Client Ref: RM195281

17 July 2019

Resource Management Group

PO Box 908

CHRISTCHURCH 8140

Attention: **John Scheele**

Dear John

Tennyson Street Public Car Park

We have reviewed the Selwyn District Council (SDC) Request for Further Information (RFI) and prepared the following response on the transport related matters that have been raised.

Item 1: Tennyson Street Queuing

We have created a set of SIDRA intersection models of the access to car park 2. Each model has a two-way volume of 180 vehicle movements per hour (vph) on the driveway. It should be noted that this represents a worst case scenario as not all vehicle movements associated with the consented development at 57-61 Tennyson Street would use this access because there is a separate access to the private car park on Markham Way.

The models have a two-way volume on Tennyson Street of non-car park related traffic of 500vph, 600vph and 700vph. Since the car park is located in central Rolleston and is for short term parking, it is expected that arrivals and departures would have similar volumes and would be evenly split between the northern and southern approaches. This means that the two way traffic volumes on Tennyson Street north or south of the car park are 590vph, 690vph and 790vph respectively. This range of flows has been examined because it reflects and exceeds the forecast traffic volumes on Tennyson Street following the full development of the town centre.

The SIDRA model outputs have been attached to this response and have been derived with no change to the default settings other than a change to the vehicle speeds where 30km/h has been adopted because this reflects the future speed environment.

The models show that, even in the highest volume scenario, the 95th percentile queue length on Tennyson Street is less than one vehicle and that only one in six vehicles would have to stop before turning right.

Item 2: Pedestrian Crossing

The current plans for Tennyson Street include kerb extensions and a painted crossing south of the car park access. Since the forecast queue length for the right turn is less than one vehicle, it is unlikely that any queues would extend from the access back through the pedestrian crossing.

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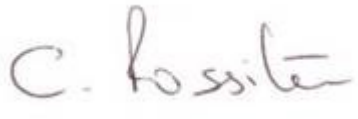
We trust that this analysis provides the information that has been requested.

Yours sincerely



Chris Rossiter

Principal Transportation Engineer

Stantec New Zealand

Encl.: SIDRA Model Outputs

MOVEMENT SUMMARY

Site: 101 [Car Park 2 - 500vph]

500vph on tennyson excluding car park
Site Category: (None)
Giveway / Yield (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: Tennyson Street												
2	T1	263	5.0	0.175	0.3	LOS A	0.4	2.9	0.16	0.07	0.16	29.8
3	R2	47	0.0	0.175	3.6	LOS A	0.4	2.9	0.16	0.07	0.16	24.2
Approach		311	4.2	0.175	0.8	NA	0.4	2.9	0.16	0.07	0.16	28.8
East: car park access												
4	L2	47	0.0	0.103	0.9	LOS A	0.4	2.6	0.40	0.36	0.40	23.8
6	R2	47	0.0	0.103	3.6	LOS A	0.4	2.6	0.40	0.36	0.40	23.7
Approach		95	0.0	0.103	2.2	LOS A	0.4	2.6	0.40	0.36	0.40	23.8
North: Tennyson Street												
7	L2	47	0.0	0.165	2.0	LOS A	0.0	0.0	0.00	0.05	0.00	30.3
8	T1	263	5.0	0.165	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	29.9
Approach		311	4.2	0.165	0.3	NA	0.0	0.0	0.00	0.05	0.00	30.0
All Vehicles		716	3.7	0.175	0.8	NA	0.4	2.9	0.12	0.10	0.12	28.5

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.
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 [Car Park 2 - 600vph]

600vph on tennyson excluding car park
Site Category: (None)
Giveway / Yield (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: Tennyson Street												
2	T1	316	5.0	0.205	0.3	LOS A	0.4	3.2	0.15	0.06	0.15	29.8
3	R2	47	0.0	0.205	3.9	LOS A	0.4	3.2	0.15	0.06	0.15	24.2
Approach		363	4.3	0.205	0.8	NA	0.4	3.2	0.15	0.06	0.15	28.9
East: car park access												
4	L2	47	0.0	0.114	1.1	LOS A	0.4	2.8	0.45	0.42	0.45	23.7
6	R2	47	0.0	0.114	4.4	LOS A	0.4	2.8	0.45	0.42	0.45	23.6
Approach		95	0.0	0.114	2.8	LOS A	0.4	2.8	0.45	0.42	0.45	23.7
North: Tennyson Street												
7	L2	47	0.0	0.193	2.0	LOS A	0.0	0.0	0.00	0.04	0.00	30.3
8	T1	316	5.0	0.193	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	29.9
Approach		363	4.3	0.193	0.3	NA	0.0	0.0	0.00	0.04	0.00	30.0
All Vehicles		821	3.8	0.205	0.8	NA	0.4	3.2	0.12	0.09	0.12	28.6

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 [Car Park 2 - 700vph]

700vph on tennyson excluding car park
Site Category: (None)
Giveway / Yield (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: Tennyson Street												
2	T1	368	5.0	0.235	0.4	LOS A	0.5	3.6	0.15	0.05	0.15	29.8
3	R2	47	0.0	0.235	4.3	LOS A	0.5	3.6	0.15	0.05	0.15	24.2
Approach		416	4.4	0.235	0.8	NA	0.5	3.6	0.15	0.05	0.15	29.0
East: car park access												
4	L2	47	0.0	0.127	1.4	LOS A	0.4	3.1	0.49	0.47	0.49	23.6
6	R2	47	0.0	0.127	5.4	LOS A	0.4	3.1	0.49	0.47	0.49	23.5
Approach		95	0.0	0.127	3.4	LOS A	0.4	3.1	0.49	0.47	0.49	23.6
North: Tennyson Street												
7	L2	47	0.0	0.221	2.0	LOS A	0.0	0.0	0.00	0.04	0.00	30.3
8	T1	368	5.0	0.221	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	29.9
Approach		416	4.4	0.221	0.3	NA	0.0	0.0	0.00	0.04	0.00	30.0
All Vehicles		926	4.0	0.235	0.8	NA	0.5	3.6	0.12	0.09	0.12	28.8

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.
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.

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File Ref: AC17269 – 05 – 04 – R1

22 July 2019

Mr J. Scheele
Resource Management Group
PO Box 908
CHRISTCHURCH 8140

Email: John@rmgroup.co.nz

Dear John

Re: Request for Further Information RC195281
Tennyson Street Public Car Park 2

We have reviewed the Request for Further Information (RFI) dated the 15th of July 2019 relating to the above application. The queries raised are reproduced in italics, with our responses provided below.

3. *AES spend little time analysing the existing District Plan or justifying effects arising from non-compliance with the applicable standards. While the District Plan is under review (we note that AES have prepared discussion papers regarding potential new standards for Council), that does not remove the need for discussion of the current compliance criteria. In particular AES should comment on:*

   a. *Their justification for describing the 12-13 dB exceedance of the existing permitted night-time noise standard as 'moderate';*

      The predicted night time noise levels are well above the District Plan night time noise standard (12 – 13 dB as noted). We accept that this is a large exceedance. The intent of this wording was to communicate that an exact L_{A10} value is difficult to predict during the night time when only sporadic vehicle movements are anticipated – rather than to quantify the magnitude of District Plan exceedance.

   b. *The relationship between the existing residual noise anticipated at the rear of Markham Way properties adjoining the proposed car park and the current District Plan Limits; and*

      Based on our ambient measurements on Markham Way (discussed further in response to 4 below), we consider that existing night time noise levels in the order of 2-5 dB higher than the current District Plan night time limit of 35 dB L_{A10} are currently received at the rear of these properties. While this is slightly higher than the existing limit, it is still lower than the predicted noise levels due to night time operation of the carpark.

   c. *The amount by which the proposed activity may exceed both the permitted activity standard and the residual noise level.*

      The predicted noise levels during the night-time period are anticipated to be in the order of 5-7 dB higher than the current residual noise anticipated at the rear of these properties, and well above the District Plan night-time noise standard (by 12 – 13 dB as outlined above by MDA). This is consistent with our assessment, which notes that the residential properties

adjoining the carpark currently receive lower ambient noise levels than the predicted night time noise limit of 45 dB L_{Aeq}.

However in the context of dwellings located in a Key Activity Centre, near a Transitional Living Zone, provided the predicted noise levels for night time operation of the carpark are consistent with the recommended 45 dB L_{Aeq} WHO guideline, we consider the noise effects will be acceptable. This guideline value is appropriate to protect against unreasonable night-time sleep disturbance effects for residents sleeping with windows open.

AES should have regard to the comments below when addressing these matters.

4. *AES are relying on residual noise measurements from a location that does not appear to be an adequate representation of the rear of the Markham Way properties closest to the proposed car park. Data during the late-night period (after 2200) from a more applicable location, together with an explanation for any adjustment on this data, should be provided.*

   We consider the existing night-time measurements of 35 – 38 L_{A90} on Markham Way to be representative of the ambient noise level received during the late-night period (after 2200 hours) at the rear of these properties. We appreciate that the boundary is setback a further 20 metres from Tennyson Street, although as traffic on this street was only intermittent during our measurements, we expect the L_{A90} to be representative of noise excluding traffic on Tennyson Street. Ambient L_{A10} values will be slightly higher (approximately 2 dB based on measured observations).

   We also understand that the JP Singh commercial development (51, 57, 59 and 61 Tennyson Street) is consented and currently under construction (the houses on these sites have been removed). The noise environment in this area will therefore change when this development becomes operational and additional measurements at this time will not be representative of the future situation.

5. *In Section 5.1 of the AES report, they assume that every car park will turn over once within a 15 minute period during the daytime and that at night-time (after 2000 hours) there will be half that number of movements. We consider this an appropriately conservative approach. However, for the period post-2200 hours, AES change their assessment methodology and/or assumptions to assume that no more than five vehicles will use the car park in any 15 minute period. They do not explain why they have made this change, nor do they clarify whether they have considered if all vehicles park near the same dwelling or if they are distributed evenly around the car park for the purposes of the assessment.*

   The predicted night time movements are based on the Integrated Traffic Assessment, which provides an expected traffic generation figure of 20 outbound movements per hour after 9.00 pm (assumed five in a 15 minute period). At the dwelling where the highest noise level is predicted (5 Markham Way), we have assumed that the all five of these vehicles are leaving from the closest parks to this dwelling, in the same 15 minute period. This is expected to be conservative.

6. *In Section 6 of the report, AES state that they expect that the difference between the L_{A10} and L_{Aeq} would be on the order of 2 dB. We disagree that this is likely to be the case for noise sources such as traffic, music from car stereos and conversation, all of which we would allow a typical increase of 3-4 dB, in the absence of a specific relevant example. Thus, for the predicted cumulative noise level of 45 dB L_{Aeq}, we expect this to translate to 48 – 49 dB L_{A10}.*

   There can be a large variation between L_{Aeq} and L_{A10} values for difference sources depending on how steady the sound is, and for how long it occurs on site. We accept the MDA position that for some sources, a difference of 3-4 dB may be expected.

   Because of this, we note in section 6.0 of our report that during the night-time where vehicle movements are likely to be sporadic, the L_{A10} level for vehicle noise is more difficult to calculate.

The actual L_{A10} level will be determined by how long vehicles take to depart the site during a representative 15 minute period.

We note that an adjustment of +3 to 4 dB between L_{Aeq} and L_{A10} makes no difference to our conclusions regarding the overall acceptability of noise generated by the proposal.

Please do not hesitate to contact me to discuss further as required.

Kind Regards,

William Reeve
BE Hons (Mech) MASNZ
Senior Acoustic Engineer
Acoustic Engineering Services