

MTR Corporation Limited

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

Baseline Monitoring Report (Part 3) Rev 2

Certified by: Glenn Frommer

Position: Environmental Team Leader

Date: 07 APR 2010

Our ref KMY/AFK/JOC/FY/bl/T264090/22.01/L-0046

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8 April 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 3) Revision 2**

We refer to the revised Baseline Monitoring Report received on 7 April 2010 via email. Pursuant to Condition 2.42 of the Environmental Permit, I hereby verify the Baseline Monitoring Report (Part 3) Revision 2.

Yours faithfully,
for MOTT MACDONALD HONG KONG LIMITED



Dr. Anne Kerr
Independent Environmental Checker (IEC)

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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 3 air quality monitoring locations in the vicinity of Works Area V1 (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 TSP level was conducted between 3/12/2009 and 16/12/2009 at AM 15, AM 16, while the monitoring of 24-hour TSP level was conducted between 5/12/2009 and 20/12/2009. Given the access for conducting impact monitoring at Tsim Sha Tsui Fire Station (AM 17) was declined, supplementary baseline 1-hour and 24-hour TSP monitoring was conducted at the alternative monitoring location, The Victoria Towers, from 22/12/2009 to 4/1/2010. The average 1-hour TSP level at AM 17 (The Victoria Towers), $106.8 \mu\text{g}/\text{m}^3$, is the highest among the three monitoring stations. The average 24-hour TSP level at AM 17 was $75.8 \mu\text{g}/\text{m}^3$, which is the highest among the three monitoring stations.

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 15 was $298.4 \mu\text{g}/\text{m}^3$ and $168.8 \mu\text{g}/\text{m}^3$ respectively. The Action Level of 1-hour and 24-hour average TSP levels at AM 16 was $295.6 \mu\text{g}/\text{m}^3$ and $155.9 \mu\text{g}/\text{m}^3$ respectively. The Action Level of 1-hour and 24-hour average TSP levels at AM 17 was $319.4 \mu\text{g}/\text{m}^3$ and $179.3 \mu\text{g}/\text{m}^3$ respectively.

Baseline noise monitoring was conducted between 3/12/2009 and 21/12/2009 at Tower 3, The Waterfront (CN 32). Baseline noise monitoring for Man King Building (CN 30), Tower 6, Sorrento (CN 31) and Moon Tower, The Arch (CN 33) would be covered in separate submission. No noise monitoring was conducted on 7/12, 8/12, 15/12 (1900-2300 and 2300-0700), 16/12 and 17/12 (0700-1900) due to rainfall. Given the access for conducting impact monitoring at Tsim Sha Tsui Fire Station was declined, supplementary baseline noise monitoring was conducted at the alternative monitoring location, Victoria Towers, from 13/2/2010 to 26/2/2010. 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 The Victoria Towers (CN 34), 74 dB(A), is highest between the two noise monitoring locations and close to the Limit Level of 75 dB(A) for residential premises. The daytime baseline noise levels at all of the two locations were below the Limit Level for 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 noise. This Baseline Monitoring Report (Part 3) contains baseline monitoring findings in the vicinity of Works Area V1 (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 15, AM 16 and AM 17 located in the vicinity of the works areas V1. 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, the original monitoring location for AM 15 and AM 16 are located at Tower 6 of Sorrento and Moon Tower of The Arch respectively. However, the podium floor of Tower 6 of Sorrento was found not a suitable monitoring location as the monitoring result would be affected by the existing barriers and trees. Given the site constraint, the monitoring location was relocated to the podium floor between Sorrento and The Waterfront. As for AM 16, the request of access and installation of dust monitoring equipment within the premises was declined by the property management. The monitoring location was relocated to podium floor of The Waterfront located in proximity to the works area. For AM 17, the access for conducting impact monitoring at Tsim Sha Tsui Fire Station was declined, supplementary baseline air quality monitoring was conducted at the alternative monitoring location, Victoria Towers. Plan showing the original and alternative locations and photos of the alternative monitoring locations are shown in Figure 4 and Figure 6 respectively.

Baseline air quality monitoring was carried out at the period shown in Table 2.2 below to determine the ambient levels of both 1-hour and 24-hour TSP levels respectively at AM 15, AM 16 and AM 17 in the vicinity of Works Area V1. The locations of the works area and the respective ASRs are shown in Figures 1 and 2 respectively. The information of the ASRs where baseline air monitoring had been conducted is summarized in the table below:

Monitoring Station ID	Original Monitoring Location in EM&A Manual	Alternative Monitoring Location	Monitoring period
AM 15	Sorrento Tower 6	Podium Floor between Sorrento and The Waterfront	3/12/2009 – 16/12/2009 (1-hr); 5/12/2009 – 18/12/2009 (24-hr);
AM 16	The Arch	Podium Floor of	3/12/2009 –

Monitoring Station ID	Original Monitoring Location in EM&A Manual	Alternative Monitoring Location	Monitoring period
	Moon Tower	Tower 3, The Waterfront	16/12/2009 (1-hr); 5/12/2009 – 20/12/2009* (24-hr);
AM 17	Tsim Sha Tsui Fire Station	Roof of Lift Building of The Victoria Towers	22/12/2009 – 4/1/2010 (1-hr and 24-hr);

* Monitoring on 7/12/2009 and 8/12/2009 at AM 16 was interrupted due to equipment breakdown.

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 wind erosion at the open area in between the TST Fire station and the Kowloon MTR Station.

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)
Podium Floor between Sorrento and The Waterfront (AM 15)	74.5 (8.0-246.2)
Podium Floor of Tower 3, The Waterfront (AM 16)	70.2 (9.0-146.2)
Roof of Lift Building, The Victoria Towers (AM 17)	106.8 (7.5-229.5)

Table 2.3: Summary of baseline 1-hour TSP level

Monitoring Location	Average TSP Concentration, $\mu\text{g}/\text{m}^3$ (Range)
Podium Floor between Sorrento and The Waterfront (AM 15)	59.7 (25.6-115.1)
Podium Floor of Tower 3, The Waterfront (AM 16)	39.9 (12.1-99.0)

Roof of Lift Building, The Victoria Towers (AM 17)	75.8 (19.4-142.2)
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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
Podium Floor between Sorrento and The Waterfront (AM 15)	TSP (24-hour average)	168.8 $\mu\text{g m}^{-3}$	260 $\mu\text{g m}^{-3}$
	TSP (1-hour average)	298.4 $\mu\text{g m}^{-3}$	500 $\mu\text{g m}^{-3}$
Podium Floor of Tower 3, The Waterfront (AM 16)	TSP (24-hour average)	155.9 $\mu\text{g m}^{-3}$	260 $\mu\text{g m}^{-3}$
	TSP (1-hour average)	295.6 $\mu\text{g m}^{-3}$	500 $\mu\text{g m}^{-3}$
Roof of Lift Building, The Victoria Towers (AM 17)	TSP (24-hour average)	179.3 $\mu\text{g m}^{-3}$	260 $\mu\text{g m}^{-3}$
	TSP (1-hour average)	319.4 $\mu\text{g m}^{-3}$	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, Rion NL-31 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

Given the access for conducting impact monitoring at Tsim Sha Tsui Fire Station (CN 34) was declined, supplementary baseline noise monitoring was conducted at the alternative monitoring location, The Victoria Towers. Baseline noise monitoring was carried out during 3/12/2009 to 21/12/2009 and 13/2/2010 to 26/2/2010 at CN 32 and

CN 34 respectively located in the vicinity of Works Area V1¹. The location of the alternative NSR and photo of alternative monitoring location are shown in Figure 5 and Figure 6 respectively. Monitoring was carried out at the following stations in accordance with the EM&A Manual:

Monitoring Station ID	Noise Monitoring Location	Monitoring period
CN 32	Tower 3, The Waterfront	3/12/2009-21/12/2009 ¹
CN 34	Roof of Lift Building, The Victoria Towers	13/2/2010-26/2/2010

¹ No noise monitoring was conducted on 7/12, 8/12, 15/12 (1900-2300 and 2300-0700), 16/12 and 17/12 (0700-1900) due to rainfall.

Table 3.1: Information of Noise Monitoring Stations

3.4 Calibration Requirements

Rion NL 31 and B&K 2238 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 Rion and B&K sound level meters and Rion NC 73 calibrator are verified by the certified laboratory or manufacturer 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

¹ Monitoring at Man King Building (CN30), Tower 6, Sorrento (CN31) and Moon Tower, The Arch (CN33) would be covered in separate submission.

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 3/12/2009 and 21/12/2009 for CN 32 and 13/2/2010 and 26/2/2010 for CN 34. The weather condition was generally fine with occasional rainfall events during the monitoring period. Free field measurements were taken at CN 32 while measurements for CN 34 were taken from building façade. A facade correction of +3dB(A) has been added to the results of CN 32 due to the free-field measurements at the noise monitoring station. The major noise sources at respective monitoring locations are summarized at the table below:

Monitoring location ID	Monitoring location	Major noise source
CN 32*	Tower 3, The Waterfront	Traffic noise
CN 34	Roof of Lift Building, The Victoria Towers	Traffic noise

* Free-field measurements were taken at this location.

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)	$L_{10(30min)}$ – dB(A) (Range)	$L_{90(30min)}$ – dB(A)
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		(Range)		(Range)
0700 – 1900 (Daytime, Normal weekday)	CN 32	71 (69-73)	73 (70-76)	70 (67-72)
	CN 34	74 (72-75)	76 (75-77)	70 (65-71)
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 32	70 (67-72)	71 (69-73)	68 (63-70)
	CN 34	72 (70-74)	75 (73-77)	67 (63-69)
1900 – 2300 (Evening, Normal weekday)	CN 32	70 (68-72)	71 (69-73)	68 (66-71)
	CN 34	73 (72-75)	75 (74-77)	69 (67-71)
2300 – 0700 (Night-time, all days)	CN 32	66 (61-71)	68 (61-72)	64 (57-69)
	CN 34	68 (65-73)	71 (69-75)	61 (57-67)

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 CN32 and CN34 range from 69-73 dB(A) and 72-75 dB(A) respectively. It was noted from the monitoring results that ambient noise level for daytime at The Victoria Towers (CN 34), 74 dB(A), is highest between the two monitoring locations and close to the Limit Level of 75 dB(A) for residential premises. The daytime baseline noise levels at all of the two locations were below the Limit Level for of 75 dB(A) for residential premises.

4. CONCLUSION

4.1 Air

1-hour TSP

Baseline 1-hour TSP monitoring was conducted at AM 15 and AM 16 between the period 3/12/2009 and 16/12/2009. Supplementary 1-hour baseline monitoring was conducted at AM 17 (The Victoria Towers) between 22/12/2009 and 4/1/2010. The weather condition was mostly fine with occasional rainy days. From site observation, it was noted that the major source of TSP at all three monitoring stations was originated mainly from wind erosion at the open area in between the TST Fire station and the Kowloon MTR Station.

Baseline 1-hour TSP monitoring at AM 15 was found in the range of 8.0 to 246.2 $\mu\text{g}/\text{m}^3$. The average 1-hour TSP level at AM 15 was recorded to be 74.5 $\mu\text{g}/\text{m}^3$. Baseline 1-hour TSP monitoring at AM 16 was found in the range of 9.0 to 146.2 $\mu\text{g}/\text{m}^3$. The average 1-hour TSP level at AM 16 was recorded to be 70.2 $\mu\text{g}/\text{m}^3$. Baseline 1-hour TSP monitoring at AM 17 was found in the range of 7.5 to 229.5 $\mu\text{g}/\text{m}^3$. The average 1-hour TSP level at AM 17 was recorded to be 106.8 $\mu\text{g}/\text{m}^3$.

24-hour TSP

Baseline 24-hour TSP monitoring was conducted at AM 15 and AM 16 between the period 5/12/2009 and 20/12/2009. Supplementary 24-hour TSP baseline monitoring was conducted at AM 17 (The Victoria Towers) between 22/12/2009 and 4/1/2010. Baseline 24-hour TSP monitoring at AM 15 was found in the range of 25.6 to 115.1 $\mu\text{g}/\text{m}^3$. The average 24-hour TSP level was recorded to be 59.7 $\mu\text{g}/\text{m}^3$. Baseline 24-hour TSP monitoring at AM 16 was found in the range of 12.1 to 99.0 $\mu\text{g}/\text{m}^3$. The average 24-hour TSP level was recorded to be 39.9 $\mu\text{g}/\text{m}^3$. Baseline 24-hour TSP monitoring at AM 17 was found in the range of 19.4 to 142.2 $\mu\text{g}/\text{m}^3$. The average 24-hour TSP level was recorded to be 75.8 $\mu\text{g}/\text{m}^3$.

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 15 was 298.4 $\mu\text{g}/\text{m}^3$ and 168.8 $\mu\text{g}/\text{m}^3$ respectively. The Action Level of 1-hour and 24-hour average TSP levels at AM 16 was 295.6 $\mu\text{g}/\text{m}^3$ and 155.9 $\mu\text{g}/\text{m}^3$ respectively. The Action Level of 1-hour and 24-hour average TSP levels at AM 17 was 319.4 $\mu\text{g}/\text{m}^3$ and 179.3 $\mu\text{g}/\text{m}^3$ respectively.

4.2 Airborne Construction Noise

Baseline noise monitoring were carried at all two monitoring stations from 3/12/2009 to 21/12/2009 at CN 32. Given the access for conducting impact monitoring at Tsim Sha Tsui Fire Station was declined, supplementary baseline noise monitoring was conducted at the alternative monitoring location, Victoria Towers, from 13/2/2010 to 26/2/2010. 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 CN32 and CN34 range from 69-73 dB(A) and 72-75 dB(A) respectively. It was noted from the monitoring results that ambient noise level for daytime at The Victoria Towers (CN 34), 74 dB(A), is highest between the two monitoring locations and close to the Limit Level of 75 dB(A) for residential premises. The daytime baseline noise levels at all of the two locations were below the Limit Level for 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 15

Month	Date	Receptor	Set No.	Time periods		Weather	Site Condition	Temp. (oC)	Pressure (mmHg)	1-hour TSP Level (µg/m3)	Remarks
				Start	Finish						
Dec-09	03-Dec-09	AM15	1	12:41	13:41	Fine	Normal	18.0	765.0	246.2	
Dec-09	03-Dec-09	AM15	2	13:41	14:41	Fine	Normal	18.0	765.0	116.3	
Dec-09	03-Dec-09	AM15	3	14:41	15:41	Fine	Normal	18.0	765.0	90.6	
Dec-09	04-Dec-09	AM15	1	13:14	14:14	Fine	Normal	18.0	765.0	66.2	
Dec-09	04-Dec-09	AM15	2	14:14	15:14	Fine	Normal	18.0	765.0	136.5	
Dec-09	04-Dec-09	AM15	3	15:14	16:14	Fine	Normal	18.0	765.0	141.8	
Dec-09	05-Dec-09	AM15	1	12:48	13:48	Fine	Normal	18.0	765.0	78.3	
Dec-09	05-Dec-09	AM15	2	13:48	14:48	Fine	Normal	18.0	765.0	96.4	
Dec-09	05-Dec-09	AM15	3	14:48	15:48	Fine	Normal	18.0	765.0	114.2	
Dec-09	06-Dec-09	AM15	1	13:01	14:01	Fine	Normal	18.0	764.0	104.8	
Dec-09	06-Dec-09	AM15	2	14:01	15:01	Fine	Normal	18.0	764.0	90.2	
Dec-09	06-Dec-09	AM15	3	15:01	16:01	Fine	Normal	18.0	764.0	93.3	
Dec-09	07-Dec-09	AM15	1	13:17	14:17	Rainy	Normal	19.0	763.0	109.3	
Dec-09	07-Dec-09	AM15	2	14:17	15:17	Rainy	Normal	19.0	763.0	110.4	
Dec-09	07-Dec-09	AM15	3	15:17	16:17	Rainy	Normal	19.0	763.0	116.0	
Dec-09	08-Dec-09	AM15	1	13:39	14:39	Rainy	Normal	18.0	762.0	16.1	
Dec-09	08-Dec-09	AM15	2	14:39	15:39	Rainy	Normal	18.0	762.0	11.8	
Dec-09	08-Dec-09	AM15	3	15:39	16:39	Rainy	Normal	18.0	762.0	11.5	

Month	Date	Receptor	Set No.	Time periods		Weather	Site Condition	Temp. (oC)	Pressure (mmHg)	1-hour TSP Level (µg/m3)	Remarks
				Start	Finish						
Dec-09	09-Dec-09	AM15	1	13:36	14:36	Cloudy	Normal	19.0	762.0	13.8	
Dec-09	09-Dec-09	AM15	2	14:36	15:36	Cloudy	Normal	19.0	762.0	8.0	
Dec-09	09-Dec-09	AM15	3	15:36	16:36	Cloudy	Normal	19.0	762.0	12.3	
Dec-09	10-Dec-09	AM15	1	10:06	11:06	Cloudy	Normal	20.0	761.0	53.8	
Dec-09	10-Dec-09	AM15	2	11:06	12:06	Cloudy	Normal	20.0	761.0	64.9	
Dec-09	10-Dec-09	AM15	3	12:06	13:06	Cloudy	Normal	20.0	761.0	51.6	
Dec-09	11-Dec-09	AM15	1	10:31	11:31	Fine	Normal	21.0	761.0	48.3	
Dec-09	11-Dec-09	AM15	2	11:31	12:31	Fine	Normal	21.0	761.0	57.1	
Dec-09	11-Dec-09	AM15	3	12:31	13:31	Fine	Normal	21.0	761.0	44.2	
Dec-09	12-Dec-09	AM15	1	10:02	11:02	Fine	Normal	22.0	762.0	76.3	
Dec-09	12-Dec-09	AM15	2	11:02	12:02	Fine	Normal	22.0	762.0	72.3	
Dec-09	12-Dec-09	AM15	3	12:02	13:02	Fine	Normal	22.0	762.0	86.5	
Dec-09	13-Dec-09	AM15	1	9:40	10:40	Fine	Normal	21.0	763.0	64.9	
Dec-09	13-Dec-09	AM15	2	10:40	11:40	Fine	Normal	21.0	763.0	62.9	
Dec-09	13-Dec-09	AM15	3	11:40	12:40	Fine	Normal	21.0	763.0	64.4	
Dec-09	14-Dec-09	AM15	1	10:16	11:16	Fine	Normal	21.0	763.0	85.7	
Dec-09	14-Dec-09	AM15	2	11:16	12:16	Fine	Normal	21.0	763.0	79.9	
Dec-09	14-Dec-09	AM15	3	12:16	13:16	Fine	Normal	21.0	763.0	76.3	
Dec-09	15-Dec-09	AM15	1	9:59	10:59	Fine	Normal	20.0	763.0	89.2	
Dec-09	15-Dec-09	AM15	2	10:59	11:59	Fine	Normal	20.0	763.0	88.5	

Month	Date	Receptor	Set No.	Time periods		Weather	Site Condition	Temp. (oC)	Pressure (mmHg)	1-hour TSP Level (µg/m3)	Remarks
				Start	Finish						
Dec-09	15-Dec-09	AM15	3	11:59	12:59	Fine	Normal	20.0	763.0	90.3	
Dec-09	16-Dec-09	AM15	1	10:06	11:06	Cloudy	Normal	20.0	763.0	28.6	
Dec-09	16-Dec-09	AM15	2	11:06	12:06	Cloudy	Normal	20.0	763.0	29.9	
Dec-09	16-Dec-09	AM15	3	12:06	13:06	Cloudy	Normal	20.0	763.0	29.3	

Details of 1-hour TSP Level monitoring at AM 16

Month	Date	Receptor	Set No.	Time periods		Weather	Site Condition	Temp. (oC)	Pressure (mmHg)	1-hour TSP Level (µg/m3)	Remarks
				Start	Finish						
Dec-09	03-Dec-09	AM16	1	8:55	9:55	Fine	Normal	18.0	765.0	107.6	
Dec-09	03-Dec-09	AM16	2	9:55	10:55	Fine	Normal	18.0	765.0	100.7	
Dec-09	03-Dec-09	AM16	3	10:55	11:55	Fine	Normal	18.0	765.0	103.1	
Dec-09	04-Dec-09	AM16	1	13:22	14:22	Fine	Normal	18.0	765.0	52.1	
Dec-09	04-Dec-09	AM16	2	14:22	15:22	Fine	Normal	18.0	765.0	134.0	
Dec-09	04-Dec-09	AM16	3	15:22	16:22	Fine	Normal	18.0	765.0	146.2	
Dec-09	05-Dec-09	AM16	1	12:49	13:49	Fine	Normal	18.0	765.0	72.9	
Dec-09	05-Dec-09	AM16	2	13:49	14:49	Fine	Normal	18.0	765.0	100.7	
Dec-09	05-Dec-09	AM16	3	14:49	15:49	Fine	Normal	18.0	765.0	113.1	
Dec-09	06-Dec-09	AM16	1	13:09	14:09	Fine	Normal	18.0	764.0	100.6	
Dec-09	06-Dec-09	AM16	2	14:09	15:09	Fine	Normal	18.0	764.0	90.8	
Dec-09	06-Dec-09	AM16	3	15:09	16:09	Fine	Normal	18.0	764.0	91.2	
Dec-09	07-Dec-09	AM16	1	13:20	14:20	Rainy	Normal	19.0	763.0	96.6	
Dec-09	07-Dec-09	AM16	2	14:20	15:20	Rainy	Normal	19.0	763.0	94.8	
Dec-09	07-Dec-09	AM16	3	15:20	16:20	Rainy	Normal	19.0	763.0	98.7	
Dec-09	08-Dec-09	AM16	1	13:32	14:32	Rainy	Normal	18.0	762.0	16.4	
Dec-09	08-Dec-09	AM16	2	14:32	15:32	Rainy	Normal	18.0	762.0	12.1	
Dec-09	08-Dec-09	AM16	3	15:32	16:32	Rainy	Normal	18.0	762.0	13.3	

Month	Date	Receptor	Set No.	Time periods		Weather	Site Condition	Temp. (oC)	Pressure (mmHg)	1-hour TSP Level (µg/m3)	Remarks
				Start	Finish						
Dec-09	09-Dec-09	AM16	1	13:47	14:47	Cloudy	Normal	19.0	762.0	9.0	
Dec-09	09-Dec-09	AM16	2	14:47	15:47	Cloudy	Normal	19.0	762.0	10.4	
Dec-09	09-Dec-09	AM16	3	15:47	16:47	Cloudy	Normal	19.0	762.0	12.3	
Dec-09	10-Dec-09	AM16	1	10:18	11:18	Cloudy	Normal	20.0	761.0	52.0	
Dec-09	10-Dec-09	AM16	2	11:18	12:18	Cloudy	Normal	20.0	761.0	77.9	
Dec-09	10-Dec-09	AM16	3	12:18	13:18	Cloudy	Normal	20.0	761.0	63.9	
Dec-09	11-Dec-09	AM16	1	10:26	11:26	Fine	Normal	21.0	761.0	42.4	
Dec-09	11-Dec-09	AM16	2	11:26	12:26	Fine	Normal	21.0	761.0	45.1	
Dec-09	11-Dec-09	AM16	3	12:26	13:26	Fine	Normal	21.0	761.0	43.1	
Dec-09	12-Dec-09	AM16	1	10:10	11:10	Fine	Normal	22.0	762.0	81.6	
Dec-09	12-Dec-09	AM16	2	11:10	12:10	Fine	Normal	22.0	762.0	78.0	
Dec-09	12-Dec-09	AM16	3	12:10	13:10	Fine	Normal	22.0	762.0	90.1	
Dec-09	13-Dec-09	AM16	1	9:50	10:50	Fine	Normal	21.0	763.0	70.0	
Dec-09	13-Dec-09	AM16	2	10:50	11:50	Fine	Normal	21.0	763.0	87.2	
Dec-09	13-Dec-09	AM16	3	11:50	12:50	Fine	Normal	21.0	763.0	89.5	
Dec-09	14-Dec-09	AM16	1	10:23	11:23	Fine	Normal	21.0	763.0	78.2	
Dec-09	14-Dec-09	AM16	2	11:23	12:23	Fine	Normal	21.0	763.0	76.0	
Dec-09	14-Dec-09	AM16	3	12:23	13:23	Fine	Normal	21.0	763.0	73.8	
Dec-09	15-Dec-09	AM16	1	10:07	11:07	Fine	Normal	20.0	763.0	76.9	
Dec-09	15-Dec-09	AM16	2	11:07	12:07	Fine	Normal	20.0	763.0	80.3	

Month	Date	Receptor	Set No.	Time periods		Weather	Site Condition	Temp. (oC)	Pressure (mmHg)	1-hour TSP Level (µg/m3)	Remarks
				Start	Finish						
Dec-09	15-Dec-09	AM16	3	12:07	13:07	Fine	Normal	20.0	763.0	87.2	
Dec-09	16-Dec-09	AM16	1	10:13	11:13	Cloudy	Normal	20.0	763.0	25.4	
Dec-09	16-Dec-09	AM16	2	11:13	12:13	Cloudy	Normal	20.0	763.0	29.2	
Dec-09	16-Dec-09	AM16	3	12:13	13:13	Cloudy	Normal	20.0	763.0	24.6	

Details of supplementary 1-hour TSP Level monitoring at AM 17 (The Victoria Towers)

Month	Date	Receptor No.	Set No.	Time periods		Weather	Site condition	Temp. (°C)	Pressure (mmHg)	1-hour TSP Level (µg/m³)	Remarks
				Start	Finish						
Dec-09	22-Dec-09	AM 17	1	13:34	14:34	Fine	Normal	16.0	766.5	139.4	
Dec-09	22-Dec-09	AM 17	2	14:34	15:34	Fine	Normal	16.0	766.5	121.8	
Dec-09	22-Dec-09	AM 17	3	15:34	16:34	Fine	Normal	16.0	766.5	125.8	
Dec-09	23-Dec-09	AM 17	1	13:39	14:39	Fine	Normal	18.0	764.3	82.7	
Dec-09	23-Dec-09	AM 17	2	14:39	15:39	Fine	Normal	18.0	764.3	82.8	
Dec-09	23-Dec-09	AM 17	3	15:39	16:39	Fine	Normal	18.0	764.3	85.4	
Dec-09	24-Dec-09	AM 17	1	13:04	14:04	Fine	Normal	21.0	762.1	160.6	
Dec-09	24-Dec-09	AM 17	2	14:04	15:04	Fine	Normal	21.0	762.1	176.8	
Dec-09	24-Dec-09	AM 17	3	15:04	16:04	Fine	Normal	21.0	762.1	159.3	
Dec-09	25-Dec-09	AM 17	1	13:14	14:14	Fine	Normal	20.0	761.4	146.8	
Dec-09	25-Dec-09	AM 17	2	14:14	15:14	Fine	Normal	20.0	761.4	141.9	
Dec-09	25-Dec-09	AM 17	3	15:14	16:14	Fine	Normal	20.0	761.4	171.0	
Dec-09	26-Dec-09	AM 17	1	13:14	14:14	Cloudy	Normal	18.0	762.5	96.3	
Dec-09	26-Dec-09	AM 17	2	14:14	15:14	Cloudy	Normal	18.0	762.5	81.8	
Dec-09	26-Dec-09	AM 17	3	15:14	16:14	Cloudy	Normal	18.0	762.5	127.4	
Dec-09	27-Dec-09	AM 17	1	13:35	14:35	Cloudy	Normal	16.0	762.6	40.5	
Dec-09	27-Dec-09	AM 17	2	14:35	15:35	Cloudy	Normal	16.0	762.6	49.2	

Month	Date	Receptor No.	Set No.	Time periods		Weather	Site condition	Temp. (°C)	Pressure (mmHg)	1-hour TSP Level (µg/m³)	Remarks
				Start	Finish						
Dec-09	27-Dec-09	AM 17	3	15:35	16:35	Cloudy	Normal	16.0	762.6	51.9	
Dec-09	28-Dec-09	AM 17	1	12:26	13:26	Cloudy	Normal	12.0	763.5	54.7	
Dec-09	28-Dec-09	AM 17	2	13:26	14:26	Cloudy	Normal	12.0	763.5	62.5	
Dec-09	28-Dec-09	AM 17	3	14:26	15:26	Cloudy	Normal	12.0	763.5	75.0	
Dec-09	29-Dec-09	AM 17	1	12:44	13:44	Cloudy	Normal	16.0	761.3	167.8	
Dec-09	29-Dec-09	AM 17	2	13:44	14:44	Cloudy	Normal	16.0	761.3	167.8	
Dec-09	29-Dec-09	AM 17	3	14:44	15:44	Cloudy	Normal	16.0	761.3	229.5	
Dec-09	30-Dec-09	AM 17	1	8:34	9:34	Rainy	Normal	17.0	761.3	31.1	
Dec-09	30-Dec-09	AM 17	2	9:34	10:34	Rainy	Normal	17.0	761.3	7.5	
Dec-09	30-Dec-09	AM 17	3	10:34	11:34	Rainy	Normal	17.0	761.3	9.8	
Dec-09	31-Dec-09	AM 17	1	9:05	10:05	Cloudy	Normal	16.0	763.5	75.5	
Dec-09	31-Dec-09	AM 17	2	10:05	11:05	Cloudy	Normal	16.0	763.5	82.6	
Dec-09	31-Dec-09	AM 17	3	11:05	12:05	Cloudy	Normal	16.0	763.5	70.2	
Jan-10	01-Jan-10	AM 17	1	9:08	10:08	Fine	Normal	16.0	763.0	105.7	
Jan-10	01-Jan-10	AM 17	2	10:08	11:08	Fine	Normal	16.0	763.0	104.8	
Jan-10	01-Jan-10	AM 17	3	11:08	12:08	Fine	Normal	16.0	763.0	104.8	
Jan-10	02-Jan-10	AM 17	1	9:15	10:15	Fine	Normal	17.0	762.0	148.8	
Jan-10	02-Jan-10	AM 17	2	10:15	11:15	Fine	Normal	17.0	762.0	150.2	
Jan-10	02-Jan-10	AM 17	3	11:15	12:15	Fine	Normal	17.0	762.0	154.5	

Month	Date	Receptor No.	Set No.	Time periods		Weather	Site condition	Temp. (°C)	Pressure (mmHg)	1-hour TSP Level (µg/m³)	Remarks
				Start	Finish						
Jan-10	03-Jan-10	AM 17	1	9:20	10:20	Fine	Normal	17.0	762.0	121.4	
Jan-10	03-Jan-10	AM 17	2	10:20	11:20	Fine	Normal	17.0	762.0	119.1	
Jan-10	03-Jan-10	AM 17	3	11:20	12:20	Fine	Normal	17.0	762.0	114.2	
Jan-10	04-Jan-10	AM 17	1	8:49	9:49	Fine	Normal	17.0	762.0	111.2	
Jan-10	04-Jan-10	AM 17	2	9:49	10:49	Fine	Normal	17.0	762.0	80.9	
Jan-10	04-Jan-10	AM 17	3	10:49	11:49	Fine	Normal	17.0	762.0	94.0	

Details of 24-hour TSP Level monitoring at AM 15

Filter No.	Date	Time periods		Receptor No.	Weather condition	Site condition	Filter Weight (g)		TSP weight (g)	Flow Rate (m ³ /min)		Average Flow	Elapse Time		Sampling Time (mins.)	Total vol. (m ³)	24-hour TSP Level (µg/m ³)
		Start	Finish				Initial	Final		Initial	Final	Rate (m ³ /min)	Start	Finish			
100505	05-Dec-09	12:51	12:51	AM15	Fine	Normal Operation	2.8161	2.9684	0.1523	1.1232	1.1227	1.1230	11940.22	11964.22	1440.00	1617.05	94.2
100509	06-Dec-09	12:54	12:54	AM15	Fine	Normal Operation	2.8400	2.9652	0.1252	1.1227	1.1208	1.1218	11964.22	11988.22	1440.00	1615.32	77.5
100513	07-Dec-09	13:00	13:00	AM15	Rainy	Normal Operation	2.7960	2.8828	0.0868	1.1208	1.1217	1.1213	11988.22	12012.22	1440.00	1614.60	53.8
100552	08-Dec-09	13:00	13:00	AM15	Rainy	Normal Operation	2.8970	2.9411	0.0441	1.1217	1.1203	1.1210	12012.22	12036.22	1440.00	1614.24	27.3
100556	09-Dec-09	13:12	13:12	AM15	Rainy	Normal Operation	2.8791	2.9219	0.0428	1.1619	1.1600	1.1610	12036.22	12060.22	1440.00	1671.77	25.6
100560	10-Dec-09	13:25	13:25	AM15	Cloudy	Normal Operation	2.8374	2.9701	0.1327	1.2015	1.2015	1.2015	12060.22	12084.22	1440.00	1730.16	76.7
100564	11-Dec-09	13:25	13:25	AM15	Fine	Normal Operation	2.8852	2.9751	0.0899	1.1585	1.1577	1.1581	12084.22	12108.22	1440.00	1667.66	53.9
100568	12-Dec-09	13:30	13:30	AM15	Fine	Normal Operation	2.9246	3.0324	0.1078	1.1577	1.1596	1.1587	12108.22	12132.22	1440.00	1668.46	64.6

Filter No.	Date	Time periods		Receptor No.	Weather condition	Site condition	Filter Weight (g)		TSP weight (g)	Flow Rate (m ³ /min)		Average Flow	Elapse Time		Sampling Time (mins.)	Total vol. (m ³)	24-hour TSP Level (µg/m ³)
		Start	Finish				Initial	Final		Initial	Final	Rate (m ³ /min)	Start	Finish			
100572	13-Dec-09	13:40	13:40	AM15	Fine	Normal Operation	2.9012	3.0934	0.1922	1.1596	1.1596	1.1596	12132.22	12156.22	1440.00	1669.82	115.1
100576	14-Dec-09	13:45	13:45	AM15	Fine	Normal Operation	2.8941	2.9611	0.0670	1.1596	1.1611	1.1604	12156.22	12180.22	1440.00	1670.90	40.1
100580	15-Dec-09	13:45	13:45	AM15	Fine	Normal Operation	2.8708	2.9380	0.0672	1.2027	1.2027	1.2027	12180.22	12204.22	1440.00	1731.89	38.8
100583	16-Dec-09	13:52	13:52	AM15	Cloudy	Normal Operation	2.9001	2.9844	0.0843	1.1682	1.2140	1.1911	12204.22	12228.22	1440.00	1715.18	49.1
100588	17-Dec-09	13:55	13:55	AM15	Cloudy	Normal Operation	2.8852	2.9621	0.0769	1.1719	1.1719	1.1719	12228.22	12252.22	1440.00	1687.54	45.6
100592	18-Dec-09	13:57	13:57	AM15	Fine	Normal Operation	2.8862	3.0097	0.1235	1.1730	1.1721	1.1726	12252.22	12276.22	1440.00	1688.47	73.1

Details of 24-hour TSP Level monitoring at AM 16

Filter No.	Date	Time periods		Receptor No.	Weather condition	Site condition	Filter Weight (g)		TSP weight (g)	Flow Rate (m ³ /min)		Average Flow Rate (m ³ /min)	Elapse Time		Sampling Time (mins.)	Total vol. (m ³)	24-hour TSP Level (µg/m ³)
		Start	Finish				Initial	Final		Initial	Final		Start	Finish			
100506	05-Dec-09	13:00	13:00	AM16	Fine	Normal Operation	2.8401	3.0084	0.1683	1.1811	1.1807	1.1809	12020.93	12044.93	1440.00	1700.50	99.0
100510	06-Dec-09	13:05	13:05	AM16	Fine	Normal Operation	2.8485	2.9942	0.1457	1.1807	1.1790	1.1799	12044.93	12068.93	1440.00	1698.98	85.8
	07-Dec-09	Monitoring interrupted due to short circuit															
	08-Dec-09																
100514	09-Dec-09	13:20	13:20	AM16	Cloudy	Normal Operation	2.8330	2.9110	0.0780	1.1940	1.1770	1.1855	12083.47	12107.47	1440.00	1707.12	45.7
100561	10-Dec-09	13:36	13:36	AM16	Fine	Normal Operation	2.8812	2.9266	0.0454	1.2098	1.2091	1.2095	12107.47	12131.47	1440.00	1741.61	26.1
100565	11-Dec-09	13:40	13:40	AM16	Fine	Normal Operation	2.8740	2.9615	0.0875	1.2431	1.2790	1.2611	12131.47	12155.47	1440.00	1815.91	48.2
100553	12-Dec-09	13:55	13:55	AM16	Fine	Normal Operation	2.8291	2.8605	0.0314	1.1767	1.1767	1.1767	12155.47	12179.47	1440.00	1694.45	18.5
100569	13-Dec-09	13:55	13:55	AM16	Fine	Normal Operation	2.8900	2.9321	0.0421	1.1767	1.1779	1.1773	12179.47	12203.47	1440.00	1695.31	24.8

Filter No.	Date	Time periods		Receptor No.	Weather condition	Site condition	Filter Weight (g)		TSP weight (g)	Flow Rate (m ³ /min)		Average Flow Rate (m ³ /min)	Elapse Time		Sampling Time (mins.)	Total vol. (m ³)	24-hour TSP Level (µg/m ³)
		Start	Finish				Initial	Final		Initial	Final		Start	Finish			
100557	14-Dec-09	14:00	14:00	AM16	Fine	Normal Operation	2.8440	2.9355	0.0915	1.1779	1.1779	1.1779	12203.47	12227.47	1440.00	1696.18	53.9
100579	15-Dec-09	14:02	14:02	AM16	Cloudy	Normal Operation	2.9128	2.9473	0.0345	1.1837	1.1868	1.1853	12227.47	12251.47	1440.00	1706.76	20.2
100584	16-Dec-09	14:04	14:04	AM16	Cloudy	Normal Operation	2.8396	2.8721	0.0325	1.1522	1.1522	1.1522	12251.47	12275.47	1440.00	1659.17	19.6
100589	17-Dec-09	14:08	14:08	AM16	Cloudy	Normal Operation	2.8780	2.8987	0.0207	1.1868	1.1868	1.1868	12275.47	12299.47	1440.00	1708.99	12.1
100593	18-Dec-09	14:12	14:12	AM16	Cloudy	Normal Operation	2.8688	2.9524	0.0836	1.2223	1.1894	1.2059	12299.47	12323.47	1440.00	1736.42	48.1
100577	19-Dec-09	14:26	14:26	AM16	Fine	Normal Operation	2.9088	2.9385	0.0297	1.1203	1.1188	1.1196	12323.47	12347.47	1440.00	1612.15	18.4
100573	20-Dec-09	14:38	14:38	AM16	Fine	Normal Operation	2.9241	2.9853	0.0612	1.1188	1.1177	1.1183	12347.47	12371.47	1440.00	1610.28	38.0

Details of Supplementary 24-hour TSP Level Monitoring at AM 17 (The Victoria Towers)

Filter No.	Date	Time periods		Receptor No.	Weather condition	Site condition	Filter Weight (g)		TSP weight (g)	Flow Rate (m ³ /min)		Average Flow Rate (m ³ /min)	Elapse Time		Sampling Time (mins.)	Total vol. (m ³)	24-hour TSP Level (µg/m ³)
		Start	Finish				Initial	Final		Initial	Final		Start	Finish			
100595	22-Dec-09	14:56	14:56	AM17	Fine	Normal Operation	2.8622	3.0278	0.1656	1.3421	1.3104	1.3263	3803.10	3827.10	1440.00	1909.80	86.7
100596	23-Dec-09	14:58	14:58	AM17	Fine	Normal Operation	2.8841	3.0172	0.1331	1.2577	1.2527	1.2552	3827.10	3851.10	1440.00	1807.49	73.6
100782	24-Dec-09	15:02	15:02	AM17	Fine	Normal Operation	2.8128	3.0281	0.2153	1.2527	1.2537	1.2532	3851.10	3875.10	1440.00	1804.61	119.3
100783	25-Dec-09	15:05	15:05	AM17	Fine	Normal Operation	2.8401	3.0969	0.2568	1.2537	1.2544	1.2541	3875.10	3899.10	1440.00	1805.83	142.2
100784	26-Dec-09	15:10	15:10	AM17	Cloudy	Normal Operation	2.8427	2.8927	0.0500	1.2544	1.2366	1.2455	3899.10	3923.10	1440.00	1793.52	27.9
100785	27-Dec-09	15:11	15:11	AM17	Cloudy	Normal Operation	2.8582	2.8940	0.0358	1.2631	1.2938	1.2785	3923.10	3947.10	1440.00	1840.97	19.4
100786	28-Dec-09	15:13	15:13	AM17	Cloudy	Normal Operation	2.8152	2.9550	0.1398	1.2938	1.2874	1.2906	3947.10	3971.10	1440.00	1858.46	75.2
100787	29-Dec-09	15:16	15:16	AM17	Cloudy	Normal Operation	2.8395	3.0237	0.1842	1.3139	1.2574	1.2857	3971.10	3995.10	1440.00	1851.34	99.5

Filter No.	Date	Time periods		Receptor No.	Weather condition	Site condition	Filter Weight (g)		TSP weight (g)	Flow Rate (m ³ /min)		Average Flow Rate (m ³ /min)	Elapse Time		Sampling Time (mins.)	Total vol. (m ³)	24-hour TSP Level (µg/m ³)
		Start	Finish				Initial	Final		Initial	Final		Start	Finish			
100788	30-Dec-09	15:18	15:18	AM17	Rainy	Normal Operation	2.8501	2.9166	0.0665	1.2574	1.2605	1.2590	3995.10	4019.10	1440.00	1812.89	36.7
100543	31-Dec-09	15:21	15:21	AM17	Cloudy	Normal Operation	2.8648	2.9769	0.1121	1.2613	1.2613	1.2613	4019.10	4043.10	1440.00	1816.27	61.7
100625	01-Jan-10	15:25	15:25	AM17	Fine	Normal Operation	2.8712	3.1039	0.2327	1.2877	1.2844	1.2861	4043.10	4067.10	1440.00	1851.91	125.7
100628	02-Jan-10	15:28	15:28	AM17	Fine	Normal Operation	2.8613	2.9600	0.0987	1.2317	1.2587	1.2452	4067.10	4091.10	1440.00	1793.09	55.0
100633	03-Jan-10	15:32	15:32	AM17	Fine	Normal Operation	2.8543	2.9520	0.0977	1.2060	1.2043	1.2052	4091.10	4115.10	1440.00	1735.42	56.3
100634	04-Jan-10	15:35	15:35	AM17	Fine	Normal Operation	2.8601	3.0072	0.1471	1.2306	1.2574	1.2440	4115.10	4139.10	1440.00	1791.36	82.1

Appendix B

Baseline noise monitoring data

Baseline Noise Monitoring Result

Location: CN 32 Tower3, The Waterfront

Baseline monitoring period: 3/12/2009-21/12/2009

Parameter: Leq

Time Slot Averaged Baselines

1) Weekdays Daytime Noise Level, dB(A)

Time slot	Leq, 30 min	L10	L90
07:00-07:30	69.8	71.2	68.0
07:30-08:00	71.1	72.3	69.4
08:00-08:30	72.0	73.4	70.3
08:30-09:00	72.0	73.4	70.5
09:00-09:30	71.8	72.9	70.3
09:30-10:00	71.7	72.9	70.2
10:00-10:30	71.6	72.7	70.0
10:30-11:00	71.4	72.7	69.9
11:00-11:30	71.3	72.6	69.8
11:30-12:00	71.1	72.3	69.5
12:00-12:30	71.0	72.3	69.4
12:30-13:00	71.2	72.5	69.5
13:00-13:30	71.1	72.4	69.4
13:30-14:00	71.3	72.6	69.7
14:00-14:30	71.3	72.5	69.7
14:30-15:00	71.3	72.6	69.8
15:00-15:30	71.2	72.4	69.6
15:30-16:00	71.4	72.7	69.6
16:00-16:30	71.3	72.6	69.7
16:30-17:00	71.4	72.6	69.6
17:00-17:30	71.5	72.8	69.9
17:30-18:00	71.4	72.6	69.9
18:00-18:30	71.3	72.5	69.7
18:30-19:00	70.8	72.1	69.2
Average	71.3	72.6	69.7

Maximum	72.0	73.4	70.5
Minimum	69.8	71.2	68.0

Noise Control Period Averaged Baselines

2) Weekdays Evening Noise Level, dB(A)

Time Slot	Leq, 5min	L10	L90
19:00-19:15	70.6	71.9	69.0
	70.4	71.7	68.7
	70.4	71.7	68.6
19:15-19:30	70.3	71.6	68.3
	70.0	71.4	68.3
	70.2	71.6	68.4
19:30-19:45	70.1	71.5	68.4
	70.3	71.7	68.5
	70.4	71.8	68.5
19:45-20:00	70.3	71.6	68.4
	70.5	72.0	68.5
	70.4	71.8	68.5
20:00-20:15	70.2	71.6	68.4
	70.2	71.5	68.4
	70.2	71.5	68.3
20:15-20:30	70.0	71.3	68.0
	70.0	71.4	68.3
	69.9	71.4	68.1
20:30-20:45	69.8	71.2	67.9
	69.8	71.2	67.9
	69.9	71.3	68.2
20:45-21:00	69.8	71.2	67.9
	69.9	71.5	67.8
	69.7	71.1	67.8
21:00-21:15	69.9	71.4	68.0
	69.7	71.1	67.8
	69.8	71.3	67.7

Time Slot	Leq, 5min	L10	L90
21:15-21:30	69.6	71.0	67.6
	69.5	71.0	67.5
	69.6	71.0	67.8
21:30-21:45	69.7	71.1	67.8
	69.6	71.1	67.7
	69.7	71.1	67.6
21:45-22:00	69.7	71.2	67.8
	69.9	71.4	67.9
	69.8	71.2	67.9
22:00-22:15	70.0	71.4	68.1
	69.8	71.2	68.0
	70.0	71.4	68.2
22:15-22:30	69.8	71.1	68.0
	69.7	71.0	67.9
	69.5	71.0	67.6
22:30-22:45	69.7	71.0	67.9
	69.4	70.9	67.6
	69.6	71.1	67.7
22:45-23:00	69.5	71.1	67.4
	69.7	71.1	67.8
	69.4	70.9	67.4
Average	69.9	71.3	68.0
Maximum	70.6	72.0	69.0
Minimum	69.4	70.9	67.4

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

Time Slot	Leq, 5min	L10	L90
0700-07:15	67.4	69.3	64.9
	67.3	69.2	65.0
	67.7	69.8	64.9
07:15-07:30	67.4	69.4	64.9
	67.9	69.8	65.5
	67.9	69.5	64.9
07:30-07:45	68.2	70.1	65.6

Time Slot	Leq, 5min	L10	L90
	68.3	70.3	65.7
	68.7	70.5	66.5
07:45-08:00	68.4	70.1	66.3
	68.6	70.4	66.4
	68.4	70.1	66.0
08:00-08:15	68.4	70.4	65.8
	68.8	70.4	66.9
	69.1	71.0	67.1
08:15-08:30	68.7	70.1	67.0
	69.2	71.0	67.1
	68.9	70.3	66.9
08:30-08:45	69.1	70.8	66.9
	69.0	70.7	66.9
	69.0	70.6	67.2
08:45-09:00	69.3	71.3	66.9
	69.3	71.0	67.3
	69.4	71.0	67.4
09:00-09:15	69.6	71.2	67.4
	69.6	71.0	67.3
	69.6	71.4	67.6
09:15-09:30	69.5	71.1	67.5
	69.5	71.2	67.8
	69.6	71.1	67.6
09:30-09:45	69.6	71.1	67.8
	69.7	71.0	68.0
	69.8	71.4	67.8
09:45-10:00	69.9	71.5	68.0
	69.9	71.4	68.1
	69.8	71.3	67.9
10:00-10:15	69.6	71.2	67.8
	69.8	71.4	67.9
	69.9	71.6	68.2
10:15-10:30	69.9	71.4	68.1
	69.9	71.4	68.2
	70.0	71.3	68.3
10:30-10:45	69.9	71.6	68.0

Time Slot	Leq, 5min	L10	L90
	69.9	71.4	68.0
	69.9	71.5	67.9
10:45-11:00	70.5	71.8	68.4
	70.1	71.6	68.3
	69.7	71.2	67.8
11:00-11:15	70.4	72.0	68.2
	70.1	71.6	68.4
	69.9	71.3	68.1
11:15-11:30	69.9	71.6	67.9
	70.3	71.8	68.4
	70.2	71.8	68.4
11:30-11:45	70.2	71.7	68.2
	70.2	71.7	68.3
	69.9	71.4	67.9
11:45-12:00	69.9	71.3	68.3
	70.3	71.9	68.1
	69.6	70.9	67.7
12:00-12:15	70.0	71.0	68.2
	70.3	71.2	68.5
	70.4	71.2	68.5
12:15-12:30	70.3	71.4	68.6
	70.3	71.5	68.3
	69.7	70.7	68.0
12:30-12:45	70.4	71.2	68.5
	70.0	71.0	68.6
	70.4	71.2	68.2
12:45-13:00	70.0	71.0	68.4
	70.3	71.4	68.7
	70.1	71.2	68.0
13:00-13:15	70.0	71.0	68.3
	70.2	71.1	68.2
	70.2	71.2	68.5
13:15-13:30	70.2	71.2	68.3
	70.4	71.8	68.5
	70.1	71.0	68.5
13:30-13:45	70.2	71.0	68.4

Time Slot	Leq, 5min	L10	L90
	70.6	71.6	68.6
	70.1	71.3	68.3
13:45-14:00	70.3	71.4	68.6
	70.3	71.3	68.5
	70.4	71.3	68.8
14:00-14:15	70.2	71.4	68.2
	70.3	71.0	68.5
	70.1	71.0	68.3
14:15-14:30	70.1	70.8	68.3
	70.3	71.2	68.6
	70.5	71.5	68.9
14:30-14:45	70.4	71.5	68.5
	70.5	71.4	68.6
	70.4	71.5	68.7
14:45-15:00	70.5	71.4	68.5
	70.3	71.2	68.6
	70.4	71.4	68.4
15:00-15:15	70.0	71.2	68.3
	70.8	71.6	68.7
	70.6	71.7	68.9
15:15-15:30	70.6	71.4	68.7
	70.3	71.1	68.6
	70.3	71.1	68.5
15:30-15:45	70.3	71.3	68.5
	70.3	71.2	68.8
	70.5	71.6	68.7
15:45-16:00	70.3	71.2	68.4
	70.2	71.1	68.4
	70.8	71.3	68.7
16:00-16:15	70.2	71.2	68.2
	70.6	71.5	68.5
	70.2	71.2	68.1
16:15-16:30	69.9	70.7	68.2
	70.4	71.6	68.6
	70.2	71.1	68.4
16:30-16:45	70.5	71.4	68.5

Time Slot	Leq, 5min	L10	L90
	70.2	71.2	68.4
	70.3	71.1	68.7
16:45-17:00	70.1	70.9	68.5
	70.3	71.3	68.7
	70.3	71.0	68.6
17:00-17:15	70.0	70.8	68.3
	69.8	70.8	67.9
	70.2	71.2	68.5
17:15-17:30	70.4	71.2	68.5
	70.2	71.2	68.4
	70.2	71.1	68.5
17:30-17:45	70.3	71.3	68.8
	70.2	71.1	68.4
	70.4	71.3	68.6
17:45-18:00	70.5	71.4	68.9
	70.2	71.2	68.2
	70.4	71.1	68.8
18:00-18:15	70.4	71.3	68.7
	70.4	71.3	68.5
	70.3	71.3	68.6
18:15-18:30	70.5	71.4	68.6
	70.0	71.0	68.4
	70.5	70.9	68.6
18:30-18:45	69.8	71.0	68.0
	69.7	70.7	67.9
	69.9	70.9	68.3
18:45-19:00	69.7	70.5	68.0
	69.9	70.9	68.0
	69.6	70.5	68.0
19:00-19:15	70.2	71.2	68.3
	69.8	70.8	67.8
	69.8	71.1	67.9
19:15-19:30	69.8	70.7	67.9
	69.9	70.9	68.3
	69.4	70.4	67.5
19:30-19:45	70.0	71.0	68.2

Time Slot	Leq, 5min	L10	L90
	69.7	70.6	67.8
	69.6	70.7	67.4
19:45-20:00	69.2	70.0	67.6
	69.5	70.5	67.7
	69.1	69.9	67.3
20:00-20:15	69.3	70.6	67.1
	69.2	70.1	67.1
	69.0	70.2	66.9
20:15-20:30	69.3	70.4	67.3
	69.1	70.1	67.0
	69.2	70.1	67.5
20:30-20:45	69.2	70.3	67.1
	69.1	70.1	67.3
	69.5	70.7	67.6
20:45-21:00	69.3	70.4	67.4
	69.7	70.7	67.6
	69.4	70.2	67.3
21:00-21:15	69.4	70.5	67.5
	69.9	70.4	67.5
	69.3	70.4	67.4
21:15-21:30	69.5	70.1	67.9
	69.7	70.9	67.7
	69.2	70.0	67.5
21:30-21:45	69.4	70.3	67.4
	69.5	70.4	67.3
	69.4	70.4	67.3
21:45-22:00	69.6	70.2	67.9
	69.8	70.9	68.1
	69.4	70.2	67.5
22:00-22:15	70.0	70.7	68.0
	69.4	70.3	67.4
	69.4	70.4	67.4
22:15-22:30	69.3	70.3	67.2
	69.8	70.7	67.6
	68.9	69.8	67.2
22:30-22:45	69.3	70.5	67.1

Time Slot	Leq, 5min	L10	L90
	69.3	70.1	67.5
	69.3	70.5	67.1
22:45-23:00	69.1	70.1	67.1
	69.0	69.9	67.2
	68.8	69.8	66.8
Average	69.8	71.0	67.9
Maximum	70.8	72.0	68.9
Minimum	67.3	69.2	64.9

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

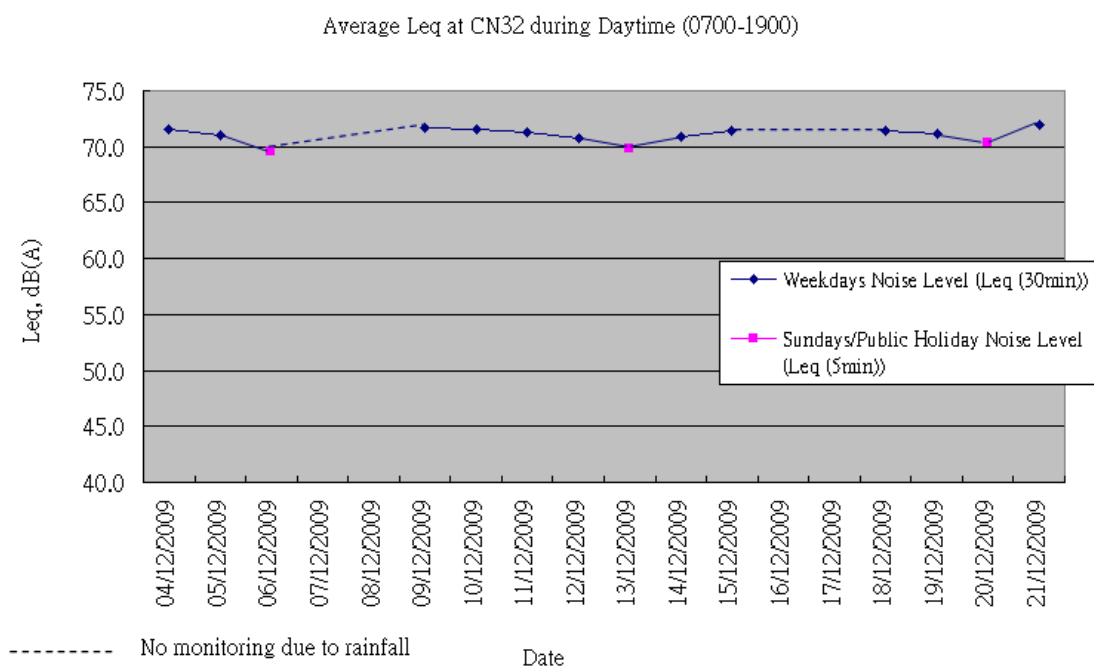
Time Slot	Leq, 5min	L10	L90
23:00-23:15	69.3	70.7	67.2
	69.3	70.6	67.1
	69.1	70.3	67.2
23:15-23:30	69.1	70.5	66.9
	69.1	70.5	66.9
	69.1	70.4	66.9
23:30-23:45	68.9	70.2	66.9
	68.7	70.1	66.6
	68.9	70.3	66.8
23:45-00:00	68.9	70.3	66.7
	68.6	70.0	66.4
	68.5	70.0	66.2
00:00-00:15	68.4	70.0	66.2
	68.3	69.9	65.9
	68.1	69.7	65.7
00:15-00:30	68.2	69.6	65.7
	67.7	69.1	65.3
	67.5	69.3	64.9
00:30-00:45	67.7	69.2	64.9
	66.9	68.5	64.1
	66.9	68.6	64.2

Time Slot	Leq, 5min	L10	L90
00:45-01:00	66.7	68.4	64.1
	66.4	68.1	63.6
	66.3	68.1	63.4
01:00-01:15	66.4	68.3	63.3
	66.2	68.0	63.2
	66.1	67.8	63.3
01:15-01:30	65.8	67.6	63.0
	65.8	67.6	62.4
	65.5	67.2	62.3
01:30-01:45	65.8	67.4	62.5
	65.4	67.3	62.0
	65.5	67.3	62.1
01:45-02:00	65.2	67.0	62.0
	64.8	66.7	61.6
	64.9	66.8	61.8
02:00-02:15	64.9	66.6	61.9
	64.7	66.6	61.5
	64.8	66.5	62.0
02:15-02:30	64.5	66.3	61.5
	64.6	66.6	61.3
	64.7	66.5	61.6
02:30-02:45	64.8	66.7	61.4
	64.4	66.5	60.9
	64.2	66.3	60.8
02:45-03:00	64.5	66.3	61.2
	64.1	66.0	60.8
	64.1	66.0	61.0
03:00-03:15	64.1	66.2	60.7
	64.0	65.8	61.0
	63.7	65.6	60.5
03:15-03:30	63.7	65.7	60.5
	63.4	65.4	60.2
	63.6	65.7	60.2
03:30-03:45	63.7	65.6	60.7
	63.6	65.5	60.4
	63.7	65.7	60.6

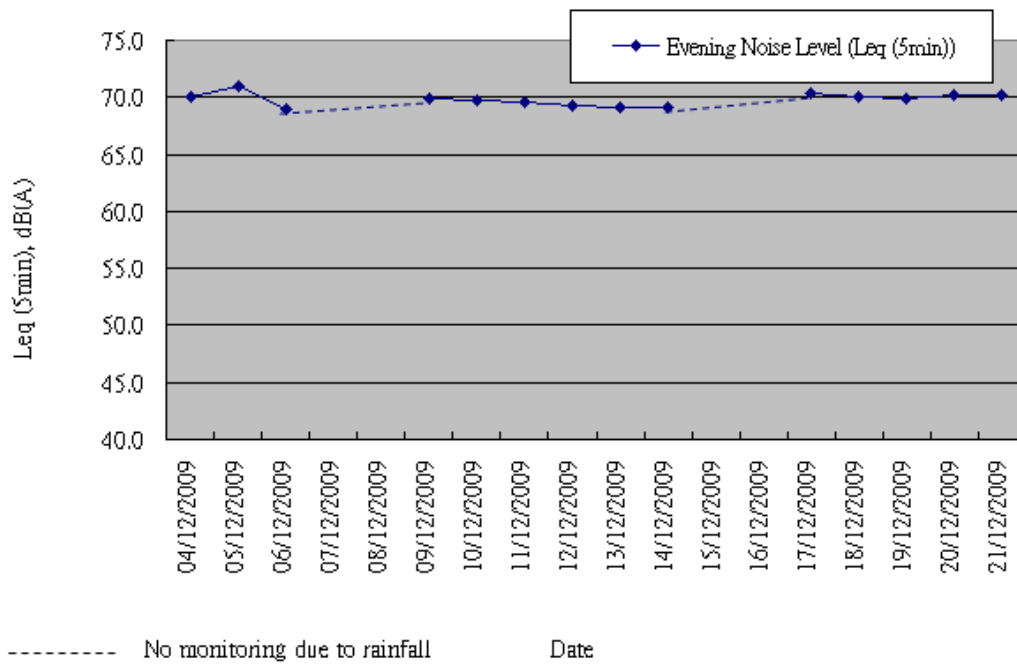
Time Slot	Leq, 5min	L10	L90
03:45-04:00	63.9	65.9	60.5
	63.8	65.7	60.7
	63.6	65.5	60.4
04:00-04:15	63.6	65.6	60.5
	63.7	65.6	60.7
	63.7	65.5	60.4
04:15-04:30	63.5	65.4	60.5
	63.8	65.7	60.5
	63.8	65.6	60.5
04:30-04:45	64.1	65.9	61.1
	64.0	65.9	60.7
	63.8	65.6	60.5
04:45-05:00	64.1	66.1	61.0
	64.3	66.2	61.3
	64.4	66.3	61.2
05:00-05:15	64.2	66.0	61.4
	64.5	66.3	61.5
	65.0	66.9	61.8
05:15-05:30	64.8	66.7	61.5
	65.0	66.7	62.2
	65.2	67.0	62.1
05:30-05:45	65.2	67.0	62.5
	65.1	67.0	62.0
	65.2	66.9	62.1
05:45-06:00	65.7	67.6	62.7
	65.8	67.6	62.9
	66.0	67.8	63.1
06:00-06:15	66.0	67.7	62.9
	66.3	68.2	63.3
	66.3	68.2	63.5
06:15-06:30	66.5	68.1	63.7
	66.9	68.7	64.1
	67.2	68.9	64.6
06:30-06:45	67.4	69.1	64.6
	67.6	69.1	65.2
	67.7	69.3	65.4

Time Slot	Leq, 5min	L10	L90
06:45-07:00	68.3	69.7	66.0
	68.2	69.7	66.0
	68.5	70.0	66.3
Average	66.2	67.9	63.5
Maximum	69.3	70.7	67.2
Minimum	63.4	65.4	60.2

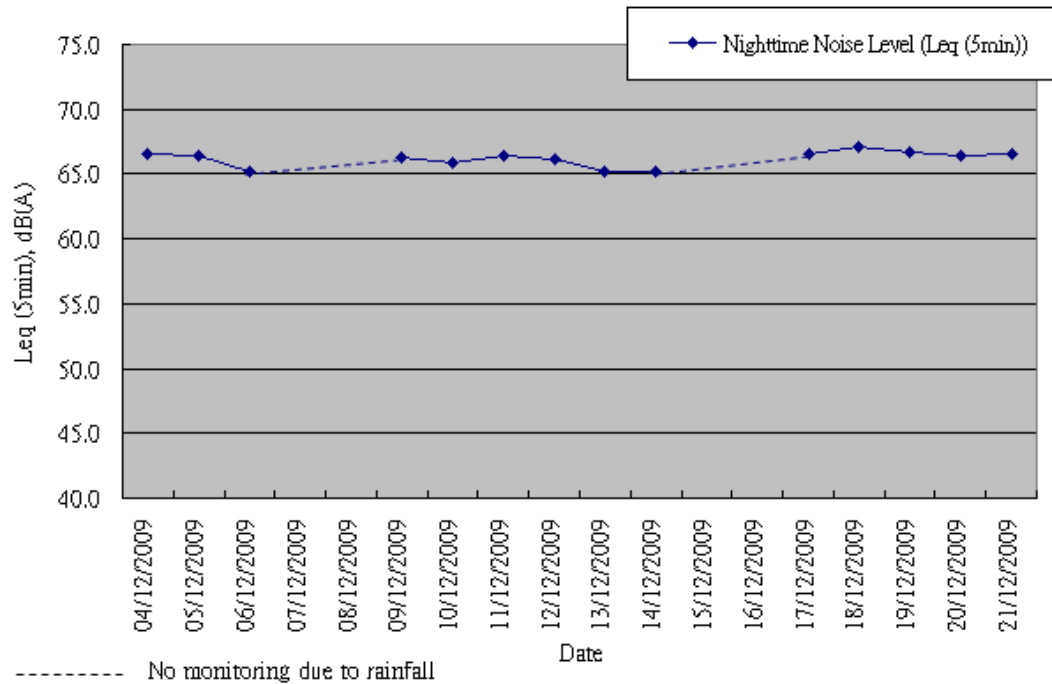
Log average was used



Average Leq(5min) at CN32 during Evening (1900-2300) for all days



Average Leq(5min) at CN32 during Nighttime (2300-0700) for all days



Supplementary Baseline Noise Monitoring Result

Location: CN 34 The Victoria Towers

Baseline monitoring period: 13/2/2010 – 26/2/2010

Parameter: Leq

Time Slot Averaged Baselines

1) Weekdays Daytime Noise Level, dB(A)

Time slot	Leq, 30 min	L10	L90
07:00-07:30	71.6	74.7	64.9
07:30-08:00	72.3	75.2	66.5
08:00-08:30	73.9	76.5	69.0
08:30-09:00	75.1	77.4	71.0
09:00-09:30	74.9	77.1	71.1
09:30-10:00	74.5	76.7	70.9
10:00-10:30	74.7	76.9	70.7
10:30-11:00	74.4	76.5	70.8
11:00-11:30	74.6	76.8	70.9
11:30-12:00	74.4	76.7	70.5
12:00-12:30	74.1	76.4	69.9
12:30-13:00	73.9	76.0	69.9
13:00-13:30	74.2	76.3	70.4
13:30-14:00	74.4	76.6	70.9
14:00-14:30	74.6	76.6	71.4
14:30-15:00	74.4	76.3	71.0
15:00-15:30	74.5	76.4	71.4
15:30-16:00	74.5	76.5	71.3
16:00-16:30	74.3	76.4	70.9
16:30-17:00	74.2	76.2	70.9
17:00-17:30	74.2	76.2	70.9
17:30-18:00	73.8	75.8	70.4
18:00-18:30	73.3	75.4	69.9
18:30-19:00	73.1	75.3	69.7
Average	74.1	76.3	70.4

Maximum	75.1	77.4	71.4
Minimum	71.6	74.7	64.9

Noise Control Period Averaged Baselines

2) Weekdays Evening Noise Level, dB(A)

Time Slot	Leq, 5min	L10	L90
19:00-19:15	74.4	76.4	71.0
	73.2	75.4	69.7
	73.7	75.9	70.0
19:15-19:30	74.4	76.6	70.6
	73.1	75.1	69.5
	72.8	75.0	69.4
19:30-19:45	73.1	75.3	69.6
	73.2	75.2	69.3
	74.9	77.1	70.7
19:45-20:00	74.1	76.6	70.1
	72.7	75.0	68.8
	72.8	74.9	68.9
20:00-20:15	72.8	75.1	68.6
	72.5	74.9	68.7
	72.4	74.6	68.3
20:15-20:30	72.1	74.5	67.8
	72.6	75.0	68.2
	72.5	74.9	67.8
20:30-20:45	71.8	74.0	67.9
	72.5	75.0	67.8
	72.7	75.1	68.0
20:45-21:00	72.0	74.4	67.5
	73.0	75.2	68.0
	72.6	74.7	68.2
21:00-21:15	73.1	75.3	68.4
	72.3	74.5	68.2

Time Slot	Leq, 5min	L10	L90
	72.4	74.4	68.4
21:15-21:30	72.6	74.9	68.3
	73.9	76.3	69.7
	73.0	75.3	68.0
21:30-21:45	72.8	75.3	68.0
	73.7	76.3	68.9
	72.4	74.6	68.3
21:45-22:00	73.6	75.8	69.1
	72.6	74.9	68.5
	72.7	75.1	68.0
22:00-22:15	72.6	75.0	68.0
	72.6	74.9	68.1
	73.8	75.9	69.8
22:15-22:30	73.4	75.7	69.0
	73.8	76.3	69.2
	72.2	74.5	67.9
22:30-22:45	72.3	74.6	67.5
	71.9	74.3	67.2
	72.2	74.4	67.6
22:45-23:00	72.1	74.6	67.3
	71.8	74.3	66.8
	71.9	74.4	66.9
Average	72.9	75.2	68.7
Maximum	74.9	77.1	71.0
Minimum	71.8	74.0	66.8

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

Time Slot	Leq, 5min	L10	L90
0700-07:15	71.0	73.9	63.9
	70.2	73.0	63.0
	70.6	73.2	63.1
07:15-07:30	71.0	74.2	63.6
	71.0	73.6	63.7

Time Slot	Leq, 5min	L10	L90
	70.5	73.4	63.2
07:30-07:45	70.3	73.0	63.3
	71.4	74.0	65.3
	70.5	73.3	63.3
07:45-08:00	70.7	73.7	64.1
	71.3	74.4	64.5
	70.8	73.6	65.1
08:00-08:15	71.6	74.5	65.0
	71.3	73.9	64.7
	71.2	74.2	64.6
08:15-08:30	71.8	74.7	65.3
	71.0	74.0	65.4
	72.3	75.2	64.2
08:30-08:45	72.1	74.8	65.3
	72.0	75.0	66.0
	71.7	74.6	65.3
08:45-09:00	72.0	75.1	65.6
	71.7	74.6	65.1
	72.2	75.0	66.0
09:00-09:15	72.0	74.6	65.9
	71.8	74.6	65.5
	72.0	74.8	65.8
09:15-09:30	72.4	75.2	65.7
	72.4	75.2	66.0
	71.3	74.0	66.1
09:30-09:45	72.1	75.1	65.7
	71.8	74.7	65.7
	72.3	75.6	65.3
09:45-10:00	71.6	74.5	65.4
	72.1	74.8	66.3
	72.0	75.0	65.9
10:00-10:15	72.2	75.2	66.3
	72.4	75.2	66.6
	73.0	75.7	66.9
10:15-10:30	72.3	74.8	66.9
	72.4	75.5	66.3

Time Slot	Leq, 5min	L10	L90
	71.8	74.8	65.2
10:30-10:45	72.1	74.8	66.8
	72.9	75.6	66.8
	72.8	75.7	66.3
10:45-11:00	72.7	75.4	67.0
	72.3	74.9	66.6
	73.0	75.5	67.5
11:00-11:15	72.1	74.6	66.5
	72.4	75.1	66.7
	72.1	74.6	66.8
11:15-11:30	72.7	75.6	66.7
	73.0	76.0	67.1
	72.3	74.9	67.0
11:30-11:45	72.4	74.9	66.7
	72.8	75.7	67.3
	72.5	75.1	67.1
11:45-12:00	72.7	75.3	67.6
	72.5	75.0	67.6
	72.7	75.4	67.4
12:00-12:15	72.7	75.4	67.9
	72.8	75.2	67.8
	73.1	75.4	68.4
12:15-12:30	72.6	75.2	67.4
	73.1	75.4	68.0
	72.6	74.8	67.5
12:30-12:45	73.0	75.7	68.0
	73.0	75.8	68.1
	73.2	75.8	68.3
12:45-13:00	72.8	75.3	68.1
	72.9	75.6	68.1
	72.6	75.0	67.9
13:00-13:15	72.9	75.5	67.9
	73.4	75.8	68.3
	73.1	75.7	67.4
13:15-13:30	73.4	75.9	67.6
	73.0	75.5	68.3

Time Slot	Leq, 5min	L10	L90
	73.4	75.7	68.9
13:30-13:45	73.0	75.6	67.8
	73.2	75.8	67.8
	73.2	75.3	68.2
13:45-14:00	72.7	75.4	67.5
	73.6	76.6	68.1
	73.7	75.8	67.5
14:00-14:15	72.9	75.4	68.1
	73.3	75.9	68.5
	72.9	75.4	68.2
14:15-14:30	73.1	75.5	68.2
	73.0	75.4	68.6
	72.9	75.1	68.5
14:30-14:45	73.2	75.8	68.6
	73.0	75.4	68.2
	72.9	75.2	68.5
14:45-15:00	72.9	75.3	68.6
	73.1	75.4	68.3
	72.7	75.0	68.8
15:00-15:15	73.0	75.1	69.1
	72.9	75.3	68.8
	72.2	74.5	68.8
15:15-15:30	72.9	75.3	68.7
	72.5	74.6	68.7
	72.9	75.1	68.2
15:30-15:45	72.9	75.1	69.1
	72.5	74.6	68.6
	73.0	75.2	68.6
15:45-16:00	72.6	74.8	68.5
	73.0	75.3	68.9
	72.7	75.0	67.9
16:00-16:15	73.2	75.4	68.2
	72.9	75.4	68.5
	72.6	74.8	68.0
16:15-16:30	72.6	74.7	68.4
	72.6	74.9	68.0

Time Slot	Leq, 5min	L10	L90
	72.9	75.2	68.6
16:30-16:45	72.3	74.7	68.2
	72.6	74.9	68.4
	73.2	76.0	68.2
16:45-17:00	72.8	75.2	68.1
	72.7	75.1	68.3
	72.4	74.6	68.3
17:00-17:15	72.3	74.4	68.5
	72.8	75.0	68.8
	72.4	74.6	68.4
17:15-17:30	73.3	75.5	68.6
	72.6	74.8	68.6
	72.5	74.5	68.1
17:30-17:45	72.6	74.8	68.6
	72.2	74.4	68.5
	72.4	74.8	68.6
17:45-18:00	71.9	73.8	68.6
	72.6	74.9	68.8
	72.3	74.5	67.8
18:00-18:15	72.4	74.8	68.6
	73.0	75.2	68.9
	71.9	74.1	68.3
18:15-18:30	71.6	73.7	68.0
	71.7	73.8	68.3
	71.8	74.0	67.7
18:30-18:45	71.7	73.6	67.9
	72.3	74.2	68.5
	72.1	74.2	68.6
18:45-19:00	71.7	73.5	68.2
	71.4	73.7	67.3
	71.6	73.7	68.0
19:00-19:15	71.6	73.5	67.6
	72.0	74.0	68.1
	71.9	74.0	68.0
19:15-19:30	71.2	73.2	66.9
	71.8	73.8	68.0

Time Slot	Leq, 5min	L10	L90
	71.8	73.9	67.9
19:30-19:45	71.3	73.6	67.7
	71.6	73.8	67.7
	72.3	74.5	67.4
19:45-20:00	71.5	74.1	66.5
	70.8	72.9	66.5
	71.9	74.0	67.7
20:00-20:15	72.8	75.9	67.8
	73.1	76.1	67.8
	72.7	75.0	68.0
20:15-20:30	71.9	74.3	67.6
	73.3	75.8	68.7
	73.0	76.1	66.8
20:30-20:45	71.8	74.4	66.7
	71.0	73.4	66.1
	71.6	73.6	66.6
20:45-21:00	71.3	73.5	66.7
	71.0	73.1	66.7
	71.1	73.5	66.5
21:00-21:15	71.2	73.4	66.8
	71.5	74.3	66.8
	72.6	76.1	66.7
21:15-21:30	71.2	73.2	66.8
	71.5	73.8	67.2
	71.3	73.5	66.8
21:30-21:45	71.4	73.6	67.0
	72.0	74.4	67.1
	71.8	74.1	66.3
21:45-22:00	71.8	74.2	66.9
	71.6	73.9	67.2
	71.6	74.1	66.5
22:00-22:15	72.4	74.9	67.2
	71.6	73.9	67.0
	72.1	74.6	66.7
22:15-22:30	71.7	74.2	66.4
	72.1	74.4	66.3

Time Slot	Leq, 5min	L10	L90
	71.6	74.0	66.6
22:30-22:45	71.9	74.5	66.7
	71.6	74.0	66.6
	71.4	74.3	65.3
22:45-23:00	70.9	73.5	65.9
	71.6	74.3	65.2
	71.0	73.6	65.6
Average	72.3	74.8	67.3
Maximum	73.7	76.6	69.1
Minimum	70.2	72.9	63.0

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

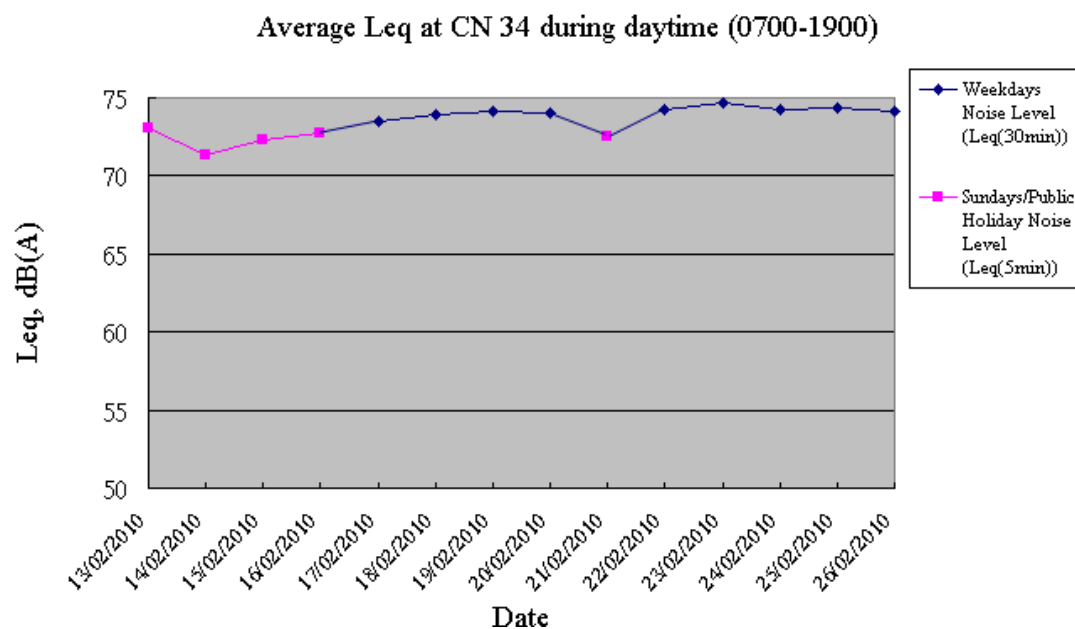
Time Slot	Leq, 5min	L10	L90
23:00-23:15	71.8	74.4	66.3
	71.4	73.9	66.3
	71.6	74.3	66.1
23:15-23:30	72.5	75.0	66.6
	71.7	74.4	65.9
	71.9	74.6	65.9
23:30-23:45	71.7	74.3	65.8
	71.7	74.3	65.2
	71.4	74.1	64.7
23:45-00:00	71.3	74.0	64.4
	71.5	74.2	64.3
	71.4	74.3	64.1
00:00-00:15	71.5	74.1	64.3
	70.6	73.7	63.1
	70.3	73.2	62.8
00:15-00:30	70.0	72.8	62.5
	69.2	72.2	61.8
	70.0	72.9	61.0
00:30-00:45	68.9	71.8	60.3
	68.7	71.9	60.2
	68.4	71.5	59.5

Time Slot	Leq, 5min	L10	L90
00:45-01:00	67.9	71.1	58.8
	67.9	71.2	58.8
	67.6	71.0	59.0
01:00-01:15	67.6	70.6	58.4
	67.7	70.5	58.8
	67.7	70.9	59.0
01:15-01:30	67.1	70.6	58.3
	67.0	70.4	58.0
	67.2	70.4	58.0
01:30-01:45	66.5	69.8	57.9
	66.5	69.9	57.6
	66.5	69.9	57.6
01:45-02:00	67.8	70.8	57.8
	66.9	70.2	57.6
	67.0	70.5	57.2
02:00-02:15	66.7	70.0	57.3
	66.3	69.6	57.2
	66.3	69.6	57.2
02:15-02:30	66.4	70.0	57.1
	66.0	69.6	57.4
	65.5	69.2	57.2
02:30-02:45	66.0	69.5	56.8
	65.4	69.1	56.9
	65.4	69.0	57.0
02:45-03:00	65.7	69.0	56.9
	66.0	69.4	56.9
	65.2	68.8	57.0
03:00-03:15	65.5	69.0	57.1
	65.9	69.8	57.3
	65.4	69.1	57.1
03:15-03:30	65.1	68.6	56.7
	65.1	68.8	57.2
	65.5	68.9	57.2
03:30-03:45	65.8	69.4	58.3
	65.6	69.1	57.9
	65.4	69.2	57.3

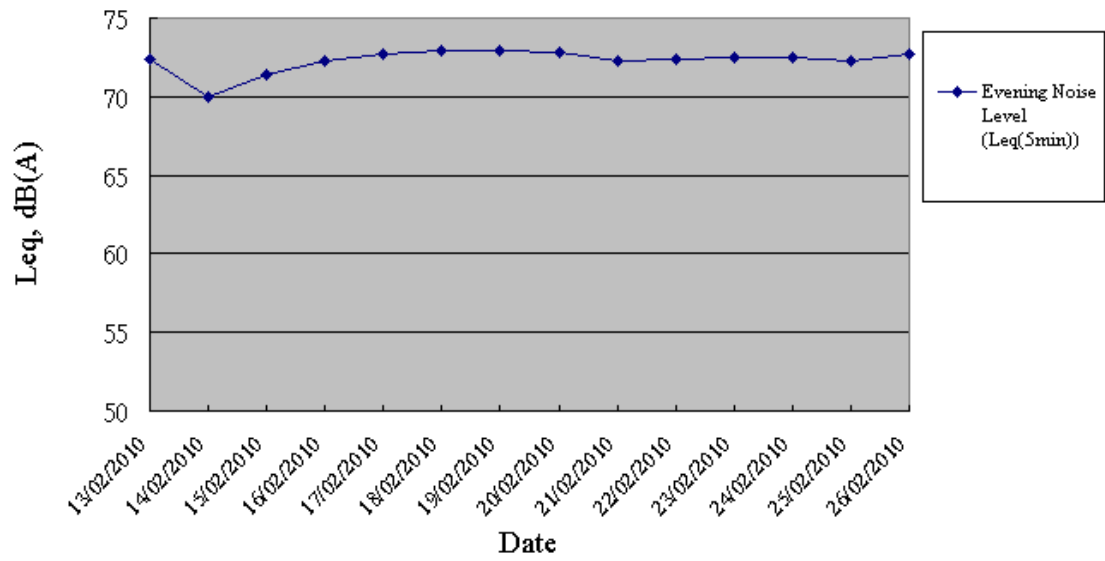
Time Slot	Leq, 5min	L10	L90
03:45-04:00	66.2	69.4	57.1
	65.1	68.8	57.1
	65.3	69.0	57.2
04:00-04:15	65.5	69.1	57.3
	65.8	69.6	57.2
	65.8	69.5	57.0
04:15-04:30	65.6	69.3	57.1
	65.2	69.0	57.1
	65.7	69.4	57.1
04:30-04:45	65.6	69.1	57.2
	64.7	68.6	57.0
	64.8	68.5	57.3
04:45-05:00	66.0	69.4	57.2
	65.2	68.8	57.5
	65.3	68.9	57.2
05:00-05:15	66.0	69.4	57.8
	65.6	69.1	58.0
	66.1	69.6	57.7
05:15-05:30	66.3	69.8	58.1
	66.1	69.5	58.2
	66.4	69.9	58.2
05:30-05:45	66.4	69.5	58.5
	66.3	69.7	58.4
	67.1	70.5	58.8
05:45-06:00	66.3	69.7	58.9
	67.3	70.7	59.5
	67.2	70.1	58.6
06:00-06:15	67.2	70.3	59.6
	67.9	71.3	59.6
	68.3	71.7	60.3
06:15-06:30	69.3	72.6	61.6
	68.8	72.2	60.1
	69.5	72.7	61.9
06:30-06:45	70.3	73.3	62.9
	69.5	72.4	62.9
	70.2	73.3	63.6

Time Slot	Leq, 5min	L10	L90
06:45-07:00	70.3	73.2	63.3
	71.3	74.1	63.1
	70.5	73.5	63.9
Average	68.2	71.3	60.8
Maximum	72.5	75.0	66.6
Minimum	64.7	68.5	56.7

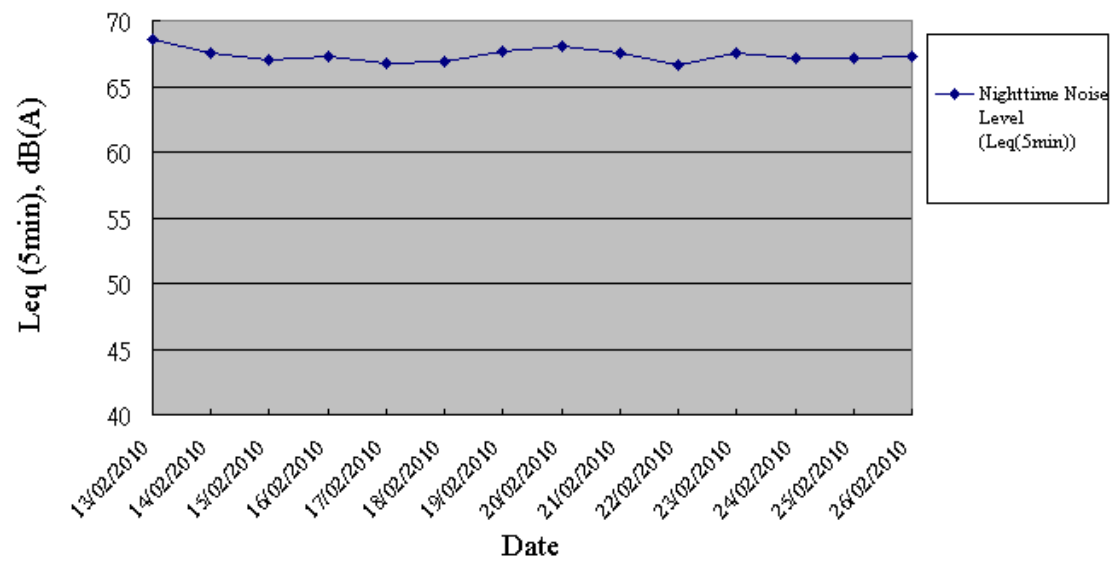
Log average was used



Average Leq at CN 34 during evening (1900-2300) for all days



Average Leq (5min) at CN 34 during nighttime (2300-0700) for all days



Appendix C

Calibration Certificates for Monitoring Equipments

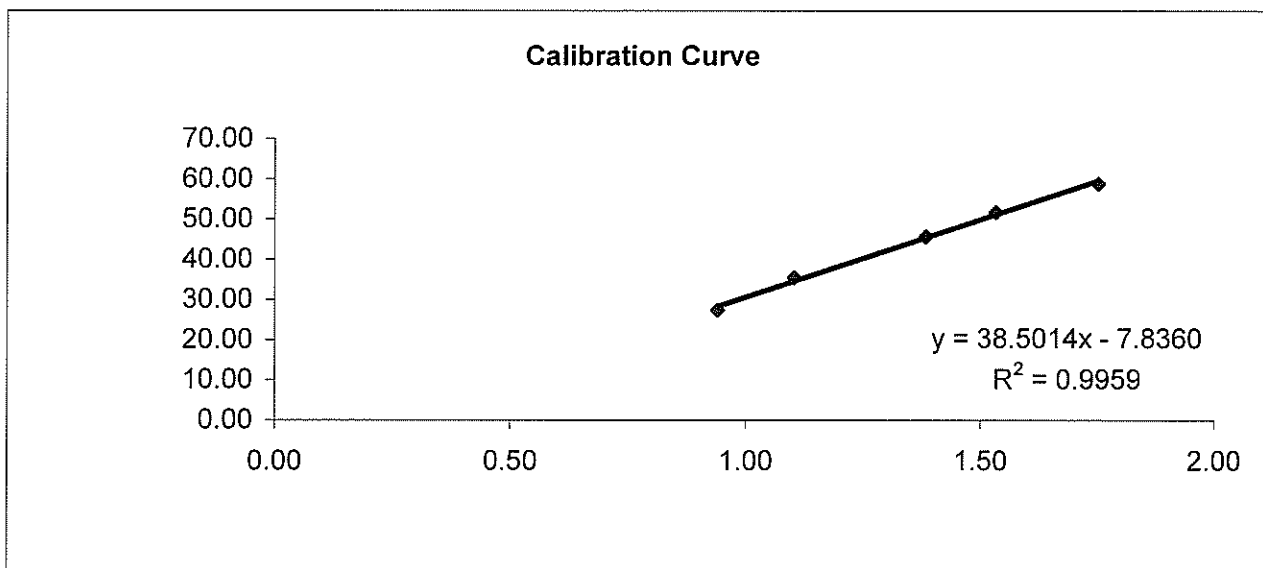
Ove Arup Partners (Hong Kong) Limited

High Volume Air Sampler Calibration Worksheet

Calibration date	22-Dec-09	Barometric pressure	765 mm Hg
Next Calibration date	20-Jun-10	Temperature (°C)	18 °C
Sampler location	The Victoria Towers	Temperature (K)	291 K
Sampler model	TE-5170	P _{std}	760 mm Hg
Sampler serial number	528	T _{std}	298 K

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

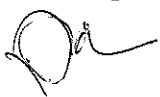
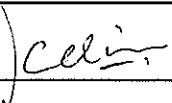
Resistance Plate No.	Manometer Reading (inch H ₂ O)	Flow Recorder Reading (CFM)	Calculated Q _{std} (m ³ /min)	Continuous Flow Recorder Reading IC (CFM)
5	3.40	27.00	0.94	27.41
7	4.70	35.00	1.10	35.53
10	7.40	45.00	1.38	45.69
13	9.10	51.00	1.53	51.78
18	11.90	58.00	1.75	58.89



Linear Regression

Sampler slope (m) : **38.5014**
 Sampler intercept (b) : **-7.8360**
 Correlation coefficient (R²) : **0.9959**

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

Performed by: 
 Checked by: 
 Approved by: 

Date: 22/12/2009
 Date: 22/12/2009
 Date: 23/12/2009

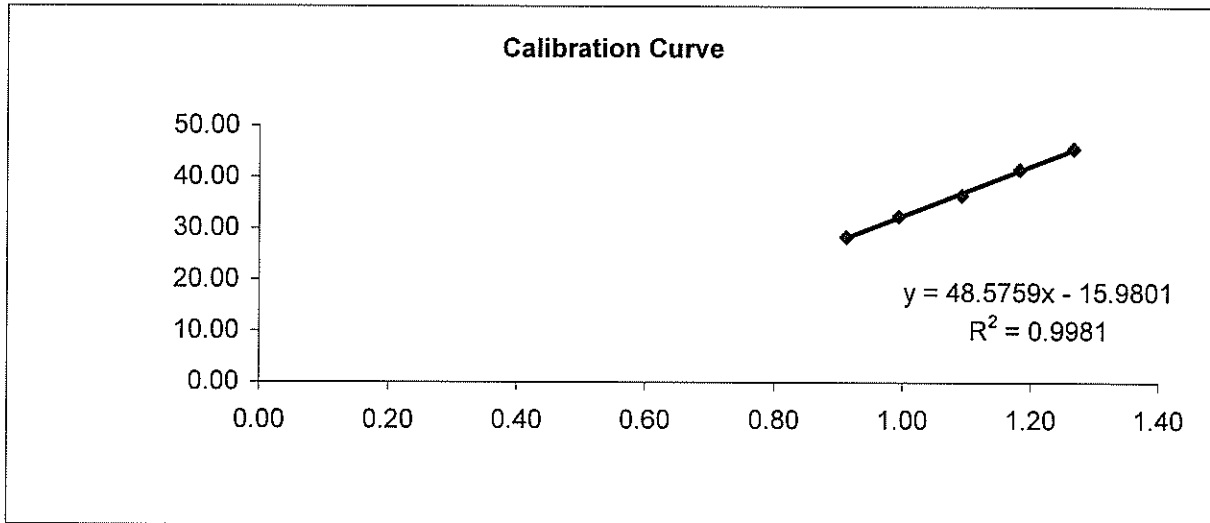
Ove Arup Partners (Hong Kong) Limited

High Volume Air Sampler Calibration Worksheet

Calibration date	5-Dec-09	Barometric pressure	765 mm Hg
Next Calibration date	3-Jun-10	Temperature (°C)	18 °C
Sampler location	Tower 6, Sorrento	Temperature (K)	291 K
Sampler model	TE-5170	P _{std}	760 mm Hg
Sampler serial number	0515	T _{std}	298 K

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	3.20	28.00	0.91	28.43
7	3.80	32.00	0.99	32.49
10	4.60	36.00	1.09	36.55
13	5.40	41.00	1.18	41.63
18	6.20	45.00	1.27	45.69



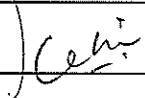
Linear Regression

Sampler slope (m) : 48.5759
 Sampler intercept (b) : -15.9801
 Correlation coefficient (R²) : 0.9981

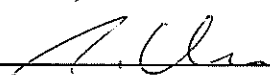
Correlation coefficient is greater than 0.9900 and the calibration result is accepted.

Performed by: 

Date: 5/12/09

Checked by: 

Date: 5/12/09

Approved by: 

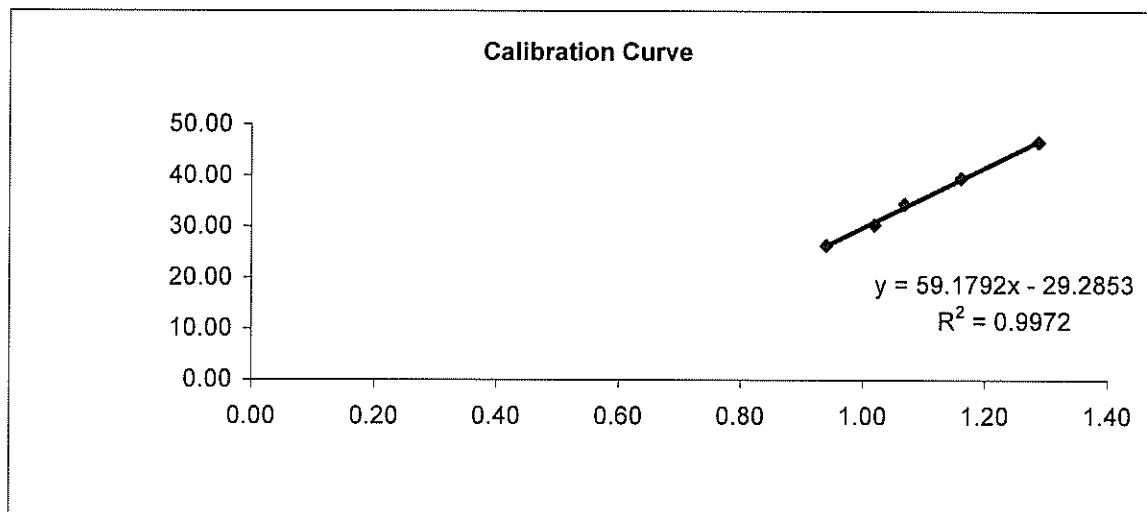
Date: 18/12/09

Ove Arup Partners (Hong Kong) Limited
High Volume Air Sampler Calibration Worksheet

Calibration date	5-Dec-09	Barometric pressure	765 mm Hg
Next Calibration date	3-Jun-10	Temperature (°C)	18 °C
Sampler location	Waterfront	Temperature (K)	291 K
Sampler model	GMWS-2310-105	P _{std}	760 mm Hg
Sampler serial number	1282	T _{std}	298 K

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

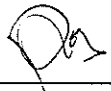
Resistance Plate No.	Manometer Reading (inch H ₂ O)	Flow Recorder Reading (CFM)	Calculated Q _{std} (m ³ /min)	Continuous Flow Recorder Reading IC (CFM)
5	3.40	26.00	0.94	26.40
7	4.00	30.00	1.02	30.46
10	4.40	34.00	1.07	34.52
13	5.20	39.00	1.16	39.60
18	6.40	46.00	1.29	46.70

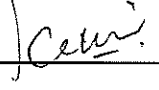


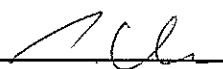
Linear Regression

Sampler slope (m) : **59.1792**
 Sampler intercept (b) : **-29.2853**
 Correlation coefficient (R²) : **0.9972**

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

Performed by: 

Checked by: 

Approved by: 

Date: 5/12/09

Date: 5/12/09

Date: 18/12/09

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PDR1000 CALIBRATION CERTIFICATE

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

<u>SERIAL NUMBER:</u>	<u>4239</u>	
<u>CALIBRATION RATIO:</u>	<u>1.003</u>	
<u>AVG. PDR CONCENTRATION:</u>	<u>1.28</u>	<u>mg/m3</u>
<u>MASTER AVG CONCENTRATION:</u>	<u>1.03</u>	<u>mg/m3</u>
<u>PDR BACKGROUND CONCENTRATION:</u>	<u>0.216</u>	<u>mg/m3</u>

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

CALIBRATION MASTER:	D325
LAST CALIBRATED:	29/7/2008

TECHNICIAN: R.A.

DATE: 26/8/2008

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:	D325
LAST CALIBRATED:	29/7/2008

TECHNICIAN: R.A.

DATE: 26/8/2008



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:

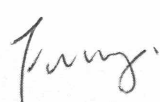
At 1000 Hz TND = 0.5%

Estimated uncertainty 0.7%

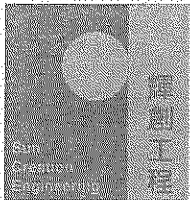
The uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95 %. A coverage factor of 2 is assumed unless explicitly stated.

- 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. : C093598

Certificate of Calibration

This is to certify that the equipment

Description : Sound Level Calibrator

Manufacturer : Rion

Model No. : NC-73

Serial No. : 10786708

has been calibrated for the specific items and ranges.

The results are shown in the Calibration Report No. C093598.

The equipment is supplied by

Co. Name : Envirotech Services Co.

*Address : Shop 6, G/F., Casio Mansion, 209 Shaaukeiwan Road,
Hong Kong*

Send to: Winnie RO		Ref:
Received by:	Date:	
Action taken:		
By:	Date:	Action:

Date Received by ERM
IC-370
Login Ref

Date of Issue : 10 July 2009

Certified by : 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

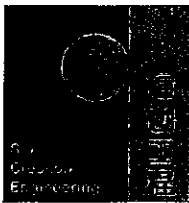
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

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. : C093598

Calibration Report

ITEM TESTED

DESCRIPTION : Sound Level Calibrator
MANUFACTURER : Rion
MODEL NO. : NC-73
SERIAL NO. : 10786708

TEST CONDITIONS

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

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

TEST SPECIFICATIONS

Calibration check

DATE OF TEST : 9 July 2009

JOB NO. : IC09-1664

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
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested by :

K/C Lee

Date : 10 July 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 2



Calibration Report

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours before the commencement of the test.
2. The results presented are the mean of 3 measurements at each calibration point.
3. Test equipment :

<u>Equipment ID</u>	<u>Description</u>	<u>Certificate No.</u>
TST150A	Measuring Amplifier	C080751
CL129	Universal Counter	C093121
CL281	Multifunction Acoustic Calibrator	DC090052

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	93.9	± 0.5	± 0.2

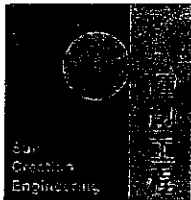
5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (Hz)	Mfr's Spec. (Hz)	Uncertainty of Measured Value (Hz)
1	0.991 6	1 kHz $\pm 2\%$	± 0.1

Remark : - The uncertainties are for a confidence probability of not less than 95 %.

Note :

The values given in this Calibration Report only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.



輝創工程有限公司

Sun Creation Engineering Limited Calibration and Testing Laboratory

Certificate No. : C093733

Certificate of Calibration

This is to certify that the equipment

Description : Sound Level Meter

Manufacturer : Rion

Model No. : NL-31

Serial No. : 00320533

*has been calibrated for the specific items and ranges.
The results are shown in the Calibration Report No. C093733.*

The equipment is supplied by

Co. Name : Envirotech Services Co.

*Address : Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road,
Hong Kong*

Date of Issue : 16 July 2009

*Certified by : Chan Hui Ching
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. : C093733

Calibration Report

ITEM TESTED

DESCRIPTION : Sound Level Meter
MANUFACTURER : Rion
MODEL NO. : NL-31
SERIAL NO. : 00320533

TEST CONDITIONS

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

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

TEST SPECIFICATIONS

Calibration check

DATE OF TEST : 15 July 2009

JOB NO. : IC09-1740

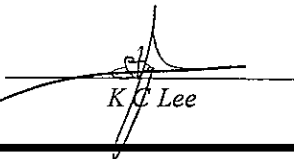
TEST RESULTS

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
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested by :


K.C. Lee

Date : 16 July 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 4



Calibration Report

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
2. Self-calibration was performed before the test.
3. The results presented are the mean of 3 measurements at each calibration point.
4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C090024
CL281	Multifunction Acoustic Calibrator	DC090052

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT	IEC 60651
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Type 1 Spec. (dB)
30 - 120	L _A	A	Fast	94.00	1	94.2	± 0.7

6.1.2 Linearity

UUT Setting				Applied Value		UUT
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)
30 - 120	L _A	A	Fast	94.00	1	94.2 (Ref.)
				104.00		104.2
				114.00		114.2

IEC 60651 Type 1 Spec. : ± 0.4 dB per 10 dB step and ± 0.7 dB for overall different.

6.2 Time Weighting

6.2.1 Continuous Signal

UUT Setting				Applied Value		UUT	IEC 60651
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Type 1 Spec. (dB)
30 - 120	L _A	A	Fast	94.00	1	94.2	Ref.
			Slow			94.1	± 0.1

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 Report

6.2.2 Tone Burst Signal (2 kHz)

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Burst Duration		
20 - 110	L _A	A	Fast	106.00	Continuous	106.0	Ref.
	L _{Amax}				200 ms	105.0	-1.0 ± 1.0
	L _A	Slow	Continuous		106.0	Ref.	
	L _{Amax}		500 ms		102.0	-4.1 ± 1.0	

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L _A	A	Fast	94.00	31.5 Hz	55.0	-39.4 ± 1.5
					63 Hz	68.3	-26.2 ± 1.5
					125 Hz	78.3	-16.1 ± 1.0
					250 Hz	85.7	-8.6 ± 1.0
					500 Hz	91.0	-3.2 ± 1.0
					1 kHz	94.2	Ref.
					2 kHz	95.2	+1.2 ± 1.0
					4 kHz	94.4	+1.0 ± 1.0
					8 kHz	90.1	-1.1 (+1.5 ; -3.0)
					12.5 kHz	83.9	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L _C	C	Fast	94.00	31.5 Hz	91.4	-3.0 ± 1.5
					63 Hz	93.6	-0.8 ± 1.5
					125 Hz	94.1	-0.2 ± 1.0
					250 Hz	94.3	0.0 ± 1.0
					500 Hz	94.3	0.0 ± 1.0
					1 kHz	94.2	Ref.
					2 kHz	93.9	-0.2 ± 1.0
					4 kHz	92.7	-0.8 ± 1.0
					8 kHz	88.3	-3.0 (+1.5 ; -3.0)
					12.5 kHz	82.1	-6.2 (+3.0 ; -6.0)

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 Report

6.4 Time Averaging

UUT Setting				Applied Value					UUT	IEC 60804
Range (dB)	Mode	Frequency Weighting	Time Weighting	Freq. (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)	Reading (dB)	Type I Spec. (dB)
20 - 110	L _{Aeq}	A	10 sec.	4	1	1/10	110.0	100	100.3	± 0.5
						1/10 ²		90	90.3	± 0.5
			60 sec.			1/10 ³		80	80.3	± 1.0
			5 min.			1/10 ⁴		70	70.3	± 1.0

Remarks : - Mfr's Spec. : IEC 60651 & IEC 60804 Type 1

- Uncertainties of Applied Value : 94 dB : 31.5 Hz - 125 Hz : ± 0.35 dB
250 Hz - 500 Hz : ± 0.30 dB
1 kHz : ± 0.20 dB
2 kHz - 4 kHz : ± 0.35 dB
8 kHz : ± 0.45 dB
12.5 kHz : ± 0.70 dB
104 dB : 1 kHz : ± 0.10 dB (Ref. 94 dB)
114 dB : 1 kHz : ± 0.10 dB (Ref. 94 dB)
Burst equivalent level : ± 0.2 dB (Ref. 110 dB continuous sound level)

- The uncertainties are for a confidence probability of not less than 95 %.

Note :

The values given in this Calibration Report only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.



MAXLAB

CALIBRATION CERTIFICATE

Certificate Information

Date of Issue

6th November, 2008

Certificate Number

MLCN080967S

Customer Information

Company Name

MTR Corporation Limited

Address

MTR Tower, Telford Plaza,
33 Wai Yip St., Kowloon Bay,
Kowloon,
Hong Kong

Unit Under Test (UUT)

Description

Integrating Sound Level Meter

Manufacturer

Brüel & Kjær

Model Number

2238

Serial Number

2337690

Equipment Number

-

Calibration Result

- * All calibration results were within IEC 60651 Type 1 specification.
- * Calibration data are detailed on the attached sheet(s).

Approved By

Laboratory Manager

- * Calibration equipment used for this calibration are traceable to national / international standards.
- * The results on this Calibration Certificate only relate to the values measured at the time of the calibration and the uncertainties quoted will not include allowance for the UUT long term drift, variation with environmental changes, vibration and shock during transportation, overloading, mishandling, misuse, and the capacity of any other laboratory to repeat the measurement.
- * MaxLab Calibration Centre Limited shall not be liable for any loss or damage resulting from the use of the UUT.
- * The copy of this Certificate is owned by MaxLab Calibration Centre Limited. No part of this Certificate may be reproduced without the prior written approval of MaxLab Calibration Centre Limited.



MAXLAB

CALIBRATION CERTIFICATE

Certificate Information

Date of Issue 6th November, 2008

Certificate Number MLCN080967S

Calibration Status

Date of Calibration 5th November, 2008
Calibration Equipment Used 4231 (MLTE008)/ CA0801167/ 24th Feb 2010
Calibration Procedure MLCG00 & MLCG15.
Calibration Uncertainty ± 0.2 dB

Calibration Condition	Lab	Temperature	23 °C $\pm$ 5 °C
		Relative Humidity	55% $\pm$ 25%
	UUT	Stabilizing Time	24 hours
		Warm-up Time	10 minutes
		Supply Voltage	Not applicable

Calibration Data

UUT Setting				UUT Rdg	Std Rdg	UUT Error	UUT Error Limit
Detector	Frequency Wt.	Time Wt.	Range (dB)				
RMS	A (1 kHz Input)	F	20 - 100	93.8 dB	94 dB	-0.2 dB	0.7 dB
		S		93.8 dB	94 dB	-0.2 dB	0.7 dB
		I		93.8 dB	94 dB	-0.2 dB	0.7 dB
	C (1 kHz Input)	F	20 - 100	93.8 dB	94 dB	-0.2 dB	0.7 dB
		S		93.8 dB	94 dB	-0.2 dB	0.7 dB
		I		93.8 dB	94 dB	-0.2 dB	0.7 dB
	L (1 kHz Input)	F	20 - 100	93.8 dB	94 dB	-0.2 dB	0.7 dB
		S		93.8 dB	94 dB	-0.2 dB	0.7 dB
		I		93.8 dB	94 dB	-0.2 dB	0.7 dB
	A (1 kHz Input)	F	40 - 120	113.8 dB	114 dB	-0.2 dB	0.7 dB
		S		113.8 dB	114 dB	-0.2 dB	0.7 dB
		I		113.8 dB	114 dB	-0.2 dB	0.7 dB
	C (1 kHz Input)	F	40 - 120	113.8 dB	114 dB	-0.2 dB	0.7 dB
		S		113.8 dB	114 dB	-0.2 dB	0.7 dB
		I		113.8 dB	114 dB	-0.2 dB	0.7 dB
	L (1 kHz Input)	F	40 - 120	113.8 dB	114 dB	-0.2 dB	0.7 dB
		S		113.8 dB	114 dB	-0.2 dB	0.7 dB
		I		113.8 dB	114 dB	-0.2 dB	0.7 dB

Appendix D

Figures

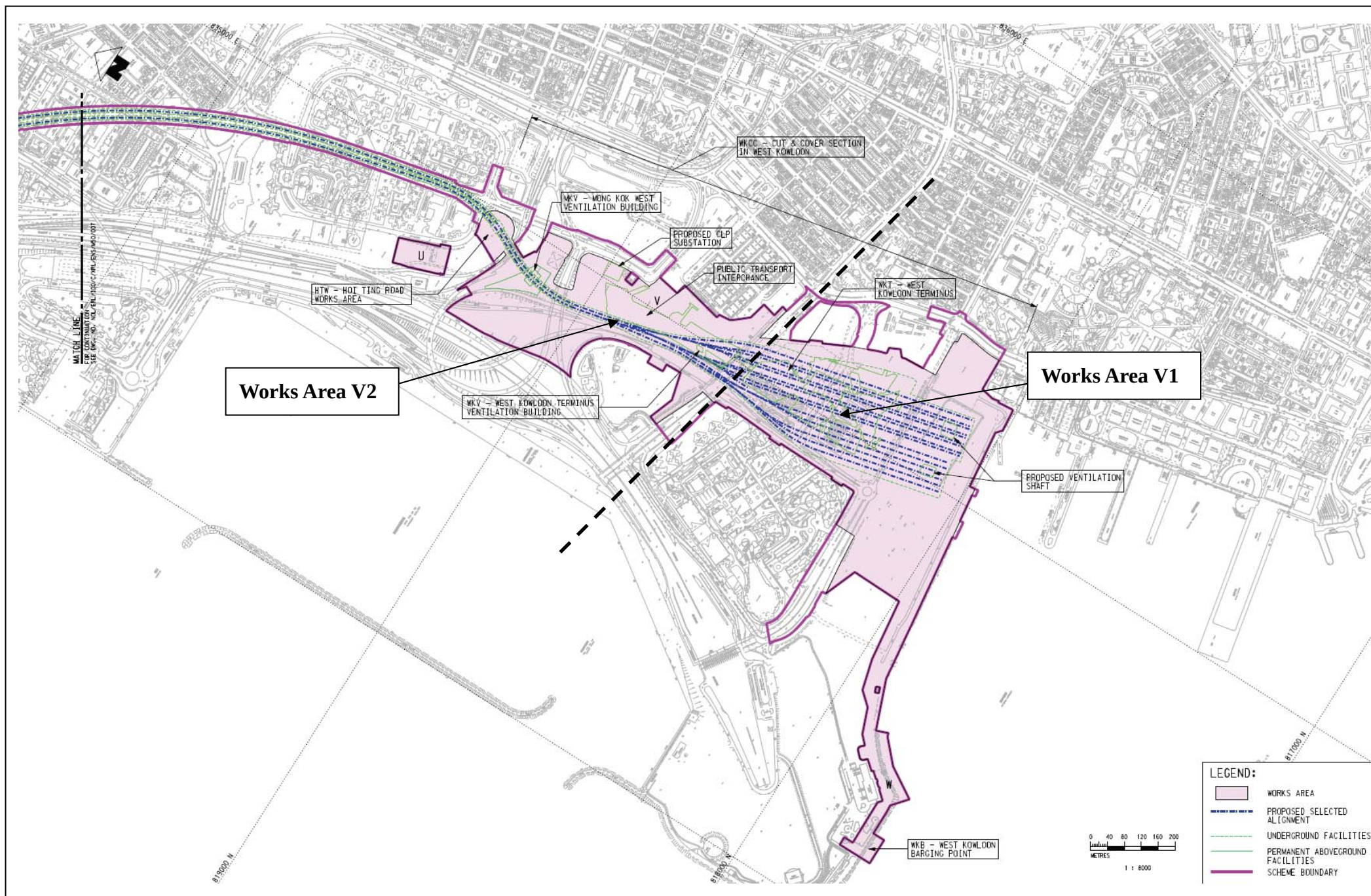


Figure 1 – Works Area

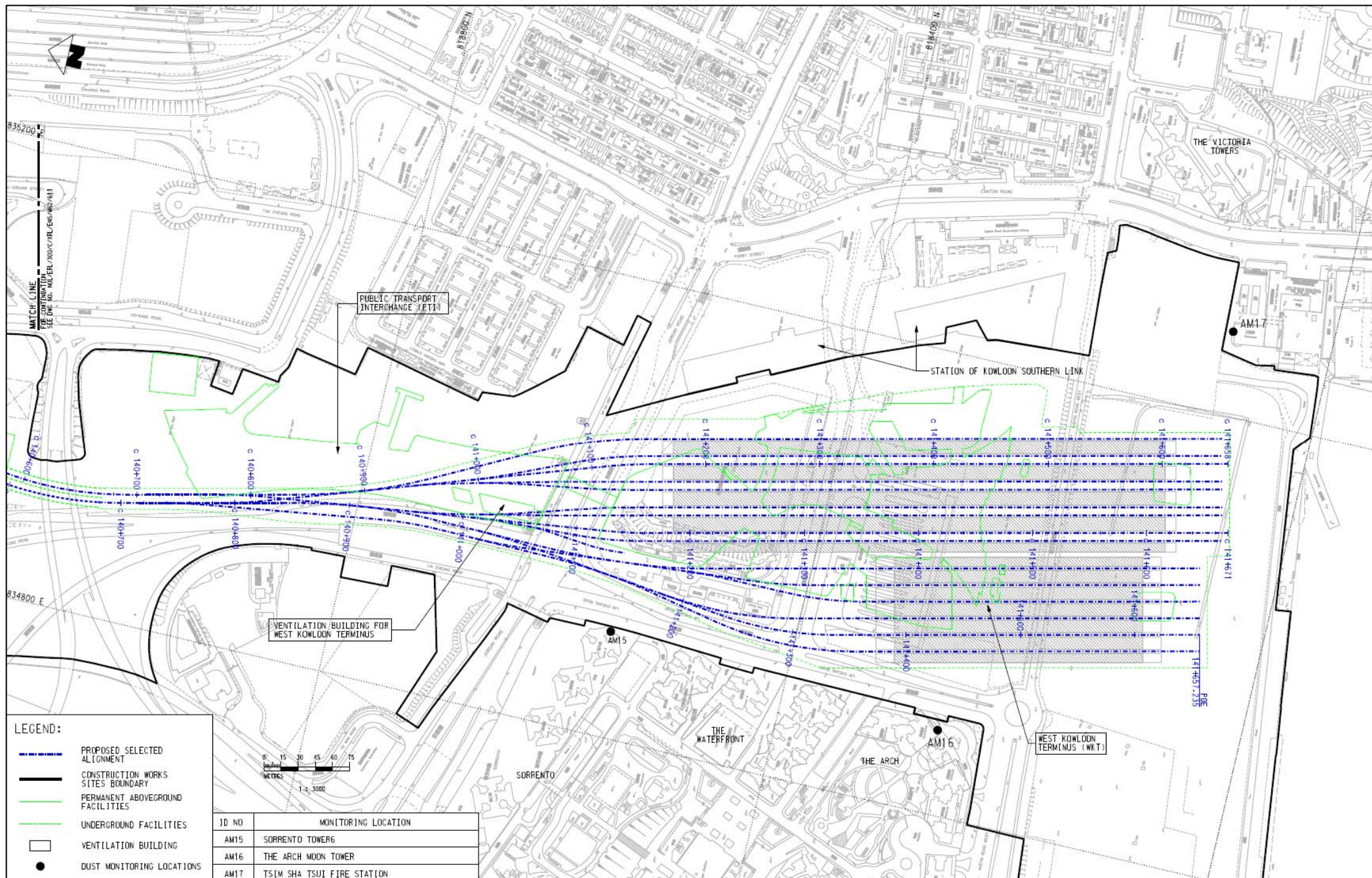


Figure 2 – Dust Monitoring Locations in EM&A Manual

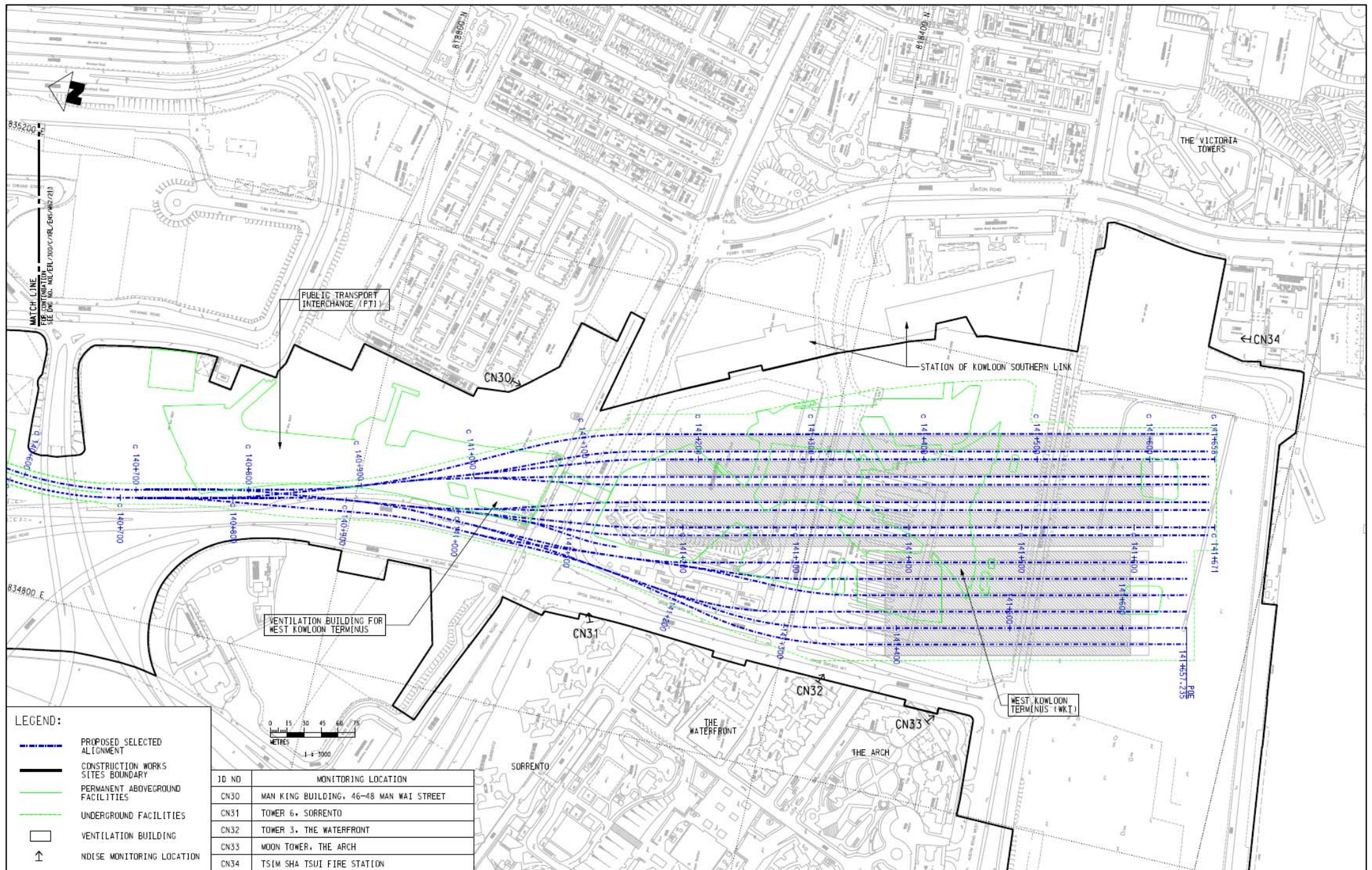


Figure 3 – Noise Monitoring Locations in EM&A Manual

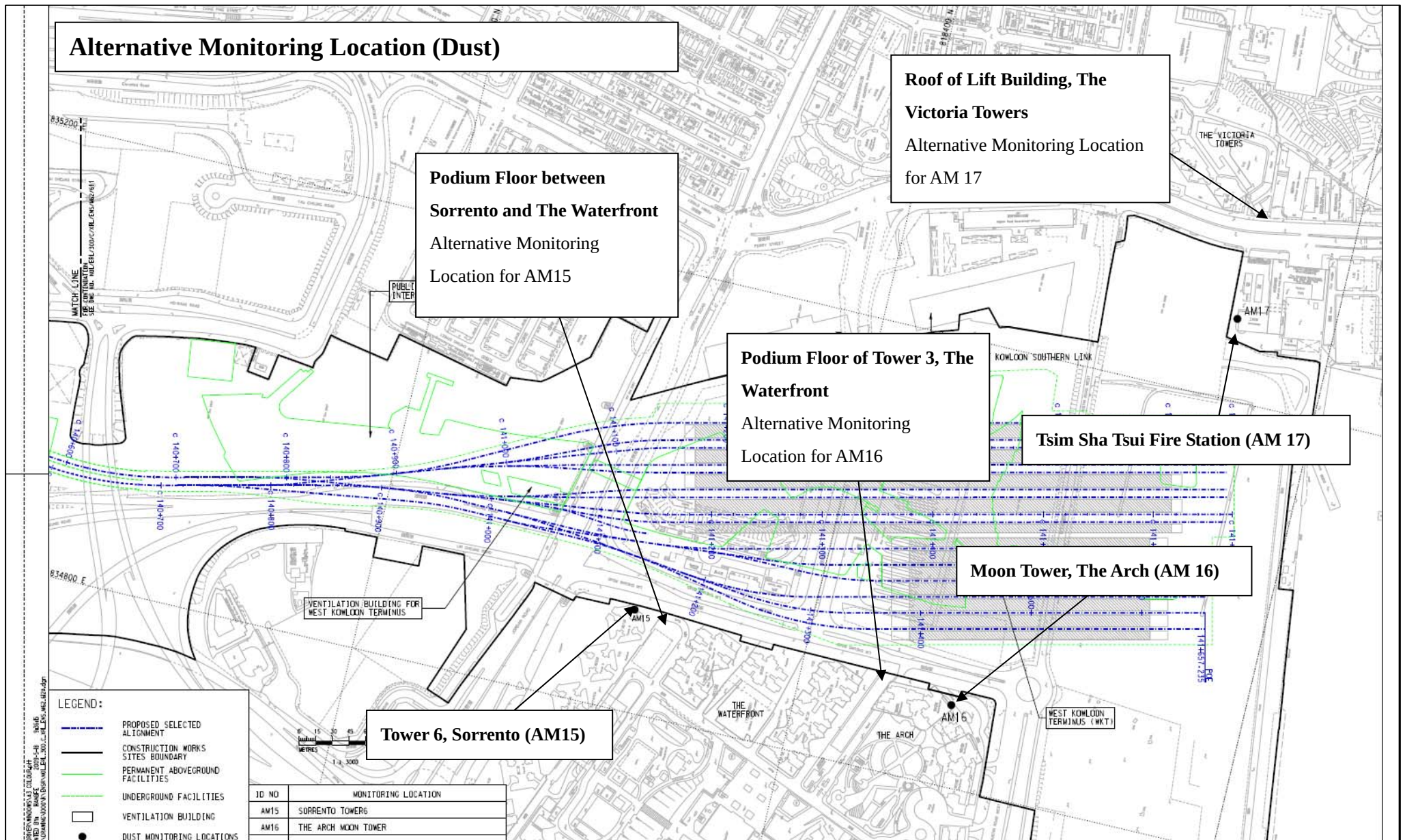
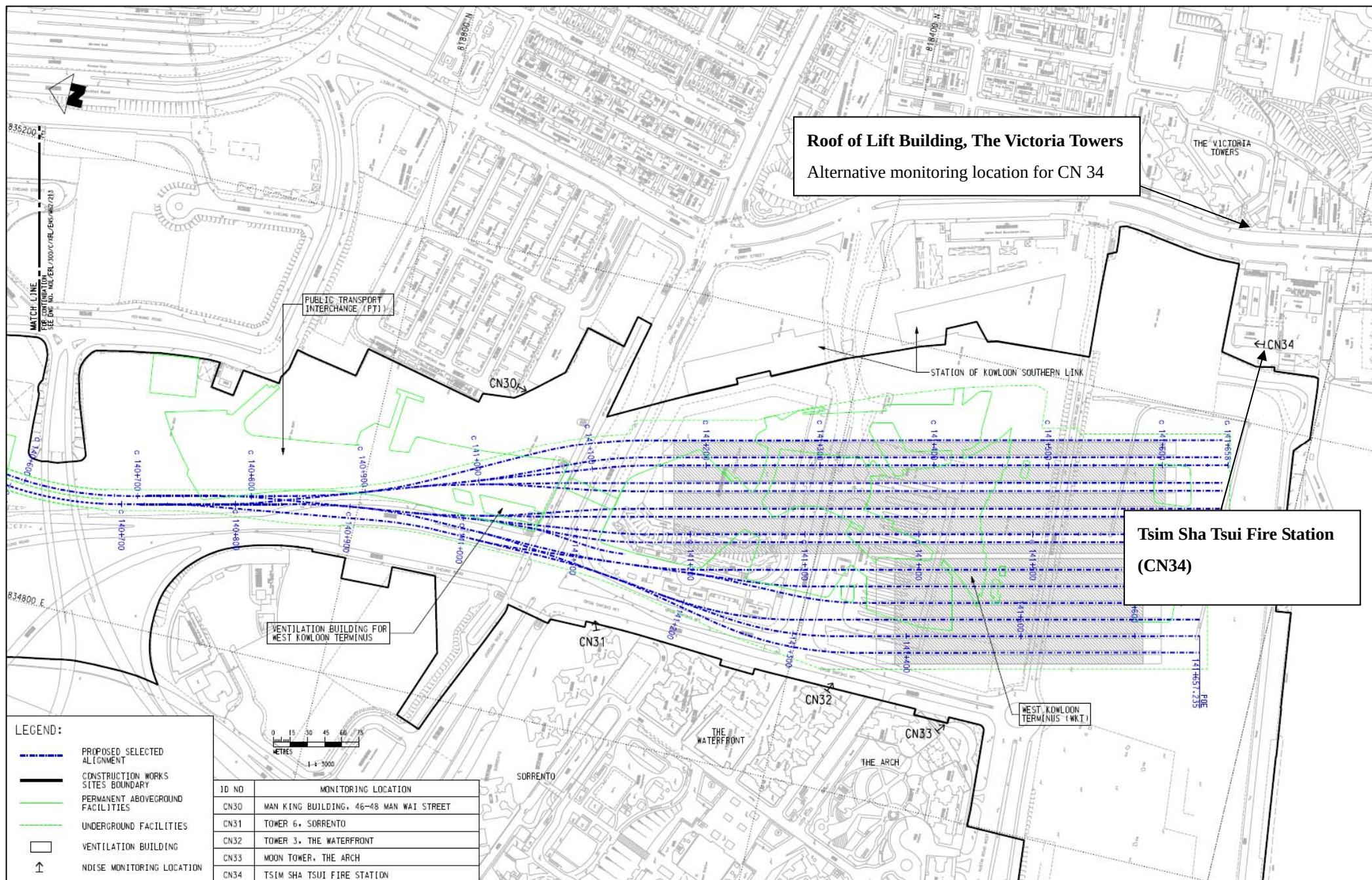


Figure 4 – Alternative dust monitoring locations





Alternative location of AM 15 - Podium Floor between Sorrento and The Waterfront



Alternative location of AM 16 - Podium Floor of Tower 3, The Waterfront



Alternative location of AM 17 and CN 34 –
Roof of Lift Building, The Victoria Towers

Figure 6 – Photos of alternative monitoring locations