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Hayden Kegg
Mostyn Copper
Suite 1, Level 8
9 Hunter Street
Sydney NSW 2000

Dear Hayden

Night Racing – Analysis of Doncaster Avenue / Ascot Street

1. Traffic Impact Assessment

1.1. Exiting Traffic Conditions

In order to determine the traffic conditions at the Doncaster Avenue / Ascot Street intersection during the afternoon peak hour, traffic count surveys were undertaken on Thursday 23rd June 2022 between 4:00pm – 11:00pm. The survey data indicates that the afternoon peak hour is 5:00pm – 6:00pm.

1.2. Doncaster Avenue / Ascot Street Intersection Arrangements

Doncaster Avenue / Ascot Street intersection is a 4-leg intersection with Doncaster Avenue traversing north-south and Ascot Street traversing east-west. This intersection was previously a roundabout intersection. Currently this intersection is being reconstructed to a priority intersection with Doncaster Avenue being designed as a major road and Ascot Street as a minor road. A pedestrian crossing is constructed at the Ascot Street eastern arm and a cycle-way traversing north-south is being constructed on the eastern kerbside of Doncaster Avenue.

1.3. Development Traffic Generation

Racing Traffic – Thursday / Friday / Saturday / Public Holiday (5pm – 10pm) operating under additional mitigation measures being:

- Only multi-deck car park private vehicles use Ascot Street
- All taxis and Ubers use Gate 1, Alison Road

1.4. Trip Distribution

The detailed trip distribution of the overall traffic generated during the Class 3 and Class 2 event has been undertaken during the SSDA stage. For the purpose of this assessment, only the vehicle trips approaching the Doncaster Avenue / Ascot Street intersection has been accounted. Most of the vehicles approaching the Doncaster Avenue / Ascot Street intersection are private cars, hired cars and taxi/Ubers. This distribution analysis includes the following:

- Taxi/Uber via Ascot Street – All taxis and Ubers enter and exit the site via Ascot Street site entry.

- Taxi/Uber via Gate 1 – All taxi and uber traffic is diverted to Gate 1.
- Following discussions with DPE, redistribution of all vehicles previously been assumed to travel straight across Ascot Street was applied to simulate the effect of the proposed NO ACCESS TO RACECOURSE signage on Anzac Parade and event point duty police at the Ascot Street/Doncaster Avenue intersection. These vehicles would be arriving from the north and south on Doncaster Avenue. Therefore, it is assumed that 65% of the traffic from Ascot Street would turn right from Doncaster Avenue and the remaining 35% turning left from Doncaster Avenue.

1.5. SIDRA Modelling

In order to confirm the current and future operation of the intersection, an assessment has been undertaken using the SIDRA modelling software, which presents a range of performance indicators (Level of Service, Average Delay, etc.).

There are four main performance indicators used to summarise the performance of an intersection:

- Average Delay – The average delay encountered by all vehicles passing through the intersection. It is often important to review the average delay of each approach as a side road could have a long delay time, while the large free flowing major traffic will provide an overall low average delay.
- Degree of Saturation (DoS) – The total usage of the intersection expressed as a factor of 1 with 1 representing 100% use/saturation (e.g. 0.8=80% saturation).
- 95% Queue lengths (Q95) – is defined to be the queue length in metres that has only a 5-percent probability of being exceeded during the analysis time period. It transforms the average delay into measurable distance units.
- Level of Service (LoS) – This is a categorisation of average delay, intended for simple reference. TfNSW adopts the following bands:

Table 1: Level of Service Criteria

Level of Service	Average Delay (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Signs
A	<14	Good operation	
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity. At signals, incidents would cause excessive delays. Roundabouts require other control mode	At capacity, requires other control mode
F	>70	Extra capacity required	Extreme delay, major treatment required

1.5.1. Modelling Scenarios

The intersection has been modelled for existing traffic, event 3 traffic and event 2 traffic. Event 3 traffic and event 2 traffic have been modelled with two (2) different scenarios as follows:

- Scenario 1 - In this scenario, all taxis / uber enter and exit via Ascot Street.
- Scenario 2 - In this scenario all taxis / uber enter and exit via Gate 1.

The Doncaster Avenue / Ascot Street intersection has been modelled with the previous roundabout and the new geometry (priority-controlled intersection) for Night Racing Traffic and both scenarios.

1.5.2. SIDRA Outputs – Doncaster Avenue / Ascot Street

Table 2 summarises the most relevant SIDRA results for the existing and events traffic for Doncaster Avenue / Ascot Street intersection.

Table 2: SIDRA Modelling Results for Existing and Event Traffic for Doncaster Avenue / Ascot Street

Location	Events	Scenarios		LoS	Delay (secs)	Highest DoS	Highest Q95% (m)
Doncaster Avenue / Ascot Street	Existing Traffic	Roundabout		B	15.2	0.522	31.8
		Priority		B	20.3	0.363	3.6
		Signals		A	13.3	0.458	128
	Night Racing	Scenario 1	Roundabout	F	392.2	1.409	1093.8
			Priority	F	2124.1	3.316	1554.7
			Signals	F	427.1	1.489	1603.5
		Scenario 2	Roundabout	B	25.6	0.838	91.8
			Priority	F	274.9	1.262	326.3
			Signals	F	212.5	1.293	680.8

In general, the previous roundabout arrangement of Doncaster Avenue / Ascot Street is considered better for the traffic during the Racecourse events. The impacts of a Night Racing event on the upgraded priority intersection is significant with worse delays and queues. Allowing the taxis/uber to enter and exit the Racecourse via Gate 1 (Scenario 2) improves the performance of the intersection significantly. However, the delays are still anticipated.

The former control at the Doncaster Avenue / Ascot Street intersection by means of a roundabout is considered better for traffic management for both general daily use and for the proposal Night Racing events.

The current arrangement control at the Doncaster Avenue / Ascot Street intersection by means of a priority right of way is considered worse for traffic management for both general daily use and for the proposal Night Racing events.

For the proposal of Night Racing, ATC and **ptc.** encourage the support of point duty police with a four-way arrangement.

Yours faithfully



Dan Budai
Project Director

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