Leader and JEC Joint Venture

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

Monthly Environmental Monitoring and Audit Report June 2019

(Version 1.0)

Certified By

(Environmental Team Leader)

REMARKS:

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

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

WELLAB LTD
Room 1701, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong
Tel: (852) 2898 7388 Fax: (852) 2898 7076
Email: wellab@wellab.com.hk

MOTT MACDONALD

CE/Harbour Area Treatment Scheme
Drainage Services Department
Sewage Services Branch
Harbour Area Treatment Scheme Division
5/F, Western Magistracy
2A Pokfulam Road, Hong Kong

Attn: Mr. K K Kam

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

Our Reference
EC/AFK/DC/rh/T261332/
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Contract No. DC/2009/24 – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau

3/F International Trade Tower
348 Kwun Tong Road
Kowloon
Hong Kong

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

Condition 4.4 – Monthly EM&A Report for June 2019 (no. 90) Version 1.0

11 July 2019
By Post

Dear Sir,

I refer to the captioned Monthly EM&A Report for June 2019 (version 1.0) submitted by ET on 10 July 2019 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

Ir Dr Anne F Kerr
Independent Environmental Checker
T +852 2828 5757
anne.kerr@mottmac.com

c.c.

Ove Arup & Partners HK Limited	Mr. Jeremy Mark Sparrow	Fax: 2370 4377
Leader – JEC JV	Mr. Kelvin Cheung / Ms. S P Ngan	By email
Wellab Limited	Dr. Priscilla Choy	By email

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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 90th Monthly Environmental Monitoring and Audit (EM&A) Report prepared by Wellab Limited for DSD Contract No. DC/2009/24 "HATS Stage 2A – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau" (The Project) which documents the key information of EM&A of Contract No. DC/2009/24 and environmental monitoring results from DC/2009/24 HATS Stage 2A with the Environmental Permit (Permit No. EP-322/2008/G) for June 2019. The project was taken over by Wellab Limited (Wellab) starting from 1st January 2019.

2. The site activities undertaken in the reporting month included:
   - Wah Fu PTW – N/A;
   - Ap Lei Chau PTW – Continuous interim operation and maintenance of the ALC PTW, Remedial E&M repairing works, Site clearance works for further seawall reinstatement;
   - Aberdeen PTW – Continuous interim operation and maintenance of the ABN PTW, Defect Rectification Works;
   - Sandy Bay PTW – N/A;
   - Cyberport PTW – N/A.

Environmental Monitoring Works

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

Air Quality and Noise

4. The monitoring of air quality monitoring station at Wah Ming House, Wah Fu Estate (CM_WF1a) and noise monitoring station at Aegean Terrace (M6a), Wah Ming House (M7a) and Wah Ling House (M8) was handed over to Contract No. DC/2009/24 from Contract No. DC/2007/24 in July 2014. The noise monitoring station at Mei Chun Court, South Horizons (M9) was handed over to Contract No. DC/2009/24 from Contract No. DC/2008/09 on 28 July 2014. The air quality and noise monitoring stations were set up by Cinotech Consultants Limited (post ET for this project) to monitor the air quality and noise in the vicinity of the sensitive receivers starting from July 2014 and the noise monitoring stations (M8, & M9) were taken over by Wellab Limited (current ET for this project) starting from 1st January 2019. The environmental monitoring schedule for the reporting month is shown in **Appendix C**.

5. Hence, the monitoring of air quality monitoring station at The Arcade, Cyberport (CM_CB1a), The Hong Kong Ice and Cold Storage (CM_AB1a) was handed over to Contract No. DC/2009/24 from Contract No. DC/2007/24 in August 2014. The air quality monitoring stations was set up by Cinotech Consultants Limited (post ET for this project) to monitor the air quality in the vicinity of the sensitive receivers starting from August 2014. The environmental monitoring schedule for the reporting month is shown in **Appendix C**.

6. However, the air quality monitoring at CM_AB1a had been rejected and could not be continued,

the proposed location (CM_AB1b – Works Site Boundary of Aberdeen PTW) was approved by ER on 22 July 2014. The air quality monitoring stations was set up by Cinotech Consultants Limited (post ET for this project) to monitor the air quality in the vicinity of the sensitive receivers starting from August 2014 and the air quality station (CM_AB1b) was taken over by Wellab Limited (current ET for this project) starting from 1st January 2019. The environmental monitoring schedule for the reporting month is shown in **Appendix C**. The location of CM_AB1b is shown in **Figure 1c**.

Noise (Sandy Bay PTW)

7. The Proposal for Termination of Construction Phase EM&A Works for Contract No. DC/2007/24 was submitted by its ET to EPD in July 2015. The proposal, including the termination of noise monitoring at Chuk Lam Ming Tong (M5), was approved by the EPD on 27 July 2015. The result of noise monitoring at M5 would not be reported from 27 July 2015 , based on section 15.11 of the EM&A Manual of this Project as below:

    i) Construction activities including the remaining outstanding construction works for Sandy Bay PTW have been completed by the Contractor of this Project, therefore, no major environmental impact from Sandy Bay PTW in anticipated due to the Project.

Air Quality and Noise (Cyberport PTW)

8. The Proposal for Termination of Construction Phase EM&A Works at Cyberport PTW for this Project was submitted by its ET to EPD in December 2017. The proposal, including the termination of air quality monitoring at The Arcade, Cyberport (CM_CB1a) and noise monitoring at Aegean Terrace (M6a), was approved by the EPD on 7 December 2017. The result of air quality monitoring at CM_CB1a and noise monitoring at M6a would not be reported from 7 December 2017, based on section 15.11 and 15.12 of the EM&A Manual of this Project as below:

    i) Referring to the certificates of substantial completion, the construction works at Cyberport PTW was substantially completed on 30th June 2016. Construction activities including the remaining outstanding construction works at Cyberport PTW will be completed by the Contractor by the end of November 2017. All construction activities with significant environmental impact at Cyberport PTW have been completed on 22nd November 2017. Therefore, no significant environmental impact at Cyberport PTW is anticipated due to the Project starting from 1st December 2017.

    ii) No Project-related environmental monitoring (air quality monitoring and noise monitoring) exceedance was recorded over the duration of the monitoring programme at Cyberport PTW.

    iii) No environmental-related prosecution or summons was recorded at Cyberport PTW. No case of complaint was logged since project commencement at Cyberport PTW.

Air Quality and Noise (Wah Fu PTW)

9. The Proposal for Termination of Construction Phase EM&A Works at Wah Fu PTW for this

Project was submitted by its ET to EPD in July 2018. The proposal, including the termination of air quality monitoring at the rooftop of Wah Ming House (CM_WF1a) and noise monitoring at the rooftop of Wah Ming House (M7a), was approved by the EPD on 2 October 2018. The result of air quality monitoring at CM_WF1a and noise monitoring at M7a would not be reported from 2 October 2018, based on section 15.11 and 15.12 of the EM&A Manual of this Project as below:

i) Referring to the certificates of substantial completion, the construction works at Wah Fu PTW was substantially completed on 25th August 2016. Construction activities including the remaining outstanding construction works at Wah Fu PTW is completed by the Contractor on 4th June 2018. All construction activities with significant environmental impact at Wah Fu PTW have been completed on 4th June 2018. Therefore, no significant environmental impact at Wah Fu PTW is anticipated due to the Project starting from 4th June 2018. Moreover, according to the email from ER on 11th June 2018, the site portion of Wah Fu PTW had been handed over to DSD/ST2 on 4th June 2018.

ii) One Project related Limit Level exceedance was recorded during the daytime construction noise monitoring on 19th December 2012 by the ET of DC/2007/24 at M7a. References could be made to the Monthly EM&A Report for December 2012. No Project-related environmental monitoring (air quality monitoring and noise monitoring) exceedance was recorded since January 2013 at Wah Fu PTW.

10. Summary of the non-compliance of the reporting month is tabulated in **Table I**.

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

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

1-hour TSP Monitoring

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

24-hour TSP Monitoring

12. All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No

Action/Limit Level exceedance was recorded.

Construction Noise

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

Environmental Licenses and Permits

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

Environmental Mitigation Implementation Schedule

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

Key Information in the Reporting Month

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

Table II Summary Table for Key Information in the Reporting Month

Event	Event Details		Action Taken	Status	Remark
	Number	Nature			
Complaint received	0	---	N/A	N/A	---
Status of submissions under EP	1	Environmental Monitoring and Audit Monthly Report – May 2019	Submitted to EPD on 13 June 2019	No comment	---
Notifications of any summons & prosecutions received	0	---	N/A	N/A	---

Summary of Complaints and Prosecutions

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

Future Key Issues:

18. Major site activities for the coming two months include:
    - Wah Fu PTW: N/A;
    - Aberdeen PTW: N/A;
    - Ap Lei Chau PTW: Operation of PTW, Building Service installation of Screening and Degritting Facilities and Effluent Pumping Station, Seawall reconstruction;
    - Sandy Bay PTW: N/A; and
    - Cyberport PTW: N/A.

19. The environmental concerns in coming months are mainly on chemicals storage, surface run off, spillage of wastewater during rainstorm and dust generated from the construction works.

1. INTRODUCTION

Background

1.1 The Project 'HATS Stage 2A – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau' with Contract No: DC/2009/24 mainly comprises the following major works:

- The construction of screens, grit traps, deodourisation rooms, workshop and administration buildings, and modification of existing inlet pumping stations at the preliminary treatment works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau.

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

1.3 The Project is under Harbour Area Treatment Scheme (HATS) Stage 2A and is a designated project (Register No. : AEIAR-121/2008). The environmental permit: (Permit No. EP-322/2008/G) which was issued on 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/2009/24 "Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau".

1.5 Cinotech Consultants Limited was commissioned by LJJV to undertake the Environmental Monitoring and Audit (EM&A) works for the project and was appointed as the Environmental Team (ET) of the Project under Condition 2.1 of the EP. The ET of this project was taken over by Wellab Limited (Wellab) starting from 1st January 2019.

1.6 The construction works at Wah Fu PTW and Ap Lei Chau PTW were commenced in the January 2012.

1.7 The construction phase of EM&A programme of the Project commenced in January 2012.

1.8 This is the 90th monthly EM&A report summarizing the EM&A works conducted for the Project in June 2019.

Project Organizations

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

Table 1.1 Key Project Contacts

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

Party	Role	Name	Position	Phone No.
Wellab	Environmental Team	Dr. Priscilla Choy	ET Leader	2151 2089
		Mr. C.M. Li	Project Coordinator & Audit Team Leader	2151 2073
Mott MacDonald	Independent Environmental Checker	Dr. Anne Kerr	Independent Environmental Checker	2828 5757
Leader and JEC Joint Venture	Contractor	Mr. Kelvin Cheung	Site Agent	9656 8865
		Ms. S.P. Ngan	Environmental Officer	9516 9431

Construction Programme

1.10 The site activities undertaken in the reporting month included:

- Wah Fu PTW – N/A;
- Ap Lei Chau PTW – Continuous interim operation and maintenance of the ALC PTW, Remedial E&M repairing works, Site clearance works for further seawall reinstatement;
- Aberdeen PTW – Continuous interim operation and maintenance of the ABN PTW, Defect Rectification Works;
- Sandy Bay PTW – N/A;
- Cyberport PTW – N/A.

Summary of EM&A Requirements

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

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

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

1.13 This report presents the monitoring results, observations, locations, equipment, period, for required monitoring parameter namely dust, noise levels, and audit works conducted for the Project in June 2019. For the methodology and QA/QC procedures of the monitoring parameters, please refer to the Section 2 and 3 of this report.

2. AIR QUALITY

Monitoring Requirements

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

Monitoring Locations

2.2 The designated monitoring station, CM_AB1b was selected for impact dust monitoring for the Project. **Table 2.1** describes the air quality monitoring locations and the responsible ET who is carrying out the impact air quality monitoring. The monitoring location which is also depicted in **Figure 1**.

2.3 The termination of air quality monitoring at CM_CB1a – The Arcade, Cyberport was approved by EPD on 7 December 2017.

2.4 The termination of air quality monitoring at CM_WF1a – The rooftop of Wah Ming House was approved by EPD on 2 October 2018. No air quality monitoring was conducted during the reporting month at CM_WF1a.

Table 2.1 Locations for Air Quality Monitoring

Monitoring Station	Monitored by	Location of Measurement
CM_AB1b(1)	DC/2009/24	Works Site Boundary of Aberdeen PTW

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

Monitoring Equipment

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

Table 2.2 Air Quality Monitoring Equipment

Equipment	Model and Make	Quantity
HVS Samplers	GMWS 2310 HVS, Model GS-2310-105	1
Laser Dust Meter	Met One Instruments; Model no. AEROCET-831	3
Calibrator	Tisch Environmental, Inc.; Model no. TE-5025A	1

Monitoring Parameters, Frequency and Duration

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

Table 2.3 Impact Dust Monitoring Parameters, Frequency and Duration

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

Monitoring Methodology and QA/QC Procedure

2.7 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: Met One Instruments; Model no. AEROCET-831)

Measuring Procedures

2.8 The measuring procedures of the 1-hour dust meters were in accordance with the Manufacturer's Instruction Manual as follows:

- The 1-hour dust meter is placed at least 1.3 meters above ground.
- Remove the red rubber cap from the AEROCET-831 inlet nozzle.
- Turn on the power switch that is located on the right side of the AEROCET-831.
- On power up the product intro screen is displayed for 3 seconds. The intro screen displays the product name and firmware version.
- Then the main counter screen will be displayed.
- Press the START button. Internal vacuum pump start running. After 1 minute the pump will stop and the 0.5µm and 5µm channels will show the cumulative counts of particles larger than 0.5µm and 5µm per cubic foot.
- The AEROCET-831 is now checked out and ready for use.
- To switch off the AEROCET-831 power to stop the measuring after 1 hour sampling.
- Information such as sampling date, time, and display value and site condition were recorded during the monitoring period.

Maintenance/Calibration

2.9 The following maintenance/calibration was required for the direct dust meters:

- Check the meter at a 2-month interval and calibrate the meter at a 1-year interval throughout all stages of the air quality monitoring.

24-hour TSP Monitoring

Instrumentation

2.10 High volume (HVS) samplers (Model no. 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

2.11 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.

2.12 Prior to the commencement of the dust sampling, the flow rate of the high volume sampler was properly set (between 1.1 m^3/min. and 1.4 m^3/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50.

2.13 Fiberglass filters were used which have a collection efficiency of larger than 99% for particles of 0.3 μm diameter.

2.14 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.

2.15 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.

2.16 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.

2.17 The shelter lid was closed and secured with the aluminum strip.

2.18 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).

2.19 After sampling, the filter was removed and sent to the laboratory for weighing. The elapsed time was also recorded.

2.20 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

2.21 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 CM_AB1b in the reporting month.

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

Air Quality Monitoring Station	Average µg/m³	Range µg/m³	Action Level µg/m³	Limit Level µg/m³
1 hour TSP				
CM_AB1b	85	38-138	283	500
24 hours TSP				
CM_AB1b	46	25-60	174	260

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

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

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

Appendix G.

2.27 The identified dust sources at the monitoring stations were mainly from road traffic.

3 NOISE

Monitoring Requirements

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

Monitoring Locations

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

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

3.4 The termination of noise monitoring at M6a – Aegean Terrace was approved by EPD on 7 December 2017.

3.5 The termination of noise monitoring at M7a – Wah Ming House was approved by EPD on 2 October 2018. No noise monitoring was conducted during the reporting month at M7a.

Table 3.1 Location of Noise Monitoring Stations

Monitoring Station	Monitored By	Location of Measurement
M8 (Aberdeen PTW)	DC/2009/24	Wah Lai House
M9 (Ap Lei Chau PTW)		Mei Chun Court, South Horizons

Monitoring Equipment

3.6 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 equipment being used. Copies of the calibration certificates for the sound level meter and calibrator are attached in **Appendix B**.

Table 3.2 Noise Monitoring Equipment

Equipment	Model and Make	Quantity
Integrating Sound Level Meter	BSWA 801	1
	SVAN 977	2
Calibrator	SV30A	1

Monitoring Parameters, Frequency and Duration

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

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

Table 3.3 Noise Monitoring Parameters, Frequency and Duration

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

Monitoring Methodology and QA/QC Procedures

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

Maintenance and Calibration

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

Results and Observations

3.10 **Table 3.4** summarizes the monitoring results at M8 and M9 in reporting month.

Table 3.4 Summary of the Noise Monitoring Results in Reporting Month

For the time period 0700-1900 hrs. on weekdays		
Monitoring Station	Range, dB(A) L_{eq}(30 min.)	Limit Level, dB(A) L_{eq}(30 min.)
M8	55-66	75.0
M9	54-62	

3.11 The construction noise monitoring at the designated locations was conducted by the ET of this project as scheduled in the reporting month. The monitoring results and graphical presentation are provided in **Appendix F**.

3.12 No Action/Limit Level exceedance was recorded. Summary of exceedance is presented in **Appendix G**.

3.13 The major noise sources identified at the designated noise monitoring stations were from road traffic noise, sea traffic.

4 ENVIRONMENTAL AUDIT

Site Audits

4.1 Site audits were carried out on a weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site.

4.2 Environmental site audits were conducted on 6, 13, 20 and 25 June 2019. No non-compliance was observed during the site audits.

4.3 Site inspections were undertaken to ensure and check that the implementation and maintenance of mitigation measures for Air Quality, Noise, Water Quality, Waste Management, Landscape and Visual are being properly carried out in the reporting month in accordance to section 14.1 of the EM&A Manual. No non-compliance was observed during the site inspections.

4.4 The summaries of site audits are attached in **Appendix H**.

Review of Environmental Monitoring Procedures

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

Status of Environmental Licensing and Permitting

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

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

Permit Number	Valid Period		Details	Status
	From	To		
Water Discharge License				
WT00011629-2012	N/A	31/1/2017	Location: Sandy Bay PTW	Expiry
WT00011633-2012	N/A	31/1/2017	Location: Cyber Port PTW	
WT00011632-2012	N/A	31/1/2017	Location: Ap Lei Chau	
WT00016837-2013	N/A	31/8/2018	Location: Wah Fu PTW	
WT00027953-2017	N/A	31/3/2022	Location: Aberdeen PTW	Valid
Notification of Works Under APCO				
334694	6/9/2011	N/A	All PTWs	N/A
Registered Chemical Waste Producer				
5218-171-L2783-01	14/12/2011	N/A	Location: Sandy Bay PTW	Valid
5218-171-L2783-02	30/12/2011	N/A	Location: Cyber Port PTW	

5218-174-L2783-03	30/12/2011	N/A	Location: Ap Lei Chau	
5218-173-L2783-04	30/12/2011	N/A	Location: Aberdeen PTW	
5218-172-L2783-05	30/12/2011	N/A	Location: Wah Fu PTW	
Special Waste Admission Ticket				
14760	24/11/2018	23/11/2019	Location: Aberdeen PTW	Valid
14759	24/11/2018	23/11/2019	Location: Ap Lei Chau	Valid

Status of Waste Management

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

Implementation Status of Environmental Mitigation Measures

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

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

Table 4.2 Observations and Recommendations of Site Audit

Parameters	Ref. Number	Observations	Follow Up Action
Water Quality	N/A	--	--
Air Quality	N/A	--	--
Waste/ Chemical Management	N/A	--	--
Noise	N/A	--	--
Landscape and Visual	N/A	--	--
Permit/ Licenses	N/A	--	--

Implementation Status of Event Action Plans

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

1-hr TSP

4.11 No Action/Limit Level exceedance was recorded. No project-related 1-hr TSP monitoring exceedance at CM_CB1a and CM_WF1a was recorded over the duration of the monitoring programme. No project-related 1-hr TSP monitoring exceedance at CM_AB1b was recorded

over the duration of the monitoring programme.

24-hr TSP

4.12 No Action/Limit Level exceedance was recorded. No project-related 24-hr TSP monitoring exceedance at CM_CB1a and CM_WF1a was recorded over the duration of the monitoring programme. No project-related 24-hr TSP monitoring exceedance at CM_AB1b was recorded over the duration of the monitoring programme.

Construction Noise

4.13 No Action/Limit Level exceedance was recorded. No project-related construction noise monitoring exceedance at M6a was recorded over the duration of the monitoring programme. One Project related Limit Level exceedance was recorded during the daytime construction noise monitoring on 19th December 2012 by the ET of DC/2007/24 at M7a. No project-related construction noise monitoring exceedance at M7a was recorded since January 2013. No project-related construction noise monitoring exceedance at M8 was recorded over the duration of the monitoring programme.

Landscape and Visual

4.14 No non-compliance was recorded.

Summary of Complaints and Prosecutions

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

4.16 Sandy Bay PTW:
There was no environmental prosecution or notification of summons since the Project commencement. The Complaint Log is presented in **Appendix L.**

Cyberport PTW:
There was no environmental prosecution or notification of summons since the Project commencement. The Complaint Log is presented in **Appendix L.**

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

Aberdeen PTW:
There was no environmental prosecution or notification of summons since the Project commencement. The Complaint Log is presented in **Appendix L.**

Ap Lei Chau PTW:
There was no environmental prosecution or notification of summons in the reporting month while two complaints were already received since the Project commencement. The Complaint Log is presented in **Appendix L.**

5. FUTURE KEY ISSUES

Key Issues for the Coming Month

5.1 Key environmental issues in the coming month include:

- Generation of dust from stockpiles of excavated and dusty materials, unpaved site area and vehicle movement, roadworks, excavation works and loading and unloading dusty materials on-site;
- Noise nuisance from operation of equipment and machinery on-site;
- Provision well maintenance on the storage facilities of chemicals/fuel and chemical waste/waste oil on-site;
- Mosquito breeding due to the ponding water and stagnant water around the site areas;
- Drainage system should be well designed and maintained to prevent flooding and silty water getting into the public area during and after raining;
- Maintenance of de-silting facilities and drainage system such as U-channels;
- Blockage of U-channel by accumulated silt;
- Silty surface runoff generated from the site area; and
- Silt and dust getting into the public area by the leaving site vehicles at the site exits without adequate wheel washing facilities.

Monitoring Schedule for the Next Month

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

Construction Program for the Next Month

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

6. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

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

1-hour TSP Monitoring

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

24-hour TSP Monitoring

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

Construction Noise Monitoring

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

Environmental Audit

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

Complaint and Prosecution

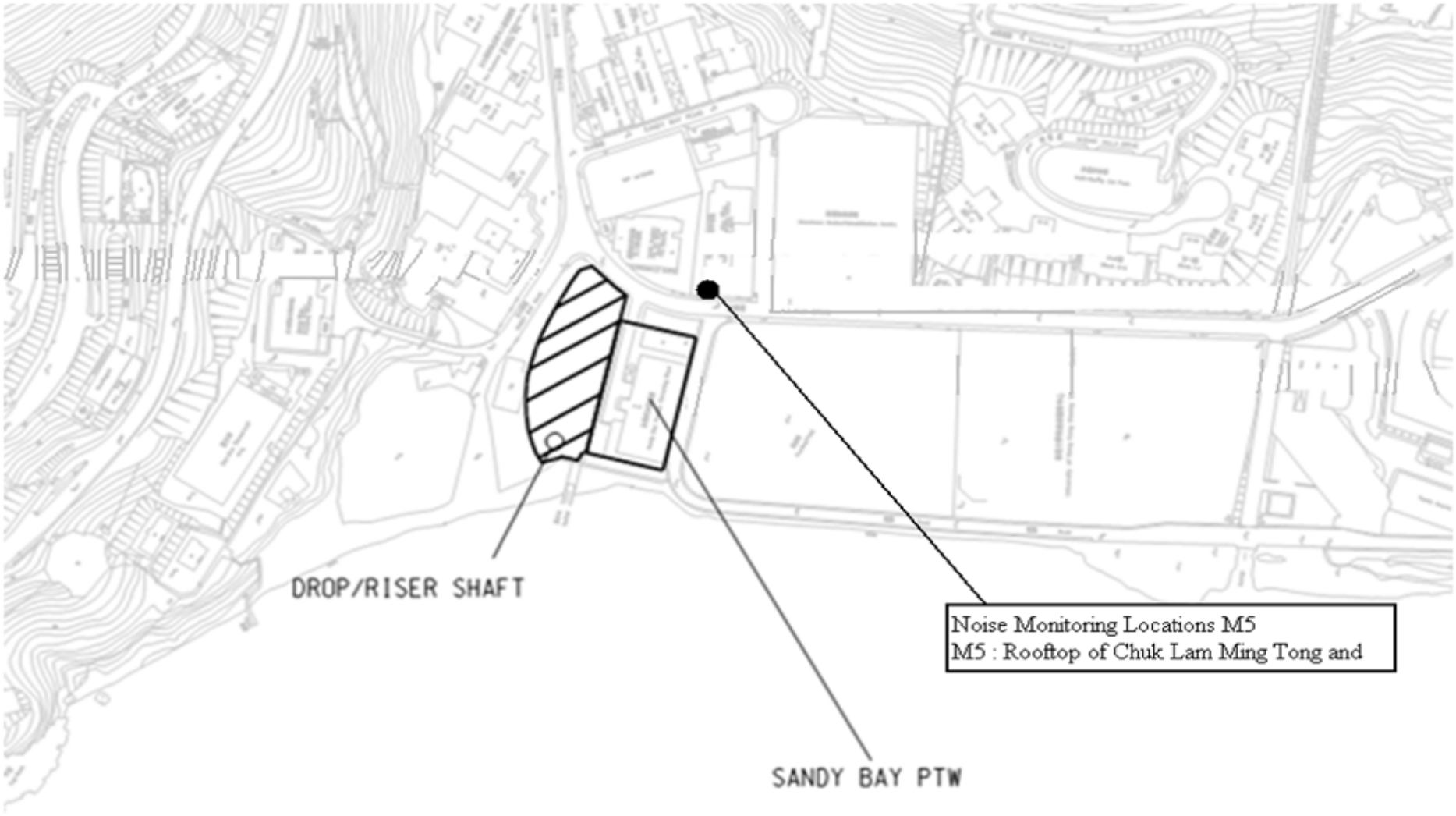
6.6 No environmentally related summons, prosecutions or complaints were received in the reporting month.

Recommendations

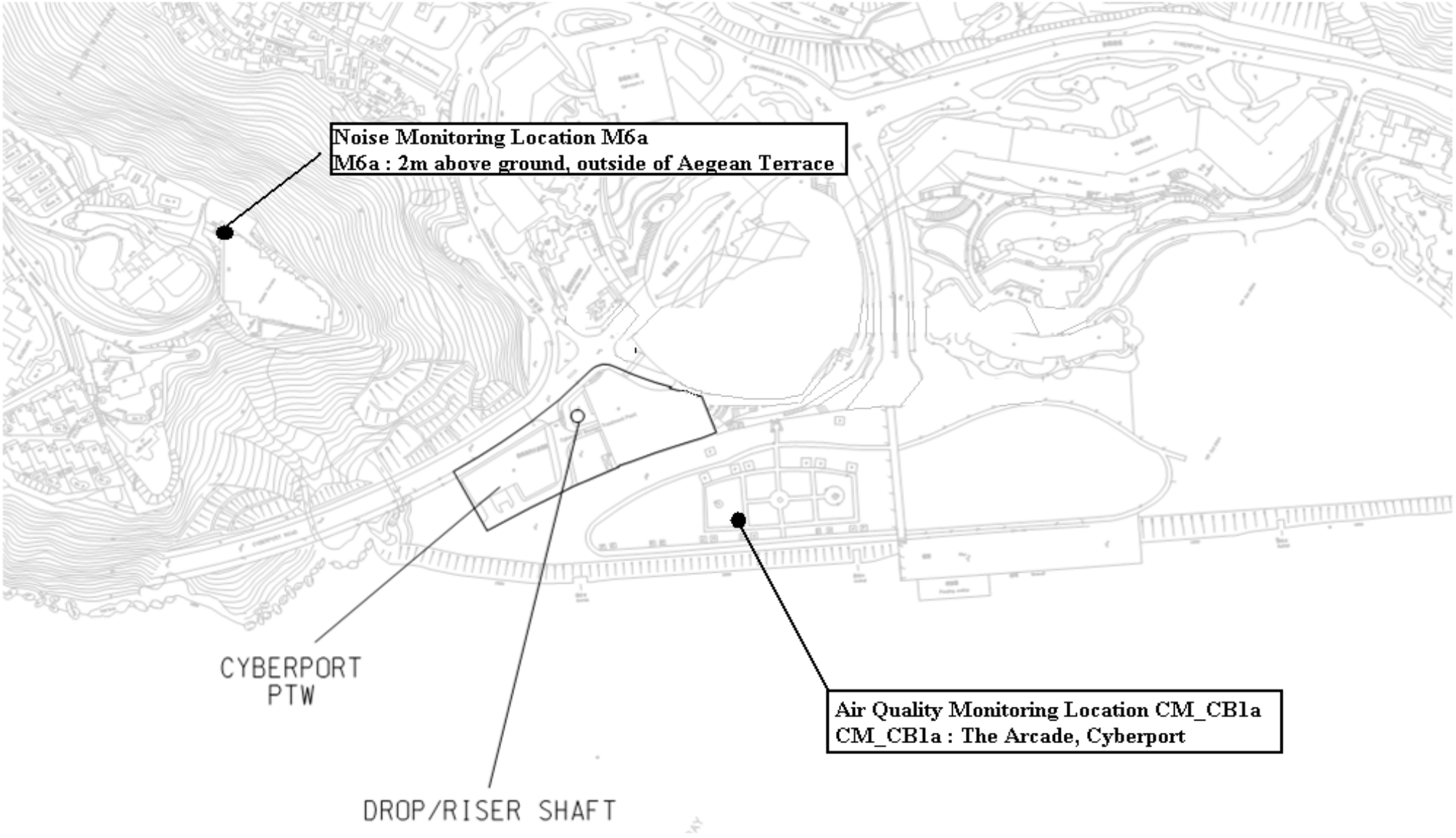
6.7 According to the environmental audit performed in the reporting month, the following recommendations were made:

- *NIL*

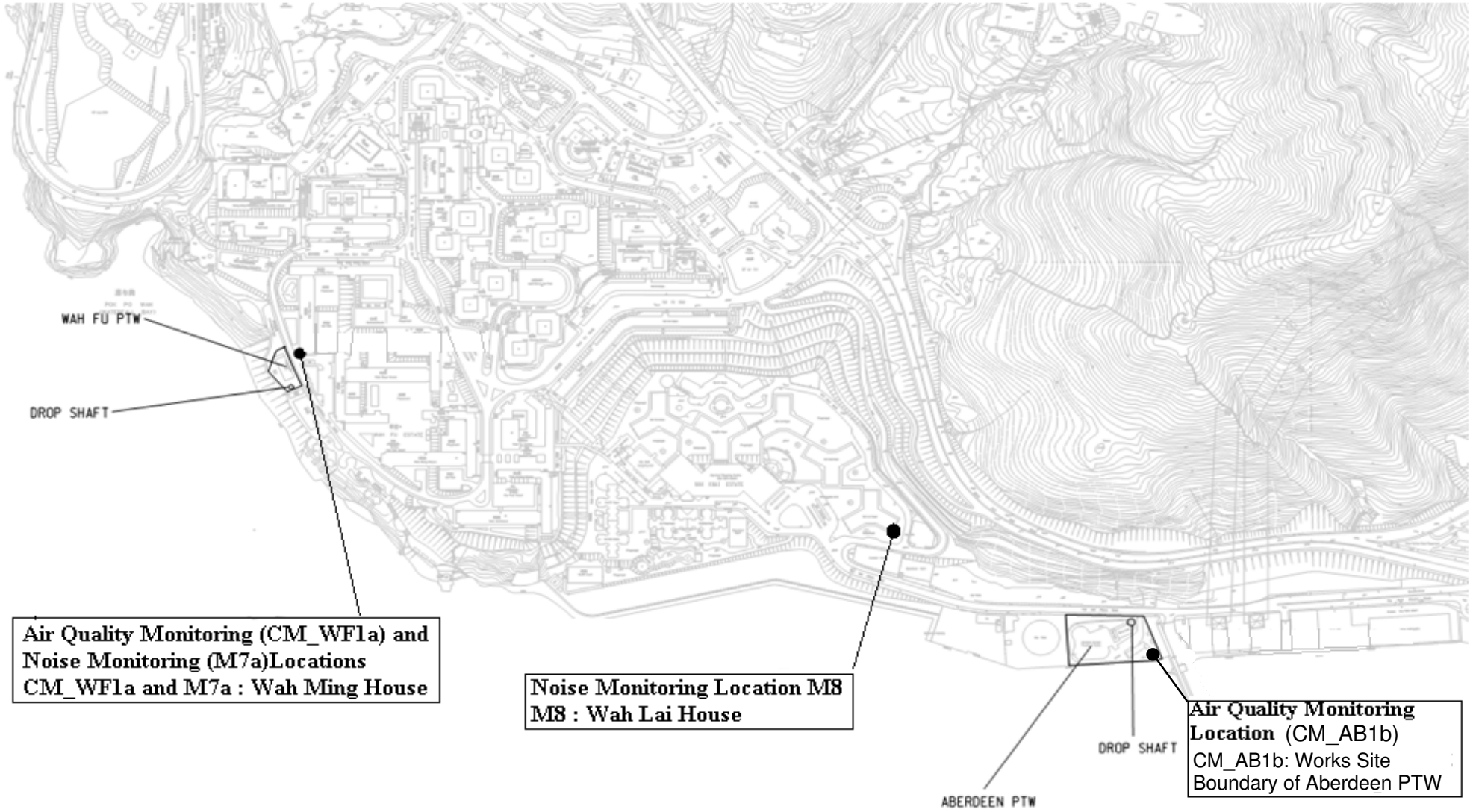
FIGURES



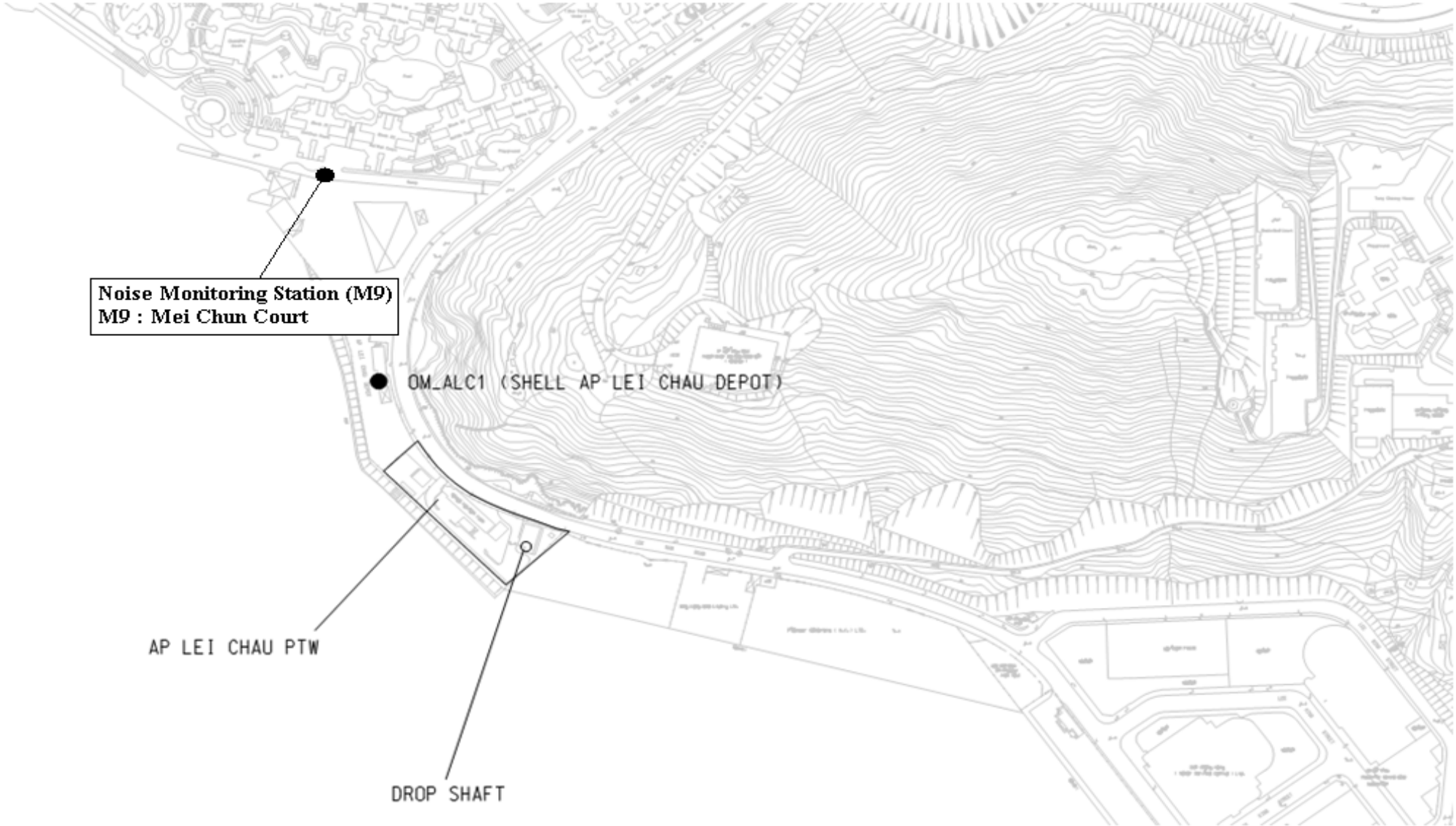
Title	Contract No: DC/2009/24 HATS 2A - Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau	Scale N.T.S	Project No. MA11060	**WELLAB**
	General Location Plan of Sandy Bay PTW and Locations of Noise Monitoring Stations	Date 01/2012	Figure 1A	



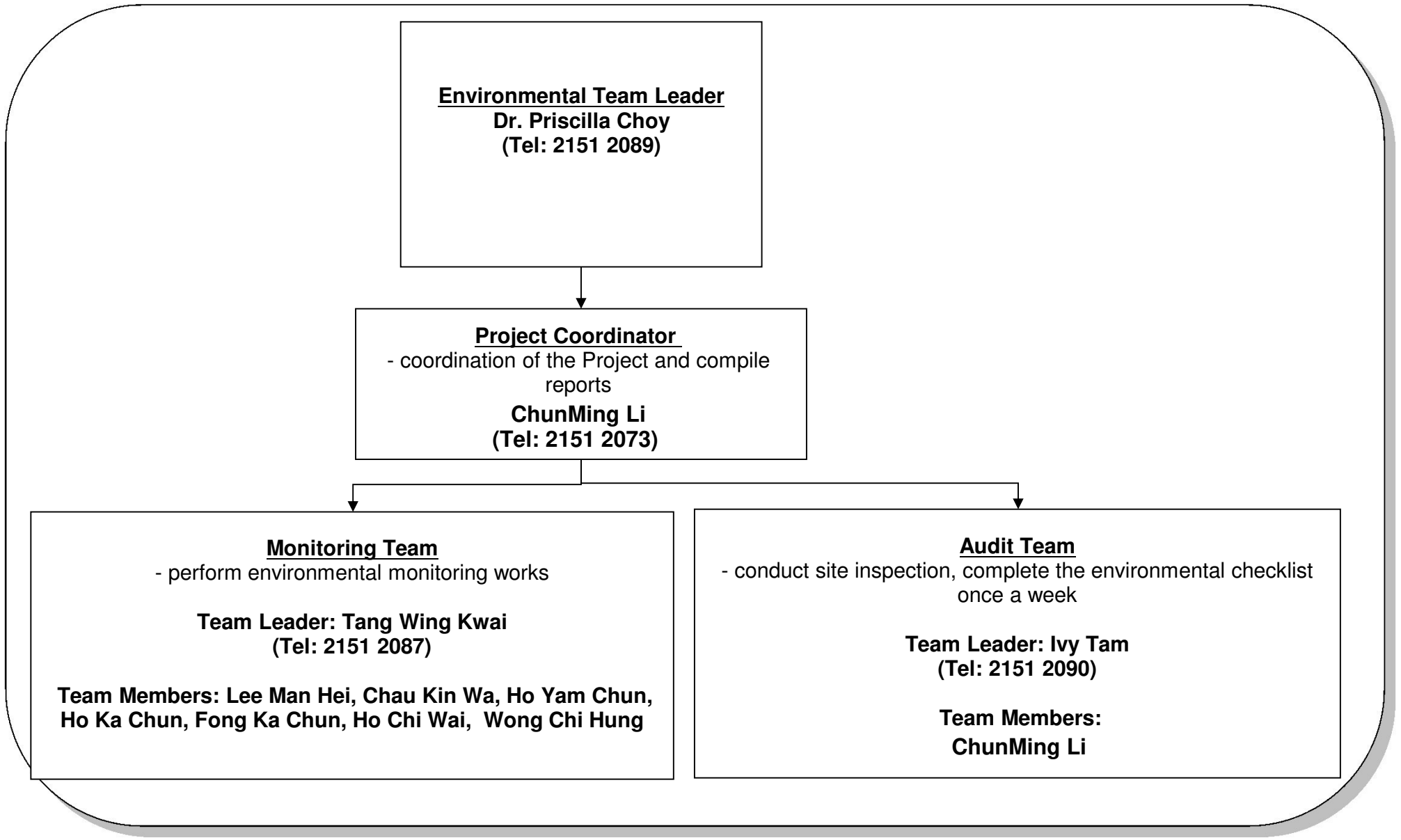
Title	Contract No: DC/2009/24 HATS 2A - Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau	Scale N.T.S	Project No. MA11060	**WELLAB**
	General Location Plan of Cyberport PTW and Locations of Air Quality and Noise Monitoring Stations	Date 01/2012	Figure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



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



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



Title	Contract No. DC/2009/24 HATS Stage 2A – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau ET's Organization Chart	Scale N.T.S	Project No. MA11060	WELLAB
		Date Jan 2019	Figure 2	

APPENDIX A
ACTION AND LIMIT LEVELS FOR AIR QUALITYAND 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 (μg/m^3)		Limit Level (μg/m^3)	
	1-hour	24-hour	1-hour	24-hour
CM_CB1a	280	178	500	260
CM_WF1a	285	185		
CM_AB1b	283	174		

Table A-2 Action and Limit Level for Construction Noise

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

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

APPENDIX B
COPIES OF CALIBRATION CERTIFICATES

WELLAB LIMITED
Rms 1214, 1502, 1516, 1701 & 1716,
Technology Park, 18 On Lai Street,
Shatin, N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Wellab Limited**
(EM&A Department)
Room 1701, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	31445A
Date of Issue:	2019-05-14
Date Received:	2019-05-10
Date Tested:	2019-05-10
Date Completed:	2019-05-14
Next Due Date:	2019-07-13
Page:	1 of 1

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

Certificate of Calibration

Item for Calibration:

Description	: Dust Monitor
Manufacturer	: Met One Instruments
Model No.	: AEROCET-831
Serial No.	: X23808
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 1 minute
Equipment No.	: WA-01-02

Test Conditions:

Room Temperature	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Tisch Environmental 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)	1.135

****

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

PATRICK TSE
General Manager

WELLAB LIMITED
Rms 1214, 1502, 1516, 1701 & 1716,
Technology Park, 18 On Lai Street,
Shatin, N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Wellab Limited**
(EM&A Department)
Room 1701, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	31445B
Date of Issue:	2019-05-14
Date Received:	2019-05-10
Date Tested:	2019-05-10
Date Completed:	2019-05-14
Next Due Date:	2019-07-13
Page:	1 of 1

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

Certificate of Calibration

Item for Calibration:

Description	: Dust Monitor
Manufacturer	: Met One Instruments
Model No.	: AEROCET-831
Serial No.	: X23809
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 1 minute
Equipment No.	: WA-01-03

Test Conditions:

Room Temperature	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Tisch Environmental 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)	1.115

****

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

PATRICK TSE
General Manager

WELLAB 匯力
Testing & Research

WELLAB LIMITED
Rms 1214, 1502, 1516, 1701 & 1716,
Technology Park, 18 On Lai Street,
Shatin, N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Wellab Limited**
(EM&A Department)
Room 1701, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	31701B
Date of Issue:	2019-06-19
Date Received:	2019-06-18
Date Tested:	2019-06-18
Date Completed:	2019-06-19
Next Due Date:	2019-08-18

Page: 1 of 1

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

Certificate of Calibration

Item for Calibration:

Description	: Dust Monitor
Manufacturer	: Met One Instruments
Model No.	: AEROCET-831
Serial No.	: X24479
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 1 minute
Equipment No.	: WA-01-08

Test Conditions:

Room Temperatre	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Tisch Environmental 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)	1.121

****

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

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

WELLAB LIMITED
Rms 1214, 1502, 1516, 1701 & 1716,
Technology Park, 18 On Lai Street,
Shatin, N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

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

Test Report No.:	29814
Date of Issue:	2018-09-15
Date Received:	2018-09-14
Date Tested:	2018-09-14
Date Completed:	2018-09-15
Next Due Date:	2019-09-14

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 977
Serial No.	: 45467
Microphone No.	: 62838
Equipment No.	: N-08-13

Test conditions:

Room Temperatre	: 17-22 degree Celsius
Relative Humidity	: 40-70%

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

WELLAB 匯力 Testing & Research

WELLAB LIMITED
Rms 1214, 1502, 1516, 1701 & 1716,
Technology Park, 18 On Lai Street,
Shatin, N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

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

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

Test Report No.:	29815
Date of Issue:	2018-09-15
Date Received:	2018-09-14
Date Tested:	2018-09-14
Date Completed:	2018-09-15
Next Due Date:	2019-09-14
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 977
Serial No.	: 45482
Microphone No.	: 63626
Equipment No.	: N-08-14

Test conditions:

Room Temperatre	: 17-22 degree Celsius
Relative Humidity	: 40-70%

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
PATRICK TSE
Laboratory Manager

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Testing & Research

WELLAB LIMITED
Rms 1214, 1502, 1516, 1701 & 1716,
Technology Park, 18 On Lai Street,
Shatin, N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

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

Test Report No.:	30524C
Date of Issue:	2018-12-17
Date Received:	2018-12-15
Date Tested:	2018-12-15
Date Completed:	2018-12-17
Next Due Date:	2019-12-16

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

Page: 1 of 1

Certificate of Calibration

Item for calibration:

Description	: Sound & Vibration Analyser
Manufacturer	: BSWA
Model No.	: BSWA 801
Serial No.	: 35927
Equipment No.	: N-13-03

Test conditions:

Room Temperatre	: 17-22 degree Celsius
Relative Humidity	: 40-70%

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

WELLAB LIMITED
Rms 1214, 1502, 1516, 1701 & 1716,
Technology Park, 18 On Lai Street,
Shatin, N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

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

Test Report No.:	29816
Date of Issue:	2018-09-29
Date Received:	2018-09-28
Date Tested:	2018-09-28
Date Completed:	2018-09-29
Next Due Date:	2019-09-28

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 Temperatre	: 17-22 degree Celsius
Relative Humidity	: 40-70%

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

WELLAB 匯力
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High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA11060/38/0031

Project No. CM_AB1b - Works Site Boundary of Aberdeen PTW Operator: MH

Date: 9-Apr-19 Next Due Date: 8-Jun-19

Equipment No.: A-01-38 Serial No. 1402

Ambient Condition			
Temperature, Ta (K)	300.5	Pressure, Pa (mmHg)	760.9

Orifice Transfer Standard Information					
Serial No.	0993	Slope, mc	0.0572	Intercept, bc	-0.02285
Last Calibration Date:	25-Feb-19	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	25-Feb-20	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.5	3.38	59.47	7.6	2.75
2	9.6	3.09	54.37	6.3	2.50
3	7.8	2.78	49.05	5.3	2.29
4	5.4	2.32	40.88	3.6	1.89
5	3.6	1.89	33.45	2.4	1.54

By Linear Regression of Y on X

Slope , mw = 0.0461 **Intercept, bw =** 0.0063

Correlation coefficient* = 0.9995

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.99**

Remarks:

Conducted by: Lee Man Kit Signature: Date: 9/4/2019

Checked by: Wk. Tang Signature: Date: 9/4/2019

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High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

File No. MA11060/38/0032

Project No. CM_AB1b - Works Site Boundary of Aberdeen PTW
Operator: WK
Date: 6-Jun-19
Next Due Date: 5-Aug-19
Equipment No.: A-01-38
Serial No. 1402

Ambient Condition			
Temperature, Ta (K)	301.8	Pressure, Pa (mmHg)	757.8

Orifice Transfer Standard Information					
Serial No.	0993	Slope, mc	0.0572	Intercept, bc	-0.02285
Last Calibration Date:	25-Feb-19	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	25-Feb-20	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	12.6	3.52	61.97	7.9	2.79
2	9.8	3.11	54.70	6.3	2.49
3	7.4	2.70	47.58	4.6	2.13
4	4.9	2.20	38.80	3.2	1.77
5	3.4	1.83	32.38	2.2	1.47

By Linear Regression of Y on X

Slope , mw = **0.0446** **Intercept, bw =** **0.0317**

Correlation coefficient* = **0.9994**

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.86**

Remarks:

Conducted by: W.K. Tang Signature: Date: 6/6/19
Checked by: LEE MAN LUEN Signature: Date: 6-6-2019

TISCH Environmental

RECALIBRATION DUE DATE:
February 25, 2020

Certificate of Calibration

Calibration Certification Information				
Cal. Date:	February 25, 2019	**Rootsmeter S/N:** 438320	**Ta:** 294	°K
Operator:	Jim Tisch		**Pa:** 762.0	mm Hg
Calibration Model #:	TE-5025A	**Calibrator S/N:** 0993		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4070	3.2	2.00
2	3	4	1	1.0000	6.3	4.00
3	5	6	1	0.8940	7.8	5.00
4	7	8	1	0.8520	8.7	5.50
5	9	10	1	0.7010	12.7	8.00

Data Tabulation

Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H\left(Ta/Pa\right)}$ (y-axis)
1.0120	0.7193	1.4257	0.9958	0.7077	0.8784
1.0079	1.0079	2.0162	0.9917	0.9917	1.2423
1.0059	1.1251	2.2542	0.9898	1.1071	1.3889
1.0047	1.1792	2.3642	0.9886	1.1603	1.4567
0.9993	1.4256	2.8513	0.9833	1.4028	1.7569
QSTD	**m=**	**2.02048**	**QA**	**m=**	**1.26519**
	b=	**-0.02285**		**b=**	**-0.01408**
	r=	**0.99995**		**r=**	**0.99995**

Calculations

Vstd=	ΔVol((Pa-ΔP)/Pstd)(Tstd/Ta)	**Va=**	ΔVol((Pa-ΔP)/Pa)
Qstd=	Vstd/ΔTime	**Qa=**	Va/ΔTime

For subsequent flow rate calculations:

Qstd= $1/m\left(\left(\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}\right)-b\right)$

Qa= $1/m\left(\left(\sqrt{\Delta H\left(Ta/Pa\right)}\right)-b\right)$

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg

Key
ΔH: calibrator manometer reading (in H2O)
ΔP: rootsmeter manometer reading (mm Hg)
Ta: actual absolute temperature (°K)
Pa: actual barometric pressure (mm Hg)
b: intercept
m: slope

RECALIBRATION

US EPA recommends annual recalibration per 1998 40 Code of Federal Regulations Part 50 to 51, Appendix B to Part 50, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere, 9.2.17, page 30

Tisch Environmental, Inc.
145 South Miami Avenue
Village of Cleves, OH 45002

www.tisch-env.com
TOLL FREE: (877)263-7610
FAX: (513)467-9009

APPENDIX C
ENVIRONMENTAL MONITORING SCHEDULE

Contract No. DC/2009/24

HATS 2A – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau

Impact Air Quality and Noise Monitoring for June 2019

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

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

Air Quality Monitoring Station (1 hr TSP & 24 hr TSP)
CM_AB1b - Works Site Boundary of Aberdeen PTW

Noise Monitoring Station
M8 - Wah Lai House
M9 - Mei Chun Court

Contract No. DC/2009/24

HATS 2A – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau

Tentative Impact Air Quality and Noise Monitoring for July 2019

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

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

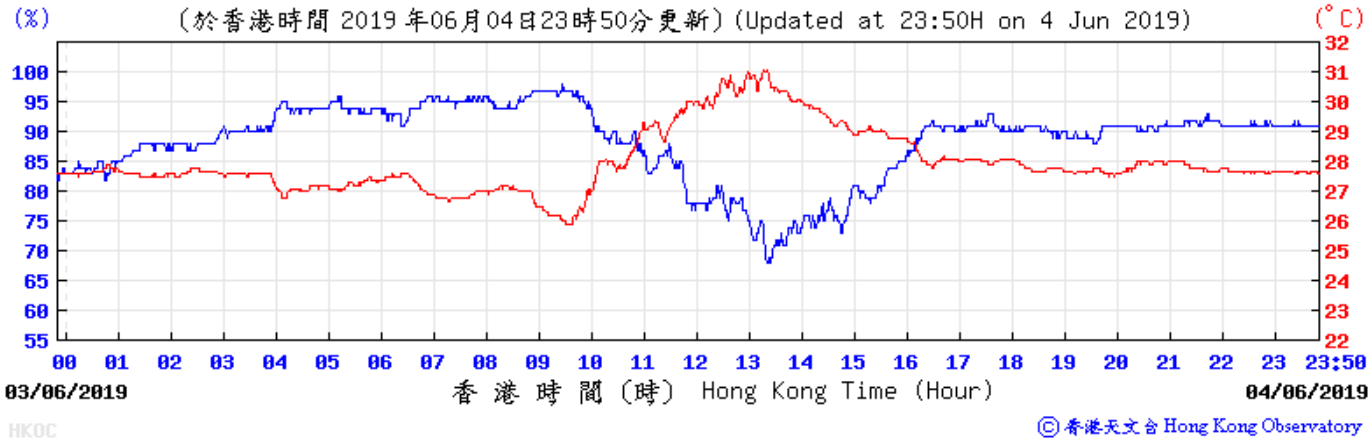
Air Quality Monitoring Station (1 hr TSP & 24 hr TSP)
CM_AB1b - Works Site Boundary of Aberdeen PTW

Noise Monitoring Station
M8 - Wah Lai House
M9 - Mei Chun Court

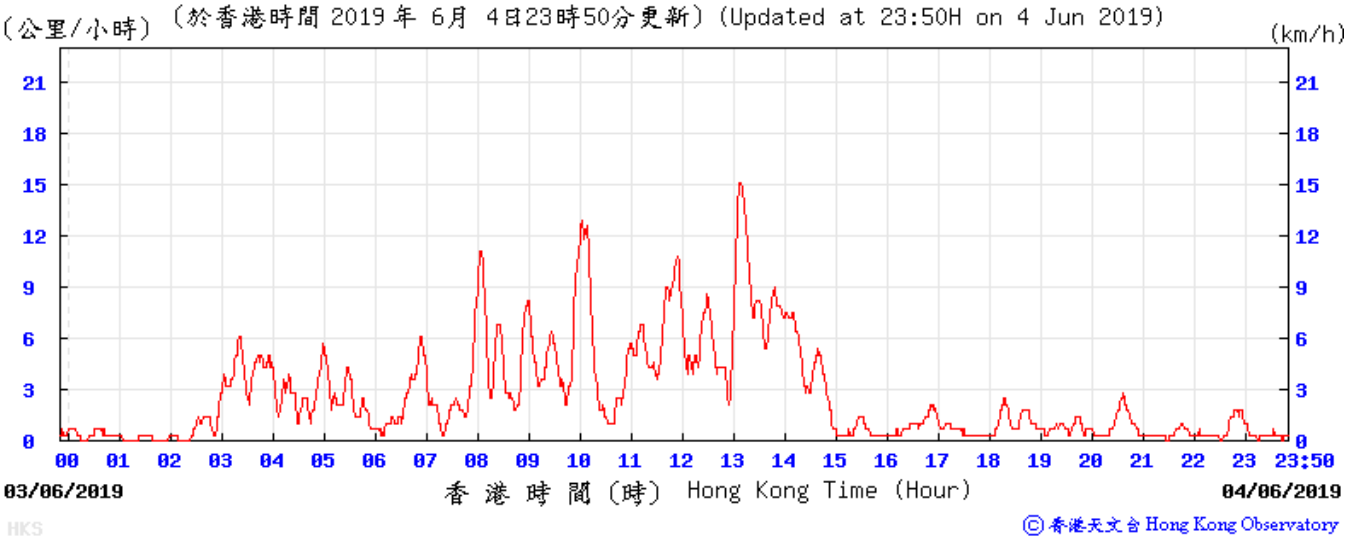
APPENDIX D
METEOROLOGICAL DATA ON MONITORING DATES

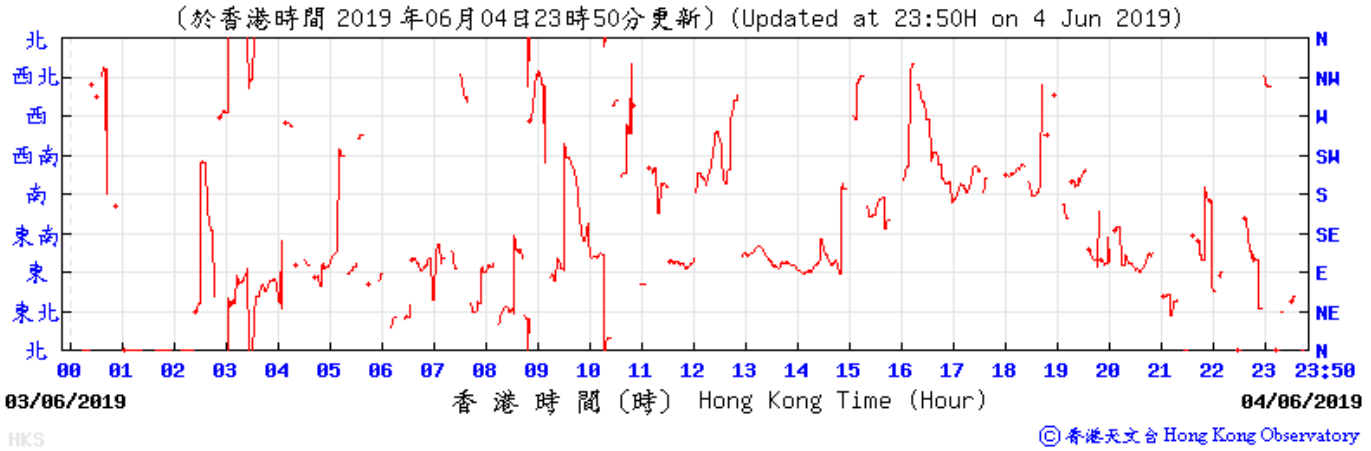
Appendix D
Meteorological Data Recorded from HKO Station (4 June 2019) (Source: www.hko.gov.hk)

Temperature/Humidity:



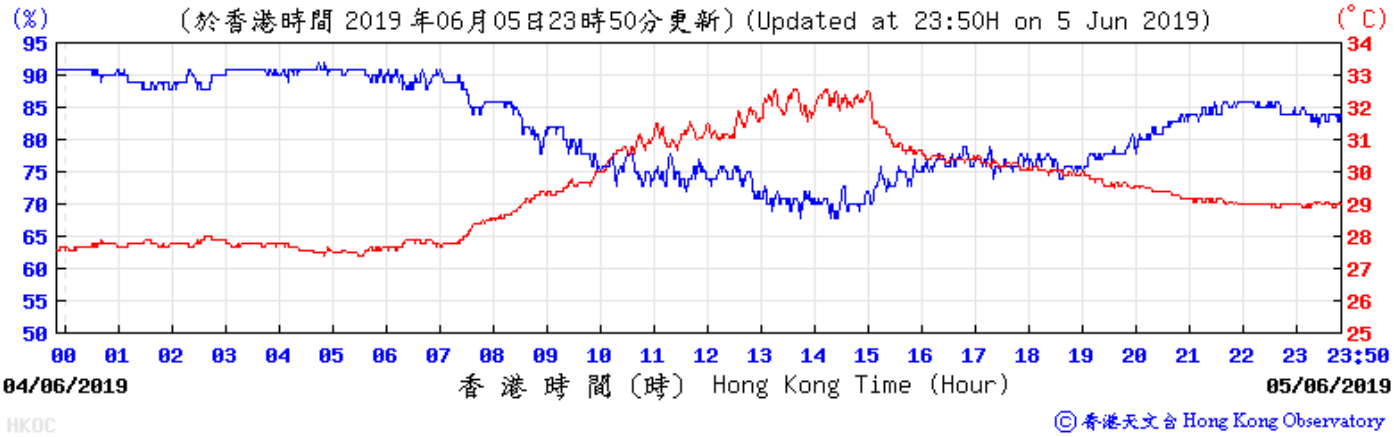
Wind Speed and Direction:



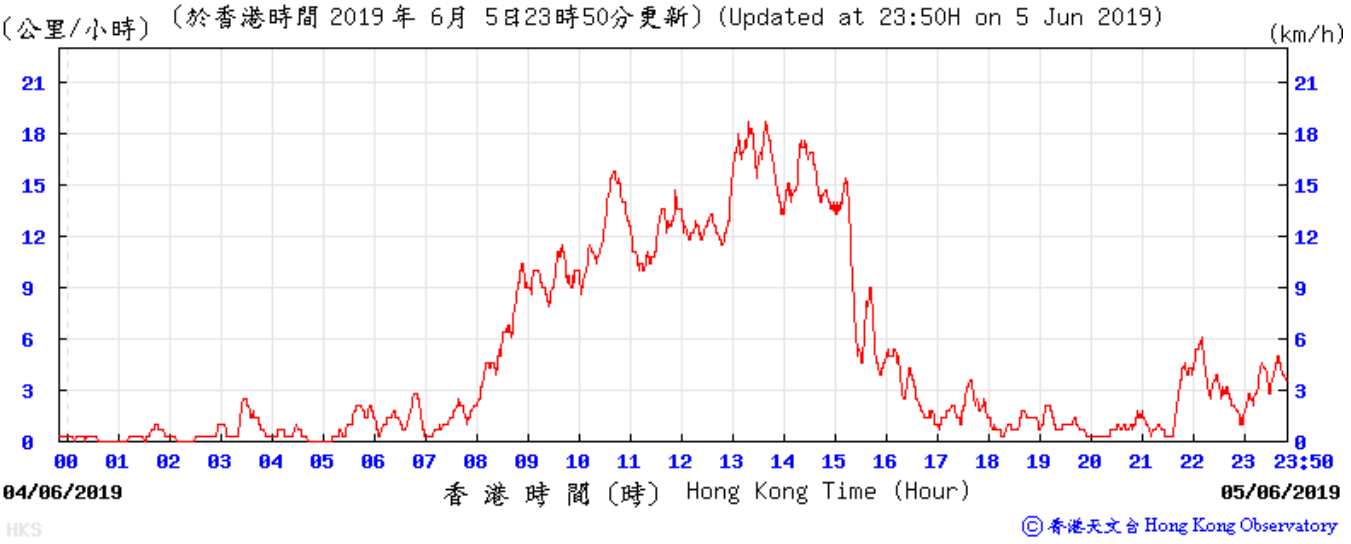


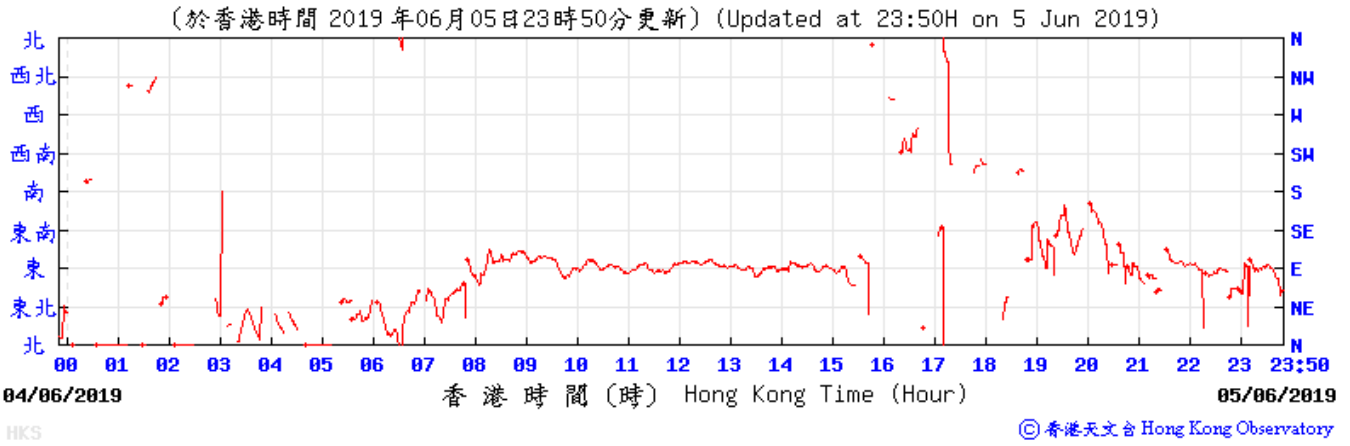
Meteorological Data Recorded from HKO Station (5 June 2019) (Source: www.hko.gov.hk)

Temperature/Humidity:



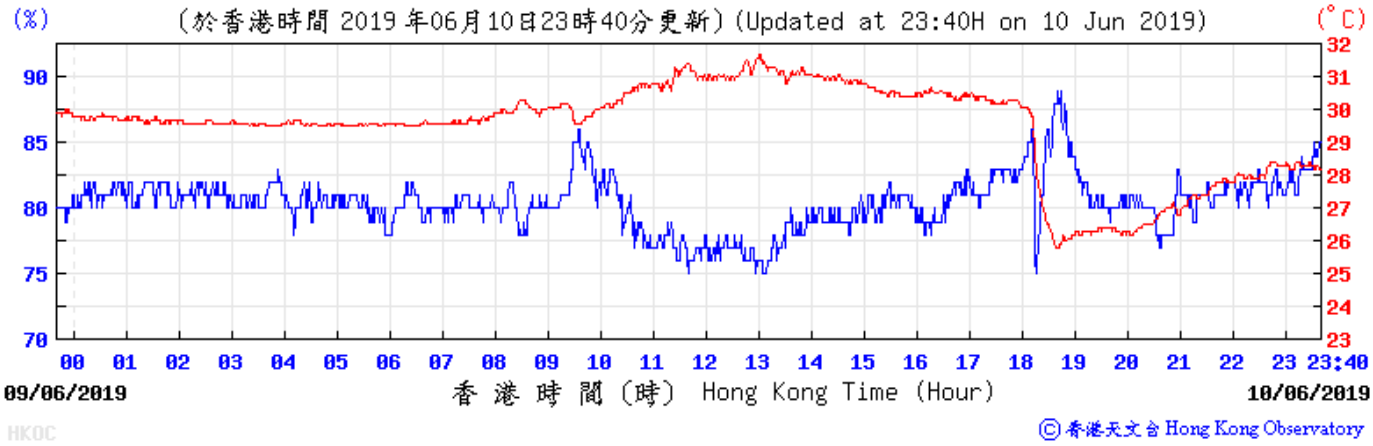
Wind Speed and Direction:



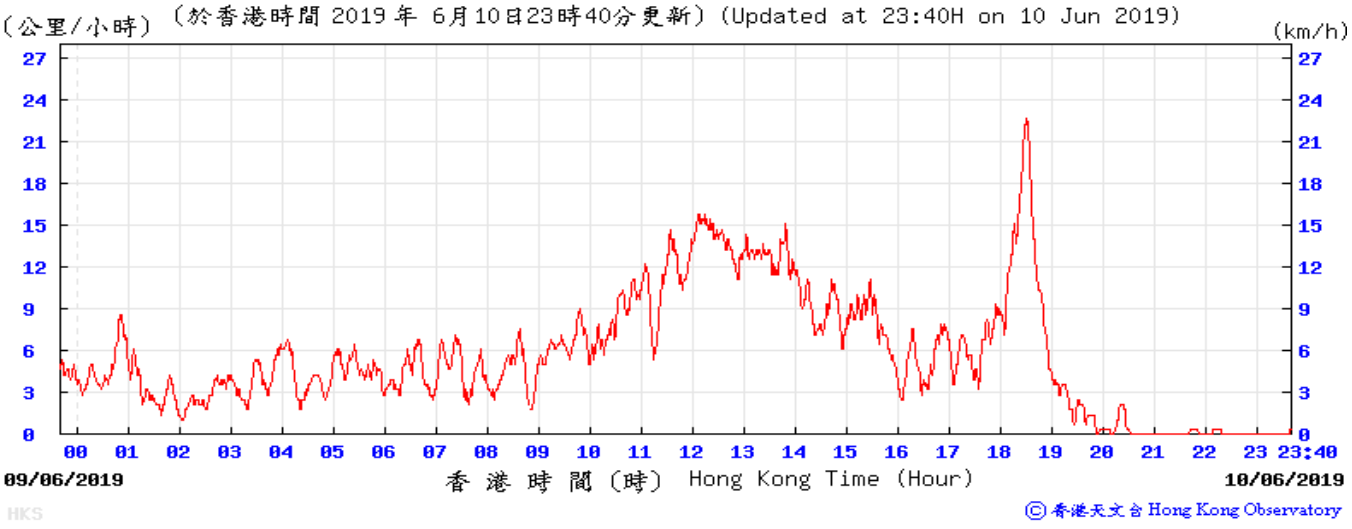


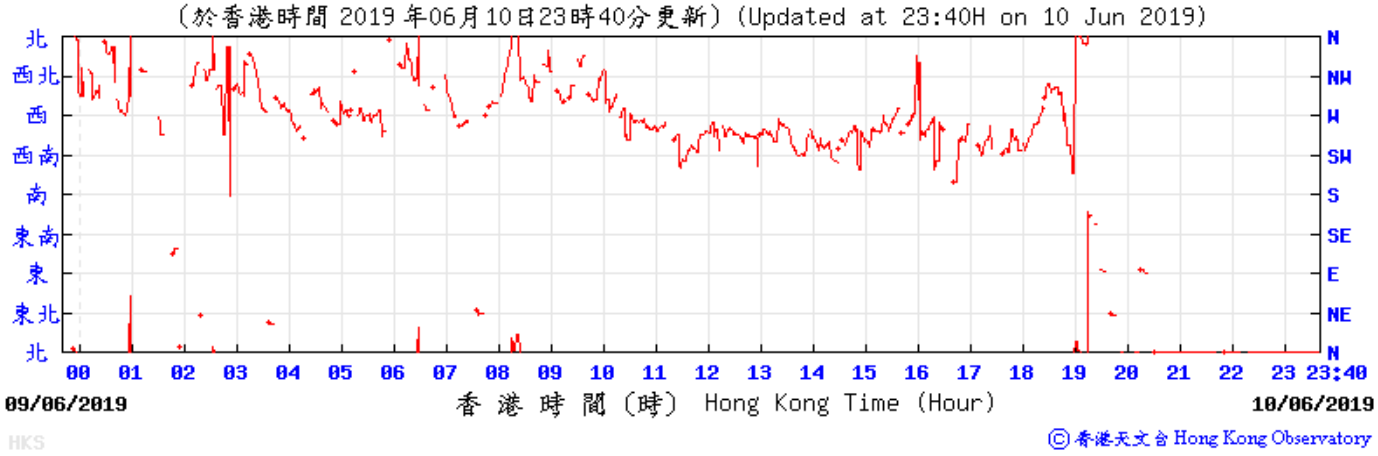
Meteorological Data Recorded from HKO Station (10 June 2019) (Source: www.hko.gov.hk)

Temperature/Humidity:



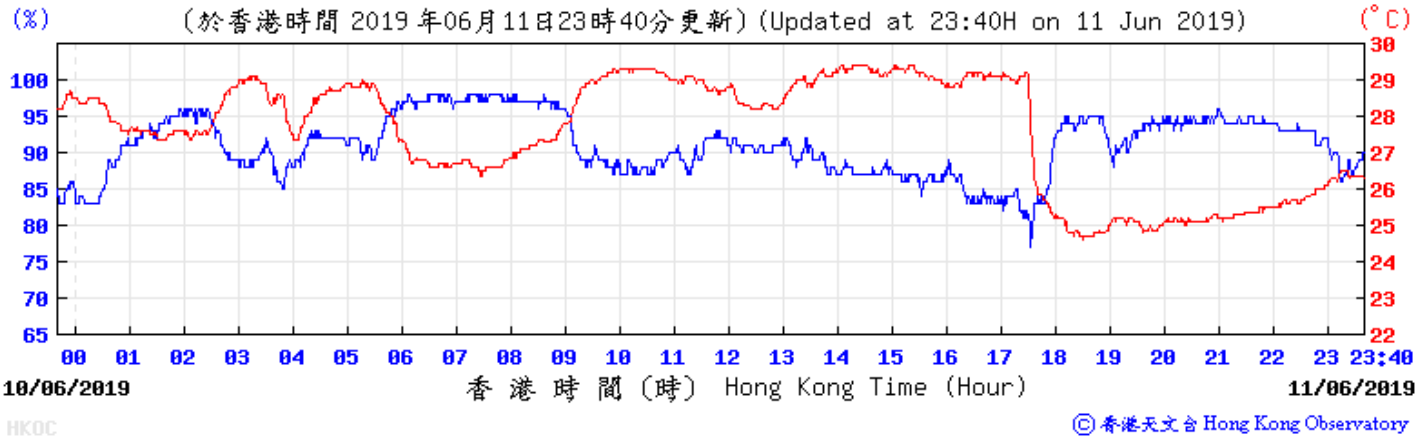
Wind Speed and Direction:



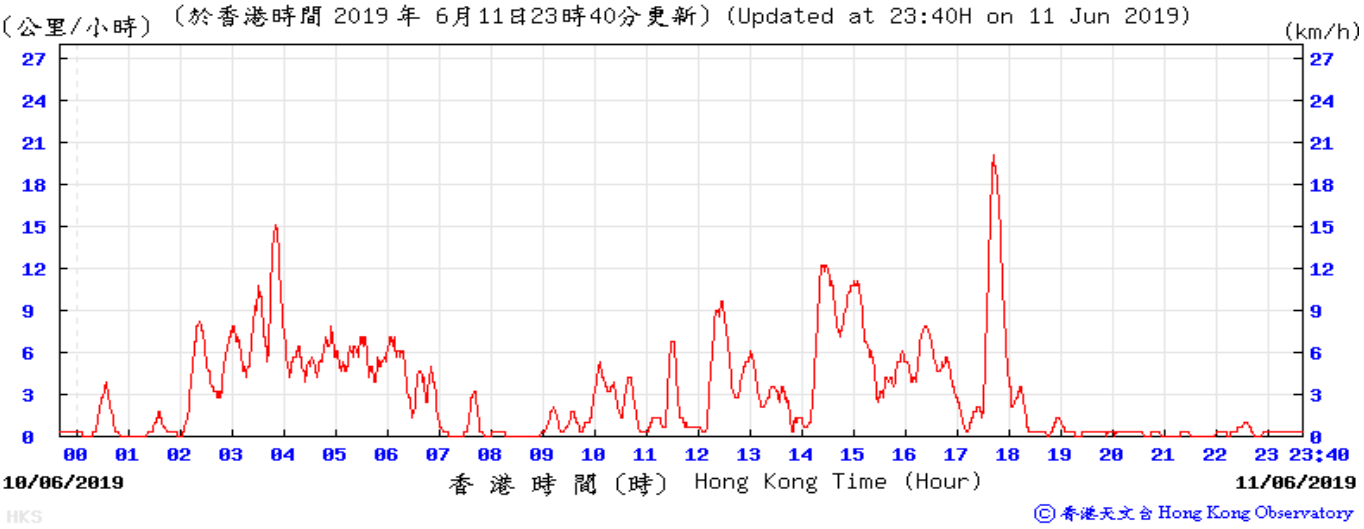


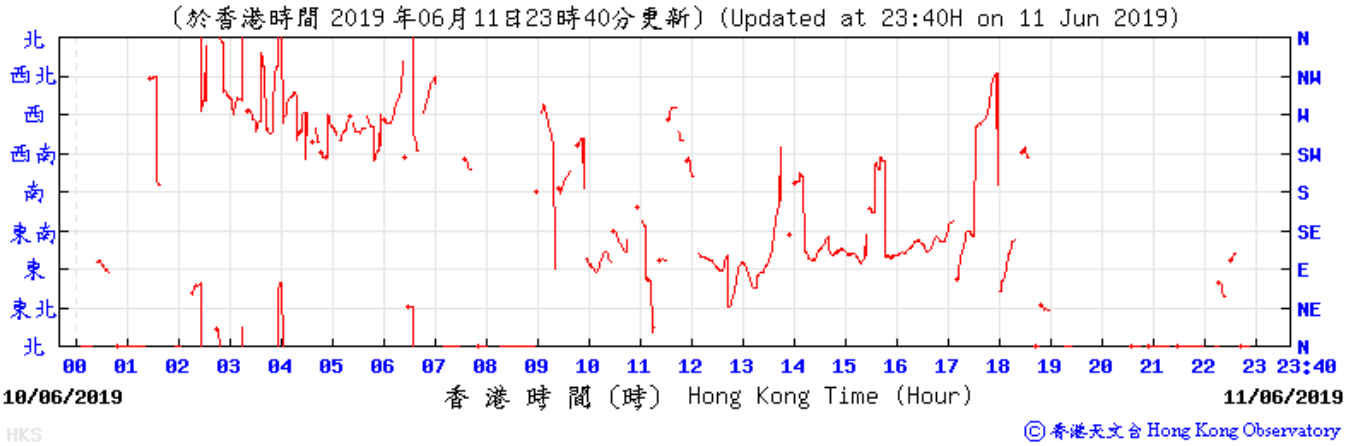
Meteorological Data Recorded from HKO Station (11 June 2019) (Source: www.hko.gov.hk)

Temperature/Humidity:



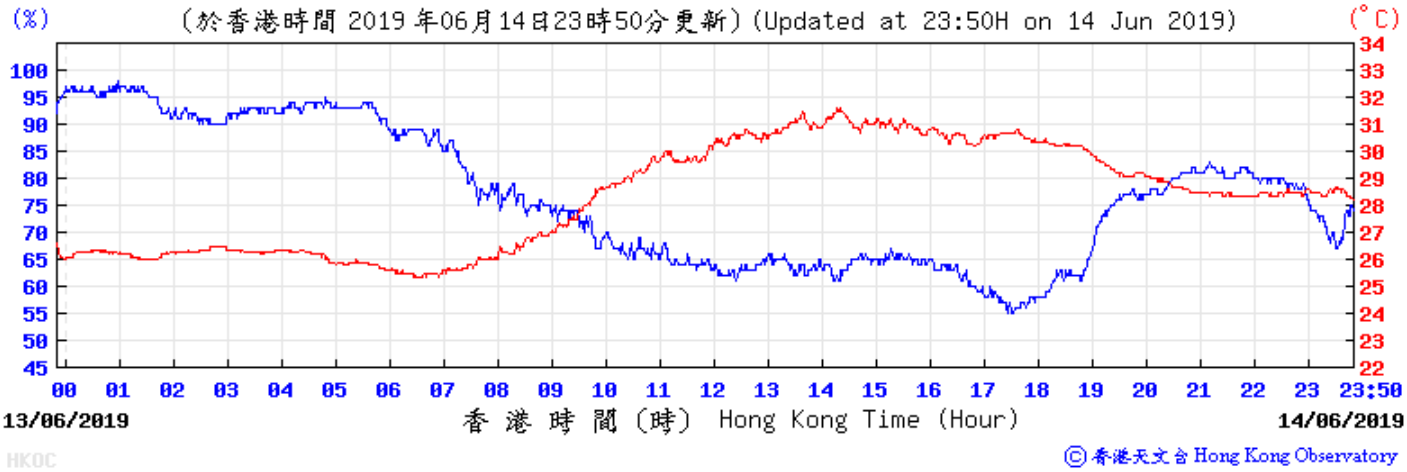
Wind Speed and Direction:



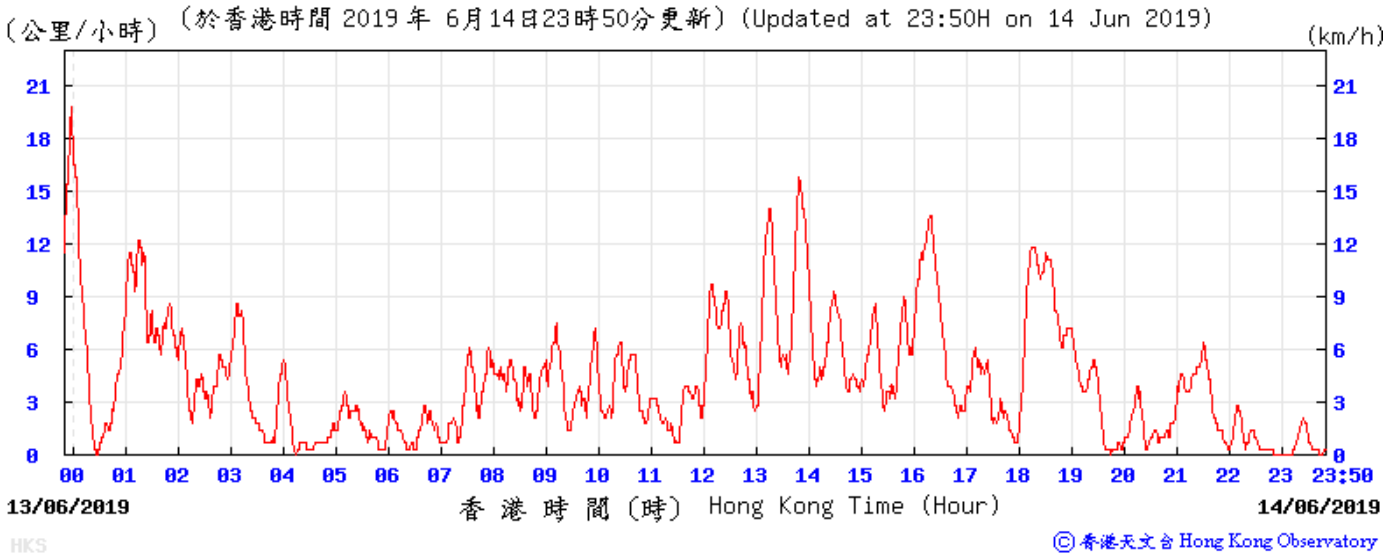


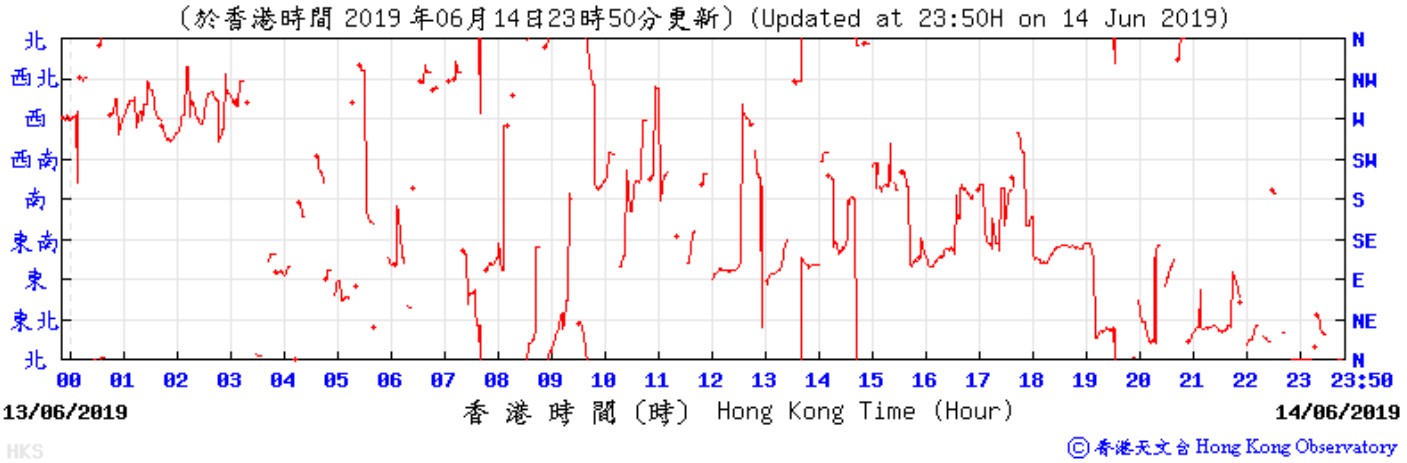
Meteorological Data Recorded from HKO Station (14 June 2019) (Source: www.hko.gov.hk)

Temperature/Humidity:



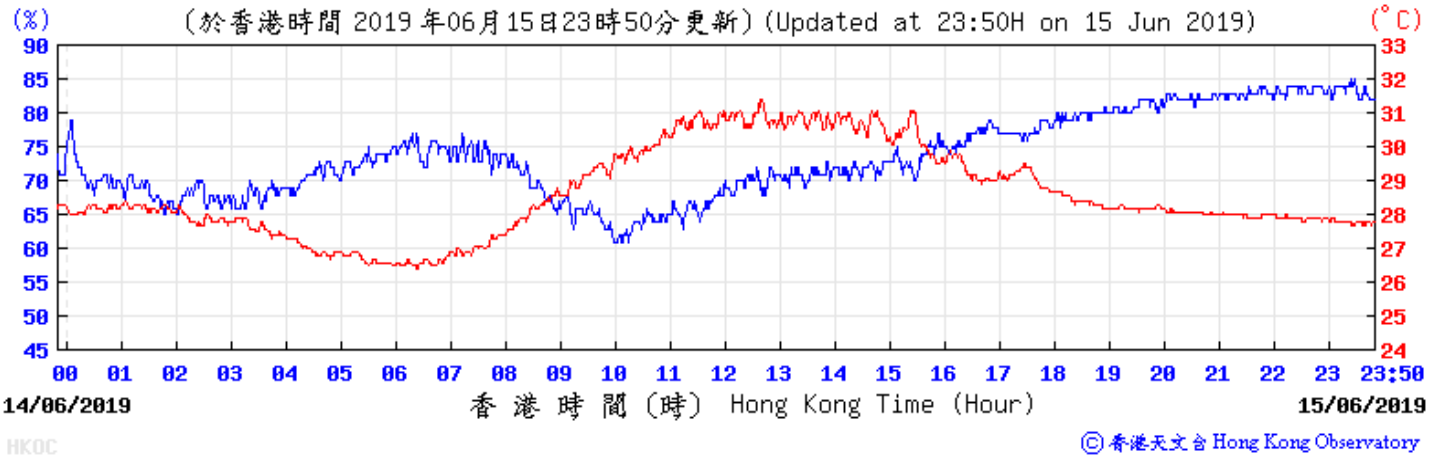
Wind Speed and Direction:



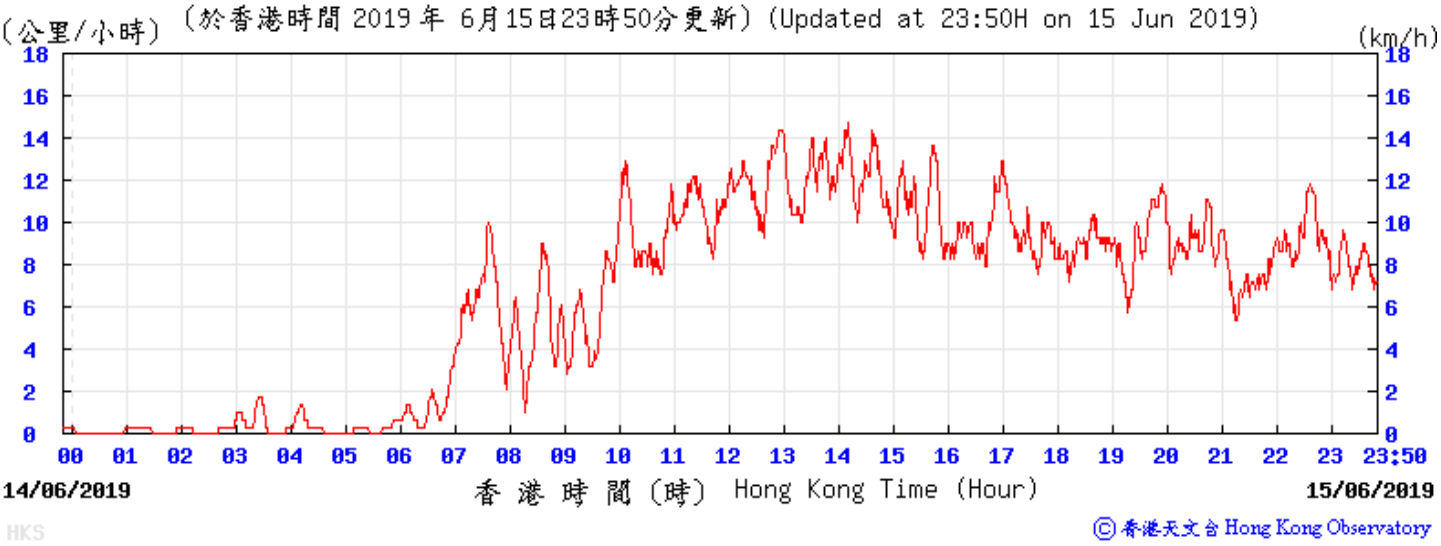


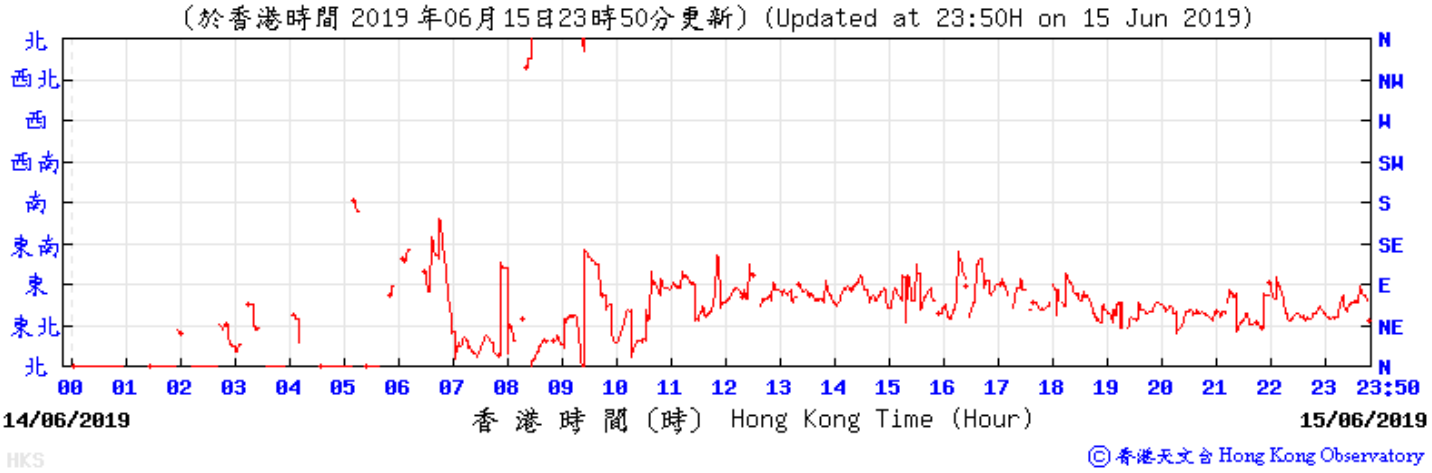
Meteorological Data Recorded from HKO Station (15 June 2019) (Source: www.hko.gov.hk)

Temperature/Humidity:



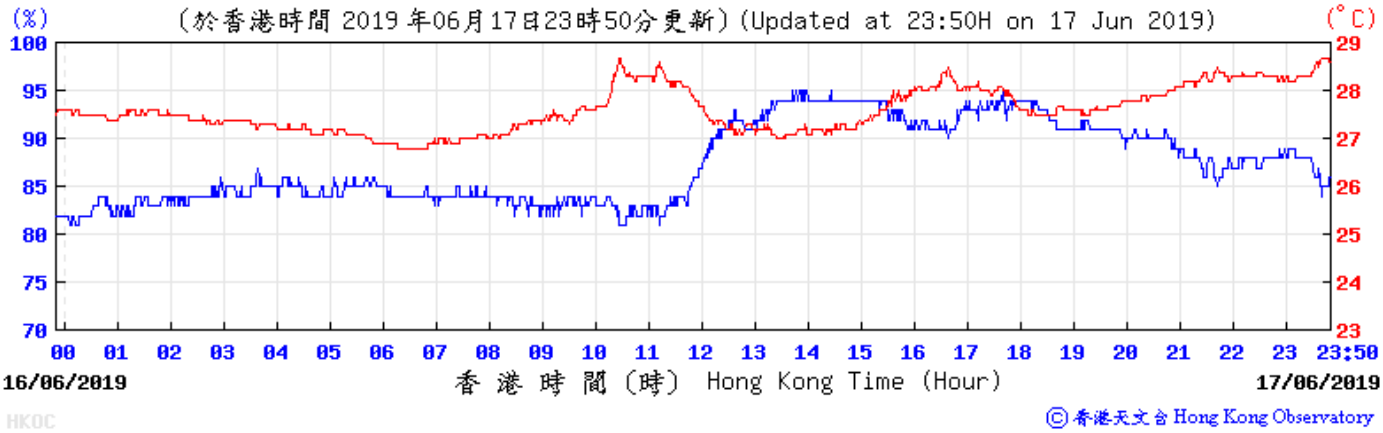
Wind Speed and Direction:



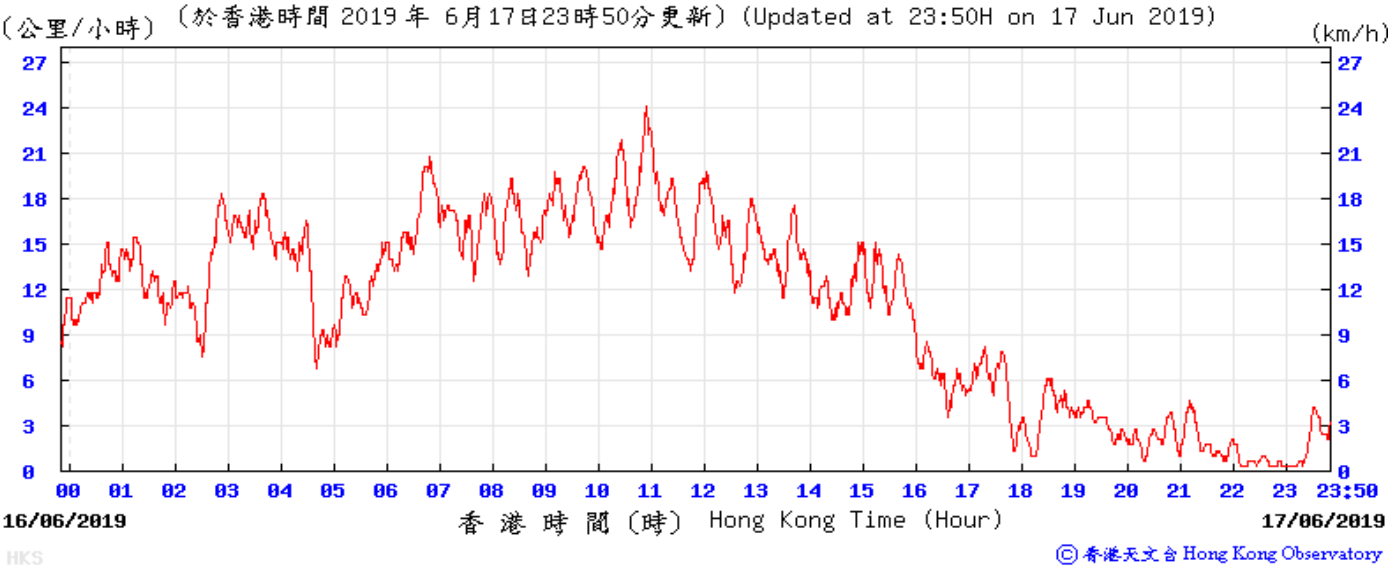


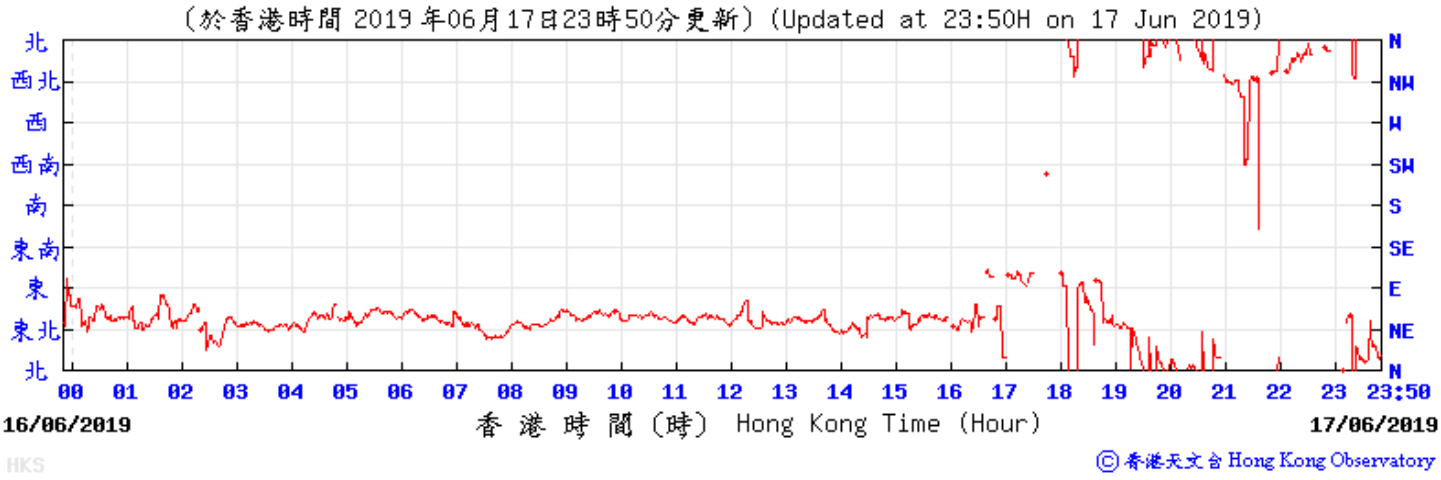
Meteorological Data Recorded from HKO Station (17 June 2019) (Source: www.hko.gov.hk)

Temperature/Humidity:



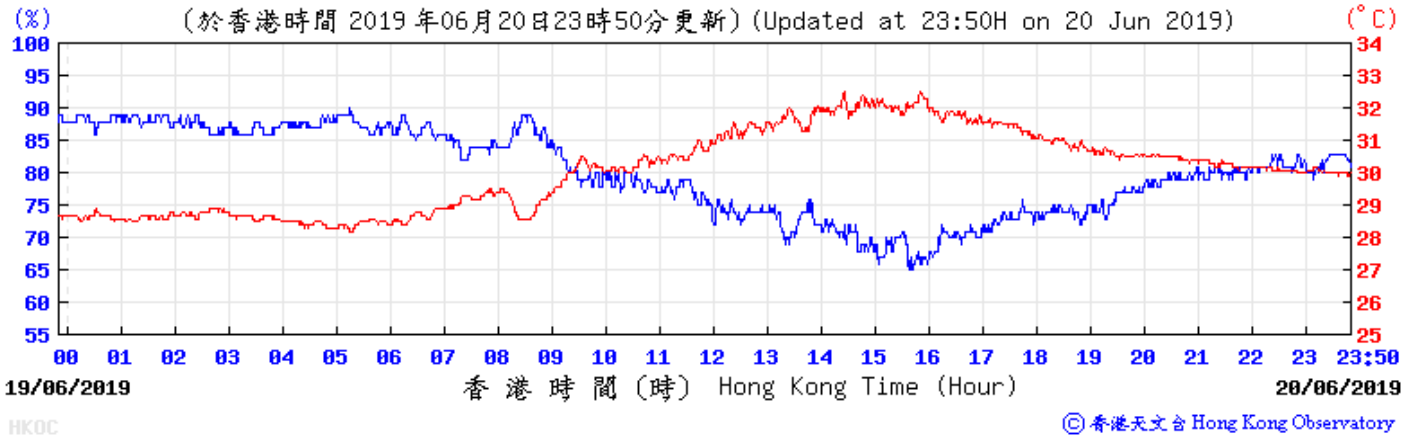
Wind Speed and Direction:



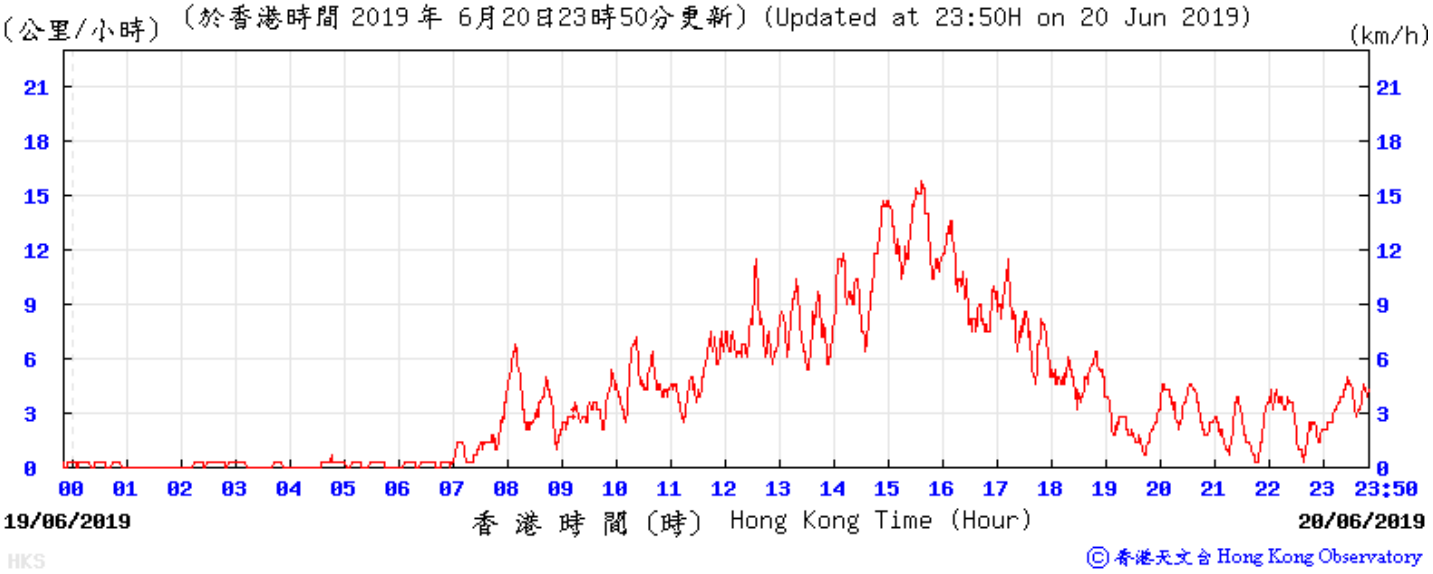


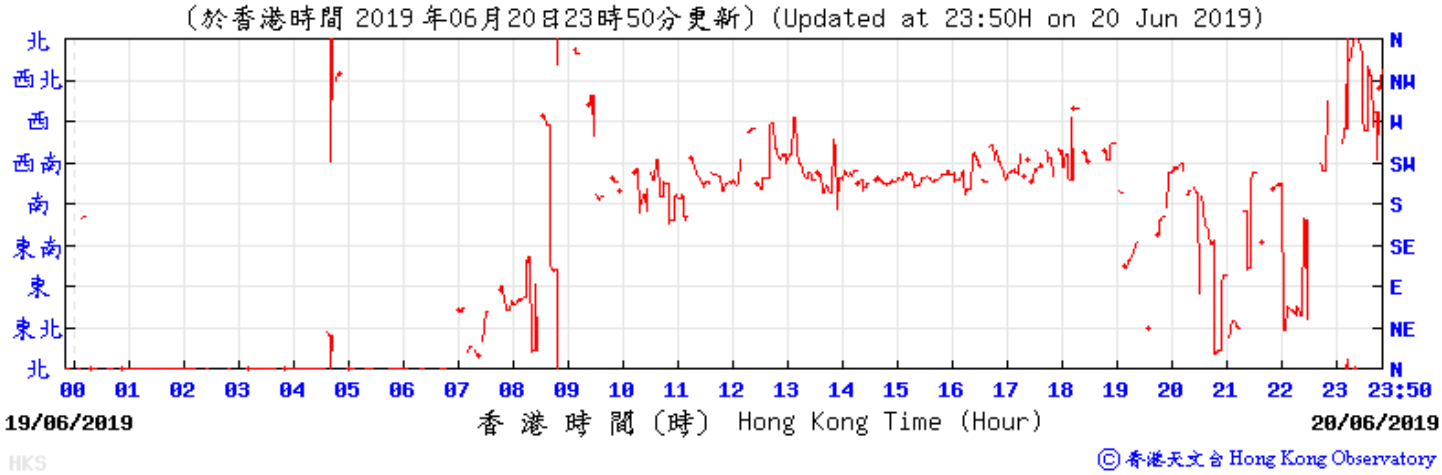
Meteorological Data Recorded from HKO Station (20 June 2019) (Source: www.hko.gov.hk)

Temperature/Humidity:



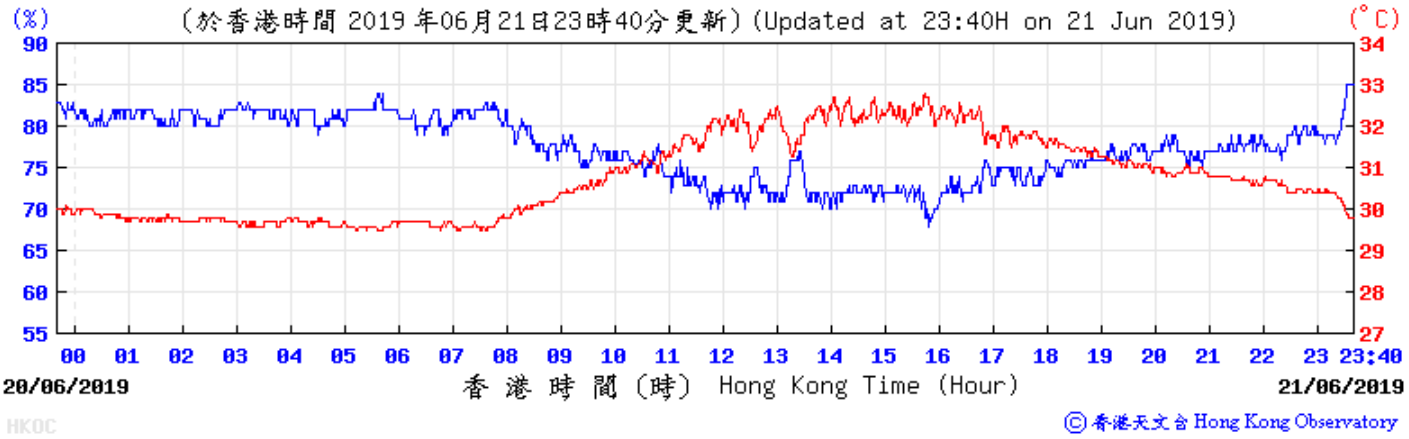
Wind Speed and Direction:



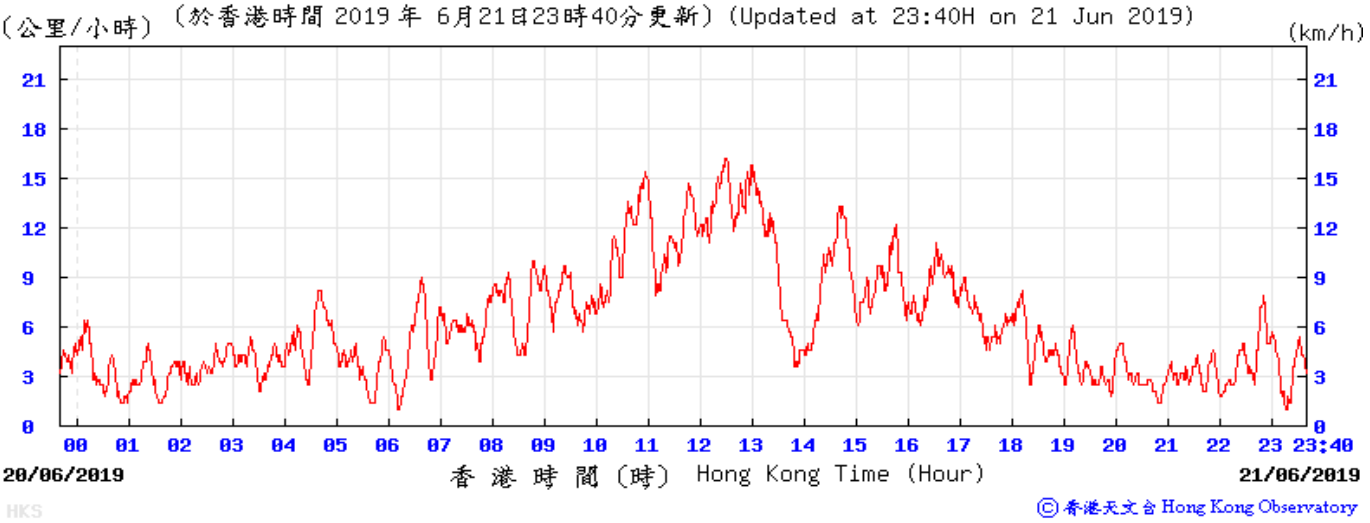


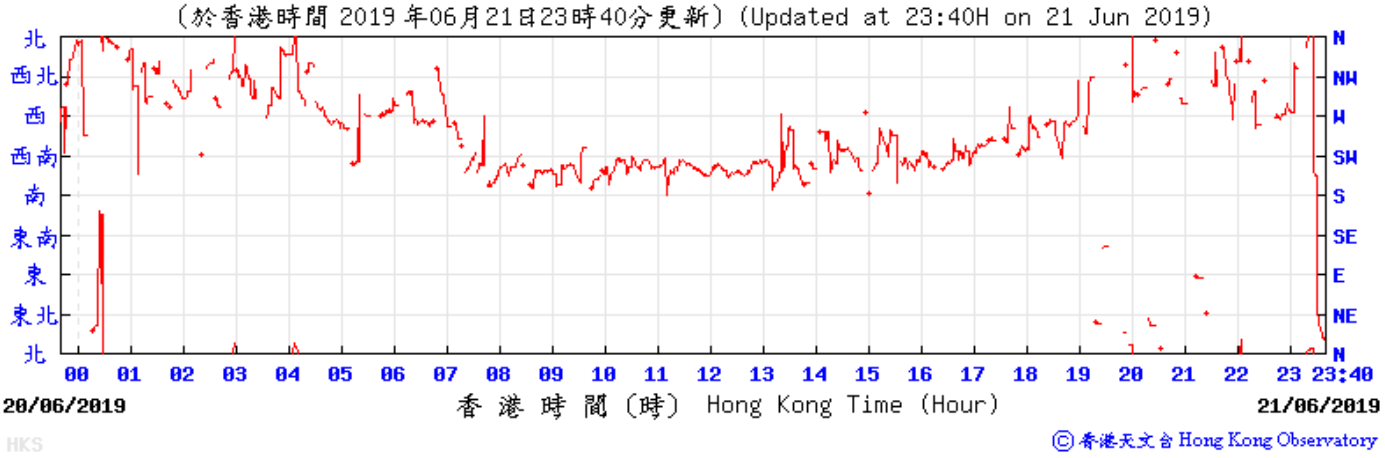
Meteorological Data Recorded from HKO Station (21 June 2019) (Source: www.hko.gov.hk)

Temperature/Humidity:



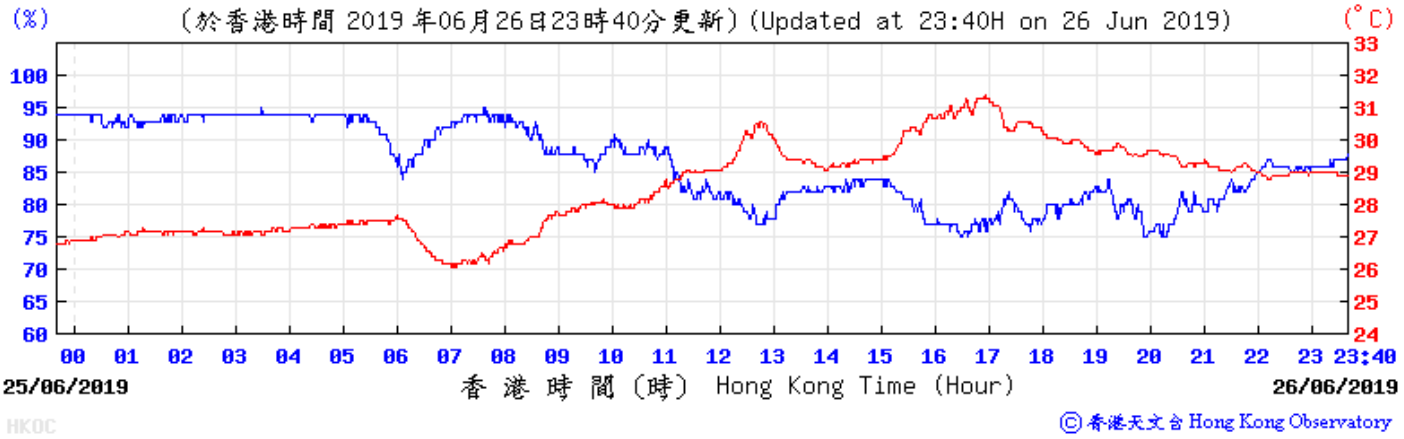
Wind Speed and Direction:



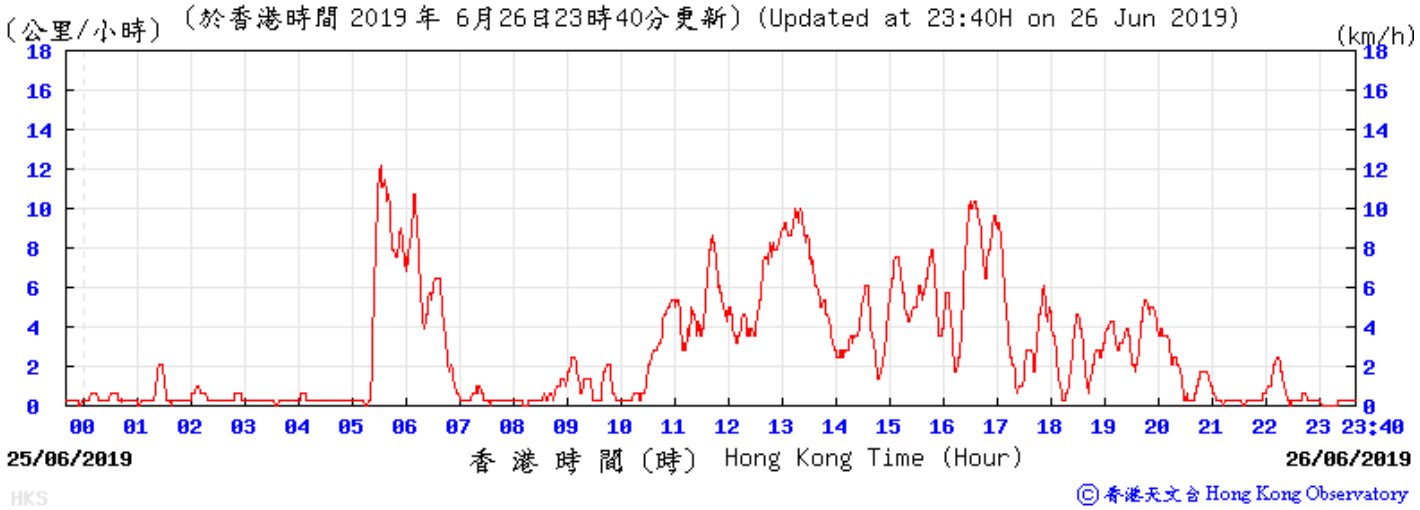


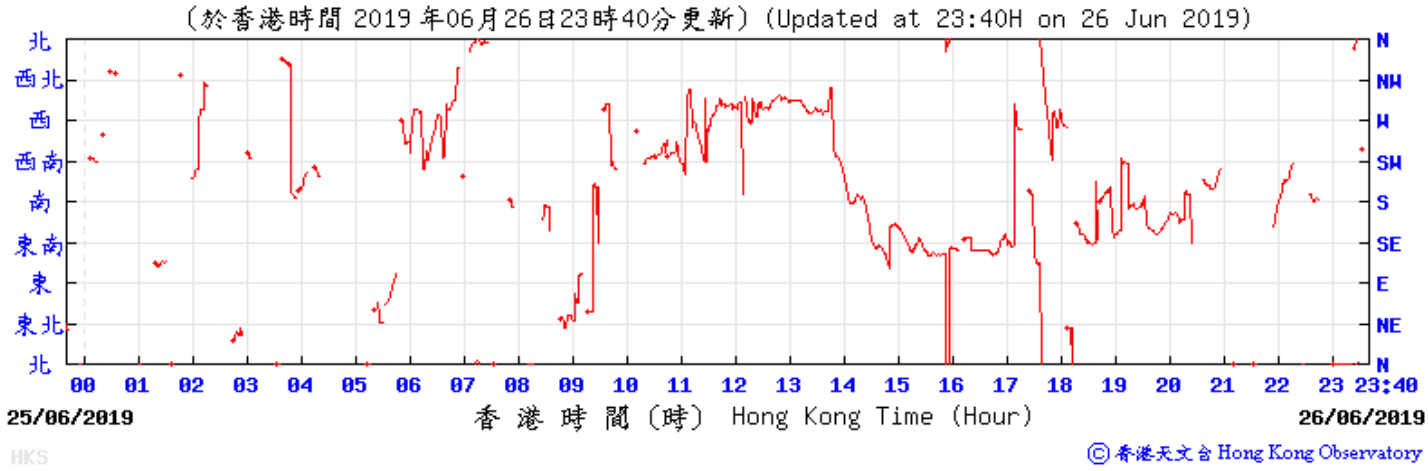
Meteorological Data Recorded from HKO Station (26 June 2019) (Source: www.hko.gov.hk)

Temperature/Humidity:



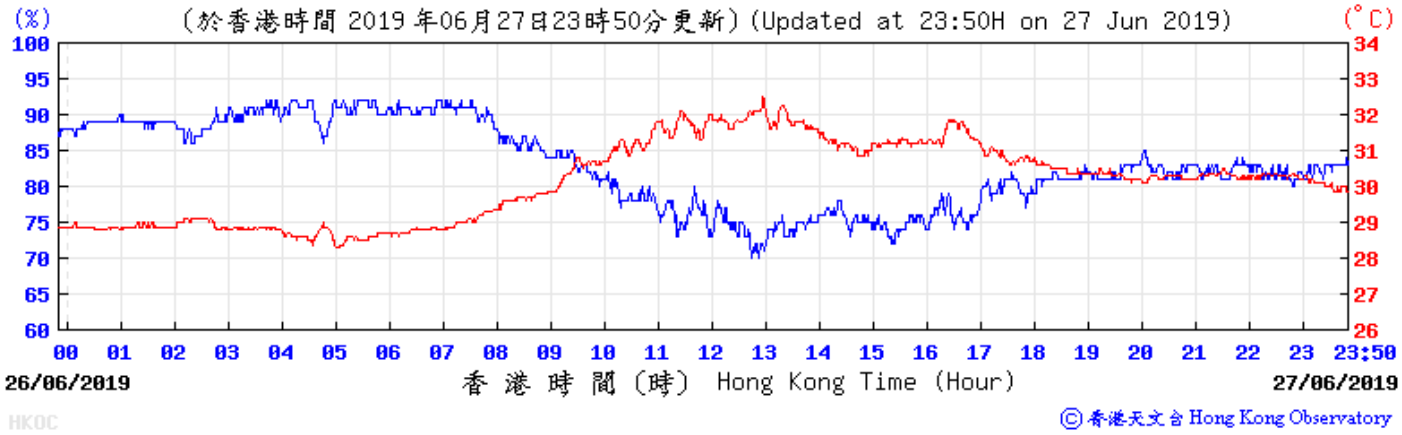
Wind Speed and Direction:



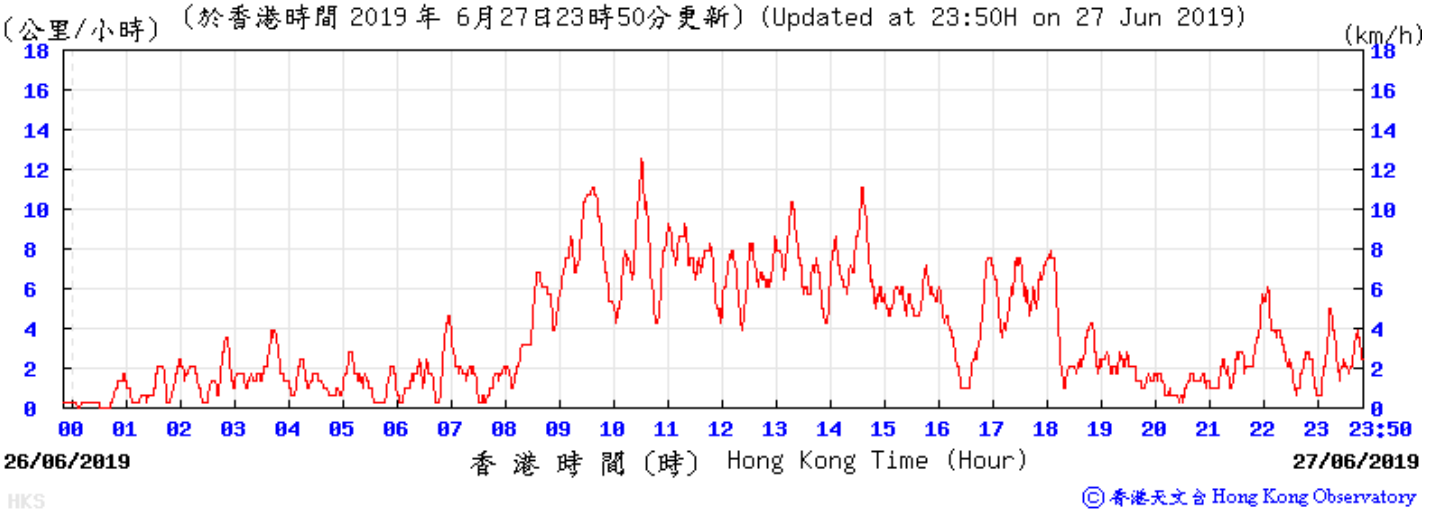


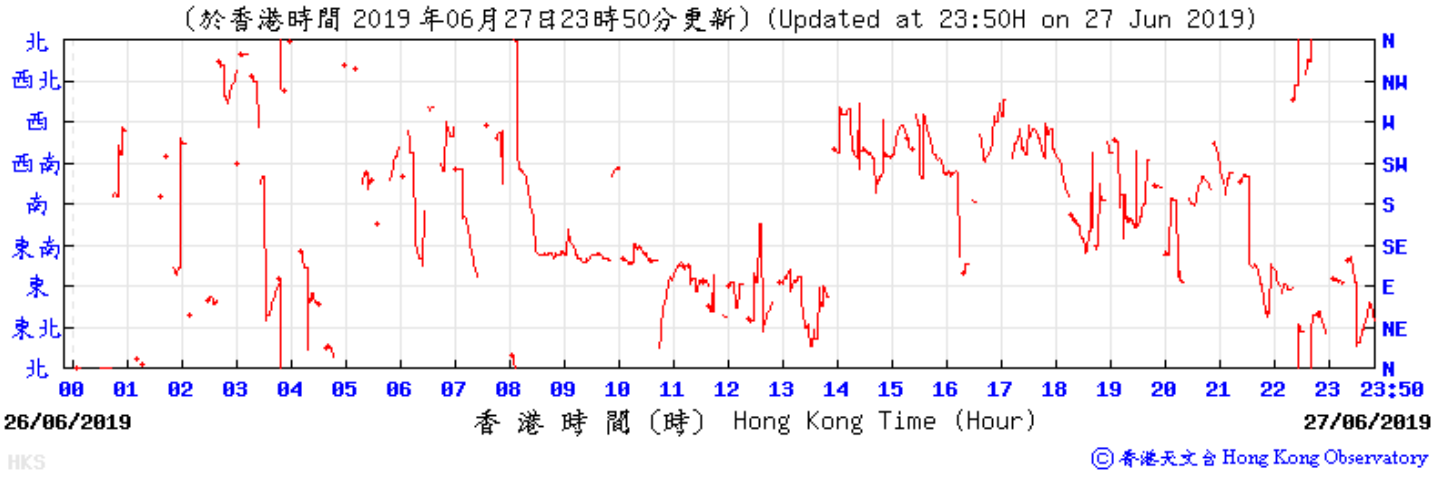
Meteorological Data Recorded from HKO Station (27 June 2019) (Source: www.hko.gov.hk)

Temperature/Humidity:



Wind Speed and Direction:





APPENDIX E
AIR QUALITY MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

Appendix E - 1-hour TSP Monitoring Results

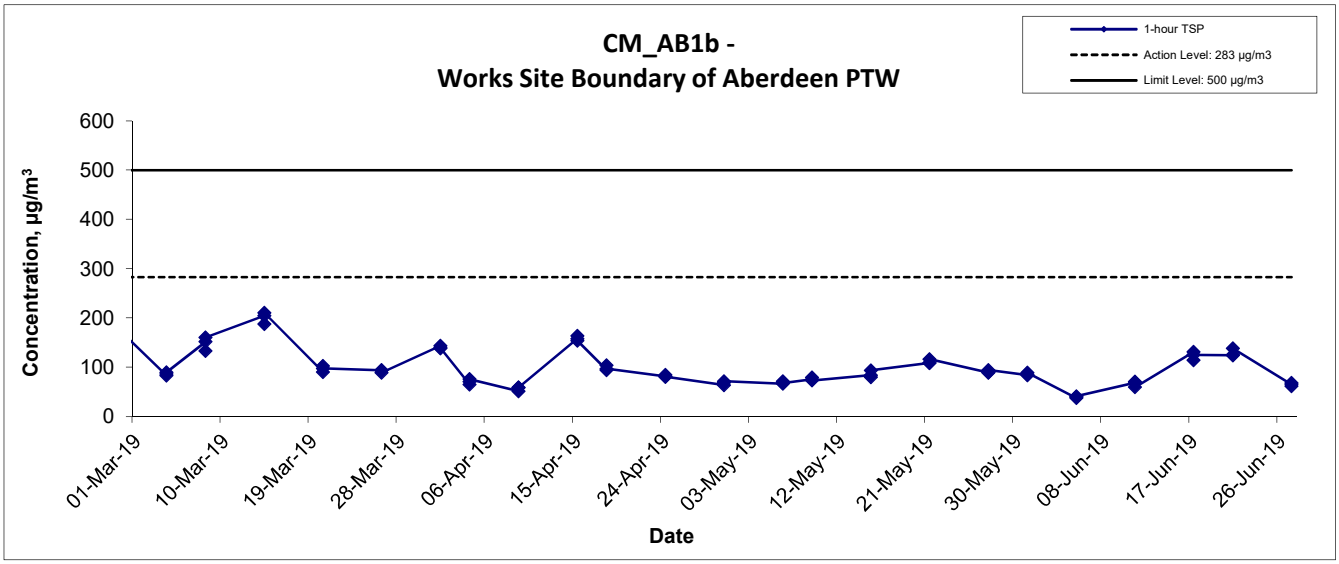
Location CM_AB1b - Works Site Boundary of Aberdeen PTW			
Date	Time	Weather	Particulate Concentration ($\mu g/m^3$)
5-Jun-19	9:00	Sunny	38.1
5-Jun-19	10:00	Sunny	40.0
5-Jun-19	11:00	Sunny	41.3
11-Jun-19	13:00	Cloudy	68.6
11-Jun-19	14:00	Cloudy	71.1
11-Jun-19	15:00	Cloudy	59.7
17-Jun-19	9:00	Cloudy	131.3
17-Jun-19	10:00	Cloudy	114.3
17-Jun-19	11:00	Cloudy	125.3
21-Jun-19	9:00	Cloudy	124.2
21-Jun-19	10:00	Cloudy	125.7
21-Jun-19	11:00	Cloudy	138.4
27-Jun-19	9:00	Cloudy	65.5
27-Jun-19	10:00	Cloudy	62.0
27-Jun-19	11:00	Cloudy	68.6
		Average	84.9
		Maximum	138.4
		Minimum	38.1

Appendix E - 24-hour TSP Monitoring Results

Location CM_AB1b - Works Site Boundary of Aberdeen PTW

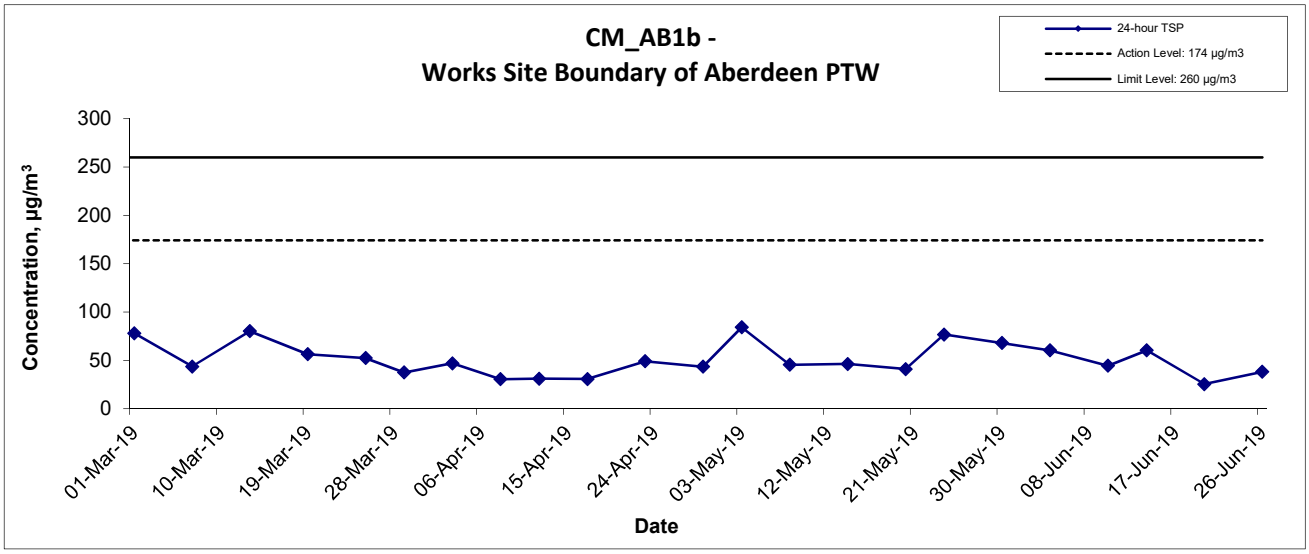
Start Date	Start Time	Weather Condition	Air Temp. (K)	Filter Weight (g)		Particulate Weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. ($\mu g/m^3$)	Filter ID no.
				Initial	Final		Initial	Final		Initial	Final				
4-Jun-19	9:00	Cloudy	299.6	3.4676	3.5736	0.1060	10259.4	10283.4	24.0	1.22	1.22	1.22	1757.3	60.3	190401/014
10-Jun-19	9:00	Cloudy	302.1	3.5053	3.5832	0.0779	10283.4	10307.4	24.0	1.22	1.22	1.22	1757.8	44.3	190501/074
14-Jun-19	9:00	Cloudy	302.6	3.6021	3.7077	0.1056	10307.4	10331.4	24.0	1.22	1.22	1.22	1755.1	60.2	190502/027
20-Jun-19	9:00	Cloudy	303.3	3.4926	3.5370	0.0444	10331.4	10355.4	24.0	1.22	1.22	1.22	1757.9	25.3	190601/011
26-Jun-19	9:00	Sunny	301.6	3.5124	3.5793	0.0669	10355.4	10379.4	24.0	1.22	1.22	1.22	1760.6	38.0	190501/057
													Min	25.3	
													Max	60.3	
													Average	45.6	

1-hr TSP Concentration Levels



Title	Contract No. DC/2009/24 HATS 2A – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau Graphical Presentation of 1-hour TSP Monitoring Results	Scale N.T.S Date Jun 19	Project No. MA11060 Appendix E	WELLAB 匯力 consulting . testing . research

24-hr TSP Concentration Levels



Title	Contract No. DC/2009/24 HATS 2A – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau Graphical Presentation of 24-hour TSP Monitoring Results	Scale: N.T.S Date: Jun 19	Project No.: MA11060 Appendix: E	WELLAB 匯力 consulting . testing . research

APPENDIX F
NOISE MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

Appendix F - Noise Monitoring Results

(0700-1900 hrs on Normal Weekdays)

Location M8 (Aberdeen PTW)
The rooftop of Wah Lai House

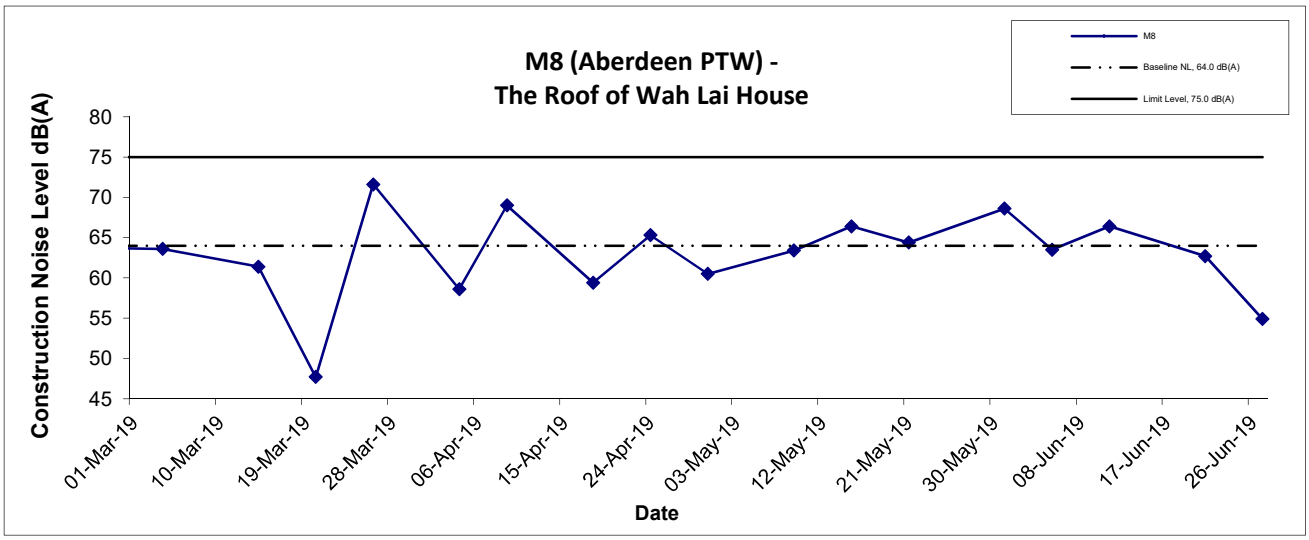
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
5-Jun-19	9:30	Sunny	63.5	65.1	59.2	64.0	63.5 Measured ≦ Baseline
11-Jun-19	13:30	Cloudy	68.4	72.3	60.5		66.4
21-Jun-19	9:00	Cloudy	62.7	64.1	56.3		62.7 Measured ≦ Baseline
27-Jun-19	10:30	Sunny	64.5	67.2	61.1		54.9

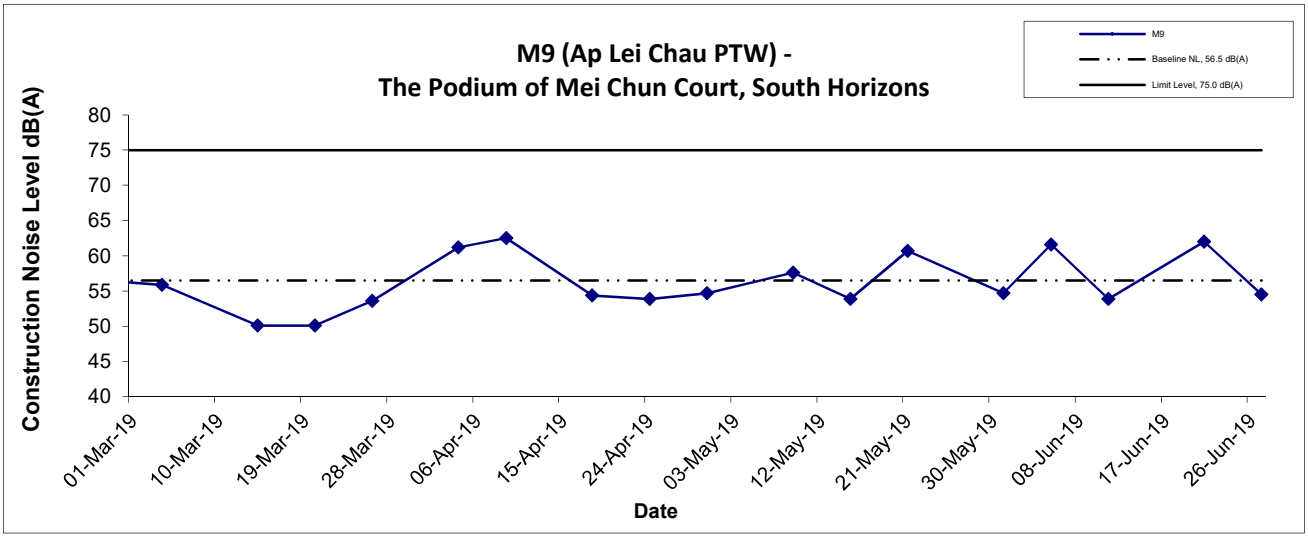
Location M9 (Ap Lei Chau PTW)
The Podium of Mei Chun Court, South Horizons

Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
5-Jun-19	14:55	Sunny	62.8	64.2	55.3	56.5	61.6
11-Jun-19	15:00	Cloudy	58.4	61.4	52.9		53.9
21-Jun-19	9:50	Cloudy	63.1	64.7	59.3		62.0
27-Jun-19	13:00	Sunny	54.5	57.2	50.3		54.5 Measured ≦ Baseline

Noise Levels

(0700-1900 hrs on Normal Weekdays)





Title: Contract No. DC/2009/24 HATS 2A – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Abredeen and Ap Lei Chau Graphical Presentation of Noise Monitoring Result	Scale: N.T.S Date: Jun-19	Project No.: MA11060 Appendix: F	WELLAB 匯力 consulting . testing . research

APPENDIX G
SUMMARY OF EXCEEDANCE

APPENDIX G – SUMMARY OF EXCEEDANCE

Reporting Month: June 2019

a) Exceedance Report for 1-hr TSP (0)

b) Exceedance Report for 24-hr TSP (0)

c) Exceedance Report for Construction Noise on normal week days (0)

APPENDIX H
SITE AUDIT SUMMARY

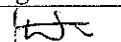
Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	190606
Date	6 June 2019 (Thursday)
Time	14:00 – 15:00

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

Ref. No.	Remarks/Observations	Related Item No.
	Part A - Water Quality • No environmental deficiency was identified during the site inspection. ***Part B – Landscape and Visual*** • No environmental deficiency was identified during the site inspection. ***Part C - Air Quality*** • No environmental deficiency was identified during the site inspection. ***Part D – Noise*** • No environmental deficiency was identified during the site inspection. ***Part E – Waste / Chemical Management*** • No environmental deficiency was identified during the site inspection. ***Part F - Permit / Licenses*** • No environmental deficiency was identified during the site inspection. ***Others*** • Follow-up on previous audit sessions: On previous audit session (Ref. No. 190530), all environmental deficiencies were improved by the Contractor. ***Remark:*** • N/A	

	Name	Signature	Date
Recorded by	Janet Wai		6 June 2019
Checked by	Dr. Priscilla Choy		6 June 2019

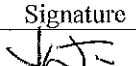
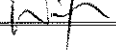
Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	190613
Date	13 June 2019 (Thursday)
Time	09:30 – 11:00

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

Ref. No.	Remarks/Observations	Related Item No.
	Part A - Water Quality • No environmental deficiency was identified during the site inspection. ***Part B – Landscape and Visual*** • No environmental deficiency was identified during the site inspection. ***Part C - Air Quality*** • No environmental deficiency was identified during the site inspection. ***Part D – Noise*** • No environmental deficiency was identified during the site inspection. ***Part E – Waste / Chemical Management*** • No environmental deficiency was identified during the site inspection. ***Part F - Permit / Licenses*** • No environmental deficiency was identified during the site inspection. ***Others*** • Follow-up on previous audit sessions: On previous audit session (Ref. No. 190606), no environmental deficiency was observed during the site inspection. ***Remark:*** • N/A	

	Name	Signature	Date
Recorded by	Janet Wai		13 June 2019
Checked by	Dr. Priscilla Choy		13 June 2019

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	190620
Date	20 June 2019 (Thursday)
Time	14:00 – 15:00

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

Ref. No.	Remarks/Observations	Related Item No.
	Part A - Water Quality • No environmental deficiency was identified during the site inspection. ***Part B – Landscape and Visual*** • No environmental deficiency was identified during the site inspection. ***Part C - Air Quality*** • No environmental deficiency was identified during the site inspection. ***Part D – Noise*** • No environmental deficiency was identified during the site inspection. ***Part E – Waste / Chemical Management*** • No environmental deficiency was identified during the site inspection. ***Part F - Permit / Licenses*** • No environmental deficiency was identified during the site inspection. ***Others*** • Follow-up on previous audit sessions: On previous audit session (Ref. No. 190613), no environmental deficiency was observed during the site inspection. ***Remark:*** • N/A	

	Name	Signature	Date
Recorded by	ChunMing Li		24 June 2019
Checked by	Dr. Priscilla Choy		24 June 2019

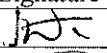
Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	190625
Date	25 June 2019 (Tuesday)
Time	09:30 – 11:00

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

Ref. No.	Remarks/Observations	Related Item No.
	Part A - Water Quality • No environmental deficiency was identified during the site inspection. ***Part B – Landscape and Visual*** • No environmental deficiency was identified during the site inspection. ***Part C - Air Quality*** • No environmental deficiency was identified during the site inspection. ***Part D – Noise*** • No environmental deficiency was identified during the site inspection. ***Part E – Waste / Chemical Management*** • No environmental deficiency was identified during the site inspection. ***Part F - Permit / Licenses*** • No environmental deficiency was identified during the site inspection. ***Others*** • Follow-up on previous audit sessions: On previous audit session (Ref. No. 190620), no environmental deficiency was observed during the site inspection. ***Remark:*** • N/A	

	Name	Signature	Date
Recorded by	Janet Wai		26 June 2019
Checked by	Dr. Priscilla Choy		26 June 2019

APPENDIX I
SUMMARY OF AMOUNT OF WASTE GENERATED

Name of Department: DSD

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

APPENDIX I MONTHLY SUMMARY WASTE FLOW TABLE FOR 2019 (YEAR)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly					
	Total Quantity Generated	Hard Rock and Broken Concrete (4)	Reused in the Contract	Reused in other Projects	Disposal as Public Fill	Import Fill	Metals	Paper / Cardboard Packaging	Plastics (3)	Chemical Waste	Other, e.g. general refuse	Special Waste
	[in '000m^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 '000ton]
Year2012	1.002910	0.000000	0.000000	0.000000	1.002910	0.000000	6.680000	0.070000	0.070000	0.100000	0.014000	2.406456
Year2013	4.264035	0.000000	0.000000	0.000000	4.264035	0.000000	10.750000	0.000000	0.000000	0.350000	0.064890	2.232710
Year2014	4.639730	0.000000	0.000000	0.000000	4.639730	0.000000	0.000000	0.000000	0.000000	0.450000	0.145370	1.832460
Year2015	5.361825	0.000000	0.000000	0.000000	5.361825	0.000000	0.000000	0.000000	0.031000	0.050000	0.461870	1.082870
Year 2016	5.172790	0.000000	0.000000	0.060000	5.112790	0.000000	0.000000	0.000000	0.000000	0.000000	0.757580	0.980878
Year 2017	2.542090	0.000000	0.000000	0.000000	2.542090	0.000000	0.000000	0.000000	0.000000	0.000000	0.616240	1.742880
Year 2018	22.983380	0.000000	0.000000	0.060000	22.923380	0.000000	17.430000	0.070000	0.101000	0.950000	2.059950	10.278254
JAN	0.11318256	0	0	0	0.11318256	0	0	0	0	0	0.0970331	0.18752
FEB	0	0	0	0	0	0	0	0	0	0	0.0113293	0.19637
MAR	0.66151426	0	0	0	0.66151426	0	0	0	0	0	0.0227694	0.18157
APR	9.94918598	0	0	0	9.94918598	0	0	0	0	0	0.0071743	0.14886
MAY	5.17313359	0	0	0	5.17313359	0	0	0	0	0	0.0048475	0.14515
JUNE	0	0	0	0	0	0	0	0	0	0	0.0090025	0.07202
SUB-TOTAL	61.863776	0.000000	0.000000	0.120000	61.743776	0.000000	34.860000	0.140000	0.202000	1.900000	4.272056	21.487998
JULY		0	0	0		0	0	0	0	0		
AUG		0	0	0		0	0	0	0	0		
SEPT		0	0	0		0	0	0	0	0		
OCT		0	0	0		0	0	0	0	0		
NOV		0	0	0		0	0	0	0	0		
DEC		0	0	0		0	0	0	0	0		
TOTAL	61.863776	0.000000	0.000000	0.120000	61.743776	0.000000	34.860000	0.140000	0.202000	1.900000	4.272056	21.487998

Forecast of Total Quantities of C&D materials to be Generated from the Contracts *												
Total Quantity Generated	Hard Rock and Broken Concrete (4)	Reused in the Contract	Reused in other Projects	Disposal as Public Fill	Import Fill	Metals	Paper / Cardboard Packaging	Plastics (3)	Chemical Waste	Other, e.g. general refuse	Special Waste
[in '000m^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 '000ton]
28.774	1.544	1.73	0.06	25.44	0	30	1	1	4	2.77	12.2

Notes :

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

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

(3) The contractor shall also submit the latest forecast of the total amount of C&D materials expected to be generated from the Works, together with a breakdown of the nature where to total amount of C&D materials expected to be generated from the Works is equal to or exceeding 50,000m3. (PS Clause 5(4)(b) referes).
[Delete Note (4) and the table above on the forecast, where inapplicable].

* (4) The assumed density (kg/m^3) for both C&D material and general refuse.
C&D material 2000kg/m3
General refuse 1.0 tonnes/m3

(5) 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
broken concrete and bitumen = 2.5 tonnes/m3
C&D Waste = 1.0 tonnes/m3
bentonite slurry = 2.8 tonnes/m3
Paper = 800kg/m3
Chemical = 800kg/m3
Special waste = 0.6m3 / container

APPENDIX J
EVENT ACTION PLANS

APPENDIX J – Event / Action Plans

Table J-1 Event / Action Plan For Air Quality

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

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

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

Table J-2 Event / Action Plan For Construction Noise

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

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

APPENDIX K
ENVIRONMENTAL MITIGATION
IMPLEMENTATION SCHEDULE (EMIS)

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

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

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Status
	Regulation should be observed and complied with for control of chemical wastes.		
6.378	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.		^
6.379	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows: • Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. • Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents. • Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.		^
6.380	Construction Works in Close Proximity of Storm Drains or Seafront: To minimize the potential water quality impacts from the construction works located at or near any watercourse, the practices outlined below should be adopted where applicable. • The use of less or smaller construction plants may be specified to reduce the disturbance to the storm water courses or marine environment. • Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any water courses during carrying out of the construction works. • Stockpiling of construction materials and dusty materials should be covered and located away from any water courses. • Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers. • Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable. • Proper shoring may need to be erected in order to prevent soil/mud from slipping into the storm culvert or sea.	All construction sites	^

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Status
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 minimize wastage of wood. Attention should be paid to WBTC No. 19/2001 - Metallic Site Hoardings and Signboards to reduce the amount of timber used on construction sites. Metallic alternatives to timber are readily available and should be used rather than new timber. Precast concrete units should be adopted wherever feasible to minimize the use of timber formwork.	All construction sites	^
9.109	All waste materials should be segregated into categories covering: • excavated materials suitable for reuse on-site; • excavated materials suitable for public filling facilities; • remaining C&D waste for landfill; • chemical waste; and • general refuse for landfill.	All construction sites	^
9.113	Sort C&D waste from demolition of existing facilities to recover recyclable portions such as metals.		^
	Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal.		^
	Encourage collection of aluminum cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force.		^
	Any unused chemicals or those with remaining functional capacity shall be recycled.		^
	Proper storage and site practices to minimize the potential for damage or contamination of construction materials.		^
9.115	Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site.		^
	Training of site personnel in proper waste management and chemical waste handling procedures.		^
9.115	Develop and provide toolbox talk for on-site sorting of C&D materials to enhance worker's awareness in handling, sorting, reuse and recycling of C&D materials.		^
	Provision of sufficient waste disposal points and regular collection of waste.		^

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

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 L
COMPLAINT LOG

APPENDIX L – COMPLAINT LOG

Reporting Month: June 2019

Cumulative complaints received:

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
Wah Fu PTW					
CIR#7_180307	DSD's Preliminary Treatment Work (PTW) at Wah Fu	7th March 2018	One anonymous complainant complained about the noise nuisance generated from Contract DC/2009/24 construction site at Wah Fu PTW during midnight. The ETL of the Contract was informed of the complaint through the e-mail on 7th March 2018 and initiated the complaint investigation procedures. According to the information provided by the Contractor, there was no construction activity was conducted and therefore no significant noise due to the construction works was generated at Wah Fu PTW during the time of complaint (during midnight). However, the high alarm from Hydrogen Sulfide Gas Detector was activated due to the fault found on the gas monitoring channels in the control room on 6th March 2018 around 01:30 a.m. and on 7th March 2018 around 05:30 a.m. respectively according to the	There was no exceedance recorded at noise monitoring stations M7a for Wah Fu PTW in early March 2018. After complaint received, the Contractor has taken initiative to minimize noise nuisance to the nearby residents by implementation of mitigation measures as below: • Properly maintained and operated the construction plant (well-greased, damage and worn parts promptly replaced. As reported by the Contractor of Contract DC/2009/24 during the site inspection on 9th March 2018, no abnormal alarm was noticed from the Hydrogen Sulfide Gas Detector after the Contractor reset the alarm system and the Contractor was reminded to check and test the alarm system on a regular basis to ensure they are working properly. The Contractor was reminded to regular check and test the alarm system to avoid the re-occurrence of the incident and closely monitor the existing noise mitigation measures are properly implemented at Wah Fu PTW under the Contract DC/2009/24.	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
			operation and maintenance records of new Fine Screen and Grit Trap facilities at Wah Fu PTW.		
CIR#6_151209	DSD's Preliminary Treatment Work (PTW) at Wah Fu	9th December 2015	One anonymous complainant complained about the noise generated from Contract DC/2009/24 construction site at Wah Fu PTW. According to the complainant, site works had commenced at about 8 am and was considered to be too early. The ETL of the Contract was informed of the complaint through the e-mail on 9th December 2015 and initiated the complaint investigation procedures. According to the information provided by the Contractor, major construction activity that contributed to the noise at Wah Fu PTW during the time of complaint were breaking and excavation works of flume channel on the pavement, and breaking and excavation works for construction of cable shaft which were conducted and started around 8:20 a.m. and around 1 p.m. respectively on 9th December 2015.	There was no exceedance recorded at noise monitoring stations M7a for Wah Fu PTW in December 2015. After complaint received, the Contractor has taken initiative to minimize noise nuisance to the nearby residents by implementation of mitigation measures as below: • Properly maintained and operated the construction plant (well-greased, damage and worn parts promptly replaced); • Operated the machines and plant in intermittent use and shut down between works periods. As reported by the Contractor of Contract DC/2009/24 during the site inspection on 11th December 2015, the Contractor agreed to reschedule the site works and noisy activities would only be started from 9 a.m. at Wah Fu PTW in order to minimize the impact to the nearby noise sensitive receiver.	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
CIR#5_151026	DSD's Preliminary Treatment Work (PTW) at Wah Fu	26th October 2015	One anonymous complainant complained about the noise generated from Contract DC/2009/24 construction site at Wah Fu PTW. The ETL of the Contract was informed of the complaint through the e-mail on 27th October 2015 and initiated the complaint investigation procedures. According to the information provided by the Contractor, major construction activity that contributed to the noise at Wah Fu PTW during the time of complaint was breaking works	There was no exceedance recorded at noise monitoring stations M7a for Wah Fu PTW in October 2015. After complaint received, the Contractor has taken initiative to minimize noise nuisance to the nearby residents by implementation of mitigation measures as below: • Properly maintained and operated the construction plant (well-greased, damage and worn parts promptly replaced); • To install the erected noise absorption screen on top of the FSGT building's roof located close to the operating PME/noisy works (noise sources). According to the site diary, the Contractor had provided the sound insulating materials to enclose and wrap the breaking tip which could further reduce the noise generated from construction works in Wah Fu PTW.	Closed
CIR#4_150330	DSD's Preliminary Treatment Work (PTW) at Wah Fu	30th March 2015	One anonymous complainant complained about the dark smoke emission generated from Contract DC/2009/24 construction site at Wah Fu PTW. The ETL of the Contract was informed of the complaint through the e-mail on 30th March 2015 and initiated the complaint investigation procedures. According to the information provided by the Contractor, the sheet pile machine was deployed at Wah Fu PTW for sheet piling installation on the day of complaint. However, no dark smoke emission was observed at Wah Fu PTW during the routine	After complaint received, the Contractor has taken initiative to prevent dark smoke emission to the nearby residents by implementation of mitigation measures as below: • Remove the sheet pile machine after finishing the works on 31st March 2015; • Properly maintained and operated the construction plant (well-greased, damage and worn parts promptly replaced). The Contractor was reminded to consider to increase the frequency of checking the darkness of smoke generated from mechanical equipment. With comparison to the shade of smoke to the shades on a Ringelmann Chart or other approved devices to ensure the emitting smoke is lighter than shade 1 on the Ringelmann Chart. The Contractor was also reminded to avoid any dark smoke emission generated from mechanical equipment for more than 6 minutes in any period of 4 hours or for more than 3 minutes continuously at	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
			inspection by the Contractor such as the Environmental Officer on the day of complaint. The machine was removed off site after finishing the works.	any one time; and remove the carbon deposits from the muffler and keep the mesh at the inlet of the air blower clear frequently which could further prevent the dark smoke emission generated from construction machines of construction works in Wah Fu PTW.	
CIR#3_131119	DSD's Preliminary Treatment Work (PTW) at Wah Fu	19th November 2013	One anonymous complainant complained about the noise generated from Contract DC/2009/24 construction site at Wah Fu PTW. The ETL of the Contract was informed of the complaint through the e-mail on 29th November 2013 and initiated the complaint investigation procedures. According to the information provided by the Contractor, major construction activities that contributed to the noise at Wah Fu during the time of complaint include: pipe pile wall construction, grout curtain construction and ELS in progress.	There was no exceedance report received from Contract DC/2007/24 at noise monitoring stations M7a for Wah Fu PTW in November 2013. After complaint received, the Contractor has taken initiative to minimize noise nuisance to the nearby residents by implementation of mitigation measures as below: • Properly maintained and operated the construction plant (well-greased, damage and worn parts promptly replaced); • To install the erected noise absorption screen located close to the operating PME/noisy works (noise sources). According to the site diary, the Contractor had provided the sound insulating materials to enclose and wrap the breaking tip which could further reduce the noise generated from construction works in Wah Fu PTW.	Closed
CIR#2_130809	DSD's Preliminary Treatment Work (PTW) at Wah Fu	9th August 2013	One anonymous complainant complained about the noise generated from Contract DC/2009/24 construction site at Wah Fu PTW. The ETL of the Contract was informed of the complaint through the e-mail on 12th August 2013 and initiated the complaint investigation procedures. According to the information	There was no exceedance report received from Contract DC/2007/24 at noise monitoring stations M7a for Wah Fu PTW in August 2013. After complaint received, the Contractor has taken initiative to minimize noise nuisance to the nearby residents by implementation of mitigation measures as below: • Properly maintained and operated the construction plant (well-greased, damage and worn parts promptly replaced); • To install movable noise absorption screen located close to the operating PME/noisy works (noise	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
			provided by the Contractor, major construction activities that contributed to the noise at Wah Fu during the time of complaint include: pipe pile wall construction.	sources); • To enclose or wrap the breaking tip with sound insulating materials to reduce the noise. According to the complaint, the Contractor had enhanced the movable noise barrier by increasing the height of the noise barrier and adding the upper sloped section which could further reduce the noise generated from construction works in Wah Fu PTW.	
Aberdeen PTW					
N/A	N/A	N/A	N/A	N/A	N/A
Ap Lei Chau PTW					
CIR#8_180309	DSD's Preliminary Treatment Work (PTW) at Ap Lei Chau	9th March 2018	A district council member referred multiple complaints from residents concerning the noise in early mornings generated from construction activities at LEE NAM ROAD. The ETL of the Project was informed of the complaint through the e-mail on 9th March 2018 and initiated the complaint investigation procedures. According to the information provided by the Contractor, there is no construction activity that contributed to the noise at Ap Lei Chau PTW before 8:00 a.m. In addition, only minor concrete breaking for road pavement works outside Ap Lei Chau PTW was carried out after 9:00 a.m. in the	During the weekly site inspection on 2nd, 9th and 16th March 2018, there is another construction site nearby at Lee Nam Road carrying out piling works and the significant noise were observed. There was no exceedance recorded at noise monitoring stations M9 for Ap Lei Chau PTW in early March 2018. After complaint received, the Contractor has taken initiative to minimize noise nuisance to the nearby residents by implementation of mitigation measures as below: • Properly maintained and operated the construction plant (well-greased, damage and worn parts promptly replaced). As reported by the Contractor of Contract DC/2009/24 during the site inspection on 9th and 16th March 2018, the Contractor agreed to reschedule the site works and noisy activities at Ap Lei Chau PTW would only be started from from 9:30 a.m. which could minimize the impact of noise nuisance to the nearby noise sensitive receiver in early morning. The Contractor also agreed to provide sound absorption materials to wrap the breaker to minimize the	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
			early March 2018 to minimize the noise nuisance in the early morning.	noise impact to the nearby noise sensitive receiver if the concrete breaking works are required to be carried out.	
CIR#1_121228	DSD's Preliminary Treatment Work (PTW) at Ap Lei Chau	28th December 2012	The residents of South Horizons and Ap Lei Chau Estate complained about the noise generated from our construction site at Ap Lei Chau PTW. The ETL of the Project was informed of the complaint through the e-mail on 31st December 2012 and initiated the complaint investigation procedures. According to the information provided by the Contractor, major construction activities that contributed to the noise at Ap Lei Chau during the time of complaint include: general site works and safety works; maintenance and handling of plants; and drilling works for pipe pile wall.	There was no exceedance report received from Contract DC/2008/09 at noise monitoring stations M9 for Ap Lei Chau PTW in December 2012. Resident site staff also revealed that rock excavation works and other construction activities were being carried out at nearby construction sites on 29 & 31 December 2012. After complaint received, the Contractor has taken initiative to minimize noise nuisance to the nearby residents by implementation of mitigation measures as below: • Adopting a relatively low-noise construction method – small drilling rig to install the pipe piles; • Equipping noise reducing jacket on the small drilling rig. The Contractor was recommended to continue the following mitigation measures in order to minimize the potential construction noise nuisance to the nearby community: • To adopt movable noise barrier; • To use silenced equipment where practicable; • To avoid concurrent uses of noisy equipment near the sensitive area; • To ensure the equipment are maintaining in good operation condition; and • To turned off any idle equipment on site.	Closed

Remarks: No environmental complaint was received in June 2019.

APPENDIX M
CONSTRUCTION PROGRAMME

OUTSTANDING WORKS PROGRAMME FOR ABERDEEN PTW
SECTION 5 & 6 OF THE WORKS

WITHOUT PREJUDICE

Data Date 05-Mar-19

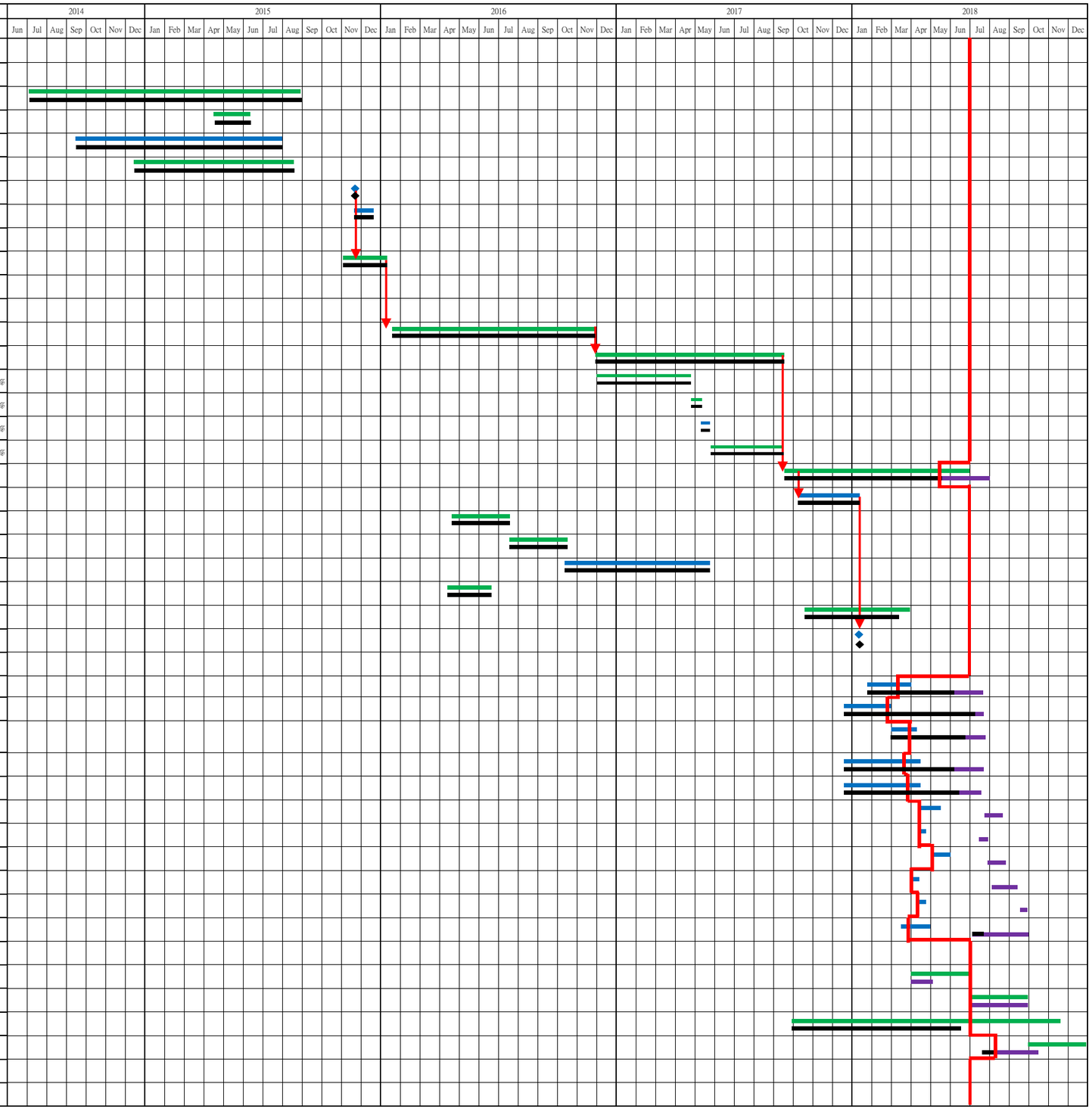
ACTIVITY DESCRIPTION	REVISED DWP_REV. 6			Actual / Target			2019											
							OCOTBER					NOVEMBER				DECEMBER		
	START	FINISH	Planned % Prog	START	FINISH	Actual % Prog	30-06	07-13	14-20	21-27	28-03	04-10	11-17	18-24	25-01	02-08	09-15	16-22	23-29
REMAINING WORKS																			
ERECTION OF SKIP ENCLOSURE																			
Erection of Steel Frame, incl welding test	23-Jan-18	15-Feb-18	100%	23-Jan-18	09-Apr-18	100%													
Demolition of remaining Temp. Decking incl. backfilling of F18 Manhole and re-installation of Compactor No. 1	23-Jan-18	31-Jan-18	100%	23-Jan-18	31-Jan-18	100%													
Roller Shutter Installation				01-Apr-18	09-Apr-18	100%													
ROAD CONSTRUCTION WORKS																			
7th Portion (paving block)	20-Jan-18	26-Jan-18	100%	20-Jan-18	26-Jan-18	100%													
8th Portion (SPT for subbbase, cast of roadbase & paving block)	17-Jan-18	02-Feb-18	100%	17-Jan-18	02-Feb-18	100%													
9th Portion (remaining drainage works, SPT for subbbase, cast of roadbase & paving block)	05-Feb-18	09-Mar-18	100%	05-Feb-18	31-Mar-18	100%													
Remaining Portion to site entrance (paving block)	10-Mar-18	31-Mar-18	100%	01-Apr-18	18-May-18	100%													
BOUNDARY WALL FENCING AND FOOTING																			
North Boundary Wall	29-Jan-18	30-Apr-18	100%	29-Jan-18	31-Jul-18	100%													
Demolition of existing boundary wall	*29-Jan-18*	*03-Feb-18*	*100%*	*29-Jan-18*	*03-Feb-18*	*100%*													
Footing construction (wall 4, 5, 6 & 7)	*05-Feb-18*	*21-Mar-18*	*100%*	*05-Feb-18*	*31-Mar-18*	*100%*													
Erection of steel post and installation of fencing & synthetic timber wall	*22-Mar-18*	*30-Apr-18*	*100%*	*07-May-18*	*31-Jul-18*	*100%*													
Remaining Boundary Walls (repair and repainting works)	01-Mar-18	10-Mar-18	100%	11-Jun-18	31-Jul-18	100%													
SLIDING GATE AND RUN-IN CONSTRUCTION																			
Extention of Run-in Construction	26-Feb-18	24-Mar-18	100%	21-Mar-18	07-Apr-18	100%													
Footing for Sliding Gate	26-Feb-18	24-Mar-18	100%	03-Apr-18	30-Apr-18	100%													
Installation of Sliding Gate & Pedestrian access doors	03-Apr-18	30-Apr-18	100%	01-Jun-18	31-Jul-18	100%													
IRRIGATION SYSTEM, GREEN ROOF AND AT-GRADE LANDSCAPING WORKS																			
WSD (Submission and Approval for WWO 542 and WWO 046) - defect works	29-Jan-18	19-Apr-18	100%	14-Feb-18	29-Jan-19	100%													
Installation of irrigation system including at-grade planting works (shrubs & trees) and green roof	20-Apr-18	20-Jun-18	100%	19-May-18	31-Jul-18	100%													
E&M OUTSTANDING WORKS																			
E&M Works (Installation of Skip)	20-Feb-18	30-Apr-18	100%	02-May-18	08-Jun-18	100%													
FINE SCREEN AREA (level sensor, migration of temp. to permanent power, DCS signal to control room and DOU air ductwork)	26-Jan-18	01-Feb-18	100%	26-Jan-18	01-Feb-18	100%													
SEWAGE PUMP NO. 1 TO 4 (power meter signal to DCS in control room)	24-Jan-18	30-Jan-18	100%	24-Jan-18	30-Jan-18	100%													
SEAWATER PUMPING STATION (installation of level electrode, migration of temp. to permanent power and DCS signal to control room)	05-Feb-18	10-Feb-18	100%	05-Mar-18	29-Mar-18	100%													
COMMISSIONING - 30 DAYS (sewage pump + FSGT equipment)	02-Feb-18	03-Mar-18	100%	08-Feb-18	27-Apr-18	100%													
COMMISSIONING - 30 DAYS (DOU system)	02-Feb-18	03-Mar-18	100%	08-Feb-18	27-Apr-18	100%													
COMMISSIONING - 7 DAYS (seawater pumping station)	12-Feb-18	18-Feb-18	100%	09-Jul-18	16-Jul-18	100%													
PCCW NETWORK (migration of drop shaft sensor from mini to permanent DCS and DCS signal received at Wan Chai East PTW)	10-Mar-18	19-Mar-18	100%	19-Jun-18	04-Jul-18	100%													
REPLACEMENT OF OVERFLOW BYPASS PENSTOCK - PEN No. 19 (work by divers)	12-Mar-18	07-Apr-18	100%	12-Feb-18	07-Apr-18	100%													
H2S MONITORING STATION - 7 SETS	12-Mar-18	21-Apr-18	100%	03-May-18	31-Jul-18	100%													
3 sets in Eastern Fencing Wall	*26-Mar-18*	*21-Apr-18*	*100%*	*28-May-18*	*31-Jul-18*	*100%*													
3 sets in Westren Fencing Wall	*12-Mar-18*	*07-Apr-18*	*100%*	*03-May-18*	*14-Jul-18*	*100%*													
1 set in Northern Fencing Wall	*21-Mar-18*	*07-Apr-18*	*100%*	*03-May-18*	*14-Jul-18*	*100%*													
MISCELLANEOUS ITEMS (overflow alarm electrodes and flow measuring sensor at overflow chamber, lamp poles incl fitting (8 nos)-completed, CCTV system and Workshop equipment-completed)	26-Feb-18	30-Mar-18	100%	16-Apr-18	23-Feb-19	100%													

OUTSTANDING WORKS PROGRAMME FOR AP LEI CHAU PTW
SECTION 7 OF THE WORKS

WITHOUT PREJUDICE

Data Date 05-Mar-19

ACTIVITY DESCRIPTION	REVISED DWP_REV. 6 incl. AS-Built			Actual / Target		
	START	FINISH	Planned % Prog	START	FINISH	Actual % Prog
SECTION 7 OF THE WORKS						
Stage 1 - Construction of Initial Treatment Plant						
ELS / Structural works for remaining half of initial treatment plant (Wet well and Dry Well) incl. Temporary wall enclosure	02-Jul-14	31-Aug-15	100%	02-Jul-14	31-Aug-15	100%
Flume Channel Construction & Connection to existing outfall chamber	20-Apr-15	06-Jun-15	100%	20-Apr-15	06-Jun-15	100%
E&M works for Initial Treatment Plant (incl. flow diversion to new plant)	15-Sep-14	31-Jul-15	100%	15-Sep-14	31-Jul-15	100%
Tie-in Connection, Rising Main and Flow Meter Chamber (Partial only)	15-Dec-14	17-Aug-15	100%	15-Dec-14	17-Aug-15	100%
Start of Flow diversion to tie-in pit		20-Nov-15	100%		20-Nov-15	100%
Flow diversion to tie-in pit	20-Nov-15	19-Dec-15	100%	20-Nov-15	19-Dec-15	100%
Stage 2 - Completion of New Treatment Plant						
Decommissioning and Demolition of existing treatment facilities	02-Nov-15	09-Jan-16	100%	02-Nov-15	09-Jan-16	100%
Construction of remaining treatment plant (FSGT Bldg)						
E&M Works incl. preliminary testing for remaining treatment plant (FSGT Bldg)						
Foundation works for new treatment plant, wet well area and effluent pumping station (incl. ELS & Excavation Works)	11-Jan-16	28-Nov-16	100%	11-Jan-16	28-Nov-16	100%
Structural Works for new treatment plant, wet well area and effluent pumping station (Incl. Finishing)	29-Nov-16	16-Sep-17	100%	29-Nov-16	16-Sep-17	100%
Structural works up to +6.15mPD	*29-Nov-16*	*24-Apr-17*	*100%*	*29-Nov-16*	*24-Apr-17*	*100%*
Delivery and in-place of effluent pipe and accessories	*25-Apr-17*	*10-May-17*	*100%*	*25-Apr-17*	*10-May-17*	*100%*
Installation of temporary decking	*11-May-17*	*31-May-17*	*100%*	*11-May-17*	*31-May-17*	*100%*
Continuation of remaining structure (up to roof floor)	*01-Jun-17*	*07-Sep-17*	*100%*	*01-Jun-17*	*07-Sep-17*	*100%*
Remaining Finishing Works for new Treatment Plant (internal and external)	17-Sep-17	30-Jun-18	100%	17-Sep-17	31-Jul-18	85%
E&M Works for new treatment plant, wet well area and effluent pumping station incl. preliminary testing of pumping system	12-Oct-17	08-Jan-18	100%	12-Oct-17	08-Jan-18	100%
Foundation works for new switch room and HEC room (incl. Excavation Works)	18-Apr-16	18-Jul-16	100%	18-Apr-16	18-Jul-16	100%
Structural Works for new switch room and HEC room	19-Jul-16	13-Oct-16	100%	19-Jul-16	13-Oct-16	100%
Finishing and E&M Works for new switch room and HEC room	14-Oct-16	25-May-17	100%	14-Oct-16	25-May-17	100%
Workshop Building - Structural Works	18-Apr-16	25-Jun-16	100%	18-Apr-16	25-Jun-16	100%
Remaining Rising Main Installation (incl. Replacement of Temp. Portion)	14-Oct-17	31-Mar-18	100%	14-Oct-17	10-Mar-18	100%
Substantial Completion of Section 7 of the Works		08-Jan-18	100%		08-Jan-18	100%
Outstanding Works - E&M Works						
FSGT Area GL 1-4 (cable tray, cable laying, permanent sensor, migration to permanent power supply, removal of temp. works and installation of remaining building services)	29-Jan-18	31-Mar-18	100%	29-Jan-18	21-Jul-18	75%
Effluent Pumping System - Dry Well (Pump 1 and 2 - 2nd train)	18-Dec-17	28-Feb-18	100%	18-Dec-17	21-Jul-18	95%
Effluent Pumping System - Dry Well (Pump 3 and 4 - migration to permanent power incl. local panels, junction boxes, cabling work, instrument & sensors, cable tray & laying, DN600 rising main return water pipe and building services)	01-Mar-18	06-Apr-18	100%	01-Mar-18	21-Jul-18	80%
Control Room (cable tray & cabling works, control desk & operator terminal set-up, programming and building services work)	18-Dec-17	14-Apr-18	100%	18-Dec-17	21-Jul-18	80%
DO Room - Wet Well Area (uPVC pipework, dosing pump, sensors, FRP platform, control panel, cable tray & cabling and building services works)	20-Dec-17	14-Apr-18	100%	20-Dec-17	15-Jul-18	85%
Commissioning of Effluent Pumps + FSGT equipment (30 Days)	16-Apr-18	15-May-18	100%	23-Jul-18	22-Aug-18	0%
DOU Seeding & system stabilization	16-Apr-18	28-Apr-18	100%	20-Jul-18	28-Jul-18	0%
Commissioning of DOU System (30 Days)	01-May-18	30-May-18	100%	30-Jul-18	29-Aug-18	0%
FSD Submission	03-Apr-18	16-Apr-18	100%	03-Aug-18	14-Sep-18	0%
FSD Inspection	16-Apr-18	28-Apr-18	100%	17-Sep-18	28-Sep-18	0%
Miscellaneous Works (H2S monitoring station, CCTV, Lamp pole w/ lighting and Weighing Bridge system - 1 set)	19-Mar-18	30-Apr-18	100%	03-Jul-18	30-Sep-18	20%
Remaining Works (External)						
External Staircase	01-Apr-18	30-Jun-18	100%	01-Apr-18	28-Apr-18	100%
Landscaping Works	01-Jul-18	30-Sep-18	100%	01-Jul-18	30-Sep-18	0%
Design and Built of Sea Wall (damaged by Typhoon) - Additional Works	01-Oct-17	18-Nov-18	100%	01-Oct-17	13-Jun-18	100%
Drainage and Road works & Reinstatement of Existing Fencing at Seawall Area	01-Oct-18	30-Dec-18	100%	25-Jun-18	23-Sep-18	20%
Weighing Bridge System - 1 Set (After Sea Wall and Reinstatement Works)						



LEGEND : Civil Works E&M Works