

MTR Corporation Limited

MTR Lai Chi Kok Station Pedestrian Subway and Entrance Works

Monthly Environmental Monitoring & Audit Report

16 April 2009 – 15 May 2009

Environmental Pioneers & Solutions Limited

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APPROVAL SHEET

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Signature:  _____

Date: - 2 JUN 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

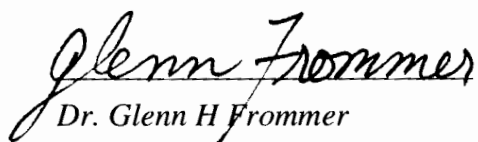
**Submission Document Title: Environmental Permit Conditions
- Monthly EM&A Report**

Environmental Permit No.: EP-253/ 2006

Independent Environmental Checker Ref: EP2532006-LCK-IEC-023

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

2 JUN 2009

Date

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EXECUTIVE SUMMARY

This is the 21st 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 2009 to 15 May 2009. The major construction activities in this reporting month include fabrication of lateral supports for construction of subway under West Kowloon Corridor; trial trench excavation for sheet piling works 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; driving sheet piles at Entrance D3 and construction of tie beam and ground beam at Entrance D4. 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. The Contractor's performance on environmental issues was considered to be satisfactory in general.

The formal public complaint on construction noise nuisance in late March has been resolved as per the procedures in the EM&A manual.

1 INTRODUCTION

This is the 21st 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 April 2009 to 15 May 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;
- Fabrication of lateral supports for construction of subway;

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 supports for construction of subway;
- Construction of wall and roof slab for smoke vent shaft completed.

Site at Cheung Lai Street

- Grouting works for lagging wall at Cheung Lai Street in between Cheung Sha Wan Road and Cheung Shun Street
- Excavation and disposal for lateral supports installation;
- Fabrication of lateral supports for construction of subway at Cheung Lai Street in between Cheung Shun Street and Lai Chi Kok Road Eastbound;
- Pumping Test at Cheung Lai Street in between Cheung Sha Wan Road and Cheung Shun Street;
- Laying blinding concrete and subway box wall construction;

Site at Entrance D3

- Driving sheet piles at inside of Liberte;
- Grouting works for lagging wall at inside of Liberte;
- Drilling holes for assisting sheet piles driving;
- Installation of pump well and observation well.

Site at Entrance D4

- Excavation and disposal for construction of tie-beam and ground beam;
- Installing lateral support for construction of tie-beam and ground beam;
- Construction of tie-beam and ground beam.

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 for 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 the construction of subway.

Site at Cheung Lai Street

- Excavation and disposal for lateral supports 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;
- Lay vertical blinding for construction of subway;
- Applying water proof membrane for construction of subway;
- Construction of base slab for the subway.

Site at Entrance D3

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

Site at Entrance D4

- Construction of tie-beam and ground beam

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 64.9dB(A) and 72.0 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 | 16:28 | 22-April-09 | 75.4 dB(A) | 74 dB(A) | 69.8 dB(A) | 75 dB(A) | N |
| R1 | Leq30min | 11:28 | 29-April-09 | 74.5 dB(A) | 74 dB(A) | 64.9 dB(A) | 75 dB(A) | N |
| R1 | Leq30min | 16:06 | 6-May-09 | 75.3 dB(A) | 74 dB(A) | 69.4 dB(A) | 75 dB(A) | N |
| R1 | Leq30min | 13:10 | 13-May-09 | 73.8 dB(A) | 74 dB(A) | # dB(A) | 75 dB(A) | N |
| R2 | Leq30min | 15:42 | 22-April-09 | 76.3 dB(A) | 74.3 dB(A) | 72.0 dB(A) | 75 dB(A) | N |
| R2 | Leq30min | 10:45 | 29-April-09 | 75.4 dB(A) | 74.3 dB(A) | 68.9 dB(A) | 75 dB(A) | N |
| R2 | Leq30min | 15:27 | 6-May-09 | 74.9 dB(A) | 74.3 dB(A) | 66.0 dB(A) | 75 dB(A) | N |
| R2 | Leq30min | 16:11 | 13-May-09 | 73.6 dB(A) | 74.3 dB(A) | # 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 20th and 27th May 2009, as well as 3rd, 10th June 2009.

Site inspection schedule for the next reporting period is designated on and 27th May 2009, as well as, 10th June 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 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 |
| <i>Total</i> | 30999.14 | 25.50 | 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 |
| 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 | 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 Contactor should regularly check any ponding site water in prevent mosquito problems and water quality condition of the working water desilting tanks on site. | Contractor to follow |
| 10 | The Contractor should follow up the general housing keeping at Lai Chi Kok site. | Contractor to follow |
| 11 | The Contractor should ensure all paint pots in use to be placed inside proper oil drip pans in order to prevent land contamination in the works sites. | Contractor to follow |
| 12 | The Contractor should have close monitoring on the noise labels on the working air compressors and hand breakers and delivery of waste disposal. | Followed up by Contractor |

There was a site inspection taken by EPD on 4th May with no adverse comments received.

9 CONCLUSION

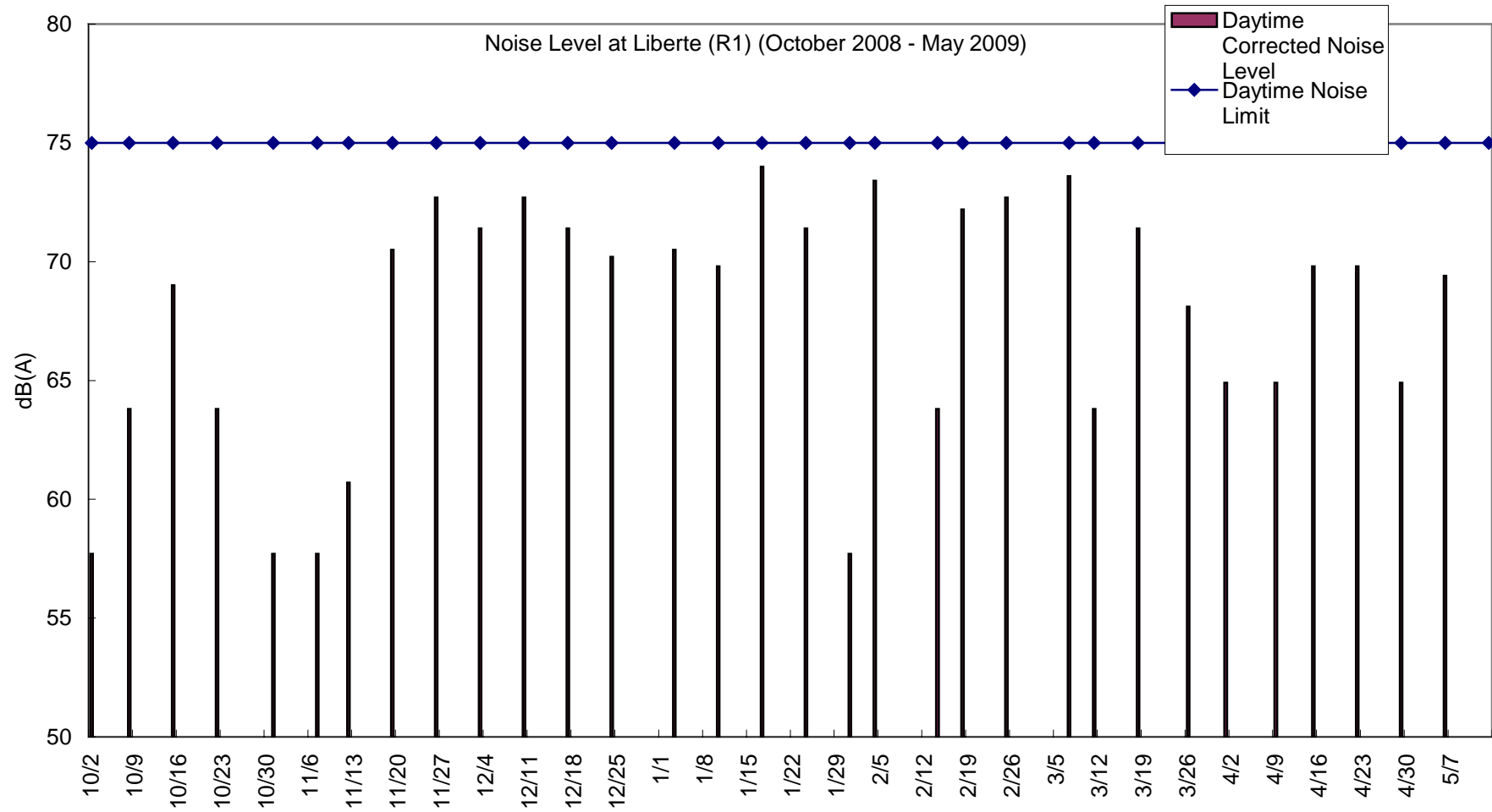
In this reporting month, construction activities for this project “MTRC Lai Chi Kok Station Pedestrian Subway and Entrance Works” include fabrication of lateral supports for construction of subway under West Kowloon Corridor; trial trench excavation for sheet piling works at footpath side of Lai Chi Kok Road westbound; grouting works for lagging wall at Cheung Lai Street in between Cheung Sha Wan Road and Cheung Shun Street; driving sheet piles inside of Entrance D3 and construction of tie beam and ground beam at Entrance D4. 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

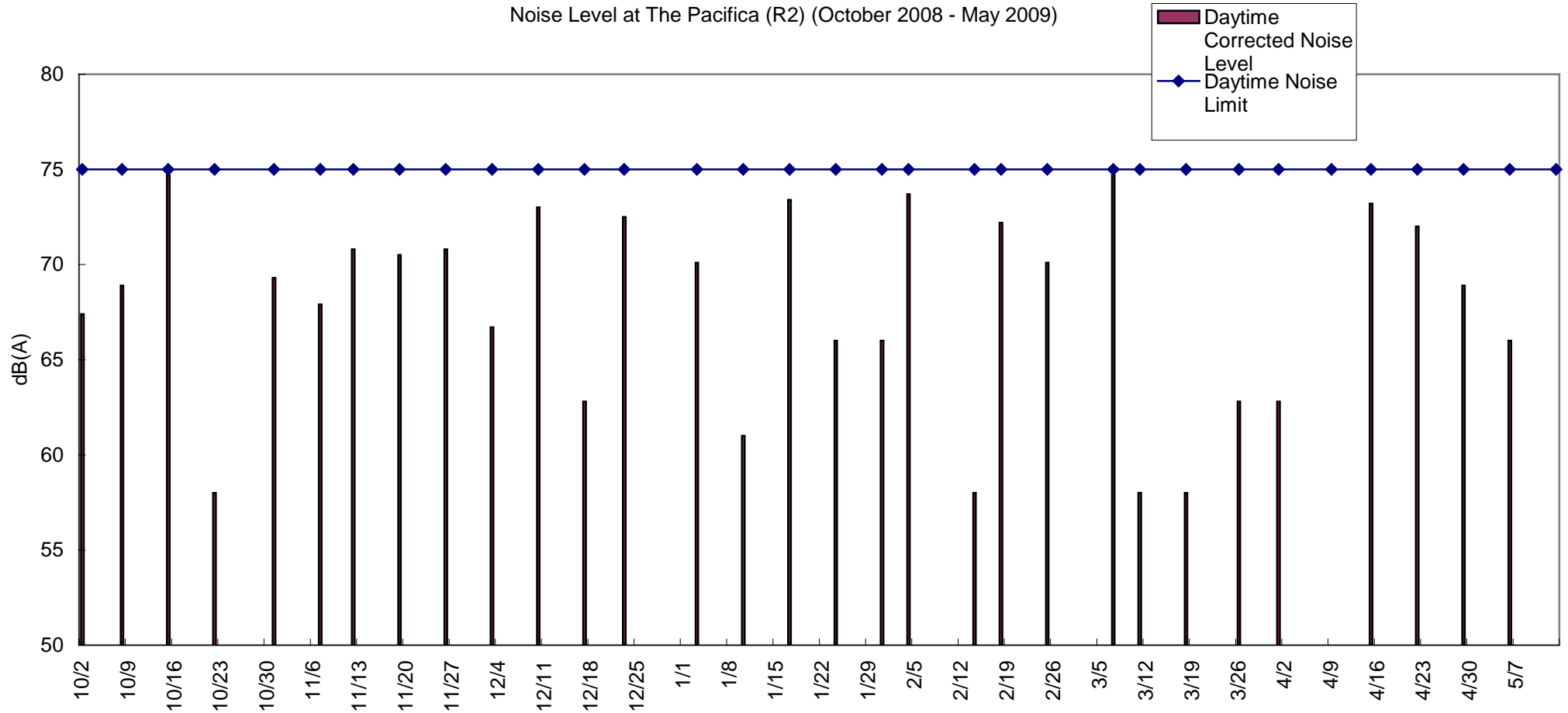
Figure 1 Project Construction Area

Figure 2 Noise Monitoring Stations

APPENDIX 2 – Environmental Monitoring Data / Charts



Noise Level at The Pacifica (R2) (October 2008 - May 2009)



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 | | 13 May 2009 |
| Sampling Time | | 13:10-13:40 |
| Weather Condition | | Sunny |
| Baseline Noise Level | dB(A) | 74.0 |
| Monitoring Results | L_{eq}, dB(A) | 73.8 |
| | L₁₀, dB(A) | 75.4 |
| | L₉₀, dB(A) | 71.8 |
| Calibration before Measurement | dB(A) | 94.0 |
| Calibration after Measurement | dB(A) | 94.0 |
| Observation(s) | | |
| Excavator noise by (Excavator x 1) Power generation noise by (Power generator x 1) Transportation noise by public transportation | | |
| Remarks | | |
| N/A | | |

With Baseline Correction : *Note dB(A)

Note: * The measurement noise is lower than the baseline noise level. Therefore, no data is recorded.

Recorded by : Stephen Tsang

Date : 13 May 2009

NOISE MEASUREMENT RECORD

SUMMARY

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

| Date | Location | Time/H Duration Min. | Comment/Source | L _{max} | L _{min} | L ₁₀ | L ₅₀ | L _{Avg} |
|---------|------------|-------------------------|----------------|------------------|------------------|-----------------|-----------------|------------------|
| 13-5-09 | R. Liberte | 13:10-13:15 | | 78.6 | 69.9 | 74.8 | 71.5 | 73.3 |
| | | 13:15-13:20 | | 80.1 | 69.6 | 75.3 | 71.4 | 73.5 |
| | | 13:20-13:25 | | 80.6 | 69.0 | 75.0 | 71.6 | 73.6 |
| | | 13:25-13:30 | | 81.0 | 71.2 | 75.4 | 72.5 | 74.2 |
| | | 13:30-13:35 | | 79.4 | 69.9 | 75.9 | 71.5 | 74.1 |
| | | 13:35-13:40 | | 82.2 | 70.4 | 76.0 | 72.2 | 74.3 |

L_{Aeq} 30min = 73.8
 L₁₀ 30min = 75.4
 L₉₀ 30min = 71.8

**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 | | 13 May 2009 |
| Sampling Time | | 16:11-16:41 |
| Weather Condition | | Sunny |
| Baselinc Noise Level | dB(A) | 74.3 |
| Monitoring Results | L_{eq}, dB(A) | 73.6 |
| | L₁₀, dB(A) | 76.9 |
| | L₉₀, dB(A) | 70.8 |
| Calibration before Measurement | dB(A) | 94.0 |
| Calibration after Measurement | dB(A) | 94.0 |
| Observation(s) | | |
| Excavator noise by (Excavator x 1) Power generation noise by (Power generator x 1) Transportation noise by public transporation | | |
| Remarks | | |
| N/A | | |

With Baseline Correction : *Note dB(A)

Note: * The measurement noise is lower than the baseline noise level. Therefore, no data is recorded.

Recorded by : Stephen Tsang

Date : 13 May 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 ₅₀ | L ₉₀ | L _{Aeq} |
|---------|--------------|-------------------------|----------------|------------------|------------------|-----------------|-----------------|-----------------|------------------|
| 13-5-09 | Re. Pa. Area | 16:11-16:16 | | 82.2 | 68.7 | 76.7 | 71.5 | 73.4 | |
| | | 16:16-16:21 | | 80.5 | 67.1 | 77.1 | 70.9 | 73.6 | |
| | | 16:21-16:26 | | 81.4 | 68.4 | 77.5 | 71.3 | 74.1 | |
| | | 16:26-16:31 | | 80.9 | 67.4 | 75.9 | 69.4 | 72.9 | |
| | | 16:31-16:36 | | 79.8 | 67.7 | 77.3 | 70.7 | 73.5 | |
| | | 16:36-16:41 | | 81.1 | 67.1 | 77.1 | 71.3 | 74.1 | |

L_{Aeq} 30min = 73.6
 L₁₀ 30min = 76.9
 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 | | 6 May 2009 |
| Sampling Time | | 16:06-16:36 |
| Weather Condition | | Sunny |
| Baseline Noise Level | dB(A) | 74.0 |
| Monitoring Results | L_{eq}, dB(A) | 75.3 |
| | L₁₀, dB(A) | 77.4 |
| | L₉₀, dB(A) | 72.0 |
| | Calibration before Measurement | dB(A) |
| Calibration after Measurement | dB(A) | 94.0 |
| Observation(s) | | |
| Excavator noise by (Excavator x 1) Hammering noise by (Hammer x 1) Transportation noise by public transportation | | |
| Remarks | | |
| N/A | | |

With Baseline Correction : 69.4 dB(A)

Recorded by : Stephen Tsang

Date : 6 May 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 ₅₀ | L ₉₀ | L _{Act} |
|--------|-------------|-------------------------|----------------|------------------|------------------|-----------------|-----------------|-----------------|------------------|
| 6-5-09 | R, Liberate | 16:06-16:11 | | 91.2 | 67.7 | 76.6 | 72.4 | 75.7 | |
| | | 16:11-16:16 | | 94.6 | 67.8 | 79.6 | 71.3 | 76.4 | |
| | | 16:16-16:21 | | 83.5 | 70.5 | 75.5 | 72.0 | 73.7 | |
| | | 16:21-16:26 | | 92.0 | 71.0 | 77.2 | 72.4 | 76.1 | |
| | | 16:26-16:31 | | 90.9 | 70.0 | 80.0 | 72.5 | 76.6 | |
| | | 16:31-16:36 | | 80.9 | 68.1 | 75.5 | 71.2 | 73.6 | |

L_{Acq} 30min = 75.3
 L₁₀ 30min = 77.4
 L₉₀ 30min = 72.0

**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 | | 6 May 2009 |
| Sampling Time | | 15:27-15:57 |
| Weather Condition | | Sunny |
| Baseline Noise Level | dB(A) | 74.3 |
| Monitoring Results | L_{eq}, dB(A) | 74.9 |
| | L₁₀, dB(A) | 76.7 |
| | L₉₀, dB(A) | 70.3 |
| | Calibration before Measurement | dB(A) |
| Calibration after Measurement | dB(A) | 94.0 |
| Observation(s) | | |
| Excavator noise by (Excavator x 1) Hammering noise by (Hammer x 1) Transportation noise by public transportation | | |
| Remarks | | |
| N/A | | |

With Baseline Correction : 66.0 dB(A)

Recorded by : Stephen Tsang

Date : 6 May 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} |
|--------|-------------|-------------------------|----------------|------------------|------------------|-----------------|-----------------|------------------|
| 6-5-09 | R2 Pacifica | 15:27-15:32 | | 81.7 | 68.9 | 75.5 | 70.7 | 74.4 |
| | | 15:32-15:37 | | 89.3 | 69.5 | 76.0 | 70.6 | 75.4 |
| | | 15:37-15:42 | | 86.0 | 69.1 | 79.4 | 70.5 | 76.4 |
| | | 15:42-15:47 | | 83.5 | 68.1 | 76.9 | 70.2 | 75.6 |
| | | 15:47-15:52 | | 82.3 | 69.1 | 75.2 | 70.2 | 73.2 |
| | | 15:52-15:57 | | 84.0 | 68.1 | 77.5 | 69.8 | 74.2 |

L_{Aeq} 30min = 74.9
 L₁₀ 30min = 76.7
 L₉₀ 30min = 70.3

**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 | | 29 April 2009 |
| Sampling Time | | 11:28-11:58 |
| Weather Condition | | Sunny |
| Baseline Noise Level | dB(A) | 74.0 |
| Monitoring Results | L_{eq}, dB(A) | 74.5 |
| | L₁₀, dB(A) | 76 |
| | L₉₀, dB(A) | 72.3 |
| Calibration before Measurement | dB(A) | 94.0 |
| Calibration after Measurement | dB(A) | 94.0 |
| Observation(s) | | |
| Sheet piling noise by (Vibratory Hammer x 1) Excavation noise by (Excavator x1) Transportation noise by public transportation | | |
| Remarks | | |
| N/A | | |

With Baseline Correction : 64.9 dB(A)

Recorded by : Stephen Tsang

Date : 29 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 _{Act} |
|-----------|------------|-------------------------|----------------|------------------|------------------|-----------------|-----------------|------------------|
| 29-9-2019 | R1 Liberte | 11:28-11:33 | | 83.6 | 66.0 | 76.9 | 72.6 | 75.2 |
| | | 11:33-11:38 | | 81.3 | 71.9 | 77.1 | 73.3 | 75.4 |
| | | 11:38-11:43 | | 86.8 | 71.3 | 76.3 | 73.3 | 75.1 |
| | | 11:43-11:48 | | 86.0 | 69.6 | 75.5 | 71.7 | 74.3 |
| | | 11:48-11:53 | | 85.4 | 69.7 | 75.4 | 71.5 | 73.9 |
| | | 11:53-11:58 | | 84.7 | 68.6 | 74.6 | 71.3 | 73.0 |

L_{eq} 30min = 74.5

L₁₀ 30min = 76.0

L₉₀ 30min = 72.3

**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 | | 29 April 2009 |
| Sampling Time | | 10:45-11:15 |
| Weather Condition | | Sunny |
| Baseline Noise Level | dB(A) | 74.3 |
| Monitoring Results | L_{eq}, dB(A) | 75.4 |
| | L₁₀, dB(A) | 78.4 |
| | L₉₀, dB(A) | 69.2 |
| Calibration before Measurement | dB(A) | 94.0 |
| Calibration after Measurement | dB(A) | 94.0 |
| Observation(s) | | |
| Sheet piling noise by (Vibratory Hammer x 1) Excavation noise by (Excavator x 1) Transportation noise by public transportation | | |
| Remarks | | |
| N/A | | |

With Baseline Correction : 68.9 dB(A)

Recorded by : Stephen Tsang

Date : 29 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} |
|-----------|-------------|-------------------------|----------------|------------------|------------------|-----------------|-----------------|------------------|
| 29-4-2011 | R2 Pacifica | 10:45-10:50 | | 78.3 | 67.5 | 75.6 | 72.0 | 74.1 |
| | | 10:50-10:55 | | 82.2 | 67.0 | 79.1 | 69.4 | 75.3 |
| | | 10:55-11:00 | | 77.2 | 66.1 | 76.0 | 68.6 | 73.7 |
| | | 11:00-11:05 | | 78.6 | 66.0 | 76.7 | 67.7 | 74.7 |
| | | 11:05-11:10 | | 82.6 | 66.9 | 79.6 | 68.5 | 76.9 |
| | | 11:10-11:15 | | 87.1 | 66.9 | 83.5 | 69.0 | 77.5 |

L_{eq} 30min = 75.4
 L₁₀ 30min = 78.4
 L₉₀ 30min = 69.2

**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 | | 22 April 2009 |
| Sampling Time | | 16:28-16:58 |
| Weather Condition | | Sunny |
| Baseline Noise Level | dB(A) | 74.0 |
| Monitoring Results | L_{eq}, dB(A) | 75.4 |
| | L₁₀, dB(A) | 78.5 |
| | 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) 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 : 22 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 ₅₀ | L ₉₀ | L _{Aeq} |
|-----------|------------------------|-------------------------|----------------|------------------|------------------|-----------------|-----------------|-----------------|------------------|
| 22-4-2009 | R ₁ Liberte | 16:28-16:33 | | 88.5 | 68.4 | 76.2 | 70.1 | 73.2 | |
| | | 16:33-16:38 | | 82.4 | 69.1 | 77.4 | 70.3 | 74.5 | |
| | | 16:38-16:43 | | 89.5 | 70.0 | 79.0 | 71.3 | 76.3 | |
| | | 16:43-16:48 | | 88.1 | 70.4 | 78.6 | 71.9 | 75.7 | |
| | | 16:48-16:53 | | 85.4 | 69.2 | 81.3 | 71.4 | 77.1 | |
| | | 16:53-16:58 | | 89.0 | 68.6 | 78.7 | 70.3 | 75.4 | |

L_{eq 30min} = 75.4

L_{10 30min} = 78.5

L_{90 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, Tower 1, The Pacifica |
| Sampling Date | | 22 April 2009 |
| Sampling Time | | 15:42-16:12 |
| Weather Condition | | Sunny |
| Baseline Noise Level | dB(A) | 74.3 |
| Monitoring Results | L_{eq}, dB(A) | 76.3 |
| | L₁₀, dB(A) | 79.2 |
| | L₉₀, dB(A) | 72.2 |
| | | |
| 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 : 72.0 dB(A)

Recorded by : Stephen Tsang

Date : 22 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} |
|-----------|-------------|-------------------------|----------------|------------------|------------------|-----------------|-----------------|------------------|
| 22-4-2009 | R2 Pacifica | 15:42-15:47 | | 85.7 | 69.6 | 80.4 | 71.3 | 77.1 |
| | | 15:47-15:52 | | 84.0 | 69.7 | 80.8 | 73.4 | 78.2 |
| | | 15:52-15:57 | | 84.3 | 70.1 | 79.7 | 72.4 | 76.6 |
| | | 15:57-16:02 | | 85.3 | 70.7 | 80.4 | 74.6 | 78.1 |
| | | 16:02-16:07 | | 80.6 | 69.4 | 77.2 | 71.4 | 74.4 |
| | | 16:07-16:12 | | 82.1 | 69.3 | 76.7 | 70.4 | 73.8 |

L_{eq} 30min = 76.3

L₁₀ 30min = 79.2

L₉₀ 30min = 72.2