



Our ref: PS210815-PAM-SYD-LTR-002 RevA

Your ref: 7-9, 14-21 Chalmers Crescent Mascot DA - Traffic and Transport Impact Assessment

By email
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Dear Michael

7-9, 14-21 Chalmers Crescent - Additional traffic modelling and sensitivity testing

As requested, we have undertaken additional traffic modelling, supplementing the assessment presented in the latest Traffic and Transport Impact Assessment (TTIA) report (PS210815-PAM-SYD-REP-001 Rev D), to conduct sensitivity testing and evaluate the effects of varying Floor Space Ratios (FSR) on the operational performance of key intersections surrounding the Project site.

The analysis focused on the Kent Road and Ricketts Street intersection (I-03), which was previously identified as operating at an unsatisfactory Level of Service (LoS F) during the weekday AM peak hour under the 2036 with Project scenario (Scenario 4, FSR 3.86:1). It is noted that the Kent Road and Gardeners Road intersection (I-04) is already projected to operate at LoS F under the 2036 future base scenario (Scenario 3 without Project traffic). Therefore, I-03 is the only intersection where unsatisfactory operation is attributable to the additional traffic generated by the Project site.

While there is a direct relationship between Gross Floor Area (GFA), determined by FSR, and trip generation rates during the weekday AM and PM peak hours according to TfNSW guidelines, several additional factors could influence intersection performance, including:

- Project occupancy by airport-related uses with extended hours, which may not generate maximum vehicle movements during standard weekday peak periods.
- Depending on the operational hours of the development, a portion of traffic may occur outside the network peak hours, with changes to working hours potentially alleviating congestion on surrounding road network during peak periods.
- Parking allocated to non-commuter uses and any reduction in parking numbers, which may further influence traffic patterns.

Additional SIDRA network models were developed to test four alternative FSR scenarios (Scenarios 4A to 4D) and to assess the relationship between development intensity and intersection performance. As outlined in the TTIA report, traffic generation estimates were derived from the proposed GFA of the commercial development, consistent with Transport for NSW's *Guide to Transport Impact Assessment* (TS 00085, 2024 Version 1.1). Project-specific trip generation rates of 0.95 and 0.85 vehicle trips per 100 m² GFA were adopted for the weekday AM and PM peak hours, respectively. These rates were derived from traffic surveys conducted at two comparable commercial developments located near the Project site and confirmed through consultation with TfNSW.

The table below summarises the tested GFA values associated with each FSR scenario.

		Year 2036 with the Project (7-9, 14-21 Chalmers Crescent)				
Site Area: 12,603 m ²		Scenario 4	Scenario 4A	Scenario 4B	Scenario 4C	Scenario 4D
FSR:		3.86 : 1	3.0 : 1	3.4 : 1	3.2 : 1	3.3 : 1
		Proposed FSR	Max Permissible	Sensitivity Test		
GFA (m ²)		48,645	37,809	42,850	40,330	41,590
Generated vehicle/hr	AM	439	341	386	364	375
	PM	415	323	366	344	355

The SIDRA network modelling results for Scenario 4 (Year 2036, including traffic generated by the Project) and the outcomes of additional sensitivity tests are summarised in the table below.

SITE ID	INTERSECTION	FUTURE 2036 AM PEAK HOUR PLUS DEVELOPMENT SIZE OF:											
		FSR of 3.86:1 – GFA of 48,645m ²				FSR of 3.0:1 – GFA of 37,809m ²				FSR of 3.4:1 – GFA of 42,850m ²			
		Scenario 4				Scenario 4A				Scenario 4B			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
I-01	Coward St / Kent Rd	0.95	51	D	340 (N)	0.97	51	D	336 (N)	1.02	60	E	375 (N)
I-02	Coward St/ Bourke St	0.89	47	D	190 (N)	0.91	49	D	201 (N)	0.89	48	D	190 (N)
I-03	Kent Rd / Ricketty St	1.07	87	F	314 (NE)	0.94	52	D	277 (NE)	1.06	82	F	307 (NE)
I-04	Kent Rd / Gardeners Rd	1.22	132	F	522 (W)	1.19	122	F	486 (W)	1.19	126	F	510 (W)
I-05	Kent Rd / Chalmers	0.42	7	A	17 (N)	0.36	6	A	14 (N)	0.38	6	A	15 (N)
I-06	Coward St / O-Riordan St	0.63	31	C	216 (S)	0.63	31	C	220 (S)	0.63	32	C	220 (S)
SITE ID	INTERSECTION					FSR of 3.2:1 – GFA of 40,330m ²				FSR of 3.3:1 – GFA of 41,590m ²			
						Scenario 4C				Scenario 4D			
						DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
I-01	Coward St / Kent Rd					0.96	51	D	332 (N)	0.97	52	D	344 (N)
I-02	Coward St/ Bourke St					0.89	48	D	190 (N)	0.89	48	D	190 (N)
I-03	Kent Rd / Ricketty St					0.93	51	D	277 (NE)	0.97	59	E	277 (NE)
I-04	Kent Rd / Gardeners Rd					1.18	124	F	507 (W)	1.18	125	F	507 (W)
I-05	Kent Rd / Chalmers					0.37	6	A	14 (N)	0.38	6	A	15 (N)
I-06	Coward St / O-Riordan St					0.63	32	C	216 (S)	0.63	32	C	216 (S)

The analysis indicates that:

- The marginal difference of approximately 10 vehicles per hour between Scenarios 4C and 4D demonstrates that the performance of I-03 is highly sensitive to minor changes in traffic volumes and signal timing allocations with several factors listed above potentially influencing intersection performance.
- FSRs of 3.3:1 (Scenario 4D) and 3.4:1 (Scenario 4B) result in unsatisfactory operation (LoS E and F, respectively), **although these levels may be tolerated as other intersections are similarly burdened.**
- An FSR of 3.2:1 (Scenario 4C) achieves satisfactory performance (LoS D) without any positive influence from the factors affecting intersection performance.
- Reducing the FSR from 3.86:1 (Scenario 4) to 3.0:1 (Scenario 4A) decreases the Project-generated traffic by approximately 90 to 100 vehicles per hour. It is noted that around 63% of the Project traffic would travel via Intersection I-03 (refer to Figure 3.2 of the TTIA report).
- A reduced FSR of 3.0:1 (Scenario 4A) results in satisfactory intersection performance (LoS D or better) at I-03 during the weekday AM peak hour but at a high impost on project FSR which would fall more than 25% below approvals consistently given by Council in the last decade. We understand that the applicant requires the FSR for which application has been made.

As noted in the latest TTIA report, Intersection I-03 was forecast to operate unsatisfactorily during the weekday AM peak hour after accounting for development traffic. This was primarily due to extended southbound queues along Kent Road from the Coward Street and Kent Road intersection (I-01), which affect operations at both the Ricketts Street (I-03) and Gardeners Road (I-04) intersections. With varying traffic volumes across the tested scenarios, the SIDRA network models applied slightly different signal phase times at I-01 and I-03, leading to variations in intersection performance between LoS D and LoS F across the sensitivity tests.

Given that the Level of Service at Intersection I-03 can vary with as few as 10 to 20 additional vehicles per hour, it is likely that such conditions may not materialise in practice, as they fall within normal daily traffic fluctuations.

Furthermore, the actual traffic generated by the proposed development may be lower during the weekday AM peak hour due to one or more of the following factors:

- The proposed development may accommodate airport-related land uses with extended operating hours (e.g., commencing as early as 3 am and continuing until midnight), resulting in reduced traffic generation during conventional peak periods.
- Some parking spaces may be used by airport operations rather than commuters.
- The occupying business may adopt staggered or shifted working hours to alleviate intersection congestion during peak times.
- As noted in the TTIA report, intersection improvements could further alleviate congestion.

Possible network solutions:

It is also noted that in the latest TTIA report, Scenario 5 (which includes upgrades to three intersections along with the proposed FSR of 3.86:1) demonstrates that I-03 would operate satisfactorily at LoS C under the 2036 with Project scenario. Feedback from TfNSW is awaited regarding the feasibility of the proposed intersection upgrade layout, which could be further considered to improve traffic conditions on the surrounding network though such a reduction may not be justified in light of external factors which may otherwise mitigate the flows assessed.

An alternative network solution could be a change to Council's parking controls. Our analysis has been based on traffic generation by comparable, nearby developments, as agreed with TfNSW. These developments appear to provide more than adequate Council DCP compliant parking which generates lower than metropolitan average trip numbers. (Parking is based on GFA as is trip generation.) If Council adopted a more restrictive parking control for this development and further projects to 2036, permitting a maximum parking rate of 1 space/90 to 100m² rather than the current minimum of 1 space/80m², trip generation would fall sufficiently to avoid the poor levels of service predicted for the study network. It should be noted that within the City of Sydney LGA, some 650m north, parking is capped at 1 space/200m². Such a change would force greater use of public or active transport to work regardless of other factors. We understand that lower parking numbers are acceptable to the applicant.

Yours sincerely

Chris Chun

Chris Chun
Principal Traffic Engineer