MEMO

MARSHALL DAY Acoustics

Project:	Peka Peka Interchange Connectivity BC	**Document No.:**	Mm 001		
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Subject:	Interchange Options Noise Effects				

We have modelled the two Peka Peka Interchange options provided by Commute Transportation. The ramps were entered into the "As Built" noise model of the MacKays to Peka Peka Expressway. This model contains all roads in their currently constructed form, with traffic volumes for the design year of 2026.

Noise levels have been predicted at all dwelling in the vicinity, including those well outside the NZS6806 assessment area of 100m from the road edge.

The noise effects have been compared with the consented (as built) road alignment. Predicted noise levels are set out in the table below. The noise level change has been calculated for each of the two options. The noise levels are coloured in green (for NZS6806 noise criteria Category A) and yellow (for NZS6806 noise criteria Category B). All dwellings but one would receive noise levels within Category A, which is the most stringent and preferred noise criteria category. The dwelling at 160 Greenhill Road is predicted to receive noise levels within Category B. This dwelling is outside the assessment area of the Standard. It is noted that once the expressway will be resurfaced with OGPA in that area, the noise level at this dwelling will reduce sufficiently to be within Category A.

House ID	As Built	Option 1	Difference	Option 2	Difference
	dB $L_{Aeq(24h)}$	dB $L_{Aeq(24h)}$	dB	dB $L_{Aeq(24h)}$	dB
38 Octavius Road	56.2	56.4	0.2	56.4	0.2
44 Octavius Road	56.3	56.5	0.2	56.5	0.2
59 Octavius Road	56.4	56.6	0.2	56.5	0.1
60 Octavius Road	56.1	56.3	0.2	56.2	0.1
Greenhill Rd 125	55.2	55.1	-0.1	55.2	0
Greenhill Rd 148	53.3	53.3	0	53.3	0
Greenhill Rd 156	53.8	53.8	0	53.9	0.1
Greenhill Rd 160	59.7	59.8	0.1	59.7	0
Hadfield Rd 1	54	54.1	0.1	54.1	0.1
Hadfield Rd 19	53.8	53.9	0.1	53.9	0.1
Hadfield Rd 3	57.1	57.1	0	57.1	0
Kensington Drive 11	55.1	55.2	0.1	55.2	0.1
Kensington Drive 21	55	55.1	0.1	55.1	0.1

House ID	As Built	Option 1	Difference	Option 2	Difference
Kensington Drive 23	54.9	55.2	0.3	55	0.1
Kensington Drive 25	52.9	53	0.1	53	0.1
Kensington Drive 35	54.4	54.4	0	54.3	-0.1
Kensington Drive 39	54.7	54.9	0.2	54.9	0.2
Kensington Drive 45	51.7	51.5	-0.2	51.4	-0.3
Kensington Drive 47	50.1	50.4	0.3	50.3	0.2
Kensington Drive 53	49.9	49.9	0	49.7	-0.2
Octavius Rd 22	56.3	56.5	0.2	56.6	0.3
Peka Peka Rd 20	60.3	60.6	0.3	60.6	0.3
Peka Peka Rd 30	58.2	58.4	0.2	58.5	0.3
Peka Peka Rd 31	58.4	58.6	0.2	58.6	0.2
Peka Peka Rd 34	54.8	54.9	0.1	54.9	0.1
Peka Peka Rd 37	54.4	54.6	0.2	54.6	0.2
Peka Peka Rd 42	52.1	52.3	0.2	52.3	0.2
SH1 193	50.6	50.6	0	50.5	-0.1
SH1 195	53.7	53.7	0	53.7	0
SH1 263	52.2	52.6	0.4	52.3	0.1
SH1 267	55.9	56.1	0.2	56	0.1

As can be seen, the difference between the options is minimal, with no more than 0.3 decibels difference between the options (at 263 SH1), and generally no difference between the options. Any noise level change of such small magnitude is insignificant and unnoticeable.

When comparing the As Built road with either of the ramp options, the largest difference ranges from -0.3 decibels to +0.4 decibels. These changes are also unnoticeable. The smallest change that would generally be perceived is 3 decibels.

Overall, both ramp options cause equally indiscernible noise level changes when compared against the As Built option. The reason is that the traffic volume on the ramps is very small compared with the main expressway, and have therefore next to no bearing on the overall noise level.