

# 13-19 Canberra Avenue, St Leonards

## Proposed Mixed-Use Development

### Traffic and Parking Impact Assessment

Ref: 21144  
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Issue: B

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# 1.0 Introduction

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This report has been prepared to accompany a Development Application to Lane Cove Council for a proposed mixed-use development at 13-19 Canberra Avenue, St Leonards (Figure 1).

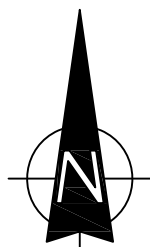
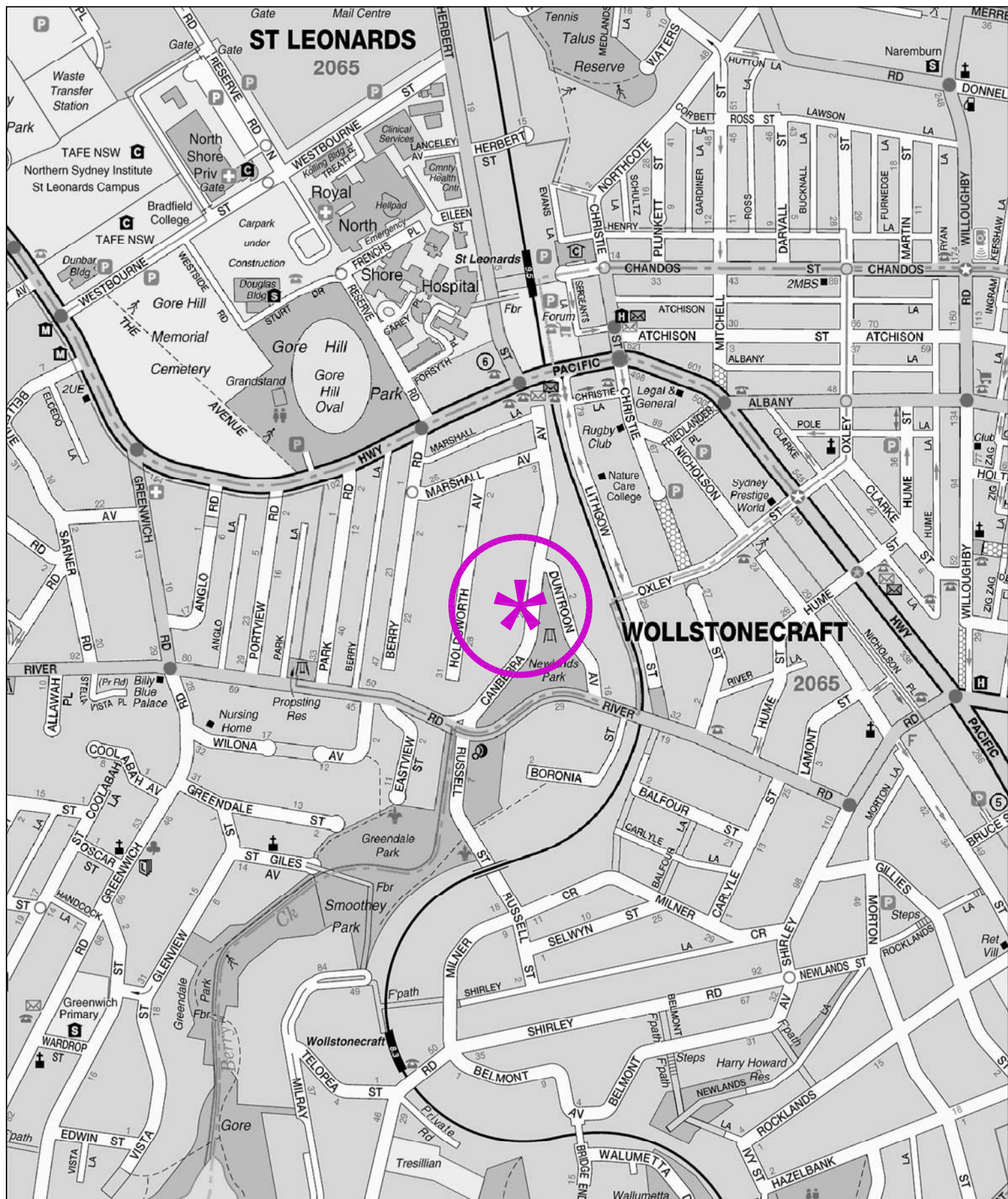
The site is located on the western side of Canberra Avenue and comprises a consolidation of 4 existing dwelling allotments. The development proposal involves the demolition of the existing buildings and the construction of a new mixed-use residential building with 84 apartments, childcare centre, community facility and 4 level basement car parking.

The St Leonards centre has experienced a significant reinvigoration with new commercial and residential apartment development occurring as part of the urban consolidation process. The centre benefits from the significant attributes of excellent rail and bus transport as well as employment opportunities and nearby shopping and entertainment facilities.

The purpose of this report is to:

- ❖ describe the proposed development scheme
- ❖ describe the existing road network serving the site and the traffic conditions on that system
- ❖ assess the adequacy of the proposed parking provision for the development
- ❖ assess any potential traffic implications
- ❖ assess the suitability of the proposed access, internal circulation, and servicing arrangements.





LOCATION

FIG 1

## 2.0 Proposed Development

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### 2.1 Site, Context, and Existing Use

The development site (Figure 2) is a consolidation of Lots 11, 12, 13, and 14 in DP7259, occupying a total area of some 2,663m<sup>2</sup>. The site has a frontage of some 61m to Canberra Avenue and is located just to the south of the St Leonards Centre. The site is currently occupied by 4 residential dwellings with vehicle accesses on Canberra Avenue.

The immediate surrounding area comprises older-style single dwelling residences and more recent apartment/townhouse buildings. The St Leonards Town Centre comprises retail/commercial buildings and a large hospital complex extending along the Pacific Highway and north of the Highway.

The existing use on the site consists of 4 older-style single residential dwellings.

### 2.2 Proposed Development

The proposed development scheme involves the demolition of existing buildings and excavation of the site to construct a 13-level building over a 4-level basement car park.

The new development will comprise:

#### Residential

1 x studio apartment

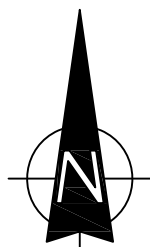
26 x one-bedroom apartments (including 10 adaptable units)

28 x two-bedroom apartments (including 4 adaptable units)

29 x three-bedroom apartments (including 3 adaptable units)

**Total: 84 dwellings (including 17 adaptable units)**





**SITE**

**FIG 2**



Childcare Centre

60 children

12 babies aged 0-2

20 toddlers aged 2-3

28 pre-schoolers aged 3-5)

14 employees

Retail

38m<sup>2</sup>

Vehicle access will be located on Canberra Avenue at the south-eastern boundary.

A total of 136 car parking, in addition to 10 motorcycle and 36 bicycle spaces, is proposed within the 4-level basement carpark in the following breakdown:

95 x resident spaces

17 x visitor spaces

7 x childcare staff spaces

12 x childcare visitor spaces

1 x retail space

2 x car share spaces

2 x car wash spaces

Architectural details of the development proposal are provided on the plans prepared by SJB Architects are reproduced in Appendix A.

## 3.0 Road Network and Traffic Conditions

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### 3.1 Road Network

The road network serving the site (Figure 3) comprises:

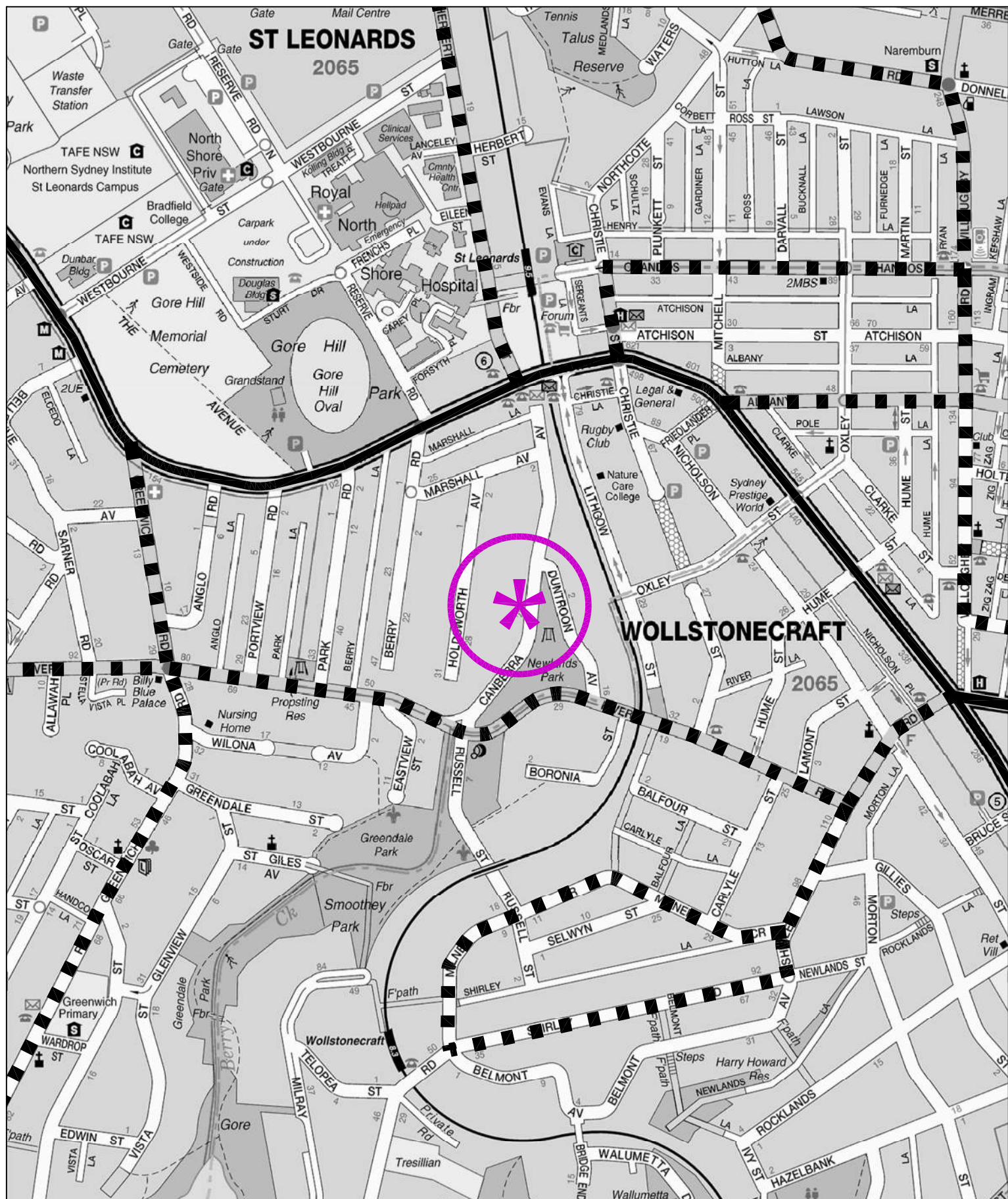
- ❖ *Pacific Highway* – a State Highway and an arterial route connecting between the Harbour Bridge/Crossing and Hornsby
- ❖ *Falcon Street* – a State Road and sub-arterial route
- ❖ *River Road and Shirley Road (north)* – a Regional Road and major collector road route linking between Lane Cove and Crows Nest
- ❖ *Greenwich Road* – a collector road route linking between the Greenwich Peninsula and the Highway
- ❖ *Herbert Street and Willoughby Road* – major collector road routes running northwards from Pacific Highway
- ❖ *Duntroon Avenue, Canberra Avenue, Marshall Avenue, Marshall Lane, Holdsworth Avenue, and Berry Road* – local access roads

### 3.2 Traffic Controls




The traffic and parking controls, which have been applied to the road system in the vicinity of the site (Figure 4) comprise:

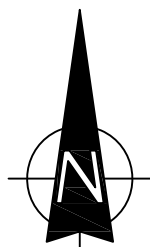
- ❖ the traffic signals along the Pacific Highway intersecting with Oxley Street, Albany Street, Christie Street, Herbert Street, Reserve Road, and Hume Street
- ❖ the traffic signals at the River Road / Greenwich Road and River Road / Shirley Road intersections
- ❖ the roundabout along Marshall Avenue intersecting with Berry Road and Holdsworth Avenue





## LEGEND

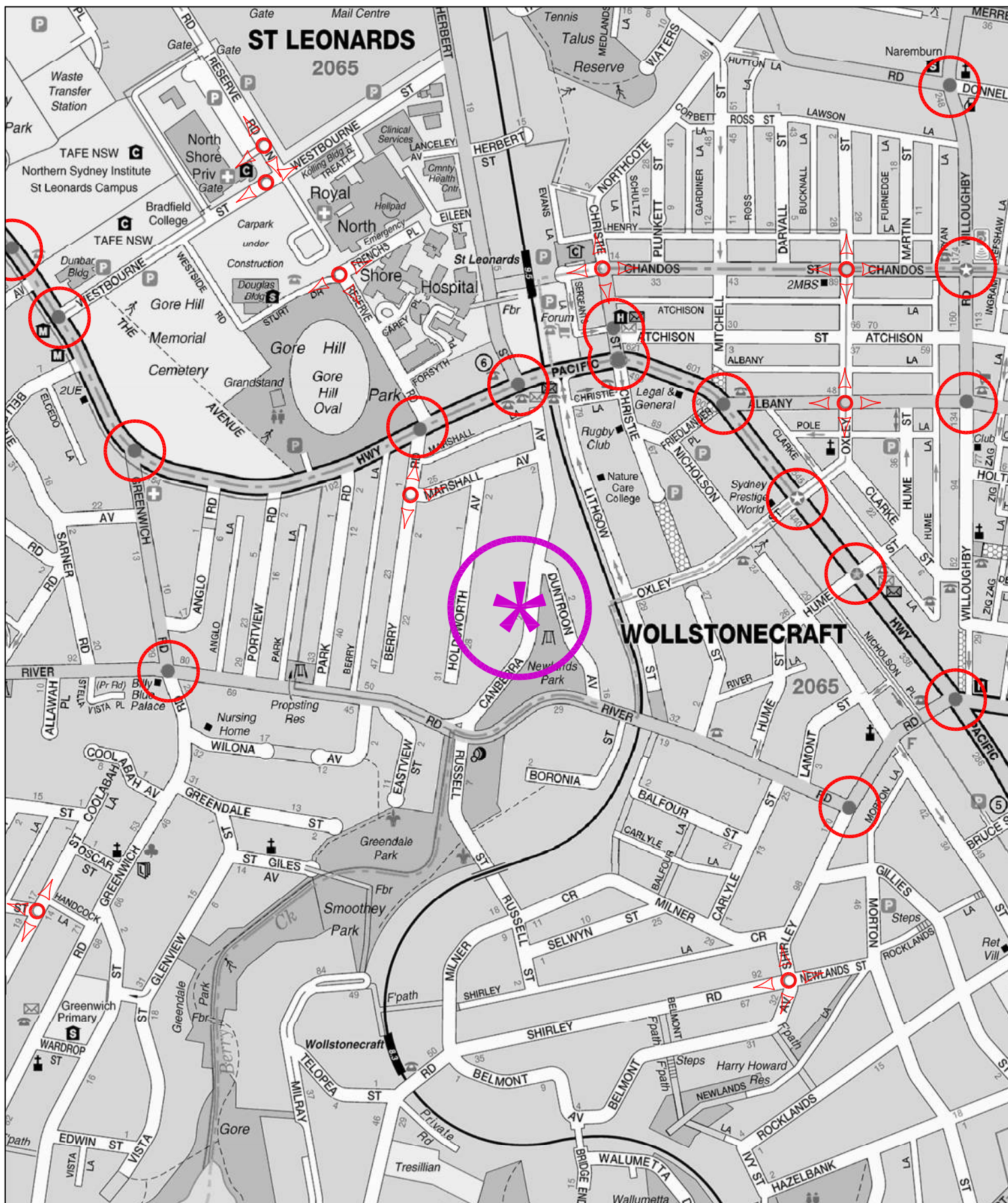
-  ARTERIAL
-  SUB-ARTERIAL
-  COLLECTOR



## ROAD NETWORK

**FIG 3**





- ❖ the left-turn IN / OUT only control on Canberra Avenue at its intersection with River Road
- ❖ the prohibition of the right-turn movement from River Road northerly to Greenwich Road and peak period prohibition of the turn from River Road to Boronia Street (AM and PM peak periods)
- ❖ the three-tonne and over truck restriction on Anglo Lane
- ❖ the north-eastern one-way restriction on Marshall Lane
- ❖ the various NO STOPPING restrictions along Canberra Avenue
- ❖ the various NO PARKING restrictions along Canberra Avenue
- ❖ the central median island on River Road preventing the right-turn movements into Canberra Avenue
- ❖ the GIVE-WAY control along Canberra Avenue intersecting Marshall Avenue and River Road
- ❖ the T3 6 am – 10am Monday to Friday Transit Lane restriction along Pacific Highway
- ❖ the 50 kmph speed limit on Canberra Avenue, Holdsworth Avenue, and surrounding local roads
- ❖ the 60 kmph speed limit on Pacific Highway

### 3.3 Traffic Conditions

An indication of traffic conditions on the road system serving the site is provided by data published by the Roads and Maritime Services and traffic surveys undertaken as part of this study. The RMS data<sup>1</sup> is expressed in terms of average annual daily traffic (AADT) and the latest recorded volumes in the vicinity of the site are

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<sup>1</sup> Traffic Volume Data for Sydney Region  
Roads and Traffic Authority 1999

summarised in the following:

	AADT
River Road at Greenwich Road	26,798
River Road at Shirley Rod	16,647
Pacific Highway at Shirley Road	29,609

Observations of traffic activity in the vicinity of the development site during morning and afternoon peak periods reveal some queuing occurs at times along Duntroon Avenue and Canberra Avenue along the site frontage. Flows along River Road and Pacific Highway are generally free flowing. Traffic signals at the intersections along Pacific Highway and River Road provide regular gaps in the traffic flows.

### 3.4 Transport Services

The site is highly accessible by public transport.

#### **Bus Services**

Access to the Metropolitan Transport Network for the site is currently provided by the bus services, which run along the Pacific Highway and River Road with bus stops within 350m walking distance northwest and southwest of the site. These services provide connections to Gladesville, North Sydney, Gore Hill, Bella Vista, Castle Hill, Denistone East, Lane Cove, and the CBD. These bus routes provide frequent services during the weekday peak hour periods.

Details of the bus services available near the site are provided in Appendix B.

#### **Railway Services**

St Leonards Railway Station is located within a 7-minute or 450m walk north of the site. The station is frequently serviced by three rail lines, namely T1 – North Shore and Western Line, T9 – Northern Line, and CCN – Central Coast and Newcastle Line.



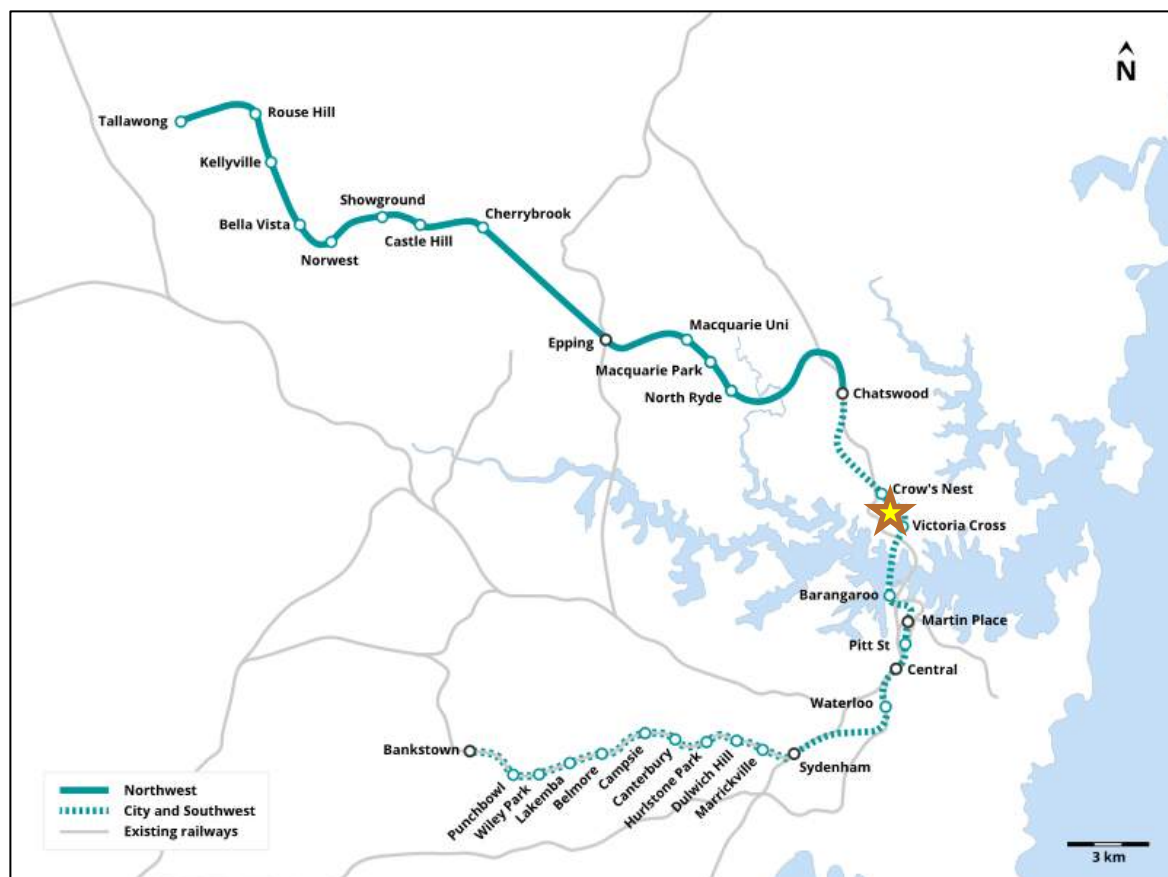
These rail services connect to the Sydney Metro Northwest line from the existing Chatswood Interchange to Tallawong Metro Station with an interchange at Epping Station to other rail services.

Details of the train services available at St Leonards Station are provided in Appendix B.

### **Future Crows Nest Sydney Metro Station**

The site is within 800m of the Crows Nest Metro Station, which is currently under construction as part of the Sydney Metro City and Southwest Line. After completion in 2024, this station will provide metro trains every four minutes during peak hours and connect the area to Sydney Central Business District, Northwest Sydney, and Southwest Sydney. The site is expected to benefit greatly from the Sydney Metro project, given the increased incentives to travel by train on the regular fast service.

The station locations and rail alignment of the Sydney Metro are shown below.



Source: Sydney Metro

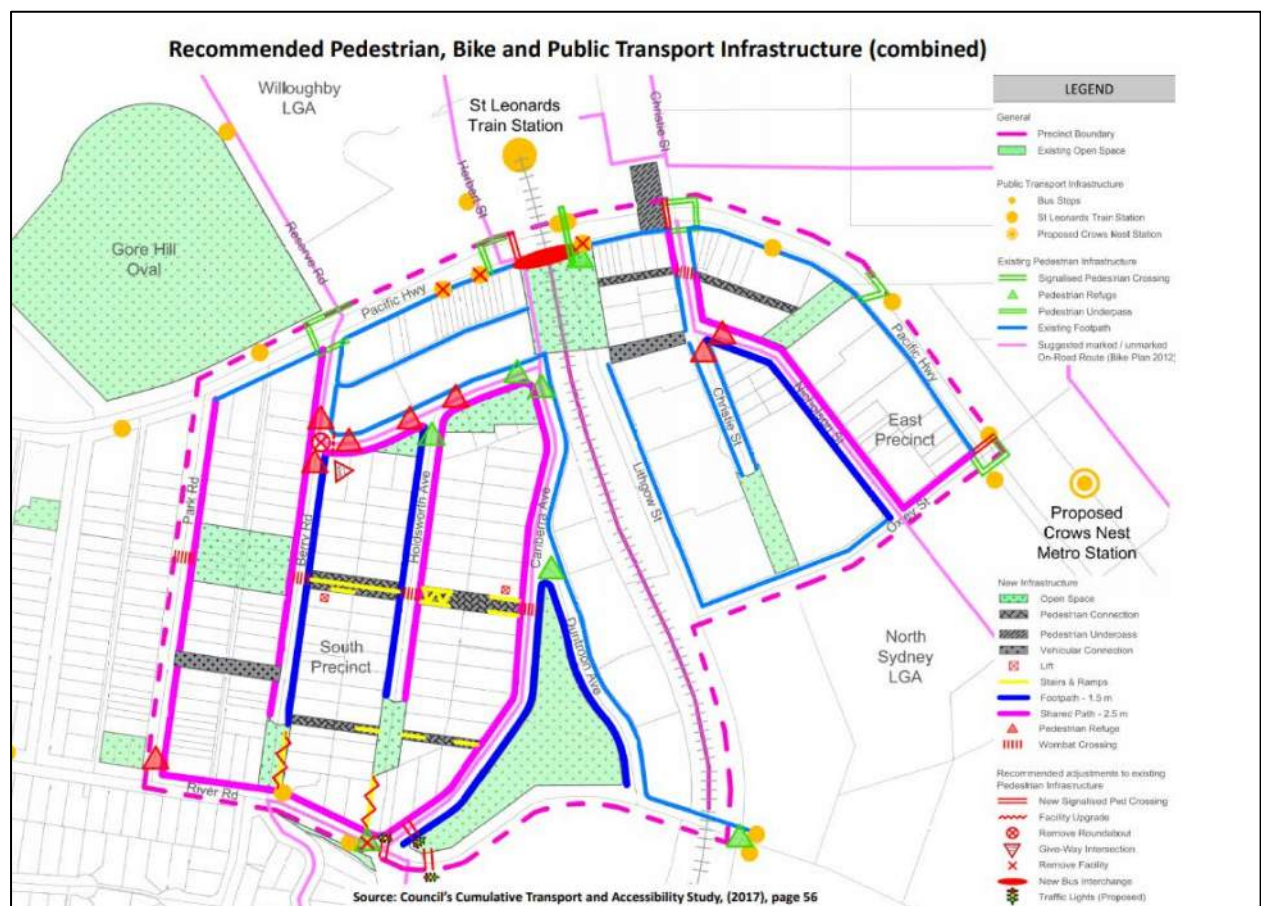


### 3.5 Walking Infrastructure

The site provides a high level of pedestrian connectivity to public transport services and the surrounding residential and commercial precincts. There are generally established and wide pedestrian footpaths on both sides of the local road network in the vicinity of the site.

The signalised pedestrian crossings at the Pacific Highway intersecting with Reserve Road and Berry Road provide formal and safe crossing facilities between the site and nearby bus stops on Pacific Highway.

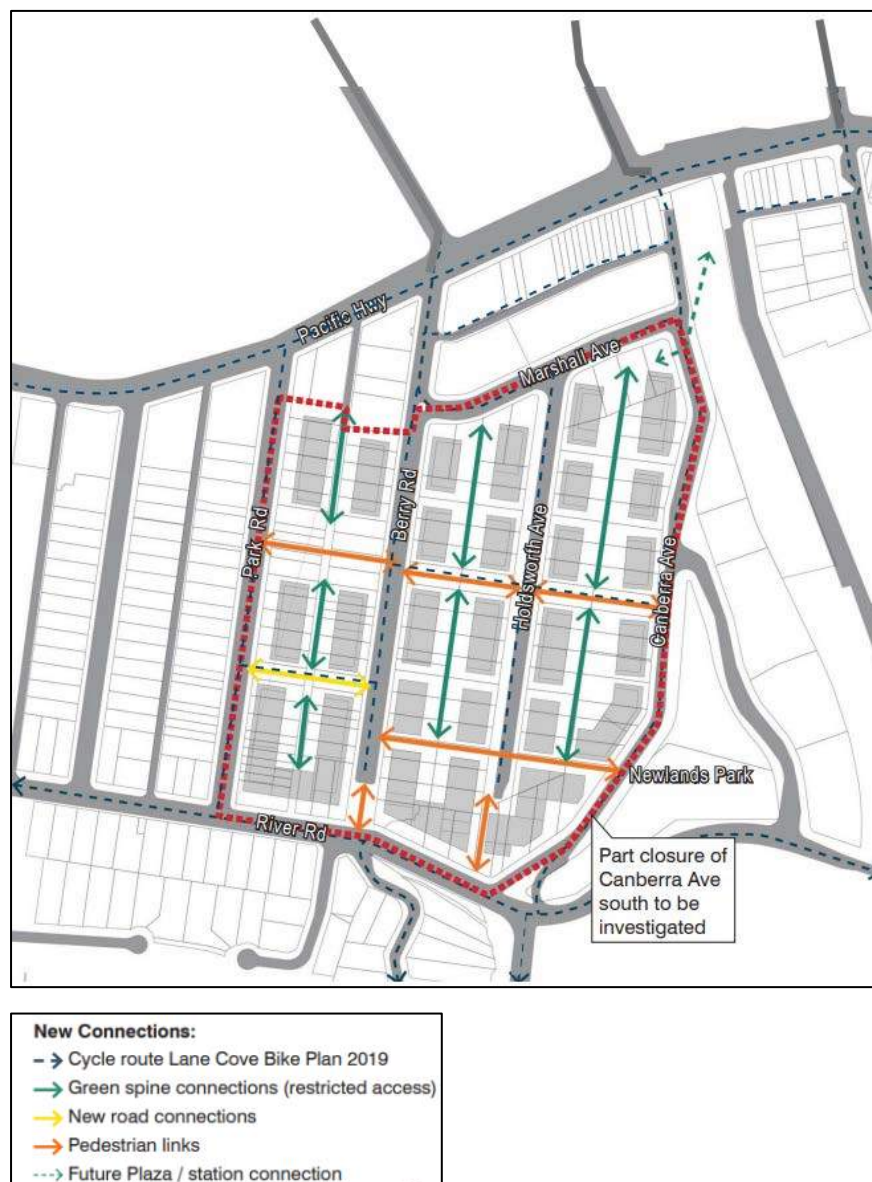
PTC consultants in conjunction with Lane Cove Council recommended a combined infrastructure plan (2017) for pedestrian, bicycle, and public transport (see figure below).



Source: PTC (St. Leonards Cumulative Transport and Accessibility Study, 2017)

## 3.6 Cycle Infrastructure

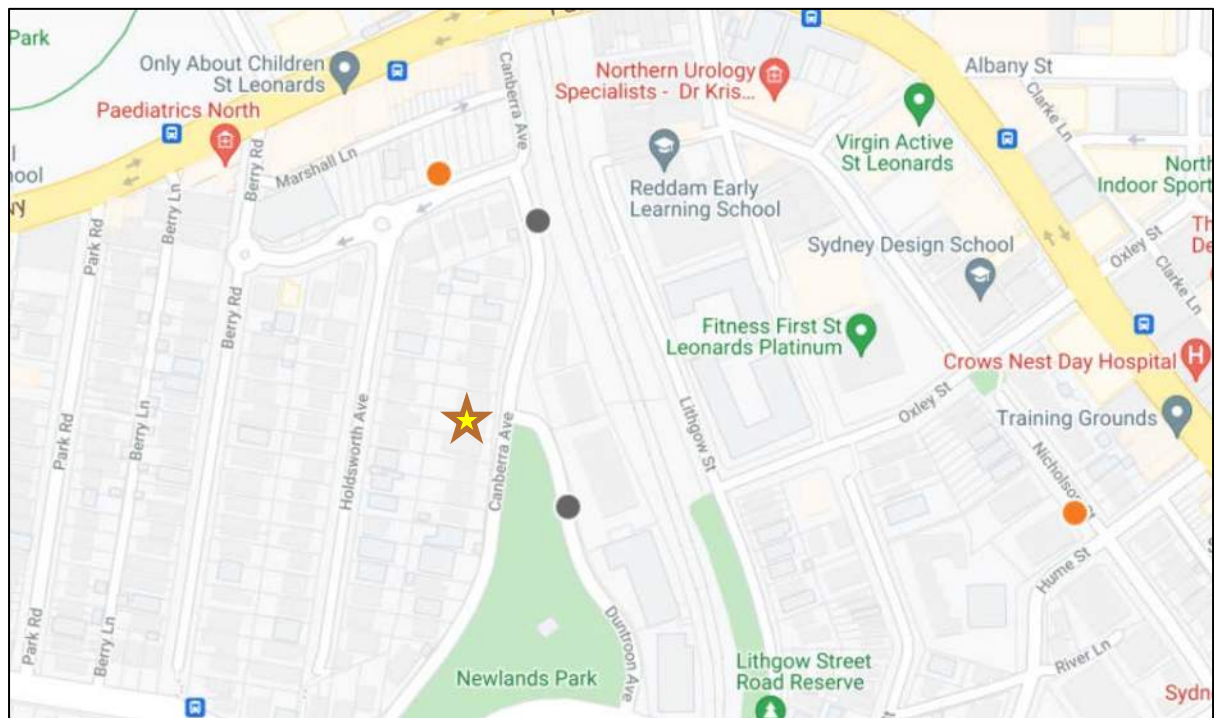
The site is well situated within Sydney's cycle network with cycle routes surrounding the site with the nearest route along River Road to the south of the site. The new master plan developed by Lane Cove Council in 2019 proposes a new shared path along Canberra Avenue, Holdsworth Avenue, Berry Road providing east-west connections for cyclists. The bicycle network surrounding the site is shown in the figure below, with details provided in figure overleaf. The site is expected to benefit from new shared user paths (SUP). These new SUP routes will aid in improving safety, convenience, and mobility for cyclists.



Source: Oculus Architecture (St. Leonards south landscape masterplan 2020)

### 3.7 Local Car Share

3 Go-Get car sharing pods are located within walking distance from the site. The nearest pod is located 1-minute or 100m walking distance east of the site (see the following figure) along Duntroon Avenue.



Source: GoGet

## 4.0 Parking

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### 4.1 Car Parking

It should be noted that the site is located within 400m of St Leonards Railway Station and is therefore subject to reduced parking rates.

Lane Cove Council's DCP specifies the following parking provision in relation to the residential component of the proposed development scheme.

One-Bed apartment	0.5 space
Two-Bed apartment	0.9 space
Three-Bed apartment	1.4 spaces
Adaptable apartment	1 disabled space (inclusive)
Visitors	1 space per 5 apartments 1 disabled visitor space per 10 visitor spaces (minimum 1 space - inclusive)
Car wash bay	1 space per 50 units

Lane Cove Council's DCP specifies the following parking provision in relation to the childcare and retail component of the proposed development scheme.

Childcare centre	1 space per 2 employees 1 short-term drop off space per 5 children 1 disabled space per 20 car spaces (minimum 1 space)
Restaurant or Café	1 space per 110m <sup>2</sup> 1 disabled space per 20 car spaces (minimum 1 space)

Lane Cove Council's DCP specifies that on-site car share spaces may be provided in lieu of private parking at a rate of 1 per 3 spaces.

Application of this development criteria would indicate the following:

1 x Studio	0.5 (1) space
26 x One-Bed apartments	13 spaces
28 x Two-Bed apartments	26 spaces
29 x Three-Bed apartments	41 spaces
17 x Adaptable apartments	17 disabled spaces (inclusive)
<b>Subtotal – Resident</b>	81 spaces (including 17 disabled spaces)
Visitors (84 apartments)	17 spaces (including 2 disabled spaces)
Car wash bay (84 apartments)	2 car wash spaces
<b>Total - Residential</b>	<b>100 spaces (including 19 disabled spaces)</b>
14 x childcare centre employees	7 spaces
60 x childcare centre children	12 short-term drop off spaces (including 1 disabled space)
<b>Total - CCC</b>	<b>19 spaces (including 1 disabled space)</b>
Retail (38m <sup>2</sup> )	1 space (including 1 disabled space)
<b>Grand Total</b>	<b>120 spaces (including 21 disabled spaces)</b>

A total of 136 spaces are provided in the basement levels with the following breakdown:

- 95 resident spaces (including 17 disabled spaces)
- 17 visitor spaces (including 3 disabled spaces)
- 2 car wash spaces
- 2 car share spaces
- 7 CCC staff spaces
- 12 short-term drop off spaces for the CCC use (including 1 disabled space)
- 1 disabled retail space (for staff only)

The on-site car parking provision is expected to meet the parking demand of the proposed CCC operation, with all set-down and pick-up activities to occur within the site. As such, there will be no reliance on the on-street parking by the parents/carers along surrounding roads (including Canberra Avenue).



It is noted that the proposed development will provide 6 charging points/stations for electric vehicles. The charging point/station opportunities to be explored in the Detailed Design stage.

## 4.2 Disabled Car Parking

A total of 22 disabled spaces (17 spaces for adaptable apartment use, 3 spaces for visitor use, 1 space for retail use and 1 space for childcare use) is provided in the basement levels in satisfaction of the BCA requirements.

## 4.3 Bicycle Parking

Council's DCP specifies the following requirements:

Residential (residents)	1 space per 4 apartments
Residential (visitors)	1 rack + 1 rack per 10 apartments
Shop / Restaurant or Café (employees)	1 space per 50m <sup>2</sup> GFA
Shop / Restaurant or Café (customers)	2 racks + 1 rack per 200 m <sup>2</sup> over 200 m <sup>2</sup> GFA
Childcare centre (employees)	1 space per 10 staff
Childcare centre (customers)	2 racks per centre

A charging point for electric bicycles for every 5 bicycle spaces.

Based on the above, the proposed development is required to provide a total of 38 bicycle parking spaces with the following breakdown:

- 21 spaces for residents
- 9 spaces for residential visitors
- 1 space for café staff
- 2 spaces for café customers
- 1 space for childcare staff
- 2 spaces for childcare visitors
- 5 charging points.

A total of 36 bicycle spaces are provided on Basement 1 and the ground level, in satisfaction with Council's DCP.

Bicycle charging point locations will be provided in the Detailed Design stage.

## 5.0 Traffic

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### 5.1 Council's Precinct Study

Council has undertaken Aimsun modelling of the St Leonards South Precinct in an effort to support the rezoning of the precinct. The model took into consideration the cumulative traffic impacts of the existing and future site developments of up to 2,400 dwellings within Areas 1 to 23 of the precinct.

The following traffic generation rates were adopted for new residential developments in the St Leonards South precinct:

AM Peak: 0.14 vtpm per apartment

PM Peak: 0.07 vtpm per apartment

The outcome of the study recommended the following infrastructure upgrades be undertaken as part of the rezoning:

- ❖ replacement of roundabout on the Marshall Avenue/Berry Road intersection with a GIVE-WAY traffic control
- ❖ a new road linkage between Berry Road and Park Road.

#### **Proposed Areas 7-11**

The proposed St. Leonards South (Areas 7-11) site is located at 21 to 41 Canberra Avenue and 18 to 32 Holdsworth Avenue just to the south of the site, comprising of 329 apartments. It is noted that the proposed development is significantly lower than the 472 dwellings assumed in the Aimsun traffic modelling.

#### **Proposed Area 5**

The proposed development is located within Area 5, which accounts for approximately 4% of the total permissible GFA of the precinct, which equates to a total of 96 apartments. Notwithstanding the above, the development currently proposes 84 dwellings (an

approximately 13% reduction in dwelling yield compared to Council's Aimsun model of the precinct).

### **Comparison between Modelled Traffic and Proposed Development Traffic**

Based on the adopted traffic generation rates, the projected peak hour traffic generations are lower than the modelled traffic, as shown in the following:

Site	No. of Apartments		Modelled		Proposed Development Traffic		Reduction in Traffic	
	Modelled	Proposed	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Areas 7-11	472	329	67	34	47	24	20	10
Area 5	96	84	14	7	12	6	2	1
<b>Total</b>	<b>568</b>	<b>413</b>	<b>81</b>	<b>41</b>	<b>59</b>	<b>30</b>	<b>22</b>	<b>11</b>

Based on the above assessments, the proposed developments will result in a reduction of 22 vtp/h and 11 vtp/h during the AM and PM peak hours, respectively, compared to that under the AIMSUN model.

## **5.2 Residential Component**

Using the adopted traffic generation rates for the precinct, the proposed residential component of 84 apartments will generate some 12 and 6 vtp/h in the AM and PM peak periods, respectively, compared to that under the AIMSUN model.

The above traffic generation will be discounted by the existing 4 dwellings at the RMS rate of 0.85 vtp/h (i.e., 3 vtp/h). As such, the projected 'additional' vehicle generation of the development during the peak traffic periods will therefore be:

AM		PM	
IN	OUT	IN	OUT
1	7	2	0

## 5.3 Childcare Centre Component

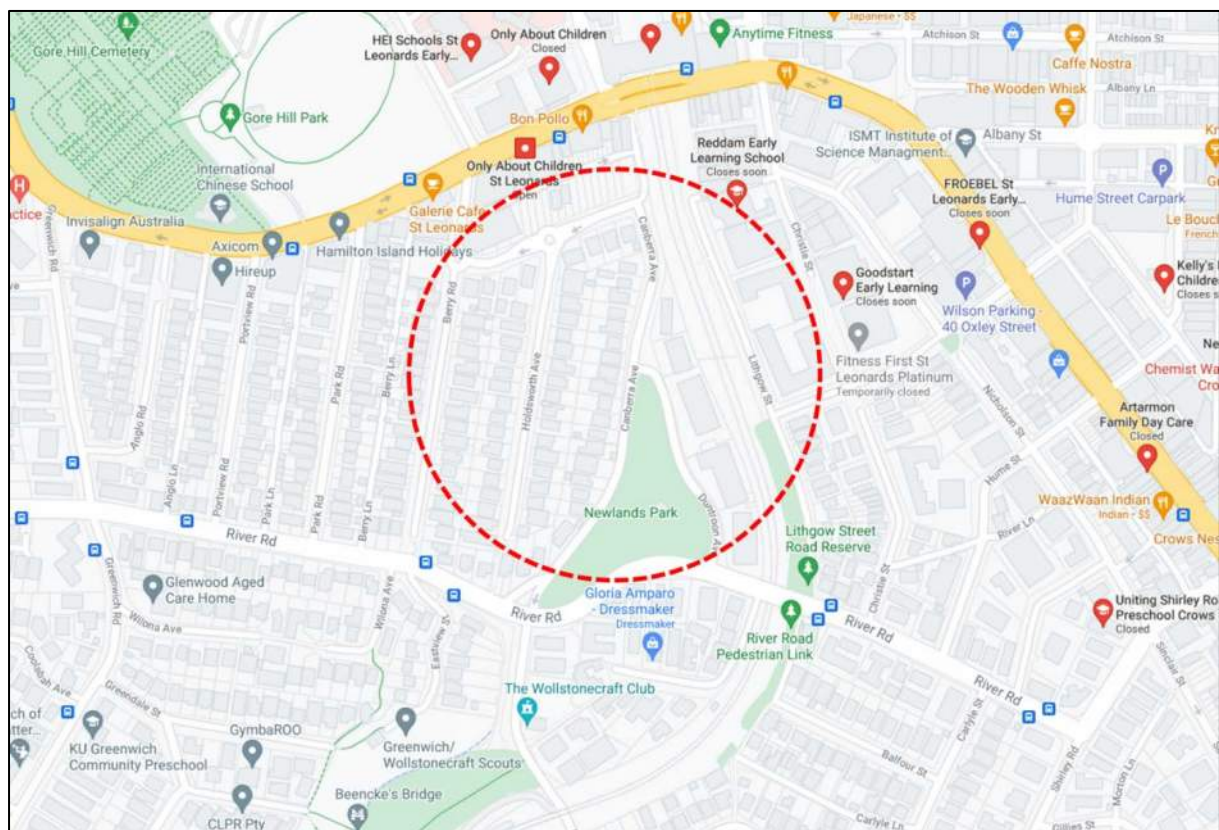
An indication of the likely traffic generation of the proposed development can be established with reference to the Trip Generation Surveys for Childcare Centres by TEF Consulting for RMS.

For CCC, the document indicates the following average traffic generation rates:

AM Peak Hour: 0.64 peak vehicle trips/child

PM Peak Hour: 0.40 peak vehicle trips/child

However, it should be noted that the proposed CCC is the only centre being proposed at this stage within the St Leonards South precinct. In addition, there is currently no other CCC within 200m of the site and further to the west, south and southeast of the site.



It is anticipated that the proposed CCC would generally consist of walk-ins by nearby



residents and employees and the site itself. Staff for the proposed CCC can rely on the excellent public transport provision in the vicinity of the site.

Based on the above, the anticipated average traffic generation rates for the CCC would be significantly lower. The following realistic traffic generation rates have been adopted for this assessment:

AM Peak Hour: 0.32 peak vehicle trips/child

PM Peak Hour: 0.20 peak vehicle trips/child

Application of these hourly rates to the proposal of 60 child places indicates a peak hourly vehicle trip generation of some 20 movements during the AM peak and some 12 movements during the PM peak. If it is assumed that the trips are relatively evenly distributed between arrivals and departures, then the following traffic generation characteristics are projected.

Peak Hour Vehicle Movements			
AM		PM	
IN	OUT	IN	OUT
10	10	6	6

It is relevant that this level of traffic activity represents a worst-case circumstance as it assumes that all trips associated with the CCC are new and does not take into account existing movements past the site generated by parents/guardians who, irrespective of whether or not they had a child attending the centre would normally travel through the area when commuting to/from work.

This circumstance is further advantaged by the schools in the surrounding area, which provide further dual-purpose trip opportunities for families with siblings of similar ages.

If it is conservatively estimated that these 'dual-purpose' trips could account for 20% of the total trips generated by the CCC, the new or additional trips on the immediate surrounding road network would be reduced accordingly.

Application of the 20% 'dual-purpose' trip discount indicates a peak hourly vehicle trip generation of some 16 movements during the AM peak and some 10 movements during the PM peak.

## 5.4 Cumulative Traffic Generation

The proposed development is expected to generate cumulative additional AM and PM peak hour traffic generations of 24 and 12 vtp, respectively, with the following breakdown:

Use	Additional Peak Hour Vehicle Movements			
	AM		PM	
	IN	OUT	IN	OUT
Residential	1	7	2	0
CCC	8	8	5	5
<b>Total</b>	<b>9</b>	<b>15</b>	<b>7</b>	<b>5</b>

As discussed, the residential component traffic will be less than those modelled by Council.

The additional traffic generated by the CCC use (of 16 vtp and 10 vtp) will be offset by the differences in peak hour traffic generation between the modelled and proposed developments of 22 vtp and 11 vtp during the AM and PM peak hours, respectively.

In summary, the projected increase in traffic activity as a consequence of the development proposal is minimal. It will clearly not have any unacceptable traffic implications in terms of road network capacity. In addition, the proposal is consistent with the zoning objectives of the precinct and the traffic implications of the proposal have already been assessed to be acceptable by Council as part of the rezoning of the precinct.

## 5.5 Closure of Canberra Avenue

Based on the consultation with Council, the traffic island and raised crossing on

Canberra Avenue will be removed as part of the proposed development. The removal of these existing traffic facilities is acceptable given that Canberra Avenue (north of River Road) will be closed and no longer serve as a throughfare between River Road and Pacific Highway. The proposed closure will result in significantly lower traffic and vehicular-pedestrian conflicts.

## 6.0 Access, Internal Circulation and Servicing

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### 6.1 Access

Access is proposed via a single 6.85-metre-wide (minimum) entry/exit driveway located near the south-eastern site boundary.

The proposed access driveway accords with the design requirements of AS2890.

Canberra Avenue is relatively straight and level at this location, where there are excellent sight distances available for exiting vehicles.

### 6.2 Internal Circulation

The geometry of the proposed internal circulation arrangement has been designed in accordance with AS2890.1, 2 and 6. Residential and employee parking bays are a minimum of 2.4 x 5.4 metres, while the aisles are a minimum of 5.8 metres wide.

CCC visitor parking bays are provided at a minimum of 2.7 x 5.4 metres. The 6.3-metre-wide aisle allows adequate vehicle manoeuvring and pedestrian movement areas within the basement carpark for safe and efficient set-down and pick-up activities.

The shared disabled space has been designed in accordance with the current standard AS2890.6-2009, with a 2.4m wide x 5.4m long space with a similar-sized shared zone.

Details of the vehicle turning assessment indicating a satisfactory provision in this regard are provided in Appendix C.

### 6.3 Servicing

#### **Proposed Loading Space**

There will be a loading space on the ground floor for refuse collection and other service vehicles, with 4.5m headroom to accommodate up to an 8.8m medium rigid vehicle



(MRV) and Council's typical 8m long garbage truck and 6.64m long small garbage truck.

Smaller service vehicles (i.e., deliveries, courier activity, maintenance, etc.), which typically involves van, utes, etc., will be able to use the loading space or the available visitor parking spaces.

### **Proposed Loading Dock Management Plan**

The day-to-day operation of the loading area will be subject to a detailed dock management plan to ensure efficient use. The primary requirements will be for garbage collection and removalist trucks, which can be easily separated and managed as part of the residential building.

The loading dock management plan will centre around the use of a detailed online booking system. The online booking system will be operated and maintained by the building management and made available via a link on the building's website. Such systems are common practice and will ensure appropriate use and prevent overstaying in the loading dock.

The objective is to always manage service vehicle and trade vehicle activity so that no more than 1 heavy vehicle is at the loading dock at any one time. Based on a maximum of 2 vehicles every hour between 7 am and 5.30 pm daily, the loading dock can accommodate up to 21 trucks per day.

Council's waste collection usually occurs outside of the peak periods, i.e., early mornings.

### **Adequacy of the Loading Space**

The provision of the loading space for an 8.8m medium rigid vehicle (over a 12.5m heavy rigid vehicle) is adequate and appropriate for the proposed development based on the following reasons:

- ❖ Based on City of Sydney's survey completed by Arup, the great majority of service vehicles accessing the proposed development will be small (e.g., vans) and the visitation by MRV size vehicles will only up to 22% of the total use
- ❖ The proposed Loading Dock Management Plan, which is similar to that enacted at the other large mixed-use developments, will provide a practical means of regulating the use of the loading bay
- ❖ Consistent with other comparable and larger mixed-use developments:

**111 George Street, Parramatta**

264 residential apartments

862m<sup>2</sup> retail

**Thomas Street, Chatswood**

353 residential apartments

356 serviced apartments

486m<sup>2</sup> retail

**Moore Park (ACI site)**

208 residential apartments

2,642m<sup>2</sup> supermarket

1,220m<sup>2</sup> retail specialty

**Carter Street, Lidcombe**

340 residential apartments

1,764m<sup>2</sup> supermarket

425m<sup>2</sup> retail specialty

**Campbell Street, Sydney**

211 residential apartments

3,836m<sup>2</sup> commercial

233m<sup>2</sup> retail

**Taylor Square Darlinghurst**

208 residential apartments

1,547m<sup>2</sup> Woolworth Supermarket

2,436m<sup>2</sup> retail/restaurant

**4 Parramatta Square**

67,600m<sup>2</sup> commercial

2,368m<sup>2</sup> Child Care Centre

3,142m<sup>2</sup> retail specialty (11 tenants)

**“Infinity“ Green Square**

400 residential apartments

3,082m<sup>2</sup> retail

760m<sup>2</sup> Conference Centre

- ❖ There is no evidence that the loading circumstances at the cited developments present any operational shortcomings for service/delivery vehicles

**Measures to Minimise Vehicular Conflicts**

To minimise conflicts between truck movements and general (residential and CCC) traffic, it is recommended that only smaller trucks are booked to use the loading space during the commuter and CCC peak hours:

- AM peak: 8.00 to 9.00
- PM peak: 3.15 to 5.30

All service vehicle drivers will be inducted during booking and reminded via on-site signage to give priorities to the general traffic at all times.

With the above measures and service vehicle movements of 2 vtpd, the loading/unloading activities will have a very minor impact on the vehicle circulation.

**Summary**

Based on the above, the proposed loading dock is considered adequate to accommodate the servicing demands of the site.



## 7.0 Pedestrian Safety, Carpark Management and On-Street Parking Restriction

---

### 7.1 Pedestrian Safety

The CCC endeavors to provide a high-level of safe environment for all users within the carpark. In order to provide an environment where access and safety for pedestrians are prioritized, the following additional safety arrangements and features will be in place on Basement 1 to minimise the risks to pedestrians:

- \* Shared zone signs with posted speed limit of 5kph will be provided within the carpark to highlight the presence of pedestrians, give priority to pedestrians and enable better control of vehicles to avoid potential conflicts with pedestrians.
- \* Dome safety mirrors to be mounted on walls and corners to broaden the drivers' field of visions to pedestrians when entering and exiting the car parking spaces and carpark.

To ensure safety within the remaining area of the carpark (ground and Basement 3 through 4), posted speed limit of 10 kmph sign will be installed at key locations on these levels.

### 7.2 Carpark Management

The carpark will be under the management of the future carpark operator/ building manager with the following operations:

- The main gate on the ground level will remain open during the day with after-hours access via remote controls (residents/staff) and intercom (visitors).
- Access to resident parking on Basement 2 through 4 via remote controls only.

- All visitor, retail and CCC parking will be sign-posted.
- Signage for driver behaviour (i.e., rules) will be provided near the lift area/key locations within the carpark, stipulating rules must be adhered to by individuals who use the carpark.

### 7.3 On-Street Parking Restriction

The 4 existing crossovers along Canberra Avenue will be consolidated into a single access. The redundant driveways will be removed with kerb invert be reinstated to match adjacent footpath and kerbing.

To accommodate truck turning left from Canberra Avenue into the new driveway, it is proposed to convert the existing unrestricted kerbside parking (17m long) on the western side of Canberra Avenue to a No Stopping zone. The proposed zone would result in the removal of 3 on-street parking spaces. Given that these spaces are currently used by the residents of existing residential dwellings, the loss of these spaces would present a negligible impact to the existing on-street parking conditions.

## 8.0 Green Travel Plan

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### 8.1 Green Travel Plan

Green Travel Plans (GTPs) has proven to be a successful way of changing travel behaviour for residential, commercial, and industrial developments throughout Australia and overseas. A GTP is a way in which a development manages the transport needs of staff and visitors. The aim of the plan is to reduce the environmental impact of travel to and from a given site and in association with its operation. In essence, the plans encourage more efficient use of motor vehicles as well as alternatives to single-occupant car usage.

It is anticipated that there would be a significant shift in the future travel patterns to/ from and within the local and regional area associated with the Sydney Metro projects. The

frequency, capacity, and nature of metro services will transform the areas along the proposed Sydney Metro route, with high-density residential developments either in planning or under construction. Large commercial entities are also continuing to be drawn to the area. The GTP would put in place measures to further influence the travel patterns of those people living and working at the development with a view to encouraging modal shift away from cars.

## 8.2 Actions

To reduce car parking demand from the development, the most straightforward actions should be addressed first:

### i. Implementation of the GTP

- ❖ Appoint a Travel Plan Coordinator (TPC) to ensure the successful implementation and monitoring of the GTP.
- ❖ Conduct annual travel surveys to establish travel patterns in the area and assess the success of the GTP. This would be managed by the appointed TPC. Allow surveys to incorporate suggestions from residents and staff to improve green travel arrangements.
- ❖ Create a site-specific GTP website.

### ii. Increase walking, running, and cycling to work and other destinations (errands, recreational, social) by staff and residents. The development should also include innovative transport solutions to manage travel demand and reduce reliance on private vehicles through:

- ❖ Provision of bicycle spaces in accordance with the DCP requirements.
- ❖ Provision of green toolkits, including puncture repair equipment and bicycle pumps.
- ❖ Promote bicycle-friendly shops in St Leonards. A loyalty card program could be organised between staff who cycle and cafes/ shops.

### iii. Increase public transport use:

- ❖ Provide timetables on-site with public transport maps and timetables to promote public transport usage.



- ❖ Provision of good quality, accurate and useful directional signage to promote walking and cycling to the nearby railway station.

#### **iv. Increase carpool:**

- ❖ Implementation of a rideshare system, which could include encouraging childcare centre staff to participate in a peak-hour car-pooling club. This may be coordinated by a 'transport champion,' an appointed worker, building manager, or formally appointed TPC.
- ❖ Provide priority parking or reduced parking costs for staff that carpool.

#### **v. Increase residents, staff and visitor awareness and knowledge of available transport options:**

- ❖ Provision of a Transport Access Guide (TAG), which should be given to every resident, staff and regular visitor. The TAG should include public transport timetables, stop/ station locations, walking times/ distances, etc.
- ❖ Provide information on public transport arrival/ departure times with a display to show train departure times from St Leonards station and surrounding bus stops as well as estimated walking times to each location.
- ❖ A half-yearly newsletter could be provided to every resident and staff for up to two years after occupation bringing the latest news on sustainable travel initiatives in the area.

## 8.3 Monitoring and Reviewing

There is no standard methodology for the implementation and management of sustainable transport initiatives. However, as part of the GTP, these initiatives should be monitored to ensure that it is achieving the desired benefits.

The monitoring of the GTP would require travel surveys to be undertaken with a focus to establish travel patterns, including mode share of trips to and from the site.

The implementation of the GTP will need a formal TPC, who will have responsibility for

developing, implementing, and monitoring the GTP. The TPC will be an appointed staff member of the proposed development or an independent expert.

It will also be necessary to provide feedback to residents, staff and regular visitors to ensure that they can see the benefits of sustainable transport.

There are several key elements to the development and implementation of a successful GTP. These include:

- ❖ Communication – Good communication is an essential part of the GTP. It will be necessary to explain the reason for adopting the plan, promote the benefits available and provide information about the alternatives to driving alone.
- ❖ Commitment – GTPs involve changing established habits or providing the impetus for people in new developments to choose a travel mode other than private car use. To achieve cooperation, it is essential to promote positively the wider objectives and benefits of the plan. This commitment includes the provision of the necessary resources to implement the plan, beginning with the introduction of the 'carrots' or incentives for changing travel modes upon occupation.
- ❖ Building consensus – It will be necessary to obtain broad support for the introduction of the plan from the tenants.

Once the plan has been adopted, it is essential to maintain interest in the scheme. Each new initiative in the plan will need to be publicised and marketing of the project will be important.

## 9.0 Conclusion

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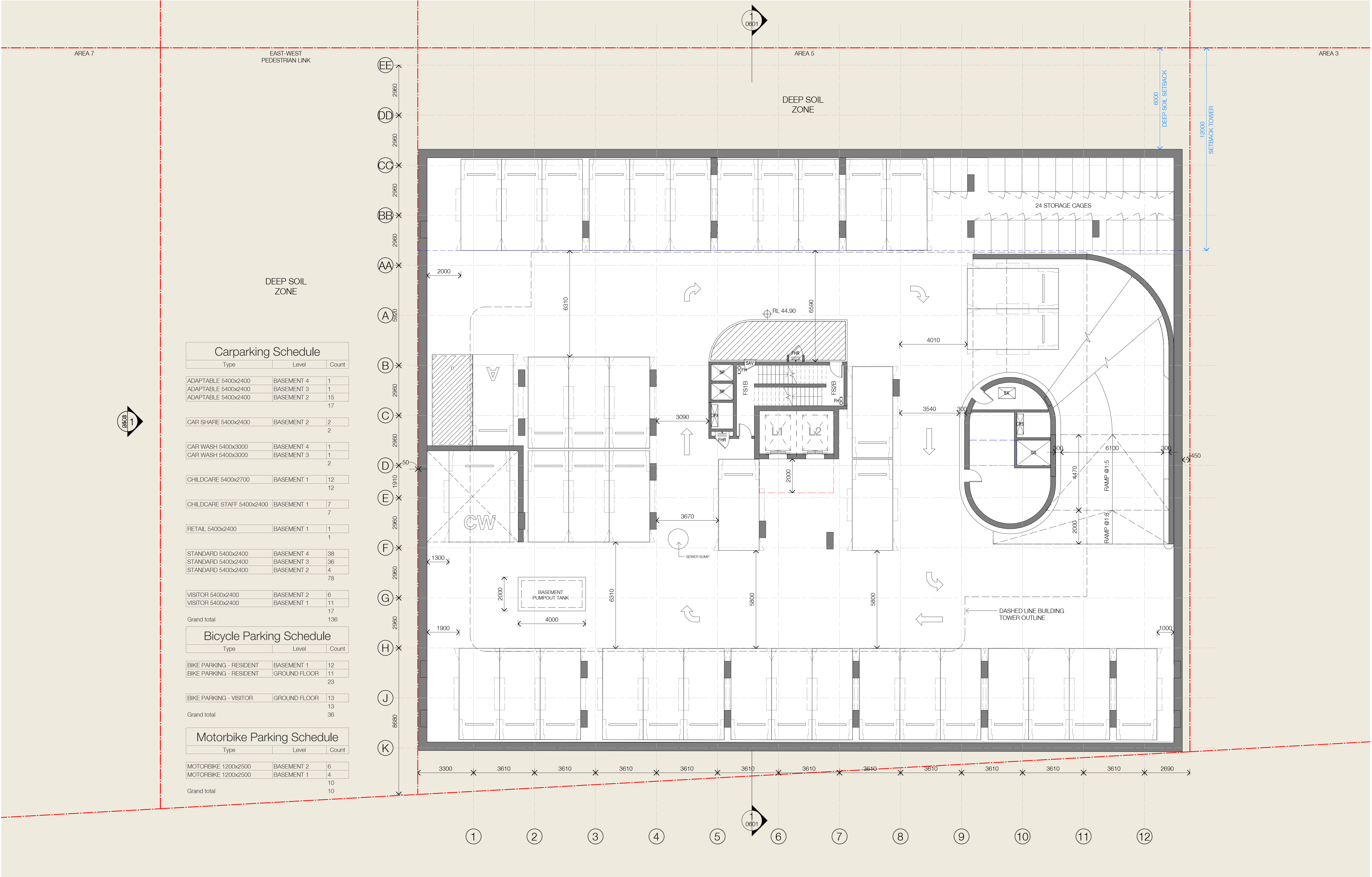
A Development Application is to be submitted to Lane Cove Council for a proposed residential development at 13-19 Canberra Avenue at St Leonards. The traffic, transport, and parking assessment provided in this report confirm that:

- ❖ the site is one of the areas (Area 5) within the St Leonards South precinct, which has been identified by Council for an uplift in the density of development.
- ❖ the site is strategically well located within the convenient walking distance to public transport (including the future Crows Nest Metro Station) and pedestrian and cycle networks.
- ❖ the site will have ready access to educational, retail, entertainment and employment facilities within the nearby St Leonards Town Centre
- ❖ a preliminary Green Travel Plan has been included as part of this assessment with a view to encouraging residents, staff and visitors to utilise non-car travel modes to travel to/from the site.
- ❖ the car, motorcycle and bicycle parking provisions are in accordance with the Council's DCP
- ❖ the proposed access, internal circulation and servicing arrangements will be appropriate to current requirements of relevant Australian Standards (i.e., AS2890.1, AS2890.2 and AS2890.6).
- ❖ the proposed development is expected to generate minor cumulative additional AM and PM peak hour traffic generations of 24 and 12 vtp/h, respectively and will not present any adverse traffic/safety implications
- ❖ it is expected that the road network would operate satisfactorily as demonstrated in the Council's modelling report
- ❖ it is therefore concluded that the proposed development is supportable on traffic planning grounds.



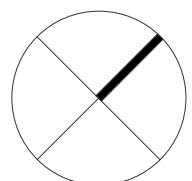
## Appendix A

### Architectural Plans



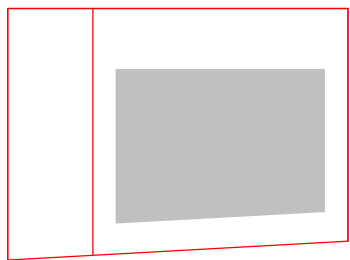
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28	18/08/2021	FOR COORDINATION	LL	AH
29	27/08/2021	FOR INFORMATION	LL	AH
32	03/09/2021	FINAL DRAFT FOR DA	LL	AH
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**13-19 Canberra Ave**  
**St Leonards**  
Drawing Name  
**FLOOR PLAN B4**

Date

**13/10/2021**

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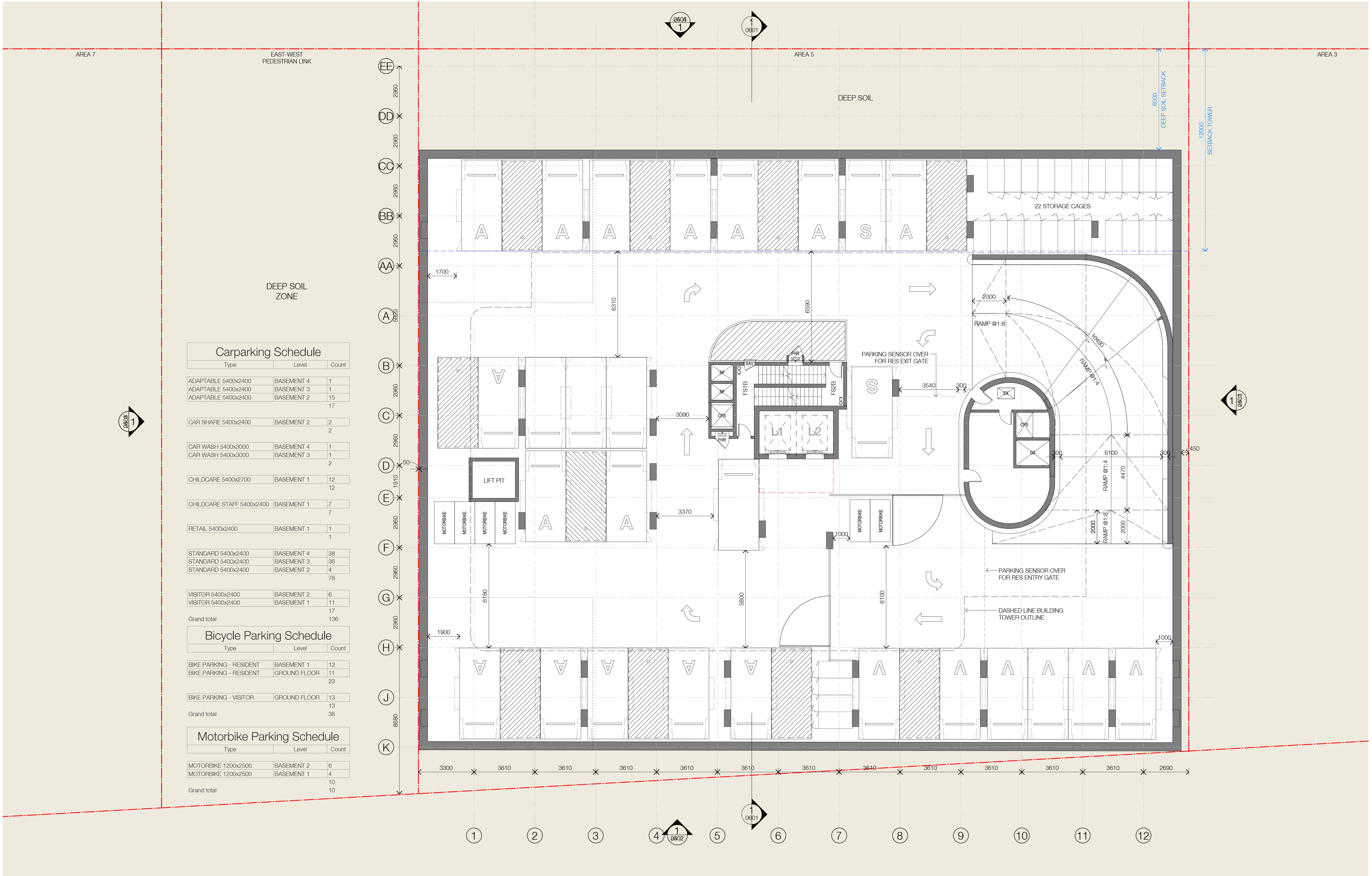
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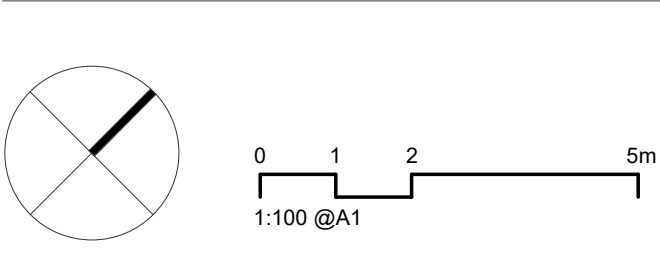




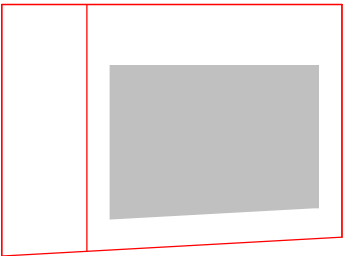


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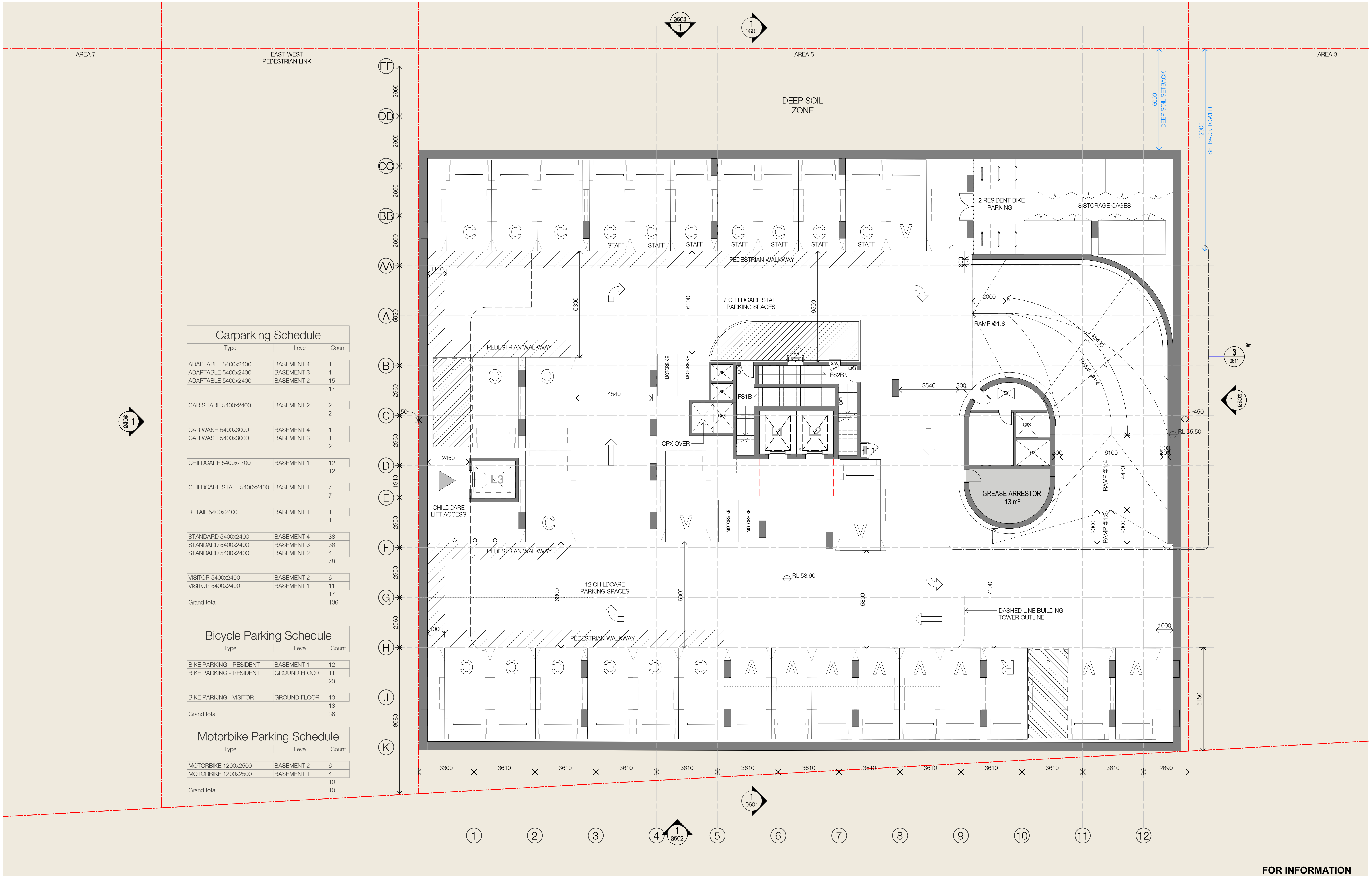
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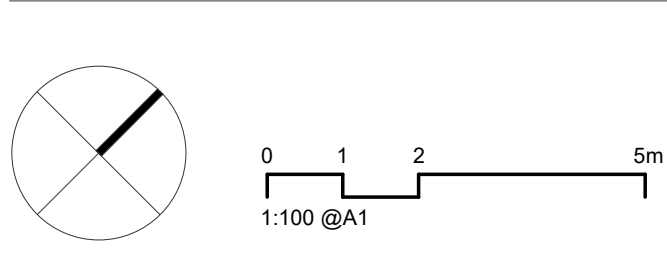




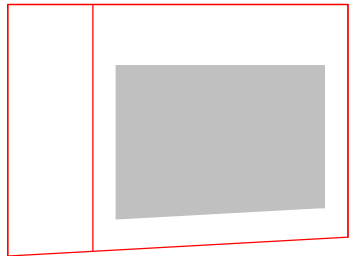


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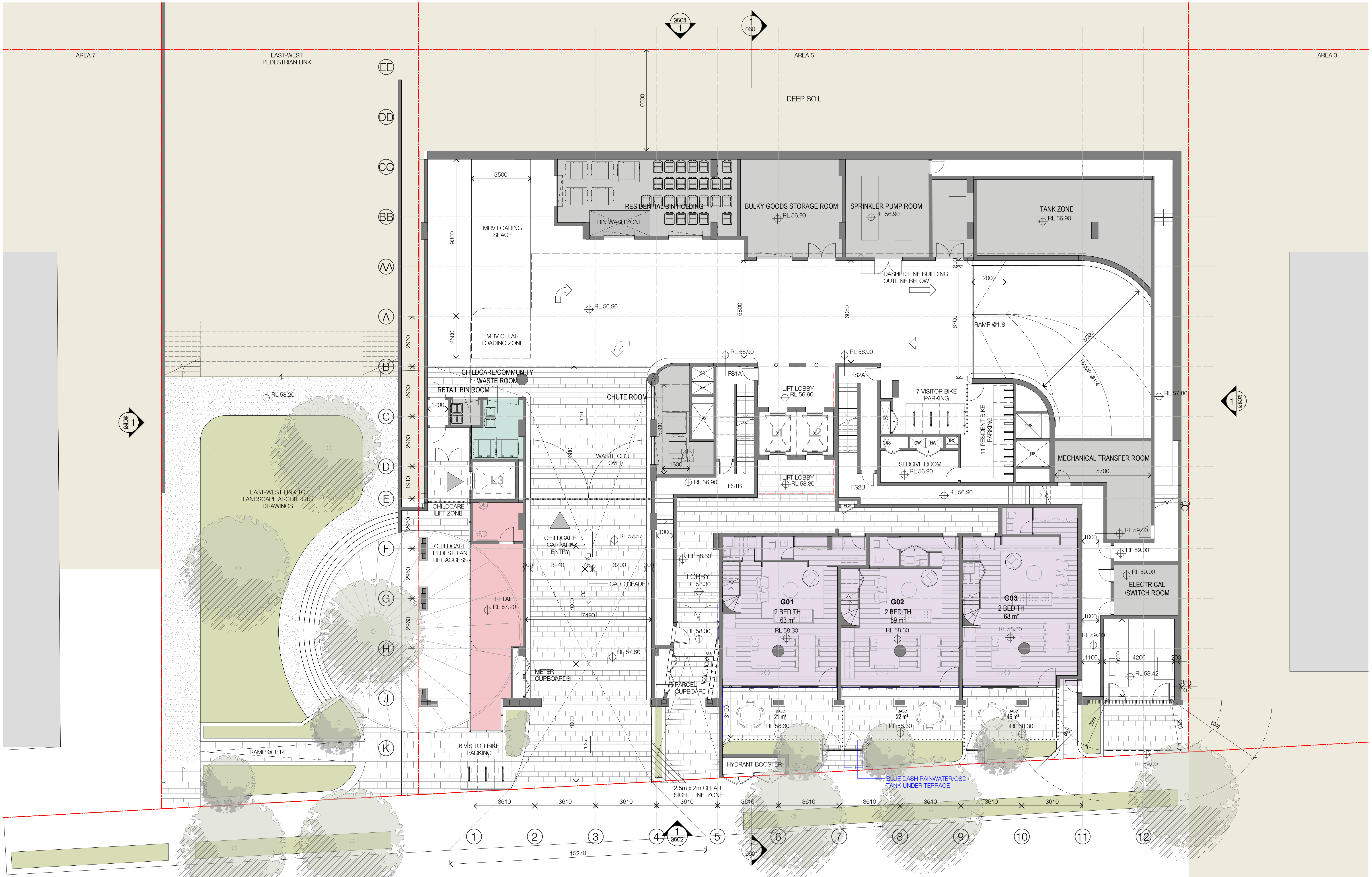
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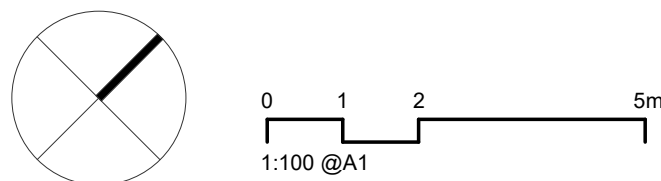




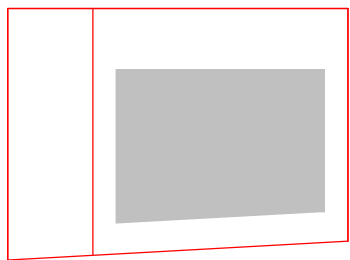


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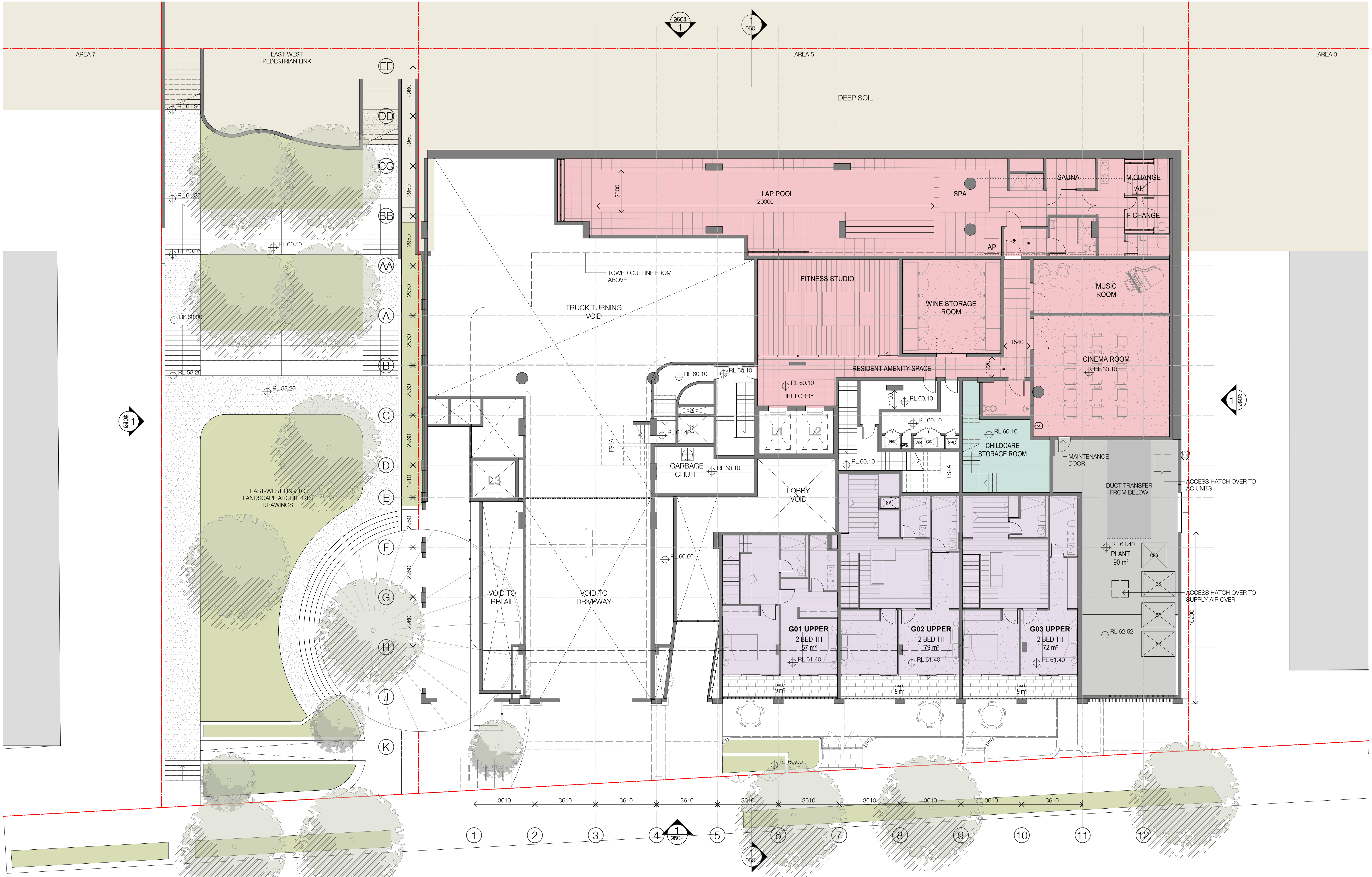
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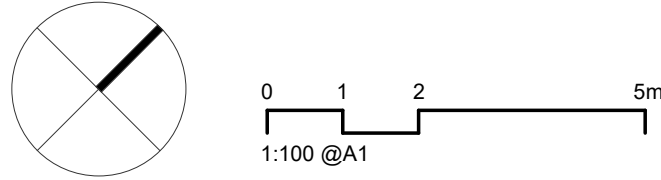




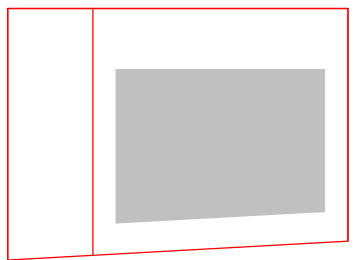


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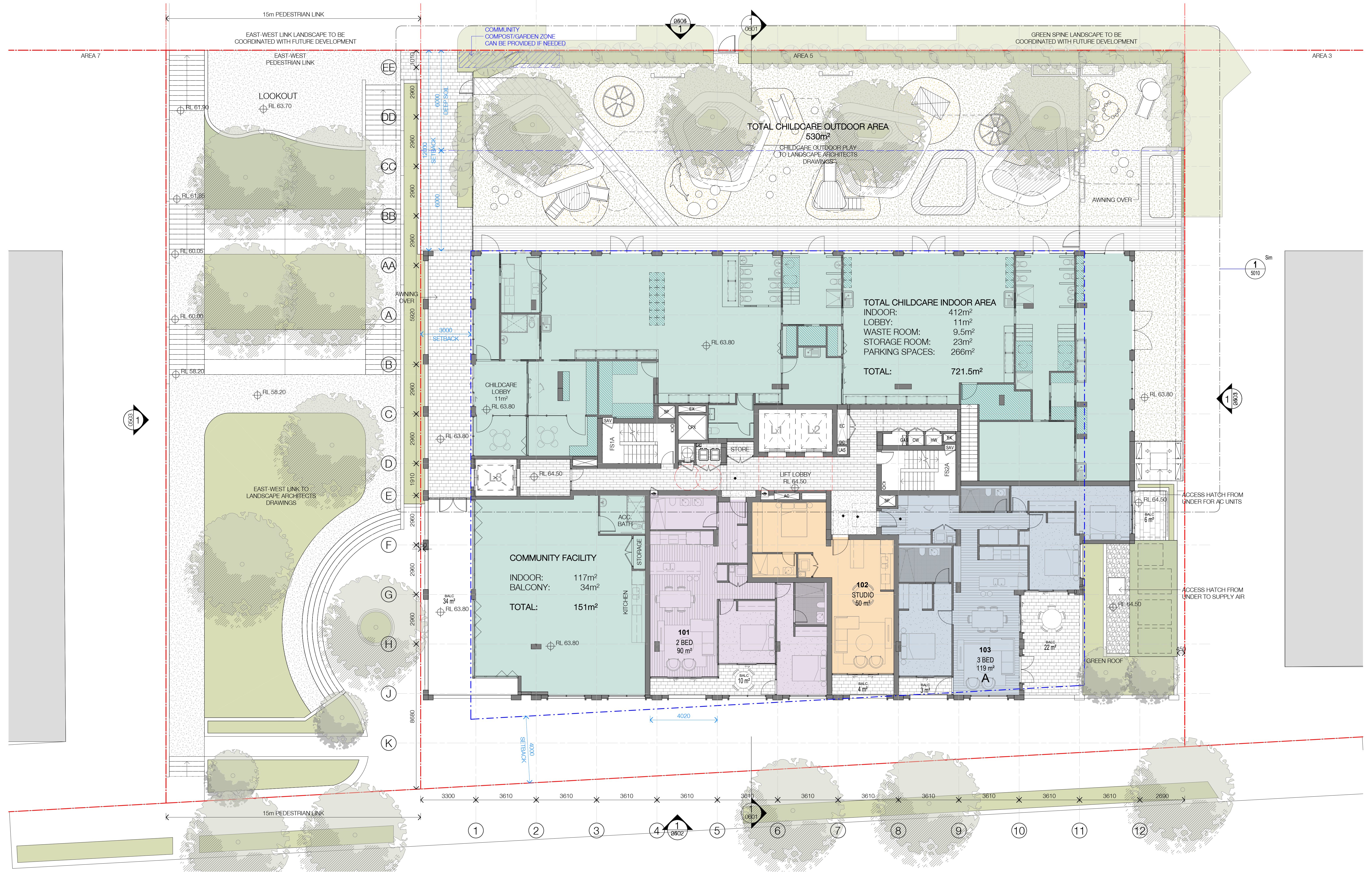
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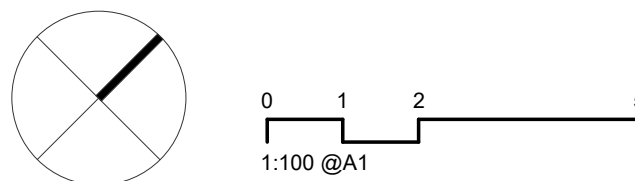




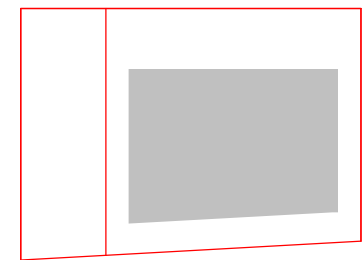


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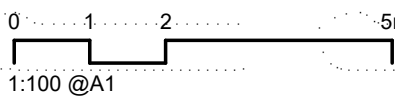




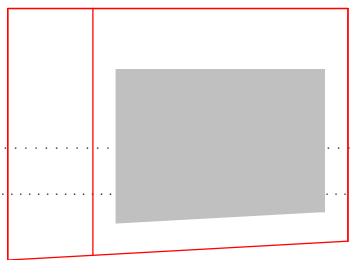


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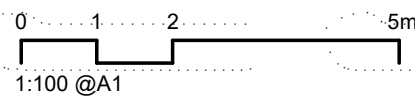




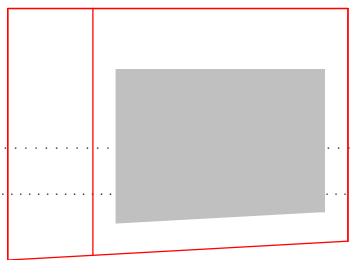


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Nominated Architects: Adam Haddow-7188 | John Pradel-7004



Rev	Date	Revision	By	Chk.
9	11/06/2021	DRAFT ELEVATIONS FOR CONSULTANT	LL	AH
14	29/06/2021	FOR CONSULTANT COORDINATION	ML	AH
21	20/07/2021	FOR CONSULTANT COORDINATION	ML	AH
23	04/08/2021	DRAFT DA FOR CLIENT REVIEW	LL	AH
28	18/09/2021	FOR COORDINATION	LL	AH
32	03/09/2021	FINAL DRAFT FOR DA	LL	AH
36	24/09/2021	FINAL DRAFT FOR DA	LL	AH
37	28/09/2021	FINAL DRAFT FOR DA	LL	AH
40	08/10/2021	FINAL DRAFT FOR DA	LL	AH
42	13/10/2021	FOR DA APPLICATION	LL	AH



Client

**HYECORP**

Project

St Leonards  
13-19 Canberra Ave  
St Leonards  
Drawing Name  
EAST ELEVATION

Date

13/10/2021 1 : 150

Drawn

LL

DA-0502

Scale

1 : 150

Chk.

AH

Sheet Size

@ A1

Job No.

6429

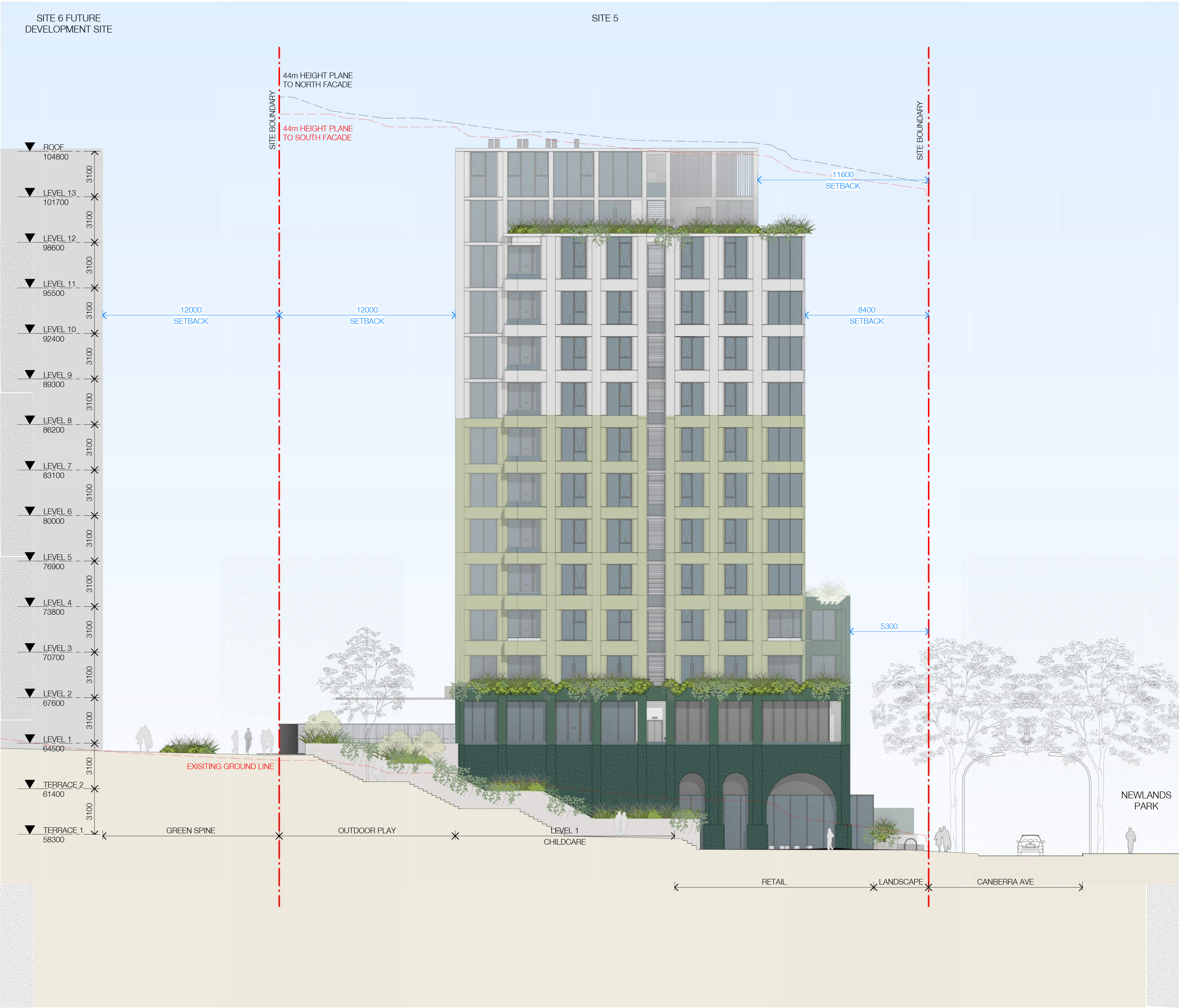
Revision

/ 42

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2010 Australia  
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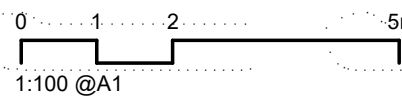




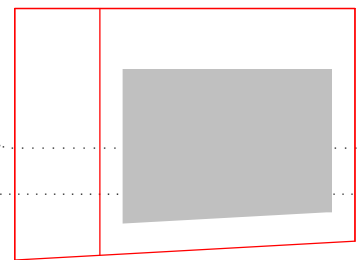


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28	18/09/2021	FOR COORDINATION	LL	AH
32	03/09/2021	FINAL DRAFT FOR DA	LL	AH
36	24/09/2021	FINAL DRAFT FOR DA	LL	AH
37	28/09/2021	FINAL DRAFT FOR DA	LL	AH
40	08/10/2021	FINAL DRAFT FOR DA	LL	AH
42	13/10/2021	FOR DA APPLICATION	LL	AH



Client

**HYECORP**

Project

St Leonards  
13-19 Canberra Ave  
St Leonards  
Drawing Name  
SOUTH ELEVATION

Date

13/10/2021 1 : 150

Drawn

LL

Drawing No:

DA-0503

Scale

1 : 150

Chk.

AH

Revision

/ 42

Sheet Size

@ A1

Job No.

6429

Revision

/ 42

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2010 Australia  
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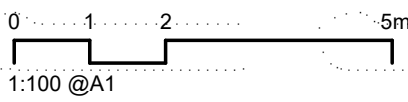




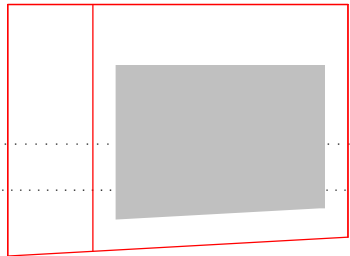
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LEVEL 13	101700
LEVEL 12	98600
LEVEL 11	95500
LEVEL 10	92400
LEVEL 9	89300
LEVEL 8	86200
LEVEL 7	83100
LEVEL 6	80000
LEVEL 5	76900
LEVEL 4	73800
LEVEL 3	70700
LEVEL 2	67600
LEVEL 1	64500

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37	28/09/2021	FINAL DRAFT FOR DA	LL	AH
40	08/10/2021	FINAL DRAFT FOR DA	LL	AH
42	13/10/2021	FOR DA APPLICATION	LL	AH



Client  
**HYECORP**

Project  
St Leonards  
13-19 Canberra Ave  
St Leonards  
Drawing Name  
WEST ELEVATION

Date  
13/10/2021

Scale  
1 : 150

Sheet Size  
@ A1

Drawn  
LL

Chk.  
AH

Job No.  
6429

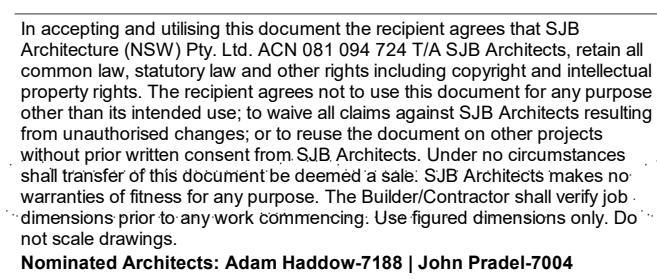
Revision  
/ 42

Drawing No.  
DA-0504

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2010 Australia  
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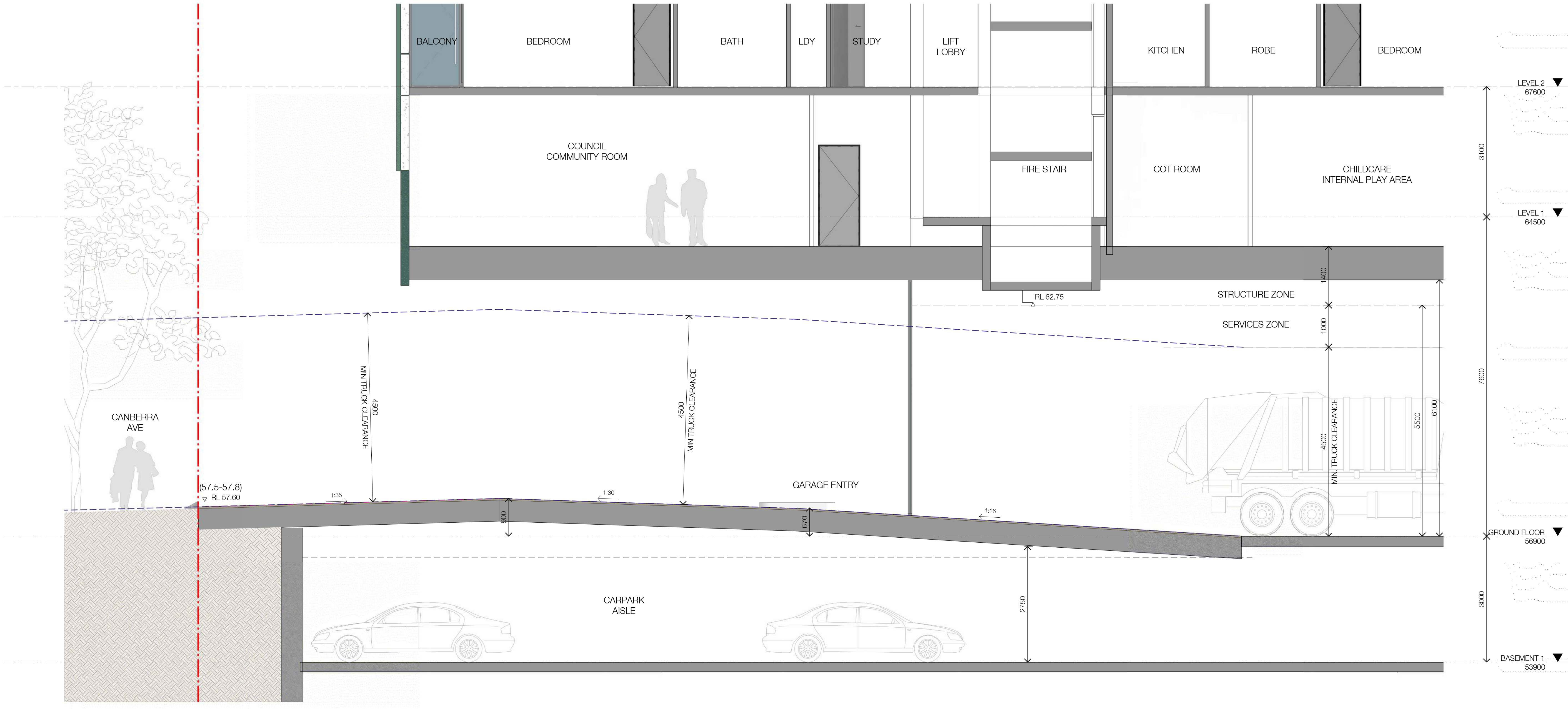


# HYECORP

**SJB Architects**  
L2, 490 Crown St  
Surry Hills NSW  
2010 Australia  
T 61 2 9380 9911  
[www.sjb.com.au](http://www.sjb.com.au)

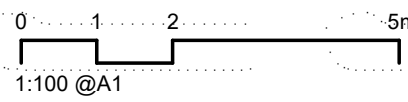




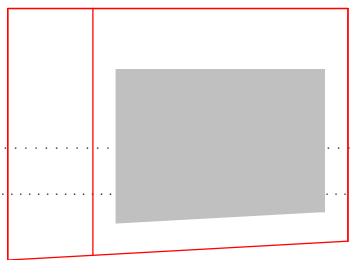


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36	24/09/2021	FINAL DRAFT FOR DA	LL	AH
37	28/09/2021	FINAL DRAFT FOR DA	LL	AH
40	08/10/2021	FINAL DRAFT FOR DA	LL	AH
42	13/10/2021	FOR DA APPLICATION	LL	AH



Client

**HYECORP**

Project

St Leonards  
13-19 Canberra Ave  
St Leonards  
Drawing Name  
DETAIL SECTION - CARPARK ENTRY

Date

13/10/2021 1 : 50

Drawn

Author

DA-0610

Scale

1 : 50

Chk.

Checker

Sheet Size

@ A1

Job No.

6429

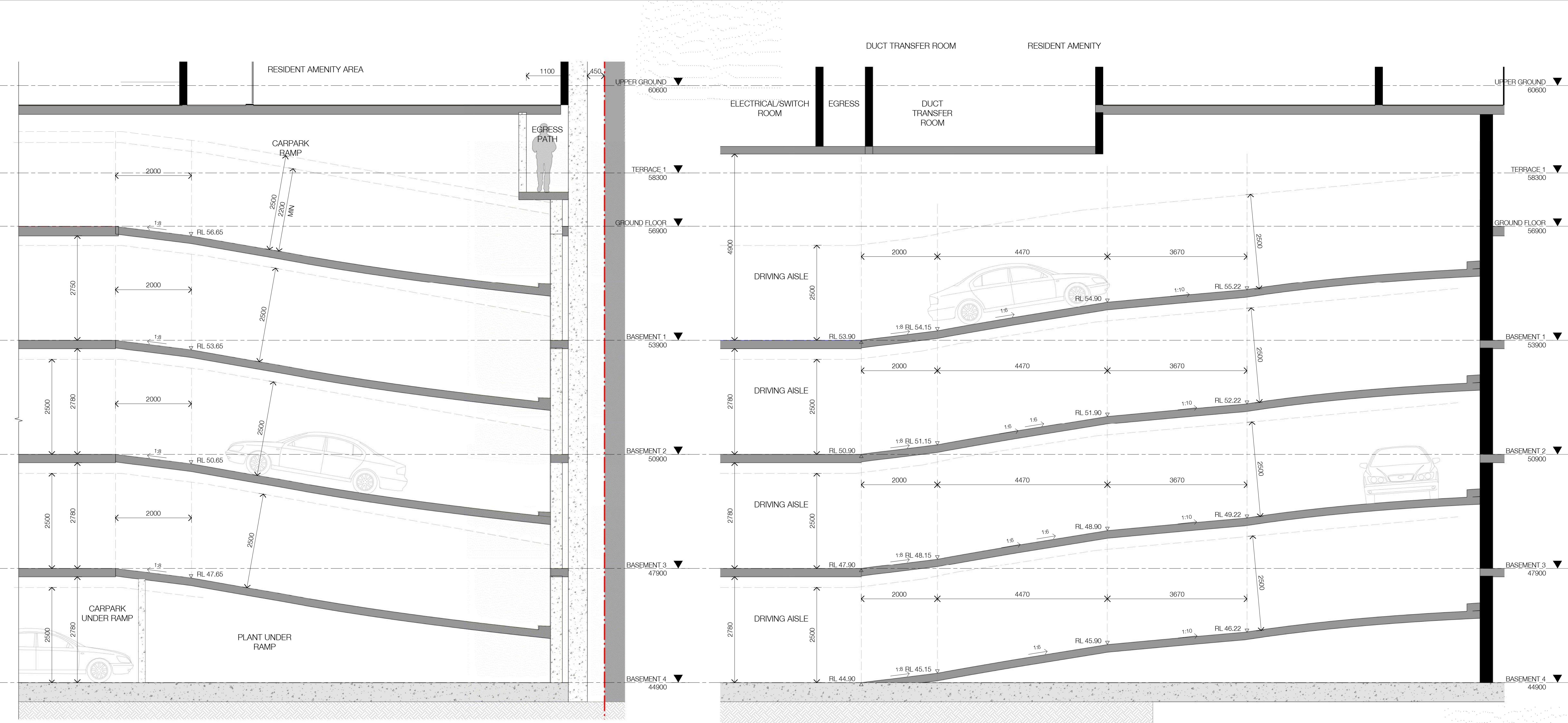
Revision

/ 42

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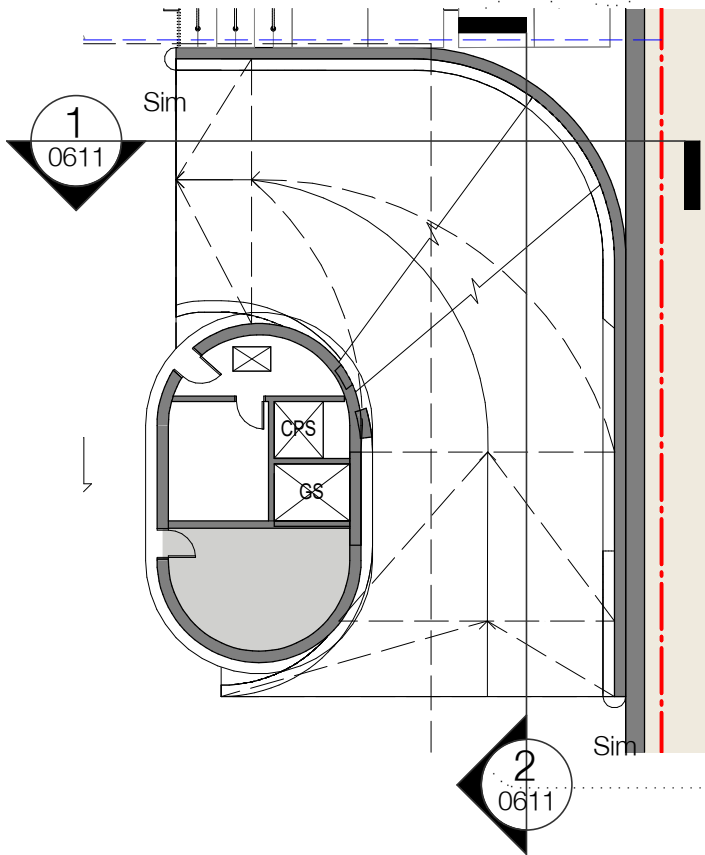
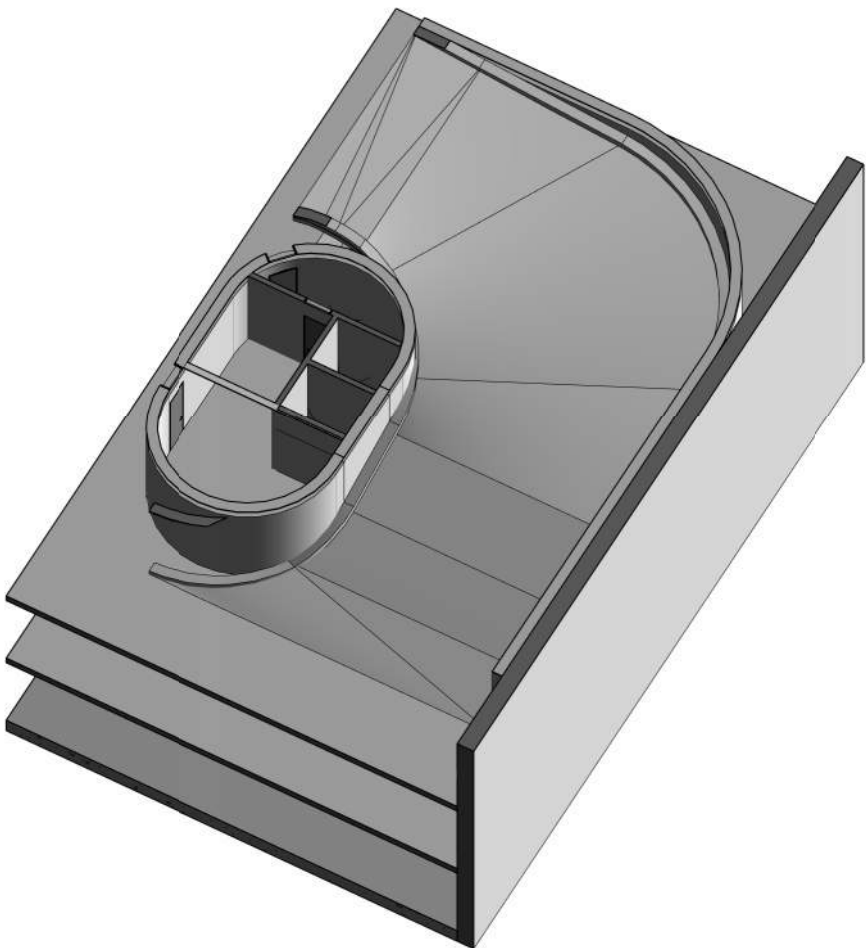






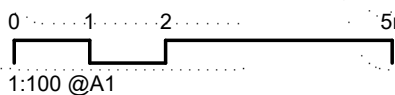
CARPARK RAMP SECTION 01

CARPARK RAMP SECTION 02

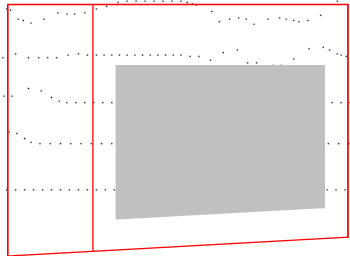


BASEMENT RAMP SECTION  
LEGEND

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Nominated Architects: Adam Haddow-7188 | John Pradel-7004



Rev	Date	Revision	By	Chk
21	20/07/2021	FOR CONSULTANT COORDINATION	ML	AH
23	04/08/2021	DRAFT DA FOR CLIENT REVIEW	LL	AH
28	16/08/2021	FOR COORDINATION	LL	AH
32	03/09/2021	FINAL DRAFT FOR DA	LL	AH
36	24/09/2021	FINAL DRAFT FOR DA	LL	AH
37	28/09/2021	FINAL DRAFT FOR DA	LL	AH
40	08/10/2021	FINAL DRAFT FOR DA	LL	AH
42	13/10/2021	FOR DA APPLICATION	LL	AH



Client

**HYECORP**

Project

St Leonards  
13-19 Canberra Ave  
St Leonards

Drawing Name

DETAIL SECTION - BASEMENT CARPARK  
RAMP

Date

13/10/2021 As indicated

Drawn

Author

DA-0611

Scale

As indicated

Chk.

Checker

Sheet Size

@ A1

Job No.

6429

Revision

/ 42

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EXTERNAL FINISHES

- CONCRETE**  
C01 Light Colour Concrete Finish  
C02 Light Green Concrete Finish

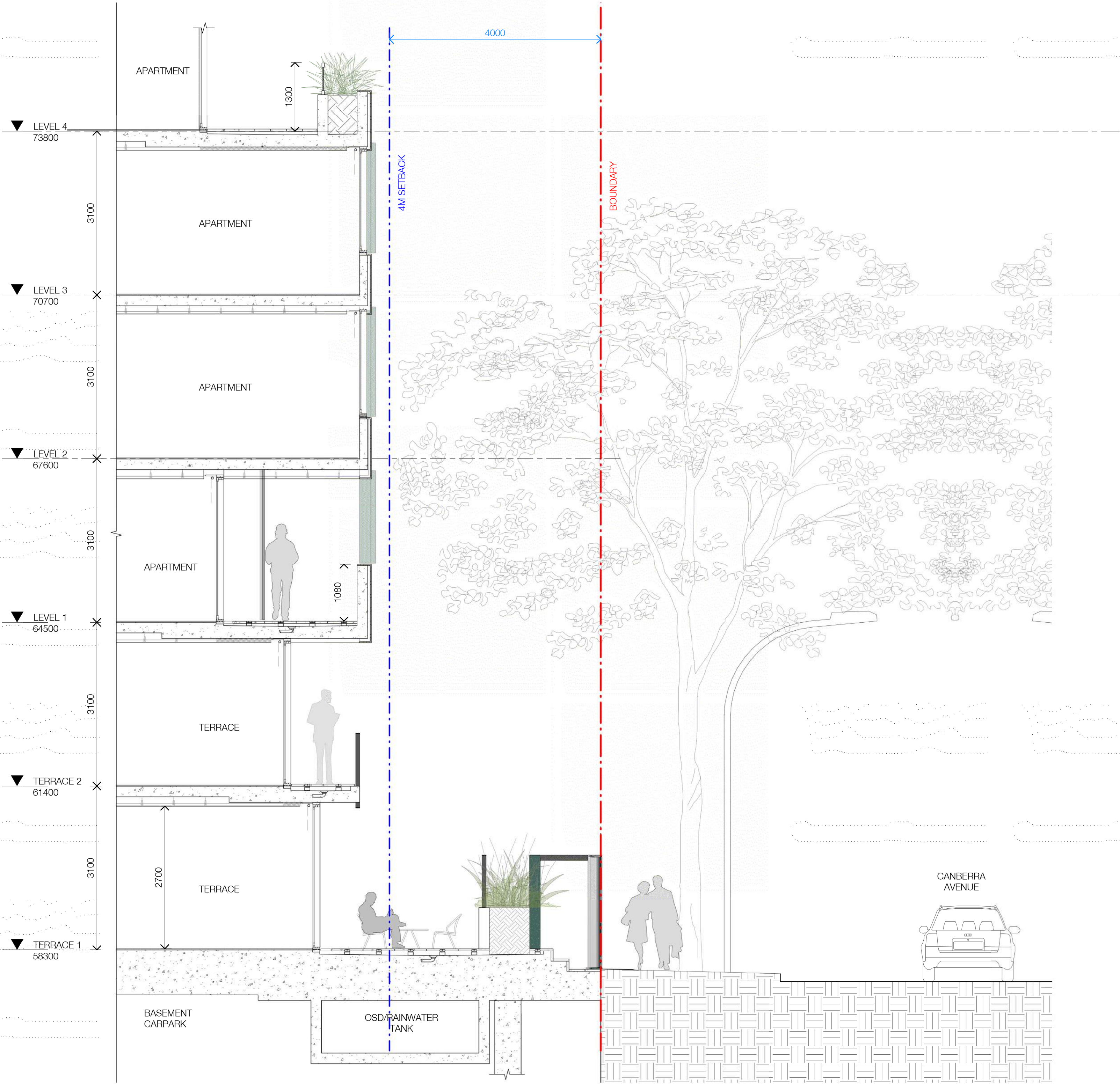
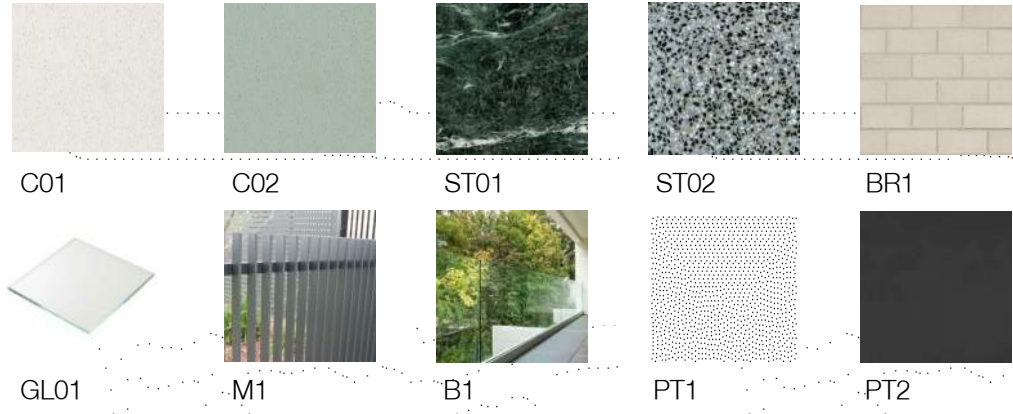
**STONE**  
ST01 Green Marble  
ST02 Green Terrazzo

**BRICK**  
BR1 LIGHT BRICK
- GLASS**  
GL1 Apartment Glazing - Performance Glass

**METALWORK**  
M1 Aluminium

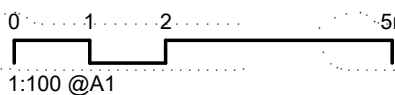
**BALUSTRADE**  
B1 Aluminium Framed - Clear Glass

**PAINT**  
PT01 White  
PT02 Dark Grey

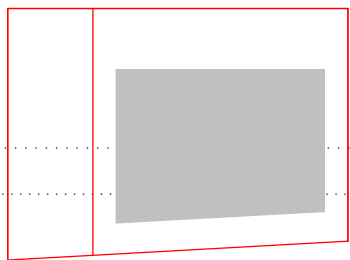


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Nominated Architects: Adam Haddow-7188 | John Pradel-7004



Rev	Date	Revision	By	Chk.
23	04/08/2021	DRAFT DA FOR CLIENT REVIEW	LL	AH
28	18/08/2021	FOR COORDINATION	LL	AH
32	03/09/2021	FINAL DRAFT FOR DA	LL	AH
36	24/09/2021	FINAL DRAFT FOR DA	LL	AH
37	28/09/2021	FINAL DRAFT FOR DA	LL	AH
40	08/10/2021	FINAL DRAFT FOR DA	LL	AH
42	13/10/2021	FOR DA APPLICATION	LL	AH



Client

**HYECORP**

Project

St Leonards  
13-19 Canberra Ave  
St Leonards

Drawing Name

DETAIL SECTION - CANBERRA AVE

Date

13/10/2021 As indicated

Drawn

Author

Drawing No:

DA-0614

Scale

As indicated

Chk.

Checker

Revision

/ 42

Sheet Size

@ A1

Job No.

6429

Revision

/ 42

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## Appendix B

### Transport Services



# Sydney rail network



## Sydney rail network

**M** Metro **T** Trains



### Sydney metro and train lines

**M** Metro North West Line  
Chatswood  
Tallawong

**T1** North Shore  
North Shore  
North Shore  
Richmond

**T2** Inner West  
Liverpool  
Inner West  
Leppington  
City

**T3** Bankstown Line  
Liverpool  
Lidcombe  
City

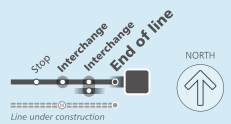
**T4** Eastern Suburbs  
Illawarra Line  
Eastern Suburbs  
Cronulla

**T5** Cumberland Line  
Leppington  
Richmond

**T7** Olympic Park Line  
Olympic Park  
Lidcombe

**T8** Airport & South Line  
Airport  
South  
City

**T9** Northern Line  
Northern  
Gordon



Check timetables and trip planners  
for train services and connections

Visit [transportnsw.info](http://transportnsw.info)

1909TMS-E-MWT-180x205-WCAG

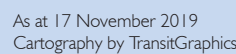


[transportnsw.info](http://transportnsw.info)

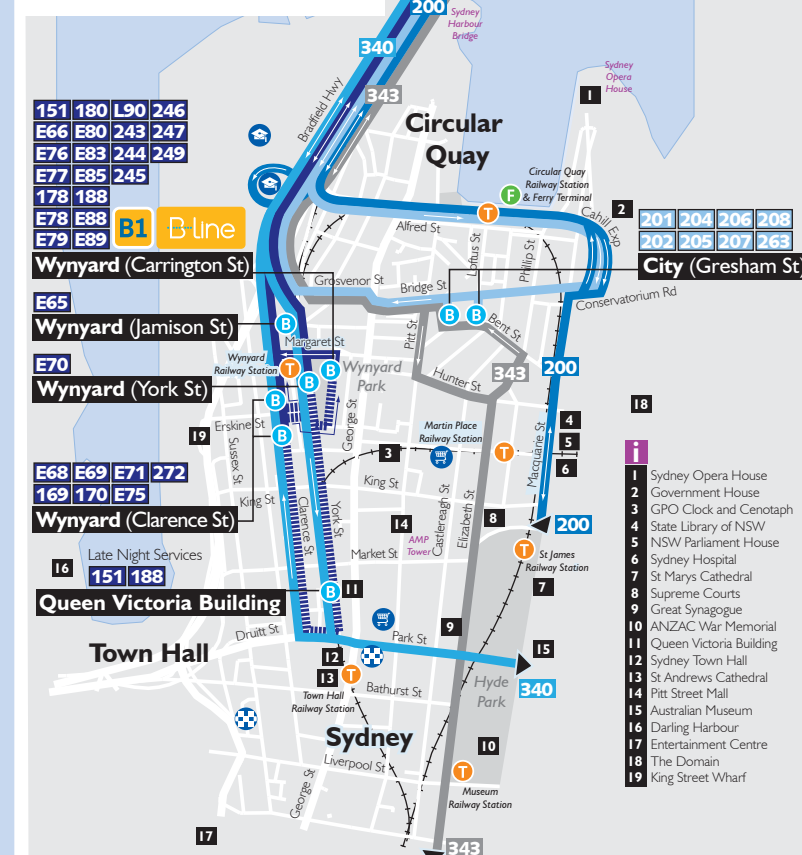




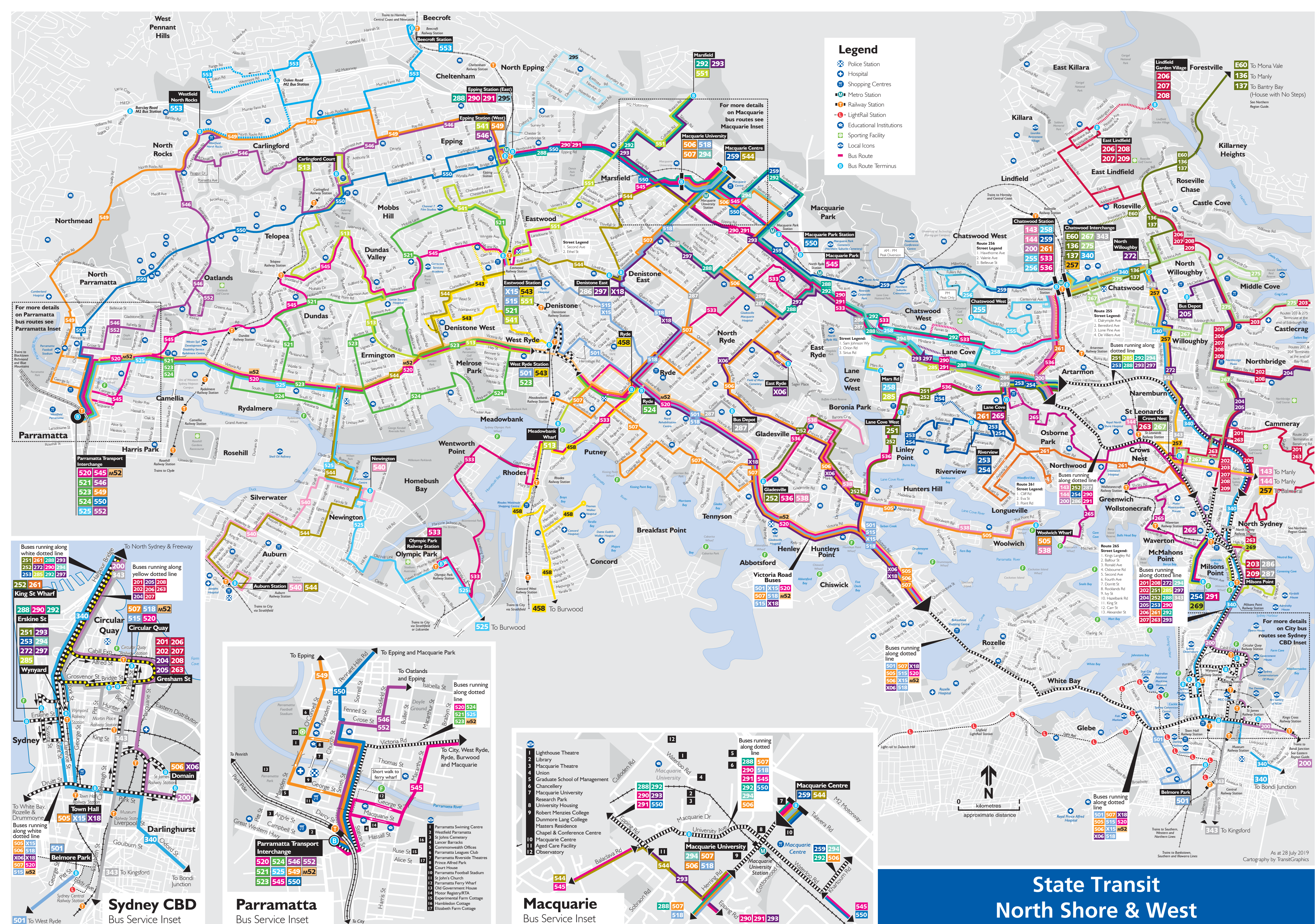
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E71	144	139	to North Head.		E50	158	to City.
		135				169	
		to Warringah Mall.				151	
						to Mona Vale.	
						159	
						199	



- Police Station
- Park and Ride
- Hospital
- Shopping Centres
- Metro Station
- Railway Station
- Educational Institutions
- Sporting Facility
- Place of Interest
- Bus Route
- Bus Route Terminus









# Buses around the Northern Beaches



## City

- B** Catch a B1 B-Line bus from Warringah Mall, Pittwater Rd, Stand B to City Wynyard.
- F** Catch an F1 ferry from Manly Wharf to Circular Quay.

## Manly

- B** Catch a bus from Warringah Mall, Pittwater Rd, Stand A to Manly.

## Palm Beach

- B** Catch a B1 B-Line bus from Warringah Mall, Pittwater Rd, Stand C to Mona Vale. Change at Mona Vale for connecting bus services to Palm Beach.

## Chatswood

- B** Catch a B1 B-Line bus to Neutral Bay Junction. Change at Neutral Bay Junction for a 143, 144 or 257 bus to Chatswood.

\*Images from Destination NSW



- B-Line stop**
- Bus route terminus**
- Bus route number**
- Train station**
- Ferry wharf**

For real time service and connection information plan your trip at [transportnsw.info](http://transportnsw.info)





## Appendix C

# Turning Path Assessment



- NOTES:
- MAXIMUM CHANGE IN GRADE FOR CARS SHOULD BE 1:8 OVER 2m
  - A MINIMUM HEIGHT CLEARANCE OF 2.2m (TO SERVICES AND STRUCTURE) SHOULD BE PROVIDED ABOVE CIRCULATION AISLES AND PARKING SPACES.
  - A MINIMUM HEIGHT CLEARANCE OF 2.5m (TO SERVICES AND STRUCTURE) SHOULD BE PROVIDED ABOVE DISABLED PARKING SPACES
  - A MINIMUM HEIGHT CLEARANCE OF 4.5m (TO SERVICES AND STRUCTURE) SHOULD BE PROVIDED ABOVE SERVICE VEHICLE ACCESS ROADWAYS AND LOADING DOCKS
  - HEIGHT CLEARANCE ABOVE A SAG CHANGE IN GRADES SHOULD BE MEASURED IN ACCORDANCE WITH FIGURE 5.3 AS2890.1-2004.

RECOMMEND TO PROVIDE COLUMN PROTECTIONS AND PAINT WITH HIGH VISIBILITY COLOR (e.g. YELLOW)

R5-400(R)



CANBERRA AVENUE

REMOVE EXISTING TRAFFIC ISLAND

EXISTING NO STOPPING RESTRICTION TO BE RETAINED

DUNTRON AVENUE

13-19 CANBERRA AVENUE, ST LEONARDS  
CAR PARK COMPLIANCE REVIEW  
GROUND  
CONCEPT LAYOUT  
DRAWING REF NO. 21144-MD-02-P5

SHEET NO. 01 OF 11

ISSUE DATE 11 OCTOBER 2021

DESIGNED BY  
S.YOU

REVIEWED BY  
M.KONG

SCALE  
A3

0 4 8  
1:400



**PRELIMINARY PLAN**  
FOR DISCUSSION PURPOSES  
ONLY SUBJECT TO CHANGE  
WITHOUT NOTIFICATION

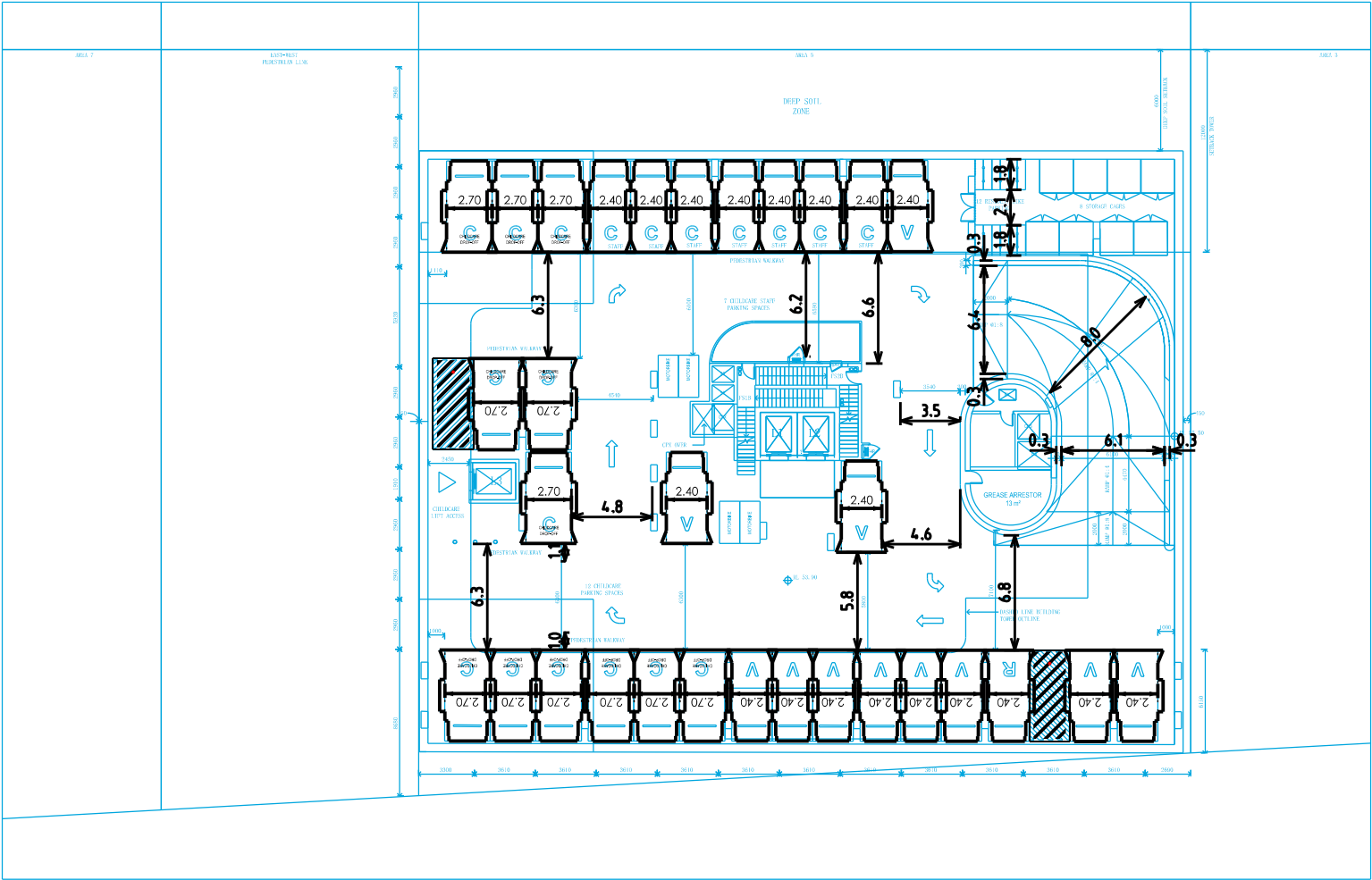
**WARNING**  
THE LOCATION OF UNDERGROUND SERVICES  
HAS NOT BEEN VERIFIED.  
THE EXISTING UTILITIES SHALL BE PROTECTED BY THE  
ALL EXISTING SERVICES SHALL BE NOT GUARANTEED.

**ttpa** TRANSPORT AND TRAFFIC PLANNING ASSOCIATES  
Established 1994

Address: Level 5, Suite 502 / 282 Victoria Ave, Chatswood NSW 2067  
P: 02 9411 5660 E: info@tpa.com.au W: www.tpa.com.au



NOTES:  
- MAXIMUM CHANGE IN GRADE FOR CARS SHOULD BE 1:8 OVER 2m  
- A MINIMUM HEIGHT CLEARANCE OF 2.2m (TO SERVICES AND STRUCTURE) SHOULD BE PROVIDED ABOVE CIRCULATION AISLES AND PARKING SPACES.  
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- A MINIMUM HEIGHT CLEARANCE OF 4.5m (TO SERVICES AND STRUCTURE) SHOULD BE PROVIDED ABOVE SERVICE VEHICLE ACCESS ROADWAYS AND LOADING DOCKS  
- HEIGHT CLEARANCE ABOVE A SAG CHANGE IN GRADES SHOULD BE MEASURED IN ACCORDANCE WITH FIGURE 5.3 AS2890.1-2004.

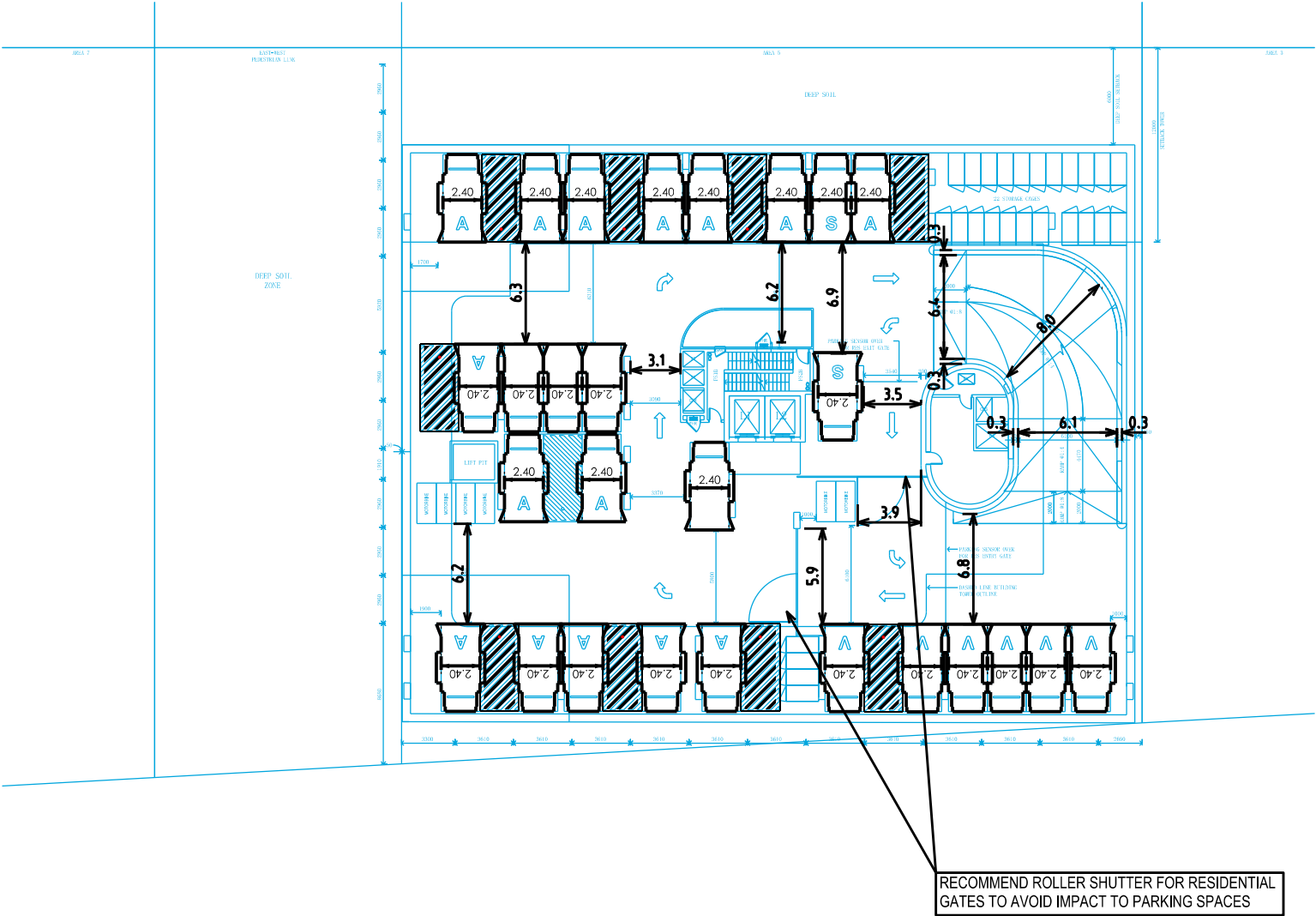


T:\WORK\212144 - 13-19 CANBERRA AVENUE, ST LEONARDS\DRAWINGS\_CAD\21144-MD-02-P5.dgn  
Plot by Sheelack





NOTES:  
- MAXIMUM CHANGE IN GRADE FOR CARS SHOULD BE 1:8 OVER 2m  
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- A MINIMUM HEIGHT CLEARANCE OF 4.5m (TO SERVICES AND STRUCTURE) SHOULD BE PROVIDED ABOVE SERVICE VEHICLE ACCESS ROADWAYS AND LOADING DOCKS  
- HEIGHT CLEARANCE ABOVE A SAG CHANGE IN GRADES SHOULD BE MEASURED IN ACCORDANCE WITH FIGURE 5.3 AS2890.1-2004.



T:\WORK\212144 - 13-19 CANBERRA AVENUE, ST LEONARDS\DRAWINGS\_CAD\2144-MD-02-P5.dgn  
Plot by Sheelack

13-19 CANBERRA AVENUE, ST LEONARDS  
CAR PARK COMPLIANCE REVIEW  
BASEMENT 2  
CONCEPT LAYOUT  
DRAWING REF NO. 21144-MD-02-P5

SHEET NO. 03 OF 11

ISSUE DATE 11 OCTOBER 2021

DESIGNED BY  
S.YOU  
REVIEWED BY  
M.KONG  
SCALE  
A3  
0 4 8  
1400

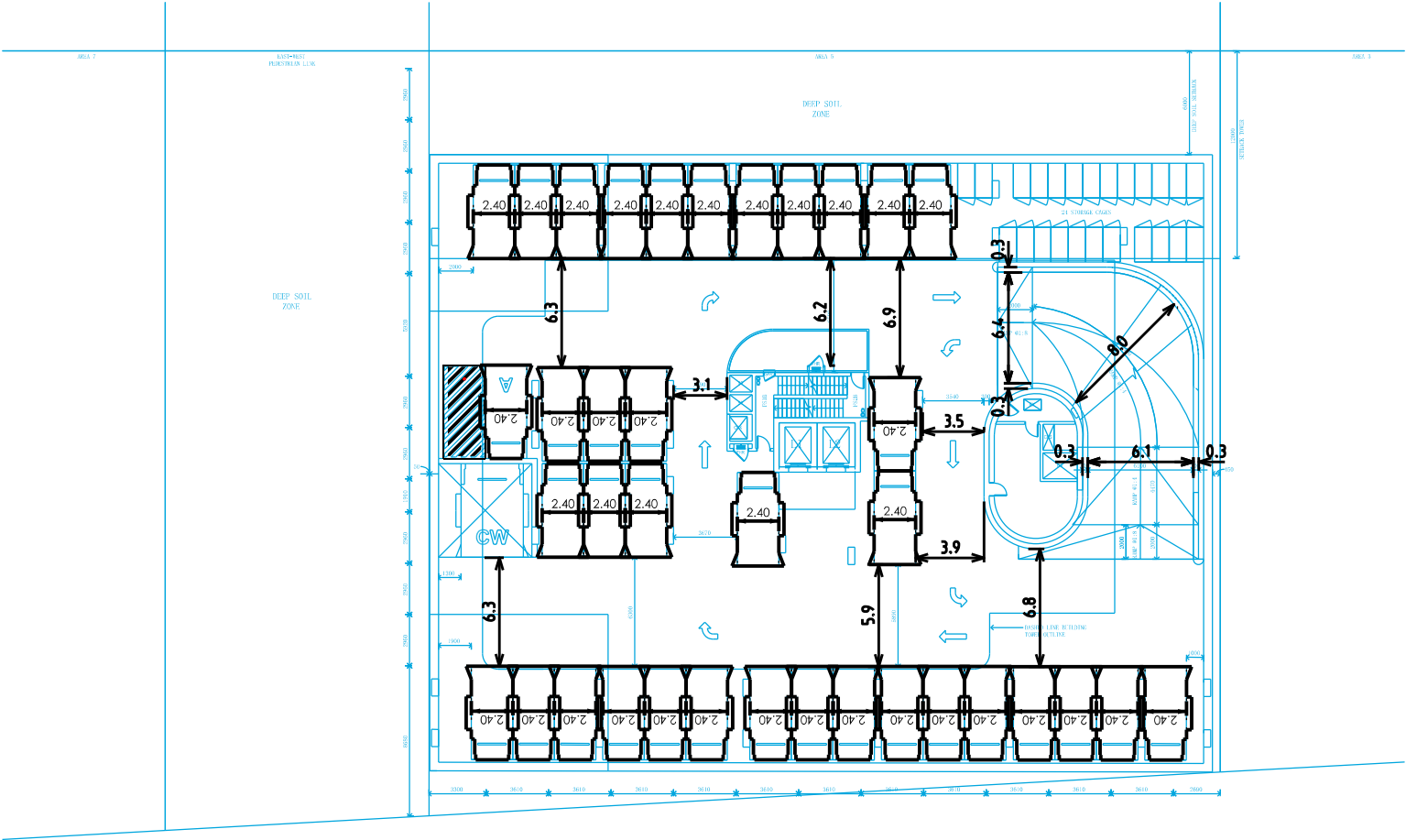


**PRELIMINARY PLAN**  
FOR DISCUSSION PURPOSES  
ONLY SUBJECT TO CHANGE  
WITHOUT NOTIFICATION

**WARNING**  
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HAS NOT BEEN CHECKED.  
THE EXACT LOCATION SHALL BE PROVIDED ON SITE.  
ALL EXISTING SERVICES SHOWN ARE NOT GUARANTEED.

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NOTES:  
- MAXIMUM CHANGE IN GRADE FOR CARS SHOULD BE 1:8 OVER 2m  
- A MINIMUM HEIGHT CLEARANCE OF 2.2m (TO SERVICES AND STRUCTURE) SHOULD BE PROVIDED ABOVE CIRCULATION AISLES AND PARKING SPACES.  
- A MINIMUM HEIGHT CLEARANCE OF 2.5m (TO SERVICES AND STRUCTURE) SHOULD BE PROVIDED ABOVE DISABLED PARKING SPACES  
- A MINIMUM HEIGHT CLEARANCE OF 4.5m (TO SERVICES AND STRUCTURE) SHOULD BE PROVIDED ABOVE SERVICE VEHICLE ACCESS ROADWAYS AND LOADING DOCKS  
- HEIGHT CLEARANCE ABOVE A SAG CHANGE IN GRADES SHOULD BE MEASURED IN ACCORDANCE WITH FIGURE 5.3 AS2890.1-2004.



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Plot by: Sheelack

13-19 CANBERRA AVENUE, ST LEONARDS  
CAR PARK COMPLIANCE REVIEW  
BASEMENT 3  
CONCEPT LAYOUT  
DRAWING REF NO. 21144-MD-02-P5

SHEET NO. 04 OF 11

ISSUE DATE 11 OCTOBER 2021

DESIGNED BY  
S.YOU  
REVIEWED BY  
M.KONG  
SCALE  
A3  
0 4 8  
1400



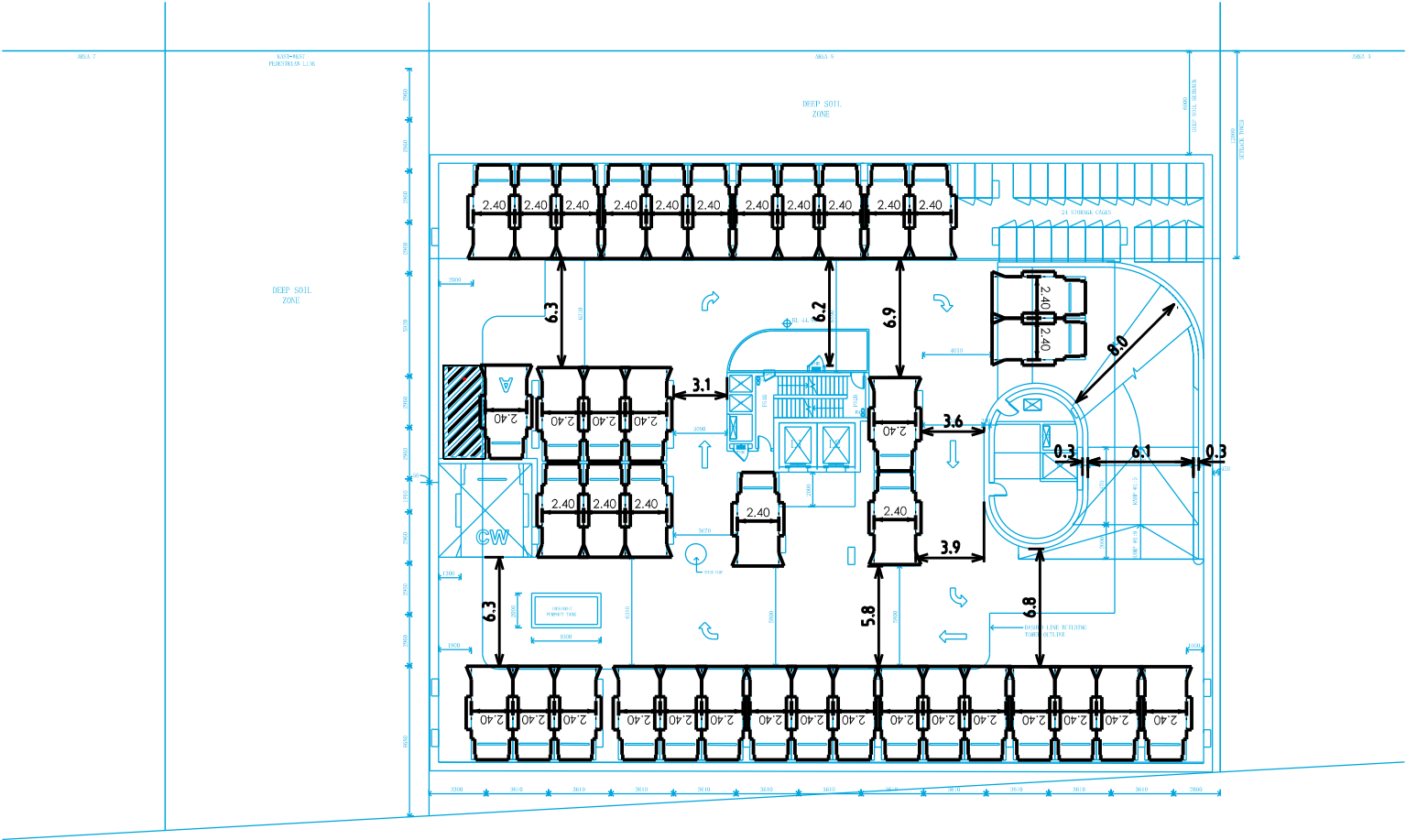
**PRELIMINARY PLAN**  
FOR DISCUSSION PURPOSES  
ONLY SUBJECT TO CHANGE  
WITHOUT NOTIFICATION

**WARNING**  
THE ACCURACY OF UNDERGROUND SERVICES  
HAS NOT BEEN VERIFIED.  
THE EXACT LOCATION SHALL BE PROVIDED ON SITE.  
ALL EXISTING SERVICES SHOWN ARE NOT GUARANTEED.

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Plot by Sheelack

13-19 CANBERRA AVENUE, ST LEONARDS  
CAR PARK COMPLIANCE REVIEW  
BASEMENT 4  
CONCEPT LAYOUT  
DRAWING REF NO. 21144-MD-02-P5

SHEET NO. 05 OF 11

ISSUE DATE 11 OCTOBER 2021

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M.KONG  
SCALE  
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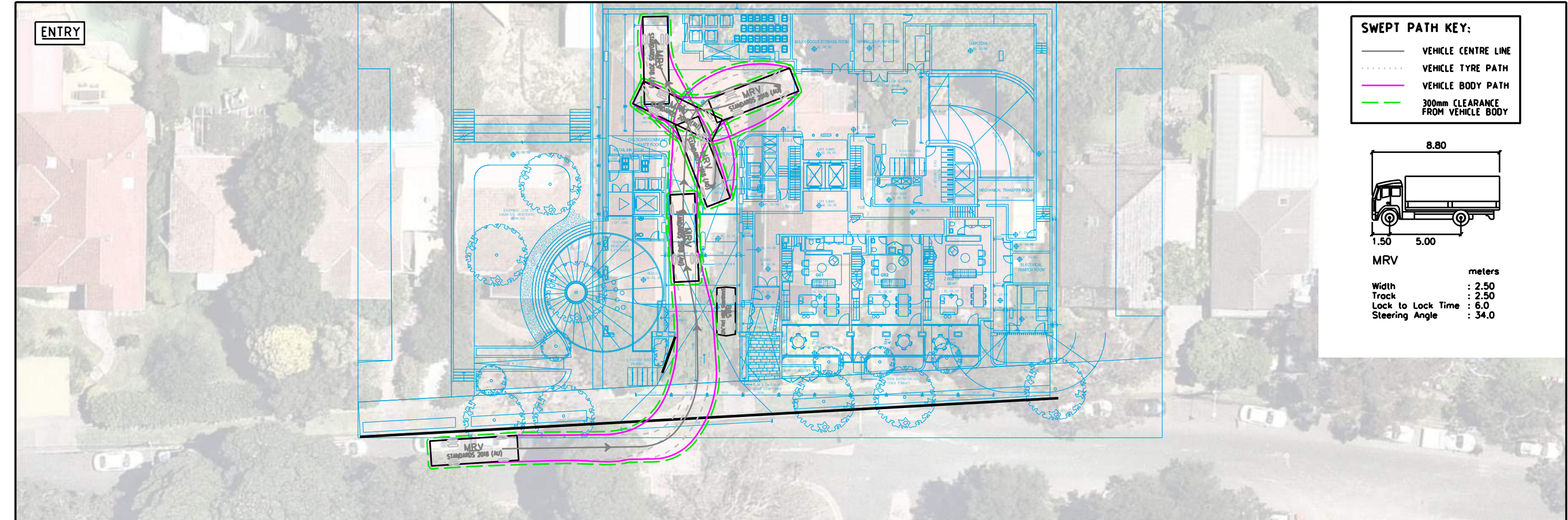


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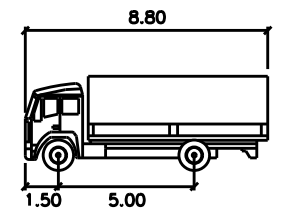
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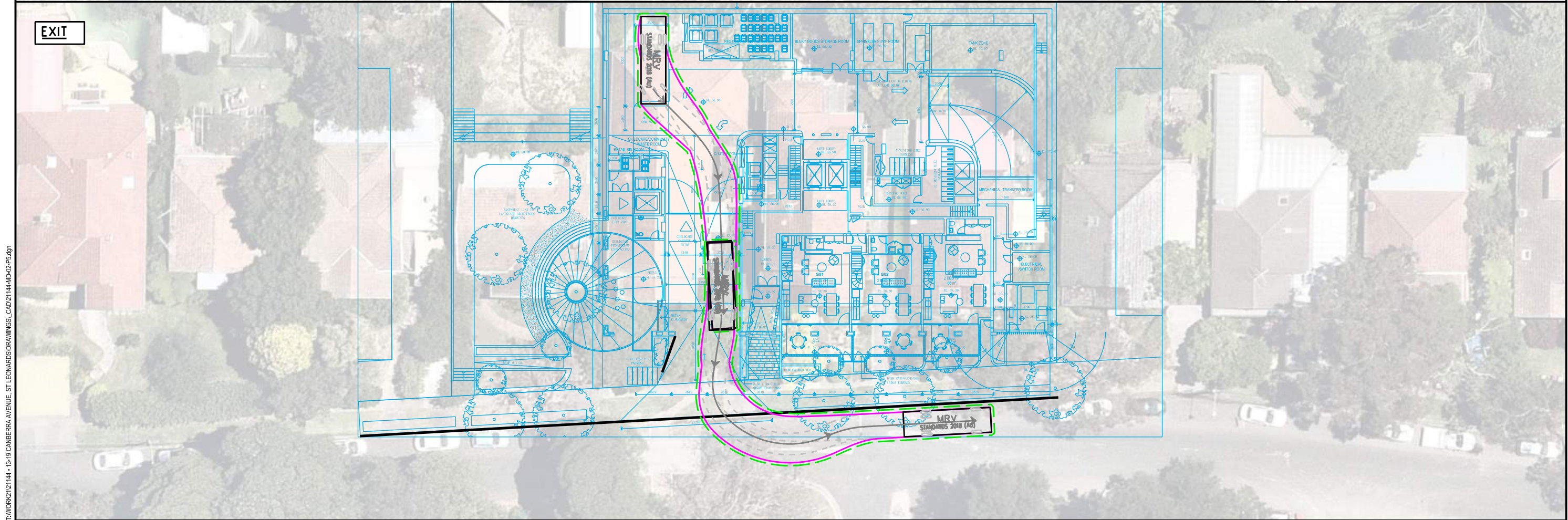


**SWEPT PATH KEY:**

- VEHICLE CENTRE LINE
- ..... VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY



	MRV	meters
Width	:	2.50
Track	:	2.50
Lock to Lock Time	:	6.0
Steering Angle	:	34.0





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Pkt by Shetlock

13-19 CANBERRA AVENUE, ST LEONARDS  
CAR PARK COMPLIANCE REVIEW  
GROUND  
SWEPT PATH ASSESSMENT  
DRAWING REF NO. 21144-MD-02-P5

SHEET NO. 07 OF 11

ISSUE DATE 11 OCTOBER 2021

DESIGNED BY  
S.YOU

REVIEWED BY  
M.KONG

SCALE  
A3

0 4 8  
1400



**PRELIMINARY PLAN**  
FOR DISCUSSION PURPOSES  
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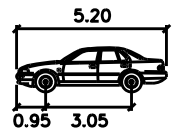
**WARNING**  
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ALL EXISTING SERVICES SHALL BE NOTED AND NOTED.

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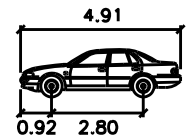
#### SWEPT PATH KEY:

— VEHICLE CENTRE LINE  
- - - VEHICLE TYRE PATH  
— VEHICLE BODY PATH  
- - - 300mm CLEARANCE FROM VEHICLE BODY



B99

Width : 1.94 meters  
Track : 1.84  
Lock to Lock Time : 6.0  
Steering Angle : 33.9



B85

Width : 1.87 meters  
Track : 1.77  
Lock to Lock Time : 6.0  
Steering Angle : 34.1

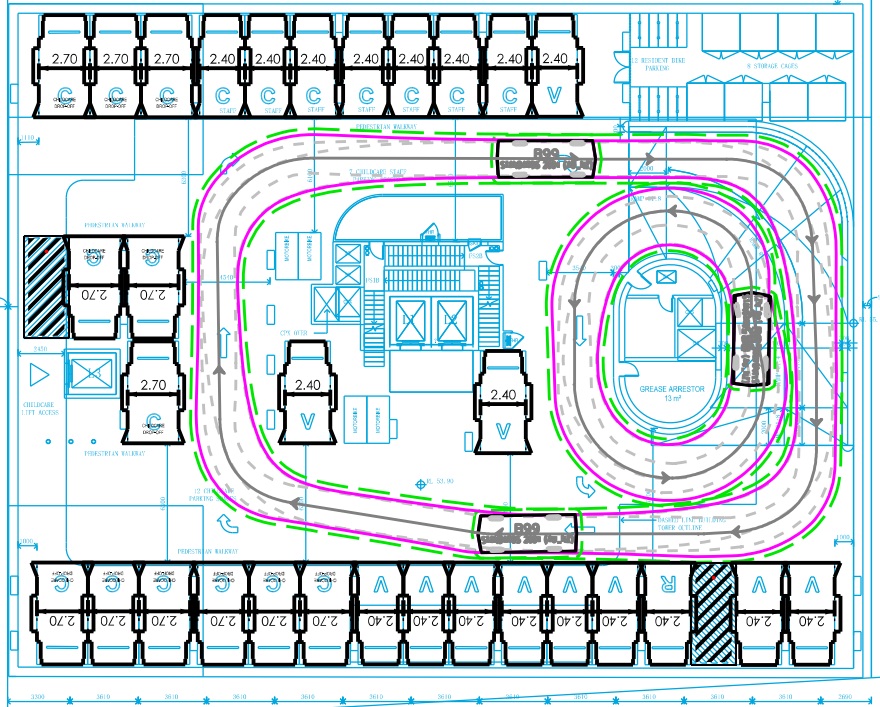


BASEMENT 1

BASEMENT 2

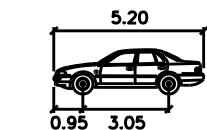
13-19 CANBERRA AVENUE, ST LEONARDS

DEEP SOIL ZONE



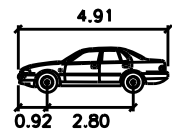
SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY



B99

Width : 1.94  
Track : 1.84  
Lock to Lock Time : 6.0  
Steering Angle : 33.9

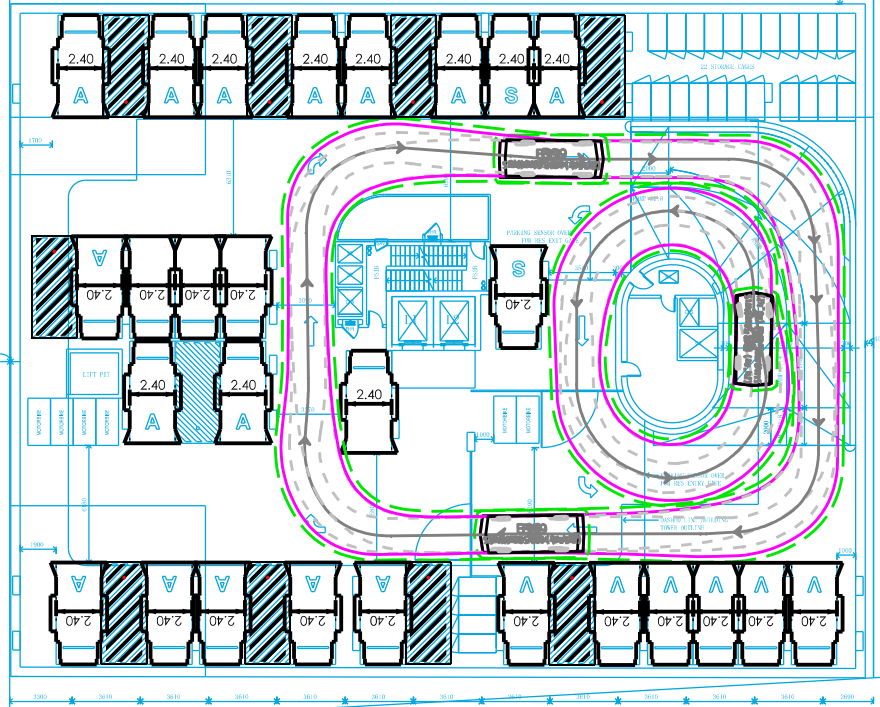


B85

Width : 1.87  
Track : 1.77  
Lock to Lock Time : 6.0  
Steering Angle : 34.1

13-19 CANBERRA AVENUE, ST LEONARDS

DEEP SOIL ZONE



DESIGNED BY  
S.YOU

REVIEWED BY  
M.KONG

SCALE  
A3

0 4 8 1400

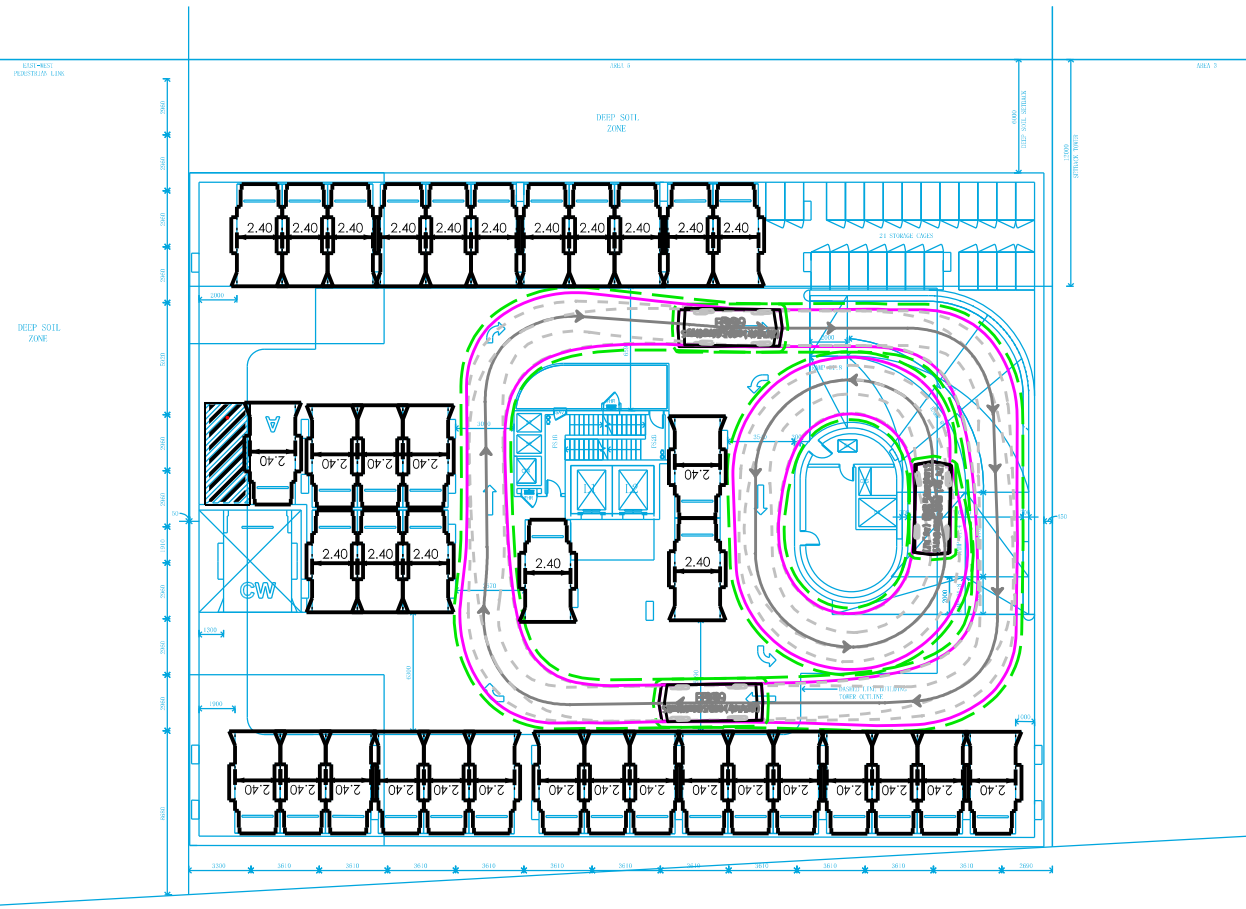


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BASEMENT 3



**SWEPT PATH KEY:**

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- ..... VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

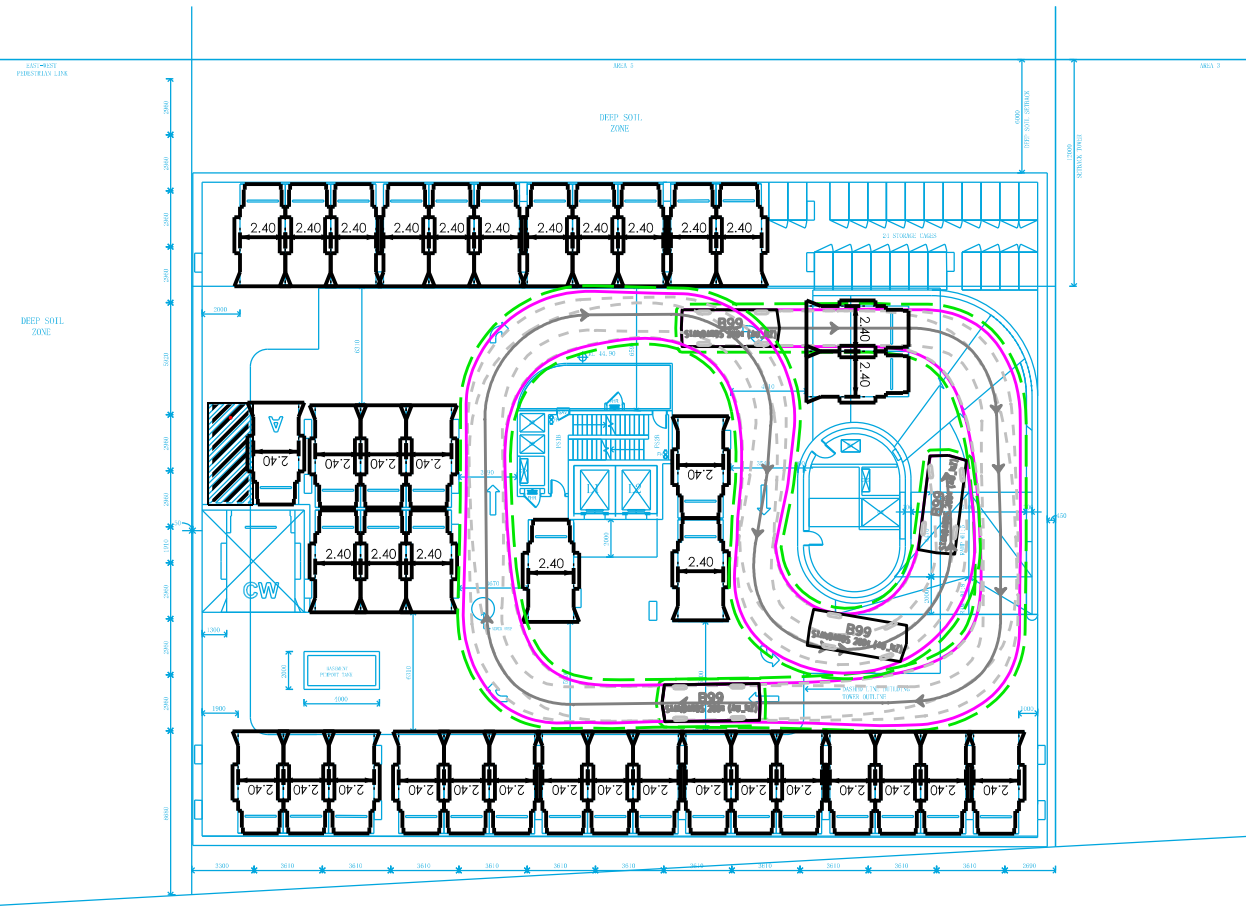
B99

B85

	meters
Width	: 1.94
Track	: 1.84
Lock to Lock Time	: 6.0
Steering Angle	: 33.9

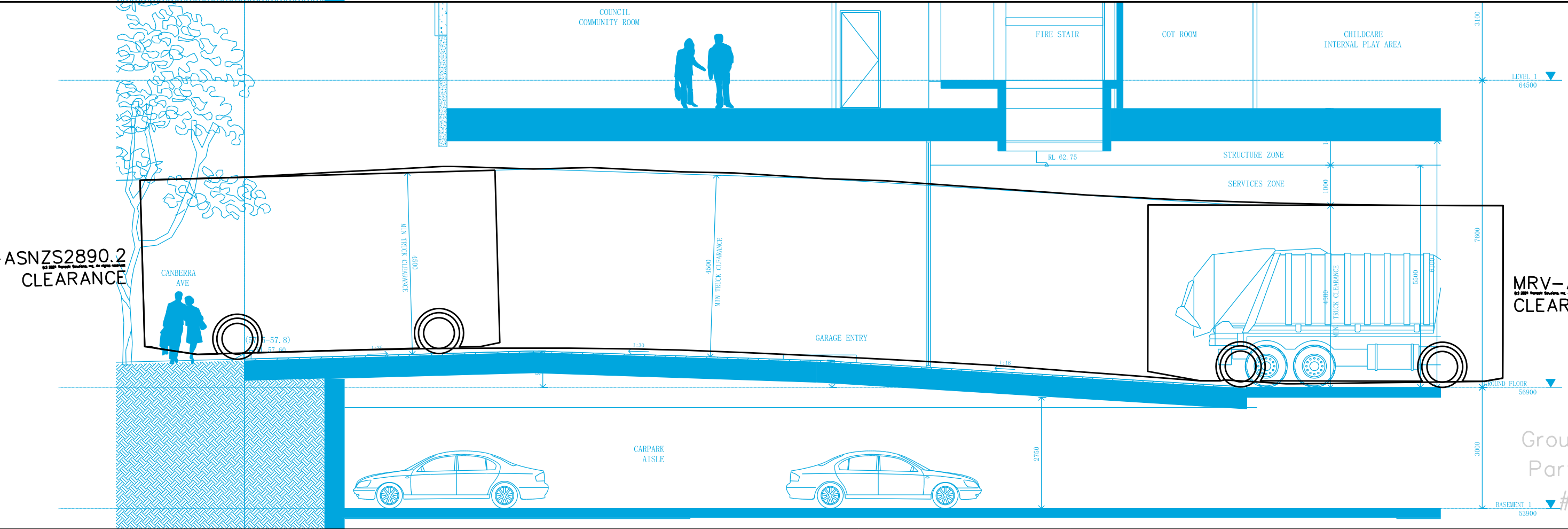
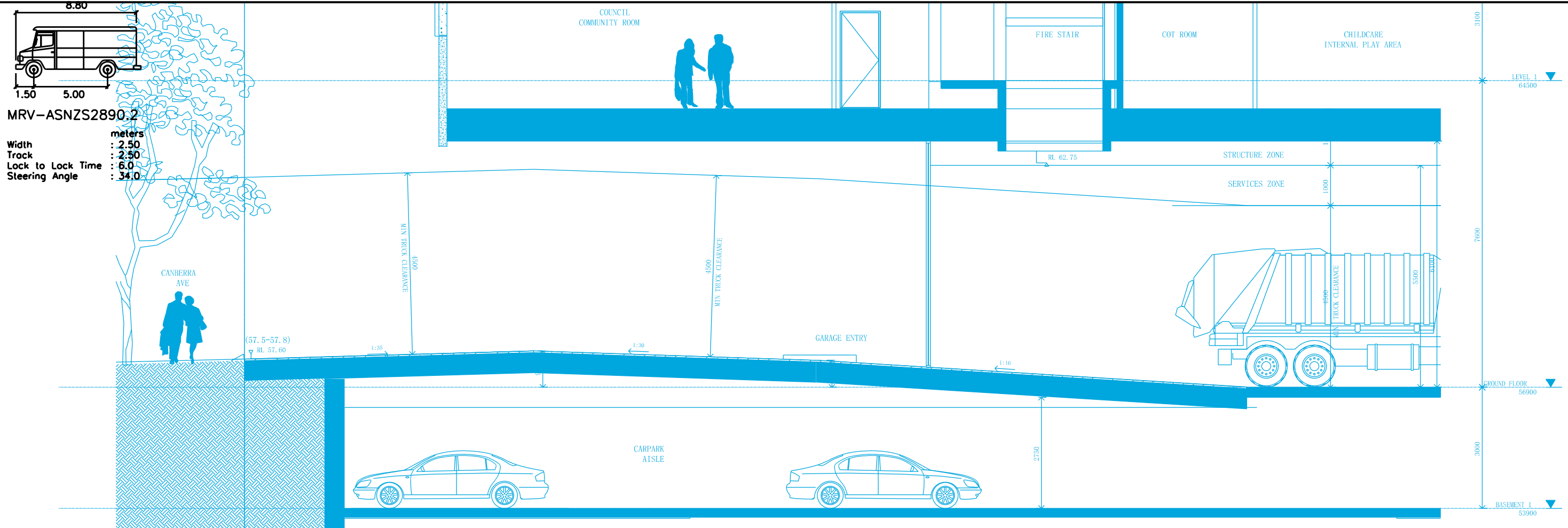
	meters
Width	: 1.87
Track	: 1.77
Lock to Lock Time	: 6.0
Steering Angle	: 34.1

BASEMENT 4

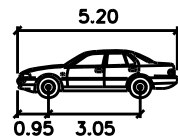


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B99-ASNZS2890.1

Width : 1.94 meters  
Track : 1.84  
Lock to Lock Time : 6.0  
Steering Angle : 33.9

