

# Chiles Ltd

Private Bag 55037, Christchurch 8154

30 January 2017

Ref: 160901e

Nomita Singh Investment Trust  
PO Box 26500  
Epsom, Auckland 1344

Attention: JP Singh

Dear Mr Singh

**Subject: 63-67 Tennyson Street, Rolleston – Revised noise assessment**

## Introduction

Chiles Ltd has been engaged to make an assessment of potential noise effects arising from the operation of a proposed commercial development at 63-67 Tennyson Street in Rolleston. The site currently contains three residential buildings, which will be removed and replaced with a new building containing six retail units. Some of the units are likely to have food and beverage tenants.

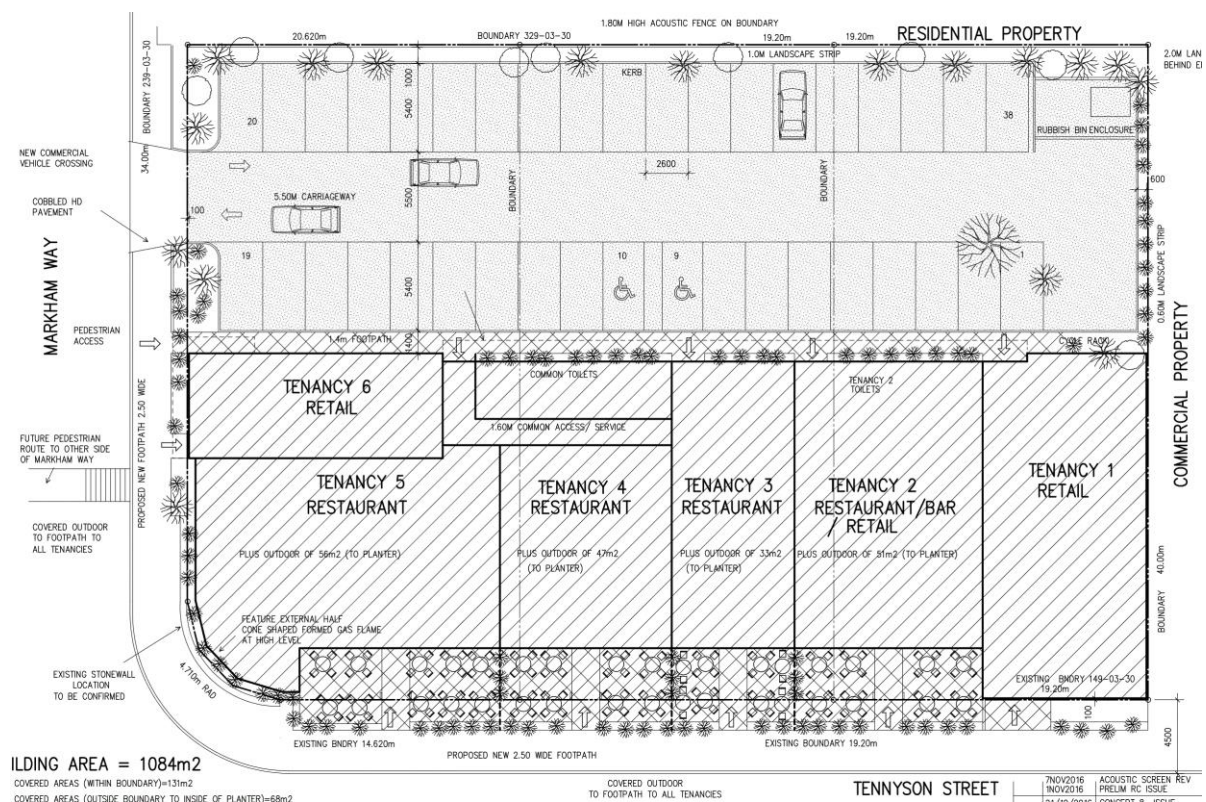
The site is shown highlighted in purple in the following figure. The applicant also owns the site highlighted in yellow at 61 Tennyson Street. That is not part of the current application, but is highlighted as noise effects have not been assessed at that location.



This assessment has been made on a desk-top basis, although the author is familiar with the area. Sound level predictions have been made using indicative data for the main sound sources. The proposed development is shown on the concept plan by Origin Architects dated 28/01/17.

An earlier version of this assessment was reviewed on behalf of the Selwyn District Council by Acoustic Engineering Services (AES) in their letter dated 20 January 2017. There were no areas of technical disagreement raised by AES, but the review did raise several points requiring clarification that have now been addressed in this revised assessment.

The following figure is an extract from the concept plan. The car park is adjacent to two residential properties at 4 and 8 Markham Way. There are six retail units on the ground floor which can be accessed both from the car park at the rear, and also from Tennyson Street and Markham Way. Units 2, 3, 4 and 5 all have outdoor seating areas by the public streets. In an earlier proposal, unit 6 also had an outdoor seating area, but in accordance with advice from Chiles Ltd, this was removed and the building extended to the site boundary to provide noise screening for residential properties in Markham Way. Following consultation with residents, and review comments from AES, the unit 5 outdoor area by Markham Way has also been removed and the building extended to further screen the outdoor area on Tennyson Street from residential properties.



## District plan

The site is in a living (residential) zone in the Selwyn District Plan. However, it is also in a Key Activity Centre (KAC), along with all surrounding sites. The following figure is an extract from the KAC precinct plan. The area coloured red is Core Retail Precinct; it includes the Police Station and existing retail units, as well as land that is currently occupied by playing fields. The site is in the yellow area, which is a Transitional Living Precinct. Behind the site in Markham Way the green hatched area remains



unchanged as a Living 1 zone. The blue area shown diagonally opposite the site on Tennyson Street is currently playing fields but is shown as Community Anchor/Town Square Precinct.



Rule 10.6.1 of the district plan sets noise limits for activities in Living Zones as follows:

- 0730h – 2000h                      50 dB  $L_{A10}$                       85 dB  $L_{AFmax}$
- 2000h – 0730h                      35 dB  $L_{A10}$                       70 dB  $L_{AFmax}$

As illustrated below, the activity cannot practicably comply with these noise limits. Rule 10.6.3 states that if an activity does not comply with these noise limits then it is discretionary. In accordance with current (2008) New Zealand Standards, while the operative district plan uses the old  $L_{A10}$  metric, this assessment has been made using the current  $L_{Aeq}$  metric.

The 35 dB night-time noise limit is unusually low, particularly for an urban or suburban area. Most district plans set noise limits of 40 or 45 dB at night in residential zones and at rural dwellings. NZS 6802:2008 recommends a noise limit of 45 dB to avoid sleep disturbance. Only a few district plans set noise limits as low as 35 dB at night, and generally only for protecting rural amenity in specific sensitive areas. In an urban or suburban environment, such a low limit is inconsistent with normal activity and ambient sound such as from road-traffic in the wider area. Common sound sources such as the outdoor units of domestic heat pumps would consistently exceed this noise limit.

In the case of Rolleston, the 35 dB noise limit at night is incompatible with the surrounding Town Square Precinct, Core Retail Precinct and Transitional Living Precinct. Regardless of this current application, the noise limit in the Living 1 zone would be exceeded by numerous activities sought to be enabled by the district plan in those precincts, and by associated vehicular and pedestrian traffic in the area. For this location, a night-time noise limit of 45 dB  $L_{Aeq(15\text{ min})}$  in the Living 1 zone would be appropriate.

## Predicted sound levels

### Vehicles

The proposal includes 38 car parking spaces on the site. Predictions of sound levels from vehicle movements have been based on previous sound level measurements of cars parking in an open surface car park in Christchurch, including the sound of doors shutting. These measurements are:

Activity	Distance	L <sub>AE</sub>
Vehicle parking	2.5 m	76 dB
Vehicle leaving	2.5 m	84 dB
Total for parking and leaving		85 dB

The neighbouring sites at 4 and 8 Markham Way are adjacent to the parking spaces and a distance of 5 metres has been taken as representative of the nearest car parking spaces that will control the sound levels. A distance of 20 metres has been taken to 3 Markham Way. It has been assumed that four cars might enter and leave the nearest spaces in a 15 minute period. It is assumed a solid fence at least 1.8 metres high on the boundary between the car park and 4 and 8 Markham Way, will provide 10 dB attenuation. Based on these assumptions the following sound levels are predicted. As recommended by AES, these predictions include levels at 3 Markham Way to account for vehicles entering and exiting the site.

	4/8 Markham Way	3 Markham Way
Source level	85 dB L <sub>AE</sub>	85 dB L <sub>AE</sub>
Number of events	+6 dB (4 cars)	+6 dB (4 cars)
Distance adjustment	-6 dB (5 m)	-18 dB (20 m)
Time adjustment	-30 dB (15 min)	-30 dB (15 min)
Screening by fence	-10 dB	0 dB
Result	<b>45 dB L<sub>Aeq</sub>(15 min)</b>	<b>43 dB L<sub>Aeq</sub>(15 min)</b>

### People

People talking while sitting outside the retail units will generate sound. Based on previous measurements outside bars in Queenstown, it has been assumed that a group of people quietly talking will generate approximately 60 dB at a distance of 20 metres. The level would be slightly higher if the group were loud/boisterous. However, based on the level for normal subdued behaviour, which is considered appropriate in this setting, the following sound levels are predicted. As recommended by AES, these predictions include levels at 59 Tennyson Street. AES questioned screening and reflection effects, but these are no longer relevant now there is no outdoor seating by Markham Way. Likewise, AES highlighted sound from people walking on Markham Way to the car park; but with the new layout the direct access from the car park to the rear of the units provides a shorter route and is expected to be used by most people.

	<b>Playing field</b>	<b>3 Markham Way</b>	<b>59 Tennyson Street</b>	<b>Police Station</b>
Source level	60 dB @ 20m	60 dB @ 20m	60 dB @ 20m	60 dB @ 20m
Distance adjustment	0 dB (20 m)	-8 dB (50 m)	-7 dB (45 m)	0 dB (20 m)
Screening	0 dB	-15 dB	-10 dB	-15 dB
Results	<b>60 dB L<sub>Aeq</sub>(15 min)</b>	<b>37 dB L<sub>Aeq</sub>(15 min)</b>	<b>43 dB L<sub>Aeq</sub>(15 min)</b>	<b>45 dB L<sub>Aeq</sub>(15 min)</b>

### Music

The sound levels set out above for people talking also include the contribution of sound from background music playing inside the units. In this context, background music is taken as a level of music inside the units that does not exceed 75 dB L<sub>Aeq</sub>(15 min). With this level of music, no specific sound insulation constructions for the units are required.

### Building services

Services such as ventilation/cooling plant and extract fans can be selected and designed with standard noise mitigation measures to comply with appropriate noise limits. AES has recommended that building services should comply with the district plan noise limits, and this restriction has been accepted by the applicant.

### Summary

Sound levels from the activity are predicted to be up to 45 dB L<sub>Aeq</sub>(15 min) at 3, 4 and 8 Markham Way and 59 Tennyson Street.

Sound levels might still be above 35 dB at 5, 6, 10 Markham Way, 55 and 57 Tennyson Street and 12 Markham Way/2 Wilbur Close. However, the exceedance should be no more than 5 dB if at all. The actual sound levels at each house will depend on localised screening effects by intervening buildings and fences, which have not been modelled. At this stage limited screening has been assumed, but in reality these properties are all partially or fully screened from the activity.

### **Assessment**

#### 61 Tennyson Street/1 Markham Way

Noise effects have not been considered at the nearest residential neighbour at 61 Tennyson Street/1 Markham Way as the property is owned by the applicant.

#### 3, 4 and 8 Markham Way and 59 Tennyson Street

At the next nearest residential neighbours (3, 4 and 8 Markham Way and 59 Tennyson Street), a busy period of car parking activity is predicted to generate up to 45 dB L<sub>Aeq</sub>(15 min). People on the outside area by Tennyson Street would generate up to 43 dB L<sub>Aeq</sub>(15 min). The combined level predicted from people and parking vehicles would not exceed 45 dB L<sub>Aeq</sub>(15 min) at any residential location.

While the operative district plan sets relatively stringent noise limits in residential areas, as set out above, NZS 6802 recommends levels of 55 dB L<sub>Aeq</sub>(15 min) during the day and 45 dB L<sub>Aeq</sub>(15 min) at night. In the context of this area that has been specifically identified as a transitional area, these guideline limits from NZS 6802 are considered appropriate to maintain reasonable residential amenity. These limits

would provide appropriate protection from sleep disturbance and should avoid disruption of normal residential activities.

All predicted sound levels at residential properties comply with the NZS 6802 night-time guideline noise limit of 45 dB  $L_{Aeq(15 \text{ min})}$ .

Sound levels have not been predicted for emptying of bins or delivery vehicles, but these are common sound sources from food and beverage units and are likely to exceed the night-time limits. If deliveries are made and bins emptied only during the day (0730h to 2000h) the noise effects should be acceptable, with sound levels in compliance with the 55 dB  $L_{Aeq(15 \text{ min})}$  guideline limit.

The above discussion of noise effects has considered activities in the daytime and night-time periods. In terms of this assessment, the noise effects would still be reasonable if activities were continuing for 24 hours, but it is understood none of the retail units are envisaged to operate after 0100h.

#### 5, 6, 10 Markham Way, 55, 57 Tennyson Street and 12 Markham Way/2 Wilbur Close

Sound levels at these properties might marginally exceed the living zone 35 dB night-time noise limit. However, the exceedance is unlikely to be unduly noticeable in this urban/suburban environment and levels will remain below thresholds for protection from sleep disturbance. In this context, any slight exceedance of the living zone night-time noise limit at these properties that are further away should not cause adverse effects.

#### Non-residential neighbours

The Police Station is not considered unduly noise sensitive, but sound from people and background music at a predicted level of 45 dB  $L_{Aeq(15 \text{ min})}$  should not cause disturbance anyway. Likewise, sound from occasional vehicles using the car park would have similar noise effects as vehicles using the Police Station's own existing car park.

The rear of the existing retail units, diagonally opposite on Tennyson Street, are not considered noise sensitive and noise effects at that location have not been considered further.

The existing playing fields are not unduly noise sensitive, but are shown as being replaced in the KAC precinct plan by the Core Retail and Community Anchor/Town Square Precincts. Neither of these precincts are considered to be unduly noise sensitive, but it is necessary to maintain appropriate amenity in this town centre area. NZS 6802 recommends a guideline noise limit of 60 dB  $L_{Aeq(15 \text{ min})}$  in commercial or mixed-use areas. The predictions for sound from people outside the new units is 60 dB  $L_{Aeq(15 \text{ min})}$  at the playing fields and based on this guideline noise limit is considered acceptable. In the context of other town centre activities and road-traffic on Tennyson Street also generating sound, these predicted levels should maintain appropriate amenity and should not cause undue disturbance.

#### **Mitigation**

The predicted sound levels and assessment of noise effects have been based on a number of assumptions. If consent were to be granted for this activity, it is recommended that it should be subject to conditions requiring the following:

- There should be a solid fence at least 1.8 metres high on the site boundary with 4 and 8 Markham Way. The fence should have a surface mass of at least 10 kg/m<sup>2</sup> and should be constructed so there are no gaps in the fence or between the fence and the ground.

- Bins should not be emptied between 2000h and 0730h.
- Delivery vehicles should only use the car park between 0730h and 2000h.
- All doors and windows, other than those directly facing Tennyson Street, should be kept closed between 2000h and 0730h.
- There should be no loudspeakers located outdoors, or directed through open external doors from inside.
- Music should not exceed 75 dB  $L_{Aeq(15 \text{ min})}$  at any point inside units.
- Building services equipment should comply with the district plan zone noise limits.

AES raised several points regarding sound from people, and raised the possibility of using a Noise Management Plan (NMP). As set out above, the assessment is based on normal subdued behaviour in outdoor areas. It is agreed that if any of the outdoor areas are used after 2000h it would be appropriate for operations to be in accordance with a NMP, to stop any loud or boisterous behaviour. Therefore a condition is also recommended to require:

- Prior to use of the outdoor seating area of a unit between 2000h and 0730h a Noise Management Plan should be prepared by the operator and certified by the Council.


## Conclusions

An assessment has been made of potential noise effects arising from a proposed commercial development at 63-67 Tennyson Street. Sound levels have been predicted for indicative sources, and found to comply with reasonable limits. The activity would not comply with the district plan living zone night-time noise limit, which is peculiarly low and has been set at an unrealistic and inappropriate level. The predictions are reliant on a number of mitigation measures, which should be specified in conditions if consent is granted. On the basis of this assessment the noise effects of the commercial development should be acceptable in this environment.

AES reviewed an earlier version of this assessment and did not raise any technical disagreement. All matters of clarification raised by AES have been addressed in this revised assessment.

Yours sincerely

**Chiles Ltd**



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