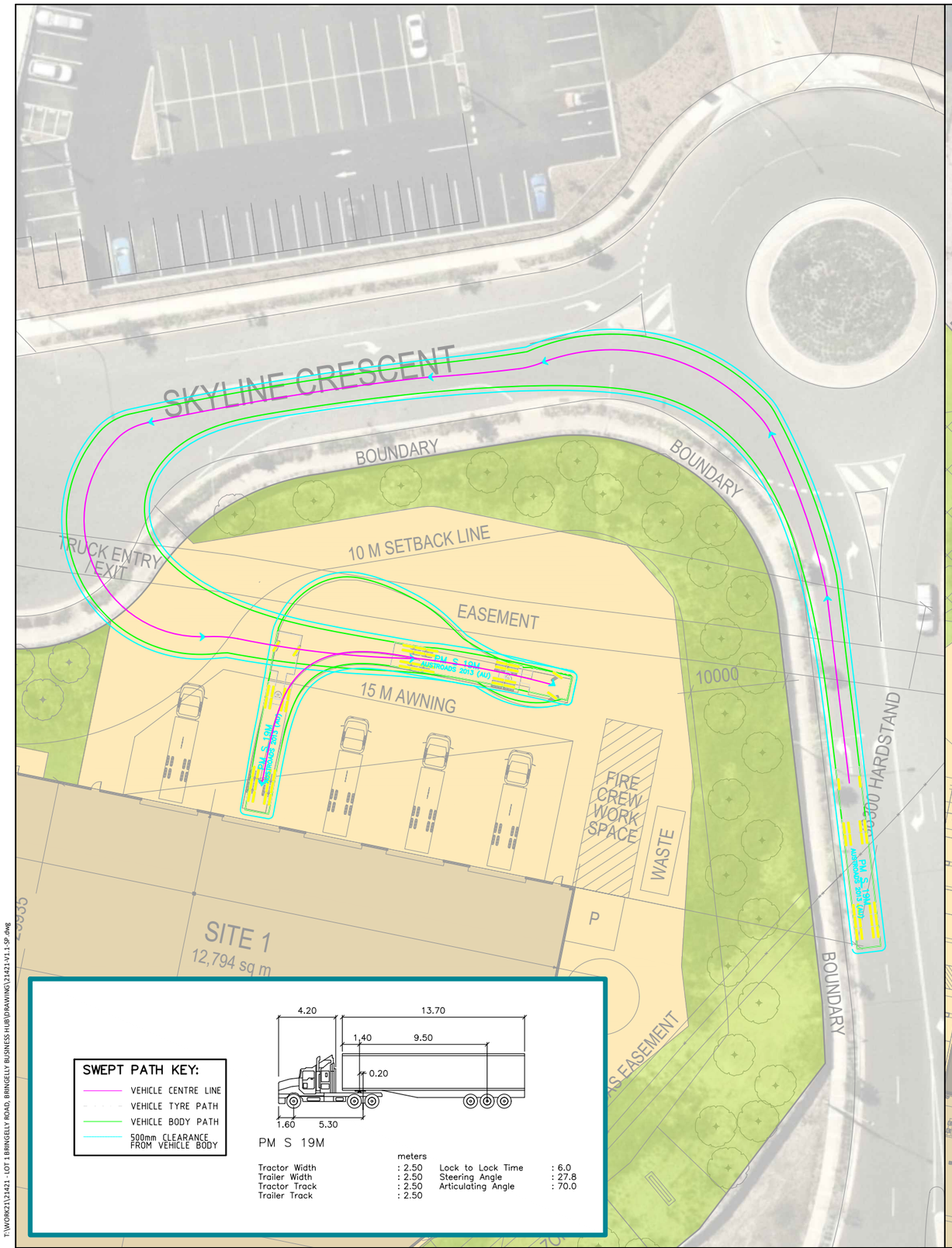
Movement Performance - Pedestrians

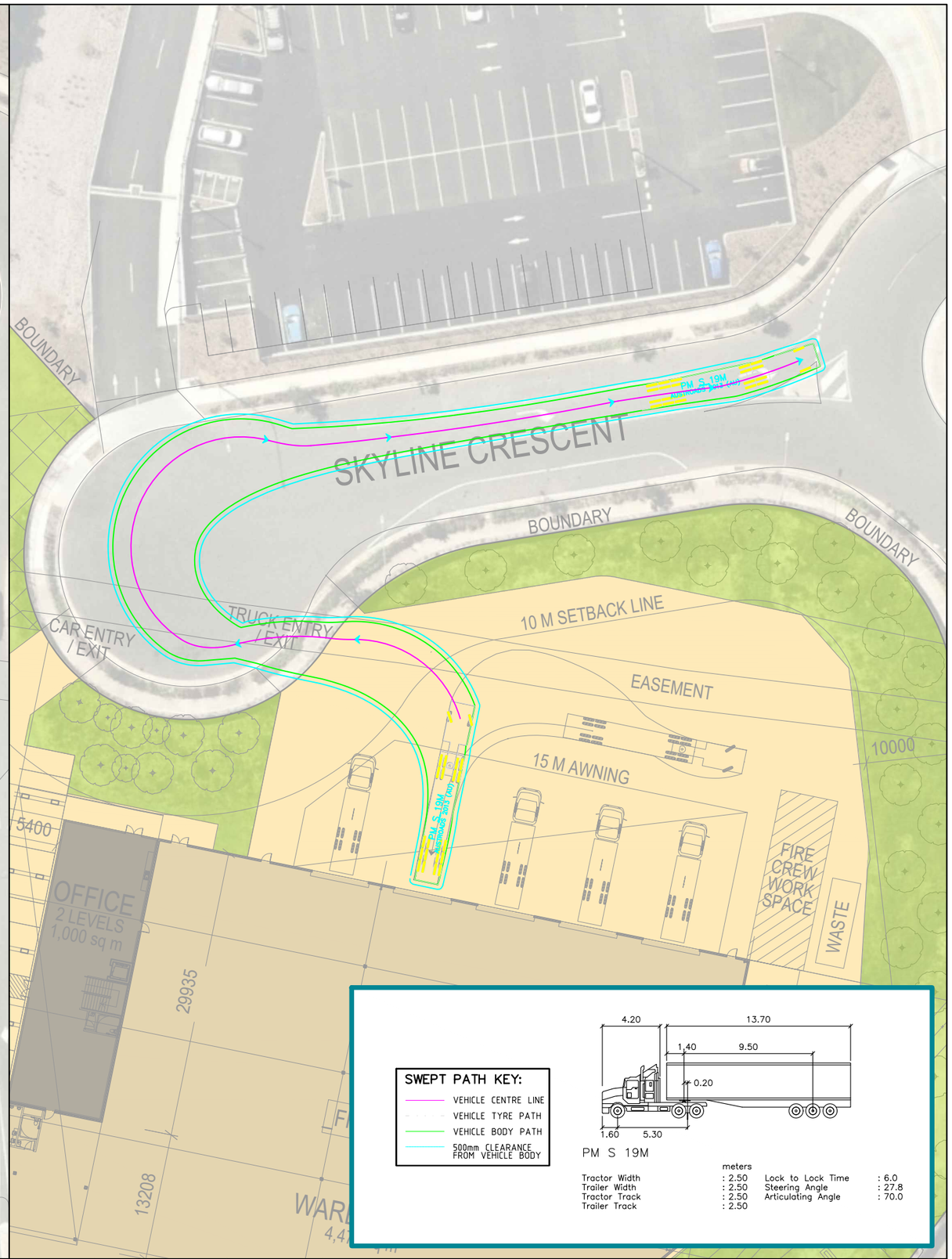
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P61	NorthEast Stage 1	50	14.5	LOS B	0.0	0.0	0.85	0.85
P62	NorthEast Stage 2	50	14.5	LOS B	0.0	0.0	0.85	0.85
P3	North Full Crossing	50	14.5	LOS B	0.0	0.0	0.85	0.85
P3B	North Slip/Bypass Lane Crossing	50	14.5	LOS B	0.0	0.0	0.85	0.85
P81	SouthWest Stage 1	50	14.5	LOS B	0.0	0.0	0.85	0.85
P82	SouthWest Stage 2	50	14.5	LOS B	0.0	0.0	0.85	0.85
P8B	SouthWest Slip/Bypass Lane Crossing	50	14.5	LOS B	0.0	0.0	0.85	0.85
All Pedestrians		350	14.5	LOS B			0.85	0.85

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Appendix D

Turning Path Assessment





SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 500mm CLEARANCE FROM VEHICLE BODY

PM S 19M

meters

Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 27.8
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		

SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 500mm CLEARANCE FROM VEHICLE BODY

PM S 19M

meters

Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 27.8
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		

LOT 1 BRINGELLY ROAD, BRINGELLY BUSINESS HUB
ENTRY AND EXIT MOVEMENTS
SWEPT PATH ASSESSMENT

DRAWING REF NO. 21421-V1.1-SP

SHEET NO. 01 OF 04

ISSUE DATE 7 April 2022

DESIGNED BY L.ELLSON

REVIEWED BY B.LO

SCALE A3 — 0 5.0 10.0 — 1:500

PRELIMINARY PLAN
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SKYLINE CRESCENT

BOUNDARY

BOUNDARY

TRUCK ENTRY / EXIT

10 M SETBACK LINE

EASEMENT

15 M AWNING

10000

FIRE CREW WORK SPACE

WASTE

P

T

SITE 1
12,794 sq m

29935

GAS EASEMENT

BOUNDARY

36300 HARDSTAND

(ZONE) 10M

HRV STANDARDS 2016 (AU)

HRV STANDARDS 2016 (AU)

HRV STANDARDS 2016 (AU)

BOUNDARY

SKYLINE CRESCENT

CAR ENTRY / EXIT

TRUCK ENTRY / EXIT

BOUNDARY

BOUNDARY

10 M SETBACK LINE

EASEMENT

15 M AWNING

10000

FIRE CREW WORK SPACE

WASTE

P

5400

OFFICE
2 LEVELS
1,000 sq m

29935

SITE 1
12,794 sq m

FFL 81.000

13208

WAREHOUSE
4,470 sq m

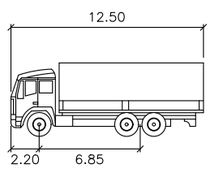
HRV STANDARDS 2016 (AU)

HRV STANDARDS 2016 (AU)

HRV STANDARDS 2016 (AU)

SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 500mm CLEARANCE FROM VEHICLE BODY

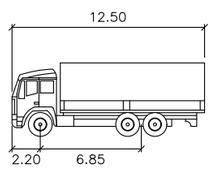


HRV

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 36.7

SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 500mm CLEARANCE FROM VEHICLE BODY



HRV

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 36.7

T:\WORK21\21421 - LOT 1 BRINGELLY ROAD, BRINGELLY BUSINESS HUB\DRAWING\21421-V1.1-SP.dwg

Plotted by Lachlan

LOT 1 BRINGELLY ROAD, BRINGELLY BUSINESS HUB
ENTRY AND EXIT MOVEMENTS
SWEPT PATH ASSESSMENT

DRAWING REF NO. 21421-V1.1-SP

SHEET NO. 02 OF 04

ISSUE DATE 7 April 2022

DESIGNED BY L.ELLSON

REVIEWED BY B.LO

SCALE A3 0 5.0 10.0 1:500

N

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SKYLINE CRESCENT

BOUNDARY

BOUNDARY

BOUNDARY

TRUCK ENTRY / EXIT

10 M SETBACK LINE

EASEMENT

15 M AWNING

10000

FIRE CREW WORK SPACE

WASTE

P

T

SITE 1

29935

GAS EASEMENT

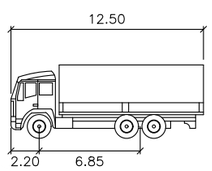
BOUNDARY

10M

HRV

SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 500mm CLEARANCE FROM VEHICLE BODY



HRV

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 36.7

SKYLINE CRESCENT

BOUNDARY

BOUNDARY

BOUNDARY

CAR ENTRY / EXIT

TRUCK ENTRY / EXIT

10 M SETBACK LINE

EASEMENT

15 M AWNING

10000

FIRE CREW WORK SPACE

WASTE

P

OFFICE
2 LEVELS
1,000 sq m

5400

29935

SITE 1
12,794 sq m

FFL 81.000

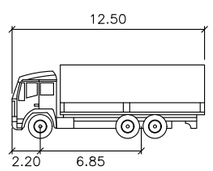
13208

WAREHOUSE
4,470 sq m

HRV

SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 500mm CLEARANCE FROM VEHICLE BODY



HRV

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 36.7

T:\WORK21\21421 - LOT 1 BRINGELLY ROAD, BRINGELLY BUSINESS HUB\DRAWING\21421-V1.1-SP.dwg

Plotted by Lachlan

LOT 1 BRINGELLY ROAD, BRINGELLY BUSINESS HUB
ENTRY AND EXIT MOVEMENTS
SWEPT PATH ASSESSMENT

DRAWING REF NO. 21421-V1.1-SP

SHEET NO. 03 OF 04

ISSUE DATE 7 April 2022

DESIGNED BY L.ELLSON

REVIEWED BY B.LO

SCALE A3 0 5.0 10.0 1:500

N

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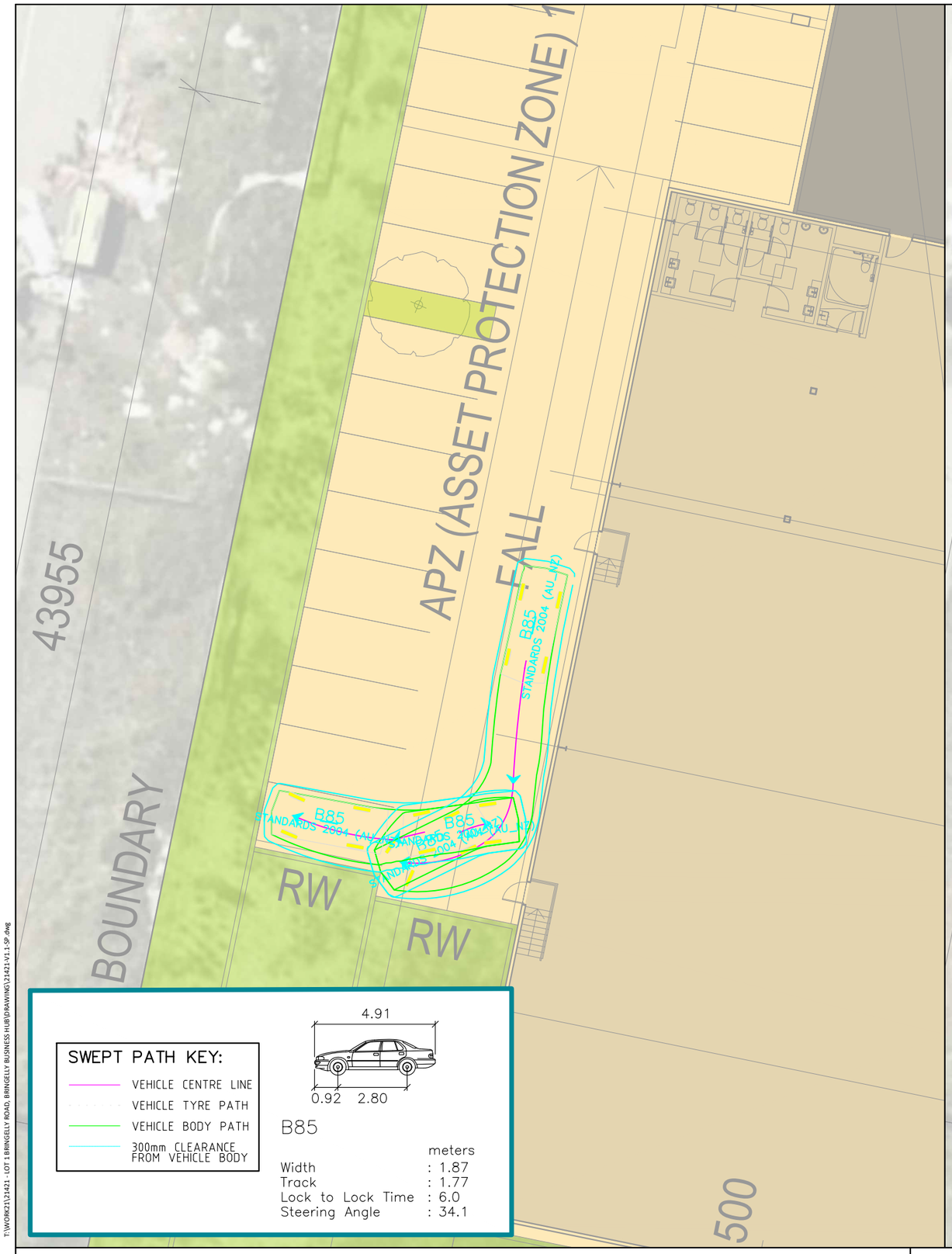
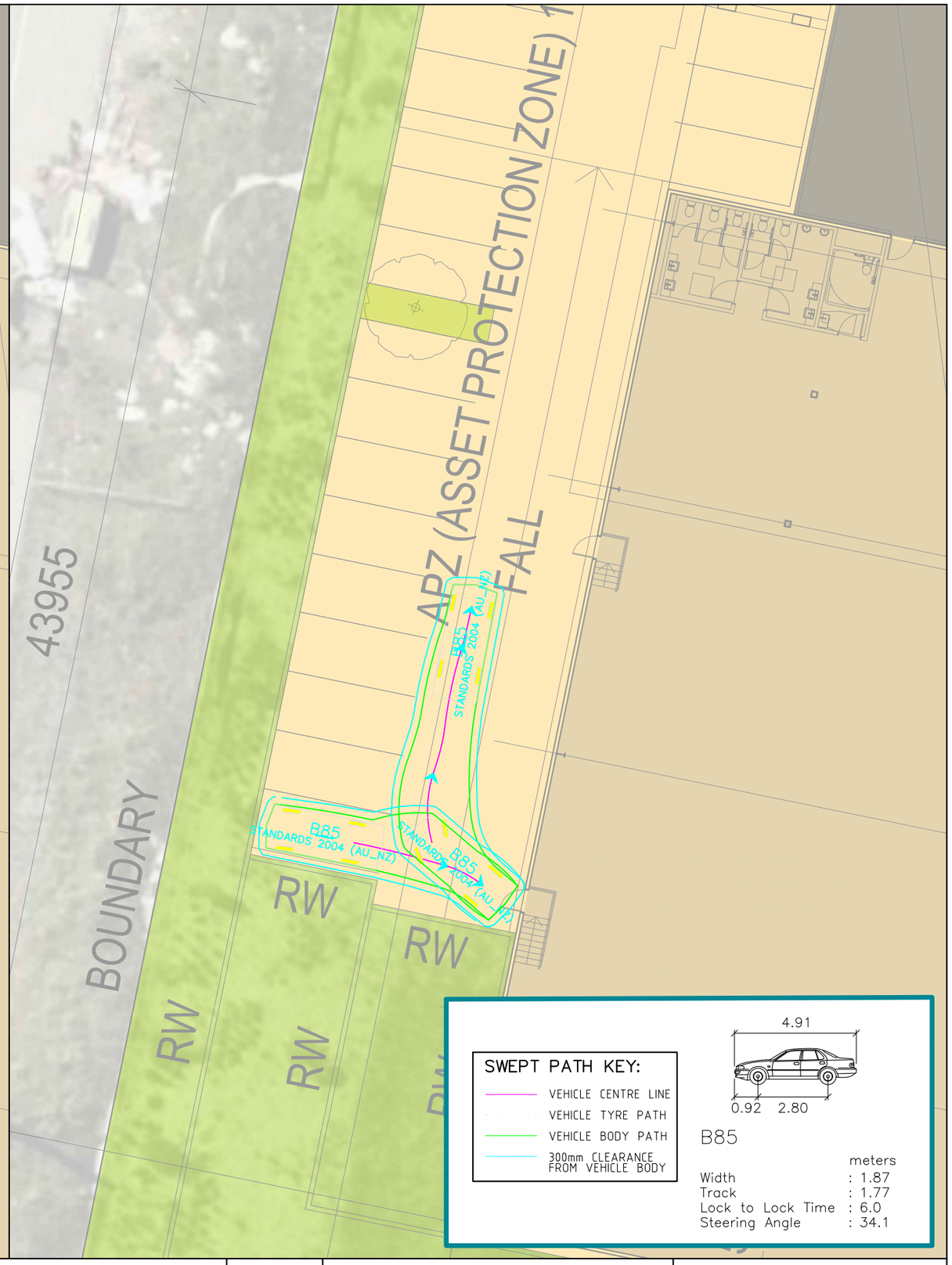


SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

B85

	meters
Width	: 1.87
Track	: 1.77
Lock to Lock Time	: 6.0
Steering Angle	: 34.1



SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

4.91
0.92
2.80

B85

	meters
Width	: 1.87
Track	: 1.77
Lock to Lock Time	: 6.0
Steering Angle	: 34.1

LOT 1 BRINGELLY ROAD, BRINGELLY BUSINESS HUB
ENTRY AND EXIT MOVEMENTS
SWEPT PATH ASSESSMENT

DRAWING REF NO. 21421-V1.1-SP

SHEET NO. 04 OF 04

ISSUE DATE 7 April 2022

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SCALE A3 0 2.0 4.0 1:200

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