

Memorandum

To	Brent Thompson	Page	1
CC			
Subject	The Hermitage Way (at Entertainment Precinct) - Traffic Review		
From	Andy Yung		
File/Ref No.	60318146	Date	29-Jan-2016

1.0 Introduction

AECOM has been engaged by Sekisui House to prepare a traffic statement to support the construction of the section of The Hermitage Way, and adjoining roads to the north, in the vicinity of the Entertainment Precinct.

The following technical note provides a summary of assumptions and analysis undertaken to review and confirm the proposed road layout of this section of The Hermitage Way.

2.0 Background

Sekisui House is proposing approximately 2,000 residential dwellings as part of The Hermitage development, which consists of development in the Turner Road, El Caballo Blanco / Gledswood and Lakeside Precincts. In addition, the Turner Road Precinct includes a 7.6ha mixed use zone referred to in the Turner Road Development Control Plan (DCP) 2007 as The Entertainment Precinct. The Entertainment Precinct allows retail, commercial and residential development.

Camden Council has issued Development Consent 1230/2015 for the construction of the balance of The Hermitage Way as well as roads MC06, MC07 and MC08 extending to the north. Condition 1.0 (3) a) of that Consent states:

“detailed plans and supporting information must be submitted to demonstrate the suitability of the intersections of Road No’s MC07 and MC08 with The Hermitage Way. The plans/information must include lane widths and traffic generation estimates.”

We note that lane widths information has been provided to Council during the DA and CC assessment processes. This statement responds to the second request in relation to traffic generation estimates.

3.0 The Hermitage Way

The intersection of Camden Valley Way | Springfield Road | The Hermitage Way provides direct access to The Hermitage development. The Hermitage Way is the main collector road and provides access between Camden Valley Way and the rest of The Hermitage development including the Entertainment Precinct.

There is a plan to further extend The Hermitage Way to the south east and link to Gregory Hills Drive through a crossing of South Creek currently under construction. A north-south Collector Road between The Hermitage Way and Raby Road will also provide access to the northern part of the development - El Caballo Blanco and Lakeside.

Figure 1 shows the location of the precinct and the connections to major road network.

It should be noted that sections of The Hermitage Way have been constructed:

- Western section between Camden Valley Way traffic signals and Long View Road roundabout
- Southern section between MC06 and South Creek.

The section of The Hermitage Way referred to in this memo will connect these two sections of the road, as approved under Development Consent 1230/2015.

Figure 1 Context and location of The Hermitage Way



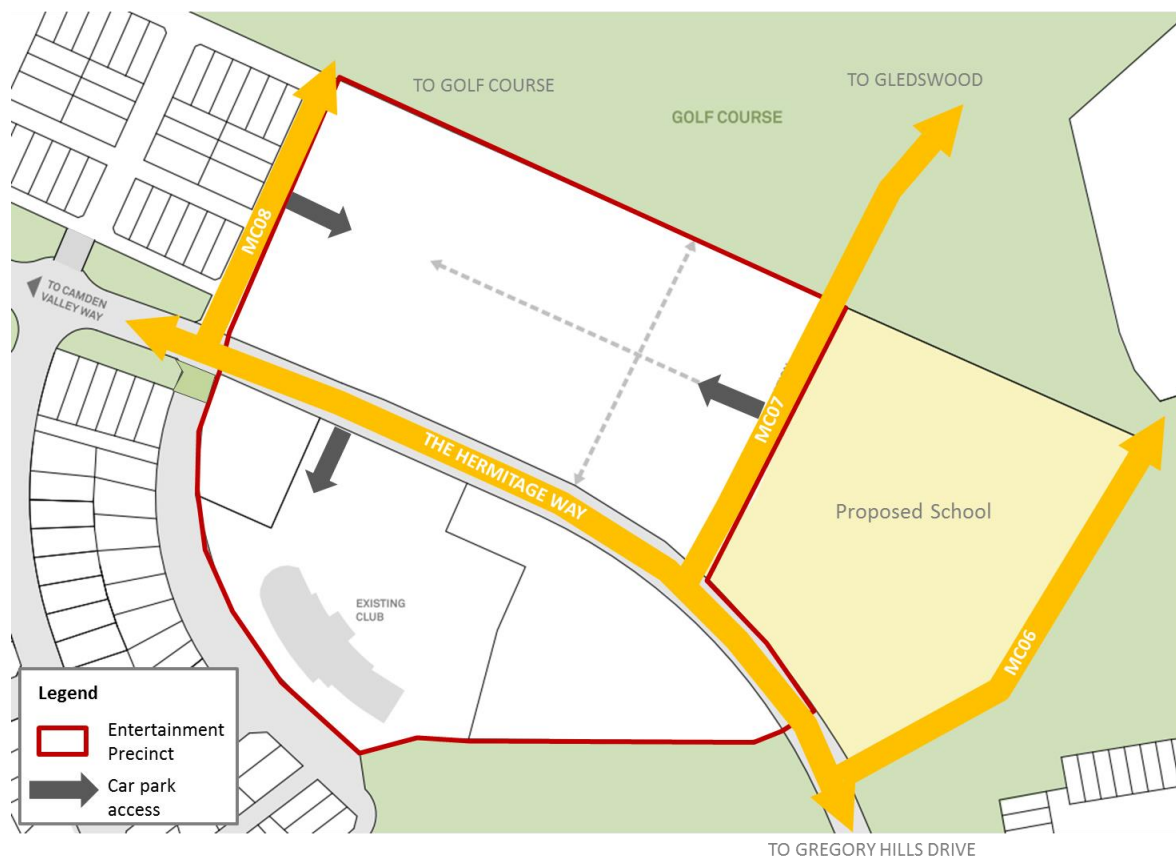
4.0 Proposed Intersections

Three key intersections with The Hermitage Way have been approved under development consent 1230/2015 in the vicinity of the Entertainment Precinct.

- MC08 will provide connections to a 9-hole golf course and driving range within El Caballo Blanco, as well as the Entertainment Precinct. This intersection has been approved as a T-junction.
- MC07 will provide connections to the Entertainment Precinct and future school staff car park. This road will be extended north to provide the main internal precinct connection to Gledswood, El Caballo Blanco and Lakeside.
- MC06 will provide connection to the potential school 'kiss and drop' areas / spaces. MC08 is also proposed to provide connection to the local roads in El Caballo Blanco Precinct.

Based on the forecast traffic turning volumes, priority controlled intersections have been proposed on MC08 and MC07 and a roundabout for MC06. Figure 2 shows the approved local road network in the precinct.

Figure 2 Entertainment Precinct local road network



5.0 Traffic generation and distribution

In order to determine the potential traffic generation onto this section of The Hermitage Way, the land use and the potential trip generation of the residential development as well as the Entertainment Precinct (a mixed use zone comprising of retail, commercial and residential land uses) have been considered. A breakdown of the land uses is presented in Table 1.

It should be noted that some of the land uses and scale of development are indicative only for the purpose of estimating the potential traffic that could be using this section of The Hermitage Way. This analysis represents an absolute worst case scenario given some of the land uses applied here could be higher traffic generating development than the final actual uses and the scale of development applied is at its upper development limit. In this regard, Table 1 should not necessarily be construed as the scale of development ultimately proposed.

Table 1 Indicative land use breakdown

Precinct	Indicative Land Use	Indicative Size / Scale
Turner Road – Entertainment Precinct	Retail	5,250 sqm
	Commercial	20,000 sqm
	Residential apartments	40,000 sqm (approx. 400 apartments)
Camden Valley Country Club*	Club	7,300 sqm
	Independent Living Units (retirement housing)	100 units
Turner Road – Residential Precinct	Residential	1,230 lots
	Education (Primary School)	1,000 students / 50 teachers
El Caballo Blanco Precinct	Residential (including Gledswood)	400 lots
	Golf Club - Recreational facilities	9-hole golf course 50 driving positions
Lakeside	Residential	400 lots
Mirvac Development	Residential	520 lots

*- Indicative Development proposal and Master Plan prepared by Curtin Architects (Oct, 2015)

The Roads and Maritime's Guide to Traffic Generating Developments (2002) has been used to determine the number of vehicle trips the assumed development will generate. For the retail component of Entertainment Precinct (as a local centre serving the surrounding development), it has been assumed that 50 per cent of the retail trips would be generated to and from the internal network, such as Lakeside / The Hermitage / ECB.

For the Mirvac development situated to the east of The Hermitage (See Figure 1), it has been assumed that 30 per cent of its traffic would access the wider network via The Hermitage Way, while the remainder access via Raby Road. The master plan indicates that there are 520 residential lots in the Mirvac development which is estimated to generate approximately 133 vehicular trips to The Hermitage Way.

A traffic survey was undertaken in April 2015 to determine the number of vehicle movements generated by the existing Camden Valley Country Club. The survey results indicate that a total of 8 and 100 vehicle trips were generated during the AM Peak and PM Peak periods respectively. Camden Valley Country Club is earmarked to be expanded, in the order of 3.2 times both the existing floor area and the existing off-street car parking provision. Accordingly, the traffic generated has been grown to 3.2 times the existing situation proportional to the proposed increase in parking provision and GFA.

As the Roads and Maritime's Guide to Traffic Generating Developments (2002) does not provide guidance for traffic generation relating to golf courses and driving ranges, the trip generation rates from The Institution of Transportation Engineers (ITE) "Trip Generation" guide book was used to estimate the trip generation from the proposed El Caballo Blanco Golf Club. A trip generation rate of 1.25 trips per hour per driving position for the AM and PM peaks has been adopted. However, the number of vehicular trips from the club house and the golf course is assumed to be the same as the existing Camden Valley Country Club, as this represents the worst case scenario, since the number of trips generated by using ITE rates for golf course is lower.

Table 2 shows the trip rates used to determine the number of trips generated by the development in the AM and PM peak hour and the number of trips expected to be generated by each land use. It has been assumed a relatively small component of the traffic generated by El Caballo Blanco, Lakeside and the Mirvac development would use The Hermitage Way to access the external road network as there are other main accesses proposed for these two precincts north of The Hermitage Way. Therefore, the detailed breakdown of trip generation of these uses are not included in the table below, however these trips are included in the traffic forecasts as shown in Figure 3 and 4 as well as the intersection analysis.

Table 2 Proposed development trip generation

Land use	Trip rate*		No. of trips	
			AM Peak	PM Peak
<i>The Hermitage</i>				
Residential	1,230 dwellings		983	
Low	84%	0.85 per dwelling		
Medium	16%	0.53 per dwelling		
<i>Entertainment Precinct</i>				
Retail	5,250m ²	2 per 100m ² (AM) 12.3 per 100m ² (PM)	105^	646^
Commercial	20,000m ²	2 per 100m ²	400	
Residential	400 apartments	0.45 per dwelling	180	
<i>Camden Valley Country Club</i>				
Club	7,300m ²	~0.35 per 100m ² (AM) ~4.5 per 100m ² (PM)	25	335
Independent Living Units	100	0.15 per dwelling (PM)	-	15
<i>Education</i>				
Primary school	1000 students	39 trips per 100 students (equivalent)	390^^	-
	50 teachers	1 trip per teacher	50^^	-
Total trips			2,133	2,559

^ Assumes 50 per cent of retail trips would be generated from the internal network such as Lakeside / The Hermitage / ECB during PM peak whilst several internal trips from the ECB & Lakeside will not use The Hermitage Way.

^^ The PM peak hour assumed to be outside the school period.

* Adopted from Roads and Maritime's Guide to Traffic Generating Developments (2002), site surveys or ITE Trip Generation Guide Book.

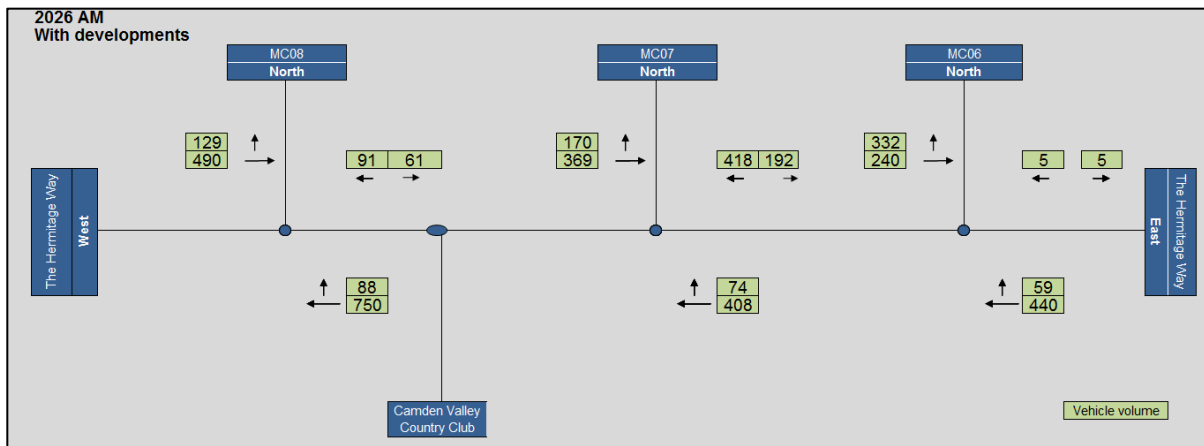
The table shows that the proposed development will generate a total of 2,133 to 2,559 trips in the peak hour. The following assumptions have been made with regards to trip movements in and out of the proposed development in the vicinity of this section of The Hermitage Way:

- 80% of retail trips will enter the site in the AM peak and 20% will leave the site.
- 40% of retail trips will enter the site in the PM peak and 60% will leave the site.
- 80% of commercial trips will enter the site in the AM peak and 20% will leave the site, with the reverse occurring in the PM peak.
- 10% of residential trips will enter the site in the AM peak and 90% will leave the site.
- 80% of residential trips will enter the site in the PM peak and 20% will leave the site.
- 90% of the development in The Entertainment Precinct is located at the northern side of The Hermitage Way. Of these 90% traffic:
 - 50% of retail / commercial / residential traffic use MC08
 - 50% of retail / commercial / residential traffic use MC07
- All incoming school trips will use MC06 and outgoing trips will use MC07 back to The Hermitage Way.

In the weekday peak period, it was assumed that 60 per cent of trips generated by the development will use Camden Valley Way (in West direction) to access the site and 40 per cent of trips will use the bridge over South Creek to connect The Hermitage Way with Gregory Hills Drive (in East direction). This recognises trips from Campbelltown via Gregory Hills Drive, which once completed will be a four lane road connecting to Campbelltown Railway Station.

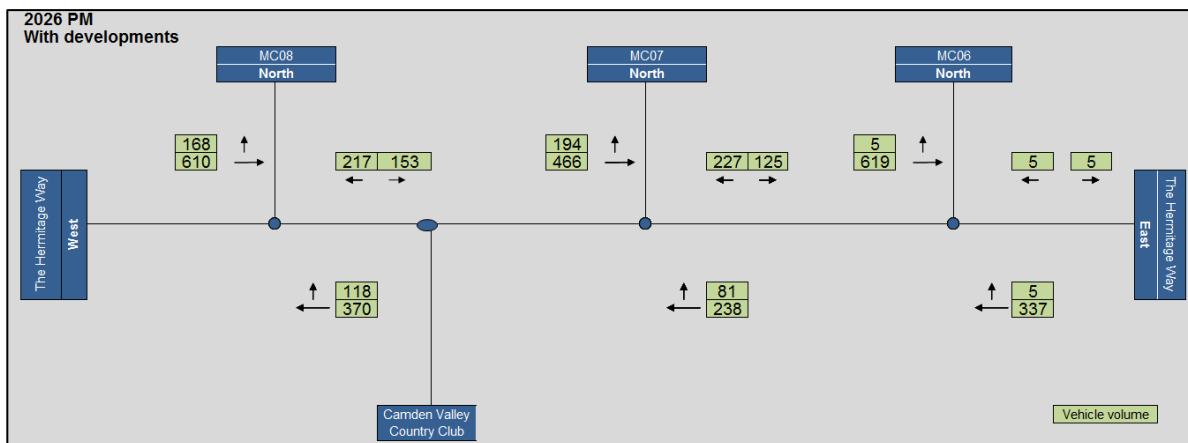
Figure 3 and Figure 4 present the turning movements for AM Peak and PM Peak at the intersections along The Hermitage Way in the Entertainment Precinct respectively.

Figure 3 2026 AM peak traffic movements (with development)



Source: AECOM, 2015

Figure 4 2026 PM peak traffic movements (with development)



Source: AECOM, 2015

The Hermitage Way is classified as a 2-lane sub-arterial road in Turner Road Precinct Development Control Plan (DCP) 2007. The estimated traffic volume on The Hermitage Way in Entertainment Precinct is approximately 1,000 – 1,500 vehicles per peak hour (in both directions) which is well within the capacity limit of 1,800 vehicles per hour for a two-lane road (one lane in each direction) in accordance with Roads and Maritime Services' Guide to Traffic Generating Developments.

6.0 Intersection assessment

The 2026 AM peak and PM peak turning movements at the intersections along The Hermitage Way were modelled in SIDRA to assess future intersection operation. A summary of the intersection performance is shown in Table 3.

Table 3 2026 peak hour intersection performance

	Intersection Type	Vehicles	LoS	DoS	Average Delay (sec)	95 th Percentile Queue (m)
AM Peak						
The Hermitage Way / MC08	Priority control	1,609	B*	0.48	24.3*	15.0
The Hermitage Way / MC07	Priority control	1,699	A*	0.67	12.1*	25.2
The Hermitage Way / MC06	Roundabout	1,081	A	0.39	3.3	20.8
PM Peak						
The Hermitage Way / MC08	Priority control	1,636	B*	0.68	22.7*	23.0
The Hermitage Way / MC07	Priority control	1,454	A*	0.36	11.5*	9.0
The Hermitage Way / MC06	Roundabout	976	A	0.36	2.9	19.2

*Level of Service and average delay for Priority intersections is based on the worst movement average delay.

Source: AECOM, 2015.

The results indicate that in the AM and PM peak hour, all three intersections along The Hermitage Way in the vicinity of Entertainment Precinct operate satisfactorily in 2026 with development traffic at Level of Service (LoS) A and B. In addition, the 95th percentile queue lengths do not exceed 30 metres or five vehicles for any of the assessed intersections. The assessment shows that the intersections will perform with significant spare capacity (approximately 30 to 60 per cent) under priority control or roundabout.

7.0 Conclusion

The traffic statement confirmed that the proposed section of The Hermitage Way in Entertainment Precinct as well as the associated intersections has the capacity to cater for the forecast traffic generation.