Our Ref: 21118

7 October 2021

Think Planners
PO Box W287
Parramatta 2150 NSW

Attention: Mr Jonathon Wood

Dear Jonathon,

RE: 10-16 SEVEN HILLS ROAD, BAULKHAM HILLS
TRAFFIC AND PARKING ASSESSMENT

1. Background

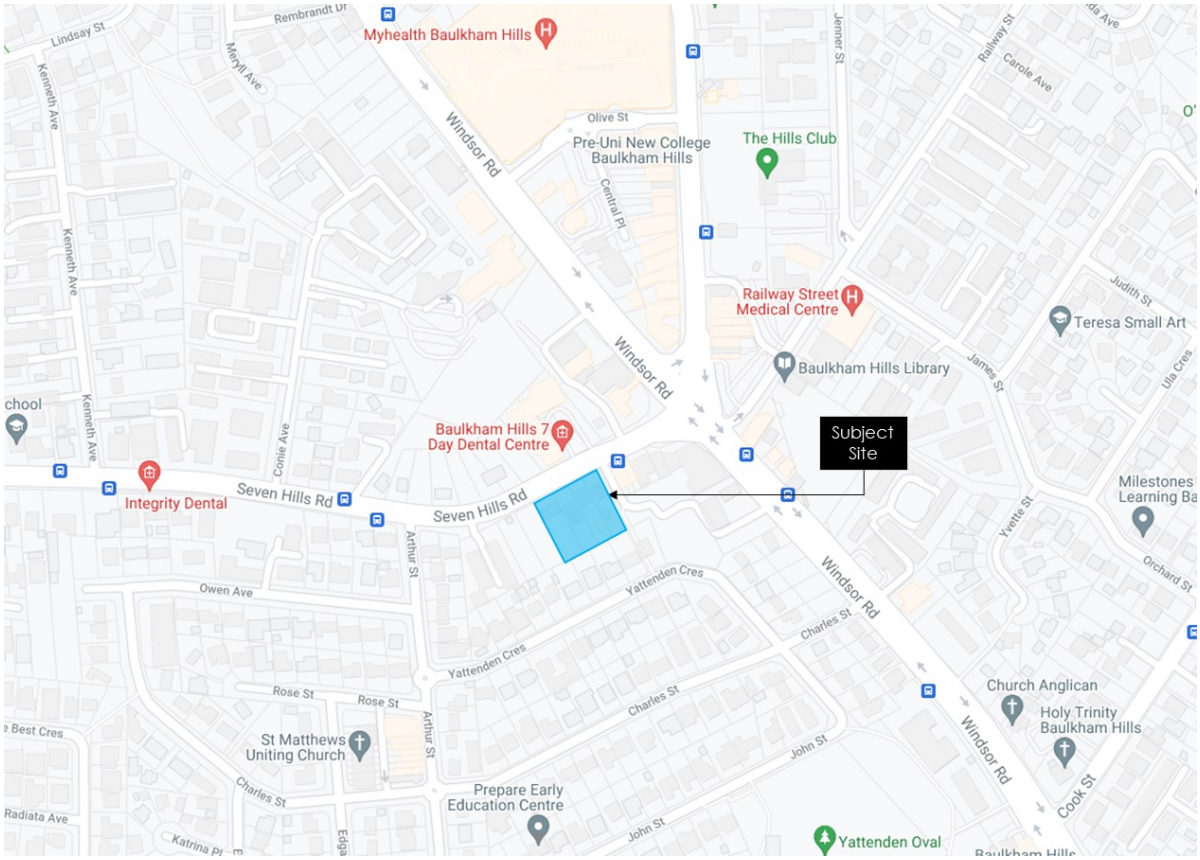
This traffic and parking assessment relates to a proposed high density residential development at 10-16 Seven Hills Road, Baulkham Hills. Locality of the subject site is shown in Figure 1.

The Planning Proposal seeks an uplift from The Hills Shire Council's planning controls for the maximum allowable floor space area and gross floor area. This would result in an increase from 50 residential units to 91 residential units in the seven-storey buildings. The development is located in Zone R4 where high density residential developments are permitted, but outside the boundary of Baulkham Hills town centre.

The proposed development includes a two-level basement car park with a vehicular access located on the south side of Seven Hills Road.

Traffic impact associated with the complying design yield and the proposed uplift has been assessed in this traffic assessment.

Figure 1: Locality Map



2. Existing Conditions

2.1 Road network

Access to the subject site is via a number of state and local roads, including Windsor Road, Seven Hills Road and Arthur Street. A brief description of these roads is provided below.

Windsor Road is a State Road that connects Wilberforce Road to the north and James rise Drive to the south. In the vicinity of the site, Windsor Road provides three travel lanes in each direction separated by a median. There is a 24-hour bus lane on Windsor Road southbound. Clearways have recently been extended and operate at all times in both directions of Windsor Road. The posted speed limit is 60km/h on Windsor Road.

Windsor Road intersects with Seven Hills Road as a signalised intersection. It is understood that The Hills Shire Council historically suggested grade separation of the intersection, but Transport for NSW (TfNSW) is of the view that it is unlikely to be viable due to construction constraints and significant costs involved, and recommends that augmentation of the existing transport infrastructure is more viable to improve intersection capacity, and setback of the

development frontages be allowed for future road widening to accommodate potential upgrades.

Seven Hills Road is a regional road that connects Windsor Road to the east and Prospect Highway to the west. In the vicinity of the site, Seven Hills Road provides two travel lanes in each direction separated by a median that was installed in year 2020.

"No Parking" signs have been installed on both sides of the road, and is operational 6:30am-9:30am and 3:30pm-6:30pm on the south side of the road, and 3pm-6pm on the north side of the road. The posted speed limit is 60km/h on Seven Hills Road.

Arthur Street is a two-lane two-way local road that connects Seven Hills Road to the north and Watkins Road to the south. "No Stopping" signs are provided between Seven Hills Road and Owen Avenue to increase intersection capacity, but parking is permitted to the south of Owen Avenue. The posted speed limit is 50km/h on Seven Hills Road.

A roundabout is located at the Arthur Street – Yattenden Crescent intersection to accommodate U-turn movements from Seven Hills Road due to the recent installation of traffic median that prevents right turn movements to/from the properties. Arthur Street – Seven Hills Road intersection has been signalised recently to better accommodate the right turn movements from Arthur Street onto Seven Hills Road.

2.2 Journey to Work

Journey to Work (JTW) data from the Bureau of Transport Statistics (BTS), derived from the 2016 Census, has been obtained to understand existing transportation modes to and from the subject site located within SA1 (11501129038) as shown in Figure 2.

Figure 2: SA1 Usual Residence

A summary of the top destinations for employed residents from this SA1 is presented in Table 1.

Table 1: Top Work Destinations

Top Destinations for Workplace	Percentage
Baulkham Hills	29%
Parramatta	15%
Chatswood - Lane Cove	14%
Strathfield - Burwood - Ashfield	11%
Auburn	9%
Merrylands - Guildford	6%
Blacktown	6%
Fairfield	5%
Sydney Inner City	5%
Total	**100%**

Reference: Census 2016

A summary of the existing mode splits of transportation is presented in Table 2 for the associated SA1 and compared with those across Baulkham Hills referenced from with Profile.ID.

Table 2: Mode Share

Transport Mode	Mode Share at the Associated SA1	Mode Share Across Baulkham Hills
Train	0%	5%
Bus	36%	19%
Car (as driver or passenger)	61%	74%
Truck	0%	1%
Motorbike	0%	0%
Bicycle	0%	0%
Walk Only	3%	1%
Total	**100%**	**100%**

Reference: Census 2016 and Profile ID (https://profile.id.com.au/the-hills/travel-to-work?WebID=110)

Table 2 indicates 36% of the employed residents surrounding the subject site would take public transport to work while 61% would travel by cars. The take up of public transport (36%) is considered high as it is located away from train stations, and it is also much higher than the figure across Baulkham Hills (24%).

Notwithstanding the above, the take up of public transport is expected to have increased since 2016 with the operation of the Sydney Metro North West Line which provides frequent services between Tallawong and Chatswood, and direct connection at Epping and Chatswood stations to other train lines. Bus Routes 600 and 610X provide services between Old Northern Road (4 minute walk from the site) and Castle Hills Metro Station.

3. Proposed Development

Design Yield

The proposed high density residential development consists of 50 units based on The Hills Shire Council's planning controls for the maximum allowable floor space area and gross floor area.

This Planning Proposal seeks an uplift to 91 units with one to three bedrooms.

Parking

Vehicle access to the car park will be provided via a driveway on the south side of Seven Hills Road. The car park would provide two basement levels with parking provision generally in accordance with The Hills Development Control Plan. Design drawings of the basement car park is provided in Attachment One.

4. Traffic Assessment

4.1 Target Mode Share

Mode share of the future residents associated with the subject development is expected to be similar to those recorded in SA1 in Census 2016, as shown in Figure 2. Census data was collected in 2016 prior to the opening of Sydney Metro North West Line which provides frequent services between Tallawong and Chatswood, with peak services once every four minutes. As such, residents would have an option to drive or take a bus to the nearest Metro station at Norwest or Castle Hill.

On this basis, the target mode share, as shown in Table 3, allows for an assumed 10% take up of metro with less dependency on private vehicles, especially for those destinations along the metro/ train lines as shown in Table 1. The assumption of 10% is indicatively only for analytical purposes.

Table 3: Target Mode Share

Transport Mode	Existing Mode Share at SA1 11501129038	Target Mode Share
Metro/Train	0%	10%
Bus	36%	32%
Car (as driver or passenger)	61%	55%
Truck	0%	0%
Motorbike	0%	0%
Bicycle	0%	0%
Walk Only	3%	3%
Total	**100%**	**100%**

4.2 Traffic Generation

The subject high density residential development is located at a distance greater than 800m from the closest train station or metro station. Typical traffic generation estimates for the proposed high density residential development have been sourced from the RMS (now TfNSW) Guide to Traffic Generating Developments (2002), as follows:

- AM peak hour vehicle trips = 0.29 trips/ unit
- PM peak hour vehicle trips = 0.29 trips/ unit.

A summary of the traffic generation estimate is shown in Table 4 for the complying yield and the proposed uplift. For the trips generated from the residential area, it has been assumed 20% of trips are inbound and 80% of trips are outbound in the AM peak hour, and these have been reversed in the PM peak hour.

Table 4: Traffic Generation Estimates

Design	Land Use	Yield	TfNSW Trip Rate		AM Traffic Generation		PM Traffic Generation	
			AM Peak	PM Peak	Inbound	Outbound	Inbound	Outbound
Based on Council Planning Control	High Density Residential	50 units	0.29	0.29	3	12	12	3
Proposed Uplift	High Density Residential	91 units	0.29	0.29	5	21	21	5
Net Increase	-	-	-	-	**2**	**10**	**10**	**2**

Note: Numbers may not add up due to rounding

The development with a complying yield of 50 units is estimated to generate 14 vehicles in the AM and PM peak hours.

The proposed uplift with 91 units is estimated to generate 26 vehicles in the AM and PM peak hours. The additional yield would contribute to an addition of 12 vehicles per peak hour from the complying yield.

Given the low traffic generation nature of this development, traffic modelling has not been undertaken to assess the impacts on the road network. A qualitative assessment is provided in Section 4.3 and Section 4.4 below.

4.3 Traffic Distribution

Review of the Journey to Work data indicates the directional distributions of trips to/from the associated SA1 are shown in Table 5. It has been assumed a 10% shift of driving to the north to Castle Hill Metro Station for analytical purposes.

Table 5: Traffic Distribution

Route	Directional Split (Based on Census 2016)	Directional Split (with 10% Shift to Metro Station Located North of the Subject Site)
To/from north via Windsor Road	15%	15%
To/from north via Old Northern Road	15%	25%
To/from south via Windsor Road	48%	48%
To/from east via the M2 motorway	18%	8%
To/from west via the M2 motorway	2%	2%
To/from west via Seven Hills Road	2%	2%
Total	**100%**	**100%**

Reference: Census 2016

The traffic median on Seven Hills Road prevents right turn movements to/from the proposed car park access, and therefore a left-in left-out arrangement will be required at the car park access.

For vehicles accessing the site, eastbound vehicles are expected to travel via Seven Hills Road, turn right onto Arthur Street, turn left onto Yattenden Crescent, turn left onto Charles Street, turn left onto Windsor Road, turn left onto Seven Hills Road, and subsequently left turn towards the site. Vehicles coming from Windsor Road and Old Northern Road would directly turn left from Seven Hills Road towards the site.

All vehicles exiting the site would turn left onto Seven Hills Road. For those wishing to reach Windsor Road and Old Northern Road, they are expected to turn left onto Arthur Street, make a U-turn movement at the roundabout at the Yattenden Crescent intersection, turn right onto Seven Hills Road, and subsequently disperse to other roads at the Windsor Road intersection.

Figure 3 depicts distribution of the site traffic based on the above descriptions for the proposed uplift scheme.

Figure 3: Traffic Distribution

4.4 Traffic Assessment

The complying yield is estimated to generate 15 vehicles in both AM and PM peak hours, equating to an average of one vehicle every four minutes.

The proposed uplift is estimated to generate 26 vehicles in both AM and PM peak hours, equating to an average of one vehicle every two to three minutes. The net change is 12 vehicles per peak hour, equating to one vehicle every five minutes.

The low level of traffic generation is not anticipated to result in any material difference on the road network performance.

Some vehicles would make a U-turn movement at the Arthur Street - Yattenden Crescent intersection due to the left-in left-out arrangement at the site access. It is expected the proposed uplift would generate 20 turnaround movements in the AM peak hour and five turnaround movements in the PM peak hour. Again, this low level of traffic volumes would not affect the performance of the roundabout on Arthur Street.

Parking Assessment

The car parking requirements for the residents of the proposed high density residential development has been assessed against The Hills Development Control Plan (DCP) 2012. The DCP sets out the following minimum car parking rates (round up) for the development:

- 1 space per 1 bedroom
- 2 spaces per 2 or 3 bedroom unit

For visitor parking, The Hills DCP requires two spaces per five units which is considered excessive as compared with the DCPs of most surrounding Councils. A comparison is shown in Table 6.

Table 6: Visitor Parking Rates in Surrounding DCPs

Land Use	DCP	Minimum Parking Rate
High Density Residential	**The Hills 2012**	**2 spaces per 5 dwellings**
	Parramatta 2011	1 space per 4 dwellings
	Draft Cumberland Part G	1 space per 4 dwellings
	Auburn DCP 2010	1 space per 5 dwellings
	Hornsby 2013	1 space per 5 dwellings
	Blacktown 2015	1 space per 2.5 dwellings
Average of Other DCPs	**-**	**1 space per 4.1 dwellings**

Visitor parking rate in The Hills DCPs is considered an outlier in this analysis with most surrounding Councils require lower rates. Given there are reasonable bus services located immediately adjacent to the Baulkham Hills town centre, it is reasonable to adopt an average of these surrounding DCPs, namely, 1 space per 4.1 dwellings.

For the 91 units in the uplift design, application of The Hills DCP would require 36 visitor spaces which are considered excessive. Application of the average rate from these surrounding Councils would be 22 visitor spaces which are considered more reasonable and aligned with other Councils' DCPs.

On this basis, the car parking requirements for the proposed development is summarised in Table 7.

Table 7: Car Parking Assessment

Land Use	Type	Yield	Reference	Minimum Parking Rate	Minimum Parking Requirement (Rounded up)	Proposed Provision
High Density Residential	1-bedroom	17 units	The Hills DCP	1 space per dwelling	17.0	201
	2-bedroom	54 units	The Hills DCP	2 space per dwelling	108.0	
	3-bedroom	20 units	The Hills DCP	2 space per dwelling	40.0	
	Visitor	-	Average of DCPs from Surrounding Councils	1 spaces per 4.1 dwellings	22.2	
Total	-	91 units		-	187.2	201
Rounded	-	-		-	**188**	**201**

Based on the DCP parking rate for residents and average DCP parking rate for visitors, the minimum parking requirement would be 188 spaces. As such, the uplift design with 201 spaces would satisfy these requirements with a surplus of 13 spaces.

On the other hand, had The Hills DCP visitor parking rate was applied instead of the average rate of surrounding Councils, the minimum parking requirement would have been 202 spaces. This means the uplift design is only one space short from full DCP compliance.

Having said this, it is considered that the 13 surplus parking spaces would accommodate accessible parking spaces and shared spaces for adaptable units which would be detailed in the subsequent Development Application (DA) stage.

Motorcycle Parking

The Hills DCP stipulates that motorcycle parking for all developments be provided at a rate of 1 motorcycle space per 50 spaces or part thereof. Given there are 201 car parking spaces, four motorcycle parking spaces are required.

Car Wash

The Hills DCP also requires a car wash bay to be provided and this may be a visitor space when it is not in use. The uplift design proposes the car wash bay to be provided in one of the surplus spaces.

Car Park Layout Design

A car park layout, the access ramps, access ramp gradients, headroom clearance etc will be designed in accordance with AS2890.1, AS2890.2 and AS2890.6. It is presumed that a condition of consent will be imposed to ensure compliance.

A review of the following design elements will be provided in the next stage of the project to ensure compliance:

- The basement car park spaces will be designed in compliance with AS2890.1 for Class 1A residential parking facilities with dimensions of 2.4m wide by 5.4m long and 5.8m parking aisles.
- Accessible parking spaces will be designed in accordance with AS2890.6 with a 2.4m width and 5.4m length, and adjacent shared area of the same dimensions to enable side ramp access. Bollards would be placed in shared areas as per AS2890.6.
- A minimum aisle width of 5.8m will be provided. An additional 300mm will be provided in front of car spaces with columns or walls on the opposite side. Sufficient aisle width will be provided to accommodate the Council waste vehicle to and from the loading area.
- The ramp will be designed to meet AS2890.2 requirements on gradient and ground clearance suitable for waste vehicle to the loading area where a turntable is provided to facilitate turnaround movement.
- A minimum clear head height of 2.2m will be provided for all circulation areas within the basement car park as required by AS2890.1. A clear head height of 2.5m is also provided above all the accessible parking spaces as required by AS2890.6.
- All columns will be located outside of the parking space design envelope as specified in Figure 5.2 of AS 2890.1.
- Dead-end aisles will provide with the required 1.0m aisle extension in accordance with Figure 2.3 of AS2890.1, except for those aisles where accessible parking spaces are located at the end where a 1.0m extension is not required.
- Appropriate splays will be provided in accordance with the requirements of Figure 3.3 of AS2890.1 at the access driveway.

Summary and Conclusion

The proposed high density residential development involving 50 units is expected to generate up to 15 vehicles in the AM and PM peak hours, based on the complying planning controls.

The proposed uplift involving 91 units is estimated to generate 26 vehicles in both AM and PM peak hours. The additional yield would result in a net increase of 12 vehicles per peak hour. The low level of traffic generation is not anticipated to impose material difference on the road network performance.

The proposed basement car park provides 201 car parking spaces which would satisfy the DCP requirement for resident parking, and the derived average DCP requirement for visitor parking.

The Hills DCP's visitor parking rate is two visitor spaces per five dwellings resulting in 36 visitor parking spaces for a 91-unit apartment and is considered excessive as compared with the DCP requirement of surrounding Councils which averaged one visitor space per 4.1 dwellings. Therefore, this Planning Proposal requests reduction of the visitor parking from 36 to 22 spaces. This is considered a reasonable approach given bus services are available nearby and the provision of 22 spaces is considered adequate and aligned with other surrounding Councils.

Overall, there will be no adverse traffic implications associated with the Planning Proposal.

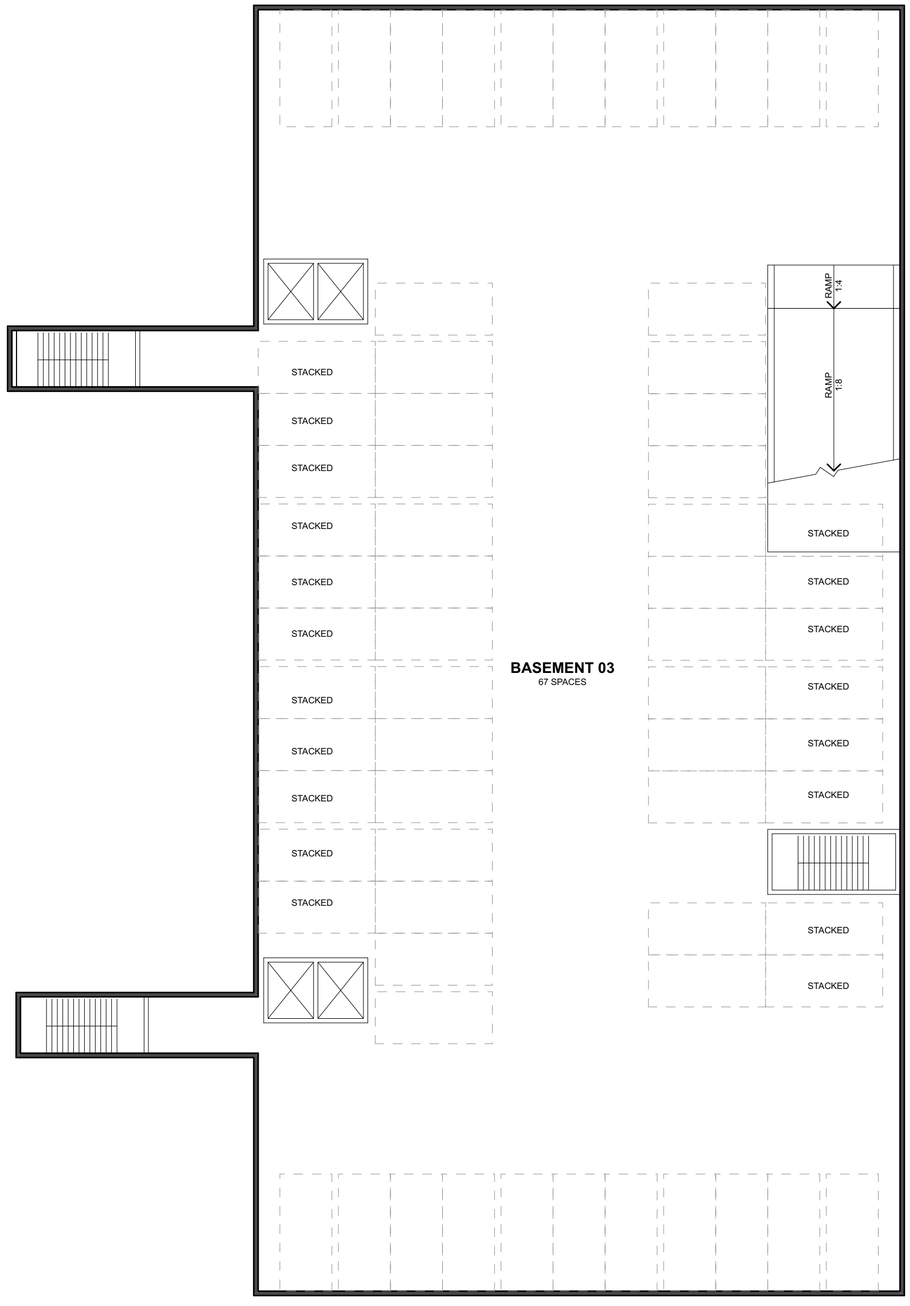
We trust the above is to your satisfaction. Should you have any queries regarding the above or require further information, please do not hesitate to contact the undersigned on 8437 7800.

Yours sincerely,

Ken Hollyoak
Director

Attachment One

Design Drawings



BASEMENT 03
67 SPACES

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NEW APARTMENT DEVELOPMENT
10-16 Seven Hills Road BAULKHAM HILLS NSW 2153 for FAL Group Pty Ltd

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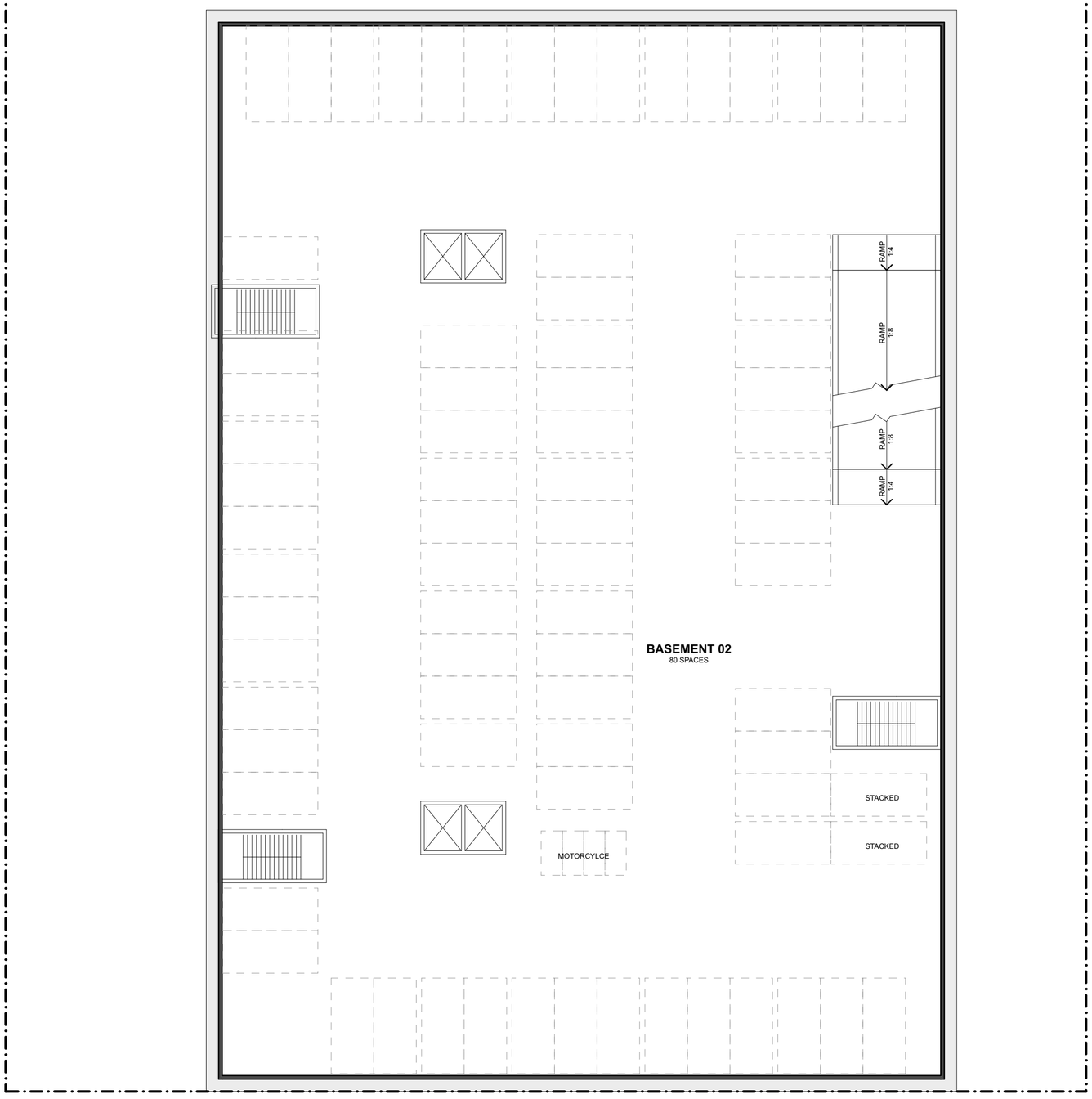

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BASEMENT 01 PLAN
SK-02 D

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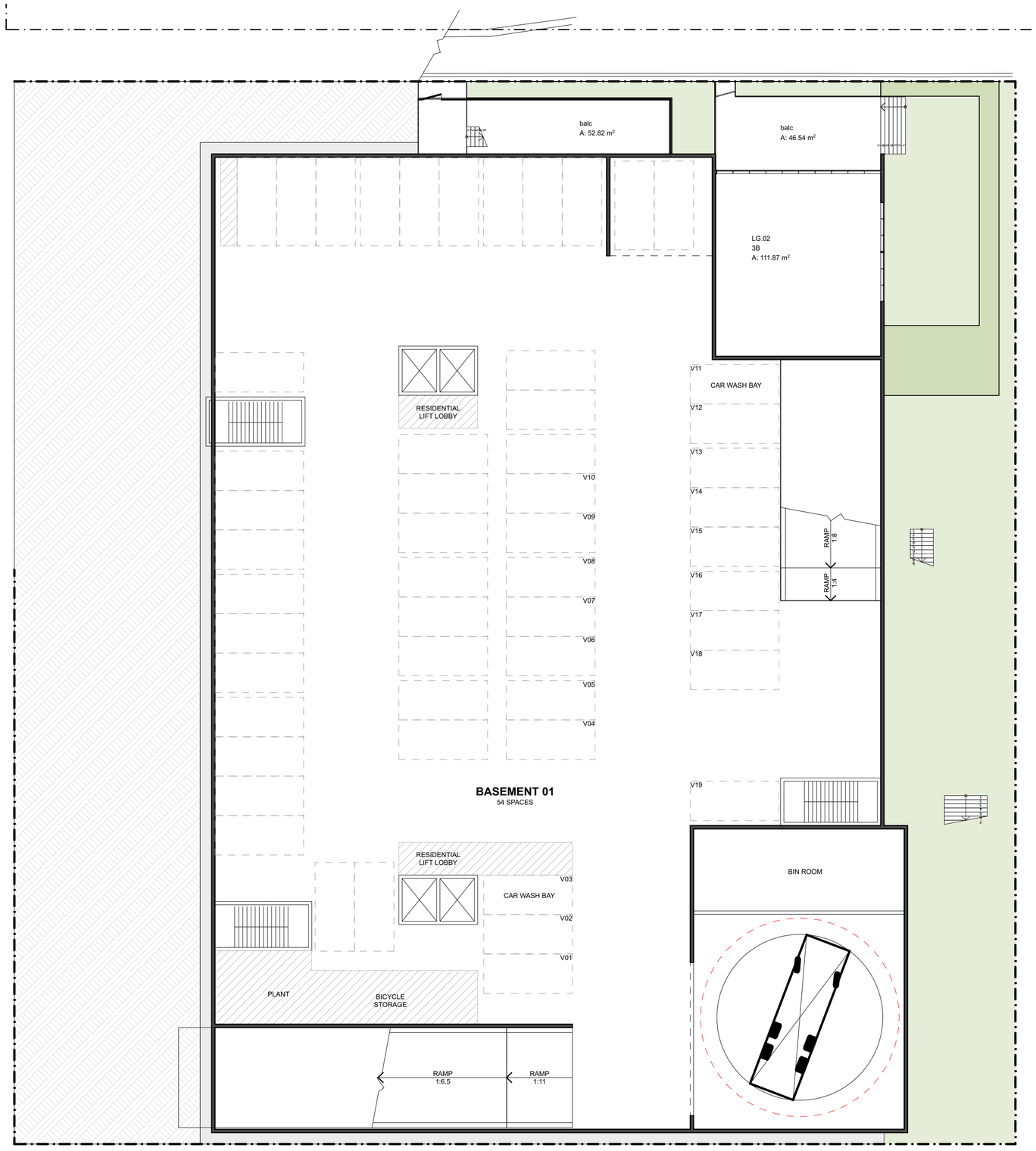

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NEW APARTMENT DEVELOPMENT
10-16 Seven Hills Road BAULKHAM HILLS NSW 2153 for FAL Group Pty Ltd

LOWER GROUND FLOOR PLAN
SK-03 D

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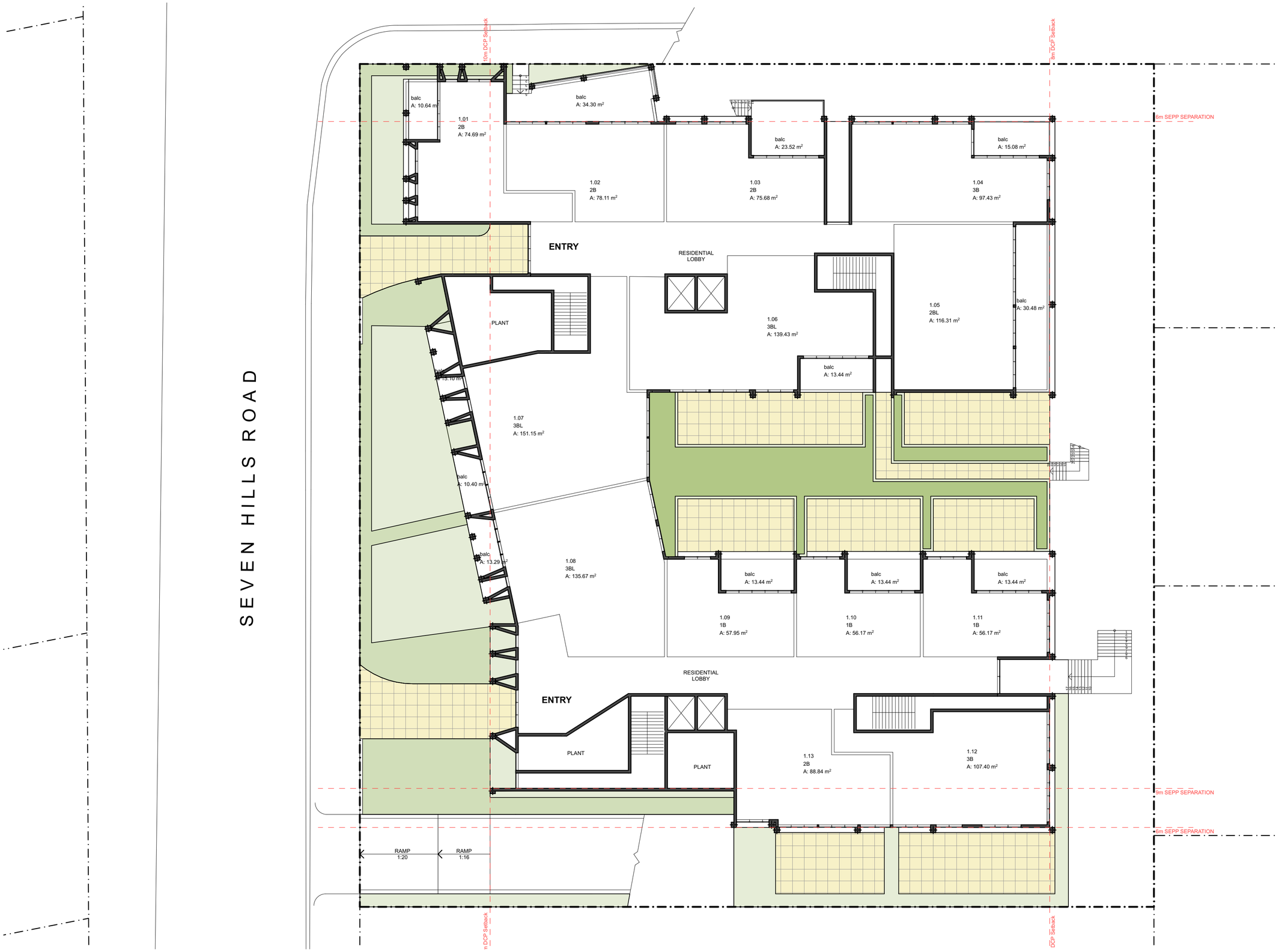

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NEW APARTMENT DEVELOPMENT
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