

MTR Corporation Limited

HONG KONG SECTION OF GUANGZHOU -
SHENZHEN - HONG KONG EXPRESS RAIL LINK

(No. EP-349/2009)

Baseline Monitoring Report (Part 4)

Certified by: Glenn Frommer

Position: Environmental Team Leader

Date: 25 JAN 2010

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Our ref KMY/AFK/JOC/FY/bl/T264090/22.01/L-0021

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Your ref

MTR Corporation Ltd.,
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25 January 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 4)

We refer to the revised Baseline Monitoring Report (Part 4) received on 25 January 2010 via email.
Pursuant to Condition 2.42 of the Environmental Permit, I hereby verify the Baseline Monitoring Report Part 4.

Yours faithfully,
for MOTT MACDONALD HONG KONG LIMITED



Dr. Anne Kerr
Independent Environmental Checker (IEC)

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 monitoring location in the vicinity of Works Area V1 (Figure 1). Noise measurements were taken in terms of Leq with L10 and L90 as reference.

In addition to the baseline noise monitoring conducted at The Waterfront (CN 32) and Tsim Sha Tsui Fire Station (CN 34) which was reported in Part 3 of the Baseline Monitoring Report, Part 4 of the Baseline Monitoring Report covers baseline noise monitoring which was conducted between 14/12/2009 and 21/1/2010 at Tower 6, Sorrento (CN 31) and Star Tower, The Arch (CN 33). Baseline noise monitoring for Man King Building (CN 30) would be covered in separate submission. 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. No noise monitoring was conducted on 15/12 (1900-2400 hours), 16/12 , 17/12 (0000-1900 hours), 27/12 (1900-2400 hours), 28/12 to 8/1 (0000-1900 hours) due to unstable weather condition. 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 CN 31 and CN 33 was ranged from 64 to 71 dB(A) and 63 to 71 dB(A) respectively. The average daytime baseline noise levels at CN 31 (67 dB(A)) and CN 33 (66 dB(A)) 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 4) contains baseline noise monitoring findings at CN 31 (Tower 6, Sorrento) and CN 33 (Star Tower, The Arch) 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

Results of all air quality monitoring stations in the vicinity of Works Area V1, including AM 15, AM 16 and AM 17, were covered in Baseline Monitoring Report (Part 3). As such, no reporting of air quality monitoring results were included in this report.

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 receiver. 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 meter 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 and B&K 2238 sound level meters, which comply 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 14/12/2009 to 21/1/2010 at Noise Sensitive Receivers (NSRs) located in the vicinity of Works Area V1¹. Given that no

¹ Baseline noise monitoring at The Waterfront (CN 32) and Tsim Sha Tsui Fire Station (CN 34) were

suitable monitoring location was identified in the Moon Tower, The Arch (location specified in the EM&A Manual), the monitoring location was re-located to the adjacent Star Tower, The Arch. The original and alternative monitoring locations are shown in Figure 2. Monitoring was carried out at the following stations in accordance with the EM&A Manual:

Monitoring Station ID	Noise Monitoring Location	Monitoring period
CN 31	Tower 6, Sorrento	24/12/2009 to 21/1/2010 ¹
CN 33	Star Tower, The Arch	14/12/2009 to 10/1/2010 ¹

¹ No noise monitoring was conducted on 15/12 (1900-2400 hours), 16/12, 17/12 (0000-1900 hours), 27/12 (1900-2400 hours), 28/12 to 8/1 (0000-1900 hours), 11/1 (0700-2400 hours) and 12/1 due to unstable weather condition.

Table 3.1: Information of Noise Monitoring Stations

3.4 Calibration Requirements

Rion NL 31 and B&K 2238 sound level meter 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 B.

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

included in Part 3 of the Baseline Monitoring Report Monitoring. Baseline noise monitoring at Man King Building (CN30) 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 14/12/2009 and 21/1/2010 for CN 31 and CN 33. The weather condition was generally fine with occasional rainfall events during the monitoring period. Measurements were taken from building façade. The major noise sources at respective monitoring locations are summarized at the table below:

Monitoring location ID	Monitoring location	Major noise source
CN 31	Tower 6, Sorrento	Traffic noise
CN 33	Star Tower, The Arch	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 A. Graphical presentations of the monitoring results are shown in Appendix A.

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 31	67 (64-71)	68 (65-73)	65 (62-67)
	CN 33	66 (63-71)	68 (64-75)	64 (60-68)
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 31	65 (62-71)	66 (64-75)	63 (59-64)
	CN 33	65 (61-71)	66 (63-70)	62 (59-65)
1900 – 2300 (Evening, Normal weekday)	CN 31	65 (63-71)	66 (64-75)	63 (61-65)
	CN 33	65 (63-69)	66 (64-73)	63 (61-65)
2300 – 0700 (Night-time, all days)	CN 31	61 (55-71)	63 (56-73)	59 (53-64)
	CN 33	61 (55-69)	62 (56-72)	58 (53-68)

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 CN33 range from 63-71 dB(A). By comparing with other noise monitoring stations in vicinity of Works Area V1, the average daytime baseline noise level at CN 31 (67 dB(A)) and CN 33 (66 dB(A)) was found comparable to Tsim Sha Tsui Fire Station (CN 34, 67 dB(A)) and was lower than Tower 3, The Waterfront (CN 32 (71 dB(A))). The daytime baseline noise level at both

CN 31 and CN 33 were below the Limit Level for of 75 dB(A) for residential premises.

4. CONCLUSION

4.1 Air

Results of all air quality monitoring stations in the vicinity of Works Area V1, including AM 15, AM 16 and AM 17, were covered in Baseline Monitoring Report (Part 3). As such, no reporting of air quality monitoring results was included in this report.

4.2 Airborne Construction Noise

Baseline noise monitoring were carried at all two monitoring stations from 14/12/2009 to 21/1/2010. The weather during the baseline monitoring period was fine with occasional rainfall events.

As revealed from the monitoring results, baseline noise levels for daytime (0700-1900) during normal weekdays at the CN31 and CN 33 range from 64-71 dB(A) and 63-71 dB(A) respectively. By comparing with other noise monitoring stations in vicinity of Works Area V1, the average daytime baseline noise level at CN 31 (67 dB(A)) and CN 33 (66 dB(A)) was found comparable to Tsim Sha Tsui Fire Station (CN 34, 67 dB(A)) and was lower than Tower 3, The Waterfront (CN 32 (71 dB(A))). The daytime baseline noise level at both CN 31 and CN 33 was below the Limit Level for of 75 dB(A) for residential premises.

Appendix A

Baseline noise monitoring data

Baseline Noise Monitoring Result

Location: CN 31 Tower 6, Sorrento

Baseline monitoring period: 24/12/2009-21/1/2010

Parameter: Leq

Time Slot Averaged Baselines

1)Weekdays Daytime Noise Level, dB(A)

Time slot	Leq, 30 min	L10	L90
07:00-07:30	64.7	66.4	62.8
07:30-08:00	65.7	67.2	63.9
08:00-08:30	66.6	68.0	65.0
08:30-09:00	67.0	68.3	65.4
09:00-09:30	66.8	68.2	65.3
09:30-10:00	66.5	67.9	65.0
10:00-10:30	67.5	69.2	65.5
10:30-11:00	68.1	69.9	65.7
11:00-11:30	67.7	69.6	65.5
11:30-12:00	66.5	68.3	64.5
12:00-12:30	66.1	67.6	64.1
12:30-13:00	66.2	67.7	64.3
13:00-13:30	67.0	68.7	65.0
13:30-14:00	67.7	69.5	65.5
14:00-14:30	67.0	68.7	65.0
14:30-15:00	66.5	68.1	64.8
15:00-15:30	66.8	68.3	64.9
15:30-16:00	66.5	68.0	64.8
16:00-16:30	66.5	67.9	64.8
16:30-17:00	66.1	67.5	64.5
17:00-17:30	66.1	67.5	64.5
17:30-18:00	66.1	67.6	64.4
18:00-18:30	65.9	67.3	64.1
18:30-19:00	65.6	67.3	63.9
Average	66.6	68.2	64.8

Noise Control Period Averaged Baselines

2) Weekdays Evening Noise Level, dB(A)

Time Slot	Leq, 5min	L10	L90
19:00-19:15	65.7	67.1	63.9
	65.4	66.8	63.7
	65.4	66.9	63.6
19:15-19:30	65.2	66.6	63.5
	65.5	67.2	63.5
	65.6	67.2	63.6
19:30-19:45	65.5	67.2	63.6
	65.4	66.8	63.6
	65.8	68.0	63.5
19:45-20:00	65.2	66.7	63.5
	65.2	66.7	63.4
	65.0	66.5	63.2
20:00-20:15	64.6	66.0	62.9
	64.8	66.3	62.9
	64.8	66.4	63.0
20:15-20:30	64.6	66.1	63.0
	64.7	66.2	62.9
	64.6	66.2	62.7
20:30-20:45	64.2	65.8	62.5
	64.6	66.3	62.7
	64.4	66.0	62.5
20:45-21:00	64.5	66.1	62.6
	64.4	66.1	62.5
	64.5	66.0	62.8
21:00-21:15	64.2	65.7	62.4
	64.4	65.8	62.5
	64.7	66.2	63.0
21:15-21:30	64.3	65.9	62.4
	64.5	66.1	62.6
	64.5	66.1	62.8

Time Slot	Leq, 5min	L10	L90
21:30-21:45	64.5	66.1	62.6
	64.7	66.3	62.8
	64.7	66.4	62.6
21:45-22:00	65.8	68.3	62.7
	64.5	66.1	62.4
	64.6	66.2	62.6
22:00-22:15	64.7	66.3	62.9
	64.5	66.2	62.6
	64.8	66.5	62.8
22:15-22:30	64.3	65.8	62.5
	64.3	65.9	62.4
	64.3	65.9	62.5
22:30-22:45	64.5	66.1	62.7
	64.2	65.8	62.5
	64.1	65.8	62.2
22:45-23:00	64.1	65.8	62.3
	64.3	66.0	62.3
	64.2	66.0	62.1
Average	64.8	66.4	62.9

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

Time Slot	Leq, 5min	L10	L90
0700-07:15	62.3	64.2	60.1
	63.4	65.3	61.1
	63.4	65.1	61.1
07:15-07:30	63.5	65.3	61.4
	63.6	65.5	61.4
	63.4	65.0	61.6
07:30-07:45	63.5	65.3	61.0
	63.4	65.3	61.3
	63.8	65.6	61.5
07:45-08:00	63.9	65.8	61.8
	63.8	65.2	61.9
	63.6	65.6	61.5
08:00-08:15	64.1	65.8	61.9

Time Slot	Leq, 5min	L10	L90
	64.2	65.9	61.9
	64.1	65.9	62.0
08:15-08:30	64.1	65.9	62.0
	64.2	65.7	62.3
	64.3	65.8	62.6
08:30-08:45	64.4	66.1	62.1
	64.3	66.0	62.1
	64.0	65.6	61.9
08:45-09:00	64.4	66.2	62.5
	64.3	66.0	62.5
	64.4	66.1	62.4
09:00-09:15	64.4	66.0	62.4
	64.4	66.3	62.2
	64.5	66.1	62.5
09:15-09:30	64.4	66.0	62.5
	64.2	66.0	62.5
	64.8	66.3	62.6
09:30-09:45	64.3	66.0	62.3
	64.5	66.1	62.6
	64.3	65.8	62.4
09:45-10:00	64.5	66.1	62.6
	64.4	66.0	62.5
	64.6	66.3	62.7
10:00-10:15	64.9	66.1	62.7
	64.6	66.1	62.8
	64.9	66.5	63.1
10:15-10:30	64.9	66.5	63.0
	65.0	66.4	63.1
	65.0	66.5	63.3
10:30-10:45	64.8	66.5	62.9
	64.7	66.2	62.7
	65.1	66.7	63.0
10:45-11:00	65.1	66.6	63.2
	64.8	66.3	63.0
	64.8	66.2	63.1
11:00-11:15	64.8	66.4	63.1

Time Slot	Leq, 5min	L10	L90
	65.1	66.8	63.3
	64.8	66.5	63.1
11:15-11:30	65.0	66.5	63.3
	64.7	66.1	63.1
	65.1	66.5	63.4
11:30-11:45	64.9	66.3	63.3
	64.9	66.4	63.3
	65.1	66.8	63.2
11:45-12:00	65.0	66.4	63.4
	64.8	66.3	63.0
	65.2	66.8	63.4
12:00-12:15	64.8	66.1	63.2
	64.7	66.2	63.0
	65.1	66.6	63.5
12:15-12:30	65.0	66.5	63.2
	65.0	66.6	63.3
	65.1	66.6	63.4
12:30-12:45	64.9	66.5	63.2
	65.0	66.5	63.1
	65.1	66.7	63.3
12:45-13:00	65.3	66.8	63.5
	65.1	66.6	63.3
	65.1	66.6	63.4
13:00-13:15	65.1	66.7	63.1
	65.0	66.7	63.3
	65.3	66.7	63.4
13:15-13:30	65.2	66.8	63.4
	65.0	66.5	63.2
	65.3	66.8	63.5
13:30-13:45	65.1	66.6	63.4
	64.8	66.3	63.2
	65.2	66.7	63.6
13:45-14:00	65.1	66.7	63.3
	65.2	66.8	63.5
	65.5	67.1	63.6
14:00-14:15	65.5	67.2	63.2

Time Slot	Leq, 5min	L10	L90
	65.3	67.0	63.5
	65.3	66.9	63.2
14:15-14:30	65.1	66.4	63.4
	64.9	66.4	63.2
	65.3	66.7	63.6
14:30-14:45	65.1	66.6	63.4
	65.0	66.3	63.4
	65.2	66.8	63.5
14:45-15:00	65.4	66.9	63.6
	65.0	66.6	63.0
	65.3	66.8	63.5
15:00-15:15	65.1	66.6	63.2
	65.2	66.8	63.5
	65.3	66.9	63.6
15:15-15:30	65.5	67.2	63.6
	64.9	66.2	63.2
	65.2	66.8	63.5
15:30-15:45	67.2	70.4	63.7
	66.0	68.1	63.6
	65.3	67.2	63.5
15:45-16:00	65.2	66.6	63.6
	65.1	66.6	63.3
	65.0	66.5	63.3
16:00-16:15	65.2	66.7	63.3
	65.4	66.9	63.6
	65.1	66.7	63.1
16:15-16:30	65.3	67.0	63.3
	65.2	66.6	63.4
	65.3	66.8	63.3
16:30-16:45	65.3	66.7	63.5
	65.2	66.4	63.5
	65.2	66.6	63.6
16:45-17:00	65.3	66.8	63.5
	65.3	66.8	63.7
	65.4	66.9	63.5
17:00-17:15	65.2	66.6	63.5

Time Slot	Leq, 5min	L10	L90
	65.3	67.2	63.4
	65.3	66.9	63.5
17:15-17:30	65.2	66.8	63.4
	65.4	67.0	63.6
	65.3	66.8	63.6
17:30-17:45	65.2	66.8	63.5
	65.0	66.5	63.2
	64.9	66.4	63.3
17:45-18:00	65.2	66.7	63.4
	64.9	66.3	63.3
	65.1	66.6	63.3
18:00-18:15	65.0	66.4	63.2
	65.6	66.9	63.3
	64.7	66.3	63.0
18:15-18:30	64.7	66.3	63.0
	64.9	66.3	63.1
	65.3	66.9	63.4
18:30-18:45	64.6	66.0	62.8
	64.4	65.8	62.8
	64.4	65.8	62.6
18:45-19:00	64.7	66.1	63.1
	64.6	66.1	63.0
	65.0	66.4	63.3
19:00-19:15	64.8	66.2	63.0
	64.9	66.6	62.9
	64.3	65.7	62.6
19:15-19:30	64.6	66.0	62.8
	64.5	65.7	62.8
	65.3	67.4	63.1
19:30-19:45	64.8	66.4	62.8
	64.6	66.2	62.9
	64.9	66.6	63.1
19:45-20:00	64.7	66.2	62.8
	64.5	66.2	62.7
	64.5	66.2	62.7
20:00-20:15	64.2	65.7	62.7

Time Slot	Leq, 5min	L10	L90
	64.1	65.6	62.4
	64.2	65.7	62.4
20:15-20:30	64.2	65.8	62.2
	64.1	65.6	62.3
	64.5	66.1	62.7
20:30-20:45	64.4	65.9	62.3
	64.7	66.4	62.3
	64.4	66.1	62.6
20:45-21:00	64.1	65.7	62.4
	64.1	65.6	62.2
	64.4	65.7	62.4
21:00-21:15	64.4	66.1	62.6
	64.4	66.1	62.4
	64.4	66.1	62.5
21:15-21:30	64.2	65.9	62.4
	64.7	66.4	62.6
	64.6	66.2	62.6
21:30-21:45	64.2	66.0	62.3
	64.4	66.0	62.6
	64.7	66.2	62.6
21:45-22:00	64.4	65.9	62.4
	64.3	65.8	62.5
	64.2	65.6	62.4
22:00-22:15	67.1	70.4	62.8
	64.1	65.8	62.1
	64.5	66.0	62.6
22:15-22:30	64.7	66.1	62.5
	64.2	65.6	62.5
	64.2	65.8	62.5
22:30-22:45	64.0	65.5	62.1
	64.0	65.5	62.2
	64.2	65.6	62.3
22:45-23:00	63.9	65.4	62.0
	64.0	65.6	62.1
	64.2	66.0	62.1
Average	64.8	66.4	62.9

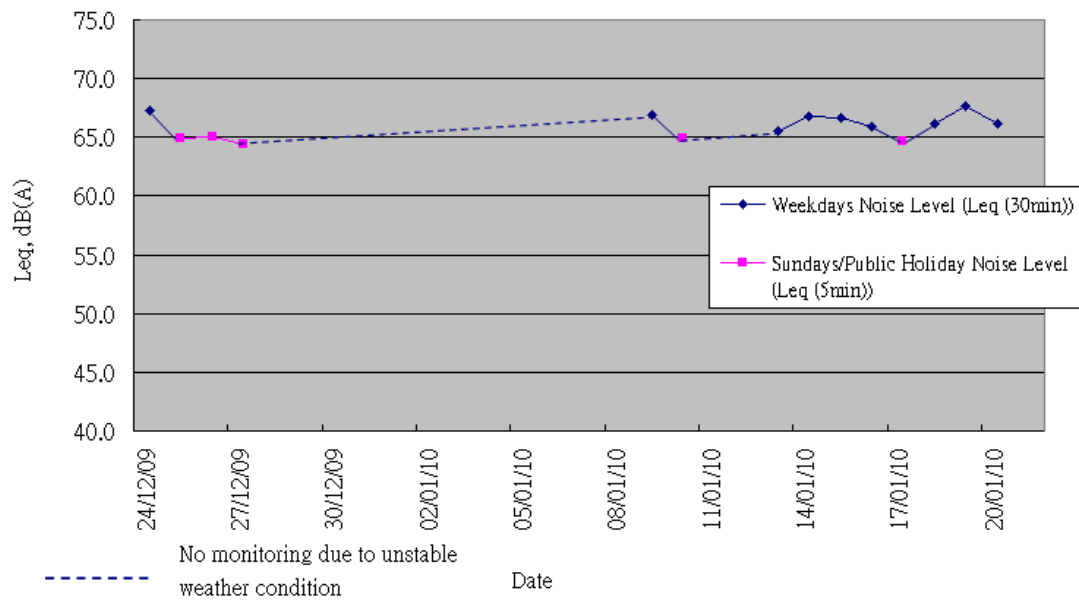
4) Night-time (for all days) Noise Level, dB(A)

Time Slot	Leq, 5min	L10	L90
23:00-23:15	65.0	66.5	62.1
	64.1	65.7	62.1
	64.7	66.4	62.0
23:15-23:30	63.8	65.3	61.8
	63.9	65.7	61.9
	64.1	65.6	62.1
23:30-23:45	63.8	65.5	61.8
	63.7	65.4	61.6
	63.7	65.5	61.6
23:45-00:00	63.6	65.3	61.6
	63.3	65.0	61.4
	63.6	65.2	61.5
00:00-00:15	63.3	65.0	61.2
	63.2	64.9	61.0
	62.7	64.4	60.7
00:15-00:30	62.8	64.5	60.8
	62.3	64.0	60.4
	62.1	63.9	60.0
00:30-00:45	61.6	63.3	59.6
	61.5	63.0	59.2
	61.3	63.1	59.0
00:45:01:00	61.0	62.8	58.9
	61.0	62.8	58.8
	60.9	62.8	58.5
01:00-01:15	60.1	61.8	58.0
	60.1	61.6	58.2
	59.9	61.4	58.0
01:15-01:30	60.0	61.7	57.8
	60.9	63.8	57.5
	59.3	60.9	57.4
01:30-01:45	59.3	60.7	57.2
	59.2	61.0	57.2
	59.3	60.7	57.1

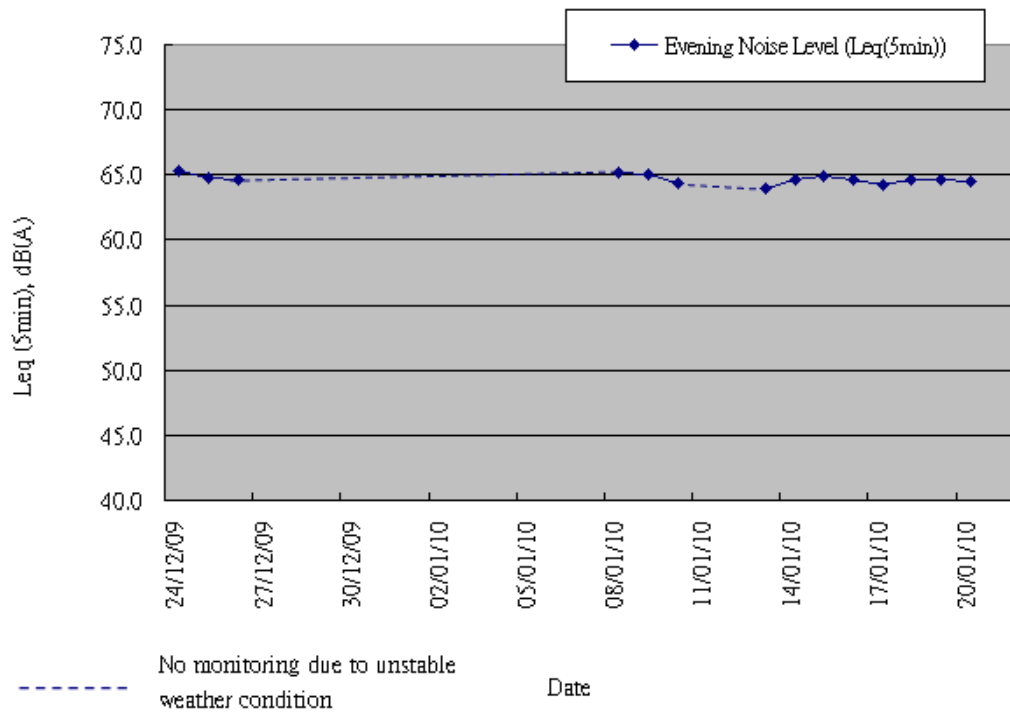
Time Slot	Leq, 5min	L10	L90
01:45-02:00	60.0	62.4	57.1
	59.1	60.8	57.1
	59.2	60.9	56.9
02:00-02:15	59.1	60.7	56.9
	59.2	61.8	56.7
	58.8	60.5	56.7
02:15-02:30	58.5	60.0	56.6
	58.2	59.6	56.4
	58.6	60.2	56.5
02:30-02:45	58.7	60.3	56.5
	58.6	60.1	56.4
	58.3	59.8	56.3
02:45-03:00	58.5	60.2	56.4
	58.1	59.6	56.1
	58.6	60.2	56.3
03:00-03:15	58.0	59.5	56.0
	58.2	59.9	56.2
	57.8	59.5	55.9
03:15-03:30	57.9	59.5	55.9
	58.0	59.5	55.7
	58.3	60.3	55.9
03:30-03:45	57.8	59.4	55.8
	57.9	59.6	55.8
	57.6	59.2	55.8
03:45-04:00	59.2	61.4	55.8
	57.7	59.0	55.6
	58.0	59.8	55.7
04:00-04:15	57.8	59.5	55.8
	58.2	59.9	56.0
	58.0	59.6	55.9
04:15-04:30	57.8	59.4	55.8
	58.2	60.0	55.8
	58.2	59.9	55.9
04:30-04:45	58.2	60.0	56.0
	58.1	59.8	56.1
	58.1	59.8	55.9

Time Slot	Leq, 5min	L10	L90
04:45-05:00	58.4	60.2	56.0
	57.9	59.5	56.0
	58.4	60.3	56.1
05:00-05:15	58.4	60.2	56.2
	58.3	60.1	56.0
	59.2	61.1	56.8
05:15-05:30	59.5	61.3	57.3
	59.8	61.8	57.3
	59.6	61.6	57.2
05:30-05:45	59.0	60.7	56.9
	59.4	61.7	57.1
	59.1	60.8	57.2
05:45-06:00	59.7	61.6	57.4
	59.8	61.6	57.6
	59.9	61.9	57.8
06:00-06:15	61.0	62.9	58.9
	61.4	63.3	59.0
	61.3	63.3	59.1
06:15-06:30	61.8	63.6	59.6
	61.9	63.8	59.7
	62.4	64.2	60.2
06:30-06:45	62.3	64.0	60.2
	62.6	64.4	60.4
	63.3	65.3	60.8
06:45-07:00	63.2	65.0	60.7
	63.0	64.8	60.9
	63.8	65.6	61.6
Average	60.8	62.6	58.6

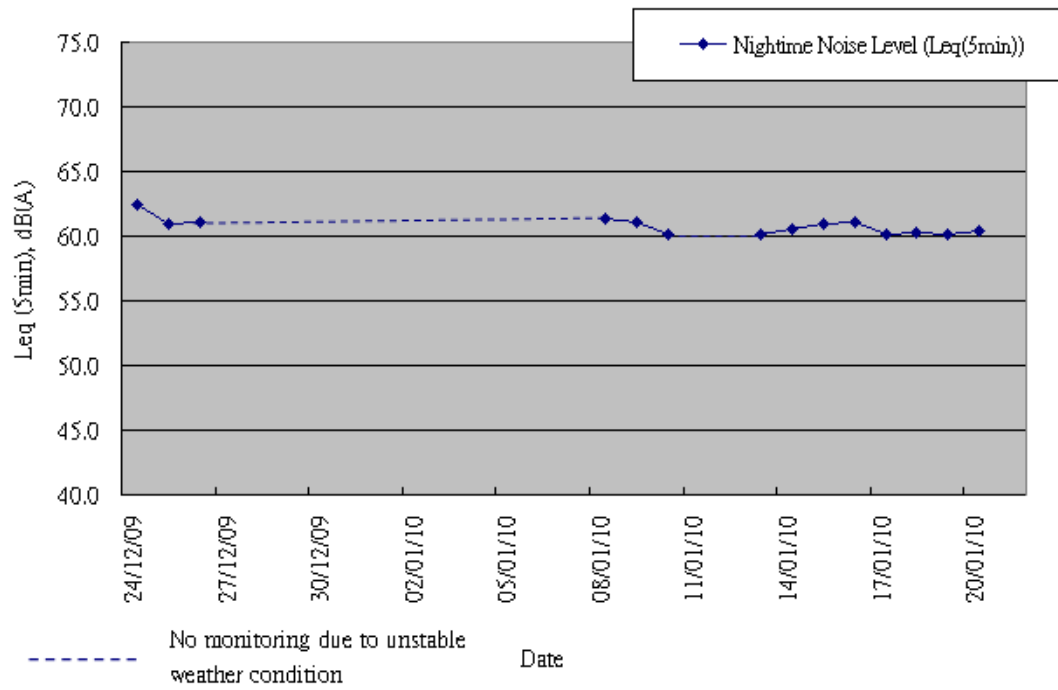
Average Leq at CN31 during Daytime (0700-1900)



Average Leq(5min) at CN31 during Evening (1900-2300) for all days



Average Leq(5min) at CN31 during Nighttime (2300-0700) for all days



Baseline Noise Monitoring Result

Location: CN 33 Star Tower, The Arch

Baseline monitoring period: 14/12/2009-10/1/2010

Parameter: Leq

Time Slot Averaged Baselines

1) Weekdays Daytime Noise Level, dB(A)

Time slot	Leq, 30 min	L10	L90
07:00-07:30	63.3	64.9	61.2
07:30-08:00	64.6	66.1	62.3
08:00-08:30	66.0	67.4	63.9
08:30-09:00	66.7	68.2	64.6
09:00-09:30	66.7	68.1	64.6
09:30-10:00	66.8	68.1	64.7
10:00-10:30	67.3	69.1	64.8
10:30-11:00	67.3	69.1	64.9
11:00-11:30	66.8	68.1	64.9
11:30-12:00	66.3	67.7	64.1
12:00-12:30	65.8	67.0	64.0
12:30-13:00	65.9	67.3	64.0
13:00-13:30	66.8	68.6	64.5
13:30-14:00	66.7	68.2	64.6
14:00-14:30	66.9	68.5	64.5
14:30-15:00	67.1	69.5	64.4
15:00-15:30	66.6	68.0	64.6
15:30-16:00	66.4	67.5	64.7
16:00-16:30	66.4	67.4	64.7
16:30-17:00	66.7	67.8	64.9
17:00-17:30	66.3	67.5	64.6
17:30-18:00	66.1	67.2	64.3
18:00-18:30	65.9	67.1	64.1
18:30-19:00	65.4	66.6	63.7
Average	66.4	67.8	64.3

Noise Control Period Averaged Baselines

2) Weekdays Evening Noise Level, dB(A)

Time Slot	Leq, 5min	L10	L90
19:00-19:15	64.9	66.1	63.3
	65.1	66.1	63.2
	65.0	66.2	63.3
19:15-19:30	65.1	66.4	63.2
	64.9	66.1	63.2
	64.9	66.0	63.2
19:30-19:45	65.1	66.3	63.1
	64.8	66.0	62.9
	65.4	66.8	63.2
19:45-20:00	65.5	66.9	63.3
	65.1	66.4	63.0
	65.1	66.4	63.1
20:00-20:15	65.1	66.4	63.2
	64.9	66.4	62.8
	64.6	65.9	62.7
20:15-20:30	64.7	66.0	62.6
	64.5	65.9	62.3
	65.0	66.4	62.9
20:30-20:45	64.8	66.2	62.7
	64.9	66.2	62.6
	64.3	65.7	62.2
20:45-21:00	64.5	65.9	62.5
	64.5	66.0	62.4
	64.9	66.4	62.6
21:00-21:15	64.2	65.4	62.5
	64.4	65.7	62.6
	64.2	65.4	62.3
21:15-21:30	64.5	65.7	62.5
	64.6	65.8	62.5
	64.4	65.8	62.4
21:30-21:45	64.7	66.0	62.6
	64.7	65.9	62.5

Time Slot	Leq, 5min	L10	L90
	64.8	66.1	62.7
21:45-22:00	65.1	66.4	63.1
	65.7	67.6	63.0
	65.3	66.9	62.8
22:00-22:15	64.6	65.8	62.6
	64.6	65.9	62.6
	64.5	65.7	62.6
22:15-22:30	64.7	65.9	62.4
	64.6	65.9	62.8
	64.7	65.9	62.6
22:30-22:45	64.3	65.6	62.4
	64.4	65.6	62.4
	64.5	65.9	62.3
22:45-23:00	64.2	65.6	62.3
	64.1	65.4	61.9
	64.4	65.8	62.1
Average	64.8	66.1	62.7

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

Time Slot	Leq, 5min	L10	L90
0700-07:15	61.9	63.4	59.6
	63.3	64.8	60.2
	62.2	63.9	59.6
07:15-07:30	62.2	63.9	60.1
	62.5	64.1	60.3
	62.6	63.9	60.3
07:30-07:45	63.3	64.6	60.5
	62.8	64.4	60.4
	62.9	64.3	60.1
07:45-08:00	62.8	64.4	60.3
	63.5	64.9	60.9
	63.1	64.7	60.7
08:00-08:15	63.0	64.5	60.9
	62.9	64.5	60.6

Time Slot	Leq, 5min	L10	L90
	63.0	64.5	60.8
08:15-08:30	63.1	64.5	60.9
	63.8	65.5	61.0
	63.8	65.3	61.5
08:30-08:45	63.7	65.6	61.3
	64.0	65.3	61.8
	63.4	65.0	61.0
08:45-09:00	63.4	65.2	61.0
	63.4	64.8	61.3
	63.9	65.4	61.6
09:00-09:15	63.7	65.3	61.4
	63.6	65.0	61.5
	64.2	66.0	61.4
09:15-09:30	63.5	65.0	61.1
	63.9	65.3	61.6
	63.8	65.4	61.5
09:30-09:45	63.3	64.8	61.1
	63.6	65.1	61.5
	63.9	65.3	61.6
09:45-10:00	63.8	65.2	61.6
	64.0	65.5	61.5
	64.3	65.7	62.0
10:00-10:15	64.3	65.8	61.8
	64.4	65.8	61.9
	64.0	65.3	61.7
10:15-10:30	64.4	66.2	61.7
	64.4	66.0	61.8
	64.4	66.0	62.2
10:30-10:45	64.2	65.3	62.1
	65.0	66.5	62.5
	64.2	65.5	61.9
10:45-11:00	64.4	65.8	62.0
	64.5	65.8	62.0
	64.4	66.0	62.1
11:00-11:15	64.6	66.0	62.2
	64.6	66.3	62.3

Time Slot	Leq, 5min	L10	L90
	64.6	66.1	62.1
11:15-11:30	64.5	66.1	62.0
	64.5	66.0	62.3
	64.5	65.8	62.3
11:30-11:45	64.7	66.2	62.4
	64.6	66.0	62.4
	64.6	66.2	62.4
11:45-12:00	64.4	65.4	62.3
	64.7	66.0	62.5
	65.0	66.2	62.8
12:00-12:15	64.6	66.0	62.6
	64.9	66.5	62.7
	64.8	66.1	63.0
12:15-12:30	64.7	66.0	62.6
	65.0	66.0	63.1
	65.0	66.5	62.9
12:30-12:45	65.0	66.3	62.6
	64.8	66.1	62.9
	64.7	66.0	62.9
12:45-13:00	64.6	65.6	62.9
	65.1	66.4	63.1
	64.7	66.1	62.6
13:00-13:15	65.6	67.0	63.1
	65.0	66.4	62.8
	64.9	66.1	62.7
13:15-13:30	64.6	66.0	62.5
	64.5	65.8	62.7
	64.9	66.4	62.9
13:30-13:45	64.8	66.7	62.5
	65.0	66.4	63.0
	65.2	66.6	63.0
13:45-14:00	64.3	65.6	62.2
	64.7	65.7	63.1
	65.2	66.4	62.9
14:00-14:15	64.5	65.9	62.4
	65.1	66.5	62.8

Time Slot	Leq, 5min	L10	L90
	64.7	66.0	62.8
14:15-14:30	64.8	65.9	62.7
	65.7	65.9	62.8
	65.1	66.4	63.3
14:30-14:45	65.0	66.5	63.1
	64.8	65.9	62.9
	65.3	66.6	62.8
14:45-15:00	64.7	65.9	62.6
	64.8	66.0	62.7
	64.9	66.0	62.3
15:00-15:15	64.9	66.3	63.1
	65.1	66.3	63.3
	64.9	66.4	62.9
15:15-15:30	65.3	66.5	63.0
	64.6	65.6	62.6
	65.0	66.2	62.9
15:30-15:45	64.8	65.9	62.7
	65.0	66.1	63.3
	66.2	67.8	63.4
15:45-16:00	65.0	66.3	63.3
	64.8	65.8	62.9
	65.0	66.3	63.3
16:00-16:15	67.6	68.1	63.1
	65.0	66.1	63.0
	64.7	65.9	63.0
16:15-16:30	64.7	65.8	62.8
	64.7	66.0	62.5
	65.3	66.4	63.1
16:30-16:45	64.9	65.9	62.9
	64.7	66.3	62.8
	65.1	66.5	63.1
16:45-17:00	65.2	66.5	63.0
	65.3	66.5	63.4
	64.7	66.2	62.8
17:00-17:15	65.2	66.3	63.1
	65.2	66.4	63.1

Time Slot	Leq, 5min	L10	L90
	64.9	66.3	62.9
17:15-17:30	65.1	66.0	63.3
	65.6	67.0	63.4
	65.2	66.5	63.3
17:30-17:45	65.3	66.3	63.3
	65.2	66.2	63.5
	64.8	66.4	62.8
17:45-18:00	64.9	66.2	63.3
	64.7	65.8	63.1
	64.7	65.7	63.3
18:00-18:15	65.1	66.5	63.0
	65.2	66.4	63.2
	65.0	65.9	63.3
18:15-18:30	65.2	66.5	63.0
	64.5	65.7	62.8
	64.4	65.7	62.8
18:30-18:45	64.2	65.3	62.4
	64.3	65.3	62.9
	64.4	65.7	62.6
18:45-19:00	64.6	65.9	62.9
	64.8	66.0	62.8
	64.4	65.7	62.8
19:00-19:15	64.3	65.7	62.4
	64.2	65.7	62.3
	64.1	65.4	62.3
19:15-19:30	65.6	66.2	62.3
	64.1	65.4	62.2
	64.4	65.9	62.7
19:30-19:45	64.6	66.0	62.5
	64.2	65.3	62.4
	64.5	65.7	62.4
19:45-20:00	64.2	65.3	62.3
	64.2	65.6	62.3
	65.0	66.7	62.4
20:00-20:15	64.2	65.6	62.1
	64.2	65.6	62.0

Time Slot	Leq, 5min	L10	L90
	64.2	65.6	62.2
20:15-20:30	63.8	65.1	61.8
	63.9	65.4	61.8
	64.6	66.1	62.2
20:30-20:45	63.8	65.0	61.8
	64.0	65.3	61.8
	63.7	65.1	61.8
20:45-21:00	64.1	65.6	61.8
	63.9	65.3	62.0
	63.9	65.3	61.9
21:00-21:15	64.2	65.4	62.3
	64.2	65.6	61.9
	63.8	65.3	61.6
21:15-21:30	64.9	66.0	61.9
	64.4	65.9	61.9
	63.9	65.3	61.9
21:30-21:45	64.0	65.6	62.1
	64.2	65.7	61.9
	63.9	65.2	61.7
21:45-22:00	64.4	65.7	62.1
	64.2	65.5	62.1
	63.9	65.4	61.8
22:00-22:15	64.2	65.8	62.0
	64.3	65.6	61.8
	64.7	66.6	61.9
22:15-22:30	63.7	64.9	61.8
	64.3	65.9	61.9
	64.1	65.4	61.6
22:30-22:45	63.7	64.8	61.9
	64.2	65.7	61.8
	63.6	64.9	61.4
22:45-23:00	63.7	65.4	61.4
	63.8	65.6	61.3
	63.3	64.7	61.1
Average	64.5	65.8	62.3

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

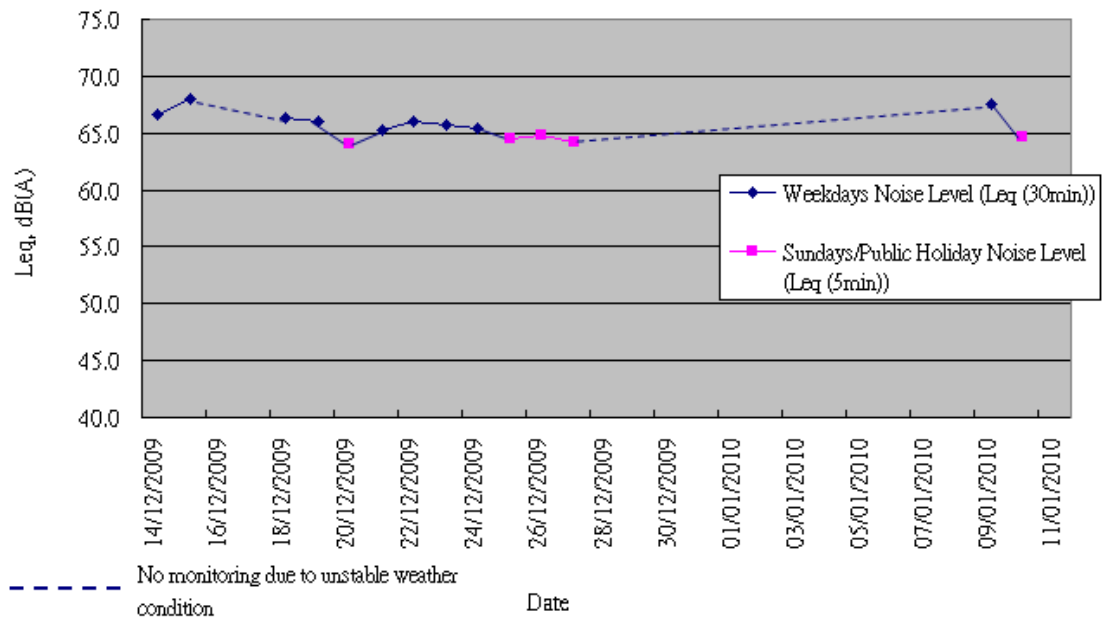
Time Slot	Leq, 5min	L10	L90
23:00-23:15	63.9	65.3	61.6
	63.8	65.3	61.5
	64.1	65.8	61.7
23:15-23:30	64.3	66.4	61.5
	63.9	65.5	61.6
	63.9	65.3	61.7
23:30-23:45	63.9	65.3	61.6
	63.8	65.3	61.3
	64.0	65.5	61.3
23:45-00:00	64.0	65.6	61.3
	63.4	65.0	60.7
	63.2	64.8	60.9
00:00-00:15	63.3	64.9	60.9
	63.2	65.0	60.5
	62.6	64.2	60.2
00:15-00:30	62.4	63.9	60.0
	63.3	64.7	60.7
	63.5	65.4	60.1
00:30-00:45	62.9	64.4	60.8
	62.0	63.5	59.3
	62.0	63.3	59.3
00:45:01:00	62.0	63.6	59.1
	61.1	62.5	58.7
	61.6	63.2	58.8
01:00-01:15	62.2	64.0	59.7
	61.7	63.1	59.3
	61.6	63.1	59.2
01:15-01:30	60.9	62.5	57.9
	60.4	62.2	57.7
	59.9	61.3	57.2
01:30-01:45	59.5	60.9	57.1
	59.4	60.8	56.9
	59.9	61.3	56.9
01:45-02:00	59.1	60.8	56.7

Time Slot	Leq, 5min	L10	L90
	59.3	60.8	57.0
	59.5	60.9	56.9
02:00-02:15	59.2	60.7	56.6
	58.9	60.4	56.6
	59.0	60.6	56.6
02:15-02:30	59.2	61.4	56.4
	58.6	60.0	56.3
	58.9	60.5	56.5
02:30-02:45	59.5	61.5	56.5
	58.3	59.9	55.9
	58.8	60.5	56.1
02:45-03:00	59.1	60.3	56.3
	58.8	60.3	56.4
	58.6	60.1	56.2
03:00-03:15	58.5	59.9	55.8
	58.2	59.8	56.0
	58.6	60.1	55.9
03:15-03:30	58.4	60.1	55.8
	58.3	59.9	55.7
	58.2	59.7	55.7
03:30-03:45	58.3	60.0	55.5
	58.6	60.0	55.8
	58.1	59.7	55.6
03:45-04:00	58.0	59.4	55.6
	57.6	59.2	55.3
	57.9	59.4	55.5
04:00-04:15	58.2	59.8	55.6
	58.2	59.8	55.4
	58.0	59.5	55.5
04:15-04:30	57.8	59.5	55.4
	58.0	59.4	55.5
	58.1	59.7	55.5
04:30-04:45	58.5	60.1	55.6
	57.9	59.5	55.5
	57.6	59.2	55.2
04:45-05:00	57.8	59.3	55.3

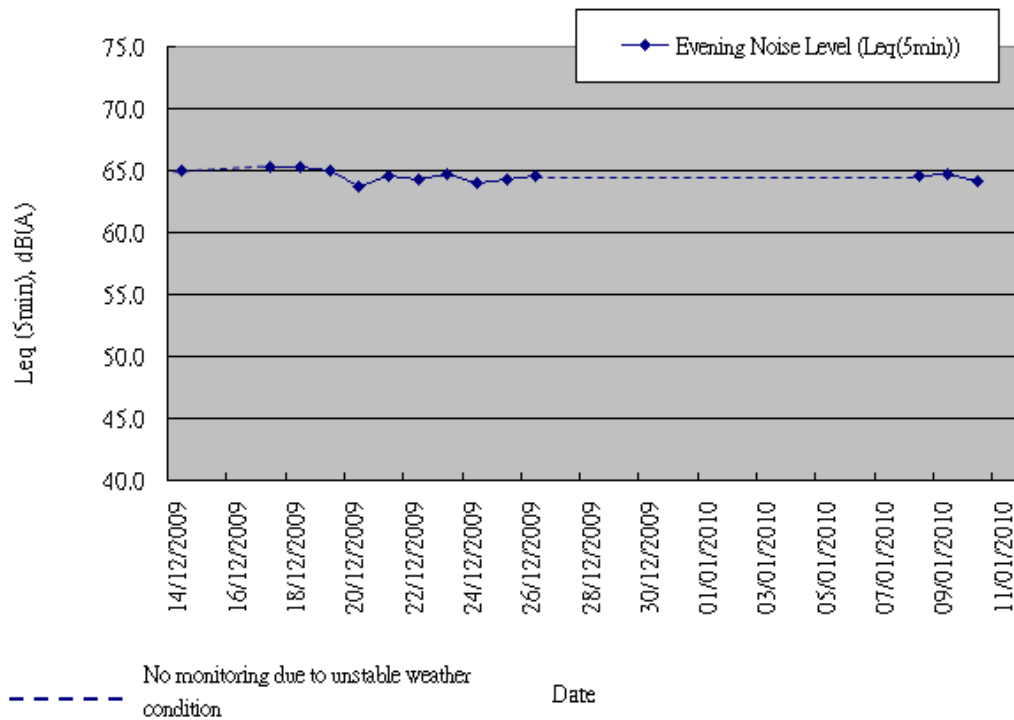
Time Slot	Leq, 5min	L10	L90
	57.6	59.2	55.4
	58.2	60.0	55.4
05:00-05:15	58.3	60.3	55.4
	58.3	60.0	55.7
	58.9	60.8	55.8
05:15-05:30	59.4	61.0	57.2
	59.7	61.6	57.1
	59.9	62.0	56.8
05:30-05:45	59.4	61.6	56.6
	58.8	60.6	56.2
	59.0	60.8	56.3
05:45-06:00	59.0	60.8	56.4
	59.3	61.1	56.6
	59.2	60.9	56.8
06:00-06:15	59.8	61.6	57.1
	60.6	62.4	57.9
	60.3	62.0	57.8
06:15-06:30	60.8	62.6	58.2
	61.2	63.1	58.3
	61.3	63.1	58.6
06:30-06:45	61.1	62.8	58.5
	61.3	63.0	58.9
	61.7	63.3	59.3
06:45-07:00	62.0	63.8	59.5
	61.5	63.1	59.2
	62.1	63.7	59.7
Average	60.8	62.4	58.2

Log average was used

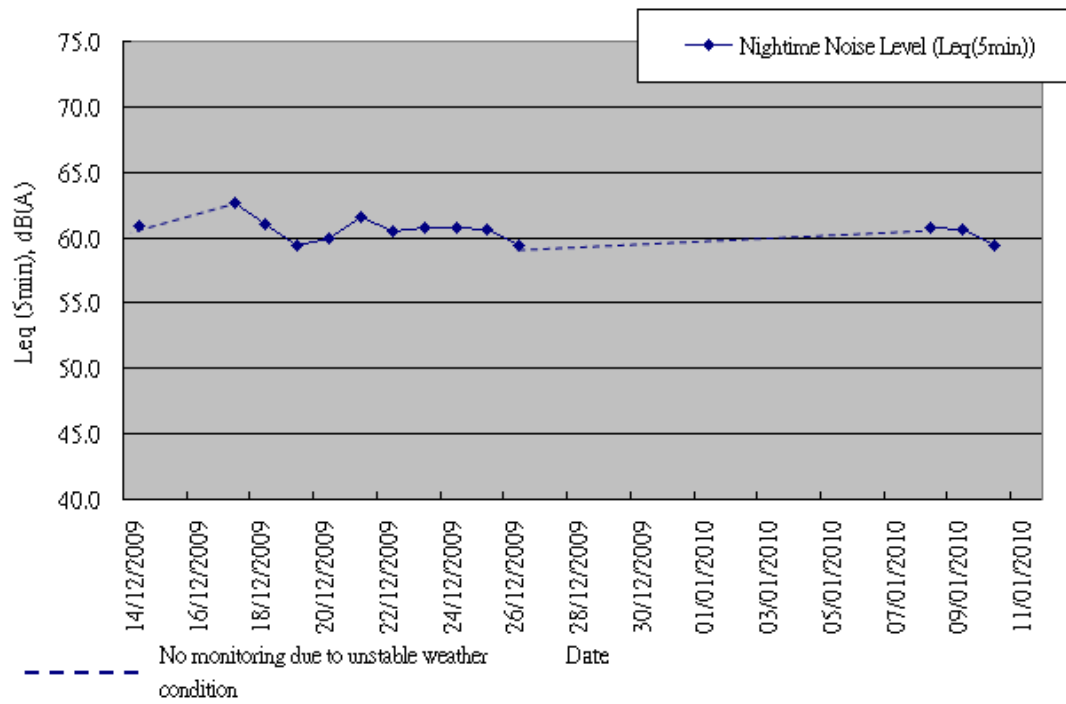
Average Leq at CN33 during Daytime (0700-1900)



Average Leq(5min) at CN33 during Evening (1900-2300) for all days

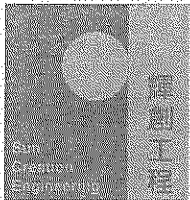


Average Leq(5min) at CN33 during Nighttime (2300-0700) for all days



Appendix B

Calibration Certificates for Monitoring Equipments



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

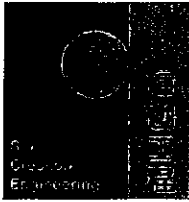
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

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.
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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

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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.	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. : C095683

Certificate of Calibration

This is to certify that the equipment

Description : Sound Level Meter

Manufacturer : Rion

Model No. : NL-31

Serial No. : 00983400

*has been calibrated for the specific items and ranges.
The results are shown in the Calibration Report No. C095683.*

The equipment is supplied by

Co. Name : Envirotech Services Co.

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

Date of Issue : 23 October 2009

Certified by :

K C Lee

The test equipment used for calibration are traceable to the National Standards as specified in this report.
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Calibration and Testing Laboratory of Sun Creation Engineering Limited

Unit 47, Tai Yee Chai Wai Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
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Send to:	Ref:	
Received by:	Date:	
Action taken:		
Copy to:	Date:	Action req:

**輝創工程有限公司****Sun Creation Engineering Limited Calibration and Testing Laboratory**

Report No. : C095683

Calibration Report

ITEM TESTED

DESCRIPTION : Sound Level Meter
MANUFACTURER : Rion
MODEL NO. : NL-31
SERIAL NO. : 00983400

TEST CONDITIONS

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

RELATIVE HUMIDITY : $(55 \pm 20)\%$ **TEST SPECIFICATIONS**

Calibration check

DATE OF TEST : 22 October 2009**JOB NO.** : IC09-2709**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 :


L L Cheung

Date : 23 October 2009

The test equipment used for calibration are traceable to the National Standards as specified in this report.
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Page 1 of 4



輝創工程有限公司

Sun Creation Engineering Limited Calibration and Testing Laboratory

Report No. : C095683

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 61672
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Class 1 Spec. (dB)
30 - 120	L _A	A	Fast	94.00	1	94.2	± 1.1

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 61672 Class 1 Spec. : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

6.2 Time Weighting

UUT Setting				Applied Value		UUT	IEC 61672
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Class 1 Spec. (dB)
30 - 120	L _A	A	Fast	94.00	1	94.2	Ref.
			Slow			94.2	± 0.3

The test equipment used for calibration are traceable to the National Standards as specified in this report.
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Calibration and Testing Laboratory of Sun Creation Engineering Limited

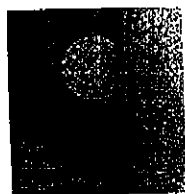
c/o 4/F, Tsing Shun Wai Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

Tel: 2927 2606

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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. : C095683

Calibration Report

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L _A	A	Fast	94.00	31.5 Hz	54.3	-39.4 ± 2.0
					63 Hz	67.7	-26.2 ± 1.5
					125 Hz	77.9	-16.1 ± 1.5
					250 Hz	85.4	-8.6 ± 1.4
					500 Hz	90.9	-3.2 ± 1.4
					1 kHz	94.2	Ref.
					2 kHz	93.5	+1.2 ± 1.6
					4 kHz	93.3	+1.0 ± 1.6
					8 kHz	93.2	-1.1 (+2.1; -3.1)
					12.5 kHz	90.3	-4.3 (+3.0; -6.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L _C	C	Fast	94.00	31.5 Hz	90.9	-3.0 ± 2.0
					63 Hz	93.3	-0.8 ± 1.5
					125 Hz	94.0	-0.2 ± 1.5
					250 Hz	94.2	0.0 ± 1.4
					500 Hz	94.2	0.0 ± 1.4
					1 kHz	94.2	Ref.
					2 kHz	94.1	-0.2 ± 1.6
					4 kHz	93.5	-0.8 ± 1.6
					8 kHz	91.3	-3.0 (+2.1; -3.1)
					12.5 kHz	88.4	-6.2 (+3.0; -6.0)

The test equipment used for calibration are traceable to the National Standards as specified in this report.
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Calibration and Testing Laboratory of Sun Creation Engineering Limited

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輝創工程有限公司

Sun Creation Engineering Limited Calibration and Testing Laboratory

Report No. : C095683

Calibration Report

Remarks : - Mfr's Spec. : IEC 61672 Class 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)

- 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.

The test equipment used for calibration are traceable to the National Standards as specified in this report.
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Calibration and Testing Laboratory of Sun Creation Engineering Limited

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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 C

Figures

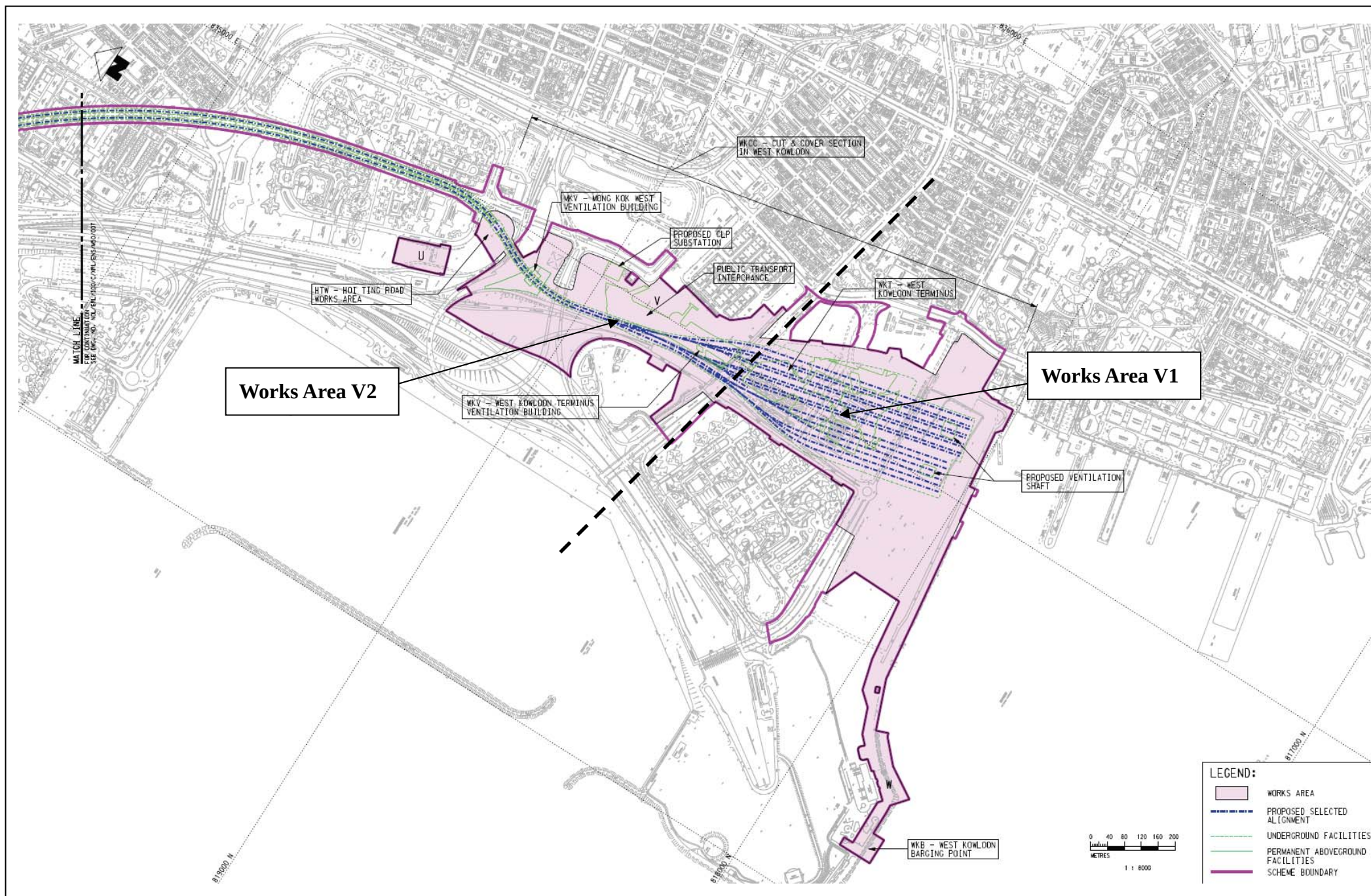


Figure 1 – Works Area

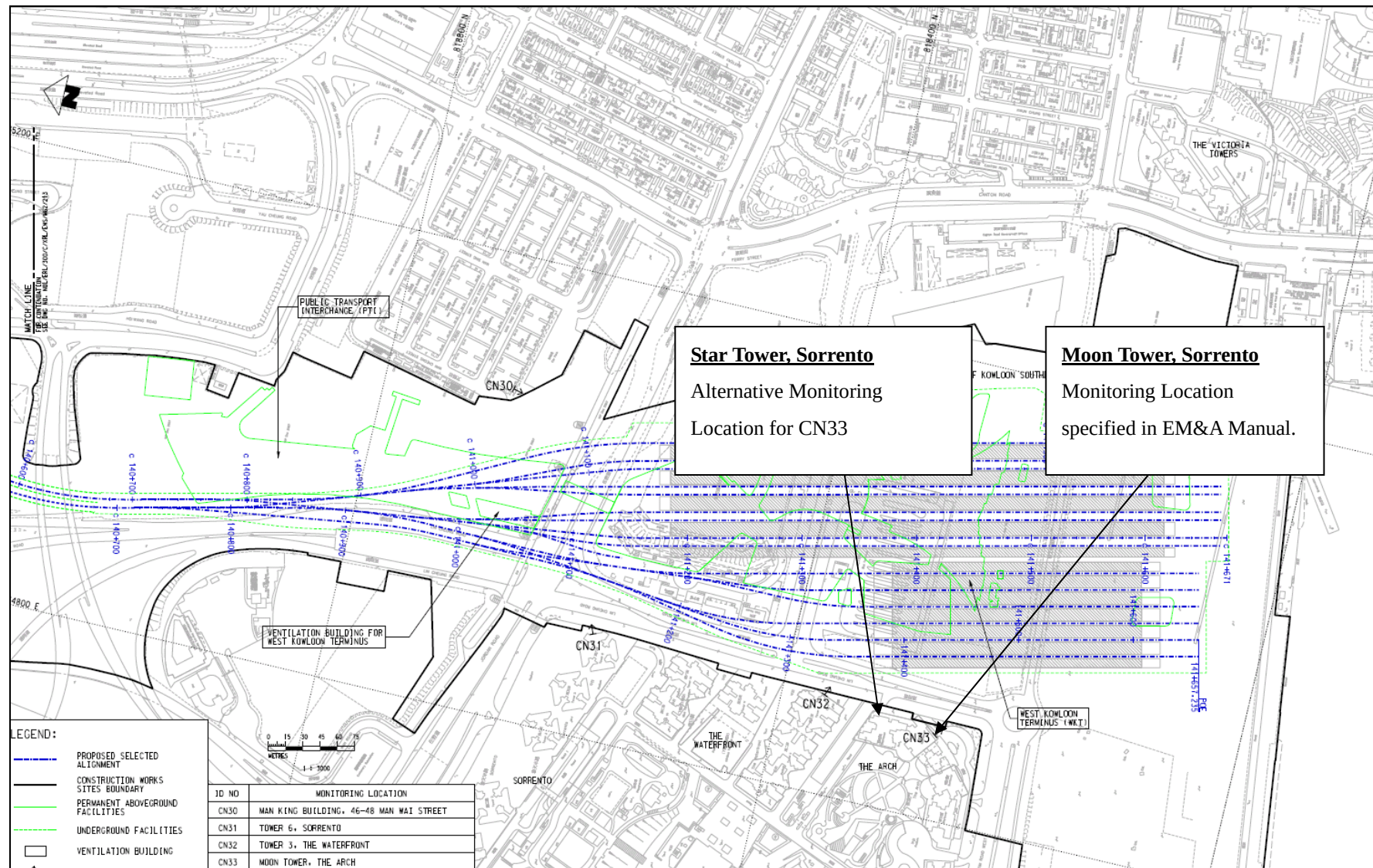


Figure 2 – Noise Monitoring Locations