

MTR Corporation Limited

MTR Lai Chi Kok Station Pedestrian Subway and Entrance Works

Monthly Environmental Monitoring & Audit Report

16 March 2009 – 15 April 2009

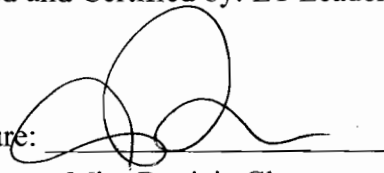
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APPROVAL SHEET

Prepared and Certified by: ET Leader (Environmental Pioneers & Solutions Limited)

Signature: _____



Miss Patricia Chung
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Date: _____

29 APR 2009

* ET – Environmental Team

MTR Lai Chi Kok Station

Cheung Lai Street Pedestrian Subway & Entrance Works

Environmental Permit No. EP – 253/ 2006

MTR Lai Chi Kok Station
Cheung Lai Street Pedestrian Subway & Entrance Works

Submission Document Title: Environmental Permit Conditions
- Monthly EM&A Report

Environmental Permit No.: EP-253/ 2006
Independent Environmental Checker Ref: EP2532006-LCK-IEC-022

According to Permit Condition 1.9 of the above Environmental Permit, the titled document(s) certified by the Environmental Team Leader has been checked and verified by the undersigned.. The document is considered to be in environmental acceptable manner.

Verified by:


Dr. Glenn H Frommer
Head of Sustainability Development
of MTR Corporation

29 APR 2009

Date

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EXECUTIVE SUMMARY

This is the 20th Monthly Environmental Monitoring and Audit (EM&A) Report for “MTRC Lai Chi Kok Station Pedestrian Subway and Entrance Works”. The Report concludes the impact monitoring and audit works for the construction works undertaken during the period of 16 March 2009 to 15 April 2009. The construction activities in this reporting month include excavation and soil disposal for construction of subway; driving sheet piles at footpath side of Lai Chi Kok Road westbound; grouting works for lagging wall at Cheung Lai Street in between Cheung Sha Wan Road and Cheung Shun Street.

Impact monitoring for the construction noise impact was conducted in this reporting period. There was no exceedance of action and limit levels recorded at the agreed sensitive receivers. There was one formal public complaint on construction noise nuisance with a reasonable follow up taken up properly in accordance with the complaint response procedure in the EM&A manual. The Contractor's performance on environmental issues was considered to be satisfactory in general.

1 INTRODUCTION

This is the 20th Monthly Environmental Monitoring and Audit (EM&A) Report for “MTRC Lai Chi Kok Station Pedestrian Subway and Entrance Works” (Environmental Permit No. EP-253/2006). The Report concludes the impact monitoring and audit works for the construction works undertaken during the period of 16 March 2009 to 15 April 2009.

2 PROJECT INFORMATION

2.1 Construction Program

Civil construction of the whole subway would take approximately 30 months to complete. The construction sites are mainly located at Cheung Lai Street, a section of Lai Chi Kok road near West Kowloon Corridor and a section of Cheung Sha Wan Road. The overall construction works of the project are currently on progress.

Construction of the subway would be carried out simultaneously by cut and cover method. Vertical open cut areas would be provided in phases to suit the project progress and laterally supported by sheetpile walls for temporary road decks construction. In order to maintain existing traffic flows at Lai Chi Kok Road, Cheung Sha Wan Road and Cheung Lai Street, temporary road decks would be provided as soon as possible. This would also act as a screen to minimize the nuisance to the public and pedestrian during construction of the subway structures. All excavation and construction of the subway and its ancillary underground structures would be carried out underneath the road decks thereby minimizing environmental impacts. At-grade access points would be provided for transportation of material/spoil and workers' access during implementation of the underground subway construction works. Once the construction of the subway structure is completed, the work areas would be backfilled and the road surface for the temporary works sites will be reinstated.

Site location plan is shown in Appendix 1. The construction programme is shown below.

Activities	Month					
	Aug - Dec 07	Jan-May 08	Jun-Oct 08	Nov08 -Mar09	Apr-Aug 09	Sept 09 - Jan 10
1800 Ø Sewer Diversion of Lai Chi Kok Sewer	████████████████████					
Construction of Subway						
- Sheet Piling works & Temporary Support	██					
- Excavation works			████████████████████			
- Formwork & Concreting				████████████████████		
- Decoration Works					████████████████████	
- Backfilling & Reinstatement					████████████████████	
Construction of smoke extraction air shaft	████████████████████					
Construction of fresh air intake shaft	████████████████████					
Construction of subway entrance D1					████████████████████	
Construction of subway entrance D2					████████████████████	
Construction of subway entrance D3 inside Liberte			████████████████████			
Construction of subway entrance D4 inside The Pacifica			████████████████████			

2.2 Construction Activities in the Past Month

Major construction activities carried out by the contractor during this reporting period include:

Site under West Kowloon Corridor

- Excavation and soil disposal for construction of subway;
- Pipe piling works for lagging wall;
- Fabrication of lateral supports for construction of subway;
- Grouting works for lagging wall.

Lai Chi Kok Road Westbound

- Driving sheet piles at footpath side of Lai Chi Kok Road westbound;
- Trial trench excavation for sheet piling works at footpath side of Lai Chi Kok Road westbound;
- Wall construction of the smoke vent shaft.

Site at Cheung Lai Street

- Driving sheet piles at west side of Cheung Lai Street/Cheung Shun Street junction;
- Grouting works for lagging wall at Cheung Lai Street in between Cheung Sha Wan Road and Cheung Shun Street;
- Excavation and disposal for install lateral support;
- Fabrication of lateral supports for construction of subway at Cheung Lai Street in between Cheung Shun Street and Lai Chi Kok Road Eastbound.

Site at Entrance D3

- Breaking the existing concrete slab for sheet piling works;
- Breaking the existing tie beam and ground beam for sheet piling works;
- Driving sheet piles inner side of the Liberte.

2.3 Construction Activities for the Coming Month

Major construction activities by the contractor anticipated for the coming month include:

Site under West Kowloon Corridor

- Excavation and soil disposal for construction of subway;
- Fabrication of lateral supports for construction of subway;
- Grouting works for lagging wall Liberte.

Lai Chi Kok Road Westbound

- Driving sheet piles at footpath side of Lai Chi Kok Road westbound;
- Trial trench excavation for sheet piling works at footpath side of Lai Chi Kok Road westbound;
- Installation of lateral support for construction of subway
- Construction of the wall and roof slab of smoke vent shaft.

Site at Cheung Lai Street

- Grouting works for lagging wall at Cheung Lai Street in between Cheung Sha Wan Road and Cheung Shun Street;
- Drilling hole pump well and observation well for pumping test;
- Excavation and disposal for lateral support installation;
- Fabrication of lateral supports for construction of subway at Cheung Lai Street in between Cheung Shun Street and Lai Chi Kok Road Eastbound;
- Lay blinding concrete for construction of subway.

Site at Entrance D3

- Driving sheet piles at inside of the Liberte;
- Grouting works for lagging wall at inside of Liberte
- Drilling hole for pump well and observation well for pump test.

3 NOISE MONITORING

3.1 Monitoring Methodology

In accordance with the EM&A Manual, the construction noise level is measured in terms of A-weighted equivalent continuous sound pressure level (L_{Aeq}). During normal construction working hours (0700-1900 Monday to Saturday), monitoring of $L_{Aeq, 30min}$ noise levels (as six consecutive $L_{Aeq, 5min}$ readings) was carried out once every week.

3.2 Equipment Used and Calibration Details

Impact noise monitoring was conducted using SVAN sound analysis equipment – SVAN 949, which complied with the International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1 985 (Type 1) Specifications as referred to in the Technical Memorandum to the Noise Control Ordinance. The equipment were calibrated and verified by certified laboratory or manufacturer every two years to ensure they perform to the same level of accuracy as stated in the manufacturer's specification. Before and after each measurement, the reading of sound level meter was checked with the acoustic calibrator and the measurements were accepted as valid if the calibration levels before and after the noise measurement agreed to within 1.0 dB. Free field and weatherproof microphone was extended 1m from the exterior of the sensitive receivers building façade and with an unobstructed field of view of the proposed construction site. Measurements were recorded to the nearest 0.1 dB.

3.3 Monitoring Station

In accordance with the EM&A Manual, monitoring stations were established at 2 locations, which are summarized in Table 3.1 and depicted in Appendix 1.

Table 3.1 – Noise Monitoring Stations

Sensitive Receiver No.	Location
R1	Podium, Block 7, Liberte
R2	Podium, Tower 1, The Pacifica

3.4 Monitoring Results

The results are presented in the Table 3.2. Relevant details of the noise monitoring results, graphic plots calculation reference are presented in Appendix 2 and 3. The corrected LAeq results, ranged between 58.0dB(A) and 73.2 dB(A), were within the limit levels and therefore, no exceedance was found.

Table 3.2 – Noise monitoring results for the reporting month

Location	Parameter	Time	Date	Measured Leq	Baseline Noise Level	Corrected LAeq*	Limit	Exceedance
R1	Leq30min	10:06	18-March-09	75.9 dB(A)	74 dB(A)	71.4 dB(A)	75 dB(A)	N
R1	Leq30min	16:28	26-March-09	75.0 dB(A)	74 dB(A)	68.1 dB(A)	75 dB(A)	N
R1	Leq30min	16:29	1-April-09	74.5 dB(A)	74 dB(A)	64.9 dB(A)	75 dB(A)	N
R1	Leq30min	16:39	9-April-09	74.5 dB(A)	74 dB(A)	64.9 dB(A)	75 dB(A)	N
R1	Leq30min	16:05	15-April-09	75.4 dB(A)	74 dB(A)	69.8 dB(A)	75 dB(A)	N
R2	Leq30min	9:26	18-March-09	74.4 dB(A)	74.3 dB(A)	58.0 dB(A)	75 dB(A)	N
R2	Leq30min	15:49	26-March-09	74.6 dB(A)	74.3 dB(A)	62.8 dB(A)	75 dB(A)	N
R2	Leq30min	15:24	1-April-09	74.6 dB(A)	74.3 dB(A)	62.8 dB(A)	75 dB(A)	N
R2	Leq30min	16:01	9-April-09	74.1 dB(A)	74.3 dB(A)	# dB(A)	75 dB(A)	N
R2	Leq30min	15:26	15-April-09	76.8 dB(A)	74.3 dB(A)	73.2 dB(A)	75 dB(A)	N

*Corrected to baseline background level

Measured Leq is lower than baseline noise measurement

Action and Limit levels and the associated Event/ Action Plan in event of exceedance are summarized in Table 3.3 and 3.4, respectively.

Table 3.3 – Action and Limit Levels for Construction Noise at Sensitive Receivers R1 and R2

Time Period	Action	Limit
Daytime 0700 – 1900 hrs on normal weekdays	When one documented complaint is received	75 dB(A)
0700 – 2300hrs on holidays; and 1900 – 2300 hrs on all other days		Subject to the control of Noise Control Ordinance
2300 – 0700 hrs of next day		Subject to the control of Noise Control Ordinance

Table 3.4 - Event/Action plan for construction noise

Event	Action			
	ET Leader	IEC	RE	Contractor
Action Level	<ol style="list-style-type: none"> 1. Notify IEC, RE and the Contractor. 2. Carry out investigation. 3. Report the results of investigation to IEC, RE and the Contractor. 4. Discuss with the RE and the Contractor and formulate remedial measures. 5. Increase monitoring frequency to check mitigation measures. 	<ol style="list-style-type: none"> 1. Review with analysed results submitted by ET. 2. Review the proposed remedial measures by the Contractor and advise RE accordingly. 3. Supervise the implement of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing. 2. Notify the Contractor. 3. Require the Contractor to propose remedial measures for the analysed noise problem. 4. Ensure remedial measures are properly implemented. 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to RE / ET. 2. Implement noise mitigation proposals.
Limit Level	<ol style="list-style-type: none"> 1. Identify the source. 2. Notify IEC, RE, EPD and the Contractor. 3. Repeat measurement to confirm findings. 4. Increase monitoring frequency. 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented. 6. Inform IEC, RE, and EPD the causes & actions taken for the exceedances. 7. Assess effectiveness of the Contractor's remedial actions and keep IEC, EPD and RE informed of the results. 8. If exceedance stops, cease additional monitoring 	<ol style="list-style-type: none"> 1. Discuss amongst RE, ET Leader and the Contractor on the potential remedial actions. 2. Review the Contractor's remedial actions whenever necessary to assure their effectiveness and advise RE accordingly. 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing. 2. Notify the Contractor. 3. Require the Contractor to propose remedial measures for the analysed noise problem. 4. Ensure remedial measures are properly implemented. 5. If exceedance continues, consider what activity of the work is responsible and instruct the Contractor to stop that activity of work until the exceedance is abated. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance. 2. Submit proposals for remedial actions to RE and IEC within 3 working days of notification. 3. Implement the agreed proposals. 4. Resubmit proposals if problem still not under control. 5. Stop the relevant activity of works as determined by the RE until the exceedance is abated.

3.5 Monitoring Schedule for Next Reporting Period

Noise monitoring in the next reporting period is scheduled for 22nd and 29th April 2009, as well as 6th, 13th May 2009.

Site inspection schedule for the next reporting period is designated on and 29th April 2009. as well as, 13th May 2009.

4 ACTION TAKEN IN EVENT OF EXCEEDENCE

There were no exceedance recorded during this reporting period, therefore no actions were taken.

5 CONSTRUCTION WASTE DISPOSAL

Dumping locations for disposal of C&D wastes from the construction site were appointed and allocated by EPD/CEDD. The contractor has implemented the delivery trip ticket system for recording the waste disposal to the public fill and landfill areas. Excavated materials are reused as back-fill material to balance cut and fill and hence reduce the generation of materials. Table 5.1 is a summary of updated figures of the construction wastes disposal provided by the Contractor. The relevant disposal records are kept in Contractor's site office for inspection.

Table 5.1 Summary of Construction Waste Disposal (please note comments below highlighted)

	Amount of Construction Waste disposed		
	Inert Waste (to Public Fill) (tonnes)	Non-inert Waste (to Landfill) (tonnes)	Chemical Waste (trip) (tonnes)
16 August 07 to 15 September 07	1297.6	0	0
16 September 07 to 15 October 07	1229.42	0	0
16 October 07 to 15 November 07	207.19	0	0
16 November 07 to 15 December 07	915.71	0	0.40
16 December 07 to 15 January 08	718.0	0	0
16 January 08 to 15 February 08	561.10	0	0
16 February 08 to 15 March 08	344.4	0	0
16 March 08 to 15 April 08	135.99	0	0
16 April 08 to 15 May 08	261.48	0	0
16 May 08 to 15 June 08	0	0	0.20
16 June 08 to 15 July 08	39.4	0	0
16 July 08 to 15 August 08	96.99	4.00	0.20
16 August 08 to 15 September 08	212.800	3.20	0
16 September 08 to 15 October 08	1010.61	0	0
16 October 08 to 15 November 08	2746.16	5.00	0.20
16 November 08 to 15 December 08	1991.3	1.60	0
16 December 08 to 15 January 09	4849.8	2.20	0.40
16 January 09 to 15 February 09	1607.19	0	0
16 February 09 to 15 March 09	3871.40	0	0
16 March 09 to 15 April 09	5603.9	3.00	0.4
<i>Total</i>	27700.44	19.00	1.80

6 COMPLAINT LOG

	Air	Noise	Water	Others
16 August 07 to 15 September 07	0	0	0	0
16 September 07 to 15 October 07	0	0	0	0
16 October 07 to 15 November 07	0	0	0	0
16 November 07 to 15 December 07	0	0	0	0
16 December 07 to 15 January 08	0	0	0	0
16 January 08 to 15 February 08	0	0	0	0
16 February 08 to 15 March 08	0	0	0	0
16 March 08 to 15 April 08	0	1	0	0
16 April 08 to 15 May 08	1	0	0	0
16 May 08 to 15 June 08	1	0	0	0
16 June 08 to 15 July 08	1	0	0	0
16 July 08 to 15 August 08	0	0	0	0
16 August 08 to 15 September 08	0	0	0	0
16 September 08 to 15 October 08	0	0	0	0
16 October 08 to 15 November 08	0	0	0	0
16 November 08 to 15 December 08	0	0	0	0
16 December 08 to 15 January 09	0	0	0	0
16 January 09 to 15 February 09	0	0	0	0
16 February 09 to 15 March 09	0	0	0	0
16 March 09 to 15 April 09	0	1	0	0
<i>Total</i>	<i>3</i>	<i>2</i>	<i>0</i>	<i>0</i>

A complaint on noise was received by MTR from EPD by phone on 30 March 09 regarding a construction noise nuisance due to the construction work, in particular the drilling work, at the junction between Cheung Lai Road and Cheung Shan Wan Road. Proper follow up was taken by Resident Engineer/ Contractor/ Environmental Team and Independent Environmental Checker for investigation and resolution. The Contractor has agreed to carry out mitigation measures to resolve the incident. The details can be referred to the complaint report and log in Appendix 4.

7 STATUS OF PERMITS AND LICENSES OBTAINED

Table 7.1 is the updated status of environmental related permits/ license obtained for the construction activities. Construction Noise Permit is renewed in the reporting month.

Table 7.1 Status of Permits and Licenses Obtained

Description	License / Permit No.#	Date of Issue	Date of Expiry	Remarks
Environmental Permit	EP-253/2006	11 Aug 2006	--	
Registration of C&D Waste Producer	7005542	1 Jun 2007	--	
Chemical Waste Producer	5214-264-K2869-08	08-May 2007	--	
Construction Noise Permit	PP-RW00004-09	16 Feb 2009	15 Aug 2009	
Effluent Discharge License	EP760/264/0124051	24 July 2007	31 July 2012	

8 SITE INSPECTION AND AUDITS

During the reporting period, regular bi-weekly joint site inspections led by senior staffs from MTR, Residential Engineer, Contractor and the ET were carried out. The Contractor’s performance on the environmental matters was assessed and concerned items were raised for rectification. Inspection findings from the reporting period are summarized as follows:

Table 8.1 Summary of inspection findings

Item	Observations/ Description	Status
1	The Contractor was reminded to have regular check on site to ensure the compliance of relevant environmental regulations, permits and licenses.	Ongoing
2	The Contractor was reminded to ensure all required construction noise mitigation measures to be followed properly.	Ongoing
3	The Contractor was reminded to keep the site works area and site office tidy as good housekeeping.	Ongoing
4	The Contractor was reminded to implement proper noise mitigation measures to shield the noise parts of circular saw, handheld breaker and vibratory hammer during construction.	Ongoing
5	The Contractor should regularly review the condition of hoardings for Cheung Lai Street site area. in order to reduce any air pollution impact to the nearby public.	Ongoing
6	The Contractor was reminded to have regular view on potential oil leak from fuel containers and the stationery plants on site by providing proper drip trays or similar.	Ongoing
7	The Contractor was reminded to have regular check on the potential black smoke from working plants.	Ongoing
8	The Contractor should take care the required dust mitigation measures at the progressing work sites at Cheung Lai Street in between Cheung Sha Wan Road and Cheung Shun Street.	Ongoing
9	The Contractor should strictly follow up the required noise mitigation measures at the progressing work sites.	Action taken
10	The Contractor should provide the oil drip pans at the site below West Kowloon Corridor.	Action taken
11	The Contractor should have close monitoring on the noise labels on the working air compressors and hand breakers and delivery of waste disposal.	Contractor to follow

9 CONCLUSION

In this reporting month, construction activities for this project “MTRC Lai Chi Kok Station Pedestrian Subway and Entrance Works” include Excavation and soil disposal for construction of subway, Driving sheet piles at footpath side of Lai Chi Kok Road westbound; Grouting works for lagging wall at Cheung Lai Street in between Cheung Sha Wan Road and Cheung Shun Street. Regular monthly meetings and weekly site audits, led by the seniors and attended by representatives of RE, ET, IEC and the Contractor, were held for discussing site environmental related issues. Concerned site environmental items raised during the audits were generally followed up by the Contractor for rectification. The overall environmental pollution control measures provided by the Contractor were considered satisfactory. Noise levels recorded during the monitoring period were within limits. There was one public complaint on noise recorded that had been handled properly in accordance with the complaint response procedure in the EM&A Manual. The contractor has also been reminded to take serious notice on the public concern and always provide and maintain proper mitigation measure and always keep good management at site. The ET will continue to execute the environmental monitoring and audit programme in accordance with the EM&A Manual and Environmental Permit requirements.

APPENDIX 1 – REFERENCE FIGURES

Figure 1 Project Construction Area

Figure 2 Noise Monitoring Stations

Figure 1 Project Construction Area

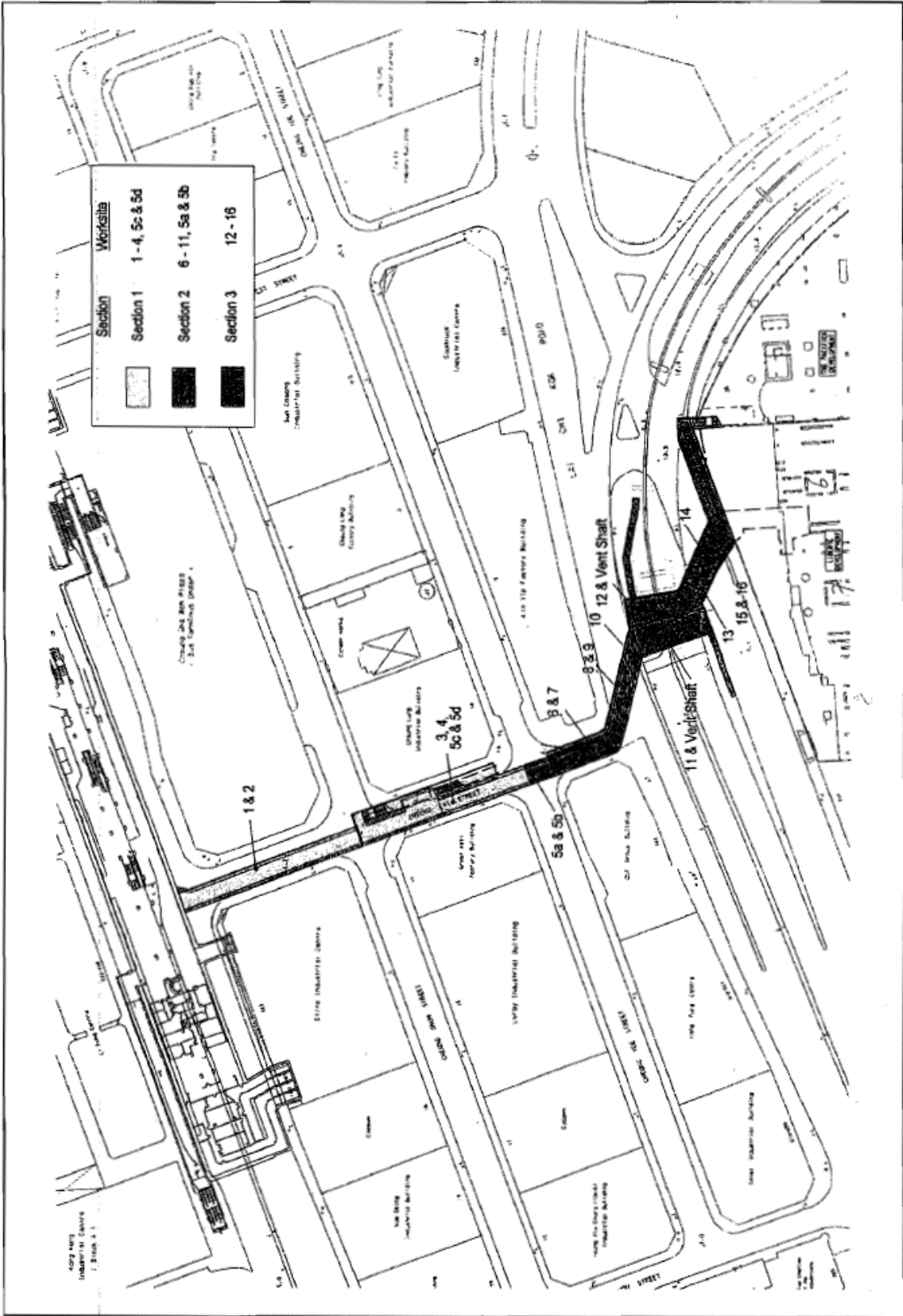
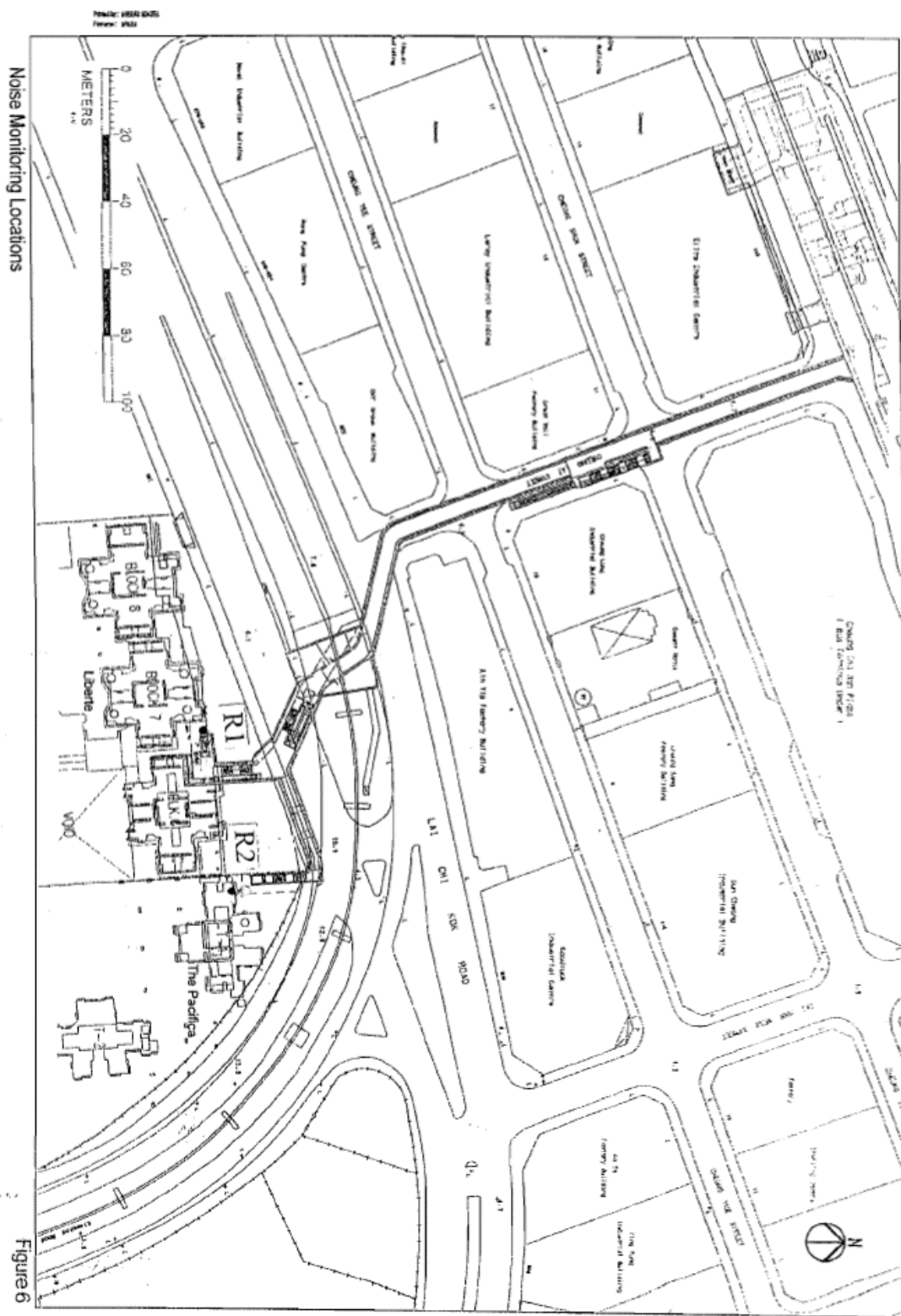
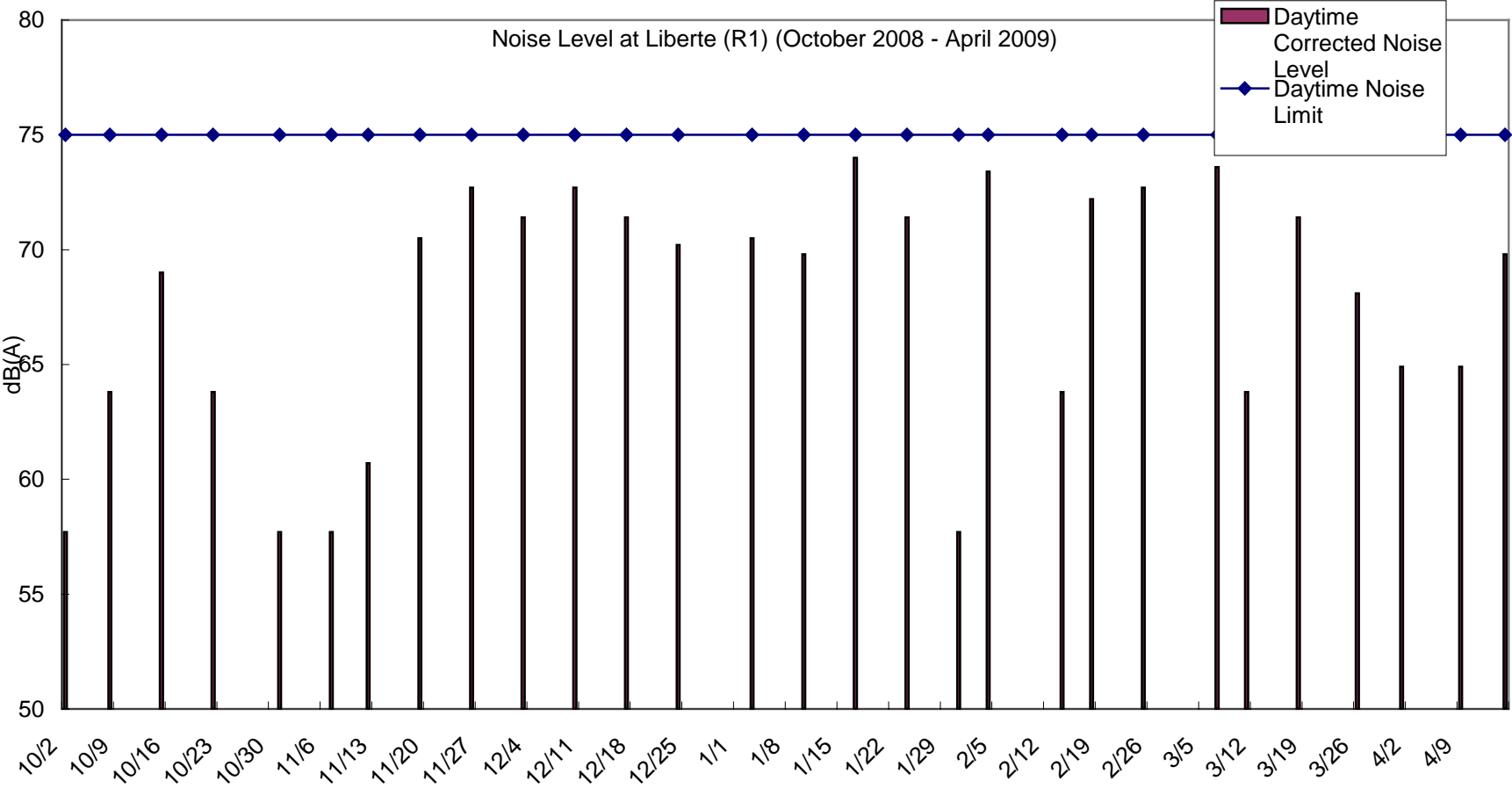
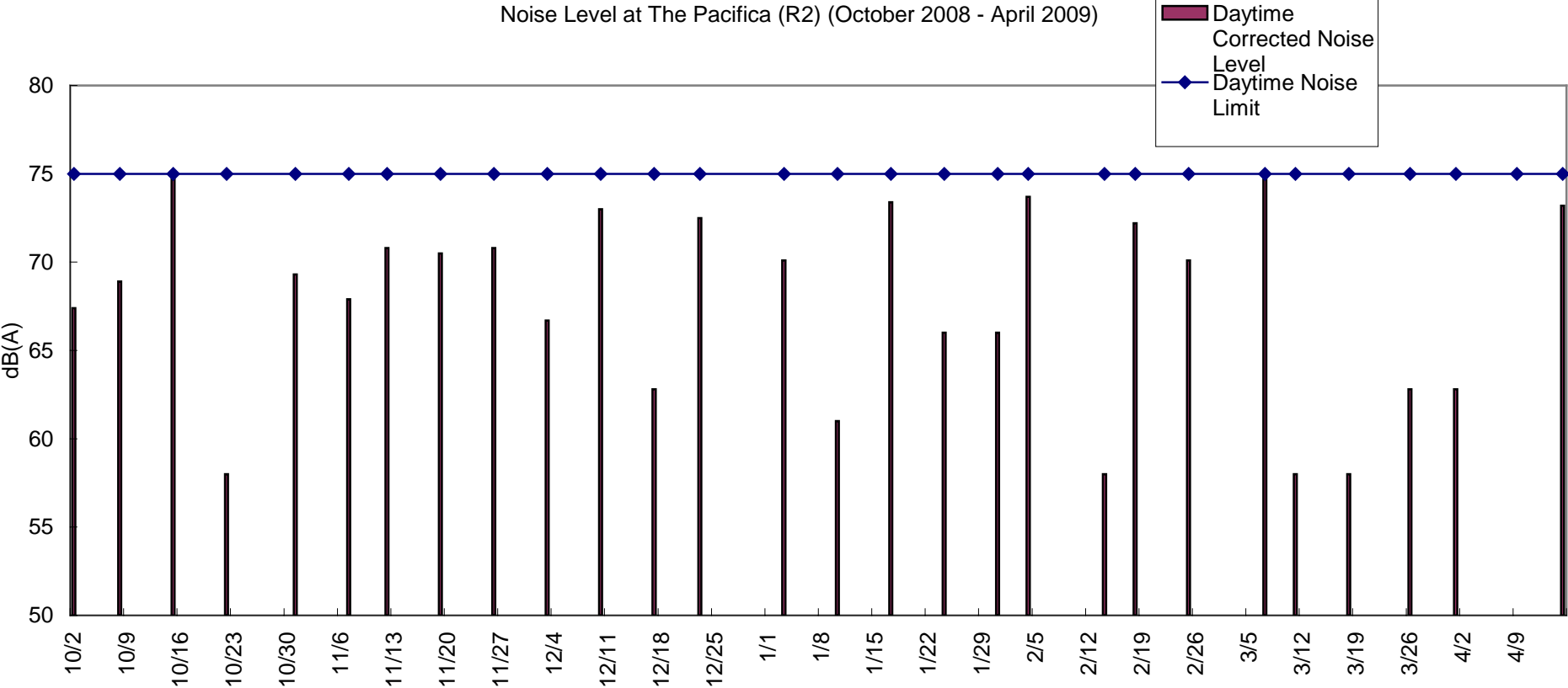


Figure 2 Noise Monitoring Stations R1 and R2



APPENDIX 2 – Environmental Monitoring Data / Charts





APPENDIX 3 – Noise Monitoring Data Sheet and Calculation

Calculations and Equations:

The 30minutes A-weighted equivalent continuous sound pressure level ($L_{Aeq, 30min}$) is calculated by geometric mean from 6 consecutive $L_{Aeq, 5min}$ readings:

$$L_{Aeq, 30min} = 6^{\text{th}} \text{ root of } (L1)(L2)\dots(L6)$$

Where: L1~6 is the 6consecutive $L_{Aeq, 5min}$ readings

And the equation of the Baseline correction:

$$10\log (10^{L_{aeq}/10} - 10^{L_b/10})$$

Where:

L_{aeq} is the $L_{Aeq, 30min}$ from the geometric mean of 6 consecutive L_{eq5min} results

L_b is the baseline noise level.

**Mass Transit Railway - Lai Chi Kok Station
 Cheung Lai Street Pedestrian Subway and Entrance Works**

Noise Level Monitoring Log Sheet

Monitoring Location		Podium, Block 7, Liberte
Sampling Date		15 April 2009
Sampling Time		16:05-16:35
Weather Condition		Sunny
Baseline Noise Level	dB(A)	74.0
Monitoring Results	L_{eq}, dB(A)	75.4
	L₁₀, dB(A)	76.6
	L₉₀, dB(A)	73.6
Calibration before Measurement	dB(A)	94.0
Calibration after Measurement	dB(A)	94.0
Observation(s)		
Sheet piling noise by (Vibratory Hammer x 1) Hammering noise by (Hammer x 1) Transportation noise by public transportation		
Remarks		
N/A		

With Baseline Correction : 69.8 **dB(A)**

Recorded by : Stephen Tsang

Date : 15 April 2009

NOISE MEASUREMENT RECORD

SUMMARY

Frequency weightings: _____ dBA Weather: Sunny Recorded by: Stephen Tsang

Date	Location	Time/H Duration Min.	Comment/Source	L _{max}	L _{min}	L ₁₀	L ₉₀	L _{Aeq}
15-4-09	R, Liberte	16:05-16:10		91.0	70.3	75.9	72.8	75.1
		16:10-16:15		83.7	70.6	76.1	73.2	74.8
		16:15-16:20		87.0	71.9	76.1	73.2	75.0
		16:20-16:25		86.3	72.7	76.8	74.0	75.5
		16:25-16:30		81.0	72.8	76.9	74.1	75.6
		16:30-16:35		84.8	72.4	77.7	74.3	76.4

L_{Aeq} 30min = 75.4
 L₁₀ 30min = 76.6
 L₉₀ 30min = 73.6

**Mass Transit Railway - Lai Chi Kok Station
 Cheung Lai Street Pedestrian Subway and Entrance Works**

Noise Level Monitoring Log Sheet

Monitoring Location		Podium, Tower 1, The Pacifica
Sampling Date		15 April 2009
Sampling Time		15:26-15:56
Weather Condition		Sunny
Baseline Noise Level	dB(A)	74.3
Monitoring Results	L_{eq}, dB(A)	76.8
	L₁₀, dB(A)	80.6
	L₉₀, dB(A)	71.2
Calibration before Measurement	dB(A)	94.0
Calibration after Measurement	dB(A)	94.0
Observation(s)		
Sheet piling noise by (Vibratory Hammer x 1) Hammering noise by (Hammer x 1) Transportation noise by public transportation		
Remarks		
N/A		

With Baseline Correction : 73.2 dB(A)

Recorded by : Stephen Tsang

Date : 15 April 2009

NOISE MEASUREMENT RECORD

SUMMARY

Frequency weightings: _____ dBA Weather: Sunny Recorded by: Stephen Tsang

Date	Location	Time/H Duration Min.	Comment/Source	L _{max}	L _{min}	L ₁₀	L ₉₀	L _{Aeq}
15-4-09	R2 Pacifica	15:26-15:31		89.5	69.3	79.4	70.4	75.4
		15:31-15:36		92.5	69.1	78.9	72.3	74.9
		15:36-15:41		82.7	69.2	79.3	71.5	76.7
		15:41-15:46		88.4	68.8	82.4	70.7	79.1
		15:46-15:51		87.4	66.8	81.5	70.1	78.1
		15:51-15:56		89.1	66.3	82.1	72.4	76.5

L_{Aeq} 30min = 76.8
 L₁₀ 30min = 80.6
 L₉₀ 30min = 71.2

**Mass Transit Railway - Lai Chi Kok Station
 Cheung Lai Street Pedestrian Subway and Entrance Works**

Noise Level Monitoring Log Sheet

Monitoring Location		Podium, Block 7, Liberte
Sampling Date		9 April 2009
Sampling Time		16:39-17:09
Weather Condition		Cloudy
Baseline Noise Level	dB(A)	74.0
Monitoring Results	L_{eq}, dB(A)	74.5
	L₁₀, dB(A)	76.9
	L₉₀, dB(A)	72.1
	Calibration before Measurement	dB(A)
Calibration after Measurement	dB(A)	94.0
Observation(s)		
Sheet piling noise by (Vibratory Hammer x 1) Power generation noise by (Power generator x 1) Hammering noise by (Hammer x 1) Transportation noise by public transporation		
Remarks		
N/A		

With Baseline Correction : 64.9 dB(A)

Recorded by : Stephen Tsang

Date : 9 April 2009

NOISE MEASUREMENT RECORD

SUMMARY

Frequency weightings: _____ dBA Weather: CLoudy Recorded by: Stephen Tsang

Date	Location	Time/H Duration Min.	Comment/Source	L _{max}	L _{min}	L ₁₀	L ₉₀	L _{Aeq}
9-4-2009	R. Liberty	16:39-16:44		83.7	69.7	75.4	72.1	74.0
		16:44-16:49		86.1	70.6	75.7	72.2	74.4
		16:49-16:54		83.6	70.9	79.2	72.7	76.3
		16:54-16:59		78.0	69.3	75.6	71.6	73.9
		16:59-17:04		80.3	70.0	75.9	72.3	74.3
		17:04-17:09		80.2	68.5	76.1	71.8	74.1

L_{eq} 30 min = 74.5
 L₁₀ 30 min = 76.9
 L₉₀ 30 min = 72.1

Mass Transit Railway - Lai Chi Kok Station
 Cheung Lai Street Pedestrian Subway and Entrance Works

Noise Level Monitoring Log Sheet

Monitoring Location		Podium, Tower 1, The Pacifica
Sampling Date		9 April 2009
Sampling Time		16:01-16:31
Weather Condition		Cloudy
Baseline Noise Level	dB(A)	74.3
Monitoring Results	L_{eq}, dB(A)	74.1
	L₁₀, dB(A)	76.2
	L₉₀, dB(A)	70.8
Calibration before Measurement	dB(A)	94.0
Calibration after Measurement	dB(A)	94.0
Observation(s)		
Sheet piling noise by (Vibratory Hammer x 1) Power generation noise by (Power generator x 1) Hammering noise by (Hammer x 1) Transportation noise by public transportation		
Remarks		
N/A		

With Baseline Correction : # Note dB(A)

Note: The measurement noise level is lower than the baseline noise level.
 Therefore, no baseline correction is available.

Recorded by : Stephen Tsang

Date : 9 April 2009

NOISE MEASUREMENT RECORD

SUMMARY

Frequency weightings: dBA Weather: Cloudy Recorded by: Stephen Tsang

Date	Location	Time/H Duration Min.	Comment/Source	L _{max}	L _{min}	L ₁₀	L ₉₀	L _{Aeq}
9-4-2009	Rz Pcciffica	16:01-16:06		80.3	70.1	75.3	71.8	73.7
		16:06-16:11		83.0	71.3	75.9	72.5	74.4
		16:11-16:16		79.3	69.8	75.3	71.6	73.6
		16:16-16:21		90.8	70.1	79.7	71.6	76.2
		16:21-16:26		90.6	67.2	77.0	68.8	74.2
		16:26-16:31		86.1	66.8	74.0	68.4	72.6

L_{eq} 30min = 74.1
 L₁₀ 30min = 76.2
 L₉₀ 30min = 70.8

**Mass Transit Railway - Lai Chi Kok Station
 Cheung Lai Street Pedestrian Subway and Entrance Works**

Noise Level Monitoring Log Sheet

Monitoring Location		Podium, Block 7, Liberte
Sampling Date		1 April 2009
Sampling Time		16:29-16:59
Weather Condition		Cloudy
Baseline Noise Level	dB(A)	74.0
Monitoring Results	L_{eq}, dB(A)	74.5
	L₁₀, dB(A)	76.9
	L₉₀, dB(A)	72.9
Calibration before Measurement	dB(A)	94.0
Calibration after Measurement	dB(A)	94.0
Observation(s)		
Sheet piling noise by (Vibratory Hammer x 1) Shoveling noise by (Shovel x 1) Hammering noise by (Hammer x 1) Transportation noise by public transporation		
Remarks		
N/A		

With Baseline Correction : 64.9 dB(A)

Recorded by : Stephen Tsang

Date : 1 April 2009

NOISE MEASUREMENT RECORD

SUMMARY

Frequency weightings: _____ dBA Weather: cloudy Recorded by: Stephen Tsang

Date	Location	Time/H Duration Min.	Comment/Source	L _{max}	L _{min}	L ₁₀	L ₉₀	L _{AEq}
1-4-07	R. Liberte	16:29-16:37		82.8	68.0	74.3	69.4	72.3
		16:34-16:39		75.1	67.5	72.1	69.2	70.5
		16:39-16:44		79.5	69.8	77.3	74.7	76.1
		16:44-16:49		81.8	73.7	77.6	75.2	76.4
		16:49-16:54		84.8	73.7	77.4	74.6	76.2
		16:54-16:57		79.8	72.3	77.0	74.4	75.9

L_{AEq} 30min = 74.5
 L₁₀ 30min = 76.9
 L₉₀ 30min = 72.9

**Mass Transit Railway - Lai Chi Kok Station
 Cheung Lai Street Pedestrian Subway and Entrance Works**

Noise Level Monitoring Log Sheet

Monitoring Location		Podium, Tower 1, The Pacifica
Sampling Date		1 April 2009
Sampling Time		15:24-15:54
Weather Condition		Cloudy
Baseline Noise Level	dB(A)	74.3
Monitoring Results	L_{eq}, dB(A)	74.6
	L₁₀, dB(A)	76.1
	L₉₀, dB(A)	70.9
Calibration before Measurement	dB(A)	94.0
Calibration after Measurement	dB(A)	94.0
Observation(s)		
Sheet piling noise by (Vibratory Hammer x 1) Shoveling noise by (Shovel x 1) Hammering noise by (Hammer x 1) Transportation noise by public transportation		
Remarks		
N/A		

With Baseline Correction : 62.8 dB(A)

Recorded by : Stephen Tsang

Date : 1 April 2009

NOISE MEASUREMENT RECORD

SUMMARY

Frequency weightings: _____ dBA Weather: CLOUDY Recorded by: Stephen Tsang

Date	Location	Time/H Duration: Min.	Comment/Source	L _{max}	L _{min}	L ₁₀	L ₉₀	L _{Aeq}
14-09	R2 Pacifica	15:24-15:29		79.7	65.7	76.4	67.7	73.1
		15:29-15:34		79.5	66.9	77.1	68.5	74.5
		15:34-15:39		79.9	67.6	76.7	69.5	75.1
		15:39-15:44		79.4	68.2	77.1	69.5	74.8
		15:44-15:49		79.1	69.9	75.3	71.5	72.3
		15:49-15:54		84.1	68.0	79.5	71.4	75.4

L_{Aeq} 30min = 74.6
 L₁₀ 30min = 77.0
 L₉₀ 30min = 69.7

**Mass Transit Railway - Lai Chi Kok Station
 Cheung Lai Street Pedestrian Subway and Entrance Works**

Noise Level Monitoring Log Sheet

Monitoring Location		Podium, Block 7, Liberte
Sampling Date		26 March 2009
Sampling Time		16:28-16:58
Weather Condition		Cloudy
Baseline Noise Level	dB(A)	74.0
Monitoring Results	L_{eq}, dB(A)	75.0
	L₁₀, dB(A)	76.5
	L₉₀, dB(A)	73.0
Calibration before Measurement	dB(A)	94.0
Calibration after Measurement	dB(A)	94.0
Observation(s)		
Sheet piling noise by (Vibratory Hammer x 1) Welding noise by (Welding machine x 1) Transportation noise by public transportation		
Remarks		
N/A		

With Baseline Correction : 68.1 dB(A)

Recorded by : Stephen Tsang

Date : 26 March 2009

NOISE MEASUREMENT RECORD

SUMMARY

Frequency weightings: _____ dBA Weather: cloudy Recorded by: Stephen Tang

Date	Location	Time/H Duration Min.	Comment/Source	L _{max}	L _{min}	L ₁₀	L ₉₀	L _{Aeq}
26-3-09	R. Liberte	16:28-16:33		86.2	70.4	77.1	73.0	75.6
		16:33-16:38		80.8	72.7	76.2	73.8	75.2
		16:38-16:43		80.3	71.1	76.8	72.8	75.1
		16:43-16:48		79.7	72.0	76.6	73.4	75.1
		16:48-16:53		79.2	70.6	75.9	72.6	74.5
		16:53-16:58		84.3	69.3	76.2	72.5	74.7

L_{Aeq} 30 min = 75.0
 L₁₀ 30 min = 76.5
 L₉₀ 30 min = 73.0

**Mass Transit Railway - Lai Chi Kok Station
 Cheung Lai Street Pedestrian Subway and Entrance Works**

Noise Level Monitoring Log Sheet

Monitoring Location		Podium, Tower 1, The Pacifica
Sampling Date		26 March 2009
Sampling Time		15:49-16:19
Weather Condition		Cloudy
Baseline Noise Level	dB(A)	74.3
Monitoring Results	L_{eq}, dB(A)	74.6
	L₁₀, dB(A)	76.1
	L₉₀, dB(A)	70.9
Calibration before Measurement	dB(A)	94.0
Calibration after Measurement	dB(A)	94.0
Observation(s)		
Sheet piling noise by (Vibratory Hammer x 1) Welding noise by (Welding machine x 1) Transportation noise by public transportation		
Remarks		
N/A		

With Baseline Correction : 62.8 dB(A)

Recorded by : Stephen Tsang

Date : 26 March 2009

NOISE MEASUREMENT RECORD

SUMMARY

Frequency weightings: _____ dBA Weather: Cloudy Recorded by: Stephen Tsang

Date	Location	Time/H Duration: Min.	Comment/Source	L _{max}	L _{min}	L ₁₀	L ₉₀	L _{Aeq}
26-3-09	B ₂ Pacific	15:49-15:54		80.2	67.5	76.4	71.0	74.9
		15:54-15:59		75.7	69.2	74.1	70.8	72.6
		15:59-16:04		79.7	69.4	76.3	71.1	74.7
		16:04-16:09		81.5	68.8	76.4	70.8	75.1
		16:09-16:14		86.3	69.6	76.8	70.8	75.3
		16:14-16:19		82.8	69.8	76.8	71.2	75.1

L_{Aeq} 30min = 74.6
 L₁₀ 30min = 76.1
 L₉₀ 30min = 70.9

**Mass Transit Railway - Lai Chi Kok Station
 Cheung Lai Street Pedestrian Subway and Entrance Works**

Noise Level Monitoring Log Sheet

Monitoring Location		Podium, Block 7, Liberte
Sampling Date		18 March 2009
Sampling Time		10:06-10:36
Weather Condition		Sunny
Baseline Noise Level	dB(A)	74.0
Monitoring Results	L_{eq}, dB(A)	75.9
	L₁₀, dB(A)	78.3
	L₉₀, dB(A)	72.9
	Calibration before Measurement	dB(A)
Calibration after Measurement	dB(A)	94.0
Observation(s)		
Concrete breaking noise by (Pneumatic breaker x 1) Excavator noise by (Excavator x 1) Transportation noise by public transportation		
Remarks		
N/A		

With Baseline Correction : 71.4 dB(A)

Recorded by : Stephen Tsang

Date : 18 March 2009

NOISE MEASUREMENT RECORD

SUMMARY

Frequency weightings: _____ dBA Weather: Sunny Recorded by: Stephen Tsang

Date	Location	Time/H Duration Min.	Comment/Source	L _{max}	L _{min}	L ₁₀	L ₉₀	L _{Aeq}
18-3-2007	R. Liberte	10:06-10:11		80.9	69.1	78.3	73.5	76.4
		10:11-10:16		82.1	71.0	79.7	73.6	77.1
		10:16-10:21		81.5	71.1	78.9	72.8	76.3
		10:21-10:26		80.6	69.5	77.3	73.1	75.3
		10:26-10:31		88.6	70.5	78.4	72.3	75.2
		10:31-10:36		81.5	70.7	77.1	72.3	74.9

L_{Aeq} 30min = 75.9

L₁₀ 30min = 78.3

L₉₀ 30min = 72.9

**Mass Transit Railway - Lai Chi Kok Station
 Cheung Lai Street Pedestrian Subway and Entrance Works**

Noise Level Monitoring Log Sheet

Monitoring Location		Podium, Tower 1, The Pacifica
Sampling Date		18 March 2009
Sampling Time		9:26-9:56
Weather Condition		Sunny
Baseline Noise Level	dB(A)	74.3
Monitoring Results	L_{eq}, dB(A)	74.4
	L₁₀, dB(A)	76.0
	L₉₀, dB(A)	71.9
Calibration before Measurement	dB(A)	94.0
Calibration after Measurement	dB(A)	94.0
Observation(s)		
Concrete breaking noise by (Pneumatic breaker x 1) Excavator noise by (Excavator x 1) Transportation noise by public transportation		
Remarks		
N/A		

With Baseline Correction : 58.0 dB(A)

Recorded by : Stephen Tsang

Date : 18 March 2009

NOISE MEASUREMENT RECORD

SUMMARY

Frequency weightings: _____ dBA Weather: Sunny Recorded by: Stephen Tsing

Date	Location	Time/H Duration Min.	Comment/Source	L _{max}	L _{min}	L ₁₀	L ₉₀	L _{Aeq}
18-3-2009	R2 Pacifica	9:26-9:31		82.7	68.0	77.4	70.2	75.1
		9:31-9:36		82.1	72.0	76.9	73.5	75.5
		9:36-9:41		81.3	70.9	77.3	73.5	75.3
		9:41-9:46		77.8	68.7	73.8	69.9	72.2
		9:46-9:51		82.4	70.9	75.3	72.1	74.1
		9:51-9:56		86.1	70.6	75.5	72.1	74.3

L_{Aeq} 30min = 74.4
 L₁₀ 30min = 76.0
 L₉₀ 30min = 71.9

APPENDIX 4 – Complaint report and log on March 30th 2009

MTR Project – MTR Lai Chi Kok Station Cheung Lai Street Pedestrian Subway and Entrances Works

Sheet: 1 of 1

Report Form For Complaint/ Concern

Ref: LCK-Ct05/09

RECIPIENT

EPD formal complaint fax to MTR was received on 1 April 09 with notification in advance by EPD's phone discussion on 30 March 09. The message was immediately passed to RE, ET Leader and Contractor for investigation on 30 march 09.

COMPLAINANT / Concern

Name: Mr. Tsang

Tel: 27851738

Address: N/A

COMPLAINT

Noise Air quality/Dust Water Odour Environment Traffic/Pedestrian
 Safety Others

Date: 23rd March 2009

Time: Morning

Location: Junction between Cheung Lai Street and Cheung Sha Wan Road.

Details: Mr. Tsang complained to EPD a construction noise nuisance due to the construction work, in particular the drilling works at the junction between Cheung Lai Street and Cheung Sha Wan Road.

INVESTIGATION RESULTS & MITIGATION MEASURES

1. A complaint on noise was received by MTR from EPD by phone on 30 march 09 regarding a construction noise nuisance due to the construction work, in particular the drilling work, at the junction between Cheung Lai Road and Cheung Sha Wan Road. This EPD's message was immediately passed to RE, ET Leader and Contractor for investigation on the same day.
2. As per the EM&A Manual section 7.3 requirements, ET arranged a site investigation on 31st March 2009 in the concerned area to resolve the complaint.
3. Contractor and ET had a meeting with Mr. Tsang (The Complainant) on site (Fig. 1) on 31st March 2009. During the meeting, the concerned operating rig was in operation and the noise level generated by the operation rig (Fig. 2) at that moment and the construction activities on site was acceptable to Mr. Tsang. However, Mr. Tsang requested the construction works to be done during nighttime, which will not affect the nearby commercial area during daytime.
4. Contractor and ET explained to Mr. Tsang that construction work at nighttime is not allowed by the Authority. The current construction works can proceed during daytime from 7:00am to 7:00pm. However, the contractor would relocate the operation rig to minimize the nuisance to the nearby commercial shops as practical as it can.

5. ET had an ad-hoc monitoring to the designated Noise Sensitive Receivers for the project on March 31st 2009. The monitoring result for Liberte was 70.5dB(A) with baseline correction and the result for Pacifica was below the baseline noise level. Both results were below the limit noise limit of 75.0dB(A). (Page 5-9)
6. Contractor, ET, RE and IEC had a joint site inspection on 1st April 2009. During the investigation, it was found that the contractor had relocated the operation rig on site to minimize noise nuisance to the commercial shops. (Fig. 3)
7. Contractor, ET, RE and IEC had a joint meeting after the site inspection above. The Contractor agreed to carry out the following mitigation measures:-
 - 1) To minimize the construction operation during the peak lunch hours.
 - 2) No more than one operation rig will be in operation at any time.
 - 3) To control the speed of the operation rig to minimize noise nuisance to the nearby commercial area.
8. ET has reminded the contractor on the importance of noise control that was generated on site, and to minimize noise nuisance as far as practicable.

RECOMMENDATIONS

1. Contractor should provide mitigation measures such as movable noise barriers for the noisy construction activities.
2. The contractor should not have more than one operating rig in operation on site at anytime.
3. Noisy activities should be scheduled to minimize noise nuisance caused to the surrounding commercial area.
4. Construction equipments and machines should be well maintained to minimize noise generation on site.
5. Contractor should take serious notice on the complaint and always keep good environmental management at site.

Signed:



Date:

ATTACHMENTS

(Fig.1) Contractor and ET had an on site meeting with Mr. Tsang (The Complainant)



(Fig. 2) Mr. Tsang showed concern on the operation rig on site that may affect the nearby commercial area on March 31st 2009.



(Fig.3) The contractor relocated the operation rig during the follow up site inspection on 1st April 2009.



**Mass Transit Railway - Lai Chi Kok Station
Cheung Lai Street Pedestrian Subway and Entrance Works**

Noise Level Monitoring Log Sheet

Monitoring Location		Podium, Block 7, Liberte
Sampling Date		31 March 2009
Sampling Time		15:26-15:56
Weather Condition		Cloudy
Baseline Noise Level	dB(A)	74.0
Monitoring Results	L_{eq}, dB(A)	75.6
	L₁₀, dB(A)	77.4
	L₉₀, dB(A)	72.8
	Calibration before Measurement	dB(A)
Calibration after Measurement	dB(A)	94.0
Observation(s)		
Hammering noise by (Hammer x 2) Excavation noise by (Excavator x1) Drilling operation noise by (Operation Rig x1) Transportation noise by public transporation		
Remarks		
Add-Hoc monitoring		

With Baseline Correction : 70.5 dB(A)

Recorded by : Stephen Tsang

Date : 31 March 2009

NOISE MEASUREMENT RECORD

SUMMARY

Frequency weightings: _____ dBA Weather: cloudy Recorded by: Stephen Tsang

Date	Location	Time/H Duration Min.	Comment/Source	L _{max}	L _{min}	L ₁₀	L ₉₀	L _{Aeq}
31-3-2009	R1 Liberte	15:26-15:31		79.1	69.2	76.0	72.5	74.5
		15:31-15:36		85.4	70.9	77.2	73.0	75.6
		15:36-15:41		88.2	70.5	77.5	73.1	76.1
		15:41-15:46		87.1	68.8	80.1	72.5	77.4
		15:46-15:51		84.5	70.6	77.0	72.7	75.2
		15:51-15:56		79.8	71.0	76.8	72.8	75.0

L_{eq} 30_{min} = 75.6
 L₁₀ 30_{min} = 77.4
 L₉₀ 30_{min} = 72.8

**Mass Transit Railway - Lai Chi Kok Station
Cheung Lai Street Pedestrian Subway and Entrance Works**

Noise Level Monitoring Log Sheet

Monitoring Location		Podium, Tower 1, The Pacifica
Sampling Date		31 March 2009
Sampling Time		16:14-16:44
Weather Condition		Cloudy
Baseline Noise Level	dB(A)	74.3
Monitoring Results	L_{eq}, dB(A)	70.7
	L₁₀, dB(A)	72.2
	L₉₀, dB(A)	68.7
Calibration before Measurement	dB(A)	94.0
Calibration after Measurement	dB(A)	94.0
Observation(s)		
Hammering noise by (Hammer x 2) Excavation noise by (Excavator x1) Drilling operation noise by (Operation Rig x1) Transportation noise by public transportation		
Remarks		
Add-Hoc monitoring		

With Baseline Correction : * Note dB(A)

* Note: The measured noise level is lower than the baseline noise level

Recorded by : Stephen Tsang

Date : 31 March 2009

NOISE MEASUREMENT RECORD

SUMMARY

Frequency weightings: _____ dBA Weather: Cloudy Recorded by: Stephen Tsang

Date	Location	Time/H Duration Min.	Comment/Source	L _{max}	L _{min}	L ₋₁₀	L ₉₀	L _{Aeq}
31-3-2009	R2 Pacifica	16:14-16:19		74.7	66.9	72.6	68.3	71.4
		16:19-16:24		75.5	67.3	71.4	68.5	70.1
		16:24-16:29		79.7	65.7	70.9	67.7	69.5
		16:29-16:34		76.3	66.9	72.4	68.5	70.6
		16:34-16:39		75.8	67.6	72.6	69.5	71.2
		16:39-16:44		77.4	67.9	73.1	69.5	71.5

L_{eq} 30min = 70.7
 L₋₁₀ 30min = 72.2
 L₉₀ 30min = 68.7

Ad-hoc noise monitoring location for (R1) Liberte and (R2) Pacifica

