

**Appendix 5.2a Groundborne Noise Calculation for Hydraulic Breaker**

**NSR Wah Ming House (Wah Fu Estate)**

Item	Description								Assumption	
	Octave Band Frequency	16	31.5	63	125	250	500	Hz		
1	rms velocity	0.05886	0.06816	0.06195	0.05033	0.06225	0.12091	mm/s	From KSL EIA report* Appendix 7-2	
2	Vibration Velocity, ref 10 <sup>-6</sup> mm/s	95	97	96	94	96	102	dB(V)	From KSL EIA report* Appendix 7-2	
3	Ro	5.5	5.5	5.5	5.5	5.5	5.5	m	Reference distance of the equipment during measurement	
	R	38	38	38	38	38	38	m	Distance between Equipment to NSR	
	Distance Attenuation	-17	-17	-17	-17	-17	-17	dB		
4	Rock and Soil Damping	0	0	0	0	0	0	dB	From KSL EIA report* Appendix 7-2 No soil damping was applied as vibration through rock	
5	Building Coupling Loss	-7	-7	-10	-13	-14	-14	dB	From KSL EIA report* Appendix 7-2	
6	Floor to Floor Attenuation	-2	-2	-2	-2	-2	-2	dB	From KSL EIA report* Appendix 7-2	
7	Conversion from Vibration to Noise	-26	-26	-26	-26	-26	-26	dB	Standard acoustic principle	
8	Conversion to A-weighted Noise	-56.7	-39.4	-26.2	-16.1	-8.6	-3.2	dB(A)	Standard acoustic principle	
9	Individual Groundborne Noise	-13	6	15	20	29	40	dB(A)	Standard acoustic principle	
10	Predicted Groundborne Noise	<b>40 dB(A)</b>							Day time criteria	60 dB(A)
									Evening time criteria	55 dB(A)
									Night time criteria	40 dB(A)

\* Kowloon Canton Railway Corporation KSL GSA 5100 Environmental Impact Assessment & Associated Services - Environmental Impact Assessment Report

## Appendix 5.2b Groundborne Noise Calculation for Raise Boring Machine

### NSR Wah Ming House (Wah Fu Estate)

Item	Description	Quantity	Assumption
1	Vibration source	2.5 mm/s	Refer to KSL EIA report* Section 7 and Appendix 7.1 Vibration Measurement for Construction TBM at DB320 Kwai Tsing Tunnel by Extrapolation, PPV at 5.5m
2	rms velocity	0.625 mm/s	Based on Crest factor of 4 Refer to Federal Transit Administration's manual for Transit Noise and Vibration Impact Assessment (FTA Guidance Manual)
3	Vibration Velocity, ref 10 <sup>-6</sup> mm/s	116 dB	Refer to KSL EIA report* Section 7 and Appendix 7.2.3
4	Ro R Distance attenuation	5.5 m 38 m -17 dB	Reference distance mentioned in item 1 Horizontal Distance between RBM to foundation of NSR
5	Soil Damping	0 dB	Refer to KSL EIA report* Section 7 and Appendix 7.2.3 No soil damping was applied as vibration through rock
6	Building Coupling Loss	-10 dB	Refer to KSL EIA report* Section 7 and Appendix 7.2.3
7	Coupling Loss from bed rock to pile	0 dB	No loss apply for building foundation rest on bedrock directly
8	Floor to floor attenuation	-2 dB	1 dB reduction per floor Residential unit on 2/F
9	Conversion from Vibration to noise	-27 dB	Refer to KSL EIA report* Section 7 and Appendix 7.2.3 Residential Units
10	Conversion to A-weighted Noise	-20 dB	Refer to KSL EIA report* Section 7 and Appendix 7.2.3 for a conservative measurement
11	Predicted Groundborne noise	<b>40 dB(A)</b>	Day time criteria (0700-1900) 65 dB(A) Night time criteria (2300-0700) 40 dB(A)

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## Appendix 5.2c Groundborne Noise Calculation for TBM

### NSR Le Meridien Hotel (Cyberport)

Item	Description	Quantity	Assumption
1	Vibration source	2.5 mm/s	Refer to KSL EIA report* Section 7 and Appendix 7.1 Vibration Measurement for Construction TBM at DB320 Kwai Tsing Tunnel by Exptrapolation, PPV at 5.5m
2	rms velocity	0.625 mm/s	Based on Crest factor of 4 Refer to Federal Transit Administration's manual for Transit Noise and Vibration Impact Assessment (FTA Guidance Manual)
3	Vibration Velocity, ref 10 <sup>-6</sup> mm/s	116 dB	Refer to KSL EIA report* Section 7 and Appendix 7.2.3
4	Ro R Distance attenuation	5.5 m 56 m -20 dB	Reference distance mentioned in item 1 Distance between TBM to foundation of NSR, Refer to Figure 2
5	Soil Damping	0 dB	Refer to KSL EIA report* Section 7 and Appendix 7.2.3 No soil damping was applied as vibration through rock
6	Building Coupling Loss	-10 dB	Refer to KSL EIA report* Section 7 and Appendix 7.2.3
7	Coupling Loss from bed rock to pile	0 dB	No loss apply for building foundation rest on bedrock directly
8	Floor to floor attenuation	-3 dB	1 dB reduction per floor Assume hotel guestrooms locate in 3/F
9	Conversion from Vibration to noise	-27 dB	Refer to KSL EIA report* Section 7 and Appendix 7.2.3 Residential Units
10	Conversion to A-weighted Noise	-20 dB	Refer to KSL EIA report* Section 7 and Appendix 7.2.3 for a conservative measurement
11	Predicted Groundborne noise	<b>36 dB(A)</b>	Day time criteria (0700-1900) 65 dB(A) Night time criteria (2300-0700) 40 dB(A)

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