Appendix H

Noise Assessment & Addendum

MARSHALL DAY Acoustics

PAK'NSAVE PAPANUI
NOISE ASSESSMENT

Rp 001 R02 20171214 | 20 July 2018

MARSHALL DAY Acoustics

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Project: **PAK'NSAVE PAPANUI**

Prepared for: **Foodstuffs South Island Limited**
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Attention: **Rebecca Parish**

Report No.: **Rp 001 R02 20171214**

Document Control

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DRAFT	-	For initial comment	21 June 2018	Gary Walton	
DRAFT	01	Updated traffic volumes	13 July 2018	Gary Walton	Rob Hay
Approved	02	Revised activity description	20 July 2018	Gary Walton	Rob Hay

EXECUTIVE SUMMARY

We have assessed noise associated with a proposed new PAK'nSAVE supermarket development in Christchurch, at the junction of Main North Road and Northcote Road/QEII Drive in Papanui.

The application site is adjacent to the head offices of the applicant, Foodstuffs South Island Limited, and to their former distribution centre, which is now operated by a logistics company. The new supermarket will replace several former industrial buildings on the site. However, despite this industrial background, the site is bounded by residential-zoned properties on two sides. These residential properties have been the focus of our assessment.

The supermarket and associated development will also function as an emergency coordination facility, used in times of major disruptions such as natural disasters. The new building will be constructed to a high level of structural integrity and a variety of dedicated services will enable this secondary use. In terms of noise, we are unaware of any potential implications of this emergency function beyond extended use of the backup electricity generator, which is in any case assessed as part of normal operations. In addition, the District Plan exempts activities at emergency service facilities from compliance with the noise standards. As such, we have not considered noise from emergency operations in detail in this report.

The main noise sources that we have considered are: vehicle movements within the car parking areas; deliveries to the supermarket and on-site fuel filling station; and building services plant noise associated with the supermarket.

Our assessment shows that there is potential for vehicle activity to generate levels of noise that exceed the District Plan noise standards for permitted activities. The status of the activity is therefore restricted discretionary with respect to noise.

In this case, the potential for adverse noise effects is reduced by the high level of traffic noise and other activity in the area during both the day and night-time. Overall, we expect that noise generated by the proposed development will be acceptable in the context of the existing ambient noise environment.

TABLE OF CONTENTS

1.0 INTRODUCTION

Marshall Day Acoustics has been engaged by Foodstuffs South Island Limited (Foodstuffs) to assess noise emissions associated with a proposed new PAK'nSAVE supermarket in Papanui, Christchurch. The supermarket will be developed on land currently occupied by existing industrial buildings and will include an associated fuel facility, ancillary offices, car parking, upgraded access and landscaping.

Our assessment has primarily been based on the architectural drawings developed by McCoy Wixon Architects (dated 06/07/2018) along with site plans and traffic modelling prepared by Abley Ltd (dated 19/06/2018).

This report summarises the results of our calculations and presents our assessment of noise effects. A glossary of acoustical terminology used in this report is provided in Appendix A.

2.0 SITE AND ACTIVITY DESCRIPTION

The proposed supermarket will be established at 171 Main North Road, which is near the junction of Main North Road and Northcote Road/QEII Drive. The development will also utilise land that is part of 165 Main North Road and 3-7 Northcote Road.

The application site is currently occupied by former industrial buildings that will be removed as part of this development. Foodstuffs offices are also within the site, to the south of the proposed supermarket, and their former distribution centre to the west, which is now operated by a logistics company, Toll Group. The site and locality is shown in Figure 1.

Figure 1: Aerial image showing application site (outlined in red) and planning zones

There are a number of residential properties in the vicinity, in addition to schools and parks. Main North Road, Northcote Road and QEII Drive are all significant roads – classified as Major Arterial Routes – that each carry in the order of 30,000 vehicles per day (AADT).

2.1 Proposed Activities

We understand that Foodstuffs seek to redevelop the site to allow for the following activities:

- Establish, operate and maintain a supermarket and associated fuel facility, ancillary offices, car parking, access, signage and landscaping at 171 Main North Road;
- Provide an emergency coordination facility at 171 Main North Road; and
- Alter the existing site access and car parking arrangements for the existing commercial tenancies located at 3-7 Northcote Road.

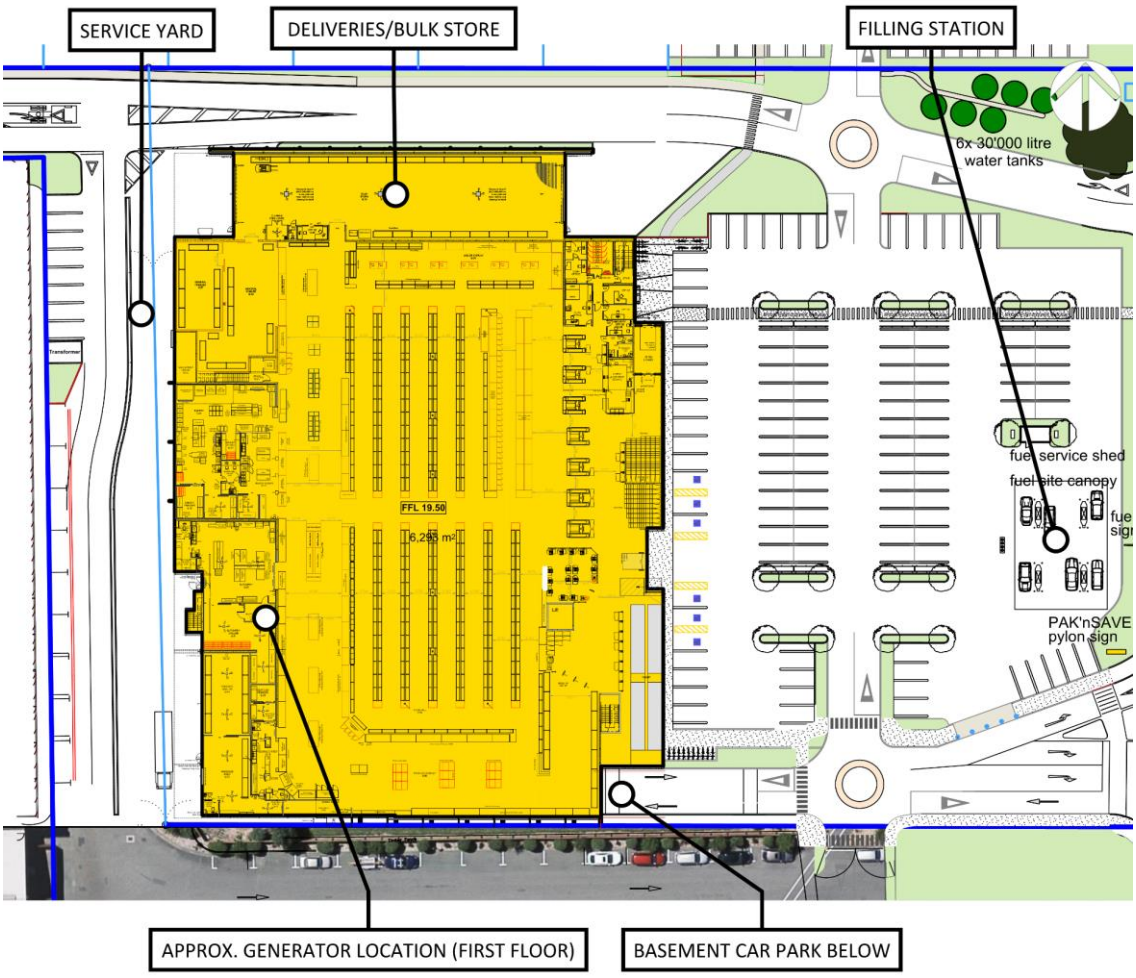
These aspects are described in further detail below.

2.1.1 Proposed Supermarket

The new building and associated car parks will be positioned as shown in Figure 2 below. The 6,890 m^2 supermarket will comprise a large retail space and back-of-house food preparation, storage, office and plant spaces. As shown in Figure 2, there will be drive-through delivery/loading bay and bulk store located on the northern side of the building with a gated service yard to the west.

The supermarket will be open between 0700 and 2300 hrs, seven days a week. Outside of these hours there may be some additional activities such as deliveries of goods and fuel and occasional car movements associated with night-fill and cleaning staff.

Figure 2: Proposed site layout plan



External wall construction will be precast concrete for lower sections and metal wall cladding for upper sections, along with metal roofing. The exception is the delivery bay, where walls will be entirely of precast concrete, with roller doors at either end. A floor plan is provided in Appendix B.

A backup diesel-electric generator is also proposed that will be located within the first-floor plant room (located in the western portion of the building, above the butchery). We understand that this is also likely to be used at times for "load shedding" or similar non-emergency use, and will require brief and occasional daytime testing as part of routine maintenance (typically once per week or month in our previous experience).

2.1.2 Vehicle Access and Car Parking

There will be two external car parking areas for the supermarket and Northcote Road retail tenancies, with another large underground car park accessed via a ramp adjacent to Access 1 (shown in Figure 3). The main parking area will also incorporate an eight-pump fuel filling station. A new signalised intersection on Main North Road will provide the main access to/from the proposed supermarket and existing retail buildings.

No changes are proposed to the existing Foodstuffs Head Office building or operation, but the car park access point for the offices will require relocation further south on Main North Road to accommodate the proposed supermarket establishment.

There is a right of way (ROW) on the northern boundary through to Lydia Street that is likely to be primarily used by service vehicles accessing the loading bay. We understand that this will not be closed-off to the public and some passenger vehicle use of this access may therefore occur at times.

Vehicle movement patterns are discussed in more detail in Section 4.1.

Figure 3: Vehicle access points 1 to 4

2.1.3 Emergency Coordination Facility

We understand that Foodstuffs intend to enable the development to function as an emergency coordination facility, which will act as a Civil Defence base and aid community resilience during time of major disruptions such as natural disasters. This function will utilise both new and existing facilities on the site, including the proposed supermarket, Foodstuffs' Existing Head Office and associated vehicle access.

The new building will be constructed to a high level of structural integrity (IL4 standard) and the services will allow for a degree of self-sufficiency. A variety of dedicated services will provide for this operation, including use of the supermarket's backup generator, extended fuel supply for the generator from the filling station, and storage tanks for both potable and waste water.

In terms on this assessment, we are unaware of any potential implications of this emergency function beyond extended use of the backup electricity generator. There are no other significant built-in noise sources, with only a small number of additional water and fuel pumps likely to be used. Day-to-day use of the generator for load shedding is already considered in this report, therefore any specific emergency functions have not been assessed against the usual noise standards (discussed further below).

2.1.4 Existing Commercial Activities

The existing buildings in the north of the site at 3-7 Northcote Road will be retained. These comprise a retail outlet and an automotive servicing facility.

The continued operation of these businesses is outside of the scope of this assessment and we understand that there will be no changes arising from this development. Access to the adjacent car parking area will be redesigned to better integrate with the overall site. Any noise effects resulting from changed use of this car park area due to the proposed supermarket are considered later in this report.

3.0 NOISE ASSESSMENT CRITERIA

3.1 Christchurch District Plan

Rule 6.1.5.1.1 of the Christchurch District Plan states that any activity (that is not otherwise exempt from the rules) is permitted with respect to noise if it meets the zone noise limits given in Rule 6.1.5.2.1 outside the central city. The relevant zone noise limits are given in Table 1 below.

Table 1: Zone noise limits (excerpt from Table 1, Rule 6.1.5.2.1)

Zone of site receiving noise from the activity		0700 – 2200 hrs		2200 – 0700 hrs	
		dB L_{Aeq}	dB L_{Amax}	dB L_{Aeq}	dB L_{Amax}
a.	All residential zones*	50	-	40	65
e.	All commercial zones	55	-	45	70
f.	All open space zones				
k.	Specific Purpose (School) Zones				
l.	Industrial General Zone†	70	-	70	-

** Other than in the Accommodation and Community Facilities Overlay.*

† Except that noise levels shall not exceed 50 dB L_{Aeq} or 75 dB L_{Amax} between 2200 and 0700 at any residential unit lawfully established prior to 6 March 2017.

3.1.1 Application of Noise Limits

These rules apply at the boundary of any site receiving noise from the activity, excluding Transport Zone (road) boundaries, as shown in Figure 4 below. We have not considered any internal property title boundaries within the application site as these are all under Foodstuffs' control.

Figure 4: Adjoining site boundary noise limits (internal application site boundaries omitted)

We note that there are two planning zone boundaries within the site: at the interface between the Industrial General and Commercial Local zones in the north of the site and at the interface with the Residential Suburban zone in the south-east (159-161 Main North Road). Rule 6.1.4.1.c of the District Plan states that *'where a site is divided by a zone boundary then each part of the site divided by the zone boundary shall be treated as a separate site for the purpose of these rules'*.

As a result, where vehicles cross these boundaries, there is the potential for a technical non-compliance with the District Plan limits. This is also the case with vehicles crossing the site boundary within the Industrial General Zone at the end of the ROW/Lydia Street access. However, it is impractical to assess noise from moving sources crossing a boundary and, moreover, we note that the effects of any technical non-compliance would only be associated with land under Foodstuffs' control, or otherwise not sensitive to noise. We have therefore not addressed this issue further.

3.1.2 Assessment Considerations

Where activities exceed the permitted activity standards given in Table 1, the following apply:

- Activities exceeding by 10 dB or less shall have restricted discretionary status (Rule 6.1.5.1.3).
- Any activity listed in Rule 6.1.5.1.1 P2 that does not meet one or more of the activity specific standards; or not otherwise provided for as a permitted, restricted discretionary or non-complying activity, is discretionary with respect to noise (Rule 6.1.5.1.4).
- Activities exceeding by more than 10 dB are non-complying with respect to noise (Rule 6.1.5.1.5).

Rule 6.1.4.1 requires that, unless otherwise specified, noise should be measured in accordance with New Zealand Standard NZS 6801:2008 *"Acoustics – Measurement of environmental sound"* and assessed in accordance with New Zealand Standard NZS 6802:2008 *"Acoustics - Environmental Noise"* (except that provisions referring to Special Audible Characteristics shall not be applied).

3.1.3 Generator Rules

The District Plan has specific provisions for noise from generators, primarily regarding exemptions for emergency use (Rules 6.1.4.2 and 6.1.6.2). As we understand that the proposed generator will be used for load-shedding, we have not considered any exemptions.

The generator will be designed to ensure that noise emissions comply with the applicable noise limits. Although the specific details of the equipment are not known at this stage, we note that it will be located internally and therefore expect that compliance will be achievable with appropriate noise mitigation to the external air paths and exhaust systems.

3.1.4 Emergency Coordination Facility Exemption

Rule 6.1.4.2.a.x. exempts *"activities at emergency service facilities associated with emergency response and emergency response training"* from the provisions of the "usual" noise standards at Rule 6.1.5 (see Section 3.1 above). The District Plan's definition of "emergency service facilities" explicitly includes emergency coordination facilities.

This is in accordance with our expectations as noise from emergency activities is generally an insignificant factor in times of crisis. In addition, we note that emergency use will typically be infrequent and also for short-term duration when it does occur. As an example, the potable water tanks only hold around three day's supply, thus limiting the time for which any associated pumps are likely to be used.

On this basis we do not consider that noise from emergency operations warrants any detailed discussion in this report. The most significant noise source, the backup generator, is considered elsewhere in this assessment and its operation will not result in adverse noise effects during emergencies.

3.2 Other Guidance

We consider that the noise standards given in the District Plan are appropriate for the neighbouring receiving environment and are aligned with other common guidance.

NZS 6802:2008 provides guidance on desirable upper limits of sound exposure for residential-use land. This is 55 dB $L_{Aeq\,(15\,min)}$ during the day and, at night, 45 dB $L_{Aeq\,(15\,min)}$ and 75 dB L_{Amax}.

Similarly, guidance from the World Health Organization (WHO) discusses exposure levels for the onset of critical health effects for the general population of: 50 dB $L_{Aeq\,(16\,hr)}$ for moderate annoyance daytime; 55 dB $L_{Aeq\,(16\,hr)}$ for serious annoyance daytime; and 40 dB $L_{Aeq\,(8\,hr)}$ outside bedrooms at night (with a maximum of 60 dB L_{Amax}).

The District Plan's limits of 50 and 40 dB L_{Aeq} for residential areas during the day and night, respectively, is therefore at the lower end of other common guidance. This therefore provides for a high level of residential amenity. More lenient noise limits apply in other areas to reflect their reduced sensitivity to noise compared with residential areas.

We do not consider the neighbouring Toll Group distribution warehouse within the Industrial General zone to be a noise-sensitive activity. This is consistent with the zone's 70 dB L_{Aeq} limit, which applies at all times – day and night.

4.0 NOISE GENERATION

In our experience noise emissions from supermarkets are typically governed by:

- Building services plant noise (mechanical ventilation equipment and backup generators);
- Noise from car parking and vehicle movements; and
- Noise from delivery trucks and unloading.

We understand that peak use of the car park will typically be between 1700 and 1800 hrs. Deliveries will be restricted to ensure that they do not coincide with this period. Peak hour traffic and deliveries will therefore not occur simultaneously. In addition, building services noise will be inaudible during the day. These activities have therefore all been assessed separately for the day. At night, we have considered cumulative noise from delivery vehicles and mechanical plant.

Noise sources associated with the fuel filling station will be similar to those above. There will be light vehicle movements that are no different in nature to those associated with the car park and, beyond these, fuel delivery tankers. We have assumed that the fuel storage tanks will be gravity fed from the tankers, so there will be no pumps required.

4.1 Vehicle Activity and Trip Generation

Based on information provided by Ableys Ltd, we understand that the following numbers of vehicle movements in Table 2 are anticipated.

Table 2: Anticipated vehicle movements (from Ableys Ltd)

Component	Peak Hour	Total Daily
PAK'nSAVE Customers	1,155	11,547
Delivery Vehicles	0	56
Total	*1,155*	*11,603*

The majority of movements above will be via the main site access from Main North Road – 83% of all movements will use this access. Around 10% are expected to use the Lydia St ROW and the remainder split between the other small access points.

4.1.1 Delivery Vehicles

In terms of the 56 daily delivery vehicle movements, we understand that the majority of vehicles will access the site via the Lydia St ROW and exit the site via either the Main North Road ROW or the main site access (fuel deliveries only). These are shown in Figure 5, which also indicates the location of the key calculation locations used in our assessment.

As a result, there will be up to 28 vehicle movements per day along the Lydia St ROW each day in relation to deliveries. Of these, six will be heavy- or semi-truck and trailer units, while the remainder will be smaller trucks and light vans. Although the majority or deliveries are likely to occur during the day, these could also take place at night.

Figure 5: Delivery vehicle movement paths and calculation receiver locations

4.1.2 Assessment Scenarios

We have primarily focussed on the two busiest traffic routes – the main site access from Main North Road (Access 1, opposite receiver 5) and movements along the Lydia St ROW (Access 4, allowing traffic to pass receiver 3). The other access points will experience much lower volumes of traffic in comparison. These lower movements have been included in our calculations but are not presented in detail in this report for simplicity.

We have undertaken calculations that represent the likely worst-case (i.e. busiest) scenarios during each of the following time periods:

1. Daytime peak hour – highest number of light vehicle movements, but no deliveries;
2. Daytime typical hour – remainder of daytime period with average car movements but including delivery vehicles servicing the bulk store and fuel station; and
3. Night-time – delivery vehicles accessing the site and a small number of light vehicles.

Light vehicles are included in the last scenario to allow for the potential for any vehicle movements associated with staff at night. These may be due to daytime staff leaving and/or the presence of night-fill and cleaning staff.

For these scenarios we have calculated the rating level (in accordance with NZS 6802:2008) for each period. The typical daytime scenario includes an adjustment to account for the limited duration of deliveries over the course of the day. Heavy delivery vehicles will occur for less than 30% of the day and receive a -5 dB adjustment; smaller delivery vehicles will visit the site more frequently and only warrant a -1 dB adjustment. No averaging is allowed at night. No adjustment has been made for any special audible characteristics, as per Rule 6.1.4.1 of the District Plan.

As parking spaces are generally not located on residential boundaries, noise from multiple vehicles moving through the car parks' internal roads will be of more significance than any noise from individual vehicles starting or manoeuvring within a space. We have therefore not discussed noise from "parking activity", and the calculations instead focus on vehicle movement noise.

4.2 Vehicle Noise Levels

Based on the information in Section 4.1 above, noise levels for each scenario have been calculated at the receiver locations shown in Figure 5. These locations represent the highest noise level received along the critical assessment boundaries. The results are presented in Table 3 for each of the calculated activity scenarios.

Table 3: Calculated noise levels from vehicle movement scenarios

Receiver	Rating Noise Level, dB $L_{Aeq\ (15\ min)}$			Night Max., dB L_{Amax}
	Peak Hour	Typical Day	Night	
1. 8 Northcote Road	**51**	49	39	62
2. 9A Northcote Road – Site boundary	**52**	**52**	**46**	**69**
– First floor façade	**55**	**54**	**49**	**71**
3. 27A Northcote Road	48	54	**50**	**73**
4. 186 Main North Road	**56**	**50**	**42**	60
5. 202 Main North Road	**56**	**54**	**45**	**68**
6. Toll Group Boundary	55	55	57	81

4.3 Building Services Plant

Noise from external mechanical plant associated with the activity can be designed to achieve appropriate noise levels. We understand that most plant will be situated internally within the plant room, which has only external wall, facing to distribution centre to the west. Roof level plant is likely to be confined to small fans and supply air inlets, to which appropriate noise control (e.g. attenuators) can be fitted if required.

While the exact details are not confirmed at this stage, the proposed plant is likely to be similar to equipment used on other recent supermarket developments with which we have been involved. In our experience, adequate noise control can be achieved by running any externally located fans at a lower duty during the night-time period.

We recommend that an appropriately worded condition of consent be included to ensure that noise levels from mechanical services plant are appropriately controlled. Provided this plant achieves the required noise levels, noise emissions will be acceptable.

Although the backup generator will generate a significant level of noise internally, the generator room does not have any external walls. Noise breakout through the roof and any ventilation paths will therefore be the only aspects that require any noise control treatment. The exact requirements of such noise control are dependent on the final design of the building and equipment specifications, but we expect would be relatively straightforward, e.g. a heavy-weight ceiling to generator room and attenuators/silencers fitted to all air paths.

For our calculations, we have assumed that mechanical plant noise at all residential boundaries will be sufficiently low (i.e. < 35 dB L_{Aeq}) to ensure there will not be any increase in cumulative noise levels from vehicle activity, etc.

4.4 Deliveries and Services

The enclosed design of the bulk store and primary delivery area will ensure that noise from unloading of delivery vehicles will be contained within this area. To be effective, it will be necessary to ensure that the roller doors at either end remain closed other than as required for access.

In addition, we understand that electric, rather than diesel, forklifts will be used, thus further limiting any noise from this area.

Regarding the external gated service yard, we consider it appropriate to only undertake noisy activities here during the daytime. This includes the collection of waste, management of skips, pallet disposal, etc.

Much of the noise associated with these back-of-house activities is due to the operation of vehicles, which is described in detail above. We do not expect that the routine use of these areas will generate high levels of noise at nearby receivers.

5.0 ASSESSMENT

The predicted noise levels in Table 3 indicate that there is the potential for vehicle activity to generate levels of noise that exceed the District Plan noise standards, although not by more than 10 dB at any time. The status of the activity with respect to noise is therefore **restricted discretionary**. The most significant difference to the permitted standard is where deliveries occur at night, in which case the predicted level is up to 10 dB above the night-time noise standards.

In this case, the potential for adverse noise effects is reduced by the already high level of traffic noise and other activity in the area, including at night.

There are existing heavy vehicle movements in the area associated with the adjacent Papanui Distribution Centre at 2 Lydia St, currently operated by Toll Group and formerly by Foodstuffs. Although we are not aware of the specific number of vehicle movements associated with this operation, we understand that Toll's operation is not subject to any night-time restrictions.

The application site and surrounding dwellings are also close to two Major Arterial routes – Main North Road and Northcote Road – both of which carry in the order of 30,000 vehicles every day. Our analysis of Council's traffic volume data (based on 2011 counts) suggests that there is a consistent level of activity through the night with between around 80 and 90 vehicles per hour on each road between 0200 and 0400 hrs. This data is provided for reference in Appendix C.

This high level of traffic means that the closest dwellings to the road will be subject to existing levels of road traffic noise up to 70 dB $L_{Aeq\,(24\,hr)}$. During the night, we expect that all adjacent dwellings will receive road traffic noise levels of between 50 and 55 dB $L_{Aeq\,(15\,min)}$ during the quietest period of the night.

Predicted noise levels from heavy vehicle activity at night do not exceed 50 dB $L_{Aeq\,(15\,min)}$ and we note that these will only occur infrequently. It is unlikely that a high number of heavy vehicle deliveries will take place during the quietest, most sensitive, periods of the night. Outside of these times existing road traffic will provide a sufficient degree of masking noise to mitigate any potential noise effects.

In addition, noise generated by mechanical plant will not generate any notable adverse noise effects. Even if this plant were to run through the night, it will be appropriately designed to ensure that noise emissions are sufficiently low alone and also significantly below the level of delivery vehicles, etc.

6.0 CONCLUSIONS

Our assessment has found that:

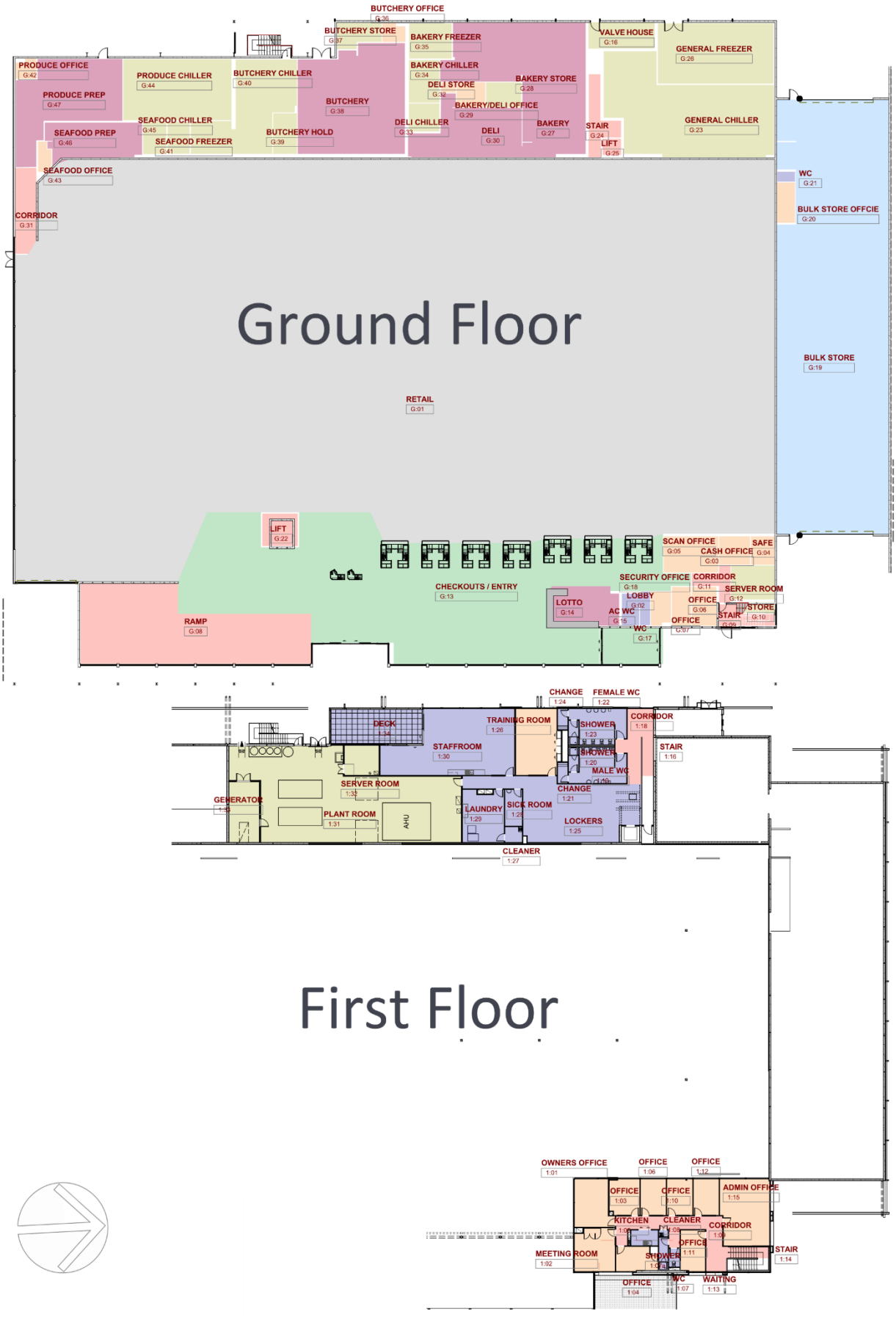
- Vehicle movements associated with the proposed supermarket and related development will generate the highest levels of noise of all activities assessed;
- Noise emissions from other sources, such as building services plant, will be minimal and their installation can be designed to comfortably achieve compliance with the permitted activity noise standards;
- Noise from vehicle activity is predicted to generate levels of noise that exceed the relevant permitted activity Christchurch District Plan noise standards;
- The status of the activity is therefore restricted discretionary with respect to noise;
- The highest noise levels at adjacent residential receivers will be due to heavy delivery vehicles and noise levels here will exceed the daytime noise standards;
- Where deliveries occur at night, the night-time noise standards will also be exceeded; and
- Public/customer use of the Lydia St ROW may also marginally exceed the daytime noise standards during the peak hour.

We consider that potential adverse noise effects from the activity will be reduced by the existing high levels of traffic noise in the environment, which is associated both with road traffic on local major arterial roads and with activity in the adjacent distribution centre. Overall, we expect that the levels of noise generated by the proposed activities will be acceptable in this context.

APPENDIX A GLOSSARY OF TERMINOLOGY

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.
dB	Decibel The unit of sound level. Expressed as a logarithmic ratio of sound pressure P relative to a reference pressure of Pr=20 μPa i.e. dB = 20 x log(P/Pr)
dBA	The unit of sound level which has its frequency characteristics modified by a filter (A-weighted) so as to more closely approximate the frequency bias of the human ear.
$L_{A90\,(t)}$	The A-weighted noise level equalled or exceeded for 90% of the measurement period. This is commonly referred to as the background noise level. The suffix "t" represents the time period to which the noise level relates, e.g. (8 h) would represent a period of 8 hours, (15 min) would represent a period of 15 minutes and (2200-0700) would represent a measurement time between 10 pm and 7 am.
$L_{Aeq\,(t)}$	The equivalent continuous (time-averaged) A-weighted sound level. This is commonly referred to as the average noise level.
L_{Amax}	The A-weighted maximum noise level. The highest noise level which occurs during the measurement period.
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.
SEL or L_{AE}	Sound Exposure Level The sound level of one second duration which has the same amount of energy as the actual noise event measured. Usually used to measure the sound energy of a particular event, such as a train pass-by or an aircraft flyover
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).

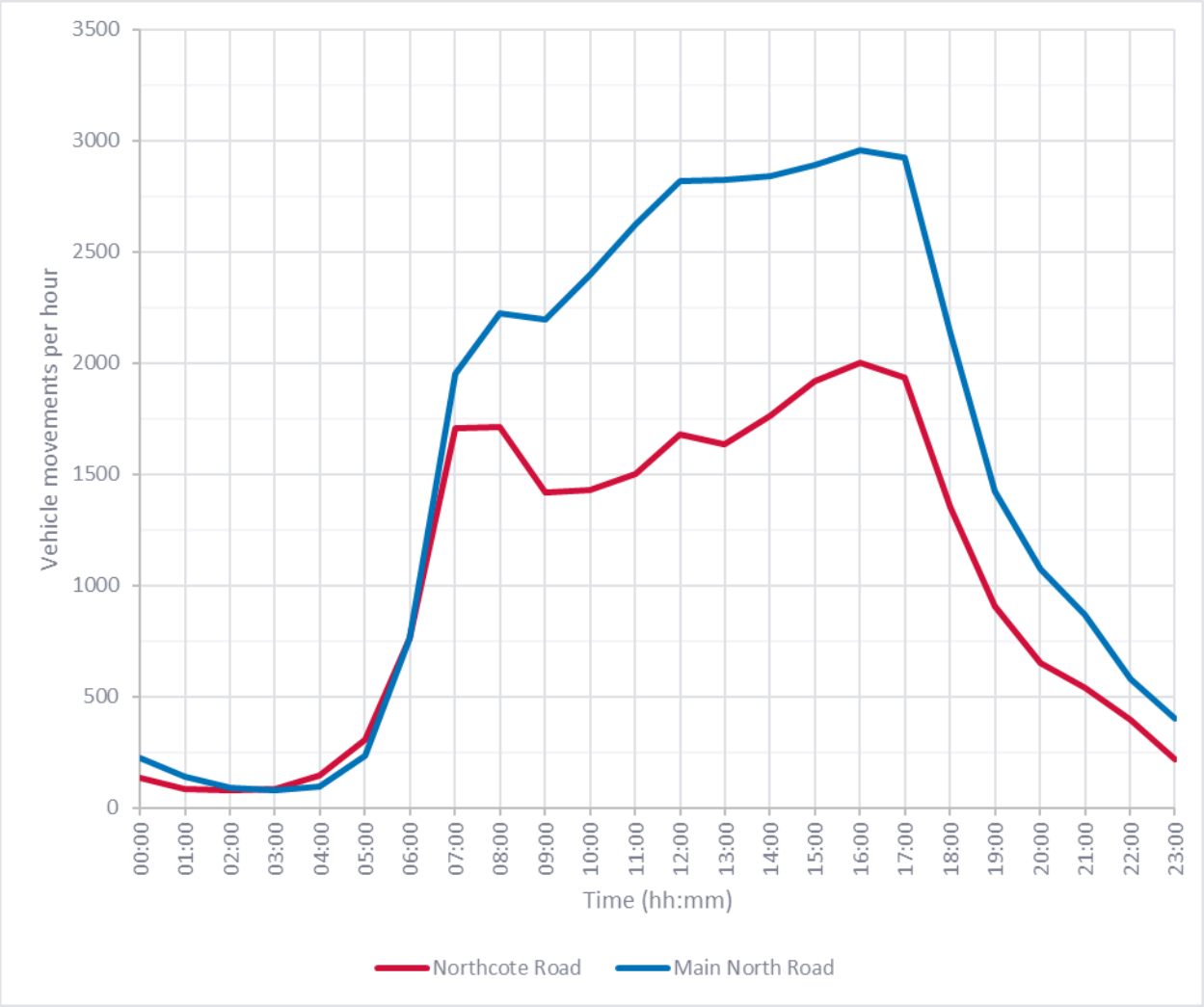
APPENDIX B FLOOR PLANS (PRELIMINARY DESIGN)



APPENDIX C ROAD TRAFFIC VOLUME DATA

From Christchurch City Council online database for:

- Northcote Road (at Rail Xing), start date 01/06/2011; and
- Main North Road (S Northcote), start date 04/06/2011.



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26 September 2018

Foodstuffs South Island Limited
Private Bag 4705
Christchurch 8140

Attention: Rebecca Parish

Dear Rebecca

RMA/2018/2029 RFI RESPONSE – NOISE

Christchurch City Council has requested further information[1] related to specific parts of our noise assessment report[2]. Following a meeting with Council (Ms Stout) to clarify the proposed method of assessment for cumulative noise effects we have prepared the following responses. Note that to aid clarity, the Council questions are provided first, followed by our response.

27. An updated acoustic assessment which includes consideration of cumulative noise effects with specific reference to proposed supermarket vehicle traffic and predicted noise generated by the consented activities at 2 Lydia Street.

2 Lydia Street is currently used as a distribution centre by Toll. However, there is a consent to establish a range of commercial undertakings at this site (RMA92029705). We have relied on estimates of peak hour traffic for both the consented 2 Lydia Street activity and the proposed Papanui PAK'nSAVE. These estimates are provided in the Abley Transportation Consultants ITA[3].

In summary, for the 2031 development year, peak hour movements of traffic (1700 to 1800) are predicted to be as summarised in Table 1 below.

Table 1: Summary of Lydia Street and Right of Way Traffic Movements – 2031 Peak Hour

Traffic Generator	Lydia Street	Right of Way
2 Lydia Street (RMA92029705)	274	60
PAK'nSAVE (RMA/2018/2029)	115	115
Total Movements	389	175

For dwellings flanking Lydia Street, the *change* in noise level over and above the consented baseline represented by RMA92029705 due to the Pak'nSAVE in 2031 is +1.5 dB. This change in noise level is not perceptible. For dwellings backing onto the Right of Way (RoW), the *change* in noise level over and above the consented baseline represented by RMA92029705 due to the Pak'nSAVE in 2031 is +4.6 dB. This change in noise level would be noticeable.

[1] Letter to Ms Ruske, Aurecon, dated 10 September 2018, reference 18/934503

[2] Marshall Day Acoustics Noise Assessment Rp 001 R02 20171214, dated 20 July 2018

[3] Abley Traffic Consultants ITA FSIL-J047, dated 7 August 2018

We note that:

- Traffic movements for the 2021 scenario were essentially identical to the 2031 scenario and would not result in a different outcome for noise predictions;
- Should the consented 2 Lydia Street activity commence, Toll would presumably cease to operate from the site. Accordingly, we have not considered Toll traffic as part of this calculation;
- Both the 2 Lydia Street activity and the PAK'nSAVE are assumed to have a peak hour that occurs between 1700 and 1800. The resulting traffic will be private vehicles. Foodstuffs will not schedule deliveries or heavy vehicle movements during peak times.

28. *Information on the predicted noise levels at all residentially zoned properties adjoining the Lydia Street right of way. At present the acoustic assessment identifies noise levels for two properties along the right of way, however, it is necessary to understand potential effects on the inhabitants of all of the residential units.*

In conducting our assessment, we have assumed that any vehicle traffic using the RoW will pass the entire length. This includes both delivery vehicles and staff/customer cars. This assumption is slightly conservative, in that it can reasonably be anticipated that some traffic will enter or leave the RoW at a midpoint, resulting in slightly reduced traffic movements at some locations. However, we consider any such reduction to be small.

In our report, we identified two 'typical' dwellings backing onto the RoW. Receiver 2 (9A Northcote Road) represents a typical two-storey dwelling backing onto the RoW. Receiver 3 (27A Northcote Road) represents a typical single level dwelling backing onto the RoW.

All other dwellings backing onto the RoW will receive the same noise level as identified for either one of the identified receivers under the conservative assessment assumption described above. For single storey dwellings compare against Receiver 3. For two-level dwellings compare against Receiver 2.

Yours faithfully

MARSHALL DAY ACOUSTICS LTD

Rob Hay
Associate