



Environmental Team Services for Contract No. CV/2011/01
Site formation and Infrastructural works near Tsing Lun Road
and Tsz Tin Road in Area 54, Tuen Mun

Monthly EM&A Report for June 2013 (Rev. A)

July 2013
Report No.: 298617/ENL/EM&A/19/A



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Civil Engineering and Development Department, 2/F, Civil Engineering and Development Building,
101 Princess Margaret Rd, Homantin, Kowloon

**Pursuant to Condition 3.2 of Environmental Permit No. EP-331/2009,
this Monthly EM&A Report for June 2013 has been reviewed and
certified by the Environmental Team Leader (ETL) and verified by the
Independent Environmental Checker (IEC).**

Certified by:



Terence Kong
Environmental Team Leader (ETL)
Mott MacDonald Hong Kong Limited

Date

11 July 2013

Verified by:



Sharifah Or
Independent Environmental Checker (IEC)
Atkins China Limited

Date

12 July 2013

Content

Chapter	Title	Page
	EXECUTIVE SUMMARY	i
1.	Introduction	1
1.1	Background _____	1
1.2	Project Organisation _____	1
1.3	Environmental Status in the Reporting Period _____	1
1.4	Summary of EM&A Requirements _____	1
2.	Impact Monitoring Methodology	3
2.1	Introduction _____	3
2.2	Air Quality _____	3
2.3	Construction Noise _____	6
3.	Monitoring Results	8
3.1	Impact Monitoring _____	8
3.2	Air Quality _____	8
3.3	Construction Noise _____	8
4.	Environmental Site Inspections	10
4.1	Site Inspection _____	10
4.2	Advice on the Solid and Liquid Waste Management Status _____	10
4.3	Status of Environmental Licenses and Permits _____	11
4.4	Recommended Mitigation Measures _____	11
5.	Report on Non-compliance, Complaints, Notifications of Summons and Successful Prosecutions	13
5.1	Record on Non-compliance of Action and Limit Levels _____	13
5.2	Record on Environmental Complaints Received _____	13
5.3	Record on Notifications of Summons and Successful Prosecution _____	13
5.4	Review of Reasons for and Implications of Non-compliance, Complaints, Summons and Prosecutions _____	13
5.5	Follow-up Actions Taken _____	13
6.	Future Key Issues	14
6.1	Construction Works for the Coming Month(s) _____	14
6.2	Key Issues for the Coming Month _____	14
6.3	Monitoring Schedule for the Coming Month _____	14
6.4	Conclusions and Recommendations _____	14

Tables

Table 1-1:	Summary of Impact EM&A Requirements _____	2
Table 2-1:	Air Quality Monitoring Parameters, Frequency and Duration _____	3
Table 2-2:	Air Monitoring Station _____	3
Table 2-3:	TSP Monitoring Equipment _____	3
Table 2-4:	Noise Monitoring Parameters, Period and Frequency _____	6
Table 2-5:	Noise Monitoring Equipments _____	6
Table 2-6:	Locations of Noise Monitoring Stations _____	7
Table 3-1:	Summary of 1-hour TSP monitoring results _____	8
Table 3-2:	Summary of 24-hour TSP monitoring results _____	8
Table 3-3:	Summary of Construction noise monitoring results _____	9
Table 4-1:	Summary of Site Inspections and Recommendations _____	10
Table 4-2:	Status of Environmental Submissions, Licenses and Permits _____	11

Figures

- Figure 1.1 [Layout plan \(1\)](#)
- Figure 1.2 [Layout plan \(2\)](#)
- Figure 2.1 [Locations of Air Quality and Noise Monitoring Stations](#)

Appendices

- [Appendix A. Project Organisation](#)
- [Appendix B. Tentative Construction Programme](#)
- [Appendix C. Action and Limit Levels for Construction Phase](#)
- [Appendix D. Event and Action Plan for Air Quality and Noise](#)
- [Appendix E. Monitoring Schedule](#)
- [Appendix F. Calibration Certificates](#)
- [Appendix G. Graphical plots of the monitoring results](#)
- [Appendix H. Wind data from Hong Kong Observatory Weather Station](#)
- [Appendix I. Waste Flow Table](#)
- [Appendix J. Environmental Mitigation Measures - Implementation Status](#)
- [Appendix K. Cumulative statistics on complaints, notifications of summons and successful prosecutions](#)

EXECUTIVE SUMMARY

In September 2011, Mott MacDonald Hong Kong Limited (MMHK) was commissioned by the Civil Engineering and Development Department (CEDD) under Agreement No. LW 05/2011 to undertake the Environmental Team (ET) services (including environmental monitoring and audit (EM&A)) for the Site formation and Infrastructural works near Tsing Lun Road and Tsz Tin Road in Area 54, Tuen Mun (The Project).

The Environmental Permit (EP) for the “Widening of Tsing Lun Road, Tuen Mun” was granted by the Environmental Protection Department (EPD) on 17 March 2009. This is the 19th Monthly EM&A Report submitted under Condition 3.2 of the EP which summarises the findings on EM&A during the period from 1 to 30 June 2013.

Exceedance of Action and Limit Levels

There was no breach of Action or Limit levels for Air Quality (1-hr TSP and 24-hr TSP) and Noise level (as L_{eq}) in this reporting month.

Implementation of Mitigation Measures

Site inspections were carried out on 5, 11, 20 and 26 June 2013 to confirm the implementation measures undertaken by the Contractor in the reporting month. The outcomes are presented in **Section 4** and the status of implementation of mitigation measures in the site is shown in [Appendix J](#).

Record of Complaints

There was no record of complaints received in the reporting month.

Record of Notification of Summons and Successful Prosecutions

There was no record of Notification of summons and successful prosecution in the reporting month.

Reporting Changes

There are no reporting changes.

Future Key Issues

The major site works scheduled to be commissioned in the coming three months include:

- Construction of retaining wall
- Construction of box culvert
- Demolition of existing structures
- Tree transplanting
- Construction of stormwater drain and sewerage
- Construction of noise barrier
- Construction of public toilet

- Construction of New Tsz Tin Road
- Piling works for footbridge & noise enclosure
- Construction of watermain

Potential environmental impacts due to the construction activities, including air quality, noise, water quality, waste and trees will be monitored or reviewed. The recommended environmental mitigation measures shall be implemented on site and weekly site inspections will be carried out to ensure that the environmental conditions are acceptable.

1. Introduction

1.1 Background

In September 2011, Mott MacDonald Hong Kong Limited (MMHK) was commissioned by the Civil Engineering and Development Department (CEDD) under Agreement No. LW 05/2011 to undertake the Environmental Team (ET) services (including environmental monitoring and audit (EM&A)) for the Site formation and Infrastructural works near Tsing Lun Road and Tsz Tin Road in Area 54, Tuen Mun (The Project). The construction of the project commenced on 8 Dec 2011.

The Monthly EM&A Report is required under the approved EM&A Manual and is submitted to fulfil Condition 3.2 of the Environmental Permit (EP) No. EP-331/2009 for the “Widening of Tsing Lun Road, Tuen Mun“, which was granted by the Environmental Protection Department (EPD) on 17 March 2009.

This is the 19th Monthly EM&A Report presenting the monitoring works conducted from 1 to 30 June 2013. The purpose of this report is to summarise the finding in the EM&A of the project over the reporting period.

1.2 Project Organisation

The organisation chart and lines of communication with respect to the on-site environmental management structure together with the contact information of the key personnel are shown in [Appendix A](#).

1.3 Environmental Status in the Reporting Period

During the reporting period, construction works of the Project undertaken include:

- Construction of watermain
- Construction of box culvert
- Construction of noise barrier
- Demolition of existing structures
- Tree transplanting
- Construction of stormwater drain and sewerage
- Construction of watermain
- Construction of retaining wall

The Construction Works Programme of the Project is provided in [Appendix B](#). A layout plan of the Project is provided in [Figure 1.1 and Figure 1.2](#).

1.4 Summary of EM&A Requirements

The EM&A programme requires environmental monitoring of air quality and noise as specified in the approved EM&A Manual.

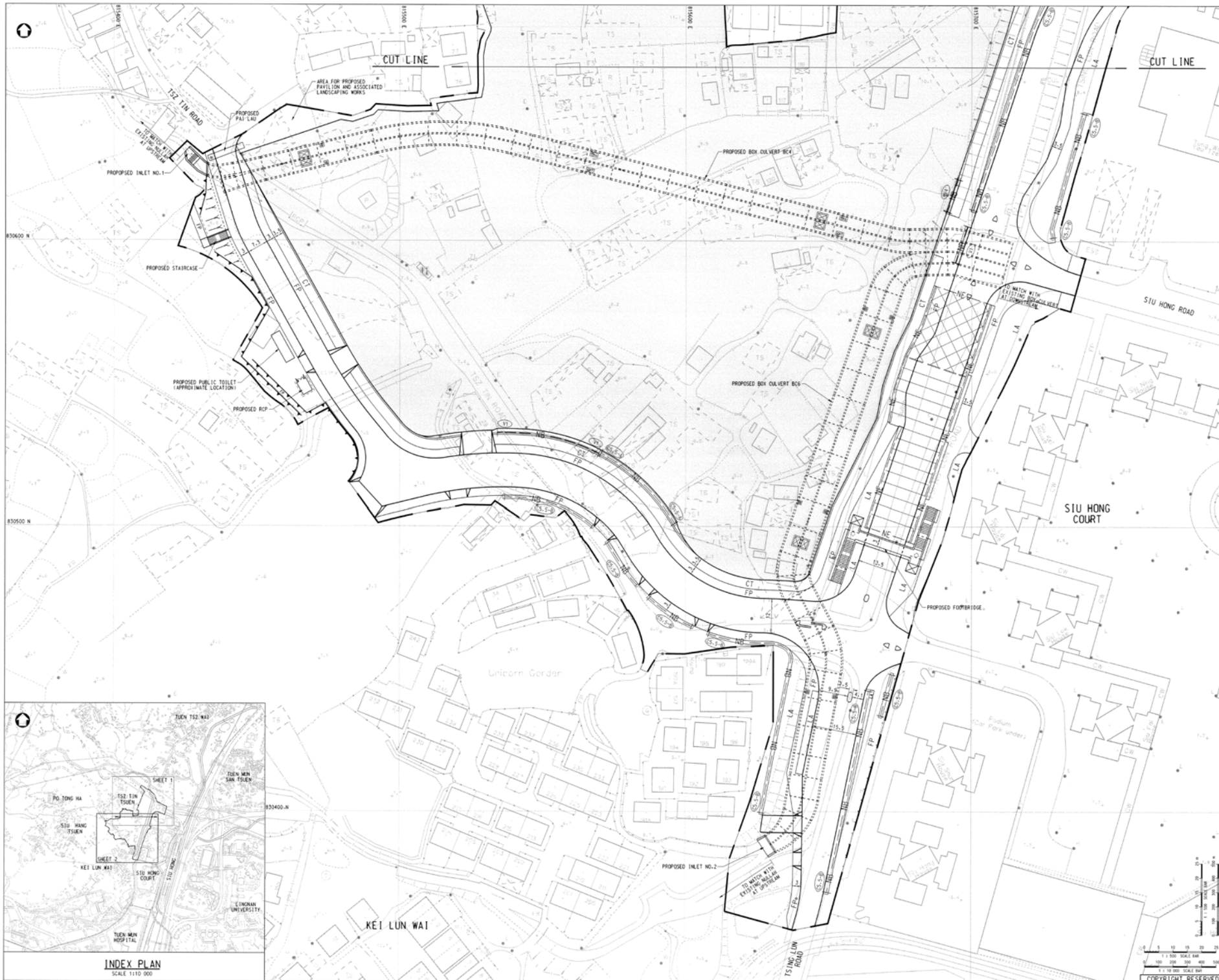
A summary of impact EM&A requirements is presented in **Table 1-1**.

Table 1-1: Summary of Impact EM&A Requirements

Parameters	Descriptions	Locations	Frequencies
Air Quality	24-Hour TSP	AM3	Once every 6 days
	1-Hour TSP	AM3	3 times every 6 days
Noise	L_{eq} , 30min	NM8, NM9	Weekly

The Environmental Quality Performance Limits for air quality and noise are shown in [Appendix C](#).

The Event and Action Plan for air quality and noise monitoring are shown in [Appendix D](#).



NOTES:
1. FOR NOTES AND LEGEND, REFER DRAWING NO. LW842.

no.	date	description	checked	approved
REVISION				
designer	M. H. TSE	MT		18.04.11
drawn	C. H. HO	CH		18.04.11
checked	C. T. LAU	CL		19.04.11
approved	 Chief Engineer date: 18.04.2011			

contract no. CV/2011/01
file no.
project no.

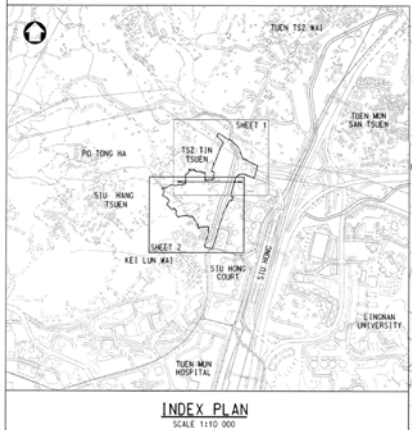
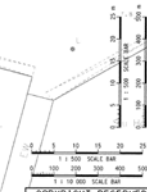
contract
SITE FORMATION AND INFRASTRUCTURAL WORKS NEAR TSING LUN ROAD AND TSZ TIN ROAD IN AREA 54, TUEN MUN

**Figure 1.2
Site Layout (2)**

drawing no. **LW 8842** sheet 1 OF 2 AS SHOWN

office
LAND WORKS DIVISION
CIVIL ENGINEERING OFFICE

CEDD CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT



INDEX PLAN
SCALE 1:10,000

2. Impact Monitoring Methodology

2.1 Introduction

For air quality and construction noise, the monitoring methodology, including the monitoring locations, monitoring equipments used, monitoring parameters, and frequency and duration etc., are detailed in this Section. The environmental monitoring schedules for the reporting period and the tentative monitoring Schedule for the coming month are provided in [Appendix E](#).

2.2 Air Quality

2.2.1 Monitoring Parameters, Frequency and Duration

Table 2-1 summarizes the monitoring parameters, frequency and duration of the TSP monitoring.

Table 2-1: Air Quality Monitoring Parameters, Frequency and Duration

Monitoring Station	Parameter	Frequency and Duration
Tung Wah Group of Hospitals (TWGHs)	24-hour TSP	At least once in every six-days
Yau Tze Tin Memorial College (AM3)	1-hour TSP	3 times every six-days

2.2.2 Monitoring Locations

Four monitoring stations (AM1, AM2, AM3 and AM4) were proposed in the EM&A Manual. Only AM3, i.e. TWGHs Yau Tze Tin Memorial College, was considered relevant to this project based on the scope and layout of the construction works. The location of the monitoring station is given in **Table 2-2** and is shown in [Figure 2.1](#).

Table 2-2: Air Monitoring Station

Monitoring Station	Location
AM3	TWGHs Yau Tze Tin Memorial College, at roof of the Assembly Hall (accessed from 4/F)

2.2.3 Monitoring Equipments

Continuous 24-hour TSP air quality monitoring was conducted using High Volume Sampler (HVS) (Model: GMWS-2310 Accu-vol) located at the designated monitoring station. The HVS meets all the requirements stated in Section 3.2 of the EM&A Manual. Portable direct reading dust meters were used to carry out the 1-hour TSP monitoring. **Table 2-3** summarizes the equipment used in the impact air quality monitoring. Copies of the calibration certificates for the HVS and portable dust meters are attached in [Appendix F](#).

Table 2-3: TSP Monitoring Equipment

Equipment	Model
24-hr TSP monitoring	
High Volume Sampler	GMWS 2310 Accu-vol (Serial no. 0890)
Calibrator	TE-5025A (Serial no. 1378)

1-hr TSP monitoring

Portable direct reading dust meter

Dust Trak 8520 (Serial no. 22020)

2.2.4 Monitoring Methodology

24-hour TSP Monitoring

Installation

The HVS was installed at the building roof of the air sensitive receiver. The following criteria were considered in the installation of the HVS.

- A horizontal platform with appropriate support to secure the sampler against gusty wind was provided.
- The distance between the HVS and any obstacles, such as buildings, was at least twice the height that the obstacle protrudes above the HVS.
- A minimum of 2 metres separation from walls, parapets and penthouse was required for rooftop sampler.
- A minimum of 2 metres separation from any supporting structure, measured horizontally was required.
- No furnace or incinerator flues or building vent were nearby.
- Airflow around the sampler was unrestricted.
- The sampler has been more than 20 metres from any drip line.
- Permission was obtained to set up the samplers and to obtain access to the monitoring stations.
- A secured supply of electricity is needed to operate the samplers.

Preparation of Filter Papers

- Glass fibre filters were labelled and sufficient filters that were clean and without pinholes were selected.
- All filters were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25 °C and not variable by more than ± 3 °C with relative humidity (RH) < 50% and was not variable by more than ± 5 %. A convenient working RH was 40%.

Field Monitoring Procedures

- The power supply was checked to ensure the HVS works properly.
- The filter holder and the area surrounding the filter were cleaned.
- The filter holder was removed by loosening the four bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully.
- The filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter.

- The swing bolts were fastened to hold the filter holder down to the frame. The pressure applied should be sufficient to avoid air leakage at the edges.
- The shelter lid was closed and was secured with the aluminium strip.
- The HVS was warmed-up for about 5 minutes to establish run-temperature conditions.
- A new flow rate record sheet was set into the flow recorder.
- The flow rate of the HVS was checked and adjusted at around 1.3 m³/min. The range specified in the EM&A Manual was between 0.6-1.7 m³/min.
- The programmable timer was set for a sampling period of 24 hrs, and the starting time, weather condition and the filter number were recorded.
- The initial elapsed time was recorded.
- At the end of sampling, the sampled filter was removed carefully and folded in half length so that only surfaces with collected particulate matter were in contact.
- It was then placed in a clean plastic envelope and sealed.
- All monitoring information was recorded on a standard data sheet.
- Filters were sent to a Hong Kong Laboratory Accreditation Scheme (HOKLAS) accredited laboratory for analysis.

Maintenance and Calibration

- The HVS and its accessories are maintained in good working condition, such as replacing motor brushes routinely and checking electrical wiring to ensure a continuous power supply.
- HVSs were calibrated prior to monitoring.
- Calibration records for HVS are shown in [Appendix F](#).

1-hour TSP Monitoring

Field Monitoring

The measuring procedures of the 1-hour dust meter are in accordance with the Manufacturer's Instruction Manual as follows:

- Set POWER to "ON", push BATTERY button, make sure that the meter's indicator is in the range with a red line and allow the instrument to stand for about 3 minutes (Then, the air sampling inlet has been capped).
- Push the knob at MEASURE position.
- Push "O-ADJ" button. (Then meter's indication is 0).
- Push the knob at SENSI ADJ position and set the meter's indication to S value described on the Test Report using the trimmer for SENSI ADJ.
- Pull out the knob and return it to MEASURE position.
- Push "START" button.

Maintenance and Calibration

- The 1-hour dust meter would be checked at 3-month intervals and calibrated at 1-year intervals throughout all stages of the air quality monitoring.
- Calibration records for direct dust meters are shown in [Appendix F](#).

Weather Condition

- The wind data during the monitoring period were recorded and provided in [Appendix H](#).

2.3 Construction Noise

2.3.1 Monitoring Parameters, Frequency and Duration

Table 2-4 summarizes the monitoring parameters, frequency and duration of noise monitoring. The noise in A-weighted levels L_{eq} , L_{10} and L_{90} are recorded in a 30-minute interval between 0700 and 1900 hrs at the designated monitoring stations shown in [Figure 2.1](#). For monitoring at hours other than daytime on normal weekdays, i.e. 0700-1900 on holidays, 1900-2300 and 2300-0700 of all days, the noise level will be measured in a 5-minute interval. One set of measurement for restricted hour shall include at least 3 consecutive $L_{eq(5\text{ mins})}$ results.

Table 2-4: Noise Monitoring Parameters, Period and Frequency

Time Period	Parameters	Frequency
Daytime on normal weekdays (0700-1900 hrs)	L_{eq} , L_{90} & L_{10} (30 min)	Once every week (the time period to be monitoring will be randomly selected if there are works at hours other than daytime on normal weekdays; otherwise only the daytime on normal weekdays will be monitored) For restricted hours (outside daytime on normal weekdays), one set of measurement shall include at least 3 consecutive $L_{eq(5\text{ mins})}$ results.
Evening time on all days (1900-2300 hrs) and Holidays (including Sundays) during daytime and evening (0700-2300 hrs)	L_{eq} , L_{90} & L_{10} (5 min)	
All days during the night-time (2300-0700 hrs of the next day)		

2.3.2 Monitoring Equipment

Integrating Sound Level Meter was used for noise monitoring. It was a Type 1 sound level meter capable of giving a continuous readout of the noise level readings including equivalent continuous sound pressure level (L_{Aeq}) and percentile sound pressure level (L_x). They comply with International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1). **Table 2-5** summarizes the noise monitoring equipment model being used.

Table 2-5: Noise Monitoring Equipments

Monitoring Station	Equipment Model	
	Integrating Sound Level Meter	Calibrator
NM8	Rion NL-18 (Serial no. 00360030)	Rion NC-73 (Serial no. 10997142)
NM9	Rion NL-31 (Serial no. 00983400)	

2.3.3 Monitoring Locations

Ten monitoring stations (NM1 to NM10) were proposed in the EM&A Manual. Only NM8 and NM9, namely Siu Hong Court and Yau Tze Tin Memorial College respectively, were considered relevant to this project based on the scope and layout of the construction works. The exact locations of the stations were slightly adjusted during the baseline monitoring phase and described in **Table 2-6** and shown in [Figure 2.1](#).

Table 2-6: Locations of Noise Monitoring Stations

Monitoring Station	Locations	Type of measurement
NM8	3/F of Car Park at Siu Hong Court	Facade
NM9	TWGHs Yau Tze Tin Memorial College, at roof of the Assembly Hall (accessed from 4/F)	Facade

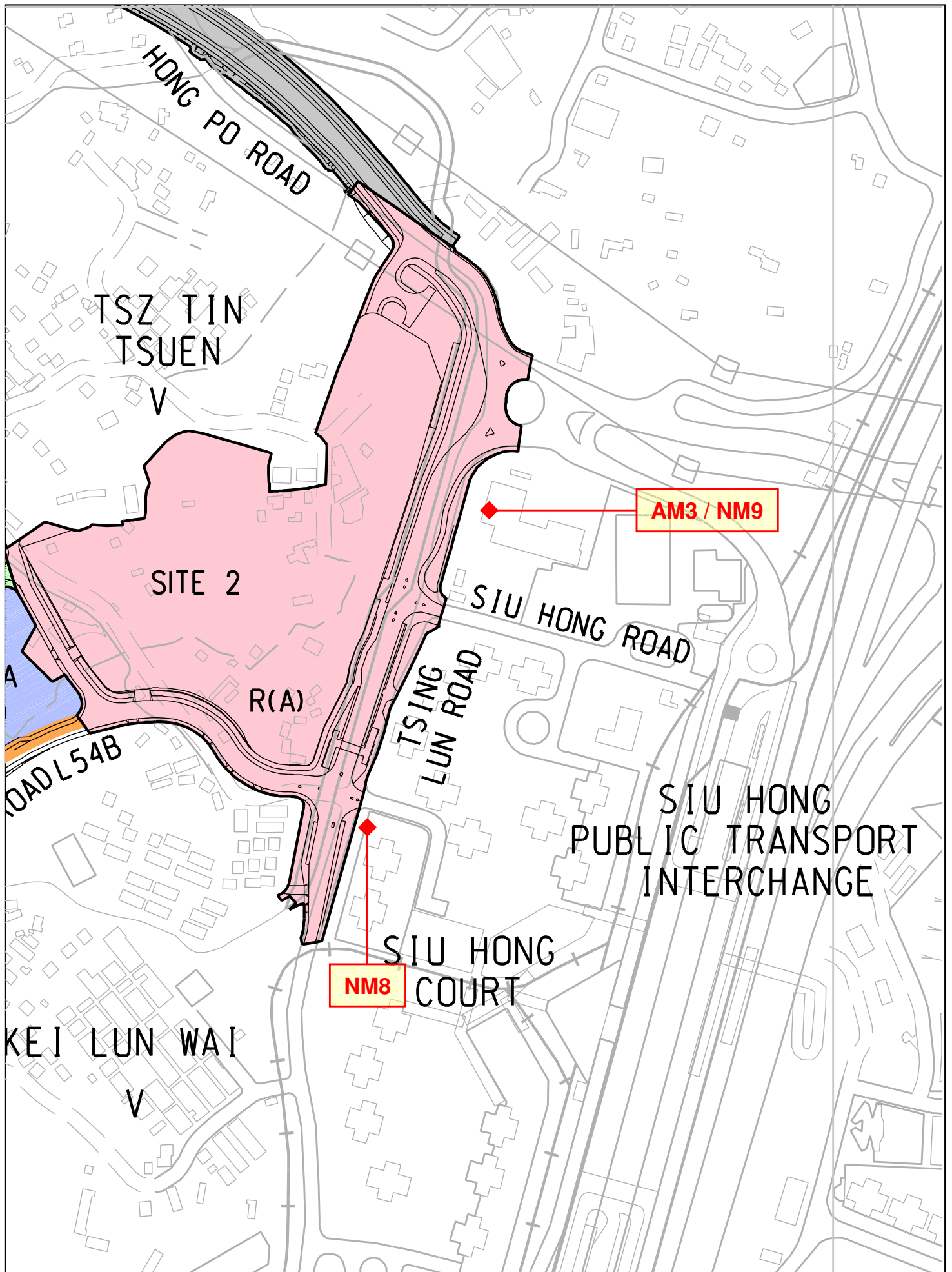
2.3.4 Monitoring Methodology



Field Monitoring

- The Sound Level Meter was set on a tripod at a height of at least 1.2 m above the ground.
- Façade measurement was made at the monitoring locations.
- The battery condition was checked to ensure the correct functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
 - frequency weighting: A
 - time weighting: Fast
 - time measurement: 30 minutes intervals (between 0700-1900 on normal weekdays); and 5 minutes intervals (0700-1900 on holidays, 1900-2300 and 2300-0700 of all days) and at least 3 consecutive measurements for one set of monitoring.
- Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94 dB at 1 kHz. If the difference in the calibration level before and after measurement was more than 1 dB, the measurement would be considered invalid has to be repeated after re-calibration or repair of the equipment.
- During the monitoring period, the L_{eq} , L_{10} and L_{90} were recorded. In addition, any site observations and noise sources were recorded on a standard record sheet.

Maintenance and Calibration

- The microphone head of the sound level meter and calibrator is cleaned with soft cloth at quarterly intervals.
- The meter and calibrator are sent to the supplier or HOKLAS laboratory to check and calibrate at yearly intervals.
- Calibration records are shown in [Appendix F](#).



 <p>Civil Engineering and Development Department</p>	 <p>Mott MacDonald</p>	<p>Agreement No. LW 05/2011 Environmental Team Services for Contract No. CV/2011/01 Site formation and Infrastructural works near Tsing Lun Road and Tsz Tin Road in Area 54, Tuen Mun</p>	<p>Title: Locations of Air Quality & Noise Monitoring Stations</p> <p>Figure 2.1</p>
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3. Monitoring Results

3.1 Impact Monitoring

Impact monitoring for air quality and noise due to the construction work were undertaken in compliance with the EMA& Manual during the reporting month.

3.2 Air Quality

3.2.1 1-hr TSP

Results of 1-hour TSP at the monitoring location are summarised in **Table 3-1**. Graphical plots of the monitoring results are shown in [Appendix G](#).

Table 3-1: Summary of 1-hour TSP monitoring results

Monitoring Date	Start Time	1-hr TSP ($\mu\text{g}/\text{m}^3$)			Range ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
		1 st Result	2 nd Result	3 rd Result			
AM3							
06-Jun-13	13:08	72	82	90	68 - 95	329	500
11-Jun-13	08:00	68	72	79			
17-Jun-13	08:10	72	80	89			
21-Jun-13	08:13	72	84	95			
27-Jun-13	13:10	75	86	90			

3.2.2 24-hr TSP

Results of 24-hour TSP at the monitoring location are summarised in **Table 3-2**. Graphical plots of the monitoring results are shown in [Appendix G](#).

Table 3-2: Summary of 24-hour TSP monitoring results

Monitoring Date	Start Time	Monitoring Results ($\mu\text{g}/\text{m}^3$)	Range ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
AM3					
06-Jun-13	13:10	75	55 - 75	179	260
11-Jun-13	08:02	62			
17-Jun-13	08:12	55			
21-Jun-13	08:10	70			
27-Jun-13	13:12	65			

No exceedance of 1-hour and 24-hour TSP (Action or Limit Level) was recorded in the reporting period.

3.3 Construction Noise

The construction noise monitoring results are summarized in **Table 3-3**. Graphical plots of the monitoring data are shown in [Appendix G](#).

Table 3-3: Summary of Construction noise monitoring results

Monitoring Date	Start Time	Mean & Range of Noise Levels, dB(A)			Limit Level for L_{eq} (dB)
		L_{eq}	L_{10}	L_{90}	
NM8					
06-Jun-13	14:47	66	68	64	> 75
11-Jun-13	10:08	68	70	66	
17-Jun-13	09:30	68	70	66	
27-Jun-13	14:40	68	70	66	
NM9					
06-Jun-13	15:25	64	67	62	> 70*
11-Jun-13	10:46	65	67	63	> 65*
17-Jun-13	10:30	65	67	62	> 65*
27-Jun-13	15:20	67	69	65	> 70*

* Note: Reduced to 70 dB(A) for schools and 65 dB(A) during school examination periods

No exceedance (Action/Limit Level) of construction noise was recorded in the reporting period.

4. Environmental Site Inspections

4.1 Site Inspection

Construction phase weekly site inspections were carried on 5, 11, 20 and 26 June 2013. All observations have been recorded in the site inspection checklist and passed to the Contractor together with the appropriate recommended mitigation measures where necessary. The key observations from site inspections and associated recommendations are summarized in **Table 4-1**.

Table 4-1: Summary of Site Inspections and Recommendations

Key Observations (Date)	ET Recommendation	Contractor's Responses / Action(s) Undertaken	Close-out (Date)
Stockpiles of sand were observed to be not properly covered. (5 Jun 13)	To cover the stockpiles with impervious sheets to minimize possible dust generation.	Agreed and action taken	11 Jun 13
Muddy water is observed leaking from the Wetsep. (5 Jun 13)	To ensure the functioning of the Wetsep and to clear the muddy water for treatment.	Agreed and action taken	11 Jun 13
Muddy water was observed seeping into the nullah from the top of box culvert at BC5. (11 Jun 13)	To improve bunding around the area.	Agreed and action taken	20 Jun 13
Concern was expressed at the handling of runoff from concrete grouting activities. (20 Jun 13)	To provide suitable treatment measures (e.g. grouting pit/ wetsep) next to grouting area before allowing such runoff to be discharged.	Agreed and action taken	26 Jun 13
A small amount of broken rocks had fallen into the drainage channel near Tsz Tin Road entrance. (20 Jun 13)	To clear the broken rocks to ensure proper flow of site runoff.	Agreed and action taken	26 Jun 13
Muddy water was observed at BC5 sheetpiles. (26 Jun 13)	To improve bunding around the U-channel going into BC5 and treat the muddy water before discharge.	Agreed and action being taken	On-going
Refuse was accumulated at the nullah upstream of 瑞園. (26 Jun 13)	To remove the refuse.	Agreed and action taken	4 Jul 13
A pipe was observed at the Tsing Lun Road nullah with muddy water dispersing at BC6 bay 14. (26 Jun 13)	To remove the pipe from the nullah and treat all wastewater before discharge.	Agreed and action being taken	On-going
Muddy water discharge was observed around the U-channels at Portion B. (26 Jun 13)	To improve the bunding around the U-channels at Portion B.	Agreed and action being taken	On-going

4.2 Advice on the Solid and Liquid Waste Management Status

The Contractor has been registered as a chemical waste producer for the Project. Construction and demolition (C&D) material sorting was carried out on site. A sufficient number of receptacles were available for general refuse collection.

The waste flow table is present in [Appendix I](#).

4.3 Status of Environmental Licenses and Permits

The environmental permits, licenses, and/or notifications on environmental protection for this Project which were valid during the period is summarised in **Table 4-2**.

Table 4-2: Status of Environmental Submissions, Licenses and Permits

Statutory Reference	Description	Permit /Reference No.	Status
EIAO	Environmental Permit	EP-331/2009	Valid
APCO	Notification of Construction Work under APCO	335179	Valid
WPCO	Discharge License	WT00011754-2012 (Valid to: 31 Jan 2017)	Valid
WDO	Registration as Chemical Waste Producer	0000-423-C1232-08	Valid
WDO	Bill Account for disposal	WFG10240	Valid

Legend: EIAO – Environmental Impact Assessment Ordinance
 APCO – Air Pollution Control Ordinance
 WPCO – Water Pollution Control Ordinance
 WDO – Waste Disposal Ordinance

4.4 Recommended Mitigation Measures

The EM&A programme followed the recommended mitigation measures in the EMA& Manual. The EM&A requirements as well as the summary of implementation status of the environmental mitigation measures are provided in [Appendix J](#). In particular, the following mitigation measures were brought to attention during the site inspections:

Noise

- Silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction works.

Air Quality

- Excavated dusty materials should be covered by impervious sheeting or sprayed with water to keep the entire surface wet.
- Every vehicle should be washed to remove dusty materials from its body and wheels before leaving a construction site.

Water Quality

- Channels, earth bunds or sand bag barriers shall be provided on site to direct storm water to silt removal facilities.
- All drainage facilities and erosion and sediment control structures shall be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rainstorms.
- Water to be pumped out from trenches or foundation excavations shall be discharged into storm drains via silt removal facilities.

- The bentonite, grouting and cement materials shall only be delivered to the construction site when they are to be used.

Waste Management

- Construction solid waste, debris and rubbish on site shall be collected, handled and disposed of properly.
- Chemical waste produced should be handled in accordance with the relevant guidelines and regulations.

5. Report on Non-compliance, Complaints, Notifications of Summons and Successful Prosecutions

5.1 Record on Non-compliance of Action and Limit Levels

There is no breach of Action or Limit Levels for Air Quality and Noise monitoring in the reporting month.

5.2 Record on Environmental Complaints Received

No environmental complaint was received during the reporting month. The cumulative statistics on complaints were provided in [Appendix K](#).

5.3 Record on Notifications of Summons and Successful Prosecution

No notifications of summons or successful prosecution were received this month. The cumulative statistics on notifications of summons and successful prosecutions were provided in [Appendix K](#).

5.4 Review of Reasons for and Implications of Non-compliance, Complaints, Summons and Prosecutions

Not applicable.

5.5 Follow-up Actions Taken

Not applicable.

6. Future Key Issues

6.1 Construction Works for the Coming Month(s)

The major site works scheduled to be commissioned in the coming three months include:

- Construction of retaining wall
- Construction of box culvert
- Demolition of existing structures
- Tree transplanting
- Construction of stormwater drain and sewerage
- Construction of noise barrier
- Construction of public toilet
- Construction of New Tsz Tin Road
- Piling works for footbridge & noise enclosure
- Construction of watermain

6.2 Key Issues for the Coming Month

Key issues to be considered in the coming month include:

- Generation of dust from construction and demolition works;
- Noise impact from operating equipment and machinery on-site;
- Generation of site surface runoffs and wastewater from activities on-site;
- Management of stockpiles and slopes, particularly on rainy days;
- Sorting, recycling, storage and disposal of general refuse and construction waste; and
- Management of chemicals and avoidance of oil spillage on-site.

6.3 Monitoring Schedule for the Coming Month

Impact monitoring for air and noise in accordance with the approved EM&A Manual has commenced since 8 December 2011. The tentative monitoring schedule for the coming month is shown in the [Appendix E](#).

6.4 Conclusions and Recommendations

6.4.1 Conclusions

The EM&A programme as recommended in the EM&A Manual has been undertaken in the reporting month since the construction commenced on 8 December 2011.

Monitoring of air quality and noise due to the Project was under way. In particular, the 1-hr TSP, 24-hr TSP, noise level (as L_{eq}) under monitoring have been checked against established Action and Limit levels. There was no breach of Action and Limit Levels for 1-hr TSP, 24-hr TSP and noise in the reporting month.

6.4.2 Recommendations

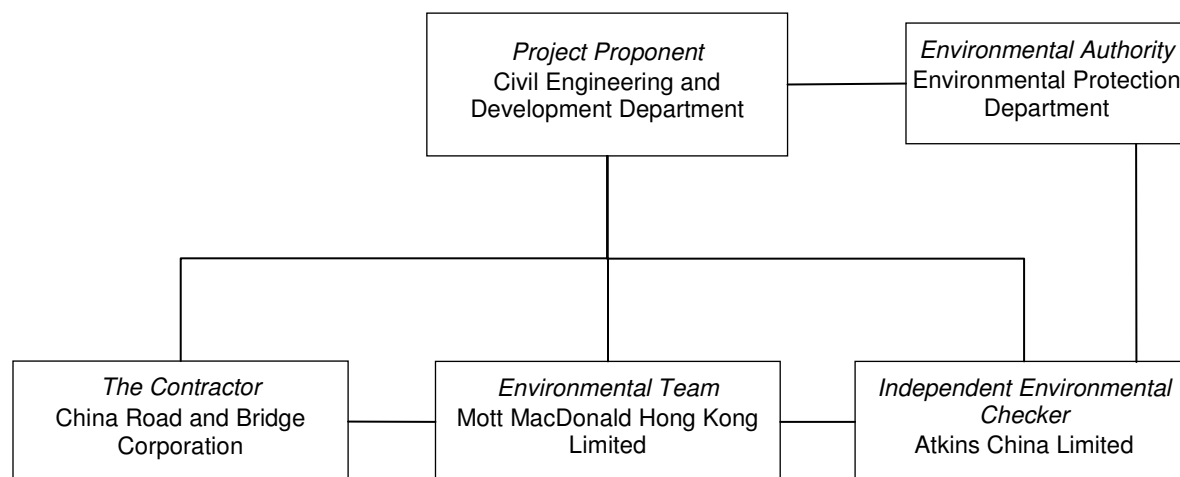
With considerations on the construction activities and environment, recommendations on mitigation measures for impacts on air quality, noise, water quality and waste were provided during site inspections and meetings.

Although no school examinations are scheduled in July 2013 at the TWGHs Yau Tze Tin Memorial College (NSR: NM9), school activities will be conducted. In addition, construction of new roads, noise barriers, stormwater drain and sewerage and associated works near Siu Hong Court (NSR: M8), Unicorn Garden and TWGHs Yau Tze Tin Memorial College (NSR: NM9) are ongoing. Therefore, the Contractor has been reminded to strictly implement the recommended noise mitigation measures in EM&A Manual:

Noise

- Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction works.
- Machines and plant that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum.
- Plant known to emit noise strongly in one direction, should, where possible, be orientated to direct noise away from nearby NSRs.
- Mobile plant should be sited as far away from NSRs as possible.

Appendix A. Project Organisation



Contact information:

Company / Department	Position	Name	Telephone / Mobile
Civil Engineering and Development Department	Engineer's Representative	Mr Gavin Wong	2762 5672
Atkins China Ltd.	Independent Environmental Checker	Ms Sharifah Or	2972 1000
Mott MacDonald Hong Kong Ltd.	Environmental Team Leader	Mr Terence Kong	2828 5919
China Road and Bridge Corporation	Project Manager	Mr Raymond Mau	9048 3669
China Road and Bridge Corporation	Site Agent	Mr Raymond Suen	9779 8871
China Road and Bridge Corporation	Environmental Officer	Mr Ray Ma	5335 9755

Appendix B. Tentative Construction Programme

CRBC-China Road and Bridge Corporation
Contract No. CV/2011/01
Site Formation and Infrastructural Works near Tsing Lun Road and Tze Tin Road in Area 54, Tuen Mun
Master Program (Version 0)

ID	Task Name	Duration	Start	Finish	2012												2013												2014												2015											
					Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4																		
1	Project Key Date	1460 days	Fri 16/09/11	Mon 14/09/15																																																
2	Section I of the Works (Portion A of the Site)	457 days	Fri 16/09/11	Sat 15/12/12																																																
3	Section II of the Works (Portion B of the Site)	578 days	Fri 16/09/11	Mon 15/04/13																																																
4	Section III of the Works (Portion C of the Site)	1095 days	Fri 16/09/11	Sun 14/09/14																																																
5	Section IV of the Works (P&P of existing Trees within the Site)	1095 days	Fri 16/09/11	Sun 14/09/14																																																
6	Section V of the Works (Establishment Works)	1460 days	Fri 16/09/11	Mon 14/09/15																																																
7																																																				
8	Preliminary	860 days	Fri 16/09/11	Wed 22/01/14																																																
9	Commencement Day	0 days	Fri 16/09/11	Fri 16/09/11																																																
10	Establishment of SLG	14 days	Fri 16/09/11	Thu 29/09/11																																																
11	Utility coordination	30 days	Fri 30/09/11	Sat 29/10/11																																																
12	Update Existing Utilities Drawings from UU parties	30 days	Sun 30/10/11	Mon 28/11/11																																																
13	Submission of Independent Traffic Consultant (ITC) to ER and approval	14 days	Fri 16/09/11	Thu 29/09/11																																																
14	Prepare TTA schemes by ITC	60 days	Fri 30/09/11	Mon 28/11/11																																																
15	Submission of TTA schemes for approval by Authorities	45 days	Tue 29/11/11	Thu 12/01/12																																																
16	Materials submission and approval by ER	45 days	Fri 16/09/11	Sun 30/10/11																																																
17	Delivery of materials and testing	90 days	Mon 31/10/11	Sat 28/01/12																																																
18	Mobilization of plants	7 days	Fri 16/09/11	Thu 22/09/11																																																
19	ER and Contractor's Site Office	72 days	Fri 23/09/11	Sat 03/12/11																																																
20	Submission layout of works area WA1 and approval	7 days	Fri 23/09/11	Thu 29/09/11																																																
21	Site preparation works	20 days	Fri 30/09/11	Wed 19/10/11																																																
22	TTA submission for run-in of WA1 and approval by TD and RMO	14 days	Thu 20/10/11	Wed 02/11/11																																																
23	Hoarding Erection for works area WA1	30 days	Thu 03/11/11	Fri 02/12/11																																																
24	Submission and approval of equipments and office for ER	14 days	Fri 30/09/11	Thu 13/10/11																																																
25	Delivery of material for RE's office	14 days	Fri 14/10/11	Thu 27/10/11																																																
26	Erection of ER's office	30 days	Fri 28/10/11	Sat 26/11/11																																																
27	Delivery of equipments for ER office	7 days	Sun 27/11/11	Sat 03/12/11																																																
28	Erection of contractor site office	30 days	Fri 28/10/11	Sat 26/11/11																																																
29	Survey of the Site	44 days	Fri 16/09/11	Sat 29/10/11																																																
30	Carrying out initial surveys and setting out Site boundaries	30 days	Fri 16/09/11	Sat 15/10/11																																																
31	Structural survey record	14 days	Sun 16/10/11	Sat 29/10/11																																																
32	Environmental Issue and base line monitoring	276 days	Fri 16/09/11	Sun 17/06/12																																																
33	Submission of EMP / WMP / TTS for approval	21 days	Fri 16/09/11	Thu 06/10/11																																																
34	Coordination with ET	7 days	Fri 16/09/11	Thu 22/09/11																																																
35	Submission of Methodology of base line monitoring by ET and approval	30 days	Fri 23/09/11	Sat 22/10/11																																																
36	Set up monitoring stations by ET	21 days	Sun 23/10/11	Sat 12/11/11																																																
37	Baseline Monitoring by ET	90 days	Sun 13/11/11	Fri 10/02/12																																																
38	Asbestos Investigation and abatement	69 days	Fri 16/09/11	Wed 23/11/11																																																
39	Submission of Registered Asbestos Consultant and approval	7 days	Fri 16/09/11	Thu 22/09/11																																																
40	Asbestos Investigation	20 days	Fri 23/09/11	Wed 12/10/11																																																
41	Submission of preliminary asbestos assessment report	7 days	Thu 13/10/11	Wed 19/10/11																																																
42	Submission of asbestos investigation report (AIR) to ER and DEP	14 days	Thu 20/10/11	Wed 02/11/11																																																
43	Submission of asbestos abatement plan (AAP) to ER and DEP	14 days	Thu 20/10/11	Wed 02/11/11																																																
44	Submission of method statement prepared by registered asbestos contractor	7 days	Thu 20/10/11	Wed 26/10/11																																																
45	Obtained the endorsement from DEP	21 days	Thu 03/11/11	Wed 23/11/11																																																
46	Apply necessary work ticket by registered asbestos contractor	28 days	Thu 27/10/11	Wed 23/11/11																																																
47	Notification to LD and DEP for commencement of works	28 days	Thu 27/10/11	Wed 23/11/11																																																
48	Land Decontamination Assessment and Remediation Works	276 days	Fri 16/09/11	Sun 17/06/12																																																
49	Submission of Decontamination Specialist and approval	28 days	Fri 16/09/11	Thu 13/10/11																																																
50	Site E	30 days	Fri 14/10/11	Sat 12/11/11																																																
51	Submission of method statement of cement solidification and approval	20 days	Fri 14/10/11	Wed 02/11/11																																																
52	Submission of treatment programme	10 days	Thu 03/11/11	Sat 12/11/11																																																
53	Submission of location plan and general arrangement and approval	10 days	Thu 03/11/11	Sat 12/11/11																																																
54	Site G / Site H1	248 days	Fri 14/10/11	Sun 17/06/12																																																
55	Submission of Contamination Assessment Plan (CAP) to ER and DEP	28 days	Fri 14/10/11	Thu 10/11/11																																																
56	Approval of CAP by ER and DEP	21 days	Fri 11/11/11	Thu 01/12/11																																																
57	Mobilization of plant for SI works	7 days	Fri 02/12/11	Thu 08/12/11																																																
58	Site Investigation Works	21 days	Fri 09/12/11	Thu 29/12/11																																																
59	Sampling and laboratory test according to approved CAP	14 days	Fri 30/12/11	Thu 12/01/12																																																
60	Submission of Contamination Assessment Report (CAR) to ER and DEP for approval	21 days	Fri 13/01/12	Thu 02/02/12																																																

Task Critical Task Milestone Summary Split Progress

Appendix C. Action and Limit Levels for Construction Phase

Air Quality

The Action and Limit Levels for 1-hour and 24-hour TSP for the monitoring station are presented in following tables:

Table C1: Action and Limit Levels for 1-hour TSP

Monitoring Station	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
AM3	329	500

Table C2: Action and Limit Levels for 24-hour TSP

Monitoring Station	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
AM3	179	260

Noise

The Action and Limit Levels for Noise for the monitoring stations are presented in following table:

Table C3: Action and Limit Levels for Construction Noise

Time Period & Monitoring Locations	Action Level	Limit Level
NM8		
0700-1900 hours on normal weekdays	When one documented complaint is received from any one of the sensitive receivers	75 dB(A)
NM9		
0700-1900 hours on normal weekdays	When one documented complaint is received from any one of the sensitive receivers	70 dB(A) / 65 dB(A) *
NM8, NM9		
0700-2300 hrs on holidays; and 1900-2300 hrs on all other days	When one documented complaint is received from any one of the sensitive receivers	65 dB(A)
2300-0700 hrs of next day	When one documented complaint is received from any one of the sensitive receivers	50 dB(A)

Note: * Reduced to 70 dB(A) for schools and 65 dB(A) during school examination periods.

Appendix D. Event and Action Plan for Air Quality and Noise

Air Quality

Should non-compliance of the air quality criteria occurs during construction stage, actions in accordance with the Event and Action Plan in the below table should be carried out.

Table D1: Event and Action Plan for Air Quality

Event	Action			
	ET Leader	IEC	ER (Engineer's Representative)	Contractor
Action Level				
1. Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify source, investigate the causes of exceedance and propose remedial measures. 2. Inform IEC and ER. 3. Repeat measurement to confirm finding. 4. Increase monitoring frequency to daily. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET. 2. Check Contractor's working method. 	<ol style="list-style-type: none"> 1. Notify Contractor. 	<ol style="list-style-type: none"> 1. Rectify any unacceptable practice. 2. Amend working methods if appropriate.
2. Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Identify the source, investigate the causes of exceedance and propose remedial measures. 2. Inform IEC and ER. 3. Repeat measurements to confirm findings. 4. Increase monitoring frequency to daily. 5. Discuss with IEC and the Contractor on remedial actions required. 6. If exceedance continues, arrange meeting with IEC and ER. 7. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET. 2. Check the Contractor's working method. 3. Discuss with ET and the Contractor on possible remedial measures. 4. Advise ER on the effectiveness of the proposed remedial measures. 5. Supervise implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing. 2. Notify the Contractor. 3. Ensure remedial measures properly implemented. 	<ol style="list-style-type: none"> 1. Submit proposals for remedial actions to IEC within 3 working days of notification. 2. Implement the agreed proposals. 3. Amend proposal if appropriate.
Limit Level				
1. Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify source, investigate the causes of exceedance and 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET. 2. Check the 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance.

Event	Action			
	ET Leader	IEC	ER (Engineer's Representative)	Contractor
	<ul style="list-style-type: none"> propose remedial measures. 2. Inform ER and EPD. 3. Repeat measurement to confirm finding. 4. Increase monitoring frequency to daily. 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results. 	<ul style="list-style-type: none"> Contractor's working method. 3. Discuss with ET Leader and the Contractor on possible remedial measures. 4. Advise ER on the effectiveness of the proposed remedial measures. 5. Supervise implementation of remedial measures. 	<ul style="list-style-type: none"> in writing. 2. Notify the Contractor. 3. Ensure remedial measures properly implemented. 	<ul style="list-style-type: none"> 2. Submit proposals for remedial actions to IEC within 3 working days of notification. 3. Implement the agreed proposals. 4. Amend proposal if appropriate.
2. Exceedance for two or more consecutive samples	<ul style="list-style-type: none"> 1. Notify IEC, ER, EPD and the Contractor. 2. Identify the source. 3. Repeat measurements to confirm findings. 4. Increase monitoring frequency to daily. 5. Carry out analysis of the Contractor's working procedures to determine possible mitigation to be implemented. 6. Arrange meeting IEC and ER to discuss the remedial actions to be taken. 7. Assess effectiveness of the Contractor's remedial actions and keep IEC, EPD and ER informed of the results. 8. If exceedance stops, cease additional monitoring. 	<ul style="list-style-type: none"> 1. Discuss amongst ER, ET Leader and the Contractor on the potential remedial actions. 2. Review the Contractor's remedial actions whenever necessary and advise ER accordingly. 3. Supervise the implementation of remedial measures. 	<ul style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing. 2. Notify the Contractor. 3. In consultation with IEC, agree with the remedial measures to be implemented. 4. Ensure remedial measures are properly implemented. 5. If exceedance continues, consider what activity of the work is responsible and instruct the Contractor to stop that activity of work until the exceedance is abated. 	<ul style="list-style-type: none"> 1. Take immediate action to avoid further exceedance. 2. Submit proposals for remedial actions to IEC within 3 working days of notification. 3. Implement the agreed proposals. 4. Resubmit proposals if problem still not under control. 5. Stop the relevant activity of works as determined by ER until the exceedance is abated.

Construction Noise

In case the Action and Limit Levels are not complied during construction stage, the following Event and Action Plan should be followed:

Table D2: Event and Action Plan for Construction Noise

Event	Action			
	ET Leader	IEC	ER	Contractor
Action Level	<ol style="list-style-type: none"> 1. Notify IEC and the Contractor. 2. Carry out investigation. 3. Report the results of investigation to IEC and the Contractor. 4. Discuss with the Contractor and formulate remedial measures. 5. Increase monitoring frequency to check mitigation measures. 	<ol style="list-style-type: none"> 1. Review with analysed results submitted by ET. 2. Review the proposed remedial measures by the Contractor and advise ER accordingly. 3. Supervise the implement of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing. 2. Notify the Contractor. 3. Require the Contractor to propose remedial measures for the analysed noise problem. 4. Ensure remedial measures are properly implemented. 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to IEC. 2. Implement noise mitigation proposals.

Event	Action			
	ET Leader	IEC	ER	Contractor
Limit Level	<ol style="list-style-type: none"> 1. Identify the source. 2. Notify IEC, ER, EPD and the Contractor. 3. Repeat measurement to confirm findings. 4. Increase monitoring frequency. 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented. 6. Inform IEC, ER, and EPD the causes & actions taken for the exceedances. 7. Assess effectiveness of the Contractor's remedial actions and keep IEC, EPD and ER informed of the results. 8. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Discuss amongst ER, ET Leader and the Contractor on the potential remedial actions. 2. Review the Contractor's remedial actions whenever necessary to assure their effectiveness and advise ER accordingly. 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing. 2. Notify the Contractor. 3. Require the Contractor to propose remedial measures for the analysed noise problem. 4. Ensure remedial measures are properly implemented. 5. If exceedance continues, consider what activity of the work is responsible and instruct the Contractor to stop that activity of work until the exceedance is abated. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance. 2. Submit proposals for remedial actions to IEC within 3 working days of notification. 3. Implement the agreed proposals. 4. Resubmit proposals if problem still not under control. 5. Stop the relevant activity of works as determined by the ER until the exceedance is abated.

Appendix E. Monitoring Schedule

Table E1: Monitoring Schedule for the reporting month

Air Quality & Noise Monitoring Schedule for Jun 2013

Jun-13						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4	5 Weekly Audit	6 24-hr TSP 1-hr TSP x 3 Noise	7	8
9	10	11 24-hr TSP 1-hr TSP x 3 Noise Weekly Audit	12 Tuen Ng Festival	13	14	15
16	17 24-hr TSP 1-hr TSP x 3 Noise	18	19	20 Weekly Audit	21 24-hr TSP 1-hr TSP x 3	22
23	24	25	26 Weekly Audit	27 24-hr TSP 1-hr TSP x 3 Noise	28	29
30						

- Air Quality Monitoring (24-hr Total Suspended Particulates)
- Air Quality Monitoring (1-hr Total Suspended Particulates) x 3 times
- Noise Monitoring (30-min)
- Weekly Audit

Table E2: Tentative Monitoring Schedule for the coming month

Tentative Air Quality & Noise Monitoring Schedule for Jul 2013

Jul-13						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1 HKSAR Establishment Day	2	3 24-hr TSP 1-hr TSP x 3 Noise Weekly Audit	4	5	6
7	8	9 24-hr TSP 1-hr TSP x 3 Noise	10 Weekly Audit	11	12	13
14	15 24-hr TSP 1-hr TSP x 3 Noise	16	17	18 Weekly Audit	19 24-hr TSP 1-hr TSP x 3	20
21	22	23	24 Weekly Audit	25 24-hr TSP 1-hr TSP x 3 Noise	26	27
28	29	30	31 24-hr TSP 1-hr TSP x 3 Noise Weekly Audit			

- Air Quality Monitoring (24-hr Total Suspended Particulates)
- Air Quality Monitoring (1-hr Total Suspended Particulates) x 3 times
- Noise Monitoring (30-min)
- Weekly Audit

Appendix F. Calibration Certificates

High-Volume TSP Sampler
5-Point Calibration Record

Location : Yau Tze Tin
Calibrated by : K.F.Ho
Date : 21/04/2013

Sampler

Model : GMWS-2310 ACCU-VOL
Serial Number : S/N 0890

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2323
Service Date : 26 Dec 2012
Slope (m) : 2.09107
Intercept (b) : -0.02838
Correlation Coefficient(r) : 0.99996

Standard Condition

Pstd (hpa) : 1013
Tstd (K) : 298.18

Calibration Condition

Pa (hpa) : 1016
Ta(K) : 293

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1 18 holes	12.0	3.499	1.687	56	56.6
2 13 holes	9.1	3.047	1.471	46	46.5
3 10 holes	7.0	2.672	1.291	39	39.4
4 7 holes	4.6	2.166	1.049	28	28.3
5 5 holes	2.8	1.690	0.822	18	18.2

Sampler Calibration Relationship

Slope(m): 44.169 Intercept(b): -18.056

Correlation Coefficient(r): 0.9998

Checked by: Magnum Fan

Date: 22/04/2013

High-Volume TSP Sampler
5-Point Calibration Record

Location : Yau Tze Tin
 Calibrated by : K.F.Ho
 Date : 21/06/2013

Sampler

Model : GMWS-2310 ACCU-VOL
 Serial Number : S/N 0890

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2323
 Service Date : 26 Dec 2012
 Slope (m) : 2.09107
 Intercept (b) : -0.02838
 Correlation Coefficient(r) : 0.99996

Standard Condition

Pstd (hpa) : 1013
 Tstd (K) : 298.18

Calibration Condition

Pa (hpa) : 1008
 Ta(K) : 304

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1 18 holes	12.0	3.418	1.648	55	54.3
2 13 holes	9.1	2.977	1.437	46	45.4
3 10 holes	7.4	2.684	1.297	40	39.6
4 7 holes	4.6	2.116	1.026	28	27.6
5 5 holes	2.8	1.651	0.803	18	17.8

Sampler Calibration Relationship

Slope(m): 43.231 Intercept(b): -16.801

Correlation Coefficient(r): 0.9999

Checked by: 
 Magnum Fan

Date: 25/06/2013

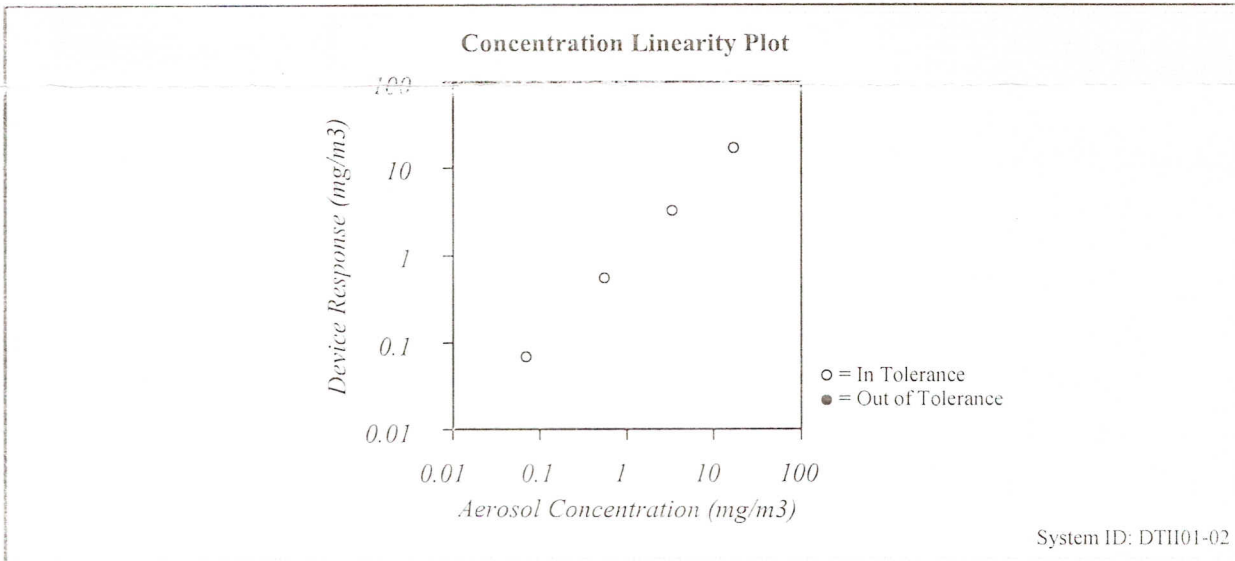


CERTIFICATE OF CALIBRATION AND TESTING

TSL Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
 Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

Environment Condition			Model	8520
Temperature	69.1 (20.6)	°F (°C)		
Relative Humidity	54	%RH	Serial Number	22020
Barometric Pressure	28.92 (979.3)	inHg (hPa)		

<input checked="" type="checkbox"/> As Left	<input checked="" type="checkbox"/> In Tolerance
<input type="checkbox"/> As Found	<input type="checkbox"/> Out of Tolerance



Zero Stability Results			
Average:	Minimum:	Maximum:	Time:
0.000 :mg/m ³	0.000 :mg/m ³	0.007 :mg/m ³	2.00 :hrs.

TSL Incorporated does hereby certify that all materials, components, and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSL and the customer and with all published specifications. All performance and acceptance tests required under this contract were successfully conducted according to required specifications. There is no NIST standard for optical mass measurements. Calibration of this instrument performed by TSL has been done using emery oil and has been nominally adjusted to respirable mass of standard ISO 12103-1, A1 test dust (Arizona dust). Our calibration ratio is greater than 1.2:1

Measurement Variable	System ID	Last Cal.	Cal. Due	Measurement Variable	System ID	Last Cal.	Cal. Due
Barometric Pressure	E003733	02-25-12	02-25-13	Temperature	E002873	11-14-11	11-14-12
Humidity	E002873	11-14-11	11-14-12	DC Voltage	E003314	01-03-12	01-03-13
DC Voltage	E003315	01-03-12	01-03-13	Photometer	E003319	07-26-12	01-26-13
Microbalance	M001324	01-04-11	01-04-13	Pressure	E003511	11-11-11	11-11-12
Flowmeter	E002006	03-06-12	03-06-13				

 _____ Calibrated	<input checked="" type="checkbox"/> Final Function Check	August 6, 2012 _____ Date
-------------------------	--	---------------------------------

Certificate of Calibration

校正證書

Certificate No. : C123522
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC12-1472)

Description / 儀器名稱 : Precision Integrating Sound Level Meter
Manufacturer / 製造商 : Rion
Model No. / 型號 : NL-18
Serial No. / 編號 : 00360030
Supplied By / 委託者 : Envirotech Services Co.
Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road,
Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 溫度 : $(23 \pm 2)^{\circ}\text{C}$ Relative Humidity / 相對濕度 : $(55 \pm 20)\%$
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 13 June 2012

TEST RESULTS / 測試結果

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 Precision Measurement Ltd., UK
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested By : 
測試 : L K Yeung

Certified By : 
核證 : K C Lee

Date of Issue : 15 June 2012
簽發日期

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室所書面批准。

Certificate of Calibration

校正證書

Certificate No. : C123522
證書編號

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
- Self-calibration was performed before the test.
- The results presented are the mean of 3 measurements at each calibration point.
- Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C120016
CL281	Multifunction Acoustic Calibrator	DC110233

- Test procedure : MA101N.

- Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 110	LA	A	Fast	94.00	1	93.8	± 0.7

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
60 - 120	LA	A	Fast	94.00	1	93.9 (Ref.)
				104.00		103.9
				114.00		113.8

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 Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 110	LA	A	Fast	94.00	1	93.8	Ref.
			Slow			93.8	± 0.1

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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Certificate of Calibration

校正證書

Certificate No. : C123522

證書編號

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		
50 -110	LA	A	Fast	106.00	Continuous	106.0	Ref.
	LAmx				200 ms	105.1	-1.0 ± 1.0
	LA	Slow	Continuous		106.0	Ref.	
	LAmx		500 ms		102.5	-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.		
50 - 110	LA	A	Fast	94.00	31.5 Hz	54.1	-39.4 ± 1.5
					63 Hz	67.4	-26.2 ± 1.5
					125 Hz	77.5	-16.1 ± 1.0
					250 Hz	85.1	-8.6 ± 1.0
					500 Hz	90.5	-3.2 ± 1.0
					1 kHz	93.8	Ref.
					2 kHz	95.1	+1.2 ± 1.0
					4 kHz	94.8	+1.0 ± 1.0
					8 kHz	92.7	-1.1 (+1.5 ; -3.0)
					12.5 kHz	89.4	-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.		
50 - 110	LC	C	Fast	94.00	31.5 Hz	90.7	-3.0 ± 1.5
					63 Hz	93.0	-0.8 ± 1.5
					125 Hz	93.6	-0.2 ± 1.0
					250 Hz	93.8	0.0 ± 1.0
					500 Hz	93.9	0.0 ± 1.0
					1 kHz	93.9	Ref.
					2 kHz	93.7	-0.2 ± 1.0
					4 kHz	93.1	-0.8 ± 1.0
					8 kHz	90.8	-3.0 (+1.5 ; -3.0)
					12.5 kHz	87.6	-6.2 (+3.0 ; -6.0)

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Sun Creation Engineering Limited - Calibration & Testing Laboratory

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

輝創工程有限公司 - 校正及檢測實驗室

c/o 香港新界屯門興安里一號青山灣機樓四樓

Tel 電話: 2927 2000 Fax 傳真: 2744 8986

E-mail 電郵: callaba@suncreation.com

Website 網址: www.suncreation.com

Certificate of Calibration

校正證書

Certificate No. : C130686
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC13-0285)

Description / 儀器名稱 : Sound Level Meter
Manufacturer / 製造商 : Rion
Model No. / 型號 : NL-31
Serial No. / 編號 : 00983400
Supplied By / 委託者 : Envirotech Services Co.
Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road,
Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 溫度 : $(23 \pm 2)^{\circ}\text{C}$ Relative Humidity / 相對濕度 : $(55 \pm 20)\%$
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 30 January 2013

TEST RESULTS / 測試結果

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 : 
測試 : K C Lee

Certified By : 
核證 : C C Cheung

Date of Issue : 30 January 2013
簽發日期

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
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Certificate of Calibration

校正證書

Certificate No. : C130686
證書編號

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
- Self-calibration was performed before the test.
- The results presented are the mean of 3 measurements at each calibration point.
- Test equipment :

<u>Equipment ID</u>	<u>Description</u>	<u>Certificate No.</u>
CL280	40 MHz Arbitrary Waveform Generator	C130019
CL281	Multifunction Acoustic Calibrator	DC110233

- Test procedure : MA101N.

- Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 120	L _A	A	Fast	94.00	1	93.8	± 1.1

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 120	L _A	A	Fast	94.00	1	93.8 (Ref.)
				104.00		103.8
				114.00		113.9

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 Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 120	L _A	A	Fast	94.00	1	93.8	Ref.
			Slow			93.7	± 0.3

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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Certificate of Calibration

校正證書

Certificate No. : C130686

證書編號

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	63 Hz	67.5	-26.2 ± 1.5
					125 Hz	77.5	-16.1 ± 1.5
					250 Hz	85.1	-8.6 ± 1.4
					500 Hz	90.5	-3.2 ± 1.4
					1 kHz	93.8	Ref.
					2 kHz	95.1	+1.2 ± 1.6
					4 kHz	95.0	+1.0 ± 1.6
					8 kHz	92.8	-1.1 (+2.1 ; -3.1)
					12.5 kHz	89.9	-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	63 Hz	92.9	-0.8 ± 1.5
					125 Hz	93.6	-0.2 ± 1.5
					250 Hz	93.8	0.0 ± 1.4
					500 Hz	93.9	0.0 ± 1.4
					1 kHz	93.9	Ref.
					2 kHz	93.7	-0.2 ± 1.6
					4 kHz	93.2	-0.8 ± 1.6
					8 kHz	90.9	-3.0 (+2.1 ; -3.1)
					12.5 kHz	88.1	-6.2 (+3.0 ; -6.0)

Remarks : - UUT Microphone Model No. : UC-53A & S/N : 315241

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value : 94 dB : 63 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 Certificate 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 Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室書面批准。

Certificate of Calibration

校正證書

Certificate No. : C124011
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC12-1674)

Description / 儀器名稱 : Sound Level Calibrator
Manufacturer / 製造商 : Rion
Model No. / 型號 : NC-73
Serial No. / 編號 : 10997142
Supplied By / 委託者 : Envirotech Services Co.
Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road,
Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 溫度 : $(23 \pm 2)^{\circ}\text{C}$ Relative Humidity / 相對濕度 : $(55 \pm 20)\%$
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 9 July 2012

TEST RESULTS / 測試結果

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 : 
測試 : L K Yeung

Certified By : 
核證 : K C Lee

Date of Issue : 10 July 2012
簽發日期

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室所書面批准。

Certificate of Calibration

校正證書

Certificate No. : C124011
證書編號

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.
- The results presented are the mean of 3 measurements at each calibration point.
- Test equipment :

<u>Equipment ID</u>	<u>Description</u>	<u>Certificate No.</u>
CL130	Universal Counter	C123541
CL281	Multifunction Acoustic Calibrator	DC110233
TST150A	Measuring Amplifier	C120886

- Test procedure : MA100N.

- 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	94.0	± 0.5	± 0.2

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	0.990	1 kHz ± 2 %	± 1

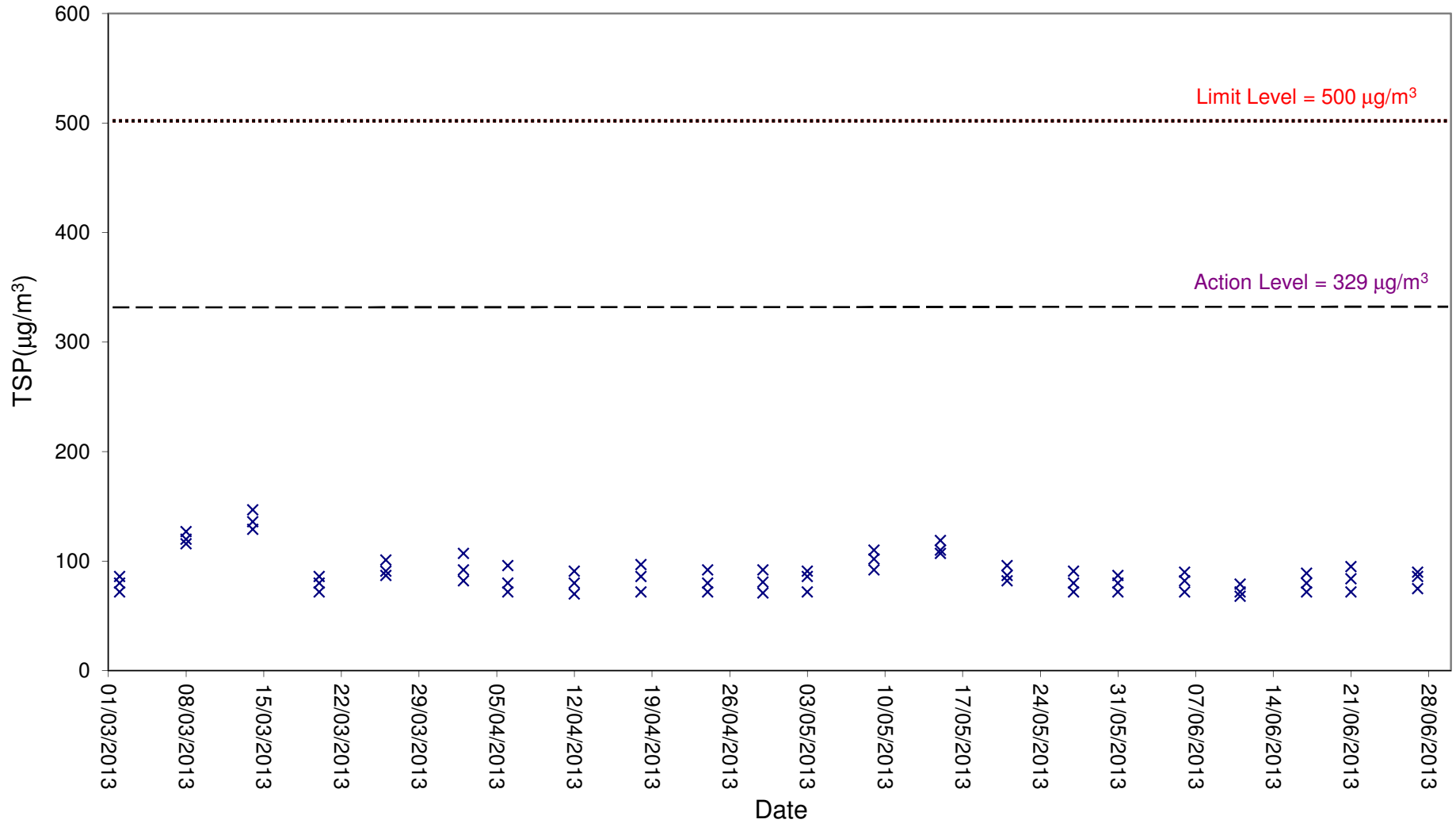
Remark : The uncertainties are for a confidence probability of not less than 95 %.

Note :

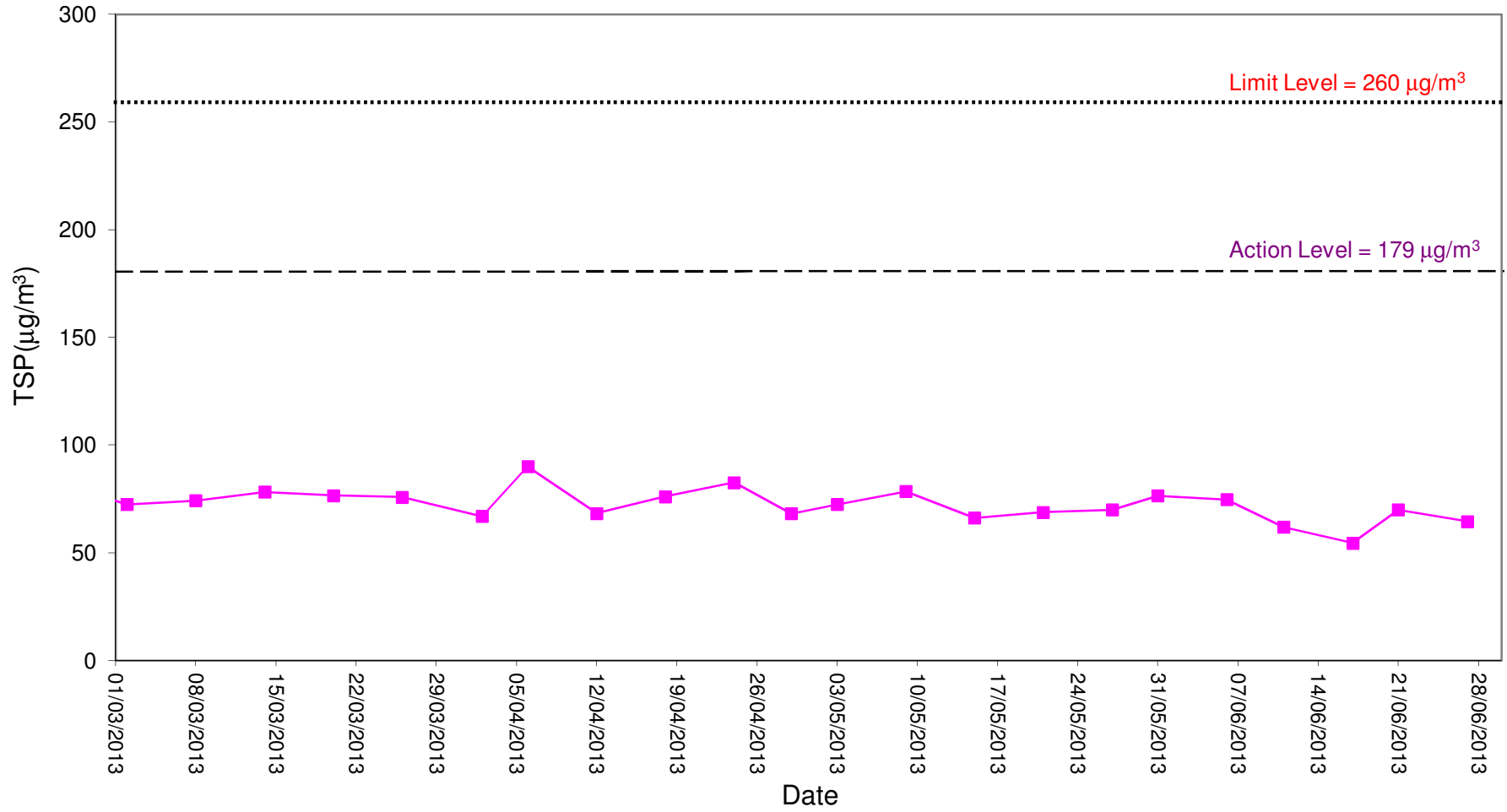
The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the 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.

Appendix G. [Graphical plots of the monitoring results](#)

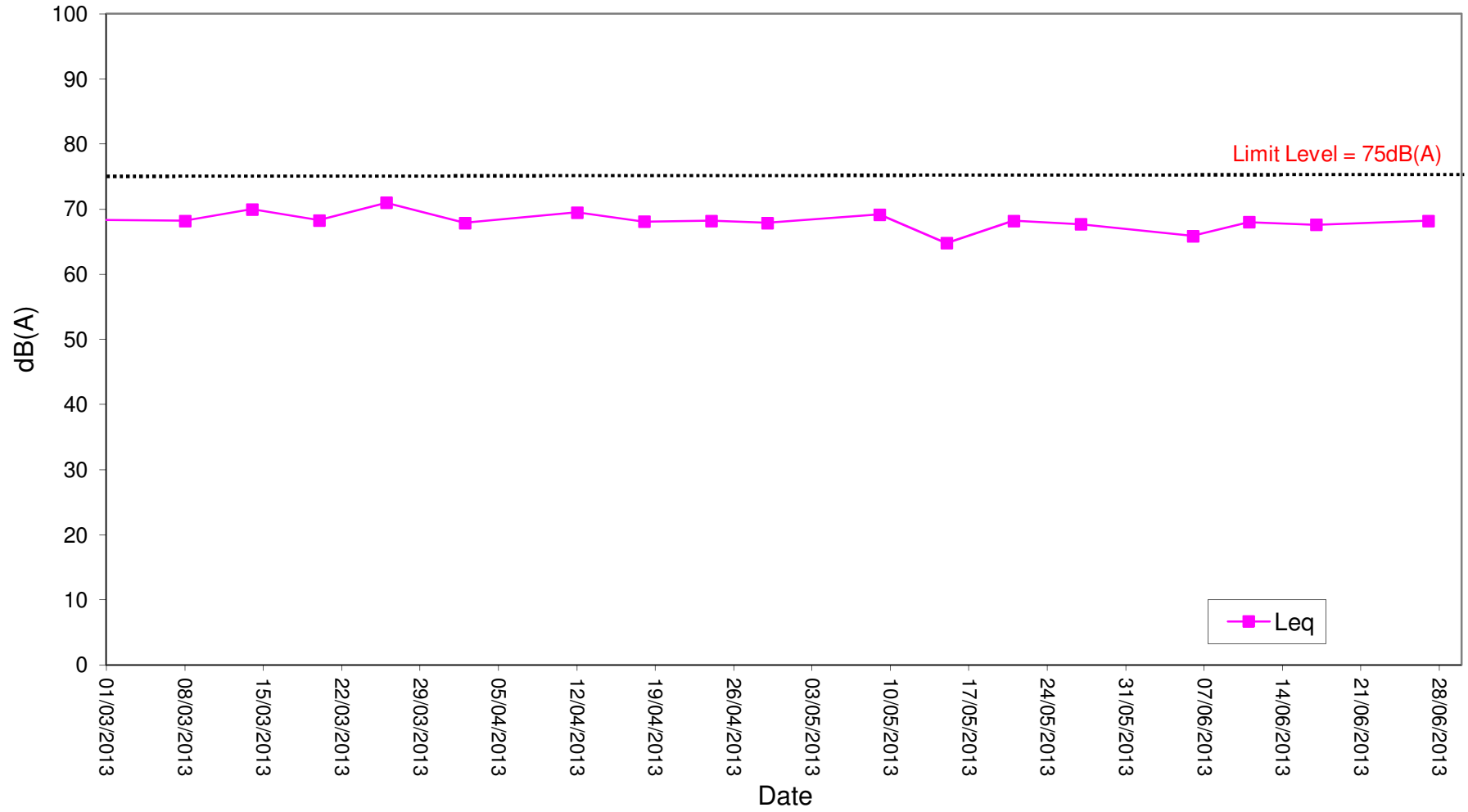
1-hour TSP Level at AM3



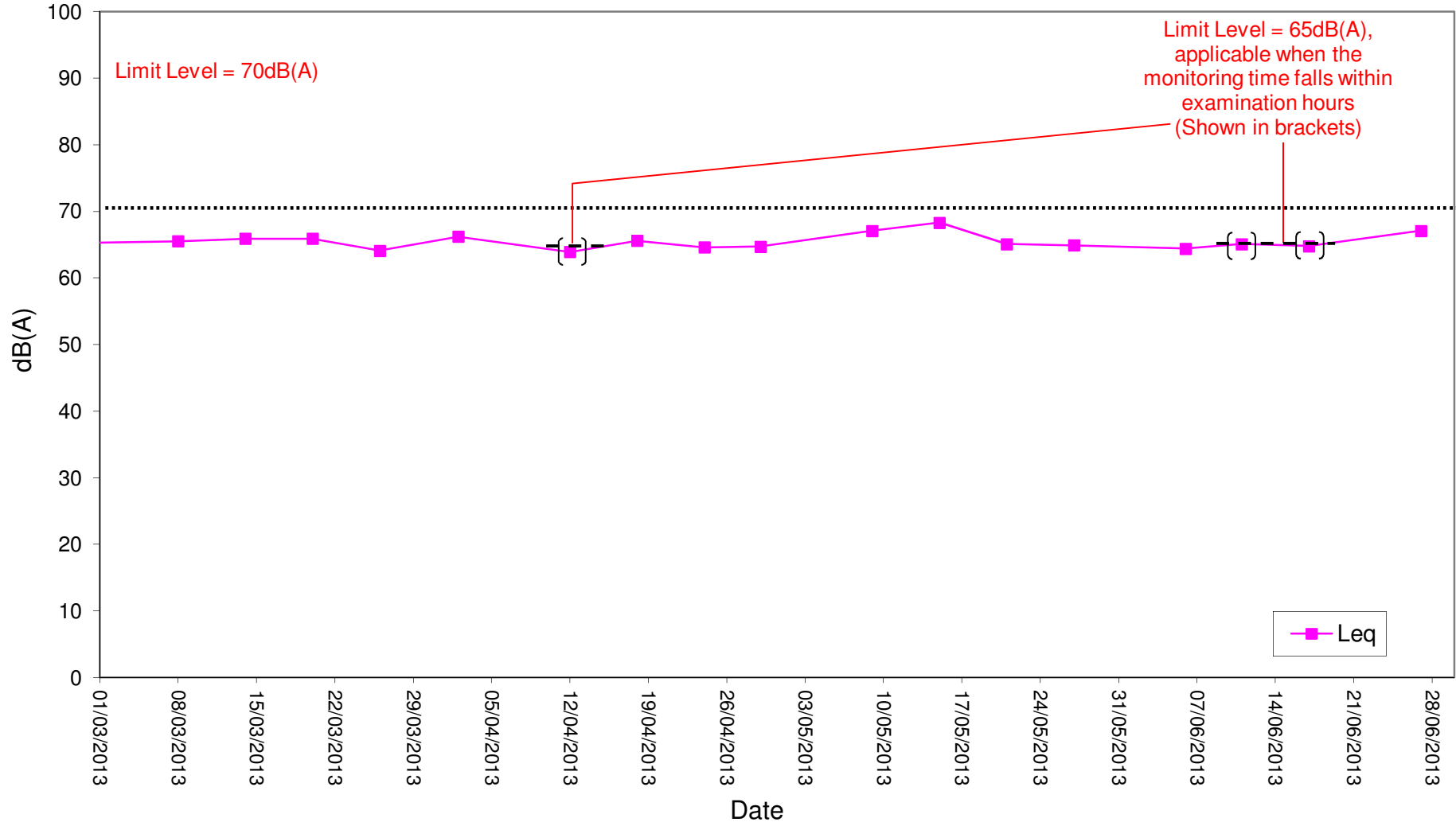
24-hour TSP Level at AM3



Noise Level for 30 min, dB(A), at NM8

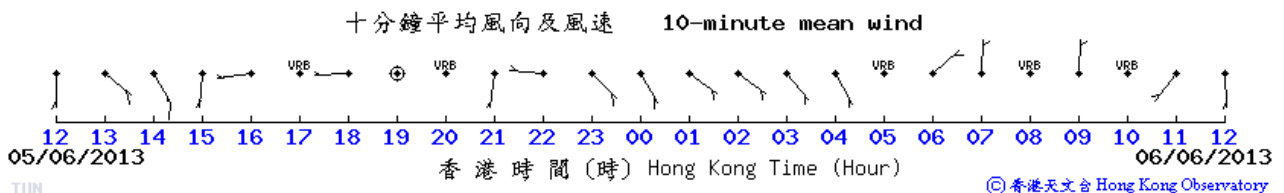
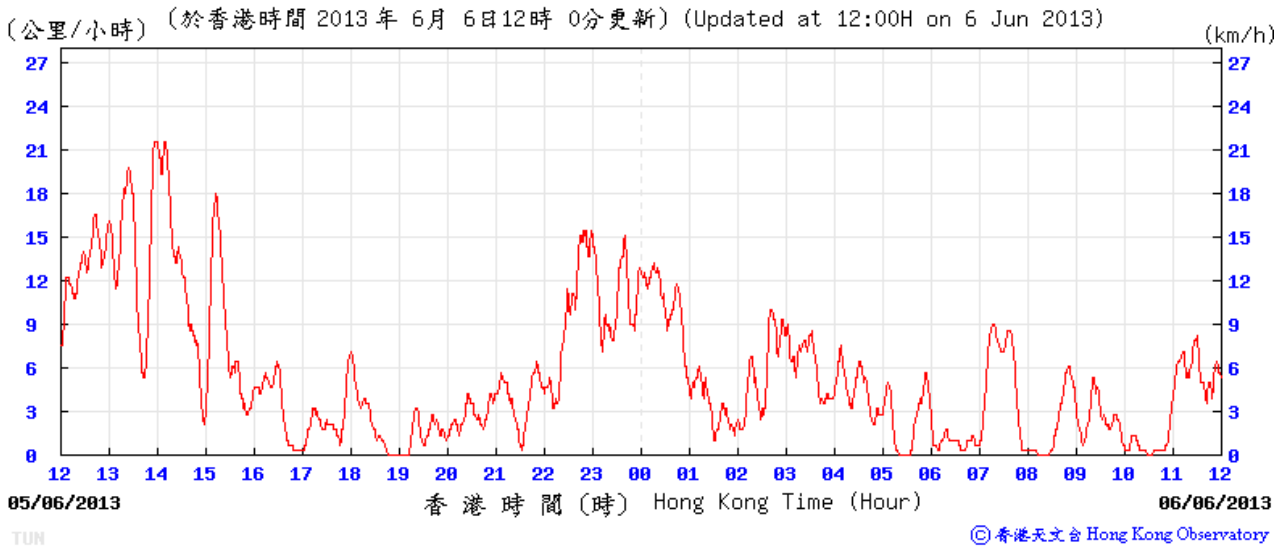
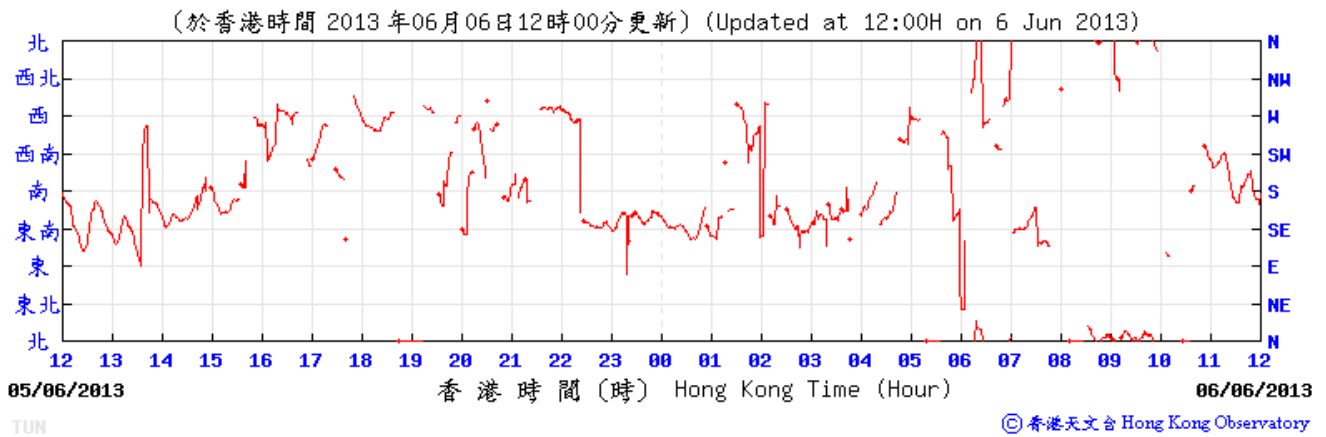


Noise Level for 30 min, dB(A), at NM9

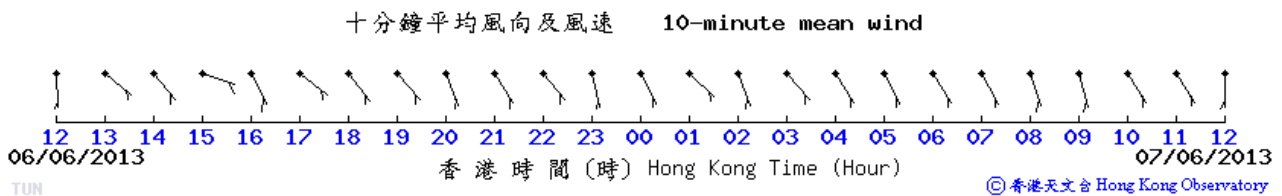
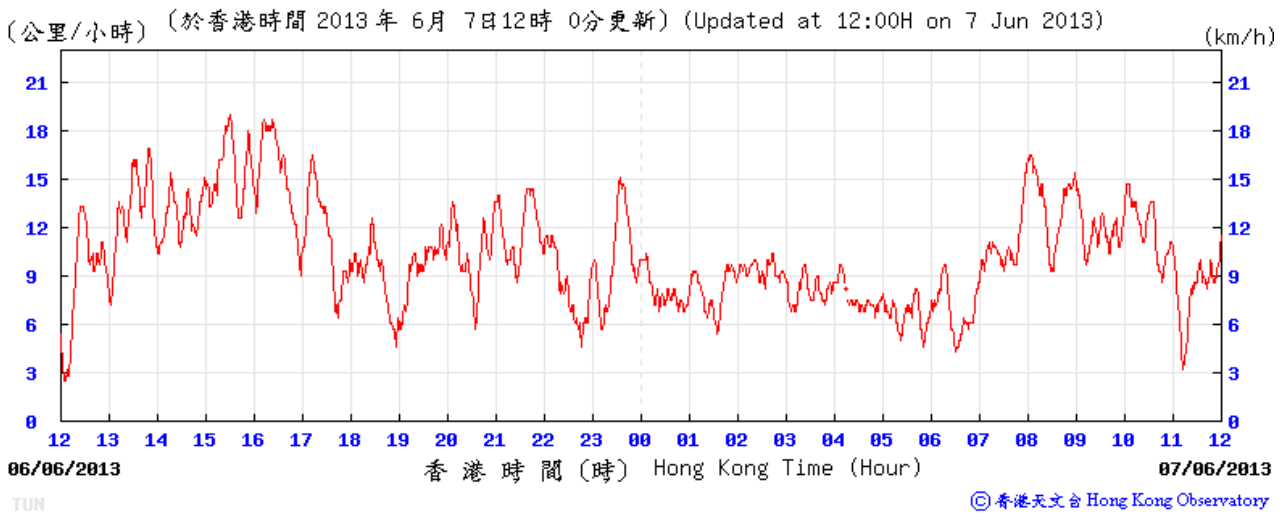
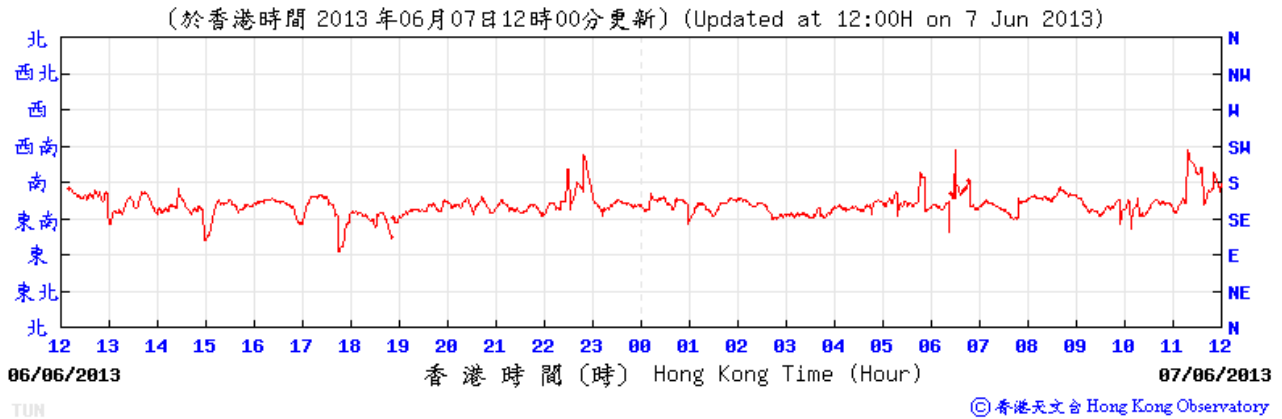


Appendix H. Wind data from Hong Kong Observatory Weather Station

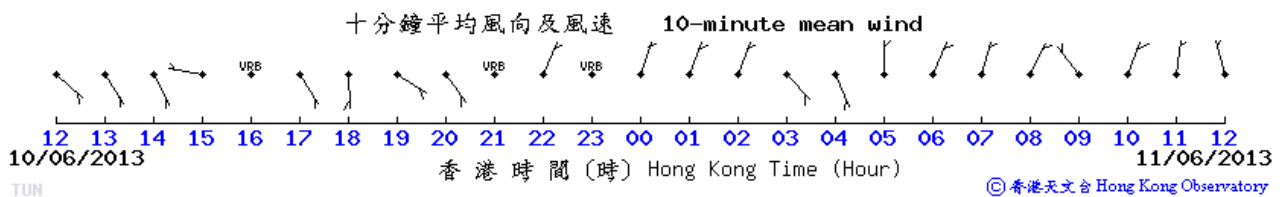
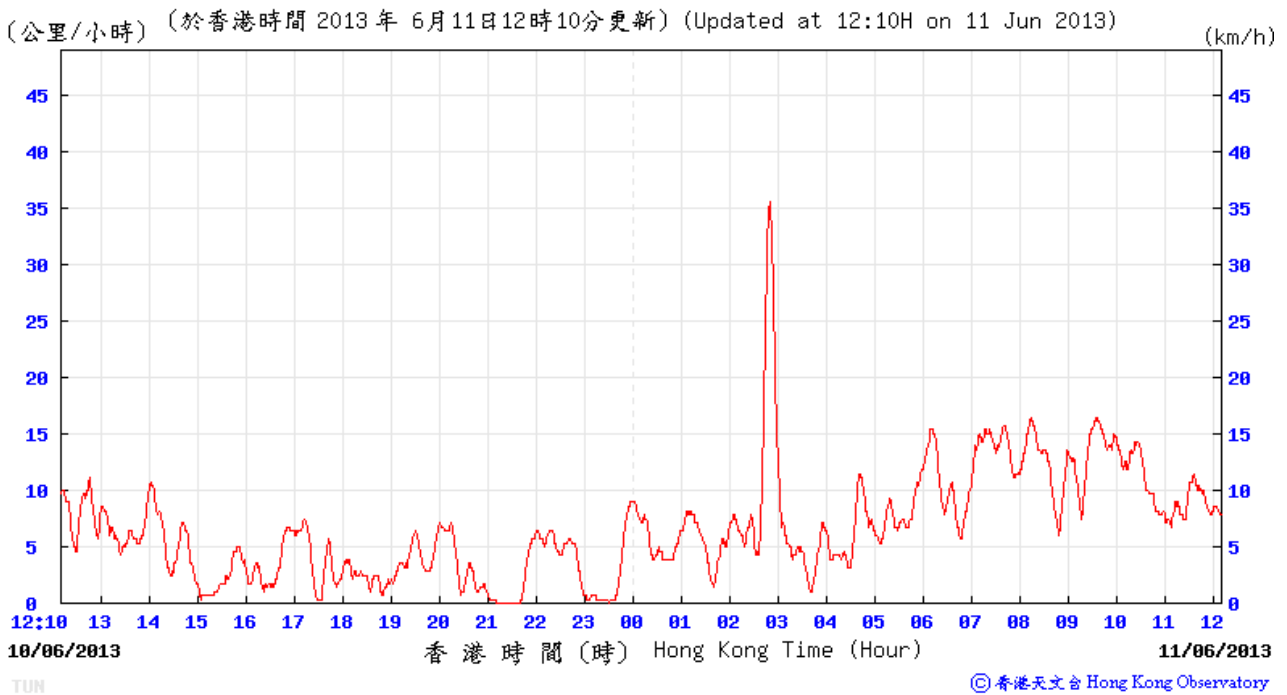
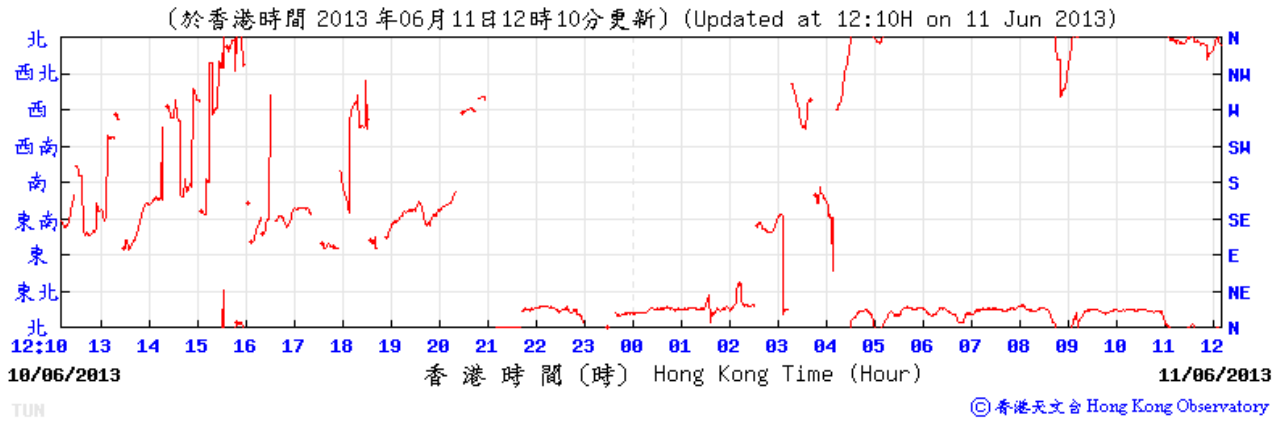
Tuen Mun – 6 Jun 2013



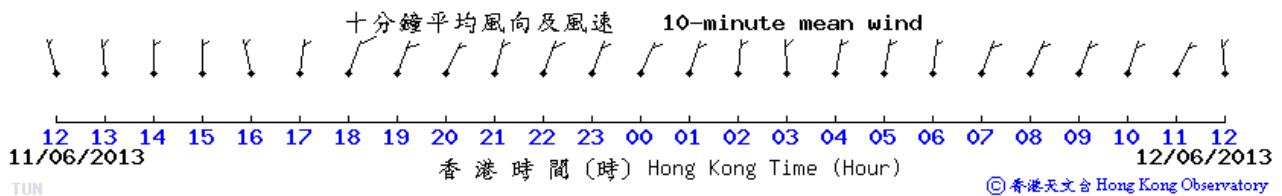
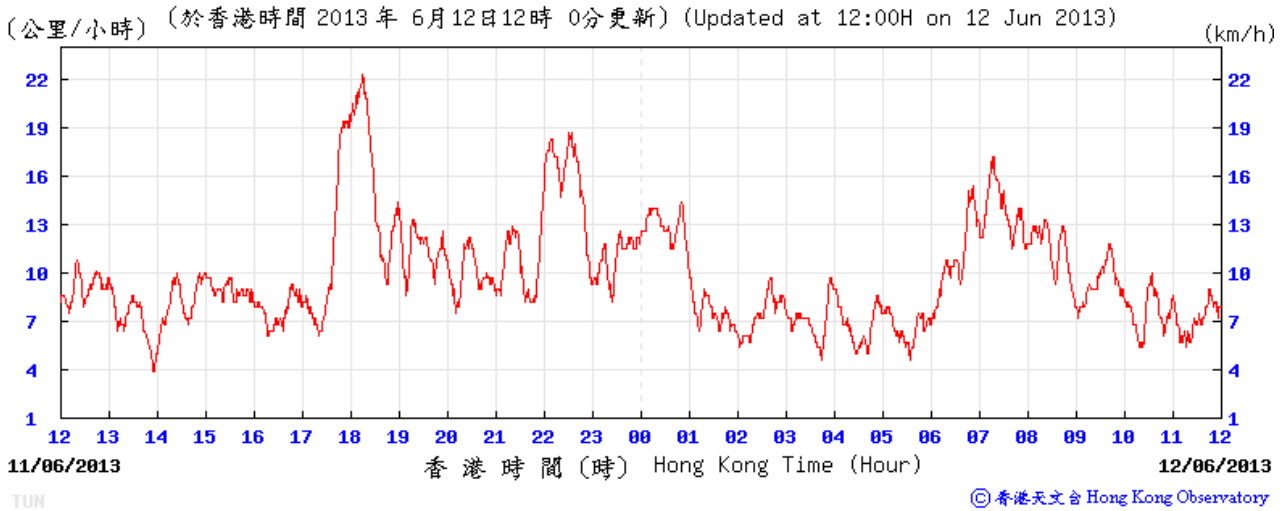
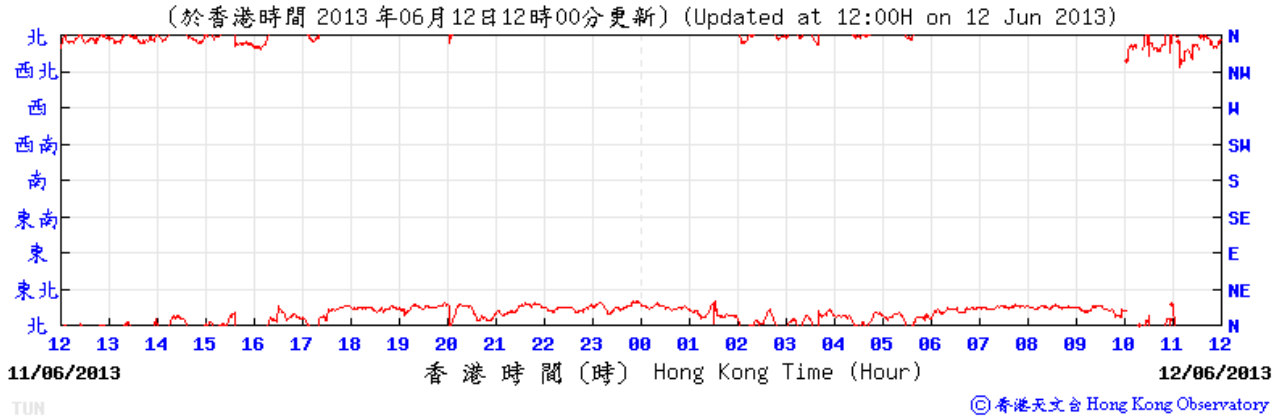
Tuen Mun – 7 Jun 2013



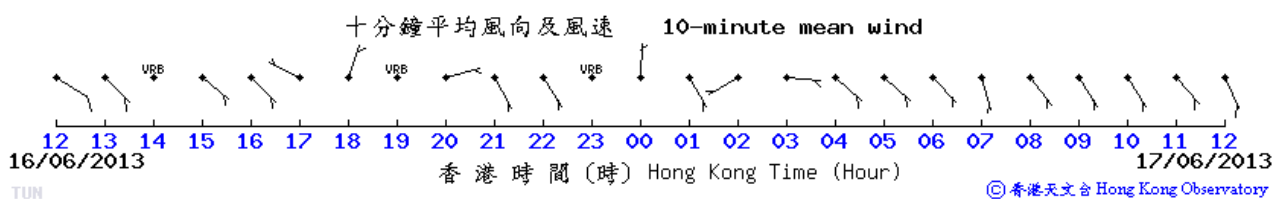
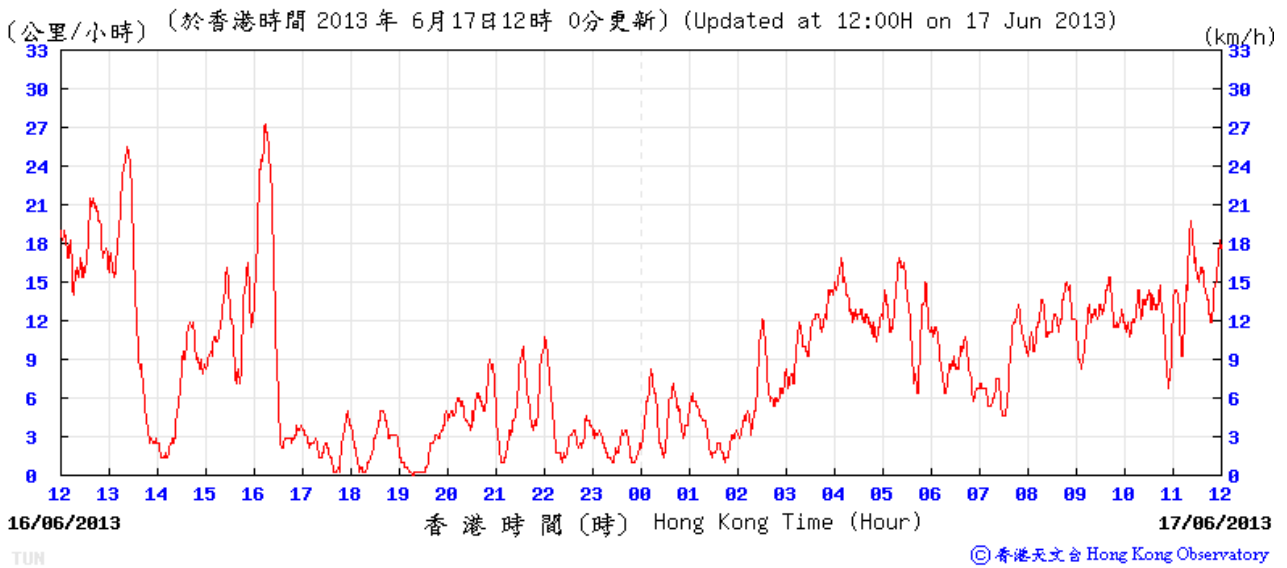
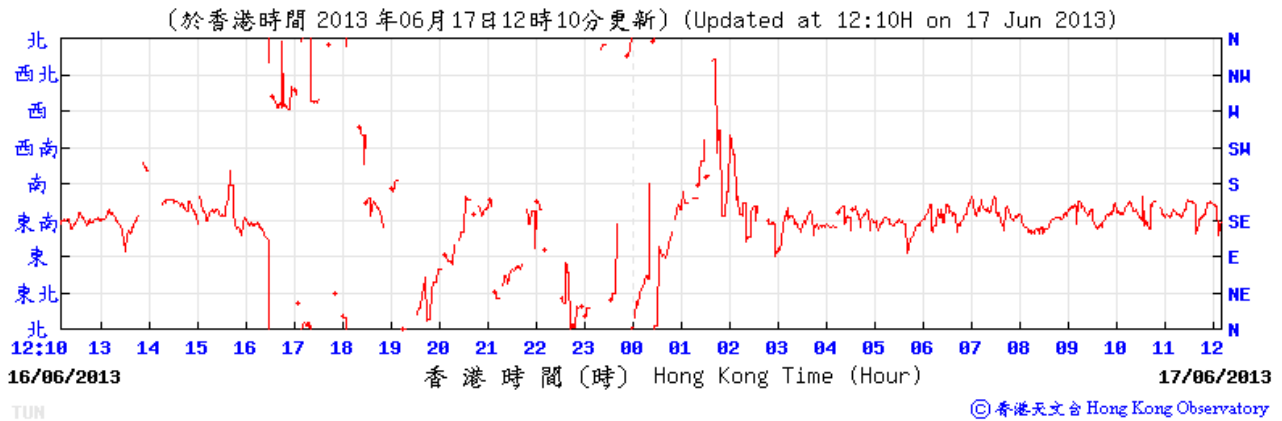
Tuen Mun – 11 Jun 2013



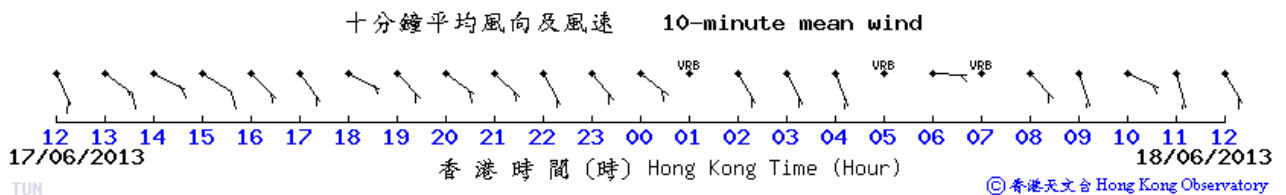
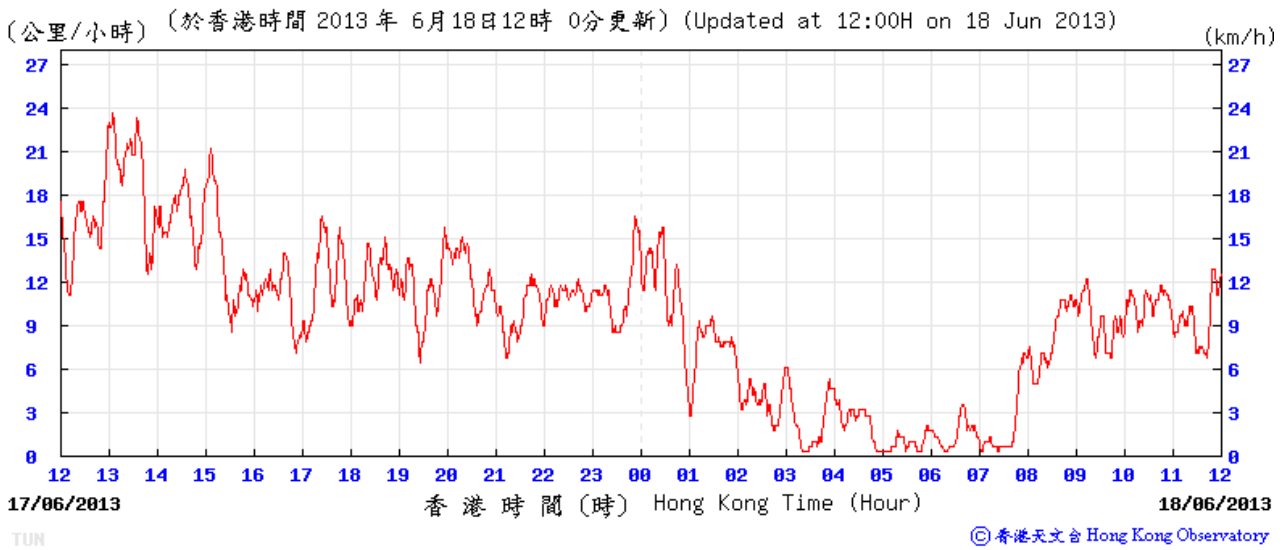
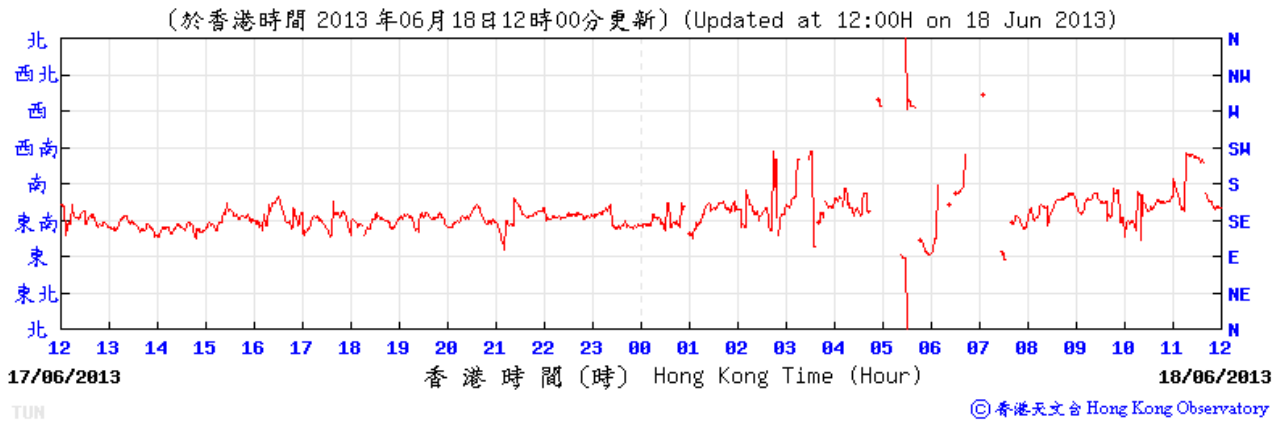
Tuen Mun – 12 Jun 2013



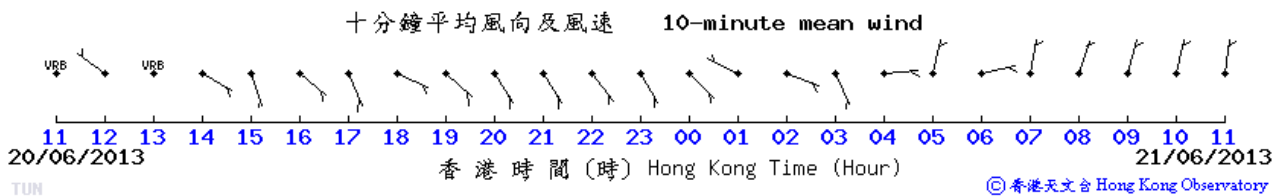
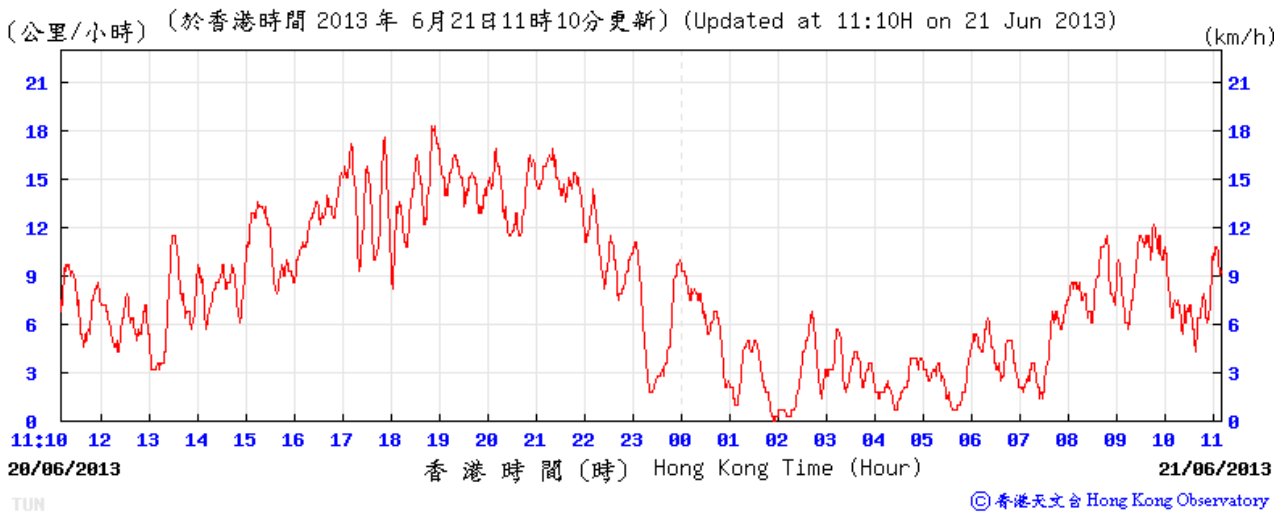
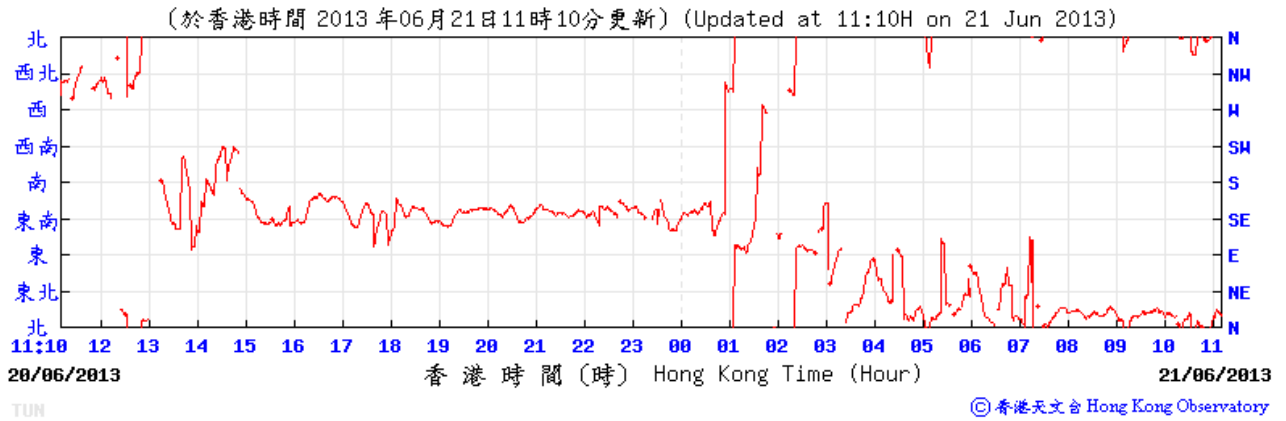
Tuen Mun – 17 Jun 2013



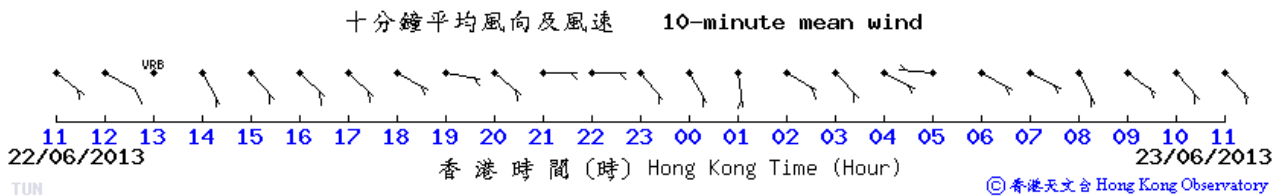
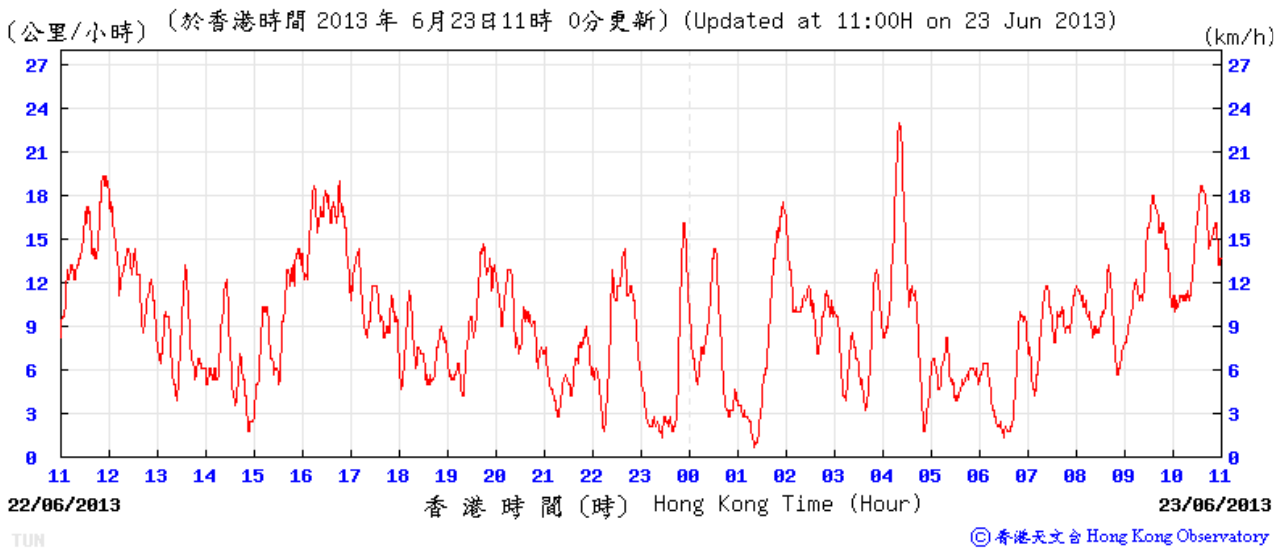
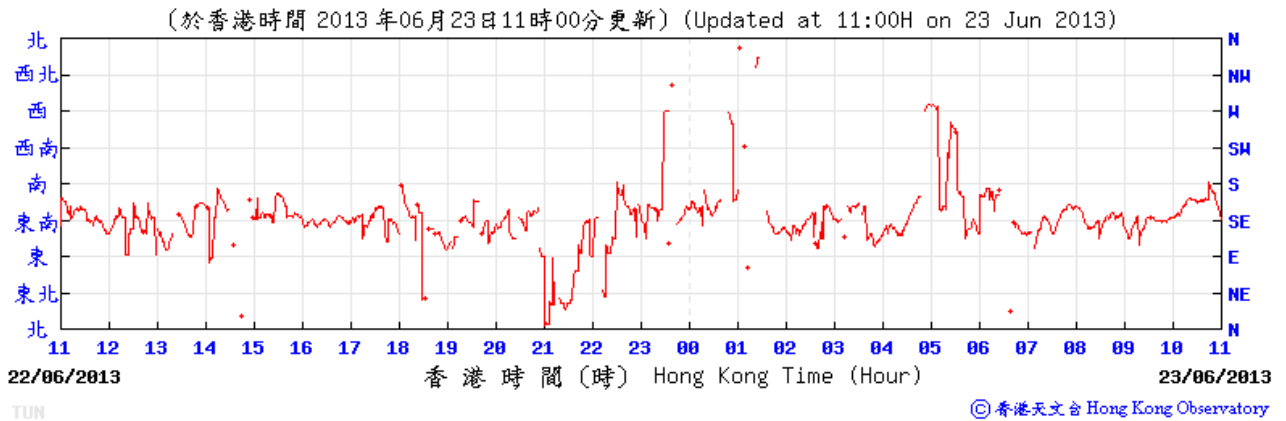
Tuen Mun – 18 Jun 2013



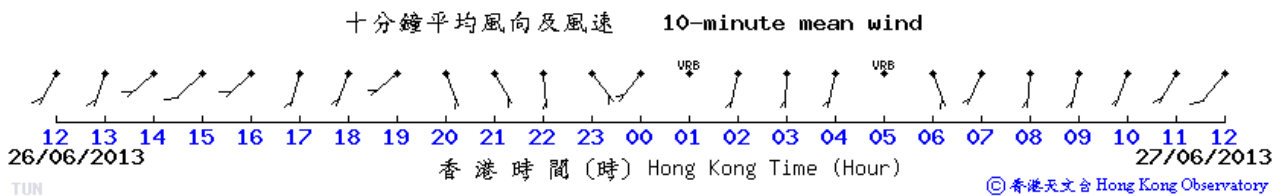
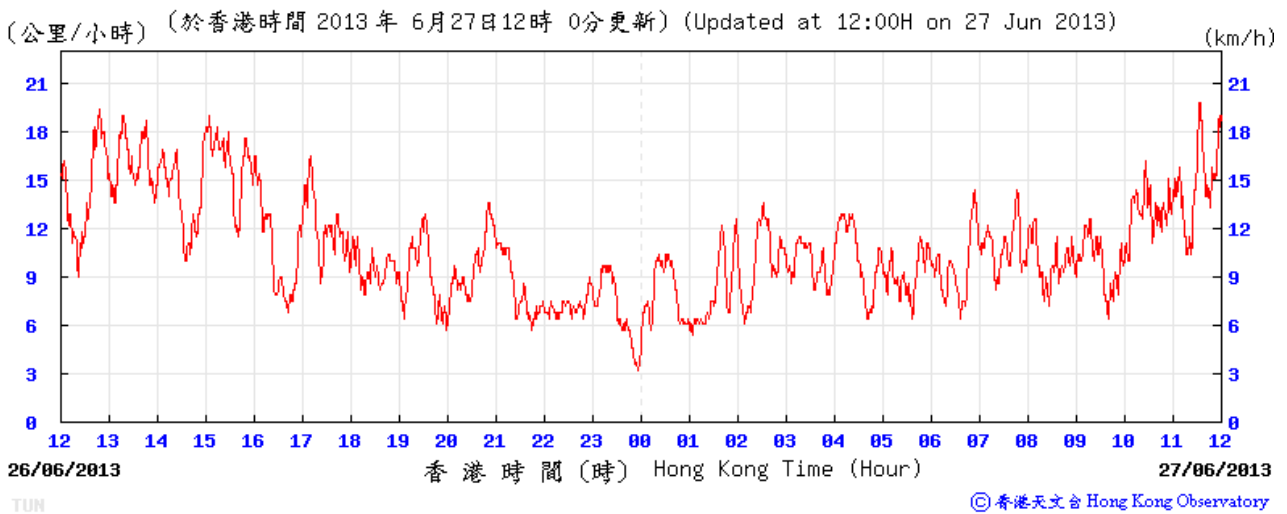
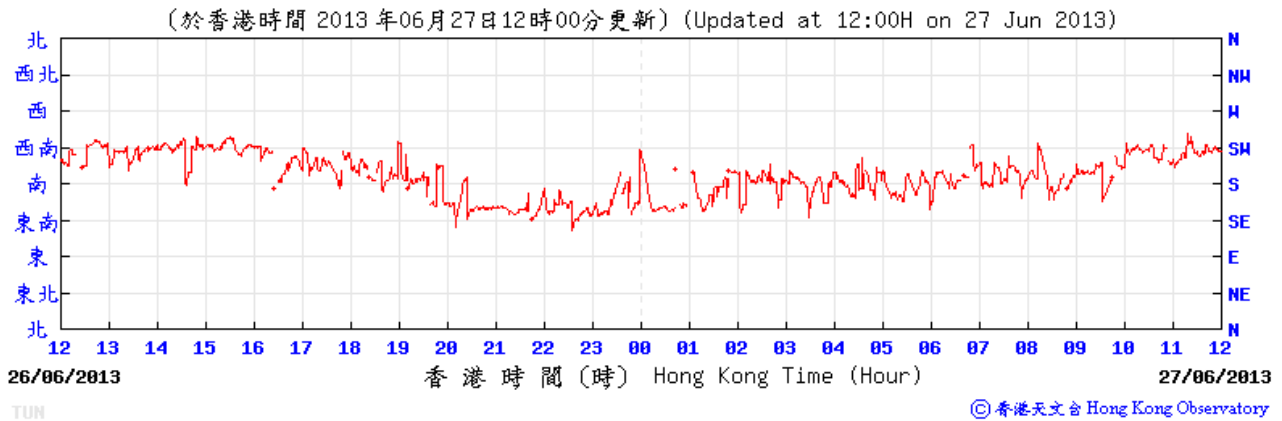
Tuen Mun – 21 Jun 2013



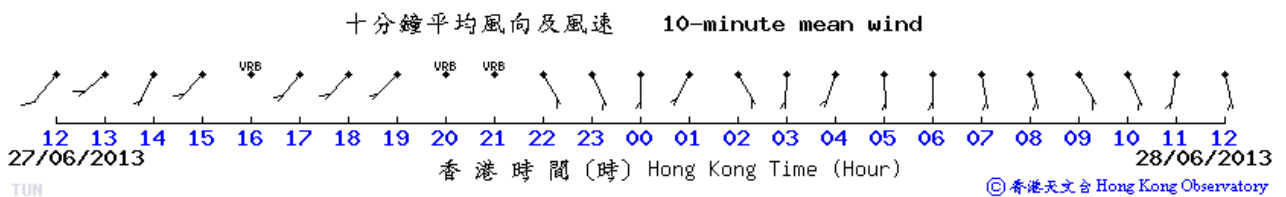
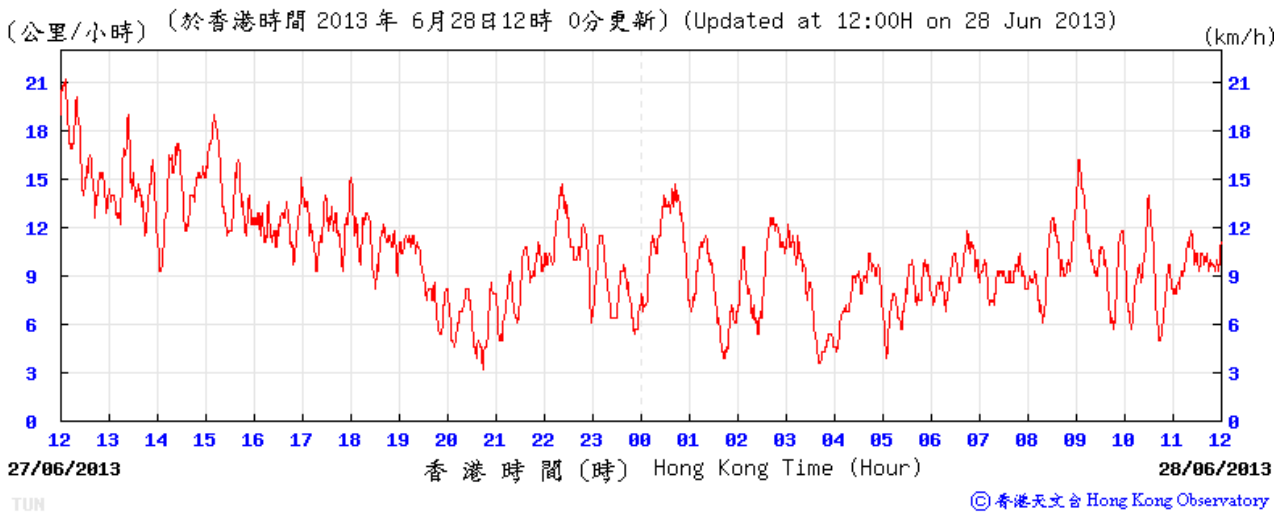
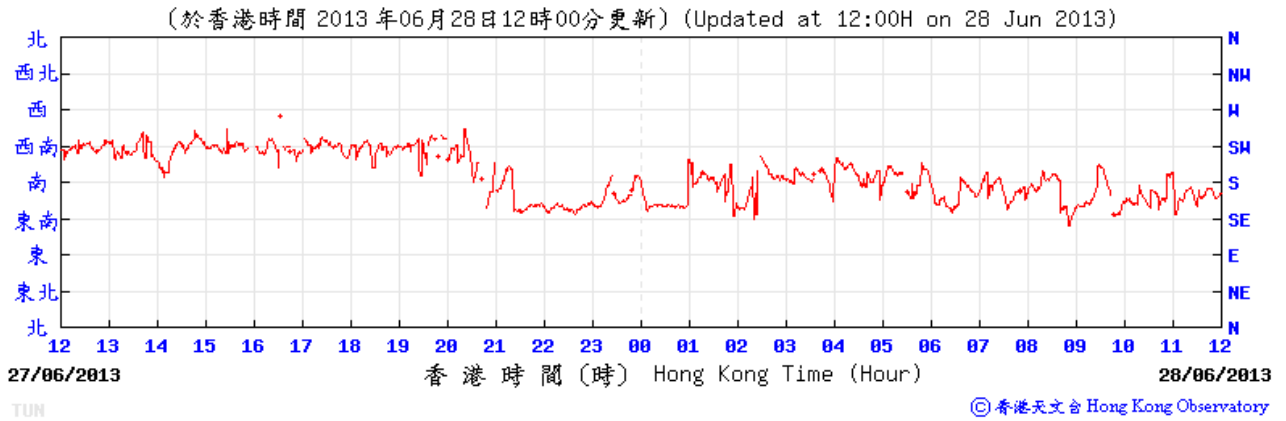
Tuen Mun – 22 Jun 2013



Tuen Mun – 27 Jun 2013



Tuen Mun – 28 Jun 2013



Appendix I. [Waste Flow Table](#)

Forecast of Total Quantities of C&D Materials to be Generated from the Contract*

Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m ³)
6	6	6	0	0	0	80	10	5	50	5

- Notes:
- (1) The performance targets are given in PS Clause 1.84(14).
 - (2) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
 - (3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material

Appendix J. Environmental Mitigation Measures - Implementation Status

Table J1: Air Quality – Recommended Mitigation Measures

* EM&A / ^ EP ref:	Recommended measures	Implementation Status
*2.1.7, Table A	• Excavated dusty materials should be covered by impervious sheeting or sprayed with water to keep the entire surface wet.	P
	• Every vehicle should be washed to remove dusty materials from its body and wheels before leaving a construction site.	✓
	• The load carried by vehicle should be covered by impervious sheeting to ensure no leakage of dusty materials from the vehicle.	✓
	• The heights from which fill materials are dropped should be controlled to a practical level to minimise the fugitive dust arising from unloading.	✓
	• The haul roads should be located away from ASRs.	✓
	• The haul roads should be sprayed with water to keep the entire road surface wet.	✓
	• Vehicle speed within the construction sites should be maintained at 20 km/h or below.	✓

Table J2: Noise – Recommended Mitigation Measures

* EM&A / ^ EP ref:	Recommended measures	Implementation Status
*3.8, Table A	• Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction works.	✓
*3.8, Table A	• Machines and plant that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum.	✓
*3.8, Table A	• Plant known to emit noise strongly in one direction, should, where possible, be orientated to direct noise away from nearby NSRs.	✓
*3.8, Table A	• Silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction works.	P
*3.8, Table A	• Mobile plant should be sited as far away from NSRs as possible.	✓
*3.8, Table A	• Material stockpiles and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.	✓
*3.8, Table A	• Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction works.	✓

Table J3: Water Quality – Recommended Mitigation Measures

* EM&A / ^ EP ref:	Recommended measures	Implementation Status
*5.1, Table A	• A temporary drainage channel shall be provided to divert any runoff away from the site.	✓
*5.1, Table A ^2.4	• Channels, earth bunds or sand bag barriers shall be provided on site to direct storm water to silt removal facilities. The design of efficient silt removal facilities shall be based on the guidelines in Appendix A1 of ProPECC PN 1/94.	P
*5.1, Table A	• The overall slope of the site shall be kept to a minimum to reduce the erosive potential of surface water flows.	✓
*5.1, Table A	• All entrances and exits of construction sites shall be protected by coarse stone ballast.	✓

* EM&A / ^ EP ref:	Recommended measures	Implementation Status
*5.1, Table A	<ul style="list-style-type: none"> Sediment tanks of sufficient capacity, constructed from pre-formed individual cells of approximately 6 to 8 m³ capacity, are recommended as a general mitigation measure which can be used for settling storm water prior to disposal. 	✓
*5.1, Table A ^2.6	<ul style="list-style-type: none"> All drainage facilities and erosion and sediment control structures shall be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rainstorms. 	P
*5.1, Table A	<ul style="list-style-type: none"> Measures shall be taken to minimise the ingress of any site drainage into excavations. 	✓
^2.5	<ul style="list-style-type: none"> Water to be pumped out from trenches or foundation excavations shall be discharged into storm drains via silt removal facilities. 	P
*5.1, Table A	<ul style="list-style-type: none"> Particular attention shall be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes. 	✓
*5.1, Table A	<ul style="list-style-type: none"> All vehicles and mechanical plant shall be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. 	✓
*5.1, Table A	<ul style="list-style-type: none"> The bentonite, grouting and cement materials shall only be delivered to the construction site when they are to be used. 	P
*5.1, Table A	<ul style="list-style-type: none"> Dusty materials shall be stored in a covered warehouse and the excess amount should be removed from the site. 	✓
^2.7	<ul style="list-style-type: none"> Construction waste, debris and rubbish shall be properly collected, handled and disposed of to avoid water quality impacts. 	✓
^2.8	<ul style="list-style-type: none"> Construction work force sewage shall be handled by temporary or permanent public toilets or by portable chemical toilets or sewage holding tanks with the sewage to be regularly collected. 	✓

Table J4: Waste Management – Recommended Mitigation Measures

* EM&A / ^ EP ref:	Recommended measures	Implementation Status
*5.1, Table A	<ul style="list-style-type: none"> Construction solid waste, debris and rubbish on site shall be collected, handled and disposed of properly. 	P
	<ul style="list-style-type: none"> Handle and store wastes in a manner which ensures that they are held securely without loss or leakage, thereby minimising the potential for pollution. 	✓
	<ul style="list-style-type: none"> Use waste hauliers authorised or licensed to collect specific category of waste, e.g. chemical wastes. 	✓
	<ul style="list-style-type: none"> Remove wastes in a timely manner. 	✓
	<ul style="list-style-type: none"> Maintain and clean waste storage areas regularly. 	✓
	<ul style="list-style-type: none"> Minimise windblown litter and dust during transportation by either covering trucks or transporting wastes in enclosed containers. 	✓
	<ul style="list-style-type: none"> Obtain the necessary waste disposal permits from the appropriate authorities. 	✓
	<ul style="list-style-type: none"> Dispose of waste at licensed waste disposal facilities. 	✓
	<ul style="list-style-type: none"> Develop procedures such as a ticketing system to facilitate tracking of loads, particularly for chemical waste, and to ensure that illegal disposal of wastes does not occur. 	✓
	<ul style="list-style-type: none"> Maintain records of the quantities of wastes generated, recycled and disposed. 	✓
	<ul style="list-style-type: none"> Surplus excavated materials shall be reused as fill material at public filling areas (PFA). 	✓
	<ul style="list-style-type: none"> Control measures shall be taken at the stockpiling area to prevent the generation of dust and pollution of stormwater channels. 	✓

* EM&A / ^ EP ref:	Recommended measures	Implementation Status
	<ul style="list-style-type: none"> Wetting the surface of the stockpiled soil with water when necessary especially during the dry season. 	✓
*5.1, Table A	<ul style="list-style-type: none"> Chemical waste produced should be handled in accordance with the relevant guidelines and regulations. 	✓

Table J5: Terrestrial Ecology – Recommended Mitigation Measures

* EM&A / ^ EP ref:	Recommended measures	Implementation Status
*4, Table A	<ul style="list-style-type: none"> Regular checks shall be made to ensure that the work site boundaries are not exceeded and that no damage is being caused to the surrounding areas. 	✓
*4	<ul style="list-style-type: none"> Wild and uncontrolled open fires shall be strictly prohibited within the work site boundary. 	✓

Table J6: Others

* EM&A / ^ EP ref:	Recommended measures	Implementation Status
^1.5	<ul style="list-style-type: none"> A copy of the valid Environmental Permit shall be displayed conspicuously on the Project site(s) at all vehicular site entrances/exits or at a convenient location for public information at all times. The most updated information about the Permit, including any amended Permit, shall be displayed at such locations. If the Permit Holder surrenders a part or whole of the Permit, the notice he send to the Director shall also be displayed at the same locations as the original Permit. The suspended, varied or cancelled Permit shall be removed from display at the Project site(s). 	✓
n/a	<ul style="list-style-type: none"> The required licenses should be obtained by the Contractor (including CNP (if any), WPCO license, etc.) 	✓

Legend:

- ✓ Implemented
- x Not implemented
- P Partially implemented
- N/A Not applicable

Appendix K. [Cumulative statistics on complaints, notifications of summons and successful prosecutions](#)

Cumulative statistics for complaints, notifications of summons and successful prosecutions for the Project account for period starting from the date of commencement of construction (i.e. 8 Dec 2011) to the end of the reporting month and are summarized in the **Table K1** below.

Table K1: Statistics for complaints, notifications of summons and successful prosecutions

Reporting Period	Cumulative Statistics		
	Complaints	Notifications of summons	Successful prosecutions
This reporting month	0	0	0
From 8 Dec 2011 to end of the reporting month	0	0	0