



# M+ Museum Main Works at West Kowloon Cultural District

Monthly Environmental Monitoring and Audit  
(EM&A) Report for November 2015

December 2015

Hsin Chong Construction Company Limited





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Hsin Chong Center, 107-109 Wai Yip Street,  
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**This Monthly EM&A Report has been reviewed and certified by the  
Environmental Team Leader (ETL) and verified by the Independent  
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**Certified by:**



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# Executive Summary

In October 2015, Mott MacDonald Hong Kong Limited (MMHK) was commissioned by the Hsin Chong Construction Company Limited (the Contractor) to undertake the Environmental Team (ET) services (including environmental monitoring and audit (EM&A)) for the construction of M+ Museum Main Works at West Kowloon Cultural District (WKCD) (The Project) as part of the WKCD development. The Project Proponent is the West Kowloon Cultural District Authority (WKCDA). The construction works and EM&A programme commenced on 31 October 2015.

The overall works for the WKCD fall under two separate categories of Designated Project (DP) of the Environmental Impact Assessment Ordinance (EIAO), namely an “engineering feasibility study of urban development projects with a study area covering more than 20 ha or involving a total population of more than 100 000” (Item 3 of Schedule 3) and “an underpass more than 100m in length under the built areas” (Item A.9, Part I, Schedule 2). An Environmental Permit No. EP-453/2013/A (EP) was issued with respect to the “Underpass Road and Austin Road Flyover Serving the West Kowloon Cultural District” which specifically includes the abovementioned category of DP under Item A.9, Part I, Schedule 2 of the EIAO.

This Monthly EM&A Report is submitted under the approved EM&A Manual and summarises the findings on EM&A during the period from 31 October to 30 November 2015.

## **Exceedance of Action and Limit Levels**

There was no breach of Action or Limit levels for Air Quality (1-hour TSP and 24-hour TSP) in this reporting month. Noise monitoring was suspended as permission and access to the podium level of the identified noise sensitive receivers could not be granted.

## **Implementation of Mitigation Measures**

Construction phase weekly site inspections were carried out on 4, 11, 20 and 25 November 2015 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 K**.

Landscape and visual impact inspections were conducted as part of the abovementioned weekly site inspections during the reporting month. No adverse comment on landscape and visual aspects was made during these inspections.

## **Record of Complaints**

No environmental complaint was recorded in the reporting month.

## **Record of Notification of Summons and Successful Prosecutions**

No notification of summons and successful prosecution were recorded in the reporting month.



### **Future Key Issues**

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

- Site formation
- Pile Cap Construction
- Local Excavation for Pile caps
- Concrete pouring
- Excavation works for Pile
- Rebar /Earthing Installation
- Rebar Installation
- Pile cap side formworks

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

# 1 Introduction

## 1.1 Background

In October 2015, Mott MacDonald Hong Kong Limited (MMHK) was commissioned by the Hsin Chong Construction Company Limited (the Contractor) to undertake the Environmental Team (ET) services (including environmental monitoring and audit (EM&A)) for the construction of M+ Museum Main Works at West Kowloon Cultural District (WKCD) (The Project) as part of the WKCD development. The Project Proponent is the West Kowloon Cultural District Authority (WKCDA). The construction works and EM&A programme commenced on 31 October 2015.

The overall works for the WKCD fall under two separate categories of Designated Project (DP) of the Environmental Impact Assessment Ordinance (EIAO), namely an “engineering feasibility study of urban development projects with a study area covering more than 20 ha or involving a total population of more than 100 000” (Item 3 of Schedule 3) and “an underpass more than 100m in length under the built areas” (Item A.9, Part I, Schedule 2). An Environmental Permit No. EP-453/2013/A (EP) was issued with respect to the “Underpass Road and Austin Road Flyover Serving the West Kowloon Cultural District” which specifically includes the abovementioned category of DP under Item A.9, Part I, Schedule 2 of the EIAO. The captioned project (i.e. The M+ Museum Main Works at WKCD) includes part of the abovementioned underpass road located within the site boundary also falls under this same category.

The M+ museum development aims to provide an iconic presence for the M+ museum, semi-transparent vertical plane, housing education facilities, a public restaurant and museum offices. At ground and lower levels, generous access will be provided to the park and other West Kowloon Cultural District facilities, alongside a public resource centre, theatres, retail and dining, and back-of-house functions. Basement of the M+ museum, which is part of the WKCD integrated basement consists of the underpass road. This report focuses on main works for M+ museum.

The Monthly EM&A Report is prepared in accordance with the Condition 3.4 of the Environmental Permit No. EP-453/2013/A. This Monthly EM&A Report presents the monitoring works conducted from 31 October to 30 November 2015. 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 include:

- Site Formation

The Construction Works Programme of the Project is provided in **Appendix B**. A layout plan of the Project is provided in **Figure 1**. Please refer to **Table 4.2** on the status of the environmental licenses.

#### 1.4 Summary of EM&A Requirements

The EM&A programme requires environmental monitoring of air quality, noise, landscape and visual 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	AM1 - International Commerce Centre	At least once every 6 days
	1-Hour TSP	AM1 - International Commerce Centre	At least 3 times every 6 days
	24-Hour TSP	AM2 - The Harbourside Tower 1	At least once every 6 days
	1-Hour TSP	AM2 - The Harbourside Tower 1	At least 3 times every 6 days
Noise	L <sub>eq</sub> , 30 minutes	NM1- Podium level of The Harbourside Tower 1	Weekly
Landscape & Visual	Monitor implementation of proposed mitigation measures during the construction stage	As described in Table 9.1 and 9.2 of the EM&A Manual	Bi-weekly

Given that the Project covers only a small part of the whole WKCD area (i.e. M+ Museum, Lyric Theatre Complex and respective portions of underpass road), it was proposed that the EM&A programme for the Project should only require 1 noise monitoring station and 2 air quality monitoring stations located closest to the Project area. Other monitoring locations are too far away (i.e. AM3 to AM5 and NM2 to NM5) are not included in this EM&A programme until the construction of the corresponding area commences. The proposal of EM&A programme with details has been submitted to EPD on 2 December 2015 for consideration.

The Harbourside management office formally rejected our proposal of setting up air quality and noise monitoring equipment on its premises at the podium level of Tower 1 (AM2/NM1) on 10 November 2015. Alternative noise monitoring location was identified at The Arch (NM2), however The Arch management office formally rejected our proposal of setting up noise monitoring equipment on its premises on 23 November 2015. Correspondence from The Harbourside and The Arch management offices is attached in **Appendix C** for reference. Nevertheless, suitable air quality monitoring location at AM2 was identified on the ground floor in front of The Harbourside Tower 1 and noise monitoring at G/F of Harbourside will not be representative and thus NM1 will be suspended until permission and access is granted by The Harbourside management office. Therefore, 2 air quality monitoring stations were confirmed for the impact monitoring.

The Environmental Quality Performance Limits for air quality and noise are shown in **Appendix D**.

The Event and Action Plan for air quality, construction noise, landscape and visual are shown in **Appendix E**.

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 K**.

## 2 Impact Monitoring Methodology

### 2.1 Introduction

For air quality and noise, the monitoring methodology, including the monitoring locations, monitoring equipment used, monitoring parameters, and frequency and duration etc., for air quality and noise 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 F**.

For landscape and audit impact, the relevant EM&A monitoring requirements and details are also presented in this Section.

### 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

Parameter	Frequency	Duration
24-hour TSP	At least once in every six-days	24 hours
1-hour TSP	At least 3 times every six-days	60 minutes

#### 2.2.2 Monitoring Locations

The monitoring station was set up at the proposed location in accordance with updated EM&A Manual. Location of the monitoring station is given in **Table 2.2** and shown in **Figure 1**.

Table 2.2: Air Quality Monitoring Station

Monitoring Station	Location
AM1	International Commerce Centre (ICC)
AM2	The Harbourside Tower 1

#### 2.2.3 Monitoring Equipment

Continuous 24-hour TSP air quality monitoring was conducted using High Volume Sampler (HVS) (Model: TE-5170) located at the designated monitoring station. The HVS meets all the requirements stated in of the EM&A Manual. Portable direct reading dust meter was 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, calibration kit and portable dust meters are attached in **Appendix G**.

Table 2.3: TSP Monitoring Equipment

Equipment	Model
<b>24-hour TSP monitoring</b>	

Equipment	Model
High Volume Sampler	TE-5170 (Serial No.: 0767 and 8919)
Calibrator	TE-5025A (Serial No.: 0438320)
<b>1-hour TSP monitoring</b>	
Portable direct reading dust meter	Sibata LD-3B (Serial No.: 2Z6240)

Calibration of the HVS (five point calibration) using Calibration Kit was carried out every two months. The HVS calibration orifice will be calibrated annually. Calibration certificate of the TE-5025A Calibration Kit and the HVS are provided in **Appendix G**.

The 1-hour TSP monitoring should be determined periodically (e.g. annually) by the HVS to check the validity and accuracy of the results measured by direct reading method.

## 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.
- The filters used are specified to have a minimum collection efficiency of 99 percent for 0.3 µm (DOP) particles.
- 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%. All preparation of filters was done by Hong Kong Laboratory Accreditation Scheme (HOKLAS) accredited laboratory.

### 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<sup>3</sup>/min. The range specified in the EM&A Manual was between 0.6-1.7 m<sup>3</sup>/min.
- The programmable timer was set for a sampling period of 24 hours, 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 upon installation and thereafter at bi-monthly intervals. The calibration kits were calibrated annually.
- Calibration records for HVS and calibration kit are shown in **Appendix G**.

### 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:

- Turn the power on.
- Close the air collecting opening cover.
- Push the "TIME SETTING" switch to [BG].
- Push "START/STOP" switch to perform background measurement for 6 seconds.

- Turn the knob at SENSI ADJ position to insert the light scattering plate.
- Leave the equipment for 1 minute upon “SPAN CHECK” is indicated in the display.
- Push “START/STOP” switch to perform automatic sensitivity adjustment. This measurement takes 1 minute.
- Pull out the knob and return it to MEASURE position.
- Setting time period of 1 hour for the 1-hour TSP measurement.
- Push “START/STOP” to start the 1-hour TSP measurement.
- Regular checking of the time period setting to ensure monitoring time of 1 hour.

#### 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 G**.

#### Weather Condition

- Meteorological data extracted from Hong Kong Observatory for the reporting month is provided in **Appendix I**.

### 2.3 Noise

The Harbourside management office formally rejected our proposal of setting up noise monitoring equipment on its premises at the podium level of Tower 1 (NM1) on 10 November 2015. Alternative noise monitoring location was identified at The Arch (NM2), however The Arch management office formally rejected our proposal of setting up noise monitoring equipment on its premises on 23 November 2015. Since noise monitoring at G/F of Harbourside will not be representative and thus NM1 is being suspended until permission and access is granted by The Harbourside management office.

### 2.4 Landscape and Visual

#### 2.4.1 Monitoring Program

**Table 2.4** details the monitoring program (as proposed in the WKCD EIA report) for landscape and visual impact during the construction phase.

**Table 2.4: Monitoring Program for Landscape and Visual Impact during Construction Phase**

Stage	Monitoring Task	Frequency	Report	Approval
Construction	Monitor implementation of proposed mitigation measures during the construction stage.	Bi-weekly	ET to report on Contractor's compliance	Counter-signed by IEC

During the landscape and visual impact monitoring, any changes in relation to the landscape and visual amenity should be monitored with reference to the baseline conditions of the site. In addition, mitigation measures were proposed in the WKCD EIA report to minimise the landscape and visual impacts during the



construction phase. The proposed mitigation measures as shown in Table 9.1 and Table 9.2 of the EM&A Manual should be checked for proper implementation.

## 3 Monitoring Results

### 3.1 Impact Monitoring

Construction impact monitoring for air quality and landscape and visual impact was 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 AM1 and AM2 are summarised in **Table 3.1**. Graphical plots of the monitoring results are shown in **Appendix H**.

Table 3.1: Summary of 1-hour TSP monitoring results

Monitoring Station	Monitoring Date	Start Time	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )			Range ( $\mu\text{g}/\text{m}^3$ )	Action Level ( $\mu\text{g}/\text{m}^3$ )	Limit Level ( $\mu\text{g}/\text{m}^3$ )
			1st Result	2nd Result	3rd Result			
AM1	05-Nov-15	10:51	84	89	96	64-96	273.7	500
	11-Nov-15	10:42	78	70	64			
	17-Nov-15	10:40	80	85	92			
	23-Nov-15	10:38	71	64	66			
	27-Nov-15	8:00	80	87	93			
AM2	05-Nov-15	11:01	85	90	98	76-140	274.2	500
	11-Nov-15	10:52	79	87	92			
	17-Nov-15	10:50	114	131	140			
	23-Nov-15	10:50	84	76	90			
	27-Nov-15	8:12	82	89	95			

#### 3.2.2 24-hour TSP

Results of 24-hour TSP at the monitoring location AM1 and AM2 are summarised in **Table 3.2**. Graphical plots of the monitoring results are shown in **Appendix H**.

Table 3.2: Summary of 24-hour TSP monitoring results

Monitoring Station	Monitoring Date	Start Time	Monitoring Results ( $\mu\text{g}/\text{m}^3$ )	Range ( $\mu\text{g}/\text{m}^3$ )	Action Level ( $\mu\text{g}/\text{m}^3$ )	Limit Level ( $\mu\text{g}/\text{m}^3$ )
AM1	05-Nov-15	10:50	71	51-73	143.6	260
	11-Nov-15	10:40	62			
	17-Nov-15	10:42	73			
	23-Nov-15	10:40	51			
	27-Nov-15	08:02	51			
AM2	05-Nov-15	11:05	81	57-100	151.1	260
	11-Nov-15	10:55	76			

Monitoring Station	Monitoring Date	Start Time	Monitoring Results ( $\mu\text{g}/\text{m}^3$ )	Range ( $\mu\text{g}/\text{m}^3$ )	Action Level ( $\mu\text{g}/\text{m}^3$ )	Limit Level ( $\mu\text{g}/\text{m}^3$ )
	17-Nov-15	10:52	97			
	23-Nov-15	10:54	57			
	27-Nov-15	08:15	100			

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

### 3.3 Noise Monitoring

The noise impact monitoring is being suspended until permission and access is granted by The Harbourside management office. Please refer to **Section 2.3** for details.

### 3.4 Landscape and Visual Impact

Landscape and visual impact inspections were conducted as part of the weekly site inspections on 4 and 20 November 2015 during the reporting month. No adverse comment on landscape and visual aspects was made during these inspections.

The landscape and visual mitigation measures were implemented during the reporting period. The summary of implementation status of the environmental mitigation measures are provided in **Appendix K**.

## 4 Environmental Site Inspection

### 4.1 Site Inspection

Construction phase weekly site inspections were carried out on 4, 11, 20 and 25 November 2015. The joint site inspection with IEC, ET, ER and Contractor was held on 20 November 2015. No site inspection was conducted by the EPD during the reporting month. No non-compliance was recorded during the site inspection. 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 the site inspections and associated recommendations are summarized in **Table 4.1**.

Table 4.1: Summary of Site Inspections and Recommendations

Inspection Date	Parameter	Observation / Recommendation	Contractor's Responses / Action(s) Undertaken	Close-out (Date)
4 Nov 2015	Waste management	The contractor was reminded to provide a chemical waste storage area in site area.	A chemical waste storage area in site area was provided.	20 Nov 2015
11 Nov 2015	Water quality	The contractor was reminded to remove stagnant water in site area.	Stagnant water was removed	12 Nov 2015
20 Nov 2015	Air quality	The contractor was reminded to ensure cement mixing area is properly covered to prevent dust impact.	Follow-up status will be provided in the next reporting month.	On-going
20 Nov 2015	Waste management	The contractor was reminded to move the chemicals off the site or provide mitigation measures to ensure no leakage, e.g. drip trays, etc.	The contractor is arranging to move the chemicals off site. (in-progress) Follow-up status will be provided in the next reporting month.	On-going

### 4.2 Advice on the Solid and Liquid Waste Management Status

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

As advised by the Contractor, 11,454.97 ton and 26,912.45 ton of inert C&D material were disposed of as public fill to Tuen Mun Area 38 and Tseung Kwan O Area 137 respectively, while 67.6 ton of general refuse was disposed of at SENT landfill. 76.2 ton of metals and 0 ton of timber were collected by recycling contractors in the reporting month. 0 ton of inert C&D materials was reused on site. 8,240 ton of inert C&D materials was reused in other projects. 0 ton of chemical wastes was collected by licensed contractors in the reporting period.

The actual amounts of different types of waste generated by the activities of the Project in the reporting month are shown in **Appendix J**.

### 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 are summarised in **Table 4.2**.

Table 4.2: Status of Environmental Submissions, Licenses and Permits

Permit / License No. / Notification / Reference No.	Valid Period		Status	Remarks
	From	To		
Chemical Waste Producer Registration				
5213-217-H2913-45	05-Nov-15	--	Valid	--
Billing Account Construction Waste Disposal				
7023393	13-Oct-15	--	Account Active	--
Construction Noise Permit				
GW-RE1055-15	19-Oct-15	18-Apr-16	Valid	--
Wastewater Discharge License				
WT00022693-2015	12-Nov-15	30-Nov-20	Valid	--

### 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 K**. In particular, the following mitigation measures were brought to attention during the site inspections:

#### Chemical and Waste Management

- All chemicals store on site should be provided with drip trays.
- All chemicals should be provided with chemical labels.
- Chemical waste storage should be securely closed.

#### Air

- Regular watering with complete coverage shall be implemented to reduce the overall dust emission of the construction site.

## 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 monitoring in the reporting month.

### 5.2 Record on Environmental Complaints Received

No environmental complaint was received this month. The cumulative statistics on complaints were provided in **Appendix L**.

### 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 L**.

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

As no notifications of summons or successful prosecution were received, the associated review was not required.

### 5.5 Follow-up Actions Taken

As no notifications of summons or successful prosecution were received, the associated follow-up actions were not required.

## 6 Future Key Issues

### 6.1 Construction Works for the Coming Month(s)

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

- Site formation
- Pile Cap Construction
- Local Excavation for Pile caps
- Concrete pouring
- Excavation works for Pile
- Rebar /Earthing Installation
- Rebar Installation
- Pile cap side formworks

### 6.2 Key Issues for the Coming Month

Key issues to be considered in the coming month include:

- Generation of dust from construction 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

The environmental site inspection and environmental monitoring will be continued in the coming month. Impact monitoring for air quality in accordance with the approved EM&A Manual has commenced since 31 October 2015. The noise impact monitoring is being suspended until permission and access is granted by The Harbourside management office. Please refer to Section 2.3 for details. The tentative monitoring schedule for the coming month is shown in the **Appendix F**.

# 7 Conclusions and Recommendations

## 7.1 Conclusions

The EM&A programme as recommended in the EM&A Manual has been undertaken since the construction works commenced on 31 October 2015.

Monitoring of air quality with respect to the Project is underway. In particular, the 1-hour TSP, 24-hour TSP under monitoring have been checked against established Action and Limit levels. There was no breach of Action and Limit Levels for 1-hour TSP, 24-hour TSP in the reporting month. Noise monitoring was suspended as the permission and access at podium of the identified noise sensitive receiver could not be granted.

No environmental complaint and no notifications of summons or successful prosecution were received during the reporting month.

Weekly construction phase site inspections and bi-weekly landscape and visual impact inspections were conducted during the reporting month as required. It was observed that the Contractor had implemented all possible and feasible mitigation measures to mitigate the potential environmental impacts during construction phase works.

## 7.2 Recommendations

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



# Figure 1 Site Layout Plan and Monitoring Stations



# Appendices

- Appendix A. Project Organisation
- Appendix B. Tentative Construction Programme
- Appendix C. Correspondence from The Harbourside and The Arch management offices
- Appendix D. Action and Limit Levels for Construction Phase
- Appendix E. Event and Action Plan for Air Quality, Noise, Landscape and Visual Impact
- Appendix F. Monitoring Schedule
- Appendix G. Calibration Certifications
- Appendix H. Graphical Plots of the Monitoring Results
- Appendix I. Meteorological Data Extracted from Hong Kong Observatory
- Appendix J. Waste Flow table
- Appendix K. Environmental Mitigation Measures – Implementation Status
- Appendix L. Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions

## Appendix A. Project Organisation

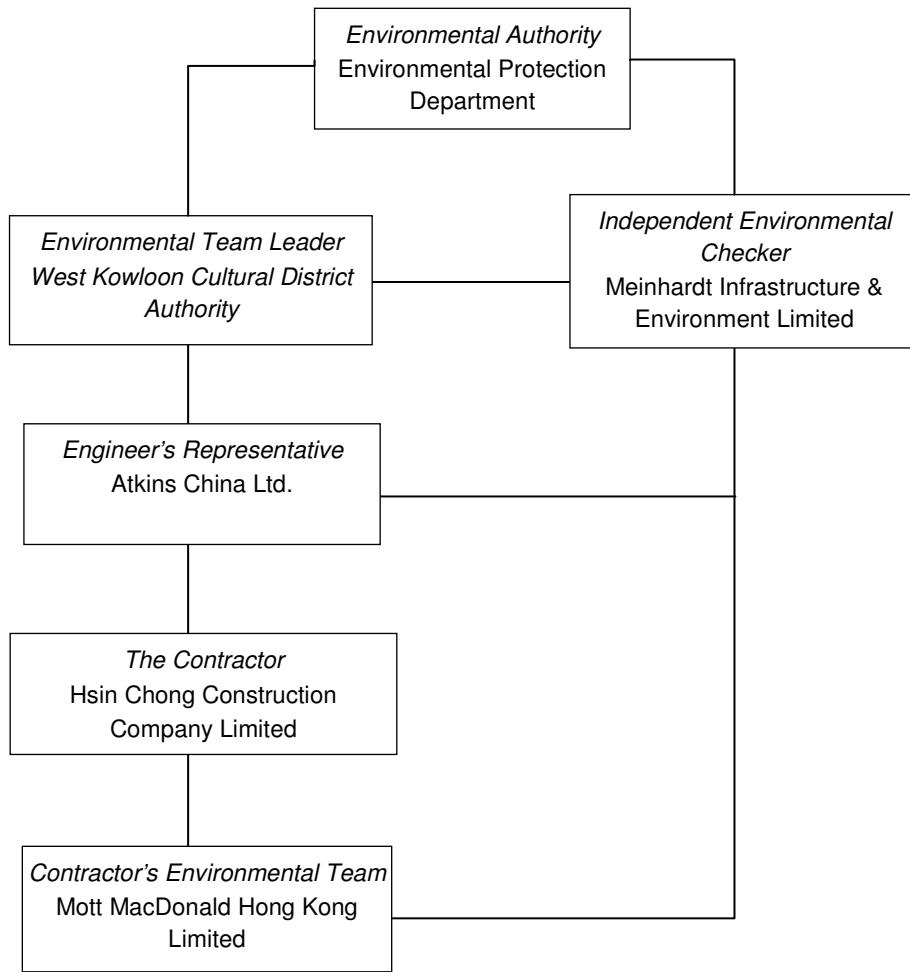


Table B-1: Contact information

Company Name	Role	Name	Telephone
Atkins China Ltd.	Senior Resident Engineer	Mr. Alfred Lee	5401 7289
Meinhardt Infrastructure & Environment Limited	IEC	Mr. Fredrick Leong	2859 1739
Hsin Chong Construction Company Limited	Environmental Officer	Mr. Andy Leung	9489 0035
Mott MacDonald Hong Kong Ltd.	Contractor's Environmental Team Leader	Mr Brandon Wong	2828 5875
West kowloon Cultural District Authority	Senior Environmental Specialist	Mr. Brian Tam	2200 0059

## Appendix B. Tentative Construction Programme











Activity ID	Activity Name	BL Project Duration	BL Project Start	BL Project Finish	Original Duration	Start	Finish	% Complete	Remarks	Gantt Chart									
										November		December			January		February		March
										08	15	22	29	06	13	20	27	03	10
3MCB.S005	Concrete pouring	1	25-Jan-16	26-Jan-16	1	23-Feb-16	24-Feb-16	0%	1 mass pour Plan in advance	Concrete pouring									
<b>DCS Structure</b>																			
3MCB.D000	Dewatering Commence	0	27-Oct-15	26-Jan-16	0	28-Nov-15	27-Feb-16	0%		Dewatering Commence, Dewatering Commence									
3MCB.D001	Excavate to +4.85mPD	2	09-Nov-15	11-Nov-15	3	05-Dec-15	08-Dec-15	0%	Awaiting for ELS Stage 2 consent approval	Excavate to +4.85mPD									
3MCB.D002	Excavate to +3.7mPD	12	11-Nov-15	25-Nov-15	12	08-Dec-15	23-Dec-15	0%	+ allowance of excavation between struts	Excavate to +3.7mPD									
3MCB.D003	Install 1st Layer Struts at +4.2mPD	13	25-Nov-15	10-Dec-15	13	23-Dec-15	11-Jan-16	0%		Install 1st Layer Struts at +4.2mPD									
3MCB.D004	Excavate to 1.95mPD (-2664 m3)	19	10-Dec-15	05-Jan-16	20	11-Jan-16	03-Feb-16	0%	+ allowance of excavation between struts	Excavate to 1.95mPD (-2664 m3)									
3MCB.D005	Excavate to -0.5mPD (-2664 m3)	18	06-Jan-16	26-Jan-16	18	03-Feb-16	27-Feb-16	0%	IAS - DCS basement exc to complete by 31 Jan 16	Excavate to -0.5mPD (-2664 m3)									
<b>Tower Crane No 3</b>																			
3MCB.T002	Position Sign-off for TC3	1	29-Oct-15	30-Oct-15	1	28-Nov-15	28-Nov-15	0%		Position Sign-off for TC3									
3MCB.T003	Design submission and approval	10	29-Oct-15	10-Nov-15	10	30-Nov-15	10-Dec-15	0%		Design submission and approval									
3MCB.T004	Mobilization & procurement	15	10-Nov-15	27-Nov-15	15	11-Dec-15	31-Dec-15	0%		Mobilization & procurement									
3MCB.T006	Excavate to reduce level +2.45mPD	2	27-Nov-15	30-Nov-15	2	02-Jan-16	04-Jan-16	0%		Excavate to reduce level +2.45mPD									
3MCB.T007	Excavate battered slope	3	30-Nov-15	03-Dec-15	3	05-Jan-16	07-Jan-16	0%		Excavate battered slope									
3MCB.T008	Excavation for TC3 Base	3	03-Dec-15	07-Dec-15	3	08-Jan-16	11-Jan-16	0%		Excavation for TC3 Base									
3MCB.T009	Construction of Pile Caps for TC3 Base	19	07-Dec-15	02-Jan-16	19	12-Jan-16	03-Feb-16	0%		Construction of Pile Caps for TC3 Base									
<b>Interfacing Works</b>																			
<b>#6 - Work Sequence Along Interface south of AEL</b>																			
<b>Pile Cap 95</b>																			
3MCB.I001	Excavate to Reduce levels +3.9mPD	1	26-Jan-16	27-Jan-16	1	24-Feb-16	25-Feb-16	0%		Excavate to Reduce levels +3.9mPD									
3MCB.I002	Battered Slope	1	27-Jan-16	28-Jan-16	1	25-Feb-16	26-Feb-16	0%		Battered Slope									
<b>Pile Cap 100</b>																			
3MCB.I031	Excavate to Reduce levels +0.7mPD	1	28-Jan-16	29-Jan-16	1	26-Feb-16	27-Feb-16	0%		Excavate to Reduce levels +0.7mPD									
<b>#29 - Construction of Sewage pumping station interface with PIW</b>																			
3MCB.I340	Access Portions M5, M6, M7, M11, M26, M30, M32 and M33 after completion of ICP and SPS foundations by other	0			0	22-Jan-16*		0%		Access Portions M5, M6, M7, M11, M26, M30, M32									
<b>#19 - DN375 sewer from M+ to Austin Road West, Via Lyric Site adj to CLP station</b>																			
3MCB.I300	Excavate trench	0			3	28-Nov-15	01-Dec-15	0%		Excavate trench									
3MCB.I310	Construct the DN375 sewer from external face of the M+ sheet pile in Portion M12	0			10	02-Dec-15	12-Dec-15	0%		Construct the DN375 sewer from external face of the M+ sheet pile in Portion M12									
3MCB.I320	Construct Manhole F1.3B and F1.3C	0			10	14-Dec-15	28-Dec-15	0%		Construct Manhole F1.3B and F1.3C									
3MCB.I330	Backfill to adjacent ground levels	0			3	29-Dec-15	31-Dec-15	0%	IAS - to be vacated by 31 Dec 15	Backfill to adjacent ground levels									
<b>M+ Site Offices</b>																			
<b>M+ Site Offices</b>																			
<b>Stage 1</b>																			
<b>Existing Container Offices - Area M10</b>																			
SO015	Existing Container Offices to be relocated to Area M66	48	01-Oct-15	17-Nov-15	48	28-Nov-15 A	28-Nov-15 A	100%		Existing Container Offices to be relocated to Area M66									
SO018	Relocate Existing Container Offices from Area M10 to Area M66	16	16-Nov-15	04-Dec-15	16	16-Nov-15 A	20-Nov-15 A	100%		Relocate Existing Container Offices from Area M10 to Area M66									
<b>Stage 2</b>																			
<b>Temporary Container Offices - Area M66</b>																			
SO060	Access / Egress - Area M66	0			0	16-Nov-15 A	04-Dec-15	100%		Access / Egress - Area M66, Access / Egress - Area M66									
SO065	Set up Containers from M10 to M66	16	16-Nov-15	04-Dec-15	16	16-Nov-15 A	04-Dec-15	65%		Set up Containers from M10 to M66									
<b>Clocken Flap Event</b>																			
SO080	Setup for 5m wide Strip for Clocken Flap Portaloo	9	16-Nov-15	26-Nov-15	9	16-Nov-15 A	26-Nov-15 A	100%		Setup for 5m wide Strip for Clocken Flap Portaloo									
SO095	Clocken flap	3	27-Nov-15	29-Nov-15	3	27-Nov-15 A	29-Nov-15	50%		Clocken flap									
SO105	Demobilize Toilet	0			5	30-Nov-15	04-Dec-15	0%		Demobilize Toilet									
<b>Stage 3</b>																			
<b>Contractor's Site Office - Area M10 (1000m2)</b>																			
S0021	Start clearing and setting up of Contractor's Office at Area M10	0	05-Dec-15	30-Jan-16	0	05-Dec-15	30-Jan-16	0%		Start clearing and setting up of Contractor's Office at Area M10. Start clearing and setting up of Cont									
S0031	Site Construction / Setup 1000m2 / 100nr person Office with 2 Levels	0			45	05-Dec-15	30-Jan-16	0%		Site Construction / Setup- 1000m2 = 100 Nr of Person (2 Floors)									
S0035	Site Construction / Setup- 1000m2 = 100 Nr of Person (2 Floors)	44	05-Dec-15	30-Jan-16	44	05-Dec-15	30-Jan-16	0%		Site Construction / Setup- 1000m2 = 100 N									
S0045	Start Occupancy	0	30-Jan-16	30-Jan-16	0	30-Jan-16	30-Jan-16	0%		Start Occupancy, Start Occupancy									
<b>ASIO - Area L22 &amp; L23 (3660 m2)</b>																			
SO000	Prepare submission to BD & FSD	20	09-Nov-15	02-Dec-15	20	28-Nov-15 A	28-Nov-15	100%		Prepare submission to BD & FSD									
SO10	CAI - Design / Approvals	0			2	28-Nov-15	30-Nov-15	0%		CAI - Design / Approvals									
SO20	FSD / Liaise / Approvals	0			25	01-Dec-15	31-Dec-15	0%		FSD / Liaise / Approvals									



**M+ 3 Months Rolling Programme (3MRP)**  
Revision C Ver 3 (Draft)

M+3 Months Rolling Programme			
Date	Revision	Checked	Approved
20-Nov-15	Status Update_008	Edgar Payos	Leo Harnett
27-Nov-15	Rev C (Draft)	Edgar Payos	Leo Harnett

## Appendix C. Correspondence from The Harbourside and The Arch management offices

Your ref: JEP/EC/TK/bw/T363512/22/0/L0002

Our ref: HBS/I1.3/2015/1243

Date: 10 November 2015

**Mott MacDonald Hong Kong Limited**

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

**Attention: Mr. Eric Ching**

By Post & Fax 2827 1823

Dear Mr. Ching,

**Re: West Kowloon Cultural District**

**M+ Museum for Visual Culture (Main Contract Works)**

**Environmental Team Consultancy Services**

**Setting Up of Construction Air and Noise Monitoring Station**

We refer to your letter dated 2 November 2015 regarding the setting up of construction air and noise monitoring station for West Kowloon Cultural District works.

According to the previous practice which advised by the representatives of owners of The Harbourside, we are not able to facilitate the related system setting up for air and noise monitoring at The Harbourside.

Should you have any enquiries, please feel free to contact me at 3122-7500.

Yours sincerely,



Deon Chui  
Property Manager  
/BOH

Ref: ARC-R1.2-2015-1033

23 November 2015

**Mr. Eric Ching**  
Mott MacDonald Hong Kong Limited  
20/F, AIA Kowloon Tower,  
Landmark East, 100 How Ming Street,  
Kwun Tong, Kowloon,  
Hong Kong

Dear Mr. Ching,

**Re: West Kowloon Cultural District  
M+ Museum for Visual Culture (Main Contract Works)  
Environmental Team Consultancy Services  
Setting Up of Construction Noise Monitoring Station**

We refer to your letter dated 2 November 2015 and the phone conversation with our Mr. Tony Ng on 13 November 2015 regarding the set up of construction noise monitoring station for West Kowloon Cultural District works.

We regret that the construction noise monitoring station is not allowed to set up in the area of The Arch.

Should you have any enquiries, please feel free to contact our Assistant Property Manager Mr. Tony Ng on 3516 3111.

Yours sincerely,



Kevin Chan  
Property Manager  
The Arch

KEC/TON/  


## Appendix D. 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 D-1: Action and Limit Levels for 1-hour TSP

Monitoring Station	Action Level ( $\mu\text{g}/\text{m}^3$ )	Limit Level ( $\mu\text{g}/\text{m}^3$ )
AM1	273.7	500
AM2	274.2	500

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

Monitoring Station	Action Level ( $\mu\text{g}/\text{m}^3$ )	Limit Level ( $\mu\text{g}/\text{m}^3$ )
AM1	143.6	260
AM2	151.1	260

## **Noise**

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

Table D-3: Action and Limit Levels for Construction Noise

Time Period & Monitoring Locations	Action Level	Limit Level
NM1		
0700-1900 hours on normal weekdays	When one documented complaint is received from any one of the sensitive receivers	75 dB(A)



## Appendix E. Event and Action Plan for Air Quality, Noise, Landscape and Visual Impact

## Air Quality

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

Table E-1: Event and Action Plan for Air Quality

Event	Action			
	ET	IEC	WKCDA	Contractor
<b>Action Level</b>				
1. Exceedance for one sample	<ol style="list-style-type: none"> <li>1. Identify source, investigate the causes of exceedance and propose remedial measures;</li> <li>2. Inform IEC and WKCDA;</li> <li>3. Repeat measurement to confirm finding;</li> <li>4. Increase monitoring frequency to daily.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check Contractor's working method.</li> </ol>	<ol style="list-style-type: none"> <li>1. Notify Contractor</li> </ol>	<ol style="list-style-type: none"> <li>1. Rectify any unacceptable practice;</li> <li>2. Amend working methods if appropriate.</li> </ol>
2. Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> <li>1. Identify source;</li> <li>2. Inform IEC and WKCDA;</li> <li>3. Advise the WKCDA on the effectiveness of the proposed remedial measures;</li> <li>4. Repeat measurements to confirm findings;</li> <li>5. Increase monitoring frequency to daily;</li> <li>6. Discuss with IEC and Contractor on remedial actions required;</li> <li>7. If exceedance continues, arrange meeting with IEC and WKCDA;</li> <li>8. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check Contractor's working method;</li> <li>3. Discuss with ET and Contractor on possible remedial measures;</li> <li>4. Advise the ET on the effectiveness of the proposed remedial measures;</li> <li>5. Monitor the implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Notify Contractor;</li> <li>3. Ensure remedial measures properly implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Submit proposals for remedial to WKCDA within three working days of notification;</li> <li>2. Implement the agreed proposals;</li> <li>3. Amend proposal if appropriate.</li> </ol>
<b>Limit Level</b>				
1. Exceedance for one sample	<ol style="list-style-type: none"> <li>1. Identify source, investigate the causes of exceedance and propose remedial measures;</li> <li>2. Inform WKCDA, Contractor and EPD;</li> <li>3. Repeat measurement to confirm finding;</li> <li>4. Increase monitoring frequency to daily;</li> <li>5. Assess effectiveness of Contractor's remedial</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check Contractor's working method;</li> <li>3. Discuss with ET and Contractor on possible remedial measures;</li> <li>4. Advise the WKCDA on the effectiveness of the proposed remedial measures;</li> <li>5. Monitor the implementation of</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Notify Contractor;</li> <li>3. Ensure remedial measures properly implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance;</li> <li>2. Submit proposals for remedial actions to IEC within three working days of notification;</li> <li>3. Implement the agreed proposals;</li> <li>4. Amend proposal if appropriate.</li> </ol>

Event	Action			
	ET	IEC	WKCDA	Contractor
	actions and keep IEC, EPD and WKCDA informed of the results.	remedial measures.		
2. Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> <li>1. Notify IEC, WKCDA, Contractor and EPD;</li> <li>2. Identify source;</li> <li>3. Repeat measurement to confirm findings;</li> <li>4. Increase monitoring frequency to daily;</li> <li>5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented;</li> <li>6. Arrange meeting with IEC and WKCDA to discuss the remedial actions to be taken;</li> <li>7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and WKCDA informed of the results;</li> <li>8. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check Contractor's working method;</li> <li>3. Discuss amongst WKCDA, ET, and Contractor on the potential remedial actions;</li> <li>4. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the WKCDA accordingly;</li> <li>5. Monitor the implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Notify Contractor;</li> <li>3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented;</li> <li>4. Ensure remedial measures properly implemented;</li> <li>5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.</li> </ol>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance;</li> <li>2. Submit proposals for remedial actions to IEC within three working days of notification;</li> <li>3. Implement the agreed proposals;</li> <li>4. Resubmit proposals if problem still not under control;</li> <li>5. Stop the relevant portion of works as determined by the WKCDA until the exceedance is abated.</li> </ol>

## **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 E-2: Event and Action Plan for Construction Noise

Event	Action			
	ET Leader	IEC	WKCD A	Contractor
Action Level	<ol style="list-style-type: none"> <li>1. Notify WKCD A, IEC and Contractor;</li> <li>2. Carry out investigation;</li> <li>3. Report the results of investigation to the IEC, WKCD A and Contractor;</li> <li>4. Discuss with the IEC and Contractor on remedial measures required;</li> <li>5. Increase monitoring frequency to check mitigation effectiveness.</li> </ol>	<ol style="list-style-type: none"> <li>1. Review the investigation results submitted by the ET;</li> <li>2. Review the proposed remedial measures by the Contractor and advise the WKCD A accordingly;</li> <li>3. Advise the WKCD A on the effectiveness of the proposed remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Notify Contractor;</li> <li>3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented;</li> <li>4. Supervise the implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Submit noise mitigation proposals to IEC and WKCD A;</li> <li>2. Implement noise mitigation proposals.</li> </ol>
Limit Level	<ol style="list-style-type: none"> <li>1. Inform IEC, WKCD A, Contractor and EPD;</li> <li>2. Repeat measurements to confirm findings;</li> <li>3. Increase monitoring frequency;</li> <li>4. Identify source and investigate the cause of exceedance;</li> <li>5. Carry out analysis of Contractor's working procedures;</li> <li>6. Discuss with the IEC, Contractor and WKCD A on remedial measures required;</li> <li>7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and WKCD A informed of the results;</li> <li>8. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss amongst WKCD A, ET, and Contractor on the potential remedial actions;</li> <li>2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the WKCD A accordingly.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Notify Contractor;</li> <li>3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented;</li> <li>4. Supervise the implementation of remedial measures;</li> <li>5. If exceedance continues, consider stopping the Contractor to continue working on that portion of work which causes the exceedance until the exceedance is abated.</li> </ol>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance;</li> <li>2. Submit proposals for remedial actions to IEC and WKCD A within 3 working days of notification;</li> <li>3. Implement the agreed proposals;</li> <li>4. Submit further proposal if problem still not under control;</li> <li>5. Stop the relevant portion of works as instructed by the WKCD A until the exceedance is abated.</li> </ol>

## **Landscape and Visual Impact**

In case of non-compliance of landscape and visual impacts, procedures in accordance with the Event and Action Plan should be followed:

Table E-3: Event and Action Plan for Landscape and Visual Impact

Event	Action			
	ET Leader	IEC	WKCD A	Contractor
Design Check	<ol style="list-style-type: none"> <li>1. Design check to make sure the design complies with all the proposed mitigation measures in the EIA report;</li> <li>2. Prepare and submit report.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check report submitted by ET;</li> <li>2. Recommend remedial design if necessary.</li> </ol>	<ol style="list-style-type: none"> <li>1. Undertake remedial design if necessary.</li> </ol>	-
Non-conformity on one occasion	<ol style="list-style-type: none"> <li>1. Identify source of non-conformity;</li> <li>2. Report to IEC and WKCD A;</li> <li>3. Discuss remedial actions with IEC, WKCD A and Contractor;</li> <li>4. Monitor remedial actions until rectification has been completed.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check and verify source of non-conformity;</li> <li>2. Discuss remedial actions with ET and Contractor;</li> <li>3. Advise WKCD A on effectiveness of proposed remedial actions;</li> <li>4. Check implementation of remedial actions.</li> </ol>	<ol style="list-style-type: none"> <li>1. Notify Contractor;</li> <li>2. Ensure remedial actions are properly implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Amend working method as necessary;</li> <li>2. Rectify damage and undertake necessary replacement and remedial actions.</li> </ol>
Repeated non-conformity	<ol style="list-style-type: none"> <li>1. Identify source of non-conformity;</li> <li>2. Report to IEC and WKCD A;</li> <li>3. Increase monitoring frequency;</li> <li>4. Discuss remedial actions with IEC, WKCD A and Contractor;</li> <li>5. Monitor remedial actions until rectification has been completed;</li> <li>6. If non-conformity rectified, reduce monitoring frequency back to normal.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check and verify source of non-conformity;</li> <li>2. Check Contractor's working method;</li> <li>3. Discuss remedial actions with ET and Contractor;</li> <li>4. Advise WKCD A on effectiveness of proposed remedial actions;</li> <li>5. Supervise implementation of remedial actions.</li> </ol>	<ol style="list-style-type: none"> <li>1. Notify Contractor;</li> <li>2. Ensure remedial actions are properly implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Amend working method as necessary;</li> <li>2. Rectify damage and undertake necessary replacement and remedial actions.</li> </ol>

## Appendix F. Monitoring Schedule

# NOVEMBER 2015

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5 AM1, AM2 - 24hrTSP, 1hr TSP x3	6	7
8	9	10	11 AM1, AM2 - 24hrTSP, 1hr TSP x3	12	13	14
15	16	17 AM1, AM2 - 24hrTSP, 1hr TSP x3	18	19	20	21
22	23 AM1, AM2 - 24hrTSP, 1hr TSP x3	24	25	26	27 AM1, AM2 - 24hrTSP, 1hr TSP x3	28
29	30					
		<b>Remarks:</b> AM1 - International Commerce Centre (ICC) AM2 - The Harbourside Tower 1 Noise monitoring at NM1(The Harbourside Tower 1) is being suspended. Please refer to Monthly EM&A Report Section 1.4 for details.				

# DECEMBER 2015

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3 AM1, AM2 - 24hrTSP, 1hr TSP x3	4	5
6	7	8	9 AM1, AM2 - 24hrTSP, 1hr TSP x3	10	11	12
13	14	15 AM1, AM2 - 24hrTSP, 1hr TSP x3	16	17	18	19
20	21 AM1, AM2 - 24hrTSP, 1hr TSP x3	22	23	24 AM1, AM2 - 24hrTSP, 1hr TSP x3	25	26
27	28	29	30 AM1, AM2 - 24hrTSP, 1hr TSP x3	31		
		<b>Notes:</b> AM1 - International Commerce Centre (ICC) AM2 - The Harbourside Tower 1 Noise monitoring at NM1(The Harbourside Tower 1) is being suspended. Please refer to Monthly EM&A Report Section 1.4 for details.				



## Appendix G. Calibration Certifications

High-Volume TSP Sampler  
5-Point Calibration Record

Location : AM1(ICC)  
 Calibrated by : K.T.Ho  
 Date : 16/10/2015

Sampler

Model : TE-5170  
 Serial Number : S/N 0767

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454  
 Service Date : 14 Mar 2015  
 Slope (m) : 2.09532  
 Intercept (b) : -0.03812  
 Correlation Coefficient(r) : 0.99994

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	10.2	3.186	1.539	60	59.86
2   13 holes	8.4	2.891	1.398	53	52.88
3   10 holes	6.2	2.484	1.204	44	43.90
4   7 holes	4.4	2.093	1.017	36	35.92
5   5 holes	2.6	1.609	0.786	24	23.94

Notes:  $Z = \sqrt{dH(Pa/Pstd)(Tstd/Ta)}$ ,  $X = Z/m - b$ ,  $Y(\text{Corrected Flow}) = IC * \{\sqrt{Pa/Pstd}(Tstd/Ta)\}$

Sampler Calibration Relationship

Slope(m): 47.088 Intercept(b): -12.676

Correlation Coefficient(r): 0.9995

Checked by:   
 Magnum Fan

Date: 02/11/2015

High-Volume TSP Sampler  
5-Point Calibration Record

Location : AM2 (Harbourside)  
 Calibrated by : K.T.Ho  
 Date : 17/10/2015

Sampler

Model : TE-5170  
 Serial Number : S/N 8919

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454  
 Service Date : 14 Mar 2015  
 Slope (m) : 2.09532  
 Intercept (b) : -0.03812  
 Correlation Coefficient(r) : 0.99994

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	12.2	3.485	1.681	60	59.86
2   13 holes	9.2	3.026	1.462	52	51.88
3   10 holes	7.2	2.677	1.296	44	43.90
4   7 holes	4.6	2.140	1.039	34	33.92
5   5 holes	2.6	1.609	0.786	24	23.94

Notes:  $Z = \sqrt{dH(Pa/Pstd)(Tstd/Ta)}$ ,  $X = Z/m - b$ ,  $Y(\text{Corrected Flow}) = IC * \{\sqrt{Pa/Pstd}(Tstd/Ta)\}$

Sampler Calibration Relationship

Slope(m): 40.493      Intercept(b): -8.037      Correlation Coefficient(r): 0.9994

Checked by:   
 Magnum Fan

Date: 20/10/2015



SIBATA SCIENTIFIC TECHNOLOGY LTD.

1-1-62, Nakane, Soka, Saitama, 340-0005 Japan

TEL : 048-933-1582 FAX : 048-933-1591

## CALIBRATION CERTIFICATE

Date: May 28, 2015

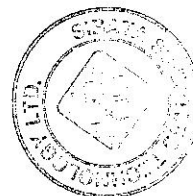
Equipment Name	:	Digital Dust Indicator, Model LD-3B
Code No.	:	080000-42
Quantity	:	1 unit
Serial No.	:	2Z6240
Sensitivity	:	0.001 mg/m <sup>3</sup>
Sensitivity Adjustment	:	570CPM
Scale Setting	:	May 25, 2015

We hereby certify that the above mentioned instrument has been calibrated satisfactory.

Sincerely

**SIBATA SCIENTIFIC TECHNOLOGY LTD.**

Kentaro Togo  
Overseas Sales Division



# TEST CERTIFICATE

**CUSTOMER : INNOTECH INSTRUMENTATION CO.LTD.**



**SIBATA SCIENTIFIC TECHNOLOGY LTD.**

Report No. 15-0798

DATE 26/May /2015

APPROVE BY 	VERIFIED BY 	ISSUED BY 
----------------	-----------------	---------------

PRODUCT NAME	: Digital Dust Indicator
MODEL NUMBER	: LD-3B
SERIAL NUMBER	: 2Z6240
CALIBRATION DATE	: 25-May-2015

Testing Category	Judging Standard	Judgment	Inspection chart
Function Test	Switch, Display, Wiring will normally function	OK	Reference Value(S) 570 CPM
Sensitivity Calibration	Count is $\pm 2\%$ accurate to the master by the standard calibration particle	OK	
Dust Concentration Measuring	Count is $\pm 10\%$ accurate to the master under the 3 different concentration.	Reading of Master	Reading of this Instrument
		813 CPM	814 CPM
		2079 CPM	1998 CPM
1020 CPM	994 CPM	-2.5 %	-2.5 %
535 CPM	524 CPM	-2.1 %	-2.1 %
Stability	The maximum value of the sensitivity adjustment scale setting value of the machine and the difference with minimum value are within 5% compared with the maximum value. (The measurement is repeated three times for one minute.)	OK	Test atmosphere
Synthetic Judgment			Temperature Humidity
Good			23 °C 45 %

# Equipment Verification Report (TSP)

## Equipment Calibrated:

Type: Laser Dust monitor  
 Manufacturer: Sibata LD-3B  
 Serial No. 2Z6240  
 Equipment Ref: Nil  
 Job Order HK1520162

## Standard Equipment:

Standard Equipment: Higher Volume Sampler  
 Location & Location ID: AUES office (calibration room)  
 Equipment Ref: HVS 018  
 Last Calibration Date: 13 May 2015

## Equipment Verification Results:

Testing Date: 22 & 23 June 2015

Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m <sup>3</sup> (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
2hr18min	12:45 ~ 15:03	27.9	1003.2	0.010	1171	8.5
2hr25min	15:08 ~ 17:33	27.9	1003.2	0.023	2290	15.7
2hr43min	9:45 ~ 12:28	27.3	1003.9	0.014	1908	11.7

Sensitivity Adjustment Scale Setting (Before Calibration) 569 (CPM)

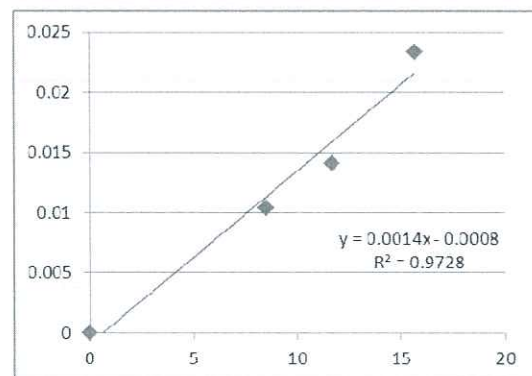
Sensitivity Adjustment Scale Setting (After Calibration) 574 (CPM)

## Linear Regression of Y or X

Slope (K-factor): 0.0014

Correlation Coefficient 0.9863

Date of Issue 24 June 2015



## Remarks:

- Strong** Correlation ( $R > 0.8$ )
  - Factor 0.0014 should be apply for TSP monitoring
- \*If  $R < 0.5$ , repair or re-verification is required for the equipment

Operator : Donald Kwok Signature :  Date : 24 June 2015

QC Reviewer : Ben Tam Signature :  Date : 24 June 2015



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 24, 2015 Rootsmeter S/N 0438320 Ta (K) - 292  
 Operator Tisch Orifice I.D. - 2454 Pa (mm) - 756.92

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	1.4460	3.2	2.00
2	NA	NA	1.00	1.0300	6.4	4.00
3	NA	NA	1.00	0.9180	7.9	5.00
4	NA	NA	1.00	0.8780	8.7	5.50
5	NA	NA	1.00	0.7240	12.6	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
1.0121	0.6999	1.4258	0.9958	0.6886	0.8784
1.0078	0.9785	2.0163	0.9916	0.9627	1.2422
1.0057	1.0955	2.2543	0.9895	1.0779	1.3888
1.0047	1.1443	2.3644	0.9885	1.1258	1.4566
0.9994	1.3805	2.8515	0.9833	1.3582	1.7568
Qstd slope (m) =		2.09532	Qa slope (m) =		1.31205
intercept (b) =		-0.03812	intercept (b) =		-0.02349
coefficient (r) =		0.99994	coefficient (r) =		0.99994
y axis = SQRT[H2O(Pa/760) (298/Ta)]			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 }

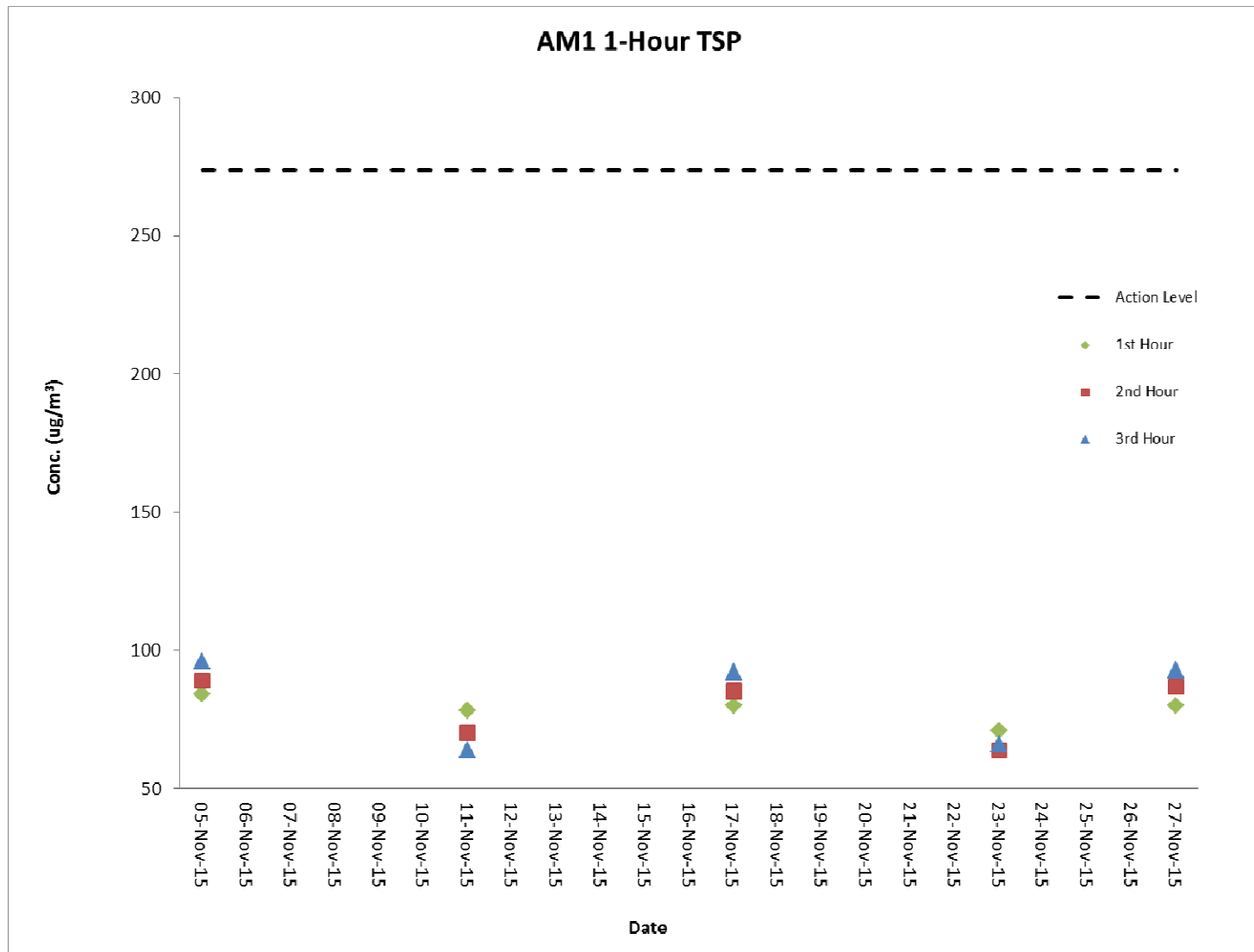
## Appendix H. Graphical Plots of the Monitoring Results



**Air Quality Monitoring Result at Station AM1 (1-hour TSP)**

Date	Weather Condition	Time	Conc. ( $\mu\text{g}/\text{m}^3$ )			Action Level ( $\mu\text{g}/\text{m}^3$ )	Limit Level ( $\mu\text{g}/\text{m}^3$ )	Min	Max
			1 <sup>st</sup> Hour	2 <sup>nd</sup> Hour	3 <sup>rd</sup> Hour				
05-Nov-15	Sunny	10:51 - 15:00	84	89	96	273.7	500	64	96
11-Nov-15	Fine	10:42 - 15:00	78	70	64	273.7	500		
17-Nov-15	Sunny	10:40 - 15:00	80	85	92	273.7	500		
23-Nov-15	Sunny	10:38 - 15:00	71	64	66	273.7	500		
27-Nov-15	Sunny	8:00 - 11:00	80	87	93	273.7	500		

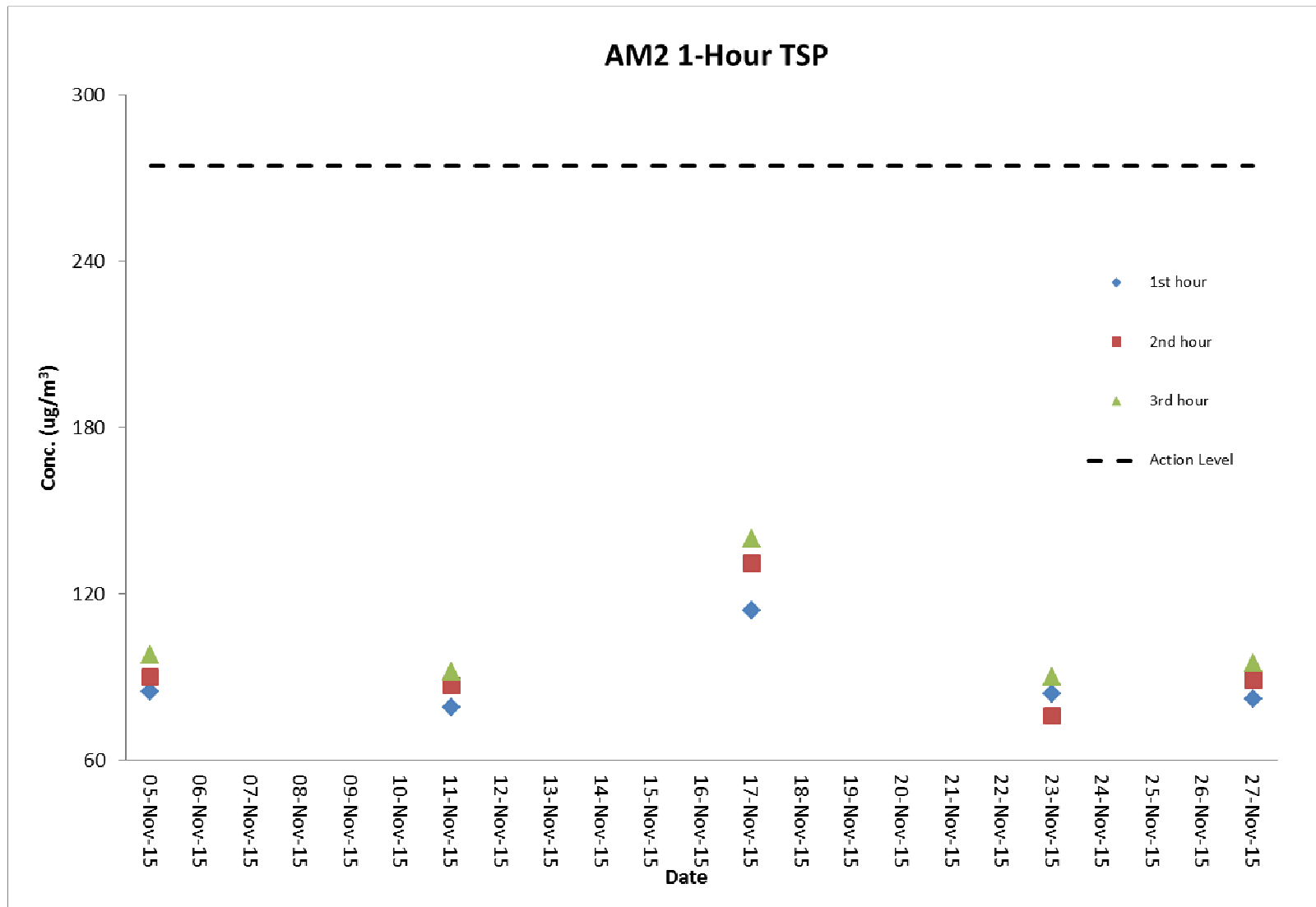
Graphical Presentation of Air Quality Monitoring Result at Station AM1 (1-hour TSP)



**Air Quality Monitoring Result at Station AM2 (1-hour TSP)**

Date	Weather Condition	Time	Conc. ( $\mu\text{g}/\text{m}^3$ )			Action Level ( $\mu\text{g}/\text{m}^3$ )	Limit Level ( $\mu\text{g}/\text{m}^3$ )	Min	Max
			1 <sup>st</sup> Hour	2 <sup>nd</sup> Hour	3 <sup>rd</sup> Hour				
05-Nov-15	Sunny	11:01 - 15:10	85	90	98	274.2	500	76	140
11-Nov-15	Fine	10:52 - 15:10	79	87	92	274.2	500		
17-Nov-15	Sunny	10:50 - 15:10	114	131	140	274.2	500		
23-Nov-15	Sunny	10:50 - 15:10	84	76	90	274.2	500		
27-Nov-15	Sunny	8:12 - 11:12	82	89	95	274.2	500		

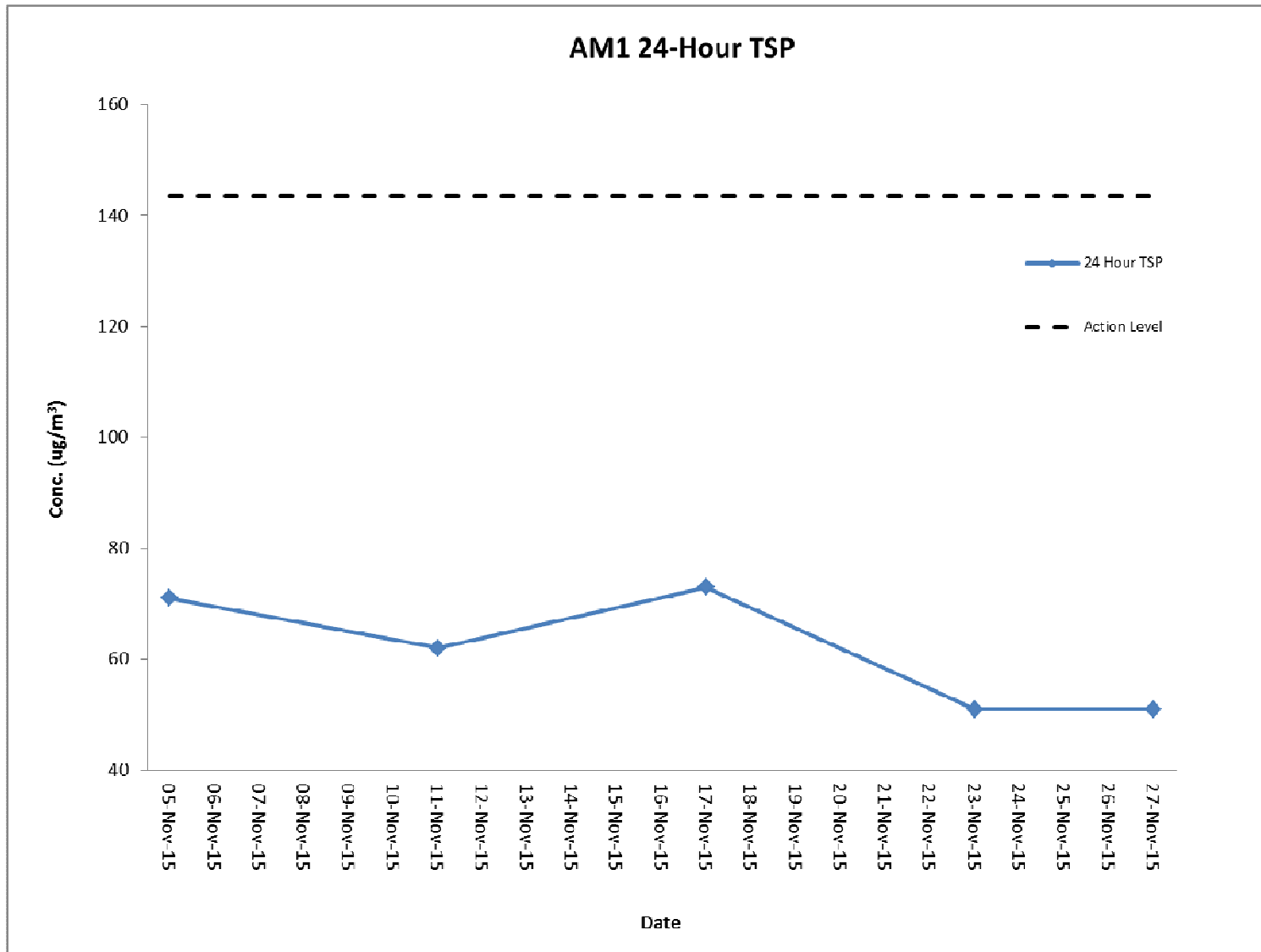
Graphical Presentation of Air Quality Monitoring Result at Station AM2 (1-hour TSP)



**Air Quality Monitoring Result at Station AM1 (24-hour TSP)**

Start		Finish		Filter Weight (g)		Elapsed Time Reading		Sampling Time (hrs)	Flow Rate (m <sup>3</sup> /min)			Conc. (µg/m <sup>3</sup> )	Weather Condition	Action Level	Limit Level
Date	Time	Date	Time	Initial	Final	Initial	Final		Initial	Final	Average				
05-Nov-15	10:50	06-Nov-15	10:50	2.884	3.0072	18648.38	18672.38	24	1.2	1.2	1.2	71	Sunny	143.6	260
11-Nov-15	10:40	12-Nov-15	10:40	2.8553	2.962	18672.38	18696.38	24	1.2	1.2	1.2	62	Fine	143.6	260
17-Nov-15	10:42	18-Nov-15	10:42	2.8647	2.9911	18696.38	18720.38	24	1.2	1.2	1.2	73	Sunny	143.6	260
23-Nov-15	10:40	24-Nov-15	10:40	2.7915	2.8804	18720.38	18744.38	24	1.2	1.2	1.2	51	Sunny	143.6	260
27-Nov-15	08:02	28-Nov-15	08:02	2.7838	2.8711	18744.38	18768.38	24	1.2	1.2	1.2	51	Sunny	143.6	260

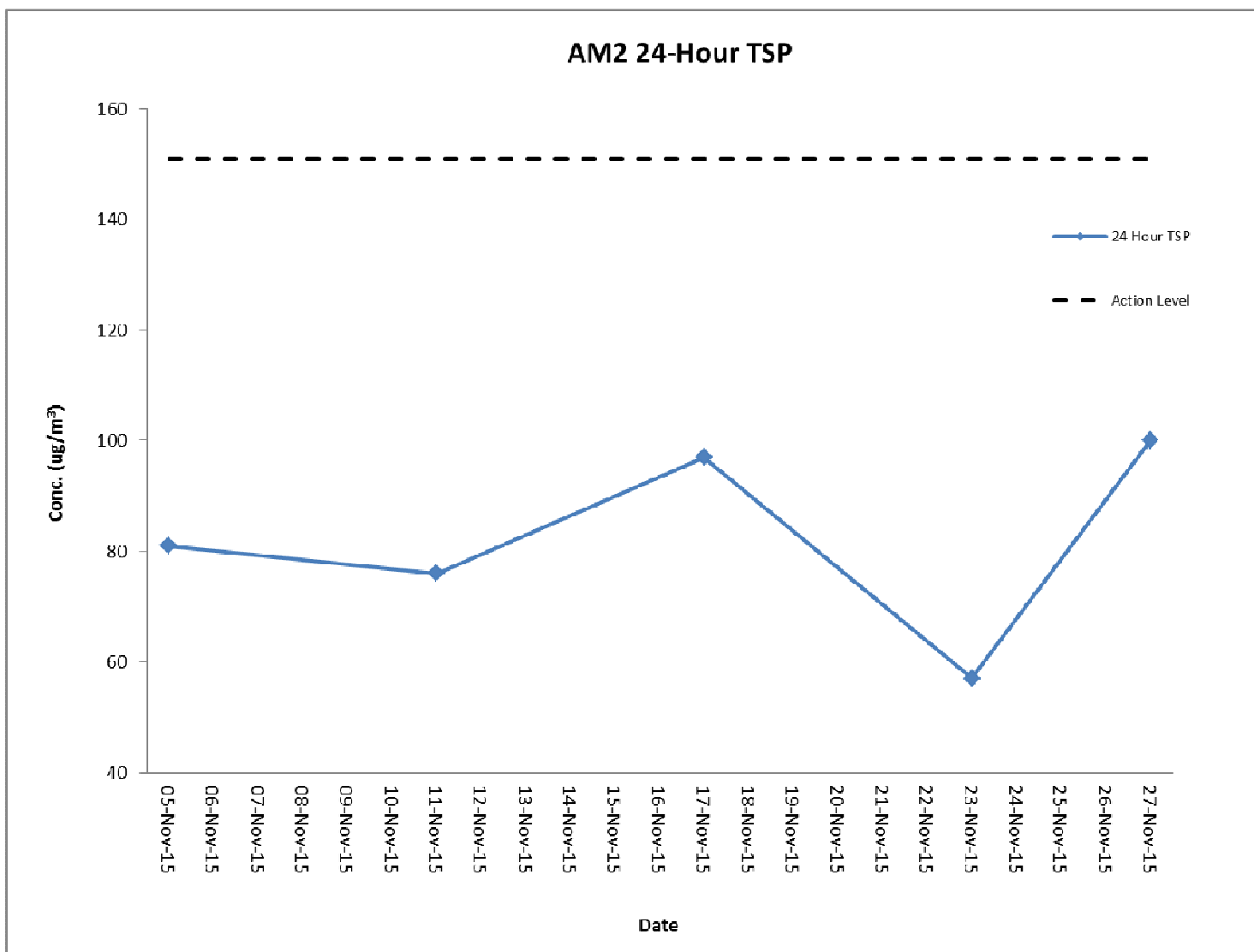
Graphical Presentation of Air Quality Monitoring Result at Station AM1 (24-hour TSP)



**Air Quality Monitoring Result at Station AM2 (24-hour TSP)**

Start		Finish		Filter Weight (g)		Elapsed Time Reading		Sampling Time (hrs)	Flow Rate (m <sup>3</sup> /min)			Conc. (µg/m <sup>3</sup> )	Weather Condition	Action Level	Limit Level
Date	Time	Date	Time	Initial	Final	Initial	Final		Initial	Final	Average				
05-Nov-15	11:05	06-Nov-15	11:05	2.8543	2.9984	14351.57	14375.57	24	1.24	1.24	1.24	81	Sunny	151.1	260
11-Nov-15	10:55	12-Nov-15	10:55	2.8176	2.9529	14375.57	14399.57	24	1.24	1.24	1.24	76	Fine	151.1	260
17-Nov-15	10:52	18-Nov-15	10:52	2.8186	2.9911	14399.57	14423.57	24	1.24	1.24	1.24	97	Sunny	151.1	260
23-Nov-15	10:54	24-Nov-15	10:54	2.78	2.881	14423.57	14447.57	24	2.24	1.24	1.74	57	Sunny	151.1	260
27-Nov-15	08:15	28-Nov-15	08:15	2.7697	2.9479	14447.57	14471.57	24	1.24	1.24	1.24	100	Sunny	151.1	260

Graphical Presentation of Air Quality Monitoring Result at Station AM2 (24-hour TSP)

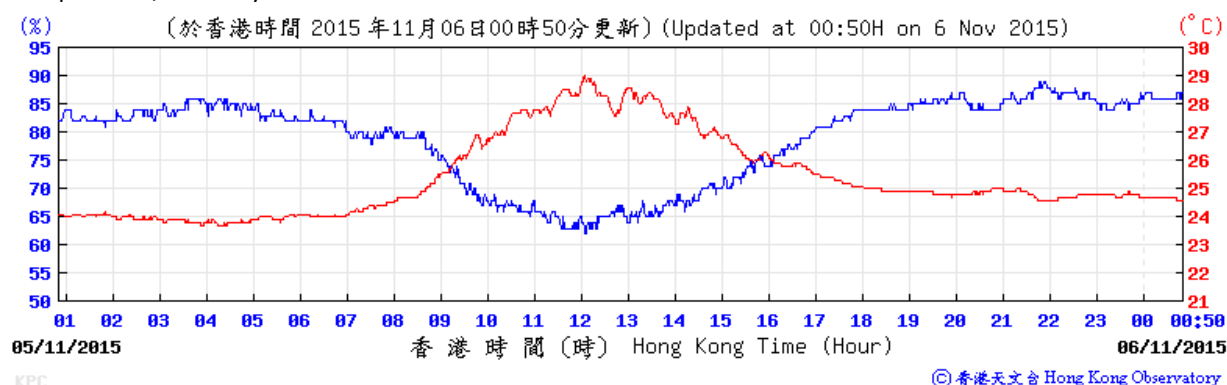




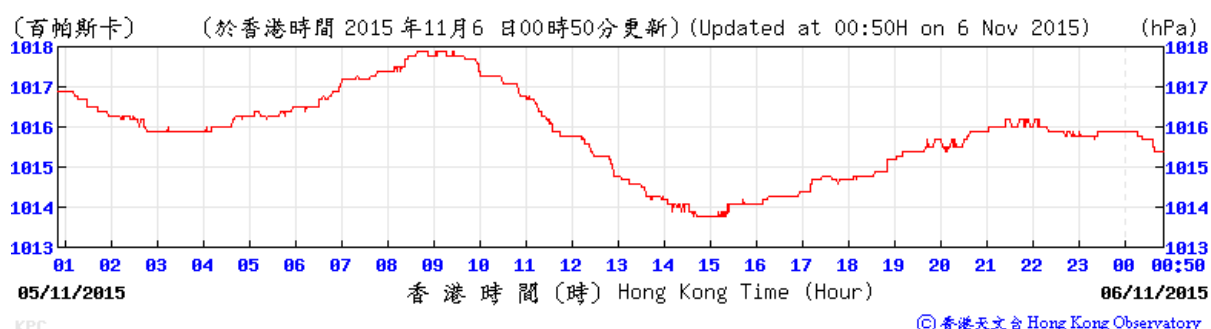
# Appendix I. Meteorological Data Extracted from Hong Kong Observatory

Table I-1: Extract of Meteorological Observations for King's Park Automatic Weather Station, November 2015

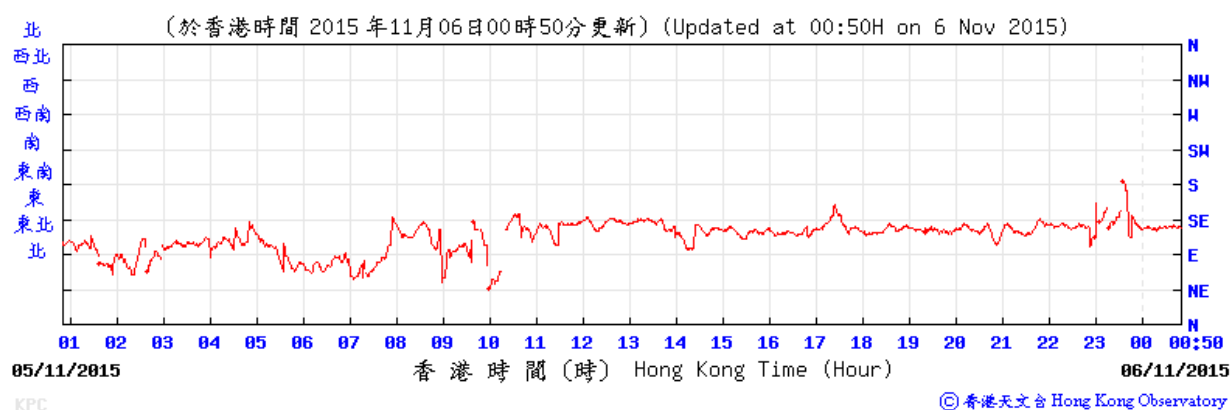
Temperature/Humidity:



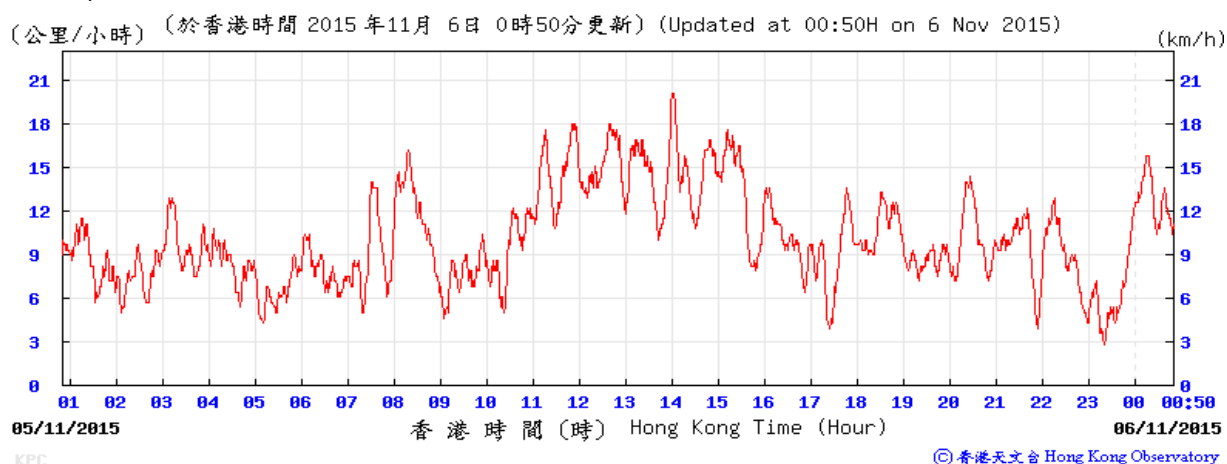
Pressure:



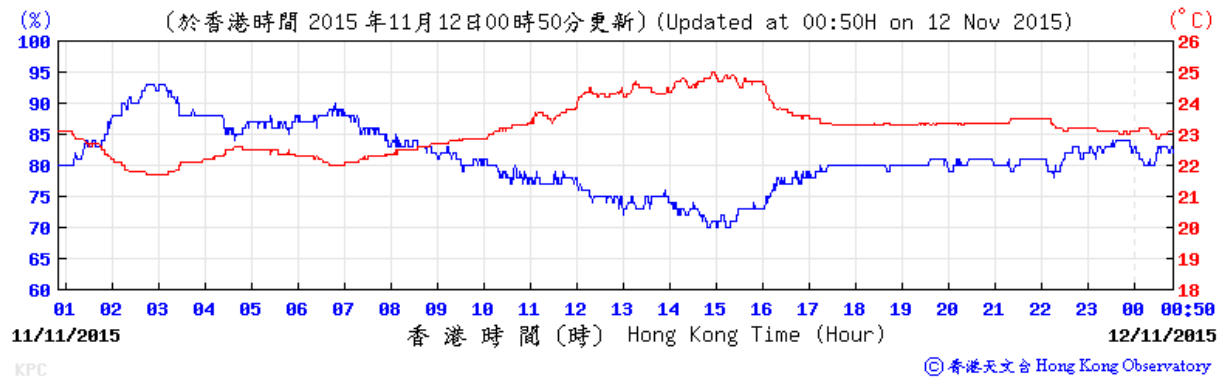
Wind Direction:



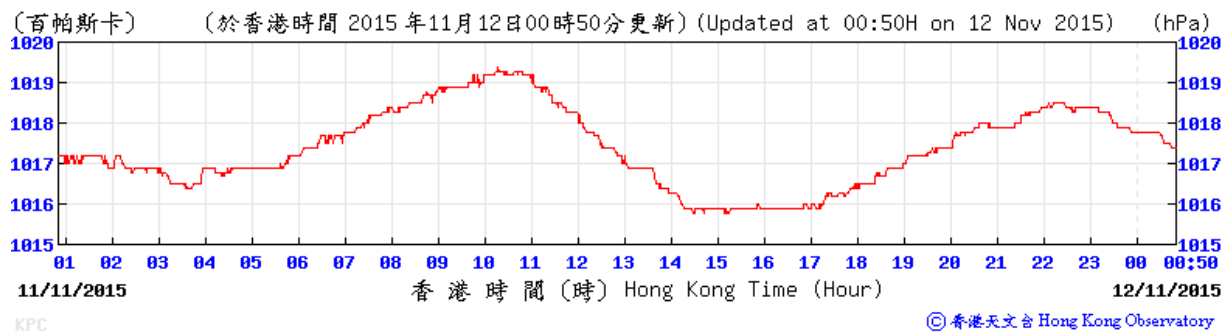
Wind Speed:



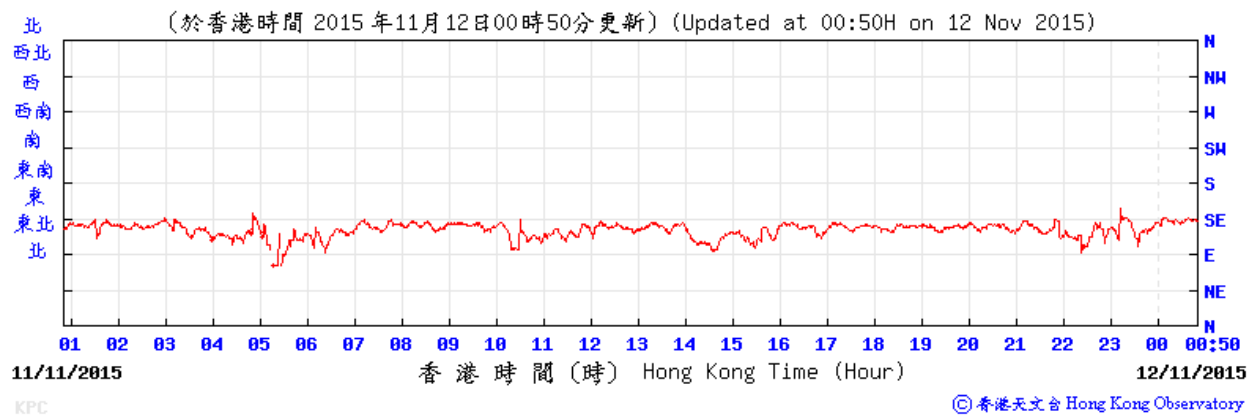
Temperature/Humidity:



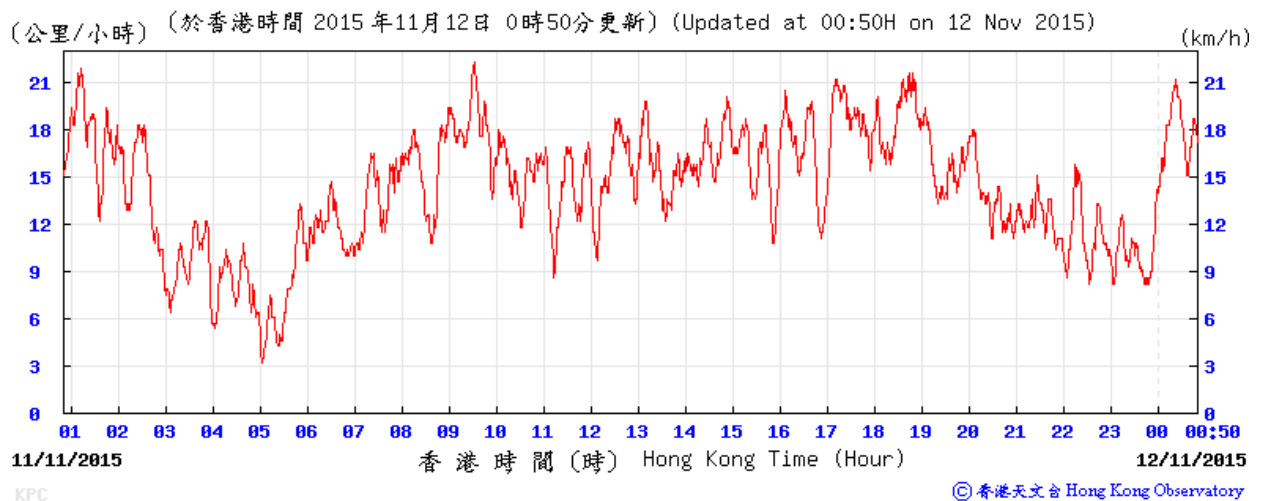
Pressure:



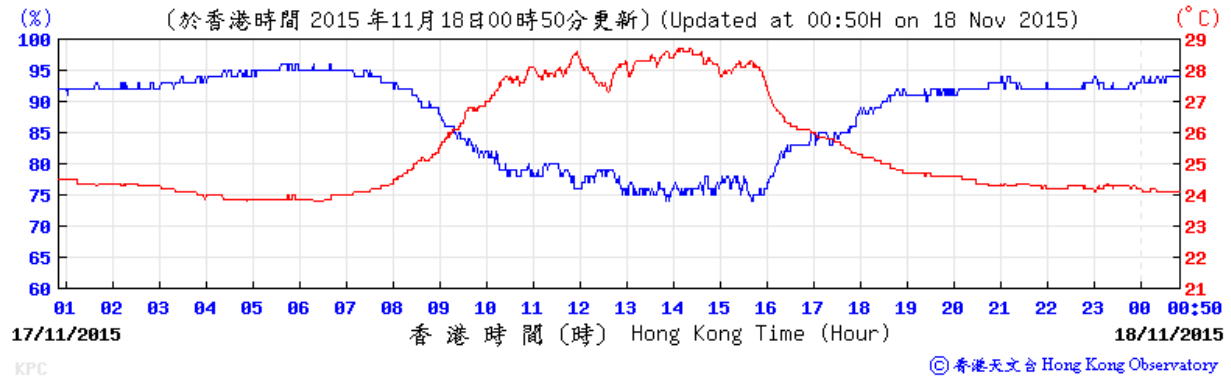
Wind Direction:



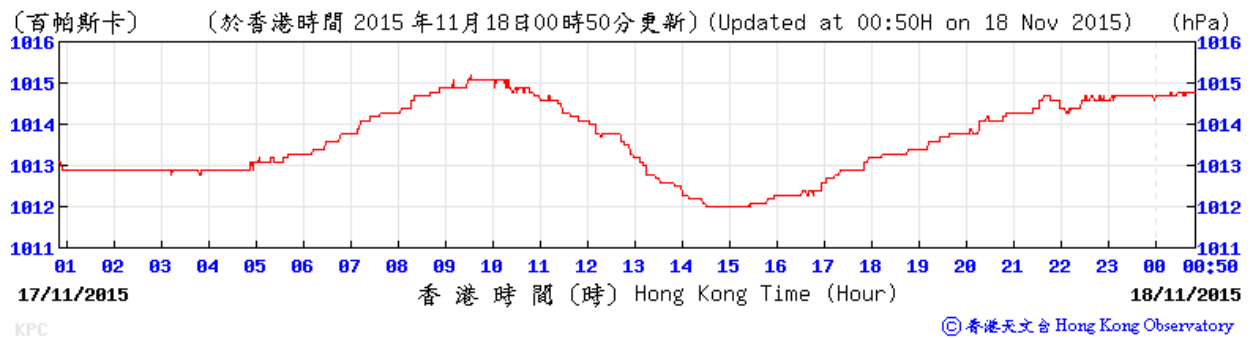
Wind Speed:



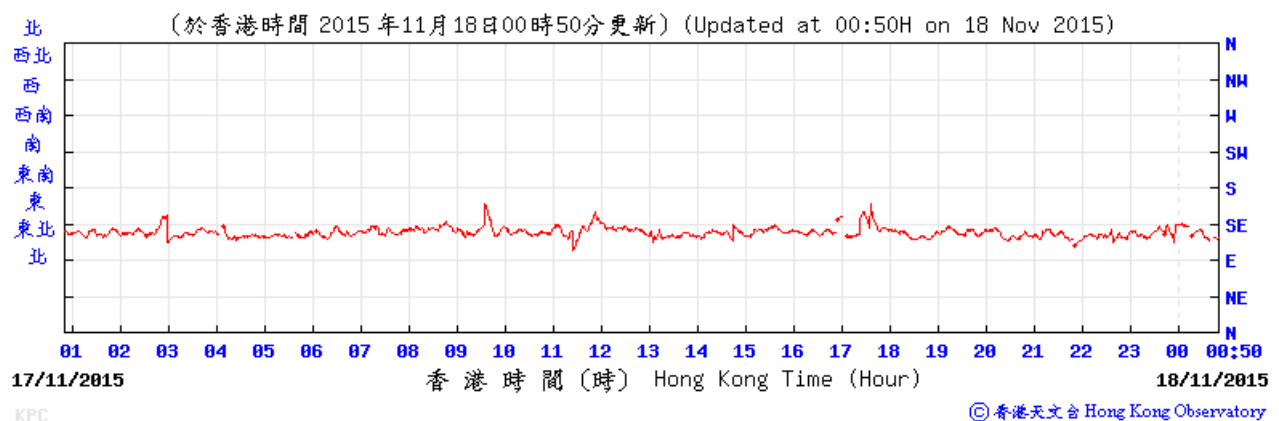
Temperature/Humidity:



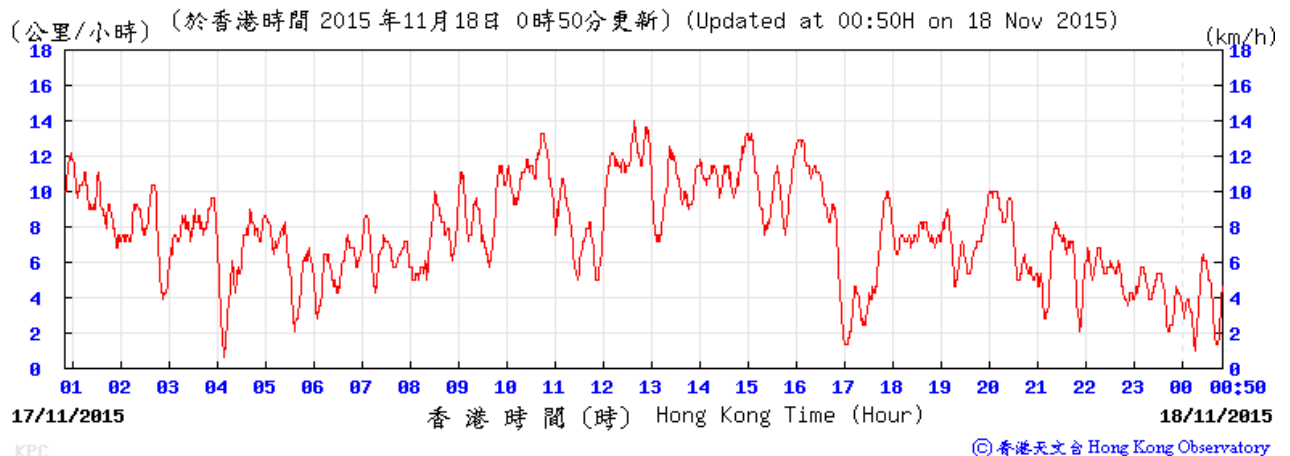
Pressure:



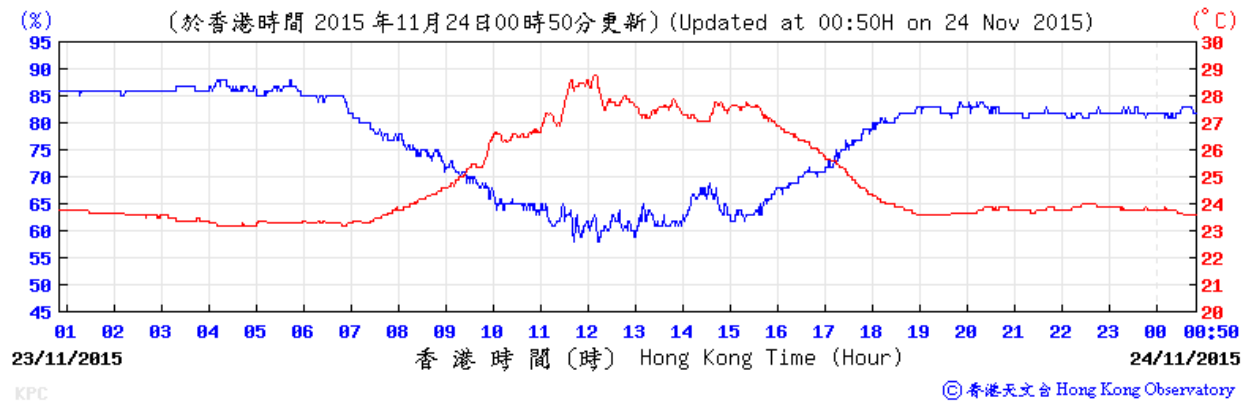
Wind Direction:



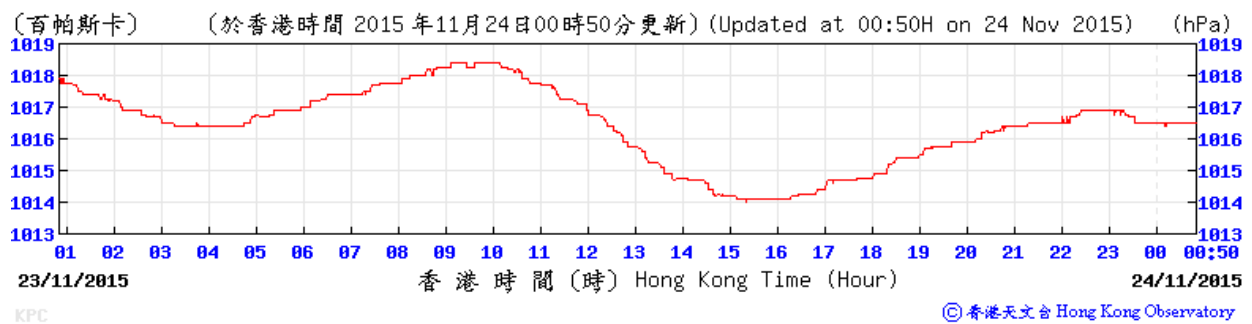
Wind Speed:



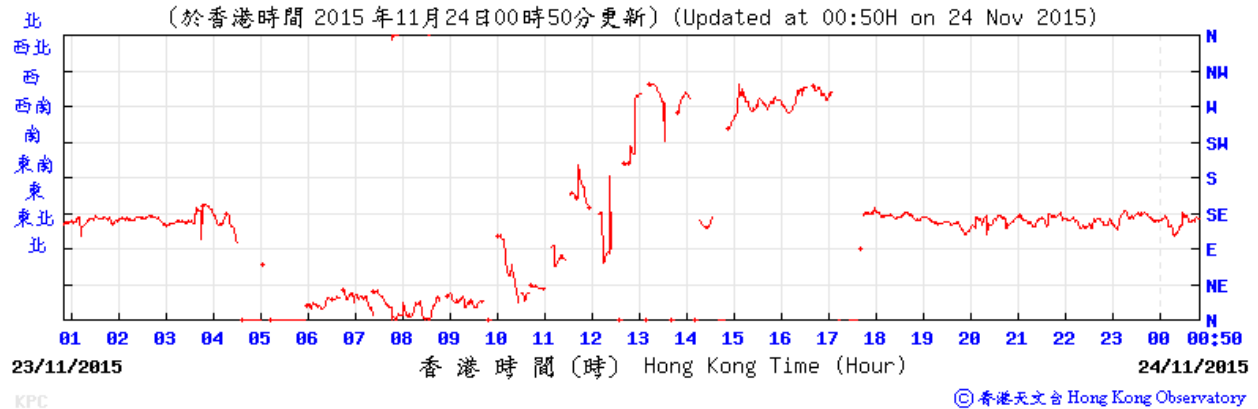
Temperature/Humidity:



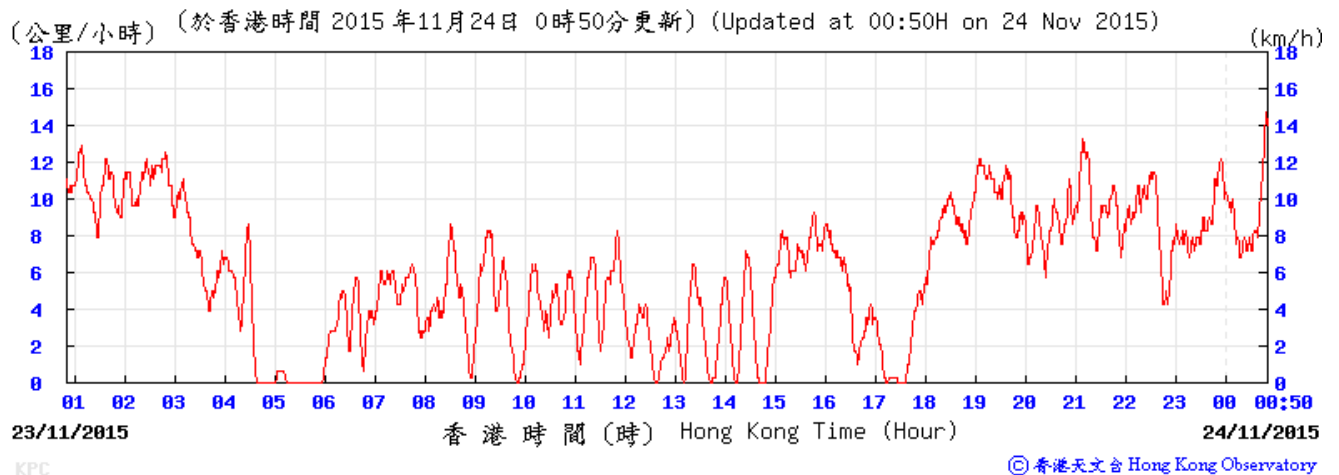
Pressure:



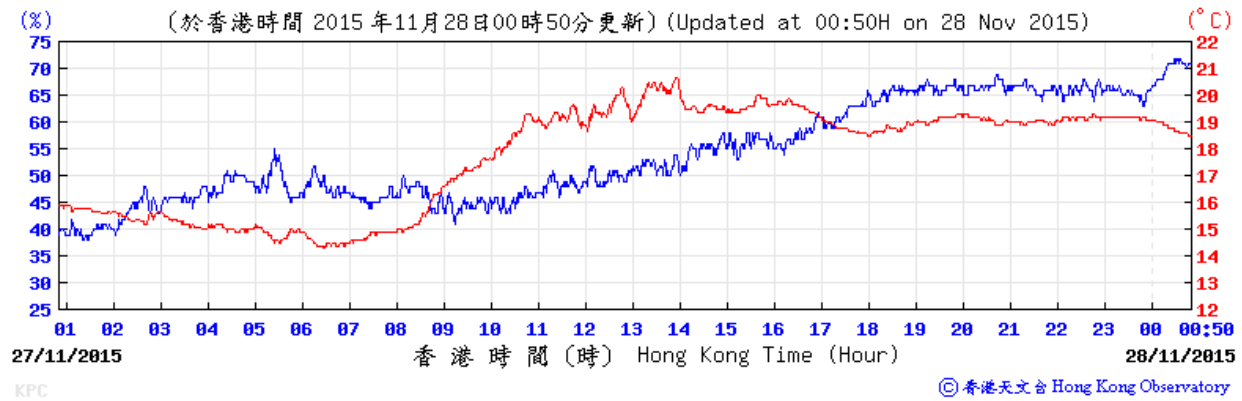
Wind Direction:



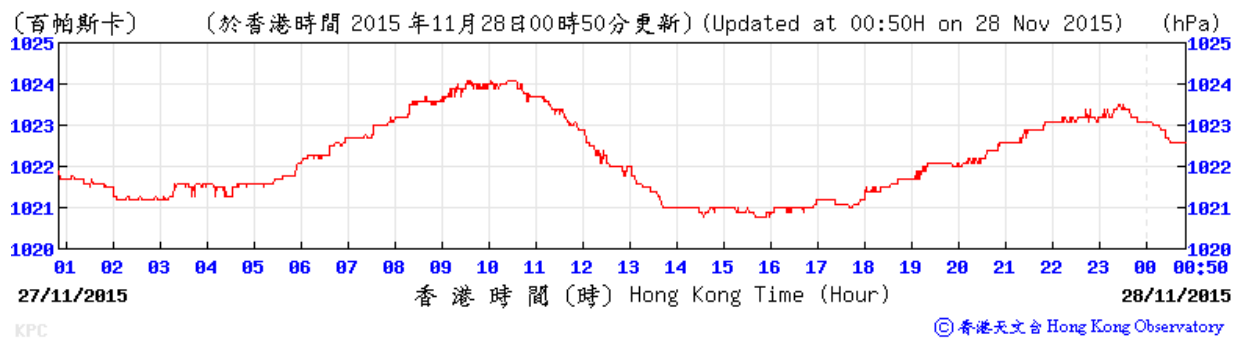
Wind Speed:



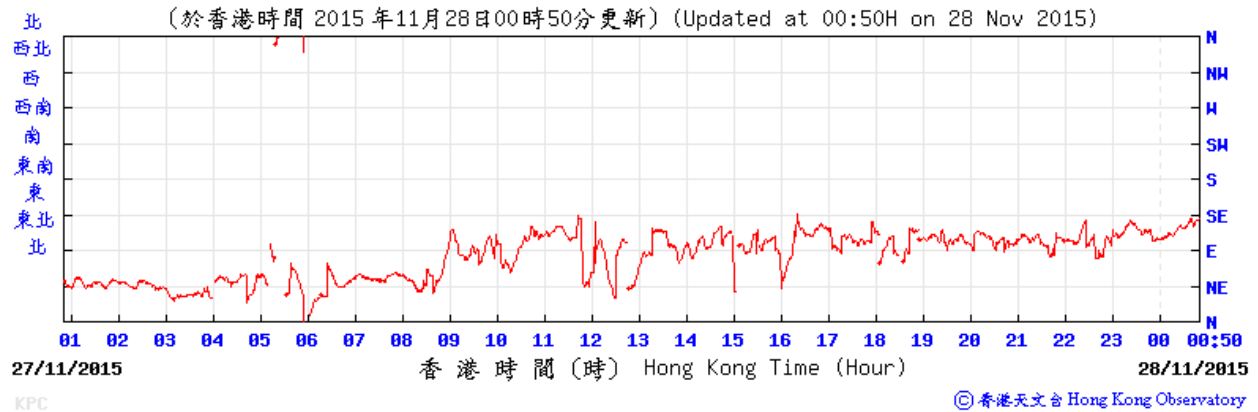
Temperature/Humidity:



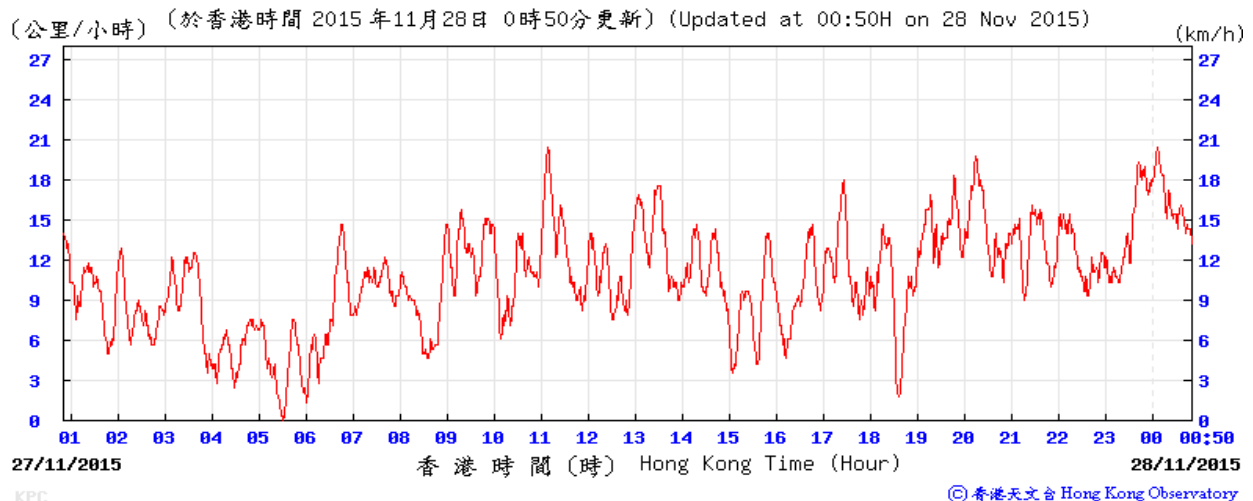
Pressure:



Wind Direction:



Wind Speed:



## Appendix J. Waste Flow table

**Table J-1: Monthly Waste Flow Table**

Month	Actual Quantities of Inert C&D Materials (tonnes)					Actual Quantities of Non-inert C&D Waste (tonnes)				
	(a) Total inert C&D material generated (a) = (b) + (c) + (d) + (e)	(b) Hard rock and broken concrete	(c) Reused in contract	(d) Reused in other projects	(e) Disposed to public fill	(f) Recycled scrap metal	(g) Reused / recycled timber	(h) Chemical waste	(i) Other e.g. general refuse (landfill)	(j) Total non-inert C&D material generated (j) = (f) + (g) + (h) + (i)
Nov 2015	46,607.4	0.0	0.0	8,240.0	38,367.4	76.2	0.0	0.0	67.6	143.8
Dec 2015										
Jan 2016										
Feb 2016										
Mar 2016										
Apr 2016										
May 2016										
Jun 2016										
Jul 2016										
Aug 2016										
Sep 2016										
Oct 2016										
Nov 2016										
Dec 2016										
<b>Total</b>	<b>46,607.4</b>	<b>0.0</b>	<b>0.0</b>	<b>8,240.0</b>	<b>38,367.4</b>	<b>76.2</b>	<b>0.0</b>	<b>0.0</b>	<b>67.6</b>	<b>143.8</b>

Note: 11,454.97 ton and 26,912.45 ton of inert C&D material were disposed of as public fill to Tuen Mun Area 38 and Tseung Kwan O Area 137 respectively.



## Appendix K. Environmental Mitigation Measures – Implementation Status

Table K-1: Environmental Mitigation Measures Implementation Status

EM&A Ref.	Recommendation Measures	Implementation Stage
<b>Air Quality Impact (Construction)</b>		
2.1	<p><b>General Dust Control Measures</b></p> <p>Frequent water spraying for active construction areas (12 times a day or once every one hour), including Heavy construction activities such as construction of buildings or roads, drilling, ground excavation, cut and fill operations (i.e., earth moving)</p>	✓
2.1	<p><b>Best Practice For Dust Control</b></p> <p>The relevant best practices for dust control as stipulated in the Air Pollution Control (construction Dust) Regulation should be adopted to further reduce the construction dust impacts from the Project. These best practices include:</p> <p><i>Good Site Management</i></p> <ul style="list-style-type: none"> <li>▪ Good site management is important to help reducing potential air quality impact down to an acceptable level. As a general guide, the Contractor should maintain high standard of housekeeping to prevent emission of fugitive dust. Loading, unloading, handling and storage of raw materials, wastes or by-products should be carried out in a manner so as to minimise the release of visible dust emission. Any piles of materials accumulated on or around the work areas should be cleaned up regularly. Cleaning, repair and maintenance of all plant facilities within the work areas should be carried out in a manner minimising generation of fugitive dust emissions. The material should be handled properly to prevent fugitive dust emission before cleaning.</li> </ul> <p><i>Disturbed Parts of the Roads</i></p> <ul style="list-style-type: none"> <li>▪ Each and every main temporary access should be paved with concrete, bituminous hardcore materials or metal plates and kept clear of dusty materials; or</li> <li>▪ Unpaved parts of the road should be sprayed with water or a dust suppression chemical so as to keep the entire road surface wet.</li> </ul> <p><i>Exposed Earth</i></p> <ul style="list-style-type: none"> <li>▪ Exposed earth should be properly treated by compaction, hydroseeding, vegetation planting or seating with latex, vinyl, bitumen within six months after the last construction activity on the site or part of the site where the exposed earth lies.</li> </ul> <p><i>Loading, Unloading or Transfer of Dusty Materials</i></p>	<p>Rem</p> <p>✓</p> <p>✓</p> <p>N/A</p>

EM&A Ref.	Recommendation Measures	Implementation Stage
	<ul style="list-style-type: none"> <li>▪ All dusty materials should be sprayed with water immediately prior to any loading or transfer operation so as to keep the dusty material wet.</li> </ul>	✓
	<i>Debris Handling</i>	
	<ul style="list-style-type: none"> <li>▪ Any debris should be covered entirely by impervious sheeting or stored in a debris collection area sheltered on the top and the three sides.</li> </ul>	✓
	<ul style="list-style-type: none"> <li>▪ Before debris is dumped into a chute, water should be sprayed so that it remains wet when it is dumped.</li> </ul>	✓
	<i>Transport of Dusty Materials</i>	
	<ul style="list-style-type: none"> <li>▪ Vehicle used for transporting dusty materials/spoils should be covered with tarpaulin or similar material. The cover should extend over the edges of the sides and tailboards.</li> </ul>	✓
	<i>Wheel washing</i>	
	<ul style="list-style-type: none"> <li>▪ Vehicle wheel washing facilities should be provided at each construction site exit. Immediately before leaving the construction site, every vehicle should be washed to remove any dusty materials from its body and wheels.</li> </ul>	✓
	<i>Use of vehicles</i>	✓
	<ul style="list-style-type: none"> <li>▪ The speed of the trucks within the site should be controlled to about 10km/hour in order to reduce adverse dust impacts and secure the safe movement around the site.</li> </ul>	
	<ul style="list-style-type: none"> <li>▪ Immediately before leaving the construction site, every vehicle should be washed to remove any dusty materials from its body and wheels.</li> </ul>	✓
	<ul style="list-style-type: none"> <li>▪ Where a vehicle leaving the construction site is carrying a load of dusty materials, the load should be covered entirely by clean impervious sheeting to ensure that the dusty materials do not leak from the vehicle.</li> </ul>	✓
	<i>Site hoarding</i>	
	<ul style="list-style-type: none"> <li>▪ Where a site boundary adjoins a road, street, service lane or other area accessible to the public, hoarding of not less than 2.4m high from ground level should be provided along the entire length of that portion of the site boundary except for a site entrance or exit.</li> </ul>	✓
2.1	<p><b>Best Practicable Means for Cement Works (Concrete Batching Plant)</b></p> <p>The relevant best practices for dust control as stipulated in the Guidance Note on the Best Practicable Means for Cement Works (Concrete Batching Plant) BPM 3/2(93) should be followed and implemented to further reduce the construction dust impacts of the Project. These best practices include:</p> <p>Exhaust from Dust Arrestment Plant</p>	
	<ul style="list-style-type: none"> <li>▪ Wherever possible the final discharge point from particulate matter arrestment plant, where is not</li> </ul>	N/A

EM&A Ref.	Recommendation Measures	Implementation Stage
	necessary to achieve dispersion from residual pollutants, should be at low level to minimise the effect on the local community in the case of abnormal emissions and to facilitate maintenance and inspection	
	Emission Limits	
	<ul style="list-style-type: none"> <li>▪ All emissions to air, other than steam or water vapour, shall be colourless and free from persistent mist or smoke</li> </ul>	N/A
	Engineering Design/Technical Requirements	
	<ul style="list-style-type: none"> <li>▪ As a general guidance, the loading, unloading, handling and storage of fuel, raw materials, products, wastes or by-products should be carried out in a manner so as to prevent the release of visible dust and/or other noxious or offensive emissions</li> </ul>	N/A
<b>Noise Impact (Construction)</b>		
3.1	<p><b>Good Site Practice</b></p> <p>Good site practice and noise management can significantly reduce the impact of construction site activities on nearby NSRs. The following package of measures should be followed during each phase of construction:</p> <ul style="list-style-type: none"> <li>▪ only well-maintained plant to be operated on-site and plant should be serviced regularly during the construction works;</li> <li>▪ machines and plant that may be in intermittent use to be shut down between work periods or should be throttled down to a minimum;</li> <li>▪ plant known to emit noise strongly in one direction, should, where possible, be orientated to direct noise away from the NSRs;</li> <li>▪ mobile plant should be sited as far away from NSRs as possible; and</li> <li>▪ material stockpiles and other structures to be effectively utilised, where practicable, to screen noise from on-site construction activities.</li> </ul>	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>
3.1	<p><b>Adoption of Quieter PME</b></p> <p>The recommended quieter PME adopted in the assessment were taken from the EPD's QPME Inventory and "<i>Sound Power Levels of Other Commonly Used PME</i>" are presented in <b>Table 4.26</b> in the EIA report. It should be noted that the silenced PME selected for assessment can be found in Hong Kong.</p>	N/A
3.1	<p><b>Use of Movable Noise Barriers</b></p> <p>Movable noise barriers can be very effective in screening noise from particular items of plant when constructing the Project. Noise barriers located along the active works area close to the noise generating component of a PME could produce at least 10 dB(A) screening for stationary plant and 5 dB(A) for mobile plant provided the direct line of sight between the PME and the NSRs is blocked.</p>	N/A

EM&A Ref.	Recommendation Measures	Implementation Stage
3.1	<b>Use of Noise Enclosure/ Acoustic Shed</b> The use of noise enclosure or acoustic shed is to cover stationary PME such as air compressor and concrete pump. With the adoption of the noise enclosure, the PME could be completely screened, and noise reduction of 15 dB(A) can be achieved according to the EIAO Guidance Note No.9/2010.	N/A
3.1	<b>Use of Noise Insulating Fabric</b> Noise insulating fabric can also be adopted for certain PME (e.g. drill rig, pilling machine etc). The fabric should be lapped such that there are no openings or gaps on the joints. According to the approved Tsim Sha Tsui Station Northern Subway EIA report (AEIAR-127/2008), a noise reduction of 10 dB(A) can be achieved for the PME lapped with the noise insulating fabric.	N/A
3.1	<b>Scheduling of Construction Works outside School Examination Periods</b> During construction phase, the contractor should liaise with the educational institutions (including NSRs LCS and CRGPS) to obtain the examination schedule and avoid the noisy construction activities during school examination periods.	N/A
<b>Water Quality Impact (Construction)</b>		
4.1	<b>Construction site runoff and drainage</b> The site practices outlined in ProPECC Note PN 1/94 should be followed as far as practicable in order to minimise surface runoff and the chance of erosion. The following measures are recommended to protect water quality and sensitive uses of the coastal area, and when properly implemented should be sufficient to adequately control site discharges so as to avoid water quality impacts:	
	<ul style="list-style-type: none"> <li>▪ At the start of site establishment, perimeter cut-off drains to direct off-site water around the site should be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels, earth bunds or sand bag barriers should be provided on site to direct storm water to silt removal facilities. The design of the temporary on-site drainage system should be undertaken by the WKCDA's Contractor prior to the commencement of construction;</li> </ul>	Rem
	<ul style="list-style-type: none"> <li>▪ Sand/silt removal facilities such as sand/silt traps and sediment basins should be provided to remove sand/silt particles from runoff to meet the requirements of the TM standards under the WPCO. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC Note PN 1/94. Sizes may vary depending upon the flow rate. The detailed design of the sand/silt traps should be undertaken by the WKCDA's Contractor prior to the commencement of construction.</li> </ul>	✓
	<ul style="list-style-type: none"> <li>▪ All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly during rainstorms. Deposited silt and grit should be regularly removed, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times.</li> </ul>	✓
	<ul style="list-style-type: none"> <li>▪ Measures should be taken to minimize the ingress of site drainage into excavations. If excavation of</li> </ul>	✓

EM&A Ref.	Recommendation Measures	Implementation Stage
	trenches in wet periods is necessary, they should be dug and backfilled in short sections wherever practicable. Water pumped out from foundation excavations should be discharged into storm drains via silt removal facilities.	
	<ul style="list-style-type: none"> <li>▪ All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing facility should be provided at construction site exit where practicable. Wash-water should have sand and silt settled out and removed regularly to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road should be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains.</li> </ul>	✓
	<ul style="list-style-type: none"> <li>▪ Open stockpiles of construction materials or construction wastes on-site should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.</li> </ul>	✓
	<ul style="list-style-type: none"> <li>▪ Manholes (including newly constructed ones) should be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and stormwater runoff being directed into foul sewers.</li> </ul>	✓
	<ul style="list-style-type: none"> <li>▪ Precautions should be taken at any time of the year when rainstorms are likely. Actions should be taken when a rainstorm is imminent or forecasted and actions to be taken during or after rainstorms are summarized in Appendix A2 of ProPECC Note PN 1/94. Particular attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes.</li> </ul>	✓
	<ul style="list-style-type: none"> <li>▪ Bentonite slurries used in piling or slurry walling should be reconditioned and reused wherever practicable. Temporary enclosed storage locations should be provided on-site for any unused bentonite that needs to be transported away after all the related construction activities are completed. The requirements in ProPECC Note PN 1/94 should be adhered to in the handling and disposal of bentonite slurries.</li> </ul>	N/A
	<p><b>Barging facilities and activities</b></p> <p>Recommendations for good site practices during operation of the proposed barging point include:</p>	
	<ul style="list-style-type: none"> <li>▪ All vessels should be sized so that adequate clearance is maintained between vessels and the seabed in all tide conditions, to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash;</li> </ul>	N/A
	<ul style="list-style-type: none"> <li>▪ Loading of barges and hoppers should be controlled to prevent splashing of material into the surrounding water. Barges or hoppers should not be filled to a level that will cause the overflow of materials or polluted water during loading or transportation;</li> </ul>	N/A
	<ul style="list-style-type: none"> <li>▪ All hopper barges should be fitted with tight fitting seals to their bottom openings to prevent leakage of</li> </ul>	N/A

EM&A Ref.	Recommendation Measures	Implementation Stage
	material; and <ul style="list-style-type: none"> <li>▪ Construction activities should not cause foam, oil, grease, scum, litter or other objectionable matter to be present on the water within the site.</li> </ul>	N/A
4.1	<b>Sewage effluent from construction workforce</b> Temporary sanitary facilities, such as portable chemical toilets, should be employed on-site where necessary to handle sewage from the workforce. A licensed contractor should be employed to provide appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance.	✓
4.1	<b>General construction activities</b> <ul style="list-style-type: none"> <li>▪ Construction solid waste, debris and refuse generated on-site should be collected, handled and disposed of properly to avoid entering any nearby storm water drain. Stockpiles of cement and other construction materials should be kept covered when not being used.</li> <li>▪ Oils and fuels should only be stored in designated areas which have pollution prevention facilities. To prevent spillage of fuels and solvents to any nearby storm water drain, all fuel tanks and storage areas should be provided with locks and be sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank. The bund should be drained of rainwater after a rain event.</li> </ul>	✓  ✓
<b>Waste Management Implications (Construction)</b>		
6.1	<b>Good Site Practices</b> Recommendations for good site practices during the construction activities include: <ul style="list-style-type: none"> <li>▪ Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site</li> <li>▪ Training of site personnel in proper waste management and chemical handling procedures</li> <li>▪ Provision of sufficient waste disposal points and regular collection of waste</li> <li>▪ Appropriate measures to minimise windblown litter and dust/odour during transportation of waste by either covering trucks or by transporting wastes in enclosed containers</li> <li>▪ Provision of wheel washing facilities before the trucks leaving the works area so as to minimise dust introduction to public roads</li> <li>▪ Well planned delivery programme for offsite disposal such that adverse environmental impact from transporting the inert or non-inert C&amp;D materials is not anticipated</li> </ul>	✓  ✓ ✓ ✓ ✓
6.1	<b>Waste Reduction Measures</b>	

EM&A Ref.	Recommendation Measures	Implementation Stage
	<p>Recommendations to achieve waste reduction include:</p> <ul style="list-style-type: none"> <li>▪ Sort inert C&amp;D material to recover any recyclable portions such as metals</li> <li>▪ Segregation and storage of different types of waste in different containers or skips to enhance reuse or recycling of materials and their proper disposal</li> <li>▪ Encourage collection of recyclable waste such as waste paper and aluminium cans by providing separate labelled bins to enable such waste to be segregated from other general refuse generated by the work force</li> <li>▪ Proper site practices to minimise the potential for damage or contamination of inert C&amp;D materials</li> <li>▪ Plan the use of construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste</li> </ul>	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>
6.1	<p><b>Inert and Non-inert C&amp;D Materials</b></p> <p>In order to minimise impacts resulting from collection and transportation of inert C&amp;D material for off-site disposal, the excavated materials should be reused on-site as fill material as far as practicable. In addition, inert C&amp;D material generated from excavation works could be reused as fill materials in local projects that require public fill for reclamation.</p> <ul style="list-style-type: none"> <li>▪ The surplus inert C&amp;D material will be disposed of at the Government's PFRFs for beneficial use by other projects in Hong Kong.</li> <li>▪ Liaison with the CEDD Public Fill Committee (PFC) on the allocation of space for disposal of the inert C&amp;D materials at PFRF is underway. No construction work is allowed to proceed until all issues on management of inert C&amp;D materials have been resolved and all relevant arrangements have been endorsed by the relevant authorities including PFC and EPD.</li> <li>▪ The C&amp;D materials generated from general site clearance should be sorted on site to segregate any inert materials for reuse or disposal of at PFRFs whereas the non-inert materials will be disposed of at the designated landfill site.</li> <li>▪ In order to monitor the disposal of inert and non-inert C&amp;D materials at respectively PFRFs and the designated landfill site, and to control fly-tipping, it is recommended that the Contractor should follow the Technical Circular (Works) No.6/2010 for Trip Ticket System for Disposal of Construction &amp; Demolition Materials issued by Development Bureau. In addition, it is also recommended that the Contractor should prepare and implement a Waste Management Plan detailing their various waste arising and waste management practices in accordance with the relevant requirements of the Technical Circular (Works) No. 19/2005 Environmental Management on Construction Site.</li> </ul>	<p>N/A</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>
6.1	<b>Chemical Waste</b>	



EM&A Ref.	Recommendation Measures	Implementation Stage
	<ul style="list-style-type: none"> <li>■ If chemical wastes are produced at the construction site, the Contractor will be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the “Code of Practice on the Packaging Labelling and Storage of Chemical Wastes”. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor should use a licensed collector to transport and dispose of the chemical wastes at the approved Chemical Waste Treatment Centre or other licensed recycling facilities, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.</li> <li>■ Potential environmental impacts arising from the handling activities (including storage, collection, transportation and disposal of chemical waste) are expected to be minimal with the implementation of appropriate mitigation measures as recommended.</li> </ul>	<p>Rem</p> <p>Rem</p>
6.1	<p><b>General Refuse</b></p> <p>General refuse should be stored in enclosed bins or compaction units separated from inert C&amp;D materials. A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from inert C&amp;D materials. Preferably an enclosed and covered area should be provided to reduce the occurrence of 'wind blown' light material.</p>	✓
<b>Land Contamination (Construction)</b>		
7.1	<p>The potential for land contamination issues at the TST Fire Station due to its future relocation will be confirmed by site investigation after land acquisition. Where necessary, mitigation measures for minimising potential exposure to contaminated materials (if any) or remediation measures will be identified. If contaminated land is identified (e.g., during decommissioning of fuel oil storage tanks) after the commencement of works, mitigation measures are proposed in order to minimise the potentially adverse effects on the health and safety of construction workers and impacts arising from the disposal of potentially contaminated materials.</p> <p>The following measures are proposed for excavation and transportation of contaminated material:</p> <ul style="list-style-type: none"> <li>■ To minimize the chance for construction workers to come into contact with any contaminated materials, bulk earth-moving excavation equipment should be employed;</li> <li>■ Contact with contaminated materials can be minimised by wearing appropriate clothing and personal protective equipment such as gloves and masks (especially when interacting directly with contaminated material), provision of washing facilities and prohibition of smoking and eating on site;</li> <li>■ Stockpiling of contaminated excavated materials on site should be avoided as far as possible;</li> <li>■ The use of contaminated soil for landscaping purpose should be avoided unless pre-treatment was</li> </ul>	<p>N/A</p> <p>N/A</p> <p>N/A</p>

EM&A Ref.	Recommendation Measures	Implementation Stage
	carried out;	N/A
	<ul style="list-style-type: none"> <li>▪ Vehicles containing any contaminated excavated materials should be suitably covered to reduce dust emissions and/or release of contaminated wastewater;</li> <li>▪ Truck bodies and tailgates should be sealed to stop any discharge;</li> <li>▪ Only licensed waste haulers should be used to collect and transport contaminated material to treatment/disposal site and should be equipped with tracking system to avoid fly tipping;</li> <li>▪ Speed control for trucks carrying contaminated materials should be exercised;</li> <li>▪ Observe all relevant regulations in relation to waste handling, such as Waste Disposal Ordinance (Cap 354), Waste Disposal (Chemical Waste) (General) Regulation (Cap 354) and obtain all necessary permits where required; and</li> <li>▪ Maintain records of waste generation and disposal quantities and disposal arrangements.</li> </ul>	N/A N/A N/A N/A N/A N/A
<b>Ecological Impact (Construction)</b>		
	No mitigation measure is required.	N/A
<b>Landscape and Visual Impact (Construction)</b>		
Table 9.1 (CM1)	Trees should be retained in situ on site as far as possible. Should tree removal be unavoidable due to construction impacts, trees will be transplanted or felled with reference to the stated criteria in the Tree Removal Applications to be submitted to relevant government departments for approval in accordance to ETWB TCW No. 29/2004 and 3/2006.	N/A
Table 9.1 (CM2)	Compensatory tree planting shall be incorporated to the proposed project and maximize the new tree, shrubs and other vegetation planting to compensate tree felled and vegetation removed. Also, implementation of compensatory planting should be of a ratio not less than 1:1 in terms of quality and quantity within the site.	N/A
Table 9.1 (CM3)	Buffer trees for screening purposes to soften the hard architectural and engineering structures and facilities.	N/A
Table 9.1 (CM4)	Softscape treatments such as vertical green wall panel /planting of climbing and/or weeping plants, etc, to maximize the green coverage and soften the hard architectural and engineering structures and facilities.	N/A
Table 9.1 (CM5)	Roof greening by means of intensive and extensive green roof to maximize the green coverage and improve aesthetic appeal and visual quality of the building/structure.	N/A
Table 9.1	Sensitive streetscape design should be incorporated along all new roads and streets.	N/A

EM&A Ref.	Recommendation Measures	Implementation Stage
(CM6)		
Table 9.1 (CM7)	Structure, ornamental planting shall be provided along amenity strips to enhance the landscape quality.	N/A
Table 9.1 (CM8)	Landscape design shall be incorporated to architectural and engineering structures in order to provide aesthetically pleasing designs.	N/A
Table 9.1 (CM9)	Minimize the structure of marine facilities to built on the seabed and foreshore in order to minimize the affected extent to the waterbody	N/A
Table 9.2 (MCP1)	Use of decorative screen hoarding/boards	✓
Table 9.2 (MCP2)	Early introduction of landscape treatments	N/A
Table 9.2 (MCP3)	Adoption of light colour for the temporary ventilation shafts for the basement during the transition period.	N/A
Table 9.2 (MCP4)	Control of night time lighting	✓
Table 9.2 (MCP5)	Use of greenery such as grass cover for the temporary open areas will help achieve the visual balance and soften the hard edges of the structures.	N/A

- N/A - Not Applicable  
✓ - Implemented  
Obs - Observed  
Rem - Reminder

## Appendix L. 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 works (i.e. 31 October 2015) to the end of the reporting month and are summarized in the **Table L-1** below.

Table L-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 31 October 2015 to end of the reporting month	0	0	0