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 November 2016 (Rev. A)

December 2016

Civil Engineering and Development Department

20/F AIA Kowloon Tower
Landmark East
100 How Ming Street
Kwun Tong
Kowloon
Hong Kong

T +852 2828 5757
F +852 2827 1823
mottmac.hk

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

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Pursuant to Condition 3.2 of Environmental Permit No. EP-331/2009, this Monthly EM&A Report for November 2016 has been reviewed and certified by the Environmental Team Leader (ETL) and verified by the Independent Environmental Checker (IEC).

Certified by:

Brandon Wong
Environmental Team Leader (ETL)
Mott MacDonald Hong Kong Limited

Date 14 December 2016

Verified by:

Keith Chau
Independent Environmental Checker (IEC)
Atkins China Limited

Date 14 December 2016

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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) No. EP-331/2009 for the "Widening of Tsing Lun Road, Tuen Mun" was granted by the Environmental Protection Department (EPD) on 17 March 2009. This is the 60th 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 November 2016.

Exceedance of Action and Limit Levels

No exceedance of Action or Limit Levels for Air Quality and Noise monitoring were recorded in the reporting month.

Implementation of Mitigation Measures

Site inspections were carried out on 2, 9, 16, 23 and 30 November 2016 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:

- Demolition of existing structures
- Construction of stormwater drain and sewage
- Construction of Noise barrier
- Finishing works for public toilet & Refuse Collection Point (RCP)
- Roadworks
- Finishing works for footbridge
- Laying 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 60th Monthly EM&A Report presenting the monitoring works conducted from 1 to 30 November 2016. The purpose of this report is to summarise the findings 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 included:

- Construction of watermain
- Demolition of existing structures
- Construction of stormwater drain and sewage
- Roadworks
- Finishing works for footbridge
- Finishing works for Public Toilet and RCP
- Construction of Noise barrier and enclosure
- Mini-piling works

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}, 30 minutes	NM8, NM9	Weekly

The Environmental Quality Performance Limits (Action and Limit Levels) 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**.

2 Impact Monitoring Methodology

2.1 Introduction

For air quality and construction noise, the monitoring methodology, including the monitoring locations, monitoring equipment 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 Stations	Parameter	Frequency and Duration
Tung Wah Group of Hospitals (TWGHs) Yau Tze Tin Memorial College (AM3)	24-hour TSP	At least once in every six-days
	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 Quality 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-hour TSP monitoring	
High Volume Sampler	GMWS 2310 Accu-vol (Serial no. 0890)
Calibration Orifice	TE-5025A (Serial no. 2454)
1-hour TSP monitoring	
Portable direct reading dust meter	Sibata LD-3B (Serial no. 1Y5546)

2.2.4 Monitoring Methodology

24-hour TSP Monitoring

Installation

The HVS was installed at the site boundary. 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 sampler and to obtain access to the monitoring station.
- A secured supply of electricity is needed to operate the sampler.

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 m^3/min. The range specified in the EM&A Manual was between 0.6-1.7 m^3/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 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 min) 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 (LA_{eq}) 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-52 (Serial no. 00131627)	Rion NC-73 (Serial no. 10997142)
NM9		

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**.

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 EM&A Manual during the reporting month.

3.2 Air Quality Monitoring

3.2.1 1-hour 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-hour TSP (µg/m³)			Range (µg/m³)	Action Level (µg/m³)	Limit Level (µg/m³)
		1st Result	2nd Result	3rd Result			
AM3							
03- Nov -16	13:05	77	86	95	68-119	329	500
09- Nov -16	13:05	78	86	94			
15- Nov -16	13:05	91	104	119			
21- Nov -16	13:05	78	68	69			
25- Nov -16	13:00	78	85	91			

3.2.2 24-hour 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 (µg/m³)	Range (µg/m³)	Action Level (µg/m³)	Limit Level (µg/m³)
AM3					
03- Nov -16	13:32	45	45-76	179	260
09- Nov -16	13:31	50			
15- Nov -16	13:31	76			
21- Nov -16	13:31	54			
25- Nov -16	13:02	64			

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(A))
		L_{eq}	L_{10}	L_{90}	
NM8					
03- Nov -16	13:42	65	67	63	75
09- Nov -16	13:42	66	67	64	
15- Nov -16	13:40	65	67	62	
21- Nov -16	13:42	65	67	63	
NM9					
03- Nov -16	13:00	60	62	59	70*
09- Nov -16	13:00	61	63	59	
15- Nov -16	13:00	61	63	60	
21- Nov -16	13:00	61	63	59	

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

No Action or Limit level exceedance of construction noise was recorded in the reporting period as no noise related environmental complaint was received during the reporting period and noise levels recorded during the monitoring period were below the limit levels.

4 Environmental Site Inspection

4.1 Site Inspection

Construction phase weekly site inspections were carried on 2, 9, 16, 23 and 30 November 2016. 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

Inspection Date	Key Observations	ET Recommendation	Contactor's Responses / Action(s) Undertaken	Close-out Date
19 October 2016	Insufficient measures to control muddy site runoff at a Tsing Lun Road Site (near car park) were observed. The same runoff also contained some oil or chemical.	The contractor was reminded to review and properly implement the necessary water quality mitigation measures.	The contractor had provided sand bags completely around the gully to control muddy site runoff.	02 November 2016
19 October 2016	Chemical containers were observed on the ground at a Tsing Lund Road Site.	The contractor was reminded to provide a suitable drip tray.	The contents of the containers were identified as water. No remaining chemical containers on the ground was observed.	02 November 2016
28 October 2016	Oil stain was found under drilling machine.	The contractor was reminded to remove the oil stain completely.	The oil stain from the drilling machine was completely removed.	16 November 2016
09 November 2016	Oil stain was found at a Tsing Lun Road Site near Yau Tse Tin College.	The contractor was reminded to remove the oil stain.	The oil stain was removed.	16 November 2016
16 November 2016	C&D materials were found near the gully under the footbridge.	The contractor was reminded to provide sandbags for the gully to control potential site runoff. C&D material should also be cleaned.	C&D materials were cleared from near the gully. The follow-up action was considered to be adequate.	23 November 2016
16 November 2016	Chemical container without drip tray was observed near footbridge.	The contractor was reminded to provide a suitable drip tray.	Chemical containers were moved to a bunded area.	23 November 2016
16 November 2016	EP was not securely displayed at the vehicle site entrance at Hong Po Road.	The contractor was reminded to display the EP at the vehicle site entrance in accordance with EP condition 1.5.	ET was securely displayed at the vehicle site entrance at Hong Po Road.	23 November 2016

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	7013751	Valid
NCO	Construction Noise Permit	GW-RW0229-16	Valid until 18 November 2016

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

The Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation requires all non-road mobile machinery to bear an approval label or exemption label with a reference number issued by EPD as specified in the Regulation. Compliance to this regulation was examined during site inspection and any deficiencies would be recorded in the site inspection checklist.

4.4 Recommended Mitigation Measures

The EM&A programme followed the recommended mitigation measures in the EM&A 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:

Air Quality

- Excavated dusty materials should be covered by impervious sheeting or sprayed with water to keep the entire surface wet.

Water Quality

- Sediment tanks of sufficient capacity are recommended as a general mitigation measure which can be used for settling storm water prior to disposal.
- Water to be pumped out from trenches or foundation excavations shall be discharged into storm drains via silt removal facilities.
- Construction waste, debris and rubbish shall be properly collected, handled and disposed of to avoid water quality impacts.

Waste Management

- Chemical waste produced should be handled in accordance with the relevant guidelines and regulations.

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

5.1 Record on Non-compliance of Action and Limit Levels

There was no breach of Action or Limit levels for Air Quality (1-hour and 24-hour Total Suspended Particulates) and Noise in the reporting period.

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:

- Demolition of existing structures
- Construction of stormwater drain and sewage
- Construction of Noise barrier
- Finishing works for public toilet & Refuse Collection Point (RCP)
- Roadworks
- Finishing works for footbridge
- Laying 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 quality 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**.

7 Conclusions and Recommendations

7.1 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 underway. In particular, the 1-hour TSP, 24-hour TSP and noise level (as L_{eq}) under monitoring have been checked against established Action and Limit levels. No exceedance of Action or Limit Levels for Air Quality and Noise was recorded in the reporting month.

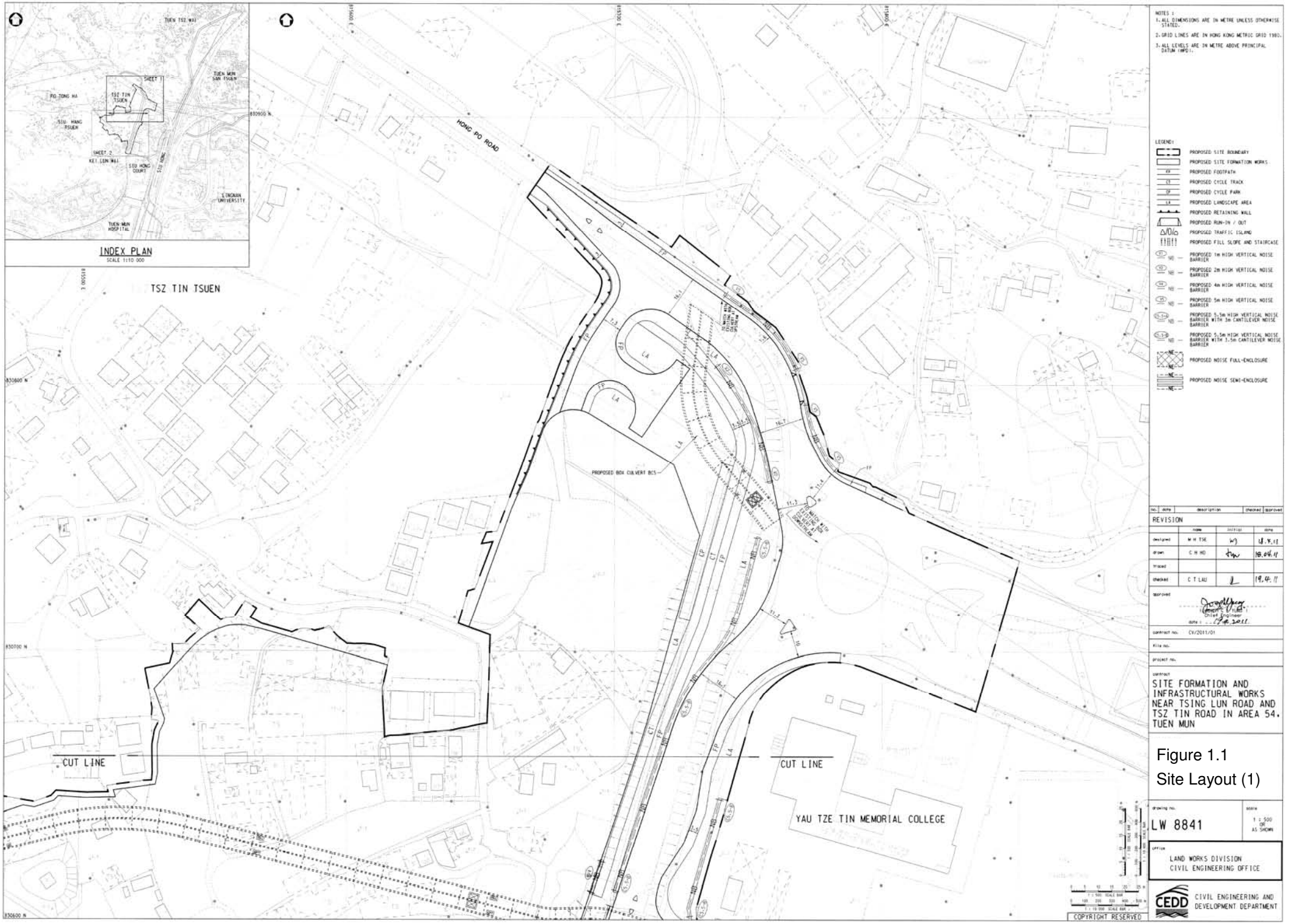
7.2 Recommendations

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 December 2016 at the TWGHs Yau Tze Tin Memorial College, school activities may be conducted. However, the construction of new roads, noise barriers, stormwater drain and sewerage and associated works near Siu Hong Court, Unicorn Garden and TWGHs Yau Tze Tin Memorial College are ongoing. 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 be orientated to direct noise away from nearby noise sensitive receivers (NSRs) if possible.
- Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction works.
- Mobile plant should be sited as far away from NSRs as possible.
- Material stockpiles and other structures should be effectively utilized, where practicable, to screen noise from on-site construction activities.


INDEX PLAN
SCALE 1:10 000
TSZ TIN TSUEN
HONG PO ROAD
PROPOSED BOX CULVERT BCS
CUT LINE
CUT LINE
YAU TZE TIN MEMORIAL COLLEGE
NOTES :
1. ALL DIMENSIONS ARE IN METRE UNLESS OTHERWISE STATED.
2. GRID LINES ARE IN HONG KONG METRIC GRID 1980.
3. ALL LEVELS ARE IN METRE ABOVE PRINCIPAL DATUM (mPD).
LEGEND :
PROPOSED SITE BOUNDARY
PROPOSED SITE FORMATION WORKS
PROPOSED FOOTPATH
PROPOSED CYCLE TRACK
PROPOSED CYCLE PARK
PROPOSED LANDSCAPE AREA
PROPOSED RETAINING WALL
PROPOSED RUN-IN / OUT
PROPOSED TRAFFIC ISLAND
PROPOSED FILL SLOPE AND STAIRCASE
PROPOSED 1m HIGH VERTICAL NOISE BARRIER
PROPOSED 2m HIGH VERTICAL NOISE BARRIER
PROPOSED 4m HIGH VERTICAL NOISE BARRIER
PROPOSED 5m HIGH VERTICAL NOISE BARRIER
PROPOSED 5.5m HIGH VERTICAL NOISE BARRIER WITH 3m CANTILEVER NOISE BARRIER
PROPOSED 5.5m HIGH VERTICAL NOISE BARRIER WITH 3.5m CANTILEVER NOISE BARRIER
PROPOSED NOISE FULL-ENCLOSURE
PROPOSED NOISE SEMI-ENCLOSURE
REVISION
designed M H TSE 18.4.11
drawn C H HO 18.04.11
traced
checked C T LAU 19.4.11
approved
Chief Engineer
date : 19.4.2011
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 1.1
Site Layout (1)
drawing no.
LW 8841
scale
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office
LAND WORKS DIVISION
CIVIL ENGINEERING OFFICE
CEDD
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT
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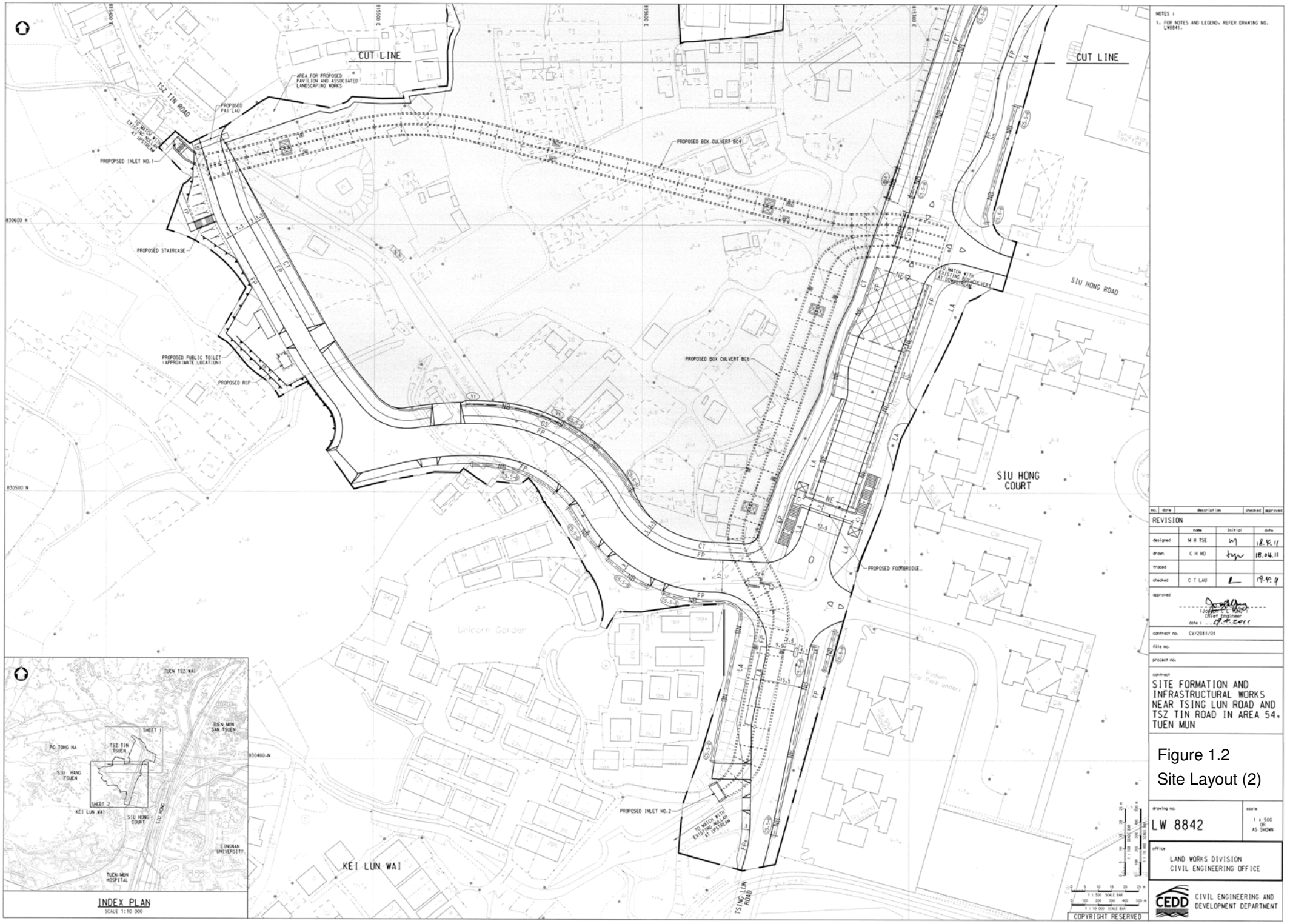

INDEX PLAN
SCALE 1:10 000

NOTES :
1. FOR NOTES AND LEGEND, REFER DRAWING NO. LW8841.

no.	date	description	checked	approved
REVISION				

	name	initial	date
designed	M H TSE		18.4.11
drawn	C H HO		18.04.11
traced			
checked	C T LAU		19.4.11
approved	(Joseph C. WONG) Chief Engineer		date : 19.4.2011

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
scale 1 : 500 OR AS SHOWN

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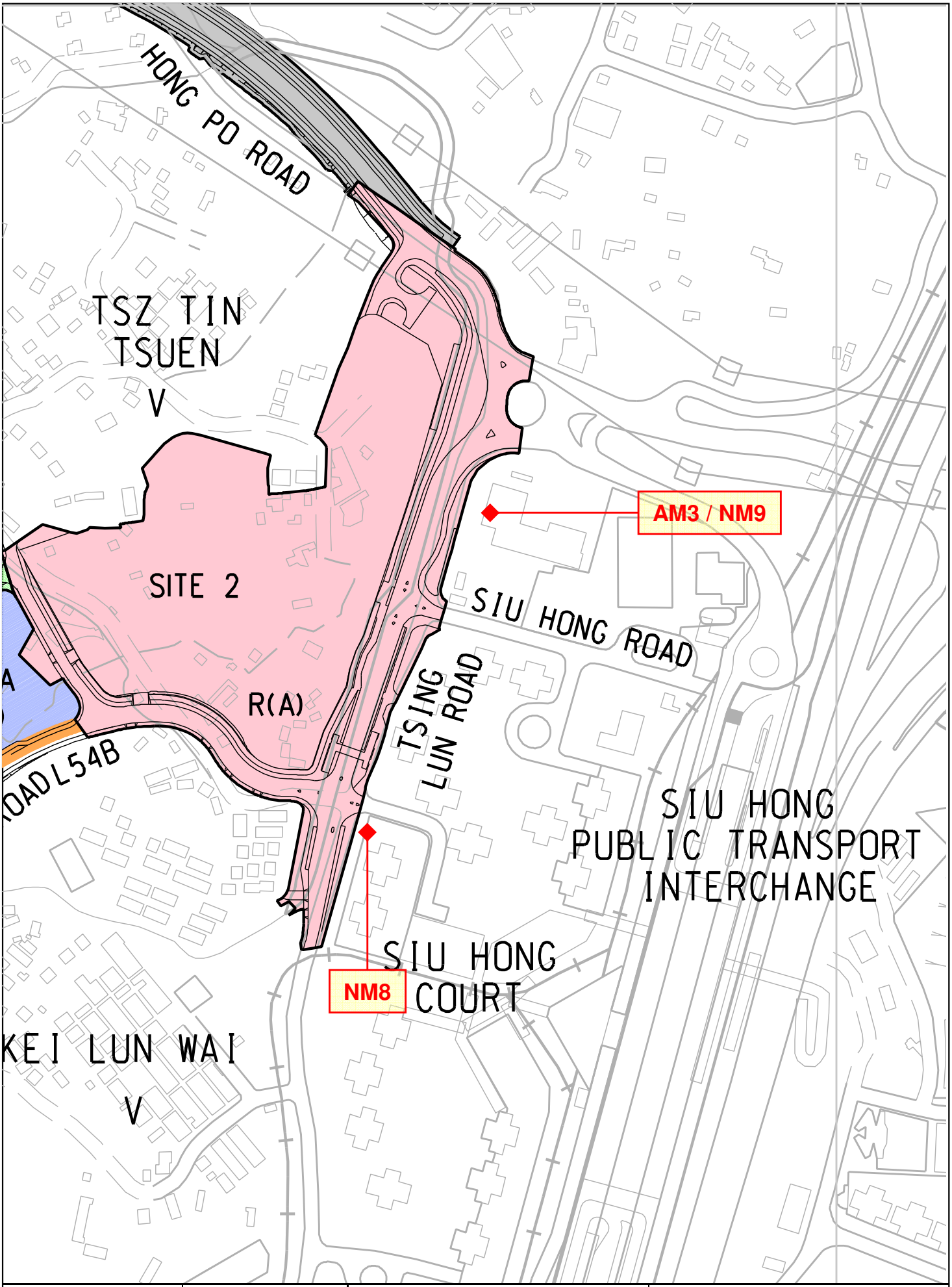
CIVIL ENGINEERING OFFICE

CEDD
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT



Civil Engineering and Development Department	MOTT MACDONALD	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	Title: Locations of Air Quality & Noise Monitoring Stations Figure 2.1

Appendix A. Project Organisation

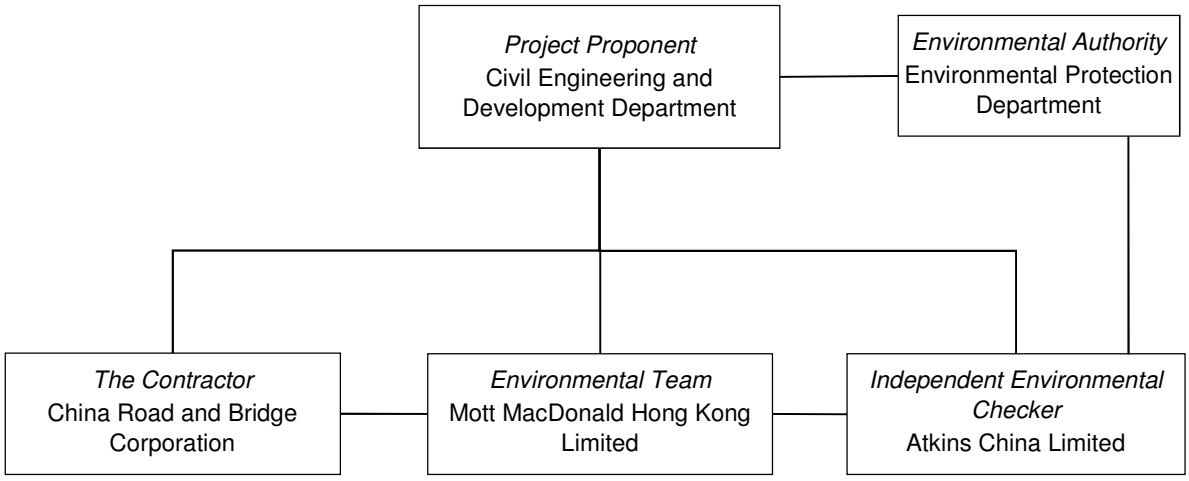


Table A.1: Contact information

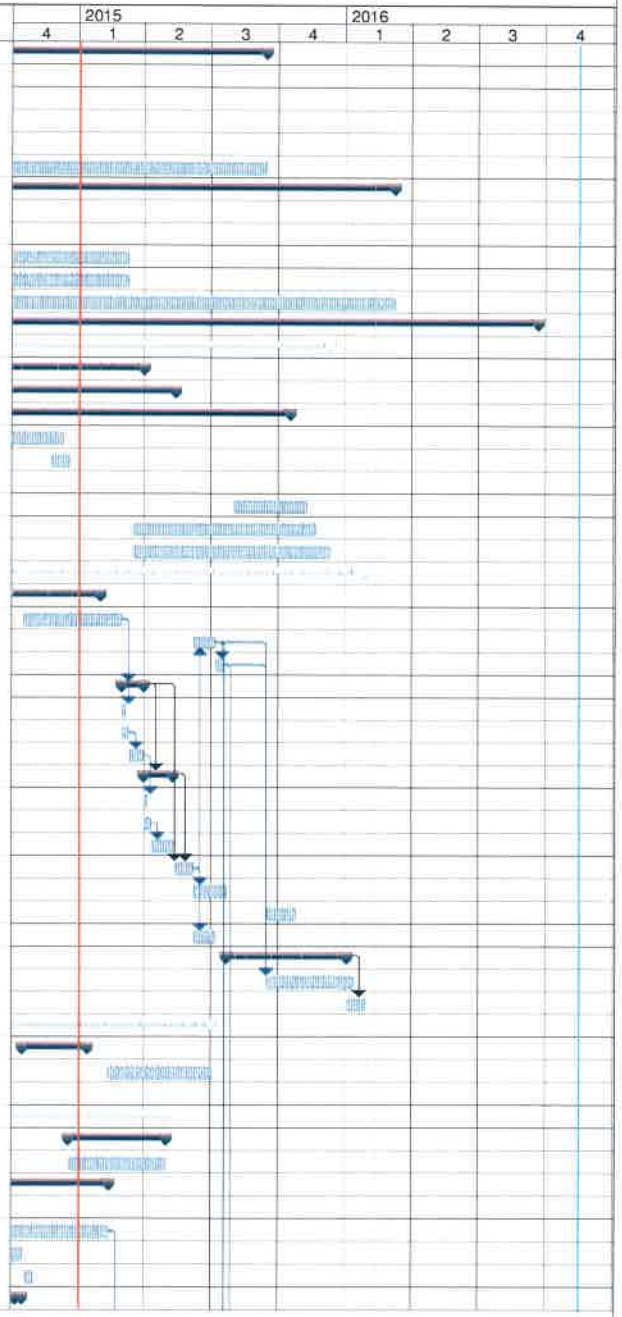
Company / Department	Position	Name	Telephone / Mobile
Civil Engineering and Development Department	Engineer's Representative	Mr FU Shing-chi, Sam	2762 5676
Atkins China Ltd.	Independent Environmental Checker	Mr Keith Chau*	2972 1000
Mott MacDonald Hong Kong Ltd.	Environmental Team Leader	Mr Brandon Wong	2828 5875
China Road and Bridge Corporation	Project Manager	Mr William Kwok Chung-yin	2757 8111
China Road and Bridge Corporation	Site Agent	Mr Kau Kwok-hung, Ken	5335 9758
China Road and Bridge Corporation	Environmental Officer	Mr Ray Ma	5335 9755

Remark: * Keith Chau took up the role of the Independent Environmental Checker for Contract No. CV/2011/01 from Sharifah Or effective from 1 November 2016.

Appendix B. Tentative Construction Programme

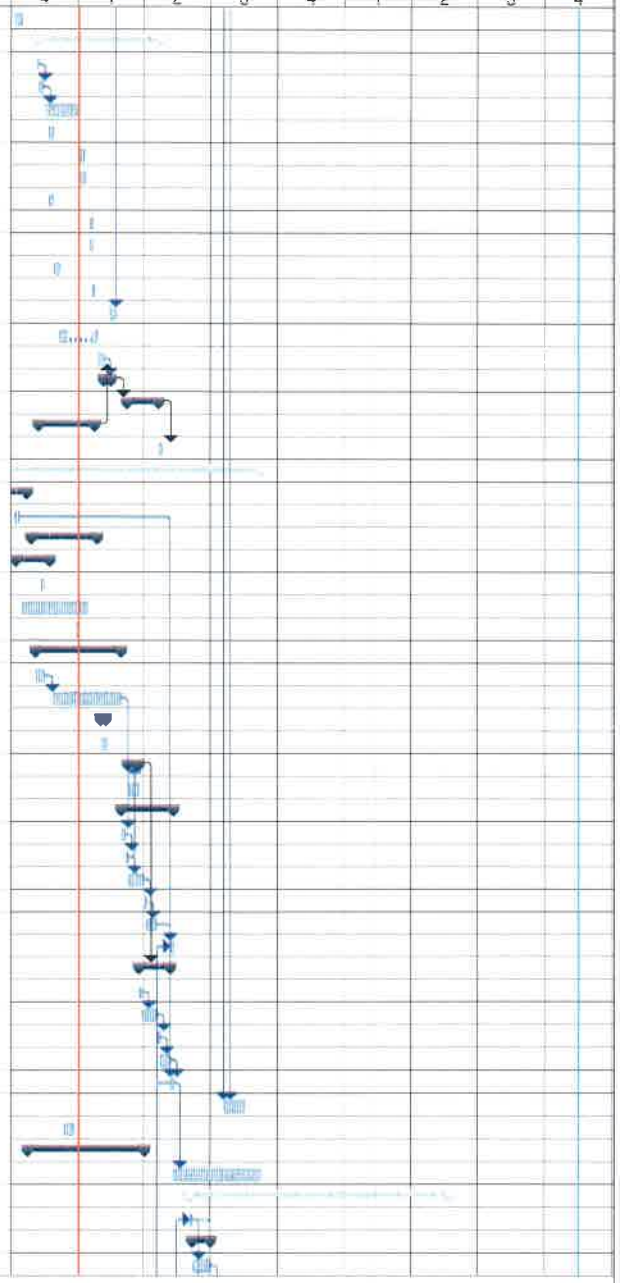
Contract No. CV/2011/01
Site Formation and Infrastructural Works near Tsing Lun Road and Tsz Tin Road in Area 54, Tuen Mun
Master Programme
(Rev.7)

ID	Task Name	Duration	Start	Finish	Actual Start	Actual Finish
1	**Contract Period**	**1460 days**	**Fri 16/9/11**	**Mon 14/9/15**	**NA**	**NA**
2	Section 1 - Portion A	457 days	Fri 16/9/11	Sat 15/12/12	NA	NA
3	Section 2 - Portion B	578 days	Fri 16/9/11	Mon 15/4/13	NA	NA
4	Section 3 - Portion C	1095 days	Fri 16/9/11	Sun 14/9/14	NA	NA
5	Section 4 - Preservation of Trees	1095 days	Fri 16/9/11	Sun 14/9/14	NA	NA
6	Section 5 - Establishment Works	1460 days	Fri 16/9/11	Mon 14/9/15	NA	NA
7	**Revised Contract Period**	**1636 days**	**Fri 16/9/11**	**Tue 8/3/16**	**Fri 16/9/11**	**NA**
8	Section 1 - Portion A (per ER's letter 0WM4S dated 5.2.2013)	511 days	Fri 16/9/11	Thu 7/2/13	Fri 16/9/11	Thu 7/2/13
9	Section 2 - Portion B (per ER's letter 117U8 dated 14.5.2014)	692 days	Fri 16/9/11	Wed 7/8/13	Fri 16/9/11	Wed 7/8/13
10	Section 3 - Portion C (per ER's letter 15RPF dated 18.9.2014)	1271 days	Fri 16/9/11	Mon 9/3/15	NA	NA
11	Section 4 - Preservation of Trees (per ER's letter 15RPF dated 18.9.2014)	1271 days	Fri 16/9/11	Mon 9/3/15	NA	NA
12	Section 5 - Establishment Works (per ER's letter 15RK3 dated 16.9.2014)	1636 days	Fri 16/9/11	Tue 8/3/16	NA	NA
13	**Works at Section 3 - Portion C**	**1832 days**	**Fri 16/9/11**	**Tue 20/9/16**	**Tue 18/2/14**	**NA**
14	**(A1) TTR Upper between CHZ136 to CHL54B160**			**Thu 10/12/15**		
15	Pai Lau architectural decoration works	217 days	Wed 27/8/14	Tue 31/3/15	Wed 27/8/14	NA
18	Pavilion architectural decoration works	450 days	Tue 18/2/14	Wed 13/5/15	Tue 18/2/14	NA
21	Landscape Works at Pavilion area	436 days	Fri 8/8/14	Sat 17/10/15	Fri 8/8/14	NA
24	Footpath paving blocks laying works (RS of Tsz Tin Road near Pai Lau to HD's run-in)	75 days	Sat 27/9/14	Wed 10/12/14	Sat 27/9/14	Wed 10/12/14
25	(SI-045) Re-construct the cycle track and footpath near CHZ110	26 days	Mon 24/11/14	Fri 19/12/14	Mon 24/11/14	Fri 19/12/14
26	Footpath construction works (LS of TTR from Pai Lau to near CHZ012	58 days	Mon 2/2/15	Tue 31/3/15	Mon 2/2/15	NA
30	Roadworks including bitumen laying (CHZ136 to CHZ012)	100 days	Sat 1/8/15	Sun 8/11/15	NA	NA
31	Construction of RCP	250 days	Mon 16/3/15	Fri 20/11/15	NA	NA
32	Construction of Public Toilet	270 days	Mon 16/3/15	Thu 10/12/15	NA	NA
33	**(A2) TTR Lower between CHL54B160 to CHL54B025**			**Wed 27/1/16**		
34	CHL54B100 to CHL54B033 Roadworks at lane1/lane2	282 days	Thu 24/4/14	Fri 30/1/15	Thu 24/4/14	Fri 30/1/15
49	(VO works) Existing fresh and salt watermains diversion from house 199 to house 30	135 days	Fri 17/10/14	Sat 28/2/15	Fri 17/10/14	NA
50	(VO works) Dwarf wall construction along house 199 & 199A	30 days	Sun 7/6/15	Mon 6/7/15	NA	NA
51	(VO works) U-channel and catchpit construction along dwarf wall	12 days	Tue 7/7/15	Sat 18/7/15	NA	NA
52	Noise barrier NB36	30 days	Sun 1/3/15	Mon 30/3/15	NA	NA
53	Start-up works	5 days	Sun 1/3/15	Thu 5/3/15	NA	NA
54	ELS & excavation	10 days	Sun 1/3/15	Tue 10/3/15	NA	NA
55	Structure construction	20 days	Wed 11/3/15	Mon 30/3/15	NA	NA
56	Noise barrier NB35	40 days	Tue 31/3/15	Sat 9/5/15	NA	NA
57	Start-up works	5 days	Tue 31/3/15	Sat 4/4/15	NA	NA
58	ELS & excavation	10 days	Tue 31/3/15	Thu 9/4/15	NA	NA
59	Structure construction	30 days	Fri 10/4/15	Sat 9/5/15	NA	NA
60	Backfill/compact noise barrier structure (NB35 & NB36)	25 days	Wed 13/5/15	Sat 6/6/15	NA	NA
61	Stormwater drainage	45 days	Sun 7/6/15	Tue 21/7/15	NA	NA
62	Utilities ducts laying	40 days	Tue 15/9/15	Sat 24/10/15	NA	NA
63	Stone facing works to NB35 & NB36	30 days	Sun 7/6/15	Mon 6/7/15	NA	NA
64	Roadworks construction including bitumen laying from Hung Fai Carpark to CHT100	165 days	Wed 22/7/15	Sat 2/1/16	NA	NA
68	All works behind kerb line area (LA/FP)	120 days	Tue 15/9/15	Tue 12/1/16	NA	NA
69	Noise Enclosure steelworks and panel installation to NB1 to NB4 and NB5 to NB6	25 days	Sun 3/1/16	Wed 27/1/16	NA	NA
70	**(B1)TLR between CHT270 to CHT410 (LS lane1/lane2/FP/CT)**			**Tue 30/6/15**		
71	U-channel	89 days	Thu 16/10/14	Mon 12/1/15	Thu 16/10/14	Mon 12/1/15
73	Footpath works CHT270 to CHT370	142 days	Mon 9/2/15	Tue 30/6/15	NA	NA
74	Utilities ducts installation between CP2 to CP1	67 days	Wed 25/6/14	Sat 30/8/14	Wed 25/6/14	Sat 30/8/14
75	**(B2)TLR between CHT135 and CHT270 (LS lane1/lane2/CT/FP)**			**Thu 30/4/15**		
83	Footpath works	134 days	Thu 18/12/14	Thu 30/4/15	Thu 18/12/14	NA
84	Footpath paving blocks laying works (sand laying and blocks paving)	134 days	Thu 18/12/14	Thu 30/4/15	Thu 18/12/14	NA
85	U-channel	154 days	Thu 11/9/14	Wed 11/2/15	Thu 11/9/14	NA
86	U-channel along FP/CT in-between CP5.1 to CP5.2	10 days	Thu 11/9/14	Sat 20/9/14	Thu 11/9/14	Sat 20/9/14
87	U-channel along FP/CT in-between CP5.2 to CP5.3	135 days	Tue 30/9/14	Wed 11/2/15	Tue 30/9/14	NA
88	U-channel along FP/CT in-between CP5.1 to CP2	27 days	Fri 19/9/14	Wed 15/10/14	Fri 19/9/14	Wed 15/10/14
89	E&M cable duct pits and UPVC cable duct at footpath along NE2-NE4	10 days	Tue 21/10/14	Thu 30/10/14	Tue 21/10/14	Thu 30/10/14
90	Utilities Installation	9 days	Tue 7/10/14	Wed 15/10/14	Tue 7/10/14	Wed 15/10/14

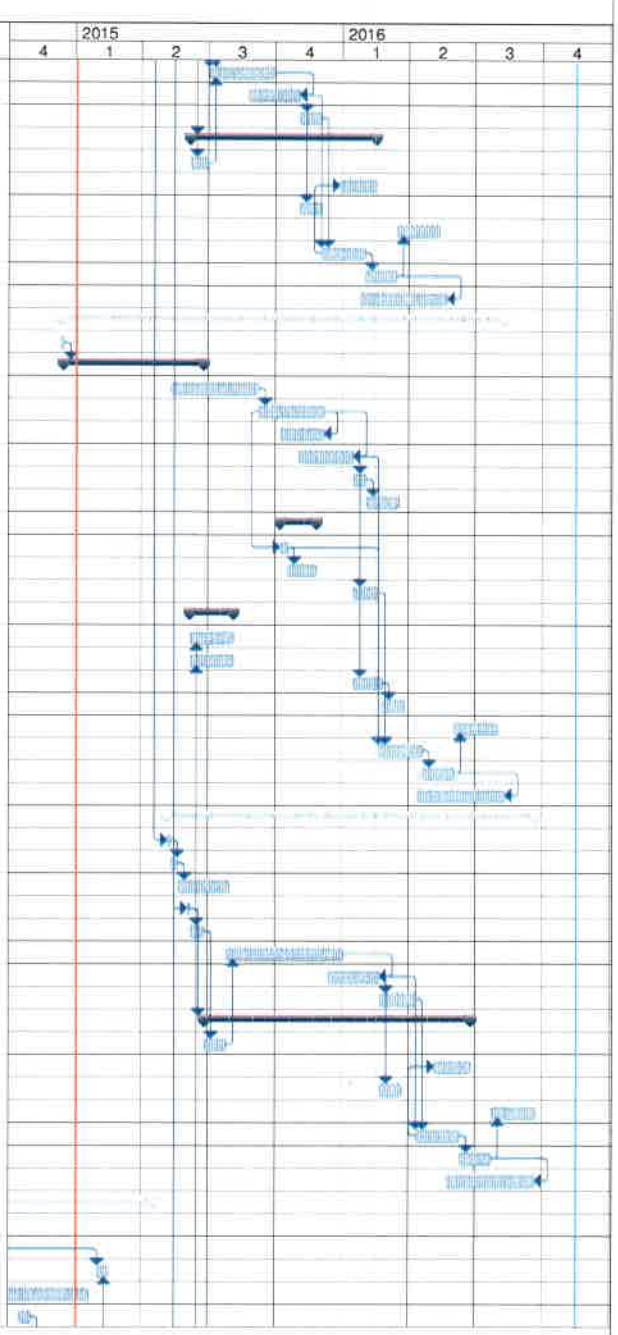


Contract No. CV/2011/01
Site Formation and Infrastructural Works near Tsing Lun Road and Tsz Tin Road in Area 54, Tuen Mun
Master Programme
(Rev.7)

ID	Task Name	Duration	Start	Finish	Actual Start	Actual Finish
91	Lighting cable (between CD1043-CD1041-CD1039 behind NE4-NE6-NE8)	9 days	Tue 7/10/14	Wed 15/10/14	Tue 7/10/14	Wed 15/10/14
92	**(B3)TLR between CHT110 and CHT135 (LS lane1/lane2)**			**Sat 25/4/15**		
93	Implement TTA drg 023-001	1 day	Thu 6/11/14	Thu 6/11/14	Thu 6/11/14	Thu 6/11/14
94	Breaking and removal road surface concrete (CHL54B070 to TLR (RS lane3/FP/CT)	6 days	Sat 8/11/14	Thu 13/11/14	Sat 8/11/14	Thu 13/11/14
95	Watermains installation and valve pit construction at junction of TTR/TLR	43 days	Mon 17/11/14	Mon 29/12/14	Mon 17/11/14	Mon 29/12/14
96	Stormwater catchpit CP5.11	7 days	Fri 21/11/14	Thu 27/11/14	Fri 21/11/14	Thu 27/11/14
97	Stormwater catchpit CP5.10	9 days	Wed 31/12/14	Thu 8/1/15	Wed 31/12/14	Thu 8/1/15
98	Stormwater catchpit CP5.3	11 days	Wed 31/12/14	Sat 10/1/15	Wed 31/12/14	Sat 10/1/15
99	Stormwater pipe installation between CP5.11 to SMH5.8	6 days	Fri 21/11/14	Wed 26/11/14	Fri 21/11/14	Wed 26/11/14
100	Stormwater pipe installation between CP5.10 to SMH5.9	4 days	Sat 17/1/15	Tue 20/1/15	Sat 17/1/15	Tue 20/1/15
101	Stormwater pipe installation between CP5.3 to SMH5.9	4 days	Sat 17/1/15	Tue 20/1/15	Sat 17/1/15	Tue 20/1/15
102	Gullies & gully pipes for G5.8A, G5.8B, G5.8C (part length for gully pipes)	8 days	Sat 29/11/14	Sat 6/12/14	Sat 29/11/14	Sat 6/12/14
103	Gullies & gully pipes for G5.9A, G5.9B	3 days	Tue 20/1/15	Thu 22/1/15	Tue 20/1/15	Thu 22/1/15
104	U-channel along FP/CT in-between CP5.2 to CP2.3	10 days	Thu 12/2/15	Sat 21/2/15	NA	NA
105	Sewer pipes between FMH7 to FMH8	18 days	Fri 5/12/14	Mon 26/1/15	Fri 5/12/14	Mon 26/1/15
106	Earthworks - filling/trimming/compaction/testing to formation level	8 days	Wed 28/1/15	Wed 4/2/15	NA	NA
107	Roadworks except bitumen laying CHT090 and CHT135 (LS lane1/lane2)	10 days	Thu 5/2/15	Sat 14/2/15	NA	NA
111	Bitumen laying (RB, BC, WC) from between near CHT090 and CHT135 (LS lane1/lane2)	43 days	Mon 9/3/15	Mon 20/4/15	NA	NA
116	Utilities ducts laying (mesh with other works)	77 days	Sat 8/11/14	Fri 23/1/15	Sat 8/11/14	Fri 23/1/15
121	TTA and traffic diversion (to TTA drawing 017-009A) (TTA diversion should be same for E/M/D)	5 days	Tue 21/4/15	Sat 25/4/15	NA	NA
122	**(B4)TLR between CHT000 and CHT100 (LS lane1/lane2)**			**Mon 7/9/15**		
123	Noise barrier NB40 & 40A	78 days	Wed 6/8/14	Wed 22/10/14	Wed 6/8/14	Wed 22/10/14
127	200mm DI sewer pipe installation between M14 to M14a (R1)	6 days	Mon 6/10/14	Sat 11/10/14	Mon 6/10/14	Sat 11/10/14
128	Stormwater Drainage CHT030 to CHT100	90 days	Wed 29/10/14	Mon 26/1/15	Wed 29/10/14	Mon 26/1/15
138	Sewer Drainage CHT030 to CHT100	46 days	Wed 8/10/14	Sat 22/11/14	Wed 8/10/14	Sat 22/11/14
143	DS1 footing works	4 days	Tue 11/11/14	Fri 14/11/14	Tue 11/11/14	Fri 14/11/14
144	Filling/trimming/compaction to formation level between near CHT040 to CHT100 lane1/lane2	90 days	Thu 16/10/14	Tue 13/1/15	Thu 16/10/14	NA
145	Implement TTA drg 009-002C	1 day	Tue 30/12/14	Tue 30/12/14	Tue 30/12/14	Tue 30/12/14
146	Roadworks except bitumen laying between near CHT030 to CHT100 lane1/lane2	117 days	Tue 4/11/14	Sat 28/2/15	Tue 4/11/14	NA
147	Subbase laying/compaction/trimming	12 days	Tue 4/11/14	Sat 15/11/14	Tue 4/11/14	Sat 15/11/14
148	Road kerb installation	94 days	Thu 27/11/14	Sat 28/2/15	Thu 27/11/14	NA
149	Traffic Island No.1 construction including E&M ducting installation across TLR (after revised from ER)	7 days	Mon 2/2/15	Sun 8/2/15	NA	NA
150	Install cross-road ATC and road lighting ducts in lane1/lane2	7 days	Mon 2/2/15	Sun 8/2/15	NA	NA
151	Works between CHT000 to CHT030	15 days	Tue 10/3/15	Tue 24/3/15	NA	NA
152	Remaining road & drainage works between CHT000 to CHT30 (except bitumen works)	15 days	Tue 10/3/15	Tue 24/3/15	NA	NA
153	Bitumen laying (RB, BC, WC) from between near CHT030 to CHT100 (LS)	71 days	Sun 1/3/15	Sun 10/5/15	NA	NA
154	Subbase laying/compaction/trimming after cross-road utilities ducts installation	5 days	Sun 1/3/15	Thu 5/3/15	NA	NA
155	Laying of RB & BC	4 days	Fri 6/3/15	Mon 9/3/15	NA	NA
156	Waiting for RB & BC bitumen test result	21 days	Tue 10/3/15	Mon 30/3/15	NA	NA
157	Laying of WC	4 days	Tue 31/3/15	Fri 3/4/15	NA	NA
158	Waiting for WC bitumen test result	14 days	Sat 4/4/15	Fri 17/4/15	NA	NA
159	TTA and traffic diversion (to TTA drawing XXXXX)	4 days	Thu 7/5/15	Sun 10/5/15	NA	NA
160	Bitumen laying (RB, BC, WC) from between near CHT000 to CHT030 (LS)	43 days	Wed 25/3/15	Wed 6/5/15	NA	NA
161	Laying of RB & BC	4 days	Wed 25/3/15	Sat 28/3/15	NA	NA
162	Waiting for RB & BC bitumen test result	21 days	Sun 29/3/15	Sat 18/4/15	NA	NA
163	Laying of WC	4 days	Sun 19/4/15	Wed 22/4/15	NA	NA
164	Waiting for WC bitumen test result	14 days	Thu 23/4/15	Wed 6/5/15	NA	NA
165	TTA and northbound traffic diversion (to TTA drawing 017-009A)	4 days	Thu 7/5/15	Sun 10/5/15	NA	NA
166	Roadworks behind noise barriers along NB44 to NB40A to site boundary	30 days	Sun 19/7/15	Mon 17/8/15	NA	NA
167	Stone facing works at noise barrier NB41 to NB40A	13 days	Fri 12/12/14	Wed 24/12/14	Fri 12/12/14	Wed 24/12/14
168	Utilities Installation	160 days	Fri 24/10/14	Wed 1/4/15	Fri 24/10/14	NA
176	Remaining works (LA works and others)	120 days	Mon 11/5/15	Mon 7/9/15	NA	NA
177	**(C1)TLR between CHT270 to CHT410 in front of YTTMC (RS lane4/FP/LA)**			**Mon 23/5/16**		
178	Implement TTA drg. 017-011A	3 days	Wed 3/6/15	Fri 5/6/15	NA	NA
179	Watermains Installation	25 days	Sat 6/6/15	Tue 30/6/15	NA	NA
180	(VO19) Part A Install fresh and salt remaining watermains and connection to existing (RS FP/LA)	25 days	Sat 6/6/15	Tue 30/6/15	NA	NA

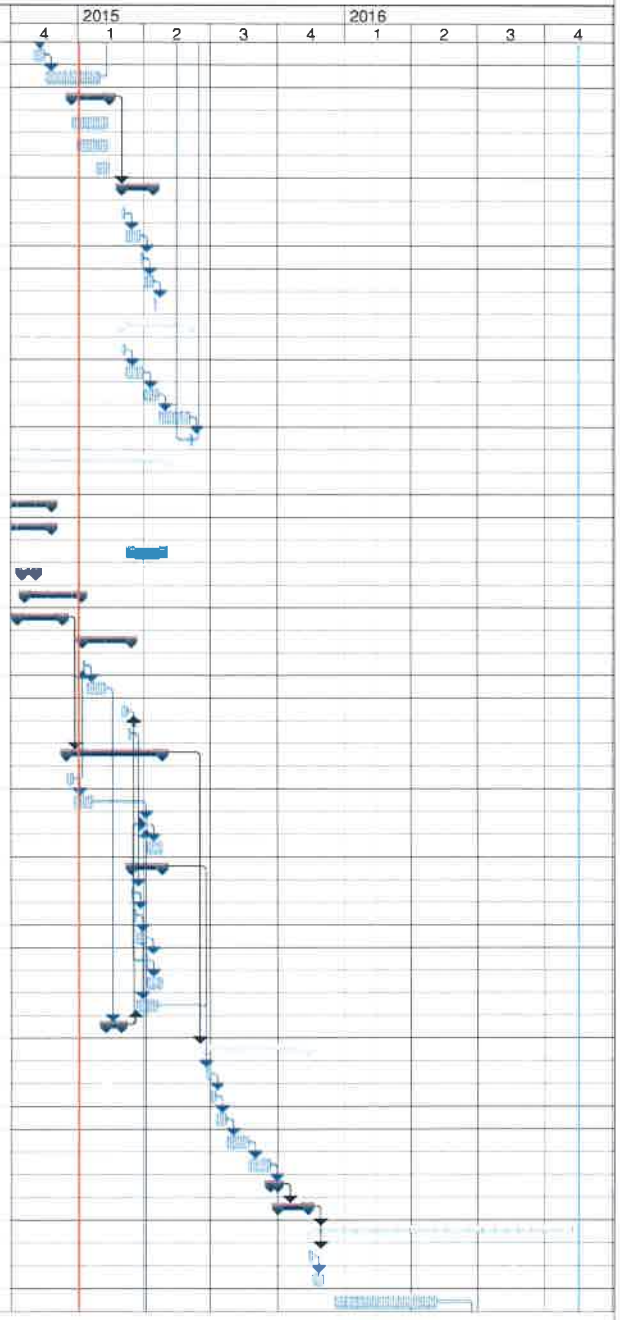


ID	Task Name	Duration	Start	Finish	Actual Start	Actual Finish
181	Construction of noise barrier footing (NB 25 to 28)	90 days	Wed 1/7/15	Mon 28/9/15	NA	NA
182	Backfilling structure and compaction up to road formation	70 days	Tue 25/8/15	Mon 2/11/15	NA	NA
183	Stormwater Drainage (RS lane4/FP/LA)	30 days	Tue 3/11/15	Wed 2/12/15	NA	NA
184	Utilities	255 days	Sat 6/6/15	Mon 15/2/16	NA	NA
185	Expose and diversion/shifting of existing utilities under pavement for NB construction works	25 days	Sat 6/6/15	Tue 30/6/15	NA	NA
186	Utilities installation at pavement (Gas, CLP, PCCW, HGC, HKBN, CATV)	50 days	Mon 28/12/15	Mon 15/2/16	NA	NA
187	Stone facing works to NB25 to 28	30 days	Tue 3/11/15	Wed 2/12/15	NA	NA
188	Noise Enclosure steelworks and panel installation to NB25 to 28	60 days	Tue 15/3/16	Fri 13/5/16	NA	NA
189	Roadworks at carriageway except bitumen laying (RS lane3/lane4)	60 days	Thu 3/12/15	Sun 31/1/16	NA	NA
190	Bitumen laying (RB, BC, WC) (RS lane3/lane4)	43 days	Mon 1/2/16	Mon 14/3/16	NA	NA
191	All works behind kerb line area (LA/FP)	120 days	Mon 25/1/16	Mon 23/5/16	NA	NA
192	**(C2)TLR between CHT130 to CHT250 (RS lane3/lane4)(divert southbound traffic)**			**Wed 10/8/16**		
193	Implement TTA drg. 017-201B	5 days	Thu 11/12/14	Mon 15/12/14	Thu 11/12/14	Mon 15/12/14
194	Ground investigation for NE1, NE3, NE5, NE7, FBP2, FBP4 (include traffic diversion)	192 days	Mon 15/12/14	Wed 24/6/15	Mon 15/12/14	NA
208	Mini pile construction works (including traffic diversion)	120 days	Mon 11/5/15	Mon 7/9/15	NA	NA
209	Noise enclosure (NE1, NE3, NE5, NE7) pile cap and stem wall construction	90 days	Tue 8/9/15	Sun 6/12/15	NA	NA
210	Footbridge pile cap (FB-P2, FB-P4)	60 days	Thu 8/10/15	Sun 6/12/15	NA	NA
211	Backfilling structure and compaction up to road formation	75 days	Mon 2/11/15	Fri 15/1/16	NA	NA
212	Footbridge staircase RC (RS)	18 days	Sat 16/1/16	Tue 2/2/16	NA	NA
213	Footbridge mid-span RC works	45 days	Wed 3/2/16	Fri 18/3/16	NA	NA
214	Lift B RC construction	50 days	Thu 8/10/15	Thu 26/11/15	NA	NA
215	Lift B substructure RC wall	10 days	Thu 8/10/15	Sat 17/10/15	NA	NA
216	Lift B superstructure RC wall	40 days	Sun 18/10/15	Thu 26/11/15	NA	NA
217	Stormwater Drainage (RS lane3/lane4/CT/FP)	35 days	Sat 16/1/16	Fri 19/2/16	NA	NA
218	Watermains Installation	60 days	Sat 6/6/15	Tue 4/8/15	NA	NA
219	(VO20) Part B Install fresh and salt watermains and connection to existing (RS lane4)	60 days	Sat 6/6/15	Tue 4/8/15	NA	NA
220	Install fresh and salt watermains from Tsz Tin Road and connect to existing (RS lane3/lane4)	60 days	Sat 6/6/15	Tue 4/8/15	NA	NA
221	Utilities Installation (RS lane3/lane4/FP)	40 days	Sat 16/1/16	Wed 24/2/16	NA	NA
222	Stone facing works at noise enclosure NE1, NE3, NE5, NE7	30 days	Thu 25/2/16	Fri 25/3/16	NA	NA
223	Noise Enclosure steelworks and panel installation at NE1, NE3, NE5, NE7	60 days	Thu 2/6/16	Sun 31/7/16	NA	NA
224	Roadworks at carriageway except bitumen laying (RS lane3/lane4)	60 days	Sat 20/2/16	Tue 19/4/16	NA	NA
225	Bitumen laying (RB, BC, WC) (RS lane3/lane4)	43 days	Wed 20/4/16	Wed 1/6/16	NA	NA
226	All works behind kerb line area (LA/FP)	120 days	Wed 13/4/16	Wed 10/8/16	NA	NA
227	**(C3)TLR between CHT000 and CHT100 (RS lane1/lane2)**			**Tue 20/9/16**		
228	Implement TTA drg. 017-009A	4 days	Thu 7/5/15	Sun 10/5/15	NA	NA
229	Site clearance works (at existing northbound lane)	10 days	Mon 11/5/15	Wed 20/5/15	NA	NA
230	Construction works inside site area in TTA drg. 017-009A (clearance, drainage, ...)	70 days	Thu 21/5/15	Wed 29/7/15	NA	NA
231	TTA and southbound traffic diversion (to TTA drawing 017-011A)	3 days	Wed 3/6/15	Fri 5/6/15	NA	NA
232	Site clearance works (at existing southbound lane)	20 days	Sat 6/6/15	Thu 25/6/15	NA	NA
233	Construction of noise barrier footing (NB 45 to 51)	160 days	Sun 26/7/15	Fri 1/1/16	NA	NA
234	Backfilling structure and compaction up to road formation	70 days	Sun 13/12/15	Sat 20/2/16	NA	NA
235	Stormwater Drainage (RS lane4/FP/LA)	50 days	Sun 21/2/16	Sun 10/4/16	NA	NA
236	Utilities	365 days	Fri 26/6/15	Fri 24/6/16	NA	NA
237	Expose and diversion/shifting of existing utilities under pavement for NB construction works	30 days	Fri 26/6/15	Sat 25/7/15	NA	NA
238	Utilities installation at pavement	50 days	Fri 6/5/16	Fri 24/6/16	NA	NA
239	Stone facing works to NB45 to 51	30 days	Sun 21/2/16	Mon 21/3/16	NA	NA
240	Noise Enclosure steelworks and panel installation to NB45 to 51	60 days	Sat 23/7/16	Tue 20/9/16	NA	NA
241	Roadworks at carriageway except bitumen laying (RS lane3/lane4)	60 days	Mon 11/4/16	Thu 9/6/16	NA	NA
242	Bitumen laying (RB, BC, WC) (RS lane3/lane4)	43 days	Fri 10/6/16	Fri 22/7/16	NA	NA
243	All works behind kerb line area (LA/FP)	120 days	Tue 24/5/16	Tue 20/9/16	NA	NA
244	**(M) TLR between CHT270 to CHT410 middle-lane portion (RS lane3/4)**			**Fri 17/4/15**		
245	Implement TTA drg 014-002A	1 day	Fri 4/7/14	Fri 4/7/14	Fri 4/7/14	Fri 4/7/14
246	Stormwater gullies and gully pipes G8A, G8B, G8C, G8D, G8E, G8F, G7A, G7B, G11D	36 days	Mon 25/8/14	Mon 29/9/14	Mon 25/8/14	Mon 29/9/14
247	Remaining stormwater system works	15 days	Sat 31/1/15	Sat 14/2/15	NA	NA
248	Modify traffic island TLR No.5 (at junction of TLR and roundabout)	195 days	Tue 8/7/14	Sun 18/1/15	Tue 8/7/14	NA
249	Breaking existing road surface inside TTA area	17 days	Wed 15/10/14	Fri 31/10/14	Wed 15/10/14	Fri 31/10/14



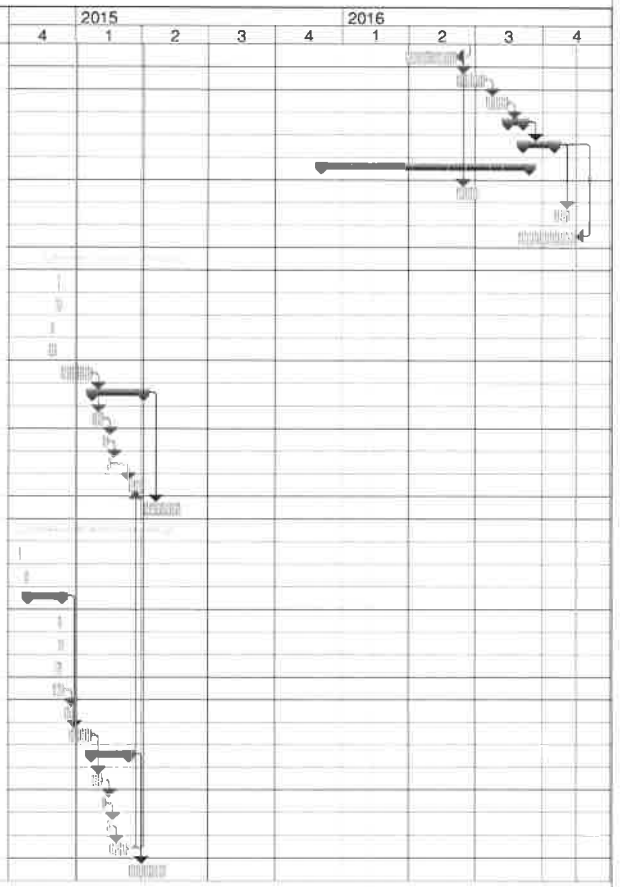
Contract No. CV/2011/01
Site Formation and Infrastructural Works near Tsing Lun Road and Tsz Tin Road in Area 54, Tuen Mun
Master Programme
(Rev.7)

ID	Task Name	Duration	Start	Finish	Actual Start	Actual Finish
250	Disposal of broken road surface material off site	15 days	Sat 1/11/14	Sat 15/11/14	Sat 1/11/14	Sat 15/11/14
251	Filling/trimming/compaction/testing to formation level	75 days	Mon 17/11/14	Fri 30/1/15	Mon 17/11/14	NA
252	Roadworks (except bitumen works)	52 days	Tue 23/12/14	Thu 12/2/15	Tue 23/12/14	NA
253	Granular sub-base laying/trimming/compacting/testing	50 days	Tue 23/12/14	Tue 10/2/15	Tue 23/12/14	NA
254	Kerb installation works	43 days	Tue 30/12/14	Tue 10/2/15	Tue 30/12/14	NA
255	Bus bay RC works	18 days	Mon 26/1/15	Thu 12/2/15	Mon 26/1/15	NA
256	Laying of bitumen (RB, BC, WC)	43 days	Mon 2/3/15	Mon 13/4/15	NA	NA
257	Laying of RB & BC	4 days	Mon 2/3/15	Thu 5/3/15	NA	NA
258	Waiting for RB & BC bitumen test result	21 days	Fri 6/3/15	Thu 26/3/15	NA	NA
259	Laying of WC	4 days	Fri 27/3/15	Mon 30/3/15	NA	NA
260	Waiting for WC bitumen test result	14 days	Tue 31/3/15	Mon 13/4/15	NA	NA
261	TTA and traffic diversion (to TTA drawing XXXXX)	4 days	Tue 14/4/15	Fri 17/4/15	NA	NA
262	**(E1)TLR/SHR junction (RS lane3/4) All construction works inside TTA drawing 017-012A**			**Fri 5/6/15**		
263	Temporary road construction for northbound traffic diversion from existing bus-stop to roundabout OKOK	5 days	Mon 2/3/15	Fri 6/3/15	NA	NA
264	Drainage works and watermains installation works	25 days	Sat 7/3/15	Tue 31/3/15	NA	NA
265	Roadworks (remove existing temporary concrete slab for construction of bitumen surface)(except bitumen works)	20 days	Wed 1/4/15	Mon 20/4/15	NA	NA
266	Laying of bitumen (RB, BC, WC)	43 days	Tue 21/4/15	Tue 2/6/15	NA	NA
267	TTA and southbourd traffic diversion (to TTA drawing 017-011A)	3 days	Wed 3/6/15	Fri 5/6/15	NA	NA
275	**(P1) HPR between CHH000 to CHH200 (LS HPR lane1 to roundabout)**			**Sat 2/5/15**		
276	Setup and implemented TTA according to drawing 010-005.2	12 days	Mon 1/9/14	Fri 12/9/14	Mon 1/9/14	Fri 12/9/14
277	Stormwater manholes	268 days	Mon 3/3/14	Tue 25/11/14	Mon 3/3/14	Tue 25/11/14
288	Stormwater pipes	266 days	Wed 5/3/14	Tue 25/11/14	Wed 5/3/14	Tue 25/11/14
305	U-channel along FP/CT in-between CP1 to CP4.2	55 days	Mon 9/3/15	Sat 2/5/15	NA	NA
306	RW1-1 construction	18 days	Fri 17/10/14	Mon 3/11/14	Fri 17/10/14	Mon 3/11/14
313	Fresh and salt watermains installation	78 days	Mon 20/10/14	Mon 5/1/15	Mon 20/10/14	Mon 5/1/15
316	Roadworks (except bitumenous) from CH15.5 (HPR roundabout) to near gate C	62 days	Fri 10/10/14	Wed 10/12/14	Fri 10/10/14	Wed 10/12/14
319	Roadworks (except bitumenous) from CHH000 to near gate C	67 days	Wed 7/1/15	Sat 14/3/15	Wed 7/1/15	NA
320	Remaining site clearance	3 days	Wed 7/1/15	Fri 9/1/15	Wed 7/1/15	Fri 9/1/15
321	Site formation works for roadworks	27 days	Mon 12/1/15	Sat 7/2/15	Mon 12/1/15	NA
322	Granular sub-base laying/trimming/compacting/testing	8 days	Sun 1/3/15	Sun 8/3/15	NA	NA
323	Kerb installation at LS	6 days	Mon 9/3/15	Sat 14/3/15	NA	NA
324	Bitumen laying (RB, BC, WC) from CH15.5 (HPR roundabout) to near gate C	131 days	Tue 16/12/14	Sat 25/4/15	Tue 16/12/14	NA
325	Laying of RB & BC	9 days	Tue 16/12/14	Wed 24/12/14	Tue 16/12/14	Wed 24/12/14
326	Waiting for RB & BC bitumen test result	27 days	Thu 25/12/14	Tue 20/1/15	Thu 25/12/14	Tue 20/1/15
327	Laying of WC	1 day	Sat 4/4/15	Sat 4/4/15	NA	NA
328	Waiting for WC bitumen test result	21 days	Sun 5/4/15	Sat 25/4/15	NA	NA
329	Bitumen laying (RB, BC, WC) from CHH000 to near gate C	42 days	Sun 15/3/15	Sat 25/4/15	NA	NA
330	Site preparation works for bitumen laying	3 days	Sun 15/3/15	Tue 17/3/15	NA	NA
331	Laying of RB & BC	3 days	Wed 18/3/15	Fri 20/3/15	NA	NA
332	Waiting for RB & BC bitumen test result	14 days	Sat 21/3/15	Fri 3/4/15	NA	NA
333	Laying of WC	1 day	Sat 4/4/15	Sat 4/4/15	NA	NA
334	Waiting for WC bitumen test result	21 days	Sun 5/4/15	Sat 25/4/15	NA	NA
335	Footing along RW1-5 to RW1-1	30 days	Sat 21/3/15	Sun 19/4/15	NA	NA
336	Utilities ducts installation	21 days	Sun 8/2/15	Sat 28/2/15	NA	NA
341	**(P2) HPR between CHH000 to CHH200 (RS HPR lane2/lane3 to roundabout)**			**Wed 11/11/15**		
342	Setup and implemented TTA according to drawing 010-006	6 days	Thu 25/6/15	Tue 30/6/15	NA	NA
343	Site clearance works	7 days	Wed 1/7/15	Tue 7/7/15	NA	NA
344	Break and remove existing wall kerb wall along LS HPR	15 days	Wed 8/7/15	Wed 22/7/15	NA	NA
345	Stormwater drainage	30 days	Thu 23/7/15	Fri 21/8/15	NA	NA
346	Earthworks - filling/trimming/compaction/testing to formation level	30 days	Sat 22/8/15	Sun 20/9/15	NA	NA
347	Roadworks (except bitumenous) from CHH000 to roundabout	10 days	Mon 21/9/15	Wed 30/9/15	NA	NA
349	Bitumen laying (RB, BC, WC) from CHH000 to roundabout	42 days	Thu 1/10/15	Wed 11/11/15	NA	NA
355	**(P3) HPR between CHH000 to CHH200 (RS HPR lane4 to roundabout)**			**Tue 15/11/16**		
356	Setup and implemented TTA according to drawing 010-003.1C	6 days	Thu 12/11/15	Tue 17/11/15	NA	NA
357	Site clearance works	15 days	Wed 18/11/15	Wed 2/12/15	NA	NA
358	Construction of noise barrier footing (NB1 to NB4 and NB5 to NB6)	140 days	Fri 18/12/15	Thu 5/5/16	NA	NA



Contract No. CV/2011/01
Site Formation and Infrastructural Works near Tsing Lun Road and Tsz Tin Road in Area 54, Tuen Mun
Master Programme
(Rev.7)

ID	Task Name	Duration	Start	Finish	Actual Start	Actual Finish
359	Backfilling structure and compaction up to road formation	70 days	Sun 27/3/16	Sat 4/6/16	NA	NA
360	Stormwater drainage	40 days	Sun 5/6/16	Thu 14/7/16	NA	NA
361	Earthworks - filling/trimming/compaction/testing to formation level	30 days	Fri 15/7/16	Sat 13/8/16	NA	NA
362	Roadworks (except bituminous) from CHH000 to roundabout	21 days	Sun 14/8/16	Sat 3/9/16	NA	NA
365	Bitumen laying (RB, BC, WC) from CHH000 to roundabout	43 days	Sun 4/9/16	Sun 16/10/16	NA	NA
371	Utilities	285 days	Thu 3/12/15	Mon 12/9/16	NA	NA
374	Stone facing works to NB1 to NB4 and NB5 to NB6	30 days	Sun 5/6/16	Mon 4/7/16	NA	NA
375	Noise Enclosure steelworks and panel installation to NB1 to NB4 and NB5 to NB6	20 days	Mon 17/10/16	Sat 5/11/16	NA	NA
376	All works behind kerb line area (LA/FP)	80 days	Sun 28/8/16	Tue 15/11/16	NA	NA
377	**(L1) Turning Tee concrete slab**			**Sat 23/5/15**		
378	Relocate site container offices	1 day	Mon 8/12/14	Mon 8/12/14	Mon 8/12/14	Mon 8/12/14
379	Catchpit CP4.2	9 days	Thu 4/12/14	Fri 12/12/14	Thu 4/12/14	Fri 12/12/14
380	Gullies and gully pipes G4.16A, G4.16B	5 days	Thu 27/11/14	Mon 1/12/14	Thu 27/11/14	Mon 1/12/14
381	1800x1800 WOT pit	10 days	Tue 25/11/14	Thu 4/12/14	Tue 25/11/14	Thu 4/12/14
382	Earthworks - filling/trimming/compaction/testing to formation level	42 days	Fri 12/12/14	Thu 22/1/15	Fri 12/12/14	Thu 22/1/15
383	Roadworks for concrete Turn-tee	70 days	Sat 24/1/15	Fri 3/4/15	Sat 24/1/15	NA
384	Granular sub-base laying/trimming/compacting/testing	15 days	Sat 24/1/15	Sat 7/2/15	Sat 24/1/15	NA
385	Kerb installation works	6 days	Sun 8/2/15	Fri 13/2/15	NA	NA
386	Preparation works for concrete laying	5 days	Sat 14/2/15	Wed 18/2/15	NA	NA
387	RC concrete carriageway	20 days	Sun 15/3/15	Fri 3/4/15	NA	NA
388	Footpath (FP) construction works	50 days	Sat 4/4/15	Sat 23/5/15	NA	NA
389	**(L2) HA's concrete access to HPR**			**Sun 3/5/15**		
390	Relocate site containers offices from retaining wall RW1 for watermains laying works	2 days	Fri 17/10/14	Sat 18/10/14	Fri 17/10/14	Sat 18/10/14
391	Removal of wheel washing facilities at temporary access road	5 days	Thu 23/10/14	Mon 27/10/14	Thu 23/10/14	Mon 27/10/14
392	Fresh and salt watermains installation (R1)	47 days	Tue 28/10/14	Sat 13/12/14	Tue 28/10/14	Sat 13/12/14
394	Stormwater manhole SMH4.12	5 days	Mon 8/12/14	Fri 12/12/14	Mon 8/12/14	Fri 12/12/14
395	Stormwater pipe between SMH4.12 to SMH4.13	6 days	Mon 8/12/14	Sat 13/12/14	Mon 8/12/14	Sat 13/12/14
396	Stormwater pipe between CP4.2 to SMH4.13	8 days	Thu 4/12/14	Thu 11/12/14	Thu 4/12/14	Thu 11/12/14
397	Gullies and gully pipes G4.12A, G4.13A, G4.15A, G4.15B	16 days	Mon 1/12/14	Tue 16/12/14	Mon 1/12/14	Tue 16/12/14
398	Remaining stormwater system works	15 days	Wed 17/12/14	Wed 31/12/14	NA	NA
399	Earthworks - filling/trimming/compaction/testing to formation level	31 days	Tue 23/12/14	Thu 22/1/15	Tue 23/12/14	Thu 22/1/15
400	Roadworks including RC concrete slab	51 days	Fri 23/1/15	Sat 14/3/15	Fri 23/1/15	NA
401	Granular sub-base laying/trimming/compacting/testing	15 days	Fri 23/1/15	Fri 6/2/15	Fri 23/1/15	NA
402	Kerb installation works	6 days	Sat 7/2/15	Thu 12/2/15	NA	NA
403	Preparation works for concrete laying	5 days	Fri 13/2/15	Tue 17/2/15	NA	NA
404	RC concrete carriageway	25 days	Wed 18/2/15	Sat 14/3/15	NA	NA
405	Footpath (FP) construction works along RW1	50 days	Sun 15/3/15	Sun 3/5/15	NA	NA



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 C.1: Action and Limit Levels for 1-hour TSP

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

Table C.2: Action and Limit Levels for 24-hour TSP

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

Noise

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

Table C.3: 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 D.1: Event and Action Plan for Air Quality

Event	Action			
	ET Leader	IEC	ER (Engineer's Representative)	Contractor
Action Level				
Exceedance for one sample	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.	1. Check monitoring data submitted by ET. 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice. 2. Amend working methods if appropriate.
Exceedance for two or more consecutive samples	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.	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.	1. Confirm receipt of notification of exceedance in writing. 2. Notify the Contractor. 3. Ensure remedial measures properly implemented.	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				
Exceedance for one sample	1. Identify source, investigate the causes of exceedance and 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.	1. Check monitoring data submitted by ET. 2. Check the 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.	1. Confirm receipt of notification of exceedance in writing. 2. Notify the Contractor. 3. Ensure remedial measures properly implemented.	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. Amend proposal if appropriate.

Event	Action			
Exceedance for two or more consecutive samples	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.	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.	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.	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 D.2: Event and Action Plan for Construction Noise

Event	Action			
	ET Leader	IEC	ER	Contractor
Action Level	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.	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.	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.	1. Submit noise mitigation proposals to IEC. 2. Implement noise mitigation proposals.
Limit Level	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	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.	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	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

Event	Action		
	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.	is responsible and instruct the Contractor to stop that activity of work until the exceedance is abated.	until the exceedance is abated.

Appendix E. Monitoring Schedule

Table E.1: Monitoring Schedule for the reporting month

Tentative Air Quality & Noise Monitoring Schedule for November 2016

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

Table E.2: Tentative Monitoring Schedule for the coming month

Tentative Air Quality & Noise Monitoring Schedule for December 2016

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

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	:	23/10/2016

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	14 Mar 2016
Slope (m)	:	2.10326
Intercept (b)	:	-0.06696
Correlation Coefficient(r)	:	0.99989

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1013
Ta(K)	:	301

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	11.6	3.389	1.643	55	54.73
2	13 holes	9.0	2.985	1.451	49	48.76
3	10 holes	6.4	2.517	1.229	42	41.79
4	7 holes	4.4	2.087	1.024	36	35.82
5	5 holes	2.6	1.604	0.795	28	27.86

Sampler Calibration Relationship

Slope(m):31.406 Intercept(b):3.214 Correlation Coefficient(r): 0.9996

Checked by:_____ Date: 24/10/2016

Magnum Fan

TISCH Environmental

TISCH ENVIRONMENTAL, INC.
145 SOUTH MIAMI AVE
VILLAGE OF CLEVES, OH
45002
513.467.9000
877.263.7610 TOLL FREE
513.467.9009 FAX

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 14, 2016 Rootsmeter S/N 0438320 Ta (K) - 295
Operator Tisch Orifice I.D. - 2454 Pa (mm) - 745.49

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.4020	3.2	2.00
2	NA	NA	1.00	1.0060	6.4	4.00
3	NA	NA	1.00	0.9010	7.9	5.00
4	NA	NA	1.00	0.8590	8.8	5.50
5	NA	NA	1.00	0.7090	12.8	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)
0.9866	0.7037	1.4078
0.9824	0.9765	1.9909
0.9803	1.0880	2.2259
0.9792	1.1399	2.3345
0.9738	1.3735	2.8155

Qstd slope (m) = 2.10326
intercept (b) = -0.06696
coefficient (r) = 0.99989

y axis = SQRT[H2O(Pa/760)(298/Ta)]

Va	(x axis) Qa	(y axis)
0.9957	0.7102	0.8896
0.9914	0.9855	1.2581
0.9893	1.0980	1.4066
0.9882	1.1504	1.4753
0.9828	1.3862	1.7792

Qa slope (m) = 1.31703
intercept (b) = -0.04232
coefficient (r) = 0.99989

y axis = SQRT[H2O(Ta/Pa)]

CALCULATIONS

Vstd = Diff. Vol[(Pa-Diff. Hg)/760](298/Ta)
Qstd = Vstd/Time

Va = Diff Vol [(Pa-Diff Hg)/Pa]
Qa = Va/Time

For subsequent flow rate calculations:

Qstd = 1/m{[SQRT(H2O(Pa/760)(298/Ta))]- b}
Qa = 1/m{[SQRT H2O(Ta/Pa)]- b}

SIBATA

SIBATA SCIENTIFIC TECHNOLOGY LTD.
1-1-62, Nakane, Soka, Saitama, 340-0005 Japan
TEL : 048-933-1582 FAX : 048-933-1591

CALIBRATION CERTIFICATE

Date: January 25, 2016

Equipment Name	:	Digital Dust Indicator, Model LD-3B
Code No.	:	080000-42
Quantity	:	1 unit
Serial No.	:	1Y5546
Sensitivity	:	0.001 mg/m3
Sensitivity Adjustment	:	593CPM
Scale Setting	:	January 20, 2016

We hereby certify that the avobe mentioned instrment has been calibrated satisfactory.

Sincerely

SIBATA SCIENTIFIC TECHNOLOGY LTD.

Shintaro Okamura

Shintaro Okamura
Overseas Sales Division

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

Certificate of Calibration
校正證書

Certificate No. : C164166
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC16-1465) Date of Receipt / 收件日期 : 20 July 2016

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. Room 113, 1/F, My Loft, 9 Hoi Wing Road, Tuen Mun, New Territories, Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 29 July 2016

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed 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
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By 測試 : H T Wong, Technical Officer

Certified By 核證 : K C Lee, Project Engineer

Date of Issue 簽發日期 : 1 August 2016

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C164166
證書編號

1. 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.

2. Self-calibration was performed before the test.

3. The results presented are the mean of 3 measurements at each calibration point.

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C160077
CL281	Multifunction Acoustic Calibrator	PA160023

5. Test procedure : MA101N.

6. 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	94.4	± 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	94.4 (Ref.)
				104.00		104.4
				114.00		114.4

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	94.4	Ref.
			Slow			94.4	± 0.1

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c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Certificate of Calibration
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Certificate No. : C164166
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	102.4	-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	54.7	-39.4 ± 1.5
					63 Hz	68.0	-26.2 ± 1.5
					125 Hz	78.0	-16.1 ± 1.0
					250 Hz	85.6	-8.6 ± 1.0
					500 Hz	91.1	-3.2 ± 1.0
					1 kHz	94.4	Ref.
					2 kHz	95.7	+1.2 ± 1.0
					4 kHz	95.5	+1.0 ± 1.0
					8 kHz	93.3	-1.1 (+1.5 ; -3.0)
					12.5 kHz	90.1	-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	91.3	-3.0 ± 1.5
					63 Hz	93.5	-0.8 ± 1.5
					125 Hz	94.2	-0.2 ± 1.0
					250 Hz	94.4	0.0 ± 1.0
					500 Hz	94.5	0.0 ± 1.0
					1 kHz	94.4	Ref.
					2 kHz	94.3	-0.2 ± 1.0
					4 kHz	93.6	-0.8 ± 1.0
					8 kHz	91.4	-3.0 (+1.5 ; -3.0)
					12.5 kHz	88.1	-6.2 (+3.0 ; -6.0)

Certificate of Calibration
校正證書

Certificate No. : C164166
證書編號

6.4 Time Averaging

UUT Setting				Applied Value					UUT	IEC 60804
Range (dB)	Mode	Frequency Weighting	Integrating Time	Freq. (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)	Reading (dB)	Type 1 Spec. (dB)
50 - 110	LAeq	A	10 sec.	4	1	1/10	110	100	100.1	± 0.5
						$1/10^2$		90	89.9	± 0.5
			60 sec.			$1/10^3$		80	79.6	± 1.0
			5 min.			$1/10^4$		70	69.7	± 1.0

Remarks : - UUT Microphone Model No. : UC-53A & S/N : 307435

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

- Uncertainties of Applied Value :

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

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

Note :
The values given in this 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.

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

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

Certificate of Calibration
校正證書

Certificate No. : C163248
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC16-1307) Date of Receipt / 收件日期 : 10 June 2016

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. Room 113, 1/F, My Loft, 9 Hoi Wing Road, Tuen Mun, New Territories, Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 15 June 2016

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed 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
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By 測試 : H T Wong, Technical Officer

Certified By 核證 : K C Lee, Project Engineer

Date of Issue 簽發日期 : 17 June 2016

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

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

Certificate of Calibration
校正證書

Certificate No. : C163248
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.

2. The results presented are the mean of 3 measurements at each calibration point.

3. Test equipment :

Equipment ID	Description	Certificate No.
CL130	Universal Counter	C153519
CL281	Multifunction Acoustic Calibrator	PA160023
TST150A	Measuring Amplifier	C161175

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	93.7	± 0.5	± 0.2

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	0.985	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.

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輝創工程有限公司 – 校正及檢測實驗所
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Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Appendix G. Graphical plots of the monitoring results

Figure G-1: Air quality monitoring at Station AM3 (1-hour TSP)

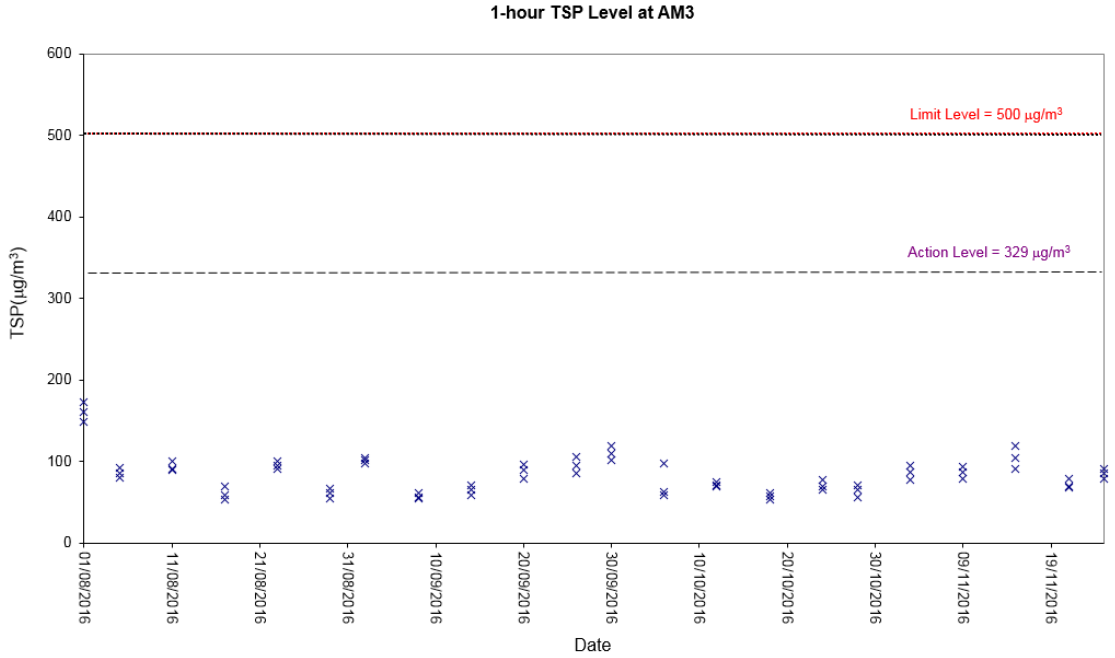


Figure G-2: Air quality monitoring at Station AM3 (24-hour TSP)

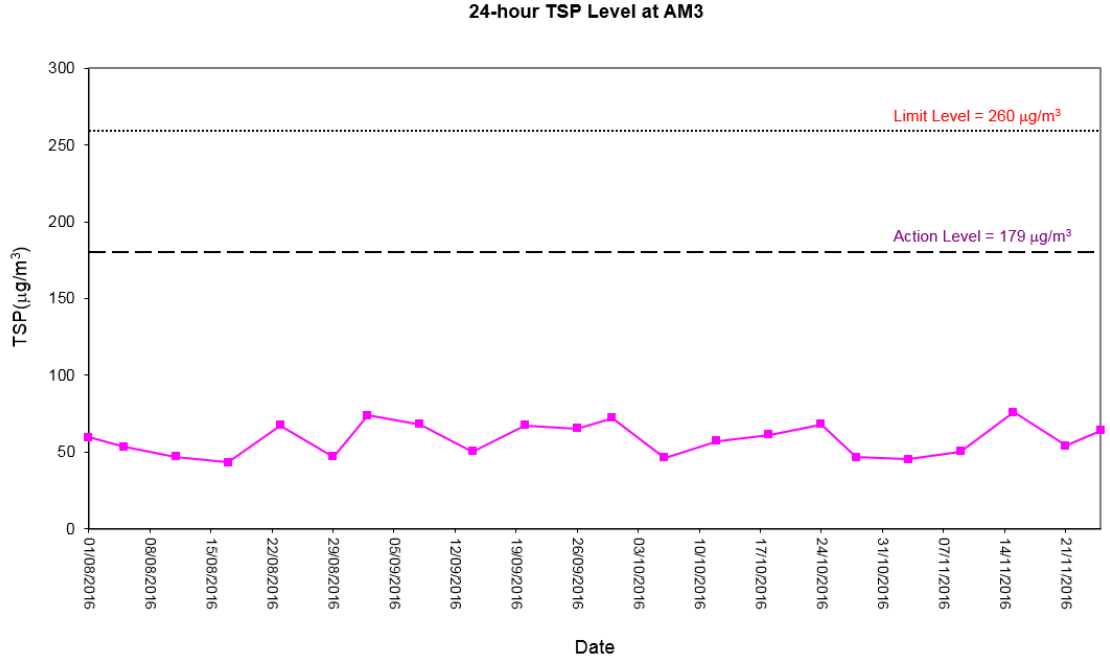


Figure G-3: Construction noise monitoring at Station NM8

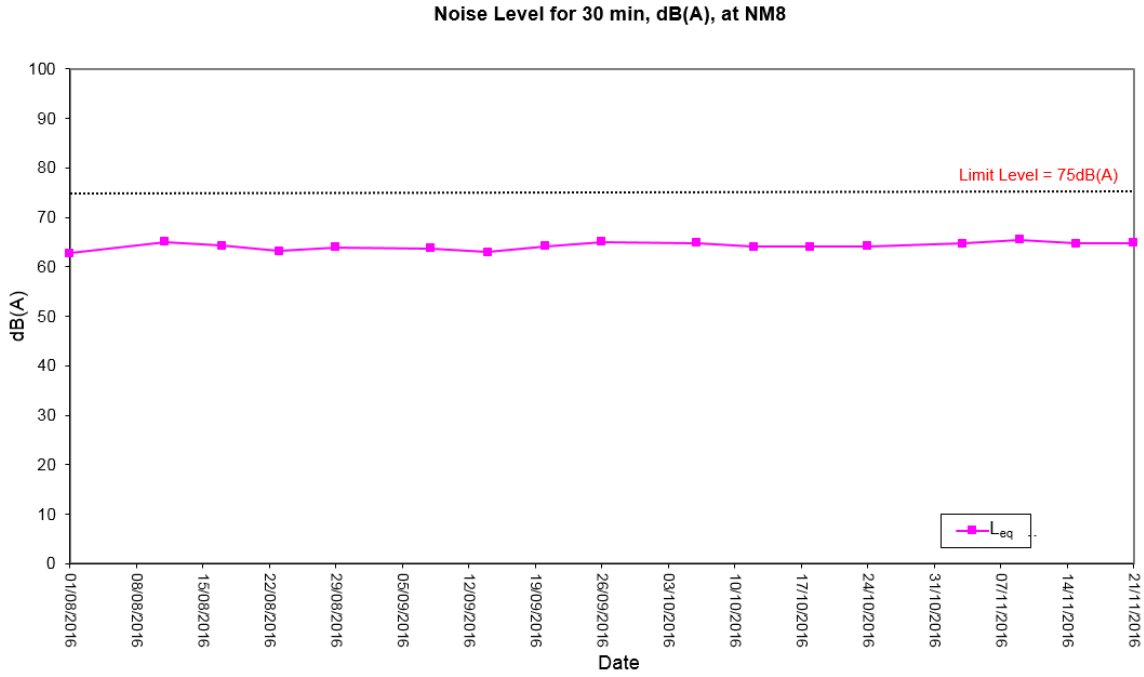
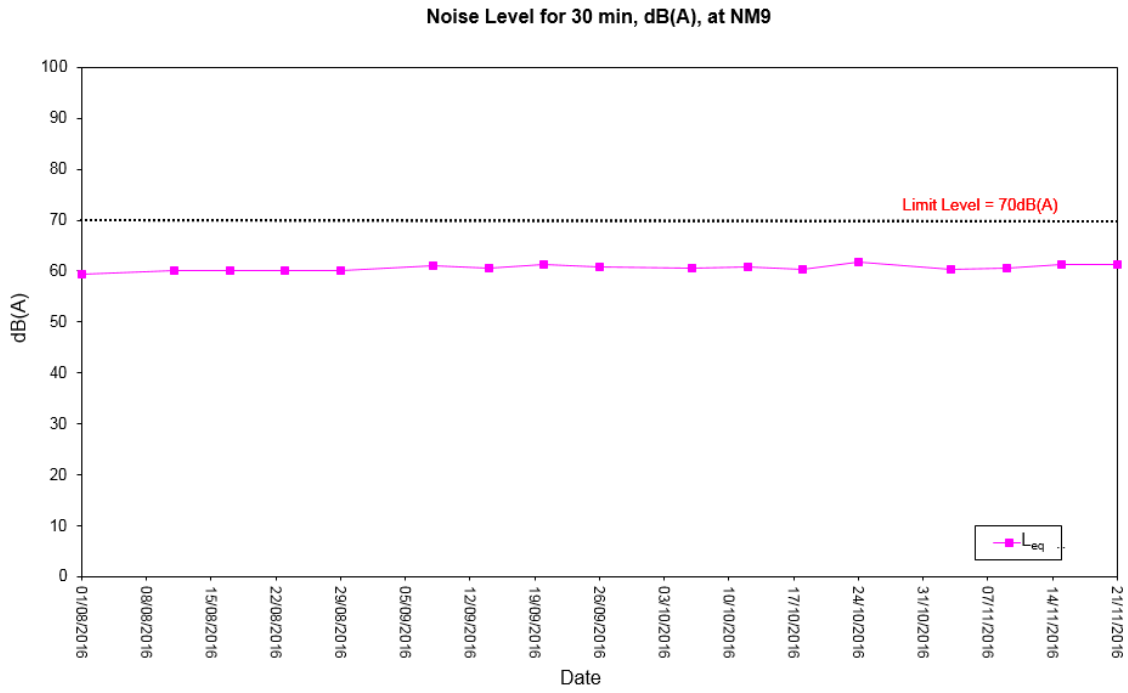
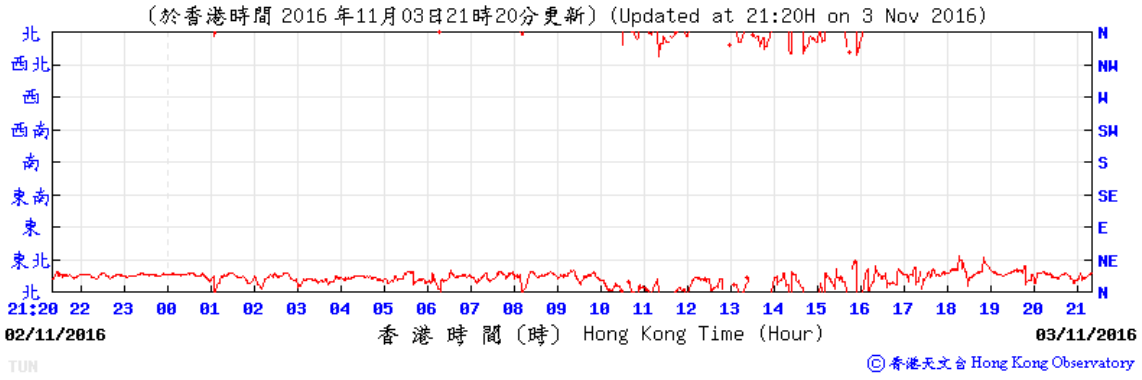


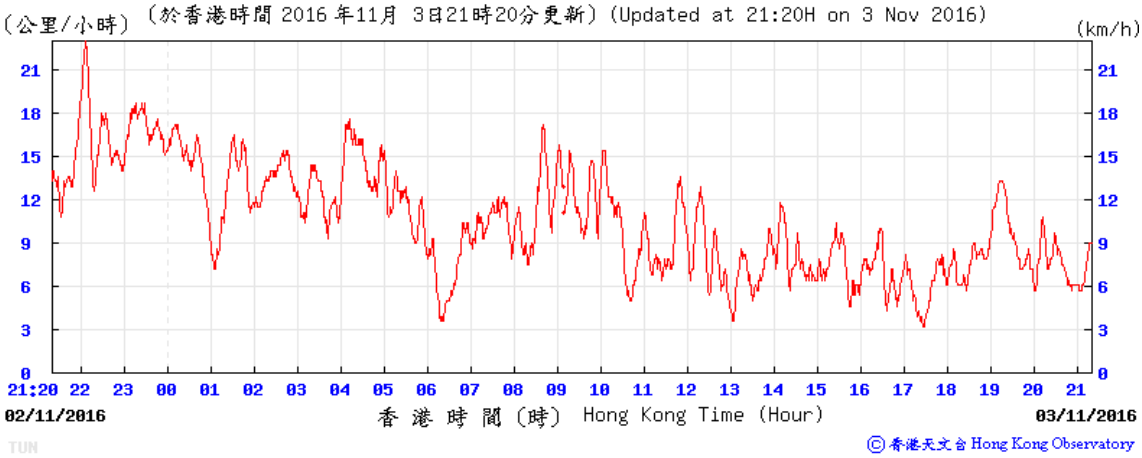
Figure G-4: Construction noise monitoring at Station NM9

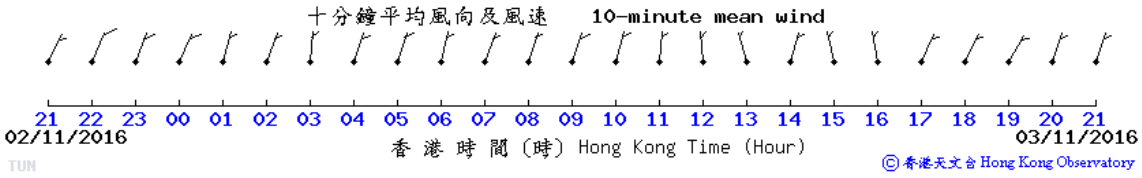


Appendix H. Wind data from Hong Kong Observatory Weather Station

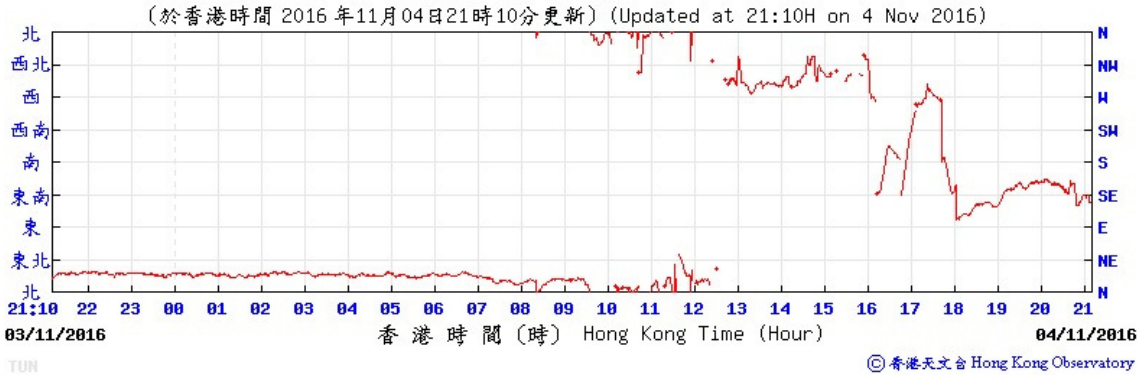
Tuen Mun – 3 November 2016

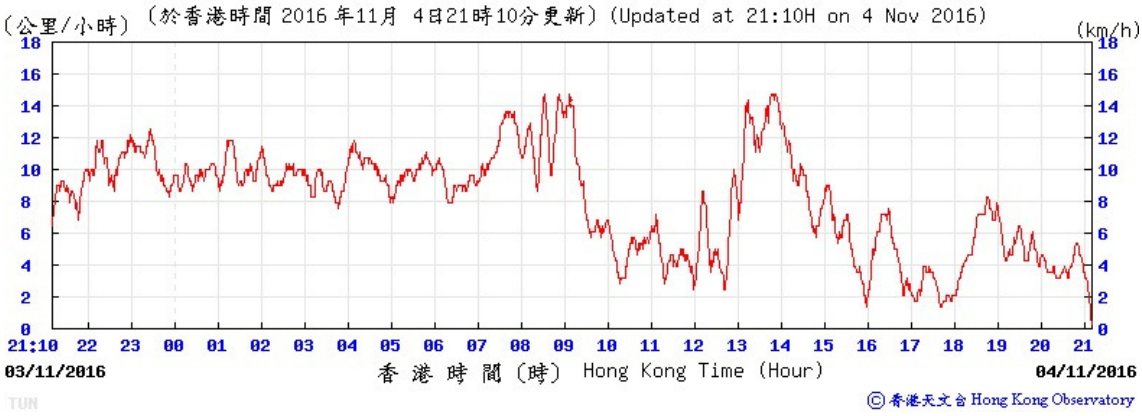


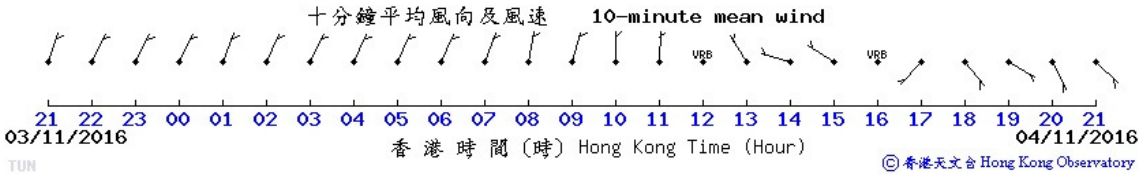




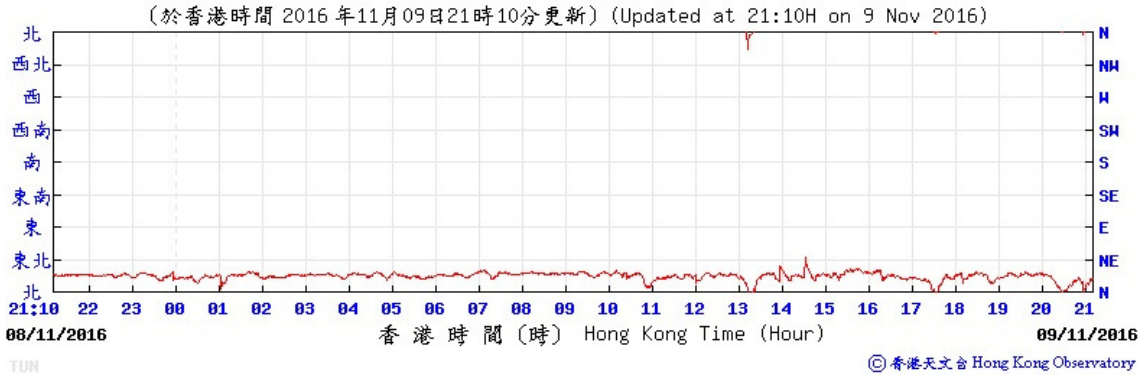
Tuen Mun – 4 November 2016

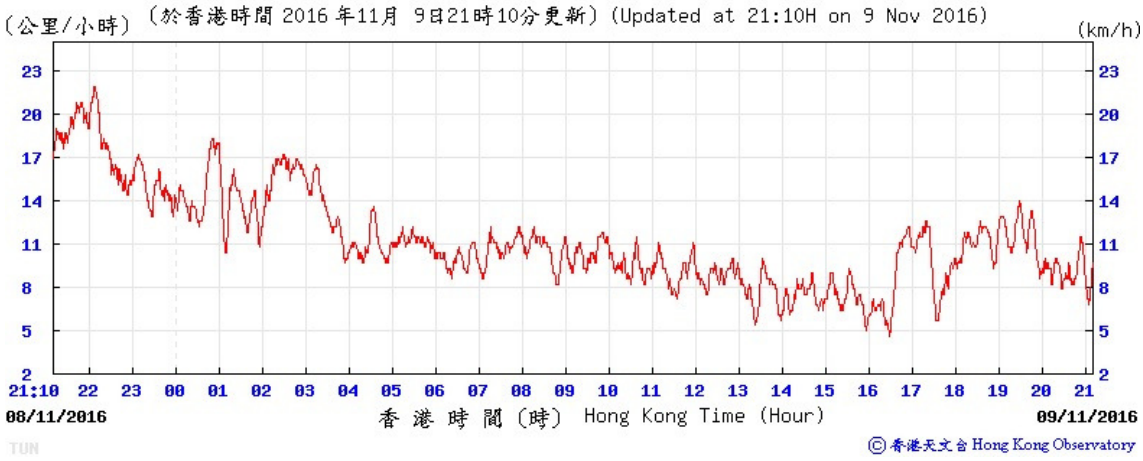


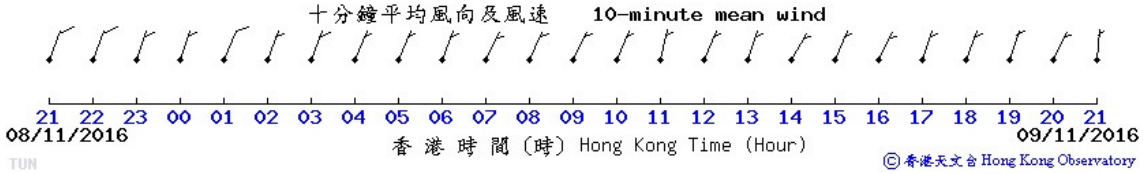




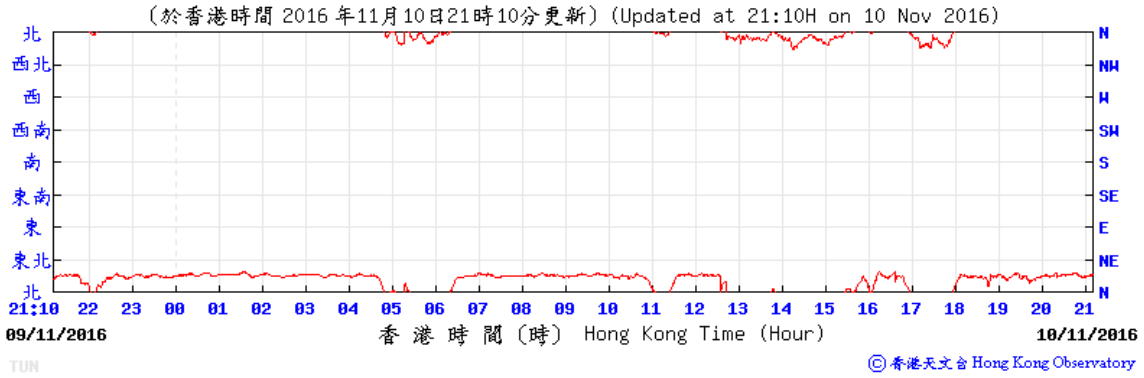
Tuen Mun – 9 November 2016

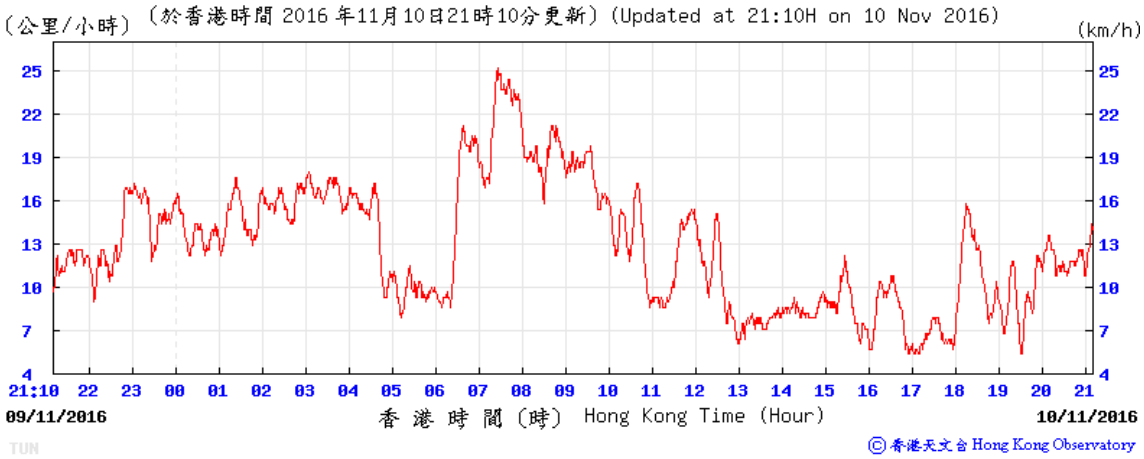


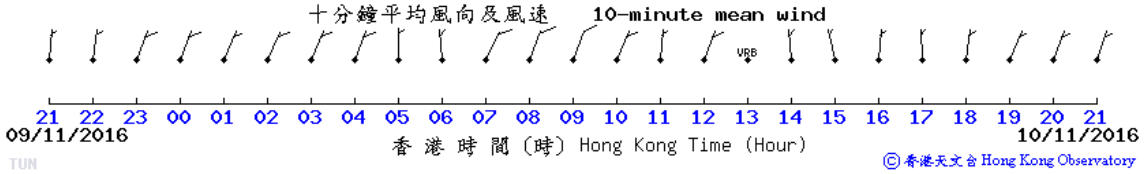




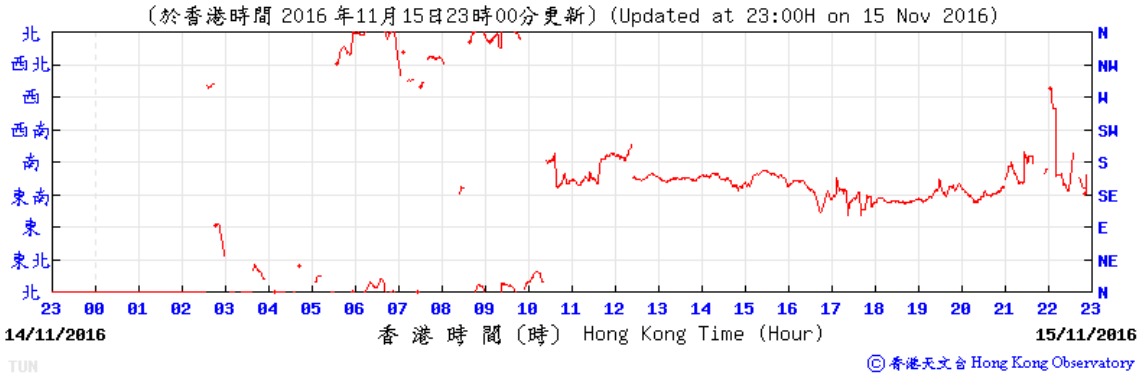
Tuen Mun – 10 November 2016

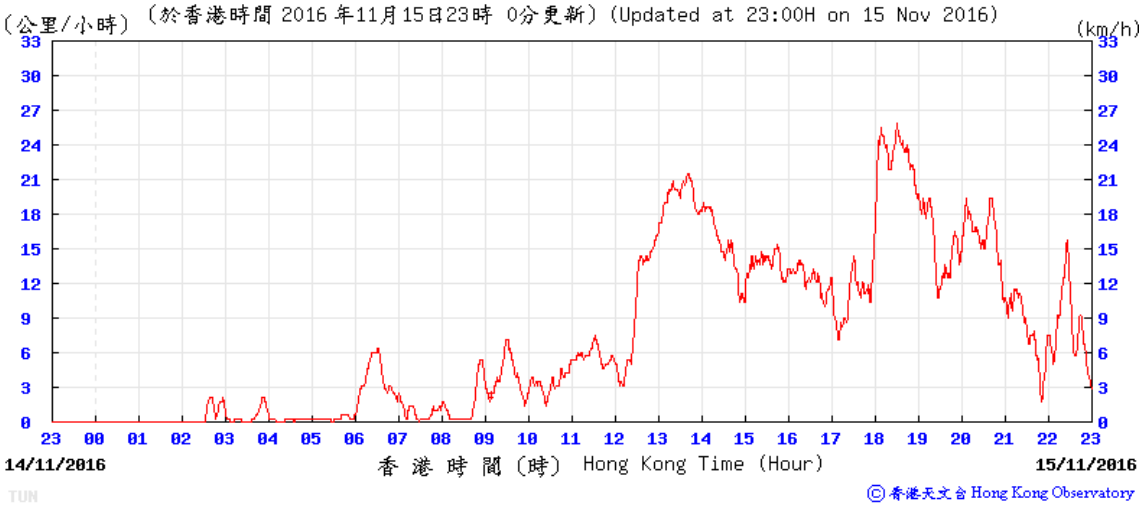


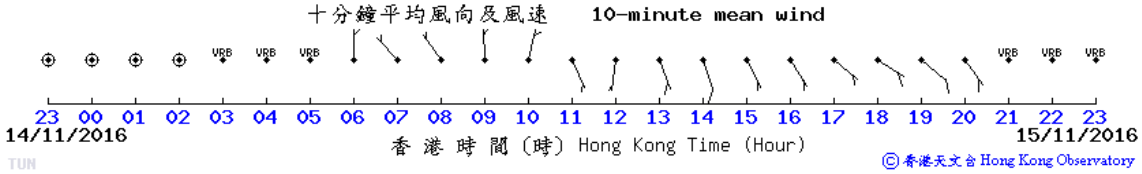




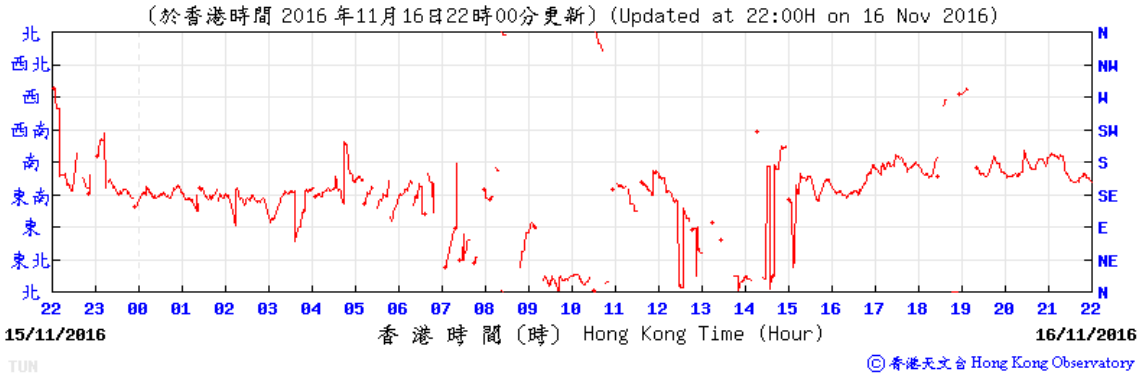
Tuen Mun – 15 November 2016

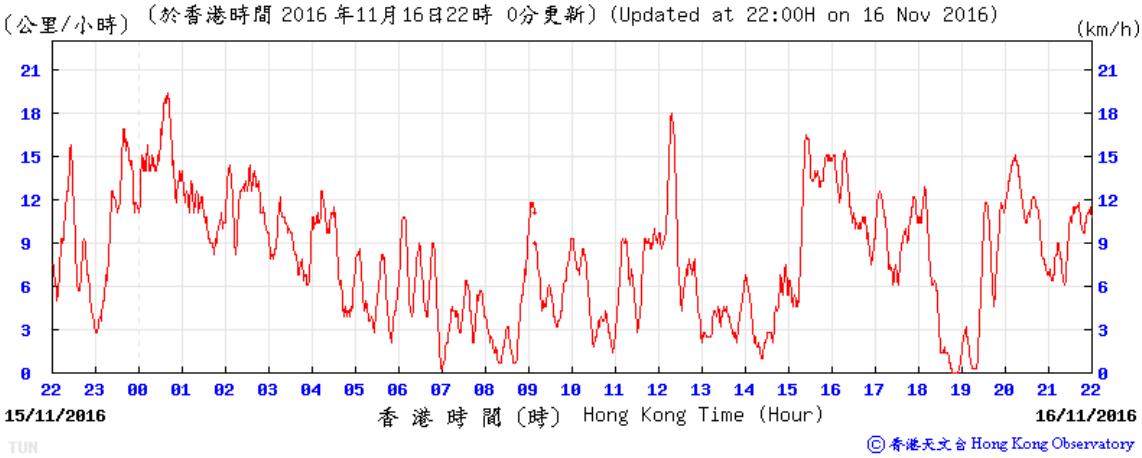


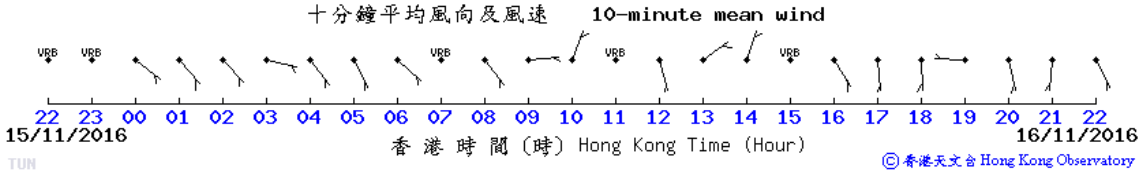




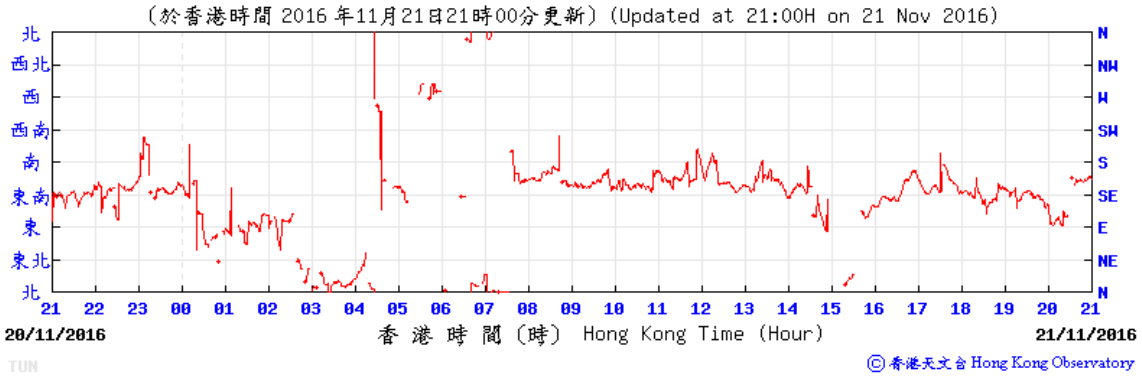
Tuen Mun – 16 November 2016

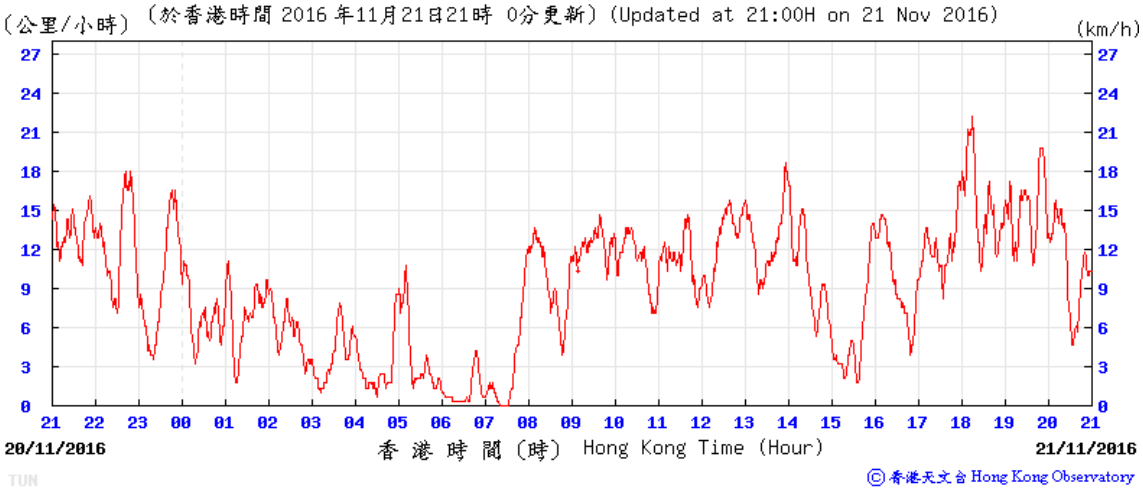


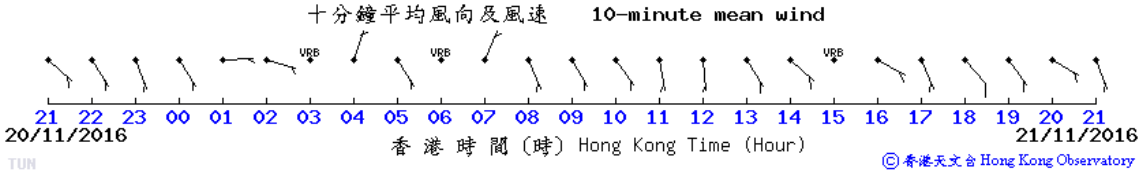




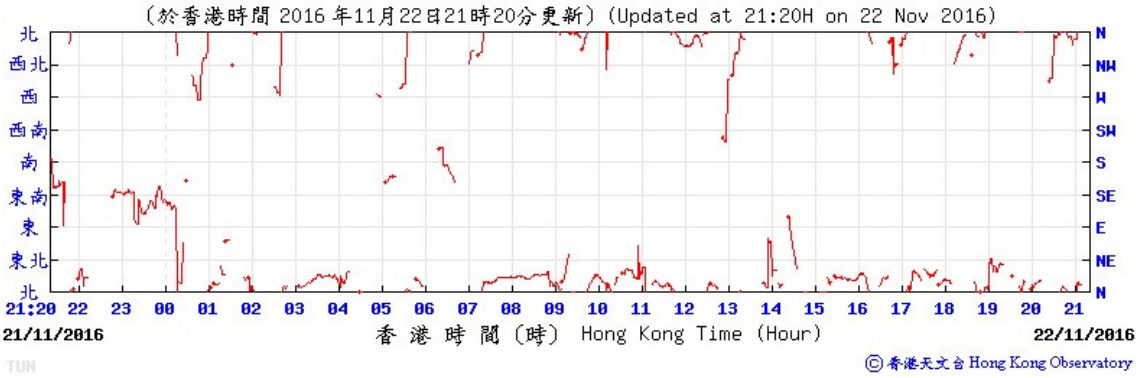
Tuen Mun – 21 November 2016

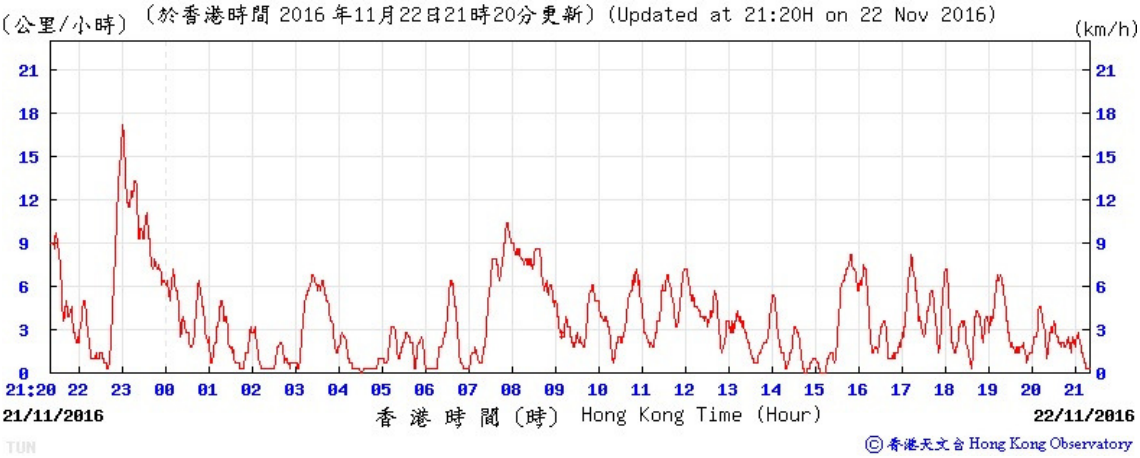


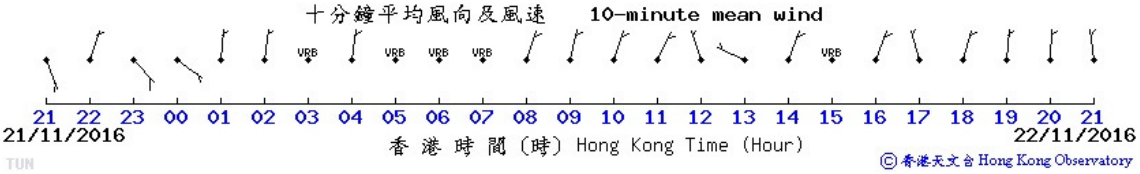




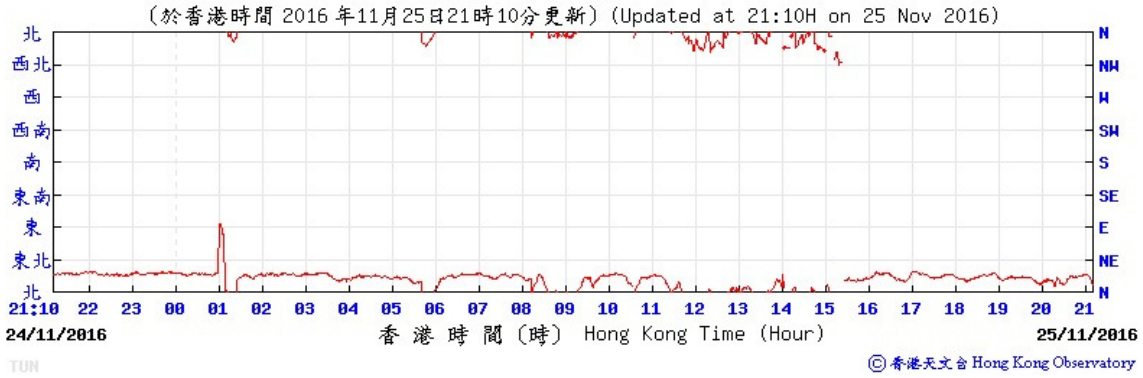
Tuen Mun – 22 November 2016

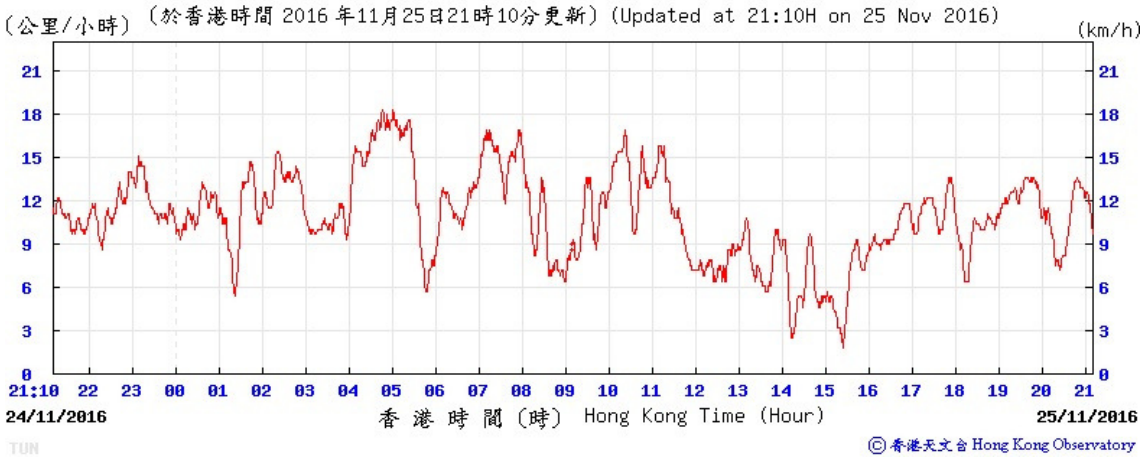


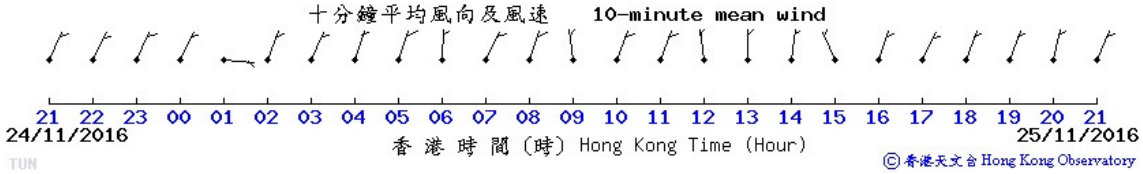




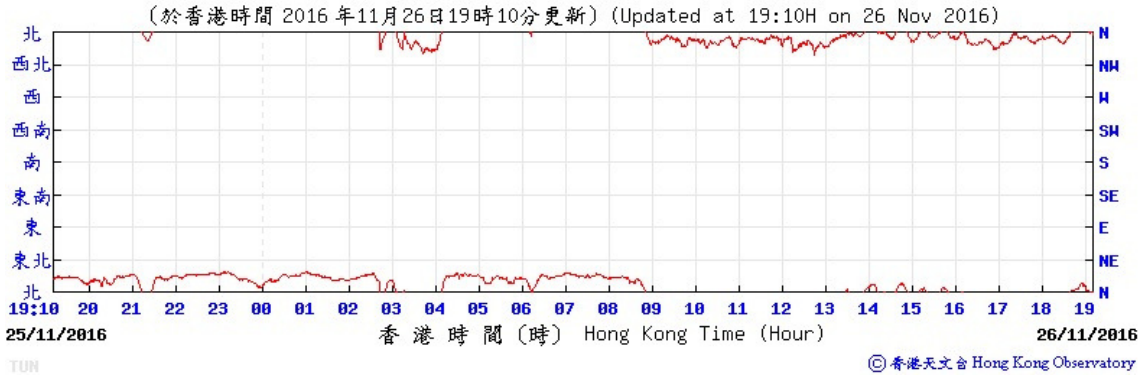
Tuen Mun – 25 November 2016

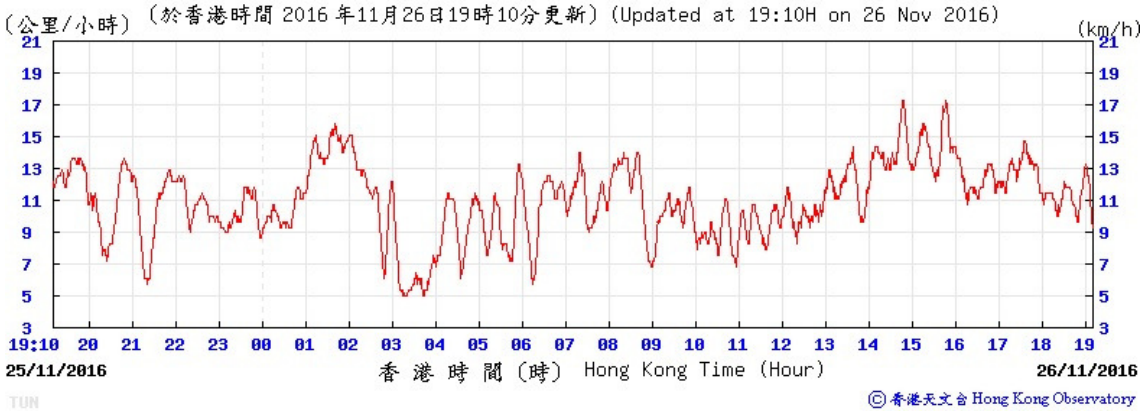


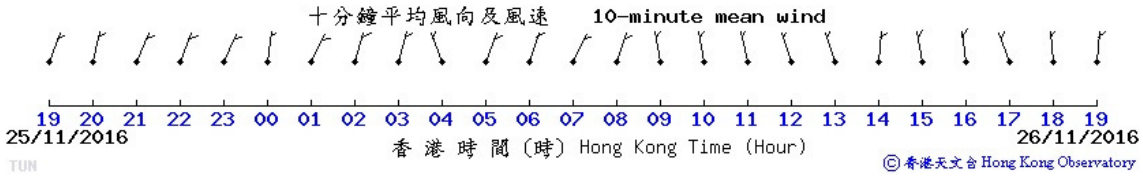




Tuen Mun – 26 November 2016







Appendix I. Waste Flow Table

Contract No.: CV/2011/01

Monthly Summary Waste Flow Table for November 2016

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	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)
Yr 2015	16.65	16.65	6.05	0	10.60	3.89	65.88	0	0	41.67	1.176
Jan	1.81	1.81	0	0	1.81	0	0	0	0	0	0.009
Feb	0.66	0.66	0	0	0.66	0	0	0	0	0	0.004
Mar	1.15	1.15	0	0	1.15	0	0	0	0	0	0.008
Apr	0.57	0.57	0	0	0.57	0	0	0	0	0	0.016
May	0.56	0.56	0	0	0.56	0	0	0	0	0	0.018
June	0.33	0.33	0	0	0.33	0	0	0	0	0	0.018
Sub-total	21.73	21.73	6.05	0	15.68	3.89	65.88	0	0	41.67	1.249
July	0.17	0.17	0	0	0.17	0	0	0	0	0	0.017
Aug	0.03	0.03	0	0	0.03	0	0	0	0	0	0.012
Sept	0.10	0.10	0	0	0.10	0	0	0	0	0.6	0.006
Oct	0.16	0.16	0	0	0.16	0	0	0	0	0	0.003
Nov	0.18	0.18	0	0	0.18	0	0	0	0	0	0.004
Dec											
Total	22.37	22.37	6.05	0	16.32	3.89	65.88	0	0	42.27	1.291

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)
22	22	7	0	15	5	80	10	5	50	5

Notes: Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material

Appendix J. Environmental Mitigation Measures – Implementation Status

Table J.1: 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.	✓
	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 J.2: 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.	✓
*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.	✓

Table J.3: 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.	✓
*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.	✓
*5.1, Table A	Sediment tanks of sufficient capacity, constructed from pre-formed individual cells of approximately 6 to 8 m^3 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	All drainage facilities and erosion and sediment control structures shall be regularly inspected and maintained to ensure proper and efficient operation at	✓

* EM&A / ^ EP ref:	Recommended measures	Implementation Status
	all times and particularly following rainstorms.	
*5.1, Table A	Measures shall be taken to minimise the ingress of any site drainage into excavations.	✓
^2.5	Water to be pumped out from trenches or foundation excavations shall be discharged into storm drains via silt removal facilities.	✓
*5.1, Table A	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	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	The bentonite, grouting and cement materials shall only be delivered to the construction site when they are to be used.	✓
*5.1, Table A	Dusty materials shall be stored in a covered warehouse and the excess amount should be removed from the site.	✓
^2.7	Construction waste, debris and rubbish shall be properly collected, handled and disposed of to avoid water quality impacts.	P
^2.8	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 J.4: Waste Management – Recommended Mitigation Measures

* EM&A / ^ EP ref:	Recommended measures	Implementation Status
*5.1, Table A	Construction solid waste, debris and rubbish on site shall be collected, handled and disposed of properly.	✓
	Handle and store wastes in a manner which ensures that they are held securely without loss or leakage, thereby minimising the potential for pollution.	P
	Use waste hauliers authorised or licensed to collect specific category of waste, e.g. chemical wastes.	✓
	Remove wastes in a timely manner.	✓
	Maintain and clean waste storage areas regularly.	✓
	Minimise windblown litter and dust during transportation by either covering trucks or transporting wastes in enclosed containers.	✓
	Obtain the necessary waste disposal permits from the appropriate authorities.	✓
	Dispose of waste at licensed waste disposal facilities.	✓
	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.	✓
	Maintain records of the quantities of wastes generated, recycled and disposed.	✓
	Surplus excavated materials shall be reused as fill material at public filling areas (PFA).	✓
	Control measures shall be taken at the stockpiling area to prevent the generation of dust and pollution of stormwater channels.	✓
	Wetting the surface of the stockpiled soil with water when necessary especially during the dry season.	✓
*5.1, Table A	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	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.	✓

* EM&A / ^ EP ref:	Recommended measures	Implementation Status
*4	Wild and uncontrolled open fires shall be strictly prohibited within the work site boundary.	✓

Table J.6: Others

* EM&A / ^ EP ref:	Recommended measures	Implementation Status
^1.5	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).	P
n/a	The required licenses should be obtained by the Contractor (including CNP (if any), WPCO license, etc.)	✓

Legend:

✓	Implemented
×	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 K.1: 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	1	0	0