



TRAFFIC IMPACT REPORT AND CAR PARKING CERTIFICATION

41-43 BARBER AVENUE, PENRITH NSW 2750

Proposed Residential Flat Building

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Date Prepared:	April 2015
Revision:	1.0
Penrith City Council Application #:	TBC

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Introduction

SafeWay Traffic Management Solutions was commissioned by Mr Simon Eliass to prepare a Traffic Impact Report and a Car Parking Certification for the proposed multi-unit residential development at 41-43 Barber Avenue in Penrith with 5,288 m² total area.

The subject site is located with frontage to Barber Avenue. The proposal includes construction of a residential flat building with 53 units (11 X 1 bedroom units + 42 X 2 bedroom units + 0 X 3 bedroom unit). On site car parking has been proposed within the basement levels 1 and 2 with following provisions;

- A total of 53 residential car spaces(including 2 disabled car spaces);
- A total of 5 visitor car spaces (including 2 disabled car space and a common loading bay);
and
- 13 Resident bicycle bays.

This report will assess the traffic impacts of this proposed development on the surrounding environment and the compliance of the proposed car parking with the Australian Standards and relevant clauses presented within the Penrith City Council Development Control Plan (DCP).

In the course of preparing this assessment, the subject site and its environment have been inspected, plans of the development examined, and all relevant traffic data collected and analysed.

Background and Existing Conditions

Location and Land Use

The subject site is currently occupied by two separate single storey residential dwellings (one at no. 41 and the other at no.43, Barber Avenue). The proposal involves demolition of these two existing residential dwellings and construction of a multi-storey residential building over a total land area of 5,288 square metres.

Barber Avenue at the frontage of the subject site is a local road which provides access to the sites present on both sides of this avenue from Colless Street to The Northern road. The area in the vicinity of the subject site is chiefly of residential nature.

Figure 1 shows the site from the local road network from a street map perspective.

Figure 2 presents an aerial photograph of the subject site and the surrounding areas.

Figure 3 presents a photo of Barber Avenue as seen at the frontage of the subject site.

Figure 4 presents a photo of Barber Avenue as seen at the frontage of the subject site.



Figure 1: Location of the Subject Site on an Street View



Figure 2: Location of the Subject Site on Aerial View



Figure 3: Barber Avenue as seen from the frontage of the subject site

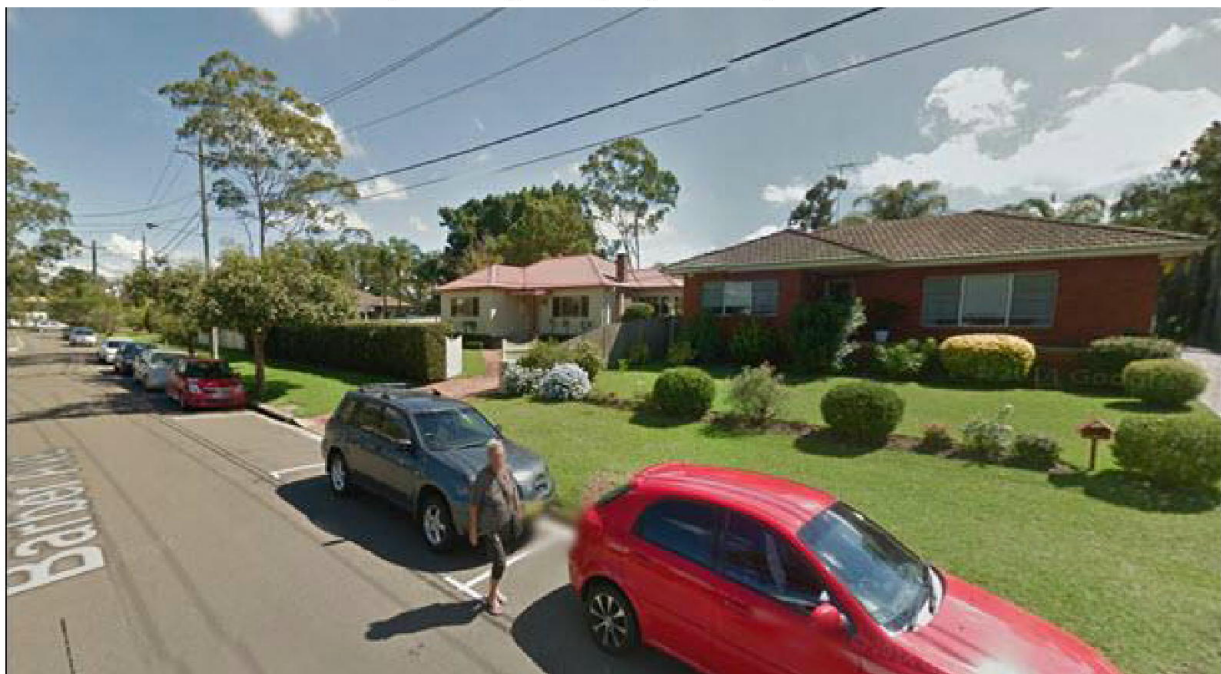


Figure 4: Barber Avenue as seen from the frontage of the subject site

Public Transport

The subject site has convenient accessibility to a large number of bus services. The following table outlines the details of the bus services available in the vicinity of the site. **Figure 5** illustrates the bus route map within the area of the subject site.

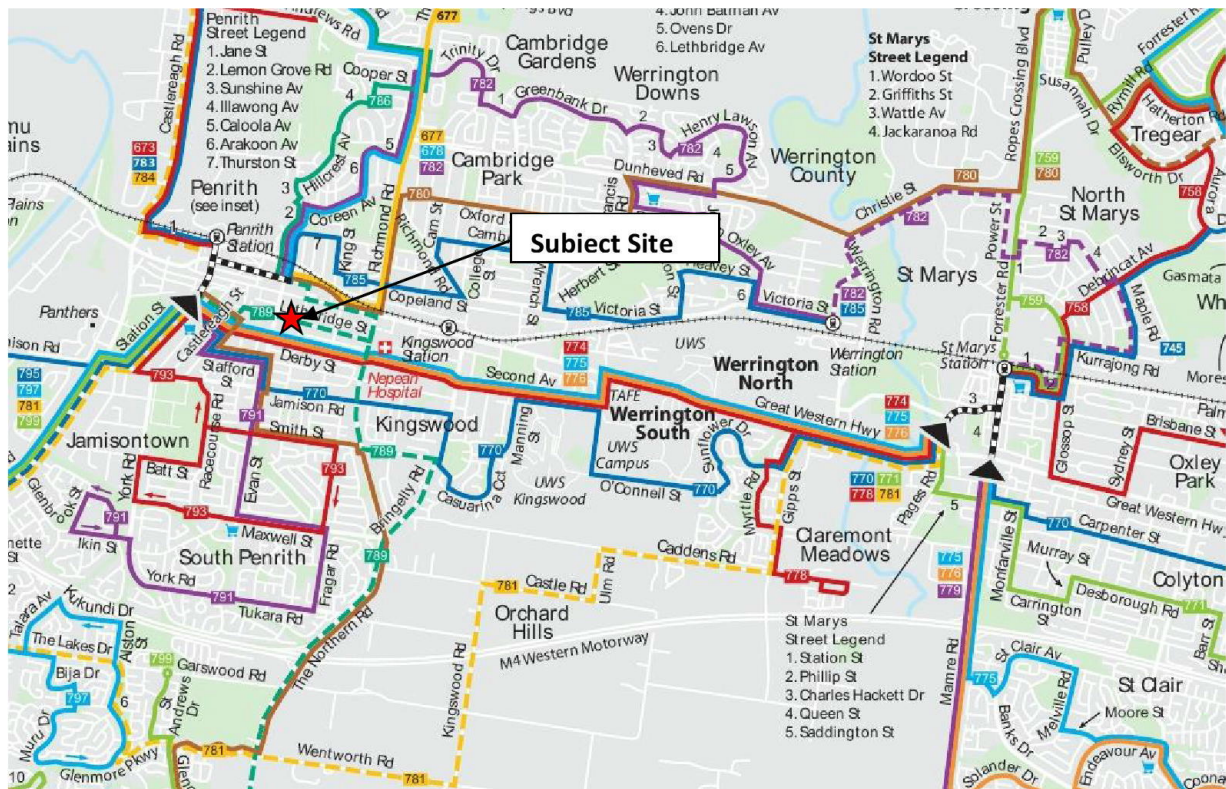


Figure5: Local Bus Services

Six different bus routes are serving the region frequently and it is an outstanding advantage for this site.

Table 1: Accessible Bus lines for the proposed development

Service	Location	Distance [m]	Walking Time [min]	Origin	Destination	Route Description	Number of Service			
							AM Peak (7-9 am)	Pm Peak (4-6 pm)	Off peak	
677	High street near Parker street Bus stop: 2750439	205	6	Richmond	Penrith	via Londonderry	2	2	1 bus/h	
		143	5	Penrith	Richmond	via Londonderry	2	2	1 bus/h	
205		6	Mt Druitt	Penrith	via Cambridge Park	6	6	3 bus/h		
143		5	Penrith	Mt Druitt	via Cambridge Park	6	6	3 bus/h		
780										
774	Derby St Near Colless St Bus stop : 2750244	364	5	Mt Druitt	Penrith	Via St. Marys stn	4	4	2 bus/h	
		388	5	Penrith	Mt Druitt	Via St. Marys stn	4	4	2 bus/h	
364		5	Mt Druitt	Penrith	Via St. Marys	4	4	2 bus/h		
388		5	Penrith	Mt Druitt	Via St. Marys	4	4	2 bus/h		
775										
		364	5	Mt Druitt	Penrith	Penrith	Via UWS	4	4	2 bus/h
776										
	388	5	Penrith	Mt Druitt	Mt Druitt	Via UWS	4	4	2 bus/h	
789	Penrith PS And HS, Lethbridge St	235	4	Penrith	Luddenham	via The Northern Rd service	1	-	1 bus/day	

As per the details presented in the section above, it is clear that the subject site is serviced by frequent bus services which are also easily accessible from the subject site. Therefore, this site is well located to access the public transport services.

Traffic Impacts of the Proposed Development

The proposed development at the subject site includes construction of a residential flat building with 53 units, on a land area of approximately 5,288 square metres, with the following unit structure;

Table 1: Proposed Unit Structure

Floor Level	1 Bedroom Units	2 Bedroom Units	3 Bedroom Units	Total Units
Ground Floor	1	8	-	9
Level 1	2	8	-	10
Level 2	2	8	-	10
Level 3	2	6	-	8
Level 4	2	6	-	8
Level 5	2	6	-	8
Total Units	11	42	0	53

The subject site is categorised under “Medium Density Residential Flat Building” in Section 3.3.2 of NSW RTA Guide to Traffic Generating Development (2002) document. The following trip rates have been outlined in this document;

- **Smaller units and flats (up to two bedrooms):**
 - Daily vehicle trips = 4-5 per dwelling
 - Weekday peak hour vehicle trips = 0.4-0.5 per dwelling.

- **Larger units and town houses (three or more bedrooms):**
 - Daily vehicle trips = 5.0-6.5 per dwelling
 - Weekday peak hour vehicle trips = 0.5-0.65 per dwelling.

Using the above rates for the subject site, we obtain the following peak hour trips;

0.5 (upper bound) trips per unit X 63 units (1 and 2 bedrooms) = 31.5 trips

Total peak hour trips generated by the proposed development = 32 trips (rounded up)

This number of trips during each peak hour is rather insignificant as it represents 1 vehicle every 2 minutes during each peak hour (assuming 100% out during the AM peak hour and 100% in during the PM peak hour and a uniform distribution of trips across each hour – justified due to the residential nature of the development).

As such, it is clear that the additional development traffic represents a very small fraction of the existing traffic volumes and therefore the additional traffic generated from the proposal is unlikely to generate any material impact on the existing traffic operations in the vicinity.

Basement Car Parking Assessment

On site car parking has been proposed, at the subject site, within the basement level with following provisions;

- A total of 58 resident car spaces;
- A total of 5 visitor car spaces (including 2 disabled car space and a common loading bay); and
- 13 Resident bicycle bays.

Full scale drawings of the proposed development are provided as part of the Development Application package and hence reference should be made to these drawings.

Penrith City Council DCP - Car Parking Requirements

The car parking requirements for residential developments are contained in Part A of the Penrith City Council DCP.

Car parking provisions for residential flat buildings must be made as follows;

Table 2: DCP Car Parking Requirements

Unit Type	Minimum Spaces Required	Number of Units	Minimum Spaces
Studio/1 bedroom	1	11	11
2 bed room	1	42	42
Visitor/dwelling	0.2	53	5.6
Total Spaces			58

From the requirements presented in the table above, it is evident that a total of 58 car spaces are required for the overall development (53 car spaces for residents and 5 car spaces for visitors).

The proposal includes a total of 53 resident car spaces and a total of 5 visitor car spaces (including 2 disabled car space). Therefore the proposed car parking is well compliant with the DCP car parking requirements.

Penrith City Council DCP - Bicycle Parking Requirements

As per the Penrith City Council DCP, at multi-unit housing developments, bicycle parking should be provided at the following rates;

Table 3: DCP Bicycle Parking Requirements

Unit Type	Minimum Spaces Required	Maximum Space Required	Number of Units	Bicycle Spaces Required
1 bedroom	0.2	0.3	11	2.2
2 bed room	0.2	0.3	42	8.4
3 bed room	0.2	0.3	-	-
Visitor/dwelling	0.05	0.1	53	2.65
Total Bicycle Spaces Required				13.25

As per the above table, the proposed development will need to provide a total of 13 bicycle parking spaces. The proposal includes 13 bicycle bays provided within the basement level and it is compliant with the DCP bicycle parking requirements.

Delivery/service/loading bay - NSW RTA Guide to Traffic Generating Development

The subject site is categorised in Section 5.2.3 of NSW RTA Guide to Traffic Generating Development (2002) document in the section of residential but more than 50 units which should provide a car space for loading bay. The proposal includes 1 common loading bays provided within the basement level 1 and it is compliant with the RTA NSW 2002.

AS 2890.1-2004 Compliance

This section will investigate the compliance of the proposed basement car park with the requirements outlined in AS 2890.1-2004.

Car Space Dimensions

The subject car parking user class as per AS 2890.1-2004 is Class 1A (residential parking). The following table indicates the standard compliance of the 21 X 90 degree parking spaces provided;

Table 4: Compliance of car spaces with the design standard

Component	Standard Dimension (m)	Dimension Provided (m)	Compliance/Comments
A	2.4	2.4	Compliant
C*	5.4	5.4	Compliant
Aisle Width	5.8	5.8 or more	Compliant

* where parking is to a wall or high kerb not allowing any overhang and where parking is controlled by wheel stops installed at right angles to the direction of parking.

as per AS 2890.1-2004 "Spaces shall be located at least 300 mm clear of obstructions higher than 150 mm such as walls, fences and Columns."

As it can be seen from the table above, the proposed car park design complies well with the basic car space and aisle width dimensional requirements.

Sight Distance for Vehicles

Barber Avenue is a local road with a recommended standard speed limit of 50km/hr. For such speed limits at a domestic driveway, a sight distance of 40m is required along both road directions. It is recommended to ensure that this can be achieved, which may require keeping the greyed area clear of visual obstructions (as seen in the table below extracted from AS 2890.1-2004).

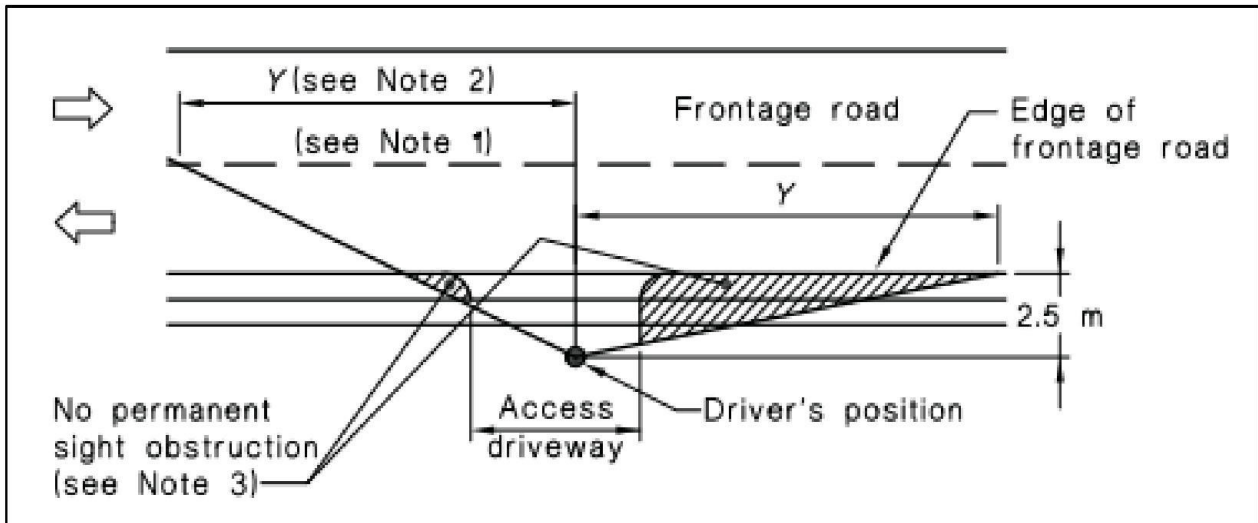


Figure 6: Entering sight distance specifications (excerpt from AS/NZS 2890.1:2004)

Sight Distance for Pedestrians

In order to provide adequate visibility of pedestrians walking along the foot path, the area outlined in **Figure 6** below must be kept clear of visual obstructions.

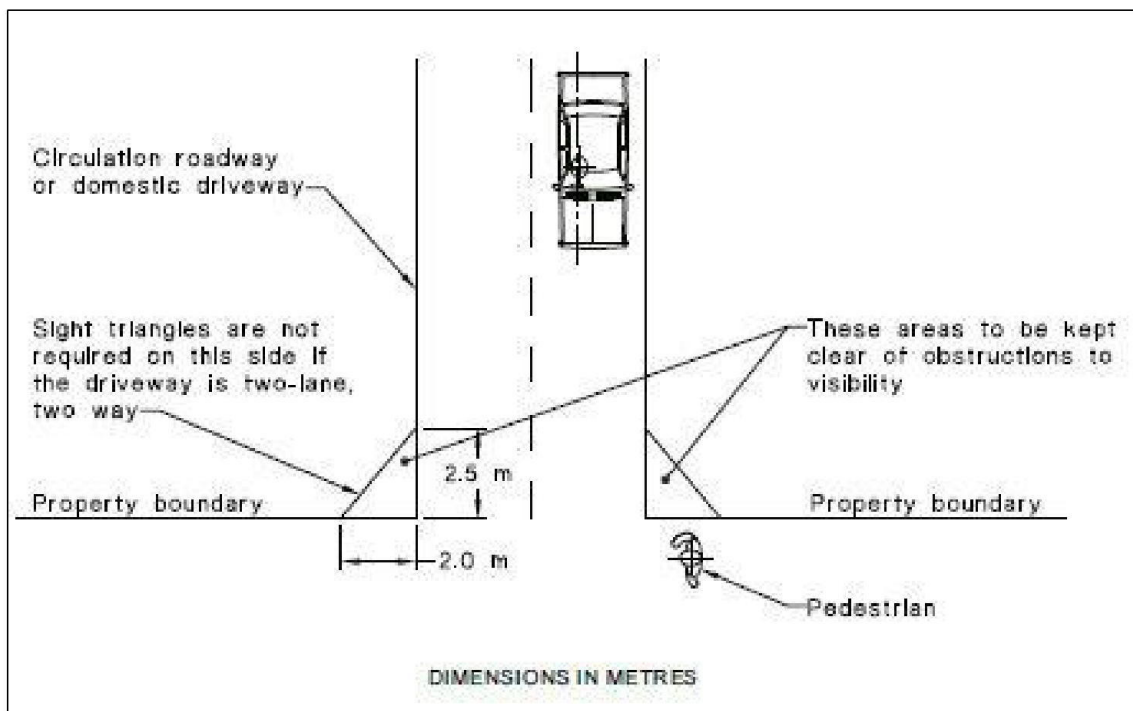


Figure 7: Minimum Sightlines for Pedestrian Safety (AS 2890.1:2004)

Disabled Car Spaces

Four dedicated parking spaces have been provided within the proposed car park. All of these spaces are designed as per the required dimensions: 2400mm width and 5400mm length.

A shared space (shaded area) on one side of the dedicated space is also provided at 2400mm X 5400mm, for two dedicated spaces at each basement level. Space identification (white symbol of access) has also been proposed as per the site plans. It is advised to provide bollard at the shared spaces as required by the Australian Standard.

Blind Aisles

At blind aisles, the aisle shall be extended a minimum of 1 m beyond the last parking space. This 1m extension has been provided at the blind aisle in order to improve manoeuvrability of vehicles when reversing out.

Ramp to the Car Park

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

- (i) Longer than 20 m—1 in 5 (20%) maximum.
- (ii) Up to 20 m long—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) A stepped ramp comprising a series of lengths each exceeding 1 in 5 (20%) grade shall have each two lengths separated by a grade of not more than 1 in 8 (12½%) and at least 10 m long.

The stepped ramp provided to the basement car park at the subject site is longer than 20m. The maximum grade at the ramp is 20% and the length of the 20% ramp is more than 10 m, and this complies with the maximum grade stipulated in the Australian Standard.

Also, the ramp width shall be 3.0 m as per the Australian Standards since the ramps to the basement car parks are one way ramps. This condition has been satisfied in the design by the provision of 3.6 width and two 0.3 m clearance obstruction of the ramp.

Column Location and Spacing

There are columns supporting the building structure at the basement levels car parking. The design envelope around a parked vehicle which is to be kept clear of columns is shown in the Figure and the Table below. As per this table (an excerpt from AS/NZS 2890.1:2004, section 5.2), at the 90 degree parking angles, the minimum X and Y dimensions are to be 750mm and 3650mm respectively. From the CAD drawings, the X and Y values are measured to be 750mm and 3650mm (or more) respectively. Since these two dimensions satisfy the minimum requirements, the column spacing is compliant with the standard.

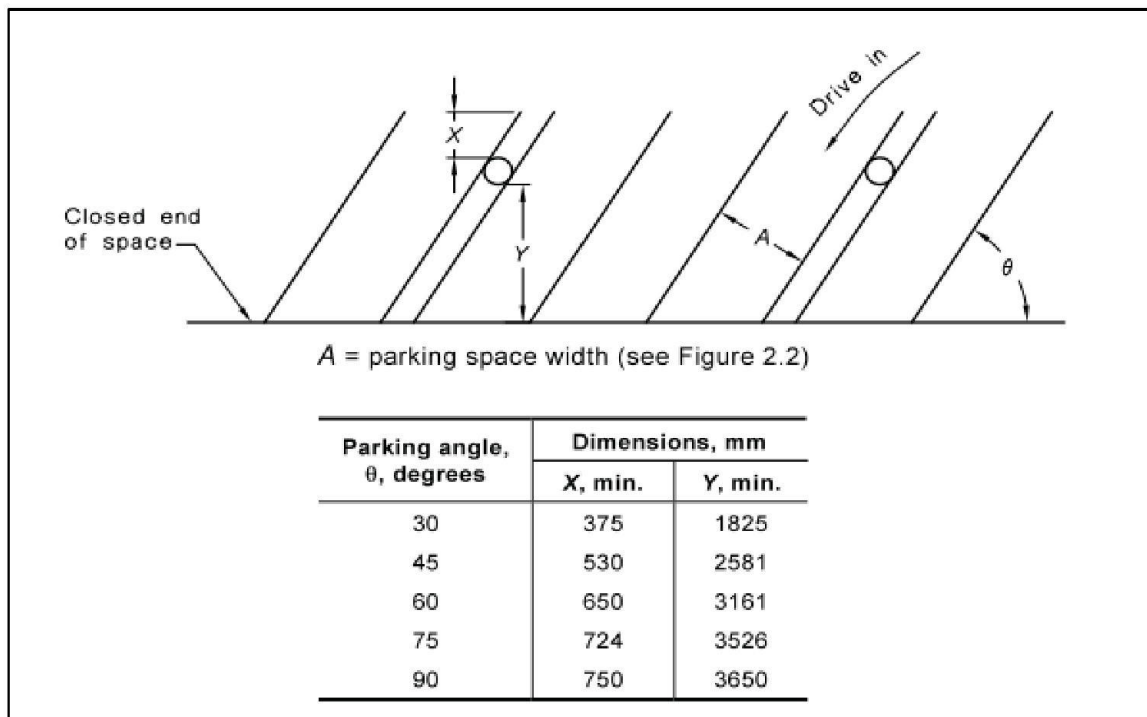


Figure 8: Column spacing requirements (excerpt from AS/NZS 2890.1:2004)

Swept Path Assessment

A swept path assessment of 85th percentile vehicles (dimensions in line with AS 2890.1-2004) have been undertaken within the basement car park. The results of these swept path assessments (see **Appendix A**) indicate sufficient manoeuvrability conditions for 85th percentile vehicles at this location.

Conclusions

Based on the assessment presented in this report, it is considered that:

- The proposed site is very well located to the public transport services.
- The proposed site will generate additional, but low levels of trips in the weekday AM and PM peak hours. These trips can be accommodated at the nearby roads without affecting intersection performance or increasing delays and queues.
- The car parking assessment indicates that the provision of car parking at the proposed site is well compliant with the requirements outlined in the Penrith Council DCP.
- The proposal includes 13 bicycle bays provided within the basement level and it is compliant with the DCP bicycle parking requirements.
- The car park assessment indicates that the design is compliant with the requirements outlined in AS 2890.1-2004;
- The swept path assessment undertaken to test the manoeuvrability of 85th percentile vehicles within the basement level indicate sufficient manoeuvrability conditions of these vehicles within the design constraints.

Based on this study, there are no traffic engineering reasons why a planning permit for the proposed residential development at should be refused.

Appendix A: Swept Path Assessment

