MTR Corporation Limited

MTR Lai Chi Kok Station Pedestrian Subway and Entrance Works

Monthly Environmental Monitoring & Audit Report

16 October 2007 – 15 November 2007

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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-005

According to Permit Condition 1.9 of the above Environmental Permit, the titled document 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:

Glenn Frommer

Dr. Glenn H Frommer
Sustainability Development Manager
of MTR Corporation

28 NOV 2007

Date

APPROVAL SHEET

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

Signature: _____ Date: 28 NOV 2007

Miss Patricia Chung
(ET Leader)

* ET – Environmental Team

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EXECUTIVE SUMMARY

This is the third 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 October 2007 to 15 November 2007. The major construction activities in this reporting month include site hoarding, footpath diversion, sheet pile driving, utility diversion and trial trench excavation works.

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. No formal prosecution and complaint were recorded in this reporting period. The contractor's performance on environmental matters was considered satisfactory.

As the construction site is mainly located in Cheung Lai Street, a section of Cheung Sha Wan Road and a section of Lai Chi Kok Road, the noise levels were significantly affected by the busy running traffic.

1 INTRODUCTION

This is the 3rd 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 October 2007 to 15 November 2007.

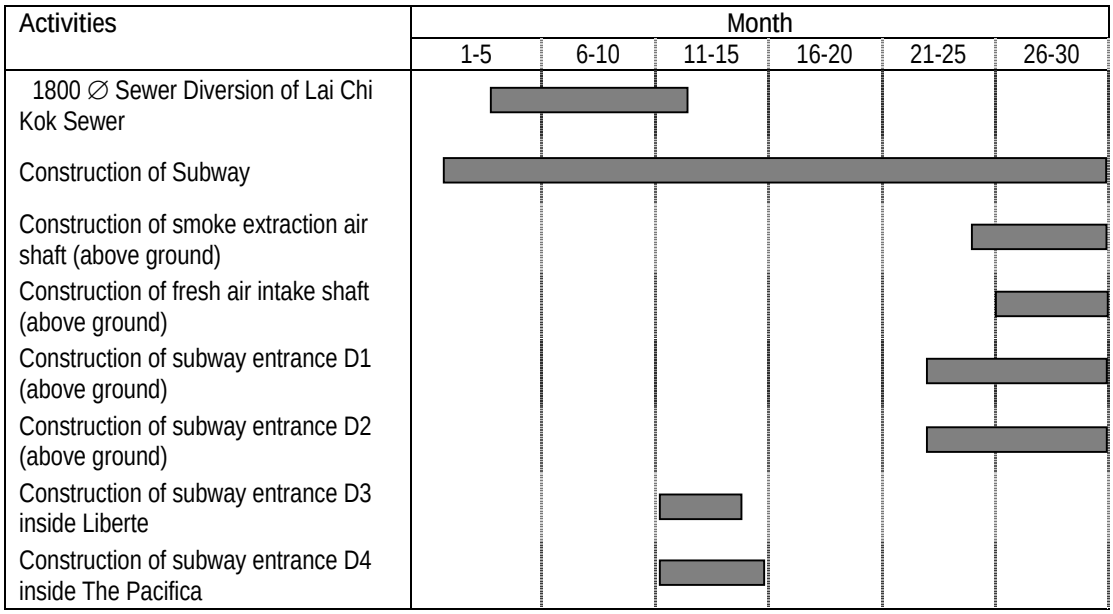
2 PROJECT INFORMATION

2.1 Construction Program

The civil construction of the subway would take approximately 30 months. Prior to construction of the subway, it would need to take about 6 months for temporary diversion of an existing 1.8m diameter sewer located along Lai Chi Kok Road.

The construction of the subway will be carried out in three sections simultaneously by cut and cover method. Vertical open cut will be undertaken along each section. Temporary walls and internal bracings will be installed to provide support for excavation. In order to maintain traffic flow, road decking will be provided as soon as practical. This will also act as a screen to minimize the nuisance to the public and pedestrian. All excavation and construction of the subway and its ancillary underground structure will be carried out underneath the deck thereby minimizing environmental impacts. At-grade access points will be provided for transportation of material/spoil and workers' access. Once the construction of the subway structure is completed, the work areas will be backfilled and the road surface will be reinstated.

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



2.2 Construction Activities in the past month

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

- Site Preparation works
- Temporary footpath diversion
- Erection of hoardings and noise barriers as noise mitigation measures at W2
- Geo-technical instrumentation works.
- Driving sheet pile works at Cheung Lai Street and W2
- Trial Trench at Cheung Lai Street and W2

2.3 Construction Activities for the coming month

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

- Site preparation works
- Installation of Strut and Wailing
- Driving sheet pile works at Cheung Lai Street and W2
- Excavation works
- Superstructure construction

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 and graphic plots are presented in Appendix 2. The results, ranged between 66.0 dB(A) and 74.2 dB(A), were within the limit levels and therefore, no exceedance was found.

Location	Parameter	Date	Time	L_{Aeq}*	Limit	Exceedance
R1	Leq30min	17-Oct-07	17:33	73.6 dB(A)	75 dB(A)	N
R1	Leq30min	22-Oct-07	13:21	73.6 dB(A)	75 dB(A)	N
R1	Leq30min	29-Oct-07	9:37	68.6 dB(A)	75 dB(A)	N
R1	Leq30min	5-Nov-07	11:03	69.4 dB(A)	75 dB(A)	N
R1	Leq30min	12-Nov-07	16:24	70.5 dB(A)	75 dB(A)	N
R2	Leq30min	17-Oct-07	16:51	73.8 dB(A)	75 dB(A)	N
R2	Leq30min	22-Oct-07	11:15	72.7 dB(A)	75 dB(A)	N
R2	Leq30min	29-Oct-07	10:22	66.0 dB(A)	75 dB(A)	N
R2	Leq30min	5-Nov-07	11:48	74.2 dB(A)	75 dB(A)	N
R2	Leq30min	12-Nov-07	17:15	69.3 dB(A)	75 dB(A)	N

* Corrected to baseline background level

Action and Limit levels and the associated Event/ Action Plan in event of exceedence are summarized in Table 3.2 and 3.3, respectively.

Table 3.2 - 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 3.3 - Event/Action plan for construction noise

Event	Action			
	ET Leader	**IEC**	**RE**	**Contractor**
Action Level	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.	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.	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.	1. Submit noise mitigation proposals to RE / ET. 2. Implement noise mitigation proposals.
Limit Level	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	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.	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.	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 19th and 26th November, as well as 3rd and 10th December.

Site inspection schedule for the next reporting period is designated on 19th November and 3rd December.

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.

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	--
Total	*2370.66*	*34.8*	--

6 COMPLAINT LOG

Table 6.1 is the environmental complaint summary record.

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
Total	*0*	*0*	*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

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-R-W0012-07	6 Aug 2007	14 Feb 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 MTRC, 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:

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 seal-up the base of hoardings with cement to contain run-off at site.	Done
5	The Contractor was reminded to properly display noise label of PMEs at site	Done
6	The Contractor was reminded to implement proper noise mitigation measures, such as noise mat and noise barriers, for noise emitting works such as sheet pile works	Ongoing

7	The Contractor should designate general waste storage area and provide collection bins at site area	Ongoing
8	The Contractor should provide proper facility for chemical waste storage	Done

The IEC joined a site inspection on 24 September 2007. Comments made by IEC were followed up promptly by the Contractor for rectification.

The EPD has inspected a public concern regarding hammering noise at site on 26 October 2007 but found no non-compliance. The Contractor was reminded to minimize nuisance as much as practicable.

9 CONCLUSION

In this reporting month, construction activities for this project “MTRC Lai Chi Kok Station Pedestrian Subway and Entrance Works” included site preparation, horading works, temporary road and utility diversion, geo-technical instrumentation works, and driving sheet pile works. Regular meetings and site audits, led by the seniors and attended by RE, ET, IEC and the Contractor, were held for discussing site environmental related issues at monthly and weekly basis respectively. Concerned site environmental items have been in general followed up by the Contractor for rectification. The environmental pollution control measures provided by the Contractor were considered satisfactory. Noise levels recorded during the monitoring period were within limits. No formal prosecution and complaint were recorded during the reporting month. 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

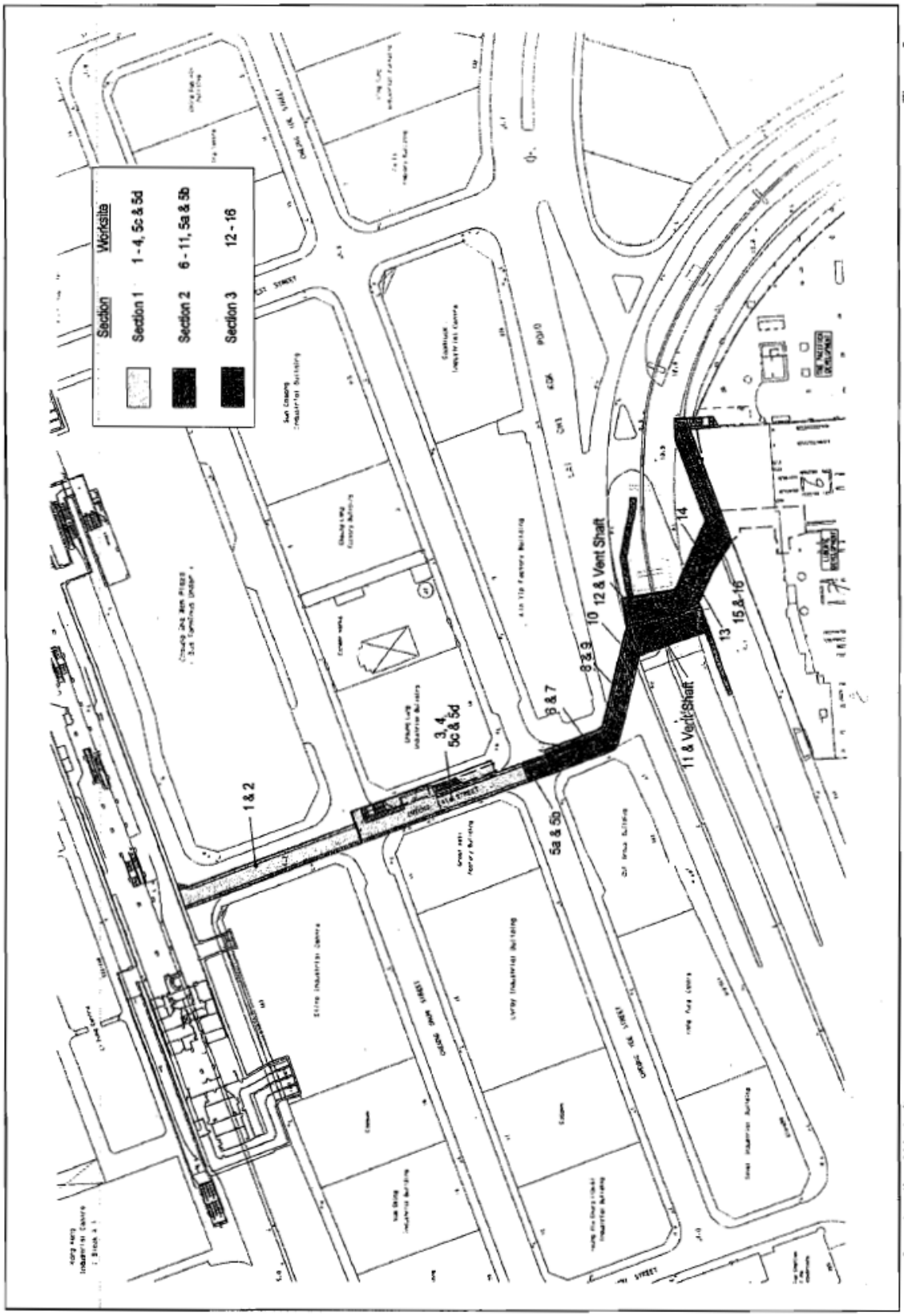


Figure 2 Noise Monitoring Stations R1 and R2

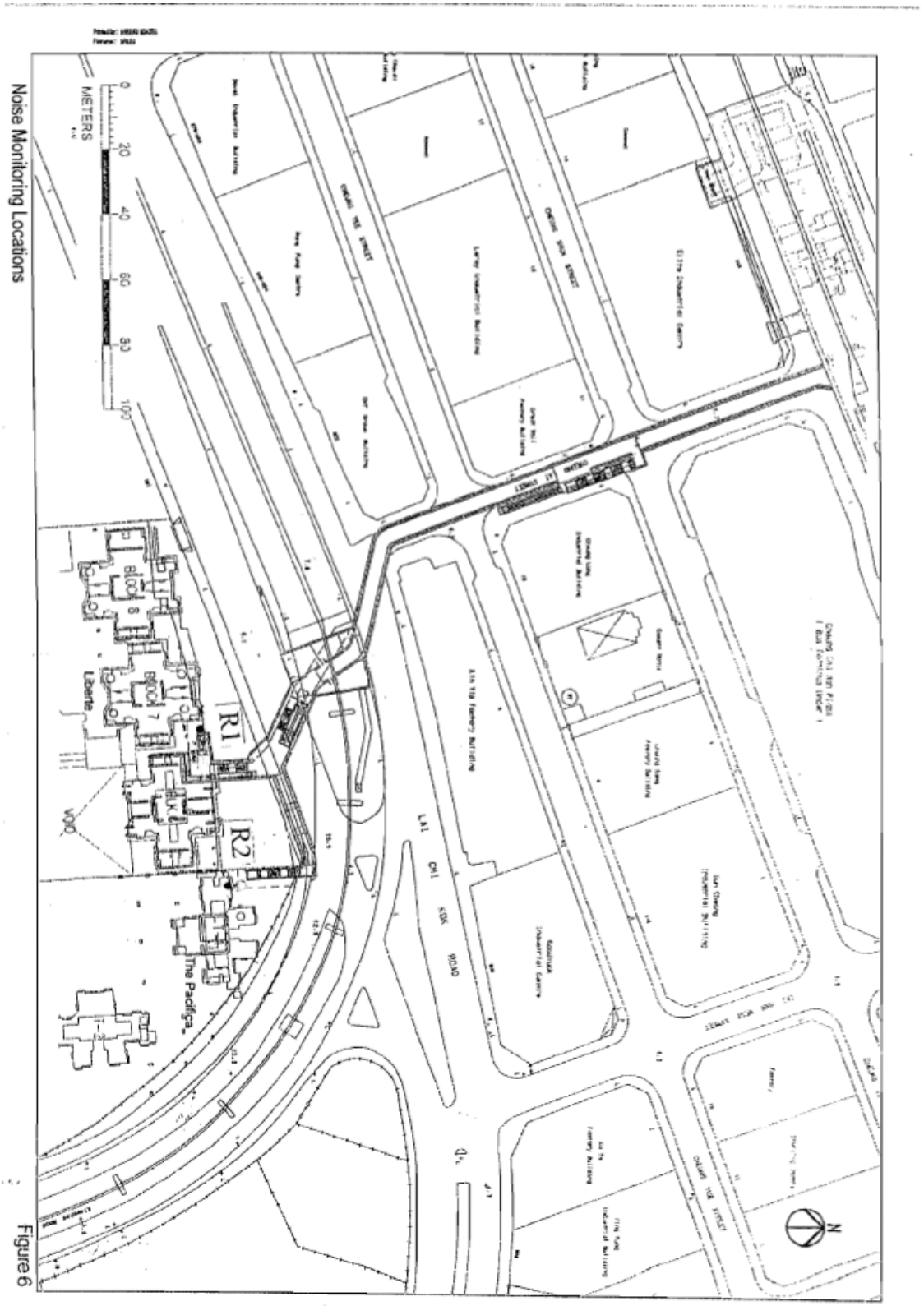
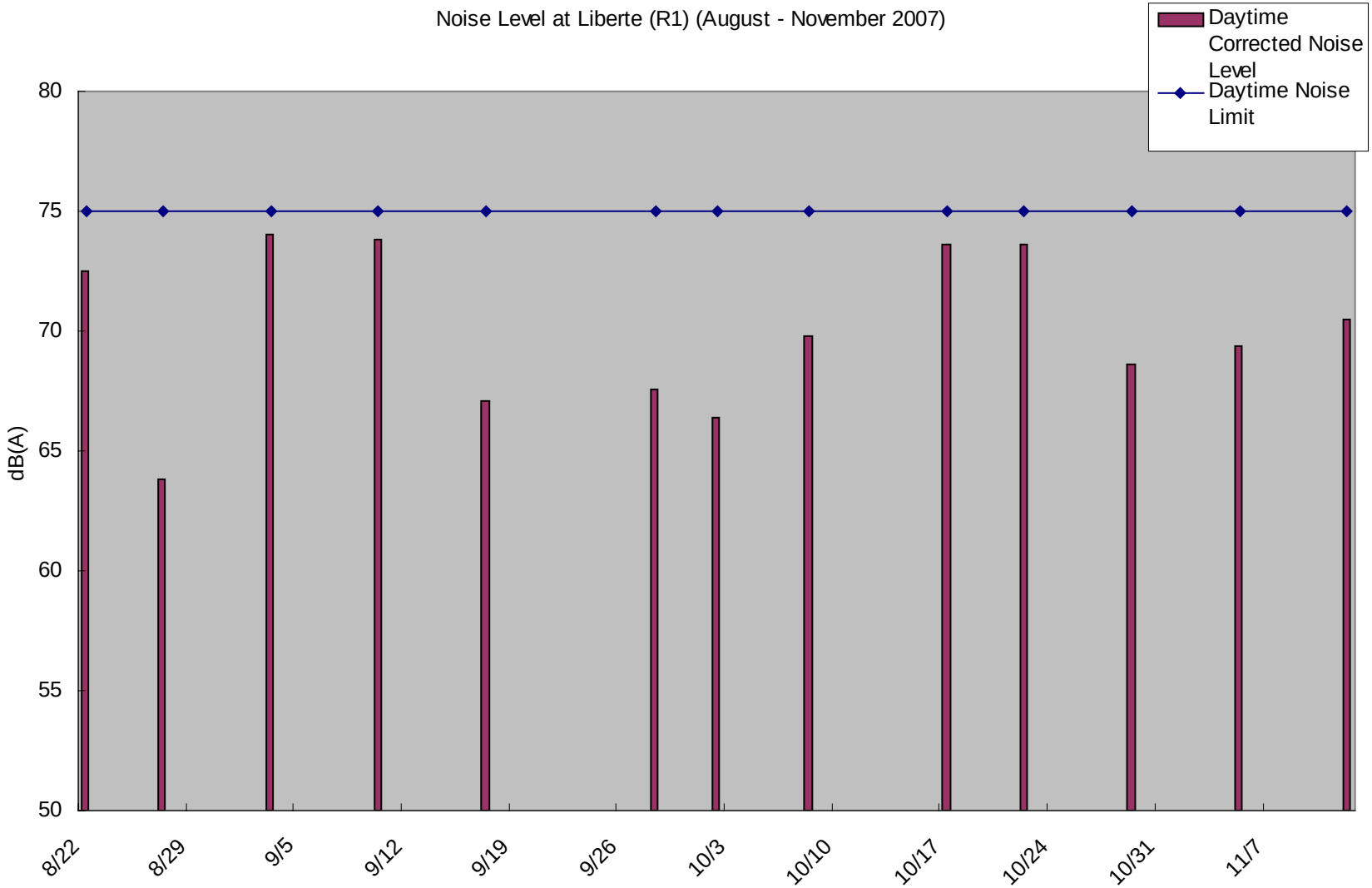
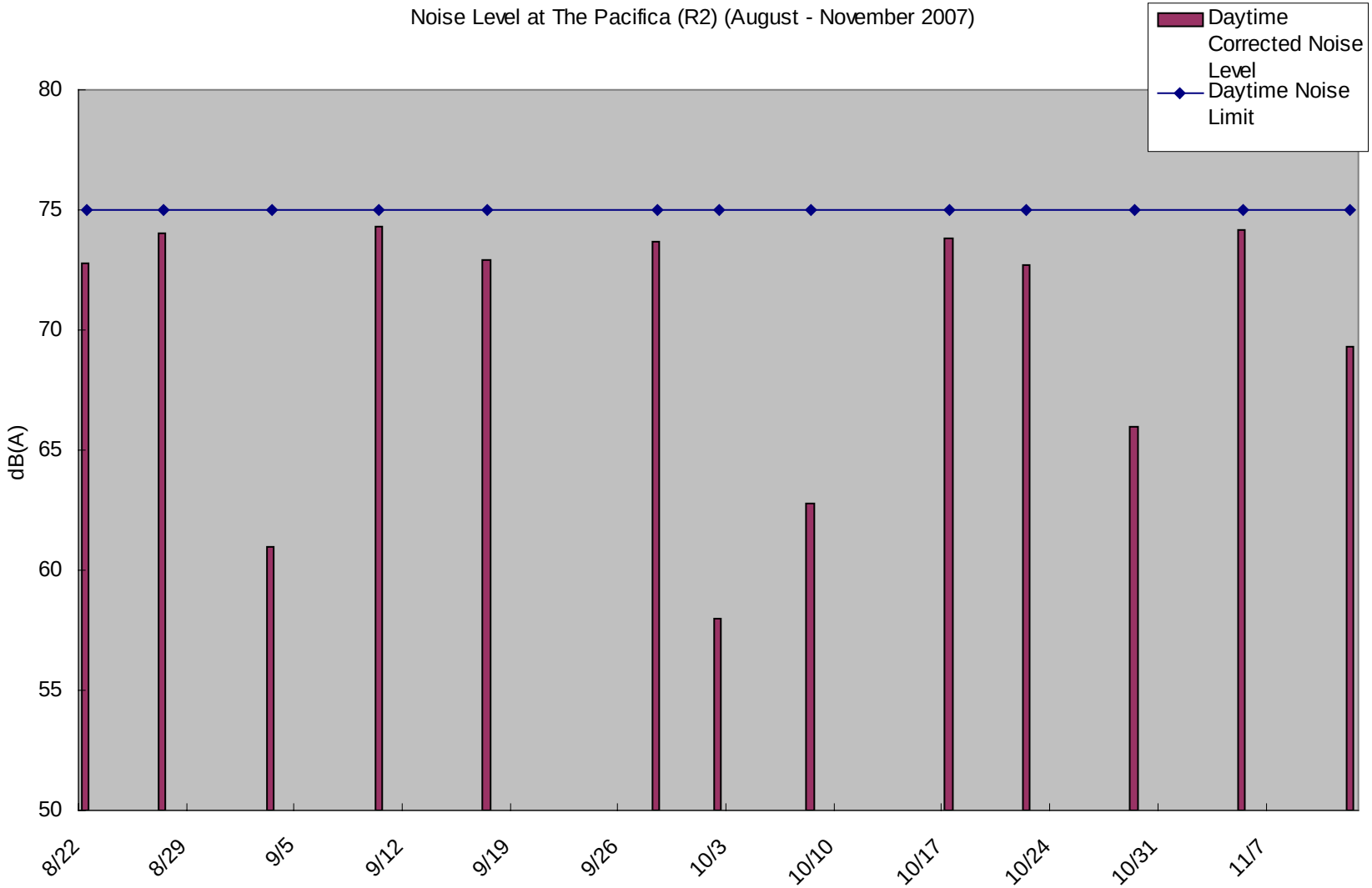


Figure 6

APPENDIX 2 – ENVIRONMENTAL MONITORING DATA/ CHARTS


Noise Level at Liberte (R1) (August - November 2007)
Daytime Corrected Noise Level
Daytime Noise Limit
dB(A)
80
75
70
65
60
55
50
8/22
8/29
9/5
9/12
9/19
9/26
10/3
10/10
10/17
10/24
10/31
11/7


Noise Level at The Pacifica (R2) (August - November 2007)
Daytime Corrected Noise Level
Daytime Noise Limit
dB(A)
80
75
70
65
60
55
50
8/22
8/29
9/5
9/12
9/19
9/26
10/3
10/10
10/17
10/24
10/31
11/7