

MTR Corporation Limited

HONG KONG SECTION OF GUANGZHOU -
SHENZHEN - HONG KONG EXPRESS RAIL LINK
(No. EP-349/2009)

Baseline Monitoring Report (Part 7)

Certified by: Glenn Frommer
Position: Environmental Team Leader
Date: - 4 MAR 2010

Our ref KMY/AFK/JOC/FY/bl/T264090/22.01/L-0034

T 2828 5757

E anne.kerr@mottmac.com.hk

Your ref

MTR Corporation Ltd.,
8/F MTR Fo Tan Railway House,
No. 9, Lok King Street,
Fo Tan,
Shatin, N.T.

5 March 2010

By Post and email

Attn : Dr. Glenn Frommer

Dear Sir

Express Rail Link

Consultancy Agreement No. C806

Independent Environmental Checker (IEC)

Environmental Permit No.: EP-349/2009

Condition 2.42 – Baseline Monitoring Report (Part 7)

We refer to the revised Baseline Monitoring Report (Part 7) received on 4 March 2010 via email. Pursuant to Condition 2.42 of the Environmental Permit, I hereby verify the Baseline Monitoring Report Part 7.

Yours faithfully,
for MOTT MACDONALD HONG KONG LIMITED



Dr. Anne Kerr
Independent Environmental Checker (IEC)

Table of Contents

EXECUTIVE SUMMARY 1

1. INTRODUCTION.....2

2. AIR QUALITY.....3

3. AIRBORNE CONSTRUCTION NOISE.....7

4. CONCLUSION 11

APPENDIX A 12

APPENDIX B 17

APPENDIX C 44

APPENDIX D 45

EXECUTIVE SUMMARY

The environmental baseline monitoring for the Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link, hereinafter referred to “the XRL” was conducted at 2 noise and 1 air quality monitoring locations in the vicinity of Works Area G (Figure 1). Noise measurements were taken in terms of Leq with L10 and L90 as reference. Air quality was measured in terms of 1-hour and 24-hour average Total Suspended Particulates (TSP).

Monitoring of 1-hour and 24-hr TSP level were conducted between 5/1/2010 and 18/1/2010 at Sau Shan House, Cheung Shan Estate (AM 9). The average 1-hour TSP level at AM 9 was $80.1 \mu\text{g}/\text{m}^3$. The average 24-hour TSP level at AM 9 was $63.4 \mu\text{g}/\text{m}^3$.

The Action Levels at the monitoring locations were derived based on the baseline monitoring results. The Action Level of 1-hour and 24-hour average TSP levels at AM 9 was $302.1 \mu\text{g}/\text{m}^3$ and $171.2 \mu\text{g}/\text{m}^3$ respectively.

Baseline noise monitoring was conducted between 5/2/2010 and 20/2/2010 at Tsuen Wan Lutheran School (CN 17) and between 6/2/2010 and 21/2/2010 at Sau Shan House, Cheung Shan Estate (CN 18). No noise monitoring was conducted on 7/2 and 8/2 due to rainfall. Baseline noise monitoring was conducted during daytime (0700-1900 hours), evening time (1900-2300 hours) and night-time (2300-0700 hours) on all day during the above-mentioned period. In this report, the measured noise levels on weekdays were presented separately from general holidays and Sundays for easy of reference. It was noted from the monitoring results that ambient noise level for daytime at Tsuen Wan Lutheran School (CN 17), 62 dB(A), is comparable to Sau Shan House, Cheung Shan Estate (CN 18), 60 dB(A). The daytime baseline noise levels of CN 17 is below the Limit Level of 65 dB(A) and 70 dB(A) for educational institutions during examination periods and normal school days. The daytime baseline noise levels of CN 18 is below the Limit Level of 75 dB(A) for residential premises.

1. INTRODUCTION

1.1 Background

Further to the Government's decision made in April 2008, MTR Corporation (MTR) commenced to plan and design the Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link (hereinafter referred to "the XRL" or "the Project"), which is a committed cross boundary transport infrastructure project.

The XRL will provide high speed rail services between Hong Kong and Guangzhou, and a connection to the national high-speed passenger rail network serving major mainland cities outside of Guangdong province. The Hong Kong section of the XRL is about 26km from new terminus located in West Kowloon (i.e. West Kowloon Terminus (WKT)) to the boundary at Huang gang. Along the railway corridor, there will be a total of eight ventilation buildings/ emergency access point (EAP), stabling sidings and a maintenance facility at Shek Kong (SSS) and an Emergency Rescue Station (ERS) next to SSS serving the operation of the XRL.

1.2 Purpose of the report

In accordance with the Environmental Monitoring and Audit (EM&A) Manual, environmental baseline monitoring was carried out for dust and noise. This Baseline Monitoring Report (Part 7) contains baseline monitoring findings in the vicinity of Works Area G (Figure 1). The purpose of this report is to summarize the findings of this baseline monitoring and to establish the compliance levels for the subsequent environmental impact monitoring during construction stage.

2. AIR QUALITY

2.1 Monitoring Methodology

Monitoring was undertaken to establish baseline levels for both 1-hour and 24-hour Total Suspended Particulates (TSP) at AM 9 located in the vicinity of the works areas G. This provides data against which any environmental impacts due to construction activities can be compared.

During the construction period impact monitoring will only be conducted for 24-hour TSP, although 1-hour TSP monitoring may also be conducted and used in following up on complaints or exceedances, in order to provide a more rapid indication of the source of the problem at hand.

Baseline monitoring was conducted for both 1-hour and 24-hour TSP using a direct reading meter (MIE Data-RAM Portable Real Time Aerosol Monitor) and a high volume sampler (HVS) according to Part 50 Chapter 1 Appendix B, Title 40 of the Code of Federal Regulations of the USEPA.

2.2 Monitoring Frequency

Three separate 1-hour TSP measurements daily for a period of at least 14 days were made at the monitoring station to establish the ambient 1-hour TSP levels. For 24-hour TSP, monitoring was carried out continuously over a period of at least 14 days at the monitoring stations to establish the ambient 24-hour TSP levels. The monitoring frequency for baseline monitoring of 1-hour and 24-hour TSP is summarized in the table below:

Sampling Parameter	Frequency	Duration
1 hour TSP	• 3 times per day	Consecutive days of at least 2 weeks before commencement of construction works
Continuous 24-hour TSP	• Daily	

Table 2.1: Monitoring frequency for baseline monitoring of 1-hour and 24-hour TSP

2.3 Monitoring location

According to the EM&A Manual, baseline air quality monitoring was carried out during 5/1/2010 – 18/1/2010 to determine the ambient levels of both 1-hour and 24-hour TSP levels respectively at Sau Shan House, Cheung Shan Estate (AM 9) in the vicinity of Works Area G. The locations of the works area and the respective ASR are shown in Figures 1 and 2 respectively. The information of the ASR where baseline air monitoring had been conducted is summarized in the table below:

Monitoring Station ID	Air Quality Monitoring Location	Monitoring period
AM 9	Sau Shan House, Cheung Shan Estate	5/1/2010 – 18/1/2010 (1-hr and 24-hr);

Table 2.2: Information of Air Sensitive Receiver where dust monitoring was conducted

2.4 Calibration requirements

The flow rate of the high volume sampler with mass flow controller was calibrated using an orifice calibrator. Initial calibration (five points) was conducted upon installation and prior to commissioning. Calibration was carried out every six months. Calibration certificate is attached in Appendix C. Calibration of the MIE by certified laboratory or manufacturer was carried out every two years and properly documented. Calibration certificate is attached in Appendix C.

The samplers shall be properly maintained. Prior to dust monitoring commencing, appropriate checks shall be made to ensure that all equipment and necessary power supply are in good working condition.

2.5 Monitoring Procedures

1-Hour TSP Levels Monitoring

TSP is sampled by drawing air into the MIE where particulate concentrations are measured instantaneously with an in-built detector sensing light scattered by the particles in the sampled air (optical sensing stage). Continuous TSP levels are indicated on the MIE along with a 'Time Weighted Average' value.

24-Hour TSP Levels Monitoring

The sampling procedure follows to that described Part 50 Chapter 1 Appendix B, Title 40 of the Code of Federal Regulations of the USEPA. TSP is sampled by drawing air through a conditioned, pre-weighed filter paper inside the high volume sampler at a controlled rate. After 24-hour sampling the filter paper with retained particles shall be collected and returned to HOKLAS accredited laboratory (ALS Technichem (HK) Pty Ltd) for drying in a desiccators followed by accurate weighing. TSP levels are calculated from the ratio of the mass of particulate retained on the filter paper to the total volume of air sampled.

2.6 Monitoring Results

During the monitoring period, the weather was mostly fine with occasional rainy days. The major source of dust in the vicinity was observed to originate mainly from the traffic on nearby road.

Monitoring results of 1-hour and 24-hour TSP are summarised in Table 2.3 and 2.4. All monitoring data of 1-hour and 24-hour are shown in Appendix A.

Monitoring Location	Average TSP Concentration, $\mu\text{g}/\text{m}^3$ (Range)
Sau Shan House, Cheung Shan Estate (AM 9)	80.1 (3.2-204.8)

Table 2.3: Summary of baseline 1-hour TSP level

Monitoring Location	Average TSP Concentration, $\mu\text{g}/\text{m}^3$ (Range)
Sau Shan House, Cheung Shan Estate (AM 9)	63.4 (20.1-104.0)

Table 2.4: Summary of baseline 24-hour TSP level

2.7 Action and Limit Levels

In accordance with the EM&A Manual, the baseline TSP levels form the basis for derivation of the Action Levels for subsequent impact monitoring, which is summarised in the table below:

Parameter	Action Level ⁽¹⁾	Limit Level
TSP (24 hour average)	• $BL \leq 200\mu\text{g m}^{-3}$, $AL = (BL * 1.3 + LL)/2$ • $BL > 200\mu\text{g m}^{-3}$, $AL = LL$	$260\mu\text{g m}^{-3}$
TSP (1 hour average)	• $BL \leq 384\mu\text{g m}^{-3}$, $AL = (BL * 1.3 + LL)/2$ • $BL > 384\mu\text{g m}^{-3}$, $AL = LL$	$500\mu\text{g m}^{-3}$

(1) BL = Baseline level, AL = Action level, LL = Limit Level.

Table 2.5: Basis for establishing the Action and Limit Levels for Air Quality

In accordance with Table 2.3 and 2.4 regarding results from baseline monitoring, the Action Level for air quality impact monitoring are calculated and presented below:

Location	Parameter	Action Level	Limit Level
Sau Shan House, Cheung Shan Estate (AM 9)	TSP (24-hour average)	$171\mu\text{g m}^{-3}$	$260\mu\text{g m}^{-3}$
	TSP (1-hour average)	$302\mu\text{g m}^{-3}$	$500\mu\text{g m}^{-3}$

Table 2.6: Action and Limit Levels for Air Quality Impact Monitoring

3. AIRBORNE CONSTRUCTION NOISE

3.1 Monitoring Methodology

Consecutive noise measurements were undertaken over a period of at least 14 days to establish the ambient noise levels at representative nearest sensitive receivers. Continuous 5 minute A-weighted noise levels were recorded throughout the daytime, evening and night-time on weekdays (Monday to Saturday) and also on Sundays.

As referred to the Technical Memorandum (TM) issued under the NCO, sound level meters in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications shall be used for carrying out the noise monitoring. In this baseline monitoring, B&K 2250-L sound level meters, which complies with the above-mentioned specifications, were used.

There should not be any construction activities in the vicinity of the monitoring stations during the baseline monitoring. Any non-project related construction activities in the vicinity of the monitoring stations during the baseline monitoring should be noted and the source and location of such activities should be recorded.

3.2 Monitoring Frequency

The baseline monitoring was measured daily for a continuous period of at least 14 consecutive days at a minimum logging interval of 30 minutes for daytime (between 0700 and 1900 hours of normal weekdays) and 15 minutes (as three consecutive Leq, (5 minutes) readings) for evening time (between 1900 and 2300 hours of normal weekdays), general holidays including Sundays (between 0700 and 2300 hours) and night-time (between 2300 and 0700 of all days). The Leq, L10 and L90 were recorded at the specified interval.

3.3 Monitoring location

Baseline noise monitoring was carried out during 5/2/2010 to 20/2/2010 at CN17 and 6/2/2010 to 21/2/2010 at CN18 located in the vicinity of Works Area G. The locations of the NSRs are shown in Figure 3. Monitoring was carried out at the following stations in accordance with the EM&A Manual:

Monitoring Station ID	Noise Monitoring Location	Monitoring period
CN 17	Tsuen Wan Lutheran School	5/2/2010 to 20/2/2010 ¹
CN 18	Sau Shan House, Cheung Shan Estate	6/2/2010 to 21/2/2010 ¹

¹ No noise monitoring was conducted on 7/2 and 8/2 due to rainfall

Table 3.1: Information of Noise Monitoring Stations

3.4 Calibration Requirements

B&K 2250-L sound level meters which complied with the International Electrotechnical Commission Publication 651:1979 (Type 1) and 804:1985 (Type 1), specification as referred to in the Technical Memoranda to the NCO were used for the baseline monitoring. The B&K sound level meters and Rion NC 73 calibrator are verified by the certified laboratory or manufacturer once every year to ensure they perform to the same level of accuracy as stated in the manufacturer's specifications. Calibration certificates of the sound level meters and calibrator are attached in Appendix C.

Immediately prior to and following each noise measurement the accuracy of the sound level meter should be checked using an acoustic calibrator (Rion NC 73) generating a known sound pressure level at a known frequency. Measurements may be accepted as valid only if the difference between calibration levels obtained before and after the noise measurement is less than 1.0 dB.

3.5 Action and Limit Levels

The Action and Limit Levels defined in the EM&A Manual for airborne construction noise is presented below for reference.

Time Period	Action	Limit
0700-1900 hours on normal weekdays	When one documented complaint is received	75 dB(A) for residential premises
		70 dB(A) for school and 65 dB(A) during examination period

Table 3.2: Action and Limit Levels for Airborne Construction Noise

3.6 Monitoring Results

Baseline noise monitoring was conducted between 5/2/2010 and 20/2/2010 at Tsuen Wan Lutheran School (CN 17) and between 6/2/2010 and 21/2/2010 at Sau Shan House, Cheung Shan Estate (CN 18). The weather condition was generally fine with occasional rainfall events during the monitoring period. The major noise sources at respective monitoring locations are summarized at the table below:

Monitoring location ID	Monitoring location	Major noise source
CN 17	Tsuen Wan Lutheran School	Traffic noise
CN 18	Sau Shan House, Cheung Shan Estate	Traffic noise

Table 3.3: Major noise source at noise monitoring locations

Baseline noise monitoring results are summarised in Table 3.3 over the monitoring periods. All monitoring data are contained in Appendix B. Graphical presentations of the monitoring results are shown in Appendix B.

Period	Monitoring Station	L_{eq}(30min) – dB(A) (Range)	L₁₀(30min) – dB(A) (Range)	L₉₀(30min) – dB(A) (Range)
0700 – 1900 (Daytime, Normal weekday)	CN 17	62 (60-65)	65 (64-68)	56 (53-60)
	CN 18	60 (57-61)	62 (60-63)	56 (51-57)
Period	Monitoring Station	L_{eq}(5min) – dB(A) (Range)	L₁₀(5min) – dB(A) (Range)	L₉₀(5min) – dB(A) (Range)
0700 – 2300 (General Holiday including Sunday)	CN 17	61 (58-68)	64 (60-70)	55 (51-64)
	CN 18	57 (51-60)	59 (53-63)	51 (48-54)
1900 – 2300 (Evening, Normal weekday)	CN 17	62 (59-64)	65 (63-67)	54 (53-57)
	CN 18	57 (54-61)	60 (57-64)	52 (50-55)
2300 – 0700 (Night-time, all days)	CN 17	56 (49-61)	59 (52-65)	48 (42-54)
	CN 18	52 (47-58)	55 (49-61)	47 (44-51)

Table 3.4: Baseline noise monitoring results

As revealed from the monitoring results, baseline noise levels for daytime (0700-1900) during normal weekdays at the CN17 and CN18 range from 60-65 dB(A) and 57-61 dB(A) respectively. It was noted from the monitoring results that ambient noise level for daytime at Tsuen Wan Lutheran School (CN 17), 62 dB(A), is comparable to Sau Shan House, Cheung Shan Estate (CN 18), 60 dB(A). The daytime baseline noise levels of CN 17 is below the Limit Level of 65 dB(A) and 70 dB(A) for educational institutions during examination periods and normal school days. The daytime baseline noise levels of CN 18 is below the Limit Level of 75 dB(A) for residential premises.

4. CONCLUSION

4.1 Air

1-hour TSP

Baseline 1-hour TSP monitoring was conducted at AM 9 between the period 5/1/2010 and 18/1/2010. The weather condition was mostly fine with occasional rainy days. From site observation, it was noted that the major source of dust was originated mainly from traffic on nearby road.

Baseline 1-hour TSP monitoring at AM 9 was found in the range of 3.2 to 204.8 $\mu\text{g}/\text{m}^3$. The average 1-hour TSP level at AM 9 was recorded to be 80.1 $\mu\text{g}/\text{m}^3$.

24-hour TSP

Baseline 24-hour TSP monitoring was conducted at AM 9 between the period 5/1/2010 and 18/1/2010. Baseline 24-hour TSP monitoring at AM 9 was found in the range of 20.1 to 104.0 $\mu\text{g}/\text{m}^3$. The average 24-hour TSP level was recorded to be 63.4 $\mu\text{g}/\text{m}^3$.

The Action Levels at the monitoring locations were derived based on the baseline monitoring results. The Action Level of 1-hour and 24-hour average TSP levels at AM 9 was 302 $\mu\text{g}/\text{m}^3$ and 171 $\mu\text{g}/\text{m}^3$ respectively.

4.2 Airborne Construction Noise

Baseline noise monitoring were carried at all two monitoring stations from 5/2/2010 to 21/2/2010. The weather during the baseline monitoring period was generally fine with occasional rainfall events.

As revealed from the monitoring results, baseline noise levels for daytime (0700-1900) during normal weekdays at the CN17 and CN18 range from 60-65 dB(A) and 57-61 dB(A) respectively. It was noted from the monitoring results that ambient noise level for daytime at Tsuen Wan Lutheran School (CN 17), 62 dB(A), is comparable to Sau Shan House, Cheung Shan Estate (CN 18), 60 dB(A). The daytime baseline noise levels of CN 17 is below the Limit Level of 65 dB(A) and 70 dB(A) for educational institutions during examination periods and normal school days. The daytime baseline noise levels of CN 18 is below the Limit Level of 75 dB(A) for residential premises.

Appendix A

Baseline air quality (1-hr and 24-hr TSP) monitoring data

Details of 1-hour TSP Level monitoring at AM 9

Month	Date	Receptor No.	Set No.	Time periods		Weather condition	Site condition	Temp. (°C)	Pressure (mmHg)	1-hour TSP Level (µg/m ³)	Remarks
				Start	Finish						
Jan-10	05-Jan-10	AM9	1	9:08	10:08	Cloudy	Normal	17.0	761.0	120.6	
Jan-10	05-Jan-10	AM9	2	10:08	11:08	Cloudy	Normal	17.0	761.0	160.8	
Jan-10	05-Jan-10	AM9	3	11:08	12:08	Cloudy	Normal	17.0	761.0	204.8	
Jan-10	06-Jan-10	AM9	1	9:03	10:03	Cloudy	Normal	16.0	764.0	118.4	
Jan-10	06-Jan-10	AM9	2	10:03	11:03	Cloudy	Normal	16.0	764.0	83.8	
Jan-10	06-Jan-10	AM9	3	11:03	12:03	Cloudy	Normal	16.0	764.0	58.9	
Jan-10	07-Jan-10	AM9	1	8:05	9:05	Cloudy	Normal	14.0	766.0	43.6	
Jan-10	07-Jan-10	AM9	2	9:05	10:05	Cloudy	Normal	14.0	766.0	45.2	
Jan-10	07-Jan-10	AM9	3	10:05	11:05	Cloudy	Normal	14.0	766.0	54.8	
Jan-10	08-Jan-10	AM9	1	8:58	9:58	Fine	Normal	14.0	766.0	97.1	
Jan-10	08-Jan-10	AM9	2	9:58	10:58	Fine	Normal	14.0	766.0	96.5	
Jan-10	08-Jan-10	AM9	3	10:58	11:58	Fine	Normal	14.0	766.0	89.7	
Jan-10	09-Jan-10	AM9	1	9:11	10:11	Cloudy	Normal	15.0	764.0	55.5	
Jan-10	09-Jan-10	AM9	2	10:11	11:11	Cloudy	Normal	15.0	764.0	48.1	
Jan-10	09-Jan-10	AM9	3	11:11	12:11	Cloudy	Normal	15.0	764.0	52.7	
Jan-10	10-Jan-10	AM9	1	9:17	10:17	Fine	Normal	17.0	763.0	109.4	
Jan-10	10-Jan-10	AM9	2	10:17	11:17	Fine	Normal	17.0	763.0	97.8	
Jan-10	10-Jan-10	AM9	3	11:17	12:17	Fine	Normal	17.0	763.0	102.7	

Month	Date	Receptor No.	Set No.	Time periods		Weather condition	Site condition	Temp. (°C)	Pressure (mmHg)	1-hour TSP Level (µg/m³)	Remarks
				Start	Finish						
Jan-10	11-Jan-10	AM9	1	12:57	13:57	Rainy	Normal	15.0	764.0	3.2	
Jan-10	11-Jan-10	AM9	2	13:57	14:57	Rainy	Normal	15.0	764.0	6.3	
Jan-10	11-Jan-10	AM9	3	14:57	15:57	Rainy	Normal	15.0	764.0	6.8	
Jan-10	12-Jan-10	AM9	1	11:57	12:57	Fine	Normal	13.0	767.3	74.5	
Jan-10	12-Jan-10	AM9	2	12:57	13:57	Fine	Normal	13.0	767.3	83.0	
Jan-10	12-Jan-10	AM9	3	13:57	14:57	Fine	Normal	13.0	767.3	90.8	
Jan-10	13-Jan-10	AM9	1	13:09	14:09	Cloudy	Normal	13.0	770.0	50.8	
Jan-10	13-Jan-10	AM9	2	14:09	15:09	Cloudy	Normal	13.0	770.0	48.9	
Jan-10	13-Jan-10	AM9	3	15:09	16:09	Cloudy	Normal	13.0	770.0	49.3	
Jan-10	14-Jan-10	AM9	1	13:31	14:31	Fine	Normal	15.0	770.0	84.9	
Jan-10	14-Jan-10	AM9	2	14:31	15:31	Fine	Normal	15.0	770.0	84.6	
Jan-10	14-Jan-10	AM9	3	15:31	16:31	Fine	Normal	15.0	770.0	98.3	
Jan-10	15-Jan-10	AM9	1	14:13	15:13	Fine	Normal	16.0	769.0	46.6	
Jan-10	15-Jan-10	AM9	2	15:13	16:13	Fine	Normal	16.0	769.0	46.3	
Jan-10	15-Jan-10	AM9	3	16:13	17:13	Fine	Normal	16.0	769.0	45.9	
Jan-10	16-Jan-10	AM9	1	14:35	15:35	Fine	Normal	17.0	770.0	89.8	
Jan-10	16-Jan-10	AM9	2	15:35	16:35	Fine	Normal	17.0	770.0	94.4	
Jan-10	16-Jan-10	AM9	3	16:35	17:35	Fine	Normal	17.0	770.0	95.3	
Jan-10	17-Jan-10	AM9	1	14:10	15:10	Fine	Normal	17.0	770.0	116.8	
Jan-10	17-Jan-10	AM9	2	15:10	16:10	Fine	Normal	17.0	770.0	102.3	

Month	Date	Receptor No.	Set No.	Time periods		Weather condition	Site condition	Temp. (°C)	Pressure (mmHg)	1-hour TSP Level (µg/m³)	Remarks
				Start	Finish						
Jan-10	17-Jan-10	AM9	3	16:10	17:10	Fine	Normal	17.0	770.0	147.4	
Jan-10	18-Jan-10	AM9	1	14:01	15:01	Fine	Normal	17.0	768.0	111.7	
Jan-10	18-Jan-10	AM9	2	15:01	16:01	Fine	Normal	17.0	768.0	73.1	
Jan-10	18-Jan-10	AM9	3	16:01	17:01	Fine	Normal	17.0	768.0	72.8	

Average 80.1

Max 204.8

Min 3.2

Details of 24-hour TSP Level monitoring at AM 9

Filter No.	Date	Time periods		Receptor No.	Weather condition	Site condition	Filter Weight (g)		TSP weight (g)	Flow Rate (m³/min)		Average Flow Rate (m³/min)	Elapse Time		Sampling Time (mins.)	Total vol. (m³)	24-hour TSP Level (µg/m³)
		Start	Finish				Initial	Final		Initial	Final		Start	Finish			
100814	05-Jan-10	12:22	12:22	AM9	Cloudy	Normal Operation	2.8315	2.9040	0.0725	1.2586	1.2625	1.2606	5427.52	5451.52	1440.00	1815.19	39.9
100635	06-Jan-10	12:28	12:28	AM9	Cloudy	Normal Operation	2.8632	2.9234	0.0602	1.3230	1.2990	1.3110	5451.52	5475.52	1440.00	1887.84	31.9
100801	07-Jan-10	12:35	12:35	AM9	Cloudy	Normal Operation	2.8240	2.8608	0.0368	1.2686	1.2686	1.2686	5475.52	5499.52	1440.00	1826.78	20.1
100802	08-Jan-10	12:40	12:40	AM9	Fine	Normal Operation	2.8088	2.9055	0.0967	1.2686	1.2647	1.2667	5499.52	5523.52	1440.00	1823.98	53.0
100803	09-Jan-10	12:45	12:45	AM9	Cloudy	Normal Operation	2.8092	2.9100	0.1008	1.2950	1.2594	1.2772	5523.52	5547.52	1440.00	1839.17	54.8
100805	10-Jan-10	12:48	12:48	AM9	Fine	Normal Operation	2.8214	2.9024	0.0810	1.2292	1.2647	1.2470	5547.52	5571.52	1440.00	1795.61	45.1
100806	11-Jan-10	12:54	12:54	AM9	Rainy	Normal Operation	2.8230	2.9124	0.0894	1.2647	1.2739	1.2693	5571.52	5595.52	1440.00	1827.79	48.9
100807	12-Jan-10	13:00	13:00	AM9	Fine	Normal Operation	2.8209	2.9858	0.1649	1.2739	1.3353	1.3046	5595.52	5619.52	1440.00	1878.62	87.8
100808	13-Jan-10	13:05	13:05	AM9	Cloudy	Normal Operation	2.8269	3.0174	0.1905	1.2742	1.2697	1.2720	5619.52	5643.52	1440.00	1831.61	104.0
100809	14-Jan-10	13:08	13:08	AM9	Fine	Normal Operation	2.8221	2.9859	0.1638	1.2697	1.2666	1.2682	5643.52	5667.52	1440.00	1826.14	89.7
100810	15-Jan-10	13:12	13:12	AM9	Fine	Normal Operation	2.8151	2.9737	0.1586	1.2362	1.2653	1.2508	5667.52	5691.52	1440.00	1801.08	88.1
100811	16-Jan-10	13:16	13:16	AM9	Fine	Normal Operation	2.8258	2.9894	0.1636	1.2653	1.2653	1.2653	5691.52	5715.52	1440.00	1822.03	89.8
100812	17-Jan-10	13:20	13:20	AM9	Fine	Normal Operation	2.8275	2.9685	0.1410	1.2653	1.2636	1.2645	5715.52	5739.52	1440.00	1820.81	77.4
100813	18-Jan-10	13:25	13:25	AM9	Fine	Normal Operation	2.8580	2.9522	0.0942	1.1424	1.1390	1.1407	5739.52	5763.52	1440.00	1642.61	57.3

Average63.4

Max104.0

Min20.1

Appendix B

Baseline noise monitoring data

Baseline Noise Monitoring Result

Location: CN 17 Tsuen Wan Lutheran School

Baseline monitoring period: 5/2/2010-20/2/2010

Parameter: Leq

Time Slot Averaged Baselines

1) Weekdays Daytime Noise Level, dB(A)

Time slot	Leq, 30 min	L10	L90
07:00-07:30	60.3	63.7	53.0
07:30-08:00	60.9	64.1	54.7
08:00-08:30	61.7	65.0	55.8
08:30-09:00	64.7	67.6	60.1
09:00-09:30	62.8	65.8	57.2
09:30-10:00	63.1	66.1	58.1
10:00-10:30	61.6	64.9	55.9
10:30-11:00	62.6	65.7	56.7
11:00-11:30	61.3	64.3	55.7
11:30-12:00	62.1	65.2	55.6
12:00-12:30	61.7	65.2	55.3
12:30-13:00	62.4	65.8	56.0
13:00-13:30	61.3	64.5	55.0
13:30-14:00	62.3	65.6	56.0
14:00-14:30	62.3	65.6	55.5
14:30-15:00	61.6	64.9	55.7
15:00-15:30	62.3	65.6	55.9
15:30-16:00	62.0	65.3	55.7
16:00-16:30	61.6	64.8	55.5
16:30-17:00	61.8	65.1	55.7
17:00-17:30	62.3	65.5	56.0
17:30-18:00	61.9	65.1	55.9
18:00-18:30	61.5	64.7	55.7
18:30-19:00	61.4	64.8	55.3
Average	62.1	65.3	56.1

Min	60.3	63.7	53.0
-----	------	------	------

Noise Control Period Averaged Baselines

2) Weekdays Evening Noise Level, dB(A)

Time Slot	Leq, 5min	L10	L90
19:00-19:15	62.6	66.1	55.4
	62.1	65.3	54.8
	60.5	63.6	54.4
19:15-19:30	61.6	64.5	54.9
	62.0	64.8	54.5
	61.4	64.7	54.6
19:30-19:45	60.9	64.3	53.8
	61.4	65.3	54.1
	60.8	64.7	54.1
19:45-20:00	60.9	64.4	54.6
	59.6	62.5	53.8
	61.3	65.0	54.1
20:00-20:15	60.7	64.3	53.9
	59.8	63.0	53.4
	60.6	63.5	53.6
20:15-20:30	60.7	64.4	53.3
	61.4	64.8	54.4
	64.1	66.9	57.2
20:30-20:45	62.1	65.5	53.7
	61.8	65.6	54.3
	61.4	64.8	53.9
20:45-21:00	59.4	62.6	54.0
	62.3	65.7	54.1
	62.3	66.4	54.6
21:00-21:15	61.0	64.4	54.3
	60.9	64.1	53.9
	61.1	64.0	54.2
21:15-21:30	62.4	66.2	54.5

Time Slot	Leq, 5min	L10	L90
	61.3	64.3	54.1
	60.8	63.9	54.4
21:30-21:45	63.2	66.2	54.7
	61.6	65.4	53.9
	61.3	65.1	54.5
21:45-22:00	61.8	64.9	54.1
	61.0	64.3	54.2
	63.0	66.5	54.5
22:00-22:15	60.3	63.8	53.2
	60.1	62.8	53.9
	61.6	65.1	54.0
22:15-22:30	61.8	65.7	53.7
	62.1	65.9	53.8
	62.6	65.9	55.9
22:30-22:45	61.1	64.8	53.7
	61.9	65.3	54.4
	59.6	62.7	53.4
22:45-23:00	62.2	65.9	54.0
	63.9	67.1	56.1
	60.9	64.2	53.9
Average	61.6	65.0	54.3
Max	64.1	67.1	57.2
Min	59.4	62.5	53.2

3) General Holidays (including Sundays) (0700-2300) Noise Level, dB(A)

Time Slot	Leq, 5min	L10	L90
0700-07:15	58.9	62.9	52.0
	58.0	61.5	51.1
	58.9	62.0	50.5
07:15-07:30	57.8	60.0	50.6
	60.1	63.2	51.2
	59.2	63.3	51.1
07:30-07:45	58.2	61.2	51.1
	61.3	65.8	51.5

Time Slot	Leq, 5min	L10	L90
	58.1	61.2	51.7
07:45-08:00	61.2	65.2	52.1
	60.4	63.9	51.9
	59.7	62.8	51.4
08:00-08:15	59.3	61.9	50.7
	57.5	60.4	51.2
	59.5	63.9	51.4
08:15-08:30	60.1	64.3	51.8
	57.5	61.2	51.3
	58.4	61.2	52.0
08:30-08:45	59.0	62.2	51.4
	61.3	64.9	53.5
	67.6	69.8	63.6
08:45-09:00	63.1	66.7	53.2
	63.9	67.0	54.8
	63.7	67.5	53.2
09:00-09:15	60.2	63.4	53.6
	58.1	61.0	52.8
	59.3	62.0	52.4
09:15-09:30	63.1	67.2	54.9
	60.5	61.8	53.0
	64.5	67.3	56.3
09:30-09:45	62.7	66.2	54.4
	61.0	64.3	53.7
	60.2	63.4	54.0
09:45-10:00	59.3	62.0	53.7
	61.1	63.6	53.0
	60.2	63.9	52.6
10:00-10:15	60.2	63.3	54.1
	59.8	62.8	53.7
	58.9	61.5	53.4
10:15-10:30	60.5	64.4	53.6
	60.6	64.0	54.2
	58.8	62.4	53.7
10:30-10:45	60.4	63.4	54.0
	60.3	63.4	54.0

Time Slot	Leq, 5min	L10	L90
	62.1	66.3	54.2
10:45-11:00	59.8	63.0	53.2
	59.6	62.8	53.7
	60.7	64.2	54.6
11:00-11:15	61.5	63.4	54.0
	60.2	62.5	54.7
	61.4	64.6	55.0
11:15-11:30	59.3	62.4	54.0
	61.2	64.8	54.8
	61.4	64.9	54.8
11:30-11:45	59.5	62.3	53.7
	61.2	64.8	54.9
	60.2	62.7	55.2
11:45-12:00	60.3	62.0	54.2
	61.4	64.1	54.3
	60.9	63.8	54.6
12:00-12:15	60.7	63.9	54.7
	60.1	62.4	54.4
	60.5	64.1	54.8
12:15-12:30	61.2	65.2	55.3
	60.8	64.0	55.0
	61.6	65.4	54.9
12:30-12:45	60.1	62.5	55.0
	61.0	64.3	55.1
	61.7	64.8	55.6
12:45-13:00	60.3	63.5	55.2
	60.1	63.0	55.4
	61.9	65.6	55.7
13:00-13:15	60.6	63.0	55.4
	60.2	62.2	55.2
	61.7	64.4	55.2
13:15-13:30	63.0	66.4	55.4
	60.8	62.8	54.7
	59.6	62.7	55.2
13:30-13:45	62.3	65.8	56.1
	61.4	64.6	55.4

Time Slot	Leq, 5min	L10	L90
	59.3	61.9	54.0
13:45-14:00	62.2	65.0	55.8
	60.5	63.6	55.3
	62.1	65.1	56.0
14:00-14:15	60.8	63.9	55.7
	60.2	63.6	55.0
	60.6	63.5	55.2
14:15-14:30	60.8	64.4	55.2
	60.4	62.9	55.6
	60.5	62.0	55.1
14:30-14:45	61.7	65.3	55.7
	61.7	64.7	55.4
	59.9	62.9	55.2
14:45-15:00	59.7	62.1	55.3
	62.2	64.3	55.4
	60.5	63.3	55.2
15:00-15:15	60.5	63.4	54.8
	61.8	65.0	55.5
	61.0	63.5	55.2
15:15-15:30	61.8	65.2	55.2
	61.4	64.8	55.6
	61.0	64.6	55.4
15:30-15:45	59.6	61.9	55.1
	59.9	62.7	55.4
	61.7	64.9	56.1
15:45-16:00	60.1	62.3	55.4
	60.4	63.5	55.6
	61.6	64.8	56.4
16:00-16:15	59.7	62.5	55.1
	59.8	62.6	55.1
	60.9	63.1	55.6
16:15-16:30	61.2	64.1	55.5
	61.1	63.6	55.5
	61.5	64.3	55.5
16:30-16:45	62.6	66.1	56.1
	60.2	62.6	55.0

Time Slot	Leq, 5min	L10	L90
	59.6	62.7	55.1
16:45-17:00	62.0	65.4	55.9
	59.4	61.4	55.0
	61.5	64.4	55.2
17:00-17:15	62.3	65.8	55.9
	60.0	62.7	55.2
	60.5	63.2	55.3
17:15-17:30	61.3	64.7	55.6
	61.6	64.6	55.9
	60.2	62.4	55.3
17:30-17:45	60.6	63.8	55.7
	61.7	63.8	56.0
	60.0	62.4	55.5
17:45-18:00	61.6	64.3	56.2
	61.0	64.1	55.6
	62.0	65.2	56.2
18:00-18:15	62.0	65.4	56.0
	61.3	64.3	55.7
	60.7	62.1	55.5
18:15-18:30	61.9	65.4	55.9
	61.8	64.3	56.3
	60.6	62.8	55.7
18:30-18:45	61.8	64.5	55.9
	62.2	65.5	55.9
	60.5	63.2	55.8
18:45-19:00	60.0	62.5	55.3
	63.1	67.2	55.8
	59.7	62.9	54.6
19:00-19:15	60.0	61.7	54.9
	61.0	63.9	54.8
	59.8	62.7	55.3
19:15-19:30	62.3	65.0	56.4
	60.1	62.3	55.8
	61.5	64.2	55.4
19:30-19:45	59.4	61.5	54.7
	60.9	64.3	54.8

Time Slot	Leq, 5min	L10	L90
	61.5	64.8	55.5
19:45-20:00	61.9	64.0	54.3
	59.9	62.6	54.2
	60.1	62.1	54.2
20:00-20:15	61.0	62.8	54.7
	61.4	63.8	54.7
	58.8	60.9	54.8
20:15-20:30	61.9	65.2	54.8
	64.8	67.3	57.0
	65.3	67.6	58.1
20:30-20:45	61.3	64.7	55.3
	59.9	62.3	53.7
	60.5	62.5	54.4
20:45-21:00	59.6	63.2	54.5
	59.1	61.4	54.4
	62.7	66.7	55.1
21:00-21:15	59.1	61.4	55.1
	59.5	62.4	56.0
	61.6	64.4	55.6
21:15-21:30	61.6	64.5	56.3
	61.8	64.1	55.2
	58.2	60.6	55.0
21:30-21:45	61.6	64.7	56.0
	61.8	65.4	55.5
	60.1	61.7	54.3
21:45-22:00	60.2	62.7	55.7
	62.4	65.2	55.1
	61.2	63.8	55.1
22:00-22:15	60.3	62.0	55.1
	60.3	63.1	54.9
	62.6	65.8	55.0
22:15-22:30	60.3	61.8	55.1
	58.1	60.8	54.2
	62.6	66.4	55.4
22:30-22:45	58.4	60.9	55.1
	61.4	64.9	54.7

Time Slot	Leq, 5min	L10	L90
	62.3	65.5	54.7
22:45-23:00	58.4	60.5	54.0
	60.2	62.3	54.0
	59.7	62.4	54.3
Average	61.0	64.0	55.0
Max	67.6	69.8	63.6
Min	57.5	60.0	50.5

4) Night-time (for all days) Noise Level, dB(A)

Time Slot	Leq, 5min	L10	L90
23:00-23:15	60.5	64.1	53.7
	59.1	62.2	52.7
	59.8	63.1	52.8
23:15-23:30	60.5	63.6	52.9
	60.4	64.0	52.6
	60.6	63.9	53.0
23:30-23:45	59.7	62.8	52.3
	60.6	63.8	52.4
	59.9	63.4	52.2
23:45-00:00	58.2	61.2	51.8
	59.3	62.4	51.7
	59.5	62.9	51.7
00:00-00:15	58.6	61.7	51.5
	57.7	60.3	50.7
	58.3	61.6	50.6
00:15-00:30	57.1	60.2	49.7
	56.6	59.9	50.0
	56.5	59.6	50.8
00:30-00:45	56.7	60.0	49.8
	56.6	59.9	49.9
	56.0	59.6	49.6
00:45:01:00	57.0	60.1	48.2
	56.5	59.9	48.3
	54.1	57.7	47.7
01:00-01:15	53.9	57.4	47.5

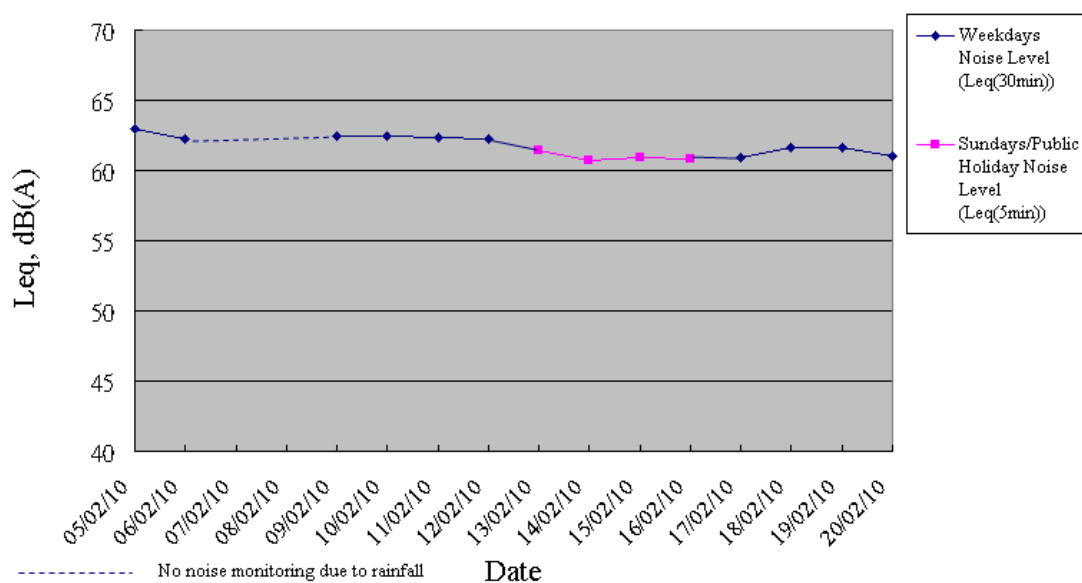
Time Slot	Leq, 5min	L10	L90
	54.5	58.1	48.0
	53.4	57.0	47.7
01:15-01:30	54.1	58.2	47.1
	53.3	56.4	47.0
	52.5	55.9	46.7
01:30-01:45	52.0	55.7	45.9
	52.9	56.3	46.2
	52.7	56.3	45.9
01:45-02:00	51.7	55.2	45.3
	52.9	56.2	46.3
	53.1	55.9	46.1
02:00-02:15	53.3	56.0	46.3
	53.6	56.5	45.4
	52.8	55.6	45.5
02:15-02:30	52.1	55.6	45.5
	51.6	55.3	44.9
	51.8	55.2	44.8
02:30-02:45	51.0	54.6	44.3
	50.2	53.8	44.0
	50.7	54.0	44.3
02:45-03:00	50.9	54.0	43.5
	52.0	55.3	42.5
	51.0	54.5	43.3
03:00-03:15	50.7	54.4	42.4
	50.0	54.0	43.0
	50.3	53.2	43.7
03:15-03:30	49.5	52.4	43.4
	50.9	55.0	43.7
	50.6	54.3	43.5
03:30-03:45	49.6	53.2	43.0
	50.5	54.0	43.8
	50.2	53.3	43.1
03:45-04:00	49.5	52.9	42.9
	51.9	55.3	43.4
	48.8	51.9	42.7
04:00-04:15	50.8	54.0	42.4

Time Slot	Leq, 5min	L10	L90
	50.3	52.9	42.0
	49.5	53.2	42.2
04:15-04:30	50.1	54.1	42.8
	49.6	52.9	42.9
	49.8	53.3	42.7
04:30-04:45	49.7	53.5	42.8
	51.1	54.7	43.3
	49.8	52.4	43.2
04:45-05:00	49.8	53.3	42.6
	51.0	53.6	43.7
	49.4	53.1	43.0
05:00-05:15	49.2	51.9	43.6
	49.8	53.0	42.9
	51.0	54.1	43.7
05:15-05:30	50.9	54.0	44.7
	50.8	53.7	45.1
	50.7	53.5	43.5
05:30-05:45	51.5	55.0	43.9
	57.2	59.8	45.6
	54.7	56.7	45.5
05:45-06:00	53.8	56.5	46.4
	60.5	64.8	48.6
	57.6	60.4	48.6
06:00-06:15	54.5	57.0	48.3
	58.3	61.9	49.7
	59.8	62.9	51.0
06:15-06:30	57.5	59.7	49.6
	57.9	60.9	49.5
	58.9	62.4	50.9
06:30-06:45	58.1	61.0	50.2
	58.2	60.6	50.5
	59.7	62.6	51.0
06:45-07:00	58.5	62.1	50.6
	59.4	62.2	51.6
	60.7	64.8	52.5
Average	55.8	59.1	48.3

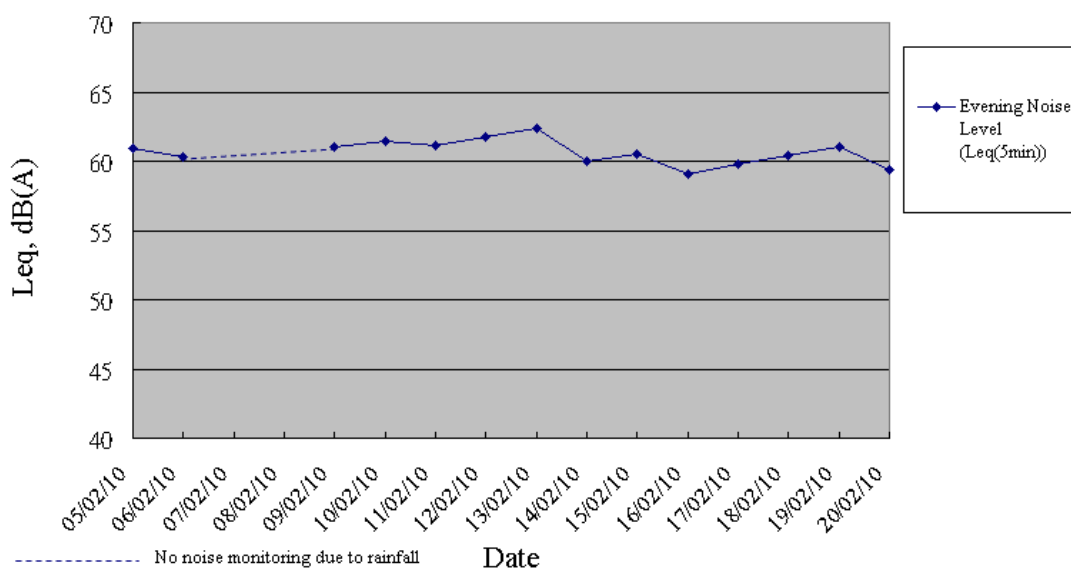
Time Slot	Leq, 5min	L10	L90
Max	60.7	64.8	53.7
Min	48.8	51.9	42.0

Log average was used

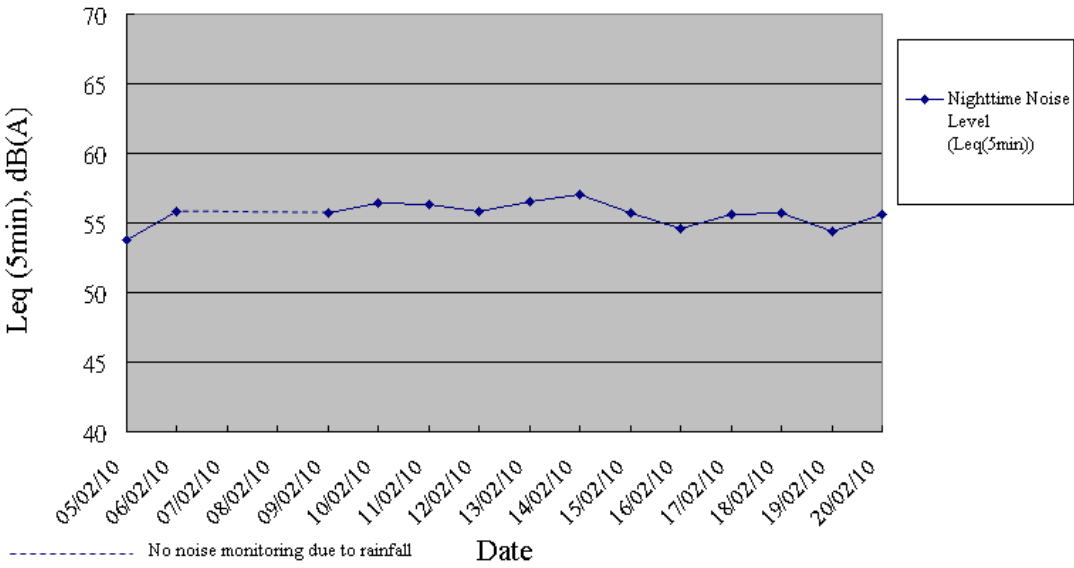
Average Leq at CN 17 during daytime (0700-1900)



Average Leq at CN 17 during evening (1900-2300) for all days



Average Leq (5min) at CN 17 during nighttime (2300-0700) for all days



Baseline Noise Monitoring Result

Location: CN 18 Sau Shan House, Cheung Shan Estate
Baseline monitoring period: 6/2/2010-21/2/2010

Parameter: Leq

Time Slot Averaged Baselines

1) Weekdays Daytime Noise Level, dB(A)

Time slot	Leq, 30 min	L10	L90
07:00-07:30	57.0	59.7	51.4
07:30-08:00	58.0	61.0	52.9
08:00-08:30	59.6	62.2	55.3
08:30-09:00	60.4	63.0	56.5
09:00-09:30	61.1	63.2	57.2
09:30-10:00	60.3	62.8	56.6
10:00-10:30	59.9	62.3	56.1
10:30-11:00	60.5	63.3	56.5
11:00-11:30	60.5	62.7	56.6
11:30-12:00	60.0	62.4	56.0
12:00-12:30	59.3	62.1	54.7
12:30-13:00	59.2	62.0	55.1
13:00-13:30	60.1	62.4	56.5
13:30-14:00	60.7	63.1	57.2
14:00-14:30	60.3	62.8	56.3
14:30-15:00	59.8	62.4	55.9
15:00-15:30	60.4	63.0	56.0
15:30-16:00	59.7	62.4	55.4
16:00-16:30	59.5	61.9	55.7
16:30-17:00	59.8	62.2	56.0
17:00-17:30	59.4	62.2	54.9
17:30-18:00	58.9	61.6	54.2
18:00-18:30	58.1	60.9	53.4
18:30-19:00	58.0	60.8	53.4
Average	59.7	62.3	55.6

Min	57.0	59.7	51.4
-----	------	------	------

Noise Control Period Averaged Baselines

2) Weekdays Evening Noise Level, dB(A)

Time Slot	Leq, 5min	L10	L90
19:00-19:15	58.7	61.6	53.4
	57.9	60.5	53.1
	58.4	61.2	53.0
19:15-19:30	58.1	60.8	53.1
	58.0	60.6	52.9
	58.0	60.4	53.4
19:30-19:45	57.2	59.6	53.9
	58.2	61.4	52.7
	57.0	59.2	52.5
19:45-20:00	57.2	60.0	52.8
	57.1	59.7	52.2
	58.2	60.6	52.4
20:00-20:15	57.8	60.5	52.1
	57.8	60.1	53.2
	57.5	59.9	52.5
20:15-20:30	57.3	60.0	51.9
	57.1	59.8	51.8
	56.5	59.1	51.7
20:30-20:45	56.4	59.0	51.6
	56.8	59.7	51.9
	57.4	60.4	51.8
20:45-21:00	55.2	57.6	51.2
	57.2	60.7	51.4
	58.1	61.2	51.8
21:00-21:15	56.1	58.6	51.3
	58.1	60.8	53.0
	56.3	59.0	51.0
21:15-21:30	57.1	60.0	51.4
	56.8	59.1	51.2
	55.5	57.9	51.3

Time Slot	Leq, 5min	L10	L90
21:30-21:45	57.8	61.4	51.4
	55.1	58.0	50.8
	56.7	60.2	50.9
21:45-22:00	56.3	58.9	51.4
	60.9	63.8	55.3
	56.9	59.5	51.0
22:00-22:15	56.9	59.7	51.7
	55.8	58.6	50.5
	57.1	60.4	50.9
22:15-22:30	57.8	60.6	52.0
	57.1	60.3	51.4
	56.6	59.0	50.8
22:30-22:45	55.8	58.6	50.6
	56.9	60.5	50.7
	54.1	56.6	50.4
22:45-23:00	56.6	59.6	50.7
	57.3	60.3	50.6
	55.1	57.4	50.0
Average	57.2	60.0	52.0
Max	60.9	63.8	55.3
Min	54.1	56.6	50.0

3) General Holidays (including Sundays) (0700-2300) Noise Level, dB(A)

Time Slot	Leq, 5min	L10	L90
0700-07:15	54.8	57.4	47.6
	54.6	57.1	48.1
	54.5	56.0	48.0
07:15-07:30	50.5	52.8	47.8
	56.4	60.4	48.2
	54.6	58.5	49.3
07:30-07:45	54.7	57.4	48.4
	56.2	58.5	48.4
	55.1	57.6	48.4
07:45-08:00	56.6	59.9	48.7

Time Slot	Leq, 5min	L10	L90
	55.6	58.6	48.4
	55.3	57.9	49.0
08:00-08:15	55.5	58.3	48.6
	54.1	55.7	49.2
	56.0	58.6	49.0
08:15-08:30	55.5	58.6	49.4
	55.2	58.4	49.3
	54.5	57.3	49.7
08:30-08:45	56.3	58.3	49.6
	57.1	60.2	50.9
	57.0	59.9	50.5
08:45-09:00	56.5	58.5	50.8
	57.9	61.9	51.1
	57.5	60.0	52.6
09:00-09:15	57.4	59.2	51.4
	55.1	57.3	50.8
	55.5	57.9	51.6
09:15-09:30	59.2	63.4	52.0
	57.6	61.3	50.4
	54.7	56.8	50.0
09:30-09:45	56.2	57.5	51.2
	57.1	60.1	50.6
	56.7	60.1	50.6
09:45-10:00	55.3	58.2	50.3
	56.4	58.3	50.3
	56.6	59.1	50.2
10:00-10:15	55.2	58.1	50.2
	56.3	58.6	50.6
	55.7	57.6	51.0
10:15-10:30	60.1	62.4	51.2
	57.7	61.5	51.6
	55.5	57.9	50.7
10:30-10:45	57.0	60.0	51.1
	58.5	60.8	50.9
	58.3	62.1	51.6
10:45-11:00	56.9	59.3	51.3

Time Slot	Leq, 5min	L10	L90
	56.6	59.3	51.3
	57.1	60.0	51.2
11:00-11:15	56.7	59.1	51.5
	55.9	58.1	51.4
	58.5	61.8	52.1
11:15-11:30	55.7	58.2	51.3
	57.9	61.0	51.3
	56.7	59.3	51.4
11:30-11:45	56.1	57.7	51.2
	56.6	59.0	52.2
	56.9	59.3	51.8
11:45-12:00	56.6	59.2	50.8
	56.6	59.3	51.1
	56.7	59.8	51.7
12:00-12:15	57.2	60.0	51.7
	56.7	59.1	51.8
	56.3	59.0	51.6
12:15-12:30	57.6	60.5	51.5
	57.3	60.2	52.0
	58.7	61.7	51.8
12:30-12:45	56.3	59.0	51.7
	58.1	61.7	51.8
	57.0	60.2	51.7
12:45-13:00	57.2	59.1	52.1
	57.9	60.1	52.3
	57.6	60.3	52.2
13:00-13:15	55.8	58.1	51.6
	57.4	59.2	52.3
	58.0	61.6	53.0
13:15-13:30	58.1	60.7	54.2
	57.2	59.5	54.1
	58.3	61.3	52.6
13:30-13:45	58.1	60.9	52.3
	55.6	57.1	52.3
	58.9	62.1	53.7
13:45-14:00	58.3	61.0	52.3

Time Slot	Leq, 5min	L10	L90
	57.3	60.6	52.6
	58.1	61.5	52.0
14:00-14:15	56.8	59.1	52.3
	56.8	58.9	52.0
	56.5	59.2	51.9
14:15-14:30	56.0	58.4	51.6
	57.8	60.5	52.2
	56.2	58.7	51.7
14:30-14:45	58.3	60.6	52.6
	56.6	59.4	51.4
	57.1	59.6	51.9
14:45-15:00	57.7	60.2	51.5
	56.2	58.6	51.6
	56.6	58.9	51.7
15:00-15:15	57.3	59.7	52.2
	56.9	60.0	51.7
	57.0	59.7	51.9
15:15-15:30	57.0	59.1	52.0
	56.8	59.8	51.7
	56.9	59.5	52.2
15:30-15:45	55.3	57.2	51.4
	55.8	57.8	51.3
	58.0	61.2	52.1
15:45-16:00	55.0	57.2	51.3
	57.1	59.6	51.8
	56.9	59.2	51.5
16:00-16:15	55.7	57.6	51.6
	56.7	58.5	51.9
	56.2	58.6	51.6
16:15-16:30	57.9	60.0	52.2
	56.4	58.6	51.5
	57.2	60.0	51.9
16:30-16:45	56.5	58.7	51.8
	55.6	57.8	51.5
	57.1	59.7	52.1
16:45-17:00	56.7	59.0	51.6

Time Slot	Leq, 5min	L10	L90
	56.5	58.3	51.1
	57.5	60.1	52.0
17:00-17:15	56.7	59.2	51.8
	55.7	57.8	51.4
	57.2	60.3	52.2
17:15-17:30	57.3	59.9	51.9
	57.6	60.5	51.8
	56.5	59.3	51.5
17:30-17:45	56.7	59.0	51.8
	56.7	60.0	51.4
	57.4	60.3	51.9
17:45-18:00	55.8	58.6	51.4
	57.5	60.0	51.9
	56.8	58.8	52.3
18:00-18:15	57.5	59.7	52.3
	55.5	56.9	51.5
	56.5	59.1	51.7
18:15-18:30	56.9	59.5	52.6
	57.0	59.1	52.3
	56.8	59.0	51.9
18:30-18:45	56.3	58.1	51.6
	56.7	58.7	52.0
	55.8	57.8	51.7
18:45-19:00	58.3	60.8	52.3
	56.2	58.9	51.3
	55.2	57.1	51.2
19:00-19:15	56.7	58.6	52.3
	55.1	57.4	50.7
	56.7	59.3	51.6
19:15-19:30	56.4	58.3	51.6
	55.4	57.5	51.4
	56.7	59.0	51.3
19:30-19:45	55.2	57.1	51.0
	58.2	60.3	51.5
	56.4	58.3	52.6
19:45-20:00	56.4	58.5	51.4

Time Slot	Leq, 5min	L10	L90
	56.2	58.7	51.3
	57.0	59.2	51.3
20:00-20:15	57.5	60.0	52.0
	56.1	58.7	51.4
	56.8	59.3	51.6
20:15-20:30	57.1	60.3	51.5
	55.2	57.4	51.4
	57.5	60.5	52.7
20:30-20:45	56.1	59.2	50.4
	55.9	57.7	51.4
	56.1	58.6	51.1
20:45-21:00	55.6	58.0	51.2
	56.0	58.6	50.8
	57.8	61.2	50.8
21:00-21:15	53.5	55.5	50.4
	56.5	58.9	51.0
	56.9	60.1	51.1
21:15-21:30	57.8	60.7	51.7
	55.3	57.7	51.2
	54.7	57.2	50.7
21:30-21:45	58.4	61.9	51.8
	56.6	58.9	51.4
	54.2	56.1	50.7
21:45-22:00	56.0	57.9	51.5
	57.0	59.6	51.0
	56.3	58.3	50.9
22:00-22:15	56.2	58.2	51.0
	55.4	57.4	50.6
	58.2	61.7	51.0
22:15-22:30	54.5	56.1	50.4
	54.8	57.0	50.5
	57.8	61.8	51.0
22:30-22:45	54.1	56.3	50.3
	57.6	61.4	51.1
	56.9	61.1	50.6
22:45-23:00	55.1	57.0	50.3

Time Slot	Leq, 5min	L10	L90
	54.5	56.3	49.9
	56.1	58.9	49.9
Average	56.7	59.3	51.4
Max	60.1	63.4	54.2
Min	50.5	52.8	47.6

4) Night-time (for all days) Noise Level, dB(A)

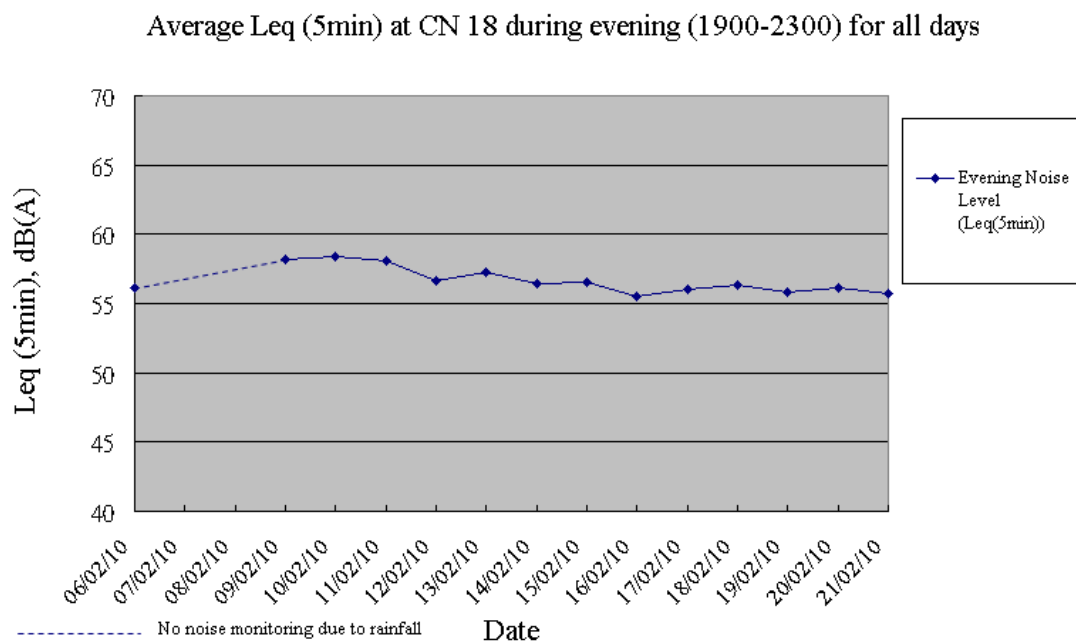
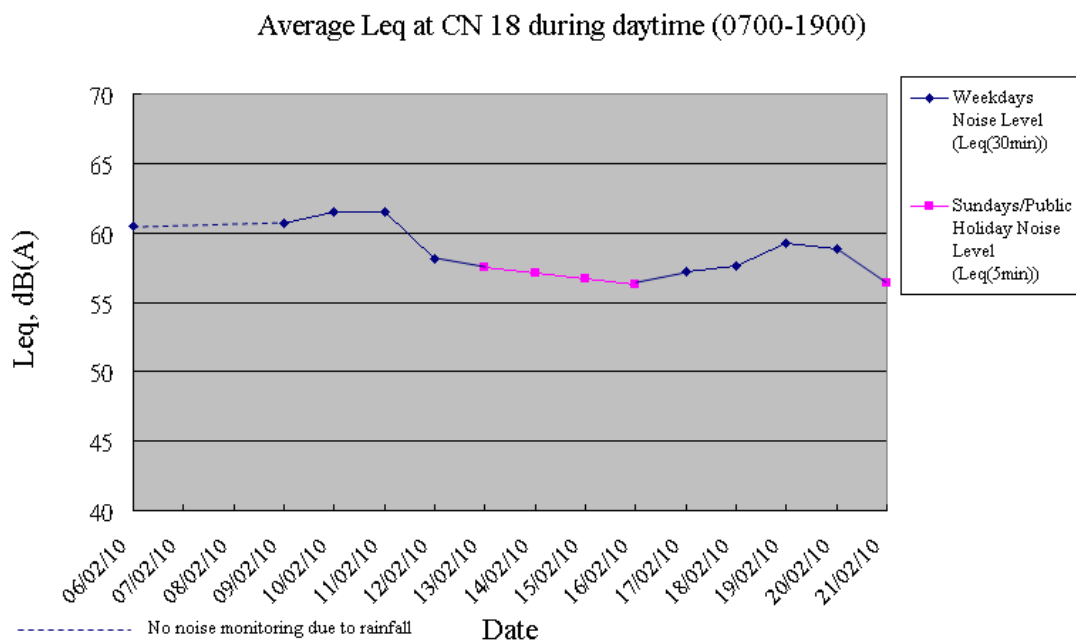
Time Slot	Leq, 5min	L10	L90
23:00-23:15	56.9	59.6	51.0
	55.1	57.3	50.2
	55.8	58.0	49.7
23:15-23:30	57.0	60.1	49.6
	55.5	58.0	49.6
	55.8	58.4	49.7
23:30-23:45	55.9	58.9	49.2
	55.8	58.0	49.1
	55.1	57.5	48.8
23:45-00:00	54.2	56.5	48.9
	55.5	58.1	48.5
	58.2	61.3	49.1
00:00-00:15	53.0	56.0	48.5
	52.6	55.1	48.1
	55.8	57.7	48.3
00:15-00:30	53.9	56.2	48.2
	52.9	55.1	47.5
	52.0	55.0	47.7
00:30-00:45	52.9	55.6	47.7
	52.9	55.7	47.3
	52.4	55.1	47.3
00:45:01:00	54.0	56.7	46.7
	53.4	56.0	47.4
	51.2	54.0	47.3
01:00-01:15	51.1	54.0	46.5

Time Slot	Leq, 5min	L10	L90
	51.3	54.5	46.3
	49.7	52.2	46.1
01:15-01:30	50.4	53.4	45.9
	50.3	52.6	45.9
	49.0	51.3	45.7
01:30-01:45	49.7	51.4	45.6
	49.7	52.2	46.3
	48.6	50.8	45.0
01:45-02:00	49.5	51.2	45.4
	48.9	51.4	45.7
	48.2	50.3	45.4
02:00-02:15	49.9	53.7	44.9
	49.3	51.4	44.8
	49.2	52.0	44.8
02:15-02:30	48.3	50.9	44.7
	48.0	50.6	44.7
	48.6	51.4	44.6
02:30-02:45	48.2	51.0	44.3
	47.1	49.2	44.4
	47.0	49.1	44.4
02:45-03:00	47.6	50.0	44.8
	49.2	52.2	44.2
	47.2	49.9	44.2
03:00-03:15	49.7	52.3	44.2
	47.0	49.7	43.8
	47.7	50.5	44.1
03:15-03:30	47.4	49.9	44.2
	47.6	50.3	44.2
	47.7	50.1	44.1
03:30-03:45	47.6	49.8	44.1
	47.5	49.6	44.1
	47.8	50.1	44.1
03:45-04:00	47.9	50.2	44.3
	48.7	51.1	44.5
	47.2	49.3	44.1
04:00-04:15	48.3	50.6	44.5

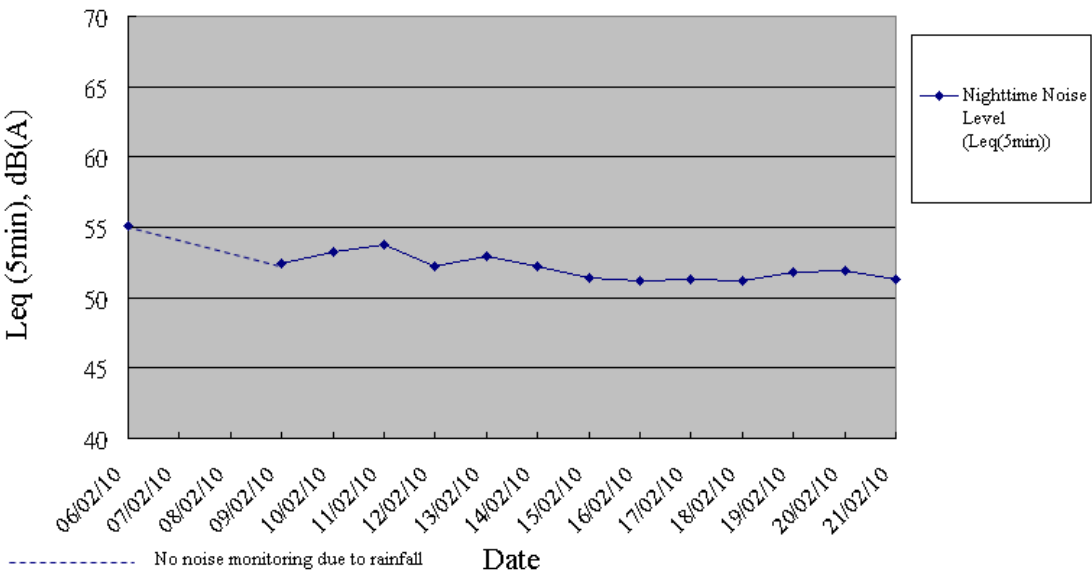
Time Slot	Leq, 5min	L10	L90
	47.9	50.2	44.1
	47.5	49.9	44.6
04:15-04:30	48.0	50.6	44.7
	47.4	49.6	44.6
	47.0	49.2	44.1
04:30-04:45	48.1	49.9	44.2
	48.0	50.4	44.3
	48.3	51.6	44.4
04:45-05:00	47.3	49.5	44.4
	47.6	49.4	44.5
	47.2	49.1	44.4
05:00-05:15	47.1	48.8	44.6
	47.2	49.1	44.5
	49.2	52.0	44.8
05:15-05:30	47.8	50.1	45.1
	48.3	50.2	45.1
	48.6	51.4	44.9
05:30-05:45	49.5	51.9	45.7
	53.3	56.0	46.3
	51.9	53.3	46.4
05:45-06:00	50.5	52.5	46.3
	56.1	59.7	47.3
	52.8	55.3	47.6
06:00-06:15	50.7	52.5	47.3
	54.7	57.2	47.8
	55.5	58.5	48.2
06:15-06:30	53.9	56.1	47.9
	53.0	54.8	48.1
	53.9	56.6	48.0
06:30-06:45	55.1	57.0	48.4
	52.4	54.8	48.0
	54.9	57.9	48.8
06:45-07:00	55.5	58.7	49.1
	55.9	57.9	50.0
	56.8	59.9	49.8
Average	52.2	54.8	46.7

Time Slot	Leq, 5min	L10	L90
Max	58.2	61.3	51.0
Min	47.0	48.8	43.8

Log average was used



Average Leq (5min) at CN 18 during nighttime (2300-0700) for all days



Appendix C

Calibration Certificates for Monitoring Equipments



CERTIFICATE OF CALIBRATION

Certificate No.: 09CA0523 02-02A

Page: 1 of 2

Item tested

Description: Acoustical Calibrator (Class 1)
Manufacturer: Rion Co., Ltd.
Type/Model No.: NC-73
Serial/Equipment No.: 10186489
Adaptors used: -

Item submitted by

Customer: Allied Environmental Consultants Limited
Address of Customer: 1001, Shanghai Industrial Investment Building, 48 Hennessy Road, Wanchai
Request No.: -
Date of request: 22-May-2009

Date of test: 23-May-2009

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2412857	29-Jun-2009	SCL
Preamplifier	B&K 2673	2239857	02-Dec-2009	CEPREI
Measuring amplifier	B&K 2610	2346941	03-Dec-2009	CEPREI
Signal generator	DS 360	61227	18-Jul-2009	CEPREI
Digital multi-meter	34401A	US36087050	03-Dec-2009	CIGISMEC
Audio analyzer	8903B	GB41300350	27-Nov-2009	CEPREI
Universal counter	53132A	MY40003662	11-Jul-2009	CEPREI

Ambient conditions

Temperature: 23 ± 1 °C
Relative humidity: 60 ± 10 %
Air pressure: 1000 ± 10 hPa

Test specifications

- 1, The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156.
- 2, The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.
- 3, The results are rounded to the nearest 0.01 dB and 0.1 Hz and have not been corrected for variations from a reference pressure of 1013.25 hectoPascals as the maker's information indicates that the instrument is insensitive to pressure changes.

Test results

This is to certify that the sound calibrator conforms to the requirements of annex B of IEC 60942: 1997 for the conditions under which the test was performed. This does not imply that the sound calibrator meets IEC 60942 under any other conditions.

Details of the performed measurements are presented on page 2 of this certificate.

Approved Signatory:

Huang Jian Min/Feng Jun Qi

Date: 05-Oct-2009

Company Chop:



Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.



CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 09CA0523 02-02A

Page: 2 of 2

1, Measured Sound Pressure Level

The output Sound Pressure Level in the calibrator head was measured at the setting and frequency shown using a calibrated laboratory standard microphone and insert voltage technique. The results are given in below with the estimated uncertainties.

(Output level in dB re 20 μ Pa)

Frequency Shown Hz	Output Sound Pressure Level Setting dB	Measured Output Sound Pressure Level dB	Estimated Uncertainty dB
1000	94.00	93.83	0.1

2, Sound Pressure Level Stability - Short Term Fluctuations

The Short Term Fluctuations was determined by measuring the maximum and minimum of the fast weighted DC output of the B&K 2610 measuring amplifier over a 20 second time interval as required in the standard. The Short Term Fluctuation was found to be:

At 1000 Hz STF = 0.005 dB

Estimated uncertainty 0.005 dB

3, Actual Output Frequency

The determination of actual output frequency was made using a B&K 4180 microphone together with a B&K 2673 preamplifier connected to a B&K 2610 measuring amplifier. The AC output of the B&K 2610 was taken to an universal counter which was used to determine the frequency averaged over 20 second of operation as required by the standard. The actual output frequency at 1 KHz was:

At 1000 Hz Actual Frequency = 986.4 Hz

Estimated uncertainty 0.1 Hz Coverage factor k = 2.2

4, Total Noise and Distortion

For the Total Noise and Distortion measurement, the unfiltered AC output of the B&K 2610 measuring amplifier was connected to an Agilent Type 8903 B distortion analyser. The TND result at 1 KHz was:

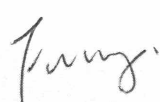
At 1000 Hz TND = 0.5%

Estimated uncertainty 0.7%

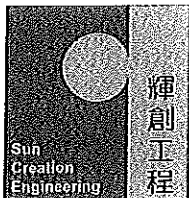
The uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95 %. A coverage factor of 2 is assumed unless explicitly stated.

- End -

Calibrated by: C.Y. Fung
Date: 23-May-2009

Checked by: 
Date: 05-Oct-2009

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.



輝創工程有限公司

Sun Creation Engineering Limited Calibration and Testing Laboratory

Certificate No. : C093379

Certificate of Calibration

This is to certify that the equipment

Description : Sound Level Meter

Manufacturer : Bruel & Kjaer

Model No. : 2250-L

Serial No. : 2638941

*has been calibrated for the specific items and ranges.
The results are shown in the Calibration Report No. C093379.*

The equipment is supplied by

Co. Name : EDMS Consulting Ltd.

*Address : Room 1009, 10/F., World Wide House,
19 Des Voeux Road Central, Hong Kong*

Date of Issue : 30 June 2009

*Certified by : Chen H C Chan
H C Chan*

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration and Testing Laboratory of Sun Creation Engineering Limited

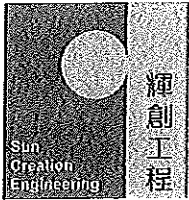
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

Tel: 2927 2606

Fax: 2744 8986

E-mail: callab@suncreation.com

Website: www.suncreation.com



輝創工程有限公司

Sun Creation Engineering Limited Calibration and Testing Laboratory

Report No. : C093379

Calibration Report

ITEM TESTED

DESCRIPTION : Sound Level Meter
MANUFACTURER : Bruel & Kjaer
MODEL NO. : 2250-L
SERIAL NO. : 2638941

TEST CONDITIONS

AMBIENT TEMPERATURE : $(23 \pm 2)^{\circ}\text{C}$
LINE VOLTAGE : ---

RELATIVE HUMIDITY : $(55 \pm 20)\%$

TEST SPECIFICATIONS

Calibration check

DATE OF TEST : 29 June 2009

JOB NO. : IC09-1612

TEST RESULTS

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory

Tested by :

K C Lee

Date : 30 June 2009

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration and Testing Laboratory of Sun Creation Engineering Limited

c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

Tel: 2927 2606

Fax: 2744 8986

E-mail: callab@suncreation.com

Website: www.suncreation.com

Page 1 of 3

OB. NR.

LOC.

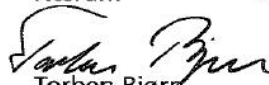
MANUFACTURER'S CERTIFICATE OF CONFORMANCE

We certify that Brüel & Kjær -2250-L-- Serial No 2681366
has been tested and passed all production tests, confirming compliance with the
manufacturer's published specification at the date of the test.

The final test has been performed using calibrated equipment, traceable to National or
International Standards or by ratio measurements.

Brüel & Kjær is certified under ISO 9001:2000 assuring that all calibration data for test
equipment are retained on file and are available for inspection upon request.

Nærum 05-May-09


Torben Bjørn
Vice President
Operations

Please note that this document is not a calibration certificate, for information on our calibration services please
contact your nearest Brüel & Kjær Service Center.

BA 0238-15

WORLD HEADQUARTERS: DK-2850 Nærum · Denmark
Telephone: +45 45 80 05 00 · Fax: +45 45 80 14 05 · <http://www.bksv.com> · e-mail: info@bksv.dk

Brüel & Kjær 

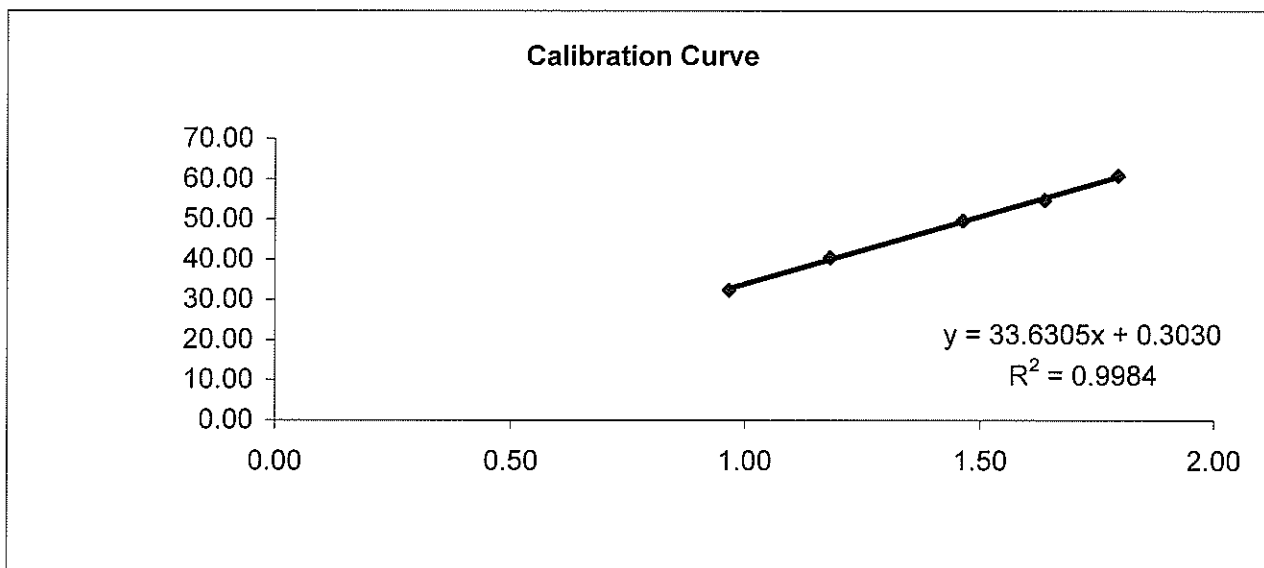
Ove Arup Partners (Hong Kong) Limited

High Volume Air Sampler Calibration Worksheet

Calibration date	5-Jan-10	Barometric pressure	763 mm Hg
Next Calibration date	4-Jul-10	Temperature (°C)	18 °C
Sampler location	Sau Shan House	Temperature (K)	291 K
	Cheung Shan Estate	P _{std}	760 mm Hg
Sampler model	TE-5170	T _{std}	298 K
Sampler serial number	529		

Calibrator model	GMW-2535
Calibrator serial number	1378
Slope of the standard curve, m _s	2.00826
Intercept of the standard curve, b _s	-0.01649

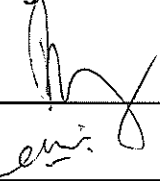
Resistance Plate No.	Manometer Reading (inch H ₂ O)	Flow Recorder Reading (CFM)	Calculated Q _{std} (m ³ /min)	Continuous Flow Recorder Reading IC (CFM)
5	3.60	32.00	0.97	32.45
7	5.40	40.00	1.18	40.56
10	8.30	49.00	1.46	49.68
13	10.40	54.00	1.64	54.75
18	12.50	60.00	1.79	60.84



Linear Regression

Sampler slope (m) : **33.6305**
 Sampler intercept (b) : **0.3030**
 Correlation coefficient (R²) : **0.9984**

Correlation coefficient is greater than 0.9900 and the calibration result is accepted.

Performed by: 

Date: 5/1/2010

Checked by: 

Date: 5/1/2010

Approved by: 

Date: 6/1/2010

ThermoFisher
SCIENTIFIC
27 FORGE PARKWAY
FRANKLIN MA 02038
TOLL FREE: 866-282-0430
TEL: 508-553-6949
FAX: 508-541-8366
www.thermofisher.com

PDR1000 CALIBRATION CERTIFICATE

This calibration is traceable to the National Institute of Standards and Testing

<u>SERIAL NUMBER:</u>	<u>4243</u>	
<u>CALIBRATION RATIO:</u>	<u>1</u>	
<u>AVG. PDR CONCENTRATION:</u>	<u>1.29</u>	<u>mg/m3</u>
<u>MASTER AVG CONCENTRATION:</u>	<u>1.03</u>	<u>mg/m3</u>
<u>PDR BACKGROUND CONCENTRATION:</u>	<u>0.239</u>	<u>mg/m3</u>

<u>TEMPERATURE:</u>	<u>72</u>	<u>F</u>
<u>RH:</u>	<u>39</u>	<u>%</u>

CALIBRATION MASTER:	<u>D325</u>
LAST CALIBRATED:	<u>29/7/2008</u>

TECHNICIAN: R.A.

DATE: 26/8/2008

Appendix D

Figures

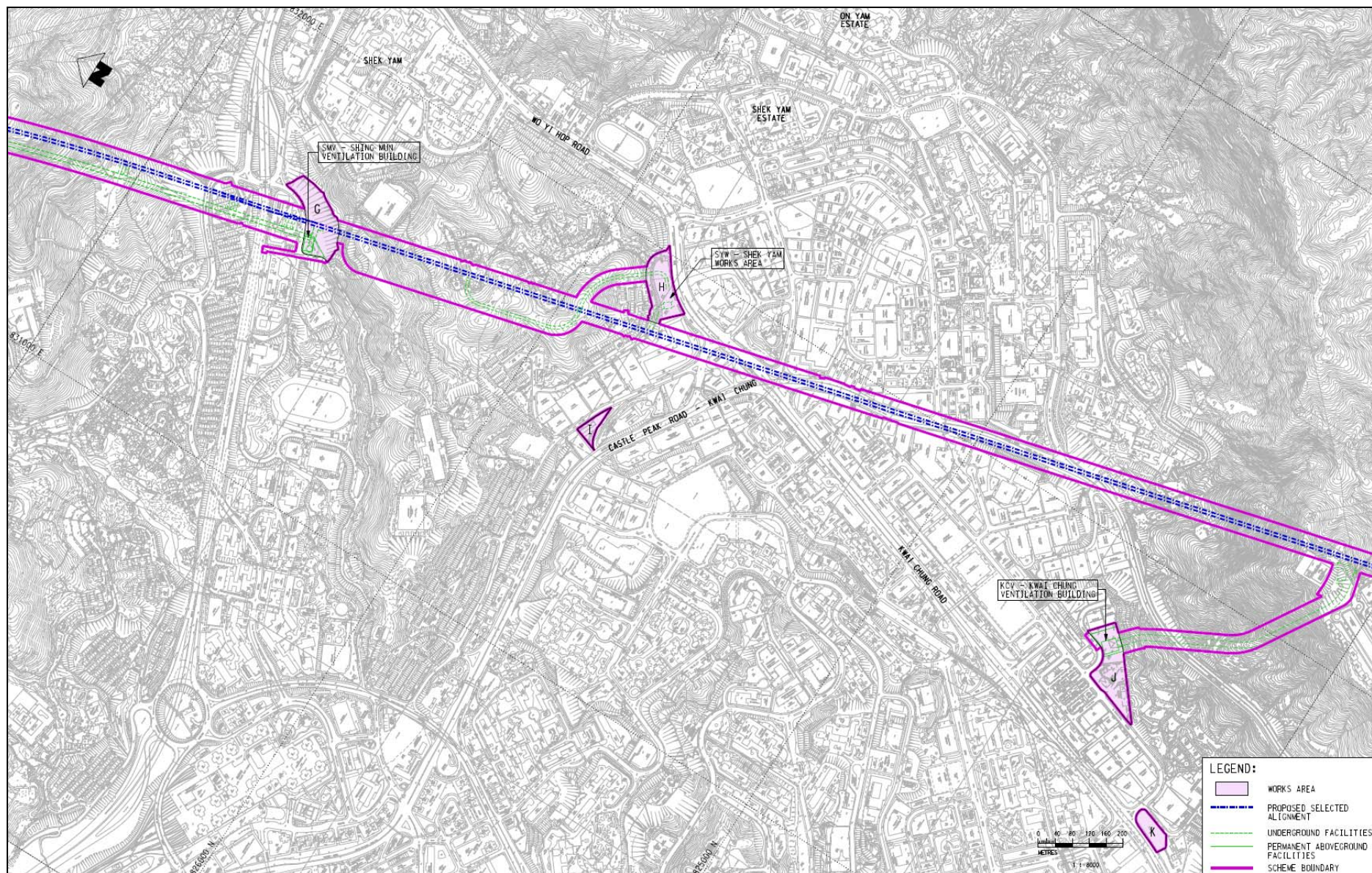


Figure 1 – Works Area

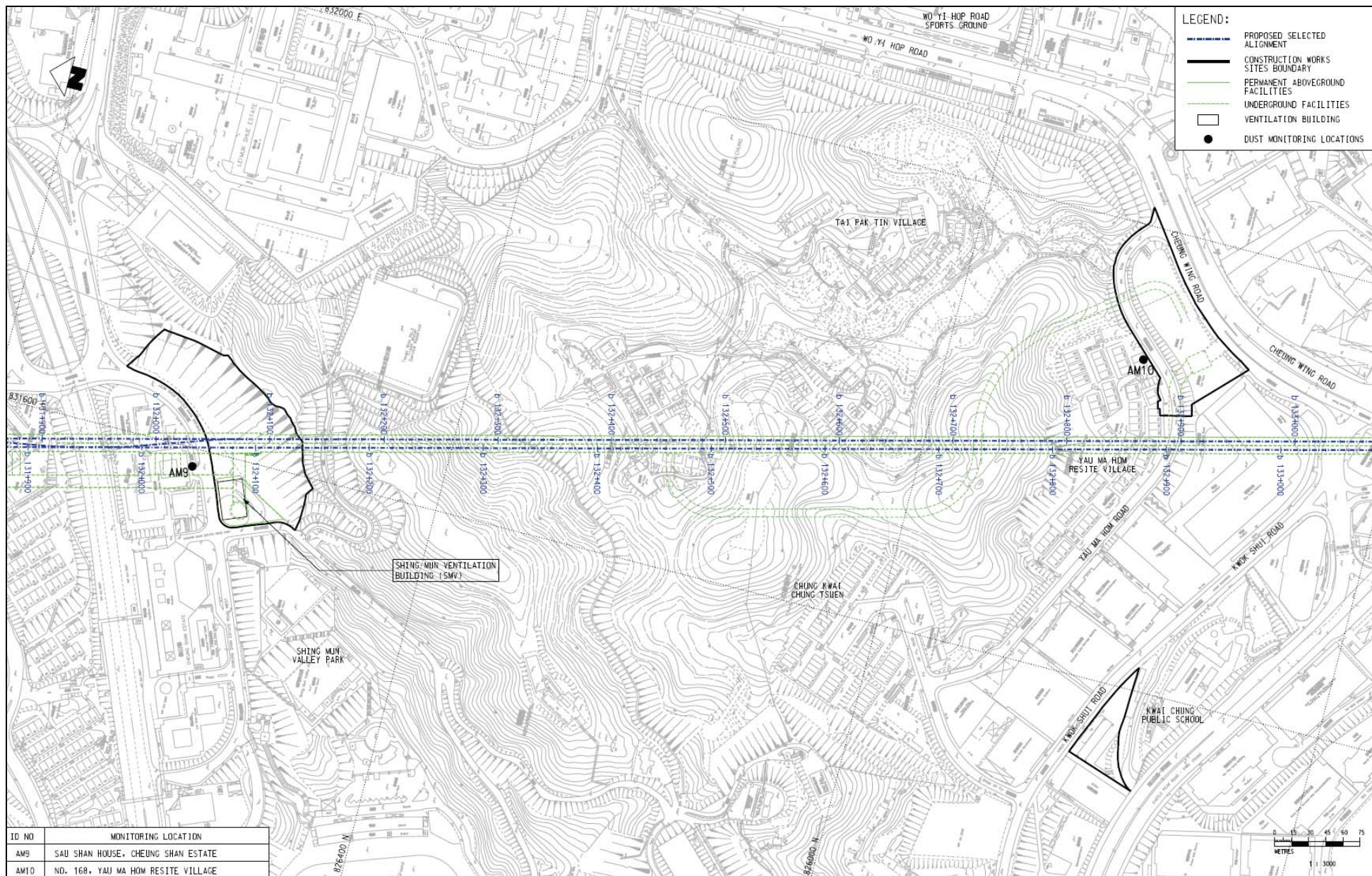


Figure 2 - Dust Monitoring Location

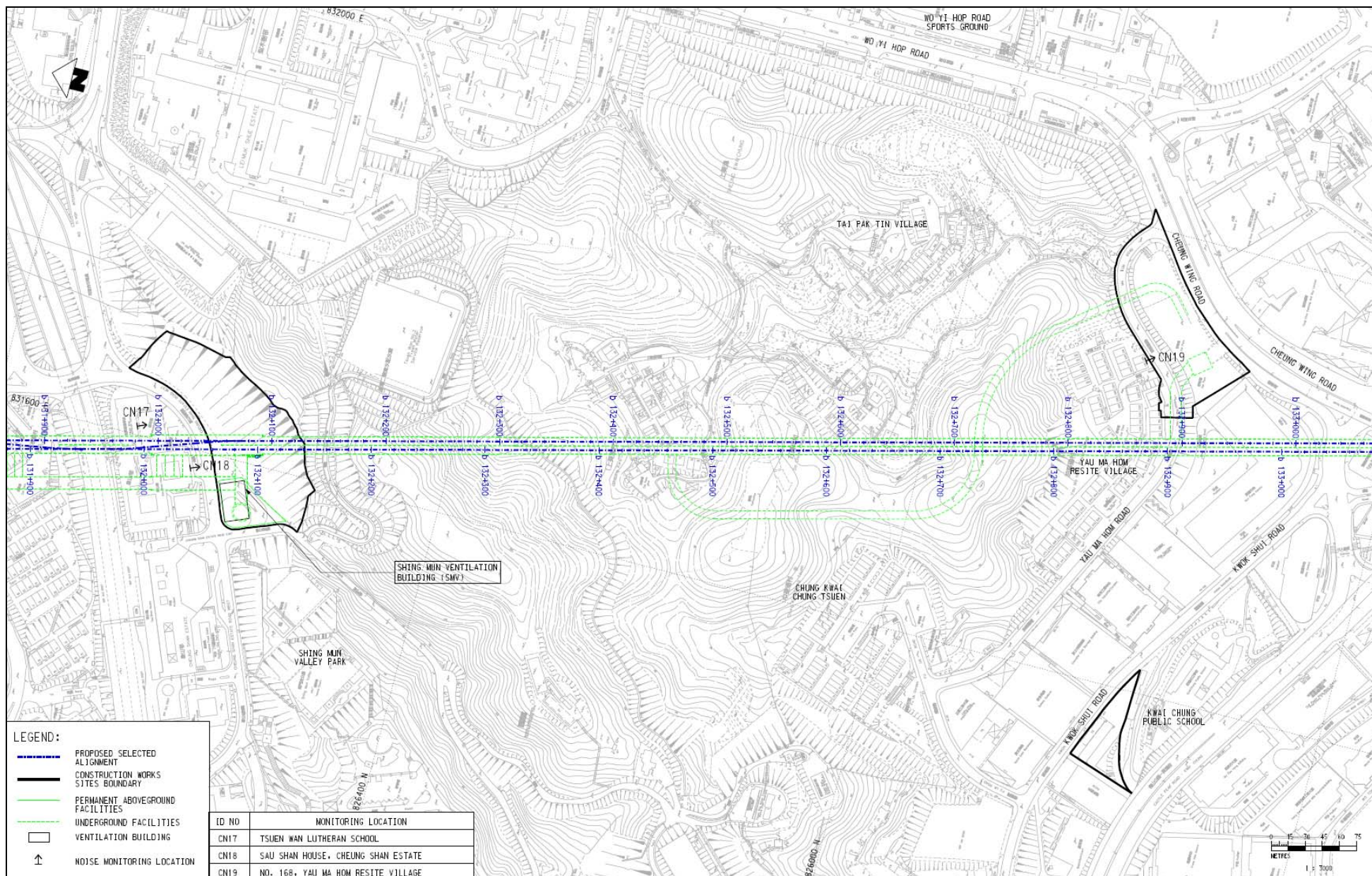


Figure 3 – Noise Monitoring Location