


# Leader and JEC Joint Venture

**Contract No. DC/2009/24  
HATS Stage 2A – Upgrading of  
Preliminary Treatment Works at  
Sandy Bay, Cyberport,  
Wah Fu, Aberdeen and Ap Lei Chau**

**Monthly Environmental  
Monitoring and Audit Report  
March 2017**

**(Version 1.0)**

Certified By	 (Environmental Team Leader)
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**REMARKS:**

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

CINOTECH accepts no responsibility for changes made to this report by third parties

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Independent Environmental Checker for Construction Phase – Investigation**

**Our Reference**  
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**Contract No. DC/2009/24 – Upgrading of Preliminary Treatment Works at  
Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau**

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**Condition 4.4 – Monthly EM&A Report for March 2017 (no. 63) Version 1.0**

11 April 2017

**By Post**

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Dear Sir,

I refer to the captioned Monthly EM&A Report for March 2017 (version 1.0) submitted by ETL on 10 April 2017 via email. In accordance with Condition 4.4 of Environmental Permit No. EP-322/2008/G, I hereby verify the captioned Monthly EM&A Report.

Yours faithfully  
for MOTT MACDONALD HONG KONG LIMITED



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## TABLE OF CONTENTS

	Page
<b>EXECUTIVE SUMMARY .....</b>	<b>1</b>
Introduction.....	1
Environmental Monitoring Works.....	1
Air Quality and Noise.....	1
Noise (Sandy Bay PTW) .....	2
Environmental Licenses and Permits.....	3
Environmental Mitigation Implementation Schedule.....	3
Key Information in the Reporting Month.....	3
Summary of Complaints and Prosecutions.....	3
Future Key Issues: .....	4
<b>1. INTRODUCTION.....</b>	<b>5</b>
Background.....	5
Project Organizations.....	5
Construction Programme .....	6
Summary of EM&A Requirements .....	6
<b>2. AIR QUALITY.....</b>	<b>7</b>
Monitoring Requirements.....	7
Monitoring Locations .....	7
Monitoring Equipment.....	7
Monitoring Parameters, Frequency and Duration.....	7
Monitoring Methodology and QA/QC Procedure .....	8
Monitoring Methodology and QA/QC Procedure .....	8
Results and Observations.....	10
<b>3 NOISE .....</b>	<b>11</b>
Monitoring Requirements.....	11
Monitoring Locations .....	11
Monitoring Equipment.....	11
Monitoring Parameters, Frequency and Duration.....	11
Monitoring Methodology and QA/QC Procedures.....	12
Maintenance and Calibration .....	12
Results and Observations.....	12
<b>4 ENVIRONMENTAL AUDIT.....</b>	<b>14</b>
Site Audits .....	14
Review of Environmental Monitoring Procedures .....	14
Status of Environmental Licensing and Permitting .....	14
Status of Waste Management .....	15
Implementation Status of Event Action Plans .....	16
Summary of Complaints and Prosecutions.....	17
<b>5. FUTURE KEY ISSUES.....</b>	<b>18</b>
Key Issues for the Coming Month.....	18
Monitoring Schedule for the Next Month.....	18
Construction Program for the Next Month.....	18
<b>6. CONCLUSIONS AND RECOMMENDATIONS .....</b>	<b>19</b>
Conclusions.....	19
Recommendations.....	19

## **LIST OF TABLES**

Table I	Summary Table for Non-compliance Recorded in the Reporting Month
Table II	Summary Table for Key Information in the Reporting Month
Table 1.1	Key Project Contacts
Table 2.1	Locations for Air Quality Monitoring
Table 2.2	Air Quality Monitoring Equipment
Table 2.3	Impact Dust Monitoring Parameters, Frequency and Duration
Table 2.4	Summary of 1-hour and 24-hour TSP Monitoring Result in Reporting Month
Table 3.1	Locations for Noise Monitoring Stations
Table 3.2	Noise Monitoring Equipment
Table 3.3	Noise Monitoring Parameters, Frequency and Duration
Table 3.4	Summary the Noise Monitoring Results in Reporting Month
Table 4.1	Summary of Environmental Licensing and Permit Status
Table 4.2	Observations and Recommendations of Site Audit

## **LIST OF FIGURES**

Figure 1	General Location Plan of the Project and Locations of Air Quality and Noise Monitoring Stations
Figure 2	ET Organization Chart

## **LIST OF APPENDICES**

A	Action and Limit Levels for Air Quality and Noise
B	Copies of Calibration Certificates
C	Environmental Monitoring Schedule
D	Meteorological Data on monitoring dates
E	Air Quality Monitoring Results and Graphical Presentations
F	Noise Monitoring Results and Graphical Presentations
G	Summary of Exceedance
H	Site Audit Summary
I	Summary of Amount of Waste Generated
J	Event Action Plans
K	Environmental Mitigation Implementation Schedule (EMIS)
L	Complaint Log
M	Construction Programme

## ABBREVIATION AND ACRONYM

AL Levels	Action and Limit Levels
DSD	Drainage Services Department
E / ER	Engineer/Engineer's Representative
EIA	Environmental Impact Assessment
EM&A	Environmental Monitoring and Audit
EMIS	Environmental Mitigation Implementation Schedule
EP	Environmental Permit
EPD	Environmental Protection Department
ET	Environmental Team
HATS 2A	Harbour Area Treatment Scheme Stage 2A
HVS	High Volume Sampler
IEC	Independent Environmental Checker
RE	Resident Engineer
RH	Relative Humidity
QA/QC	Quality Assurance / Quality Control
SLM	Sound Level Meter
WMP	Waste Management Plan

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## EXECUTIVE SUMMARY

### Introduction

1. This is the 63<sup>rd</sup> Monthly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for DSD Contract No. DC/2009/24 “HATS Stage 2A – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau” (The Project) which documents the key information of EM&A of Contract No. DC/2009/24 and environmental monitoring results from DC/2009/24 HATS Stage 2A with the Environmental Permit (Permit No. EP-322/2008/G) for March 2017.
2. The site activities undertaken in the reporting month included:
  - Wah Fu PTW –Green roof installation for FSGT, Grit Handling Room and Switch and Control Room, Continuous interim operation and maintenance of new FSGT facilities, Boundary wall construction adjacent to sea side, Electrical work, DCS and building services installation, Installation of glass block window, Installation of doors, Road and Drainage works construction;
  - Ap Lei Chau PTW – Continuous interim operation and maintenance of the ALC PTW, Construction of Remaining Part of Screening and Degritting Facilities and Effluent Pumping Station, Installation of glass blocks window and louvres at Workshop, E&M building services work in HEC substation and transformer room;
  - Aberdeen PTW – Continuous interim operation and maintenance of the ABN PTW, Construction of cable drawpits and lying cable ducts, Underground drainage construction, Internal & external finishing works installation inside Admin. & Workshop Building, Installation of stoplogs in middle channel, Excavation of existing outfall chamber, Building services installation of Administration Building;
  - Sandy Bay PTW – N/A;
  - Cyberport PTW – New walkway and associated facilities construction.

### Environmental Monitoring Works

3. The environmental monitoring works of the Project was conducted by the ET for the Contract DC/2009/24 under HATS 2A with the Environmental Permit and in accordance with the EM&A Manual. The monitoring results were checked and reviewed. Site audits were conducted once per week. The implementation of the environmental mitigation measures, Event Action Plans and environmental complaint handling procedures were also checked.

### Air Quality and Noise

4. The monitoring of air quality monitoring station at Wah Ming House, Wah Fu Estate (CM\_WF1a) and noise monitoring station at Aegean Terrace (M6a), Wah Ming House (M7a) and Wah Ling House (M8) was handed over to Contract No. DC/2009/24 from Contract No. DC/2007/24 in July 2014. The noise monitoring station at Mei Chun Court, South Horizons (M9) was handed over to Contract No. DC/2009/24 from Contract No. DC/2008/09 on 28 July 2014. The air quality and noise monitoring stations was set up by Cinotech Consultants Limited (ET for this project) to monitor the air quality and noise in the vicinity of the sensitive receivers starting from July 2014. The environmental monitoring schedule for the reporting month is shown in **Appendix C**.
5. Hence, the monitoring of air quality monitoring station at The Arcade, Cyberport (CM\_CB1a),

The Hong Kong Ice and Cold Storage (CM\_AB1a) was handed over to Contract No. DC/2009/24 from Contract No. DC/2007/24 in August 2014. The air quality monitoring stations was set up by Cinotech Consultants Limited (ET for this project) to monitor the air quality and noise in the vicinity of the sensitive receivers starting from August 2014. The environmental monitoring schedule for the reporting month is shown in **Appendix C**.

6. However, the air quality monitoring at CM\_AB1a had been rejected and could not be continued, the proposed location (CM\_AB1b – Works Site Boundary of Aberdeen PTW) was approved by ER on 22 July 2014. The air quality monitoring stations was set up by Cinotech Consultants Limited (ET for this project) to monitor the air quality and noise in the vicinity of the sensitive receivers starting from August 2014. The environmental monitoring schedule for the reporting month is shown in **Appendix C**. The location of CM\_AB1b is shown in **Figure 1c**.

### Noise (Sandy Bay PTW)

7. The Proposal for Termination of Construction Phase EM&A Works for Contract No. DC/2007/24 was submitted by its ET to EPD in July 2015. The proposal, including the termination of noise monitoring at Chuk Lam Ming Tong (M5), was approved by the EPD on 27 July 2015. The result of noise monitoring at M5 would not be reported from 27 July 2015, based on section 15.11 of the EM&A Manual of this Project as below:
- i) Construction activities including the remaining outstanding construction works for Sandy Bay PTW have been completed by the Contractor of this Project, therefore, no major environmental impact from Sandy Bay PTW in anticipated due to the Project.
8. Summary of the non-compliance of the reporting month is tabulated in **Table I**.

**Table I Summary Table for Non-compliance Recorded in the Reporting Month**

Monitoring Station	Parameter	No. of Exceedance		No. of Exceedance Due to the Project		Action Taken
		Action Level	Limit Level	Action Level	Limit Level	
CM_CB1a	1-hr TSP	0	0	0	0	N/A
	24-hr TSP	0	0	0	0	N/A
CM_WF1a	1-hr TSP	0	0	0	0	N/A
	24-hr TSP	0	0	0	0	N/A
CM_AB1b	1-hr TSP	0	0	0	0	N/A
	24-hr TSP	0	0	0	0	N/A
M5	Noise (Day Time)	--	--	--	--	--
M6a		0	0	0	0	N/A
M7a		0	0	0	0	N/A
M8		0	0	0	0	N/A
M9		0	0	0	0	N/A

### 1-hour TSP Monitoring

9. All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

*24-hour TSP Monitoring*

10. All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

*Construction Noise*

11. All construction noise monitoring was conducted as scheduled in the reporting. No Action/Limit Level exceedance was recorded.

**Environmental Licenses and Permits**

12. Licenses/Permits granted to the Project include the Environmental Permit (EP), Notification of Works under APCO, Water Discharge Licences and Registered as a Chemical Waste Producer for Sandy Bay, Cyberport, Ap Lei Chau, Aberdeen, Wah Fu PTWs sites.

**Environmental Mitigation Implementation Schedule**

13. According to the EIA Report Section 3.74, 4.56, 6.384, 9.154 and 13.44, air quality, noise, water quality, waste management and landscape and visual would be the key environmental issues and mitigation measures shall be implemented during the construction phase. Details of the implementation of mitigation measures are provided in the **Appendix K**.

**Key Information in the Reporting Month**

14. Summary of key information in the reporting month is tabulated in **Table II**.

**Table II Summary Table for Key Information in the Reporting Month**

Event	Event Details		Action Taken	Status	Remark
	Number	Nature			
Complaint received	0	---	N/A	N/A	---
Status of submissions under EP	1	Environmental Monitoring and Audit Monthly Report – February 2017	Submitted to EPD on 9 March 2017	No comment	---
Notifications of any summons & prosecutions received	0	---	N/A	N/A	---

**Summary of Complaints and Prosecutions**



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15. There was no environmental prosecution, complaint or notification of summons received in the reporting month, while six complaints were already received since the Project commencement. The Complaint Log is presented in **Appendix L**.

**Future Key Issues:**

16. Major site activities for the coming two months include:
- Wah Fu PTW: Operation of New Treatment Plant, Green Roof Installation at FSGT Building, Installation of doors, Construction of boundary wall;
  - Aberdeen PTW: Operation of PTW, Finishing Works of the Workshop and Administration Building, Road & Drainage Works along access road, Excavation of Existing Outfall Chamber, Construction of Cable Drawpits and Cable Ducts;
  - Ap Lei Chau PTW: Operation of PTW, Construction for the Remaining Part of Screening and Degritting Facilities and Effluent Pumping Station;
  - Sandy Bay PTW: N/A; and
  - Cyberport PTW: Road works.
17. The environmental concerns in coming months are mainly on chemicals storage, surface run off, spillage of wastewater during rainstorm and dust generated from the construction works.

## 1. INTRODUCTION

### Background

- 1.1 The Project ‘HATS Stage 2A – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau’ with Contract No: DC/2009/24 mainly comprises the following major works:
- The construction of screens, grit traps, deodourisation rooms, workshop and administration buildings, and modification of existing inlet pumping stations at the preliminary treatment works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau.
- 1.2 The general location plan of the Project is shown in **Figure 1**.
- 1.3 The Project is under Harbour Area Treatment Scheme (HATS) Stage 2A and is a designated project (Register No. : AEIAR-121/2008). The environmental permit: (Permit No. EP-322/2008/G) which was issued on 9<sup>th</sup> May 2014 to the Drainage Services Department (hereinafter called the DSD) as the Permit Holder.
- 1.4 Leader and JEC Joint Venture (hereafter called the LJJV) was commissioned by the DSD to undertake the construction of the Contract No. DC/2009/24 “Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau”.
- 1.5 Cinotech Consultants Limited was commissioned by LJJV to undertake the Environmental Monitoring and Audit (EM&A) works for the project and was appointed as the Environmental Team (ET) of the Project under Condition 2.1 of the EP.
- 1.6 The construction works at Wah Fu PTW and Ap Lei Chau PTW were commenced in the January 2012.
- 1.7 The construction phase of EM&A programme of the Project commenced in January 2012.
- 1.8 This is the 63<sup>rd</sup> monthly EM&A report summarizing the EM&A works conducted for the Project in March 2017.

### Project Organizations

- 1.9 The contacts of the Project are shown in **Table 1.1** and the organization chart of ET for Contract is shown in **Figure 2**.

**Table 1.1 Key Project Contacts**

Party	Role	Name	Position	Phone No.
Drainage Services Department	Project Proponent	Mr. Vincent Y.K. Wong	Senior Engineer 2	2159 3406
Ove Arup & Partners Hong Kong Ltd	Engineer’s Representative	Mr. Ted Tang	Principal Resident Engineer	2370-4311
	Coordinator	Ms. Natalie Kwok	Resident Engineer	6794 8844
Cinotech	Environmental	Dr. Priscilla Choy	ET Leader	2151 2089

Party	Role	Name	Position	Phone No.
	Team	Ms. Janet Wai	Project Coordinator & Audit Team Leader	2157 3879
Mott MacDonald	Independent Environmental Checker	Dr. Anne Kerr	Independent Environmental Checker	2828 5757
Leader and JEC Joint Venture	Contractor	Mr. Kelvin Cheung	Site Agent	9656 8865
		Ms. S.P. Ngan	Environmental Officer	9516 9431

### Construction Programme

1.10 The site activities undertaken in the reporting month included:

- Wah Fu PTW –Green roof installation for FSGT, Grit Handling Room and Switch and Control Room, Continuous interim operation and maintenance of new FSGT facilities, Boundary wall construction adjacent to sea side, Electrical work, DCS and building services installation, Installation of glass block window, Installation of doors, Road and Drainage works construction;
- Ap Lei Chau PTW – Continuous interim operation and maintenance of the ALC PTW, Construction of Remaining Part of Screening and Degritting Facilities and Effluent Pumping Station, Installation of glass blocks window and louvres at Workshop, E&M building services work in HEC substation and transformer room;
- Aberdeen PTW – Continuous interim operation and maintenance of the ABN PTW, Construction of cable drawpits and lying cable ducts, Underground drainage construction, Internal & external finishing works installation inside Admin. & Workshop Building, Installation of stoplogs in middle channel, Excavation of existing outfall chamber, Building services installation of Administration Building;
- Sandy Bay PTW – N/A;
- Cyberport PTW – New walkway and associated facilities construction.

### Summary of EM&A Requirements

1.11 The EM&A programme requires construction phase monitoring for air quality and construction noise, landscape and visual and environmental site audit. The EM&A requirements for each parameter are described in the following sections, including:

- All monitoring parameters;
- Action and Limit levels for all environmental parameters;
- Event Action Plans;
- Environmental mitigation measures, as recommended in the project EIA study final report; and
- Environmental requirements in contract documents.

1.12 The advice on the implementation status of environmental protection and pollution control/mitigation measures is summarized in **Section 4** of this report.

1.13 This report presents the monitoring results, observations, locations, equipment, period, for required monitoring parameter namely dust, noise levels, and audit works conducted for the Project in March 2017. For the methodology and QA/QC procedures of the monitoring parameters, please refer to the Section 2 and 3 of this report.

**2. AIR QUALITY**

**Monitoring Requirements**

2.1 1-hour and 24-hour TSP monitoring were conducted to monitor the air quality. **Appendix A** shows the established Action/Limit Levels for the environmental monitoring works.

**Monitoring Locations**

2.2 Three designated monitoring stations, CM\_CB1a, CM\_WF1a and CM\_AB1b were selected for impact dust monitoring for the Project. **Table 2.1** describes the air quality monitoring locations and the responsible ET who is carrying out the impact air quality monitoring. The monitoring locations which are also depicted in **Figure 1**.

**Table 2.1 Locations for Air Quality Monitoring**

Monitoring Station	Monitored by	Location of Measurement
CM_CB1a <sup>(1)</sup>	DC/2009/24	The Arcade, Cyberport
CM_WF1a <sup>(1)</sup>		Wah Ming House, Wah Fu Estate
CM_AB1b <sup>(2)</sup>		Works Site Boundary of Aberdeen PTW

Remarks:

1: Refer to the monthly report of DC/2007/24, revision to the original monitoring location in EM&A Manual was made and was verified by IEC on 19 November 2009 and subsequently approved by EPD on 27 November 2009.

2: Relocation of the air quality monitoring station was verified by IEC on 23 October 2014 and approved by EPD on 5 December 2014.

**Monitoring Equipment**

2.3 Both 1-hour TSP monitoring and continuous 24-hour TSP impact air quality monitoring were performed and complied with the specifications stipulated in the approved EM&A Manual. **Table 2.2** summarizes the equipment used in the impact air quality monitoring programme. Copies of the calibration certificates for the equipment are presented in **Appendix B**.

**Table 2.2 Air Quality Monitoring Equipment**

Equipment	Model and Make	Quantity
HVS Samplers	GMWS 2310 HVS, Model GS-2310-105	2
	Tisch Environmental, Inc.; Model no. TE-5170	1
Laser Dust Meter	Sibata; Model no. LD-3B	4
Calibrator	Tisch Environmental, Inc.; Model no. TE-5025A	1

**Monitoring Parameters, Frequency and Duration**

2.4 **Table 2.3** summarizes the monitoring parameters and frequencies of impact dust monitoring for the whole construction period. The air quality monitoring schedules could be found in Appendix C of this report.

**Table 2.3 Impact Dust Monitoring Parameters, Frequency and Duration**

Monitoring Station	Parameter	Period	Frequency
All monitoring locations	1-hour TSP	0700-1900 hrs	3 times/ every 6 days
	24-hour TSP	0000-2400 hrs	once in every 6 days

### Monitoring Methodology and QA/QC Procedure

- 2.5 Weather data was recorded during the monitoring period and is shown in **Appendix D**. The data was obtained from the Meteorological Observations from Hong Kong Observatory Station. The general weather conditions (i.e. sunny, cloudy or rainy) were recorded by the field staff's observation on the monitoring day.

#### Monitoring Methodology and QA/QC Procedure

##### *1-hour TSP Monitoring*

*(Equipment: Sibata; Model no. LD-3, LD-3B)*

#### Measuring Procedures

- 2.6 The measuring procedures of the 1-hour dust meters were in accordance with the Manufacturer's Instruction Manual as follows:
- Pull up the air sampling inlet cover
  - Change the Mode 0 to BG with once
  - Push Start/Stop switch once
  - Turn the knob to SENSI.ADJ and press it
  - Push Start/Stop switch once
  - Return the knob to the position MEASURE slowly
  - Push the timer set switch to set measuring time
  - Remove the cap and make a measurement

#### Maintenance/Calibration

- 2.7 The following maintenance/calibration was required for the direct dust meters:
- Check the meter at a 3-month interval and calibrate the meter at a 1-year interval throughout all stages of the air quality monitoring.

##### *24-hour TSP Monitoring*

#### Instrumentation

- 2.8 High volume (HVS) samplers (Model no. TE-5170 and GS-2310-105) completed with appropriate sampling inlets were employed for 24-hour TSP monitoring. The sampler was composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complied with that required by USEPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50).

#### Operating/Analytical Procedures

2.9 Operating/analytical procedures for the operation of HVS were as follows:

- A horizontal platform was provided with appropriate support to secure the samplers against gusty wind.
  - No two samplers were placed less than 2 meters apart.
  - The distance between the sampler and an obstacle, such as buildings, was at least twice the height that the obstacle protrudes above the sampler.
  - A minimum of 2 meters of separation from walls, parapets and penthouses was required for rooftop samples.
  - A minimum of 2 meters separation from any supporting structure, measured horizontally was required.
  - No furnaces or incineration flues were nearby.
  - Airflow around the sampler was unrestricted.
  - The sampler was more than 20 meters from the drip line.
  - Any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring.
- 2.10 Prior to the commencement of the dust sampling, the flow rate of the high volume sampler was properly set (between 1.1 m<sup>3</sup>/min. and 1.4 m<sup>3</sup>/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50.
- 2.11 Fiberglass filters were used which have a collection efficiency of larger than 99% for particles of 0.3 µm diameter.
- 2.12 The power supply was checked to ensure the sampler worked properly. On sampling, the sampler was operated for 5 minutes to establish thermal equilibrium before placing any filter media at the designated air monitoring station.
- 2.13 The filter holding frame was then removed by loosening the four nuts and a weighted and conditioned filter was carefully centered with the stamped number upwards, on a supporting screen.
- 2.14 The filter was aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter. Then the filter holding frame was tightened to the filter holder with swing bolts. The applied pressure should be sufficient to avoid air leakage at the edges.
- 2.15 The shelter lid was closed and secured with the aluminum strip.
- 2.16 The timer was then programmed. Information was recorded on the record sheet, which included the starting time, the weather condition and the filter number (the initial weight of the filter paper can be found out by using the filter number).
- 2.17 After sampling, the filter was removed and sent to the laboratory for weighing. The elapsed time was also recorded.
- 2.18 Before weighing, all filters were equilibrated in a conditioning environment for 24 hours. The conditioning environment temperature should be between 25°C and 30°C and not vary by more than ±3°C; the relative humidity (RH) should be < 50% and not vary by more than ±5%. A convenient working RH is 40%.

Maintenance/Calibration

2.19 The following maintenance/calibration was required for the HVS:

- The high volume motors and their accessories were properly maintained. Appropriate maintenance such as routine motor brushes replacement and electrical wiring checking were made to ensure that the equipment and necessary power supply are in good working condition.

2.20 High volume samplers were calibrated at bi-monthly intervals using Calibration Kit (Tisch Environmental, Inc.; Model no. TE-5025A) throughout all stages of the air quality monitoring.

**Results and Observations**

2.21 **Table 2.4** summarizes the monitoring results at CM\_CB1a, CM\_WF1a and CM\_AB1b in the reporting month.

**Table 2.4 Summary of 1-hour and 24-hour TSP Monitoring Result in Reporting Month**

Air Quality Monitoring Station	Average $\mu\text{g}/\text{m}^3$	Range $\mu\text{g}/\text{m}^3$	Action Level $\mu\text{g}/\text{m}^3$	Limit Level $\mu\text{g}/\text{m}^3$
1 hour TSP				
CM_CB1a	137	82-218	280	500
CM_WF1a	117	80-188	285	
CM_AB1b	152	92-210	283	
24 hours TSP				
CM_CB1a	101	69-130	178	260
CM_WF1a	72	48-96	185	
CM_AB1b	106	61-146	174	

2.22 The detailed monitoring data and graphical presentations of 1-hour and 24-hour TSP monitoring results could be referred to **Appendix E**.

2.23 All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded. Summary of exceedance is presented in **Appendix G**.

2.24 All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded. Summary of exceedance is presented in **Appendix G**.

2.25 The identified dust sources at the monitoring stations were mainly from sea traffic, road traffic.

**3 NOISE**

**Monitoring Requirements**

3.1 Four noise monitoring stations, namely M6a, M7a, M8 and M9 were designated in the EM&A Manual for impact monitoring in the reporting month. **Appendix A** shows the established Action and Limit Levels for the environmental monitoring works.

**Monitoring Locations**

3.2 Noise monitoring was conducted at four designated monitoring stations as listed in **Table 3.1**.

3.3 Noise monitoring at M5 – Chuk Lam Ming Tong was completed by the end of July 2015.

**Table 3.1 Location of Noise Monitoring Stations**

Monitoring Station	Monitored By	Location of Measurement
M6a <sup>(1)</sup> (Cyberport PTW)	DC/2009/24	Aegean Terrace
M7a <sup>(1)</sup> (Wah Fu PTW)		Wah Ming House
M8 (Aberdeen PTW)		Wah Lai House
M9 (Ap Lei Chau PTW)		Mei Chun Court, South Horizons

Remark 1: Refer to the monthly report of DC/2007/24, revision to the original monitoring location in EM&A Manual was made and was verified by IEC on 19 November 2009 and subsequently approved by EPD on 27 November 2009.

**Monitoring Equipment**

3.4 Integrating Sound Level Meter was used for noise monitoring. The meter is a Type 1 sound level meter capable of giving a continuous readout of the noise level readings including equivalent continuous sound pressure level (L<sub>eq</sub>) and percentile sound pressure level (L<sub>x</sub>) and also complied with International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1) specifications. **Table 3.2** summarizes the noise monitoring equipment being used. Copies of the calibration certificates for the sound level meter and calibrator are attached in **Appendix B**.

**Table 3.2 Noise Monitoring Equipment**

Equipment	Model and Make	Quantity
Integrating Sound Level Meter	SVAN 955	2
	SVAN 957	2
Calibrator	SV30A	3
	B&K 4231	1

**Monitoring Parameters, Frequency and Duration**

3.5 **Table 3.3** summarizes the monitoring parameters, frequency and total duration of monitoring. The noise monitoring schedules could be found in **Appendix C** of this report.



3.6 As advised by the Contractor, no construction work under this project was conducted during the restricted hours in reporting month.

**Table 3.3 Noise Monitoring Parameters, Frequency and Duration**

Monitoring Stations	Parameter	Period	Frequency
M6a M7a M8 M9	$L_{eq}(30 \text{ min.})$ dB(A)	0700-1900 hrs. on normal weekdays	Once per week
M6a M7a M8 M9	$L_{eq}(5 \text{ min.})$ dB(A)	During restricted hours	Weekly monitoring to be conducted during the construction works

**Monitoring Methodology and QA/QC Procedures**

- The Sound Level Meter was generally set on a tripod at a height of 1.2 m above the ground, depending to the actual monitoring condition.
- For free field measurement (if any), the meter was positioned away from any nearby reflective surfaces. All records for free field noise levels were adjusted with a correction of +3 dB(A).
- The battery condition was checked to ensure the correct functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
  - frequency weighting : A
  - time weighting : Fast
  - time measurement : 30 minutes / 5 minutes
- Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94.0 dB at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1.0 dB, the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.
- The wind speed was frequently checked with the portable wind meter.
- At the end of the monitoring period, the  $L_{eq}$ ,  $L_{90}$  and  $L_{10}$  were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- Noise measurement was paused during periods of high intrusive noise if possible and observation was recorded when intrusive noise was not avoided.  
 Noise monitoring was cancelled in the presence of fog, rain, and wind with a steady speed exceeding 5 m/s, or wind with gusts exceeding 10 m/s.

**Maintenance and Calibration**

3.7 The microphone head of the sound level meter and calibrator was cleaned with soft cloth regularly. The meters were sent to the supplier to check and calibrate on a yearly interval.

**Results and Observations**

3.8 **Table 3.4** summarizes the monitoring results at M6a, M7a, M8 and M9 in reporting month.

**Table 3.4 Summary of the Noise Monitoring Results in Reporting Month**

For the time period 0700-1900 hrs. on weekdays		
Monitoring Station	Range, dB(A) L <sub>eq</sub> (30 min.)	Limit Level, dB(A) L <sub>eq</sub> (30 min.)
M6a	53-55 <sup>(1)</sup>	75.0
M7a	57-61	
M8	60-67	
M9	60-62	

Remark: (1) Free-field measurement, +3dB correction.

- 3.9 The construction noise monitoring at the designated locations was conducted by the ET of this project as scheduled in the reporting month. The monitoring results and graphical presentation are provided in **Appendix F**.
- 3.10 No Action/Limit Level exceedance was recorded. Summary of exceedance is presented in **Appendix G**.
- 3.11 The major noise sources identified at the designated noise monitoring stations were from road traffic noise, sea traffic.

**4 ENVIRONMENTAL AUDIT****Site Audits**

- 4.1 Site audits were carried out on a weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site.
- 4.2 Environmental site audits were conducted on 3, 10, 17, 24 and 31 March 2017. No non-compliance was observed during the site audits.
- 4.3 Site inspections were undertaken to ensure and check that the implementation and maintenance of mitigation measures for Air Quality, Noise, Water Quality, Waste Management, Landscape and Visual are being properly carried out in the reporting month in accordance to section 14.1 of the EM&A Manual. No non-compliance was observed during the site inspections.
- 4.4 The summaries of site audits are attached in **Appendix H**.

**Review of Environmental Monitoring Procedures**

- 4.5 The monitoring works were conducted by the monitoring team of this project. The monitoring procedures were reviewed by its ET.

**Status of Environmental Licensing and Permitting**

- 4.6 All permits/licenses obtained for the Contract DC/2009/24 are summarized in **Table 4.1**.

**Table 4.1 Summary of Environmental Licensing and Permit Status for Contract DC/2009/24**

Permit Number	Valid Period		Details	Status
	From	To		
<b>Water Discharge License</b>				
WT000116 29-2012	N/A	31/1/2017	Location: Sandy Bay PTW	Expiry
WT000116 33-2012	N/A	31/1/2017	Location: Cyber Port PTW	
WT000116 32-2012	N/A	31/1/2017	Location: Ap Lei Chau	
WT000162 42-2013	N/A	31/3/2017	Location: Aberdeen PTW	<b>Valid until 31/3/2017</b>
WT000168 37-2013	N/A	31/8/2018	Location: Wah Fu PTW	Valid
<b>Notification of Works Under APCO</b>				
334694	6/9/2011	N/A	All PTWs	N/A
<b>Registered Chemical Waste Producer</b>				
5218-171- L2783-01	14/12/2011	N/A	Location: Sandy Bay PTW	Valid
5218-171- L2783-02	30/12/2011	N/A	Location: Cyber Port PTW	

5218-174-L2783-03	30/12/2011	N/A	Location: Ap Lei Chau	
5218-173-L2783-04	30/12/2011	N/A	Location: Aberdeen PTW	
5218-172-L2783-05	30/12/2011	N/A	Location: Wah Fu PTW	
<b>Special Waste Admission Ticket</b>				
13434	24/11/2016	23/11/2017	Location: Ap Lei Chau	Valid
13435	24/11/2016	23/11/2017	Location: Aberdeen PTW	Valid
13433	24/11/2016	23/11/2017	Location: Wah Fu PTW	Valid

**Status of Waste Management**

4.7 The amount of wastes generated by the activities of the Project in the reporting month is shown in **Appendix I**.

**Implementation Status of Environmental Mitigation Measures**

4.8 Details of the implementation of mitigation measures are provided in the **Appendix K**.

4.9 During the weekly environmental site inspections in the reporting period, no non-conformance was identified. The observations and recommendations for the Projects are summarized in **Table 4.2**.

**Table 4.2 Observations and Recommendations of Site Audit**

Parameters	Ref. Number	Observations	Follow Up Action
<b>Water Quality</b>	170303-R01	The bund should be provided to prevent the muddy water runoff and clear the silt/sand properly at Wah Fu-PTW.	The bund was provided and the silt/sand was cleared at Wah Fu-PTW.
	170310-O01	The mud/silt trail was observed near the site entrance of Cyberport-PTW and Abd-PTW. The Contractor was reminded to provide the wheel washing facility and clear the sand/silt regularly and properly.	Please refer to 170317-O01.
	170317-O01	The silt trail was observed near the site entrance of Cyberport-PTW and Abd-PTW. The Contractor was reminded to provide the wheel washing facility and clear the silt regularly and properly.	Please refer to 170324-O01.
	170324-O01	The silt trail was observed near the site entrance of Cyberport-PTW and Abd-PTW. The Contractor was reminded to provide the wheel washing facility and clear the silt regularly and properly.	The silt trail was not observed near the site entrance of Cyberport-PTW and Abd-PTW.

<b>Air Quality</b>	170317-R02	The stockpiles of dusty material should be covered by impervious material to prevent the dust emission at Cyberport-PTW.	The stockpiles of dusty material was cleared and not observed at Cyberport-PTW.
	170324-R03	The stockpiles of dusty material should be covered by impervious material to prevent the dust emission at Cyberport-PTW.	The stockpiles of dusty material was cleared at Cyberport-PTW.
<b>Waste/ Chemical Management</b>	170310-O02	The oil leakage was observed from the excavator at Abd-PTW. The Contractor was reminded to provide the maintenance and clear the oil stain properly.	The oil leakage was not observed from the excavator at Abd-PTW.
	170310-R03	Properly clear the oil stain as chemical waste at Cyberport-PTW.	The oil stain was cleared at Cyberport-PTW.
	170324-O02	The oil leakage was observed from the excavator at Abd-PTW. The Contractor was reminded to provide the maintenance and clear the oil stain properly.	The oil leakage was not observed from the excavator at Abd-PTW.
	170331-R01	The drip tray should be provided for the chemical containers at ALC-PTW.	The chemical containers were removed.
	170331-R02	Properly clear the oil stain at Abd-PTW.	The oil stain was cleared.
<b>Noise</b>	--	--	--
<b>Landscape and Visual</b>	--	--	--
<b>Permit/ Licenses</b>	--	--	--

### Implementation Status of Event Action Plans

4.10 The Event Action Plans for air quality and noise are presented in **Appendix J**.

#### 1-hr TSP

4.11 No Action/Limit Level exceedance was recorded.

#### 24-hr TSP

4.12 No Action/Limit Level exceedance was recorded.

#### Construction Noise

4.13 No Action/Limit Level exceedance was recorded.

#### Landscape and Visual

4.14 No non-compliance was recorded.

### **Summary of Complaints and Prosecutions**

- 4.15 There was no environmental prosecution or notification of summons received while six complaints were already received since the Project commencement. The Complaint Log is presented in **Appendix L**.

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## 5. FUTURE KEY ISSUES

### Key Issues for the Coming Month

5.1 Key environmental issues in the coming month include:

- Generation of dust from stockpiles of excavated and dusty materials, unpaved site area and vehicle movement, roadworks, excavation works and loading and unloading dusty materials on-site;
- Noise nuisance from operation of equipment and machinery on-site;
- Provision well maintenance on the storage facilities of chemicals/fuel and chemical waste/waste oil on-site;
- Maintenance of de-silting facilities and drainage system such as U-channels;
- Blockage of U-channel by accumulated silt;
- Dust generation should be mitigated by adequate water spraying, especially in dry days;
- Silty surface runoff generated from the site area; and
- Silt and dust getting into the public area by the leaving site vehicles at the site exits without adequate wheel washing facilities.

### Monitoring Schedule for the Next Month

5.2 The tentative environmental monitoring schedules for the next month could be found in the **Appendix C** of this report.

### Construction Program for the Next Month

5.3 The tentative construction program is provided in **Appendix M**.

## 6. CONCLUSIONS AND RECOMMENDATIONS

### Conclusions

- 6.1 Environmental monitoring and audit works were performed in the reporting month and all monitoring results were checked and reviewed.

#### 1-hour TSP Monitoring

- 6.2 All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

#### 24-hour TSP Monitoring

- 6.3 All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

#### Construction Noise Monitoring

- 6.4 All construction noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

#### Environmental Audit

- 6.5 Environmental site audits were conducted as weekly basis in the reporting month. No non-compliance was recorded.

#### Complaint and Prosecution

- 6.6 No environmentally related summons, prosecutions or complaints were received in the reporting month.

### Recommendations

- 6.7 According to the environmental audit performed in the reporting month, the following recommendations were made:

#### *Water Quality*

- To provide the bund to prevent the muddy water runoff from the site;
- To provide the wheel washing facility to prevent the silt/mud trail near the site entrance and clear silt/sand properly.

#### *Air Quality*

- To cover the stockpile of dusty material to prevent the dust emission in the site.

#### *Waste/Chemical Management*

- To provide the maintenance of PMEs to prevent the oil spillage and proper clear the oil stain in the site;



- To provide the adequate capacity of drip tray for the storage of chemical containers in the site.

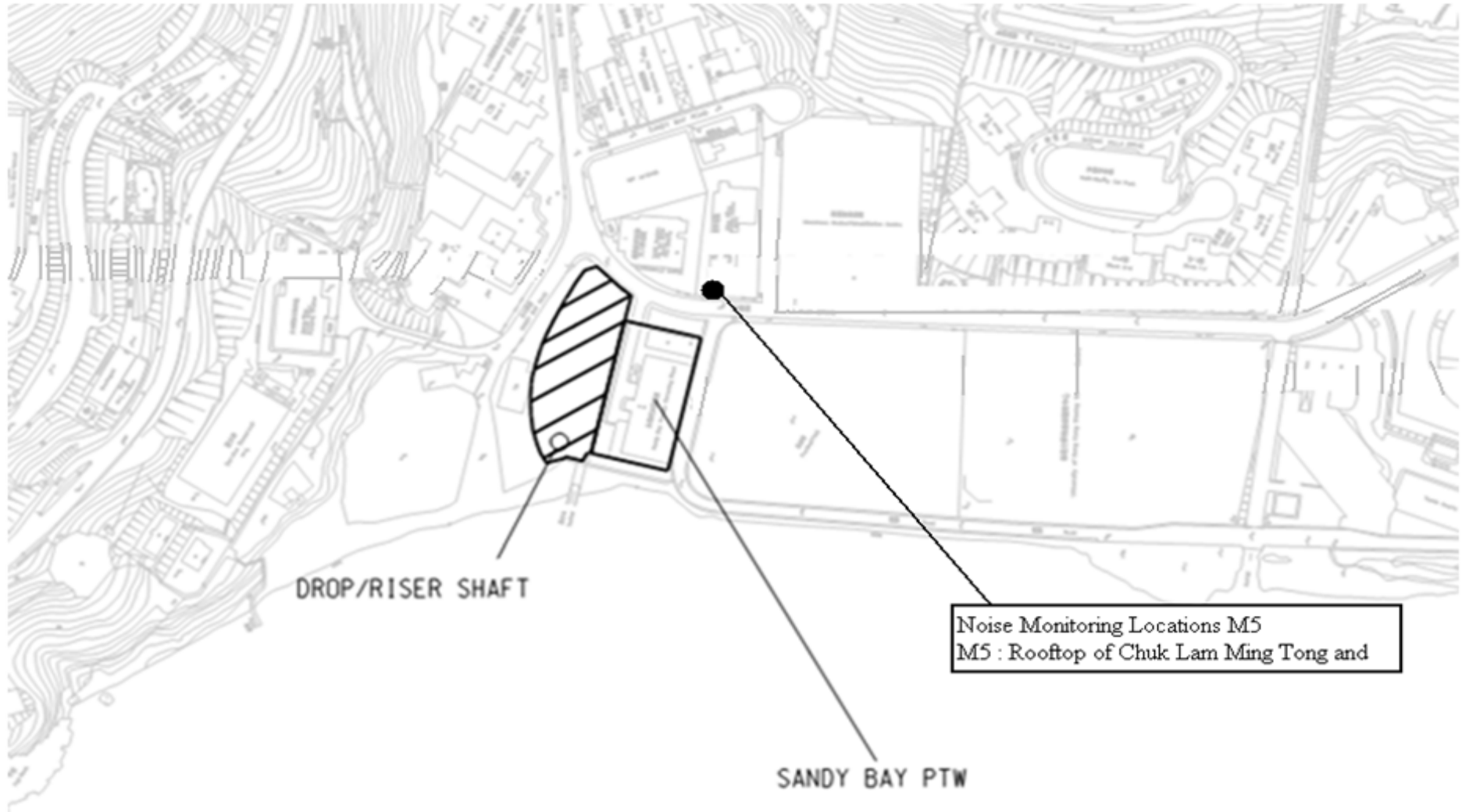
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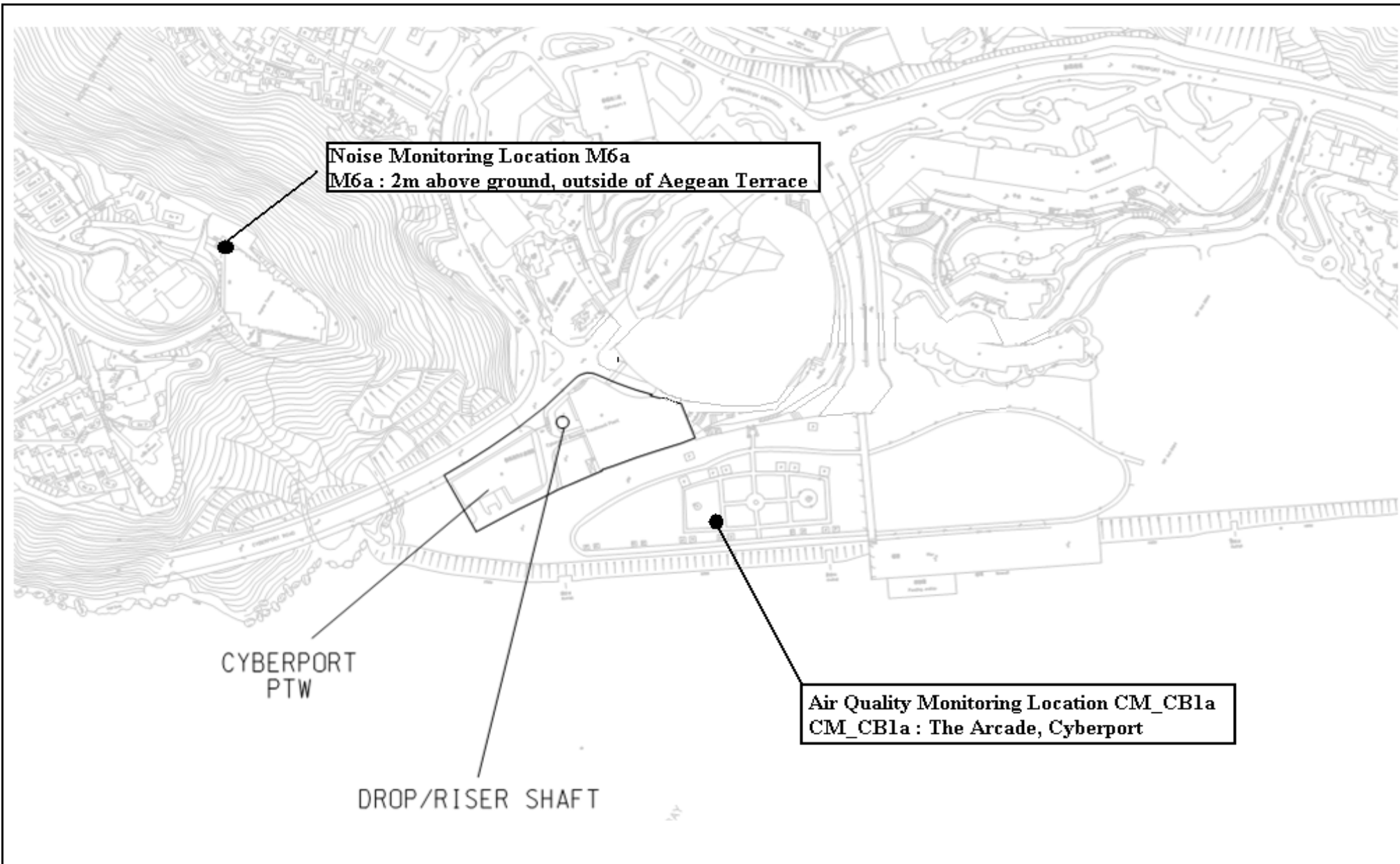
## FIGURES

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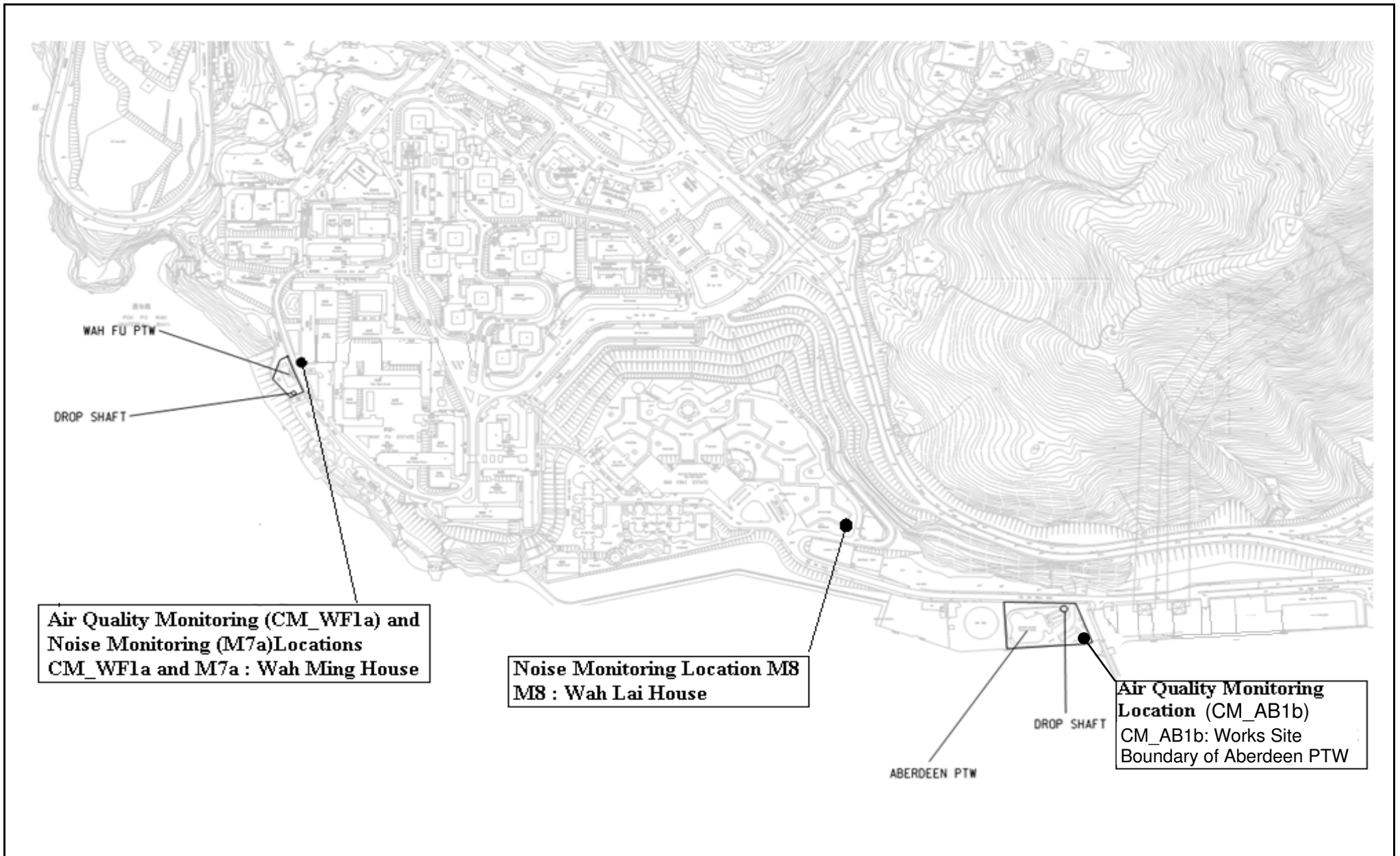
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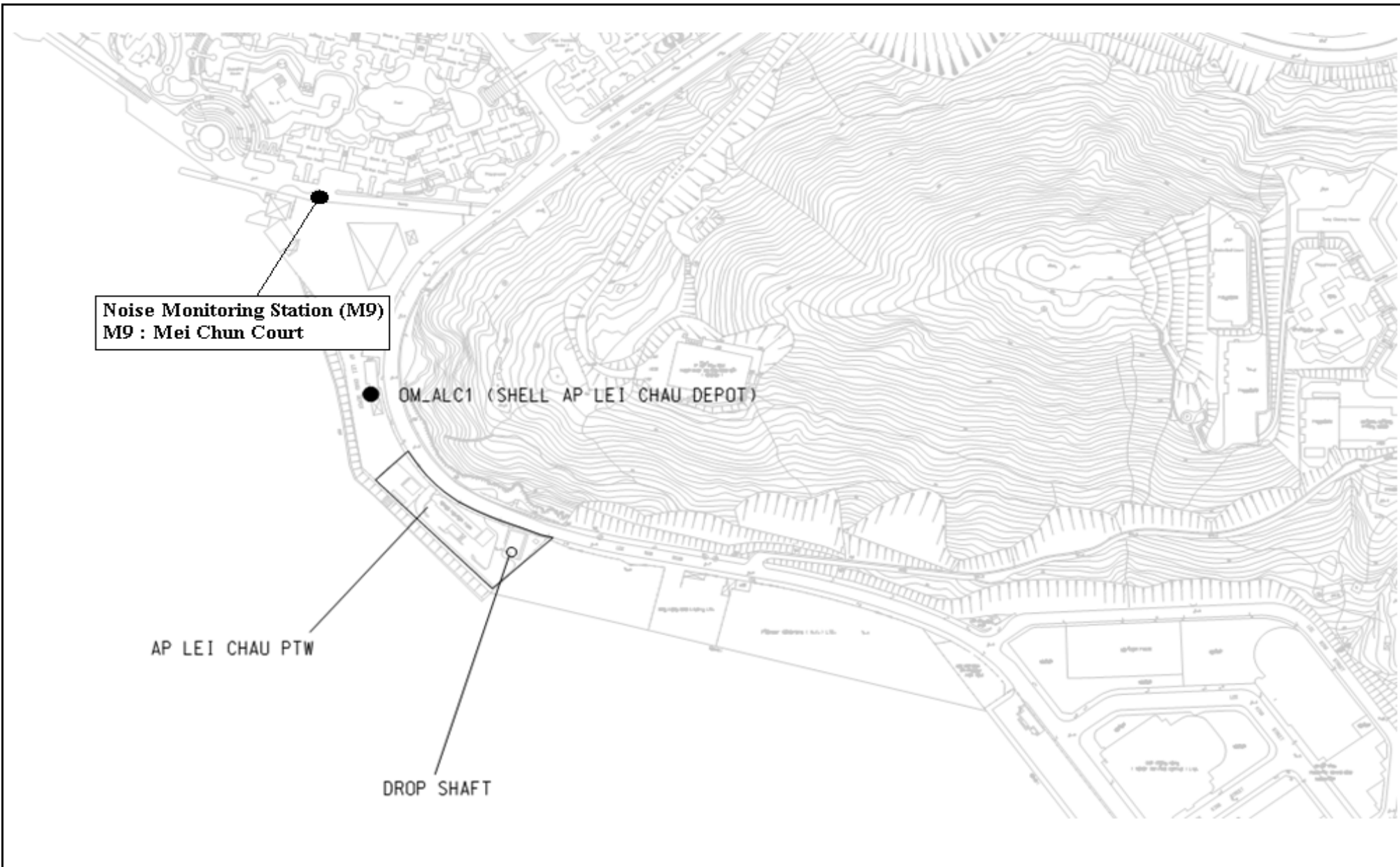
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	HATS 2A - Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau	N.T.S	No. MA11060	
	General Location Plan of Sandy Bay PTW and Locations of Noise Monitoring Stations	Date	Figure	
		01/2012	1a	



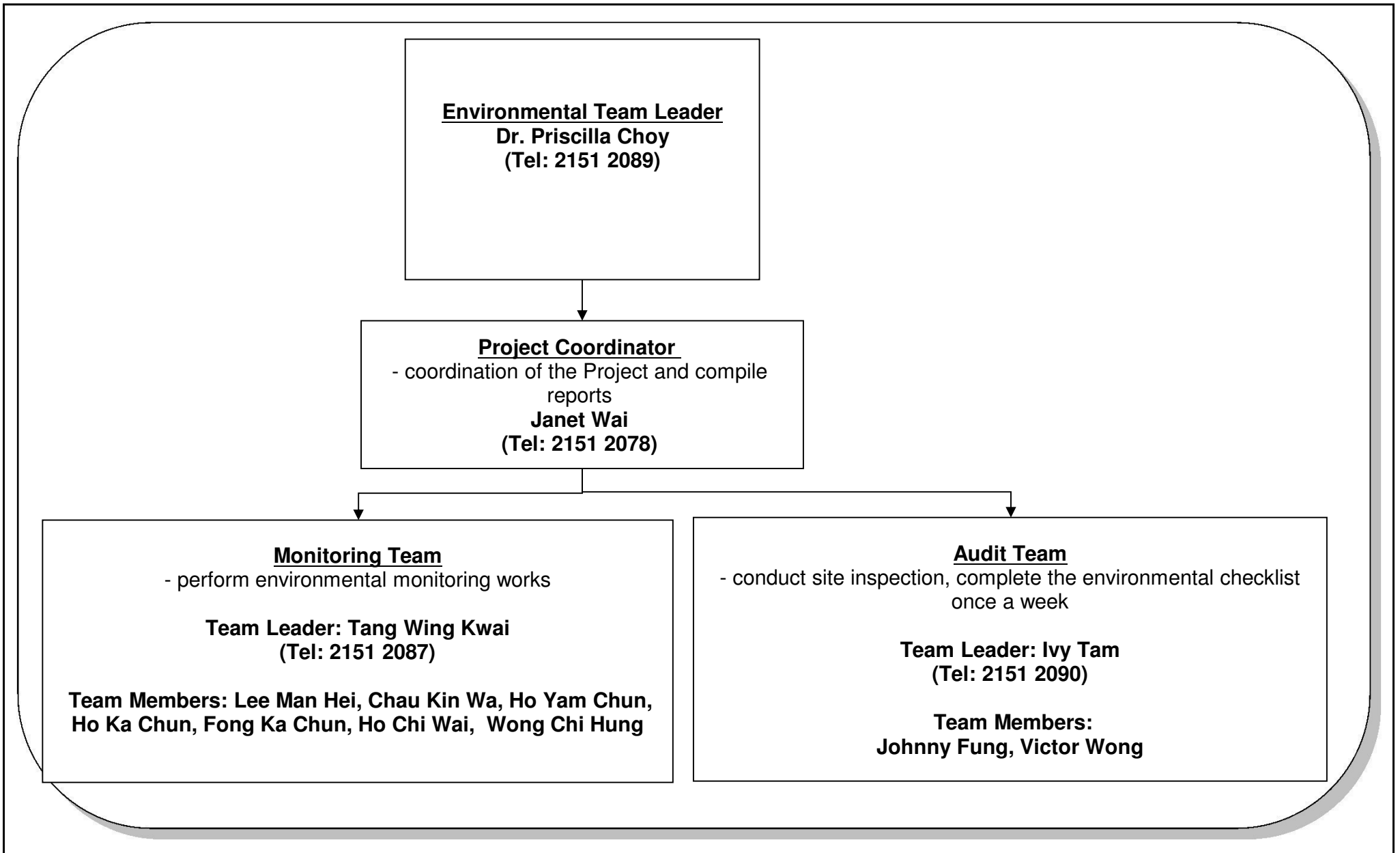
Title	Contract No: DC/2009/24	Scale	Project	CINOTECH
	HATS 2A - Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau	N.T.S	No. MA11060	
	General Location Plan of Cyberport PTW and Locations of Air Quality and Noise Monitoring Stations	Date	Figure	
		01/2012	1B	



Title	Contract No: DC/2009/24	Scale	Project	CINOTECH
	HATS 2A - Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau	N.T.S	No. MA11060	
	Location of Wah Fu and Aberdeen PTW and Locations of Air Quality and Noise Monitoring Locations	Date	Figure	
		07/2014	1C	



Title	Contract No: DC/2009/24	Scale	Project	CINOTECH
	HATS 2A - Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau	N.T.S	No. MA11060	
	Locations of AP LEI CHAU PTW and the Noise Monitoring Location	Date	Figure	
		1/2012	1D	



Title	Contract No. DC/2009/24 HATS Stage 2A – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau ET's Organization Chart	Scale	N.T.S	Project No.	MA11060	<b>CINOTECH</b>
		Date	Mar-15	Figure	2	

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**APPENDIX A  
ACTION AND LIMIT LEVELS FOR AIR  
QUALITY AND NOISE**

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## Appendix A Action and Limit Levels

**Table A-1 Action and Limit Levels for 1-Hour TSP and 24-Hour TSP**

Monitoring Stations	Action Level ( $\mu\text{g}/\text{m}^3$ )		Limit Level ( $\mu\text{g}/\text{m}^3$ )	
	1-hour	24-hour	1-hour	24-hour
CM_CB1a	280	178	500	260
CM_WF1a	285	185		
CM_AB1b	283	174		

**Table A-2 Action and Limit Level for Construction Noise**

Monitoring Stations	Time Period	Action Level	Limit Level in dB(A)
M5 M6a M7a M8 M9	0700-1900 hours on normal weekdays	When one documented complaint is received	75 <sup>(1)</sup>

Remark: 1: 70dB(A) and 65 dB(A) for schools during normal teaching periods and school examination periods, respectively.

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**APPENDIX B  
COPIES OF CALIBRATION  
CERTIFICATES**

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# High-Volume TSP Sampler

## 5-POINT CALIBRATION DATA SHEET

**CINOTECH**

File No. MA11060/69/0017

Station CM\_WF1a - Wah Ming House Operator: WK  
 Date: 27-Jan-17 Next Due Date: 26-Mar-17  
 Equipment No.: A-01-69 Serial No. 3222

Ambient Condition			
Temperature, Ta (K)	292.4	Pressure, Pa (mmHg)	770.5

Orifice Transfer Standard Information					
Serial No.:	2896	Slope, mc (CFM)	0.0598	Intercept, bc	-0.05079
Last Calibration Date:	4-Mar-16	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	3-Mar-17	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	$\Delta H$ (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	$\Delta W$ (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	12.4	3.58	60.72	7.8	2.84
2	9.6	3.15	53.53	6.1	2.51
3	7.8	2.84	48.33	5.0	2.27
4	5.1	2.30	39.24	3.3	1.85
5	3.1	1.79	30.78	2.2	1.51

By Linear Regression of Y on X

Slope, mw = 0.0448 Intercept, bw : 0.1110  
 Correlation coefficient\* = 0.9996

\*If Correlation Coefficient < 0.990, check and recalibrate.

### Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point;  $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$  4.02

Remarks: \_\_\_\_\_

Conducted by: Wk Tang Signature: Kwai Date: 27/1/17  
 Checked by: LA Signature: \_\_\_\_\_ Date: 27 January 2017

# High-Volume TSP Sampler

## 5-POINT CALIBRATION DATA SHEET

**CINOTECH**

File No. MA11060/69/0018

Station CM\_WF1a - Wah Ming House Operator: WK  
 Date: 24-Mar-17 Next Due Date: 23-May-17  
 Equipment No.: A-01-69 Serial No. 3222

Ambient Condition			
Temperature, Ta (K)	294.7	Pressure, Pa (mmHg)	765.2

Orifice Transfer Standard Information					
Serial No.:	0993	Slope, mc (CFM)	0.0578	Intercept, bc	-0.04890
Last Calibration Date:	28-Feb-17	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	27-Feb-18	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	ΔH (orifice), in. of water	[ΔH x (Pa/760) x (298/Ta)] <sup>1/2</sup>	Qstd (CFM) X - axis	ΔW (HVS), in. of water	[ΔW x (Pa/760) x (298/Ta)] <sup>1/2</sup> Y-axis
1	12.2	3.52	61.85	7.9	2.84
2	9.8	3.16	55.52	6.1	2.49
3	7.5	2.76	48.68	4.7	2.19
4	5.2	2.30	40.67	3.3	1.83
5	3.4	1.86	33.05	2.3	1.53

By Linear Regression of Y on X

Slope, mw = 0.0450 Intercept, bw = 0.0157  
 Correlation coefficient\* = 0.9986

\*If Correlation Coefficient < 0.990, check and recalibrate.

### Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; W = (mw x Qstd + bw)<sup>2</sup> x (760 / Pa) x (Ta / 298) = 3.74

Remarks: \_\_\_\_\_

Conducted by: Wk Tang Signature: [Signature]  
 Checked by: [Signature] Signature: [Signature]

Date: 24/3/17  
 Date: 24 March 2017

# High-Volume TSP Sampler

## 5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA11060/38/0017

Station CM AB1b - Works Site Boundary of Aberdeen PTW Operator: WK  
 Date: 27-Jan-17 Next Due Date: 26-Mar-17  
 Equipment No.: A-01-38 Serial No. 1402

Ambient Condition			
Temperature, Ta (K)	291.6	Pressure, Pa (mmHg)	771.7

Orifice Transfer Standard Information					
Serial No.:	2896	Slope, mc (CFM)	0.0598	Intercept, bc	-0.05079
Last Calibration Date:	4-Mar-16	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	3-Mar-17	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	$\Delta H$ (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	$\Delta W$ (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	11.7	3.48	59.13	7.0	2.70
2	9.4	3.12	53.09	5.7	2.43
3	7.5	2.79	47.51	4.5	2.16
4	5.2	2.32	39.70	3.3	1.85
5	3.4	1.88	32.27	2.1	1.48

By Linear Regression of Y on X

Slope, mw = 0.0450 Intercept, bw = 0.0385  
 Correlation coefficient\* = 0.9994

\*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation	
From the TSP Field Calibration Curve, take Qstd = 43 CFM	
From the Regression Equation, the "Y" value according to	
$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$	
Therefore, Set Point; W = $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ <u>3.75</u>	

Remarks: \_\_\_\_\_

Conducted by: wk Tang Signature: Kwai  
 Checked by: A Signature: \_\_\_\_\_

Date: 27/1/17  
 Date: 27 January 2017

# High-Volume TSP Sampler 5-POINT CALIBRATION DATA SHEET

**CINOTECH**

File No. MA11060/38/0018

Station CM\_AB1b - Works Site Boundary of Aberdeen PTW Operator: WK  
 Date: 24-Mar-17 Next Due Date: 23-May-17  
 Equipment No.: A-01-38 Serial No. 1402

Ambient Condition			
Temperature, Ta (K)	294	Pressure, Pa (mmHg)	766.2

Orifice Transfer Standard Information					
Serial No.:	0993	Slope, mc (CFM)	0.0578	Intercept, bc	-0.04890
Last Calibration Date:	28-Feb-17	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	27-Feb-18	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	$\Delta H$ (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	$\Delta W$ (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	11.8	3.47	60.95	6.9	2.66
2	9.7	3.15	55.34	5.8	2.43
3	7.4	2.75	48.44	4.5	2.14
4	5.1	2.28	40.36	3.1	1.78
5	3.3	1.84	32.63	2.0	1.43

By Linear Regression of Y on X

Slope, mw = 0.0434 Intercept, bw : 0.0229  
 Correlation coefficient\* = 0.9996

\*If Correlation Coefficient < 0.990, check and recalibrate.

### Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM  
 From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; W =  $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$  3.50

Remarks: \_\_\_\_\_

Conducted by: Wk Tang Signature: [Signature] Date: 24/3/17  
 Checked by: [Signature] Signature: [Signature] Date: 24 March 2017

# High-Volume TSP Sampler

## 5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA11060/41/0011

Station CM CB1a - The Arcade, Cyberport Operator: WK  
 Date: 27-Jan-17 Next Due Date: 26-Mar-17  
 Equipment No.: A-01-41 Serial No. 5280

Ambient Condition			
Temperature, Ta (K)	291.2	Pressure, Pa (mmHg)	771.5

Orifice Transfer Standard Information					
Serial No.:	2896	Slope, mc (CFM)	0.0598	Intercept, bc	-0.05079
Last Calibration Date:	4-Mar-16	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	3-Mar-17	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	$\Delta H$ (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	$\Delta W$ (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	11.7	3.49	59.16	7.2	2.73
2	9.8	3.19	54.22	5.9	2.48
3	7.6	2.81	47.85	4.7	2.21
4	5.1	2.30	39.35	3.2	1.82
5	3.3	1.85	31.82	2.1	1.48

By Linear Regression of Y on X

Slope, mw = 0.0455 Intercept, bw : 0.0298  
 Correlation coefficient\* = 0.9997

\*If Correlation Coefficient < 0.990, check and recalibrate.

### Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point;  $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$  3.80

Remarks: \_\_\_\_\_

Conducted by: wh Tang Signature: [Signature]  
 Checked by: [Signature] Signature: \_\_\_\_\_

Date: 27/1/17  
 Date: 27 January 2017

# High-Volume TSP Sampler 5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA11060/41/0012

Station CM\_CB1a - The Arcade, Cyberport Operator: WK  
 Date: 24-Mar-17 Next Due Date: 23-May-17  
 Equipment No.: A-01-41 Serial No. 5280

Ambient Condition			
Temperature, Ta (K)	293.6	Pressure, Pa (mmHg)	765.7

Orifice Transfer Standard Information					
Serial No.:	0993	Slope, mc (CFM)	0.0578	Intercept, bc	-0.04890
Last Calibration Date:	28-Feb-17	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	27-Feb-18	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	$\Delta H$ (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	$\Delta W$ (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	11.8	3.47	60.97	7.1	2.69
2	9.7	3.15	55.36	5.9	2.46
3	7.4	2.75	48.46	4.6	2.17
4	5.2	2.31	40.76	3.3	1.84
5	3.5	1.89	33.59	2.2	1.50

**By Linear Regression of Y on X**

Slope,  $mw =$  0.0434 Intercept,  $bw =$  0.0554  
 Correlation coefficient\* = 0.9997

\*If Correlation Coefficient < 0.990, check and recalibrate.

**Set Point Calculation**

From the TSP Field Calibration Curve, take  $Qstd = 43$  CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point;  $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$  3.61

Remarks: \_\_\_\_\_

Conducted by: Wk Tang Signature: \_\_\_\_\_  
 Checked by: Av Signature: \_\_\_\_\_

Date: 24/3/17  
 Date: 24 March 2017





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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 04, 2016 Rootmeter S/N 0438320 Ta (K) - 295  
 Operator Tisch Orifice I.D. - 2896 Pa (mm) - 755.65

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	1.4340	3.2	2.00
2	NA	NA	1.00	1.0250	6.4	4.00
3	NA	NA	1.00	0.9150	7.9	5.00
4	NA	NA	1.00	0.8770	8.7	5.50
5	NA	NA	1.00	0.7210	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
1.0001	0.6974	1.4173	0.9957	0.6944	0.8836
0.9959	0.9716	2.0044	0.9915	0.9674	1.2496
0.9938	1.0861	2.2410	0.9894	1.0814	1.3971
0.9928	1.1320	2.3503	0.9885	1.1271	1.4653
0.9875	1.3696	2.8346	0.9831	1.3636	1.7672
Qstd slope (m) = 2.11176			Qa slope (m) = 1.32235		
intercept (b) = -0.05079			intercept (b) = -0.03166		
coefficient (r) = 0.99982			coefficient (r) = 0.99982		
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 }



TISCH ENVIRONMENTAL, INC.  
 145 SOUTH MIAMI AVE  
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 513.467.9000  
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 513.467.9009 FAX

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Feb 28, 2017 Rootsmeter S/N 0438320 Ta (K) - 294  
 Operator Tisch Orifice I.D. - 0993 Pa (mm) - 750.57

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER	ORFICE
					DIFF Hg (mm)	DIFF H2O (in.)
1	NA	NA	1.00	1.3860	3.2	2.00
2	NA	NA	1.00	0.9910	6.4	4.00
3	NA	NA	1.00	0.8840	7.9	5.00
4	NA	NA	1.00	0.8430	8.7	5.50
5	NA	NA	1.00	0.6970	12.6	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
0.9967	0.7191	1.4149	0.9957	0.7184	0.8851
0.9925	1.0015	2.0010	0.9915	1.0005	1.2517
0.9904	1.1204	2.2372	0.9894	1.1192	1.3995
0.9894	1.1737	2.3464	0.9884	1.1725	1.4678
0.9842	1.4120	2.8299	0.9832	1.4106	1.7702
Qstd slope (m) = 2.04055			Qa slope (m) = 1.27776		
intercept (b) = -0.04890			intercept (b) = -0.03059		
coefficient (r) = 0.99995			coefficient (r) = 0.99995		
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}

**TEST REPORT**

**APPLICANT:** Cinotech Consultants Limited  
Room 1710, Technology Park,  
18 On Lai Street,  
Shatin, NT, Hong Kong

Test Report No.:	C/A/170303A
Date of Issue:	2017-03-06
Date Received:	2017-03-03
Date Tested:	2017-03-03
Date Completed:	2017-03-06
Next Due Date:	2017-05-05

**ATTN:** Mr. W. K. Tang

Page: 1 of 1

**Certificate of Calibration**

**Item for Calibration:**

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 853944
Sensitivity (K) 1 CPM	: 0.001 mg/m <sup>3</sup>
Sen. Adjustment Scale Setting	: 685 CPM
Equipment No.	: A-02-04

**Test Conditions:**

Room Temperature	: 23 degree Celsius
Relative Humidity	: 64 %

**Test Specifications & Methodology:**

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

**Results:**

Correlation Factor (CF)	0.0034
-------------------------	--------

\*\*\*\*\*

*PREPARED AND CHECKED BY:*

For and On Behalf of **WELLAB Ltd.**

  
**PATRICK TSE**  
Laboratory Manager

**TEST REPORT**

**APPLICANT:** Cinotech Consultants Limited  
Room 1710, Technology Park,  
18 On Lai Street,  
Shatin, NT, Hong Kong

Test Report No.:	C/A/170303B
Date of Issue:	2017-03-06
Date Received:	2017-03-03
Date Tested:	2017-03-03
Date Completed:	2017-03-06
Next Due Date:	2017-05-05

**ATTN:** Mr. W. K. Tang

Page: 1 of 1

**Certificate of Calibration**

**Item for Calibration:**

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 014750
Sensitivity (K) 1 CPM	: 0.001 mg/m <sup>3</sup>
Sen. Adjustment Scale Setting	: 790 CPM
Equipment No.	: A-02-06

**Test Conditions:**

Room Temperature	: 23 degree Celsius
Relative Humidity	: 64 %

**Test Specifications & Methodology:**

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

**Results:**

Correlation Factor (CF)	0.0034
-------------------------	--------

\*\*\*\*\*

*PREPARED AND CHECKED BY:*

For and On Behalf of **WELLAB Ltd.**

  
**PATRICK TSE**  
Laboratory Manager

**TEST REPORT**

**APPLICANT:** Cinotech Consultants Limited  
Room 1710, Technology Park,  
18 On Lai Street,  
Shatin, NT, Hong Kong

Test Report No.:	C/A/170303C
Date of Issue:	2017-03-06
Date Received:	2017-03-03
Date Tested:	2017-03-03
Date Completed:	2017-03-06
Next Due Date:	2017-05-05

**ATTN:** Mr. W. K. Tang

Page: 1 of 1

**Certificate of Calibration**

**Item for Calibration:**

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 541146
Sensitivity (K) 1 CPM	: 0.001 mg/m <sup>3</sup>
Sen. Adjustment Scale Setting	: 625 CPM
Equipment No.	: A-02-07

**Test Conditions:**

Room Temperature	: 23 degree Celsius
Relative Humidity	: 64 %

**Test Specifications & Methodology:**

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

**Results:**

Correlation Factor (CF)	0.0034
-------------------------	--------

\*\*\*\*\*

*PREPARED AND CHECKED BY:*

For and On Behalf of **WELLAB Ltd.**

  
**PATRICK TSE**  
Laboratory Manager

**TEST REPORT**

**APPLICANT:** Cinotech Consultants Limited  
Room 1710, Technology Park,  
18 On Lai Street,  
Shatin, NT, Hong Kong

Test Report No.:	C/A/170106
Date of Issue:	2017-01-09
Date Received:	2017-01-06
Date Tested:	2017-01-06
Date Completed:	2017-01-09
Next Due Date:	2017-03-08

**ATTN:** Mr. W. K. Tang

Page: 1 of 1

**Certificate of Calibration**

**Item for Calibration:**

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 541146
Sensitivity (K) 1 CPM	: 0.001 mg/m <sup>3</sup>
Sen. Adjustment Scale Setting	: 625 CPM
Equipment No.	: A-02-07

**Test Conditions:**

Room Temperature	: 22 degree Celsius
Relative Humidity	: 63 %

**Test Specifications & Methodology:**

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

**Results:**

Correlation Factor (CF)	0.0033
-------------------------	--------

\*\*\*\*\*

*PREPARED AND CHECKED BY:*

For and On Behalf of **WELLAB Ltd.**

  
**PATRICK TSE**  
Laboratory Manager

**TEST REPORT**

**APPLICANT:** Cinotech Consultants Limited  
Room 1710, Technology Park,  
18 On Lai Street,  
Shatin, NT, Hong Kong

Test Report No.:	C/170302C
Date of Issue:	2017-03-04
Date Received:	2017-03-02
Date Tested:	2017-03-02
Date Completed:	2017-03-04
Next Due Date:	2017-05-03

**ATTN:** Mr. W. K. Tang

Page: 1 of 1

**Certificate of Calibration**

**Item for Calibration:**

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 095029
Sensitivity (K) 1 CPM	: 0.001 mg/m <sup>3</sup>
Sen. Adjustment Scale Setting	: 551 CPM
Equipment No.	: A-02-10

**Test Conditions:**

Room Temperature	: 22 degree Celsius
Relative Humidity	: 61 %

**Test Specifications & Methodology:**

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

**Results:**

Correlation Factor (CF)	0.0037
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*PREPARED AND CHECKED BY:*

For and On Behalf of **WELLAB Ltd.**



**PATRICK TSE**

Laboratory Manager

**TEST REPORT**

**APPLICANT:** Cinotech Consultants Limited  
Room 1710, Technology Park,  
18 On Lai Street,  
Shatin, NT, Hong Kong

Test Report No.:	C/161230
Date of Issue:	2017-01-03
Date Received:	2016-12-30
Date Tested:	2016-12-30
Date Completed:	2017-01-03
Next Due Date:	2017-03-02

**ATTN:** Mr. W. K. Tang

Page: 1 of 1

**Certificate of Calibration**

**Item for Calibration:**

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 095029
Sensitivity (K) 1 CPM	: 0.001 mg/m <sup>3</sup>
Sen. Adjustment Scale Setting	: 551 CPM
Equipment No.	: A-02-10

**Test Conditions:**

Room Temperature	: 22 degree Celsius
Relative Humidity	: 66 %

**Test Specifications & Methodology:**

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

**Results:**

Correlation Factor (CF)	0.0038
-------------------------	--------

\*\*\*\*\*

*PREPARED AND CHECKED BY:*

For and On Behalf of **WELLAB Ltd.**

  
**PATRICK TSE**  
Laboratory Manager



### TEST REPORT

**APPLICANT:** Cinotech Consultants Limited  
Room 1710, Technology Park,  
18 On Lai Street,  
Shatin, NT, Hong Kong

Test Report No.:	C/N/160917B
Date of Issue:	2016-09-19
Date Received:	2016-09-17
Date Tested:	2016-09-17
Date Completed:	2016-09-19
Next Due Date:	2017-09-18

**ATTN:** Mr. W.K. Tang

Page: 1 of 1

### Certificate of Calibration

**Item for calibration:**

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 955
Serial No.	: 12553
Microphone No.	: 35222
Equipment No.	: N-08-02

**Test conditions:**

Room Temperature	: 24 degree Celsius
Relative Humidity	: 57%

**Test Specifications:**

Performance checking at 94 and 114 dB

**Methodology:**

In-house method, according to manufacturer instruction manual

**Results:**

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

*PREPARED AND CHECKED BY:*

For and On Behalf of **WELLAB Ltd.**

  
**PATRICK TSE**  
Laboratory Manager

## TEST REPORT

**APPLICANT:** Cinotech Consultants Limited  
Room 1710, Technology Park,  
18 On Lai Street,  
Shatin, NT, Hong Kong

Test Report No.:	C/N/161230
Date of Issue:	2017-01-03
Date Received:	2016-12-30
Date Tested:	2016-12-30
Date Completed:	2017-01-03
Next Due Date:	2018-01-02

**ATTN:** Mr. W. K. Tang

Page: 1 of 1

### Certificate of Calibration

**Item for calibration:**

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 955
Serial No.	: 14303
Microphone No.	: 35222
Equipment No.	: N-08-05

**Test conditions:**

Room Temperature	: 21 degree Celsius
Relative Humidity	: 62 %

**Test Specifications:**

Performance checking at 94 and 114 dB

**Methodology:**

In-house method, according to manufacturer instruction manual

**Results:**

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

Remark: 1) This report supersedes the one dated 2012/01/21 with certificate number C/N/120120/1.

*PREPARED AND CHECKED BY:*

For and On Behalf of **WELLAB Ltd.**

  
**PATRICK TSE**  
Laboratory Manager

## TEST REPORT

**APPLICANT:** Cinotech Consultants Limited  
Room 1710, Technology Park,  
18 On Lai Street,  
Shatin, NT, Hong Kong

Test Report No.:	C/N/160826A
Date of Issue:	2016-08-29
Date Received:	2016-08-26
Date Tested:	2016-08-26
Date Completed:	2016-08-29
Next Due Date:	2017-08-28

**ATTN:** Mr. W.K. Tang

Page: 1 of 1

### Certificate of Calibration

**Item for calibration:**

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 957
Serial No.	: 21455
Microphone No.	: 43730
Equipment No.	: N-08-07

**Test conditions:**

Room Temperature	: 25 degree Celsius
Relative Humidity	: 57%

**Test Specifications:**

Performance checking at 94 and 114 dB

**Methodology:**

In-house method, according to manufacturer instruction manual

**Results:**

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

*PREPARED AND CHECKED BY:*

For and On Behalf of **WELLAB Ltd.**

  
\_\_\_\_\_  
**PATRICK TSE**  
Laboratory Manager

## TEST REPORT

**APPLICANT:** Cinotech Consultants Limited  
Room 1710, Technology Park,  
18 On Lai Street,  
Shatin, NT, Hong Kong

Test Report No.:	C/N/161128
Date of Issue:	2016-11-30
Date Received:	2016-11-28
Date Tested:	2016-11-28
Date Completed:	2016-11-30
Next Due Date:	2017-11-29

**ATTN:** Mr. W.K. Tang

Page: 1 of 1

### Certificate of Calibration

**Item for calibration:**

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 957
Serial No.	: 23853
Microphone No.	: 48530
Equipment No.	: N-08-10

**Test conditions:**

Room Temperature	: 21 degree Celsius
Relative Humidity	: 66%

**Test Specifications:**

Performance checking at 94 and 114 dB

**Methodology:**

In-house method, according to manufacturer instruction manual

**Results:**

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

*PREPARED AND CHECKED BY:*

For and On Behalf of **WELLAB Ltd.**



**PATRICK TSE**

Laboratory Manager

## TEST REPORT

**APPLICANT:** Cinotech Consultants Limited  
Room 1710, Technology Park,  
18 On Lai Street,  
Shatin, NT, Hong Kong

Test Report No.:	CN/160930A
Date of Issue:	2016-10-03
Date Received:	2016-09-30
Date Tested:	2016-09-30
Date Completed:	2016-10-03
Next Due Date:	2017-10-02

**ATTN:** Mr. W.K. Tang

Page: 1 of 1

### Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 24803
Equipment No.	: N-09-03

### Test conditions:

Room Temperature	: 25 degree Celsius
Relative Humidity	: 60%

### Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

### Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

*PREPARED AND CHECKED BY:*

For and On Behalf of **WELLAB Ltd.**



**PATRICK TSE**

Laboratory Manager

## TEST REPORT

**APPLICANT:** Cinotech Consultants Limited  
Room 1710, Technology Park,  
18 On Lai Street,  
Shatin, NT, Hong Kong

Test Report No.:	C/N/160930B
Date of Issue:	2016-10-03
Date Received:	2016-09-30
Date Tested:	2016-09-30
Date Completed:	2016-10-03
Next Due Date:	2017-10-02

**ATTN:** Mr. W.K. Tang

Page: 1 of 1

### Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 24791
Equipment No.	: N-09-04

### Test conditions:

Room Temperature	: 25 degree Celsius
Relative Humidity	: 60%

### Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

### Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

*PREPARED AND CHECKED BY:*

For and On Behalf of **WELLAB Ltd.**

  
**PATRICK TSE**  
Laboratory Manager

## TEST REPORT

**APPLICANT:** Cinotech Consultants Limited  
Room 1710, Technology Park,  
18 On Lai Street,  
Shatin, NT, Hong Kong

Test Report No.:	CN/160930C
Date of Issue:	2016-10-03
Date Received:	2016-09-30
Date Tested:	2016-09-30
Date Completed:	2016-10-03
Next Due Date:	2017-10-02

**ATTN:** Mr. W.K. Tang

Page: 1 of 1

### Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 24780
Equipment No.	: N-09-05

### Test conditions:

Room Temperature	: 25 degree Celsius
Relative Humidity	: 60%

### Methodology:


The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

### Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

*PREPARED AND CHECKED BY:*

For and On Behalf of **WELLAB Ltd.**

  
**PATRICK TSE**  
Laboratory Manager

## TEST REPORT

**APPLICANT:** Cinotech Consultants Limited  
Room 1710, Technology Park,  
18 On Lai Street,  
Shatin, NT, Hong Kong

Test Report No.:	C/N/161104/1
Date of Issue:	2016-11-07
Date Received:	2016-11-04
Date Tested:	2016-11-04
Date Completed:	2016-11-07
Next Due Date:	2017-11-06

**ATTN:** Mr. W.K. Tang

Page: 1 of 1

### Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: Brüel & Kjær
Model No.	: 4231
Serial No.	: 2326353
Equipment No.	: N-02-01

### Test conditions:

Room Temperature	: 21 degree Celsius
Relative Humidity	: 62 %

### Methodology:

The sound calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

### Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

*PREPARED AND CHECKED BY:*

For and On Behalf of **WELLAB Ltd.**

  
**PATRICK TSE**  
Laboratory Manager



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**APPENDIX C  
ENVIRONMENTAL MONITORING  
SCHEDULE**

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**Contract No. DC/2009/24**  
**HATS 2A – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau**  
**Impact Air Quality and Noise Monitoring for March 2017**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1-Mar	2-Mar	3-Mar	4-Mar
			24hr TSP	1 hr TSP (CM_AB1b, CB1a & WF1a) Noise (M6a, M7a, M8 & M9)		
5-Mar	6-Mar	7-Mar	8-Mar	9-Mar	10-Mar	11-Mar
		24hr TSP	1 hr TSP (CM_AB1b, CB1a & WF1a) Noise (M6a, M7a, M8 & M9)			
12-Mar	13-Mar	14-Mar	15-Mar	16-Mar	17-Mar	18-Mar
	24hr TSP	1 hr TSP (CM_AB1b, CB1a & WF1a) Noise (M6a, M7a, M8 & M9)			24hr TSP	
19-Mar	20-Mar	21-Mar	22-Mar	23-Mar	24-Mar	25-Mar
	1 hr TSP (CM_AB1b, CB1a & WF1a) Noise (M6a, M7a, M8 & M9)			24hr TSP	1 hr TSP (CM_AB1b, CB1a & WF1a)	
26-Mar	27-Mar	28-Mar	29-Mar	30-Mar	31-Mar	
			24hr TSP	1 hr TSP (CM_AB1b, CB1a & WF1a) Noise (M6a, M7a, M8 & M9)		

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

**Air Quality Monitoring Station (1 hr TSP & 24 hr TSP)**

CM\_CB1a - The Arcade, Cyberport  
 CM\_WF1a - Wah Ming House  
 CM\_AB1b - Works Site Boundary of Aberdeen PTW

**Noise Monitoring Station**

M6a - Aegean Terrace  
 M7a - Wah Ming House  
 M8 - Wah Lai House  
 M9 - Mei Chun Court

**Contract No. DC/2009/24**

**HATS 2A – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau  
Tentative Impact Air Quality and Noise Monitoring for April 2017**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1-Apr
<b>2-Apr</b>	3-Apr	4-Apr	5-Apr	6-Apr	7-Apr	8-Apr
	24hr TSP		1 hr TSP (CM_AB1b, CB1a & WF1a) Noise (M6a, M7a, M8 & M9)			24hr TSP
<b>9-Apr</b>	10-Apr	11-Apr	12-Apr	13-Apr	14-Apr	15-Apr
		1 hr TSP (CM_AB1b, CB1a & WF1a) Noise (M6a, M7a, M8 & M9)	24hr TSP	1 hr TSP (CM_AB1b, CB1a & WF1a)		
<b>16-Apr</b>	17-Apr	18-Apr	19-Apr	20-Apr	21-Apr	22-Apr
		24hr TSP	1 hr TSP (CM_AB1b, CB1a & WF1a) Noise (M6a, M7a, M8 & M9)			
<b>23-Apr</b>	24-Apr	25-Apr	26-Apr	27-Apr	28-Apr	29-Apr
	24hr TSP	1 hr TSP (CM_AB1b, CB1a & WF1a) Noise (M6a, M7a, M8 & M9)			24hr TSP	
<b>30-Apr</b>						

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

**Air Quality Monitoring Station (1 hr TSP & 24 hr TSP)**

CM\_CB1a - The Arcade, Cyberport  
 CM\_WF1a - Wah Ming House  
 CM\_AB1b - Works Site Boundary of Aberdeen PTW

**Noise Monitoring Station**

M6a - Aegean Terrace  
 M7a - Wah Ming House  
 M8 - Wah Lai House  
 M9 - Mei Chun Court

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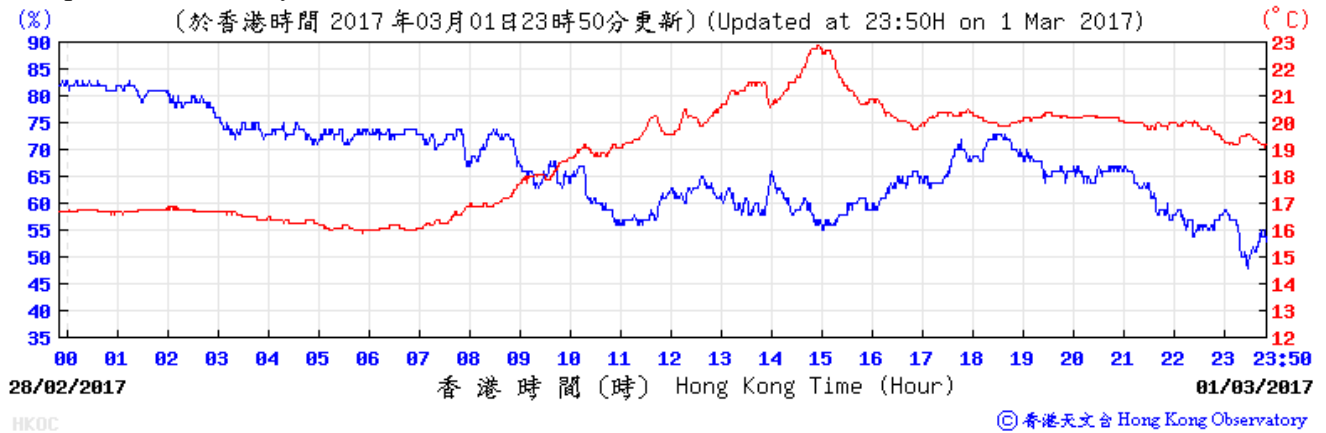
**APPENDIX D  
METEOROLOGICAL DATA ON  
MONITORING DATES**

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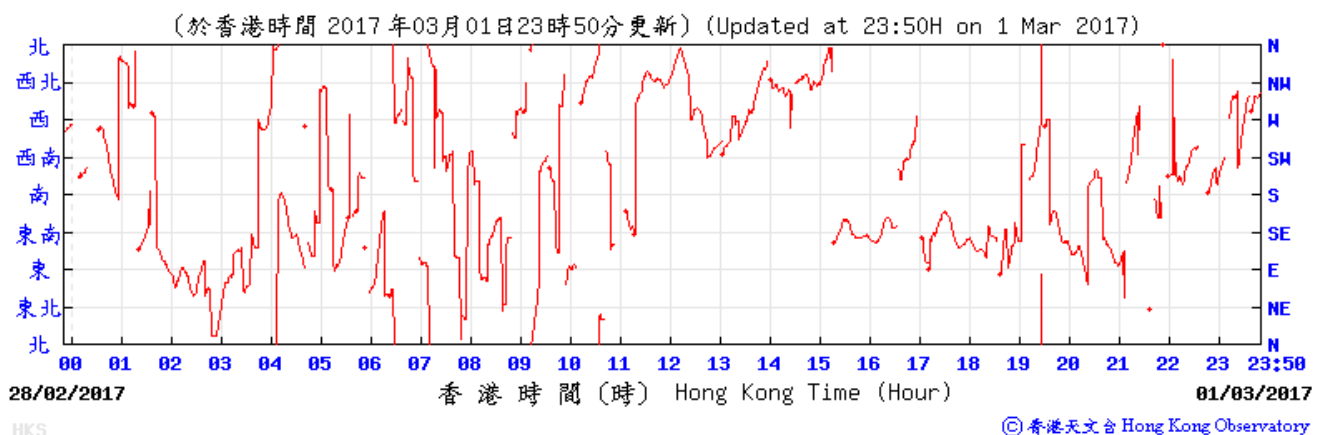
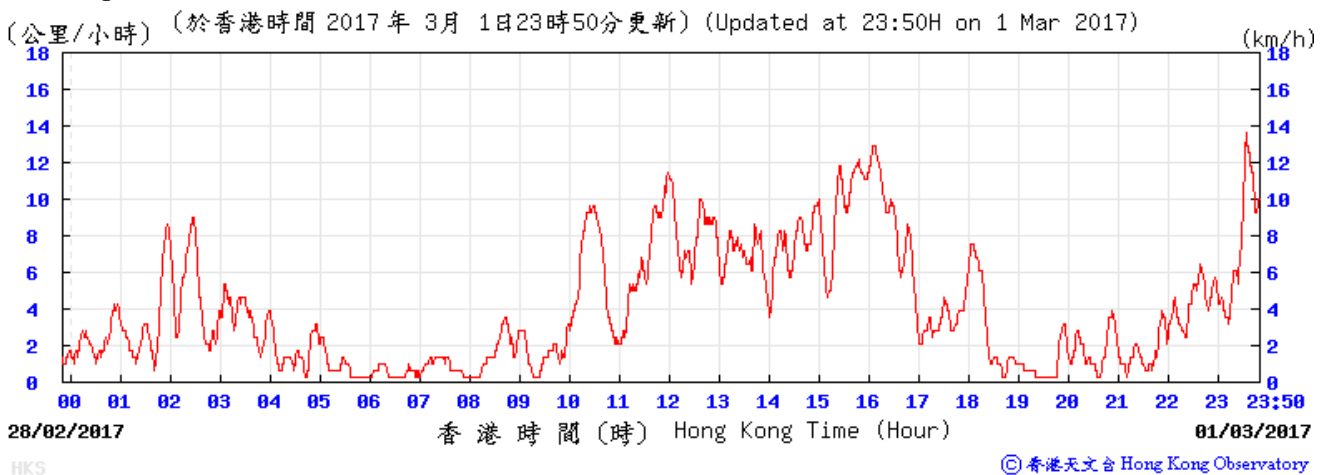
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## Appendix D Meteorological Data Recorded from HKO Station (1 March 2017) (Source: [www.hko.gov.hk](http://www.hko.gov.hk))

### Temperature/Humidity:



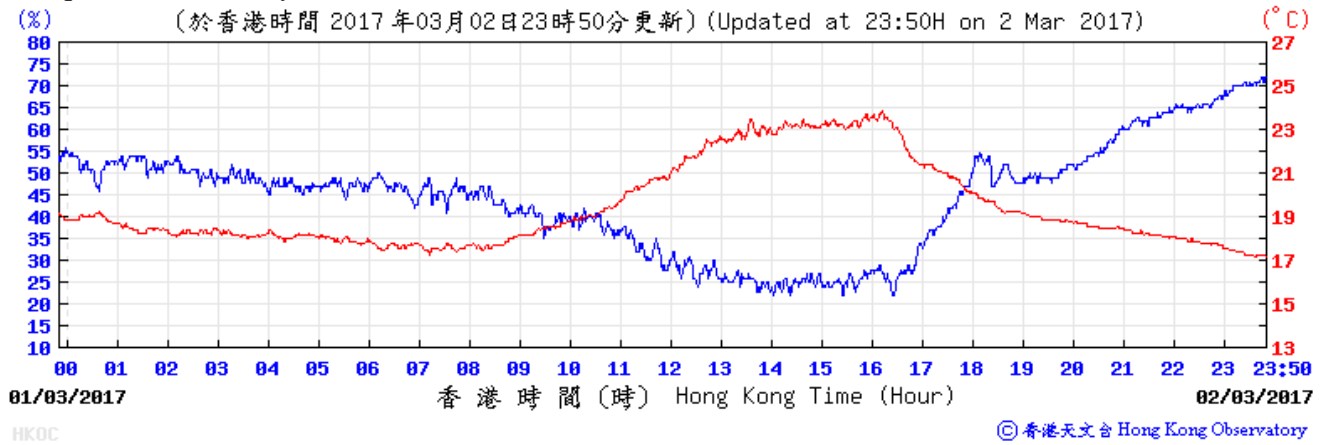
### Wind Speed and Direction:



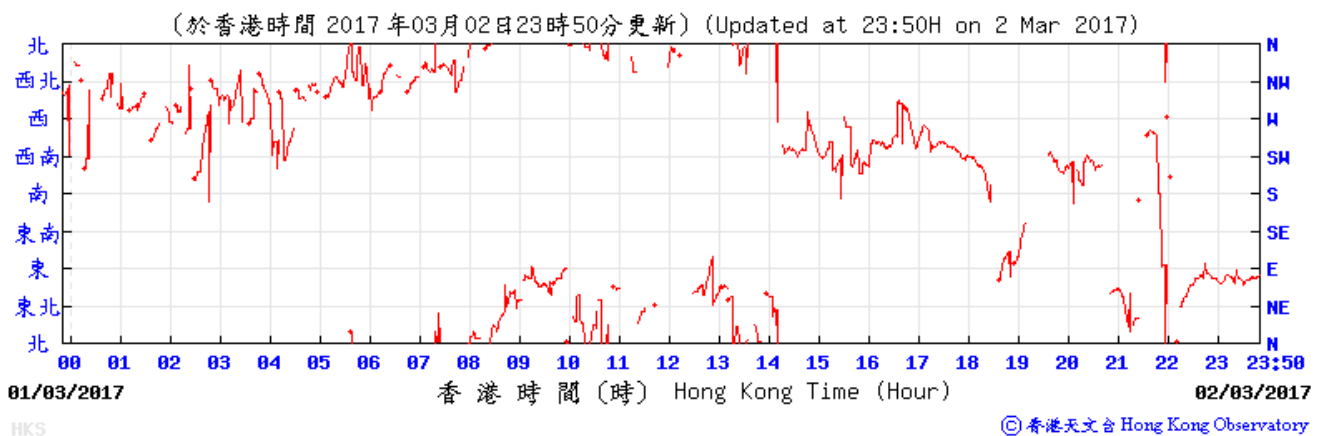
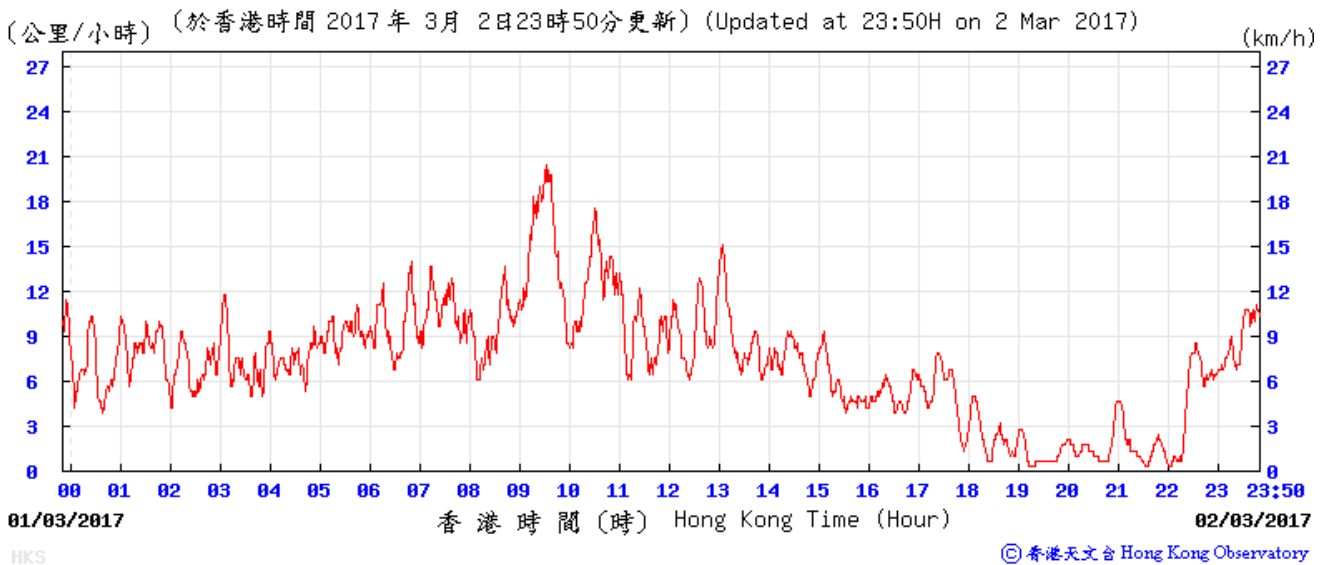
### Meteorological Data Recorded from HKO Station (2 March 2017)

(Source: [www.hko.gov.hk](http://www.hko.gov.hk))

#### Temperature/Humidity:



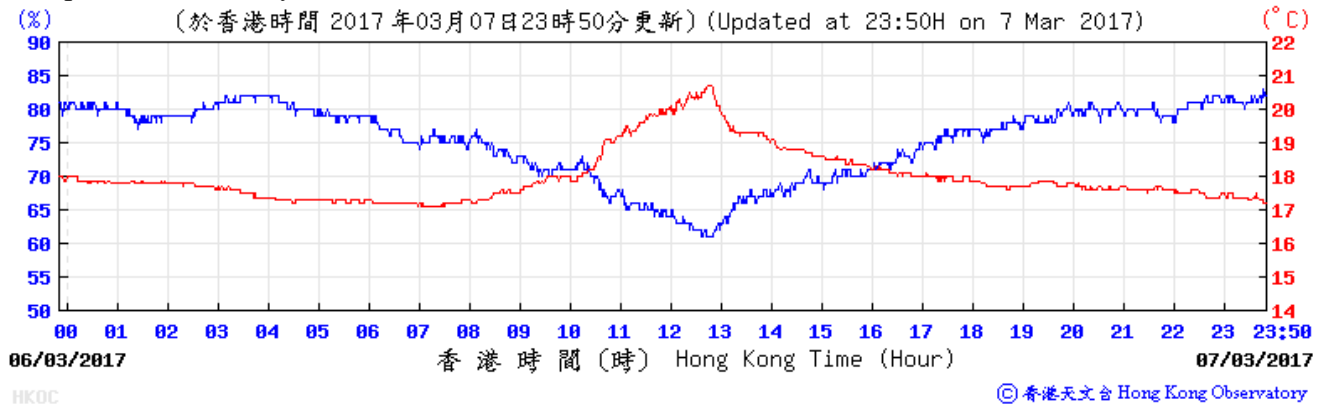
#### Wind Speed and Direction:



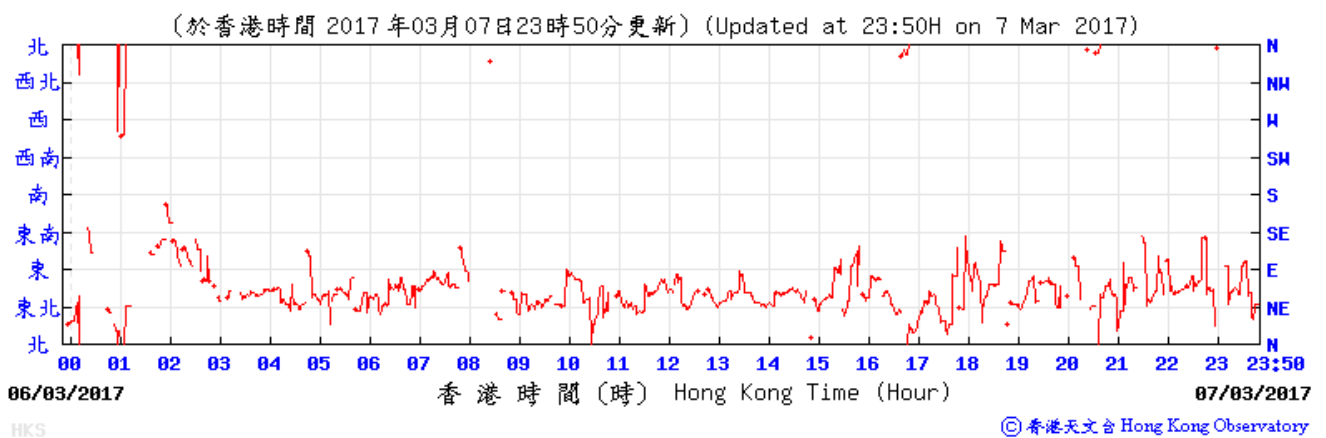
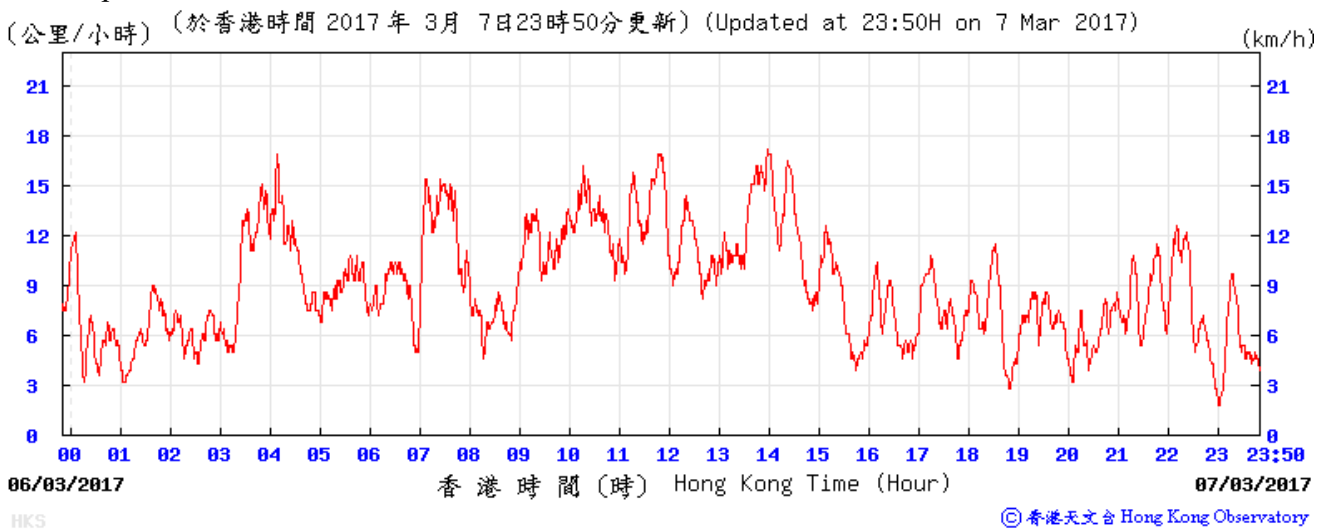
### Meteorological Data Recorded from HKO Station (7 March 2017)

(Source: [www.hko.gov.hk](http://www.hko.gov.hk))

#### Temperature/Humidity:



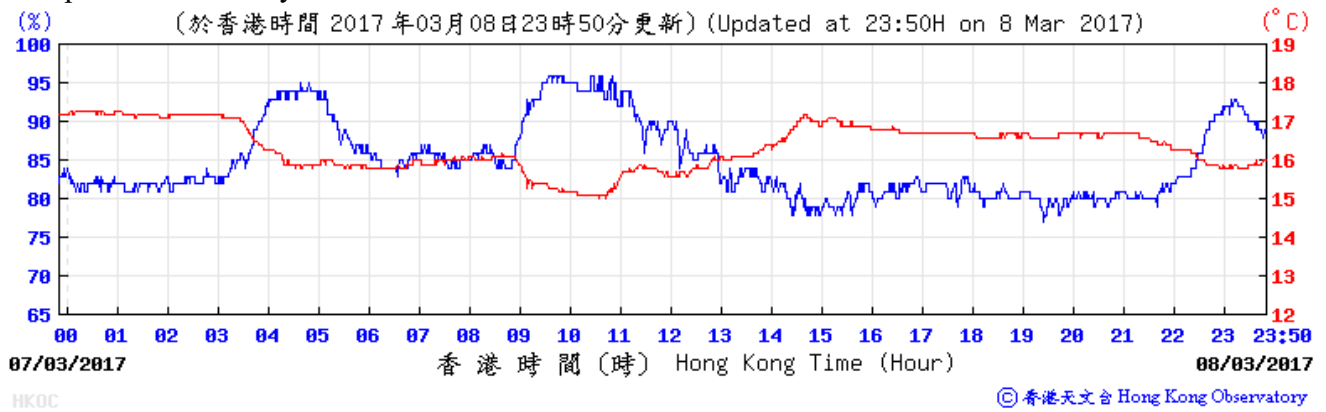
#### Wind Speed and Direction:



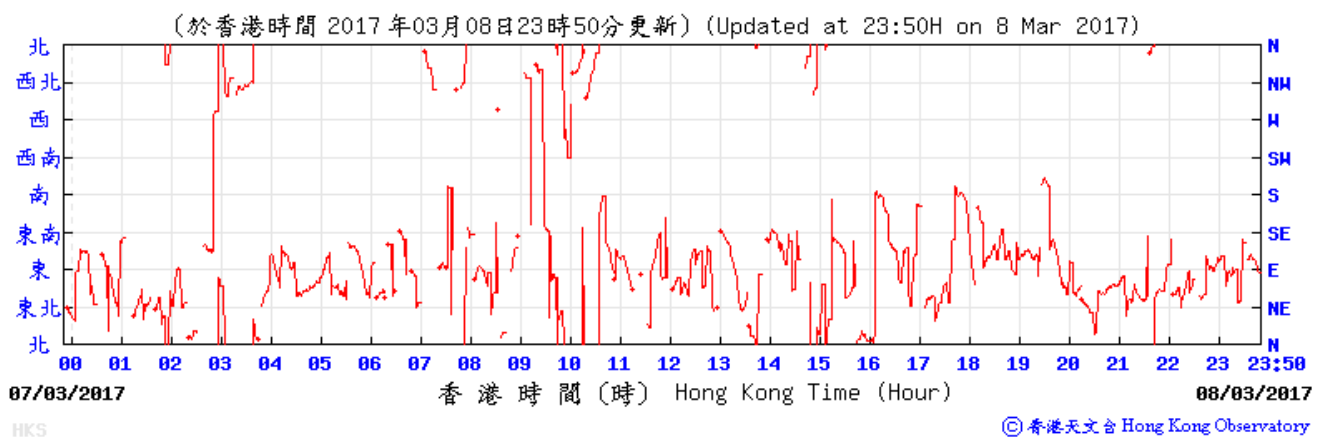
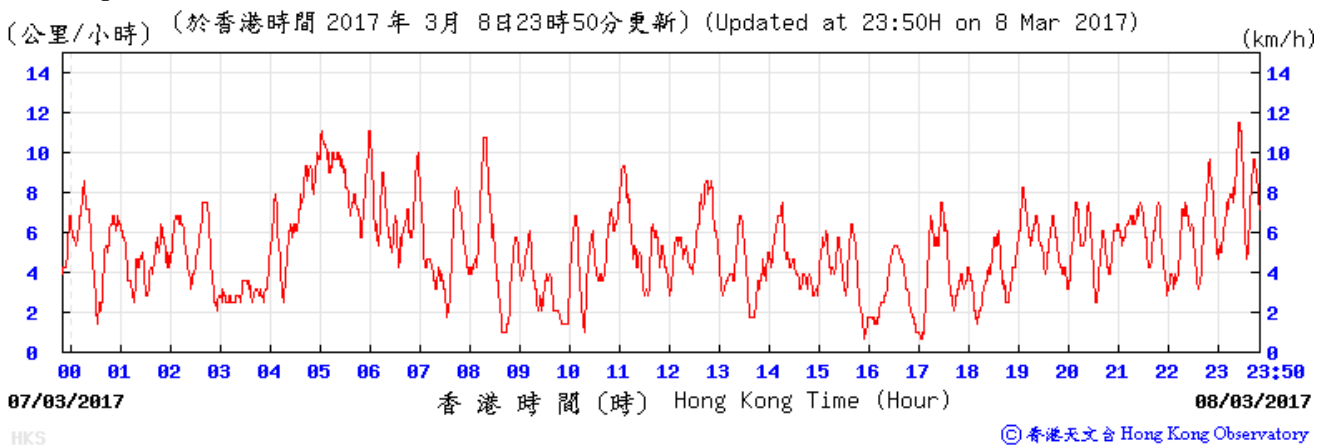
### Meteorological Data Recorded from HKO Station (8 March 2017)

(Source: [www.hko.gov.hk](http://www.hko.gov.hk))

#### Temperature/Humidity:



#### Wind Speed and Direction:

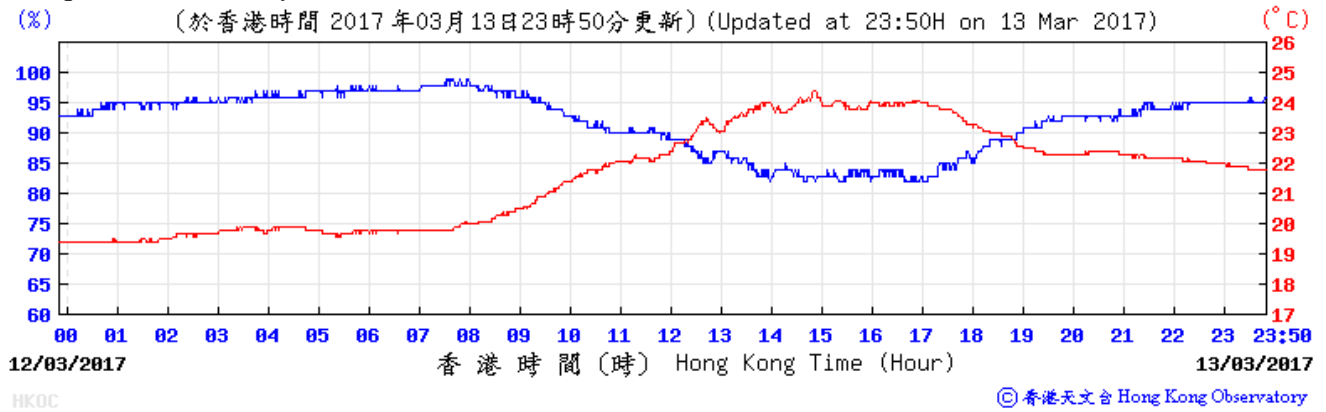




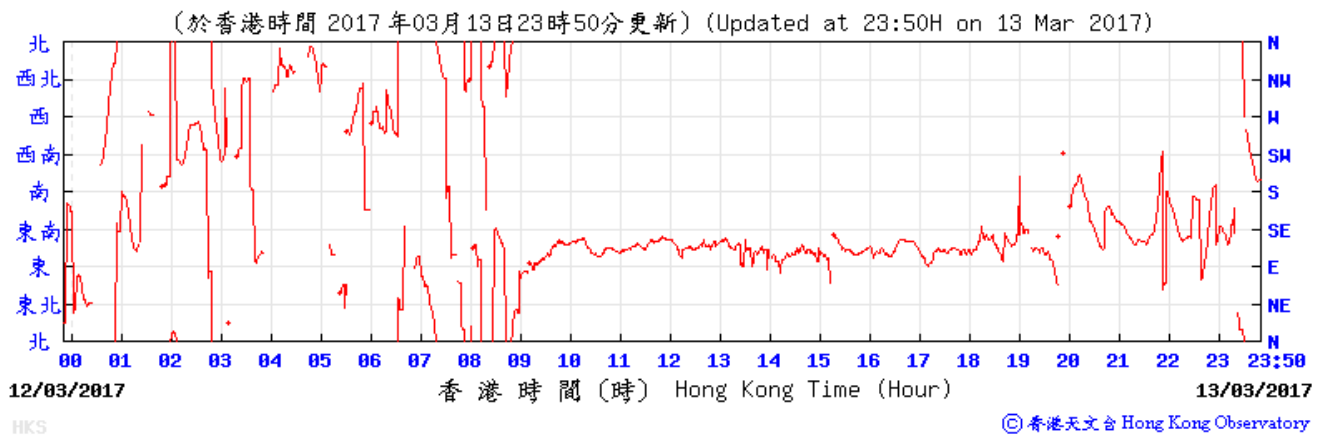
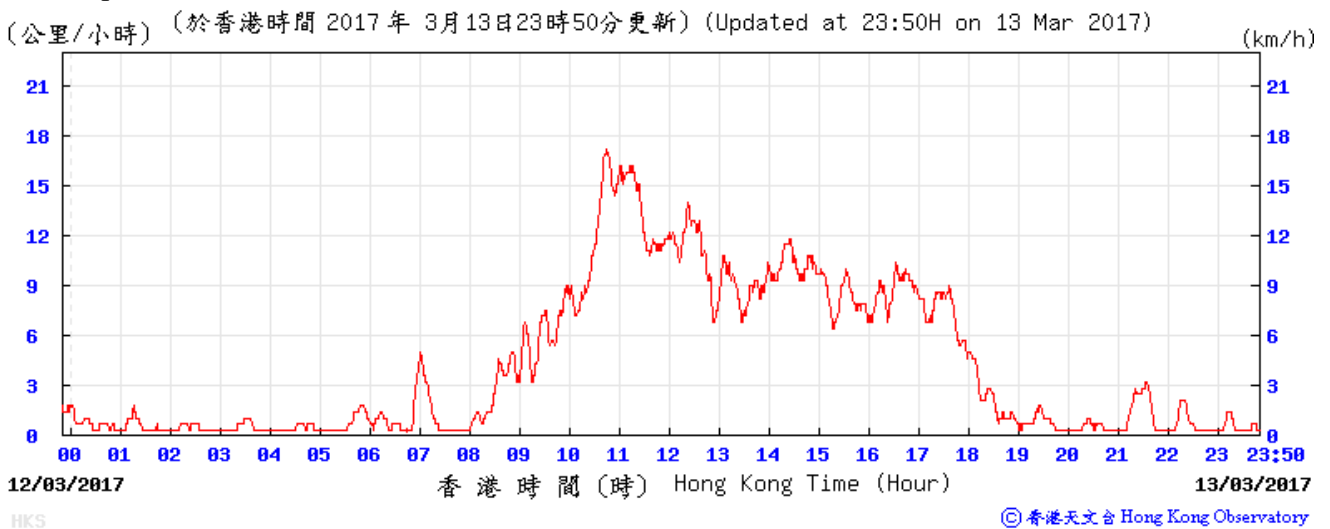
### Meteorological Data Recorded from HKO Station (13 March 2017)

(Source: [www.hko.gov.hk](http://www.hko.gov.hk))

#### Temperature/Humidity:



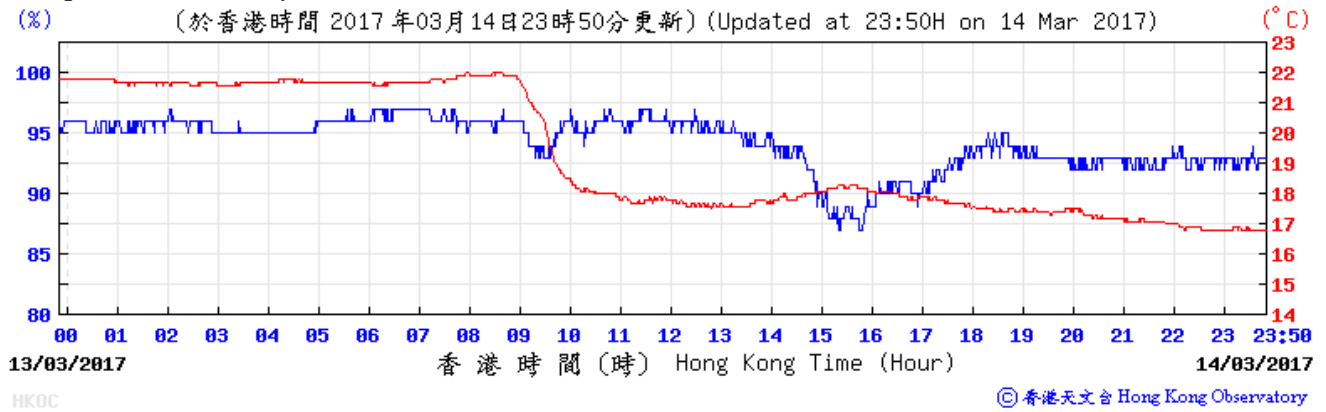
#### Wind Speed and Direction:



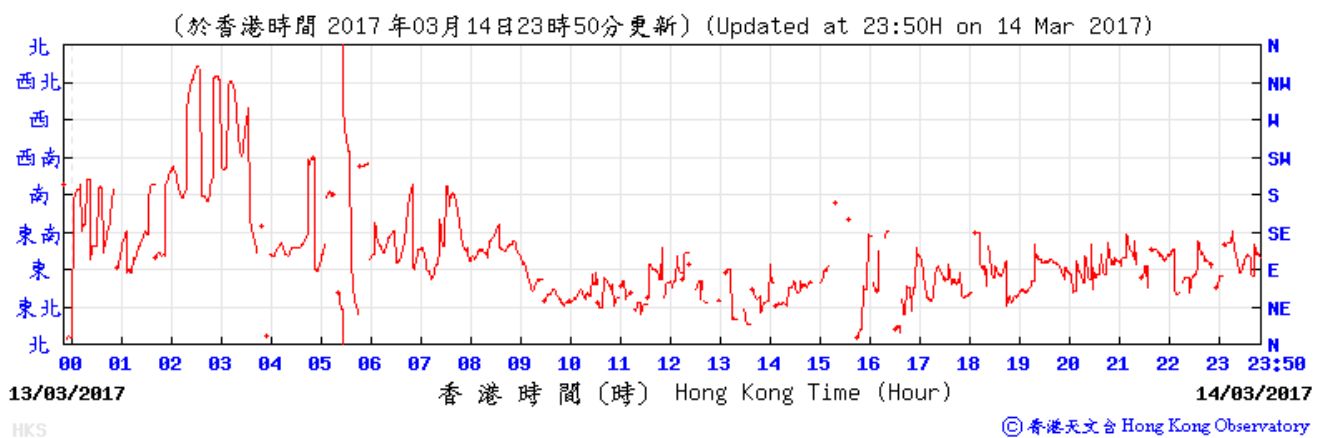
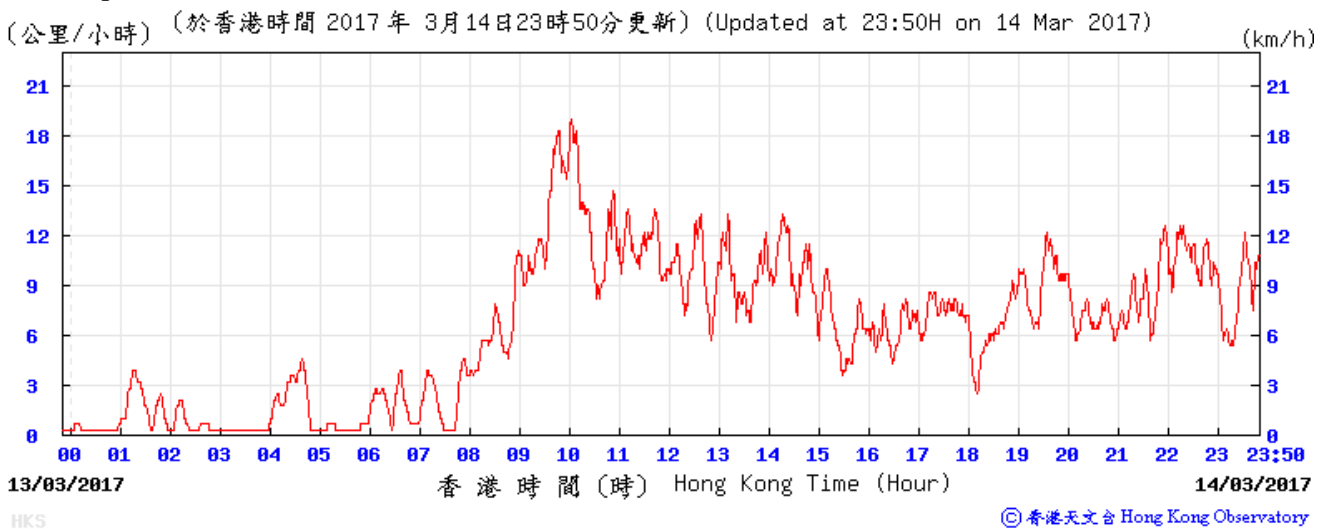
### Meteorological Data Recorded from HKO Station (14 March 2017)

(Source: [www.hko.gov.hk](http://www.hko.gov.hk))

#### Temperature/Humidity:



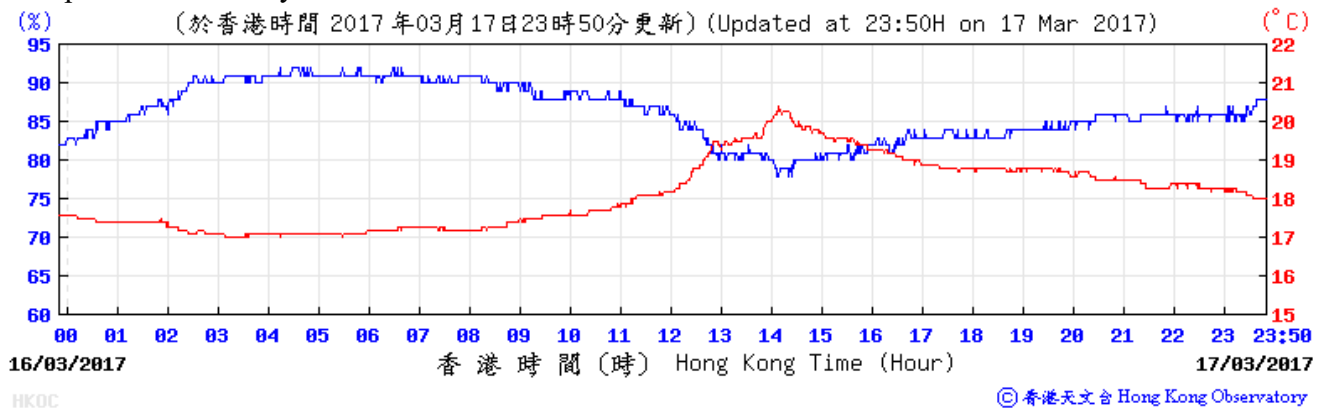
#### Wind Speed and Direction:



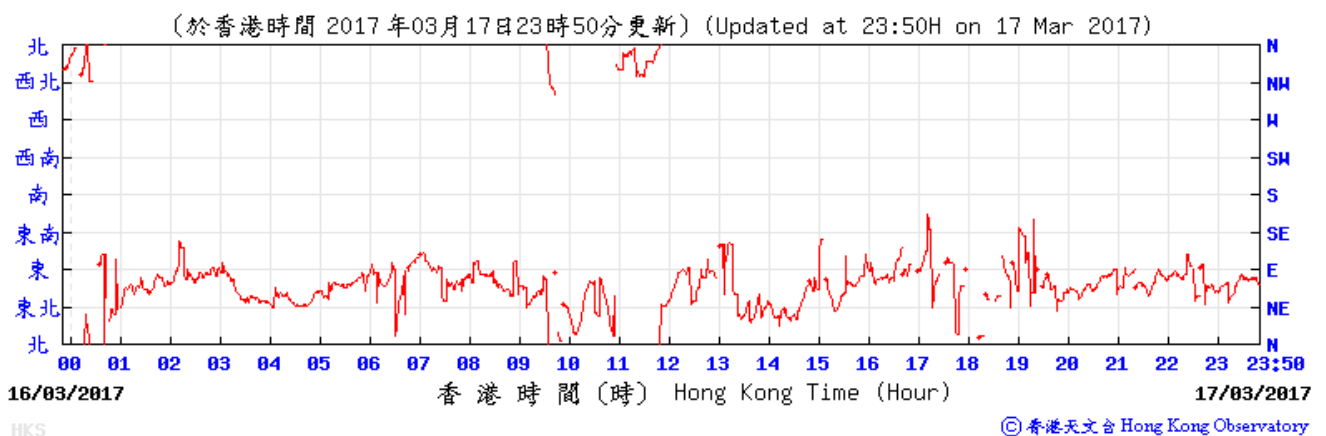
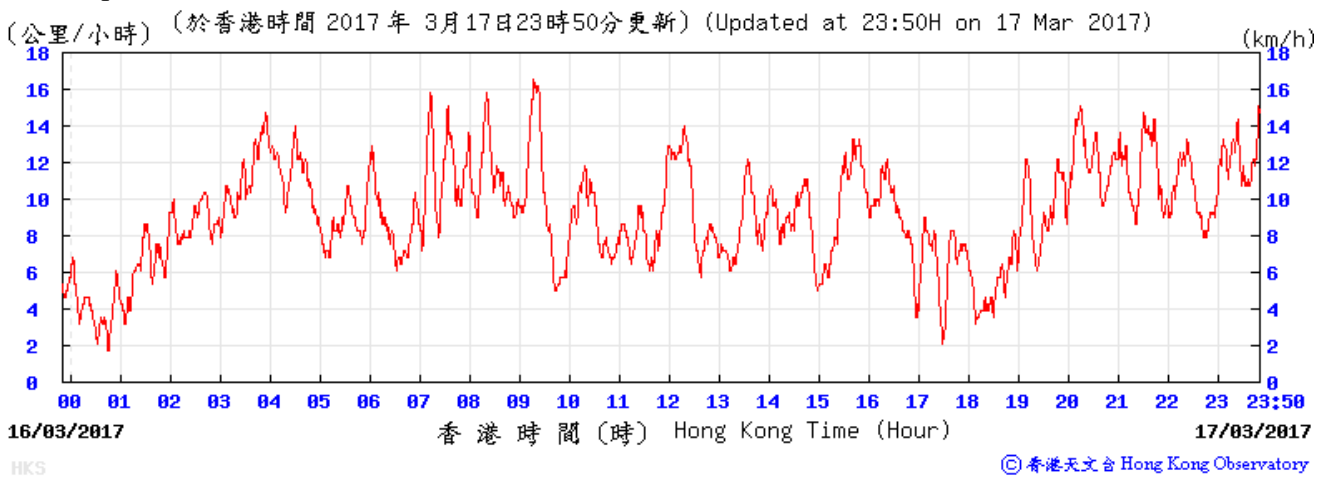
### Meteorological Data Recorded from HKO Station (17 March 2017)

(Source: [www.hko.gov.hk](http://www.hko.gov.hk))

#### Temperature/Humidity:



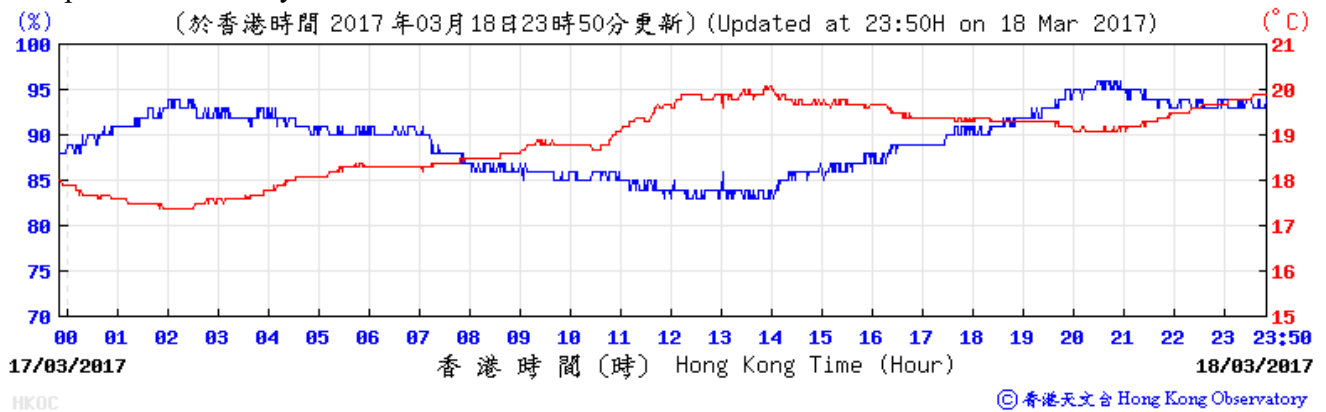
#### Wind Speed and Direction:



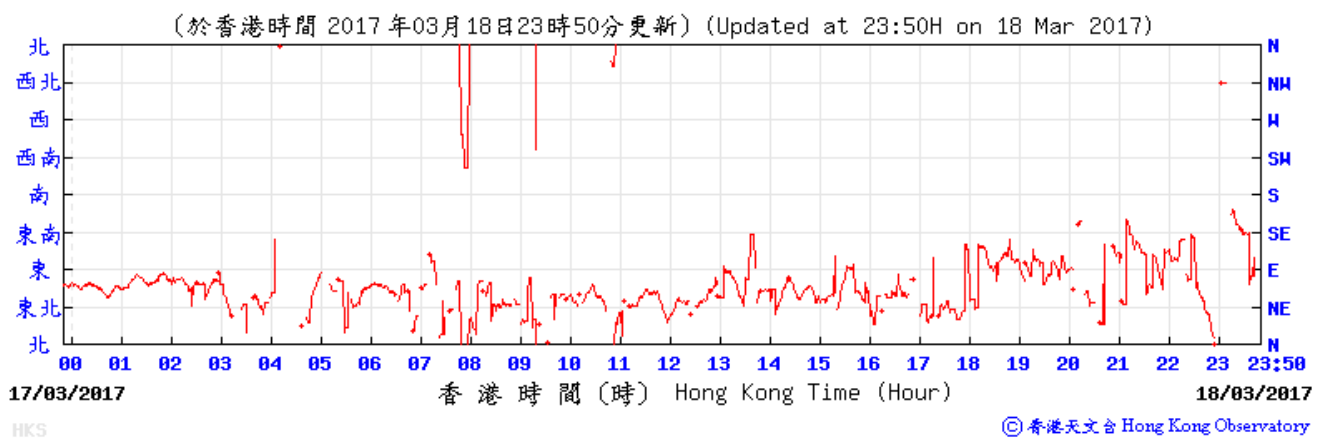
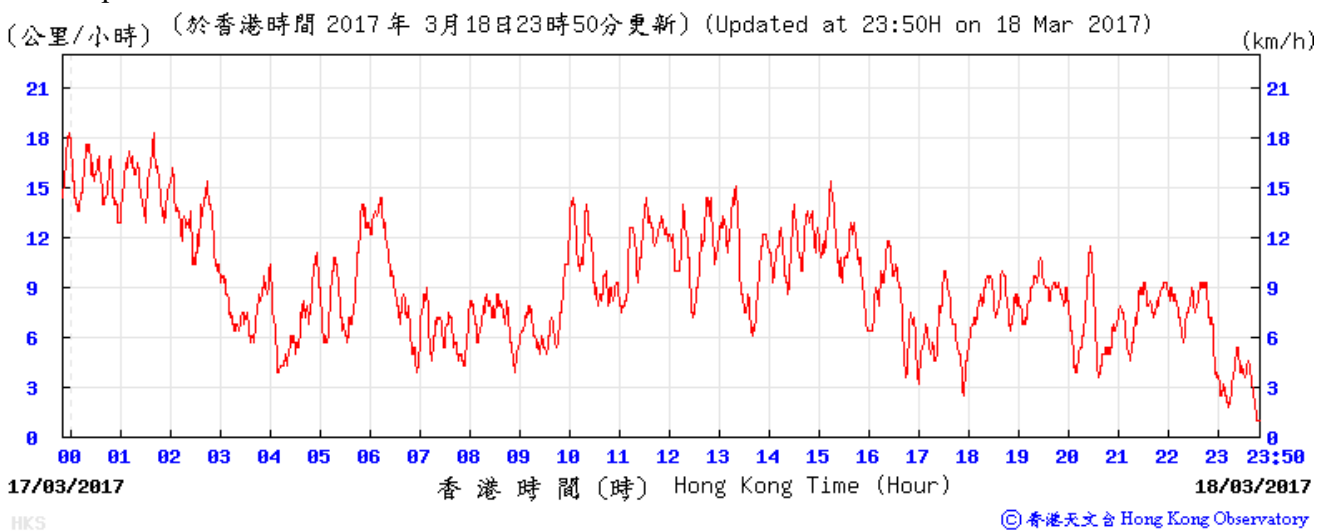
### Meteorological Data Recorded from HKO Station (18 March 2017)

(Source: [www.hko.gov.hk](http://www.hko.gov.hk))

#### Temperature/Humidity:



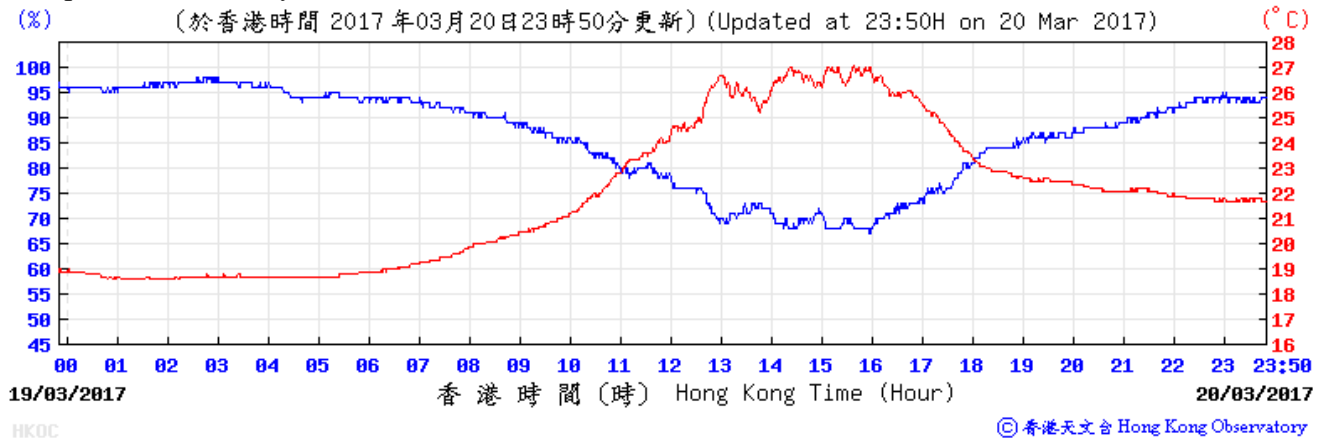
#### Wind Speed and Direction:



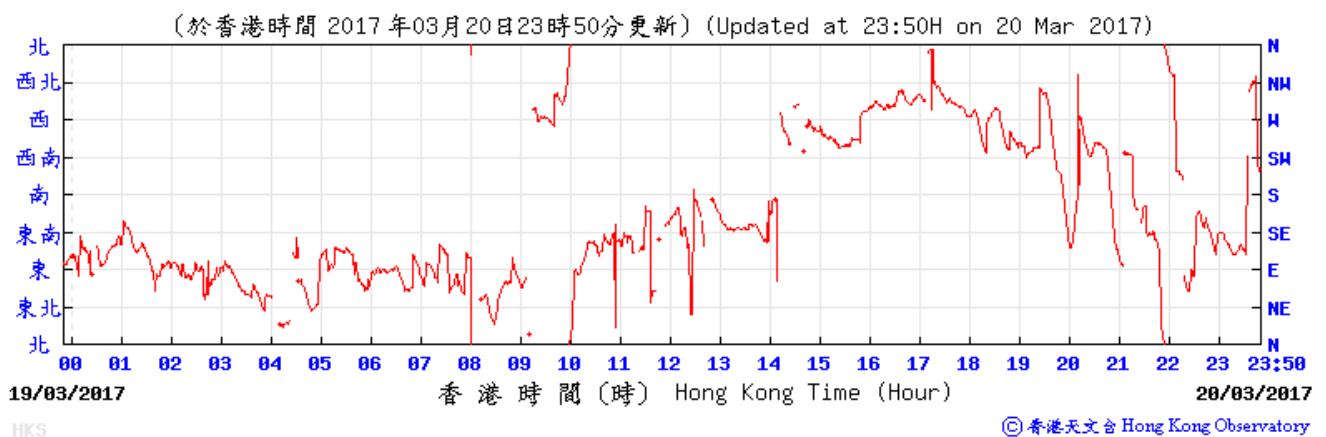
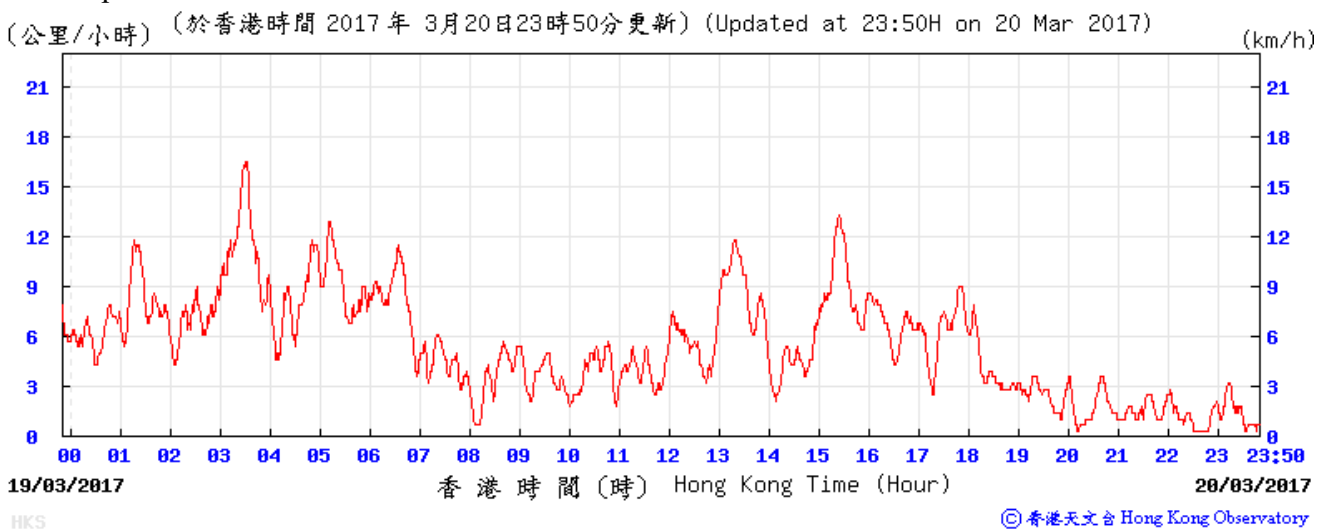
### Meteorological Data Recorded from HKO Station (20 March 2017)

(Source: [www.hko.gov.hk](http://www.hko.gov.hk))

#### Temperature/Humidity:



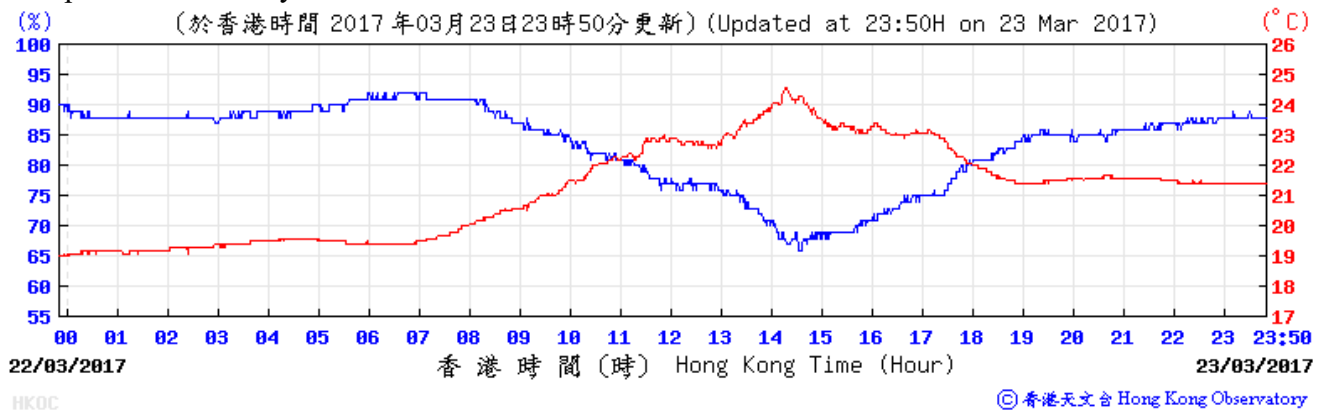
#### Wind Speed and Direction:



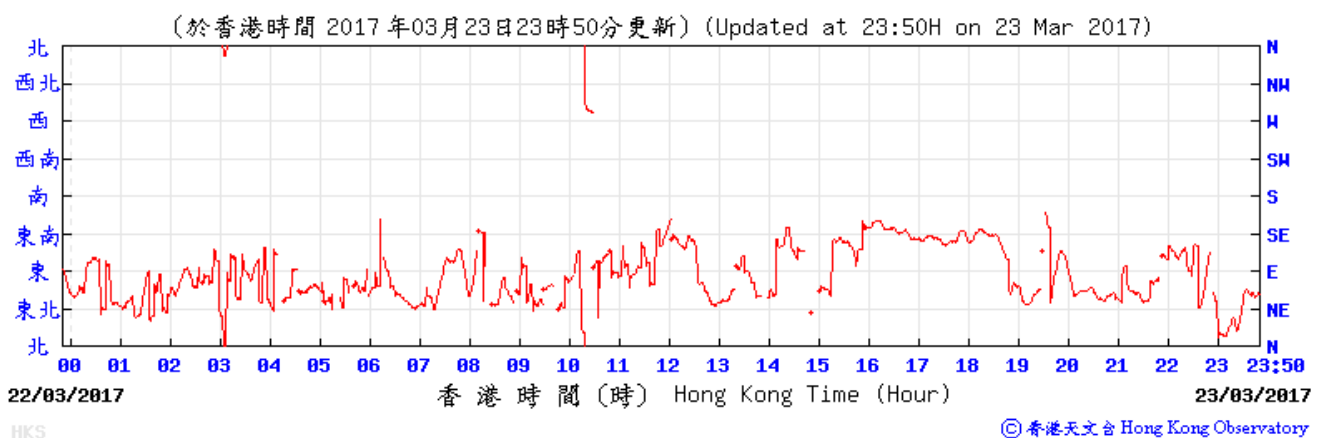
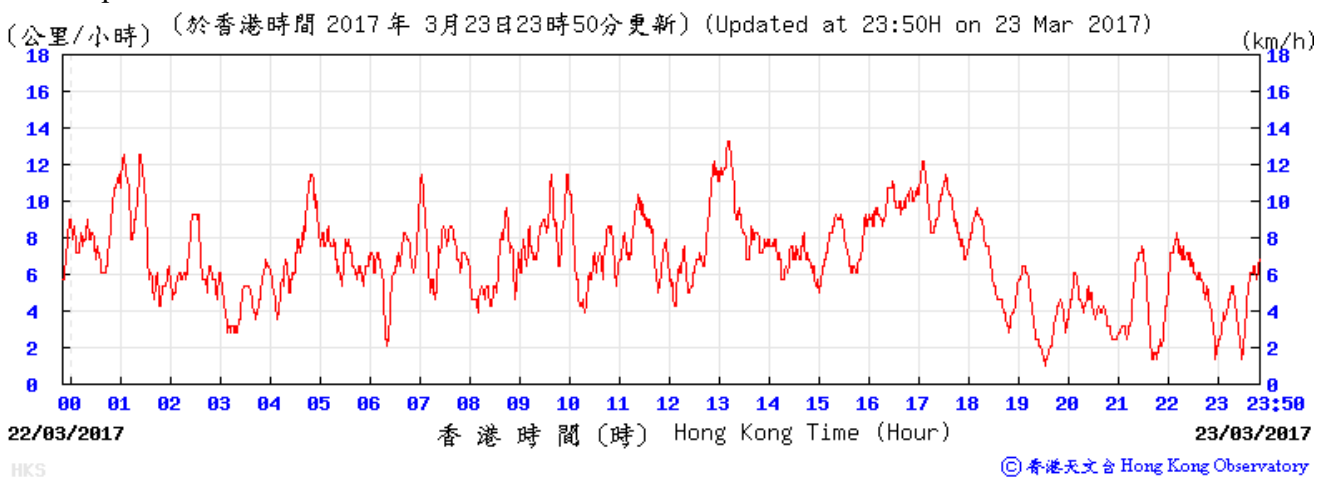
### Meteorological Data Recorded from HKO Station (23 March 2017)

(Source: [www.hko.gov.hk](http://www.hko.gov.hk))

#### Temperature/Humidity:



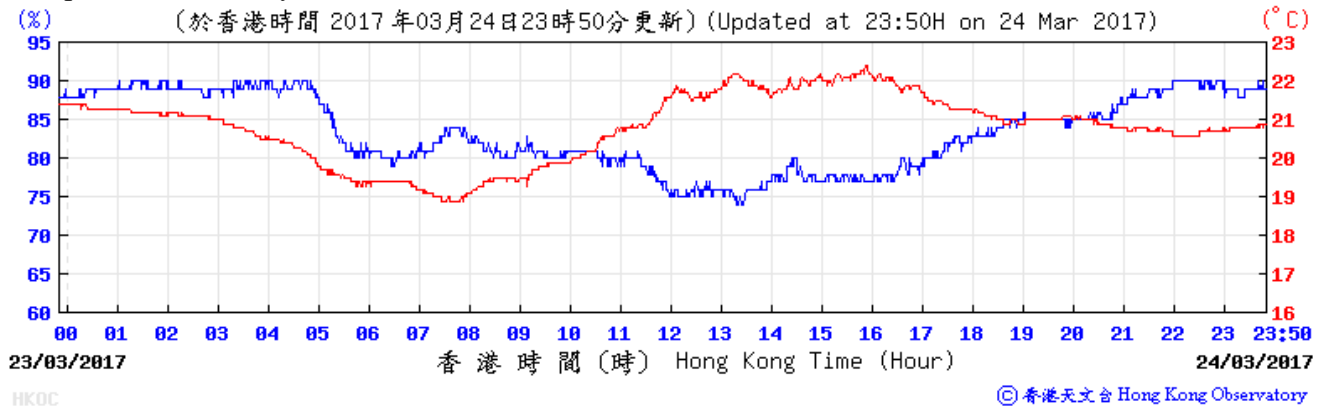
#### Wind Speed and Direction:



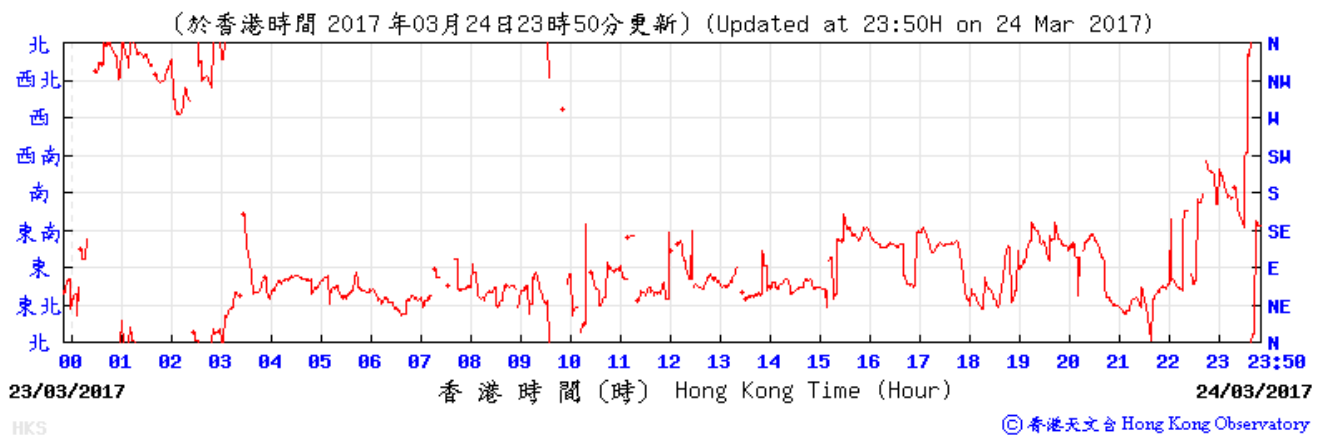
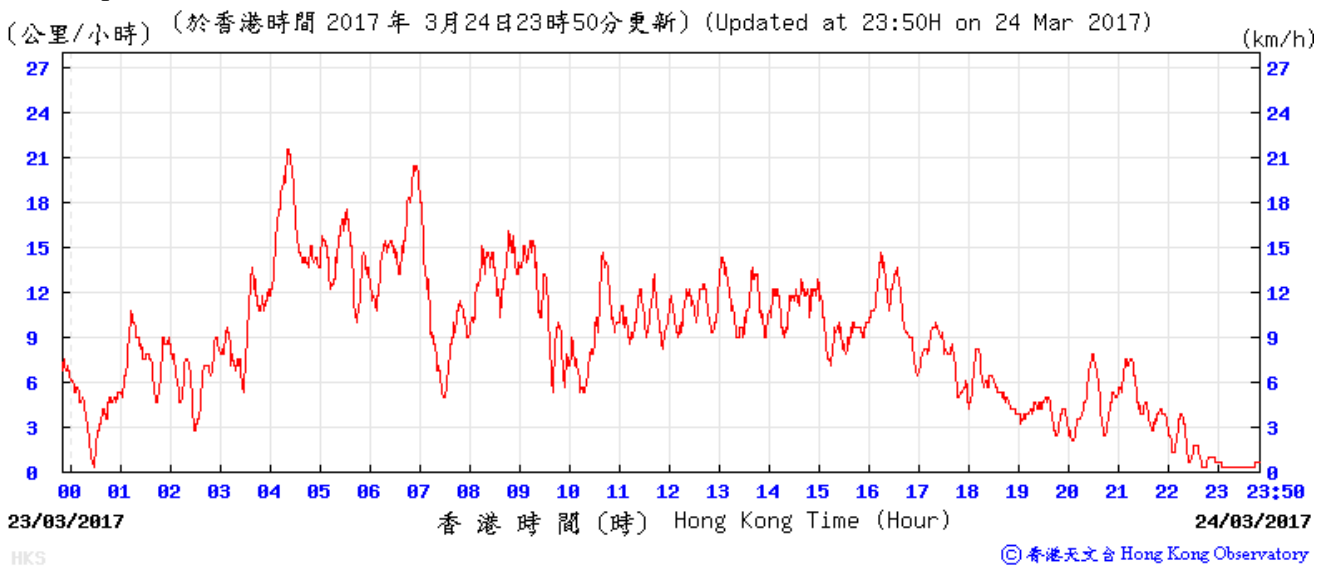
### Meteorological Data Recorded from HKO Station (24 March 2017)

(Source: [www.hko.gov.hk](http://www.hko.gov.hk))

#### Temperature/Humidity:



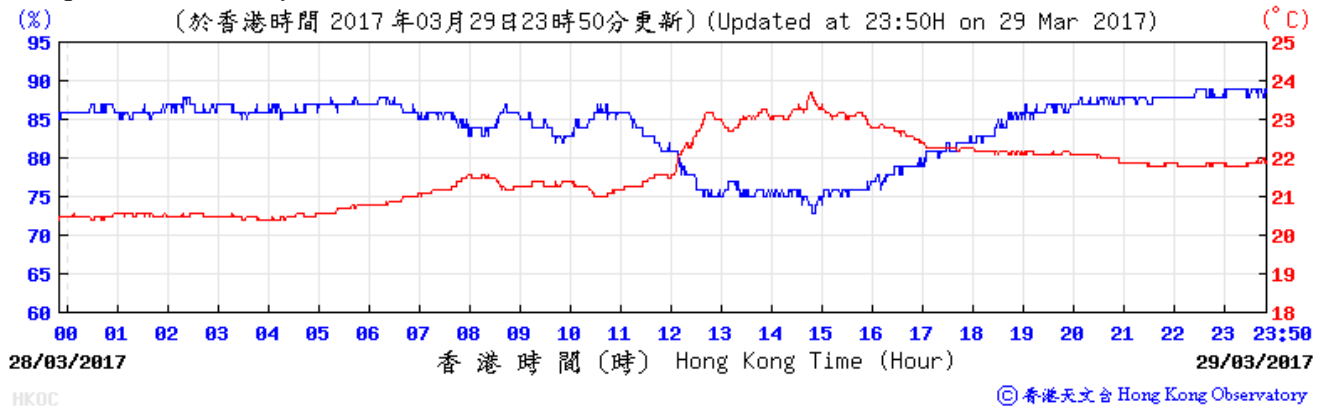
#### Wind Speed and Direction:



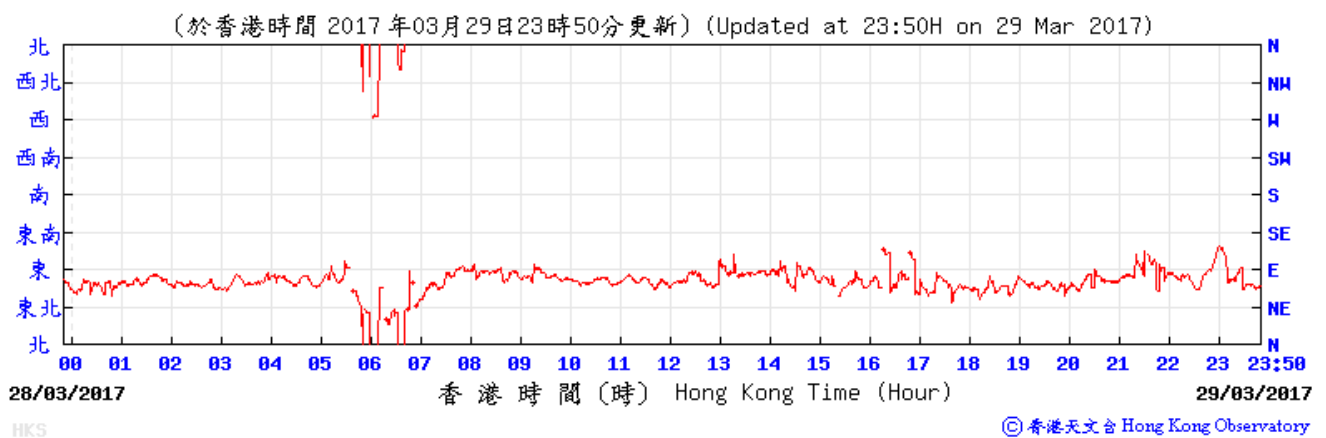
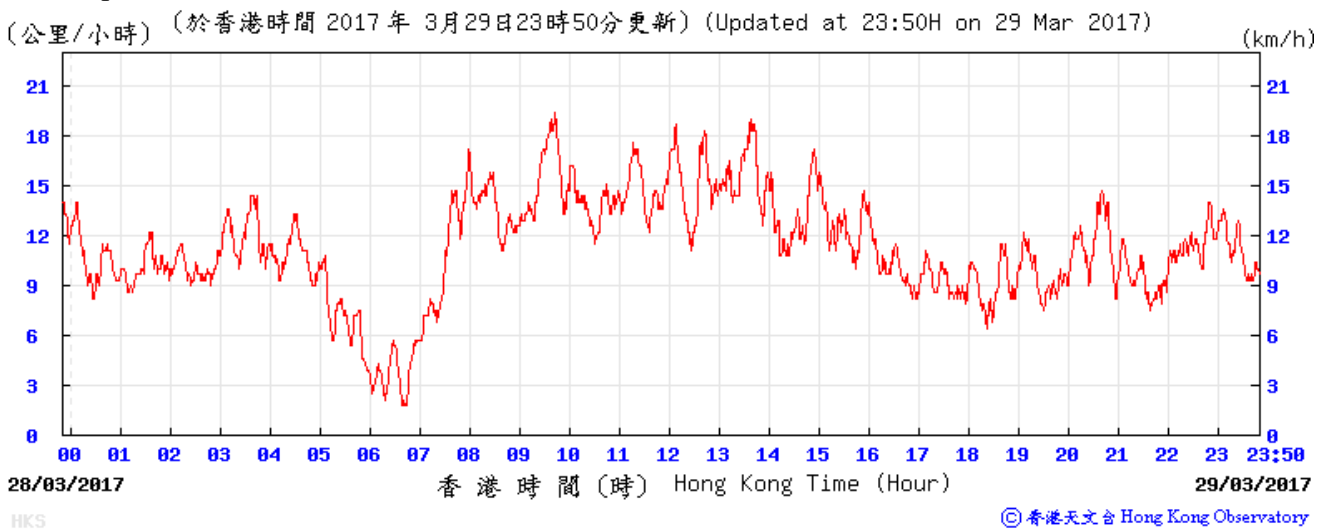
### Meteorological Data Recorded from HKO Station (29 March 2017)

(Source: [www.hko.gov.hk](http://www.hko.gov.hk))

#### Temperature/Humidity:



#### Wind Speed and Direction:

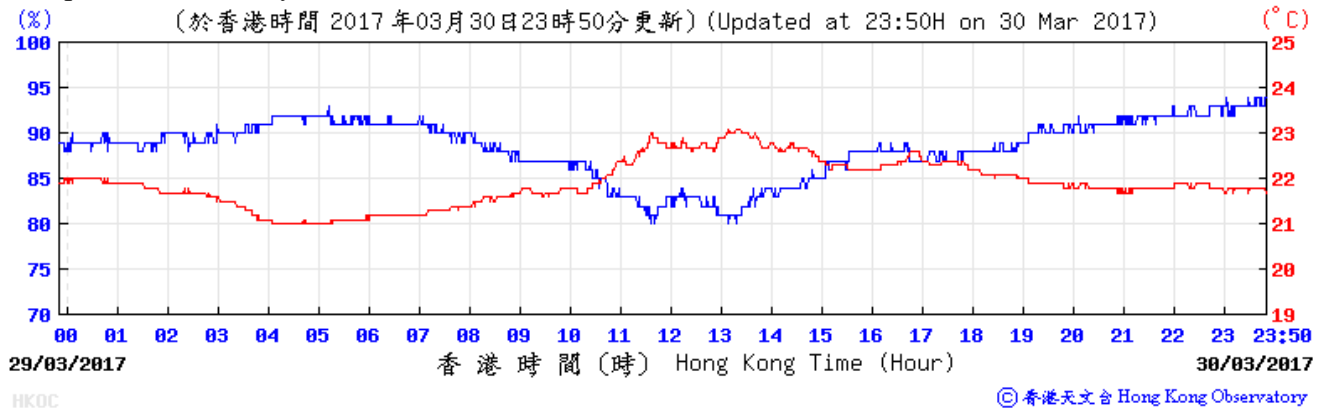




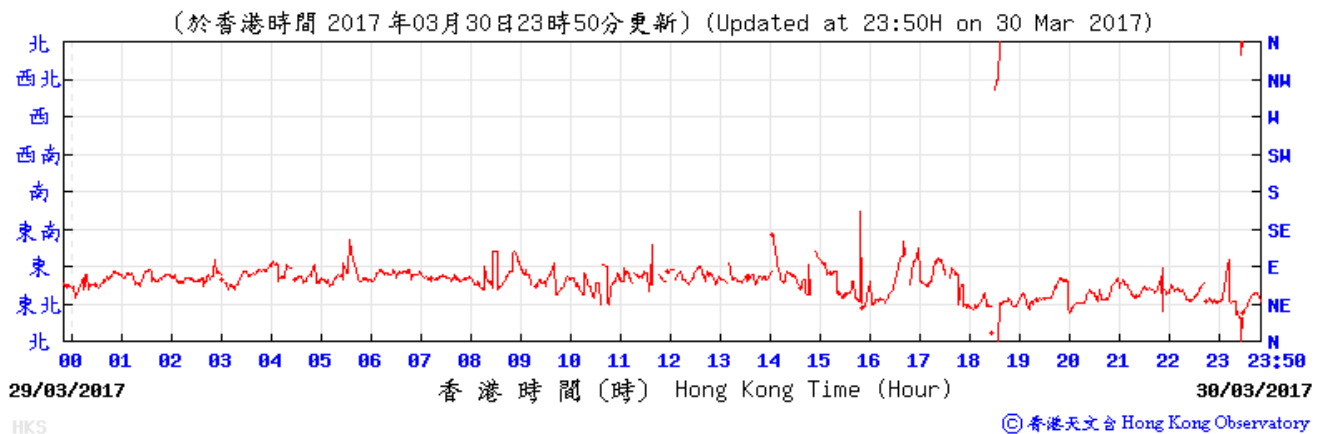
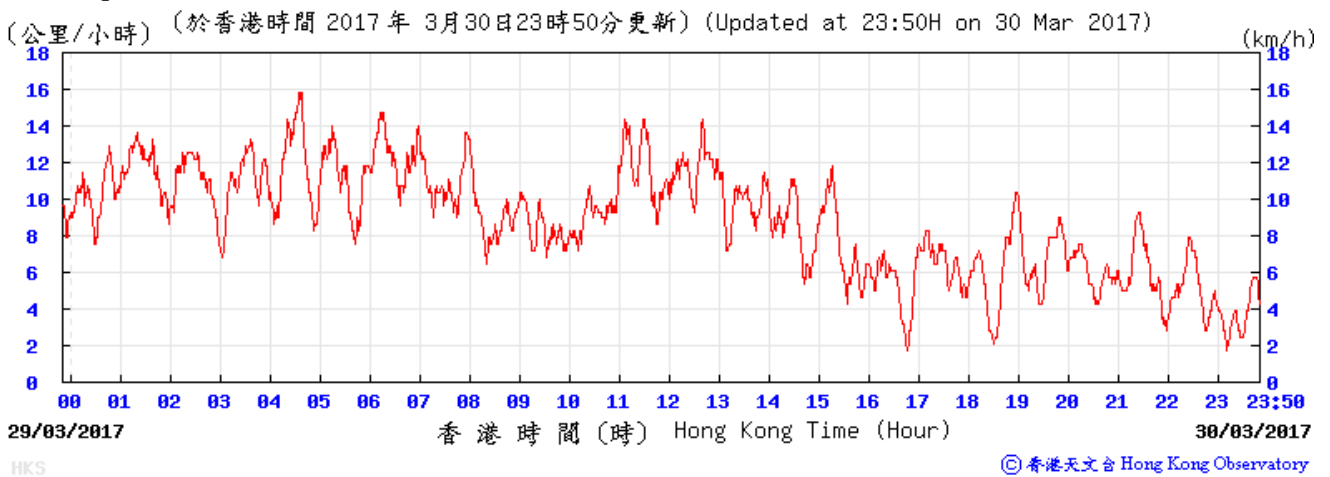
### Meteorological Data Recorded from HKO Station (30 March 2017)

(Source: [www.hko.gov.hk](http://www.hko.gov.hk))

#### Temperature/Humidity:



#### Wind Speed and Direction:



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**APPENDIX E  
AIR QUALITY MONITORING RESULTS  
AND GRAPHICAL PRESENTATIONS**

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## Appendix E - 1-hour TSP Monitoring Results

Location CM_WF1a - Wah Ming House (Roof)			
Date	Time	Weather	Particulate Concentration ( $\mu\text{g}/\text{m}^3$ )
2-Mar-17	13:00	Cloudy	90.3
2-Mar-17	14:00	Cloudy	91.4
2-Mar-17	15:00	Cloudy	93.0
8-Mar-17	13:00	Cloudy	109.0
8-Mar-17	14:00	Cloudy	108.7
8-Mar-17	15:00	Cloudy	107.9
14-Mar-17	9:00	Cloudy	187.8
14-Mar-17	10:00	Cloudy	184.7
14-Mar-17	11:00	Cloudy	178.9
20-Mar-17	13:00	Cloudy	86.4
20-Mar-17	14:00	Cloudy	88.7
20-Mar-17	15:00	Cloudy	90.2
24-Mar-17	13:30	Cloudy	81.5
24-Mar-17	14:30	Cloudy	80.0
24-Mar-17	15:30	Cloudy	85.1
30-Mar-17	9:00	Sunny	164.7
30-Mar-17	10:00	Sunny	132.1
30-Mar-17	11:00	Sunny	151.9
		Average	117.4
		Maximum	187.8
		Minimum	80.0

Location CM_AB1b - Works Site Boundary of Aberdeen PTW			
Date	Time	Weather	Particulate Concentration ( $\mu\text{g}/\text{m}^3$ )
2-Mar-17	9:00	Cloudy	136.5
2-Mar-17	10:00	Cloudy	136.8
2-Mar-17	11:00	Cloudy	141.5
8-Mar-17	9:00	Cloudy	172.4
8-Mar-17	10:00	Cloudy	176.9
8-Mar-17	11:00	Cloudy	177.5
14-Mar-17	13:00	Cloudy	172.2
14-Mar-17	14:00	Cloudy	165.2
14-Mar-17	15:00	Cloudy	183.9
20-Mar-17	9:00	Cloudy	92.3
20-Mar-17	10:00	Cloudy	91.9
20-Mar-17	11:00	Cloudy	91.7
24-Mar-17	9:00	Cloudy	126.8
24-Mar-17	10:00	Cloudy	148.5
24-Mar-17	11:00	Cloudy	133.6
30-Mar-17	9:00	Sunny	194.9
30-Mar-17	10:00	Sunny	189.1
30-Mar-17	11:00	Sunny	210.3
		Average	152.3
		Maximum	210.3
		Minimum	91.7

## Appendix E - 1-hour TSP Monitoring Results

Location CM_CB1a - The Arcade, Cyberport			
Date	Time	Weather	Particulate Concentration ( $\mu\text{g}/\text{m}^3$ )
2-Mar-17	13:00	Cloudy	94.9
2-Mar-17	14:00	Cloudy	95.3
2-Mar-17	15:00	Cloudy	95.7
8-Mar-17	13:00	Cloudy	145.2
8-Mar-17	14:00	Cloudy	145.0
8-Mar-17	15:00	Cloudy	142.3
14-Mar-17	13:00	Cloudy	185.1
14-Mar-17	14:00	Cloudy	191.8
14-Mar-17	15:00	Cloudy	193.3
20-Mar-17	13:00	Sunny	81.5
20-Mar-17	14:00	Sunny	84.5
20-Mar-17	15:00	Sunny	83.3
24-Mar-17	9:00	Cloudy	88.4
24-Mar-17	10:00	Cloudy	97.7
24-Mar-17	11:00	Cloudy	100.1
30-Mar-17	13:00	Sunny	214.1
30-Mar-17	14:00	Sunny	217.8
30-Mar-17	15:00	Sunny	205.2
		Average	136.7
		Maximum	217.8
		Minimum	81.5

## Appendix E - 24-hour TSP Monitoring Results

### Location CM\_WF1a - Wah Ming House

Start Date	Start Time	Weather Condition	Air Temp. (K)	Filter Weight (g)		Particulate Weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m <sup>3</sup> /min.)		Av. flow (m <sup>3</sup> /min)	Total vol. (m <sup>3</sup> )	Conc. (µg/m <sup>3</sup> )	Filter ID no.
				Initial	Final		Initial	Final		Initial	Final				
1-Mar-17	9:00	Cloudy	290.1	3.5967	3.7658	0.1691	5637.9	5661.9	24.0	1.22	1.22	1.22	1753.7	96.4	170302/002
7-Mar-17	9:00	Cloudy	289.8	3.5879	3.7360	0.1481	5661.9	5685.9	24.0	1.22	1.22	1.22	1751.5	84.6	170203/005
13-Mar-17	9:00	Sunny	292.5	3.6070	3.7205	0.1135	5685.9	5709.9	24.0	1.21	1.21	1.21	1738.5	65.3	170302/093
17-Mar-17	9:00	Cloudy	290.7	3.5917	3.6756	0.0839	5709.9	5733.9	24.0	1.21	1.21	1.21	1748.9	48.0	170303/005
23-Mar-17	9:00	Cloudy	293.4	3.5731	3.6557	0.0826	5733.9	5757.9	24.0	1.21	1.21	1.21	1737.5	47.5	170303/061
29-Mar-17	9:00	Cloudy	294.5	2.8682	3.0282	0.1600	5757.9	5781.9	24.0	1.21	1.21	1.21	1746.6	91.6	170304/002
												Min	47.5		
												Max	96.4		
												Average	72.2		

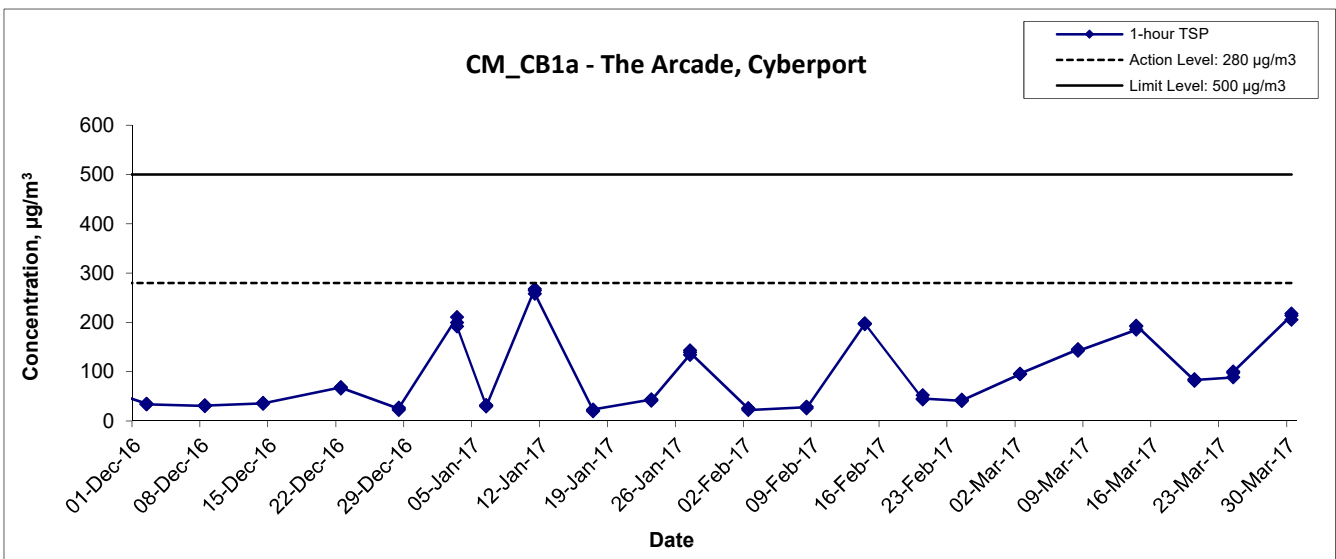
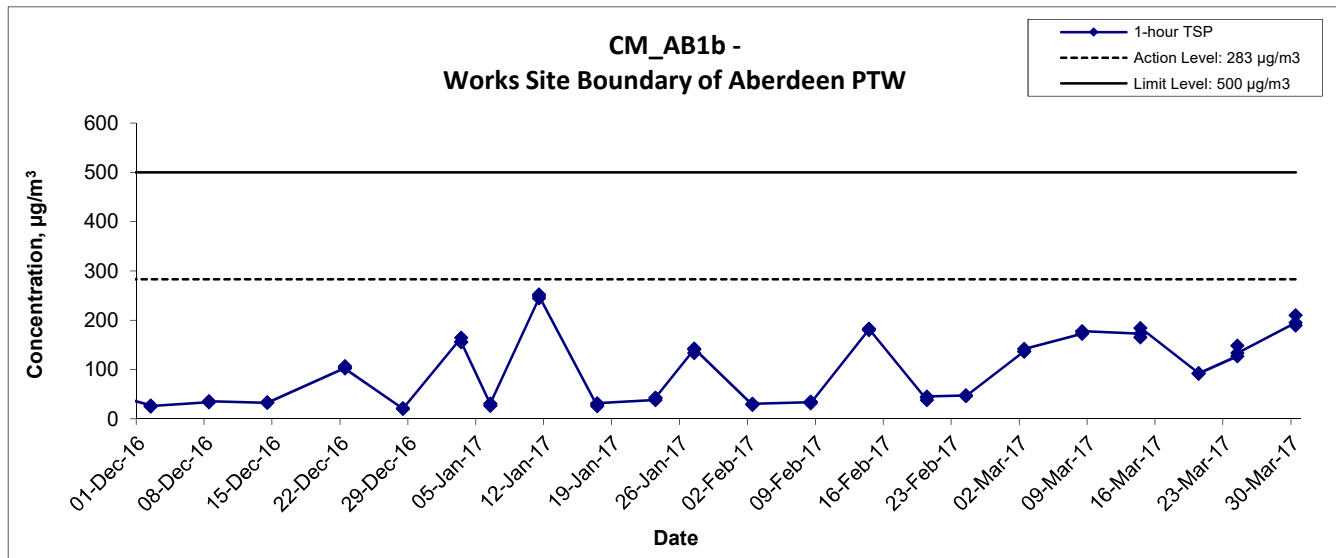
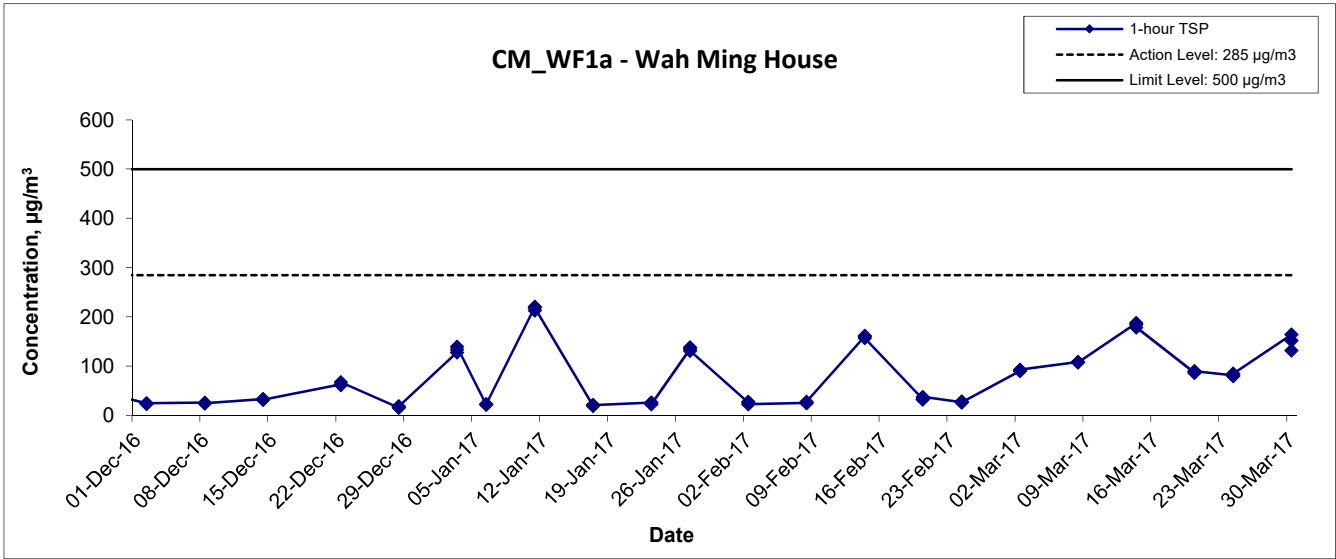
### Location CM\_AB1b - Works Site Boundary of Aberdeen PTW

Start Date	Start Time	Weather Condition	Air Temp. (K)	Filter Weight (g)		Particulate Weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m <sup>3</sup> /min.)		Av. flow (m <sup>3</sup> /min)	Total vol. (m <sup>3</sup> )	Conc. (µg/m <sup>3</sup> )	Filter ID no.
				Initial	Final		Initial	Final		Initial	Final				
1-Mar-17	9:00	Cloudy	290.4	3.6417	3.7484	0.1067	6611.4	6635.4	24.0	1.22	1.22	1.22	1763.5	60.5	170301/086
7-Mar-17	9:00	Cloudy	290.2	3.5680	3.8020	0.2340	6635.4	6659.4	24.0	1.22	1.22	1.22	1761.0	132.9	170203/004
13-Mar-17	9:00	Sunny	292.8	3.5888	3.7976	0.2088	6659.4	6683.4	24.0	1.21	1.21	1.21	1748.1	119.4	170302/092
17-Mar-17	9:00	Cloudy	291.3	3.5667	3.7303	0.1636	6683.4	6707.4	24.0	1.22	1.22	1.22	1758.4	93.0	170303/007
23-Mar-17	9:00	Cloudy	294.1	3.5707	3.7141	0.1434	6707.4	6731.4	24.0	1.21	1.21	1.21	1746.6	82.1	170303/060
29-Mar-17	9:00	Cloudy	293.6	2.8320	3.0891	0.2571	6731.4	6755.4	24.0	1.22	1.22	1.22	1756.4	146.4	170304/020
												Min	60.5		
												Max	146.4		
												Average	105.7		

### Location CM\_CB1a - The Arcade, Cyberport

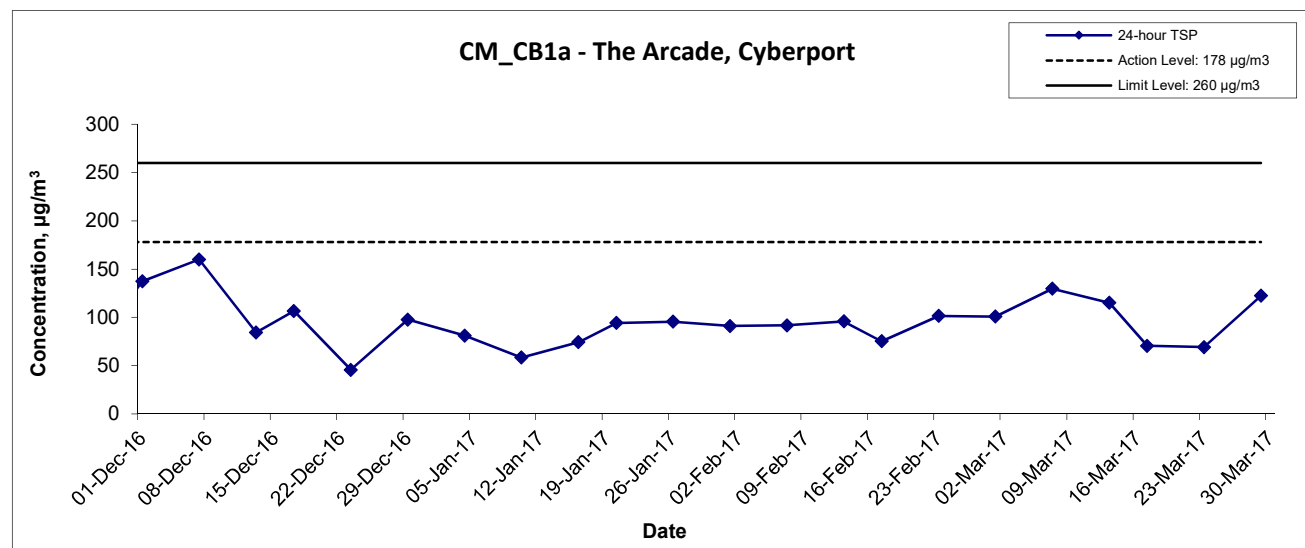
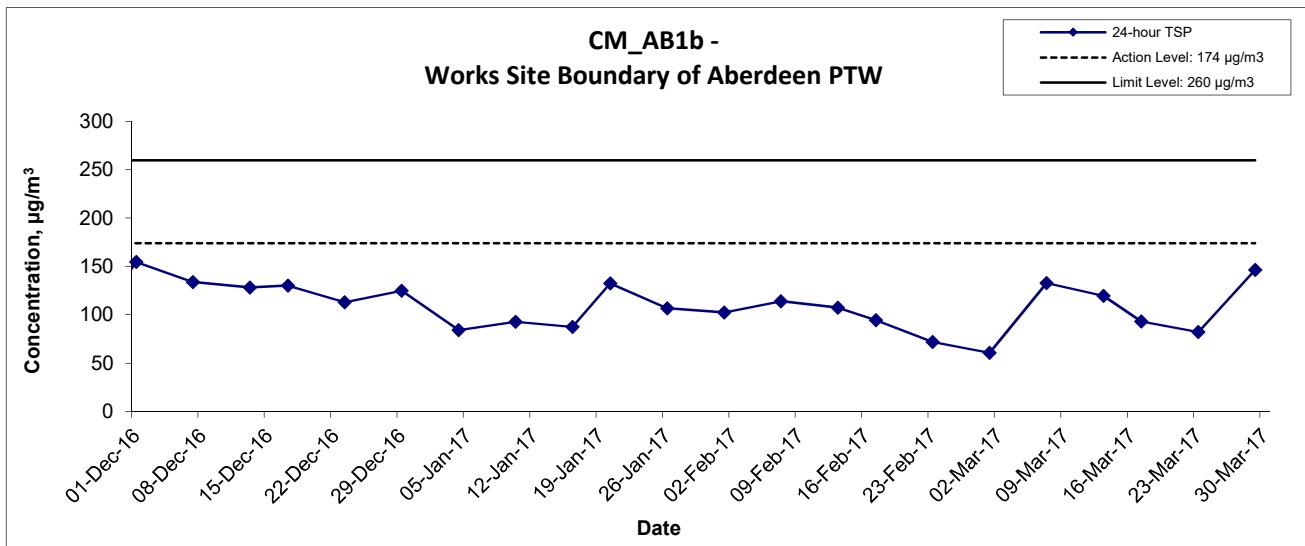
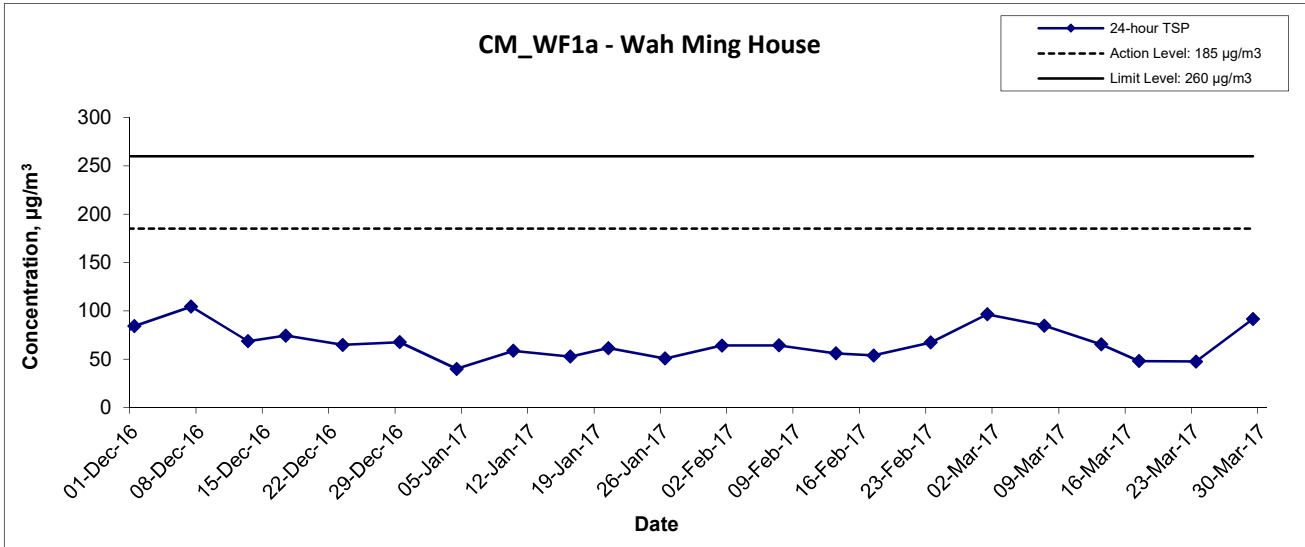
Start Date	Start Time	Weather Condition	Air Temp. (K)	Filter Weight (g)		Particulate Weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m <sup>3</sup> /min.)		Av. flow (m <sup>3</sup> /min)	Total vol. (m <sup>3</sup> )	Conc. (µg/m <sup>3</sup> )	Filter ID no.
				Initial	Final		Initial	Final		Initial	Final				
1-Mar-17	9:00	Cloudy	291.5	3.6056	3.7819	0.1763	10935.8	10959.8	24.0	1.21	1.21	1.21	1748.0	100.9	170302/003
7-Mar-17	9:00	Cloudy	290.6	3.6195	3.8464	0.2269	10959.8	10983.8	24.0	1.21	1.21	1.21	1749.0	129.7	170203/061
13-Mar-17	9:00	Sunny	292.6	3.6162	3.8164	0.2002	10983.8	11007.8	24.0	1.21	1.21	1.21	1739.0	115.1	170302/094
17-Mar-17	9:00	Cloudy	291.4	3.6054	3.7284	0.1230	11007.8	11031.8	24.0	1.21	1.21	1.21	1745.5	70.5	170303/008
23-Mar-17	9:00	Cloudy	293.7	3.6112	3.7314	0.1202	11031.8	11055.8	24.0	1.21	1.21	1.21	1737.4	69.2	170303/062
29-Mar-17	9:00	Cloudy	294.8	2.8678	3.0818	0.2140	11055.8	11079.8	24.0	1.21	1.21	1.21	1747.9	122.4	170304/003
												Min	69.2		
												Max	129.7		
												Average	101.3		

### 1-hr TSP Concentration Levels



Title Contract No. DC/2009/24 HATS 2A – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau Graphical Presentation of 1-hour TSP Monitoring Results	Scale N.T.S	Project No. MA11060	
	Date Mar 17	Appendix E	

### 24-hr TSP Concentration Levels



Title Contract No. DC/2009/24 HATS 2A – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau Graphical Presentation of 24-hour TSP Monitoring Results	Scale N.T.S	Project No. MA11060	
	Date Mar 17	Appendix E	

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**APPENDIX F  
NOISE MONITORING RESULTS AND  
GRAPHICAL PRESENTATIONS**

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## Appendix F - Noise Monitoring Results

(0700-1900 hrs on Normal Weekdays)

Location M6a (Cyberport PTW) Outside of Aegean Terrace							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>eq</sub>	L <sub>eq</sub>
2-Mar-17	15:30	Cloudy	53.1	54.0	47.3	57.3	53.1 Measured ≤ Baseline
8-Mar-17	11:00	Cloudy	53.2	54.6	47.8		53.2 Measured ≤ Baseline
14-Mar-17	9:10	Cloudy	54.4	56.2	48.9		54.4 Measured ≤ Baseline
20-Mar-17	11:30	Sunny	54.3	55.2	46.9		54.3 Measured ≤ Baseline
30-Mar-17	16:15	Sunny	55.4	56.2	48.9		55.4 Measured ≤ Baseline

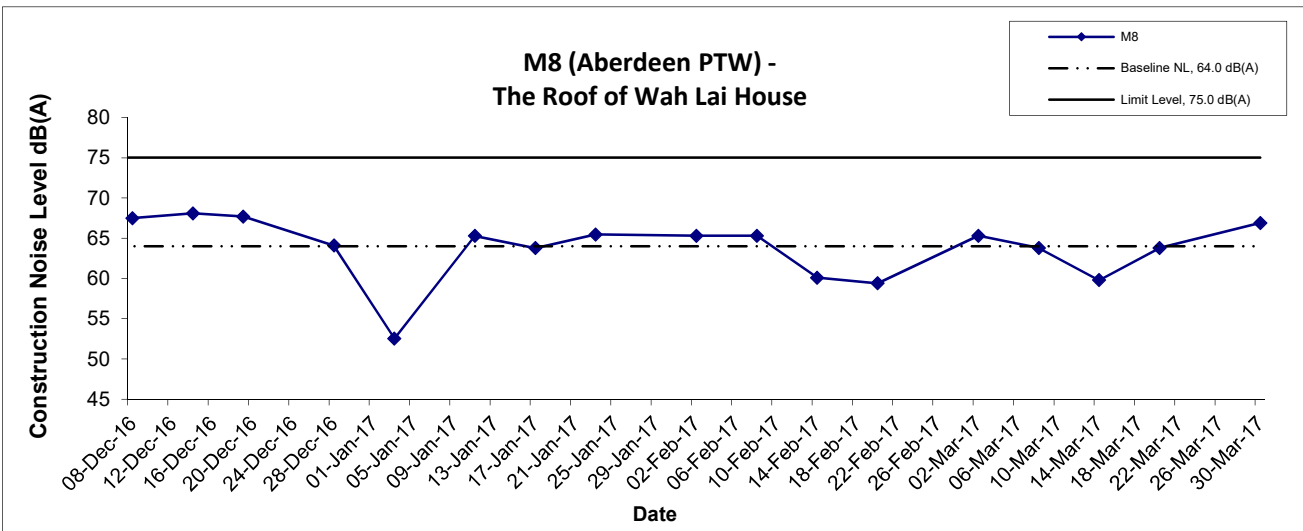
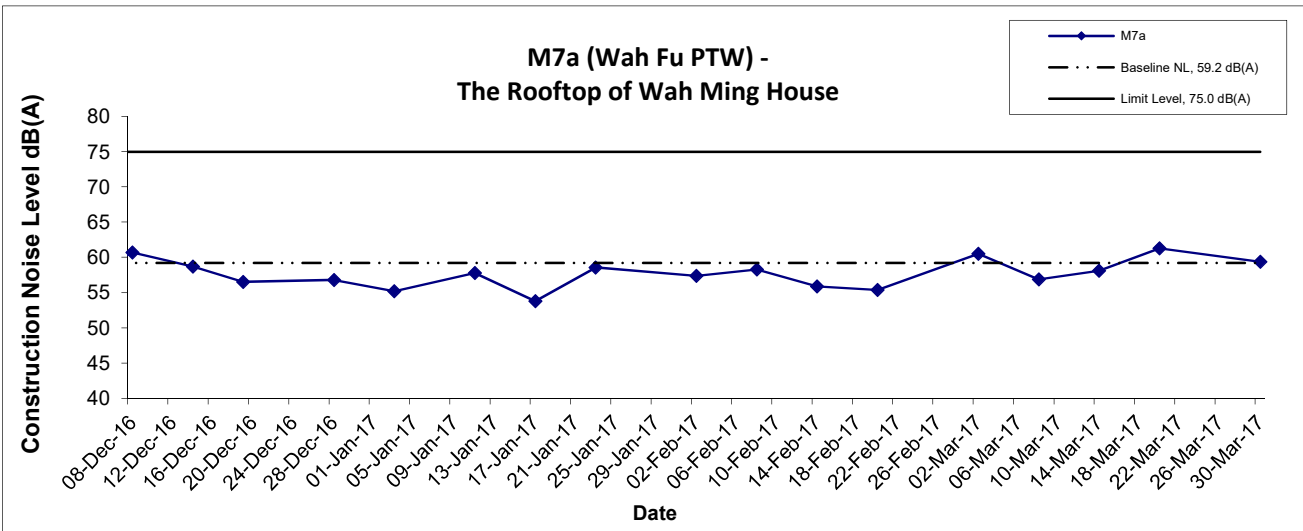
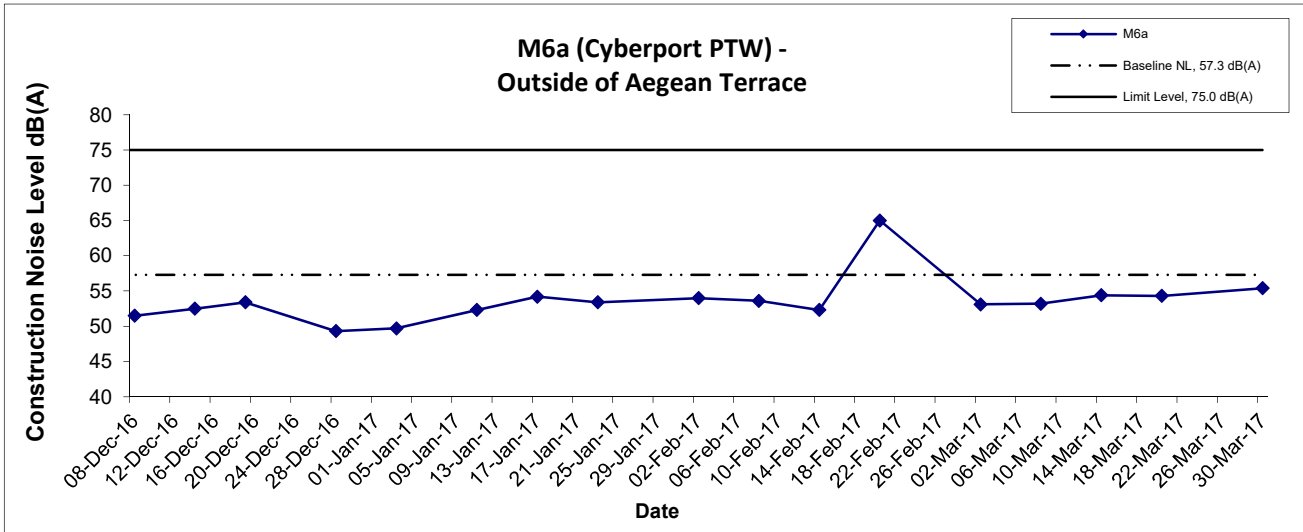
Location M7a (Wah Fu PTW) The rooftop of Wah Ming House							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>eq</sub>	L <sub>eq</sub>
2-Mar-17	13:05	Cloudy	62.9	64.2	60.1	59.2	60.5
8-Mar-17	13:05	Cloudy	61.2	63.4	60.4		56.9
14-Mar-17	9:05	Cloudy	61.7	63.3	60.2		58.1
20-Mar-17	13:10	Sunny	63.4	65.9	62.1		61.3
30-Mar-17	9:05	Sunny	62.3	63.9	60.5		59.4

Location M8 (Aberdeen PTW) The rooftop of Wah Lai House							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>eq</sub>	L <sub>eq</sub>
2-Mar-17	9:30	Cloudy	67.7	69.2	66.1	64.0	65.3
8-Mar-17	10:00	Cloudy	66.9	68.3	64.2		63.8
14-Mar-17	10:00	Cloudy	65.4	66.9	62.3		59.8
20-Mar-17	9:30	Sunny	66.9	68.3	64.2		63.8
30-Mar-17	10:00	Sunny	68.7	70.8	66.4		66.9

Location M9 (Ap Lei Chau PTW) The Podium of Mei Chun Court, South Horizons							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>eq</sub>	L <sub>eq</sub>
2-Mar-17	10:30	Cloudy	62.1	63.4	58.1	56.5	60.7
8-Mar-17	9:00	Cloudy	61.6	63.5	58.2		60.0
14-Mar-17	11:00	Cloudy	62.7	65.3	58.0		61.5
20-Mar-17	10:30	Sunny	62.6	65.9	57.4		61.4
30-Mar-17	11:00	Sunny	62.8	66.1	57.3		61.6

## Noise Levels

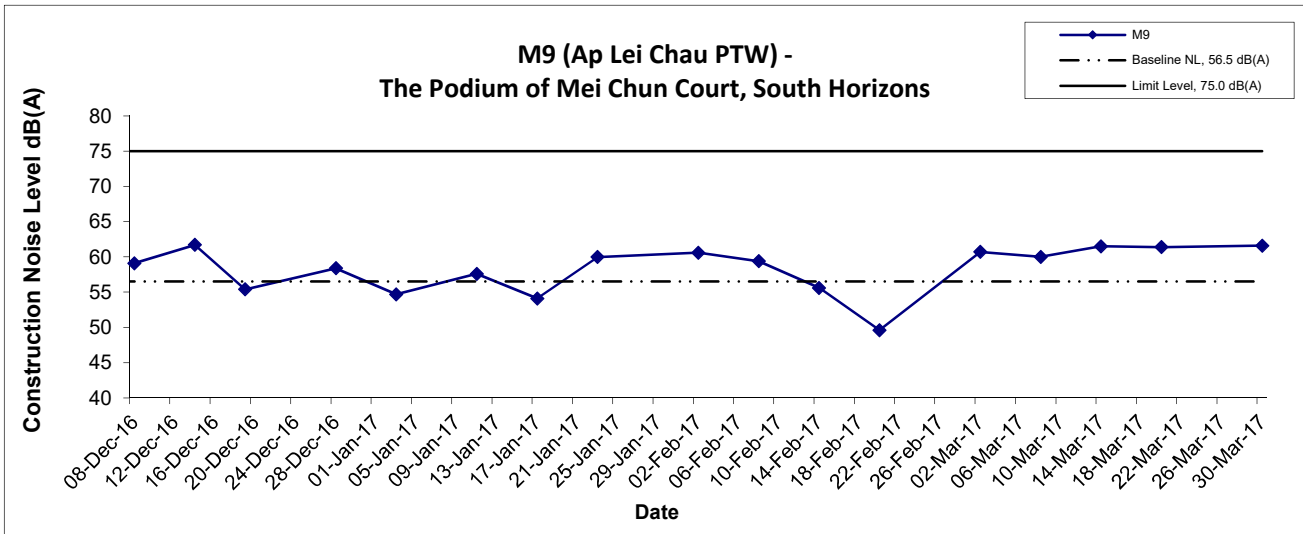
(0700-1900 hrs on Normal Weekdays)



Title Contract No. DC/2009/24 HATS 2A – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Abredeen and Ap Lei Chau Graphical Presentation of Noise Monitoring Result	Scale N.T.S Date Mar 17	Project No. MA11060 Appendix F	
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## Noise Levels

**(0700-1900 hrs on Normal Weekdays)**



Title Contract No. DC/2009/24 HATS 2A – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Abredeen and Ap Lei Chau Graphical Presentation of Noise Monitoring Result	Scale N.T.S	Project No. MA11060	CINOTECH
	Date Mar 17	Appendix F	

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**APPENDIX G**  
**SUMMARY OF EXCEEDANCE**

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## **APPENDIX G – SUMMARY OF EXCEEDANCE**

**Reporting Month:** March 2017

- a) Exceedance Report for 1-hr TSP (0)**
- b) Exceedance Report for 24-hr TSP (0)**
- c) Exceedance Report for Construction Noise on normal week days (0)**

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**APPENDIX H**  
**SITE AUDIT SUMMARY**

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Contract No: DC/2009/24

**HATS 2A - Upgrading of PTWs at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau**

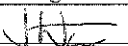

**Record Summary of Environmental Site Inspection**

**Inspection Information**

Checklist Reference Number	170303
Date	3 March 2017 (Friday)
Time	09:40 – 11:40

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
170303-R01	<p><b>Part A - Water Quality</b></p> <ul style="list-style-type: none"><li>The bund should be provided to prevent the muddy water runoff and clear the silt/sand properly at Wah Fu-PTW.</li></ul> <p><b>Part B – Landscape and Visual</b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part C - Air Quality</b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part D – Noise</b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part E – Waste / Chemical Management</b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part F - Permit / Licenses</b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Others</b></p> <ul style="list-style-type: none"><li>Follow-up on previous audit sessions: On previous audit session (Ref. No. 170224), all environmental deficiencies were improved by the Contractor.</li></ul> <p><b>Remark:</b></p> <ul style="list-style-type: none"><li>N/A</li></ul>	A 2

	Name	Signature	Date
Recorded by	Janet Wai		3 March 2017
Checked by	Dr. Priscilla Choy		3 March 2017

Contract No: DC/2009/24

**HATS 2A - Upgrading of PTWs at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau**

**Record Summary of Environmental Site Inspection**

**Inspection Information**

Checklist Reference Number	170310
Date	10 March 2017 (Friday)
Time	09:30 – 11:20

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
170310-O01	<p><b>Part A - Water Quality</b></p> <ul style="list-style-type: none"> <li>The mud/silt trail was observed near the site entrance of Cyberport-PTW and Abd-PTW. The Contractor was reminded to provide the wheel washing facility and clear the sand/silt regularly and properly.</li> </ul> <p><b>Part B – Landscape and Visual</b></p> <ul style="list-style-type: none"> <li>No environmental deficiency was identified during the site inspection.</li> </ul> <p><b>Part C - Air Quality</b></p> <ul style="list-style-type: none"> <li>No environmental deficiency was identified during the site inspection.</li> </ul> <p><b>Part D – Noise</b></p> <ul style="list-style-type: none"> <li>No environmental deficiency was identified during the site inspection.</li> </ul>	A 12 & 13
170310-O02	<p><b>Part E – Waste / Chemical Management</b></p> <ul style="list-style-type: none"> <li>The oil leakage was observed from the excavator at Abd-PTW. The Contractor was reminded to provide the maintenance and clear the oil stain properly.</li> </ul>	E 7i
170310-R03	<ul style="list-style-type: none"> <li>Properly clear the oil stain as chemical waste at Cyberport-PTW.</li> </ul> <p><b>Part F - Permit / Licenses</b></p> <ul style="list-style-type: none"> <li>No environmental deficiency was identified during the site inspection.</li> </ul> <p><b>Others</b></p> <ul style="list-style-type: none"> <li>Follow-up on previous audit sessions: On previous audit session (Ref. No. 170302), all environmental deficiencies were improved by the Contractor.</li> </ul> <p><b>Remark:</b></p> <ul style="list-style-type: none"> <li>N/A</li> </ul>	E 7i

	Name	Signature	Date
Recorded by	Janet Wai		10 March 2017
Checked by	Dr. Priscilla Choy		10 March 2017



Contract No: DC/2009/24

**HATS 2A - Upgrading of PTWs at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau**

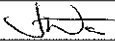

**Record Summary of Environmental Site Inspection**

**Inspection Information**

Checklist Reference Number	170317
Date	17 March 2017 (Friday)
Time	13:30 – 14:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
170317-001	<p><b>Part A - Water Quality</b></p> <ul style="list-style-type: none"> <li>The silt trail was observed near the site entrance of Cyberport-PTW and Abd-PTW. The Contractor was reminded to provide the wheel washing facility and clear the silt regularly and properly.</li> </ul>	A 12 & 13
170317-R02	<p><b>Part B – Landscape and Visual</b></p> <ul style="list-style-type: none"> <li>No environmental deficiency was identified during the site inspection.</li> </ul> <p><b>Part C - Air Quality</b></p> <ul style="list-style-type: none"> <li>The stockpiles of dusty material should be covered by impervious material to prevent the dust emission at Cyberport-PTW.</li> </ul> <p><b>Part D – Noise</b></p> <ul style="list-style-type: none"> <li>No environmental deficiency was identified during the site inspection.</li> </ul> <p><b>Part E – Waste / Chemical Management</b></p> <ul style="list-style-type: none"> <li>No environmental deficiency was identified during the site inspection.</li> </ul> <p><b>Part F - Permit / Licenses</b></p> <ul style="list-style-type: none"> <li>No environmental deficiency was identified during the site inspection.</li> </ul> <p><b>Others</b></p> <ul style="list-style-type: none"> <li>Follow-up on previous audit sessions: On previous audit session (Ref. No. 170310), outstanding items 170310-001 is required to be followed up and remarked as 170317-001 which will be reviewed in the next weekly site inspection (Ref. No. 170324).</li> </ul> <p><b>Remark:</b></p> <ul style="list-style-type: none"> <li>N/A</li> </ul>	C 6

	Name	Signature	Date
Recorded by	Janet Wai		17 March 2017
Checked by	Dr. Priscilla Choy		17 March 2017

Contract No: DC/2009/24

HATS 2A - Upgrading of PTWs at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	170324
Date	24 March 2017 (Friday)
Time	13:50 – 15:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
170324-O01	<p><b>Part A - Water Quality</b></p> <ul style="list-style-type: none"><li>The silt trail was observed near the site entrance of Cyberport-PTW and Abd-PTW. The Contractor was reminded to provide the wheel washing facility and clear the silt regularly and properly.</li></ul>	A 12 & 13
170324-R03	<p><b>Part B – Landscape and Visual</b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part C - Air Quality</b></p> <ul style="list-style-type: none"><li>The stockpiles of dusty material should be covered by impervious material to prevent the dust emission at Cyberport-PTW.</li></ul>	C 6
170324-O02	<p><b>Part D – Noise</b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part E – Waste / Chemical Management</b></p> <ul style="list-style-type: none"><li>The oil leakage was observed from the excavator at Abd-PTW. The Contractor was reminded to provide the maintenance and clear the oil stain properly.</li></ul> <p><b>Part F - Permit / Licenses</b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Others</b></p> <ul style="list-style-type: none"><li>Follow-up on previous audit sessions: On previous audit session (Ref. No. 170317), outstanding items 170317-O01 is required to be followed up and remarked as 170324-O01 which will be reviewed in the next weekly site inspection (Ref. No. 170331).</li></ul> <p><b>Remark:</b></p> <ul style="list-style-type: none"><li>N/A</li></ul>	E 7i

	Name	Signature	Date
Recorded by	Janet Wai		24 March 2017
Checked by	Dr. Priscilla Choy		24 March 2017

Contract No: DC/2009/24

**HATS 2A - Upgrading of PTWs at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau**

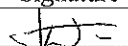

**Record Summary of Environmental Site Inspection**

**Inspection Information**

Checklist Reference Number	170331
Date	31 March 2017 (Friday)
Time	14:00 – 15:10

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
170331-R01 170331-R02	<p><b>Part A - Water Quality</b></p> <ul style="list-style-type: none"> <li>No environmental deficiency was identified during the site inspection.</li> </ul> <p><b>Part B – Landscape and Visual</b></p> <ul style="list-style-type: none"> <li>No environmental deficiency was identified during the site inspection.</li> </ul> <p><b>Part C - Air Quality</b></p> <ul style="list-style-type: none"> <li>No environmental deficiency was identified during the site inspection.</li> </ul> <p><b>Part D – Noise</b></p> <ul style="list-style-type: none"> <li>No environmental deficiency was identified during the site inspection.</li> </ul> <p><b>Part E – Waste / Chemical Management</b></p> <ul style="list-style-type: none"> <li>The drip tray should be provided for the chemical containers at ALC-PTW.</li> <li>Properly clear the oil stain at Abd-PTW.</li> </ul> <p><b>Part F - Permit / Licenses</b></p> <ul style="list-style-type: none"> <li>No environmental deficiency was identified during the site inspection.</li> </ul> <p><b>Others</b></p> <ul style="list-style-type: none"> <li>Follow-up on previous audit sessions: On previous audit session (Ref. No. 170324), all environmental deficiencies were improved by the Contractor.</li> </ul> <p><b>Remark:</b></p> <ul style="list-style-type: none"> <li>N/A</li> </ul>	E 7ii E 7i

	Name	Signature	Date
Recorded by	Janet Wai		31 March 2017
Checked by	Dr. Priscilla Choy		31 March 2017

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**APPENDIX I  
SUMMARY OF AMOUNT OF WASTE  
GENERATED**

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Name of Department: DSD

Name of Contract : Harbour Area Treatment Scheme Stage 2A – Upgrading of Preliminary Treatment Works  
at Sandy Bay, Cyberport, Wah Fu, Ap Lei Chau and Aberdeen

Contract No. : DC/2009/24

**APPENDIX D MONTHLY SUMMARY WASTE FLOW TABLE FOR 2015 (YEAR)**

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly					
	Total Quantity Generated	Hard Rock and Broken Concrete (4)	Reused in the Contract	Reused in other Projects	Disposal as Public Fill	Import Fill	Metals	Paper / Cardboard Packaging	Plastics (3)	Chemical Waste	Other, e.g. general refuse	Special Waste
	[in '000m <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000m <sup>3</sup> ]	[in '000ton]
Year2012	1.002910	0.000000	0.000000	0.000000	1.002910	0.000000	6.680000	0.070000	0.070000	0.100000	0.014000	2.406456
Year2013	4.264035	0.000000	0.000000	0.000000	4.264035	0.000000	10.750000	0.000000	0.000000	0.350000	0.064890	2.232710
Year2014	4.639730	0.000000	0.000000	0.000000	4.639730	0.000000	0.000000	0.000000	0.000000	0.450000	0.145370	1.832460
JAN	0.921395	0	0	0	0.921395	0	0	0	0	0	0.0112	0.12827
FEB	0.145405	0	0	0	0.145405	0	0	0	0.031	0	0.01901	0.10553
MAR	0.51156	0	0	0	0.51156	0	0	0	0	0	0.01676	0.10203
APR	0.69157	0	0	0	0.69157	0	0	0	0	0	0.02722	0.07945
MAY	0.318355	0	0	0	0.318355	0	0	0	0	0	0.03746	0.08964
JUNE	0.119775	0	0	0	0.119775	0	0	0	0	0	0.0421	0.08198
SUB-TOTAL	2.708060	0.000000	0.000000	0.000000	2.708060	0.000000	0.000000	0.000000	0.031000	0.000000	0.153750	0.586900
JULY	0.04194	0	0	0	0.04194	0	0	0	0	0	0.11106	0.0965
AUG	0.27276	0	0	0	0.27276	0	0	0	0	0	0.0462	0.07069
SEPT	0.197565	0	0	0	0.197565	0	0	0	0	0	0.03732	0.08438
OCT	0.879	0	0	0	0.879	0	0	0	0	0	0.03342	0.07928
NOV	0.6821	0	0	0	0.6821	0	0	0	0	0.05	0.03908	0.07918
DEC	0.5804	0	0	0	0.5804	0	0	0	0	0	0.04104	0.08594
TOTAL	5.361825	0.000000	0.000000	0.000000	5.361825	0.000000	0.000000	0.000000	0.031000	0.050000	0.461870	1.082870

Forecast of Total Quantities of C&D materials to be Generated from the Contracts *											
Total Quantity Generated	Hard Rock and Broken	Reused in the Contract	Reused in other Projects	Disposal as Public Fill	Import Fill	Metals	Paper / Cardboard Packaging	Plastics (3)	Chemical Waste	Other, e.g. general refuse	Special Waste
[in '000m <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000m <sup>3</sup> ]	[in '000ton]
20.654	1.544	1.73	0	17.38	0	30	1	1	4	1.65	9.6

- Notes :
- (1) The performance targets are given in PS Clause 6(14).
  - (2) Plastics refer to plastic bottles / containers, plastic sheets / foam from packaging material.
  - (3) The contractor shall also submit the latest forecast of the total amount of C&D materials expected to be generated from the Works, together with a breakdown of the nature where to total amount of C&D materials expected to be generated from the Works is equal to or exceeding 50,000m<sup>3</sup>. (PS Clause 5(4)(b) refers).

[Delete Note (4) and the table above on the forecast, where inapplicable].

- \* (4) The assumed density (kg/m<sup>3</sup>) for both C&D material and general refuse.

C&D material 2000kg/m<sup>3</sup>  
General refuse 1.0 tonnes/m<sup>3</sup>

- (5) Conversion factors for reporting purpose:

in-situ: rock = 2.5 tonnes/m<sup>3</sup> ; soil = 2.0 tonnes/m<sup>3</sup>  
excavated: rock = 2.0 tonnes/m<sup>3</sup> ; soil = 1.8 tonnes/m<sup>3</sup>  
broken concrete and bitumen = 2.5 tonnes/m<sup>3</sup>  
C&D Waste = 1.0 tonnes/m<sup>3</sup>  
bentonite slurry = 2.8 tonnes/m<sup>3</sup>  
Paper = 800kg/m<sup>3</sup>  
Chemical = 800kg/m<sup>3</sup>  
Special waste = 0.6m<sup>3</sup> / container

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**APPENDIX J**  
**EVENT ACTION PLANS**

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**APPENDIX J – Event / Action Plans**

**Table J-1 Event / Action Plan For Air Quality**

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
<b>ACTION LEVEL</b>				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor’s working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
2. Exceedance for two or more consecutive samples	1. Identify source; 2. Inform IEC and ER; 3. Advise the ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial	1. Check monitoring data submitted by ET; 2. Check Contractor’s working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ET on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented	1. Submit proposals for remedial to ER within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
	actions required; 7. If exceedance continues, arrange meeting with IEC and ER; 8. If exceedance stops, cease additional monitoring			
<b>LIMIT LEVEL</b>				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform ER, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate



EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
2. Exceedance for two or more consecutive samples	1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 4. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 5. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 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.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated

**Table J-2 Event / Action Plan For Construction Noise**

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action Level being exceeded	<ol style="list-style-type: none"> <li>1. Notify ER, IEC and Contractor;</li> <li>2. Carry out investigation;</li> <li>3. Report the results of investigation to the IEC, ER 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 ER accordingly;</li> <li>3. Advise the ER 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 ER;</li> <li>2. Implement noise mitigation proposals</li> </ol>
Limit Level being exceeded	<ol style="list-style-type: none"> <li>1. Inform IEC, ER, 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 ER on remedial measures required;</li> <li>7. Assess effectiveness of</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss amongst ER, 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 ER 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</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 ER 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</li> </ol>

<b>EVENT</b>	<b>ACTION</b>			
	<b>ET</b>	<b>IEC</b>	<b>ER</b>	<b>CONTRACTOR</b>
	Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring		until the exceedance is abated	the ER until the exceedance is abated

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**APPENDIX K  
ENVIRONMENTAL MITIGATION  
IMPLEMENTATION SCHEDULE (EMIS)**

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**APPENDIX K IMPLEMENTATION SCHEDULE OF ENVIRONMENTAL MITIGATION MEASURES (EMIS)**

<b>EIA Ref.</b>	<b>Recommended Mitigation Measures</b>	<b>Location of the measure</b>	<b>Implementation Status</b>
<b>A</b>	<b>Air Quality</b>		
3.74	<p>Skip hoist for material transport should be totally enclosed by impervious sheeting.</p> <p>Vehicle washing facilities should be provided at every vehicle exit point.</p> <p>The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcore.</p> <p>Where a site boundary adjoins a road, streets or other areas accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length except for a site entrance or exit.</p> <p>Use of regular watering, with complete coverage, to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather.</p> <p>Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering shall be applied to aggregate fines.</p> <p>Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs.</p> <p>Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations.</p> <p>Imposition of speed controls for vehicles on unpaved site roads. Ten kilometers per hour is the recommended limit.</p> <p>Every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the 3 sides.</p> <p>Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction sites.</p>	All construction sites	<p>N/A</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>*</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>
3.74	Instigation of an environmental monitoring and auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.	All construction sites	^

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Status
<b>B</b>	<b>Airborne Noise</b>		
4.56– 4.61	Use of quiet PME, movable barriers and acoustic mats.	All construction sites	^
4.67	Only well-maintained plant shall be operated on-site and plant shall be serviced regularly during the construction program.		^
	Silencers or mufflers on construction equipment shall be utilized and shall be properly maintained during the construction program.		^
	Mobile plant, if any, shall be sited as far away from NSRs as possible.		^
	Machines and plant (such as trucks) that may be in intermittent use shall be shut down between works periods or shall be throttled down to a minimum.		^
4.67	Plant known to emit noise strongly in one direction shall, wherever possible, be orientated so that the noise is directed away from the nearby NSRs.		^
	Material stockpiles and other structures shall be effectively utilized, wherever practicable, in screening noise from on-site construction activities.		^
<b>C</b>	<b>Water Quality</b>		
6.349 to 6.375	Construction Site Runoff and General Construction Activities The mitigation measures as outlined in the ProPECC PN 1/94 Construction Site Drainage should be adopted where applicable.	All construction sites	*
6.376	Effluent Discharge There is a need to apply to EPD for a discharge licence for discharge of effluent from the construction site under the WPCO. The discharge quality must meet the requirements specified in the discharge licence. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the WPCO license which is under the ambit of regional office (RO) of EPD. Minimum distances of 100 m should be maintained between the discharge points of construction site effluent and the existing saltwater intakes.		^
6.377	Accidental Spillage of Chemicals  Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General)		^

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Status
	Regulation should be observed and complied with for control of chemical wastes.		
6.378	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.		^
6.379	<p>Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows:</p> <ul style="list-style-type: none"> <li>• Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport.</li> <li>• Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents.</li> <li>• Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.</li> </ul>		^
6.380	<p>Construction Works in Close Proximity of Storm Drains or Seafront:</p> <p>To minimize the potential water quality impacts from the construction works located at or near any watercourse, the practices outlined below should be adopted where applicable.</p> <ul style="list-style-type: none"> <li>• The use of less or smaller construction plants may be specified to reduce the disturbance to the storm water courses or marine environment.</li> <li>• Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any water courses during carrying out of the construction works.</li> <li>• Stockpiling of construction materials and dusty materials should be covered and located away from any water courses.</li> <li>• Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers.</li> <li>• Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable.</li> <li>• Proper shoring may need to be erected in order to prevent soil/mud from slipping into the storm culvert or sea.</li> </ul>	All construction sites	^

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Status
<b>D</b>	<b>Waste Management</b>		
9.107	Reusable steel or concrete panel shutters, fencing and hoarding and signboard should be used as a preferred alternative to items made of wood, to minimize wastage of wood. Attention should be paid to WBTC No. 19/2001 - Metallic Site Hoardings and Signboards to reduce the amount of timber used on construction sites. Metallic alternatives to timber are readily available and should be used rather than new timber. Precast concrete units should be adopted wherever feasible to minimize the use of timber formwork.	All construction sites	^
9.109	All waste materials should be segregated into categories covering: <ul style="list-style-type: none"> <li>• excavated materials suitable for reuse on-site;</li> <li>• excavated materials suitable for public filling facilities;</li> <li>• remaining C&amp;D waste for landfill;</li> <li>• chemical waste; and</li> <li>• general refuse for landfill.</li> </ul>	All construction sites	^
9.113	Sort C&D waste from demolition of existing facilities to recover recyclable portions such as metals.		^
	Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal.		^
	Encourage collection of aluminum cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force.		^
	Any unused chemicals or those with remaining functional capacity shall be recycled.		^
	Proper storage and site practices to minimize the potential for damage or contamination of construction materials.		^
9.115	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.		^
	Training of site personnel in proper waste management and chemical waste handling procedures.		^
9.115	Develop and provide toolbox talk for on-site sorting of C&D materials to enhance worker's awareness in handling, sorting, reuse and recycling of C&D materials.		^
	Provision of sufficient waste disposal points and regular collection of waste.		^



EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Status
	Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.		^
9.125	Bentonite slurries used in diaphragm wall construction should be reconditioned and reused wherever practicable. The disposal of residual used bentonite slurry should follow the good practice guidelines stated in ProPECC PN 1/94 "Construction Site Drainage".	All construction sites	N/A
9.131	Adequate number of portable toilets at temporary works areas or the PTWs to ensure that sewage from site staff would be properly collected.		^
9.133	General refuse should be stored in enclosed bins, skips or compaction units separating from C&D material and disposed of at designated landfill.		^
9.135	The recyclable component of the municipal waste generated by the workforce, such as aluminium cans, paper and cleansed plastic containers should be separated from other waste. Provision and collection of recycling bins for different types of recyclable waste should be set up by the Contractor. The Contractor should also be responsible for arranging recycling companies to collect these materials.		^
9.137	If chemical wastes are produced at the construction site, the Contractor would 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 shall use a licensed collector to transport and dispose of the chemical wastes, to either the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.		*
9.142	Prior to excavation of the marine deposit layer, the deposit should be tested in accordance with the ETWB TC(W) No. 34/2002 and the results should be presented in a Preliminary Sediment Quality Report. The marine deposit should be disposed of at the disposal site designated by the Marine Fill Committee (MFC) or Director of Environmental Protection (DEP) depending on the test results.		N/A

<b>EIA Ref.</b>	<b>Recommended Mitigation Measures</b>	<b>Location of the measure</b>	<b>Implementation Status</b>
<b>E</b>	<b>Terrestrial Ecology</b>		
10.94	To implement effective noise mitigation measures as recommended in Section 4 of EIA.	All construction sites	N/A
10.95	Dust control practices such as regular watering, complete coverage of any aggregate or dusty material storage piles, and re-schedule of dusty activities during high-wind conditions as well as other measures recommended in Section 3 of EIA, should be implemented.		^
10.96	Fences/hoardings should be erected and installed along the boundary of the works areas.		^
10.97	Standard good site practices as suggested in Section 10 of EIA should be implemented.		N/A
10.98	Provision of proper drainage system and runoff control measures such as use of sand/silt traps, oil/grease separators, sedimentation tanks, etc.		^
<b>F</b>	<b>Landscape and Visual</b>		
Table 13.7	Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical.	All construction sites	^
	Existing trees to be retained on site should be carefully protected during construction.		^
	Trees unavoidably affected by the works should be transplanted where practical.		^
	Compensatory tree planting should be provided to compensate for felled trees.		^
	Control of night-time lighting.		^
Table 13.7	Erection of decorative screen hoarding compatible with the surrounding setting.	All construction sites	N/A
<b>G</b>	<b>Marine Ecology</b>		
11.137	To minimize the potential indirect impacts on water quality from construction site runoff and various construction activities, the practices outlined in ProPECC PN 1/94 Construction Site Drainage should be adopted.	All construction sites	*
<b>H</b>	<b>Hazard to Life</b>		
14A.201	Limiting use of cranes in terms of locations, lifting height, swing angle and setting up safety zone.	Exact location will be determined on construction site by the engineer	^

Remarks:	^ Compliance of mitigation measure;
	N/A Not Applicable;
	* Recommendation was made during site audit but improved/rectified by the contractor.
	# Recommendation was made during site audit and to be improved / rectified by the contractor.
	X Non-compliance of mitigation measure;
	• Non-compliance but rectified by the contractor;

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**APPENDIX L  
COMPLAINT LOG**

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**APPENDIX L – COMPLAINT LOG**

**Reporting Month:** March 2017

**Cumulative complaints received:**

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
CIR#1_121228	DSD’s Preliminary Treatment Work (PTW) at Ap Lei Chau	28 <sup>th</sup> December 2012	<p>The residents of South Horizons and Ap Lei Chau Estate complained about the noise generated from our construction site at Ap Lei Chau PTW. The ETL of the Project was informed of the complaint through the e-mail on 31<sup>st</sup> December 2012 and initiated the complaint investigation procedures. According to the information provided by the Contractor, major construction activities that contributed to the noise at Ap Lei Chau during the time of complaint include: general site works and safety works; maintenance and handling of plants; and drilling works for pipe pile wall.</p>	<p>There was no exceedance report received from Contract DC/2008/09 at noise monitoring stations M9 for Ap Lei Chau PTW in December 2012. Resident site staff also revealed that rock excavation works and other construction activities were being carried out at nearby construction sites on 29 &amp; 31 December 2012. After complaint received, the Contractor has taken initiative to minimize noise nuisance to the nearby residents by implementation of mitigation measures as below:</p> <ul style="list-style-type: none"> <li>• Adopting a relatively low-noise construction method – small drilling rig to install the pipe piles;</li> <li>• Equipping noise reducing jacket on the small drilling rig.</li> </ul> <p>The Contractor was recommended to continue the following mitigation measures in order to minimize the potential construction noise nuisance to the nearby community:</p> <ul style="list-style-type: none"> <li>• To adopt movable noise barrier;</li> <li>• To use silenced equipment where practicable;</li> <li>• To avoid concurrent uses of noisy equipment near the sensitive area;</li> <li>• To ensure the equipment are maintaining in good operation condition; and</li> <li>• To turned off any idle equipment on site.</li> </ul>	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
CIR#2_130809	DSD's Preliminary Treatment Work (PTW) at Wah Fu	9 <sup>th</sup> August 2013	<p>One anonymous complainant complained about the noise generated from Contract DC/2009/24 construction site at Wah Fu PTW. The ETL of the Contract was informed of the complaint through the e-mail on 12<sup>th</sup> August 2013 and initiated the complaint investigation procedures.</p> <p>According to the information provided by the Contractor, major construction activities that contributed to the noise at Wah Fu during the time of complaint include: pipe pile wall construction.</p>	<p>There was no exceedance report received from Contract DC/2007/24 at noise monitoring stations M7a for Wah Fu PTW in August 2013.</p> <p>After complaint received, the Contractor has taken initiative to minimize noise nuisance to the nearby residents by implementation of mitigation measures as below:</p> <ul style="list-style-type: none"> <li>• Properly maintained and operated the construction plant (well-greased, damage and worn parts promptly replaced);</li> <li>• To install movable noise absorption screen located close to the operating PME/noisy works (noise sources);</li> <li>• To enclose or wrap the breaking tip with sound insulating materials to reduce the noise.</li> </ul> <p>According to the complaint, the Contractor had enhanced the movable noise barrier by increasing the height of the noise barrier and adding the upper sloped section which could further reduce the noise generated from construction works in Wah Fu PTW.</p>	Closed
CIR#3_131119	DSD's Preliminary Treatment Work (PTW) at Wah Fu	19 <sup>th</sup> November 2013	<p>One anonymous complainant complained about the noise generated from Contract DC/2009/24 construction site at Wah Fu PTW. The ETL of the Contract was informed of the complaint through the e-mail on 29<sup>th</sup> November 2013 and initiated the complaint investigation procedures.</p> <p>According to the information provided by the Contractor, major construction activities that contributed to the noise at Wah Fu</p>	<p>There was no exceedance report received from Contract DC/2007/24 at noise monitoring stations M7a for Wah Fu PTW in November 2013.</p> <p>After complaint received, the Contractor has taken initiative to minimize noise nuisance to the nearby residents by implementation of mitigation measures as below:</p> <ul style="list-style-type: none"> <li>• Properly maintained and operated the construction plant (well-greased, damage and worn parts promptly replaced);</li> <li>• To install the erected noise absorption screen located close to the operating PME/noisy works (noise sources).</li> </ul> <p>According to the site diary, the Contractor had provided the sound insulating materials to enclose and wrap the breaking tip which could further reduce the noise generated from</p>	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
			during the time of complaint include: pipe pile wall construction, grout curtain construction and ELS in progress.	construction works in Wah Fu PTW.	
CIR#4_150330	DSD's Preliminary Treatment Work (PTW) at Wah Fu	30 <sup>th</sup> March 2015	One anonymous complainant complained about the dark smoke emission generated from Contract DC/2009/24 construction site at Wah Fu PTW. The ETL of the Contract was informed of the complaint through the e-mail on 30 <sup>th</sup> March 2015 and initiated the complaint investigation procedures. According to the information provided by the Contractor, the sheet pile machine was deployed at Wah Fu PTW for sheet piling installation on the day of complaint. However, no dark smoke emission was observed at Wah Fu PTW during the routine inspection by the Contractor such as the Environmental Officer on the day of complaint. The machine was removed off site after finishing the works.	After complaint received, the Contractor has taken initiative to prevent dark smoke emission to the nearby residents by implementation of mitigation measures as below: <ul style="list-style-type: none"> <li>• Remove the sheet pile machine after finishing the works on 31<sup>st</sup> March 2015;</li> <li>• Properly maintained and operated the construction plant (well-greased, damage and worn parts promptly replaced).</li> </ul> The Contractor was reminded to consider to increase the frequency of checking the darkness of smoke generated from mechanical equipment. With comparison to the shade of smoke to the shades on a Ringelmann Chart or other approved devices to ensure the emitting smoke is lighter than shade 1 on the Ringelmann Chart. The Contractor was also reminded to avoid any dark smoke emission generated from mechanical equipment for more than 6 minutes in any period of 4 hours or for more than 3 minutes continuously at any one time; and remove the carbon deposits from the muffler and keep the mesh at the inlet of the air blower clear frequently which could further prevent the dark smoke emission generated from construction machines of construction works in Wah Fu PTW.	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
CIR#5_151026	DSD’s Preliminary Treatment Work (PTW) at Wah Fu	26 <sup>th</sup> October 2015	<p>One anonymous complainant complained about the noise generated from Contract DC/2009/24 construction site at Wah Fu PTW. The ETL of the Contract was informed of the complaint through the e-mail on 27<sup>th</sup> October 2015 and initiated the complaint investigation procedures.</p> <p>According to the information provided by the Contractor, major construction activity that contributed to the noise at Wah Fu PTW during the time of complaint was breaking works</p>	<p>There was no exceedance recorded at noise monitoring stations M7a for Wah Fu PTW in October 2015. After complaint received, the Contractor has taken initiative to minimize noise nuisance to the nearby residents by implementation of mitigation measures as below:</p> <ul style="list-style-type: none"> <li>• Properly maintained and operated the construction plant (well-greased, damage and worn parts promptly replaced);</li> <li>• To install the erected noise absorption screen on top of the FSGT building’s roof located close to the operating PME/noisy works (noise sources).</li> </ul> <p>According to the site diary, the Contractor had provided the sound insulating materials to enclose and wrap the breaking tip which could further reduce the noise generated from construction works in Wah Fu PTW.</p>	Closed
CIR#6_151209	DSD’s Preliminary Treatment Work (PTW) at Wah Fu	9 <sup>th</sup> December 2015	<p>One anonymous complainant complained about the noise generated from Contract DC/2009/24 construction site at Wah Fu PTW. According to the complainant, site works had commenced at about 8 am and was considered to be too early. The ETL of the Contract was informed of the complaint through the e-mail on 9<sup>th</sup> December 2015 and initiated the complaint investigation procedures.</p> <p>According to the information provided by the Contractor, major construction activity that contributed to the noise at Wah Fu PTW during the time of complaint</p>	<p>There was no exceedance recorded at noise monitoring stations M7a for Wah Fu PTW in December 2015. After complaint received, the Contractor has taken initiative to minimize noise nuisance to the nearby residents by implementation of mitigation measures as below:</p> <ul style="list-style-type: none"> <li>• Properly maintained and operated the construction plant (well-greased, damage and worn parts promptly replaced);</li> <li>• Operated the machines and plant in intermittent use and shut down between works periods.</li> </ul> <p>As reported by the Contractor of Contract DC/2009/24 during the site inspection on 11<sup>th</sup> December 2015, the Contractor agreed to reschedule the site works and noisy activities would only be started from 9 a.m. at Wah Fu PTW in order to minimize the impact to the nearby noise sensitive receiver.</p>	Closed



Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
			were breaking and excavation works of flume channel on the pavement, and breaking and excavation works for construction of cable shaft which were conducted and started around 8:20 a.m. and around 1 p.m. respectively on 9 <sup>th</sup> December 2015.		

**Remarks:** No environmental complaint was received in March 2017.

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**APPENDIX M**  
**CONSTRUCTION PROGRAMME**

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Activity ID	Activity Name	% Comp.	Original Duration	Early Start	Early Finish	PL Project Early Start	PL Project Early Finish	February 2017					March 2017					April 2017				May 2017			
								23	30	06	13	20	27	06	13	20	27	03	10	17	24	01	08	15	22
<b>DSD - HATSS2 Upgrading of PTW (DC/2009/24)</b>																									
<b>Particulars</b>																									
<b>Key Dates</b>																									
<b>Commencement / Completion</b>																									
24CEN0020	Time for Completion of Project	0%	1309	31-Aug-11 A	30-Sep-17	24-Mar-16	28-Feb-17																		
<b>Civil &amp; Geo. Submission</b>																									
<b>Electrical and Mechanical Submission</b>																									
<b>Cyberport PTW</b>																									
<b>Works for Section 2</b>																									
<b>Modification Inside Cyberport PTW Complex, Incl. Deodorization Room</b>																									
<b>Electrical and Mechanical Works</b>																									
<b>Control and Monitoring Services incl. Instrumentation</b>																									
24CPT02577	Installation of H2S monitoring station (remaining 2 sets)	0%	30	23-Feb-17	29-Mar-17	24-Mar-16	03-May-16	Installation of H2S monitoring station (remaining 2 sets)																	
<b>Roadworks and Landscaping Works</b>																									
<b>Roadworks</b>																									
24CPT04020	Roadworks	0%	45	09-Jan-17 A	15-Apr-17	02-Jul-16	23-Aug-16	Roadworks																	
<b>Landscaping Works</b>																									
24CPT04000	Shrubs and Tree planting at CP-3	0%	45	03-Apr-17*	21-May-17	09-Aug-16	30-Sep-16	Shrubs																	
<b>Completion of Works in Section 2</b>																									
<b>Submission of Manuals</b>																									
24CPT05050	As-Built Drawings Submission / Approval for Cyberport PTW	0%	60	24-Oct-16 A	24-Mar-17	01-Jun-16	30-Jul-16	As-Built Drawings Submission / Approval for Cyberport PTW																	
<b>Training for DSD Staff</b>																									
24CPT05070	Interim Training of DSD staff for modified control system	0%	3	23-Feb-17	25-Feb-17	24-Mar-16	26-Mar-16	Interim Training of DSD staff for modified control system																	
24CPT05080	Final Training of DSD staff for modified control system	0%	3	19-Mar-17	21-Mar-17	17-Apr-16	19-Apr-16	Final Training of DSD staff for modified control system																	
<b>Walkway Construction (Vastation Order)</b>																									
24CPTVO-00150	Off-site fabrication of grille fence and vehicular & man access	0%	39	12-Dec-16 A	22-Apr-17	Off-site fabrication of grille fence and vehicular & man access																			
24CPTVO-00160	Preparation work for the installation of grille fence and access	0%	39	12-Dec-16 A	05-Apr-17	Preparation work for the installation of grille fence and access																			
24CPTVO-00170	Installation of grill fence and access	0%	12	24-Apr-17*	06-May-17	Installation of grill fence and access																			
24CPTVO-00180	Construct the surface drain	100%	23	06-Jan-17 A	01-Feb-17 A	Construct the surface drain																			
24CPTVO-00190	Procure the pre-cast concrete blocks	0%	39	12-Dec-16 A	28-Feb-17	Procure the pre-cast concrete blocks																			
24CPTVO-00200	Substructure preparation including sub-base and road base	0%	23	06-Jan-17 A	07-Mar-17	Substructure preparation including sub-base and road base																			
24CPTVO-00210	Lay paving blocks for Phase 3 (see attached phasing plan for reference)	0%	16	08-Mar-17*	25-Mar-17	Lay paving blocks for Phase 3 (see attached phasing plan for reference)																			
24CPTVO-00220	Remaining works for Phase 4 (see attached phasing plan for reference)	0%	11	27-Mar-17	07-Apr-17	Remaining works for Phase 4 (see attached phasing plan for reference)																			
24CPTVO-00230	Procure the SS enclosure of level sensors	0%	39	12-Dec-16 A	04-Mar-17	Procure the SS enclosure of level sensors																			
24CPTVO-00240	Modification of footing and installation of enclosure	0%	20	06-Mar-17*	28-Mar-17	Modification of footing and installation of enclosure																			
24CPTVO-00250	Procure the construction material of removable fence	0%	39	12-Dec-16 A	04-Mar-17	Procure the construction material of removable fence																			
24CPTVO-00260	Construct the footing of removable fence	0%	20	06-Mar-17*	28-Mar-17	Construct the footing of removable fence																			
24CPTVO-00290	Procure the materials for irrigation system	0%	23	03-Jan-17 A	28-Feb-17	Procure the materials for irrigation system																			
24CPTVO-00300	Install the irrigation system	0%	20	01-Mar-17*	23-Mar-17	Install the irrigation system																			
24CPTVO-00310	Landscaping softworks	0%	27	29-Mar-17	28-Apr-17	Landscaping softworks																			
24CPTVO-00330	Off-site fabrication of FRP enclosure for penstock	0%	65	13-Dec-16 A	30-Mar-17	Off-site fabrication of FRP enclosure for penstock																			

Start Date: 25-Jun-11  
 Finish Date: 30-Sep-18  
 Date Date: 23-Feb-17  
 Run Date: 03-Mar-17

- Primary Baseline
- Actual Work
- Critical Remaining Work
- ◆ Baseline Milestone
- ◆ Current Bar Labels
- ◆ Milestone

HATSS2A Contract No. DC/2009/24

**3 MONTHS ROLLING PROGRAMME**

**FEBRUARY 2017**

DETAILED WORKS PROGRAMME - DC/2009/24			
Date	Revision	Checked	Approved
14-Dec-12	DWP - REVISION 2		
17-Jun-14	DWP - REVISION 3 (S5, 6 & 7)		
06-Apr-16	DWP - REVISION 4		
23-Feb-17	UDWP - REVISION 4		

Activity ID	Activity Name	% Comp	Original Duration	Early Start	Early Finish	SL Project Early Start	SL Project Early Finish	February 2017							March 2017							April 2017				May 2017				
								23	30	06	13	20	27	06	13	20	27	03	10	17	24	01	08	15	22	29				
24CPTVC-00340	Installation of FRP enclosure for penslock	0%	20	31-Mar-17	22-Apr-17																									
24CPTVC-00350	Completion of Walkway Construction	0%	0		06-May-17*																									
<b>Wah Fu PTV</b> Key Dates Statutory and Utility Applications and Approvals <b>Fire Services Department (FSD)</b> 24WFOU1100 Prepare / Submit Application for FSD Inspection 100% 90 01-Dec-15 A 23-Feb-17 24-Mar-16 13-Apr-16 Prepare / Submit Application for FSD Inspection 24WFOU1110 1st round on site inspection of FSD 0% 14 23-Feb-17 10-Mar-17 14-Apr-16 29-Apr-16 1st round on site inspection of FSD 24WFOU1111 Remedial works as per FSD inspection comment 0% 14 11-Mar-17 27-Mar-17 30-Apr-16 18-May-16 Remedial works as per FSD inspection comment 24WFOU1112 2nd round on site inspection of FSD 0% 7 28-Mar-17 04-Apr-17 19-May-16 26-May-16 2nd round on site inspection of FSD 24WFOU1113 Issuance of FS Completion certificate 0% 14 05-Apr-17 20-Apr-17 27-May-16 13-Jun-16 Issuance of FS Completion certificate <b>Hong Kong Electric (HEC)</b> 24WFOU1117 2nd round on-site inspection by HEC 0% 6 23-Sep-16 A 28-Feb-17 30-Apr-16 07-May-16 2nd round on-site inspection by HEC 24WFOU1118 Power energization by HEC 0% 1 01-Mar-17 01-Mar-17 09-May-16 16-May-16 Power energization by HEC <b>Environmental Protection Department (EPD)</b> 24WFOU1119 Statutory submission to EPD (Chimney Design) 0% 60 24-Feb-16 A 02-Mar-17 24-Mar-16 09-May-16 Statutory submission to EPD (Chimney Design) 24WFOU1120 Comment & re-submission to EPD 0% 30 03-Mar-17 06-Apr-17 10-May-16 15-Jun-16 Comment & re-submission to EPD 24WFOU1121 Approval from EPD 0% 21 07-Apr-17 01-May-17 16-Jun-16 11-Jul-16 Approval from EPD <b>Works for Section 4</b> Remaining Works After Early Flow Turning <b>Finishing Works</b> 24WFOU2250A80 Installation of Doors 0% 15 23-Feb-17 11-Mar-17 24-May-16 10-Jun-16 Installation of Doors 24WFOU2270A30 Installation of Irrigation System and Green Roof 0% 66 13-Jan-17 A 31-Mar-17 09-Aug-16 10-Sep-16 Installation of Irrigation System and Green Roof <b>Electrical and Mechanical Works</b> <b>Material / Equipment Delivery on Site</b> 24WFOU3340 Delivery of weather & H2S monitoring station 0% 0 09-Mar-17 30-Apr-16 Delivery of weather & H2S monitoring station, Delivery of weather & H2S monitoring station <b>Electrical Works</b> 24WFOU03509 Installation of outdoor lighting fittings 100% 7 23-Jan-17 A 30-Jan-17 A 26-Apr-16 04-May-16 Installation of outdoor lighting fittings <b>Control and Monitoring Services incl. instrumentation</b> 24WFOU2829 Cable tray installation for weather and H2S monitoring station 0% 21 23-Feb-17 18-Mar-17 03-May-16 27-May-16 Cable tray installation for weather and H2S monitoring station 24WFOU2830 Cable laying for weather and H2S monitoring station 0% 21 03-Mar-17 27-Mar-17 28-May-16 22-Jun-16 Cable laying for weather and H2S monitoring station 24WFOU2831 Megger test in cables for weather and H2S monitoring station 0% 10 28-Mar-17 07-Apr-17 23-Jun-16 05-Jul-16 Megger test in cables for weather and H2S monitoring station 24WFOU2832 Cable termination for weather and H2S monitoring station 0% 10 08-Apr-17 19-Apr-17 06-Jul-16 16-Jul-16 Cable termination for weather and H2S monitoring station 24WFOU2833 Installation of weather monitoring station 0% 14 28-Mar-17 12-Apr-17 23-Jun-16 09-Jul-16 Installation of weather monitoring station 24WFOU2834 Installation of H2S monitoring station 0% 28 13-Apr-17 15-May-17 11-Jul-16 11-Aug-16 Installation of H2S monitoring station <b>Roadworks, Landscape and Modification of Fence</b> <b>Roadworks</b> 24WFOU2300A30 Roadworks (footpath around FS & GT Bldg) 0% 45 16-Jan-17 A 29-Apr-17 10-Aug-16 03-Oct-16 Roadworks (footpath around FS & GT Bldg) <b>Landscaping Works</b> 24WFOU2300A50 Grasscrete and Soft landscaping works 0% 90 17-Mar-17 29-Jun-17 26-Oct-16 26-Nov-16 24WFOU2310A10 Tree Transplantation from off-site to site (1 tree) 0% 20 27-Apr-17 31-May-17 26-Sep-16 01-Nov-16 <b>Modification of Fence</b> 24WFOU2320A20 Construct new boundary fence 0% 30 19-Sep-16 A 30-Mar-17 15-Aug-16 19-Sep-16 Construct new boundary fence 24WFOU2320A30 Installation of Ceramic Face or natural stone facing on boundary fence 0% 45 31-Mar-17 22-May-17 01-Sep-16 26-Oct-16 Installation of Ceramic Face or natural stone facing on boundary fence 24WFOU2320A40 Installation of Synthetic diagonal timber board fencing 0% 45 25-Apr-17 15-Jun-17 20-Sep-16 12-Nov-16 Installation of Synthetic diagonal timber board fencing <b>Completion of Works in Section 4</b>																														

Activity ID	Activity Name	% Comp	Original Duration	Early Start	Early Finish	BL Project Early Start	BL Project Early Finish	February 2017		March 2017			April 2017			May 2017							
								23	30	06	13	20	27	06	13	20	27	03	10	17	24	01	08
<b>Final Testing and Commissioning</b>																							
24WFL03220	Testing and Commissioning of Generator Set at Wah Fu PTW	100%	30	08-Jan-17 A	08-Feb-17 A	16-Nov-16	15-Dec-16	Testing and Commissioning of Generator Set at Wah Fu PTW															
<b>Submission of Manuals</b>																							
24WFL04080	Preparation / Submission of final O&M manual	0%	90	04-Jan-16 A	30-Mar-17	26-Feb-17	26-May-17	Preparation / Submission of final O&M manual															
24WFL04085	As-Built Drawings Submission / Approval for Wah Fu PTW	0%	60	24-Dec-16 A	24-Mar-17	29-Jun-16	27-Aug-16	As-Built Drawings Submission / Approval for Wah Fu PTW															
<b>Trainings for DSD Staff</b>																							
24WFL04090	Interim Training of DSD staff for modified control system	0%	3	23-Feb-17	25-Feb-17	24-Mar-15	26-Mar-16	Interim Training of DSD staff for modified control system															
24WFL04100	Final Training of DSD staff for modified control system	0%	3	26-Feb-17	28-Feb-17	27-Aug-16	29-Aug-16	Final Training of DSD staff for modified control system															
<b>Aberdeen PTW</b>																							
<b>Key Dates</b>																							
<b>Time of Completion</b>																							
24ABN00310	Time for Completion of Section 5	0%	1309	31-Aug-11 A	30-Aug-17	24-Mar-15	28-Feb-17	Time for Completion of Section 5															
<b>Statutory and Utility Applications and Approvals</b>																							
<b>Fire Services Department (FSD)</b>																							
24ABN00420	Prepare / Submit Application for FSD Inspection	0%	90	03-Oct-16 A	30-Jun-17	05-Jul-16	20-Oct-16	Prepare / Submit Application for FSD Inspection															
<b>Works for Section 5</b>																							
<b>FS &amp; GT Bldg - Grit Trap No.2 Incl. Middle Chamber (Stage 3)</b>																							
<b>Electrical and Mechanical Works</b>																							
<b>Electrical Works</b>																							
24ABN03936	Modification / installation of power, control & indication circuitry in existing switchboard (for weather & H2S)	0%	2	23-Feb-17	24-Feb-17	06-Apr-16	07-Apr-16	Modification / installation of power, control & indication circuitry in existing switchboard (for weather & H2S)															
24ABN03937	Cable tray installation of weather and H2S monitoring station	0%	12	23-Feb-17	08-Mar-17	10-May-16	24-May-16	Cable tray installation of weather and H2S monitoring station															
24ABN03938	Cable tying for weather and H2S monitoring station	0%	16	28-Feb-17	17-Mar-17	13-May-16	01-Jun-16	Cable tying for weather and H2S monitoring station															
24ABN03939	Megger test in cables for weather and H2S monitoring station	0%	7	18-Mar-17	25-Mar-17	02-Jun-16	10-Jun-16	Megger test in cables for weather and H2S monitoring station															
24ABN03940	Cable termination for weather and H2S monitoring station	0%	7	27-Mar-17	03-Apr-17	11-Jun-16	18-Jun-16	Cable termination for weather and H2S monitoring station															
<b>Control and Monitoring Services incl. Instrumentation</b>																							
24ABN03917	Installation of weather monitoring station	0%	14	04-Apr-17	19-Apr-17	24-May-16	08-Jun-16	Installation of weather monitoring station															
24ABN03918	Installation of H2S monitoring sensors	0%	33	13-Mar-17	19-Apr-17	24-May-16	02-Jul-16	Installation of H2S monitoring sensors															
<b>Preliminary Testing and Commissioning</b>																							
<b>Control and Monitoring Services incl. Instrumentation</b>																							
24ABN03952	SAT of weather and H2S monitoring station	0%	14	20-Apr-17	05-May-17	04-Jul-16	19-Jul-16	SAT of weather and H2S monitoring station															
<b>Completion of Works in Section 5</b>																							
<b>Submission of Manuals</b>																							
24ABN4020	As-Built Drawings Submission / Approval for Aberdeen PTW - Fire Screen and Grit Trap Building	0%	60	23-Feb-17	23-Apr-17	08-Jun-16	06-Aug-16	As-Built Drawings Submission / Approval for Aberdeen PTW - Fire Screen and Grit Trap Building															
<b>Works for Section 6</b>																							
<b>Workshop and Administration Building</b>																							
<b>Interface between Civil / ABWF / E&amp;M Works</b>																							
24MABN00540	Partial completion of architectural works in preparation for E&M works	0%	0		05-Mar-17		01-Sep-16	Partial completion of architectural works in preparation for E&M works															
24MABN00560	Completion of E&M works	0%	0		15-Apr-17		10-Jan-17	Completion of E&M works															
<b>Civil Works</b>																							
<b>Finishing Works (Internal and External)</b>																							
24ABN02230A10	Wall Finishes (Painting) at 1st Floor	0%	36	24-Oct-16 A	05-Mar-17	22-Jul-16	01-Sep-16	Wall Finishes (Painting) at 1st Floor															
24ABN02230A20	Installation of glass blocks at 1st Floor	0%	31	24-Dec-16 A	05-Mar-17	07-Jul-16	11-Aug-16	Installation of glass blocks at 1st Floor															
24ABN02230A30	Installation of framing for doors and windows at 1st floor	0%	30	23-Feb-17	29-Mar-17	15-Jul-16	18-Aug-16	Installation of framing for doors and windows at 1st floor															
24ABN02230A50	Wall Finishes (Painting) at Ground Floor	0%	51	10-Nov-16 A	13-Mar-17	11-Aug-16	12-Oct-16	Wall Finishes (Painting) at Ground Floor															
24ABN02230A60	Installation of glass blocks at Ground Floor	0%	52	24-Dec-16 A	31-Mar-17	25-Jul-16	23-Sep-16	Installation of glass blocks at Ground Floor															
24ABN02230A70	Installation of framing for doors and windows at ground floor	0%	30	23-Feb-17	29-Mar-17	25-Jul-16	27-Aug-16	Installation of framing for doors and windows at ground floor															

Activity ID	Activity Name	% Comp	Original Duration	Early Start	Early Finish	PL Project Early Start	PL Project Early Finish	Gantt Chart																											
								February 2017							March 2017							April 2017							May 2017						
								23	29	06	13	20	27	06	13	20	27	03	10	17	24	01	08	15	22	29									
24ABN02230A00	Ceiling Finishes at Ground Floor (Painting)	0%	18	24-Oct-16 A	02-Mar-17	22-Jul-16	11-Aug-16	Ceiling Finishes at Ground Floor (Painting)																											
24ABN02230B10	Ceiling Finishes at 1st Floor (Suspended Board) after E&M	0%	27	07-Mar-17	06-Apr-17	06-Oct-16	07-Nov-16	Ceiling Finishes at 1st Floor (Suspended Board) after E&M																											
24ABN02230B20	Floor Finishes at Ground Floor (Tiles) after E&M	0%	19	20-Apr-17	11-May-17	17-Oct-16	07-Nov-16	Floor Finishes at Ground Floor (Tiles) after E&M																											
24ABN02230B30	Floor Finishes at Ground Floor (Painting) after E&M	0%	24	20-Apr-17	17-May-17	17-Oct-16	12-Nov-16	Floor Finishes at Ground Floor (Painting) after E&M																											
24ABN02230B40	Floor Finishes at 1st Floor (Tiles) after E&M	0%	30	07-Apr-17	11-May-17	09-Nov-16	12-Dec-16	Floor Finishes at 1st Floor (Tiles) after E&M																											
24ABN02230E50	Installation of Roller Shutter at Ground Floor	0%	30	20-Apr-17	24-May-17	17-Oct-16	19-Nov-16	Installation of Roller Shutter at Ground Floor																											
24ABN02230E60	Installation of Doors, Windows and Louver at Ground Floor	0%	30	20-Apr-17	24-May-17	17-Oct-16	19-Nov-16	Installation of Doors, Windows and Louver at Ground Floor																											
24ABN02230E70	Installation of Doors, Windows and Louver at 1st Floor	0%	30	08-May-17	10-Jun-17	08-Nov-16	12-Dec-16	Installation of Doors, Windows and Louver at 1st Floor																											
24ABN02230E80	Painting works at Staircases	0%	21	24-Dec-16 A	18-Mar-17	20-Aug-16	13-Sep-16	Painting works at Staircases																											
24ABN02230E90	Installation of railing at stairs	0%	30	23-Feb-17	29-Mar-17	20-Aug-16	24-Sep-16	Installation of railing at stairs																											
24ABN02240A10	Exterior Wall Finishes (Tiles) at 1st Floor	0%	27	16-Jan-17 A	29-Apr-17	19-Aug-16	20-Sep-16	Exterior Wall Finishes (Tiles) at 1st Floor																											
24ABN02240A20	Exterior Wall Finishes (Tiles) at Ground Floor	0%	50	16-Jan-17 A	26-May-17	24-Sep-16	23-Nov-16	Exterior Wall Finishes (Tiles) at Ground Floor																											
24ABN02240A30	Guard rail at roof floor	0%	60	30-Mar-17	07-Jun-17	26-Sep-16	06-Dec-18	Guard rail at roof floor																											
24ABN02240A40	Installation of Irrigation System and Green Roof	0%	103	30-Mar-17*	27-Jul-17	07-Dec-16	08-Feb-17	Installation of Irrigation System and Green Roof																											
<b>Electrical and Mechanical Works</b>																																			
<b>Material / Equipment Delivery on Site</b>																																			
24ABN02030	Delivery of emergency generator set	0%	0		09-Mar-17		09-Oct-16	Delivery of emergency generator set																											
24ABN02040	Delivery of lifting appliance	100%	0		06-Feb-17 A		17-Aug-16	Delivery of lifting appliance																											
<b>Mechanical Works</b>																																			
24ABN04300	Installation of monopiil no. 1 (workshop G/F)	0%	14	06-Feb-17 A	10-Mar-17	18-Aug-16	02-Sep-16	Installation of monopiil no. 1 (workshop G/F)																											
24ABN04310	Installation of monopiil no. 2 (gen-set room G/F)	0%	7	09-Feb-17 A	10-Mar-17	03-Sep-16	10-Sep-16	Installation of monopiil no. 2 (gen-set room G/F)																											
24ABN04320	Installation of monopiil no. 3 (store room 1/F)	0%	14	13-Feb-17 A	10-Mar-17	12-Sep-16	28-Sep-16	Installation of monopiil no. 3 (store room 1/F)																											
24ABN04730	Set-up of workshop equipment	0%	60	09-Mar-17	17-May-17	17-Oct-16	24-Dec-16	Set-up of workshop equipment																											
<b>Electrical Works</b>																																			
24ABN04331	Cable laying from existing plant switch room to the New Administration Building	0%	7	23-Feb-17	02-Mar-17	05-Aug-16	12-Aug-16	Cable laying from existing plant switch room to the New Administration Building																											
24ABN04332	Installation of cable trunking and conduit	0%	30	23-Jan-17 A	28-Feb-17	12-Aug-16	15-Sep-16	Installation of cable trunking and conduit																											
24ABN04333	Installation of MCB, MCCB and power distribution board	0%	30	23-Feb-17	29-Mar-17	12-Aug-16	15-Sep-16	Installation of MCB, MCCB and power distribution board																											
24ABN04334	Installation of lighting fittings	0%	30	13-Feb-17 A	06-Apr-17	06-Oct-16	03-Dec-16	Installation of lighting fittings																											
24ABN04335	Installation of lighting switch, power switch, fuse switch, power socket & electrical accessories	0%	30	23-Feb-17	29-Mar-17	12-Aug-16	05-Oct-16	Installation of lighting switch, power switch, fuse switch, power socket & electrical accessories																											
24ABN04336	Cable laying for electrical services	0%	44	09-Jan-17 A	29-Mar-17	17-Sep-16	09-Nov-16	Cable laying for electrical services																											
24ABN04337	Megger test for electrical services	0%	18	21-Mar-17	10-Apr-17	10-Nov-16	30-Nov-16	Megger test for electrical services																											
24ABN04338	Cable termination for electrical services	0%	24	15-Apr-17	12-May-17	01-Dec-16	30-Dec-16	Cable termination for electrical services																											
24ABN04339	Installation of generator set	0%	30	10-Mar-17	13-Apr-17	11-Oct-16	14-Nov-16	Installation of generator set																											
24ABN04340	Installation of fresh air ductwork for generator set	0%	14	16-Jan-17 A	25-Mar-17	11-Oct-16	26-Oct-16	Installation of fresh air ductwork for generator set																											
24ABN04341	Installation of exhaust air ductwork for generator set	0%	21	27-Mar-17	19-Apr-17	27-Oct-16	19-Nov-16	Installation of exhaust air ductwork for generator set																											
24ABN04342	Installation of switchboard for generator set	0%	14	10-Mar-17	25-Mar-17	27-Oct-16	11-Nov-16	Installation of switchboard for generator set																											
24ABN04343	Cable tray installation for generator switchboard	0%	10	27-Mar-17	06-Apr-17	12-Nov-16	23-Nov-16	Cable tray installation for generator switchboard																											
24ABN04344	Cable laying for emergency generator set	0%	10	08-Apr-17	19-Apr-17	24-Nov-16	05-Dec-16	Cable laying for emergency generator set																											
24ABN04345	Megger test in cables for generator switchboard	0%	7	20-Apr-17	27-Apr-17	06-Dec-16	13-Dec-16	Megger test in cables for generator switchboard																											
24ABN04346	Cable termination for generator switchboard	0%	10	28-Apr-17	09-May-17	14-Dec-16	24-Dec-16	Cable termination for generator switchboard																											
24ABN04347	Installation of UPS	0%	0	01-Mar-17	01-Mar-17	18-Aug-16	29-Aug-16	Installation of UPS																											
24ABN04348	Cable laying for UPS system	0%	10	01-Mar-17	11-Mar-17	12-Aug-16	23-Aug-16	Cable laying for UPS system																											
24ABN04349	Megger test in cables for UPS system	0%	3	13-Mar-17	15-Mar-17	24-Aug-16	26-Aug-16	Megger test in cables for UPS system																											
24ABN04350	Cable termination for UPS system	0%	3	16-Mar-17	18-Mar-17	30-Aug-16	01-Sep-16	Cable termination for UPS system																											
<b>HVAC System (Distribution / Air Conditioning / Ventilation)</b>																																			
24ABN4410	Installation of ventilation fan c/w air duct (control room at 1/F)	0%	45	16-Jan-17 A	27-Mar-17	02-Sep-16	27-Oct-16	Installation of ventilation fan c/w air duct (control room at 1/F)																											

Activity ID	Activity Name	% Comp	Original Duration	Early Start	Early Finish	DL Project Early Start	DL Project Early Finish	Gantt Chart																											
								February 2017				March 2017				April 2017				May 2017															
								23	30	06	13	20	27	06	13	20	27	03	10	17	24	01	08	15	22	29									
24ABN4420	Installation of split type A/C unit (at O&M library)	0%	14	07-Mar-17	22-Mar-17	02-Sep-16	19-Sep-16	Installation of split type A/C unit (at O&M library)																											
24ABN4430	Installation of split type A/C unit (at server room)	0%	14	23-Mar-17	07-Apr-17	20-Sep-16	09-Oct-16	Installation of split type A/C unit (at server room)																											
24ABN4440	Installation of split type A/C unit (at general office)	0%	32	23-Mar-17	28-Apr-17	20-Sep-16	28-Oct-16	Installation of split type A/C unit (at general office)																											
24ABN4450	Installation of split type A/C unit (at electronic store room)	0%	24	01-Apr-17	28-Apr-17	20-Oct-16	16-Nov-16	Installation of split type A/C unit (at electronic store room)																											
24ABN4460	Installation of split type A/C unit (at plant manager room)	0%	14	13-Apr-17	28-Apr-17	20-Oct-16	04-Nov-16	Installation of split type A/C unit (at plant manager room)																											
24ABN4470	Installation of split type A/C unit (at control room)	0%	24	15-Apr-17	12-May-17	05-Nov-16	02-Dec-16	Installation of split type A/C unit (at control room)																											
24ABN4480	Installation of split type A/C unit (at meeting room)	0%	24	15-Apr-17	12-May-17	19-Nov-16	16-Dec-16	Installation of split type A/C unit (at meeting room)																											
<b>Control and Monitoring Services incl. Instrumentation</b>																																			
24ABN4800	Equipment installation for monitoring and control system	0%	14	23-Feb-17	10-Mar-17	13-Aug-16	29-Aug-16	Equipment installation for monitoring and control system																											
24ABN4810	Install cable tray for monitoring and control system	0%	12	23-Feb-17	08-Mar-17	13-Aug-16	26-Aug-16	Install cable tray for monitoring and control system																											
24ABN4820	Cable laying for monitoring and control system	0%	12	09-Mar-17	22-Mar-17	27-Aug-16	09-Sep-16	Cable laying for monitoring and control system																											
24ABN4830	Megger test in cables for monitoring and control system	0%	6	23-Mar-17	29-Mar-17	10-Sep-16	17-Sep-16	Megger test in cables for monitoring and control system																											
24ABN4840	Cable termination for monitoring and control system	0%	6	30-Mar-17	05-Apr-17	19-Sep-16	24-Sep-16	Cable termination for monitoring and control system																											
24ABN4850	DCS panel fabrication	0%	18	05-Mar-17	25-Mar-17	29-Sep-16	21-Oct-16	DCS panel fabrication																											
24ABN4860	PLC programming and SCADA editing	0%	21	27-Mar-17	19-Apr-17	22-Oct-16	25-Nov-16	PLC programming and SCADA editing																											
24ABN4870	Migration of existing DCS system to newly installed DCS system	0%	26	20-Apr-17	19-May-17	26-Nov-16	30-Dec-16	Migration of existing DCS system to newly installed DCS system																											
24ABN4880	DCS interface with contract DG/2009/10	0%	45	27-Mar-17	17-May-17	22-Oct-16	30-Dec-16	DCS interface with contract DG/2009/10																											
<b>Fire Protection / Detection System</b>																																			
24ABN04541	Installation of cable conduit / trunking	0%	75	24-Dec-16 A	11-Mar-17	12-Aug-16	10-Nov-16	Installation of cable conduit / trunking																											
24ABN04542	Cabling works	0%	30	13-Jan-17 A	11-Mar-17	30-Aug-16	28-Nov-16	Cabling works																											
24ABN04543	Installation of fire alarm panel	0%	12	27-Feb-17	11-Mar-17	06-Oct-16	10-Nov-16	Installation of fire alarm panel																											
24ABN04544	Installation of fire detector	0%	30	23-Feb-17	29-Mar-17	30-Aug-16	15-Dec-16	Installation of fire detector																											
24ABN04545	Installation of fire alarm bell	0%	12	13-Mar-17	25-Mar-17	11-Nov-16	15-Dec-16	Installation of fire alarm bell																											
24ABN04546	Installation of manual fire alarm call point	0%	12	13-Mar-17	25-Mar-17	29-Nov-16	04-Jan-17	Installation of manual fire alarm call point																											
24ABN04547	Installation of fire exit sign	0%	30	23-Feb-17	29-Mar-17	25-Oct-16	15-Dec-16	Installation of fire exit sign																											
24ABN04548	Installation of fire extinguisher	0%	7	30-Mar-17	06-Apr-17	16-Dec-16	23-Dec-16	Installation of fire extinguisher																											
24ABN04549	Installation of water pump for hose reel system	0%	30	23-Feb-17	29-Mar-17	25-Oct-16	28-Nov-16	Installation of water pump for hose reel system																											
24ABN04550	Installation of water pipe for hose reel system	0%	30	13-Mar-17	15-Apr-17	25-Oct-16	15-Dec-16	Installation of water pipe for hose reel system																											
24ABN04551	Installation of hose reel	0%	20	24-Mar-17	15-Apr-17	16-Dec-16	10-Jan-17	Installation of hose reel																											
24ABN04552	Installation of water pump for sprinkler system	0%	15	23-Feb-17	11-Mar-17	09-Aug-16	12-Sep-16	Installation of water pump for sprinkler system																											
24ABN04553	Installation of water pipe for sprinkler system	0%	45	23-Feb-17	15-Apr-17	09-Aug-16	20-Oct-16	Installation of water pipe for sprinkler system																											
<b>P&amp;ID Services</b>																																			
24ABN04491	Installation of FRP water tank for plumbing system	0%	14	23-Feb-17	10-Mar-17	22-Jul-16	09-Aug-16	Installation of FRP water tank for plumbing system																											
24ABN04492	Installation of water booster pump for plumbing system	0%	14	11-Mar-17	27-Mar-17	08-Aug-16	23-Aug-16	Installation of water booster pump for plumbing system																											
24ABN04493	Installation of hydro pneumatic pressure vessel for plumbing system	0%	14	28-Mar-17	12-Apr-17	24-Aug-16	08-Sep-16	Installation of hydro pneumatic pressure vessel for plumbing system																											
24ABN04494	Installation of water supply pipe for plumbing system (small size pipe)	0%	50	09-Jan-17 A	29-Apr-17	24-Aug-16	24-Oct-16	Installation of water supply pipe for plumbing system (small size pipe)																											
24ABN04495	Installation of water supply pipe for plumbing system at toilet room	0%	20	09-Jan-17 A	19-Apr-17	29-Sep-16	24-Oct-16	Installation of water supply pipe for plumbing system at toilet room																											
24ABN04496	Installation of sanitary ware drainage services at toilet room	0%	45	28-Mar-17	19-May-17	10-Sep-16	04-Nov-16	Installation of sanitary ware drainage services at toilet room																											
<b>Earthing and Lightning Systems</b>																																			
24ABN4380	Installation of earthing and lightning protection equipment	0%	30	23-Feb-17	29-Mar-17	12-Aug-16	15-Sep-16	Installation of earthing and lightning protection equipment																											
<b>Roadworks, Landscape and Modification of Fence</b>																																			
<b>Roadworks</b>																																			
24ABN2320A10	Roadworks	0%	90	15-Apr-17	28-Jul-17	03-Sep-16	20-Dec-16	Roadworks																											
<b>Landscaping Works</b>																																			
24ABN2320A20	Landscaping (Shrubs planting)	0%	104	03-May-17*	31-Aug-17	08-Nov-16	08-Feb-17	Landscaping (Shrubs planting)																											
24ABN2320A30	Planting of new tree	0%	60	20-May-17	28-Jul-17	25-Nov-16	04-Feb-17	Planting of new tree																											

Activity ID	Activity Name	% Comp	Original Duration	Early Start	Early Finish	PL Project Early Start	PL Project Early Finish	February 2017							March 2017					April 2017				May 2017					
								23	30	06	13	20	27	06	13	20	27	03	10	17	24	01	08	15	22	29			
24ABN0230A10	Tree Transplantation from off site to site area	0%	60	30-Mar-17	07-Jun-17	24-Sep-16	05-Dec-16																						
<b>Modification of Fence</b>																													
24ABN02325A10	Demolition on some part of existing boundary fence	0%	30	15-Apr-17	19-May-17	03-Sep-16	11-Oct-16																						
24ABN02325A20	Construct new boundary fence	0%	30	20-May-17	23-Jun-17	28-Oct-16	01-Dec-16																						
<b>U/G Utility Works</b>																													
<b>U/G Utility Works</b>																													
24ABN02821A10	U/G odour pipe installation	0%	45	23-Feb-17	15-Apr-17	24-Mar-16	21-May-16																						
24ABN02821A20	U/G water supply	0%	35	23-Feb-17	04-Apr-17	22-Jul-16	31-Aug-16																						
24ABN02821A30	U/G drainage and sewerage	0%	45	24-Dec-16 A	15-Apr-17	23-Jul-16	12-Sep-16																						
24ABN02821A43	Abandoned and filled of existing drainage and sewerage	0%	45	17-Apr-17	07-Jun-17	13-Sep-16	07-Nov-16																						
24ABN02821A50	Installation of external signal and power cable including ducting works and drawpit	0%	45	24-Dec-16 A	15-Apr-17	01-Sep-16	26-Oct-16																						
<b>Completion of Works for Section 6</b>																													
<b>Final Testing and Commissioning</b>																													
24ABN03225	Final Testing and Commissioning of Aberdeen PTW	0%	30	20-May-17	18-Jun-17	30-Jun-17	28-Feb-17																						
<b>Submission of Manuals</b>																													
24ABN4740	Preparation / Submission of draft O&M manuals	0%	90	24-Nov-16 A	31-Mar-17	05-Aug-16	02-Nov-16																						
24ABN4750	Preparation / Submission of modified O&M manuals	0%	90	13-May-17	10-Aug-17	31-Dec-16	30-Mar-17																						
24ABN4770	As-Built Drawings Submission / Approval for Aberdeen PTW - Workshop and Administration Building	0%	60	11-Mar-17	09-May-17	14-Dec-16	11-Feb-17																						
<b>Trainings for DSD Staff</b>																													
24ABN4780	Interim Training of DSD	0%	3	23-Feb-17	25-Feb-17	30-Jan-17	01-Feb-17																						
24ABN4790	Final Training of DSD	0%	3	19-Mar-17	21-Mar-17	23-Feb-17	25-Feb-17																						
<b>Ap Lei Chau PTW</b>																													
<b>Key Dates</b>																													
<b>Time of Completion</b>																													
24ALC00300	Time for Completion of Section 7	0%	1264	31-Aug-11 A	30-Sep-17	25-Mar-16	13-Feb-17																						
24ALC00302	Claim for Additional Extension of Time - under review	0%	657	31-Mar-15 A	30-Sep-17	24-Mar-16	13-Feb-17																						
<b>Statutory and Utility Applications and Approvals</b>																													
<b>Fire Services Department (FSD)</b>																													
24ALC00410	Prepare / Submit Application for FSD inspection	0%	60	23-Feb-17	03-May-17	21-Jul-16	29-Sep-16																						
24ALC00420	1st round on-site inspection by FSD	0%	14	04-May-17	19-May-17	30-Sep-16	18-Oct-16																						
24ALC00421	Remedial works as per FSD inspection comment	0%	14	20-May-17	05-Jun-17	19-Oct-16	03-Nov-16																						
<b>Hong Kong Electric (HEC)</b>																													
24ALC00424	Prepare / Submit Application form to HEC	0%	26	23-Feb-17	24-Mar-17	15-Jul-16	13-Aug-16																						
24ALC00425	Pre-inspection of transformer room by HEC	0%	14	25-Mar-17	10-Apr-17	15-Aug-16	30-Aug-16																						
24ALC00426	Remedial works per HEC inspection comments	0%	13	11-Apr-17	25-Apr-17	31-Aug-16	14-Sep-16																						
24ALC00427	Final inspection of transformer room by HEC	0%	13	26-Apr-17	10-May-17	15-Sep-16	30-Sep-16																						
24ALC00428	Transformer installation by HEC	0%	60	11-May-17	09-Jul-17	01-Oct-16	29-Nov-16																						
<b>Interface and Liaison</b>																													
<b>Interface with S72/DSD</b>																													
24MALC00130	Application of PMAC/SWAC for Demolition of Temp. Control Room	0%	0	02-May-17		28-Oct-16																							
24MALC00140	Proposed Approval date of PMAC/SWAC for Demolition of Temp. Control Room	0%	0		15-May-17		10-Nov-16																						
24MALC00150	Application of PMAC/SWAC for Relocation from Existing to New Workshop Bldg.	0%	0	23-Feb-17		24-Sep-16																							
24MALC00160	Proposed Approval date of PMAC/SWAC for Relocation from Existing to New Workshop Bldg.	0%	0		08-Mar-17		07-Oct-16																						
24MALC00170	Application of PMAC/SWAC for Demolition of Temporary Workshop Bldg.	0%	0	11-May-17		10-Nov-16																							
<b>Works for Section 7</b>																													
<b>Stage 2 of ALC Upgrade (Completion of Remaining Works)</b>																													



Activity ID	Activity Name	% Comp	Original Duration	Early Start	Early Finish	DL Project Early Start	DL Project Early Finish	February 2017					March 2017					April 2017				May 2017					
								23	30	06	13	20	27	06	13	20	27	03	10	17	24	01	08	15	22	29	
<b>Civil Works</b>																											
<b>Relocation of Temp. Control Room to New Control Room (incl. Demolition)</b>																											
24ALC00810A05	Relocation of temporary to new control room	0%	15	02-May-17	18-May-17	28-Oct-16	01-Dec-16	Relocation of tempo																			
24ALC00810A10	Demolition of Temporary Control Room	0%	15	19-May-17	05-Jun-17	02-Dec-16	12-Jan-17																				
<b>Foundation Works</b>																											
<b>Wet Well and Effluent Pumping Station (GL4-7)</b>																											
24ALC00780B31	Formworks for U/G wall of wet well and effluent pumping station up to +3.700mPD	0%	6	08-Jan-17 A	06-Mar-17	14-Jun-16	20-Jun-16	Formworks for U/G wall of wet well and effluent pumping station up to +3.700mPD																			
24ALC00780B32	Rebarworks for U/G wall of wet well and effluent pumping station up to +3.700mPD	0%	6	08-Jan-17 A	08-Mar-17	21-Jun-16	27-Jun-16	Rebarworks for U/G wall of wet well and effluent pumping station up to +3.700mPD																			
24ALC00780B33	Concrete for U/G wall of wet well and effluent pumping station up to +3.700mPD	0%	1	09-Mar-17	09-Mar-17	28-Jun-16	28-Jun-16	Concrete for U/G wall of wet well and effluent pumping station up to +3.700mPD																			
24ALC00820B20	Formworks for remaining wall and slab of wet well up to +6.15mPD	0%	10	10-Mar-17	21-Mar-17	30-Jun-16	14-Jul-16	Formworks for remaining wall and slab of wet well up to +6.15mPD																			
24ALC00820B30	Rebarworks for remaining wall and slab of wet well up to +6.15mPD	0%	10	11-Mar-17	22-Mar-17	15-Jul-16	28-Jul-16	Rebarworks for remaining wall and slab of wet well up to +6.15mPD																			
24ALC00820B40	Concrete for remaining wall and slab of wet well up to +6.15mPD	0%	1	23-Mar-17	23-Mar-17	29-Jul-16	30-Jul-16	Concrete for remaining wall and slab of wet well up to +6.15mPD																			
<b>RC Structural Works</b>																											
<b>Fine Screen and Grit Trap Area (GL 1-4)</b>																											
24ALC00750A10	Formworks for column and wall of grit trap and fine screen area	0%	12	24-Mar-17	06-Apr-17	19-Jul-16	01-Aug-16	Formworks for column and wall of grit trap and fine screen area																			
24ALC00750A20	Rebarworks for column and wall of grit trap and fine screen area	0%	14	07-Apr-17	22-Apr-17	02-Aug-16	15-Aug-16	Rebarworks for column and wall of grit trap and fine screen area																			
24ALC00750A30	Concrete for column and wall of grit trap and fine screen area	0%	1	24-Apr-17	24-Apr-17	16-Aug-16	18-Aug-16	Concrete for column and wall of grit trap and fine screen area																			
24ALC00750A40	Formworks for roof beam and slab of grit trap and fine screen area	0%	12	25-Apr-17	08-May-17	19-Aug-16	30-Aug-16	Formworks for roof beam and slab of grit trap and fine screen area																			
24ALC00750A50	Rebarworks for roof beam and slab of grit trap and fine screen area	0%	12	09-May-17	22-May-17	31-Aug-16	10-Sep-16	Rebarworks																			
<b>Deodorization Room and Effluent Pumping Station (GL 4-7)</b>																											
24ALC00830A10	Formworks for column and wall of deodorization room and effluent pumping station up to +11.034mPD	0%	18	25-Mar-17	14-Apr-17	01-Aug-16	20-Aug-16	Formworks for column and wall of deodorization room and effluent pumping station																			
24ALC00830A20	Rebarworks for column and wall of deodorization room and effluent pumping station up to +11.034mPD	0%	18	05-Apr-17	25-Apr-17	22-Aug-16	10-Sep-16	Rebarworks for column and wall of deodorization room and effluent pumping station																			
24ALC00830A30	Concrete for column and wall of deodorization room and effluent pumping station up to +11.034mPD	0%	2	26-Apr-17	27-Apr-17	12-Sep-16	13-Sep-16	Concrete for column and wall of deodorization room and effluent pumping station																			
24ALC00830A70	Formworks for roof beam and slab of deodorization room and effluent pumping station	0%	17	28-Apr-17	17-May-17	14-Sep-16	06-Oct-16	Formworks for roof beam and slab of deodorization room and effluent pumping station																			
24ALC00830A80	Rebarworks for roof beam and slab of deodorization room and effluent pumping station	0%	17	09-May-17	27-May-17	07-Oct-16	28-Oct-16	Rebarworks																			
<b>Finishing Works (Internal and External)</b>																											
24ALC00840A60	Floor finishes (painting) at switch room and HEC room	0%	19	23-Feb-17	16-Mar-17	07-Sep-16	29-Sep-16	Floor finishes (painting) at switch room and HEC room																			
<b>Electrical and Mechanical Works</b>																											
<b>Material / Equipment Delivery on Site</b>																											
24ALC03996	Delivery of switchboard	0%	0		14-Mar-17		10-May-16	Delivery of switchboard																			
24ALC03997	Delivery of deodorization unit	0%	0		01-May-17		17-Aug-16	Delivery of deodorization unit																			
24ALC03998	Delivery of DCS panel	0%	0		08-Apr-17		14-Oct-16	Delivery of DCS panel																			
<b>Mechanical Works</b>																											
24ALC04000	Installation of penstock no. 1 & 3 (coarse screen no. 1 inlet / outlet)	0%	30	09-Jan-17 A	16-Jun-17	21-Sep-16	28-Oct-16																				
24ALC04010	Installation of penstock no. 5 & 8 (fine screen no. 1 inlet / outlet)	0%	30	09-Jan-17 A	16-Jun-17	05-Oct-16	10-Nov-16																				
<b>Electrical Works</b>																											
24ALC04250	Installation of new MCC switchboard	0%	21	15-Mar-17	07-Apr-17	07-Sep-16	03-Oct-16	Installation of new MCC switchboard																			
24ALC04260	Cable tray installation for the new MCC switchboard	0%	10	13-Jan-17 A	25-Mar-17	07-Sep-16	19-Sep-16	Cable tray installation for the new MCC switchboard																			
24ALC04270	Cable laying for main power supply	0%	12	27-Mar-17	08-Apr-17	20-Sep-16	04-Oct-16	Cable laying for main power supply																			
24ALC04280	Megger test in cables for main power supply	0%	6	10-Apr-17	15-Apr-17	05-Oct-16	12-Oct-16	Megger test in cables for main power supply																			
24ALC04290	Cable termination for main power supply	0%	6	17-Apr-17	22-Apr-17	13-Oct-16	19-Oct-16	Cable termination for main power supply																			
24ALC04300	Cable laying for UPS system	0%	10	27-Mar-17	06-Apr-17	20-Sep-16	30-Sep-16	Cable laying for UPS system																			
24ALC04310	Megger test in cables for UPS system	0%	3	07-Apr-17	10-Apr-17	03-Oct-16	05-Oct-16	Megger test in cables for UPS system																			
24ALC04320	Cable termination for UPS system	0%	3	11-Apr-17	13-Apr-17	06-Oct-16	08-Oct-16	Cable termination for UPS system																			
24ALC04330	Division of cables from temporary switchboard to new MCC room / switchboard & w megger test	0%	45	14-Apr-17	05-Jun-17	11-Oct-16	01-Dec-16																				
<b>Control and Monitoring Services (incl. Instrumentation)</b>																											

Activity ID	Activity Name	% Comp	Original Duration	Early Start	Early Finish	PL Project Early Start	PL Project Early Finish	Gantt Chart Timeline																							
								February 2017				March 2017				April 2017				May 2017											
								23	30	06	13	20	27	06	13	20	27	03	10	17	24	01	08	15	22	29					
24ALC04710	Equipment installation for monitoring and control system	0%	14	15-Mar-17	30-Mar-17	24-Sep-16	12-Oct-16	Equipment installation for monitoring and control system																							
24ALC04720	Install cable tray for monitoring and control system	0%	21	13-Jan-17 A	07-Apr-17	07-Sep-16	03-Oct-16	Install cable tray for monitoring and control system																							
24ALC04730	Cable laying for monitoring and control system	0%	30	15-Mar-17	18-Apr-17	08-Sep-16	15-Oct-16	Cable laying for monitoring and control system																							
24ALC04740	Megger test in cables of monitoring and control system	0%	7	19-Apr-17	26-Apr-17	17-Oct-16	24-Oct-16	Megger test in cables of monitoring and control system																							
24ALC04750	Cable termination for monitoring and control system	0%	7	27-Apr-17	04-May-17	25-Oct-16	01-Nov-16	Cable termination for monitoring and control system																							
24ALC04760	DCS panel fabrication	0%	16	19-Apr-17	06-May-17	17-Oct-16	03-Nov-16	DCS panel fabrication																							
24ALC04780	PLC programming and SCADA editing	0%	30	08-May-17	10-Jun-17	04-Nov-16	08-Dec-16	PLC programming and SCADA editing																							
24ALC04790	Install cable tray for DCS outstation and instrumentation	0%	12	15-Mar-17	28-Mar-17	07-Sep-16	21-Sep-16	Install cable tray for DCS outstation and instrumentation																							
24ALC04800	Cable laying for DCS outstation and instrumentation	0%	12	28-Mar-17	11-Apr-17	23-Sep-16	06-Oct-16	Cable laying for DCS outstation and instrumentation																							
24ALC04810	Megger test in cables of DCS outstation and instrumentation	0%	6	12-Apr-17	18-Apr-17	07-Oct-16	14-Oct-16	Megger test in cables of DCS outstation and instrumentation																							
24ALC04820	Cable termination for DCS outstation and instrumentation	0%	6	19-Apr-17	25-Apr-17	15-Oct-16	21-Oct-16	Cable termination for DCS outstation and instrumentation																							
24ALC04840	DCS interface with contract DC/2009/10	0%	58	08-May-17	13-Jul-17	04-Nov-16	12-Jan-17	DCS interface with contract DC/2009/10																							
24ALC04850	Install cable tray for gas detection system (CH4, H2S & O2 detector)	0%	20	08-Apr-17	01-May-17	04-Oct-16	27-Oct-16	Install cable tray for gas detection system (CH4, H2S & O2 detector)																							
24ALC04860	Cable laying for gas detection system	0%	21	20-Apr-17	13-May-17	17-Oct-16	09-Nov-16	Cable laying for gas detection system																							
24ALC04870	Megger test in cables of gas detection system	0%	5	15-May-17	19-May-17	10-Nov-16	15-Nov-16	Megger test in cables of gas detection system																							
24ALC04880	Cable termination for gas detection system	0%	5	20-May-17	25-May-17	16-Nov-16	21-Nov-16	Cable termination for gas detection system																							
24ALC04890	Installation of gas detector (CH4, H2S & O2 detector)	0%	5	15-May-17	19-May-17	10-Nov-16	15-Nov-16	Installation of gas detector (CH4, H2S & O2 detector)																							
24ALC04900	Install cable tray for weather and H2S monitoring station	0%	21	15-Mar-17	07-Apr-17	07-Sep-16	03-Oct-16	Install cable tray for weather and H2S monitoring station																							
24ALC04910	Cable laying for weather and H2S monitoring station	0%	21	27-Mar-17	19-Apr-17	20-Sep-16	15-Oct-16	Cable laying for weather and H2S monitoring station																							
24ALC04920	Megger test in cables of weather and H2S monitoring station	0%	10	20-Apr-17	01-May-17	17-Oct-16	27-Oct-16	Megger test in cables of weather and H2S monitoring station																							
24ALC04930	Cable termination for weather and H2S monitoring station	0%	10	02-May-17	12-May-17	28-Oct-16	08-Nov-16	Cable termination for weather and H2S monitoring station																							
24ALC04940	Installation of weather monitoring station	0%	14	13-May-17	29-May-17	28-Nov-16	13-Dec-16	Installation of weather monitoring station																							
24ALC04950	Installation of H2S monitoring station	0%	30	13-May-17	16-Jun-17	28-Nov-16	03-Jan-17	Installation of H2S monitoring station																							
24ALC04950	Install cable tray for CCTV system	0%	14	15-Mar-17	30-Mar-17	07-Sep-16	23-Sep-16	Install cable tray for CCTV system																							
24ALC04970	Cable laying for CCTV system	0%	14	31-Mar-17	15-Apr-17	24-Sep-16	12-Oct-16	Cable laying for CCTV system																							
24ALC04980	Megger test in cables of CCTV system	0%	7	17-Apr-17	24-Apr-17	13-Oct-16	20-Oct-16	Megger test in cables of CCTV system																							
24ALC04990	Cable termination for CCTV system	0%	7	25-Apr-17	02-May-17	21-Oct-16	28-Oct-16	Cable termination for CCTV system																							
24ALC05000	Installation of CCTV camera	0%	7	03-May-17	10-May-17	29-Oct-16	05-Nov-16	Installation of CCTV camera																							
<b>Fire Protection / Detection System</b>																															
24ALC05010	Installation of automatic fire alarm panel (AFA panel)	0%	7	11-Mar-17	18-Mar-17	30-Sep-16	08-Oct-16	Installation of automatic fire alarm panel (AFA panel)																							
24ALC05020	Cable tray installation for AFA panel	0%	14	23-Feb-17	10-Mar-17	13-Sep-16	29-Sep-16	Cable tray installation for AFA panel																							
24ALC05030	Cable laying for AFA panel	0%	14	11-Mar-17	27-Mar-17	30-Sep-16	18-Oct-16	Cable laying for AFA panel																							
24ALC05040	Megger test in cables for AFA panel	0%	7	28-Mar-17	04-Apr-17	19-Oct-16	26-Oct-16	Megger test in cables for AFA panel																							
24ALC05050	Cable termination for AFA panel	0%	5	05-Apr-17	10-Apr-17	27-Oct-16	01-Nov-16	Cable termination for AFA panel																							
24ALC05060	Installation of emergency lighting fitting	0%	12	28-Mar-17	10-Apr-17	19-Oct-16	01-Nov-16	Installation of emergency lighting fitting																							
24ALC05070	Installation of heat detector	0%	15	11-Apr-17	27-Apr-17	02-Nov-16	18-Nov-16	Installation of heat detector																							
24ALC05080	Installation of alarm bell	0%	3	28-Apr-17	01-May-17	19-Nov-16	22-Nov-16	Installation of alarm bell																							
24ALC05090	Installation of break glass unit	0%	3	02-May-17	04-May-17	23-Nov-16	25-Nov-16	Installation of break glass unit																							
24ALC05100	Installation of exit signs	0%	3	05-May-17	08-May-17	26-Nov-16	29-Nov-16	Installation of exit signs																							
24ALC05110	Installation of fire extinguisher	0%	3	09-May-17	11-May-17	30-Nov-16	02-Dec-16	Installation of fire extinguisher																							
24ALC05120	Fire service cable tray for fire screen and grill trap building	0%	12	23-Feb-17	08-Mar-17	13-Sep-16	27-Sep-16	Fire service cable tray for fire screen and grill trap building																							
24ALC05130	Fire service cable tray for deodorizer area	0%	12	23-Feb-17	08-Mar-17	13-Sep-16	27-Sep-16	Fire service cable tray for deodorizer area																							
24ALC05140	Fire service cable tray for inlet chamber & coarse screen area	0%	15	23-Feb-17	11-Mar-17	13-Sep-16	30-Sep-16	Fire service cable tray for inlet chamber & coarse screen area																							
24ALC05150	Fire service cable tray for effluent pumping station	0%	15	23-Feb-17	11-Mar-17	13-Sep-16	30-Sep-16	Fire service cable tray for effluent pumping station																							
24ALC05160	Fire service cable tray for control room	0%	4	23-Feb-17	27-Feb-17	13-Sep-16	17-Sep-16	Fire service cable tray for control room																							
24ALC05170	Fire service cable tray for switch room	0%	4	28-Feb-17	03-Mar-17	19-Sep-16	22-Sep-16	Fire service cable tray for switch room																							

Activity ID	Activity Name	% Comp	Original Duration	Early Start	Early Finish	BL Project Early Start	BL Project Early Finish	Gantt Chart Timeline																							
								February 2017				March 2017				April 2017				May 2017											
								23	30	06	13	20	27	06	13	20	27	03	10	17	24	01	08	15	22	29					
24ALC05180	Fire service cable tray for HEC transformer room and HEC switch board	0%	8	28-Feb-17	08-Mar-17	19-Sep-16	27-Sep-16	Fire service cable tray for HEC transformer room and HEC switch board																							
24ALC05190	Cable laying for fire services equipment	0%	30	13-Mar-17	15-Apr-17	03-Oct-16	07-Nov-16	Cable laying for fire services equipment																							
24ALC05200	Megger test in cables for fire services equipment	0%	7	17-Apr-17	24-Apr-17	08-Nov-16	15-Nov-16	Megger test in cables for fire services equipment																							
24ALC05210	Cable termination for fire services equipment	0%	14	25-Apr-17	10-May-17	16-Nov-16	01-Dec-16	Cable termination for fire services equipment																							
<b>Earthing and Lightning System</b>																															
24ALC05270	Installation of earthing and lightning protection equipment	0%	30	24-Apr-17	27-May-17	20-Oct-16	23-Nov-16	Installation of earthing and lightning protection equipment																							
<b>UPG Utility Works</b>																															
24ALC00851A10	Installation of 400 potable water pipe from water meter cabinet to workshop building	0%	30	23-Feb-17	29-Mar-17	30-Jun-16	04-Aug-16	Installation of 400 potable water pipe from water meter cabinet to workshop building																							
24ALC00851A20	Installation of 400 plant, cleansing and irrigation pipe from water meter cabinet to deodorization room	0%	30	30-Mar-17	03-May-17	05-Aug-16	08-Sep-16	Installation of 400 plant, cleansing and irrigation pipe from water meter cabinet to deodorization room																							
24ALC00851A30	Installation of drainage pipe with size of 100, 150, 225 and 250Ø from new buildings to inlet chamber	0%	45	17-Apr-17	07-Jun-17	23-Aug-16	17-Oct-16	Installation of drainage pipe with size of 100, 150, 225 and 250Ø from new buildings to inlet chamber																							
24ALC00851A40	Installation of foul manhole for drainage system	0%	30	04-May-17	07-Jun-17	09-Sep-16	17-Oct-16	Installation of foul manhole for drainage system																							
24ALC00851A50	Installation of sewer and stormwater pipe (150, 225 and 300Ø)	0%	45	04-May-17	24-Jun-17	09-Sep-16	03-Nov-16	Installation of sewer and stormwater pipe (150, 225 and 300Ø)																							
24ALC00851A60	Installation of sewer and stormwater manholes	0%	30	22-May-17	24-Jun-17	28-Sep-16	03-Nov-16	Installation of sewer and stormwater manholes																							
<b>Preliminary Testing and Commissioning</b>																															
<b>Electrical Works</b>																															
24ALC05350	SAT of new MCC switchboard	0%	7	24-Apr-17	01-May-17	20-Oct-16	27-Oct-16	SAT of new MCC switchboard																							
<b>Workshop Building</b>																															
<b>Interface between CNII / ABWF / E&amp;M Works</b>																															
24MALC00290	Partial completion of finishing works in preparation for E&M works	0%	0		15-Mar-17		08-Sep-16	Partial completion of finishing works in preparation for E&M works																							
24MALC00300	Completion of Workshop building	0%	0		07-Apr-17		09-Nov-16	Completion of Workshop building																							
<b>Civil Works</b>																															
<b>Relocation and Demolition Works</b>																															
24ALC00900A10	Relocation of Temp. to New Workshop Building	0%	16	11-May-17	29-May-17	10-Nov-16	28-Nov-16	Relocation of Temp. to New Workshop Building																							
<b>Finishing Works (Internal and External)</b>																															
24ALC00890A20	Ceiling Finishes (Suspended Board) of workshop building	0%	18	23-Feb-17	15-Mar-17	19-Aug-16	08-Sep-16	Ceiling Finishes (Suspended Board) of workshop building																							
24ALC00890A50	Floor Finishes (Painting) of workshop building	0%	14	07-Sep-16 A	01-Mar-17	19-Aug-16	03-Sep-16	Floor Finishes (Painting) of workshop building																							
24ALC00890A60	Floor Finishes (Tiles) of workshop building	100%	13	02-Feb-17 A	16-Feb-17 A	05-Sep-16	20-Sep-16	Floor Finishes (Tiles) of workshop building																							
24ALC00890A70	Installation of glass block	0%	14	23-Feb-17	10-Mar-17	05-Aug-16	20-Aug-16	Installation of glass block																							
24ALC00890A80	Installation of louver	0%	12	11-Mar-17	24-Mar-17	22-Aug-16	27-Aug-16	Installation of louver																							
24ALC00890A90	Installation of doors and windows	0%	12	02-Mar-17	15-Mar-17	21-Sep-16	05-Oct-16	Installation of doors and windows																							
24ALC00910A10	Installation of railings at roof floor	0%	12	23-Feb-17	08-Mar-17	05-Aug-16	18-Aug-16	Installation of railings at roof floor																							
24ALC00910A30	Installation of tiles on external walls	0%	19	05-Dec-16 A	24-Mar-17	10-Sep-16	04-Oct-16	Installation of tiles on external walls																							
<b>Electrical and Mechanical Works</b>																															
<b>Electrical Works</b>																															
24ALC05400	Installation of power supply MCB distribution board	0%	12	13-Apr-17	26-Apr-17	11-Oct-16	24-Oct-16	Installation of power supply MCB distribution board																							
24ALC05410	Installation of lighting fittings	0%	6	27-Apr-17	03-May-17	25-Oct-16	31-Oct-16	Installation of lighting fittings																							
24ALC05420	Installation of lighting switch, fuse switch, power sockets, etc.	0%	6	04-May-17	10-May-17	01-Nov-16	07-Nov-16	Installation of lighting switch, fuse switch, power sockets, etc.																							
<b>Fire Protection / Detection System</b>																															
24ALC05450	Installation of heat detector	0%	8	16-Mar-17	24-Mar-17	09-Sep-16	19-Sep-16	Installation of heat detector																							
24ALC05460	Installation of fire alarm bell	0%	8	25-Mar-17	03-Apr-17	20-Sep-16	28-Sep-16	Installation of fire alarm bell																							
24ALC05470	Installation of break glass unit	0%	4	04-Apr-17	07-Apr-17	29-Sep-16	04-Oct-16	Installation of break glass unit																							
24ALC05480	Installation of exit sign	0%	4	08-Apr-17	12-Apr-17	05-Oct-16	08-Oct-16	Installation of exit sign																							
<b>HVAC System (Deodorization / Air Conditioning / Ventilation)</b>																															
24ALC05430	Installation of split type A/C unit (2 sets at workshop)	0%	38	23-Feb-17	07-Apr-17	24-Sep-16	09-Nov-16	Installation of split type A/C unit (2 sets at workshop)																							
24ALC05440	Installation of wall mount exhaust fan at changing room	0%	2	23-Feb-17	24-Feb-17	24-Sep-16	26-Sep-16	Installation of wall mount exhaust fan at changing room																							
<b>Plumbing System</b>																															

