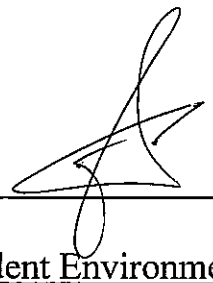
MTR Corporation Limited

West Island Line Project

Baseline Monitoring Report (Part 9)

Verified by: 

Position: Independent Environmental Checker

Date: 7 July 2010

MTR Corporation Limited

West Island Line Project

Baseline Monitoring Report (Part 9)

Certified by: Glenn Fronmes

Position: Environmental Team Leader

Date: 7 July 2010

EXECUTIVE SUMMARY

1 INTRODUCTION

1.1 BACKGROUND

1.2 ORGANISATION OF THE REPORT

2 NOISE

2.1 MONITORING METHODOLOGY

2.2 CALIBRATION REQUIREMENTS

2.3 MONITORING RESULTS

3 CONCLUSION

3.1 BASELINE LEVELS

3.2 ACTION AND TARGET LEVELS

ANNEX A Noise Baseline Measurements

ANNEX B Calibration Certificates for Monitoring Equipment

EXECUTIVE SUMMARY

Background

MTR Corporation Limited (MTRCL) proposes to build a new railway line, the West Island Line (WIL) which is an extension of the Island Line to the Western District. The route length of the fully underground WIL is approximately 3 km with three new underground stations namely Sai Ying Pun Station (SYP), University Station (UNI) and Kennedy Town Station (KET).

Impact Assessment and Baseline Monitoring

With the development of the Environmental Monitoring and Audit Manual (EM&A Manual) in accordance with the guideline set out in the Environmental Impact Assessment (EIA) report prepared by ENSR Asia (HK) Limited in October 2008, Baseline Monitoring (Part 9) had been conducted for noise at the proposed monitoring location in the vicinity of Works Area L1 to establish baseline levels for noise for the civil construction work within Works Area L1.

Results and Conclusions

Baseline monitoring (Part 9) had been carried out in accordance with the recommendations contained in the Technical Memoranda associated with EIAO and Noise Control Ordinance, where applicable. Results and Conclusions of the report were presented in the subsequent sections of the Baseline Monitoring Report.

1 INTRODUCTION

1.1 BACKGROUND

The West Island Line Project

MTR Corporation Limited (MTRCL) proposes to build a new railway line, the West Island Line (WIL) which is an extension of the Island Line to the Western District. The route length of the fully underground WIL is approximately 3 km with three new underground stations namely Sai Ying Pun (SYP), University (UNI) and Kennedy Town (KET).

The location of works areas is shown in Figure 1.

1.1.1 An EIA study (refer to EIA Report dated October 2008) has been conducted by ENSR Asia (HK) Limited for the proposed WIL Project. An EM&A Manual has provided guidelines in the preparation of this baseline monitoring report.

1.1.2 Baseline levels have been established for noise, by which the performance of the construction Contractor may be measured in meeting the required environmental protection standards and requirements under the Environmental Permit, during the course of the construction work. These are presented in subsequent sections of this report.

1.1.3 This Baseline Monitoring Report (Part 9) presents the results for the baseline monitorings conducted for noise at the proposed monitoring locations in the vicinity of Works Area L1 and establishes baseline levels for noise for the civil construction work within Works Area L1. Baseline monitorings for other works areas are to be conducted subsequently and the baseline monitoring reports for these works areas will be submitted accordingly.

1.2 ORGANISATION OF THE REPORT

Following the introduction, the remainder of this Report is arranged as follows:

- Section 2 describes the noise quality monitoring methodology and analyses the monitoring results.
- Section 3 Conclusions

N

830900 E

831900 E

832900 E

816800 N

815800 N

FIG 1.3

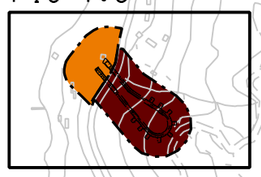


FIG 1.4

FIG 1.5

FIG 1.6

FIG 1.7

FIG 1.8

A1 A2 A A3 B C AND D E F G H I J J1 J2 J3 K L L1 M M1 M2 M3 N1 O1 O2 O3

SAI WAN

SAI YING PUN

WESTERN HARBOUR

Little Green Island

SULPHUR CHANNEL

KENNEDY TOWN

KWUN TONG

LUNG FU SHAN

MID LEVELS

VICTORIA PEAK

MOUNT DAVIS

MOUNT DAVIS ROAD

VICTORIA ROAD

CONNAUGHT ROAD WEST

ROBINSON ROAD

Hong Kong University

Victoria Peak Garden

LEGEND:

WORKS AREA/WORKS SITE

WORKS AREA(UNDERGROUND)

AECOM

WEST ISLAND LINE

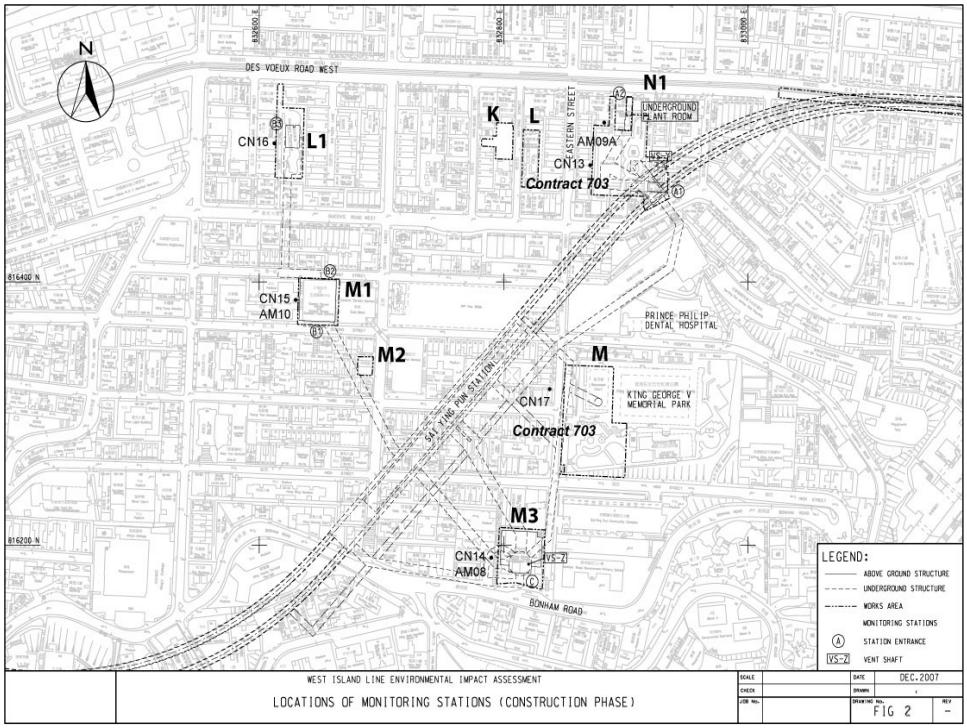
ENVIRONMENTAL REPORT FOR VARIATION OF ENVIRONMENTAL PERMIT APPLICATION (EP-313/2008)

MAJOR GROUND LEVEL WORKS AREAS/ WORKS SITES - KEY PLAN

SCALE	A3 1:10000	DATE	JUN. 09
CHECK	FWYW	DRAWN	WDF
JOB No.	60017115	Figure 1	REV –

2009-6-15 11:30:38 DAIXL

p:\projects\60017115\DRAWING\FIGURE\VARIATION\FIG 1.2.dgn



WEST ISLAND LINE ENVIRONMENTAL IMPACT ASSESSMENT

LOCATIONS OF MONITORING STATIONS (CONSTRUCTION PHASE)

SCALE		DATE	DEC.2007
CHECK		DRAWN	
JOB No.		DRAWING No.	FIG 2
		REV	-

2 NOISE

2.1 MONITORING METHODOLOGY

Monitoring was undertaken by the Environmental Team to establish noise baseline levels in the vicinity of the Works Area L1, to provide data against which any environmental impacts due to construction activities can be compared.

The baseline monitoring station as specified in the EM&A Manual were established at the following location, see Figure 2:

CN16 - No.9-11 Ki Ling Lane

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. The noise levels were presented for weekdays over each 30 minute period between 0700 and 1900hr to produce the baseline conditions.

Monitoring was conducted using B&K sound analysis equipment – B&K SLM 2236. Microphones were extended 1m from building facades and oriented towards the works area.

Weather conditions throughout the monitoring period were mild and relatively dry, with light wind normally from the east, with some days from the south. The average measured wind speed during the baseline monitoring was in the range 1.5 – 4m/s.

2.2 CALIBRATION REQUIREMENTS

B&K 2236 sound level meters which complied with the International Electrotechnical Commission Publication 651:1979 (Type 1) and 804:1985 (Type 1), specification as referred to in the Technical Memoranda to the NCO were used for the baseline monitoring. The B&K sound level meters and B&K 4231 calibrator are verified by the certified laboratory or manufacturer once every two years by MaxLab Calibration Centre Limited to ensure they perform to the same level of accuracy as stated in the manufacturer's specifications. Calibration certificates are attached in Annex B.

Immediately prior to and following each set of measurements at any NSR, the accuracy of the sound level meter was checked using an acoustic calibrator generating a known sound pressure level at a known frequency. If the calibration levels before and after the measurement differ by more than 1.0dB the measurement shall be repeated to obtain a reliable result (note: maximum deviation during this initial baseline monitoring period was 0.3dB). Periods of prolonged or repeated overloading of the sound level meter detector were avoided by setting the meter with adequate headroom prior to commencing measurements. Measurements were recorded to the nearest 0.1 dB, with values of 0.05 being rounded up.

Limit levels for these locations are shown in *Table 3.3 a*.

Table 3.3a Limit Levels for Construction Noise

Time Period	**Noise Level (dB) for NSR around Works Area L1**
Daytime (0700-1900), Monday through Saturday excluding Public Holidays	$L_{Aeq\ 30mins}75^{(1)}$
All evenings (1900-2300)	Subject to control under the Noise Control Ordinance
General Holidays (including all Sundays) during the daytime and evening (0700-2300)	Subject to control under the Noise Control Ordinance
All night time periods (2300-0700)	Subject to control under the Noise Control Ordinance

(1) Limit level guideline, for educational establishments the limit level shall be 70, reduced to 65 during examination periods.

2.3 MONITORING RESULTS

Noise baseline monitoring was conducted at the monitoring station CN16 between 18 January 2010 and 31 January 2010.

5 minute, "fast" detector response, levels were recorded in the following indices, L_{Aeq}, L_{A10}, L_{A90}. The baseline data was initially downloaded into a spreadsheet, directly from the noise loggers in ASCII format for checking, and then imported into the database. The L_{Aeq}, results for each 5 minute period of weekday were averaged. An average of two 24 hour Sunday periods was covered in the monitoring periods. 'Time Slot Averaged', 'Noise Control Period Averaged' baseline noise levels are presented for the monitoring location in *Annex A.*

At the monitoring station CN16, it was observed that the ambient noise from the open space at Ki Ling Lane contributed to the background noise.

3 CONCLUSION

3.1 BASELINE LEVEL

3.1.1 Noise

Baseline monitorings were conducted at the monitoring station, namely No.9-11 Ki Ling Lane (CN16) from 18 January 2010 to 31 January 2010. Baseline noise levels have been established for weekday and Sunday periods.

Baseline noise levels between 57.6 and 64.1 dB(A) had been recorded at the monitoring station CN16 from 0700 – 1900hr for the monitoring station.

The noise sources noticed at the monitoring station CN16 was the ambient noise from the open space at Ki Ling Lane in the vicinity.

3.2 ACTION AND TARGET LEVELS

3.2.1 Noise

Action level exceedance occurs when one or more documented complaints are received.

Limit level is set at $L_{Aeq\ 30mins}75$[(1)] for normal working hours (i.e. 0700 – 1900 hours on any day not being a Sunday or general holiday), as suggested in EIAO-TM and the Practice Note for Professional Persons ProPECC PN2/93. For restricted hours (i.e. 1900 – 0700 hours for weekdays and all day on Sundays and general holidays), limit level shall be subjected to control under the Noise Control Ordinance (NCO).

[(1)]Limit level guideline, for educational establishments the limit level shall be 70, reduced to 65 during examination periods.

ANNEX A

Noise Baseline Measurements

Noise Baseline Report

Project: West Island Line
Report for Location: No.9-11 Ki Ling Lane (CN16)
Baseline between: 18/01/2010 - 31/01/2010

Report date: 28/06/2010

Parameter : Leq

Time Slot Averaged Baselines
Weekdays Noise Level, dB(A)

	LAeq,30min	L10	L90
07:00-07:30	57.6	59.5	54.5
07:30-08:00	58.8	60.3	56.3
08:00-08:30	58.9	60.3	56.7
08:30-09:00	60.4	62.1	57.9
09:00-09:30	61.6	63.5	59.2
09:30-10:00	61.7	64.0	58.5
10:00-10:30	62.5	63.8	58.9
10:30-11:00	60.9	62.5	58.7
11:00-11:30	61.2	63.4	58.5
11:30-12:00	61.3	63.2	58.9
12:00-12:30	60.6	61.9	57.9
12:30-13:00	60.3	61.6	58.0
13:00-13:30	60.9	62.4	58.8
13:30-14:00	61.9	63.5	59.3
14:00-14:30	63.2	64.5	60.2
14:30-15:00	64.1	65.5	60.1
15:00-15:30	62.0	63.6	59.1
15:30-16:00	62.9	65.7	58.9
16:00-16:30	61.8	63.6	58.9
16:30-17:00	62.5	63.9	58.9
17:00-17:30	61.8	63.1	58.6
17:30-18:00	60.4	61.9	58.3
18:00-18:30	60.2	61.5	58.2
18:30-19:00	59.4	60.7	57.5

Noise Control Period Averaged Baselines
Weekdays Noise Level, dB(A)

	LAeq,30min	L10	L90
07:00-19:00	61.4	63.0	58.5

	LAeq,5min	L10	L90
19:00-23:00	58.4	60.0	56.1
23:00-07:00	54.1	55.5	51.8

Sundays/General Holidays Noise Level, dB(A)

	LAeq,5min	L10	L90
07:00-19:00	60.4	61.6	58.2
19:00-23:00	57.8	59.2	55.8
23:00-07:00	54.3	55.6	52.4

Logarithmic Averaging is being used.

ANNEX B

Calibration Certificates for Monitoring Equipment

Calibration Certificates for Sound Level Meter and Calibrator

MAXLAB

CALIBRATION CERTIFICATE

Certificate Information

Date of Issue	30th December, 2008	***Certificate Number***	MLCN081194S

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	Precision Integrating Sound Level Meter
Manufacturer	Brüel & Kjær
Model Number	Type 2236
Serial Number	1794284
Equipment Number	-

Calibration Result

* The UUT range indication was found defective, but range selection and measurement were not affected.
* All calibration results are within the manufacturer's 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 service is provided under a HKQAA ISO9001:2000 certified quality system of Certificate No. CC1929.

萬儀校正中心有限公司
MaxLab Calibration Centre Limited
Unit 1, 22/F., Futura Plaza, 111-113 How Ming Street, Kwun Tong, Kowloon, Hong Kong Tel : (852) 2116 1380 Fax : (852) 2264 6480 Email : info@maxlab.com.hk
香港九龍觀塘巧明街 111-113 號富利廣場 22 樓 1 室 電話：(852) 2116 1380 傳真：(852) 2264 6480 電郵：info@maxlab.com.hk

MAXLAB

CALIBRATION CERTIFICATE

Certificate Information

Date of Issue	30th December, 2008	***Certificate Number***	MLCN081194S

Calibration Status

Date of Calibration			30th December, 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 ± 5 °C
		Relative Humidity	55% ± 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
Frequency Wt.	**Parameter**	**Response**	Range (dB)				
A (1 kHz Input)	SPL	F	20 - 100	93.9 dB	94 dB	-0.1 dB	0.7 dB
		S		93.9 dB	94 dB	-0.1 dB	0.7 dB
		I		93.9 dB	94 dB	-0.1 dB	0.7 dB
C (1 kHz Input)		F	20 - 100	93.9 dB	94 dB	-0.1 dB	0.7 dB
		S		93.9 dB	94 dB	-0.1 dB	0.7 dB
		I		93.9 dB	94 dB	-0.1 dB	0.7 dB
L (1 kHz Input)		F	20 - 100	94.0 dB	94 dB	0.0 dB	0.7 dB
		S		94.0 dB	94 dB	0.0 dB	0.7 dB
		I		94.0 dB	94 dB	0.0 dB	0.7 dB
A (1 kHz Input)		F	40 - 120	113.9 dB	114 dB	-0.1 dB	0.7 dB
		S		113.9 dB	114 dB	-0.1 dB	0.7 dB
		I		113.9 dB	114 dB	-0.1 dB	0.7 dB

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MAXLAB
CALIBRATION CERTIFICATE

Certificate Information

Date of Issue	6th November, 2008	***Certificate Number***	MLCN080969S

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	Sound Level Calibrator
Manufacturer	Brüel & Kjær
Model Number	4231
Serial Number	1795385
Equipment Number	-

Calibration Result

* All calibration results within the manufacturer's 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.
*

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CALIBRATION CERTIFICATE

Certificate Information

Date of Issue	6th November, 2008	*Certificate Number*	MLCN080969S

Calibration Status

Date of Calibration			6th November, 2008
Calibration Equipment Used			4231 (Spec) (MLTE008)/ CA0801167/ 24th Feb 2008 1351 (MLTE049)/ MLEC08/06/02/ 14th Jun 2009
Calibration Procedure			MLCG00 & MLCG15.
Calibration Uncertainty			± 0.1 dB
Calibration Condition	*Lab*	*Temperature*	23 °C ± 5 °C
		Relative Humidity	55% ± 25%
	UUT	*Stabilizing Time*	24 hours
		Warm-up Time	Not applicable
		Supply Voltage	Not applicable

Calibration Data

UUT Setting	STD Rdg	UUT Error	UUT Error Limit
94 dB	94.0 dB	0.0 dB	0.2 dB
114 dB	114.0 dB	0.0 dB	0.2 dB

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