

Title : Detailed Assessment for Ground Borne Noise

rev 1 - 1/3 Octave: Based on MTR SIL(E) WP 14 Rev E Implementation
08-Jan-10



Project No.:	248137		
Project Title:	SIL(E) EIA - Ground Borne Noise Assessment		
Client:	MTRCL		
Location of Noise Sensitive Receiver:	SLH - Island Shangri-la Hotel		
No. of Floor:	27+ ground level podium		
Assessment Floor:	4		
	Horizontal	Vertical	Slant
Distance from Track (nearside only) :	m	0	23.6 23.6
Rock Head Depth :	m	-16	
Rolling Stock Information:	MTRCL K-stock		
Train Speed:	kph	55	
Length of Train:	m	68	
Passby duration:	s	4.5	
Total No. of Passby during Assessment Period (both direction together):	nos.	Day period	Night period
		30	16
Assessment Period	mins.	30	30
Notes	Assessment floor is located above podium level		

Octave Band Centre Frequency	Hz	12.5	16	20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	Overall
Force Density (FDL)	VdB re lb-ft/ft ⁵	47.6	40.8	41.8	47.5	44.6	47.6	42.7	40.6	44.7	47.7	48.5	48.0	44.1	46.3	42.1	39.0	38.1	58.0
Source Corrections																			
Speed	dB	-3.3	-3.3	-3.3	-3.3	-3.3	-3.3	-3.3	-3.3	-3.3	-3.3	-3.3	-3.3	-3.3	-3.3	-3.3	-3.3	-3.3	
Turn out and cross over (TOC)	dB	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
Track Form	dB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Others	dB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Structure	dB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Source Vibration Level	VdB re 1x10⁻⁶ in/s	54.3	47.5	48.5	54.2	51.3	54.3	49.4	47.3	51.4	54.4	55.2	54.7	50.8	53.0	48.8	45.7	44.8	64.7
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Propogation Corrections		6.4	10.5	10.4	10.1	6.5	4.8	2.1	-4.5	-7.8	-12.1	-18.3	-22.1	-22.1	-20.9	-24.0	-23.5	-26.3	
Line Source Response	dB re (1x10 ⁻⁶ in/s) / (lb-ft / ft ⁵)	NSR at 23.6m: WIL D012 #1																	

Vibration at NSR Foundation	VdB re 1x10⁻⁶ in/s	60.7	58.0	58.9	64.3	57.9	59.1	51.5	42.9	43.7	42.3	37.0	32.7	28.7	32.1	24.8	22.2	18.5
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Building Corrections		-5.7	-6.0	-6.7	-7.3	-8.0	-9.0	-10.0	-11.0	-11.7	-12.3	-13.0	-13.3	-13.7	-14.0	-13.3	-12.7	-12.0	
Building Foundation Coupling Loss	dB	Large Masonry Building on Pile - Lower																	
Floor and Wall Correction	dB	Total Floor Attenuation																	
Building Structure Resonance	dB	Building Structure Resonance																	

Predicted Groundborne Vibration Level	VdB re 1x10⁻⁶ in/s	53.0	50.0	50.3	55.0	47.9	48.1	39.5	29.9	30.0	28.0	22.0	17.4	13.0	16.1	9.5	7.5	4.5	59.7
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Room Corrections		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Krad	dB	Krad = 0																	
K A-weighting	dB	-63.4	-56.7	-50.5	-44.7	-39.4	-34.6	-30.2	-26.2	-22.5	-19.1	-16.1	-13.4	-10.9	-8.6	-6.6	-4.8	-3.2	
Conversion to A-weighted Audible Noise (CTN)	dB	-63.4	-56.7	-50.5	-44.7	-39.4	-34.6	-30.2	-26.2	-22.5	-19.1	-16.1	-13.4	-10.9	-8.6	-6.6	-4.8	-3.2	
Predicted Ground Borne Noise Level inside NSR	dBA	-10.4	-6.7	-0.2	10.3	8.5	13.5	9.3	3.7	7.5	8.9	5.9	4.0	2.1	7.5	2.9	2.7	1.3	19.3
Design Factor	dBA	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	

Predicted Ground Borne Noise Level inside NSR (include a 10dBA Design Factor), Lmax (Unm)	dBA	-0.4	3.3	9.8	20.3	18.5	23.5	19.3	13.7	17.5	18.9	15.9	14.0	12.1	17.5	12.9	12.7	11.3	29.3
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Propose Mitigation Treatment		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Insertion Loss	dB	Not required																	
Predicted Ground Borne Noise Level inside NSR (include a 10dBA Design Factor), Lmax (Mit)	dBA	-0.4	3.3	9.8	20.3	18.5	23.5	19.3	13.7	17.5	18.9	15.9	14.0	12.1	17.5	12.9	12.7	11.3	29.3

Day Period		6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
Correction for Passby Duration	dB	10 log (4.5s)																	
Correction for "Tailing Effect"	dB	NSR 23.6m from the nearest track																	
SEL for Passby (include a 10dBA Design Factor)	dBA	6.7	10.3	16.8	27.3	25.5	30.6	26.4	20.7	24.5	25.9	22.9	21.0	19.2	24.6	19.9	19.8	18.4	36.3
Correction for no. of Train Passby	dB	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8
Correction for duration effect	dB	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	
Predicted Ground Borne Noise - LA eq 30mins (include a 10dBA Design Factor)	dBA	-11.1	-7.4	-1.0	9.6	7.7	12.8	8.6	2.9	6.8	8.1	5.1	3.2	1.4	6.8	2.2	2.0	0.6	18.5
Design Target (ANL)	dBA	Day Period - ASR Type B																	
Margin of Safety	dBA																		
Minimum Attenuation Requirement (Overall)	dBA																		
Propose Mitigation Treatment																			
Insertion Loss	dB	Not required																	
Predicted Ground Borne Noise with Mitigation Treatment - LA eq 30mins (include a 10dBA Design Factor)	dBA	-11.1	-7.4	-1.0	9.6	7.7	12.8	8.6	2.9	6.8	8.1	5.1	3.2	1.4	6.8	2.2	2.0	0.6	18.5

Night Period		6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
Correction for Passby Duration	dB	10 log (4.5s)																	
Correction for "Tailing Effect"	dB	NSR 23.6m from the nearest track																	
SEL for Passby (include a 10dBA Design Factor)	dBA	6.7	10.3	16.8	27.3	25.5	30.6	26.4	20.7	24.5	25.9	22.9	21.0	19.2	24.6	19.9	19.8	18.4	36.3
Correction for no. of Train Passby	dB	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Correction for duration effect	dB	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	
Predicted Ground Borne Noise - LA eq 30mins (include a 10dBA Design Factor)	dBA	-13.8	-10.2	-3.7	6.8	5.0	10.0	5.9	0.2	4.0	5.4	2.4	0.5	-1.3	4.1	-0.6	-0.7	-2.2	15.8
Design Target (ANL)	dBA	Night Period - ASR Type B																	
Margin of Safety	dBA																		
Minimum Attenuation Requirement (Overall)	dBA																		
Propose Mitigation Treatment																			
Insertion Loss	dB	Not required																	
Predicted Ground Borne Noise with Mitigation Treatment - LA eq 30mins (include a 10dBA Design Factor)	dBA	-13.8	-10.2	-3.7	6.8	5.0	10.0	5.9	0.2	4.0	5.4	2.4	0.5	-1.3	4.1	-0.6	-0.7	-2.2	15.8

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Project No.:	248137		
Project Title:	SIL(E) EIA - Ground Borne Noise Assessment		
Client:	MTRCL		
Location of Noise Sensitive Receiver:	YOC4 - Yue On Court - Shan On House Block F		
No. of Floor:	35		
Assessment Floor:	1		
	Horizontal	Vertical	Slant
Distance from Track (nearest only) :	m	5.4	10.9 12.2
Rock Head Depth :	m	20	
Rolling Stock Information:	MTRCL K-stock		
Train Speed:	kph	55	
Length of Train:	m	68	
Passby duration:	s	4.5	
Total No. of Passby during Assessment Period (both direction together):	nos.	Day period	Night period
		30	16
Assessment Period	mins.	30	30

Octave Band Centre Frequency	Hz	12.5	16	20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	Overall
Force Density (FDL)	VdB re lb-ft/ft ² s ⁵	47.6	40.8	41.8	47.5	44.6	47.6	42.7	40.6	44.7	47.7	48.5	48.0	44.1	46.3	42.1	39.0	38.1	58.0
Source Corrections																			
Speed	dB	-3.3	-3.3	-3.3	-3.3	-3.3	-3.3	-3.3	-3.3	-3.3	-3.3	-3.3	-3.3	-3.3	-3.3	-3.3	-3.3	-3.3	
Turn out and cross over (TOC)	dB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Track Form	dB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Others	dB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Structure	dB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Source Vibration Level	VdB re 1x10⁻⁶ in/s	44.3	37.5	38.5	44.2	41.3	44.3	39.4	37.3	41.4	44.4	45.2	44.7	40.8	43.0	38.8	35.7	34.8	54.7
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Propogation Corrections		12.5	16	20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	Overall
Line Source Response	dB re (1x10 ⁻⁶ in/s) / (lb-ft / ft ² s ⁵)	15.9	17.3	16.0	7.0	15.5	17.7	17.5	17.2	11.9	7.6	0.2	-5.9	-7.3	-6.6	-6.8	-4.5	-9.4	

Vibration at NSR Foundation	VdB re 1x10⁻⁶ in/s	60.2	54.8	54.6	51.3	56.8	62.0	56.9	54.6	53.3	52.0	45.4	38.9	33.5	36.4	32.0	31.3	25.4	
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Building Corrections		12.5	16	20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	Overall
Building Foundation Coupling Loss	dB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Floor and Wall Correction	dB	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Building Structure Resonance	dB	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	

Predicted Groundborne Vibration Level	VdB re 1x10⁻⁶ in/s	64.2	58.8	58.6	55.3	60.8	66.0	60.9	58.6	57.3	56.0	49.4	42.9	37.5	40.4	36.0	35.3	29.4	71.5
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Room Corrections		12.5	16	20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	Overall
Krad	dB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
K A-weighting	dB	-63.4	-56.7	-50.5	-44.7	-39.4	-34.6	-30.2	-26.2	-22.5	-19.1	-16.1	-13.4	-10.9	-8.6	-6.6	-4.8	-3.2	
Conversion to A-weighted Audible Noise (CTN)	dB	-63.4	-56.7	-50.5	-44.7	-39.4	-34.6	-30.2	-26.2	-22.5	-19.1	-16.1	-13.4	-10.9	-8.6	-6.6	-4.8	-3.2	
Predicted Ground Borne Noise Level inside NSR	dBA	0.8	2.1	8.1	10.6	21.4	31.4	30.7	32.4	34.8	36.9	33.3	29.5	26.6	31.8	29.4	30.5	26.2	43.0
Design Factor	dBA	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	

Predicted Ground Borne Noise Level inside NSR (include a 10dBA Design Factor), Lmax (Unm)	dBA	10.8	12.1	18.1	20.6	31.4	41.4	40.7	42.4	44.8	46.9	43.3	39.5	36.6	41.8	39.4	40.5	36.2	53.0
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Propose Mitigation Treatment		12.5	16	20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	Overall
Insertion Loss	dB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Predicted Ground Borne Noise Level inside NSR (include a 10dBA Design Factor), Lmax (Mit)	dBA	10.8	12.1	18.1	20.6	31.4	41.4	40.7	42.4	44.8	46.9	43.3	39.5	36.6	41.8	39.4	40.5	36.2	53.0
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Day Period		12.5	16	20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	Overall
Correction for Passby Duration	dB	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
Correction for "Tailing Effect"	dB	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
SEL for Passby (include a 10dBA Design Factor)	dBA	17.4	18.7	24.6	27.1	38.0	48.0	47.3	48.9	51.4	53.5	49.9	46.0	43.2	48.4	46.0	47.0	42.8	59.5
Correction for no. of Train Passby	dB	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	
Correction for duration effect	dB	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	

Predicted Ground Borne Noise - LA eq 30mins (include a 10dBA Design Factor)	dBA	-0.4	0.9	6.9	9.4	20.2	30.2	29.5	31.1	33.6	35.7	32.1	28.3	25.4	30.6	28.2	29.3	25.0	41.8
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Design Target (ANL)	dBA																		55
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Margin of Safety	dBA																		13.2
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Minimum Attenuation Requirement (Overall)	dBA																		0.0
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Propose Mitigation Treatment																			
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Insertion Loss	dB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
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Predicted Ground Borne Noise with Mitigation Treatment - LA eq 30mins (include a 10dBA Design Factor)	dBA	-0.4	0.9	6.9	9.4	20.2	30.2	29.5	31.1	33.6	35.7	32.1	28.3	25.4	30.6	28.2	29.3	25.0	41.8
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Night Period		12.5	16	20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	Overall
Correction for Passby Duration	dB	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
Correction for "Tailing Effect"	dB	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
SEL for Passby (include a 10dBA Design Factor)	dBA	17.4	18.7	24.6	27.1	38.0	48.0	47.3	48.9	51.4	53.5	49.9	46.0	43.2	48.4	46.0	47.0	42.8	59.5
Correction for no. of Train Passby	dB	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Correction for duration effect	dB	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	

Predicted Ground Borne Noise - LA eq 30mins (include a 10dBA Design Factor)	dBA	-3.1	-1.8	4.1	6.6	17.5	27.5	26.8	28.4	30.9	33.0	29.4	25.5	22.7	27.9	25.5	26.5	22.3	39.0
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Design Target (ANL)	dBA																		45
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Margin of Safety	dBA																		6.0
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Minimum Attenuation Requirement (Overall)	dBA																		0.0
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Propose Mitigation Treatment																			
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Insertion Loss	dB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
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Predicted Ground Borne Noise with Mitigation Treatment - LA eq 30mins (include a 10dBA Design Factor)	dBA	-3.1	-1.8	4.1	6.6	17.5	27.5	26.8	28.4	30.9	33.0	29.4	25.5	22.7	27.9	25.5	26.5	22.3	39.0
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Title : Detailed Assessment for Ground Borne Noise

rev 1 - 1/3 Octave: Based on MTR SIL(E) WP 14 Rev E Implementation
06-Jan-10



Project No.:	248137		
Project Title:	SIL(E) EIA - Ground Borne Noise Assessment		
Client:	MTRCL		
Location of Noise Sensitive Receiver:	SOH8 - South Horizons Phase IV - Dover Court Block 25		
No. of Floor:	35 + 4 level of Podium		
Assessment Floor:	5		
	Horizontal	Vertical	Slant
Distance from Track (nearside only) :	m	4.5	0
Rock Head Depth :	m	-23	
Rolling Stock Information:	MTRCL K-stock		
Train Speed:	kph	35	
Length of Train:	m	68	
Passby duration:	s	7.0	
Total No. of Passby during Assessment Period (both direction together):	nos.	Day period	Night period
	30	16	
Assessment Period	mins.	30	30

Notes Turnout or cross over correction apply because rail crossing locate within 1 train length. Assessment floor is located above podium level

Octave Band Centre Frequency	Hz	12.5	16	20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	Overall
Force Density (FDL)	VdB re lb-ft/lp ⁵	47.6	40.8	41.8	47.5	44.6	47.6	42.7	40.6	44.7	47.7	48.5	48.0	44.1	46.3	42.1	39.0	38.1	58.0
Source Corrections																			
Speed	dB	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2
Turn out and cross over (TOC)	dB	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Track Form	dB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Others	dB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Structure	dB	0.0	0.0	-0.3	-0.7	-1.0	-1.7	-2.3	-3.0	-3.3	-3.7	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0
Source Vibration Level	VdB re 1x10⁻⁶ in/s	50.4	43.6	44.3	49.7	46.4	48.8	43.2	40.4	44.2	46.9	47.3	46.8	42.9	45.1	40.9	37.8	36.9	58.7
Propogation Corrections																			
Line Source Response	dB re (1x10 ⁻⁶ in/s) / (lb-ft / ft ^{2.5})	18.6	24.0	26.9	24.3	23.9	31.2	39.0	41.4	42.2	40.8	46.1	32.1	33.0	24.1	12.9	8.2	13.0	
Vibration at NSR Foundation	VdB re 1x10⁻⁶ in/s	69.0	67.6	71.2	74.0	70.3	79.9	82.2	81.8	86.4	87.6	93.4	79.0	75.9	69.2	53.8	46.0	50.0	
Building Corrections																			
Building Foundation Coupling Loss	dB	-5.7	-6.0	-6.7	-7.3	-8.0	-9.0	-10.0	-11.0	-11.7	-12.3	-13.0	-13.3	-13.7	-14.0	-13.3	-12.7	-12.0	
Floor and Wall Correction	dB	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0
Building Structure Resonance	dB	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Predicted Groundborne Vibration Level	VdB re 1x10⁻⁶ in/s	59.3	57.6	60.5	62.6	58.3	66.9	68.2	66.8	70.7	71.3	76.4	61.6	58.3	51.2	36.4	29.3	34.0	79.7
Room Corrections																			
Krad	dB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
K A-weighting	dB	-63.4	-56.7	-50.5	-44.7	-39.4	-34.6	-30.2	-26.2	-22.5	-19.1	-16.1	-13.4	-10.9	-8.6	-6.6	-4.8	-3.2	
Conversion to A-weighted Audible Noise (CTN)	dB	-63.4	-56.7	-50.5	-44.7	-39.4	-34.6	-30.2	-26.2	-22.5	-19.1	-16.1	-13.4	-10.9	-8.6	-6.6	-4.8	-3.2	
Predicted Ground Borne Noise Level inside NSR	dBA	-4.1	0.9	10.0	17.9	18.9	32.3	38.0	40.6	48.2	52.2	60.3	48.2	47.4	42.6	29.8	24.5	30.8	61.7
Design Factor	dBA	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	
Predicted Ground Borne Noise Level inside NSR (include a 10dBA Design Factor), Lmax (Unm)	dBA	5.9	10.9	20.0	27.9	28.9	42.3	48.0	50.6	58.2	62.2	70.3	58.2	57.4	52.6	39.8	34.5	40.8	71.7

Propose Mitigation Treatment																			
Insertion Loss	dB	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Predicted Ground Borne Noise Level inside NSR (include a 10dBA Design Factor), Lmax (Mit)	dBA	5.9	10.9	20.0	27.9	28.9	42.3	48.0	50.6	58.2	62.2	70.3	58.2	57.4	52.6	39.8	34.5	40.8	71.7

Day Period																				
Correction for Passby Duration	dB	10 log (7s)	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	
Correction for "Tailing Effect"	dB	NSR 4.5m from the nearest track	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
SEL for Passby (include a 10dBA Design Factor)	dBA		14.4	19.3	28.5	36.4	37.3	50.8	56.5	59.0	66.6	70.6	78.8	66.7	65.8	61.1	48.3	43.0	49.2	80.1
Correction for no. of Train Passby	dB	10 log (30nos. of passby)	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	
Correction for duration effect	dB	-10log(1800s)	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	
Predicted Ground Borne Noise - LA eq 30mins (include a 10dBA Design Factor)	dBA		-3.4	1.6	10.7	18.6	19.6	33.0	38.7	41.3	48.9	52.8	61.0	48.9	48.0	43.3	30.5	25.2	31.4	62.3
Design Target (ANL)	dBA	Day Period - ASR Type B																	55	
Margin of Safety	dBA																		-7.3	
Minimum Attenuation Requirement (Overall)	dBA																		7.3	
Propose Mitigation Treatment																				
Insertion Loss	dB	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Predicted Ground Borne Noise with Mitigation Treatment - LA eq 30mins (include a 10dBA Design Factor)	dBA		-3.4	1.6	10.7	18.6	19.6	33.0	38.7	41.3	48.9	52.8	61.0	48.9	48.0	43.3	30.5	25.2	31.4	62.3

Night Period																				
Correction for Passby Duration	dB	10 log (7s)	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	
Correction for "Tailing Effect"	dB	NSR 4.5m from the nearest track	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
SEL for Passby (include a 10dBA Design Factor)	dBA		14.4	19.3	28.5	36.4	37.3	50.8	56.5	59.0	66.6	70.6	78.8	66.7	65.8	61.1	48.3	43.0	49.2	80.1
Correction for no. of Train Passby	dB	10 log (16nos. of passby)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Correction for duration effect	dB	-10log(1800s)	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	
Predicted Ground Borne Noise - LA eq 30mins (include a 10dBA Design Factor)	dBA		-6.1	-1.2	8.0	15.9	16.8	30.2	36.0	38.5	46.1	50.1	58.2	46.2	45.3	40.6	27.8	22.5	28.7	59.6
Design Target (ANL)	dBA	Night Period - ASR Type B																	45	
Margin of Safety	dBA																		-14.6	
Minimum Attenuation Requirement (Overall)	dBA																		14.6	
Propose Mitigation Treatment																				
Insertion Loss	dB	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Predicted Ground Borne Noise with Mitigation Treatment - LA eq 30mins (include a 10dBA Design Factor)	dBA		-6.1	-1.2	8.0	15.9	16.8	30.2	36.0	38.5	46.1	50.1	58.2	46.2	45.3	40.6	27.8	22.5	28.7	59.6

Title : Detailed Assessment for Ground Borne Noise

rev 1 - 1/3 Octave: Based on MTR SIL(E) WP 14 Rev E Implementation
06-Oct-09



Project No.:	248137		
Project Title:	SIL(E) EIA - Ground Borne Noise Assessment		
Client:	MTRCL		
Location of Noise Sensitive Receiver:	SOH6 - South Horizons Phase III - Mei Ka Court Block 23A		
No. of Floor:	39 + 3 level of podium		
Assessment Floor:	4		
	Horizontal	Vertical	Slant
Distance from Track (nearside only) :	m	8	0
Rock Head Depth :	m	-10	8.0
Rolling Stock Information:	MTRCL K-stock		
Train Speed:	kph	35	
Length of Train:	m	68	
Passby duration:	s	7.0	
Total No. of Passby during Assessment Period (both direction together):	nos.	30	16
Assessment Period	mins.	30	30

Notes Turnout or cross over correction apply because rail crossing locate within 1 train length. Assessment floor is located above podium level

Octave Band Centre Frequency	Hz	12.5	16	20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	Overall
Force Density (FDL)	VdB re lb-ft ⁵	47.6	40.8	41.8	47.5	44.6	47.6	42.7	40.6	44.7	47.7	48.5	48.0	44.1	46.3	42.1	39.0	38.1	58.0
Source Corrections																			
Speed	dB	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2
Turn out and cross over (TOC)	dB	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Track Form	dB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Others	dB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Structure	dB	0.0	0.0	-0.3	-0.7	-1.0	-1.7	-2.3	-3.0	-3.3	-3.7	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0
Source Vibration Level	VdB re 1x10⁻⁶ in/s	50.4	43.6	44.3	49.7	46.4	48.8	43.2	40.4	44.2	46.9	47.3	46.8	42.9	45.1	40.9	37.8	36.9	58.7
Propagation Corrections																			
Line Source Response	dB re (1x10 ⁻⁶ in/s) / (lb-ft / ft ^{2.5})	15.8	18.9	21.5	19.7	18.7	23.5	28.4	30.0	28.7	26.2	28.1	15.0	14.8	10.4	1.1	-2.7	1.1	
NSR at 6m: WIL D095 #1																			
Vibration at NSR Foundation	VdB re 1x10⁻⁶ in/s	66.3	62.5	65.8	69.4	65.1	72.3	71.6	70.4	72.9	73.1	75.4	61.9	57.7	55.5	42.0	35.1	38.0	
Building Corrections																			
Building Foundation Coupling Loss	dB	-5.7	-6.0	-6.7	-7.3	-8.0	-9.0	-10.0	-11.0	-11.7	-12.3	-13.0	-13.3	-13.7	-14.0	-13.3	-12.7	-12.0	
Floor and Wall Correction	dB	-8.0	-8.0	-8.0	-8.0	-8.0	-8.0	-8.0	-8.0	-8.0	-8.0	-8.0	-8.0	-8.0	-8.0	-8.0	-8.0	-8.0	
Building Structure Resonance	dB	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Predicted Groundborne Vibration Level	VdB re 1x10⁻⁶ in/s	58.6	54.5	57.1	60.0	55.1	61.3	59.6	57.4	59.2	58.7	60.4	46.5	42.0	39.5	26.7	20.4	24.0	69.5
Room Corrections																			
Krad	dB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
K A-weighting	dB	-63.4	-56.7	-50.5	-44.7	-39.4	-34.6	-30.2	-26.2	-22.5	-19.1	-16.1	-13.4	-10.9	-8.6	-6.6	-4.8	-3.2	
Conversion to A-weighted Audible Noise (CTN)	dB	-63.4	-56.7	-50.5	-44.7	-39.4	-34.6	-30.2	-26.2	-22.5	-19.1	-16.1	-13.4	-10.9	-8.6	-6.6	-4.8	-3.2	
Predicted Ground Borne Noise Level inside NSR	dBA	-4.8	-2.2	6.6	15.3	15.7	26.7	29.4	31.2	36.7	39.6	44.3	33.1	31.1	30.9	20.1	15.6	20.8	46.9
Design Factor	dBA	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	
Predicted Ground Borne Noise Level inside NSR (include a 10dBA Design Factor), Lmax (Unm)	dBA	5.2	7.8	16.6	25.3	25.7	36.7	39.4	41.2	46.7	49.6	54.3	43.1	41.1	40.9	30.1	25.6	30.8	56.9

Propose Mitigation Treatment																			
Insertion Loss	dB	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Predicted Ground Borne Noise Level inside NSR (include a 10dBA Design Factor), Lmax (Mit)	dBA	5.2	7.8	16.6	25.3	25.7	36.7	39.4	41.2	46.7	49.6	54.3	43.1	41.1	40.9	30.1	25.6	30.8	56.9

Day Period																			
Correction for Passby Duration	dB	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	
Correction for "Tailing Effect"	dB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
SEL for Passby (include a 10dBA Design Factor)	dBA	13.6	16.2	25.1	33.8	34.2	45.1	47.8	49.7	55.2	58.1	62.8	51.6	49.6	49.3	38.5	34.1	39.2	65.3
Correction for no. of Train Passby	dB	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8
Correction for duration effect	dB	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
Predicted Ground Borne Noise - LA eq 30mins (include a 10dBA Design Factor)	dBA	-4.1	-1.6	7.3	16.0	16.4	27.4	30.0	31.9	37.4	40.3	45.0	33.8	31.8	31.5	20.7	16.3	21.4	47.5
Design Target (ANL)	dBA																		55
Margin of Safety	dBA																		7.5
Minimum Attenuation Requirement (Overall)	dBA																		0.0
Propose Mitigation Treatment																			
Insertion Loss	dB	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Predicted Ground Borne Noise with Mitigation Treatment - LA eq 30mins (include a 10dBA Design Factor)	dBA	-4.1	-1.6	7.3	16.0	16.4	27.4	30.0	31.9	37.4	40.3	45.0	33.8	31.8	31.5	20.7	16.3	21.4	47.5

Night Period																			
Correction for Passby Duration	dB	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	
Correction for "Tailing Effect"	dB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
SEL for Passby (include a 10dBA Design Factor)	dBA	13.6	16.2	25.1	33.8	34.2	45.1	47.8	49.7	55.2	58.1	62.8	51.6	49.6	49.3	38.5	34.1	39.2	65.3
Correction for no. of Train Passby	dB	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Correction for duration effect	dB	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
Predicted Ground Borne Noise - LA eq 30mins (include a 10dBA Design Factor)	dBA	-6.9	-4.3	4.6	13.3	13.7	24.6	27.3	29.2	34.7	37.6	42.3	31.1	29.1	28.8	18.0	13.6	18.7	44.8
Design Target (ANL)	dBA																		45
Margin of Safety	dBA																		0.2
Minimum Attenuation Requirement (Overall)	dBA																		0.0
Propose Mitigation Treatment																			
Insertion Loss	dB	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Predicted Ground Borne Noise with Mitigation Treatment - LA eq 30mins (include a 10dBA Design Factor)	dBA	-6.9	-4.3	4.6	13.3	13.7	24.6	27.3	29.2	34.7	37.6	42.3	31.1	29.1	28.8	18.0	13.6	18.7	44.8



Title : Detailed Assessment for Ground Borne Noise

rev 1 - 1/3 Octave: Based on MTR SIL(E) WP 14 Rev E Implementation
08-Jan-10

Project No.:	248137		
Project Title:	SIL(E) EIA - Ground Borne Noise Assessment		
Client:	MTRCL		
Location of Noise Sensitive Receiver:	SOH8 - South Horizons Phase IV - Dover Court Block 25		
No. of Floor:	35 + 4 level of Podium		
Assessment Floor:	5		
	Horizontal	Vertical	Slant
Distance from Track (nearside only) :	m	4.5	0
Rock Head Depth :	m	-23	
Rolling Stock Information:	MTRCL K-stock		
Train Speed:	kph	35	
Length of Train:	m	68	
Passby duration:	s	7.0	
Total No. of Passby during Assessment Period (both direction together):	nos.	Day period	Night period
		30	16
Assessment Period	mins.	30	30

Notes: Inclined turnout and resilient trackform have been applied. Assessment floor is located above podium level

Octave Band Centre Frequency	Hz	12.5	16	20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	Overall
Force Density (FDL)	VdB re lb-ft ⁵	47.6	40.8	41.8	47.5	44.6	47.6	42.7	40.6	44.7	47.7	48.5	48.0	44.1	46.3	42.1	39.0	38.1	58.0
Source Corrections																			
Speed	dB	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2
Turn out and cross over (TOC)	dB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Track Form	dB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Others	dB	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Structure	dB	0.0	0.0	-0.3	-0.7	-1.0	-1.7	-2.3	-3.0	-3.3	-3.7	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0
Source Vibration Level	VdB re 1x10⁻⁶ in/s	45.4	38.6	39.3	44.7	41.4	43.8	38.2	35.4	39.2	41.9	42.3	41.8	37.9	40.1	35.9	32.8	31.9	53.7
Propagation Corrections																			
Line Source Response	dB re (1x10 ⁶ in/s) / (lb-ft / ft ^{2.5})	18.6	24.0	26.9	24.3	23.9	31.2	39.0	41.4	42.2	40.8	46.1	32.1	33.0	24.1	12.9	8.2	13.0	
Vibration at NSR Foundation	VdB re 1x10⁻⁶ in/s	64.0	62.6	66.2	69.0	65.3	74.9	77.2	76.8	81.4	82.6	88.4	74.0	70.9	64.2	48.8	41.0	45.0	
Building Corrections																			
Building Foundation Coupling Loss	dB	-5.7	-6.0	-6.7	-7.3	-8.0	-9.0	-10.0	-11.0	-11.7	-12.3	-13.0	-13.3	-13.7	-14.0	-13.3	-12.7	-12.0	
Floor and Wall Correction	dB	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	
Building Structure Resonance	dB	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Predicted Groundborne Vibration Level	VdB re 1x10⁻⁶ in/s	54.3	52.6	55.5	57.6	53.3	61.9	63.2	61.8	65.7	66.3	71.4	56.6	53.3	46.2	31.4	24.3	29.0	74.7
Room Corrections																			
Krad	dB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
K A-weighting	dB	-63.4	-56.7	-50.5	-44.7	-39.4	-34.6	-30.2	-26.2	-22.5	-19.1	-16.1	-13.4	-10.9	-8.6	-6.6	-4.8	-3.2	
Conversion to A-weighted Audible Noise (CTN)	dB	-63.4	-56.7	-50.5	-44.7	-39.4	-34.6	-30.2	-26.2	-22.5	-19.1	-16.1	-13.4	-10.9	-8.6	-6.6	-4.8	-3.2	
Predicted Ground Borne Noise Level inside NSR	dBA	9.1	4.1	5.0	12.9	13.9	27.3	33.0	35.6	43.2	47.2	55.3	43.2	42.4	37.6	24.8	19.5	25.8	56.7
Design Factor	dBA	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	
Predicted Ground Borne Noise Level inside NSR (include a 10dBA Design Factor), Lmax (Unm)	dBA	0.9	5.9	15.0	22.9	23.9	37.3	43.0	45.6	53.2	57.2	65.3	53.2	52.4	47.6	34.8	29.5	35.8	66.7

Propose Mitigation Treatment																			
Insertion Loss	dB	0.0	-1.0	-4.0	-5.0	-3.0	-3.0	0.0	-9.0	-13.0	-10.0	-12.0	-12.0	-13.0	-12.0	-10.0	-5.0	-5.0	
Predicted Ground Borne Noise Level inside NSR (include a 10dBA Design Factor), Lmax (Mit)	dBA	0.9	4.9	11.0	17.9	20.9	34.3	43.0	36.6	40.2	47.2	53.3	41.2	39.4	35.6	24.8	24.5	30.8	55.2

Day Period																			
Correction for Passby Duration	dB	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4
Correction for "Tailing Effect"	dB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SEL for Passby (include a 10dBA Design Factor)	dBA	9.4	14.3	23.5	31.4	32.3	45.8	51.5	54.0	61.6	65.6	73.8	61.7	60.8	56.1	43.3	38.0	44.2	75.1
Correction for no. of Train Passby	dB	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8
Correction for duration effect	dB	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
Predicted Ground Borne Noise - LA eq 30mins (include a 10dBA Design Factor)	dBA	-8.4	-3.4	5.7	13.6	14.6	28.0	33.7	36.3	43.9	47.8	56.0	43.9	43.0	38.3	25.5	20.2	26.4	57.3
Design Target (ANL)	dBA																		55
Margin of Safety	dBA																		-2.3
Minimum Attenuation Requirement (Overall)	dBA																		2.3
Propose Mitigation Treatment																			
Insertion Loss	dB	0.0	-1.0	-4.0	-5.0	-3.0	-3.0	0.0	-9.0	-13.0	-10.0	-12.0	-12.0	-13.0	-12.0	-10.0	-5.0	-5.0	
Predicted Ground Borne Noise with Mitigation Treatment - LA eq 30mins (include a 10dBA Design Factor)	dBA	-8.4	-4.4	1.7	8.6	11.6	25.0	33.7	27.3	30.9	37.8	44.0	31.9	30.0	26.3	15.5	15.2	21.4	45.9

Night Period																			
Correction for Passby Duration	dB	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4
Correction for "Tailing Effect"	dB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SEL for Passby (include a 10dBA Design Factor)	dBA	9.4	14.3	23.5	31.4	32.3	45.8	51.5	54.0	61.6	65.6	73.8	61.7	60.8	56.1	43.3	38.0	44.2	75.1
Correction for no. of Train Passby	dB	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Correction for duration effect	dB	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
Predicted Ground Borne Noise - LA eq 30mins (include a 10dBA Design Factor)	dBA	-11.1	-6.2	3.0	10.9	11.8	25.2	31.0	33.5	41.1	45.1	53.2	41.2	40.3	35.6	22.8	17.5	23.7	54.6
Design Target (ANL)	dBA																		45
Margin of Safety	dBA																		-9.6
Minimum Attenuation Requirement (Overall)	dBA																		9.6
Propose Mitigation Treatment																			
Insertion Loss	dB	0.0	-1.0	-4.0	-5.0	-3.0	-3.0	0.0	-9.0	-13.0	-10.0	-12.0	-12.0	-13.0	-12.0	-10.0	-5.0	-5.0	
Predicted Ground Borne Noise with Mitigation Treatment - LA eq 30mins (include a 10dBA Design Factor)	dBA	-11.1	-7.2	-1.0	5.9	8.8	22.2	31.0	24.5	28.1	35.1	41.2	29.2	27.3	23.6	12.8	12.5	18.7	43.1



Title : Detailed Assessment for Ground Borne Noise

rev 1 - 1/3 Octave: Based on MTR SIL(E) WP 14 Rev E Implementation
06-Jan-10

Project No.:	248137		
Project Title:	SIL(E) EIA - Ground Borne Noise Assessment		
Client:	MTRCL		
Location of Noise Sensitive Receiver:	SOH6 - South Horizons Phase III - Mei Ka Court Block 23A		
No. of Floor:	39 + 3 level of podium		
Assessment Floor:	4		
	Horizontal	Vertical	Slant
Distance from Track (nearside only) :	m	8	0
Rolling Stock Information:	MTRCL K-stock		
Train Speed:	kph	35	
Length of Train:	m	68	
Passby duration:	s	7.0	
Total No. of Passby during Assessment Period (both direction together):	nos.	Day period	Night period
		30	16
Assessment Period	mins.	30	30

Notes: Inclined turnout and resilient trackform have been applied. Assessment floor is located above podium level

Octave Band Centre Frequency	Hz	12.5	16	20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	Overall
Force Density (FDL)	VdB re lb-ft ⁵	47.6	40.8	41.8	47.5	44.6	47.6	42.7	40.6	44.7	47.7	48.5	48.0	44.1	46.3	42.1	39.0	38.1	58.0
Source Corrections																			
Speed	dB	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2	-7.2
Turn out and cross over (TOC)	dB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Track Form	dB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Others	dB	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Structure	dB	0.0	0.0	-0.3	-0.7	-1.0	-1.7	-2.3	-3.0	-3.3	-3.7	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0
Source Vibration Level	VdB re 1x10⁻⁶ in/s	45.4	38.6	39.3	44.7	41.4	43.8	38.2	35.4	39.2	41.9	42.3	41.8	37.9	40.1	35.9	32.8	31.9	53.7
Propagation Corrections																			
Line Source Response	dB re (1x10 ⁻⁶ in/s) / (lb-ft / ft ⁵)	15.8	18.9	21.5	19.7	18.7	23.5	28.4	30.0	28.7	26.2	28.1	15.0	14.8	10.4	1.1	-2.7	1.1	
NSR at 6m: WIL D095 #1																			
Vibration at NSR Foundation	VdB re 1x10⁻⁶ in/s	61.3	57.5	60.8	64.4	60.1	67.3	66.6	65.4	67.9	68.1	70.4	56.9	52.7	50.5	37.0	30.1	33.0	
Building Corrections																			
Building Foundation Coupling Loss	dB	-5.7	-6.0	-6.7	-7.3	-8.0	-9.0	-10.0	-11.0	-11.7	-12.3	-13.0	-13.3	-13.7	-14.0	-13.3	-12.7	-12.0	
Floor and Wall Correction	dB	-8.0	-8.0	-8.0	-8.0	-8.0	-8.0	-8.0	-8.0	-8.0	-8.0	-8.0	-8.0	-8.0	-8.0	-8.0	-8.0	-8.0	
Building Structure Resonance	dB	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Predicted Groundborne Vibration Level	VdB re 1x10⁻⁶ in/s	53.6	49.5	52.1	55.0	50.1	56.3	54.6	52.4	54.2	53.7	55.4	41.5	37.0	34.5	21.7	15.4	19.0	64.5
Room Corrections																			
Krad	dB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
K A-weighting	dB	-63.4	-56.7	-50.5	-44.7	-39.4	-34.6	-30.2	-26.2	-22.5	-19.1	-16.1	-13.4	-10.9	-8.6	-6.6	-4.8	-3.2	
Conversion to A-weighted Audible Noise (CTN)	dB	-63.4	-56.7	-50.5	-44.7	-39.4	-34.6	-30.2	-26.2	-22.5	-19.1	-16.1	-13.4	-10.9	-8.6	-6.6	-4.8	-3.2	
Predicted Ground Borne Noise Level inside NSR	dBA	-9.8	-7.2	1.6	10.3	10.7	21.7	24.4	26.2	31.7	34.6	39.3	28.1	26.1	25.9	15.1	10.6	15.8	41.9
Design Factor	dBA	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	
Predicted Ground Borne Noise Level inside NSR (include a 10dBA Design Factor), Lmax (Unm)	dBA	0.2	2.8	11.6	20.3	20.7	31.7	34.4	36.2	41.7	44.6	49.3	38.1	36.1	35.9	25.1	20.6	25.8	51.9

Propose Mitigation Treatment																			
Insertion Loss	dB	0.0	-1.0	-4.0	-5.0	-3.0	-3.0	0.0	-9.0	-13.0	-10.0	-12.0	-12.0	-13.0	-12.0	-10.0	-5.0	-5.0	
Predicted Ground Borne Noise Level inside NSR (include a 10dBA Design Factor), Lmax (Mit)	dBA	0.2	1.8	7.6	15.3	17.7	28.7	34.4	27.2	28.7	34.6	37.3	26.1	23.1	23.9	15.1	15.6	20.8	41.5

Day Period																			
Correction for Passby Duration	dB	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	
Correction for "Tailing Effect"	dB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
SEL for Passby (include a 10dBA Design Factor)	dBA	8.6	11.2	20.1	28.8	29.2	40.1	42.8	44.7	50.2	53.1	57.8	46.6	44.6	44.3	33.5	29.1	34.2	60.3
Correction for no. of Train Passby	dB	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8
Correction for duration effect	dB	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
Predicted Ground Borne Noise - LA eq 30mins (include a 10dBA Design Factor)	dBA	-9.1	-6.6	2.3	11.0	11.4	22.4	25.0	26.9	32.4	35.3	40.0	28.8	26.8	26.5	15.7	11.3	16.4	42.5
Design Target (ANL)	dBA																		55
Margin of Safety	dBA																		12.5
Minimum Attenuation Requirement (Overall)	dBA																		0.0
Propose Mitigation Treatment																			
Insertion Loss	dB	0.0	-1.0	-4.0	-5.0	-3.0	-3.0	0.0	-9.0	-13.0	-10.0	-12.0	-12.0	-13.0	-12.0	-10.0	-5.0	-5.0	
Predicted Ground Borne Noise with Mitigation Treatment - LA eq 30mins (include a 10dBA Design Factor)	dBA	-9.1	-7.6	-1.7	6.0	8.4	19.4	25.0	17.9	19.4	25.3	28.0	16.8	13.8	14.5	5.7	6.3	11.4	32.2

Night Period																			
Correction for Passby Duration	dB	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	
Correction for "Tailing Effect"	dB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
SEL for Passby (include a 10dBA Design Factor)	dBA	8.6	11.2	20.1	28.8	29.2	40.1	42.8	44.7	50.2	53.1	57.8	46.6	44.6	44.3	33.5	29.1	34.2	60.3
Correction for no. of Train Passby	dB	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Correction for duration effect	dB	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
Predicted Ground Borne Noise - LA eq 30mins (include a 10dBA Design Factor)	dBA	-11.9	-9.3	-0.4	8.3	8.7	19.6	22.3	24.2	29.7	32.6	37.3	26.1	24.1	23.8	13.0	8.6	13.7	39.8
Design Target (ANL)	dBA																		45
Margin of Safety	dBA																		5.2
Minimum Attenuation Requirement (Overall)	dBA																		0.0
Propose Mitigation Treatment																			
Insertion Loss	dB	0.0	-1.0	-4.0	-5.0	-3.0	-3.0	0.0	-9.0	-13.0	-10.0	-12.0	-12.0	-13.0	-12.0	-10.0	-5.0	-5.0	
Predicted Ground Borne Noise with Mitigation Treatment - LA eq 30mins (include a 10dBA Design Factor)	dBA	-11.9	-10.3	-4.4	3.3	5.7	16.6	22.3	15.2	16.7	22.6	25.3	14.1	11.1	11.8	3.0	3.6	8.7	29.5