

Ref: 17/073

21<sup>st</sup> May 2018

Kingston Property Fund No. 2 Pty Ltd  
C/- Shaddock Smith Architects,  
33 Scott Street,  
NEWCASTLE NSW 2300

Attention: - Steve Smith

Dear Steve,

**RE: Multiple Dwelling Residential Development (75 dwellings) – Lot 1 DP 349727 – 27 – 61 Nikko Road, Warnervale – Impact on Warnervale Road Railway Level Crossing.**

Reference is made to correspondence from Central Coast Council dated 10 April 2018 received by you regarding the above project. As requested Intersect Traffic has reviewed point 1 of the correspondence which relates to a request from Sydney Trains seeking information on the impact of the development on the Warnervale Road Railway Crossing.

The original traffic report clearly provided current traffic data in the area through a manual intersection count at the intersection of Warnervale Road and Nikko Road with the following AM and PM peak traffic flows recorded on Warnervale Road west of Nikko Road i.e. across the railway level crossing;

- AM peak = 183 vtp; and
- PM peak = 162 vtp.

The traffic report also clearly identified that following completion of the development these traffic volumes would increase to;

- AM peak = 201 vtp; and
- PM peak = 181 vtp.

To determine the impact of this additional traffic the level crossing has been modelled using the SIDRA INTERSECTION 8 program. Note whilst SIDRA INTERSECTION does not provide a site model for railway level crossings the signalised pedestrian crossing model can be modified to simulate a railway level crossing. This process requires calibration to ensure queue lengths observed match the queue lengths predicted by the model.

Therefore further data on closure times and queue lengths were collected at the crossing during the AM and PM peak periods. This data was collected on Tuesday 15<sup>th</sup> May 2018 at which time the following was observed;

#### AM peak hour (8 am – 9 am)

- Closures at 8.31 am, 8.35 am, 8.40 am and 8.53 am;
- Closure times of 60 seconds, 110 seconds, 60 seconds and 35 seconds respectively;
- Warnervale Road eastern side queue lengths of 6 cars, 8 cars, 6 cars and 2 cars respectively;
- Albert Warner Drive eastern side queue lengths of 3 cars, 2 cars, 6 cars and 6 cars respectively.

#### PM peak hour (3 pm – 4 pm)

- Closures at 3 pm, 3.13 pm, 3.19 pm, 3.23 pm, 3.33 pm and 3.47 pm;
- Closure times of 115 seconds, 35 seconds, 30 seconds, 60 seconds, 60 seconds and 120 seconds respectively;
- Warnervale Road eastern side queue lengths of 6 cars, 4 cars, 3 cars, 3 cars, 2 cars and 4 cars respectively;
- Albert Warner Drive eastern side queue lengths of 2 cars, 0 cars, 8 cars, 4 cars, 0 cars and 3 cars respectively.

Based on this data it was found that running the SIDRA INTERSECTION model with current traffic data and a cycle time of 240 seconds and a minimum road closure time of 120 seconds provided the best correlation of results between the modelled and observed queue lengths. This calibrated model was then used to model the post development traffic flows to determine the impact of the development on queue lengths at the railway crossing.

The modelling results, shown in the Sidra Movement Summary Tables provided in **Attachment 1**, are as follows;

- In the AM peak the impact of the development would be to increase the queue lengths on the eastern side of the crossing by 0.9 say 1 vehicle;
- In the AM peak the impact of the development would be to increase the queue lengths on the northern side of the crossing by 0.2 say 1 vehicle;
- In the PM peak the impact of the development would be to increase the queue lengths on the eastern side of the crossing by 0.2 say 1 vehicle; and
- In the PM peak the impact of the development would be to increase the queue lengths on the northern side of the crossing by 0.9 say 1 vehicle.

As queues at the level crossing are fully dissipated between closures, which will continue to occur post development, the overall delays for motorists at the level crossing will not be impacted on by the development.

Therefore it is concluded that the proposed development is likely to increase queue lengths at the railway level crossing by 1 vehicle however will not result in any additional delay for vehicles at the level crossing.

Given construction traffic volumes are likely to be similar or less than the full development traffic volumes i.e. approximately 60 vtpm then the construction traffic will also have little if any impact on the operation of the level crossing with no

additional delays to be experienced by motorists and queue lengths increasing only by a maximum of 1 vehicle. It is also likely that a construction traffic management plan be prepared for the development that will encourage construction traffic to approach the site from the east thereby avoiding any impact on the railway level crossing.

Hoping this information satisfies the request from Sydney Trains through Central Coast Council. If you require further information or clarification please do not hesitate to contact me on 02 4936 6200 or 0423 324 188.

Yours sincerely

A handwritten signature in black ink, appearing to read 'J. Garry', with a stylized flourish at the end.

Jeff Garry  
**Director**  
**Intersect Traffic**

## Attachment 1 – Sidra Movement Summary Tables

### MOVEMENT SUMMARY

#### Site: 101 [Warnervale Road Level Crossing AM]

Warnervale Level Crossing

Site Category: (None)

Pedestrian Crossing (Signals) - Fixed Time Isolated Cycle Time = 240 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Warnervale Road												
2	T1	107	1.0	0.105	29.2	LOS C	6.0	42.6	0.53	0.43	0.53	31.6
Approach		107	1.0	0.105	29.2	LOS C	6.0	42.6	0.53	0.43	0.53	31.6
NorthWest: Warnervale Road												
8	T1	85	1.0	0.083	28.8	LOS C	4.7	33.4	0.52	0.42	0.52	31.8
Approach		85	1.0	0.083	28.8	LOS C	4.7	33.4	0.52	0.42	0.52	31.8
All Vehicles		193	1.0	0.105	29.0	LOS C	6.0	42.6	0.52	0.43	0.52	31.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	
P1	SouthEast Full Crossing	53	114.3	LOS F	0.4	0.4	0.98	0.98	
All Pedestrians		53	114.3	LOS F			0.98	0.98	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

SIDRA INTERSECTION 8.0 | Copyright © 2000-2018 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: INTERSECT TRAFFIC PTY LTD | Processed: Thursday, May 17, 2018 10:40:07 PM

Project: C:\Work Documents\Project Files\2017\17.073 - Multiple Dwelling Nicco Street, Warnervale\Warnervale level crossing.sip8

## MOVEMENT SUMMARY



**Site: 101 [Warnervale Road Level Crossing AM + dev]**

Warnervale Level Crossing

Site Category: (None)

Pedestrian Crossing (Signals) - Fixed Time Isolated Cycle Time = 240 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Warnervale Road												
2	T1	122	1.0	0.118	28.9	LOS C	6.9	48.4	0.53	0.44	0.53	31.7
Approach		122	1.0	0.118	28.9	LOS C	6.9	48.4	0.53	0.44	0.53	31.7
NorthWest: Warnervale Road												
8	T1	89	1.0	0.087	28.4	LOS B	4.9	34.8	0.52	0.42	0.52	32.0
Approach		89	1.0	0.087	28.4	LOS B	4.9	34.8	0.52	0.42	0.52	32.0
All Vehicles		212	1.0	0.118	28.7	LOS C	6.9	48.4	0.52	0.43	0.52	31.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate	
P1	SouthEast Full Crossing	53	114.3	LOS F	0.4	0.4	0.98	0.98	
All Pedestrians		53	114.3	LOS F			0.98	0.98	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

**SIDRA INTERSECTION 8.0 | Copyright © 2000-2018 Akcelik and Associates Pty Ltd | sidrasolutions.com**

Organisation: INTERSECT TRAFFIC PTY LTD | Processed: Thursday, May 17, 2018 10:40:10 PM

Project: C:\Work Documents\Project Files\2017\17.073 - Multiple Dwelling Nicco Street, Warnervale\Warnervale level crossing.sip8

# MOVEMENT SUMMARY

## Site: 101 [Warnevale Road Level Crossing PM]

Warnervale Level Crossing

Site Category: (None)

Pedestrian Crossing (Signals) - Fixed Time Isolated Cycle Time = 240 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Warnervale Road												
2	T1	99	1.0	0.097	29.6	LOS C	5.6	39.4	0.53	0.43	0.53	31.4
Approach		99	1.0	0.097	29.6	LOS C	5.6	39.4	0.53	0.43	0.53	31.4
NorthWest: Warnervale Road												
8	T1	72	1.0	0.070	29.1	LOS C	4.0	28.1	0.52	0.42	0.52	31.6
Approach		72	1.0	0.070	29.1	LOS C	4.0	28.1	0.52	0.42	0.52	31.6
All Vehicles		171	1.0	0.097	29.4	LOS C	5.6	39.4	0.53	0.43	0.53	31.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	SouthEast Full Crossing	53	114.3	LOS F	0.4	0.4	0.98	0.98
All Pedestrians		53	114.3	LOS F			0.98	0.98

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

SIDRA INTERSECTION 8.0 | Copyright © 2000-2018 Akcelik and Associates Pty Ltd | [sidrasolutions.com](http://sidrasolutions.com)

Organisation: INTERSECT TRAFFIC PTY LTD | Processed: Thursday, May 17, 2018 10:40:09 PM

Project: C:\Work Documents\Project Files\2017\17.073 - Multiple Dwelling Nicco Street, Warnervale\Warnervale level crossing.sip8



# MOVEMENT SUMMARY

 **Site: 101 [Warnevale Road Level Crossing PM + dev]**

Warnervale Level Crossing

Site Category: (None)

Pedestrian Crossing (Signals) - Fixed Time Isolated Cycle Time = 240 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Warnervale Road												
2	T1	103	1.0	0.101	29.1	LOS C	5.8	40.8	0.53	0.43	0.53	31.6
Approach		103	1.0	0.101	29.1	LOS C	5.8	40.8	0.53	0.43	0.53	31.6
NorthWest: Warnervale Road												
8	T1	87	1.0	0.085	28.8	LOS C	4.9	34.3	0.52	0.42	0.52	31.7
Approach		87	1.0	0.085	28.8	LOS C	4.9	34.3	0.52	0.42	0.52	31.7
All Vehicles		191	1.0	0.101	29.0	LOS C	5.8	40.8	0.52	0.43	0.52	31.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akcelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow	Average Delay	Level of Service	Average Back of Queue	Back of Queue Distance	Prop. Queued	Effective Stop Rate
		ped/h	sec		ped	m		
P1	SouthEast Full Crossing	53	114.3	LOS F	0.4	0.4	0.98	0.98
All Pedestrians		53	114.3	LOS F			0.98	0.98

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

**SIDRA INTERSECTION 8.0 | Copyright © 2000-2018 Akcelik and Associates Pty Ltd | sidrasolutions.com**

Organisation: INTERSECT TRAFFIC PTY LTD | Processed: Thursday, May 17, 2018 10:40:09 PM

Project: C:\Work Documents\Project Files\2017\17.073 - Multiple Dwelling Nicco Street, Warnervale\Warnervale level crossing.sip8