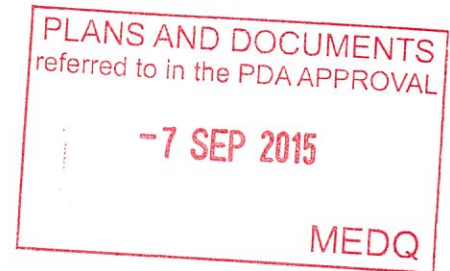


CITILINK RESIDENTIAL DEVELOPMENT TRAFFIC IMPACT ASSESSMENT



FOR

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1. INTRODUCTION

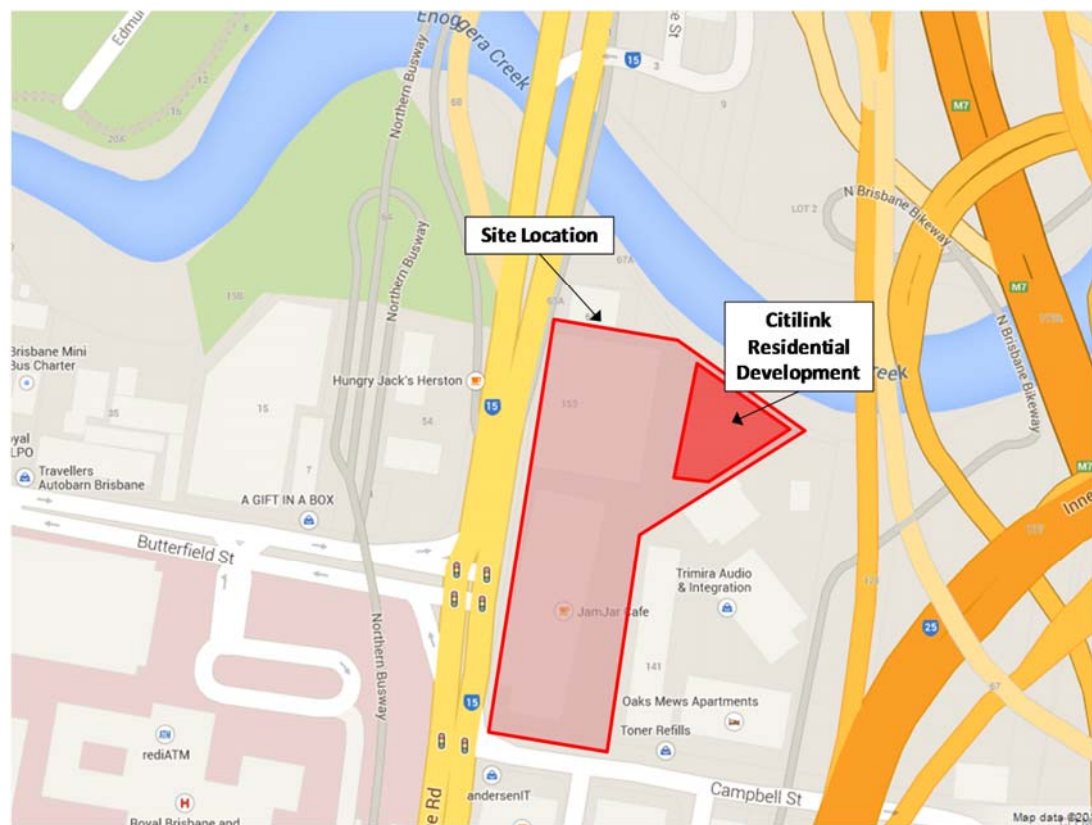
1.1 BACKGROUND

Bitzios Consulting was engaged by Sentinel Citilink Pty Ltd to undertake a traffic impact assessment for a proposed development located at 153 Campbell Street, Bowen Hills. The development consists of a 14 storey, short-term accommodation (residential) building with three levels of car parking occupying a triangular portion to the northeast of the site.

The existing site is occupied by the Citilink Business Centre consisting of two multi-storey buildings with office / commercial uses throughout (including a small café with frontage to Campbell Street). Access to the development is gained via Campbell Street which leads to a large underground car park beneath the buildings, and to a podium level with access to a number of parking spaces and small office / commercial tenancies. All vehicular access including servicing is gained via the Campbell Street access.

1.2 STUDY AREA

The location of the development site is shown below in Figure 1.1 detailing the entire site and the location of the Citilink Residential development to the northeast.



SOURCE: Google Maps

Figure 1.1: Location of Site

The development is located within Brisbane City Council's (BCC) *City Frame* and *Brisbane Central Traffic Area*. Under BCC's *City Plan* (2014), the development is located in area zoned as an Emerging Community.

Additionally, it is located within Bowen Hills Priority Development Area (PDA) and therefore subject to the planning requirements and restrictions as contained in the Bowen Hills Urban Development Area (UDA) Development Scheme developed by Economic Development Queensland (EDQ).

1.3 DEVELOPMENT DETAILS

A summary of the development is shown in Table 1.1, while detailed development plans (relevant to traffic) are attached in Appendix A.

Table 1.1: Development Details

Level	3 Bedroom Dual Key Unit	2 Bedroom Dual Key Unit	2 Bedroom + 2 Bath Unit	1 Bedroom + 1 Bath Unit	Car Parks ¹	Commercial ² (m ²)
Lower Ground	-	-	-	-	42	-
Upper Ground	-	-	-	-	23	73.7
1	-	-	-	-	44	-
2	1	2	4	7	-	-
3	1	2	4	7	-	-
4	1	2	4	7	-	-
5	1	2	4	7	-	-
6	1	2	4	7	-	-
7	1	2	4	7	-	-
8	1	2	4	7	-	-
9	1	2	4	7	-	-
10	1	2	4	7	-	-
11	1	2	4	7	-	-
12	1	2	4	7	-	-
TOTAL	11	22	44	77	109	73.7

¹Car parking numbers for upper ground floor include 14 resident spaces, three (3) visitor spaces, four(4) retail spaces and two (2) PWD spaces..

²Café area shown to include total seating area, separate back of house kitchen area consists of 16.5m².

The development also provides 124 bicycle parking spaces (100 resident bicycle spaces and 24 visitor bicycle spaces). Further, due to demolition requirements associated with the development, a number of existing commercial parking spaces are lost, yet additional spaces are proposed as part of the Citilink residential development to compensate any loss. The café / breakfast area is ancillary to the overall development and services the building tenants and is not expected to generate any trips or warrant any additional car parking.

1.4 SCOPE

The scope of this traffic impact assessment included the following:

- assessing the on-site parking requirements and provisions in accordance with EDQ's Bowen Hills UDA Development Scheme and BCC's *Transport, Access, Parking and Servicing (TAPS) Planning Scheme Policy (PSP)*;
- assessing the general manoeuvring and on-site servicing requirements for the development for typical private vehicles;
- assessing the refuse requirements associated with the development including refuse collection vehicle (RCV) access and manoeuvring requirements and impacts using AutoTURN software;
- determining the development's traffic generation and distribution onto the external road network;
- undertaking a qualitative assessment of the impacts from development-generated traffic on the external road network (including Bowen Bridge Road intersections) given the level of alternative transport modes available in the surrounding area and the likely reduction to typical vehicle trip rates;
- using SIDRA intersection analysis software to assess the site access for operational performance and undertaking a turn warrants assessment for the access; and
- assessment of public transport and active transport accessibility to / from site, considering its proximity to the *Royal Brisbane & Women's Hospital (RBWH)* Busway Station and North Brisbane Cycleway.

2. EXISTING CONDITIONS

2.1 SURROUNDING ROAD NETWORK

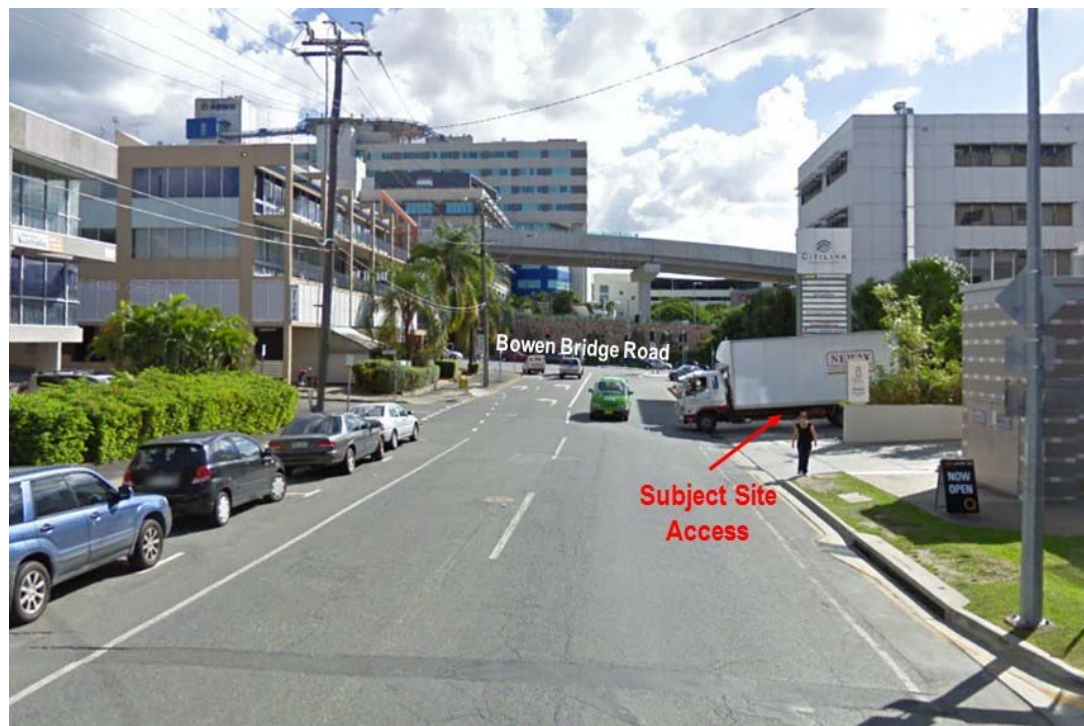
The site is located within a network of high capacity roads including Bowen Bridge Road to the west and the Airport Link and Inner City Bypass to the east. The development gains access to the network via Campbell Street which allows vehicles to connect to the wider road system. Table 2.1 below presents a summary of the key roads within the surrounding road network relevant to the development site.

Table 2.1: Road Hierarchy

Road Name	Jurisdiction	Hierarchy	No. of Lanes	Speed Limit	Notes
Campbell Street	BCC	Suburban Road	2 (two-way)	50km/hr	Southern frontage of the site. Provides access to the site and to the Brisbane North Bikeway. Forms a signalised T-intersection with Bowen Bridge Road with left turns out only (right turns out barred). Pedestrian path on both sides of road.
Bowen Bridge Road	BCC	Arterial	6 (two-way)	60km/hr	Western frontage of the site. Carries high volume of traffic north-south, becomes state-controlled Lutwyche Road to the north of bridge. Pedestrian path on both sides of road with multiple signalised intersections.
Walden Lane	BCC	Suburban Road	1 (one-way)	50km/hr	Exists opposite the site access (south of the site). Small, local access laneway forming a priority T-intersection with Campbell Street and Wren Street.
Wren Street	BCC	District Road	2 (two-way)	50km/hr	Located east of the site running southbound only between Campbell Street and O'Connell Terrace. Toll road providing convenient access to and from the airport.

SOURCE: Brisbane City Council Road Hierarchy Overlay Map

The following Figures show typical cross-sections of the roads described in Table 2.1 above within the vicinity of the site.



SOURCE: Google Streetview

Figure 2.1: Campbell Street (looking west towards Bowen Bridge Road)



SOURCE: Google Streetview

Figure 2.2: Bowen Bridge Road (looking south from Campbell Street)



SOURCE: Google Streetview

Figure 2.3: Walden Lane (looking south from Campbell Street)



SOURCE: Google Streetview

Figure 2.4: Wren Street (looking south from Campbell Street)

2.2 PUBLIC AND ACTIVE TRANSPORT

The site is located within a highly accessible active and public transport network, with high quality and high frequency public transport services running regularly, and nearby quality cycle routes. This type of accessibility to such facilities allows for reductions in typical private vehicle trips overall and promotes greater use / mode share to public and active transport modes.

2.2.1 Train Services

The site is conveniently located approximately 900m walking distance from Bowen Hills Train Station which services trains for the following lines:

- Airport Line;
- Cleveland Line;
- Gold Coast Line;
- Shorncliffe Line;
- Beenleigh Line;
- Doomben Line;
- Ipswich Line;
- Springfield Line;
- Caboolture Line;
- Ferny Grove Line;
- Rosewood Line; and
- Sunshine Coast Line.

Trains on each line typically arrive every 15 minutes during peak periods, and half-hourly during off-peak periods. The train station operates between 4:20am and 12:30am Monday - Thursday, with extended hours Friday - Sunday.

2.2.2 Bus Services

The site is located within 180m walking distance from the RBWH Bus Station. A large number of bus routes service this station and are detailed in Table 2.2. Note that the route descriptions are shown as they occur for inbound journeys, however all bus routes also operate in an outbound direction with the exception of routes 66 and 393 which only operate southbound from Platform 1 and northbound from Platform 2 respectively.

Table 2.2: Bus Route Details

Bus Service	Route Description	Peak Frequency	Off-Peak Frequency
310	Brighton, Sandgate, Toombul, RBWH, City	1 per hour in each direction	1 per hour in each direction
321	Toombul, Woolloowin, Lutwyche, RBWH, Spring Hill, City	1-2 per hour in each direction	1 per hour in each direction
330	Bracken Rdg, Chermside, RBWH, Roma St, City, Cultural Centre	4 per hour in each direction	4 per hour in each direction
333	Chermside, Lutwyche, RBWH, Normanby, City, Cultural Centre	4 per hour in each direction	4 per hour in each direction
334	Chermside, Prince Charles, Windsor, RBWH, Valley, City	1 per hour in each direction	1 per hour in each direction
335	Sandgate, Taigum, Prince Charles, Grange, RBWH, Valley, City	1-2 per hour in each direction	1-2 per hour in each direction
340	Carseldine, Chermside, RBWH, Normanby, City, Woolloongabba	4-6 per hour in each direction	4-6 per hour in each direction
346	Aspley, Stafford, Grange, Windsor, RBWH, Valley, City	2 per hour in each direction	1 per hour in each direction
353	Chermside, McDowall, Stafford, Wilston, RBWH, Valley, City	2-3 per hour in each direction	1 per hour in each direction
363	Herston, RBWH, QUT Kelvin Grove, Roma St, City	2 per hour in each direction	N/A
370	Chermside, Kedron, Lutwyche, Windsor, RBWH, Valley, City	3-4 per hour in each direction	3-4 per hour in each direction
375	Bardon, Paddington, City, Valley, RBWH, Lutwyche, Stafford	3-4 per hour in each direction	2-3 per hour in each direction
376	Stafford, Lutwyche, RBWH, Herston, QUT, Normanby, City	2 per hour in each direction	N/A
379	City, Valley, RBWH, Lutwyche, Grange Heights, Stafford	3-4 per hour in each direction	1-2 per hour in each direction
66	RBWH, Roma St, City, South Bank, PA, Boggo Rd, UQ Lakes	12 per hour	6 per hour
P331	Bracken Ridge, Zillmere, Chermside, RBWH, Spring Hill, City	3-4 per hour in each direction	N/A
P332	Chermside, Kedron, Lutwyche, RBWH, Spring Hill, City	6 per hour in each direction	N/A
P341	Carseldine, Aspley, Chermside, RBWH, Spring Hill, City	3-4 per hour in each direction	N/A
393	Teneriffe Ferry, Bowen Hills, RBWH, Teneriffe Ferry	3-4 per hour	1 per hour

SOURCE: Translink

These high frequency services provide numerous trips inbound / outbound to and from the CBD allowing connection with the greater public transport network covering a wide range of trip destinations.

2.2.3 Cycle and Pedestrian Facilities

The site is surrounded by a network of cycle and pedestrian paths linked by several signalised intersections / crossing points. The site has immediate access to pedestrian footpaths and is within 100m walking distance to the Brisbane North Bikeway.

To complement the existing network of active transport facilities, the development will provide 100 secured bicycle parking spaces for residents in addition to 15 visitor bicycle spaces which are provided on the upper ground level.

Figure 2.5 and Figure 2.6 below show the cycle routes and pedestrian paths (respectively) that surround the development site.



SOURCE: Google Maps

Figure 2.5 Cycle Routes



SOURCE: Google Maps

Figure 2.6 Pedestrian Facilities

Further to the above, the RBWH Cycle Centre is located opposite Campbell Street (beneath the Busway) that is available to RBWH staff and the public 24 hours 7 days a week (members). This centre provides 750 secure bicycle parking spaces, full end of trip facilities (male and female), security services and bike maintenance services.

2.3 BACKGROUND TRAFFIC VOLUMES

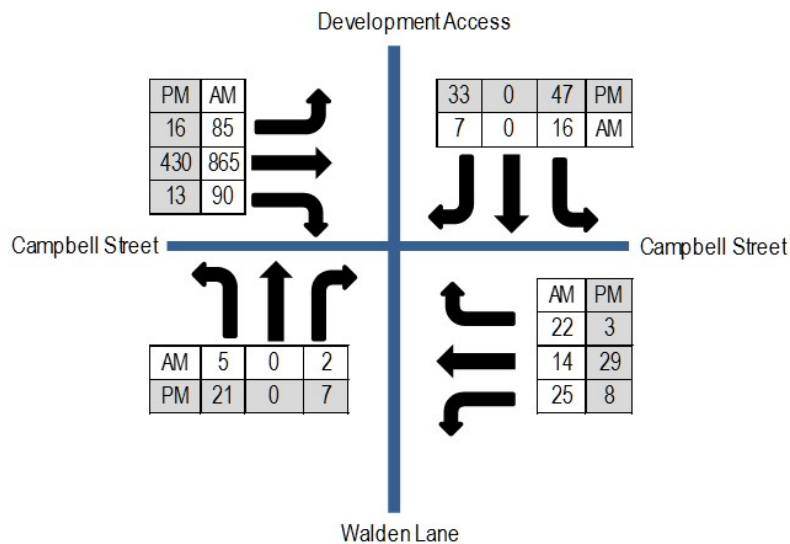
2.3.1 Traffic Surveys

Traffic survey data was sourced from the previously approved development application on this site, undertaken as part of a traffic report produced by TTM (*Traffic Engineering Report – 21/03/12*). This count data is considered to be recent and was therefore used as the basis of assessing the access intersection to the site via Campbell Street.

A conservative compounding annual growth rate (CAGR) of 2% was applied to the sourced volumes to estimate current (base) year volumes.

2.3.2 Base Year (2015 Background Traffic Volumes)

The background AM and PM peak hour turning movement volumes at the development access growthed-up for 2015 are shown in Figure 2.7 below.



SOURCE: *Traffic Engineering Report (TTM, 2012)*

Figure 2.7 2015 Background Traffic Volumes

The volume data shown above forms the basis for assessing the access intersection for the proposed residential development.

3. PARKING ASSESSMENT

3.1 REQUIREMENTS AND PROVISIONS

The parking requirements for the development have been sourced from BCC's TAPS PSP for short-term accommodation within the City Frame (*identified in 'Figure a' of TAPS Code*) which has further been identified by EDQ as an applicable rate. Table 3.1 details the applicable rate and subsequent car parking requirements for the development – including the proposed development parking provisions / supply.

Table 3.1: Parking Requirements and Provisions

Parking Component	Parking Rate	Number of Units / Area	Parking Requirement	Parking Provision
Residential	0.5 per unit	154	77	100
Visitor	-		-	7
PWD	1 per 50 spaces		2	2

Given the above, the development exceeds the parking requirements within BCC's TAPS PSP with a total supply of 109 spaces. Note that the development proposes to provide 20% of allocated parking spaces as designated 'small car bays', as specified within BCC's TAPS PSP which allows for this level of small car bays to be provided. Further, an additional three (3) visitor (parallel) parking spaces and four (4) retail / commercial spaces are provided opposite the development entrance (discussed further in Section 3.2).

The parking supply for the development is in accordance with the above requirements and therefore deemed adequate to support the demand for this use.

3.2 PARKING LAYOUT

The proposed parking layout has been reviewed against BCC's TAPS PSP and the Australian Standards (AS2890) for dimensional compliance. Table 3.2 below provides a summary of the key design aspects.

Table 3.2: Parking Layout Design Summary

Design Aspect	Development Proposed	TAPS PSP Requirement	AS2890 Requirement	Compliance
Parking Bay Length				
Standard Bay	5.4m	5.4m	5.4m	TAPS PSP / AS2890
Small Car Bay	5.0-5.4m	5.0m	5.0m	TAPS PSP / AS2890
PWD Bay	5.4m	5.4m	5.4m	TAPS PSP / AS2890
Parking Bay Width				
Standard Bay	2.6m	2.6m	2.4m	TAPS PSP / AS2890
Small Car Bay	2.3m	2.3m	2.3m	TAPS PSP / AS2890
PWD Bay	2.4m + 2.4m Shared Space	2.4m + 2.4m Shared Space	2.4m + 2.4m Shared Space	TAPS PSP / AS2890
Clearance between car parking spaces and vertical obstructions	300mm	300mm	300mm	TAPS PSP / AS2890
Aisle Widths	6.2m	6.2m	5.8m	TAPS PSP / AS2890
Ramp Widths (kerb-to-kerb) ¹	6.2m	6.5m	5.5m	AS2890
Ramp Gradients	1:5 – 1:6	Maximum 1:6	Maximum 1:5	AS2890

¹Ramp Widths are based on straight ramps as only minor curves occur within the proposed development.

Further to Table 3.2 above, it is noted that all ramp widths within the development are provided at a kerb-to-kerb width of 6.2m and provides an additional 300mm clearance on either side of the ramp. The AS2890 requirement (including 300mm clearances) results in a 6.1m requirement and the development therefore exceeds this constraint. While BCC's TAPS PSP requires 6.5m wide ramps, the provision of 6.2m kerb-to-kerb is more than sufficient to accommodate general traffic movements for two-way flows with two vehicles able to comfortably pass.

The site will provide two (2) additional Persons with Disability (PWD) bays with compliant dimensions in accordance with BCC's TAPS PSP and AS2890.6. These have been provided in accordance with BCC's requirement of 1 PWD bay per 50 standard spaces. The two (2) PWD bays are positioned on the upper ground floor generally opposite the building lobby / café and pedestrian access providing safe and convenient accessibility to/from these bays.

Further, a Port Cochere / shared area exists at the lobby frontage for pedestrian access with three (3) parallel visitor spaces provided opposite the entrance. This allows for tenants staying within the development to park temporarily while accessing the lobby / reception, before gaining entry into the car parking levels. It should be noted that the dimensions of these parallel bays are in accordance with BCC requirements at 2.4m x 6.3m. An additional four (4) spaces have also been provided adjacent the visitor bays for use by retail / café uses of the development.

A turnaround / reversing area is further provided at the northern extent of site allowing vehicles to perform a turnaround if required.

Bicycle Parking

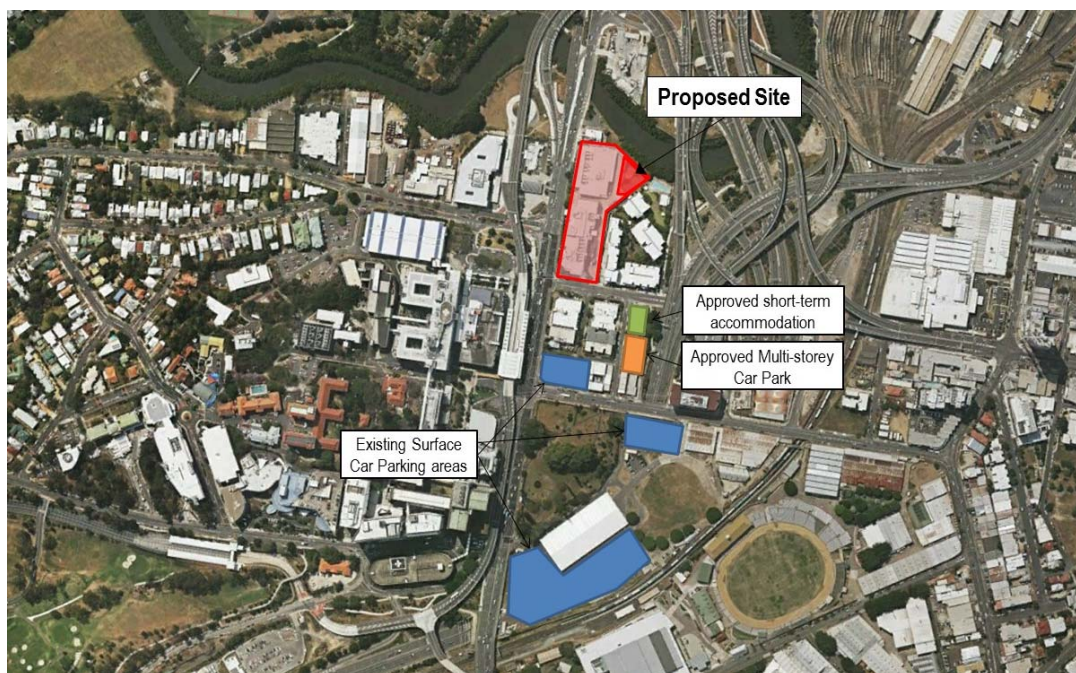
The development proposes to provide one (1) bicycle parking space for each standard resident vehicle parking space totalling 100 resident bicycle spaces. These are to be positioned as a hanging rack over each space. Visitor bicycle parking has also been proposed with 24 spaces provided on upper ground floor as shown on the design plans (see Appendix A).

While the TAPS PSP does not provide a bicycle parking rate for this particular use (i.e. short-term accommodation), this level of bicycle parking is sufficient given the nature of the use – and considering the surrounding active transport / bicycle parking facilities in the area (see Section 2.2.3).

3.3 ADDITIONAL PARKING

While a proportion of the units proposed are dual key units, the provision of 100 residential spaces is considered adequate as the use of available spaces is typically managed through tenancy numbers / occupancy rates, and unlikely that any impacts will be generated. Furthermore, there is a number of parking sites provided in the surrounding area as seen in Figure 3.1 below.

As shown, an approved multi-storey car park is also to be located within 200m of the proposed development.



SOURCE: Google Maps

Figure 3.1: Existing and Approved Parking Facilities Surrounding the Site

On the basis of the above, the parking provision / supply and parking layout is designed in accordance with the relevant standards / requirements and is adequate to support the development and accommodate safe and efficient operations. In the unlikely event that the site is at capacity, a range of nearby parking sites exist within walking distance that can be utilised.

Further to this – and considering the nature of the land use proposed for the site – public and active transport facilities surrounding the site are in abundance and of high quality. Including the Bowen Hills Train Station, The RBWH Busway Station, the RBWH Cycle Centre and surrounding active transport routes and facilities.

4. TRAFFIC ASSESSMENT

4.1 TRAFFIC GENERATION

4.1.1 Design Rates

Traffic generation rates for the proposed development were sourced from the *RMS (formerly RTA) Guide to Traffic Generating Developments* (2002). Rates applied were for “High density residential flat buildings located within a Metropolitan Regional (CBD) centre”. Table 4.1 details the traffic generation applicable to this development.

Table 4.1: Traffic Generation

Component	Quantity/Area	Traffic Generation Rate (trips per hour)	Traffic Generation (trips per hour)
Residential Unit	154	0.24	37

4.1.2 Directional Split

Table 4.2 shows the estimated traffic directional splits and resulting traffic directionality based on the above traffic generation. A typical split of an 80/20 percent split has been assumed.

Table 4.2: Traffic Directional Splits

Component	Peak Period	Total Trips (vph)	Directional Split (%)		Traffic Volumes (vph)	
			Inbound	Outbound	Inbound	Outbound
Residential	AM	37	20	80	7	30
	PM		80	20	30	7

4.1.3 Traffic Distribution

The distribution of the development generated traffic was based upon background traffic patterns and local knowledge of the key trip attractors in the area. The traffic distributions adopted are shown in Figure 4.1.

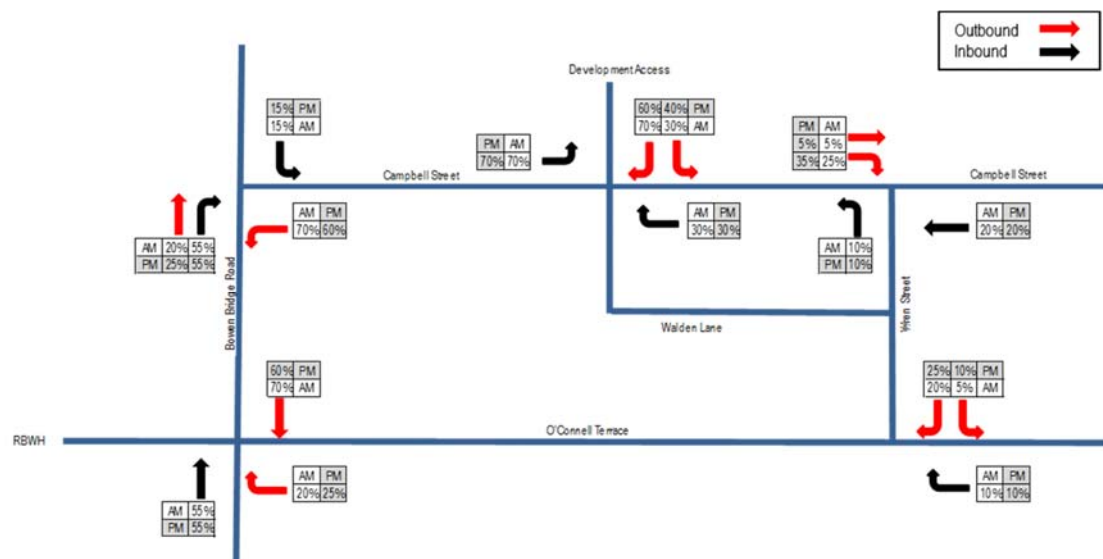


Figure 4.1: Development Traffic Distribution

Figure 4.2 below demonstrates the corresponding site generated traffic volume distribution.

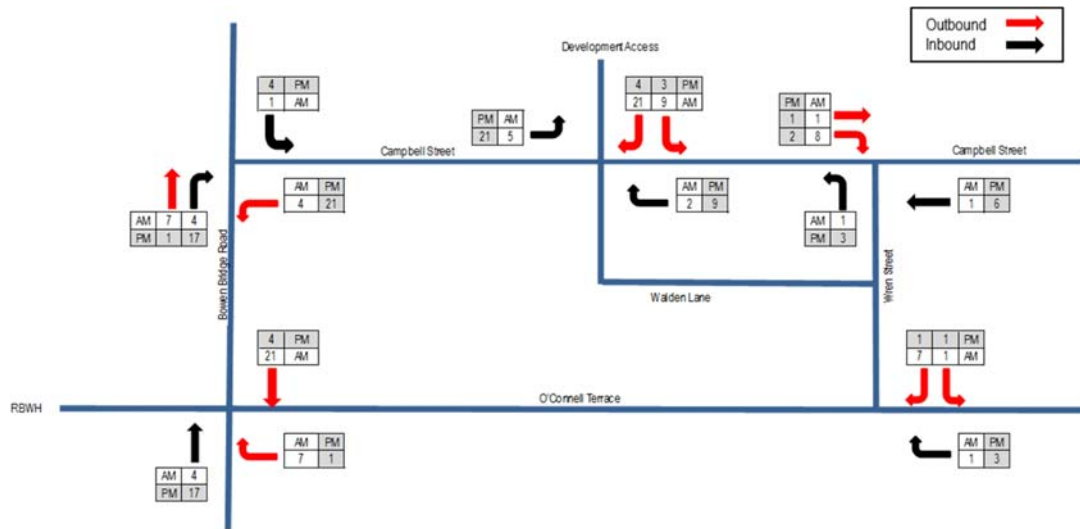


Figure 4.2: Development Traffic Volumes

From the above Figures, it is evident that low levels of development-generated traffic will be distributed to the greater road network. Volumes distributed to the Bowen Bridge Road / Campbell Street intersection are consistent with the intersections existing major movements and signal phase timings. Therefore are expected to already receive a significant allocation of green phase time, hence; the impact of additional traffic will be marginal.

4.2 DESIGN TRAFFIC VOLUMES

Based on the above traffic distributions and development-generated traffic, the design (i.e. background + development) traffic volumes for the AM and PM peaks at the site access for 2015 are shown in Figure 4.3.

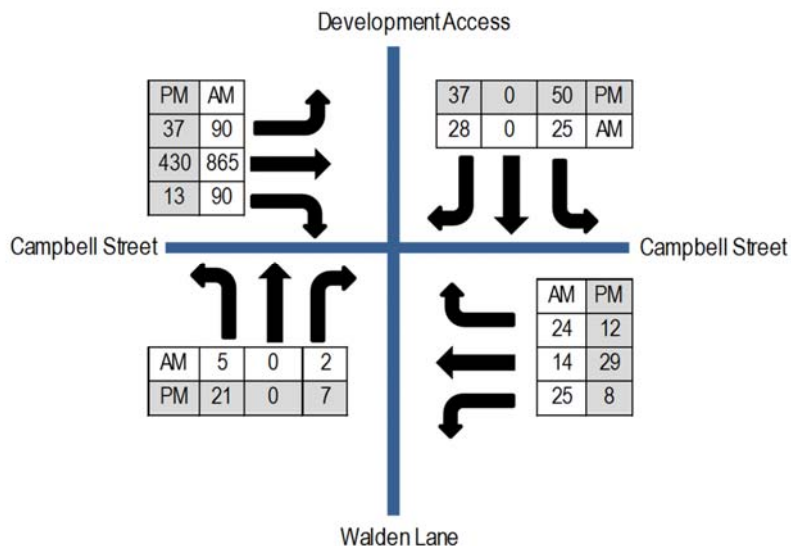


Figure 4.3: 2015 Design Traffic Volumes – Access Intersection

4.3 INTERSECTION PERFORMANCE

The site access intersection was modelled under “Without Development” and “With Development” scenarios for 2015. It is noted that being within a Priority Development Area, significant infrastructure upgrades are planned and therefore an assessment of the intersection for 2025 is not likely to provide valid results. Planning for the surrounding area is also expected to accommodate this level of development.

Figure 4.4 shows the intersection layout assessed using SIDRA representing the existing intersection configuration (with Walden Street also modelled).

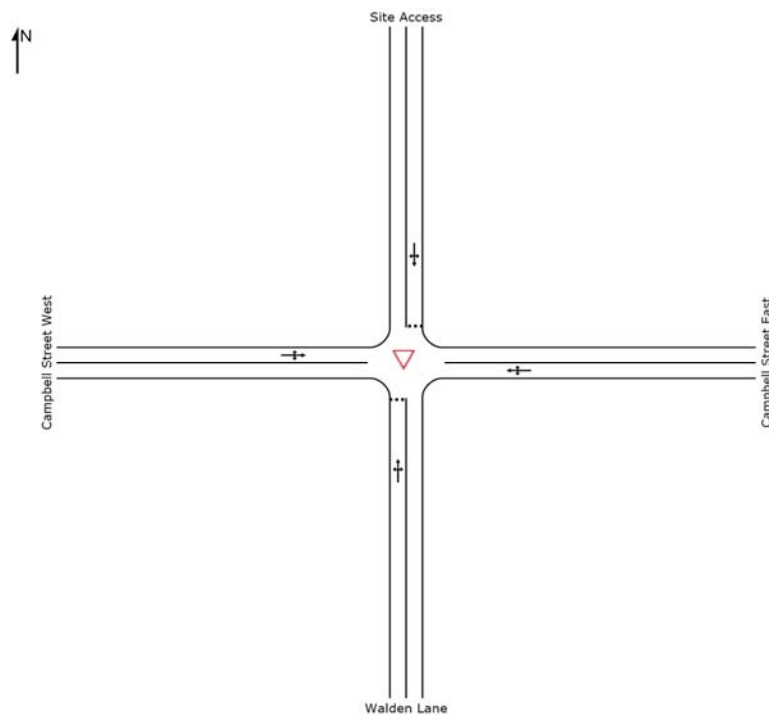


Figure 4.4: Site Access – SIDRA Intersection Layout

Table 4.3 below shows the summary of the SIDRA analysis model results for the site access intersection. Full movement summary output sheets are provided in Appendix B of this report.

Table 4.3: Site Access – SIDRA Model Results

Intersection: Approach	Without Development				With Development			
	DOS (v/c)	Avg. Delay (sec)	LOS	95% Back of Queue (m)	DOS (v/c)	Avg. Delay (sec)	LOS	95% Back of Queue (m)
2015 AM Peak Results								
South: Walden Lane	0.017	10.2	B	0.4	0.017	10.3	B	0.4
East: Campbell Street - East	0.071	11.8	N/A	3.5	0.076	12.0	N/A	3.6
North: Site Access	0.069	13.9	B	1.5	0.191	16.8	C	4.2
West: Campbell Street - West	0.572	1.2	N/A	38.7	0.575	1.2	N/A	39.1
2015 PM Peak Results								
South: Walden Lane	0.028	6.5	A	0.7	0.028	6.5	A	0.7
East: Campbell Street - East	0.023	3.3	N/A	1.1	0.032	4.1	N/A	1.4
North: Site Access	0.105	8.0	A	2.6	0.117	8.1	A	2.9
West: Campbell Street - West	0.249	0.5	N/A	10.9	0.261	0.7	N/A	11.6

The results in the table demonstrate that the intersection will operate well within the maximum practical operating capacity for a priority controlled intersection (i.e. DOS < 0.8) in 2015. Additionally the table shows that the traffic generated by the development will have minimal impact on the operating performance of the site access with only marginal increases in performance measures.

On the basis of the above, no further assessment is necessary and no mitigation measures or upgrades are warranted due to the development.

5. ACCESS ASSESSMENT

5.1 DRIVEWAY AND CROSSOVER

It is understood that the pre-existing site access driveway and crossover currently accommodates refuse and service vehicles and that no changes to this design are proposed. The existing access driveway and crossover are therefore deemed appropriate to continue to service this development.

It should be noted that no additional permanent structure should be erected either side of the crossover that would impede visibility to pedestrians for traffic exiting the site. Further no queuing assessment has been undertaken as there are no gates proposed at the frontage road or crossover, and therefore no residual queuing is expected to impact the roadway (as per existing operations). While security shutters are proposed at the entrances to the development's parking areas, there is significant queue space provided within the existing driveway, in conjunction with visitor parking bays allowing tenants to park temporarily prior to entering the car parking levels.

The driveway width is also to remain as per the existing and currently caters for refuse / service vehicles, therefore this is considered appropriate – no change necessary.

5.2 TURN WARRANTS ASSESSMENT

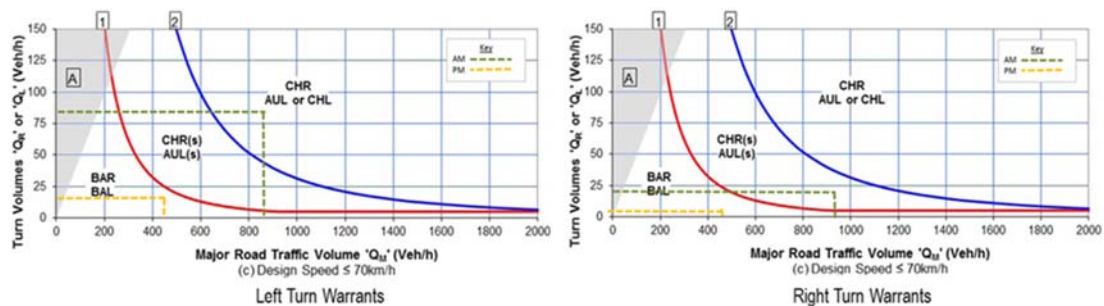
To further justify the existing access arrangement (and site access intersection layout), a turn warrants assessment was undertaken for left and right turns into the development during the 2015 AM and PM peak periods in accordance with the *August 2014 Supplement to AustRoads Guide to Road Design Part 4A; Unsignalised and Signalised Intersections*.

The assessment was undertaken for the existing traffic volumes and the addition of development traffic volumes to demonstrate that no change to the warrants result based on development traffic.

The assessment inputs and results are summarised in Table 5.1 below whilst turn warrant plots are shown in Figure 5.2 and Figure 5.2 for Without Development and With Development respectively.

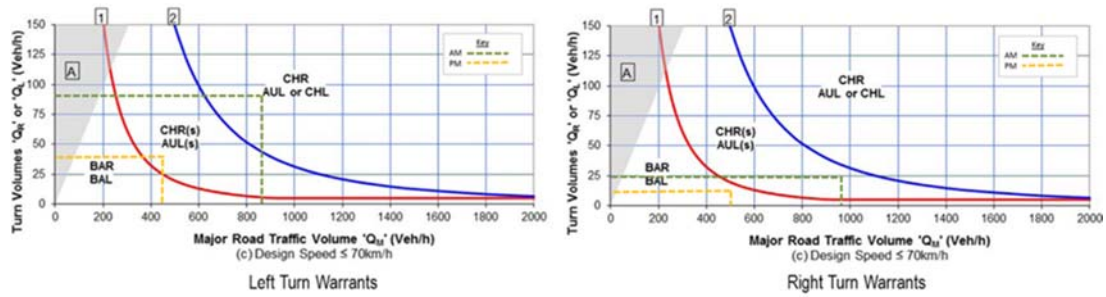
Table 5.1: Site Access – Turn Warrant Parameters and Requirements

Scenario	Peak Period	Left Turn Movements			Right Turn Movements		
		Left Turn Volume (Q_L)	Major Road Volume (Q_M)	Treatment Required	Right Turn Volume (Q_R)	Major Road Volume (Q_M)	Treatment Required
Without Development	AM	85	865	AUL / CHL	22	964	CHR(s)
	PM	16	430	AUL(s)	3	475	BAR
With Development	AM	90	865	AUL / CHL	24	969	CHR(s)
	PM	37	430	AUL(s)	12	496	BAR



SOURCE: August 2014 Supplement to AustRoads Guide to Road Design Part 4A; Unsignalised and Signalised Intersections

Figure 5.1: Turn Warrant Plots – Without Development Traffic



SOURCE: August 2014 Supplement to AustRoads Guide to Road Design Part 4A; Unsignalised and Signalised Intersections

Figure 5.2: Turn Warrant Plots – With Development Traffic

The Figures above indicate that the exact same turn warrants result with or without development traffic. While the existing intersection configuration does not actually include the above turn treatments, it currently operates satisfactorily. Therefore the inclusion of development generated traffic makes no change to the turn treatment requirements and no change / upgrade is warranted.

On the basis of the above the existing access intersection arrangement is expected to operate satisfactorily regardless of the inclusion of development traffic.

6. SERVICING AND REFUSE REQUIREMENTS

The site will provide a shared loading and refuse collection bay and service area separate from the car parking, adjacent the main entry ramp on the upper ground floor. The bay is provided at 5.0m wide by 11.0m long which complies with BCC's TAPS PSP for an RCV, and other relevant service vehicles that could be expected to service the site (e.g. medium rigid vehicles (MRV) and small rigid vehicles (SRV)).

It is intended that refuse collection for the development will occur from this shared loading area, wholly within the site, as per existing arrangements. Refuse collection assessment has been conducted using a standard 10.0m rear loading BCC refuse collection vehicle (RCV). Note that no height clearance obstructions exist in this service area.

A swept path analysis has been undertaken to demonstrate the ability of the RCV to enter and exit the area. Figure 6.1 and Figure 6.2 below demonstrate typical entry / exit manoeuvres whilst detailed swept paths are contained within Appendix C.

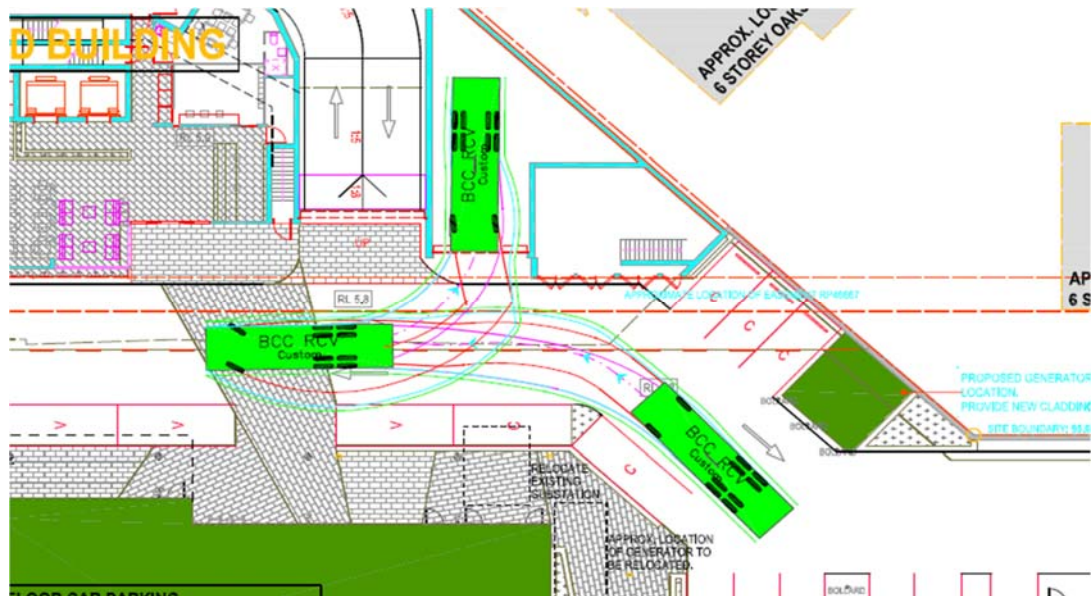


Figure 6.1: RCV Entry

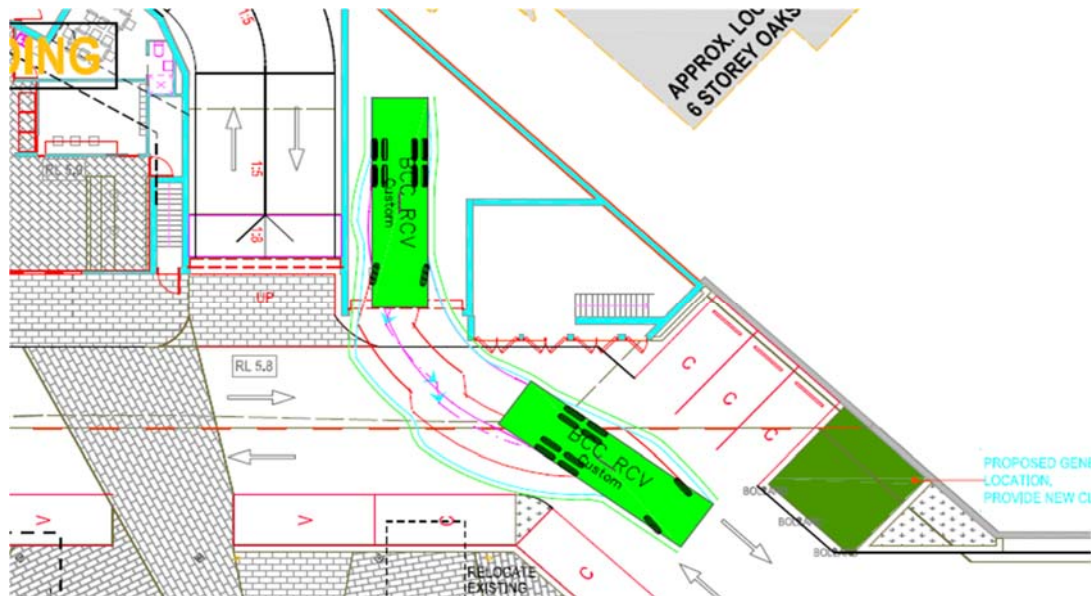


Figure 6.2: RCV Exit

It is noted that although the loading bay and RCV manoeuvring shown above allows service / refuse vehicles to enter and exit the site in a forward gear.

7. SUMMARY AND CONCLUSION

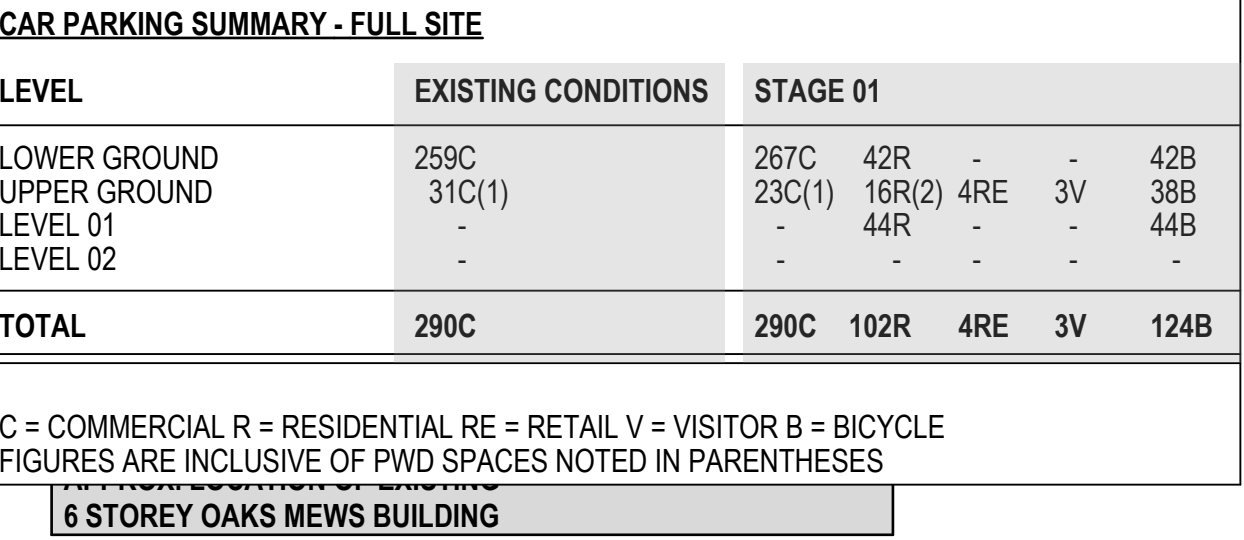
The key findings from the traffic impact assessment for the proposed development located at 153 Campbell Street Bowen Hills are as follows:

- the development is located within Bowen Hills PDA and will consist of 154 units and provide an ancillary café use on the (upper) ground floor for use by tenants;
- the site is well connected to high quality and high frequency public transport facilities with the Bowen Hills Train Station and RBWH Busway Station within walking distance which are highly likely to reduce the number of private vehicle trips to / from the development, allowing connection to a range of other destinations throughout the Brisbane CBD, the Brisbane Airport and abroad;
- the site has high accessibility to quality active transport facilities including the RBWH Cycle Centre directly opposite the site on Bowen Bridge Road and the Brisbane North Bikeway;
- the development generates a residential parking requirement of 77 parking spaces (*based on BCC's TAPS PSP*) and proposes a supply of 109 parking spaces in excess of the requirements, the site further supplies 100 secure resident bicycle spaces in addition to 24 visitor bicycle parking spaces which is considered more than sufficient given the surrounding bicycle facilities and RBWH Cycle Centre with 750 secure bicycle parking spaces available;
- the parking layout has been assessed against the design requirements with BCC's TAPS PSP and AS2890 and is designed in accordance with the dimensional requirements of both BCC's TAPS PSP and AS2890;
- a shared refuse and servicing bay is provided on-site and meets the design standards as set out within BCC's TAPS PSP and is sufficient to accommodate typical refuse collection and service vehicle manoeuvres;
- access to the site is provided by the existing access / entrance which currently allows for design service vehicles and regular traffic, and is therefore deemed adequate to continue to service the proposed development without adverse impacts;
- a peak hour trip generation of 37 vehicles per hour (vph) is expected to be generated by the site – this estimate is considered accurate given the high level of public and active transport surrounding the site;
- a distribution of the traffic generation demonstrates that the site is unlikely to have a major impact on the operation of the local road network with low volumes distributed to intersections and future planning the area typically catering for the proposed level of development;
- a SIDRA assessment conducted of the site access intersection indicated that little-to-no impact is expected from development-generated traffic with marginal increases in operational performance measures and the intersection operating well below acceptable limits; and
- a turn warrants assessment indicated that the development does not warrant any greater turn treatments than those required under background traffic (existing) conditions.

As a result of these findings it is concluded that there are no significant adverse impacts generated by the development on the local road network, or internal to the existing site that would preclude its relevant approval from a traffic and transport perspective.

APPENDIX A

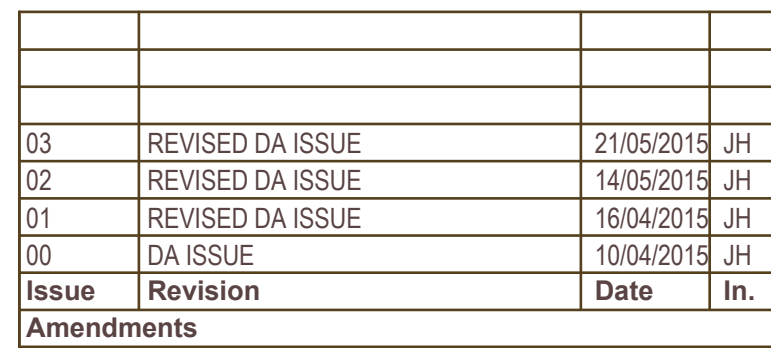
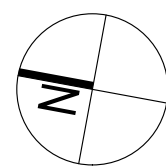
DEVELOPMENT PLANS



Schematic

MULTI RESIDENTIAL

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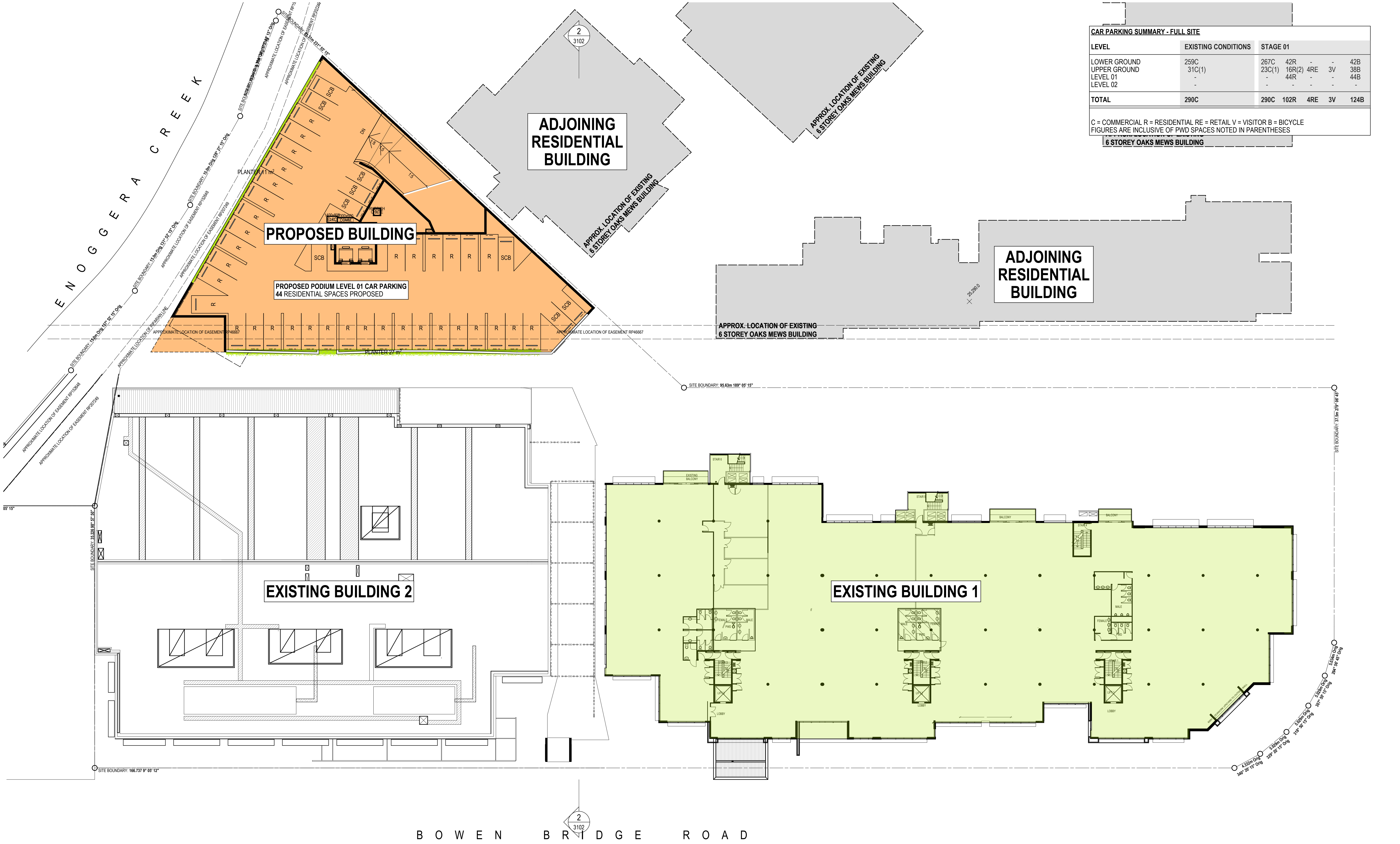
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Drawing no. SD 1003		Issue 03

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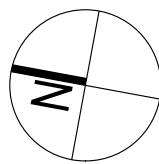
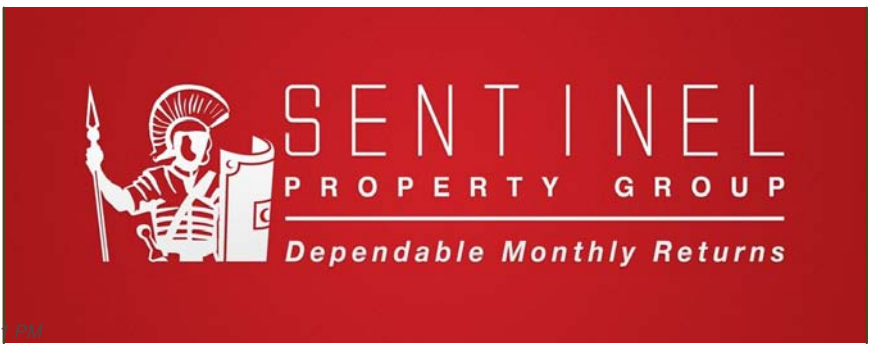


CAR PARKING SUMMARY - FULL SITE						
LEVEL	EXISTING CONDITIONS	STAGE 01				
LOWER GROUND	259C	267C	42R	-	-	42B
UPPER GROUND	31C(1)	23C(1)	16R(2)	4RE	3V	38B
LEVEL 01	-	-	44R	-	-	44B
LEVEL 02	-	-	-	-	-	-
TOTAL	290C	290C	102R	4RE	3V	124B

C = COMMERCIAL R = RESIDENTIAL RE = RETAIL V = VISITOR B = BICYCLE
FIGURES ARE INCLUSIVE OF PWD SPACES NOTED IN PARENTHESES

6 STOREY OAKS MEWS BUILDING

1 SITE PLAN - LEVEL 02-10
SCALE 1:250 @ A1
SCALE 1:500 @ A3



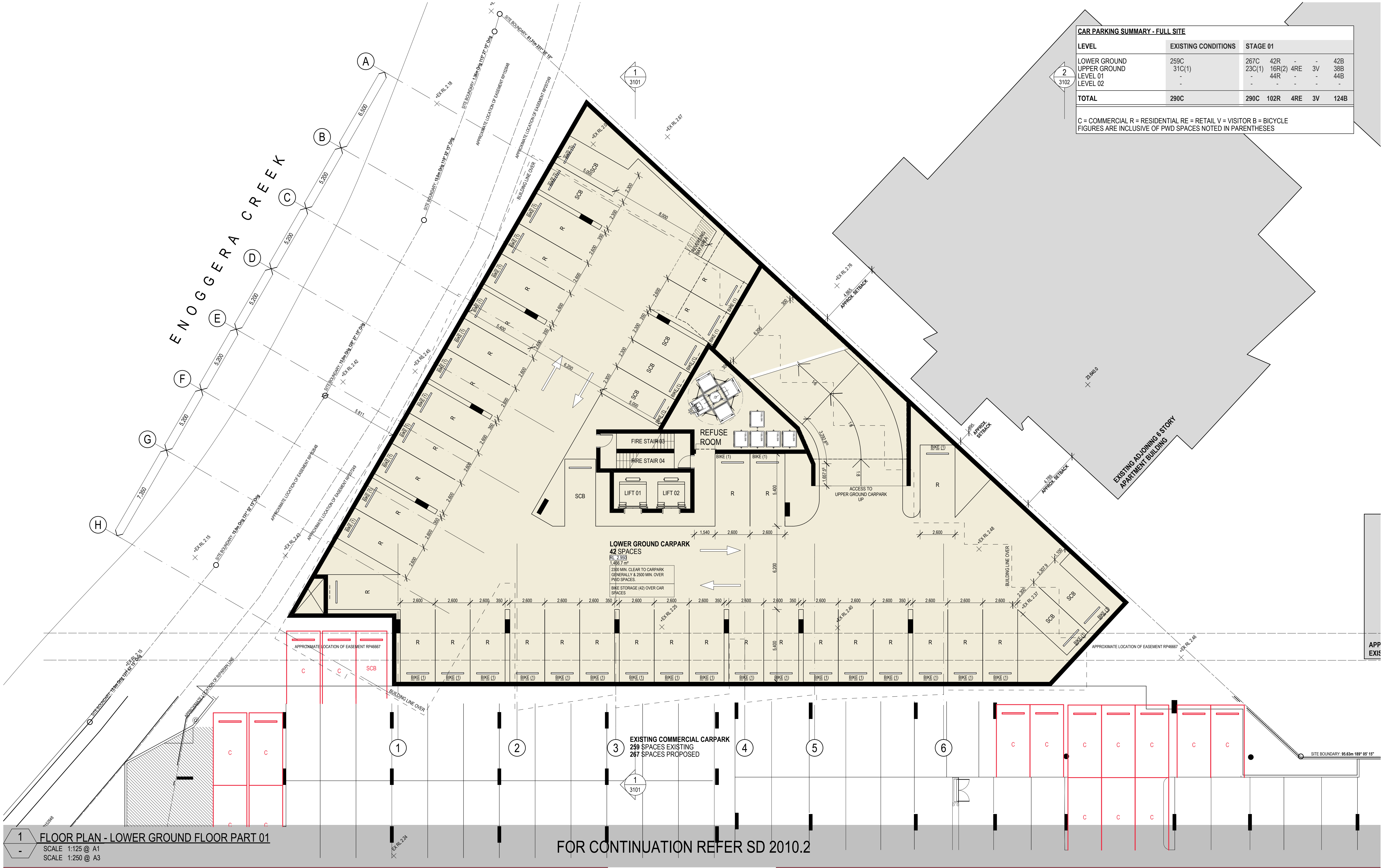
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Issue	Revision	Date	In.
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02	REVISED DA ISSUE	14/05/2015	JH
01	REVISED DA ISSUE	16/04/2015	JH
00	DA ISSUE	10/04/2015	JH
Amendments			

Client SENTINEL PROPERTY GROUP	Scale As Shown	Date JAN2015	Job no. 4940
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Drawing Title SITE PLAN PHASE 1 - LEVEL 01	Drawing no. SD 1005	Issue 03	

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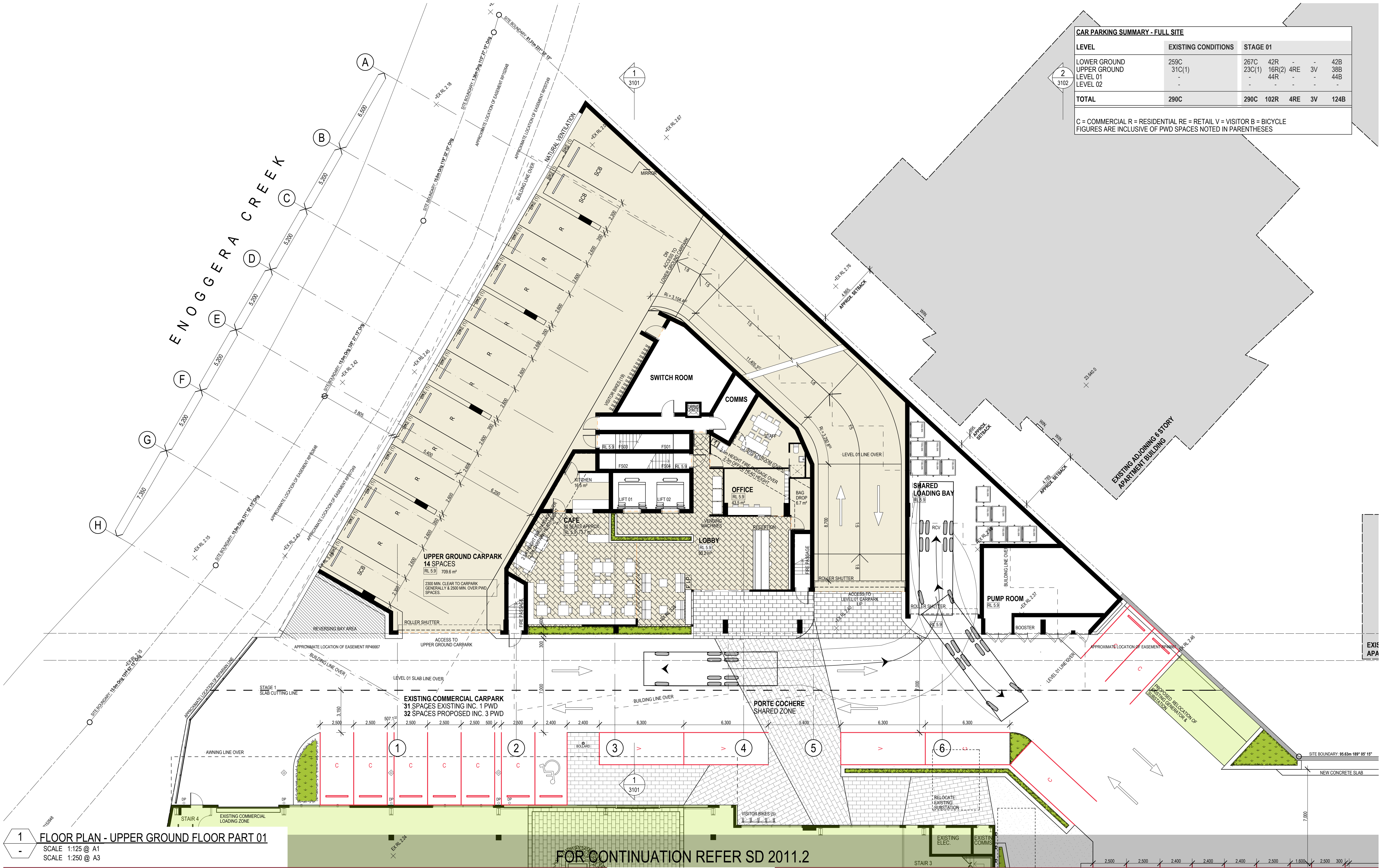
CAR PARKING SUMMARY - FULL SITE						
LEVEL	EXISTING CONDITIONS	STAGE 01				
LOWER GROUND	259C	267C	42R	-	-	42B
UPPER GROUND	31C(1)	23C(1)	16R(2)	4RE	3V	38B
LEVEL 01	-	-	44R	-	-	44B
LEVEL 02	-	-	-	-	-	-
TOTAL	290C	290C	102R	4RE	3V	124B

C = COMMERCIAL R = RESIDENTIAL RE = RETAIL V = VISITOR B = BICYCLE
FIGURES ARE INCLUSIVE OF PWD SPACES NOTED IN PARENTHESES

1 FLOOR PLAN - LOWER GROUND FLOOR PART 01
SCALE 1:125 @ A1
SCALE 1:250 @ A3

FOR CONTINUATION REFER SD 2010.2

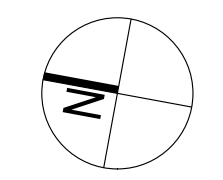
0 1.25 2.5 3.75 5 6.25 7.5 8.75 10 11.25 12.5metres



CAR PARKING SUMMARY - FULL SITE						
LEVEL	EXISTING CONDITIONS	STAGE 01				
LOWER GROUND	259C	267C	42R	-	-	42B
UPPER GROUND	31C(1)	23C(1)	16R(2)	4RE	3V	38B
LEVEL 01	-	-	44R	-	-	44B
LEVEL 02	-	-	-	-	-	-
TOTAL	290C	290C	102R	4RE	3V	124B

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FIGURES ARE INCLUSIVE OF PWD SPACES NOTED IN PARENTHESES

1 FLOOR PLAN - UPPER GROUND FLOOR PART 01
SCALE 1:125 @ A1
SCALE 1:250 @ A3



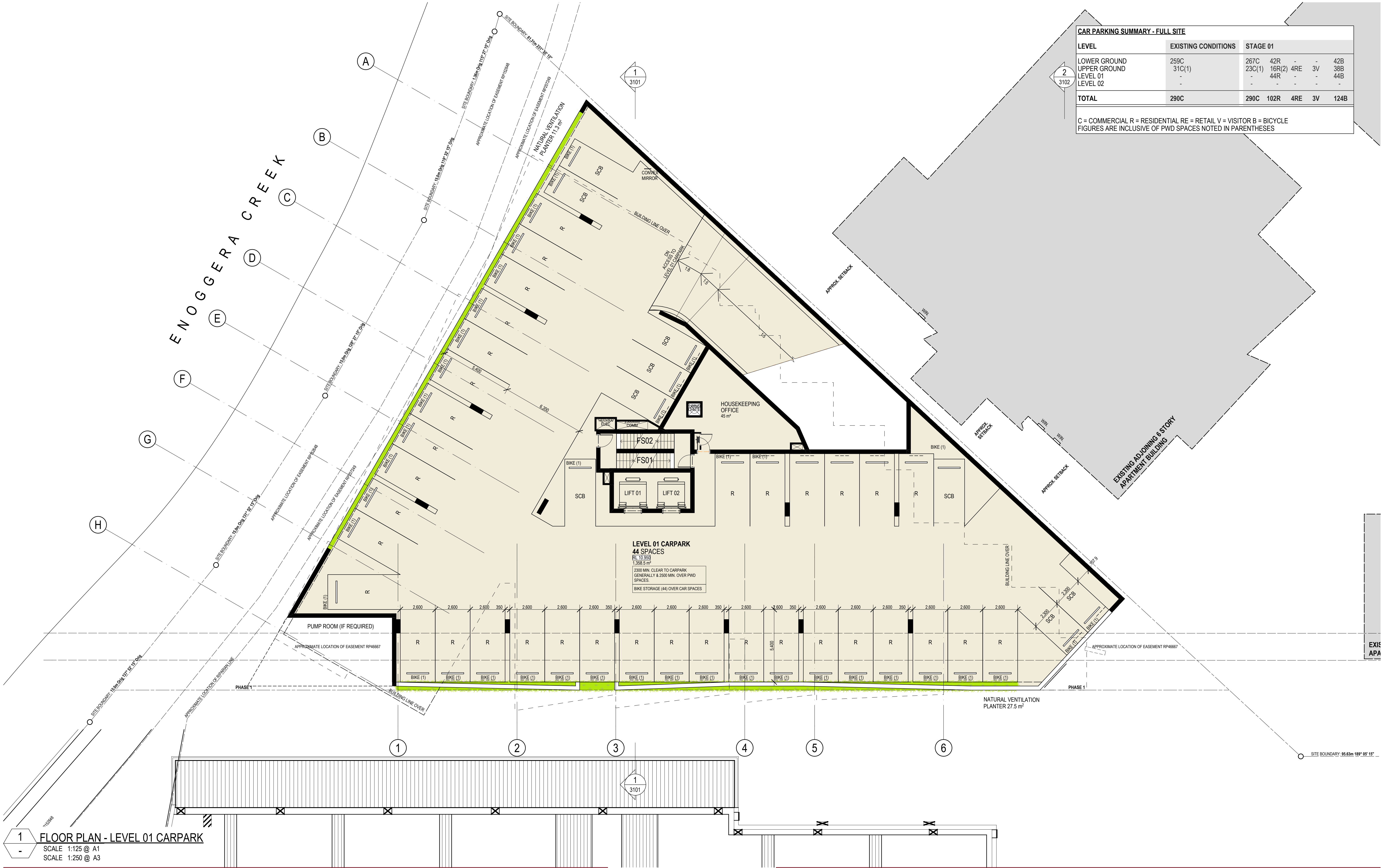
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01	REVISED DA ISSUE	16/04/2015	JH
00	DA ISSUE	10/04/2015	JH
Amendments			

Client	SENTINEL PROPERTY GROUP
Project Name and Location	MULTI RESIDENTIAL, 153 CAMPBELL STREET, BOWEN HILLS
Drawing Title	FLOOR PLAN - UPPER GROUND PART 01

Scale	As Shown	Date	JAN2015	Job no.	4940
Drawn	JH	Checked	JH	Approved	MT
Drawing no.	SD 2011.1	Issue	03		

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CAR PARKING SUMMARY - FULL SITE						
LEVEL	EXISTING CONDITIONS	STAGE 01				
LOWER GROUND	259C	267C	42R	-	-	42B
UPPER GROUND	31C(1)	23C(1)	16R(2)	4RE	3V	38B
LEVEL 01	-	-	44R	-	-	44B
LEVEL 02	-	-	-	-	-	-
TOTAL	290C	290C	102R	4RE	3V	124B

C = COMMERCIAL R = RESIDENTIAL RE = RETAIL V = VISITOR B = BICYCLE
FIGURES ARE INCLUSIVE OF PWD SPACES NOTED IN PARENTHESES

1 FLOOR PLAN - LEVEL 01 CARPARK
SCALE 1:125 @ A1
SCALE 1:250 @ A3

Schematic

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SENTINEL
PROPERTY GROUP
Dependable Monthly Returns

N

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01	REVISED DA ISSUE	16/04/2015	JH
00	DA ISSUE	10/04/2015	JH
Issue	Revision	Date	In.
Amendments			

Client
SENTINEL PROPERTY GROUP

Project Name and Location
MULTI RESIDENTIAL, 153 CAMPBELL STREET, BOWEN HILLS

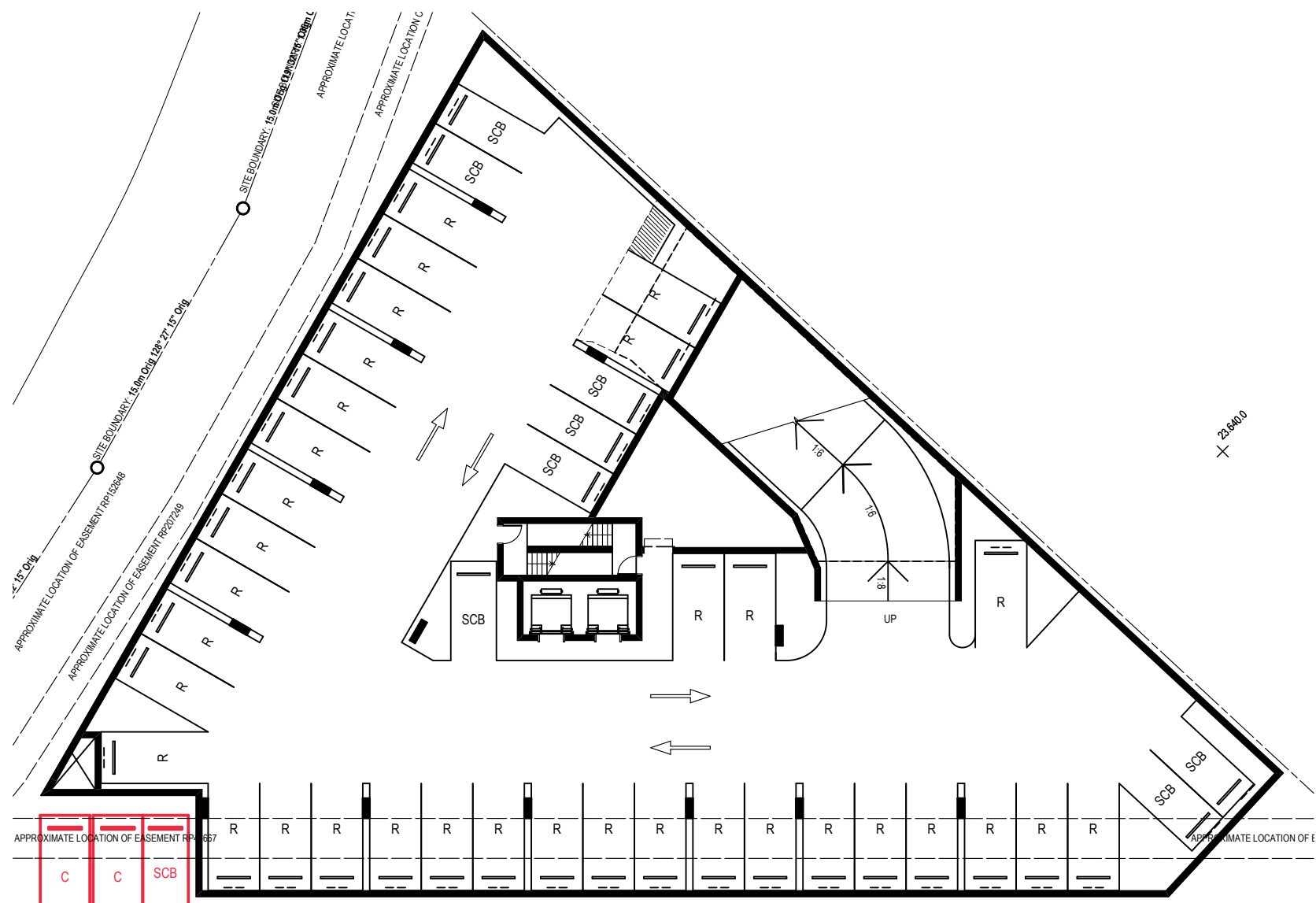
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FLOOR PLAN - LEVEL 01 CARPARK

Scale As Shown	Date JAN2015	Job no. 4940
Drawn JH	Checked JH	Approved MT
Drawing no. SD 2012		Issue 03

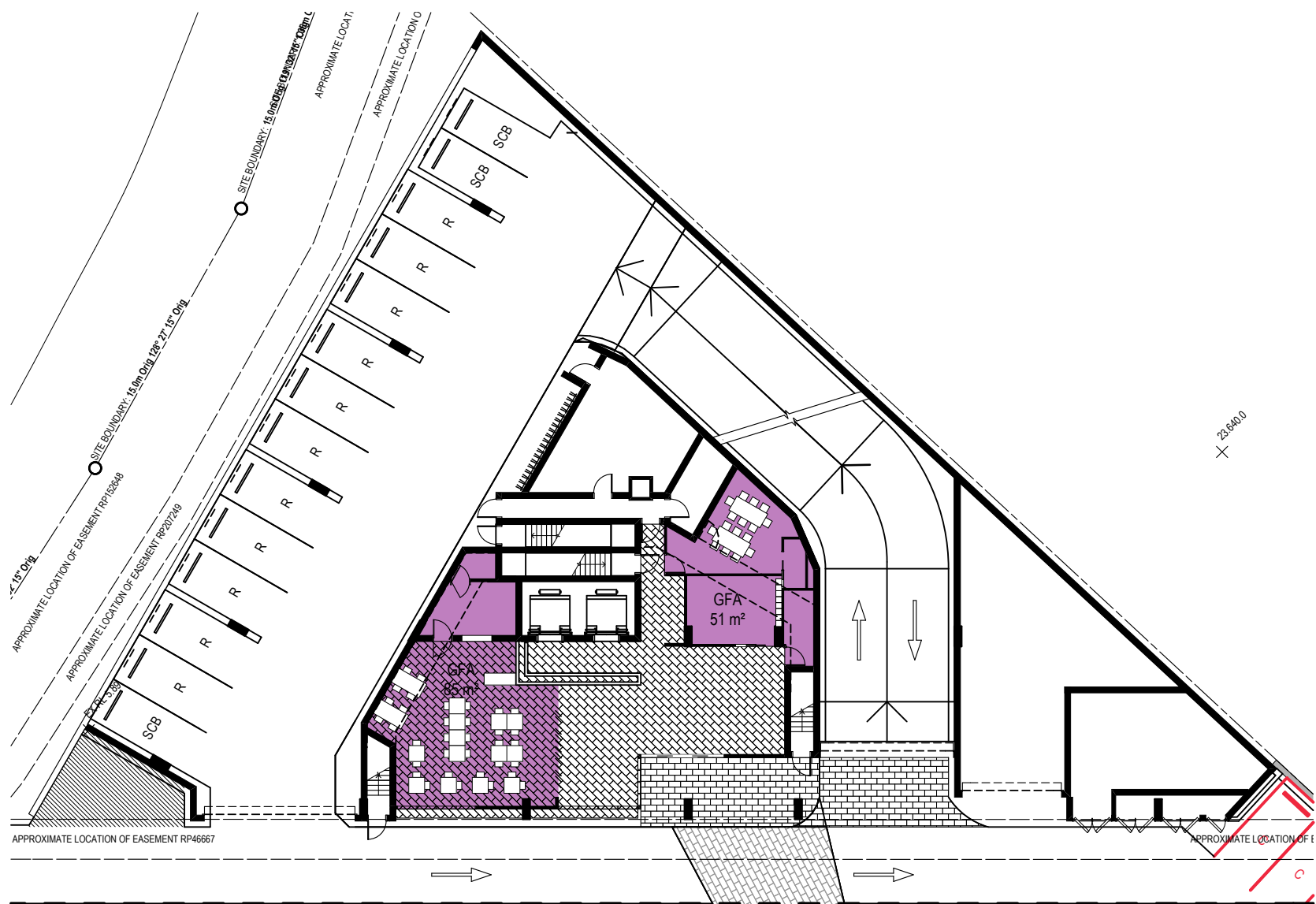
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1 GFA PLAN - LOWER GROUND FLOOR
SCALE NTS @ A1



2 GFA PLAN - UPPER GROUND FLOOR
SCALE NTS @ A1



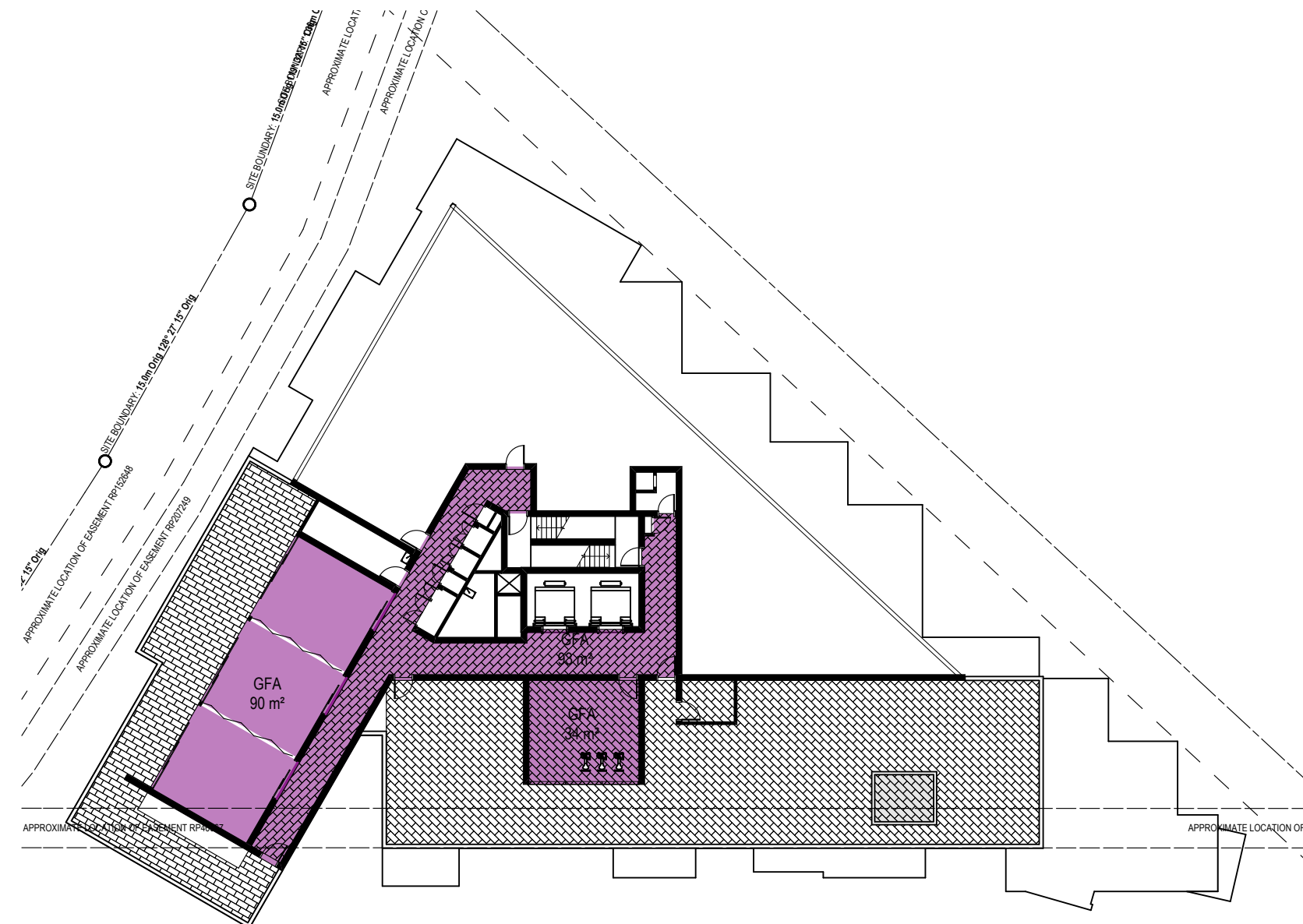
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SCALE NTS @ A1



4 GFA PLAN - LEVEL 02
SCALE NTS @ A1



5 GFA PLAN - LEVEL 03-12 TYPICAL
SCALE NTS @ A1



6 GFA PLAN - ROOF TERRACE
SCALE NTS @ A1

CAR PARKING

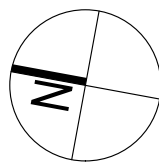
PROPOSED RESIDENTIAL	REQUIRED	PROVIDED
VISITORS	-	3
UNITS (154 UNITS)	77 (0.5 x 154 units)	100
PWD	2	2
TOTAL	77	105
PROPOSED RETAIL	REQUIRED RETAIL	PROPOSED RETAIL
RETAIL VISITORS (1/100m ² NLA)	0	4
TOTAL CARS	79	109
MOTORCYCLE PARKING	-	-
BICYCLE PARKING		
RESIDENTIAL (1/UNIT)	-	100
RESIDENTIAL VISITOR (1/10 UNITS)	-	10
RETAIL STAFF (1/500m ² GFA)	-	0
RETAIL CUSTOMERS	-	5
TOTAL BICYCLES	-	115
MRV	-	-
LRV	-	1

GFA SUMMARY		
	FLOOR	AREA
GFA	UPPER GROUND	450.06
GFA	LEVEL 02	1,062.17
GFA	LEVEL 03	1,062.17
GFA	LEVEL 04	1,062.17
GFA	LEVEL 05	1,062.17
GFA	LEVEL 06	1,062.17
GFA	LEVEL 07	1,062.17
GFA	LEVEL 08	1,062.17
GFA	LEVEL 09	1,062.17
GFA	LEVEL 10	1,062.17
GFA	LEVEL 11	1,062.17
GFA	LEVEL 12	1,062.17
GFA	ROOF TERRACE	214.24
		12,348.17 m ²

Schematic

MULTI RESIDENTIAL

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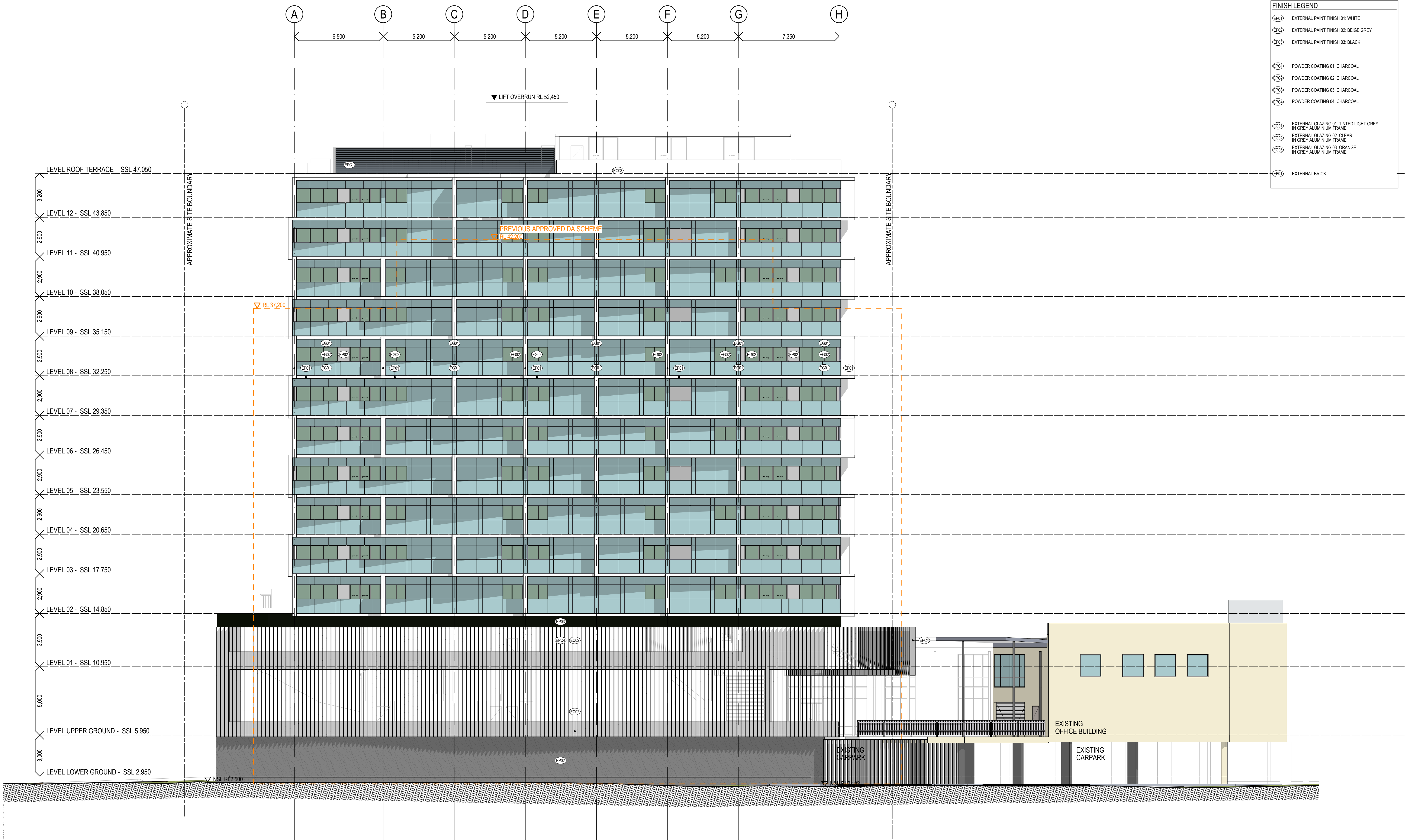
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02	REVISED DA ISSUE	12/05/2015	JH
01	REVISED DA ISSUE	16/04/2015	JH
00	DA ISSUE	10/04/2015	JH
Issue	Revision	Date	In.
Amendments			

Client	SENTINEL PROPERTY GROUP
Project Name and Location	MULTI RESIDENTIAL, 153 CAMPBELL STREET, BOWEN HILLS
Drawing Title	GFA PLANS

Scale	Date	Job no.
As Shown	JAN2015	4940
Drawn	Checked	Approved
JH	JH	MT
Drawing no.	Issue	
SD 2801	06	

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FINISH LEGEND	
EP01	EXTERNAL PAINT FINISH 01: WHITE
EP02	EXTERNAL PAINT FINISH 02: BEIGE GREY
EP03	EXTERNAL PAINT FINISH 03: BLACK
EPC1	POWDER COATING 01: CHARCOAL
EPC2	POWDER COATING 02: CHARCOAL
EPC3	POWDER COATING 03: CHARCOAL
EPC4	POWDER COATING 04: CHARCOAL
EG01	EXTERNAL GLAZING 01: TINTED LIGHT GREY IN GREY ALUMINIUM FRAME
EG02	EXTERNAL GLAZING 02: CLEAR IN GREY ALUMINIUM FRAME
EG03	EXTERNAL GLAZING 03: ORANGE IN GREY ALUMINIUM FRAME
EB01	EXTERNAL BRICK

1 NORTH-EAST ELEVATION
SCALE 1:125 @ A1
SCALE 1:250 @ A3



0 1.25 2.5 3.75 5 6.25 7.5 8.75 10 11.25 12.5metres

Issue	Revision	Date	In.
02	REVISED DA ISSUE	14/05/2019	JH
01	REVISED DA ISSUE	16/04/2019	JH
00	DA ISSUE	10/04/2019	JH
Amendments			

Client
SENTINEL PROPERTY GROUP

Project Name and Location
MULTI RESIDENTIAL, 153 CAMPBELL STREET, BOWEN HILLS

Drawing Title
ELEVATIONS

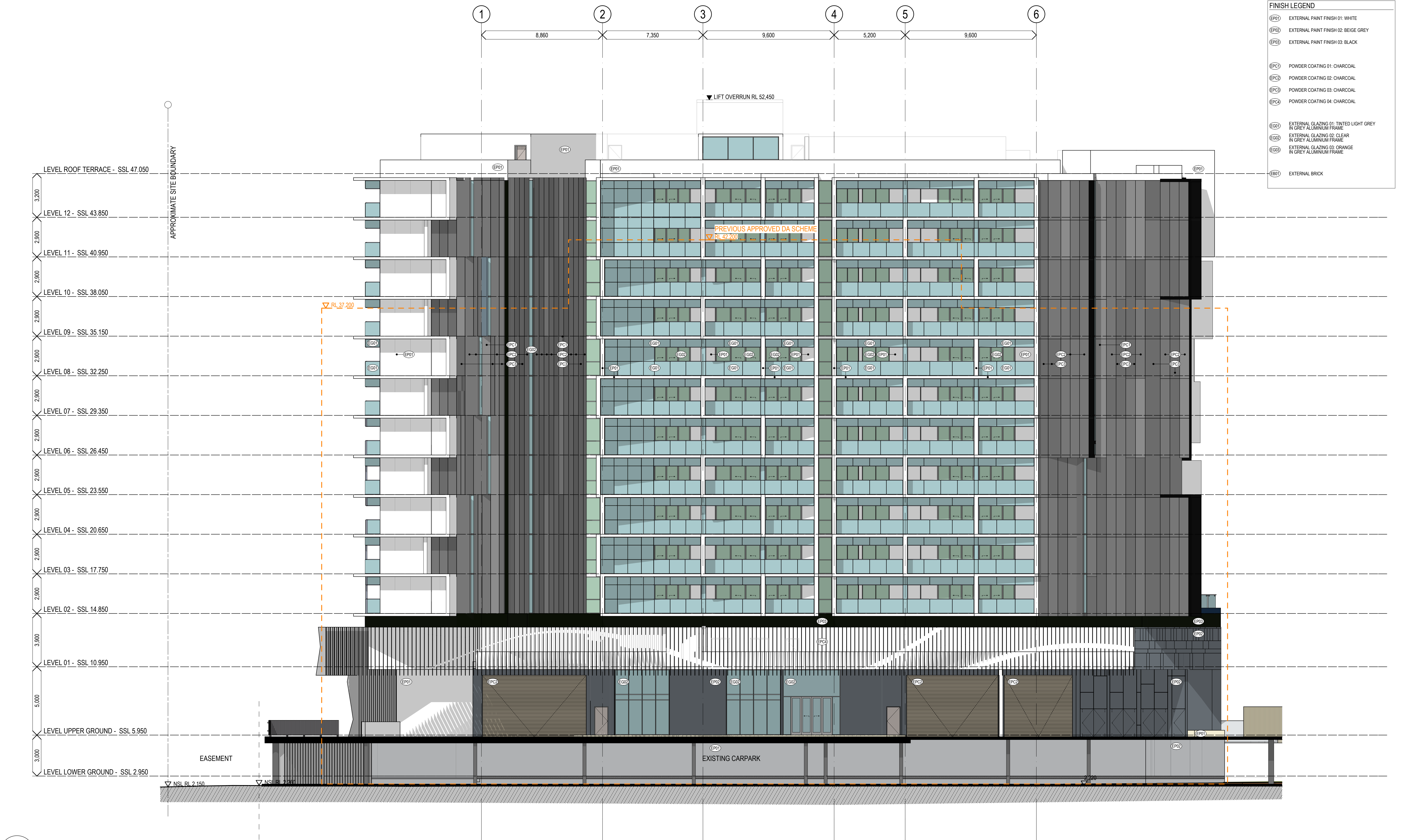
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Drawn JH	Checked JH	Approved MT
Drawing no. SD 3001		Issue 02

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FINISH LEGEND	
EP01	EXTERNAL PAINT FINISH 01: WHITE
EP02	EXTERNAL PAINT FINISH 02: BEIGE GREY
EP03	EXTERNAL PAINT FINISH 03: BLACK
EPC1	POWDER COATING 01: CHARCOAL
EPC2	POWDER COATING 02: CHARCOAL
EPC3	POWDER COATING 03: CHARCOAL
EPC4	POWDER COATING 04: CHARCOAL
EG01	EXTERNAL GLAZING 01: TINTED LIGHT GREY IN GREY ALUMINIUM FRAME
EG02	EXTERNAL GLAZING 02: CLEAR IN GREY ALUMINIUM FRAME
EG03	EXTERNAL GLAZING 03: ORANGE IN GREY ALUMINIUM FRAME
EB01	EXTERNAL BRICK

1 WEST ELEVATION
SCALE 1:125 @ A1
SCALE 1:250 @ A3



0 1.25 2.5 3.75 5 6.25 7.5 8.75 10 11.25 12.5metres

Issue	Revision	Date	In.
02	REVISED DA ISSUE	14/05/2015	JH
01	REVISED DA ISSUE	16/04/2015	JH
00	DA ISSUE	10/04/2015	JH
Amendments			

Client
SENTINEL PROPERTY GROUP

Project Name and Location
MULTI RESIDENTIAL, 153 CAMPBELL STREET, BOWEN HILLS

Drawing Title
ELEVATIONS

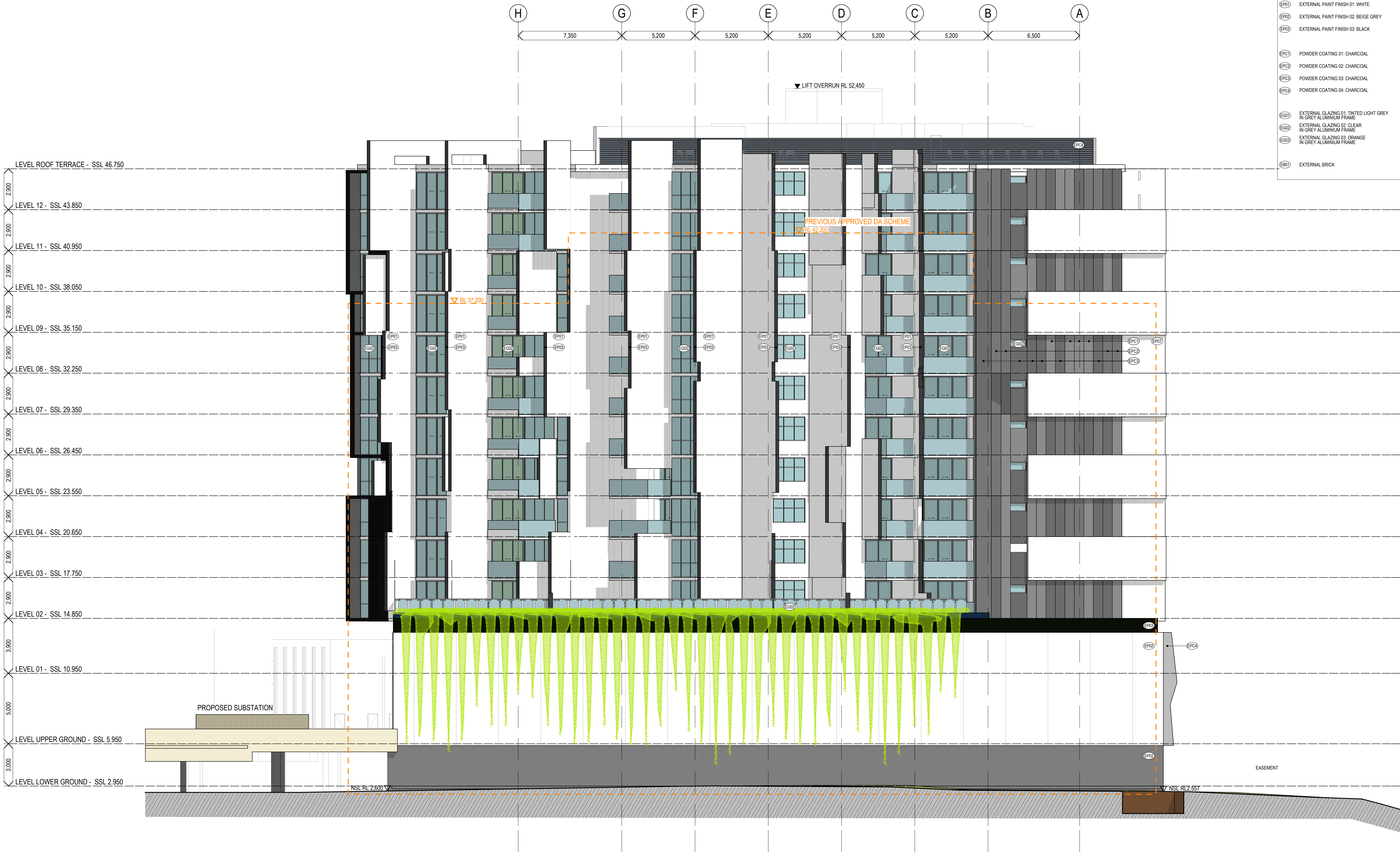
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1 SOUTH-EAST ELEVATION
SCALE 1:125 @ A1
SCALE 1:250 @ A3



0 1.25 2.5 3.75 5 6.25 7.5 8.75 10 11.25 12.5metres

02	REVISED DA ISSUE	14/05/2015	JH
01	REVISED DA ISSUE	16/04/2015	JH
00	DA ISSUE	10/04/2015	JH
Issue	Revision	Date	In.
Amendments			

Client	SENTINEL PROPERTY GROUP
Project Name and Location	MULTI RESIDENTIAL, 153 CAMPBELL STREET, BOWEN HILLS
Drawing Title	ELEVATIONS

Scale	As Shown	Date	JAN2015	Job no.	4940
Drawn	JH	Checked	JH	Approved	MT
Drawing no.	SD 3003	Issue	02		

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1 SECTION 01 STAGE 1
SCALE 1:125 @ A1
SCALE 1:250 @ A3



0 1.25 2.5 3.75 5 6.25 7.5 8.75 10 11.25 12.5 metres

02	REVISED DA ISSUE	14/05/2015	JH	
01	REVISED DA ISSUE	16/04/2015	JH	
00	DA ISSUE	10/04/2015	JH	
Issue	Revision	Date	In.	
Amendments				

Client	SENTINEL PROPERTY GROUP
Project Name and Location	MULTI RESIDENTIAL, 153 CAMPBELL STREET, BOWEN HILLS
Drawing Title	SECTIONS

Scale	Date	Job no.
As Shown	JAN2015	4940
Drawn	Checked	Approved
JH	JH	MT
Drawing no.	Issue	
SD 3101	02	

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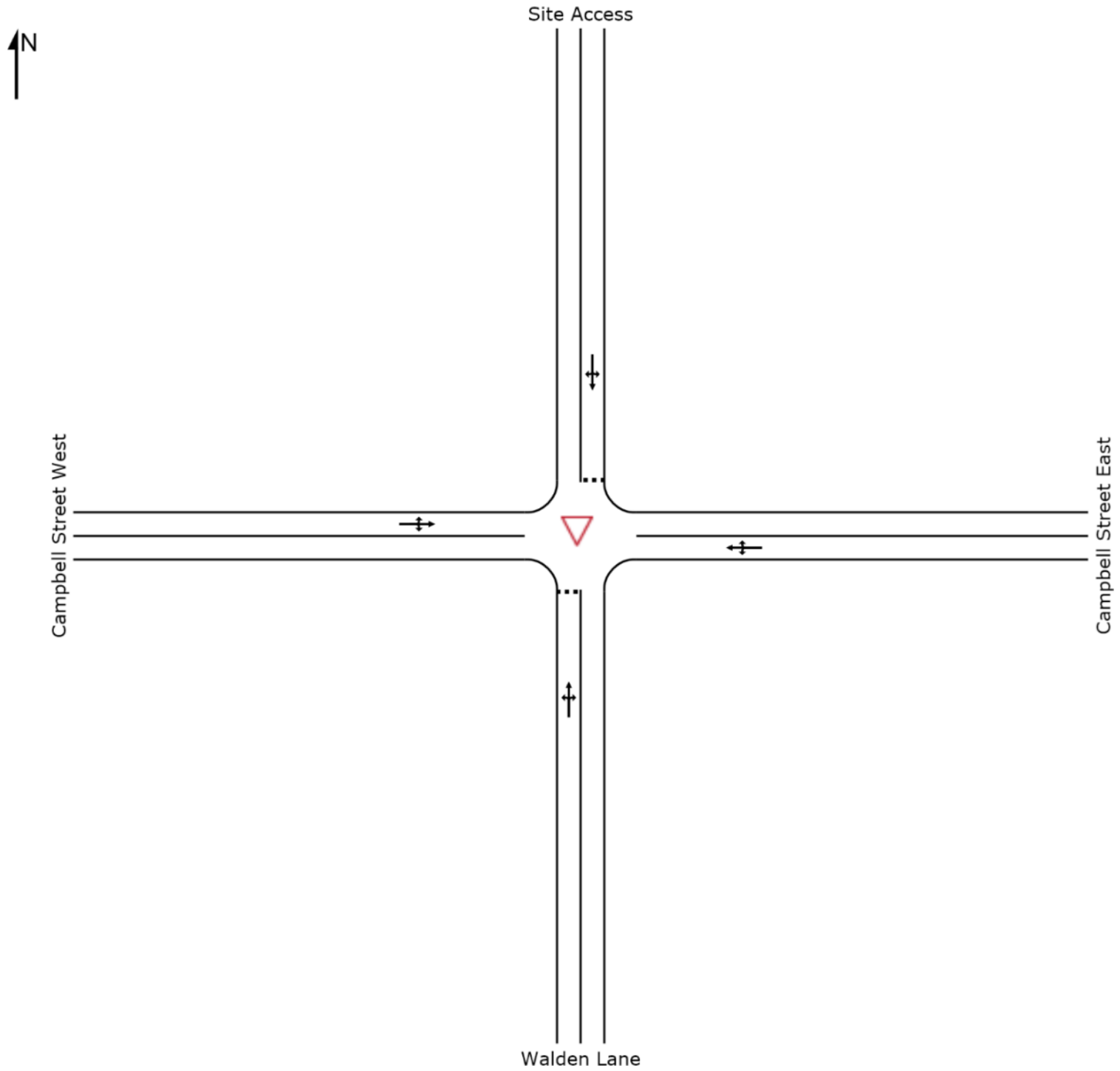
APPENDIX B

SIDRA OUTPUT SUMMARIES

SITE LAYOUT

▽ Site: Base 2015 AM - Citilink Development Site Access

Citilink Development Site Access
Giveaway / Yield (Two-Way)



MOVEMENT SUMMARY

Site: Base 2015 AM - Citilink Development Site Access

Citilink Development Site Access
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Walden Lane											
1	L2	5	0.0	0.017	10.4	LOS B	0.1	0.4	0.05	0.57	50.2
2	T1	1	0.0	0.017	9.0	LOS A	0.1	0.4	0.05	0.57	50.3
3	R2	2	0.0	0.017	10.3	LOS B	0.1	0.4	0.05	0.57	49.7
Approach		8	0.0	0.017	10.2	LOS B	0.1	0.4	0.05	0.57	50.1
East: Campbell Street East											
4	L2	26	0.0	0.071	13.1	LOS B	0.5	3.5	0.78	0.38	49.1
5	T1	15	0.0	0.071	7.5	LOS A	0.5	3.5	0.78	0.38	50.3
6	R2	23	0.0	0.071	13.0	LOS B	0.5	3.5	0.78	0.38	48.7
Approach		64	0.0	0.071	11.8	NA	0.5	3.5	0.78	0.38	49.2
North: Site Access											
7	L2	17	0.0	0.069	14.0	LOS B	0.2	1.5	0.75	0.89	47.7
8	T1	1	0.0	0.069	12.6	LOS B	0.2	1.5	0.75	0.89	47.9
9	R2	7	0.0	0.069	13.9	LOS B	0.2	1.5	0.75	0.89	47.3
Approach		25	0.0	0.069	13.9	LOS B	0.2	1.5	0.75	0.89	47.6
West: Campbell Street West											
10	L2	89	0.0	0.572	5.8	LOS A	5.5	38.7	0.22	0.09	56.7
11	T1	911	0.0	0.572	0.3	LOS A	5.5	38.7	0.22	0.09	58.2
12	R2	95	0.0	0.572	5.7	LOS A	5.5	38.7	0.22	0.09	56.1
Approach		1095	0.0	0.572	1.2	NA	5.5	38.7	0.22	0.09	57.9
All Vehicles		1193	0.0	0.572	2.1	NA	5.5	38.7	0.26	0.12	57.0

Level of Service (LOS) Method: Delay (HCM 2000).

Vehicle movement LOS values are based on average delay per movement

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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.

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MOVEMENT SUMMARY

Site: Base 2015 PM - Citilink Development Site Access

Citilink Development Site Access
 Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	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: Walden Lane											
1	L2	22	0.0	0.028	6.5	LOS A	0.1	0.7	0.07	0.57	52.9
2	T1	1	0.0	0.028	5.1	LOS A	0.1	0.7	0.07	0.57	53.1
3	R2	7	0.0	0.028	6.4	LOS A	0.1	0.7	0.07	0.57	52.4
Approach		31	0.0	0.028	6.5	LOS A	0.1	0.7	0.07	0.57	52.8
East: Campbell Street East											
4	L2	8	0.0	0.023	7.3	LOS A	0.2	1.1	0.48	0.11	55.2
5	T1	31	0.0	0.023	1.7	LOS A	0.2	1.1	0.48	0.11	56.7
6	R2	3	0.0	0.023	7.2	LOS A	0.2	1.1	0.48	0.11	54.6
Approach		42	0.0	0.023	3.3	NA	0.2	1.1	0.48	0.11	56.2
North: Site Access											
7	L2	49	0.0	0.105	8.1	LOS A	0.4	2.6	0.48	0.72	51.8
8	T1	1	0.0	0.105	6.6	LOS A	0.4	2.6	0.48	0.72	51.9
9	R2	35	0.0	0.105	8.0	LOS A	0.4	2.6	0.48	0.72	51.3
Approach		85	0.0	0.105	8.0	LOS A	0.4	2.6	0.48	0.72	51.6
West: Campbell Street West											
10	L2	17	0.0	0.249	5.7	LOS A	1.6	10.9	0.14	0.03	57.5
11	T1	453	0.0	0.249	0.1	LOS A	1.6	10.9	0.14	0.03	59.1
12	R2	14	0.0	0.249	5.6	LOS A	1.6	10.9	0.14	0.03	56.9
Approach		483	0.0	0.249	0.5	NA	1.6	10.9	0.14	0.03	58.9
All Vehicles		641	0.0	0.249	2.0	NA	1.6	10.9	0.21	0.16	57.3

Level of Service (LOS) Method: Delay (HCM 2000).

Vehicle movement LOS values are based on average delay per movement

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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.

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MOVEMENT SUMMARY

Site: With Development 2015 AM- Citilink Development Site Access

Citilink Development Site Access
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Walden Lane											
1	L2	5	0.0	0.017	10.5	LOS B	0.1	0.4	0.06	0.57	50.1
2	T1	1	0.0	0.017	9.1	LOS A	0.1	0.4	0.06	0.57	50.2
3	R2	2	0.0	0.017	10.4	LOS B	0.1	0.4	0.06	0.57	49.6
Approach		8	0.0	0.017	10.3	LOS B	0.1	0.4	0.06	0.57	50.0
East: Campbell Street East											
4	L2	26	0.0	0.076	13.2	LOS B	0.5	3.6	0.79	0.40	49.0
5	T1	15	0.0	0.076	7.7	LOS A	0.5	3.6	0.79	0.40	50.1
6	R2	25	0.0	0.076	13.1	LOS B	0.5	3.6	0.79	0.40	48.5
Approach		66	0.0	0.076	12.0	NA	0.5	3.6	0.79	0.40	49.1
North: Site Access											
7	L2	26	0.0	0.191	16.8	LOS C	0.6	4.2	0.80	0.93	46.0
8	T1	1	0.0	0.191	15.4	LOS C	0.6	4.2	0.80	0.93	46.1
9	R2	29	0.0	0.191	16.7	LOS C	0.6	4.2	0.80	0.93	45.6
Approach		57	0.0	0.191	16.8	LOS C	0.6	4.2	0.80	0.93	45.8
West: Campbell Street West											
10	L2	95	0.0	0.574	5.8	LOS A	5.6	39.1	0.22	0.09	56.6
11	T1	911	0.0	0.574	0.3	LOS A	5.6	39.1	0.22	0.09	58.2
12	R2	95	0.0	0.574	5.7	LOS A	5.6	39.1	0.22	0.09	56.0
Approach		1100	0.0	0.574	1.2	NA	5.6	39.1	0.22	0.09	57.8
All Vehicles		1232	0.0	0.574	2.6	NA	5.6	39.1	0.28	0.15	56.6

Level of Service (LOS) Method: Delay (HCM 2000).

Vehicle movement LOS values are based on average delay per movement

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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 SUMMARY

Site: With Development 2015 PM- Citilink Development Site Access

Citilink Development Site Access
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Walden Lane											
1	L2	22	0.0	0.028	6.6	LOS A	0.1	0.7	0.07	0.57	52.9
2	T1	1	0.0	0.028	5.2	LOS A	0.1	0.7	0.07	0.57	53.0
3	R2	7	0.0	0.028	6.5	LOS A	0.1	0.7	0.07	0.57	52.4
Approach		31	0.0	0.028	6.5	LOS A	0.1	0.7	0.07	0.57	52.8
East: Campbell Street East											
4	L2	8	0.0	0.032	7.4	LOS A	0.2	1.4	0.50	0.21	54.6
5	T1	31	0.0	0.032	1.9	LOS A	0.2	1.4	0.50	0.21	56.0
6	R2	13	0.0	0.032	7.3	LOS A	0.2	1.4	0.50	0.21	54.0
Approach		52	0.0	0.032	4.1	NA	0.2	1.4	0.50	0.21	55.3
North: Site Access											
7	L2	53	0.0	0.117	8.2	LOS A	0.4	2.9	0.49	0.73	51.7
8	T1	1	0.0	0.117	6.8	LOS A	0.4	2.9	0.49	0.73	51.8
9	R2	39	0.0	0.117	8.1	LOS A	0.4	2.9	0.49	0.73	51.2
Approach		93	0.0	0.117	8.1	LOS A	0.4	2.9	0.49	0.73	51.4
West: Campbell Street West											
10	L2	39	0.0	0.261	5.7	LOS A	1.7	11.6	0.14	0.05	57.3
11	T1	453	0.0	0.261	0.1	LOS A	1.7	11.6	0.14	0.05	58.8
12	R2	14	0.0	0.261	5.6	LOS A	1.7	11.6	0.14	0.05	56.7
Approach		505	0.0	0.261	0.7	NA	1.7	11.6	0.14	0.05	58.6
All Vehicles		680	0.0	0.261	2.2	NA	1.7	11.6	0.21	0.18	57.0

Level of Service (LOS) Method: Delay (HCM 2000).

Vehicle movement LOS values are based on average delay per movement

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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.

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APPENDIX C

RCV SWEPT PATH DIAGRAMS

