Transport Planning

3 Holdsworth Ave, St Leonards Proposed Residential Development

Traffic and Parking Assessment

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1 Introduction

The site at 1 and 3 Holdsworth Avenue and 10 and 12 Marshall Avenue, St Leonards, collectively referred to as 3 Holdsworth Avenue, St Leonards, has an existing approval (DA 187/2021, as modified) granted by Sydney North Planning Panel permitting the site to be redeveloped into a residential development. The approval permits the demolition of the existing structures and construction of a part 10/part 12 storey residential flat building accommodating 96 apartments with a 4-level basement parking for 110 vehicles.

As part of the NSW Government's 5-year housing strategy to add 377,000 new homes across the state, the Department of Planning and Environment has introduced key initiatives to boost affordable housing and address housing shortages. One of these key initiatives is the in-fill affordable housing provisions which have led to amendments to the State Environmental Planning Policy (Housing) 2021 (Housing SEPP). These provisions encourage the development of affordable housing in well-located areas by allowing developers to increase the floor space ratio (FSR) and building height by 20 to 30 percent, provided that at least 10 to 15 percent of the building's gross floor area is designated as affordable housing. The FSR and height bonuses are proportional to the affordable housing component. This reform aims to integrate affordable housing within private developments and support sustainable urban growth in accessible locations.

Acting on this initiative from the Department, a new development application is being prepared for submission to Lane Cove Council (Council). The application seeks approval to add four more levels to the previously approved building, increasing the total number of apartments by 24, from 96 apartments (as approved in DA 187/2021) to 120 apartments. The new proposed development includes 21 affordable apartments, aligning with the Department's initiative to boost affordable housing availability. The new development application will also seek approval to amend the basement car park layout to accommodate additional parking requirement arising from increased number of apartments.

Separately, it is noted that the subject site is located within an urban renewal area known as St Leonards South. Council prepared a planning proposal in 2018 to permit higher density residential development in the area. The planning proposal has been gazetted in November 2020 and Council has prepared and adopted development control plan for the overall St Leonards South precinct. The gazetted planning proposal is expected to deliver 2,000 additional dwellings.

MLA Transport Planning (MLA) prepares this traffic and parking impact assessment report on behalf of New Golden St Leonards Pty Ltd. The report presents the findings of

a traffic and parking assessment into the proposed residential development. It accompanies the new amending development application to be lodged with Council.

This report assesses the transport, traffic and parking effects of the proposed development. The remainder of the report is set out as follows:

- Chapter 2 describes the existing conditions including a description of the subject site
- Chapter 3 outlines the planning proposal for the St Leonards South precinct
- Chapter 4 presents a brief description of the proposed development
- Chapter 5 assesses the proposed on-site parking provision and the design of the car parking spaces
- Chapter 6 examines the traffic generation and its effects, and
- Chapter 7 presents the summary and conclusion of the assessment.

2 Existing Conditions

2.1 Site Description

The subject site is located at 3 Holdsworth Avenue, St Leonards. It includes the previous parcels of land at 1 and 3 Holdsworth Avenue and 10 and 12 Marshall Avenue, and is legally described as Lot 8 in DP1275969. The subject site is located within the local government area of Lane Cove Council. The site is currently occupied by four detached houses.

The subject site is located within the St Leonards South precinct for which a planning proposal to provide additional high density housing has been given approval with the local environmental plan and development control plan finalised.

The location of the subject site and its surrounding environs are shown in Figure 2.1.

Figure 2.1: Site Locality Plan

The subject site is surrounded by low density detached dwellings on all sides. The entire area including the subject is undergoing through an urban renewal process consistent

with the St Leonards South planning proposal as noted previously. This development application is part of the renewal process relating to the subject site.

2.2 Road Network

The road network in the vicinity of the subject site includes Pacific Highway, River Road, Berry Road, Marshall Avenue, Holdsworth Avenue and Canberra Avenue. Below is a description of the local road network.

2.2.1 Pacific Highway

Pacific Highway is a declared State Road under the jurisdiction of Transport for New South Wales (TfNSW, formerly Roads and Maritime Services, RMS). It forms part of the arterial major road network linking the North Shore area and beyond to Sydney CBD via Sydney Harbour Bridge and Sydney Harbour Tunnel.

In the vicinity of the site, Pacific Highway is aligned in an east-west direction and is generally configured as a six-lane, divided two-way road except at Albany Road and Westbourne Road where a westbound lane has been dropped to provide an auxiliary right turn lane.

One hour parking is permitted within the kerbside lane on both sides of Pacific Highway outside of the peak periods (except at bus zones and "NO STOPPING" zones). In addition, T3 lane is implemented on the eastbound carriageway during the morning peak period (6:00am to 10:00am) and on the westbound carriageway during the evening peak period (3:00pm to 7:00pm).

Pacific Highway has a sign posted speed limit of 60km/hr.

2.2.2 River Road

River Road is a regional road is maintained by Lane Cove Council with funding from TfNSW. It is generally aligned in an east-west direction. It connects to Pacific Highway to the east (via Shirley Road) and to Burns Bay Road to the west (via Northwood Road and River Road West). It is generally configured with one traffic lane and one parking lane in each direction, however at its intersection with Canberra Avenue the carriageway is reduced to one traffic lane in each direction separated by a raised median strip. Traffic movements to and from Canberra Avenue is restricted to left in and left out traffic movements. River Road has sign posted speed limit of 50km/hr.

2.2.3 Canberra Avenue

Canberra Avenue is a local street under the jurisdiction of Lane Cove Council. It provides access to properties fronting on to it. It is configured as a 2-lane undivided road with a generally north-south alignment. It terminates at the northern end to form a

cul-de-sac near Pacific Highway. Time restricted kerbside parking (2P) is available on the western side of Canberra Avenue while the eastern side provides unrestricted kerbside parking except south of Duntroon Avenue where "NO PARKING" parking restriction is enforced on the eastern side. Canberra Avenue is located within a 50km/hr speed limit area.

2.2.4 Berry Road

Berry Road is a local road providing access to abutting properties under the administration of Lane Cove Council. It is aligned in a north-south direction. It connects to Pacific Highway to the north via a signalised intersection. Berry Road terminates at its southern end to provide a cul-de-sac with pedestrian access permitted to River Road.

It is generally configured as a 2-lane undivided road with kerbside parking on both sides of the road. Kerbside parking is restricted to 1P and 2P parking in the vicinity of its intersection with Holdsworth Avenue. It is located within a 50km/hr speed limit area.

2.2.5 Marshall Avenue

Marshall Avenue is a local road providing access to abutting properties and is administrated by Lane Cove Council. The road is generally aligned in an east-west direction. It is configured as a 2-lane undivided road with kerbside restricted parking (1P) permitted. It is located within a 50km/hr speed limit area.

2.2.6 Holdsworth Avenue

Holdsworth Avenue is another local road under the administration of Lane Cove Council. It is aligned in a north-south direction as a 2-lane undivided road with unrestricted kerbside parking permitted on both sides of the road. Holdsworth Avenue also terminates at the southern end to form a cul-de-sac. It is located within a 50km/hr speed limit area.

2.3 Public Transport

The subject site is located within 400m to St Leonards Railway Station with the nearest bus stop located within 300m of the site.

The site can be accessed using train services operated by Sydney Trains and NSW TrainLink as well as regular scheduled bus services operated by Busways North West, Transit Systems, Hillsbus and Keolis Downer Northern Beaches. In addition, the newly opened Metro station at Crows Nest, located approximately 850m from the site, provides direct Metro services to Sydney CBD. The Metro operates on a 'just turn up and go' timetable, with trains arriving every four minutes during peak periods and every 10 minutes at other times, significantly increasing public transport capacity in the area.

As such, the subject site is well located in terms of accessibility to public transport services.

The available public transport services in the vicinity of the site are summarised in Table 2.1 for train services and Table 2.2 for bus services.

Table 2.1: Available Train Services at St Leonards Railway Station

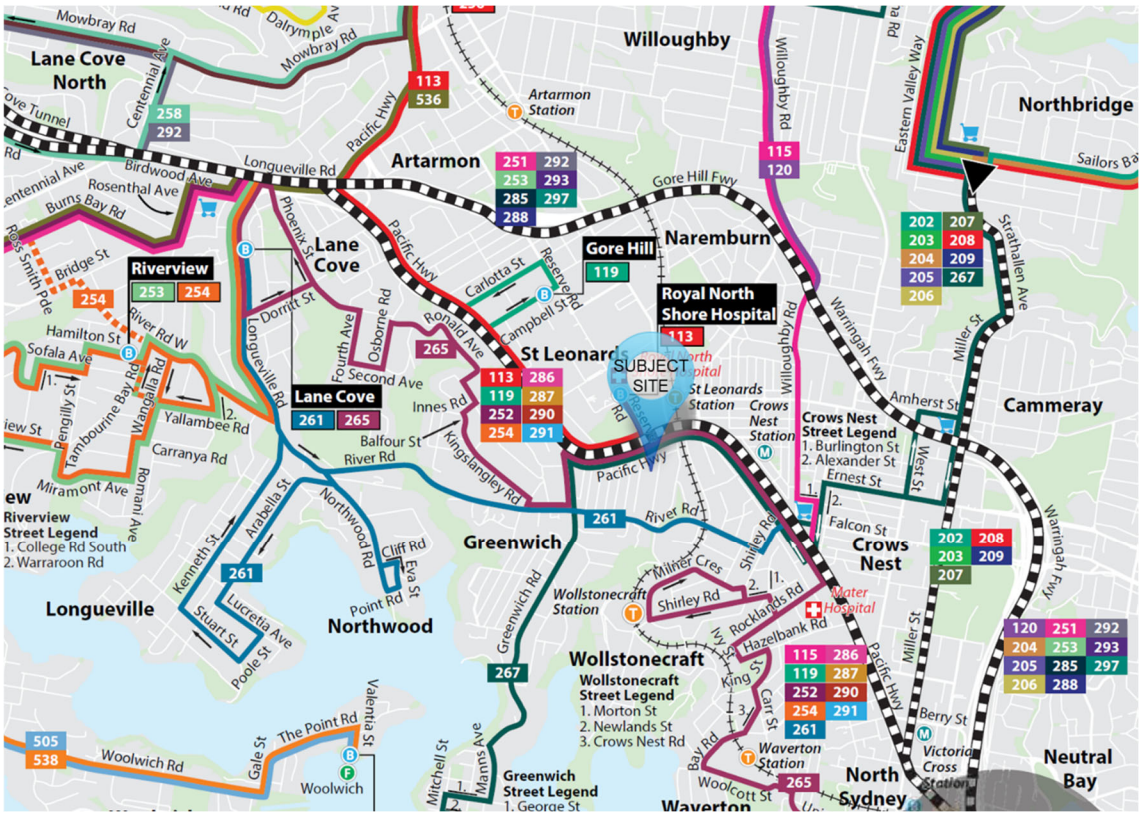
Line	Line Description	Weekday Peak Period Frequency
T1 Western Line	Emu Plains/Richmond to City	3-10 minutes
T1 North Shore Line	Berowra to City via Gordon	3-5 minutes
T9 Northern Line	Hornsby to North Shore via City	15 minutes
Central Coast & Newcastle Line	Newcastle to Central via Strathfield or Gordon	15 minutes

Table 2.2: Available Bus Services

Route No.	Route Description	Weekday Peak Period Frequency
114	Balmoral to Royal North Shore Hospital	20-25 minutes
119	Gore Hill to North Sydney Station	20-30 minutes
144	Manly to Chatswood via St Leonards	10 minutes
252	Gladesville to City King Street Wharf via North Sydney	20-45 minutes
254	McMahons Point to Riverview	15-20 minutes
265	North Sydney to Lane Cove via Greenwich	30 minutes
267	Chatswood to Greenwich via Crows Nest	30 minutes
286	Denistone East to Milsons Point via St Leonards & North Sydney	30 minutes
287	Milsons Point to Ryde via North Sydney & St Leonards	30 minutes
290	Epping to City Erskine St via Macquarie University & North Sydney	No Service
291	McMahons Pt to Epping	20 minutes
612X	Castle Hill to North Sydney (Express Service)	10 minutes
622	Dural to Milsons Point via Cherrybrook	30 minutes

Figure 2.2 shows a map of the existing available bus services in the vicinity of the subject site.

Figure 2.2: Bus Network



Source: TfNSW

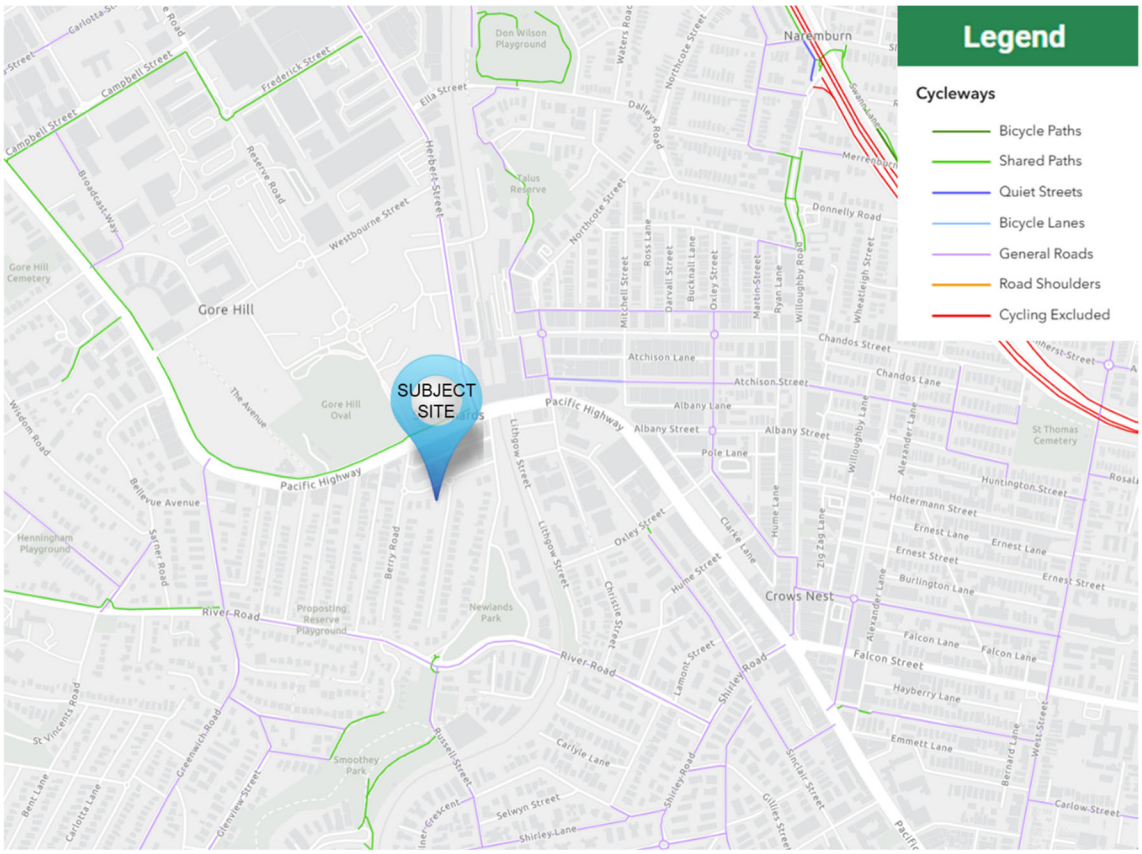
2.4 Pedestrian and Cycle Network

Within the immediate vicinity of the site, well established pedestrian and cycle infrastructures are available.

Fully formed pedestrian paths are provided on all existing roads in the vicinity of the site.

In relation to bicycle pathways in the vicinity of the site, the map in Figure 2.3 shows the existing bicycle paths in the area.

Figure 2.3: Cycle Network Map



Source: https://www.rms.nsw.gov.au/maps/cycleway_finder

It is noted that in the future the St Leonards South precinct will include a number of pedestrian links and bicycle paths. These are depicted in Figure 2.4 which has been extracted from Lane Cove Development Control Plan 2010.

Figure 2.4: Future Access Network in St Leonards South Precinct

3 Planning Proposal

3.1 Background

The subject site is part of the St Leonards South precinct which was the subject matter of a planning proposal prepared by Lane Cove Council. The planning proposal process commenced in July 2015 when Lane Cove Council resolved to undertake a master planning exercise for the precinct.

Lane Cove Council exhibited the planning proposal in 2018. The planning proposal was reviewed by the Independent Planning Commission of NSW. A design charrette was organised and attended by representatives from Lane Cove Council, Government Architect NSW (GANSW), Greater Sydney Commission (GSC) and three independent State Design Review Panel (SDRP) members. The planning proposal was finalised by the Department of Planning, Industry and Environment in September 2020 and gazetted in November 2020. The development control plan was adopted by Council in its October 2020 meeting and come into effect on the same date.

The gazetted planning proposal permitted an additional 2,000 new dwellings delivered through the following changes to the relevant controls and provisions in Lane Cove Council Local Environmental Plan (LEP):

- land use zone control – from R2 Low Density Residential to R4 High Density Residential
- maximum building height control – from 9.5m to up to 65m (or equivalent to 19 storeys), and
- maximum floor space ratio control – from 0.5-0.6:1 up to 3.85:1.

The subject site which has been designated as Area 12 in the planning proposal is permitted to have the following controls in the gazetted planning proposal:

- a R4 High Density Residential zoning
- a maximum building height of 2.5m and 44m, and
- a maximum floor space ratio of 3.45:1.

In line with the Housing SEPP 2021 in-fill affordable housing provisions, the above maximum building height and floor space ratio would increase proportionally with the affordable housing component. With a proposed 15 per cent allocation for affordable housing, this would result in a 30 per cent increase in both the maximum building height

and floor space ratio. Accordingly, the site would have a new maximum building heights of 2.5m and 57.2m, and a new maximum floor space ratio of 4.485:1.

3.2 Traffic Assessment

The planning proposal was supported by a cumulative traffic assessment report[1] prepared on behalf of Lane Cove Council. The cumulative traffic assessment included the development of a Aimsun traffic model which takes into account the cumulative traffic impacts arising from all known developments at the time in the St Leonards area within the local government area of Lane Cove Council. It includes development traffic generated by the St Leonards South precinct which was anticipated to provide an additional 2,400 dwellings (this was reduced to 2,000 dwellings in the gazetted planning proposal).

The Aimsun traffic model has been developed by building upon the previous microsimulation traffic models developed on the Paramics platform.

The Aimsun traffic model adopted the following traffic generation rates:

- morning peak period – 0.14 trips per peak hour per dwelling, and
- evening peak period – 0.07 trips per peak hour per dwelling.

The above traffic generation rates have been extracted from Technical Direction TDT 2013/04a, TfNSW's updated traffic generation guidelines and are based on the St Leonards high density residential site. These rates have also been agreed with the then Roads and Maritime Services (now Transport for NSW, TfNSW).

The Aimsun traffic model includes assessment of the following traffic scenarios:

- Base Model 2013 – existing traffic conditions at the time
- Base Model 2021 – future case with additional development traffic including those from LEP 2009 growth, St Leonards South and the Loftex sites on Marshall Avenue (Site L)
- Model 2021 + A – Base Model 2021 plus development traffic from Site A (Winten sites) which is currently under construction and is generally referred to as 88 Christie Street
- Model 2021 + AB – Model 2021 + A plus development traffic from Site B (Mirvac site) which has been completed and occupied, and
- Model 2021 + ABC –Model 2021 + AB plus development traffic from Site C (New Hope/VIMG site) which is currently under construction.

[1] St Leonards South, A Report on Traffic Impacts of Large-Scale Developments on Pacific Highway prepared by TEF Consulting for Lane Cove Council (Ref: 17020 Rep 02a 170424)

The cumulative traffic assessment recommended a number of traffic measures in order to achieve satisfactory performance in the Base Model 2021 scenario. These are required "*as a result of the general growth of network traffic, LEP 2009 developments and the proposed St Leonards South Master Plan development*". These measures include:

- parking bans on streets approaching certain intersections
- adjustment to traffic signal timing and phasing at select intersections
- right turn bans at select intersections, and
- new road connection (between Park Road and Berry Road).

The cumulative traffic assessment found that:

> *"The results of modelling for all development options, with consideration of subsequent cumulative impacts of each large development analysed in this study, are generally consistent with findings of the traffic impact assessment reports submitted for the respective development applications.*
>
> *Primarily due to the fact that the proposed developments replace existing substantial buildings, traffic increases as a result were very moderate for each of the developments L, A, B and C and in some cases a reduction of trip generation resulted from the land use change.*
>
> *Accordingly, although total traffic delays for the whole network generally increased with each additional development, some intersections even experienced slight improvements (due to traffic redistribution), whilst increased delays at other intersections were minor to moderate. Levels of Service remained essentially the same for all models."*

4 Development Description

4.1 Development Description

The proposed development involves the demolition of all existing buildings on the site and construct in their place a 16-storey residential flat building.

The proposed building will accommodate 120 residential apartments with the following apartment mix:

- 1-bedroom units – 29
- 2-bedroom units – 51
- 3-bedroom units – 31, and
- 4-bedrooom unit – 9.

Out of the 120 proposed residential apartments, 21 of these are proposed as affordable apartments. In addition, 24 of the apartments are proposed to be configured as adaptable apartments.

The proposed development includes a 4-basement level car park plus a lower ground floor containing a loading bay plus some visitor parking spaces. Overall, the proposed development will have 146 car parking spaces including 24 visitor parking spaces.

The revised architectural car park plans are contained in Appendix A.

4.2 Proposed Access Arrangement

Vehicular access to the basement car park and loading area is proposed to be provided off Holdsworth Avenue. The proposed access is proposed to be configured as a combined entry and exit driveway to be shared between general traffic and service vehicles.

All redundant vehicle crossovers will be removed with kerb and gutter re-instated to Council's requirements and in accordance with relevant design guidelines.

4.3 Loading Facility

The proposed development includes an on-site loading bay on the ground floor. It has dimensions of 3.5m by 8.8m long with an additional clearance area at the rear

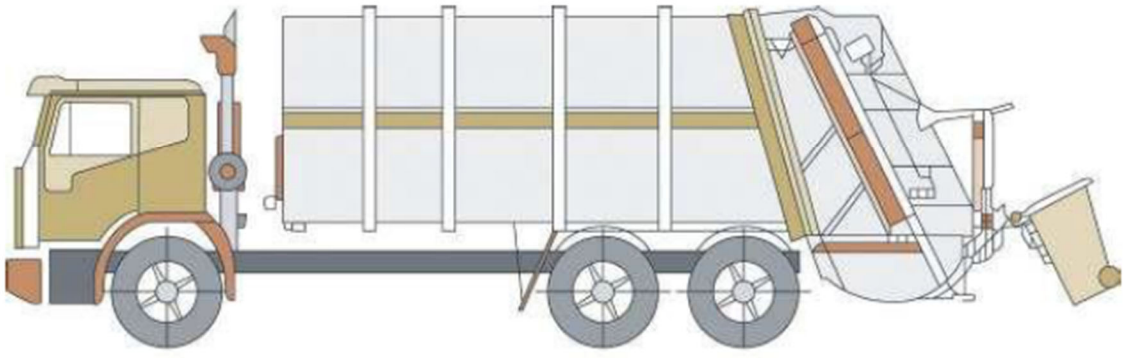
measuring 3.5m by 2.7m. The proposed loading bay has been designed to accommodate service vehicles up to an Australian Standard 8.8m long medium rigid vehicle (MRV).

It is noted that Part Q of the Lane Cove Development Control Plan 2010 (LCDCP 2010) states that residential developments are to be designed to accommodate waste collection vehicles in Appendix E of LCDCP 2010. The largest waste collection vehicle in Appendix E of LCDCP 2010 is a 9.64m long vehicle which is a side loading vehicle. The largest rear loading waste vehicle is an 8.0m long waste vehicle – see Figure 4.1. Side loading waste collection vehicles are typically used for kerbside collection, while rear loading waste collection vehicles are typically used for onsite waste collection. It is also noted that previously Council's Waste Contract Coordinator has agreed to the use of an 8.0m long waste vehicle for the subject proposed development.

Figure 4.1: Council's Waste Collection Vehicle

Typical Garbage Truck used for Domestic Waste Collection – Rear Load

• Length overall	8.0 metres
• Width overall	2.5 metres
• Operational height	4.3 metres
• Travel height	4.3 metres
• Weight (vehicle and load)	22.5 tonnes
• Weight (vehicle only)	13 tonnes
• Turning Circle	25.0 metres



rearloader garbage truck

As noted above, the proposed development has been designed to accommodate an 8.8m long MRV which exceeds the dimensions of an 8.0m long rear loading waste collection vehicle in LCDCP 2010.

In relation to the required headroom for waste collections vehicles, the LCDCP2010 (refer to Figure 4.1 above) requires a travel and operational height of 4.3m to be provided. MLA's review of the architectural plans indicates the part of the ground floor

that would be accessed by service vehicles has double height with a floor to floor of 7.6m. As such, the required 4.3m headroom for the waste collection vehicles can be accommodated.

In addition, it is noted that an 8.8m long service vehicle bay can also accommodate typical removalist trucks.

Following the above, the proposed loading bay on the lower ground floor is proposed to operate as a shared loading facility for the proposed development i.e. it will accommodate service vehicles for waste collection, removalist trucks and large bulky items deliveries (refrigerators, televisions, washing machines) etc.

It is also proposed for service vehicles to share the same access as the general traffic accessing the car park.

4.4 Electric Vehicle Infrastructure

Part C of the LCDCP 2010 requires the proposed development to provide infrastructure for potential to provide electric charging points to every car space within the internal parking basements for hybrid and electric vehicles.

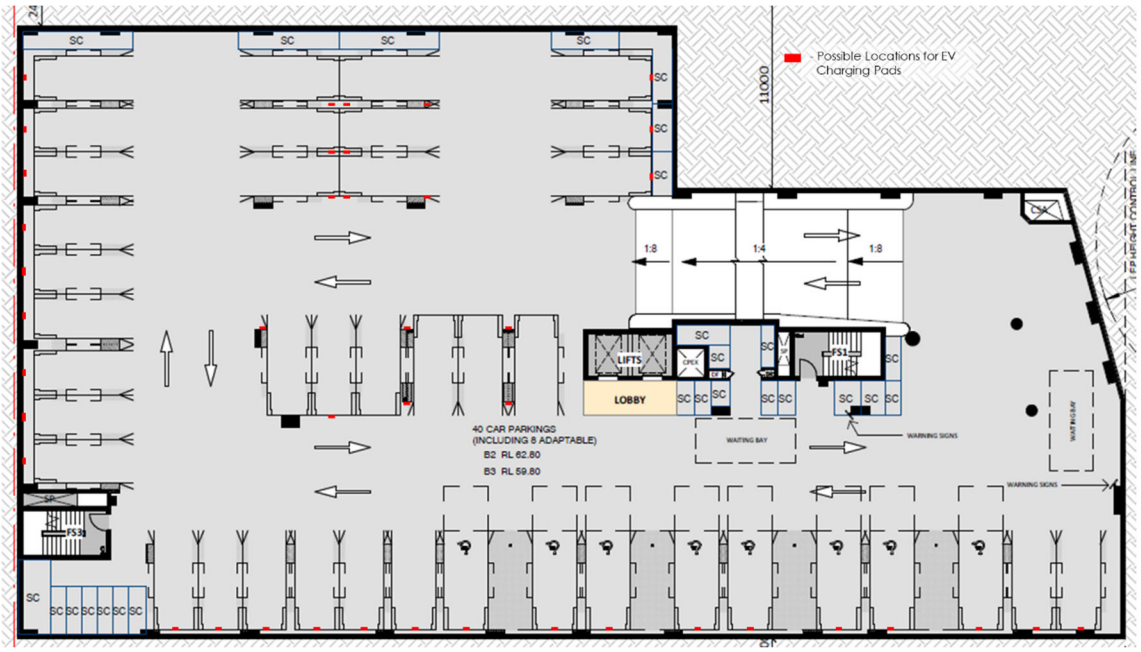
The proposed development proposes to comply with the above requirement as follows.

All proposed car parking spaces for residents will be provided with surface mounted conduits and cabling reticulated back to the sub-station for the proposed development. The mounting of conduits and cabling (with a maximum nominal size of 150mm, but typically 25mm) will not affect the car park's ability to comply with the Australian Standard headroom requirement. A headroom of 2.2m (or 2.5m above accessible car parking spaces) will be maintained noting that the basement is proposed with a minimum floor to floor height of 3.0m.

In addition, the charging pad or wallbox responsible for the charging of the vehicles has typical dimensions (H x W x D) of 320mm x 195mm x 110mm. It is noted that the width of the charging pad will not be wider than a typical column width (400mm typical). The charging pad will be accommodated by having it mounted on a wall and/or column adjacent to the car space. Where this is not possible, it will be mounted on a pedestal which will be fixed to the ground adjacent to the car space. In all cases, the charging pad will be located outside of the Australian Standard car space design envelope (Figure 5.2 of the Australian Standard AS2890.1:2004). As such, the charging pad including the pedestal (where required) will not compromise the car parking space's compliance with the design requirement set out in the Australian Standard.

The possible locations for a charging pad to each car space on a typical basement level are shown in Figure 4.2.

Figure 4.2: Possible Locations for Electric Vehicle Charging Pad



As such, the above will provide adequate infrastructure to future proof the development so to encourage the uptake of electric vehicles and thus complies with the Sustainable Transport control in Part C of LCDCP 2010.

5 Parking Assessment

5.1 Preamble

The proposed development aligns with the in-fill affordable housing provisions introduced in the Housing SEPP amendments, which aim to streamline and simplify the approval process for affordable housing projects. The Housing SEPP include amendments that set non-discretionary development standards to create predictability and minimise barriers by ensuring that if an affordable housing project complies with certain development standards prescribed in the Housing SEPP, the consent authority cannot impose stricter requirements that could obstruct the project's feasibility.

In this regard, it is noted that the car parking requirements set by Lane Cove Council for residential developments are more onerous than those outlined in the Housing SEPP. To remain compliant with the SEPP's non-discretionary standards, this traffic assessment has assessed car parking requirement for the proposed development based on the car parking requirements from the Housing SEPP. For other parking requirements, the assessment has been conducted based on LCDCP 2010, specifically, Table 2 of Part R: Traffic, Transport, and Parking.

5.2 Car Parking Requirements

The Housing SEPP prescribes the following car parking rates for non-affordable and affordable housing:

- non-affordable housing
  - 1-bedroom dwelling – at least 0.5 car parking spaces per dwelling
  - 2-bedroom dwelling – at least 1 car parking space per dwelling
  - 3-bedroom or larger dwelling – at least 1.5 car parking spaces per dwelling
- affordable housing
  - 1-bedroom dwelling – at least 0.4 car parking spaces per dwelling
  - 2-bedroom dwelling – at least 0.5 car parking spaces per dwelling. and
  - 3-bedroom or larger dwelling – at least 1 car parking space per dwelling.

It is noted that the Housing SEPP does not prescribe car parking rates for residential visitors. In light of this, this assessment has adopted the car parking rate for residential visitors from LCDCP 2010.

The car parking assessment for the proposed development is presented in Table 5.1.

Table 5.1: Car Parking Assessment (Housing SEPP)

Proposed Land Use	No. of Dwellings	Housing SEPP Minimum Parking Rates	Housing SEPP Minimum Car Parking Requirement
Non-Affordable Housing			
1-Bedroom Dwellings	21 Apts	0.5 spaces per dwelling	11
2-Bedroom Dwellings	39 Apts	1.0 space per dwelling	39
3-Bedroom Dwellings	30 Apts	1.5 spaces per dwelling	45
4-Bedroom Dwellings	9 Apt	1.5 spaces per dwelling	14
Non-Affordable Housing Sub-Total-			109
Affordable Housing			
1-Bedroom Dwellings	8 Apts	0.4 spaces per dwelling	3
2-Bedroom Dwellings	12 Apts	0.5 spaces per dwelling	6
3-Bedroom Dwellings	1 Apts	1.0 space per dwelling	1
4-Bedroom Dwellings	0 Apt	1.0 space per dwelling	0
Affordable Housing Sub-Total			10
All Housing Type			
1-Bedroom Dwellings	29 Apts	-	14
2-Bedroom Dwellings	51 Apts	-	45
3-Bedroom Dwellings	31 Apts	-	46
4-Bedroom Dwellings	9 Apt	-	14
Visitors§	-	1.0 space per 5 dwellings	24
Total (All Housing Type)	**120**	**-**	**143**

§ - Visitor car parking has been assessed LCDCP 2010.

Based on the car parking assessment presented in Table 5.1, the proposed development is required to provide a total of 143 car parking spaces comprising:

- 109 resident car parking spaces for non-affordable housing
- 10 resident car parking spaces for affordable housing, and
- 24 visitor car parking spaces.

5.3 Adequacy of Car Parking Spaces

The proposed development includes a 4-level basement car park with additional parking on the ground floor. A total of 146 car parking spaces comprising 122 car parking spaces for residents and 24 visitor car parking spaces is proposed to serve the proposed development.

The proposed parking provision of 146 car parking spaces exceeds the minimum car parking requirement stipulated in the Housing SEPP. Given that the Housing SEPP prescribes car parking standard as an "at least" requirement, the proposed car parking provision therefore complies with the Housing SEPP's non-discretionary standards.

5.4 Accessible Parking

LCDCP 2010 requires accessible parking for residents to be provided at a rate of one accessible car space per one adaptable housing unit. LCDCP 2010 also requires one accessible car space per 10 visitor car parking spaces provided (with a minimum of one accessible space).

The proposed development includes 24 adaptable apartments. As such, based on LCDCP 2010 requirement, the proposed development is required to provide 24 accessible parking for residents. Similarly, the proposed development proposes to provide 24 visitor car parking spaces. As such, the proposed development is required to provide two visitor accessible car parking spaces.

The architectural car park plans indicate a total of 24 accessible car parking spaces for residents and two accessible visitor car parking spaces. Therefore, the proposed accessible parking provision for the proposed development is satisfactory.

Separately, the accessible car parking spaces are proposed to be distributed to all parking levels.

5.5 Bicycle Parking

LCDCP 2010 requires bicycle parking for residential developments to be provided at a rate of one bicycle parking space per four dwellings for residents and one bicycle space plus one bicycle space per 10 dwellings.

Therefore, the proposed development is required to provide 30 bicycle parking spaces residents and 13 bicycle parking spaces for visitors.

The proposed development includes 30 bicycle parking spaces for residents and 13 bicycle parking spaces for visitors. As such, the proposed bicycle parking provision complies with LCDCP 2010 requirement and is therefore satisfactory.

5.6 Motorcycle Parking

LCDCP 2010 requires motorcycle parking to be provided at a rate of one motorcycle parking space per 15 car parking spaces for all types of development.

The proposed development is required to provide 143 car parking spaces. Therefore, it is required to provide 10 motorcycle parking spaces.

The proposed development includes 10 motorcycle parking spaces. Therefore, the proposed motorcycle parking provision is also satisfactory.

5.7 Service and Delivery Vehicle Parking

In relation to service vehicle requirements, LCDCP 2010 requires any proposed residential developments to provide service vehicle bays at a rate of one removalist truck space per 100 residential units.

As such, the proposed development with 120 dwellings is required to provide one truck bay. In this regard, it is noted that the proposed development includes a loading bay on the lower ground floor which has been designed to accommodate service vehicles up to an Australian Standard 8.8m long medium rigid vehicle.

Therefore, the proposed provision of service vehicle bay is satisfactory.

5.8 Car Park Layout Design

The car park is proposed as a 4-level basement car park from Levels B1 to B4 with additional parking provided on the lower ground floor and is located directly beneath the proposed development. It can be accessed via a combined entry and exit driveway located off Holdsworth Avenue.

Each basement level has an L shape with the floor-to-floor internal ramp being located on the northern half of the basement while the car parking spaces are distributed across the entire basement level.

A straight two-lane, two-way ramp is located off the western wall within the northern half of the site to provide access between basement levels as well as connecting to the lower ground floor.

On Basement B2 to B4, 90 degrees car parking spaces are proposed to be located along the southern, eastern and western periphery walls of the basement with an additional module of car parking spaces located at the centre of each basement level. This layout is replicated on B1, but plant rooms along the southern wall and storage cages along the eastern wall have displaced the car parking spaces. On the

lower ground floor, 90 degrees parking spaces are proposed on the southern and northern periphery walls of the southern half of the site.

In relation to the design of the parking spaces, it is noted that the car parking spaces have minimum dimensions of 2.4m wide by 5.4m long with aisle width of 5.8m. The proposed dimensions of the car parking spaces comply with the Australian Standard AS2890.1:2004 as Class 1A car parking facility. The Australian Standard notes that a Class 1Acar park facility is suitable for a residential car park.

The proposed accessible car spaces and associated shared areas have dimensions 2.4m wide by 5.4m long with 5.8m wide aisles. The proposed dimensions comply with AS2890.6:2009.

In addition, MLA's car parking spaces design review also assessed the following (but not limited to) design elements relating to car parking spaces:

- the first 6m of the access driveway behind the property boundary has a maximum grade of 1:20 has been provided
- an additional width of 0.3m has been provided for car spaces adjacent to a wall
- all columns have been located outside of the parking space design envelope
- blind aisles have been provided with an extension of 1.0m beyond the last car parking space
- single sided aisles (where one side is confined by a vertical obstruction higher than 0.15m) have been provided with an additional 0.3m in width
- minimum clear head heights of 2.2m for general car parking spaces and 2.5m for accessible parking spaces have been provided within the basement car park as required by AS2890.1 and AS2890.6
- maximum vertical grade of 1:4 with appropriate length transitions at 1:8 have been provided along ramps used by passenger vehicles in accordance with AS2890.1
- bicycle parking spaces have dimensions of 0.5m by 1.8m with an aisle width of 1.5m
- motorcycle parking spaces have dimensions of 3.0m by 1.2m as required by LCDCP 2010, and
- the proposed loading area has been designed to accommodate service vehicles up to an Australian Standard 8.8m long medium rigid vehicle, it can enter and exit the site in a forward direction, and
- loading area including along access paths to and from the loading area have a minimum headroom of 4.5m.

Our review indicates that the proposed the design of the car parking spaces and aisles generally complies with the design requirements set out in the Australian Standard for car parking facilities in AS2890.1, AS2890.3 and AS2890.6. Therefore, the design of the

proposed car parking spaces is satisfactory. The design of the loading dock also complies with AS2890.2.

Finally, it is noted swept path analysis has been conducted at the driveway and along the internal ramps using an Australian Standard 5.2m long B99 vehicle as the design vehicle. The analysis indicates that a B99 vehicle can access and circulate within the car park satisfactorily and have sufficient clearance to pass one another where required.

Swept path analysis has also been conducted for an MRV accessing the loading dock. These were also found to be satisfactory.

The swept path diagrams are contained in Appendix B.

6 Traffic Assessment

6.1 Previous Traffic Assessment

As previously noted, the site has an existing development approval allowing it to be redeveloped into a residential flat building with 96 apartments.

A traffic impact assessment was prepared by this office, that went to inform the approval, estimated that the approved development would generate up 13 vehicle trips per hour (vph) during the busiest peak period. An earlier scheme was estimated to generate 15 vph during the busiest peak period.

The traffic assessment included the development of a traffic model on the Aimsun platform to assess the traffic effects of the proposed development. The traffic model accounts for both existing and future traffic conditions, incorporating background traffic growth through tor 2031. It was built upon the Aimsun traffic model previously prepared for Council as part of the St Leonards South planning proposal work.

The traffic assessment found that the modelling results for the future 2031 development scenario are consistent with those from the cumulative traffic assessment for the 2021 Base Model + ABC. The results indicate that the majority of the assessed intersections would continue to operate with acceptable level of service (i.e. LoS D or better) during both peak periods with the exception of the Greenwich Road intersection with River Road which is expected to operate with LoS E during the morning peak period. The poor performance of the Greenwich Road intersection can be attributed to growth in the background traffic.

The traffic assessment concluded that the proposed development is expected to generate only 13 vph during the busiest peak period and is not expected to create any material change to the operation of the road network.

6.2 Traffic Generation and its Effects Arising from this Application

The proposed development is for 120 residential apartments. Using the accepted traffic generation rates from the planning proposal cumulative traffic assessment of 0.14 and 0.07 vehicle trips per hour per dwelling during the morning and evening peak periods respectively, the proposed development is expected to generate 17 vph during the morning peak period and 8 vph during the evening peak period.

This level of development traffic is considered to be low especially when compared to the existing traffic flows on Pacific Highway (approximately 3,500 vph). The estimated development traffic represents less than 0.5 per cent of the existing traffic on Pacific Highway noting that daily fluctuations can vary by up to ±15 per cent. As such, the proposed development by itself would not create any noticeable adverse traffic impacts.

It is further noted that the estimated development traffic for the current proposal is 4 vph more than the development traffic estimated for the approved development in DA 187/2021. A difference of four vehicle trips is not expected to create any material change in traffic performance and as such will not have any discernible traffic effects to the local road network.

In light of the above, traffic effects arise from the proposed development would be satisfactory.

7 Summary and Conclusion

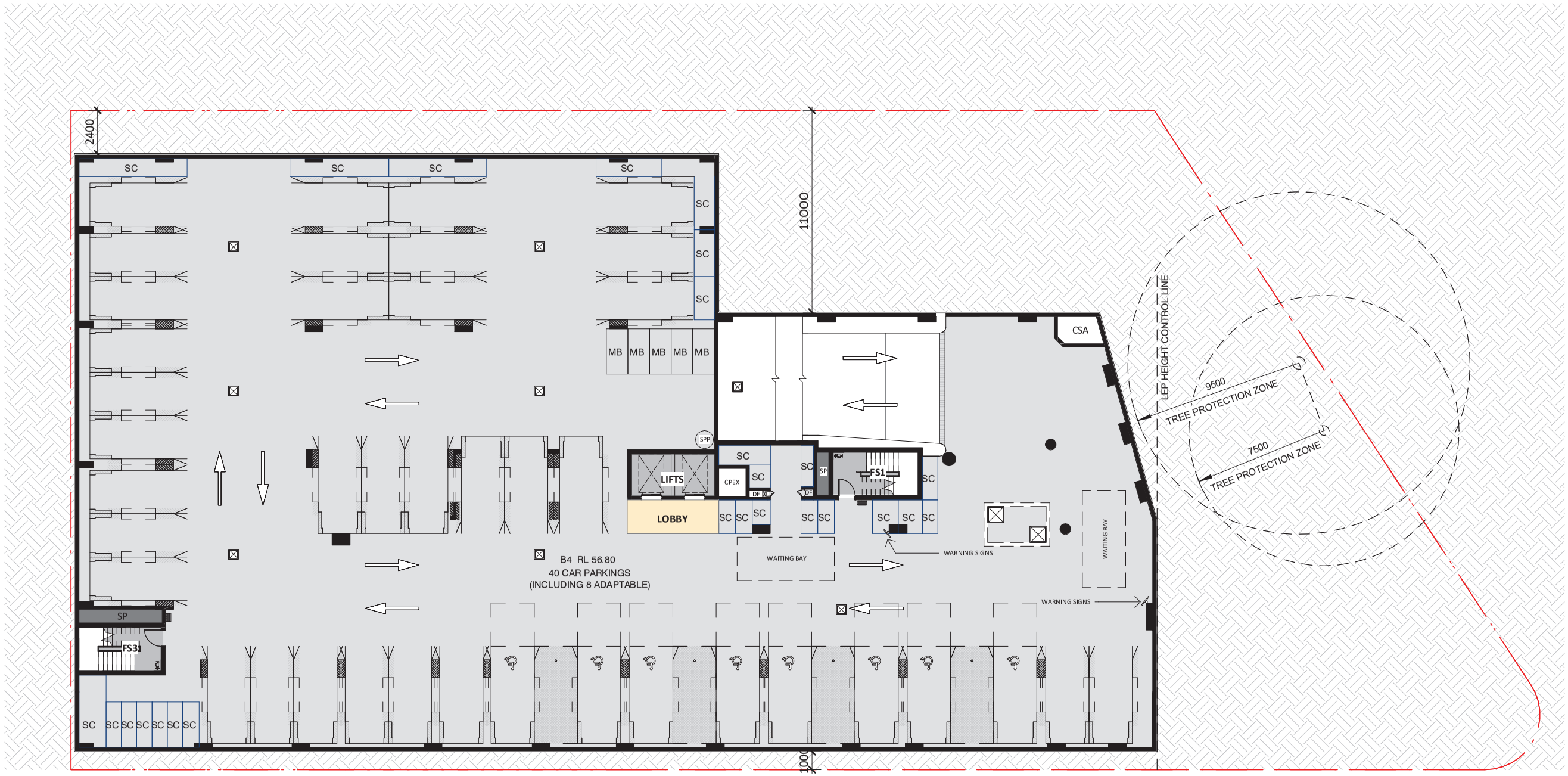
This report examines the traffic and parking implications of a proposed residential development at 3 Holdsworth Avenue, St Leonards. The salient findings of this assessment are presented below.

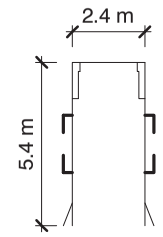
- The proposed development involves the redevelopment of the subject site, which is currently occupied by four detached dwellings, into a 16-storey building to accommodate 120 residential apartments. The proposed development includes 21 affordable housing apartments.
- The subject site is part of the St Leonards South precinct for which a planning proposal has been gazetted to provide an additional 2,000 dwellings.
- Vehicular access to the proposed development is proposed to be provided off Holdsworth Road to be shared between general traffic and service vehicles.
- The Housing SEPP requires the proposed development to provide a 143 car parking spaces including 24 visitor car parking spaces. It is proposed to provide 146 car parking spaces including 24 visitor car parking spaces.
- The proposed car parking spaces have been designed to comply with the Australian Standard as Class 1A car parking spaces and are considered to be satisfactory.
- Bicycle and motorcycle parking spaces are proposed to be provided in full compliance with the requirements stipulated in the development control plan.
- The proposed development includes a service vehicle bay on the ground floor which has been designed to accommodate service vehicles up to an Australian Standard 8.8m medium rigid vehicle. The proposed loading facility is proposed to be shared between waste collection vehicles, removalist trucks and other delivery vehicles.
- The car park and loading area have been designed to comply with the design requirements set out in the Australian Standard, namely AS2890.1:2004, AS2890.2:2018. AS2890.3:2015 and AS2890.6:2009.
- The proposed development has been estimated to generate a total of 17 vph during the busiest peak period. This level of development traffic is considered to be low and will not create any noticeable traffic impacts to the local road network as discussed in this report.
- The surrounding road network would continue to operate as originally planned following the completion of the proposed development.

Overall, from a traffic and parking perspective the proposed development is considered to be satisfactory.

Appendix A

Architectural Car Park Layout Plans





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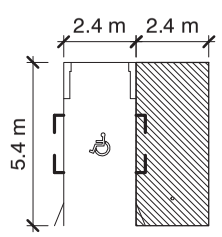
V - VISITOR



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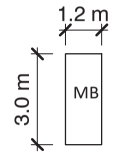

MOTORBIKE PARKING

STORAGE CAGE

Key Plan:

N

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Rev	Amendment	By	Chk*	Date
H	SYDNEY WATER APPLICATION	DW	MS	2024.10.22
G	SYDNEY WATER APPLICATION	DW	MS	2024.07.16
F	ISSUED FOR S4.55	DW	MS	2024.05.14
E	ISSUED FOR S4.55	DW	MS	2023.09.22
D	ISSUED FOR S4.55	DW	DF	2023.06.19
C	ISSUED FOR S4.55	DW	MGS	2023.02.10
B	REVISED DA SUBMISSION	CN	MGS	2022.06.08
A	DA SUBMISSION	YY	MGS	2021.12.09

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S Parsons Architect No.6098
D Jones Architect No.4778

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Project PA030370
3 Holdsworth Avenue, St Leonards

Status
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Title
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LEVEL B4 PLAN

Drawing Number DA-09-0010
Revision H

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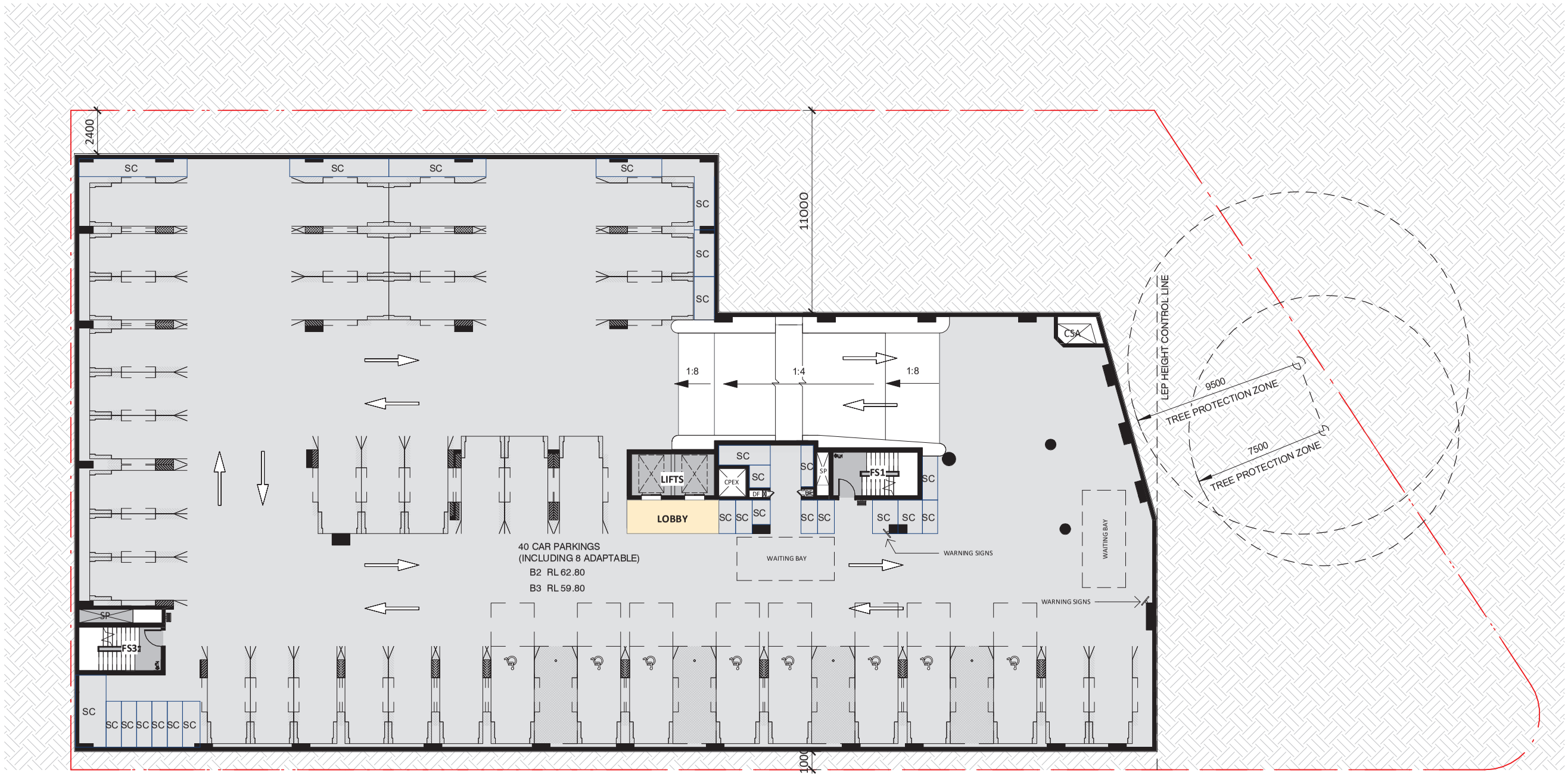

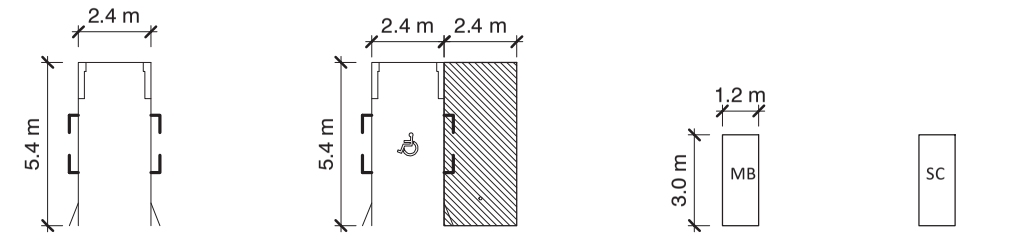

R - RESIDENTIAL PARKING
V - VISITOR

ACCESSIBLE PARKING

MOTORBIKE PARKING

STORAGE CAGE

Key Plan:

N

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G	SYDNEY WATER APPLICATION	DW	MS	2024.07.16
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E	ISSUED FOR S4.55	DW	MS	2023.09.22
D	ISSUED FOR S4.55	DW	DF	2023.06.19
C	ISSUED FOR S4.55	DW	MGS	2023.02.10
B	REVISED DA SUBMISSION	CN	MGS	2022.06.08
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S Parsons Architect No.6098
D Jones Architect No.4778

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Project PA030370
3 Holdsworth Avenue, St Leonards

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Title
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LEVEL B3-B2 PLAN

Drawing Number DA-09-0030
Revision H

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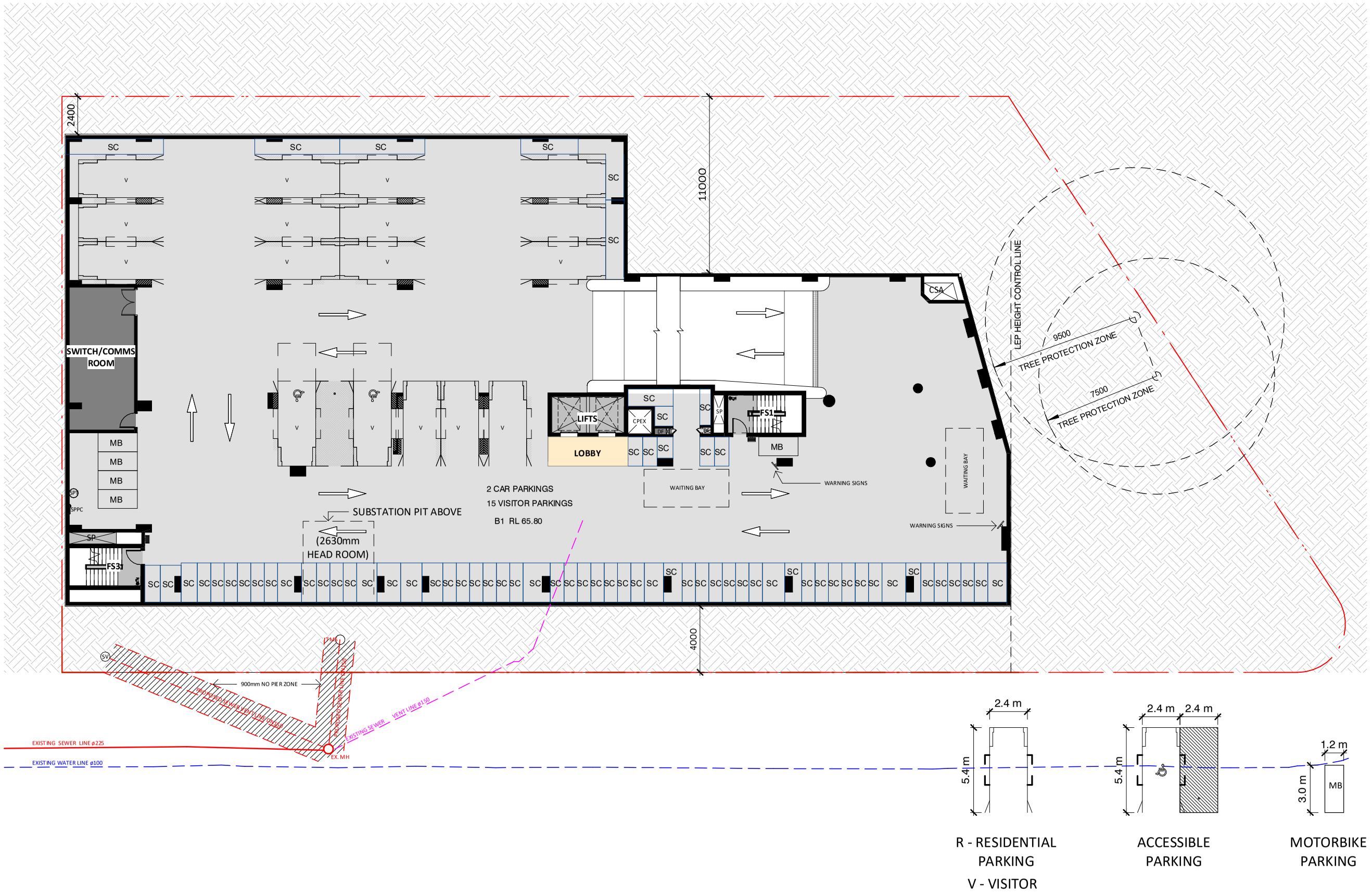

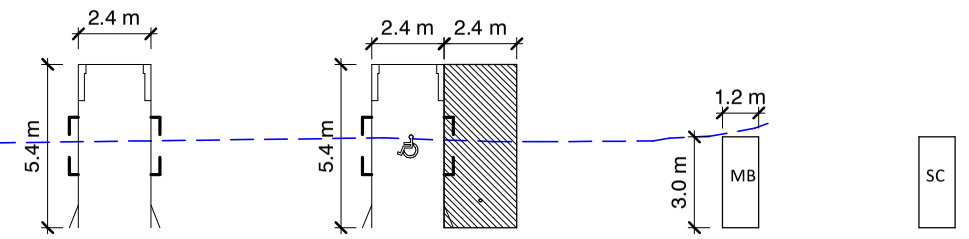

R - RESIDENTIAL PARKING
V - VISITOR

ACCESSIBLE PARKING

MOTORBIKE PARKING

STORAGE CAGE

Key Plan:

N

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Rev	Amendment	By	Chk*	Date
K	ISSUED FOR REVISED DA	DW	MS	2024.10.30
J	SYDNEY WATER APPLICATION	DW	MS	2024.10.22
I	SYDNEY WATER APPLICATION	DW	MS	2024.07.16
H	ISSUED FOR S4.55	DW	MS	2024.05.14
G	ISSUED FOR S4.55	DW	MS	2023.09.22
F	ISSUED FOR S4.55	DW	DF	2023.06.19
E	ISSUED FOR S4.55	DW	MGS	2023.02.10
D	SYDNEY WATER APPLICATION	ZS	MGS	2022.09.07

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S Parsons Architect No.6098
D Jones Architect No.4778

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3 Holdsworth Avenue, St Leonards

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Title
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LEVEL B1 PLAN

Drawing Number DA-09-0040
Revision K

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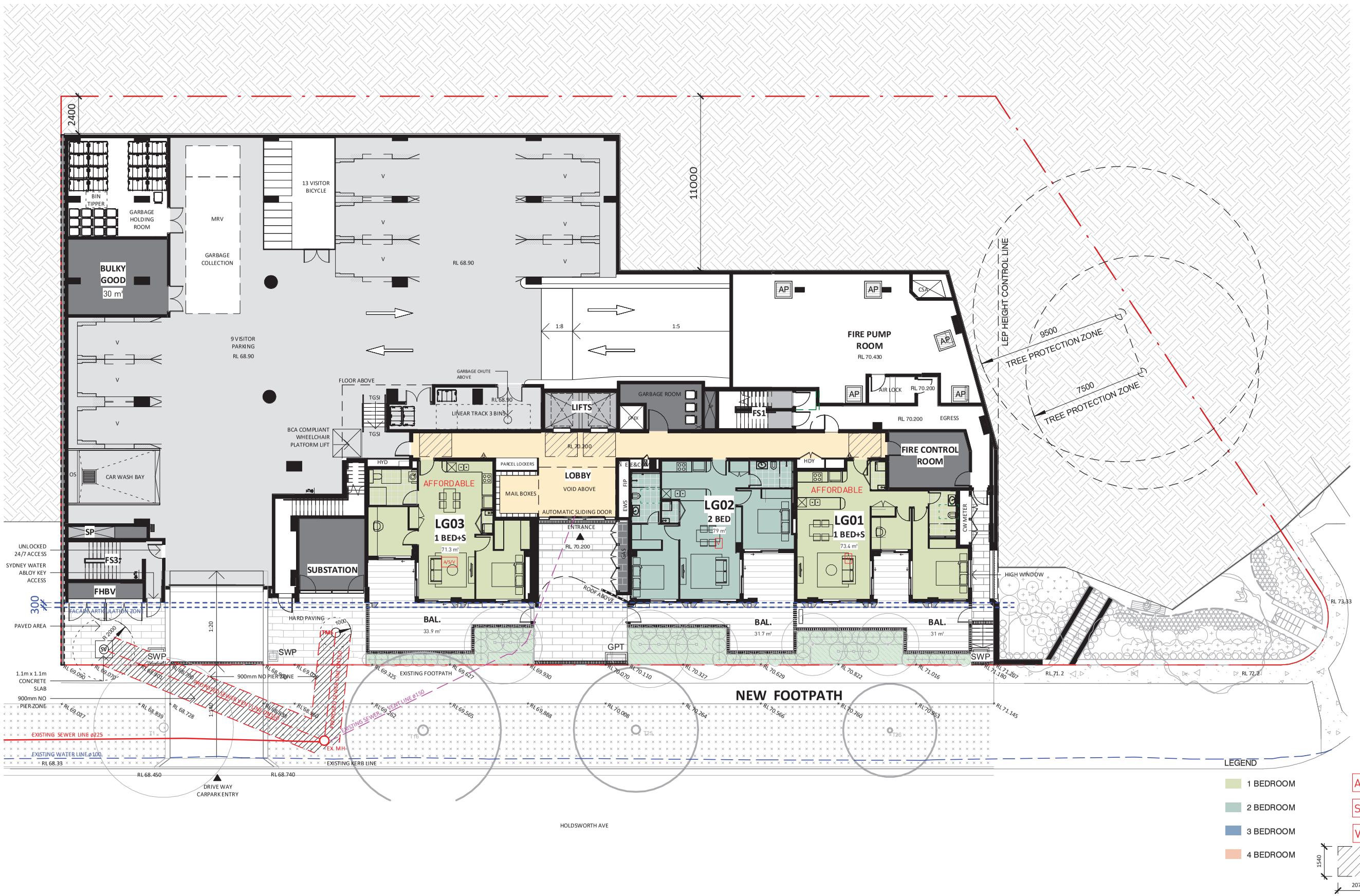

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Rev	Amendment	By	Chk*	Date
M	ISSUED FOR REVISED DA	DW	MS	2024.10.30
L	SYDNEY WATER APPLICATION	DW	MS	2024.10.22
K	SYDNEY WATER APPLICATION	DW	MS	2024.07.16
J	ISSUED FOR S4.55	DW	MS	2024.05.14
I	ISSUED FOR S4.55	DW	MS	2023.09.22
H	ISSUED FOR S4.55	DW	DF	2023.06.19
G	ISSUED FOR S4.55	DW	MGS	2023.02.10
F	SYDNEY WATER APPLICATION	ZS	MGS	2022.09.07

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D Jones Architect No.4778

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Project PA030370
3 Holdsworth Avenue, St Leonards

Status
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Title
10-GENERAL ARRANGEMENT PLANS
LOWER GROUND PLAN

Drawing Number DA-10-0001
Revision M

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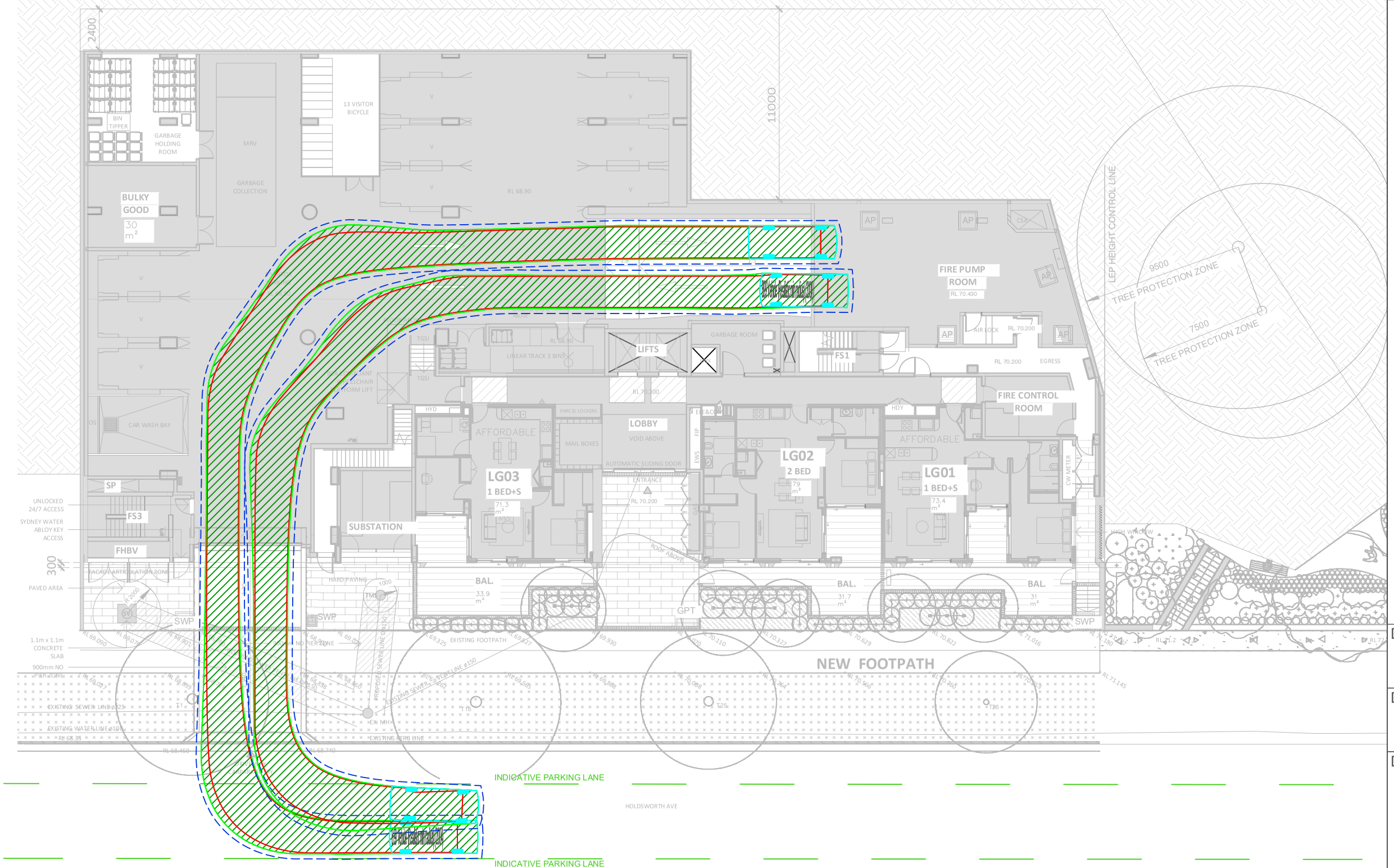
Appendix B

Swept Path Diagrams



Transport Planning

Level 14 | 275 Alfred St
North Sydney | NSW | 2060

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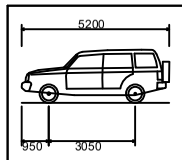

B99 Vehicle (Realistic min radius) (2004)

Overall Length	5200mm
Overall Width	1940mm
Overall Body Height	1878mm
Min Body Ground Clearance	272mm
Track Width	1840mm
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	6250mm

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20080CAD014C-001	C

DRAWING TITLE:

SWEPT PATH ANALYSIS - AS2890.1 5.2M B99 VEHICLE ENTERING AND EXITING - GROUND FLOOR

PROJECT:

3 HOLDSWORTH AVE, ST LEONARDS PROPOSED RESIDENTIAL DEVELOPMENT

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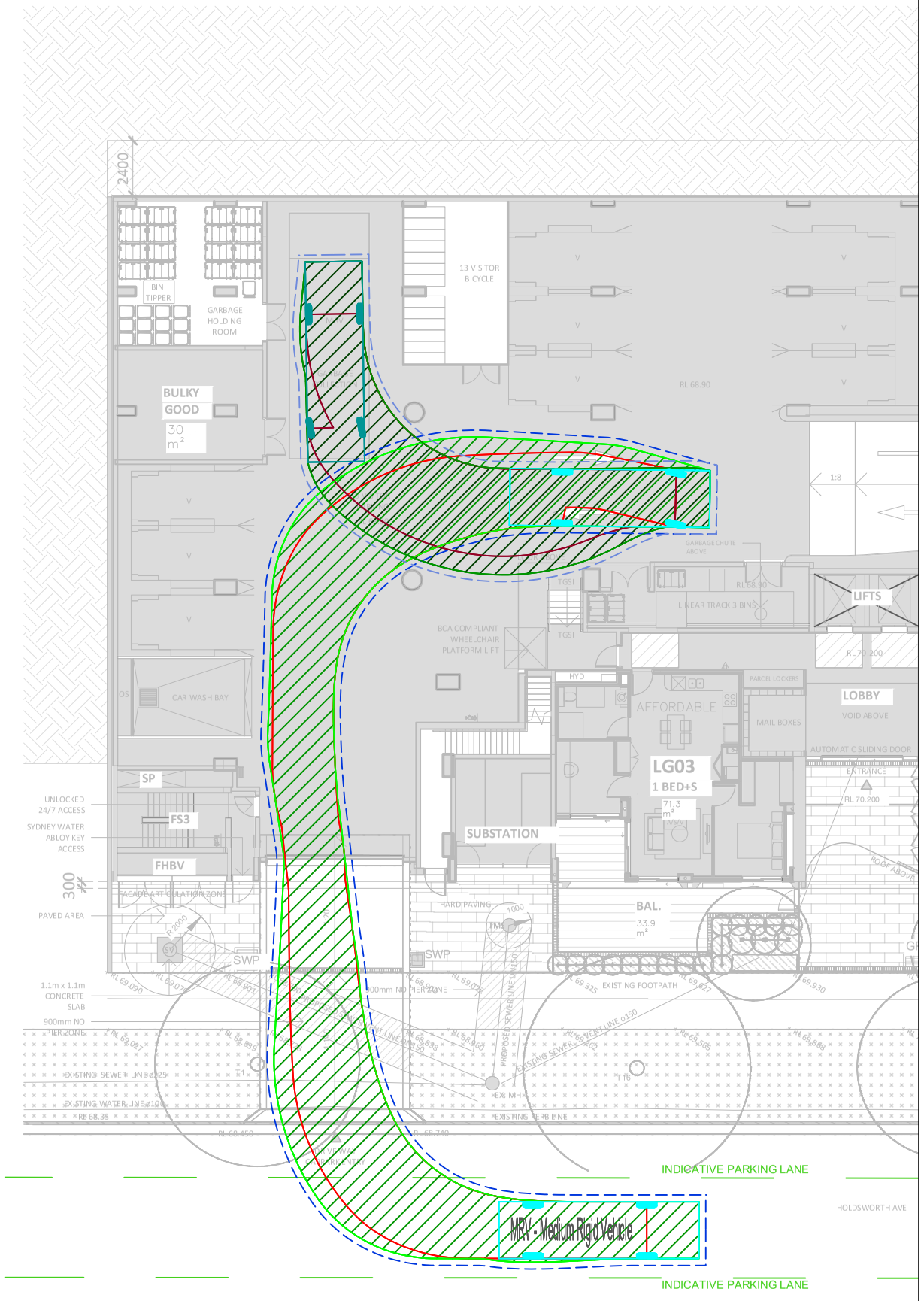

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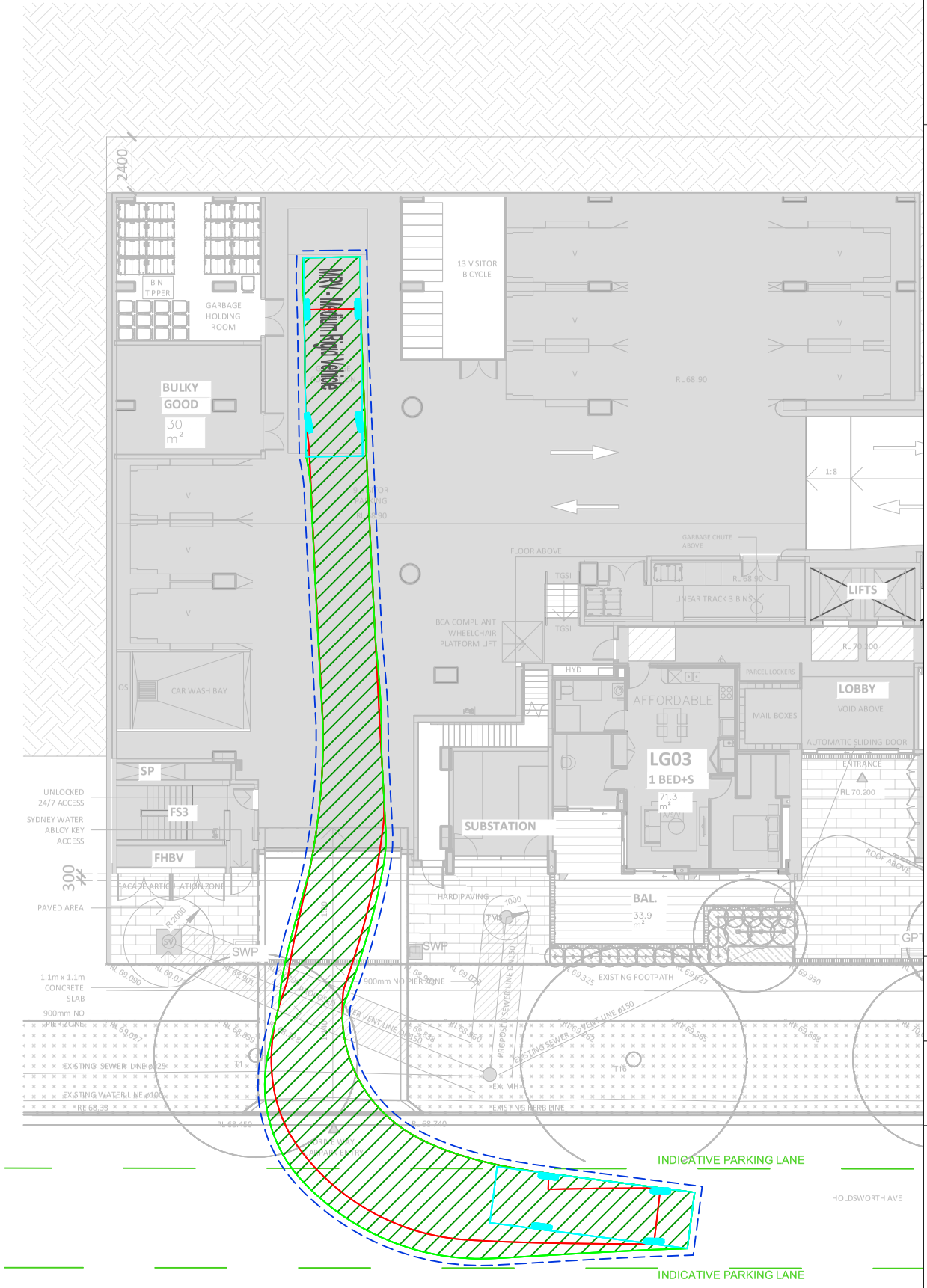

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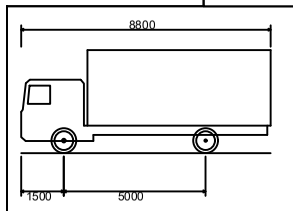

MRV - Medium Rigid Vehicle	
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Curb to Curb Turning Radius	10000mm

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DRAWING NO.:	REV:
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DRAWING TITLE:

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PROJECT:

3 HOLDSWORTH AVE, ST LEONARDS PROPOSED RESIDENTIAL DEVELOPMENT

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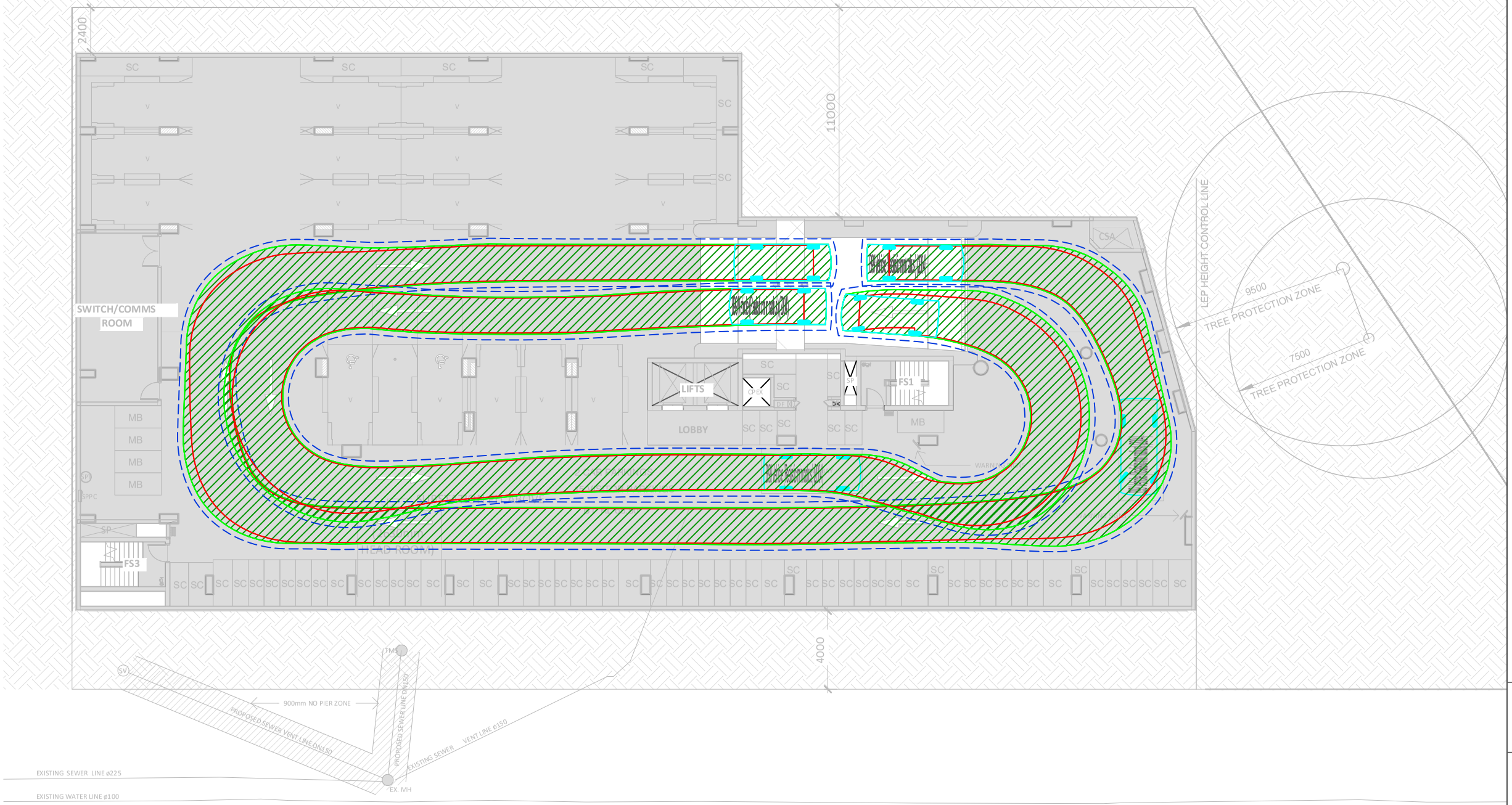

Transport Planning
Level 14 | 275 Alfred St
North Sydney | NSW | 2060

KEY:

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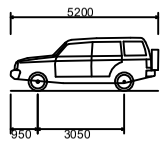

B99 Vehicle (Realistic min radius) (2004)

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Overall Body Height	1878mm
Min Body Ground Clearance	272mm
Track Width	1840mm
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Curb to Curb Turning Radius	6250mm

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DRAWING NO.:	REV:
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SWEPT PATH ANALYSIS - AS2890.1 5.2M B99 VEHICLE ENTERING AND EXITING - BASEMENT LEVEL B1

PROJECT:

3 HOLDSWORTH AVE, ST LEONARDS PROPOSED RESIDENTIAL DEVELOPMENT

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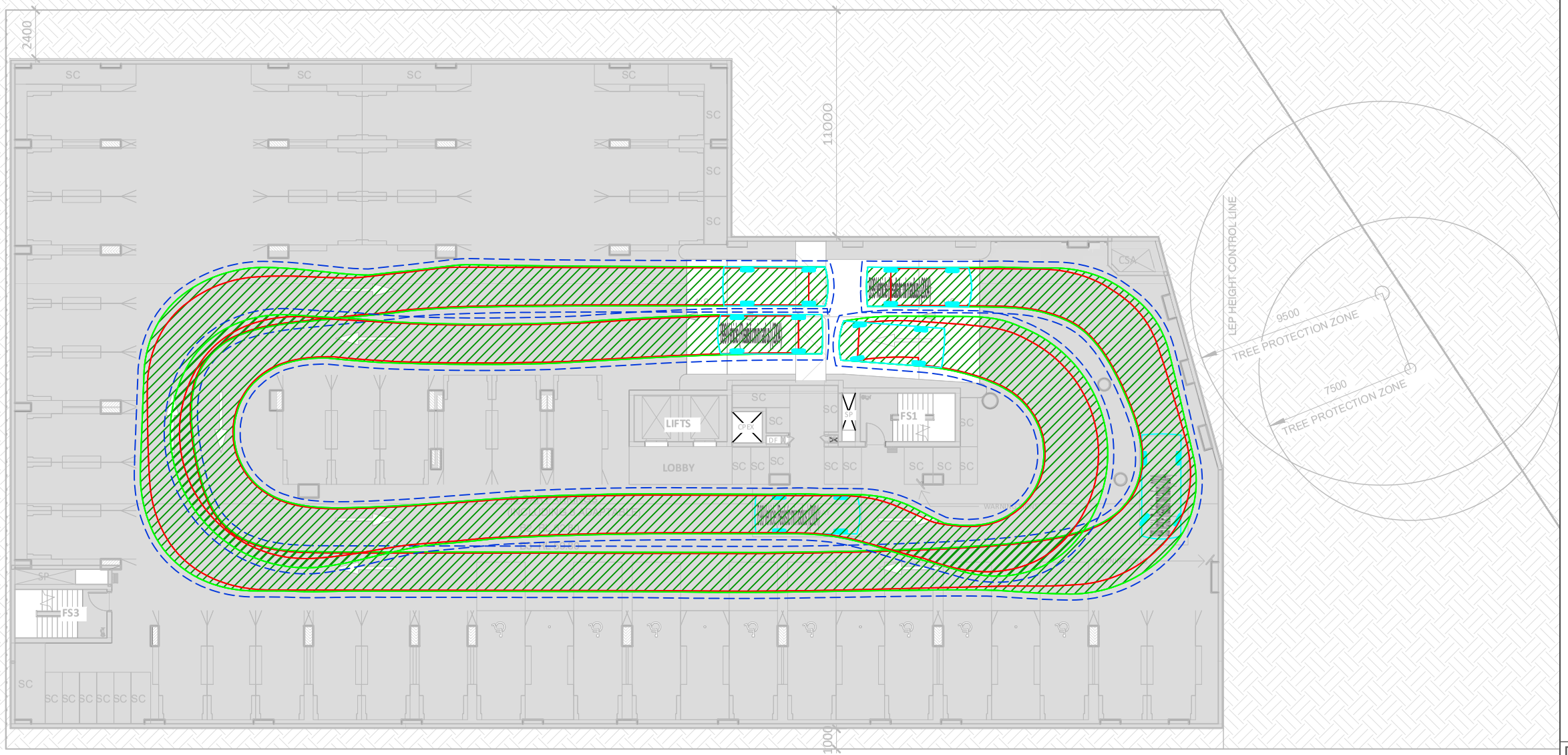

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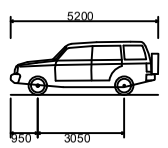

B99 Vehicle (Realistic min radius) (2004)

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Overall Body Height	1878mm
Min Body Ground Clearance	272mm
Track Width	1840mm
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Curb to Curb Turning Radius	6250mm

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13 NOVEMBER 2024	1:250@A3

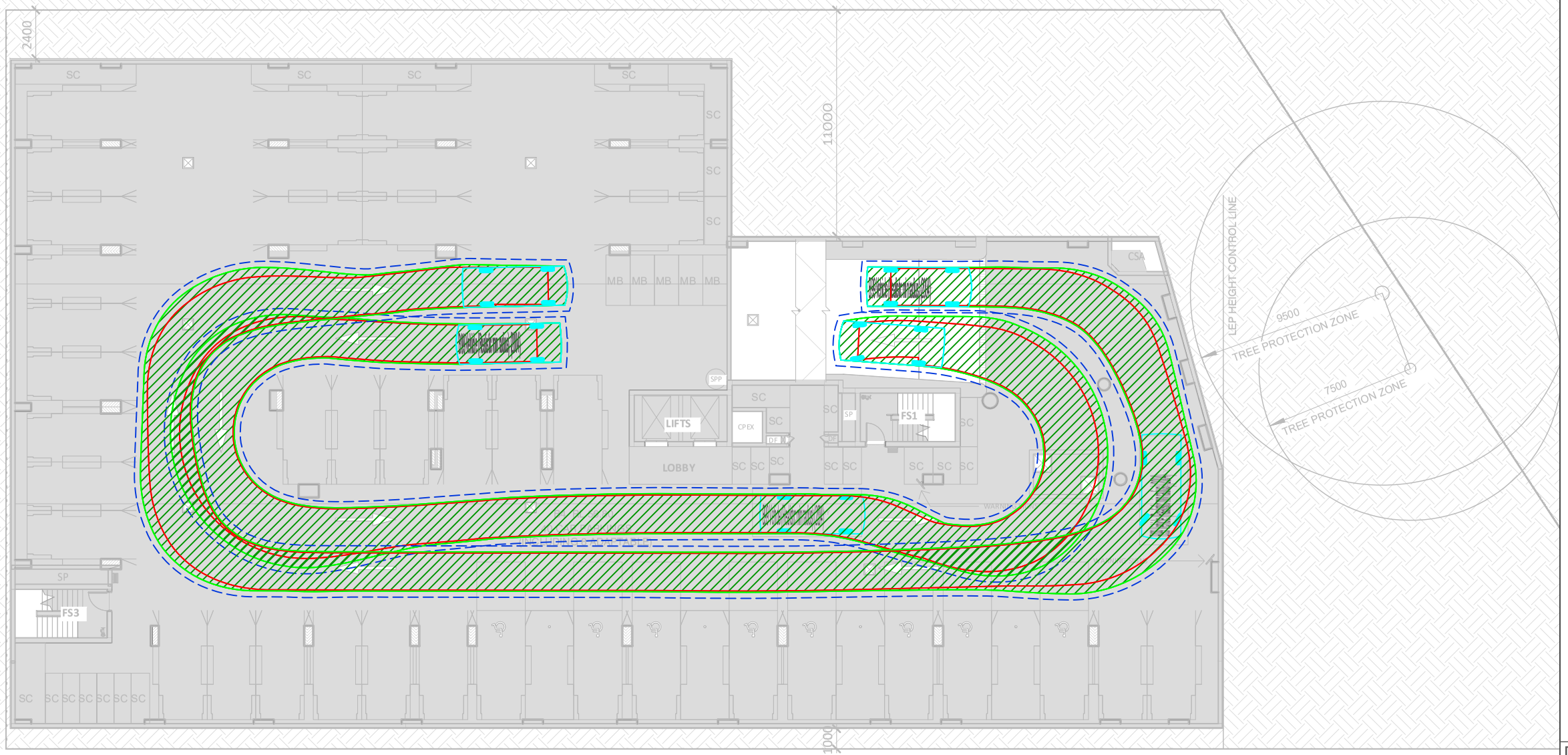
DRAWING NO.:	REV:
20080CAD014C-004	C

DRAWING TITLE:

SWEPT PATH ANALYSIS - AS2890.1 5.2M B99 VEHICLE ENTERING AND EXITING - BASEMENT LEVELS B2 & B3

PROJECT:

3 HOLDSWORTH AVE, ST LEONARDS PROPOSED RESIDENTIAL DEVELOPMENT



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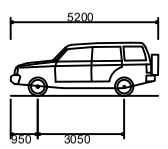

B99 Vehicle (Realistic min radius) (2004)

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PROJECT:

3 HOLDSWORTH AVE, ST LEONARDS PROPOSED RESIDENTIAL DEVELOPMENT

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