



29 July 2013

Wellington City Council
PO Box 6140
WELLINGTON

For the attention of Sarah Edwards
Senior Policy Advisor
District Plan

Dear Sarah

**WELLINGTON DISTRICT PLAN – DPC77
CURTIS STREET BUSINESS AREA – NOISE PROVISION
PEER REVIEW**

You have asked me to undertake a peer review of Council's noise advice for the Proposed District Plan Change. The advice note was prepared by Matthew Borich dated 2nd November 2012. You have also provided a full set of the Plan Change rules and a link to Council's website with the submissions¹.

Of particular note with regards to noise are submissions 13, 16, 29 and 40.

The Proposed Plan Change

The proposed noise standards in DPC77 are found in 36.6 *Activity Standards* paragraph (n). The standards control noise between sites within the proposed Business Area to 60dB L_{Aeq} (15 min) and 85dB L_{AFmax} . L_{Aeq} is the time-average A-weighted sound pressure level. The L_{AFmax} is the maximum A-weighted sound pressure level (measured using the F-time weighting). All of the L_{Aeq} standards in DPC77 are based on a 15 minute measurement timeframe which is consistent with New Zealand Standard NZS6802:2008².

The noise standards for residential sites are set out in n(iii). These change between daytime (7am to 7pm) 50dB L_{Aeq} , evening (7pm to 10pm) 45dB L_{Aeq} and night-time (10pm to 7am) 40dB L_{Aeq} and also (10pm to 7am) 65dB L_{AFmax} . The night-time L_{AFmax} is intended to protect against noise that might cause sleep disturbance but which may not be adequately controlled using the L_{Aeq} descriptor. Consequently the L_{AFmax} limit only applies between 10pm and 7am.

Fixed plant and emergency plant noise is controlled separately within the Business Area but must meet the residential noise limits in n(iii) as required by n(v). There is

¹ <http://wellington.govt.nz/your-council/plans-policies-and-bylaws/district-plan/plan-changes-and-variations/active/plan-change-77-curtis-street-business-area>

² NZS6802:2008 Acoustics – Environmental noise

no exemption for this standard in n(vi) which otherwise exempts emergency plant from meeting the limits in n(iv).

The L_{Aeq} standards in 36.6 n(iii) are 5dB more stringent than the upper recommended residential amenity limits in NZS6802:2008 and the L_{AFmax} is 10dB more stringent than the limit in that Standard for L_{Amax} .

The Advice Note

The advice note describes the site and discusses amphitheatre effect. I agree with the opinion expressed in the advice note regarding the concept of amphitheatre effect. Submitters describe experiencing enhanced sound levels from activities in the valley and this is more likely to result from the elevated nature of the dwellings and the fact that sound is travelling directly from the source (in this case mostly that of road traffic) to the receiver, without the sound being absorbed by topography and ground cover.

It is accepted that there may be a perception of enhanced noise levels for residents located on the valley sides. In real terms it does not matter if this phenomenon exists or how it occurs because if appropriate noise standards are applied at the residential sites then it becomes the responsibility of the developer to ensure they are met. The District Plan is an effects based document that establishes appropriate standards to protect residents from adverse noise levels. If there is an amphitheatre effect (or any other enhancement of sound propagation) then the developer would need to obtain advice on how any proposed activities could be managed to ensure compliance with the noise standards.

The advice note describes the upper acceptable guideline limits in the 2008 version of NZS6802 and then explains that the standards used in the Plan Change had been selected based on these upper limits and knowledge of local ambient sound levels.

The Operative District Plan residential noise standards are generally overly strict on Sundays where the daytime noise controls are more appropriate for night-time amenity protection. This is an outdated practice and, given that the ambient sound levels on Sunday will not change significantly from any other day of the week, then I agree that the daytime noise limits should apply for seven days.

Submissions

A number of the submitters raise strong concerns regarding amenity issues, particularly noise. These have been summarised into the following themes:

- The noise levels on site should remain at the current residential levels,
- The plan change does not provide evidence of noise surveys,
- The plan change needs to contain assumptions on the noise levels anticipated in the business area (both activities and structures),
- The cumulative effect of commercial noise is not addressed in the plan change, and
- Perceived amphitheatre effect.

In recognition of the submitters' concerns Council has undertaken further sound sampling in the area. I assisted in determining the best times for this monitoring.

The monitoring determined that at busier peak periods during the day background (L_{A90}) sound levels were consistently around about 50dB and that L_{Aeq} sound levels were consistently about 60dB. During the afternoon the levels dropped to about L_{A90} 45dB and L_{Aeq} of about 55dB.

Measurements after 10pm gave sound levels of around L_{A90} 30dB with L_{Aeq} falling to about 47dB.

Given these ambient sound levels, the daytime standard of 50dB $L_{Aeq (15 \text{ min})}$ is no more than about 5dB greater than the background sound level at quieter times and is about 5dB less than the existing L_{Aeq} sound level. This is an appropriate noise limit if somewhat strict for this location.

The night-time noise limits of 40dB $L_{Aeq (15 \text{ min})}$ and 65dB L_{AFmax} are moderately strict for suburban areas and will provide adequate protection of night-time amenity, including sleep. The levels are about 10dB greater than the background sound levels in the area and about 7dB less than the existing L_{Aeq} sound levels after 10pm. On that basis I consider that the night-time standards, being stricter than the upper guideline limits in NZS6802:2008, are appropriate to protect residential amenity at this location. NZS6802:2008 also recommends a transition or shoulder noise standard for evenings. The limit of 45dB $L_{Aeq (15 \text{ mins})}$ provides an appropriate protection for residential amenity as the total sound gradually falls during the evening period. This standard applies between 7pm and 10pm.

Submitters are concerned that the Plan does not contain assumptions about the noise levels anticipated in the proposed Business Area but this is not the function of the Plan. The application of appropriate noise limits at residential sites will dictate what activities can take place in the Business Area, as of right, and provides a framework against which future developers need to gauge their activities. That is not to say that applications cannot be made to exceed the noise limits in the District Plan but, if this occurs, then Council has the opportunity to decide whether such exceedence is appropriate in the circumstances. The District Plan sets out to control the effects of the activities and I consider that the noise standards in the Proposed District Plan Change are appropriate to achieve this outcome.

Cumulative effect is currently dealt with in the District Plan under the definition of *Noise Emission Level* where it states (in the first bullet point):

- *The assessment of cumulative effect of activities (with the exception of road traffic noise) shall be determined. Measurement of noise shall be made in such a way that as far as reasonably practical, the contribution of individual activities creating the noise shall be identified.*

This is as far as the Plan can go in this respect.

The issue of amphitheatre effect has been discussed above.

Conclusions

Council has undertaken noise sampling in the Curtis Road area and the standards in rule 36.6.n(iii) are appropriate given the existing ambient sound levels in the area and

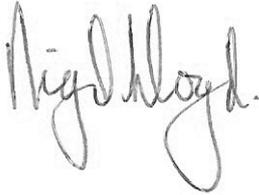
given that they are more stringent than the recommended upper limits in NZS6802:2008. When compared to the existing ambient sound levels the daytime standards are strict.

The noise standards protect the residential areas and apply at or within residential sites. Thus any enhancement in noise propagation that does exist needs to be taken into account by future developers when designing activities within the Business Area. Unless further application is made to exceed these limits (which the consent authority would need to carefully consider and decide whether such a relaxation is appropriate to the circumstances) then compliance will need to be achieved on an on-going basis.

I can support the noise provisions contained in Proposed District Plan Change 77 and I consider that the limits are appropriate and that they will suitably protect the health and amenity of nearby residential neighbours to the proposed Curtis Road Business Area.

Yours faithfully

ACOUSAPE CONSULTING & ENGINEERING LTD

A handwritten signature in black ink, appearing to read 'Nigel Lloyd', written in a cursive style.

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