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File Ref: AC20356 – 02 – R3

3 September 2021

Ms J. Lewes
Selwyn District Council
PO Box 90
ROLLESTON 7643

Email: Jocelyn.lewes@selwyn.govt.nz

Dear Jocelyn,

Re: Private Plan Change Request 73
Review of noise assessment

As requested, we have undertaken a peer review with regard to the noise assessments provided in support of an application for a Private Plan change for the rezoning of two blocks (Holmes Block and Skellerup Block) of land in Rolleston from Living 3 to Living Z.

Our review is based on the following documents:

- Design Advice Memo titled *Rolleston West Plan Change (ODP Area 39 and 40),* A01 Issue B, as prepared by Powell Fenwick, and dated the 17th of November 2020
- Design Advice Memo titled *Rolleston West Plan Change (ODP Area 39 and 40) – Addendum 1 RFI Response,* A02 Issue B, as prepared by Powell Fenwick, and dated the 2nd of February 2021
- Integrated Transport Assessment titled *Rolleston West Residential Ltd, Dunns Crossing Road*, Rolleston, as prepared by Novo Group, and dated November 2020
- Draft evidence of Andrew Boyd of the Solid Waste Department at Selwyn District Council, dated August 2021

The analysis provided by Powell Fenwick Consultants (PFC) was initially limited to the reverse sensitivity effects of the State Highway adjoining the Holmes Block. In response to the request for further information, the additional report considered the reverse sensitivity effects which may be associated with the nearby The Pines Resource Recovery Park (RRP) and The Pines Waste Water Treatment Plant (WWTP) on the Holmes Block, and the reverse sensitivity effects which may be associated with the nearby poultry farm to the Skellerup Block.

Please find our comments below.

1.0 HOLMES BLOCK

1.1 State Highway

PFC provide a discussion of the various reverse sensitivity rules within the Selwyn District Plan which apply to the current site, and other residential sites in the vicinity. However, there is no discussion of what the

expected traffic noise levels would be at the site if these rules were implemented. We have conducted this analysis, as described below.

1.1.1 Setback and mitigation

The current rule for the site requires an 80 metre setback from the State Highway (with no requirement for an acoustic barrier). Based on the traffic volumes for the road, we would expect noise levels in the order of 68 dB $L_{Aeq\ (24\ hours)}$ (including a 3 dB adjustment for future use of the road) at this setback distance.

PFC are proposing that the setback is reduced to 40 metres, but that a 3 metre acoustic barrier is included between the State Highway and the residential sites. We expect noise levels in the order of 63 dB $L_{Aeq\ (24\ hours)}$ at this setback distance with the 3 metre barrier.

Based on the above, we have the following comments:

- The proposed 40 metre buffer is in line with the Waka Kotahi Guidelines for a buffer area from a State Highway.
- Traffic noise levels of up to 57 dB $L_{Aeq\ (24\ hours)}$ are typically considered to be appropriate for residential outdoor areas.
- The proposed requirements would result in lower worst-case noise levels than that would be expected under the current rules for the site.

Therefore, while the overall potential future traffic noise levels are higher than what would be ideally received in residential outdoor areas, the situation represents an improvement over which could happen currently (in regards to worst-case noise levels), and is consistent with the setback for the buffer area in the Waka Kotahi Guidelines.

We note that the recommended rules would also result in appropriate noise levels from the nearby railway line, and meet the KiwiRail Reverse Sensitivity Guidelines.

1.1.2 Internal noise level requirement

PFC have recommended an internal noise level requirement of 35 dB $L_{Aeq\ (24\ hours)}$ for bedrooms and 40 dB $L_{Aeq\ (24\ hours)}$ for living areas, for the dwellings within 100 metres of the State Highway. These internal noise level requirements are more stringent than the Waka Kotahi Guideline requirements, and would provide a greater level of protection to bedrooms within any dwellings within 100 metres of the State Highway.

PFC have noted that there is currently no explicit requirement for a mechanical ventilation system for spaces where internal noise level requirement is exceeded with the windows open for any of the rules within the District. We agree that this is the case; however, from a noise effects perspective an alternative ventilation requirement should be included in any sound insulation rule.

1.2 The Pines Resource Recovery Park (RRP) & Waste Water Treatment Plant (WWTP)

We understand that a 600 metre setback are required from the RRP (including composting) for odour control.

PFC have undertaken noise measurements on the Holmes Block and determined that there was no observable noise from the RRP during the daytime period, and that the key noise matter from this development would be the removal of waste by truck and trailer units, which start as early as 0400 hours. Based on the hours of operation of the RRP and the distance from the current activities on the site this appears reasonable.

In regards to the RRP, approximately 2 – 3 truck movements are expected per day before 0800 hours. PFC have observed that these truck and trailer units could result in noise levels of up to 85 dB L_{Amax} at 5 metres from the road. As this is above the level that would typically be required to prevent sleep disturbance, PFC

have recommended that a 2 metre acoustic fence is installed along the Burnham School Road boundary. With this in place they expect noise levels of up to 77 dB L_{AFmax} at the residential sites.

Based on the evidence of Mr Boyd (Solid Waste Manager at Selwyn District Council), we understand that as part of the predicted future use of this site the number of trucks before 0800 hours could increase to up to 18 truck movements. The truck movements would still be about 15 – 20 minutes apart; however, this would be sustained over a number of successive hours. Therefore, in the future we assume that there could be up to 3 – 4 vehicle movements within a worst-case hour period before 0800 hours.

With regard to an appropriate methodology for quantifying any night-time noise effect from these heavy vehicles, we note the following:

- The District Plan noise limits do not apply to vehicles on public roads.
- NZS6802:2008 states that sound from vehicles on public roads as a specific source is outside the scope of that Standard. It does provide generic guideline values for other sounds of 45 dB $L_{Aeq\ (15\ mins)}$ and 75 dB L_{AFmax} to prevent sleep disturbance during the night-time period.
- The scope of NZS 6806:2010 only applies to roads with an average number of movements greater than 2000. Clause 3.4.2 states that below vehicle flows of 2000 AADT, people's response to traffic noise is mostly to individual vehicle noise as a transient maximum sound level. However, the Standard states that L_{AFmax} criteria are not included because road controlling authorities do not have direct control over individual vehicle noise.

We are not aware of any established common methodology for assessing the effect of heavy vehicle movements during the night-time. However, we have been involved with a number of Environment Court cases where heavy vehicles on roads *during the daytime* was a key concern. In those cases, the 24 hour and 1 hour L_{Aeq} noise levels, and the L_{AFmax} noise level were considered. In those cases, we concluded that a daytime noise limit of 55 dB $L_{Aeq\ (1\ hour)}$ at the façade of dwellings was appropriate. The same reasoning would suggest a night-time noise level of 45 dB $L_{Aeq\ (1\ hour)}$ would be appropriate.

Therefore, in addition to the L_{AFmax} noise levels that PFC have provided, we would consider the $L_{Aeq(1\ hour)}$ noise levels to also be relevant in terms of effects, as this provides some indication of how sustained the noise intrusion may be, and can be compared to the commonly referenced sleep disturbance threshold of 45 dB L_{Aeq}.

We have undertaken some indicative calculations to determine the likely noise levels on the site, if four heavy vehicles travelled on the adjoining Burnham School Road in a one hour period. Based on this analysis, with the two metre acoustic fence in place we would expect noise levels of less than 45 dB L_{Aeq} at the façade of the future dwellings. When also observing that the worst-case L_{AFmax} levels predicted by PFC are likely to generally be less than 75 dB L_{AFmax} when received at dwelling facades, we consider the mitigation proposed to be appropriate. We note that the worst-case noise levels expected on the dwellings would also be reduced from that allowed for within the current zoning.

We observe that a two metre barrier is not proposed for the Dunns Crossing Road boundary, and we understand that the RRP trucks would travel to the State Highway using this route. We note that there are already houses adjoining this road, and the road has a 50 km/hr speed limit (which would reduce the noise levels). The noise levels would therefore be expected to be similar to those on the adjoining Stonebrook subdivision site.

PFC also concluded that noise from the WWTP would not be expected to have observable noise effects within the Holmes Block. We understand that there is a 400 metre setback proposed from the WWTP and 100 metre setback from the irrigation site to the west for odour control. Based on these setback distances, we consider this conclusion to be reasonable.

2.0 SKELLERUP BLOCK

PFC carried out noise measurements of the poultry farm at a distance of 70 metres. Key noise sources included the conveyor / feeding system. This resulted in noise level in the order of 46 dB L_{Aeq}. There is a 150 metre setback required from the poultry farm for odour reasons; therefore, the noise levels at the closest section would be in the order of 40 dB L_{Aeq}. PFC consider this to be appropriate. We do note that the site is currently zoned Living 3 – and therefore the poultry farm should currently be complying with a noise limit of 40 dB L_{A10} at the site boundary during the night-time period. However, there are exceptions for any mobile machinery, and/or it may have a Resource Consent or existing use rights.

We agree that provided the 150 metre setback was implemented we would expect the effects from the noise levels from the poultry farm when received on the Skellerup Block to be minimal.

With regard to possible reverse sensitivity effects due to traffic on Dunns Crossing Road, we note that we do not have traffic data for this road, but the speed limit is 50-60 km/hr and the traffic volume is likely to be less than the portion of the road adjoining the State Highway. We therefore do not expect any mitigation to be required.

3.0 REVIEW OF SUBMISSIONS

We have reviewed the opposing submissions which mention noise. Our key observations are outlined below.

Quiet rural area

There are several comments regarding the quiet rural area that the neighbours currently experience. We note that the overall change in noise limits from this proposed Plan Change will be very similar to what is currently in the District Plan, as the sites are already zoned Living 3. In addition, the discussion above regarding the suitability of these sites for residential use, indicates that there are already several noise sources within the area which mean this is not an unusually quiet area.

Overall, while more people living within the area will increase noise levels generally, we would not expect it to be beyond what is reasonably anticipated in a residential area.

Noise from construction

There is concern regarding the noise levels from the earthworks that will be required to construct the subdivisions on each of the blocks.

The New Zealand Construction Noise Standard NZS6803:1999 is not currently referenced within the operative District Plan. Construction noise is excluded from the rural volume noise limits, with no exclusions in the Township volume. However, it would be good practice to manage noise from construction in accordance with NZS6803:2008 *Acoustics – Construction noise*. This is referred to in the Proposed Selwyn District Plan, and would be appropriate to use in this situation to manage noise from construction.

Noise from chicken farms

As outlined above, we expect that the 150 metre setback required between the existing poultry farm and the proposed residential dwellings to be appropriate to maintain appropriate noise levels at the residential dwellings.

Increase of vehicles on road

Additional residential dwellings in the area will likely increase the traffic on the road. Based on the traffic assessment, it appears that the traffic volumes on Dunns Crossing Road would be expected to approximately double. This would result in an increase in average noise levels of 3 dB. A 3 dB change in average noise levels is subjectively just perceptible.

We understand that the main concern from a noise point of view appears to be for the portion of road adjoining the Skellerup Block. We note that reducing the speed limit from 60 km/hr down to 50 km/hr as suggested by the submitters would result in a slight decrease in noise levels (1 dB). If this was able to be implemented, it would result in the average increase in traffic noise levels not being subjectively noticeable for the existing residential dwellings.

Burnham Military Base

The New Zealand Defence Force (NZDF) has made a neutral submission to the proposed plan change. They seek to ensure that the operation of the Burnham Military Camp is not affected, due to potential reverse sensitivity effects.

NZDF state that they undertake a wide variety of activities on the Burnham Military Camp site; however, do not provide any further comment on the specific activities. We understand that this site is largely an operational and accommodation base; however, has some proposed areas for training – including a 25 metre rifle range within the golf club to the east.

The rifle range is more than two kilometres from the proposed Holmes Block, and there appear to be other residential dwellings in closer proximity than this. We are not aware of any existing reverse sensitivity issues for these closer dwellings.

We also note that there is a railway line and the State Highway between the Burnham site and the proposed Holmes Block, with the proposed 3 metre high barrier. When considering the above, we would not anticipate reverse sensitivity from the Burnham Military Base to be problematic on the proposed Holmes or Skellerup Blocks. However, if further information can be provided on the type and location of activities which are of particular concern, we could undertake additional analysis.

4.0 CONCLUSIONS

Overall, provided the mitigation outlined in the PFC report and the application is implemented we consider the rezoning of the site from Living 3 to Living Z to be an improvement over which could happen currently in regard to worst-case noise levels from the State Highway, and generally appropriate from a noise point of view from the other nearby noise sources. The key mitigation measures include the following:

- Any construction work undertaken on the sites should be managed in accordance with NZS6803:1999 *Acoustics – Construction Noise*.

Holmes Block

- 40 metre set back from the State Highway
- 600 metre set back from the RRP activity (including composting)
- 400 metre set back from the WWTP
- 100 metre set back from the WWTP irrigation site to the west
- 3 metre high barrier installed along the boundary to the State Highway
- 2 metre high acoustic fence installed the boundary to Burnham School Road
- Requirements for the habitable spaces of dwellings within 100 metres of the State Highway to achieve an internal noise level of 35 dB $L_{Aeq\ (24\ hours)}$ in bedrooms and 40 dB $L_{Aeq\ (24\ hours)}$ in other habitable spaces. If this can only be met with windows closed, a mechanical ventilation system should be required.

Skellerup Block

- 150 metre set back from the poultry farm

Kind Regards,

Dr Jeremy Trevathan
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