

Issue No. : 1
Issue Date : February 2010
Project No. : 912

**PROVISION OF CREMATORS AT
WO HOP SHEK CREMATORIUM**

**QUARTERLY ENVIRONMENTAL
MONITORING & AUDIT REPORT
(NOVEMBER 2009 – JANUARY 2010)**

Prepared By:

ALLIED ENVIRONMENTAL CONSULTANTS LTD.

COMMERCIAL-IN-CONFIDENCE



**3D Visualisation
Environment & Energy
Information Technology**



ISO 9001 : 2008
Certificate No.: CC 3988

Architectural Services Department
Architectural Branch
41/F, Queensway Government Offices
66 Queensway
Hong Kong

Your reference:

Our reference: HKASD101/50/100456

Date: 5 March 2010

Attn.: Mr Andrew NAM / Ms Salina LEE

BY FAX ONLY
(Fax no.: 2524 7981)

Dear Sirs

Quotation Contract No. 9/2009/AB1
Provision of Cremators at Wo Hop Shek Crematorium - Independent Environmental Checker Service
Quarterly EM&A Report (November 2009 - January 2010)

We refer to your e-mail from your Environmental Team attaching a copy of the quarterly EM&A report (November 2009 - January 2010) on 24 February 2010. We have no comment and, hereby, endorse the report.

Should you have any queries, please do not hesitate to contact our Mr James Choi on 2869 6018.

Yours faithfully
EDMS CONSULTING LTD

Andy W L Chung
Independent Environmental Checker

AC/jc

cc AEC - Mr Adi Li (Fax: 2815 5399)

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Certified by:



Adi Y.M. Lee
Environmental Team Leader

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This report has been prepared by Allied Environmental Consultants Limited with all reasonable skill, care and diligence within the terms of the Agreement with the client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client.

We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

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EXECUTIVE SUMMARY

Allied Environmental Consultants Limited (AEC) has been appointed to conduct an environmental monitoring and audit (EM&A) program for the Provision of Cremators at Wo Hop Shek Crematorium (the “Project”). The construction works of the Project commenced on 1st November 2009. This report is the first quarterly EM&A report, which summarizes the environmental monitoring and audit results recorded during the period from 1st November 2009 to 31st January 2010.

Based on the monitoring results, the air quality and construction noise levels during the reporting period complied with the environmental requirements in EM&A Manual. There were no environmental complaints received in this reporting quarter. No notification of summons or prosecution was received.

Construction activities undertaken from 1st November 2009 to 31st January 2010 included construction of retaining wall, site backfilling at the stockpile area, removal of trees & cutting of slope, site drainage works, excavation for the underground drainage system, abatement of heavy metal in ash inside chimney and flue, abatement of asbestos in plant room and demolition of reinforced concrete structure. Potential environmental impacts include dust generation from drilling, material transfer, vehicular movement, stockpile of excavated materials and fly ash; noise from demolition of reinforced concrete structure; wastewater generated from spraying water; and generation of various wastes including C&D and chemical wastes. The Contractor should properly implement environmental mitigation measures as per the implementation schedule in the EM&A manual to ensure no adverse environmental impacts to be arisen from the construction works. The Contractor was also reminded to maintain good housekeeping at the site.

1. PROJECT BACKGROUND

The existing Wo Hop Shek Crematorium is a coffin crematorium with two twin cremators. A skeletal cremator building with a single cremator operates nearby for the cremation of skeletal remains from burial. The skeletal cremator and the coffin cremators were commissioned in the 1960's and 1991 respectively.

As the five existing cremators had approached the end of their serviceable life, the Food and Environmental Hygiene Department (FEHD) proposed to demolish the existing coffin crematorium and the skeletal cremator building and to construct in-situ a new crematorium in the same site.

An Environmental Impact Assessment (EIA) was carried out for the Provision of Cremators at Wo Hop Shek Crematorium (hereafter referred to as the "Project") and the EIA Report was approved by Environmental Protection Department (EPD) in June 2008. The Environmental Permit (EP-329/2009) for the Project was issued by EPD in February 2009.

The locations of project site and air sensitive receivers are shown in **Figure 1**. The construction phase is divided in the three phases as outlined below:

Phase I (Year 2009 to Year 2011)

Construction works include the demolition of the existing coffin crematorium building, transformer room and pump room and provision of five new coffin cremators, one dual-purpose cremator, one new skeletal cremator, one cremation plant room with sufficient space for housing nine single cremators and other ancillary facilities such as service halls. The new crematorium will provide seven cremators upon completion of Phase I.

Phase II (Year 2012)

The existing skeletal cremator building will be demolished upon completion of Phase I (i.e. there will be no overlapping between Phases I and II).

Phase III: Future Expansion Phase (for completion by around 2014)

Two additional cremators and one additional service hall will be provided upon completion of Phase II to allow future expansion.

In July 2009, Architectural Services Department (ArchSD) as the works agent has awarded the construction contract of the Project to Wan Chung Construction Co. Ltd. ("the Contractor"). The Contractor has appointed Allied Environmental Consultants Limited (AEC) as the Environmental Team (ET) to undertake Environmental Monitoring and Audit (EM&A) programme in accordance with the EM&A Manual under the approved EIA report, which details the EM&A requirements for the construction and operation of the Project, and the EP-329/2009.

The Construction Programme of the Project is shown in Appendix A. The construction works commenced on 1st November 2009. This report is the third monthly EM&A report, which details the EM&A results recorded during the period from 1st January 2010 to 31st January 2010.

1.1 Project Organization and Contact Personnel

Key personnel and contact particulars are summarized in *Table 1*.

Role	Department / Company	Names	Contact Number	Fax Number
Environmental Permit Holder	Food and Environmental Hygiene Department	Ms. Karen Sin	3141 1226	3101 0450
Architect	Architecture Services Department	Mr. Andrew Nam	2867 3662	2290 2170
Main Contractor	Wan Chung Construction Co., Limited	Mr. Sunny Ngan Mr. Frank So	9491 9058 9863 6587	2676 7966
Environmental Team Leader	Allied Environmental Consultants Limited	Mr. Adi Lee	2815 7028	2815 5399
Independent Environmental Checker	EDMS Consulting Limited	Mr. Andy Chung	2869 6018	3007 8556

Table 1 Contact Details of Key Personnel

2. CONSTRUCTION WORKS & PROGRAMME

The major works undertaken and/or completed during the reporting period are listed below:

- Excavation works for the retaining wall; and
- Tree felling.

Figure 2 shows the works undertaken during the reporting period and *Table 2* shows the interrelationship between construction activities and environmental mitigation measures in the reporting period.

Construction Works	Major Environmental Impact	Mitigation Measures
Excavation works	Construction dust, construction noise and waste management	Water spraying provided and three sides tarpaulin enclosure was provided during excavation works, well-maintained and quiet plants were used.
Tree felling	Air quality impacts	Three sides tarpaulin enclosure was provided during tree felling.

Table 2 Interrelationship between Construction Activities and Mitigation Measures

3. SUMMARY OF EM&A REQUIREMENT

For regular impact monitoring, the sampling frequency of at least once in every six-days, was strictly observed at the monitoring station for 24-hr TSP monitoring. For 1-hr TSP monitoring, the sampling frequency of at least three times in every six-days was undertaken when the highest dust impact occurs.

From baseline monitoring results, the Action and Limit Levels for air quality are summarized in **Table 3**.

Parameters	Monitoring Location	Baseline Level ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
24-Hour TSP Level	A22a	42.0	157.3	260
	A22b	41.6	157.0	260
1-Hour TSP Level	A22a	48.8	281.7	500
	A22b	46.8	280.4	500

Table 3 Action and Limit Level for Air Quality Impact Monitoring

Should non-compliance of the above Action and Limit levels occurs, actions in accordance with the Event and Action Plan in **Table 4**.

Event	Action			
	ET	IEC	AR	Contractor
Action Level				
Exceedance for one sample	1. Identify source, investigate the causes of complaint and propose remedial measures; 2. Inform IEC and AR; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
Exceedance for two or more consecutive samples	1. Identify source; 2. Inform IEC and AR; 3. Advise the AR on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and AR;	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ET on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Submit proposals for remedial to AR within three working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.

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

Table 4 Event and Action Plan

4. AIR QUALITY MONITORING

4.1 Air Quality Monitoring Methodology

TSP levels in 1-hour and 24-hour were measured to indicate the impacts of construction dust on air quality. TSP levels were measured by following the standard high volume sampling (HVS) method as set out in the Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50). 1-hour TSP samples were taken three times a day between 0700-1900 hours. 24-hour TSP samples were taken every six days.

4.2 Monitoring Equipment

High Volume Sampler (HVS) in compliance with the specifications of section 2.2.1 of the EM&A Manual was used for carrying out the 1-hour and 24-hour TSP monitoring at the designated location. The model number of the HVSs is Anderson GMWS-2310 ACCU-VOL.

The HVSs are equipped with an electronic mass flow controller and be calibrated against a traceable standard at regular intervals. The flow rate of each HVS with mass flow controller is calibrated using an orifice calibrator. Initial calibration of dust monitoring equipment is conducted upon installation and prior to commissioning. Five point calibration is carried out every six months. The Calibration Certificates of the High-Volume TSP Sampler are given in *Appendix A*. The weighing of the filter paper was undertaken by SGS Hong Kong Limited.

Wind data monitoring equipment was set up on 30 November 2009 and set up at conspicuous locations for logging wind speed and wind direction near to the dust monitoring locations. Installation and operation of wind data monitoring equipment followed the followings:

- Wind sensors were installed on masts at an elevated level 10m above ground so that they are clear of obstructions of turbulence caused by the buildings;
- The wind data were captured by a data logger and to be downloaded for processing at least once a month;
- The wind data monitoring equipment shall be re-calibrated at least once every six months; and
- Wind direction is divided into 16 sectors of 22.5 degrees each.

Weather data were obtained from the on-site wind stations in the reporting period.

4.3 Air Quality Monitoring Location

1-hour and 24-hour TSP monitoring were conducted to monitor the air quality. Air quality monitoring were conducted at two designated air quality monitoring locations during construction phase: (i) 83 Wo Ka Lau Road (A22a) and (ii) 51D Wo Hop Shek San Tsuen (A22b) as shown in **Figure 2**. Details of the two air quality monitoring stations are shown in **Table 5**.

ID	Monitoring Location	Description of Monitoring Location
A22a	83 Wo Ka Lau Road	G/F at the front gate of 83 Wo Ka Lau Road
A22b	51D Wo Hop Shek San Tsuen	G/F boundary wall of house 51D of Wo Hop Shek San Tsuen

Table 5 Descriptions of Air Quality Monitoring Locations

5. RESULTS

5.1. Air Quality

No exceedance was recorded in this quarter. Summary and graphical plots of air quality monitoring record of 1-hour TSP levels and 24-hour TSP levels are given in **Appendices B and Appendix C**.

5.2. Weather Conditions

Weather data for November 2009 were obtained from Hong Kong Observatory while data for December 2009 and January 2010 were from the on-site wind stations in the reporting period. **Table 6** summarizes the wind data during the monitoring dates. Wind data records from the on-site wind stations are shown in **Appendix D**.

Date	Weather	Prevailing Wind Direction	Daily Average Wind Speed (m/s)
7 November 2009	Fine	E	2.09
13 November 2009	Cloudy	N	3.08
19 November 2009	Fine	NW	3.04
25 November 2009	Sunny	E	1.44
2 December 2009	Sunny	ENE	0.28
8 December 2009	Cloudy	NNE	0.40
14 December 2009	Cloudy	ENE	0.11
18 December 2009	Cloudy	N	0.17
24 December 2009	Fine	NNE	0.10
30 December 2009	Rainy	NE	0.41
5 January 2010	Cloudy	ENE	1.05
11 January 2010	Rainy	N	0.03
16 January 2010	Sunny	ESE	0.10

22 January 2010	Cloudy	E	0.26
28 January 2010	Cloudy	SSE	0.03

Table 6 Summary of Weather Conditions during the Monitoring Period

6. SITE INSPECTION & AUDIT

Weekly site inspections were carried out by representatives of the ET. A total of thirteen site inspections were conducted by the ET in this reporting period. Observations by the ET, actions by the Contractor and outcome are summarized in the **Table 7**.

Date	Observations	Action taken by Contractor	Outcome
5 November 2009	Debris was found inside the perimeter u-channel.	Contractor removed debris inside the perimeter u-channel.	The situation was rectified as observed on 12 November 2009 (Closed).
	No blockage was provided for the stream course at the western part of the site.	Contractor provided sandbags to prevent any soil/debris from entering the stream course.	The situation was rectified as observed on 12 November 2009 (Closed).
12 November 2009	Debris was found inside the perimeter u-channel.	Contractor removed debris inside the perimeter u-channel.	The situation was rectified immediately (Closed).
	No blockage was provided for the stream course of the western part of the site.	Contractor provided sandbags to prevent any soil/debris from entering the stream course.	The situation was rectified immediately (Closed).
17 November 2009	No observations during inspection.	Nil	Nil
27 November 2009	No observations during inspection.	Nil	Nil
3 December 2009	Debris was found inside the perimeter u-channel.	Contractor removed debris inside the perimeter u-channel.	The situation was rectified as observed on 10 December 2009 (Closed).
	Exposed earth on slope was not properly covered.	Contractor provided tarpaulin sheet to cover the slope.	The situation was rectified as observed on 10 December 2009 (Closed).
10 December 2009	No observations during inspection.	Nil	Nil
17 December 2009	Debris was found inside the perimeter u-channel.	Contractor removed debris inside the perimeter u-channel.	The situation was rectified as observed on 23 December 2009 (Closed).

23 December 2009	No observations during inspection.	Nil	Nil
30 December 2009	No observations during inspection.	Nil	Nil
7 January 2010	Sand and debris was found inside the perimeter u-channel.	Contractor removed debris inside the perimeter u-channel.	The situation was rectified as observed on 13 January 2010 (Closed).
	An empty drip tray was placed at open area.	Contractor relocated the empty drip tray into a covered area.	The situation was rectified as observed on 20 January 2010 (Closed).
13 January 2010	The chemical storage area was not provided properly.	Contractor provided cement bund and drip tray for chemical storage area.	The situation was rectified as observed on 20 January 2010 (Closed).
	Oil stain on designated road.	Contractor removed the oil stain and treat as chemical waste.	The situation was rectified as observed on 20 January 2010 (Closed).
20 January 2010	Debris was found inside the perimeter u-channel.	Contractor removed debris inside the perimeter u-channel.	The situation was rectified as observed on 3 February 2010 (Closed).
29 January 2010	No observations during inspection.	Nil	Nil

Table 7 Summary of Site Inspections

During site inspections in the reporting quarter, no non-conformance of implementation of environmental mitigation measures was identified. All environmental mitigation measures for construction stages as stated in approved EIA Report, EM&A Manual and EP-329/2009 were carried out properly in the reporting quarter.

7. LANDSCAPE AND VISUAL IMPACTS

A total of six landscape and visual impact inspections were carried out on 13th, 27th November 2009, 3rd, 17th, 30th December 2009 and 12th January 2010. The *Aquilaria sinensis* and *Cibotium barometz* were recorded in fair condition at transplanting receptor “T1” site.

8. NON-COMPLIANCE, COMPLAINTS, NOTIFICATIONS OF SUMMONS AND SUCCESSFUL PROSECUTIONS

In this reporting quarter, no complaints, inspection notices, and notifications of summons or prosecution were received.

9. WASTE MANAGEMENT

A total of 0.9035 tonnes inert C&D material was disposed to Tuen Mun Area 38 Fill Bank. 50.737 tonnes of metal wastes, 0.13 tonnes of paper / cardboard packaging and 0.3315 tonnes of general refuse were disposed of to NENT Landfill. 14 tonnes of chemical waste was transported off site to Chemical Waste Treatment Centre at Tsing Yi in this reporting quarter.

10. RECOMMENDATIONS AND CONCLUSIONS

10.1. Recommendations

In accordance with the environmental site audits undertaken during the reporting quarter, the following recommendations are made:

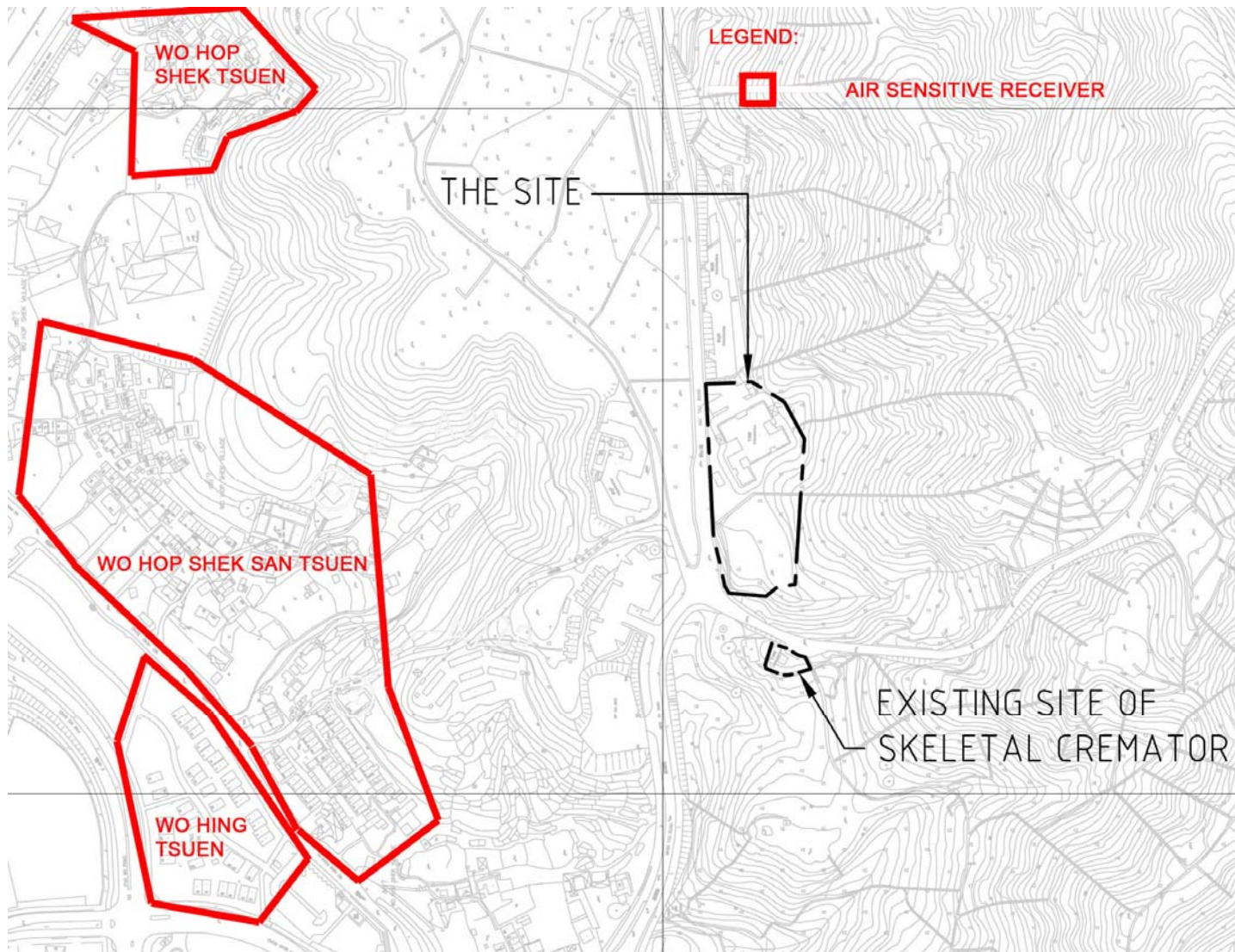
- Exposed surface should be compacted or covered at all times when no works were being undertaken; and
- Perimeter u-channel should be clean regularly to prevent debris accumulation.

The ET will strictly follow the EM&A programme to ensure compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

10.2. Conclusions

Environmental monitoring was carried out for the Provision of Cremators at Wo Hop Shek Crematorium in the reporting period. 1-hour and 24-hour TSP air quality monitoring were conducted at (i) 83 Wo Ka Lau Road (A22a) and (ii) 51D Wo Hop Shek San Tsuen (A22b) during the period from 1st November 2009 to 31st January 2010.

All monitoring results complied with the relevant action and limit levels. No environmental complaints and notification of summons or prosecution were received during the reporting period.



PROVISION OF CREMATORS AT WO HOP SHEK CREMATORIUM AT KIU TAU ROAD
SITE LOCATION PLAN

Figure No.

1

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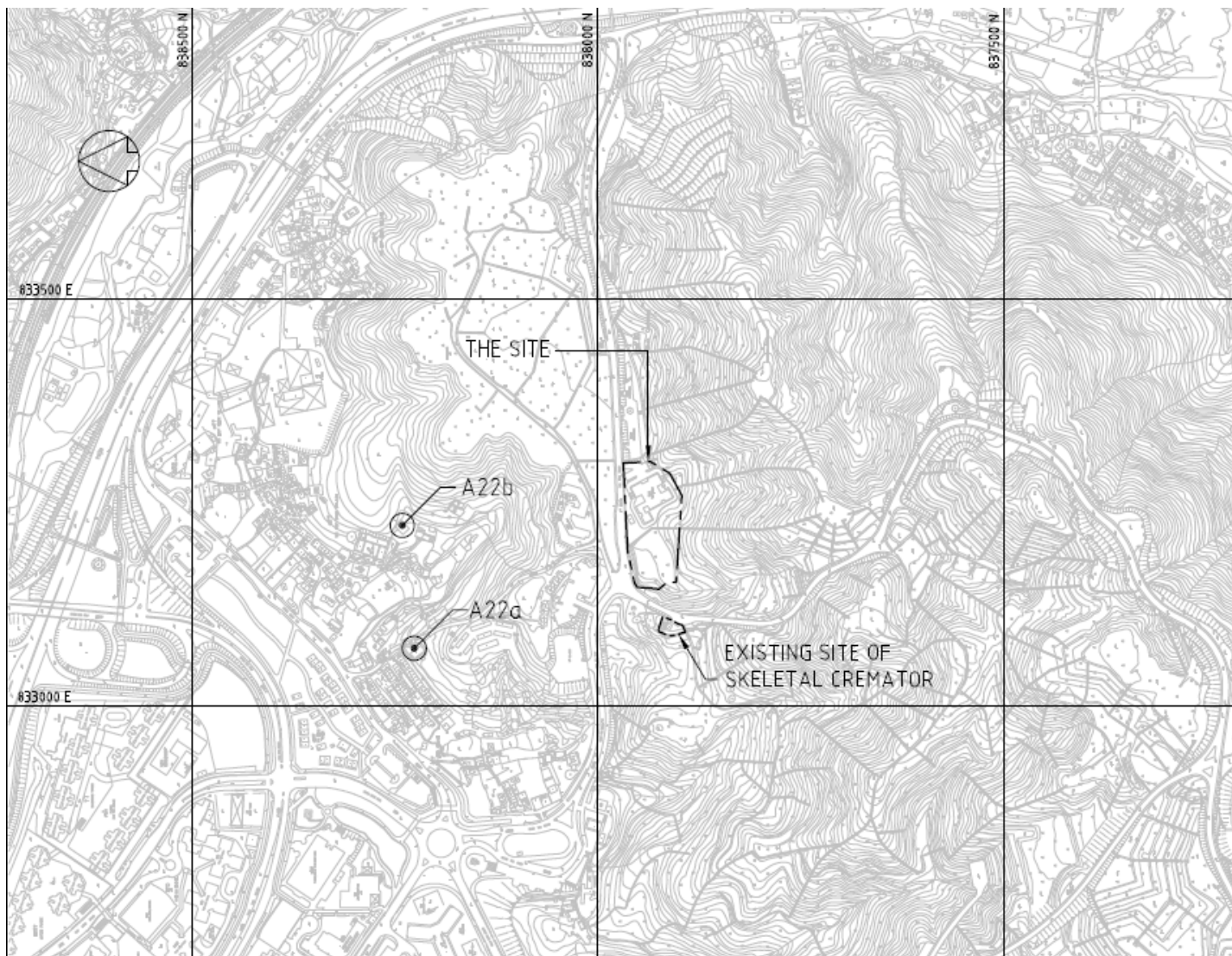
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2/10





PROVISION OF CREMATORS AT WO HOP SHEK CREMATORIUM AT KIU TAU ROAD
LOCATION OF AIR QUALITY MONITORING STATION

Figure No.

2

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Ground floor within the front gate of 83 Wo Ka Lau Road



Ground floor boundary wall of house 51D of Wo Hop Shek San Tsuen

PROVISION OF CREMATORS AT WO HOP SHEK CREMATORIUM AT KIU TAU ROAD
PHOTOS OF AIR QUALITY MONITORING STATION

Figure No.

3

Rev.:

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Scale

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Date

2/10



Appendix A

Calibration Record of High-Volume TSP Sampler

High-Volume TSP Sampler
5-Point Calibration Record

Location : A22a
Calibrated by : K.F.Ho
Date : 07/11/09

Sampler

Model : GMWS-2310 ACCU-VOL
Serial Number : S/N0143

Calibration Orifice and Standard Calibration Relationship

Serial Number : 9833620
Service Date : 18 May 2009
Slope (m) : 1.97702
Intercept (b) : -0.00070
Correlation Coefficient(r) : 0.99992

Standard Condition

Pstd (hpa) : 1013
Tstd (K) : 298.18

Calibration Condition

Pa (hpa) : 1018
Ta(K) : 295

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	12.2	3.477	1.758	68	67.7
2	13 holes	9.6	3.085	1.562	60	59.7
3	10 holes	7.8	2.780	1.410	52	51.8
4	7 holes	4.9	2.264	1.122	40	39.8
5	5 holes	2.9	1.695	0.868	28	27.9

Sampler Calibration Relationship

Slope(m): 44.784 Intercept(b): -10.794 Correlation Coefficient(r): 0.9995

Checked by: Magnum Fan

Date: 10/11/09

**High-Volume TSP Sampler
5-Point Calibration Record**

Location : Al (Fanling)
Calibrated by : P.P.Yeung
Date : 7/1/2010

Sampler

Model : GMWS-2310 ACCU-VOL
Serial Number : S/N 0143

Calibration Office and Standard Calibration Relationship

Serial Number : 9833620
Service Date : 18 May 2009
Slope (m) : 1.97702
Intercept (b) : -0.00070
Correlation Coefficient(r) : 0.99992

Standard Condition

Pstd (hpa) : 1013
Tstd (K) : 298.18

Calibration Condition

Pa (hpa) : 1016
Ta(K) : 293

Zero Error of Sampler Flow Rate Indication

IO : 0.0

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1 18 holes	12.0	3.520	1.781	66	67.1
2 13 holes	9.5	3.132	1.585	58	58.9
3 10 holes	7.6	2.801	1.417	52	52.8
4 7 holes	4.7	2.203	1.115	40	40.6
5 5 holes	2.9	1.731	0.876	30	30.5

Sampler Calibration Relationship

Slope(m): 40.152 Intercept(b): -4.395 Correlation Coefficient(r): 0.9998

Checked by: Magnum Fan

Date: 8/01/2010

High-Volume TSP Sampler
5-Point Calibration Record

Location : A22b
Calibrated by : K.F.Ho
Date : 07/11/09

Sampler
Model : GMWS-2310 ACCU-VOL
Serial Number : S/N 1068

Calibration Office and Standard Calibration Relationship

Serial Number : 9833620
Service Date : 18 May 2009
Slope (m) : 1.97702
Intercept (b) : -0.00070
Correlation Coefficient(r) : 0.99992

Standard Condition

Pstd (hpa) : 1013
Tstd (K) : 298.18

Calibration Condition

Pa (hpa) : 1018
Ta(K) : 295

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	12.7	3.548	1.795	60	59.7
2	13 holes	10.0	3.148	1.593	52	51.8
3	10 holes	8.1	2.833	1.434	46	45.8
4	7 holes	5.0	2.226	1.126	34	33.8
5	5 holes	3.1	1.753	0.887	23	22.9

Sampler Calibration Relationship

Slope(m): 40.198 Intercept(b): -12.138 Correlation Coefficient(r): 0.9993

Checked by: Magnum Fan

Date: 10/11/09

High-Volume TSP Sampler
5-Point Calibration Record

Location : A2, Fanling
Calibrated by : P.F. Yeung
Date : 7/01/2010

Sampler

Model : GMWS-2310 ACCU-VOL
Serial Number : S/N 1068

Calibration Office and Standard Calibration Relationship

Serial Number : 9833620
Service Date : 18 May 2009
Slope (m) : 1.97702
Intercept (b) : -0.00070
Correlation Coefficient(r) : 0.99992

Standard Condition

Pstd (hpa) : 1013
Tstd (K) : 298.18

Calibration Condition

Pa (hpa) : 1016
Ta(K) : 293

Zero Error of Sampler Flow Rate Indication

IO : 0.0

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (indicated flow)	Y
1 18 holes	13.2	3.692	1.868	58	58.9
2 13 holes	10.2	3.245	1.642	50	50.8
3 10 holes	8.1	2.892	1.463	43	43.7
4 7 holes	4.8	2.226	1.126	30	30.5
5 5 holes	3.0	1.760	0.891	22	22.4

Sampler Calibration Relationship

Slope(m): 37.865 Intercept(b): -11.678

Correlation Coefficient(r): 0.9997

Checked by: Magnum Fan

Date: 8/01/2010

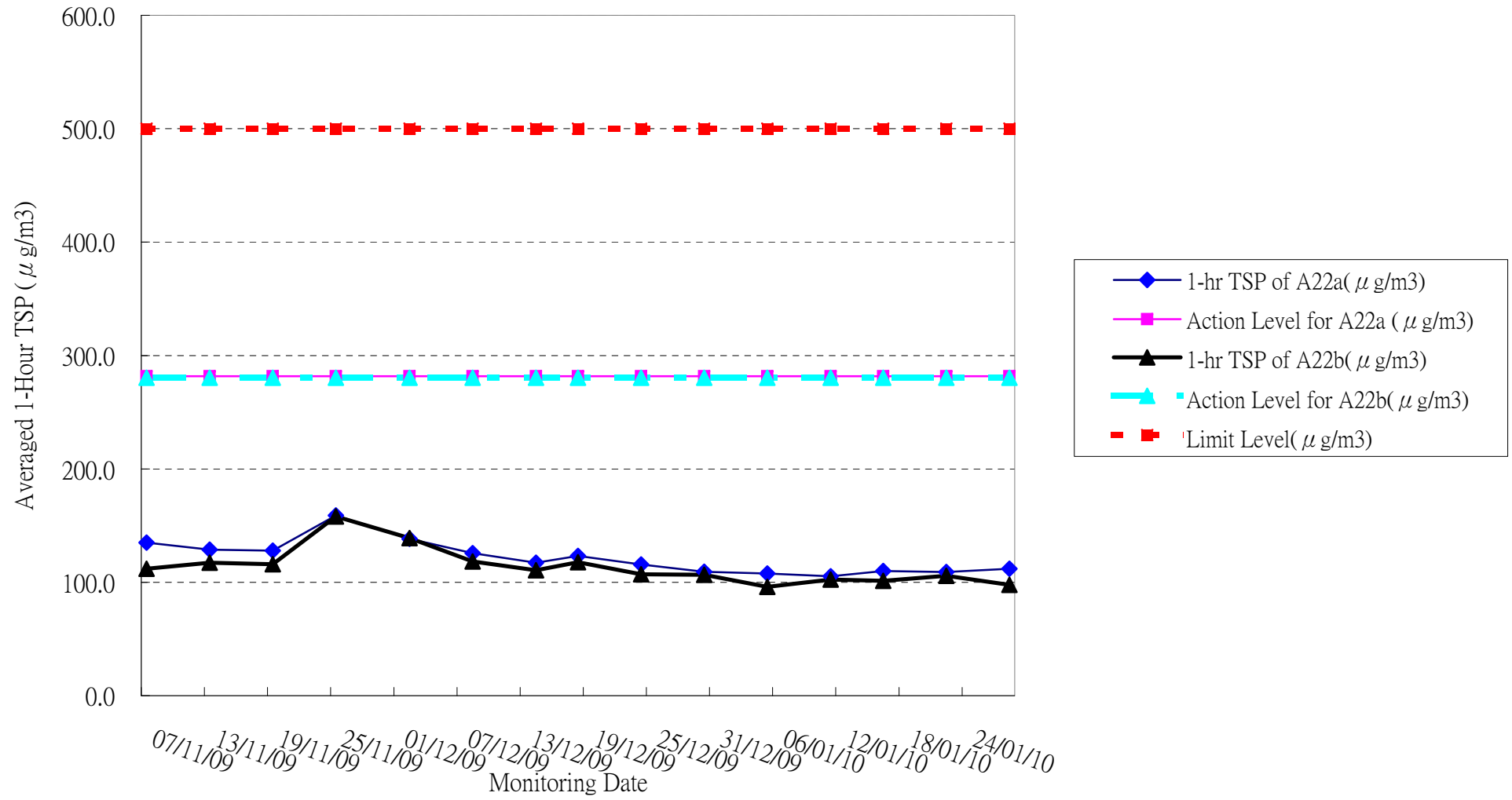
Appendix B

*Summary and Graphical Plot of 1-Hour TSP
Monitoring Record*

Impact Monitoring for reprovisioning of cremators in Wo Hop Shek Crematorium**Air Quality Monitoring: 1-hour TSP****Month: November 2009 - January 2010**

Date	1-hr TSP of A22a($\mu\text{g}/\text{m}^3$)	Action Level for A22a ($\mu\text{g}/\text{m}^3$)	1-hr TSP of A22b($\mu\text{g}/\text{m}^3$)	Action Level for A22b($\mu\text{g}/\text{m}^3$)	Limit Level($\mu\text{g}/\text{m}^3$)
07/11/09	135.0	281.7	112.0	280.4	500.0
13/11/09	128.7	281.7	117.3	280.4	500.0
19/11/09	128.0	281.7	116.0	280.4	500.0
25/11/09	159.0	281.7	158.0	280.4	500.0
02/12/09	138.3	281.7	139.0	280.4	500.0
08/12/09	125.7	281.7	118.3	280.4	500.0
14/12/09	117.3	281.7	110.7	280.4	500.0
18/12/09	123.3	281.7	117.7	280.4	500.0
24/12/09	115.7	281.7	107.0	280.4	500.0
30/12/09	109.3	281.7	106.7	280.4	500.0
05/01/10	107.7	281.7	96.0	280.4	500.0
11/01/10	105.3	281.7	102.3	280.4	500.0
16/01/10	110.0	281.7	101.3	280.4	500.0
22/01/10	109.0	281.7	105.7	280.4	500.0
28/01/10	112.0	281.7	97.7	280.4	500.0

1-Hour TSP air quality monitoring data plot recorded at the designated monitoring points



Appendix C

*Summary and Graphical Plot of 24-Hour TSP
Monitoring Record*

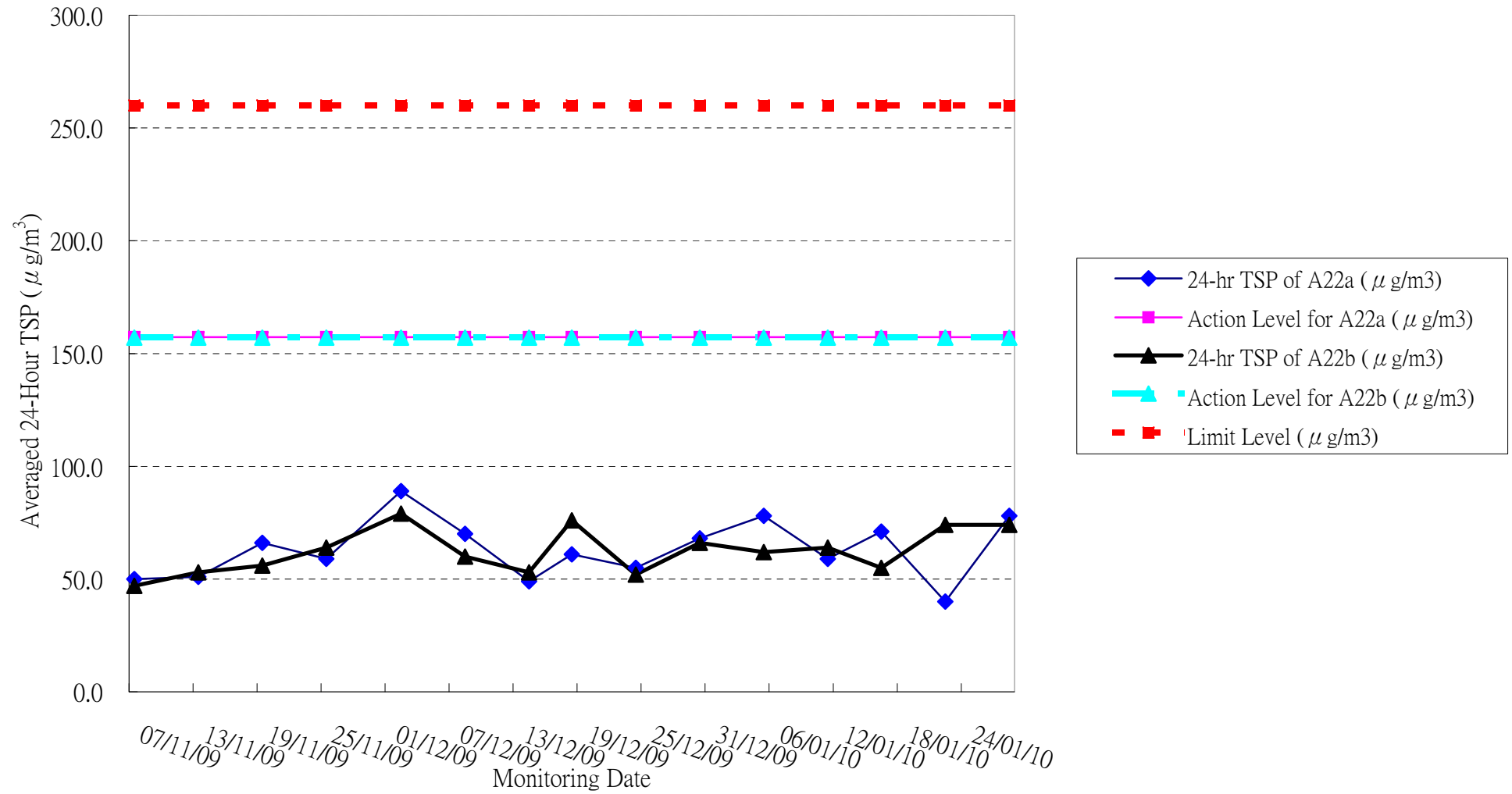
Impact Monitoring for reprovisioning of cremators in Wo Hop Shek Crematorium

Air Quality Monitoring: 24-hour TSP

Month: November 2009 - January 2010

Date	24-hr TSP of A22a (µg/m3)	Action Level for A22a (µg/m3)	24-hr TSP of A22b (µg/m3)	Action Level for A22b (µg/m3)	Limit Level (µg/m3)
07/11/09	50.0	157.3	47.0	157.0	260.0
13/11/09	51.0	157.3	53.0	157.0	260.0
19/11/09	66.0	157.3	56.0	157.0	260.0
25/11/09	59.0	157.3	64.0	157.0	260.0
02/12/09	89.0	157.3	79.0	157.0	260.0
08/12/09	70.0	157.3	60.0	157.0	260.0
14/12/09	49.0	157.3	53.0	157.0	260.0
18/12/09	61.0	157.3	76.0	157.0	260.0
24/12/09	55.0	157.3	52.0	157.0	260.0
30/12/09	68.0	157.3	66.0	157.0	260.0
05/01/10	78.0	157.3	62.0	157.0	260.0
11/01/10	59.0	157.3	64.0	157.0	260.0
16/01/10	71.0	157.3	55.0	157.0	260.0
22/01/10	40.0	157.3	74.0	157.0	260.0
28/01/10	78.0	157.3	74.0	157.0	260.0

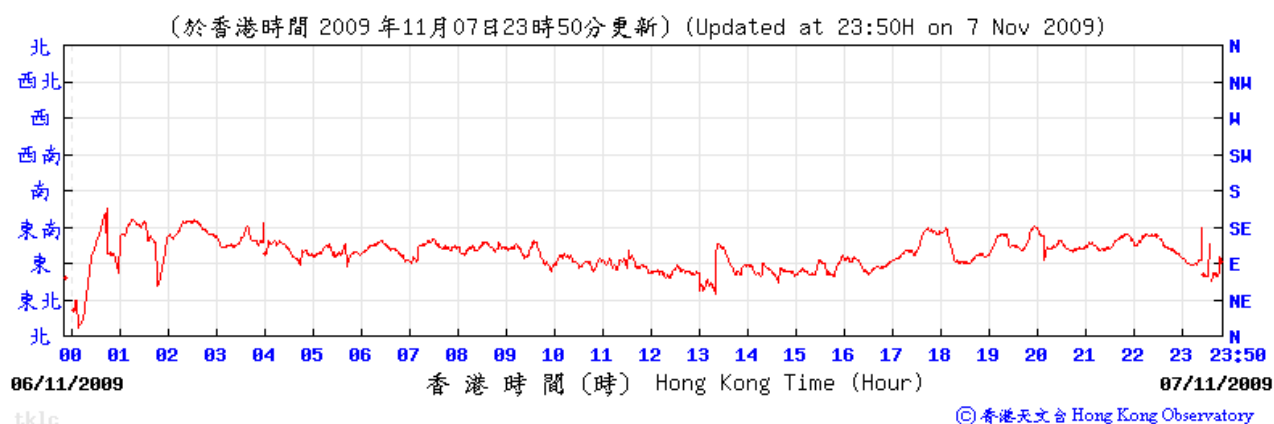
24-Hour TSP air quality monitoring data plot recorded at the designated monitoring points



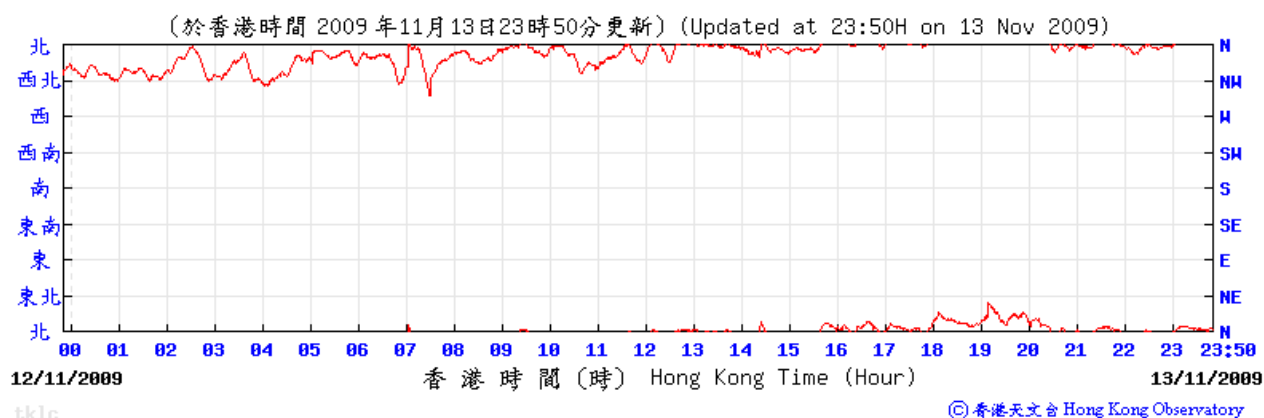
Appendix D
Wind Record

Wind Direction at Hong Kong Observatory Ta Kwu Ling Automatic Weather Station

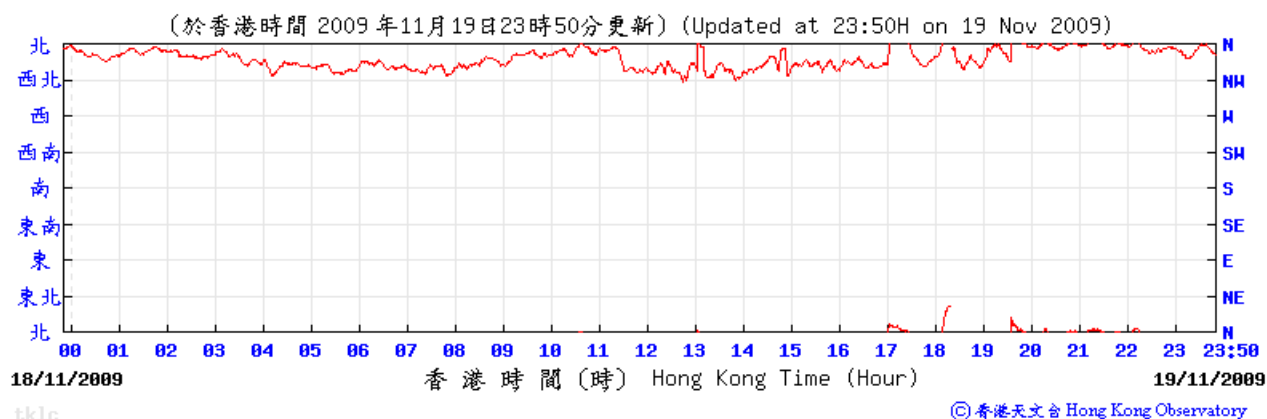
7/11/2009



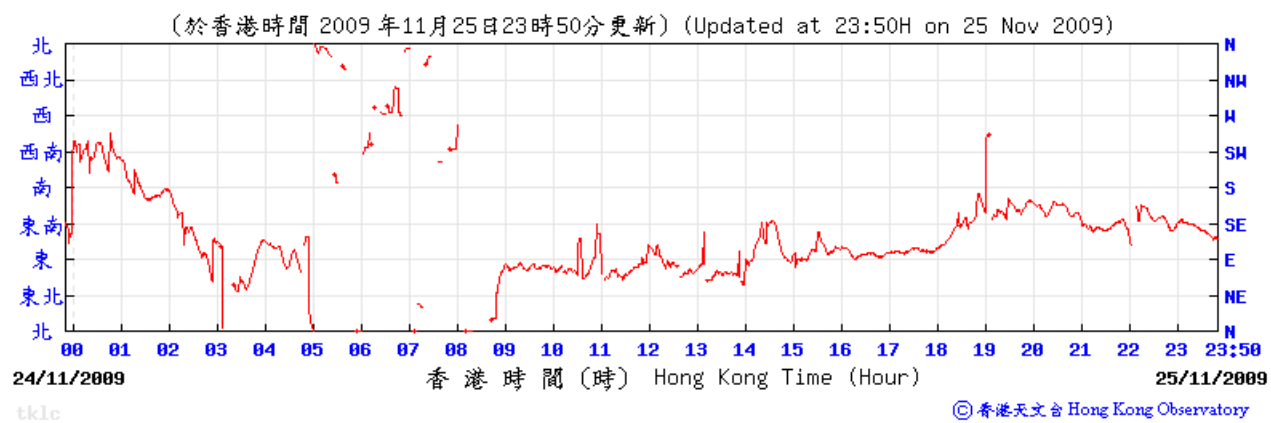
13/11/2009



19/11/2009



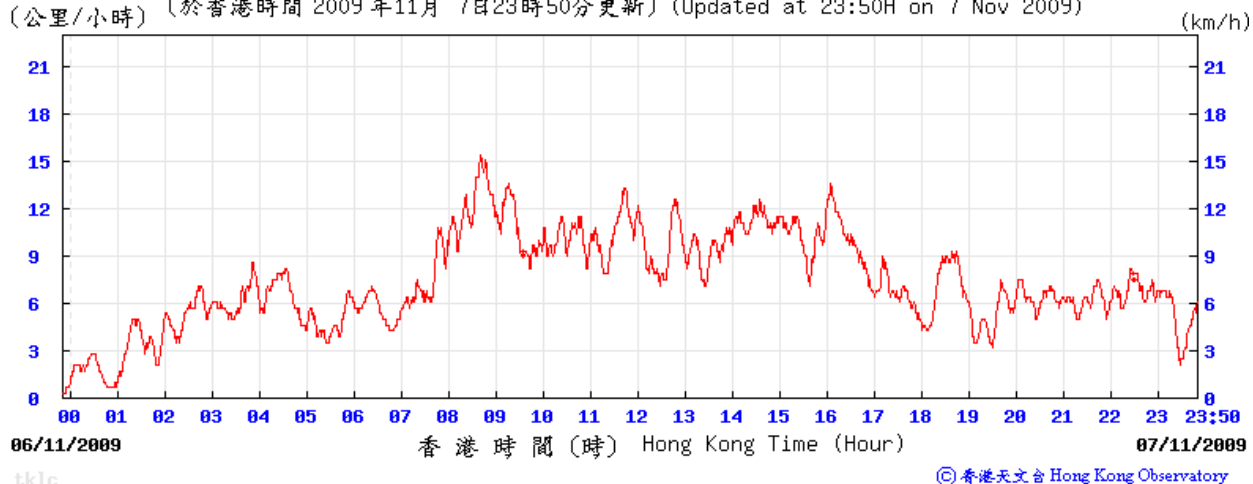
25/11/2009



Wind Speed at Hong Kong Observatory Ta Kwu Ling Automatic Weather Station

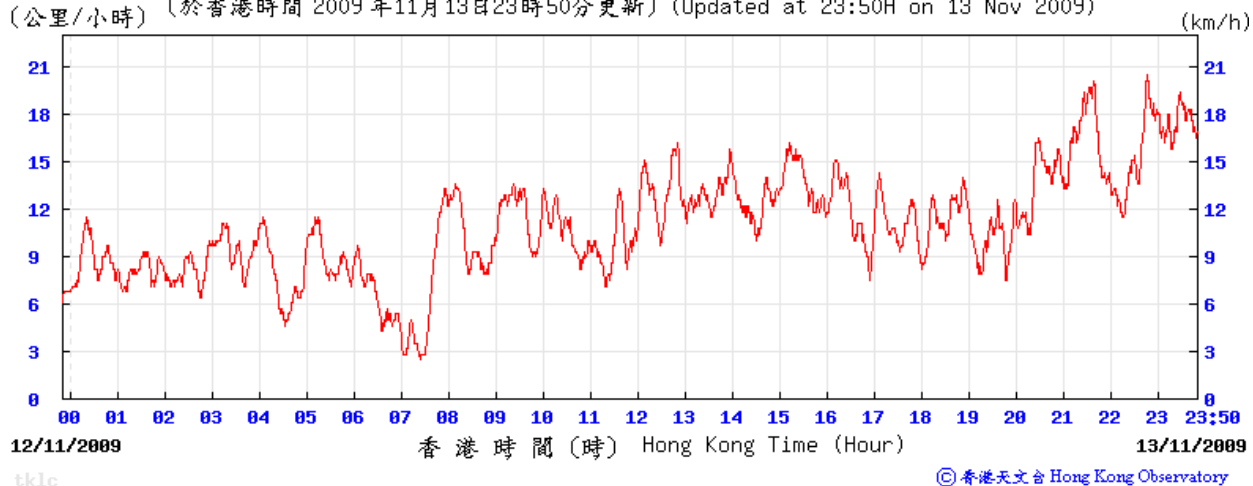
7/11/2009

(公里/小時) (於香港時間 2009 年11月 7日23時50分更新) (Updated at 23:50H on 7 Nov 2009)



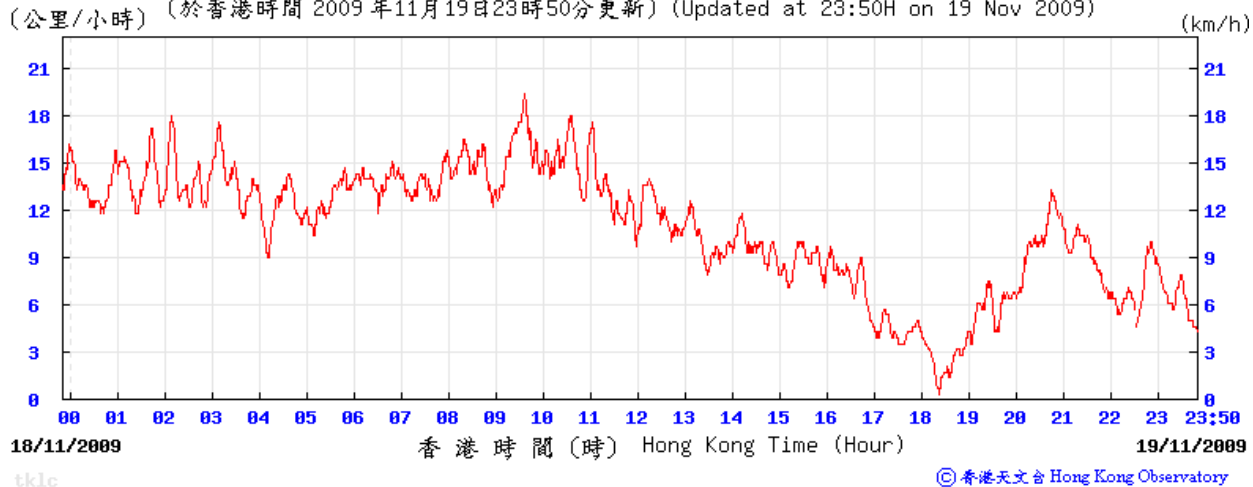
13/11/2009

(公里/小時) (於香港時間 2009 年11月13日23時50分更新) (Updated at 23:50H on 13 Nov 2009)



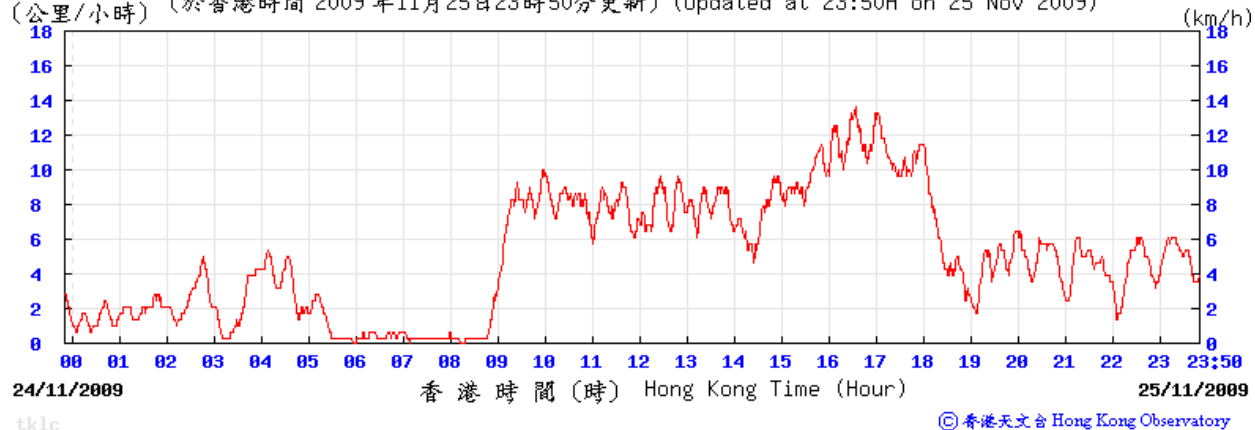
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(公里/小時) (於香港時間 2009 年11月19日23時50分更新) (Updated at 23:50H on 19 Nov 2009)



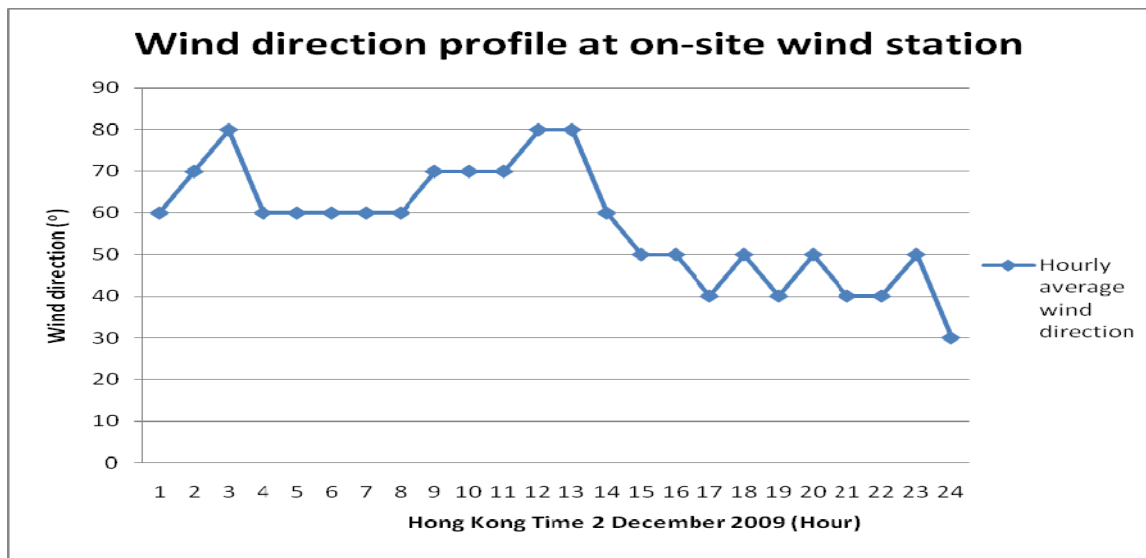
25/11/2009

(公里/小時) (於香港時間 2009 年11月25日23時50分更新) (Updated at 23:50H on 25 Nov 2009)

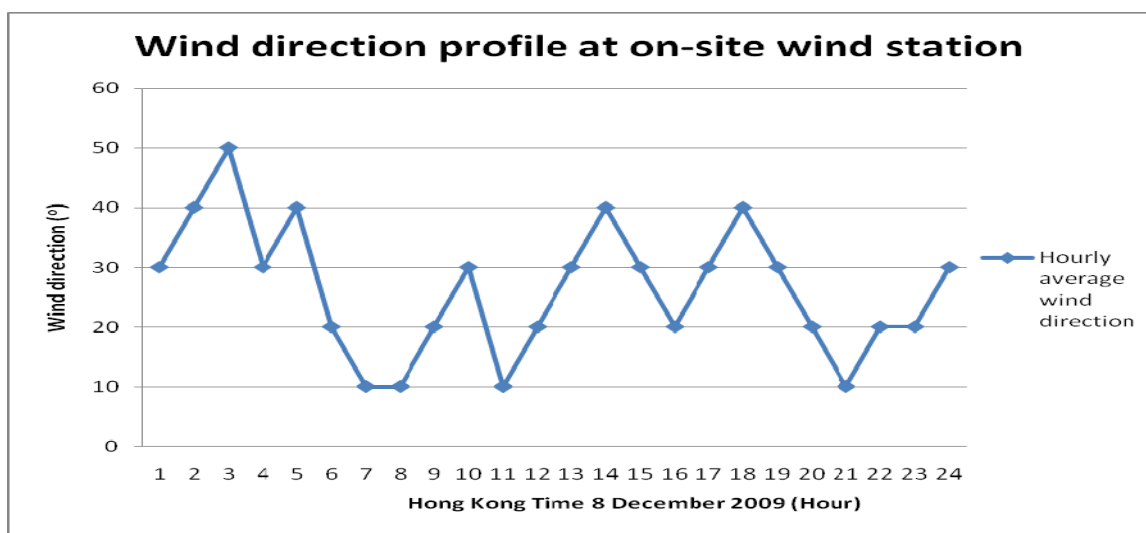


Wind Direction at On-site Wind Station

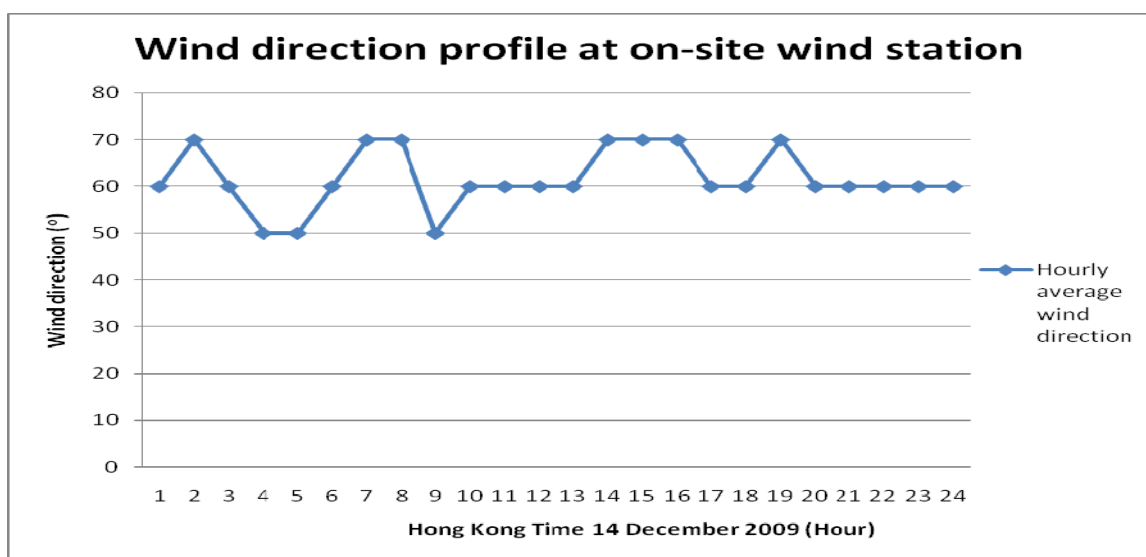
2/12/2009



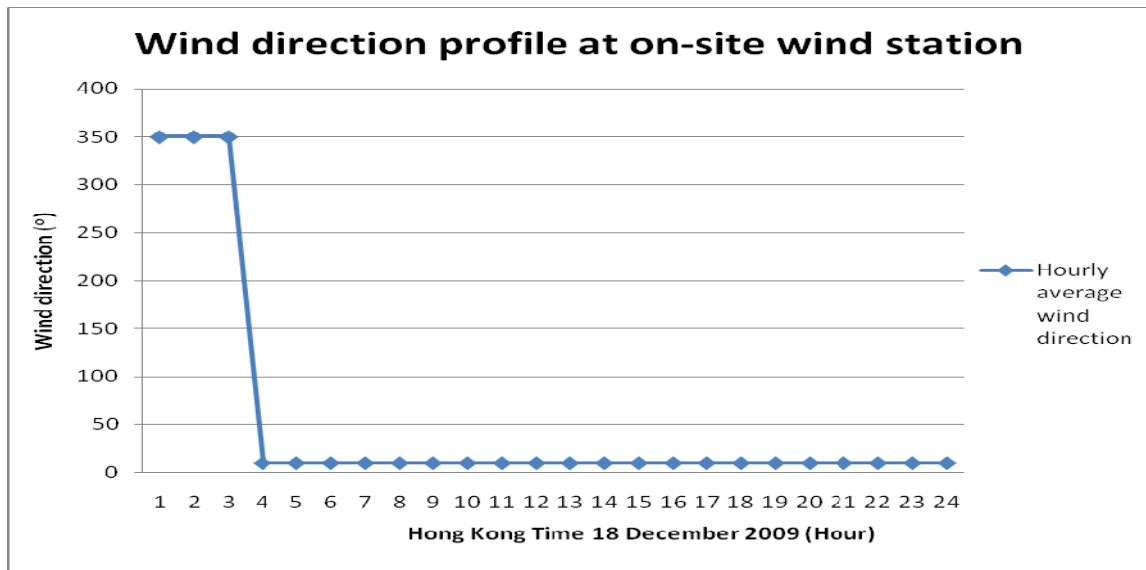
8/12/2009



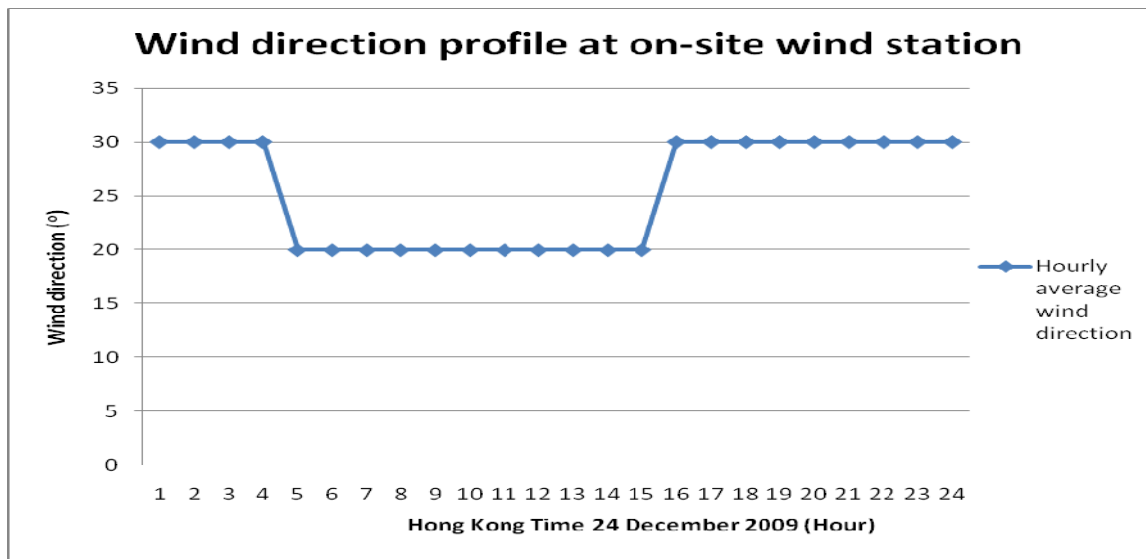
14/12/2009



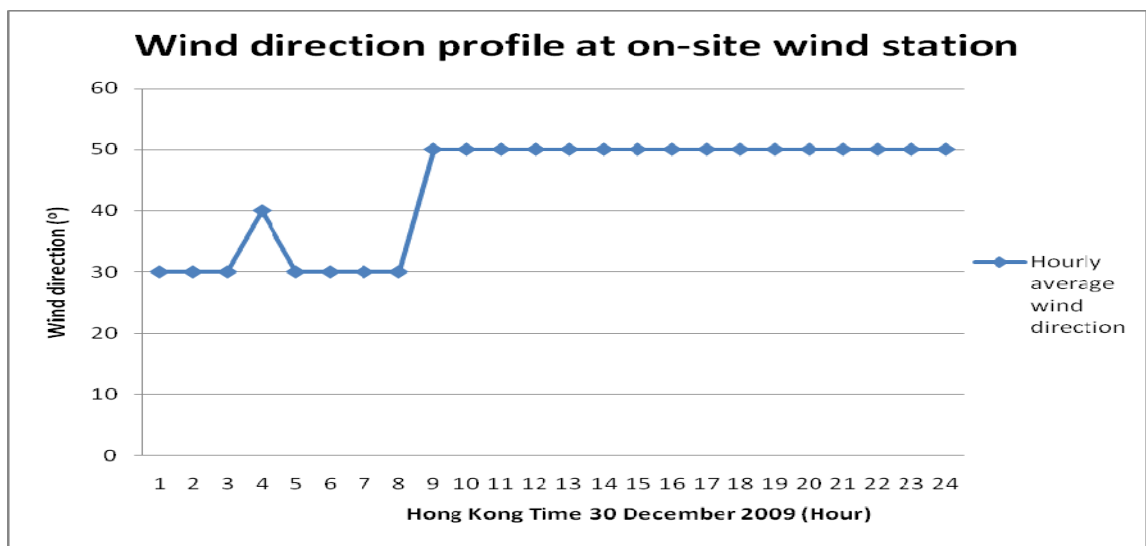
18/12/2009



24/12/2009

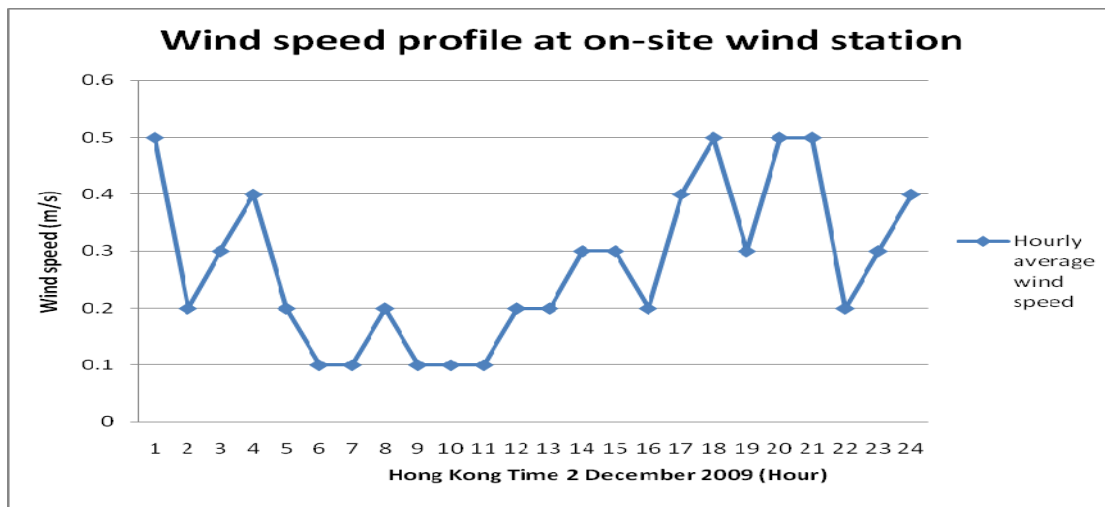


30/12/2009

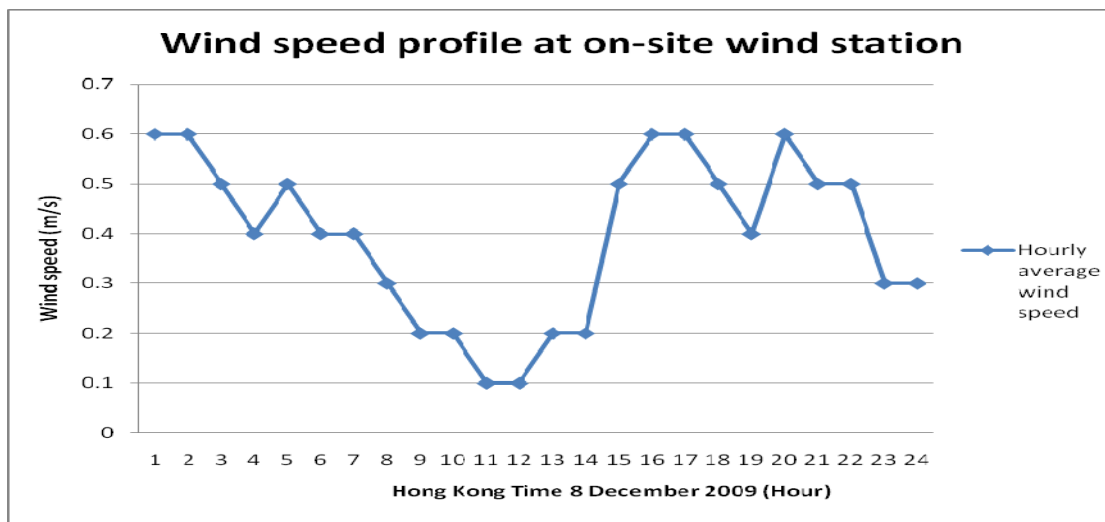


Wind Speed at On-site Wind Station

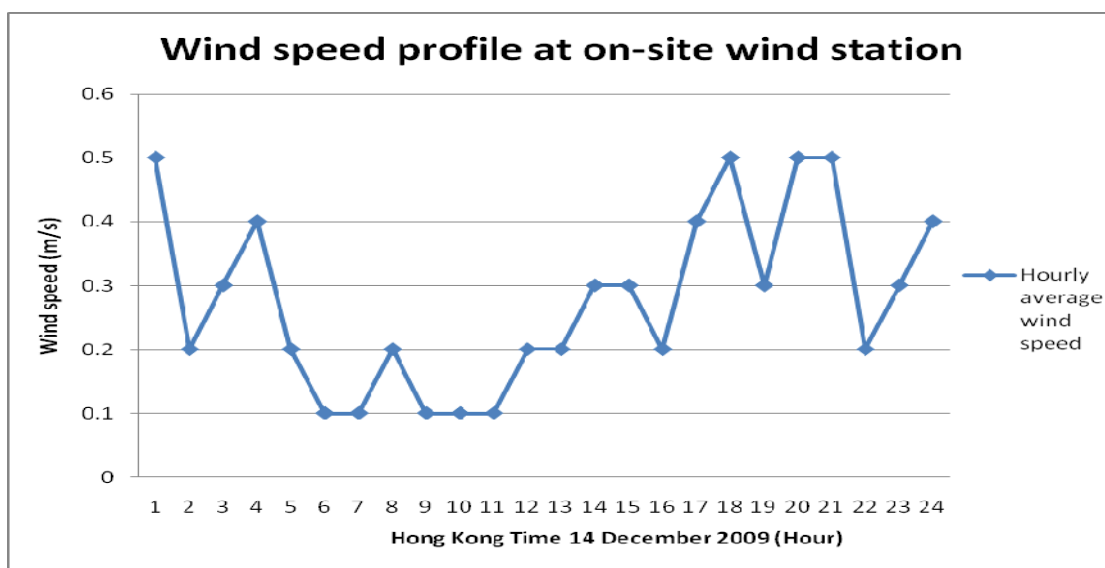
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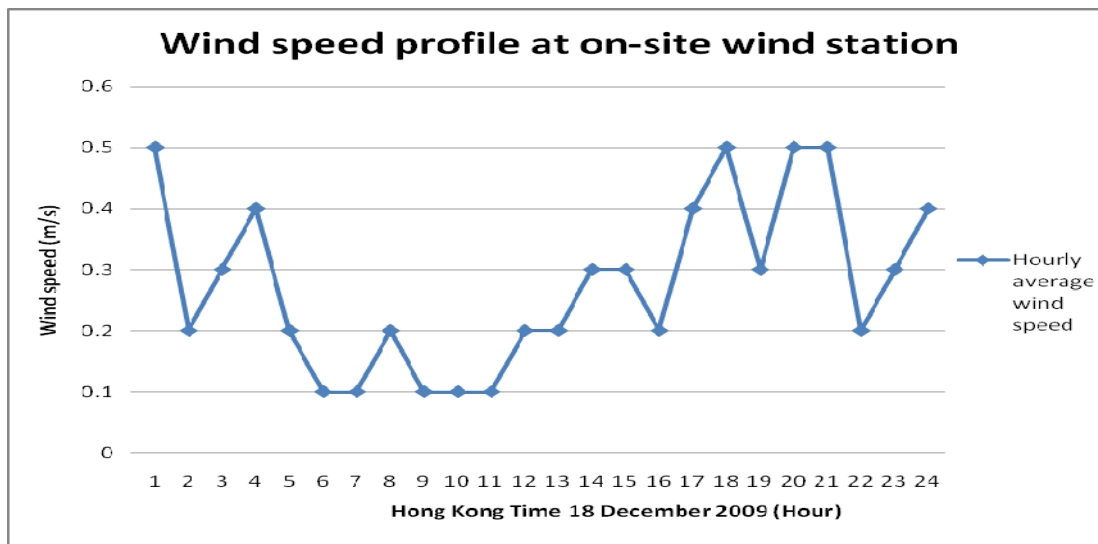
8/12/2009



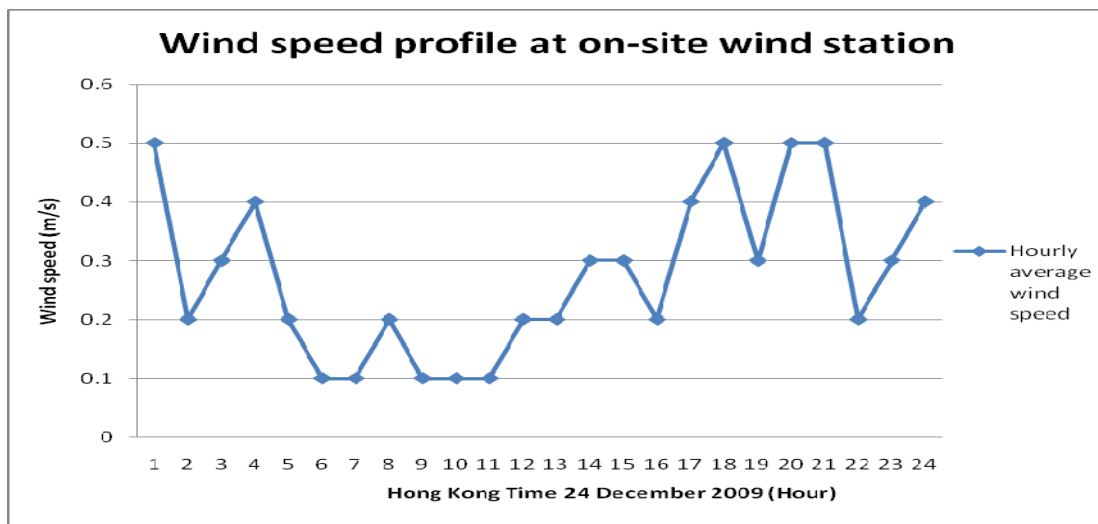
14/12/2009



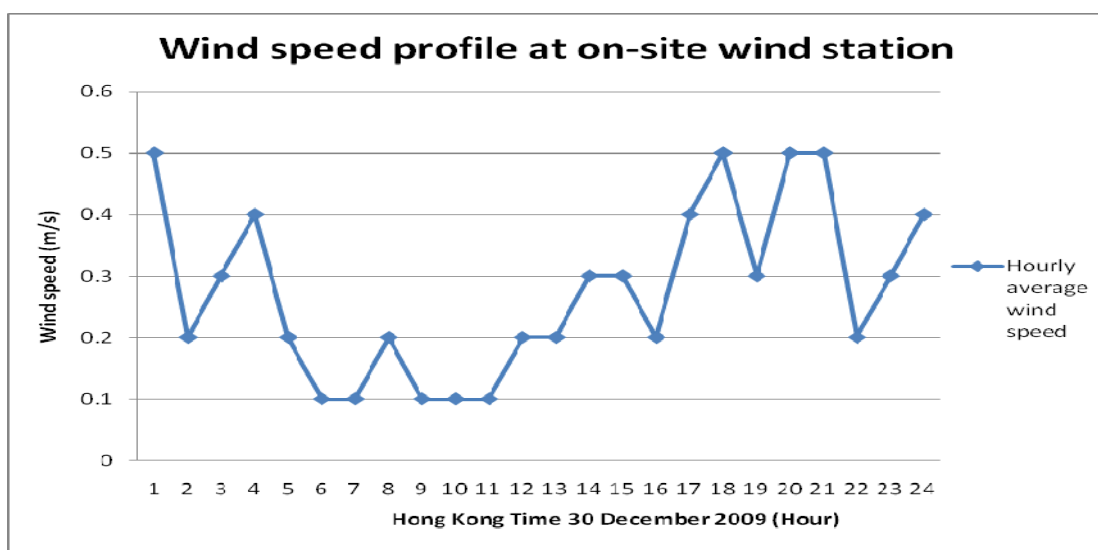
18/12/2009



24/12/2009

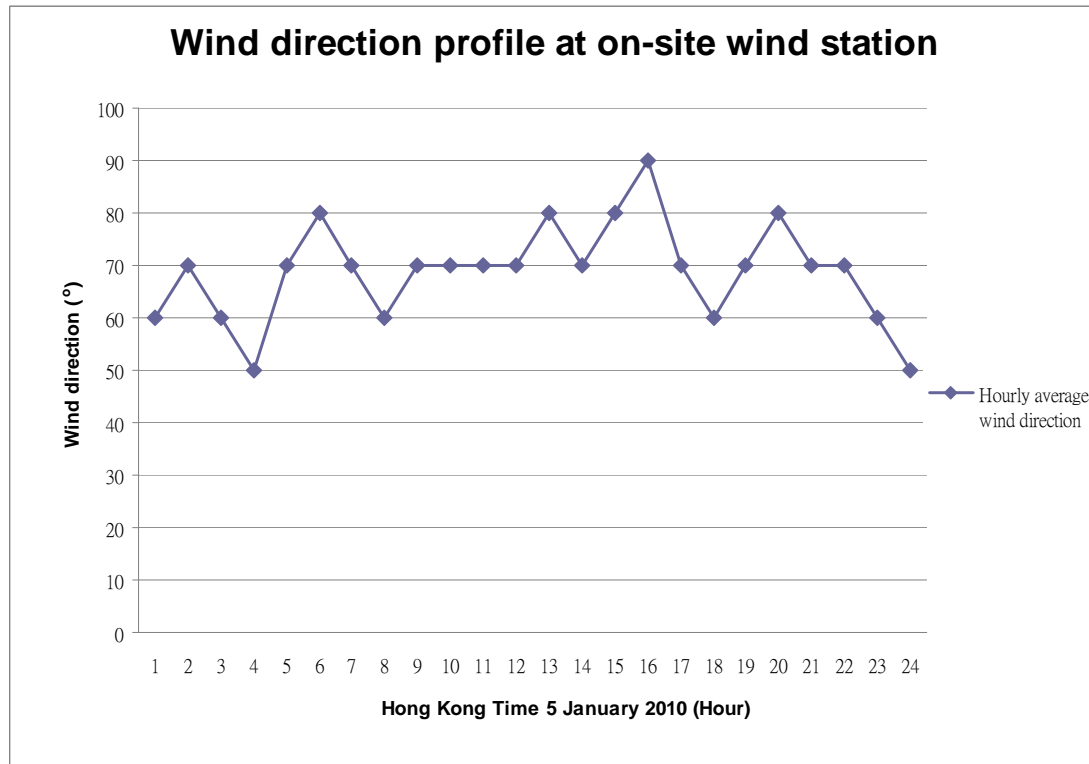


30/12/2009

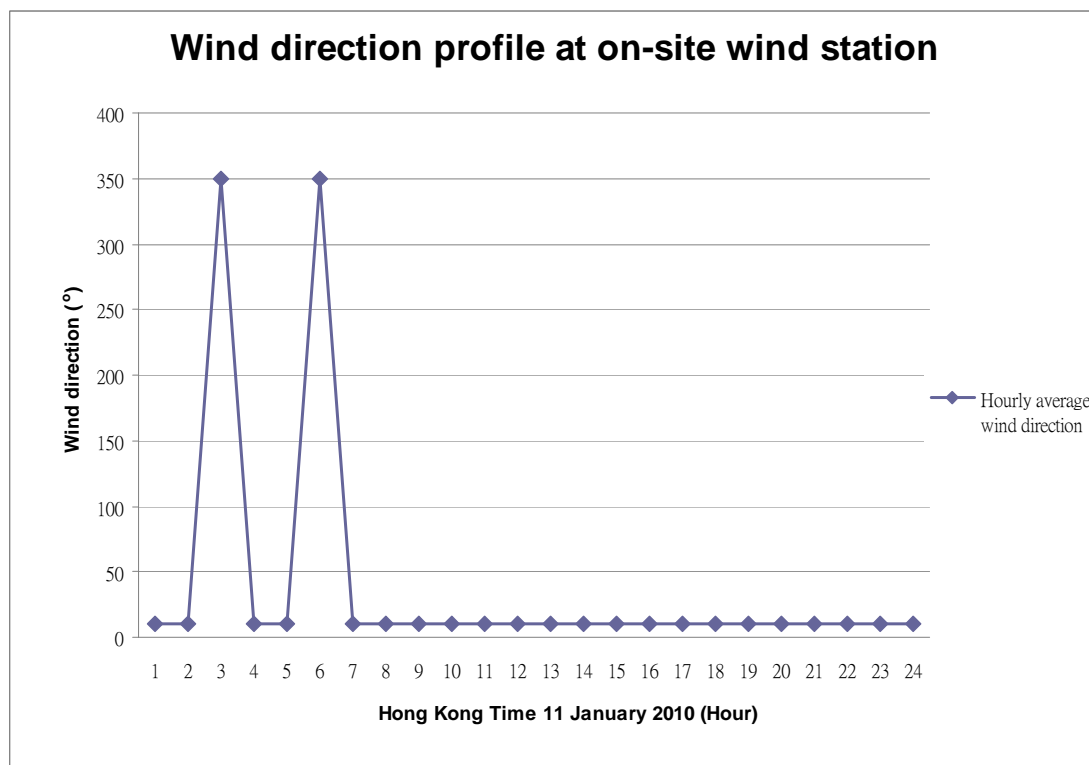


Wind Direction at On-site Wind Station

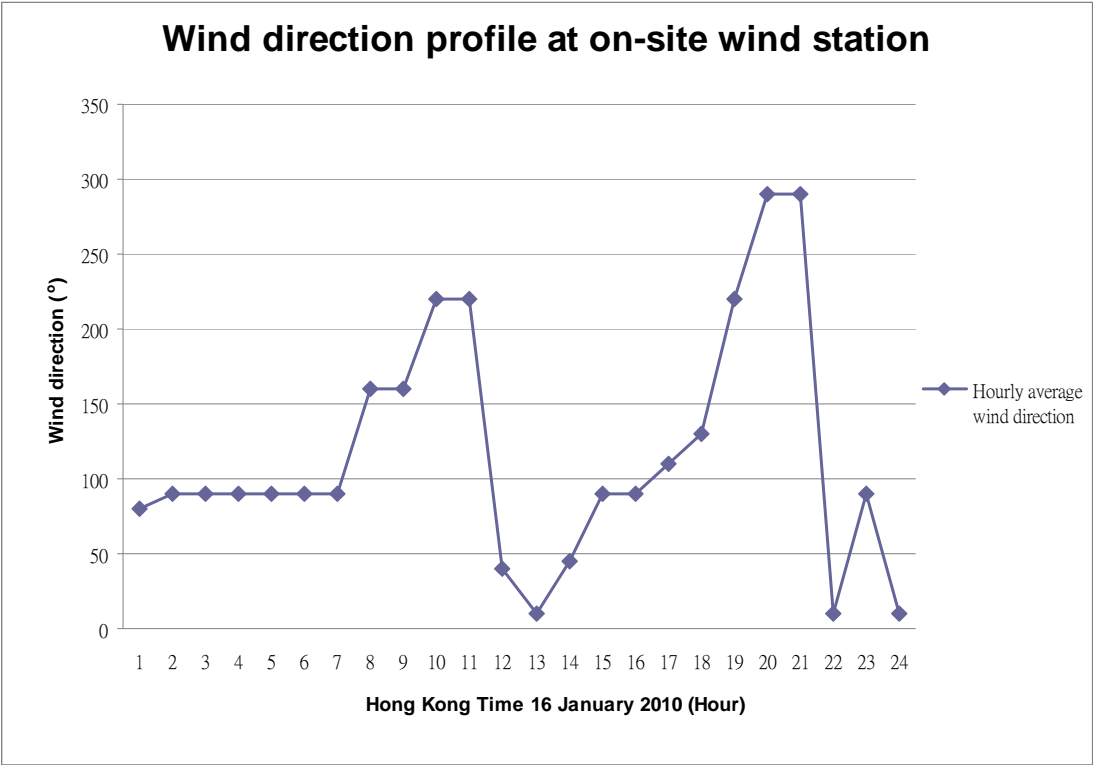
5/1/2010



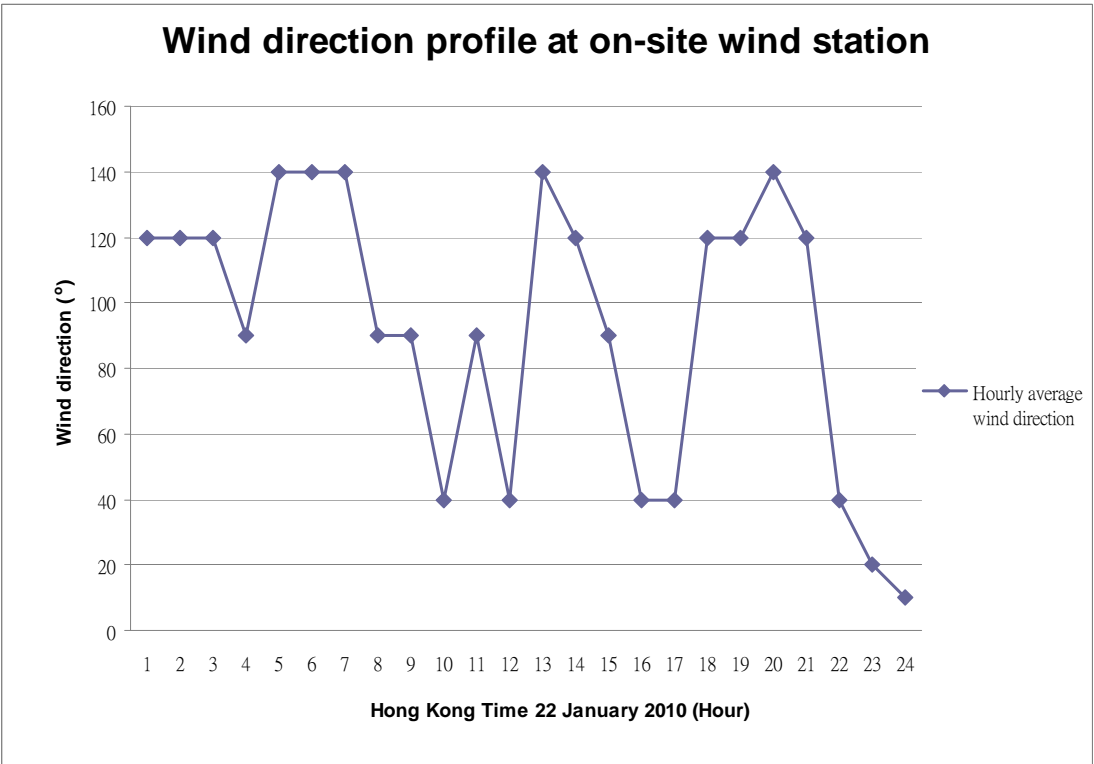
11/1/2010



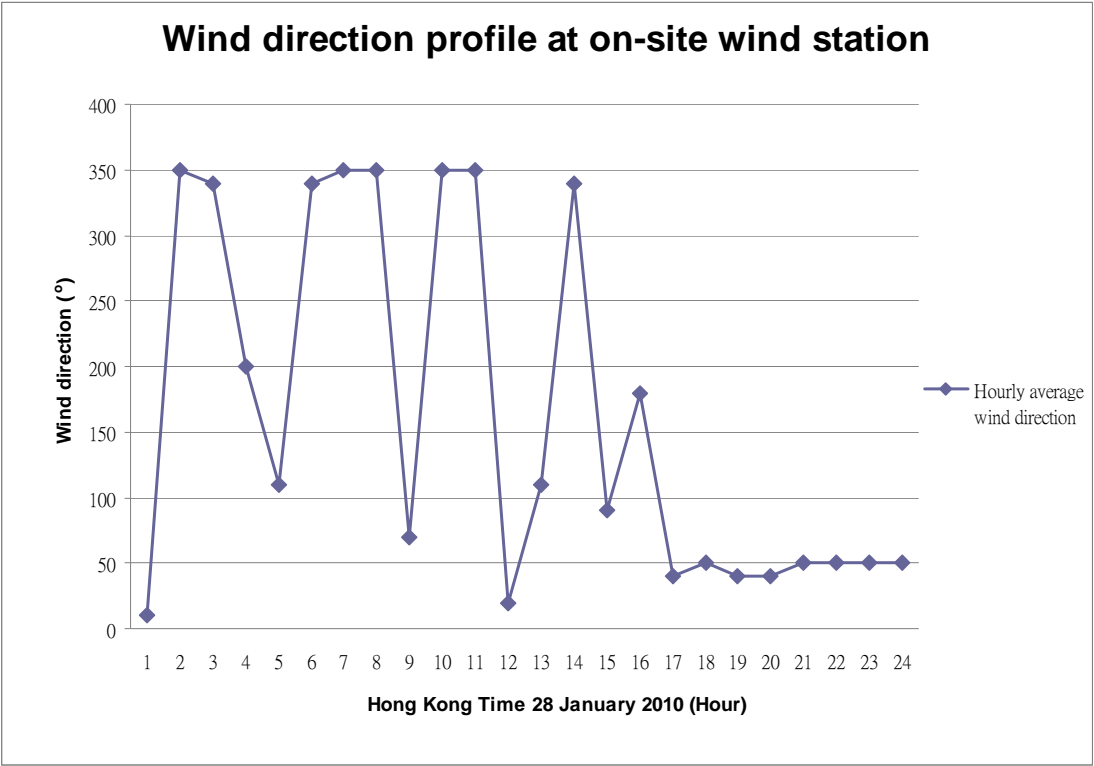
16/1/2010



22/1/2010

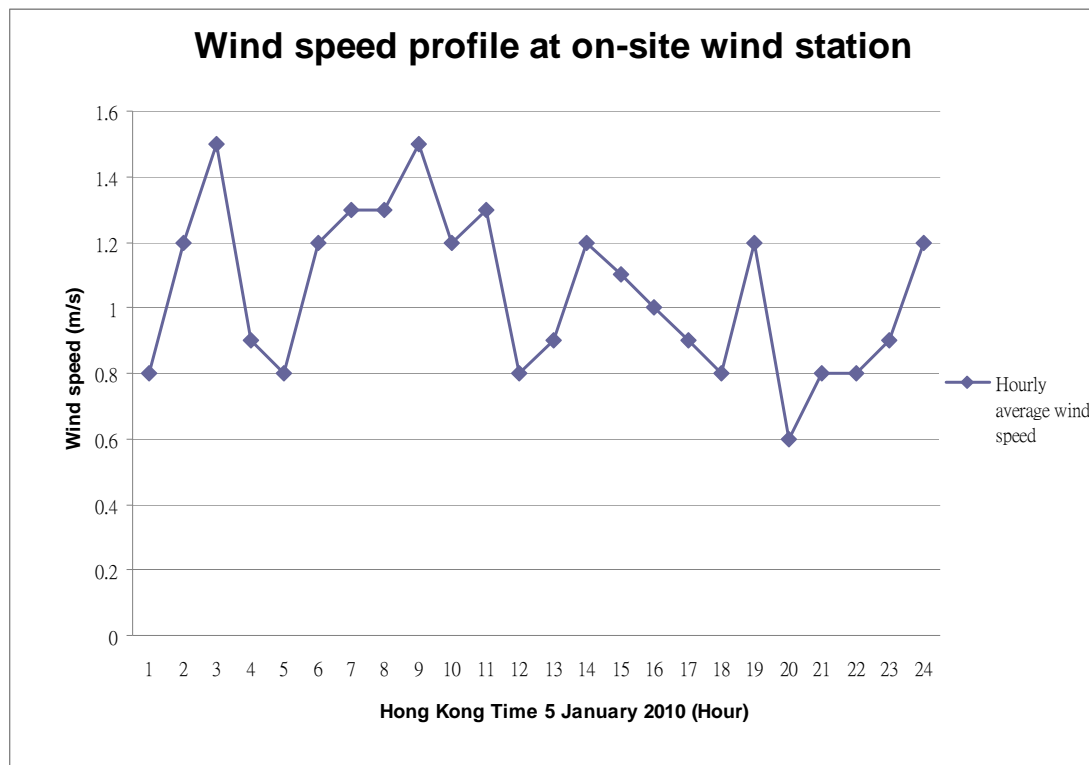


28/1/2010

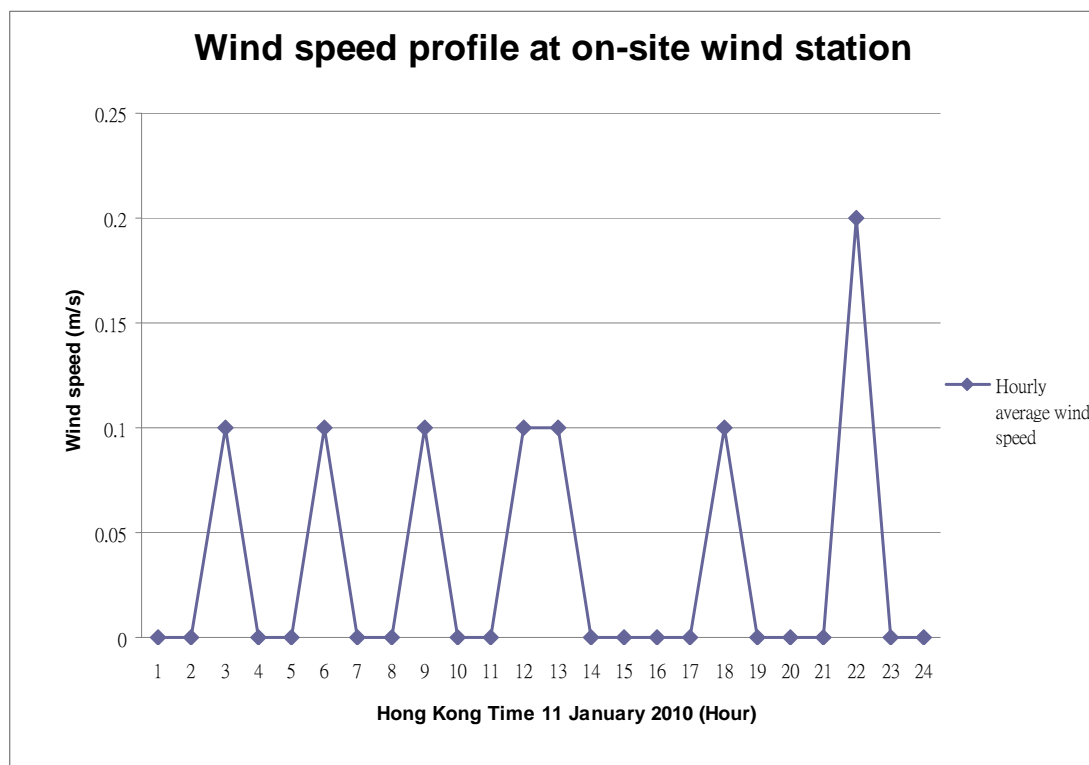


Wind Speed at On-site Wind Station

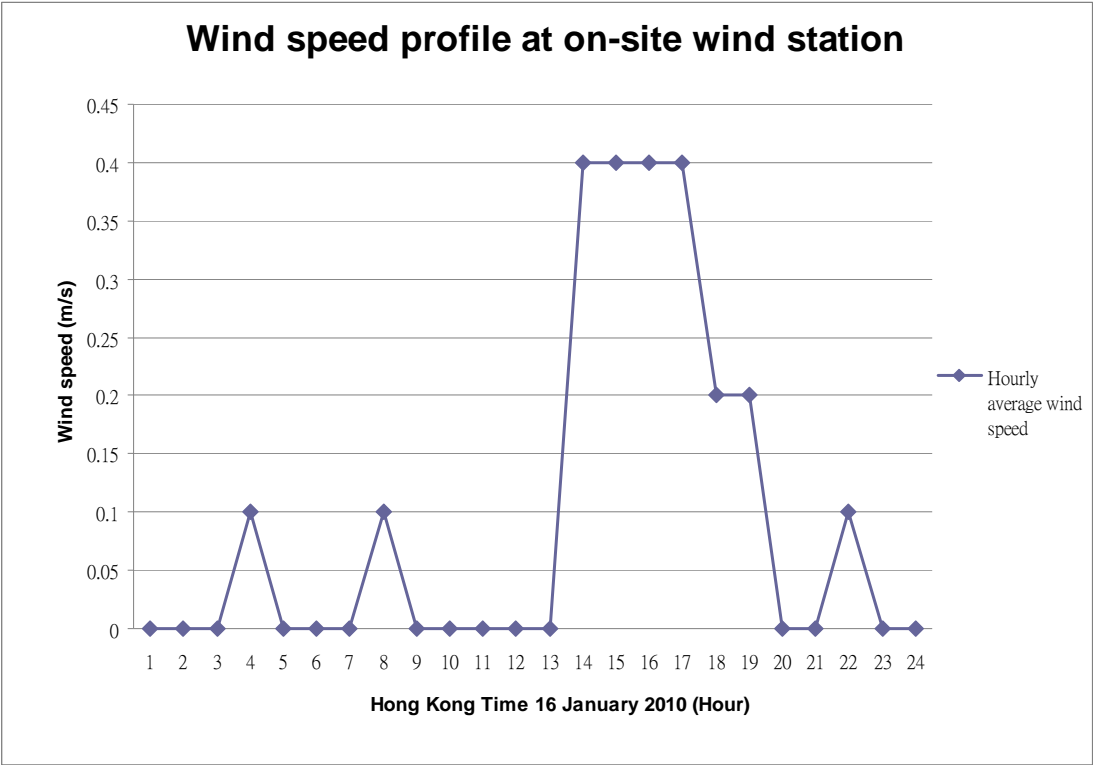
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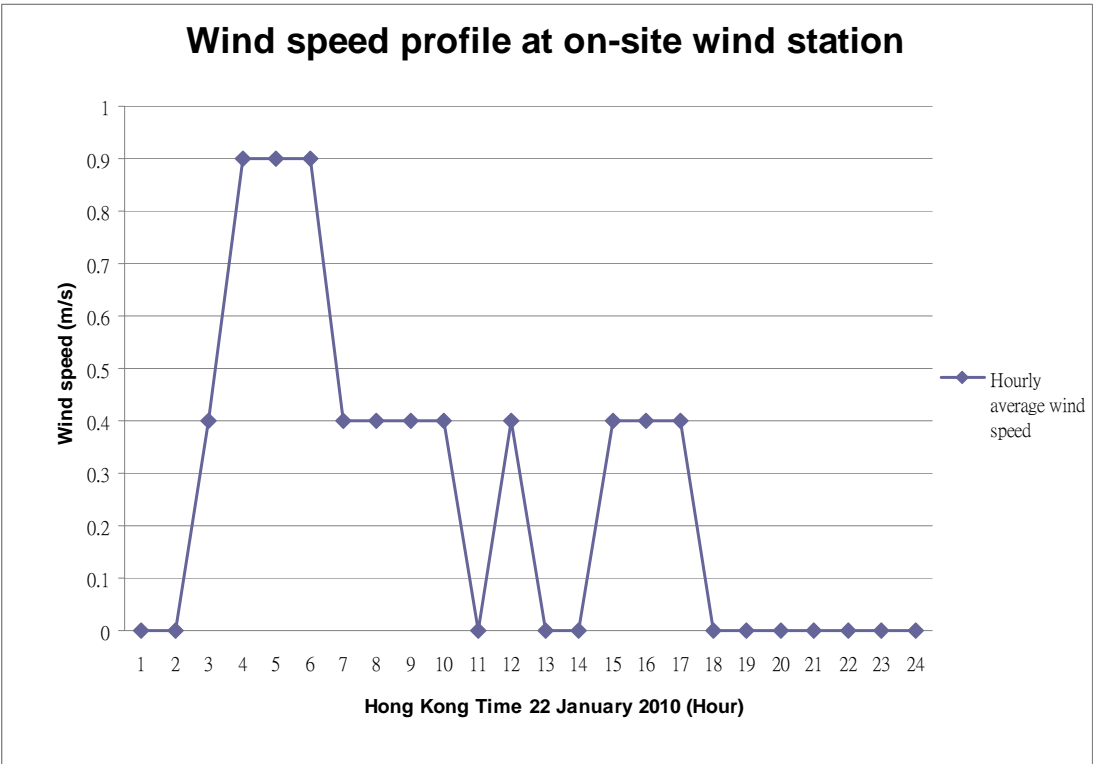
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16/1/2010



22/1/2010



28/1/2010

