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TRANSPORTATION SPECIALISTS

technical note

PROJECT	**VARIATION 1 TO THE PROPOSED DISTRICT PLAN: REZONING SUBMISSIONS**
SUBJECT	**REVIEW OF V1-0068 TRANSPORT REBUTTAL EVIDENCE**
TO	**VICKI BARKER; JUSTINE ASHLEY**
FROM	MAT COLLINS
DATE	13 JUNE 2023

SUMMARY OF MY PEER REVIEW

Flow Transportation Specialists Ltd (Flow) has been engaged by Selwyn District Council (Council) to provide transport planning and transport engineering advice regarding Variation 1 to the Proposed District Plan (PDP). The Proposed District Plan Variation was notified in August 2022, with numerous submissions being received seeking the re-zoning of land.

Council had requested that I review transport matters associated with V1-0068, which I provided on 27 March 2023 (Flow reference T3C230327). In response to my review, Mr Rossiter (Transport Engineer acting for submitter V1-0068) has provided rebuttal evidence (dated 9 May 2023). The Independent Hearing Panel has requested that I peer review Mr Rossiter's evidence, which I do so in this technical note.

1 V1-0068: ALLENDALE LANE, LINCOLN, MANMEET SINGH

In my initial review I raised concerns about the feasibility of a proposed vesting of a 10m wide legal road, between 5 Allendale Lane and 10 Allendale Lane. Mr Rossiter's rebuttal evidence discusses three options for a road cross section within a 10m corridor

- Option 1: A **base option** with a 7m wide carriageway and a 1.8m wide footpath, with around 1.4m width of grass berms
- Option 2: A **two-way option** with a 5.8m wide carriageway and a 1.8m wide footpath, with around 2.4m width of grass berms
- Option 3: A **single lane option** with a 4m wide carriageway and a 2m wide footpath, with around 4m width of grass berms.

I understand that Mr Rossiter's preference is Option 3.

I discuss these options in the following subsections.

1.1 Design criteria

In developing these options, Mr Rossiter has referred to Council's Engineering Code of Practice (CoP) Chapter 11 Roading and Transport[1]. However, the Proposed District Plan (PDP) – Variation 1 version of

[1] Available online at https://www.selwyn.govt.nz/__data/assets/pdf_file/0010/1064728/Section-11-Roading-and-Transport.pdf

the Transport Chapter is proposed to supersede aspects of the CoP, specifically TRAN-TABLE7 Road formation standards which specifies minimum requirements for local roads within the Medium Density Residential Zone (MRZ), and therefore is the more appropriate guide to development within MRZ. Key differences between the CoP and the PDP are:

- The PDP requires a minimum legal road width for local roads of 15m, whereas the CoP requires a minimum of 13m.
- The PDP requires there to be sufficient space for footpaths on one side with adequate provision of space for another one on the other side of the road, whereas the CoP only requires a footpath on one side of the road.

I consider that Mr Rossiter's options infringe on the following road formation elements, which are anticipated by TRAN-TABLE7:

- Significantly reduced legal width of 10m, whereas 15m is anticipated by the PDP
- Only one footpath, whereas footpaths on both sides of the road or at least one with the space for another on the other side are anticipated by the PDP
- No provision for on-street parking, whereas one parking lane is anticipated by the PDP
- The single lane option does not achieve the two traffic lane minimum anticipated by the PDP
- Only 5.8m of carriageway, whereas a minimum of 7m is anticipated by the PDP.

TRAN-REQ18 and TRAN-REQ19 state that when compliance with TRAN-TABLE7 is not achieved, the activity is Discretionary.

1.2 TRAN Chapter objectives and policies

I consider that the following PDP objectives and policies are relevant when considering the proposed 10m wide legal road:

- *TRAN-O1: People and places are connected through safe, efficient, and convenient land transport corridors and land transport infrastructure which is well integrated with land use activities and subdivision development.*
- *TRAN-O3: Land transport corridors and land transport infrastructure support the needs of people and freight, while ensuring adverse effects on the surrounding environment from their establishment and operation are managed.*
- *TRAN-P1: The safety and efficiency of the District's land transport network and systems are enabled through integrated land use and subdivision development that:*
    - *1. Manages the levels of service, formation standards and the types of land transport corridors and land transport infrastructure, including through the network road classifications and compliance with the design and operational standards;*
    - *2. Provides land transport infrastructure that is consistent with the form, function, and character of each zone;*
    - *3. Ensures there is enough space within land transport corridors to support the efficient and effective operation of network utilities;*
    - *4. Provides for the safe and efficient movement and operation of emergency services; and….*

- *TRAN-P2: Manage any extensions to the District's land transport network to ensure it occurs in an integrated way by:*
    - *1. Co-coordinating the timing of land use activities and subdivision development with the availability of capacity in land transport corridors;*
    - *2. Providing a range of travel modes and ensuring these are integrated, including between walking, cycling, public transport, freight and private vehicle modes; and…*
- *TRAN-P5: Promote a range of transport options to reduce the number of trips and distances travelled in private motor vehicles by:*
    - *1. Encouraging land use activities and subdivision development to include connected walking and cycling networks and access to public transport and public transport facilities, including within and between townships; and*
    - *2. Managing the design, layout and function of new land transport infrastructure to ensure they integrate with existing and future land transport corridors.*
- *TRAN-P6: Enable safe, multi-modal connections that support walking, cycling, and access to public transport and public transport facilities through land use activities and subdivision development that:*
    - *1. Establish levels of service and multi-modal transport options based on the network road classifications, including the provision of strategic level walking and cycling connections where they are identified in Development Plans or ODP;…*
    - *3. Manage the number and design of cul de sacs, rear lots and accessways;…*
- *TRAN-P7: Recognise and protect the function of the District's land transport network and systems by managing land use activities and subdivision development to ensure the safe and efficient movement of people and goods by:*
    - *2. Ensuring land transport corridors and land transport infrastructure can support the volume and type of transport movements based on the network road classifications; and*
    - *3. Requiring the design, positioning, and maintenance of accessways, corner splays, vehicle crossings, intersections, footpaths, plantings, and signs to ensure appropriate sightline visibility is provided to road users to support safe and efficient vehicle, pedestrian, and cycle movements.*
- *TRAN-P12: Enable works to be carried out by network utility operators to construct, renew, improve, and operate network utilities within land transport corridors in an efficient manner, while managing the scale and types of works and activities.*

I have prepared a high-level assessment of each option against the relevant PDP objectives and policies, shown in Table 1. I provide commentary on aspects where I consider there is poor alignment with objectives or policies as follows

- TRAN-O1: Overall I consider that all Options do not achieve a safe, efficient or convenient transport corridor due to inconsistencies with multiple policies.
- TRAN-O3: All options are likely to have a degree of adverse amenity effect on 5 Allendale Lane and 10 Allendale Lane as both properties will experience an increase in vehicle movement close to their property boundaries (due to the 10m road width and density of development proposed).

I am not qualified to provide further commentary on this. Adverse effects on traffic safety and efficiency are also anticipated.

- TRAN-P1.1: All options have poor alignment with the design and operational standards of the Transport Chapter.
- TRAN-P1.2:
    - All options provide a substandard pedestrian environment due to the provision of only one footpath, and Option 1 provides a very substandard pedestrian environment due to the limited separation between the footpath and carriageway, and footpath and road boundary.
    - Option 3 provides a substandard driver environment due to the one-lane road. My analysis (contained in Appendix A) indicates that during the peak hour there will be around 20-25 instances of conflict between opposing vehicles in association with Option 3. Option 1 and Option 2 will not create conflict between opposing vehicles.
    - All options provide a substandard on-street parking environment, with no on-street parking provided. All options will require on-street parking to be prohibited.
- TRAN-P1.3: All options can provide for a services trench under the footpath, however other utilities (such as street lighting, utility boxes etc) may have less clearance from the footpath and carriageway than typically provided for.
- TRAN-P2.1 and P2.2: All options provide substandard capacity for all road users, as they do not meet the minimum carriageway width, footpath provision, or parking provision identified in TRAN-TABLE7.
- TRAN-P5.1 and P5.2: All options provide a substandard outcome for walking networks, and provide poor integration with the existing Allendale Lane transport corridor.
- TRAN-P6.1: Option 3 provides a very substandard level of service for drivers due to the one-lane road. My analysis (contained in Appendix A) indicates that during the peak hour there will be around 20-25 instances of conflict between opposing vehicles in association with Option 3.
- TRAN-P6.3: The development site will have poor connectivity, as only one vehicle access point is proposed at this time (with a future potential connection to PC69). This is consistent across all options.
- TRAN-P7.2:
    - All options do not provide a transport corridor that supports the type of transport movement for pedestrians, as space for a footpath is only provided on one side of the road.
    - Option 3 does not provide a transport corridor that supports the volume and type of transport movement, due to the one-lane road. My analysis (contained in Appendix A) indicates that during the peak hour there will be around 20-25 instances of conflict between opposing vehicles. Options 1 and 2 avoid these conflicting movements.
- TRAN-P7.3: Option 3 may not provide sufficient forward visibility over the single lane section, as the ODP indicates that the road will curve to the west at the southern end of the 10m section.
- TRAN-P12: Option 3 is likely to create complexity for Council and infrastructure service providers when undertaking renewals and maintenance work, as the carriageway may need to be entirely closed (and therefore vehicle access to the site obstructed) while works are undertaken.

Table 1: High-level assessment of options against TRAN objectives and policies

Objective/ Policy	Degree to which the option is consistent with the objective/policy		
	Option 1 – base option	Option 2 – two way	Option 3 – single lane
TRAN-O1	Low/Moderate	Low/Moderate	Low
TRAN-O3	Unknown	Unknown	Unknown
TRAN-P1.1	Low	Low	Low
TRAN-P1.2	Low	Low	Low
TRAN-P1.3	Moderate	Moderate	Moderate
TRAN-P1.4	Low/moderate	Low/moderate	Low/moderate
TRAN-P2.1	Moderate	Moderate	Moderate
TRAN-P2.2	Moderate	Moderate	Moderate
TRAN-P5.1	Moderate	Moderate	Moderate
TRAN-P5.2	Moderate	Moderate	Moderate
TRAN-P6.1	Moderate	Moderate	Low
TRAN-P6.3	Low	Low	Low
TRAN-P7.2	Moderate	Moderate	Low
TRAN-P7.3	Moderate	Moderate	Low
TRAN-P12	Moderate	Moderate	Low

Overall, I consider that Option 3 is the least preferred option, and that Options 1 and 2 provide a substandard transport corridor. In my view none of the options are suitable to be vested as a public road.

1.3 My recommendations

I am concerned that a proposed 10m wide legal road will impact users safe, efficient and convenient access and movement to and from the V1-0068 site.

A 13m wide corridor could be provided by the submitter entering into a willing buyer/willing seller agreement with the owner of 10 Allendale Lane, to acquire 3m of frontage and vest this to Council. I have shown this indicatively in Figure 1. Unless the submitter widens the proposed 10m wide Allendale Road extension to a minimum of a 13m wide corridor, I recommend that the rezoning request be declined. For clarity, I consider that all other roads within the site should comply with all aspects of the Transport Chapter, and that a narrowed width of 13m would only be acceptable between 5 Allendale Lane and 10 Allendale Lane, as shown in Figure 1.

If the Hearing Panel chooses to approve the rezoning without adopting my recommendation above, I recommend that Restricted Discretionary activity status is applied to any subdivision or residential unit within the site. Council should have discretion over the safe, efficient and convenient operation of any section of Allendale Lane extension that has a legal width of less than 15m. This is in response to TRAN-O1, TRAN-P1, TRAN-P2, TRAN-P5, TRAN-P6, TRAN-P7, and TRAN-P12, and will allow Council to monitor how Allendale Lane extension is performing as development progresses

Figure 1: Indicative frontage that is required to support V1-0068

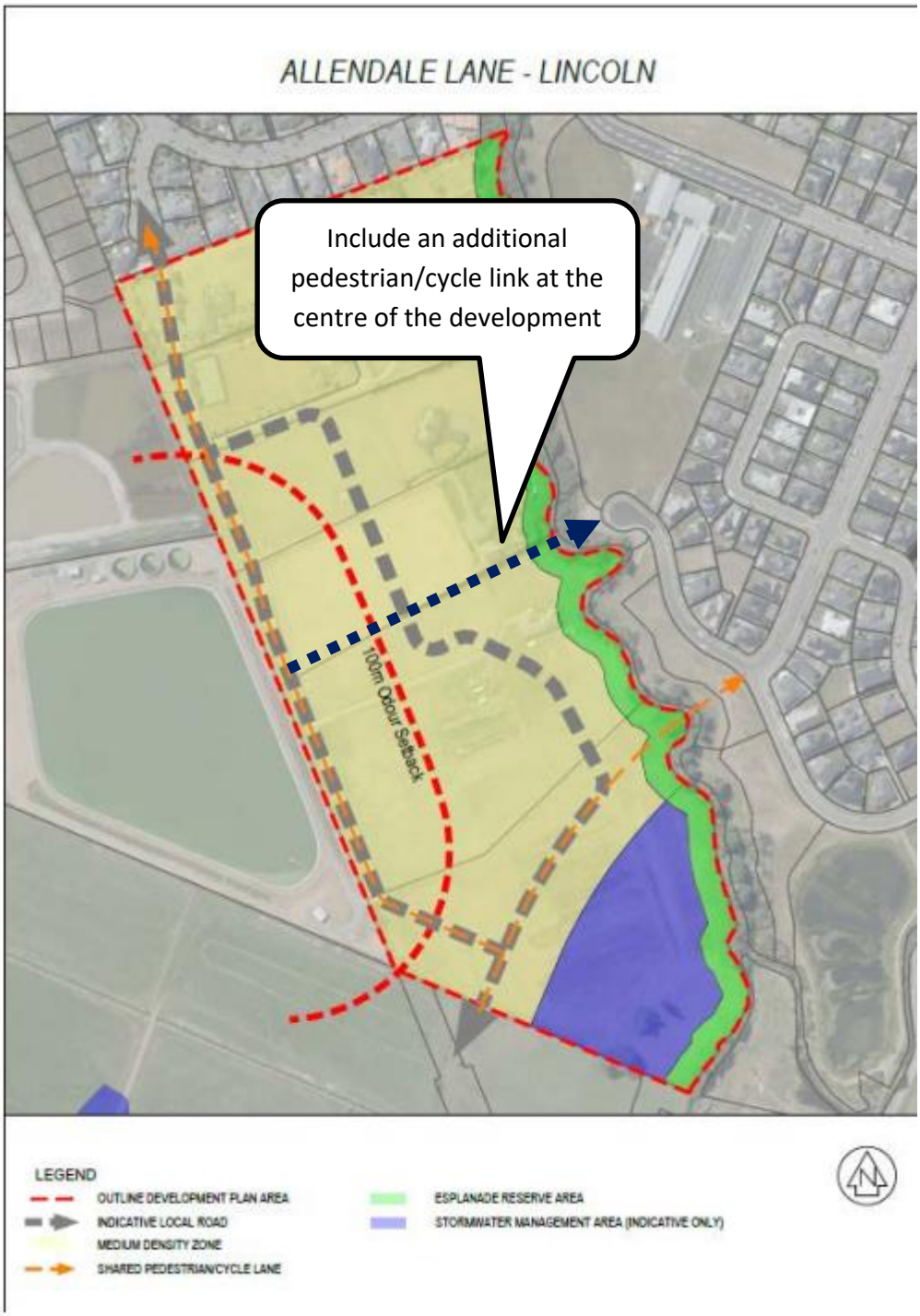
If the Hearing Panel chooses to approve the rezoning, I recommend that the following matters are also incorporated:

- As part of vesting the extension of Allendale Lane, the developer must reform the existing cul-de-sac head on Allendale Lane to provide a consistent and legible street environment. Mr Rossiter has demonstrated this at a conceptual level in Figure 5 of his rebuttal evidence.
- The ODP is updated to include a walking and cycling link to Jimmy Adams Terrace in the centre of the ODP area, and that the developer is required to form this link including a bridge over the Liffey stream. This helps address the otherwise limited connectivity for the site, provides pedestrians with an alternative route to avoid the 10m section of Allendale Lane extension, and assists to reduce the total vehicle kilometres travelled (VKT) that will otherwise be generated by the development.
- The ODP narrative includes a discussion of Council having discretion to close the 10m section of Allendale Lane extension to general traffic, if an alternative roading link is provided (for example the indicative roading connection to PC69 shown in the ODP). This clearly signals that Council may

close the Allendale Lane extension to improve safety, efficiency and convenience for non-general traffic modes (e.g. walking, cycling, emergency services etc).

- That the proposed roading link to PC69 is retained within the ODP plan and ODP narrative.

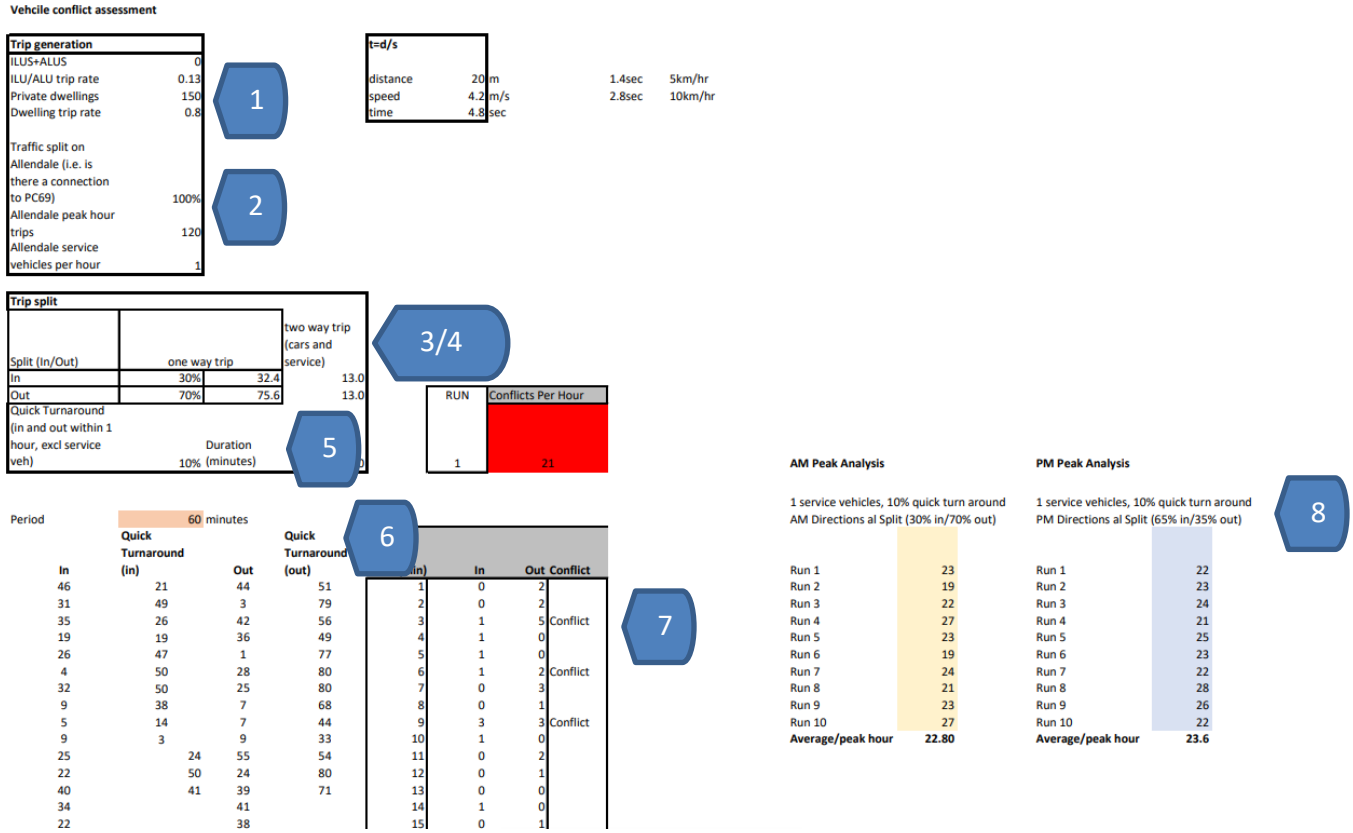
Figure 2: Proposed Development Area, recommended amendments



APPENDIX A Conflict assessment

Conflict model assumptions and methodology for single lane Allendale Lane extension

1. 150 dwellings
2. Dwellings generate 0.8 vehicle trips per hour during the AM and PM peak
3. During the AM peak 70% of vehicle trips are outbound and 30% are inbound
4. During the PM peak 65% of vehicle trips are inbound and 35% are outbound
5. 10% of peak hour trips are short turnaround (i.e. the vehicle enters and exits, or exits and enters, the site within the peak hour)
6. Spreadsheet random number generator to create a distribution of entering and exiting trips, spread over a 60 min period
7. When an entry trip and an exit trip coincide within the same 1 minute period, this is classified as a conflict
8. The model was run 10 times for the AM and the PM peaks, and the number of conflicts recorded. An average number of conflicts in the AM and the PM peaks by summing the total conflicts over 10 model runs, then divided by 10.



Vehcile conflict assessment

Trip generation	
ILUS+ALUS	0
ILU/ALU trip rate	0.13
Private dwellings	150
Dwelling trip rate	0.8
Traffic split on Allendale (i.e. is there a connection to PC69)	100%
Allendale peak hour trips	120
Allendale service vehicles per hour	1

1

2

t=d/s				
distance	20	m	1.4sec	5km/hr
speed	4.2	m/s	2.8sec	10km/hr
time	4.8	sec		

Trip split			
Split (In/Out)	one way trip		two way trip (cars and service)
In	30%	32.4	13.0
Out	70%	75.6	13.0

3/4

Quick Turnaround (in and out within 1 hour, excl service veh)	Duration (minutes)
10%	

5

RUN	Conflicts Per Hour
1	21

Period 60 minutes

6

In	Quick Turnaround (in)	Out	Quick Turnaround (out)	(in)	In	Out	Conflict
46	21	44	51	1	0	2	
31	49	3	79	2	0	2	
35	26	42	56	3	1	5	Conflict
19	19	36	49	4	1	0	
26	47	1	77	5	1	0	
4	50	28	80	6	1	2	Conflict
32	50	25	80	7	0	3	
9	38	7	68	8	0	1	
5	14	7	44	9	3	3	Conflict
9	3	9	33	10	1	0	
25	24	55	54	11	0	2	
22	50	24	80	12	0	1	
40	41	39	71	13	0	0	
34		41		14	1	0	
22		38		15	0	1	

7

AM Peak Analysis	
1 service vehicles, 10% quick turn around AM Directions al Split (30% in/70% out)	
Run 1	23
Run 2	19
Run 3	22
Run 4	27
Run 5	23
Run 6	19
Run 7	24
Run 8	21
Run 9	23
Run 10	27
Average/peak hour	22.80

PM Peak Analysis	
1 service vehicles, 10% quick turn around PM Directions al Split (65% in/35% out)	
Run 1	22
Run 2	23
Run 3	24
Run 4	21
Run 5	25
Run 6	23
Run 7	22
Run 8	28
Run 9	26
Run 10	22
Average/peak hour	23.6

8

Vehcile conflict assessment

Trip generation	
ILUS+ALUS	0
ILU/ALU trip rate	0.13
Private dwellings	150
Dwelling trip rate	0.8
Traffic split on Allendale (i.e. is there a connection to PC69)	100%
Allendale peak hour trips	120
Allendale service vehicles per hour	1

t=d/s				
distance	20	m	1.4sec	5km/hr
speed	4.2	m/s	2.8sec	10km/hr
time	4.8	sec		

Trip split

Split (In/Out)	one way trip		two way trip (cars and service)
In	30%	32.4	13.0
Out	70%	75.6	13.0
Quick Turnaround (in and out within 1 hour, excl service veh)	10%	Duration (minutes)	30

RUN	Conflicts Per Hour
1	21

Period 60 minutes

In	Quick Turnaround (in)	Out	Quick Turnaround (out)	Time (min)	In	Out	Conflict
46	21	44	51	1	0	2	
31	49	3	79	2	0	2	
35	26	42	56	3	1	5	Conflict
19	19	36	49	4	1	0	
26	47	1	77	5	1	0	
4	50	28	80	6	1	2	Conflict
32	50	25	80	7	0	3	
9	38	7	68	8	0	1	
5	14	7	44	9	3	3	Conflict
9	3	9	33	10	1	0	
25	24	55	54	11	0	2	
22	50	24	80	12	0	1	
40	41	39	71	13	0	0	
34		41		14	1	0	
22		38		15	0	1	
36		45		16	0	2	

AM Peak Analysis

1 service vehicles, 10% quick turn around
AM Directions al Split (30% in/70% out)

Run 1	23
Run 2	19
Run 3	22
Run 4	27
Run 5	23
Run 6	19
Run 7	24
Run 8	21
Run 9	23
Run 10	27
Average/peak hour	**22.80**

PM Peak Analysis

1 service vehicles, 10% quick turn around
PM Directions al Split (65% in/35% out)

Run 1	22
Run 2	23
Run 3	24
Run 4	21
Run 5	25
Run 6	23
Run 7	22
Run 8	28
Run 9	26
Run 10	22
Average/peak hour	**23.6**

9	0	17	0	1	
47	19	18	1	3	Conflict
49	58	19	2	2	Conflict
29	46	20	1	1	Conflict
42	50	21	1	1	Conflict
20	3	22	2	1	Conflict
30	9	23	0	2	
10	3	24	1	3	Conflict
18	0	25	1	1	Conflict
45	23	26	2	0	
43	16	27	0	2	
32	28	28	0	3	
6	24	29	2	1	Conflict
43	0	30	1	0	
29	42	31	1	0	
49	28	32	2	0	
	55	33	0	2	
	15	34	1	0	
	6	35	1	1	Conflict
	0	36	1	1	Conflict
	33	37	0	1	
	51	38	1	1	Conflict
	27	39	0	1	
	3	40	1	1	Conflict
	3	41	1	1	Conflict
	37	42	1	2	Conflict
	29	43	2	0	
	18	44	0	2	
	35	45	1	1	Conflict
	53	46	1	1	Conflict
	11	47	2	0	
	0	48	0	0	
	9	49	3	1	Conflict
	52	50	3	2	Conflict
	22	51	0	3	
	11	52	0	1	
	50	53	0	2	
	6	54	0	1	
	23	55	0	4	
	21	56	0	1	
	16	57	0	0	
	7	58	0	2	
	12	59	0	0	
	2	60	0	0	
	58	61	0	0	
	55	62	0	0	
	18	63	0	0	
	17	64	0	0	
	40	65	0	0	
	1	66	0	0	

2	67	0	0	
20	68	0	1	
51	69	0	0	
27	70	0	0	
19	71	0	1	
24	72	0	0	
55	73	0	0	
53	74	0	0	
18	75	0	0	
8	76	0	0	
	77	0	1	