

MTR Corporation Limited

MTR Lai Chi Kok Station Pedestrian Subway and Entrance Works

Monthly Environmental Monitoring & Audit Report


16 November 2009 – 15 December 2009

Environmental Pioneers & Solutions Limited

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APPROVAL SHEET

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

Signature: 

Date: 31 DEC 2009

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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-030

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

31 DEC 2009

Date

TABLE OF CONTENTS

EXECUTIVE SUMMARY	4
1 INTRODUCTION	5
2 PROJECT INFORMATION	5
2.1 Construction Program	5
2.2 Construction Activities in the Past Month	6
2.3 Construction Activities for the Coming Month	7
3 NOISE MONITORING	9
3.1 Monitoring Methodology	9
3.2 Equipment Used and Calibration Details	9
3.3 Monitoring Station	9
3.4 Monitoring Results	10
3.5 Monitoring Schedule for Next Reporting Period	11
4 ACTION TAKEN IN EVENT OF EXCEEDENCE	12
5 CONSTRUCTION WASTE DISPOSAL	13
6 COMPLAINT LOG	14
7 STATUS OF PERMITS AND LICENSES OBTAINED	15
8 SITE INSPECTION AND AUDITS	16
9 CONCLUSION	17
APPENDIX 1 – REFERENCE FIGURES	18
APPENDIX 2 – Environmental Monitoring Data / Charts	21
APPENDIX 3 – Noise Monitoring Data Sheet and Calculation	24

EXECUTIVE SUMMARY

This is the 28th 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 November 2009 to 15 December 2009. The major construction activities in this reporting month include grouting lagging walls and construction of subway base slabs, walls and soffits under West Kowloon Corridor and subway box construction under Cheung Lai Street; pumping tests at Entrance D3 and utility diversions and subway base slab construction at Lai Chi Kok Road West. Noise impact monitoring for the construction noise impact was conducted at the agreed NSRs during this reporting period and no exceedance of action and limit levels recorded. The Contractor's performance on environmental issues was considered to be satisfactory in general.

1 INTRODUCTION

This is the 28th 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 November 2009 to 15 December 2009.

2 PROJECT INFORMATION

2.1 Construction Program

Civil construction of the whole subway would take approximately 33 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.

As advised by RE, the following construction programme has been revised to suit the current progress of the project works due to longer time taken for the utility diversion works and resolving site constraints. Site location plan is shown in Appendix 1.

Activities	Month						
	Aug - Dec 07	Jan-May 08	Jun-Oct 08	Nov08 - Mar09	Apr-Aug 09	Sept 09 - Jan 10	Feb - May 10
1800 Φ Sewer Diversion of Lai Chi Kok Sewer	■						
Construction of Subway - Sheet Piling works & Temporary Support	■						
- Excavation works			■				
- Formwork & Concreting				■			
- Decoration Works						■	
- Backfilling & Reinstatement 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

- Subway excavation and soil disposal;
- Grouting works for lagging walls for Liberte;
- Installation of lateral supports for construction of subway;
- Construction of subway base slabs.

Lai Chi Kok Road Westbound

- Soil excavation and disposal for installing waling and strut of the cofferdam;
- Construction of the subway blinding layer;
- Fabrication of supports to the existing utilities.

Site at Cheung Lai Street

- Soil excavation and disposal for subway construction;
- Construction of subway base slabs, walls and soffit;
- Applying water proof membrane for subway;
- Preparation for breaking through of the existing station wall of LCK Station.

Site at Entrance D3

- Water testing for installed pump wells.
- Preparation works for sheet piling works

Site at Entrance D4

- Preparation of the underground beam construction.

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

- Construction of subway base slabs, walls and soffits.
- Installation of waterproofing membrane.
- Construction of remaining smoke and fresh air vent shaft

Lai Chi Kok Road Westbound

- Soil excavation and disposal for installing waling and strut of the cofferdam;
- Construction of the blinding layer;
- Fabrication of supports to the existing utilities.

Site at Cheung Lai Street

- Soil excavation and disposal for subway construction;
- Construction of subway base slabs, walls and soffits;
- Breaking through of the existing station wall of LCK Station.

Site at Entrance D3

- Continue Sheet piling works and pumping test.

Site at Entrance D4

- Construction of tie beam and ground beams

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 references are presented in Appendix 2 and 3. The corrected LAeq results, ranged between 65.2 dB(A) and 71.5 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	14:10	16-Nov-09	73.3 dB(A)	74 dB(A)	# dB(A)	75 dB(A)	N
R1	Leq30min	10:02	26-Nov-09	74.5 dB(A)	74 dB(A)	66.2 dB(A)	75 dB(A)	N
R1	Leq30min	10:24	3-Dec-09	75.3 dB(A)	74 dB(A)	70.0 dB(A)	75 dB(A)	N
R1	Leq30min	10:23	10-Dec-09	75.8 dB(A)	74 dB(A)	71.5 dB(A)	75 dB(A)	N
R2	Leq30min	13:28	16-Nov-09	76.1 dB(A)	74.3 dB(A)	71.4 dB(A)	75 dB(A)	N
R2	Leq30min	10:26	26-Nov-09	75.8 dB(A)	74.3 dB(A)	70.5 dB(A)	75 dB(A)	N
R2	Leq30min	09:46	3-Dec-09	74.8 dB(A)	74.3 dB(A)	65.2 dB(A)	75 dB(A)	N
R2	Leq30min	09:42	10-Dec-09	75.4 dB(A)	74.3 dB(A)	68.9 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 17th, 21st and 28th December and 7th and 12th January 2009.

Site inspection schedule for the next reporting period is designated on and 21st December and 4th January 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

	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 May 08	5642.79	0	0.4
16 May 08 to 15 February 09	12526.15	16.00	1
16 February 09 to 15 March 09	3871.40	0	0
16 March 09 to 15 April 09	5603.90	3.00	0.4
16 April 09 to 15 May 09	3354.90	6.50	0
16 May 09 to 15 June 09	4182.60	2.70	0
16 June 09 to 15 July 09	5594.20	9.50	--
16 July 09 to 15 August 09	5667.33	4.45	0
16 August 09 to 15 September 09	1300.50	12.90	0
16 September 09 to 15 October 09	2442.80	32.00	0
16 October 09 to 15 November 09	0.00	145.00	0
16 November 09 to 15 December 09	0.00	140.00	0
<i>Total</i>	50186.57	232.05	1.80

6 COMPLAINT LOG

Table 6.1 Summary of Formal Complaints received				
	Air	Noise	Water	Others
16 August 07 to 15 May 07	1	1	0	0
16 May 08 to 15 February 09	2	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
16 April 09 to 15 May 09	0	0	0	0
16 May 09 to 15 June 09	0	0	0	0
16 June 09 to 15 July 09	0	0	0	0
16 July 09 to 15 August 09	0	0	0	0
16 August 09 to 15 September 09	0	0	0	0
16 September 09 to 15 October 09	0	0	0	0
16 October 09 to 15 November 09	0	0	0	0
16 November 09 to 15 December 09	0	0	0	0
Total	3	2	0	0

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	GW-RW0303-09	3 Aug 2009	2 Feb 2010	
Construction Noise Permit	GW-RW0330-09	17 Aug 2009	16 Feb 2010	
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 implement properly required dust mitigation measures at the progressing work sites..	Ongoing
9	The Contractor should regularly check any ponding site water in order to prevent mosquito breeding problems and working condition of the working de-silting tanks.	Still followed by Contractor

9 CONCLUSION

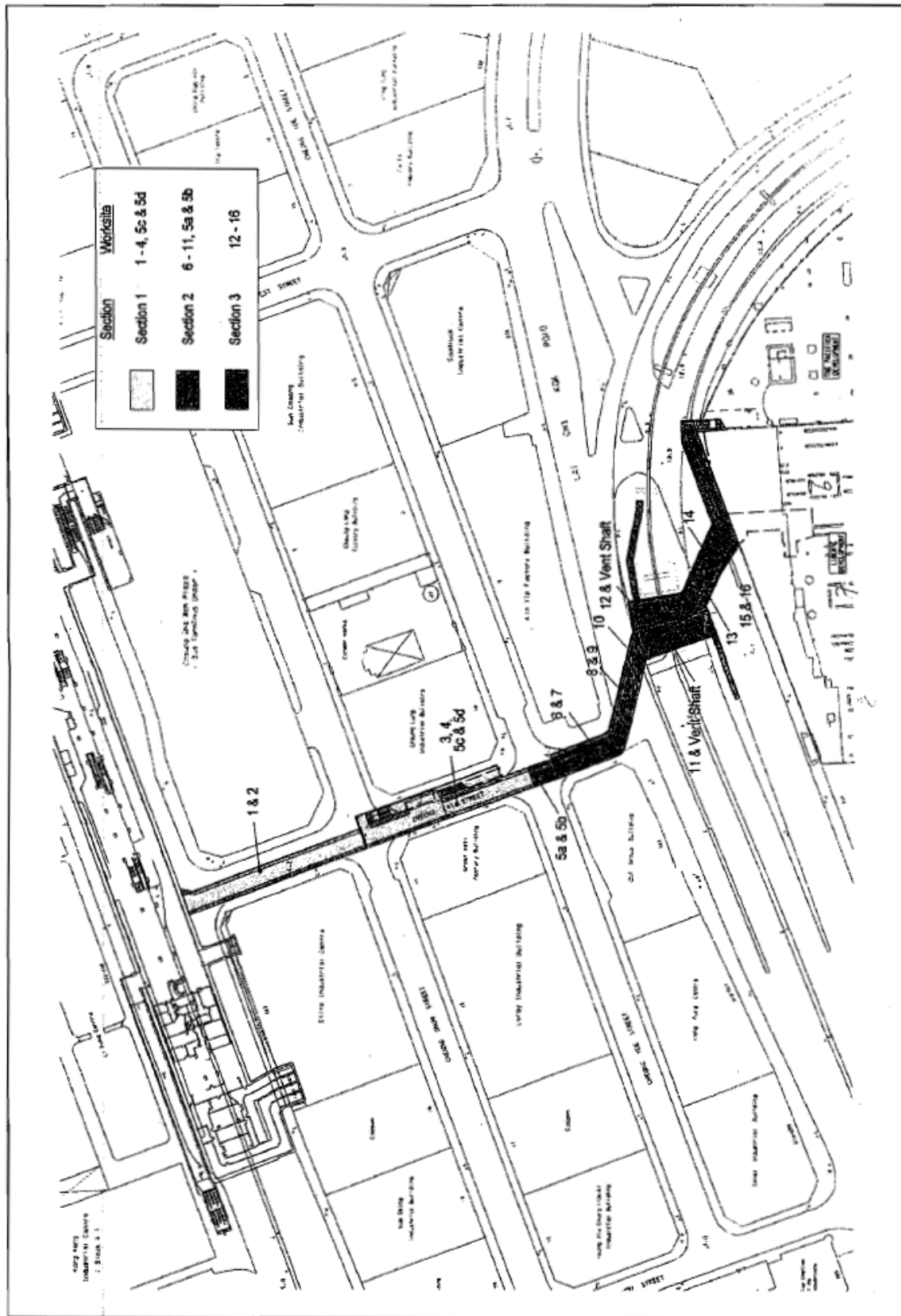
In this reporting month, construction activities for this project “MTRC Lai Chi Kok Station Pedestrian Subway and Entrance Works” include grouting lagging walls and construction of subway base slabs and walls under West Kowloon Corridor; excavation and installation of the lateral supports along footpath of Lai Chi Kok Road Westbound and construction of subway base slabs, soffits and walls for the subway sections and preparation of breaking through of the existing station wall of LCK station under Cheung Lai Street; pumping tests at Entrance D3. 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. 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

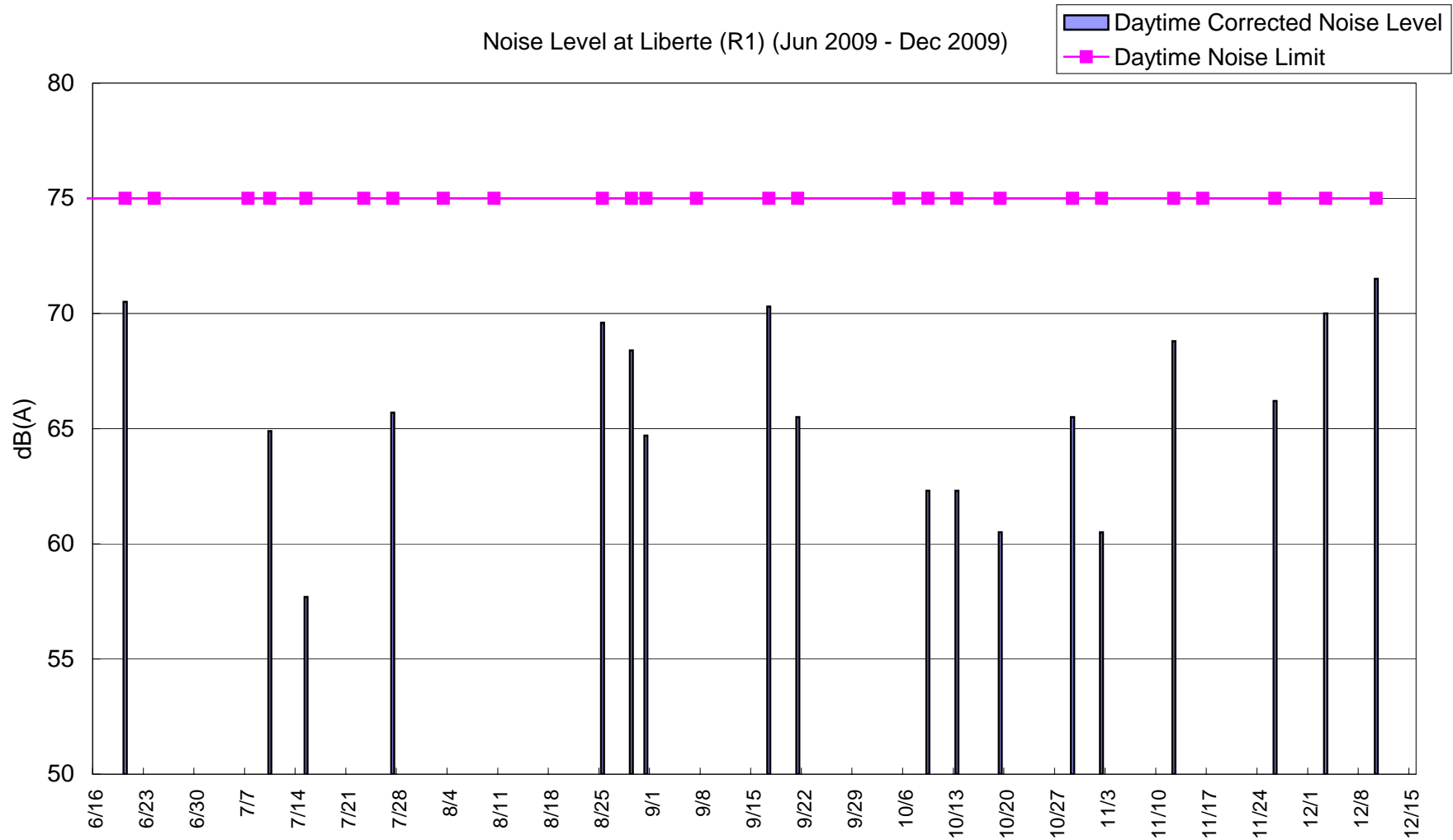
Figure 1 Project Construction Area

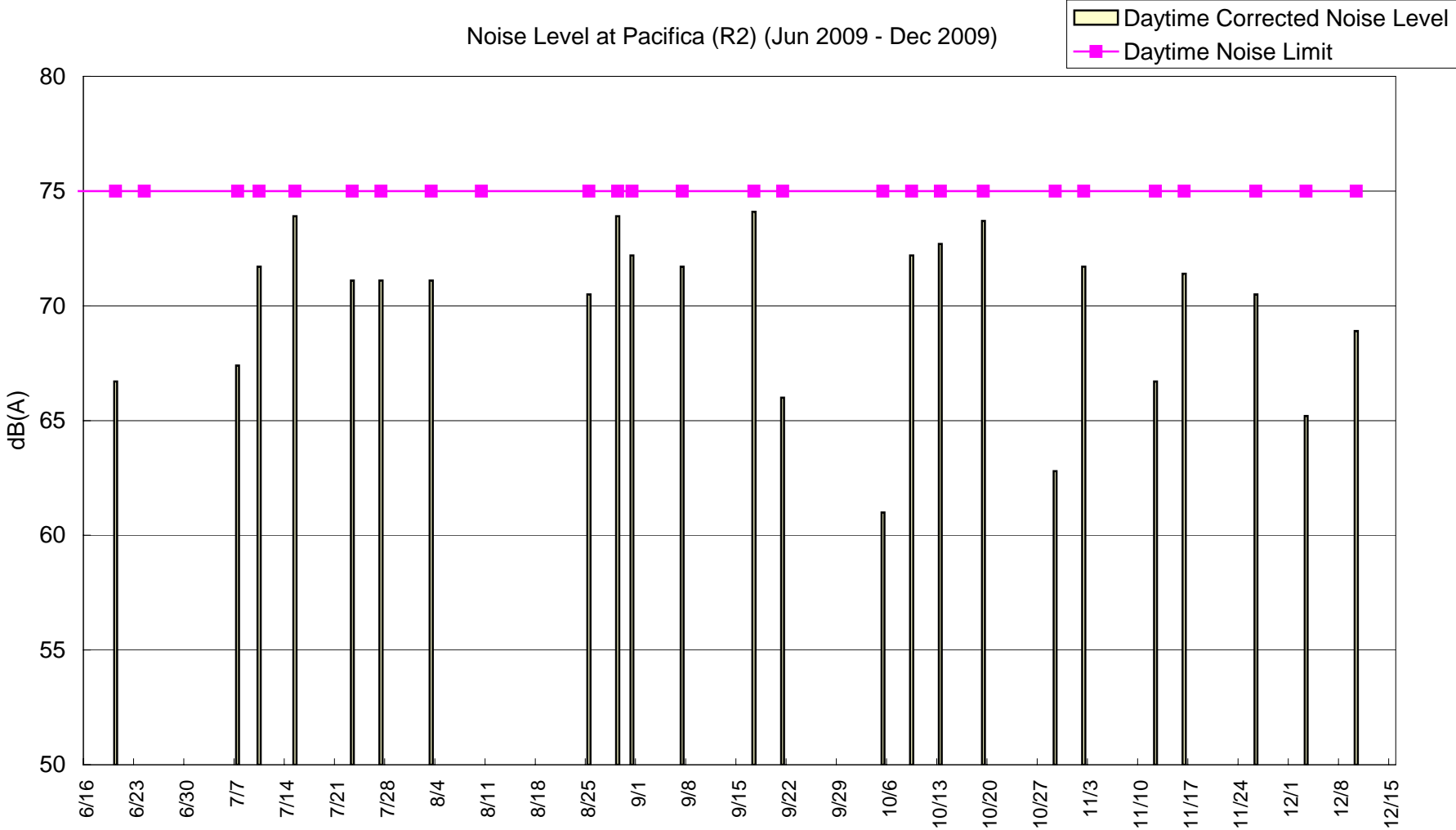
Figure 2 Noise Monitoring Stations

Figure 1 Project Construction Area



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:

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

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		16 November 2009
Sampling Time		14:10 - 14:40
Weather Condition		Cloudy
Baseline Noise Level	dB(A)	73.8
Monitoring Results	L_{eq}, dB(A)	73.3
	L₁₀, dB(A)	75.1
	L₉₀, dB(A)	72.0
Calibration before Measurement	dB(A)	94.0
Calibration after Measurement	dB(A)	94.0
Observation(s)		
Excavation noise by (Excavator 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 calculated.

Recorded by : William Law

Date : 16 November 2009

NOISE MEASUREMENT RECORD

SUMMARY

Frequency weightings: _____ dBA Weather: Cloudy Recorded by: WILLIAM LAW

Date	Location	Time/H Duration Min.	Comment/Source	L _{max}	L _{min}	L ₁₀	L ₉₀	L _{Aeq}
16/11/09	R ₁ Liberte	14:10-14:15		81.30	69.50	74.30	71.10	72.80
		14:15-14:20		82.70	70.30	75.10	71.50	73.40
		14:20-14:25		81.90	70.60	75.70	72.50	74.60
		14:25-14:30		81.60	71.50	75.30	73.10	73.20
		14:30-14:35		82.50	70.60	75.70	72.20	73.40
		14:35-14:40		82.40	70.40	74.40	71.70	72.60

L_{eq 30 min} = 73.30

L_{10 30 min} = 75.60

L_{90 30 min} = 72.00

**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		16 November 2009
Sampling Time		13:28 - 13:58
Weather Condition		Cloudy
Baseline Noise Level	dB(A)	74.3
Monitoring Results	L_{eq}, dB(A)	76.1
	L₁₀, dB(A)	77.4
	L₉₀, dB(A)	74.6
Calibration before Measurement	dB(A)	94.0
Calibration after Measurement	dB(A)	94.0
Observation(s)		
Excavation noise by (Excavator x 1) Hammering noise by (Hammer x 1) Transportation noise by public transportation		
Remarks		

With Baseline Correction : 71.4 dB(A)

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

Recorded by : William Law

Date : 16 November 2009

NOISE MEASUREMENT RECORD

SUMMARY

Frequency weightings: _____ dBA Weather: Cloudy Recorded by: William Law

Date	Location	Time/H Duration Min.	Comment/Source	L _{max}	L _{min}	L ₁₀	L ₅₀	L _{Avg}
16/11/2017	R ₂ Pacific	13:28 - 13:33		79.90	74.20	77.80	75.10	76.50
		13:33 - 13:36		78.90	72.20	76.50	73.70	75.30
		13:38 - 13:43		79.50	71.20	76.60	73.70	75.30
		13:43 - 13:48		81.90	72.90	77.50	74.50	76.60
		13:48 - 13:53		84.80	73.70	77.80	75.00	76.60
		13:53 - 13:58		84.20	73.50	78.20	75.50	76.90

L₉₀ 30min = 76.10
 L₁₀ 30min = 77.40
 L₉₀ 30min = 74.60

**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 November 2009
Sampling Time		11:02 - 11:32
Weather Condition		Sunny
Baseline Noise Level	dB(A)	73.8
Monitoring Results	L_{eq}, dB(A)	74.5
	L₁₀, dB(A)	76.2
	L₉₀, dB(A)	72.5
Calibration before Measurement	dB(A)	94.0
Calibration after Measurement	dB(A)	94.0
Observation(s)		
Excavation noise by (Excavator x 1) Hammering noise by (Hammer x 1) Transportation noise by public transportation		
Remarks		
N/A		

With Baseline Correction : 66.2 dB(A)

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

Recorded by : William Law

Date : 26 November 2009

NOISE MEASUREMENT RECORD

SUMMARY

Frequency weightings: _____ dBA
 Weather: Sunny
 Recorded by: William Lam

Date	Location	Time/H Duration Min.	Comment/Source	L _{max}	L _{min}	L ₁₀	L ₅₀	L _{avg}
26/10/09	E. Entrance	11:02 - 11:07		81.80	71.70	76.50	73.20	75.00
		11:07 - 11:12		79.60	71.20	75.60	72.90	74.60
		11:12 - 11:17		81.30	71.00	76.30	72.50	74.60
		11:17 - 11:22		81.20	70.20	75.10	72.60	74.20
		11:22 - 11:27		78.90	69.90	75.90	72.00	74.20
		11:27 - 11:32		78.00	70.70	77.10	71.80	74.90

L_{eq 30min} = 74.50
 L_{10 30min} = 76.20
 L_{90 30min} = 72.50

**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 November 2009
Sampling Time		10:26 - 10:56
Weather Condition		Sunny
Baseline Noise Level	dB(A)	74.3
Monitoring Results	L_{eq}, dB(A)	75.8
	L₁₀, dB(A)	77.6
	L₉₀, dB(A)	73.5
Calibration before Measurement	dB(A)	94.0
Calibration after Measurement	dB(A)	94.0
Observation(s)		
Excavation noise by (Excavator x 1) Hammering noise by (Hammer x 1) Transportation noise by public transportation		
Remarks		

With Baseline Correction : 70.5 **dB(A)**

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

Recorded by : William Law

Date : 26 November 2009

NOISE MEASUREMENT RECORD

SUMMARY

Frequency weightings: _____ dBA Weather: Sunny Recorded by: William Lam

Date	Location	Time/H Duration Min.	Comment/Source	L _{max}	L _{min}	L ₁₀	L ₅₀	L _{Aeq}
26/1/09	R ₂ Pacifica	10:26 - 10:31		79.80	70.90	75.90	72.60	74.40
		10:31 - 10:36		85.10	72.30	77.90	73.90	76.20
		10:36 - 10:41		85.50	72.40	80.70	74.30	78.30
		10:41 - 10:46		81.50	72.40	77.20	73.60	75.60
		10:46 - 10:51		85.70	70.80	76.10	72.90	74.60
		10:51 - 10:56		81.90	71.90	77.90	73.60	75.80

Leg 30min = 75.80
 L₁₀ 30min = 77.60
 L₉₀ 30min = 73.50

**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		03 December 2009
Sampling Time		10:24 - 10:54
Weather Condition		Sunny
Baseline Noise Level	dB(A)	73.8
Monitoring Results	L_{eq}, dB(A)	75.3
	L_{10s}, dB(A)	76.9
	L_{90s}, dB(A)	73.3
Calibration before Measurement	dB(A)	94.0
Calibration after Measurement	dB(A)	94.0
Observation(s)		
Excavation noise by (Excavator x 1) Hammering noise by (Hammer x 1) Transportation noise by public transportation		
Remarks		
N/A		

With Baseline Correction : 70.0 **dB(A)**

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

Recorded by : William Law

Date : 03 December 2009

NOISE MEASUREMENT RECORD

SUMMARY

Frequency weightings: _____ dBA
 Weather: Sunny
 Recorded by: WILLIAM LAW

Date	Location	Time/H Duration Min.	Comment/Source	L _{max}	L _{min}	L ₁₀	L ₅₀	L _{avg}
03/12/09	R1 Liberte	10:28-10:29		81.50	71.80	77.40	73.50	75.70
		10:31-10:34		82.70	71.00	76.70	73.40	75.20
		10:34-10:39		79.70	71.50	76.90	73.50	75.40
		10:39-10:44		80.60	72.20	76.60	73.70	75.30
		10:44-10:49		84.50	70.90	77.40	73.10	75.50
		10:49-10:54		83.70	70.70	76.30	72.70	74.70

Leg 50min = 75.30
 L₁₀ 30min = 76.90
 L₉₀ 30min = 73.30

**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		03 December 2009
Sampling Time		09:46 - 10:16
Weather Condition		Sunny
Baseline Noise Level	dB(A)	74.3
Monitoring Results	L_{eq}, dB(A)	74.8
	L₁₀, dB(A)	76.4
	L₉₀, dB(A)	72.7
Calibration before Measurement	dB(A)	94.0
Calibration after Measurement	dB(A)	94.0
Observation(s)		
Excavation noise by (Excavator x 1) Hammering noise by (Hammer x 1) Transportation noise by public transportation		
Remarks		

With Baseline Correction : 65.2 dB(A)

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

Recorded by : William Law

Date : 03 December 2009

NOISE MEASUREMENT RECORD

SUMMARY

Frequency weightings: _____ dBA Weather: Sunny Recorded by: WILLIAM (AW)

Date	Location	Time/H Duration Min.	Comment/Source	L _{max}	L _{min}	L ₁₀	L ₅₀	L _{avg}
03/12/09	R. Pacifica	09:46-09:51		88.70	71.20	76.70	73.00	75.20
		09:51-09:56		84.20	70.60	76.70	72.80	75.10
		09:56-10:01		85.30	71.10	76.90	73.50	75.40
		10:01-10:06		80.10	70.80	76.00	72.60	74.50
		10:06-10:11		79.10	70.20	76.30	72.40	74.50
		10:11-10:16		83.00	69.60	75.90	72.20	74.40

Leg 30min = 74.80
 L₁₀ 30min = 76.40
 L₉₀ 30min = 72.70

**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		10 December 2009
Sampling Time		10:23 - 10:53
Weather Condition		Cloudy
Baseline Noise Level	dB(A)	73.8
Monitoring Results	L_{eq}, dB(A)	75.8
	L₁₀, dB(A)	77.9
	L₉₀, dB(A)	73.0
Calibration before Measurement	dB(A)	94.0
Calibration after Measurement	dB(A)	94.0
Observation(s)		
Excavation noise by (Excavator x 1) Hammering noise by (Hammer x 1) Transportation noise by public transportation		
Remarks		
N/A		

With Baseline Correction : 71.5 dB(A)

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

Recorded by : William Law

Date : 10 December 2009

NOISE MEASUREMENT RECORD

SUMMARY

Frequency weightings: _____ dBA Weather: Cloudy Recorded by: WILLIAM AW

Date	Location	Time/H Duration Min.	Comment/Source	L _{max}	L _{min}	L ₁₀	L ₉₀	L _{Aeq}
10/12/09	R ₁ Lift area	10:23 - 10:28		82.80	70.70	80.10	73.10	77.00
		10:28 - 10:33		82.00	71.60	79.90	73.40	77.20
		10:33 - 10:38		81.30	71.60	78.90	73.20	76.00
		10:38 - 10:43		85.70	71.30	76.20	72.60	74.80
		10:43 - 10:48		80.80	71.30	76.30	72.60	74.80
		10:48 - 10:53		81.40	71.60	76.20	73.10	74.80

Leg 30min = 75.80
 L₁₀ 30min = 77.90
 L₉₀ 30min = 73.00

**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		10 December 2009
Sampling Time		09:42 - 10:12
Weather Condition		Cloudy
Baseline Noise Level	dB(A)	74.3
Monitoring Results	L_{eq}, dB(A)	75.4
	L₁₀, dB(A)	76.2
	L₉₀, dB(A)	72.5
Calibration before Measurement	dB(A)	94.0
Calibration after Measurement	dB(A)	94.0
Observation(s)		
Excavation noise by (Excavator x 1) Hammering noise by (Hammer x 1) Transportation noise by public transportation		
Remarks		

With Baseline Correction : 68.9 dB(A)

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

Recorded by : William Law

Date : 10 December 2009

NOISE MEASUREMENT RECORD

SUMMARY

Frequency weightings: _____ dBA Weather: Cloudy Recorded by: William Chan

Date	Location	Time/H Duration Min.	Comment/Source	L _{max}	L _{min}	L ₁₀	L ₉₀	L _{Aeq}
10/12/09	L ₂ Ped. fice	07:42-08:47		88.80	70.80	76.10	72.30	75.60
		08:47-09:52		85.30	70.60	76.30	72.20	75.40
		09:52-09:57		87.10	71.00	76.80	73.80	75.70
		09:57-10:02		87.30	68.50	75.80	72.10	75.30
		10:02-10:07		84.70	70.60	76.10	72.40	75.40
		10:07-10:12		86.50	70.30	76.20	72.50	75.30

L_{90 30min} = 75.40
 L_{10 30min} = 76.20
 L_{90 30min} = 72.50