



**Agreement No. CE 30/2018 (EP)
Environmental Team for Kai Tak Sports Park –
Design and Construction**

Quarterly EM&A Report (Oct 2019 – Dec 2019)

February 2020

Home Affairs Bureau
Kai Tak Sports Park Project Office
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Agreement No. CE 30/2018 (EP)
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Environmental Permit No. EP-544/2017

Kai Tak Sports Park - Investigation

Independent Environmental Checker Verification


Reference Document/Plan

Document/ Plan to be Certified / Verified:	Quarterly EM&A Report No. 3 (October to December 2019)
Date of Report:	February 2020
Date received by IEC:	7 February 2020

Reference EP Condition / EM&A Manual

EM&A Manual (AEIAR-204/2017)	Sections 2.5.1 (v) & 14.1.1
The ET should prepare monthly, quarterly and final EM&A reports to summarize environmental performance and to anticipate future key issues.	
The ET shall prepare baseline monitoring report, monthly EM&A reports, quarterly EM&A report and final EM&A report. They shall be submitted to the EPD in paper and electronic formats in a timely manner.	

IEC Verification

I hereby verify that the above referenced document/ plan complies with the above referenced condition of EP-544/2017/EM&A Manual.	
	
Ms Mandy To	Date: 11 February 2020
Independent Environmental Checker	

Our ref: 0500384_IEC Verification Cert_KTSP_Quarterly EM&A Rpt No.3.docx



Environmental Permit No. EP- 544/2017

Kai Tak Sports Park – Investigation

Environmental Team Leader Certification

Reference Document /Plan

Document/ Plan to be Certified:	Quarterly EM&A Report (Oct 2019 - Dec 2019)
Date of Report:	February 2020
Date received by ETL:	11 February 2020

Reference EP Condition

EM&A Manual (AEIAR-204/2017)	Sections 2.5.1 (v) & 14.1.1
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The ET should prepare monthly, quarterly and final EM&A reports to summarize environmental performance and to anticipate future key issues.

The ET shall prepare baseline monitoring report, monthly EM&A reports, quarterly EM&A report and final EM&A report. They shall be submitted to the EPD in paper and electronic formats in a timely manner.

ETL Certification

I hereby certify that the above reference document complies with the above referenced condition of EP-544/2017.

Mr Sunny Chan
Environmental Team Leader

Date: 11 February 2020

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Executive Summary

This is the 3rd Quarterly Environmental Monitoring & Audit (EM&A) Report for the construction phase of the Kai Tak Sports Park (KTSP) Project which summaries findings of the EM&A programme during the reporting period from 1 October 2019 to 31 December 2019 (the “reporting period”) under the Environmental Permit (No. EP-544/2017) requirement.

Environmental Monitoring and Audit Progress

The monthly EM&A programme was implemented by Environmental Team (ET) in accordance with the approved EM&A Manual. A summary of the EM&A activities during the reporting period is presented below:

Activities	Locations	Dates
Air quality impact monitoring (1-hour TSP)	AMS1, AMS2	3, 9, 15, 21, 25, 31 October 2019 6, 12, 18, 22, 28 November 2019 4, 10, 16, 21, 27 December 2019
Noise impact monitoring (L _{eq} (30 min))	NMS1, NMS2	3, 9, 15, 21, 31 October 2019 6, 12, 18, 28 November 2019 4, 10, 16, 27 December 2019
Weekly environmental site inspections	Kai Tak Sports Park Project Site	2, 9, 16, 23, 29 October 2019 6, 13, 20, 26 November 2019 4, 11, 19, 24, 31 December 2019
Bi-weekly landscape and visual site inspections	Kai Tak Sports Park Project Site	9, 23 October 2019 6, 20 November 2019 11, 24 December 2019

Breaches of Action and Limit Levels

Air Quality

No Action and Limit Level exceedances of 1-hour TSP level was recorded at AMS1 and AMS2 during the reporting period.

Noise

One noise related complaint was received during the reporting period. One Action Level for Noise was triggered during the reporting period.

No exceedance of Limit Level of noise at NMS1 and NMS2 was recorded during the reporting period.

Complaint Log

There was one complaint on noise issue received during the reporting period. Detail of complaint investigation is shown in **Appendix L**.

Notifications of Summons and Successful Prosecutions

There were no notifications of summons or prosecutions received during this reporting period.

Reporting Changes

There was no reporting change during the reporting period.

1 Project Information

1.1 Project Organisation

The organisation chart and lines of communication with respect to the on-site environmental management structure of the key personnel are shown in **Appendix A**. The key personnel contact names and numbers are summarized in **Table 1.1**.

Table 1.1: Contact Information of Key Personnel

Party	Position	Name	Telephone	Fax
Project Proponent (Home Affairs Bureau)	Project Director (Sports Park)	Victor Tai	3586 3403	3586 0591
Supervising Officer's Representative (Home Affairs Bureau)	Senior Engineer	Keith Man	3586 3149	3586 0591
Environmental Team (Mott MacDonald Hong Kong Limited)	Environmental Team Leader	Sunny Chan	2828 5962	2827 1823
	Deputy Environmental Team Leader	Arthur Lo	2828 5994	2827 1823
Independent Environmental Checker (ERM Hong Kong Limited)	Independent Environmental Checker	Mandy To	2271 3000	2723 5660
Contracted Party (Kai Tak Sports Park Limited)	Senior Project Manager	Michael Wong	3552 5003	2845 9295
	Senior Environmental Engineer	Hiko Law	3552 5013	3552 5099
24-hour Community Liaison Hotline	-	-	5587 6112	-

1.2 Works Area and Construction Programme

The construction works commenced on 8 April 2019. The works area of the Project is shown in **Appendix B**. The Construction Works Programme of the Project is provided in **Appendix C**.

1.3 Construction Works undertaken during the Reporting Period

A summary of construction activities undertaken during this reporting period is presented below:

Table 1.2: Construction Works undertaken during the Reporting Period

October 2019	November 2019	December 2019
<ul style="list-style-type: none"> Ground investigation works; Piling works (Percussive piling, Socket H piling and Bored piling); Setting up of temporary site office; 	<ul style="list-style-type: none"> Ground investigation works; Piling works (Percussive piling, Socket H piling and Bored piling); 	<ul style="list-style-type: none"> Ground investigation works; Piling works (Percussive piling, Socket H piling and Bored piling);

October 2019	November 2019	December 2019
<ul style="list-style-type: none">• Setting up of wastewater treatment facilities;• Tree transplantation;• Mobilization; and• Concreting and excavation	<ul style="list-style-type: none">• Setting up of temporary site office;• Tree felling;• Mobilization; and• Concreting and excavation	<ul style="list-style-type: none">• Setting up of temporary site office;• Setting up of temporary site canteen;• Mobilization; and• Concreting and excavation

2 Summary of EM&A Requirement

2.1 EM&A Requirement

In accordance with the EM&A Manual of the Project, the EM&A programme was established to assure compliance with the standards and predictions in the EIA study involving the construction and operation of the Project. The environmental performance was routinely monitored and audited for evaluating the effectiveness of the recommended mitigation measures or remedial action. Impact air quality and noise monitoring were required for the Project.

Air Quality

2.2 Air Quality Monitoring Parameters, Frequency and Duration

Table 2.1 summarises the monitoring parameters, frequency and duration of impact air quality monitoring.

Table 2.1: Air Quality Monitoring Parameters, Frequency and Duration

Parameter	Frequency and Duration
1-hour TSP	3 times every six-days

2.3 Air Quality Monitoring Locations

According to the EM&A Manual, a total of five air quality monitoring stations are identified for impact monitoring. AMS1 and AMS2 were set up at the proposed locations for impact monitoring during the reporting period. AMS3, AMS4 and AMS5 are planned residential use and were currently not available for impact monitoring.

Table 2.2 describes the impact air quality monitoring stations and **Figure 2.1** shows their locations.

Table 2.2: Construction Dust Monitoring Locations

Monitoring Station	Location	Status
AMS1	Hong Kong Society for the Blind Workshop, Roof Floor	Existing Air Sensitive Receiver
AMS2	Sky Tower, Podium of Tower 7	Existing Air Sensitive Receiver
AMS3	Kai Tak Area 2B Site 4 (2B4) (residential use)	Planned Air Sensitive Receiver
AMS4	Kai Tak Area 1K Site 3 (1K3) (residential use)	Planned Air Sensitive Receiver
AMS5	Kai Tak Area 1L Site 3 (1L3) (residential use)	Planned Air Sensitive Receiver

2.4 Action and Limit Levels for Air Quality Monitoring

The Action and Limit Levels for 1-hr TSP are provided in **Table 2.3**.

Table 2.3: Action and Limit Levels for 1-hour TSP

Monitoring Station	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
AMS1 – Hong Kong Society for the Blind Workshop, Roof Floor	283	500

Monitoring Station	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
AMS2 – Sky Tower, Podium of Tower 7	280	500
AMS3 - Kai Tak Area 2B Site 4 (2B4) (residential use)	287*	500
AMS4 - Kai Tak Area 1K Site 3 (1K3) (residential use)	287*	500
AMS5 - Kai Tak Area 1L Site 3 (1L3) (residential use)	287*	500

*Remarks: the Action Level for AMS3, AMS4 and AMS5 were derived from an alternative monitoring station AMS3-4-5 during the baseline monitoring.

The event and action plan is provided in [Appendix D](#).

2.5 Wind Data

Wind data at Kai Tak automatic weather station collected from the Hong Kong Observatory (HKO) were used for the air quality monitoring for recording wind speed and wind direction. It is considered that the wind data obtained at the existing Kai Tak wind station are representative of the Project area and could be used for undertaking the construction phase baseline and impact air quality monitoring programme for the Project.

The detail of the wind data is shown in [Appendix F](#).

Noise

2.6 Noise Monitoring Parameters, Frequency and Duration

Table 2.4 summarises the monitoring parameters, frequency and duration of impact noise monitoring.

Table 2.4: Noise Monitoring Parameters, Frequency and Duration

Parameter	Frequency and Duration
30-minutes measurement at each monitoring station between 0700 and 1900 on normal weekdays (Monday to Saturday). L_{eq} , L_{10} and L_{90} would be recorded.	At least once per week

2.7 Noise Monitoring Locations

According to the approved EM&A Manual, a total of seven noise monitoring stations were identified for the impact monitoring locations. NMS1 and NMS2 were set up at the proposed locations for impact monitoring during the reporting period. NMS1A, NMS2A, NMS3, NMS4 and NMS5 are planned residential use and were currently not available for impact monitoring.

Table 2.5 describes the details of the monitoring stations and [Figure 2.2](#) shows the locations of noise monitoring stations.

Table 2.5: Construction Noise Monitoring Locations

Monitoring Station	Location Description	Status
NMS1	Hong Kong Society for the Blind Workshop, Roof Floor	Existing Noise Sensitive Receiver

Monitoring Station	Location Description	Status
NMS2	Sky Tower, Podium of Tower 7	Existing Noise Sensitive Receiver
NMS1A	Sung Wong Toi Road Public Housing Site	Planned Noise Sensitive Receiver
NMS2A	Sung Wong Toi Road CDA Site (mixed use)	Planned Noise Sensitive Receiver
NMS3	Kai Tak Area 2B Site 4 (2B4) (residential use)	Planned Noise Sensitive Receiver
NMS4	Kai Tak Area 1K Site 3 (1K3) (residential use)	Planned Noise Sensitive Receiver
NMS5	Kai Tak Area 1L Site 3 (1L3) (residential use)	Planned Noise Sensitive Receiver

2.8 Action and Limit Levels for Noise Monitoring

The Action and Limit Levels for construction noise are defined in **Table 2.6**

Table 2.6: Action and Limit Level for Construction Noise

Monitoring Station	Time Period	Action Level	Limit Level
NMS1 NMS2	0700 – 1900 hours on normal weekdays	When one documented complaint is received	75 dB(A)

The event and action plan is provided in **Appendix D**.

3 Summary of Environmental Status

3.1 Construction Works undertaken during the Reporting Period

A summary of construction activities undertaken during this reporting period is presented below:

Table 3.1: Construction Works undertaken during the Reporting Period

October 2019	November 2019	December 2019
<ul style="list-style-type: none"> • Ground investigation works; • Piling works (Percussive piling, Socket H piling and Bored piling); • Setting up of temporary site office; • Setting up of wastewater treatment facilities; • Tree transplantation; • Mobilization; and • Concreting and excavation 	<ul style="list-style-type: none"> • Ground investigation works; • Piling works (Percussive piling, Socket H piling and Bored piling); • Setting up of temporary site office; • Tree felling; • Mobilization; and • Concreting and excavation 	<ul style="list-style-type: none"> • Ground investigation works; • Piling works (Percussive piling, Socket H piling and Bored piling); • Setting up of temporary site office; • Setting up of temporary site canteen; • Mobilization; and • Concreting and excavation

3.2 Implementation Status of Environmental Mitigation Measures

Regular site inspections and audits were carried out to monitor the implementation of proper environmental pollution control mitigation measures for the Project. **Table 3.2** shows the summary of site inspection and audit conducted during the reporting period.

Table 3.2: Summary of Site Inspection and Landscape Audit during the Reporting Period

Activities	Locations	Dates
Weekly environmental site inspections	Kai Tak Sports Park Project Site	2, 9, 16, 23, 29 October 2019 6, 13, 20, 26 November 2019 4, 11, 19, 24, 31 December 2019
Bi-weekly landscape and visual site inspections	Kai Tak Sports Park Project Site	9, 23 October 2019 6, 20 November 2019 11, 24 December 2019

A summary of the environmental mitigation measures implementation status is presented in **Appendix I**. Most of the necessary mitigation measures were implemented properly. A summary of the environmental licenses and permits is presented in **Appendix H**.

3.3 Monitoring Results

The monitoring results for 1-hour TSP at AMS1 and AMS2 are summarized in **Table 3.3**. Detailed impact air quality monitoring results are presented in **Appendix E**. The calibration certificate for the dust meter used during monitoring is shown in **Appendix K**.

Table 3.3: Summary of 1-hour TSP Monitoring Results during the Reporting Period

Monitoring Station	Average, $\mu\text{g}/\text{m}^3$	Min, $\mu\text{g}/\text{m}^3$	Max, $\mu\text{g}/\text{m}^3$	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
AMS1	57	29	89	283	500
AMS2	56	26	87	280	500

There was no Action and Limit Level exceedance of 1-hr TSP level recorded at station AMS1 and AMS2 by the ET during the reporting period.

The monitoring results for construction noise are summarized in **Table 3.4**. Detailed impact noise monitoring results and relevant graphical plots are presented in **Appendix E**. The calibration certificate for the noise meter used during monitoring is shown in **Appendix K**

Table 3.4: Summary of Construction Noise Monitoring Results during the Reporting Period

Monitoring Station	Measured Noise Level L_{eq} (30 mins), dB(A)			Limit Level
	Average	Min	Max	
NMS1	69	67	70	75
NMS2	68	67	70	75

No noise exceedances were recorded at stations NMS1 and NMS2 by the ET during the reporting period.

3.4 Solid and Liquid Waste Management Status

The summary of waste flow table during the reporting period is detailed in **Appendix G**.

The comparison of estimated amount of waste generated for construction of the Project and actual amount generated during the reporting period is showed in **Table 3.5**

Mitigation measures recommended in EIA Report were implemented by the Contractor as far as practicable and were considered effective in reducing the total quantity of waste generated during the reporting period.

Table 3.5: Comparison of Estimated Amount and Actual Amount of Waste Generated during the Reporting Period

Type of Waste	Estimated Amount for the Project in the EIA (m ³)	Actual Amount during Reporting Period (000kg)	Actual Amount during Reporting Period* (m ³)
Inert C&D materials (or public fills) to be disposed of	447,464	20,448	15,729
Non-inert C&D materials (or C&D waste) to be disposed of	68,110	959	1,199
Total C&D material of the Project	515,574	21,407	16,928

*Note:

Assumed Inert C&D waste density = 1,300 kg/m³

Assumed Non-inert C&D waste density = 800 kg/m³

3.5 Summary of Non-compliance Status

Exceedances

Air Quality

No Action and Limit Level exceedances of 1-hour TSP level was recorded at AMS1 and AMS2 during the reporting period.

Noise

One noise related complaint was received during the reporting period. One Action Level for Noise was triggered during the reporting period.

No exceedance of Limit Level of noise at NMS1 and NMS2 was recorded during the reporting period.

Complaints

There was one complaint received in relation to the environmental impact during the reporting period.

Table 3.6: Summary of Complaints during the reporting period

Date of Notification from EPD	Date of Complaint	Description of Complaint	Recommendations / Actions	Close-Out Date / Status
14 Oct 2019	29 Sep 2019	- Complaint of percussive piling noise from the construction site of Kai Tak Sports Park. - Complainant would like percussive piling to be carried out later in the morning and implement noise control measure - Please ensure the work fulfil the relevant environmental legislation and conditions stipulated in the construction noise permit.	1. Conduct regular checking to ensure the implementation of noise mitigation measures for the percussive piling works. 2. A new CNP has been issued on 9 October 2019 (PP-RE0043-19) with revised piling hours between 0830 to 0930 in the morning to reduce the noise impact in the morning session. 3. Arrange those sensitive percussive piling works (i.e. close to nearby sensitive receivers) in a later piling hour session if possible.	21 Oct 2019

Detail of complaint investigation is shown in **Appendix L**.

Notification of Summons and Successful Prosecution

No notification of summons or prosecutions was received during the reporting period.

Statistics on notifications of summons and successful prosecutions are summarized in **Appendix J**.

4 Comments, Recommendations and Conclusion

4.1 Comments

Mitigation measures in the EM&A Manual were implemented during the reporting period. The weekly environmental site inspections ensured that all the environmental mitigation measures recommended were effectively implemented. Based on observation from the site inspections, landscape audits, and the air quality and noise impact monitoring results recorded, it was considered that mitigation measures were effective and efficient in controlling the potential impacts due to construction of the project during the reporting period.

4.2 Recommendations

During the reporting period, the following recommendations were provided:

October 2019

- The Contractor was reminded to provide lock for chemical waste storage area.
- The Contractor was reminded to provide water spraying at the access road.
- The Contractor was reminded to clear muddy water.
- The Contractor was reminded to provide cover for the stock pile.
- The Contractor was reminded to provide drip tray for the chemical container.
- The Contractor was reminded to display the environmental permit at all site entrance.
- The Contractor was reminded to maintain proper house keeping for chemical container storage.
- The Contractor was reminded to provide plugging for the drip tray.
- The Contractor was reminded to provide sand bags and keep the tree protection zone clear.
- The Contractor was reminded to provide water spraying for the works area at southern site.
- The Contractor was reminded to properly implement the tree protection zone.

November 2019

- The Contractor was reminded to clear the drainage channel to prevent accumulation of stagnant water.
- The Contractor was reminded to keep the drip tray clear from general refuse.
- The Contractor was reminded to clear the general refuse and properly dispose the general refuse in enclosed rubbish bin.
- The Contractor was reminded to clear the drainage channel.
- The Contractor was reminded to keep the tree protection zone clear and dispose the general refuse properly.

December 2019

- The Contractor was reminded to display a new NRMM label for the generator.
- The Contractor was reminded to provide covering for the stockpile.

- The Contractor was reminded to provide plugging for the drip tray.
- The Contractor was reminded to provide cover for the rubbish bin.
- The Contractor was reminded to provide clear colour for the indication of chemical waste storage area.
- The Contractor was reminded to provide sand bags for the drainage gully.
- The Contractor should ensure provision of secondary containment for all oil/chemical containers on site.
- The Contractor was reminded to provide sufficient pumping to prevent accumulation of site runoff at drainage channel.
- The Contractor was reminded to clear the effluent tank to ensure proper usage of effluent tank.

Review of the effectiveness and efficiency of the EM&A programme will be continued, and recommendations will be provided to remediate any potential impacts due to the project and to improve the EM&A programme if deficiencies of the existing EM&A programme are identified.

4.3 Conclusions

General

The construction works for the Project commenced on 8 April 2019. This is the 3rd Quarterly EM&A Report for the Project summarises findings of the EM&A works during the reporting period from 1 October 2019 to 31 December 2019. (the “reporting period”).

Breaches of Action and Limit Levels

Air Quality

No Action and Limit Level exceedances of 1-hour TSP level was recorded at AMS1 and AMS2 during the reporting period.

Noise

One noise related complaint was received during the reporting period. One Action Level for Noise was triggered during the reporting period.

No exceedance of Limit Level of noise at NMS1 and NMS2 was recorded during the reporting period.

Environmental Site Inspections

Environmental site inspections were carried out fourteen times during the reporting period. Recommendations on remedial actions were given to the Contracted Party for the deficiencies identified during the site inspections.

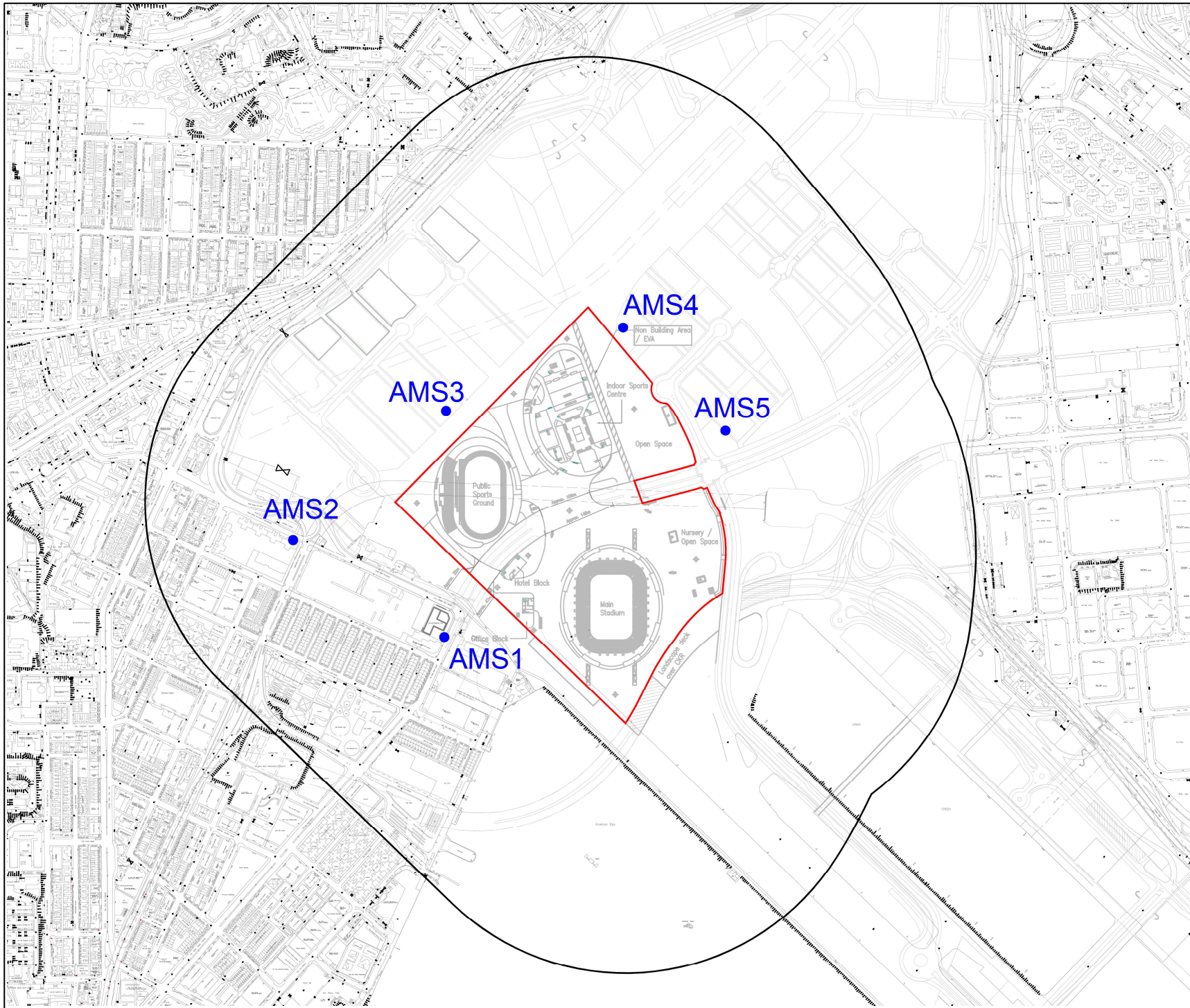
Complaints

There was one complaint received in relation to the environmental impact during the reporting period. Follow up actions have been taken and investigation reports were shown in **Appendix L**.

Notifications of Summons and Successful Prosecutions

There were no notifications of summons or prosecutions received during the reporting period.

Figures



Key Plan:

Notes:

1. ALL LEVELS ARE METRES TO PRINCIPAL DATUM (PD) UNLESS NOTED OTHERWISE.
2. ALL CO-ORDINATES REFER TO HONG KONG (1980) METRIC GRID CO-ORDINATES SYSTEM.
3. PIPE AND BOX CULVERT SIZES ARE SHOWN IN MILLIMETERS

Key to symbols:

LEGEND:

- Project Site
- 500m from Site Boundary
- AMS1 • Air Monitoring Station 1

Rev	Date	Drawn	Description	Ch'g'd	App'd

M
MOTT
MACDONALD

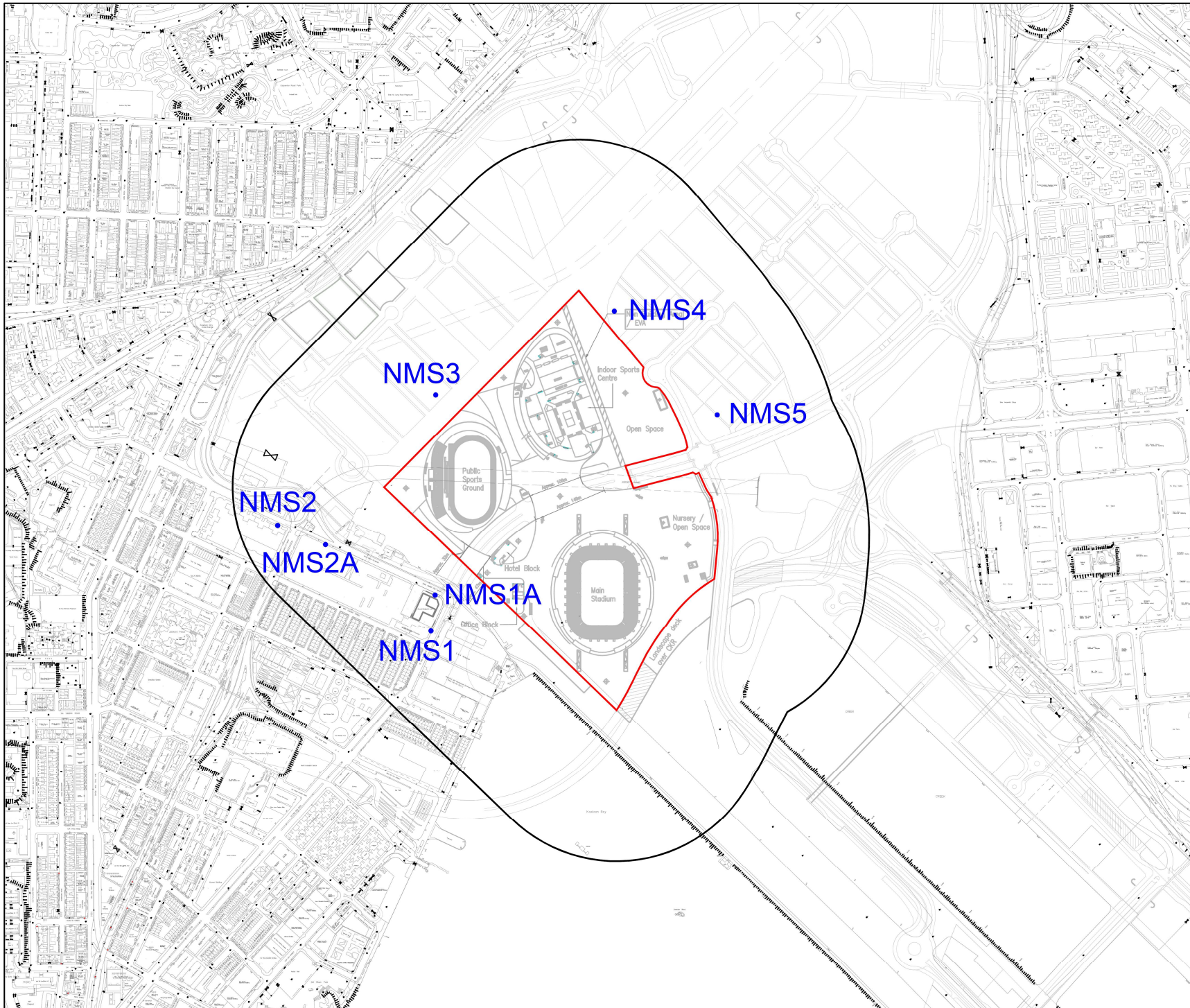
3/F, Mapletree Bay Point
348 Kowloon Tong Road
Kowloon, Kowloon
Hong Kong
T +852 2828 5757
F +852 2827 1659
W mottmac.com

Client:

Project:

Title:
Figure 2.1
Location of Air Quality
Monitoring Stations

Designed		Eng check	
Drawn		Coordination	
Dwg check		Approved	
Scale at A3	Status	Rev	
Drawing Number			



Key Plan

- Notes:
1. ALL LEVELS ARE METRES TO PRINCIPAL DATUM (PD) UNLESS NOTED OTHERWISE.
 2. ALL CO-ORDINATES REFER TO HONG KONG (1980) METRIC GRID CO-ORDINATE SYSTEM.
 3. PIPE AND BOX CULVERT SIZES ARE SHOWN IN MILLIMETERS

Key to symbols:

LEGEND:

- Project Site
- 300m from Site Boundary
- NMS1 • Construction Noise Monitoring Station 1

Rev	Date	Drawn	Description	Chk'd	App'd

3/F Mapletree Bay Point
 348 Kwan Tong Road
 Kowloon
 Hong Kong
 T +852 2828 5757
 F +852 2827 1824
 W mottramc.com

Client

Project

Title

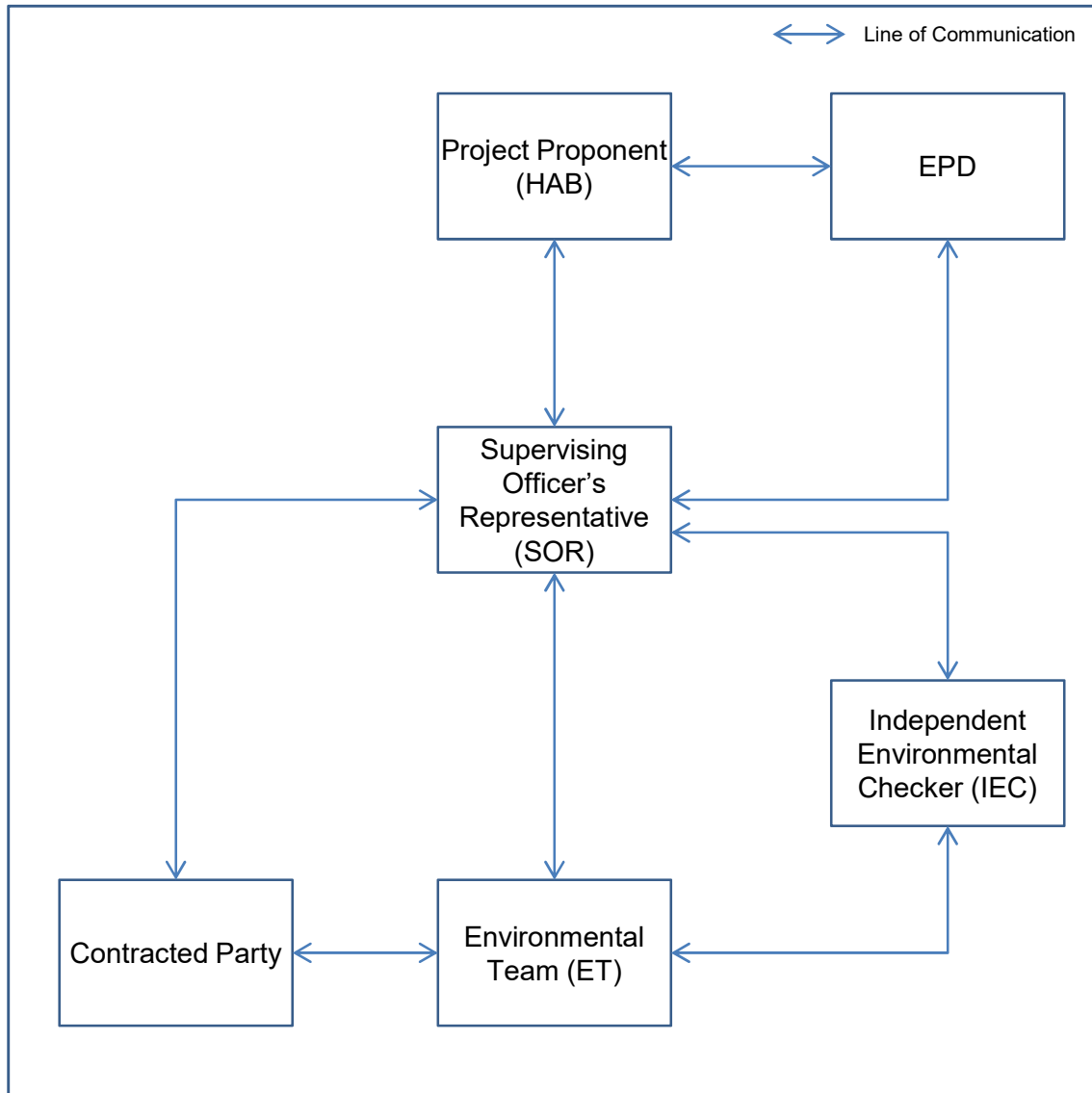
Figure 2.2
Location of Noise Monitoring Stations

Designed		Eng check	
Drawn		Consultation	
Dwg check		Approved	
Scale at A3	Status		Rev

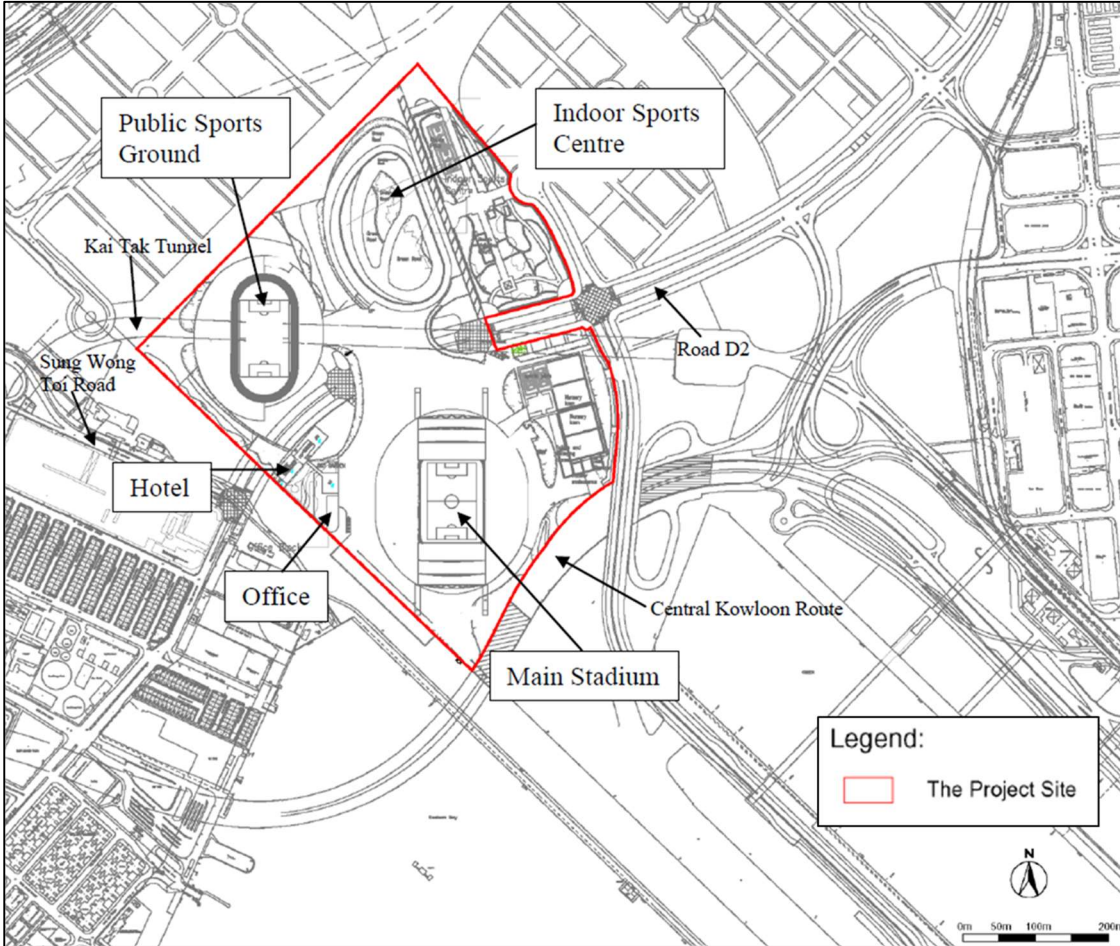
Drawing Number

Appendix A. Project Organization for Environmental Works

Project Organisation for Environmental Works



Appendix B. Location of Works Areas



Appendix C. Construction Programme

Construction Programme (Oct 2019 to Jan 2020)

Construction Activities	2019						2020						
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	
Plants Mobilization				█									
C&D Waste Disposal (By vessel)				█									
Loading/ Unloading of Materials				█									
Excavation				█									
Ground Investigation				█									
C&D Waste Disposal				█									
Setting up of Temporary Office				█									
Piling (Percussive Piling)				█									
Piling (Socket H Piling)				█									
Piling (Bored Piling)				█									
Concreting				█									
Lifting				█									
C&D Materials Internal Transportation				█									

Appendix D. Event and Action Plan

Should non-compliance of the air quality criteria occur, actions in accordance with the Event and Action Plan in **Table D.1** and **Table D.2** shall be carried out.

Table D.1: Event and Action Plan for Construction Air Quality (Action Level)

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

Table D.2: Event and Action Plan for Construction Air Quality (Limit Level)

Event	Action			
	ET	IEC	ET	Contracted Party
Limit Level				
Exceedance for one sample	<ol style="list-style-type: none"> 1. Inform IEC, SOR, Contracted Party and EPD; 2. Identify source, investigate the causes of exceedance and propose remedial measures; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contracted Party's remedial actions and keep IEC, EPD and SOR informed of the results. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contracted Party's working method; 3. Discuss with ET and Contracted Party on possible remedial measures; 4. Advise the SOR on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contracted Party; 3. Ensure remedial measures properly implemented. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Discuss with ET and IEC on remedial actions; 3. Submit proposals for remedial actions to IEC within 3 working days of notification; 4. Implement the agreed proposals; 5. Amend proposal if appropriate.
Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Notify IEC, SOR, Contracted Party and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contracted Party's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and SOR and Contracted Party to discuss the remedial actions to be taken; 7. Assess effectiveness of Contracted Party's remedial actions and keep IEC, EPD and SOR informed of the results; 8. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contracted Party's working method; 3. Discuss amongst SOR, ET, and Contracted Party on the potential remedial actions; 4. Review Contracted Party's remedial actions whenever necessary to assure their effectiveness and advise the SOR accordingly; 5. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contracted Party; 3. In consultation with the IEC, agree with the Contracted Party 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 Contracted Party to terminate that portion of work until the exceedance ceases. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Discuss with ET and IEC on remedial actions; 3. Submit proposals for remedial actions to SOR and IEC within 3 working days of notification; 4. Implement the agreed proposals; 5. Resubmit proposals if problem still not under control; 6. Stop the relevant portion of works as determined by the SOR until the exceedance ceases.

Should non-compliance of the noise criteria occur, actions in accordance with the Event and Action Plan in **Table D.3** shall be carried out.

Table D.3: Event and Action Plan for Construction Noise

Event	Action			
	ET	IEC	ET	Contracted Party
Action Level	1. Notify IEC, SOR and Contracted Party of exceedance; 2. Identify source; 3. Investigate the causes of exceedance and propose remedial measures; 4. Report the results of investigation to the IEC, SOR and Contracted Party; 5. Discuss with the IEC, SOR and Contracted Party and formulate remedial measures; 6. Increase monitoring frequency to check mitigation effectiveness.	1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contracted Party and advise the SOR accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contracted Party; 3. Require Contracted Party to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented	1. Submit noise mitigation proposals to SOR with copy to ET and IEC; 2. Implement noise mitigation proposals.
Limit Level	1. Inform IEC, SOR, EPD and Contracted Party; 2. Identify source; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contracted Party's working procedures to determine possible mitigation to be implemented; 6. Inform IEC, SOR and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contracted Party's remedial actions and keep IEC, EPD and SOR informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst SOR, ET, and Contracted Party on the potential remedial actions; 2. Review Contracted Party's remedial actions whenever necessary to assure their effectiveness and advise the SOR accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contracted Party; 3. Require Contracted Party to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented; 5. If exceedance continues, investigate what portion of the work is responsible and instruct the Contracted Party to terminate that portion of work until the exceedance ceases.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to SOR with copy to ET and IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Terminate the relevant portion of works as determined by the SOR until the exceedance ceases.

Appendix E. Monitoring Data and Graphical Plots (Air Quality and Noise)

Data for 1-hour TSP Monitoring at Station AMS1

Date	Start Time	Finish Time	Weather	Wind Speed (m/s)	Wind Direction (deg)	1-hour TSP ($\mu\text{g}/\text{m}^3$)
03-Oct-19	8:53	9:53	Sunny	2.7	270	68
03-Oct-19	9:53	10:53	Sunny	2.4	262	72
03-Oct-19	10:53	11:53	Sunny	2.7	250	79
09-Oct-19	8:53	9:53	Fine	5.1	89	37
09-Oct-19	9:53	10:53	Fine	6.8	100	47
09-Oct-19	10:53	11:53	Fine	4.6	73	40
15-Oct-19	10:22	11:22	Fine	6.0	95	42
15-Oct-19	11:22	12:22	Fine	6.1	105	39
15-Oct-19	12:22	13:22	Fine	6.8	109	37
21-Oct-19	8:54	9:54	Sunny	1.9	29	57
21-Oct-19	9:54	10:54	Sunny	2.2	103	54
21-Oct-19	10:54	11:54	Sunny	2.9	113	50
25-Oct-19	8:30	9:30	Sunny	4.6	97	42
25-Oct-19	9:30	10:30	Sunny	5.6	100	49
25-Oct-19	10:30	11:30	Sunny	4.7	91	55
31-Oct-19	8:54	9:54	Cloudy	2.0	20	44
31-Oct-19	9:54	10:54	Cloudy	3.6	68	40
31-Oct-19	10:54	11:54	Cloudy	3.2	40	39
06-Nov-19	8:59	9:59	Sunny	2.8	64	69
06-Nov-19	9:59	10:59	Sunny	4.1	95	78
06-Nov-19	10:59	11:59	Sunny	3.3	107	88
12-Nov-19	8:57	9:57	Sunny	4.9	94	66
12-Nov-19	9:57	10:57	Sunny	4.8	90	75
12-Nov-19	10:57	11:57	Sunny	4.5	85	84
18-Nov-19	9:07	10:07	Sunny	2.0	231	71
18-Nov-19	10:07	11:07	Sunny	1.3	194	80
18-Nov-19	11:07	12:07	Sunny	2.0	220	89
22-Nov-19	8:35	9:35	Sunny	0.0	Variable	46
22-Nov-19	9:35	10:35	Sunny	0.3	Variable	41
22-Nov-19	10:35	11:35	Sunny	1.1	143	39
28-Nov-19	10:01	11:01	Sunny	3.0	339	66
28-Nov-19	11:01	12:01	Sunny	3.0	315	74
28-Nov-19	12:01	13:01	Sunny	2.9	339	81
04-Dec-19	9:05	10:05	Sunny	2.7	43	66
04-Dec-19	10:05	11:05	Sunny	1.4	246	73
04-Dec-19	11:05	12:05	Sunny	2.3	15	81
10-Dec-19	8:56	9:56	Sunny	1.3	124	67
10-Dec-19	9:56	10:56	Sunny	3.5	103	75
10-Dec-19	10:56	11:56	Sunny	3.0	88	84
16-Dec-19	8:25	9:25	Cloudy	3.7	121	38
16-Dec-19	9:25	10:25	Cloudy	4.2	113	45
16-Dec-19	10:25	11:25	Cloudy	3.6	120	46
21-Dec-19	8:30	9:30	Cloudy	1.8	137	38
21-Dec-19	9:30	10:30	Cloudy	3.6	115	42
21-Dec-19	10:30	11:30	Cloudy	2.8	130	40
27-Dec-19	13:14	14:14	Sunny	2.8	53	29
27-Dec-19	14:14	15:14	Sunny	4.4	98	32
27-Dec-19	15:14	16:14	Sunny	3.3	104	35

Data for 1-hour TSP Monitoring at Station AMS2

Date	Start Time	Finish Time	Weather	Wind Speed (m/s)	Wind Direction (deg)	1-hour TSP ($\mu\text{g}/\text{m}^3$)
03-Oct-19	8:08	1:00	Sunny	2.4	267	54
03-Oct-19	9:08	1:00	Sunny	2.7	256	52
03-Oct-19	10:08	1:00	Sunny	2.1	237	60
09-Oct-19	8:08	1:00	Fine	2.5	59	45
09-Oct-19	9:08	1:00	Fine	5.2	89	39
09-Oct-19	10:08	1:00	Fine	6.1	101	47
15-Oct-19	9:09	1:00	Cloudy	2.9	Variable	35
15-Oct-19	10:09	1:00	Cloudy	5.9	104	35
15-Oct-19	11:09	1:00	Cloudy	6.3	95	31
21-Oct-19	8:08	1:00	Sunny	1.2	Variable	64
21-Oct-19	9:08	1:00	Sunny	2.1	24	62
21-Oct-19	10:08	1:00	Sunny	2.9	114	69
25-Oct-19	8:10	1:00	Sunny	3.3	101	37
25-Oct-19	9:10	1:00	Sunny	5.4	89	40
25-Oct-19	10:10	1:00	Sunny	6.9	107	41
31-Oct-19	8:09	1:00	Cloudy	2.9	2	38
31-Oct-19	9:09	1:00	Cloudy	2.4	347	35
31-Oct-19	10:09	1:00	Cloudy	2.1	84	33
06-Nov-19	8:12	1:00	Sunny	2.2	29	68
06-Nov-19	9:12	1:00	Sunny	3.4	89	77
06-Nov-19	10:12	1:00	Sunny	3.4	99	86
12-Nov-19	8:12	1:00	Sunny	4.8	96	67
12-Nov-19	9:12	1:00	Sunny	5.7	97	75
12-Nov-19	10:12	1:00	Sunny	5.0	87	84
18-Nov-19	8:20	1:00	Sunny	1.0	249	70
18-Nov-19	9:20	1:00	Sunny	2.5	215	78
18-Nov-19	10:20	1:00	Sunny	1.0	Variable	87
22-Nov-19	8:20	1:00	Sunny	0.0	Variable	60
22-Nov-19	9:20	1:00	Sunny	0.3	Variable	44
22-Nov-19	10:20	1:00	Sunny	0.7	200	52
28-Nov-19	9:10	1:00	Sunny	3.7	323	67
28-Nov-19	10:10	1:00	Sunny	3.2	325	75
28-Nov-19	11:10	1:00	Sunny	4.1	335	84
04-Dec-19	8:18	1:00	Sunny	1.2	243	67
04-Dec-19	9:18	1:00	Sunny	3.9	17	75
04-Dec-19	10:18	1:00	Sunny	1.6	356	82
10-Dec-19	8:12	1:00	Sunny	0.7	151	66
10-Dec-19	9:12	1:00	Sunny	4.4	108	73
10-Dec-19	10:12	1:00	Sunny	3.2	103	81
16-Dec-19	9:11	1:00	Cloudy	4.5	112	34
16-Dec-19	10:11	1:00	Cloudy	3.4	122	41
16-Dec-19	11:11	1:00	Cloudy	5.1	113	35
21-Dec-19	8:20	1:00	Cloudy	1.6	142	45
21-Dec-19	9:20	1:00	Cloudy	3.0	128	51
21-Dec-19	10:20	1:00	Cloudy	3.1	112	55
27-Dec-19	13:01	1:00	Sunny	2.5	29	32
27-Dec-19	14:01	1:00	Sunny	5.6	99	29
27-Dec-19	15:01	1:00	Sunny	4.2	105	26

Data for Noise Monitoring at Station NMS1

Date	Time	Weather	L _{eq} (5min)	L ₁₀	L ₉₀	Measured L _{eq} (30min)
03-Oct-19	08:56	Sunny	68.2	70.1	63.4	68.9
03-Oct-19	09:01	Sunny	69.7	71.7	64.4	
03-Oct-19	09:06	Sunny	67.7	69.4	63.0	
03-Oct-19	09:11	Sunny	69.9	71.4	64.7	
03-Oct-19	09:16	Sunny	68.4	70.6	63.9	
03-Oct-19	09:21	Sunny	68.8	70.7	63.7	
09-Oct-19	08:55	Fine	70.1	72.7	64.1	70.0
09-Oct-19	09:00	Fine	69.7	71.1	63.9	
09-Oct-19	09:05	Fine	70.4	72.5	64.5	
09-Oct-19	09:10	Fine	68.2	70.6	63.2	
09-Oct-19	09:15	Fine	70.1	72.7	64.7	
09-Oct-19	09:20	Fine	70.9	72.7	64.9	
15-Oct-19	10:00	Fine	69.9	72.1	66.2	69.6
15-Oct-19	10:05	Fine	70.3	72.8	66.9	
15-Oct-19	10:10	Fine	71.7	74.2	65.8	
15-Oct-19	10:15	Fine	67.1	69.4	63.1	
15-Oct-19	10:20	Fine	68.2	70.6	64.1	
15-Oct-19	10:25	Fine	69.1	71.2	65.0	
21-Oct-19	08:57	Sunny	70.1	72.1	65.1	69.8
21-Oct-19	09:02	Sunny	71.1	73.6	66.1	
21-Oct-19	09:07	Sunny	69.1	72.1	65.7	
21-Oct-19	09:12	Sunny	68.7	70.9	65.4	
21-Oct-19	09:17	Sunny	69.4	71.7	65.9	
21-Oct-19	09:22	Sunny	69.7	71.9	65.7	
31-Oct-19	08:56	Cloudy	69.1	71.1	64.1	69.5
31-Oct-19	09:01	Cloudy	70.1	72.4	65.2	
31-Oct-19	09:06	Cloudy	68.2	70.6	64.0	
31-Oct-19	09:11	Cloudy	69.2	71.7	65.7	
31-Oct-19	09:16	Cloudy	70.1	72.9	65.9	
31-Oct-19	09:21	Cloudy	69.9	71.6	65.2	
06-Nov-19	09:02	Sunny	69.2	72.7	65.7	70.1
06-Nov-19	09:07	Sunny	70.1	72.9	67.1	
06-Nov-19	09:12	Sunny	71.1	72.4	67.9	
06-Nov-19	09:17	Sunny	69.2	72.0	67.2	
06-Nov-19	09:22	Sunny	70.6	72.7	68.0	
06-Nov-19	09:27	Sunny	70.1	72.5	67.9	
12-Nov-19	09:00	Sunny	69.2	71.4	66.9	69.3
12-Nov-19	09:05	Sunny	70.1	72.6	67.1	
12-Nov-19	09:10	Sunny	68.7	70.7	66.0	
12-Nov-19	09:15	Sunny	67.9	70.2	65.7	
12-Nov-19	09:20	Sunny	69.2	71.1	66.9	
12-Nov-19	09:25	Sunny	70.1	72.4	67.2	
18-Nov-19	09:10	Sunny	69.1	71.9	65.1	69.2
18-Nov-19	09:15	Sunny	68.4	70.6	64.6	
18-Nov-19	09:20	Sunny	70.1	72.4	65.8	
18-Nov-19	09:25	Sunny	68.2	70.6	64.9	
18-Nov-19	09:30	Sunny	69.4	71.8	65.0	
18-Nov-19	09:35	Sunny	69.7	71.9	65.2	
28-Nov-19	10:00	Sunny	66.9	68.1	61.7	67.1
28-Nov-19	10:05	Sunny	67.1	69.3	62.9	
28-Nov-19	10:10	Sunny	67.9	69.4	63.7	
28-Nov-19	10:15	Sunny	66.2	68.3	61.9	
28-Nov-19	10:20	Sunny	66.9	68.2	61.7	
28-Nov-19	10:25	Sunny	67.4	69.3	61.5	

04-Dec-19	09:07	Sunny	68.2	70.6	64.1	
04-Dec-19	09:12	Sunny	69.2	71.4	65.8	
04-Dec-19	09:17	Sunny	69.7	71.9	65.9	69.5
04-Dec-19	09:22	Sunny	70.1	72.4	66.0	
04-Dec-19	09:27	Sunny	69.4	71.7	65.7	
04-Dec-19	09:32	Sunny	70.1	72.6	66.2	
10-Dec-19	08:58	Sunny	68.2	70.0	65.8	
10-Dec-19	09:03	Sunny	69.0	71.4	66.2	
10-Dec-19	09:08	Sunny	68.4	70.5	65.7	68.7
10-Dec-19	09:13	Sunny	69.1	71.6	66.6	
10-Dec-19	09:18	Sunny	69.0	71.7	65.9	
10-Dec-19	09:23	Sunny	68.7	70.6	65.7	
16-Dec-19	10:07	Cloudy	68.5	70.3	65.3	
16-Dec-19	10:12	Cloudy	69.5	71.5	65.7	
16-Dec-19	10:17	Cloudy	68.1	70.6	64.4	68.2
16-Dec-19	10:22	Cloudy	67.4	70.2	63.6	
16-Dec-19	10:27	Cloudy	67.0	69.6	63.3	
16-Dec-19	10:32	Cloudy	68.0	70.5	63.9	
27-Dec-19	14:00	Sunny	67.6	68.0	64.7	
27-Dec-19	14:05	Sunny	67.6	68.2	65.2	
27-Dec-19	14:10	Sunny	67.4	69.1	65.3	67.8
27-Dec-19	14:15	Sunny	67.9	70.2	65.5	
27-Dec-19	14:20	Sunny	68.5	70.3	64.7	
27-Dec-19	14:25	Sunny	67.4	69.3	64.5	

Data for Noise Monitoring at Station NMS2

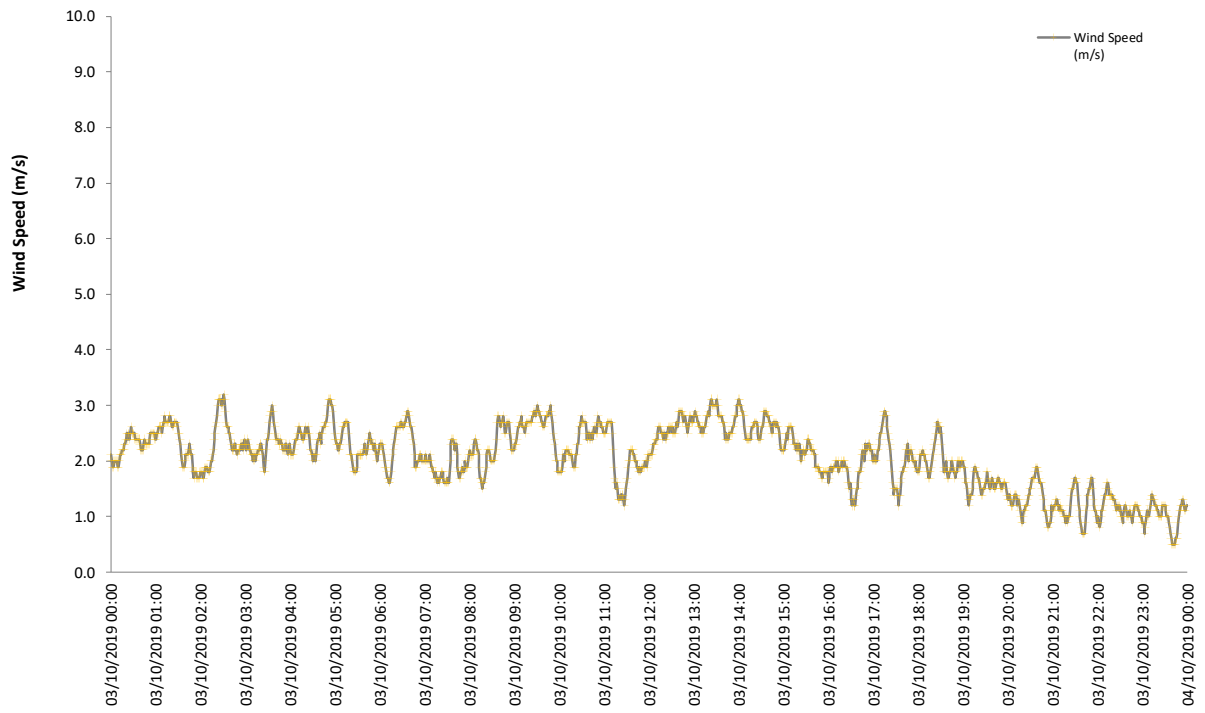
Date	Time	Weather	L _{eq} (5min)	L ₁₀	L ₉₀	Measured L _{eq} (30min)
03-Oct-19	08:11	Sunny	67.1	69.4	63.7	67.3
03-Oct-19	08:16	Sunny	68.2	70.6	64.1	
03-Oct-19	08:21	Sunny	66.9	68.2	62.9	
03-Oct-19	08:26	Sunny	67.1	69.7	63.8	
03-Oct-19	08:31	Sunny	67.9	69.9	63.9	
03-Oct-19	08:36	Sunny	66.5	68.4	63.7	
09-Oct-19	08:12	Fine	67.1	69.4	63.4	68.5
09-Oct-19	08:17	Fine	68.2	70.6	64.2	
09-Oct-19	08:22	Fine	68.9	70.7	64.5	
09-Oct-19	08:27	Fine	67.1	69.4	63.5	
09-Oct-19	08:32	Fine	69.2	71.5	64.7	
09-Oct-19	08:37	Fine	69.7	71.6	64.9	
15-Oct-19	09:12	Cloudy	68.4	70.8	64.4	68.8
15-Oct-19	09:17	Cloudy	69.1	71.4	65.4	
15-Oct-19	09:22	Cloudy	68.8	71.6	64.2	
15-Oct-19	09:27	Cloudy	68.8	70.8	64.9	
15-Oct-19	09:32	Cloudy	68.8	71.2	65.1	
15-Oct-19	09:37	Cloudy	69.1	71.4	65.0	
21-Oct-19	08:11	Sunny	67.1	69.4	63.1	68.4
21-Oct-19	08:16	Sunny	68.2	70.1	64.1	
21-Oct-19	08:21	Sunny	67.9	69.5	63.7	
21-Oct-19	08:26	Sunny	68.8	70.6	64.5	
21-Oct-19	08:31	Sunny	69.2	71.4	64.9	
21-Oct-19	08:36	Sunny	69.1	71.5	65.0	
31-Oct-19	08:12	Cloudy	67.1	70.4	63.1	67.7
31-Oct-19	08:17	Cloudy	68.4	71.1	64.4	
31-Oct-19	08:22	Cloudy	66.9	69.2	63.0	
31-Oct-19	08:27	Cloudy	68.1	71.4	64.7	
31-Oct-19	08:32	Cloudy	68.4	71.6	64.8	
31-Oct-19	08:37	Cloudy	67.1	70.7	64.0	
06-Nov-19	08:16	Sunny	67.1	69.7	63.7	68.6
06-Nov-19	08:21	Sunny	69	71.1	64.9	
06-Nov-19	08:26	Sunny	68.2	70.2	64.2	
06-Nov-19	08:31	Sunny	69.2	71.4	65.1	
06-Nov-19	08:36	Sunny	68.2	70.9	65.0	
06-Nov-19	08:41	Sunny	69.7	71.6	65.9	
12-Nov-19	08:15	Sunny	66.9	68.4	64.1	66.8
12-Nov-19	08:20	Sunny	65.2	67.9	63.3	
12-Nov-19	08:25	Sunny	67.1	69.0	65.0	
12-Nov-19	08:30	Sunny	67.9	69.4	65.5	
12-Nov-19	08:35	Sunny	65.9	68.0	63.7	
12-Nov-19	08:40	Sunny	67.2	69.7	65.4	
18-Nov-19	08:25	Sunny	67.5	69.5	64.1	67.7
18-Nov-19	08:30	Sunny	68.1	70.0	63.9	
18-Nov-19	08:35	Sunny	66.9	68.4	63.7	
18-Nov-19	08:40	Sunny	67.1	69.3	64.1	
18-Nov-19	08:45	Sunny	68.4	70.6	65.0	
18-Nov-19	08:50	Sunny	67.9	69.7	64.7	
28-Nov-19	09:14	Sunny	69.1	71.1	64.1	68.1
28-Nov-19	09:19	Sunny	68.2	70.7	63.9	
28-Nov-19	09:24	Sunny	67.1	69.4	63.4	
28-Nov-19	09:29	Sunny	67.9	69.8	63.7	
28-Nov-19	09:34	Sunny	68.1	70.6	64.9	
28-Nov-19	09:39	Sunny	67.9	69.7	64.7	

04-Dec-19	08:22	Sunny	67.1	69.4	63.1	
04-Dec-19	08:27	Sunny	68.2	70.6	64.4	
04-Dec-19	08:32	Sunny	67.9	69.9	63.9	67.6
04-Dec-19	08:37	Sunny	66.9	68.2	63.2	
04-Dec-19	08:42	Sunny	67.9	69.7	63.8	
04-Dec-19	08:47	Sunny	67.7	69.8	63.7	
10-Dec-19	08:16	Sunny	67.1	69.4	65.3	
10-Dec-19	08:21	Sunny	68.4	70.6	66.2	
10-Dec-19	08:26	Sunny	66.9	68.7	64.4	67.6
10-Dec-19	08:31	Sunny	67.2	69.4	65.3	
10-Dec-19	08:36	Sunny	67.6	69.9	65.5	
10-Dec-19	08:41	Sunny	68.2	70.1	66.8	
16-Dec-19	09:16	Cloudy	70.6	72.7	67.4	
16-Dec-19	09:21	Cloudy	71.7	74.4	67.6	
16-Dec-19	09:26	Cloudy	70.2	72.5	66.4	70.4
16-Dec-19	09:31	Cloudy	69.5	72.0	65.2	
16-Dec-19	09:36	Cloudy	70.2	73.4	65.3	
16-Dec-19	09:41	Cloudy	70.1	71.5	65.2	
27-Dec-19	13:10	Sunny	67.3	69.9	63.7	
27-Dec-19	13:15	Sunny	66.2	69.8	64.9	
27-Dec-19	13:20	Sunny	67.8	69.6	65.2	66.9
27-Dec-19	13:25	Sunny	66.4	68.7	64.8	
27-Dec-19	13:30	Sunny	67.2	70.1	65.5	
27-Dec-19	13:35	Sunny	66.3	70.0	64.7	

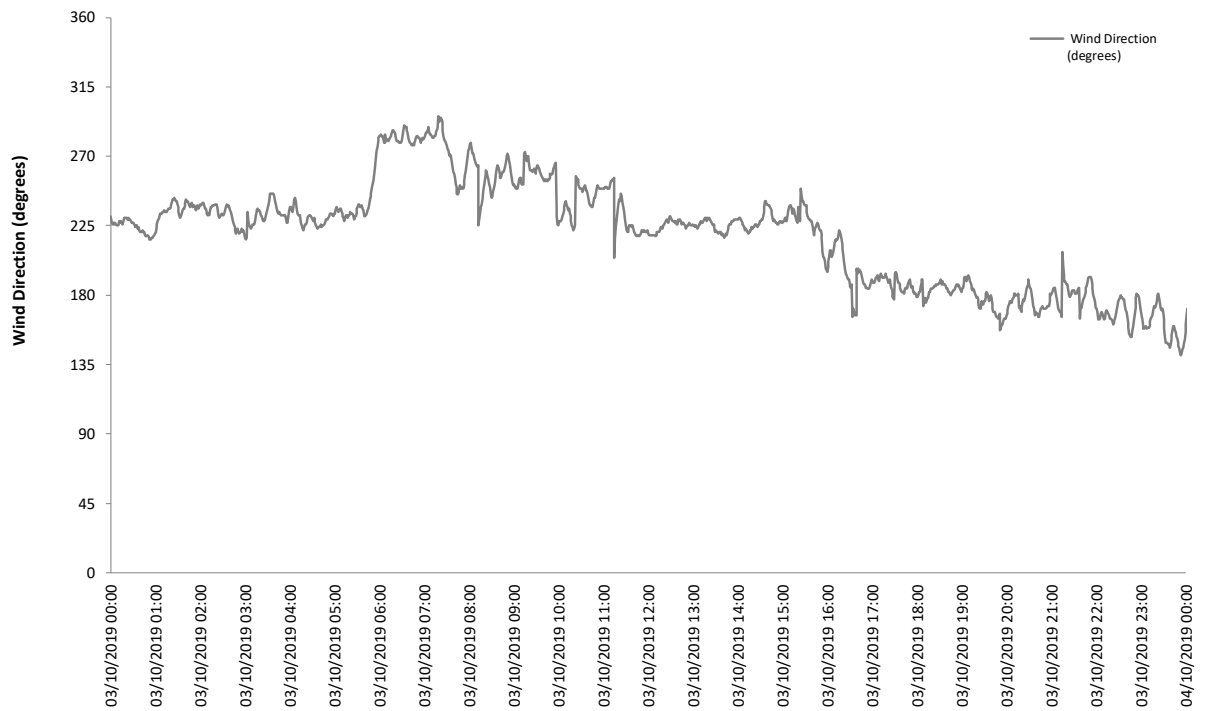
Appendix F. Wind Data

3 October 2019

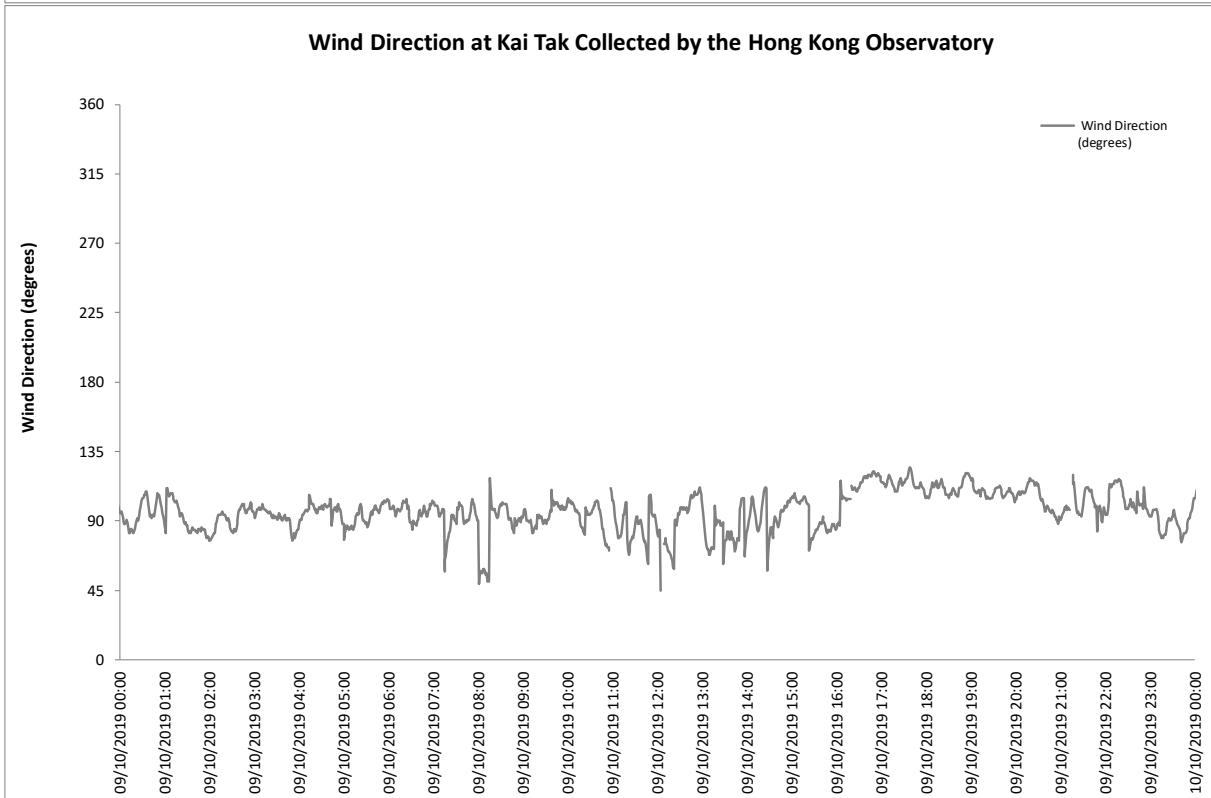
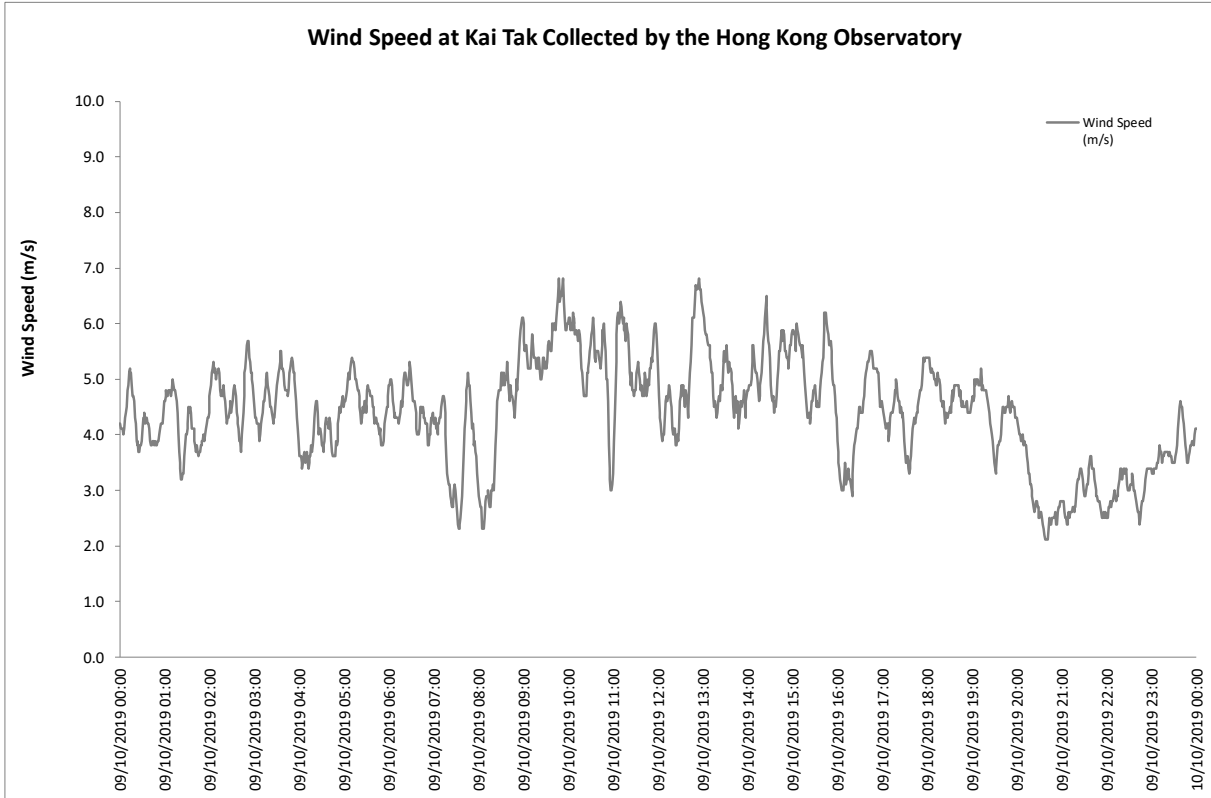
Wind Speed at Kai Tak Collected by the Hong Kong Observatory



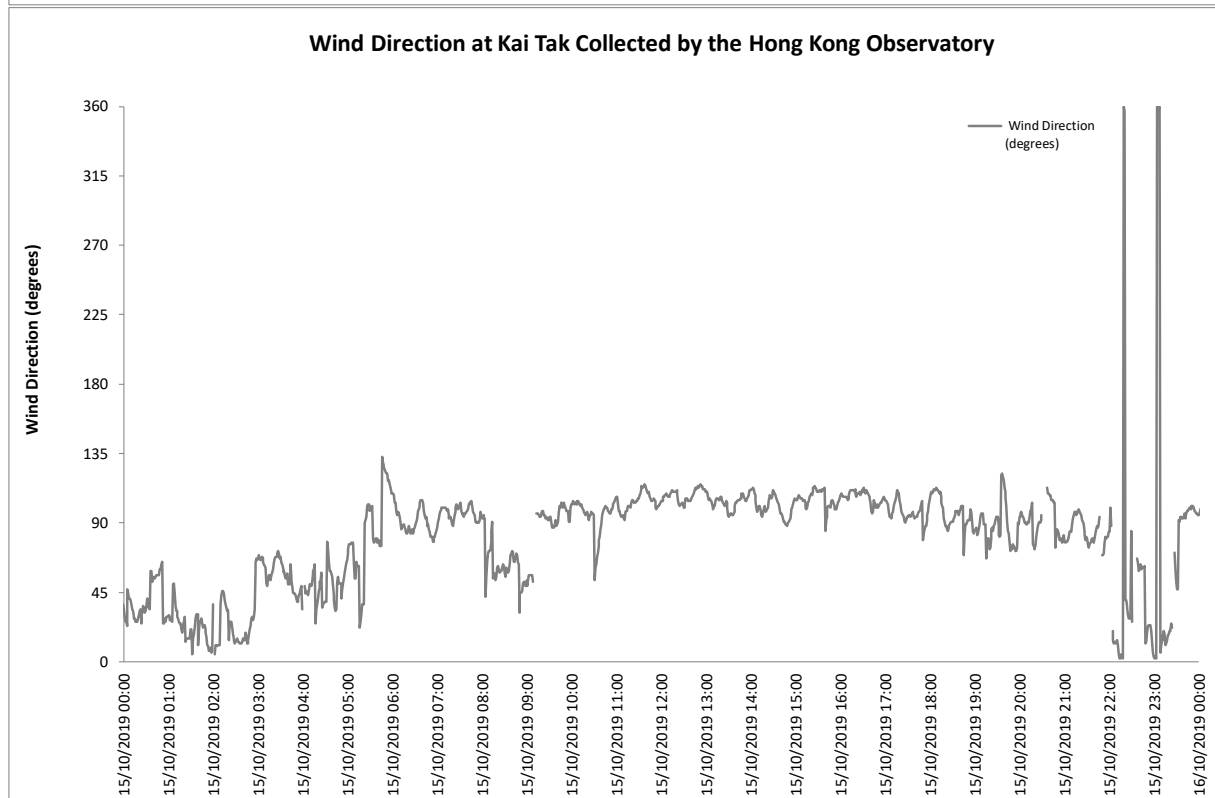
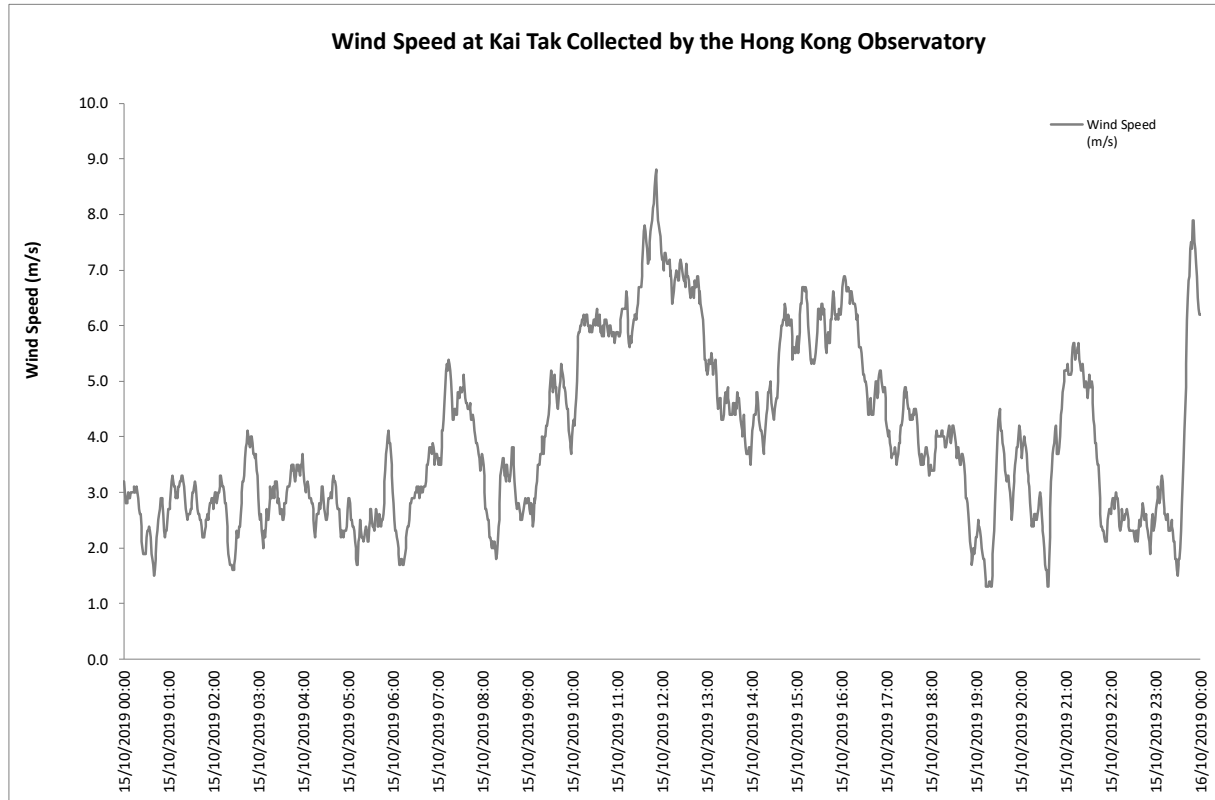
Wind Direction at Kai Tak Collected by the Hong Kong Observatory



9 October 2019

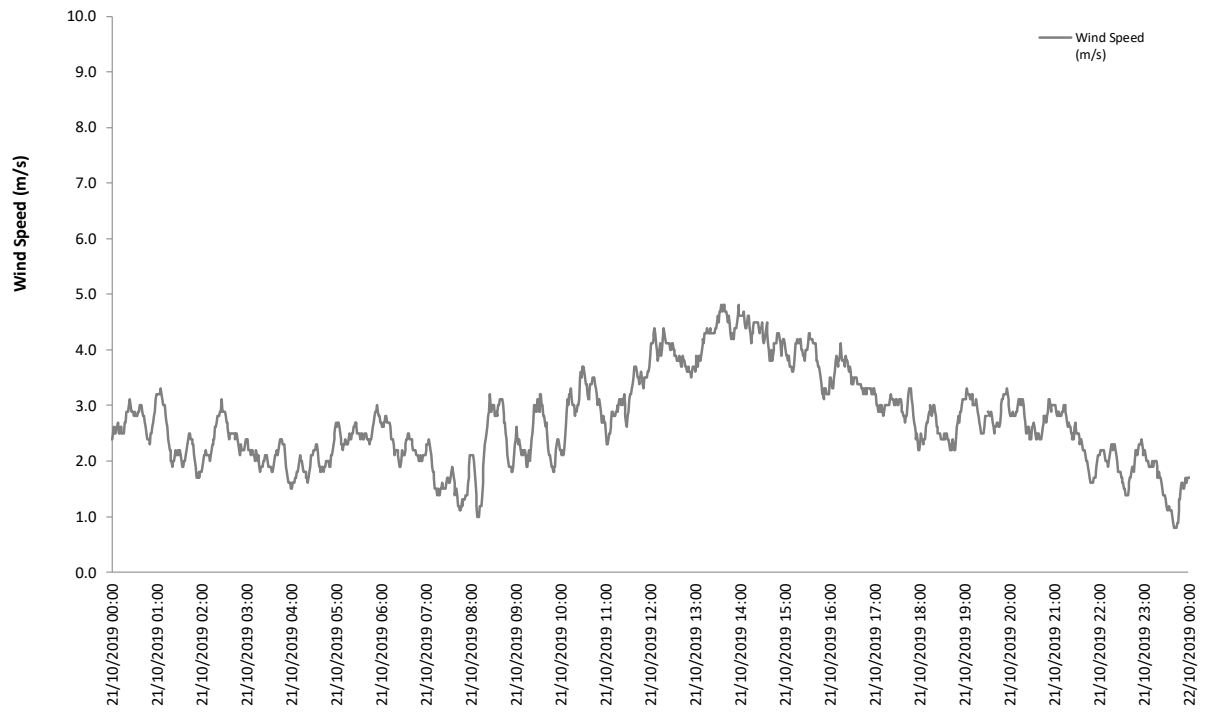


15 October 2019

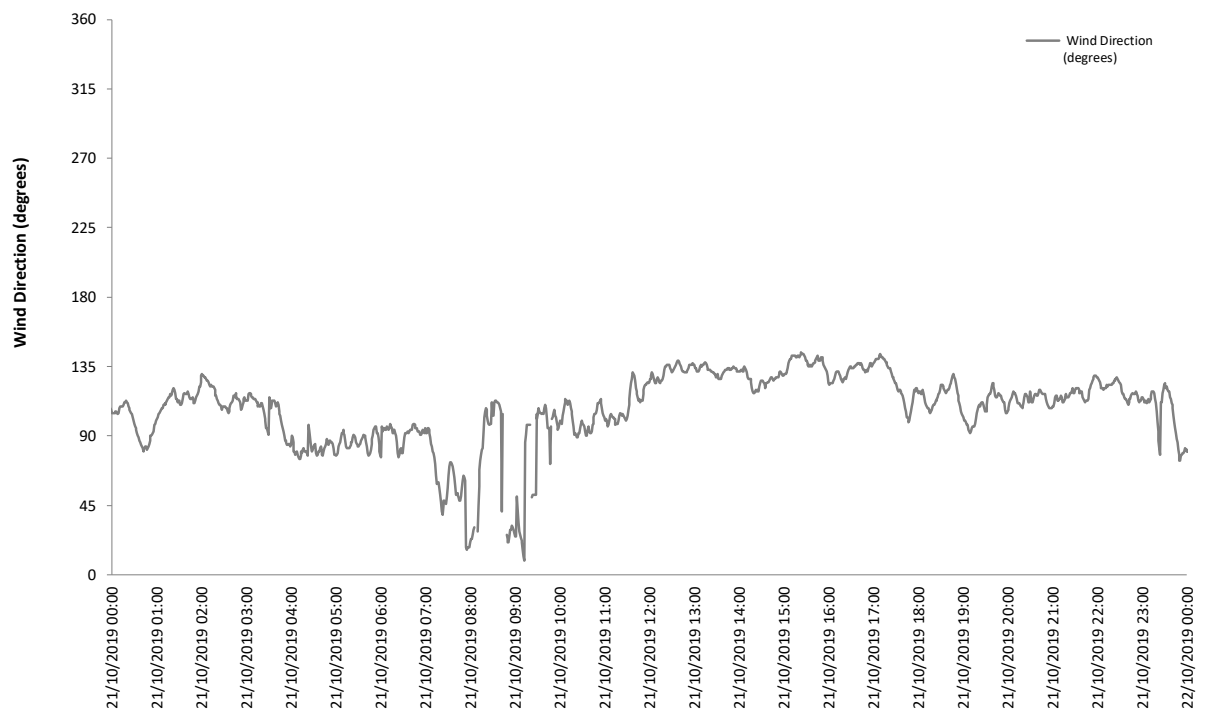


21 October 2019

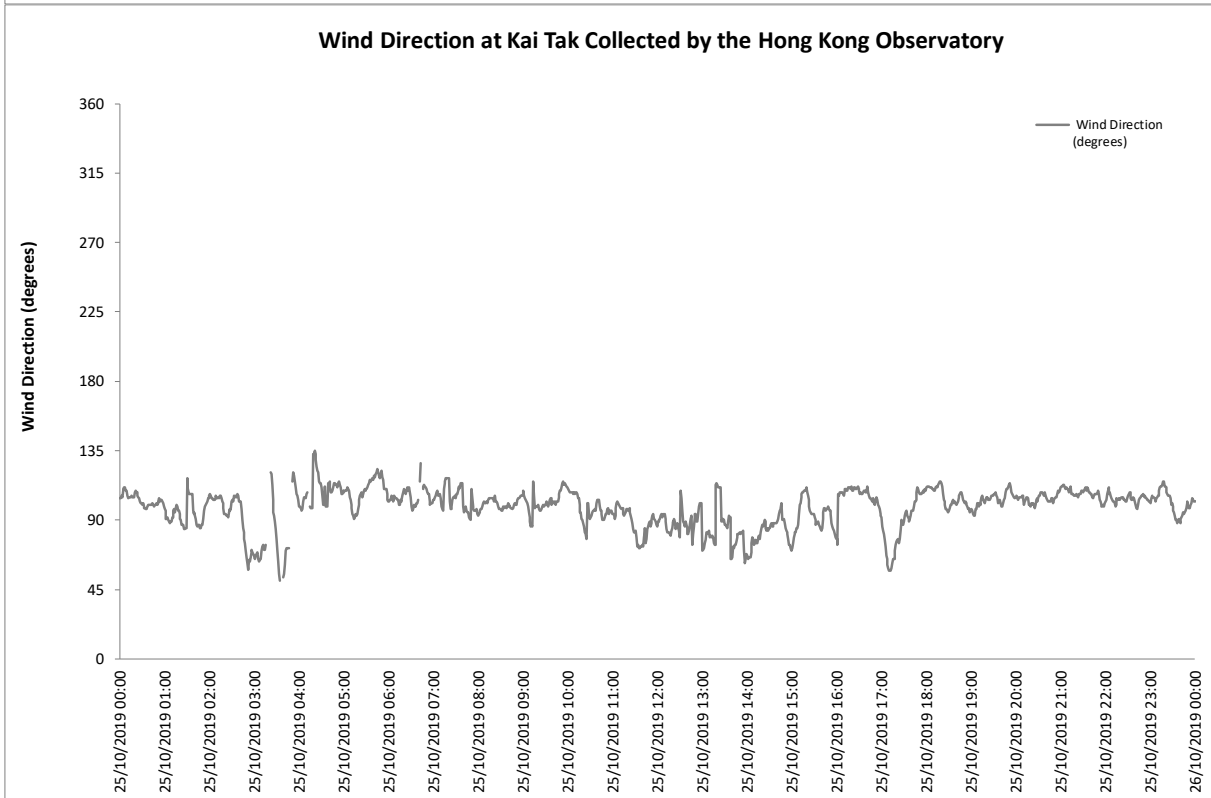
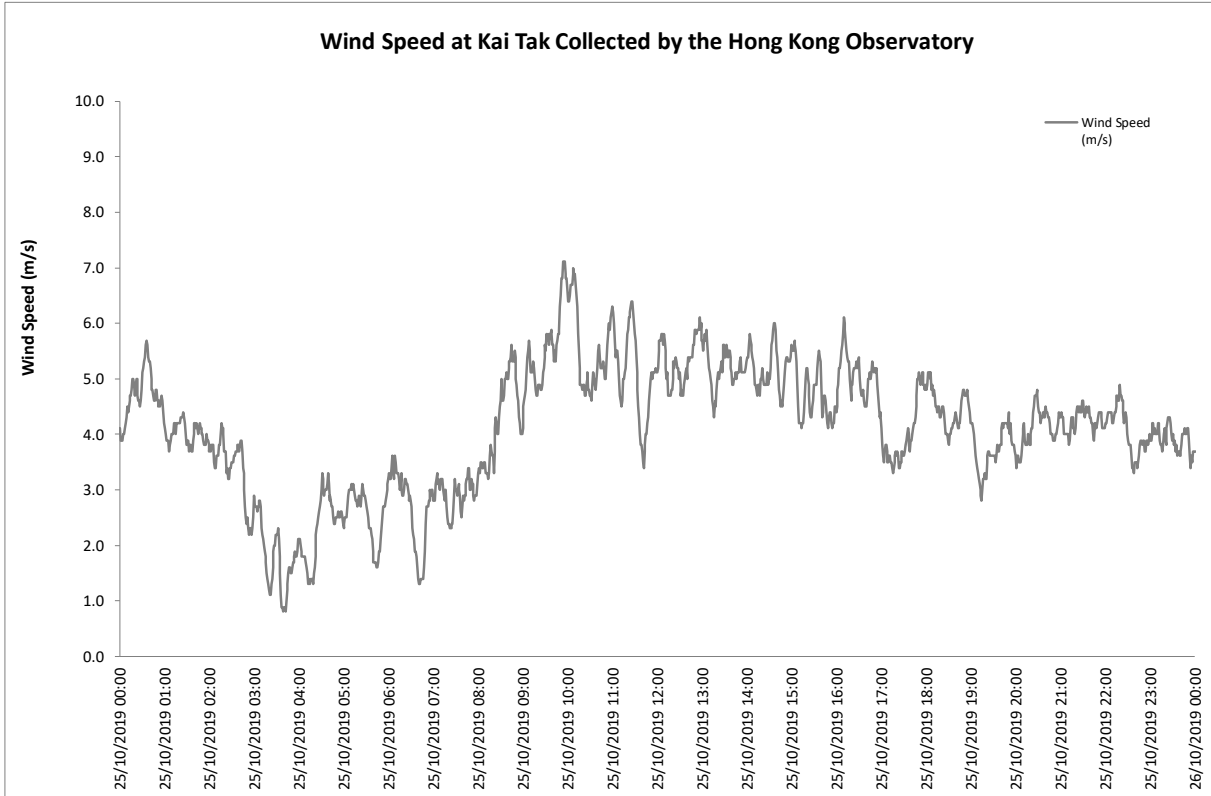
Wind Speed at Kai Tak Collected by the Hong Kong Observatory



Wind Direction at Kai Tak Collected by the Hong Kong Observatory

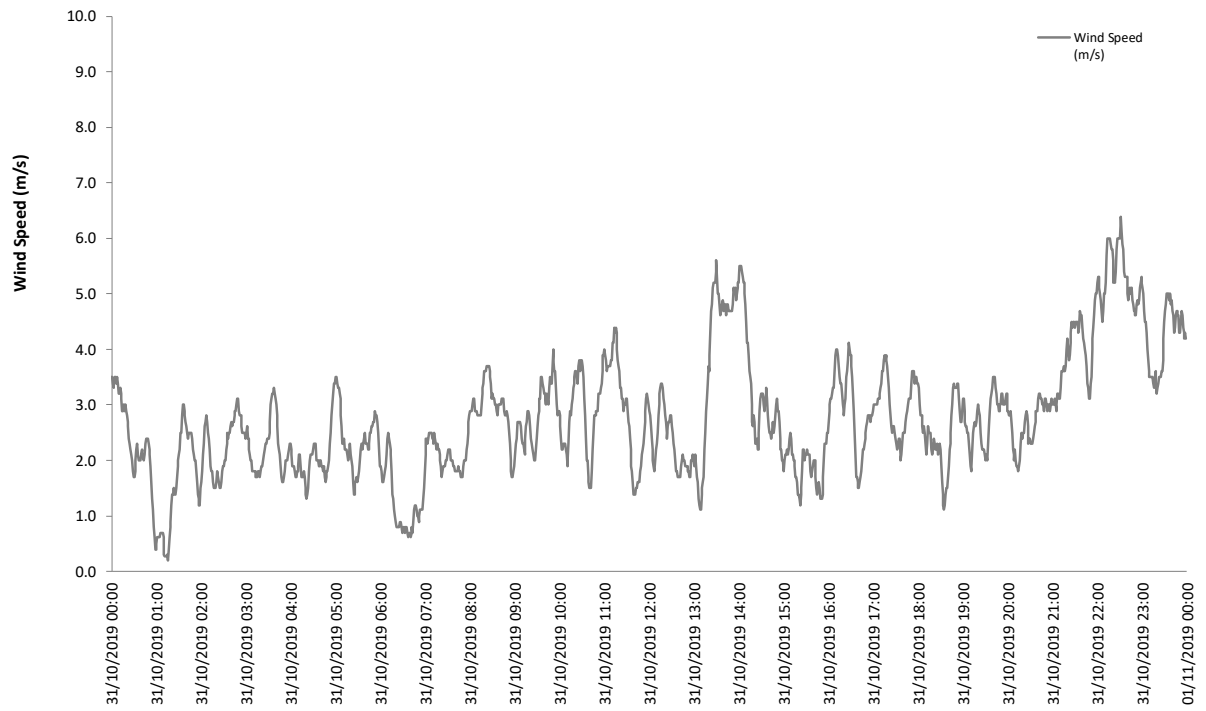


25 October 2019

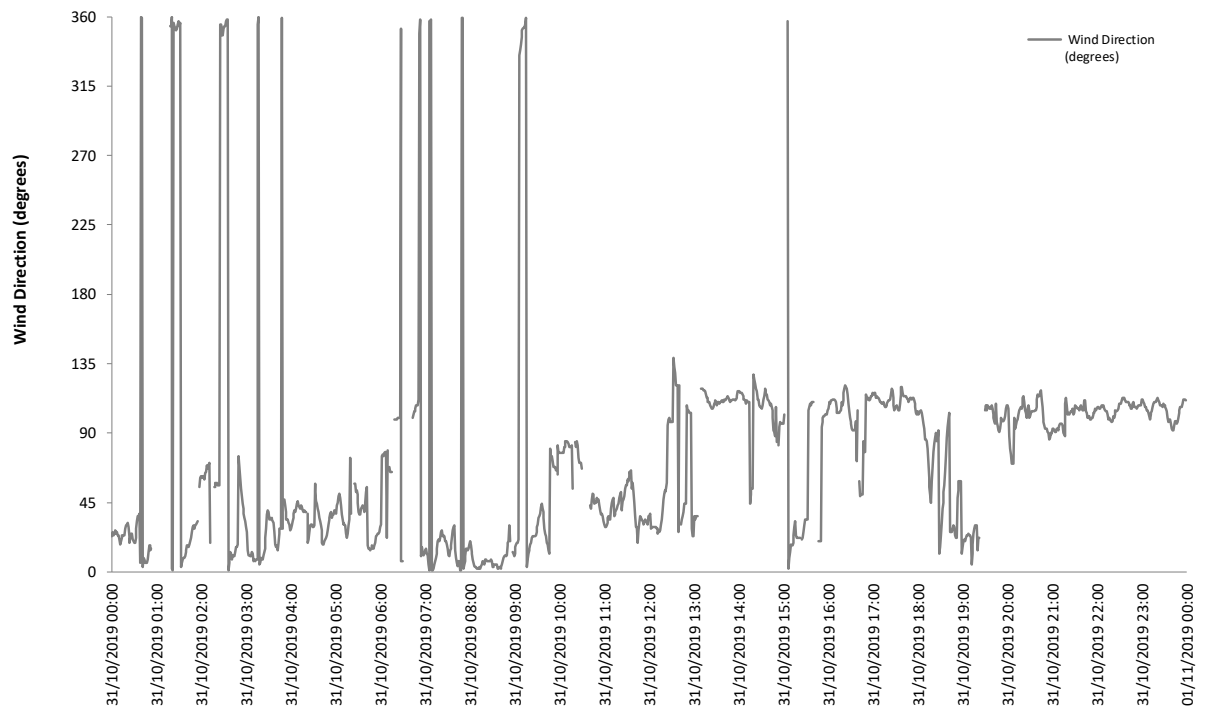


31 October 2019

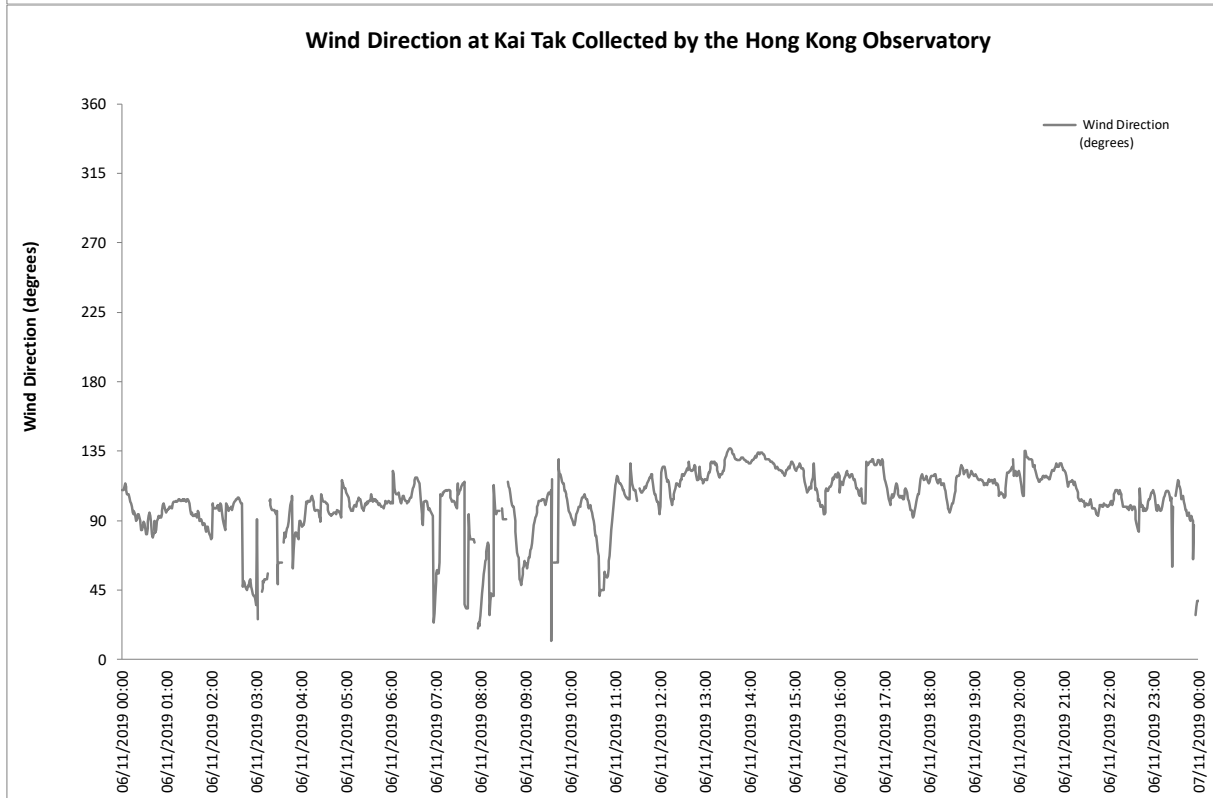
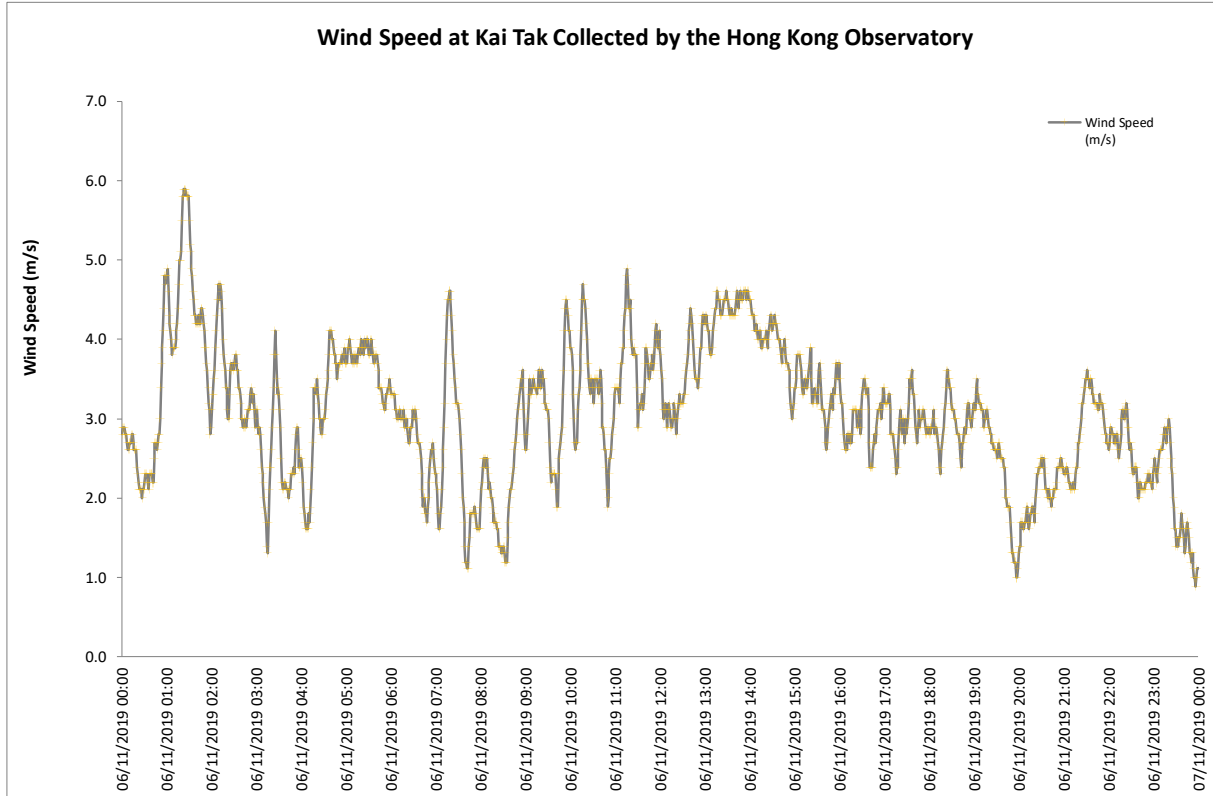
Wind Speed at Kai Tak Collected by the Hong Kong Observatory



Wind Direction at Kai Tak Collected by the Hong Kong Observatory

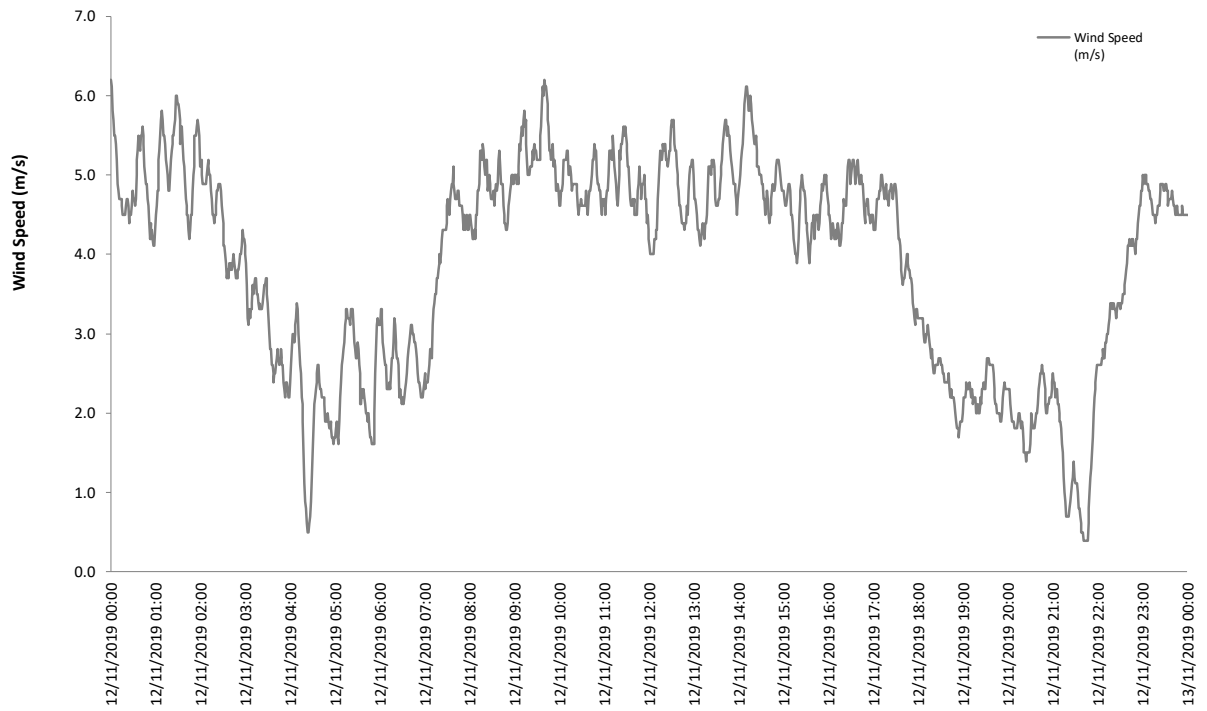


6 November 2019

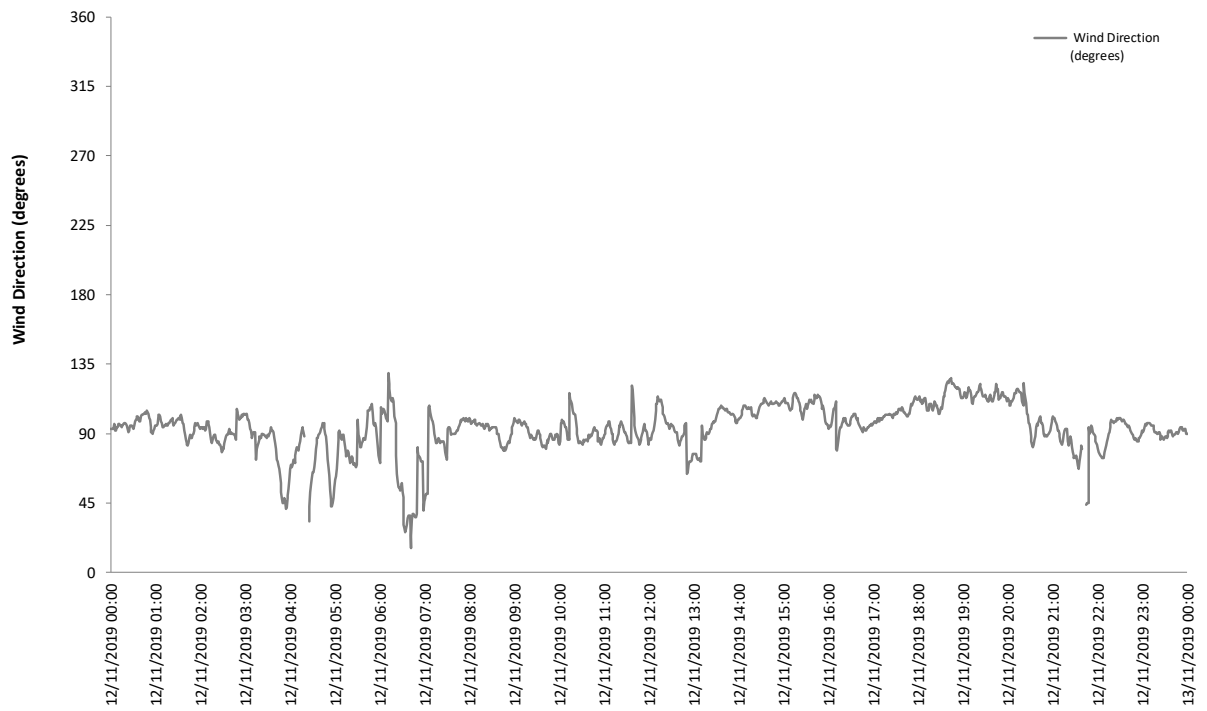


12 November 2019

Wind Speed at Kai Tak Collected by the Hong Kong Observatory

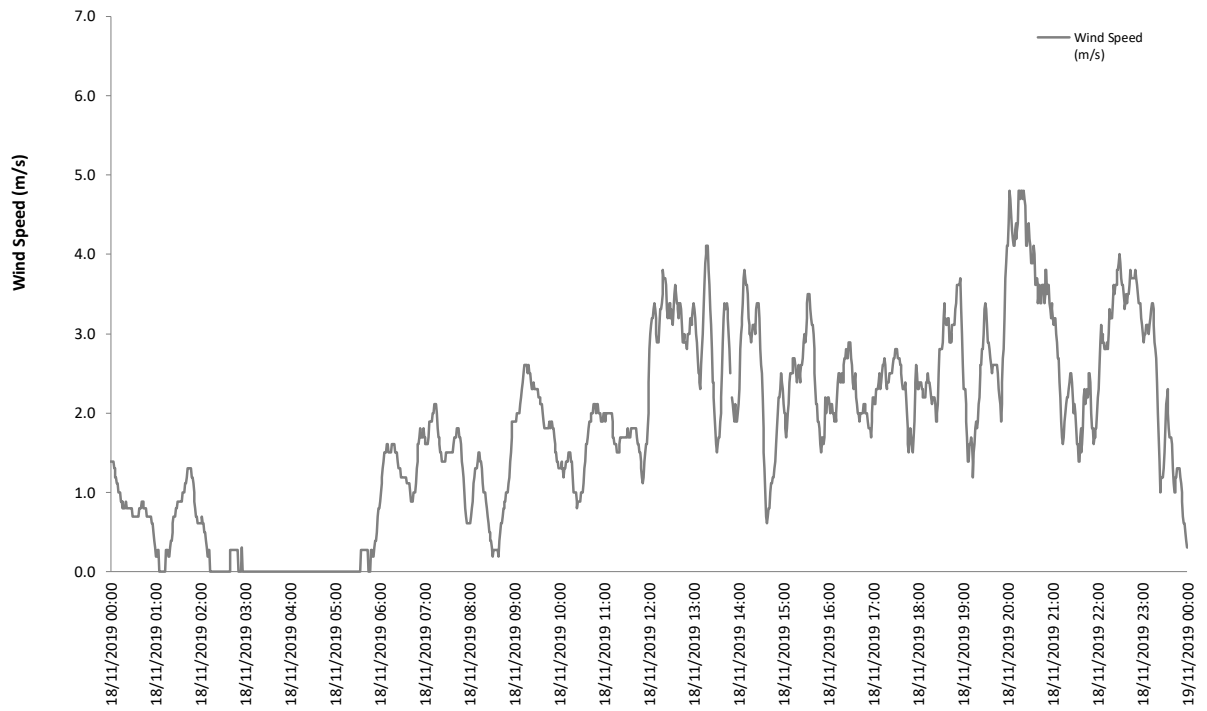


Wind Direction at Kai Tak Collected by the Hong Kong Observatory

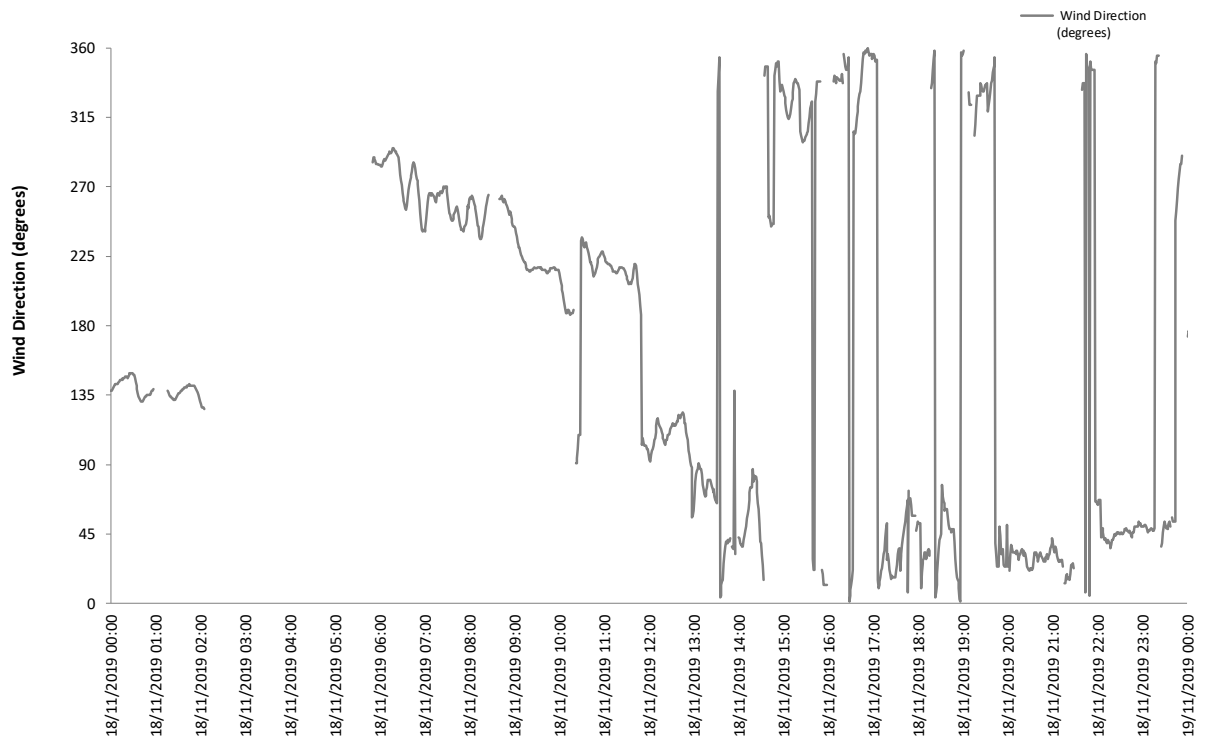


18 November 2019

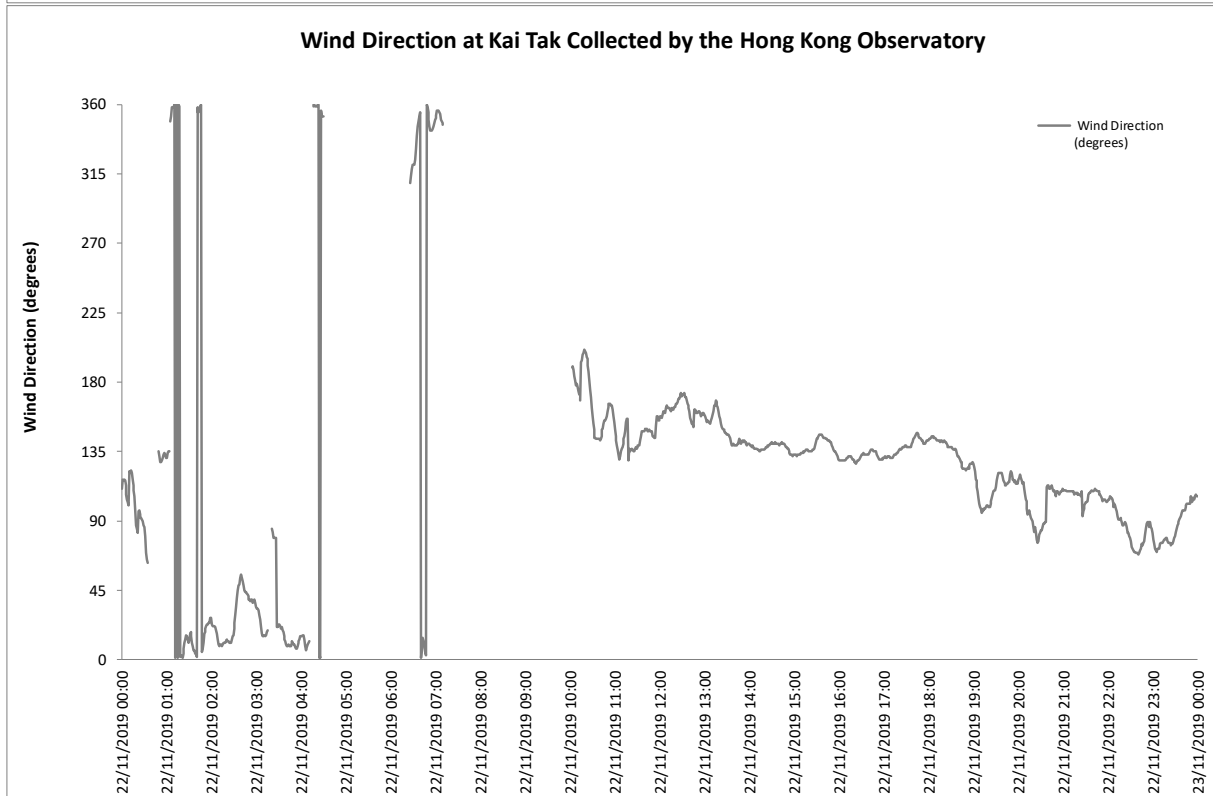
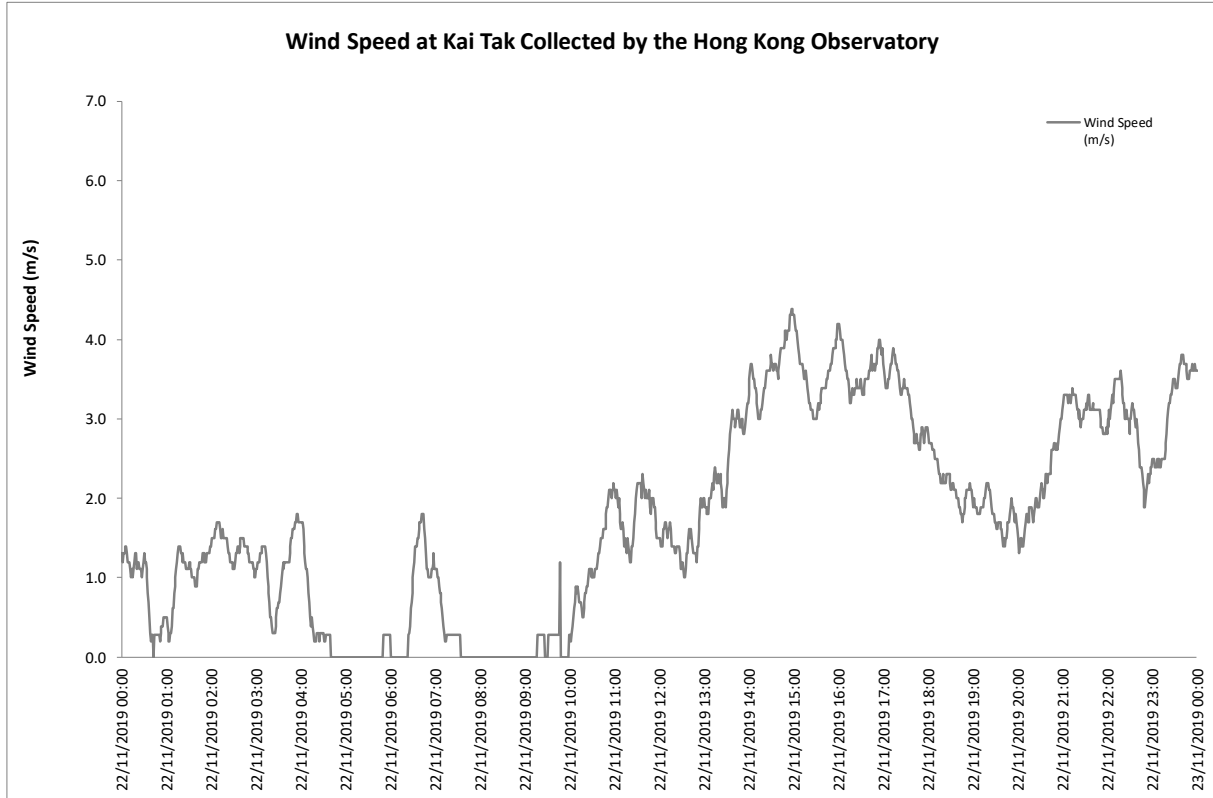
Wind Speed at Kai Tak Collected by the Hong Kong Observatory



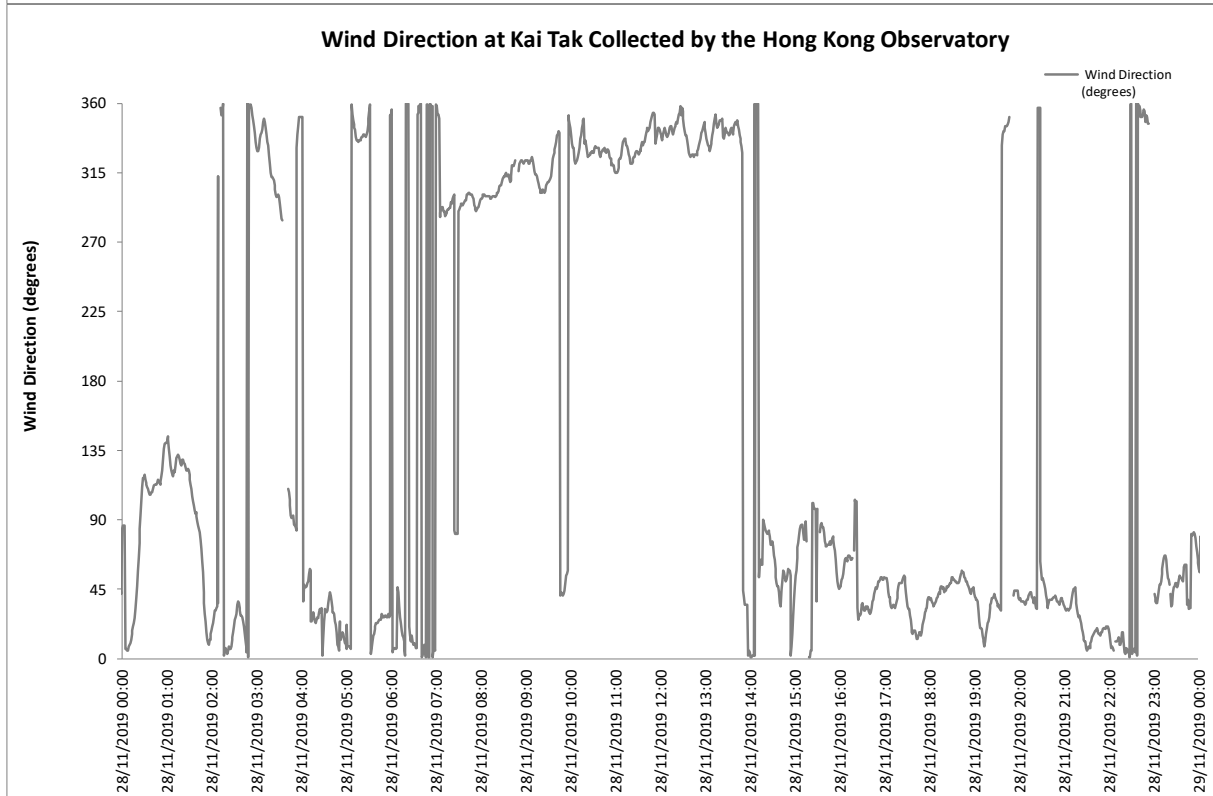
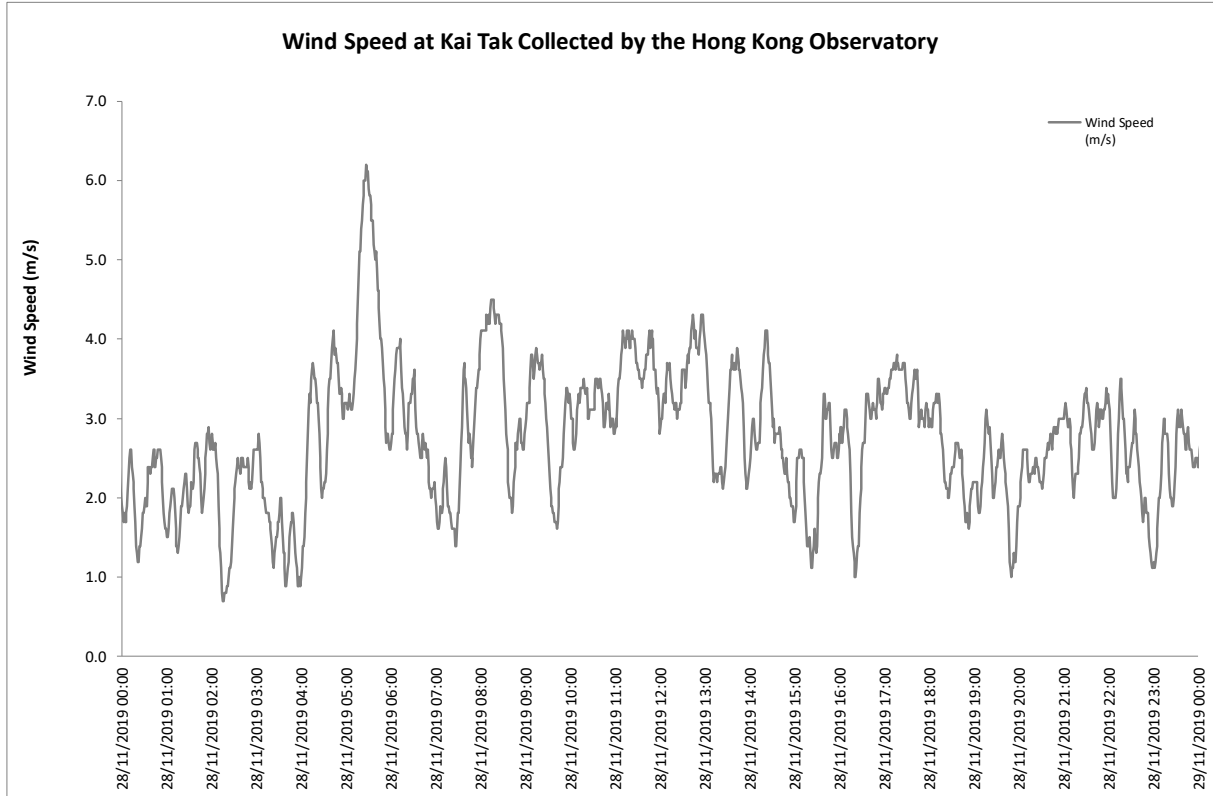
Wind Direction at Kai Tak Collected by the Hong Kong Observatory



22 November 2019

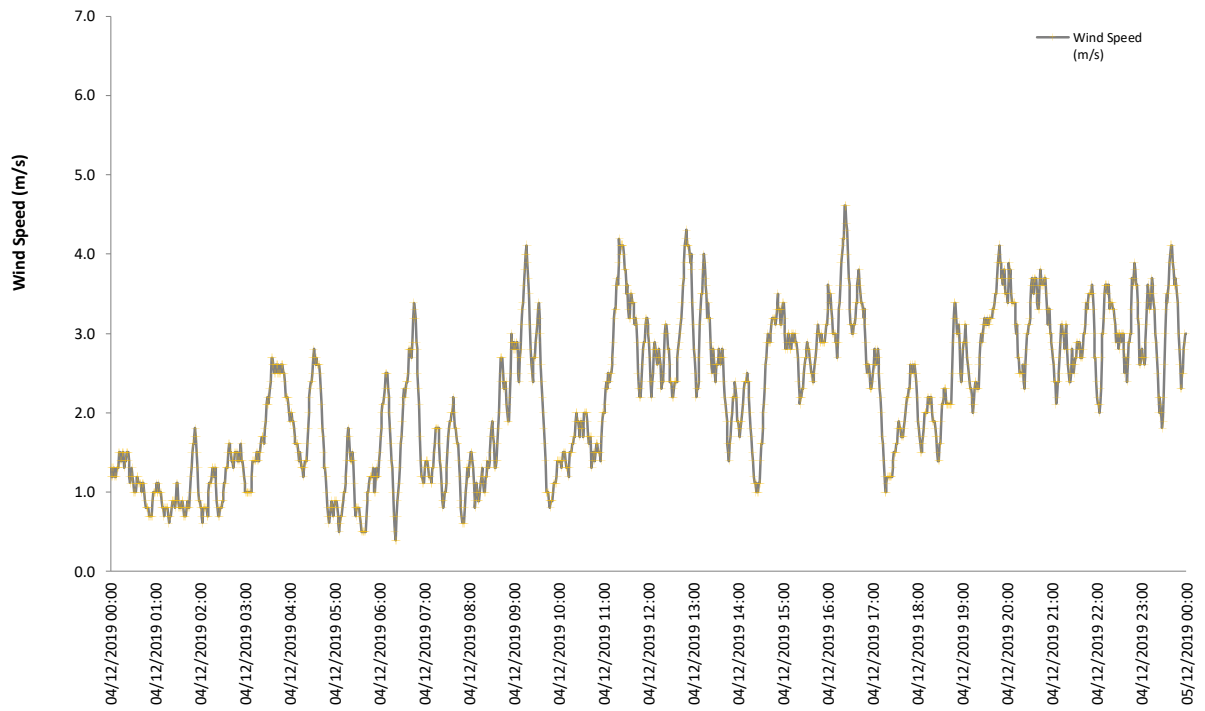


28 November 2019

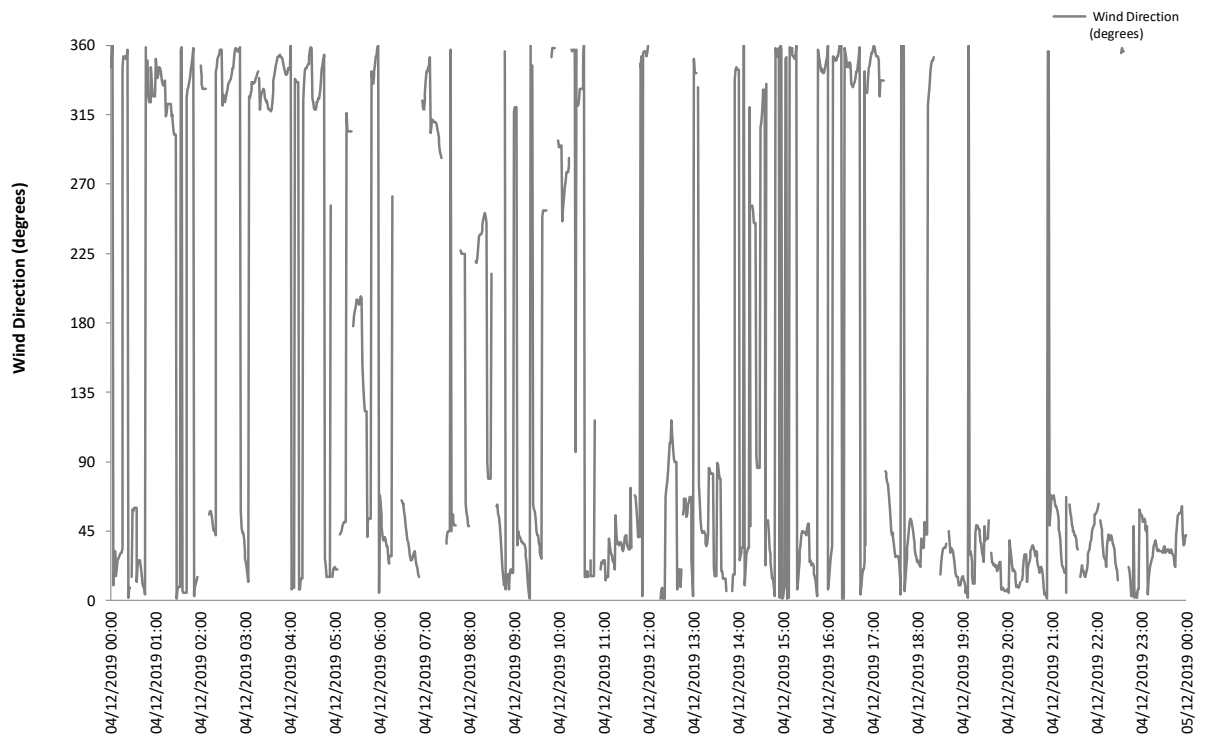


4 December 2019

Wind Speed at Kai Tak Collected by the Hong Kong Observatory

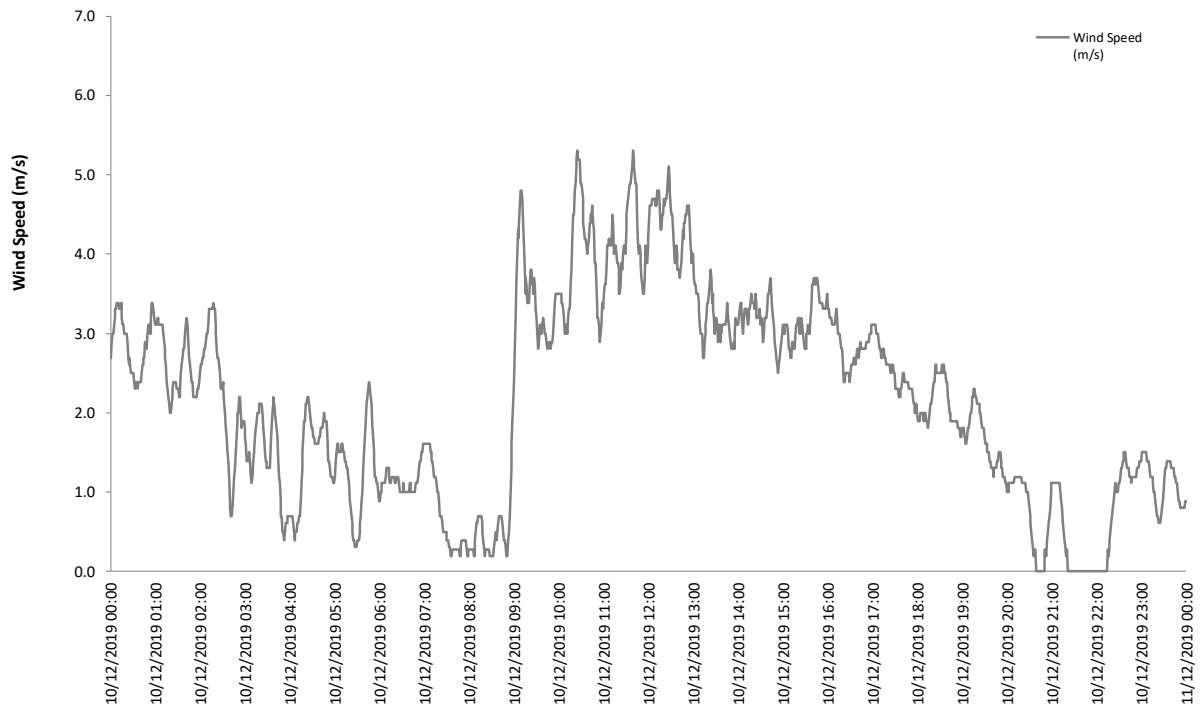


Wind Direction at Kai Tak Collected by the Hong Kong Observatory

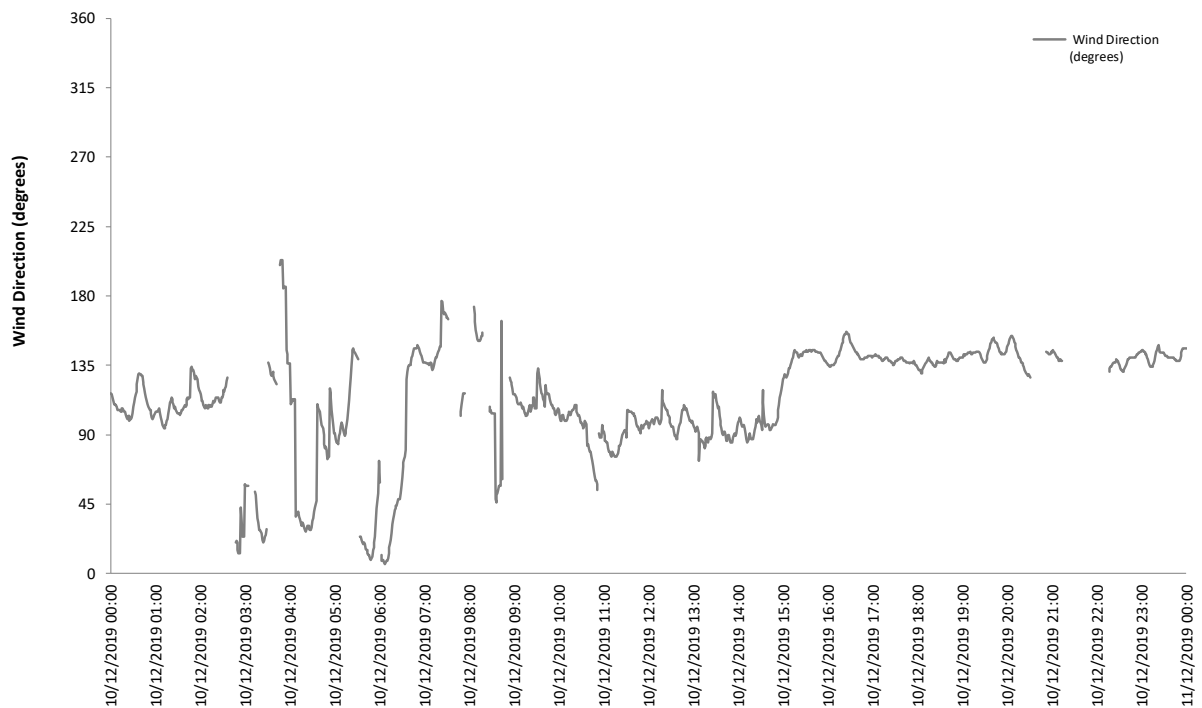


10 December 2019

Wind Speed at Kai Tak Collected by the Hong Kong Observatory

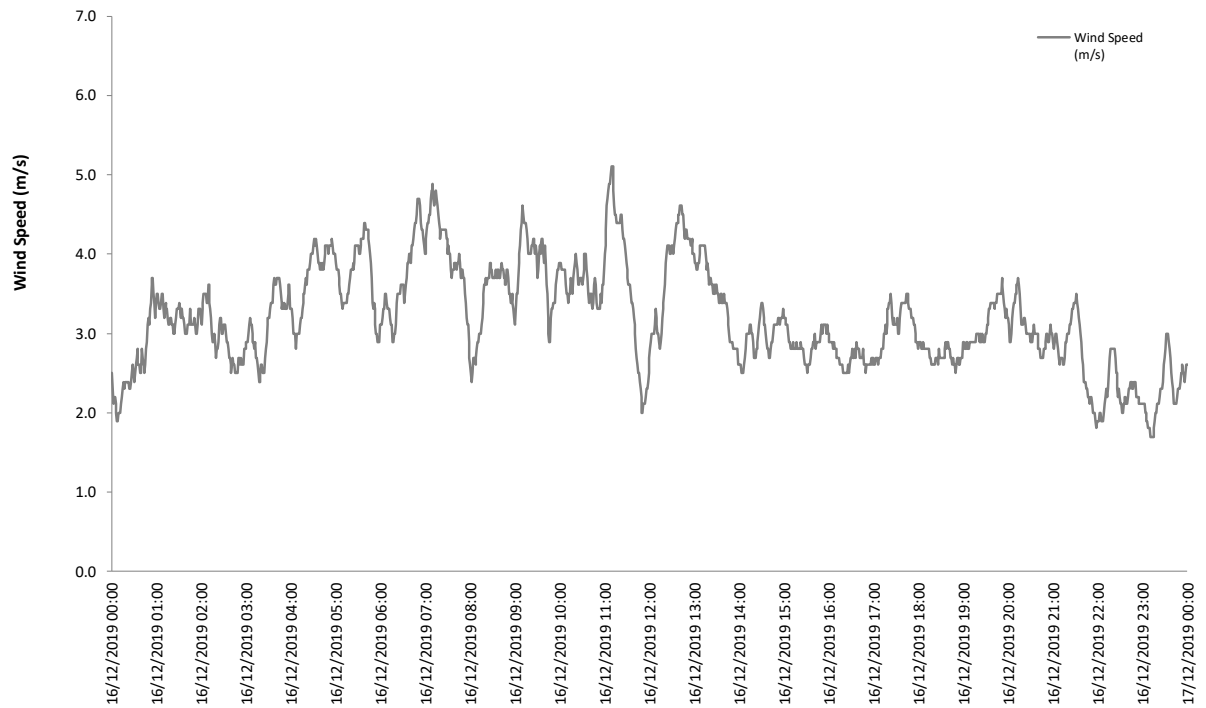


Wind Direction at Kai Tak Collected by the Hong Kong Observatory

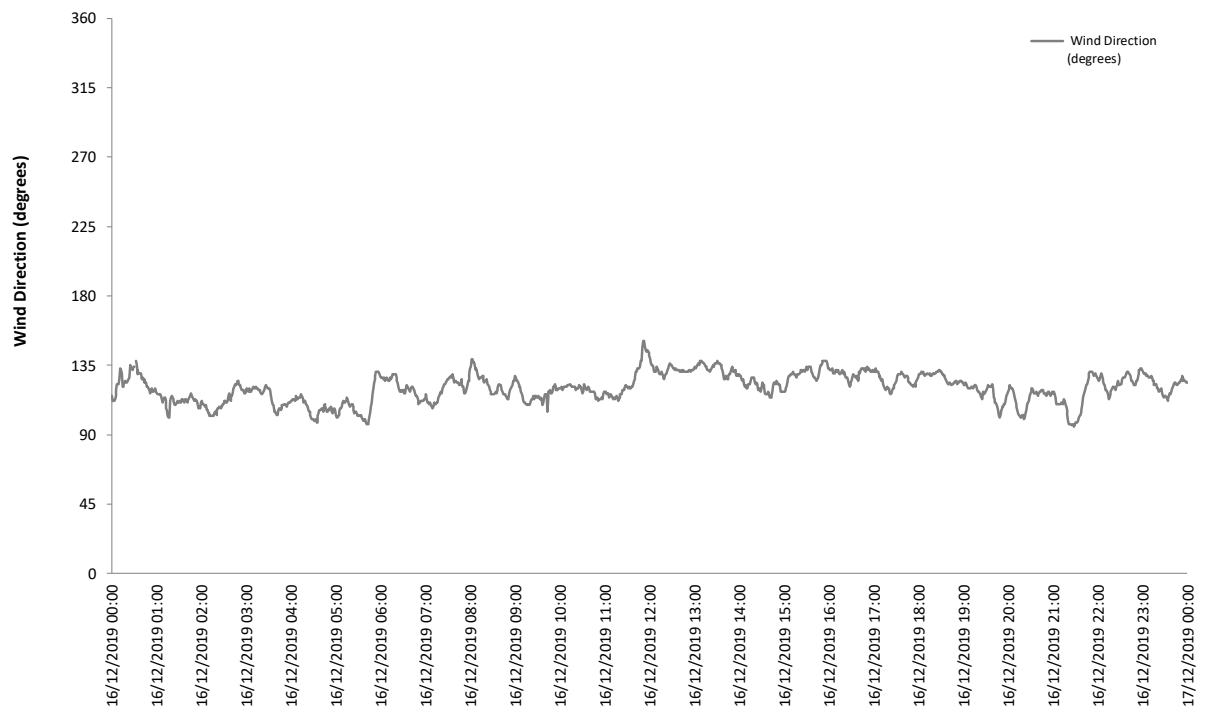


16 December 2019

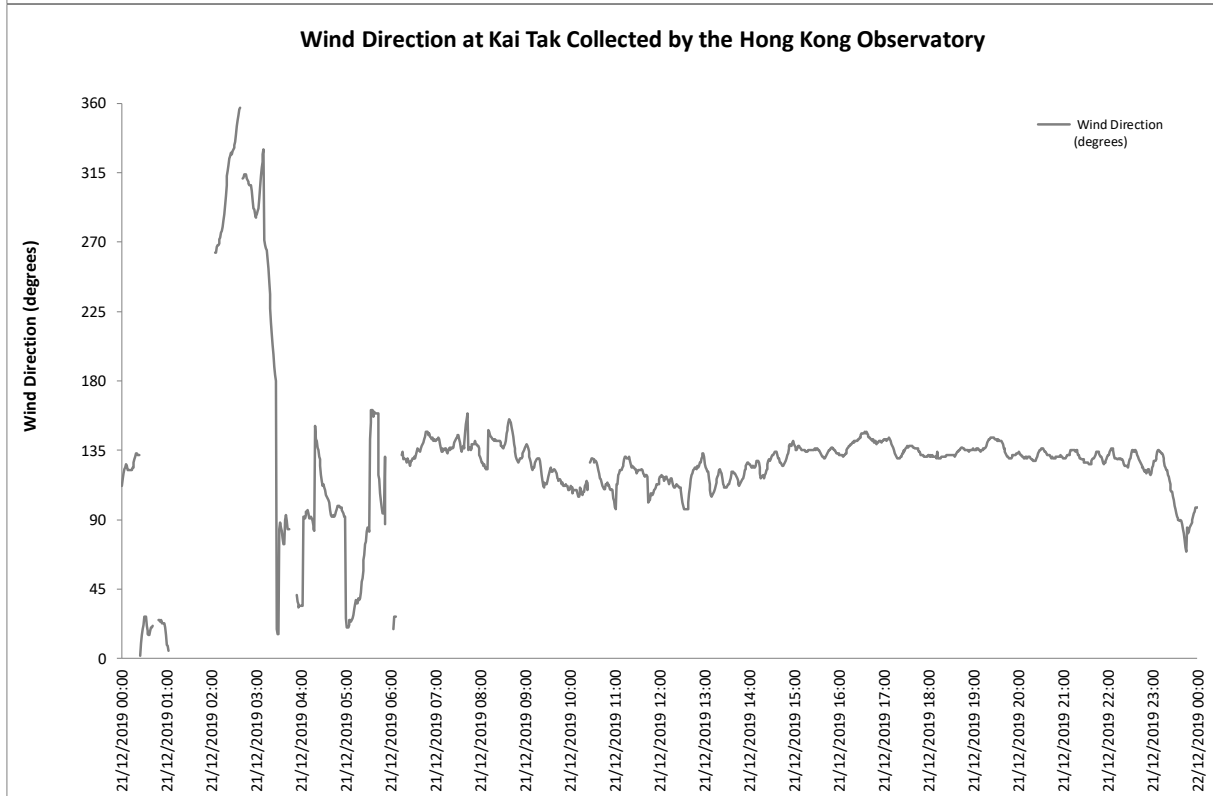
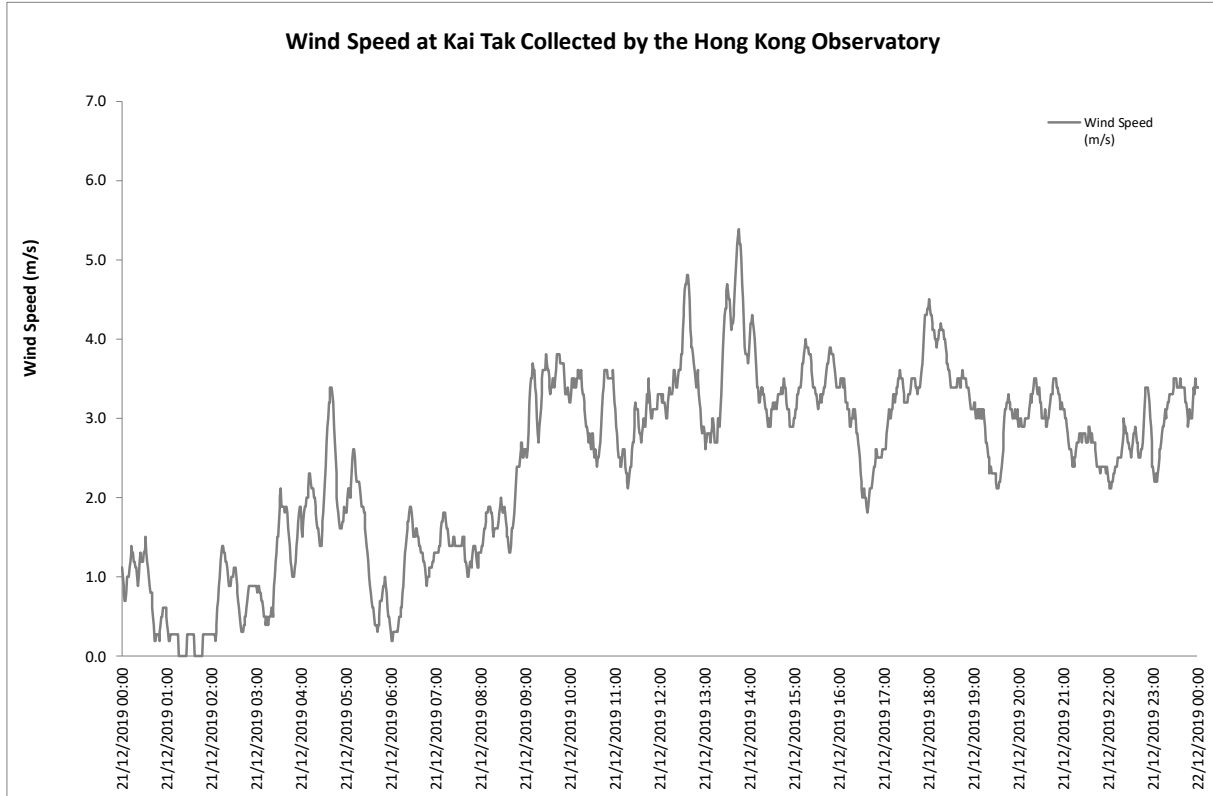
Wind Speed at Kai Tak Collected by the Hong Kong Observatory



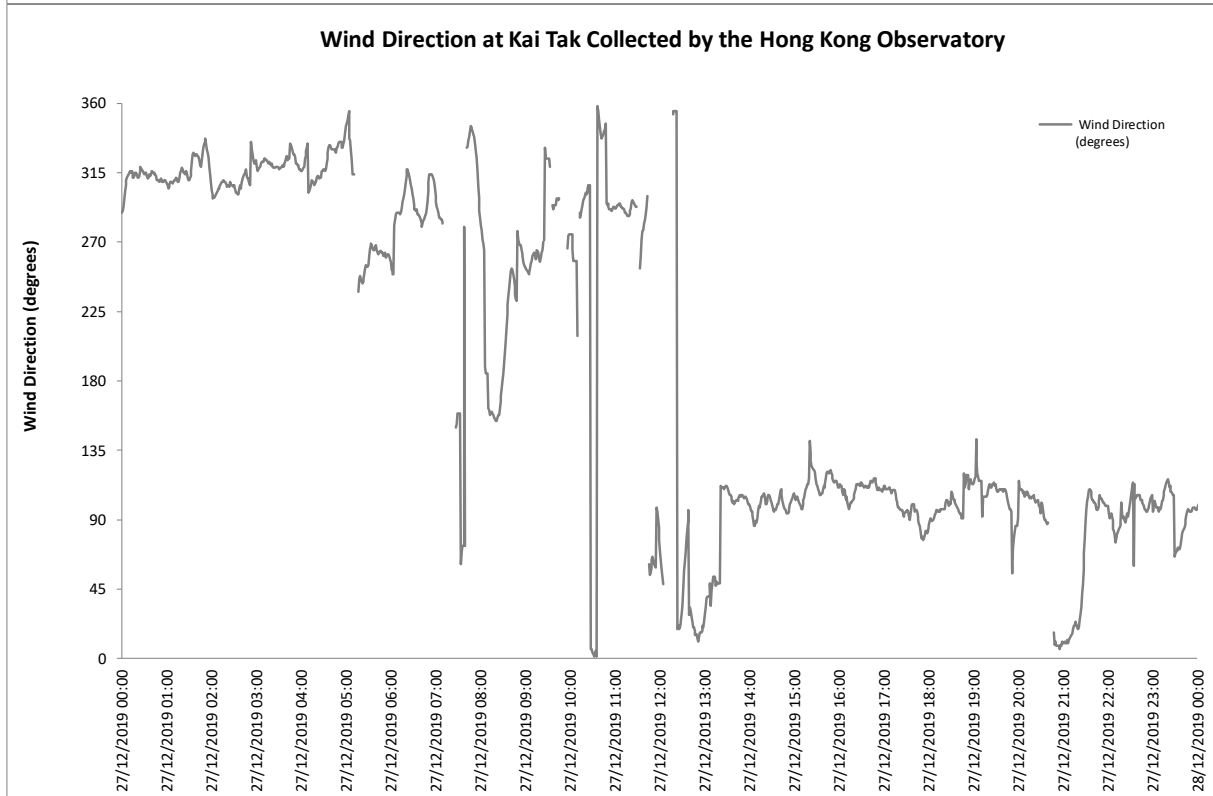
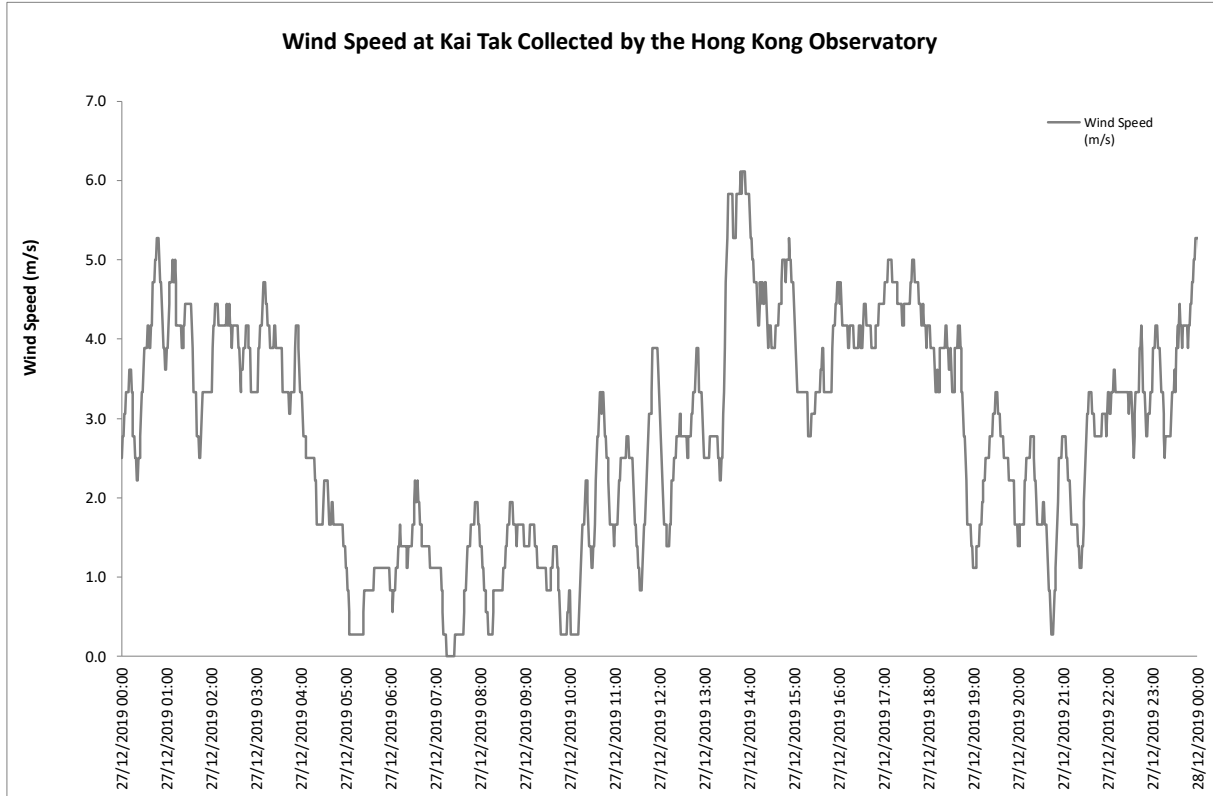
Wind Direction at Kai Tak Collected by the Hong Kong Observatory



21 December 2019



27 December 2019



Appendix G. Waste Flow Table

Project: Kai Tak Sport Park
 Contract No.: HAB/ KTSP/ 01
 Contract Title: Design, Construction and Operation of the Kai Tak Sports Park at Kai Tak, Kowloon City District, Hong Kong
 Year of Record: 2019

Monthly Waste Flow Table

Month	Total Quantity Generated	Total Quantity Generated (Excluded Excavated Material)	Actual Quantities of Inert C&D Materials Generated Monthly								Actual Quantities of C&D Materials Generated Monthly						Remarks
			Excavated Materials				Non-excavated Materials				Metals (steel bar / metal strip) ⁽¹⁾	Metals (aluminum can) ⁽¹⁾	Paper / cardboard packaging ⁽¹⁾	Plastics ^{(1) & (4)}	Chemical waste (wasted lubricant oil/ oil container)	Other, e.g. general refuse	
			Disposed in Public Fill	Disposed in Sorting Facilities	Others (e.g Reused in the Contract / Other Projects)	Broken Concrete or Construction Waste Collected by Recycled Company	Reused in the Contract	Reused in other Projects	Disposed in Public Fill	Disposed in Sorting Facilities							
			(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	
a1	a2	b	b	b	c	d	e	f	g	h	i	j	k	l	m		
Jan-19																	
Feb-19	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	
Mar-19	4960.89	4741.39	219.50	0	0	0	0	0	0	0	11.84	0	0	0	0	4729.55	
Apr-19	1218.47	1211.81	6.66	0	0	0	0	0	0	0	0	0	0	0.06	0	1211.75	
May-19	87.29	87.29	0	0	0	0	0	0	0	0	0	0	0	0.01	0	87.28	
Jun-19	80.77	80.77	0	0	0	0	0	0	0	0	0.67	0	0.08	0.42	0	79.61	
Jul-19	2302.12	614.75	1687.37	0	0	0	0	0	0	0	0	0	0.26	0.95	0	613.54	
Aug-19	3619.81	280.59	3339.22	0	0	0	0	0	0	0	1.77	0	0	1.29	0.6	276.93	
Sep-19	9840.53	350.02	9490.51	0	0	0	0	0	0	0	0	0	0	1.41	0.6	348.01	
Oct-19	11504.49	543	10961.37	0	0	0	0	0	0	0	81.95	0	1.43	0.58	0	459.16	
Nov-19	4717.41	313.12	4404.29	0	0	0	0	0	0	0	69.84	0	0	0.89	0	242.39	
Dec-19	5185.04	102.38	5082.66	0.00	0	0	0	0	0	0	0	0	0.00	1.530	1	100.05	
Total	43516.82	8325.24	35191.58	0	0	0	0	0	0	0	166.07	0	1.77	7.14	2.0	8148.27	

Total C&D waste generated	43516.82	tonne	a1=b+c+d+e+f+g+h+i+j+k+l+m
Total C&D waste generated (excluding excavated materials)	8325.24	tonne	a2=c+d+e+f+g+h+i+j+k+l+m
Total recycled C&D waste	174.98	tonne	a3=c+d+e+h+i+j+k
% of recycled C&D waste for BEAM Plus MA10 or MA11	2.10	%	a4=a3/a2 x 100%

- Notes:
- (1) Metal, paper & plastic were collected by recycler.
 - (2) The performance target of waste recycling are specified in the Contract.
 - (3) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
 - (4) Plastics refer to plastic bottles/ containers, plastic/ foam from packaging material.
 - (5) Broken concrete for recycling into aggregates.
 - (6) Excavated materials/waste will NOT be considered as part of construction waste. It should be excluded in the calculation.
 - (7) Disposal of inert waste to public fill or sorting facilities will NOT be considered as recycled waste.
 - (8) Disposal record for Dec 2019 has been updated according to the latest information from contractor.

Appendix H. Environmental Licences and Permits

Table H.1: Summary of Environmental Licences and Permits Status

Item No.	Type of Permit / Licence	Reference No.	Application Date	Valid from	Valid until	Remark
1	Environmental Permit under EIAO	EP-544/2017	21 Aug 2017	8 Sep 2017	N/A	Issued
2	Construction Dust Notification under APCO	441733	25 Jan 2019	29 Jan 2019	N/A	N/A
3	Construction Waste Disposal Account (Main)	7033182	12 Feb 2019	12 Feb 2019	N/A	N/A
4	Construction Waste Disposal Account (Vessel)	7033555	8 Jul 2019	7 Aug 2019	7 Nov 2019	Superseded
			8 Oct 2019	7 Nov 2019	7 Feb 2020	N/A
5	Registration as a Chemical Waste Producer	WPN5213-286-H3906-02	29 Jan 2019	12 Feb 2019	N/A	N/A
6	Discharge Licence under WPCO	WT00034082-2019	15 Feb 2019	26 Jun 2019	30 Jun 2024	Issued
7	Construction Noise Permit (Percussive Piling)	PP-RE0023-19	26 Apr 2019	18 May 2019	8 Oct 2019	Superseded by PP-RE0043-19 on 9 Oct 2019
8	Construction Noise Permit (Percussive Piling)	PP-RE0043-19	12 Sep 2019	9 Oct 2019	8 Apr 2020	Superseded by PP-RE0055-19 on 18 Dec 2019
9	Construction Noise Permit (Percussive Piling)	PP-RE0055-19	2 Dec 2019	18 Dec 2019	15 Jun 2020	Issued
10	Construction Noise Permit (General Construction Works)	GW-RE0654-19	1 Aug 2019	19 Aug 2019	10 Feb 2020	Issued

Appendix I. Environmental Mitigation Measures Implementation Status

Air Quality – Recommended Mitigation Measures

Air Quality Mitigation Measures during construction	Implementation Status
• Good housekeeping to minimize dust generation, e.g. by properly handling and storing dusty materials	✓
• Store cement in shelter with 3 sides and the top covered by impervious materials if the stack exceeds 20 bags	✓
• Cement delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed	✓
• Loading, unloading, transfer, handling or storage of bulk cement should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system	✓
• Dusty materials (e.g. debris) should be wetted by misting / water-spraying before any loading, unloading, transfer or transport operation	✓
• Any skip hoist for material transport should be fully enclosed by impervious sheeting	✓
• Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously	✓
• Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities to maintain the entire surface wet	✓
• Excavation area should be minimized as far as possible	✓
• Stockpile of dusty materials should not be extended beyond the pedestrian barriers, fencing or traffic cones	✓
• Excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet, and then removed, backfilled or reinstated where practicable within 24 hours of the excavation or unloading	P
• Dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads	✓
• Properly fitted side and tail boards are necessary for any vehicle with open load area	✓
• While transporting materials that potentially create dust (e.g. debris), materials should not be loaded higher than side and tail boards, and should be fully covered by tarpaulin or similar materials which extend at least 300 mm over the edges of the side and tail boards to prevent leakage.	✓
• Limit the maximum vehicle speed within the site to 10km/hr	✓
• Haulage and delivery vehicles should be confined to designated roads	✓
• Every main haul road should either be 1.) paved with concrete and kept clear of dusty materials, or 2.) sprayed or watered to maintain the entire road surface wet	✓
• All on-site unpaved roads should be compacted and kept free of loose materials as possible	✓
• Provide vehicle washing (e.g. wheel washing bay & high pressure water jet where practicable) at every vehicle exit point for cleaning vehicle body and wheels	✓
• The vehicle washing area and the road between washing area and site exit should be paved with concrete, bituminous or other hardcores	✓
• The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials.	✓
• Dusty materials on every vehicle's body and wheels should be removed in washing area before leaving the site	✓

Air Quality Mitigation Measures during construction	Implementation Status
• Regular maintenance of all plant equipment	✓
• Throttle down or switch off unused machines or machine in intermittent use	✓
• If the site is adjacent to area where accessible to the public (e.g. road and service lane etc.), hoarding of not less than 2.4 m high from ground level should be erected along the adjoining the entire length of that portion of the site boundary, except for a site entrance or exit. The hoarding should be well maintained throughout the construction period.	✓
• Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding	N/A
• Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shortcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies	✓
• Carry out air quality monitoring throughout the construction period	✓
• Carry out weekly site inspection to audit the implementation of mitigation measures	✓
• Regular watering once per hour on exposed worksites and haul road with an equivalent intensity of not less than 1.3L/m ³ to achieve 91.7% dust removal efficiency.	✓
• Provision of electrical vehicle (EV) charging facilities in at least one-third of the car parking spaces for private cars. Provision of EV charging enabling facilities in all car parking spaces provided for private cars.	✓
• Non-Road Mobile Machinery (NRMMS)	✓
• All NRMMS operated on-site are approved or exempted (as the case may be) and affixed with the requisite approval/exemption labels under the Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation or are in the process of application for such approval/exemption during the relevant grace period.	✓

Noise – Recommended Mitigation Measures

Noise Mitigation Measures during construction	Implementation Status
• Adopt good site practice, such as throttle down or switch off equipment unused or intermittently used between works	✓
• Regular maintenance of equipment to prevent noise emission due to impair	✓
• Position mobile noisy equipment in locations away from NSRs and point the noise sources to directions away from NSRs	✓
• Use silencer or muffler for equipment	✓
• Make good use structures for noise screening	✓
• Use Quality Powered Mechanical Equipment (QPME) and quiet equipment which produces lower noise level.	✓
• Erect movable noise barrier of 3m height to shed large plant equipment (e.g. breaker, backhoe & mobile crane) or hand-held items (e.g. poker, wood saw, power rammer & compactor) near low-rise NSR. Where necessary, special design (e.g. with noise absorbing material or bend top) should be adopted. The barrier's length should be at least five times greater than its height, and the minimum surface density is 10 kg/m ² . Alternatively, acoustic shed, enclosure or silencer (for generator, air compressor and concrete pump) or acoustic mat (for piling) can be adopted.	✓
• Carry out regular site inspection to audit the implementation of mitigation measures	✓
• Carry out noise monitoring throughout the construction period	✓

Water Quality – Recommended Mitigation Measures

Water Quality Mitigation Measures during construction	Implementation Status
<ul style="list-style-type: none"> Practices outlined in ProPECC PN 1/94 Construction Site Drainage should be adopted. 	P
<ul style="list-style-type: none"> Install perimeter channels in the works areas to intercept runoff from boundary prior to the commencement of any earthwork 	✓
<ul style="list-style-type: none"> To prevent storm runoff from washing across exposed soil surfaces, intercepting channels should be provided. 	✓
<ul style="list-style-type: none"> Drainage channels are required to convey site runoff to sand/silt traps and oil interceptors. Provision of regular cleaning and maintenance to ensure the normal operation of these facilities throughout the construction period. 	✓
<ul style="list-style-type: none"> Any practical options for the diversion and realignment of drainage should comply with both engineering and environmental requirements 	✓
<ul style="list-style-type: none"> Minimum distances of 100 m should be maintained between the discharge points of construction site runoff and the existing WSD saltwater intake and EMSD cooling water intake. 	✓
<ul style="list-style-type: none"> The following good site measures should be adopted for the use of the existing barging facilities being operated by the MTR SCL Project: <ul style="list-style-type: none"> - All vessels should be sized so that adequate clearance is maintained between vessels and the seabed in all tide conditions, to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash. - All hopper barges should be fitted with tight fitting seals to their bottom openings to prevent leakage of material. - Construction activities should not cause foam, oil, grease, scum, litter or other objectionable matter to be present on the water within the site. - Loading of barges and hoppers should be controlled to prevent splashing of material into the surrounding water. - Barges or hoppers should not be filled to a level that will cause the overflow of materials or polluted water during loading or transportation. Whole construction site Contractor P WPCO, EIAO-TM Page 	N/A
<ul style="list-style-type: none"> The runoff and wastewater generated from the works areas should be treated so that it satisfies all the standards listed in the TM-DSS. 	P
<ul style="list-style-type: none"> Reuse and recycling of the treated effluent from construction site runoff. 	✓
<ul style="list-style-type: none"> Weekly site audit should be carried out to check the implementation status of the recommended water quality impact mitigation measures throughout construction period. 	✓
<ul style="list-style-type: none"> The construction programme should be properly planned to minimise soil excavation, if any, in rainy seasons. 	✓
<ul style="list-style-type: none"> Any exposed soil surfaces should be properly protected to minimise dust emission. 	✓
<ul style="list-style-type: none"> In areas where a large amount of exposed soils exist, earth bunds or sand bags should be provided. 	✓
<ul style="list-style-type: none"> Exposed stockpiles should be covered with tarpaulin or impervious sheets at all times. 	✓
<ul style="list-style-type: none"> The stockpiles of materials should be placed at locations away from any stream courses so as to avoid releasing materials into the water bodies. 	✓
<ul style="list-style-type: none"> Final surfaces of earthworks should be compacted and protected by permanent work. 	✓
<ul style="list-style-type: none"> Haul roads should be paved with concrete and the temporary access roads protected using crushed stone or gravel, wherever practicable. 	✓
<ul style="list-style-type: none"> Wheel washing facilities should be provided at all site exits to ensure that earth, mud and debris would not be carried out of the works areas by vehicles. 	✓
<ul style="list-style-type: none"> Good site practices should be adopted to keep the site dry and tidy, such as clean the rubbish and litter on the construction sites. 	✓
<ul style="list-style-type: none"> Adequate temporary site drainage and pumping should be provided, if necessary. 	P
<ul style="list-style-type: none"> Provide sufficient temporary toilets in the works areas. The toilet facilities should be more than 30 m from any watercourse. A licensed waste collector should be deployed to clean the temporary toilets on a regular basis. 	✓
<ul style="list-style-type: none"> Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment during the construction phase of the Project. 	✓

Water Quality Mitigation Measures during construction	Implementation Status
<ul style="list-style-type: none"> 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) Regulation should be observed and complied with for control of chemical wastes. 	✓
<ul style="list-style-type: none"> 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. 	P
<ul style="list-style-type: none"> Clean the construction sites on a regular basis. 	✓
<ul style="list-style-type: none"> Oil interceptor in car parking area shall be designed and constructed according to Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers, APP-46 (PNAP 124) 	N/A
<ul style="list-style-type: none"> Provide two sequential storage tanks to contain surface water with residual fertilizers and pesticides and third holding tank for incidental rainstorm 	N/A
Sewerage and Sewage Treatment Implications	
<ul style="list-style-type: none"> Implementation of Sewer No. 1 and Sewer No.2 as proposed in Sections 7.2.2 - 7.2.3 of the EIA Report 	✓

Waste Management – Recommended Mitigation Measures

Waste Management Mitigation Measures during construction	Implementation Status
<ul style="list-style-type: none"> Inert C&D materials (or public fills) will be used to form the ramps and other filling area as far as civil engineering design permits. 	✓
<ul style="list-style-type: none"> The contractor should formulate waste management measures on waste minimization, storage, handling and disposal in a Waste Management Plan as part of Environmental Management Plan. 	✓
<ul style="list-style-type: none"> Adopt good site practice as follows: <ul style="list-style-type: none"> Provide training to workers on site cleanliness, waste management (waste reduction, reuse and recycle) and chemical handling procedures Provide sufficient waste collection points and regular removal Cover waste materials with tarpaulin or in enclosure during transportation Maintain drainage systems, sumps and oil interceptors Sort out chemical waste for proper handling and treatment onsite or offsite 	P
<ul style="list-style-type: none"> Adopt waste reduction measures as follows: <ul style="list-style-type: none"> Allocate area/containers for sorting, recovering and storing waste for reuse, recycle or disposal (e.g. demolition debris and excavated materials, general refuse like aluminium cans.) Remove waste from the Site for sorting once generated if no suitable space can be identified. Allocate area for proper storage of construction materials to prevent contamination Minimize wastage through careful planning and avoiding over-purchase of construction materials 	✓
<ul style="list-style-type: none"> Store waste materials properly as follows: <ul style="list-style-type: none"> Avoid contamination by proper handling and storing waste Prevent erosion by covering waste Apply water spray on excavated materials Maintain and clean storage area regularly Sort and stockpile different materials at designated location to enhance reuse 	P
<ul style="list-style-type: none"> Apply for relevant waste disposal permits in accordance with the Waste Disposal Ordinance (Cap. 354), Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 345) and the Land (Miscellaneous Provisions) Ordinance (Cap. 28), Dumping at Sea Ordinance (Cap. 466). 	✓
<ul style="list-style-type: none"> Hire licensed waste disposal contractors for waste collection and removal. Dispose waste at licensed waste disposal facilities. 	✓
<ul style="list-style-type: none"> Implement trip-ticket system for recording the amount of waste generated, recycled and disposed, including chemical wastes 	✓

Waste Management Mitigation Measures during construction	Implementation Status
<ul style="list-style-type: none"> Reduce water content in wet spoil generated from piling work by mixing with dry materials. Only dispose treated spoil with less than 25% dry density to Public Fill Reception Facilities 	✓
<ul style="list-style-type: none"> Dispose dry waste or waste with less than 70% water content by weight to landfill 	✓
<ul style="list-style-type: none"> Follow the Code of Practice on the Packaging, Labelling and Storage of Chemical Waste as follows: <ul style="list-style-type: none"> - Store chemical wastes with suitable containers. Seal and maintain the container to avoid leakage or spillage during storage, handling and transport - Label chemical waste containers in both English and Chinese with instructions in accordance to Schedule 2 of the Waste Disposal (Chemical Waste) (General) Regulation - The container capacity should be smaller than 450 litres unless agreed by the EPD 	P
<ul style="list-style-type: none"> Comply with the requirement of the chemical storage area: <ul style="list-style-type: none"> - Store only chemical waste and label clearly the chemical characters of the waste - Have at least 3 sides enclosed and protected from rainfall with cover - Provide sufficient ventilation - Have impermeable floor and has bunds to contain 110% of the capacity of the largest container or 20% of the total volume of the stored waste in the area, whichever is larger - Adequately spaced incompatible materials 	P
<ul style="list-style-type: none"> Transfer used lubricants, waste oils and other chemicals to oil recycling companies, if possible, and empty oil drums for reuse or refill. No direct or indirect discharge is permitted 	✓
<ul style="list-style-type: none"> Hire licensed chemical waste disposal contractors for waste collection and removal. Dispose chemical waste at the approved Chemical Waste Treatment Centre at Tsing Yi or other licensed facility 	✓
<ul style="list-style-type: none"> Hire reputable waste collector to separately collect and dispose general refuse from other wastes. Cover the waste to prevent being blown away 	✓
<ul style="list-style-type: none"> The hauling of C&D materials shall follow established environmental mitigation measures as stated in Practice Note for Registered Contractors No. 17 "Control of Environmental Nuisance from Construction Sites" issued by the Buildings Department 	✓
<ul style="list-style-type: none"> Provide recycling bins for sorting out recyclables for collection by recycling companies. Non-recyclables should be removed to designated landfills every day by licensed collectors to prevent environmental and health nuisance. 	✓
<ul style="list-style-type: none"> Organize training and reminders to site staff on waste minimization through avoidance and reduction, reusing and recycling 	✓
<ul style="list-style-type: none"> Bentonite slurry which will not be reused shall be disposed of from the Site as soon as possible. Residual used dewatered bentonite slurry should be disposed to a public filling area and liquid bentonite slurry if mixed with inert fill material should be disposed to a public filling area. 	N/A
<ul style="list-style-type: none"> If chemical wastes were to be 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 waste such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport the chemical wastes. The licensed collector shall deliver the waste to the Chemical Waste Treatment Centre at Tsing Yi, or other licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation 	✓
<ul style="list-style-type: none"> Carry out weekly site inspection to check the implementation status of the recommended waste management measures. 	✓
<ul style="list-style-type: none"> The barging of C&DM for this Project shall use the existing Kai Tak Barging Facility (KTBF), or otherwise approved by the Director. 	N/A

Ecology – Recommended Mitigation Measures

Ecology Mitigation Measures during construction	Implementation Status
<ul style="list-style-type: none"> Erection of hoarding, fencing or provision of clear demarcation of work zone 	✓

Ecology Mitigation Measures during construction	Implementation Status
<ul style="list-style-type: none"> Designate areas for placement of equipment, building materials and wastes away from drainage channels 	✓
<ul style="list-style-type: none"> Carry out weekly site inspection to check the implementation status and the effectiveness of the proposed mitigation measures 	✓

Landscape and Visual – Recommended Mitigation Measures

Landscape and Visual Mitigation Measures during construction	Implementation Status
<ul style="list-style-type: none"> Construction Lighting Control <ul style="list-style-type: none"> All security floodlights for construction sites should be equipped with adjustable shields, frosted diffusers and reflective covers, and be controlled to minimize light pollution and night-time glare to the visual sensitive receivers (VSRs). 	✓
<ul style="list-style-type: none"> Temporary Landscape Treatments <ul style="list-style-type: none"> Including vertical greening, pot planting and application of green roofing to site offices, Hydroseeding of site formation areas and short term greening of site boundaries and land not immediately developed. 	✓
<ul style="list-style-type: none"> Decoration of Hoarding <ul style="list-style-type: none"> Erection of screen hoardings should be designed appropriately to be compatible with the existing urban context, either brightly and imaginatively or with visually unobtrusive design and colours where more appropriate. 	✓
<ul style="list-style-type: none"> All security floodlights for construction sites shall be equipped with adjustable shield, frosted diffusers and reflective covers, and be carefully controlled to minimize light pollution and night-time glare to nearby receivers 	✓
<ul style="list-style-type: none"> Site inspection should be undertaken once every two weeks. 	✓
<ul style="list-style-type: none"> Compensatory Tree Planting <ul style="list-style-type: none"> A new parkland area is created in the project development to be used for the implementation of compensatory tree planting to offset the net loss of key landscape resources. It is recommended that 340 trees be planted in this regard and a compensatory tree planting proposal outlining the locations of tree compensation will be submitted separately in seeking relevant government department's approval in accordance with DEVB TC No.7/2015. 	N/A

Other – Recommended Mitigation Measures

<ul style="list-style-type: none"> Relevant environmental permits/licences should be posted at all vehicle entrances/exits. 	✓
--	---

Legend:

- ✓ Implemented
- × Not implemented
- P Partially implemented
- N/A Not applicable

Appendix J. Statistics on Environmental Complaints, Notification of Summons and Successful Prosecutions

Table J.1: Statistics on Environmental Complaints, Notifications of Summons and Successful Prosecutions

Reporting Period	Complaints	Notifications of Summons	Successful Prosecutions
This reporting period (Oct to Dec 2019)	1	0	0
From commencement data of construction to end of reporting month	4	0	0

Appendix K. Calibration Certificate



ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

SUB-CONTRACTING REPORT

CONTACT	: MR K.W. FAN	WORK ORDER	: HK1907875
CLIENT	: ENVIROTECH SERVICES CO.		
ADDRESS	: RM113, 1/F, MY LOFT, 9 HOI WING ROAD, TUEN MUN, N.T. HONG KONG	SUB-BATCH	: 1
		DATE RECEIVED	: 22-FEB-2019
		DATE OF ISSUE	: 7-MAR-2019
PROJECT	: ----	NO. OF SAMPLES	: 1
		CLIENT ORDER	: ----

General Comments

- Sample(s) were received in ambient condition.
- Sample(s) analysed and reported on as received basis.
- Calibration was subcontracted to and analysed by Action United Enviro Services.

Signatories

This document has been signed by those names that appear on this report and are the authorised signatories

Signatories

Position

Richard Fung

General Manager

This is the Final Report and supersedes any preliminary report with this batch number.

Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

ALS Technichem (HK) Pty Ltd
Part of the **ALS Laboratory Group**

11/F. Chung Shun Knitting Centre 1 - 3 Wing Yip Street Kwai Chung N.T. Hong Kong
Tel. +852 2610 1044 Fax. +852 2610 2021 www.alsglobal.com

WORK ORDER : HK1907875
SUB-BATCH : 1
CLIENT : ENVIROTECH SERVICES CO.
PROJECT : ----



ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK1907875-001	S/N: 276019	Equipments	22-Feb-2019	S/N: 276019

Certificate of Calibration

Calibration Certification Information			
Cal. Date: February 13, 2018	Rootsmeter S/N: 438320	Ta: 293	°K
Operator: Jim Tisch		Pa: 763.3	mm Hg
Calibration Model #: TE-5025A	Calibrator S/N: 1612		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.3970	3.2	2.00
2	3	4	1	1.0000	6.3	4.00
3	5	6	1	0.8900	7.9	5.00
4	7	8	1	0.8440	8.7	5.50
5	9	10	1	0.7010	12.6	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)	$\sqrt{\Delta H \left(\frac{Ta}{Pa} \right)}$ (y-axis)
1.0172	0.7281	1.4293	0.9958	0.7128	0.8762
1.0130	1.0130	2.0213	0.9917	0.9917	1.2392
1.0109	1.1358	2.2599	0.9896	1.1120	1.3854
1.0098	1.1964	2.3702	0.9886	1.1713	1.4530
1.0046	1.4331	2.8586	0.9835	1.4030	1.7524
QSTD	m=	2.02017	QA	m=	1.26500
	b=	-0.03691		b=	-0.02263
	r=	0.99988		r=	0.99988

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

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



ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

SUB-CONTRACTING REPORT

CONTACT	: MR K.W. FAN	WORK ORDER	: HK1907876
CLIENT	: ENVIROTECH SERVICES CO.		
ADDRESS	: RM113, 1/F, MY LOFT, 9 HOI WING ROAD, TUEN MUN, N.T. HONG KONG	SUB-BATCH	: 1
		DATE RECEIVED	: 22-FEB-2019
		DATE OF ISSUE	: 7-MAR-2019
PROJECT	: ----	NO. OF SAMPLES	: 1
		CLIENT ORDER	: ----

General Comments

- Sample(s) were received in ambient condition.
- Sample(s) analysed and reported on as received basis.
- Calibration was subcontracted to and analysed by Action United Enviro Services.

Signatories

This document has been signed by those names that appear on this report and are the authorised signatories

Signatories

Position

Richard Fung

General Manager

This is the Final Report and supersedes any preliminary report with this batch number.

Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

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WORK ORDER : HK1907876
SUB-BATCH : 1
CLIENT : ENVIROTECH SERVICES CO.
PROJECT : ----



ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK1907876-001	S/N: 456668	Equipments	22-Feb-2019	S/N: 456668

Certificate of Calibration

Calibration Certification Information			
Cal. Date: February 13, 2018	Rootsmeter S/N: 438320	Ta: 293	°K
Operator: Jim Tisch		Pa: 763.3	mm Hg
Calibration Model #: TE-5025A	Calibrator S/N: 1612		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.3970	3.2	2.00
2	3	4	1	1.0000	6.3	4.00
3	5	6	1	0.8900	7.9	5.00
4	7	8	1	0.8440	8.7	5.50
5	9	10	1	0.7010	12.6	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)	$\sqrt{\Delta H \left(\frac{Ta}{Pa} \right)}$ (y-axis)
1.0172	0.7281	1.4293	0.9958	0.7128	0.8762
1.0130	1.0130	2.0213	0.9917	0.9917	1.2392
1.0109	1.1358	2.2599	0.9896	1.1120	1.3854
1.0098	1.1964	2.3702	0.9886	1.1713	1.4530
1.0046	1.4331	2.8586	0.9835	1.4030	1.7524
QSTD	m=	2.02017	QA	m=	1.26500
	b=	-0.03691		b=	-0.02263
	r=	0.99988		r=	0.99988

Calculations	
Vstd= $\Delta Vol \left(\frac{Pa - \Delta P}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)$	Va= $\Delta Vol \left(\frac{Pa - \Delta P}{Pa} \right)$
Qstd= $Vstd / \Delta Time$	Qa= $Va / \Delta Time$
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= $1/m \left(\left(\sqrt{\Delta H \left(\frac{Ta}{Pa} \right)} \right) - b \right)$

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



Certificate of Calibration 校正證書

Certificate No. : C185607
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC18-1968) Date of Receipt / 收件日期 : 27 September 2018

Description / 儀器名稱 : Precision Acoustic Calibrator
Manufacturer / 製造商 : LARSON DAVIS
Model No. / 型號 : CAL200
Serial No. / 編號 : 15678
Supplied By / 委託者 : Envirotech Services Co.
Room 113, 1/F, My Loft, 9 Hoi Wing Road, Tuen Mun,
New Territories, Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 溫度 : $(23 \pm 2)^{\circ}\text{C}$ Relative Humidity / 相對濕度 : $(50 \pm 25)\%$
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 14 October 2018

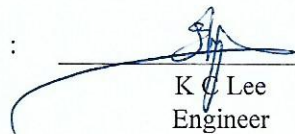
TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- The Bruel & Kjaer Calibration Laboratory, Denmark
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By
測試


K C Lee
Engineer

Certified By
核證


H C Chan
Engineer

Date of Issue : 19 October 2018
簽發日期

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。



輝創工程有限公司

Sun Creation Engineering Limited

Calibration & Testing Laboratory

Certificate of Calibration 校正證書

Certificate No. : C185607

證書編號

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.
- The results presented are the mean of 3 measurements at each calibration point.
- Test equipment :

Equipment ID	Description	Certificate No.
CL130	Universal Counter	C183775
CL281	Multifunction Acoustic Calibrator	CDK1806821
TST150A	Measuring Amplifier	C181288

- Test procedure : MA100N.

- Results :

5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	94.0	± 0.2	± 0.2
114 dB, 1 kHz	113.9		

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	1.000	1 kHz ± 1 %	± 1

Remark : The uncertainties are for a confidence probability of not less than 95 %.

Note :

Only the original copy or the laboratory's certified true copy is valid.

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室書面批准。

Sun Creation Engineering Limited - Calibration & Testing Laboratory

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Page 2 of 2



輝創工程有限公司

Sun Creation Engineering Limited
Calibration & Testing Laboratory

Certificate of Calibration

校正證書

Certificate No. : C185972
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC18-2180) Date of Receipt / 收件日期 : 24 October 2018

Description / 儀器名稱 : Sound Level Meter
Manufacturer / 製造商 : Rion
Model No. / 型號 : NL-52
Serial No. / 編號 : 00542913
Supplied By / 委託者 : Envirotech Services Co.
Room 113, 1/F, My Loft, 9 Hoi Wing Road, Tuen Mun,
New Territories, Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 溫度 : $(23 \pm 2)^{\circ}\text{C}$ Relative Humidity / 相對濕度 : $(50 \pm 25)\%$
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration


DATE OF TEST / 測試日期 : 4 November 2018

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed manufacturer's specification. (after adjustment)
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- The Bruel & Kjaer Calibration Laboratory, Denmark
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By : 
測試 : K C Lee
Engineer

Certified By : 
核證 : H C Chan
Engineer

Date of Issue : 7 November 2018
簽發日期

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

Sun Creation Engineering Limited - Calibration & Testing Laboratory

c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司 - 校正及檢測實驗室

c/o 香港新界屯門興安里一號四樓

Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com



輝創工程有限公司

Sun Creation Engineering Limited
Calibration & Testing Laboratory

Certificate of Calibration

校正證書

Certificate No. : C185972
證書編號

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
- Self-calibration using the internal standard (After Adjustment) was performed before the test 6.1.1.2 to 6.3.2.
- The results presented are the mean of 3 measurements at each calibration point.
- Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C180024
CL281	Multifunction Acoustic Calibrator	CDK1806821

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

6.1.1.1 Before Adjustment

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L _A	A	Fast	94.00	1	* 95.9	± 1.1

*Out of IEC 61672 Class 1 Spec.

6.1.1.2 After Adjustment

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L _A	A	Fast	94.00	1	94.0	± 1.1

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 130	L _A	A	Fast	94.00	1	94.0 (Ref.)
				104.00		104.0
				114.00		114.0

IEC 61672 Class 1 Spec. : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

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Certificate of Calibration

校正證書

Certificate No. : C185972

證書編號

6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L _A	A	Fast	94.00	1	94.0	Ref.
			Slow			94.0	± 0.3

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L _A	A	Fast	94.00	63 Hz	67.8	-26.2 ± 1.5
					125 Hz	77.8	-16.1 ± 1.5
					250 Hz	85.3	-8.6 ± 1.4
					500 Hz	90.7	-3.2 ± 1.4
					1 kHz	94.0	Ref.
					2 kHz	95.2	+1.2 ± 1.6
					4 kHz	95.0	+1.0 ± 1.6
					8 kHz	93.0	-1.1 (+2.1 ; -3.1)
					12.5 kHz	89.6	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L _C	C	Fast	94.00	63 Hz	93.1	-0.8 ± 1.5
					125 Hz	93.8	-0.2 ± 1.5
					250 Hz	94.0	0.0 ± 1.4
					500 Hz	94.0	0.0 ± 1.4
					1 kHz	94.0	Ref.
					2 kHz	93.8	-0.2 ± 1.6
					4 kHz	93.2	-0.8 ± 1.6
					8 kHz	91.1	-3.0 (+2.1 ; -3.1)
					12.5 kHz	87.6	-6.2 (+3.0 ; -6.0)

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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輝創工程有限公司

Sun Creation Engineering Limited

Calibration & Testing Laboratory

Certificate of Calibration

校正證書

Certificate No. : C185972

證書編號

Remarks : - UUT Microphone Model No. : UC-53A & S/N : 320728
- Mfr's Spec. : IEC 61672 Class 1
- Uncertainties of Applied Value : 94 dB : 63 Hz - 125 Hz : ± 0.35 dB
250 Hz - 500 Hz : ± 0.30 dB
1 kHz : ± 0.20 dB
2 kHz - 4 kHz : ± 0.35 dB
8 kHz : ± 0.45 dB
12.5 kHz : ± 0.70 dB
104 dB : 1 kHz : ± 0.10 dB (Ref. 94 dB)
114 dB : 1 kHz : ± 0.10 dB (Ref. 94 dB)

- The uncertainties are for a confidence probability of not less than 95 %.

Note :

Only the original copy or the laboratory's certified true copy is valid.

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室所書面批准。

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Certificate of Calibration

for

Description: Sound Level Meter
Manufacturer: RION
Type No.: NL-52 (Serial No.: 00175561)
Microphone: UC-53A (Serial No.: 99995)
Preamplifier: NH-25 (Serial No.:65663)

Submitted by:

Customer: Envirotech Services Co.
Address: Rm.113, 1/F., My Loft, 9 Hoi Wing Road,
Tuen Mun, N.T., Hong Kong.

Upon receipt for calibration, the instrument was found to be:

- Within
 Outside

the allowable tolerance.

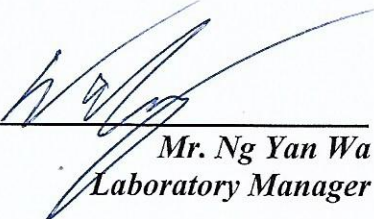
The test equipment used for calibration are traceable to National Standards via:

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory

Date of receipt: 24 September 2019

Date of calibration: 26 September 2019

Calibrated by: 
Calibration Technician

Certified by: 
Mr. Ng Yan Wa
Laboratory Manager

Date of issue: 26 September 2019

Certificate No.: APJ19-095-CC001



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1. Calibration Precaution:

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
- The results presented are the mean of 3 measurements at each calibration point.

2. Calibration Conditions:

Air Temperature: 24.1 °C
 Air Pressure: 1006 hPa
 Relative Humidity: 54.2 %

3. Calibration Equipment:

	Type	Serial No.	Calibration Report Number	Traceable to
Multifunction Calibrator	B&K 4226	2288467	AV180064	HOKLAS

4. Calibration Results

Sound Pressure Level

Reference Sound Pressure Level

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz		
30-130	dBA SPL	Fast	94	1000	94.0	±0.4

Linearity

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz		
30-130	dBA SPL	Fast	94	1000	94.0	Ref
			104		104.0	±0.3
			114		114.1	±0.3

Time Weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz		
30-130	dBA SPL	Fast	94	1000	94.0	Ref
		Slow			94.0	±0.3

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Frequency Response

Linear Response

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB	
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz			
30-130	dB	SPL	Fast	94	31.5	94.3	±2.0
					63	94.2	±1.5
					125	94.1	±1.5
					250	94.0	±1.4
					500	94.0	±1.4
					1000	94.0	Ref
					2000	93.9	±1.6
					4000	93.7	±1.6
					8000	91.9	+2.1; -3.1

A-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB	
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz			
30-130	dBA	SPL	Fast	94	31.5	55.2	-39.4±2.0
					63	68.0	-26.2±1.5
					125	78.0	-16.1±1.5
					250	85.4	-8.6±1.4
					500	90.8	-3.2±1.4
					1000	94.0	Ref
					2000	95.1	+1.2±1.6
					4000	94.7	+1.0±1.6
					8000	90.9	-1.1±2.1; -3.1

C-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB	
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz			
30-130	dBC	SPL	Fast	94	31.5	91.3	-3.0±2.0
					63	93.4	-0.8±1.5
					125	93.9	-0.2±1.5
					250	94.0	-0.0±1.4
					500	94.0	-0.0±1.4
					1000	94.0	Ref
					2000	93.8	-0.2±1.6
					4000	92.9	-0.8±1.6
					8000	89.0	-3.0 +2.1: -3.1

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5. Calibration Results Applied

The results apply to the particular unit-under-test only. All calibration points are within manufacture's specification as IEC 61672 Class 1.

Uncertainties of Applied Value:

94 dB	31.5 Hz	± 0.15
	63 Hz	± 0.10
	125 Hz	± 0.10
	250 Hz	± 0.05
	500 Hz	± 0.10
	1000 Hz	± 0.05
	2000 Hz	± 0.05
	4000 Hz	± 0.10
	8000 Hz	± 0.10
104 dB	1000 Hz	± 0.05
114 dB	1000 Hz	± 0.05


The uncertainties are evaluated for a 95% confidence level.

Note:

The values given in this certification only related to the values measured at the time of the calibration and any uncertainties quoted will not allow for the equipment long-term drift, variations with environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the calibration. (A+A)*L shall not be liable for any loss or damage resulting from the use of the equipment.

Appendix L. Complaint Investigation Report

Interim Report on Complaint Investigation

RECEIPT OF COMPLAINT		Ref: COM_0004	
Date:	15 October 2019		
Time:	09:01		
From:	Hiko Law (Hip Hing Construction Limited)		
Via:	Email		
Contact no.:	60360068		
COMPLAINANT			
Name:	Mr. W.K. Tse	Address:	-
Contact no.:	2117 7572		
DETAILS OF COMPLAINT			
Date:	29 September 2019		
Time:	-		
Parameter:*	Dust	Noise	Water Other (specify):
Description:	<p>- Complaint of percussive piling noise from the construction site of Kai Tak Sports Park.</p> <p>- Complainant would like percussive piling to be carried out later in the morning and implement noise control measure</p> <p>- Please ensure the work fulfil the relevant environmental legislation and conditions stipulated in the construction noise permit.</p>		
INVESTIGATION RESULT & RESPONSE			
ET, IEC and SOR notified on:	15 October 2019		
Investigation conducted on:	17 October 2019		
Result of investigation:	<p>1. No percussive piling activities was carried out at Kai Tak Sports Park on 29 September 2019.</p> <p>2. All noise monitoring data ($L_{eq} (30 \text{ min})$) recorded at the representative noise sensitive receivers during the morning piling hours sessions in September 2019 ranged between 67 dB(A) and 72 dB (A), complied with the relevant environmental legislation requirement.</p> <p>3. The percussive piling activities were carried out any day not being a general holiday between 8:00 a.m. and 9:30 a.m., fulfilling the construction noise permit requirement (Ref. No. PP-RE0023-19)</p> <p>4. The piling works in the morning sessions have been changed to 8:30am to 9:30am after addressing previous noise complaint (EPD Ref. 19-24781)</p> <p>5. Noise barrier for percussive piling works had been implemented to reduce the noise nuisance to sensitive receivers. (see attached photo record for 17 October 2019)</p>		
RECOMMENDATIONS / MITIGATION MEASURES / ACTIONS			
<p>1. Conduct regular checking to ensure the implementation of noise mitigation measures for the percussive piling works.</p> <p>2. A new CNP has been issued on 9 October 2019 (PP-RE0043-19) with revised piling hours between 0830 to 0930 in the morning to reduce the noise impact in the morning session.</p> <p>3. Arrange those sensitive percussive piling works (i.e. close to nearby sensitive receivers) in a later piling hour session if possible.</p>			
Prepared by:	Sunny Chan	Title:	Environmental Team Leader
Signature:		Date:	21 October 2019

ATTACHMENTS

Date of Investigation: 17 October 2019

1. Noise barrier for percussive piling had been implemented to reduce the noise nuisance to sensitive receivers.

