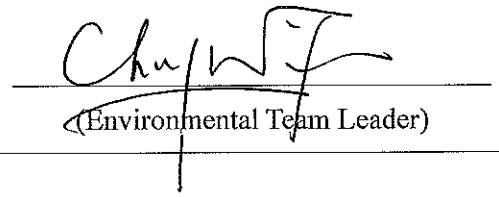
Leader and JEC Joint Venture

Contract No. DC/2009/23

HATS Stage 2A – Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central

Monthly Environmental Monitoring and Audit Report January 2017

(Version 1.0)

Certified By 

(Environmental Team Leader)

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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MOTT MACDONALD

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Sewage Services Branch
Harbour Area Treatment Scheme Division
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Attn: Mr. Danny Tang

Agreement No. CE 8/2009(EP) Harbour Area Treatment Scheme Stage 2A Independent Environmental Checker for Construction Phase – Investigation

Contract No. DC/2009/23 – Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central

Condition 4.4 – Monthly EM&A Report for January 2017 (no. 72) Version 1.0

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9 February 2017

By Post

Dear Sir,

I refer to the captioned Monthly EM&A Report for January 2017 (version 1.0) submitted by ETL on 3 February 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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c.c.

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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

EXECUTIVE SUMMARY

Introduction

1. This is the 72nd Monthly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for DSD Contract No. DC/2009/23 "HATS Stage 2A – Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central" (The Project) which documents the key information of EM&A and environmental monitoring works by Contract DC/2009/23 HATS Stage 2A with the Environmental Permit (Permit No. EP-322/2008/G) for January 2017.

2. The site activities undertaken for in the reporting month included:

Wan Chai East PTW:

- Sewage Pump replacement work;
- Construction of road and drainage;
- Steel frame construction for upgrading the DO unit at the inlet pumping station;
- Construction of boundary wall.

North Point PTW

- Interim Operation for North Point PTW - Fine Screen & Grit Trap Building;
- Construction of Manholes and Laying Associated Pipes near FSGT Building;
- Construction of Manhole FM1 and Sewage Pipes behind DO Building;
- Construction of Boundary Wall bedside King's Road Playground;
- Construction of Grasscrete;
- Installation of Green Roof.

Central PTW

- Interim Operation for North Point PTW - Fine Screen & Grit Trap Building;
- Installation of Access Link Bridge;
- Construction of road and drainage;
- Construction of boundary wall.

Environmental Monitoring Works

3. The environmental monitoring works of the Project was conducted by the ET for the Contract: DC/2009/23 under HATS 2A with the Environmental Permit (Permit No. EP-322/2008/G) 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.

4. Since the monitoring of air quality monitoring station at Chan's Creative School (AM1), Hong Kong & Islands Regional Office, WSD (AM2), Wan Chai East PTW (AM3), a location next to Sheung Wan Fire Station (AM4_2); and noise monitoring station at Chan's Creative School (NM1), Hyde Building (NM2) and Goldfield Building (NM3) were handed over to Contract No. DC/2009/23 from Contract No. DC/2007/23 in October 2015. The air quality and noise monitoring stations were set up by Cinotech Consultants Limited (ET for Contract No. DC/2009/23 for HATS 2A) to monitor the air quality and noise in the vicinity of the sensitive receivers starting from October 2015. The environmental monitoring schedule for the next reporting month is shown in **Appendix B**.

5. 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	
AM1	1-hr TSP	0	0	0	0	N/A
	24-hr TSP	0	0	0	0	N/A
AM2	1-hr TSP	0	0	0	0	N/A
	24-hr TSP	0	0	0	0	N/A
AM3	1-hr TSP	0	0	0	0	N/A
	24-hr TSP	0	0	0	0	N/A
AM4_2	1-hr TSP	0	0	0	0	N/A
	24-hr TSP	0	0	0	0	N/A
NM1	Noise	0	0	0	0	N/A
NM2	Noise	0	2	0	0	N/A
NM3	Noise	0	0	0	0	N/A

Note: Since the site area where air monitoring station AM4 was located had to be returned to DSD for another Works Contract, AM4 was relocated to AM4_2 on 24 September 2012.

1-hour TSP Monitoring

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

24-hour TSP Monitoring

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

Construction Noise

8. All Construction Noise monitoring was conducted as scheduled in the reporting month. No Action Level exceedance was recorded, while two non-project related Limit Level exceedance were recorded during the restricted hour noise monitoring on 1st & 10th January 2017 by the ET of this Project at NM2. Details of the exceedance could be referred to **Appendix G & H**.

Environmental Licenses and Permits

9. Licenses/Permits granted to the Project include the Environmental Permit (EP) and Registered as a Chemical Waste Producer for North Point, Wan Chai East and Central PTWs sites; water discharge licenses of North Point, Wan Chai East and Central PTWs; also the Construction Noise Permits for construction works at Wan Chai East PTW and Central PTW.

Environmental Mitigation Implementation Schedule

10. 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 L**.

Key Information in the Reporting Month

11. 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	Monthly Environmental Monitoring and Audit Report for December 2016	Submitted to EPD on 12 January 2017	No Comment	---
Notifications of any summons & prosecutions received	0	---	N/A	N/A	---

Summary of Complaints and Prosecutions

12. No environmentally related summons, prosecutions or complaints were received for the Project in the reporting month.

13. There were no environmentally related summons, prosecutions or complaints were received since the commencement of the Project. The Complaint Log is presented in **Appendix M.**

Future Key Issues

14. Major site activities for the coming two months include:

Wan Chai East PTW:
- Construction of road and drainage;
- Construction of boundary wall.

North Point PTW
- Operation and maintain of the new FSGT Building;
- Construction of boundary wall;
- Construction of Sea water pumping station;
- Construction of Manholes and Laying Associated Pipes near FSGT Building;
- Construction of Manhole FM1 and Sewage Pipes behind DO Building;
- Construction of Boundary Wall beside King's Road Playground;
- Construction of Grasscrete;
- Installation of Green Roof.

Central PTW
- Operation and maintain of the new FSGT Building;
- Construction of boundary wall;
- External wall finishing work;
- Installation of Access Link Bridge;

- Construction Road & Drainage.

15. The environmental concerns in coming months are mainly dust emission in the dry season. Other concerns including noise generated from construction works; dust emission due to strong wind erosion and vehicle movements, and inappropriate storage of construction equipments within the tree protective zones.

1. INTRODUCTION

Background

1.1 The Project 'HATS Stage 2A - Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central with Contract No: DC/2009/23' mainly comprises the following major works:

- Decommissioning, demolition and removal of existing structures and buildings, including the associated E&M works;
- Relocation of sewers, control room, workshop equipment and the associated E&M works; and
- Construction of new buildings and structures.

1.2 The general location plan of the Project is shown in **Figure 1A** to **1C**.

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 9th 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/2009/23 "Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central". The date of commencement of construction of the Project is on 14th February 2011.

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 This is the 72nd monthly EM&A report summarizing the EM&A works conducted for the Project in January 2017.

Project Organizations

1.7 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 Team	Dr. Priscilla Choy	ET Leader	2151 2089
		Ms. Janet Wai	Project Coordinator & Audit Team Leader	2157 3879

Party	Role	Name	Position	Phone No.
Mott MacDonald	Independent Environmental Checker	Dr. Anne Kerr	Independent Environmental Checker	2828 5757
Leader and JEC Joint Venture	Contractor	Mr. Kelvin Cheung	Site Agent	9650 9410
		Mr. Sunny Sung	Environmental Officer	9650 9410

Construction Programme

1.8 The site activities undertaken in the reporting month included:

Wan Chai East PTW:
- Sewage Pump replacement work;
- Construction of road and drainage;
- Steel frame construction for upgrading the DO unit at the inlet pumping station;
- Construction of boundary wall.

North Point PTW
- Interim Operation for North Point PTW - Fine Screen & Grit Trap Building;
- Construction of Manholes and Laying Associated Pipes near FSGT Building;
- Construction of Manhole FM1 and Sewage Pipes behind DO Building;
- Construction of Boundary Wall bedside King's Road Playground;
- Construction of Grasscrete;
- Installation of Green Roof.

Central PTW
- Interim Operation for North Point PTW - Fine Screen & Grit Trap Building;
- Installation of Access Link Bridge;
- Construction of road and drainage;
- Construction of boundary wall.

Summary of EM&A Requirements

1.9 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.

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

1.11 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 January 2017. For the methodology and QA/QC procedures of the monitoring parameters, please refer to the **Section 2.5** & **3.5** 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 Four designated monitoring stations, AM1, AM2, AM3 and AM4_2 were selected for impact dust monitoring for the Project. **Table 2.1** describes the air quality monitoring locations, which are also depicted in **Figure 1A** to **1C**.

Table 2.1 Locations for Air Quality Monitoring

Monitoring Station	Monitored by	Location of Measurement
AM1	DC/2009/23	Chan's Creative School
AM2		Hong Kong & Islands Regional Office, WSD
AM3		Wan Chai East PTW
AM4_2		A Location next to Sheung Wan Fire Station

Note: Since the site area where air monitoring station AM4 was located had to be returned to DSD for another Works Contract, AM4 was relocated to AM4_2 on 24 September 2012.

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 monitoring programme. Copies of calibration certificates are provided in **Appendix C** of this report.

Table 2.2 Air Quality Monitoring Equipment

Equipment	Model and Make	Quantity
HVS Samplers	GMWS 2310 HVS, Model GS-2310-105	1
	Tisch Environmental, Inc.; Model no. TE-5170	3
Laser Dust Meter	Sibata; Model no. LD-3	1
	Sibata; Model no. LD-3B	4
	Hal Technology; Model no. Hal-HPC300	2
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 schedule for the reporting period is shown in **Appendix B**.

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-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^3/min. and 1.4 m^3/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.

2.22 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

2.23 **Table 2.4** summarizes the monitoring results at AM1, AM2, AM3 and AM4_2 in reporting month.

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

Air Quality Monitoring Station	Average µg/m³	Range µg/m³	Action Level µg/m³	Limit Level µg/m³
1 hour TSP				
AM1	155	25 – 242	340	500
AM2	154	25 – 226	352	
AM3	152	29 – 254	355	
AM4_2	168	32 – 261	393	
24 hours TSP				
AM1	65	43 – 89	185	260
AM2	125	74 – 157	182	
AM3	134	101 – 159	181	
AM4_2	140	89 – 159	211	

Note: Since the site area where air monitoring station AM4 was located had to be returned to DSD for another Works Contract, AM4 was relocated to AM4_2 on 24 September 2012.

2.24 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.**

2.25 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.**

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

2.27 According to field observations during site inspection, the identified dust sources at the monitoring stations were mainly from loading of material, vehicles movement and construction works in site.

3 NOISE

Monitoring Requirements

3.1 Three noise monitoring stations, namely NM1, NM2 and NM3 were designated in the EM&A Manual for impact monitoring. **Appendix A** shows the established Action and Limit Levels for the environmental monitoring works.

Monitoring Locations

3.2 Noise monitoring was conducted at three designated monitoring stations as listed in **Table 3.1**, which are also depicted in **Figure 1A** to **1C**

Table 3.1 Location of Noise Monitoring Stations

Monitoring Station	Monitored By	Location of Measurement
NM1	DC/2009/23	Chan's Creative School
NM2		Hyde Building
NM3		Goldfield Building

Monitoring Equipment

3.3 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_{eq}) and percentile sound pressure level (L_x) 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 equipments. Copies of calibration certificates are provided in **Appendix C** of this report.

Table 3.2 Noise Monitoring Equipment

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

Monitoring Parameters, Frequency and Duration

3.4 Table 3.3 summarizes the monitoring parameters, frequency and total duration of monitoring. The noise monitoring schedule is shown in **Appendix B**.

Table 3.3 Noise Monitoring Parameters, Frequency and Duration

Monitoring Stations	Parameter	Period	Frequency
NM1 NM2	L_{eq}(30 min.) dB(A)	0700-1900 hrs. on weekdays	Once per week

	L_{eq}(5 min.) dB(A)	Restricted hours (1900-2300 on all days and 0700-2300 on general holidays and Sundays)	
NM3	L_{eq}(30 min.) dB(A)	0700-1900 hrs. on weekdays	

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.

Results and Observations

3.5 **Table 3.4** summarizes the daytime noise monitoring results at NM1, NM2 and NM3 in reporting month.

Table 3.4 Summary of Daytime Noise Monitoring Results in Reporting Month

For the time period 0700-1900 hrs. on weekdays		
Monitoring Station	Range, dB(A) L_{eq}(30 min.)	Limit Level ,dB(A) L_{eq}(30 min.)
NM1	63 – 70	70.0 */69.0**
NM2	65 – 73	75.0
NM3	68 – 74	

* 70 dB(A) was adopted as the Limit Level during school normal teaching period in the reporting period.
** 69 dB(A) was adopted as the Limit Level during the examination period at NM1 because of the Baseline Monitoring Report, the average LAeq,30min measured at NM1 between

0700 and 1900 hours is 69.0 dB(A), exceeded the Limit Level of daytime construction noise during the examination periods (65 dB(A)).

3.6 **Table 3.5** summarizes the restricted hours noise monitoring results at NM1 and NM2 in reporting month.

Table 3.5 Summary of Restricted Hours Noise Monitoring Results in Reporting Month

Restricted hours (1900-2300 on all days and 0700-2300 on general holidays and Sundays)		
Monitoring Station	Range, dB(A) L_{eq}(5 min.)	Limit Level ,dB(A) L_{eq}(5 min.)
NM1	68 – 68[(1)]	70.0 *
NM2	69 – 72[(1)]	70.0 *

Note: No class was held at the school during all the measurement period
[(1)] According to the notification from ET of Contract No. DC/2007/23 on 13th January 2017, no more construction works during restricted hours are carried out under Contract No. DC/2007/23, and also, no construction works for the Contract No. DC/2009/23 was carried out during the restricted hours noise monitoring at North Point PTW and Wan Chai East PTW, so the noise monitoring during restricted hours was suspended from 14th January 2017.
* 70dB (A) was adopted as the Limit Level during restricted hours in the reporting period.

3.7 The construction noise monitoring at the designated locations was conducted by the ET of Contract DC/2009/23 as scheduled in the reporting month.

3.8 Excavation works were conducted during day time at North Point PTW. No construction work was conducted during the restricted hours under the Project in the reporting month.

3.9 All Construction Noise monitoring was conducted as scheduled in the reporting month. No Action Level exceedance was recorded, while two non-project related Limit Level exceedance were recorded during the restricted hour noise monitoring on 1st & 10th January 2017 by the ET of this Project at NM2. Details of the exceedance could be referred to **Appendix G & H**.

3.10 The detailed monitoring data and graphical presentations of noise monitoring results could be referred to **Appendix F** of this report.

3.11 The major noise sources identified at the designated noise monitoring stations were traffic noise and construction activities.

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 4th, 13th, 18th and 25th January 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 landscape and visual mitigation measures 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 I**.

Review of Environmental Monitoring Procedures

4.5 The monitoring works were conducted by the monitoring team of Contract DC/2009/23. The monitoring procedures were reviewed by its ET.

Status of Environmental Licensing and Permitting

4.6 All permits/licenses obtained for the Contract DC/2009/23 are summarized in **Table 4.1**.

Table 4.1 Summary of Environmental Licensing and Permit Status for Contract DC/2009/23

Ref. No.	Valid Period		Details	Status
	From	To		
Water Discharge License				
WT00025400-2016	1/9/2016	30/9/2021	Location: North Point PTW	Valid
WT00025414-2016	1/9/2016	30/9/2021	Location: Central PTW	
Registered Chemical Waste Producer				
5213-153-L2743-01	15/2/2011	N/A	Location: North Point PTW	Valid
5213-115-L2737-01	26/1/2011	N/A	Location: Wan Chai East PTW	
5213-134-L2745-01	16/2/2011	N/A	Location: Central PTW	
Construction Noise Permit				
GW-RS0516-13	29/5/2013	28/11/2013	Construction Noise Permit for the use of Powered Mechanical Equipment for the purpose of carrying out construction work other than percussive piling and/or the carrying out of prescribed construction work at North Point Preliminary Treatment Works Plant House, Man Hong Street, North Point, Hong Kong	Expiry
GW-RS0906-13	23/8/2013	22/11/2013	Construction Noise Permit for the use of Powered Mechanical Equipment for the purpose of carrying out construction work other than percussive piling and/or the carrying out of prescribed construction work at North Point Preliminary Treatment Works Plant House, Man Hong Street, North Point, Hong Kong	Expiry
GW-RS1387-13	5/12/2013	21/5/2014	Construction Noise Permit for the use of Powered Mechanical Equipment for the purpose of carrying out construction work other than percussive piling and/or the carrying out of prescribed construction work at North Point Preliminary Treatment Works Plant House, Man Hong Street, North Point, Hong Kong	Expiry
GW-RS0424-14	5/5/2014	5/7/2014	Construction Noise Permit for the use of Powered Mechanical Equipment for the purpose of carrying out construction work other than percussive piling and/or the carrying out of prescribed construction work at North Point Preliminary Treatment Works Plant House, Man Hong Street, North Point, Hong Kong	Expiry

Ref. No.	Valid Period		Details	Status
	From	To		
GW-RS0643-14	3/7/2014	30/9/2014	Construction Noise Permit for the use of Powered Mechanical Equipment for the purpose of carrying out construction work other than percussive piling and/or the carrying out of prescribed construction work at Wan Chai East Preliminary Treatment Works, Wan Chai, Hong Kong	Expiry
GW-RS1078-14	10/10/2014	9/4/2015	Construction Noise Permit for the use of Powered Mechanical Equipment for the purpose of carrying out construction work other than percussive piling and/or the carrying out of prescribed construction work at Wan Chai East Preliminary Treatment Works, Wan Chai, Hong Kong	Expiry
GW-RS0179-15	25/2/2015	23/5/2015	Construction Noise Permit for the use of Powered Mechanical Equipment for the purpose of carrying out construction work other than percussive piling and/or the carrying out of prescribed construction work at Central Preliminary Treatment Works, Western Fire Services Street, Hong Kong	Expiry
GW-RS0484-15	8/5/2015	3/8/2015	Construction Noise Permit for the use of Powered Mechanical Equipment for the purpose of carrying out construction work other than percussive piling and/or the carrying out of prescribed construction work at Wan Chai East Preliminary Treatment Works, Wan Chai, Hong Kong	Expiry
GW-RS0567-15	26/5/2015	23/11/2015	Construction Noise Permit for the use of Powered Mechanical Equipment for the purpose of carrying out construction work other than percussive piling and/or the carrying out of prescribed construction work at Central Preliminary Treatment Works, Western Fire Services Street, Hong Kong	Expiry
GW-RS1284-16	19/12/2016	13/06/2017	Construction Noise Permit for the use of Powered Mechanical Equipment for the purpose of carrying out construction work other than percussive piling and/or the carrying out of prescribed construction work at Central Preliminary Treatment Works, Western Fire Services Street, Hong Kong	Valid
Special Waste Admission Ticket				
13436	24/11/2016	23/11/2017	Location: Central PTW	Valid
13437	24/11/2016	23/11/2017	Location: North Point 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 J.**

Implementation Status of Environmental Mitigation Measures

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

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	Date/Ref. Number	Observations	Follow Up Action
Water Quality	170113-R02	The bund should be provided to prevent the muddy water runoff from the site of Central-PTW.	Please refer to 170118-R02.
	170118-R02	The bund should be provided to prevent the muddy water runoff from the site of Central-PTW.	The bund was provided at Central-PTW.
Air Quality	161228-R03	The dusty materials should be covered by impervious material to prevent the dust emission at Wan Chai-PTW and Central-PTW.	Please refer to 170104-R02.
	170104-R02	The dusty materials should be covered by impervious material to prevent the dust emission at Wan Chai-PTW.	The dusty materials were covered by impervious material at Wan Chai-PTW.
	170113-R03	The dusty materials should be covered by impervious material to prevent the dust emission at Central-PTW.	The dusty materials were cleared at Central-PTW.
	170118-R01	The dusty materials should be covered by impervious material to prevent the dust emission at Wan Chai-PTW.	The dusty materials were covered by impervious material at Wan Chai-PTW.
Waste/ Chemical Management	170104-O01	The oil leakage was observed from the hydraulic sheet driver at North Point-PTW. The Contractor was reminded to provide the maintenance and clear the oil stain.	The oil leakage was not observed from the hydraulic sheet driver at North Point-PTW.
	170113-O01	The oil leakage was observed from the excavator at North Point-PTW. The Contractor was reminded to provide the maintenance and clear the oil stain.	The oil leakage was not observed from the excavator at North Point-PTW.
	170125-R01	The oil stain at Wan Chai PTW should be properly cleared.	The oil stain was cleared at Wan Chai-PTW.
Noise	--	--	--
Landscape and Visual	161228-R04	The fence should be provided and enhanced for the existing tree at Wan Chai-PTW.	Please refer to 170104-R03.
	170104-R03	The fence should be provided and enhanced for the existing trees at Wan Chai-PTW.	The fence was provided and enhanced for the existing trees at Wan Chai-PTW.

Permit/ Licenses	--	--	--

Implementation Status of Event Action Plans

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

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 Level exceedance was recorded, while two non-project related Limit Level exceedance were recorded during the restricted hour noise monitoring on 1st & 10th January 2017 by the ET of this Project at NM2. Details of the exceedance could be referred to **Appendix G & H**.

Landscape and Visual

4.14 No non-compliance was recorded.

Summary of Complaints and Prosecutions

4.15 No environmentally related summons, prosecutions or complaints were received for the Project in the reporting month.

4.16 There were no environmentally related summons, prosecutions or complaints were received since the commencement of the Project. The Complaint Log is presented in **Appendix M.**

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, roadwork, excavation works and loading and unloading dusty materials on-site;
- Noise 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;
- Ponding water generated in pre-drillings;
- Drainage system should be well designed and maintained to prevent flooding and silty water getting into the public area during and after rainstorm;
- 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 are shown in **Appendix B.**

5.3 Construction Activities for the Next Two Months:

Wan Chai East PTW:
- Construction of road and drainage;
- Construction of boundary wall.

North Point PTW
- Operation and maintain of the new FSGT Building;
- Construction of boundary wall;
- Construction of Sea water pumping station;
- Construction of Manholes and Laying Associated Pipes near FSGT Building;
- Construction of Manhole FM1 and Sewage Pipes behind DO Building;
- Construction of Boundary Wall beside King's Road Playground;
- Construction of Grasscrete;
- Installation of Green Roof.

Central PTW
- Operation and maintain of the new FSGT Building;
- Construction of boundary wall;
- External wall finishing work;
- Installation of Access Link Bridge;
- Construction Road & Drainage.

5.4 The tentative construction program is provided in **Appendix N.**

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 Level exceedance was recorded, while two non-project related Limit Level exceedance were recorded during the restricted hour noise monitoring on 1st & 10th January 2017 by the ET of this Project at NM2. Details of the exceedance could be referred to **Appendix G & H**.

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 for the Project in the reporting month.

Recommendations for the coming reporting month:

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

Water Quality
- To provide the bund to prevent the muddy water runoff from the site.

Air Quality
- To provide the impervious material for the stockpile of dusty material to prevent the dust emission in the site.

Noise Impact
- To inspect the noise sources inside the site;
- To follow up any exceedance caused by the construction works;

- To space out noisy equipment and position the equipment as far away as possible from sensitive receivers;
- To provide temporary noise barriers for operations of noisy equipment near the noise sensitive receivers in an appropriate location;
- To provide adequate lubricant on mechanical equipments to reduce frictional noise;
- To ensure the doors of the air compressors are closed; and
- To well maintain the mechanical equipments / machineries to avoid abnormal noise nuisance.

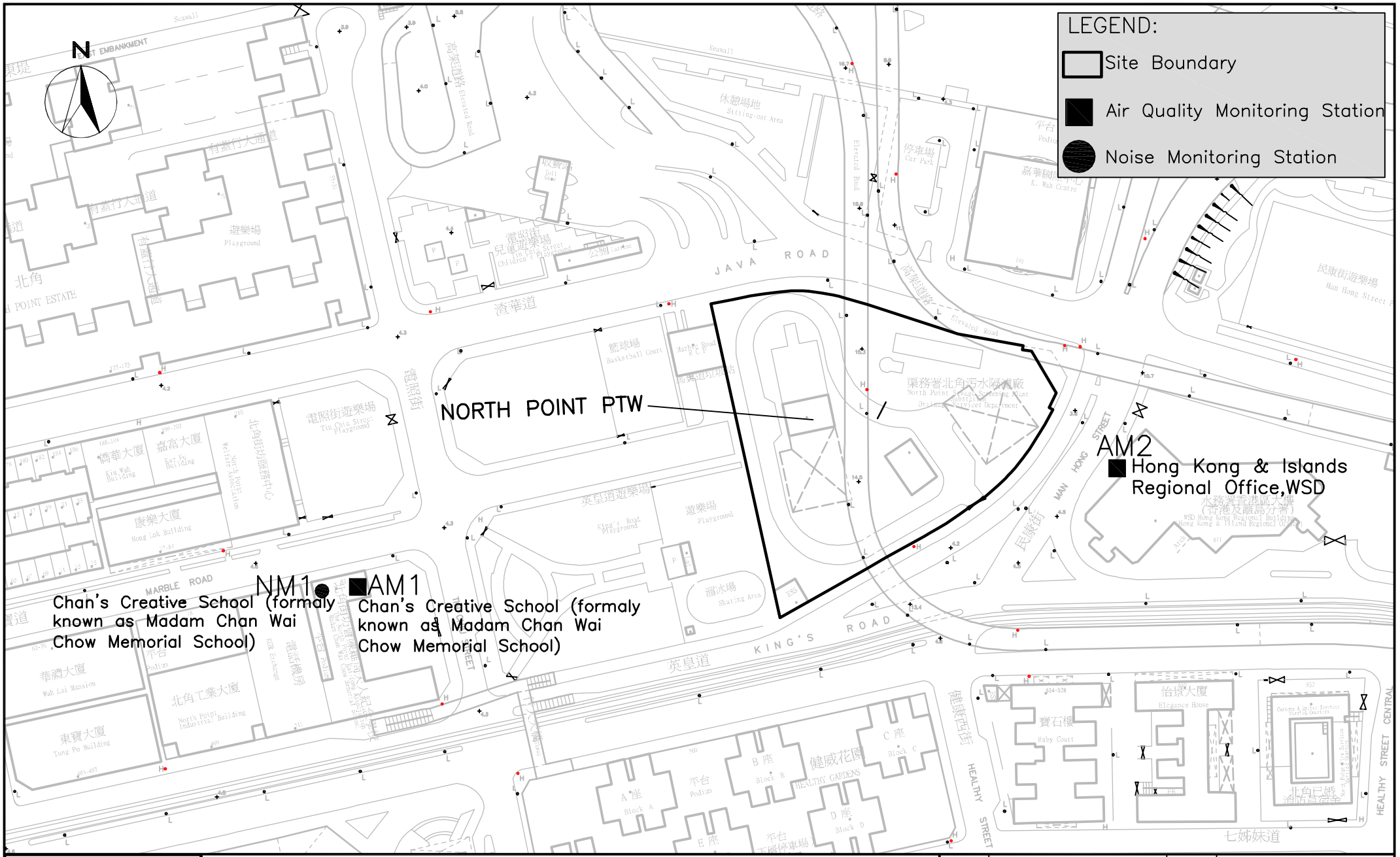
Waste/Chemical Management

- To provide the maintenance of hydraulic sheet driver/excavator to prevent the oil leakage in the site;
- Proper clear the oil stain as chemical waste in the site.

Landscape and Visual

- To provide and enhance the fence for the tree protection area in the site.

FIGURES

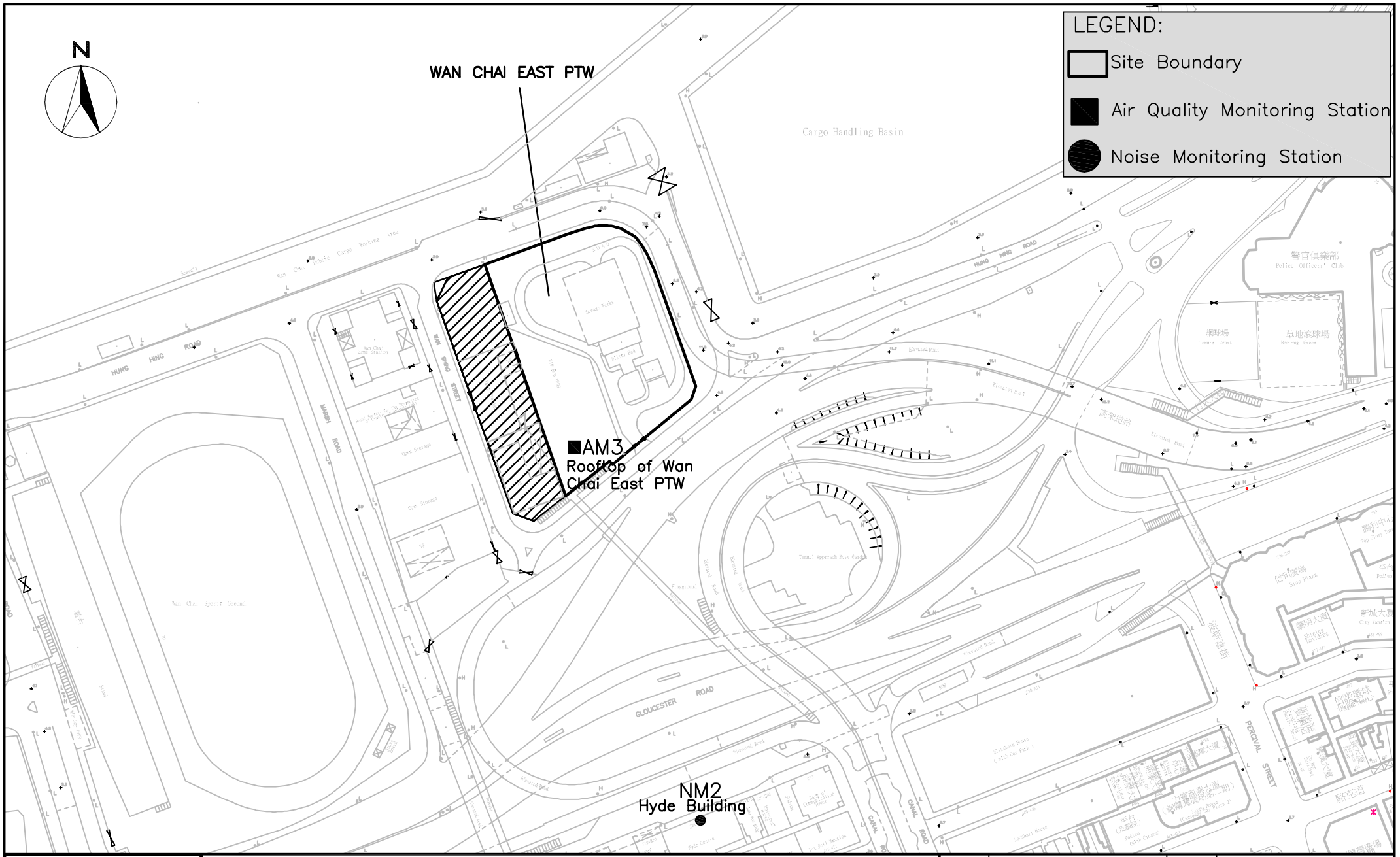


CINOTECH consultants limited

Contract No. DC/2009/23 – Harbour Area Treatment Stage 2A – Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central

Impact Air Quality & Noise Monitoring Stations (North Point)

SCALE	N.T.S	DATE	11 MAR 2011
CHECK	GL	DRAWN	TW
PROJECT NO.	MA11003	FIGURE NO.	1A
		REV	–

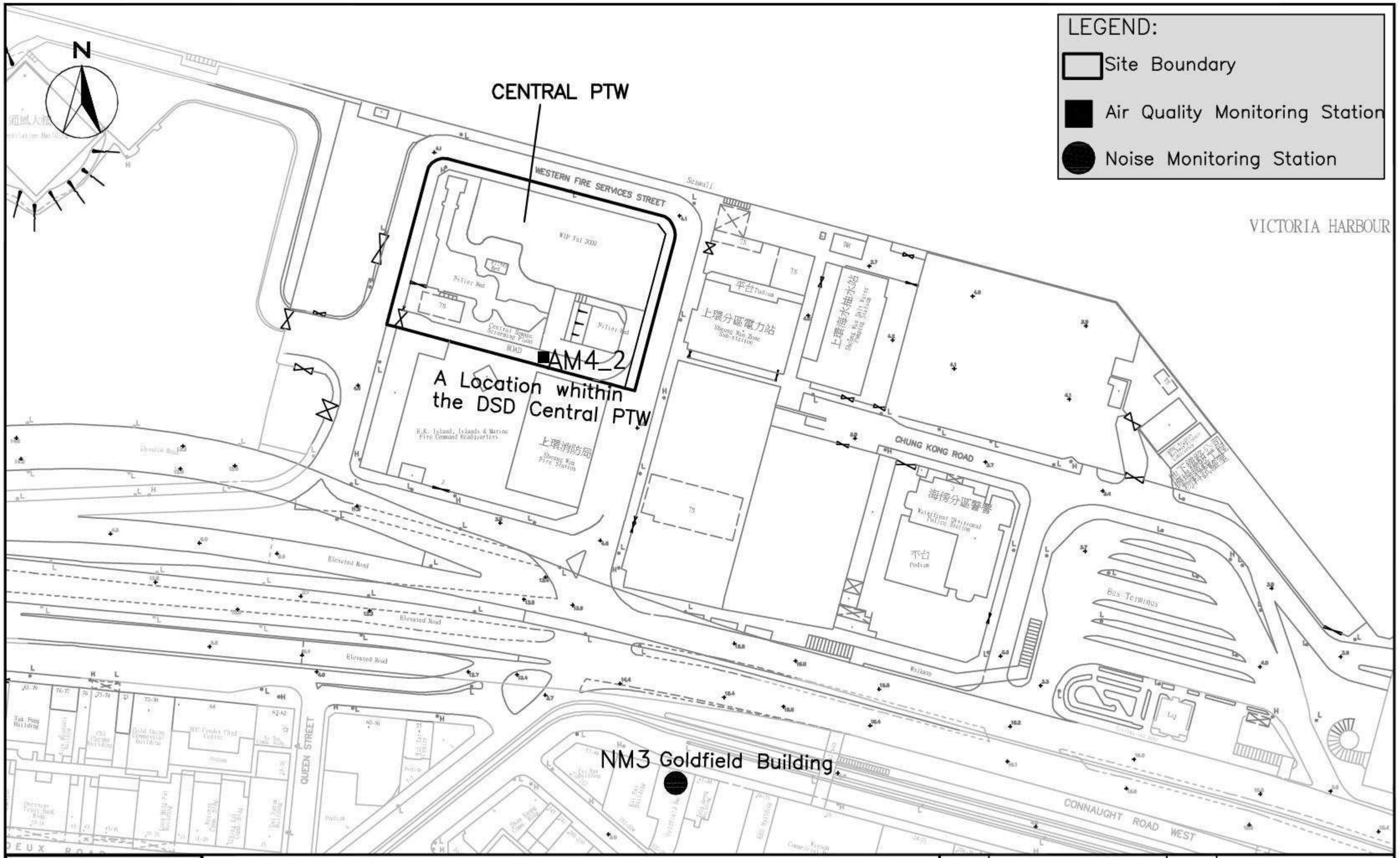


CINOTECH consultants limited

Contract No. DC/2009/23 – Harbour Area Treatment Stage 2A – Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central

Impact Air Quality & Noise Monitoring Stations (Wan Chai East)

SCALE	N.T.S	DATE	11 MAR 2011
CHECK	GL	DRAWN	TW
PROJECT NO.	MA11003	FIGURE NO.	1B
		REV	–

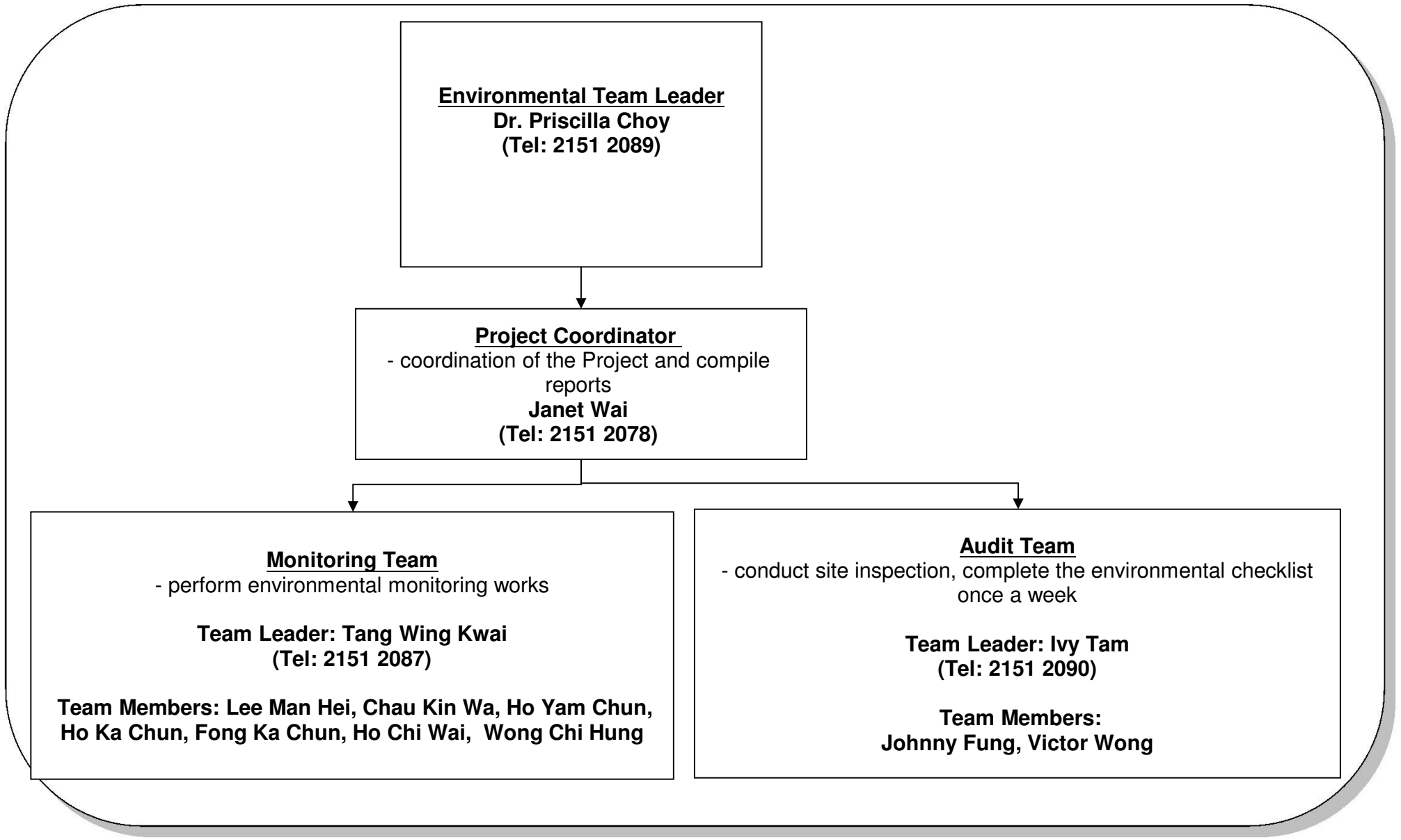


CINOTECH consultants limited

Contract No. DC/2009/23 – Harbour Area Treatment Stage 2A – Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central

Impact Air Quality & Noise Monitoring Stations (Central)

SCALE	N.T.S	DATE	11 MAR 2011
CHECK	GL	DRAWN	TW
PROJECT NO.	MA11003	FIGURE NO. 1C	REV –



Title	Contract No. DC/2009/23 HATS Stage 2A – Upgrading of Preliminary Treatment Works at North Point, Wanchai East and Central ET's Organization Chart	Scale N.T.S	Project No. MA11003	CINOTECH
		Date Mar-15	Figure 2	

APPENDIX A
ACTION AND LIMIT LEVELS FOR AIR QUALITY AND NOISE

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 ($\mu g/m^3$)		Limit Level ($\mu g/m^3$)	
	1-hour	24-hour	1-hour	24-hour
AM1	340	185	500	260
AM2	352	182		
AM3	355	181		
AM4_2	393	211		

Table A-2 Action and Limit Level for Construction Noise

Monitoring Stations	Time Period	Action Level	Limit Level in dB(A)
NM1	0700-1900 hours on normal weekdays	When one documented complaint is received	70 */69**
	Restricted hours (1900-2300 on all days and 0700-2300 on general holidays and Sundays)		70 ***
NM2	0700-1900 hours on normal weekdays		75
	Restricted hours (1900-2300 on all days and 0700-2300 on general holidays and Sundays)		70 ***
NM3	0700-1900 hours on normal weekdays		75

Notes: If works are to be carried out during restricted hours, the conditions stipulated in the Construction Noise Permit (CNP) issued by the Noise Control Authority have to be followed.
* 70 dB(A) was adopted as the Limit Level during school normal teaching period in the reporting period.
** 69 dB(A) was adopted as the Limit Level during the examination period at NM1 because of the Baseline Monitoring Report, the average LAeq,30min measured at NM1 between 0700 and 1900 hours is 69.0 dB(A), exceeded the Limit Level of daytime construction noise during the examination periods (65 dB(A)).
*** 70 dB(A) was adopted as the Limit Level during restricted hours in the reporting period

APPENDIX B
ENVIRONMENTAL MONITORING SCHEDULES

Contract No. DC/2009/23
Upgrading of PTWs at North Point, Wan Chai East and Central
Impact Air Quality and Noise Monitoring for January 2017

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1-Jan	**2-Jan**	3-Jan	4-Jan	5-Jan	6-Jan	7-Jan
	Noise (NM1 & NM2) (during daytime on sundays/public holidays)	24hr-TSP	1 hr TSP (AM1, AM2, AM3 & AM4_2) Noise (NM1, NM2 & NM3) (Daytime)			
8-Jan	9-Jan	10-Jan	11-Jan	12-Jan	13-Jan	14-Jan
	24hr-TSP	1 hr TSP (AM1, AM2, AM3 & AM4_2) Noise (NM1 & NM2) (Daytime & Evening time) Noise (NM3)(Daytime)			24hr-TSP	
15-Jan	16-Jan	17-Jan	18-Jan	19-Jan	20-Jan	21-Jan
	1 hr TSP (AM1, AM2, AM3 & AM4_2) Noise (NM1, NM2 & NM3) (Daytime)			24hr-TSP	1 hr TSP (AM1, AM2, AM3 & AM4_2)	
22-Jan	23-Jan	24-Jan	25-Jan	26-Jan	27-Jan	**28-Jan**
			24hr-TSP	1 hr TSP (AM1, AM2, AM3 & AM4_2) Noise (NM1, NM2 & NM3) (Daytime)	24hr-TSP	
29-Jan	**30-Jan**	**31-Jan**				

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

Note: According to the notification from ET of Contract No. DC/2007/23 on 13 January 2017, no more construction works during restricted hours are carried out under Contract No. DC/2007/23, and also, no construction works for the Contract No. DC/2009/23 was carried out during the restricted hours noise monitoring at North Point PTW and Wan Chai East PTW, so the noise monitoring during restricted hours was suspended from 14 January 2017.

Air Quality Monitoring Station

AM1 - Works site boundary of DC/2009/23
AM2 - Hong Kong & Islands Regional Office, WSD
AM3 - Wan Chai East PTW
AM4_2 - A Location within the DSD Central PTW

Noise Monitoring Station

NM1 - Chan's Creative School
NM2 - Hyde Building
NM3 - Goldfield Building

Contract No. DC/2009/23
Upgrading of PTWs at North Point, Wan Chai East and Central
Tentative Impact Air Quality and Noise Monitoring for February 2017

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1-Feb	2-Feb	3-Feb	4-Feb
			1 hr TSP (AM1, AM2, AM3 & AM4_2) Noise (NM1, NM2 & NM3) (Daytime)	24hr TSP		
5-Feb	6-Feb	7-Feb	8-Feb	9-Feb	10-Feb	11-Feb
		1 hr TSP (AM1, AM2, AM3 & AM4_2) Noise (NM1, NM2 & NM3) (Daytime)	24hr TSP			
12-Feb	13-Feb	14-Feb	15-Feb	16-Feb	17-Feb	18-Feb
	1 hr TSP (AM1, AM2, AM3 & AM4_2) Noise (NM1, NM2 & NM3) (Daytime)	24hr TSP		1 hr TSP (AM1, AM2, AM3 & AM4_2)		
19-Feb	20-Feb	21-Feb	22-Feb	23-Feb	24-Feb	25-Feb
	24hr TSP		1 hr TSP (AM1, AM2, AM3 & AM4_2) Noise (NM1, NM2 & NM3) (Daytime)		24hr TSP	
26-Feb	27-Feb	28-Feb				
		1 hr TSP (AM1, AM2, AM3 & AM4_2) Noise (NM1, NM2 & NM3) (Daytime)				

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

Air Quality Monitoring Station

AM1 - Works site boundary of DC/2009/23
AM2 - Hong Kong & Islands Regional Office, WSD
AM3 - Wan Chai East PTW
AM4_2 - A Location within the DSD Central PTW

Noise Monitoring Station

NM1 - Chan's Creative School
NM2 - Hyde Building
NM3 - Goldfield Building

APPENDIX C
COPIES OF CALIBRATION CERTIFICATES

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA11003/46/0008

Station: AM1 - Chan's Creative School Operator: WK

Date: 18-Nov-16 Next Due Date: 17-Jan-17

Equipment No.: A-01-46 Serial No. 1315

Ambient Condition			
Temperature, Ta (K)	296.7	Pressure, Pa (mmHg)	764.4

Orifice Transfer Standard Information					
Serial No.:	2896	Slope, mc (CFM)	0.0598	Intercept, bc	-0.05079
Last Calibration Date:	4-Mar-16	**mc x 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	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	12.8	3.60	60.99	8.2	2.88
2	10.5	3.26	55.32	6.9	2.64
3	7.7	2.79	47.50	5.0	2.25
4	5.0	2.25	38.44	3.2	1.80
5	3.1	1.77	30.45	1.9	1.39

By Linear Regression of Y on X

Slope , mw = 0.0492 **Intercept, bw :** -0.0992

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: 18/11/16

Checked by: [signature] Signature: [signature] Date: 18 November 2016

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA11003/46/0009

Station: AM1 - Chan's Creative School Operator: WK

Date: 16-Jan-17 Next Due Date: 15-Mar-17

Equipment No.: A-01-46 Serial No. 1315

Ambient Condition			
Temperature, Ta (K)	285.5	Pressure, Pa (mmHg)	769.7

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	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	12.7	3.66	62.13	8.3	2.96
2	10.2	3.28	55.77	6.8	2.68
3	7.5	2.82	47.94	5.1	2.32
4	5.0	2.30	39.30	3.3	1.87
5	3.1	1.81	31.13	2.0	1.45

By Linear Regression of Y on X

Slope , mw = 0.0489 **Intercept, bw =** -0.0524

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; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.97**

Remarks:

Conducted by: WK Tang Signature: Kwan Date: 16/1/17

Checked by: LA Signature: Date: 16 January 2017

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA1003/44/0008

Station: AM2 - Hong Kong & Islands Regional Office, WSD Operator: WK

Date: 18-Nov-16 Next Due Date: 17-Jan-17

Equipment No.: A-01-44 Serial No. 1316

Ambient Condition			
Temperature, Ta (K)	298.1	Pressure, Pa (mmHg)	764

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

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	[ΔW x (Pa/760) x (298/Ta)]$^{1/2}$ **Y-axis**
1	12.8	3.59	60.84	8.1	2.85
2	10.5	3.25	55.18	6.7	2.59
3	7.9	2.82	47.98	5.1	2.26
4	5.2	2.29	39.08	3.3	1.82
5	3.1	1.77	30.37	2.0	1.42

By Linear Regression of Y on X

Slope , mw = 0.0474 **Intercept, bw =** -0.0210

Correlation coefficient* = 0.9999

*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 x Qstd + bw = [ΔW x (Pa/760) x (298/Ta)]$^{1/2}$

Therefore, Set Point; W = (mw x Qstd + bw)^2 x (760 / Pa) x (Ta / 298) = **4.04**

Remarks:

Conducted by: Wk Tang Signature: Kwan Date: 18/11/16

Checked by: [illegible] Signature: Date: 18 November 2016

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA11003/44/0009

Station: AM2 - Hong Kong & Islands Regional Office, WSD Operator: WK

Date: 16-Jan-17 Next Due Date: 15-Mar-17

Equipment No.: A-01-44 Serial No. 1316

Ambient Condition			
Temperature, Ta (K)	286	Pressure, Pa (mmHg)	769.4

Orifice Transfer Standard Information					
Serial No.:	2896	Slope, mc (CFM)	0.0598	Intercept, bc	-0.05079
Last Calibration Date:	4-Mar-16	**mc x 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	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	12.7	3.66	62.07	8.2	2.94
2	10.5	3.33	56.51	6.9	2.70
3	7.8	2.87	48.82	5.2	2.34
4	5.3	2.36	40.40	3.3	1.87
5	3.1	1.81	31.09	2.0	1.45

By Linear Regression of Y on X

Slope , mw = 0.0489 **Intercept, bw :** -0.0751

Correlation coefficient* = 0.9991

*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; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.89**

Remarks:

Conducted by: WK Tang Signature: Kwan Date: 16/1/17

Checked by: [illegible] Signature: [illegible] Date: 16 January 2017

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA11003/48/0008

Station: AM3 - Wan Chai East PTW Operator: WK

Date: 18-Nov-16 Next Due Date: 17-Jan-17

Equipment No.: A-01-48 Serial No. 1792

Ambient Condition			
Temperature, Ta (K)	298.9	Pressure, Pa (mmHg)	761

Orifice Transfer Standard Information					
Serial No.:	2896	Slope, mc (CFM)	0.0598	Intercept, bc	-0.05079
Last Calibration Date:	4-Mar-16	**mc x 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	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.6	3.40	57.77	7.5	2.74
2	9.9	3.14	53.43	6.7	2.59
3	7.8	2.79	47.52	4.9	2.21
4	5.3	2.30	39.32	3.4	1.84
5	3.4	1.84	31.66	2.1	1.45

By Linear Regression of Y on X

Slope , mw = 0.0501 **Intercept, bw =** -0.1377

Correlation coefficient* = 0.9984

*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; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.08**

Remarks:

Conducted by: Wk. Tang Signature: Kwan Date: 18/11/16

Checked by: LAY Signature: Date: 18 November 2016

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA11003/48/0009

Station: AM3 - Wan Chai East PTW Operator: WK

Date: 16-Jan-17 Next Due Date: 15-Mar-17

Equipment No.: A-01-48 Serial No. 1792

Ambient Condition			
Temperature, Ta (K)	289.2	Pressure, Pa (mmHg)	766.5

Orifice Transfer Standard Information					
Serial No.:	2896	Slope, mc (CFM)	0.0598	Intercept, bc	-0.05079
Last Calibration Date:	4-Mar-16	**mc x 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	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.7	3.49	59.17	7.5	2.79
2	9.8	3.19	54.23	6.4	2.58
3	7.5	2.79	47.54	4.9	2.26
4	5.3	2.35	40.10	3.4	1.88
5	3.5	1.91	32.75	2.1	1.48

By Linear Regression of Y on X

Slope , mw = 0.0498 **Intercept, bw =** -0.1333

Correlation coefficient* = 0.9992

*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; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.89**

Remarks:

Conducted by: Wk Tang Signature: Date: 16/1/17

Checked by: Ian Signature: Date: 16 January 2017

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA11003/15/0007

Station: AM4_2 - A location within the DSD Central PTW Operator: WK

Date: 18-Nov-16 Next Due Date: 17-Jan-17

Equipment No.: A-01-15 Serial No. 10576

Ambient Condition			
Temperature, Ta (K)	302.5	Pressure, Pa (mmHg)	758

Orifice Transfer Standard Information					
Serial No.:	2896	Slope, mc (CFM)	0.0598	Intercept, bc	-0.05079
Last Calibration Date:	4-Mar-16	**mc x 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	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.6	3.38	57.31	7.8	2.77
2	9.7	3.09	52.48	6.2	2.47
3	7.3	2.68	45.64	4.7	2.15
4	5.1	2.24	38.29	3.4	1.83
5	3.2	1.77	30.51	2.0	1.40

By Linear Regression of Y on X

Slope , mw = 0.0496 **Intercept, bw =** -0.1028

Correlation coefficient* = 0.9987

*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; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.20**

Remarks:

Conducted by: WK Tang Signature: Kwan Date: 18/11/16

Checked by: [illegible] Signature: [illegible] Date: 18 November 2016

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA11003/15/0008

Station: AM4_2 - A location within the DSD Central PTW Operator: WK

Date: 16-Jan-17 Next Due Date: 15-Mar-17

Equipment No.: A-01-15 Serial No. 10576

Ambient Condition			
Temperature, Ta (K)	285.8	Pressure, Pa (mmHg)	769.2

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

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	[ΔW x (Pa/760) x (298/Ta)]$^{1/2}$ **Y-axis**
1	11.8	3.53	59.87	7.9	2.89
2	9.2	3.12	52.96	6.1	2.54
3	7.4	2.79	47.59	4.8	2.25
4	5.0	2.30	39.27	3.3	1.87
5	3.3	1.87	32.06	2.0	1.45

By Linear Regression of Y on X

Slope , mw = 0.0511 **Intercept, bw :** -0.1675

Correlation coefficient* = 0.9995

*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 x Qstd + bw = [ΔW x (Pa/760) x (298/Ta)]$^{1/2}$

Therefore, Set Point; W = (mw x Qstd + bw)^2 x (760 / Pa) x (Ta / 298) = **3.90**

Remarks:

Conducted by: W.K. Tang Signature: Kwan Date: 16/1/17

Checked by: KW Signature: Date: 16 January 2017

TISCH Environmental

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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 04, 2016 Rootsmeter 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)
1.0001	0.6974	1.4173
0.9959	0.9716	2.0044
0.9938	1.0861	2.2410
0.9928	1.1320	2.3503
0.9875	1.3696	2.8346

Qstd slope (m) = 2.11176
intercept (b) = -0.05079
coefficient (r) = 0.99982

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

Va	(x axis) Qa	(y axis)
0.9957	0.6944	0.8836
0.9915	0.9674	1.2496
0.9894	1.0814	1.3971
0.9885	1.1271	1.4653
0.9831	1.3636	1.7672

Qa slope (m) = 1.32235
intercept (b) = -0.03166
coefficient (r) = 0.99982

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}

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Rms 1516, 1701 & 1716, Technology Park,
18 On Lai Street, Shatin, N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

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

Test Report No.:	C/A/170106A
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
Page:	1 of 1

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

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3
Serial No.	: 251634
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 550 CPM
Equipment No.	: A-02-01

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)	0.0037

****

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

PATRICK TSE
Laboratory Manager

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TEST REPORT

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

Test Report No.:	C/A/170106B
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
Page:	1 of 1

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

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^3
Sen. Adjustment Scale Setting	: 685 CPM
Equipment No.	: A-02-04

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)	0.0038

****

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Laboratory Manager

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TEST REPORT

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

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

Test Report No.:	C/A/170106C
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
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^3
Sen. Adjustment Scale Setting	: 790 CPM
Equipment No.	: A-02-06

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)	0.0035

****

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PATRICK TSE
Laboratory Manager

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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^3
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

****

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Laboratory Manager

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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^3
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

****

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Laboratory Manager

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TEST REPORT

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

Test Report No.:	C/161216A
Date of Issue:	2016-12-19
Date Received:	2016-12-16
Date Tested:	2016-12-16
Date Completed:	2016-12-19
Next Due Date:	2017-02-18

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

Page: 1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Handheld Particle Counter
Manufacturer	: Hal Technology
Model No.	: Hal-HPC300
Serial No.	: 3020408
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 5 minutes
Equipment No.	: A-26-01

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)	1.043

****

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TEST REPORT

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

Test Report No.:	C/161216B
Date of Issue:	2016-12-19
Date Received:	2016-12-16
Date Tested:	2016-12-16
Date Completed:	2016-12-19
Next Due Date:	2017-02-18

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

Page: 1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Handheld Particle Counter
Manufacturer	: Hal Technology
Model No.	: Hal-HPC300
Serial No.	: 3020409
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 5 minutes
Equipment No.	: A-26-02

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)	1.103

****

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Laboratory Manager

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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 Temperatre	: 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

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Rms 816, 1516 & 1701, Technology Park,
18 On Lai Street, Shatin, N.T, Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

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

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

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
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 Temperatre	: 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

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TEST REPORT

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

Test Report No.:	C/N/160819B
Date of Issue:	2016-08-22
Date Received:	2016-08-19
Date Tested:	2016-08-19
Date Completed:	2016-08-22
Next Due Date:	2017-08-21

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.	: 21459
Microphone No.	: 43676
Equipment No.	: N-08-08

Test conditions:

Room Temperatre	: 24 degree Celsius
Relative Humidity	: 58%

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

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Laboratory Manager

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TEST REPORT

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

Test Report No.:	C/N/160819C
Date of Issue:	2016-08-22
Date Received:	2016-08-19
Date Tested:	2016-08-19
Date Completed:	2016-08-22
Next Due Date:	2017-08-21

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.	: 21460
Microphone No.	: 43679
Equipment No.	: N-08-09

Test conditions:

Room Temperatre	: 24 degree Celsius
Relative Humidity	: 58%

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

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Laboratory Manager

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TEST REPORT

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

Test Report No.:	C/N/161028/1
Date of Issue:	2016-10-31
Date Received:	2016-10-28
Date Tested:	2016-10-28
Date Completed:	2016-10-31
Next Due Date:	2017-10-30

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

Page: 1 of 1

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 10965
Equipment No.	: N-09-02

Test conditions:

Room Temperatre	: 21 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:
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Patrick Tse

PATRICK TSE
Laboratory Manager

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TEST REPORT

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

Test Report No.:	C/N/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
Page:	1 of 1

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

Item for calibration:

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

Test conditions:

Room Temperatre	: 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

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PATRICK TSE
Laboratory Manager

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
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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
Page:	1 of 1

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

Item for calibration:

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

Test conditions:

Room Temperatre	: 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

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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 Temperatre	: 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:
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Patrick Tse
PATRICK TSE
Laboratory Manager

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TEST REPORT

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

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

Test Report No.:	C/N/160819D
Date of Issue:	2016-08-22
Date Received:	2016-08-19
Date Tested:	2016-08-19
Date Completed:	2016-08-22
Next Due Date:	2017-08-21
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: Brüel & Kjær
Model No.	: 4231
Serial No.	: 2412367
Equipment No.	: N-02-03

Test conditions:

Room Temperatre	: 24 degree Celsius
Relative Humidity	: 58%

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

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PATRICK TSE
Laboratory Manager

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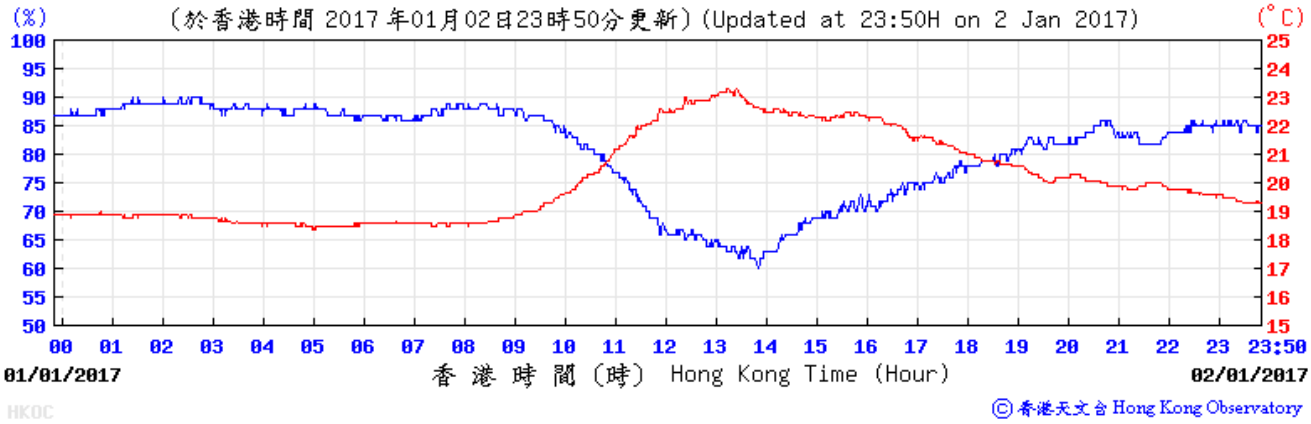
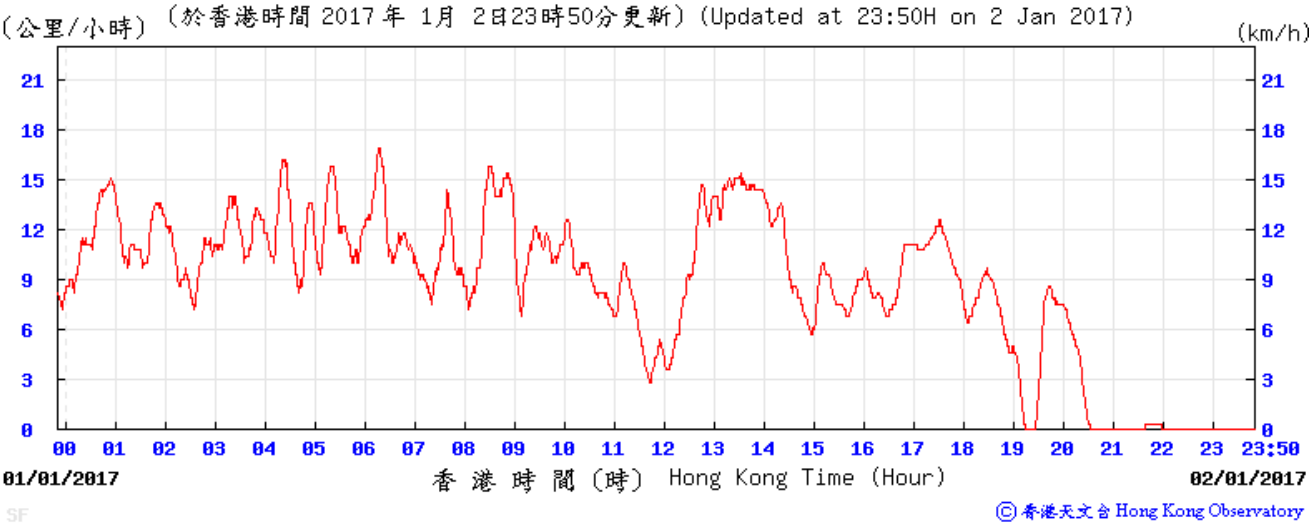
APPENDIX D
METEOROLOGICAL DATA ON MONITORING DATES

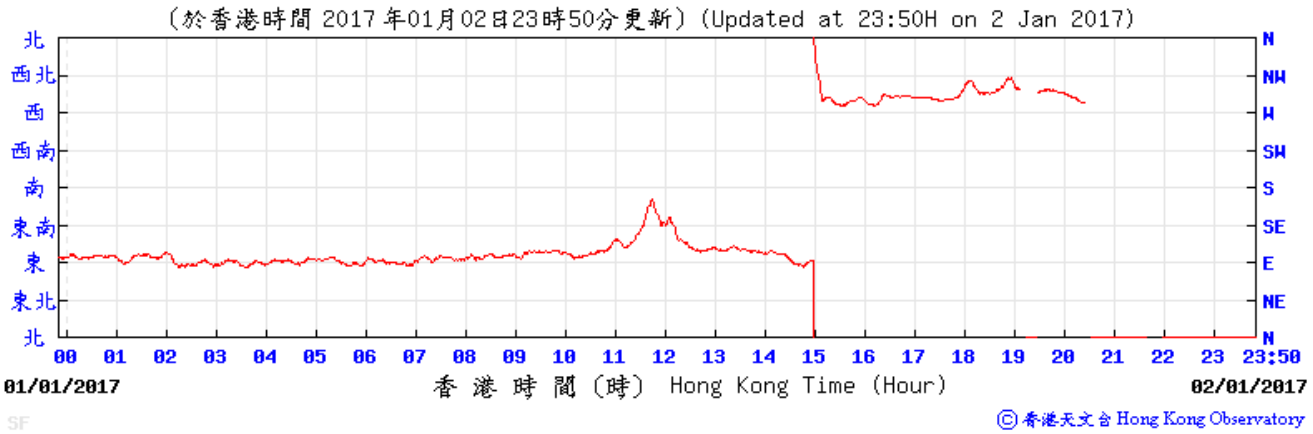
Appendix D
Meteorological Data Recorded from HKO Station (2 January 2017) (Source: www.hko.gov.hk)

Temperature/Humidity:



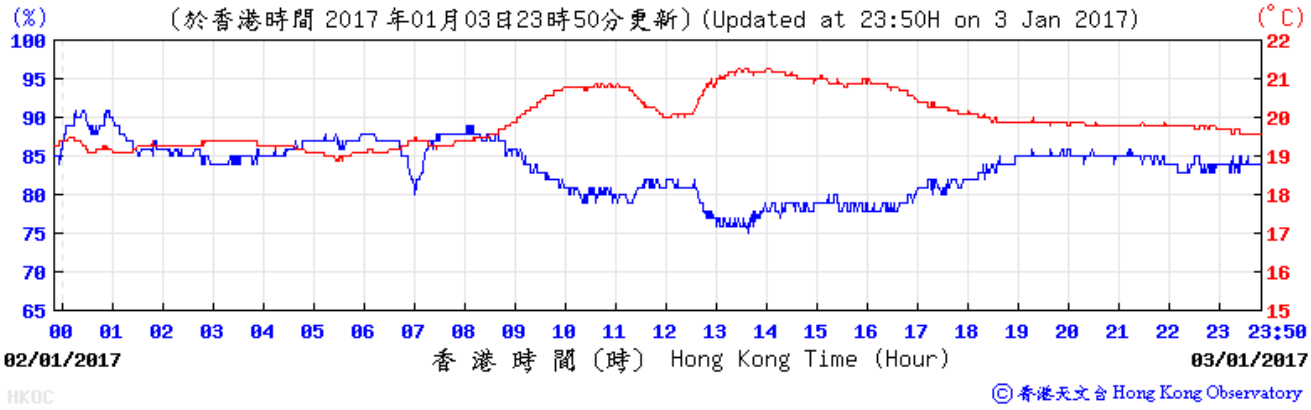
Wind Speed and Direction:



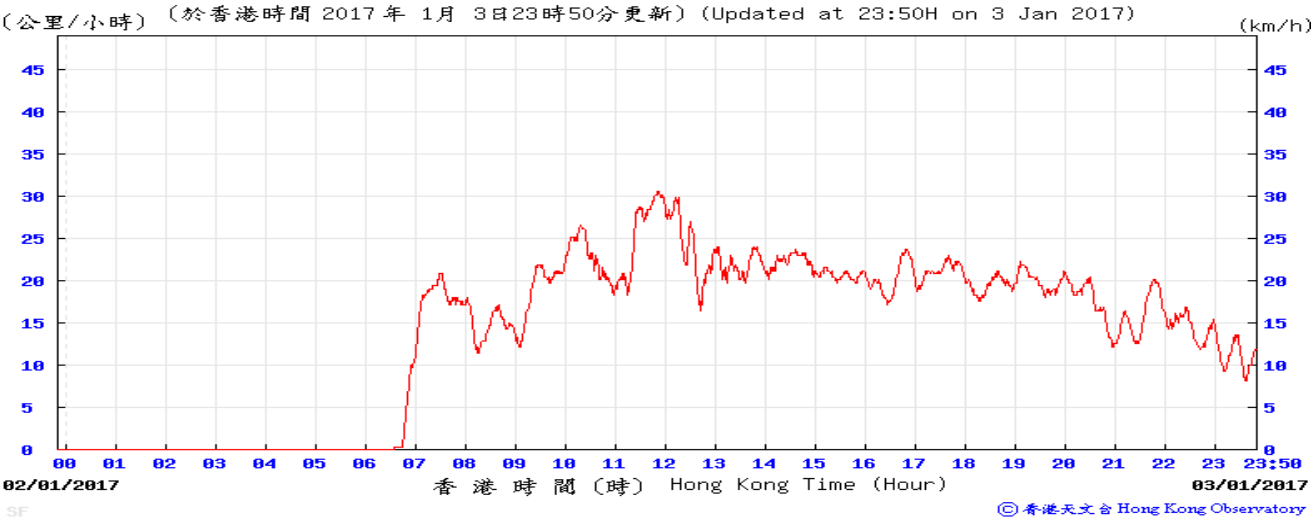


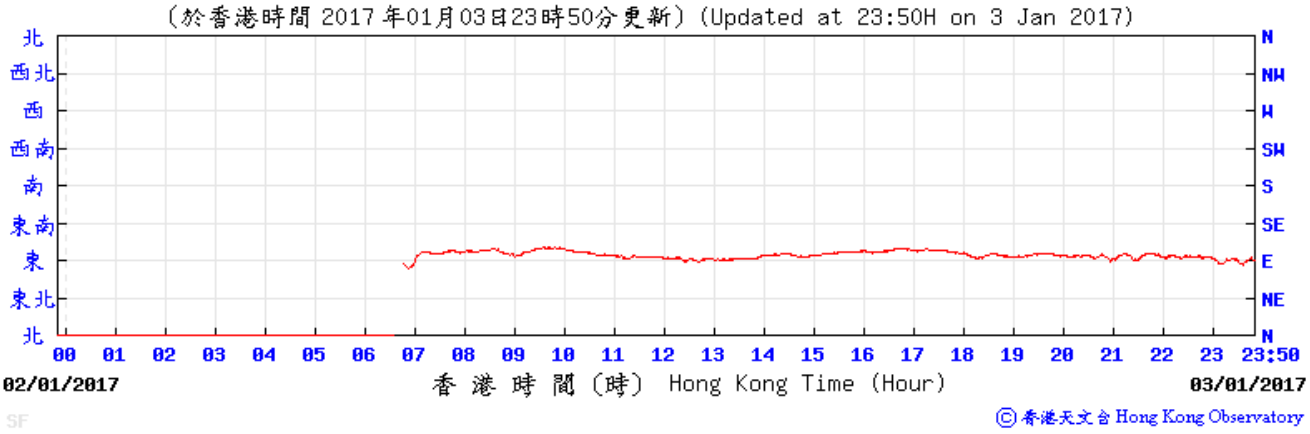
Meteorological Data Recorded from HKO Station (3 January 2017) (Source: www.hko.gov.hk)

Temperature/Humidity:



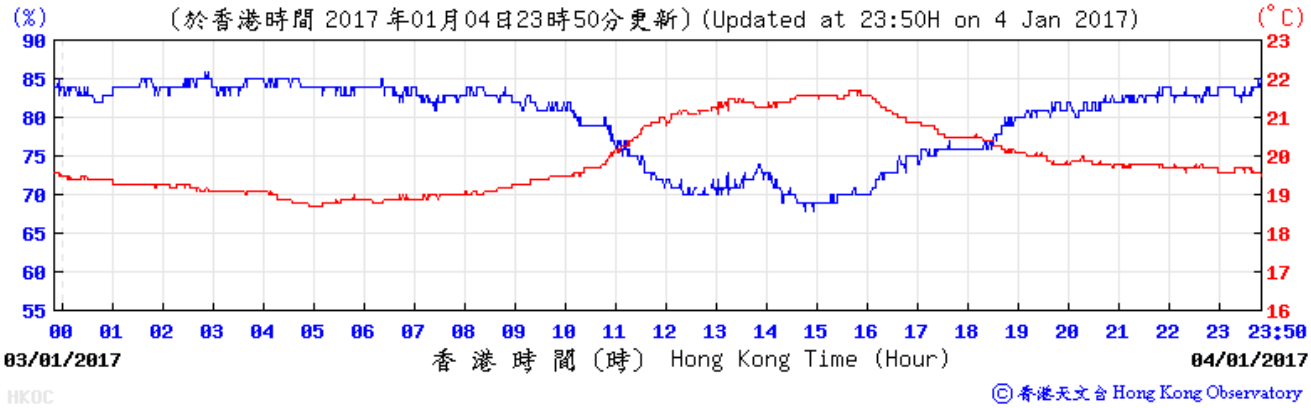
Wind Speed and Direction:



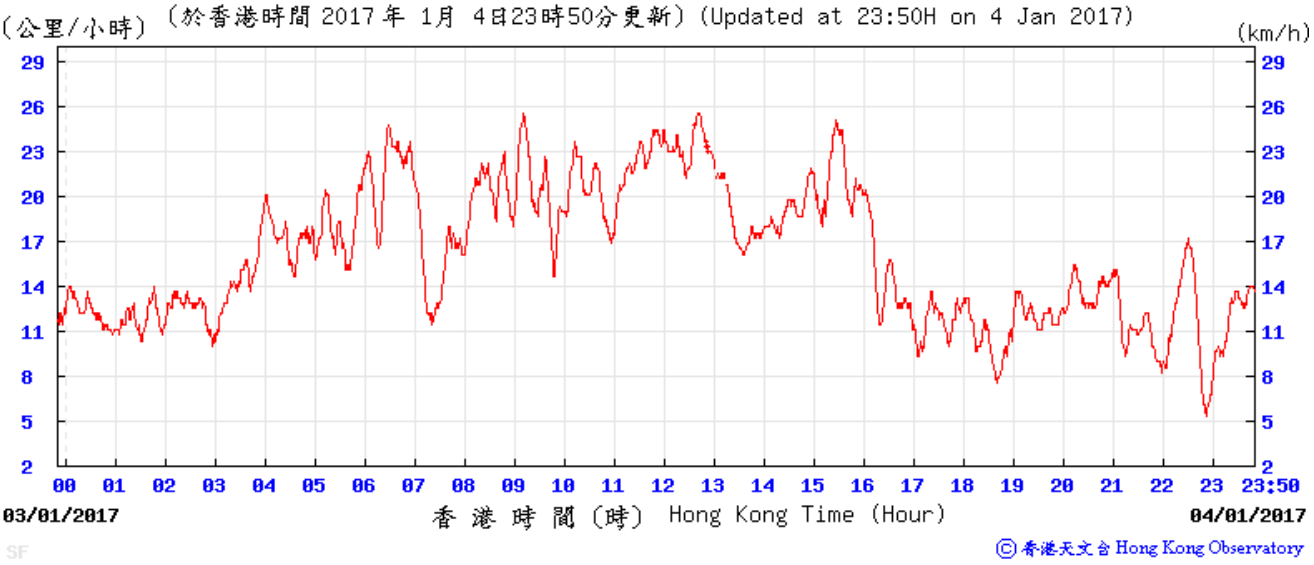


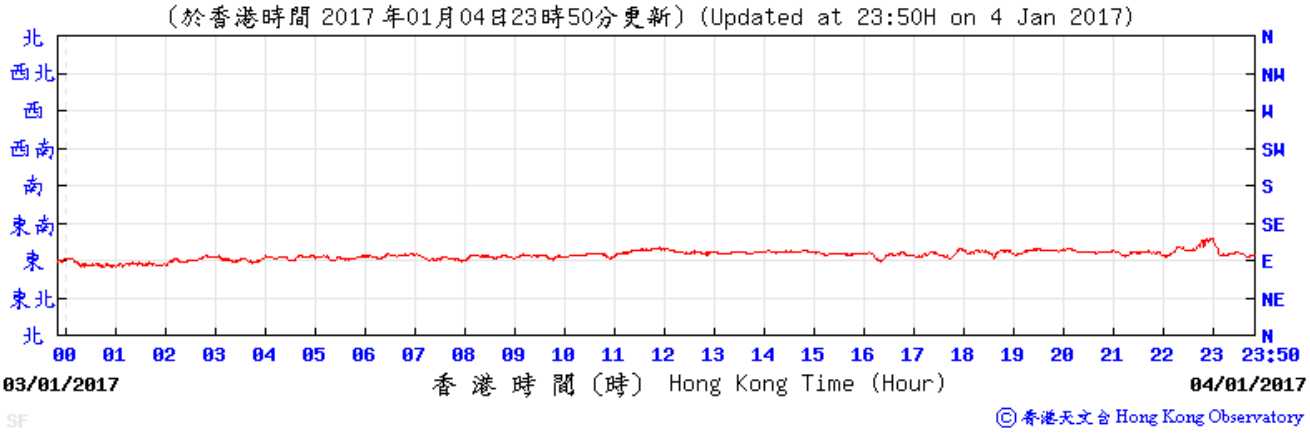
Meteorological Data Recorded from HKO Station (4 January 2017) (Source: www.hko.gov.hk)

Temperature/Humidity:



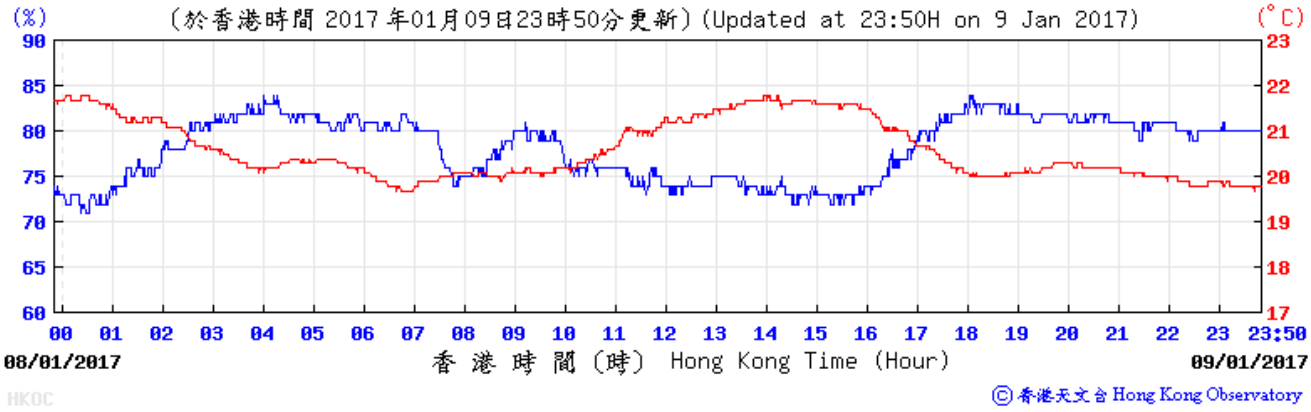
Wind Speed and Direction:



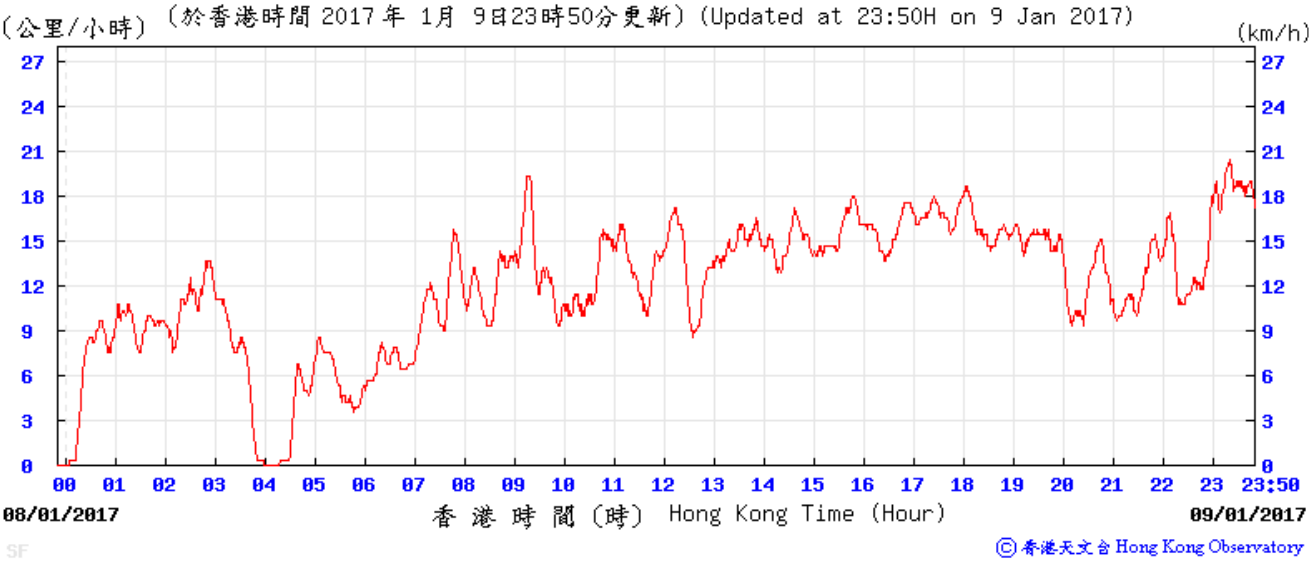


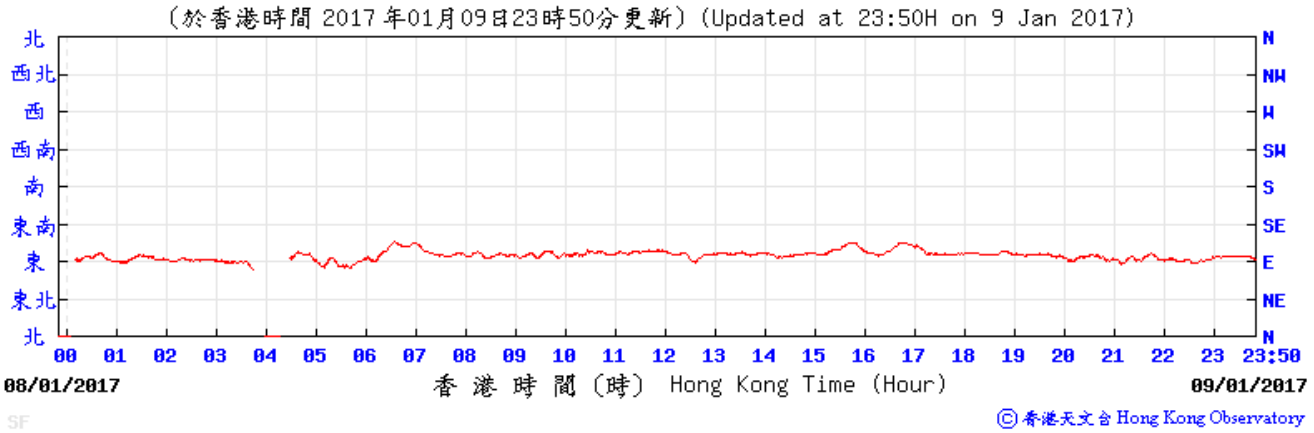
Meteorological Data Recorded from HKO Station (9 January 2017) (Source: www.hko.gov.hk)

Temperature/Humidity:



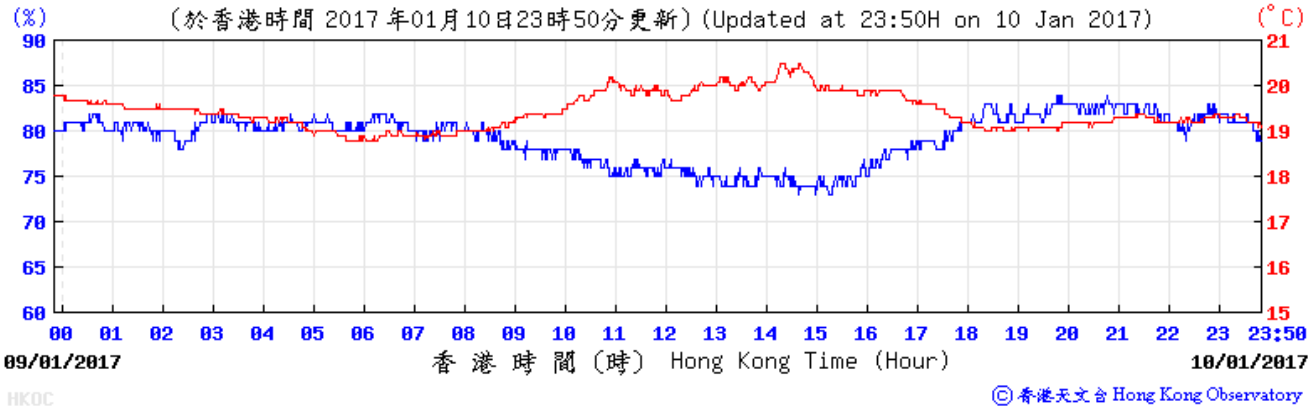
Wind Speed and Direction:



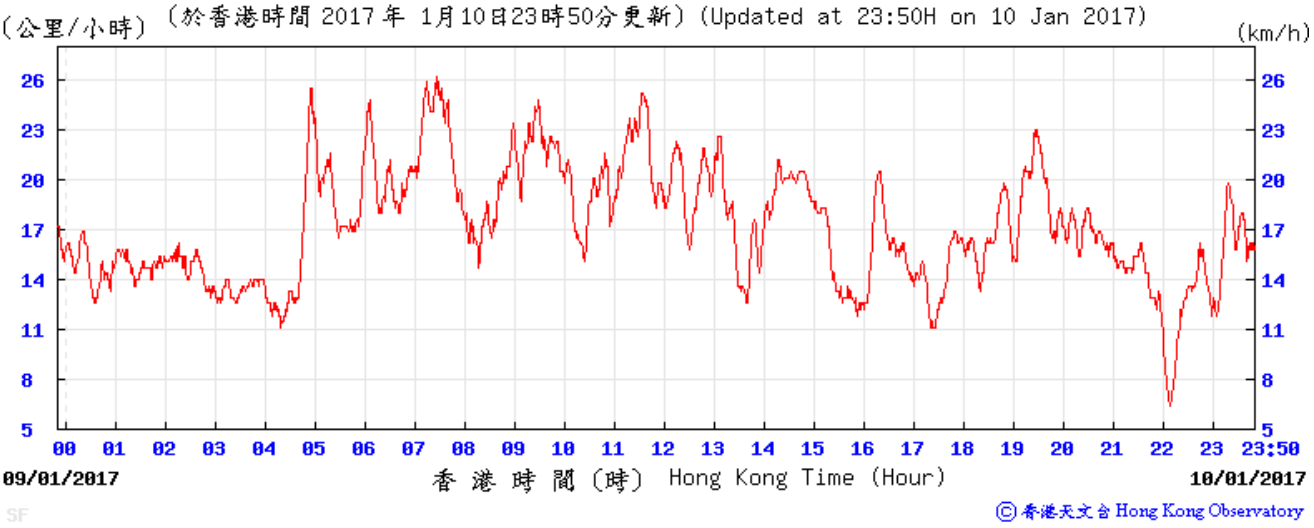


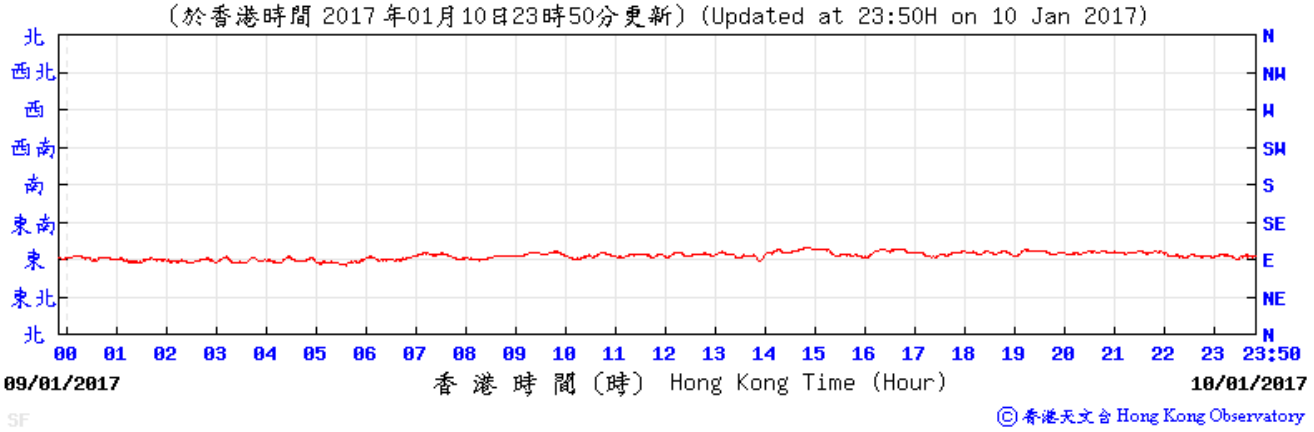
Meteorological Data Recorded from HKO Station (10 January 2017) (Source: www.hko.gov.hk)

Temperature/Humidity:



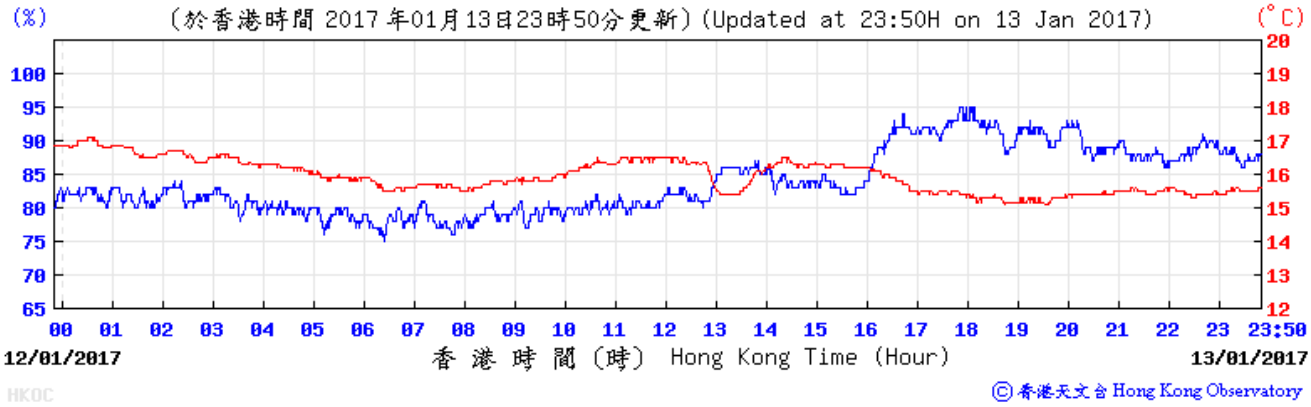
Wind Speed and Direction:



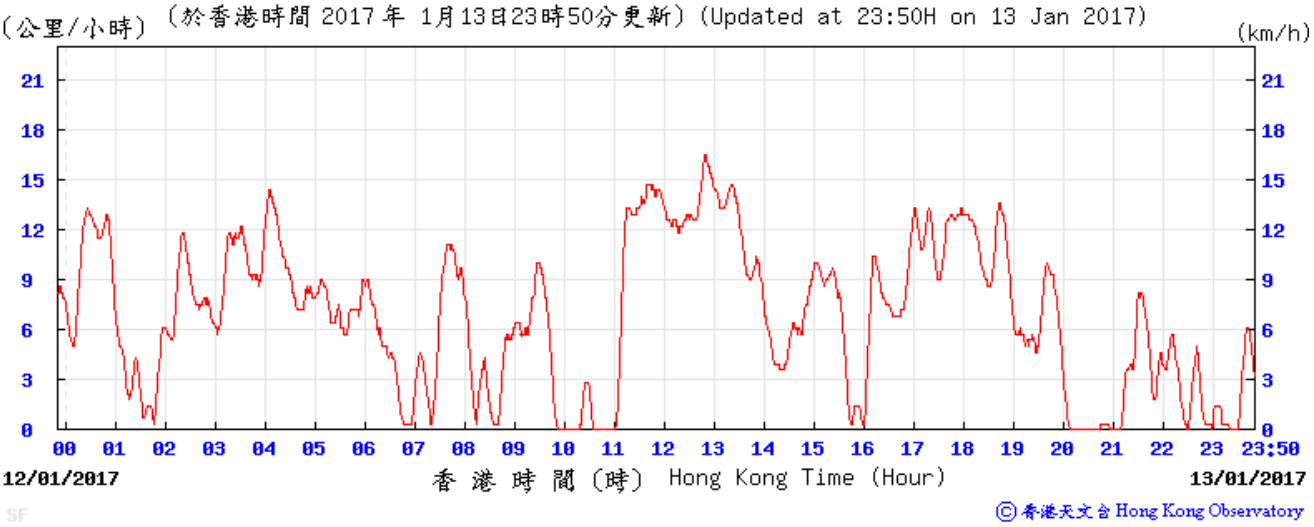


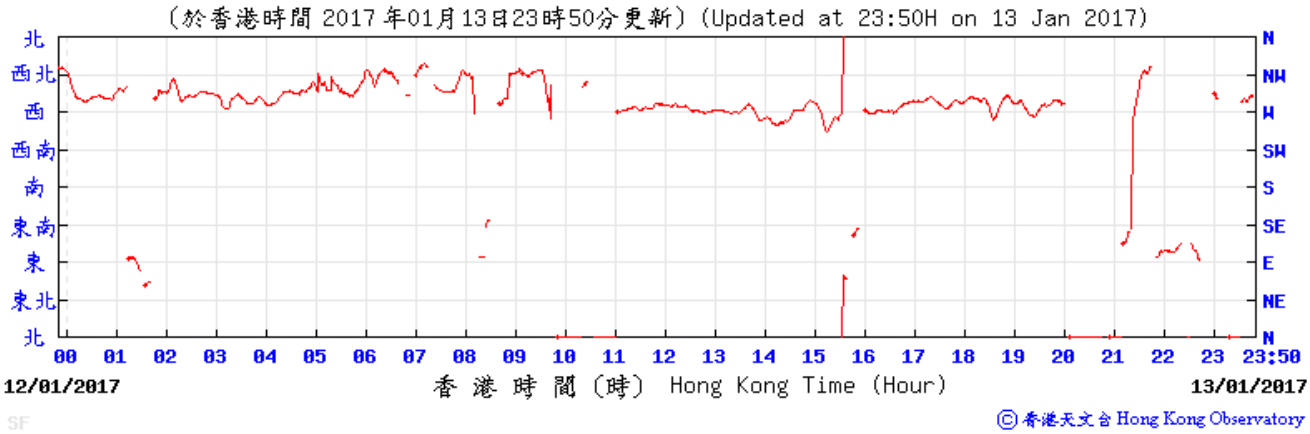
Meteorological Data Recorded from HKO Station (13 January 2017) (Source: www.hko.gov.hk)

Temperature/Humidity:



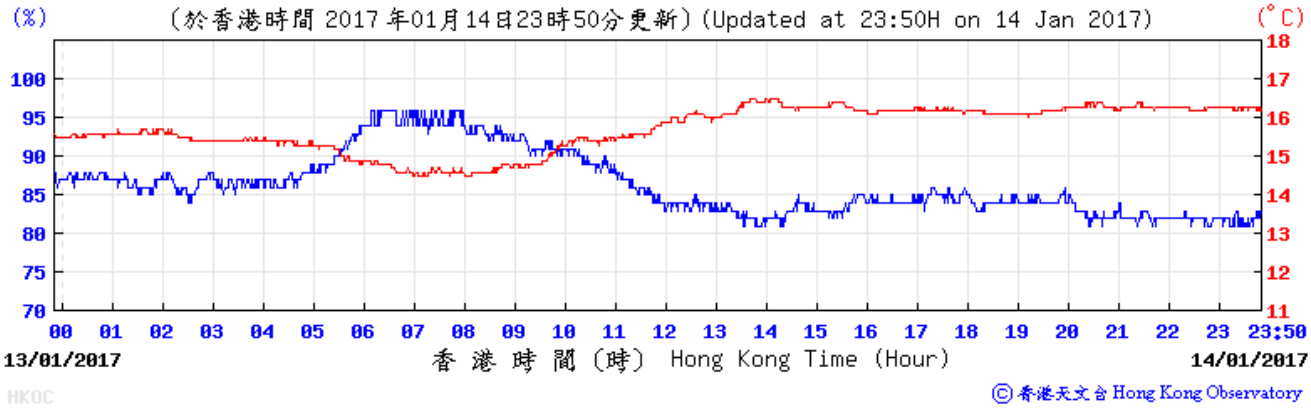
Wind Speed and Direction:



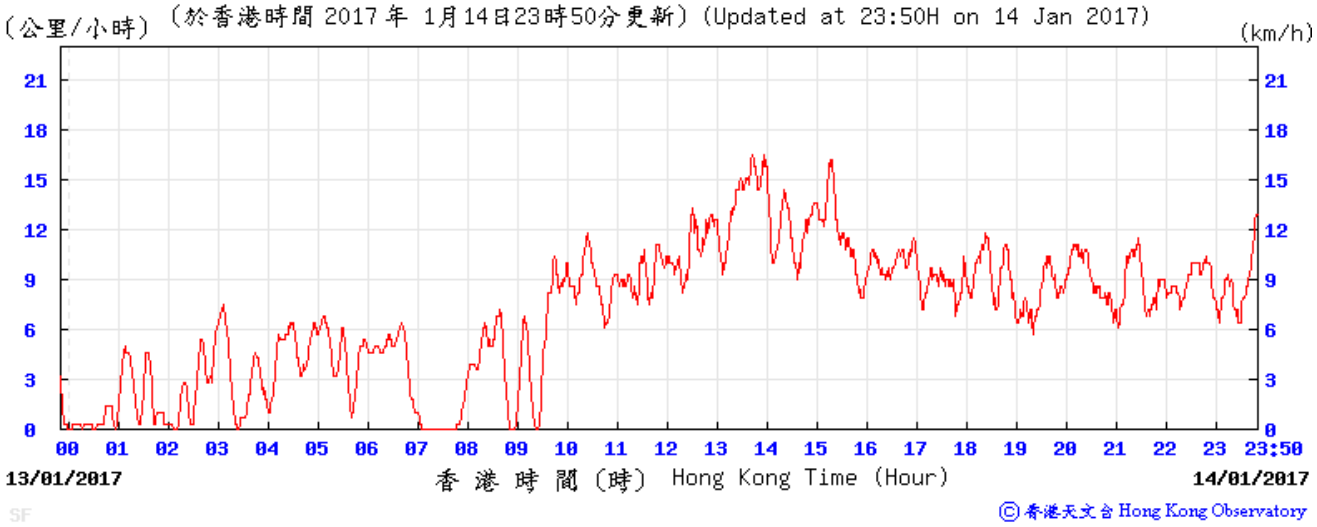


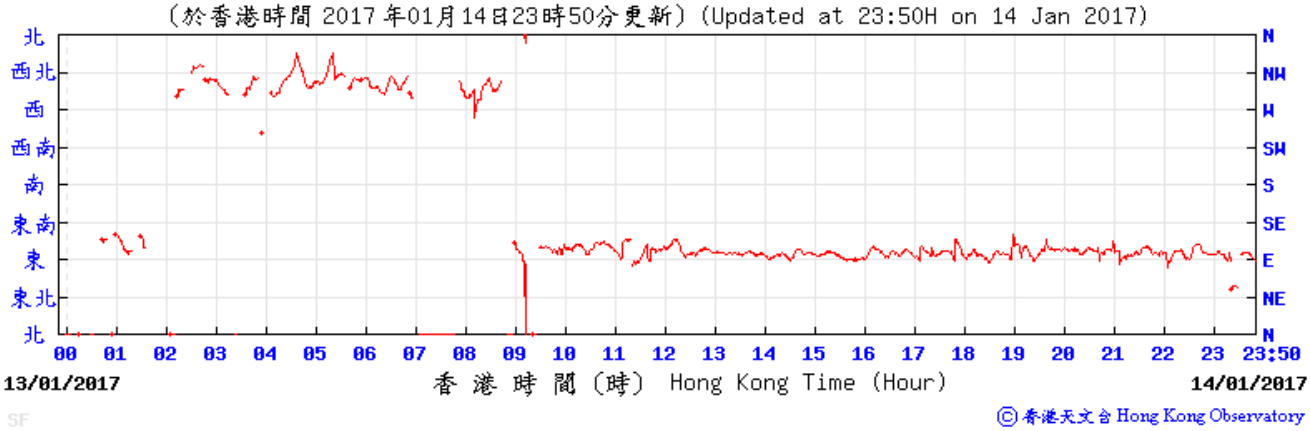
Meteorological Data Recorded from HKO Station (14 January 2017) (Source: www.hko.gov.hk)

Temperature/Humidity:



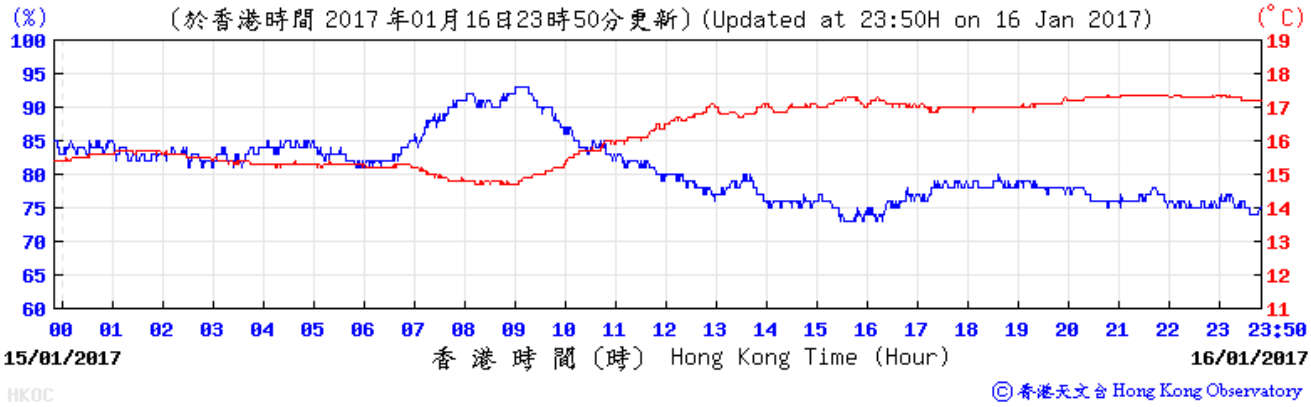
Wind Speed and Direction:



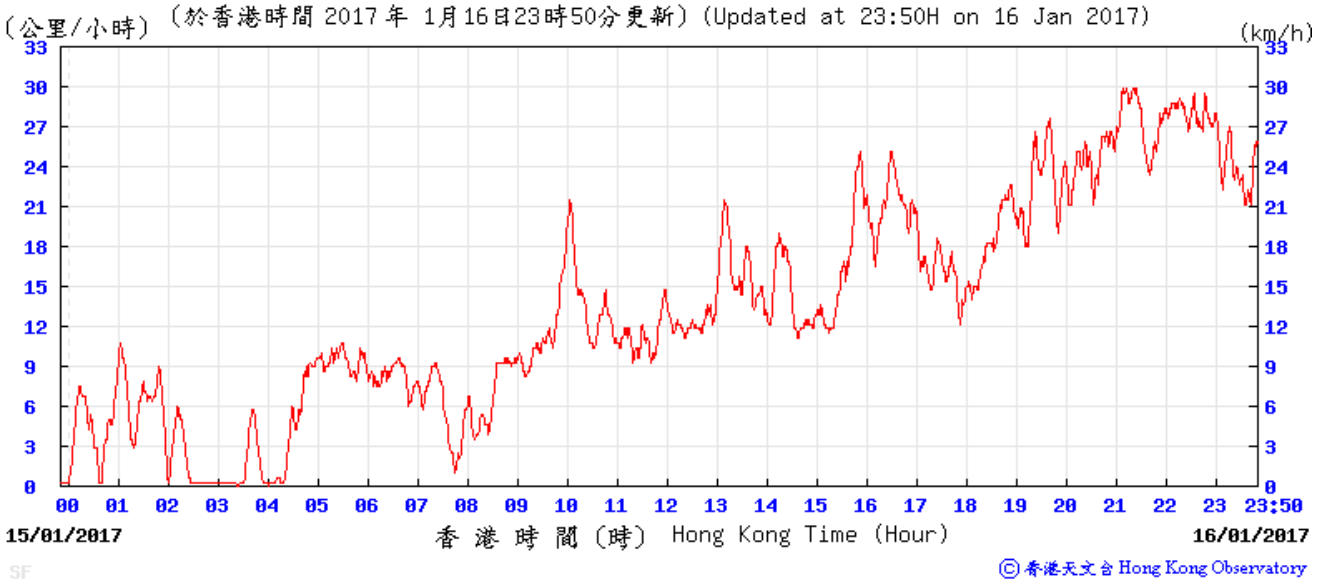


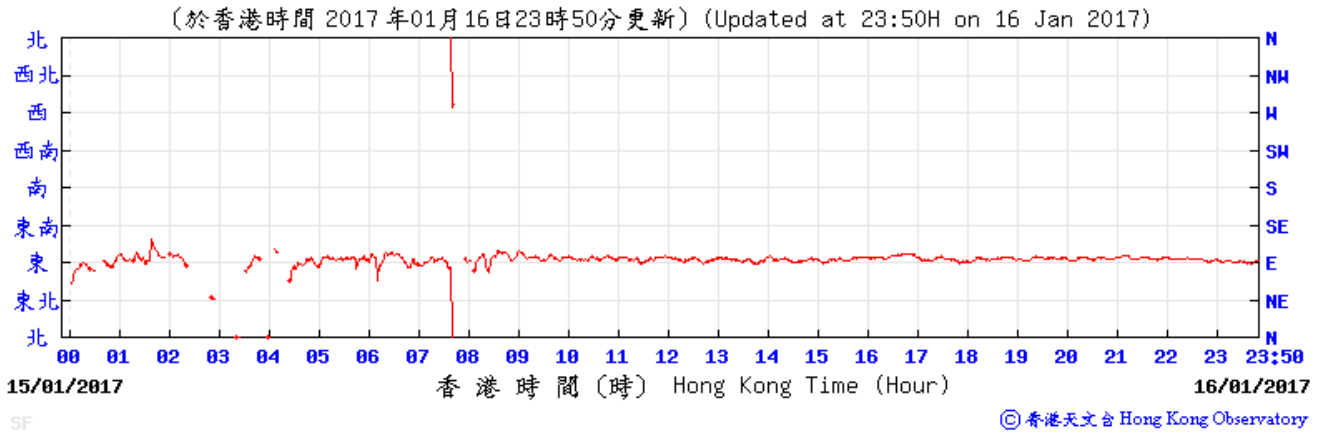
Meteorological Data Recorded from HKO Station (16 January 2017) (Source: www.hko.gov.hk)

Temperature/Humidity:



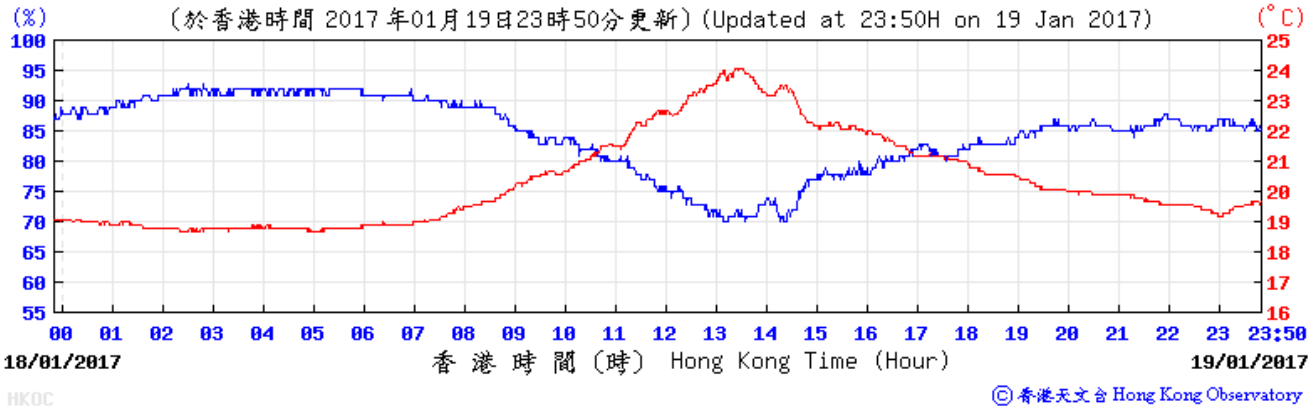
Wind Speed and Direction:



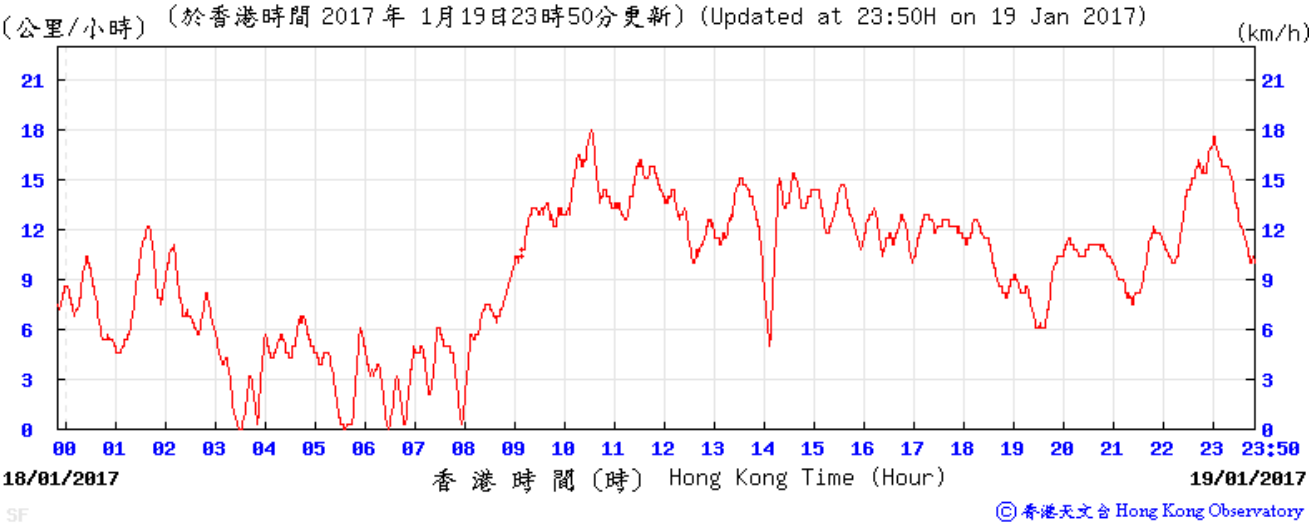


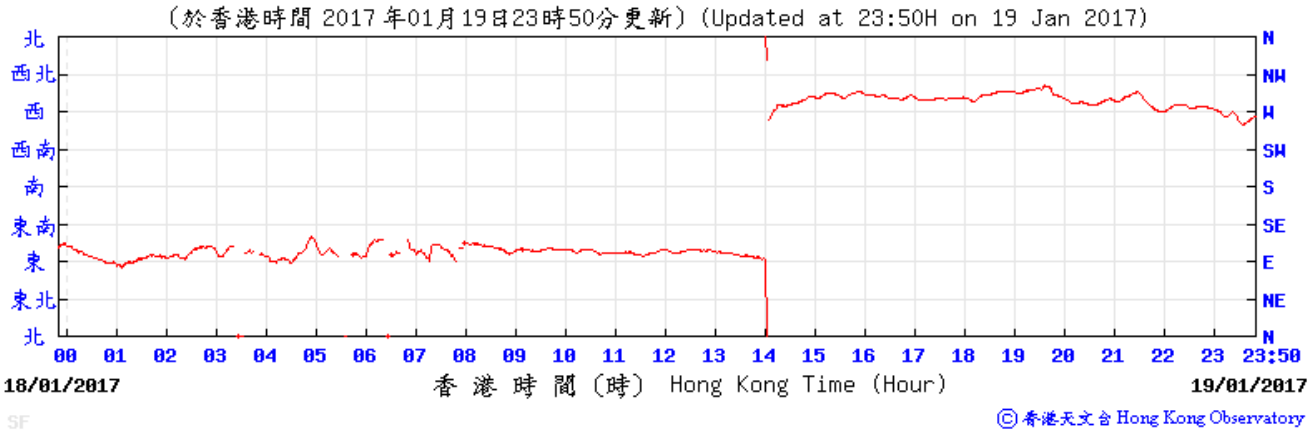
Meteorological Data Recorded from HKO Station (19 January 2017) (Source: www.hko.gov.hk)

Temperature/Humidity:



Wind Speed and Direction:





Meteorological Data Recorded from HKO Station (20 January 2017) (Source: www.hko.gov.hk)

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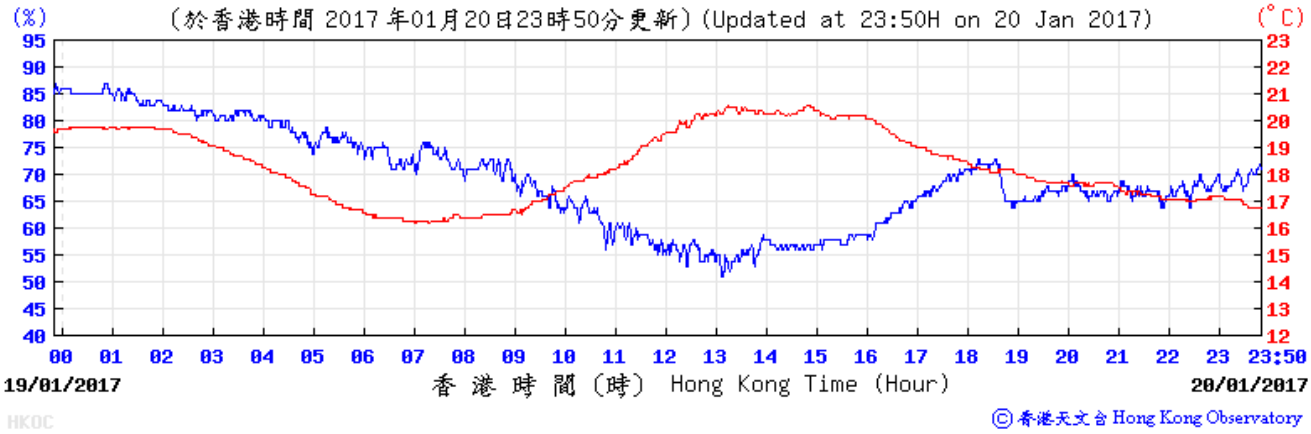

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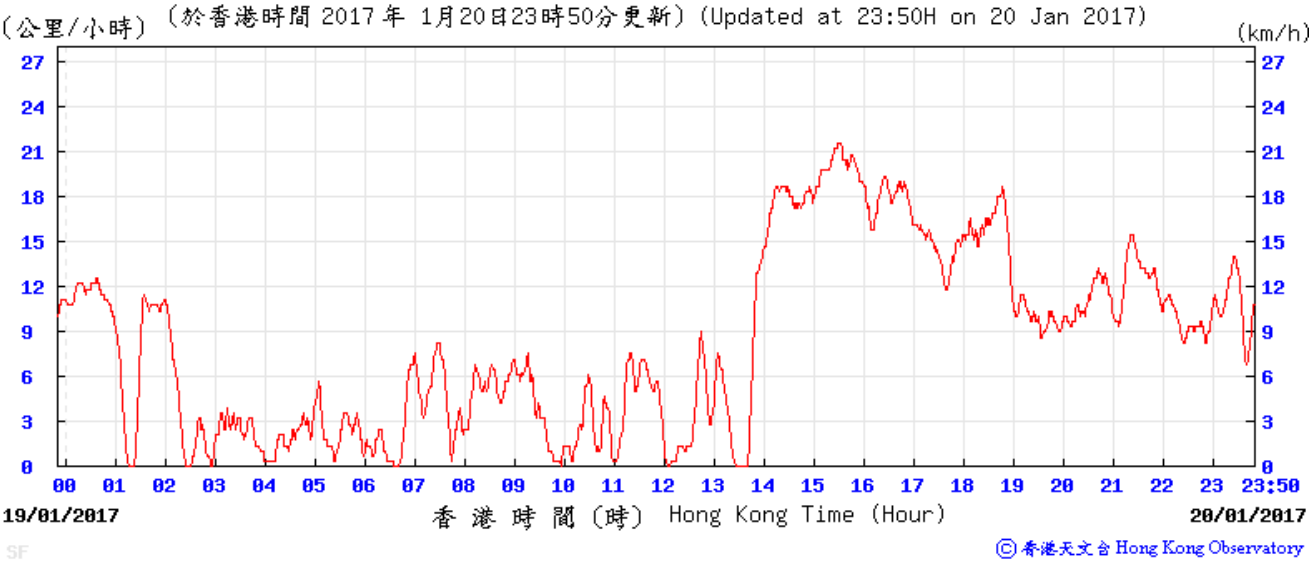

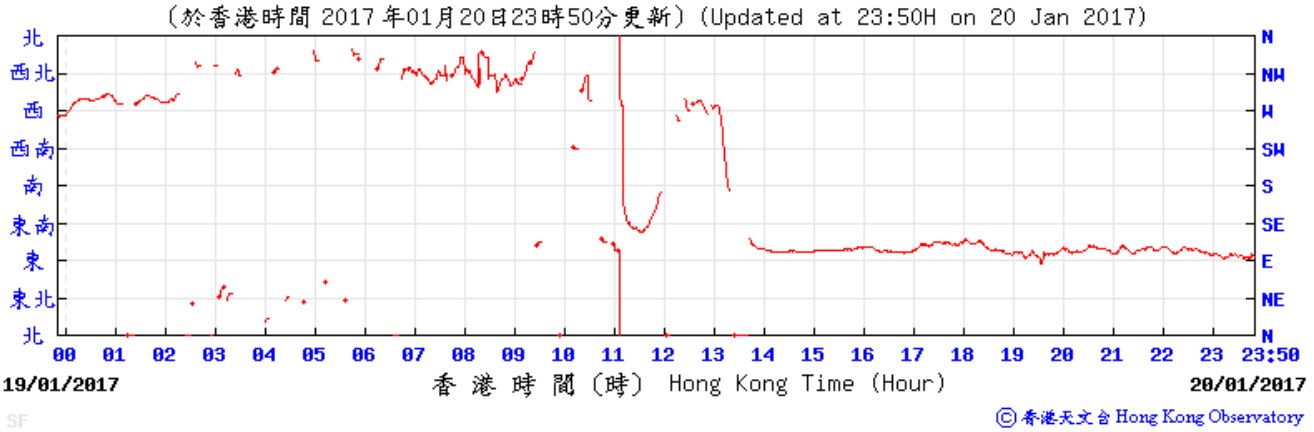

Meteorological Data Recorded from HKO Station (25 January 2017) (Source: www.hko.gov.hk)

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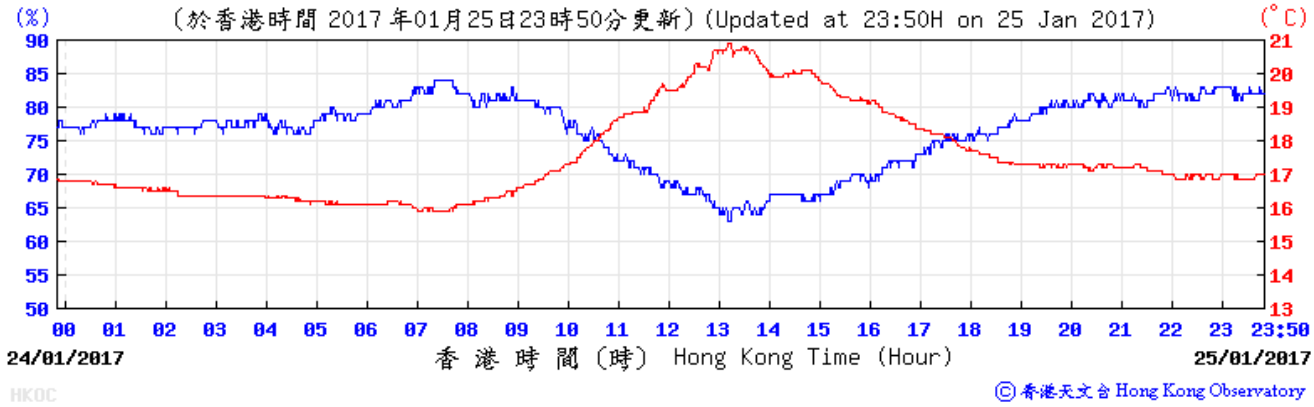

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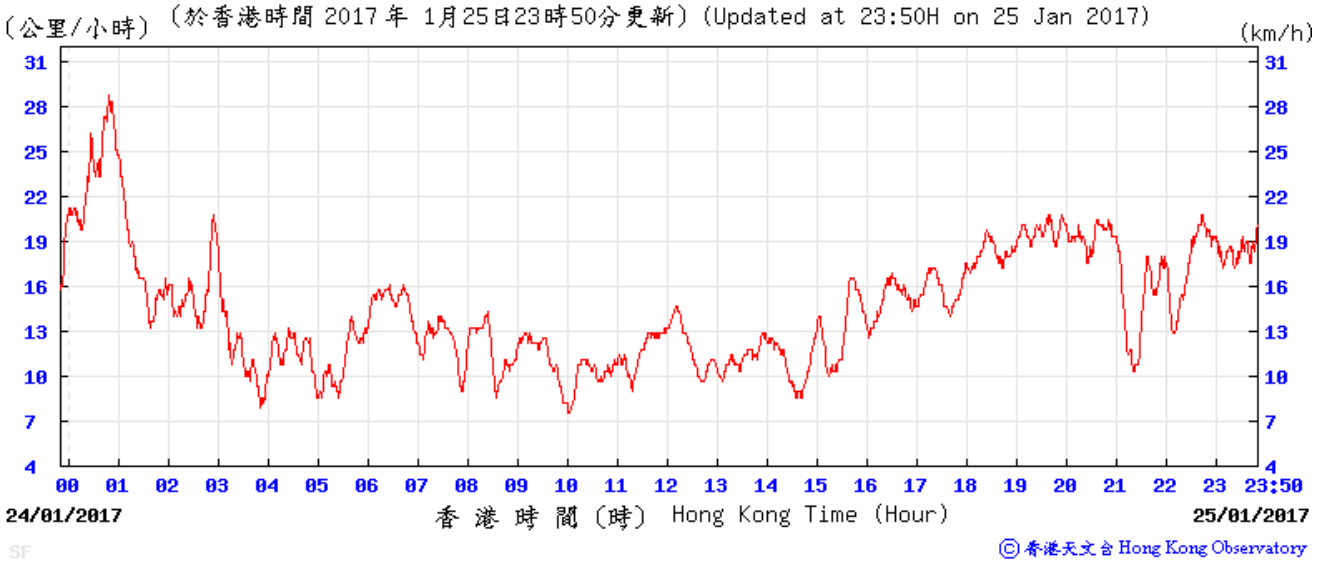

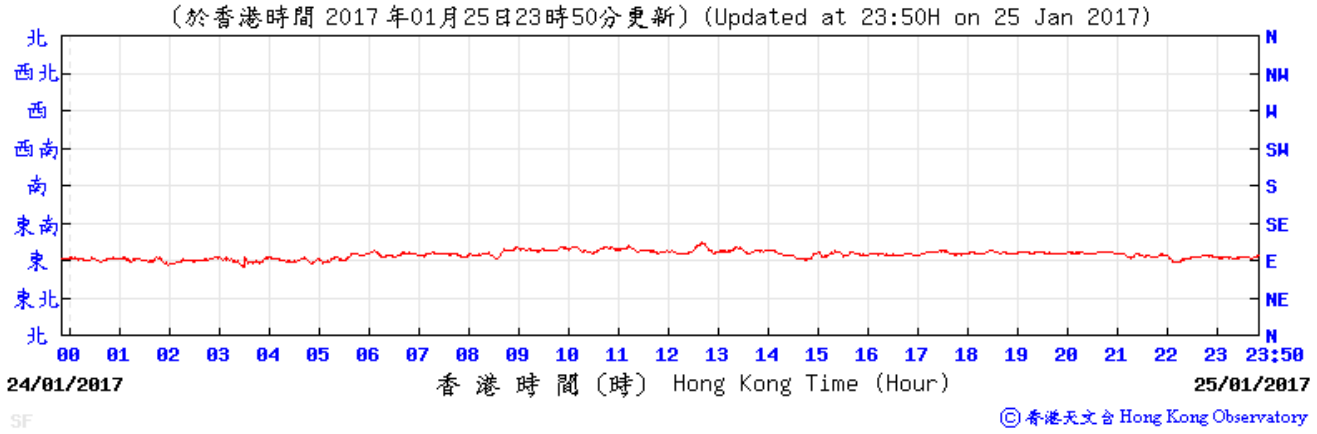

Meteorological Data Recorded from HKO Station (26 January 2017) (Source: www.hko.gov.hk)

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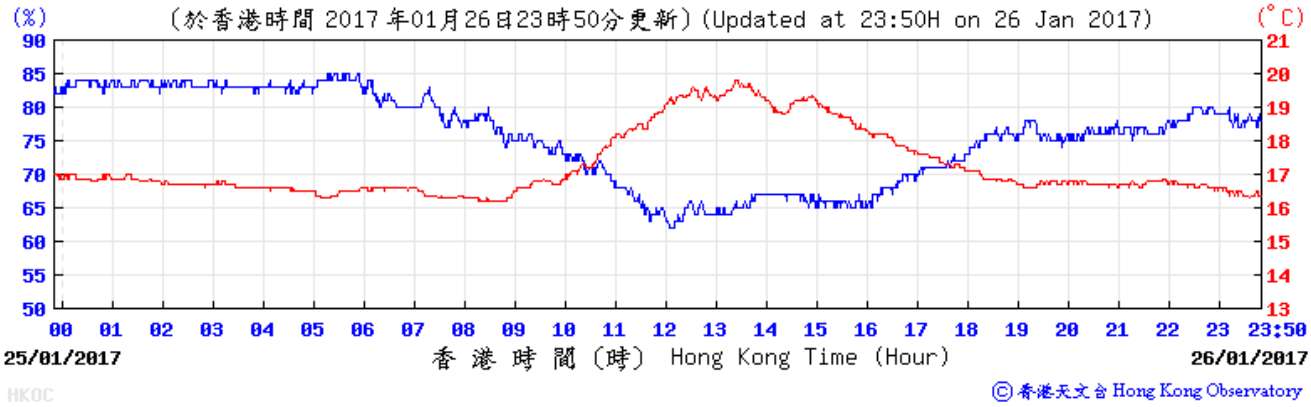
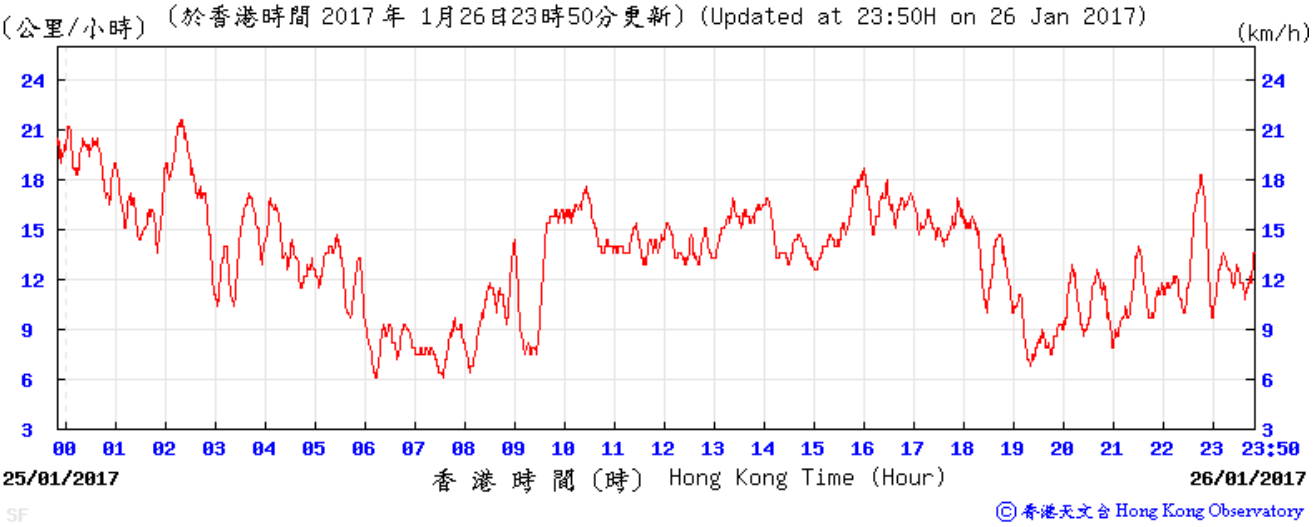
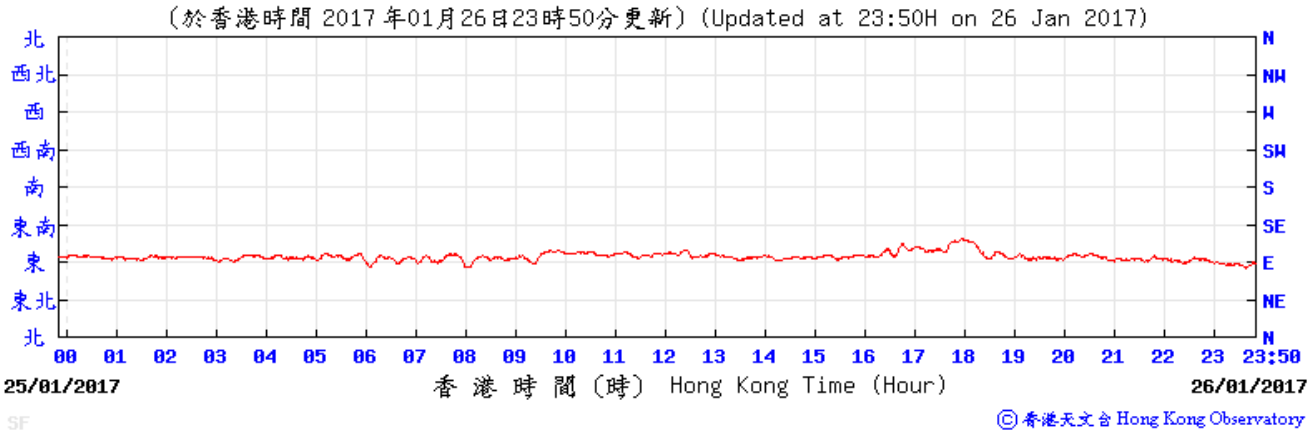


Wind Speed and Direction:





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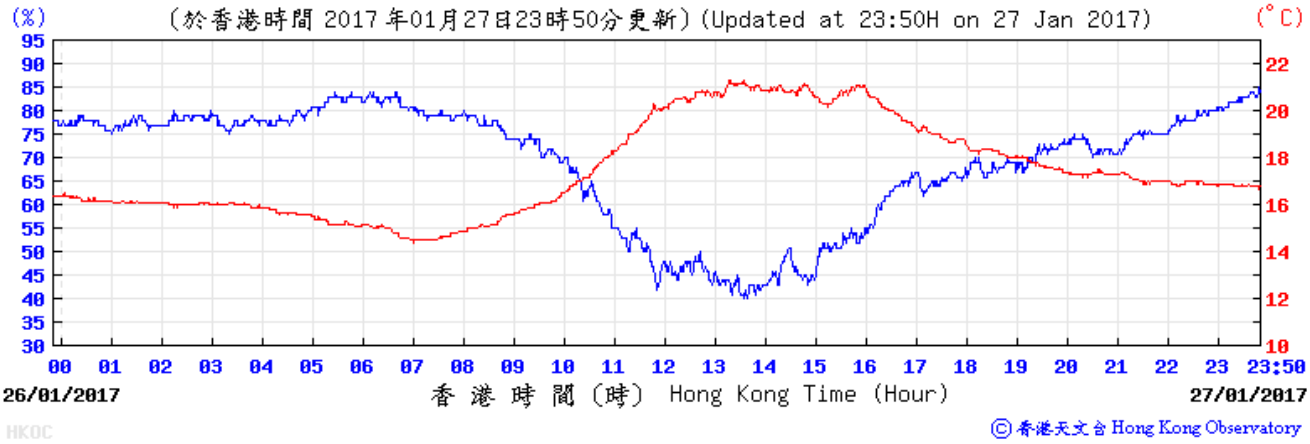
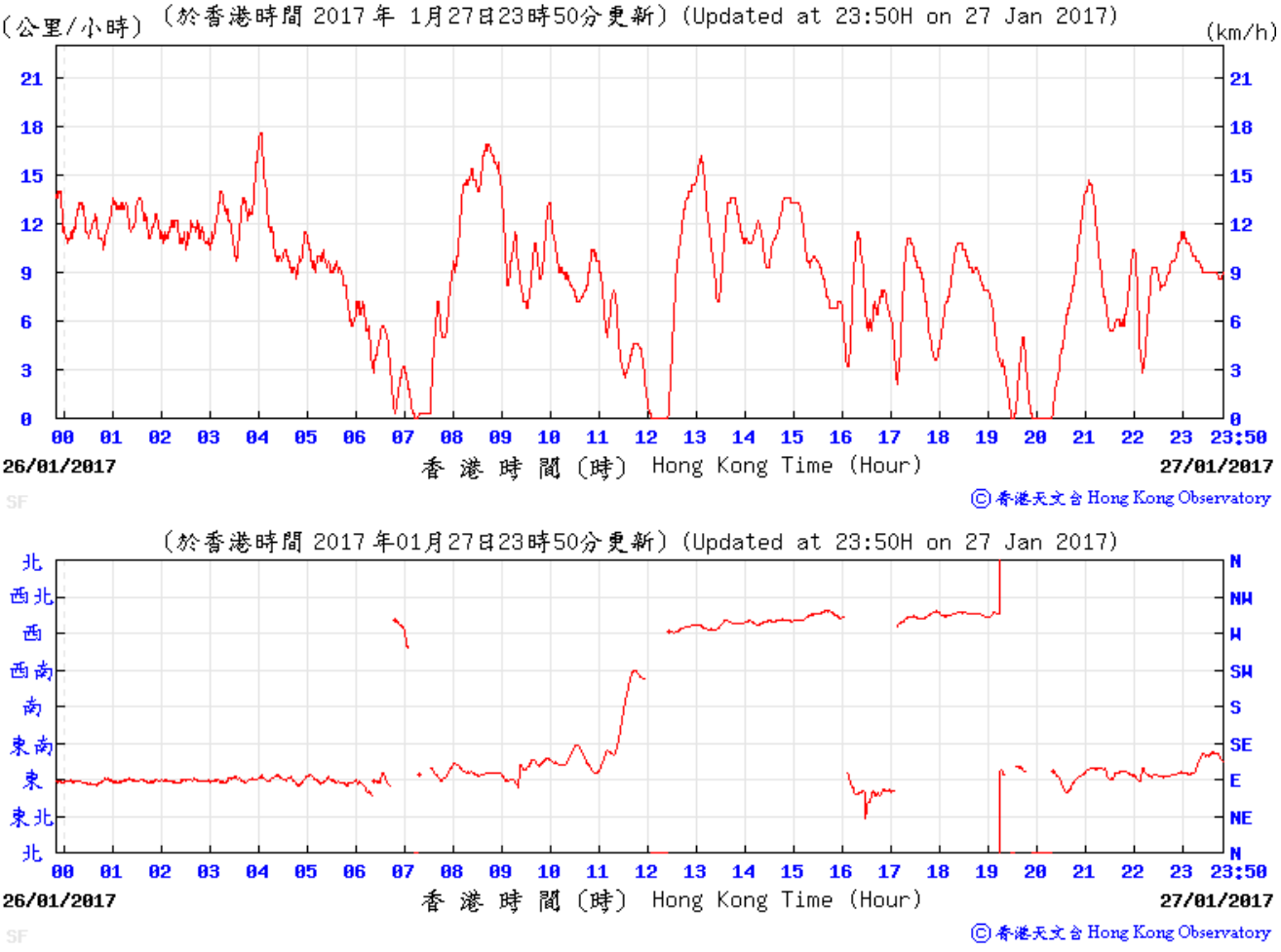


Wind Speed and Direction:



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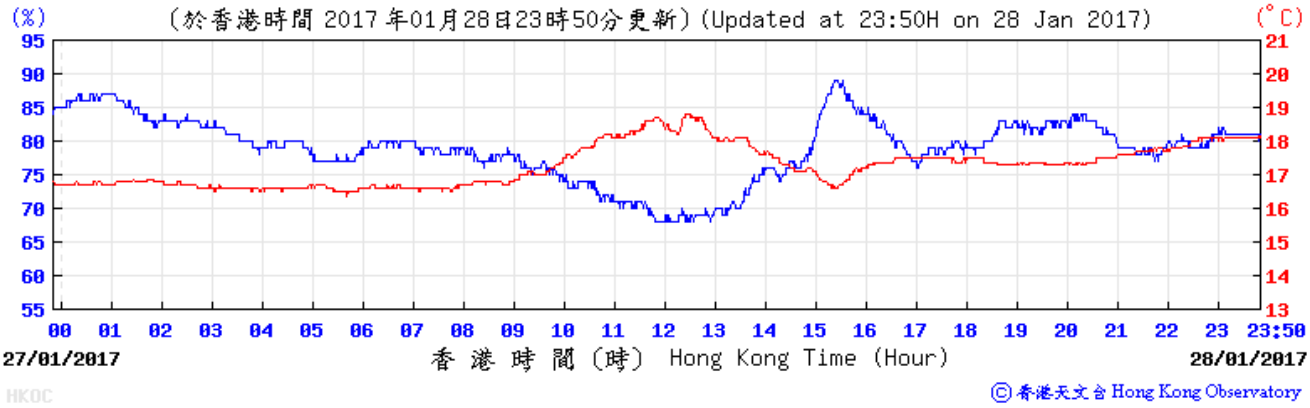
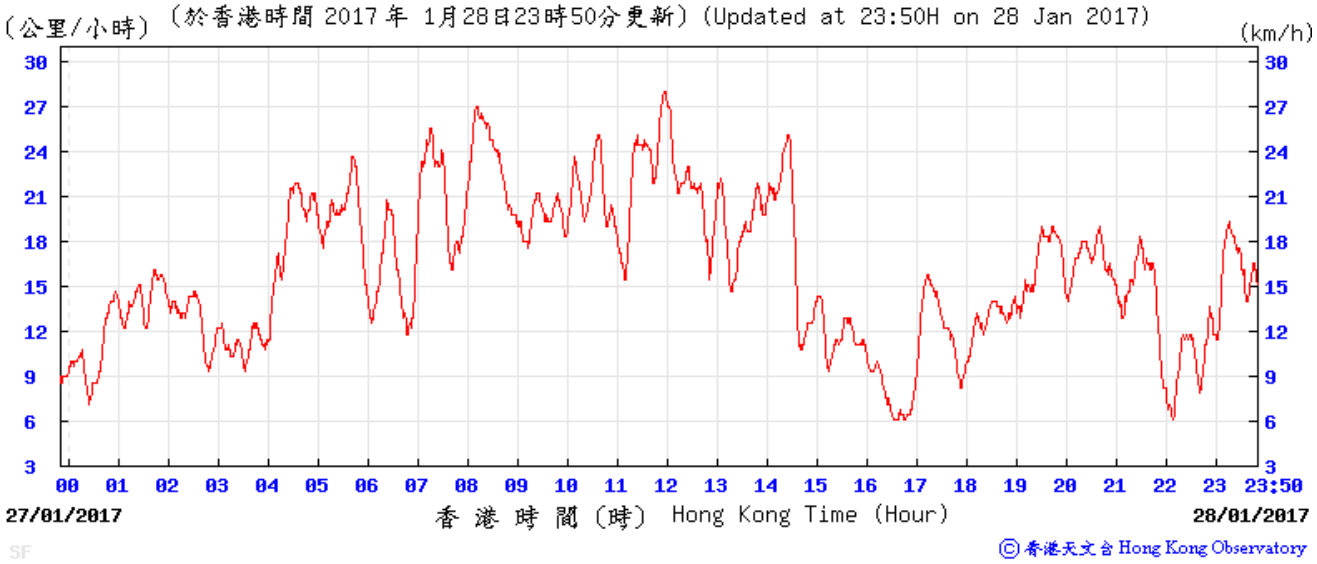
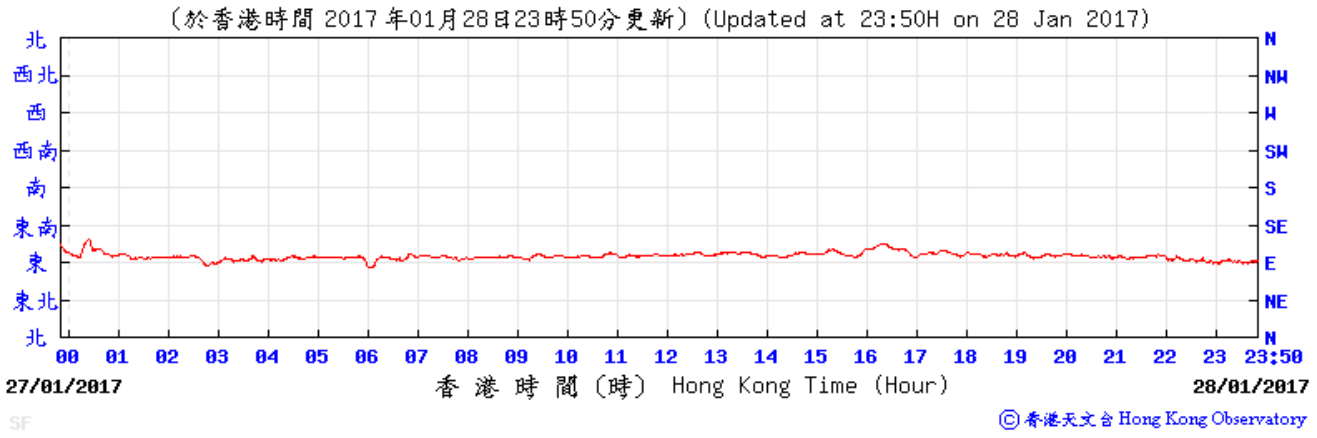


Wind Speed and Direction:





APPENDIX E
1-HOUR AND 24-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

Appendix E - 1-hour TSP Monitoring Results

Location AM1 - Chan's Creative School			
Date	Time	Weather	Particulate Concentration ($\mu g/m^3$)
4-Jan-17	13:00	Sunny	27.1
4-Jan-17	14:00	Sunny	25.0
4-Jan-17	15:00	Sunny	25.0
10-Jan-17	13:00	Fine	219.0
10-Jan-17	14:00	Fine	209.7
10-Jan-17	15:00	Fine	216.7
16-Jan-17	9:00	Cloudy	232.6
16-Jan-17	10:00	Cloudy	241.5
16-Jan-17	11:00	Cloudy	235.9
20-Jan-17	13:00	Sunny	153.2
20-Jan-17	14:00	Sunny	152.3
20-Jan-17	15:00	Sunny	153.1
26-Jan-17	13:15	Sunny	141.6
26-Jan-17	14:15	Sunny	144.8
26-Jan-17	15:15	Sunny	142.2
		Average	154.6
		Maximum	241.5
		Minimum	25.0

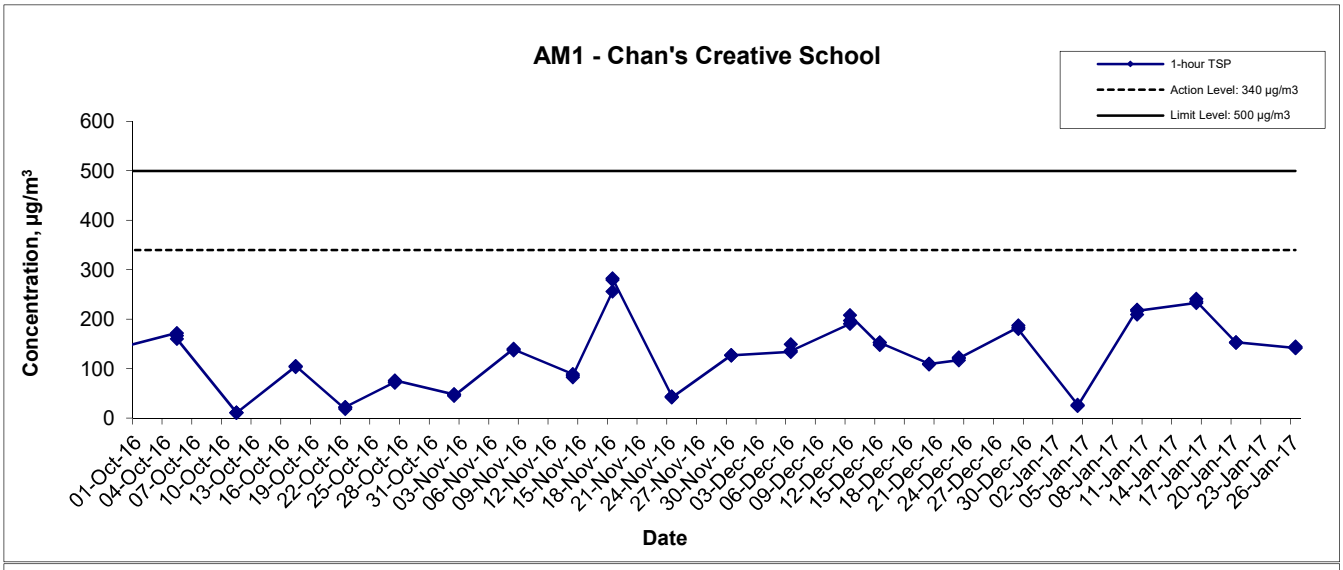
Location AM2 - Hong Kong & Islands Regional Office, WSD			
Date	Time	Weather	Particulate Concentration ($\mu g/m^3$)
4-Jan-17	13:10	Sunny	25.4
4-Jan-17	14:10	Sunny	26.5
4-Jan-17	15:10	Sunny	25.4
10-Jan-17	9:00	Fine	225.9
10-Jan-17	10:00	Fine	217.9
10-Jan-17	11:00	Fine	220.4
16-Jan-17	9:00	Cloudy	215.2
16-Jan-17	10:00	Cloudy	217.1
16-Jan-17	11:00	Cloudy	211.4
20-Jan-17	9:00	Sunny	143.6
20-Jan-17	10:00	Sunny	143.1
20-Jan-17	11:00	Sunny	141.0
26-Jan-17	13:30	Sunny	165.0
26-Jan-17	14:30	Sunny	166.3
26-Jan-17	15:30	Sunny	169.5
		Average	154.2
		Maximum	225.9
		Minimum	25.4

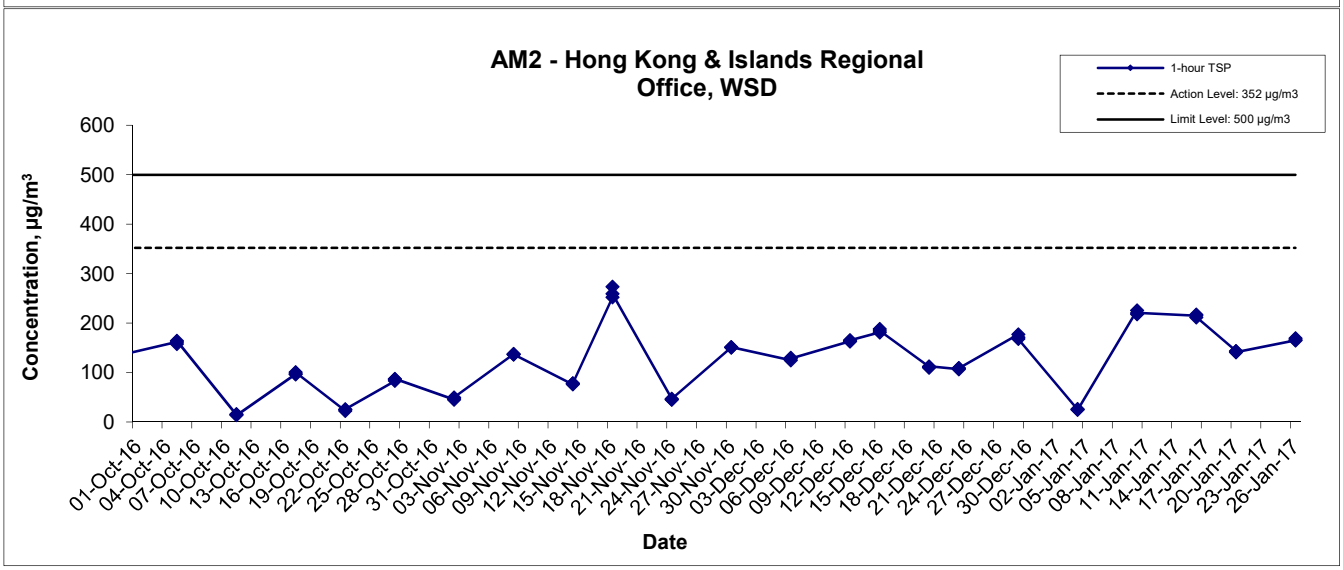
Appendix E - 1-hour TSP Monitoring Results

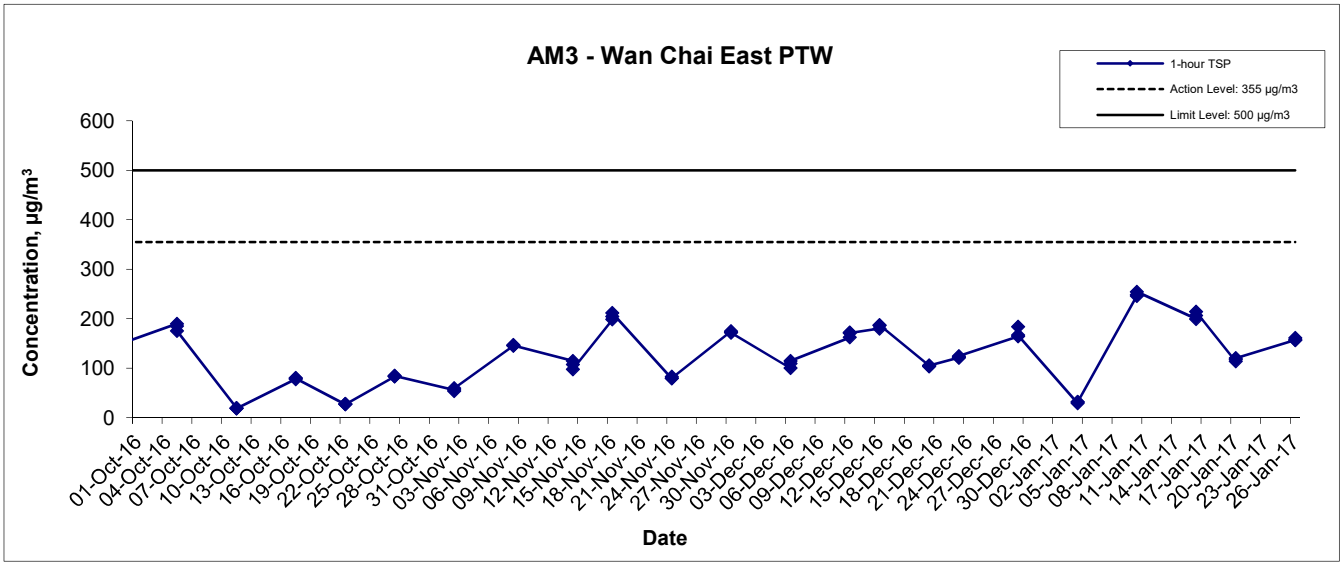
Location AM3 - Wan Chai East PTW			
Date	Time	Weather	Particulate Concentration (μg/m^3)
4-Jan-17	9:00	Sunny	29.2
4-Jan-17	10:00	Sunny	31.3
4-Jan-17	11:00	Sunny	31.3
10-Jan-17	13:00	Fine	246.1
10-Jan-17	14:00	Fine	248.1
10-Jan-17	15:00	Fine	254.2
16-Jan-17	13:00	Cloudy	199.2
16-Jan-17	14:00	Cloudy	206.5
16-Jan-17	15:00	Cloudy	214.0
20-Jan-17	13:05	Fine	113.9
20-Jan-17	14:05	Fine	117.4
20-Jan-17	15:05	Fine	120.1
26-Jan-17	9:00	Sunny	156.5
26-Jan-17	10:00	Sunny	160.7
26-Jan-17	11:00	Sunny	157.0
		Average	152.4
		Maximum	254.2
		Minimum	29.2

Location AM4_2 - A Location next to Sheung Wan Fire Station			
Date	Time	Weather	Particulate Concentration (μg/m^3)
4-Jan-17	8:00	Sunny	34.2
4-Jan-17	9:00	Sunny	34.2
4-Jan-17	10:00	Sunny	32.0
10-Jan-17	9:00	Fine	261.2
10-Jan-17	10:00	Fine	255.6
10-Jan-17	11:00	Fine	247.9
16-Jan-17	13:00	Cloudy	261.4
16-Jan-17	14:00	Cloudy	255.8
16-Jan-17	15:00	Cloudy	249.9
20-Jan-17	8:45	Sunny	108.8
20-Jan-17	9:45	Sunny	115.3
20-Jan-17	10:45	Sunny	119.3
26-Jan-17	9:00	Sunny	182.0
26-Jan-17	10:00	Sunny	186.0
26-Jan-17	11:00	Sunny	181.8
		Average	168.4
		Maximum	261.4
		Minimum	32.0

1-hr TSP Concentration Levels

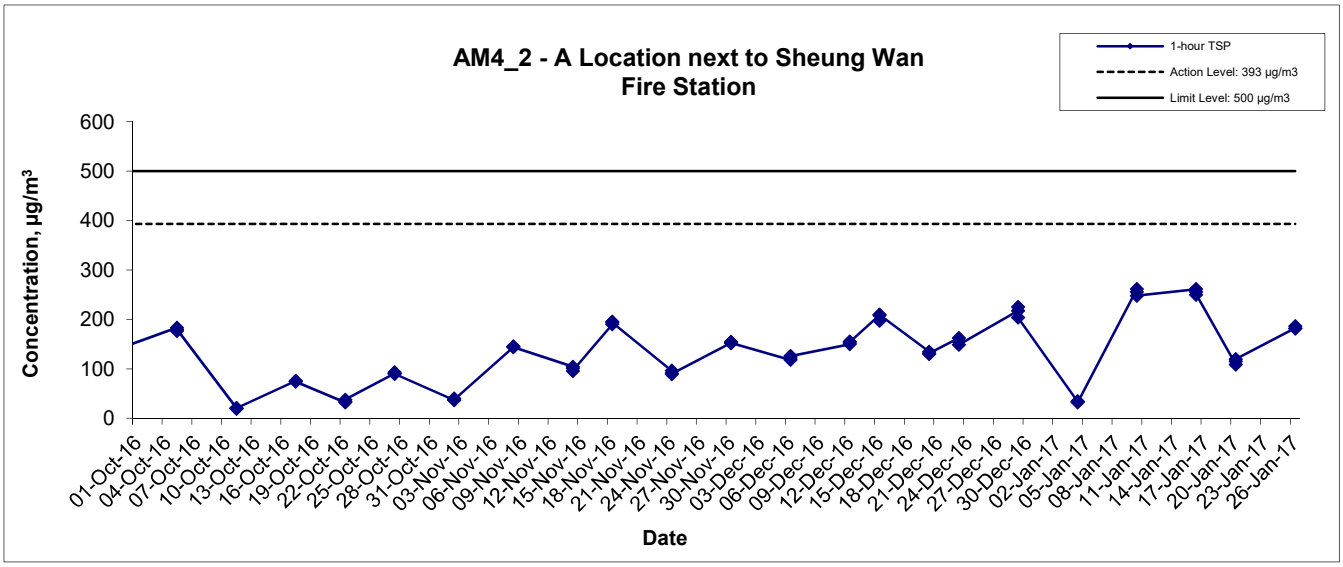






Title: Contract No. DC/2009/23 HATS 2A – Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central Graphical Presentation of 1-hour TSP Monitoring Results	Scale: N.T.S	Project No.: MA11003	CINOTECH
	Date: Jan 17	Appendix: E	

1-hr TSP Concentration Levels



Title: Contract No. DC/2009/23 HATS 2A – Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central Graphical Presentation of 1-hour TSP Monitoring Results	Scale: N.T.S Date: Jan 17	Project No.: MA11003 Appendix: E	CINOTECH

Appendix E - 24-hour TSP Monitoring Results

Location AM1 - Chan's Creative School

Start Date	Start Time	Weather Condition	Air Temp. (K)	Filter Weight (g)		Particulate Weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. ($\mu g/m^3$)	Filter ID no.
				Initial	Final		Initial	Final		Initial	Final				
3-Jan-17	9:00	Sunny	294.3	3.5770	3.6782	0.1012	1322.3	1346.3	24.0	1.22	1.22	1.22	1758.3	57.6	161205/088
9-Jan-17	9:00	Cloudy	293.6	3.6048	3.7420	0.1372	1346.3	1370.3	24.0	1.22	1.22	1.22	1758.5	78.0	161205/049
13-Jan-17	9:00	Cloudy	285.5	3.5802	3.6562	0.0760	1370.3	1394.3	24.0	1.24	1.24	1.24	1780.9	42.7	170101/051
19-Jan-17	9:00	Sunny	292.7	3.5890	3.7438	0.1548	1394.3	1418.3	24.0	1.21	1.21	1.21	1735.8	89.2	170102/080
25-Jan-17	9:00	Sunny	291.6	3.5713	3.6981	0.1268	1418.3	1442.3	24.0	1.21	1.21	1.21	1742.7	72.8	170103/061
27-Jan-17	9:00	Sunny	291.1	3.5858	3.6767	0.0909	1442.3	1466.3	24.0	1.21	1.21	1.21	1742.7	52.2	161204/055
													Min	42.7	
													Max	89.2	
													Average	65.4	

Location AM2 - Hong Kong & Islands Regional Office, WSD

Start Date	Start Time	Weather Condition	Air Temp. (K)	Filter Weight (g)		Particulate Weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. ($\mu g/m^3$)	Filter ID no.
				Initial	Final		Initial	Final		Initial	Final				
3-Jan-17	9:00	Sunny	293.8	3.5875	3.7859	0.1984	11602.0	11626.0	24.0	1.22	1.22	1.22	1759.2	112.8	161205/093
9-Jan-17	9:00	Cloudy	292.7	3.5994	3.8756	0.2762	11626.0	11650.0	24.0	1.22	1.22	1.22	1760.6	156.9	161205/051
13-Jan-17	9:00	Cloudy	286.3	3.5804	3.7127	0.1323	11650.0	11674.0	24.0	1.23	1.23	1.23	1777.9	74.4	170101/052
19-Jan-17	9:00	Sunny	293.1	3.5680	3.8333	0.2653	11674.0	11698.0	24.0	1.20	1.20	1.20	1731.9	153.2	170102/081
25-Jan-17	9:00	Sunny	291.4	3.6235	3.8725	0.2490	11698.0	11722.0	24.0	1.21	1.21	1.21	1740.1	143.1	170103/060
27-Jan-17	9:00	Sunny	292.3	3.6180	3.8121	0.1941	11722.0	11746.0	24.0	1.21	1.21	1.21	1736.9	111.8	161204/056
													Min	74.4	
													Max	156.9	
													Average	125.4	

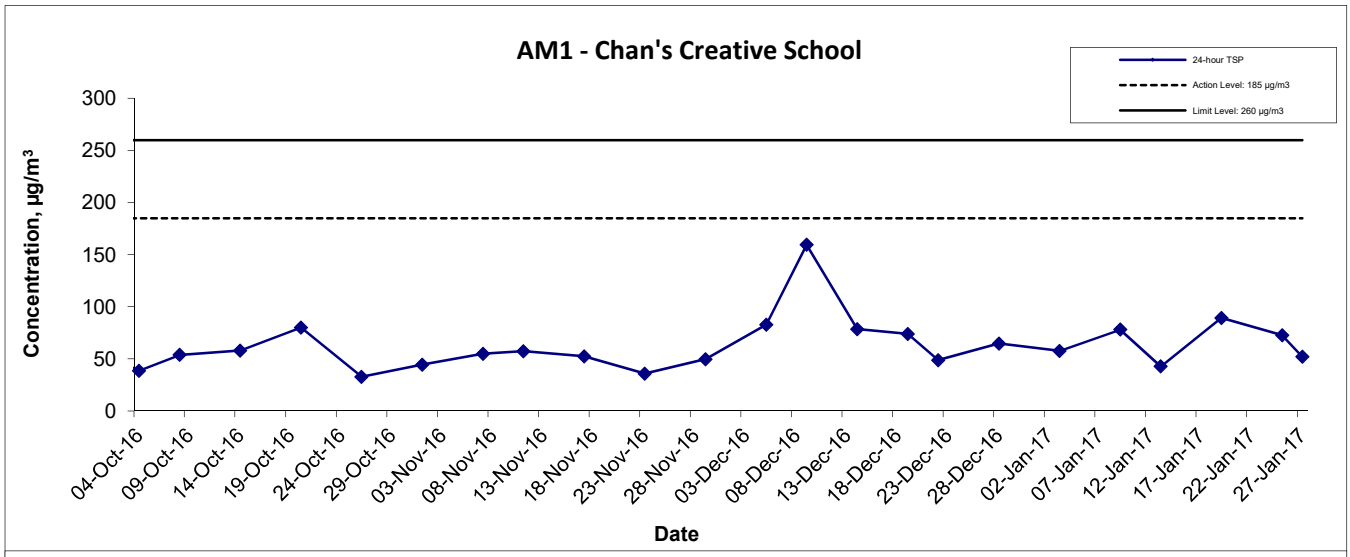
Location AM3 - Wan Chai East PTW

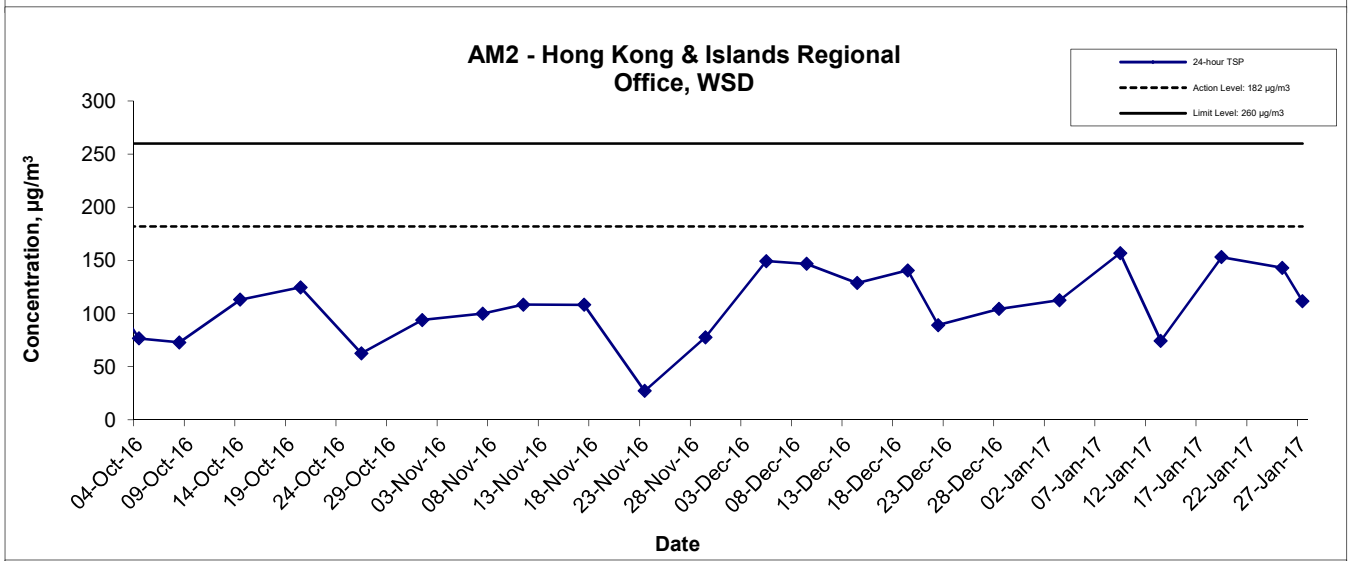
Start Date	Start Time	Weather Condition	Air Temp. (K)	Filter Weight (g)		Particulate Weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. ($\mu g/m^3$)	Filter ID no.
				Initial	Final		Initial	Final		Initial	Final				
3-Jan-17	9:00	Sunny	294.6	3.6090	3.8517	0.2427	7903.9	7927.9	24.0	1.23	1.23	1.23	1776.9	136.6	161205/094
9-Jan-17	9:00	Cloudy	292.5	3.5775	3.8529	0.2754	7927.9	7951.9	24.0	1.24	1.24	1.24	1781.4	154.6	161205/048
13-Jan-17	9:00	Cloudy	286.2	3.5776	3.7587	0.1811	7951.9	7975.9	24.0	1.25	1.25	1.25	1798.1	100.7	161205/038
19-Jan-17	9:00	Sunny	292.6	3.6022	3.8808	0.2786	7975.9	7999.9	24.0	1.22	1.22	1.22	1750.1	159.2	170102/082
25-Jan-17	9:00	Sunny	292.3	3.5899	3.8265	0.2366	7999.9	8023.9	24.0	1.22	1.22	1.22	1753.2	135.0	170102/071
27-Jan-17	9:00	Sunny	291.3	3.5979	3.8017	0.2038	8023.9	8047.9	24.0	1.22	1.22	1.22	1756.1	116.1	170103/040
													Min	100.7	
													Max	159.2	
													Average	133.7	

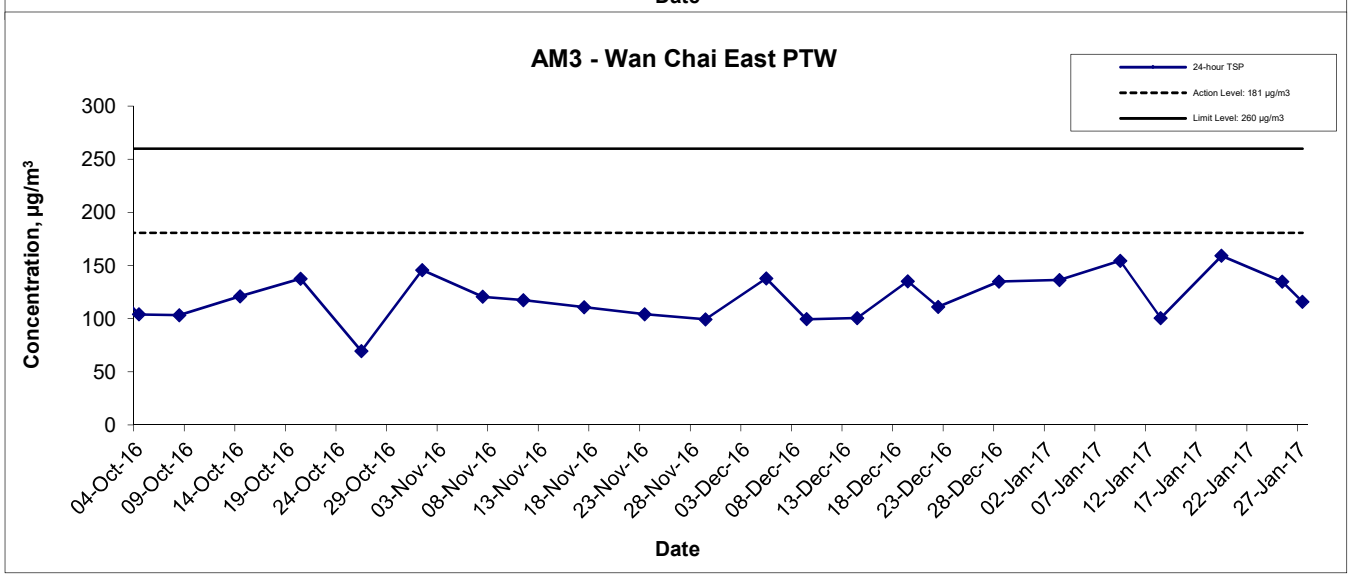
Location AM4_2 - A Location next to Sheung Wan Fire Station

Start Date	Start Time	Weather Condition	Air Temp. (K)	Filter Weight (g)		Particulate Weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. ($\mu g/m^3$)	Filter ID no.
				Initial	Final		Initial	Final		Initial	Final				
3-Jan-17	9:00	Sunny	292.7	3.6211	3.8823	0.2612	816.2	840.2	24.0	1.24	1.24	1.24	1790.9	145.8	161205/095
9-Jan-17	9:00	Cloudy	287.3	3.5377	3.7991	0.2614	840.2	864.2	24.0	1.25	1.25	1.25	1806.3	144.7	161205/047
13-Jan-17	9:00	Cloudy	285.7	3.6376	3.7981	0.1605	864.2	888.2	24.0	1.26	1.26	1.26	1811.6	88.6	161205/042
19-Jan-17	9:00	Sunny	292.4	3.6071	3.8823	0.2752	888.2	912.2	24.0	1.20	1.20	1.20	1733.1	158.8	161205/013
25-Jan-17	9:00	Sunny	291.6	3.6337	3.9000	0.2663	912.2	936.2	24.0	1.21	1.21	1.21	1738.6	153.2	170102/070
27-Jan-17	9:00	Sunny	291.6	3.5995	3.8563	0.2568	936.2	960.2	24.0	1.21	1.21	1.21	1737.3	147.8	170103/039
													Min	88.6	
													Max	158.8	
													Average	139.8	

24-hr TSP Concentration Levels

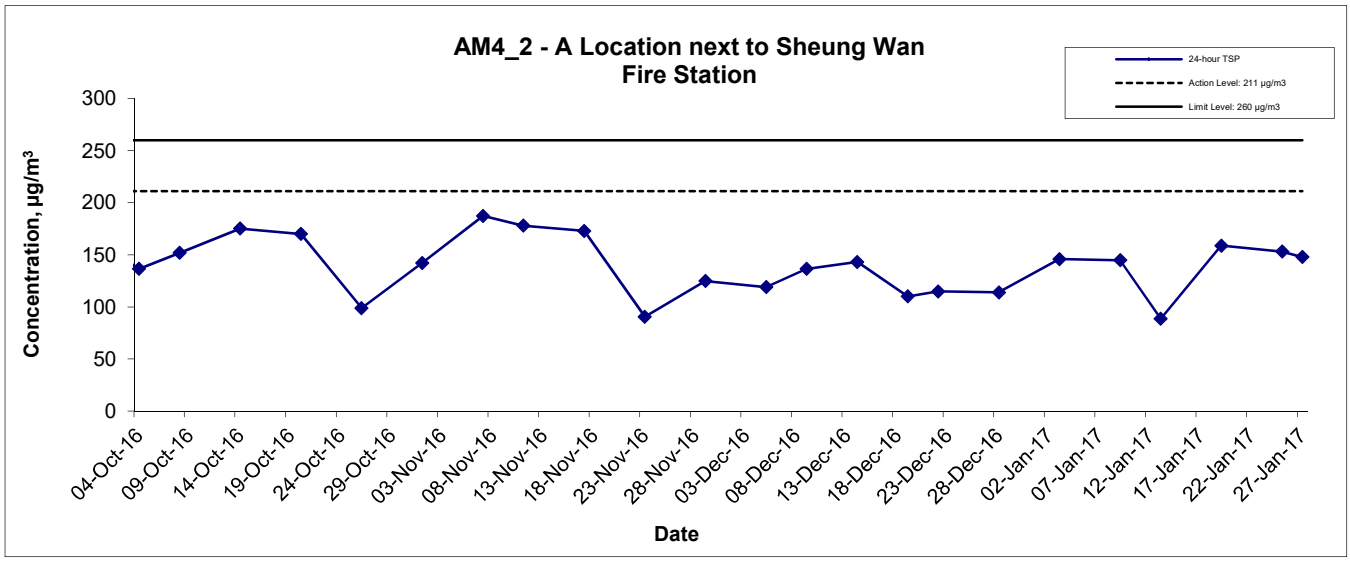






Title: Contract No. DC/2009/23 HATS 2A – Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central Graphical Presentation of 24-hour TSP Monitoring Results	Scale: N.T.S Date: Jan-17	Project No.: MA11003 Appendix: E	CINOTECH

24-hr TSP Concentration Levels



Title: Contract No. DC/2009/23 HATS 2A – Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central Graphical Presentation of 24-hour TSP Monitoring Results	Scale: N.T.S Date: Jan-17	Project No.: MA11003 Appendix: E	CINOTECH

APPENDIX F
NOISE MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

Appendix F - Noise Monitoring Results

(0700-1900 hrs on Normal Weekdays)

Location NM1 - Chan's Creative School					
Date	Time	Weather	Unit: dB (A) (30-min)		
			Measured Noise Level		
			L_{eq}	L_{10}	L_{90}
4-Jan-17	13:00	Sunny	62.8	63.8	59.5
10-Jan-17	13:00	Fine	66.8	68.6	64.2
16-Jan-17	9:05	Cloudy	69.6	72.5	65.3
26-Jan-17	13:15	Sunny	67.8	69.1	64.5

Location NM2 - Hyde Building					
Date	Time	Weather	Unit: dB (A) (30-min)		
			Measured Noise Level		
			L_{eq}	L_{10}	L_{90}
4-Jan-17	9:15	Sunny	65.4	66.8	61.2
10-Jan-17	13:20	Fine	73.1	75.6	70.2
16-Jan-17	13:05	Cloudy	72.6	74.3	70.2
26-Jan-17	10:30	Sunny	73.2	75.1	71.0

Location NM3 - Goldfield Building					
Date	Time	Weather	Unit: dB (A) (30-min)		
			Measured Noise Level		
			L_{eq}	L_{10}	L_{90}
4-Jan-17	8:05	Sunny	68.1	69.3	63.4
10-Jan-17	9:25	Fine	73.4	75.4	70.3
16-Jan-17	16:30	Cloudy	74.2	75.9	72.1
26-Jan-17	9:30	Sunny	73.8	75.5	71.8

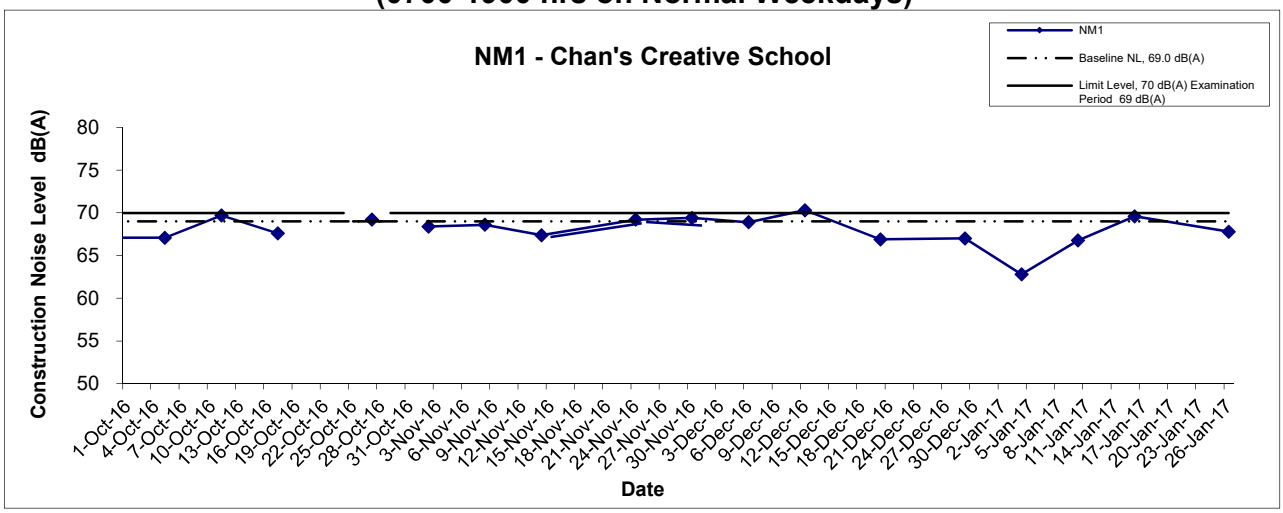
(Restricted Hours - 07:00 to 23:00 holidays & 19:00 to 23:00 on all other days)

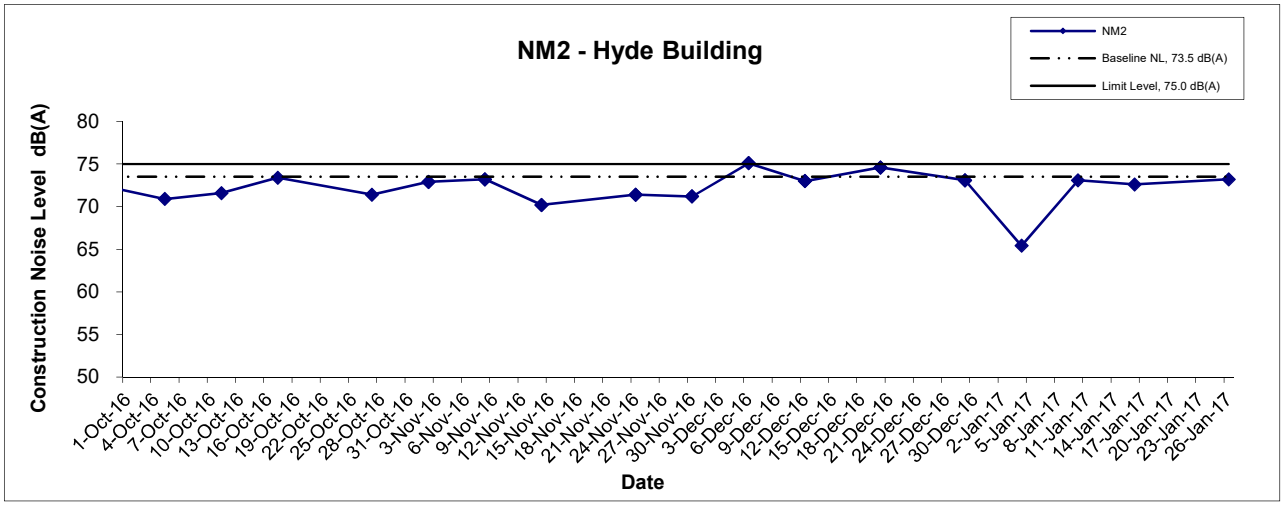
Location NM1 - Chan's Creative School					
Date	Time	Weather	dB (A) (5-min)		
			L_{eq}	L_{10}	L_{90}
2-Jan-17	13:00	Sunny	67.8	69.9	64.3
	13:05		68.3	70.6	63.7
	13:10		67.6	70.3	63.9
10-Jan-17	19:00	Fine	68.4	70.5	67.2
	19:05		69.0	71.1	67.8
	19:10		68.1	70.6	67.1

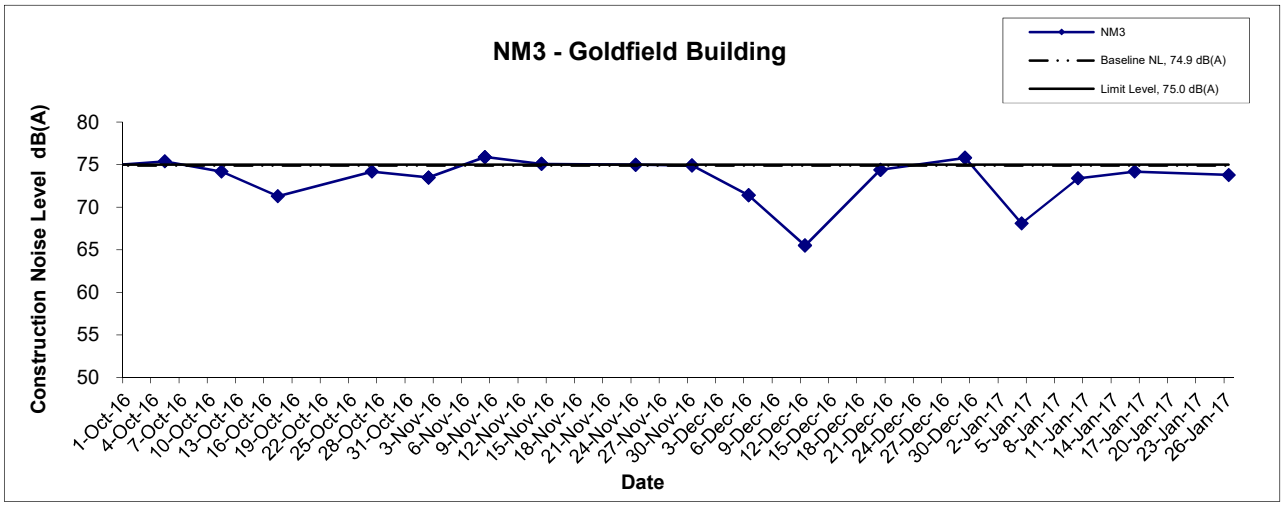
Location NM2 - Hyde Building					
Date	Time	Weather	dB (A) (5-min)		
			L_{eq}	L_{10}	L_{90}
2-Jan-17	14:00	Sunny	70.1	72.8	66.7
	14:05		69.3	71.5	66.5
	14:10		70.4	72.9	66.9
10-Jan-17	19:00	Fine	71.7	72.7	70.5
	19:05		72.6	72.8	70.4
	19:10		71.2	72.3	70.3

Noise Levels

(0700-1900 hrs on Normal Weekdays)



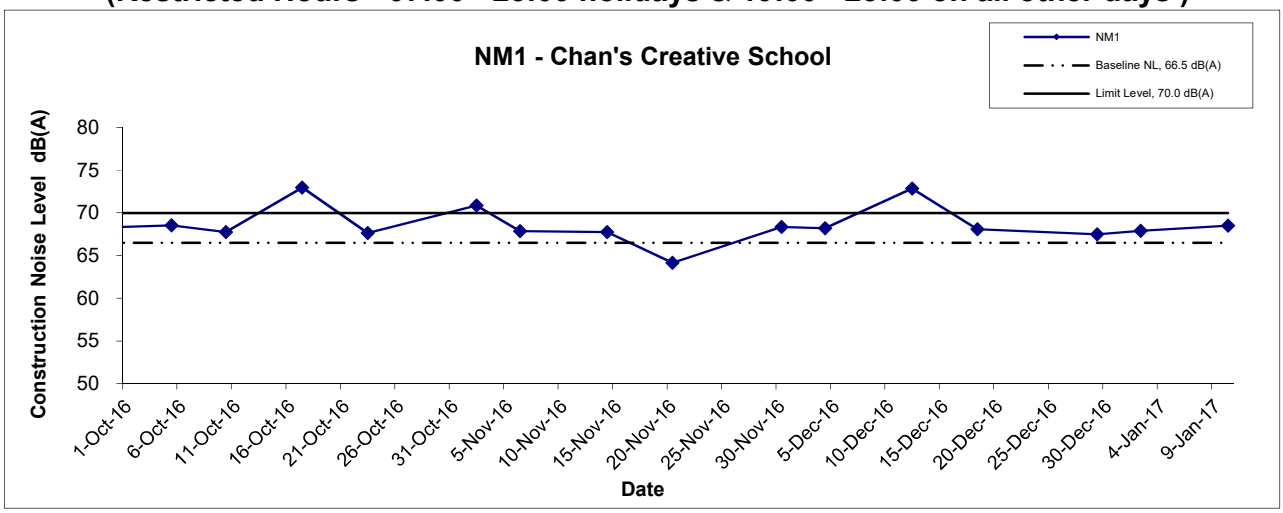


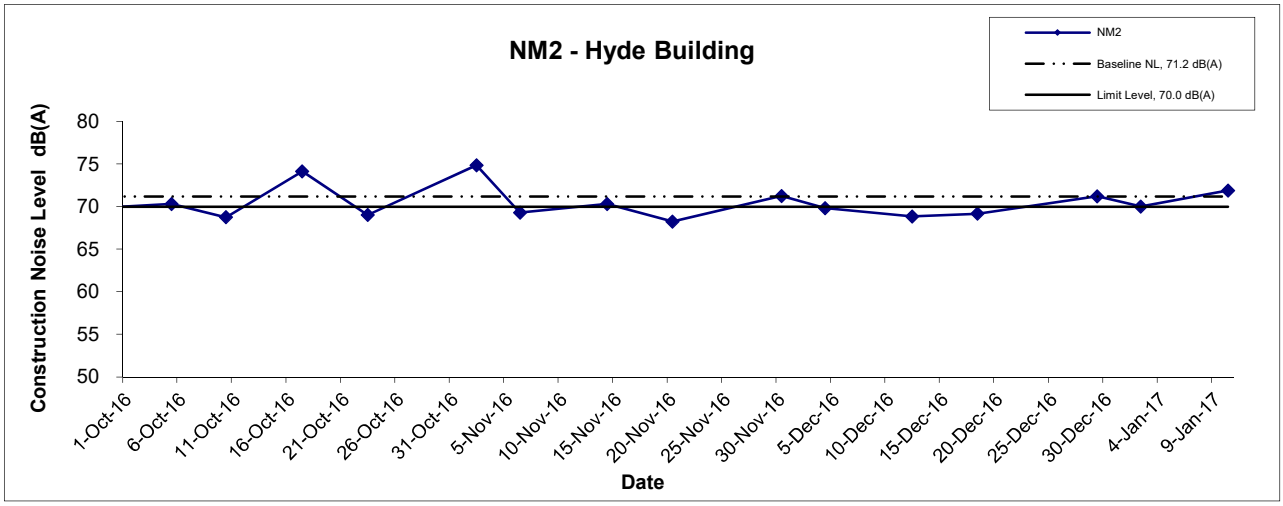


Title: Contract No. DC/2009/23 HATS 2A – Upgrading Works at North Point, Wan Chai East and Central Graphical Presentation of Noise Monitoring Result	Scale: N.T.S Date: Jan 17	Project No.: MA11003 Appendix: F	CINOTECH

Noise Levels

(Restricted Hours - 07:00 - 23:00 holidays & 19:00 - 23:00 on all other days)





Title: Contract No. DC/2009/23 HATS 2A – Upgrading Works at North Point, Wan Chai East and Central Graphical Presentation of Noise Monitoring Result	Scale: N.T.S	Project No.: MA11003	CINOTECH
	Date: Jan 17	Appendix: F	

APPENDIX G
SUMMARY OF EXCEEDANCE

APPENDIX G – SUMMARY OF EXCEEDANCE

Reporting Month: January 2017

a) Exceedance Report for 1-hr TSP (NIL)

b) Exceedance Report for 24-hr TSP (NIL)

c) Exceedance Report for Construction Noise (2)

No Action Level exceedance was recorded, while two non-project related Limit Level exceedance were recorded during the restricted hour noise monitoring on 1st & 10th January 2017 by the ET of this Project at NM2.

According to the information provided by the Contractor, no construction works were carried out during the restricted hours period on 1st & 10th January 2017 at Wan Chai East Preliminary Treatment Works under DC/2009/23.

APPENDIX H
SUMMARY OF EXCEEDANCE REPORT

Contract No. DC/2009/23 – HATS Stage 2A
Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central
Report No. 170102_noise_NM2_RN

Date of Measurement: 2nd January 2017
Time of Measurement: 14:00 (3 consecutive 5-min measurements)

Location	Parameter	Measured Level (Leq dB(A))	Action Level	Limit Level (Leq dB(A))	Level exceeded
NM2	Construction Noise	70.1	When one documented complaint is received	70.0*	Limit
		69.3			
		70.4			

* 70dB (A) was adopted as the Limit Level during restricted hours in January 2017.

Remarks

(a) Statement of exceedance(s)

Construction noise measured at NM2(Wan Chai East PTW) - The roof of Hyde Building exceeded the construction noise limit (70dB(A)) during the restricted hour (07:00 to 23:00 holidays & 19:00 to 23:00 on all other days).

(b) Cause of exceedance(s)

The exceedance was considered not due to the Contract No. DC/2009/23 based on the following reason(s):-

1) During the continuous measurements, the major noise source was the traffic noise.
2) According to information provided by the Contractor, no construction works for the Contract No. DC/2009/23 was carried out during the restricted hours noise monitoring.
3) Comparing with the similar monitoring period during the baseline noise monitoring, the average of the noise level on 2nd January 2017 is well within the range of baseline noise levels (68.6 – 76.8dB(A)).

Therefore, the exceedance was considered to be non-project related.

(c) Conclusions and Recommendations:

- The exceedance was considered not due to the Contract No. DC/2009/23.
- The Contractor was reminded to review the effectiveness of the implemented noise mitigation measures from time to time during different construction phases.

ETL Signature: _____ Date: 27 January 2017

Contract No. DC/2009/23 – HATS Stage 2A
Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central
Report No. 170110_noise_NM2_RN

Date of Measurement: 10th January 2017
Time of Measurement: 19:00 (3 consecutive 5-min measurements)

Location	Parameter	Measured Level (Leq dB(A))	Action Level	Limit Level (Leq dB(A))	Level exceeded
NM2	Construction Noise	71.7	When one documented complaint is received	70.0*	Limit
		72.6			
		71.2			

* 70dB (A) was adopted as the Limit Level during restricted hours in January 2017.

Remarks

(a) Statement of exceedance(s)

Construction noise measured at NM2(Wan Chai East PTW) - The roof of Hyde Building exceeded the construction noise limit (70dB(A)) during the restricted hour (07:00 to 23:00 holidays & 19:00 to 23:00 on all other days).

(b) Cause of exceedance(s)

The exceedance was considered not due to the Contract No. DC/2009/23 based on the following reason(s):-

1) During the continuous measurements, the major noise source was the traffic noise.
2) According to information provided by the Contractor, no construction works for the Contract No. DC/2009/23 was carried out during the restricted hours noise monitoring.
3) Comparing with the similar monitoring period during the baseline noise monitoring, the average of the noise level on 10th January 2017 is well within the range of baseline noise levels (68.6 – 76.8dB(A)).

Therefore, the exceedance was considered to be non-project related.

(c) Conclusions and Recommendations:

- The exceedance was considered not due to the Contract No. DC/2009/23.
- The Contractor was reminded to review the effectiveness of the implemented noise mitigation measures from time to time during different construction phases.

ETL Signature: _____ Date: 27 January 2017

APPENDIX I
SITE AUDIT SUMMARY

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	170104
Date	4 January 2017 (Wednesday)
Time	9:30 – 11:30

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

Ref. No.	Remarks/Observations	Related Item No.
	Part A - Water Quality • No environmental deficiency was identified during the site inspection.	
170104-R03	***Part B – Landscape and Visual*** • The fence should be provided and enhanced for the existing tree at Wan Chai-PTW.	B 2
170104-R02	***Part C - Air Quality*** • The dusty materials should be covered by impervious material to prevent the dust emission at Wan Chai-PTW.	C 6
	Part D – Noise • No environmental deficiency was identified during the site inspection.	
170104-O01	***Part E –Waste / Chemical Management*** • The general refuse should be cleared regularly to prevent the accumulation at North Point-PTW, Wan Chai-PTW and Central-PTW.	E 7i
	Part F - Permit / Licenses • No environmental deficiency was identified during the site inspection.	
	Follow up: • For previous audit session (Ref. No. 161228), outstanding items 161228-R03 & 161228-R04 is required to be followed up and remarked as 170104-R02 & 170104-R03 which will be reviewed in the next weekly site inspection (Ref. No. 170113).	
	Remark: • --	

	Name	Signature	Date
Recorded by	Janet Wai		4 January 2017
Checked by	Dr. Priscilla Choy		4 January 2017

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	170113
Date	13 January 2017 (Friday)
Time	9:30 – 11:00

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

Ref. No.	Remarks/Observations	Related Item No.
170113-R02	***Part A - Water Quality*** • The bund should be provided to prevent the muddy water runoff from the site of Central-PTW. ***Part B – Landscape and Visual*** • No environmental deficiency was identified during the site inspection.	A 2
170113-R03	***Part C - Air Quality*** • The dusty materials should be covered by impervious material to prevent the dust emission at Central-PTW. ***Part D – Noise*** • No environmental deficiency was identified during the site inspection.	C 6
170113-O01	***Part E –Waste / Chemical Management*** • The oil leakage was observed from the excavator at North Point-PTW. The Contractor was reminded to provide the maintenance and clear the oil stain. ***Part F - Permit / Licenses*** • No environmental deficiency was identified during the site inspection. ***Follow up:*** • For previous audit session (Ref. No. 170104), all environmental deficiencies were improved by the Contractor. ***Remark:*** • --	E 7i

	Name	Signature	Date
Recorded by	Janet Wai		13 January 2017
Checked by	Dr. Priscilla Choy		13 January 2017

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	170118
Date	18 January 2017(Wednesday)
Time	9:30 – 11:30

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

Ref. No.	Remarks/Observations	Related Item No.
170118-R02	***Part A - Water Quality*** • The bund should be provided to prevent the muddy water runoff from the site of Central-PTW. ***Part B – Landscape and Visual*** • No environmental deficiency was identified during the site inspection.	A 2
170118-R01	***Part C - Air Quality*** • The dusty materials should be covered by impervious material to prevent the dust emission at Wan Chai-PTW. ***Part D – Noise*** • No environmental deficiency was identified during the site inspection. ***Part E –Waste / Chemical Management*** • No environmental deficiency was identified during the site inspection. ***Part F - Permit / Licenses*** • No environmental deficiency was identified during the site inspection. ***Follow up:*** • For previous audit session (Ref. No. 170113), outstanding items 170113-R02 is required to be followed up and remarked as 170118-R02 which will be reviewed in the next weekly site inspection (Ref. No. 170125). ***Remark:*** • --	C 6

	Name	Signature	Date
Recorded by	Janet Wai		18 January 2017
Checked by	Dr. Priscilla Choy		18 January 2017

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	170125
Date	25 January 2017 (Wednesday)
Time	9:30 – 11:00

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

Ref. No.	Remarks/Observations	Related Item No.
170125-R01	***Part A - Water Quality*** • No environmental deficiency was identified during the site inspection. ***Part B – Landscape and Visual*** • No environmental deficiency was identified during the site inspection. ***Part C - Air Quality*** • No environmental deficiency was identified during the site inspection. ***Part D – Noise*** • No environmental deficiency was identified during the site inspection. ***Part E –Waste / Chemical Management*** • The oil stain at Wan Chai PTW should be properly cleared. ***Part F - Permit / Licenses*** • No environmental deficiency was identified during the site inspection. ***Follow up:*** • For previous audit session (Ref. No. 170118), all environmental deficiencies were improved by the Contractor. ***Remark:*** • --	E 7i

	Name	Signature	Date
Recorded by	Janet Wai		25 January 2017
Checked by	Dr. Priscilla Choy		25 January 2017

APPENDIX J
SUMMARY OF AMOUNT OF WASTE GENERATED

Name of Department : Harbour Area Treatment Scheme Stage 2A – Upgrading of Preliminary Treatment Works at North Point , Wan Chai East and Central

Contract No. : DC/2009/23

APPENDIX J MONTHLY SUMMARY WASTE FLOW TABLE FOR January (2017)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly					Special Waste			
	Total Quantity Generated	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	Screening (CPTW)	Grit (CPTW)	Screening (NPPTW)	Grit (NPPTW)
	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]
Year2016	26.449	0.000	0.000	0.000	26.449	0.000	72.810	7.474	0.928	1.030	2.029	3.408	2.242	1.566	1.053
JAN	0.389	0.000	0.000	0.000	0.389	0.000	0.000	0.158	0.017	0.000	0.026	0.066	0.022	0.050	0.018
FEB															
MAR															
APR															
MAY															
JUN															
SUB-TOTAL	26.838	0.000	0.000	0.000	26.838	0.000	72.810	7.632	0.945	1.030	2.055	3.474	2.264	1.616	1.071
JUL															
AUG															
SEP															
OCT															
NOV															
DEC															
TOTAL	26.838	0.000	0.000	0.000	26.838	0.000	72.810	7.632	0.945	1.030	2.055	3.474	2.264	1.616	1.071

Forecast of Total Quantities of C&D materials to be Generated from the Contracts *												Special Waste		Special Waste	
Total Quantity Generated	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	Screening (CPTW)	Grit (CPTW)	Screening (NPPTW)	Grit (NPPTW)
[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]
27.5	0.01	0.01	0	27.48	0	100	8	1	3	3.5	4.5	3	2	1.5

Notes :

(1) The performance targets are given in PS Clause 6(14).

(2) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the site.

(3) Plastics refer to plastic bottles / containers, plastic sheets / foam from packaging material.

* (4) 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 50,000m3. (PS Clause 25.25S (6)(b) referes). [Delete Note (4) and the table above on the forecast, where inapplicable].

(5) The assumed density (kg/m^3) for both C&D material and general refuse.
C&D material 2000kg/m3
General refuse 500kg/m3

(6) Conversion factors for reporting purpose: in-situ: rock = 2.5 tonnes/m3 ; soil = 2.0 tonnes/m3 excavated: rock = 2.0 tonnes/m3 ; soil = 1.8 tonnes/m3 Special Waste (Grit) = 1.2 tonnes/m3
broken concrete and bitumen = 2.4 tonnes/m3 C&D Waste = 0.9 tonnes/m3 bentonite slurry = 2.8 tonnes/m3 Chemical waste 1 Litres = 1 kg Special Waste (Screening) = 0.31 tonnes/m3

APPENDIX K
EVENT ACTION PLANS

APPENDIX K – Event / Action Plans

Table K-1 Event / Action Plan For Air Quality

EVENT	ACTION			
	ET	**IEC**	**ER**	**CONTRACTOR**
ACTION LEVEL				
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 failurein 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			
LIMIT LEVEL				
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	1. Notify ER, IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the IEC and Contractor on remedial measures required; 5. Increase monitoring frequency to check mitigation effectiveness	1. Review the investigation results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Advise the ER on the effectiveness of the proposed 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. Supervise the implementation of remedial measures	1. Submit noise mitigation proposals to IEC and ER; 2. Implement noise mitigation proposals
Limit Level being exceeded	1. Inform IEC, ER, Contractor and EPD; 2. Repeat measurements to confirm findings; 3. Increase monitoring frequency; 4. Identify source and investigate the cause of exceedance; 5. Carry out analysis of Contractor's working procedures; 6. Discuss with the IEC, Contractor and ER on remedial measures required; 7. Assess effectiveness of	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly.	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. Supervise the implementation of remedial measures; 5. If exceedance continues, consider stopping the Contractor to continue working on that portion of work which causes the exceedance	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC and ER within 3 working days of notification; 3. Implement the agreed proposals; 4. Submit further proposal if problem still not under control; 5. Stop the relevant portion of works as instructed by

EVENT	ACTION			
	ET	**IEC**	**ER**	**CONTRACTOR**
	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

APPENDIX L
ENVIRONMENTAL MITIGATION
IMPLEMENTATION SCHEDULE (EMIS)

APPENDIX L IMPLEMENTATION SCHEDULE OF ENVIRONMENTAL MITIGATION MEASURES (EMIS)

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Status
A	**Air Quality**		
3.74	Skip hoist for material transport should be totally enclosed by impervious sheeting.	All construction sites	^
	Vehicle washing facilities should be provided at every vehicle exit point.		^
	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.		^
	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.		^
	Use of regular watering, with complete coverage, to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather.		^
	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.		*
	Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs.		^
	Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations.		^
	Imposition of speed controls for vehicles on unpaved site roads. Ten kilometers per hour is the recommended limit.		^
	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.		^
	Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction sites.		^
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	**Airborne Noise**		
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.		^
C	**Water Quality**		
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	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: • Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. • Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents. • Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.		^
6.380	Construction Works in Close Proximity of Storm Drains or Seafront 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. • The use of less or smaller construction plants may be specified to reduce the disturbance to the storm water courses or marine environment. • 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. • Stockpiling of construction materials and dusty materials should be covered and located away from any water courses. • 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. • Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable. • Proper shoring may need to be erected in order to prevent soil/mud from slipping into	All construction sites	^

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Status
	the storm culvert or sea.		
D	**Waste Management**		
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 minimise 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: • excavated materials suitable for reuse on-site; • excavated materials suitable for public filling facilities; • remaining C&D waste for landfill; • chemical waste; and • general refuse for landfill.	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 aluminium 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 minimise 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.		^

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Status
	Provision of sufficient waste disposal points and regular collection of waste.		^
	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

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Status
E	**Terrestrial Ecology**		
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.		^
F	**Landscape and Visual**		
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
G	**Marine Ecology**		
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	*
H	**Hazard to Life**		
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;

APPENDIX M
COMPLAINT LOG

APPENDIX M – COMPLAINT LOG

Reporting Month: January 2017

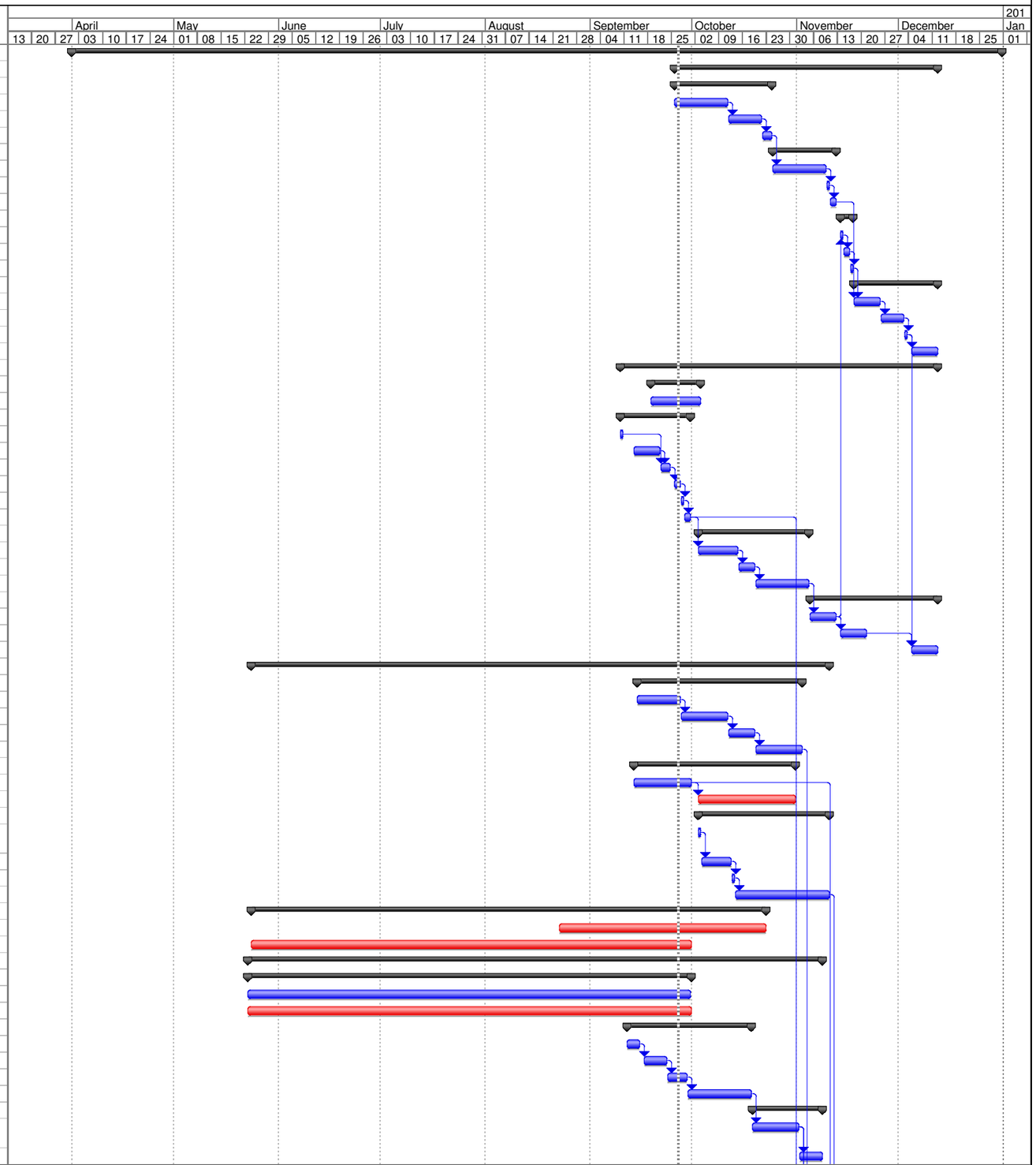
Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Remarks: No environmental complaint was received in the reporting month.

APPENDIX N
CONSTRUCTION PROGRAMME

OUTSTANDING WORKS PROGRAMME FOR DC/2009/23
NORTH POINT PTW, WAN CHAI EAST PTW AND CENTRAL PTW

ID	Task Name	Action By	Duration	Start	Finish	Predeces	Remarks
1	**NORTH POINT PTW**		**227 days**	**01 Apr '16**	**31 Dec '16**		
2	**Area A1 (in between FSGT and Drop Shaft)**		**65 days**	**26 Sep '16**	**12 Dec '16**		
3	**Manhole and Pipe laying (Stormdrain)**		**23 days**	**26 Sep '16**	**24 Oct '16**		
4	Sheetpiling works for Stormdrain	Leader	12 days	26 Sep '16	11 Oct '16		
5	Manhole and Pipe Installation (Stormdrain)	Leader	9 days	12 Oct '16	21 Oct '16	4	
6	Backfilling for Stormdrain	Leader	2 days	22 Oct '16	24 Oct '16	5	
7	**Manhole and Pipe laying (Sewage)**		**17 days**	**25 Oct '16**	**12 Nov '16**		
8	Manhole and Pipe Installation (Sewage)	Leader	14 days	25 Oct '16	09 Nov '16	6	
9	Removal of formworks for manhole	Leader	1 day	10 Nov '16	10 Nov '16	8	
10	Backfilling for Sewage System	Leader	2 days	11 Nov '16	12 Nov '16	9	
11	**Remaining Air Duct from FSGT to Drop Shaft**		**4 days**	**14 Nov '16**	**17 Nov '16**		
12	Excavation incl. blinding layer	Leader	1 day	14 Nov '16	14 Nov '16	35	
13	Air duct installation	Leader	2 days	15 Nov '16	16 Nov '16	12	
14	Backfilling	Leader	1 day	17 Nov '16	17 Nov '16	13	
15	**Road Works for Area A1**		**21 days**	**18 Nov '16**	**12 Dec '16**		
16	Sub-base	Leader	7 days	18 Nov '16	25 Nov '16	10,14	
17	Road Kerb incl. U-channel and catchpit	Leader	6 days	26 Nov '16	02 Dec '16	16	
18	Road Base	Leader	1 day	03 Dec '16	03 Dec '16	17	
19	Paving blocks for Area A1	Leader	7 days	05 Dec '16	12 Dec '16	18	
20	**Area A2 (in between FSGT, Drop Shaft and Pumping Station)**		**77 days**	**10 Sep '16**	**12 Dec '16**		
21	**Manhole for Sewage and Pipe Reinstatement**		**12 days**	**19 Sep '16**	**03 Oct '16**		
22	Manhole for Sewage and Pipe Reinstatment	Leader	12 days	19 Sep '16	03 Oct '16		
23	**Remaining DN400 Rising Main (SP2)**		**17 days**	**10 Sep '16**	**30 Sep '16**		
24	Material on site (decking should be ready)	Leader	1 day	10 Sep '16	10 Sep '16		
25	Excavation for installation of remaining DN400	Leader	6 days	14 Sep '16	21 Sep '16		
26	Installation of remaining DN400 pipe	Leader	3 days	22 Sep '16	24 Sep '16	24,25	
27	Thrust block construction	Leader	2 days	26 Sep '16	27 Sep '16	26	
28	Testing of DN400 pipe	Leader	1 day	28 Sep '16	28 Sep '16	27	
29	Backfilling	Leader	2 days	29 Sep '16	30 Sep '16	28	
30	**Storm Drain, Sewage and Cable Draw Pit**		**28 days**	**03 Oct '16**	**04 Nov '16**		
31	Manhole and Pipe Installation (Sewage)	Leader	10 days	03 Oct '16	14 Oct '16	29	
32	Cable Draw Pit	Leader	4 days	15 Oct '16	19 Oct '16	31	
33	Storm Drain & Pit	Leader	14 days	20 Oct '16	04 Nov '16	32	
34	**Road Works for Area A2**		**32 days**	**05 Nov '16**	**12 Dec '16**		
35	Sub-base	Leader	7 days	05 Nov '16	12 Nov '16	33	
36	Road Base, Kerb incl. U-channel and catchpit	Leader	7 days	14 Nov '16	21 Nov '16	35	
37	Paving blocks for Area A2	Leader	7 days	05 Dec '16	12 Dec '16	36,18	
38	**Remaining Works around DO Building**		**142 days**	**24 May '16**	**10 Nov '16**		
39	**Construction of Staircase No. 5**		**39 days**	**15 Sep '16**	**02 Nov '16**		
40	Bay 1	Leader	10 days	15 Sep '16	27 Sep '16		
41	Bay 2	Leader	10 days	28 Sep '16	11 Oct '16	40	
42	Bay 3	Leader	7 days	12 Oct '16	19 Oct '16	41	
43	Finishing & Backfilling	Leader	12 days	20 Oct '16	02 Nov '16	42	
44	**Construction of Toilet**		**38 days**	**14 Sep '16**	**31 Oct '16**		
45	Finishing Works	Leader	14 days	14 Sep '16	30 Sep '16		
46	E&M Installation for toilet and shower room	JEC	24 days	03 Oct '16	31 Oct '16	45	
47	**Manhole and Pipe Laying**		**33 days**	**03 Oct '16**	**10 Nov '16**		
48	Bamboo Scaffolding for External Finishing of DO Building	Leader	1 day	03 Oct '16	03 Oct '16		
49	External Finishing at DO Building	Leader	7 days	04 Oct '16	12 Oct '16	48	
50	Removal of Bamboo Scaffolding	Leader	1 day	13 Oct '16	13 Oct '16	49	
51	Manhole and Pipe Laying	Leader	24 days	14 Oct '16	10 Nov '16	50	
52	**E&M Outstanding Works at DO Building**		**126 days**	**24 May '16**	**22 Oct '16**		
53	Provision of ACF	JEC	50 days	23 Aug '16	22 Oct '16		In progress
54	Defects Rectification	JEC	109 days	24 May '16	30 Sep '16		In progress
55	**Other Works for FSGT Building**		**141 days**	**23 May '16**	**08 Nov '16**		
56	**Defects and Outstanding Works at FSGT Building**	**Leader**	**110 days**	**23 May '16**	**30 Sep '16**		
57	Defects and Outstanding Finishes at FSGT Building	Leader	110 days	23 May '16	30 Sep '16		
58	Defects Rectification on E&M Works	JEC	110 days	23 May '16	30 Sep '16		In progress
59	**Ramp Construction No. 4**	**Leader**	**29 days**	**12 Sep '16**	**18 Oct '16**		
60	Removal of shelter	Leader	4 days	12 Sep '16	15 Sep '16		
61	Footing Construction	Leader	6 days	17 Sep '16	23 Sep '16	60	
62	Column Construction	Leader	5 days	24 Sep '16	29 Sep '16	61	
63	Slab Construction	Leader	14 days	30 Sep '16	18 Oct '16	62	
64	**Remaining U-Channel and Catchpit**		**18 days**	**19 Oct '16**	**08 Nov '16**		
65	U-Channel and Catchpit (West Side of FSGT and DO Building)	Leader	12 days	19 Oct '16	01 Nov '16	63	
66	U-Channel and Catchpit (North Side of FSGT Building)	Leader	6 days	02 Nov '16	08 Nov '16	65	

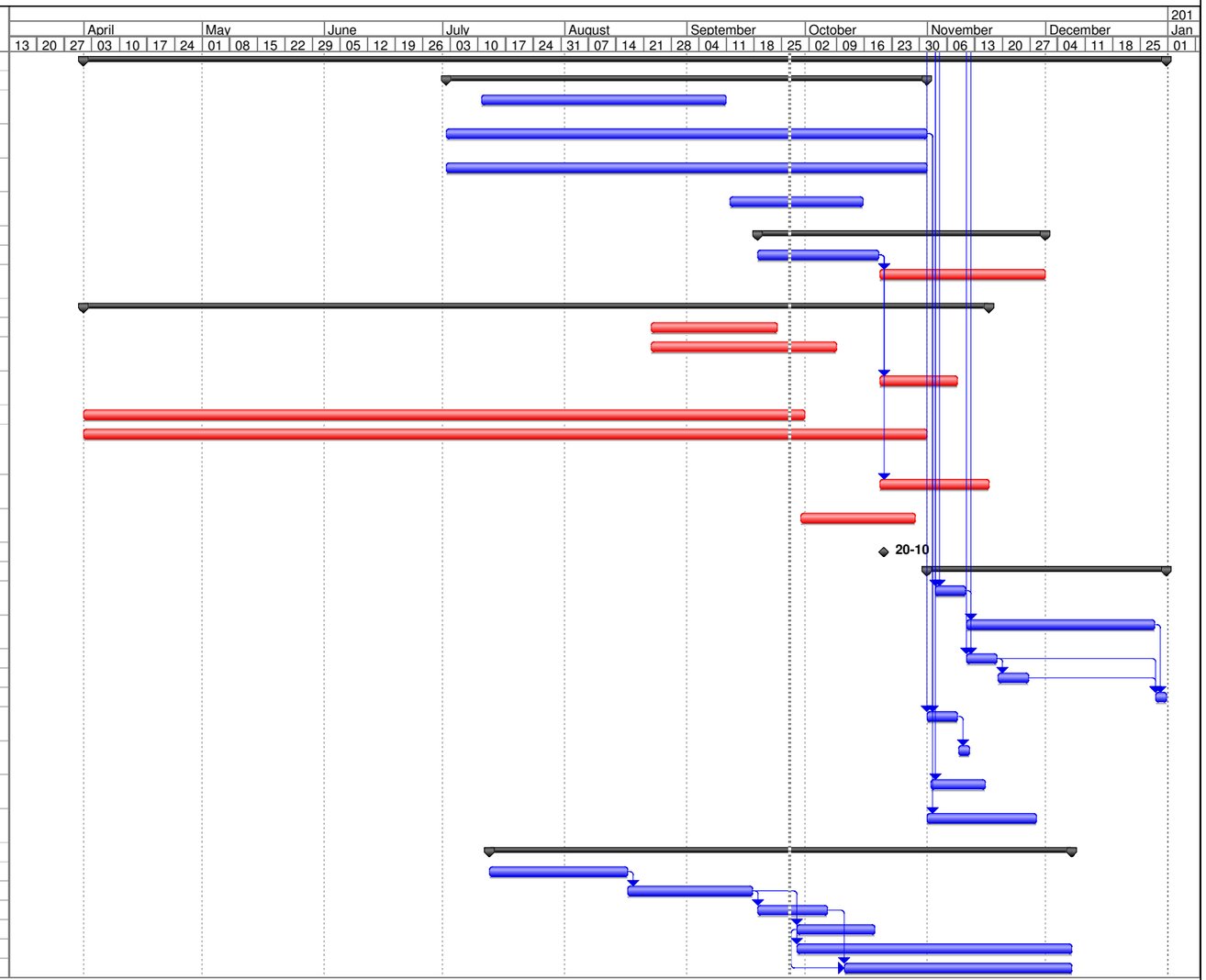


Project: Outstanding Works Programme (15Sep16)
Date: 27 Sep '16

Leader JEC Milestone Summary

OUTSTANDING WORKS PROGRAMME FOR DC/2009/23
NORTH POINT PTW, WAN CHAI EAST PTW AND CENTRAL PTW

ID	Task Name	Action By	Duration	Start	Finish	Predeces	Remarks
67	**Other External Works**		**227 days**	**01 Apr '16**	**31 Dec '16**		
68	**Backfilling Works (Drop Shaft Area)**	**Leader**	**101 days**	**02 Jul '16**	**31 Oct '16**		
69	Backfilling Works between Seawater Intake Chamber & Seawater Pumping Station	Leader	54 days	11 Jul '16	10 Sep '16		
70	Remaining Works for Seawater Pumping Station (incl. multi part cover)	Leader	101 days	02 Jul '16	31 Oct '16		
71	Remaining Works for Seawater Intake Chamber A & B (incl. multi part cover)	Leader	101 days	02 Jul '16	31 Oct '16		
72	Backfilling Works at Seawater Intake Chamber A and B	Leader	27 days	12 Sep '16	15 Oct '16		
73	**Remaining Cable Ducts and Drawpits**	**Leader**	**61 days**	**19 Sep '16**	**30 Nov '16**		
74	Remaining Cable Ducts and Drawpits	Leader	25 days	19 Sep '16	19 Oct '16		
75	H2S and Weather Monitoring Station	JEC	36 days	20 Oct '16	30 Nov '16	74	Waiting for H/O of cable duct from Civil Works
76	**Remaining E&M Works**	**Leader**	**190 days**	**01 Apr '16**	**16 Nov '16**		
77	E+H Flume Channel re-calibration	Leader	27 days	23 Aug '16	23 Sep '16		In progress
78	Mechanical Installation of Penstock inside Seawater Intake Chamber B	Leader	39 days	23 Aug '16	08 Oct '16		Rework on penstock
79	Electrical Installation of Penstock inside Seawater Intake Chamber B	Leader	17 days	20 Oct '16	08 Nov '16	74	Waiting for H/O of cable duct from Civil Works
80	M&E Installation at Seawater Pumping Station	Leader	152 days	01 Apr '16	30 Sep '16		
81	Electrical Installation at Valve Chamber	JEC	176 days	01 Apr '16	31 Oct '16		Cable duct and plinth for local control station not yet finish (Civil Works)
82	Outdoor lamp poles	JEC	24 days	20 Oct '16	16 Nov '16	74	Waiting for H/O of cable duct from Civil Works
83	Final System Commissioning	JEC	23 days	30 Sep '16	28 Oct '16		Inspection not yet confirmed by ARUP/ST2
84	Fire Services Inspection (Including EVA)	JEC	1 day	20 Oct '16	20 Oct '16		
85	**Grasscrete and Landscaping Works**	**Leader**	**51 days**	**01 Nov '16**	**31 Dec '16**		
86	Near Staircase at DO Bldg. (Area G1) - except Grass	Leader	7 days	03 Nov '16	10 Nov '16	43,65	After Staircase No. 5 and U-Channel & Catchpit
87	Along DO Bldg & FSGT Bldg. (Area G2 - 4 bays) - except Grass	Leader	39 days	11 Nov '16	28 Dec '16	86	
88	Near Toilet at DO Bldg. (Area G3) - except Grass	Leader	7 days	11 Nov '16	18 Nov '16	45,51	After toilet and manhole
89	East Side of DO Bldg. (Area G4) - except Grass	Leader	7 days	19 Nov '16	26 Nov '16	88	
90	Grass Installation (Area G1 to G4) near FSGT and DO Bldg.	Leader	3 days	29 Dec '16	31 Dec '16	87,88,89	
91	Near Seawater Pumping Station and Valve Chamber (Area G5) - except Grass	Leader	7 days	01 Nov '16	08 Nov '16	29,70	After remaining works at Seawater Pumping Station
92	Grass Installation (Area G5)near Seawater Pumping Station & Valve Chamber	Leader	3 days	09 Nov '16	11 Nov '16	91	
93	Landscaping Works (FSGT Building Area)	Leader	12 days	02 Nov '16	15 Nov '16	65	After U-channel & catchpit on west side of FSGT & DO Bldg.
94	Landscaping Works (Drop Shaft Area)	Leader	24 days	01 Nov '16	28 Nov '16	70	After remaining works at Seawater Pumping Station
95	**Boundary Wall**		**124 days**	**13 Jul '16**	**07 Dec '16**		
96	Investigation Works	Leader	30 days	13 Jul '16	16 Aug '16		
97	Design Checking and ICE	Leader	27 days	17 Aug '16	17 Sep '16	96	
98	Fabrication of Fence Wall	Leader	15 days	19 Sep '16	06 Oct '16	97	
99	Concrete Trimming	Leader	15 days	29 Sep '16	18 Oct '16	97	
100	Concrete Portion of Boundary Wall	Leader	58 days	29 Sep '16	07 Dec '16	97	
101	Timber Portion of Boundary Wall	Leader	50 days	11 Oct '16	07 Dec '16	99SS+8 da	

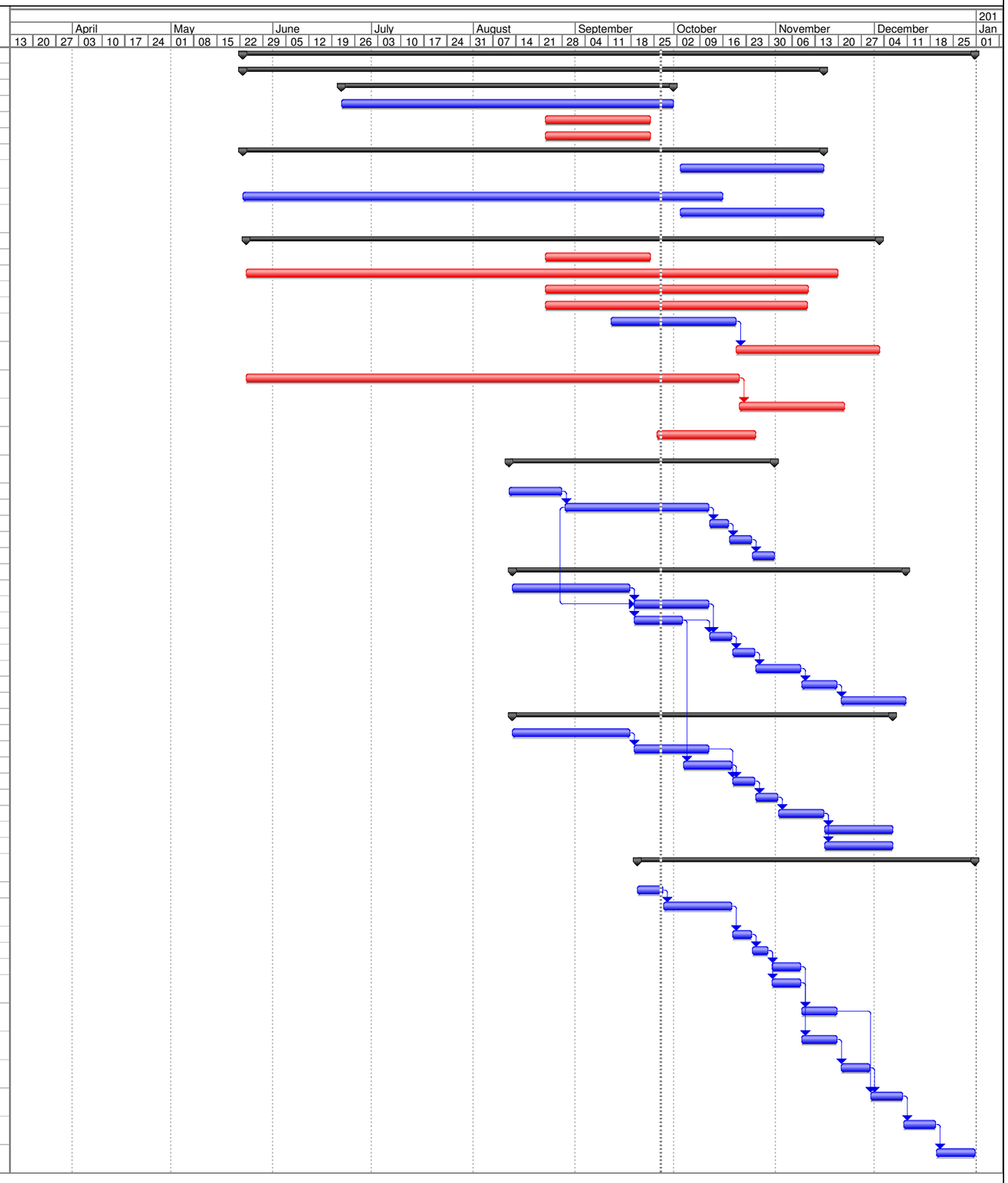


Project: Outstanding Works Programme (15Sep16)
Date: 27 Sep '16

Leader JEC Milestone Summary

OUTSTANDING WORKS PROGRAMME FOR DC/2009/23
NORTH POINT PTW, WAN CHAI EAST PTW AND CENTRAL PTW

ID	Task Name	Action By	Duration	Start	Finish	Predeces	Remarks
102	**WAN CHAI EAST PTW**		**185 days**	**23 May '16**	**31 Dec '16**		
103	**Admin Building and Inlet Pumping Station Building**		**147 days**	**23 May '16**	**15 Nov '16**		
104	**Defects and Outstanding Works**		**85 days**	**22 Jun '16**	**30 Sep '16**		
105	Defects and Outstanding Finishes at Admin Building	Leader	85 days	22 Jun '16	30 Sep '16		
106	Outdoor Lighting	JEC	27 days	23 Aug '16	23 Sep '16		
107	PV System	JEC	27 days	23 Aug '16	23 Sep '16		
108	**Remaining Works at Inlet Pumping Station**		**147 days**	**23 May '16**	**15 Nov '16**		
109	Pavement for Pedestrian (between Boundary Wall and Inlet Pumping Station)	Leader	37 days	03 Oct '16	15 Nov '16		
110	Curtain Wall	Leader	121 days	23 May '16	15 Oct '16		
111	Painting works & architectural finishes at existing Inlet Pumping Station	Leader	37 days	03 Oct '16	15 Nov '16		
112	**Remaining E&M Works**		**161 days**	**24 May '16**	**02 Dec '16**		
113	E+H Flume Channel re-calibration	JEC	27 days	23 Aug '16	23 Sep '16		In progress
114	Resolve Pump Liner	JEC	150 days	24 May '16	19 Nov '16		
115	Permanent support to valves	JEC	66 days	23 Aug '16	10 Nov '16		On hold by BCM
116	Permanent platform	JEC	66 days	23 Aug '16	10 Nov '16		On hold by BCM
117	Cable Ducts and Drawpits (for H2S and Weather Monitoring Station)	Leader	30 days	12 Sep '16	19 Oct '16		
118	H2S and Weather Monitoring Station	JEC	38 days	20 Oct '16	02 Dec '16	117	Waiting for H/O of cable duct from Civil Works
119	Outstanding DOU and ventilation works	JEC	124 days	24 May '16	20 Oct '16		ACF air duct to skip enclosure and hood
120	Final System Commissioning of DOU and Ventilation Works	JEC	27 days	21 Oct '16	21 Nov '16	119	
121	Installation of skip enclosure (site installation)	JEC	24 days	26 Sep '16	25 Oct '16		
122	**Boundary Wall (Near Admin Bldg. Footing Construction Completed) - 30m**		**66 days**	**12 Aug '16**	**31 Oct '16**		
123	Design Submission and Approval	Leader	14 days	12 Aug '16	27 Aug '16		
124	Fabrication (off-site)	Leader	35 days	29 Aug '16	11 Oct '16	123	
125	Fence Wall Installation	Leader	5 days	12 Oct '16	17 Oct '16	124	
126	Painting	Leader	6 days	18 Oct '16	24 Oct '16	125	
127	Timber Installation	Leader	6 days	25 Oct '16	31 Oct '16	126	
128	**Boundary Wall and Landscaping Works (Drop Shaft Area) - 60m**		**100 days**	**13 Aug '16**	**10 Dec '16**		
129	Design Submission and Approval	Leader	30 days	13 Aug '16	17 Sep '16		
130	Fabrication (off-site)	Leader	18 days	19 Sep '16	11 Oct '16	129,124SS	
131	Footing Construction (Excavation to Concreting)	Leader	12 days	19 Sep '16	03 Oct '16	129	
132	Fence Wall Installation	Leader	6 days	12 Oct '16	18 Oct '16	130,131	
133	Painting	Leader	6 days	19 Oct '16	25 Oct '16	132	
134	Timber Installation	Leader	12 days	26 Oct '16	08 Nov '16	133	
135	Trimming of existing Fence	Leader	10 days	09 Nov '16	19 Nov '16	134	
136	Landscaping Works	Leader	18 days	21 Nov '16	10 Dec '16	135	
137	**Boundary Wall (along Entrance Gate) - 55m**		**96 days**	**13 Aug '16**	**06 Dec '16**		
138	Design Submission and Approval	Leader	30 days	13 Aug '16	17 Sep '16		
139	Fabrication (off-site)	Leader	18 days	19 Sep '16	11 Oct '16	138	
140	Footing Construction (Excavation to Concreting)	Leader	12 days	04 Oct '16	18 Oct '16	131	
141	Fence Wall Installation	Leader	6 days	19 Oct '16	25 Oct '16	140,139	
142	Painting	Leader	6 days	26 Oct '16	01 Nov '16	141	
143	Timber Installation	Leader	12 days	02 Nov '16	15 Nov '16	142	
144	Trimming of existing Fence	Leader	18 days	16 Nov '16	06 Dec '16	143	
145	Sliding Gate Installation	Leader	18 days	16 Nov '16	06 Dec '16	143	
146	**Roadworks and Drainage Works incl. Grasscrete (between Fence Wall & Admin Bldg.)**		**85 days**	**20 Sep '16**	**31 Dec '16**		
147	Grasscrete (in between Drop Shaft and Admin Bldg. GL1)	Leader	7 days	20 Sep '16	27 Sep '16		
148	Drainage Works (SM5 incl. pipe laying) and Roadworks - Admin Bldg GL 1-3	Leader	16 days	28 Sep '16	18 Oct '16	147	
149	Drainage Works at Admin Bldg GL A-B	Leader	5 days	19 Oct '16	24 Oct '16	148	
150	Remaining Grasscrete (along GL 7)	Leader	5 days	25 Oct '16	29 Oct '16	149	
151	Roadworks (in between Drop Shaft and Admin Bldg. GL1)	Leader	8 days	31 Oct '16	08 Nov '16	150	
152	Roadworks (in between Admin Bldg & Fence Wall Gate Area) Admin Bldg GL A-B	Leader	8 days	31 Oct '16	08 Nov '16	150	
153	Roadworks (in between Admin Bldg & Fence Wall Gate Area) Admin Bldg GL B-C	Leader	10 days	09 Nov '16	19 Nov '16	152	
154	Roadworks (in between Admin Bldg & Pumping Station) Admin Bldg GL 3-4	Leader	10 days	09 Nov '16	19 Nov '16	151	
155	Roadworks (in between Admin Bldg & Pumping Station) Admin Bldg GL 4-between 6&7	Leader	8 days	21 Nov '16	29 Nov '16	154	
156	Drainage & Roadworks (in between Admin Bldg & Pumping Station) Admin Bldg GL between 6&7 – 7	Leader	9 days	30 Nov '16	09 Dec '16	155,153	
157	Roadworks (In Between Admin Bldg. GL 7 & Fence Wall Gate Area) Half of Road	Leader	8 days	10 Dec '16	19 Dec '16	156	
158	Remaining Roadworks (In Between Admin Bldg. GL 7 & Fence Wall Gate Area) Remaining Half of Road	Leader	9 days	20 Dec '16	31 Dec '16	157	

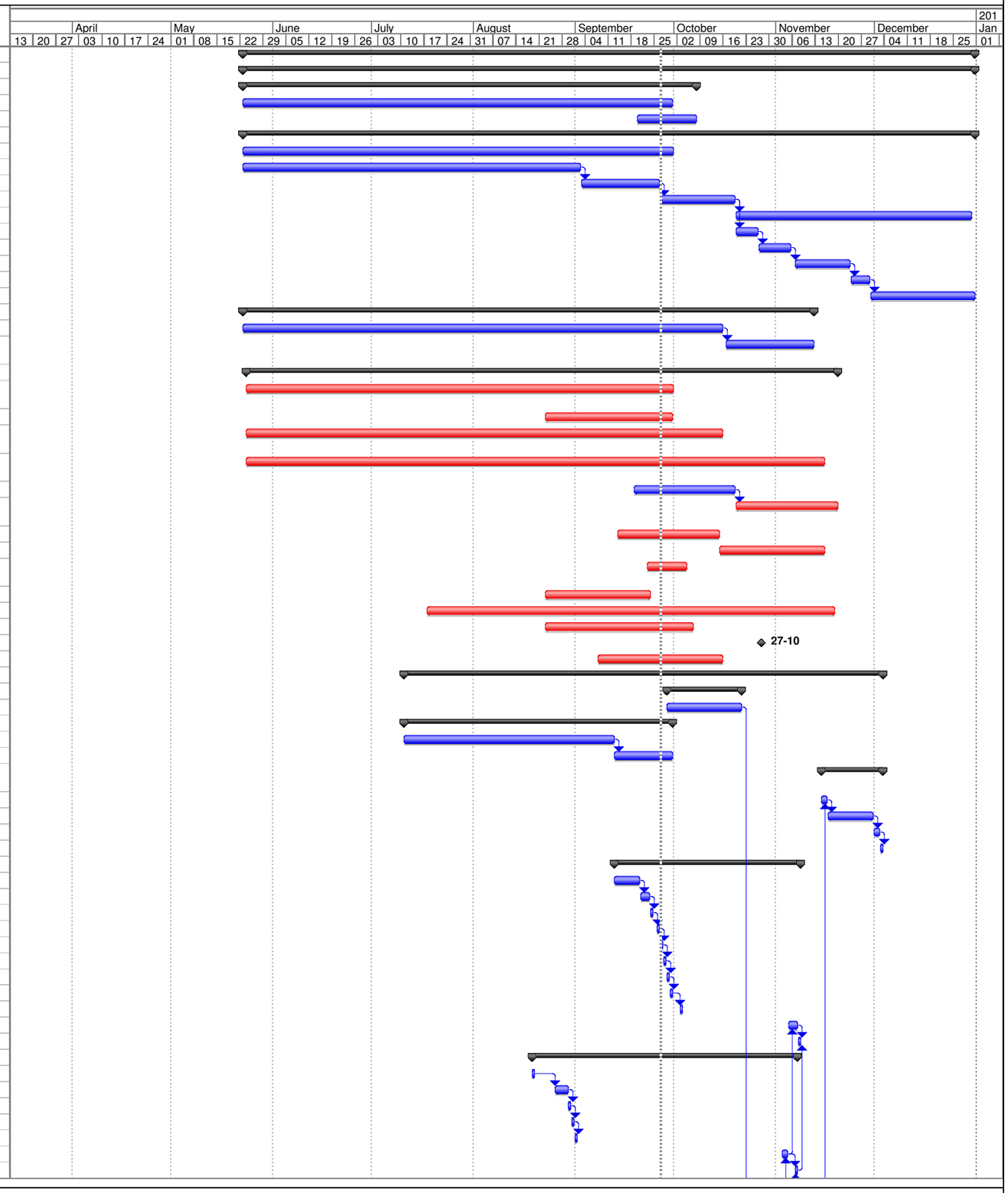


Project: Outstanding Works Programme (15Sep16)
Date: 27 Sep '16

Leader JEC Milestone ◆ Summary

OUTSTANDING WORKS PROGRAMME FOR DC/2009/23
NORTH POINT PTW, WAN CHAI EAST PTW AND CENTRAL PTW

ID	Task Name	Action By	Duration	Start	Finish	Predeces	Remarks
159	**CENTRAL PTW**		**185 days**	**23 May '16**	**31 Dec '16**		
160	**Outstanding Works at FSGT, DO Room, DG Store & General Store**		**185 days**	**23 May '16**	**31 Dec '16**		
161	**FSGT Building**		**115 days**	**23 May '16**	**07 Oct '16**		
162	Outstanding and Defective Works	Leader	110 days	23 May '16	30 Sep '16		
163	Installation of Access Link Bridge between FSGT and DO Room	Leader	15 days	20 Sep '16	07 Oct '16		
164	**DO Room, DG Store and General Store**		**185 days**	**23 May '16**	**31 Dec '16**		
165	Outstanding and Defective Works	Leader	110 days	23 May '16	30 Sep '16		
166	RC Staircase (up to +7.7mPD)	Leader	87 days	23 May '16	02 Sep '16		
167	RC Staircase (up to +11.4mPD)	Leader	19 days	03 Sep '16	26 Sep '16	166	
168	RC Staircase (up to roof at +14.51mPD)	Leader	18 days	27 Sep '16	19 Oct '16	167	
169	Finishing at Staircase	Leader	60 days	20 Oct '16	30 Dec '16	168	
170	Plate load test for Toilet Construction	Leader	6 days	20 Oct '16	26 Oct '16	168	
171	Toilet (slab construction and drain installation)	Leader	9 days	27 Oct '16	05 Nov '16	170	
172	Toilet (wall and top slab construction)	Leader	15 days	07 Nov '16	23 Nov '16	171	
173	Internal Finishing at Toilet	Leader	5 days	24 Nov '16	29 Nov '16	172	
174	E&M Installation at Toilet	Leader	26 days	30 Nov '16	31 Dec '16	173	
175	**Outstanding Works at Inlet Pumping Station**		**145 days**	**23 May '16**	**12 Nov '16**		
176	Curtain Wall	Leader	121 days	23 May '16	15 Oct '16		
177	Painting works & architectural finishes at existing Inlet Pumping Station	Leader	24 days	17 Oct '16	12 Nov '16	176	
178	**Remaining E&M Works**	**Leader**	**150 days**	**24 May '16**	**19 Nov '16**		
179	Outstanding and Defective Works for E&M Works at Central PTW	JEC	109 days	24 May '16	30 Sep '16		
180	ACF installation	JEC	33 days	23 Aug '16	30 Sep '16		In progress
181	Permanent Air Duct	JEC	120 days	24 May '16	15 Oct '16		In progress air duct to and inside IPS
182	Permanent Cables	JEC	146 days	24 May '16	15 Nov '16		Subject to availability of cable ducts
183	Remaining Cable Ducts and Drawpits (Civil Works)	Leader	25 days	19 Sep '16	19 Oct '16		
184	H2S and Weather Monitoring Station	JEC	27 days	20 Oct '16	19 Nov '16	183	Subject to availability of cable ducts
185	Final System Commissioning (FSGT Building)	JEC	24 days	14 Sep '16	14 Oct '16		
186	Final System Commissioning DOU and Ventilation	JEC	27 days	15 Oct '16	15 Nov '16		
187	Conversion of existing flushing system at Inlet Pumping Station	JEC	9 days	23 Sep '16	04 Oct '16		Waiting for backfill (civil) up to 1m below FFL
188	Flume channel re-calibration	JEC	27 days	23 Aug '16	23 Sep '16		In progress
189	Pump liner issues	JEC	104 days	18 Jul '16	18 Nov '16		
190	Pump softstarter bypass contractor	JEC	37 days	23 Aug '16	06 Oct '16		
191	Fire Services Inspection (Including EVA)	JEC	1 day	27 Oct '16	27 Oct '16		
192	Handing over the system to ST2	JEC	30 days	08 Sep '16	15 Oct '16		
193	**Remaining Boundary Wall Construction**		**123 days**	**11 Jul '16**	**03 Dec '16**		
194	**Fabrication for Steel Frame**		**18 days**	**29 Sep '16**	**21 Oct '16**		
195	Fabrication of Steel Frame (Planters 3-5 and 13-17)	Leader	18 days	29 Sep '16	21 Oct '16		
196	**Planters 1 to 2**		**70 days**	**11 Jul '16**	**30 Sep '16**		
197	Painting Works for Frame	Leader	55 days	11 Jul '16	12 Sep '16		
198	Timber Installation	Leader	15 days	13 Sep '16	30 Sep '16	197	
199	**Planter 3**		**17 days**	**15 Nov '16**	**03 Dec '16**		**Upon completion of road and drainage works**
200	Excavation	Leader	2 days	15 Nov '16	16 Nov '16	248	
201	Footing Construction	Leader	12 days	17 Nov '16	30 Nov '16	200	
202	Frame Installation	Leader	2 days	01 Dec '16	02 Dec '16	201	
203	Timber Installation	Leader	1 day	03 Dec '16	03 Dec '16	202	
204	**Planter 4**		**46 days**	**13 Sep '16**	**08 Nov '16**		
205	Excavation	Leader	6 days	13 Sep '16	20 Sep '16		
206	Formworks	Leader	3 days	21 Sep '16	23 Sep '16	205	
207	Steel works	Leader	1 day	24 Sep '16	24 Sep '16	206	
208	Concrete	Leader	1 day	26 Sep '16	26 Sep '16	207	
209	Removal of formworks	Leader	1 day	27 Sep '16	27 Sep '16	208	
210	Capping formworks	Leader	1 day	28 Sep '16	28 Sep '16	209	
211	Steel works	Leader	1 day	29 Sep '16	29 Sep '16	210	
212	Formworks	Leader	1 day	30 Sep '16	30 Sep '16	211	
213	Concrete	Leader	1 day	03 Oct '16	03 Oct '16	212	
214	Frame Installation	Leader	2 days	05 Nov '16	07 Nov '16	222	
215	Timber Installation	Leader	1 day	08 Nov '16	08 Nov '16	214,223	
216	**Planter 5 (Capping)**		**66 days**	**19 Aug '16**	**07 Nov '16**		
217	Drilling	Leader	1 day	19 Aug '16	19 Aug '16		
218	Steel Works	Leader	3 days	26 Aug '16	29 Aug '16	217	
219	Formworks	Leader	1 day	30 Aug '16	30 Aug '16	218	
220	Concrete	Leader	1 day	31 Aug '16	31 Aug '16	219	
221	Removal of formworks	Leader	1 day	01 Sep '16	01 Sep '16	220	
222	Frame Installation	Leader	2 days	03 Nov '16	04 Nov '16	235	
223	Timber Installation	Leader	1 day	07 Nov '16	07 Nov '16	222,236	



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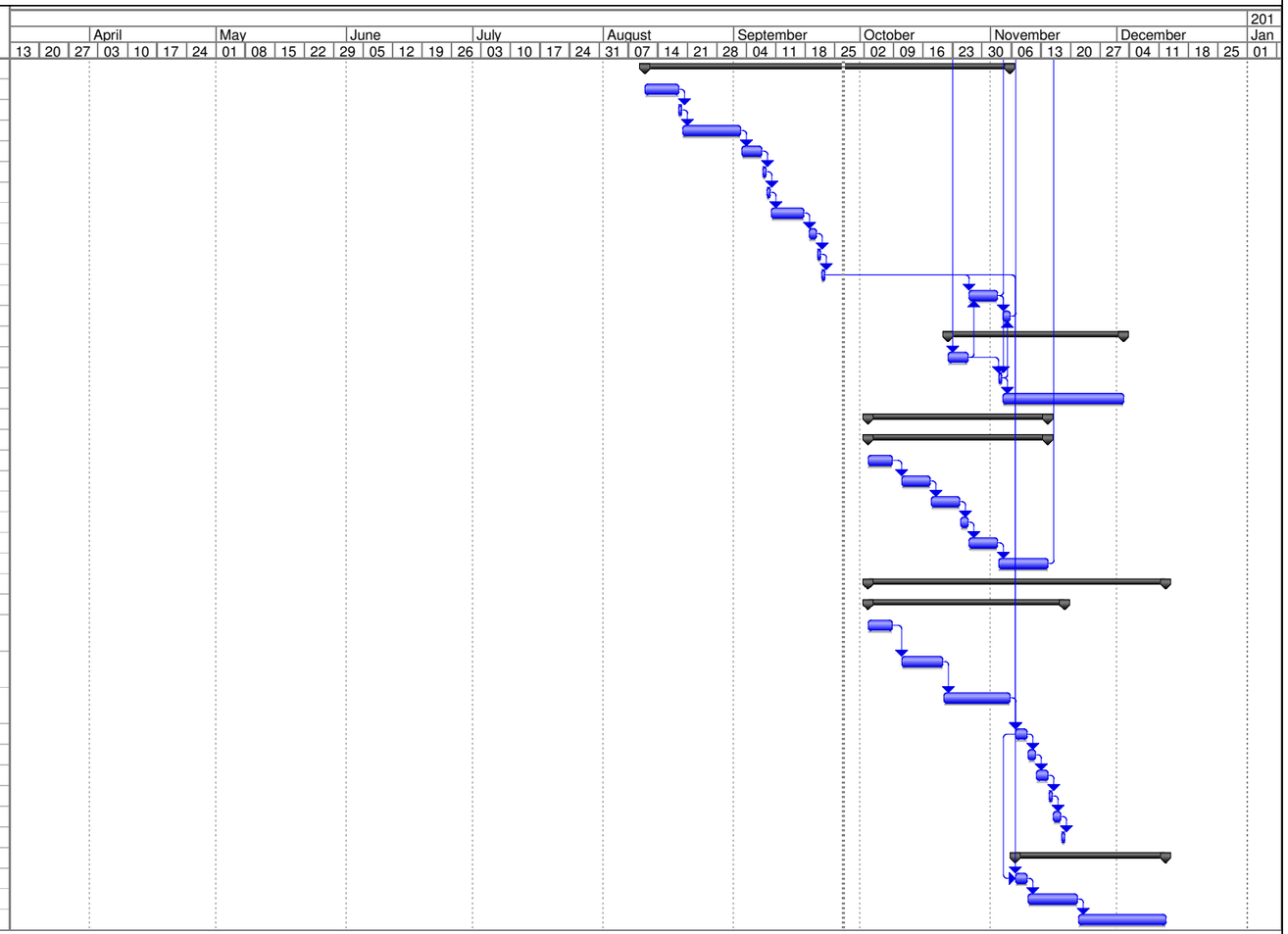
Leader JEC Milestone Summary

OUTSTANDING WORKS PROGRAMME FOR DC/2009/23
NORTH POINT PTW, WAN CHAI EAST PTW AND CENTRAL PTW

ID	Task Name	Action By	Duration	Start	Finish	Predeces	Remarks
224	**Planters 13 to 15**		**72 days**	**11 Aug '16**	**05 Nov '16**		
225	Slab breaking & demolition	Leader	7 days	11 Aug '16	18 Aug '16		
226	Blinding	Leader	1 day	19 Aug '16	19 Aug '16	225	
227	Formworks	Leader	12 days	20 Aug '16	02 Sep '16	226	
228	Steel Works	Leader	4 days	03 Sep '16	07 Sep '16	227	
229	Concrete	Leader	1 day	08 Sep '16	08 Sep '16	228	
230	Removal of formworks	Leader	1 day	09 Sep '16	09 Sep '16	229	
231	Formworks	Leader	6 days	10 Sep '16	17 Sep '16	230	
232	Steel Works	Leader	2 days	19 Sep '16	20 Sep '16	231	
233	Concrete	Leader	1 day	21 Sep '16	21 Sep '16	232	
234	Removal of formworks	Leader	1 day	22 Sep '16	22 Sep '16	233	
235	Frame Installation	Leader	6 days	27 Oct '16	02 Nov '16	234,238	
236	Timber Installation	Leader	2 days	04 Nov '16	05 Nov '16	235,239	
237	**Planter 16 to 17**		**36 days**	**22 Oct '16**	**02 Dec '16**		
238	Frame Installation	Leader	4 days	22 Oct '16	26 Oct '16	195	
239	Timber Installation	Leader	1 day	03 Nov '16	03 Nov '16	238,235	
240	Installation of Sliding Gate	Leader	25 days	04 Nov '16	02 Dec '16	239	
241	**Roadworks and Drainage Works**		**36 days**	**03 Oct '16**	**14 Nov '16**		
242	**Southern Portion**		**36 days**	**03 Oct '16**	**14 Nov '16**		
243	Site Clearance	Leader	6 days	03 Oct '16	08 Oct '16		
244	Excavation Works	Leader	6 days	11 Oct '16	17 Oct '16	243	
245	Catchpit and Drainage Pipe Installation	Leader	6 days	18 Oct '16	24 Oct '16	244	
246	Sub Base	Leader	2 days	25 Oct '16	26 Oct '16	245	
247	Road base and Kerb	Leader	6 days	27 Oct '16	02 Nov '16	246	
248	Paving Block Installation	Leader	10 days	03 Nov '16	14 Nov '16	247	
249	**Grasscrete and Landscaping Works**		**60 days**	**03 Oct '16**	**12 Dec '16**		
250	**Grasscrete Installation**		**40 days**	**03 Oct '16**	**18 Nov '16**		
251	Removal of Container and Site Clearance (in between FSGT & DO, DG and General Store Bldg.)	Leader	6 days	03 Oct '16	08 Oct '16		
252	Excavation Works (in between FSGT & DO, DG and General Store Bldg.)	Leader	9 days	11 Oct '16	20 Oct '16	251	
253	Catchpit and Drainage Pipe Installation (in between FSGT & DO, DG and General Store Bldg.)	Leader	14 days	21 Oct '16	05 Nov '16	252	
254	Site clearance after Planters 13 to 15	Leader	3 days	07 Nov '16	09 Nov '16	253,234	
255	Sub base with backfilling	Leader	2 days	10 Nov '16	11 Nov '16	254	
256	Laying of steel mesh	Leader	2 days	12 Nov '16	14 Nov '16	255	
257	Concrete	Leader	1 day	15 Nov '16	15 Nov '16	256	
258	Soil laying	Leader	2 days	16 Nov '16	17 Nov '16	257	
259	Grass Installation	Leader	1 day	18 Nov '16	18 Nov '16	258	
260	**Landscaping Works**		**31 days**	**07 Nov '16**	**12 Dec '16**		
261	Site clearance after Planters 13 to 15	Leader	3 days	07 Nov '16	09 Nov '16	234,254SS	
262	Backfilling	Leader	10 days	10 Nov '16	21 Nov '16	261	
263	Landscaping for Central PTW	Leader	18 days	22 Nov '16	12 Dec '16	262	



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