13 February 2019

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Canterbury Aero Club
c/- Planz Consultants Ltd

Attention: Nick Boyes

Dear Nick,

CANTERBURY AERO CLUB, WEST MELTON AIRFIELD TRANSPORT EFFECTS REVIEW

1. This letter sets out our assessment of transport effects associated with the potential rezoning of the West Melton Airfield to enable additional development to occur. The site location in illustrated in **Figure 1**.

Figure 1: Site Location

Application Site

Existing Activities

2. At present, the airfield is primarily used for flight training by Aero Club students during the week and private pilots mainly at weekends. On a typical day 30 people (students/instructors) would be on site. Given the distance from Christchurch, many students car pool and typically there would be 10 to 12 cars in the parking area, with an additional 3 to 4 parked outside the hangars.

3. We understand that 'open days' are typically held every two years, although there is potential for this to become an annual event. They result in approximately 100 people visiting the site. Using an estimated car occupancy for an event of 2.5 people per vehicle, there would be in the order of 40 vehicles associated with these events.

4. Regional and National competitions can also be held, which result in 200 to 300 people being on site. However, in this scenario many of these people would arrive by private plane – so vehicle (car) movements are understood to be comparable to an open day.

5. The vast majority of all traffic movements take place during the daytime and there is no ability to operate flights during night-time given current runway lighting and Civil Aviation Authority (CAA) rules. The only evening movements would be associated with persons going to their hangar to undertake maintenance etc. These would be minimal as there are very few hangars on site.

Proposed Activities

6. One of the outcomes of the sought rezoning is to increase the ability to construct further hangars. This would increase the number of vehicle movements that may occur during the evening, although these movements would still be around 5 people an evening.

7. Based on the above, the increase in traffic movements as a result of the proposed rezoning are not anticipated to be significant. The traffic generated by events is understood to be broadly the same as per the existing arrangement. There is sufficient space on-site to accommodate additional car parking such that no vehicles would need to park on Weedons Ross Road.

8. The key matters for assessing the transport effects are considered to be the ability for Weedons Ross Road to accommodate the additional traffic, plus the safety and efficiency effects of the Weedons Ross Road / Old West Coast Road intersection.

Adjacent Activities

Moore Park Speedway

9. The Moore Park Speedway is a motorcycle speedway track directly across the road from the application site. They hold events in a seasonal manner running October through to May, with a maximum of 15 meetings over a season. Each event is attended by approximately 1,000 people and these are assumed to attract up to approximately 400

vehicles[1]. Events take place in the afternoon commencing at 1pm in the shoulder months and as late as 4pm during mid-summer. All meetings are held during daylight hours, although we understand they are currently investigating the installation of lights, in which case meeting might go through to 10pm at the latest.

10. In addition to race meetings, approximately 20 training days take place over a season, which involve a maximum of 100 people on site. These are assumed to attract 40 vehicles, based on a car occupancy of 2.5 people per vehicle.

Canterbury Off-Road Car Club

11. There is also the Canterbury Off-Road Car Club located in the vicinity. They do not appear to hold many events at the club track based on the on-line calendar and events take place over winter, commencing in May through to the beginning of November. The number of visitors is anticipated to be slightly less than for a race meeting at Moore Park, say 500 people (200 vehicles). From the calendar on their website they held six events in 2018.

Road Network

12. Weedons Ross Road is classified as a *Local Road* north of Old West Coast Road. Given this road only serves the above activities, approximately three residential properties and links to the Waimakariri River, it is estimated as carrying approximately 283 vehicles per day[2]. This road is straight and flat with a posted speed limit of 100km/hr. Observations suggest that the typical operating speed is significantly less than 100k/hr. The formed carriageway width is approximately 7.0m.

13. Weedons Ross Road south of Old West Coast Road is classified as an *Arterial Road*. Old West Coast Road is also classified as an *Arterial Road*.

14. The Weedons Ross Road / Old West Coast Road intersection is priority controlled, with Old West Coast Road having the priority. There are no dedicated turning bays provided at the intersection. The intersection layout is illustrated in **Figure 2**. Good visibility is provided in each direction because of the straight and flat alignments of the approaches.

[1] Based on an assumed car occupancy of 2.5 people per vehicle.
[2] From *Mobile Road* data.

Figure 2: Old West Coast Road / Weedons Ross Road Intersection

15. A traffic count has been undertaken of the weekday PM peak on Tuesday 12 February 2018. The turning volumes between 17:00 and 18:00 are summarised in **Attachment 1**. These volumes were used in an intersection traffic capacity model and the output reasonably matches the observed queue lengths when using the default SIDRA model values. The output of this model is included in **Attachment 2**, which indicates the intersection is operating no worse than Level of Service B[3]. This represents reasonably free flow conditions, with motorists having a high level of comfort.

16. The NZ Transport Agency Crash Analysis System has been reviewed to identify crashes that have been reported within 100m of this intersection in the most recent five-year period available. This indicated that one non-injury crash was reported, in which a southbound vehicle travelling through the intersection on Weedons Ross Road failed to give-way to a westbound vehicle on Old West Coast Road.

17. Overall, this intersection is considered to be currently operating safely and efficiently.

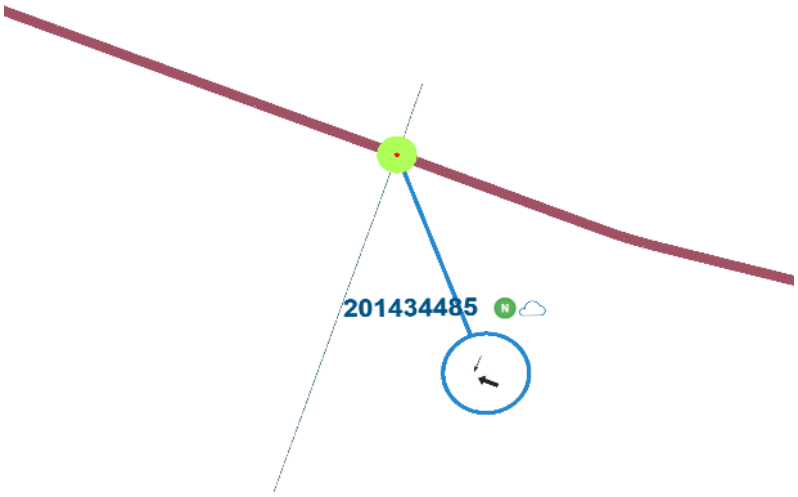

Figure 3: NZTA Collision Diagram

Effects of the Proposal

Old West Coast Road / Weedons Ross Road Intersection

Typical Operation

18. The additional five vehicles generated during the day to day operation of an expanded Aero Club are anticipated to have a negligible effect of the operation of the road network. This is because the traffic model of the existing intersection operated sufficiently well that these vehicles can easily be accommodated.

[33] Where Level of Service A is excellent operation, E is at capacity and F is over-capacity.

Event Operation

19. The operation of this intersection has also been assessed on the basis of an additional 440 vehicles either arriving or departing the Weedons Ross Road northern arm of this intersection. This number is based on 40 vehicles associated with an event at the Aero Club, plus 400 vehicles associated with the Moore Park Speedway. It is noted that the seasons for the Speedway and the Off-Road Car Club generally do not overlap or compete.

20. The additional traffic associated with the activity has been distributed on the road network as follows:

    (a) 80% of people are assumed to travel to / from Christchurch on Old West Coast Road east of Weedons Ross Road;

    (b) 15% of people are assumed to travel via Weedons Ross Road south of Old West Coast Road; and

    (c) The remaining 5% of people are assumed to travel via Old West Coast Road west of Weedons Ross Road.

21. Two intersection models have been created, that assume either:

    (a) Speedway traffic is arriving whilst Aero Club traffic is departing; or

    (b) Speedway traffic is departing whilst Aero Club traffic is arriving.

22. The results of the traffic model are included in **Attachment 3**, which indicate that no approach is predicted to operate worse than Level of Service C. This represents acceptable (stable flows), which is understandable given that this is an assessment of the traffic operation during a low frequency event.

Weedons Ross Road Mid-Block Capacity

23. The existing road cross-section is a carriageway of 7.0m. AustRoads *Guide to Road Design*[4] suggests that this width can accommodate an annual average traffic volume of up to 500 vehicles per day (based on a carriageway of 6.2m plus sealed shoulders of approximately 0.5m on both sides). Equally, we note that NZ Standard 4404 (*Land Development and Subdivision Infrastructure*) identifies that a sealed width of 6.5m (i.e. 5.5m traffic lanes plus 0.5m sealed shoulders) is sufficient to accommodate up to 1,000 vehicle movements per day[5].

24. The existing daily traffic volume is approximately 283 vehicles per day. The proposed Aero Club development is anticipated to add nominally ten vehicle movements per day (five arrivals plus five departures). The traffic volumes remain well within the capacity of this road.

25. The proposed events at the Aero Club and Speedway could add a further 880 vehicle movements per day. However, these events are at most fortnightly, so they would

[4] Table 4.5 of Part 3 – Geometric Design.
[5] Refer to Diagram E6 of NZS4404.

represent an increase in Annual Average Daily Traffic of approximately 63 vehicles per day, which remains with the capacity of this road.

26. It is accepted that this road will experience generally lower traffic volumes, with notable peaks occurring when events are taking place. However, the tidal nature of traffic volumes associated with those events plus their infrequent nature mean that the existing road width on Weedons Ross Road is considered to be acceptable.

Conclusion

27. We have reviewed the operation of Weedons Ross Road and the intersection with Old West Coast Road on the basis that additional activity would occur with the Canterbury Aero Club and at the Moore Park Speedway. This review has identified that the adjacent road network is anticipated to operate safely and efficiently. Traffic volumes would remain within the carrying capacity of Weedons Ross Road. Accordingly, we could support the rezoning from a traffic engineering perspective.

28. We trust this is sufficient, but please feel free to contact the undersigned if you have any queries regarding this matter.

Yours sincerely,

Novo Group Limited

Nick Fuller

Senior Transport Engineer

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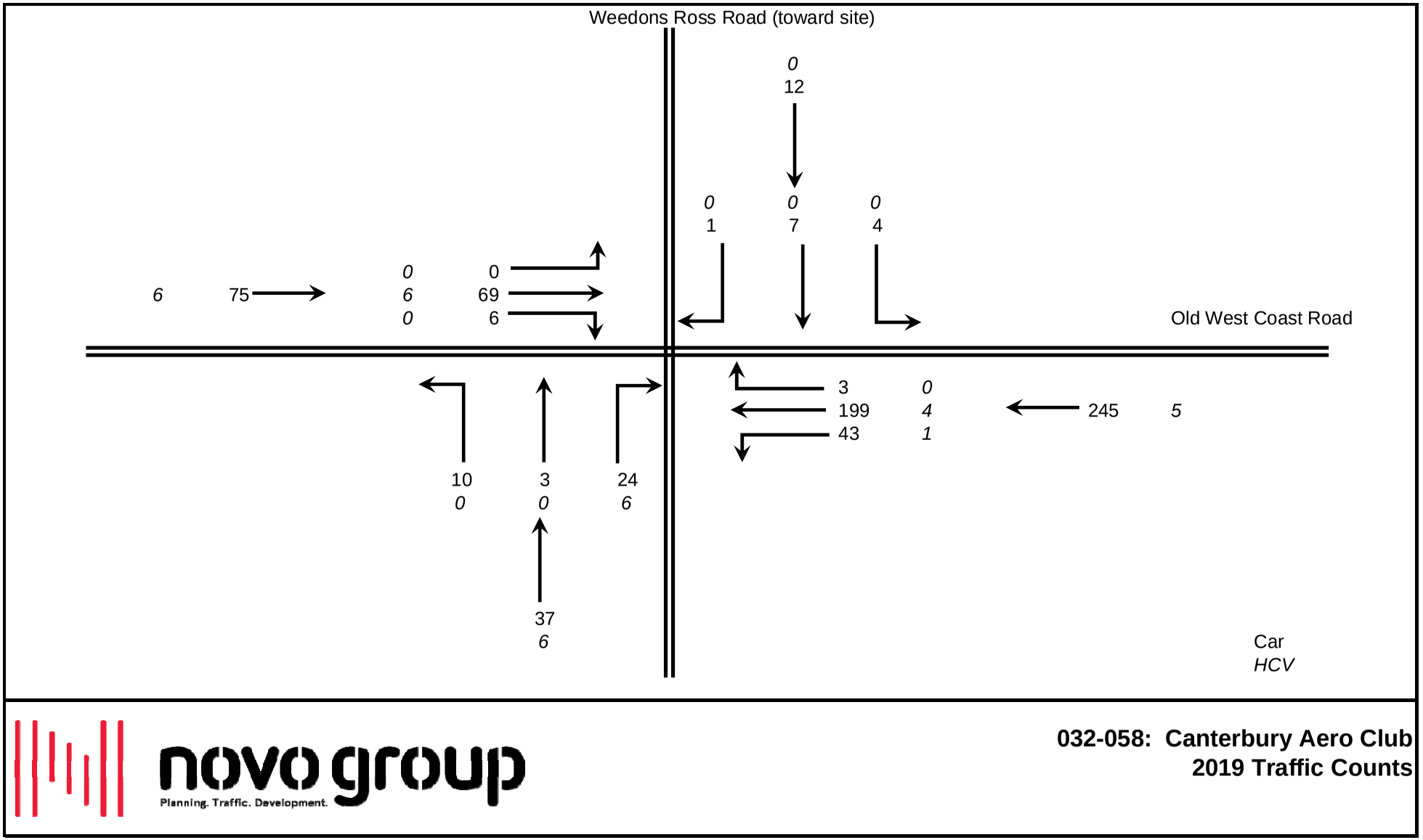
[032-058]

Attachment 1: Traffic Volumes



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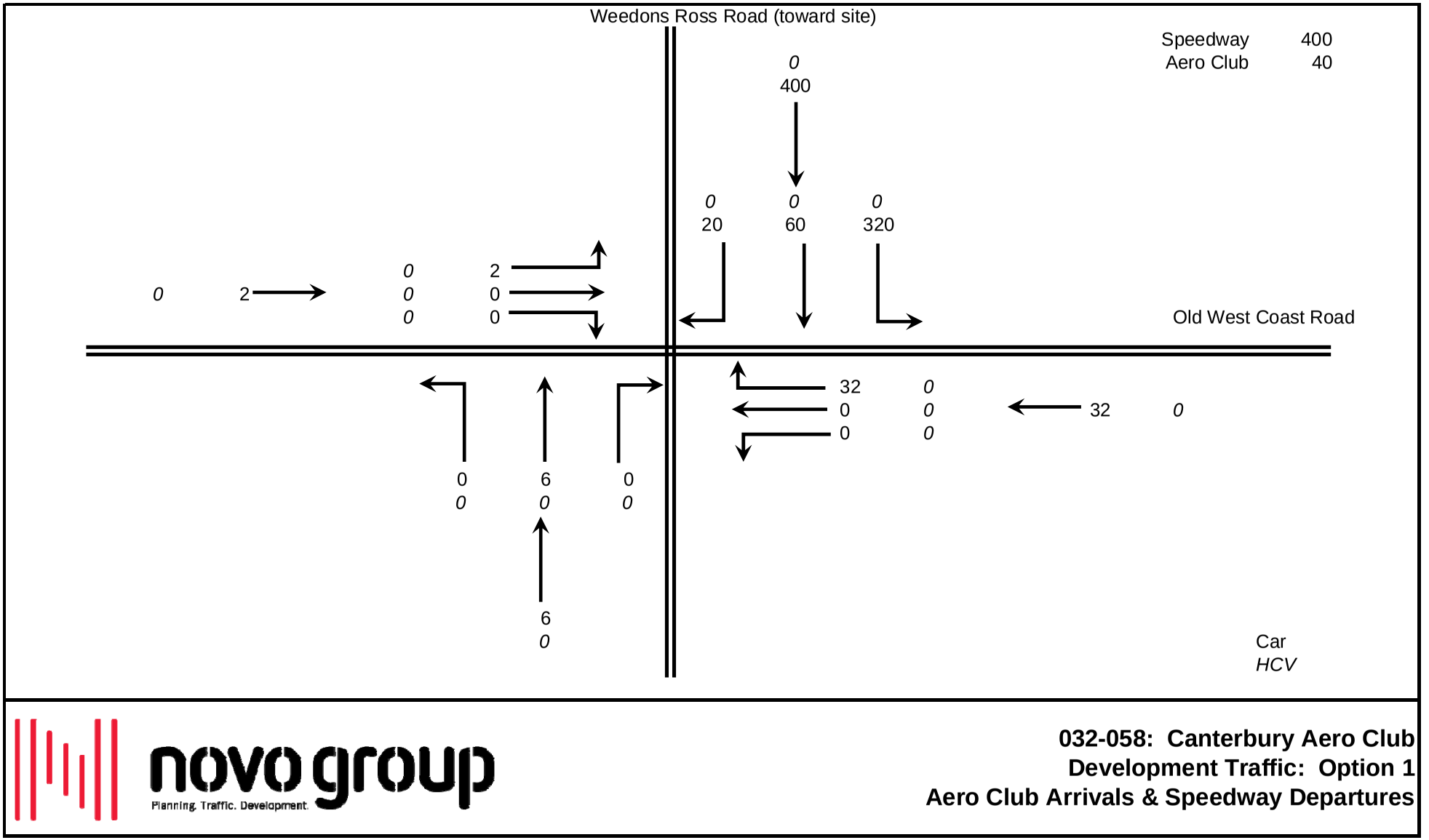
032-058: Canterbury Aero Club
2019 Traffic Counts



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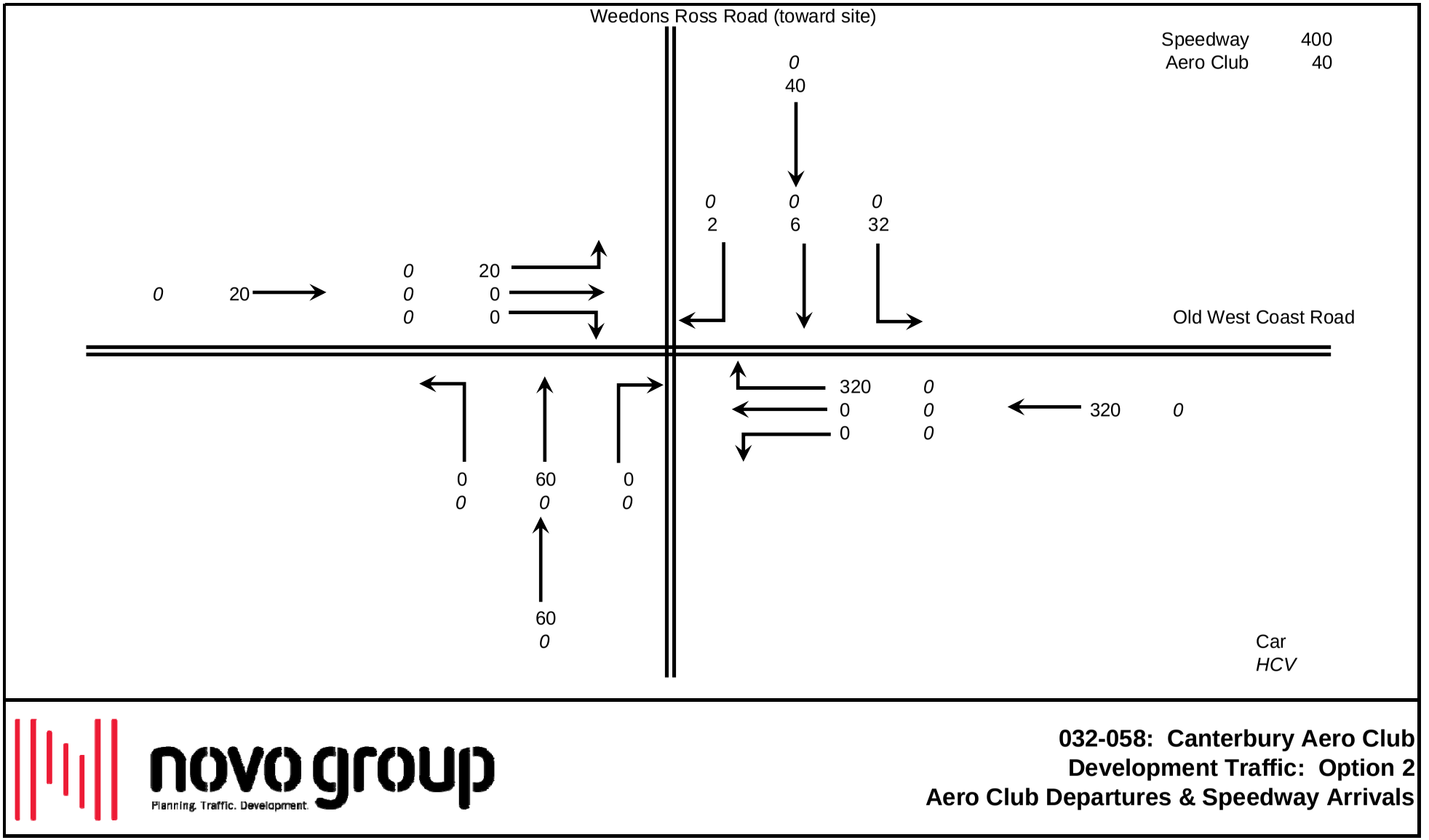
032-058: Canterbury Aero Club
Development Traffic: Option 1
Aero Club Arrivals & Speedway Departures



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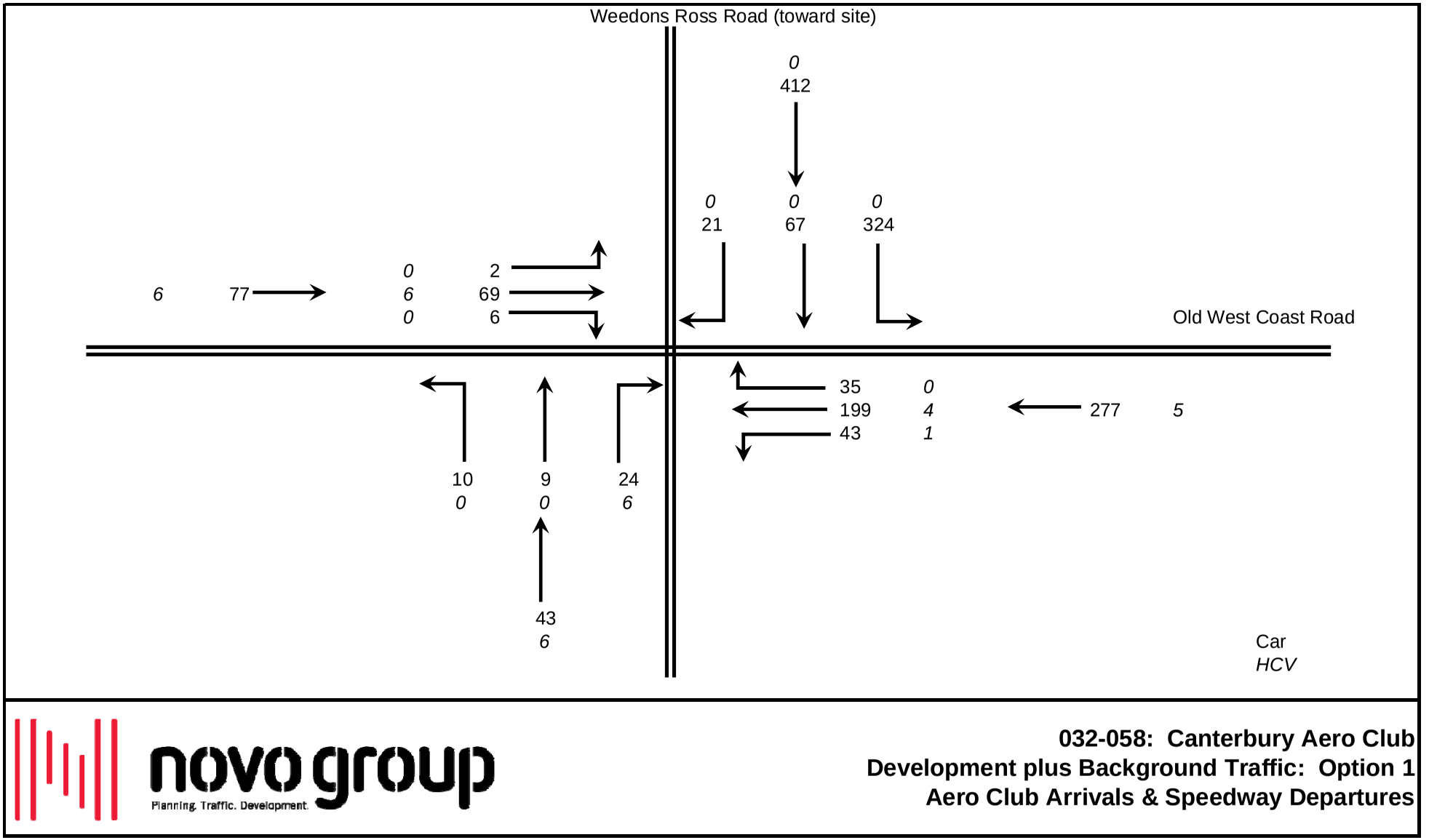
032-058: Canterbury Aero Club
Development Traffic: Option 2
Aero Club Departures & Speedway Arrivals



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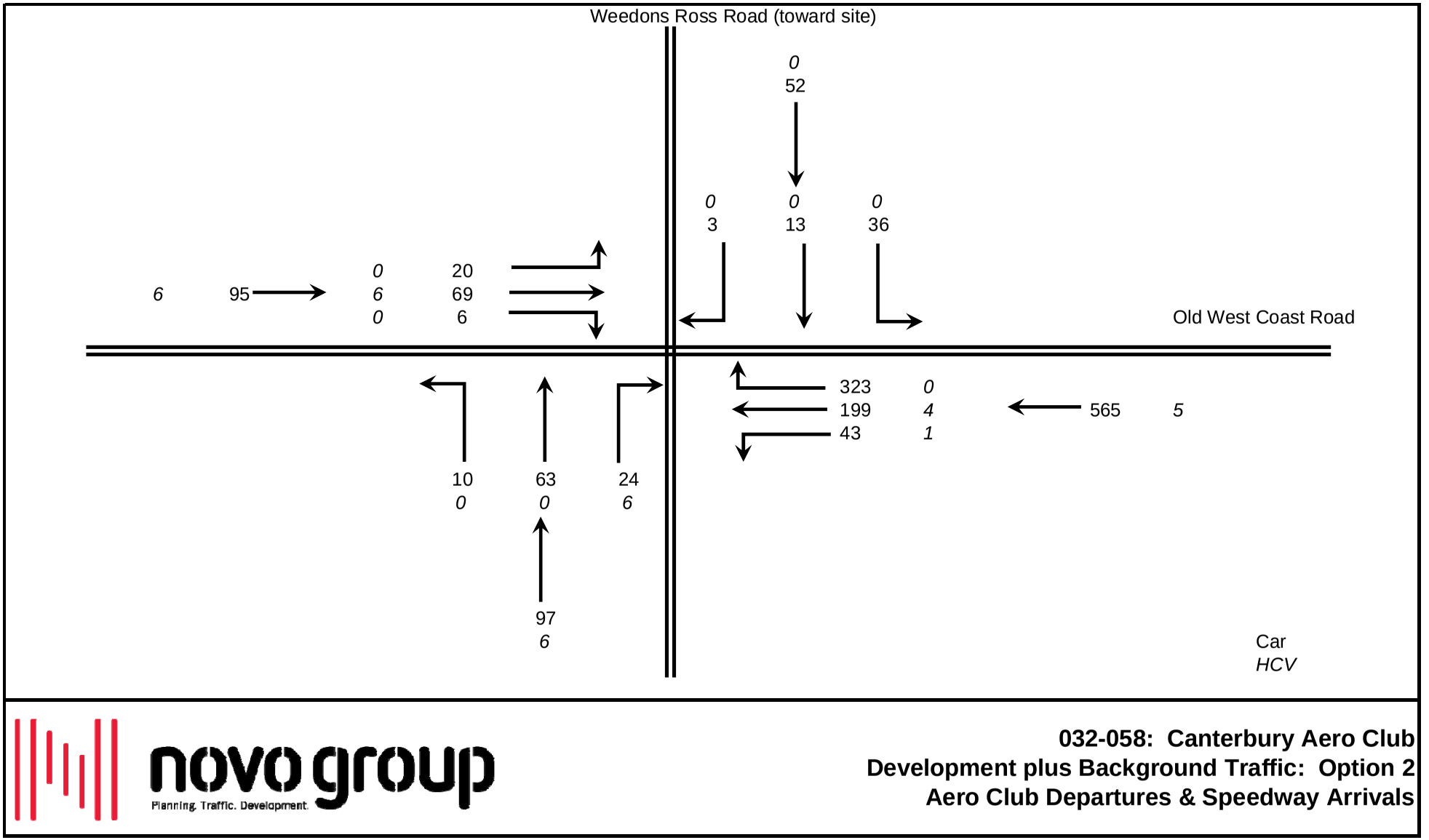
032-058: Canterbury Aero Club
Development plus Background Traffic: Option 1
Aero Club Arrivals & Speedway Departures



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032-058: Canterbury Aero Club
Development plus Background Traffic: Option 2
Aero Club Departures & Speedway Arrivals

Attachment 2: Existing Intersection Operation

MOVEMENT SUMMARY

Site: 101 [Weedons Ross / Old West Coast - Base PM]

New Site
Site Category: (None)
Stop (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	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
South: Weedons Ross Rd												
1	L2	11	0.0	0.065	10.4	LOS B	0.2	1.8	0.40	0.91	0.40	70.3
2	T1	3	0.0	0.065	10.8	LOS B	0.2	1.8	0.40	0.91	0.40	70.0
3	R2	32	20.0	0.065	13.1	LOS B	0.2	1.8	0.40	0.91	0.40	63.8
Approach		45	14.0	0.065	12.3	LOS B	0.2	1.8	0.40	0.91	0.40	65.6
East: Old West Coast Rd												
4	L2	46	2.3	0.138	7.9	LOS A	0.0	0.2	0.01	0.13	0.01	84.4
5	T1	214	2.0	0.138	0.0	LOS A	0.0	0.2	0.01	0.13	0.01	96.0
6	R2	3	0.0	0.138	7.7	LOS A	0.0	0.2	0.01	0.13	0.01	85.1
Approach		263	2.0	0.138	1.5	NA	0.0	0.2	0.01	0.13	0.01	93.6
North: Weedons Ross Rd												
7	L2	4	0.0	0.014	9.8	LOS A	0.0	0.3	0.25	0.92	0.25	72.1
8	T1	7	0.0	0.014	10.9	LOS B	0.0	0.3	0.25	0.92	0.25	71.8
9	R2	1	0.0	0.014	10.8	LOS B	0.0	0.3	0.25	0.92	0.25	71.6
Approach		13	0.0	0.014	10.5	LOS B	0.0	0.3	0.25	0.92	0.25	71.9
West: Old West Coast Rd												
10	L2	1	0.0	0.048	8.6	LOS A	0.0	0.4	0.07	0.06	0.07	86.4
11	T1	79	8.0	0.048	0.1	LOS A	0.0	0.4	0.07	0.06	0.07	97.2
12	R2	6	0.0	0.048	8.5	LOS A	0.0	0.4	0.07	0.06	0.07	86.2
Approach		86	7.3	0.048	0.8	NA	0.0	0.4	0.07	0.06	0.07	96.2
All Vehicles		407	4.4	0.138	2.8	NA	0.2	1.8	0.07	0.22	0.07	89.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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.

Attachment 3: Predicted Intersection Operation

MOVEMENT SUMMARY

Site: 101 [Weedons Ross / Old West Coast - Development PM - Opt 1]

New Site
Site Category: (None)
Stop (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	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
South: Weedons Ross Rd												
1	L2	11	0.0	0.123	10.4	LOS B	0.4	3.1	0.53	0.95	0.53	65.4
2	T1	9	0.0	0.123	11.1	LOS B	0.4	3.1	0.53	0.95	0.53	65.1
3	R2	32	20.0	0.123	20.0	LOS C	0.4	3.1	0.53	0.95	0.53	59.8
Approach		52	12.2	0.123	16.4	LOS C	0.4	3.1	0.53	0.95	0.53	61.8
East: Old West Coast Rd												
4	L2	46	2.3	0.159	8.0	LOS A	0.3	2.2	0.07	0.18	0.07	82.5
5	T1	214	2.0	0.159	0.1	LOS A	0.3	2.2	0.07	0.18	0.07	93.6
6	R2	37	0.0	0.159	7.7	LOS A	0.3	2.2	0.07	0.18	0.07	83.2
Approach		297	1.8	0.159	2.3	NA	0.3	2.2	0.07	0.18	0.07	90.3
North: Weedons Ross Rd												
7	L2	341	0.0	0.379	10.0	LOS A	2.0	13.7	0.24	0.91	0.24	72.1
8	T1	71	0.0	0.379	12.4	LOS B	2.0	13.7	0.24	0.91	0.24	71.8
9	R2	22	0.0	0.379	12.5	LOS B	2.0	13.7	0.24	0.91	0.24	71.7
Approach		434	0.0	0.379	10.5	LOS B	2.0	13.7	0.24	0.91	0.24	72.0
West: Old West Coast Rd												
10	L2	2	0.0	0.048	8.5	LOS A	0.1	0.4	0.07	0.06	0.07	86.2
11	T1	79	8.0	0.048	0.1	LOS A	0.1	0.4	0.07	0.06	0.07	96.9
12	R2	6	0.0	0.048	8.5	LOS A	0.1	0.4	0.07	0.06	0.07	86.0
Approach		87	7.2	0.048	0.9	NA	0.1	0.4	0.07	0.06	0.07	95.8
All Vehicles		869	2.1	0.379	7.1	NA	2.0	13.7	0.18	0.58	0.18	78.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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 SUMMARY

Site: 101 [Weedons Ross / Old West Coast - Development PM - Opt 2]

New Site
Site Category: (None)
Stop (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	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
South: Weedons Ross Rd												
1	L2	11	0.0	0.239	10.7	LOS B	0.9	6.5	0.61	1.01	0.66	65.5
2	T1	66	0.0	0.239	15.1	LOS C	0.9	6.5	0.61	1.01	0.66	65.2
3	R2	32	20.0	0.239	20.4	LOS C	0.9	6.5	0.61	1.01	0.66	59.8
Approach		108	5.8	0.239	16.2	LOS C	0.9	6.5	0.61	1.01	0.66	63.6
East: Old West Coast Rd												
4	L2	46	2.3	0.345	8.3	LOS A	2.1	14.8	0.26	0.40	0.26	76.5
5	T1	214	2.0	0.345	0.4	LOS A	2.1	14.8	0.26	0.40	0.26	86.0
6	R2	340	0.0	0.345	7.9	LOS A	2.1	14.8	0.26	0.40	0.26	77.1
Approach		600	0.9	0.345	5.2	NA	2.1	14.8	0.26	0.40	0.26	80.0
North: Weedons Ross Rd												
7	L2	38	0.0	0.064	9.8	LOS A	0.2	1.6	0.20	0.93	0.20	70.7
8	T1	14	0.0	0.064	14.6	LOS B	0.2	1.6	0.20	0.93	0.20	70.4
9	R2	3	0.0	0.064	16.0	LOS C	0.2	1.6	0.20	0.93	0.20	70.3
Approach		55	0.0	0.064	11.4	LOS B	0.2	1.6	0.20	0.93	0.20	70.6
West: Old West Coast Rd												
10	L2	21	0.0	0.059	8.1	LOS A	0.1	0.5	0.07	0.17	0.07	83.6
11	T1	79	8.0	0.059	0.1	LOS A	0.1	0.5	0.07	0.17	0.07	93.7
12	R2	6	0.0	0.059	8.5	LOS A	0.1	0.5	0.07	0.17	0.07	83.4
Approach		106	5.9	0.059	2.2	NA	0.1	0.5	0.07	0.17	0.07	90.9
All Vehicles		869	2.1	0.345	6.6	NA	2.1	14.8	0.28	0.48	0.28	78.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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