



TRAFFIC IMPACT ASSESSMENT


Proposed Residential Development 12-16 Bent Street, Lindfield

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1. INTRODUCTION

TRAFFIX has been commissioned by Sundale Northland Development Pty Ltd to undertake a Traffic Impact Assessment (TIA) in support of a development application (DA) relating to a residential development located at 12-16 Bent Street, Lindfield.

The subject development is a State Significant Development and has been assessed having regard for the Planning Secretary's Environmental Assessment Requirements (SEARs) (SSD-78156462).

The subject development is legally defined as Lot 3 DP 1226294, Lot 1 DP 935936, Lot 1 DP 960014, Lot 1 DP 960015 and Lot 1 DP 318518 within the Ku-ring-gai Council Local Government Area (LGA) and has been assessed under that Council's controls as well as the controls of State Environmental Planning Policy (Housing) 2021 (SEPP Housing 2021).

This report documents the findings of our investigations and should be read in the context of the Environmental Impact Statement (EIS), prepared separately.

The report is structured as follows:

- Section 2: Summarises the SEARS requirements and the corresponding sections in the report.
- Section 3: Describes the site and its location
- Section 4: Documents existing traffic conditions
- Section 5: Describes the proposed development
- Section 6: Assesses the parking requirements
- Section 7: Assesses traffic impacts
- Section 8: Discusses access and internal design aspects
- Section 9: Presents the overall study conclusions

2. SEARS REQUIREMENTS

The Planning Secretary's Environmental Assessment Requirements in relation to the subject development (Application number: SSD-78156462) and relevant sections where each requirement is summarised and addressed in **Table 1** below:

Table 1: SEARs Requirements and Relevant Sections

SEARs Issue and Assessment Requirement (10. Traffic, Transport and Accessibility)	Relevant Section
Provide a Transport Impact Assessment (TIA) in accordance with the processes and methodology recommended in the Guide to Transport Impact Assessment (GITA) published by TfNSW.	This document
If the construction of the development would cause interruptions to regular pedestrian and transport routes (including public transport, active transport or general traffic), a preliminary Construction Traffic (or Transport) Management Plan (CTMP) should be prepared as part of the TIA to mitigate any such impacts.	Preliminary CTMP Report provided separately and prepared by TRAFFIX.

3. LOCATION AND SITE

The subject site at 12-16 Bent Street, Lindfield is located approximately 220 metres west of Lindfield railway station and 11.5 kilometres north of Sydney CBD. More specifically, it is situated in the southern side of Bent Street, legally comprising Lot 3 DP 1226294, Lot 1 DP 935936, Lot 1 DP 960014 and Lot 1 DP 960015 and Lot 1 DP 318518.

The site is generally irregular in configuration and has a total site area of 4,324m². It has a northern frontage to Bent Street. It is bounded on both the eastern, western and southern sides by neighbouring residential developments.

The site is currently comprised and residential developments and vehicular access is provided via Bent Street.

A Location Plan is presented in **Figure 1**, with a Site Plan presented in **Figure 2**.

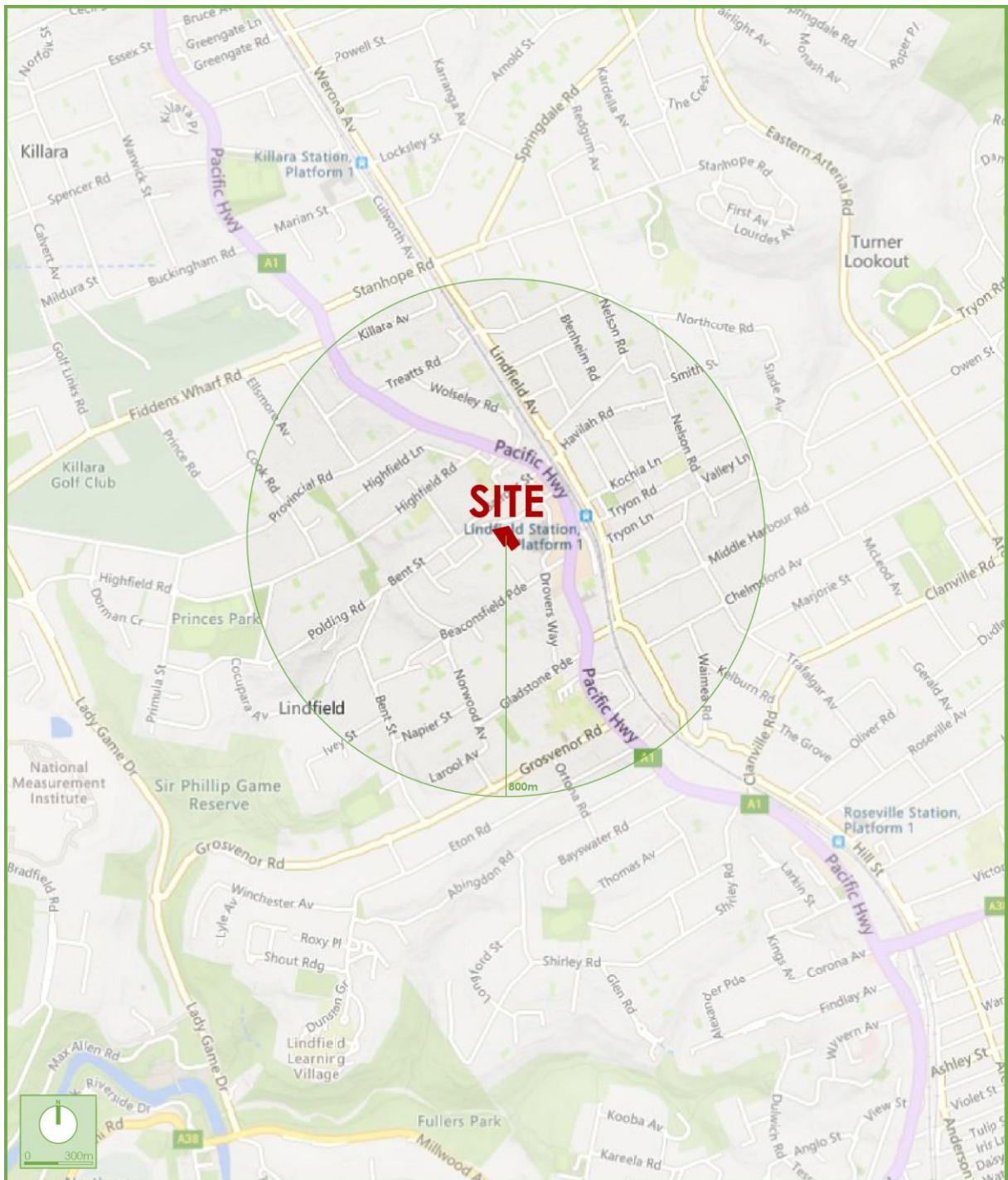


Figure 1: Location Plan



Figure 2: Site Plan

4. EXISTING TRAFFIC CONDITIONS

4.1 Road Network

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

- Pacific Highway: a TfNSW Highway (HW 10) that traverses north-south between the Queensland Boarder in the north and the Warringah Freeway in the south. Within the vicinity of the site, it is subject to 60km/h speed zoning and accommodates 2-3 lanes of traffic in each direction, separated by a median. Pacific Highway permits sections of time-restricted on-street parking along both sides of the road, subject to clearway restrictions.
- Bent Street: a local road that traverses east-west between Pacific Highway in the east and Grosvenor Road in the southwest. It is subject to 50km/h speed zoning and accommodates a single lane of traffic in each direction. Bent Street permits unrestricted on-street parking along both sides of the road.
- Balfour Street: a local road that traverses east-west between Pacific Highway in the east and Bent Street in the west. It is subject to 50km/h speed zoning and accommodates a single lane of traffic in each direction. Balfour Street permits unrestricted on-street parking along both sides of the road.

It can be seen from **Figure 3** that the site is centrally located with respect to the surrounding road network with access to the Pacific Highway in the east and other local roads accessing the wider road network, thereby minimising traffic impacts.

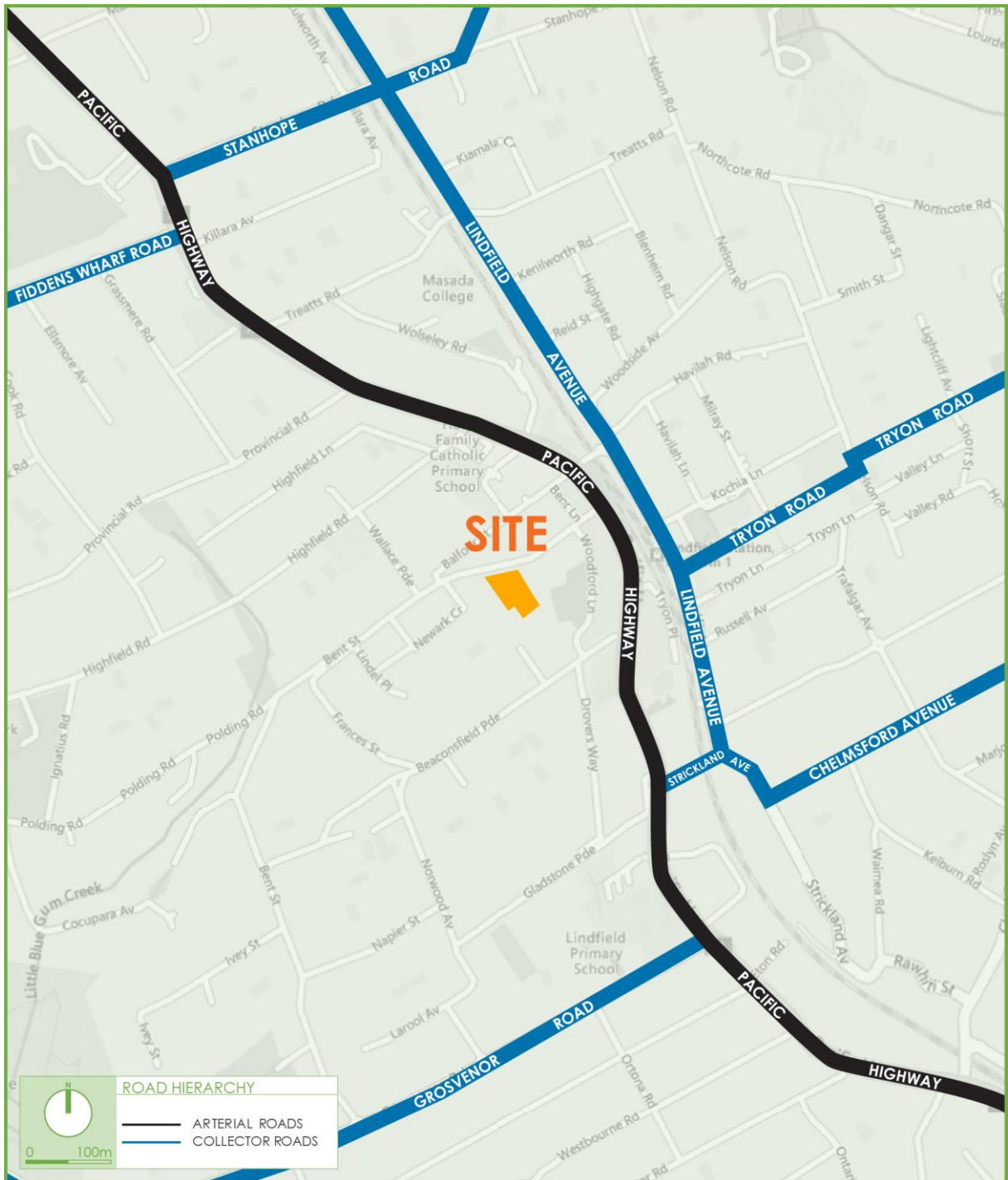


Figure 3: Road Hierarchy

4.2 Key Intersections

4.2.1 Intersection of Pacific Highway and Bent Street

It can be seen from **Figure 4** that the intersection of Pacific Highway and Bent Street is a priority controlled T-junction.



Figure 4: Intersection of Pacific Highway and Bent Street

The main attributes of each approach outlined as follows:

- Pacific Highway (north-south)
 - The northern approach provides three (3) through lanes. Given the central median the right turn is prohibited.
 - The southern approach provides three (3) through lanes with the left turn permitted from the kerbside.
- Bent Street (west)
 - The eastern approach provides a single lane of traffic, from which left turns are permitted.

4.2.2 Intersection of Bent Street, Balfour Street and Newark Crescent

It can be seen from **Figure 5** that the intersection of Bent Street / Balfour Street / Newark Crescent is essentially a four-legged priority-controlled intersection.



Figure 5: Intersection of Bent Street / Balfour Street / Newark Crescent

The main attributes of each approach are outlined as follows:

- Bent Street (east-west)
 - Bent Street is the main road where through movements have priority.
 - The eastern approach provides one (1) lane with all movements permitted.
 - The western approach provides one (1) lane with all movements permitted.
- Balfour Street (north leg)
 - Minor road and is required to 'Give Way'
 - The northern approach provides one (1) lane with all movements permitted.
- Newark Crescent (south leg)
 - Minor road and is required to 'Give Way'
 - The southern approach provides one (1) lane with all movements permitted.

4.2.3 Intersection of Pacific Highway, Balfour Street and Havilah Road

It can be seen from **Figure 6** that the intersection of Pacific Highway / Balfour Street / Havilah Road is a four-legged signalised intersection.



Figure 6: Intersection of Pacific Highway / Balfour Street / Havilah Road

The main attributes of each approach outlined as follows:

- Pacific Highway (north-south)
 - The northern approach provides three (3) through lanes permitting left turns from the kerbside lane and a dedicated short right turn lane.
 - The southern approach provides three (3) through lanes permitting left turns from the kerbside lane and a dedicated right turn lane.
- Havilah Road (east)
 - The eastern approach provides one (1) lane with all movements permitted.
- Balfour Street (west)
 - The western approach provides two (2) lanes. Noting that the kerbside lane is a short lane due to kerbside parking, all movements are permitted from Balfour Street.

4.3 Public Transport

The existing public transport services operating in the locality are presented in **Figure 4** and summarised as follows.

4.3.1 Bus Services

The site is located within the vicinity of bus stops along the Pacific Highway, with the closest situated near the Lindfield Station, approximately 300 metres walking distance. These bus stops provide services to the routes and general weekday frequencies outlined below:

- 556 – Lindfield to East Killara;
- 558 – Chatswood to Lindfield; and
- 565 – Chatswood to Macquarie University.

4.3.2 Train Services

The site is located approximately 350 metres walking distance from Lindfield Railway Station. This railway station provides commuters with access to the wider public transport network along the following train lines:

- T1 – North Shore and Western Line; and
- T9 – Northern Line.

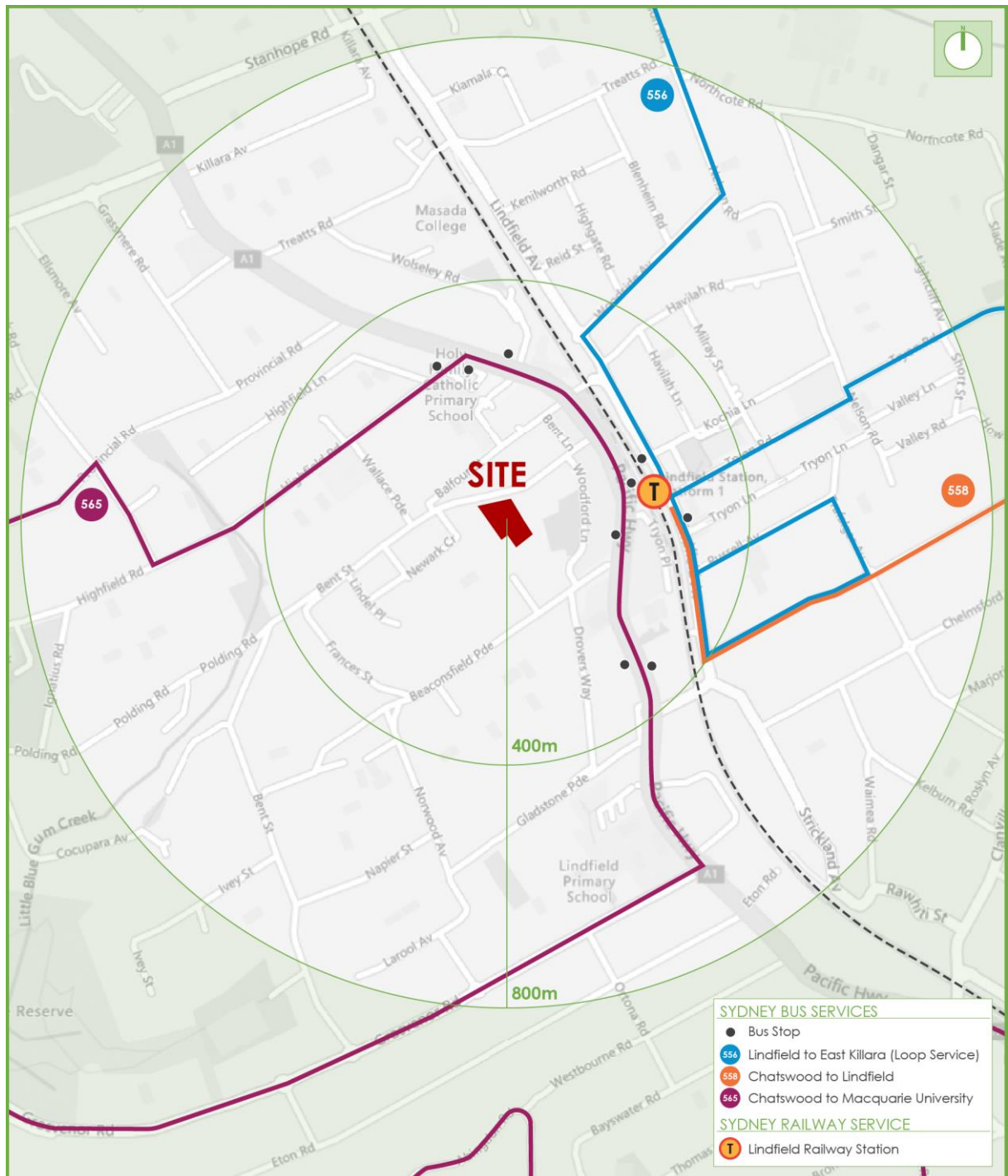


Figure 7: Public Transport

5. DESCRIPTION OF PROPOSED DEVELOPMENT

A detailed description of the proposed development is provided in the EIS, prepared separately. In summary, the development for which approval is now sought relates to a residential flat building comprising the following:

- Construction of residential component with a total of 111 dwellings, including:
 - 14 x one-bedroom dwellings including 11 affordable housing dwellings;
 - 37 x two-bedroom dwellings including 11 affordable housing dwellings;
 - 49 x three-bedroom dwellings including 4 affordable housing dwellings; and
 - 11 x four-bedroom dwellings.
- Provision for a total of 145 car parking spaces within basement carpark, including:
 - 126 x residential parking spaces; and
 - 19 x visitor parking spaces (including a shared car wash bay).
- Vehicular access via Bent Street.

The parking and traffic impacts arising from the proposed development are discussed in **Section 6** and **Section 7**. Reference should be made to the plans submitted separately to Council, which are presented at reduced scale in **Appendix A**.

6. PARKING REQUIREMENTS

6.1 Car Parking

The State Environmental Planning Policy (SEPP) Housing 2021 provides parking rates for residential developments including affordable housing with the Ku-ring-gai DCP 2024 providing residential visitor parking rates as summarised in **Table 2** below.

Table 2: Car Parking Rates and Provisions

Apartment	Type	Number	Car Parking Rates	Parking Required	Parking Provided
In-Fill Affordable Housing – SEPP (Housing) 2021 – Affordable Housing Dwellings (Minimum Rates)					
One-bedroom	Affordable	11	0.4 spaces per dwelling	4.4	5
Two-bedroom	Affordable	11	0.5 spaces per dwelling	5.5	5
Three-bedrooms or more	Affordable	4	1 spaces per dwelling	4	4
Sub Total				14 (13.9)	14
In-Fill Affordable Housing – SEPP (Housing) 2021 – Dwellings not used for Affordable Housing (Minimum Rates)					
One-bedroom	Normal	3	0.5 spaces per dwelling	1.5 (2)	2
Two-bedroom	Normal	26	1 space per dwelling	26	26
Three-bedrooms or more	Normal	56	1.5 spaces per dwelling	84	84
Sub Total				112	112
Residential Visitor Parking Requirement – Ku-ring-gai DCP 2024					
Residential Visitor		111	0.17 space per dwelling	18.87 (19) including one (1) carwash bay	19 (including shared carwash)
TOTAL				145	145

It can be seen from **Table 2** that the development is required to provide a minimum of 145 car parking spaces, comprising 14 affordable housing spaces and 112 non-affordable housing spaces and 19 visitor parking spaces. In response, the development proposes 145 car parking spaces comprising 112 non-affordable housing spaces, 14 affordable housing spaces, 19 visitor spaces (including a shared car wash bay) in compliance SEPP (Housing) 2021 thereby ensuring all standard car parking demands are accommodated onsite.

6.2 Motorcycle Parking

The Ku-ring-gai DCP 2024 does not provide motorcycle parking rates however five (5) motorbike parking spaces are provided. As a result, all motorcycle parking demands are therefore accommodated onsite.

6.3 Accessible Parking

Reference is to be made to the report prepared by the accessibility consultant regarding requirements and compliance of accessible parking spaces.

6.4 Bicycle Parking

Council's DCP provides bicycle parking rates as outlined in **Table 3** below.

Table 3: Bicycle Parking Rates and Provisions

Type	GFA / No. of Dwellings	Bicycle Parking Rate	Parking Required ^[1]	Parking Provided
Residential – SEPP65 (Sub-Regional Centre)				
Residents	111 dwellings	1 space per dwellings	111	115
Visitors		1 visitor space per 10 dwellings	11.1 (11)	12
TOTAL			122	127

[1] – Rounded up to the nearest whole number after total, as per the DCP.

It can be seen from **Table 3** that the development is nominally required to provide 122 bicycle spaces comprising 111 residential spaces and 11 residential visitor spaces. In response, the subject development proposes a total of 127 bicycle spaces in compliance with Council's DCP bicycle parking requirements.

6.5 Refuse Collection & Servicing

Refuse collection is to be undertaken within the ground floor loading dock by Council's 6.7m long truck. Reference should be made to the swept path analysis provided in **Appendix B** demonstrating that all waste and general service vehicles are able to enter and egress the development in a forward direction.

7. TRAFFIC AND TRANSPORT IMPACTS

7.1 Proposed Vehicle Trip Generation

The TfNSW Technical Direction (TDT) 2013/04a provides traffic generation rates for high density residential flat buildings, which has also been adopted. It is noted that the surveys differentiate between Sydney and Rural sites. The traffic generation rates for the Sydney sites assuming worst case are as follows:

- 0.19 vehicle trips per unit during the morning peak period; and
- 0.15 vehicle trips per unit during the evening peak period.

Application of the above trip rates to the proposed 111 residential dwellings, and adopting an 80/20 directional split, results in the following traffic generation:

- 22 vehicle trips per hour during the morning peak period (4 in, 18 out); and
- 17 vehicle trips per hour during the evening peak period (14 in, 3 out).

7.2 Intersection Performance

7.2.1 Traffic Surveys

For the purposes of assessing the traffic impacts of this development, surveys were undertaken of the most critical intersections within proximity of the site. The following surveys were performed during the network peak periods between 7:30am to 9:30am and 4:00pm to 6:00pm on Thursday 21 November 2024 at the following key intersections:

- Pacific Highway and Bent Street;
- Bent Street, Balfour Street and Newark Crescent; and
- Pacific Highway, Balfour Street and Havilah Road

7.2.2 Trip Distribution

The following trip distributions was applied to both morning and afternoon network peaks for the key intersections identified above based on Australian Bureau of Statistics Journey to Work data in relation to place of work for residents and place of residence for workers in Lindfield:

- 70% of vehicles will arrive to the site via the Pacific Highway northbound (left onto Bent Street)

- 30% of vehicles will arrive to the site via the Pacific Highway southbound (right onto Balfour Street).
- 70% of vehicles will exit the site heading southbound on the Pacific Highway (right from Balfour Street)
- 30% of vehicles will exit the site heading northbound on the Pacific Highway (left from Bent Street)

Trip distribution diagrams for each key intersection during the morning and afternoon network peaks in relation to the additional traffic generated by the proposed development are provided in the distribution diagrams in **Figure 8** and **Figure 9** below:



Figure 8: AM Trip Distributions



Figure 9: PM Trip Distributions

7.2.3 Scenarios

In order to assess the potential traffic impacts related to the proposed development, the following scenarios were assessed:

- Base Case
- Base Case + Development
- Base Case + Development Plus Approved Developments Scenarios (Cumulative Impacts)

7.2.4 SIDRA Intersection Analysis

The surveys were analysed using the SIDRA Intersection 9.1 computer program to determine their performance characteristics under existing traffic conditions. 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 in **Table 4**.

Table 4: Intersection Performance Indicators (TfNSW)

Level of Service (LoS)	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 is provided in **Table 5** for the 2024 scenario. Reference should also be made to the SIDRA Intersection outputs provided in **Appendix C** which provides detailed results for each movement.

7.3 Existing and Existing Plus Development Scenario

Table 5: Intersection Performance for 2024 Scenario

Intersection	Control Type	Scenario	Period	Degree of Saturation	Average Delay (sec)	Level of Service
Pacific Highway / Bent Street	Priority	Base	AM	0.571	9.0	A
			PM	0.430	10.7	A
		Base + Development	AM	0.574	9.0	A
			PM	0.432	10.6	A
Bent Street / Balfour Street / Newark Crescent	Priority	Base	AM	0.151	6.8	A
			PM	0.085	5.5	A
		Base + Development	AM	0.151	7.1	A
			PM	0.088	5.7	A
Pacific Highway / Balfour Street / Havilah Road	Signalised	Base	AM	0.760	26.6	B
			PM	0.703	26.2	B
		Base + Development	AM	0.761	26.8	B
			PM	0.703	26.3	B

It can be seen from **Table 5** that the intersection of Pacific Highway and Bent Street experiences no change in the Level of Service (LoS) from the existing (base) scenario to the base + development scenario during both peaks and will continue to operate at LoS A. It will experience a no increase in average delay with delay remaining at 9.0 seconds in the AM peak and decreasing from 10.7 seconds to 10.6 seconds in the PM peak.

The intersection of Bent Street / Balfour Street / Newark Crescent experiences no change in the Level of Service (LoS) from the existing (base) scenario to the base + development scenario and will continue to operate at LoS A during both peaks. It will experience a minor increase in average delay from 6.8 seconds to 7.1 seconds in the AM peak and from 5.5 seconds to 5.7 seconds in the PM peak.

The intersection of Pacific Highway / Balfour Street / Havilah Road experiences no change in the Level of Service (LoS) from the existing (base) scenario to the base + development scenario and will continue to operate at LoS B during both peak. It will experience a minor increase in average delay from 26.6 seconds to 26.8 seconds in the AM peak and from 26.2 seconds to 26.3 seconds in the PM peak.

The above impacts are considered acceptable, with all intersections operating in accordance with existing LoS parameters and only minor increases in average delay. Hence no external improvements are required to support the proposed development.

7.4 Cumulative Impacts Scenario

The NSW Department of Planning, Housing and Infrastructure (DPHI) published the Cumulative Impact Assessment Guidelines for State Significant Projects in July 2021. The Guidelines require the cumulative assessment of relevant projects to determine their combined cumulative impacts on the operation of the nearby transport network and recommend suitable mitigation measures to address any impacts.

The Guideline sets out criteria for the identification of relevant projects. Applying these criteria a review of the NSW Planning Portal has identified four (4) State Significant Developments in the vicinity of the subject site. These projects are detailed in **Table 6** below.

Table 6: Nearby Major Projects

Application No.	Type	Address	Proposal	Status
SSD-79261463	SSD Application	1-3 Reid Street & 2-4 Woodside Avenue, Lindfield	Residential Flat Building with infill affordable housing	Preparing EIS
SSD-79276958	SSD Application	59-63 Trafalgar Avenue, 1A & 1B Valley Road, Lindfield	Proposed residential flat building with infill affordable housing.	Preparing EIS
SSD-78669234	SSD Application	27-29 Teyon Road, Lindfield	Proposed residential flat building with infill affordable housing.	Preparing EIS
SSD-78493518	SSD Application	2-8 Highgate Road, Lindfield	Proposed residential flat building with infill affordable housing.	Preparing EIS

As seen in the table above, all SSD Applications in the surrounding area are still in the Preparing EIS stage. As the SSD applications in the nearby area are still in the preliminary stages, it is uncertain if the projects will proceed or would be approved. In addition, there is no available traffic study available for assessment. Therefore, the nearby major projects cannot be assessed in the cumulative assessment.

It is noted however, other significant nearby development applications have been assessed. These development applications are detailed in **Table 7** below.

Table 7: Nearby DA Projects

Application No.	Type	Address	Proposal	Status
DA0376/24	Development Application	4A & 4 Beaconsfield Parade, Lindfield	Residential Flat Building with infill affordable housing	Approved
DA0020/25	Development Application	16 Buckingham Road, Killara	Proposed residential flat building	Approved

A review of the impacts of the above projects has been undertaken and the following has been found:

- **DA0376/24** is an approved development for a 38 dwelling residential flat building at 4A & 4 Beaconsfield Road, Lindfield. As there are no trip distribution presented within the Traffic report, it has been assumed for a worst-case scenario of all movements utilising the intersection of Pacific Highway / Balfour Street / Havilah Road and Bent Street / Balfour Street / Newark Crescent.
- **DA0020/25** is an approved development for a 34 dwelling residential flat building at 16 Buckingham Road, Killara. As there are no trip distribution presented within the Traffic report, it has been assumed for a worst-case scenario of all movements utilising the intersection of Pacific Highway / Balfour Street / Havilah Road and Pacific Highway / Bent Street.

A summary of the modelled results is provided in **Table 8** for the cumulative impact assessment (including proposed development). Reference should also be made to the SIDRA Intersection outputs provided in **Appendix C** which provides detailed results for each movement.

Table 8: Nearby Major Projects

Intersection	Control Type	Scenario	Period	Degree of Saturation	Average Delay (sec)	Level of Service
Pacific Highway / Bent Street	Priority	Base + Cumulative Impact	AM	0.575	9.0	A
			PM	0.433	10.6	A
Bent Street / Balfour Street / Newark Crescent	Priority	Base + Cumulative Impact	AM	0.153	7.1	A
			PM	0.091	5.6	A
Pacific Highway / Balfour Street / Havilah Road	Signalised	Base + Cumulative Impact	AM	0.762	27.1	B
			PM	0.704	26.4	B

It can be seen from **Table 8** that all intersections experience no change in the Level of Service (LoS) from the existing (base) scenario to the base + cumulative impact scenario development scenario during both peak periods. The intersections will only experience a minor increase in average delay, with the largest increase being at the intersection of Pacific Highway / Balfour Street / Havilah Road. This intersection will experience a minor increase in average delay of 0.5 seconds from 26.6 seconds to 27.1 seconds in the AM peak.

Given the level of traffic generated by the proposed development, combined with that predicted for the surrounding approved development, it is considered that the cumulative traffic impacts of the proposal would result in minimal and acceptable impacts on the surrounding transport network.

8. ACCESS AND INTERNAL DESIGN ASPECTS

8.1 Vehicular Access

The development proposes a total of 145 residential parking spaces with access to Bent Street (local road). The vehicular access will require a Category 2 access driveway under AS2890.1 (2004), being a combined 6.0-9.0 metres. In response, the development proposes a 6.4m wide combined access driveway thereby complying with the requirements of AS 2890.1-2004.

Reference should be made to the swept path analysis provided in **Appendix B** showing the satisfactory operation and ensuring that all vehicles are able to enter and egress in a forward direction.

8.2 Internal Design

The car park and loading area complies with the requirements of AS2890.1 (2004), AS2890.2 (2018), and AS2890.6 (2022), with the following characteristics noteworthy:

8.2.1 Parking Modules

- All residential car parking spaces have been designed in accordance with AS2890.1 (2004) User Class 1A, being a minimum width of 2.4 metres and length of 5.4 metres. It is emphasised that commercial spaces are for staff parking only and will not be accessible to the public, therefore these spaces are provided as User Class 1A spaces in accordance with AS2890.1 (2004).
- All accessible parking spaces that have been designed in accordance with AS2890.6 (2022), are provided with a minimum width of 2.4 metres, length of 5.4 metres and provide an adjacent shared area with the same dimensions.
- All spaces located adjacent to obstructions greater than 150mm in height are provided with an additional width of 300mm.
- All dead-end aisles are provided with the required 1.0 metre aisle extension in accordance with AS2890.1 (2004) Figure 2.3.

8.2.2 Ramps

- The vehicular access ramp provides a maximum gradient of 1 in 20 (5%) for the initial 6.0 metres within the property boundary, as required under AS2890.1 (2004).

- All internal vehicular ramps provide a maximum gradient of 1 in 4 (25%) with sag and summit transitions of 1 in 8 (12.5%) for a minimum length of 2.0 metres.

8.2.3 Clear Head Heights

- A minimum clear head height of 2.2 metres is to be provided for all trafficable areas within the car park, as required under AS2890.1 (2004).
- A minimum clear head height of 2.5 metres is to be provided for all accessible spaces and associated shared areas, as required under AS2890.6 (2022).
- A minimum clear head height of 2.6 metres is to be provided for waste collection of a 6.7m long waste truck.

8.2.4 Other Considerations

- All columns are located outside of the parking space design envelope in accordance with AS2890.1 (2004) Figure 5.2.
- A visual splay has been provided at the vehicular access for egressing drivers in accordance with AS2890.1 (2004) Figure 3.3.
- The shared visitor and car wash bay has been provided dimensions of 4.0m x 5.4m.
- A loading bay capable of accommodating service vehicles up to 6.7m long Council's waste truck has been provided on the ground floor with vehicles able to enter and egress the development in a forward direction. Reference should be made to the swept path analysis provided in **Appendix B**.

8.3 Summary

In summary, the internal configuration of the car park and loading area have been designed in accordance with AS2890.1 (2004), AS2890.2 (2018), AS2890.3 (2015) and AS2890.6 (2022). It is however envisaged that a standard 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 any Construction Certificate.

9. CONCLUSIONS

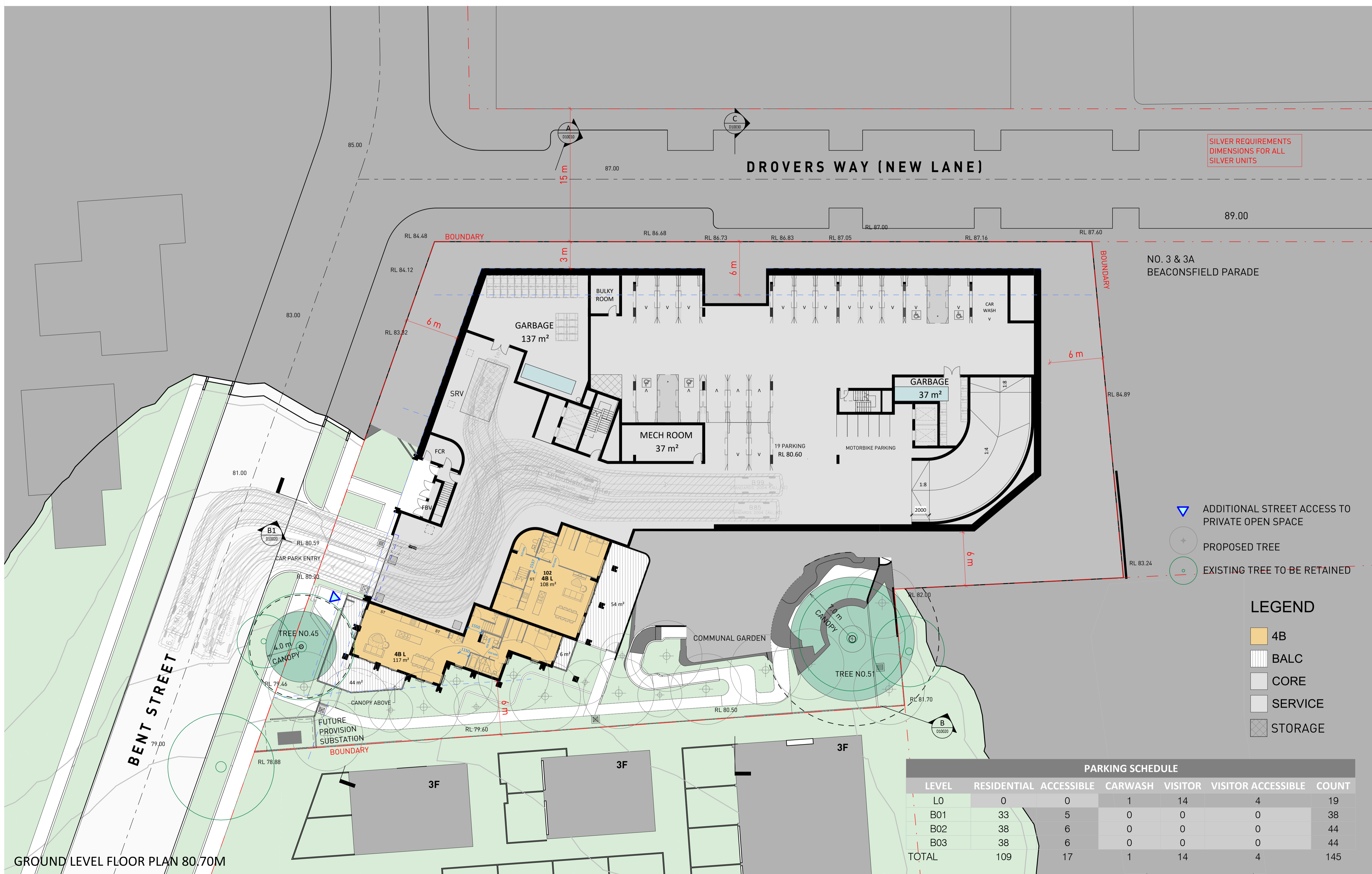
The following is noteworthy:

- The subject development (SEARs Application Number: SSD-78156462) is located at 12-16 Bent Street, Lindfield.
- The proposal seeks approval for a residential flat building comprising 111 dwellings.
- The subject site is located within optimal walking distance (400 metres) of numerous bus stops and Lindfield Railway Station.
- The development proposes a total of 145 car parking spaces, comprising 126 residential spaces, 19 visitor spaces (including a shared car wash bay). This provision is in accordance with the minimum requirements of SEPP (Housing) 2021 and will thereby ensure all standard car parking demands are accommodated onsite.
- Traffic Impacts are +22 vehicles per hour in the morning peak and +17 vehicle trips per hour in the evening peak. These increases have been assessed with SIDRA 9.1 Intersection modelling software to have minimal impacts on the surrounding intersections with no upgrades to surrounding roads or intersections required based on the future development scenario including cumulative impacts.
- All waste and general service vehicles are able to enter and exit the development in a forward direction.
- The basement carpark complies with the requirements of AS2890.1 (2004), AS2890.2 (2018), and AS2890.6 (2022), thereby ensuring safe and efficient operation. It is however envisaged that a standard 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 any Construction Certificate.

This traffic impact assessment therefore demonstrates that the subject application is supportable on traffic planning grounds. TRAFFIX anticipates an ongoing involvement during the development approval process.

APPENDIX A

Architectural Plans



SILVER REQUIREMENTS
DIMENSIONS FOR ALL
SILVER UNITS

NO. 3 & 3A
BEACONSFIELD PARADE

- ADDITIONAL STREET ACCESS TO PRIVATE OPEN SPACE
- PROPOSED TREE
- EXISTING TREE TO BE RETAINED

LEGEND

- 4B
- BALC
- CORE
- SERVICE
- STORAGE

PARKING SCHEDULE						
LEVEL	RESIDENTIAL	ACCESSIBLE	CARWASH	VISITOR	VISITOR ACCESSIBLE	COUNT
L0	0	0	1	14	4	19
B01	33	5	0	0	0	38
B02	38	6	0	0	0	44
B03	38	6	0	0	0	44
TOTAL	109	17	1	14	4	145

GROUND LEVEL FLOOR PLAN 80/70M

Key Plan:

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Rev	Amendment	By	Chk*	Date
A03	RESPONSE TO SDRP	TT	GC	19.09.25
A02	RESPONSE TO SDRP	TT	GC	18.07.25
A01	DA SUBMISSION	TT	MS	03.03.25

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ABN 23 000 454 624
trading as PTW Architects

NSW Nominated Architects
S Parsons Architect No.6098
D Jones Architect No.4778
N Marojevic Architect No.11274

PTW

1:200 @ A1

Project PA030530.01

BENT STREET LINDFIELD
12-16 BENT STREET, LINDFIELD, NSW
2070

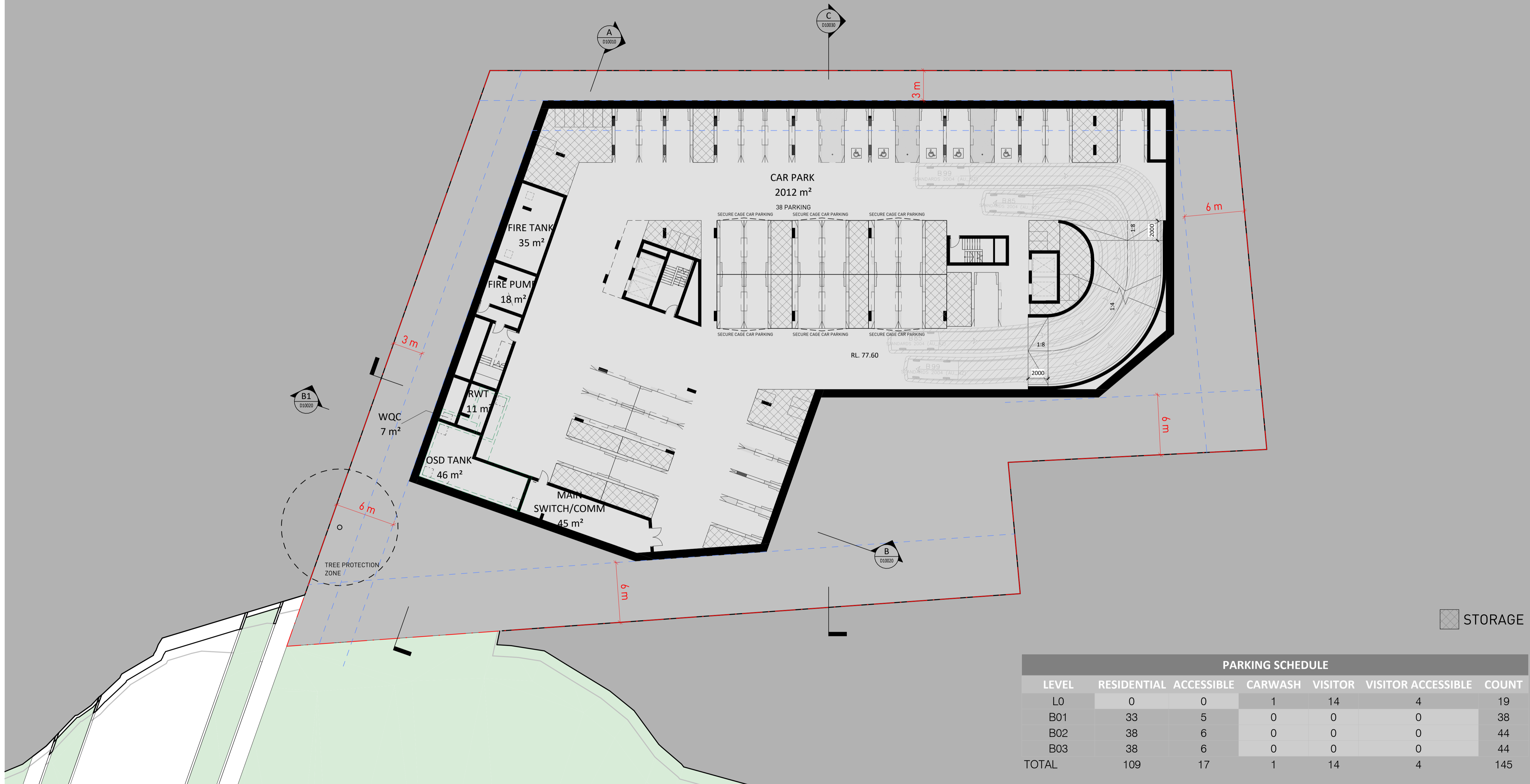
Status
DEVELOPMENT APPLICATION

Title
B1-GENERAL ARRANGEMENT PLANS
GROUND LEVEL FLOOR PLAN

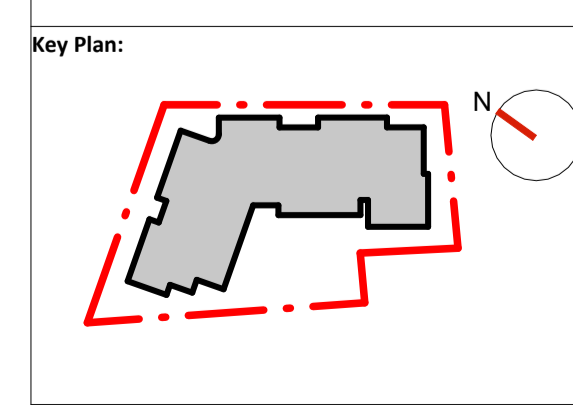
Drawing Number
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Revision
A03

STORAGE CAGES HAVE BEEN PROVIDED IN BASEMENT LEVELS



PARKING SCHEDULE						
LEVEL	RESIDENTIAL	ACCESSIBLE	CARWASH	VISITOR	VISITOR ACCESSIBLE	COUNT
L0	0	0	1	14	4	19
B01	33	5	0	0	0	38
B02	38	6	0	0	0	44
B03	38	6	0	0	0	44
TOTAL	109	17	1	14	4	145



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Rev	Amendment	By	Chk*	Date
A03	RESPONSE TO SDRP	TT	GC	19.09.25
A02	RESPONSE TO SDRP	TT	GC	18.07.25
A01	DA SUBMISSION	TT	MS	03.03.25

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NSW Nominated Architects
5 Parsons Architect No.6098
D Jones Architect No.4778
N Marojevic Architect No.11274

PTW

1:200 @ A1

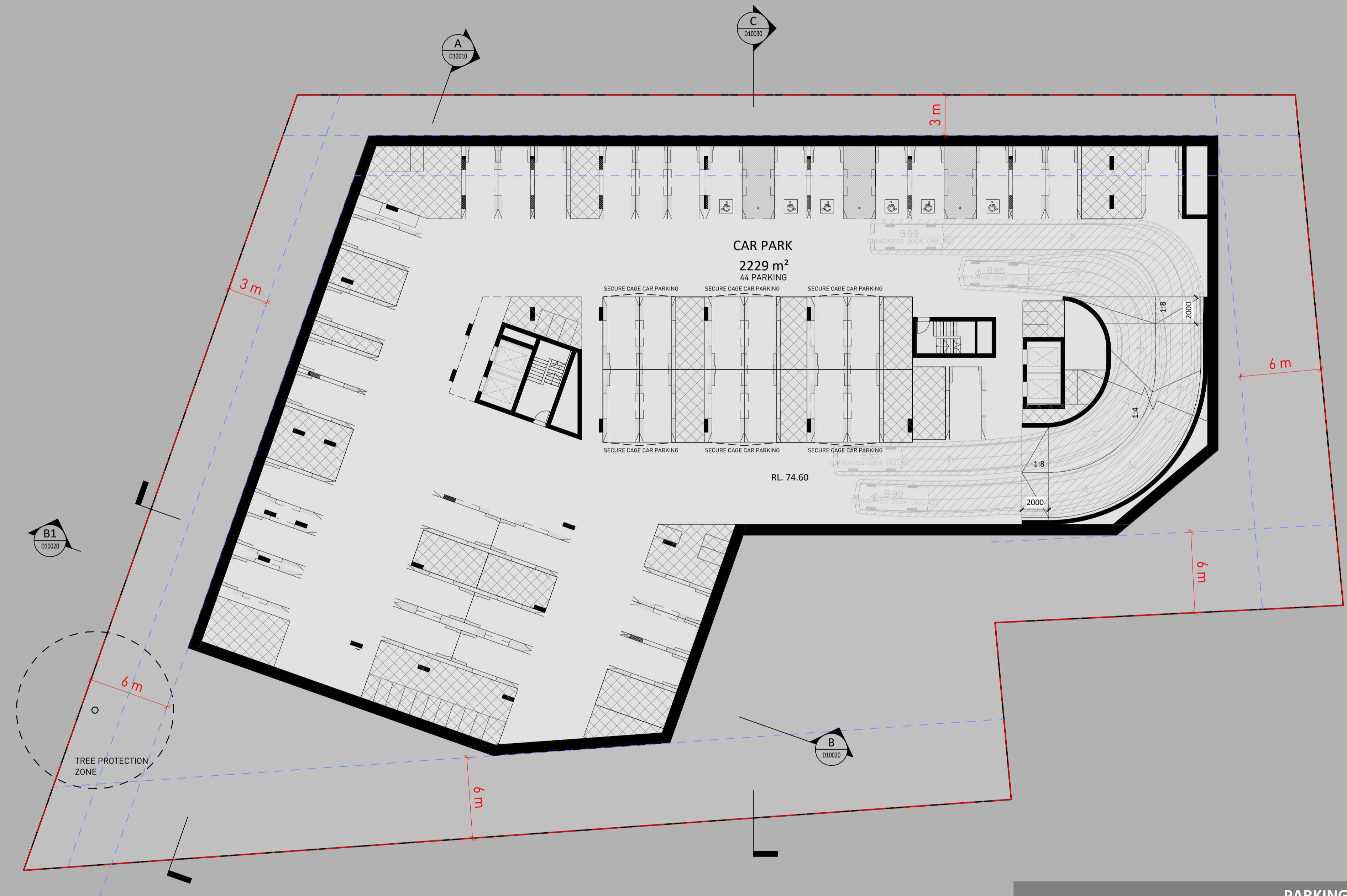
Project PA030530.01
BENT STREET LINDFIELD
12-16 BENT STREET, LINDFIELD, NSW
2070

Status
DEVELOPMENT APPLICATION

Title
B1-GENERAL ARRANGEMENT PLANS
BASEMENT LEVEL 01 FLOOR
PLAN
Drawing Number
AR-DA-B10020

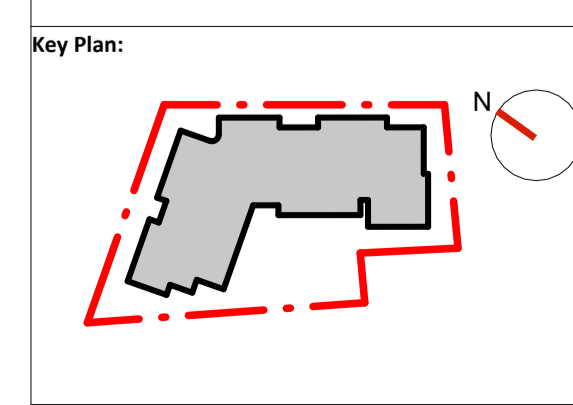
Revision
A03

STORAGE CAGES HAVE BEEN PROVIDED IN BASEMENT LEVELS



STORAGE

PARKING SCHEDULE						
LEVEL	RESIDENTIAL	ACCESSIBLE	CARWASH	VISITOR	VISITOR ACCESSIBLE	COUNT
L0	0	0	1	14	4	19
B01	33	5	0	0	0	38
B02	38	6	0	0	0	44
B03	38	6	0	0	0	44
TOTAL	109	17	1	14	4	145



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Rev	Amendment	By	Chk*	Date
A03	RESPONSE TO SDRP	TT	GC	19.09.25
A02	RESPONSE TO SDRP	TT	GC	18.07.25
A01	DA SUBMISSION	TT	MS	03.03.25

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D Jones Architect No.4778
N Marojevic Architect No.11274



Scale: 1:200 @ A1

Project: PA030530.01

BENT STREET LINDFIELD
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2070

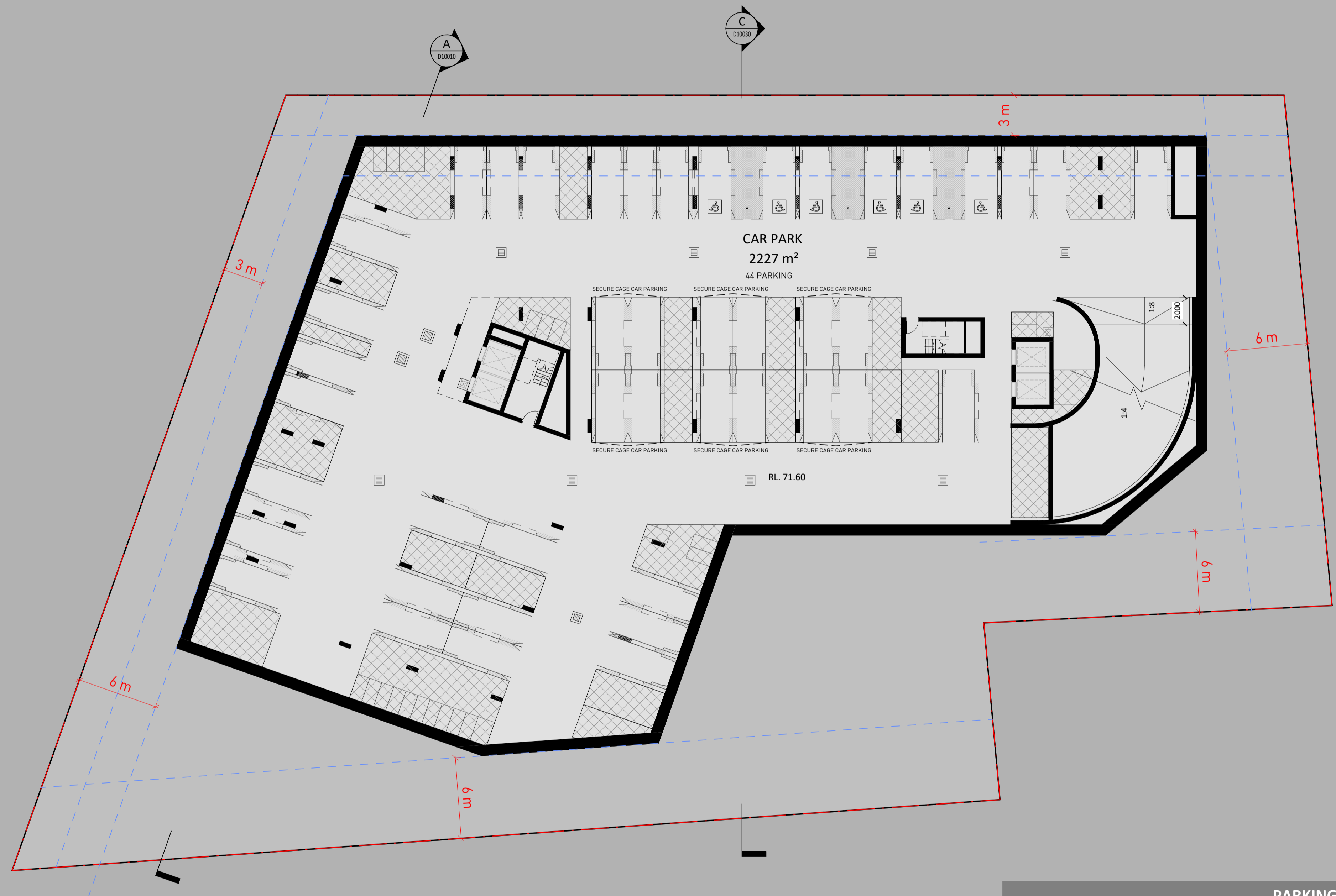
Status: DEVELOPMENT APPLICATION

Title: B1-GENERAL ARRANGEMENT PLANS
BASEMENT LEVEL 02 FLOOR PLAN

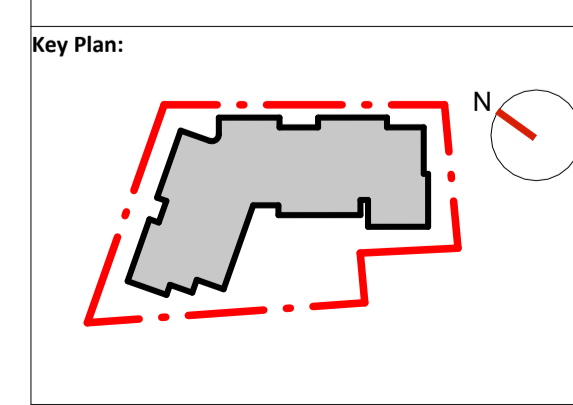
Drawing Number: **AR-DA-B10010**

Revision: **A03**

STORAGE CAGES HAVE BEEN PROVIDED IN BASEMENT LEVELS



PARKING SCHEDULE						
LEVEL	RESIDENTIAL	ACCESSIBLE	CARWASH	VISITOR	VISITOR ACCESSIBLE	COUNT
L0	0	0	1	14	4	19
B01	33	5	0	0	0	38
B02	38	6	0	0	0	44
B03	38	6	0	0	0	44
TOTAL	109	17	1	14	4	145



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Rev	Amendment	By	Chk*	Date
A03	RESPONSE TO SDRP	TT	GC	19.09.25
A02	RESPONSE TO SDRP	TT	GC	18.07.25
A01	DA SUBMISSION	TT	MS	03.03.25

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Scale: 1:200 @ A1

Project: PA030530.01
BENT STREET LINDFIELD
12-16 BENT STREET, LINDFIELD, NSW
2070

Status: DEVELOPMENT APPLICATION

Title: B1-GENERAL ARRANGEMENT PLANS
BASEMENT LEVEL 03 FLOOR PLAN

Drawing Number: **AR-DA-B10000**

Revision: **A03**

APPENDIX B

Swept Path Analysis



Notes:
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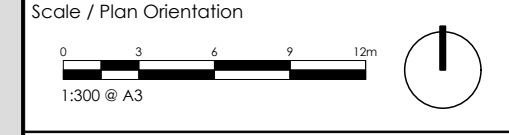
Rev.	Revision Note	By.	Date
A	Swept Path Analysis	AB	28-03-25
B	Updated Design	TM	30-07-25
C	Updated Design	TM	29-09-25
D	Updated Design	TM	7-10-25

Swept Path Legend

	Wheel Path
	Vehicle Body Envelope
	Clearance Envelope (300mm)

Architect

Client
 Sundale Northland Development Pty Ltd



Project Description
 12-16 Bent Street, Linfield

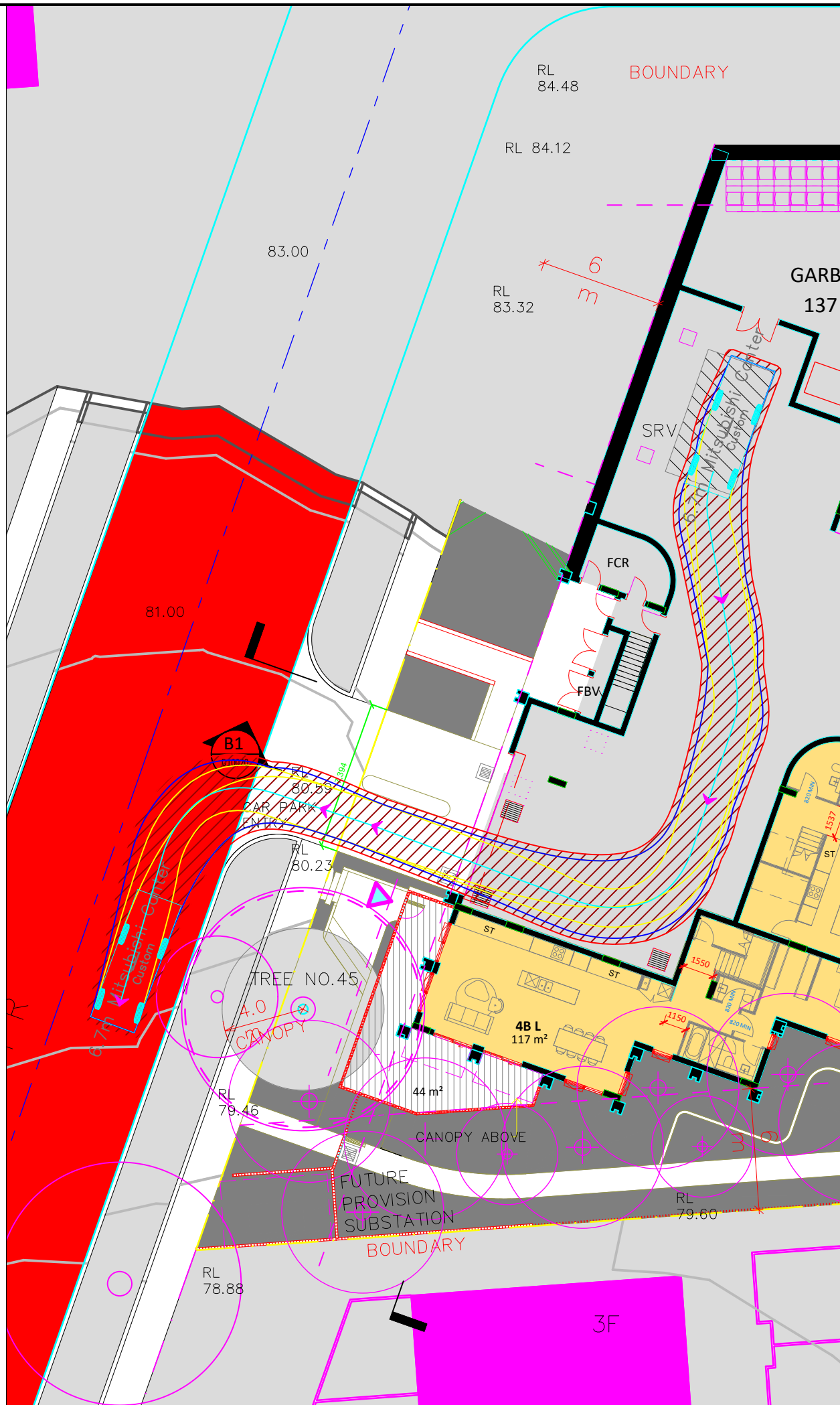
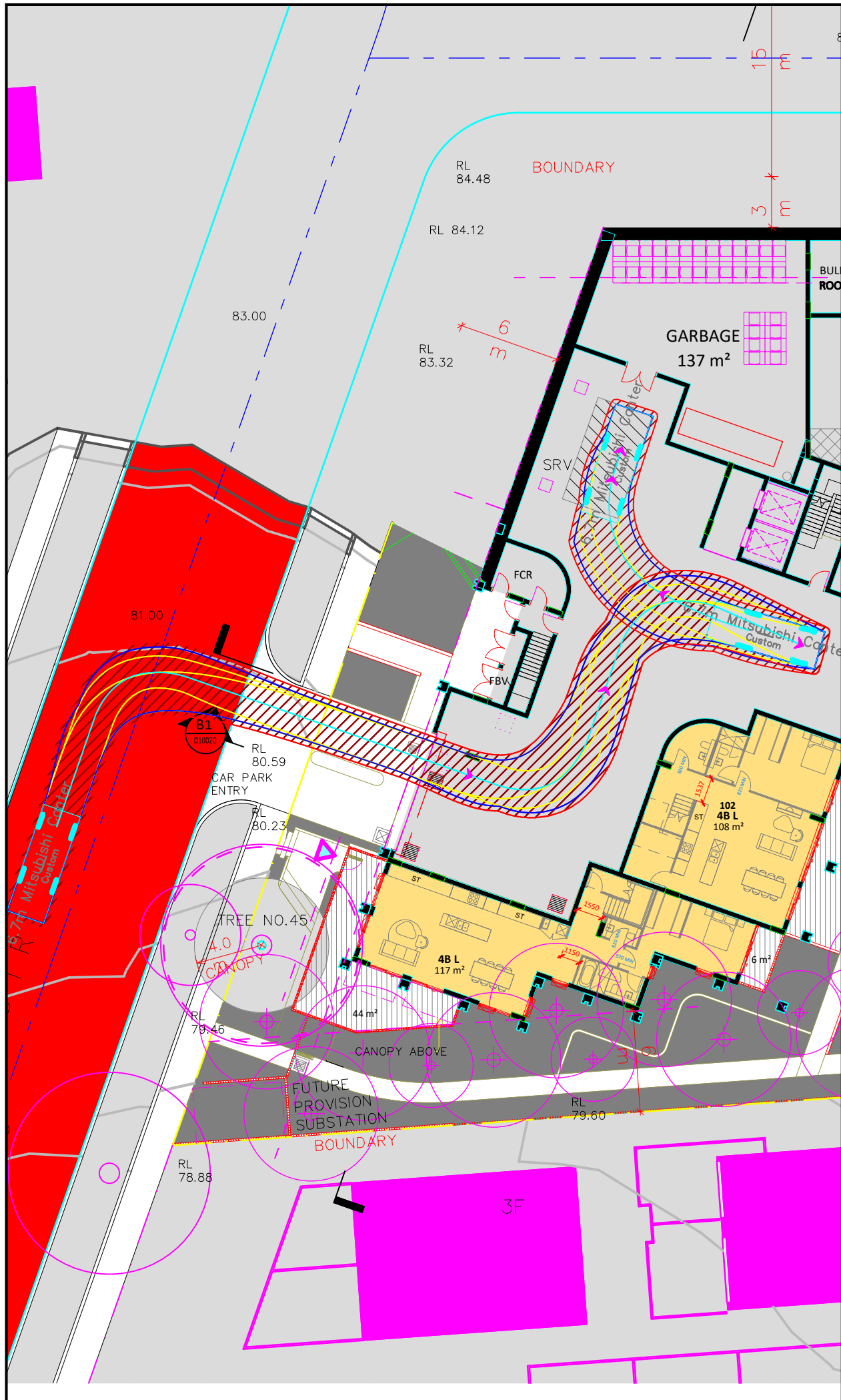
Drawing Prepared By

TRAFFIX
 TRAFFIC AND TRANSPORT PLANNERS

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 PO Box 1124 w: www.traffix.com.au
 Strawberry Hills, NSW 2012

Drawing Title
 Design Review
 Swept Path Analysis
 Ground Floor
 B99 & B85 Design Vehicles
 Simultaneous Entry / Egress Manoeuvres

Drawn: TM	Checked: VD	Date:	
24.558d09v01 TRAFFIX [251007 Plans] Design Review.dwg			
Project No.	Drawing Phase	Drawing No.	Rev.
24.558	DA	TX.01	D



Notes:
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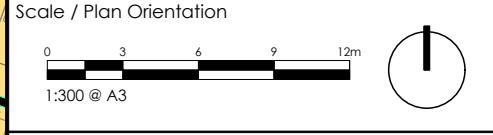
Rev.	Revision Note	By.	Date
A	Swept Path Analysis	AB	28-03-25
B	Swept Path Analysis	AB	18-06-25
C	Updated Design	TM	30-07-25
D	Updated Design	TM	29-09-25
E	Updated Design	TM	7-10-25

Swept Path Legend

	Wheel Path
	Vehicle Body Envelope
	Clearance Envelope (300mm)

Architect

Client
 Sundale Northland Development Pty Ltd



Project Description
 12-16 Bent Street, Linfield

Drawing Prepared By
TRAFFIX
 TRAFFIC AND TRANSPORT PLANNERS

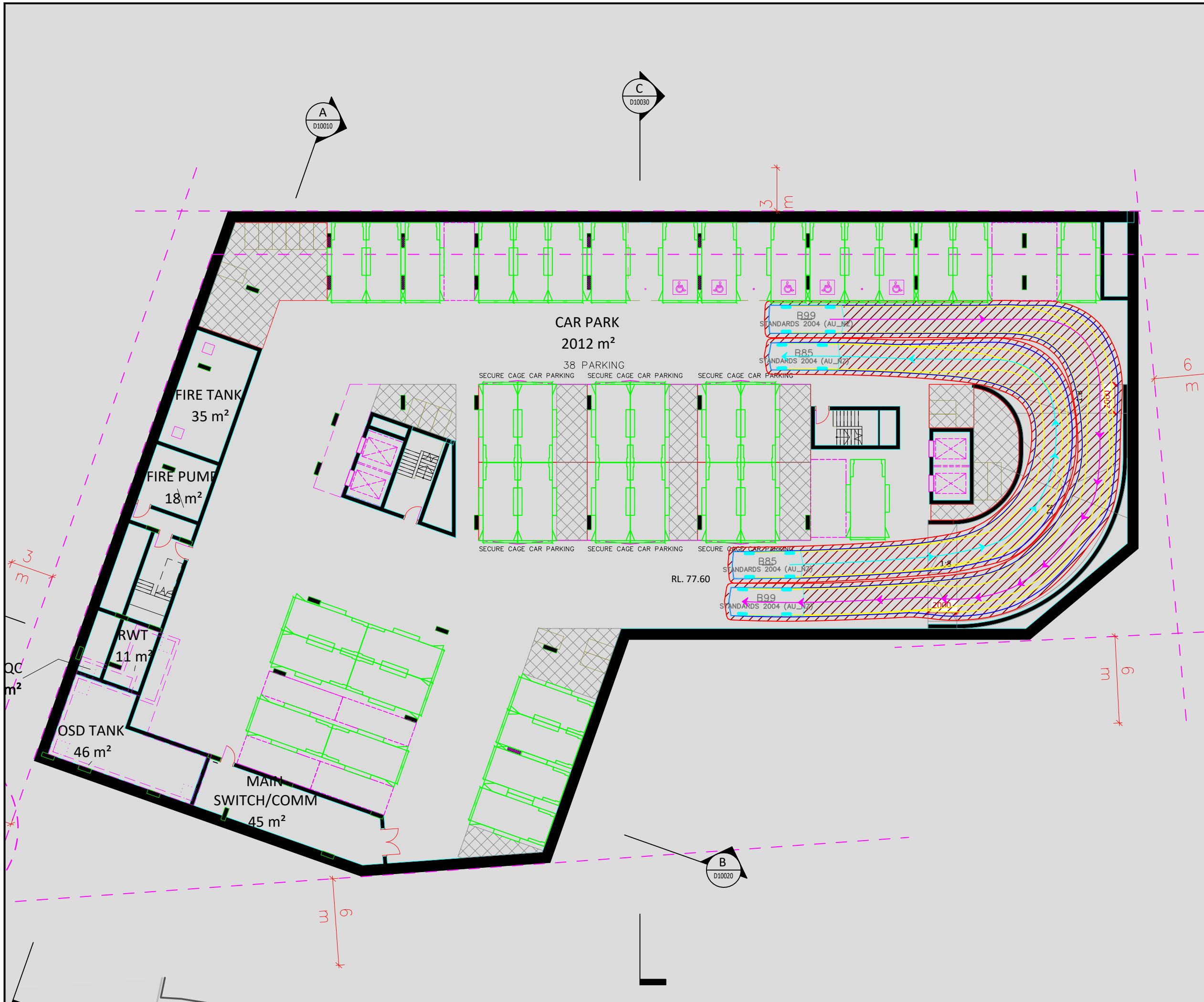
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 PO Box 1124 w: www.traffix.com.au
 Strawberry Hills, NSW 2012

Drawing Title
 Swept Path Analysis
 Ground Floor
 6.7m Mitsubishi Canter
 Left: Entry Manoeuvre
 Right: Egress Manoeuvre

Drawn: TM Checked: VD Date:

24.558d09v01 TRAFFIX [251007 Plans] Design Review.dwg

Project No.	Drawing Phase	Drawing No.	Rev.
24.558	DA	TX.02	E



Notes:

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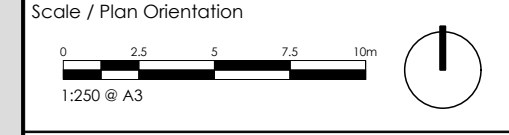
Rev.	Revision Note	By.	Date
A	Swept Path Analysis	AB	28-03-25
B	Updated Design	TM	30-07-25
C	Updated Design	TM	29-09-25
D	Updated Design	TM	7-10-25

Swept Path Legend

	Wheel Path
	Vehicle Body Envelope
	Clearance Envelope (300mm)

Architect

Client
Sundale Northland Development Pty Ltd



Project Description
12-16 Bent Street, Linfield

Drawing Prepared By

TRAFFIX
TRAFFIC AND TRANSPORT PLANNERS

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 Strawberry Hills, NSW 2012

Drawing Title
Swept Path Analysis
Basement Level 1
B99 and B85 Design Vehicles
Passing Manoeuvre

Drawn: TM	Checked: VD	Date:
24.558d09v01 TRAFFIX [251007 Plans] Design Review.dwg		
Project No. 24.558	Drawing Phase DA	Drawing No. Rev. TX.03 D

APPENDIX C

SIDRA Modelling Outputs

MOVEMENT SUMMARY

Site: 101 [101 EXAM - Pacific Hwy x Bent St (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Pacific Highway x Bent Street
 Scenario: Existing
 Peak Period: AM
 Site Category: (None)
 Stop (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				
South: Pacific Highway															
1	L2	All MCs	58	0.0	58	0.0	0.056	5.5	LOS A	0.0	0.0	0.00	0.32	0.00	52.2
2	T1	All MCs	1112	4.8	1112	4.8	0.281	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	59.2
Approach			1169	4.6	1169	4.6	0.281	0.3	NA	0.0	0.0	0.00	0.03	0.00	58.1
North: Pacific Highway															
8	T1	All MCs	2196	2.1	2196	2.1	0.571	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	59.5
Approach			2196	2.1	2196	2.1	0.571	0.3	NA	0.0	0.0	0.00	0.00	0.00	59.5
West: Bent Street															
10	L2	All MCs	32	3.3	32	3.3	0.028	9.0	LOS A	0.1	0.7	0.13	0.92	0.13	40.9
Approach			32	3.3	32	3.3	0.028	9.0	LOS A	0.1	0.7	0.13	0.92	0.13	40.9
All Vehicles			3397	2.9	3397	2.9	0.571	0.4	NA	0.1	0.7	0.00	0.02	0.00	59.0

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

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

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

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: T:\Synergy\Projects\24\24.558\Modelling\24.558m01v02.sip9

MOVEMENT SUMMARY

Site: 201 [201 EXAM - Bent St x Newark Cres x Balfour St (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Bent Street x Newark Crescent x Balfour Street
 Scenario: Existing
 Peak Period: AM
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Newark Crescent															
1	L2	All MCs	1	0.0	1	0.0	0.008	4.8	LOS A	0.0	0.2	0.33	0.50	0.33	43.1
2	T1	All MCs	5	0.0	5	0.0	0.008	4.8	LOS A	0.0	0.2	0.33	0.50	0.33	42.6
3	R2	All MCs	1	0.0	1	0.0	0.008	5.6	LOS A	0.0	0.2	0.33	0.50	0.33	41.7
Approach			7	0.0	7	0.0	0.008	4.9	LOS A	0.0	0.2	0.33	0.50	0.33	42.5
East: Bent Street															
4	L2	All MCs	1	0.0	1	0.0	0.059	4.6	LOS A	0.1	0.9	0.15	0.17	0.15	45.8
5	T1	All MCs	87	0.0	87	0.0	0.059	0.0	LOS A	0.1	0.9	0.15	0.17	0.15	48.5
6	R2	All MCs	18	0.0	18	0.0	0.059	6.8	LOS A	0.1	0.9	0.15	0.17	0.15	45.9
Approach			106	0.0	106	0.0	0.059	1.2	NA	0.1	0.9	0.15	0.17	0.15	48.1
North: Balfour Street															
7	L2	All MCs	7	0.0	7	0.0	0.105	4.9	LOS A	0.4	2.6	0.37	0.62	0.37	41.8
8	T1	All MCs	1	0.0	1	0.0	0.105	4.6	LOS A	0.4	2.6	0.37	0.62	0.37	41.2
9	R2	All MCs	78	4.1	78	4.1	0.105	6.5	LOS A	0.4	2.6	0.37	0.62	0.37	42.4
Approach			86	3.7	86	3.7	0.105	6.3	LOS A	0.4	2.6	0.37	0.62	0.37	42.3
West: Bent Street															
10	L2	All MCs	161	0.0	161	0.0	0.151	4.6	LOS A	0.0	0.1	0.00	0.31	0.00	45.7
11	T1	All MCs	123	0.0	123	0.0	0.151	0.0	LOS A	0.0	0.1	0.00	0.31	0.00	47.4
12	R2	All MCs	1	0.0	1	0.0	0.151	4.6	LOS A	0.0	0.1	0.00	0.31	0.00	44.9
Approach			285	0.0	285	0.0	0.151	2.6	NA	0.0	0.1	0.00	0.31	0.00	46.4
All Vehicles			485	0.7	485	0.7	0.151	3.0	NA	0.4	2.6	0.11	0.34	0.11	45.9

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

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

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

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: T:\Synergy\Projects\24\24.558\Modelling\24.558m01v02.sip9

MOVEMENT SUMMARY

Site: 301 [301 EXAM - Pacific Hwy x Balfour St x Havilah Rd (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Pacific Highway x Balfour Street x Havilah Road

Scenario: Existing

Peak Period: AM

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				
SouthEast: Pacific Highway															
1	L2	All MCs	37	2.9	37	2.9	0.399	24.9	LOS B	13.6	98.9	0.66	0.60	0.66	32.5
2	T1	All MCs	1017	4.5	1017	4.5	0.399	20.1	LOS B	13.7	99.4	0.66	0.58	0.66	33.6
3	R2	All MCs	96	2.2	96	2.2	*0.570	33.9	LOS C	3.5	25.2	0.94	0.81	0.94	20.7
Approach			1149	4.2	1149	4.2	0.570	21.4	LOS B	13.7	99.4	0.69	0.60	0.69	32.4
NorthEast: Havilah Road															
4	L2	All MCs	34	3.1	34	3.1	0.734	43.0	LOS D	12.1	87.4	1.00	0.88	1.08	13.0
5	T1	All MCs	56	1.9	56	1.9	*0.734	50.8	LOS D	12.1	87.4	1.00	0.88	1.08	15.7
6	R2	All MCs	118	4.5	118	4.5	0.734	61.1	LOS E	12.1	87.4	1.00	0.88	1.08	13.0
Approach			207	3.6	207	3.6	0.734	55.4	LOS D	12.1	87.4	1.00	0.88	1.08	13.8
NorthWest: Pacific Highway															
7	L2	All MCs	189	0.6	189	0.6	0.760	25.4	LOS B	36.5	259.4	0.81	0.77	0.81	18.5
8	T1	All MCs	2093	2.1	2093	2.1	*0.760	23.8	LOS B	36.8	262.4	0.81	0.75	0.81	33.0
9	R2	All MCs	97	1.1	97	1.1	0.217	41.2	LOS C	2.0	13.8	0.56	0.70	0.56	36.1
Approach			2379	1.9	2379	1.9	0.760	24.6	LOS B	36.8	262.4	0.80	0.75	0.80	31.9
SouthWest: Balfour Street															
10	L2	All MCs	31	3.4	31	3.4	0.086	43.6	LOS D	1.8	12.9	0.78	0.68	0.78	23.9
11	T1	All MCs	64	0.0	64	0.0	0.430	54.1	LOS D	6.5	45.5	0.90	0.76	0.90	17.4
12	R2	All MCs	69	1.5	69	1.5	0.430	62.5	LOS E	6.5	45.5	0.93	0.77	0.93	21.2
Approach			164	1.3	164	1.3	0.430	55.7	LOS D	6.5	45.5	0.89	0.75	0.89	20.3
All Vehicles			3900	2.6	3900	2.6	0.760	26.6	LOS B	36.8	262.4	0.78	0.71	0.79	29.7

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

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance												
Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
						[Ped	Dist]					
			ped/h	sec		[Ped	m					
SouthEast: Pacific Highway												
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
NorthEast: Havilah Road												
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
NorthWest: Pacific Highway												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
SouthWest: Balfour Street												
P4	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
All Pedestrians		200	211	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96

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.

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MOVEMENT SUMMARY

Site: 102 [102 EXPM - Pacific Hwy x Bent St (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Pacific Highway x Bent Street
 Scenario: Existing
 Peak Period: PM
 Site Category: (None)
 Stop (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				
South: Pacific Highway															
1	L2	All MCs	31	0.0	31	0.0	0.086	5.5	LOS A	0.0	0.0	0.00	0.11	0.00	54.7
2	T1	All MCs	1798	1.2	1798	1.2	0.430	0.2	LOS A	0.0	0.0	0.00	0.01	0.00	59.3
Approach			1828	1.2	1828	1.2	0.430	0.3	NA	0.0	0.0	0.00	0.01	0.00	59.1
North: Pacific Highway															
8	T1	All MCs	1388	1.0	1388	1.0	0.358	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			1388	1.0	1388	1.0	0.358	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.8
West: Bent Street															
10	L2	All MCs	37	2.9	37	2.9	0.036	10.7	LOS A	0.1	0.9	0.24	0.88	0.24	40.7
Approach			37	2.9	37	2.9	0.036	10.7	LOS A	0.1	0.9	0.24	0.88	0.24	40.7
All Vehicles			3254	1.1	3254	1.1	0.430	0.3	NA	0.1	0.9	0.00	0.02	0.00	59.1

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

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

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

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 202 [202 EXPM - Bent St x Newark Cres x Balfour St (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Bent Street x Newark Crescent x Balfour Street

Scenario: Existing

Peak Period: PM

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				
South: Newark Crescent															
1	L2	All MCs	5	0.0	5	0.0	0.006	4.8	LOS A	0.0	0.2	0.19	0.48	0.19	43.1
2	T1	All MCs	2	0.0	2	0.0	0.006	4.0	LOS A	0.0	0.2	0.19	0.48	0.19	42.5
3	R2	All MCs	1	0.0	1	0.0	0.006	5.2	LOS A	0.0	0.2	0.19	0.48	0.19	41.7
Approach			8	0.0	8	0.0	0.006	4.6	LOS A	0.0	0.2	0.19	0.48	0.19	42.8
East: Bent Street															
4	L2	All MCs	2	0.0	2	0.0	0.048	4.6	LOS A	0.1	0.4	0.06	0.08	0.06	46.6
5	T1	All MCs	81	0.0	81	0.0	0.048	0.0	LOS A	0.1	0.4	0.06	0.08	0.06	49.2
6	R2	All MCs	8	0.0	8	0.0	0.048	5.5	LOS A	0.1	0.4	0.06	0.08	0.06	46.6
Approach			92	0.0	92	0.0	0.048	0.6	NA	0.1	0.4	0.06	0.08	0.06	48.9
North: Balfour Street															
7	L2	All MCs	5	0.0	5	0.0	0.085	4.7	LOS A	0.3	2.1	0.27	0.57	0.27	42.4
8	T1	All MCs	1	0.0	1	0.0	0.085	3.9	LOS A	0.3	2.1	0.27	0.57	0.27	41.9
9	R2	All MCs	75	0.0	75	0.0	0.085	5.5	LOS A	0.3	2.1	0.27	0.57	0.27	43.0
Approach			81	0.0	81	0.0	0.085	5.5	LOS A	0.3	2.1	0.27	0.57	0.27	43.0
West: Bent Street															
10	L2	All MCs	71	0.0	71	0.0	0.070	4.6	LOS A	0.0	0.1	0.00	0.29	0.00	45.9
11	T1	All MCs	62	0.0	62	0.0	0.070	0.0	LOS A	0.0	0.1	0.00	0.29	0.00	47.5
12	R2	All MCs	1	0.0	1	0.0	0.070	4.6	LOS A	0.0	0.1	0.00	0.29	0.00	45.0
Approach			134	0.0	134	0.0	0.070	2.4	NA	0.0	0.1	0.00	0.29	0.00	46.6
All Vehicles			315	0.0	315	0.0	0.085	2.7	NA	0.3	2.1	0.09	0.31	0.09	46.1

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

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

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

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 302 [302 EXPM - Pacific Hwy x Balfour St x Havilah Rd (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Pacific Highway x Balfour Street x Havilah Road

Scenario: Existing

Peak Period: PM

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				
SouthEast: Pacific Highway															
1	L2	All MCs	12	0.0	12	0.0	0.699	27.3	LOS B	24.6	174.1	0.84	0.76	0.84	31.3
2	T1	All MCs	1745	1.1	1745	1.1	*0.699	24.1	LOS B	24.7	174.3	0.84	0.75	0.84	31.9
3	R2	All MCs	98	1.1	98	1.1	*0.411	37.9	LOS C	2.2	15.5	0.81	0.76	0.81	24.4
Approach			1855	1.1	1855	1.1	0.699	24.8	LOS B	24.7	174.3	0.84	0.75	0.84	31.6
NorthEast: Havilah Road															
4	L2	All MCs	39	0.0	39	0.0	0.703	29.8	LOS C	12.6	89.4	0.96	0.86	1.00	16.3
5	T1	All MCs	55	0.0	55	0.0	*0.703	36.9	LOS C	12.6	89.4	0.96	0.86	1.00	19.3
6	R2	All MCs	181	1.7	181	1.7	0.703	43.8	LOS D	12.6	89.4	0.96	0.86	1.00	16.3
Approach			275	1.1	275	1.1	0.703	40.4	LOS C	12.6	89.4	0.96	0.86	1.00	16.9
NorthWest: Pacific Highway															
7	L2	All MCs	207	0.5	207	0.5	0.624	26.2	LOS B	20.6	145.0	0.80	0.76	0.80	18.0
8	T1	All MCs	1316	1.0	1316	1.0	0.624	23.8	LOS B	20.9	147.7	0.80	0.72	0.80	32.4
9	R2	All MCs	83	0.0	83	0.0	0.381	43.7	LOS D	1.8	12.9	0.84	0.76	0.84	31.2
Approach			1606	0.9	1606	0.9	0.624	25.1	LOS B	20.9	147.7	0.80	0.73	0.80	30.2
SouthWest: Balfour Street															
10	L2	All MCs	33	0.0	33	0.0	0.045	23.9	LOS B	1.0	6.8	0.64	0.67	0.64	29.8
11	T1	All MCs	66	0.0	66	0.0	0.223	29.6	LOS C	3.8	26.7	0.82	0.69	0.82	22.1
12	R2	All MCs	34	0.0	34	0.0	0.223	37.5	LOS C	3.8	26.7	0.82	0.69	0.82	26.5
Approach			133	0.0	133	0.0	0.223	30.2	LOS C	3.8	26.7	0.77	0.68	0.77	25.2
All Vehicles			3868	1.0	3868	1.0	0.703	26.2	LOS B	24.7	174.3	0.83	0.75	0.83	29.4

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

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance												
Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
						[Ped	Dist]					
			ped/h	sec		ped	m					
SouthEast: Pacific Highway												
P1	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
NorthEast: Havilah Road												
P2	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
NorthWest: Pacific Highway												
P3	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
SouthWest: Balfour Street												
P4	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
All Pedestrians		200	211	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

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.

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MOVEMENT SUMMARY

Site: 103 [103 EX+SAM - Pacific Hwy x Bent St (Site Folder: Existing + Proposed)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Pacific Highway x Bent Street
 Scenario: Existing + Scenario
 Peak Period: AM
 Site Category: (None)
 Stop (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				
South: Pacific Highway															
1	L2	All MCs	61	0.0	61	0.0	0.056	5.5	LOS A	0.0	0.0	0.00	0.34	0.00	52.0
2	T1	All MCs	1112	4.8	1112	4.8	0.282	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	59.2
Approach			1173	4.6	1173	4.6	0.282	0.4	NA	0.0	0.0	0.00	0.03	0.00	58.0
North: Pacific Highway															
8	T1	All MCs	2209	2.0	2209	2.0	0.574	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	59.5
Approach			2209	2.0	2209	2.0	0.574	0.3	NA	0.0	0.0	0.00	0.00	0.00	59.5
West: Bent Street															
10	L2	All MCs	37	2.9	37	2.9	0.033	9.0	LOS A	0.1	0.8	0.13	0.92	0.13	41.6
Approach			37	2.9	37	2.9	0.033	9.0	LOS A	0.1	0.8	0.13	0.92	0.13	41.6
All Vehicles			3419	2.9	3419	2.9	0.574	0.4	NA	0.1	0.8	0.00	0.02	0.00	58.9

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

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

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

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 203 [203 EX+SAM - Bent St x Newark Cres x Balfour St (Site Folder: Existing + Proposed)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Bent Street x Newark Crescent x Balfour Street

Scenario: Existing+ Scenario

Peak Period: AM

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Newark Crescent															
1	L2	All MCs	1	0.0	1	0.0	0.008	4.8	LOS A	0.0	0.2	0.34	0.50	0.34	43.0
2	T1	All MCs	5	0.0	5	0.0	0.008	4.9	LOS A	0.0	0.2	0.34	0.50	0.34	42.5
3	R2	All MCs	1	0.0	1	0.0	0.008	5.7	LOS A	0.0	0.2	0.34	0.50	0.34	41.6
Approach			7	0.0	7	0.0	0.008	5.0	LOS A	0.0	0.2	0.34	0.50	0.34	42.5
East: Bent Street															
4	L2	All MCs	1	0.0	1	0.0	0.069	4.6	LOS A	0.2	1.6	0.22	0.26	0.22	45.4
5	T1	All MCs	87	0.0	87	0.0	0.069	0.0	LOS A	0.2	1.6	0.22	0.26	0.22	48.2
6	R2	All MCs	32	0.0	32	0.0	0.069	7.1	LOS A	0.2	1.6	0.22	0.26	0.22	46.9
Approach			120	0.0	120	0.0	0.069	1.9	NA	0.2	1.6	0.22	0.26	0.22	47.8
North: Balfour Street															
7	L2	All MCs	8	0.0	8	0.0	0.108	5.1	LOS A	0.4	2.7	0.38	0.62	0.38	42.1
8	T1	All MCs	1	0.0	1	0.0	0.108	4.6	LOS A	0.4	2.7	0.38	0.62	0.38	41.2
9	R2	All MCs	78	4.1	78	4.1	0.108	6.6	LOS A	0.4	2.7	0.38	0.62	0.38	42.3
Approach			87	3.6	87	3.6	0.108	6.4	LOS A	0.4	2.7	0.38	0.62	0.38	42.3
West: Bent Street															
10	L2	All MCs	161	0.0	161	0.0	0.151	4.6	LOS A	0.0	0.1	0.00	0.31	0.00	45.7
11	T1	All MCs	123	0.0	123	0.0	0.151	0.0	LOS A	0.0	0.1	0.00	0.31	0.00	47.4
12	R2	All MCs	1	0.0	1	0.0	0.151	4.6	LOS A	0.0	0.1	0.00	0.31	0.00	44.9
Approach			285	0.0	285	0.0	0.151	2.6	NA	0.0	0.1	0.00	0.31	0.00	46.4
All Vehicles			500	0.6	500	0.6	0.151	3.1	NA	0.4	2.7	0.13	0.35	0.13	45.9

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

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

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

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 303 [303 EX+SAM - Pacific Hwy x Balfour St x Havilah Rd (Site Folder: Existing + Proposed)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Pacific Highway x Balfour Street x Havilah Road

Scenario: Existing+ Scenario

Peak Period: AM

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
SouthEast: Pacific Highway															
1	L2	All MCs	37	2.9	37	2.9	0.401	24.9	LOS B	13.7	99.5	0.66	0.60	0.66	32.4
2	T1	All MCs	1022	4.4	1022	4.4	0.401	20.0	LOS B	13.8	100.0	0.66	0.58	0.66	33.6
3	R2	All MCs	96	2.2	96	2.2	* 0.570	33.0	LOS C	3.5	25.2	0.94	0.81	0.94	20.7
Approach			1155	4.2	1155	4.2	0.570	21.2	LOS B	13.8	100.0	0.68	0.60	0.68	32.4
NorthEast: Havilah Road															
4	L2	All MCs	34	3.1	34	3.1	0.732	42.9	LOS D	12.1	87.3	1.00	0.88	1.08	13.0
5	T1	All MCs	56	1.9	56	1.9	* 0.732	50.7	LOS D	12.1	87.3	1.00	0.88	1.08	15.7
6	R2	All MCs	118	4.5	118	4.5	0.732	61.0	LOS E	12.1	87.3	1.00	0.88	1.08	13.0
Approach			207	3.6	207	3.6	0.732	55.3	LOS D	12.1	87.3	1.00	0.88	1.08	13.8
NorthWest: Pacific Highway															
7	L2	All MCs	189	0.6	189	0.6	0.761	25.4	LOS B	36.6	259.7	0.81	0.77	0.81	18.5
8	T1	All MCs	2093	2.1	2093	2.1	* 0.761	23.8	LOS B	36.9	262.7	0.81	0.75	0.81	33.0
9	R2	All MCs	98	1.1	98	1.1	0.220	41.4	LOS C	2.0	13.9	0.58	0.70	0.58	35.9
Approach			2380	1.9	2380	1.9	0.761	24.6	LOS B	36.9	262.7	0.80	0.75	0.80	31.9
SouthWest: Balfour Street															
10	L2	All MCs	31	3.4	31	3.4	0.097	46.4	LOS D	2.0	14.2	0.79	0.68	0.79	23.7
11	T1	All MCs	64	0.0	64	0.0	0.485	57.5	LOS E	7.1	49.9	0.91	0.76	0.91	17.4
12	R2	All MCs	83	1.3	83	1.3	0.485	66.0	LOS E	7.1	49.9	0.94	0.78	0.94	21.0
Approach			178	1.2	178	1.2	0.485	59.6	LOS E	7.1	49.9	0.90	0.76	0.90	20.3
All Vehicles			3920	2.6	3920	2.6	0.761	26.8	LOS B	36.9	262.7	0.78	0.71	0.79	29.6

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

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance													
Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed	
						[Ped	Dist]						
			ped/h	sec		ped	m			sec	m	m/sec	
SouthEast: Pacific Highway													
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96	
NorthEast: Havilah Road													
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96	
NorthWest: Pacific Highway													
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96	
SouthWest: Balfour Street													
P4	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96	
All Pedestrians		200	211	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96	

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.

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MOVEMENT SUMMARY

Site: 104 [104 EX+SPM - Pacific Hwy x Bent St (Site Folder: Existing + Proposed)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Pacific Highway x Bent Street
 Scenario: Existing+Scenario
 Peak Period: PM
 Site Category: (None)
 Stop (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				
South: Pacific Highway															
1	L2	All MCs	41	0.0	41	0.0	0.086	5.5	LOS A	0.0	0.0	0.00	0.15	0.00	54.3
2	T1	All MCs	1798	1.2	1798	1.2	0.432	0.2	LOS A	0.0	0.0	0.00	0.01	0.00	59.2
Approach			1839	1.1	1839	1.1	0.432	0.3	NA	0.0	0.0	0.00	0.01	0.00	58.9
North: Pacific Highway															
8	T1	All MCs	1391	1.0	1391	1.0	0.359	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			1391	1.0	1391	1.0	0.359	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.8
West: Bent Street															
10	L2	All MCs	38	2.8	38	2.8	0.036	10.6	LOS A	0.1	0.9	0.23	0.88	0.23	40.9
Approach			38	2.8	38	2.8	0.036	10.6	LOS A	0.1	0.9	0.23	0.88	0.23	40.9
All Vehicles			3267	1.1	3267	1.1	0.432	0.4	NA	0.1	0.9	0.00	0.02	0.00	59.0

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

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

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

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 204 [204 EX+SPM - Bent St x Newark Cres x Balfour St (Site Folder: Existing + Proposed)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Bent Street x Newark Crescent x Balfour Street
 Scenario: Existing + Scenario
 Peak Period: PM
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				
South: Newark Crescent															
1	L2	All MCs	5	0.0	5	0.0	0.006	4.8	LOS A	0.0	0.2	0.19	0.48	0.19	43.1
2	T1	All MCs	2	0.0	2	0.0	0.006	4.0	LOS A	0.0	0.2	0.19	0.48	0.19	42.5
3	R2	All MCs	1	0.0	1	0.0	0.006	5.3	LOS A	0.0	0.2	0.19	0.48	0.19	41.7
Approach			8	0.0	8	0.0	0.006	4.6	LOS A	0.0	0.2	0.19	0.48	0.19	42.8
East: Bent Street															
4	L2	All MCs	2	0.0	2	0.0	0.050	4.6	LOS A	0.1	0.5	0.07	0.10	0.07	46.5
5	T1	All MCs	81	0.0	81	0.0	0.050	0.0	LOS A	0.1	0.5	0.07	0.10	0.07	49.1
6	R2	All MCs	11	0.0	11	0.0	0.050	5.7	LOS A	0.1	0.5	0.07	0.10	0.07	47.2
Approach			94	0.0	94	0.0	0.050	0.7	NA	0.1	0.5	0.07	0.10	0.07	48.9
North: Balfour Street															
7	L2	All MCs	9	0.0	9	0.0	0.088	5.2	LOS A	0.3	2.1	0.27	0.56	0.27	43.7
8	T1	All MCs	1	0.0	1	0.0	0.088	3.9	LOS A	0.3	2.1	0.27	0.56	0.27	42.1
9	R2	All MCs	75	0.0	75	0.0	0.088	5.6	LOS A	0.3	2.1	0.27	0.56	0.27	43.1
Approach			85	0.0	85	0.0	0.088	5.5	LOS A	0.3	2.1	0.27	0.56	0.27	43.2
West: Bent Street															
10	L2	All MCs	71	0.0	71	0.0	0.070	4.6	LOS A	0.0	0.1	0.00	0.29	0.00	45.9
11	T1	All MCs	62	0.0	62	0.0	0.070	0.0	LOS A	0.0	0.1	0.00	0.29	0.00	47.5
12	R2	All MCs	1	0.0	1	0.0	0.070	4.6	LOS A	0.0	0.1	0.00	0.29	0.00	45.0
Approach			134	0.0	134	0.0	0.070	2.4	NA	0.0	0.1	0.00	0.29	0.00	46.6
All Vehicles			321	0.0	321	0.0	0.088	2.8	NA	0.3	2.1	0.10	0.31	0.10	46.2

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

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

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

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 304 [304 EX+SPM - Pacific Hwy x Balfour St x Havilah Rd (Site Folder: Existing + Proposed)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Pacific Highway x Balfour Street x Havilah Road

Scenario: Existing + Scenario

Peak Period: PM

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
SouthEast: Pacific Highway															
1	L2	All MCs	12	0.0	12	0.0	0.703	27.4	LOS B	24.9	175.8	0.85	0.76	0.85	31.3
2	T1	All MCs	1756	1.1	1756	1.1	* 0.703	24.2	LOS B	24.9	176.0	0.85	0.76	0.85	31.9
3	R2	All MCs	98	1.1	98	1.1	* 0.412	38.0	LOS C	2.2	15.5	0.81	0.76	0.81	24.4
Approach			1865	1.1	1865	1.1	0.703	24.9	LOS B	24.9	176.0	0.84	0.76	0.84	31.5
NorthEast: Havilah Road															
4	L2	All MCs	39	0.0	39	0.0	0.702	29.8	LOS C	12.6	89.4	0.96	0.86	1.00	16.3
5	T1	All MCs	55	0.0	55	0.0	* 0.702	36.9	LOS C	12.6	89.4	0.96	0.86	1.00	19.3
6	R2	All MCs	181	1.7	181	1.7	0.702	43.8	LOS D	12.6	89.4	0.96	0.86	1.00	16.3
Approach			275	1.1	275	1.1	0.702	40.4	LOS C	12.6	89.4	0.96	0.86	1.00	16.9
NorthWest: Pacific Highway															
7	L2	All MCs	207	0.5	207	0.5	0.628	26.3	LOS B	20.7	146.3	0.80	0.76	0.80	17.9
8	T1	All MCs	1316	1.0	1316	1.0	0.628	23.7	LOS B	21.1	148.9	0.80	0.72	0.80	32.3
9	R2	All MCs	87	0.0	87	0.0	0.401	43.5	LOS D	1.9	13.6	0.85	0.76	0.85	31.2
Approach			1611	0.9	1611	0.9	0.628	25.1	LOS B	21.1	148.9	0.80	0.73	0.80	30.2
SouthWest: Balfour Street															
10	L2	All MCs	33	0.0	33	0.0	0.046	23.8	LOS B	1.0	6.8	0.64	0.67	0.64	29.8
11	T1	All MCs	66	0.0	66	0.0	0.229	29.6	LOS C	3.9	27.2	0.82	0.69	0.82	22.1
12	R2	All MCs	36	0.0	36	0.0	0.229	37.6	LOS C	3.9	27.2	0.82	0.69	0.82	26.5
Approach			135	0.0	135	0.0	0.229	30.3	LOS C	3.9	27.2	0.77	0.68	0.77	25.3
All Vehicles			3885	1.0	3885	1.0	0.703	26.3	LOS B	24.9	176.0	0.83	0.75	0.84	29.4

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

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance												
Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Eff. Stop Rate	Eff. Travel Time	Travel Dist.	Aver. Speed
						[Ped	Dist]					
		ped/h	ped/h	sec		ped	m			sec	m	m/sec
SouthEast: Pacific Highway												
P1	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
NorthEast: Havilah Road												
P2	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
NorthWest: Pacific Highway												
P3	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
SouthWest: Balfour Street												
P4	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
All Pedestrians		200	211	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

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.

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MOVEMENT SUMMARY

Site: 105 [105 EX+CIAM - Pacific Hwy x Bent St (Site Folder: Existing + Cumulative Impact)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Pacific Highway x Bent Street
 Scenario: Existing + Cumulative
 Peak Period: AM
 Site Category: (None)
 Stop (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				
South: Pacific Highway															
1	L2	All MCs	61	0.0	61	0.0	0.056	5.5	LOS A	0.0	0.0	0.00	0.34	0.00	52.0
2	T1	All MCs	1113	4.8	1113	4.8	0.282	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	59.2
Approach			1174	4.6	1174	4.6	0.282	0.4	NA	0.0	0.0	0.00	0.03	0.00	58.0
North: Pacific Highway															
8	T1	All MCs	2213	2.0	2213	2.0	0.575	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	59.5
Approach			2213	2.0	2213	2.0	0.575	0.3	NA	0.0	0.0	0.00	0.00	0.00	59.5
West: Bent Street															
10	L2	All MCs	37	2.9	37	2.9	0.033	9.0	LOS A	0.1	0.8	0.13	0.92	0.13	41.6
Approach			37	2.9	37	2.9	0.033	9.0	LOS A	0.1	0.8	0.13	0.92	0.13	41.6
All Vehicles			3423	2.9	3423	2.9	0.575	0.4	NA	0.1	0.8	0.00	0.02	0.00	58.9

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

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

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

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 205 [205 EX+CIAM - Bent St x Newark Cres x Balfour St (Site Folder: Existing + Cumulative Impact)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Bent Street x Newark Crescent x Balfour Street
 Scenario: Existing+ Cumulative
 Peak Period: AM
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				
South: Newark Crescent															
1	L2	All MCs	1	0.0	1	0.0	0.008	4.8	LOS A	0.0	0.2	0.34	0.50	0.34	43.0
2	T1	All MCs	5	0.0	5	0.0	0.008	4.9	LOS A	0.0	0.2	0.34	0.50	0.34	42.5
3	R2	All MCs	1	0.0	1	0.0	0.008	5.7	LOS A	0.0	0.2	0.34	0.50	0.34	41.6
Approach			7	0.0	7	0.0	0.008	5.0	LOS A	0.0	0.2	0.34	0.50	0.34	42.4
East: Bent Street															
4	L2	All MCs	1	0.0	1	0.0	0.069	4.6	LOS A	0.2	1.6	0.22	0.26	0.22	45.4
5	T1	All MCs	87	0.0	87	0.0	0.069	0.0	LOS A	0.2	1.6	0.22	0.26	0.22	48.2
6	R2	All MCs	32	0.0	32	0.0	0.069	7.1	LOS A	0.2	1.6	0.22	0.26	0.22	46.9
Approach			120	0.0	120	0.0	0.069	1.9	NA	0.2	1.6	0.22	0.26	0.22	47.8
North: Balfour Street															
7	L2	All MCs	8	0.0	8	0.0	0.109	5.1	LOS A	0.4	2.7	0.38	0.63	0.38	42.1
8	T1	All MCs	1	0.0	1	0.0	0.109	4.6	LOS A	0.4	2.7	0.38	0.63	0.38	41.2
9	R2	All MCs	79	4.0	79	4.0	0.109	6.6	LOS A	0.4	2.7	0.38	0.63	0.38	42.4
Approach			88	3.6	88	3.6	0.109	6.4	LOS A	0.4	2.7	0.38	0.63	0.38	42.4
West: Bent Street															
10	L2	All MCs	165	0.0	165	0.0	0.153	4.6	LOS A	0.0	0.1	0.00	0.31	0.00	45.8
11	T1	All MCs	123	0.0	123	0.0	0.153	0.0	LOS A	0.0	0.1	0.00	0.31	0.00	47.5
12	R2	All MCs	1	0.0	1	0.0	0.153	4.6	LOS A	0.0	0.1	0.00	0.31	0.00	44.9
Approach			289	0.0	289	0.0	0.153	2.6	NA	0.0	0.1	0.00	0.31	0.00	46.5
All Vehicles			505	0.6	505	0.6	0.153	3.2	NA	0.4	2.7	0.13	0.36	0.13	46.0

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

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

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

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 305 [305 EX+CIAM - Pacific Hwy x Balfour St x Havilah Rd (Site Folder: Existing + Cumulative Impact)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Pacific Highway x Balfour Street x Havilah Road

Scenario: Existing+ Cumulative

Peak Period: AM

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				
SouthEast: Pacific Highway															
1	L2	All MCs	37	2.9	37	2.9	0.401	24.9	LOS B	13.7	99.5	0.66	0.60	0.66	32.4
2	T1	All MCs	1023	4.4	1023	4.4	0.401	20.1	LOS B	13.8	100.0	0.66	0.58	0.66	33.6
3	R2	All MCs	96	2.2	96	2.2	* 0.570	34.2	LOS C	3.6	25.4	0.94	0.81	0.95	20.5
Approach			1156	4.2	1156	4.2	0.570	21.4	LOS B	13.8	100.0	0.69	0.60	0.69	32.4
NorthEast: Havilah Road															
4	L2	All MCs	34	3.1	34	3.1	0.749	43.8	LOS D	12.3	88.4	1.00	0.90	1.10	12.8
5	T1	All MCs	56	1.9	56	1.9	* 0.749	51.6	LOS D	12.3	88.4	1.00	0.90	1.10	15.6
6	R2	All MCs	118	4.5	118	4.5	0.749	61.9	LOS E	12.3	88.4	1.00	0.90	1.10	12.9
Approach			207	3.6	207	3.6	0.749	56.2	LOS D	12.3	88.4	1.00	0.90	1.10	13.6
NorthWest: Pacific Highway															
7	L2	All MCs	189	0.6	189	0.6	0.762	25.4	LOS B	36.7	260.8	0.81	0.78	0.81	18.5
8	T1	All MCs	2096	2.1	2096	2.1	* 0.762	23.8	LOS B	37.0	263.8	0.81	0.75	0.81	33.0
9	R2	All MCs	99	1.1	99	1.1	0.222	41.4	LOS C	2.0	14.1	0.58	0.70	0.58	35.9
Approach			2384	1.9	2384	1.9	0.762	24.7	LOS B	37.0	263.8	0.80	0.75	0.80	31.9
SouthWest: Balfour Street															
10	L2	All MCs	31	3.4	31	3.4	0.101	48.0	LOS D	2.1	14.8	0.80	0.68	0.80	23.5
11	T1	All MCs	64	0.0	64	0.0	0.503	59.6	LOS E	7.3	51.5	0.91	0.76	0.91	17.2
12	R2	All MCs	87	1.2	87	1.2	0.503	68.1	LOS E	7.3	51.5	0.95	0.79	0.95	20.8
Approach			182	1.2	182	1.2	0.503	61.7	LOS E	7.3	51.5	0.91	0.76	0.91	20.1
All Vehicles			3929	2.6	3929	2.6	0.762	27.1	LOS B	37.0	263.8	0.78	0.72	0.79	29.6

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

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance												
Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
						[Ped	Dist]					
		ped/h	ped/h	sec		ped	m					
SouthEast: Pacific Highway												
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
NorthEast: Havilah Road												
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
NorthWest: Pacific Highway												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
SouthWest: Balfour Street												
P4	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
All Pedestrians		200	211	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96

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.

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MOVEMENT SUMMARY

Site: 106 [106 EX+CIPM - Pacific Hwy x Bent St (Site Folder: Existing + Cumulative Impact)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Pacific Highway x Bent Street
 Scenario: Existing+Cumulative
 Peak Period: PM
 Site Category: (None)
 Stop (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				
South: Pacific Highway															
1	L2	All MCs	41	0.0	41	0.0	0.087	5.5	LOS A	0.0	0.0	0.00	0.15	0.00	54.3
2	T1	All MCs	1800	1.2	1800	1.2	0.433	0.2	LOS A	0.0	0.0	0.00	0.01	0.00	59.2
Approach			1841	1.1	1841	1.1	0.433	0.3	NA	0.0	0.0	0.00	0.01	0.00	58.9
North: Pacific Highway															
8	T1	All MCs	1392	1.0	1392	1.0	0.359	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			1392	1.0	1392	1.0	0.359	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.8
West: Bent Street															
10	L2	All MCs	38	2.8	38	2.8	0.036	10.6	LOS A	0.1	0.9	0.23	0.88	0.23	40.9
Approach			38	2.8	38	2.8	0.036	10.6	LOS A	0.1	0.9	0.23	0.88	0.23	40.9
All Vehicles			3271	1.1	3271	1.1	0.433	0.4	NA	0.1	0.9	0.00	0.02	0.00	59.0

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

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

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

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: T:\Synergy\Projects\24\24.558\Modelling\24.558m01v02.sip9

MOVEMENT SUMMARY

Site: 206 [206 EX+CIPM - Bent St x Newark Cres x Balfour St (Site Folder: Existing + Cumulative Impact)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Bent Street x Newark Crescent x Balfour Street
 Scenario: Existing + Cumulative
 Peak Period: PM
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				
South: Newark Crescent															
1	L2	All MCs	5	0.0	5	0.0	0.006	4.8	LOS A	0.0	0.2	0.19	0.48	0.19	43.1
2	T1	All MCs	2	0.0	2	0.0	0.006	4.0	LOS A	0.0	0.2	0.19	0.48	0.19	42.5
3	R2	All MCs	1	0.0	1	0.0	0.006	5.3	LOS A	0.0	0.2	0.19	0.48	0.19	41.7
Approach			8	0.0	8	0.0	0.006	4.6	LOS A	0.0	0.2	0.19	0.48	0.19	42.8
East: Bent Street															
4	L2	All MCs	2	0.0	2	0.0	0.050	4.6	LOS A	0.1	0.5	0.07	0.10	0.07	46.5
5	T1	All MCs	81	0.0	81	0.0	0.050	0.0	LOS A	0.1	0.5	0.07	0.10	0.07	49.1
6	R2	All MCs	11	0.0	11	0.0	0.050	5.7	LOS A	0.1	0.5	0.07	0.10	0.07	47.2
Approach			94	0.0	94	0.0	0.050	0.7	NA	0.1	0.5	0.07	0.10	0.07	48.9
North: Balfour Street															
7	L2	All MCs	9	0.0	9	0.0	0.091	5.2	LOS A	0.3	2.2	0.27	0.56	0.27	43.8
8	T1	All MCs	1	0.0	1	0.0	0.091	4.0	LOS A	0.3	2.2	0.27	0.56	0.27	42.2
9	R2	All MCs	78	0.0	78	0.0	0.091	5.6	LOS A	0.3	2.2	0.27	0.56	0.27	43.4
Approach			88	0.0	88	0.0	0.091	5.5	LOS A	0.3	2.2	0.27	0.56	0.27	43.4
West: Bent Street															
10	L2	All MCs	72	0.0	72	0.0	0.071	4.6	LOS A	0.0	0.1	0.00	0.29	0.00	45.9
11	T1	All MCs	62	0.0	62	0.0	0.071	0.0	LOS A	0.0	0.1	0.00	0.29	0.00	47.6
12	R2	All MCs	1	0.0	1	0.0	0.071	4.6	LOS A	0.0	0.1	0.00	0.29	0.00	45.1
Approach			135	0.0	135	0.0	0.071	2.5	NA	0.0	0.1	0.00	0.29	0.00	46.7
All Vehicles			325	0.0	325	0.0	0.091	2.9	NA	0.3	2.2	0.10	0.31	0.10	46.2

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

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

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

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 306 [306 EX+CIPM - Pacific Hwy x Balfour St x Havilah Rd (Site Folder: Existing + Cumulative Impact)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Pacific Highway x Balfour Street x Havilah Road

Scenario: Existing + Cumulative

Peak Period: PM

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				
SouthEast: Pacific Highway															
1	L2	All MCs	12	0.0	12	0.0	0.704	27.4	LOS B	24.9	176.2	0.85	0.76	0.85	31.3
2	T1	All MCs	1758	1.1	1758	1.1	* 0.704	24.2	LOS B	25.0	176.4	0.85	0.76	0.85	31.9
3	R2	All MCs	98	1.1	98	1.1	* 0.413	38.1	LOS C	2.2	15.5	0.81	0.76	0.81	24.4
Approach			1867	1.1	1867	1.1	0.704	24.9	LOS B	25.0	176.4	0.84	0.76	0.84	31.5
NorthEast: Havilah Road															
4	L2	All MCs	39	0.0	39	0.0	0.702	29.8	LOS C	12.6	89.4	0.96	0.86	1.00	16.3
5	T1	All MCs	55	0.0	55	0.0	* 0.702	36.9	LOS C	12.6	89.4	0.96	0.86	1.00	19.3
6	R2	All MCs	181	1.7	181	1.7	0.702	43.8	LOS D	12.6	89.4	0.96	0.86	1.00	16.3
Approach			275	1.1	275	1.1	0.702	40.4	LOS C	12.6	89.4	0.96	0.86	1.00	16.9
NorthWest: Pacific Highway															
7	L2	All MCs	207	0.5	207	0.5	0.631	26.3	LOS B	20.9	147.2	0.80	0.76	0.80	17.9
8	T1	All MCs	1317	1.0	1317	1.0	0.631	23.7	LOS B	21.2	149.9	0.80	0.72	0.80	32.3
9	R2	All MCs	91	0.0	91	0.0	0.416	43.4	LOS D	2.0	14.1	0.85	0.76	0.85	31.2
Approach			1615	0.9	1615	0.9	0.631	25.1	LOS B	21.2	149.9	0.80	0.73	0.80	30.2
SouthWest: Balfour Street															
10	L2	All MCs	33	0.0	33	0.0	0.046	24.4	LOS B	1.0	7.0	0.65	0.67	0.65	29.5
11	T1	All MCs	66	0.0	66	0.0	0.231	29.6	LOS C	3.9	27.5	0.82	0.69	0.82	22.1
12	R2	All MCs	37	0.0	37	0.0	0.231	37.7	LOS C	3.9	27.5	0.82	0.69	0.82	26.5
Approach			136	0.0	136	0.0	0.231	30.6	LOS C	3.9	27.5	0.78	0.68	0.78	25.2
All Vehicles			3893	1.0	3893	1.0	0.704	26.3	LOS B	25.0	176.4	0.83	0.75	0.84	29.4

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

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance													
Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Eff. Stop Rate	Eff. Travel Time	Travel Dist.	Aver. Speed	
						[Ped	Dist]						
			ped/h	sec		ped	m						
SouthEast: Pacific Highway													
P1	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01	
NorthEast: Havilah Road													
P2	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01	
NorthWest: Pacific Highway													
P3	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01	
SouthWest: Balfour Street													
P4	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01	
All Pedestrians		200	211	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01	

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.

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