TRAFFIC IMPACT ASSESSMENT

&

CAR PARKING CERTIFICATION

32-36 HOPE STREET, PENRITH

Prepared for:	DesignCorp
Date Prepared:	Nov 2017
Revision:	1.1
Penrith City Council #:	TBC

INDEX

1. Introduction

Safeway has been commissioned by Design Corp Australia Pty Ltd to undertake a Traffic Impact Assessment of the proposed development comprising of a 5 storey residential flat building with 2 levels of basement at 32-36 Hope Street, Penrith. The development is located within the Penrith Council LGA and has been assessed under Penrith Development Control Plan 2014 (DCP).

This report entails our investigations and assesses the impacts of this proposed development on the surrounding environment and assesses compliance with the DCP and the relevant Australian Standards. This development would not require referral to the Roads and Maritime Services (RMS) under the provisions of SEPP (infrastructure) 2007.

2. Site Location

The site is situated on the southern side of Hope Street and lies within the section bounded by Colless Street to the west and Parker Street to the east. It is also situated approximately 1km from Kingswood train station, 2km from Penrith Station and approximately 280m from Napean Hospital.

The site currently comprises of 3 separate lots totalling 1865sqm. The configuration of the consolidated lots are rectangular in shape. There are currently three separate driveways providing access to the existing properties.

The site is zoned R4 high density under the Penrith Local Environmental Plan 2010. The site adjoining along the western boundary is a residential apartment block currently under construction. There is also a residential apartment block being constructed directly opposite the site, along the northern side of Hope Street. The site location is depicted in Figure 1 and an aerial photograph is depicted in Figure 2.

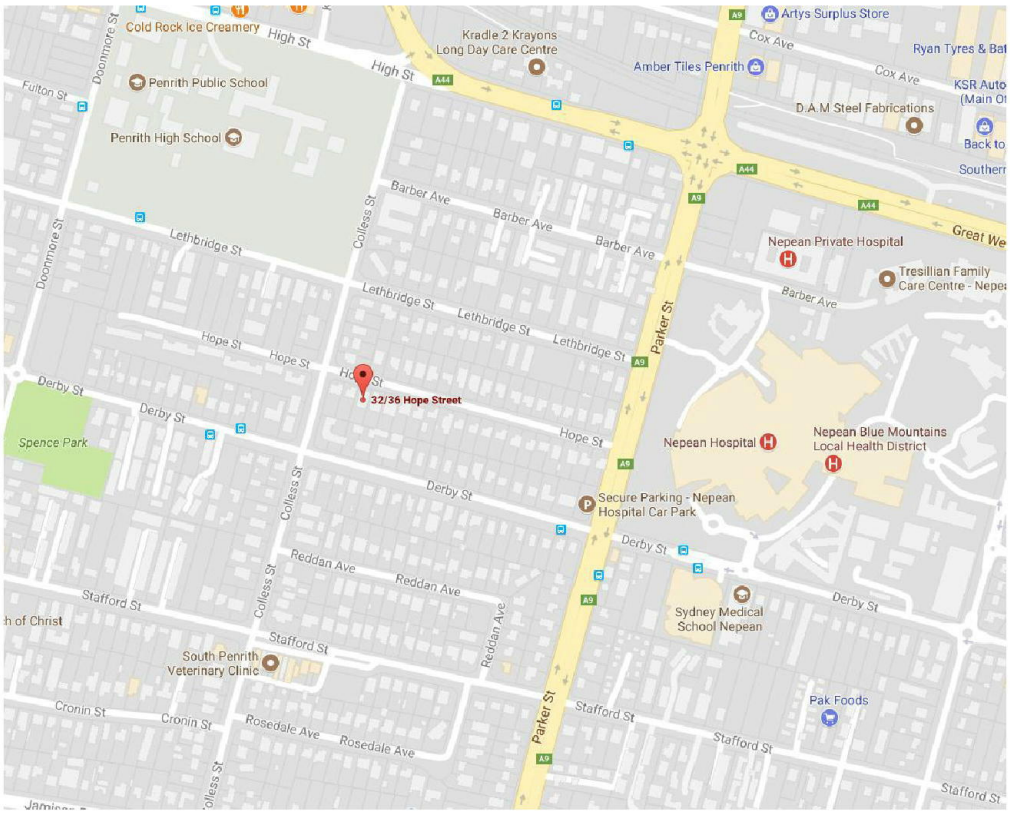


Figure 1: Street Map

Figure 2: Site Plan

3.0 Existing Traffic Conditions

3.1 Road Network

The road hierarchy of the network surrounding the site are described below and shown in Figure 3.

Hope Street: A local street which runs in an east-west direction between Parker Street, intersects with Colless Street and is closed with a cul-de-sac to the west. Hope Street is approximately 560m long. The street has a 50km/h speed limit, and has restricted parking. The restrictions require all vehicles to park within the marked bays, also there are parking restrictions along the length of the southern side between Parker Street and Colless Street. The restrictions are 'No Parking 7am-6pm Mon-Fri and 8am – 1pm Sat'. There are existing Give Way treatments along Hope Street at the intersection with Parker Street and along either side of the intersection with Colless Street.

Colless Street: A local street which runs in a north-south direction between Jamison Road and terminates with a cul-de sac to the north of the intersection with Barber Avenue. It is approximately 840m long and has a 50km/h speed limit. Unrestricted parking is permitted along both sides of the road.

Parker Street: An arterial road with 3 lanes in each direction and signposted 70km/h in the vicinity of the site. Parking is generally restricted however unrestricted parking is available along a section on the eastern side opposite Napean Hospital.

Derby Street: A collector road which runs in an east-west direction between Bringelly Road and Station Street. It is approximately 2.6km long and has a 50km/h speed limit. Parking is permitted along both sides and parking bays are marked along the section between Parker Street and Colless Street.

Figure 3: Road Hierarchy

3.2 Public Transport

The existing bus and train services that operate in the locality are depicted in Figure 4. The site is located approximately 1km from Kingswood Railway Station and 2km from Penrith Railway Station. The Kingswood Railway Station provides services along the T1 Western Line which provides services to Penrith, Parramatta, Sydney CBD and North Sydney. Penrith Railway Station provides services along both the T1 Western Line and also the Blue Mountains Line.

In addition to frequent train services numerous bus services operate in the vicinity of the site, buses are accessible along Derby Street and Parker Street.

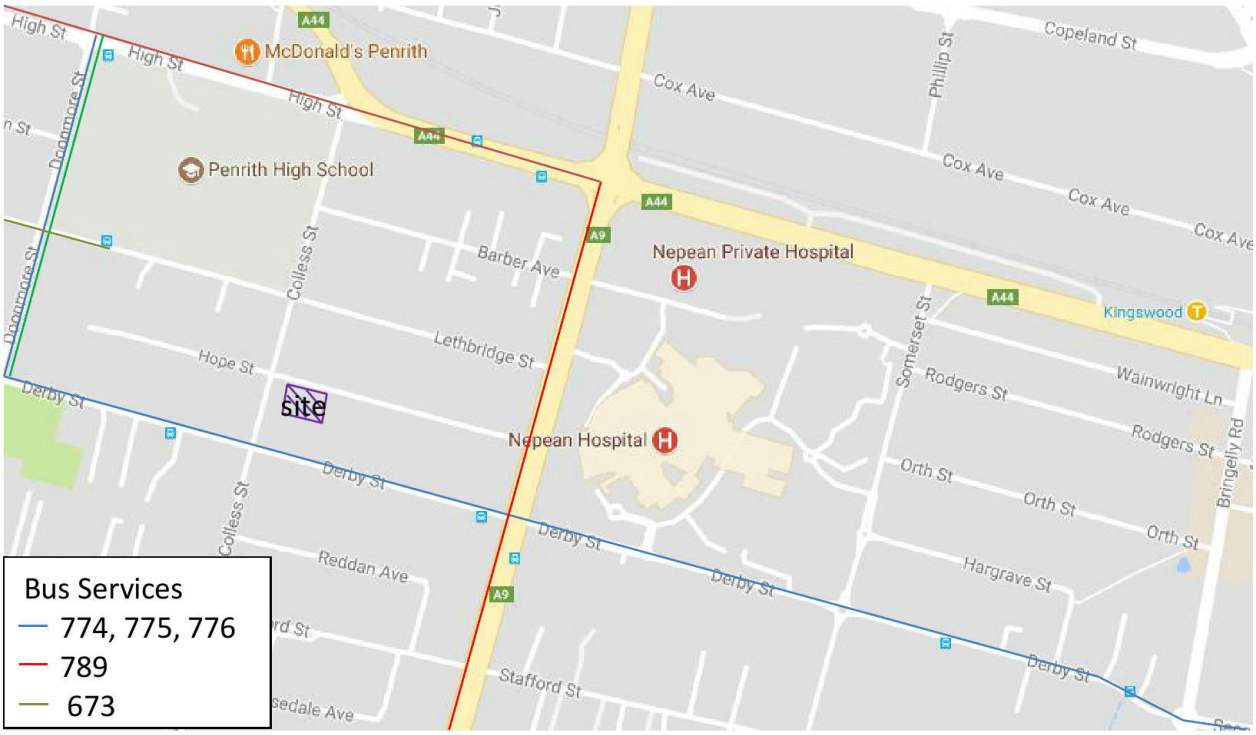


Figure 4: Public Transport Map

3.3 Active Transport

The southern side of Hope Street, east of the intersection with Colless Street has a footpath which connects to the footpath along Parker Street and Colless Street. Surrounding streets generally have footpaths on at least one side of the road catering for encouraging people to walk to the shops, schools and public transport. People may also cycle to and from their destinations as cycling is increasing in popularity particularly as council implements its cycling strategy.

3.4 Existing Site Traffic Generation

The existing site is comprised of 3 lots each containing a single residential dwelling which will generate approximately 3 vehicle trip per hour during the peak period and 32.1 daily vehicle trips – as per the RMS Guideline to Traffic Generating Developments – TDT2013/04a.

4 Description of Proposed Development

The proposed development entails construction of a 5 storey residential flat building. The proposed development will include:

- 45 residential units
- 2 level basement
- 59 car parking spaces (including 5 disabled parking spaces);
- 1 loading bay
- 1 car wash bay
- Loading area for waste collection
- 45 storage compartments

5 Traffic Generation and Impact of the Proposed Development

The proposed development contains 45 residential units. The RMS Guide to Traffic Generating Development stipulates that high density residential flat buildings within a metropolitan sub-regional area generate 0.29 vehicle trips, per unit, in the peak hour. Application of this rate shows that the proposed development would generate 13 vehicle movements during the peak hour. Deducting the existing traffic generation discussed in section 3.4 of this report, the proposed site would generate an additional 10 vehicle movements during the peak hour. The number of additional vehicle movements is negligible and is not expected to have a notable impact to the surrounding road network. Further, the additional traffic movements would have been accounted for within the study undertaken prior to rezoning the precinct.

6 Parking Requirements and Car Park Compliance

6.1 Penrith Development Control Plan 2014

The relevant development guideline, being Penrith Council DCP 2014, table C10.2 provides specific parking requirements for residential flat buildings. Figure 5 provides a copy of the parking rates from the DCP.

Residential Flat Buildings	On-site resident parking for each dwelling: 1 space per 1 or 2 bedrooms 2 spaces per 3 or more bedrooms 1 space per 40 units for service vehicles In addition, visitor parking is to be provided for developments that have 5 or more dwellings: 1 space per every 5 dwellings, or part thereof. 1 space for car washing for every 50 units, up to a maximum of 4 spaces per building.

Figure 5: DCP parking requirement

The proposed apartment mix is as follows:

- 4 x 1 bedroom units
- 36 x 2 bedroom units
- 5 x 3 bedroom units

Calculations stipulate the following minimum parking requirements:

Specification	DCP Parking Rate	Number of units	Parking Requirement	Parking Provided
1 Bedroom	1 space	4	4	4
2 Bedroom	1 space	36	36	36
3 Bedroom	2 space	5	10	10
Visitors	1 space per 5 units	45	9	9
Car wash	1 per 50 units	45	1	1
Total			**60**	**60**

The proposed development provides 60 car parking spaces for residents and visitors including 5 disabled spaces and 1 car wash bay. In addition the development also provides a loading bay within the basement car park and also a separate loading area with turntable to accommodate waste collection.

Based on the above, the proposed development satisfies the requirements of the DCP with regards to car parking and car wash bay provision.

6.2 Parking Bay Dimensions

According to Australian Standard AS2890.1-2004 the proposed development's residential parking bays would be categorised as a User Class 1A, namely:

Residential, domestic and employee parking.

The requirements for User Class 1A car parks as specified in the Australian Standards are as follows:

- Bay width 2.4m or 2.3m for small cars;
- Bay length 5.4m or 5.0m for small cars; and
- Aisle width 5.8m.

The proposed development provides parking bays with minimum dimensions of 2.4m by 5.4m and circulation aisles with a minimum width of 5.8m. These dimensions are compliant with Australian Standards (AS/NZS 2890.1-2004) and it is expected that they will operate in a safe and efficient manner.

6.3 Blind Aisles

According to AS2890.1-2004 (Clause 2.4.2(c)), blind aisles must be extended by a minimum of 1m beyond the last parking space. Where a parking space is bound by a wall, it is required to be widened by at least 0.3m.

The proposed development basement parking level complies with these specifications as a minimum of 1m beyond the last parking space and additional 0.3m clearance adjacent to parking spaces bound by walls are provided.

6.4 Access to the Car Park

Access to the car park is provided from Hope Street. The driveway location also complies with Figure 3.1 of AS2890.1-2004 and is not situated in an area identified as prohibited. The car park access accommodates for loading vehicles which continue along the western boundary to access the loading area and vehicles entering the basement will travel toward the east to access the ramp. This configuration enables all vehicles to utilise the same driveway, minimising the number of crossovers along Hope Street.

It is recommended that convex mirrors are installed at the access where the accesses divert, in order to ensure vehicles exiting the loading area are able to see if vehicles are approaching from the ramp. It is also recommended that convex mirrors are implemented on the ramps at the sharp bend, when traveling between basement 1 and basement 2, in order to improve sightlines and safety. A vehicle on basement 2 may use the mirror to determine if a vehicle is on the ramp approaching and will wait. Due to the low volume of traffic this is considered an effective measure. With 13 vehicle movements this would result in a one vehicle traveling every 4.6 mins. Adopting a conservative 80:20 trip origin-destination distribution 10 vehicles will exit the building in the AM peak whilst 3 enter. The likelihood of vehicles passing each other on the site is very minimal.

Australian Standards indicate that two-way roadways or ramps should provide a minimum width of 5.5m between kerbs. The proposed development's access ramps provide a minimum width of 5.5m between 0.3m kerbs and therefore comply with Australian Standard requirements.

6.5 Loading Area

As discussed in section 6.4, access to the loading area is provided directly adjacent to the access to the basement car park. The width of the loading area access is 4.1m and leads to a turntable used to ensure all vehicles enter and exit in a forward direction. The width satisfies the requirement of AS2890.2-2002. The sole purpose of the loading area is to allow council waste collection vehicles and removalist vehicles to access the site. The provided turntable will ensure all vehicles may enter and exit in a forward direction. It is noted that in order to exit the loading area the truck requires to travel over the landscaped area adjacent. It is recommended that approximately 4m of landscaped area is setback to accommodate the truck egressing.

6.6 Ramp Gradients

AS 2890.1-2004 states the grade requirements for straight ramps at private or residential car parks as follows:

(i) The maximum gradient for a domestic driveway shall be 1 in 4 (25%).

(ii) Up to 20 m long straight ramps—1 in 4 (25%) maximum. The allowable 20 m maximum length shall include any parts of grade change transitions at each end that exceed 1 in 5 (20%).

(iii) To prevent bottoming or scraping changes in grade in excess of 12.5% require transition ramps.

(iv) A maximum grade of 1 in 20 (5%) should be provided for the first 6m from the property boundary.

Most ramps within the proposed development provide a maximum gradient of 1 in 4 (25%) with 2m transition ramps of 1 in 8 (12.5%) and thus comply with Australian Standards. However the 2m transition at the access where the ground floor meets the ramp to the basement is substandard with a transition of 1:5.7.

6.7 Disabled Parking

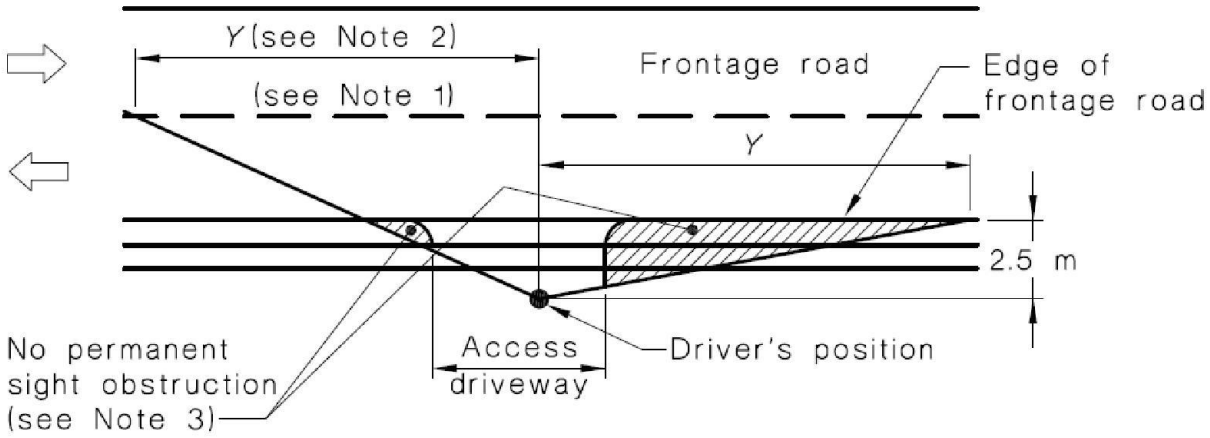
The proposed development's design includes 5 parking spaces for the mobility impaired – four of these spaces are situated within basement 2 and one is situated on basement 1. Australian Standard AS2890.6:2009, stipulates the following requirements for these spaces:

- A parking space of minimum dimensions 2.4m x 5.4m; plus
- An adjacent shared space of equal dimensions; and
- Indication of appropriate markings and bollard instalment along the shared space.

The proposed development's parking bays for the mobility impaired complies with this specification and will provide bollards situated in accordance with the requirement of AS2890.6-2009.

6.8 Sight Distance for Vehicles

Hope Street is a local road that with a default urban speed limit of 50km/h. Referring to Figure 3.3 of AS 2890.1:2004, it is recommended to leave the shaded area in the figure below (excerpt from AS 2890.1:2004) free of permanent obstacles for a length 'Y' of 69 [m].



Frontage road speed (Note 4) km/h	Distance (Y) along frontage road m		
	Access driveways other than domestic (Note 5)		Domestic property access (Note 6)
	Desirable 5 s gap	Minimum SSD	
40	55	35	30
50	69	45	40
60	83	65	55
70	97	85	70
80	111	105	95
90	125	130	Use values from 2nd and 3rd columns
100	139	160	
110	153	190	

Figure 6: AS2890.1:2004 Sight Line Specification

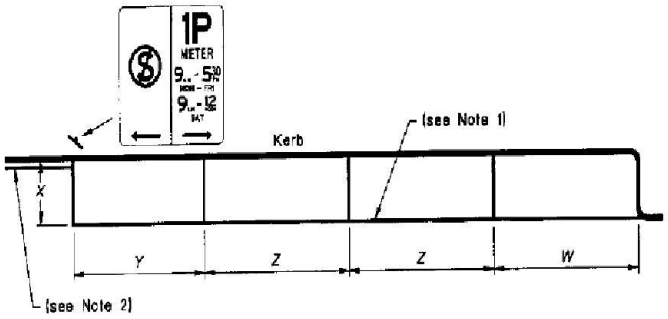
In the vicinity of the subject site Hope Street is relatively straight and flat, sight lines are deemed satisfactory as there are no permanent obstructions there are also parking restrictions adjacent to the driveway during the peak periods and will ensure vehicles sightlines are further enhanced and unobstructed.

6.9 On-Street Parking

As discussed in this report, Hope Street has existing parking restrictions which require vehicles to park within the marked bays at all times and also has parking restrictions along the southern stretch of the street between Parker Street and Colless Street prohibiting parking between 7am-6pm Mon-Fri and 8am-1pm Saturday.

The site currently has 3 existing crossovers providing access to the respective sites. Upon consolidation of the sites the proposed development requires one driveway and will reinstate kerb at the locations where driveways are no longer required.

These changes will impact on the layout of the on-street car parking along the site frontage and would accommodate 2 additional on-street spaces. Some existing line marking would be removed and realigned. AS2890.5-1993 sets minimum dimensions as stipulated in Figure 7. The overview plan on Figure 8 outlines the proposed line marking out the front of 32-36 Hope Street. The dimensions adopted comply with the Australian Standards and conform to the layout implemented by Council along Hope Street. The proposed line marking results in an additional 2 on-street car parking bays.



LEGEND:

X = width of space—see Table 2.1

Y = length of end space where vehicles may enter or leave the space directly—5.4 m minimum

Z = length of intermediate space—6.0 m to 6.7 m, depending on parking turnover and traffic volume (see Note 3)

W = length of end space which is obstructed at one end by a kerb or barrier—6.3 m or length Z of adjacent space, whichever is the greater

NOTES:

1 Space markings may be broken or unbroken. Unbroken longitudinal space markings can assist in the guidance of traffic past parking spaces.

2 'No Stopping' restrictions may be supplemented by a yellow line 80 to 100 mm wide, close to the kerb, broken for part-time and unbroken for full-time restrictions.

3 Where parking turnover is high and vehicles backing into parking spaces cannot be readily tolerated, increased space lengths, up to 8 m, should be considered.

Figure 7: Parallel Parking layout for cars

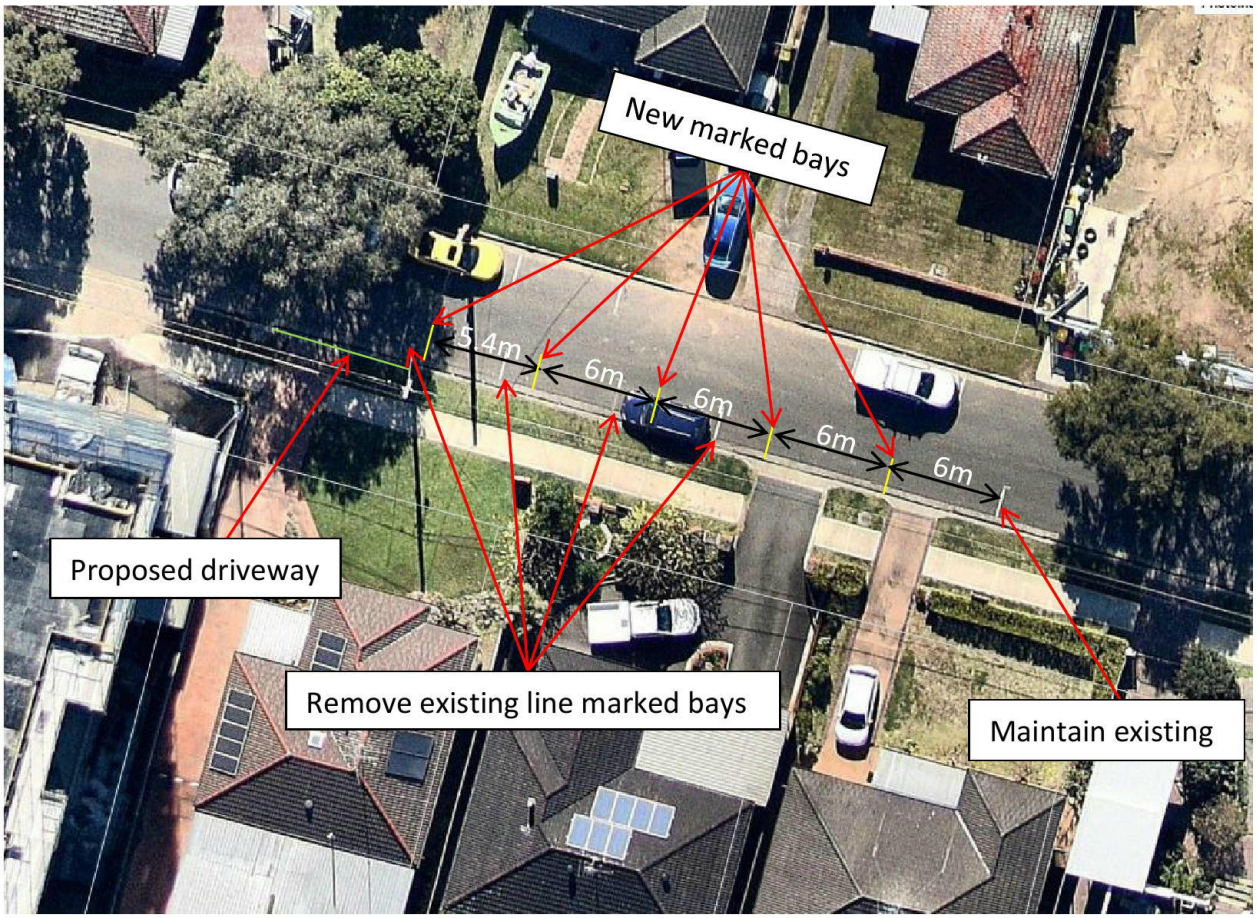


Figure 8: Proposed on-street parking

6.10 Swept Paths

Swept path assessments have been undertaken for the critical car spaces and access analysing relevant Australian Standard Vehicles. Swept paths have also been undertaken assessing the ability of Council waste collection vehicles to enter and exit the site in a forward manner. These swept paths are presented in Appendix C of this document. Based on these swept paths, it is noted that the anticipated manoeuvres by these vehicles can be sufficiently accommodated within the proposed design constraints, whereby they can enter the site manoeuvre internally and exit the site in a forward direction.

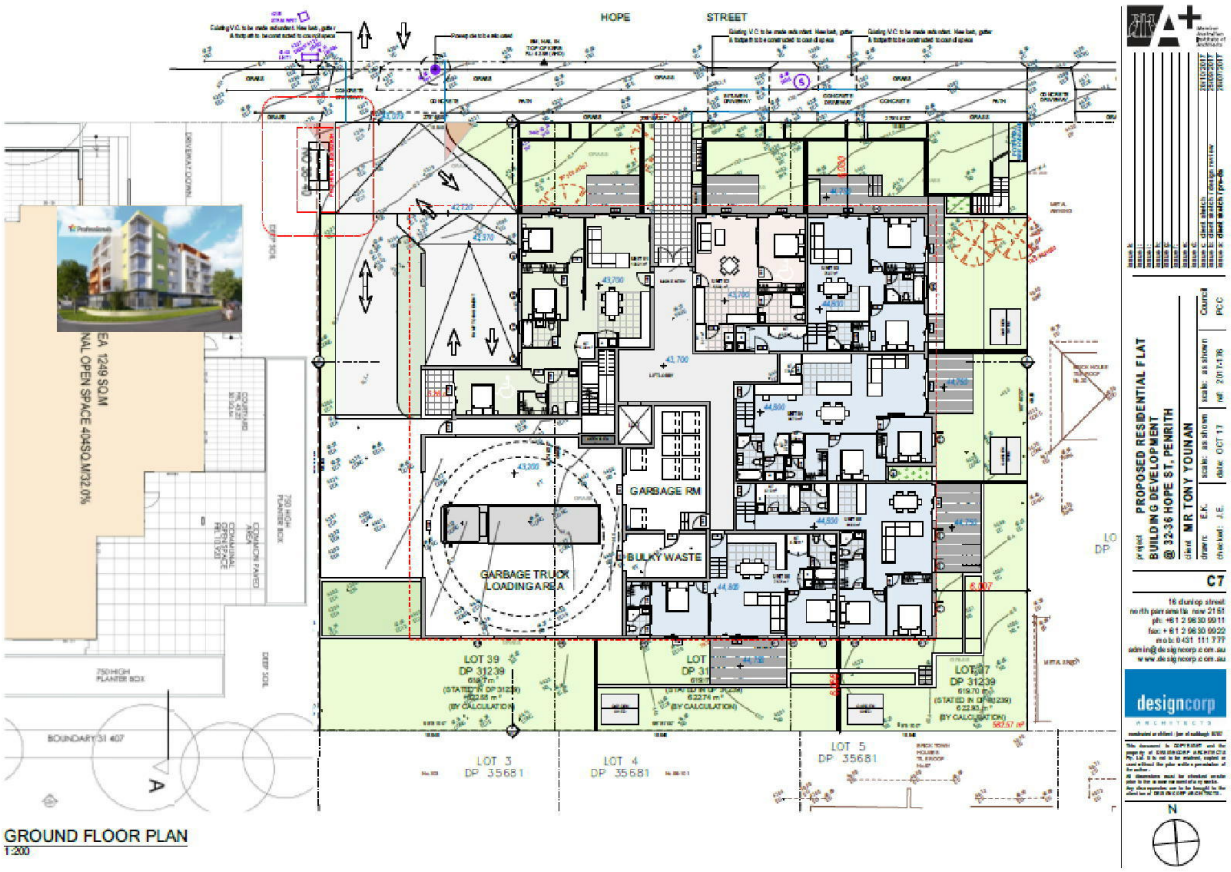
7 Conclusion

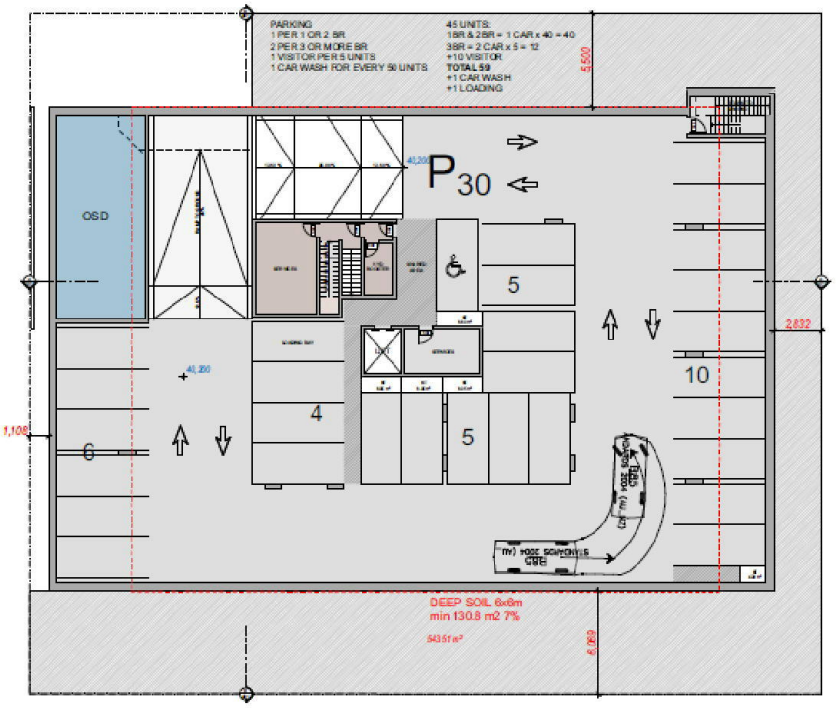
- The traffic generation from the proposed residential flat building will result in a net increase of 10 vehicles per hour during the peak periods. These trips will be split in both directions and can be readily accommodated with minimal impact on the surrounding road network;
- Based on the assessment presented in this report, it is considered that after an inspection the car parking design of the proposed residential development located at 32 -36 Hope Street meets/exceeds the relevant design standards presented in AS 2890.1-2004 and AS2890.2-2002.
- Off-street waste collection is proposed for the subject site;
- The proposed development embraces the policies of the Penrith Council DCP and will create a negligible traffic impact which would be readily accommodated.

Overall the proposed development is supportable on traffic planning grounds and will operate in satisfactorily.

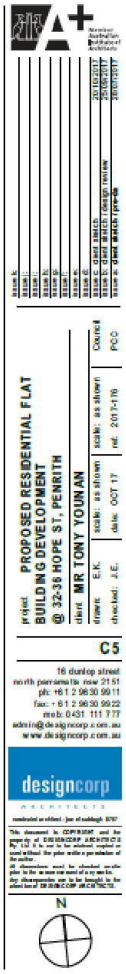
Appendix

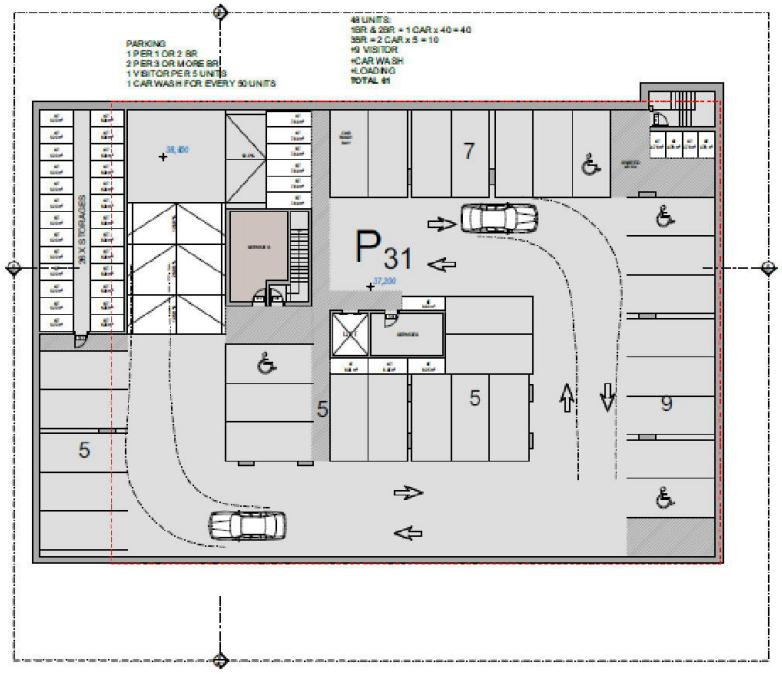
Appendix A: Reduced Plans



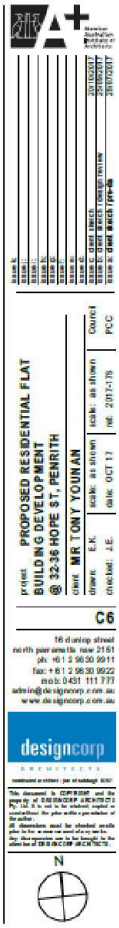


BASEMENT 1 FLOOR PLAN
1:200

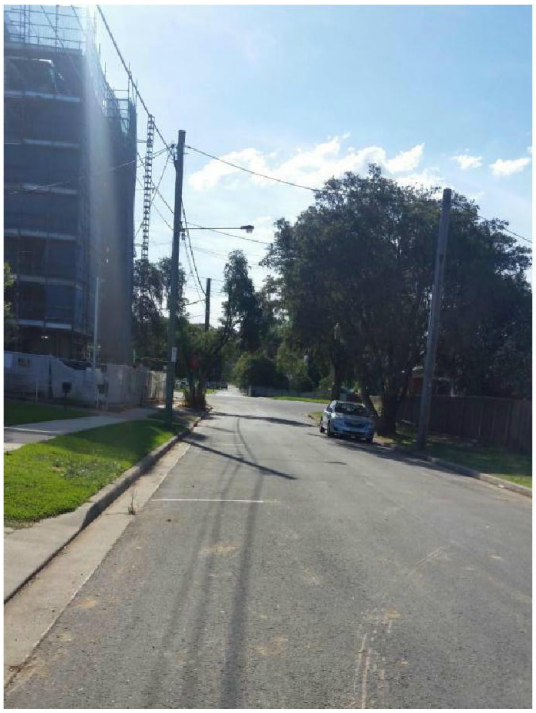




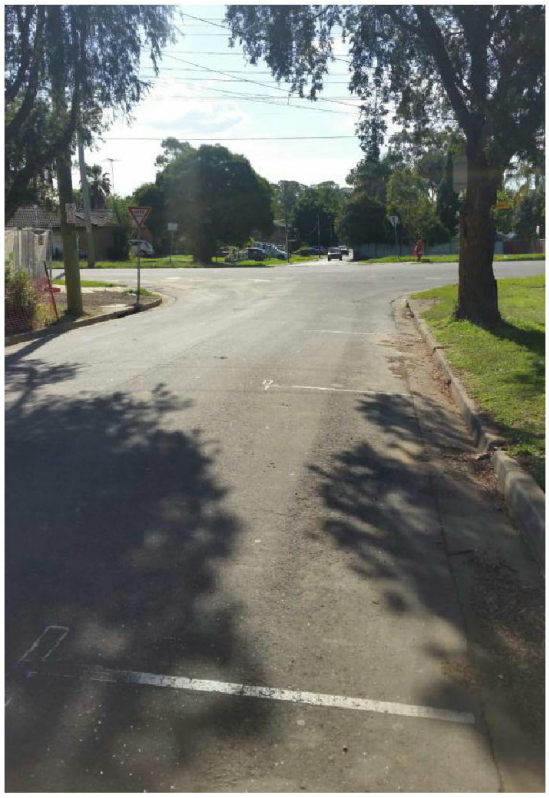
BASEMENT 2 FLOOR PLAN
1:200



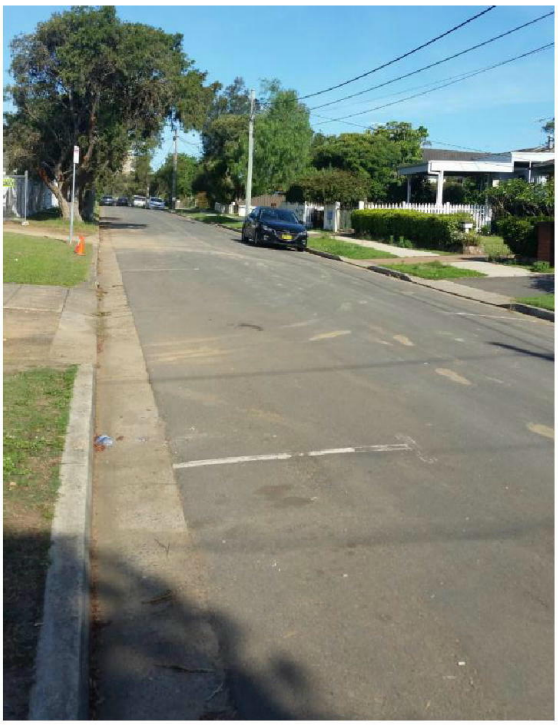
Appendix B: Photographs



Hope Street (view west)

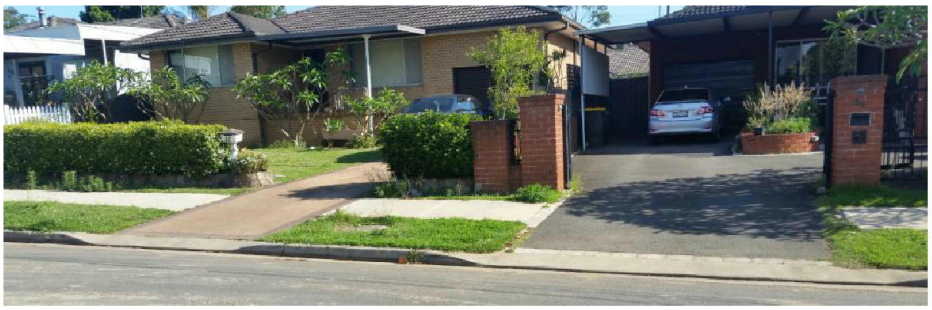


Hope Street (view west – intersection with Colless Street)

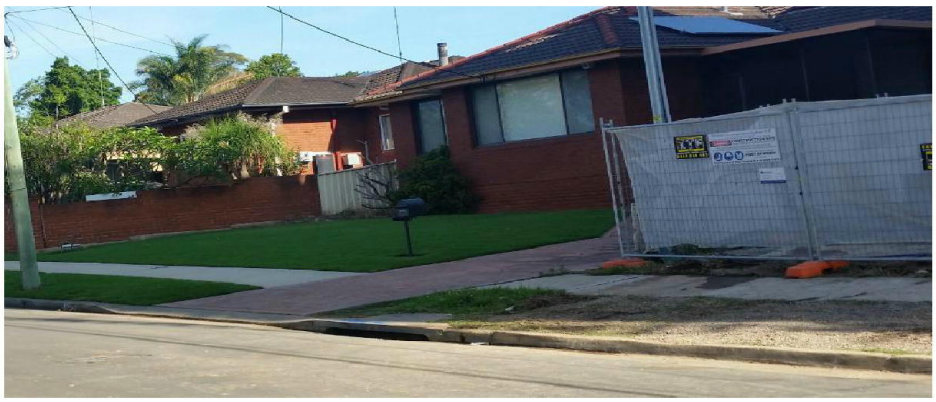


Hope Street (view east)

Existing parking restrictions within Hope Street

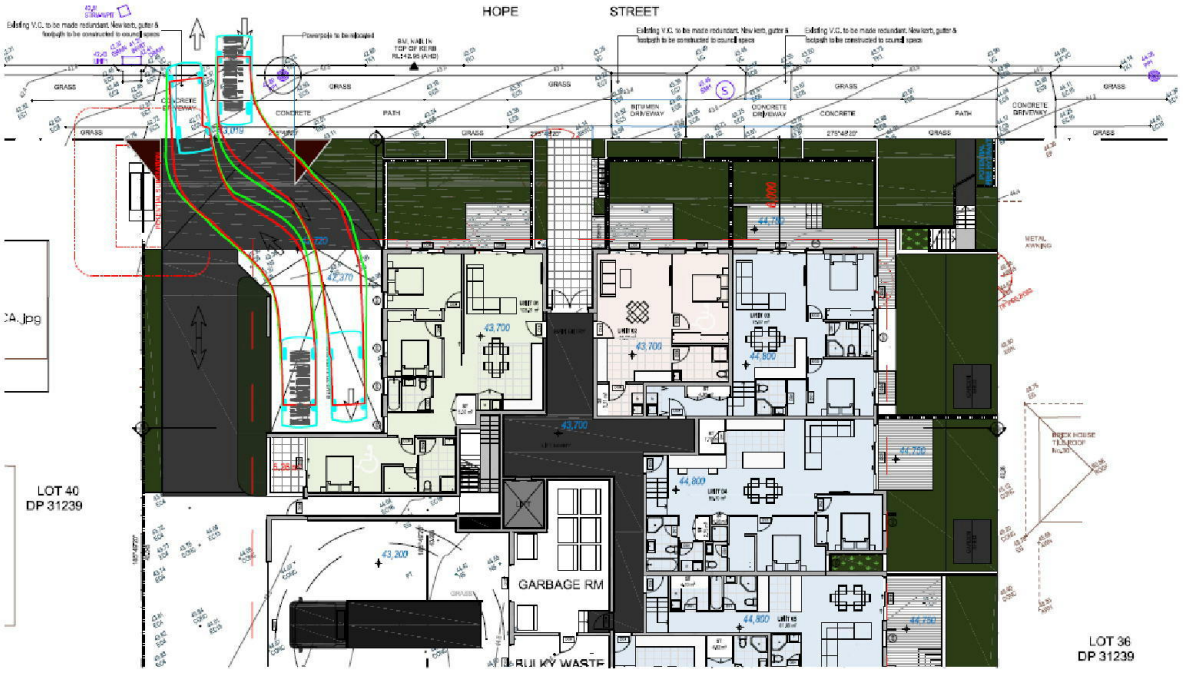


Existing properties #32-34 Hope Street

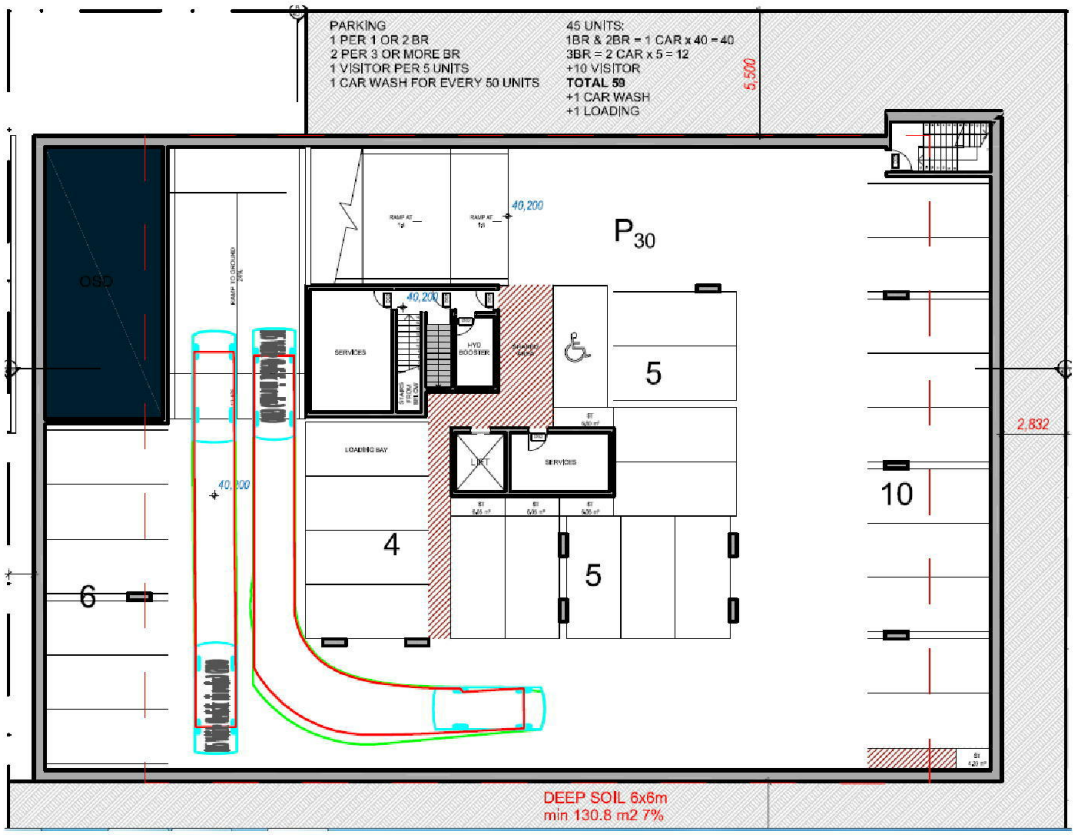


Existing #36 Hope Street

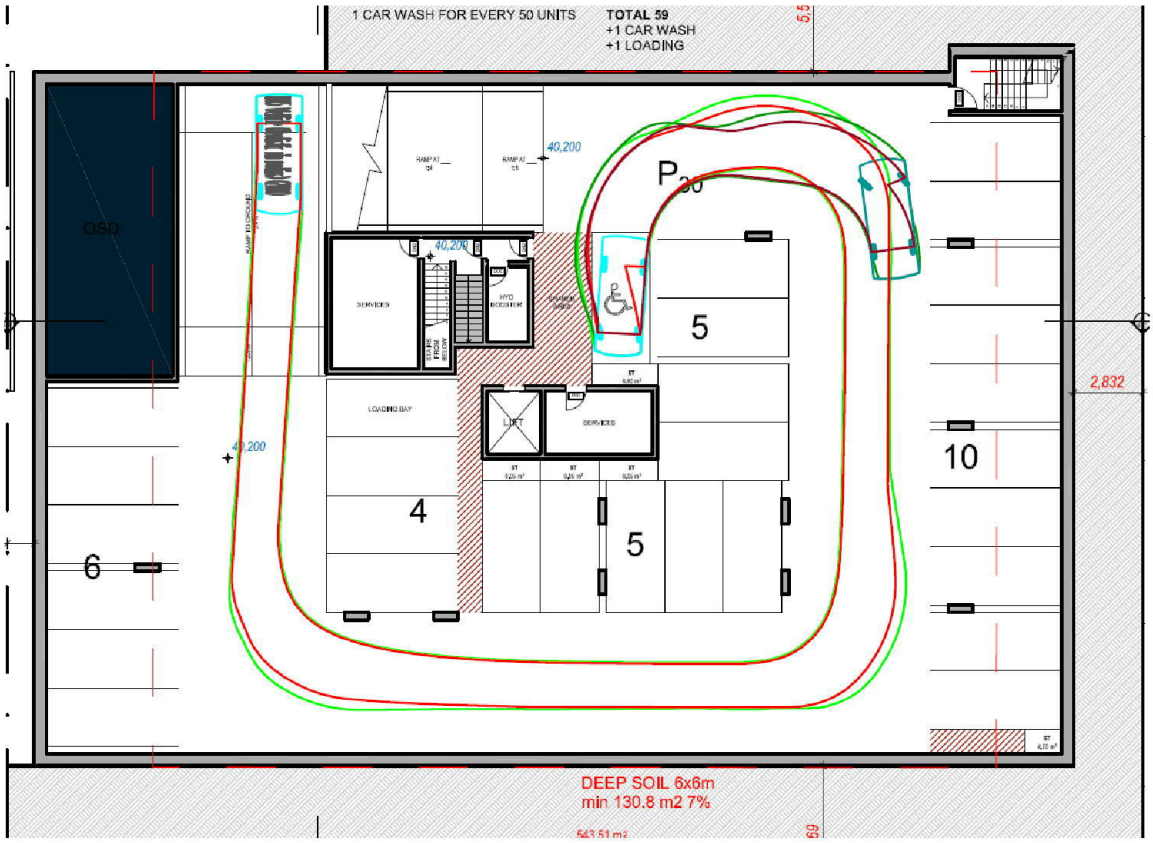
Appendix C: Swept Paths



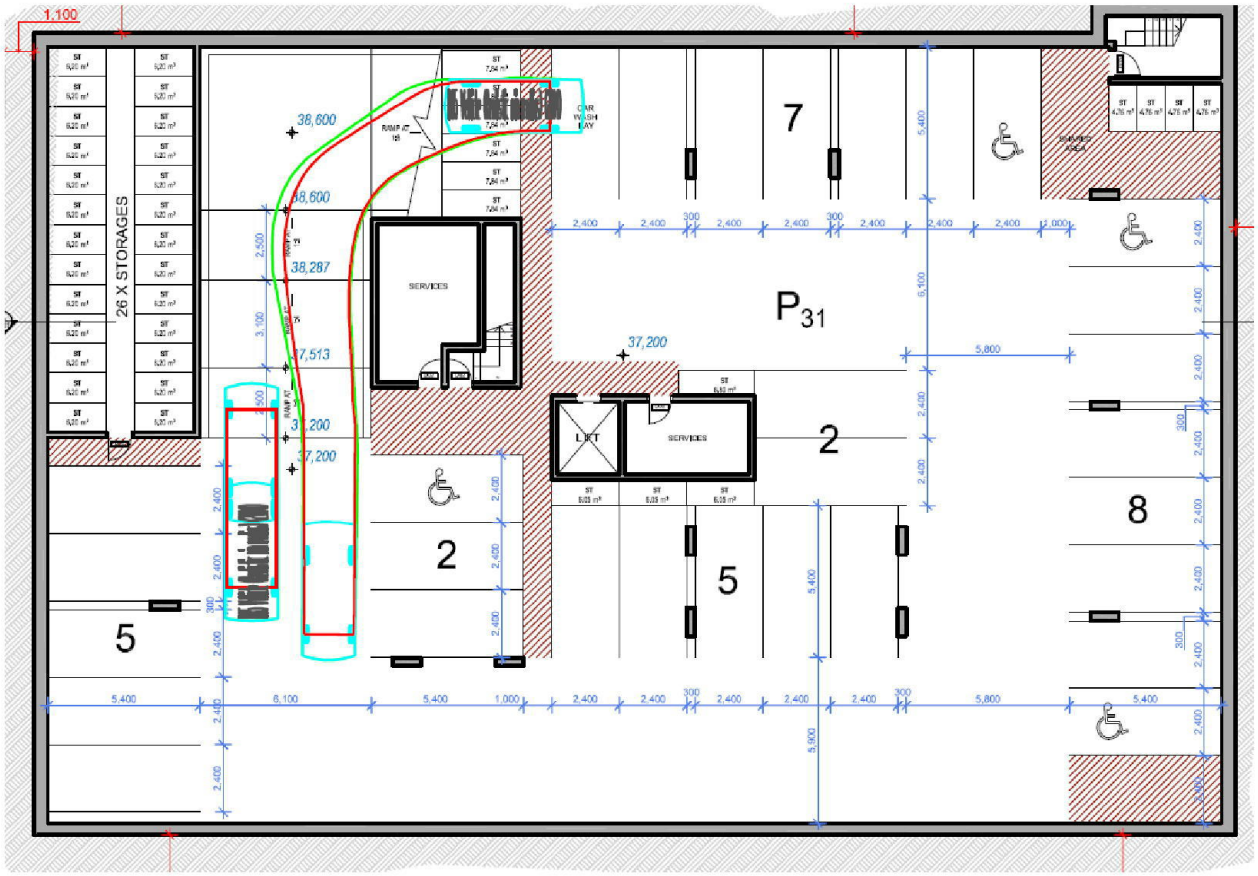
Vehicles entering and exiting the site



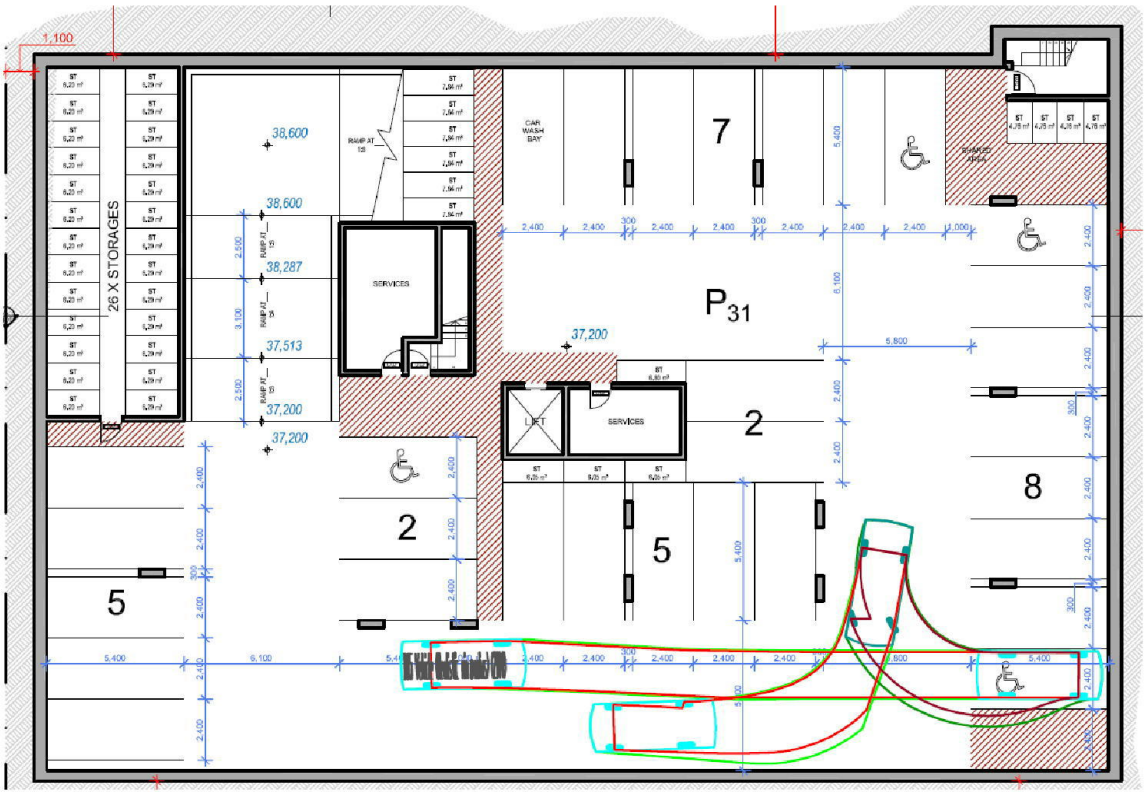
Basement 1



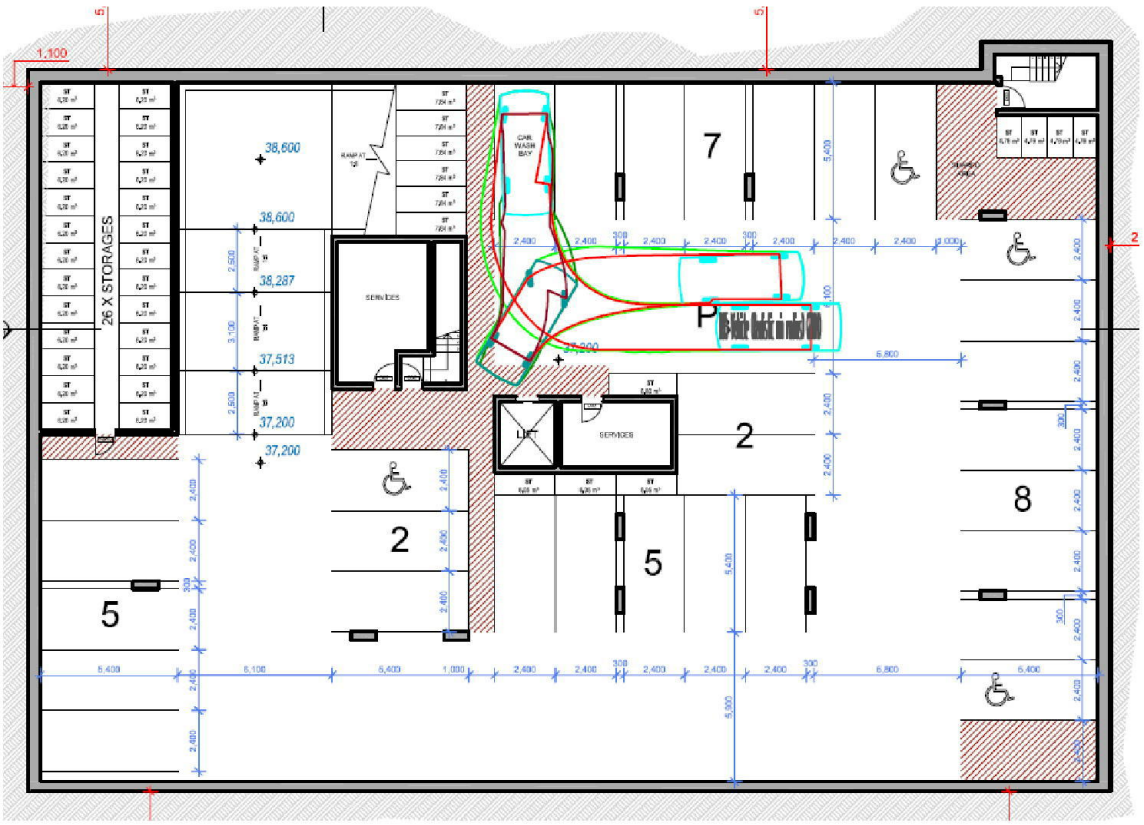
Entering and Exiting Disabled Bay (Basement 1)



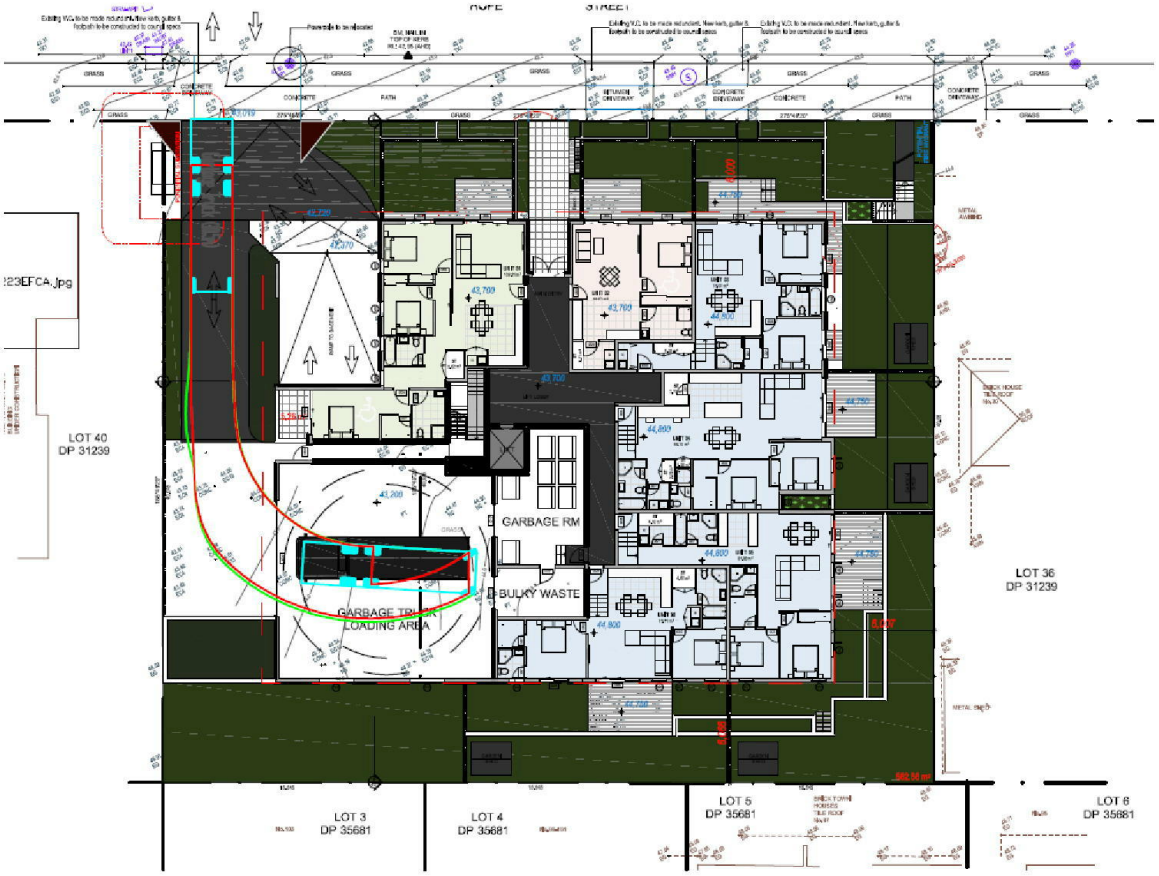
Vehicles on Internal Ramp to Basement 2



Disabled Space (Basement 2)

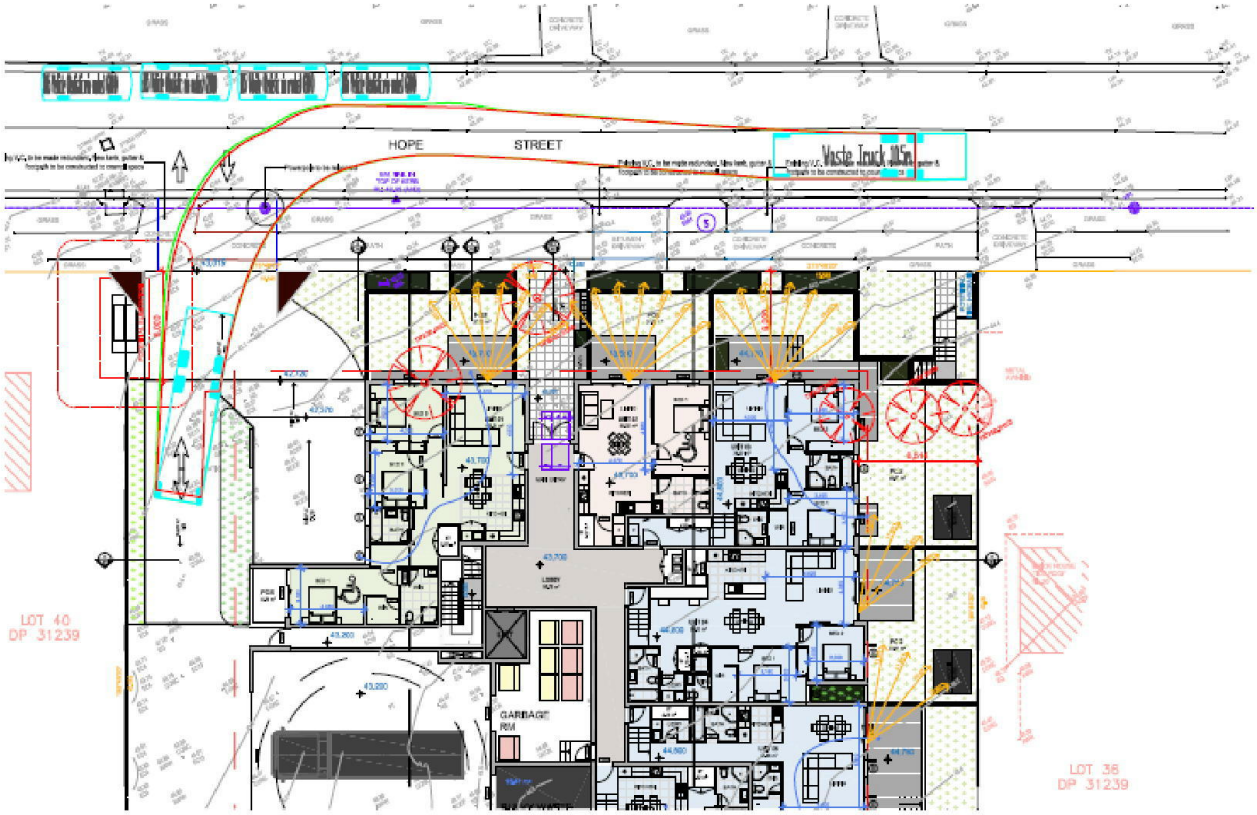


Car Wash Bay (Basement 2)

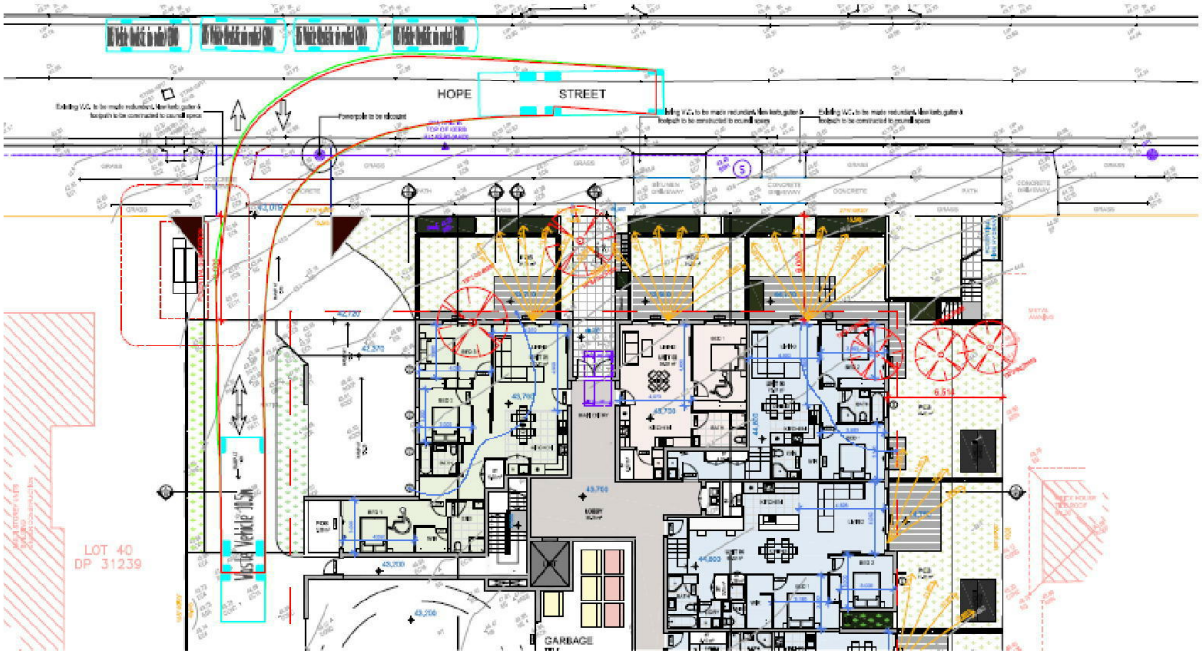


Garbage Truck Entering Loading Area

Garbage Truck Exiting Loading Area



Garbage Truck Entering Site from Hope Street



Garbage Truck Exiting Site onto Hope Street