

09 February 2024

Sarah Haydock
Goodman Nominee (NZ) Ltd
PO Box 90940
Victoria Street West
AUCKLAND 1142

Dear Sarah

WAITOMOKIA ESTATE PLAN CHANGE – TRANSPORT CLAUSE 23 RESPONSES

Flow Transportation Specialists Limited (Flow) has prepared this letter responding to the transport-related Clause 23 Requests for Further Information (RFI) received from Auckland Council (Council) on the proposed Waitomokia Estate Plan Change in Mangere, Auckland (the Site).

Following engagement with Council, we understand that the Council RFI includes requests received from Auckland Transport, therefore no further requests on transport matters are expected. The RFI includes four transport related requests. Each request is copied below in italics with the same numbering as per Council's RFI. Our responses are directly below each item.

Responses to transport related Section 92 RFI

Council's request item 7 (a) (i) - Traffic and trip generation effects

Please provide further information which assesses trip generation effects and associated traffic patterns which would result from a range of potential land-use development scenarios enabled by the proposed precinct provisions and underlying AUP Business –Light Industry Zone provisions, and the assessed scenarios should be representative of the range of business, commercial and ancillary/complementary land uses enabled by these provisions.

The potential land-use development scenarios assessed should include permitted, controlled and restricted discretionary activities which are generally anticipated by the AUP in the existing environment (as per AUP Chapter A1.7.3) and also take into account corresponding building height standards which vary across the proposed precinct when assessing associated development capacities for each sub-precinct.

NB The requested information could include sensitivity testing which considers land use activities resulting in greater weekday peak hour traffic effects, such as more intense office development, and activities resulting in greater off peak traffic effects, such as commercial activities and ancillary/complementary land uses enabled by the proposed precinct provisions and underlying AUP Business – Light Industry Zone provisions.

Flow's response

As we noted in Section 2 of our ITA, the plan change does not enable any additional potential land-uses other than the existing zoning of the plan change site, which is already zoned Light Industry Business zone. As such, the proposed precinct provisions do not enable additional traffic demand that is already enabled by the current zoning and therefore the existing 'baseline' situation.

Furthermore, we consider that the trip generation estimation as outlined in Section 5.1.2 in our ITA reflects the development potential of the site.

Rather than looking at different trip generation scenarios (that would in any case be assessed at the resource consent stage of each development), we have undertaken a sensitivity analysis of the Montgomerie Road access and Montgomerie Road / Pavilion Drive intersection (the capacity analysis of this intersection is outlined in the response below).

Our findings are that the Montgomerie Road access could accommodate an additional 20 % of trips entering and exiting the site, whereas the Montgomerie Road / Pavilion Drive intersection could accommodate more than 50 % additional in and outbound trips at the intersection. We have attached the Sidra results as Appendix A. These results are based on the assumption that a level of service (LOS) no worse than a LOS D is maintained for any movement.

In terms of what this means for the actual trip generation associated with the Montgomerie Road access and Montgomerie Road / Pavilion Drive intersection, we have outlined the increased values compared to the trip generation outlined in our ITA in Table 1 below.

Table 1: Trip generation sensitivity (vehicles per hour)

Access	Trip generation	Morning Peak	Afternoon Peak
		Hourly Trips	Hourly Trips
Montgomerie Road	As per ITA	749	669
	Additional trips that could be accommodated at the access point	135	121
	<i>Sub-total</i>	<i>884</i>	<i>790</i>
Montgomerie Road / Pavilion Drive intersection	As per ITA	58	53
	Additional trips that could be accommodated at the access point	211	169
	<i>Sub-total</i>	<i>269</i>	<i>222</i>
Total trips predicted per hour for the entire PC area		807	723
Total trips predicted per hour for the entire PC area (including sensitivity)		1153 (+346)	1012 (+289)

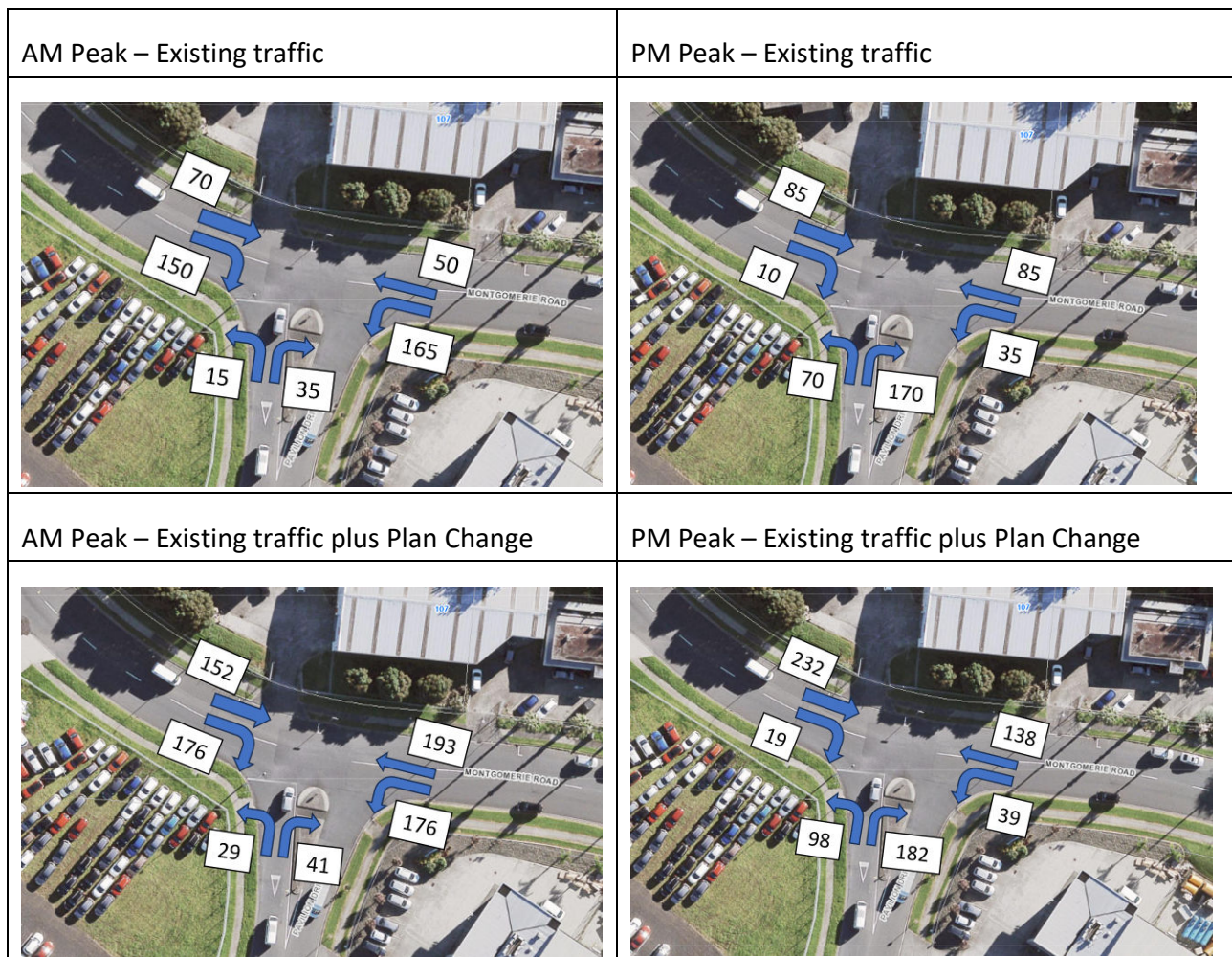
Council's request item 7 (a) (ii) - Traffic and trip generation effects

Please confirm traffic distribution assumptions and undertake a capacity assessment of the priority Pavilion Drive/ Montgomerie Road intersection for inclusion in the ITA.

Flow's response

We haven't specifically surveyed the Montgomerie Road / Pavilion Drive intersection, however, we have surveyed both the upstream and downstream intersections on Montgomerie Road as set out in Section 3.5 of our ITA. We have estimated the turning volumes in and out of Pavilion Drive on the basis that the traffic flows on Montgomerie Road are 'balanced'. Our calculated traffic volumes at the Montgomerie Road / Pavilion Drive intersection are summarised in Figure 1 below and include the morning and evening peak periods, without and with the plan change area traffic generation.

Figure 1: Montgomerie Road / Pavilion Drive intersection Traffic Counts



The same trip distribution as outlined in our ITA has been used, namely:

- ◆ A 70 % trip distribution to/ from Ascot Road (to the north)
- ◆ A 30 % trip distribution to/ from Richard Pearse Drive (to the south).

We have assessed the performance of the Montgomerie Road / Pavilion Drive intersection using Sidra, and can conclude that the capacity of the intersection remains acceptable with and without the plan change area traffic generation. The Sidra results are included in Appendix B.

Council's request item 7 (b)(i) - Proposed road access

Please provide the following further information for the proposed future access road onto Montgomerie Road and associated urban road frontage:

- *anticipated urban transport functions, including access for freight, public transport and pedestrians and active mode users (including provision of pedestrian and cycle facilities to the Oruarangi Rd/Ascot Rd roundabout intersection along the proposed urban road frontage), with any potential access for public transport being subject to engagement with Auckland Transport;*
- *key principles to inform it's likely future urban form and cross-section design, based on identified transport functions (e.g. provisions for on-street parking, public transport infrastructure if applicable, provisions for active mode users etc.) and how the proposed precinct provisions will incorporate these principles, particularly in relation to being designed for a low speed environment; and*
- *assessment of key principles for future intersection with Montgomerie Road, including an assessment of visibility, separation from any existing vehicle crossings or intersections, and potential for alternative intersection forms based on outcomes from any updated trip generation assessments provided in response to further information item 7(a)(i) above.*

NB The applicant is strongly encouraged to commence engagement with Auckland Transport as soon as practicably possible regarding the plan change and the interface/intersection connections proposed with the adjoining road network for which Auckland Transport is the Road Controlling Authority.

Flow's response

As discussed in Sections 5.3 to 5.5 the proposed plan change

- ◆ has the potential to lead to a small increase in public transport trips, particularly during peak hours. The distribution of these trips between different bus stop pairs on Richard Pearse Drive, which serves Bus Route 38, will depend on their origins/destinations
- ◆ is not projected to lead to a substantial increase in walking trips; any potential increase would primarily be linked to the walking components associated with public transport
- ◆ is not anticipated to result in a significant increase in cycling trips. Any potential new trips would likely utilise the SH20A shared path.

We note that the concept development example includes provisions for pedestrian connections between the plan change area and Montgomerie Road. This will include a kerb and channels as well as a footpath along the western side of Montgomerie Road, for the extent where the plan change area fronts Montgomerie Road. Where the footpath terminates, a suitable pedestrian crossing facility to

connect to the existing footpath network on the eastern side of Montgomerie Road will be provided. Furthermore, pedestrians and cyclists would have direct access to the SH20A shared path from the eastern end of Montgomerie Road.

We have prepared a concept design of the Montgomerie Road access, attached as Appendix C. The concept design identifies the appropriate location for access, pedestrian provision requirements across the access road in the form of a refuge island, like the one at the Pavilion Drive intersection, the extent of kerbs required and where parking restrictions are required to enable the required sight lines at the newly formed intersection. We emphasise that this is a concept design and detailed elements will be confirmed and designed at subsequent resource consent stages. The concept design purely outlines the location that enables sufficient sight lines with an indication of how pedestrian and parking provisions along Montgomerie Road may look.

We consider a stop-controlled T-shaped intersection to be the most appropriate intersection form that will facilitate heavy vehicle movements in and out of the plan change area. The stop-controlled intersection could operate with sufficient capacity as outlined in our ITA, with appropriate sight line provisions in both directions for a design speed of 60km/hr (10 km/hr above the posted speed limit). The provision of kerb and channel on the western side of Montgomerie Road will further contribute to reflecting the urban nature of the road and a calmer traffic environment. Given the industrial nature of the area, vertical traffic calming devices are not recommended.

As outlined in the concept design safe intersection sight distances (SISD) of 138 m to the north and 133 m to the south are achieved along Montgomerie Road, reflecting sufficient SISD for an operating speed of 50 km/hr (design speed of 60 km/hr and consideration of vertical alignment).

We also consider that the existing vehicle crossing on the eastern side of the proposed intersection can continue to operate safely. We don't consider the proposed intersection to significantly impact the existing vehicle crossing as opposing right turn traffic into the new intersection and existing vehicle crossing will not conflict, with sufficient visibility being available that will ensure safe manoeuvring.

Council's request item 7 (b)(ii) - Proposed road access

(ii) Please provide the following further information for the proposed accessways onto Pavilion Drive:

- confirmation that they will not facilitate through access to Montgomerie Road, otherwise specify mitigation measures to enforce their function of only facilitating local access;*
- in relation to intersections with Pavilion Drive, mitigation measures to enforce the 'no right turn outbound' access arrangements, with consideration of a similar 'no right-turn inbound'.*
- restriction also being recommended as a mitigation measure for ensuring safe vehicle movements on-site from Pavilion Drive as development progresses within the proposed precinct; and*
- assess traffic effects of proposed left-in/left-out arrangement on traffic distribution analysis (cross-reference with further information item 7(a)(ii) above).*

NB The applicant is strongly encouraged to commence engagement with Auckland Transport as soon as practicably possible regarding the plan change and the interface/intersection connections proposed with the adjoining road network for which Auckland Transport is the Road Controlling Authority

Flow's response

We confirm that there will be no through traffic between Pavilion Drive and Montgomerie Road facilitated within the plan change area.

Even though specific accessway conditions like the restrictions recommended by Auckland Transport are considered a design matter that could be dealt with at the resource consent stage, we consider that there is no need to restrict vehicle movements at the Pavilion Drive accessway, as sufficient sight lines exist as illustrated in Figure 2 and Figure 3. Although the existing accessway already operates with an outbound left turn-only arrow, we have considered sight lines towards the southeast of the accessway as well.

Figure 2: Sight line assessment for the existing Pavilion Drive access - right turn-in movements

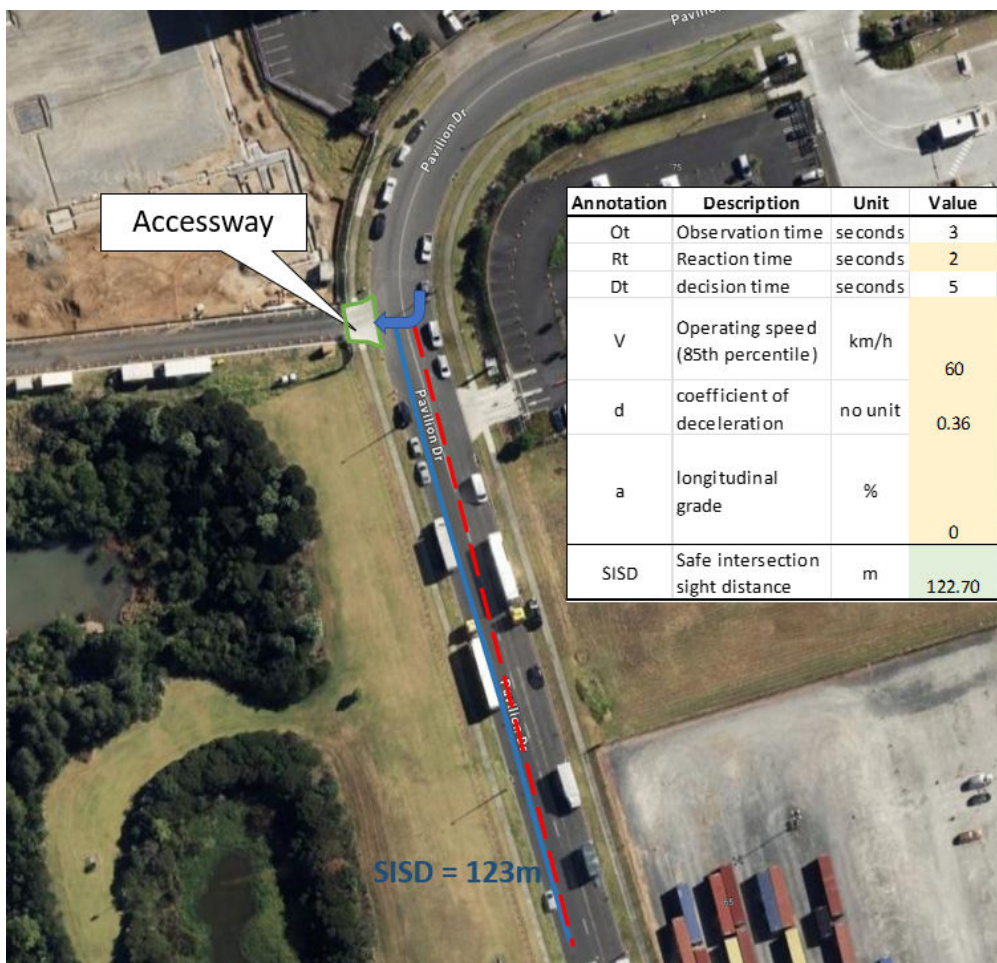
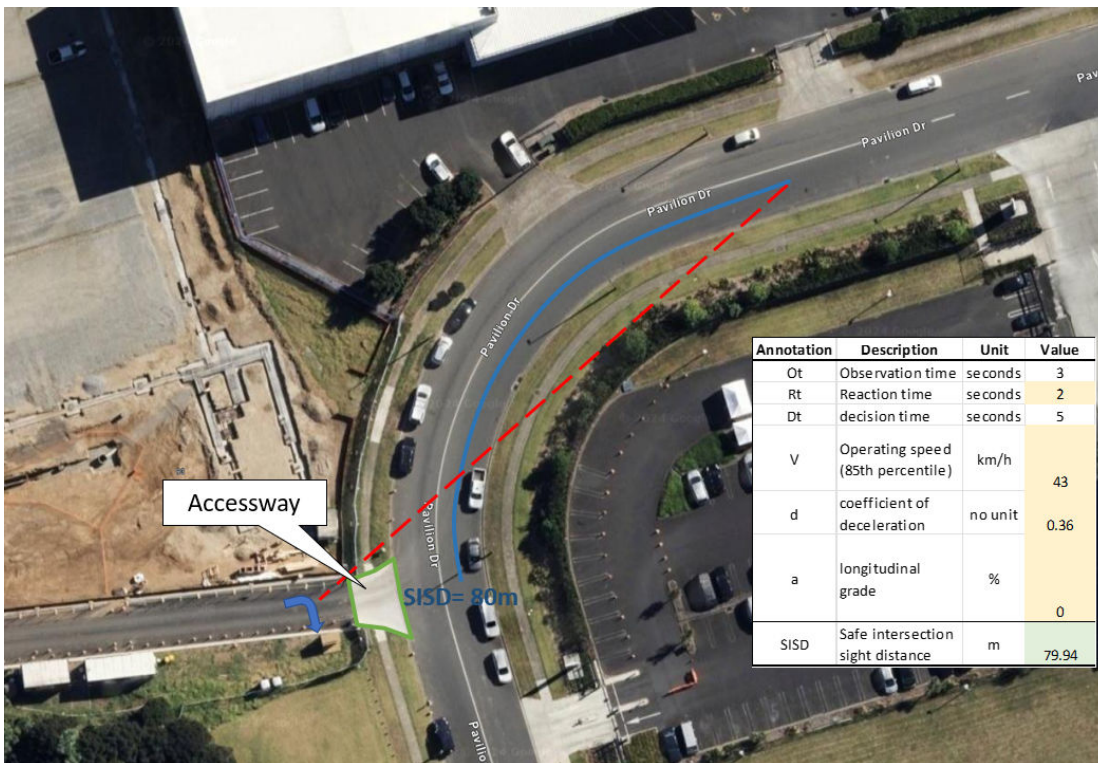


Figure 3: Sight line assessment for the existing Pavilion Drive access - right turn-out movements



We note that the inside of the Pavilion Drive corner now has parking restrictions that enable good visibility towards the southeast. Considering an operational speed of just above 40 km/hr around the corner on Pavilion Drive, about 80 m SISD exists towards the southeast for drivers wanting to turn right out of the accessway.

Furthermore, SISD of about 120 m (with an operational speed of up to 60 km/hr) exists towards the north for drivers wanting to turn right into the accessway from Pavilion Drive.

We consider that the trips expected at this accessway will remain low with the plan change area equating to maximum vehicle trips of around 50-60 veh/hr in the peak periods. As such, the accessway could continue to operate safely.

Yours sincerely

Gerhard van der Westhuizen
PRINCIPLE TRANSPORTATION ENGINEER

Cc: Ben Shaw (email)

Reference: P:\good\015 Waitomokia Estate Plan Change Transport Assessment\4.0 Reporting\cl23 response\L1A240209 cl23 response.docx - Gerhard.Vdwesthuizen@flownz.com

Appendix A: Sensitivity analysis Sidra results

MOVEMENT SUMMARY

**Site: 101v [PC Main Access PM - Conversion 1.18 growth
(Site Folder: General (70/30))]**

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
South: Montgomerie Rd S														
1	L2	53	30.0	66	30.0	0.163	4.9	LOS A	0.0	0.0	0.00	0.13	0.00	48.2
2	T1	186	30.0	196	30.0	0.163	0.1	LOS A	0.0	0.0	0.00	0.13	0.00	49.2
Approach		239	30.0	262	30.0	0.163	1.3	NA	0.0	0.0	0.00	0.13	0.00	48.9
North: Montgomerie Rd N														
8	T1	106	30.0	112	30.0	0.207	1.4	LOS A	1.1	9.6	0.44	0.37	0.44	47.2
9	R2	124	30.0	154	30.0	0.207	6.5	LOS A	1.1	9.6	0.44	0.37	0.44	45.8
Approach		230	30.0	266	30.0	0.207	4.3	NA	1.1	9.6	0.44	0.37	0.44	46.4
West: PC Access Road														
10	L2	344	30.0	427	30.0	0.807	17.4	LOS C	12.6	110.8	0.71	1.33	1.64	40.0
12	R2	147	30.0	183	30.0	0.807	24.3	LOS C	12.6	110.8	0.71	1.33	1.64	39.6
Approach		491	30.0	610	30.0	0.807	19.4	LOS C	12.6	110.8	0.71	1.33	1.64	39.9
All Vehicles		960	30.0	1137	30.0	0.807	11.7	NA	12.6	110.8	0.48	0.83	0.98	43.1

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.
 Delay Model: SIDRA Standard (Geometric Delay is included).
 Queue Model: SIDRA Standard.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101v [PC Main Access AM - Conversion 1.18 growth (Site Folder: General (70/30))]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
South: Montgomerie Rd S														
1	L2	143	30.0	178	30.0	0.166	4.9	LOS A	0.0	0.0	0.00	0.36	0.00	47.0
2	T1	77	30.0	81	30.0	0.166	0.1	LOS A	0.0	0.0	0.00	0.36	0.00	47.9
Approach		220	30.0	259	30.0	0.166	3.4	NA	0.0	0.0	0.00	0.36	0.00	47.3
North: Montgomerie Rd N														
8	T1	245	30.0	258	30.0	0.530	3.0	LOS A	5.6	49.1	0.60	0.50	0.79	46.2
9	R2	334	30.0	415	30.0	0.530	8.2	LOS A	5.6	49.1	0.60	0.50	0.79	44.9
Approach		579	30.0	673	30.0	0.530	6.2	NA	5.6	49.1	0.60	0.50	0.79	45.4
West: PC Access Road														
10	L2	190	30.0	236	30.0	0.648	15.2	LOS C	5.8	51.2	0.34	1.08	0.71	39.0
12	R2	82	30.0	100	30.0	0.648	34.4	LOS D	5.8	51.2	0.34	1.08	0.71	38.7
Approach		272	30.0	336	30.0	0.648	20.9	LOS C	5.8	51.2	0.34	1.08	0.71	38.9
All Vehicles		1071	30.0	1268	30.0	0.648	9.5	NA	5.8	51.2	0.41	0.63	0.61	43.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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 Delay Model: SIDRA Standard (Geometric Delay is included).
 Queue Model: SIDRA Standard.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: PM [PM (Site Folder: Existing + Site - Sensitivity (50% in/outbound movements))]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %				[Veh. veh	Dist] m				
South: Pavilion Dr														
1	L2	98	30.0	155	30.0	0.581	7.7	LOS A	4.4	38.6	0.52	0.85	0.83	43.2
3	R2	182	30.0	287	30.0	0.581	11.7	LOS B	4.4	38.6	0.52	0.85	0.83	43.3
Approach		280	30.0	442	30.0	0.581	10.3	LOS B	4.4	38.6	0.52	0.85	0.83	43.3
East: Montgomerie Rd (East)														
4	L2	39	30.0	62	30.0	0.119	4.9	LOS A	0.0	0.0	0.00	0.16	0.00	48.1
5	T1	138	30.0	145	30.0	0.119	0.0	LOS A	0.0	0.0	0.00	0.16	0.00	49.0
Approach		177	30.0	207	30.0	0.119	1.5	NA	0.0	0.0	0.00	0.16	0.00	48.8
West: Montgomerie Rd (West)														
11	T1	232	30.0	244	30.0	0.163	0.2	LOS A	0.3	2.6	0.11	0.06	0.11	49.3
12	R2	19	30.0	30	30.0	0.163	6.0	LOS A	0.3	2.6	0.11	0.06	0.11	48.5
Approach		251	30.0	274	30.0	0.163	0.8	NA	0.3	2.6	0.11	0.06	0.11	49.3
All Vehicles		708	30.0	923	30.0	0.581	5.5	NA	4.4	38.6	0.28	0.46	0.43	46.1

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.
 Delay Model: SIDRA Standard (Geometric Delay is included).
 Queue Model: SIDRA Standard.
 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 [AM (Site Folder: Existing + Site - Sensitivity (50% in/outbound movements))]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %				[Veh. veh	Dist] m				
South: Pavilion Dr														
1	L2	29	30.0	46	30.0	0.216	5.9	LOS A	0.7	6.5	0.50	0.69	0.50	43.3
3	R2	41	30.0	65	30.0	0.216	13.3	LOS B	0.7	6.5	0.50	0.69	0.50	43.4
Approach		70	30.0	111	30.0	0.216	10.2	LOS B	0.7	6.5	0.50	0.69	0.50	43.3
East: Montogomerie Rd (East)														
4	L2	176	30.0	278	30.0	0.281	4.9	LOS A	0.0	0.0	0.00	0.31	0.00	47.2
5	T1	193	30.0	203	30.0	0.281	0.1	LOS A	0.0	0.0	0.00	0.31	0.00	48.1
Approach		369	30.0	481	30.0	0.281	2.9	NA	0.0	0.0	0.00	0.31	0.00	47.6
West: Montogomerie Rd (West)														
11	T1	152	30.0	160	30.0	0.441	5.2	LOS A	3.6	31.9	0.69	0.62	0.97	44.9
12	R2	176	30.0	278	30.0	0.441	10.3	LOS B	3.6	31.9	0.69	0.62	0.97	44.3
Approach		328	30.0	438	30.0	0.441	8.4	NA	3.6	31.9	0.69	0.62	0.97	44.5
All Vehicles		767	30.0	1029	30.0	0.441	6.0	NA	3.6	31.9	0.35	0.48	0.47	45.8

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.
 Delay Model: SIDRA Standard (Geometric Delay is included).
 Queue Model: SIDRA Standard.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

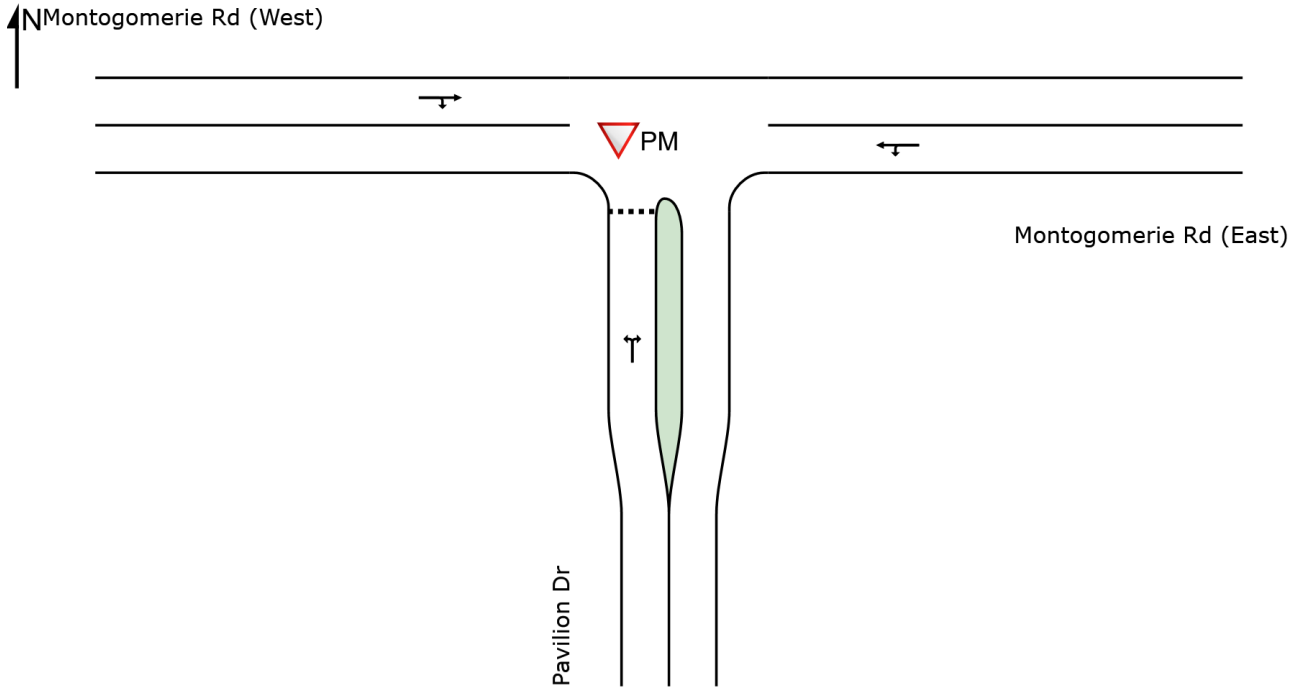
Appendix B: Montgomerie Road / Pavilion Drive intersection Sidra results

SITE LAYOUT

▼ Site: PM [PM (Site Folder: Existing + Site)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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Organisation: FLOW TRANSPORTATION SPECIALIST LIMITED | Licence: NETWORK / 1PC | Created: Thursday, 25 January 2024 2:00:56 pm

Project: P:\good\015 Waitomokia Estate Plan Change Transport Assessment\7.0 Assessment\Sidras\SID1A240124 - Pavilion_Montgomerie.sip9

MOVEMENT SUMMARY

Site: 101 [AM (Site Folder: Existing)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
South: Pavilion Dr														
1	L2	15	30.0	16	30.0	0.064	5.1	LOS A	0.2	1.9	0.22	0.55	0.22	45.2
3	R2	35	30.0	37	30.0	0.064	7.2	LOS A	0.2	1.9	0.22	0.55	0.22	45.3
Approach		50	30.0	53	30.0	0.064	6.6	LOS A	0.2	1.9	0.22	0.55	0.22	45.3
East: Montgomerie Rd (East)														
4	L2	165	30.0	174	30.0	0.134	4.9	LOS A	0.0	0.0	0.00	0.40	0.00	46.8
5	T1	50	30.0	53	30.0	0.134	0.0	LOS A	0.0	0.0	0.00	0.40	0.00	47.7
Approach		215	30.0	226	30.0	0.134	3.7	NA	0.0	0.0	0.00	0.40	0.00	47.0
West: Montgomerie Rd (West)														
11	T1	70	30.0	74	30.0	0.176	1.2	LOS A	0.9	8.2	0.41	0.40	0.41	46.9
12	R2	150	30.0	158	30.0	0.176	6.1	LOS A	0.9	8.2	0.41	0.40	0.41	46.2
Approach		220	30.0	232	30.0	0.176	4.6	NA	0.9	8.2	0.41	0.40	0.41	46.4
All Vehicles		485	30.0	511	30.0	0.176	4.4	NA	0.9	8.2	0.21	0.42	0.21	46.5

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.
 Delay Model: SIDRA Standard (Geometric Delay is included).
 Queue Model: SIDRA Standard.
 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 [PM (Site Folder: Existing)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
South: Pavilion Dr														
1	L2	70	30.0	74	30.0	0.260	5.3	LOS A	1.1	9.3	0.30	0.57	0.30	45.5
3	R2	170	30.0	179	30.0	0.260	6.3	LOS A	1.1	9.3	0.30	0.57	0.30	45.6
Approach		240	30.0	253	30.0	0.260	6.0	LOS A	1.1	9.3	0.30	0.57	0.30	45.6
East: Montgomerie Rd (East)														
4	L2	35	30.0	37	30.0	0.073	4.8	LOS A	0.0	0.0	0.00	0.16	0.00	48.1
5	T1	85	30.0	89	30.0	0.073	0.0	LOS A	0.0	0.0	0.00	0.16	0.00	49.1
Approach		120	30.0	126	30.0	0.073	1.4	NA	0.0	0.0	0.00	0.16	0.00	48.8
West: Montgomerie Rd (West)														
11	T1	85	30.0	89	30.0	0.059	0.1	LOS A	0.1	0.7	0.07	0.05	0.07	49.5
12	R2	10	30.0	11	30.0	0.059	5.4	LOS A	0.1	0.7	0.07	0.05	0.07	48.7
Approach		95	30.0	100	30.0	0.059	0.7	NA	0.1	0.7	0.07	0.05	0.07	49.4
All Vehicles		455	30.0	479	30.0	0.260	3.7	NA	1.1	9.3	0.18	0.35	0.18	47.1

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.
 Delay Model: SIDRA Standard (Geometric Delay is included).
 Queue Model: SIDRA Standard.
 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 [AM (Site Folder: Existing + Site)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
South: Pavilion Dr														
1	L2	29	30.0	31	30.0	0.118	5.9	LOS A	0.4	3.5	0.45	0.67	0.45	44.1
3	R2	41	30.0	43	30.0	0.118	10.4	LOS B	0.4	3.5	0.45	0.67	0.45	44.3
Approach		70	30.0	74	30.0	0.118	8.5	LOS A	0.4	3.5	0.45	0.67	0.45	44.2
East: Montgomerie Rd (East)														
4	L2	176	30.0	185	30.0	0.226	4.9	LOS A	0.0	0.0	0.00	0.25	0.00	47.5
5	T1	193	30.0	203	30.0	0.226	0.1	LOS A	0.0	0.0	0.00	0.25	0.00	48.5
Approach		369	30.0	388	30.0	0.226	2.4	NA	0.0	0.0	0.00	0.25	0.00	48.0
West: Montgomerie Rd (West)														
11	T1	152	30.0	160	30.0	0.292	2.6	LOS A	1.8	15.6	0.56	0.40	0.58	46.6
12	R2	176	30.0	185	30.0	0.292	7.8	LOS A	1.8	15.6	0.56	0.40	0.58	45.9
Approach		328	30.0	345	30.0	0.292	5.4	NA	1.8	15.6	0.56	0.40	0.58	46.2
All Vehicles		767	30.0	807	30.0	0.292	4.2	NA	1.8	15.6	0.28	0.35	0.29	46.9

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.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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Project: P:\good\015 Waitomokia Estate Plan Change Transport Assessment\7.0 Assessment\Sidras\SID1A240124 - Pavilion_Montgomerie.sip9

MOVEMENT SUMMARY

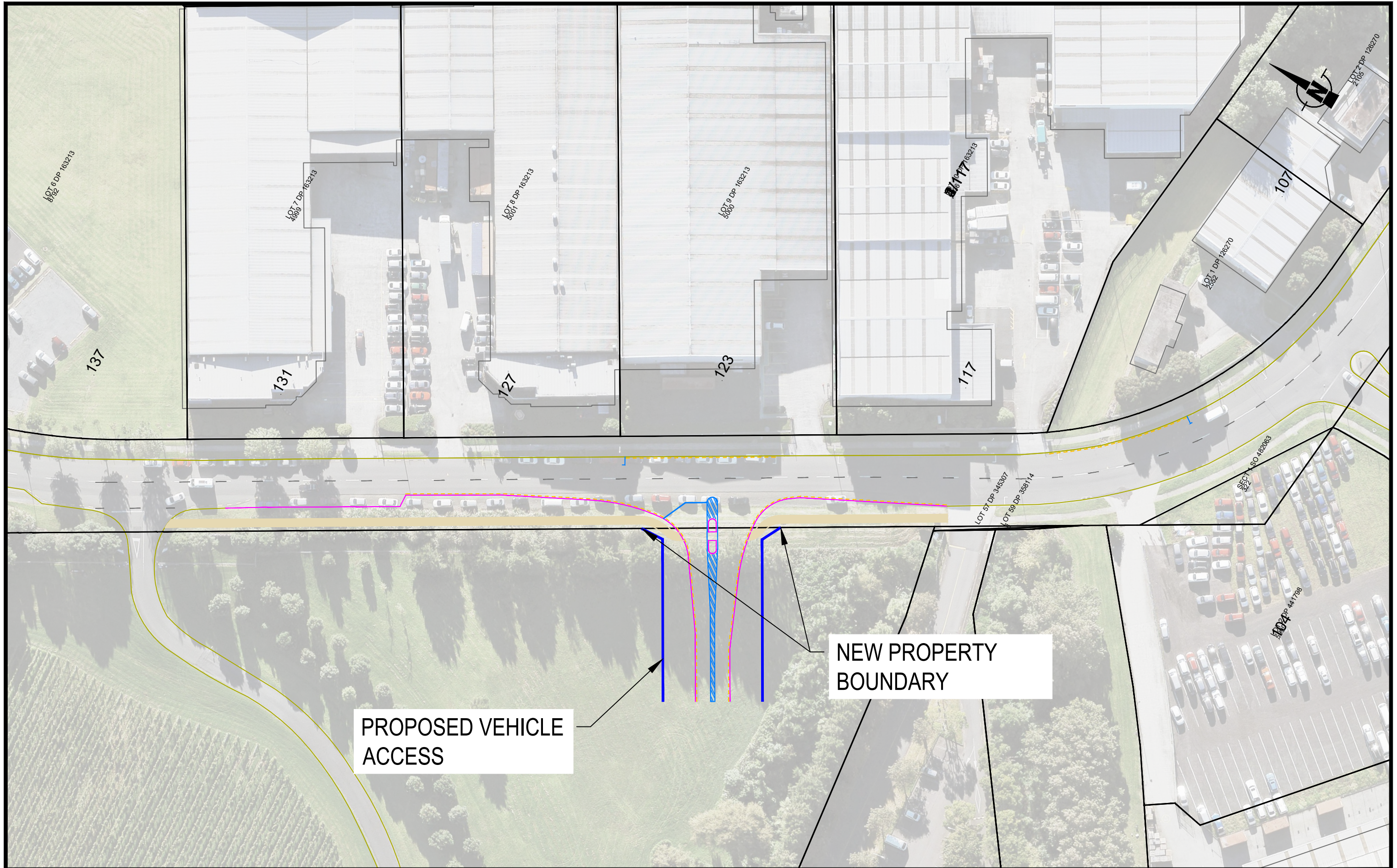
Site: PM [PM (Site Folder: Existing + Site)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
South: Pavilion Dr														
1	L2	98	30.0	103	30.0	0.379	6.2	LOS A	1.9	16.8	0.44	0.71	0.53	44.3
3	R2	182	30.0	192	30.0	0.379	9.3	LOS A	1.9	16.8	0.44	0.71	0.53	44.4
Approach		280	30.0	295	30.0	0.379	8.2	LOS A	1.9	16.8	0.44	0.71	0.53	44.4
East: Montgomerie Rd (East)														
4	L2	39	30.0	41	30.0	0.106	4.9	LOS A	0.0	0.0	0.00	0.12	0.00	48.3
5	T1	138	30.0	145	30.0	0.106	0.0	LOS A	0.0	0.0	0.00	0.12	0.00	49.3
Approach		177	30.0	186	30.0	0.106	1.1	NA	0.0	0.0	0.00	0.12	0.00	49.1
West: Montgomerie Rd (West)														
11	T1	232	30.0	244	30.0	0.154	0.1	LOS A	0.2	1.7	0.07	0.04	0.07	49.6
12	R2	19	30.0	20	30.0	0.154	5.9	LOS A	0.2	1.7	0.07	0.04	0.07	48.7
Approach		251	30.0	264	30.0	0.154	0.6	NA	0.2	1.7	0.07	0.04	0.07	49.5
All Vehicles		708	30.0	745	30.0	0.379	3.7	NA	1.9	16.8	0.20	0.33	0.24	47.2

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.
 Delay Model: SIDRA Standard (Geometric Delay is included).
 Queue Model: SIDRA Standard.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Appendix C: Montgomerie Road access concept design example



PROPOSED VEHICLE ACCESS

NEW PROPERTY BOUNDARY

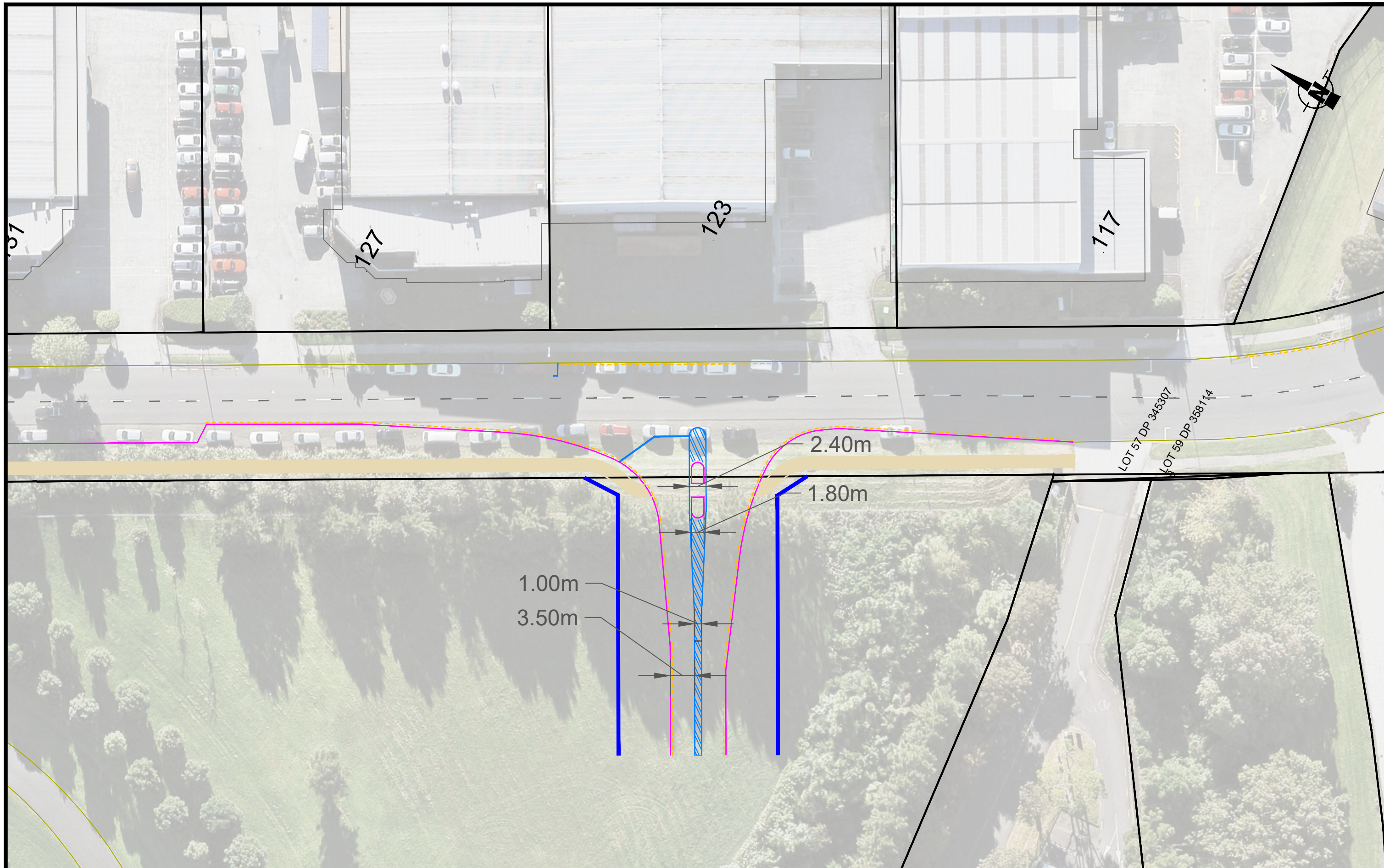
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CLIENT: CLIENT
 PROJECT: WAITOMOKIA ESTATE PLAN CHANGE TRANSPORT ASSESSMENT
 LOCATION: MONTGOMERIE ROAD, MĀNGERE
CONCEPT DESIGN

SHEET TITLE: **GENERAL LAYOUT**
 DRAWING NUMBER: GOOD015-MG-CD01-A

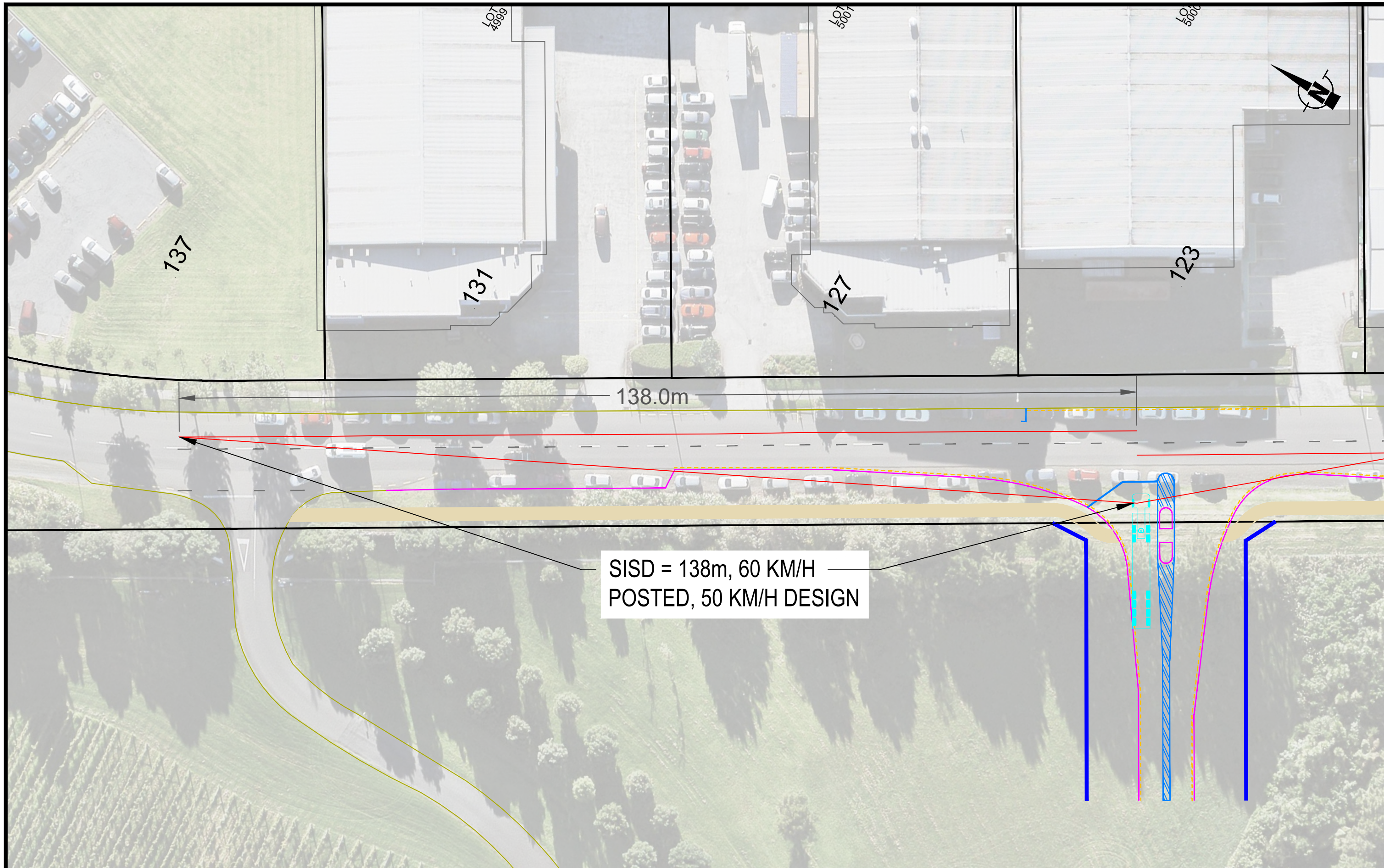
SHEET: 01 of 06
 REV: A

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REV	AMENDMENT	DATE OF ISSUE	DESIGN: GV	DRAWN: GV	CLIENT: CLIENT	SHEET TITLE: INTERSECTION LAYOUT DIMENSIONS	SHEET: 02 of 06
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			1:500 @ A3		CONCEPT DESIGN	DRAWING NUMBER: GOOD015-MG-CD01-A	REV: A

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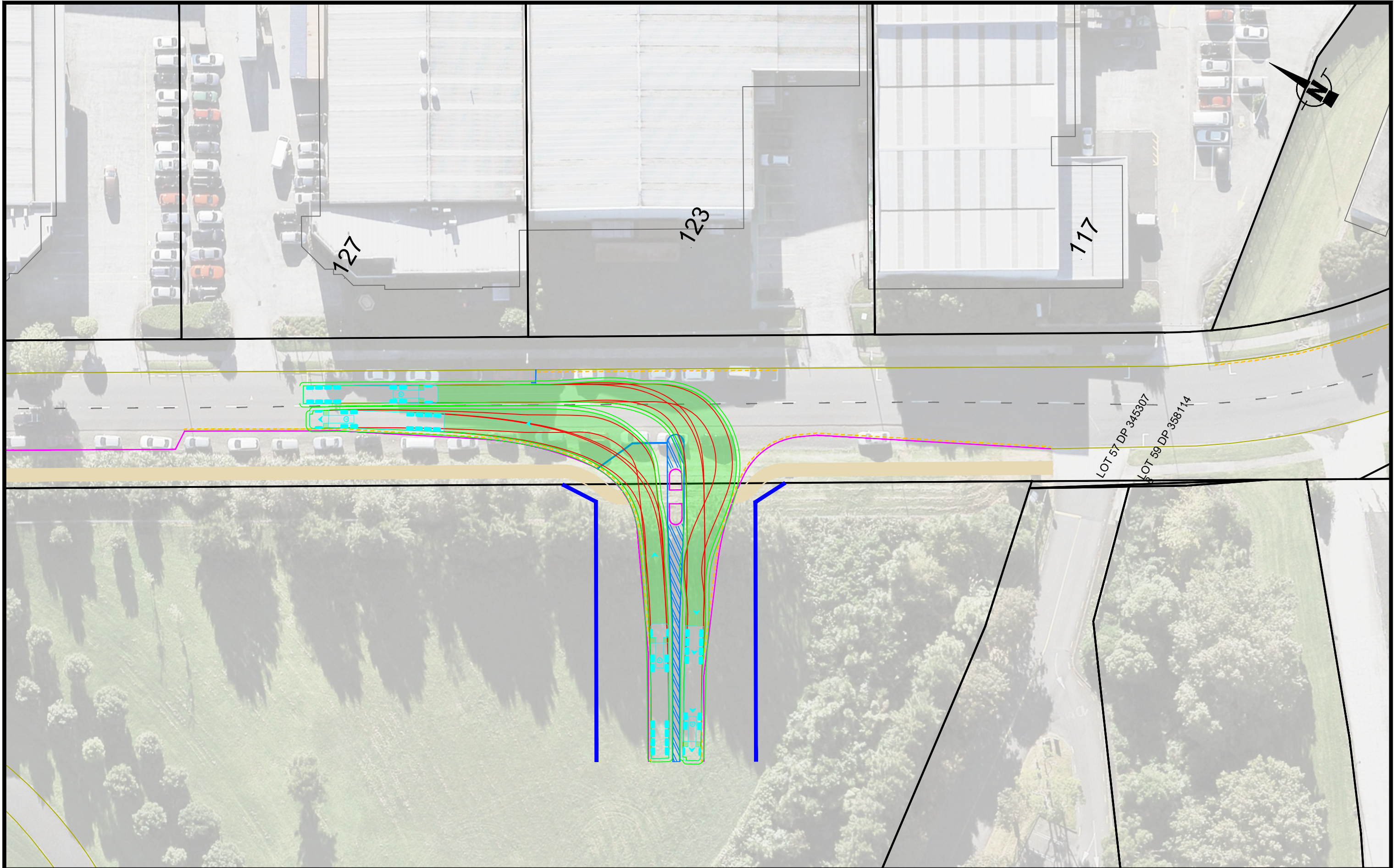
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CLIENT: GOODMAN
 PROJECT: WAITOMOKIA ESTATE PLAN CHANGE TRANSPORT ASSESSMENT
 LOCATION: MONTGOMERIE ROAD, MĀNGERE
CONCEPT DESIGN

SHEET TITLE: **NORTHBOUND SISD**
 DRAWING NUMBER: GOOD015-MG-CD01-A

SHEET: **03 of 06**
 REV: **A**

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REV	AMENDMENT	DATE OF ISSUE
A	First Issue	20/12/2023

DESIGN: GV	DRAWN: GV
CHECKED: TC	DATE: 20/12/2023
SCALE: 0 20m	
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CLIENT: GOODMAN
 PROJECT: WAITOMOKIA ESTATE PLAN CHANGE
 TRANSPORT ASSESSMENT
 LOCATION: MONTGOMERIE ROAD, MĀNGERE

CONCEPT DESIGN

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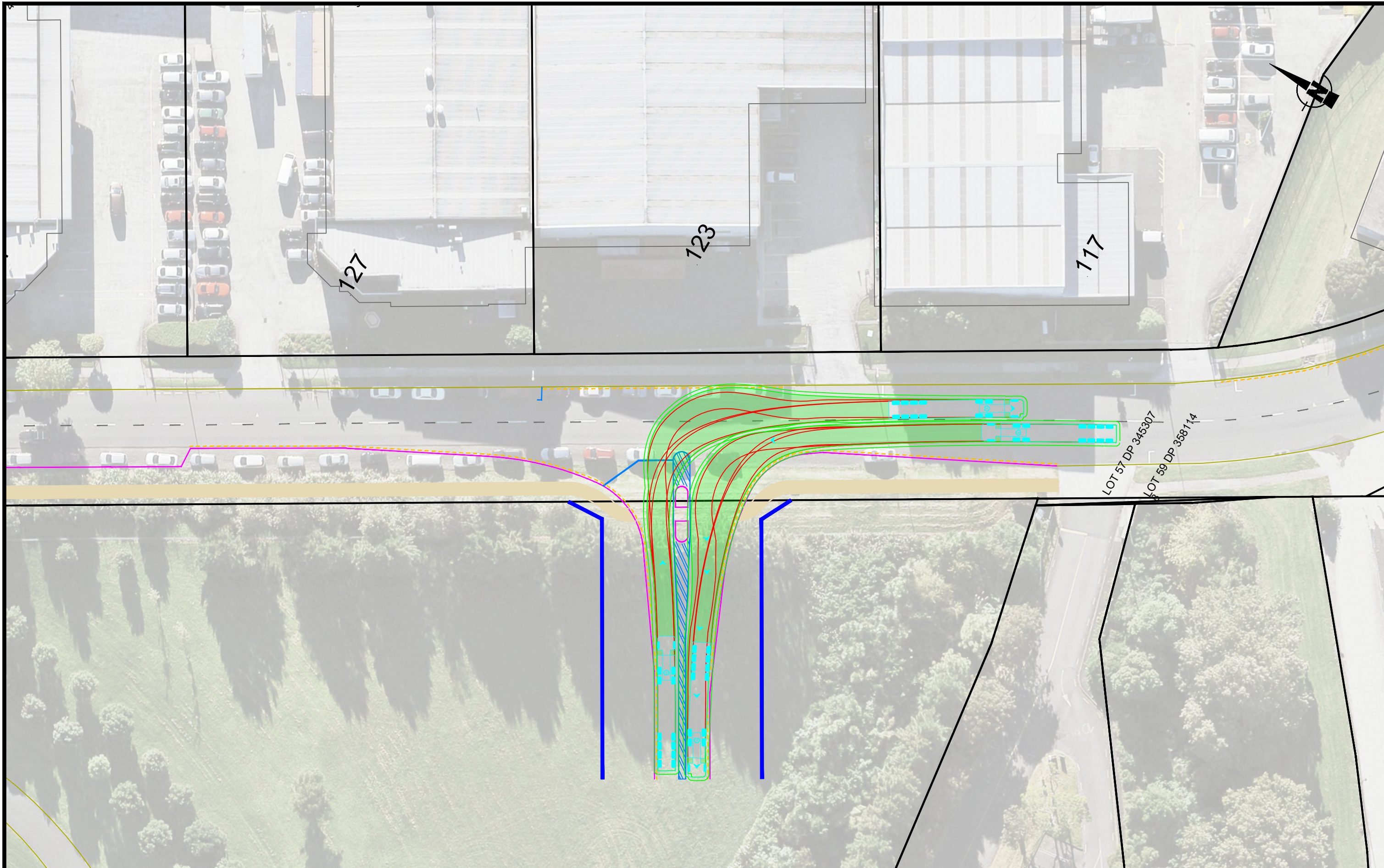
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SHEET: 05 of 06

REV: A

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REV	AMENDMENT	DATE OF ISSUE
A	First Issue	20/12/2023

DESIGN: GV	DRAWN: GV
CHECKED: TC	DATE: 20/12/2023

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CLIENT: GOODMAN
 PROJECT: WAITOMOKIA ESTATE PLAN CHANGE
 TRANSPORT ASSESSMENT
 LOCATION: MONTGOMERIE ROAD, MĀNGERE

CONCEPT DESIGN

SHEET TITLE: TRACKING - 02

DRAWING NUMBER: GOOD015-MG-CD01-A

SHEET: 06 of 06

REV: A

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