TRAFFIC IMPACT ASSESSMENT

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

PREPARED FOR: DOMA GROUP

AMENDED FEBRUARY 2020

17/115

TRAFFIC IMPACT ASSESSMENT
DOMA GROUP

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

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QUALITY ASSURANCE

This document has been prepared, checked and released in accordance with the Quality Control Standards established by Intersect Traffic Pty Ltd.

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F	17/02/20	Further Plan Changes/ Approved	JG
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This document has been authorised by

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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 179 room Little National Hotel as well as 5,311 m^2 GFA of commercial floor area and a small 81 m^2 GFA café.. The site is currently vacant though earthworks for the development have commenced. 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 state significant development application to the NSW Department of Planning, Industry and Environment (Department) and allow the Department 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. Addresses the SEARS requirements for Transport and Traffic issued for the project.
5. 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)*.

The relevant traffic and transport considerations included in the SEARS issued for the project dated 6 November 2019 are provided below.

7. Transport and Accessibility (Construction and Operation)

The EIS shall:

- include a traffic, parking, servicing and access assessment identifying any impacts of the proposed development on the traffic and transport network and pedestrian cyclist safety adjacent to the site. Any associated impacts and/or mitigation measures are to be included in the EIS
- assess the impacts of the traffic generated on the local road network, and surrounding intersections (including Hannell Street / Honeysuckle Drive intersections) using SIDRA or similar traffic model and any potential need for upgrading or road works (local and classified) to maintain existing levels of service
- address the impacts of the proposal having regard to the cumulative traffic impact of other proposed developments in the area and the impact of the Newcastle Light Rail project.

All these matters are addressed in ***Section 11*** of this report noting cumulative impacts are addressed through the adoption of an appropriate background traffic growth rate of 1.5 % per annum which includes for additional development traffic from other developments and a modal shift in trip making with the operation of the Light Rail i.e. reduced light vehicle trips.

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^2. ***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, though earthworks for the project have commenced, 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 though some realignment works are to occur in Honeysuckle Drive and changes to Worth Place are also proposed which do not increase the capacity of the road network. The provision of light rail along Hunter Street near the site, which has just commenced operation is 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. It will however take some time 6 to 12 months before changed traffic patterns become noticeable and motorists get use to the new road network with the light rail.

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 24th 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 vtph in the AM peak and 3,032 vtph in the PM peak.
- Stewart Avenue – 2,654 vtph in the AM peak and 2,607 vtph in the PM peak.
- Honeysuckle Drive – 1,515 vtph in the AM peak and 1,511 vtph in the PM peak.
- Worth Place – 156 vtph in the AM peak and 148 vtph in the PM peak.

These values have been adopted for assessment purposes along with a background traffic growth rate of 1.5 % per annum as adopted in NSW RMS strategic modelling.

6.0 ROAD CAPACITY

The capacity of urban roads is generally determined by the capacity of intersections. However, Table 4.3 of the *RTA's Guide to Traffic Generating Developments* provides some guidance on mid-block capacities for urban roads. This table is 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

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

Based on these tables and noting that Hannell Street and Stewart Avenue are 4 lane divided roads while Honeysuckle Drive has 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 C is considered satisfactory in a CBD area.

- Hannell Street / Stewart Avenue – up to 3,800 vtph; and
- Honeysuckle Drive – up to 1,800 vtph.

However as these are major collector roads it is still considered acceptable for lane capacities of 1,100 vtph to occur providing a LoS D on the road network. As such the road capacities adopted in this report are;

- Hannell Street / Stewart Avenue – up to 4,400 vtph; and
- Honeysuckle Drive – up to 2,200 vtph.

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 vtph and Honeysuckle Drive peak 1,515 vtph) 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 which stop at the Newcastle Transport interchange (280 metres from the site). The nearest bus stops are located on Stewart Avenue and Hunter Street approximately 300 metres walk west from the site. The site is also within 260 metres of the Honeysuckle light rail station (east of site) providing connection to the Transport interchange and the bus and Sydney and Hunter rail trains that run from there.

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 7***) with a road crossing and refuge again in front of the site (see ***Photograph 8***). 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 9***). 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 – Foreshore cycleway and Honeysuckle Drive connection

Photograph 8 – Pedestrian Refuge in front of site

Photograph 9 – Pedestrian footpath – Honeysuckle Drive.

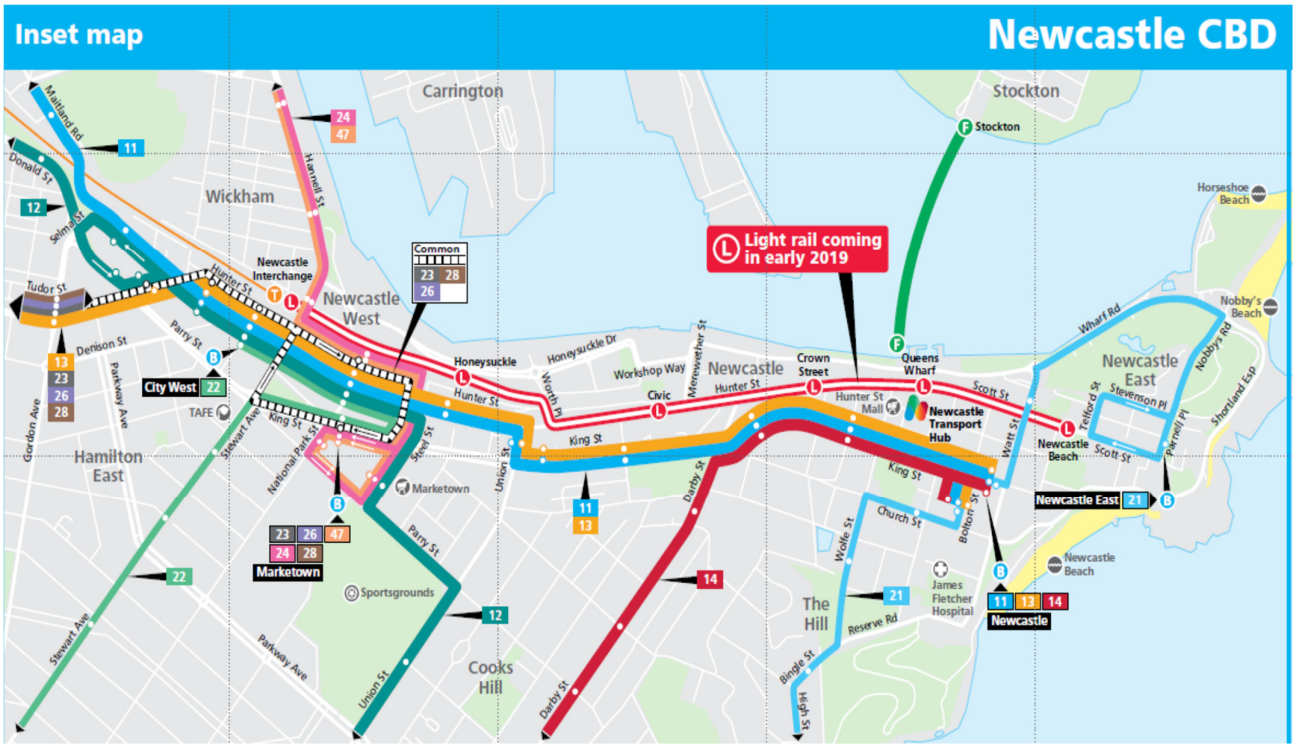


Figure 2– Bus Route Map Extract

8.0 DEVELOPMENT PROPOSAL

The proposal is to construct a mixed-use development containing a total of nine (9) levels including ground level containing 179 hotel rooms, 5,311 m^2 GFA of commercial office space and a small 81 m^2 GFA ground floor cafe. The proposed development plans are provided within ***Attachment A***. Specifically, the proposal seeks to undertake the following works;

- Ground level – Hotel lobby and cafe tenancy (50 m^2 GFA), luggage store, hotel office, hotel gymnasium, lift lobby, plant rooms, waste room, bicycle storage area and end of trip amenities, combined entry / exit vehicular access to Honeysuckle Drive, loading and servicing bay and 17 on-site car parks including 1 accessible space;
- Level 1 – 19 hotel rooms, ancillary library for hotel, commercial tenancy (488 m^2 GFA) and 40 on-site car parks (5 accessible) and 2 motorbike parks;
- Level 2 – 19 hotel rooms, ancillary meeting rooms, commercial tenancy (408 m^2 GFA) and 43 on-site car parks and 2 motorbike parks;
- Level 3 – 18 hotel rooms including an accessible room, ancillary lounge / bar area for hotel and 43 on-site car parks and 1 motorbike park;81
- Level 4 – 27 hotel rooms including 2 accessible rooms, commercial tenancy (883 m^2 GFA) and 30 on-site car parks and 1 motorbike park;
- Level 5 – 32 hotel rooms including 2 accessible rooms and a commercial tenancy (883 m^2 GFA);
- Level 6 – 32 hotel rooms including 2 accessible rooms and a commercial tenancy (883 m^2 GFA);
- Level 7 - 32 hotel rooms including 2 accessible rooms and a commercial tenancy (883 m^2 GFA); and
- Level 8 – Commercial tenancy (883 m^2 GFA);

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.

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

Café / Restaurant

- *Daily vehicle trips – 60 per 100 m^2 GFA.*
- *Peak hour trips – 5 per 100 m^2 GFA.*

Hotel (same as motel)

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

Commercial Offices

- *Daily vehicle trips – 10 per 100 m^2 GFA.*
- *Peak hour trips – 2 per 100 m^2 GFA.*

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. Note the ancillary components of the hotel development including the bar and lounge area will not generate additional traffic movements.

Cafe (AM & PM)	= 50 m^2/100 m^2 x 5	= 3 vtph;
Hotel (AM & PM)	= 179 units x 0.4	= 72 vtph; and
Commercial Offices (AM & PM)	= 5,311 /100 x 2	= 107 vtph.

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

Peak hour traffic generation (AM & PM) = 3 + 72 + 107 = **182 vtph**

These traffic generation values for the development have been adopted in this report.

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 hotel component in the AM peak 80 % of traffic is outbound and 20 % inbound. This is mirrored in the PM peak.
- For the commercial component in the AM peak 70 % of traffic is inbound and 30 % outbound which is mirrored in PM peak.
- 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 Steel Street.

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.***

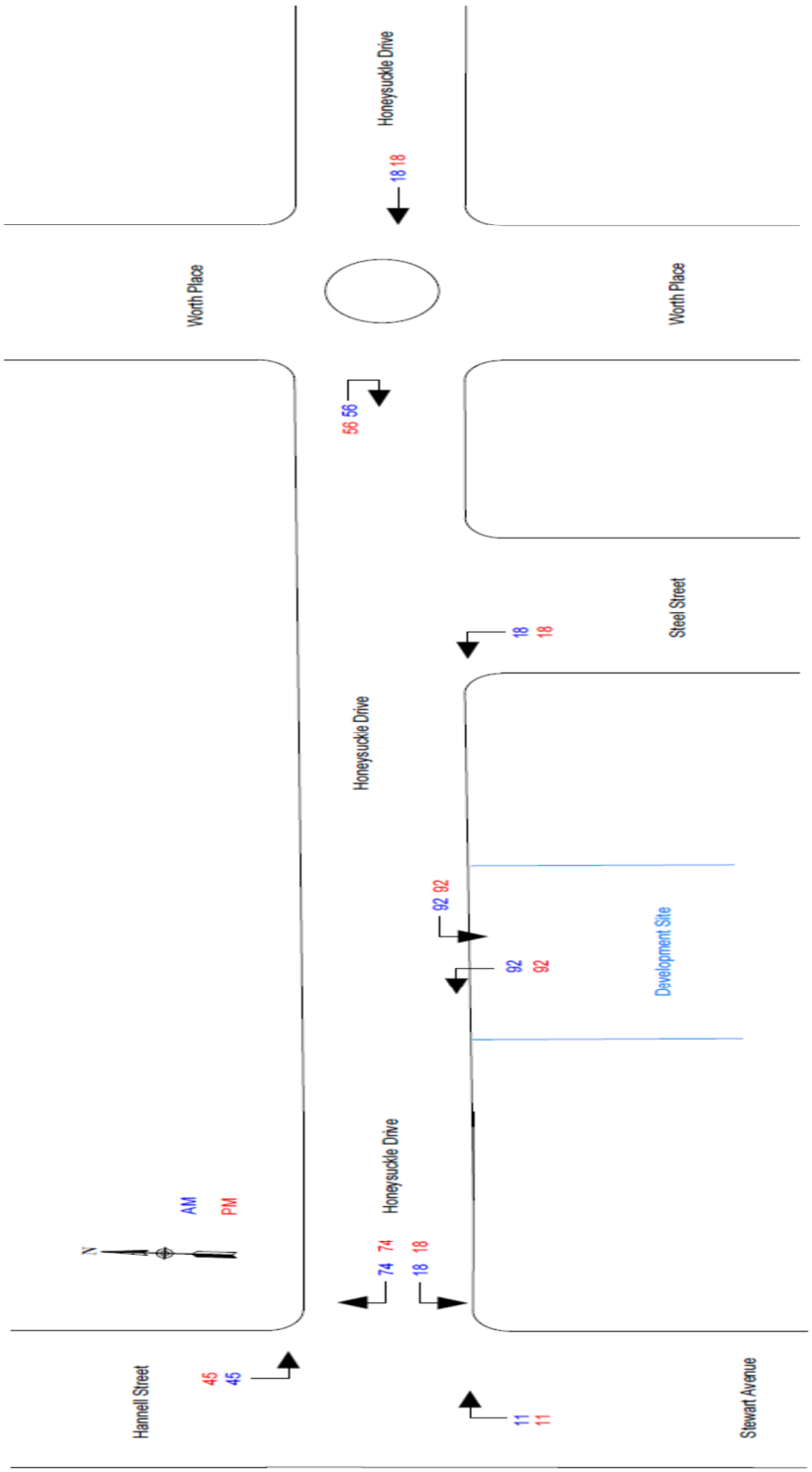


Figure 3 – Development Traffic Trip Distribution

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 – 148 vtph in the AM and PM peaks;
- Hannell Street – 119 vtph in the AM and PM peaks;
- Stewart Avenue – 29 vtph in the AM peak and PM peaks; and
- Steel Street – 18 vtph in the AM and PM peaks.

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

		Development Traffic (vtph)		Post - Development traffic (vtph) @ 1.5 % p.a. background growth			
Road	Capacity (vtph)	AM	PM	2020 AM	2020 PM	2030 AM	2030PM
Honeysuckle Drive	2,200	148	148	1732	1728	1906	1902
Hannell Street	4,400	119	119	3280	3289	3627	3638
Stewart Avenue	4,400	29	29	2804	2755	3118	3055

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 1,732 vtph in 2020 or 1,906 vtph in 2030 (1.5 % 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 2,200 vtph. 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 1.5 % per annum background traffic growth has been adopted to ensure that the cumulative impacts of other development within the Honeysuckle Drive area are considered.

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;
- Honeysuckle Drive / Steel signalised T-intersection; and
- Honeysuckle Drive / Worth Place roundabout.

In regard to the two intersections on Honeysuckle Drive both these intersections have been observed to be operating satisfactorily during peak hour periods with little or no queuing occurring on the minor roads however some queuing/congestion occurs on Honeysuckle Drive as a result of the operation of the Hannell Street / Honeysuckle Drive signals. Therefore the Hannell Street / Honeysuckle Drive intersection becomes the constraint on the local and state road network and is the most important intersection to analyse in this assessment. The additional traffic volumes on the Honeysuckle Drive intersections with Steel Street and Worth Place represent less than 10 % of

existing traffic volumes through these intersections which given the lack of delay and queuing on the side roads and level of control provided at the intersection i.e. signals and roundabout would be expected to cater for the additional development traffic without adversely impacting on the local road network. Therefore further intersection analysis of these two intersections is not considered warranted.

To determine the impact of the development on these intersections, the intersections were modelled using the SIDRA INTERSECTION 8 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 (2020) and for ten years background traffic growth at 1.5 % per annum (2030) 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***;
- Due to the proximity of adjoining traffic signals at Stewart Avenue and Throsby Street an extra bunching factor of 30 % has been assumed for approach traffic on Hannell Street.
- Due to the proximity of the Steel Street signals an extra bunching factor of 20 % has been assumed for approach traffic on Honeysuckle Drive.

The summary results of the modelling for the 'all vehicles' case are shown in the following ***Table 2*** 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)	Average Level of Service	95 % back of queue length (cars)
2020 AM	0.891	29.5	C	25.5
2020 PM	0.902	25.5	B	20.1
2020 AM + development	0.897	29.9	C	25.4
2020 PM + development	0.904	26.4	B	21.1
2030 AM + development	0.953	57.3	E	66.0
2030 PM + development	0.972	65.2	E	71.5

The modelling shows that the recently upgraded Hannell Street / Honeysuckle Drive signalised intersection is currently operating satisfactorily in both the AM and PM peak periods and will continue to do so post development. The impact of the development is to only increase average delays by less than 1 second and queue lengths by approximately 1 vehicle which is insignificant and does not result in a loss of LoS for motorists. With continued background traffic growth it would be expected that this intersection would reach capacity by 2030 unless a modal shift in trip making occurred in the Newcastle CBD area.

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 median separated 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 173 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 2 access for this size of car park accessing off a local road. A category 2 access requires a combined entry / exit access 6 to 9 metres wide. Therefore the proposed median separated access 7.5 metres wide is compliant with this requirement and 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 is in excess of 6 metres from the footpath area in Honeysuckle Drive therefore is compliant with Australian Standard *AS2890.1-2004 Parking Facilities – Part 1 Off-street car parking..* 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^2 gross floor area.*

As a practical approach to likely car parking demand for the development the minimum hotel rates contained in the Newcastle DCP (2012) for hotel developments outside the CBD has been adopted as follows;

Hotels

- *1 space per 2 staff plus a minimum 0.5 spaces per room and a maximum 1 space per room.*

In considering the commercial uses it is noted that Council recently provided a concession to a nearby development (6 Stewart Avenue) and accepted a rate of 1 space per 75 m^2 GFA for commercial floor space. The basis for this concession as detailed in the GHD Supplementary Traffic Report for the project (April 2019) summarised were;

- The location of the site has three direct modes of public transport available for commuters with excellent convenience being within easy walking distance of the Wickham Transport interchange. Therefore it is better serviced by public transport that most other areas in NSW and thus is likely to attract a high public commuter percentage from staff than other locations even in the Newcastle CBD area.
- Because of the location of the site in the Honeysuckle precinct with excellent access to 3 forms of public transport and the type of tenancies visitor car parking demand is expected to be low with many visitors also choosing public transport as its favoured mode of transport to the site.
- Further the development provides significant bicycle storage, excellent end of trip amenities and motorbike parking areas therefore will encourage higher than usual percentages of staff choosing bicycle, motorcycle or pedestrian travel to and from the site.
- The use of lower parking requirements in similar areas in Sydney well serviced by convenient public transport.

As this argument was accepted by the Joint Regional Planning Panel for 6 Stewart Avenue, Newcastle West and this development is no different in terms of its access to and convenience to multiple public transport travel options and alternative transport mode trip decisions for staff and visitors, as the development at 6 Stewart Avenue, it is considered that a commercial floor space on-site parking rate of 1 space per 75 m^2 GFA should be supported by Newcastle City Council for this development as a justified variation to its normal DCP car parking rate of 1 space per 75 m^2 GFA for all non-residential land uses.

Therefore the minimum on-site car parking requirement for the development is calculated as shown in ***Table 3*** below;

Table 3 – Car Parking Calculations

Floor Space	Quantity	Unit	Rate	Total Required	Total Provided
Hotel	179	Rooms	0.5	90	90
	20	Staff (bar and house cleaning) estimate	0.5	10	10
Commercial Offices	5311	m^2 GFA	1 per 75 m^2	71	72
Café	50	m^2 GFA	1 per 60 m^2	1	1
		Total		172	173

As the proposed development provides 173 car spaces there is sufficient on-site car parking on-site to meet the expected demand generated by the development..

Further the Newcastle DCP would require the following in regard to motorcycle and bicycle parking noting the hotel use is unlikely to generate much bicycle or motorcycle parking demand;

Non - Residential

- *Bicycle Parking - 1 space per 100m^2 GFA (Class 2)*
- *Motor Cycle Parking - 1 space per 20 car spaces*

Hotel Rooms

- *Bicycle Parking – 1 space per 20 units*
- *Motor Cycle Parking – 1 space per 20 car parks*

Therefore the development is required to provide a suitable bicycle locker storage area for up to 63 bicycles for the hotel and commercial tenancies as well as 8 – 9 motorcycle spaces.

A suitable bicycle storage area has been provided within the development that can accommodate up to 48 bicycles and 11 motorcycle spaces are provided in the car park area. Therefore whilst the development represents a small deficiency in terms of bicycle parking when compared to the DCP rates it still provides a significant amount of bicycle parking that would be expected to meet the demand generated by the development. It is argued the DCP bicycle parking rate is not appropriate for the size of development proposed and that the generation rate for such a large development should be less than the DCP requirement. Overall the proposal is considered to provide suitable bicycle and motorcycle parking sufficient to meet the likely peak demand from the development.

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.

The development also provides car parking on the ground level and a suitable turnaround area to allow the drop-off and pick up of passengers from the hotel by taxi's and Uber drivers however the hotel operators are unsure if this will be favoured by the taxi and Uber drivers and will still be seeking Council approval for a suitable taxi / Uber rank in Honeysuckle Drive in front of the hotel lobby.

Overall it can be concluded that 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.

11.5 Servicing

As mainly a hotel and commercial 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 turnaround area 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 the Department.

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 vtph. 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 vtph 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 vtph 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 vtph 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 significant additional public transport usage as it is likely many staff and visitors will utilise existing bus services, taxi's and the rail service (both light and 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 179 room Little National Hotel as well as 5,311 m^2 GFA of commercial floor area and a small 81 m^2 GFA café 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 4,400 vtph and 2,200 vtph 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 184 vtph in the AM and PM peak periods.
- 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.
- The major intersections impacted by this development have high levels of intersection control i.e. traffic signals or roundabouts which have been recently designed and constructed / upgraded to cater for the full development of the Honeysuckle Drive precinct. As the development only increases traffic volumes through these intersections by less than 10 % it will not adversely impact on the operation of these intersections.
- SIDRA INTERSECTION modelling of the recently upgraded Hannell Street / Honeysuckle Drive signalised intersection shows this intersection operates satisfactorily post development with the impact of the development insignificant with no loss of LoS experienced by motorists at 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 also 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 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 the Department.
- 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.

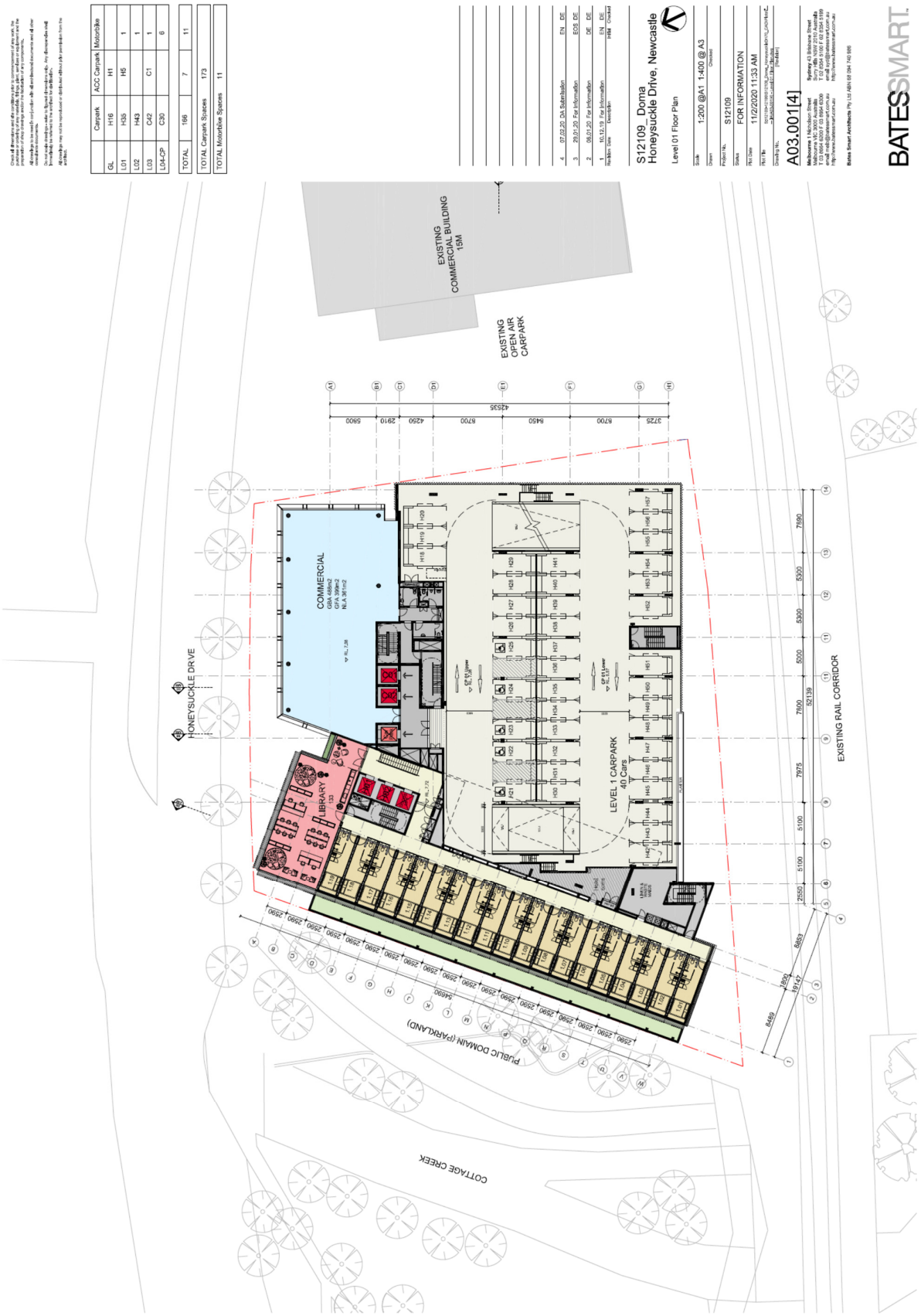
15.0 RECOMMENDATION

Having carried out this traffic impact assessment for a mixed use development containing a 179 room Little National Hotel as well as 5,311 m^2 GFA of commercial floor area and a small 81 m^2 GFA café 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.

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

ATTACHMENT A
DEVELOPMENT PLANS


S12109_Doma
Honeysuckle Drive, Newcastle
Ground Level Plan
A03.000[4]
BATESSMART
EXISTING COMMERCIAL BUILDING 15M
EXISTING OPEN AIR CARPARK
HONEYSUCKLE DRIVE
TERRACE
CAFE
LOBBY
GROUND CARPARK 17 cars
LAUNDRY
OFFICE
GYM
LOADING
WASTE STORE
STORE
SWITCH
PUBLIC DOMAIN (PARKLAND)
COTTAGE CREEK
EXISTING RAIL CORRIDOR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HONEYSUCKLE DRIVE
COMMERCIAL
LIBRARY
LEVEL 1 CARPARK 40 Cars
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PUBLIC DOMAIN (PARKLAND)
COTTAGE CREEK
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Honeysuckle Drive, Newcastle
Level 01 Floor Plan
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FOR INFORMATION
11/2/2020 11:33 AM
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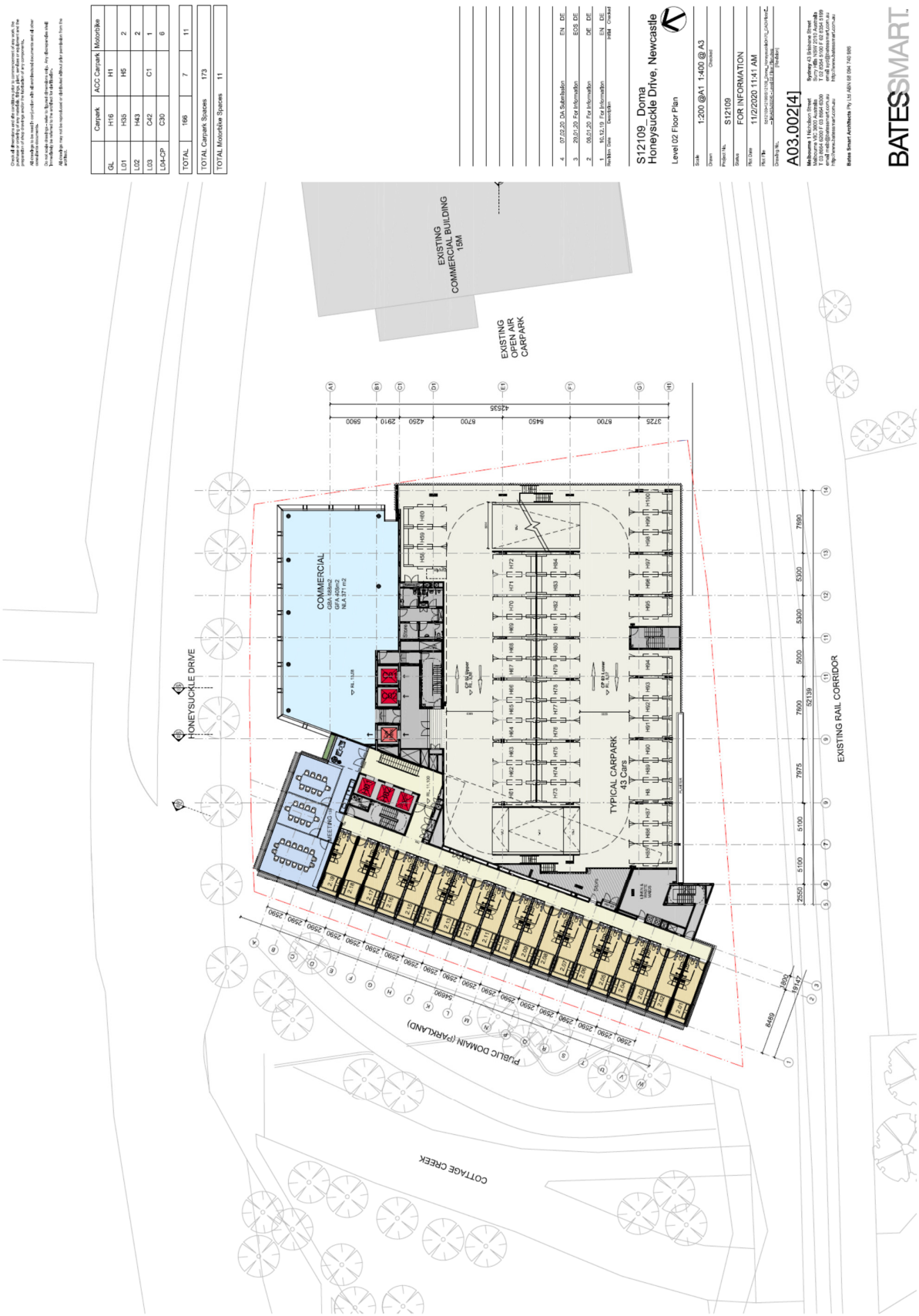
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EXISTING OPEN AIR CARPARK
HONEYSUCKLE DRIVE
COMMERCIAL
TYPICAL CARPARK 43 Cars
EXISTING RAIL CORRIDOR
PUBLIC DOMAIN (PARKLAND)
COTTAGE CREEK
S12109_Doma
Honeysuckle Drive, Newcastle
Level 02 Floor Plan
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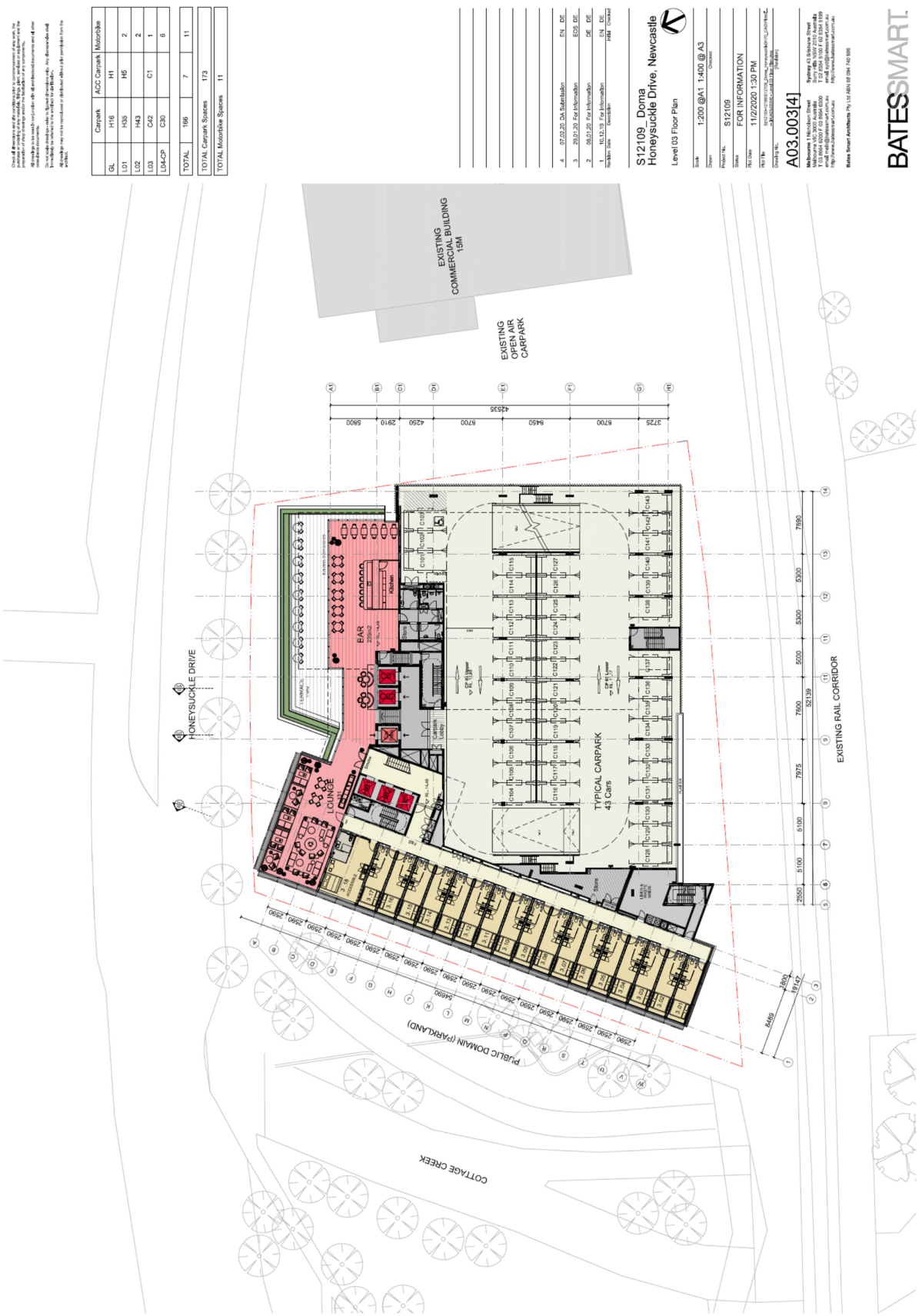
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EAR
LOUNGE
TYPICAL CARPARK
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PUBLIC DOMAIN (PARKLAND)
COTTAGE CREEK
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Honeysuckle Drive, Newcastle
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FOR INFORMATION
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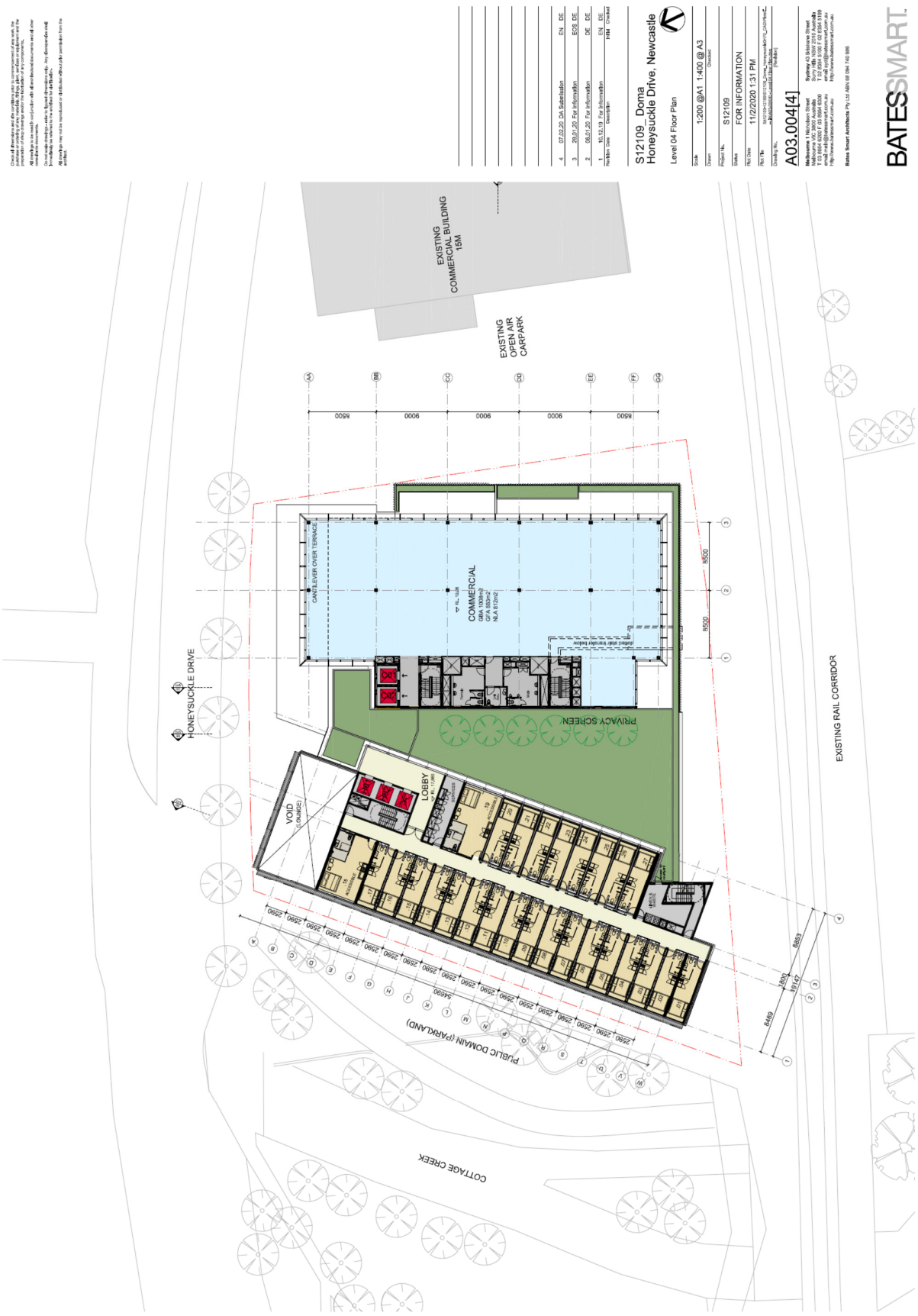
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EXISTING OPEN AIR CARPARK
HONEYSUCKLE DRIVE
COMMERCIAL
CANTILEVER OVER TERRACE
PRIVACY SCREEN
LOBBY
VOID
EXISTING RAIL CORRIDOR
PUBLIC DOMAIN (PARKLAND)
COTTAGE CREEK
S12109_Doma
Honeysuckle Drive, Newcastle
Level 04 Floor Plan
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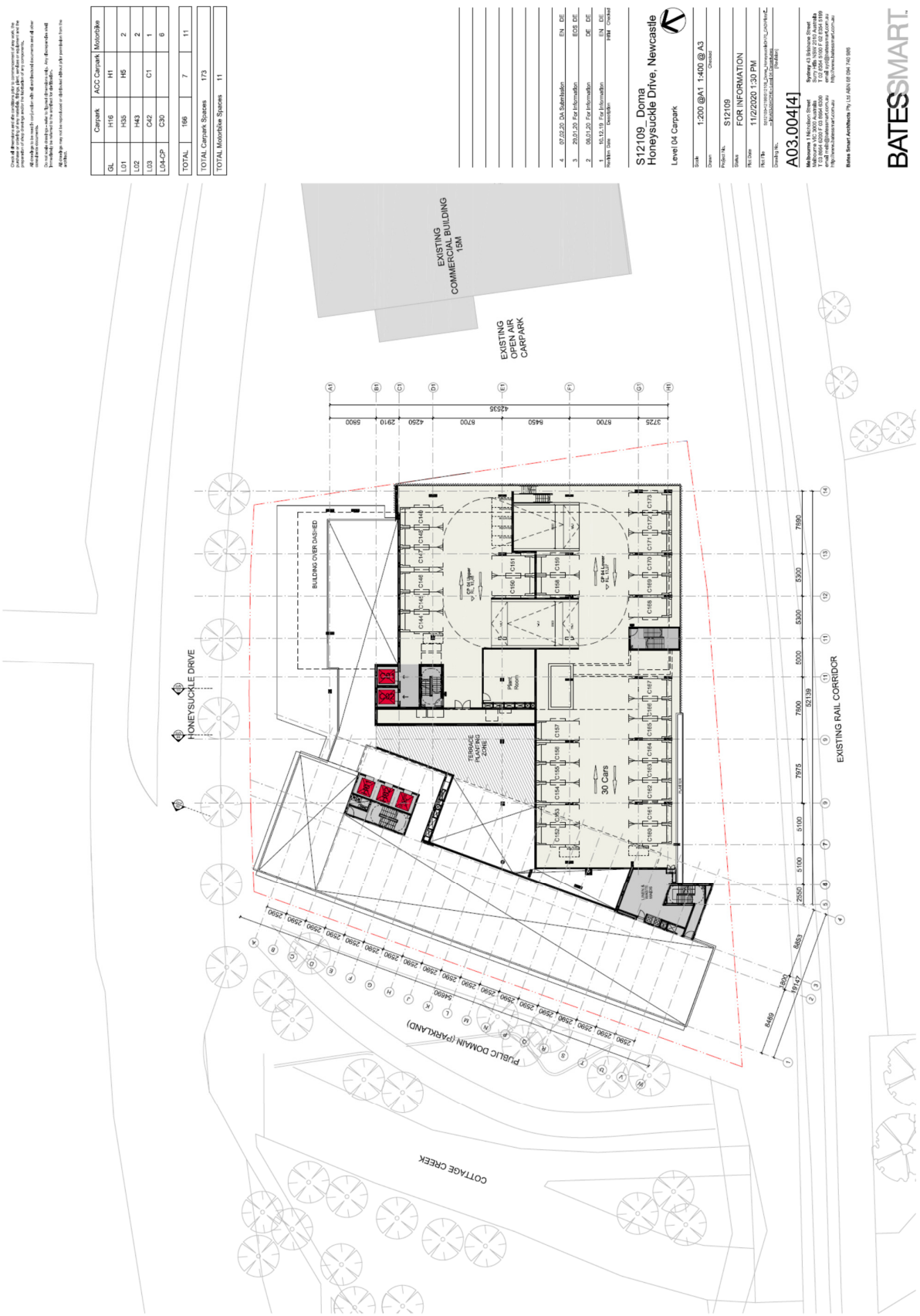
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ACC Carpark
Motorbike
GL
H16
H1
2
L01
H35
H5
2
L02
H43
1
L03
C42
C1
1
L04-CP
C30
6
TOTAL
166
7
11
TOTAL Carpark Spaces
173
TOTAL Motorbike Spaces
11
S12109_ Doma
Honeysuckle Drive, Newcastle
Level 04 Carpark
A03.004[4]
BATESSMART
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EXISTING OPEN AIR CARPARK
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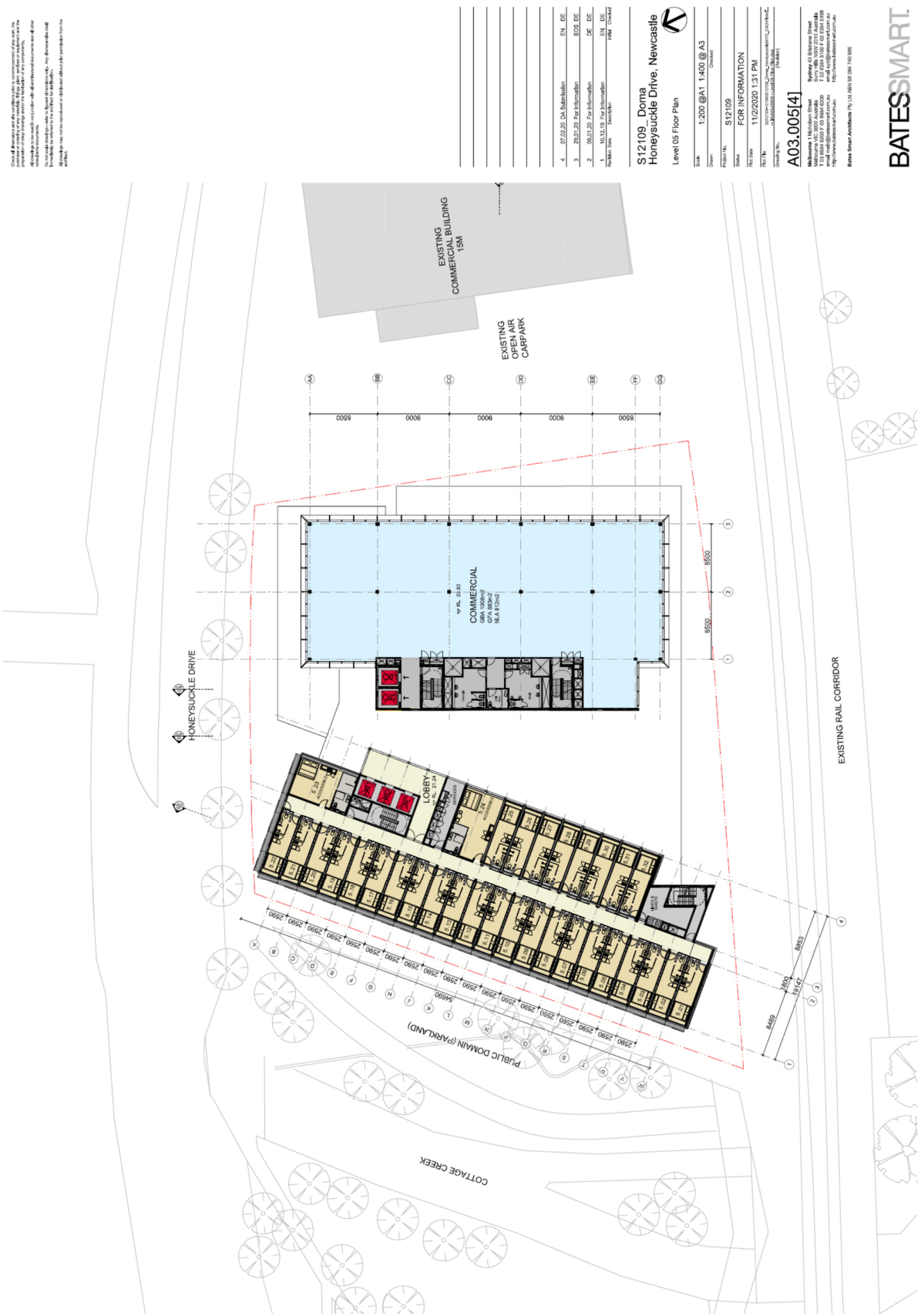
COTTAGE CREEK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Honeysuckle Drive, Newcastle
Level 05 Floor Plan
A03,005[4]
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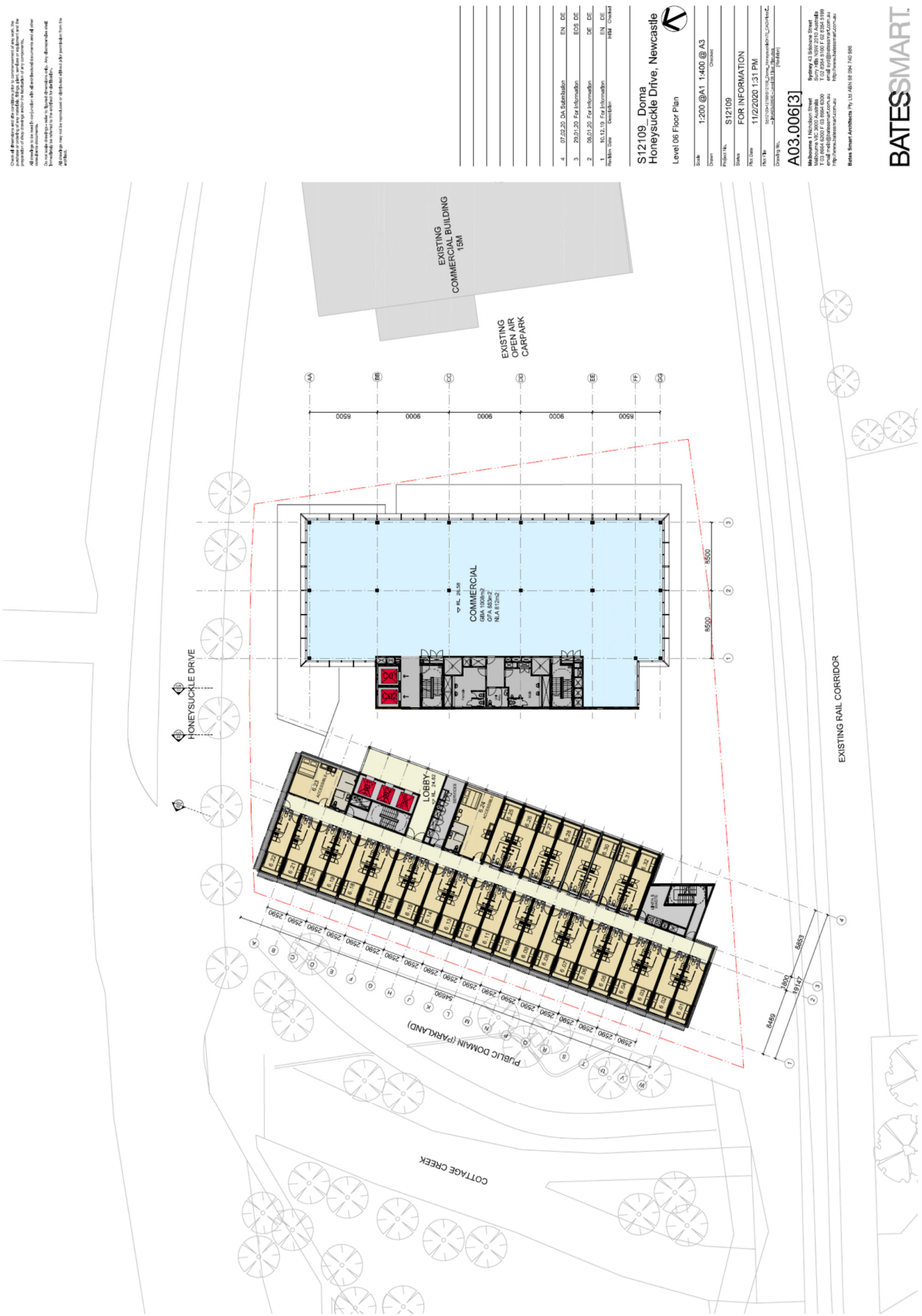
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HONEYSUCKLE DRIVE
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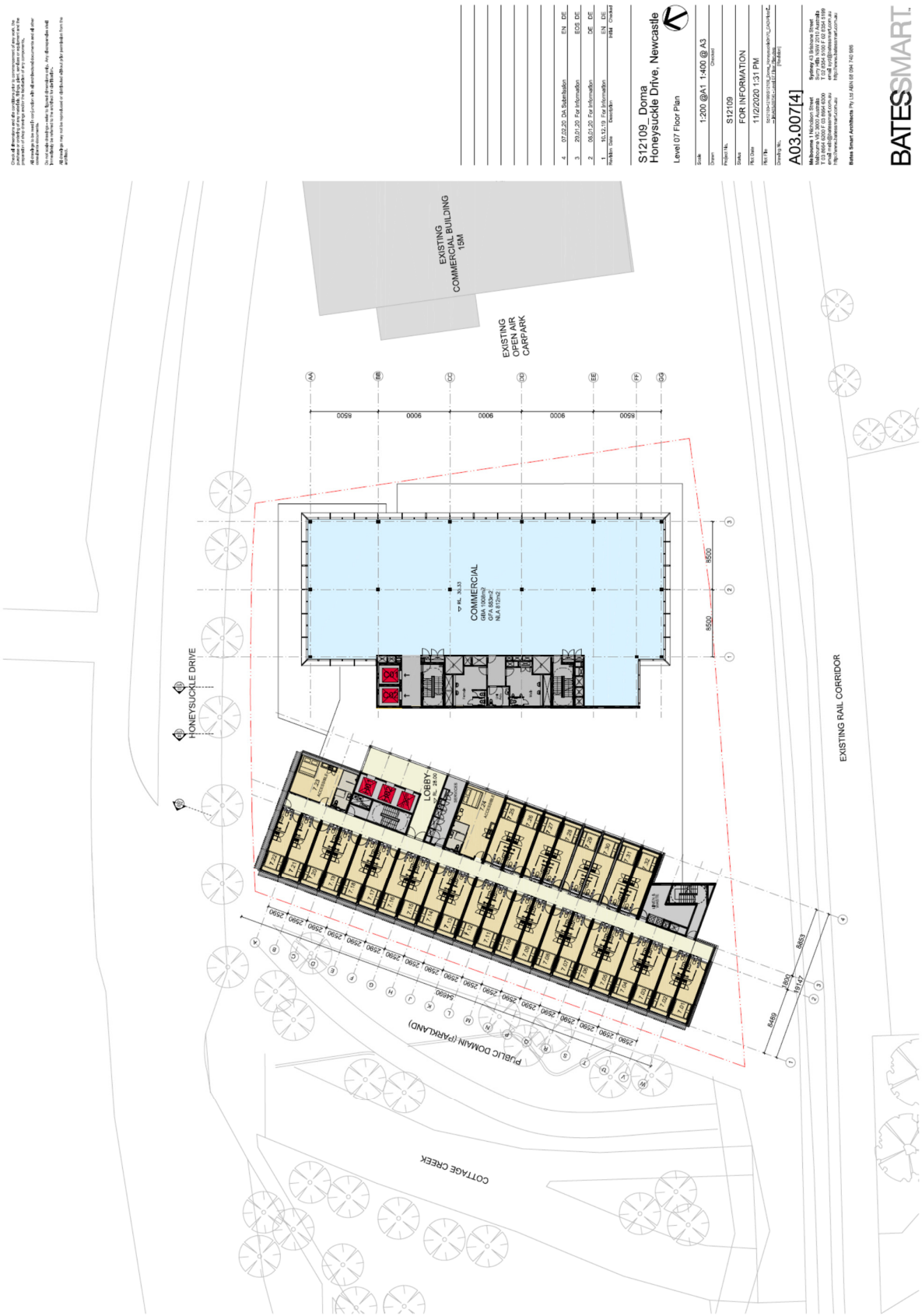
COTTAGE CREEK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Level 07 Floor Plan
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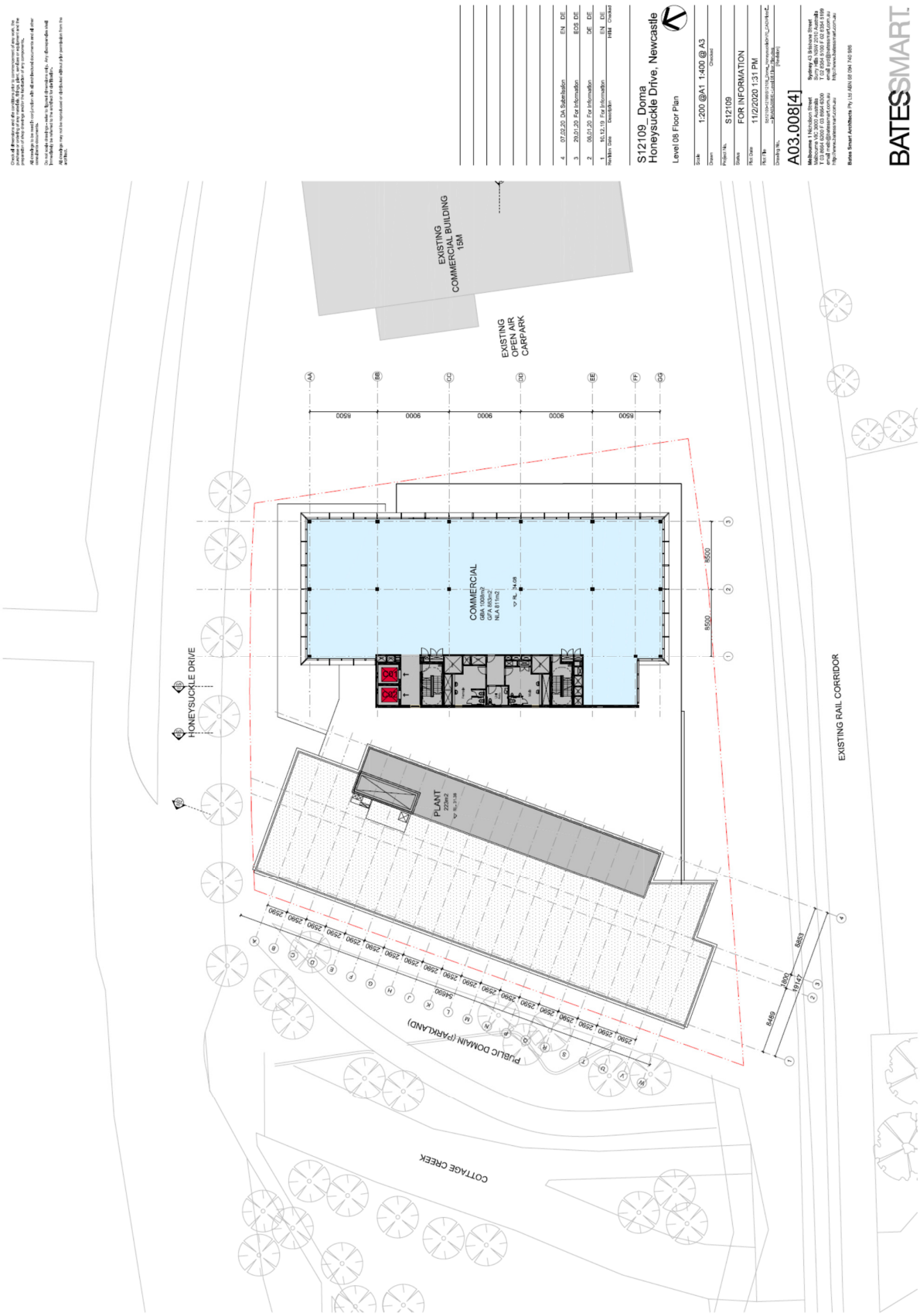
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Honeysuckle Drive, Newcastle
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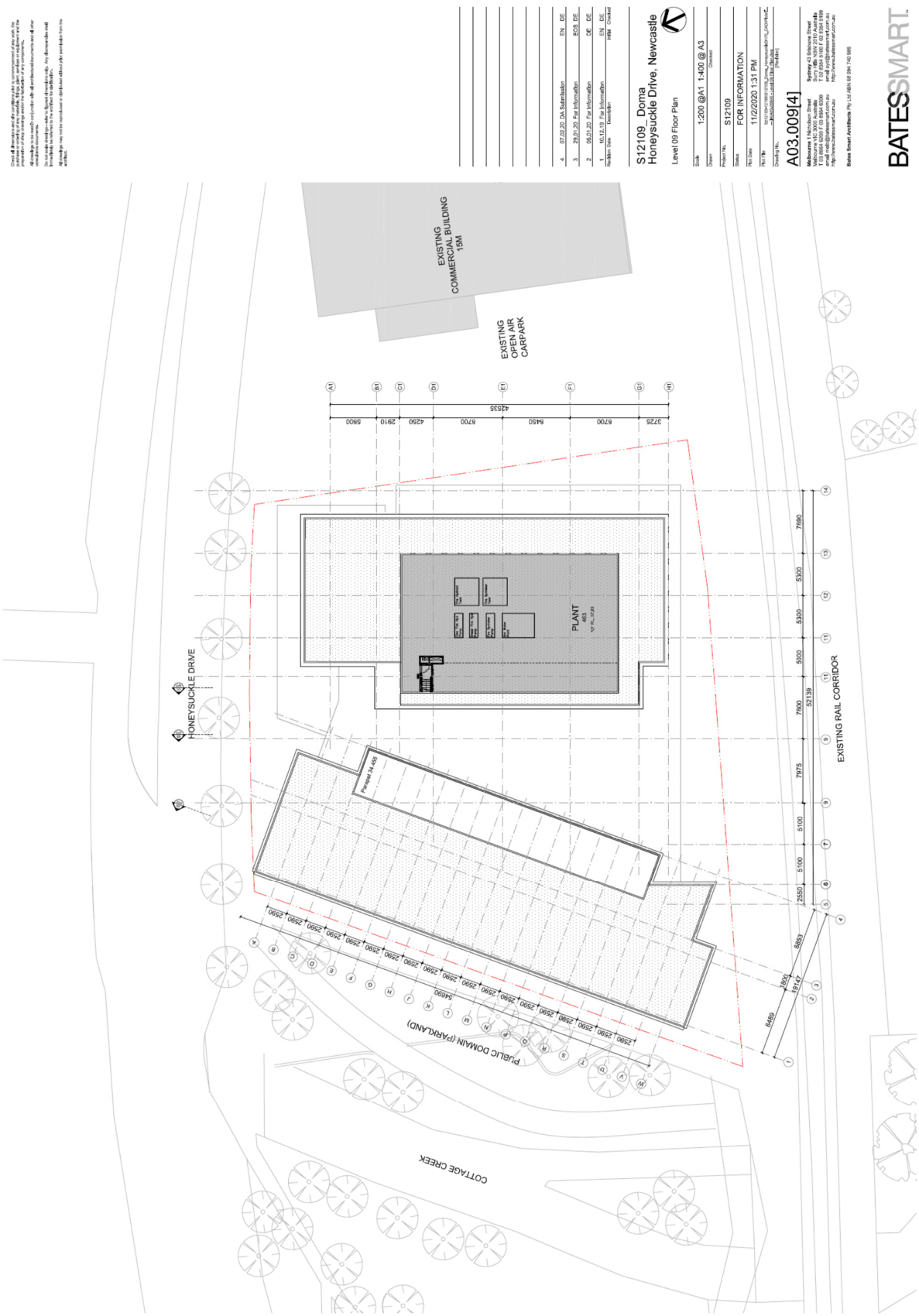
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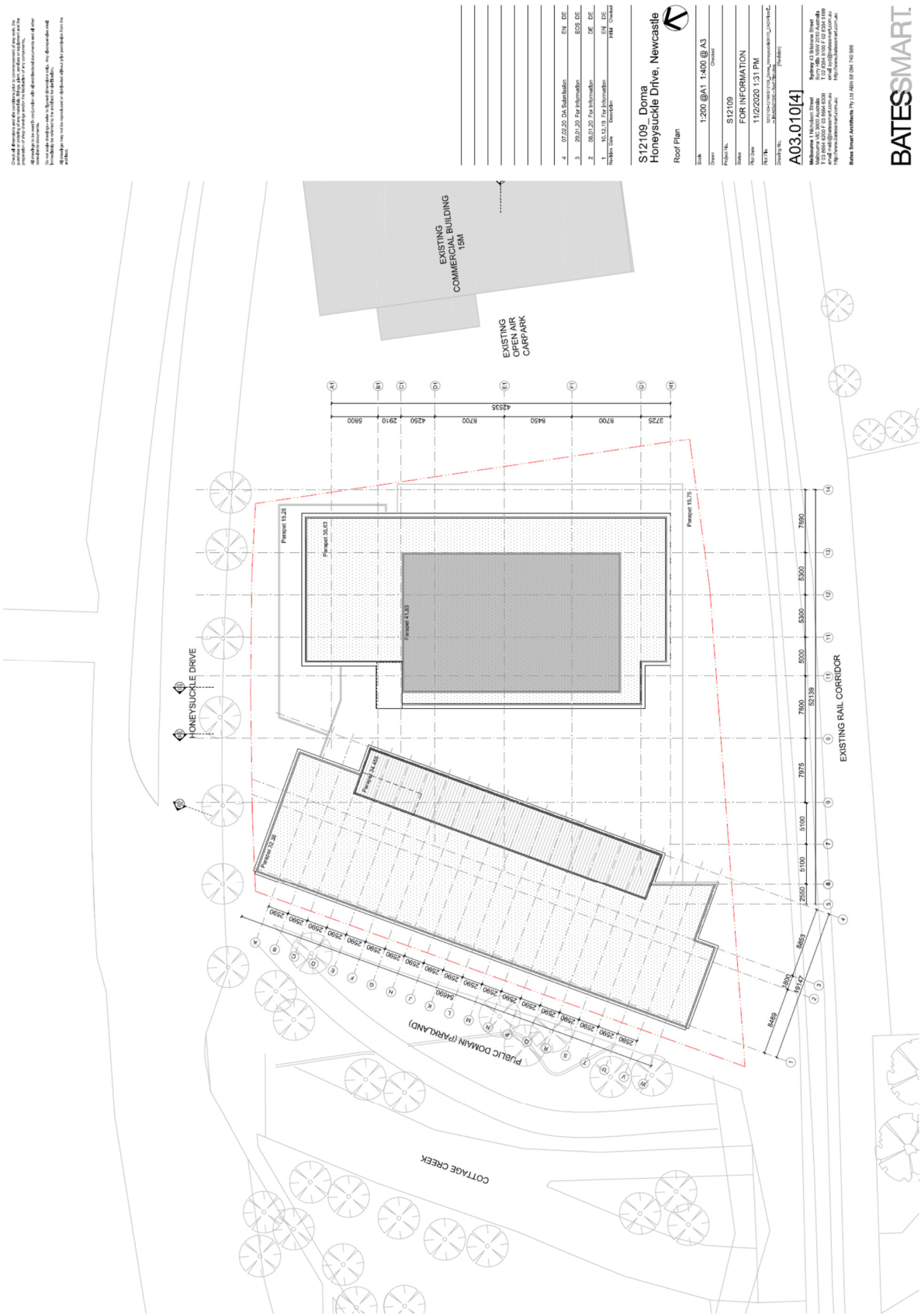
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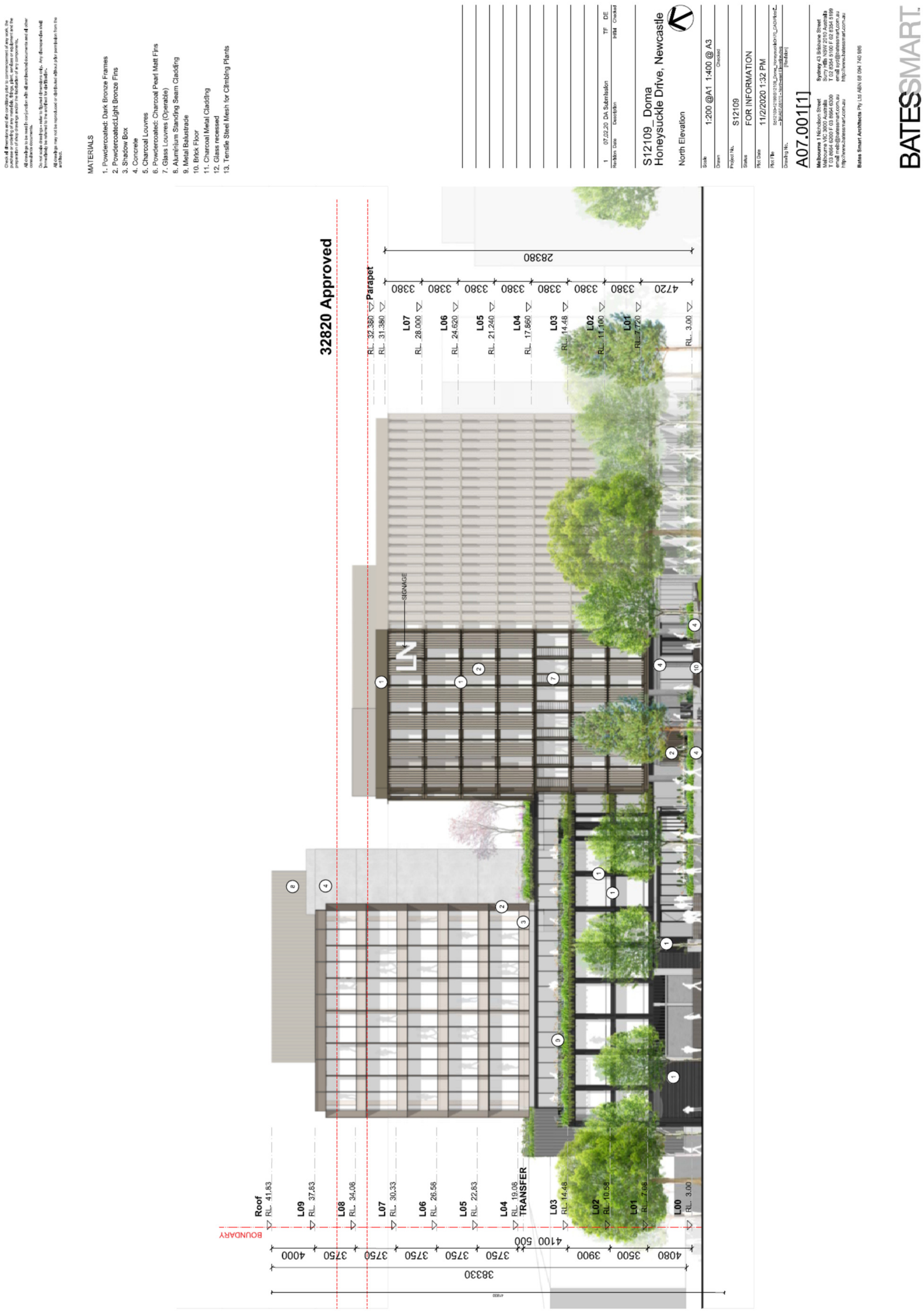
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9. Metal Balustrade
10. Brick Floor
11. Charcoal Metal Cladding
12. Glass recessed
13. Tensile Steel Mesh for Climbing Plants
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FOR INFORMATION
11/2/2020 1:32 PM
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9. Metal Balustrade
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12. Glass recessed
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32820 Approved
30000 LEP
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Honeysuckle Drive, Newcastle
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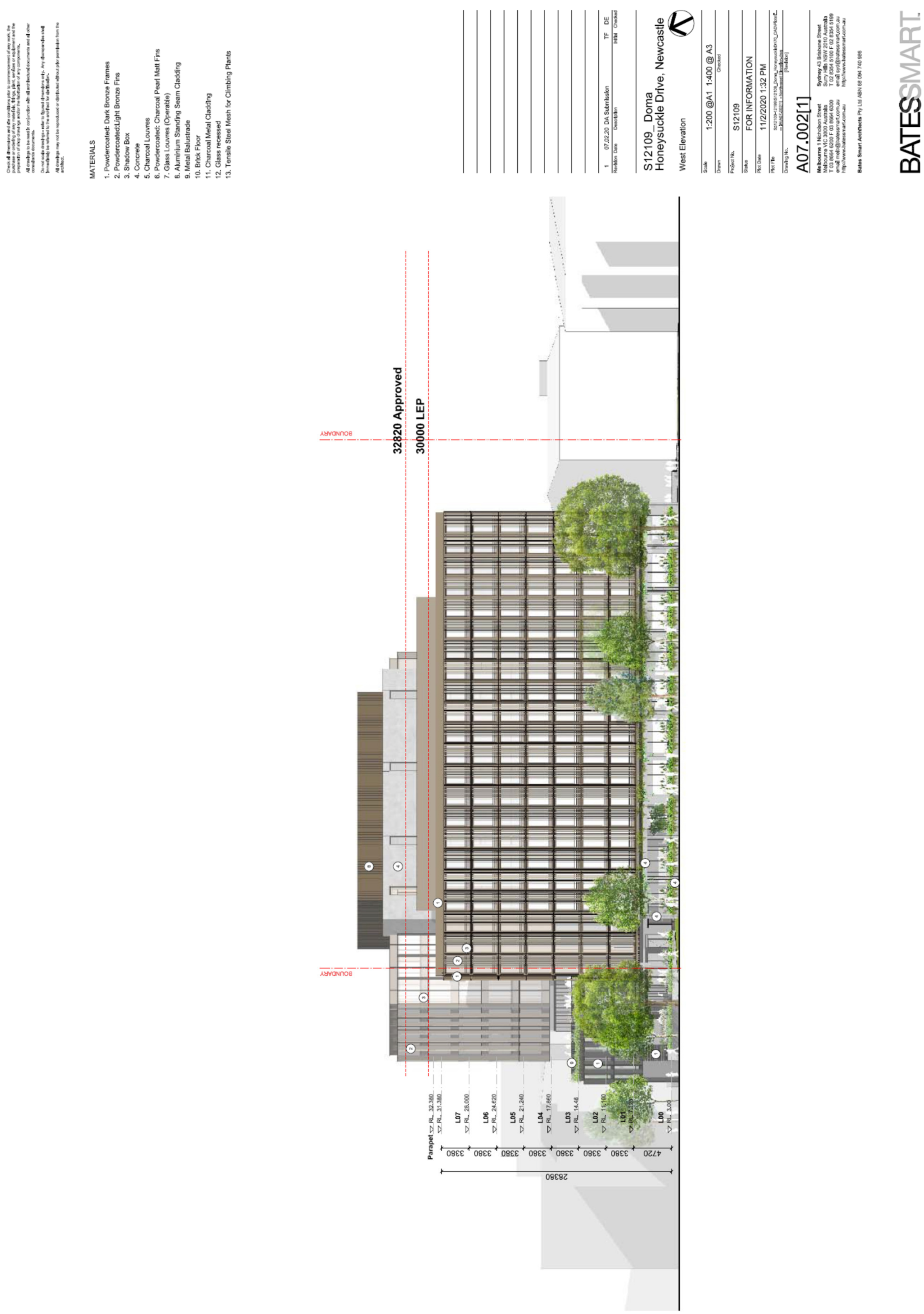
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32820 Approved
30000 LEP
BOUNDARY
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Honeysuckle Drive, Newcastle
West Elevation
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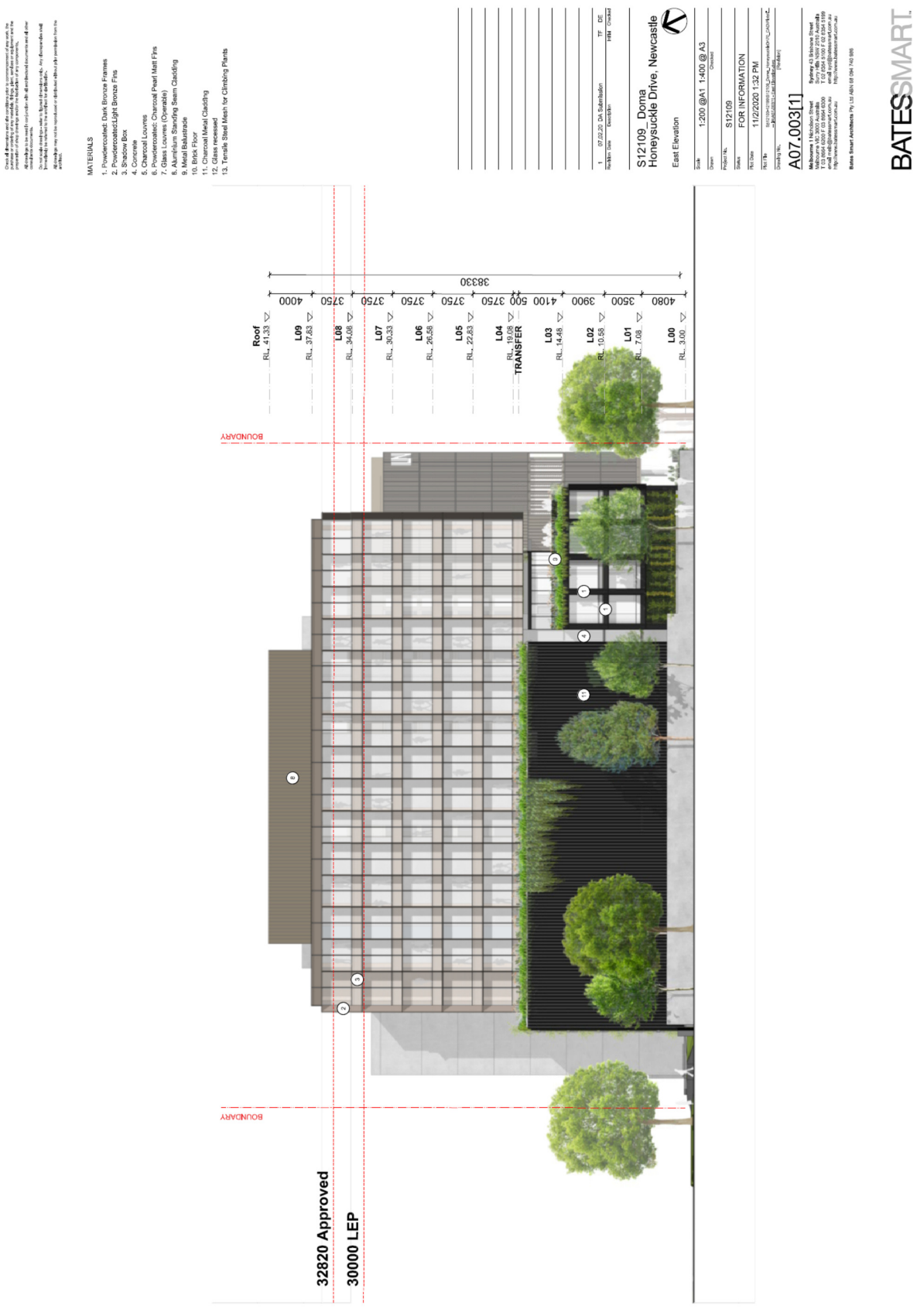
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Honeysuckle Drive, Newcastle
East Elevation
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3750
3750
3750
3750
500
4100
3900
3500
4080
Roof
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L09
RL 37.83
L08
RL 34.08
L07
RL 30.33
L06
RL 26.58
L05
RL 22.83
L04
RL 19.08
TRANSFER
L03
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L00
RL 3.00
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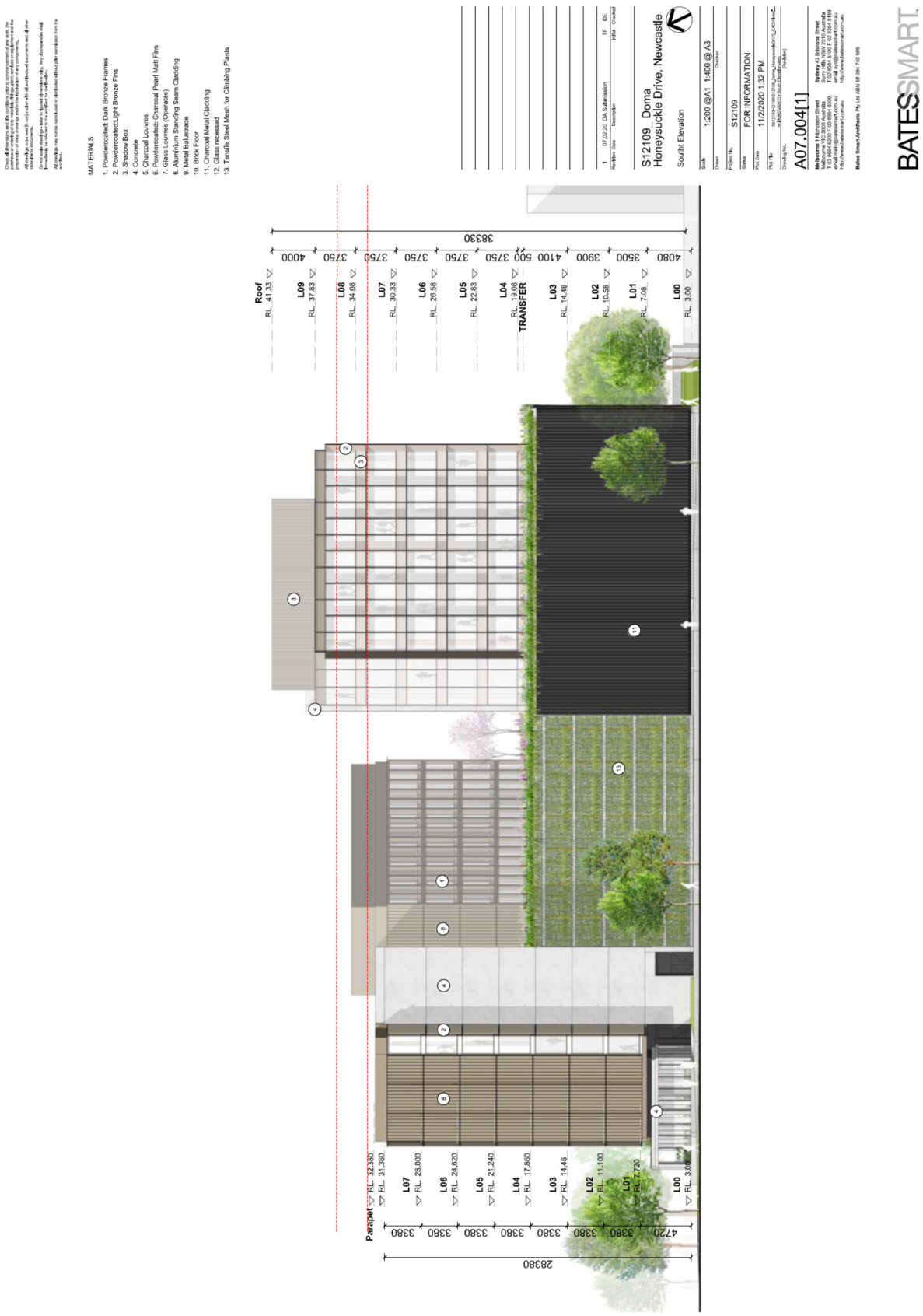
BOUNDARY
32820 Approved
30000 LEP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8. Aluminium Standing Seam Cladding
9. Metal Balustrade
10. Brick Floor
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S12109_ Doma
Honeysuckle Drive, Newcastle
South Elevation
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S12109
FOR INFORMATION
11/2/2020 1:32 PM
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28380

MATERIALS

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4. Concrete
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6. Powdercoated: Charcoal Pearl Matt Fins
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8. Aluminium Standing Seam Cladding
9. Metal Balustrade
10. Brick Floor
11. Charcoal Metal Cladding
12. Glass recessed
13. Tensile Steel Mesh for Climbing Plants

Revision	Date	Description	Initial	Checked
1	07.02.20	DA Submission	TF	DE

S12109_ Doma
Honeysuckle Drive, Newcastle

West Commercial Elevation

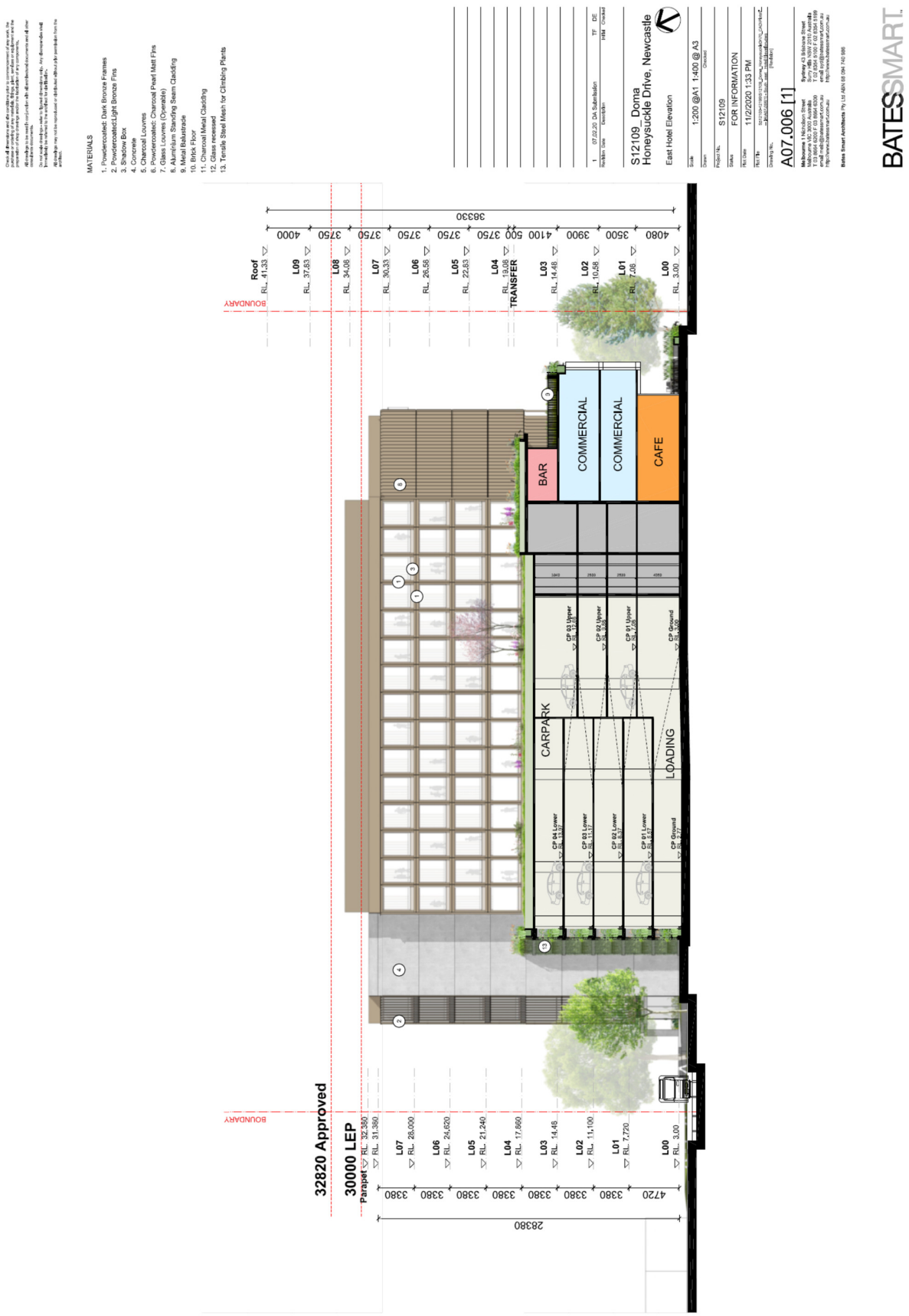
Scale	1:200 @A1 1:400 @ A3
Project No.	S12109
Status	FOR INFORMATION
Plot Date	11/2/2020 1:32 PM
Drawing No.	A07.005[1]

Melbourne 1 Nicholson Street Melbourne VIC 3000 Australia T 03 8664 6200 F 03 8664 6300 email melb@batessmart.com.au http://www.batessmart.com.au

Sydney 43 Brisbane Street Surry Hills NSW 2010 Australia T 02 8354 5100 F 02 8354 5199 email syd@batessmart.com.au http://www.batessmart.com.au

Bates Smart Architects Pty Ltd ABN 68 094 740 986

BATESSMART.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7. Glass Louvres (Operable)
8. Aluminium Standing Seam Cladding
9. Metal Balustrade
10. Brick Floor
11. Charcoal Metal Cladding
12. Glass Balustrade
13. Tensile Steel Mesh for Climbing Plants
S12109_ Doma
Honeysuckle Drive, Newcastle
East Hotel Elevation
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S12109
FOR INFORMATION
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L04 RL. 19,08
TRANSFER
L03 RL. 14,48
L02 RL. 10,58
L01 RL. 7,06
L00 RL. 3,00
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3900
4100
500
3750
4000
BAR
COMMERCIAL
COMMERCIAL
CAFE
CARPARK
LOADING
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CP 02 Upper
CP 01 Upper
CP Ground
CP 04 Lower
CP 03 Lower
CP 02 Lower
CP 01 Lower
CP Ground
32820 Approved
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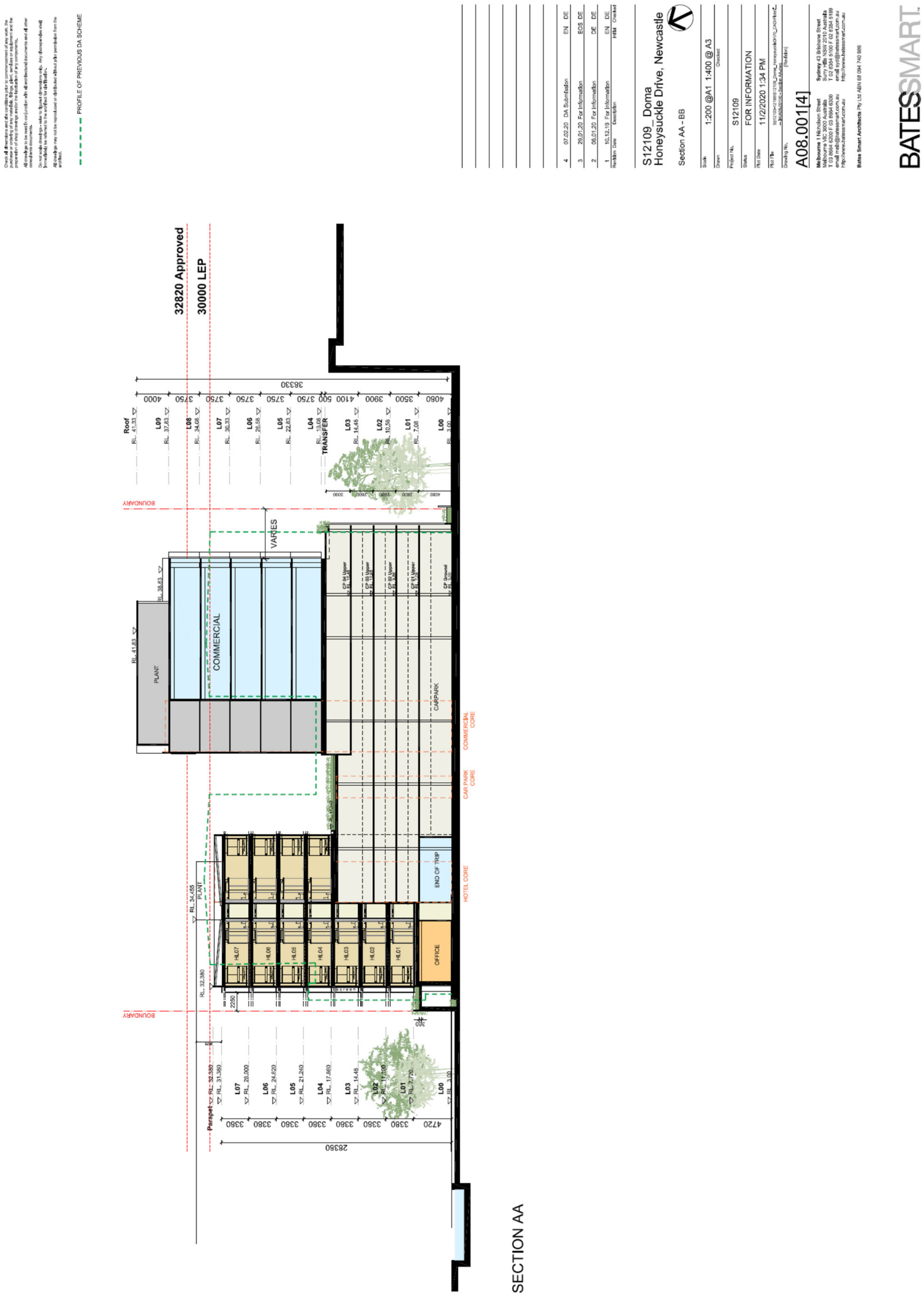
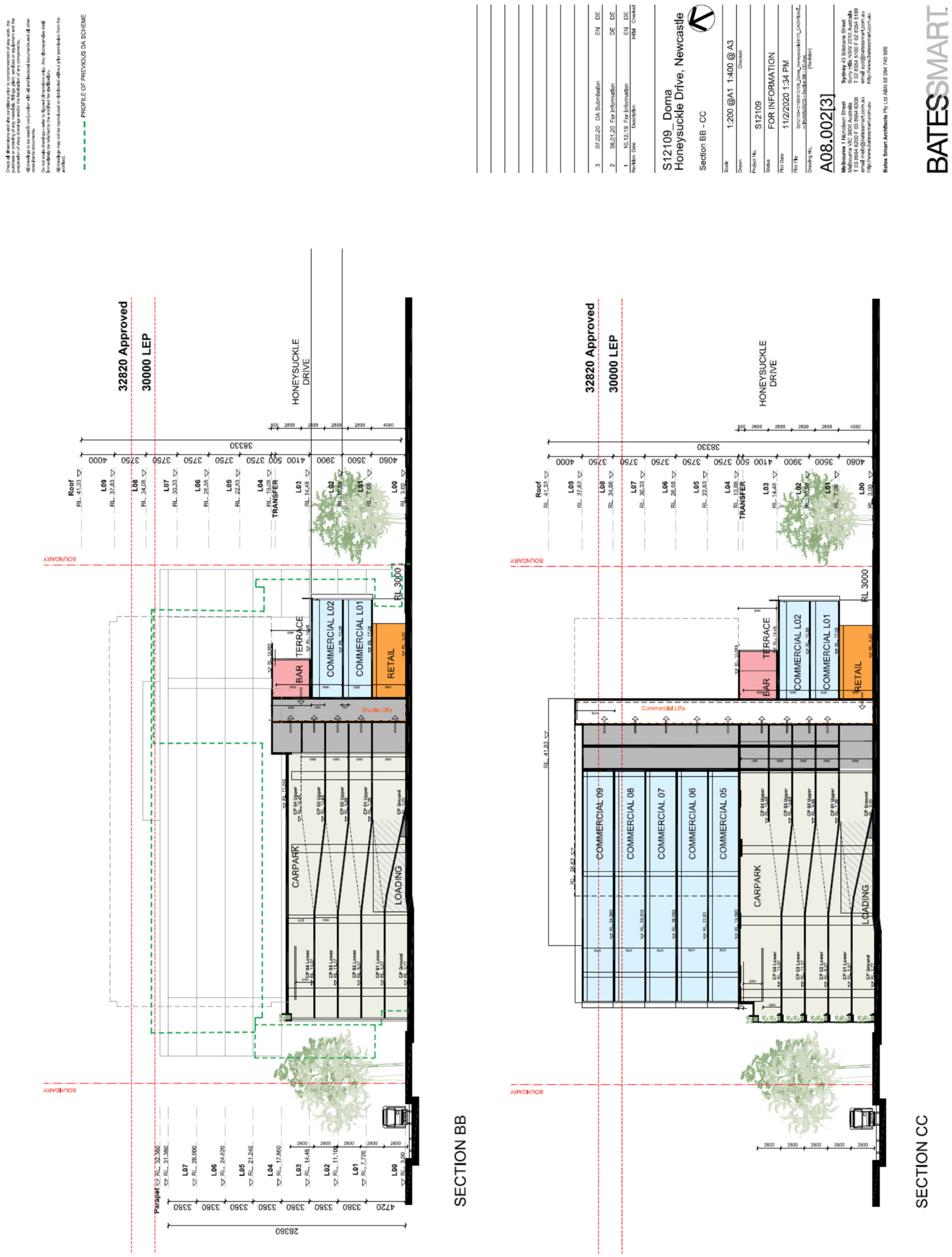
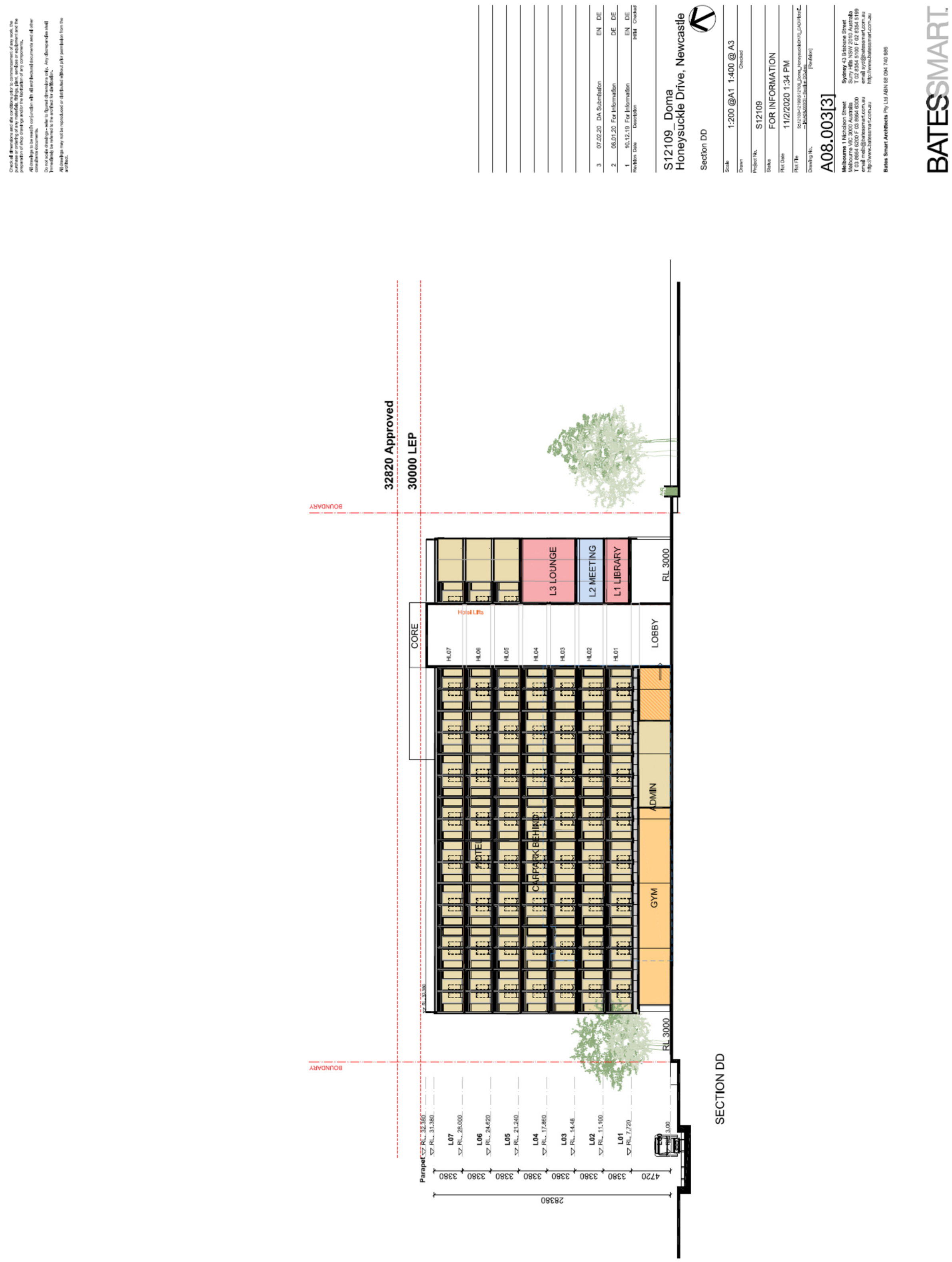
L01 RL. 7,720
L00 RL. 3,00
28380
4720
3380

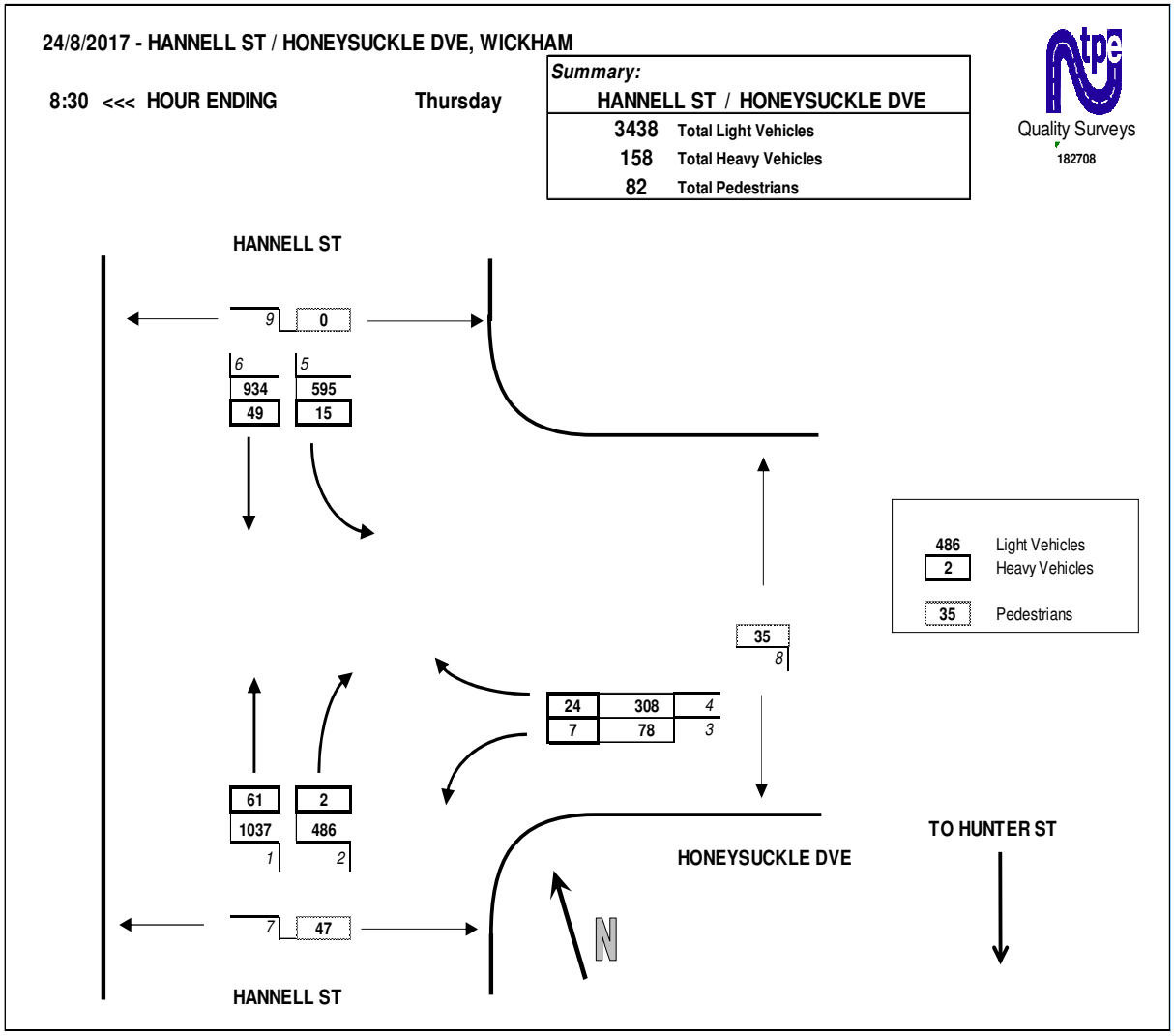

S12109_Doma
Honeysuckle Drive, Newcastle
Section AA - BB
1:200 @A1 1:400 @ A3
S12109
FOR INFORMATION
11/2/2020 1:34 PM
A08.001[4]
BATESSMART
PROFILE OF PREVIOUS DA SCHEME
32820 Approved
30000 LEP
COMMERCIAL
CARPARK
PLANT
OFFICE
END OF TRIP
HOTEL CORE
CAR PARK CORE
COMMERCIAL CORE
BOUNDARY
TRANSFER
SECTION AA

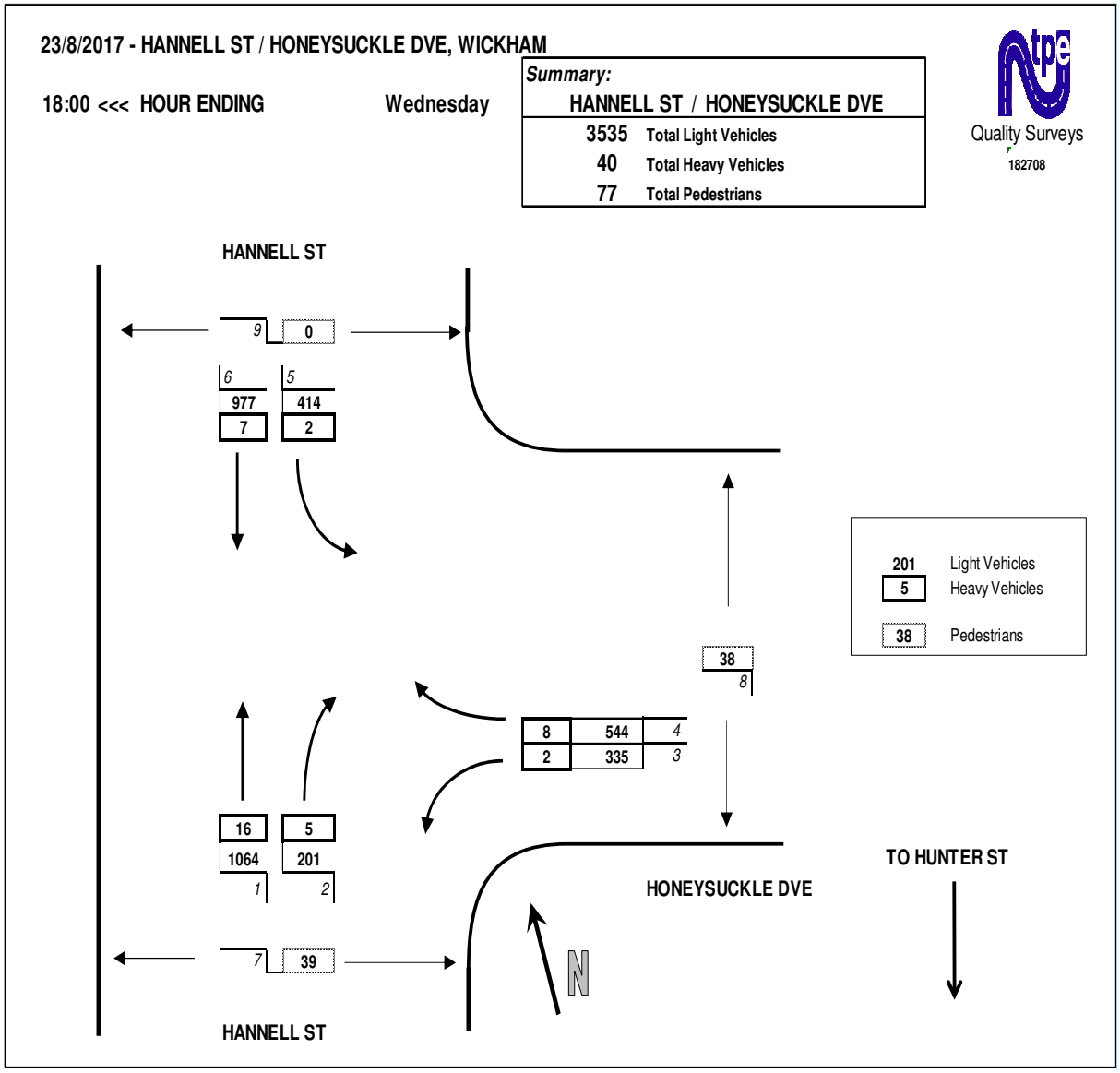

S12109_Doma
Honeysuckle Drive, Newcastle
Section BB - CC
1:200 @A1 1:400 @ A3
S12109
FOR INFORMATION
11/2/2020 1:34 PM
A08.002[3]
BATESSMART
32820 Approved
30000 LEP
HONEYSUCKLE DRIVE
COMMERCIAL L02
COMMERCIAL L01
TERRACE
BAR
RETAIL
CARPARK
LOADING
COMMERCIAL 09
COMMERCIAL 08
COMMERCIAL 07
COMMERCIAL 06
COMMERCIAL 05
SECTION BB
SECTION CC

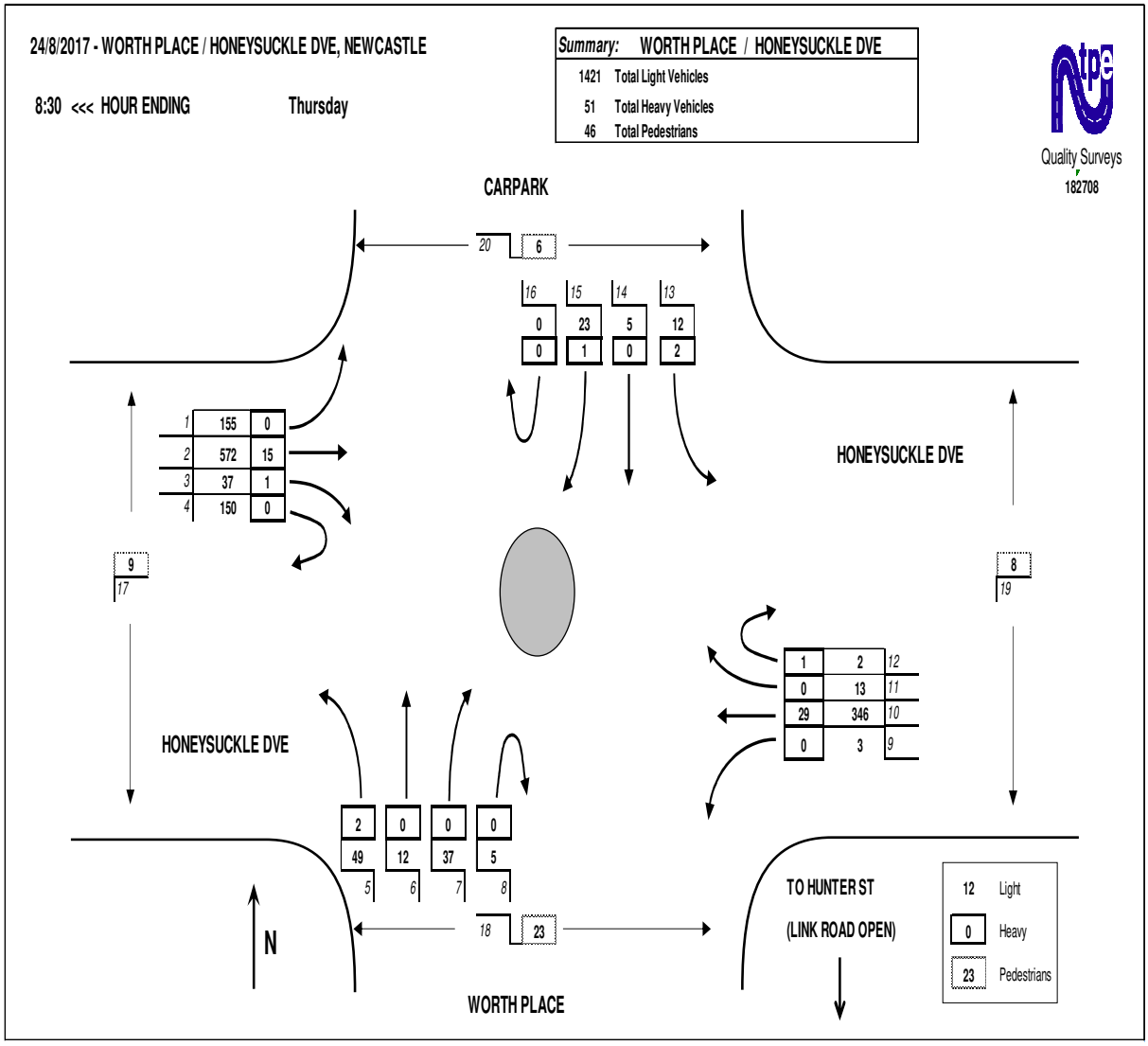


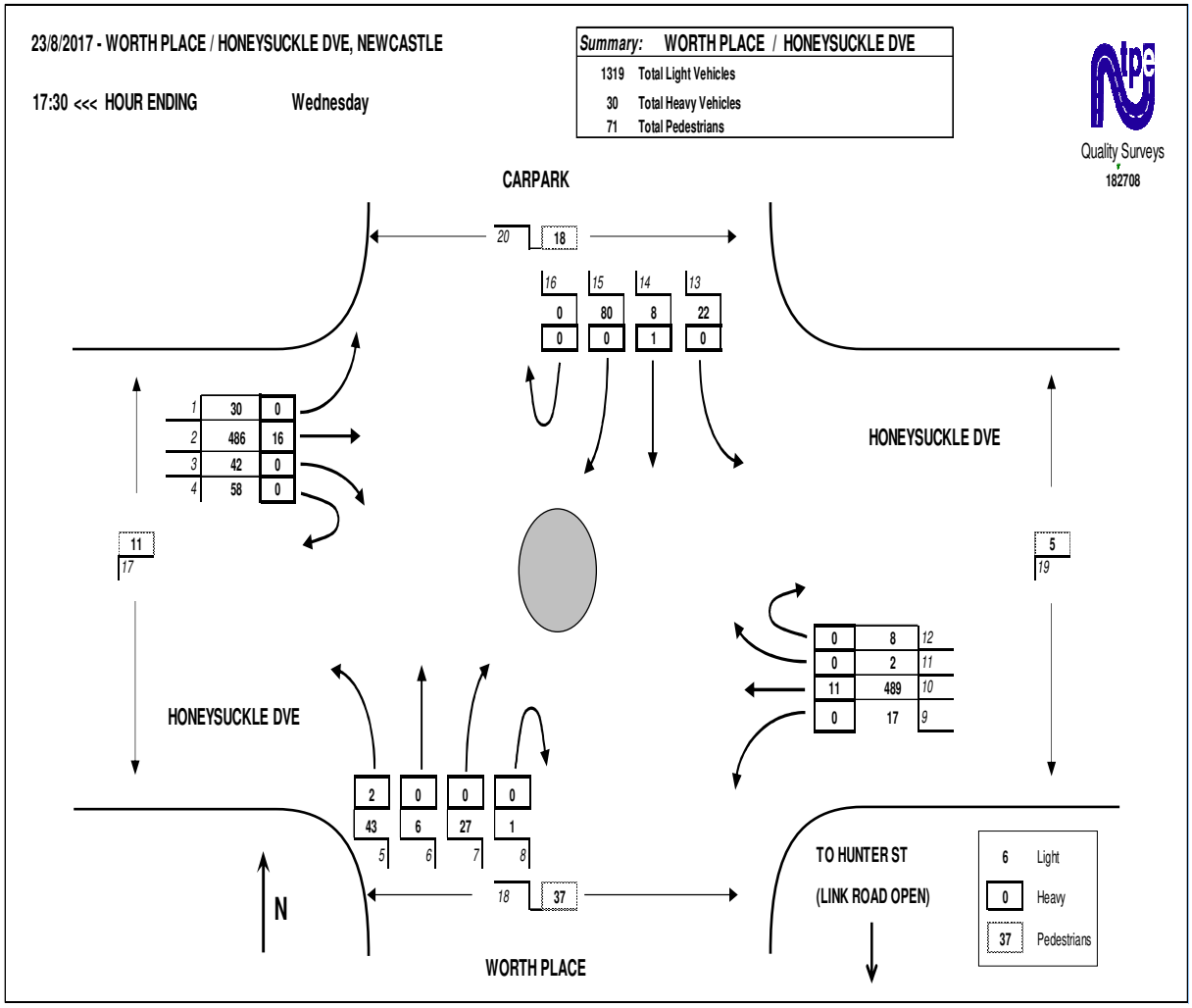
32820 Approved
30000 LEP
BOUNDARY
CORE
Hotel Lifts
L3 LOUNGE
L2 MEETING
L1 LIBRARY
LOBBY
RL 3000
HOTEL
CARPARK BEHIND
ADMIN
GYM
Parapet
L07
L06
L05
L04
L03
L02
L01
3380
4720
28380
SECTION DD
S12109_ Doma
Honeysuckle Drive, Newcastle
Section DD
1:200 @A1 1:400 @ A3
S12109
FOR INFORMATION
11/2/2020 1:34 PM
A08.003[3]
3 07.02.20 DA Submission
2 06.01.20 For Information
1 10.12.19 For Information
BATESSMART.

ATTACHMENT B
TRAFFIC COUNT DATA


24/8/2017 - HANNELL ST / HONEYSUCKLE DVE, WICKHAM
8:30 <<< HOUR ENDING
Thursday
Summary:
HANNELL ST / HONEYSUCKLE DVE
3438 Total Light Vehicles
158 Total Heavy Vehicles
82 Total Pedestrians
Quality Surveys
182708
HANNELL ST
9
0
6
934
49
5
595
15
35
8
24
308
4
7
78
3
61
1037
1
2
486
2
7
47
HANNELL ST
HONEYSUCKLE DVE
TO HUNTER ST
N
486 Light Vehicles
2 Heavy Vehicles
35 Pedestrians


23/8/2017 - HANNELL ST / HONEYSUCKLE DVE, WICKHAM
18:00 <<< HOUR ENDING
Wednesday
Summary:
HANNELL ST / HONEYSUCKLE DVE
3535 Total Light Vehicles
40 Total Heavy Vehicles
77 Total Pedestrians
Quality Surveys
182708
HANNELL ST
9
0
6
977
7
5
414
2
201 Light Vehicles
5 Heavy Vehicles
38 Pedestrians
38
8
8
544
4
2
335
3
16
1064
1
5
201
2
HONEYSUCKLE DVE
TO HUNTER ST
7
39
HANNELL ST
N


24/8/2017 - WORTH PLACE / HONEYSUCKLE DVE, NEWCASTLE
8:30 <<< HOUR ENDING
Thursday
Summary: WORTH PLACE / HONEYSUCKLE DVE
1421 Total Light Vehicles
51 Total Heavy Vehicles
46 Total Pedestrians
Quality Surveys
182708
CARPARK
HONEYSUCKLE DVE
HONEYSUCKLE DVE
WORTH PLACE
TO HUNTER ST
(LINK ROAD OPEN)
N
12 Light
0 Heavy
23 Pedestrians


23/8/2017 - WORTH PLACE / HONEYSUCKLE DVE, NEWCASTLE
17:30 <<< HOUR ENDING
Wednesday
Summary: WORTH PLACE / HONEYSUCKLE DVE
1319 Total Light Vehicles
30 Total Heavy Vehicles
71 Total Pedestrians
Quality Surveys
182708
CARPARK
HONEYSUCKLE DVE
HONEYSUCKLE DVE
TO HUNTER ST
(LINK ROAD OPEN)
WORTH PLACE
N
6 Light
0 Heavy
37 Pedestrians

ATTACHMENT C
SIDRA SUMMARY TABLES

MOVEMENT SUMMARY

Site: 101 [2020AM]

Hannell Street / Honeysuckle Drive signals
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 71 seconds (Site Practical Cycle Time)
Design Life Analysis (Final Year): Results for 3 years

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Stewart Avenue												
2	T1	1227	5.6	0.890	34.8	LOS C	25.5	187.0	1.00	1.10	1.31	25.9
3	R2	545	0.4	0.891	41.7	LOS C	14.7	103.1	0.98	0.95	1.26	29.6
Approach		1772	4.0	0.891	36.9	LOS C	25.5	187.0	0.99	1.06	1.29	27.3
East: Honeysuckle Drive												
4	L2	95	8.2	0.116	17.2	LOS B	1.9	13.9	0.60	0.71	0.60	40.8
6	R2	371	7.2	0.621	37.0	LOS C	6.3	47.1	0.98	0.83	1.02	32.2
Approach		466	7.4	0.621	33.0	LOS C	6.3	47.1	0.90	0.80	0.93	33.5
North: Hannell Street												
7	L2	681	2.5	0.602	14.5	LOS A	14.3	102.4	0.65	0.78	0.65	44.9
8	T1	1098	5.0	0.794	25.4	LOS B	18.8	137.5	0.96	0.92	1.07	30.6
Approach		1779	4.0	0.794	21.2	LOS B	18.8	137.5	0.84	0.87	0.91	36.6
All Vehicles		4017	4.4	0.891	29.5	LOS C	25.5	187.0	0.91	0.94	1.08	31.8

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	29.8	LOS C	0.1	0.1	0.92	0.92
P2	East Full Crossing	39	25.4	LOS C	0.1	0.1	0.85	0.85
All Pedestrians		92	27.9	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.

Organisation: INTERSECT TRAFFIC PTY LTD | Processed: Monday, 10 February 2020 10:28:41 AM
Project: C:\Work Documents\Projects\2020\2020.016 - 42 Honeysuckle Drive amended report\Hannell_Honeysuckle.sip8

MOVEMENT SUMMARY

Site: 101 [2020PM]

Hannell Street / Honeysuckle Drive signals
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 52 seconds (Site Practical Cycle Time)
Design Life Analysis (Final Year): Results for 3 years

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Stewart Avenue												
2	T1	1206	1.5	0.902	30.4	LOS C	20.1	142.7	1.00	1.16	1.47	27.9
3	R2	230	2.4	0.698	32.0	LOS C	4.1	29.0	0.99	0.83	1.12	33.3
Approach		1437	1.6	0.902	30.7	LOS C	20.1	142.7	1.00	1.11	1.42	29.0
East: Honeysuckle Drive												
4	L2	376	0.6	0.481	17.5	LOS B	7.1	49.8	0.77	0.79	0.77	41.0
6	R2	617	1.4	0.872	36.4	LOS C	9.6	68.0	1.00	1.06	1.52	32.7
Approach		993	1.1	0.872	29.3	LOS C	9.6	68.0	0.91	0.96	1.23	35.3
North: Hannell Street												
7	L2	465	0.5	0.384	10.1	LOS A	5.5	38.6	0.49	0.71	0.49	48.4
8	T1	1099	0.7	0.818	21.9	LOS B	15.1	106.4	0.97	0.99	1.20	32.8
Approach		1564	0.6	0.818	18.4	LOS B	15.1	106.4	0.83	0.90	0.99	38.0
All Vehicles		3993	1.1	0.902	25.5	LOS B	20.1	142.7	0.91	0.99	1.20	33.9

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	20.4	LOS C	0.1	0.1	0.89	0.89
P2	East Full Crossing	39	20.4	LOS C	0.1	0.1	0.89	0.89
All Pedestrians		92	20.4	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.

Organisation: INTERSECT TRAFFIC PTY LTD | Processed: Monday, 10 February 2020 10:28:44 AM
Project: C:\Work Documents\Projects\2020\2020.016 - 42 Honeysuckle Drive amended report\Hannell_Honeysuckle.sip8

MOVEMENT SUMMARY

Site: 101 [2020AM + development]

Hannell Street / Honeysuckle Drive signals
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 69 seconds (Site Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Stewart Avenue												
2	T1	1226	5.2	0.897	35.5	LOS C	25.4	186.0	1.00	1.12	1.34	25.6
3	R2	555	0.4	0.881	39.8	LOS C	14.3	100.5	0.97	0.94	1.23	30.2
Approach		1781	3.7	0.897	36.9	LOS C	25.4	186.0	0.99	1.07	1.31	27.3
East: Honeysuckle Drive												
4	L2	114	6.5	0.138	17.0	LOS B	2.2	16.2	0.60	0.71	0.60	41.0
6	R2	448	5.6	0.788	40.7	LOS C	8.2	60.3	1.00	0.93	1.25	30.9
Approach		562	5.8	0.788	35.9	LOS C	8.2	60.3	0.92	0.89	1.12	32.4
North: Hannell Street												
7	L2	728	2.2	0.654	15.1	LOS B	16.0	114.0	0.70	0.80	0.70	44.4
8	T1	1098	4.7	0.801	25.4	LOS B	18.6	135.6	0.96	0.94	1.09	30.6
Approach		1826	3.7	0.801	21.3	LOS B	18.6	135.6	0.86	0.88	0.94	36.7
All Vehicles		4169	4.0	0.897	29.9	LOS C	25.4	186.0	0.92	0.96	1.12	31.7

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
P1	South Full Crossing	49	28.8	LOS C	0.1	0.1	0.91	0.91
P2	East Full Crossing	37	25.3	LOS C	0.1	0.1	0.86	0.86
All Pedestrians		86	27.3	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.

Organisation: INTERSECT TRAFFIC PTY LTD | Processed: Monday, 10 February 2020 10:28:39 AM
Project: C:\Work Documents\Projects\2020\2020.016 - 42 Honeysuckle Drive amended report\Hannell_Honeysuckle.sip8

MOVEMENT SUMMARY

Site: 101 [2020PM + development]

Hannell Street / Honeysuckle Drive signals
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 55 seconds (Site Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Stewart Avenue												
2	T1	1206	1.4	0.904	31.8	LOS C	21.1	149.7	1.00	1.16	1.46	27.2
3	R2	242	2.2	0.776	34.7	LOS C	4.7	33.4	0.99	0.86	1.21	32.2
Approach		1448	1.5	0.904	32.3	LOS C	21.1	149.7	1.00	1.11	1.42	28.3
East: Honeysuckle Drive												
4	L2	396	0.5	0.490	17.7	LOS B	7.8	54.6	0.76	0.80	0.76	40.9
6	R2	695	1.2	0.865	36.5	LOS C	11.2	79.3	1.00	1.03	1.44	32.7
Approach		1091	1.0	0.865	29.7	LOS C	11.2	79.3	0.91	0.95	1.19	35.1
North: Hannell Street												
7	L2	512	0.4	0.411	10.0	LOS A	6.2	43.8	0.49	0.71	0.49	48.5
8	T1	1099	0.7	0.819	22.9	LOS B	15.9	111.8	0.98	0.98	1.19	32.1
Approach		1611	0.6	0.819	18.8	LOS B	15.9	111.8	0.82	0.90	0.97	37.8
All Vehicles		4149	1.0	0.904	26.4	LOS B	21.1	149.7	0.91	0.98	1.18	33.6

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
P1	South Full Crossing	49	21.9	LOS C	0.1	0.1	0.89	0.89
P2	East Full Crossing	37	21.9	LOS C	0.1	0.1	0.89	0.89
All Pedestrians		86	21.9	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.

Organisation: INTERSECT TRAFFIC PTY LTD | Processed: Monday, 10 February 2020 10:28:43 AM
Project: C:\Work Documents\Projects\2020\2020.016 - 42 Honeysuckle Drive amended report\Hannell_Honeysuckle.sip8

MOVEMENT SUMMARY

Site: 101 [2030AM + development]

Hannell Street / Honeysuckle Drive signals
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 150 seconds (Site Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Stewart Avenue												
2	T1	1495	4.3	0.953	72.0	LOS F	66.0	478.9	1.00	1.10	1.23	16.1
3	R2	676	0.3	0.930	72.0	LOS F	34.3	240.7	0.96	0.93	1.13	21.8
Approach		2171	3.1	0.953	72.0	LOS F	66.0	478.9	0.99	1.04	1.20	18.1
East: Honeysuckle Drive												
4	L2	142	5.2	0.157	26.4	LOS B	5.4	39.8	0.57	0.72	0.57	35.6
6	R2	529	4.8	0.925	89.4	LOS F	23.7	172.6	1.00	0.99	1.35	19.9
Approach		672	4.9	0.925	76.1	LOS F	23.7	172.6	0.91	0.94	1.19	21.8
North: Hannell Street												
7	L2	728	2.2	0.705	22.0	LOS B	30.6	218.2	0.64	0.78	0.64	40.0
8	T1	877	5.9	0.565	35.7	LOS C	24.2	178.0	0.82	0.73	0.82	25.5
Approach		1605	4.2	0.705	29.5	LOS C	30.6	218.2	0.74	0.75	0.74	32.4
All Vehicles		4447	3.7	0.953	57.3	LOS E	66.0	478.9	0.89	0.92	1.03	22.5

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	49	63.6	LOS F	0.2	0.2	0.92	0.92
P2	East Full Crossing	37	35.4	LOS D	0.1	0.1	0.69	0.69
All Pedestrians		86	51.6	LOS E			0.82	0.82

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.

Organisation: INTERSECT TRAFFIC PTY LTD | Processed: Monday, 10 February 2020 10:28:40 AM
Project: C:\Work Documents\Projects\2020\2020.016 - 42 Honeysuckle Drive amended report\Hannell_Honeysuckle.sip8

MOVEMENT SUMMARY

Site: 101 [2030PM + development]

Hannell Street / Honeysuckle Drive signals
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 150 seconds (Site Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Stewart Avenue												
2	T1	1471	1.1	0.934	64.7	LOS E	61.3	433.3	1.00	1.05	1.18	17.4
3	R2	292	1.8	0.953	93.2	LOS F	16.6	118.1	1.00	0.94	1.30	18.4
Approach		1762	1.3	0.953	69.5	LOS E	61.3	433.3	1.00	1.04	1.20	17.6
East: Honeysuckle Drive												
4	L2	478	0.4	0.756	30.8	LOS C	22.5	158.1	0.71	0.79	0.71	33.7
6	R2	834	1.0	0.968	91.4	LOS F	41.9	296.0	0.89	1.01	1.29	19.7
Approach		1312	0.8	0.968	69.3	LOS E	41.9	296.0	0.82	0.93	1.08	23.0
North: Hannell Street												
7	L2	614	0.3	0.407	9.7	LOS A	12.2	85.5	0.30	0.66	0.30	48.8
8	T1	1340	0.5	0.972	81.1	LOS F	71.5	502.9	0.96	1.12	1.28	14.7
Approach		1954	0.5	0.972	58.7	LOS E	71.5	502.9	0.75	0.97	0.97	21.3
All Vehicles		5027	0.8	0.972	65.2	LOS E	71.5	502.9	0.86	0.99	1.08	20.5

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	49	41.9	LOS E	0.2	0.2	0.75	0.75
P2	East Full Crossing	37	36.1	LOS D	0.1	0.1	0.69	0.69
All Pedestrians		86	39.4	LOS D			0.73	0.73

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

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