


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
August 2017

(Version 1.0)

Certified By	 (Environmental Team Leader)
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REMARKS:

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

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

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

Our Reference
GCB/AFK/DC/bw/
T261332/22.01/L-1251

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

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Condition 4.4 – Monthly EM&A Report for August 2017 (no. 79) Version 1.0

11 September 2017

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Dear Sir,

I refer to the captioned Monthly EM&A Report for August 2017 (version 1.0) submitted by ET on 7 September 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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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 79th 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). The Proposal of Termination of EM&A Programme of the Project was approved by EPD on 11th August 2017. This report 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 1st August to 11th August 2017.
2. The site activities undertaken for in the reporting month included:
 - Wan Chai East PTW:
 - N/A.
 - North Point PTW
 - Operation and maintain of the new FSGT Building.
 - Central PTW
 - Operation and maintain of the new FSGT Building.

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	0	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. 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

24-hour TSP Monitoring

- 7. 24-hour TSP monitoring was conducted as scheduled in the reporting month. Due to the interruption of power supply at AM3 on 28 July 2017, the 24hrs -TSP monitoring at AM3 was replenished on 2 August 2017. No Action/Limit Level exceedance was recorded.

Construction Noise

- 8. All Construction Noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

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 July 2017	Submitted to EPD on 14 August 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. According to the information from the Contractor, the construction works of this contract was completed in July 2017. Therefore, there was no construction activities after July 2017 under Contract No. DC/2009/23.

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 79th monthly EM&A report summarizing the EM&A works conducted for the Project from 1st August to 11th August 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:

- N/A.

North Point PTW

- Operation and maintain of the new FSGT Building.

Central PTW

- Operation and maintain of the new FSGT Building.

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 from 1st August to 11th August 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	Hal Technology; Model no. Hal-HPC300	2
	Hal Technology; Model no. Hal-HPC301	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 SENSL.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 m³/min. and 1.4 m³/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 $\mu\text{g}/\text{m}^3$	Range $\mu\text{g}/\text{m}^3$	Action Level $\mu\text{g}/\text{m}^3$	Limit Level $\mu\text{g}/\text{m}^3$
1 hour TSP				
AM1	47	17 – 79	340	500
AM2	53	18 – 89	352	
AM3	56	35 – 79	355	
AM4_2	55	30 – 75	393	
24 hours TSP				
AM1	31	25 – 38	185	260
AM2	53	44 – 62	182	
AM3	29	20 – 44	181	
AM4_2	75	62 – 88	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 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 24-hour TSP monitoring was conducted as scheduled in the reporting month. Due to the interruption of power supply at AM3 on 28 July 2017, the 24hrs -TSP monitoring at AM3 was replenished on 2 August 2017. 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 vehicles movement.

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	1
Calibrator	SV30A	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

	$L_{eq}(5 \text{ min.})$ dB(A)	Restricted hours (1900-2300 on all days and 0700-2300 on general holidays and Sundays)
NM3	$L_{eq}(30 \text{ min.})$ 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) $L_{eq}(30 \text{ min.})$	Limit Level ,dB(A) $L_{eq}(30 \text{ min.})$
NM1	69 – 69	70.0 */69.0**
NM2	73 – 73	75.0
NM3	73 – 73	

* 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 $L_{Aeq,30min}$ 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	N/A ⁽¹⁾	70.0 *
NM2	N/A ⁽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 No construction work was conducted during the day time and 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/Limit Level exceedance was recorded.
- 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 source identified at the designated noise monitoring stations was traffic noise.

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 3rd and 11th August 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				
WT000254 00-2016	1/9/2016	30/9/2021	Location: North Point PTW	Valid
WT000254 14-2016	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	Expiry
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	--	--	--
Air Quality	170803-001	The Non-road Mobile Machinery (NRMM) label should be shown/displayed on the excavator at North Point-PTW.	The Non-road Mobile Machinery (NRMM) label was displayed on the unused identified excavator at North Point-PTW.
Waste/Chemical Management	170803-R02	The drip tray should be provided for the chemical containers at Central-PTW.	The chemical containers were removed and not observed at Central-PTW.
Noise	--	--	--
Landscape and Visual	--	--	--
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 in the reporting month. No project-related 1-hr TSP monitoring exceedance was recorded over the duration of the monitoring programme.

24-hr TSP

- 4.12 No Action/Limit Level exceedance was recorded in the reporting month. No project-related 24-hr TSP monitoring exceedance was recorded over the duration of the monitoring programme.

Construction Noise

- 4.13 No Action/Limit Level exceedance was recorded in the reporting month. No project-related construction noise monitoring exceedance was recorded over the duration of the monitoring programme.

Landscape and Visual

4.14 No non-compliance was recorded in the reporting month.

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 According to the information from the Contractor, the construction works of this contract was completed in July 2017. Therefore, there was no construction activities after July 2017 and no recommendation was made under Contract No. DC/2009/23.

Construction Activities for the Next Two Months

- 5.2 According to the information from the Contractor, the construction works of this contract was completed in July 2017. Therefore, there was no construction activities after July 2017 under Contract No. DC/2009/23.

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 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 24-hour TSP monitoring was conducted as scheduled in the reporting month. Due to the interruption of power supply at AM3 on 28 July 2017, the 24hrs -TSP monitoring at AM3 was replenished on 2 August 2017. No Action/Limit Level exceedance was recorded.

Construction Noise Monitoring

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

Environmental Audit

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

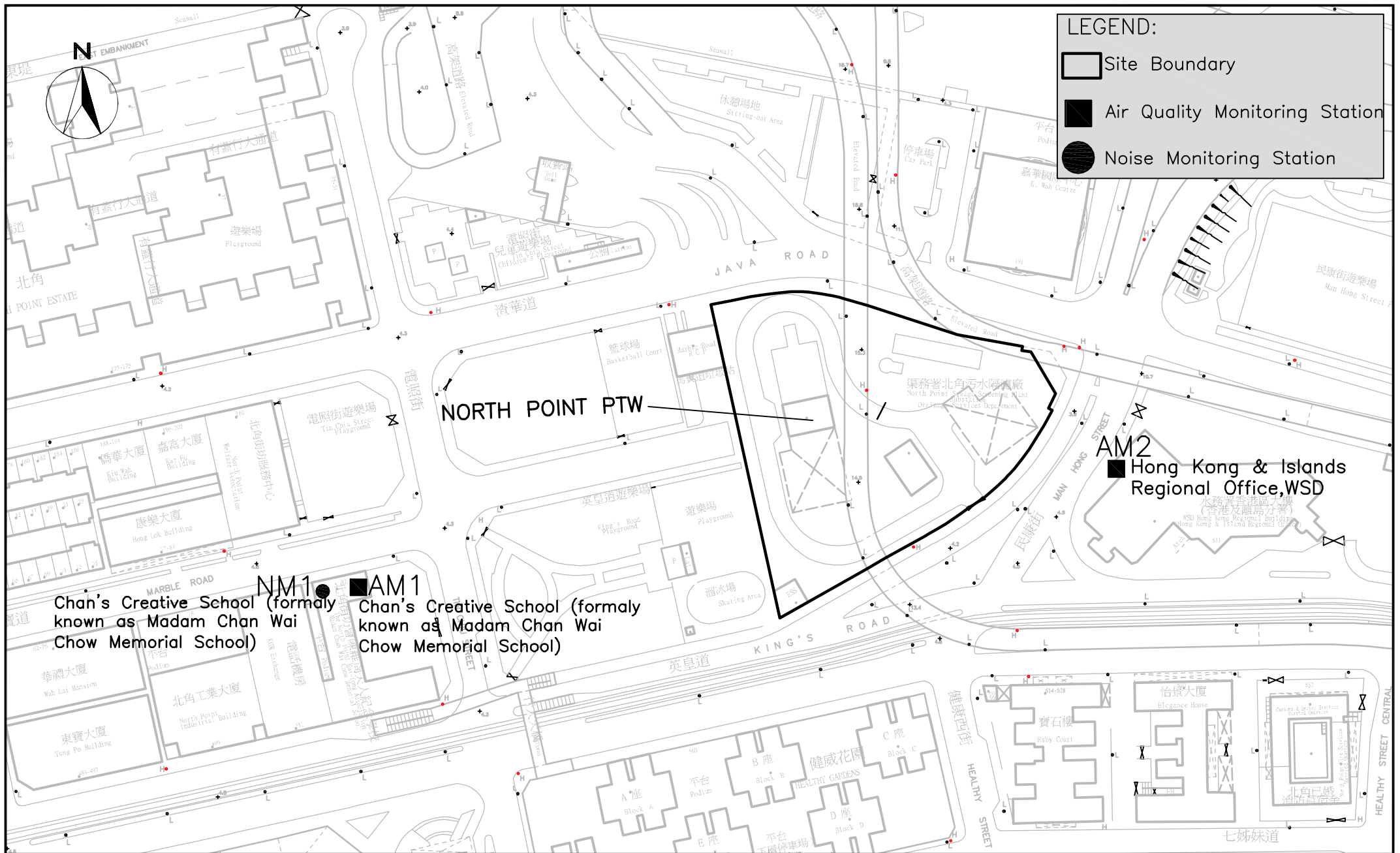
Complaint and Prosecution

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

Recommendations for the coming reporting month:

- 6.7 According to the information from the Contractor, the construction works of this contract was completed in July 2017. Therefore, there was no construction activities after July 2017 under Contract No. DC/2009/23.

FIGURES



NM1 ■ AM1
 Chan's Creative School (formally known as Madam Chan Wai Chow Memorial School)

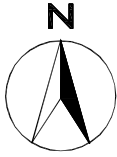
AM2 ■
 Hong Kong & Islands Regional Office, WSD

NORTH POINT PTW



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)

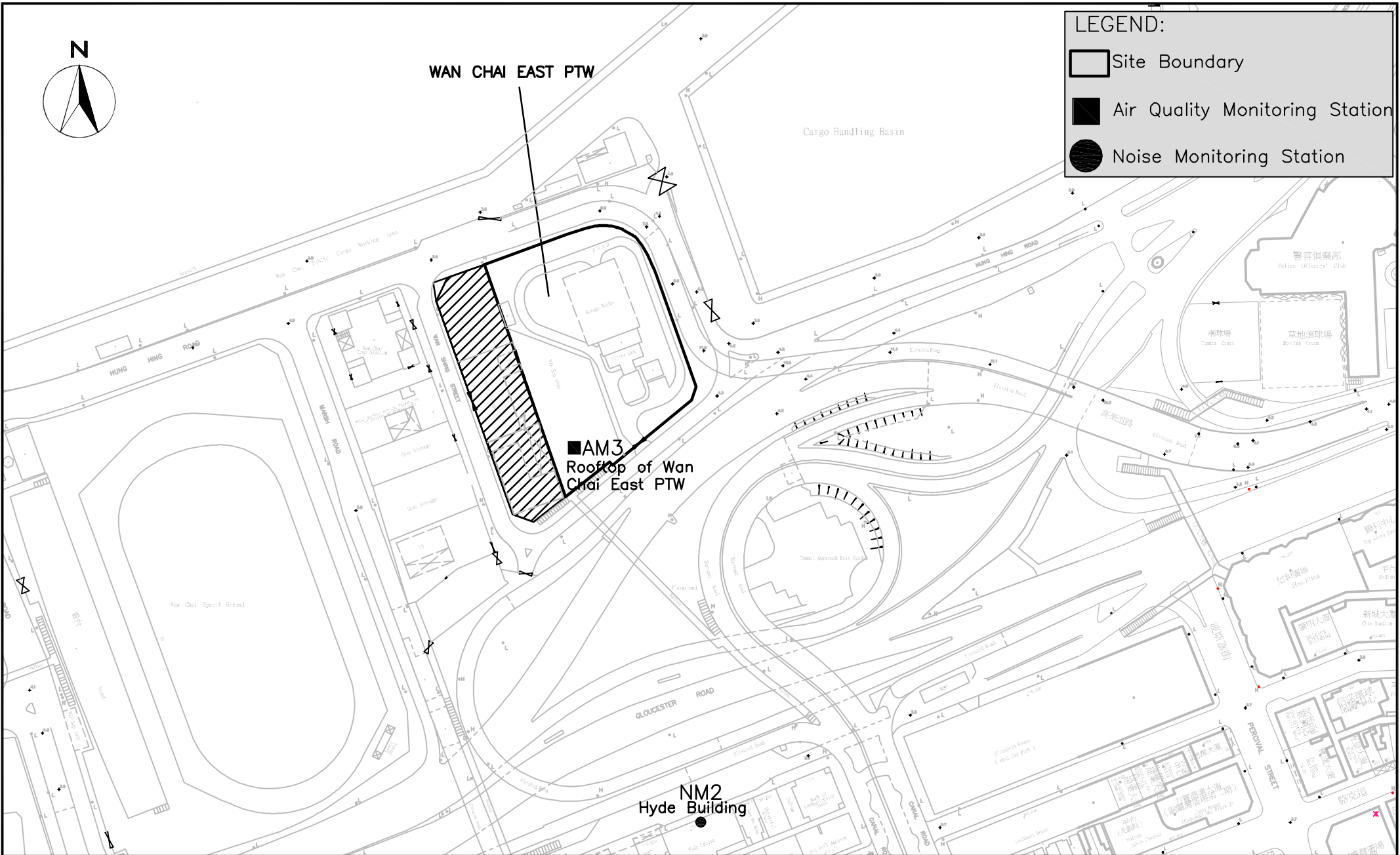
SCALE	N.T.S	DATE	11 MAR 2011	
CHECK	GL	DRAWN	TW	
PROJECT NO.	MA11003	FIGURE NO.	1A	REV —



WAN CHAI EAST PTW

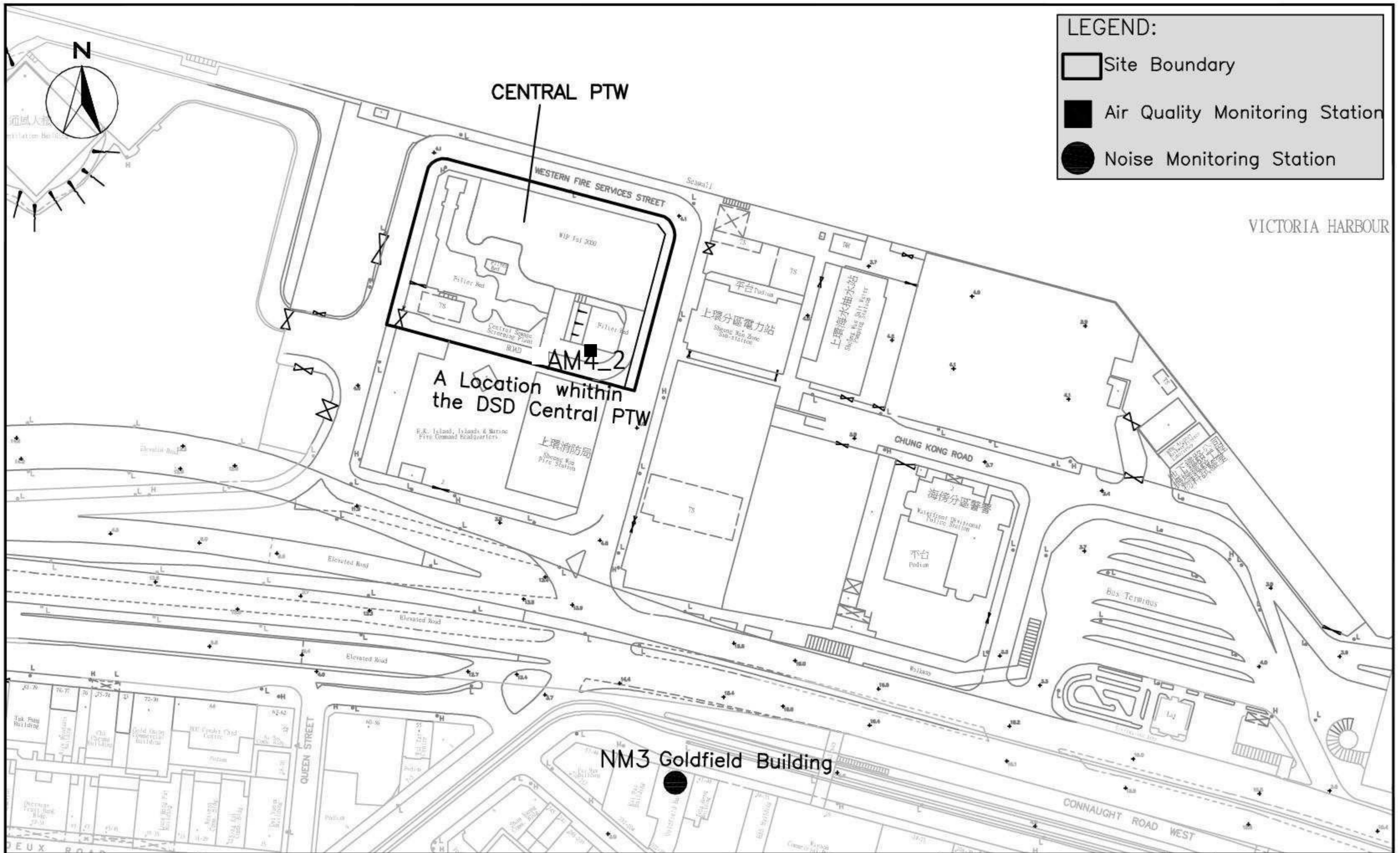
LEGEND:

- Site Boundary
- Air Quality Monitoring Station
- Noise Monitoring Station



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	—

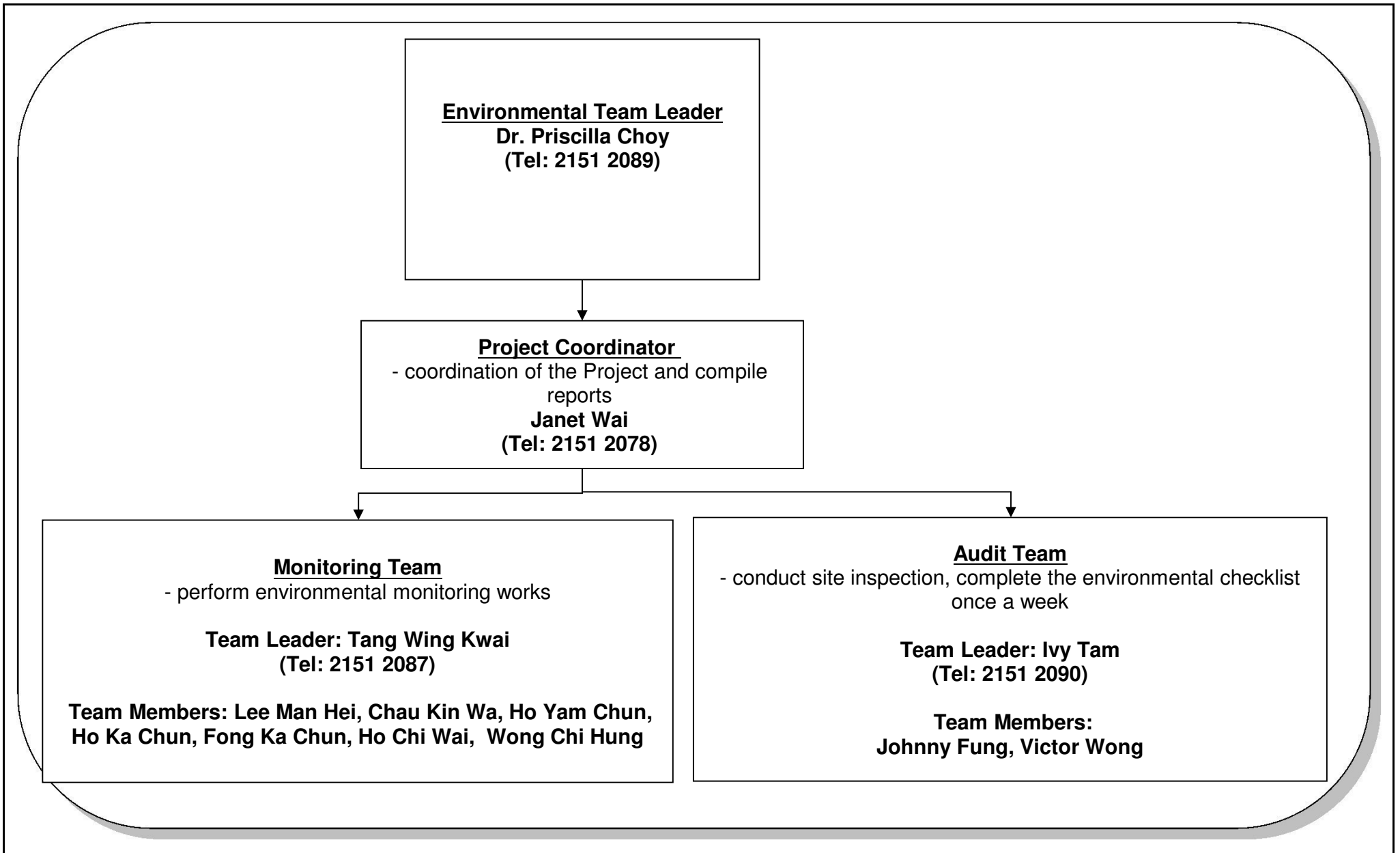


Contract No. DC/2009/23 – Harbour Area Treatment Stage 2A
 – Upgrading of Preliminary Treatment Works at North Point,
 Wan Chai East and Central

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

**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 ($\mu\text{g}/\text{m}^3$)		Limit Level ($\mu\text{g}/\text{m}^3$)	
	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 August 2017

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1-Aug	2-Aug	3-Aug	4-Aug	5-Aug
			24hr TSP* (AM3)	24hr TSP	1 hr TSP Noise (Daytime)	
6-Aug	7-Aug	8-Aug	9-Aug	10-Aug	11-Aug	12-Aug
			24hr TSP	1 hr TSP Noise (Daytime)		
13-Aug	14-Aug	15-Aug	16-Aug	17-Aug	18-Aug	19-Aug
20-Aug	21-Aug	22-Aug	23-Aug	24-Aug	25-Aug	26-Aug
27-Aug	28-Aug	29-Aug	30-Aug	31-Aug		

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

Remark: * Due to the interruption of power supply at AM3 on 28 July 2017, the replenishment of 24hrs -TSP monitoring at AM3 was made up on 2 August 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

**APPENDIX C
COPIES OF CALIBRATION
CERTIFICATES**

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA11003/46/0012

Station: AM1 - Chan's Creative School Operator: MH
 Date: 13-Jul-17 Next Due Date: 12-Sep-17
 Equipment No.: A-01-46 Serial No. 1315

Ambient Condition			
Temperature, Ta (K)	302.2	Pressure, Pa (mmHg)	759.7

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

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	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	3.55	62.33	8.6	2.91
2	10.2	3.17	55.73	6.9	2.61
3	7.6	2.74	48.22	5.0	2.22
4	5.4	2.31	40.78	3.4	1.83
5	3.3	1.80	32.06	2.1	1.44

By Linear Regression of Y on X

Slope, mw = 0.0493 Intercept, bw = -0.1560
 Correlation coefficient* = 0.9996

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation



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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 3.91

Remarks: _____

Conducted by: LEE MAN MEZ Signature:  Date: 13-7-2017
 Checked by: Wah Tang Signature:  Date: 13/7/2017

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA11003/44/0012

Station: AM2 - Hong Kong & Islands Regional Office, WSD Operator: WK
 Date: 13-Jul-17 Next Due Date: 12-Sep-17
 Equipment No.: A-01-44 Serial No. 1316

Ambient Condition			
Temperature, Ta (K)	302.6	Pressure, Pa (mmHg)	759.3

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

Calibration of TSP Sampler						
Calibration Point	Orifice			HVS		
	ΔH (orifice), in. of water	[ΔH x (Pa/760) x (298/Ta)] ^{1/2}	Qstd (CFM) X - axis	ΔW (HVS), in. of water	[ΔW x (Pa/760) x (298/Ta)] ^{1/2} Y-axis	Y-
1	12.7	3.53	62.03	7.9	2.79	
2	10.5	3.21	56.48	6.7	2.57	
3	7.8	2.77	48.80	5.0	2.22	
4	5.2	2.26	40.00	3.2	1.77	
5	3.3	1.80	32.04	2.1	1.44	

By Linear Regression of Y on X
 Slope, mw = 0.0458 Intercept, bw = -0.0346
 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 x Qstd + bw) ² x (760 / Pa) x (Ta / 298) =	<u>3.80</u>

Remarks: _____

Conducted by: LEE MAN HEI Signature: Lee Man Hei Date: 13-7-2017
 Checked by: W.K. Tang Signature: W.K. Tang Date: 13/7/2017

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA11003/48/0012

Station: AM3 - Wan Chai East PTW Operator: MH
 Date: 13-Jul-17 Next Due Date: 12-Sep-17
 Equipment No.: A-01-48 Serial No. 1792

Ambient Condition			
Temperature, Ta (K)	303.4	Pressure, Pa (mmHg)	759.3

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

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	ΔH (orifice), in. of water	[ΔH x (Pa/760) x (298/Ta)] ^{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	3.40	59.75	7.8	2.77
2	9.9	3.12	54.80	6.5	2.53
3	7.7	2.75	48.43	5.0	2.22
4	5.4	2.30	40.69	3.5	1.85
5	3.4	1.83	32.46	2.3	1.50

By Linear Regression of Y on X

Slope, mw = 0.0465 Intercept, bw = -0.0235
 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 x Qstd + bw)² x (760 / Pa) x (Ta / 298) = 3.98

Remarks: _____

Conducted by: LEE MAN HEI Signature: Lee Date: 13-7-2017
 Checked by: Lik Tang Signature: Lik Tang Date: 13/7/2017

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA11003/15/0011

Station: AM4_2 - A location within the DSD Central PTW Operator: MH
 Date: 19-Jul-17 Next Due Date: 18-Sep-17
 Equipment No.: A-01-15 Serial No. 10576

Ambient Condition			
Temperature, Ta (K)	302.2	Pressure, Pa (mmHg)	758.2

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

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	11.9	3.42	60.07	8.0	2.81
2	9.7	3.09	54.32	6.5	2.53
3	7.6	2.73	48.18	4.8	2.17
4	5.1	2.24	39.62	3.3	1.80
5	3.4	1.83	32.50	2.2	1.47

By Linear Regression of Y on X
 Slope, mw = 0.0485 Intercept, bw = -0.1198
 Correlation coefficient* = 0.9989

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation	
From the TSP Field Calibration Curve, take Qstd = 43 CFM	
From the Regression Equation, the "Y" value according to	
$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$	
Therefore, Set Point; W = $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ <u>3.93</u>	

Remarks: _____

Conducted by: LEE MAN HEZ Signature: Lee Date: 19-7-2017
 Checked by: Wk Tang Signature: Kwan Date: 19/7/2017



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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

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

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

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
0.9967	0.7191	1.4149	0.9957	0.7184	0.8851
0.9925	1.0015	2.0010	0.9915	1.0005	1.2517
0.9904	1.1204	2.2372	0.9894	1.1192	1.3995
0.9894	1.1737	2.3464	0.9884	1.1725	1.4678
0.9842	1.4120	2.8299	0.9832	1.4106	1.7702

Qstd slope (m) = 2.04055
 intercept (b) = -0.04890
 coefficient (r) = 0.99995

Qa slope (m) = 1.27776
 intercept (b) = -0.03059
 coefficient (r) = 0.99995

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

CALCULATIONS

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

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

For subsequent flow rate calculations:

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

TEST REPORT

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

Test Report No.:	C/170616A
Date of Issue:	2017-06-19
Date Received:	2017-06-16
Date Tested:	2017-06-16
Date Completed:	2017-06-19
Next Due Date:	2017-08-18

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 : 65 %

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 Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.131
-------------------------	-------

PREPARED AND CHECKED BY:
 For and On Behalf of **WELLAB Ltd.**


PATRICK TSE
 Laboratory Manager

TEST REPORT

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

Test Report No.:	C/170616B
Date of Issue:	2017-06-19
Date Received:	2017-06-16
Date Tested:	2017-06-16
Date Completed:	2017-06-19
Next Due Date:	2017-08-18

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 : 65 %

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 Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.188
-------------------------	-------

PREPARED AND CHECKED BY:

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



PATRICK TSE
 Laboratory Manager

TEST REPORT

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

Test Report No.:	C/170609G
Date of Issue:	2017-06-12
Date Received:	2017-06-09
Date Tested:	2017-06-09
Date Completed:	2017-06-12
Next Due Date:	2017-08-11

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-HPC301
Serial No.	: 3011701019
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 5 minutes
Equipment No.	: A-27-01

Test Conditions:

Room Temperature	: 21 degree Celsius
Relative Humidity	: 62 %

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 Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.107
-------------------------	-------

PREPARED AND CHECKED BY:

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



PATRICK TSE
Laboratory Manager

TEST REPORT

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

Test Report No.:	C/170609E
Date of Issue:	2017-06-12
Date Received:	2017-06-09
Date Tested:	2017-06-09
Date Completed:	2017-06-12
Next Due Date:	2017-08-11

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-HPC301
Serial No.	: 3011701015
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 5 minutes
Equipment No.	: A-27-09

Test Conditions:

Room Temperature	: 21 degree Celsius
Relative Humidity	: 62 %

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 Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.147
-------------------------	-------

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**



PATRICK TSE
Laboratory Manager

TEST REPORT

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

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

ATTN: Mr. W. K. Tang

Page: 1 of 1

Certificate of Calibration

Item for calibration:

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

Test conditions:

Room Temperature	: 21 degree Celsius
Relative Humidity	: 62 %

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual


Results:

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

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

PREPARED AND CHECKED BY:

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


PATRICK TSE
Laboratory Manager

TEST REPORT

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

Test Report No.:	C/N/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 Temperature	: 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

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**


PATRICK TSE
Laboratory Manager

TEST REPORT

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

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

ATTN: Mr. W.K. Tang

Page: 1 of 1

Item for calibration:

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

Test conditions:

Room Temperature	: 25 degree Celsius
Relative Humidity	: 60%

Methodology:

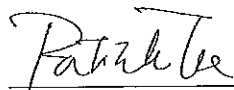
The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

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

PREPARED AND CHECKED BY:

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



PATRICK TSE

Laboratory Manager

TEST REPORT

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

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

ATTN: Mr. W.K. Tang

Page: 1 of 1

Item for calibration:

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

Test conditions:

Room Temperature	: 25 degree Celsius
Relative Humidity	: 60%

Methodology:

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

Results:

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

PREPARED AND CHECKED BY:

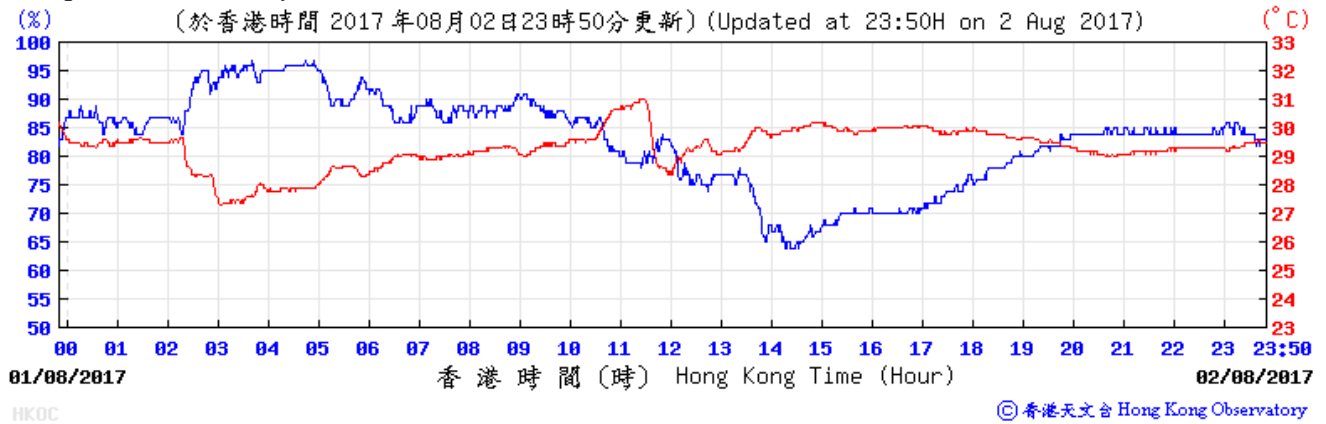
For and On Behalf of **WELLAB Ltd.**


BATRICK TSE
Laboratory Manager

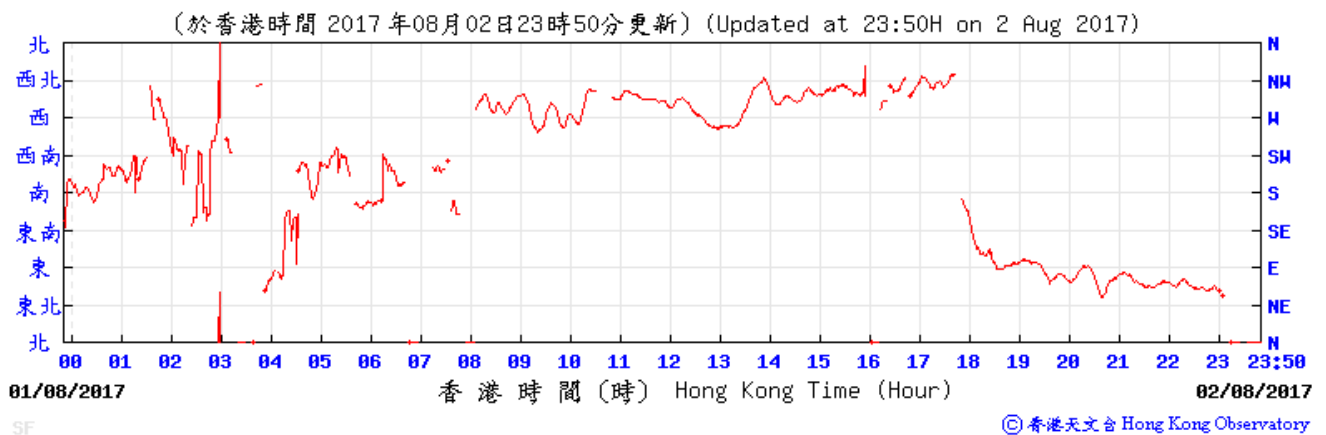
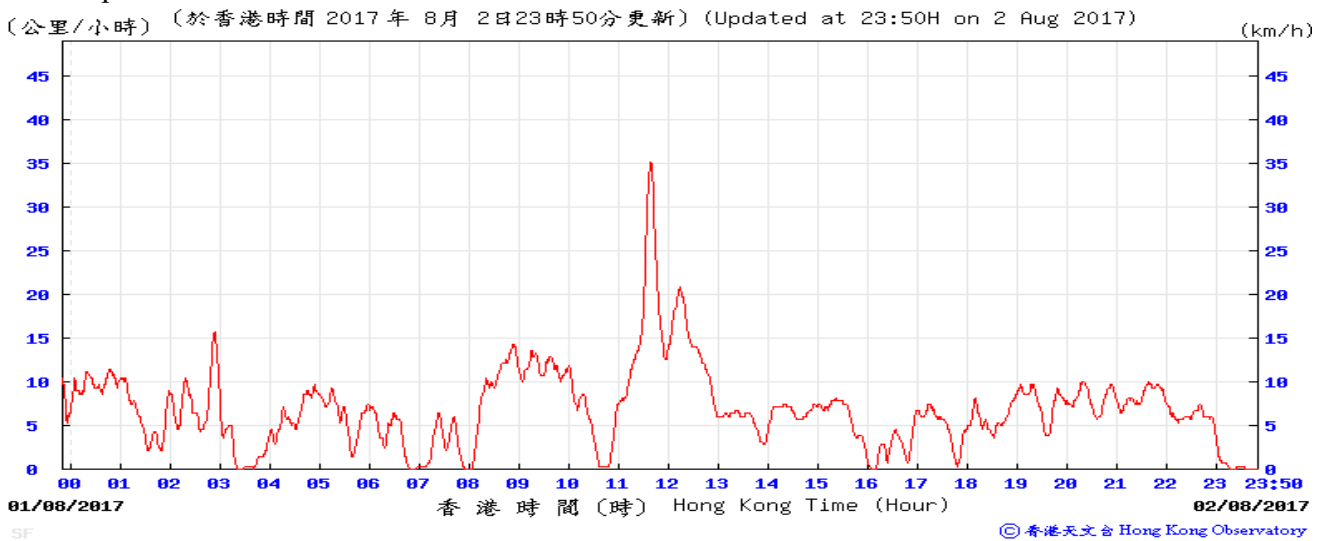
**APPENDIX D
METEOROLOGICAL DATA ON
MONITORING DATES**

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

Temperature/Humidity:



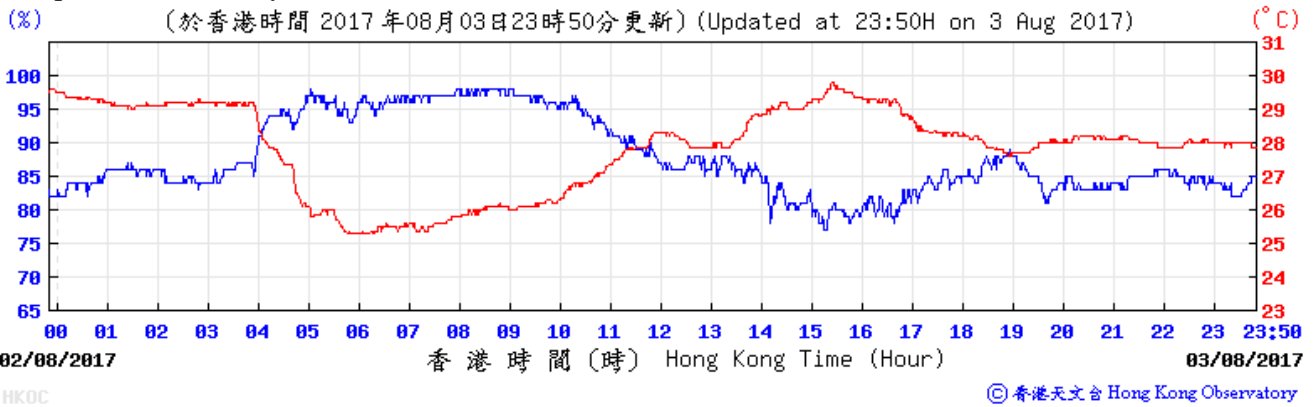
Wind Speed and Direction:



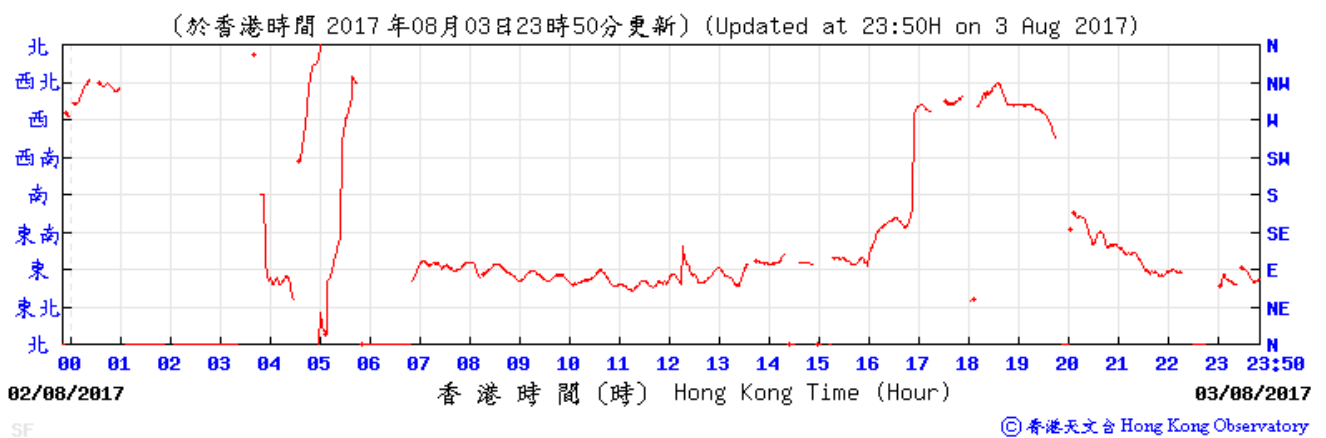
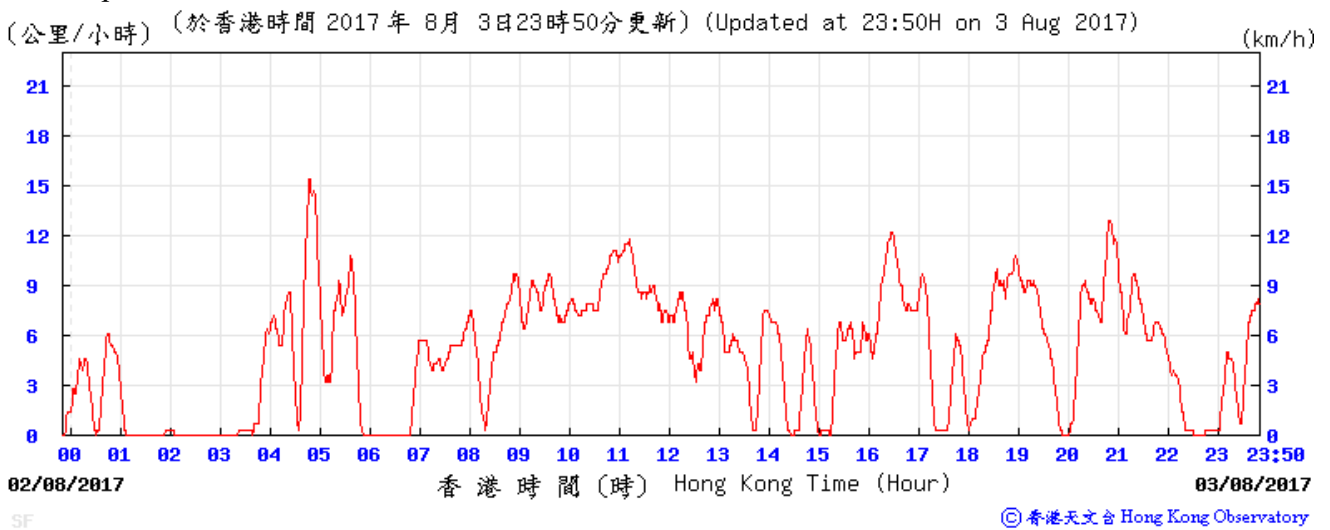
Meteorological Data Recorded from HKO Station (3 August 2017)

(Source: www.hko.gov.hk)

Temperature/Humidity:



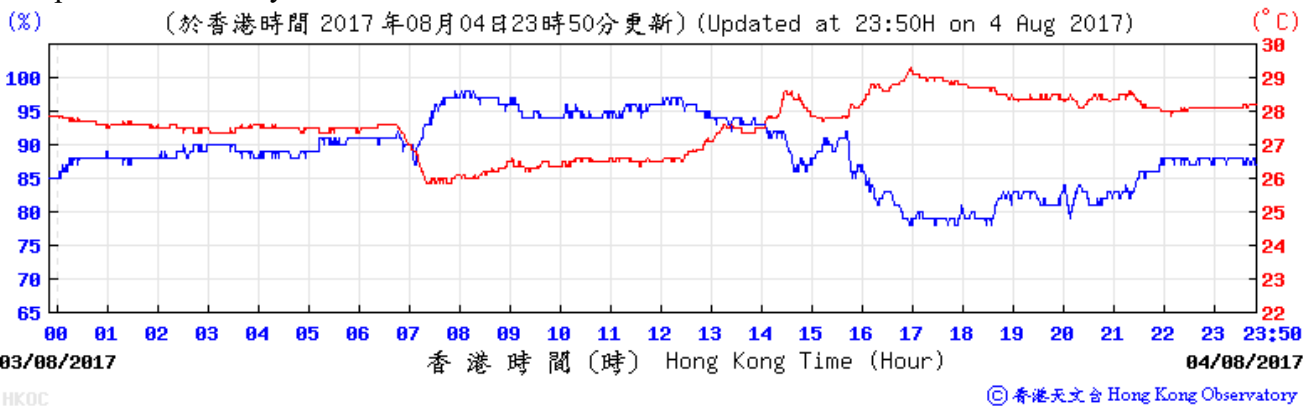
Wind Speed and Direction:



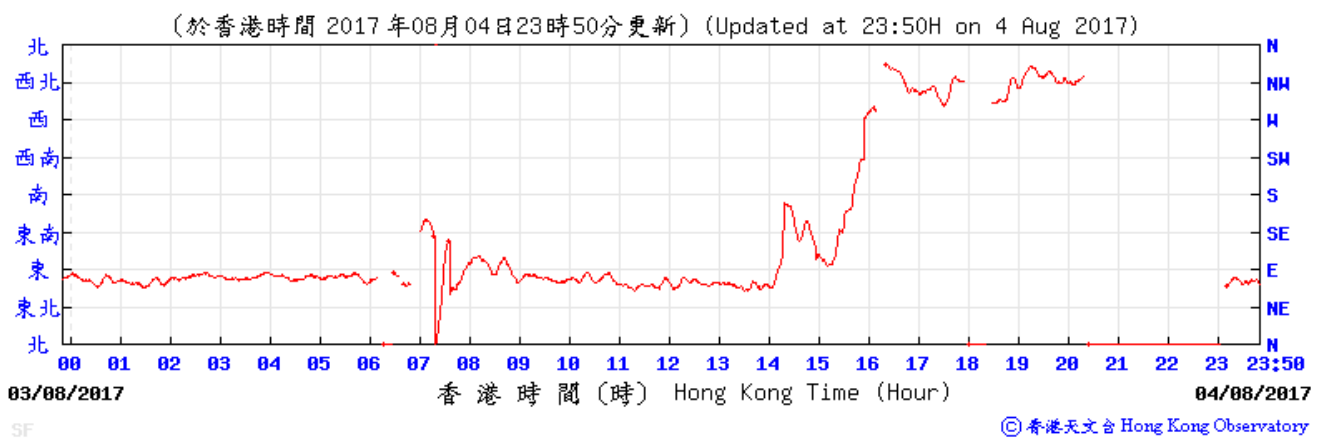
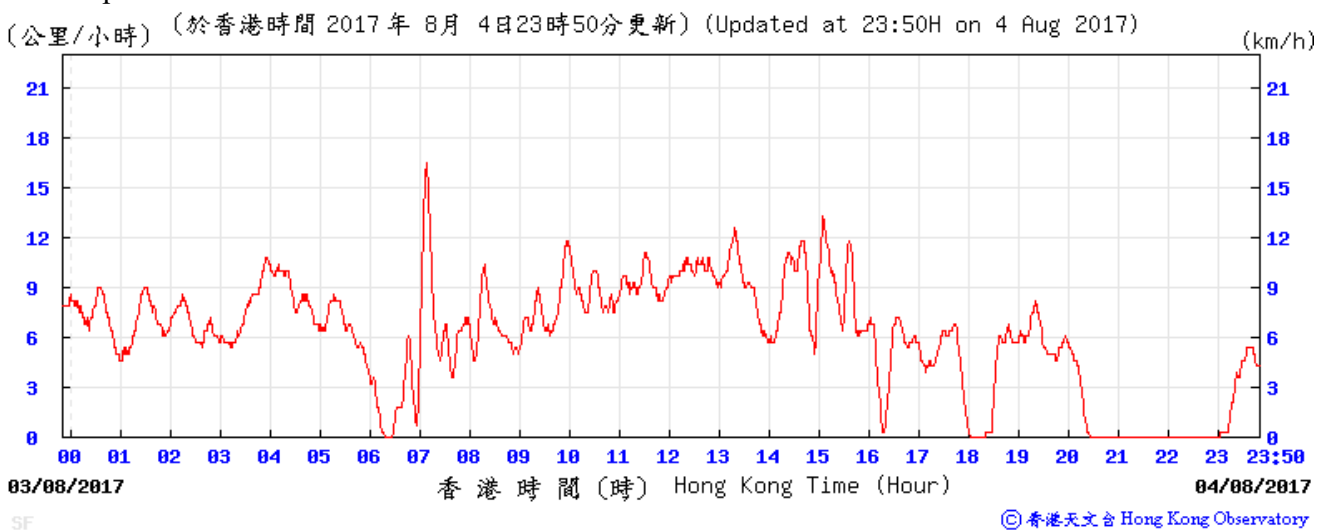
Meteorological Data Recorded from HKO Station (4 August 2017)

(Source: www.hko.gov.hk)

Temperature/Humidity:



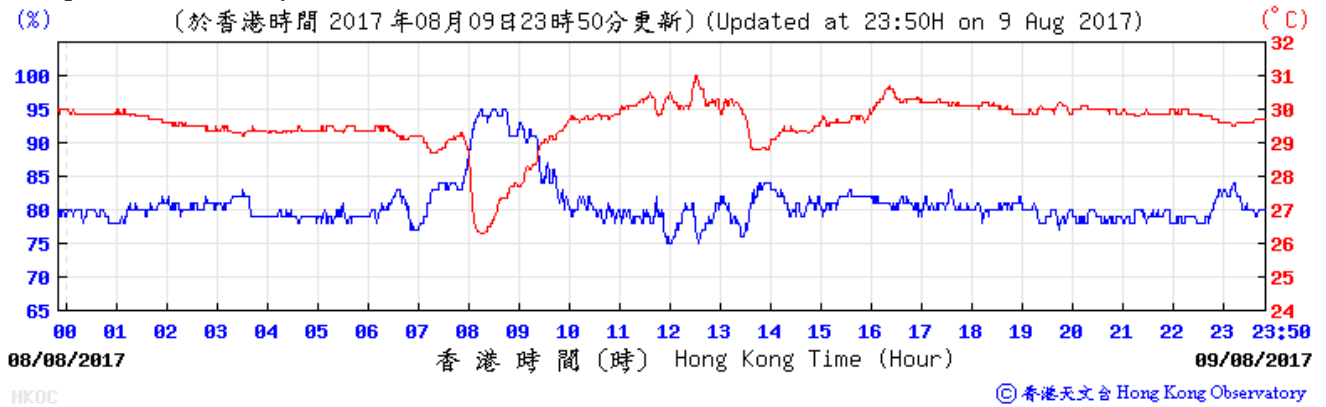
Wind Speed and Direction:



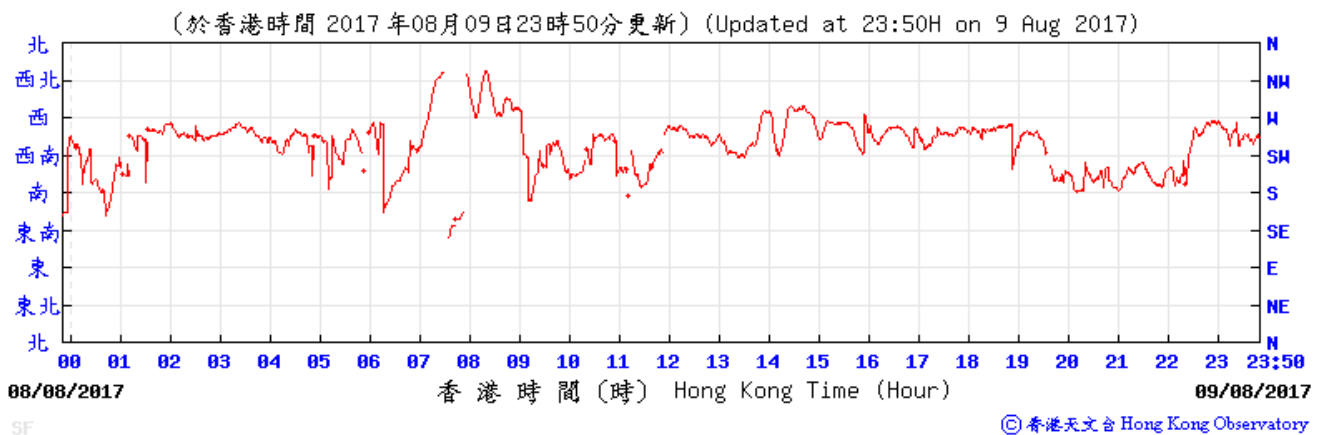
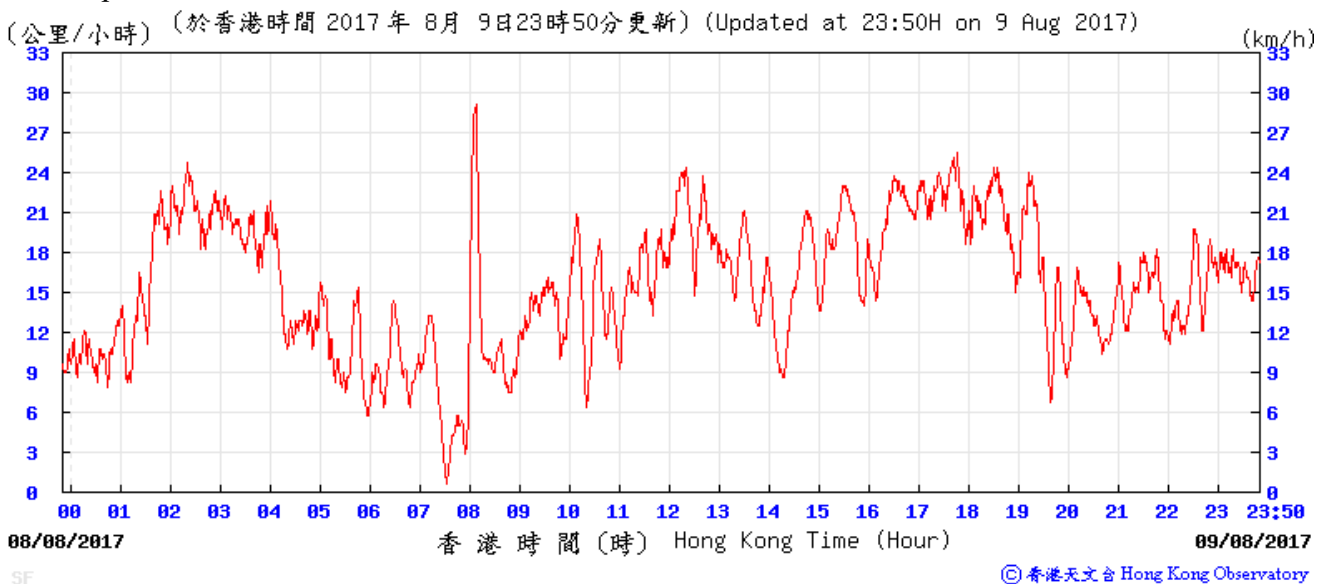
Meteorological Data Recorded from HKO Station (9 August 2017)

(Source: www.hko.gov.hk)

Temperature/Humidity:



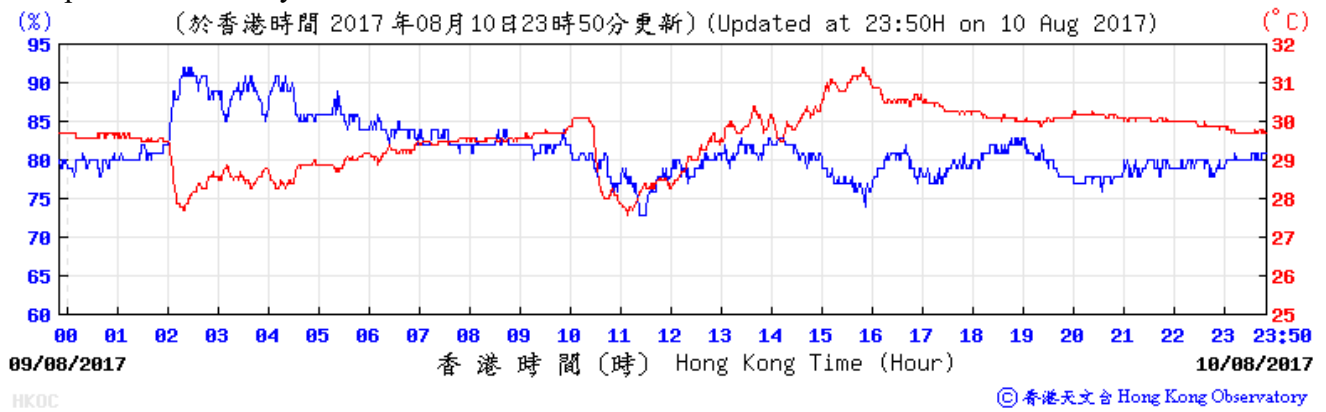
Wind Speed and Direction:



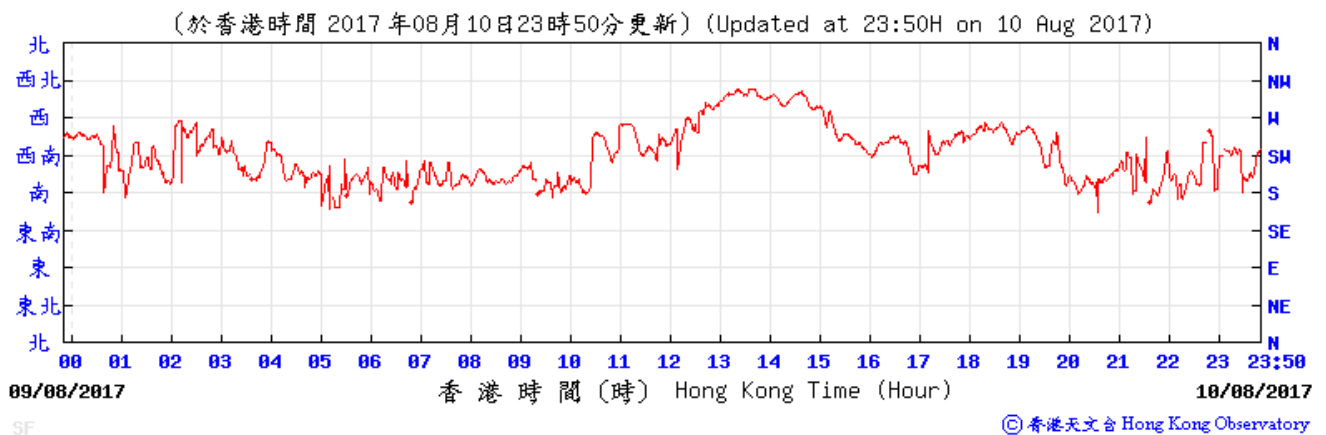
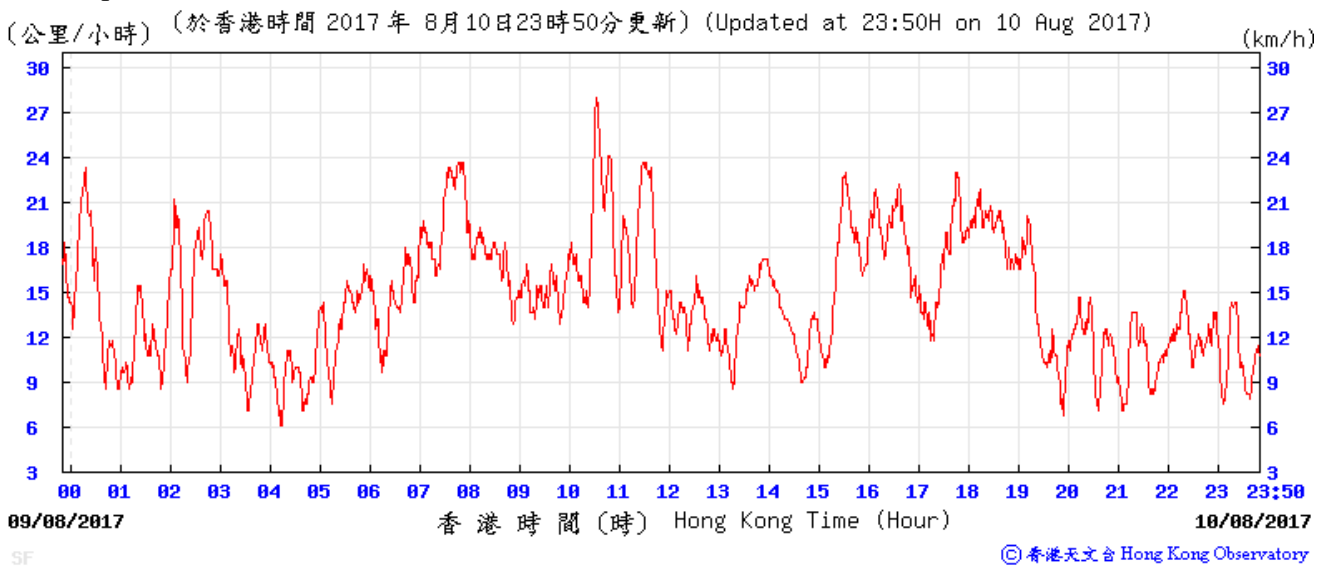
Meteorological Data Recorded from HKO Station (10 August 2017)

(Source: www.hko.gov.hk)

Temperature/Humidity:



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 ($\mu\text{g}/\text{m}^3$)
4-Aug-17	9:00	Sunny	21.5
4-Aug-17	10:00	Sunny	18.1
4-Aug-17	11:00	Sunny	17.0
10-Aug-17	9:00	Cloudy	78.5
10-Aug-17	10:00	Cloudy	75.9
10-Aug-17	11:00	Cloudy	72.5
Average			47.3
Maximum			78.5
Minimum			17.0

Location AM2 - Hong Kong & Islands Regional Office, WSD			
Date	Time	Weather	Particulate Concentration ($\mu\text{g}/\text{m}^3$)
4-Aug-17	8:30	Sunny	17.8
4-Aug-17	9:30	Sunny	20.2
4-Aug-17	10:30	Sunny	23.8
10-Aug-17	13:00	Cloudy	84.1
10-Aug-17	14:00	Cloudy	88.9
10-Aug-17	15:00	Cloudy	81.0
Average			52.6
Maximum			88.9
Minimum			17.8

Location AM3 - Wan Chai East PTW			
Date	Time	Weather	Particulate Concentration ($\mu\text{g}/\text{m}^3$)
4-Aug-17	9:00	Sunny	77.8
4-Aug-17	10:00	Sunny	79.0
4-Aug-17	11:00	Sunny	69.1
10-Aug-17	9:00	Cloudy	34.5
10-Aug-17	10:00	Cloudy	38.0
10-Aug-17	11:00	Cloudy	39.2
Average			56.3
Maximum			79.0
Minimum			34.5

Location AM4_2 - A Location next to Sheung Wan Fire Station			
Date	Time	Weather	Particulate Concentration ($\mu\text{g}/\text{m}^3$)
4-Aug-17	13:00	Sunny	69.1
4-Aug-17	14:00	Sunny	73.7
4-Aug-17	15:00	Sunny	74.5
10-Aug-17	13:00	Cloudy	29.7
10-Aug-17	14:00	Cloudy	40.4
10-Aug-17	15:00	Cloudy	45.1
Average			55.4
Maximum			74.5
Minimum			29.7

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. (µg/m ³)	Filter ID no.
				Initial	Final		Initial	Final		Initial	Final				
3-Aug-17	9:00	Cloudy	304.2	2.8248	2.8682	0.0434	2282.3	2306.3	24.0	1.20	1.20	1.20	1726.6	25.1	170601/039
9-Aug-17	9:00	Cloudy	301.9	2.8369	2.9021	0.0652	2306.3	2330.3	24.0	1.21	1.21	1.21	1740.3	37.5	170601/079
													Min	25.1	
													Max	37.5	
													Average	31.3	

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. (µg/m ³)	Filter ID no.
				Initial	Final		Initial	Final		Initial	Final				
3-Aug-17	9:00	Cloudy	303.8	2.8077	2.8846	0.0769	12562.0	12586.0	24.0	1.20	1.20	1.20	1731.2	44.4	170601/038
9-Aug-17	9:00	Cloudy	302.4	2.8654	2.9737	0.1083	12586.0	12610.0	24.0	1.21	1.21	1.21	1741.7	62.2	170601/078
													Min	44.4	
													Max	62.2	
													Average	53.3	

Location AM3 - Wan Chai East PTW

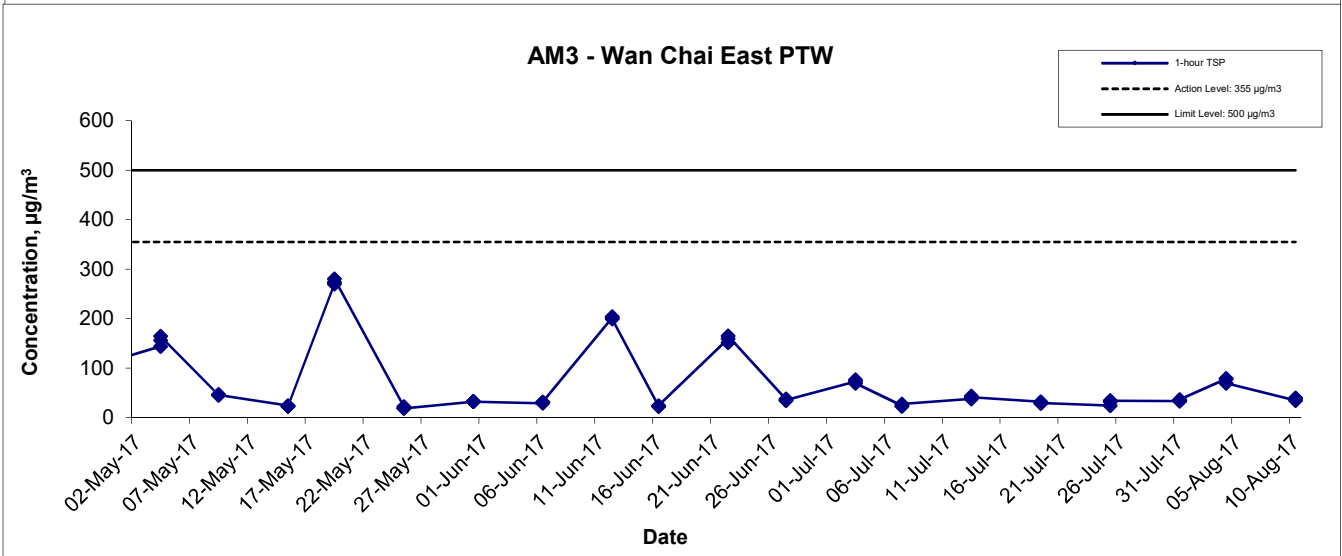
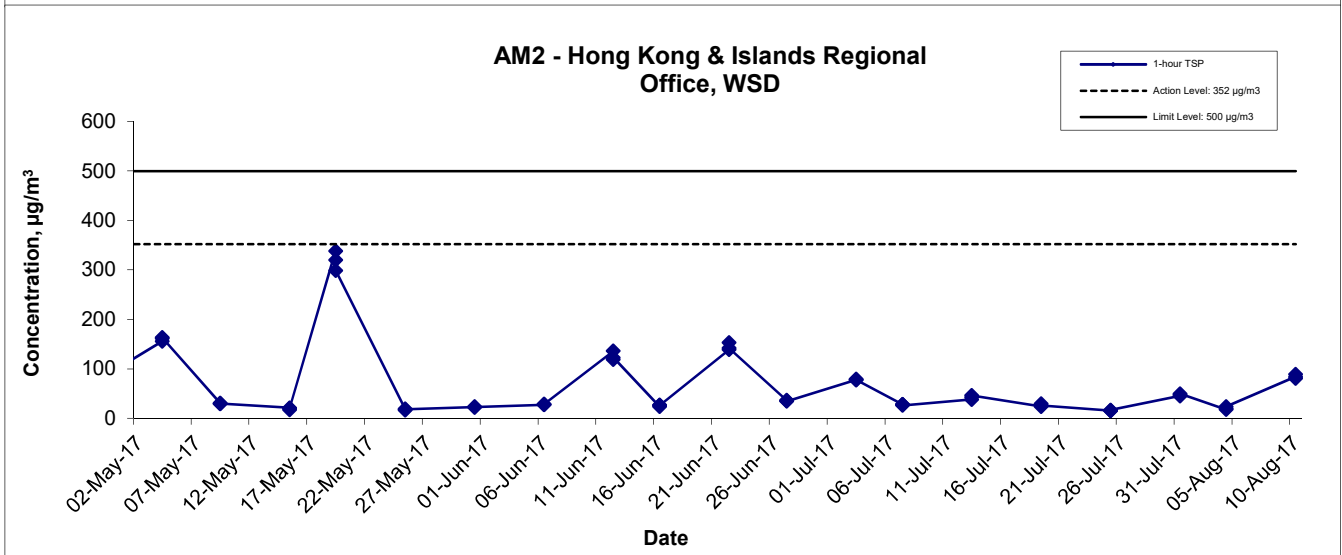
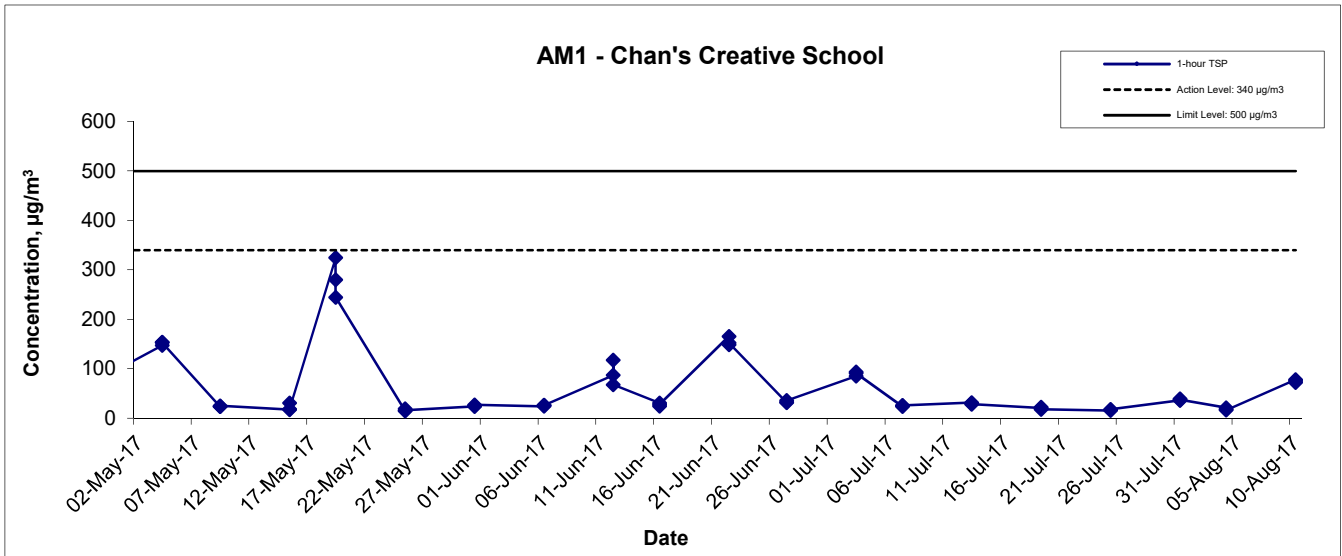
Start Date	Start Time	Weather Condition	Air Temp. (K)	Filter Weight (g)		Particulate Weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m ³ /min.)		Av. flow (m ³ /min)	Total vol. (m ³)	Conc. (µg/m ³)	Filter ID no.
				Initial	Final		Initial	Final		Initial	Final				
2-Aug-17*	14:30	Cloudy	303.5	2.7858	2.8633	0.0775	8839.9	8863.9	24.0	1.21	1.21	1.21	1749.2	44.3	170601/054
3-Aug-17	15:15	Cloudy	303.7	2.8383	2.8763	0.0380	8863.9	8887.9	24.0	1.21	1.22	1.22	1751.7	21.7	170601/098
9-Aug-17	9:00	Cloudy	301.6	2.8835	2.9185	0.0350	8887.9	8911.9	24.0	1.22	1.22	1.22	1761.3	19.9	170601/080
													Min	19.9	
													Max	44.3	
													Average	28.6	

Remark: *Due to the interruption of power supply at AM3 on 28 July 2017, the replenishment of 24hrs -TSP monitoring at AM3 was made up on 2 August 2017.

Location AM4_2 - A Location next to Sheung Wan Fire Station

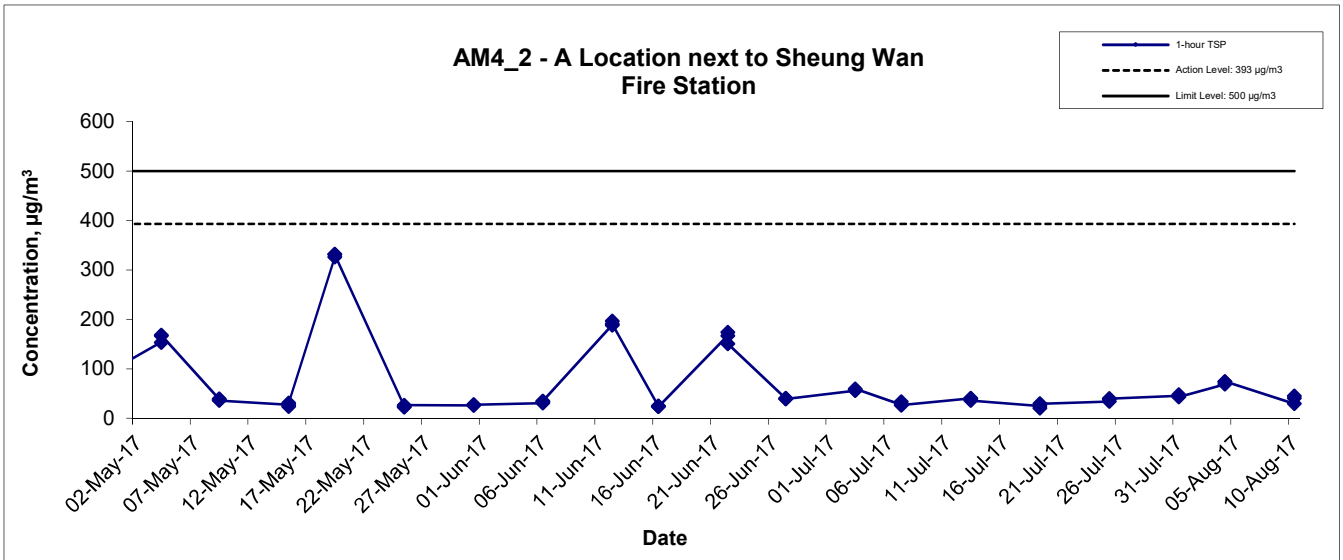
Start Date	Start Time	Weather Condition	Air Temp. (K)	Filter Weight (g)		Particulate Weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m ³ /min.)		Av. flow (m ³ /min)	Total vol. (m ³)	Conc. (µg/m ³)	Filter ID no.
				Initial	Final		Initial	Final		Initial	Final				
3-Aug-17	9:00	Cloudy	304.4	2.7820	2.9343	0.1523	1776.2	1800.2	24.0	1.20	1.20	1.20	1734.0	87.8	170601/041
9-Aug-17	9:00	Cloudy	301.7	2.8764	2.9849	0.1085	1800.2	1824.2	24.0	1.21	1.21	1.21	1747.1	62.1	170601/081
													Min	62.1	
													Max	87.8	
													Average	75.0	

1-hr TSP Concentration Levels



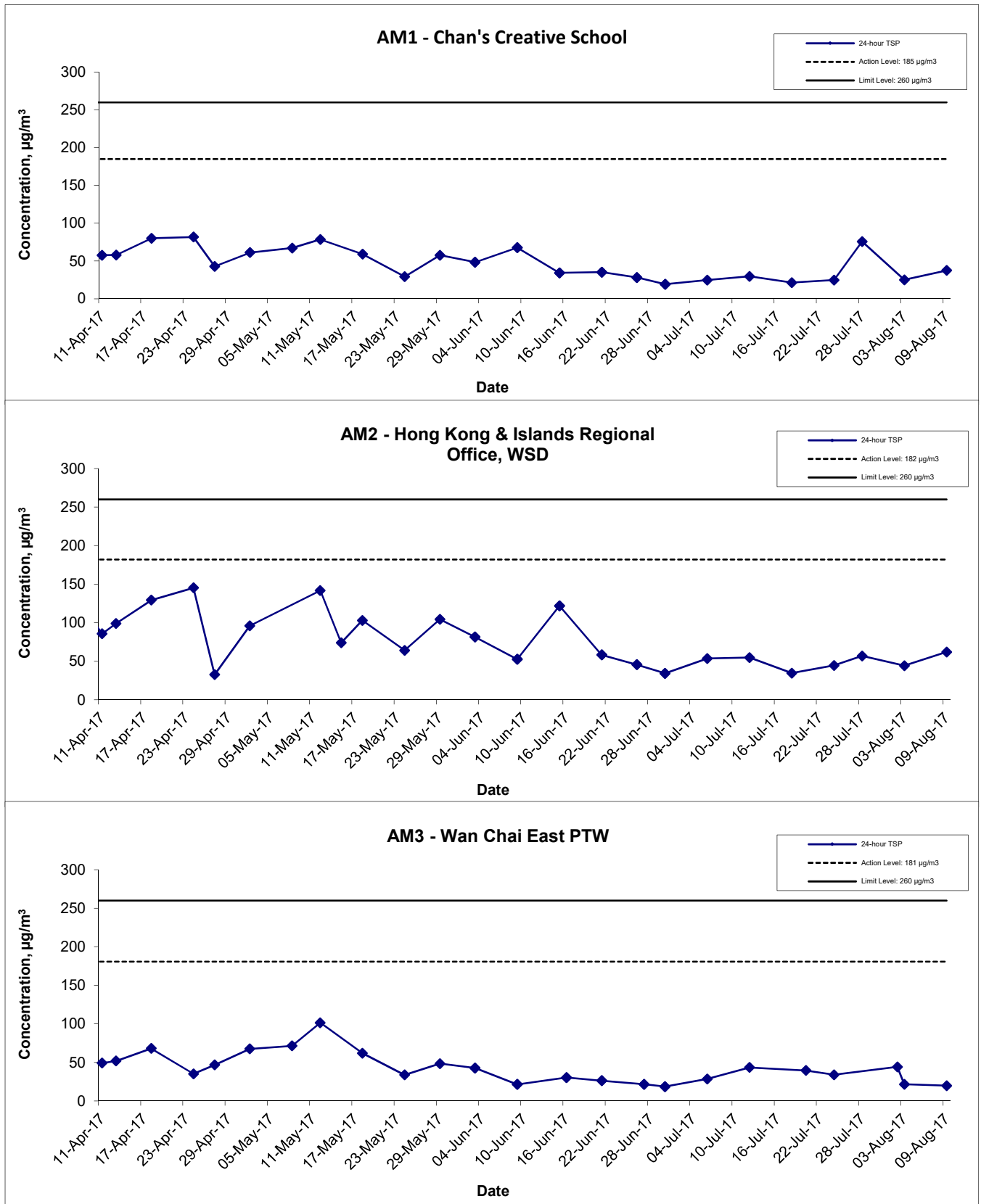
Title Contract No. DC/2009/23 HATS 2A – Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central Graphical Presentation of 1-hour TSP Monitoring Results	Scale N.T.S	Project No. MA11003	CINOTECH
	Date Aug 17	Appendix E	

1-hr TSP Concentration Levels



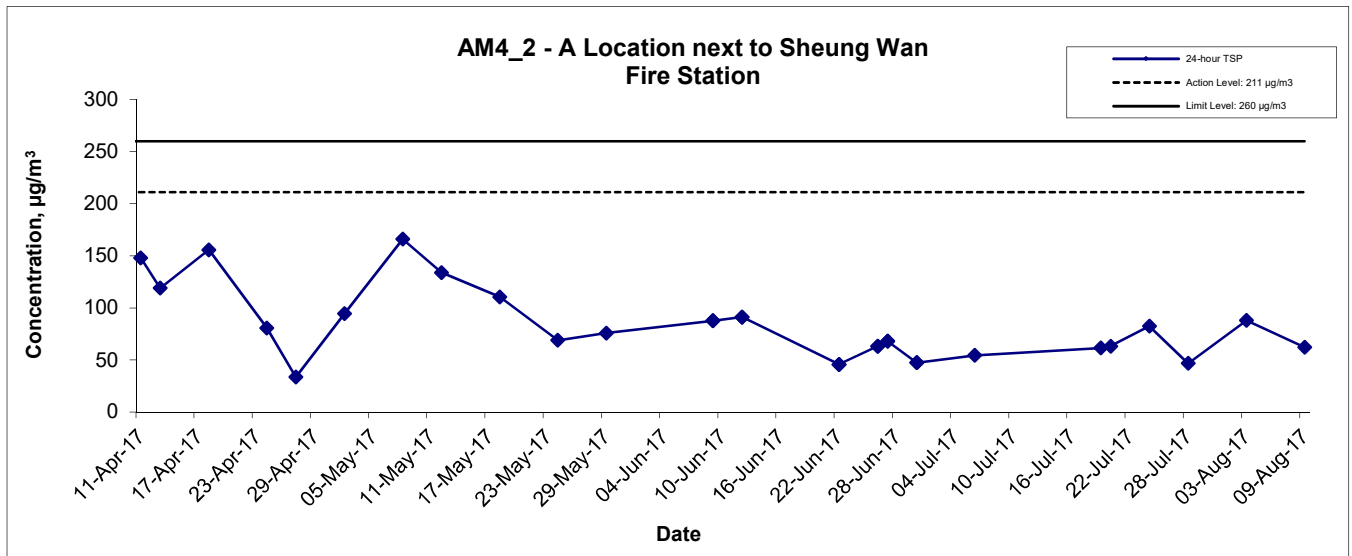
Title Contract No. DC/2009/23 HATS 2A – Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central Graphical Presentation of 1-hour TSP Monitoring Results	Scale N.T.S	Project No. MA11003	
	Date Aug 17	Appendix E	

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	Project No. MA11003	
	Date Aug-17	Appendix E	

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	Project No. MA11003	
	Date Aug-17	Appendix E	

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

Appendix F - Noise Monitoring Results

(0700-1900 hrs on Normal Weekdays)

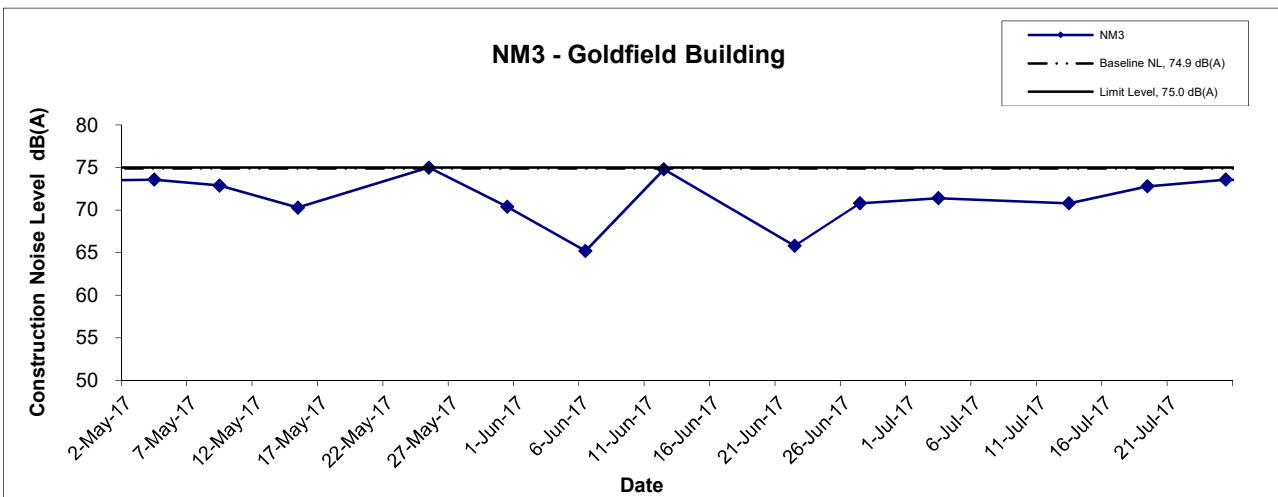
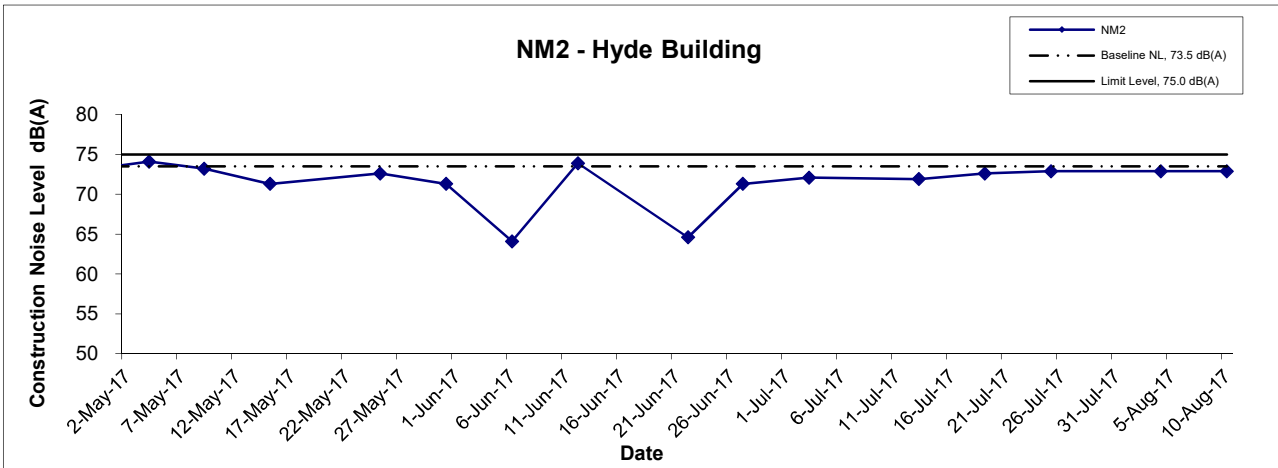
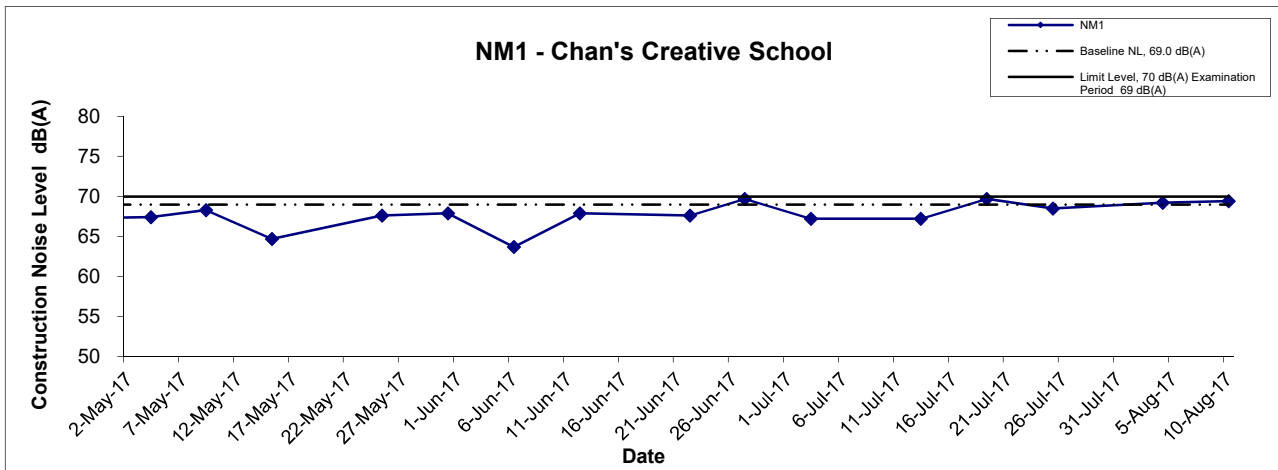
Location NM1 - Chan's Creative School					
Date	Time	Weather	Unit: dB (A) (30-min)		
			Measured Noise Level		
			L _{eq}	L ₁₀	L ₉₀
4-Aug-17	09:05	Sunny	69.2	70.9	67.7
10-Aug-17	09:05	Cloudy	69.4	71.2	64.3

Location NM2 - Hyde Building					
Date	Time	Weather	Unit: dB (A) (30-min)		
			Measured Noise Level		
			L _{eq}	L ₁₀	L ₉₀
4-Aug-17	10:15	Sunny	72.9	73.7	71.0
10-Aug-17	09:30	Cloudy	72.9	73.8	70.3

Location NM3 - Goldfield Building					
Date	Time	Weather	Unit: dB (A) (30-min)		
			Measured Noise Level		
			L _{eq}	L ₁₀	L ₉₀
4-Aug-17	13:45	Sunny	73.1	74.5	71.5
10-Aug-17	13:20	Cloudy	73.1	74.9	71.5

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	Project No. MA11003	
	Date Aug 17	Appendix F	

APPENDIX G
SUMMARY OF EXCEEDANCE

APPENDIX G – SUMMARY OF EXCEEDANCE

Reporting Month: 1st August to 11th August 2017

- a) Exceedance Report for 1-hr TSP (NIL)**
- b) Exceedance Report for 24-hr TSP (NIL)**
- c) Exceedance Report for Construction Noise (NIL)**

**APPENDIX H
SUMMARY OF EXCEEDANCE REPORT**

NIL

**APPENDIX I
SITE AUDIT SUMMARY**

Contract No: DC/2009/23

HATS 2A - Upgrading of PTWs at North Point, Wan Chai East and Central

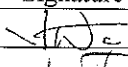

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	170803
Date	3 August 2017 (Thursday)
Time	09:30 – 11:00

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

Ref. No.	Remarks/Observations	Related Item No.
170803-O01	<p>Part A - Water Quality</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Part B - Landscape and Visual</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Part C - Air Quality</p> <ul style="list-style-type: none">The Non-road Mobile Machinery (NRMM) label should be shown/displayed on the excavator at North Point-PTW. <p>Part D - Noise</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection.	C 19
170803-R02	<p>Part E - Waste / Chemical Management</p> <ul style="list-style-type: none">The drip tray should be provided for the chemical containers at Central-PTW. <p>Part F - Permit / Licenses</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Follow up:</p> <ul style="list-style-type: none">For previous audit session (Ref. No. 170728), all environmental deficiencies were improved by the Contractor. <p>Remark:</p> <ul style="list-style-type: none">--	E 7ii

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

Contract No: DC/2009/23

HATS 2A - Upgrading of PTWs at North Point, Wan Chai East and Central

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	170811
Date	11 August 2017 (Friday)
Time	09:30 – 11:00

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

Ref. No.	Remarks/Observations	Related Item No.
	<p>Part A - Water Quality</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Part B - Landscape and Visual</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Part C - Air Quality</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Part D - Noise</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Part E - Waste / Chemical Management</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Part F - Permit / Licenses</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Follow up:</p> <ul style="list-style-type: none">For previous audit session (Ref. No. 170803), all environmental deficiencies were improved by the Contractor. <p>Remark:</p> <ul style="list-style-type: none">--	

	Name	Signature	Date
Recorded by	Janet Wai		11 August 2017
Checked by	Dr. Priscilla Choy		11 August 2017

**APPENDIX J
SUMMARY OF AMOUNT OF WASTE
GENERATED**

APPENDIX J MONTHLY SUMMARY WASTE FLOW TABLE FOR August (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]	
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	0.385	0.000	0.000	0.000	0.385	0.000	0.000	0.143	0.016	0.000	0.024	0.066	0.025	0.044	0.016
MAR	0.369	0.000	0.000	0.000	0.369	0.000	0.000	0.153	0.017	0.000	0.040	0.080	0.033	0.056	0.014
APR	0.513	0.000	0.000	0.000	0.513	0.000	0.000	0.143	0.015	0.000	0.027	0.067	0.027	0.044	0.020
MAY	0.365	0.000	0.000	0.000	0.365	0.000	0.000	0.150	0.013	0.000	0.032	0.062	0.026	0.050	0.026
JUN	0.126	0.000	0.000	0.000	0.126	0.000	0.000	0.147	0.011	0.000	0.040	0.071	0.026	0.046	0.033
SUB-TOTAL	28.596	0.000	0.000	0.000	28.596	0.000	72.810	8.368	1.017	1.030	2.218	3.820	2.401	1.856	1.180
JUL	0.086	0.000	0.000	0.000	0.086	0.000	0.000	0.700	0.000	0.000	0.044	0.061	0.022	0.045	0.025
AUG	0.005	0.000	0.000	0.000	0.005	0.000	0.000	0.137	0.010	0.000	0.018	0.028	0.009	0.015	0.009
SEP															
OCT															
NOV															
DEC															
TOTAL	28.687	0.000	0.000	0.000	28.687	0.000	72.810	9.205	1.027	1.030	2.280	3.909	2.432	1.916	1.214

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]	
28.5	0.01	0.01	0	28.48	0	100	10	1	3	3.5	4.5	3	2	1.5

- Notes :
- The performance targets are given in PS Clause 6(14).
 - The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the site.
 - Plastics refer to plastic bottles / containers, plastic sheets / foam from packaging material.
 - 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) refers).
[Delete Note (4) and the table above on the forecast, where inapplicable].
 - The assumed density (kg/m³) for both C&D material and general refuse.
C&D material 2000kg/m³
General refuse 500kg/m³
 - 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 failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented	1. Submit proposals for remedial to ER within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
	actions required; 7. If exceedance continues, arrange meeting with IEC and ER; 8. If exceedance stops, cease additional monitoring			
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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to IEC and ER; 2. Implement noise mitigation proposals
Limit Level being exceeded	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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	<p>Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows:</p> <ul style="list-style-type: none"> • 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	<p>Construction Works in Close Proximity of Storm Drains or Seafront</p> <p>To minimize the potential water quality impacts from the construction works located at or near any watercourse, the practices outlined below should be adopted where applicable.</p> <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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;	All construction sites	^
	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.	All construction sites	^
	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.	All construction sites	^

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: 1st August to 11th August 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 from 1st August to 11th August 2017.

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	201																																										
								April			May				June				July				August				September				October			November			December			Jan										
								13	20	27	03	10	17	24	01	08	15	22	29	05	12	19	26	03	10	17	24	31	07	14	21	28	04	11	18	25	02	09	16	23	30	06	13	20	27	04	11	18	25	01
67	Other External Works		227 days	01 Apr '16	31 Dec '16			[Summary bar from Apr to Dec]																																										
68	Backfilling Works (Drop Shaft Area)	Leader	101 days	02 Jul '16	31 Oct '16			[Summary bar from Jul to Oct]																																										
69	Backfilling Works between Seawater Intake Chamber & Seawater Pumping Station	Leader	54 days	11 Jul '16	10 Sep '16			[Blue bar from Jul to Sep]																																										
70	Remaining Works for Seawater Pumping Station (incl. multi part cover)	Leader	101 days	02 Jul '16	31 Oct '16			[Blue bar from Jul to Oct]																																										
71	Remaining Works for Seawater Intake Chamber A & B (incl. multi part cover)	Leader	101 days	02 Jul '16	31 Oct '16			[Blue bar from Jul to Oct]																																										
72	Backfilling Works at Seawater Intake Chamber A and B	Leader	27 days	12 Sep '16	15 Oct '16			[Blue bar from Sep to Oct]																																										
73	Remaining Cable Ducts and Drawpits	Leader	61 days	19 Sep '16	30 Nov '16			[Summary bar from Sep to Nov]																																										
74	Remaining Cable Ducts and Drawpits	Leader	25 days	19 Sep '16	19 Oct '16			[Blue bar from Sep to Oct]																																										
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	[Red bar from Oct to Nov]																																										
76	Remaining E&M Works	Leader	190 days	01 Apr '16	16 Nov '16			[Summary bar from Apr to Nov]																																										
77	E+H Flume Channel re-calibration	Leader	27 days	23 Aug '16	23 Sep '16		In progress	[Red bar from Aug to Sep]																																										
78	Mechanical Installation of Penstock inside Seawater Intake Chamber B	Leader	39 days	23 Aug '16	08 Oct '16		Rework on penstock	[Red bar from Aug to Oct]																																										
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	[Red bar from Oct to Nov]																																										
80	M&E Installation at Seawater Pumping Station	Leader	152 days	01 Apr '16	30 Sep '16			[Red bar from Apr to Sep]																																										
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)	[Red bar from Apr to Oct]																																										
82	Outdoor lamp poles	JEC	24 days	20 Oct '16	16 Nov '16	74	Waiting for H/O of cable duct from Civil Works	[Red bar from Oct to Nov]																																										
83	Final System Commissioning	JEC	23 days	30 Sep '16	28 Oct '16		Inspection not yet confirmed by ARUP/ST2	[Red bar from Sep to Oct]																																										
84	Fire Services Inspection (Including EVA)	JEC	1 day	20 Oct '16	20 Oct '16			[Milestone diamond on Oct 20]																																										
85	Grasscrete and Landscaping Works	Leader	51 days	01 Nov '16	31 Dec '16			[Summary bar from Nov to Dec]																																										
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	[Blue bar from Nov 3 to Nov 10]																																										
87	Along DO Bldg & FSGT Bldg. (Area G2 - 4 bays) - except Grass	Leader	39 days	11 Nov '16	28 Dec '16	86		[Blue bar from Nov 11 to Dec 28]																																										
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	[Blue bar from Nov 11 to Nov 18]																																										
89	East Side of DO Bldg. (Area G4) - except Grass	Leader	7 days	19 Nov '16	26 Nov '16	88		[Blue bar from Nov 19 to Nov 26]																																										
90	Grass Installation (Area G1 to G4) near FSGT and DO Bldg.	Leader	3 days	29 Dec '16	31 Dec '16	87,88,89		[Blue bar from Dec 29 to Dec 31]																																										
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	[Blue bar from Nov 1 to Nov 8]																																										
92	Grass Installation (Area G5) near Seawater Pumping Station & Valve Chamber	Leader	3 days	09 Nov '16	11 Nov '16	91		[Blue bar from Nov 9 to Nov 11]																																										
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.	[Blue bar from Nov 2 to Nov 15]																																										
94	Landscaping Works (Drop Shaft Area)	Leader	24 days	01 Nov '16	28 Nov '16	70	After remaining works at Seawater Pumping Station	[Blue bar from Nov 1 to Nov 28]																																										
95	Boundary Wall		124 days	13 Jul '16	07 Dec '16			[Summary bar from Jul to Dec]																																										
96	Investigation Works	Leader	30 days	13 Jul '16	16 Aug '16			[Blue bar from Jul 13 to Aug 16]																																										
97	Design Checking and ICE	Leader	27 days	17 Aug '16	17 Sep '16	96		[Blue bar from Aug 17 to Sep 17]																																										
98	Fabrication of Fence Wall	Leader	15 days	19 Sep '16	06 Oct '16	97		[Blue bar from Sep 19 to Oct 6]																																										
99	Concrete Trimming	Leader	15 days	29 Sep '16	18 Oct '16	97		[Blue bar from Sep 29 to Oct 18]																																										
100	Concrete Portion of Boundary Wall	Leader	58 days	29 Sep '16	07 Dec '16	97		[Blue bar from Sep 29 to Dec 7]																																										
101	Timber Portion of Boundary Wall	Leader	50 days	11 Oct '16	07 Dec '16	99SS+8 da		[Blue bar from Oct 11 to Dec 7]																																										

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	Precedes	Remarks	Gantt Chart																																										
								April			May			June			July			August			September			October			November			December			201															
								13	20	27	03	10	17	24	01	08	15	22	29	05	12	19	26	03	10	17	24	31	07	14	21	28	04	11	18	25	02	09	16	23	30	06	13	20	27	04	11	18	25	01
102	WAN CHAI EAST PTW		185 days	23 May '16	31 Dec '16			[Summary bar from 23 May '16 to 31 Dec '16]																																										
103	Admin Building and Inlet Pumping Station Building		147 days	23 May '16	15 Nov '16			[Summary bar from 23 May '16 to 15 Nov '16]																																										
104	Defects and Outstanding Works		85 days	22 Jun '16	30 Sep '16			[Summary bar from 22 Jun '16 to 30 Sep '16]																																										
105	Defects and Outstanding Finishes at Admin Building	Leader	85 days	22 Jun '16	30 Sep '16			[Blue bar from 22 Jun '16 to 30 Sep '16]																																										
106	Outdoor Lighting	JEC	27 days	23 Aug '16	23 Sep '16			[Red bar from 23 Aug '16 to 23 Sep '16]																																										
107	PV System	JEC	27 days	23 Aug '16	23 Sep '16			[Red bar from 23 Aug '16 to 23 Sep '16]																																										
108	Remaining Works at Inlet Pumping Station		147 days	23 May '16	15 Nov '16			[Summary bar from 23 May '16 to 15 Nov '16]																																										
109	Pavement for Pedestrian (between Boundary Wall and Inlet Pumping Station)	Leader	37 days	03 Oct '16	15 Nov '16			[Blue bar from 03 Oct '16 to 15 Nov '16]																																										
110	Curtain Wall	Leader	121 days	23 May '16	15 Oct '16			[Blue bar from 23 May '16 to 15 Oct '16]																																										
111	Painting works & architectural finishes at existing Inlet Pumping Station	Leader	37 days	03 Oct '16	15 Nov '16			[Blue bar from 03 Oct '16 to 15 Nov '16]																																										
112	Remaining E&M Works		161 days	24 May '16	02 Dec '16			[Summary bar from 24 May '16 to 02 Dec '16]																																										
113	E+H Flume Channel re-calibration	JEC	27 days	23 Aug '16	23 Sep '16		In progress	[Red bar from 23 Aug '16 to 23 Sep '16]																																										
114	Resolve Pump Liner	JEC	150 days	24 May '16	19 Nov '16			[Red bar from 24 May '16 to 19 Nov '16]																																										
115	Permanent support to valves	JEC	66 days	23 Aug '16	10 Nov '16		On hold by BCM	[Red bar from 23 Aug '16 to 10 Nov '16]																																										
116	Permanent platform	JEC	66 days	23 Aug '16	10 Nov '16		On hold by BCM	[Red bar from 23 Aug '16 to 10 Nov '16]																																										
117	Cable Ducts and Drawpits (for H2S and Weather Monitoring Station)	Leader	30 days	12 Sep '16	19 Oct '16			[Blue bar from 12 Sep '16 to 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	[Red bar from 20 Oct '16 to 02 Dec '16]																																										
119	Outstanding DOU and ventilation works	JEC	124 days	24 May '16	20 Oct '16		ACF air duct to skip enclosure and hood	[Red bar from 24 May '16 to 20 Oct '16]																																										
120	Final System Commissioning of DOU and Ventilation Works	JEC	27 days	21 Oct '16	21 Nov '16	119		[Red bar from 21 Oct '16 to 21 Nov '16]																																										
121	Installation of skip enclosure (site installation)	JEC	24 days	26 Sep '16	25 Oct '16			[Red bar from 26 Sep '16 to 25 Oct '16]																																										
122	Boundary Wall (Near Admin Bldg. Footing Construction Completed) - 30m		66 days	12 Aug '16	31 Oct '16			[Summary bar from 12 Aug '16 to 31 Oct '16]																																										
123	Design Submission and Approval	Leader	14 days	12 Aug '16	27 Aug '16			[Blue bar from 12 Aug '16 to 27 Aug '16]																																										
124	Fabrication (off-site)	Leader	35 days	29 Aug '16	11 Oct '16	123		[Blue bar from 29 Aug '16 to 11 Oct '16]																																										
125	Fence Wall Installation	Leader	5 days	12 Oct '16	17 Oct '16	124		[Blue bar from 12 Oct '16 to 17 Oct '16]																																										
126	Painting	Leader	6 days	18 Oct '16	24 Oct '16	125		[Blue bar from 18 Oct '16 to 24 Oct '16]																																										
127	Timber Installation	Leader	6 days	25 Oct '16	31 Oct '16	126		[Blue bar from 25 Oct '16 to 31 Oct '16]																																										
128	Boundary Wall and Landscaping Works (Drop Shaft Area) - 60m		100 days	13 Aug '16	10 Dec '16			[Summary bar from 13 Aug '16 to 10 Dec '16]																																										
129	Design Submission and Approval	Leader	30 days	13 Aug '16	17 Sep '16			[Blue bar from 13 Aug '16 to 17 Sep '16]																																										
130	Fabrication (off-site)	Leader	18 days	19 Sep '16	11 Oct '16	129,124SS		[Blue bar from 19 Sep '16 to 11 Oct '16]																																										
131	Footing Construction (Excavation to Concreting)	Leader	12 days	19 Sep '16	03 Oct '16	129		[Blue bar from 19 Sep '16 to 03 Oct '16]																																										
132	Fence Wall Installation	Leader	6 days	12 Oct '16	18 Oct '16	130,131		[Blue bar from 12 Oct '16 to 18 Oct '16]																																										
133	Painting	Leader	6 days	19 Oct '16	25 Oct '16	132		[Blue bar from 19 Oct '16 to 25 Oct '16]																																										
134	Timber Installation	Leader	12 days	26 Oct '16	08 Nov '16	133		[Blue bar from 26 Oct '16 to 08 Nov '16]																																										
135	Trimming of existing Fence	Leader	10 days	09 Nov '16	19 Nov '16	134		[Blue bar from 09 Nov '16 to 19 Nov '16]																																										
136	Landscaping Works	Leader	18 days	21 Nov '16	10 Dec '16	135		[Blue bar from 21 Nov '16 to 10 Dec '16]																																										
137	Boundary Wall (along Entrance Gate) - 55m		96 days	13 Aug '16	06 Dec '16			[Summary bar from 13 Aug '16 to 06 Dec '16]																																										
138	Design Submission and Approval	Leader	30 days	13 Aug '16	17 Sep '16			[Blue bar from 13 Aug '16 to 17 Sep '16]																																										
139	Fabrication (off-site)	Leader	18 days	19 Sep '16	11 Oct '16	138		[Blue bar from 19 Sep '16 to 11 Oct '16]																																										
140	Footing Construction (Excavation to Concreting)	Leader	12 days	04 Oct '16	18 Oct '16	131		[Blue bar from 04 Oct '16 to 18 Oct '16]																																										
141	Fence Wall Installation	Leader	6 days	19 Oct '16	25 Oct '16	140,139		[Blue bar from 19 Oct '16 to 25 Oct '16]																																										
142	Painting	Leader	6 days	26 Oct '16	01 Nov '16	141		[Blue bar from 26 Oct '16 to 01 Nov '16]																																										
143	Timber Installation	Leader	12 days	02 Nov '16	15 Nov '16	142		[Blue bar from 02 Nov '16 to 15 Nov '16]																																										
144	Trimming of existing Fence	Leader	18 days	16 Nov '16	06 Dec '16	143		[Blue bar from 16 Nov '16 to 06 Dec '16]																																										
145	Sliding Gate Installation	Leader	18 days	16 Nov '16	06 Dec '16	143		[Blue bar from 16 Nov '16 to 06 Dec '16]																																										
146	Roadworks and Drainage Works incl. Grasscrete (between Fence Wall & Admin Bldg.)		85 days	20 Sep '16	31 Dec '16			[Summary bar from 20 Sep '16 to 31 Dec '16]																																										
147	Grasscrete (in between Drop Shaft and Admin Bldg. GL1)	Leader	7 days	20 Sep '16	27 Sep '16			[Blue bar from 20 Sep '16 to 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		[Blue bar from 28 Sep '16 to 18 Oct '16]																																										
149	Drainage Works at Admin Bldg GL A-B	Leader	5 days	19 Oct '16	24 Oct '16	148		[Blue bar from 19 Oct '16 to 24 Oct '16]																																										
150	Remaining Grasscrete (along GL 7)	Leader	5 days	25 Oct '16	29 Oct '16	149		[Blue bar from 25 Oct '16 to 29 Oct '16]																																										
151	Roadworks (in between Drop Shaft and Admin Bldg. GL1)	Leader	8 days	31 Oct '16	08 Nov '16	150		[Blue bar from 31 Oct '16 to 08 Nov '16]																																										
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		[Blue bar from 31 Oct '16 to 08 Nov '16]																																										
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		[Blue bar from 09 Nov '16 to 19 Nov '16]																																										
154	Roadworks (in between Admin Bldg & Pumping Station) Admin Bldg GL 3-4	Leader	10 days	09 Nov '16	19 Nov '16	151		[Blue bar from 09 Nov '16 to 19 Nov '16]																																										
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		[Blue bar from 21 Nov '16 to 29 Nov '16]																																										
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		[Blue bar from 30 Nov '16 to 09 Dec '16]																																										
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		[Blue bar from 10 Dec '16 to 19 Dec '16]																																										
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		[Blue bar from 20 Dec '16 to 31 Dec '16]																																										

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	Calendar																																										
								April			May			June			July			August			September			October			November			December			201															
								13	20	27	03	10	17	24	01	08	15	22	29	05	12	19	26	03	10	17	24	31	07	14	21	28	04	11	18	25	02	09	16	23	30	06	13	20	27	04	11	18	25	01
159	CENTRAL PTW		185 days	23 May '16	31 Dec '16			[Summary bar from 23 May '16 to 31 Dec '16]																																										
160	Outstanding Works at FSGT, DO Room, DG Store & General Store		185 days	23 May '16	31 Dec '16			[Summary bar from 23 May '16 to 31 Dec '16]																																										
161	FSGT Building		115 days	23 May '16	07 Oct '16			[Summary bar from 23 May '16 to 07 Oct '16]																																										
162	Outstanding and Defective Works	Leader	110 days	23 May '16	30 Sep '16			[Blue bar from 23 May '16 to 30 Sep '16]																																										
163	Installation of Access Link Bridge between FSGT and DO Room	Leader	15 days	20 Sep '16	07 Oct '16			[Blue bar from 20 Sep '16 to 07 Oct '16]																																										
164	DO Room, DG Store and General Store		185 days	23 May '16	31 Dec '16			[Summary bar from 23 May '16 to 31 Dec '16]																																										
165	Outstanding and Defective Works	Leader	110 days	23 May '16	30 Sep '16			[Blue bar from 23 May '16 to 30 Sep '16]																																										
166	RC Staircase (up to +7.7mPD)	Leader	87 days	23 May '16	02 Sep '16			[Blue bar from 23 May '16 to 02 Sep '16]																																										
167	RC Staircase (up to +11.4mPD)	Leader	19 days	03 Sep '16	26 Sep '16	166		[Blue bar from 03 Sep '16 to 26 Sep '16]																																										
168	RC Staircase (up to roof at +14.51mPD)	Leader	18 days	27 Sep '16	19 Oct '16	167		[Blue bar from 27 Sep '16 to 19 Oct '16]																																										
169	Finishing at Staircase	Leader	60 days	20 Oct '16	30 Dec '16	168		[Blue bar from 20 Oct '16 to 30 Dec '16]																																										
170	Plate load test for Toilet Construction	Leader	6 days	20 Oct '16	26 Oct '16	168		[Blue bar from 20 Oct '16 to 26 Oct '16]																																										
171	Toilet (slab construction and drain installation)	Leader	9 days	27 Oct '16	05 Nov '16	170		[Blue bar from 27 Oct '16 to 05 Nov '16]																																										
172	Toilet (wall and top slab construction)	Leader	15 days	07 Nov '16	23 Nov '16	171		[Blue bar from 07 Nov '16 to 23 Nov '16]																																										
173	Internal Finishing at Toilet	Leader	5 days	24 Nov '16	29 Nov '16	172		[Blue bar from 24 Nov '16 to 29 Nov '16]																																										
174	E&M Installation at Toilet	Leader	26 days	30 Nov '16	31 Dec '16	173		[Blue bar from 30 Nov '16 to 31 Dec '16]																																										
175	Outstanding Works at Inlet Pumping Station		145 days	23 May '16	12 Nov '16			[Summary bar from 23 May '16 to 12 Nov '16]																																										
176	Curtain Wall	Leader	121 days	23 May '16	15 Oct '16			[Blue bar from 23 May '16 to 15 Oct '16]																																										
177	Painting works & architectural finishes at existing Inlet Pumping Station	Leader	24 days	17 Oct '16	12 Nov '16	176		[Blue bar from 17 Oct '16 to 12 Nov '16]																																										
178	Remaining E&M Works	Leader	150 days	24 May '16	19 Nov '16			[Summary bar from 24 May '16 to 19 Nov '16]																																										
179	Outstanding and Defective Works for E&M Works at Central PTW	JEC	109 days	24 May '16	30 Sep '16			[Red bar from 24 May '16 to 30 Sep '16]																																										
180	ACF installation	JEC	33 days	23 Aug '16	30 Sep '16		In progress	[Red bar from 23 Aug '16 to 30 Sep '16]																																										
181	Permanent Air Duct	JEC	120 days	24 May '16	15 Oct '16		In progress air duct to and inside IPS	[Red bar from 24 May '16 to 15 Oct '16]																																										
182	Permanent Cables	JEC	146 days	24 May '16	15 Nov '16		Subject to availability of cable ducts	[Red bar from 24 May '16 to 15 Nov '16]																																										
183	Remaining Cable Ducts and Drawpits (Civil Works)	Leader	25 days	19 Sep '16	19 Oct '16			[Blue bar from 19 Sep '16 to 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	[Red bar from 20 Oct '16 to 19 Nov '16]																																										
185	Final System Commissioning (FSGT Building)	JEC	24 days	14 Sep '16	14 Oct '16			[Red bar from 14 Sep '16 to 14 Oct '16]																																										
186	Final System Commissioning DOU and Ventilation	JEC	27 days	15 Oct '16	15 Nov '16			[Red bar from 15 Oct '16 to 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	[Red bar from 23 Sep '16 to 04 Oct '16]																																										
188	Flume channel re-calibration	JEC	27 days	23 Aug '16	23 Sep '16		In progress	[Red bar from 23 Aug '16 to 23 Sep '16]																																										
189	Pump liner issues	JEC	104 days	18 Jul '16	18 Nov '16			[Red bar from 18 Jul '16 to 18 Nov '16]																																										
190	Pump softstarter bypass contractor	JEC	37 days	23 Aug '16	06 Oct '16			[Red bar from 23 Aug '16 to 06 Oct '16]																																										
191	Fire Services Inspection (Including EVA)	JEC	1 day	27 Oct '16	27 Oct '16			[Red bar from 27 Oct '16 to 27 Oct '16]																																										
192	Handing over the system to ST2	JEC	30 days	08 Sep '16	15 Oct '16			[Red bar from 08 Sep '16 to 15 Oct '16]																																										
193	Remaining Boundary Wall Construction		123 days	11 Jul '16	03 Dec '16			[Summary bar from 11 Jul '16 to 03 Dec '16]																																										
194	Fabrication for Steel Frame		18 days	29 Sep '16	21 Oct '16			[Summary bar from 29 Sep '16 to 21 Oct '16]																																										
195	Fabrication of Steel Frame (Planters 3-5 and 13-17)	Leader	18 days	29 Sep '16	21 Oct '16			[Blue bar from 29 Sep '16 to 21 Oct '16]																																										
196	Planters 1 to 2		70 days	11 Jul '16	30 Sep '16			[Summary bar from 11 Jul '16 to 30 Sep '16]																																										
197	Painting Works for Frame	Leader	55 days	11 Jul '16	12 Sep '16			[Blue bar from 11 Jul '16 to 12 Sep '16]																																										
198	Timber Installation	Leader	15 days	13 Sep '16	30 Sep '16	197		[Blue bar from 13 Sep '16 to 30 Sep '16]																																										
199	Planter 3		17 days	15 Nov '16	03 Dec '16		Upon completion of road and drainage works	[Summary bar from 15 Nov '16 to 03 Dec '16]																																										
200	Excavation	Leader	2 days	15 Nov '16	16 Nov '16	248		[Blue bar from 15 Nov '16 to 16 Nov '16]																																										
201	Footing Construction	Leader	12 days	17 Nov '16	30 Nov '16	200		[Blue bar from 17 Nov '16 to 30 Nov '16]																																										
202	Frame Installation	Leader	2 days	01 Dec '16	02 Dec '16	201		[Blue bar from 01 Dec '16 to 02 Dec '16]																																										
203	Timber Installation	Leader	1 day	03 Dec '16	03 Dec '16	202		[Blue bar from 03 Dec '16 to 03 Dec '16]																																										
204	Planter 4		46 days	13 Sep '16	08 Nov '16			[Summary bar from 13 Sep '16 to 08 Nov '16]																																										
205	Excavation	Leader	6 days	13 Sep '16	20 Sep '16			[Blue bar from 13 Sep '16 to 20 Sep '16]																																										
206	Formworks	Leader	3 days	21 Sep '16	23 Sep '16	205		[Blue bar from 21 Sep '16 to 23 Sep '16]																																										
207	Steel works	Leader	1 day	24 Sep '16	24 Sep '16	206		[Blue bar from 24 Sep '16 to 24 Sep '16]																																										
208	Concrete	Leader	1 day	26 Sep '16	26 Sep '16	207		[Blue bar from 26 Sep '16 to 26 Sep '16]																																										
209	Removal of formworks	Leader	1 day	27 Sep '16	27 Sep '16	208		[Blue bar from 27 Sep '16 to 27 Sep '16]																																										
210	Capping formworks	Leader	1 day	28 Sep '16	28 Sep '16	209		[Blue bar from 28 Sep '16 to 28 Sep '16]																																										
211	Steel works	Leader	1 day	29 Sep '16	29 Sep '16	210		[Blue bar from 29 Sep '16 to 29 Sep '16]																																										
212	Formworks	Leader	1 day	30 Sep '16	30 Sep '16	211		[Blue bar from 30 Sep '16 to 30 Sep '16]																																										
213	Concrete	Leader	1 day	03 Oct '16	03 Oct '16	212		[Blue bar from 03 Oct '16 to 03 Oct '16]																																										
214	Frame Installation	Leader	2 days	05 Nov '16	07 Nov '16	222		[Blue bar from 05 Nov '16 to 07 Nov '16]																																										
215	Timber Installation	Leader	1 day	08 Nov '16	08 Nov '16	214,223		[Blue bar from 08 Nov '16 to 08 Nov '16]																																										
216	Planter 5 (Capping)		66 days	19 Aug '16	07 Nov '16			[Summary bar from 19 Aug '16 to 07 Nov '16]																																										
217	Drilling	Leader	1 day	19 Aug '16	19 Aug '16			[Blue bar from 19 Aug '16 to 19 Aug '16]																																										
218	Steel Works	Leader	3 days	26 Aug '16	29 Aug '16	217		[Blue bar from 26 Aug '16 to 29 Aug '16]																																										
219	Formworks	Leader	1 day	30 Aug '16	30 Aug '16	218		[Blue bar from 30 Aug '16 to 30 Aug '16]																																										
220	Concrete	Leader	1 day	31 Aug '16	31 Aug '16	219		[Blue bar from 31 Aug '16 to 31 Aug '16]																																										
221	Removal of formworks	Leader	1 day	01 Sep '16	01 Sep '16	220		[Blue bar from 01 Sep '16 to 01 Sep '16]																																										
222	Frame Installation	Leader	2 days	03 Nov '16	04 Nov '16	235		[Blue bar from 03 Nov '16 to 04 Nov '16]																																										
223	Timber Installation	Leader	1 day	07 Nov '16	07 Nov '16	222,236		[Blue bar from 07 Nov '16 to 07 Nov '16]																																										

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

Leader [Blue bar] JEC [Red bar] Milestone [Diamond] Summary [Arrow]

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	Gantt Chart																														
								April	May	June	July	August	September	October	November	December	201																					
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	234,254,255																																
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																																