

Report pursuant to s42A Resource Management Act 1991

In the matter of:

A Notice of Requirement to construct, operate, use, maintain and improve approximately 11.5km of new State highway connection between Ashhurst and Woodville

And:

A hearing by Manawatū District Council, Palmerston North City Council and Tararua District Council pursuant to s102

Requiring Authority:

New Zealand Transport Agency

Hearing date:

25 March 2019

NJ-015652-992-151-V1:KZ-e



S42A Technical Evidence Addendum: Noise

By: Nigel Lloyd

NJ-015652-992-151-V1:KZ-e



1 Scope

1. In this addendum I provide comment on the following:
 - a. Identification of noise effects;
 - b. matters arising at the hearing, particularly submission 366 from Nick and Tiffany Roger and submission 103 & 105 from Nicholas Shoebridge on behalf of himself, his mother and family; and
 - c. the draft conditions, including any differences between the conditions proposed by NZTA and the S42A reporting team.

2 Identification of Effects

2. The main noise impacts that have arisen from the submissions relate to those generated by heavy vehicle engine braking noise which would result from some trucks as they descend the eastern slopes and trucks slowing at roundabouts at either end of the route.
3. Heavy vehicle engine braking noise is not effectively controlled by reference to NZS 6806 which is based on a 24 hour average assessment procedure (L_{Aeq} (24 hours)). Short term intermittent noises have little affect on the 24 hour average L_{Aeq} .

3 Matters Arising at the Hearing

4. I have listened to the submission (S366) from Nick Roger (also on behalf of Tiffany Roger). Mr & Ms Roger reside at 1213 Fitzherbert East Road and have done for the past 6 years. Mr Roger explained that he was vulnerable with respect to road traffic noise.
5. It was Mr Roger's submission that, prior to the closure of the Gorge, passing road traffic could not be heard inside the dwelling apart from the occasional noise

from heavy trucks turning at the intersection of Fitzherbert East Road (SH57) and Napier Road (SH3).

6. There was a low volume of traffic at night and he was woken infrequently.
7. Mr Roger's concern was that the introduction of the roundabout would mean that road traffic that previously passed along SH3 unhindered would now need to slow down at the roundabout. This would introduce new heavy vehicle engine braking noise which was not present before the closure of the Gorge. While there is existing truck noise at the intersection, this is at a much lower intensity than will occur with the new route, and does not seem to be unacceptable to Mr Roger.
8. There is a noise bund that has been constructed around the property adjacent to the road.
9. Mr and Ms Roger seek:
 - a. that the roundabout be located at least 250 metres away from their dwelling,
 - b. that a new earth bund be constructed near to SH3 and SH27 as the roads pass their dwelling,
 - c. that NZTA noise insulate their dwelling,
 - d. That independent noise monitoring be undertaken after the opening of the route.
10. I consider the solutions sought by Mr and Ms Roger would reasonably mitigate the noise. I note that Ms McLeod's condition 5(e)(vii) provides for the distance between the dwelling and the roundabout to be maximised subject to land availability, geometric design standards, other Project requirements (including proximity to other existing dwellings) and safety audit processes. Given the restrictions provided for within the condition it is not possible to know what the final separation distance will be. On that basis it is sensible to explore the other noise mitigation measures requested by Mr Roger.

11. Mr Roger provided a sketch which generally showed the location of a bund close to SH3 and SH27 although the ownership of the underlying land was unclear. Acoustically, a bund provides better noise reduction if it is located close to the noise source (or to the noise receiver), so the location near to the road would provide the best noise performance.
12. The new roading layout will cause increased heavy vehicle engine braking noise to occur as vehicles approach the roundabout on SH3 as they pass Mr and Ms Roger's dwelling. Ms McLeod's condition 29B(b) provides for the dwelling to be noise insulated if the Category A criterion in NZS 6806 is exceeded. However, I consider that, in this instance, heavy vehicle engine braking will not be adequately controlled by reference to Category A. I discuss this issue in 17 below and consider that it is appropriate to include 1213 Fitzherbert Road in that discussion.
13. Ms McLeod's Condition 29B(a) provides for a post-construction review which includes noise measurements. To provide for transparency I recommend that the review is approved (or certified) by the Territorial Authorities at the appropriate time.

4 Draft Conditions

14. I would comment on the following noise conditions:
 - a. NZTA Condition 12 – new clauses (iv), (v) and (vi)
 - b. NZTA Condition 22
 - c. NZTA Condition 29B(b)
15. The new proposed clauses (v) and (vi) in Condition 12 both require the CEDF to describe the earth bunds for 1213 Fitzherbert East Road and 49846 State Highway_3 “for the purpose of noise mitigation and screening. My concern is that this requirement is in the Landscape Management Plan conditions. It is important that the noise bund be designed by a qualified and experienced noise

expert (as opposed to a landscape expert) and there would be merit in having the design certified by the territorial authority. At this stage of the design project it is not practical to provide a criterion for the effectiveness of the noise bund. The designs for the noise bunds would be better located under conditions headed Operational Noise & Property as follows:

- a. A suitable qualified and experience person shall design the noise bunds provided for 1213 Fitzherbert East Road and 49846 State Highway 3 to ensure that the best practicable option is adopted to mitigate heavy vehicle engine braking noise.
16. Ms McLeod's condition 22(e)(ii) is to "*manage*" heavy vehicles on Hope Road. The JWS (page 8) agrees that Hope Road should not be used as an access for bulk haulage or regular heavy construction vehicles. I consider that it is important to avoid the use of Hope Road by heavy construction vehicles.
 17. With respect to Ms McLeod's condition 29B(b). In the JWS, the stated intention of providing for noise insulation of the identified dwellings from the new road (at 49807 State Highway 3 and 75 Hope Road) is to protect against heavy vehicle engine braking noise on the lower eastern slope (page 6 of the JWS). The NZTA condition 29B(b) specifically provides for the Category A criterion in NZS 6806 to be used which would not protect against heavy vehicle engine braking noise for the reason I have identified in para 3 above.
 18. I therefore consider condition 29A in the S42A draft is more appropriate as it specifically identifies engine braking noise as the adverse effect that requires mitigating.
 19. An alternative to this condition is for NZTA to offer noise insulation/ventilation to the owners of 49807 State Highway 3 and 75 Hope Road should they require it, with the offer staying open for, say, one year from the opening of the route. Again it is difficult to draft noise criteria for such a condition as it applies to heavy vehicle engine braking noise. However, the main aim would be to upgrade

bedroom windows where practical and to provide for alternative mechanical ventilation to allow windows to be kept closed.

20. I recommend that an appropriate condition would be as follows:
- a. NZTA shall offer to noise insulate and ventilate the bedrooms 49807 State Highway 3, 75 Hope Road, 1213 Fitzherbert East Road and 49846 State Highway 3 as follows:
 - i. Glazing in bedroom windows shall be at least 6.38mm laminated glass. Where windows are double glazed then this applies to one side of the double glazing.
 - ii. Ventilation must be provided to meet clause G4 of the New Zealand Building Code if windows remain closed. At the same time as meeting this minimum provision the sound level of the system shall not exceed 30 dB $L_{Aeq(30s)}$ when measured 1 metre away from any grille or diffuser. The occupant must be able to control the ventilation rate in increments up to a high airflow setting that provides at least 6 air changes per hour.
21. This ventilation requirement is found in the NZTA planning documents¹.
22. As discussed above it would be appropriate to extend this offer to the owners of 1213 Fitzherbert East Road and 49846 State Highway 3 to control the adverse noise impacts of heavy vehicle engine braking noise associated with the nearby roundabouts.

¹ Guide to the Management of Effects on Noise Sensitive Land use near to the State Highway Network, NZTA.

5 Conclusions

23. My addendum considers noise matters raised during the hearing and the recommended draft conditions.
24. I consider that it is reasonable to locate the new roundabout the maximum distance from the dwelling at 1213 Fitzherbert East Road to minimise road traffic noise impacts and, particularly, heavy vehicle noise. Other noise mitigation measures sought by Mr & Ms Roger include providing an effective noise bund, noise insulating the dwelling and noise monitoring subsequent to the route being constructed. I agree this could be helpful and should be covered in conditions.
25. With respect to NZTA conditions, care needs to be taken that a noise expert designs the landscaping where this is intended to screen noise. This noise screening is currently provided for under the Landscape Management Plan. I recommend that the design of the noise bunds should be undertaken by a suitably qualified and experienced noise expert and the requirement of this should sit in the operational noise section of the conditions.
26. Heavy construction traffic should be avoided on Hope Road (as agreed in the JWS).
27. Ms McLeod's condition 29B(b) needs to mitigate against heavy vehicle engine braking noise. It currently refers to Criteria A in NZS 6806 which would not adequately provide this protection. The S42A condition is specific to heavy vehicle braking noise (as agreed in the JWS) or NZTA could specifically offer noise insulation to the four dwellings most likely to be impacted by engine braking noise.

Nigel Lloyd

4 April 2019

Nightlight.