

**MTR Corporation Limited**

**MTR Lai Chi Kok Station Pedestrian Subway and Entrance Works**

**Monthly Environmental Monitoring & Audit Report**

**16 April 2008 – 15 May 2008**

**Environmental Pioneers & Solutions Limited**

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MTR Lai Chi Kok Station

Cheung Lai Street Pedestrian Subway & Entrance Works

Environmental Permit No. EP – 253/ 2006

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**MTR Lai Chi Kok Station**

**Cheung Lai Street Pedestrian Subway & Entrance Works**

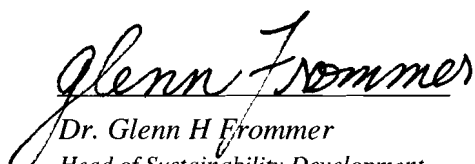
**Submission Document Title: Environmental Permit Conditions  
- Monthly EM&A Report**

**Environmental Permit No.: EP-253/ 2006**

**Independent Environmental Checker Ref: EP2532006-LCK-IEC-013**

*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

27 MAY 2008

Date

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## APPROVAL SHEET

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

Signature:  \_\_\_\_\_

Miss Patricia Chung  
(ET Leader)

Date: 27 MAY 2008

\* ET – Environmental Team

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## **EXECUTIVE SUMMARY**

This is the ninth 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 April 2008 to 15 May 2008. The major construction activities in this reporting month include 1800mm dia sewer diversion works, sheetpiling and temporary support for subway construction, construction of smoke extraction air shaft and fresh air intake shaft, backfilling, utility diversion works and temporary road diversion.

Impact monitoring for noise 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 concern regarding dust emission with a reasonable follow up taken properly in accordance with the complaint response procedure in the EM&A manual. The contractor's performance on environmental issues was considered in general satisfactory.

## **1 INTRODUCTION**

This is the 9<sup>th</sup> 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<sup>th</sup> April 2008 to 15<sup>th</sup> May 2008.

## **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.

The 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 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	██					
<b>Construction of Subway</b>						
- 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:

1800 dia sewer diversion of Lai Chi Kok Sewer

- Excavate and lay 1800 dia new pipes for future diversion connection.

Construction of ventilation ducts and shafts

- Construct fresh air ventilation shaft below West Kowloon Corridor.

Construction of subway

- Carry out trial trench excavation and sheet piling works at Cheung Lai Street between Cheung Shun Street and Cheung Yee Street.
- Drive sheet piles at Cheung Lai Street between Cheung Shun Street and Cheung Yee Street.
- Excavate traench for sheetpiling works at north lane of Cheung Yee Street.

- Carry out trial trench excavation, sheet piles driving and temporary decking beam installation for subway construction at mid-lane of Lai Chi Kok Road (Eastbound).

### **2.3 Construction Activities for the Coming Month**

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

#### 1800 dia sewer diversion of Lai Chi Kok Sewer

- Construct 1800mm dia sewer manhole (FM-1) and (FM-2) for connection under West Kowloon Corridor.
- Backfill areas of the completed pipe laying.

#### Construction of ventilation ducts and shafts

- Backfill the completed fresh air ventilation shaft under West Kowloon Corridor.

#### Construction of subway

- Continue driving sheet piles at Cheung Lai Street between Cheung Shun Street and Cheung Yee Street.
- Continue trial trench excavation, driving sheet piles and temporary road decks for subway construction at mid-lane of Lai Chi Kok Road.



### 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 results, ranged between 65.7 dB(A) and 71.9 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	10:48	21-Apr-08	75.5 dB(A)	74 dB(A)	70.2 dB(A)	75 dB(A)	N
R1	Leq30min	13:58	28-Apr-08	76.1 dB(A)	74 dB(A)	71.9 dB(A)	75 dB(A)	N
R1	Leq30min	13:43	5-May-08	74.6 dB(A)	74 dB(A)	65.7 dB(A)	75 dB(A)	N
R1	Leq30min	14:26	13-May-08	74.7 dB(A)	74 dB(A)	66.4 dB(A)	75 dB(A)	N
R2	Leq30min	10:06	21-Apr-08	73.5 dB(A)	74.3 dB(A)	# dB(A)	75 dB(A)	N
R2	Leq30min	13:01	28-Apr-08	76 dB(A)	74.3 dB(A)	71.1 dB(A)	75 dB(A)	N
R2	Leq30min	15:45	5-May-08	75.5 dB(A)	74.3 dB(A)	69.3 dB(A)	75 dB(A)	N
R2	Leq30min	9:12	13-May-08	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
<b>Action Level</b>	<ol style="list-style-type: none"> <li>1. Notify IEC, RE and the Contractor.</li> <li>2. Carry out investigation.</li> <li>3. Report the results of investigation to IEC, RE and the Contractor.</li> <li>4. Discuss with the RE and the Contractor and formulate remedial measures.</li> <li>5. Increase monitoring frequency to check mitigation measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Review with analysed results submitted by ET.</li> <li>2. Review the proposed remedial measures by the Contractor and advise RE accordingly.</li> <li>3. Supervise the implement of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing.</li> <li>2. Notify the Contractor.</li> <li>3. Require the Contractor to propose remedial measures for the analysed noise problem.</li> <li>4. Ensure remedial measures are properly implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Submit noise mitigation proposals to RE / ET.</li> <li>2. Implement noise mitigation proposals.</li> </ol>
<b>Limit Level</b>	<ol style="list-style-type: none"> <li>1. Identify the source.</li> <li>2. Notify IEC, RE, EPD and the Contractor.</li> <li>3. Repeat measurement to confirm findings.</li> <li>4. Increase monitoring frequency.</li> <li>5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented.</li> <li>6. Inform IEC, RE, and EPD the causes &amp; actions taken for the exceedances.</li> <li>7. Assess effectiveness of the Contractor's remedial actions and keep IEC, EPD and RE informed of the results.</li> <li>8. If exceedance stops, cease additional monitoring</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss amongst RE, ET Leader and the Contractor on the potential remedial actions.</li> <li>2. Review the Contractor's remedial actions whenever necessary to assure their effectiveness and advise RE accordingly.</li> <li>3. Supervise the implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing.</li> <li>2. Notify the Contractor.</li> <li>3. Require the Contractor to propose remedial measures for the analysed noise problem.</li> <li>4. Ensure remedial measures are properly implemented.</li> <li>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.</li> </ol>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance.</li> <li>2. Submit proposals for remedial actions to RE and IEC within 3 working days of notification.</li> <li>3. Implement the agreed proposals.</li> <li>4. Resubmit proposals if problem still not under control.</li> <li>5. Stop the relevant activity of works as determined by the RE until the exceedance is abated.</li> </ol>

### 3.5 Monitoring Schedule for Next Reporting Period

Noise monitoring in the next reporting period is scheduled for 19<sup>th</sup>, 26<sup>th</sup> May 2008, as well as 2<sup>nd</sup> and 10<sup>th</sup> June 2008.

Site inspection schedule for the next reporting period is designated on 19<sup>th</sup> May 2008 and 2<sup>nd</sup> June 2008.

#### 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)
16 August 07 to 15 September 07	963.75	34.8	--
16 September 07 to 15 October 07	1220.02	0	--
16 October 07 to 15 November 07	186.89	0	--
16 November 07 to 15 December 07	136.7	0	13
16 December 07 to 15 January 08	698.2	102.3	0
16 January 08 to 15 February 08	586.1	0	0
16 February 08 to 15 March 08	322.9	0	0
16 March 08 to 15 April 08	136.71	0	0
16 April 08 to 15 May 08	239.28	0	0
<i>Total</i>	<i>4490.55</i>	<i>137.1</i>	<i>13</i>

## 6 COMPLAINT LOG

Table 6.1 Summary of Formal Complaints received

	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 07 to 15 February 08	0	0	0	0
16 February 07 to 15 March 08	0	0	0	0
16 March 07 to 15 April 08	0	1	0	0
16 April 07 to 15 May 08	1	0	0	0
<i>Total</i>	<i>1</i>	<i>1</i>	<i>0</i>	<i>0</i>

A tenant showed a concern on dust emission from the construction activities on Cheung Lai Street. The complaint was received by Environmental Team on 8<sup>th</sup> May 2008 via EPD. 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, as well as the Environmental follow-up Action Photos in Appendix 5.

## 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-RW0002-08	6 Feb 2008	14 Aug 2008	
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.	Ongoing
6	The Contractor was reminded to prevent the possible oil leak from fuel containers and the stationery plants by providing drip trays or similar.	Ongoing
7	The Contractor was reminded to have regular check on the potential black smoke from working plants	Done
8	The Contractor was reminded to have close monitoring on the dust pollution at Cheung Lai Street.	Done
9	The Contractor was reminded to properly locate the oil drum in use inside in the drip pan at the site under West Kowloon Corridor.	Done

## 9 CONCLUSION

In this reporting month, construction activities for this project “MTRC Lai Chi Kok Station Pedestrian Subway and Entrance Works” included 1800mm dia sewer diversion works, sheetpiling and temporary support for subway construction, construction of smoke extraction air shaft and fresh air intake shaft, utility diversion works and temporary road diversion. 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 concern on dust emission 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 implement the environmental monitoring & 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

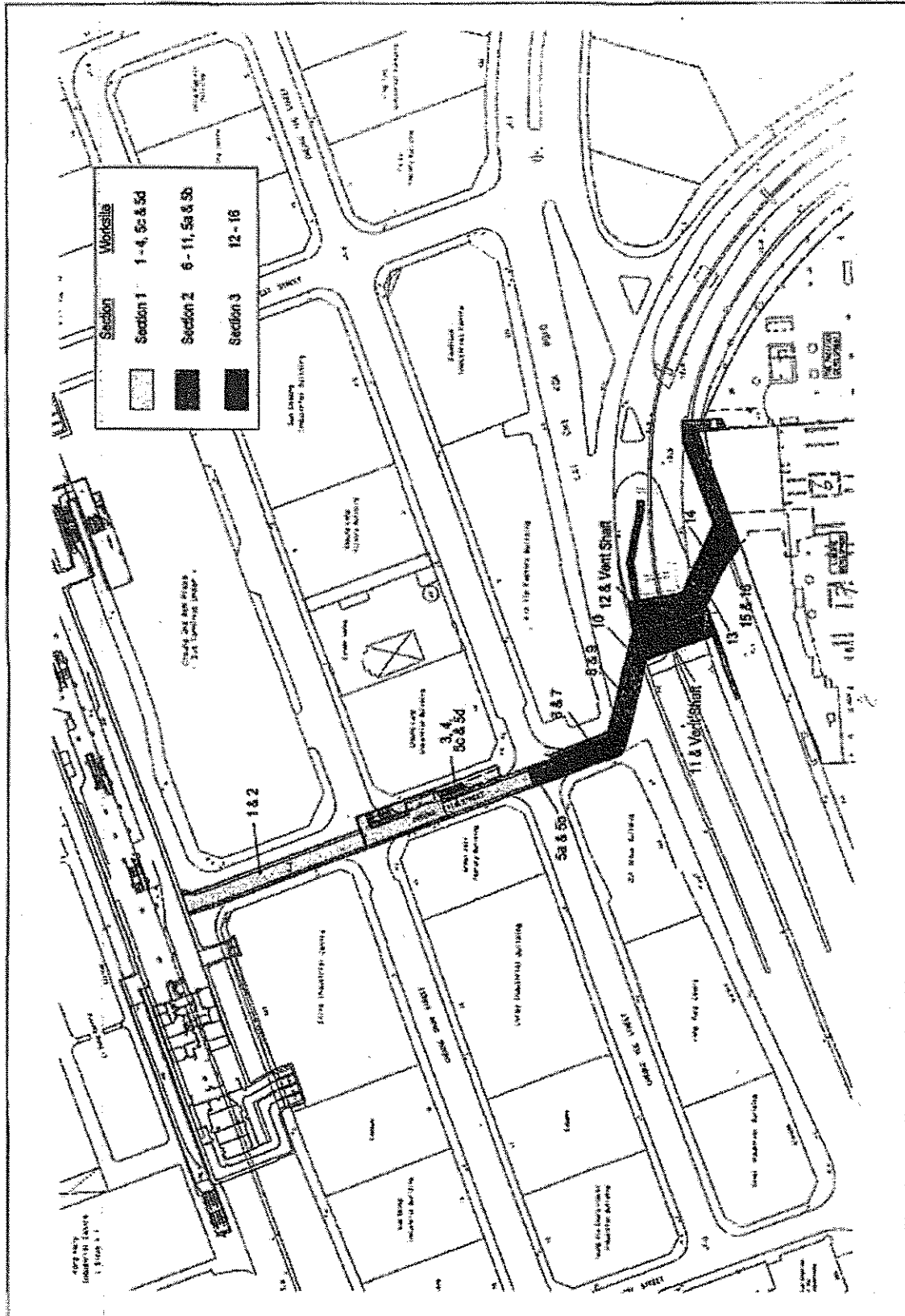
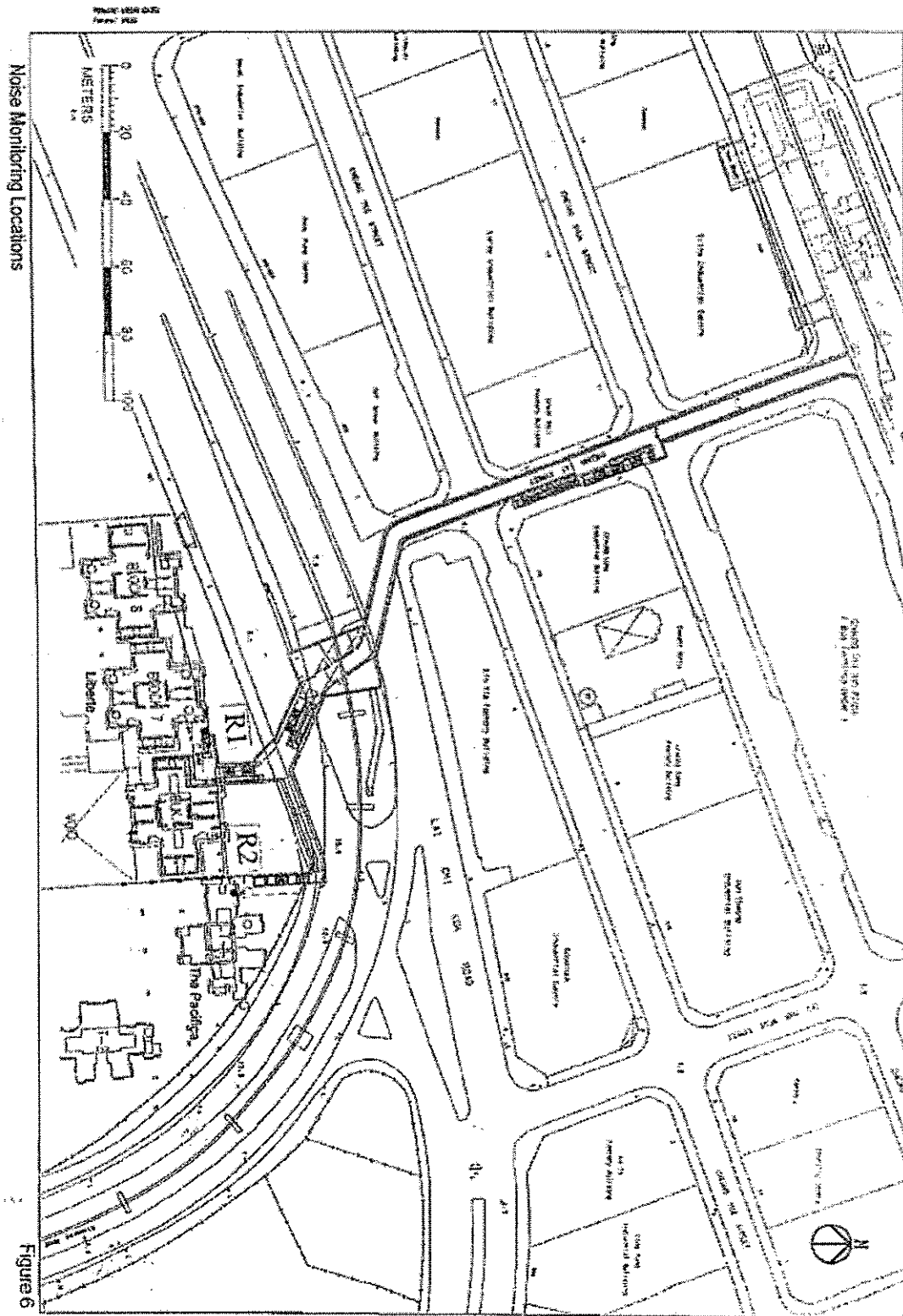


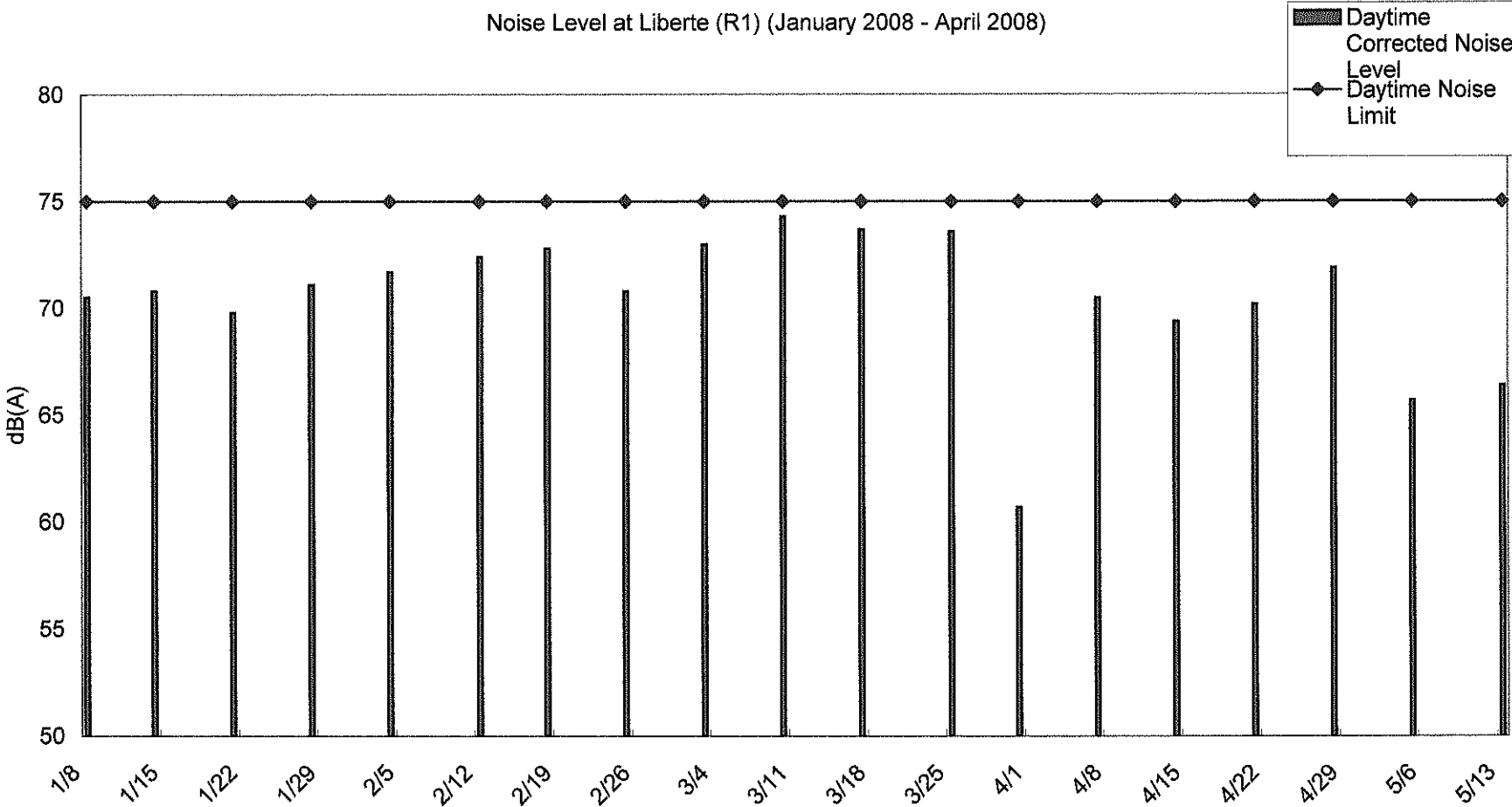
Figure 2 Noise Monitoring Stations R1 and R2

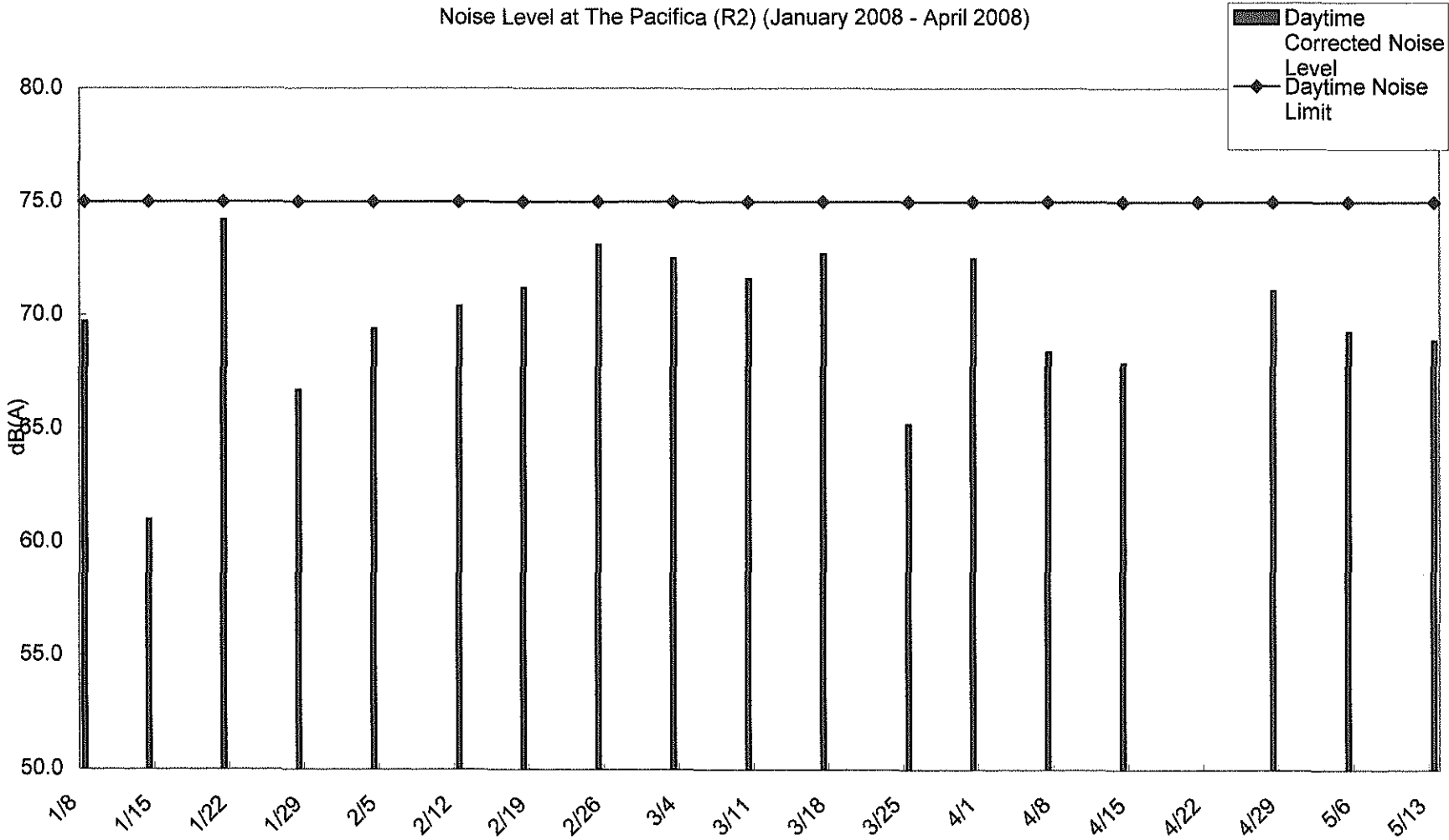


Noise Monitoring Locations

Figure 6

**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:

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

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

<b>Monitoring Location</b>		Podium, Block 7, Liberte
<b>Sampling Date</b>		21 April 2008
<b>Sampling Time</b>		1048 - 1118
<b>Weather Condition</b>		Fine
<b>Baseline Noise Level</b>	<b>dB(A)</b>	74.0
<b>Monitoring Results</b>	<b>L<sub>eq</sub>, dB(A)</b>	75.5
	<b>L<sub>10</sub>, dB(A)</b>	77.1
	<b>L<sub>90</sub>, dB(A)</b>	73.3
<b>Calibration before Measurement</b>	<b>dB(A)</b>	94.0
<b>Calibration after Measurement</b>	<b>dB(A)</b>	94.0
<b>Observation(s)</b>		
Excavation noise by (Excavator x 1) Transporation noise by public transporation		
<b>Remarks</b>		
N/A		

With Baseline Correction : 70.2 dB(A)

Recorded by : Jimmy Cheng

Date : 21 Apr 2008

NOISE MEASUREMENT RECORD

SUMMARY

Frequency weightings: \_\_\_\_\_ dBA

Weather: fine.

Recorded by: \_\_\_\_\_

Date	Location	Time/H Duration Min.	Comment/Source	L <sub>max</sub>	L <sub>min</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>Aeq</sub>
21 Apr 08	R1. Liberte.	1048-1053		86.4	70.8	77.1	72.8	75.5
		1053-1058		88.7	71.8	77.2	73.6	75.9
		1058-1103		80.2	70.3	76.6	72.5	74.9
		1103-1108		81.5	71.8	77.0	73.6	75.4
		1108-1113		88.5	71.6	77.2	73.2	75.7
		1113- <del>1118</del> <sup>1118</sup>		81.8	72.7	77.5	74.2	75.9

L<sub>Aeq</sub> 30min = 75.5.

L<sub>10</sub> 30min = 77.1.

L<sub>90</sub> 30min = 73.3

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

Noise Level Monitoring Log Sheet

<b>Monitoring Location</b>		Podium, Tower 1, The Pacifica
<b>Sampling Date</b>		21 April 2008
<b>Sampling Time</b>		1006 - 1036
<b>Weather Condition</b>		Fine
<b>Baseline Noise Level</b>	<b>dB(A)</b>	74.3
<b>Monitoring Results</b>	<b>L<sub>eq</sub>, dB(A)</b>	73.5
	<b>L<sub>10</sub>, dB(A)</b>	75.4
	<b>L<sub>90</sub>, dB(A)</b>	70.9
<b>Calibration before Measurement</b>	<b>dB(A)</b>	94.0
<b>Calibration after Measurement</b>	<b>dB(A)</b>	94.0
<b>Observation(s)</b>		
Excavation noise by(Excavator x 1) Transportation noise by public transportation		
<b>Remarks</b>		
N/A		

With Baseline Correction : \_\_\_\_\_ # \_\_\_\_\_ dB(A)

# Measured Leq is lower than baseline noise measurement

Recorded by : Jimmy Cheng

Date : 21 April 2008

NOISE MEASUREMENT RECORD

SUMMARY

Frequency weightings: \_\_\_\_\_ dBA

Weather: fine

Recorded by: \_\_\_\_\_

Date	Location	Time/H Duration Min.	Comment/Source	L <sub>max</sub>	L <sub>min</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>Aeq</sub>
21 Apr 08	R2 Pacifica	1006-1011		86.8	68.8	74.8	70.6	73.1
		1011-1016		81.2	68.4	74.4	70.3	72.7
		1016-1021		77.9	69.4	73.9	70.8	72.5
		1021-1026		81.5	68.5	74.5	70.2	72.7
		1026-1031		85.7	68.9	77.4	72.2	75.3
		1031-1036		84.3	68.8	77.2	71.6	74.7

L<sub>Aeq</sub> 30min = 73.5

L<sub>10</sub> 30min = 75.4

L<sub>90</sub> 30min = 70.9

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

Noise Level Monitoring Log Sheet

<b>Monitoring Location</b>		Podium, Block 7, Liberte
<b>Sampling Date</b>		28 April 2008
<b>Sampling Time</b>		1358 - 1428
<b>Weather Condition</b>		Cloudy
<b>Baseline Noise Level</b>	<b>dB(A)</b>	74.0
<b>Monitoring Results</b>	<b>L<sub>eq</sub>, dB(A)</b>	76.1
	<b>L<sub>10</sub>, dB(A)</b>	78
	<b>L<sub>90</sub>, dB(A)</b>	73.7
<b>Calibration before Measurement</b>	<b>dB(A)</b>	94.0
<b>Calibration after Measurement</b>	<b>dB(A)</b>	94.0
<b>Observation(s)</b>		
Excavation noise by (Excavator x 1) Shoveling noise by (Shovel x 2) Transportation noise by public transportation		
<b>Remarks</b>		
N/A		

With Baseline Correction : 71.9 dB(A)

Recorded by : Stephen Tsang

Date : 28 Apr 2008

NOISE MEASUREMENT RECORD

SUMMARY

Frequency weightings: \_\_\_\_\_ dBA

Weather: cloudy

Recorded by: \_\_\_\_\_

Date	Location	Time/H Duration Min.	Comment/Source	L <sub>max</sub>	L <sub>min</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>Aeq</sub>
28 Apr 08	R. Liberte	1358-1403		86.1	71.4	78.0	73.4	76.1
		1403-1408		83.2	73.0	79.8	74.6	77.5
		1408-1413		87.1	72.2	77.6	73.5	76.0
		1413-1418		80.4	72.0	77.5	74.1	75.9
		1418-1423		83.0	71.8	77.5	73.6	75.7
		1423-1428		82.1	71.4	77.5	73.0	75.5

L<sub>10</sub> 30 min = 78

L<sub>90</sub> 30 min = 73.7

L<sub>aeq</sub> 30 min = 76.1

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

Noise Level Monitoring Log Sheet

<b>Monitoring Location</b>		Podium, Tower 1, The Pacifica
<b>Sampling Date</b>		28 April 2008
<b>Sampling Time</b>		1301-1326
<b>Weather Condition</b>		Cloudy
<b>Baseline Noise Level</b>	<b>dB(A)</b>	74.3
<b>Monitoring Results</b>	<b>L<sub>eq</sub>, dB(A)</b>	76.0
	<b>L<sub>10</sub>, dB(A)</b>	77.6
	<b>L<sub>90</sub>, dB(A)</b>	73.2
<b>Calibration before Measurement</b>	<b>dB(A)</b>	94.0
<b>Calibration after Measurement</b>	<b>dB(A)</b>	94.0
<b>Observation(s)</b>		
Excavation noise by (Excavator x 1) Shoveling noise by (Shovel x 2) Transportation noise by public transportation		
<b>Remarks</b>		
N/A		

With Baseline Correction : 71.1 dB(A)

Recorded by : Stephen Tsang

Date : 28 Apr 2008

NOISE MEASUREMENT RECORD

SUMMARY

Frequency weightings: \_\_\_\_\_ dBA

Weather: Cloudy

Recorded by: \_\_\_\_\_

Date	Location	Time/H Duration Min.	Comment/Source	L <sub>max</sub>	L <sub>min</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>Aeq</sub>
28 Apr 08	R2 Pacifica	1301-1306		87.0	69.7	77.7	73.7	76.0
		1306-1311		85.5	72.5	77.8	74.3	76.5
		1311-1316		81.6	72.6	77.3	73.9	75.9
		1316-1321		85.4	72.4	77.6	74.2	76.1
		1321-1326		86.8	67.1	80.5	73.2	78.2
		1326-1331		76.9	66.6	74.8	69.9	73.3

L<sub>10</sub> 30 min = 77.6

L<sub>90</sub> 30 min = 73.2

L<sub>Aeq</sub> 30 min = 76.0



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

Noise Level Monitoring Log Sheet

<b>Monitoring Location</b>		Podium, Block 7, Liberte
<b>Sampling Date</b>		5 May 2008
<b>Sampling Time</b>		1636-1706
<b>Weather Condition</b>		Sunny
<b>Baseline Noise Level</b>	<b>dB(A)</b>	74.0
<b>Monitoring Results</b>	<b>L<sub>eq</sub>, dB(A)</b>	74.6
	<b>L<sub>10</sub>, dB(A)</b>	78
	<b>L<sub>90</sub>, dB(A)</b>	73.7
<b>Calibration before Measurement</b>	<b>dB(A)</b>	94.0
<b>Calibration after Measurement</b>	<b>dB(A)</b>	94.0
<b>Observation(s)</b>		
Excavation noise by (Excavator x 1) Hammering noise by (Hammer x 1) Transportation noise by public transportation		
<b>Remarks</b>		
N/A		

With Baseline Correction : 65.7 dB(A)

Recorded by : Stephen Tsang

Date : 5 May 2008

NOISE MEASUREMENT RECORD

SUMMARY

Frequency weightings:          dBA

Weather: Sunny

Recorded by: Stephen Tsang

Date	Location	Time/H Duration Min.	Comment/Source	L <sub>max</sub>	L <sub>min</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>Aeq</sub>
5-5-08	R. Liberty	1636-1641		<del>85.2</del> 84.1	70.5	76.6	72.5	74.9
		1641-1646		85.2	70.1	76.4	71.4	74.4
		1646-1651		86.1	70.0	76.1	71.2	74.2
		1651-1656		86.7	70.1	76.3	71.6	74.3
		1656-1701		80.6	71.1	76.7	72.7	74.9
		1701-1706		80.5	71.1	76.3	72.9	74.7

L<sub>Aeq</sub> = 74.6

L<sub>90</sub> = 72.0

L<sub>10</sub> = 76.4

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

Noise Level Monitoring Log Sheet

<b>Monitoring Location</b>		Podium, Tower 1, The Pacifica
<b>Sampling Date</b>		5 May 2008
<b>Sampling Time</b>		1545-1615
<b>Weather Condition</b>		Cloudy
<b>Baseline Noise Level</b>	dB(A)	74.3
<b>Monitoring Results</b>	$L_{eq}$ , dB(A)	75.5
	$L_{r(0)}$ , dB(A)	73.4
	$L_{90}$ , dB(A)	77.0
<b>Calibration before Measurement</b>	dB(A)	94.0
<b>Calibration after Measurement</b>	dB(A)	94.0
<b>Observation(s)</b>		
Excavation noise by (Excavator x 1) Hammering noise by (Hammer x 1) Transportation noise by public transportation		
<b>Remarks</b>		
N/A		

With Baseline Correction : 69.3 dB(A)

Recorded by : Stephen Tsang

Date : 5 May 2008

NOISE MEASUREMENT RECORD

SUMMARY

Frequency weightings: \_\_\_\_\_ dBA.

Weather: Fine

Recorded by: Stephen Tsung

Date	Location	Time/H Duration Min.	Comment/Source	L <sub>max</sub>	L <sub>min</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>Aeq</sub>
5-5-08	R2 Pacifica	1545-1550		89.6	71.9	76.6	73.3	75.2
		1550-1555		81.7	72.4	77.5	73.8	75.9
		1555-1600		80.9	71.4	77.1	73.0	75.3
		1600-1605		83.4	71.6	76.7	73.4	75.2
		1605-1610		84.9	71.6	76.8	73.6	75.5
		1610-1615		80.9	72.2	77.8	73.6	75.7

$$L_{Aeq} = 75.5$$

$$L_{90} = 73.4$$

$$L_{10} = 77.0$$

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

Noise Level Monitoring Log Sheet

<b>Monitoring Location</b>		Podium, Block 7, Liberte
<b>Sampling Date</b>		13 May 2008
<b>Sampling Time</b>		1426-1456
<b>Weather Condition</b>		Sunny
<b>Baseline Noise Level</b>	<b>dB(A)</b>	74.0
<b>Monitoring Results</b>	<b>L<sub>eq</sub>, dB(A)</b>	74.7
	<b>L<sub>10</sub>, dB(A)</b>	72.4
	<b>L<sub>90</sub>, dB(A)</b>	76.3
<b>Calibration before Measurement</b>	<b>dB(A)</b>	94.0
<b>Calibration after Measurement</b>	<b>dB(A)</b>	94.0
<b>Observation(s)</b>		
Excavation noise by (Excavator x 1) Crane lifting noise by (Crane Lifter x 1) Transportation noise by public transportation		
<b>Remarks</b>		
N/A		

With Baseline Correction : 66.4 dB(A)

Recorded by : Stephen Tsang

Date : 13 May 2008

NOISE MEASUREMENT RECORD

SUMMARY

Frequency weightings: \_\_\_\_\_ dBA      Weather: Fine      Recorded by: \_\_\_\_\_

Date	Location	Time/H Duration Min.	Comment/Source	L <sub>max</sub>	L <sub>min</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>Aeq</sub>
13-5-2008	R. Liberte	14:26-14:31		80.0	70.5	76.0	72.5	75.0
		14:31-14:36		80.9	70.9	76.4	72.8	74.9
		14:36-14:41		86.2	70.9	76.8	72.5	75.0
		14:41-14:46		82.6	69.9	76.8	72.6	75.2
		14:46-14:51		79.3	69.8	75.6	72.1	74.0
		14:51-14:56		81.6	70.2	76.3	72.0	74.4

L<sub>eq</sub> = 74.7

L<sub>90</sub> = 72.4

L<sub>10</sub> = 76.3

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

Noise Level Monitoring Log Sheet

<b>Monitoring Location</b>		Podium, Tower 1, The Pacifica
<b>Sampling Date</b>		13 May 2008
<b>Sampling Time</b>		0912-0942
<b>Weather Condition</b>		Sunny
<b>Baseline Noise Level</b>	<b>dB(A)</b>	74.3
<b>Monitoring Results</b>	<b>L<sub>eq</sub>, dB(A)</b>	75.4
	<b>L<sub>10</sub>, dB(A)</b>	73.4
	<b>L<sub>90</sub>, dB(A)</b>	77.0
<b>Calibration before Measurement</b>	<b>dB(A)</b>	94.0
<b>Calibration after Measurement</b>	<b>dB(A)</b>	94.0
<b>Observation(s)</b>		
Excavation noise by (Excavator x 1) Hammering noise by (Hammer x 1) Transportation noise by public transportation.		
<b>Remarks</b>		
N/A		

With Baseline Correction : 68.9 dB(A)

Recorded by : Stephen Tsang

Date : 13 May 2008

NOISE MEASUREMENT RECORD

SUMMARY

Frequency weightings: \_\_\_\_\_ dBA

Weather: Fine

Recorded by: \_\_\_\_\_

Date	Location	Time/H Duration Min.	Comment/Source	L <sub>max</sub>	L <sub>min</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>Aeq</sub>
13-5-2008	R2 Pacifica	9:12-9:17		80	70.8	76.6	73.2	75.1
		9:17-9:22		82.4	71.1	77.2	73.7	75.7
		9:22-9:27		86.4	71.9	77.2	73.4	75.5
		9:27-9:32		85.5	71.5	77.4	73.1	75.4
		9:32-9:37		82.7	71.5	76.8	73.6	75.3
		9:37-9:42		83.8	71.8	76.9	73.2	75.2

~~★~~  
 $L_{Aeq} = 75.4$   
 $L_{90} = 73.4$   
 $L_{10} = 77.0$



**APPENDIX 4 – COMPLAINT REPORT AND LOG**

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

**Report for Complaint/ Concern**

Ref: LCK-Ct02/08

Sheet: 1 of 1

**RECIPIENT**

Name: MTR Corporation Limited

Details: The EPD's fax dated 6 May 2008 regarding a public complaint on dust emission was received by MTRC.

Received Date: 7 May 2008

Received Time: \_\_\_\_\_

**COMPLAINANT / Concern**

Name: A tenant from Liberte

Tel: n/a

Address: n/a

**COMPLAINT**

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

Event Date and Time: 30 April 2008 afternoon

Location: A tenant showed a concern on dust emission from the construction activities on Cheung Lai Street to the EPD.

**INVESTIGATION RESULTS & MITIGATION MEASURES**

1. Communications and discussions with the representatives from RE/ Contractor/ Environmental Team/ IEC have been made to resolve the incident on 9 and 13 May 2008 after receiving the public concern on dust emission from the EPD on 7 May 2008.
2. Site investigations to figure out major source of impacts produced from the site have been conducted on 9 and 13 May 2008.
3. The investigation findings indicate that the dust concern could be caused by minor dust emission from the progressing excavation works and smoke emission from a working generator and excavator at Cheung Lai Street site on the incident date.
4. The contractor agreed to take prompt action on mitigation measures to further reduce/ stop the concerned dust and smoke emission by:-
  - a) constant site cleaning and watering for the construction area at Cheung Lai Street.
  - b) stopping smoke emission from the concerned working plants by clean up the dirty fuels and providing regular effective plant maintenance
  - c) extending the length of the exhaust pipes of the plants up to the breathing zone level for minimizing impacts to the pedestrians passing through the Cheung Lai Street.
5. The above mitigation measures were completed by the contractor on 14 May 2008 and re-inspected by the ET with satisfaction on the same day.

### RECOMMENDATIONS

- ♦ The Contractor should always pay attention to smoke emissions from the site equipments and plants;
- ♦ Orange mesh and water-in barriers should be installed to minimize visual impact caused by heavy construction activities;
- ♦ The Contractor should take serious notice on the public concern and always provide and maintain proper mitigation measure and always keep good management at site.

Signed: 

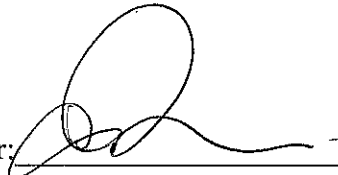
Date: 14-5-2008

**ATTACHMENTS – Environmental Follow-up action photos on 13 May 2008 photo evidence (By Kaden)**

### COMPLAINT / CONCERN LOG

Ref: \_\_\_\_\_

Log Ref	Event Date/Location	Complainant/ Date of Contact	Details of Complaint	Investigation/Mitigation Action	File Closed
LCK-Ct02/08	30 <sup>th</sup> April 2008; Cheung Lai St.	A public concern received by MTRC via EPD on 7 <sup>th</sup> May 08	A tenant showed a concern on the construction activities which generated dust emission in Cheung Lai Street to the EPD on 30 <sup>th</sup> April 2008 (Wednesday)	<ol style="list-style-type: none"> <li>1. Site investigations to figure out major source of impacts produced from the site have been conducted on 9 and 13 May 2008.</li> <li>2. The contractor needs prompt action on mitigation measures to reduce dust emission by constant watering for the construction area and site cleaning undertaken on site.</li> <li>3. Smoke emitted from the concerned excavator and generator were found during investigation. The contractor was advised to provide maintenance for the plants as remedial actions; and to extend the length of the exhaust pipes of the plants up to the breathing zone level for minimizing the impacts to the pedestrians passing through the Cheung Lai Street.</li> </ol>	Yes

Filed by Environmental Team Leader:  \_\_\_\_\_

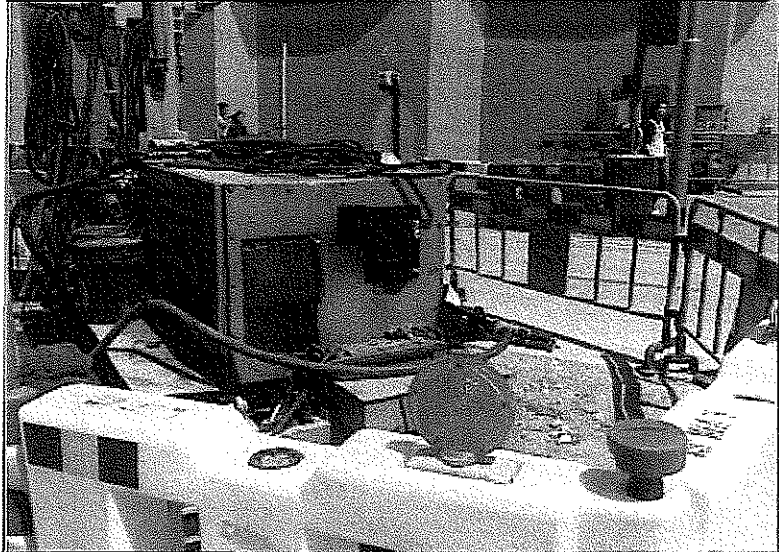

Date: 14-5-2008

**APPENDIX 5 – Environmental Follow-Up Action Photos**

## Kaden Construction Limited

Environmental Follow-up action photos on 13 May 2008



### Photo Evidence

<p>Photo 01</p> 	<p><u>Location :</u> Lai Chi Kok Rd.</p> <p><u>Observation :</u> The smoke was found emitted from the drilling machine close to the pedestrian walkway.</p>
<p>Photo 02</p> 	<p><u>Follow Up Action</u> A chimney has been connected to raise the smoke emission zone far away the pedestrian walkway.</p>

## Kaden Construction Limited

Environmental Follow-up action photos on 13 May 2008

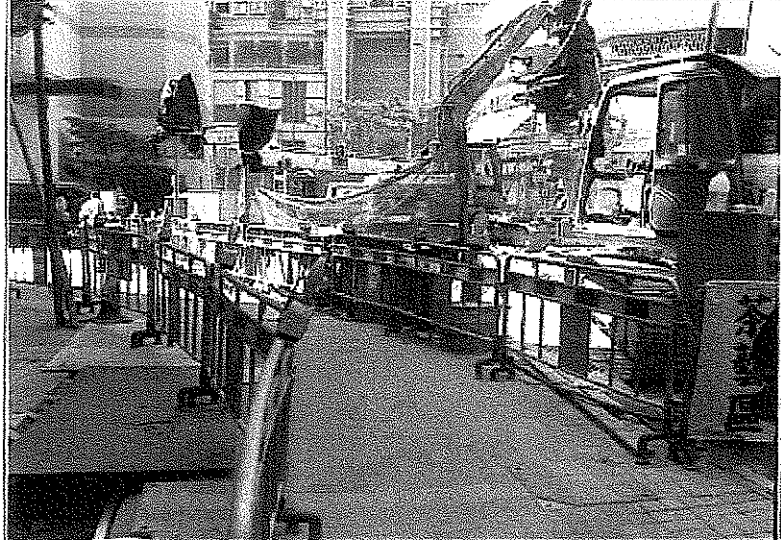

### Photo Evidence

<p>Photo 03</p> 	<p><u>Location :</u> Cheung Lai Street</p> <p><u>Observation :</u> The site area should be kept wet to prevent dust emission on site.</p>
<p>Photo 04</p> 	<p><u>Follow Up Action</u> A worker has been assigned for regular watering the floor to prevent dust emission on site.</p>

## Kaden Construction Limited

Environmental Follow-up action photos on 13 May 2008

### Photo Evidence


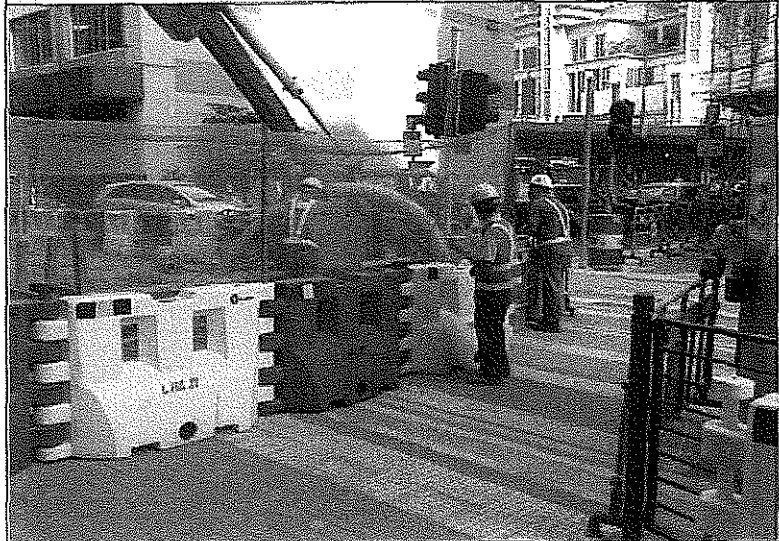
<p>Photo 05</p> 	<p><u>Location :</u> Cheung Lai St.</p> <p><u>Observation :</u> The orange mesh was not adequately erected along the pedestrian walkway.</p>
<p>Photo 06</p> 	<p><u>Follow Up Action</u> Water-in-barriers with orange mesh have been properly installed to replace the plastic barriers along the pedestrian walkway.</p>



## Kaden Construction Limited

Environmental Follow-up action photos on 13 May 2008

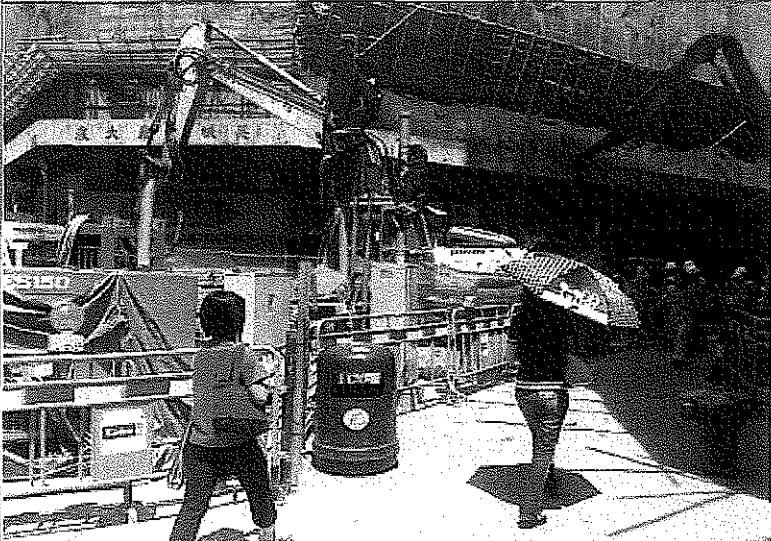
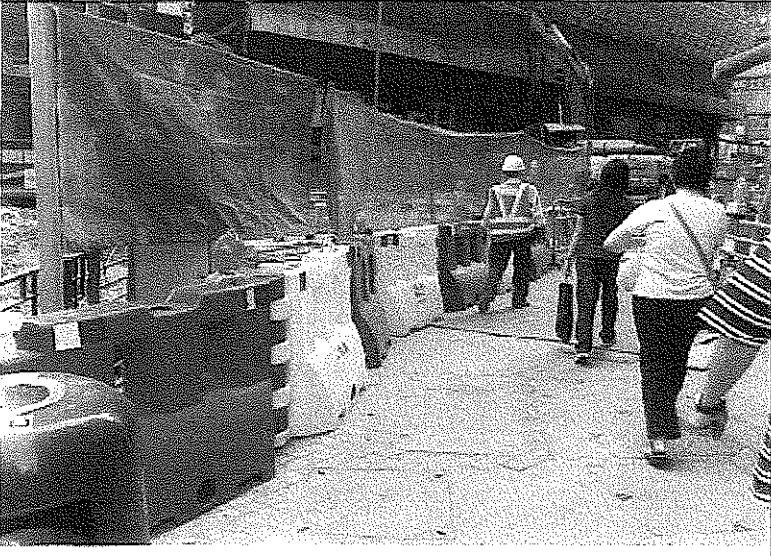
### Photo Evidence

<p>Photo 07</p> 	<p><u>Location :</u> Cheung Lai St.</p> <p><u>Observation :</u> The orange mesh was not adequately erected along the pedestrian walkway.</p>
<p>Photo 08</p> 	<p><u>Follow Up Action</u> Water-in-barriers with orange mesh have been properly installed to replace the plastic barriers along the pedestrian walkway.</p>

## Kaden Construction Limited

Environmental Follow-up action photos on 13 May 2008

### Photo Evidence

<p>Photo 09</p> 	<p><u>Location :</u> Cheung Lai St.</p> <p><u>Observation :</u> The orange mesh was not adequately erected along the pedestrian walkway.</p>
<p>Photo 10</p> 	<p><u>Follow Up Action</u> Water-in-barriers with orange mesh have been properly installed to replace the plastic barriers along the pedestrian walkway.</p>

## Kaden Construction Limited

Environmental Follow-up action photos on 13 May 2008

### Photo Evidence

Photo 11



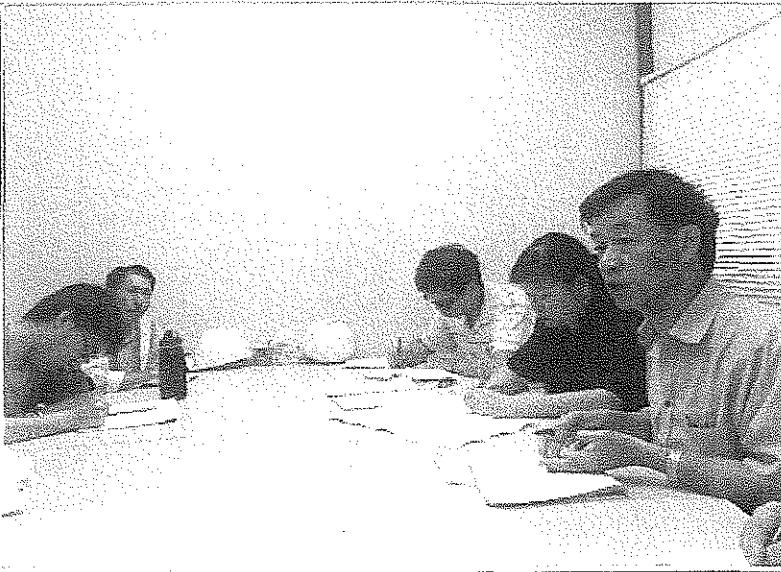
Location :

Cheung Lai Street

Measures :

A worker has been assigned to cleaning the sheet piles to prevent dust emission during piling works.

Photo 12



Location :

Site office.

Measures :

The complaint follow up meeting on 13 May 2008.