Traffic Impact Assessment

Proposed Mixed Use Development
11-13 Lord Street, Botany

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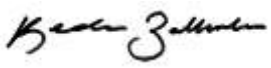
v03	24/10/2018	Kedar Ballurkar	Kedar Ballurkar	

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Contents

1. Introduction

TRAFFIX has been commissioned by Dexus Funds Management Limited to undertake a Traffic Impact Assessment of a proposed mixed-use development at 11-13 Lord Street in Botany, New South Wales. An accompanying Development Application seeks approval for the adaptive reuse of two industrial buildings and for the construction of a single storey warehouse building.

The site is located within the Bayside Council local government area and is subject to the *Botany Local Environmental Plan 2013*. The resulting changes to the gross floor areas under this development application do not warrant referral to the Roads and Maritime Services (RMS) under the provisions of *State Environmental Planning Policy (Infrastructure) 2007*. Notwithstanding, a previously submitted Development Application (10.2018.1045.1) has previously been assessed by the RMS, which was of a larger scale.

The report is structured as follows:

- Section 2: Describes the site and its location
- Section 3: Documents existing traffic conditions
- Section 4: Describes the proposed development
- Section 5: Reviews the parking requirements
- Section 6: Assesses traffic impacts
- Section 7: Discusses access and internal design aspects
- Section 8: Presents the overall study conclusions.

2. Location and Site

The development site is located at 11-13 Lord Street, on the southern side of the road, west of Booralee Park. In a regional context, it lies approximately two kilometres south-east of Sydney Domestic Airport and 10 kilometres south of the Sydney central business district. The site is legally described as Lot 2 in DP717692.

The site is rectangular in configuration with a site area of approximately 29,769m^2. It has a northern frontage of approximately 230 metres to Lord Street, an eastern boundary of approximately 130 metres to Booralee Park, a southern boundary of approximately 230 metres to neighbouring residential developments and a western boundary of approximately 130 metres to a neighbouring commercial development.

The site comprises of two buildings known as 'Block A' and 'Block B', and is part of the 'Lakes Business Park', encompassing several developments (43,000m^2 of office and warehouse space) on the northern side of Lord Street. Block A and Block B collectively accommodate 7,905m^2 gross floor area (GFA) of office space and 6,280m^2 GFA of warehouse space. Vehicular access to the site is currently provided via three (3) combined entry / exit driveways onto Lord Street. These driveways serve approximately 357 at-grade parking spaces and well as loading docks for tenancies.

A Location Plan is presented in **Figure 1**, with a Site Plan presented in **Figure 2**. Reference should also be made to the Photographic Record presented in **Appendix A**, which provides an appreciation of the general character of roads and other key attributes in proximity to the site.

Figure 1: Location Plan

Figure 2: Site Plan

3. Existing Traffic Conditions

3.1 Road Network

The road hierarchy in the vicinity of the site is shown in **Figure 3** with the following roads of particular interest:

- Southern Cross Drive: an RMS State Road (MR 593) that generally runs in a north-south direction between General Holmes Drive in the south and Todman Avenue in the north. Southern Cross Drive carries 130,000 vpd (2008 AADT) near Gardeners Road. It is generally subject to a 70km/h speed zoning in the vicinity of the site and carries three lanes of traffic in either direction within a separated carriageway of width 26.0 metres.

- Botany Road: an RMS State Road (MR 170) that generally runs in a north-south direction between Bunnerong Road in the south and Boundary Street in the north. Botany Road carries 24,000 vpd (2005 AADT) in the vicinity of the site. It is generally subject to a 60km/h speed zoning in the vicinity of the site and generally carries two lanes of traffic in either direction within a separated carriageway of width 18.0 metres.

- Lord Street: a local road that runs in an east-west direction between Botany Road in the west and extending 500 metres west, forming a cul-de-sac at its eastern end. It carries a single lane of traffic in both direction and permits parallel parking on both sides.

- Daniel Street: a local road that runs in a north-south direction, between the site boundary to the north and Ramsgate Street to the south. The road terminates before the site and north of Daphne Street, with 90 degree parking provided on both kerbsides. Daniel Street accommodates a single lane of traffic in each direction within an undivided carriageway.

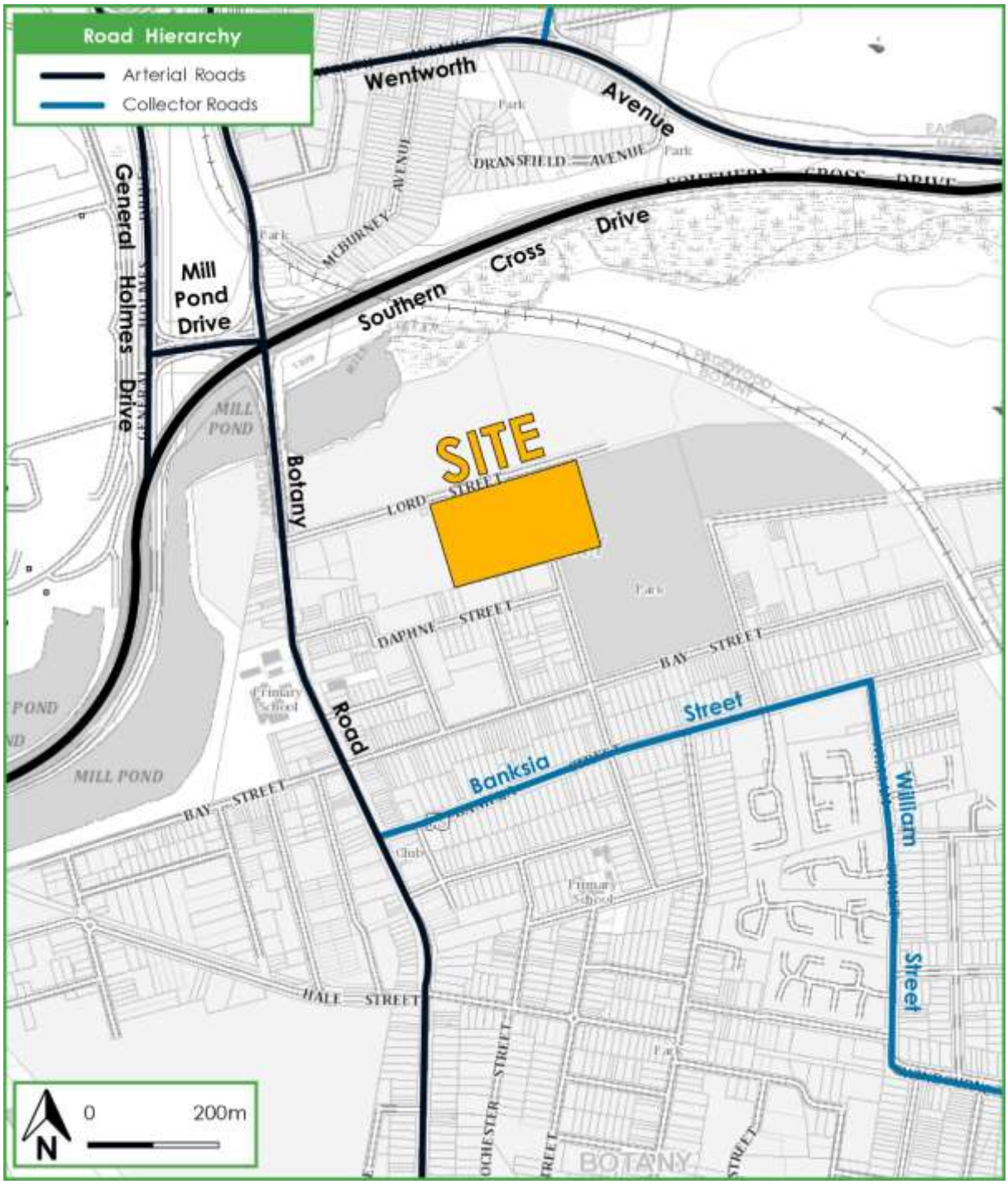


Figure 3: Road Hierarchy

3.2 Key Intersections

Access to the arterial road network is achieved via the intersection of Botany Road and Lord Street. An aerial photograph of this intersection is shown in **Figure 4** below, where is evident that Botany Road and Lord Street form a signalised T-junction to the west of the site. Two approach lanes are provided on the northern approach of Botany Road and the eastern approach of Lord Street. Notably, both lanes on Lord Street are permitted to turn right, with the left lane permitted to turn left after stopping on red. Two through approach lanes and a right turn bay are provided on the south approach of Botany Road. A signalised pedestrian crossing is provided on the southern approach of Botany Road and on the Lord Street approach.

Source: Near Map

Figure 4: Intersection of Botany Road and Lord Street

3.3 Public Transport

The public transport network operating in the locality is illustrated in **Figure 5**. It is evident that bus stops on Botany Road are situated within 400 metres of the site and are serviced a number of routes, including 309, 310, L09, M20, X09 and X10. These routes provide connections to such centres as Mascot Station, Banksmeadow, Redfern, Eastgardens and the Sydney central business district.

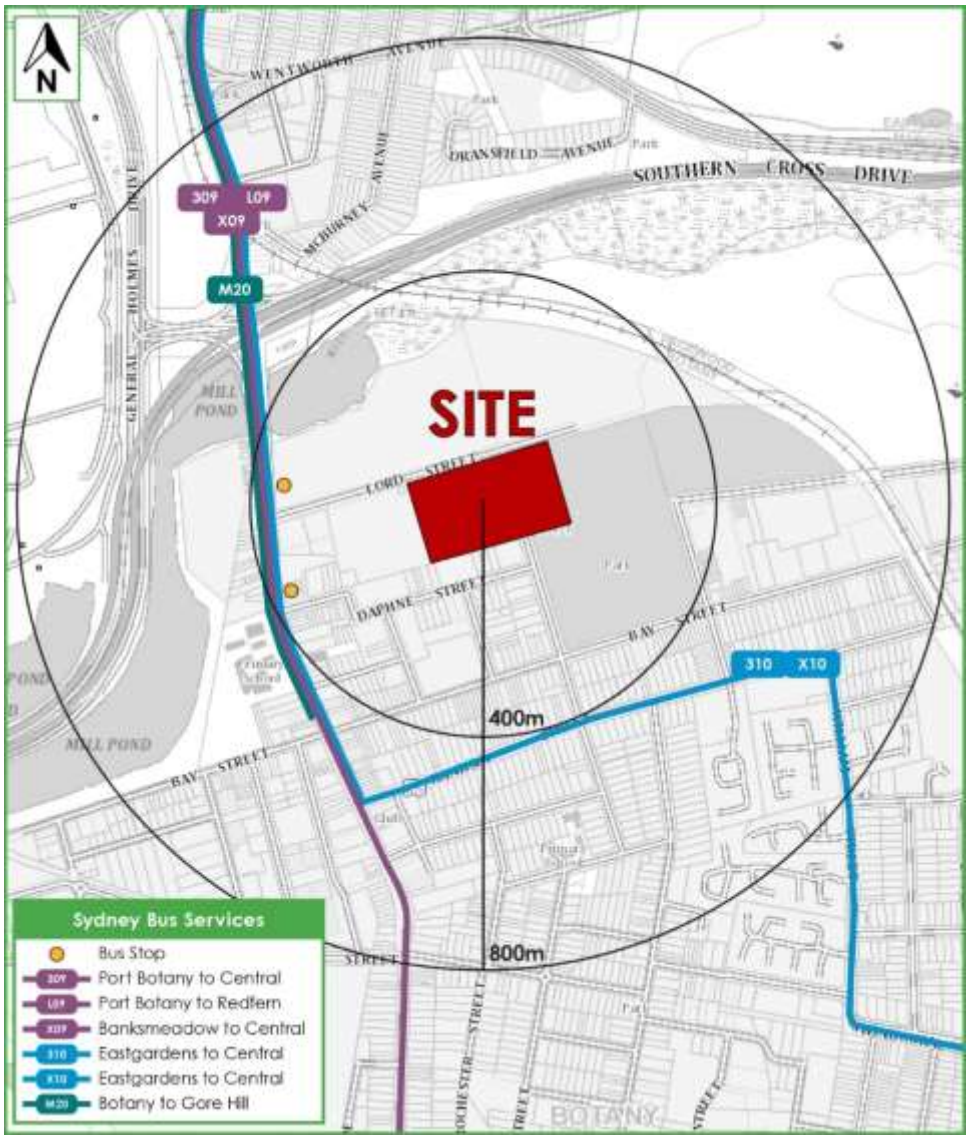


Figure 5: Public Transport Network

3.4 Existing Site Generation

TRAFFIX has previously commissioned a survey of the site to establish the traffic generation of the existing development during weekday peak periods. Counts were undertaken at each driveway on Wednesday 1 April 2015, during the following times:

- 7:00am to 9:00am; and
- 4:00pm to 6:00pm

The peak hour traffic generation of the existing development was found to be as follows:

- 94 vehicle trips per hour (79 in, 15 out), which occurred between 7:45am and 8:45am
- 82 vehicle trips per hour (7 in, 75 out), which occurred between 4:45pm and 5:45pm

The above volumes were used to calculate the net increase in traffic generation as a result of the proposed development, which is discussed in further detail in Section 7.

3.5 Existing Intersection Performance

SIDRA software modelling has been undertaken of the intersection of Botany Road and Lord Street to assess performance under existing conditions. Surveys of the intersection were previously conducted on 1 April 2015 for AM and PM peak period weekday conditions, and an updated survey in 23 February 2018 revealed that traffic volumes have slightly reduced in the weekday AM peak period. Surveys were also conducted for this intersection on Saturday 24 February 2018. Accordingly, the base case volumes adopted for each scenario are as follows:

- AM Peak Period – April 2015 volumes (slightly higher than present day volumes);
- PM Peak Period – April 2015 volumes; and
- Weekend Peak Period (11:45am to 12:45pm) – February 2018 volumes.

The SIDRA model produces a range of outputs, the most useful of which are the Degree of Saturation (DOS) and Average Vehicle Delay per vehicle (AVD). The AVD is in turn related to a level of service (LOS) criteria. These performance measures can be interpreted using the following explanations:

DOS - the DOS is a measure of the operational performance of individual intersections. As both queue length and delay increase rapidly as DOS approaches 1, it is usual to attempt to keep DOS to less than 0.9. When DOS exceeds 0.9 residual queues can be anticipated, as occurs at many major intersections throughout the metropolitan area during peak periods. In this regard, a practical limit at 1.1 can be assumed. For intersections controlled by roundabout or give way/stop control, satisfactory intersection operation is generally indicated by a DOS of 0.8 or less.

AVD - the AVD for individual intersections provides a measure of the operational performance of an intersection. In general, levels of acceptability of AVD for individual intersections depend on the time of day (motorists generally accept higher delays during peak commuter periods) and the road system being modelled (motorists are more likely to accept longer delays on side streets than on the main road system).

LOS - this is a comparative measure which provides an indication of the operating performance of an intersection as shown below:

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

A summary of the modelled results are provided in **Table 1** below. Reference should also be made to the SIDRA outputs provided in **Appendix B**, which provide detailed results for individual lanes and approaches.

Table 1: Existing Intersection Performance

Intersection Description	Control Type	Period	Degree of Saturation	Average Delay	Level of Service
Botany Road / Lord Street	Signals	AM	0.503	10.1	A
		PM	0.463	19.4	B
		Weekend	0.317	10.5	A

It can be seen that the intersection of Botany Road / Lord Street operates acceptably under the existing 'base case' scenario, with Level of Service of A achieved during both the AM peak period and weekend peak period. The intersection also operates satisfactorily during the PM peak period, with a Level of Service B.

Nevertheless, it is stressed that the most relevant use of this analysis is to compare the relative change in the performance parameters as a result of the proposed development. This is discussed further in Section 6.

4. Description of Proposed Development

A detailed description of the proposed development is provided in the Statement of Environmental Effects prepared separately. In summary, approval is sought for the following:

- Adaptive re-use of Block A, being a two-storey structure comprising of industrial, ancillary office, commercial, industrial retail outlet and indoor recreational facility uses.
- Adaptive reuse of Block B, being a three-storey structure comprising of industrial, ancillary office, commercial, retail, food & beverage and child care uses.
- Construction of Block C, being a single-storey structure comprising of warehouse units with mezzanine commercial floor space.

A breakdown of the gross floor areas (combined tenancies) of each land use for each Block is included in **Appendix C**. The proposed development will also accommodate the following with respect to parking and vehicular circulation:

- Capacity for 268 car parking spaces, consisting of:
  - 147 parking spaces surrounding Block A (including 4 accessible spaces);
  - 72 parking spaces surrounding Block B (including 3 accessible spaces); and
  - 49 parking spaces surrounding Block C (including 2 accessible spaces).
- Three (3) vehicular access points for the overall site, consisting of:
  - Retention of two driveways on Lord Street (Deletion of a single access north of Block B); and
  - Proposal of an entry only driveway on Lord Street, adjacent to the eastern site boundary.

The parking requirements and traffic impacts arising from the proposed development are discussed in **Section 5** and **Section 6**, respectively. Reference should be made to the architectural drawings prepared by Nettleton Tribe, which are presented at reduced scale in **Appendix D**.

5. Parking Assessment

5.1 Parking Survey

RMS guidelines place significant weight on parking demands associated with existing uses that reflect the location and nature of any proposed uses. Hence, surveys were undertaken to establish the parking demands of the existing development on-site, comprising of 7,905m^2 GFA of commercial space (including ancillary office) and 6,280m^2 GFA of industrial space.

The counts were undertaken for all on-site parking areas on Wednesday 16 May 2018 between 11:00am and 3:00pm, accounting for the busiest period that these land uses typically experience. Detailed results of the survey are presented in **Appendix E**, with a peak occupancy of 192 parking spaces recorded at peak times on a typical weekday. This equates to a site specific parking rate of 1 parking space per 73m^2 GFA for combined commercial and industrial uses.

The following is also noteworthy in relation to the parking survey:

- Dexus confirmed that the tenancies for the existing development are over 90% occupied and as stated on their website, this has been the case since acquisition of the site in January 2015. A montage of aerial imagery from NearMap is also presented in **Attachment E** and demonstrate that the on-site parking demands on various days of the week have remained consistent over the past twelve months.
- The existing development has an oversupply of parking and this indicates a limited dependency on private transport as a means to access the site. It also underscores that reliance on on-street parking is minimal.

5.2 Parking Assumptions

For the purposes of assessing the parking demands of the proposed development which is capable of accommodating a wide range of tenants, TRAFFIX has adopted the following assumptions, noting that the nature of uses will be subject to changes over time, as occurs with any such multi-functional estate:

- A site specific parking rate of 1 parking space per 73m^2 GFA for combined commercial and industrial uses, based on the parking surveys of the existing industrial and commercial uses of the site.
- A parking rate for indoor recreational facilities of 1 space per 40m^2 gross floor area, having regard for the following:
  - 1 space per 25m^2 gross floor area for a dance studio (specific use) under the *Botany Bay Development Control Plan 2013*;
  - 1 space per 40m^2 gross floor area for any indoor recreational facility under the *Rockdale Development Control Plan 2011*; and
  - 1 space per 50m^2 gross floor area for any indoor recreational facility (for the most stringent areas) under the *Marrickville Development Control Plan 2011*.
- An employee density of four (4) staff per 100m^2 gross floor area to be adopted for the calculation of the parking requirements for retail and food & beverage uses.
- The childcare is assumed to employ eight (8) staff on-site at any one time.

5.3 Cumulative Parking Assessment

A cumulative assessment of the parking requirements for the proposed development based on the above assumptions and under the *Botany Bay Development Control Plan 2013* is summarised in **Table 2**.

Table 2: Cumulative Parking Assessment – Weekends & Weekdays

Type	Number	Minimum Rate	Spaces Required[1]
Block A			
General Industry[2]	2,185.1m^2	1 space per 73m^2 GFA	30
Ancillary Office[2]	1,257.3m^2		18
Office Premises[2]	1,302.5m^2		18
Industrial Retail Outlet	2,049.8m^2	1 space per 40m^2 GFA	52
Indoor Recreation[3]	823.8m^2	1 space per 40m^2 GFA	21
		Sub-Total	**139**
Block B			
General Industry[2]	2,387.1m^2	1 space per 73m^2 GFA	33
Ancillary Office[2]	828.0m^2		12
Office Premises[2]	988.6m^2		14
Child Care Centre	35 children 8 employees	1 space per 2 employees; plus 1 space per 5 children; plus 1 pick-up and set-down space per 20 children	13
Restaurants and Café[4,5]	723.3m^2 29 employees	1 space per 2 employees; plus 1 space / 3 seats (internal and external); or 1 space / 10m^2 GFA, whichever is greater	87
Shops	350.6m^2	1 space per 25m^2 GFA	15
		Sub-Total	**174**
Block C			
Warehouse	4,403.8m^2	1 space per 300m^2 GFA plus 1 space per 40m^2 GFA for ancillary office space	15
Ancillary Office	800.2m^2		21
		Sub-Total	**36**
		Total	**349**

[1] Parking spaces rounded up to the nearest whole number for each land use within each block.

[2] Site specific parking rate adopted form surveys of existing industrial and commercial development on-site.

[3] Parking Assessment based on similar developments is required.

[4] Rate adopted for developments with a gross floor area of greater than 100m^2.

[5] Number of employees determined at a rate of 4 staff per 100m^2.

Based on the above analysis, the proposed development would nominally be required to provide 349 parking spaces in order satisfy each individual demand for all land uses, treated cumulatively. This approach however is considered unsuitable as it assumes that all components of the site will concurrently experience peak demands. Indeed, the DCP stipulates that Council may reduce the car parking provision in circumstances where *"peak parking and traffic activity occurs during periods where surrounding parking demand is lowest".*

This implies reliance on on-street or other available public parking in some situations. This flexibility could be also applicable within an estate where individual uses peak on differing days. Accordingly, a non-cumulative assessment for weekday and weekend conditions is discussed below in Section 5.4.

5.4 Non-Cumulative DCP Parking Assessment

5.4.1 Weekends (and weeknights)

Peak periods for all customer generating tenancies are expected to be on weekends (and weeknights). Accordingly, reduction factors have been applied to commercial, industrial and childcare uses during these times as summarised in the parking assessment in **Table 3**.

Table 3: Non-Cumulative Parking Assessment – Weekends & Weekdays

Type	Number	Minimum Rate	Spaces Required[1]
Block A			
General Industry[2]	2,185.1m^2	1 space per 73m^2 GFA	3 (10%)
Ancillary Office[2]	1,257.3m^2		2 (10%)
Office Premises[2]	1,302.5m^2		2 (10%)
Industrial Retail Outlet	2,049.8m^2	1 space per 40m^2 GFA	52
Indoor Recreation[3]	823.8m^2	1 space per 40m^2 GFA	21
		Sub-Total	**80**
Block B			
General Industry[2]	2,387.1m^2	1 space per 73m^2 GFA	4 (10%)
Ancillary Office[2]	828.0m^2		2 (10%)
Office Premises[2]	988.6m^2		2 (10%)
Child Care Centre	35 children 8 employees	1 space per 2 employees; plus 1 space per 5 children; plus 1 pick-up and set-down space per 20 children	13
Restaurants and Café[4,5]	723.3m^2 29 employees	1 space per 2 employees; plus 1 space / 3 seats (internal and external); or 1 space / 10m^2 GFA, whichever is greater	87
Shops	350.6m^2	1 space per 25m^2 GFA	15
		Sub-Total	**123**
Block C			
Warehouse	4,403.8m^2	1 space per 300m^2 GFA plus 1 space per 40m^2 GFA for ancillary office space	2 (10%)
Ancillary Office	800.2m^2		3 (10%)
		Sub-Total	**5**
		Total	**208**

[1] Parking spaces rounded up to the nearest whole number for each land use within each block.

[2] Site specific parking rate adopted form surveys of existing industrial and commercial development on-site.

[3] Parking Assessment based on similar developments is required.

[4] Rate adopted for developments with a gross floor area of greater than 100m^2.

[5] Number of employees determined at a rate of 4 staff per 100m^2.

When adjusting the demands associated with tenancies that are not expected to operate or will operate at minimal levels on weekends or weekday evenings (industrial, office and child care), the resulting parking requirement under the DCP is for 208 parking spaces. This is less than the total of 268 spaces provided on-site for the proposed development and it may be concluded that weekend demands can be readily accommodated.

5.4.2 Weekdays

During weekdays, parking occupancy will be predominantly associated with industrial and office uses. Between the typical peak period of demand between 11:30am to 2:00pm, retail uses are expected to be effectively ancillary to the main industrial uses (which is not the case on weekends), while the childcare centre will have minimal staff demands and no expected parent/carer activity.

The development is also situated within a sizeable catchment of customers within easy walking distance of the site. Under present conditions, the entire Lakes Business Park encompassing several properties on Lord Street accommodates a total 43,000m^2 of industrial and office area (with additional floor space proposed under this application), with many of these tenancies also appealing to residents living south of the site (pedestrian access will be provided from the Daniel Street connection). The applicant's food and beverage consultant, Urbis, predicts that 60% of trade for retail and food & beverage establishments will be from walk-in customers, having regard for market research undertaken for the Lakes Business Park.

Accordingly, reduction factors have been applied to industrial retail outlet, indoor recreation, food and beverage retail and child care uses during these times as summarised in the parking assessment in **Table 4**.

Table 4: Non-Cumulative Assessment - Weekdays

Type	Number	Minimum Rate	Spaces Required[1]
Block A			
General Industry[2]	2,185.1m^2	1 space per 73m^2 GFA	30
Ancillary Office[2]	1,257.3m^2		18
Office Premises[2]	1,302.5m^2		18
Industrial Retail Outlet	2,049.8m^2	1 space per 40m^2 GFA	21 (40%)
Indoor Recreation[3]	823.8m^2	1 space per 40m^2 GFA	9 (40%)
		Sub-Total	**96**
Block B			
General Industry[2]	2,387.1m^2	1 space per 73m^2 GFA	33
Ancillary Office[2]	828.0m^2		12
Office Premises[2]	988.6m^2		14
Child Care Centre	35 children 8 employees	1 space per 2 employees; plus 1 space per 5 children; plus 1 pick-up and set-down space per 20 children	4 (employees)
Restaurants and Café[4,5]	723.3m^2 29 employees	1 space per 2 employees; plus 1 space / 3 seats (internal and external); or 1 space / 10m^2 GFA, whichever is greater	35 (40%)
Shops	350.6m^2	1 space per 25m^2 GFA	6 (40%)
		Sub-Total	**104**
Block C			
Warehouse	4,403.8m^2	1 space per 300m^2 GFA plus 1 space per 40m^2 GFA for ancillary office space	15
Ancillary Office	800.2m^2		21
		Sub-Total	**36**
		Total	**236**

[1] Parking spaces rounded up to the nearest whole number for each land use within each block.

[2] Site specific parking rate adopted form surveys of existing industrial and commercial development on-site.

[3] Parking Assessment based on similar developments is required.

[4] Rate adopted for developments with a gross floor area of greater than 100m^2.

[5] Number of employees determined at a rate of 4 staff per 100m^2.

Is evident from the above non-cumulative assessment that 236 parking spaces would satisfy the expected demand during weekdays. In response, the total provision of 268 on-site parking spaces will accommodate this provision with spare capacity for some 32 spaces.

5.5 Accessible Parking

The accessible parking requirements under the DCP for each respective land use is summarised in **Table 5** below.

Table 5: DCP Accessible Parking Rates

Type		Source	Parking Requirement	Accessible Rate	Spaces Required
Industry	Class 7b	BCA	78	1 space for every 100 car parking spaces or part thereof	1
Commercial	Class 5		69		1
Retail (inc food & beverage and industrial retail outlet)		DCP	154	5% of the car parking requirement	8
Child Care Centre		DCP	13	In a vehicle parking area containing 6-49 vehicle spaces, one accessible space designed in accordance with relevant Australian Standards will be provided.	1
Indoor Recreation	Class 9b	BCA	21	1 space for every 50 car parking spaces or part thereof	1
				Total	**12**

It can be seen that the proposed development nominally requires 12 accessible parking spaces, which again is based on a cumulative assessment. In response, provision has been made for nine (9) accessible parking spaces, which is considered to be satisfactory for weekday and weekend conditions when accounting for the non-cumulative demands established in Section 5.4.

5.6 Bicycle Facilities

The DCP requires that in every new non-residential building, where the floor space exceeds 600m^2 gross floor area, bicycle parking equivalent to 10% of the car parking requirement or part thereof is to be provided. Given Block A and Block B are adaptive reuses of existing buildings, bicycle parking would only be required for Block C.

Notwithstanding, bicycle parking may be of more utility to other proposed uses, such as retail, food & beverage and indoor recreational tenancies. In this regard, bicycle parking could be provided to suit a Condition of Consent, prior to issue of a Construction Certificate.

5.7 Servicing

The service vehicle parking requirements under the DCP for each respective land use is summarised in **Table 4** below.

Table 4: DCP Service Vehicle Parking Rates

Type	Size	Range	Service Vehicle Rates
Industry	All tenancies	< 8,000m^2 GFA[1]	1 service bay for every 800m^2 GFA
Office Premises	2,291.1m^2	1,000m^2 – 2,499m^2 GFA	2 Courier Vans 1 MRV
Retail	1,073.3m^2	1,000m^2 – 1,499m^2 GFA	1 Courier Vans 1 SRV 1 MRV
Indoor Recreation Industrial Retail Outlet	2,873.6m^2	Not specified	

[1] Range chosen for each tenancy size

An exact provision cannot be strictly determined as rates have not been published for all uses. Nonetheless, the following private and general loading facilities will be available:

- A private loading dock for each industrial (including ancillary office) and indoor recreational tenancy. Each tenancy is capable of accommodating an 8.8m Medium Rigid Vehicle (MRV).
- A 19 metre parallel loading zone along the western face of Block A.

It is expected that outside of typical operational hours, car parking areas can also accommodate loading vehicles in addition to the designated Loading Bays (available at all times). Accordingly, the site has potential to accommodate virtually any foreseable demand through careful scheduling and management of parking areas. It is therefore proposed that a Loading Dock Management Plan be prepared prior to an Occupation Certificate, which would demonstrate how all temporary and permanent loading facilities will operate satisfactorily, including details on:

- Allocation of car parking areas for tenancies to use as loading areas.
- Scheduling of all regular deliveries outside of key operational hours for the Lakes Business Park.

- Couriers using car parking spaces at non-peak times.
- Management procedures and responsibilities to ensure that loading resources are used equitably.

6. Traffic Impacts

6.1 Trip Generation

6.1.1 Industrial, Warehouse and Commercial

The RMS *Technical Direction TDT 2013/04a* provides traffic generation rates for business parks and industrial estates based on surveys undertaken in 2012. It recommends an hourly peak period rate of 0.52 vehicle trips per 100m^2 gross floor area during the AM peak period and 0.56 vehicle trips per 100m^2 gross floor area during the PM peak period (this is noted to be consistent with the 0.5 vehicle trips per 100m^2 GFA stipulated for warehouses under the RMS Guide to Traffic Generating Developments). Application of these rates to the total of 14,152.6m^2 gross floor area of industrial, warehouse, ancillary office and commercial space results in the following traffic generation:

- 79 vehicle trips per hour during the AM peak period (63 in and 16 out); and
- 74 vehicle trips per hour during the PM peak period (15 in and 59 out).

As a comparable amount of industrial and commercial space is currently approved on-site, it is expected that the weekend traffic surveys undertaken for the intersection of Botany Road and Lord Street would capture the traffic associated with these uses under proposed conditions.

6.1.2 Retail

The RMS *Guide to Traffic Generating Developments* provides traffic generation rates for secondary retail stores, defined to be those stores that tend not to be the primary attractors to a centre. This can include food & beverage outlets of a take-away nature. It recommends an hourly trip generation rate of 4.6 vehicle trips per 100m^2 gross leasable floor area for the weekday PM peak period (Thursday) and 10.7 vehicle trips per 100m^2 gross leasable floor area during the weekend peak period (Saturday). The AM peak period rate has been assumed to be third of the PM peak period rate to account mainly for staff arrivals, whilst it is also assumed that gross leasable floor area is equivalent to gross floor area. Given that 60% of customers are expected to be walk-in (as outlined in Section 5), a reduction factor of 30% is considered suitable for all peak periods (a proportion of customers are also expected to be shared across different tenancies on weekends). Application of the above rates and reduction factors to the combined 1,073.9m^2 gross floor area of retail and food & beverage space results in the following traffic generation:

- 12 vehicle trips per hour during the AM peak period (10 in and 2 out);
- 35 vehicle trips per hour during the PM peak period (17 in and 18 out); and

- 80 vehicle trips per hour during the weekend peak period (40 in and 40 out).

6.1.3 Industrial Retail Outlet

The RMS *Guide to Traffic Generating Developments* does not publish trip generation rates for industrial retail outlets, however acknowledges that where retailing is permitted from the site, traffic generation rates are higher than the 0.5 vehicle trips per hour recommended for warehouse developments. A comparable use is considered to be a bulky goods retail store, to which the *Technical Direction TDT 2013/04a* recommends hourly trip rates of 2.7 vehicle trips per hour during morning and evening weekday peak periods (AM peak periods don't coincide with network peak period) and 3.9 vehicle trips per hour during weekend peak periods. When applying a 30% reduction factor for walk-in/dual-use customers, the following traffic generation is estimated for the 2,049.8m^2 gross floor area of industrial retail outlet space:

- 9 vehicle trips per hour during the AM peak period (4 in and 5 out);
- 27 vehicle trips per hour during the PM peak period (13 in and 14 out); and
- 80 vehicle trips per hour during the weekend peak period (40 in and 40 out).

6.1.4 Indoor Recreational Facility

Traffic generation rates for indoor recreational facilities vary according the nature of the facility (e.g. gymnasium, rock climbing facility, dance studio). It is expected that the tenancies for the proposed development would draw vehicle trips primarily from patrons/customers and as such, identical retail rates with a 30% reduction factor for walk-in/dual-use customers (and with equal splits) has been applied to the proposed 823.8m^2 gross floor area of indoor recreational space:

- 9 vehicle trips per hour during the AM peak period (4 in and 5 out);
- 27 vehicle trips per hour during the PM peak period (13 in and 14 out); and
- 62 vehicle trips per hour during the weekend peak period (31 in and 31 out).

6.1.5 Child Care Centre

The RMS *Guide to Traffic Generating Developments* provides traffic generation rates for child minding developments in the Sydney region, whereby for long-day care centres it recommends a trip generation rate of 0.8 vehicle trips per child per hour during the AM peak period and 0.7 vehicle trips per child per hour during the PM peak period. Application of these rates to the proposed child care centre with 35 children results in the following traffic generation:

- 28 vehicle trips per hour during the AM peak period (14 in and 14 out); and
- 25 vehicle trips per hour during the PM peak period (12 in and 13 out).

The child care centre has been assumed not to be operational on weekends, however in any case, traffic generation would be expected to be minimal during the 11:00am to 1:00pm peak period.

6.1.6 Combined Traffic Generation

Having regard for the above, it is evident that the proposed development is expected to generate the following:

- 137 vehicle trips per hour during the AM peak period (95 in and 42 out);
- 188 vehicle trips per hour during the PM peak period (70 in and 118 out); and
- 222 vehicle trips per hour during the weekend peak period (111 in and 111 out).

6.1.7 Net increase in Traffic Generation

The above traffic generation does not however take into account the volumes of the existing development as surveyed and discussed in Section 3.4. Accordingly, the net change in traffic generation as a result of the proposed development would be as follows:

- 43 vehicle trips per hour during the AM peak period (16 in and 27 out);
- 106 vehicle trips per hour during the PM peak period (63 in and 43 out); and
- 222 vehicle trips per hour during the weekend peak period (111 in and 111 out).

The expected distribution of the above net change in traffic volumes and the impact on the operation of the key intersection of Botany Road and Lord Street is discussed separately below.

6.2 Distribution of Development Traffic

In assessing the expected distribution of the development traffic, a review of the 2011 Journey to Work Data and Botany Road / Lord Street intersection survey results was undertaken. Based on the place of residence nominated for employees working within the Travel Zone containing the site, traffic will be split on Botany Road as follows:

- 80% expected to arrive from / depart to the north along Botany Road.
- 20% expected to arrive from / depart to the south along Botany Road.

These splits have been used to distribute the development volumes at this intersection during AM, PM and weekend peak periods.

6.3 Peak Period Intersection Performances

As mentioned, a previous Development Application (10.2018.1045.1) was submitted for the site which proposed a more intense scheme, which was estimated by TRAFFIX (Traffic Impact Assessment 18.002r01v05) to generate the following traffic volumes:

- 166 vehicle trips per hour during the AM peak period (118 in and 48 out);
- 230 vehicle trips per hour during the PM peak period (78 in and 152 out); and
- 222 vehicle trips per hour during the weekend peak period (111 in and 111 out).

Software modelling using SIDRA Intersection 8.0 was undertaken to assess the performance of the intersection of Lord Street and Botany Road. A summary of these results are presented in Table 6, with detailed outputs included in **Appendix B**.

Table 6: Intersection Performance - Existing & Future Scenarios

Intersection Description	Period	Scenario	Degree of Saturation	Average Delay	Level of Service
Botany Road / Lord Street (Signalised)	AM	Existing	0.562	10.3	A
		Future	0.573	10.9	A
	PM	Existing	0.476	16.1	B
		Future	0.602	19.8	B
	Weekend	Existing	0.358	10.2	A
		Future	0.421	13.9	A

It is evident that the intersection will continue to perform at a Level of Service of B or greater for all peak periods, including on weekends when the greatest utilisation of the site is expected. Under RMS guidelines, this category is defined as *'good with acceptable delays and spare capacity'*.

Furthermore, the increase in average delays (maximum 3.7 seconds) will not induce any change to the existing Level of Service experienced for any peak period. It is also emphasised that the future traffic volumes adopted in the analysis are 20% higher on weekdays than assessed for the presently proposed development scheme.

It is therefore concluded that the traffic impacts of the proposed development are minimal, with the intersection of Botany Road and Lord Street continuing to perform well under future conditions.

7. Access & Internal Design Aspects

7.1 Access

The proposed development will be served by three (3) vehicular accesses including:

- Two existing vehicular accesses on Lord Street, which will continue to accommodate heavy vehicle movements; and
- A proposed 6.0m entry only access on Lord Street, adjacent to the eastern site boundary.

As the development has multiple access points, the off-street parking standard AS2890.1 (2004) permits each access to be designed for the number of parking spaces effectively served by that access. In this respect, overall compliance with a Category 3 driveway (101-300 & Class 2 spaces) is already achieved from the existing two site access (each exceeding 8 metres).

The proposed 6.0m access complies with the requirements for a Category 2 driveway (minimum width of 6.0m) and is supportable in conjunction with the existing site accesses as it will provide safe passage for retail and parents of the child care centre, with the circulation road clear of heavy vehicle movements associated with industrial activity (besides small delivery trucks). This access has been design as one-way only with crossing points provided to account for pedestrian activity from food & beverage and retail tenancies.

7.2 Internal Design

Internal parking areas generally comply with the requirements of AS2890.1 (2004), AS2890.2 (2002) and AS2890.6 (2009), with the following noteworthy characteristics:

7.2.1 Parking Modules

- All 90 degree parking spaces have been designed to Class 2 user dimensions including a minimum space width of 2.5m, space length of 5.4m and aisle width of 5.8m. This class is suitable for medium-term parking such as for town centres and sports facilities.
- Parallel spaces are provided with a minimum space width of 2.1m and space length of 5.9m (reduced to 5.4m for end spaces). These spaces are suitable for high turnover parking and an increased aisle width of 6.0m has been provided for the circulation road adjacent to the eastern site boundary to allow for efficient circulation in accordance with AS2890.1 (2004).

- All 90 degree accessible parking spaces are designed in accordance with AS2890.6 (2009). Spaces are provided with a clear width of 2.4m and located adjacent to a minimum shared area of 2.4m.

- All 90 degree accessible parking spaces are designed in accordance with AS2890.6 (2009). Spaces are provided with a clear width of 3.2m, space length of 7.8m and located adjacent to a minimum shared area of 1.6m width.

7.2.2 Clear Head Heights

- A minimum clear head height of 2.2m is required for all (non-accessible) car parking spaces and circulation areas under AS2890.1 (2004).

- A minimum clear head height of 2.5m is required for all accessible car parking spaces and circulation areas under AS2890.6 (2009).

- A minimum clear head height of 4.5m is required for all MRV loading docks and circulation areas under AS2890.2 (2002).

7.2.3 Loading Areas

- Under AS2890.2 (2002) dimensions required for a loading dock are a minimum width of 3.5m by a length identical to the vehicle length. Parallel loading zones are to have a minimum space width of 3.0m.

- A minimum circulation width of 6.5m is provided for all areas intended for two-way truck circulation (6.2m for SRV exclusive areas) and a minimum circulation width of 3.5m provided for all areas for one-way truck circulation, in accordance with AS2890.2 (2002).

7.2.4 Other Considerations

- All columns are required to be located outside of the parking space design envelope shown in Figure 5.2 of AS2890.1 (2004).

- Appropriate visual splays are to be provided in accordance with the requirements of Figure 3.3 of AS2890.1 (2004) at all accesses.

In summary, the internal parking areas for the proposed development generally comply with AS2890.1 (2004), AS2890.2 (2002) and AS2890.6 (2009). It is however envisaged that a condition of consent would be imposed requiring compliance with these standards and as such any minor amendments considered necessary (if any) can be dealt with prior to the release of a Construction Certificate.

8. Conclusions

In summary:

- Approval is sought for the adaptive re-use of existing buildings and construction of a new warehouse building at 11-13 Lord Street in Botany. The proposed development will incorporate industrial, warehouse, commercial, retail, food & beverage, industrial retail outlet, indoor recreational facility and child care uses.

- The proposed development has a multitude of uses and has therefore been assessed non-cumulatively to account for days of differing peak demands. The provision of 268 parking spaces will accommodate the expected weekend demand of 208 spaces and expected weekday demand of 236 parking spaces, whilst also affording some spare capacity.

- The proposed development has been assessed to generate a net increase of 43 vehicle trips per hour during the weekday AM peak period, 106 vehicle trips per hour during the weekday PM peak period and 222 vehicle trips per hour during the weekend (Saturday midday) peak period. Software modelling of the critical intersection of Botany Road and Lord Street has been undertaken, with the results showing acceptable performance with the addition of development volumes during each peak scenario.

- The proposed accesses and internal parking areas generally comply with the requirements of AS2890.1 (2004), AS2890.2 (2002) and AS2890.6 (2009). Any minor amendments considered necessary (if any) can be dealt with prior to the release of a Construction Certificate.

It is therefore concluded that the proposed development is supportable on traffic and transport planning grounds and will operate satisfactorily.

Appendix A

Photographic Record

View looking south towards the sites access driveway with Lord Street from the northern side of Lord Street.

View looking east along Lord Street towards the sites access driveway to Lord Street on the right.

View looking west towards the sites access driveway with Lord Street to the left..

View looking west along Lord Street towards the intersection with Botany Road and Lord Street.

View looking north along Daniel Street towards the existing cul-de-sac which forms a section of the sites southern boundary providing an opportunity for an additional access driveway to the site.

View looking east along Daphne Street towards the intersection with Daphne Street and Daniel Street.

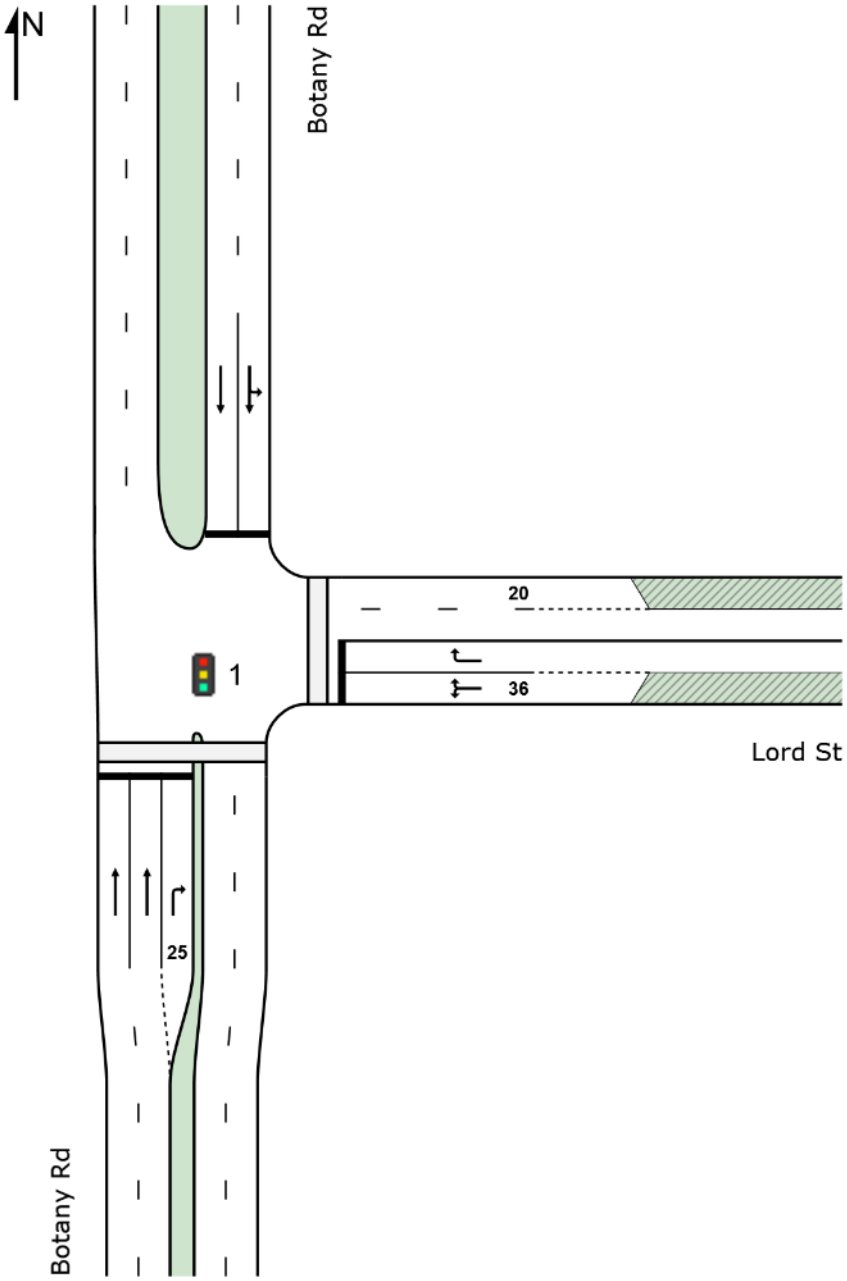
Appendix B

SIDRA Outputs

SITE LAYOUT

Site: 1 [Botany Rd x Lord St EX - AM Peak]

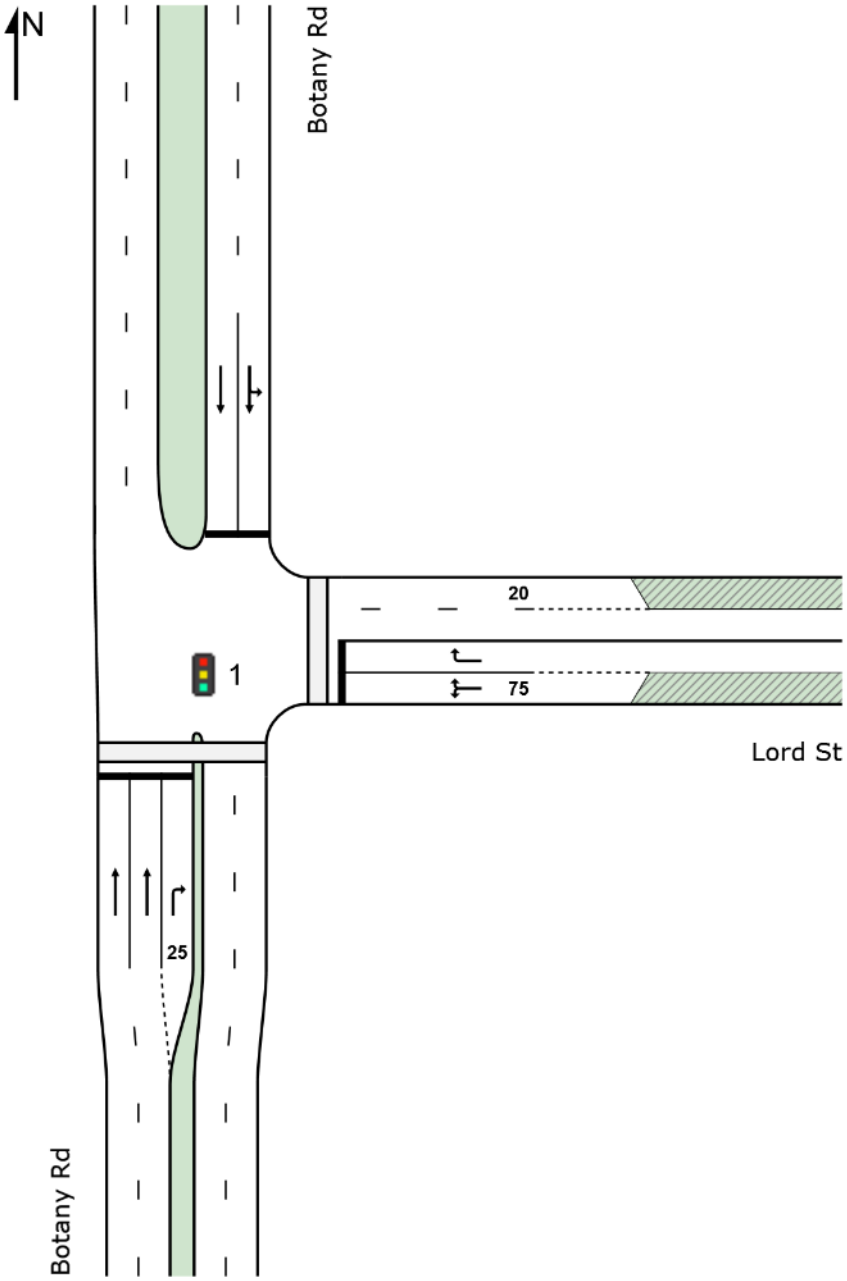
Scenario: Existing
Period: AM Peak
Site Category: (None)
Signals - Fixed Time Isolated



SITE LAYOUT

Site: 1 [Botany Rd x Lord St EX - PM Peak]

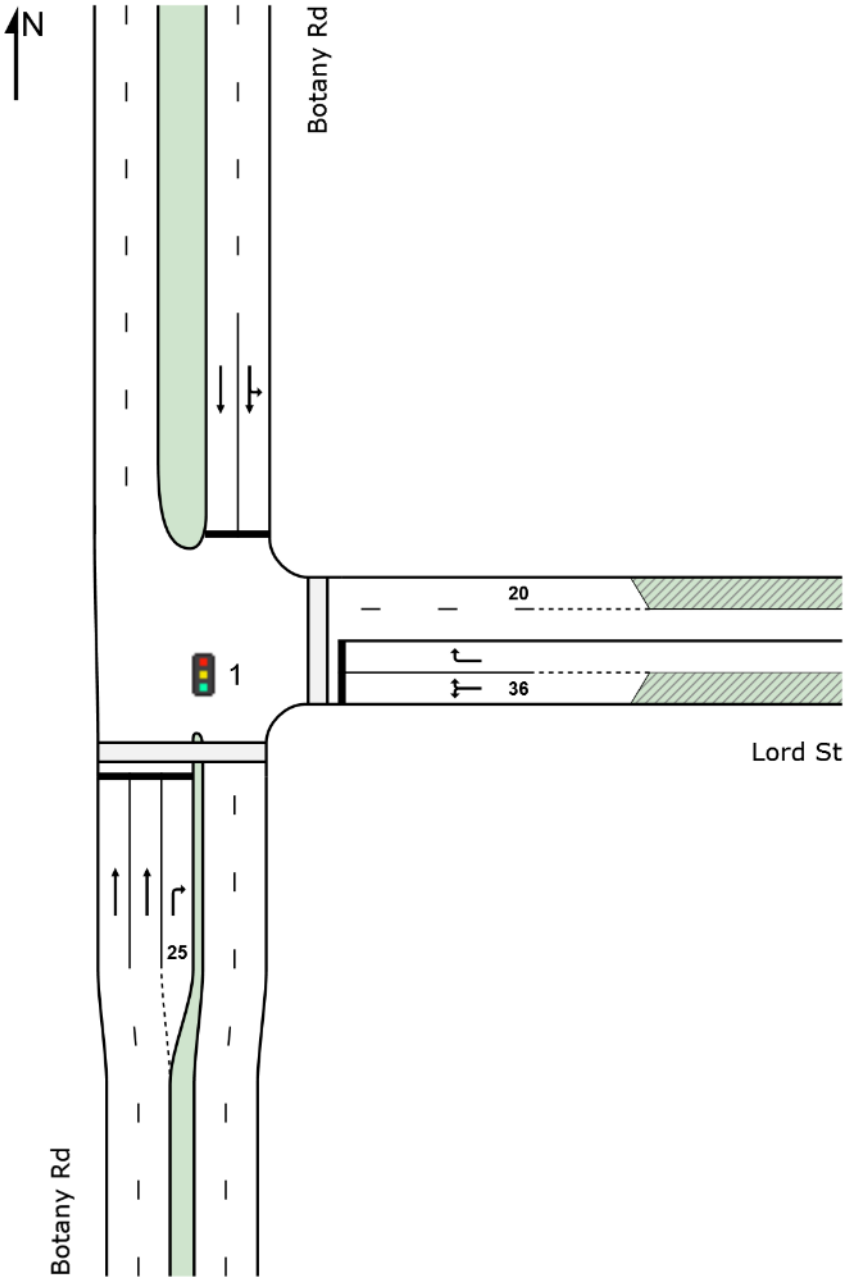
Scenario: Existing
Period: PM Peak
Site Category: (None)
Signals - Fixed Time Isolated



SITE LAYOUT

Site: 1 [Botany Rd x Lord St EX - Weekend]

Scenario: Existing
Period: PM Peak
Site Category: (None)
Signals - Fixed Time Isolated



MOVEMENT SUMMARY

Site: 1 [Botany Rd x Lord St EX - AM Peak]

Scenario: Existing
Period: AM Peak
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 90 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Botany Rd												
2	T1	1028	3.8	0.403	5.1	LOS A	9.4	67.9	0.41	0.37	0.41	42.8
3	R2	87	1.2	0.272	13.3	LOS A	1.3	9.3	0.64	0.71	0.64	38.4
Approach		1116	3.6	0.403	5.7	LOS A	9.4	67.9	0.43	0.39	0.43	42.2
East: Lord St												
4	L2	37	0.0	0.222	22.9	LOS B	1.7	11.8	0.87	0.74	0.87	33.2
6	R2	89	4.7	0.222	35.5	LOS C	2.3	16.8	0.90	0.74	0.90	30.5
Approach		126	3.3	0.222	31.8	LOS C	2.3	16.8	0.89	0.74	0.89	31.1
North: Botany Rd												
7	L2	494	0.6	0.562	13.6	LOS A	16.0	113.6	0.59	0.70	0.59	40.6
8	T1	803	5.4	0.562	11.4	LOS A	16.7	122.2	0.65	0.62	0.65	35.5
Approach		1297	3.6	0.562	12.3	LOS A	16.7	122.2	0.62	0.65	0.62	38.1
All Vehicles		2539	3.6	0.562	10.3	LOS A	16.7	122.2	0.55	0.54	0.55	38.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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
P1	South Full Crossing	53	39.3	LOS D	0.1	0.1	0.94	0.94
P2	East Full Crossing	53	12.3	LOS B	0.1	0.1	0.52	0.52
All Pedestrians		105	25.8	LOS C			0.73	0.73

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: 1 [Botany Rd x Lord St FU - AM Peak]

Scenario: Future
Period: AM Peak
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 90 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Botany Rd												
2	T1	1028	3.8	0.406	5.1	LOS A	9.5	68.5	0.41	0.37	0.41	42.8
3	R2	96	1.1	0.306	13.5	LOS A	1.5	10.6	0.66	0.71	0.66	38.7
Approach		1124	3.6	0.406	5.8	LOS A	9.5	68.5	0.43	0.40	0.43	42.2
East: Lord St												
4	L2	44	0.0	0.289	25.0	LOS B	2.2	15.4	0.92	0.77	0.92	32.9
6	R2	117	3.6	0.289	36.7	LOS C	3.1	22.1	0.93	0.76	0.93	30.8
Approach		161	2.6	0.289	33.5	LOS C	3.1	22.1	0.92	0.76	0.92	31.3
North: Botany Rd												
7	L2	526	0.6	0.573	13.7	LOS A	16.6	118.3	0.60	0.71	0.60	40.8
8	T1	803	5.4	0.573	11.6	LOS A	17.2	125.8	0.65	0.62	0.65	35.5
Approach		1329	3.5	0.573	12.5	LOS A	17.2	125.8	0.63	0.66	0.63	38.2
All Vehicles		2615	3.5	0.573	10.9	LOS A	17.2	125.8	0.56	0.55	0.56	38.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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
P1	South Full Crossing	53	39.3	LOS D	0.1	0.1	0.94	0.94
P2	East Full Crossing	53	12.3	LOS B	0.1	0.1	0.52	0.52
All Pedestrians		105	25.8	LOS C			0.73	0.73

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: 1 [Botany Rd x Lord St EX - PM Peak]

Scenario: Existing
Period: PM Peak
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 90 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Botany Rd												
2	T1	1006	2.7	0.476	11.6	LOS A	13.4	95.7	0.62	0.55	0.62	36.0
3	R2	31	0.0	0.110	21.4	LOS B	0.8	5.8	0.62	0.68	0.62	33.8
Approach		1037	2.6	0.476	11.9	LOS A	13.4	95.7	0.62	0.55	0.62	35.9
East: Lord St												
4	L2	43	0.0	0.471	33.3	LOS C	9.0	63.0	0.87	0.83	1.07	28.9
6	R2	466	0.0	0.471	33.3	LOS C	9.3	64.8	0.87	0.81	0.96	31.2
Approach		509	0.0	0.471	33.3	LOS C	9.3	64.8	0.87	0.81	0.97	31.0
North: Botany Rd												
7	L2	64	0.0	0.460	15.9	LOS B	12.5	88.9	0.61	0.58	0.68	40.9
8	T1	957	2.5	0.460	11.5	LOS A	12.8	91.3	0.62	0.56	0.65	35.9
Approach		1021	2.4	0.460	11.8	LOS A	12.8	91.3	0.62	0.56	0.65	36.4
All Vehicles		2567	2.0	0.476	16.1	LOS B	13.4	95.7	0.67	0.61	0.70	34.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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
P1	South Full Crossing	53	33.9	LOS D	0.1	0.1	0.87	0.87
P2	East Full Crossing	53	12.8	LOS B	0.1	0.1	0.53	0.53
All Pedestrians		105	23.4	LOS C			0.70	0.70

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: 1 [Botany Rd x Lord St FU - PM Peak]

Scenario: Future
Period: PM Peak
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 90 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Botany Rd												
2	T1	1006	2.7	0.455	10.4	LOS A	12.5	89.7	0.58	0.52	0.58	37.1
3	R2	45	0.0	0.146	17.3	LOS B	0.9	6.1	0.72	0.70	0.72	37.5
Approach		1052	2.6	0.455	10.7	LOS A	12.5	89.7	0.59	0.53	0.59	37.1
East: Lord St												
4	L2	59	0.0	0.592	37.5	LOS C	11.2	78.6	0.92	0.85	1.18	27.9
6	R2	532	0.0	0.592	36.7	LOS C	11.4	79.8	0.92	0.84	1.04	30.5
Approach		591	0.0	0.592	36.8	LOS C	11.4	79.8	0.92	0.84	1.05	30.3
North: Botany Rd												
7	L2	124	0.0	0.602	23.2	LOS B	17.4	124.0	0.79	0.73	0.79	38.3
8	T1	957	2.5	0.602	18.9	LOS B	17.5	125.3	0.79	0.72	0.79	30.5
Approach		1081	2.2	0.602	19.4	LOS B	17.5	125.3	0.79	0.72	0.79	31.8
All Vehicles		2723	1.9	0.602	19.8	LOS B	17.5	125.3	0.74	0.67	0.77	32.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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
P1	South Full Crossing	53	35.6	LOS D	0.1	0.1	0.89	0.89
P2	East Full Crossing	53	18.7	LOS B	0.1	0.1	0.65	0.65
All Pedestrians		105	27.2	LOS C			0.77	0.77

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: 1 [Botany Rd x Lord St EX - Weekend]

Scenario: Existing
Period: Weekend
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 90 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Botany Rd												
2	T1	698	4.2	0.255	4.5	LOS A	5.1	37.2	0.36	0.32	0.36	43.5
3	R2	28	0.0	0.058	10.0	LOS A	0.4	2.6	0.47	0.63	0.47	40.6
Approach		726	4.1	0.255	4.7	LOS A	5.1	37.2	0.37	0.33	0.37	43.3
East: Lord St												
4	L2	28	0.0	0.258	28.3	LOS B	2.3	16.2	0.90	0.75	0.90	30.8
6	R2	114	3.7	0.258	36.8	LOS C	2.7	19.7	0.92	0.75	0.92	30.0
Approach		142	3.0	0.258	35.1	LOS C	2.7	19.7	0.91	0.75	0.91	30.1
North: Botany Rd												
7	L2	114	5.6	0.358	14.4	LOS A	8.8	64.4	0.55	0.55	0.55	41.3
8	T1	679	5.7	0.358	10.1	LOS A	9.0	65.9	0.55	0.51	0.55	36.9
Approach		793	5.7	0.358	10.7	LOS A	9.0	65.9	0.55	0.52	0.55	37.9
All Vehicles		1661	4.8	0.358	10.2	LOS A	9.0	65.9	0.50	0.46	0.50	38.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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
P1	South Full Crossing	53	39.3	LOS D	0.1	0.1	0.94	0.94
P2	East Full Crossing	53	12.3	LOS B	0.1	0.1	0.52	0.52
All Pedestrians		105	25.8	LOS C			0.73	0.73

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: 1 [Botany Rd x Lord St FU - Weekend]

Scenario: Future
Period: Weekend
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 90 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Botany Rd												
2	T1	698	4.2	0.267	5.7	LOS A	5.7	41.7	0.41	0.36	0.41	42.1
3	R2	52	0.0	0.120	12.4	LOS A	0.8	5.5	0.56	0.67	0.56	41.4
Approach		749	3.9	0.267	6.1	LOS A	5.7	41.7	0.42	0.38	0.42	42.0
East: Lord St												
4	L2	52	0.0	0.390	36.9	LOS C	4.7	33.6	0.92	0.80	1.06	28.8
6	R2	207	2.0	0.390	39.6	LOS C	5.1	36.1	0.93	0.79	0.98	30.5
Approach		259	1.6	0.390	39.1	LOS C	5.1	36.1	0.93	0.79	1.00	30.2
North: Botany Rd												
7	L2	207	3.0	0.421	16.1	LOS B	10.9	78.9	0.60	0.64	0.60	41.8
8	T1	679	5.7	0.421	12.1	LOS A	11.1	81.5	0.61	0.58	0.61	35.2
Approach		886	5.1	0.421	13.0	LOS A	11.1	81.5	0.61	0.60	0.61	37.4
All Vehicles		1895	4.2	0.421	13.9	LOS A	11.1	81.5	0.58	0.54	0.59	37.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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
P1	South Full Crossing	53	39.3	LOS D	0.1	0.1	0.94	0.94
P2	East Full Crossing	53	13.9	LOS B	0.1	0.1	0.56	0.56
All Pedestrians		105	26.6	LOS C			0.75	0.75

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 C

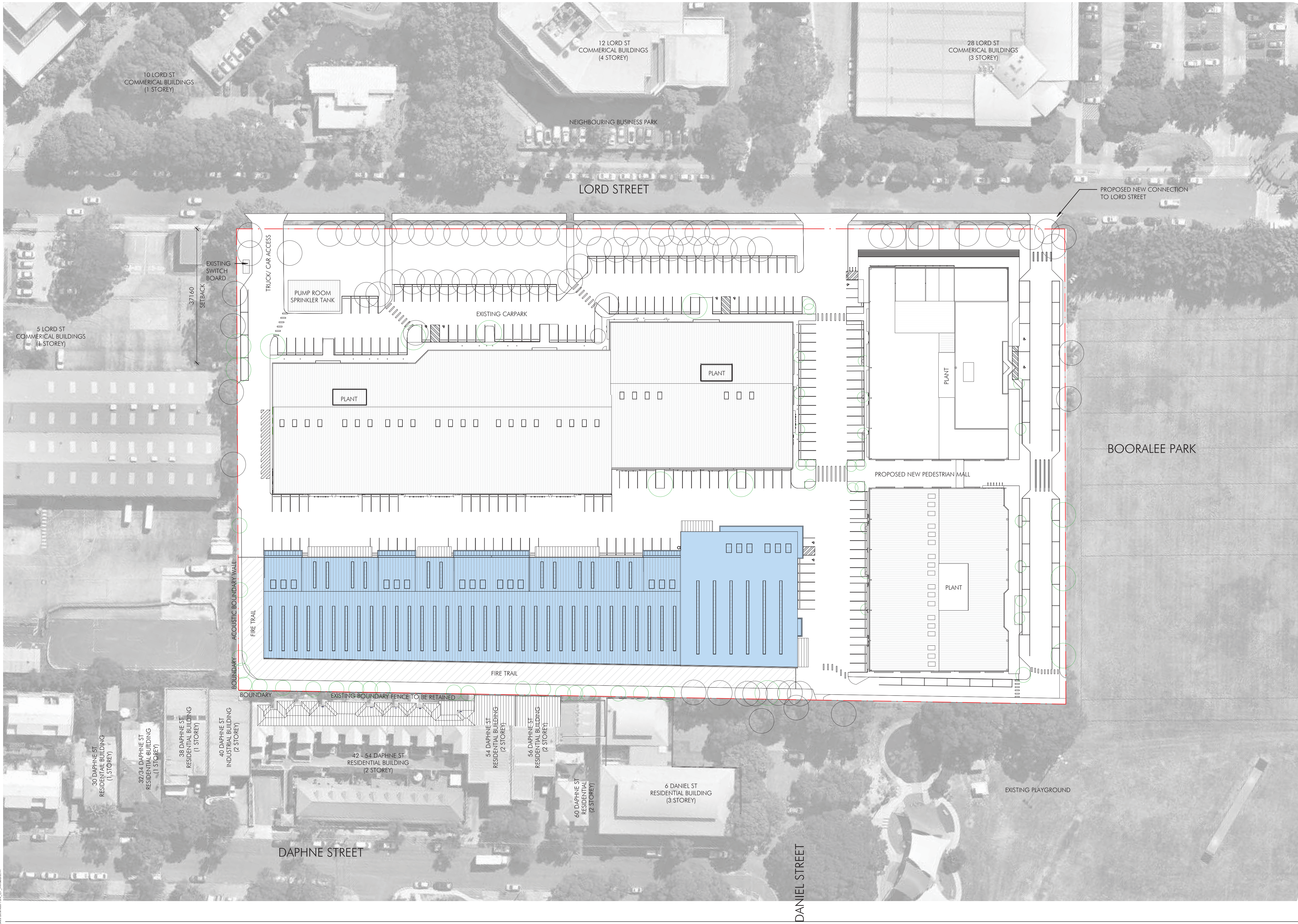
Development Yields

Development Yields

Type	Number
Block A	
General Industry	2,185.1m^2
Ancillary Office	1,257.3m^2
Office Premises	1,302.5m^2
Industrial Retail Outlet	2,049.8m^2
Indoor Recreation	823.8m^2
Block B	
General Industry	2,387.1m^2
Ancillary Office	828.0m^2
Office Premises	988.6m^2
Child Care Centre	407.1m^2
Restaurants and Café	723.3m^2
Shops	350.6m^2
Block C	
Warehouse	4,403.8m^2
Ancillary Office	800.2m^2

Appendix D

Architectural Plans (Reduced Scale)



TREE LEGEND

EXISTING

REMOVE

NEW

AREA SCHEDULE:

SITE AREA	29,766 m^2
BUILDING A	8,608 m^2
BUILDING B	6,912 m^2
BUILDING C	5,280 m^2
TOTAL AREA	20,800 m^2
TOTAL CAR	268
SITE COVERAGE	15,194 m^2
LANDSCAPE AREA	578 m^2
DEEP SOIL AREA	2,043 m^2

Client

dexus

Issue	Description	Date
C	ISSUED FOR AMENDED DA	22.10.18
B	DRAFT AMENDED DA	12.10.18
A	ISSUED FOR DA	22.03.18
P4	ISSUED FOR COORDINATION	16.03.18
P3	DRAFT DA	09.03.18
P2	ISSUED FOR COORDINATION	07.03.18
P1	Draft Pre-DA	09.02.18

Builder and/or subcontractors shall verify all project dimensions before commencing on-site work or off-site fabrication. Figured dimensions shall take precedence over scaled dimensions.

Project Manager

PROJECT STRATEGY.

Project Name
Lakes Business Park

Project Address
11 - 13 Lord St, Botany

Key Plan

0 10000 25000

Drawing Title:
Site Plan

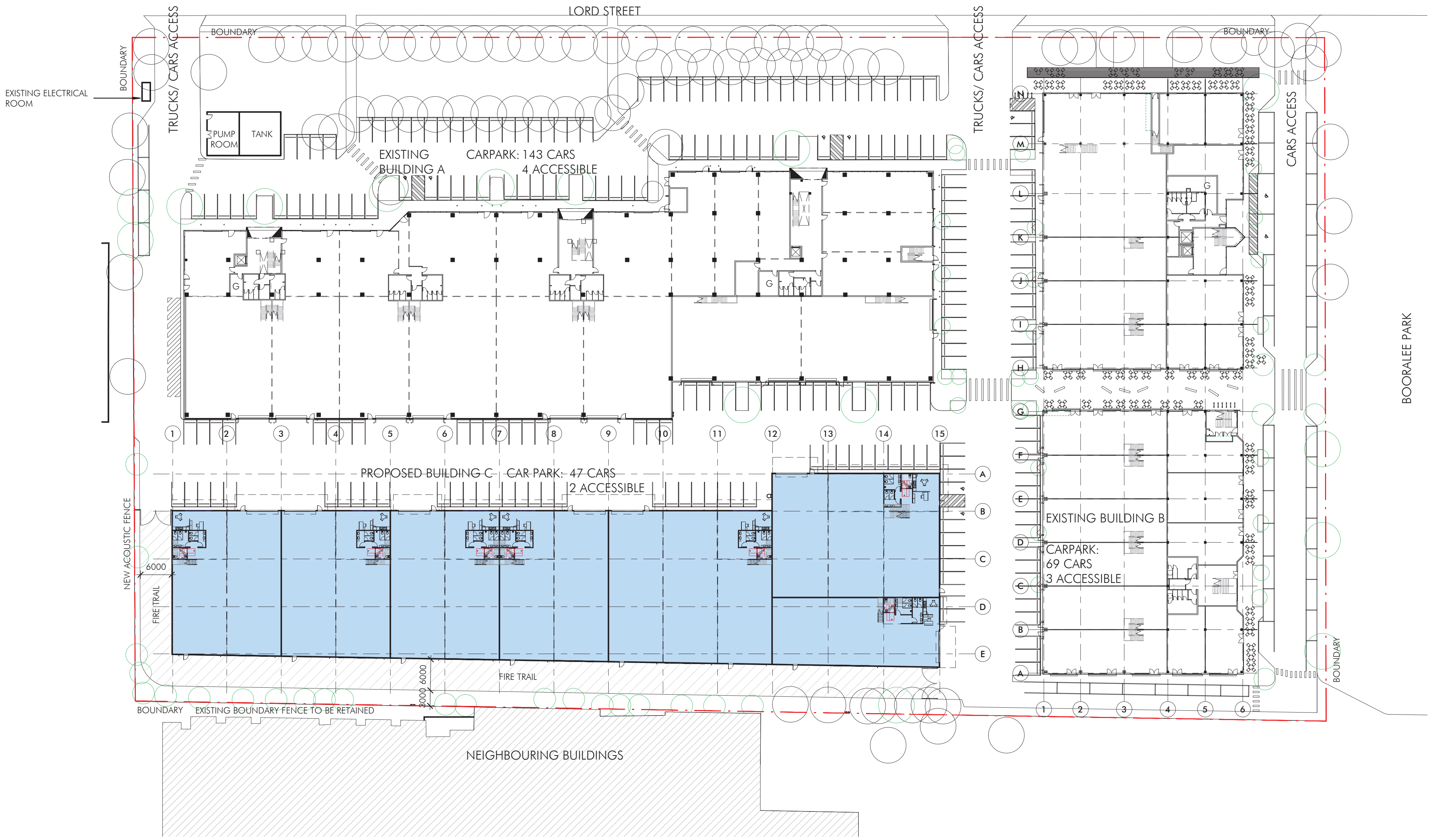
Author: Min | Checker: DC | Sheet Size: A1 | Scale: 1:500

Drawing Number: **10693_DA010** | Issue: **C**

nettletontribe

nettleton tribe partnership pty ltd ABN 58 161 683 122

Level 5, 344 Queen Street, Brisbane, QLD 4000
t +61 7 3239 2444
e: brisbane@nettletontribe.com.au w: nettletontribe.com.au



1 B_New_Ground Floor Plan
1 : 500

Client

dexus

Issue	Description	Date
C	ISSUED FOR AMENDED DA	22.10.18
B	DRAFT AMENDED DA	12.10.18
A	ISSUED FOR DA	22.03.18
P3	ISSUED FOR COORDINATION	16.03.18
P2	DRAFT DA	09.03.18
P1	Draft Pre-DA	09.02.18

Project Manager

PROJECT STRATEGY.

Project Name
Lakes Business Park

Project Address
11 - 13 Lord St, Botany

Key Plan
0 2000 5000

Drawing Title:
roun loor Plan

Author: Min
Checker: DC
Sheet Size: A1
Scale: 1: 50

Drawing Number:
10693_DA012

Issue:
C

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nettleton tribe partnership pty ltd ABN 58 161 683 122
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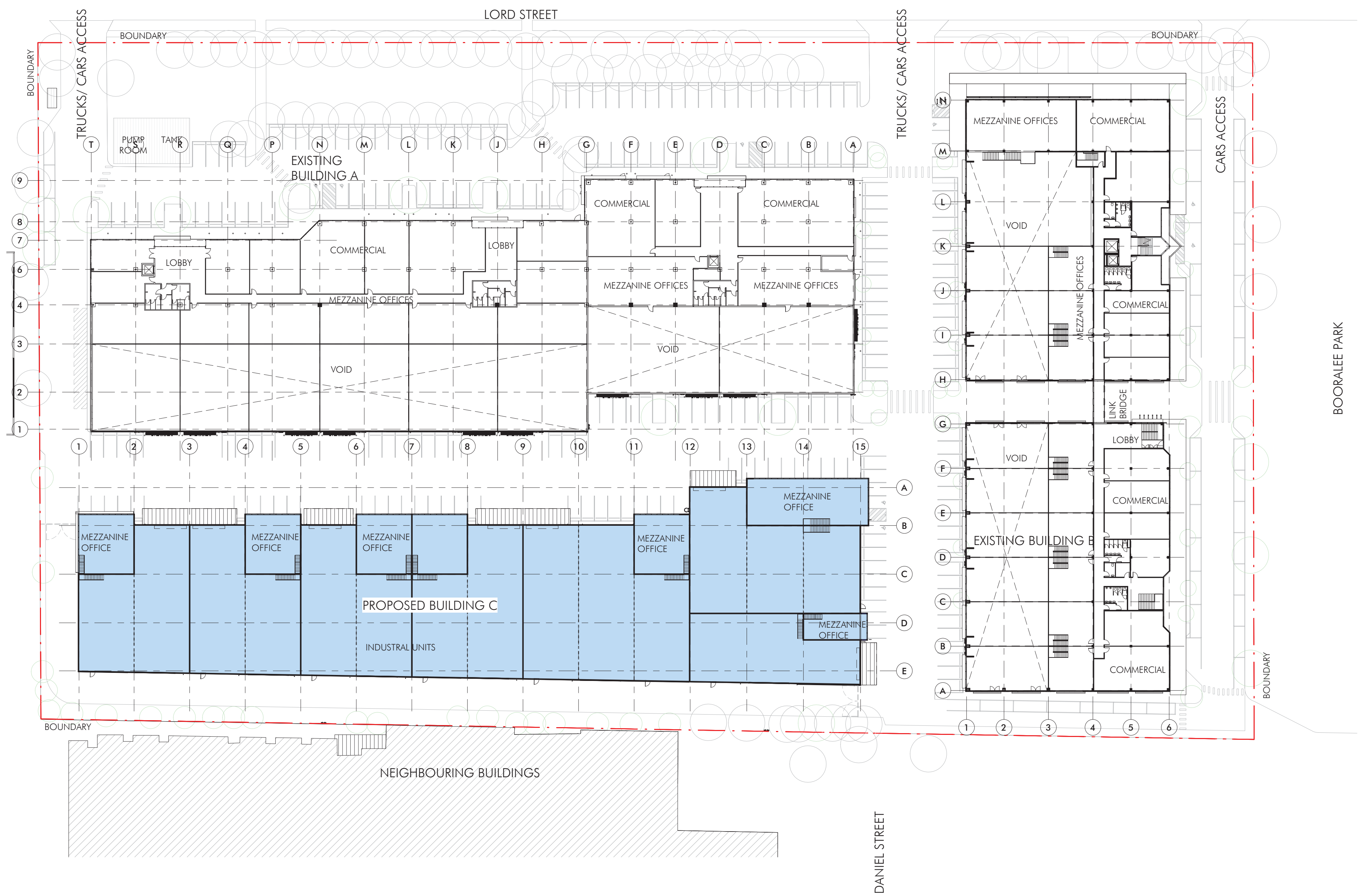
e: brisbane@nettletontribe.com.au w: nettletontribe.com.au



Client

dexus

Issue	Description	Date
C	ISSUED FOR AMENDED DA	22.10.18
B	DRAFT AMENDED DA	12.10.18
A	ISSUED FOR DA	22.03.18
P2	DRAFT DA	09.03.18
P1	Draft Pre-DA	09.02.18

Project Manager

PROJECT STRATEGY.

Project Name
Lakes Business Park

Project Address
11 - 13 Lord St, Botany

Key Plan

0 2000 5000

Drawing Title:
Mezzanine e el 1 Plan

Author: Min
Checker: DC
Sheet Size:
Scale: 1: 50

Drawing Number: **10693_DA013**
Issue: **C**

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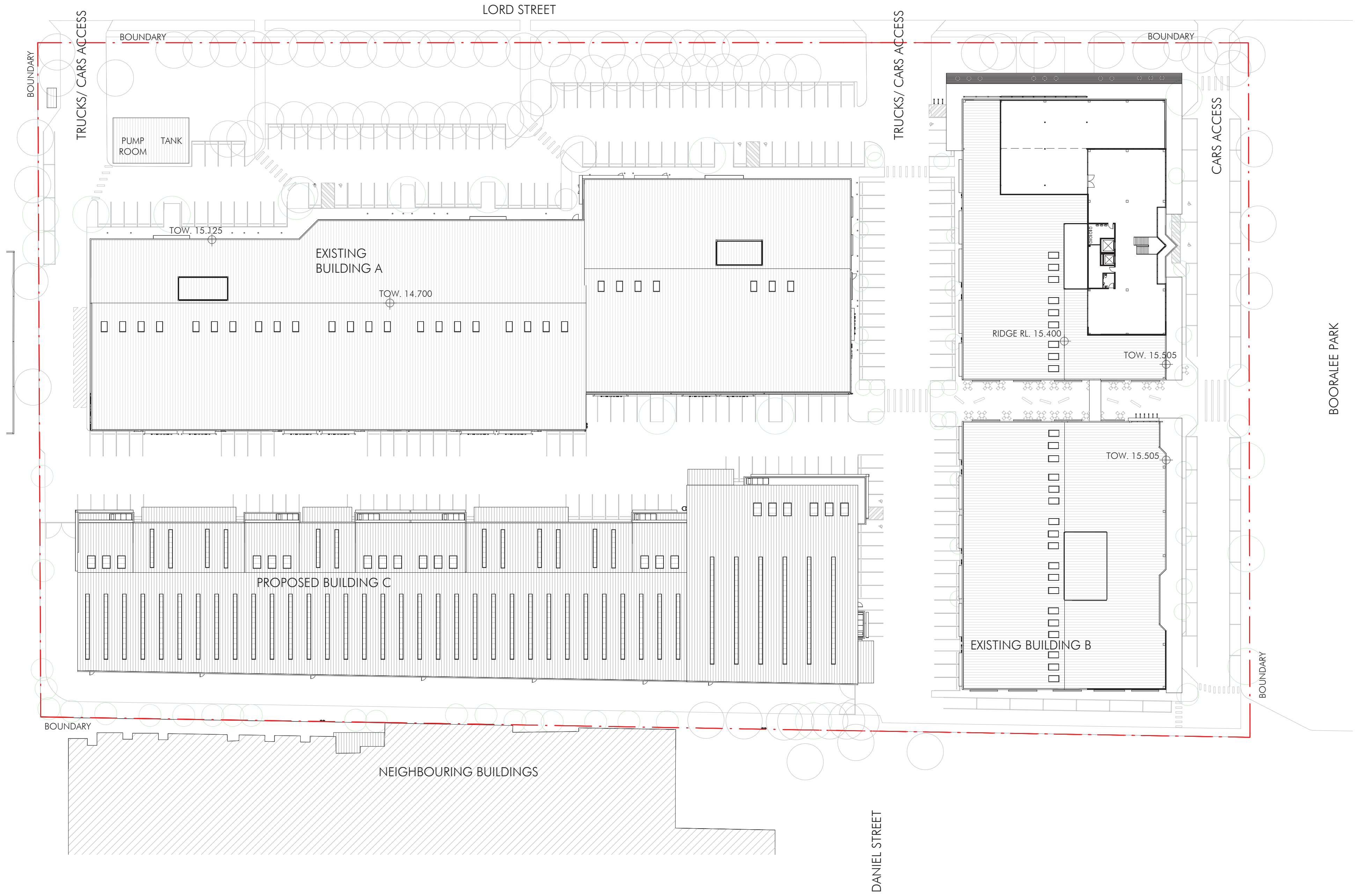
Level 5, 344 Queen Street, Brisbane, QLD 4000
t +61 7 3239 2444
e: brisbane@nettletontribe.com.au w: nettletontribe.com.au

22/10/2018 6:32:46 PM C:\REVITLOCAL2018\10693_Lakes Business Park_CF_Minseans.rvt



Client

dexus

Issue	Description	Date
C	ISSUED FOR AMENDED DA	22.10.18
B	DRAFT AMENDED DA	12.10.18
A	ISSUED FOR DA	22.03.18
P2	DRAFT DA	09.03.18
P1	Draft Pre-DA	09.02.18

Project Manager

PROJECT STRATEGY.

Project Name
Lakes Business Park

Project Address
11 - 13 Lord St, Botany

Key Plan

0 10000 25000

Drawing Title:
oo e el Plan

Author: Min
Checker: DC
Sheet Size: A1
Scale: 1:500

Drawing Number: **10693_DA014**
Issue: **C**

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t +61 7 3239 2444
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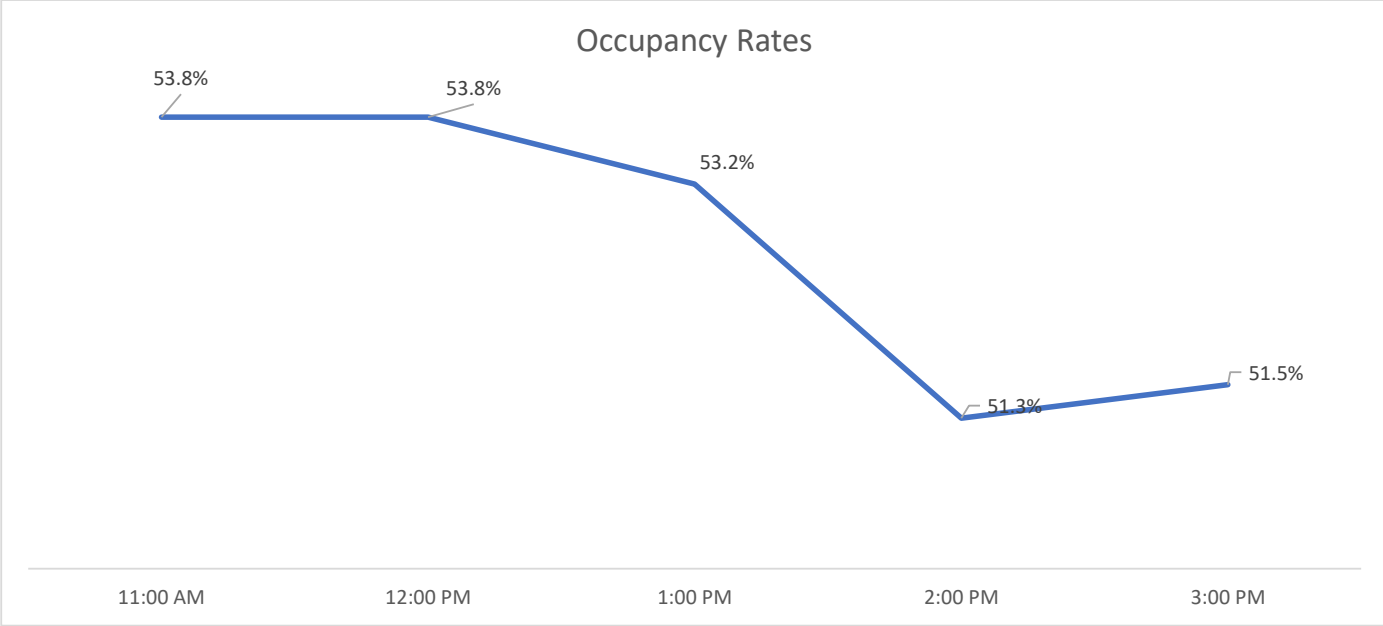
Appendix E

Parking Surveys

Location	11-13 Lord Street
Suburb	BOTANY
Client	TRAFFIX
Job No/Name	18060
Survey Duration	4 Hours
Day/Date	Wednesday, 16 May 2018

Location	Capacity	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM
Front Carpark	**91**	65	63	61	56	53
Side Carpark	**62**	45	45	45	46	48
Main Carpark	**204**	82	84	84	81	83
Total Vehicles Parked	**357**	**192**	**192**	**190**	**183**	**184**
Number of Vacant Spaces		165	165	167	174	173
% of Capacity Used		**53.8%**	**53.8%**	**53.2%**	**51.3%**	**51.5%**

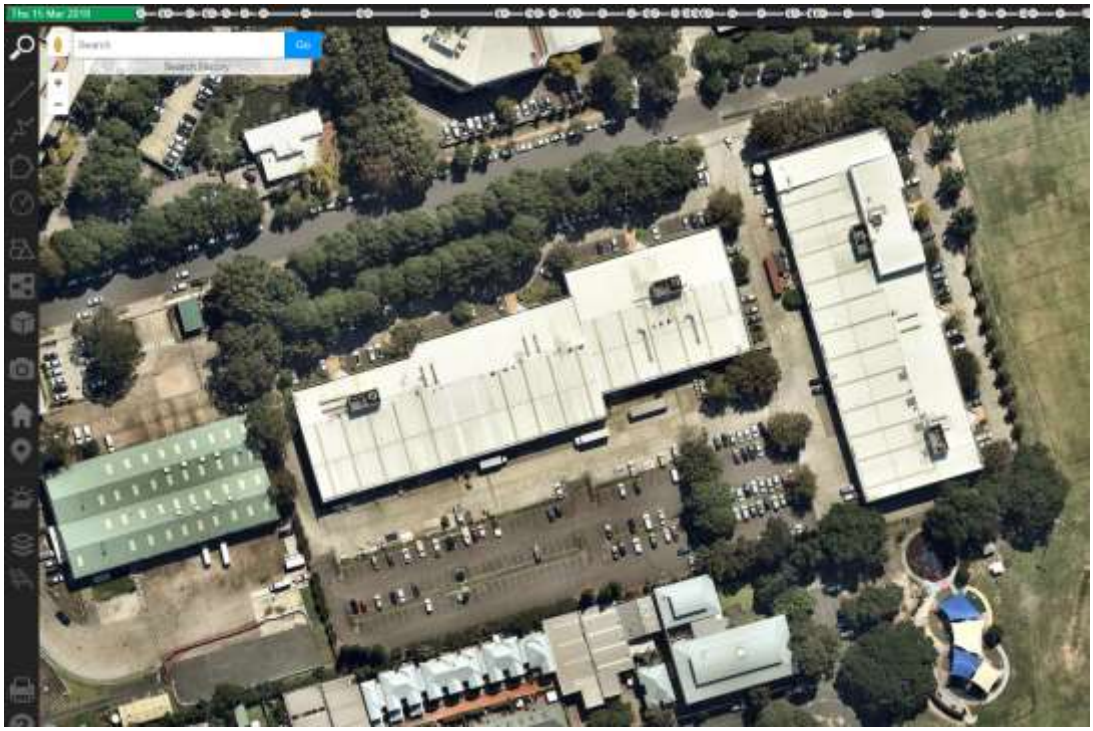


On site parking of 11 Lord Street

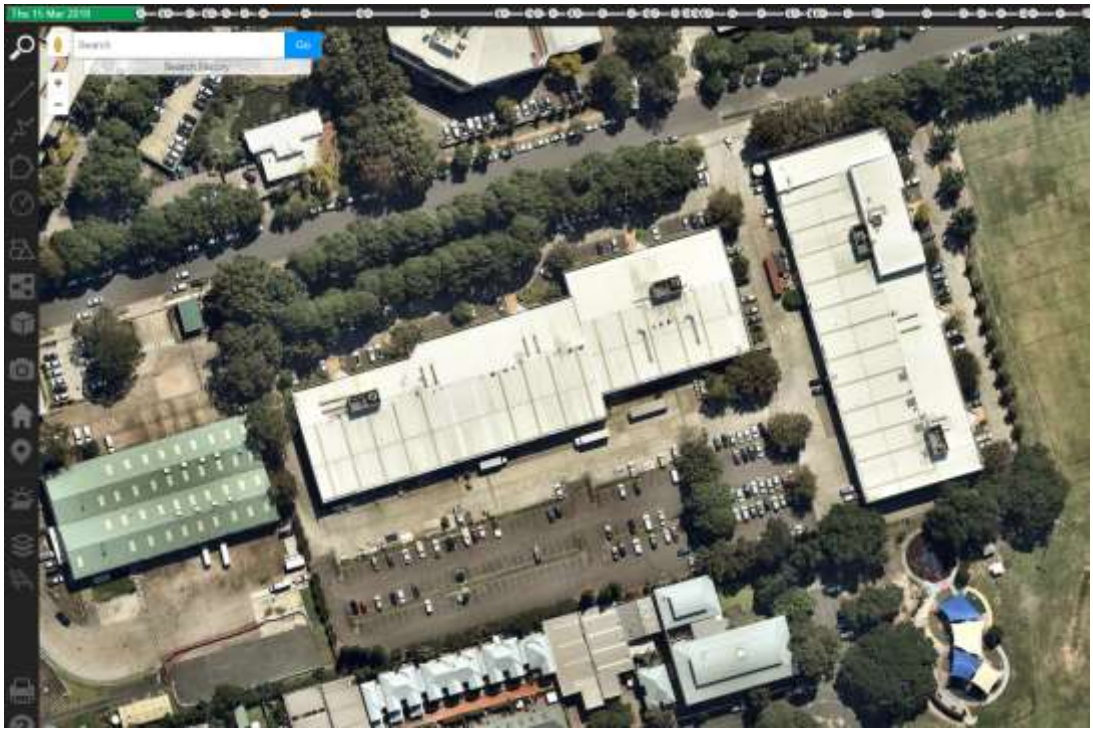
Front Carpark		91	Bays	25.49%	of Total Capacity
Side Carpark		62	Bays	17.37%	of Total Capacity
Main Carpark		204	Bays	57.14%	of Total Capacity
Total Capacity		357	Bays		

Traffic Information Specialist

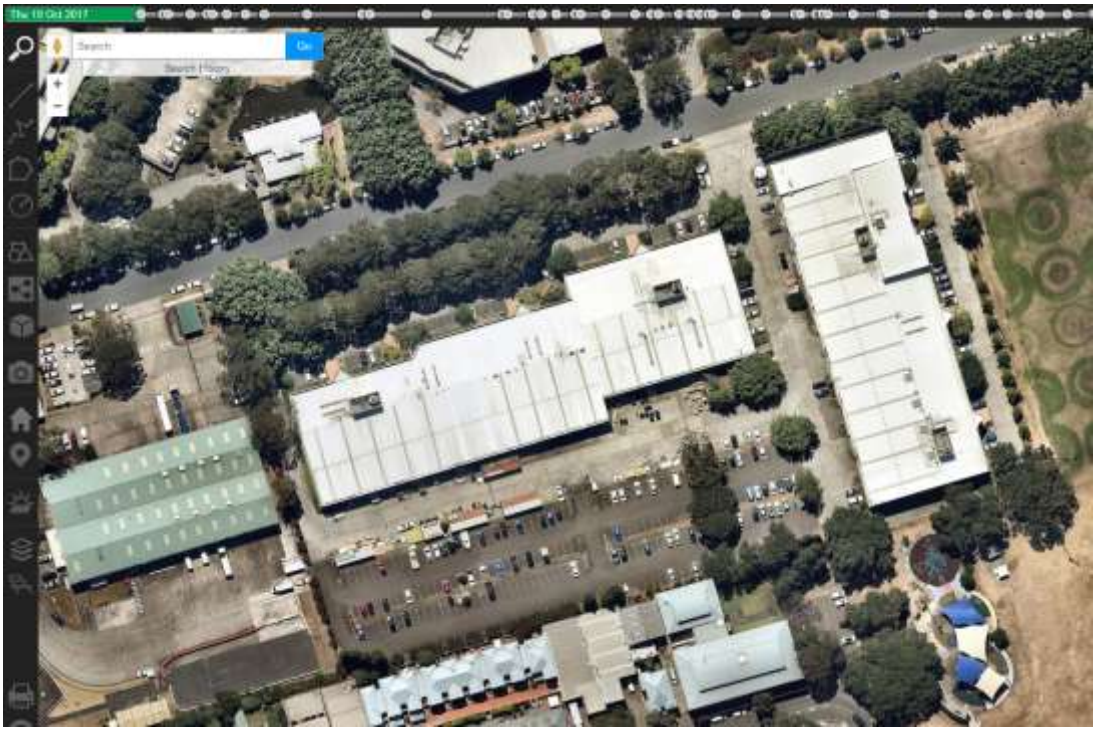
Aerial image of site captured on Wednesday 11 April 2018 (Source: NearMap)



Aerial image of site captured on Thursday 15 March 2018 (Source: NearMap)



Aerial image of site captured on Friday 19 January 2018 (Source: NearMap)



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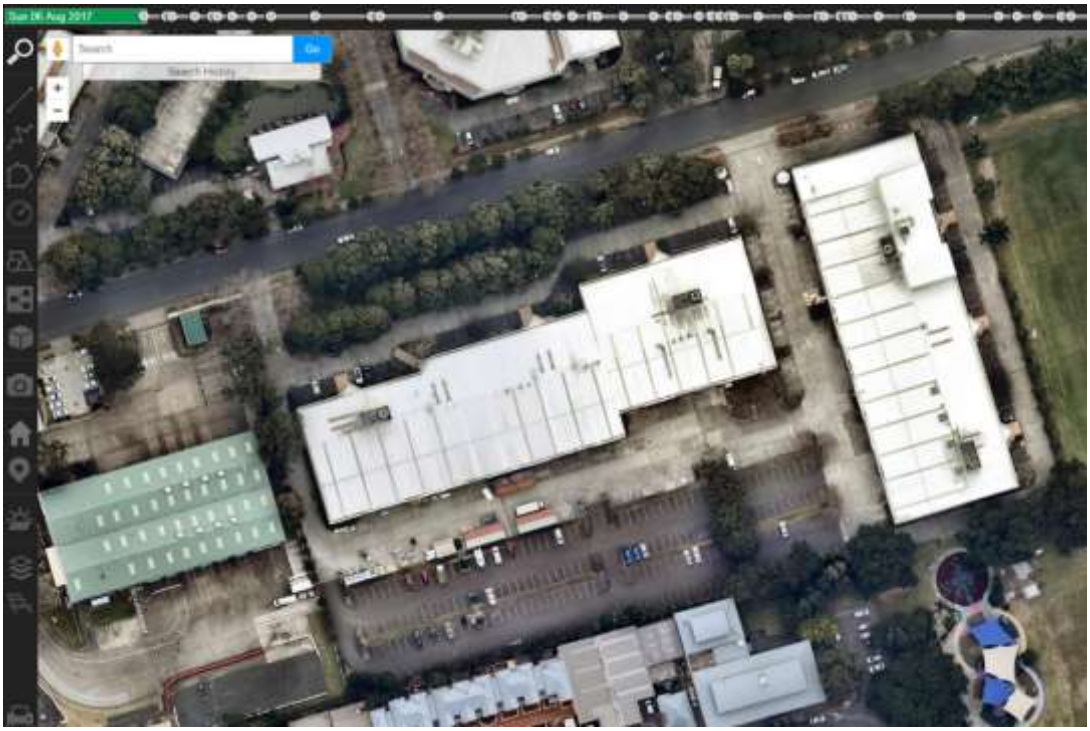
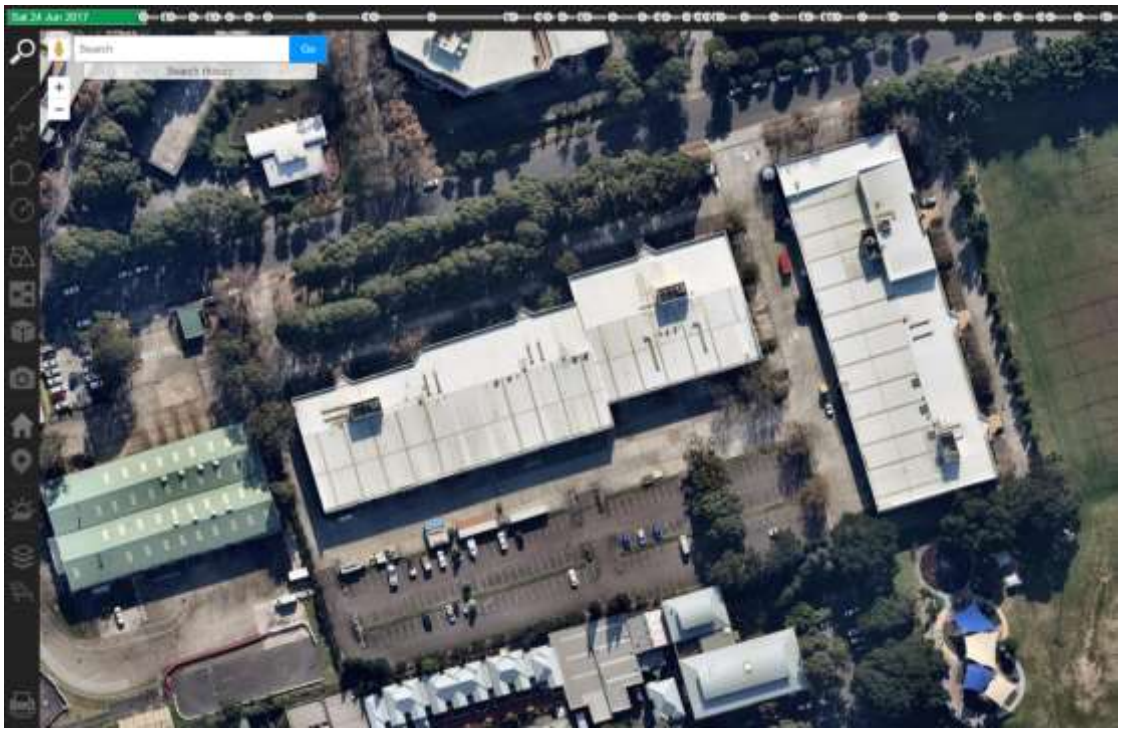


Aerial image of site captured on Sunday 6 August 2017 (Source: NearMap)



Aerial image of site captured on Saturday 24 June 2017 (Source: NearMap)

Appendix F

Swept Path Analysis

Notes

This drawing is prepared for information purposes only. It is not to be used for construction.

TRAFFIX is responsible for vehicle swept path diagrams and/or drawing mark-ups only. Base drawing prepared by others.

Vehicle swept path diagrams prepared using computer generated turning path software and associated CAD drawing platforms. Vehicle data based upon relevant Australian Standards (*AS/NZS 2890.1-2004 Parking facilities - Off-street car parking*, and/or *AS 2890.2-2002 Parking facilities - Off-street commercial vehicle facilities*). These standards embody a degree of tolerance, however the vehicle characteristics in these standards represent a suitable design vehicle and do not account for all variations in vehicle dimensions / specifications and/or driver ability or behaviour.

no.	revision note	by.	date

Swept Path Legend:

- Wheel Path
- Vehicle Body Envelope
- Clearance Envelope (300mm)

architect
Nettleton Tribe

client
Dexus Funds Management Limited

scale
1:250 @ A3
0m 2 4 6 8

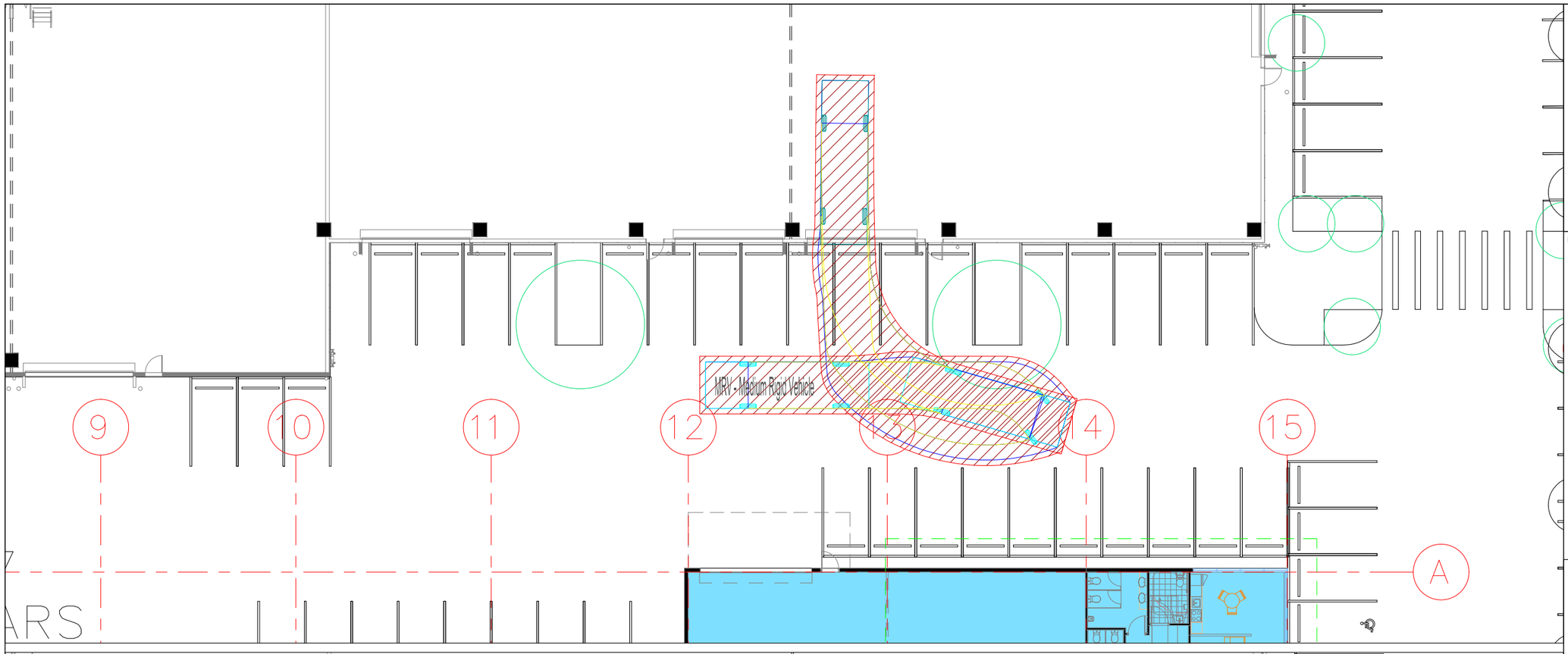
project
Botany Quarter
11-13 Lord Street, Botany

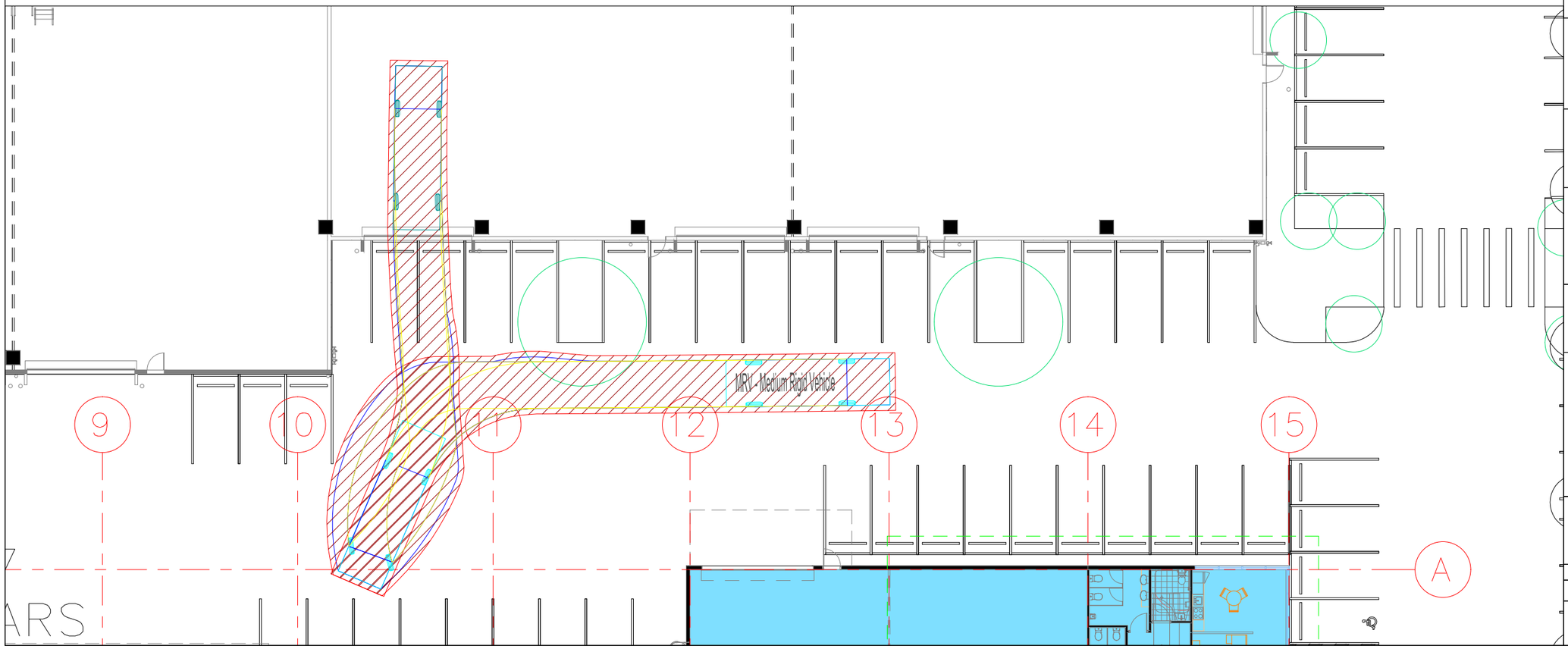
drawing prepared by
TRAFFIX
traffic and transport planners
Suite 2.08, 50 Holt Street
Surry Hills NSW 2010
PO Box 1124
Strawberry Hills NSW 2012
t: +61 2 8324 8700
f: +61 2 9380 4481
e: info@traffix.com.au
traffix
traffic & transport planners

drawing title
Swept Path Analysis
Block B (Eastern Unit) - East Entry & East Exit
8.8m Medium Rigid Vehicle

drawn:	checked:	date:
KB	-	24 Oct 18

project no.	drawing phase.	drawing no.	rev
18.002	-	SK.01	-





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no.	revision note	by.	date

Swept Path Legend:

- Wheel Path
- Vehicle Body Envelope
- Clearance Envelope (300mm)

architect
Nettleton Tribe

client
Dexus Funds Management Limited

scale
1:250 @ A3
0m 2 4 6 8

project
Botany Quarter
11-13 Lord Street, Botany

drawing prepared by

TRAFFIX
traffic and transport planners

Suite 2.08, 50 Holt Street
Surry Hills NSW 2010

PO Box 1124
Strawberry Hills NSW 2012

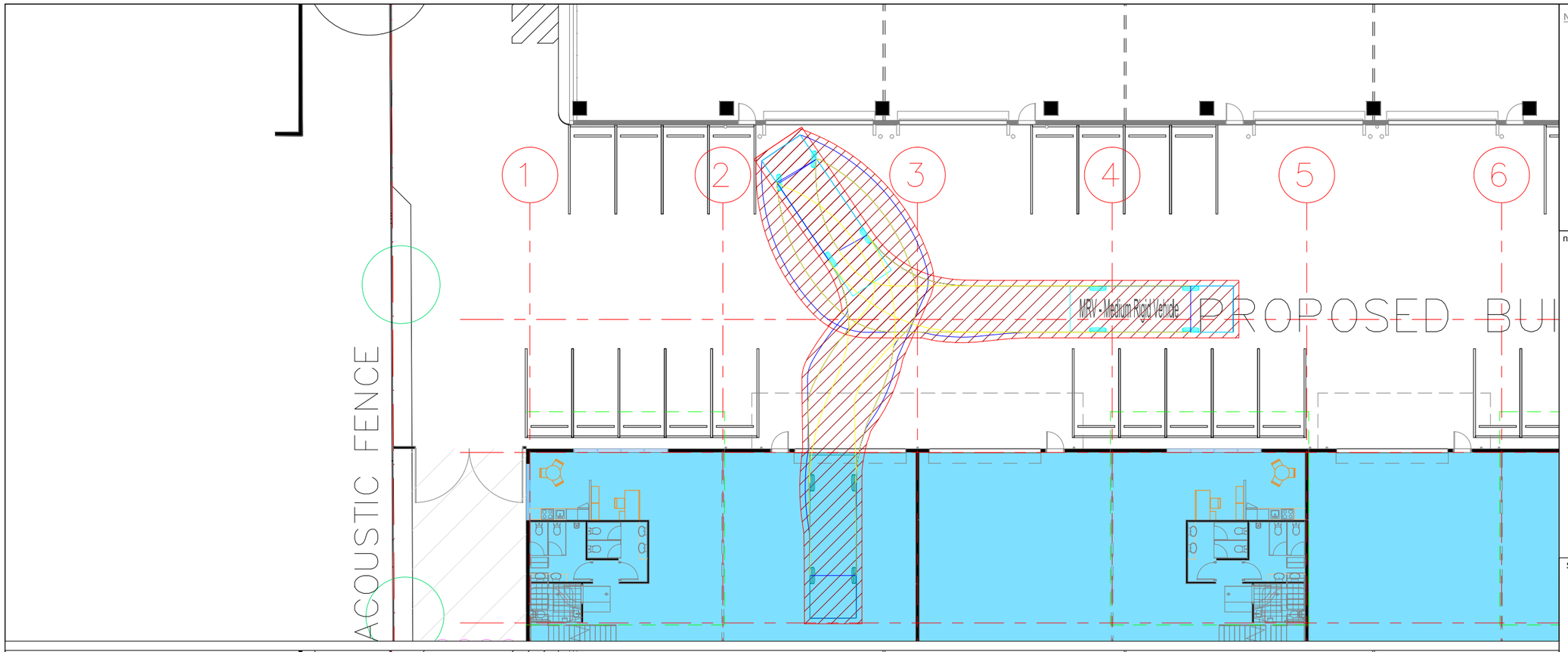
t: +61 2 8324 8700
f: +61 2 9380 4481
e: info@traffix.com.au

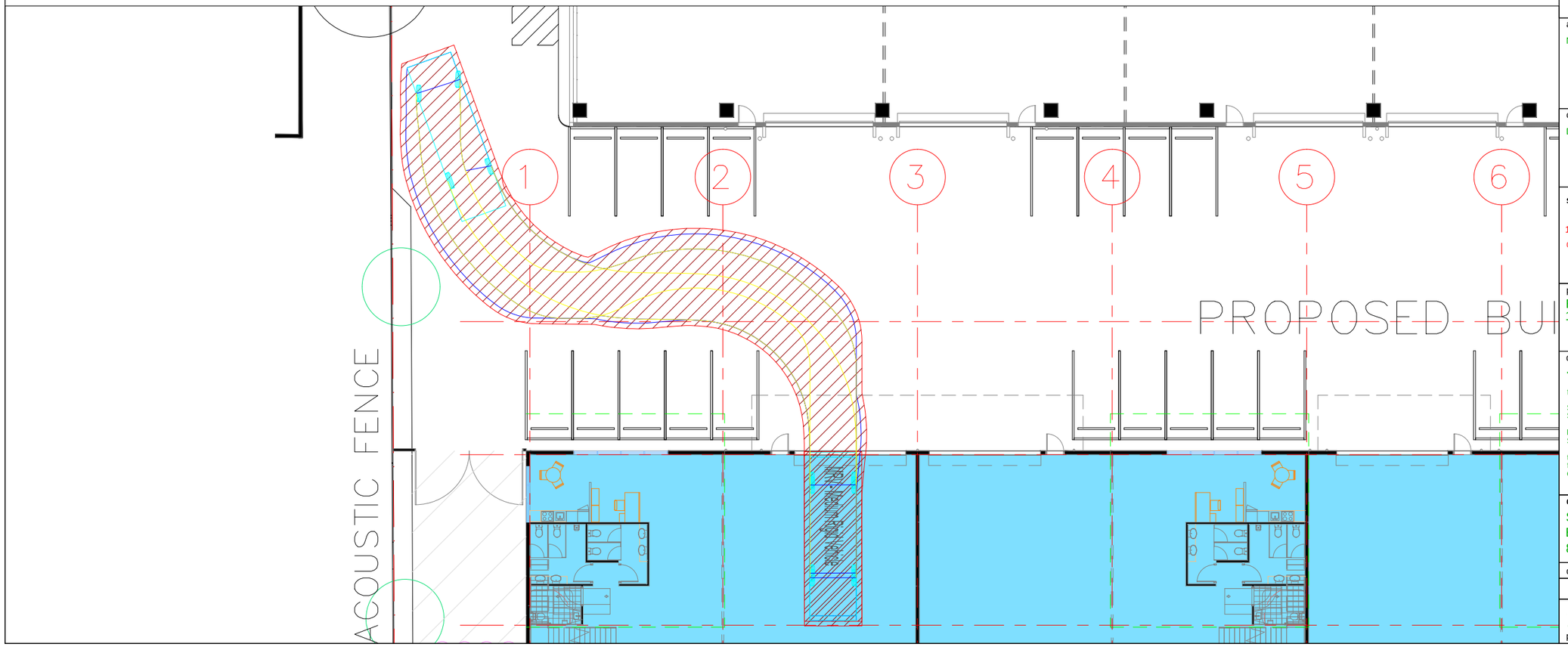
traffix
traffic & transport planners

drawing title
Swept Path Analysis
Block A (Eastern Units) - East & West Entry
8.8m Medium Rigid Vehicle

drawn:	checked:	date:
KB	-	24 Oct 18

project no.	drawing phase.	drawing no.	rev
18.002	-	SK.02	-





Notes

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no.	revision note	by.	date

Swept Path Legend:

- Wheel Path
- Vehicle Body Envelope
- Clearance Envelope (300mm)

architect

Nettleton Tribe

client

Dexus Funds Management Limited

scale

1:250 @ A3

0m 2 4 6 8

project

Botany Quarter
11-13 Lord Street, Botany

drawing prepared by

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Suite 2.08, 50 Holt Street
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e: info@traffix.com.au

traffix
traffic & transport planners

drawing title

Swept Path Analysis
Block B (Western Unit) - East Entry & West Exit
8.8m Medium Rigid Vehicle

drawn:	checked:	date:
KB	-	24 Oct 18

18.002	-	SK.03	-
project no.	drawing phase.	drawing no.	rev