



# TRAFFIC IMPACT ASSESSMENT

**MIXED USE DEVELOPMENT  
LOT 22 DP 1072217  
42 HONEYSUCKLE DRIVE, NEWCASTLE**

**PREPARED FOR: DOMA GROUP**

**NOVEMBER 2017**

17/115

**TRAFFIC IMPACT ASSESSMENT  
DOMA GROUP****MIXED USE DEVELOPMENT  
LOT 22 DP 1072217  
42 HONEYSUCKLE DRIVE, NEWCASTLE**

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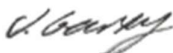
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## 1.0 INTRODUCTION

Intersect Traffic Pty Ltd was engaged by Doma Group to prepare a Traffic and Parking Assessment Report for a mixed-use development on Lot 22 DP 1072217 – 42 Honeysuckle Drive, Newcastle. The development will contain a total of nine (9) levels including ground level with six (6) levels of on-site car parking (245 spaces), a small retail tenancy (101 m<sup>2</sup> GFA) at ground level, a tourist hotel over ground level to level 4 with 144 hotel rooms and 7 serviced apartments and 52 residential apartments over levels 5 to 8. The site is currently vacant. The development concept plans are shown in **Attachment A**. Vehicular access to the on-site car parking will be via a combined entry / exit access crossing off Honeysuckle Drive which will operate as a left in and left out only access due to the raised vegetated central median in Honeysuckle Drive that separates flow directions on the road.

This report is required to support a development application to Newcastle City Council and allow the Council to assess the proposal's impact on the local and state road network. This report presents the findings of the traffic assessment and includes the following;

1. An outline of the existing situation near the site.
2. An assessment of the traffic impacts of the proposed development including the predicted traffic generation and its impact on existing road and intersection capacities.
3. Reviews parking, public transport, pedestrian and cycle way requirements for the proposed development, including assessment against Council and Australian Standards.
4. Presentation of conclusions and recommendations.

This report has been undertaken with reference to *RTA's Guide to Traffic Generating Developments (2002)*, *AUSTROADS Guide to Traffic Management – Part 12 – Traffic Impacts of Development* and *Chapter 7.03 of Newcastle City Council's DCP (2012)*.

## 2.0 SITE LOCATION

The subject site is shown in **Figure 1** below. It is located on the southern side of Honeysuckle Drive, Newcastle immediately north of the old heavy rail corridor and approximately 270 metres west of Hannell Street and the proposed Wickham Transport Interchange currently under construction. The site is within the Newcastle City Centre area and adjoins the Honeysuckle entertainment precinct.

The site is titled and addressed as Lot 22 DP 1072217 – 42 Honeysuckle Drive, Newcastle and is zoned B4 – Mixed Use pursuant to the Newcastle LEP (2012). The site has a total area of approximately 3,749 m<sup>2</sup>. **Photograph 1** below shows existing conditions at the site while **Photograph 2** shows the central median within Honeysuckle Drive along the site frontage.

The site is currently vacant and has frontage to Honeysuckle Drive only with no existing vehicular access to the site. On-street parking along the Honeysuckle Drive is paid parking during CBD business hours and time limited as both 4 and 8 hour restricted.



**Figure 1 – Site Location**



*Photograph 1 – Development site*



*Photograph 2 – Honeysuckle Drive along site frontage*

## 3.0 EXISTING ROAD NETWORK

### 3.1 Honeysuckle Drive

Honeysuckle Drive under a functional road hierarchy functions as major local collector road in the Newcastle CBD area. It collects and distributes traffic along the harbour front to connect to the major arterial and sub-arterial road networks being the Pacific Highway (Hunter Street) to the south and Industrial Drive (Hannell Street) to the west. It is under the care and control of Newcastle City Council. In the vicinity of the site Honeysuckle Drive is an urban two lane two way sealed road with parking lanes and kerb and gutter on both sides and a central raised median separating traffic flow directions. Lane widths are between 3.0 and 3.5 metres and a 50 km/h speed limit applies to the roads. At the time of inspection Honeysuckle Drive (see **Photograph 3**) was observed to be in good condition.

On-street parking in Honeysuckle Drive is both time restricted charged on an hourly basis with a ticket payment scheme in place. Time restrictions vary along the length of Honeysuckle Drive from short term to longer term parking.



**Photograph 3 – Honeysuckle Drive near the site**

### 3.2 Hannell Street / Stewart Avenue

Hannell Street and Stewart Avenue near the site are both classified sub-arterial roads under the care and control of NSW Roads and Maritime Services. Their primary function is to connect to the Newcastle CBD area to sub-regions to the south (Stewart Avenue) e.g. Charlestown, Belmont, Swansea etc. and to the west and north (Hannell Avenue) e.g. Port Stephens, Raymond Terrace, Maitland and further afield. On-street parking is limited near Honeysuckle Drive. In the vicinity of the site these roads are four lane two way urban roads with kerb and gutter. Lane widths are typically 3 to 3.5 metres and a 50 km/h speed limit applies to these sections of road. At the time of inspection both Stewart Avenue and Hannell Street were observed to be in good condition (see **Photographs 4 & 5**).



*Photograph 4 – Hannell Street near the site.*



*Photograph 5 – Stewart Avenue near the site*

### 3.2 Worth Place

Worth Place though generally considered a local urban street provides an important connection to Hunter Street to the south (left in and left out only). This link has only recently been completed across the old heavy rail corridor to ease traffic congestion on Stewart Avenue and Hunter Street to the west and Workshop Way and Merewether Street to the east. The intersection of Worth Place and Honeysuckle Drive is constructed as a single lane roundabout and this intersection plays an important function in providing vehicular access to properties on the southern side of Honeysuckle Drive west of Worth Place such as the proposed development.

As a local road, Worth Place is under the care and control of Newcastle City Council and is a two-way two-lane road with travel lane widths exceeding 3.5 metres. A 50 km/h speed zoning exists and at the time of inspection Worth Place was observed to be in excellent condition (see **Photograph 6**).



*Photograph 6 – Worth Place near the site*

## 4.0 ROAD NETWORK IMPROVEMENTS

The major road network improvement impacting on the site has been the recent removal of the section of heavy rail line between Newcastle and Wickham stations which included the removal of the Merewether Street and Stewart Avenue heavy rail crossings. This increased the capacity of the road network through the removal of the rail crossings.

There are no known future road network upgrades that will increase the capacity of the road network. The provision of light rail along Hunter Street near the site, for which construction has just commenced is however likely to result in a reduced two-way mid-block capacity in Hunter Street which overall will likely reduce traffic volumes in Hunter Street but increase traffic volumes on Wharf Road and Honeysuckle Drive thereby reducing available capacity in both Wharf Road and Honeysuckle Drive.

## 5.0 TRAFFIC VOLUMES

The RMS and Newcastle City Council were sourced for relevant existing traffic data in the area however neither had any relevant recent data. Therefore, Northern Transport Planning Engineering on behalf of Intersect Traffic undertook manual intersection counts on the Stewart Avenue / Hannell Street / Honeysuckle Drive signalised intersections and the Honeysuckle Drive / Worth Place roundabout during the AM and PM peak periods on Thursday 24<sup>th</sup> August 2017 (prior to the light rail construction in Hunter Street commencing) to gauge existing peak traffic volumes on the local road network. The traffic data collected is provided in **Attachment B**.

This data indicates current peak hour traffic periods to be generally between 7.30 am and 8.30 am and 4.30 pm and 6.00 pm. Peak hour traffic volumes on the local road network during these periods are as follows;

- ◆ Hannell Street – 3,023 vtpm in the AM peak and 3,032 vtpm in the PM peak.
- ◆ Stewart Avenue – 2,654 vtpm in the AM peak and 2,607 vtpm in the PM peak.
- ◆ Honeysuckle Drive – 1,515 vtpm in the AM peak and 1,511 vtpm in the PM peak.
- ◆ Worth Place – 156 vtpm in the AM peak and 148 vtpm in the PM peak.

These values have been adopted for assessment purposes.



## 6.0 ROAD CAPACITY

The capacity of urban roads is generally determined by the capacity of intersections. However, Tables 4.3 and 4.4 of the RTA's *Guide to Traffic Generating Developments* provides some guidance on mid-block capacities for urban roads and likely levels of service. These tables are reproduced below.

**Table 4.3**  
Typical mid-block capacities for urban roads with interrupted flow

Type of Road	One-Way Mid-block Lane Capacity (pcu/hr)	
Median or inner lane:	Divided Road	1,000
	Undivided Road	900
Outer or kerb lane:	With Adjacent Parking Lane	900
	Clearway Conditions	900
	Occasional Parked Cars	600
4 lane undivided:	Occasional Parked Cars	1,500
	Clearway Conditions	1,800
4 lane divided:	Clearway Conditions	1,900

**Table 4.4**  
Urban road peak hour flows per direction

Level of Service	One Lane (veh/hr)	Two Lanes (veh/hr)
A	200	900
B	380	1400
C	600	1800
D	900	2200
E	1400	2800

Source: - RTA's *Guide to Traffic Generating Developments* (2002).

Based on these tables and noting that Hannell Street and Stewart Avenue have two lanes per flow direction while Honeysuckle Drive and Worth Place have single lanes per flow direction it is considered that the state and local road network has the following two-way road capacity if a LOS D is considered satisfactory in a CBD area.

- ◆ Hannell Street / Stewart Avenue – up to 5,600 vtp; and
- ◆ Honeysuckle Drive / Worth Place – up to 2,800 vtp.

From the traffic data collected in **Section 5** and noting the likely technical road capacity of the local road network exceeds the existing traffic volumes on the network (Hannell Street peak 3,032 vtp and Honeysuckle Drive peak 1,515 vtp) it is considered that the adjacent road network is currently operating within its technical capacity and has scope to cater for additional traffic generated by new development in the area.

## 7.0 ALTERNATE TRANSPORT MODES

The site is well serviced by public transport being within convenient walking distance from many bus routes operated by Keolis Downer. Route Numbers 106 & 107 run along Honeysuckle Drive past the site while Route Numbers 100, 111, 104, 118, 201, 222, 224, 225, 226, 230, 231, 235, 317, 322, 334, 349, 350 & 363 all run along Hunter Street within 100 metres of the site. The nearest bus stops are located on Honeysuckle Drive approximately 30 metres walk west from the site (see **Photograph 7**).

The site is also within convenient walking distance to the Stockton Ferry terminal. The Newcastle Airport bus service run by Port Stephens Coaches is also conveniently accessible to the site. The local bus route map is provided in **Figure 2** below.

There is an off-road cycleway that runs along the Foreshore immediately north of the site with a connection directly opposite the site (see **Photograph 8**) with a road crossing and refuge again in front of the site (see **Photograph 9**). Cyclist accessing the site would be required to utilise these off-road cycle ways or share travel lanes with other vehicles. Due to the road conditions and traffic volumes in the area on road cycling would only be suitable for experienced cyclists.

The site is surrounded by a suitable pedestrian footpath network made up of mainly reinforced concrete and pavers (see **Photograph 10**). This footpath network surrounds the site and provides suitable connections to the nearby public transport infrastructure and other attractions and services within the CBD, Foreshore and Honeysuckle Precincts.



**Photograph 7 – Existing bus stops immediately east of site.**



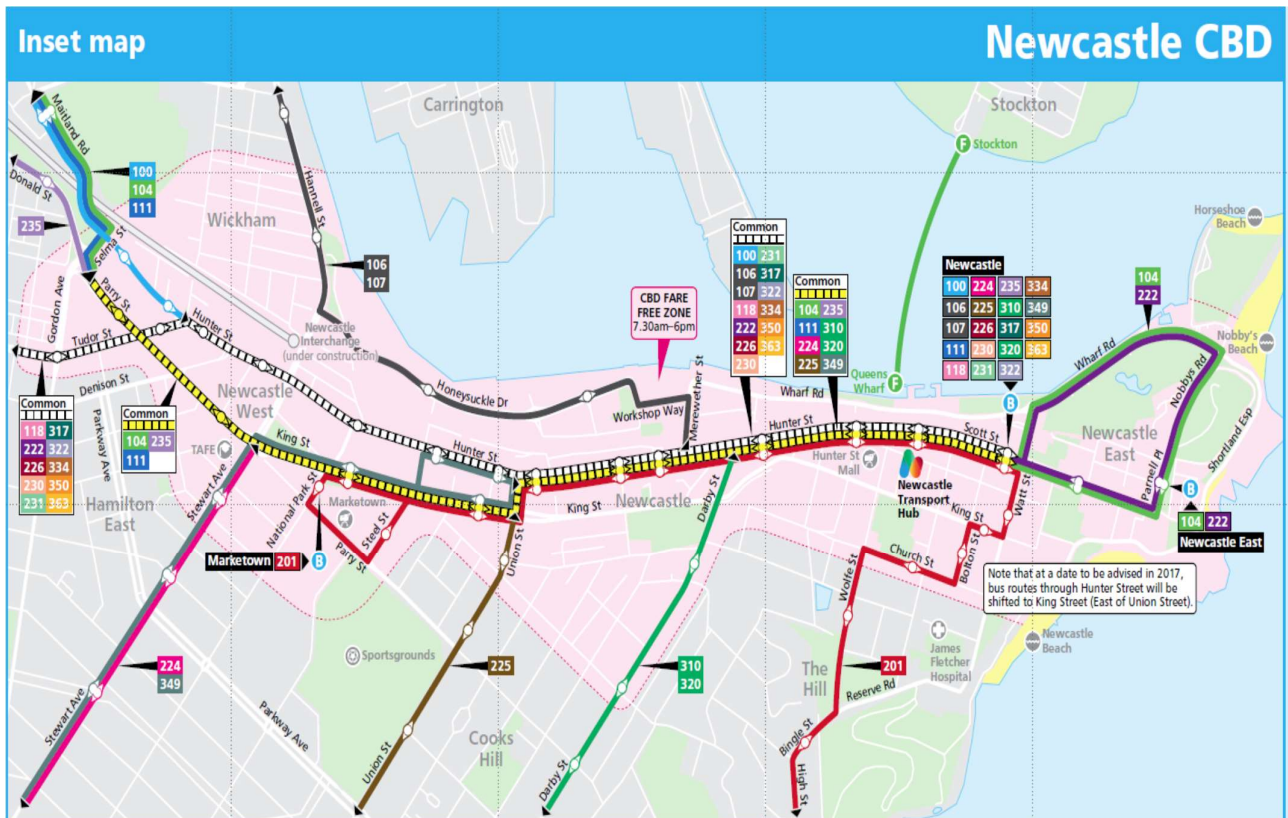
*Photograph 8 – Foreshore cycleway and Honeysuckle Drive connection*



*Photograph 9 – Pedestrian Refuge in front of site*



**Photograph 10 – Pedestrian footpath – Honeysuckle Drive.**



**Figure 2– Bus Route Map Extract**

## 8.0 DEVELOPMENT PROPOSAL

The proposal is to construct a mixed-use development containing a total of nine (9) levels including ground level with six (6) levels of on-site car parking (245 spaces), a small retail tenancy (101 m<sup>2</sup> GFA) at ground level, a tourist hotel over ground level to level 4 with 144 hotel rooms and 6 serviced apartments and 52 residential apartments over levels 5 to 8. The proposed development plans are provided within **Attachment A**. Specifically, the proposal seeks to undertake the following works;

- ◆ Ground level – Hotel lobby and 6 serviced apartments, retail tenancy (101 m<sup>2</sup> GFA), Residential lobby, combined entry / exit vehicular access to Honeysuckle Drive, loading and servicing bay with turntable and 27 on-site car parks, 12 motorbike spaces and bicycle storage for residents;
- ◆ Level 1 – 36 hotel rooms, ancillary gymnasium for hotel (80 m<sup>2</sup> GFA) and 46 on-site car parks;
- ◆ Level 2 – 36 hotel rooms, ancillary food and beverage area for the hotel and 50 on-site car parks;
- ◆ Level 3 – 36 hotel rooms, ancillary library / reading area for hotel and 50 on-site car parks;
- ◆ Level 4 – 36 hotel rooms, ancillary library / reading area for hotel, storage areas for residents and 47 on-site car parks;
- ◆ Level 5 – 24 on-site car parks, storage areas for residents as well 2 three-bedroom and three bedroom + units and 9 two-bedroom units;
- ◆ Level 6 – 4 three-bedroom and three bedroom + units, 8 two-bedroom units and 3 one-bedroom units;
- ◆ Level 7 - 5 three-bedroom and three bedroom + units, 14 two-bedroom units and 3 one-bedroom units; and
- ◆ Level 8 – 2 three-bedroom units and 2 two-bedroom units.

The proposed combined entry / exit access to the multi-level parking areas off Honeysuckle Drive operates as a left in and left out only access due to the raised central median in Honeysuckle Drive that separates traffic flow directions on the road. It is proposed that the excess car parking within the development will be utilised for paid public parking.



# 9.0 TRAFFIC GENERATION

The RMS' *RTA's Guide to Traffic Generating Development's* provides specific advice on the traffic generation potential of various land uses. However, regarding residential flat buildings, the RMS issued a Technical Direction TDT 2013/04 in May 2013 that provided updated traffic generation rates for certain development types including residential flat buildings.

Therefore, the relevant land uses and traffic generation rates applied in this assessment are;

## Retail

- ◆ *Daily vehicle trips – 121 per 100 m<sup>2</sup> GFA and evening peak hour – 12.5 per 100 m<sup>2</sup> GFA.*

Note: - due to the location of the site being within the Newcastle City Centre area a cross-use and passing traffic concession of 50 % is considered reasonable.

## Hotel (same as motel)

- ◆ *Daily vehicle trips – 3 per unit and evening peak hour – 0.4 per unit.*

## Residential Flat Buildings

Weekday Rates	Sydney Average	Sydney Range	Regional Average	Regional Range
AM peak (1 hour) vehicle trips per unit	0.19	0.07-0.32	0.53	0.39-0.67
AM peak (1 hour) vehicle trips per car space	0.15	0.09-0.29	0.35	0.32-0.37
AM peak (1 hour) vehicle trips per bedroom	0.09	0.03-0.13	0.21	0.20-0.22
PM peak (1 hour) vehicle trips per unit	0.15	0.06-0.41	0.32	0.22-0.42
PM peak (1hour) vehicle trips per car space	0.12	0.05-0.28	0.26	0.11-0.40
PM peak (1 hour) vehicle trips per bedroom	0.07	0.03-0.17	0.15	0.07-0.22
Daily vehicle trips per unit	1.52	0.77-3.14	4.58	4.37-4.78
Daily vehicle trips per car space	1.34	0.56-2.16	3.22	2.26-4.18
Daily vehicle trips per bedroom	0.72	0.35-1.29	1.93	1.59-2.26

Therefore, the following peak hour traffic generation calculations can be undertaken for the proposed development noting traffic impact assessment is based on peak hour traffic volumes and average regional rates are used due to the site being within the Newcastle City Centre area with excellent access to existing and future public transport. For the purposes of this assessment it is assumed the retail tenancies AM peak does not coincide with the road network AM peak and that the hotel AM peak is the same as the PM peak. Also the ancillary components of the hotel development including the food and beverage area will not generate additional traffic movements.

Retail spaces (PM) = 101 m<sup>2</sup>/100 m<sup>2</sup> x 12.5 vtp/h x 0.5 = 7 vtp/h;  
 Hotel (AM & PM) = 150 units x 0.4 = 60 vtp/h  
 Residential apartments (AM) = 52 x 0.53 = 28 vtp/h; and  
 Residential apartments (PM) = 52 x 0.32 = 17 vtp/h.

Therefore, the total peak hour traffic volumes generated by the proposed development are;

Peak hour traffic generation (AM) = 60 +28 = **88 vtp/h**  
 Peak hour traffic generation (PM) = 7 + 60 +17 = **84 vtp/h**.

These traffic generation values for the development have been adopted in this report. Note the traffic generated by the public car parking spaces is deemed to be passing traffic that is already on the road network and generated by existing adjoining developments therefore does not need to be added to existing road network traffic volumes.

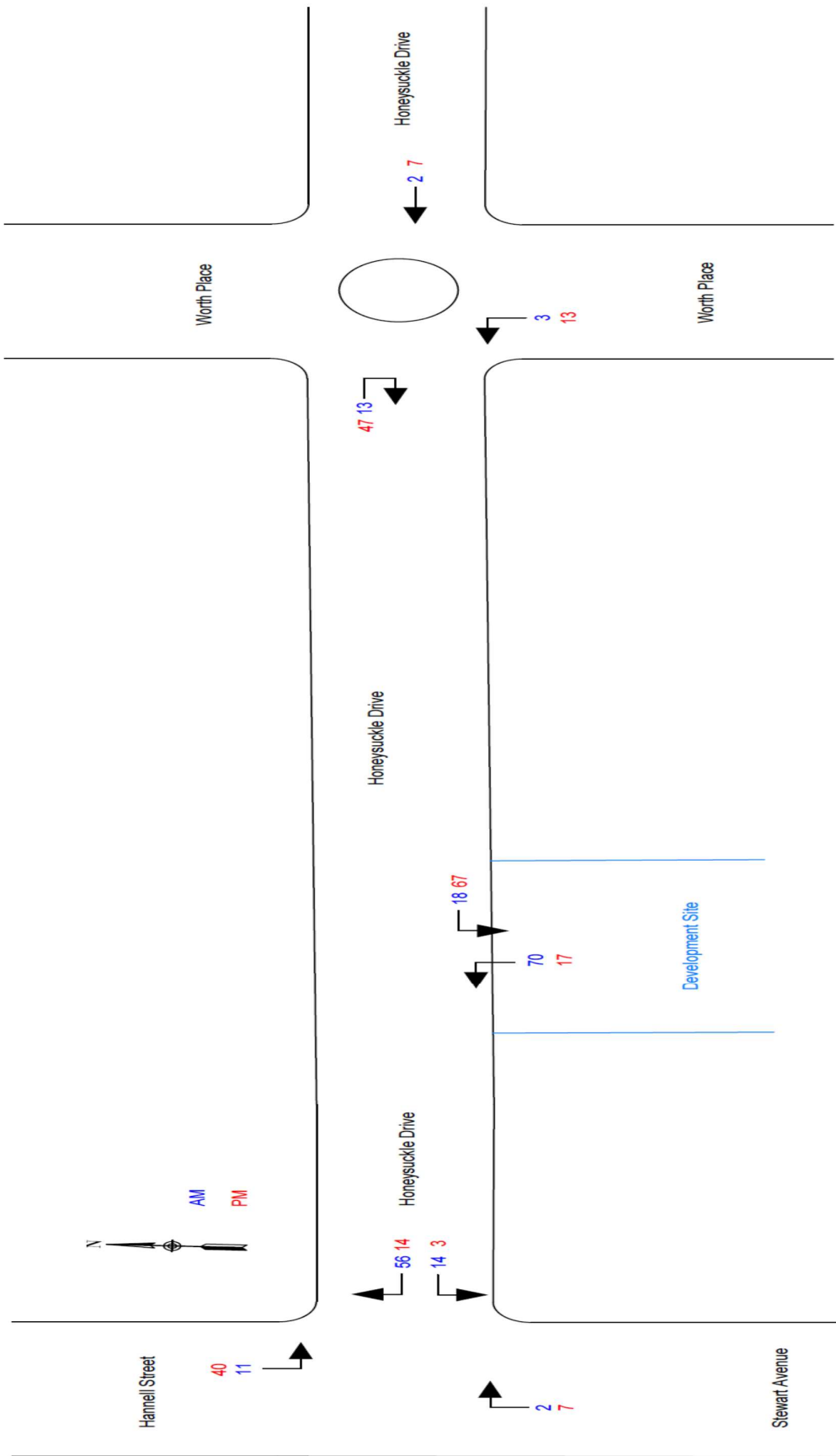
## 10.0 TRIP DISTRIBUTION

Before carrying out any traffic assessment the additional peak hour traffic generated by the development needs to be distributed through the adjoining road network. This involves making several assumptions as to distribution patterns to and from the complex. In distributing the peak hour traffic through the adjacent road network the existing traffic distribution was used as a basis for distributing the development traffic. Key assumptions made were;

- ◆ For the residential and hotel component in the AM peak 80 % of traffic is outbound and 20 % inbound. This is mirrored in the PM peak.
- ◆ For the retail section in the PM peak it is assumed length of stay is less than 1 hour therefore 50 % of traffic is inbound and 50 % of traffic is outbound.
- ◆ All traffic will enter the site from Honeysuckle Drive approaching from the east and exit the site onto Honeysuckle Drive heading west.
- ◆ In the AM peak 80% of outbound traffic will turn right onto Hannell Street while 20% will turn left into Stewart Avenue.
- ◆ In the PM peak 60 % of outbound traffic will turn right into Hannell Street while 40 % will turn left into Stewart Avenue.
- ◆ In both the AM and PM peak 60% of inbound traffic will undertake a U-turn movement at the Worth Place roundabout, 20% will travel west through the roundabout on Honeysuckle Drive and 20% will turn left into Honeysuckle Drive from Worth Place.

The resulting predicted AM and PM peak hour trip distributions for traffic generated by the development have therefore been determined as shown below in **Figure 3**.





**Figure 3 – Development Traffic Trip Distribution**

# 11.0 TRAFFIC IMPACTS OF DEVELOPMENT

## 11.1 Road Network Capacity

It has previously been shown in **Section 6** of this report that the local road network is currently operating well within its technical capacity.

The proposed development will result the following additional two-way traffic flows on any leg of the local road network (see **Figure 3**).

- ◆ Honeysuckle Drive – 83 vtpm in the AM peak and 107 vtpm in the PM peak;
- ◆ Hannell Street – 67 vtpm in the AM peak and 54 vtpm in the PM peak;
- ◆ Stewart Avenue – 16 vtpm in the AM peak and 10 vtpm in the PM peak; and
- ◆ Worth Place – 3 vtpm in the AM peak and 13 vtpm in the PM peak.

The addition of this traffic generated by the development will not result in the capacity thresholds for these roads being reached as demonstrated below in **Table 1**.

**Table 1 – Mid-block two way capacity assessment**

Road	Capacity (vtpm)	Development Traffic (vtpm)		Post - Development traffic (vtpm) @ 3 % p.a. background growth			
		AM	PM	2017 AM	2017 PM	2027 AM	2027 PM
Honeysuckle Drive	2,800	83	107	1598	1618	2119	2138
Hannell Street	5,600	67	54	3090	3086	4130	4129
Stewart Avenue	5,600	16	10	2670	2617	3577	3514
Worth Place	2,800	3	13	159	161	213	212

The peak two-way traffic volumes on the road network on operation of the development within the critical Honeysuckle Drive leg is still only likely to be in the order of less than 1,618 vtpm in 2017 or 1,949 vtpm in 2027 (3 % per annum background traffic growth) which are still below the technical mid-block two way capacity of Honeysuckle Drive previously determined as being up to 2,800 vtpm. Further all other roads in the immediate road network also continue to operate below their mid-block two-way capacity. It is noted that a 3 % per annum background traffic growth has been adopted to ensure that the cumulative impacts of other development within the Honeysuckle Drive area are considered. The average background traffic growth in the Lower Hunter Area is approximately 1.5 % per annum therefore the adoption of a higher rate i.e. 3 % per annum is considered relevant for an area with significant development.

It is therefore reasonable to conclude that the state and local road network subject to suitable intersection controls being in place has sufficient spare capacity to cater for the proposed development.

## 11.2 Intersection Capacity

The intersections likely to be most affected by this development are;

- ◆ Hannell Street / Honeysuckle Drive signalised T-intersection; and
- ◆ Honeysuckle Drive / Worth Place roundabout.

To determine the impact of the development on these intersections, the intersections were modelled using the SIDRA 7 traffic modelling software. This software package predicts likely delays, queue lengths and thus levels of service that will occur at intersections. Assessment is then based on the level of service requirements of the RMS shown below;

**Table 4.2**  
Level of service criteria for intersections

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

Source: - RTA's Guide to Traffic Generating Developments (2002).

Modelling was carried out for the AM and PM peak periods for both the post development (2017) and for ten years background traffic growth at 3 % per annum (2027) scenarios. Assumptions made in the modelling were;

- ◆ Intersection layouts were as currently constructed and in operation;
- ◆ Baseline traffic data was as collected by NTPE in August 2017;
- ◆ Development traffic and trip distribution as per **Figure 3**.

The summary results of the modelling for the 'all vehicles' case are shown in the following **Tables 2 & 3** while the Sidra Movement Summary Tables for each scenario modelled are provided in **Attachment C**.

**Table 2 – Sidra Results 'all vehicles' – Hannell Street / Honeysuckle Drive signalised intersection**

Model	Deg. Satn (v/c)	Average Delay (s)	Worst Level of Service	95 % back of queue length (cars)
2017 AM + development	0.912	35.3	C	26.0
2017 PM + development	0.913	24.2	B	15.6
2027 AM – no development	1.069	160.8	F	129.4
2027 PM – no development	0.985	72.3	F	85.1
2027 AM + development	1.084	173.4	F	133.9
2027 PM + development	0.994	77.8	F	89.8

**Table 3 – Sidra Results 'all vehicles' – Honeysuckle Drive / Worth Place roundabout.**

Model	Deg. Satn (v/c)	Average Delay (s)	Worst Level of Service	95 % back of queue length (cars)
2017 AM + development	0.488	4.9	A	4.2
2017 PM + development	0.458	5.1	A	3.3
2027 AM + development	0.644	5.5	A	7.1
2027 PM + development	0.620	5.9	A	5.8

The modelling shows that the Honeysuckle Drive / Worth Place roundabout will continue to operate satisfactorily both post development and through to 2027. The Level of Service (LoS), 95 % back of queue lengths and average delay for all movements fall within the RMS acceptable levels i.e. equivalent to or better than a LOS D in urban areas.

Regarding the Hannell Street / Honeysuckle Drive signalised intersection the modelling shows this intersection is currently operating near capacity in both the AM and PM peak periods. With continued background traffic growth it would be expected that this intersection would begin to fail particularly in the AM peak period requiring some form of upgrading for this intersection. However the additional traffic from this development has little impact on the operation of the intersection and will not result in any change in LoS being experienced by motorists on the road network. The additional average delay in 2027 on the critical AM peak remains less than 14 seconds while the increase in queue lengths at the intersection is less than 4 vehicles. This is not considered unacceptable nor is it considered sufficient nexus for the upgrading of the intersection as a result of this development.

It is therefore reasonable to conclude that the proposed development will not adversely impact on the operation of nearby intersections and overall the development will not adversely impact on the local and state road network.

### 11.3 Access

The development site currently does not have any vehicular access. It is proposed to service the car parking area with a single combined entry / exit off Honeysuckle Drive adjacent to the eastern boundary of the site. This access will operate as a left in and left out only access due to the raised central median in Honeysuckle Drive with motorists either adjusting their approach and departure routes to suit their origin / destination or utilising the Honeysuckle Drive / Worth Place roundabout to undertake a U-turn movement to access the site. This is consistent with existing accesses in adjoining development and considered to provide a suitable road safety environment for access to the site.

Suitable pedestrian and vehicular sight lines in accordance with Australian Standard *AS2890.1-2004 Parking Facilities – Part 1 Off-street car parking* can be provided with the use of a combined entry / exit driveway and appropriate on-street car parking controls around the access.

The access will service a car park of 245 spaces for Class 1 and Class 2 parking and Table 3.1 of Australian Standard *AS2890.1-2004 Parking Facilities – Part 1 Off-street car parking* requires a category 3 access for this size of car park accessing off a local road. A category 3 access requires a 6 metre wide entry lane and a minimum 4 metre wide exit lane separated by at least 1 to 3 metres. This means the proposed access needs to be a minimum 10 metres wide with the entry and exit lanes being median separated. The proposed development can comply with this requirement with internal traffic lanes of 3.2 metres width though at the kerb the driveway crossing will be in the order of a minimum 11 metres. The proposed access is considered to be consistent with the requirements of Australian Standard *AS2890.1-2004 Parking Facilities – Part 1 Off-street car parking*.

As the car park will have a control point the car park also needs to provide suitable queuing. As resident and hotel guest parking only a single space queue within the property prior to the security gate is required i.e. 6 metres. The proposed security gate will therefore need to be provided 6 metres inside the boundary which can be accommodated and thus compliant with Newcastle Council and Australian Standard requirements. As all ramps within the development are straight ramps they need to be a minimum 5.5 metres wide however no traffic flow separation median is required (see Table 2.2 of Australian Standard *AS2890.1-2004 Parking Facilities – Part 1 Off-street car parking*.) The proposed car park design is also compliant with this requirement of the Australian Standard.

Overall it is concluded the proposed car park access arrangements off Honeysuckle Drive are satisfactory as they provide a suitable level of pedestrian and road safety as well as serviceability to the development. They can also be designed to comply with the requirements of Newcastle City Council and Australian Standard AS2890.1-2004 *Parking Facilities – Part 1 Off-street car parking*.

## 11.4 Off-Street Car Parking

With regard to on-site parking the proposal should comply with Australian Standard AS2890.1-2004 *Parking facilities – Part 1 Off-street car parking* and *Section 7.03 – Traffic, Parking and Access* of Newcastle City Council's DCP 2012.

The peak parking demand rates considered relevant within Council's DCP are as follows noting that the site is within the Newcastle City Centre area;

*Except for residential development, car parking for development in the City Centre is provided at the rate of one space per 60 m<sup>2</sup> gross floor area.*

*For residential development:-*

- ◆ *Small (<75m<sup>2</sup> or 1 bedroom) average 0.6 spaces per dwelling*
- ◆ *Medium (75m<sup>2</sup> - 100m<sup>2</sup> or 2 bedrooms) average 0.9 spaces per dwelling*
- ◆ *Large (>100m<sup>2</sup> or 3 bedrooms) average 1.4 spaces per dwelling*
- ◆ *1 space for the first 3 dwellings plus 1 space for every 5 thereafter or part thereof for visitors.*

It is unclear whether the hotel land-use is residential development or not however for the purposes of this assessment and as a practical approach to likely car parking demand for the development the residential rates have been applied, except no visitor car parking is required, to the development on the basis that;

- ◆ Hotel room and serviced apartments are equivalent to a one bedroom dwelling.

On this basis the total car parking requirement (peak parking demand) for the proposal can be calculated as shown below in **Table 4** noting;

- ◆ 50 % discount for non-residential uses based on cross-use by residents.

**Table 4 – NCC DCP- Car Parking Calculation**

Land-Use	GFA (m <sup>2</sup> )	Units	Car parks	Visitor car parks
Ground Level - non -residential	101		1.7	
Residential – One bedroom		6	3.6	1
Residential – Two bedroom		33	29.7	7
Residential – Three Bedroom		13	18.2	3
Hotel – Serviced Apartments		7	4.2	
Hotel – Studio rooms		147	88.2	
			146	11

Further the Newcastle DCP would require the following in regard to motorcycle and bicycle parking;

### Residential

- ◆ *Bike parking of 1 space per dwelling is required unless separate storage is provided (Council determine the required class of security) plus 1 space per 10 dwellings (Class 3) for visitors.*
- ◆ *1 motorbike space per 20 car spaces.*

### Non - Residential

- ◆ *Bicycle Parking - 1 space per 100m<sup>2</sup> GFA (Class 2)*
- ◆ *Motor Cycle Parking - 1 space per 20 car spaces*

Therefore the development is required to provide a suitable bicycle locker storage area for residents plus bicycle racks for up to 5 bicycles for visitors as well as 7 motorcycle spaces.

The site provides a total of 245 marked on site car parking spaces within six levels of resident, visitor, guest and staff car parking as well as public car parking. A suitable bicycle locker area for residents has been provided as well as 12 motorcycle spaces. Therefore the proposal is considered to provide in excess of the DCP requirements and has sufficient spaces to provide 1 space per hotel and residential unit as well as additional on-site car parking for public parking.

The design of the car parking areas within the building will need to comply with the requirements of Australian Standard *AS2890.1-2004 Parking facilities – Part 1 Off-street car parking*. A review of the plans indicates that the proposed layout could comply with this Standard though confirmation at Construction Certificate stage will be required.

Overall it can be concluded that the proposed onsite car parking provision and layout is generally satisfactory providing sufficient spaces, suitable manoeuvrability and serviceability for the likely long term parking demand generated by the operation of the proposed development.

## **11.5 Servicing**

As mainly a residential / hotel development, servicing will involve regular waste collection and deliveries for the retail and catering services within and external to the hotel. It is considered up to 6 deliveries per day would be the normal servicing frequency. All these deliveries would be made by small to medium rigid vehicles and the development is designed for servicing from the Honeysuckle Drive access into a servicing area which includes a turntable to allow service vehicles to turn around and exit the site in a forward direction. Note clearance in the vicinity of the loading area is approximately 3.9 metres which will cater for most MRV vehicles. Higher heavy vehicles will need to be serviced from the street frontage within existing loading zones on Honeysuckle Drive.

Further most deliveries are likely to occur outside the peak AM and PM traffic periods which ensures conflict between light and heavy vehicles is minimised. It is concluded that the proposed servicing arrangements for the development are satisfactory and should be supported by Council.

## **11.6 Construction Traffic**

The construction of the development will result in additional traffic entering and exiting the site. It is estimated that during the peak construction periods up to 40 construction employees will be on-site at any one time. If a car occupancy rate of 1.2 is assumed for employee traffic this would result in an AM and PM peak traffic flow to the site of in the order of 35 vtp. This will also increase the peak parking demand at the site by a similar number during construction.

Material deliveries will add to this traffic with peak materials delivery traffic expected during the pouring of concrete slabs early on in the construction period. With a large pour and a fleet of

concrete trucks sourced from nearby it is likely that a further 10 vph could occur during the AM peak period as a result of this construction activity. Therefore overall it is estimated that the peak construction traffic generation resulting from the construction of the development will be in the order of 45 vph during the AM peak.

This assessment has already determined that the additional post development traffic generation from the site as a result of the new development is in the order of up to 88 vph and that this will not adversely impact on the capacity of the local road network. As this is more than double the likely construction traffic generation from the site it would also be reasonable to assume then that the construction traffic associated with the development will not adversely impact on the local road network.

Construction traffic is a short term traffic impact that is best managed through the preparation of a construction traffic management plan prepared and implemented prior to commencement of construction activities. This plan may seek to minimise the impacts of construction activities by designating travel routes, access points, construction employee parking areas, material delivery procedures and times etc. This plan is best prepared, implemented and enforced by the head contractor. It is recommended that a construction traffic management plan be prepared and implemented prior to the commencement of construction activities.

## 12.0 PEDESTRIAN FACILITIES

Given the location and type of development proposed it is likely to generate additional pedestrian movements as residents seek access to the Newcastle Transport Interchange, Newcastle CBD area, the Foreshore area and the Honeysuckle entertainment precinct. By observation the existing external pedestrian facilities are considered adequate and apart from the upgrading of the pedestrian pathways along the frontage of the site no additional external pedestrian facilities are deemed warranted.

In terms of internal pedestrian linkages within the car park area due to the limited size of the parking areas on each level and the proposed configuration it is unlikely that vehicle speed within the car park will be an issue and nor will there be any necessity to provide designated pedestrian linkages aside from delineating pedestrian waiting areas in the vicinity of the lift access points.

## 13.0 ALTERNATE TRANSPORT MODE FACILITIES

The proposed development is likely to generate additional public transport usage as it is likely many residents will utilise existing bus services, taxi's and the rail service (both light or heavy) to access the site. However the accessibility of the site to existing public transport services is considered excellent and that no new facilities or service amendments will be required as a result of the level of additional public transport usage generated by the development nor will they provide any further benefit in encouraging public transport usage.

Similarly it is likely that the development will increase bicycle traffic to the site however with convenient access to the Foreshore cycleway and onto the wider Newcastle cycle way's network it is concluded that the existing external bicycle infrastructure in the area is suitable for the type of development proposed.

## 14.0 CONCLUSIONS

This traffic impact assessment for a mixed use development containing a total of nine (9) levels including ground level with six (6) levels of on-site car parking (245 spaces), a small retail tenancy (101 m<sup>2</sup> GFA) at ground level, a tourist hotel over ground level to level 4 with 144 hotel rooms and 6 serviced apartments and 52 residential apartments over levels 5 to 8 on Lot 22 DP 1072217 – 42 Honeysuckle Drive, Newcastle has determined the following;

- ◆ The local road network in the vicinity of the site as either a four lane two way or a two lane two way road has a likely technical mid-block capacity of up to 5,600 vtpm and 2,800 vtpm respectively if a LOS D is considered acceptable. As this is in excess of current traffic volumes the local road network has spare capacity to cater for development in the area.
- ◆ It is expected that the additional traffic generated by the development will be 88 vtpm in the AM peak period and 84 vtpm in the PM peak period.
- ◆ The local road network has sufficient spare capacity to cater for the additional development traffic generated by the proposal and other developments in the area without the need for any road upgrading works.
- ◆ SIDRA modelling shows that the Honeysuckle Drive / Worth Place roundabout will continue to operate satisfactorily both post development and through to 2027. The Level of Service (LoS), 95 % back of queue lengths and average delay for all movements fall within the RMS acceptable levels i.e. equivalent to or better than a LOS D in urban areas.
- ◆ SIDRA modelling of the Hannell Street / Honeysuckle Drive signalised intersection shows this intersection is currently operating near capacity in both the AM and PM peak periods. With continued background traffic growth it would be expected that this intersection would begin to fail particularly in the AM peak period requiring some form of upgrading for this intersection. However the additional traffic from this development has little impact on the operation of the intersection and will not result in any change in LoS being experienced by motorists on the road network. The additional average delay in 2027 on the critical AM peak remains less than 14 seconds while the increase in queue lengths at the intersection is less than 4 vehicles. This is not considered unacceptable nor is it considered sufficient nexus for the upgrading of the intersection.
- ◆ Therefore, the proposed development will not adversely impact on the operation of nearby intersections and overall the development will not adversely impact on the local and state road network.
- ◆ The proposed car park access arrangements off Honeysuckle Drive are satisfactory as they provide a suitable level of pedestrian and road safety as well as serviceability to the development. They can also be designed to comply with the requirements of Newcastle City Council and Australian Standard AS2890.1-2004 Parking Facilities – Part 1 Off-street car parking.
- ◆ The proposed on-site car parking provision and layout is generally satisfactory providing sufficient spaces, suitable manoeuvrability and serviceability for the likely long term parking demand generated by the operation of the proposed development.
- ◆ The proposed servicing arrangements for the development are satisfactory and should be supported by Council.
- ◆ Construction traffic generated by the development will be less than the additional traffic generated by the operation of the development therefore also will not adversely impact on the local road network. A construction traffic management plan should be prepared and implemented prior to commencement of construction activities on the site to ensure the impacts of the construction activities are minimised during construction.
- ◆ The existing external pedestrian facilities are considered adequate and apart from the upgrading of the pedestrian pathways along the frontage of the site no additional external pedestrian facilities are deemed warranted.

- ◆ Existing public transport services to the site are considered excellent and no new facilities or service amendments will be required as a result of the level of additional public transport usage generated by the development.
- ◆ The development will increase bicycle traffic to the site however with convenient access to the Foreshore cycleway and onto the wider Newcastle cycle way's network it is concluded that the existing external bicycle infrastructure in the area is suitable for the type of development proposed.



## 15.0 RECOMMENDATION

Having carried out this traffic impact assessment for a mixed use development containing a total of nine (9) levels including ground level with six (6) levels of on-site car parking (245 spaces), a small retail tenancy (101 m<sup>2</sup> GFA) at ground level, a tourist hotel over ground level to level 4 with 144 hotel rooms and 6 serviced apartments and 52 residential apartments over levels 5 to 8 on Lot 22 DP 1072217 – 42 Honeysuckle Drive, Newcastle it is recommended that the proposal can be supported from a traffic impact perspective as it will not adversely impact on the local and state road network and complies with all relevant Newcastle City Council, Australian Standard and RMS requirements.

Handwritten signature of JR Garry in black ink.

**JR Garry BE (Civil), Masters of Traffic**  
**Director**  
**Intersect Traffic Pty Ltd**

# ATTACHMENT A

## DEVELOPMENT PLANS





**42 Honeysuckle Drive, Newcastle**  
Level 1 Plan

**Scale:** 1:150 @ A1 1:300 @ A3  
**Client:** MJU  
**Contract:** V0  
**Project No.:** 617109  
**Sheet:** DA  
**File Name:** 21101011111416.rvt  
**Project Path:** H:\42 Honeysuckle Drive\42 Honeysuckle Drive\HONEY\_SUCKLE\_DRIVE\DA

**Revision:** 01  
**Author:** [Name]  
**Check:** [Name]  
**Drawn:** [Name]  
**Scale:** [Scale]  
**Date:** [Date]

**Project Information:**  
 Project Name: 42 Honeysuckle Drive, Newcastle  
 Project Location: Newcastle, NSW  
 Project Description: Mixed Use Development  
 Project Status: Design Stage

**Legend:**  
 1 Fire Alarm Control Panel (FACP)  
 2 Fire Alarm Sounder (FAS)  
 3 Fire Alarm Bell (FAB)  
 4 Fire Alarm Control Panel (FACP) - Remote  
 5 Fire Alarm Control Panel (FACP) - Remote  
 6 Fire Alarm Control Panel (FACP) - Remote  
 7 Fire Alarm Control Panel (FACP) - Remote  
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 60 Fire Alarm Control Panel (FACP) - Remote

**Note:** Room No. 01.32 Accessible

**BATESSMART.**





**LEGEND**

- 1 Fire Hydrant 600x400mm
- 2 Fire Hose Reel 600x400mm
- 3 Fire Hose Cabinet 600x400mm
- 4 Exhaust Fan 400x200mm
- 5 Exhaust Fan 600x300mm
- 6 Cold Water Meter 3000x800x800
- 7 Cold Water Meter 3000x800x800
- 8 Kitchen Exhaust Fan 1200x450
- 9 Kitchen Exhaust Fan 1200x450
- 10 Building Stationary Room 3600W x 2100D
- 11 Main Hot Communications Room 6000x3000mm
- 12 Main Hot Communications Room 6000x3000mm
- 13 Main Hot Communications Room 6000x3000mm
- 14 Fire Hydrant 450x200mm
- 15 Cold Water Pump Room 6000x2000mm
- 16 Cold Water Pump Room 6000x2000mm
- 17 Main Hot Communications Room 6000x3000mm
- 18 Main Hot Communications Room 6000x3000mm
- 19 Main Hot Communications Room 6000x3000mm
- 20 Cold Water Pump Room 6000x2000mm
- 21 Cold Water Pump Room 6000x2000mm
- 22 Secondary Cold Water 1000x1000mm
- 23 Secondary Cold Water 1000x1000mm
- 24 150 M³ PVC Storage
- 25 Shared preparation shaft for room 2000x1800mm
- 26 Shared preparation shaft for room 2000x1800mm
- 27 Shared preparation shaft for room 2000x1800mm
- 28 Shared preparation shaft for room 2000x1800mm
- 29 Shared preparation shaft for room 2000x1800mm
- 30 Exhaust riser 1000x600mm
- 31 Exhaust riser 1000x600mm
- 32 Exhaust riser 1000x600mm
- 33 Exhaust riser 1000x600mm
- 34 Exhaust riser 1000x600mm
- 35 Exhaust riser 1000x600mm
- 36 Exhaust riser 1000x600mm
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- 40 Exhaust riser 1000x600mm
- 41 Exhaust riser 1000x600mm
- 42 Exhaust riser 1000x600mm
- 43 Exhaust riser 1000x600mm
- 44 Exhaust riser 1000x600mm
- 45 Hot water riser 200x200mm
- 46 Hot water riser 200x200mm
- 47 Hot water riser 200x200mm
- 48 Hot water riser 200x200mm
- 49 Fire Staircase 1000x1000mm
- 50 Fire Staircase 1000x1000mm
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- 56 Fire Staircase 1000x1000mm
- 57 Fire Staircase 1000x1000mm

Note: Room No. 03.32 Accessible

42 Honeysuckle Drive  
42 Honeysuckle Drive, Newcastle

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Project No.	A17109	Drawn	DA
Sheet No.	03.104	Project File	20190907 03.104.rvt
Revision	A	Client File	19-03-2020\03\03-104\03-104.rvt



03.104

A03.104

A

Level 3 Plan

42 Honeysuckle Drive, Newcastle

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Project No: A17109

Sheet No: 03.104

Revision: A

Project File: 20190907 03.104.rvt

Client File: 19-03-2020\03\03-104\03-104.rvt

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Sheet No: 03.104

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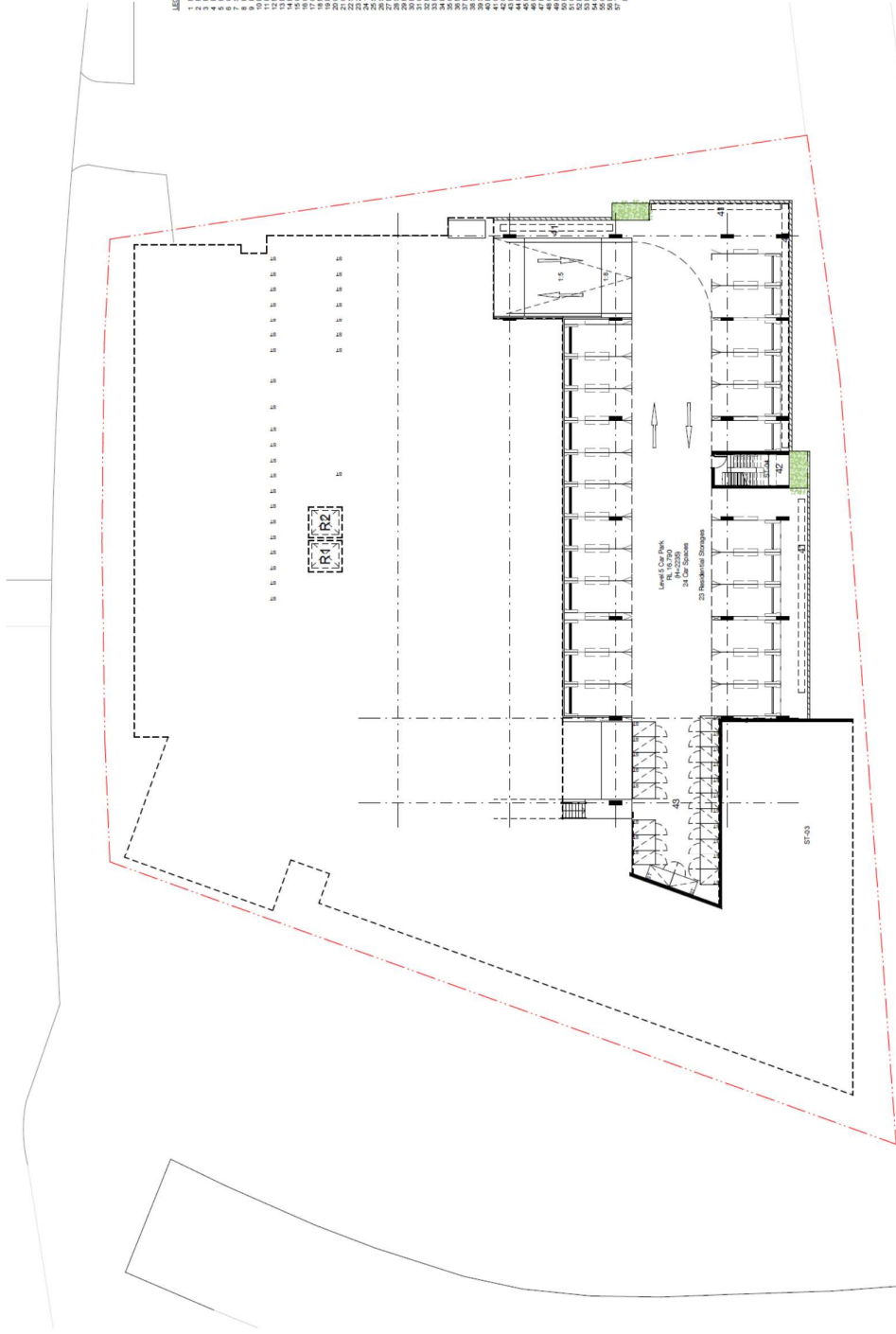
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- LEGEND:**
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  - 2 Fire Control Box 1200x600mm
  - 3 Fire Alarm Control Panel 1200x600mm
  - 4 Fire Alarm Pull Station 400x300mm
  - 5 Fire Alarm Bell 400x300mm
  - 6 Fire Alarm Control Panel 400x300mm
  - 7 Fire Alarm Control Panel 400x300mm
  - 8 Fire Alarm Control Panel 400x300mm
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  - 60 Fire Alarm Control Panel 400x300mm

**42 Honeysuckle Drive**  
42 Honeysuckle Drive, Newcastle

Level 5 Parking

Scale: 1:150 @ A1 1:300 @ A3

Drawn: MDJ Checked: VG

Project No: 1121018

Sheet: DA

Project Name: 2210007 11 of 11

Client: A03.106 A

Project File: 1121018\1121018\1121018\_11.dwg

Scale: 1:150 @ A1 1:300 @ A3

Project Name: 2210007 11 of 11

Client: A03.106 A

Project File: 1121018\1121018\1121018\_11.dwg

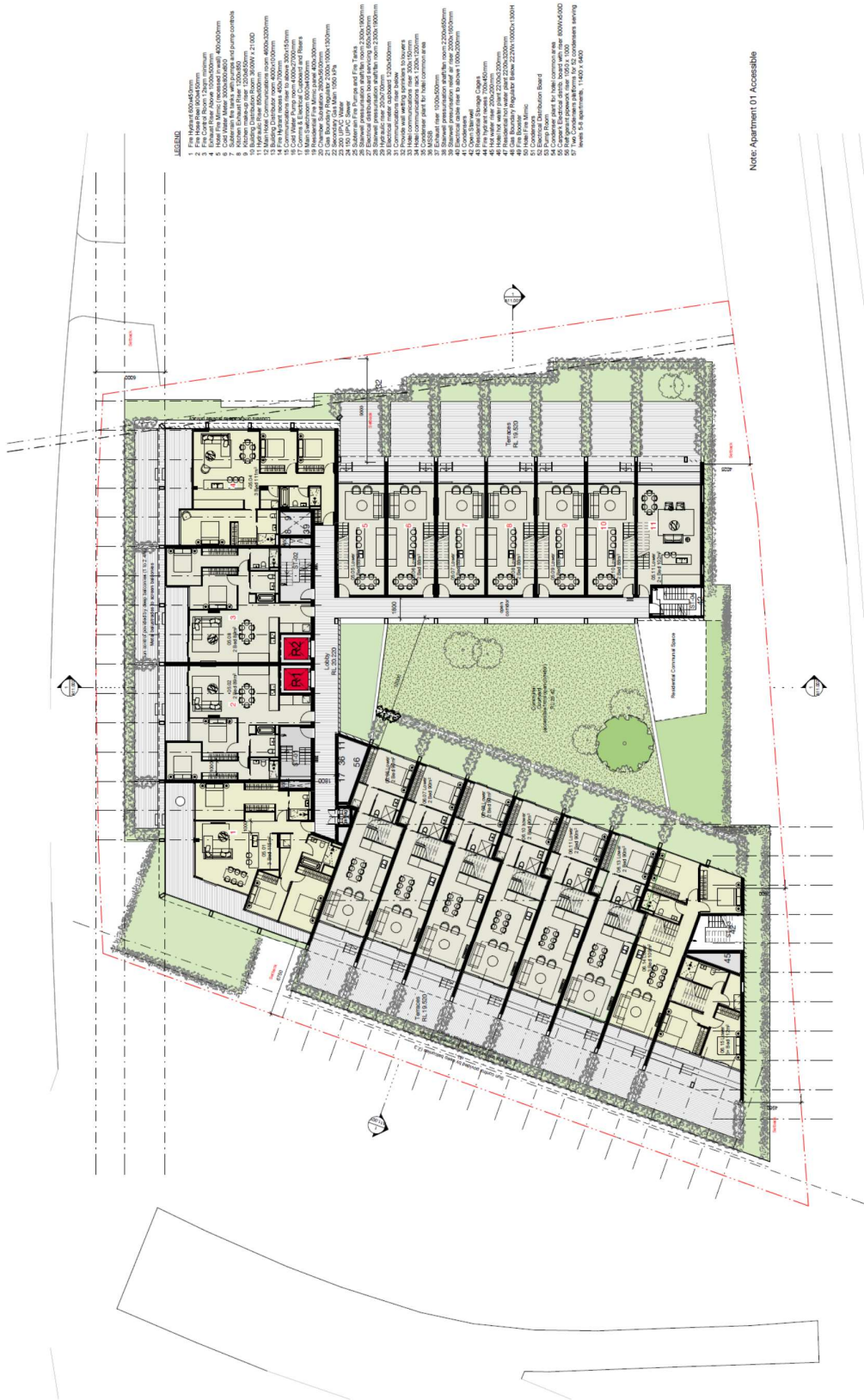
Scale: 1:150 @ A1 1:300 @ A3

Project Name: 2210007 11 of 11

Client: A03.106 A

Project File: 1121018\1121018\1121018\_11.dwg

**BATESSMART.**



**LEGEND**

- 1 Fire Hydrant 1000x450mm
- 2 Fire Alarm Call Point 100x100mm
- 3 Fire Alarm Control Panel 1000x450mm
- 4 Fire Alarm Call Point 100x100mm
- 5 Fire Alarm Call Point 100x100mm
- 6 Fire Alarm Call Point 100x100mm
- 7 Fire Alarm Call Point 100x100mm
- 8 Fire Alarm Call Point 100x100mm
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- 57 Fire Alarm Call Point 100x100mm

Note: Apartment 01 Accessible

**42 Honeysuckle Drive, Newcastle**  
**Level 5 Plan**

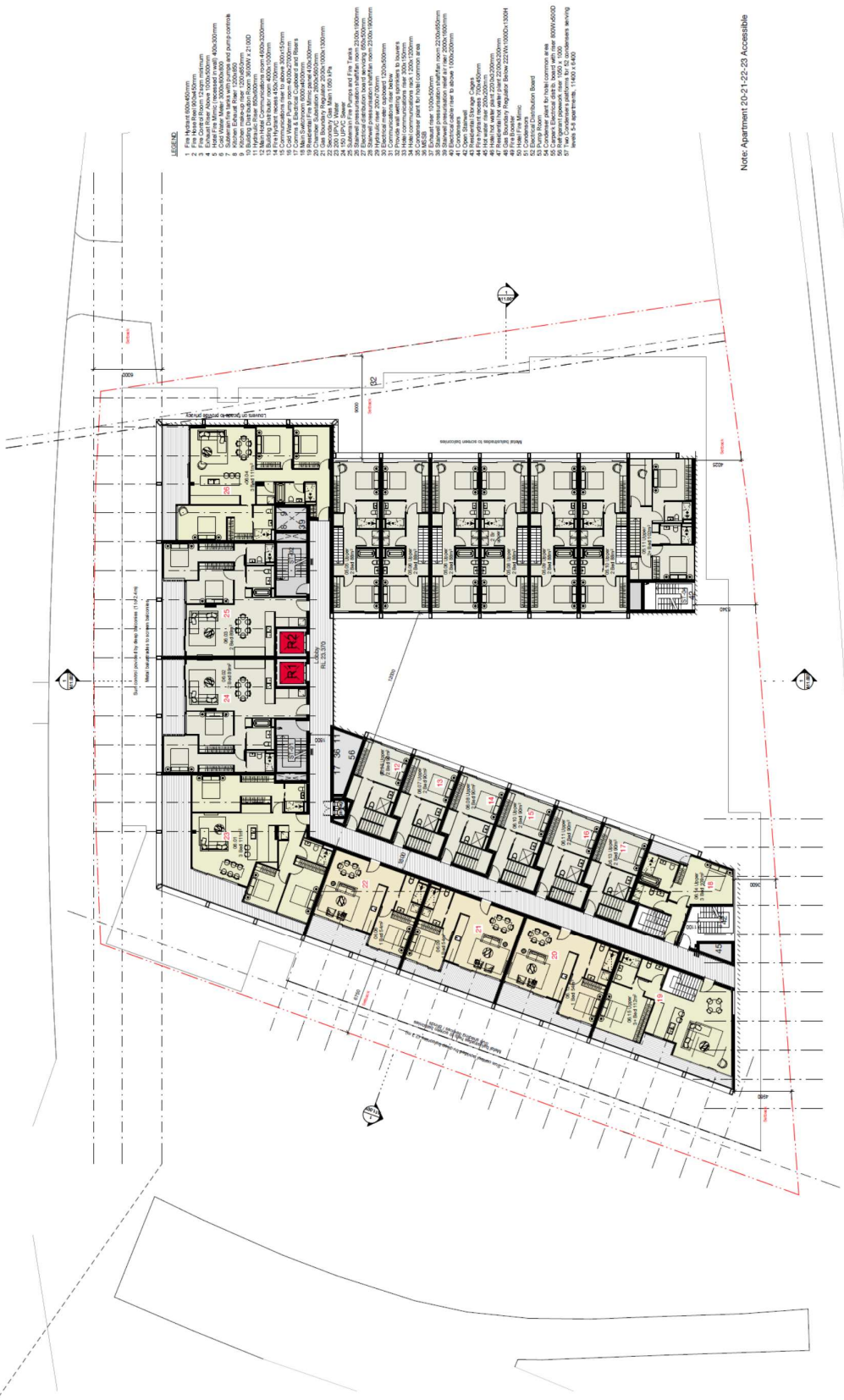
Scale: 1:100 @ A1 1:500 @ A2  
 Date: 10/10/2018  
 Project: 42 Honeysuckle Drive, Newcastle  
 Status: 02  
 Drawn: [Name]  
 Checked: [Name]

Client: Batesmart  
 Project No: [Number]  
 Drawing No: A03.107  
 Revision: A

Author: [Name]  
 Date: [Date]

Scale: 1:100 @ A1 1:500 @ A2  
 Date: 10/10/2018  
 Project: 42 Honeysuckle Drive, Newcastle  
 Status: 02  
 Drawn: [Name]  
 Checked: [Name]

**BATESMART.**



- LEGEND**
- 1 Fire Hydrant 600x400mm
  - 2 Fire Alarm Call Point 120x120mm
  - 3 Fire Alarm Control Panel 600x600mm
  - 4 Fire Alarm Control Panel 600x600mm
  - 5 Fire Alarm Control Panel 600x600mm
  - 6 Fire Alarm Control Panel 600x600mm
  - 7 Fire Alarm Control Panel 600x600mm
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Note: Apartment 20-23-23 Accessible

**42 Honeysuckle Drive**  
42 Honeysuckle Drive, Newcastle

Level 6 Plan

Scale: 1:150 @ A1  
Date: 12/08/2020  
Project: 42 Honeysuckle Drive  
Client: Bates Smart Pty Ltd  
Drawing No: A03.108

North Arrow

Project No: 20200007-01-01-01-01  
Drawing No: A03.108  
Revision: 1

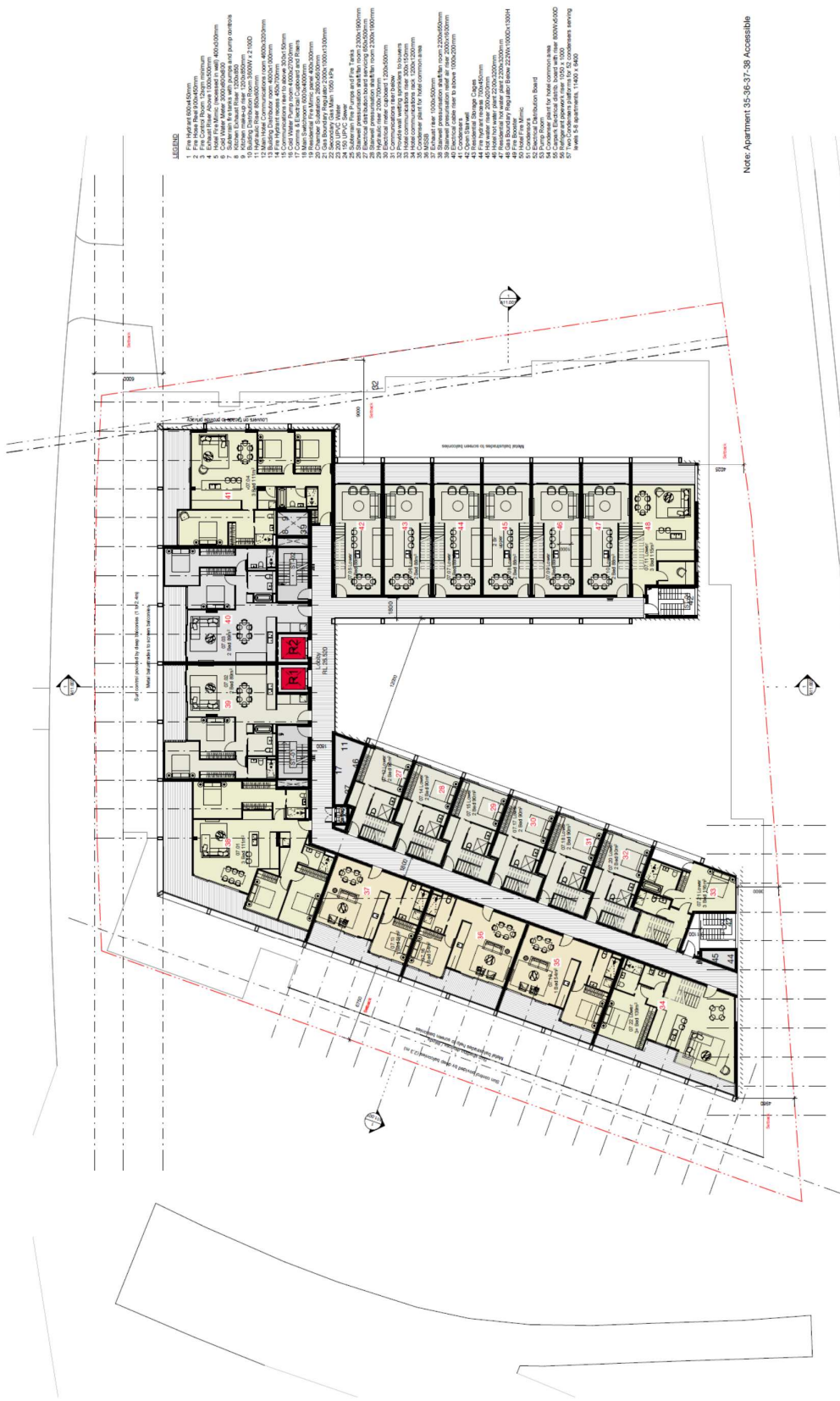
Scale: 1:150 @ A1  
Date: 12/08/2020  
Project: 42 Honeysuckle Drive  
Client: Bates Smart Pty Ltd  
Drawing No: A03.108

Project No: 20200007-01-01-01-01  
Drawing No: A03.108  
Revision: 1

Scale: 1:150 @ A1  
Date: 12/08/2020  
Project: 42 Honeysuckle Drive  
Client: Bates Smart Pty Ltd  
Drawing No: A03.108

Project No: 20200007-01-01-01-01  
Drawing No: A03.108  
Revision: 1

**BATESSMART**



- LEGENDA**
1. Fire Movable 1000x400mm
  2. Fire Control Panel, 1000x400mm
  3. Fire Alarm, 1000x400mm
  4. Fire Alarm, 1000x400mm
  5. Fire Alarm, 1000x400mm
  6. Fire Alarm, 1000x400mm
  7. Fire Alarm, 1000x400mm
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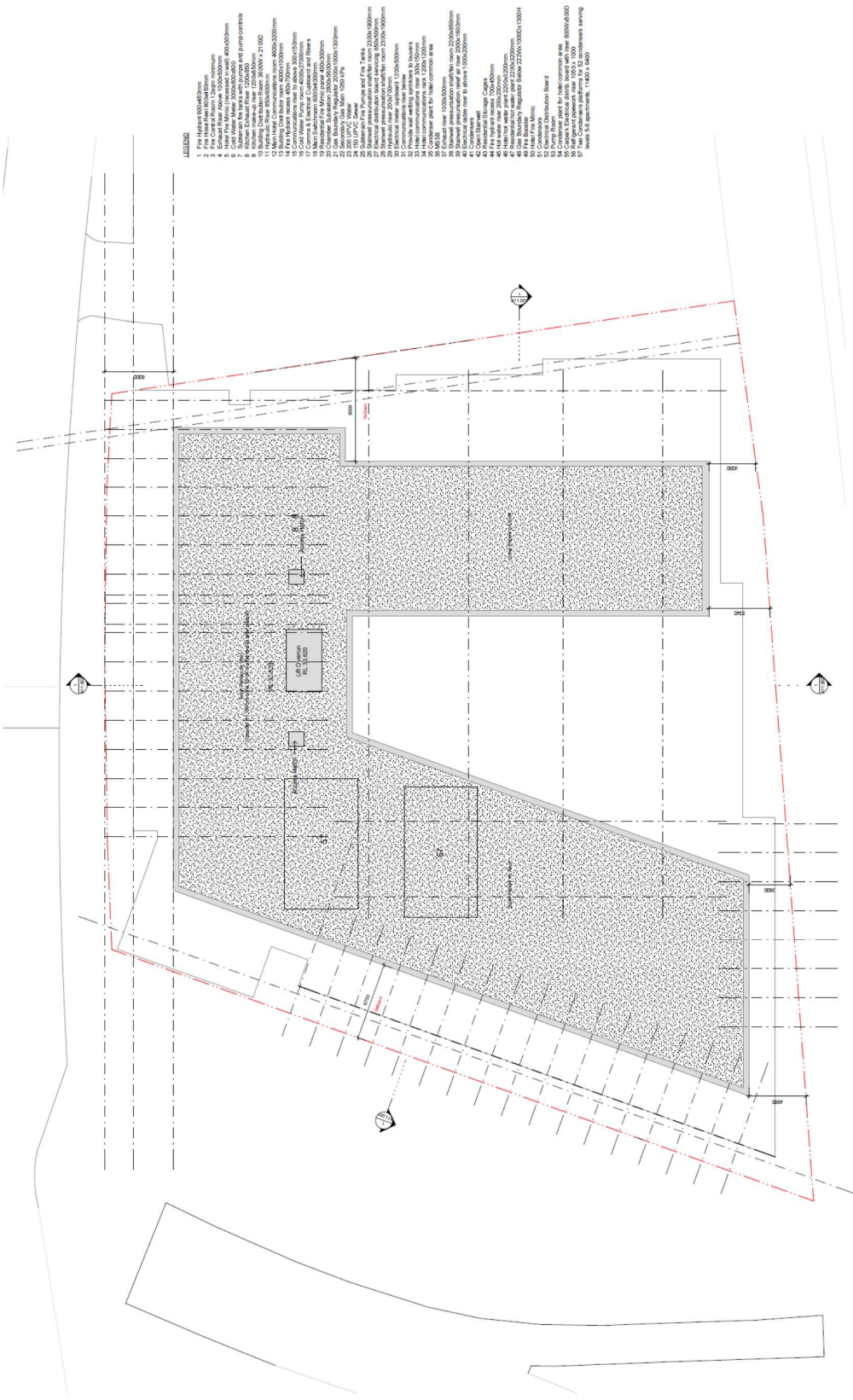
Note: Apartment 35-36-37-38 Accessible

**42 Honeysuckle Drive, Newcastle**  
 42 Honeysuckle Drive, Newcastle  
 Level 7 Plan  
 Scale: 1:150  
 Date: 13/09/23  
 Project: A03.109  
 Client: BATESMART  
 Designer: [Name]  
 Drafter: [Name]  
 Checker: [Name]  
 Approver: [Name]



**BATESMART**





- LEGEND**
- 1 Fire Hydrant 600x450mm
  - 2 Fire Hose Reel 1200mm
  - 3 Fire Hose Reel 1200mm
  - 4 Fire Hose Reel 1200mm
  - 5 Fire Hose Reel 1200mm
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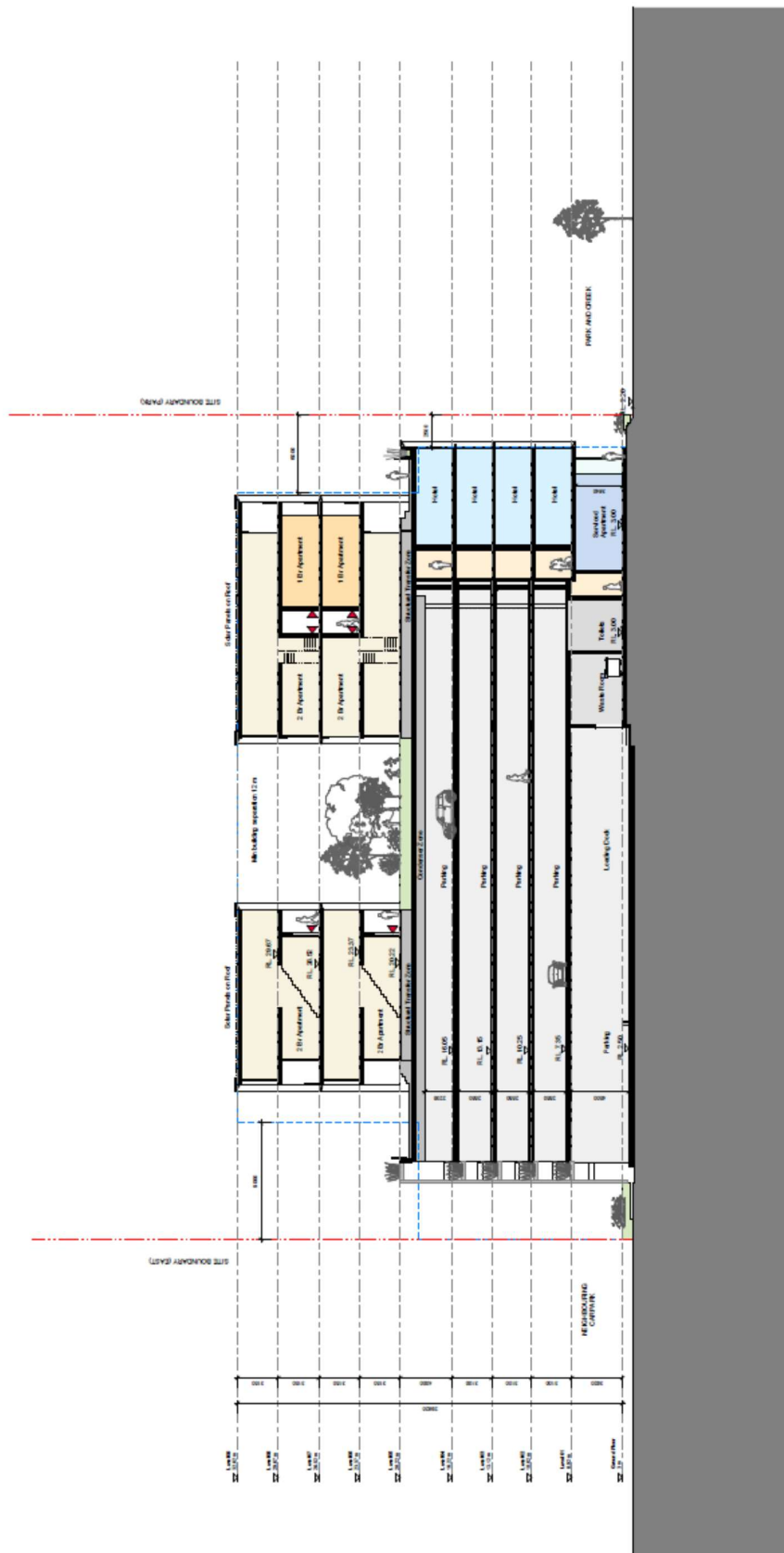
**42 Honeysuckle Drive**  
42 Honeysuckle Drive, Newcastle

Scale: 1:150 @ A1 1:200 @ A2  
 Project No: 172119  
 Date: 27/09/17  
 Drawn: D.A.  
 Checked: V.G.  
 Title: Roof Plan

**A03.111**

**BATESMART.**

10/15/2017 10:13:38 AM  
 10/15/2017 10:13:38 AM  
 10/15/2017 10:13:38 AM  
 10/15/2017 10:13:38 AM



**42 Honeysuckle Drive**  
42 Honeysuckle Drive, Newcastle

Section: Earth-Wall

Scale: 1:100 @ A1

Project: AT11.001 A

Client: BATESSMART

Drawn: [Name]

Checked: [Name]

Approved: [Name]

Date: [Date]

Project No: [Number]

Revision: [Number]

Scale: 1:100 @ A1

Project: AT11.001 A

Client: BATESSMART

Drawn: [Name]

Checked: [Name]

Approved: [Name]

Date: [Date]

Project No: [Number]

Revision: [Number]



Section: Earth-Wall

Scale: 1:100 @ A1

Project: AT11.001 A

Client: BATESSMART

Drawn: [Name]

Checked: [Name]

Approved: [Name]

Date: [Date]

Project No: [Number]

Revision: [Number]

**BATESSMART**



# ATTACHMENT B

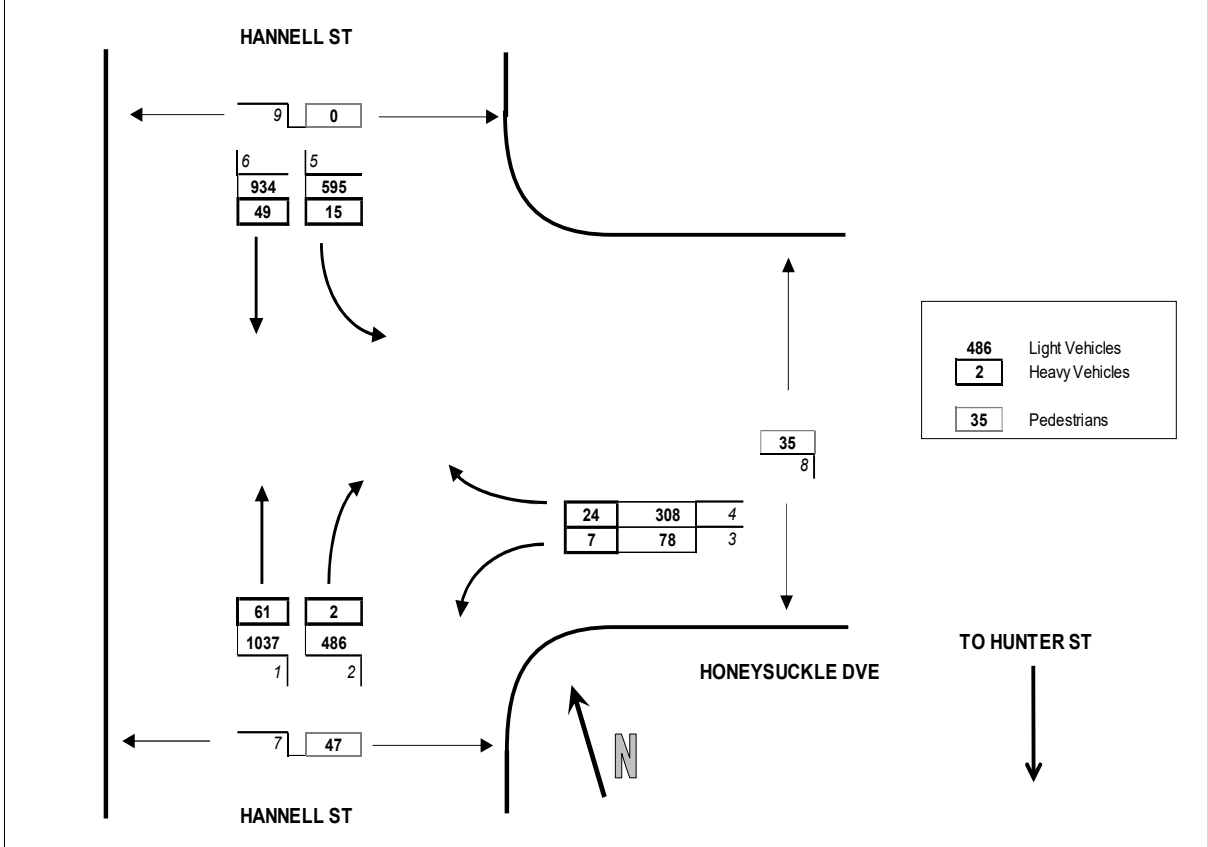
## TRAFFIC COUNT DATA

24/8/2017 - HANNELL ST / HONEYSUCKLE DVE, WICKHAM

8:30 <<< HOUR ENDING

Thursday

<i>Summary:</i>	
<b>HANNELL ST / HONEYSUCKLE DVE</b>	
<b>3438</b>	Total Light Vehicles
<b>158</b>	Total Heavy Vehicles
<b>82</b>	Total Pedestrians



23/8/2017 - HANNELL ST / HONEYSUCKLE DVE, WICKHAM

18:00 <<< HOUR ENDING

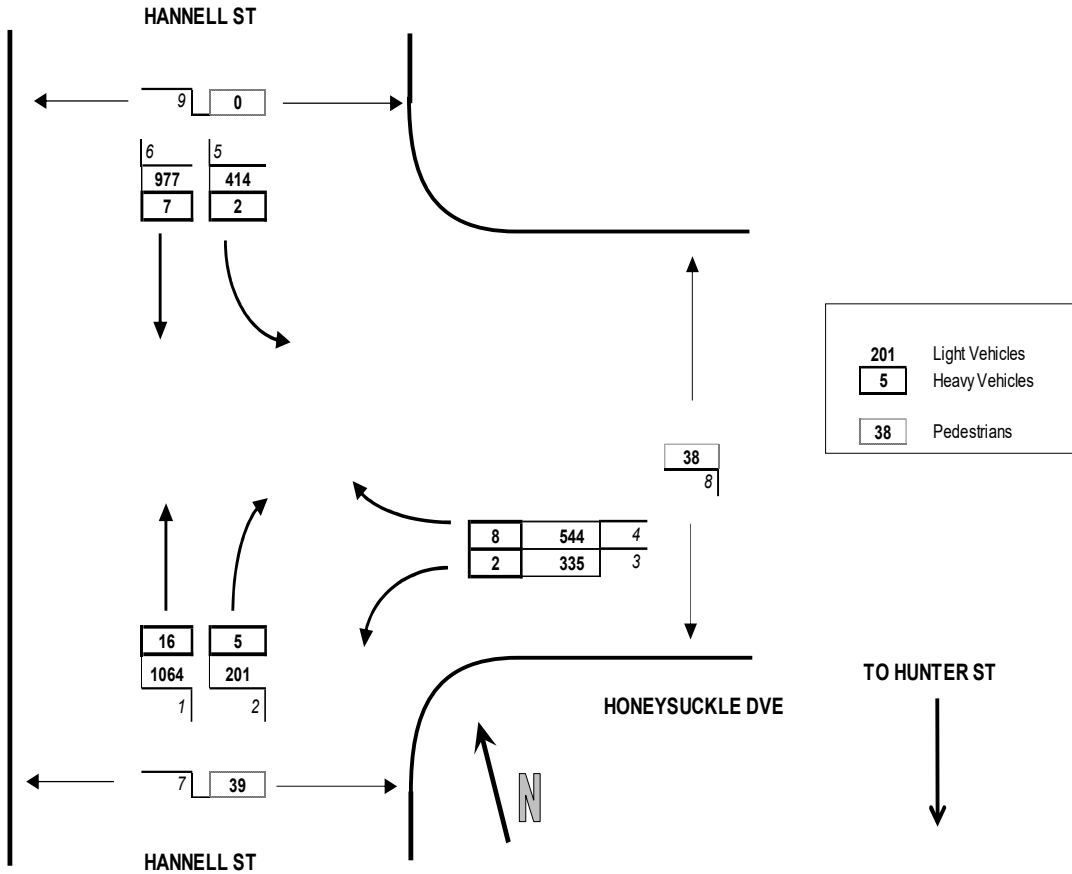
Wednesday

Summary:

<b>HANNELL ST / HONEYSUCKLE DVE</b>	
<b>3535</b>	Total Light Vehicles
<b>40</b>	Total Heavy Vehicles
<b>77</b>	Total Pedestrians



Quality Surveys  
182708

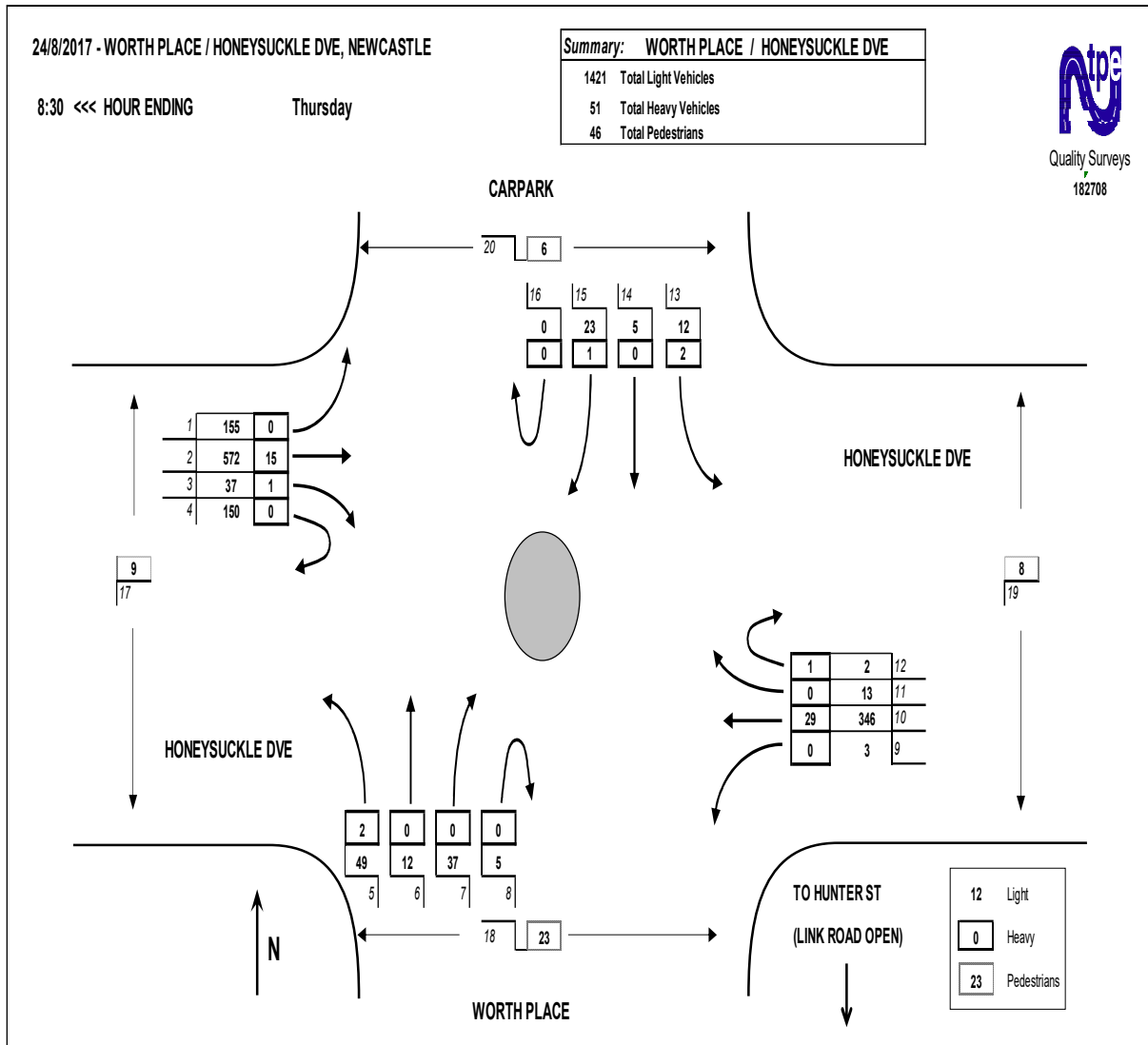


24/8/2017 - WORTH PLACE / HONEYSUCKLE DVE, NEWCASTLE

8:30 <<< HOUR ENDING

Thursday

<b>Summary: WORTH PLACE / HONEYSUCKLE DVE</b>	
1421	Total Light Vehicles
51	Total Heavy Vehicles
46	Total Pedestrians

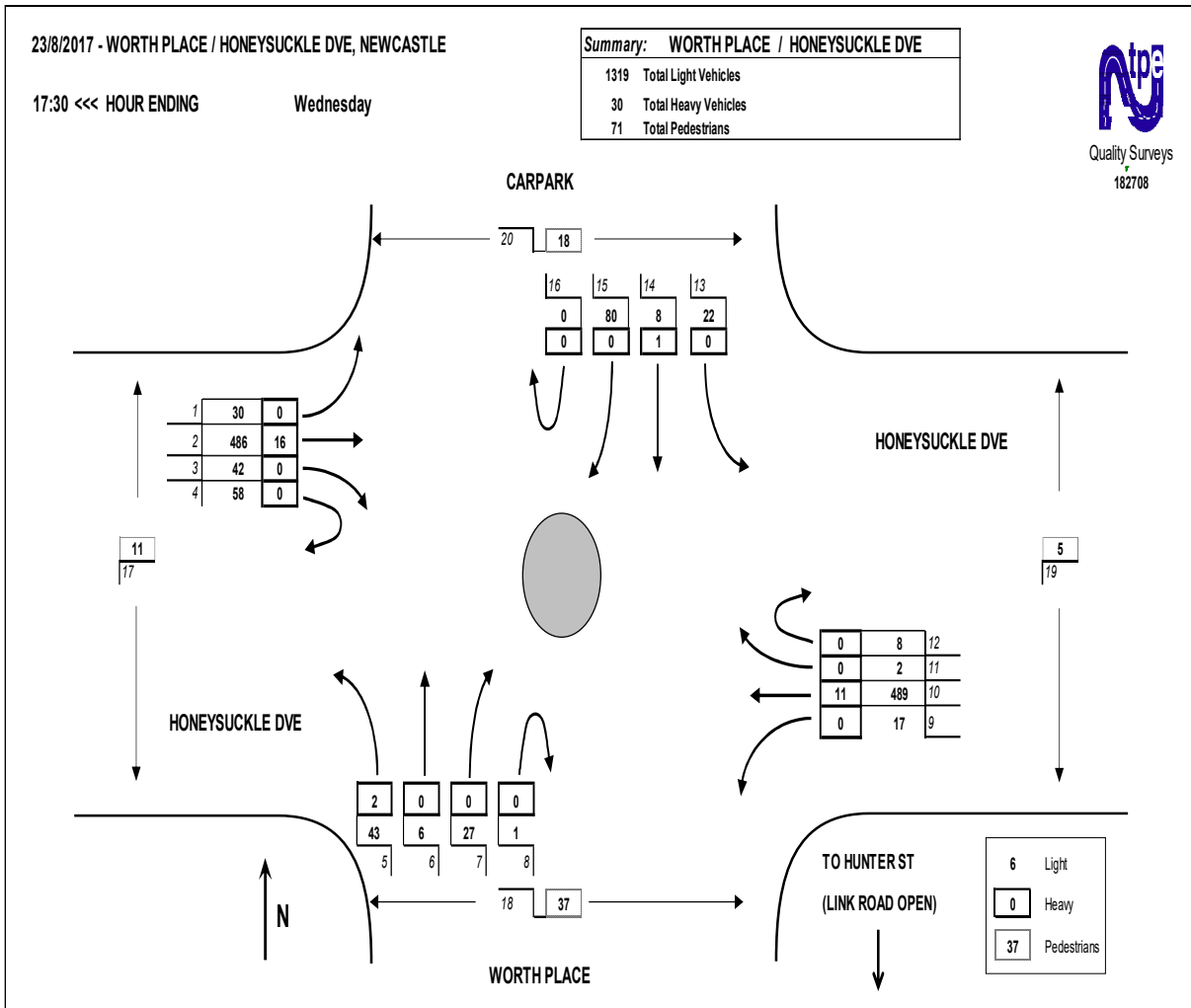


23/8/2017 - WORTH PLACE / HONEYSUCKLE DVE, NEWCASTLE

17:30 <<< HOUR ENDING

Wednesday

<b>Summary: WORTH PLACE / HONEYSUCKLE DVE</b>	
1319	Total Light Vehicles
30	Total Heavy Vehicles
71	Total Pedestrians



# ATTACHMENT C

## SIDRA MOVEMENT SUMMARY TABLES

## MOVEMENT SUMMARY

**Site: 101 [2017AM + development]**

Hannell Street / Honeysuckle Drive signals

Signals - Fixed Time Isolated Cycle Time = 75 seconds (Practical Cycle Time)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Stewart Avenue											
2	T1	1098	5.6	0.912	43.2	LOS D	26.0	190.4	1.00	1.18	22.6
3	R2	490	0.4	0.902	47.9	LOS D	22.6	158.5	1.00	1.06	27.6
Approach		1588	4.0	0.912	44.6	LOS D	26.0	190.4	1.00	1.14	24.5
East: Honeysuckle Drive											
4	L2	99	7.1	0.108	15.4	LOS B	1.8	13.6	0.54	0.70	42.1
6	R2	388	6.2	0.744	42.6	LOS D	7.5	55.3	1.00	0.89	30.1
Approach		487	6.4	0.744	37.0	LOS C	7.5	55.3	0.91	0.85	31.8
North: Hannell Street											
7	L2	621	2.4	0.717	18.3	LOS B	15.7	112.2	0.74	0.81	41.6
8	T1	983	5.0	0.813	30.2	LOS C	18.7	136.2	0.98	0.97	27.8
Approach		1604	4.0	0.813	25.6	LOS B	18.7	136.2	0.89	0.91	33.7
All Vehicles		3679	4.3	0.912	35.3	LOS C	26.0	190.4	0.94	1.00	29.1

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

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

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

Movement Performance - Pedestrians										
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped		
P1	South Full Crossing	47	31.8	LOS D	0.1	0.1	0.92	0.92		
P2	East Full Crossing	35	26.5	LOS C	0.1	0.1	0.84	0.84		
All Pedestrians		82	29.5	LOS C			0.89	0.89		

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

## MOVEMENT SUMMARY

Site: 101 [2017PM + development]

Hannell Street / Honeysuckle Drive signals

Signals - Fixed Time Isolated Cycle Time = 47 seconds (Practical Cycle Time)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Stewart Avenue											
2	T1	1080	1.5	0.876	26.0	LOS B	15.6	110.6	1.00	1.13	30.1
3	R2	213	2.3	0.913	39.8	LOS C	6.6	47.0	1.00	1.19	30.2
Approach		1293	1.6	0.913	28.2	LOS B	15.6	110.6	1.00	1.14	30.2
East: Honeysuckle Drive											
4	L2	340	0.6	0.432	16.1	LOS B	5.6	39.7	0.75	0.78	42.1
6	R2	566	1.4	0.904	38.2	LOS C	8.7	61.4	1.00	1.18	31.9
Approach		906	1.1	0.904	29.9	LOS C	8.7	61.4	0.91	1.03	34.9
North: Hannell Street											
7	L2	456	0.4	0.399	10.5	LOS A	5.4	37.8	0.54	0.74	47.2
8	T1	984	0.7	0.794	19.9	LOS B	12.1	85.0	0.97	0.96	34.1
Approach		1440	0.6	0.794	16.9	LOS B	12.1	85.0	0.84	0.89	38.9
All Vehicles		3639	1.1	0.913	24.2	LOS B	15.6	110.6	0.91	1.01	34.6

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

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

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped	
P1	South Full Crossing	47	17.9	LOS B	0.1	0.1	0.87	0.87	
P2	East Full Crossing	35	17.9	LOS B	0.0	0.0	0.87	0.87	
All Pedestrians		82	17.9	LOS B			0.87	0.87	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

## MOVEMENT SUMMARY

Site: 101 [2027AM]

Hannell Street / Honeysuckle Drive signals

Signals - Fixed Time Isolated Cycle Time = 150 seconds (Practical Cycle Time)

Design Life Analysis (Final Year): Results for 10 years

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Stewart Avenue											
2	T1	1427	5.6	0.971	90.0	LOS F <sup>11</sup>	76.8	562.9	0.98	1.20	13.5
3	R2	634	0.4	1.059	208.9	LOS F <sup>11</sup>	93.0	653.6	1.00	1.36	9.9
Approach		2062	4.0	1.059	126.6	LOS F <sup>11</sup>	93.0	653.6	0.99	1.25	11.7
East: Honeysuckle Drive											
4	L2	111	8.2	0.126	26.7	LOS B	4.2	31.6	0.56	0.71	35.3
6	R2	432	7.2	1.044	195.1	LOS F <sup>11</sup>	30.7	228.6	1.00	1.32	11.1
Approach		542	7.4	1.044	160.8	LOS F <sup>11</sup>	30.7	228.6	0.91	1.19	12.7
North: Hannell Street											
7	L2	793	2.5	1.028	157.9	LOS F <sup>11</sup>	108.4	774.6	1.00	1.23	13.2
8	T1	1278	5.0	1.069	217.7	LOS F <sup>11</sup>	129.4	944.6	1.00	1.81	6.4
Approach		2071	4.0	1.069	194.8	LOS F <sup>11</sup>	129.4	944.6	1.00	1.59	8.7
All Vehicles		4675	4.4	1.069	160.8	LOS F <sup>11</sup>	129.4	944.6	0.98	1.39	10.3

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

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

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

<sup>11</sup> Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped	
P1	South Full Crossing	56	69.3	LOS F <sup>12</sup>	0.2	0.2	0.96	0.96	
P2	East Full Crossing	42	32.7	LOS D	0.1	0.1	0.66	0.66	
All Pedestrians		98	53.7	LOS E <sup>12</sup>			0.83	0.83	

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.

<sup>12</sup> Level of Service is worse than the Pedestrian Level of Service Target specified in the Parameter Settings dialog.

## MOVEMENT SUMMARY

Site: 101 [2027PM]

Hannell Street / Honeysuckle Drive signals  
 Signals - Fixed Time Isolated Cycle Time = 150 seconds (Practical Cycle Time)  
 Design Life Analysis (Final Year): Results for 10 years

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Stewart Avenue											
2	T1	1404	1.5	0.904	55.3	LOS D <sup>11</sup>	56.8	403.0	0.98	1.00	19.3
3	R2	268	2.4	0.957	107.1	LOS F <sup>11</sup>	25.2	180.4	1.00	1.08	16.7
Approach		1672	1.6	0.957	63.6	LOS E <sup>11</sup>	56.8	403.0	0.98	1.01	18.6
East: Honeysuckle Drive											
4	L2	438	0.6	0.687	31.5	LOS C	20.6	145.0	0.70	0.79	33.4
6	R2	718	1.4	0.966	107.0	LOS F <sup>11</sup>	40.2	285.0	0.93	1.07	17.7
Approach		1156	1.1	0.966	78.4	LOS F <sup>11</sup>	40.2	285.0	0.84	0.97	21.3
North: Hannell Street											
7	L2	541	0.5	0.381	11.6	LOS A	12.7	89.1	0.36	0.69	46.4
8	T1	1279	0.7	0.985	103.8	LOS F <sup>11</sup>	85.1	599.0	0.94	1.24	12.1
Approach		1820	0.6	0.985	76.4	LOS F <sup>11</sup>	85.1	599.0	0.76	1.08	17.6
All Vehicles		4648	1.1	0.985	72.3	LOS F <sup>11</sup>	85.1	599.0	0.86	1.03	19.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).  
 Vehicle movement LOS values are based on average delay per movement.  
 Intersection and Approach LOS values are based on average delay for all vehicle movements.  
 SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.  
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

<sup>11</sup> Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped	
P1	South Full Crossing	56	47.3	LOS E <sup>12</sup>	0.2	0.2	0.80	0.80	
P2	East Full Crossing	42	32.7	LOS D	0.1	0.1	0.66	0.66	
All Pedestrians		98	41.1	LOS E <sup>12</sup>			0.74	0.74	

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.

<sup>12</sup> Level of Service is worse than the Pedestrian Level of Service Target specified in the Parameter Settings dialog.

## MOVEMENT SUMMARY

Site: 101 [2027AM + development]

Hannell Street / Honeysuckle Drive signals

Signals - Fixed Time Isolated Cycle Time = 150 seconds (Practical Cycle Time)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Stewart Avenue											
2	T1	1427	4.3	0.976	94.4	LOS F	78.1	567.0	0.99	1.23	13.0
3	R2	636	0.3	1.072	228.2	LOS F	97.8	686.4	1.00	1.41	9.1
Approach		2063	3.1	1.072	135.6	LOS F	97.8	686.4	0.99	1.28	11.1
East: Honeysuckle Drive											
4	L2	125	5.6	0.138	26.2	LOS B	4.7	34.7	0.56	0.72	35.7
6	R2	488	4.9	1.084	255.1	LOS F	40.8	297.7	1.00	1.44	8.8
Approach		613	5.1	1.084	208.5	LOS F	40.8	297.7	0.91	1.29	10.3
North: Hannell Street											
7	L2	804	1.9	1.023	150.3	LOS F	107.5	764.7	1.00	1.22	13.7
8	T1	1278	3.8	1.078	232.2	LOS F	133.9	968.0	1.00	1.87	6.0
Approach		2082	3.1	1.078	200.5	LOS F	133.9	968.0	1.00	1.61	8.5
All Vehicles		4758	3.3	1.084	173.4	LOS F	133.9	968.0	0.98	1.43	9.7

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

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

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped	
P1	South Full Crossing	47	69.3	LOS F	0.2	0.2	0.96	0.96	
P2	East Full Crossing	35	33.4	LOS D	0.1	0.1	0.67	0.67	
All Pedestrians		82	53.9	LOS E			0.84	0.84	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

## MOVEMENT SUMMARY

Site: 101 [2027PM + development]

Hannell Street / Honeysuckle Drive signals

Signals - Fixed Time Isolated Cycle Time = 150 seconds (Practical Cycle Time)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Stewart Avenue											
2	T1	1404	1.1	0.903	54.9	LOS D	56.6	400.3	0.98	0.99	19.4
3	R2	275	1.8	0.978	120.8	LOS F	27.8	197.8	1.00	1.13	15.3
Approach		1679	1.3	0.978	65.7	LOS E	56.6	400.3	0.98	1.01	18.2
East: Honeysuckle Drive											
4	L2	441	0.5	0.696	31.5	LOS C	20.8	146.0	0.71	0.79	33.4
6	R2	732	1.1	0.986	123.9	LOS F	44.2	312.0	0.93	1.12	15.9
Approach		1173	0.9	0.986	89.2	LOS F	44.2	312.0	0.85	1.00	19.6
North: Hannell Street											
7	L2	581	0.3	0.409	11.8	LOS A	14.1	98.7	0.37	0.70	46.2
8	T1	1279	0.5	0.994	113.4	LOS F	89.8	631.3	0.93	1.29	11.3
Approach		1860	0.5	0.994	81.7	LOS F	89.8	631.3	0.76	1.10	16.9
All Vehicles		4712	0.8	0.994	77.8	LOS F	89.8	631.3	0.86	1.05	18.1

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

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

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped	
P1	South Full Crossing	47	47.3	LOS E	0.2	0.2	0.79	0.79	
P2	East Full Crossing	35	32.7	LOS D	0.1	0.1	0.66	0.66	
All Pedestrians		82	41.1	LOS E			0.74	0.74	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

## MOVEMENT SUMMARY

Site: 101 [2017AM + development]

Honeysuckle Drive / Worth Place roundabout  
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Worth Place											
1	L2	54	3.7	0.129	6.2	LOS A	0.7	5.3	0.65	0.70	42.8
2	T1	12	0.0	0.129	6.0	LOS A	0.7	5.3	0.65	0.70	28.5
3	R2	37	0.0	0.129	10.5	LOS A	0.7	5.3	0.65	0.70	39.6
3u	U	5	0.0	0.129	12.4	LOS A	0.7	5.3	0.65	0.70	35.3
Approach		108	1.9	0.129	7.9	LOS A	0.7	5.3	0.65	0.70	40.8
East: Honeysuckle Drive											
4	L2	3	0.0	0.356	4.3	LOS A	2.3	17.0	0.50	0.50	39.7
5	T1	377	7.7	0.356	4.3	LOS A	2.3	17.0	0.50	0.50	46.1
6	R2	13	0.0	0.356	8.7	LOS A	2.3	17.0	0.50	0.50	32.8
6u	U	3	33.3	0.356	11.3	LOS A	2.3	17.0	0.50	0.50	41.1
Approach		396	7.6	0.356	4.5	LOS A	2.3	17.0	0.50	0.50	45.9
North: Worth Place											
7	L2	14	14.3	0.067	8.0	LOS A	0.4	3.0	0.75	0.74	31.1
8	T1	5	0.0	0.067	7.5	LOS A	0.4	3.0	0.75	0.74	32.5
9	R2	24	4.2	0.067	12.0	LOS A	0.4	3.0	0.75	0.74	41.8
9u	U	1	0.0	0.067	13.7	LOS A	0.4	3.0	0.75	0.74	21.9
Approach		44	6.8	0.067	10.2	LOS A	0.4	3.0	0.75	0.74	38.5
West: Honeysuckle Drive											
10	L2	155	0.0	0.146	3.6	LOS A	0.8	5.6	0.26	0.43	44.2
11	T1	587	2.6	0.488	3.2	LOS A	4.2	29.9	0.31	0.44	46.2
12	R2	38	2.6	0.488	7.7	LOS A	4.2	29.9	0.31	0.44	46.2
12u	U	163	0.0	0.488	9.5	LOS A	4.2	29.9	0.31	0.44	48.5
Approach		943	1.7	0.488	4.5	LOS A	4.2	29.9	0.30	0.44	46.5
All Vehicles		1491	3.4	0.488	4.9	LOS A	4.2	29.9	0.39	0.48	45.8

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

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

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

## MOVEMENT SUMMARY

Site: 101 [2017PM + development]

Honeysuckle Drive / Worth Place roundabout  
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Worth Place											
1	L2	58	3.4	0.125	7.1	LOS A	0.7	5.4	0.72	0.73	42.4
2	T1	6	0.0	0.125	6.9	LOS A	0.7	5.4	0.72	0.73	27.8
3	R2	27	0.0	0.125	11.4	LOS A	0.7	5.4	0.72	0.73	38.9
3u	U	1	100.0	0.125	17.3	LOS B	0.7	5.4	0.72	0.73	32.9
Approach		92	3.3	0.125	8.5	LOS A	0.7	5.4	0.72	0.73	41.1
East: Honeysuckle Drive											
4	L2	17	0.0	0.458	4.4	LOS A	3.3	23.4	0.54	0.51	39.4
5	T1	507	2.2	0.458	4.4	LOS A	3.3	23.4	0.54	0.51	46.0
6	R2	2	0.0	0.458	8.9	LOS A	3.3	23.4	0.54	0.51	32.5
6u	U	8	0.0	0.458	10.7	LOS A	3.3	23.4	0.54	0.51	45.4
Approach		534	2.1	0.458	4.5	LOS A	3.3	23.4	0.54	0.51	45.9
North: Worth Place											
7	L2	22	0.0	0.140	6.3	LOS A	0.8	5.7	0.68	0.75	32.4
8	T1	9	11.1	0.140	6.7	LOS A	0.8	5.7	0.68	0.75	32.7
9	R2	80	0.0	0.140	10.7	LOS A	0.8	5.7	0.68	0.75	42.6
9u	U	1	0.0	0.140	12.5	LOS A	0.8	5.7	0.68	0.75	18.7
Approach		112	0.9	0.140	9.5	LOS A	0.8	5.7	0.68	0.75	40.8
West: Honeysuckle Drive											
10	L2	30	0.0	0.028	3.4	LOS A	0.1	1.0	0.19	0.41	44.5
11	T1	502	3.2	0.392	3.0	LOS A	3.1	22.0	0.22	0.41	46.7
12	R2	42	0.0	0.392	7.5	LOS A	3.1	22.0	0.22	0.41	47.0
12u	U	105	0.0	0.392	9.3	LOS A	3.1	22.0	0.22	0.41	48.9
Approach		679	2.4	0.392	4.3	LOS A	3.1	22.0	0.22	0.41	47.1
All Vehicles		1417	2.2	0.458	5.1	LOS A	3.3	23.4	0.41	0.50	45.9

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

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

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

## MOVEMENT SUMMARY

Site: 101 [2027AM + development]

Honeysuckle Drive / Worth Place roundabout  
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Worth Place											
1	L2	69	2.9	0.200	7.8	LOS A	1.3	9.1	0.78	0.80	41.6
2	T1	16	0.0	0.200	7.7	LOS A	1.3	9.1	0.78	0.80	26.9
3	R2	48	0.0	0.200	12.2	LOS A	1.3	9.1	0.78	0.80	37.5
3u	U	7	0.0	0.200	14.0	LOS A	1.3	9.1	0.78	0.80	33.5
Approach		140	1.4	0.200	9.6	LOS A	1.3	9.1	0.78	0.80	39.2
East: Honeysuckle Drive											
4	L2	4	0.0	0.487	4.9	LOS A	3.6	26.4	0.63	0.58	38.6
5	T1	490	5.9	0.487	5.0	LOS A	3.6	26.4	0.63	0.58	45.5
6	R2	17	0.0	0.487	9.4	LOS A	3.6	26.4	0.63	0.58	31.8
6u	U	4	25.0	0.487	11.9	LOS A	3.6	26.4	0.63	0.58	41.0
Approach		515	5.8	0.487	5.2	LOS A	3.6	26.4	0.63	0.58	45.2
North: Worth Place											
7	L2	18	11.1	0.122	12.1	LOS A	0.8	6.0	0.90	0.85	27.2
8	T1	7	0.0	0.122	11.5	LOS A	0.8	6.0	0.90	0.85	27.9
9	R2	31	3.2	0.122	16.0	LOS B	0.8	6.0	0.90	0.85	38.8
9u	U	1	0.0	0.122	17.7	LOS B	0.8	6.0	0.90	0.85	18.6
Approach		57	5.3	0.122	14.2	LOS A	0.8	6.0	0.90	0.85	35.1
West: Honeysuckle Drive											
10	L2	202	0.0	0.195	3.8	LOS A	1.1	8.0	0.32	0.45	43.9
11	T1	763	2.0	0.644	3.5	LOS A	7.1	50.4	0.46	0.46	45.6
12	R2	49	2.0	0.644	8.0	LOS A	7.1	50.4	0.46	0.46	45.6
12u	U	208	0.0	0.644	9.8	LOS A	7.1	50.4	0.46	0.46	48.1
Approach		1222	1.3	0.644	4.8	LOS A	7.1	50.4	0.44	0.46	46.0
All Vehicles		1934	2.6	0.644	5.5	LOS A	7.1	50.4	0.53	0.53	45.1

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

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

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

## MOVEMENT SUMMARY

Site: 101 [2027PM + development]

Honeysuckle Drive / Worth Place roundabout  
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Worth Place											
1	L2	72	2.8	0.201	9.4	LOS A	1.4	9.7	0.86	0.85	40.7
2	T1	8	0.0	0.201	9.2	LOS A	1.4	9.7	0.86	0.85	25.6
3	R2	35	0.0	0.201	13.7	LOS A	1.4	9.7	0.86	0.85	35.9
3u	U	1	100.0	0.201	21.0	LOS B	1.4	9.7	0.86	0.85	30.7
Approach		116	2.6	0.201	10.8	LOS A	1.4	9.7	0.86	0.85	39.1
East: Honeysuckle Drive											
4	L2	22	0.0	0.620	5.8	LOS A	5.8	41.2	0.71	0.67	38.1
5	T1	657	1.7	0.620	5.8	LOS A	5.8	41.2	0.71	0.67	45.2
6	R2	3	0.0	0.620	10.2	LOS A	5.8	41.2	0.71	0.67	31.4
6u	U	10	0.0	0.620	12.1	LOS A	5.8	41.2	0.71	0.67	43.7
Approach		692	1.6	0.620	5.9	LOS A	5.8	41.2	0.71	0.67	45.0
North: Worth Place											
7	L2	29	0.0	0.223	8.6	LOS A	1.4	10.2	0.81	0.85	29.9
8	T1	12	8.3	0.223	9.0	LOS A	1.4	10.2	0.81	0.85	30.1
9	R2	104	0.0	0.223	13.0	LOS A	1.4	10.2	0.81	0.85	40.8
9u	U	1	0.0	0.223	14.8	LOS B	1.4	10.2	0.81	0.85	17.3
Approach		146	0.7	0.223	11.8	LOS A	1.4	10.2	0.81	0.85	38.8
West: Honeysuckle Drive											
10	L2	39	0.0	0.037	3.5	LOS A	0.2	1.4	0.22	0.41	44.3
11	T1	653	2.5	0.507	3.1	LOS A	4.7	33.7	0.30	0.42	46.5
12	R2	55	0.0	0.507	7.6	LOS A	4.7	33.7	0.30	0.42	46.7
12u	U	122	0.0	0.507	9.4	LOS A	4.7	33.7	0.30	0.42	48.7
Approach		869	1.8	0.507	4.3	LOS A	4.7	33.7	0.30	0.42	46.8
All Vehicles		1823	1.7	0.620	5.9	LOS A	5.8	41.2	0.53	0.57	45.2

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

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

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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