

File Ref: AC22006 – 02 – R1

10 February 2022

Ms J. Anderson
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Email: jane.anderson@selwyn.govt.nz

Dear Jane,

**Re: Proposed Pak'nSave Development, Rolleston - SDC Resource Consent application
Peer review of Assessment of Noise Effects**

Acoustic Engineering Services (AES) has been engaged by the Selwyn District Council to undertake a peer review of the Assessment of Noise Effects provided by Marshall Day Acoustics Limited (MDA) in support of the above Resource Consent application by Foodstuffs New Zealand Limited (the Applicant). The application is for a proposed new Pak'nSave supermarket to be located at the intersection of Levi Road and Lincoln-Rolleston Road, in Rolleston.

Our review is based on the following documentation:

- Assessment of noise effects report titled *Pak 'n Save Rolleston, Assessment of Noise Effects*, report number Rp 001 R02 20210814, as prepared by Marshall Day Acoustics, and dated the 16th of December 2021.

Based on our review of these documents we have the following comments.

1.0 NOISE PERFORMANCE STANDARDS

MDA have correctly identified the Operative District Plan (OSDP) noise limits for Living and Rural Zones, as applicable to sites neighbouring the proposed development.

Additionally, MDA have included, in section 3.1.2 of their report, discussion of the planned changes under the Selwyn Proposed District Plan (PSDP). The changes proposed include replacing the L_{A10} parameter with L_{Aeq} , and an extension of the daytime period to 0700 to 2200 hours. MDA write that the inclusion of these changes in the final Selwyn DP is currently uncertain, as the SDC is considering the impact of the Resource Management (Enabling Housing Supply and Other Matters) Amendment Bill. However, we agree with MDA that the current OSDP residential noise limits are outdated.

MDA proposes that the PSDP residential and rural noise limits are a more appropriate set of criteria for the project, with regard to the appropriate assessment of noise effects, than those under the OSDP. We agree with this. The PSDP criteria are in line with the guidance of the relevant literature, and the NPS-UD. We expect that, provided noise levels from the site comply with the PSDP noise limits, noise effects on neighbouring sites will be minimal.

With respect to noise during the construction period, while construction noise has not been assessed in this report, MDA have stated that this should be assessed in accordance with NZS 6803:1999, which is appropriate.

2.0 RECEIVERS

Throughout the MDA assessment, for noise from all sources, levels are reported at the existing residentially zoned properties on the opposite sides of Levi and Lincoln-Rolleston Roads, and at the notional boundary of the rurally zoned site at 139 Levi Road.

We note that land to the southeast of the proposed supermarket site is also currently residentially zoned. While no dwellings have been constructed in this area, future residential development could be expected to occur here.

Similarly, we note that Plan Change 71 (PC71), which is currently under consideration by the SDC, proposes to rezone land immediately to the east of the proposed supermarket site as residential land. The MDA assessment does not refer to PC71 at all, nor are any noise levels presented for this area.

Given the proposed site layout, with the main route for delivery vehicles being located on the east and southern boundaries, it may be appropriate to consider the potential effects on adjacent residential sites of the proposed development. At very least, it may be appropriate to consider the areas of these adjacent sites within which residential development may be restricted (or may result in reverse sensitivity effects), should the proposed development be approved.

3.0 PREDICTED NOISE LEVELS AND DISTRICT PLAN COMPLIANCE

MDA have stated that they expect the primary noise sources from the proposed development to be as follows:

- Car parking and light vehicle movements,
- Heavy vehicle movements (e.g. deliveries) and loading bay activity,
- Mechanical services plant.

We have reviewed the analysis of each noise source below.

3.1 Car parking and light vehicle movements

MDA have stated that their analysis has been based on the expected number of vehicle movements provided by the traffic engineer. However, MDA have not provided any indication of any of their other underlying assumptions regarding noise associated with these vehicles – i.e. the sound powers or spectral character they have assumed for the individual vehicle movements. However, the levels that MDA report for noise from car parking and light vehicle movements generally accord with the levels that we would expect from our own analysis.

MDA state that levels in the order of 40 – 47 dB $L_{Aeq(15\text{ min})}$ would be expected during the evening peak hour period (stated as between 1645 to 1800 hours) in the 2033 design year, within the boundaries of the existing residential properties on the opposite sides of Levi and Lincoln-Rolleston Roads. Noise levels of 31 dB $L_{Aeq(15\text{ min})}$ are expected at the notional boundary of the nearest rurally zoned residential dwelling. These levels are within the respective OSDP (when converted to L_{A10}) and PSDP day time noise limits for these areas.

During off peak day time hours, the MDA reports that levels in the order of 41 – 48 dB $L_{Aeq(15\text{ min})}$ would be expected in the 2033 design year, within the boundaries of the existing residential properties on the opposite sides of Levi and Lincoln-Rolleston Roads. It is not immediately clear why these levels exceed the evening peak hour predictions, however we suspect that this is due to the inclusion of additional activity by service vehicles (rubbish trucks, etc.) in this scenario during the off day time peak hour. If the latter is the case,

again it is not clear why the levels given in section 4.1.2 of the report are lower than those given in table 4 of section 4.2 (45 – 50 dB $L_{Aeq(15\text{ min})}$). Nevertheless, either way the predicted levels are expected to comply with the PSDP day time criteria at all neighbouring receivers. We agree with this analysis.

However, some exceedance of the OSDP criteria may be expected during day time off peak hours. The MDA analysis in section 4.1.2 suggests that some residentially zoned receivers on opposite sides of Levi and Lincoln-Rolleston Roads may experience levels in the order of 51 dB L_{A10} . However, later in the report, in section 4.2, it is suggested that levels of up to 53 dB L_{A10} may be experienced at the same residentially zoned receivers. Both of these predictions result in levels in exceedance of the OSDP day time residential zone criterion of 50 dB L_{A10} . Between 2000 and 2200 hours, the OSDP night time residential zone criterion of 35 dB L_{A10} would be exceeded by a significant margin. MDA have proposed that waste collection at the site should be limited to within the hours of 0700 – 1900 hours, which we consider appropriate.

Noise from staff carpark activity in the night time period (after 2200 hours) is expected to result in levels of 30 dB $L_{Aeq(15\text{ min})}$ and 50 dB L_{Amax} at the residential boundary nearest access point 5. This complies with both OSDP (when converted to L_{A10}) and PSDP night time criteria. We agree that this is reasonable and similar to the levels that we would expect from our own analysis.

MDA have stated that L_{Amax} levels are expected to fully comply with all criteria. No further analysis of L_{Amax} levels has been provided. We would expect L_{Amax} noise events could be generated by engine starts, door slams, crashes of trollies, and horns. Based on the relative distances from the carparks to the neighbouring sites, we agree that full compliance with all criteria will be achieved.

3.2 Heavy vehicle movements (e.g. deliveries) and loading bay activity

MDA state that they expect the primary noise sources associated with deliveries to the supermarket to be as follows:

- The movement of large heavy delivery vehicles such as B-trains, truck and trailer, or refrigerated trucks
- Noise from vehicles idling
- Brake system air release
- Loading bay activity
- Rubbish and recycling trucks

MDA state that noise from the above sources during the day time period, when assessed cumulatively with noise from off peak customer car park activity, is expected to comply with the PSDP day time noise limits at all existing dwellings. Generally speaking we agree with the above conclusion. However, we note that it is not clear whether the MDA analysis includes noise from some additional sources which we consider are likely to occur on the site. We have addressed these additional sources in section 3.2.1 below.

With respect to determination of L_{A10} levels for the assessment OSDP compliance, MDA confirm that they have predicted L_{A10} noise levels by calculating the expected L_{Aeq} level and then adding 3 dB. While this method is more accurate for constant noise sources (for example, daytime light vehicles) than for intermittent noise sources (such as delivery vehicles), we consider that the resulting predicted L_{A10} levels will be reasonably accurate.

In terms of compliance with the OSDP, MDA state that during the day time, cumulative noise from customer vehicles and day time deliveries will result in levels of 48 to 53 dB L_{A10} at the boundary of nearby residentially zoned sites. Thus, some residential properties located in close proximity to site access points 1 and 5 are expected to receive levels in exceedance of the OSDP criteria.

During the night time period, noise from delivery activity only is expected to exceed the night-time permitted noise levels under both the OSDP and PSDP for properties located in proximity to the service vehicle access points (1 and 5). At some properties, levels up to 9 dB $L_{Aeq(15\text{ min})}$ above the noise limit may be experienced at some residential receivers (140-150 Levi Rd, and 341-353 Lincoln-Rolleston Rd – 8 properties).

MDA note that only two night time deliveries are planned, with both occurring during the hours of 0430 – 0515. The duration of these noise events is likely to be very short, perhaps less than 30 seconds each, and delivery truck movements will be split between the two service vehicle access points, with only two movements per access point in the night time period. However, it does appear likely that, from time to time, these two delivery trucks could arrive and/or depart with a single 15 minute period. Were that to occur, levels up to 12 dB $L_{Aeq(15\text{ min})}$ above the noise limit may be experienced at some residential receivers. This could be expected to be the worst-case scenario.

Again, no discussion of L_{Amax} is provided for the activity within the loading bay. However, based on the relative distances, compliance is likely to be achieved.

3.2.1 Additional noise sources associated with deliveries

Based on our experience on similar projects, we expect that there may be other significant noise sources associated with delivery activity at the proposed supermarket. It is not clear from the MDA report how the below noises have been assessed in the MDA report.

Refrigerated trucks

Based on our experience, noise from truck refrigeration units can be a significant source of noise emissions from supermarket loading bays. Due to the height of the refrigeration units (typically in the order of 3.5 metres above ground level), the proposed noise barrier fence on the eastern boundary would not be expected to be an effective mitigation solution for this type of noise.

Based on measurements we have undertaken of truck refrigeration units in existing supermarket loading zones, we estimate that levels in the order of 50 dB $L_{Aeq(15\text{ min})}$ could be expected at the notional boundary of the rurally zoned property at 139 Levi Road, from a single truck refrigeration unit located in the loading bay area. This level of noise would exceed the night time rural zone noise limits under both the OSDP and the PSDP.

Forklift reversing alarms

MDA state that their predictions of delivery noise consider loading bay activity, and that electric-powered forklifts and manual / electric pallet lifters are expected to be used within the loading bay area. It is not clear from the report whether noise from forklift reversing alarms has been taken into account. Based on our experience, 'beeper' forklift reversing alarms can be a significant noise source from supermarket loading bay areas. The tonal and intermittent character of this noise can result in this noise source being perceived as particularly annoying for residential receivers. We would consider it appropriate that the use of broadband forklift reversing alarms be made a condition of the Resource Consent, and that the level of the alarms be calibrated to ensure they are minimally audible at the closest residential boundaries.

3.3 Mechanical services plant

MDA have stated that they expect that noise from mechanical plant (except the emergency generator) can be designed and constructed to comply with the applicable noise criteria at all neighbouring properties. Given that mechanical plant is planned to be contained within an enclosed plant room, we agree that this is reasonable.

MDA also recommend that mechanical services achieve a 30 dB $L_{Aeq(15\text{ min})}$ night time noise limit at the boundaries or notional boundaries of nearby residential buildings. This design level is recommended to account for cumulative noise levels from mechanical plant and night time delivery activity. We understand

that mechanical plant noise of this type is a common source of complaint within the District and therefore agree with the application of the lower night time noise limit for residential sites.

4.0 ASSESSMENT OF NOISE EFFECTS

4.1 Car parking and light vehicle movements

We agree with MDA that, provided that noise levels from the site comply with the PSDP noise limits, noise effects on existing residential sites on the opposite sides of Levi and Lincoln-Rolleston Roads will be minimal.

4.2 Heavy vehicle movements (e.g. deliveries) and loading bay activity

Noise levels from heavy vehicle movements during the night time period are expected to exceed the recommended criteria by a significant margin at some residential receivers, by in the order of 9 dB $L_{Aeq(15\text{ min})}$ and up to 12 dB $L_{Aeq(15\text{ min})}$ if the two night time delivery trucks arrive or depart within the same 15 minute period. While we agree with MDA that the duration of the noise source at any individual receiver will be short (likely less than 30 seconds per truck), we expect that the effects of these noise events could be more than minor especially for residential properties in close proximity to site access point 1. Due to the significantly lower traffic flow on Levi Road (compared to Lincoln-Rolleston Road), exceedances at these properties could represent a significant change to the current early-morning noise environment for these properties. We recommend that effects on these properties, and possible mitigation strategies, be further considered.

Additionally, noise from refrigeration units on trucks in the loading bay is expected to significantly exceed the PSDP rural night time criteria at the notional boundary of the nearest rural property (139 Levi Road). We expect that, given the likely duration of this noise, and the amount of exceedance, again effects could be more than minor. We recommend that additional mitigation strategies are explored to minimise noise levels from truck refrigeration units when received at sites to the east of the proposed loading bay area.

4.3 Noise effects on future residential areas

With respect to future residential areas, we expect that if residential dwellings were to be developed along the eastern and southeastern boundaries of the Pak'nSave site, noise effects or reverse sensitively effects associated with some sites could be more than minor. Noise generated in the proposed loading bay area also has the potential to be particularly problematic when received in the proposed PC71 residential area to the immediate east of the project site. Additional mitigation (such as site fencing) may be sufficient to reduce noise levels experienced in some future residential areas, however, as noted above for some noise sources (such as truck refrigeration units), further investigation of mitigation measures would be required.

5.0 CONDITIONS OF CONSENT

MDA have provided seven recommended Conditions of Resource Consent to mitigate noise from the proposed development. We have the following comments:

Condition 1

As stated above, we agree that the PSDP residential and rural noise limits are a more appropriate set of criteria for the project, than those under the OSDP. However, we have concerns that exempting heavy vehicles at night from the noise limits could enable a more than minor effect on some nearby dwellings.

Condition 2

This condition states that deliveries must be in conducted in accordance with the consent application. As above, we recommend additional mitigation for night time deliveries be considered, such as restricting night time deliveries further.

Conditions 3 and 4

This condition requires a 2 metre high noise barrier to be installed along a portion of the eastern site boundary. As stated above, we expect that this noise barrier will be insufficient to mitigate noise from truck refrigeration units when received at residential properties to the east, during the night time period. We recommend that additional mitigation solutions for this noise source be explored.

Condition 5

We agree that limiting waste collection to between the hours of 0700 and 1900 hrs is appropriate.

Condition 6

As noted above, MDA recommend that mechanical plant (except the emergency generator) be designed and constructed to achieve a night time noise level of less than 30 dB $L_{Aeq(15\text{ min})}$, when assessed at the boundary of neighbouring residential zoned dwellings and the notional boundary of any rural zoned dwellings. We agree with this.

Condition 7

We consider this condition appropriate.

Additional condition

We suggest that the use of broadband forklift reversing alarms be made a condition of the Resource Consent, and that the level of the alarms be calibrated to ensure they are minimally audible at the closest residential boundaries.

Please do not hesitate to contact me if you have any questions.

Kind Regards,



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