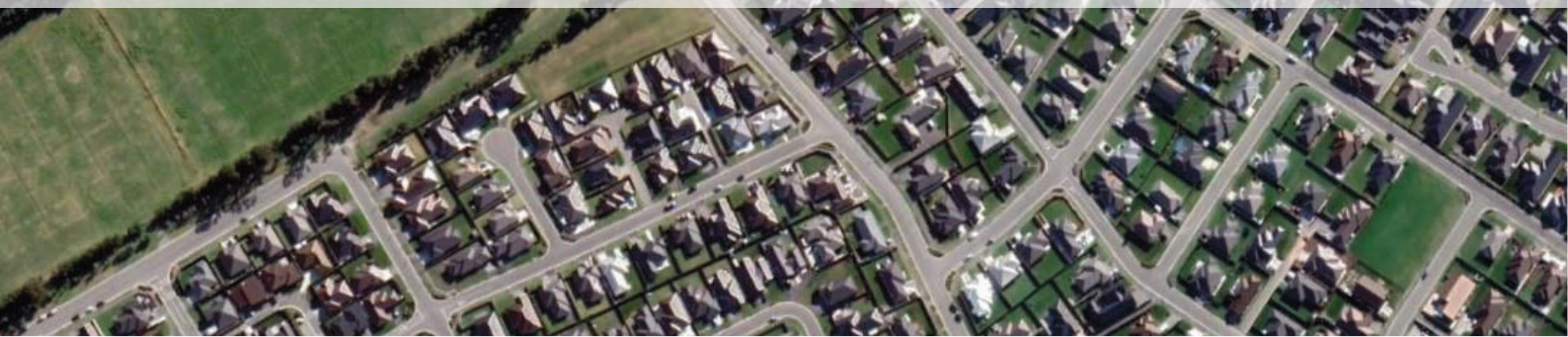
Appendix L – Noise Assessment

MARSHALL DAY Acoustics

ROLLESTON PPC LARGE FORMAT RETAIL ASSESSMENT OF NOISE EFFECTS

Rp 001 R01 20240014 | 19 February 2024



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Project: **ROLLESTON PPC LARGE FORMAT RETAIL**

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SUMMARY

We have assessed noise from Foodstuffs (South Island) Properties Limited's (Foodstuffs) proposal to rezone 157 Levi Road, Rolleston (the Site) from Medium Density Residential Zone (MRZ) to Large Format Retail Zone (LFRZ) under the Partially Operative Selwyn District Plan (PODP).

Despite the existing supermarket consent, the Site and surrounding properties are zoned MRZ under the PODP. Foodstuffs seeks to re-zone the site to LFRZ to better reflect the consent supermarket activity and enable a trade retail or trade supply store on the balance of the site, proposed to be occupied by Mitre 10.

Our assessment focuses on the proposed trade supply activity given that the supermarket is already forms part of the existing environment.

Following the resource consent process, the interface along the eastern boundary between the supermarket goods vehicle accessway, the loading zone, and the adjoining MRZ will include two noise control fences and a 10 m wide biodiversity planting strip within the supermarket site.

Trade supply noise emissions

Noise levels from trade supply companies and similar activities can typically reach 50-65 dB L_{Aeq} at site boundaries with no mitigation, with goods deliveries being a major noise source. However, as above, we note that significant noise mitigation is already included along this boundary, which can be augmented through the later resource consent process for the trade supply activity.

We also understand that deliveries and loading bay activity associated with Mitre 10 will only occur during the PODP daytime hours.

Traffic noise effects

Noise will also be generated from customer vehicles accessing the site. 260 vehicles per hour are forecast for the Mitre 10 weekday evening peak, compared with 1,013 vph for the supermarket. Actual levels may be lower if there are linked trips between the retail stores occurring within the combined Site.

This additional vehicle activity will likely be a change in noise level of less than 1 dB for any MRZ sites directly opposite the main shared access, compared to the already consented supermarket traffic.

We also note that the peak periods for the retail stores are unlikely to coincide. The trade store is expected to generate greatest trips on Saturdays during late morning and early afternoon (480 vph), which will coincide with reduced levels of trip generation at the supermarket.

Traffic noise generated by the LFRZ-enabled activities are likely to be acceptable in the existing environment. We note that resource consent for any specific development of a trade store at the Site would result in both a detailed ITA and noise assessment being prepared in any case.

LFRZ noise mitigation

We have analysed the following additional noise mitigation treatments for the trade supply portion of the Site, beyond that consented for the supermarket alone:

1. A 2.5 m fence which meets the 'supermarket' fence and extends along the eastern boundary.
2. A full height wall to meet the loading bay canopy.
3. Extending the 10 m wide landscaping buffer from the supermarket area to the southern tip of the Site.

Noise levels within the MRZ with these mitigation measures will be below 50 dB L_{Aeq} at the closest potential façade line (1 m from the fence).

Noise levels will therefore achieve the permitted activity standards of NOISE-REQ1 in the PODP. We consider this appropriate protection of amenity and that the noise level and character would not be unreasonable. On this basis we support the proposed rezoning as being appropriate to manage noise, noting that noise will be assessed for specific activities at the time of consent.

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1.0 INTRODUCTION

Marshall Day Acoustics has been engaged to assess the noise effects arising from Foodstuffs (South Island) Properties Limited's (Foodstuffs) proposal to rezone 157 Levi Road, Rolleston (the Site) from Medium Density Residential Zone (MRZ) to Large Format Retail Zone (LFRZ), subject to an Outline Development Plan (ODP) within the Partially Operative Selwyn District Plan (PODP).

Our report assesses the Plan Change request from an acoustic perspective. The report considers the existing and future receiving environment; and both noise levels and associated noise effects that may occur based on a conceptual design characteristic of a large format retail activity on the site subject to practicable mitigation and design measures being implemented. The proposed ODP includes key elements to guide the form and location of development that, in combination with the proposed amendments to the LFRZ rules and matters of discretion, will enable a supermarket (already consented – RC216016) and a trade retail and trade supply store on the Site. This report assesses the suitability of the Site, the proposed ODP and the proposed rules, and provides acoustic-related recommendations.

Given that the supermarket is already consented, and therefore forms part of the existing environment, this report focuses on the proposed trade supply activity when assessing both potential noise levels, effects, and potential mitigation measures. A general description of the proposed activity prepared by Mitre 10 is provided below.

A glossary of acoustical terms used in this report is provided in Appendix A.

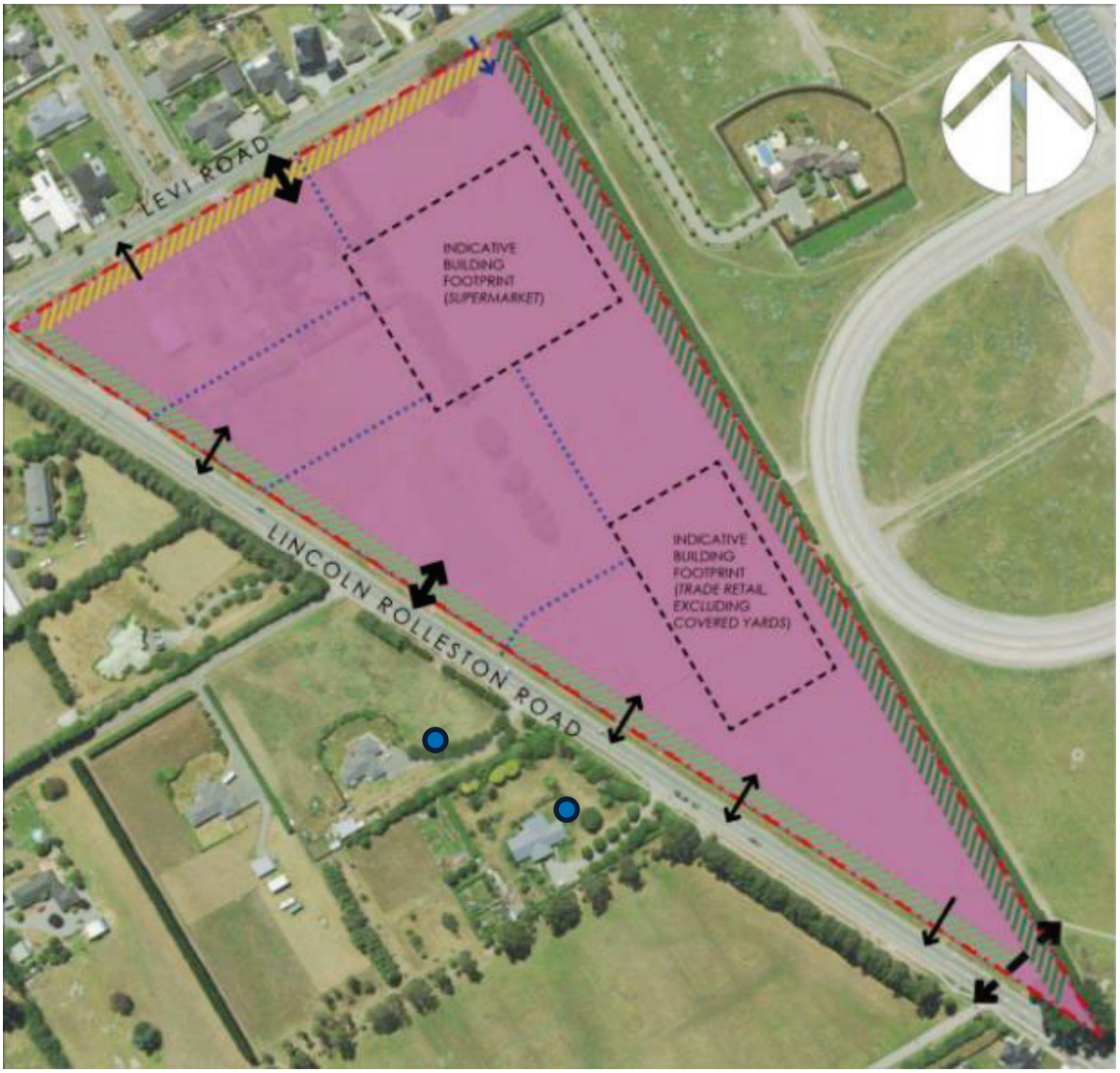
2.0 SITE DESCRIPTION & PROPOSAL

Both the Site and surrounding properties are zoned MRZ under the PODP (Figure 1). The MRZ is not an appropriate zone for the already consented supermarket activity, which is a better fit for LFRZ. In addition, as the supermarket does not utilise the entire Site, Foodstuffs seeks to re-zone the whole of the site to LFRZ to enable a trade retail or trade supply store on the balance of the site.

Figure 1: Zones as per PODP in relation to Site (shown as LFRZ).

All interfaces with surrounding MRZ sites are either directly adjoining the Site or on the opposite side of roads, as seen in the proposed ODP (Figure 2).

Figure 2: Proposed ODP layout for Site.



The interface along the eastern boundary between the supermarket goods vehicle accessway, the loading zone, and the MRZ proposed by PC71 was considered in the resource consent process. The activity of primary concern during that hearing was night-time deliveries to the loading zone, which required heavy goods vehicles to use the accessway that ran along the common eastern boundary between the supermarket and the PC71 site.

To accommodate this interface a solution was reached that included a 2 m noise control fence on the boundary between the adjoining sites, a 10 m wide biodiversity planting strip (which will provide a buffer zone) and 2.5 m high timber noise control fence within the supermarket site. Because this noise mitigation now forms a part of the consented environment. We do not intend to discuss this further, other than to note that this is an appropriate solution to accommodate limited night-time activity on the MRZ interface.

We have considered the proposed ODP and have used this as a basis for our assessment of interface effects.

We understand from the Integrated Traffic Assessment (ITA) that Lincoln Rolleston Road currently carries approximately 4,400 vehicles per day past the Site. The western side of Lincoln Rolleston Road opposite the Site is currently undeveloped in part and in large 'lifestyle' lots for the remainder. Two

lots (333 and 341 are marked with blue circles in Figure 2) have consent to subdivide creating 16 residential MRZ sections in total.

2.1 Description of Proposed Activity

Mitre 10 have provided the following description of the activity.

The Rolleston store is designed as a Mitre 10 store (not a Mega), that will work alongside the Hornby Mega Store in a Hub and Spoke model, with Hornby being the hub (or full offer store) and Rolleston being the spoke. The proposed store in Rolleston will have a retail customer focus and will be able to provide the local market with everything required for projects around the home, while being mindful that customers will be prepared to drive to nearby stores for larger purchases when advantageous. The store is proposed to have a very strong garden offer, featuring a large outdoor garden area, with a focus on bulk plantings and a strong range of Garden Décor. The comparatively oversized retail hall would allow for a full range of products with a more locally curated range than the Hornby store. The store anticipates installing a large children's play area, due to being amongst many new houses with young families.

Extended or more specialized products would be transferred from the Hornby Mega store to serve click and collect or special orders. The retail hall would include a large Click and Collect area at the front of the store, as this function is crucial for the Hub and Spoke model to work well. The Drive Thru would be a good size for a Mitre 10 store, being able to supply a full creditable offer for the trade and serious DIYer. Larger trade orders will be supplied from our off-site trade warehouse, nine minutes away in Hornby. The trade functions of the store, these along with all the non-customer facing functions would be run from Hornby Mitre 10.

In terms of trade activity, the Rolleston store is expected to be similar to Beckenham Mitre 10. Its trade sales are mainly to small one-man-band handymen and as a secondary supply to the tradesperson who is working in the area to pick up a few products they have run out of. Beckenham has trade sales of approximately 10% of its total. Where Hornby is closer to 35-40% trade sales as a percentage of the total.

3.0 PARTIALLY OPERATIVE DISTRICT PLAN & OTHER GUIDANCE

In undertaking our assessment, we have considered both the PODP and a range of other guidance typically used in New Zealand.

3.1 The District Plan (PODP)

The noise limits that apply under the PODP are defined in NOISE-REQ1 Table 5. For the LFRZ and MRZ interface, where noise is generated within the LFRZ, the noise limits that apply are the residential zone rules, which can be summarised as:

- 50 dB L_{Aeq} 0700 to 2200; and
- 40 dB L_{Aeq}/70 dB L_{Amax} 2200 to 0700.

Where noise is to be measured and assessed using the 2008 versions of NZS 6801 and 6802 respectively.

Where compliance with the noise limits above cannot be achieved, the activity status reverts to restricted discretionary, with the matters of discretion confined to those listed in NOISE-MAT1, which can be summarised as:

- Noise level, duration, and character, including ambient noise levels.
- Nature and location of nearby activities and the adverse effects they may experience.
- Whether the noise is likely to detract from the receiver's amenity values or general environmental quality.
- Whether sleep disturbance or adverse health or well-being effects are likely.
- Mitigation or attenuation measures proposed.
- The extent to which alternative locations and methods have been considered to avoid, remedy, or mitigate any adverse effects recognizing any technical, operational, and practical constraints.

3.2 National Planning Standards

The National Planning Standard November 2019, Chapter 15 (NPS.15) requires that district plans adopt the 2008 versions of NZS 6801 and 6802 (along with up-to-date versions of other 680X acoustics standards). Any plan rules must also adopt noise assessment methodology using the L_{Aeq} rating level and L_{max}, provided that the noise to be assessed falls within the scope of NZS 6802:2008.

3.3 World Health Organisation Guidelines

The World Health Organisation (WHO) Guideline Values for Community Noise (Berglund and Lindvall, 1999) provide guidelines for environmental noise exposure. For community or environmental noise, the critical health effects (those effects which occur at the lowest exposure levels) are sleep disturbance and annoyance.

These Guideline values are the exposure levels that represent the onset of the effect for the general population.

Table 1: WHO Guideline Values for the critical health effects of community or environmental noise

Specific Environment	Critical health effect(s)	dB L_{Aeq}	Time base (hours)	dB L_{AFmax}
Outdoor living area	Serious annoyance, daytime & evening	55	16	-
	Moderate annoyance, daytime & evening	50	16	-
Outside bedrooms	Sleep disturbance, window open (outdoor values)	45	8	60

3.4 New Zealand Noise Assessment Standard NZS 6802:2008

The latest version of NZS 6802:2008 "*Acoustics - Environmental Noise*" refers to the following guideline upper limits for sound exposure (rating level) at or within the boundary of a dwelling:

- Daytime: 55 dB $L_{Aeq\,(15\,min)}$
- Night-time: 45 dB $L_{Aeq\,(15\,min)}$ and 75 dB L_{AFmax}

3.5 Summary of Noise Guidance

Although the time-base used for averaging noise varies, the PODP, NZS 6802:2008, and WHO Guidelines all provide reasonably consistent proposed noise limits and day/night definitions. The PODP residential noise limit is slightly on the conservative side of guidance. The use of the L_{Aeq} noise parameter and assessment using NZS 6802:2008 by the PODP is consistent with NPS.15.

The PODP noise rules reflect the more conservative end of typical guidance and can be considered as appropriate for a residential area in our view. There are circumstances in which the proposed noise limit may be considered overly conservative. The Resource Management Enabling Housing Act 2021 made changes to the Resource Management Act 1991 which enables three story dwellings with little separation from site boundaries.

4.0 PROPOSED LFRZ NOISE EMISSIONS TO MRZ NEIGHBOURS

4.1 Immediately adjoining MRZ neighbours

Based on previous experience with trade supply companies and considering information provided in the plan change request, we anticipate that the noise level at the Site boundary of a trade supply and retail activity during the daytime would be between 50-65 dB L_{Aeq} depending on a range of factors and in the absence of any noise control or mitigation. In this case the indicative site layout (Appendix B) shows that the dominant noise generating activities at the Site interface will be goods deliveries using an accessway running between the Site boundary and the building, and (un)loading activity at the loading bay. There is also some potential for activity in the open-air yard to generate noise similar in nature to the loading bay, although at lesser intensity and further removed from the Site boundary – and therefore lower in noise level.

We understand the operation of the deliveries and loading bay will only occur during the PODP daytime hours. Specifically, although deliveries may occur from 0730 until 1600 hours, it is more likely that deliveries will occur from 0800 until 1600 hours Monday to Friday. We have been supplied with the results of a delivery movement schedule for a comparable trade store in Christchurch. This indicated that there was one truck and trailer delivery per week, along with a variable number of smaller delivery trucks ranging from 9 and 11m rigid trucks, smaller trucks, and courier vans. For the purposes of our assessment, we have taken the busiest day for general deliveries (a Thursday with 23 deliveries), rounded this up to 24 deliveries, and assumed two truck and trailer deliveries rather than one. This ensures that the assessment is appropriately conservative and accounts for the potential that additional movements not accounted for may occur.

We have assumed that all deliveries enter the site off Lincoln Rolleston Road at the internal roadway that divides the supermarket and trade store portions of the Site. Vehicles will proceed to the end of this road adjacent to the MRZ interface, before turning right onto the trade store goods vehicle access. A limited number of deliveries may be made to the garden centre back of house, but most deliveries will occur at the loading bay area or in the open yard itself.

4.2 MRZ neighbours separated by Lincoln Rolleston Road

The ITA notes that the joint use of the main site access from Lincoln Rolleston Road will be similar to the model successfully adopted by PAK'nSAVE and Mitre 10 in Frankton, Queenstown. The supermarket and trade retail and supply activity are anticipated to operate independently, with a high level of pedestrian and vehicle integration between the activities. That supports internal movement between stores, without requiring access back to the arterial road network. Future resource consents and resource consent variations would be required to contemplate and assess Site integration through the PODP TRAN 8 High Trip Generator rule requirements.

The ITA predicts that the aggregate weekday evening peak hour trip generation of the trade store would be 260 vph, compared to 1,013 vph for the supermarket. This makes no allowance for reduced trip generation resulting from linked trips occurring within the combined Site.

While no detailed splits between individual Site access points have been estimated at this time, the result at the main shared access will likely be a change in noise level of less than 1 dB for any MRZ sites directly opposite, compared to the already consented supermarket traffic. In addition, the trade store peak hour (1600 to 1700) is not expected to coincide with either the supermarket peak hour (1700 to 1800) or the road network peak (1645 to 1745).

The trade store is expected to generate greatest trips on Saturdays during late morning and early afternoon (480 vph), which will coincide with reduced levels of trip generation at the supermarket.

We consider that the likely levels of traffic noise generated by the LFRZ-enabled activities are likely to be acceptable in the existing environment. We note that resource consent for any specific development of a trade store at the Site would result in both a detailed ITA and noise assessment being prepared in any case.

5.0 APPROPRIATE MITIGATION OF NOISE BY LFRZ ACTIVITIES IS PRACTICABLE

Typical noise mitigation measures which would be required to enable the establishment of a trade supply activity adjacent to a boundary of a residential zone are discussed below. In addition to these controls, the business activities would require general good practice in noise control design.

Typically, noise mitigation measures such as boundary setbacks, barriers, or screening are addressed during the consenting process for a particular activity. For mechanical plant noise, common practice is that detailed design is most appropriately addressed after resource consent for a particular activity has been obtained. In such cases we normally suggest that a condition is offered at resource consent stage requiring a report detailing mechanical plant acoustic design and performance will be received by Council before issuing building consent.

In the current situation where the appropriateness of the LFRZ/MRZ interface needs to be established, we consider the critical point is to demonstrate that a satisfactory noise level can be achieved within the respective zone frameworks. For dwellings within the MRZ zone we have assumed that these could be three storeys in height and constructed within 1 m of the Site boundary. This may not occur, but we understand this to be the worst case in terms of sensitive receivers on this interface.

We have considered the existing consented boundary treatment between the consented PAK'nSAVE Supermarket on the northern portion of the Site and adjacent MRZ as a starting point. This situation is very similar to the trade store/MRZ interface in the nature of the activities, with the following key differences:

- The proposed trade store loading area is slightly closer to the boundary.
- The trade store will generate a greater number of deliveries on the busiest day of the week.
- The trade store only receives deliveries during the daytime.

An indicative site layout has been provided to us to assist in our assessment of the rezoning application (Appendix B).

We have considered a number of noise mitigation treatments that could be usefully applied to the trade supply portion of the Site. The first of these is a 2.5 m noise control fence which begins at the southern end of the similarly constructed and situated 'supermarket' fence, before extending along the eastern side of the trade store goods accessway and yard until reaching the exit point at the southern tip of the Site. The fence would be broken near its midpoint by a noise control wall forming enhanced noise mitigation for the loading bay (see below). This would be the primary means of reducing truck and van noise emissions to dwellings within the adjacent MRZ zone. This fence will achieve a high degree of noise mitigation at the ground level of dwellings, with the level of attenuation decreasing, but remaining meaningful, at first and second storey levels. This wall will need to join to the similar 'supermarket' wall within the landscaping buffer at the north of the Site. At its southern end this fence may be reduced in height sufficiently to improve truck driver's leftward visibility to ensure safe egress from the site.

The second treatment is a wall rising from ground level to the height of the loading bay canopy and along the loading bay's full width. This wall will need to be constructed in a manner much like a noise control fence, although the materiality and appearance can differ. The wall must have a surface mass

of at least 10 kg/m^2, and be free from gaps, cracks, and holes and be durable in nature. This wall is specifically positioned at this location and extent to control the noise levels associated with unloading and loading of delivery vehicles, including the use of forklifts, pallet trolleys, communication etc.

The third feature is the 10 m wide landscaping buffer extending southwards from the matching 'supermarket' buffer along the site boundary to the southern tip of the Site. This setback permits noise passing over the noise control fence and around the noise control wall to attenuate before reaching receiving sites.

Each of these features is indicated in the site layout drawing provided in Appendix B.

After assessing the predicted noise levels in accordance with NZS 6802:2008, we estimate interface noise levels with these mitigation measures ranging from 42 to 50 dB L_{Aeq} 1 m inside the MRZ zone at the potential façade line. The noise level depends on factors such as height above ground, proximity to loading activities, and the amount of screening arising from the proposed noise control fence and loading bay wall. These predictions include no allowance for special audible character because of the nature of the likely dominant noise source (vehicles); or residual noise level because the residual noise level is not sufficiently high to affect the predicted noise level. The maximum permitted 5dB reduction for averaging permitted under the Standard has been applied as the delivery activities assessed will be present for less than 30% of the daytime period (the prescribed timeframe).

6.0 DISCUSSION

The mitigated daytime noise levels of 42 to 50 dB L_{Aeq} 1 m inside the MRZ zone demonstrate that with appropriate site layout, building design, and noise control barriers, noise levels that comply with the permitted activity standards of NOISE-REQ1 in the PODP can be achieved.

We have adopted a worst-case scenario position by assuming that dwellings on immediately adjoining MRZ sites would be constructed just one metre from the Site boundary and to three storeys in height and that the most intensive likely day of goods deliveries based on a similar Mitre10 has been considered. Because of this small separation between the boundary and the building in this scenario, we have not assessed the potential amenity effect on outdoor living spaces (as there essentially are none). However, as noted above, the noise levels would meet the permitted activity daytime noise standard and other guidance. We consider this appropriate protection of amenity and that the noise level and character would not be unreasonable.

We also note that even if upper-level bedrooms or living rooms had their trade supply site facing windows ajar for ventilation, interior noise levels arising from the activity would be suitable for normal day to day activities such as conversation, listening to music, radio or watching TV, or even sleep.

Should a specific trade retail and trade supply activity result in noise levels that are greater than the permitted activity noise standards due to night-time activity or elevated daytime noise, a resource consent application and assessment of noise effects would be required. However, given that in this assessment we have been conservative and built in a certain level of ‘stress test’ to demonstrate that compliant, satisfactory, noise levels can be achieved in a practicable manner, the rezoning of the Site will not result in unacceptable adverse noise effects.

Therefore, we consider that rezoning is the most appropriate course with respect to noise related matters at this time, and the noise effects of a specific proposal can be considered and managed when a site-specific proposal eventuates.

7.0 CONCLUSIONS

The mitigated daytime noise levels of 42 to 50 dB L_{Aeq}, calculated 1 m inside the MRZ zone demonstrate that with appropriate site layout, building design, and noise control barriers, noise

levels that comply with the permitted activity standards of NOISE-REQ1 in the PODP can be achieved. We consider this appropriate protection of amenity and that the noise level and character would not be unreasonable.

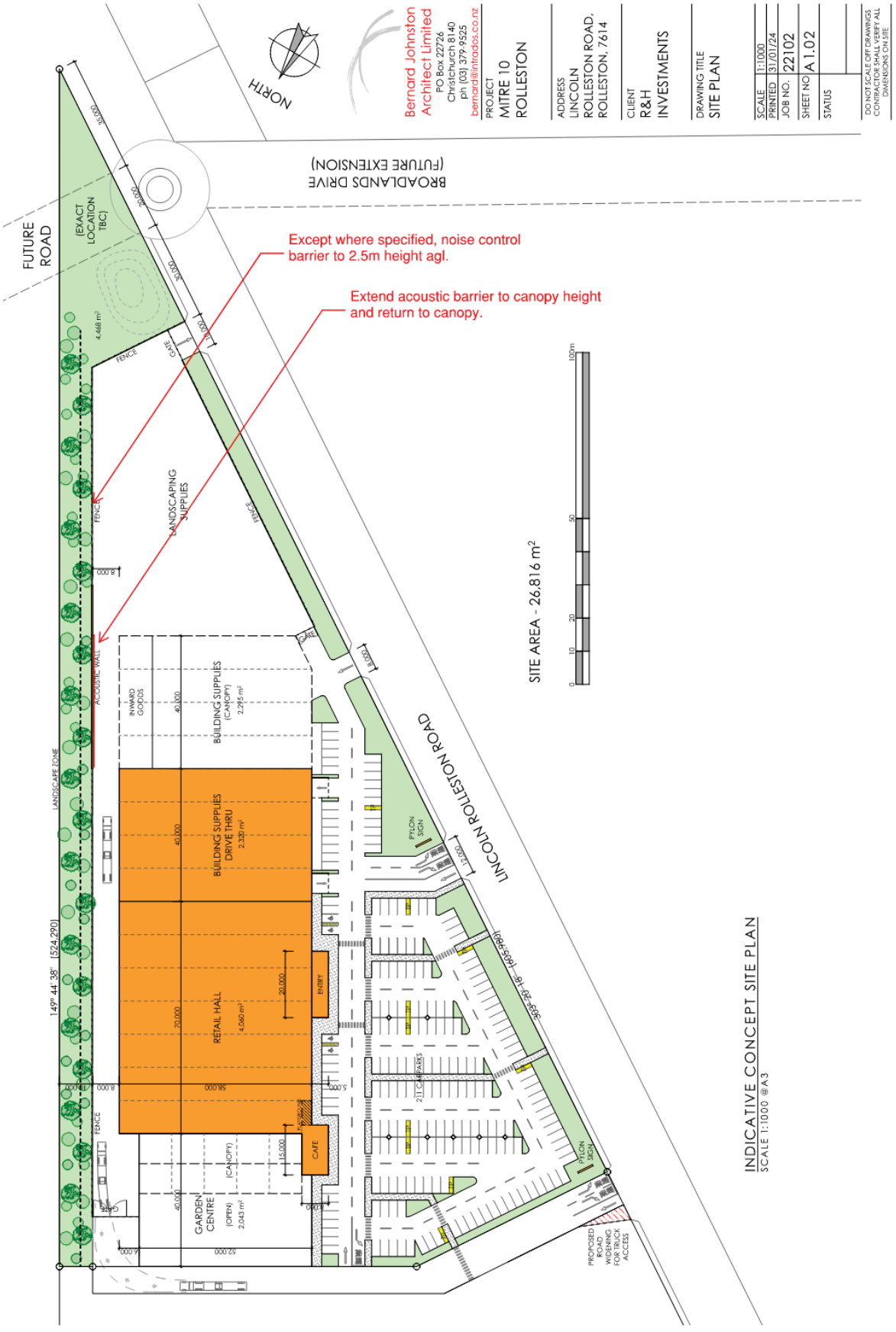
We also note that even if upper-level bedrooms or living rooms had their trade supply site facing windows ajar for ventilation, interior noise levels arising from the activity would be suitable for normal day to day activities such as conversation, listening to music, radio or watching TV, or even sleep.

Therefore, we consider that rezoning is the most appropriate course with respect to noise related matters at this time, and the noise effects of a specific proposal can be considered and managed when a site-specific proposal eventuates.

APPENDIX A GLOSSARY OF TERMINOLOGY

Noise	A subjective term used to describe sound that is unwanted by, or distracting to, the receiver.
dB	Decibel. The unit of sound level.
A-weighting	A set of frequency-dependent sound level adjustments that are used to better represent how humans hear sounds. Humans are less sensitive to low and very high frequency sounds.
L_{Aeq}	The equivalent continuous A-weighted sound level. Commonly referred to as the average sound level and is measured in dB.
L_{Amax}	The A-weighted maximum sound level. The highest sound level which occurs during the measurement period. Usually measured with a fast time–weighting i.e. L_{AFmax}
Ambient	The ambient noise level is the noise level measured in the absence of the intrusive noise or the noise requiring control. Ambient noise levels are frequently measured to determine the situation prior to the addition of a new noise source.
Masking Noise	Intentional background noise that is not disturbing, but due to its presence causes other unwanted noises to be less intelligible, noticeable and distracting.
Special Audible Characteristics	Distinctive characteristics of a sound which are likely to subjectively cause adverse community response at lower levels than a sound without such characteristics. Examples are tonality (e.g. a hum or a whine) and impulsiveness (e.g. bangs or thumps).
Rating Level	A derived level used for comparison with a noise limit. Takes into account any and all corrections described in NZS 6801 and NZS 6802, e.g. duration, special audible character, residual sound etc.

APPENDIX B INDICATIVE SITE LAYOUT



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