

Our Ref: 17117

13 February 2018

Castle Larool DM Pty
C/- CPDM
Suite 1, Level 21
123 Pitt Street
SYDNEY NSW 2000

Attention: Mr Michael Gee

Dear Michael,

**RE: 4-22 LAROOLO CRESCENT & 44-50 CARRAMARR ROAD, CASTLE HILL
PLANNING PROPOSAL – TRAFFIC AND PARKING REVIEW**

As requested, please herein The Transport Planning Partnership (TPPP) traffic and parking assessment to accompany a planning proposal for the above site.

Background

The NSW State Government prepared the North West Rail Link Corridor Strategy to engage the community and other stake holders to identify potential development precincts along the North West Rail corridor for higher residential densities to take advantage of the new high frequency rail services currently under construction. The subject site is located within the Castle Hill town centre which is one of these identified development precincts. This Strategy identified the subject site as having the potential to be redeveloped to provide medium density apartment living.

Following this, in November 2015 the Hills Shire Council adopted the Castle Hill North Precinct Plan. The Castle Hill Precinct Plan identified the subject site as having a R4 Zoning and has the potential to be redeveloped to provide an additional 146 dwellings.

It is now proposed to prepare a planning proposal to permit the subject site to be redeveloped with 180 residential apartments.

Site Description

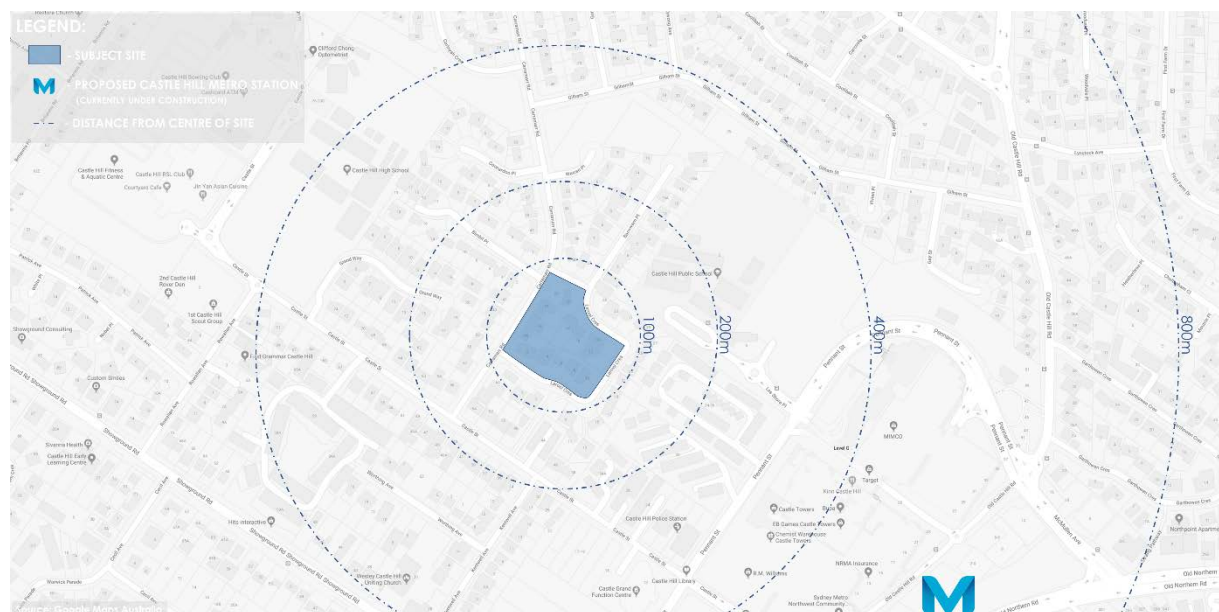
The subject site is located at Larool Crescent and Carramarr Road, Castle Hill. It comprises 14 low density residential dwellings being Nos. 4, 6, 8, 10, 12, 14, 16, 18, 20 and 22 Larool Crescent, and Nos. 44, 46, 48 and 50 Carramarr Road. The subject site is bounded by Larool Crescent to the north, east and south, and by Carramarr Road to the west. It is located within the local government area of The Hills Shire Council. Figure 1 shows the location of the subject site.

The subject site is located within 750m walking distance of the existing Castle Towers Shopping Centre and the future railway station (which is currently under construction).

The surrounding land uses in the vicinity of the site are predominantly low density residential dwellings with other community uses such as primary and high schools as well as the police station and the local library. Also as indicated previously, the Castle Towers Shopping Centre is located nearby.

Figure 1 shows the location of the subject site and its environs.

Figure 1: Site Location Plan



Proposed Development

It is proposed to prepare a planning proposal for submission to The Hills Shire Council. The planning proposal proposes to amend The Hills Shire Council's Local Environmental Plan 2012 (LEP) to enable all existing dwelling lots within the subject site to be consolidated into one lot and redeveloped to provide high density residential development generally consistent with the North West Rail Link Corridor Strategy and Castle Hill North Precinct Plan.

The planning proposal will seek approval to permit the combined site to be redeveloped with six buildings of six storeys in height.

Preliminary building design and planning investigations undertaken by the project architect indicates that the consolidated site could be developed to provide five residential apartment buildings accommodating approximately 180 residential apartments. An indicative apartment mix is as follows:

- 1-bedroom units – 18
- 2-bedroom units – 108, and
- 3-bedroom units – 54.

Traffic Effects

Development Traffic Arising from the Proposed Development

Roads and Maritime Services (Roads and Maritime) released the Technical Direction TDT2013/04 to provide a summary of trip generation rates for various land uses to replace the trip generation rates in their 2002 *Guide to Traffic Generating Developments*.

The new traffic generation rates in the Technical Direction for the high density residential uses are as follows:

- 0.19 trips per peak hour per apartment during the weekday morning peak period
- 0.15 trips per peak hour per apartment during the weekday evening peak period, and
- 0.25 trips per peak hour per apartment during the weekend peak period.

From the above, the proposed development would generate the following level of development traffic:

- weekday morning peak period – 34 vehicles per hour (vph)
- weekday evening peak period – 27 vph, and
- weekend peak period – 45 vph.

From the above, a high density residential development with 180 apartments would generate at a minimum 27 vph to a maximum of 45 vph during the peak periods. At its busiest peak period the proposed development is expected to generate a total of 45 vph.

The above predicted development traffic is considered to be relatively low, especially with consideration to the traffic volumes on the surrounding road network. Table 1 shows the existing peak hour traffic volumes on nearby streets extracted from the traffic report that accompanied the Review of Environmental Factors for the Showground Road Proposed Upgrades.

Table 1: Peak Hour Traffic Volumes on Surrounding Roads

Location	Morning Peak Period	Evening Peak Period	Saturday Peak Period
Showground Rd, East of Carrington Rd	2,387	2,817	3,195
Showground Rd, East of Pennant St	1,017	1,261	1,490
Carrington Rd	1,223	1,360	1,206
Pennant St	2,023	2,398	2,738
Old Northern Rd, South of Showground Rd	1,173	1,369	1,503

Source: Showground Road Upgrade: Carrington Road to Old Northern Road, Castle Hill Review of Environmental Factors Volume 1 March 2014

From Table 1, it can be seen that the surrounding roads carry peak hour traffic generally in excess of 1,000 vph with Showground Road on a Saturday peak period carrying in excess of 3,000 vph.

The predicted development traffic flows represent approximately two to three per cent of the existing background traffic on existing roads in the general vicinity of the subject site. In addition, it is noted that typical variances in day to day peak hour traffic on Sydney roads could be up to 15 per cent. As such, the additional development traffic will be within daily traffic variances, and is therefore not expected to create any noticeable traffic effects to the operation of the nearby intersections.

In addition, the additional development would be distributed to different traffic movements across a number of local intersections. As such, the development traffic is expected to be further diluted. For this reason, due to the very small resultant increases to the traffic volumes at traffic movement/intersection level, any intersection modelling software (such as SIDRA) is unlikely to register the changes in the intersection performance. The modelling results are not expected to return any meaningful intersection performance output. At the expected low volume of additional traffic, the nearby intersections are expected to continue to operate with similar performance to existing conditions.

Traffic Modelling

Notwithstanding the above, traffic analysis has been conducted to determine if there is any spare traffic capacity in the surrounding road network taking into consideration development traffic from other known developments including Council's anticipation of future intensification of the Castle Hill town centre as documented in their Castle Hill North Precinct Plan as well as the proposed future expansion of the Castle Towers Shopping Centre.

The future base case intersection turning movements at nearby intersections have been extracted from the traffic model prepared as of part of the traffic and transport assessment for the proposed expansion of the Castle Towers Shopping Centre. The intersection flows were extracted for the Thursday and Saturday peak periods for the end state of the proposed Castle Towers expansion.

In addition to the development traffic arising from the proposed expansion of the Castle Towers Shopping Centre, the traffic model also included development traffic from a number of potential development sites:

- QIC Kentwell Avenue site (Site B)
- QIC Les Shore Place site (Site C)
- Crane Road Precinct
- Terminus Street Precinct, and
- Pennant Street Target Site.

These sites combined to provide the following land uses and gross floor areas:

- retail – 16,600m²
- commercial – 48,900m², and
- residential – 2,485 apartments.

Intersection analysis was conducted for the following nearby intersections:

- Showground Road-Pennant Street
- Pennant Street-Castle Street
- Pennant Street-Eric Felton Avenue
- Pennant Street-McMullen Avenue
- Castle Street-Kentwell Avenue, and
- Castle Street-Carramarr Road.

The intersection performance under this future base case condition is presented in Table 2.

Table 2: Future Base Case Analysis Results

Intersections	Priority	Thursday Evening Peak		Saturday Peak Period	
		LoS	Delays (Sec)	LoS	Delays (Sec)
Showground Rd-Pennant St	Signalised	D	49	D	51
Pennant St-Castle St	Signalised	E	57	C	39
Pennant St-Eric Felton Ave	Signalised	D	46	E	62
Pennant St-McMullen Ave	Signalised	D	52	E	58
Castle St-Kentwell Ave	Priority	B	17	B	17
Castle St-Carramarr Rd	Priority	A	10	A	12

Roads and Maritime uses level of service as a measure of performance for all intersection types operating under prevailing traffic conditions. The level of service ranges from LoS A to LoS F which is directly related to the average intersection delays experienced by traffic travelling through the intersection. LoS A to LoS D are considered to provide acceptable performance with LoS A providing better performance than LoS D. LoS D is the long term desirable level of service. LoS E and LoS F are considered to provide unsatisfactory intersection performance.

The analysis results for the future base case indicate that the assessed intersections would generally have satisfactory intersection performance during the peak periods following the completion of the expansion of Castle Towers and the other nearby known developments. However, some intersections may operate with LoS E performance. It is not unusual for some

busy intersections around built up urban areas such as Castle Hill town centre to operate with LoS E or F during busy periods. This is typically due to regional background traffic.

The intersection capacity was repeated to determine the amount of additional development on the subject site that the local network can accommodate before the intersections operate at unacceptable level of service (i.e. LoS E/F), and in cases where a given intersection would operate at LoS E/F the same level of service is retained without excessive increases in intersection delays.

This involves an iterative process whereby additional traffic is incrementally added to the nearby intersections until the intersections operate at unacceptable level of service as discussed above. Through this iterative process, the analysis found that the local road network in the Saturday period would experience more capacity stress than the Thursday peak period. In the Saturday peak period, the local road could accommodate approximately 120 vph.

Applying a trip rate of 0.25 vehicle trips per peak hour per dwelling for Saturday peak period, this level of additional development traffic (120 vph) equates to an additional of approximately 480 residential apartments on the subject site.

The analysis results for this level of development (480 dwellings) traffic are presented in Table 3.

Table 3: Additional Development (480 Dwellings) Analysis Results

Intersections	Priority	Thursday Evening Peak		Saturday Peak Period	
		LoS	Delays (Sec)	LoS	Delays (Sec)
Showground Rd-Pennant St	Signalised	D	52	D	54
Pennant St-Castle St	Signalised	E	65	D	44
Pennant St-Eric Felton Ave	Signalised	D	47	E	64
Pennant St-McMullen Ave	Signalised	D	55	E	60
Castle St-Kentwell Ave	Priority	B	19	B	20
Castle St-Carramarr Rd	Priority	A	10	A	12

Roads and Maritime uses level of service as a measure of performance for all intersection types operating under prevailing traffic conditions. The level of service ranges from LoS A to LoS F which is directly related to the average intersection delays experienced by traffic travelling through the intersection. LoS A to LoS D are considered to provide acceptable performance with LoS A providing better performance than LoS D. LoS D is the long term desirable level of service. LoS E and LoS F are considered to provide unsatisfactory intersection performance.

With an additional 480 apartments on the subject site, the nearby intersections would continue to operate with the same level of service (albeit with a slight increase in intersection delays) to that found under the future base case traffic condition.

Therefore, following the completion of the proposed expansion of Castle Towers Shopping Centre and including additional development traffic from the intensification of the Castle Hill town centre in accordance to Council's Castle Hill North Precinct Plan, the nearby assessed intersections could accommodate additional development traffic arising from the subject site if it was to be redeveloped to accommodate 480 residential apartments.

It is noted that the planning proposal is seeking approval for an additional 180 residential apartments. As indicated above, this level of development would generate approximately 45 vph during the busiest peak period (expected to be Saturday peak period). It is further noted that the above traffic analysis demonstrates that the local road network could accommodate approximately 120 vph (being 480 apartments at 0.25 trips per peak hour per apartment).

In the light of the above, the proposed development is not expected to generate any adverse traffic effects.

Parking Effects

The parking requirement for proposed development has been assessed against The Hills Development Control Plan 2012 (DCP 2012).

Table 4 presents the assessment of car parking requirements for the proposed development noting that DCP 2012 stipulates minimum parking rates.

Table 4: DCP 2012 Car Parking Requirements

Proposed Uses	Proposed Units	Minimum Provision Rates	Minimum Required Parking
1-bedroom apartments	18	1.0 space per unit	18
2-bedroom apartments	108	2.0 spaces per unit	216
3-bedroom apartments	54	2.0 spaces per unit	108
Visitor	180	2.0 spaces per 5 units	72
Total			414

Applying Council's parking rates, the proposed development would require a minimum of 414 car parking spaces.

This level of required parking is considered to be excessive, in particular considering the subject site is located within walking distance to Castle Towers and the future railway station which is currently under construction.

Council has prepared a draft amendment to the existing DCP specifically for the Castle Hill North Precinct. The draft DCP provides updates to parking requirements for all land uses within the Castle Hill North Precinct. For residential flat buildings within Castle Hill North Precinct, the draft DCP stipulates that parking is to be provided at a rate of one space per unit for tenants and one space per five units for visitors. The required parking based on draft DCP requirements is presented in Table 5.

Table 5: Draft Castle Hill North Precinct DCP 2012 Car Parking Requirements

Proposed Uses	Proposed Units	Provision Rates	Required Parking
1-bedroom apartments	18	1.0 space per unit	18
2-bedroom apartments	108	1.0 space per unit	108
3-bedroom apartments	54	1.0 space per unit	54
Visitor	180	1.0 spaces per 5 units	36
Total			216

From Table 5, it can be seen that the draft Castle Hill North Precinct requires a total 216 car parking spaces to be provided (compares to a minimum of 414 car parking spaces required in the current DCP).

In addition, it is noted the SEPP 65 states that a development application cannot be refused on car parking grounds "if the car parking for the building will be equal to, or greater than, the recommended minimum amount of car parking specified in Part 3J of the Apartment Design Guide".

Part 3J of the Apartment Design Guide states:

"For development... on sites that are within 800 metres of a railway station... the minimum car parking requirement for residents and visitors is set out in the Guide to Traffic Generating Developments, or the car parking requirement prescribed by the relevant council, whichever is less."

In this regard, the subject site is located within 800m walking distance to a future railway station that is currently under construction. Table 6 provides an assessment of parking requirements using parking rate for residents and visitors set out in the *Guide to Traffic Generating Developments*.

Table 6: Roads and Maritime Guide to Traffic Generating Developments Car Parking Requirements

Proposed Uses	Proposed Units	Minimum Provision Rates	Minimum Required Parking
1-bedroom apartments	18	0.6 space per unit	10.8
2-bedroom apartments	108	0.9 spaces per unit	97.2
3-bedroom apartments	54	1.4 spaces per unit	75.6
Visitor	180	0.2 spaces per unit	36
Total			219.6

From Table 6, it can be seen that the Roads and Maritime guidelines require a minimum of 220 car parking spaces to be provided. The current local prescribed parking requirement was determined to be 414 car parking spaces (see Table 4 above). Therefore, Part 3J of the Apartment Design Guide recommends a minimum parking provision of 220 car parking spaces with consideration for the current DCP.

With consideration for the draft Castle Hill North Precinct DCP, the Part 3J of the Apartment Design Guide recommended parking provision is 216 spaces, as the lesser of the local prescribed parking requirement and Apartment Design Guide requirement.

Noting that the requirements of the Apartment Design Guide is relatively consistent with the requirements specified in the draft Castle Hill North Precinct DCP, the draft DCP is considered as a more realistic guide to the parking requirement of the site, than the current DCP.

Based on this, it is proposed to provide parking consistent with parking requirements stipulated in the SEPP 65 and draft Castle Hill North Precinct DCP of 216 spaces. On this basis, the proposed parking provision is considered to be satisfactory.

The parking layout and loading facility are proposed to be designed in accordance with the relevant Australian Standard for car parking facilities (namely AS2890.1, AS2890.2 and AS2890.6).

Summary and Conclusion

This report is in relation to a proposed planning proposal for a development site located at Larool Crescent and Carramarr Road, Castle Hill.

The planning proposal is seeking approval for the subject site to be redeveloped to accommodate 180 residential dwellings across six buildings of six storeys in height.

The proposed development is expected to generate moderate volumes of development traffic (approximately 46 vehicles per hour during the busiest peak period) which would constitute only a small fraction of the existing background traffic. As such, the proposed development is not expected to generate any adverse traffic impacts.

Separately, traffic analysis has been conducted demonstrating that following the completion of the proposed expansion of Castle Towers Shopping Centre and including additional development traffic from the intensification of the Castle Hill town centre in accordance to Council's Castle Hill North Precinct Plan, the subject site could be redeveloped to accommodate 480 residential apartments in total.

Parking requirements for the proposed development have been assessed against Council's parking requirements stipulated in the current development control plan as well as the draft Castle Hill North Precinct development control plan. Based on Council's parking requirement stipulated in the current development control plan, the proposed development would require a minimum of 414 car parking spaces. This level of parking is considered to be excessive, in particular when considering that the site is located within walking distance to Castle Towers Shopping Centre and a future railway station which is currently under construction.

It is further noted that the draft Castle Hill North Precinct development control plan specifies a parking provision of 216 car parking spaces for the proposed development.

The Apartment Design Guide requires parking for residential developments located within 800m walking distance to railway stations to have parking equal to or greater than the lessor of the parking requirements suggested in Roads and Maritime's Guide to Traffic Generating Developments, or the parking requirement prescribed by the relevant council.

In this case, the Roads and Maritime guidelines suggest a total parking provision of 220 car parking spaces compared to 414 car parking spaces required by Council.

The parking requirement stipulated in the Roads and Maritime guidelines is relatively consistent with the requirement set out in the draft Castle Hill North Precinct development control plan, suggesting that the draft Castle Hill North Precinct development control plan is a more realistic guide to the required amount of parking. Therefore, the parking level stipulated in the draft Castle Hill North Precinct development control plan is considered to prevail over Council's current required parking provision.

It is proposed to provide on-site car parking provision consistent with the parking requirements set out in SEPP 65 and the draft Castle Hill North Precinct development control plan, of 216 spaces. Therefore, the proposed parking is considered to be satisfactory.

It is proposed to design the car park in accordance with design requirements set out in the Australian Standard for car parking facilities.

Overall, the traffic and parking aspects of the proposed development are considered to be satisfactory.

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