



Maeda Corporation

MTRCL Contract C3840-13C Tsim Sha Tsui  
Station Carnarvon Road Subway and Entrances  
Modification Works

Quarterly EM&A Report (March to May 2016)

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Your Ref:  
Our Ref: 40032976/452234

**By Email and Post**

MTR Corporation Limited  
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Attn.: Mr. Kenneth Chow / Environmental Engineer II

10 June 2016

Dear Sirs

**Consultancy Agreement A130-13  
Independent Environmental Checker for CRS and LTS  
CRS - Verification for 9th Quarterly Environmental Monitoring and Audit (EM&A) Report  
(March 2016 to May 2016) (Report No.: EB001340R00381)**

We refer to the 9th Quarterly EM&A Report (March to May 2016) received under cover of the email from the Environmental Team, Hyder Consulting Limited (HCL), dated on 8 June 2016.

We have no comment and have verified the captioned report (Report No.: EB001340R00381).

Should you have any queries, please feel free to contact the undersigned at 3922 9366.

Yours faithfully  
**AECOM Consulting Services Ltd**



Y. W. Fung  
Independent Environmental Checker

LLMC/wwsc

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**M A E D A**

## Maeda Corporation

# MTRCL Contract C3840-13C Tsim Sha Tsui Station Carnarvon Road Subway and Entrances Modification Works

## Quarterly EM&A Report (March to May 2016)

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**Report No** EB001340R0381

**Date** 15 June 2016

This Quarterly EM&A Report is prepared for Maeda Corporation in accordance with the terms and conditions of appointment dated 30 October 2013. Hyder Consulting Limited (Company Number 126012) cannot accept any responsibility for any use of or reliance on the contents of this report by any third party.

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# EXECUTIVE SUMMARY

## Key Issues (Reporting Period)

### Breaches of Action and Limit Levels

- ES01 No Notice of Exceedance (NOE) and the associated investigation and follow-up actions were required as the environmental monitoring results registered no exceedances of Action/ Limit Levels of air quality and construction noise during the Reporting Period.
- ES02 Corrective actions were required as the environmental audit during the Reporting Period observed:
1. Total number of 3 findings and required implementation of environmental mitigation measures;
  2. No non-compliance with the required waste management; and
  3. No adverse environmental impacts on the sensitive receivers environed with the site of the Project.

### Environmental Complaints

- ES03 One environmental complaint on air nuisance was recorded during the Reporting Period.

### Notification of Summons and Successful Prosecutions

- ES04 No notification of summons and successful prosecutions were recorded during the Reporting Period.

### Reporting Changes

- ES05 No major reporting changes were made during the Reporting Period.

## Future Key Issues

### General

- ES06 Full implementation of the environmental mitigation measures, which are required in the EM&A Plan and summarized in Implementation Schedule, are recommended. Whenever necessary, proper maintenance and improvement of the implemented mitigation measures are reminded.

### Construction Noise

- ES07 Particular attention should be paid to construction noise mitigation measures, especially during piling works during the coming construction period to ensure full compliance with statutory and non-statutory requirements and guidelines. Proactive review of working methods, careful selection and arrangement of the noisy equipment as well as effective noise mitigation measures are strongly recommended.

### Water Quality

- ES08 In addition, compliance with water quality mitigation measures remains one of the key environmental issues within the construction period, especially when water usage is high.

### Air quality

- ES09 Furthermore, implying of construction dust suppression measures are recommended during dusty activities under dry and windy conditions.
- ES10 Construction dust suppression measures including decking over the excavation areas, watering of exposed site surface and covering of all excavated and stockpiles of dusty material by impervious sheeting or similar materials are reminded.

# 1. INTRODUCTION

## 1.1 Reporting Period

- 1.1.1 This is the 9<sup>th</sup> quarterly EM&A report (hereinafter referred as 'This Report') covering construction period from 1<sup>st</sup> March 2016 to 31<sup>st</sup> May 2016 (hereinafter referred as 'the Reporting Period').
- 1.1.2 This Report has been written in accordance with the **Environmental Monitoring and Audit Plan** (hereinafter referred as 'the EM&A Plan') enclosed in the **Project Profile – MTR Tsim Sha Tsui Station Carnarvon Road Subway and Entrances Modification Works**, which is registered in the **Environmental Permit No. EP-440/2012** (hereinafter referred as 'the EP') (Register No.: PP-462/2012).

## 1.2 Project Background

- 1.2.1 In order to improve the appearance of Carnarvon Road Entrance D1 and D2 of Tsim Sha Tsui (hereafter referred as 'TST') Station and to provide a more comfortable walking environment nearby, MTR Corporation Limited (hereafter referred as 'MTRC' or 'the Corporation') has commissioned Maeda Corporation (hereinafter referred as 'MC') the contract **MTR Tsim Sha Tsui Station Carnarvon Road Subway and Entrances Modification Works** (hereafter referred as 'the Project'). The Project is proposed to rebuild the existing Entrance D1 and D2 and construct a new Entrance D3 at the basement B2 level of the K11 Art Mall to connect to the TST station by a subway, which extends from the Entrance D1 and D2 and runs approximately 80m along Carnarvon Road and across the Bristol Avenue to the Entrance D3. The project was commenced in March 2014 and is anticipated to be completed in September 2017.
- 1.2.2 The existing TST Station had been in operation before the **Environmental Impact Assessment Ordinance** (hereafter referred as 'EIAO') came into effect on 1 April 1998. It constitutes an exempted Designated Project (hereinafter referred as 'DP') according to Section 9(2) (g) of the EIAO (Cap. 499). As the Project involves a material change to an exempted DP which may have potential environmental impacts, an environmental permit is required prior to the commencement of the modification works. The Project Profile has been developed to provide information for direct application of an environmental permit. The EP has been granted since 18 July 2012, where the Project Profile and the associated **EM&A Plan** are registered.
- 1.2.3 Site map, works area and locations of the environmental monitoring under the Project are illustrated in Figure 1.1 Site Location Plan of **Appendix A**.
- 1.2.4 Management structure of the Project, including organization chart, lines of communication and contact names and telephone numbers of key personnel, is demonstrated in **Appendix B**.
- 1.2.5 Construction programme is shown in **Appendix C**, whereas implementation schedule for the recommended environmental mitigation measures (hereinafter referred as 'the Implementation Schedule') is summarized in **Appendix D**, which fine tunes construction activities and shows inter-relationship with environmental protection / mitigation measures for the construction period.

## 1.3 Environmental Status

- 1.3.1 As required in the EP, AECOM Consulting Services Limited (formerly known as "URS Hong Kong Limited") has been appointed as the Independent Environmental Checker under the Project (hereinafter referred as 'the IEC'), whereas Hyder Consulting Limited has been appointed as the Environmental Team under the Project (hereinafter referred as 'the ET').



- 1.3.2 According to the EP Condition 3.2 (a) under Environmental Monitoring and Audit (EM&A) during the Construction Period, baseline monitoring has been completed and the required Baseline Monitoring Report has been submitted to EPD on 14 February 2014 prior to commencement of the works under the Project.
- 1.3.3 Status of relevant environmental permits, licences, and/or notifications on environmental protection for the Project is summarized in **Table 1-3-1**. They are detailed in **Appendix E**.

**Table 1-3-1 Summary of Status of Environmental Licenses and Permits**

Item	Description	License/Permit Status
1	Air Pollution Control (Construction Dust)	Notification Ref. 365953 acknowledged on 21 Oct 2013.
2	Water Pollution Control Ordinance (Discharge License)	The discharge license (Ref No. WT0019722-2014) granted on 01 Sep 2014 superseding the previous license (Ref No. WT00018229-2014)
3	Billing Account for Disposal of Construction Waste	A/C Ref. 7018523 granted on 25 Oct 2013
4	Chemical Waste Producer Registration	Registration Ref. 5213-2214-M2446-16 granted on 4 Mar 2014
5	Construction Noise Permit	CNP No. GW-RE0088-16 approved on 29 January 2016 for operation of 4 submersible water pumps (electric) or 1 Air Blower (TS) or 4 Hand-held Drill (TS) from 15 February to 14 August 2016.

## 1.4 Construction Activities

- 1.4.1 Construction activities undertaken during the Reporting Period are summarized in **Table 1-4-1**:

**Table 1-4-1 Construction Activities Undertaken during the Reporting Period**

Item	Description
<b><u>Construction Activities Undertaken during the Reporting Period</u></b>	
1	Excavation and concrete breaking UU identification and support tailoring at G1-6
2	Horizontal pipe piling and grouting for mined tunnel
3	ABWF & BS works of the temporary staircase
4	Relocation of site facilities
5	Installation of steel decking at Grid 4-6

## 2. EM&A REQUIREMENTS

### 2.1 Air Quality

#### Monitoring Parameters and Frequency

2.1.1 24-Hour Total Suspended Particulates (hereinafter referred as '24-Hr TSP') is required to be monitored once a week during construction period of the Project.

2.1.2 1-Hour Total Suspended Particulates (hereinafter referred as '1-Hr TSP') is required to be monitored when exceedances of 24-Hr TSP were recorded, following the Event and Action Plan presented in **Appendix F**.

#### Action and Limit Levels

2.1.3 The Action and Limit levels (hereinafter referred as 'the A/L Levels') at K11 have been established in the Baseline Monitoring Report in accordance with the derivation criteria specified in Section 3.7 of the EM&A Plan, which are summarized in **Table 2-1-1** as follows:

**Table 2-1-1 Derivation of Action and Limit Levels for Air Quality at K11,  $\mu\text{g}/\text{m}^3$**

Parameter	Action Level	Limit Level
24-Hr TSP	For baseline level $\leq 200 \mu\text{g}/\text{m}^3$ , Action level = (130% of baseline level + Limit level)/2	260
	For baseline level $> 200 \mu\text{g}/\text{m}^3$ , Action level = Limit level	
1-Hr TSP	For baseline level $\leq 384 \mu\text{g}/\text{m}^3$ , Action level = (130% of baseline level + Limit level)/2	500
	For baseline level $> 384 \mu\text{g}/\text{m}^3$ , Action level = Limit level	

2.1.4 The established A/L Levels for 24-Hr and 1-Hr TSP are summarized in **Table 2-1-2** as follows:

**Table 2-1-2 Action & Limit Levels for Air Quality at K11,  $\mu\text{g}/\text{m}^3$**

Parameter	Action Level	Limit Level
24-Hr TSP	222	260
1-Hr TSP	373	500

#### Event and Action Plan

2.1.5 In case exceedances of Action and/or Limit levels for air quality occur, **Event and Action Plan** for Air Quality enclosed in **Appendix F** will be implemented.

#### Environmental Mitigation Measures for Air Quality

2.1.6 Although most of the construction works would be carried out underground, appropriate dust mitigation measures as stipulated in the EP, Project Profile, related environmental regulation including Air Pollution Control (Construction Dust) Regulation as well as those recommended in the Implementation Schedule should be implemented to control fugitive dust emission. The following key dust suppression measures are recommended:

- Decking over the excavation areas;
- Regular watering to reduce dust emissions from all exposed site surface, particularly during dry weather;
- Frequent watering for particularly dusty construction areas and areas close to air sensitive receivers;
- Cover all excavated or stockpiles of dusty material by impervious sheeting or spraying with water to maintain the entire surface wet;
- Provision of vehicle washing facilities at the exit points of the site; and
- Provision of tarpaulin covering for any dusty materials on a vehicle leaving the site.

2.1.7 Details of the implementation schedule for the required environmental mitigation measures are presented in **Appendix D**.

## 2.2 Construction Noise

### Monitoring Parameters and Frequency

2.2.1 **Table 2-2-1** summarizes the monitoring parameters and frequency for construction noise.

**Table 2-2-1 Noise Monitoring Parameters and Frequency**

Parameters	Frequency
$L_{eq}$ in 30 minutes	Once a week

2.2.2 Monitoring schedules for construction noise for the Reporting Period and the next Reporting Period are prepared and submitted to MTRC, IEC and MC prior to implementation via e-mail and / or facsimile for ease of necessary inspection. Where amendment is necessary under ad hoc conditions, including actual and broadcast adverse weather, accidental instrument failures, etc., advanced notification is given at least 24 hours prior to implementation or as practical as possible.

### Action and Limit Levels

2.2.3 The Action and Limit levels (hereinafter referred as 'the A/L Levels) at K11 have been established in the **Baseline Monitoring Report**. They are summarized in **Table 2-2-2** as follows:

**Table 2-2-2 Action and Limit Levels for Construction Noise**

Time Period	Action Level	Limit Level
0700-1900 hours on normal weekdays	When one valid documented complaint is received.	75*

*Note: \*70 dB(A) for schools and 65 dB(A) during school examination periods. If works are to be carried out during restricted hours, the conditions stipulated in the Construction Noise Permit (CNP) issued by the Noise Control Authority have to be followed.*

### Event and Action Plan

2.2.4 In case exceedances of Action and/or Limit levels for construction noise occur, the Event and Action Plan enclosed in **Appendix F** will be implemented.

## Mitigation Measures for Construction Noise

2.2.5

Although no residual noise impact would be generated after the proposed mitigation measures are in place, the general construction noise control measures stipulated in the EP, Project Profile as well as those recommended in the Implementation Schedule should be fully implemented in order to minimize noise impacts during the construction phase. They are summarized as follows:

- a) The Code of Practice on Good Management Practice to Prevent Violation of the Noise Control Ordinance (Chapter 400) (for Construction Industry) published by EPD shall be adopted;
- b) The statutory and non-statutory requirements and guidelines shall be complied with;
- c) Approval for the method of working, equipment and noise mitigation measures intended to be used at the site shall be granted from the Project Engineer before commencing any work;
- d) Working methods to minimize the noise impact on the surrounding NSRs shall be formulated and executed, and the implementation of these methods shall be monitored by experienced personnel with suitable training;
- e) Noisy equipment and noisy activities shall be located as far away from the NSRs as is practical;
- f) Unused equipment shall be turned off;
- g) PME should be kept to a minimum and the parallel use of noisy equipment / machinery should be avoided;
- h) All plant and equipment shall be maintained regularly;
- i) Material stockpiles and other structures shall be effectively utilized as noise barriers, whenever practicable; and
- j) Enclosure of Entrance D1 with acoustic mat during demolition.

2.2.6

Details of the implementation schedule for the mitigation measures are presented in **Appendix D**.

### 3. MONITORING RESULTS

#### 3.1 Air Quality

##### Monitoring Results

3.1.1 24-Hr TSP monitoring during the Reporting Period was conducted following the agreed monitoring schedule.

3.1.2 24-Hr TSP results of the Reporting Period are summarized in the following **Table 3-1-1**. Graphical plots of the parameter are illustrated in **Appendix H**.

**Table 3-1-1 Summary of 24-Hr TSP Monitoring Results, ug/m<sup>3</sup>**

Monitoring Date	24-Hr TSP	A/L Levels	
01-Mar-16	159.5		
07-Mar-16	80.1		
14-Mar-16	95.2		
21-Mar-16	34.7		
29-Mar-16	51.4		
05-Apr-16	51.7		
11-Apr-16	37.9		
18-Apr-16	49.5	<b>Action Level:</b> <b>222</b>	<b>Limit Level:</b> <b>260</b>
25-Apr-16	41.7		
03-May-16	47.7		
09-May-16	27.2		
17-May-16	67.4		
23-May-16	68.2		
30-May-16	29.0		
<b>Mean (Min – Max)</b>	<b>60.1 (27.2 – 159.5)</b>		

## Discussion

- 3.1.3 One environmental complaints against air quality were registered during the Reporting Period.
- 3.1.4 **Table 3-1-1** demonstrates that all 24-Hr TSP results of the Reporting Period were fluctuated below the A/L Level, there were no Action Level or Limit Level exceedances recorded during the Reporting Period.
- 3.1.5 No Notice of Exceedances (thereinafter referred as 'NOE') and the associated NOE Investigation and remedial actions were required during the Reporting Period.

## 3.2 Construction Noise

### Monitoring Results

- 3.2.1 Construction noise monitoring during the Reporting Period was conducted following the agreed monitoring schedule.
- 3.2.2 Construction noise monitoring results of the Reporting Period are summarized in the following **Table 3-2-1**. Graphical plots of the parameter are illustrated in **Appendix H**.
- 3.2.3 Weather condition, including wind speeds and directions, during the monitoring period are recorded and shown in **Appendix G**.

**Table 3-2-1 Summary of Construction Noise Monitoring Results at K11, dB(A)**

Monitoring Date	Leq (30 min)	A/L Levels
01-Mar-16	67.2	Limit Level: 75
08-Mar-16	66.2	Action Level:
15-Mar-16	69.9	Any documented complaint against construction noise.
22-Mar-16	67.3	
29-Mar-16	68.3	
05-Apr-16	69.0	
15-Apr-16	70.8	
19-Apr-16	67.1	
26-Apr-16	68.7	
03-May-16	70.5	
12-May-16	66.7	
17-May-16	67.9	
26-May-16	69.1	
31-May-16	72.4	
<b>Mean (Min – Max)</b>	<b>69.0 (66.2 – 72.4)</b>	

## Discussion

- 3.2.4 No environmental complaint against construction noise was registered during the Reporting Period, whereas **Table 3-2-1** demonstrates that all construction noise results of the Reporting Period fell below the Limit Level of the parameter.
- 3.2.5 Neither NOE nor NOE investigation and the associated remedial actions were required during the Reporting Period.
- 3.2.6 The Contractor was reminded to pay extra attention to noisy construction activities within the Reporting Month and the coming month. The ET will liaise closely with the Contractor on any unusual level of noise recorded in the upcoming month.
- 3.2.7 It is re-instated that adequate mitigation measures should be implemented during the noisy construction activities in order to alleviate noise nuisance generated from the Project related construction activities.

## Weather Conditions

- 3.2.8 No weather conditions and any other factors were identified to have significant effects on the monitoring results of air quality and construction noise during the Reporting Period.
- 3.2.9 Weather information during the Reporting Period which is extracted from Hong Kong Observatory King's Park Weather Station is enclosed for reference in **Appendix G**.

## 3.3 Conclusions and Recommendations

### Conclusions

- 3.3.1 No exceedances of A/L Levels of air quality and no exceedances of Action Level of construction noise were registered during the Reporting Period.
- 3.3.2 One air quality related complaint was recorded during the Reporting Period.

### Recommendations

- 3.3.3 Full implementation of the environmental mitigation measures, which are required in the EM&A Plan and summarized in Implementation Schedule of **Appendix D**, is recommended. Where necessary, proper maintenance and improvement of the implemented mitigation measures are reminded.
- 3.3.4 Construction dust shall be suppressed during dusty construction activities under dry and windy conditions.
- 3.3.5 Construction noise shall be eliminated to avoid adverse impacts on the nearby sensitive receivers.

## 4. ENVIRONMENTAL AUDIT

### 4.1 Site Inspection

4.1.1 Weekly site inspections during the Reporting Period are conducted by MTRC, MC and ET, whereas monthly site inspections of the Reporting Period were jointly conducted by the IEC, MTRC, MC and ET. The site inspection follows strictly the agreed Site Inspection Checklist, which covers all the site audit requirements stipulated in the EM&A Plan, PS and all relevant environmental laws.

4.1.2 The completed Site Inspection Checklists are distributed to all relevant parties upon completion of the site inspection for agreement and signature of the relevant parties and, where appropriate, for implementation of the recommended corrected actions to promptly rectify the situation.

4.1.3 There were 14 site inspections conducted within the Reporting Period. Deficiencies or findings of the site audits and the associated follow up actions are summarized in **Table 4-1-1**:

**Table 4-1-1 Summary of Findings and Follow-Up Actions of the Site Inspection**

<b>Date</b>	<b>Deficiencies or findings</b>	<b>Follow-Up Action</b>
1-Mar-16	No follow-up item.	Not required.
	No deficiency was observed on site.	Not required.
08-Mar-16	No follow-up item.	Not required.
	No deficiency was observed on site.	Not required.
15-Mar-16	1) A generator was observed covering with acoustic enclosure at site. The Contractor was reminded to provide sufficient acoustic enclosure (with surface mass of at least 10 kg/m <sup>2</sup> ) for the generator.	To be follow-up the next inspection.
	2) Sufficient watering and enclosure the area where possible when cutting open of pavement for hoarding alterations.	To be follow-up the next inspection.
	3) Construction wastes were properly stored. However, the storage area was without proper signage for indication. The Contractor was reminded.	To be follow-up the next inspection.
22-Mar-16	1) Generator was well enclosed with all 4 sides.	Closed. Contractor is suggested to have the top of the generator to be covered.
	2) The works was already completed and the location was tidy up for public use.	Closed.
	3) Signage was affixed to the area.	Closed.
	No deficiency was observed on site.	Not required.
29-Mar-16	Generator was observed to be well enclosed of all 4 sides as well as the top.	Closed. Contractor is suggested to have the top of the generator to be covered.
	No deficiency was observed on site.	Not required.



<b>Date</b>	<b>Deficiencies or findings</b>	<b>Follow-Up Action</b>
05-Apr-16	No follow-up item.	Not required.
	No deficiency was observed on site.	Not required.
12-Apr-16	No follow-up item.	Not required.
	No deficiency was observed on site.	Not required.
19-Apr-16	No follow-up item.	Not required.
	No deficiency was observed on site.	Not required.
26-Apr-16	No follow-up item.	Not required.
	No deficiency was observed on site.	Not required.
03-May-16	No follow-up item.	Not required.
	No deficiency was observed on site.	Not required.
10-May-16	No follow-up item.	Not required.
	No deficiency was observed on site.	Not required.
17-May-16	No follow-up item.	Not required.
	No deficiency was observed on site.	Not required.
24-May-16	No follow-up item.	Not required.
	No deficiency was observed on site.	Not required.
31-May-16	No follow-up item.	Not required.
	No deficiency was observed on site.	Not required.

4.1.4 As shown in **Table 4-1-1**, no deficiencies or non-compliance of environmental mitigation measures or adverse environmental impacts were observed during the Reporting Period.

## 4.2 Compliance with Legal/ Contractual Requirements

4.2.1 Construction activities under the Project must comply with all environmental protection and pollution control laws in Hong Kong, as well as the contractual requirements of the Project. **Table 4-2-1** summarizes breaches of legal and contractual requirements.

**Table 4-2-1 Summary of Breaches of Legal and Contractual Requirements**

<b>Month</b>	<b>No. of Breaches</b>	<b>Cumulative no. of Breaches</b>
March 2016	0	0
April 2016	0	0
May 2016	0	0

## 4.3 Environmental Complaints

4.3.1 Environmental complaints are handled following closely the flow chart of complaint response procedure which is enclosed in **Appendix I**.

### **Complaint on 28 April 2016**

4.3.2 One complaint was received on 28 April 2016.

4.3.3 A complaint against air nuisance which was suspected caused by dust emission due to failure of water pump used for dust suppression during drilling works inside the vertical shaft at the construction site located at Carnarvon Road, Tsim Sha Tsui, on 28 April 2016. A joint complaint investigation was carried out by the ET and Contractor on 29 April 2016. An investigation report was prepared and submitted on 04 May 2016. No further comment was not the foundation to close the complaint. Complaint could be closed when this is judged by effectiveness of mitigation or not further dust emission was observed or etc. Details of the complaint investigation and observations can be referred to **Appendix K**.

4.3.4 Environmental complaints registered during the Reporting Period and cumulative statistics of environmental complaints are summarized in **Table 4-3-1** below:

**Table 4-3-1 Summary of Complaint**

Month	No. of Complaint	Cumulative no. from March 2014 to the Reporting Period
March 2016	0	4
April 2016	1	5
May 2016	0	5

## 4.4 Notification of Summons/Successful Prosecutions

4.4.1 Notification of summons and successful prosecutions registered during the Reporting Period are summarized in **Table 4-4-1** below:

**Table 4-4-1 Summary of Summon and Successful Prosecutions**

Month	Number of Issue	Cumulative no. from March 2014 to the Reporting Period
March 2016	0	0
April 2016	0	0
May 2016	0	0

## 5. WASTE MANAGEMENT

### 5.1 Waste Management

- 5.1.1 Despite small scale of the Project and the amount of C&D material that needs to be hauled off site and disposed of is anticipated not to be significant, 3-R waste management i.e. Reduce, Reuse and Recycle, is adopted in order to minimize adverse environmental impacts to be generated from construction of the Project.
- 5.1.2 Waste management under the Project is performed in accordance with the Waste Management Plan, which has been prepared for implementation of the construction waste mitigation measures in compliance with the requirements stipulated in the EM&A Plan, PS, Waste Disposal Ordinance and the associated subsidiary regulations.

### 5.2 Waste Management Record

- 5.2.1 Updated waste management status is detailed in **Appendix J**, where the 3-R status of the construction waste generated from construction of the Project during the Reporting Period is presented.

## 6. FUTURE ENVIRONMENTAL ISSUES

### 6.1 Key Environmental Issues

- 6.1.1 Future key environmental issues include:
- 1) Air quality in particular construction dust during dusty construction activities on site, e.g. demolition of the Entrance D2 and excavation works, under dry and windy conditions;
  - 2) Construction noise during noisy activities; and
  - 3) Site surface water run-off and construction wastewater discharge.

### 6.2 Mitigation Measures

- 6.2.1 To avoid potential adverse environmental impacts of the future key environmental issues stated above, full implementation of the mitigation measures as stipulated in the Implementation Schedule shown in **Appendix D** is required.
- 6.2.2 Mitigation measures for air quality, construction noise and water quality implemented to date shall be properly maintained.
- 6.2.3 Where appropriate, improvement of the implemented mitigation measures is reminded to ensure effectiveness of the mitigation measures.

## 7. COMMENTS AND RECOMMENDATIONS

### 7.1 Conclusion

7.1.1 Neither NOE & the associated NOE investigation nor follow-up actions were required as the environmental monitoring results registered no exceedances of A/L Levels of air quality and construction noise during the Reporting Period. It is supported by statistical information of the monitored parameters required in EP Condition 5.6 of the EM&A Plan, including result tables and graphical plots, presented in **Appendix H**.

7.1.2 Base on the findings listed in **Table 4-1-1** within the Reporting Period, three corrective actions are required:

- 1) A generator was observed covering with acoustic enclosure at site. The Contractor was reminded to provide sufficient acoustic enclosure (with surface mass of at least 10 kg/m<sup>2</sup>) for the generator;
- 2) Sufficient watering and enclosure the area where possible when cutting open of pavement for hoarding alterations; and
- 3) Construction wastes were properly stored. However, the storage area was without proper signage for indication. The Contractor was reminded to provide signage for the designated waste disposal area.

7.1.3 It has concluded that the implementation of air quality related mitigation measures and site performance were satisfactory for the complaint received on 28 April 2016, with no further complaint received up to the reported date and the complaint was closed.

7.1.4 In addition, no remedial actions were required as no notification of summons and successful prosecutions were reported during the Reporting Period.

### 7.2 Recommendations

7.2.1 Full implementation of the environmental mitigation measures stipulated in the EM&A Plan and summarized in **Implementation Schedule** of **Appendix D**, are recommended. Where necessary, proper maintenance and improvement of the implemented mitigation measures are reminded.

7.2.2 As noisy construction activities such as piling works were being conducted during the Reporting Period, adequate mitigation measures should be implemented in order to alleviate noise nuisance.

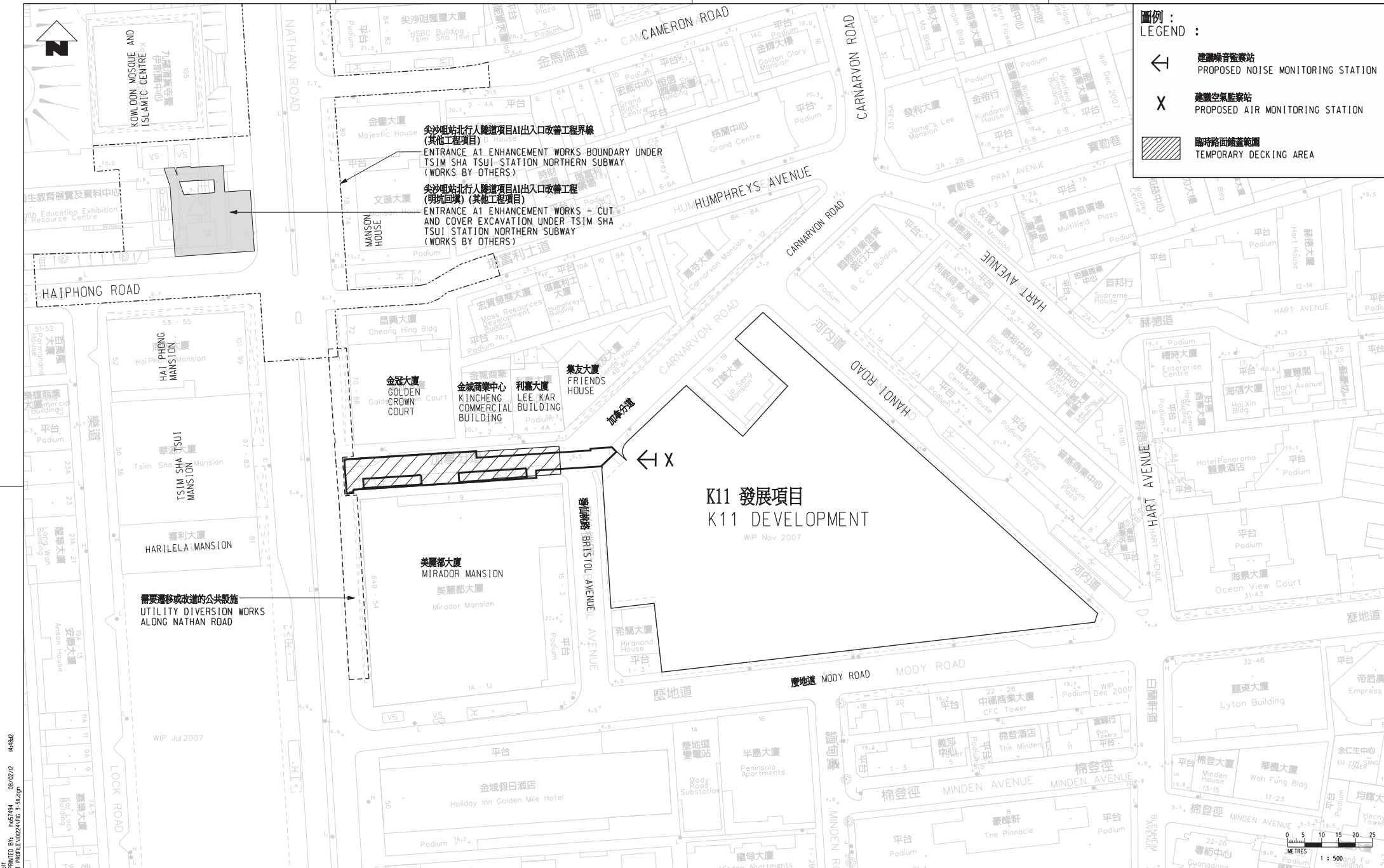
7.2.3 In addition, suppression of construction dust is required during dusty construction activities, especially under the upcoming dry season.

7.2.4 Furthermore, monitoring of site water runoff is reminded to prevent any direct water discharge off site, especially when water usage is high during the construction period. When necessary, the Contractor is reminded to apply additional precautionary measures to prevent any possible environmental deficiency.

Appendix A



Site Location Plan



**圖例 :**  
**LEGEND :**

← 建議噪音監察站  
 PROPOSED NOISE MONITORING STATION

X 建議空氣監察站  
 PROPOSED AIR MONITORING STATION

▨ 臨時路面鋪蓋範圍  
 TEMPORARY DECKING AREA

尖沙咀站北行人隧道項目A1出入口改善工程界線  
 (其他工程項目)  
 ENTRANCE A1 ENHANCEMENT WORKS BOUNDARY UNDER  
 TSM SHA TSUI STATION NORTHERN SUBWAY  
 (WORKS BY OTHERS)

尖沙咀站北行人隧道項目A1出入口改善工程  
 (明坑回填) (其他工程項目)  
 ENTRANCE A1 ENHANCEMENT WORKS - CUT  
 AND COVER EXCAVATION UNDER TSM SHA  
 TSUI STATION NORTHERN SUBWAY  
 (WORKS BY OTHERS)

需要遷移或改道的公共設施  
 UTILITY DIVERSION WORKS  
 ALONG NATHAN ROAD

**K11 發展項目**  
**K11 DEVELOPMENT**  
 WIP Nov 2007

C:\MTR\A3.BW.COL.dwg 08/02/07 44682  
 PLOT BY: 08/02/07 44682  
 FILENAME: A320288-KEN-PROJECT\_PROFILE-022A503\_3-1.dwg

REV	DESCRIPTION	BY	DATE	APPROVED	REV	DESCRIPTION	BY	DATE	APPROVED
A	PROJECT PROFILE				HO				

DRAWN HO  
 DESIGNED --  
 CHECKED --  
 APPROVED --  
 DATE --

**MTR**

**TST STATION CARNARVON ROAD SUBWAY**

ORIGINATOR

**Mott MacDonald**

30/F The Landmark 100 Hong Kong Street  
 Hong Kong  
 T: +852 2512 2727  
 F: +852 2512 1000  
 www.mottmacdonald.com

In association with  
 Hatched Architect Ltd  
 8/F 80 Wing Lok Street  
 Hong Kong

CADD REF.

TITLE

**CONSULTANCY AGREEMENT NO. NEX/1049**  
**DETAILED DESIGN FOR CARNARVON ROAD SUBWAY**  
**AIR AND NOISE MONITORING LOCATIONS**  
**空氣及噪音監察站位置圖**

SCALE 1:500 (A1)

DRAWING NO. **APPENDIX B**

REV. A

Appendix B

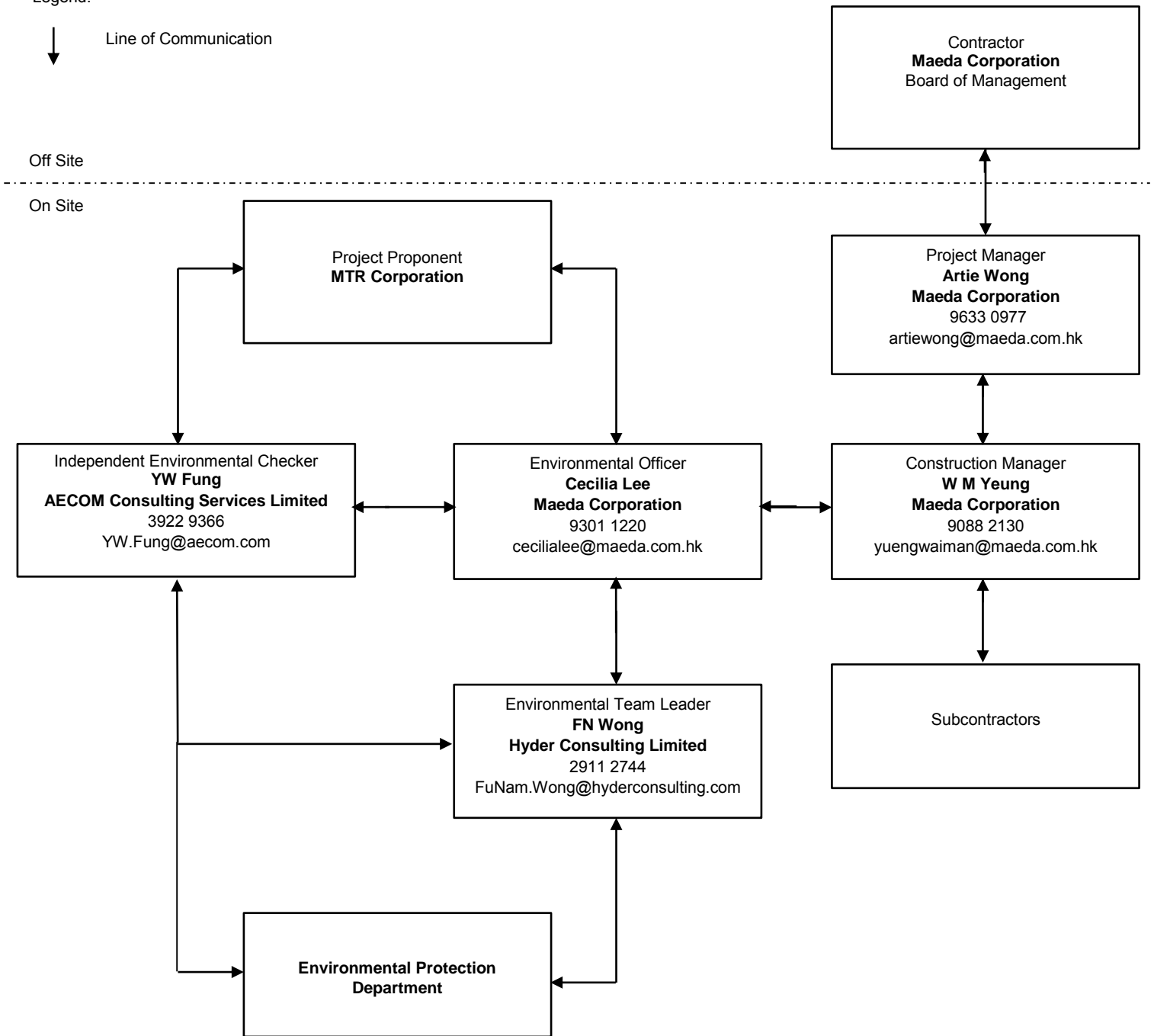


Management Structure

# Project Organization Chart in Environmental Management (Rev.03)

Legend:

↓ Line of Communication



*Note: In Compliance with*

*i) Clause.1.3 of Environmental Monitoring and Audit Manual (Appendix VII of Project Profile PP462/2012)*



Appendix C

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## Construction Programme



















Appendix D

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## Implementation Schedule

## Appendix VIII

### Implementation Schedule

Project Profile Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Parties	Location of the measure	When to implement the measure	Relevant requirements or standards for the measure to achieve
	Noise Impact					
S.3.1	Use of quieter plant	To minimise construction noise emissions	Contractor	Work site	Construction Stage	ProPECC PN2/93 and Noise Control Ordinance
S.3.1	Use of noise enclosure and movable barrier <ul style="list-style-type: none"> <li>• movable barrier can achieve a 5 dB(A) reduction for movable PME and 10 dB(A) reduction for stationary PME;</li> <li>• noise enclosure can achieve 15dB(A) reduction for PME;</li> <li>• A typical design barrier with a steel frame of vertical / cantilever type would be adopted and located close to the noise generating part of PME;</li> <li>• Barrier material of surface mass in excess of 7kg/m<sup>2</sup> shall be required to achieve the maximum screening effect (and minimum 10kg/m<sup>2</sup> for noise enclosure);</li> <li>• The length of barrier should generally be at least five times greater than its height and the minimum height of a barrier should be such that no part of the noise source will be visible from the noise sensitive receiver being protected.</li> </ul>	To minimize construction noise emissions	Contractor	Work site	Construction Stage	ProPECC PN2/93, Noise Control Ordinance and EIAO Guidance Note NO. 9/2010
S.3.1	General Construction Noise Control Measures <ul style="list-style-type: none"> <li>• The Code of Practice on Good Management Practice</li> </ul>	To minimize construction noise	Contractor	Work site	Construction Stage	ProPECC PN2/93 and Noise Control

Project Profile Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Parties	Location of the measure	When to implement the measure	Relevant requirements or standards for the measure to achieve
	<p>to Prevent Violation of the Noise Control Ordinance (Chapter 400) (for Construction Industry) published by EPD shall be adopted;</p> <ul style="list-style-type: none"> <li>• The statutory and non-statutory requirements and guidelines shall be complied with;</li> <li>• Approval for the method of working, equipment and noise mitigation measures intended to be used at the site shall be granted from the Project Engineer before commencing any work;</li> <li>• Working methods to minimize the noise impact on the surrounding NSRs shall be formulated and executed, and the implementation of these methods shall be monitored by experienced personnel with suitable training;</li> <li>• Noisy equipment and noisy activities shall be located as far away from the NSRs as is practical;</li> <li>• Unused equipment shall be turned off;</li> <li>• PME should be kept to a minimum and the parallel use of noisy equipment / machinery should be avoided;</li> <li>• All plant and equipment shall be maintained regularly; and</li> <li>• Material stockpiles and other structures shall be effectively utilized as noise barriers, whenever practicable.</li> </ul>	emissions				Ordinance
	Air Quality Impact					
S.3.2	<p>Construction Dust Control Measures</p> <ul style="list-style-type: none"> <li>• Decking will be provided subsequent to the completion of surface excavation works. The duration</li> </ul>	To minimise the dust impacts arising from the	Contractor	Work site	Construction Stage	Air Pollution Control (Construction

Project Profile Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Parties	Location of the measure	When to implement the measure	Relevant requirements or standards for the measure to achieve
	<p>of decking is around 13 months after surface excavation works;</p> <ul style="list-style-type: none"> <li>• Regular watering to reduce dust emissions from all exposed site surface, particularly during dry weather;</li> <li>• Frequent watering for particularly dusty construction areas and areas close to air sensitive receivers;</li> <li>• Cover all excavated or stockpile of dusty material by impervious sheeting or spraying with water to maintain the entire surface wet;</li> <li>• Provision of vehicle washing facilities at the exit points of the site; and</li> <li>• Provision of tarpaulin covering of any dusty materials on a vehicle leaving the site.</li> </ul>	construction works				Dust) Regulation
Water Quality Impact						
S.3.3	<p>Construction Water Quality Impact Measures</p> <ul style="list-style-type: none"> <li>• The Contractor should design and implement all the mitigation measures and practices specified in the ProPECC PN 1/94 “Construction Site Drainage” and “Recommended Pollution Control Clauses for Construction Contracts” issued by EPD.</li> <li>• All runoffs arising from the construction site should be properly collected and treated to ensure the discharge standards as stipulated in WPCO are met. Silt trap and oil interceptor should be provided to remove the oil, lubricants, grease, silt, grit and debris from the wastewater before being pumped to the public stormwater drainage system. The silt traps and oil interceptors should be cleaned and maintained regularly.</li> </ul>	To reduce water quality impact induced by the construction work	Contractor	Work Site	Construction Stage	ProPECC PN1/94; Water Pollution Control Ordinance

Project Profile Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Parties	Location of the measure	When to implement the measure	Relevant requirements or standards for the measure to achieve
	<ul style="list-style-type: none"> <li>Any foul effluent should not be discharged into any public sewer and stormwater drain, unless an effluent discharge permit is obtained under the WPCO by the Contractor.</li> <li>Site toilet facilities, if needed, should be chemical toilets or should have the foul water effluent directed to a foul sewer.</li> </ul>					
	Waste Management					
S.3.4	<p>Construction Waste Management Measures</p> <ul style="list-style-type: none"> <li>Excavated material should be reused on site as far as possible to minimise off-site disposal. Scrap metals or abandoned equipment should be recycled if possible.</li> <li>Waste arising should be kept to a minimum and be handled, transported and disposed of in a suitable manner.</li> <li>The Contractor should adopt a trip ticket system for the disposal of C&amp;D materials to any designated public filling facility and/or landfill. Independent audits of the Contractor and resident site staff will be undertaken to ensure that the correct procedures are being followed.</li> <li>Chemical waste shall be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes.</li> <li>All general refuse should be segregated and stored in enclosed bins or compaction units and waste separation facilities for paper, aluminium cans, plastic bottles etc. should be provided to facilitate reuse or</li> </ul>	To adopt waste management measures in the way of avoiding, minimising, reusing and recycling so as to reduce waste generation	Contractor	Work Site	Construction Stage	Waste Disposal Ordinance (Cap. 54); Waste Disposal (Chemical Waste) (General) Regulation; ETWB TCW No. 31/2004; ETWB TCW No. 19/2005.

<b>Project Profile Ref.</b>	<b>Recommended Mitigation Measures</b>	<b>Objectives of the Recommended Measures &amp; Main Concerns to address</b>	<b>Implementation Parties</b>	<b>Location of the measure</b>	<b>When to implement the measure</b>	<b>Relevant requirements or standards for the measure to achieve</b>
	recycling of materials and their proper disposal.					
	<b>Landscape and Visual Impact</b>					
S.3.5	<b>Landscape and Visual Measures</b> <ul style="list-style-type: none"> <li>Screening of construction works by hoardings/noise barriers around works area with visually unobtrusive colours</li> </ul>	To reduce visual impact by construction works.	Contractor	Temporary Storage Area at Salisbury Road	Construction Stage	EIAO
S.3.5	<ul style="list-style-type: none"> <li>Reinstating the affected amenity planting area at Salisbury Road after the completion of works</li> </ul>	To prevent loss of planter after construction	Contractor	Temporary Storage Area at Salisbury Road	Operation Stage	ETWB TCW No. 2/2004

## Appendix E

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### Status of Environmental Licenses and Permits





# Maeda Corporation

Contract No. C3840-13C

Tsim Sha Tsui Station Carnarvon Road Subway

Last Update: 15-February-2016

## Licence Summary

Item No.	Our Ref.	Govt. Ord.	Type? (License / Permit / Account / Notification / Registration & etc.)	Description	Submission	Ref. No	Date of Submission (to EPD) (DD-MM-YYYY)	Date of Approval / Receipt (from EPD) (DD-MM-YYYY)	Date of Activation (DD-MM-YYYY)	Date of Expiry (DD-MM-YYYY) Green = expire next mth; Yellow = expire this wk; Red = Expired	Description	Remarks
000	000	EIAO	Permit	Environmental Permit	N/A	AEP-440/2012	N/A	N/A	18 - 07 - 2012	N/A	Baseline, Air & Noise Impact Monitoring	
001	001	APCO	Notification	Construction Dust Notification	Form NA – Notification S3(1) of APCO (Construction Dust)	365953	18 - 10 - 2013	21 - 10 - 2013	01 - 02 - 2014	01 - 10 - 2016	Demolition of a Building	
001	001	APCO	Notification	Construction Dust Notification	Form NA – Notification S3(1) of APCO (Construction Dust)	365953	18 - 10 - 2013	21 - 10 - 2013	01 - 08 - 2014	01 - 08 - 2016	Work carried out in any part of a tunnel that is within 100m of any exit to the open air	
001	001	APCO	Notification	Construction Dust Notification	Form NA – Notification S3(1) of APCO (Construction Dust)	365953	18 - 10 - 2013	21 - 10 - 2013	01 - 01 - 2016	01 - 03 - 2017	Construction of the Superstructure of a Building	
001	001	APCO	Notification	Construction Dust Notification	Form NA – Notification S3(1) of APCO (Construction Dust)	365953	18 - 10 - 2013	21 - 10 - 2013	01 - 11 - 2016	10 - 09 - 2017	Road Construction Work	
002	002	WDO	Account	Construction Waste Billing Account	EPD-211 (Form 1) Application for a Billing Account for Disposal of Construction Waste	7018523	18 - 10 - 2013	25 - 10 - 2013	25 - 10 - 2013	N/A	Disposal of C&D Waste	Application No. WFG12765
003	003 WPCO #002	WPCO	Licence	Water Discharge Licence	EPD-117 (Form A) Application for a Licence of Water Discharge	WT00019722-2014	24 - 07 - 2014	01 - 09 - 2014	01 - 09 - 2014	31 - 03 - 2019	Quarterly Report FlowRate 25m3/d, pH 6-9, SS 30mg/L, COD 80mg/L	
004	004 CWP#001	WDO	Registration	Chemical Waste Producer	EPD-129 Application for Registration as a Chemical Waste Producer	5213-2214-M2446-16	15 - 01 - 2014	04 - 03 - 2014	04 - 03 - 2014	N/A	Surplus paint, spent lubricating oil, spent battery	
005	005 CNP#005	NCO	Permit	Construction Noise Permit	EPD74A(s) Form 1 - Application for a Construction Noise Permit	Application: 397983 Permit: GW-RE0088-16	15 - 01 - 2016	29 - 01 - 2016	15 - 02 - 2016	14 - 08 - 2016	4nos Electric Water pump (whole site) or 1no Air Blower (TS) or 4nos Hand-held Drill (TS)	

Appendix F

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Event and Action Plan

# Event and Action Plan for Air Quality

In case the Action and Limit Levels are not complied during construction stage, the Event and Action Plan shown below should be followed.

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

Event / Action	ET	IEC	ER	Contractor
	<p>monitoring frequency to daily;</p> <p>5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.</p>	<p>method;</p> <p>4. Discuss with ET and the Contractor on possible remedial measures;</p> <p>5. Advise the ER on the effectiveness of the proposed remedial measures;</p> <p>6. Supervise implementation of remedial measures.</p>	<p>measures properly implemented.</p>	<p>within 3 working days of notification;</p> <p>3. Implement the agreed proposals;</p> <p>4. Amend proposal if appropriate.</p>
Exceedance for two or more consecutive samples	<p>1. Notify IEC, ER, Contractor and EPD;</p> <p>2. Identify sources;</p> <p>3. Repeat measurement to confirm findings;</p> <p>4. Increase monitoring frequency to daily;</p> <p>5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented;</p> <p>6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken;</p> <p>7. Assess the effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the</p>	<p>1. Discuss amongst ER, ET and Contractor on the potential remedial actions;</p> <p>2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ET accordingly.</p> <p>3. Supervise the implementation of remedial measures.</p>	<p>1. Confirm receipt of notification of failure in writing;</p> <p>2. Notify Contractor;</p> <p>3. In consultation with IEC, agree with the Contractor on the remedial measures to be implemented;</p> <p>4. Ensure remedial measures properly implemented;</p> <p>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.</p>	<p>1. Take immediate action to avoid further exceedance;</p> <p>2. Submit proposals for remedial actions to IEC within 3 working days of notification;</p> <p>3. Implement the agreed proposals;</p> <p>4. Resubmit proposals if problem still not under control;</p> <p>5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.</p>

Event / Action	ET	IEC	ER	Contractor
	results; 8. If exceedance stops, cease additional monitoring.			

# Event and Action Plan for Construction Noise

In case the Action and Limit Levels are not complied during the construction stage, the Event and Action Plan shown below should be followed.

Event / Action	ET	IEC	ER	Contractor
Action Level	<ol style="list-style-type: none"> <li>1. Notify IEC and Contractor.</li> <li>2. Carry out investigation.</li> <li>3. Report the results of investigation to the IEC and Contractor.</li> <li>4. Discuss with the Contractor and formulate remedial measures</li> <li>5. Increase monitoring frequency to check mitigation effectiveness.</li> </ol>	<ol style="list-style-type: none"> <li>1. Review the analyzed result submitted by ET.</li> <li>2. Review the proposed remedial measures by the Contractor and advise the ER accordingly.</li> <li>3. Supervise the implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance</li> <li>2. Notify Contractor</li> <li>3. Require Contractor to propose remedial measures for the analysed noise problem</li> <li>4. Ensure remedial measures are properly implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Submit noise mitigation proposals to IEC</li> <li>2. Implement noise mitigation proposals</li> </ol>
Limit Level	<ol style="list-style-type: none"> <li>1. Notify IEC, ER, EPD and Contractor, and follow other actions</li> <li>2. Identify source</li> <li>3. Repeat measurement to confirm findings</li> <li>4. Increase monitoring frequency</li> <li>5. Check Contractor's working procedures to determine possible mitigation to be implemented</li> <li>6. Inform IEC, ER and EPD the causes and actions taken for the exceedances</li> <li>7. Assess effectiveness of Contractor's</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss amongst ER, ET and Contractor on the potential remedial actions</li> <li>2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ET accordingly</li> <li>3. Supervise the implementation of remedial measures</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedances</li> <li>2. Notify Contractor</li> <li>3. Require Contractor to propose remedial measures</li> <li>4. Ensure remedial measures are properly implemented</li> <li>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.</li> </ol>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance</li> <li>2. Submit proposals for remedial actions to IEC within 3 working days of notifications</li> <li>3. Implement the agreed proposals</li> <li>4. Revise and resubmit proposals if problem still not under control</li> <li>5. Stop the relevant portion of works as determined by the ER until the exceedance is abated</li> </ol>

Event / Action	ET	IEC	ER	Contractor
	remedial actions and keep IEC, EPD, ER informed of the results  8. If exceedance stops, cease additional monitoring			

## Appendix G

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### Weather Information Extracted from HK Observatory

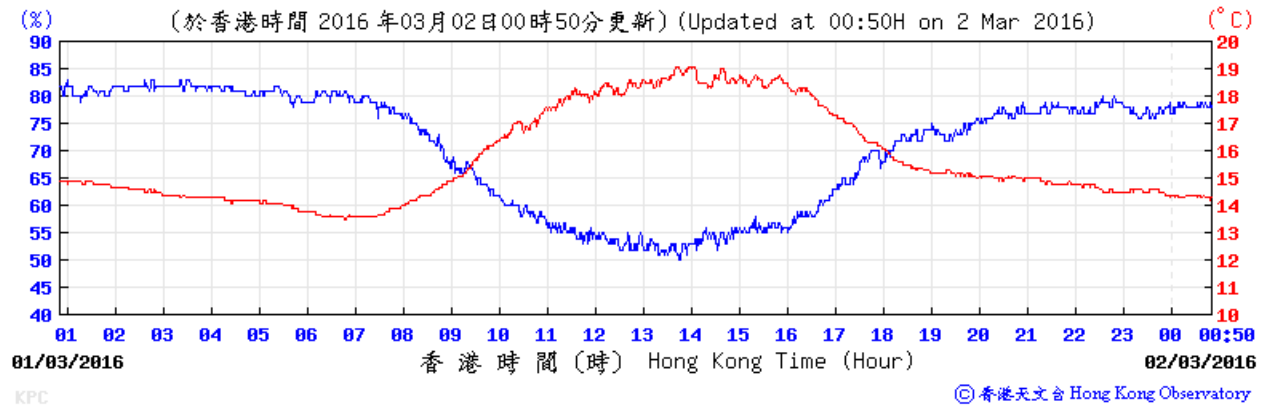


**Daily Total Rainfall at King's Park HKO Weather Monitoring Station - March 2016**

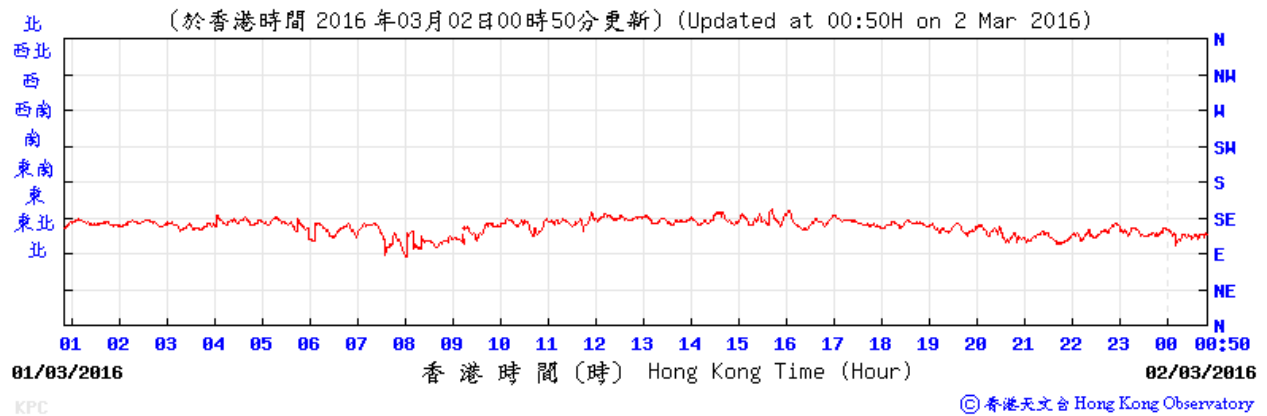
Day	Total Rainfall, mm	24-hr TSP	Noise	Remarks
1	0	✓	✓	It was sunny without rainfall on site during noise monitoring.
2	0			
3	0			
4	0			
5	0			
6	0			
7	0.2	✓		
8	0		✓	It was cloudy without rainfall on site during noise monitoring.
9	8.3			
10	14.8			
11	0			
12	0.1			
13	9.3			
14	0.1	✓		
15	0		✓	It was cloudy without rainfall on site during noise monitoring.
16	1.2			
17	1			
18	0.1			
19	0.1			
20	0			
21	58.3	✓		
22	1.3		✓	It was cloudy without rainfall on site during noise monitoring.
23	8.8			
24	34.2			
25	1.1			
26	0			
27	0			
28	0			
29	0	✓	✓	It was sunny without rainfall on site during noise monitoring.
30	0			
31	0			
Mean/Total	138.9			

# King's Park Weather Station – 01 March 2016

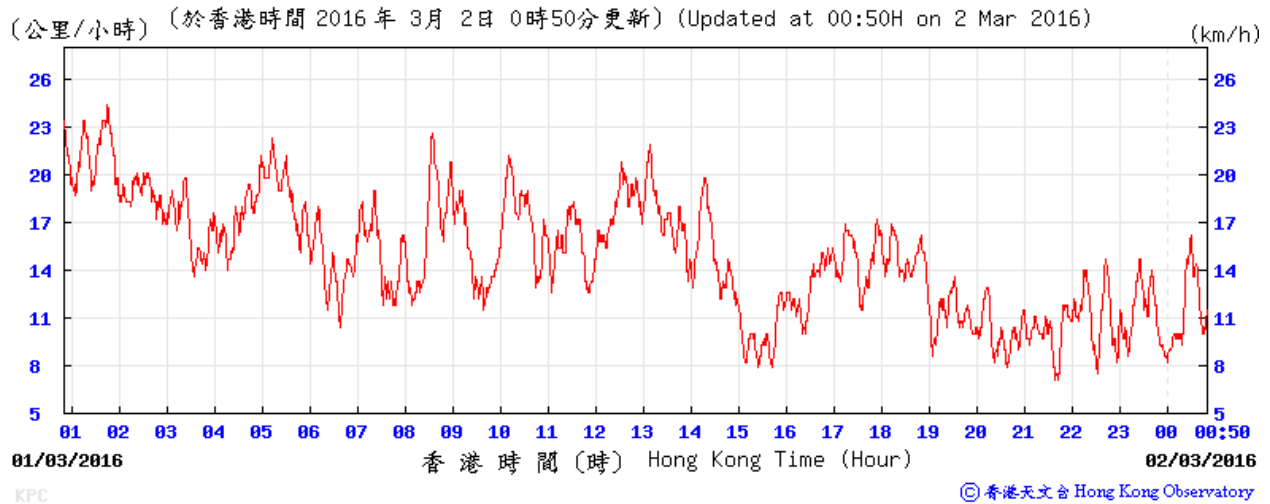
## Temperature/Humidity:



## Wind Direction:

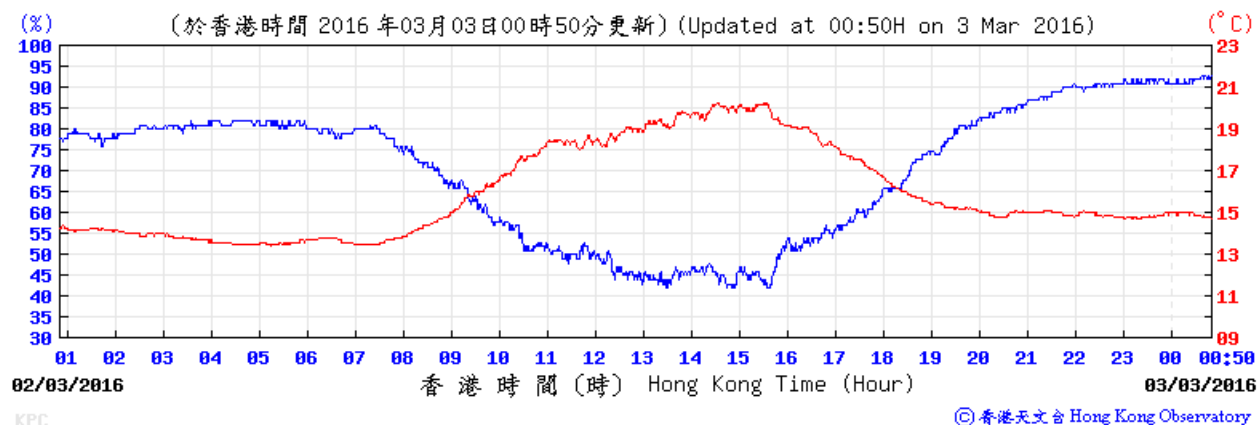


## Wind Speed:

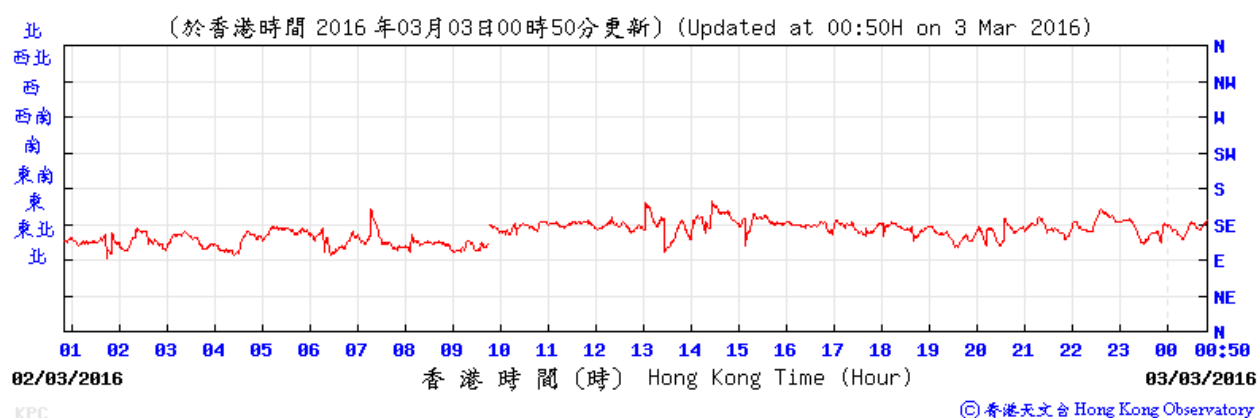


## King's Park Weather Station – 02 March 2016

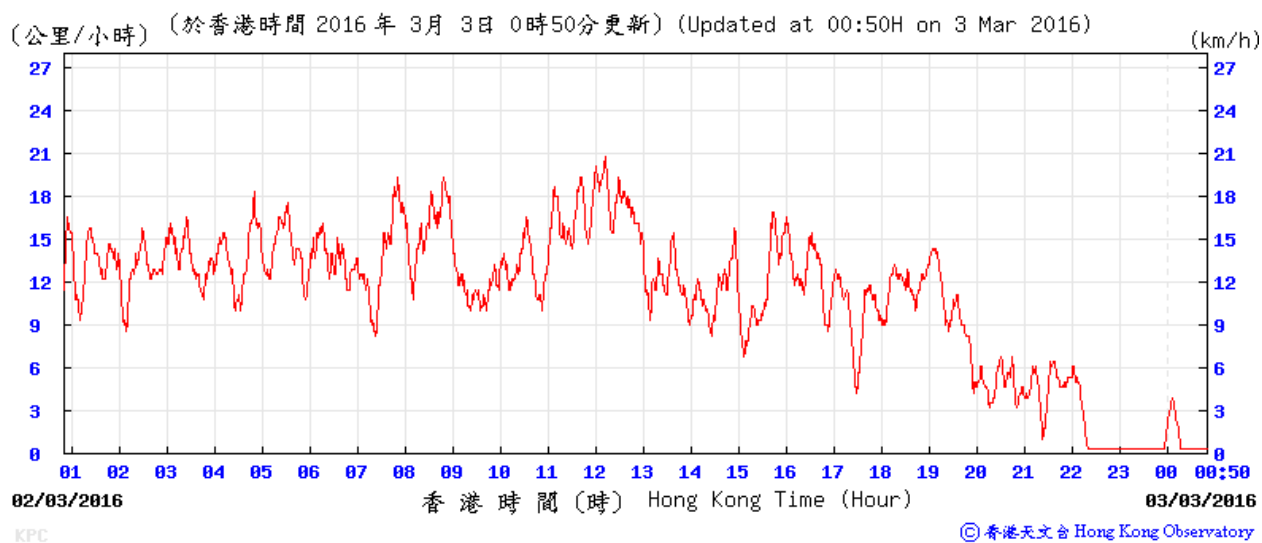
### Temperature/Humidity:



### Wind Direction:

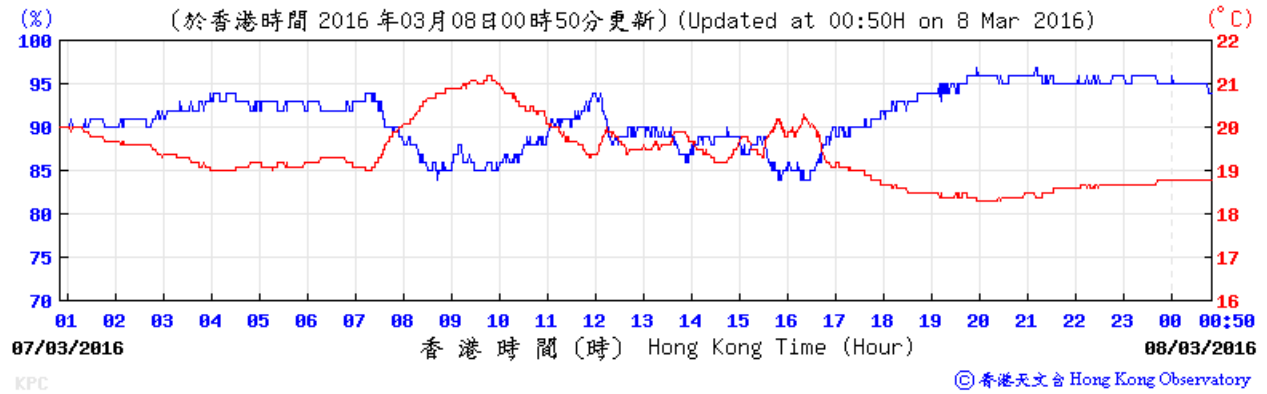


### Wind Speed:

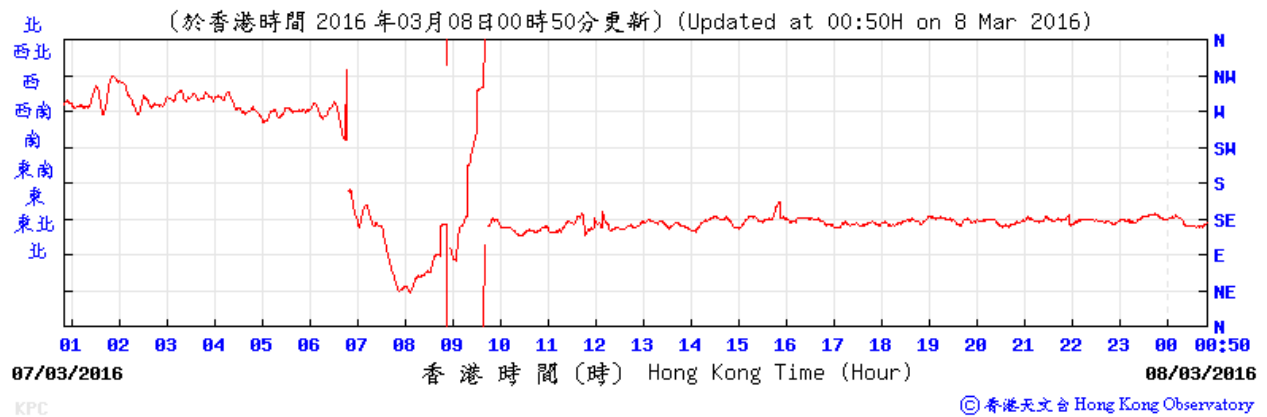


# King's Park Weather Station – 07 March 2016

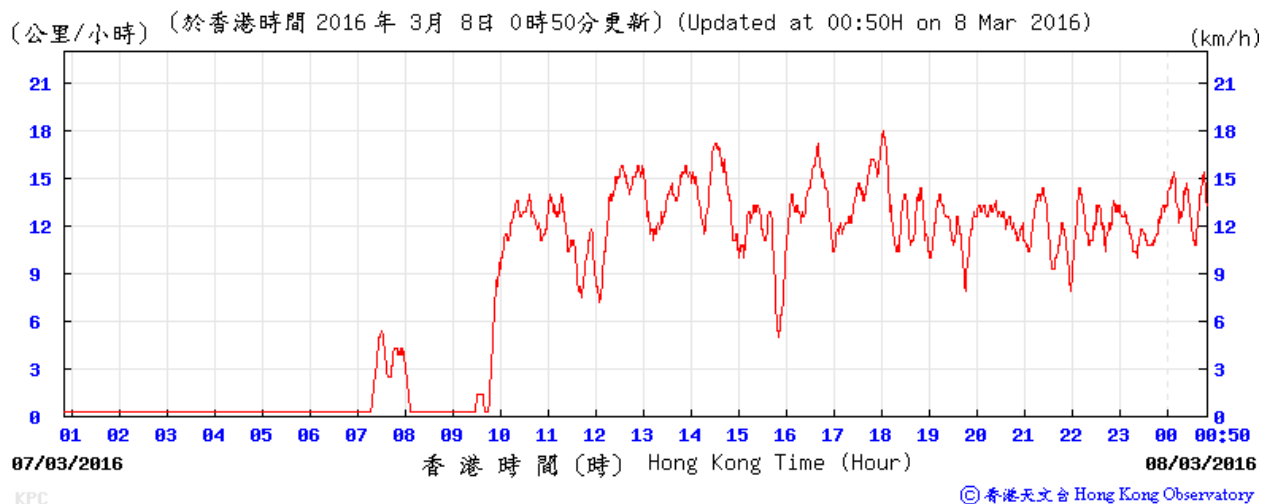
## Temperature/Humidity:



## Wind Direction:

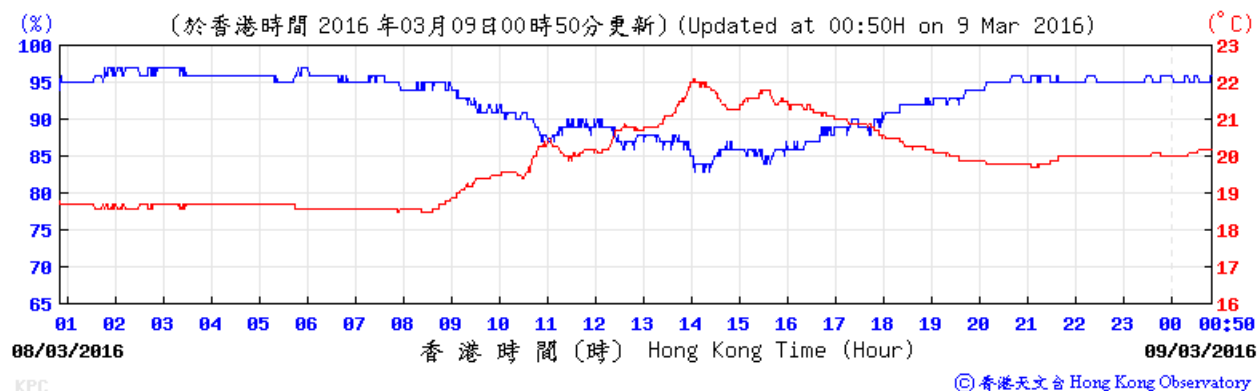


## Wind Speed:

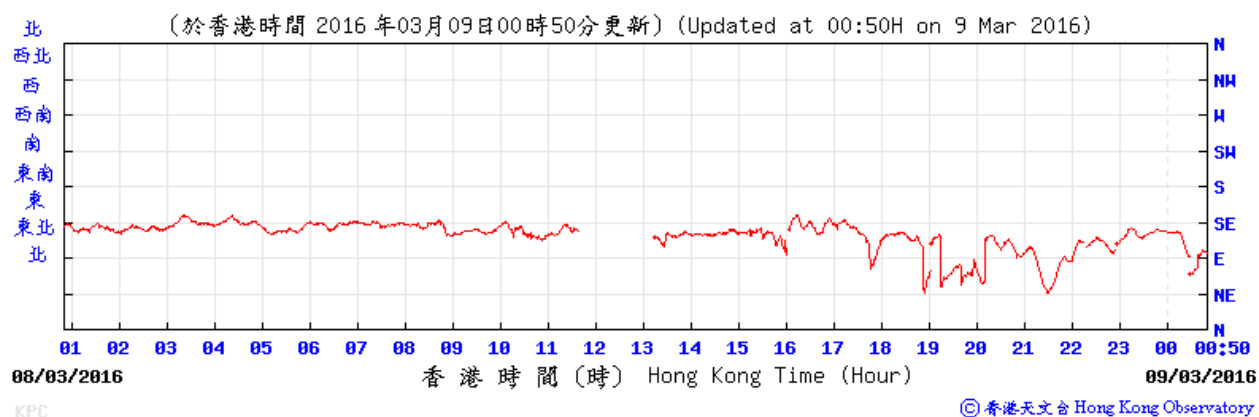


## King's Park Weather Station – 08 March 2016

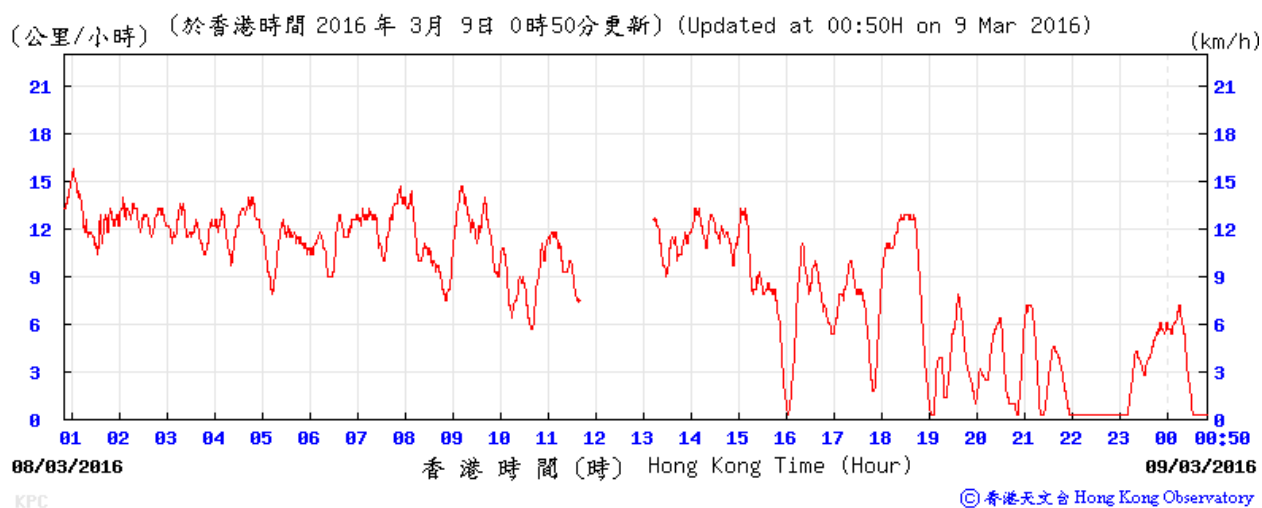
### Temperature/Humidity:



### Wind Direction:

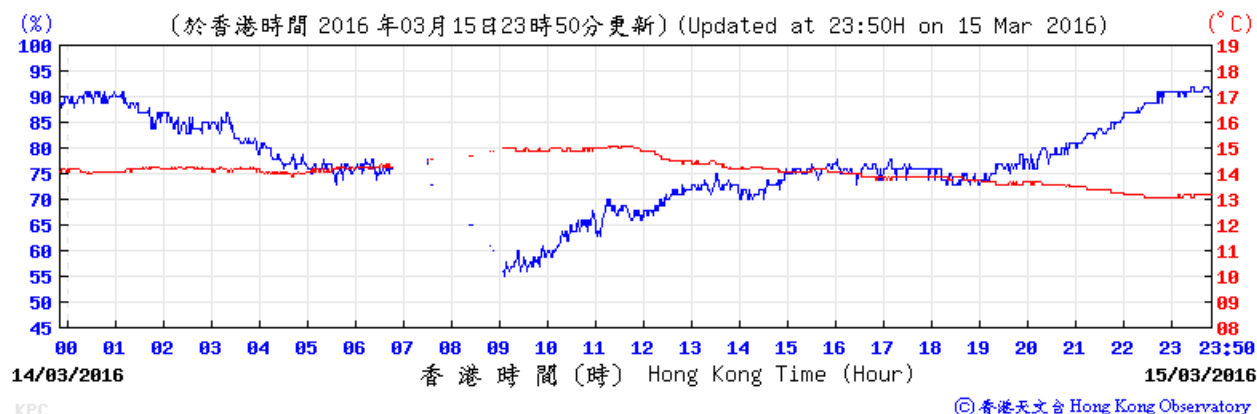


### Wind Speed:

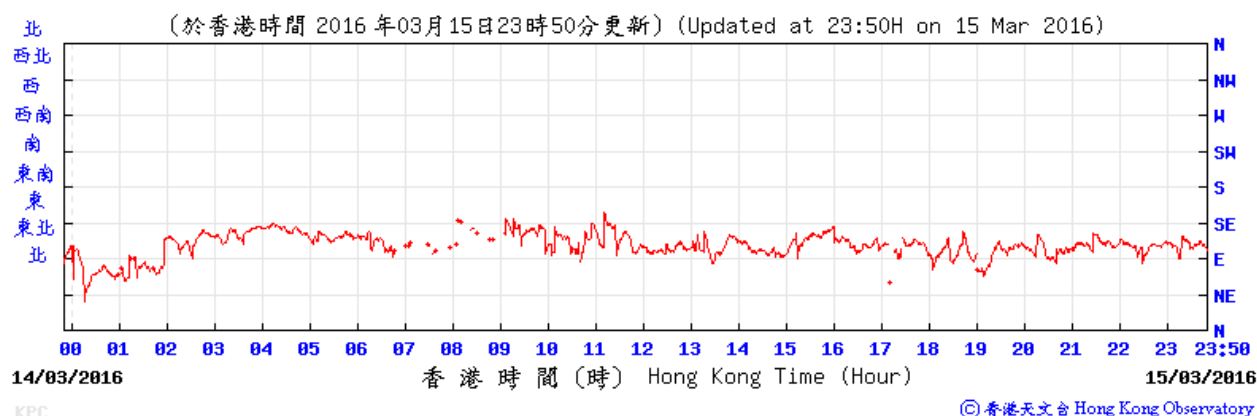


# King's Park Weather Station – 14 March 2016

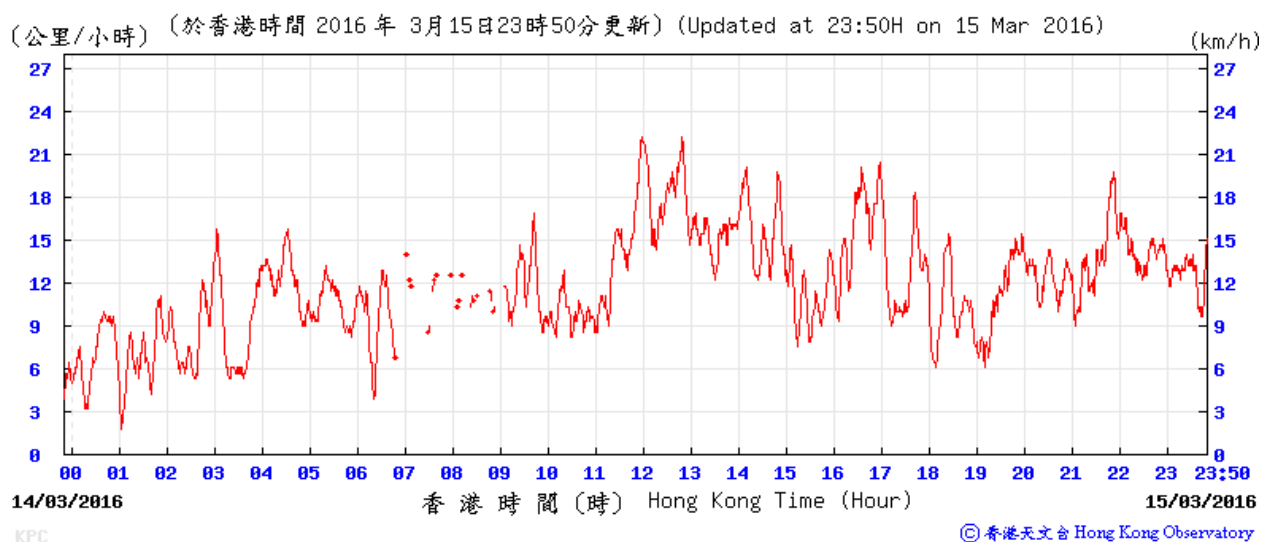
## Temperature/Humidity:



## Wind Direction:

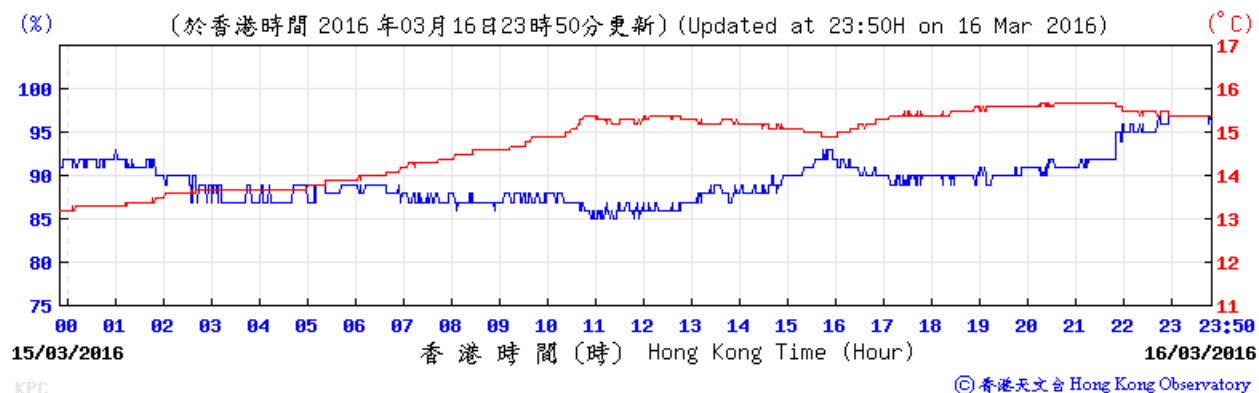


## Wind Speed:

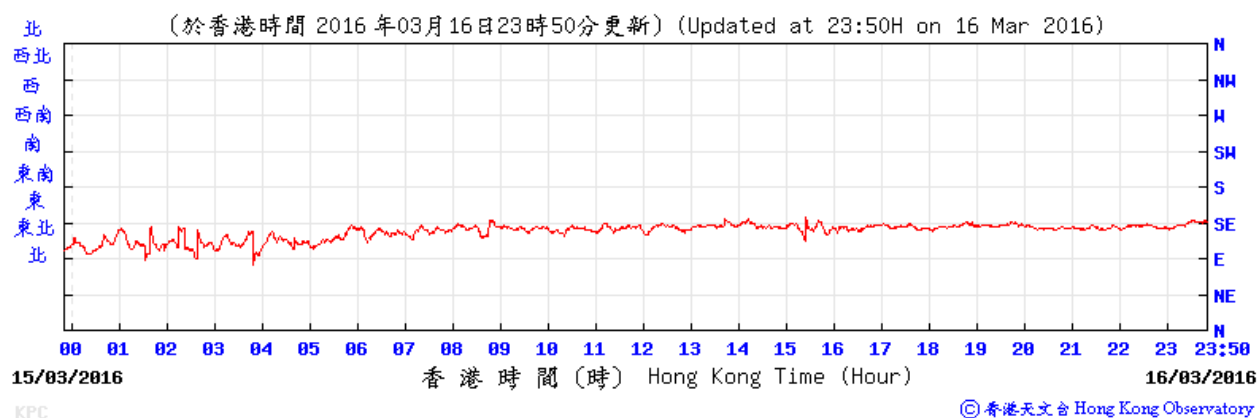


## King's Park Weather Station – 15 March 2016

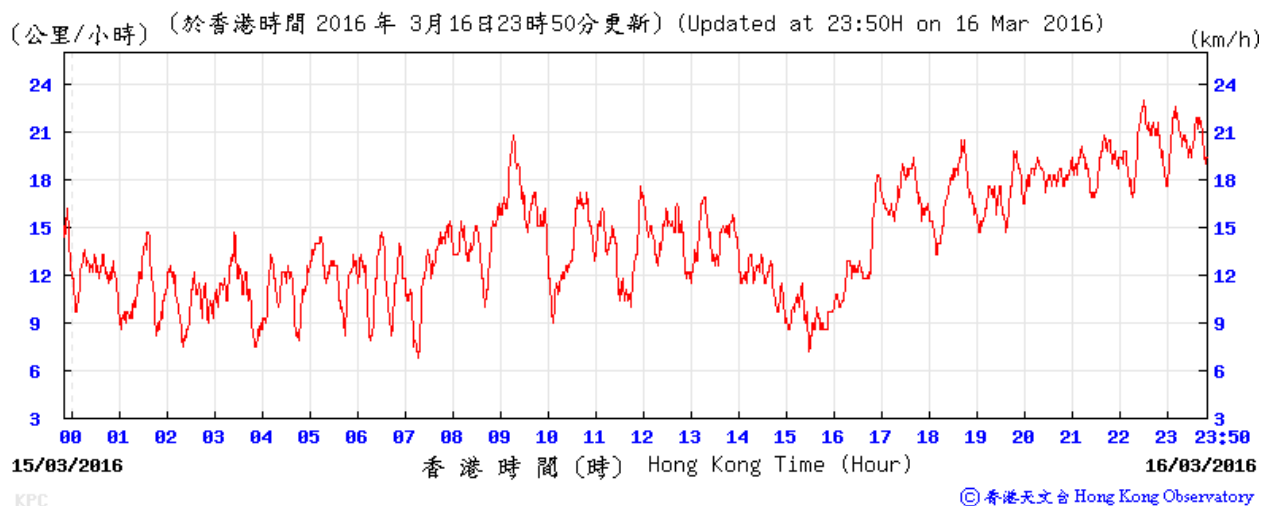
### Temperature/Humidity:



### Wind Direction:

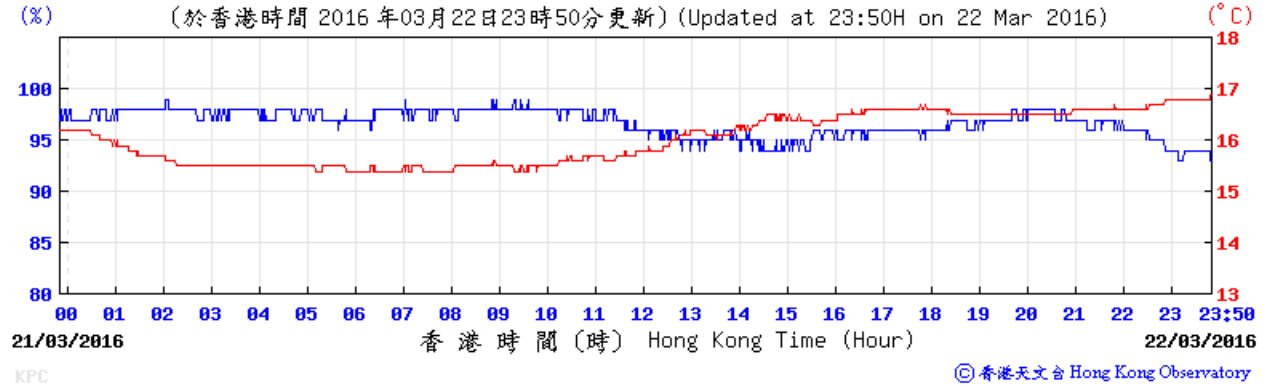


### Wind Speed:

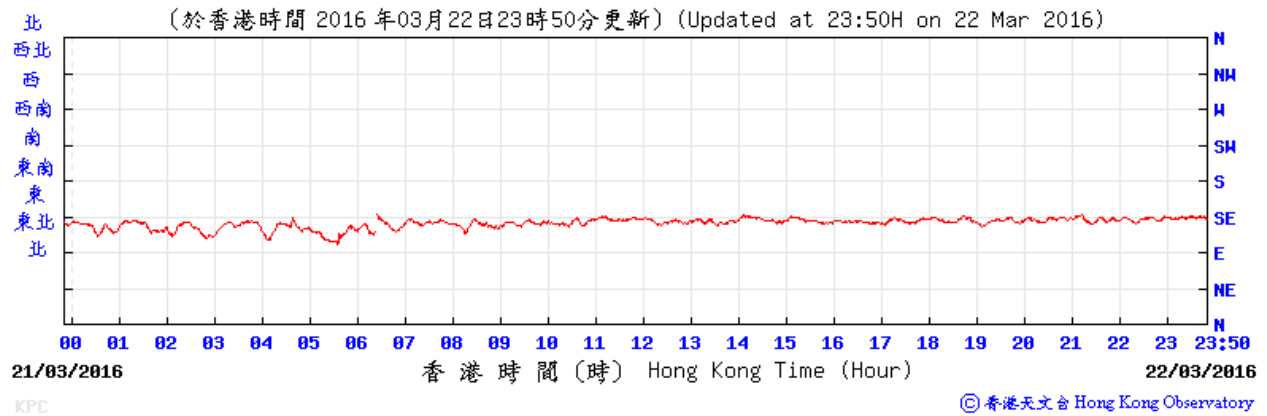


# King's Park Weather Station – 21 March 2016

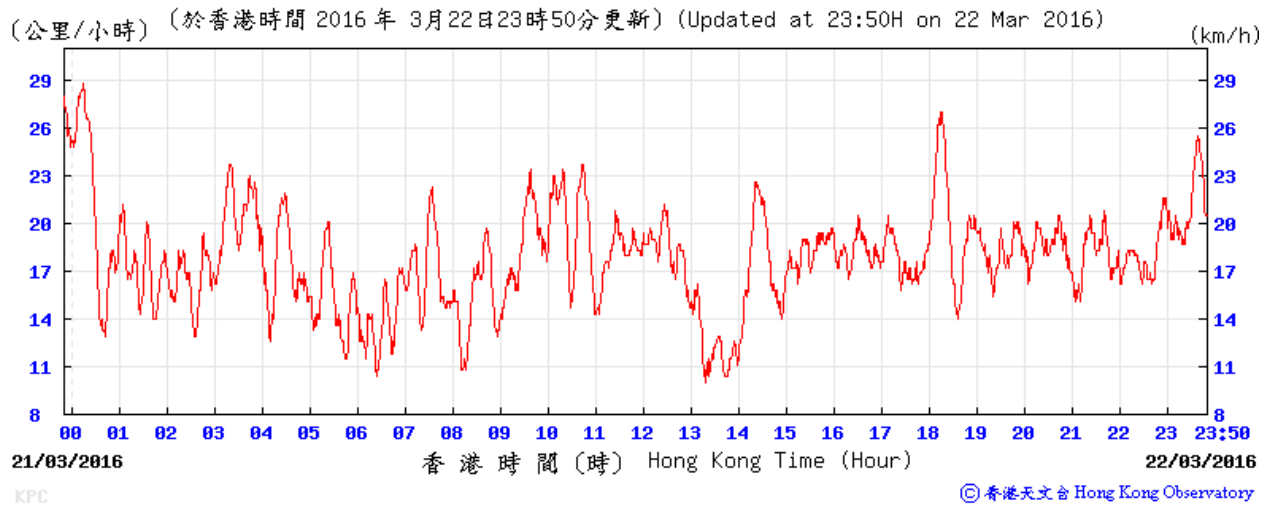
## Temperature/Humidity:



## Wind Direction:



## Wind Speed:

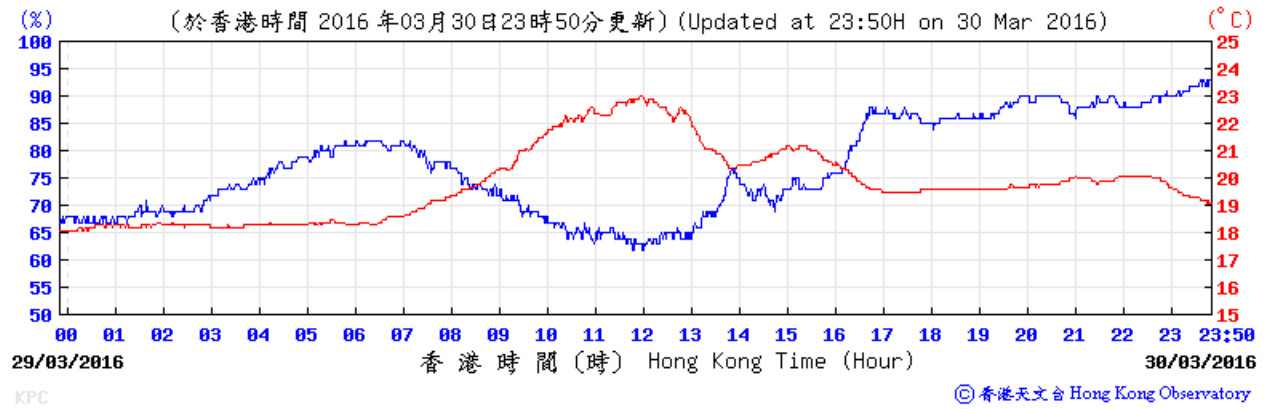




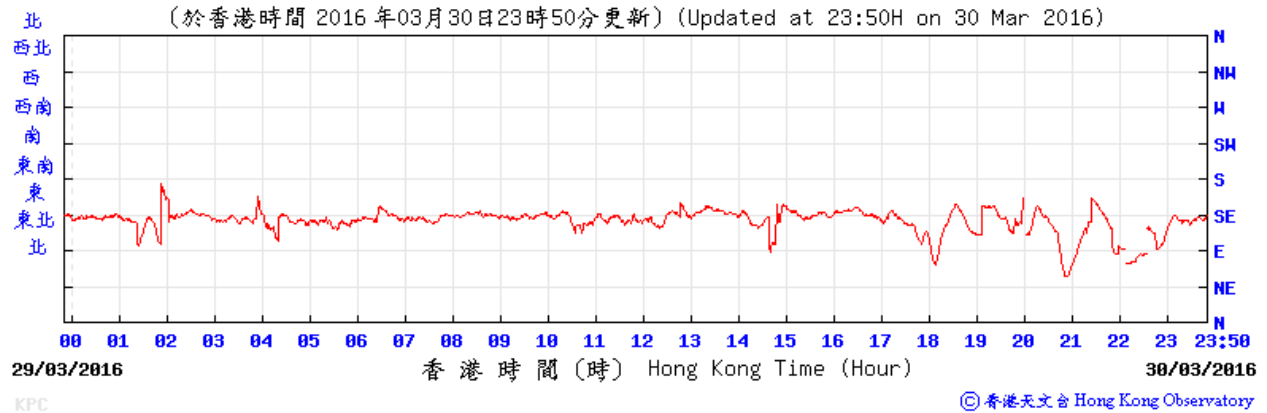


# King's Park Weather Station – 29 March 2016

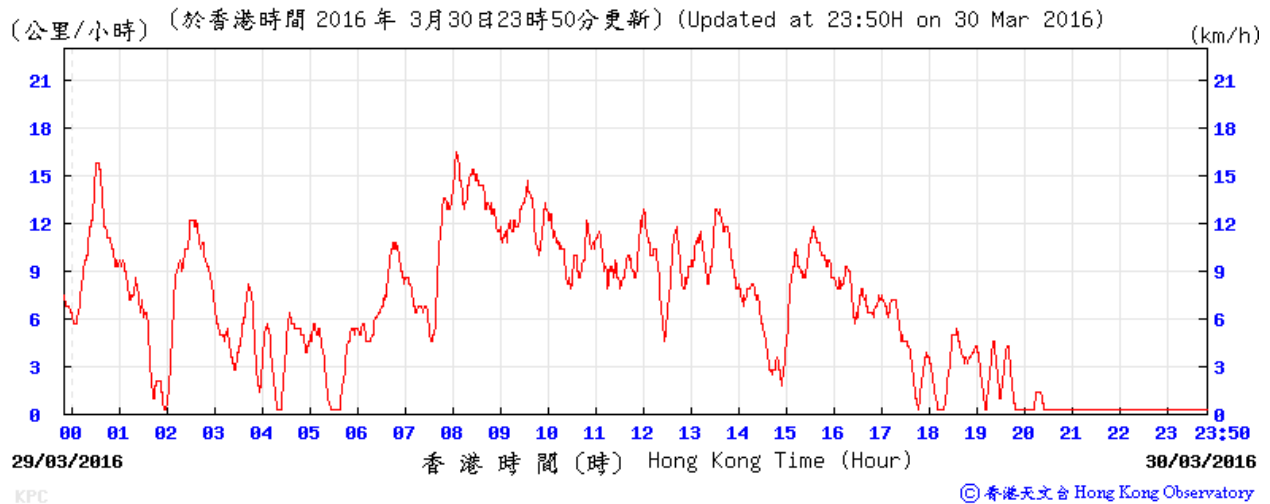
## Temperature/Humidity:



## Wind Direction:



## Wind Speed:

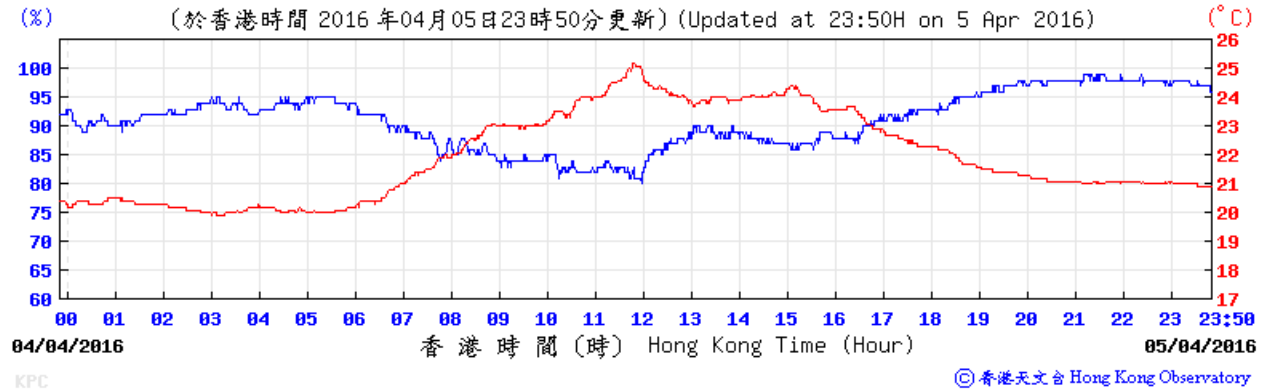


**Daily Total Rainfall at King's Park HKO Weather Monitoring Station - April 2016**

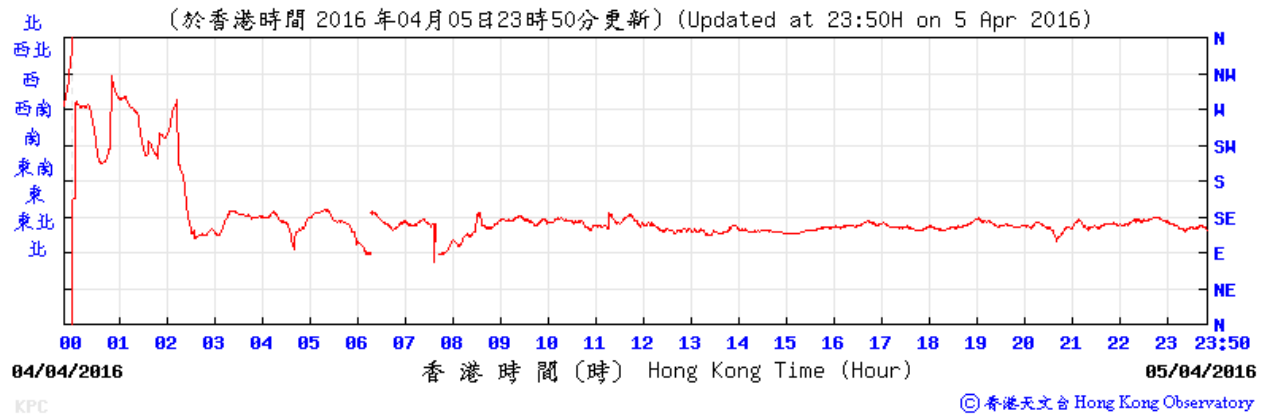
Day	Total Rainfall, mm	24-hr TSP	Noise	Remarks
1	0			
2	0			
3	0			
4	5.3			
5	0	✓	✓	<b>It was sunny without rainfall on site during noise monitoring.</b>
6	0			
7	0			
8	0			
9	0			
10	26.7			
11	0.6	✓		
12	10.6			
13	81.6			
14	1			
15	3.3		✓	<b>It was cloudy without rainfall on site during noise monitoring.</b>
16	0			
17	0			
18	23.2	✓		
19	0		✓	<b>It was cloudy without rainfall on site during noise monitoring.</b>
20	0			
21	0			
22	11			
23	2.7			
24	37.8			
25	15.9	✓		
26	0.1		✓	<b>It was sunny without rainfall on site during noise monitoring.</b>
27	0			
28	8.8			
29	0			
30	1.9			
Mean/Total	230.5			

# King's Park Weather Station – 05 April 2016

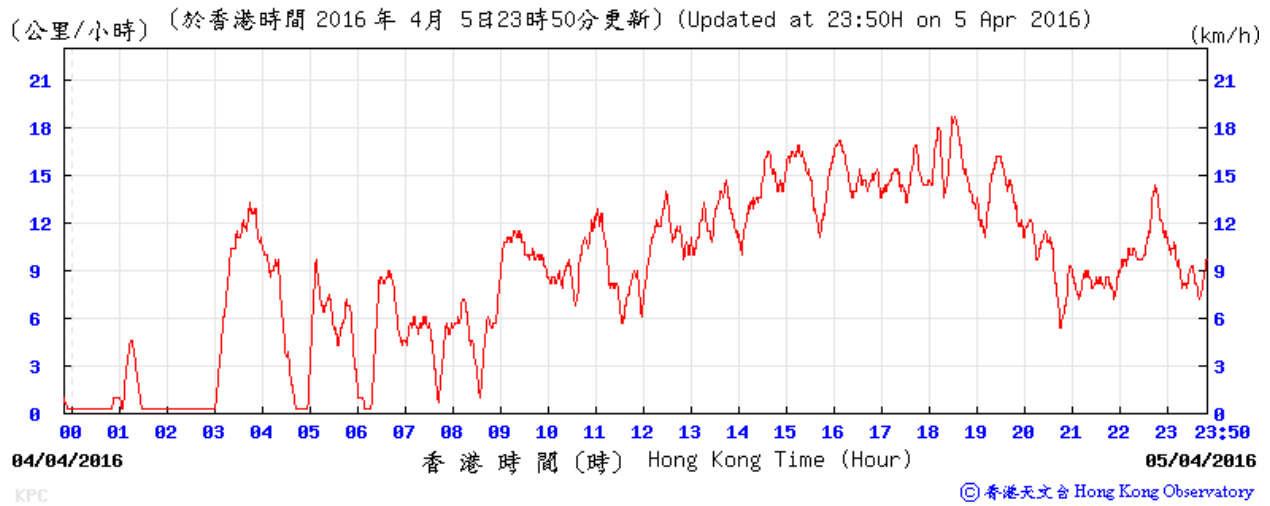
Temperature/Humidity:



Wind Direction:

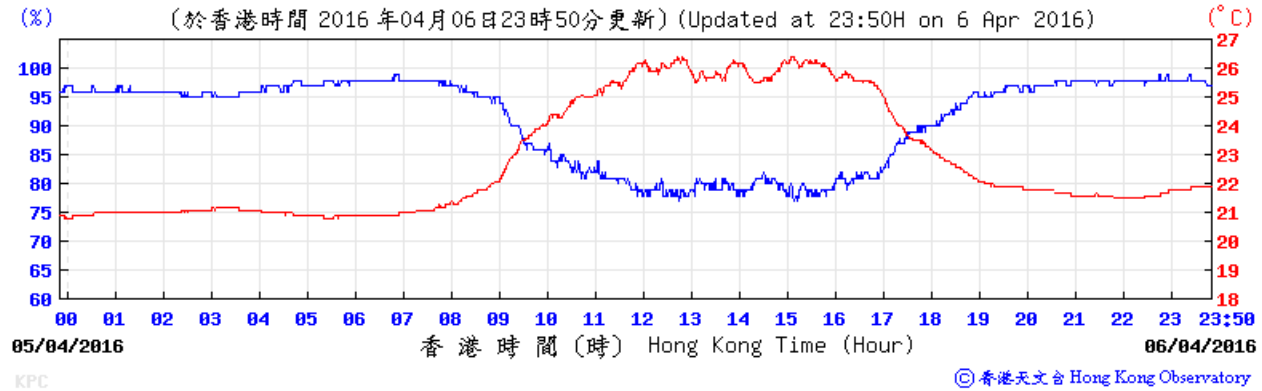


Wind Speed:

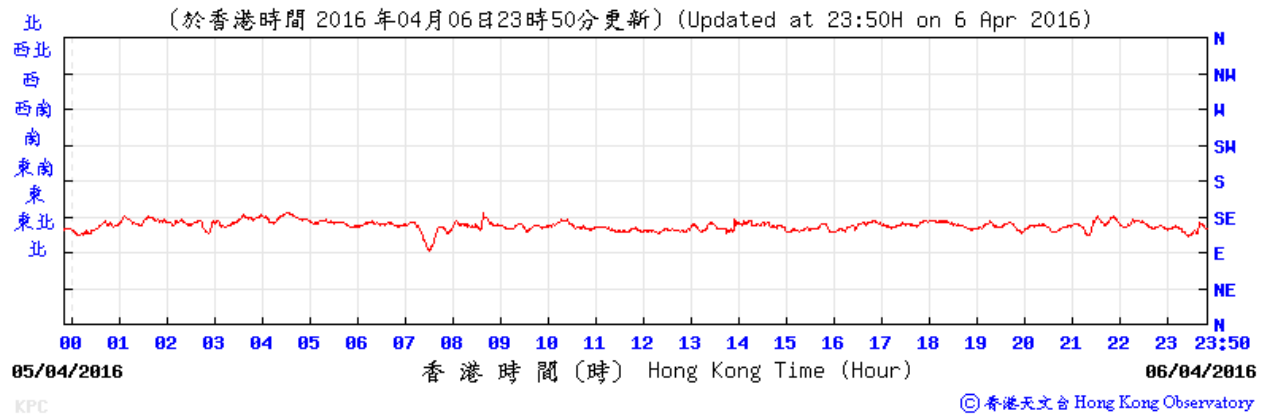


# King's Park Weather Station – 06 April 2016

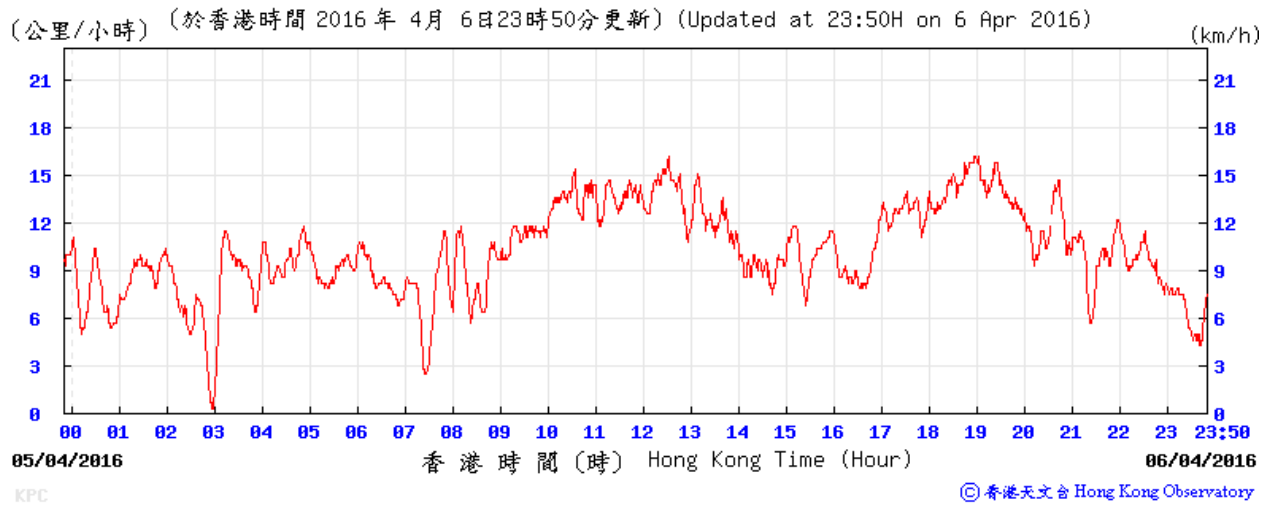
Temperature/Humidity:



Wind Direction:



Wind Speed:

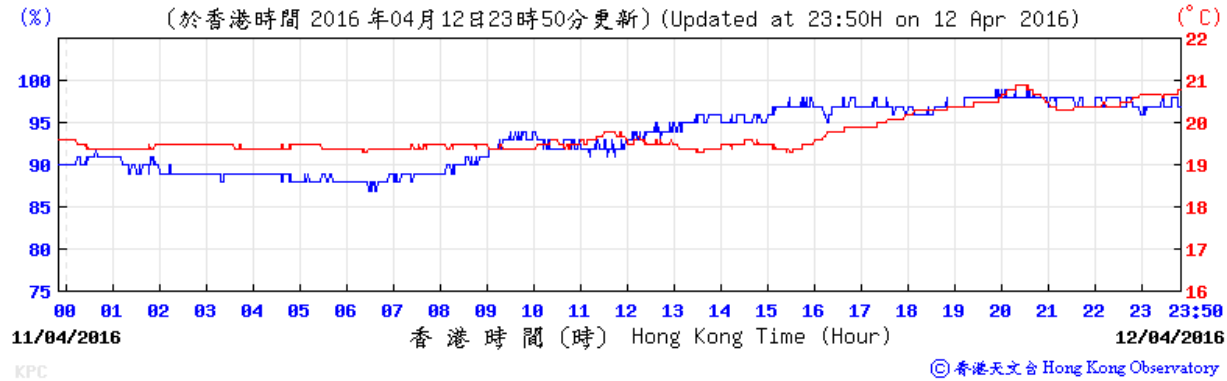


## King's Park Weather Station – 11 April 2016

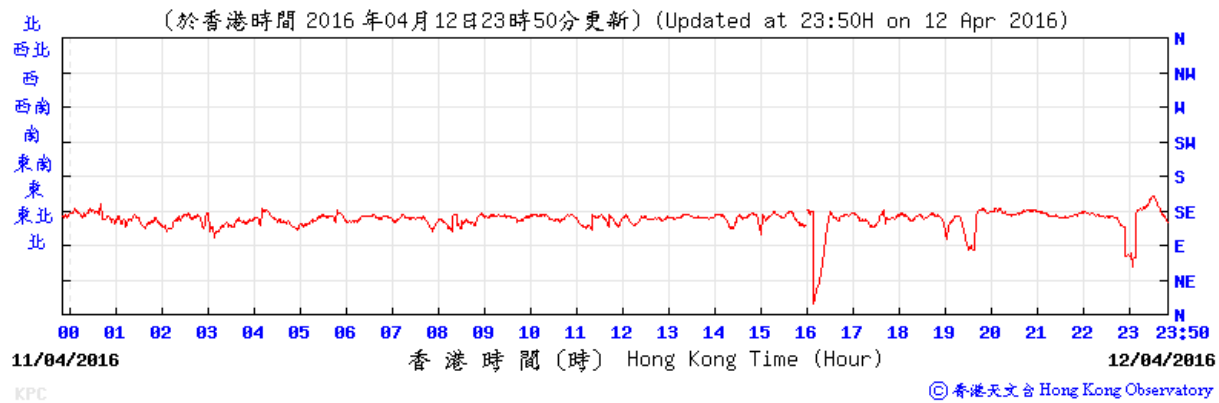
Remarks: Hong Kong Observatory not provided the weather information

## King's Park Weather Station – 12 April 2016

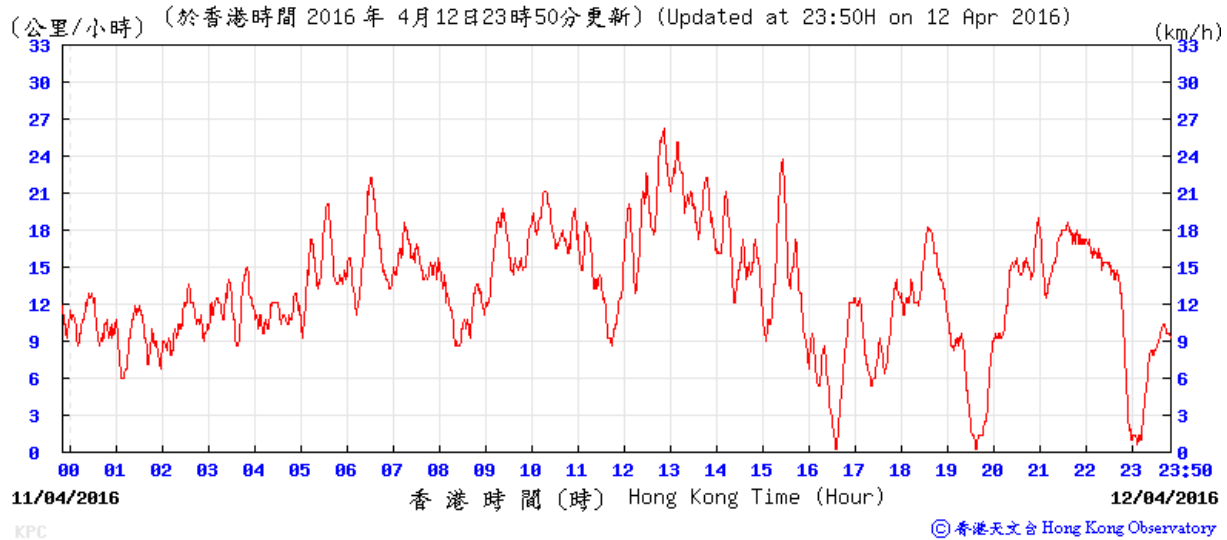
Temperature/Humidity:



Wind Direction:

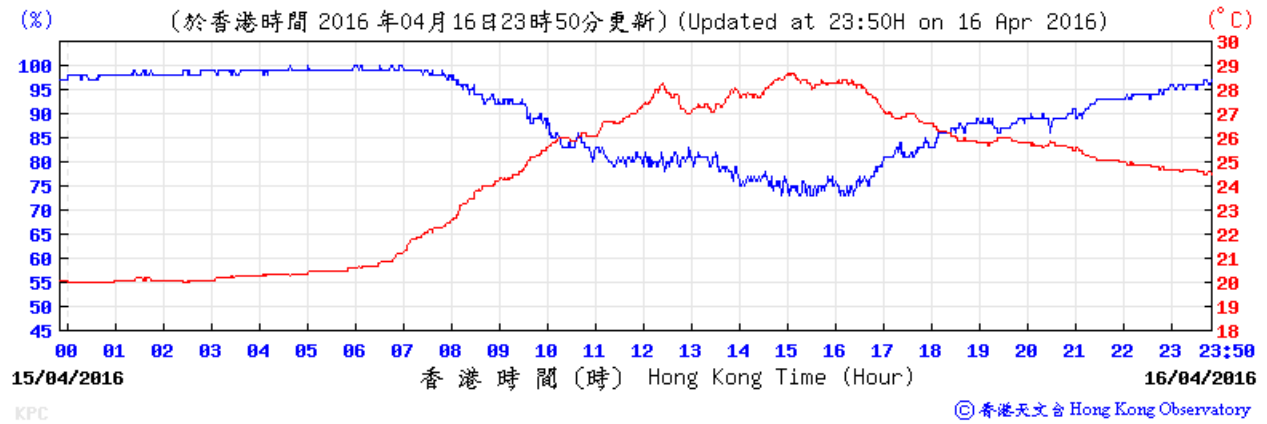


Wind Speed:

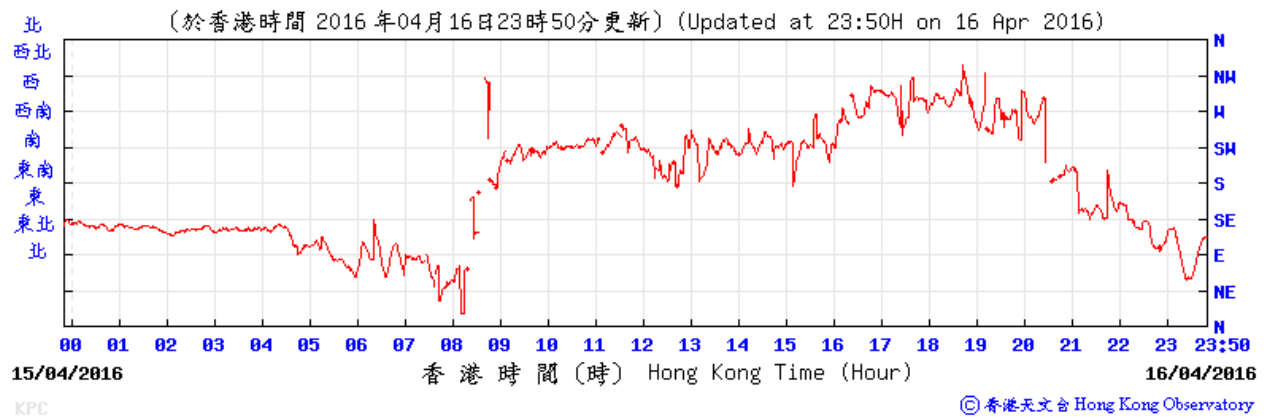


# King's Park Weather Station – 15 April 2016

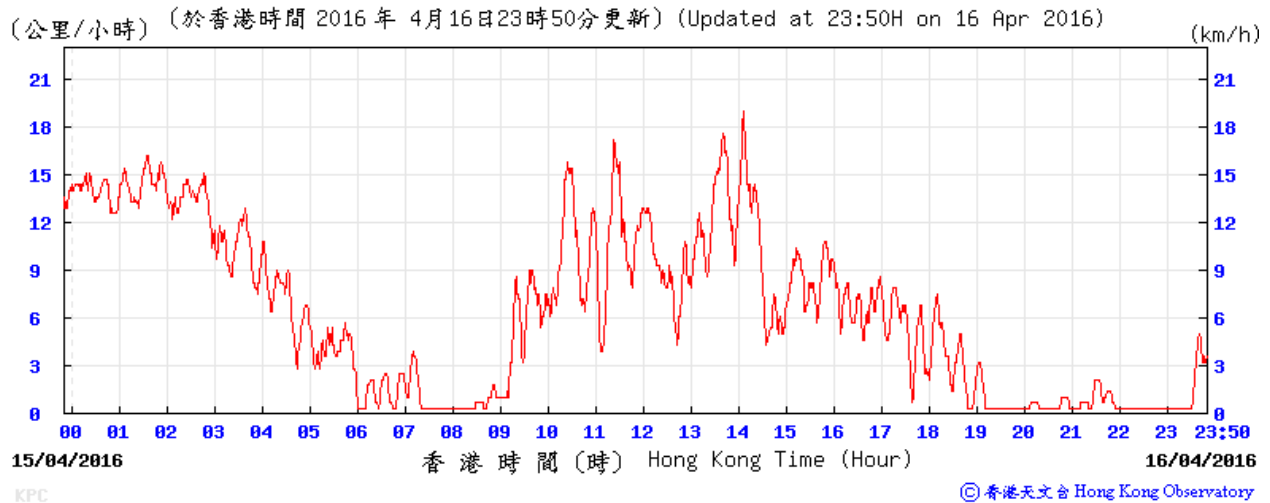
## Temperature/Humidity:



## Wind Direction:

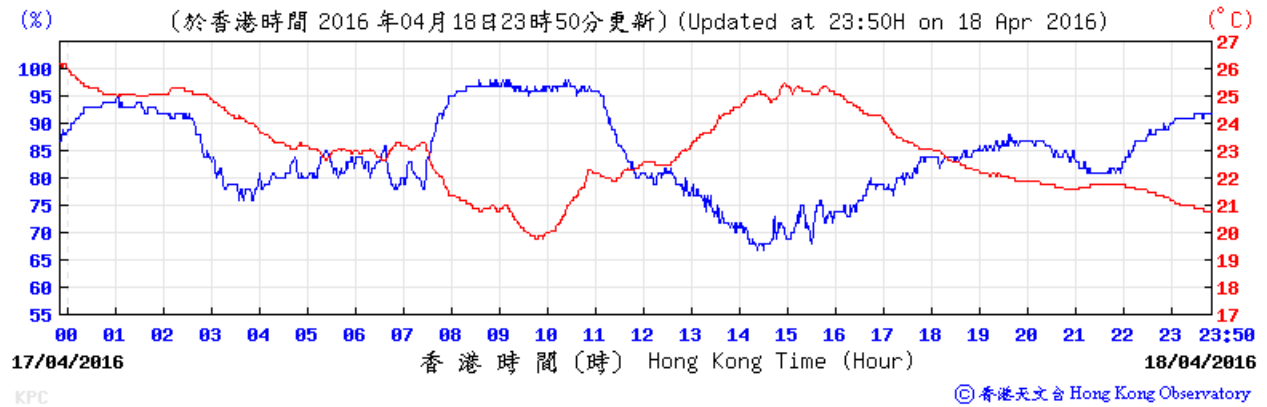


## Wind Speed:

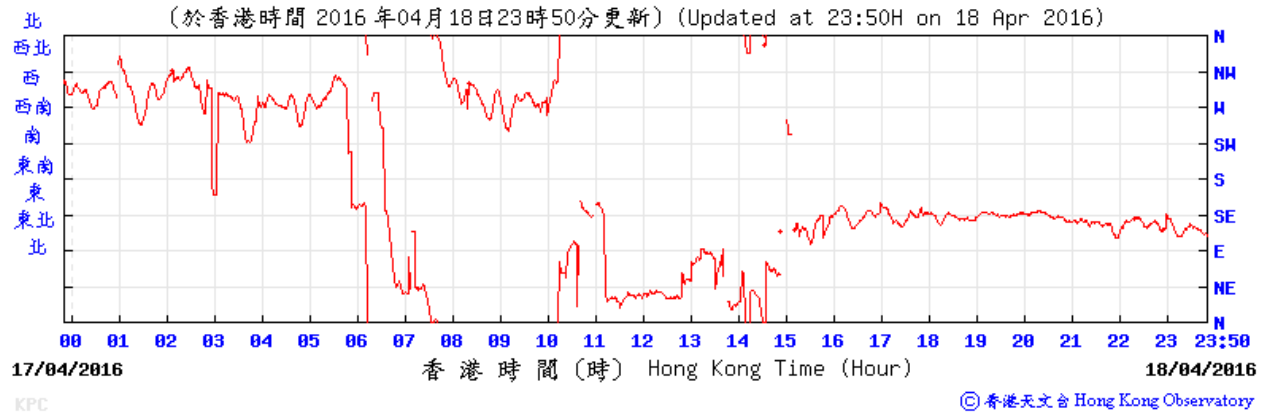


# King's Park Weather Station – 18 April 2016

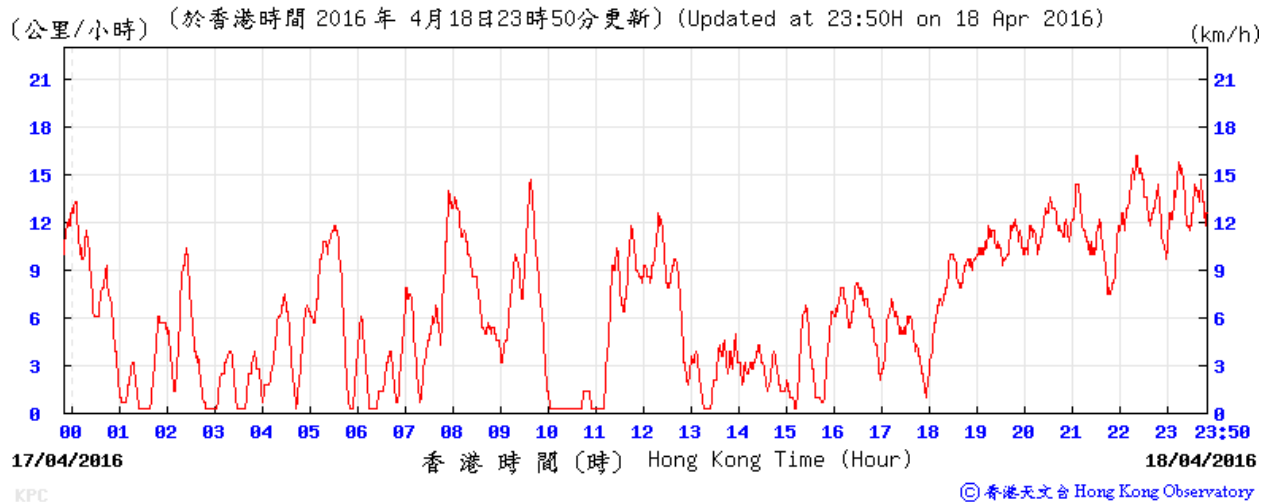
## Temperature/Humidity:



## Wind Direction:



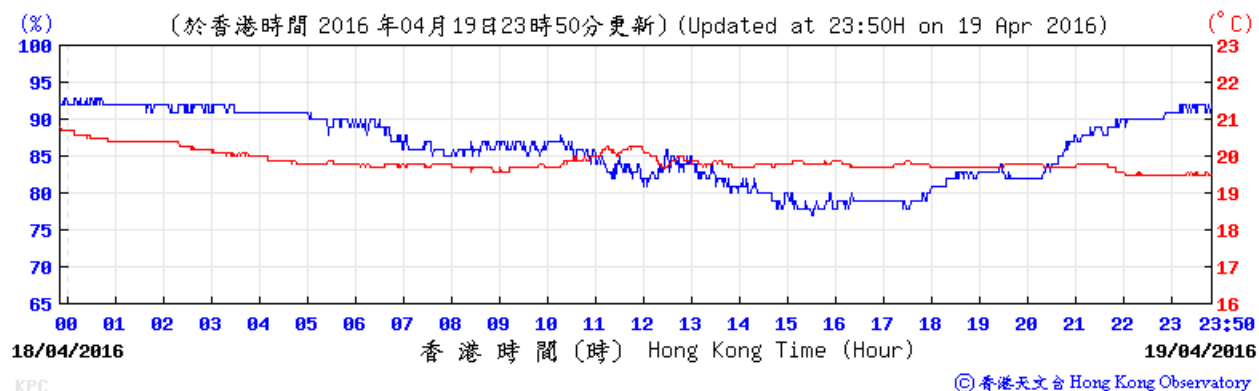
## Wind Speed:



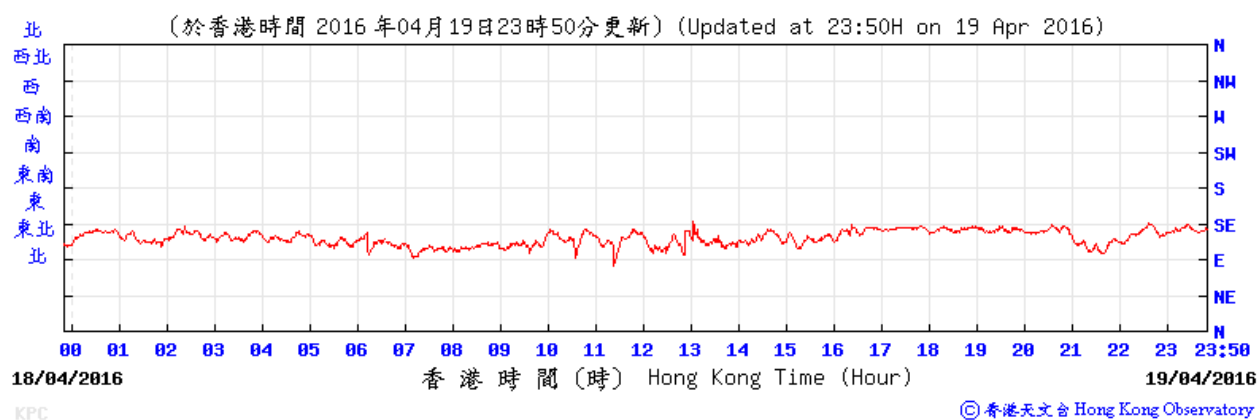


## King's Park Weather Station – 19 April 2016

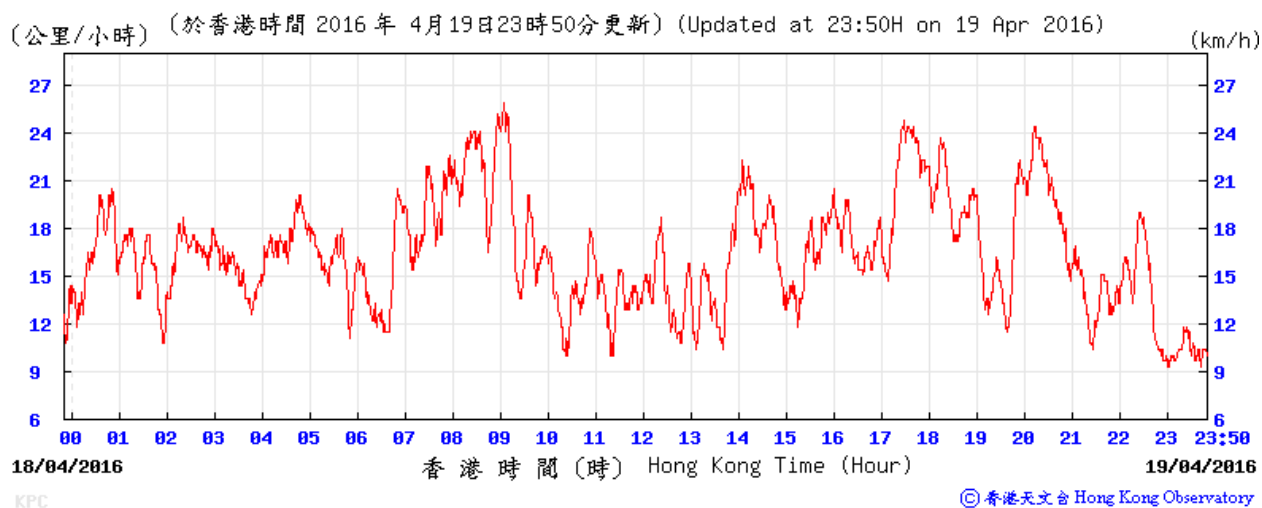
### Temperature/Humidity:



### Wind Direction:

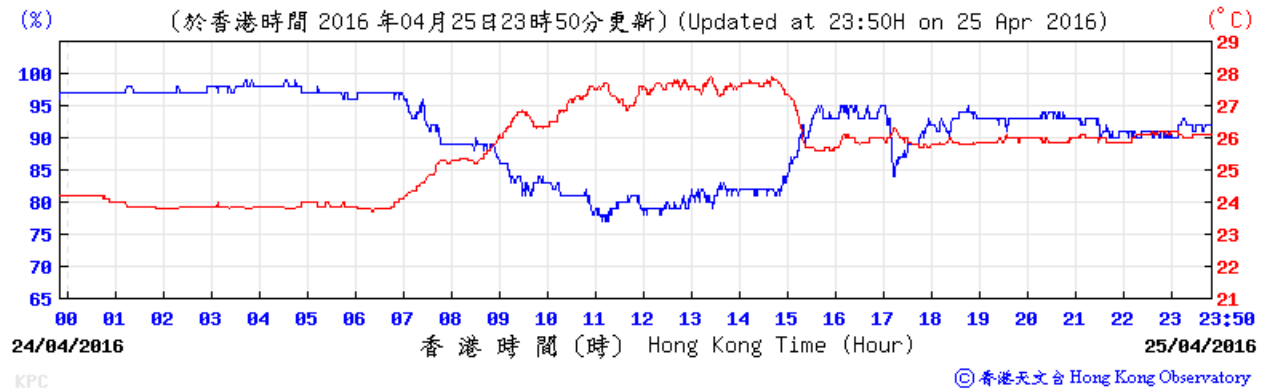


### Wind Speed:

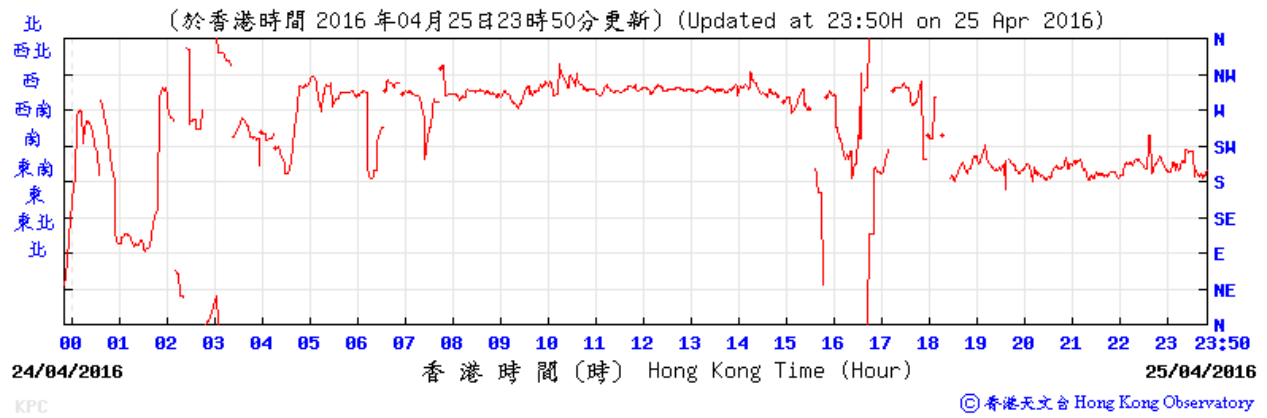


# King's Park Weather Station – 25 April 2016

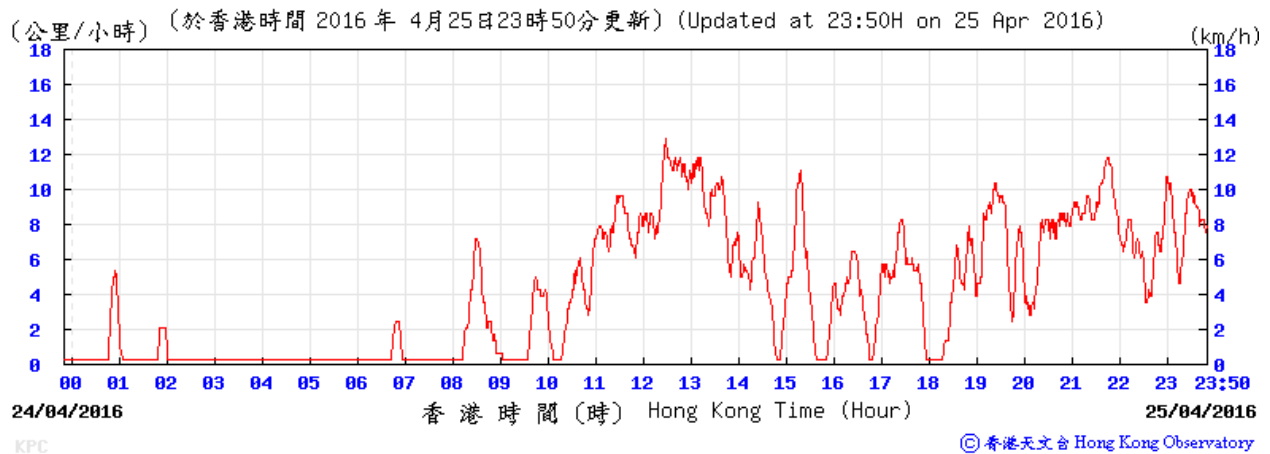
## Temperature/Humidity:



## Wind Direction:

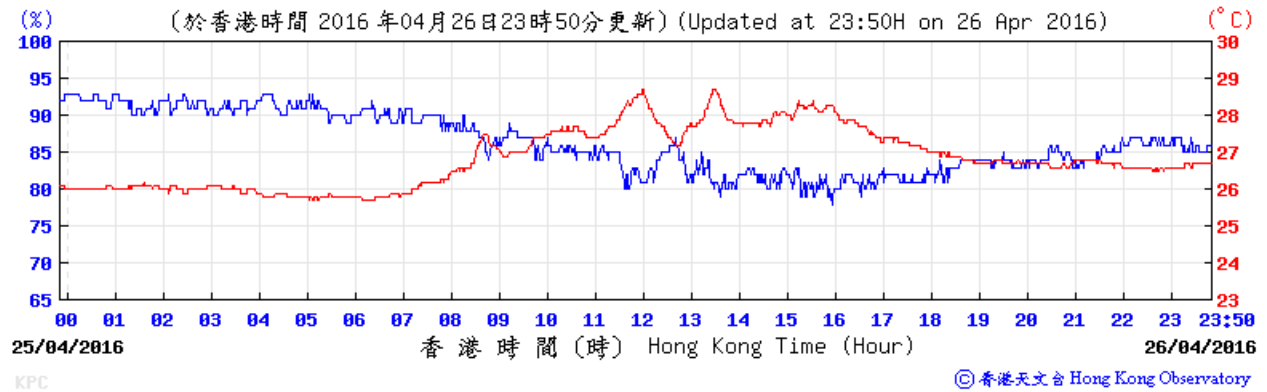


## Wind Speed:

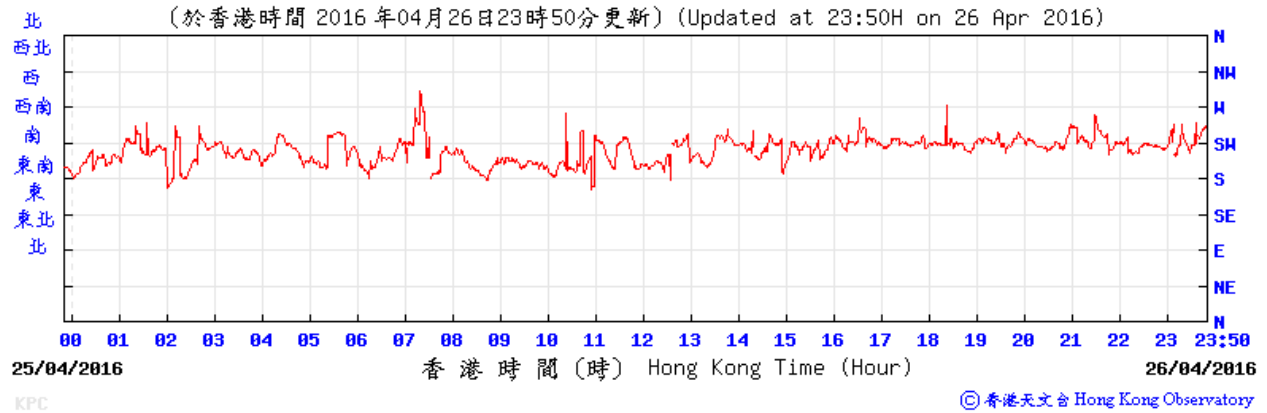


# King's Park Weather Station – 26 April 2016

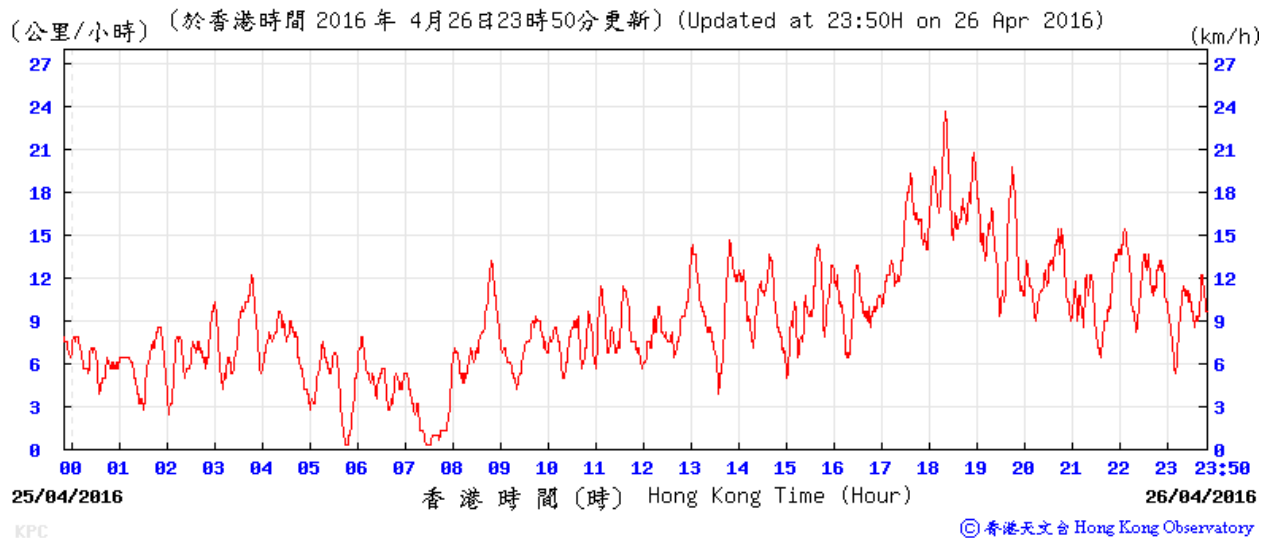
## Temperature/Humidity:



## Wind Direction:



## Wind Speed:

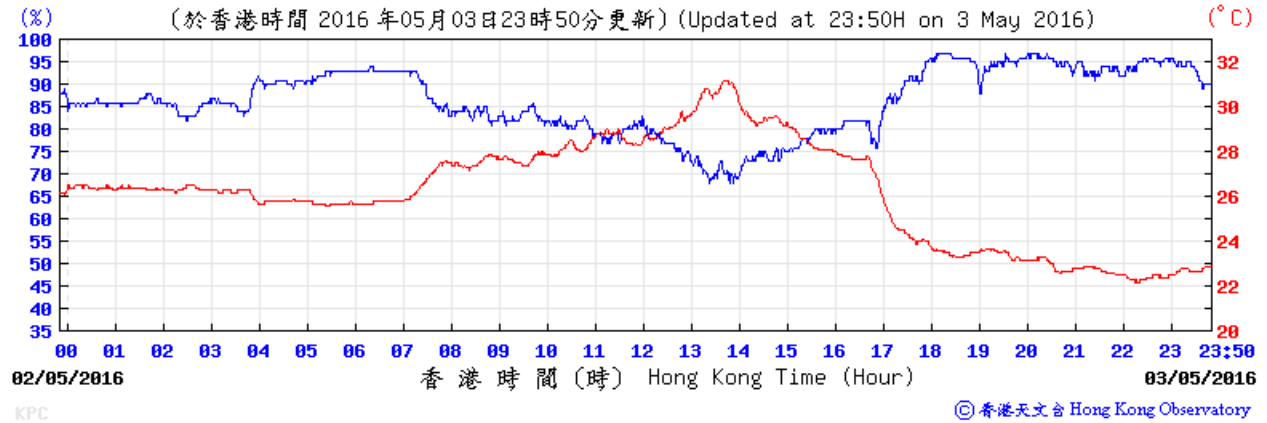


**Daily Total Rainfall at King's Park HKO Weather Monitoring Station - May 2016**

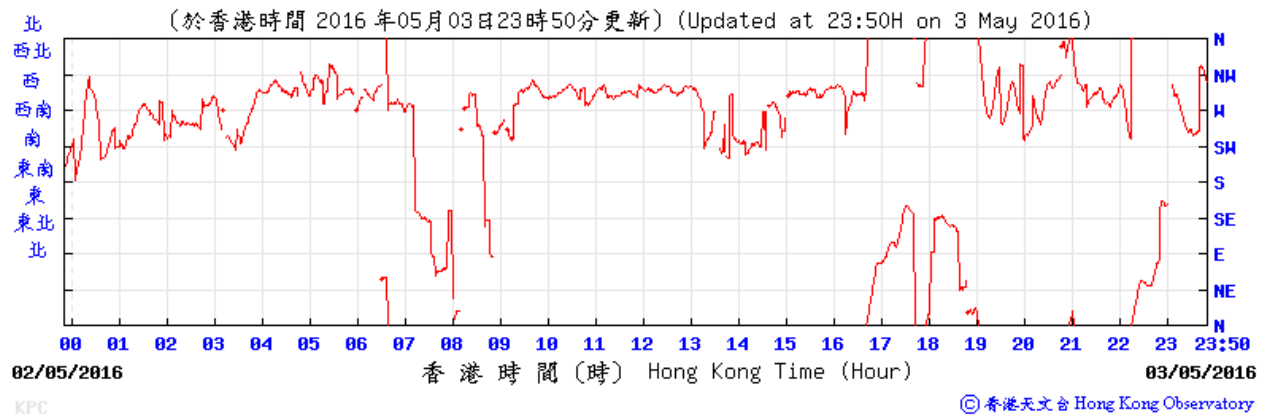
Day	Total Rainfall, mm	24-hr TSP	Noise	Remarks
1	3.1			
2	0.3			
3	30.7	✓	✓	<b>It was sunny without rainfall on site during noise monitoring.</b>
4	0			
5	0			
6	0			
7	0			
8	0			
9	0	✓		
10	60.3			
11	0			
12	0		✓	<b>It was cloudy without rainfall on site during noise monitoring.</b>
13	0			
14	4.7			
15	1			
16	0.3			
17	1.2	✓	✓	<b>It was cloudy without rainfall on site during noise monitoring.</b>
18	0			
19	0			
20	16.1			
21	37.6			
22	0			
23	0	✓		
24	0			
25	0			
26	0.1		✓	<b>It was sunny without rainfall on site during noise monitoring.</b>
27	14.4			
28	62.9			
29	0.8			
30	0.1	✓		
31	0		✓	<b>It was sunny without rainfall on site during noise monitoring.</b>
Mean/Total	233.6			

# King's Park Weather Station – 03 May 2016

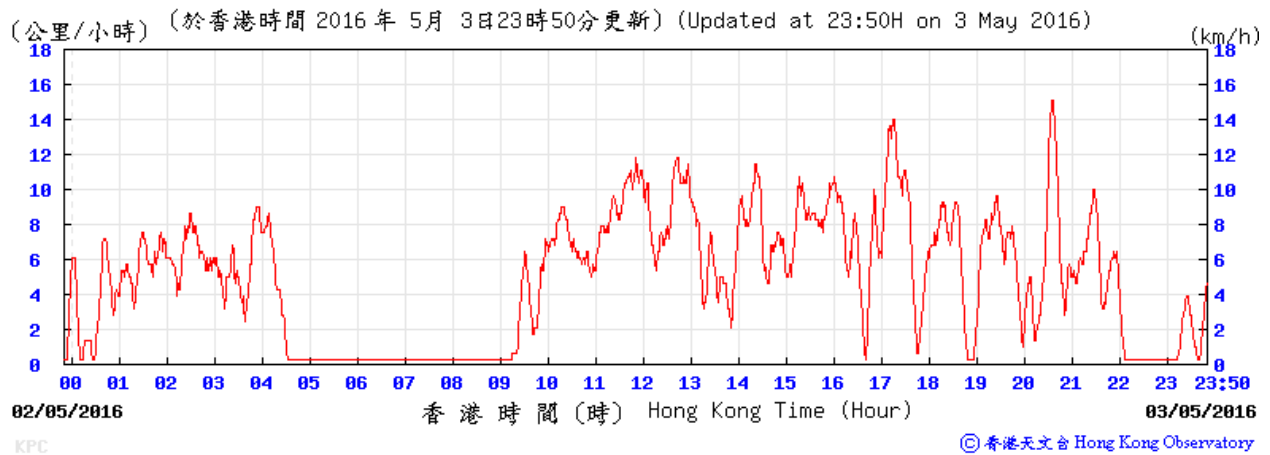
Temperature/Humidity:



Wind Direction:

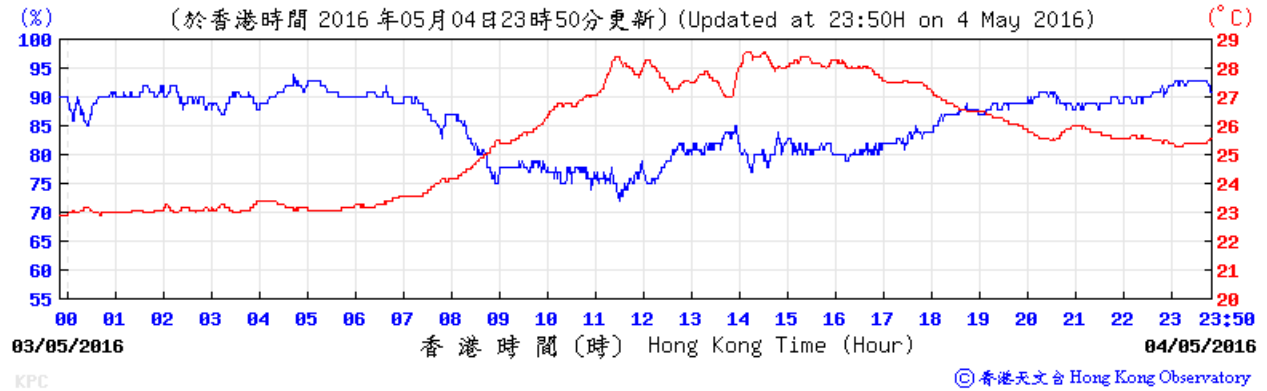


Wind Speed:

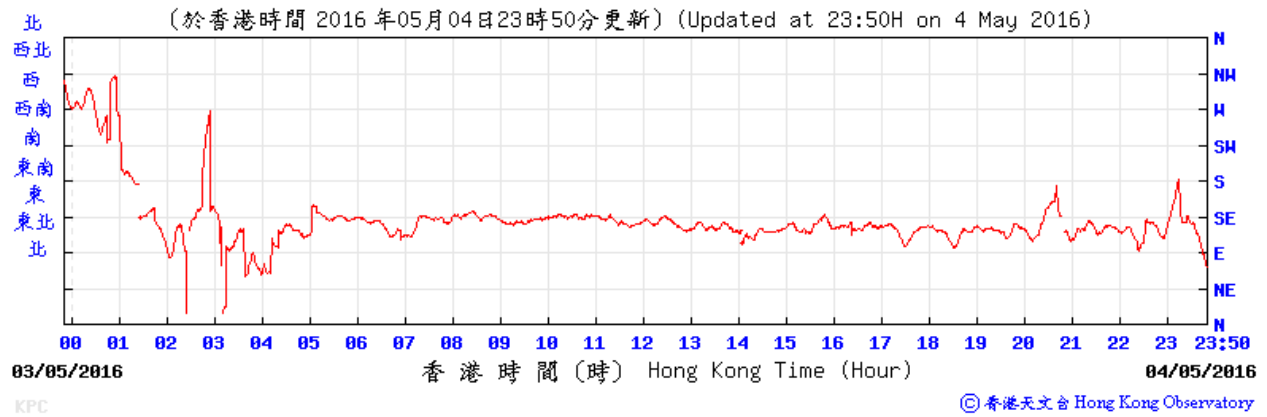


# King's Park Weather Station – 04 May 2016

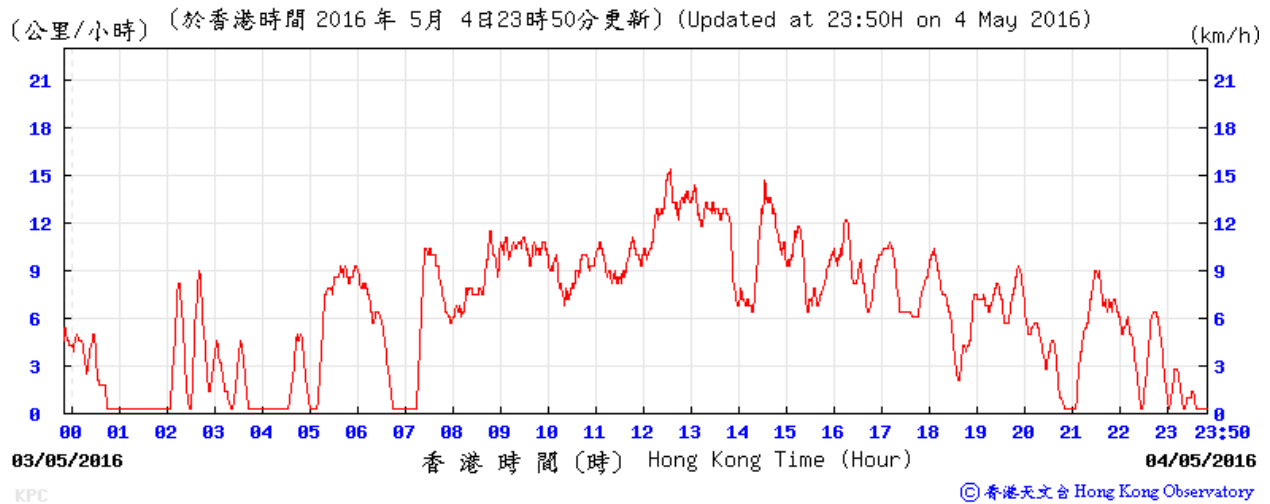
Temperature/Humidity:



Wind Direction:

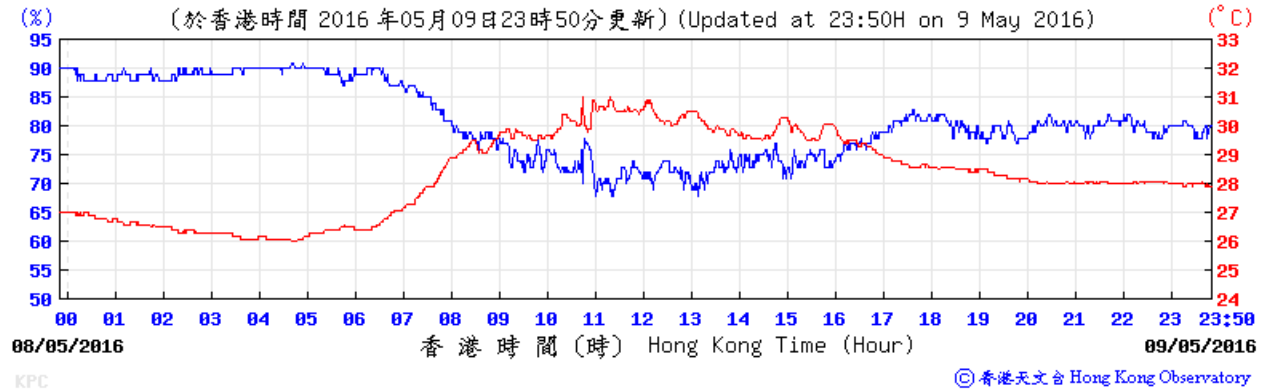


Wind Speed:

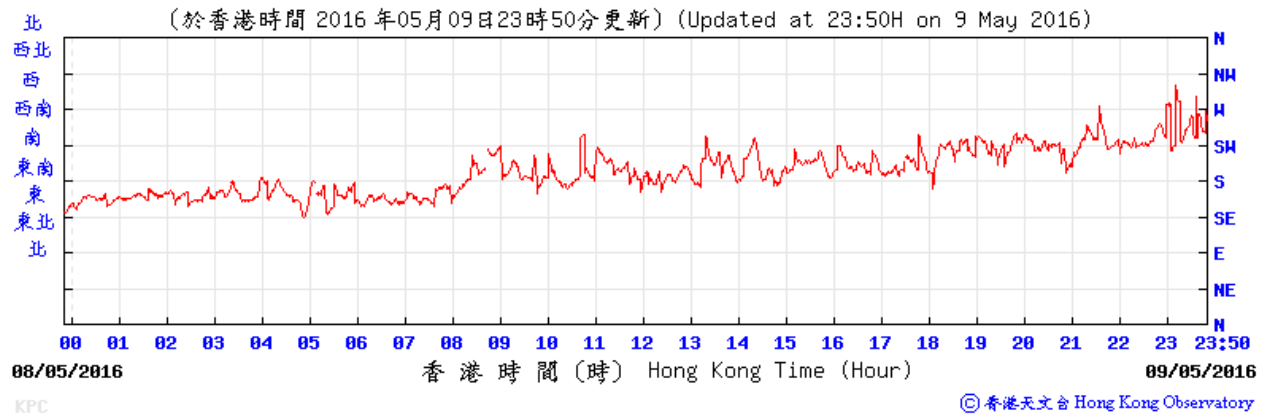


# King's Park Weather Station – 09 May 2016

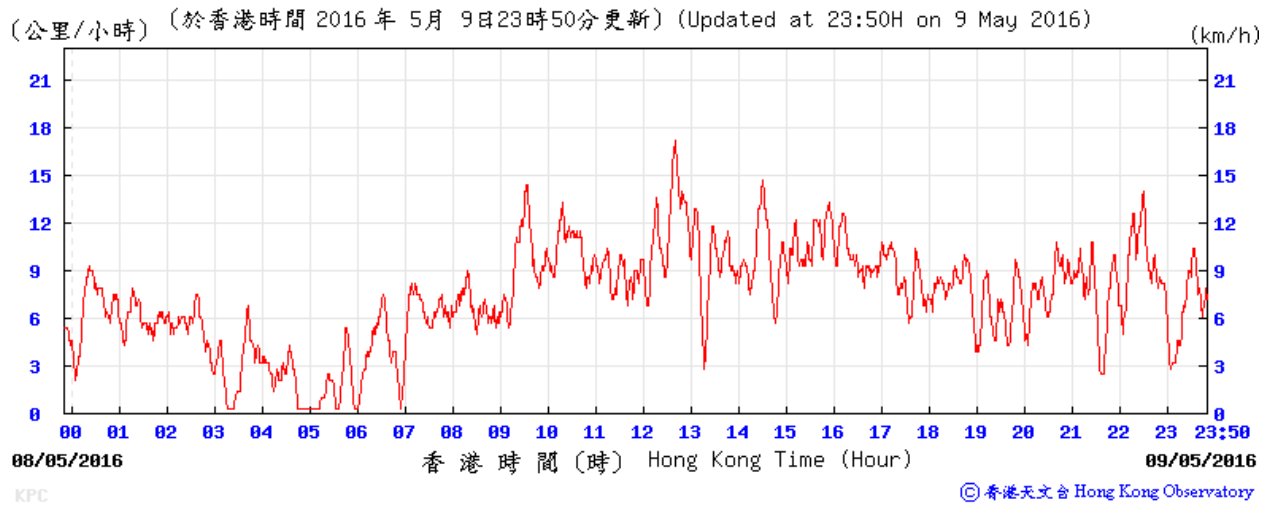
Temperature/Humidity:



Wind Direction:

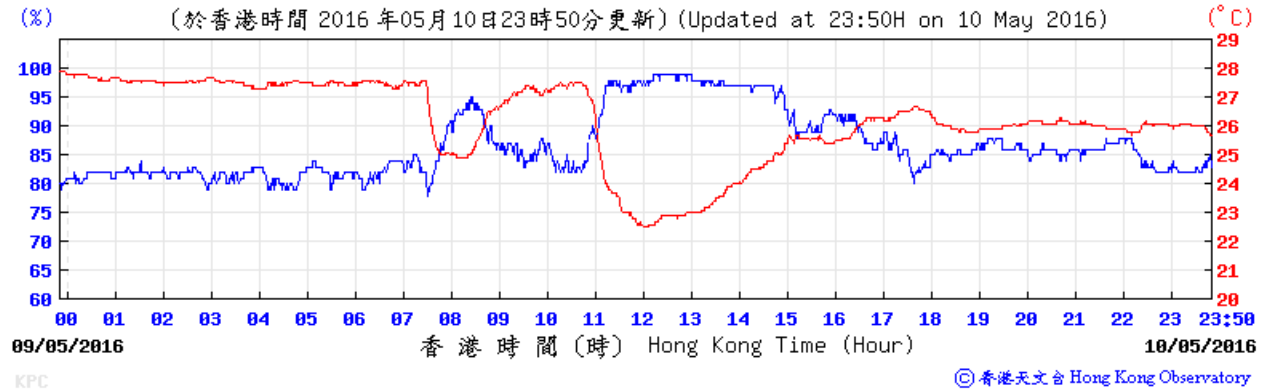


Wind Speed:

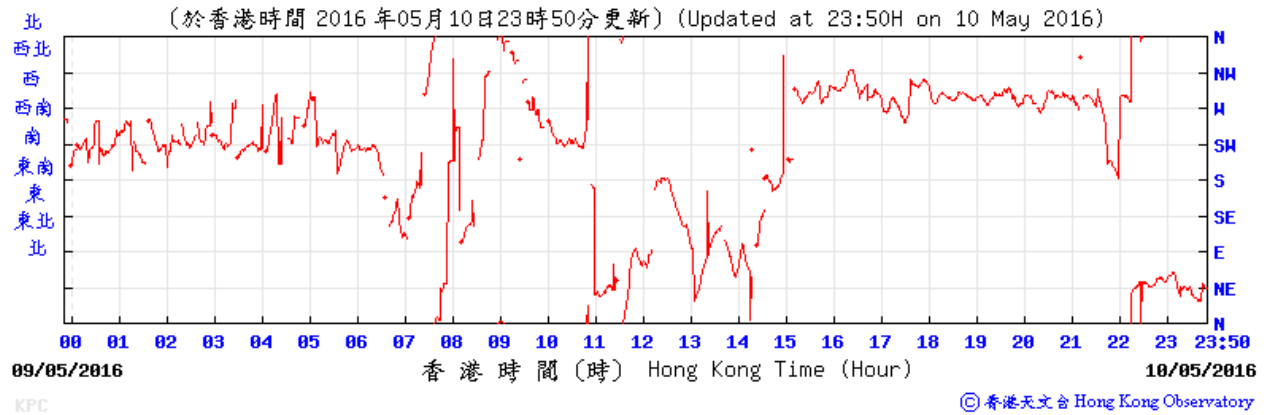


# King's Park Weather Station – 10 May 2016

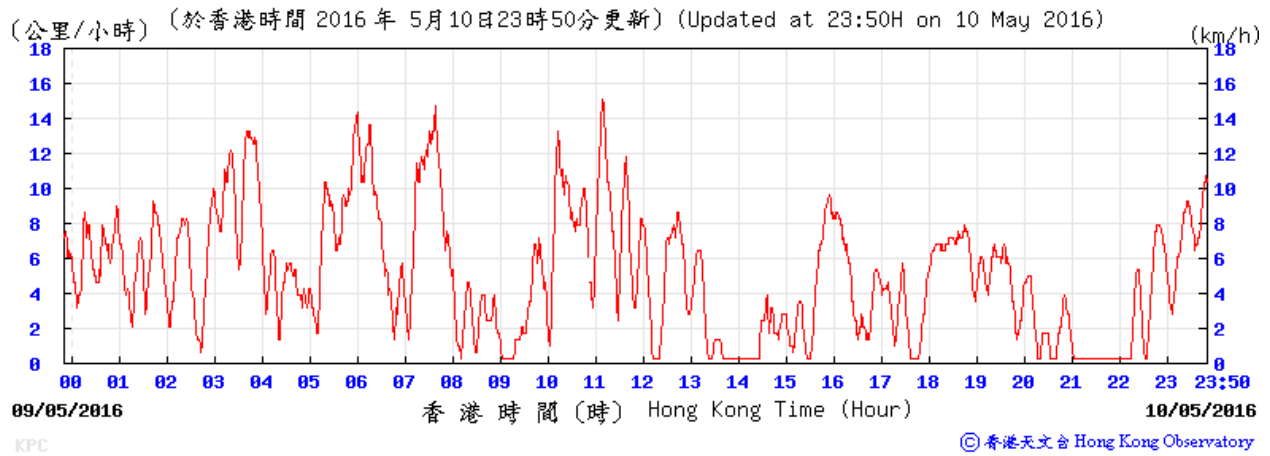
Temperature/Humidity:



Wind Direction:



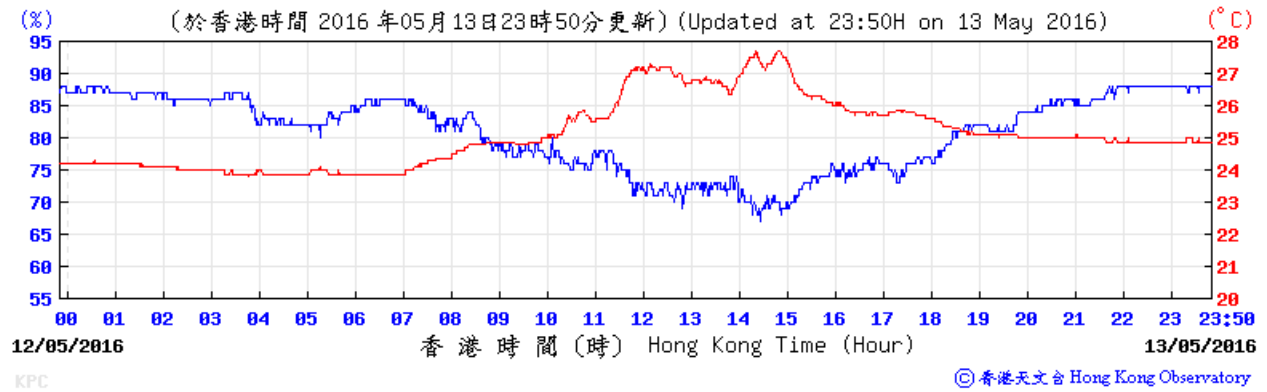
Wind Speed:



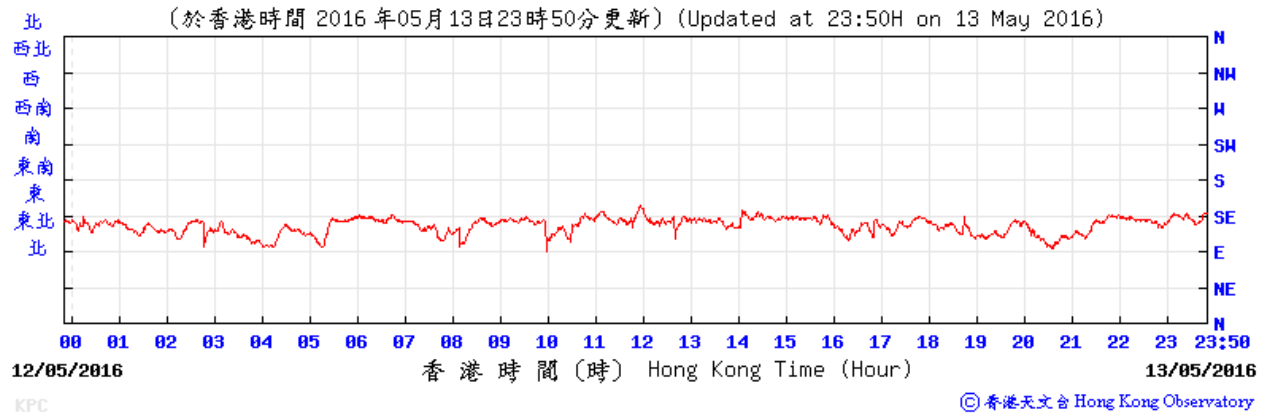


# King's Park Weather Station – 12 May 2016

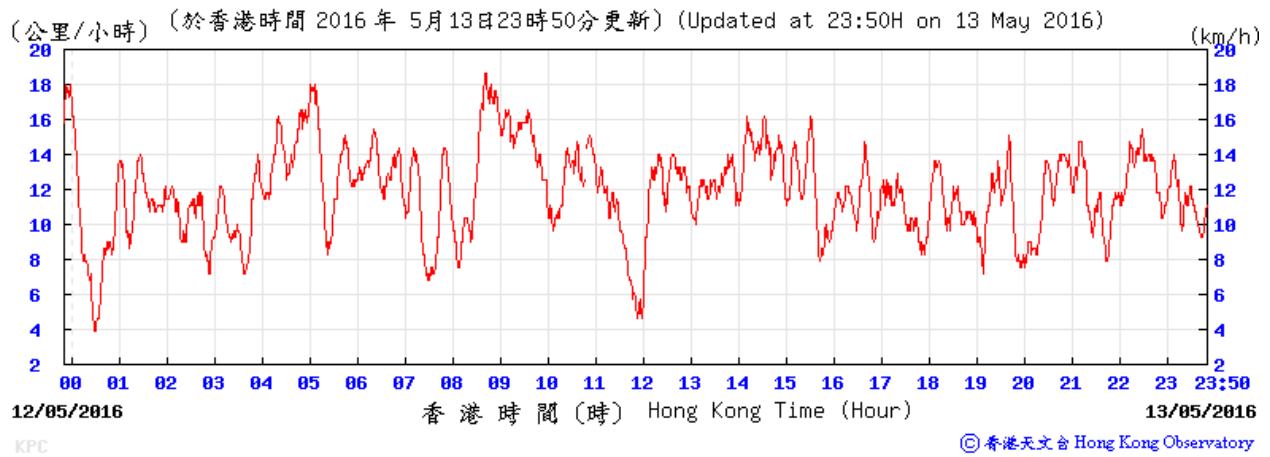
## Temperature/Humidity:



## Wind Direction:

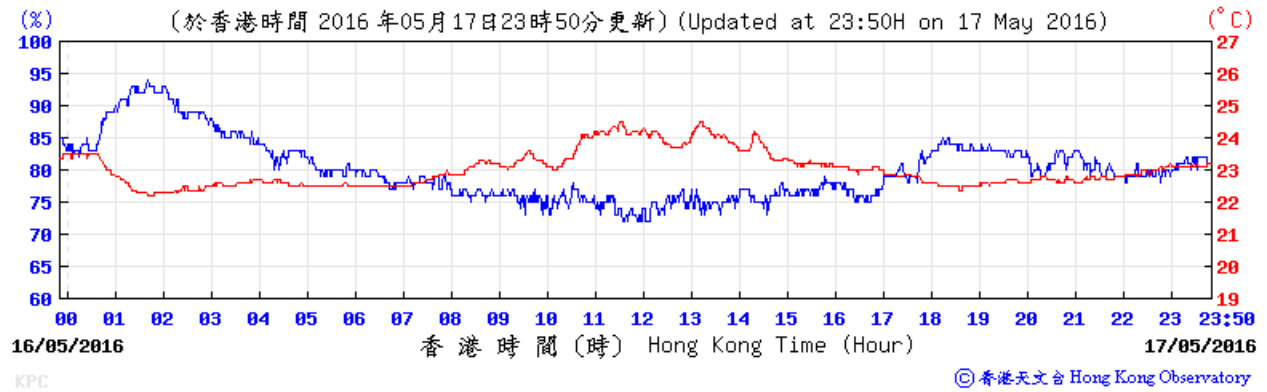


## Wind Speed:

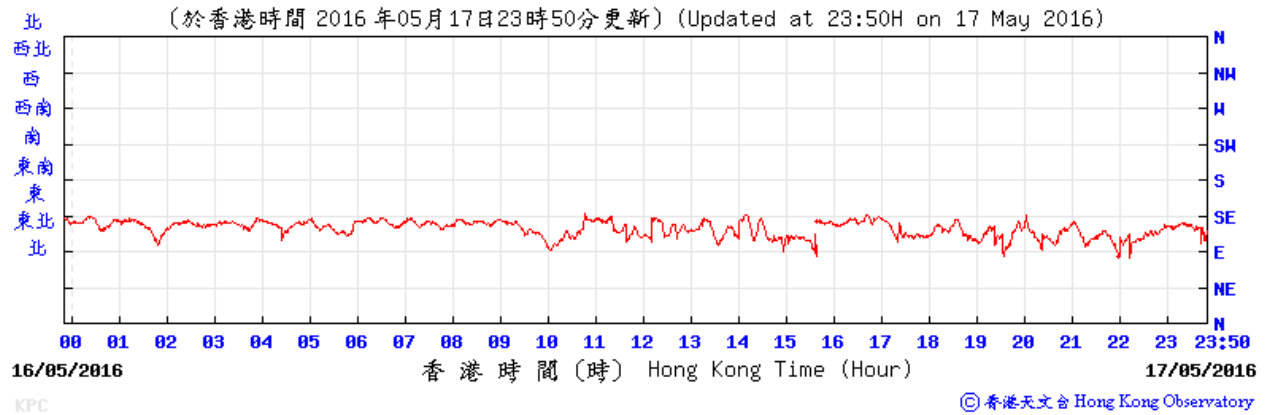


# King's Park Weather Station – 17 May 2016

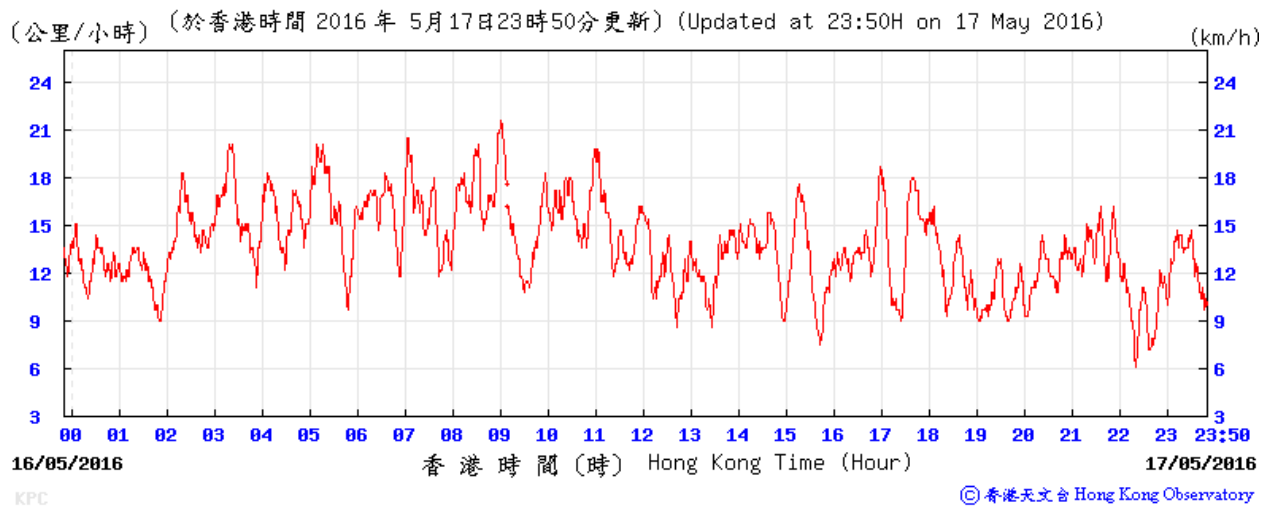
## Temperature/Humidity:



## Wind Direction:

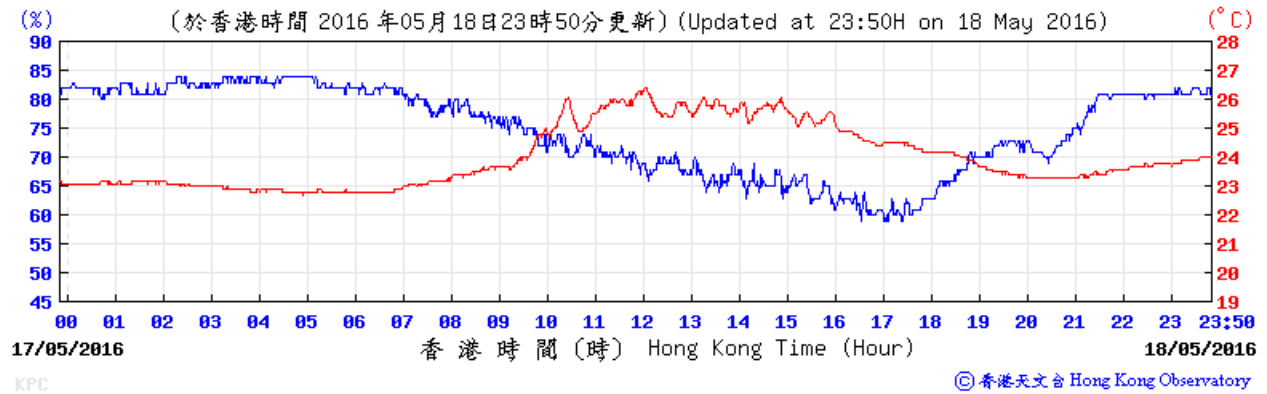


## Wind Speed:

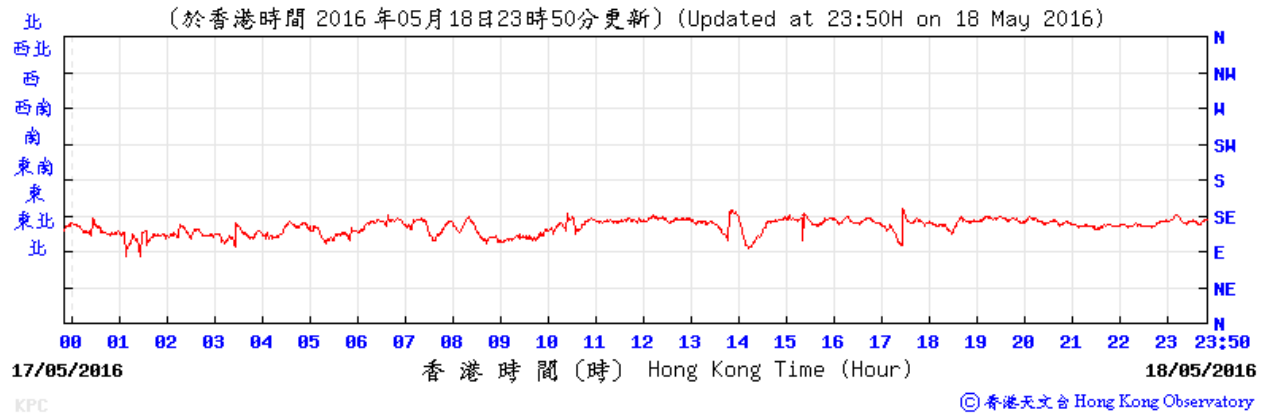


# King's Park Weather Station – 18 May 2016

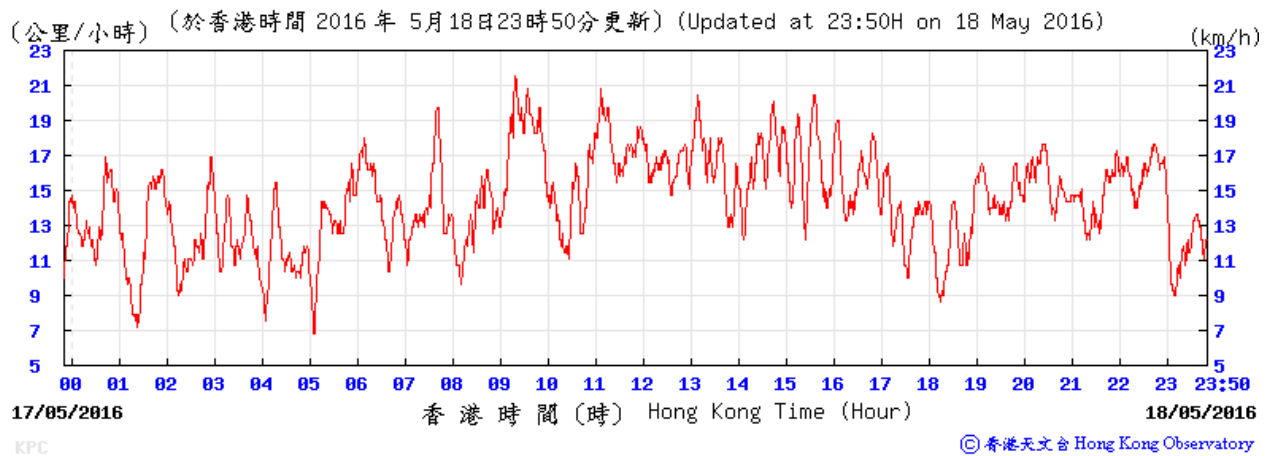
## Temperature/Humidity:



## Wind Direction:

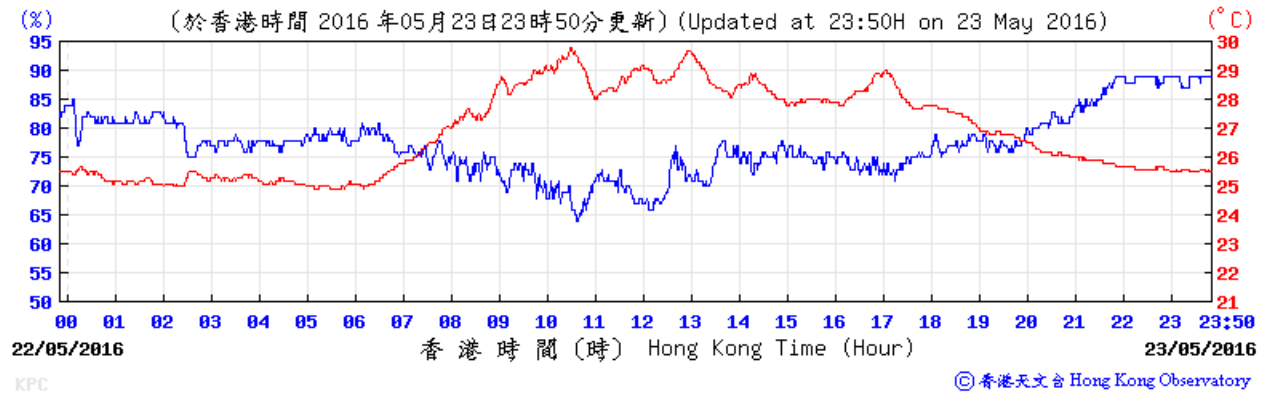


## Wind Speed:

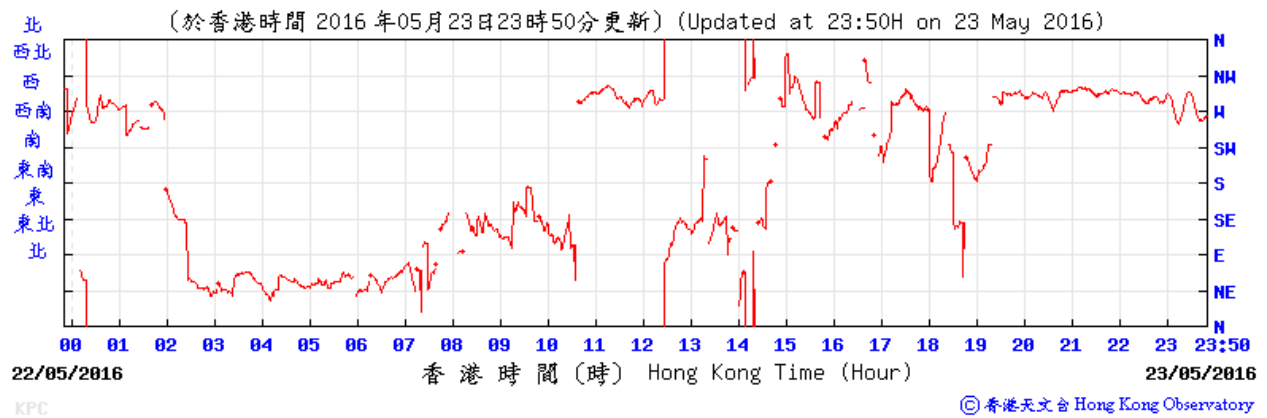


# King's Park Weather Station – 23 May 2016

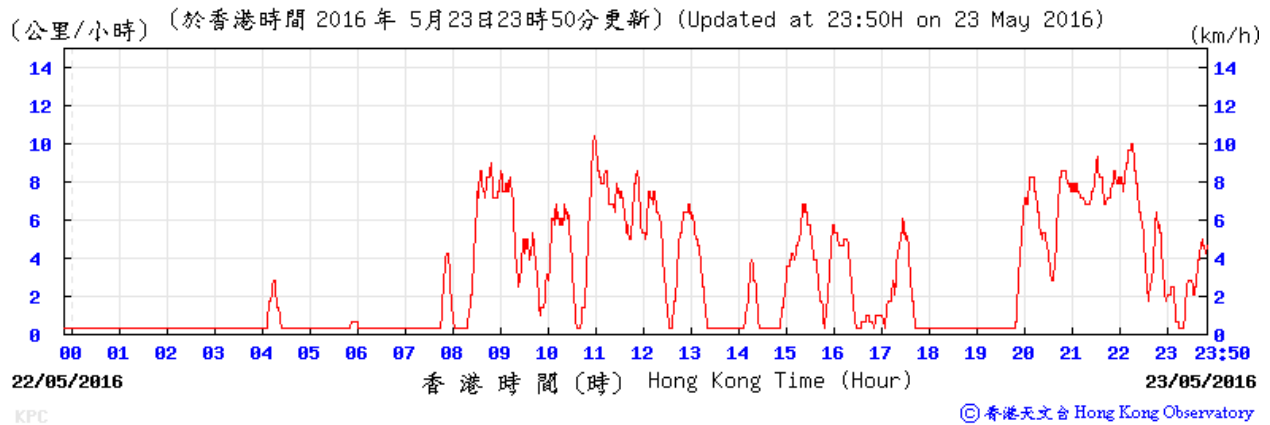
## Temperature/Humidity:



## Wind Direction:

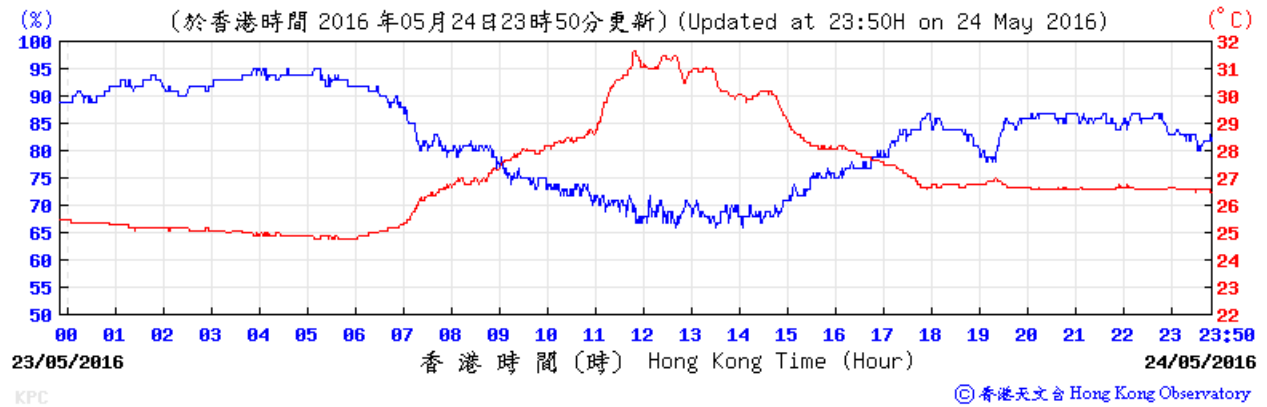


## Wind Speed:

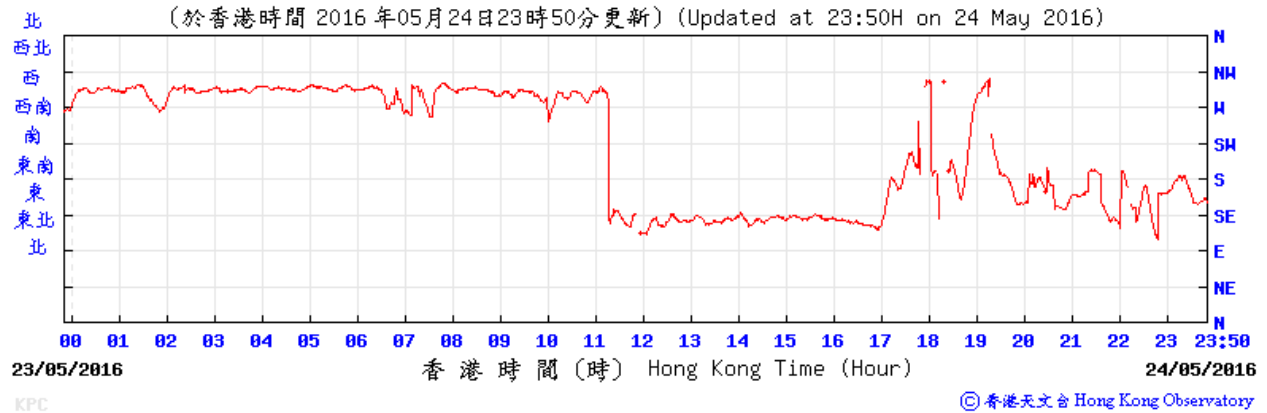


# King's Park Weather Station – 24 May 2016

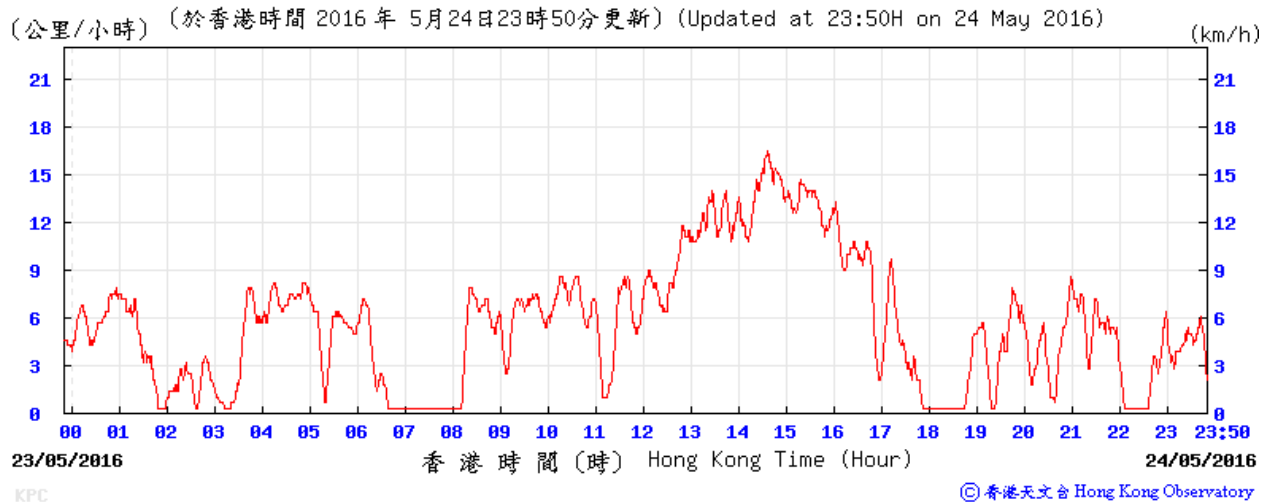
## Temperature/Humidity:



## Wind Direction:

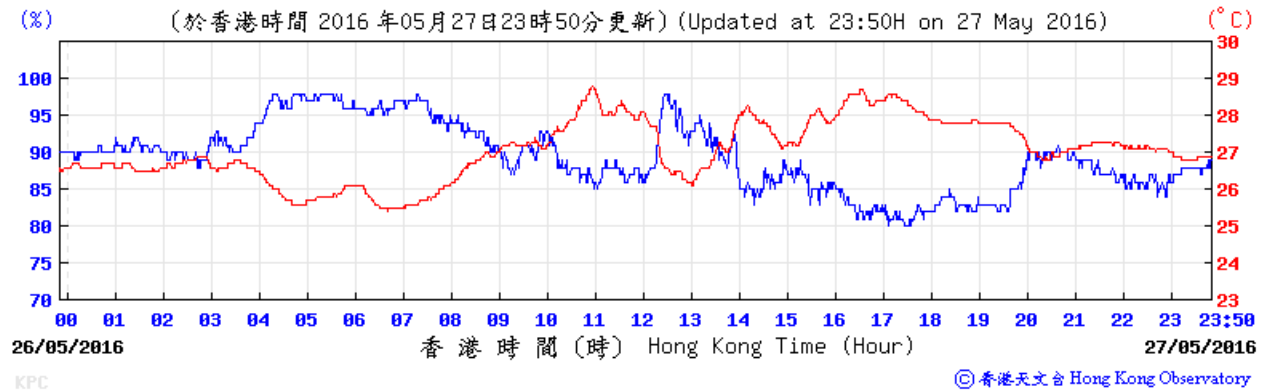


## Wind Speed:

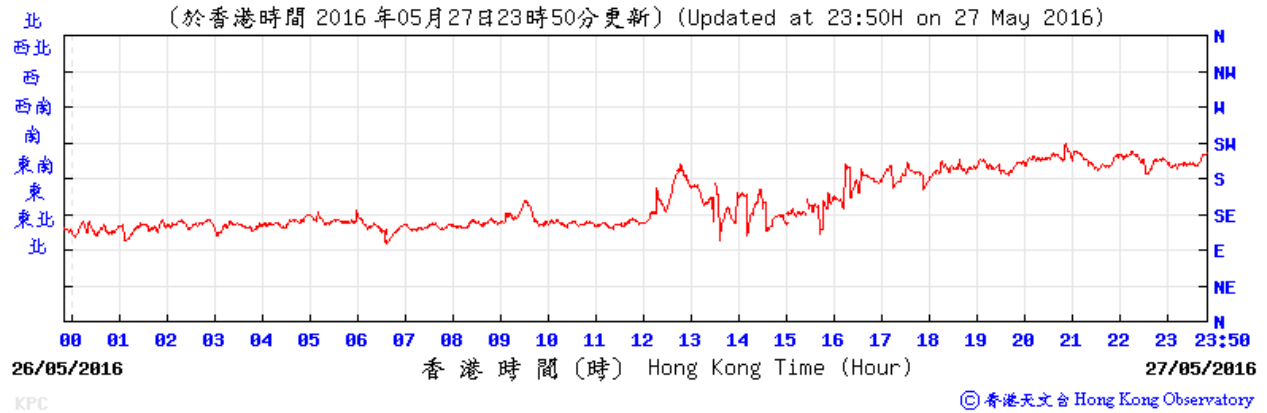


# King's Park Weather Station – 26 May 2016

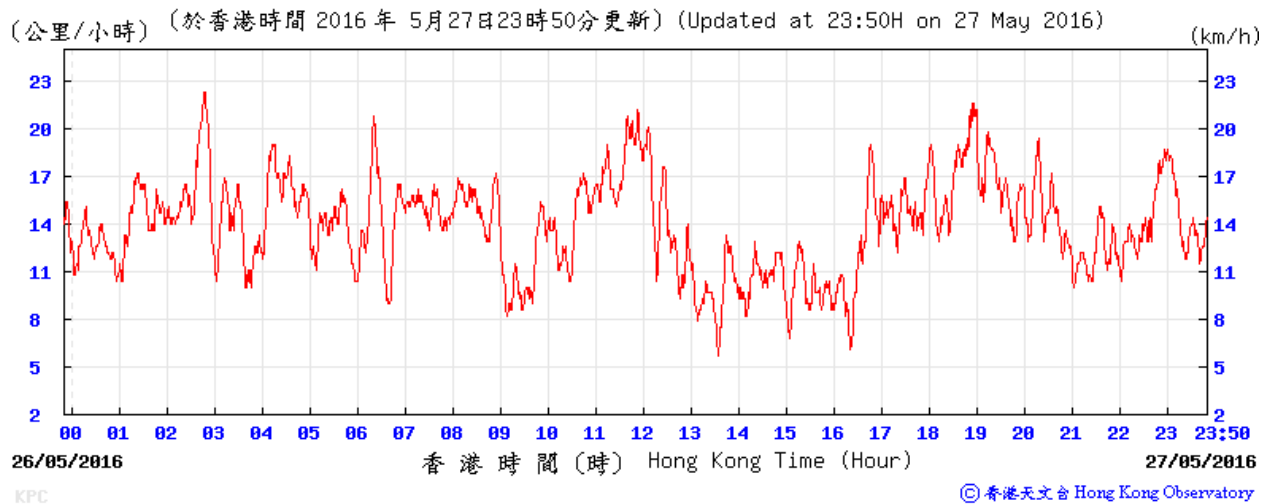
## Temperature/Humidity:



## Wind Direction:

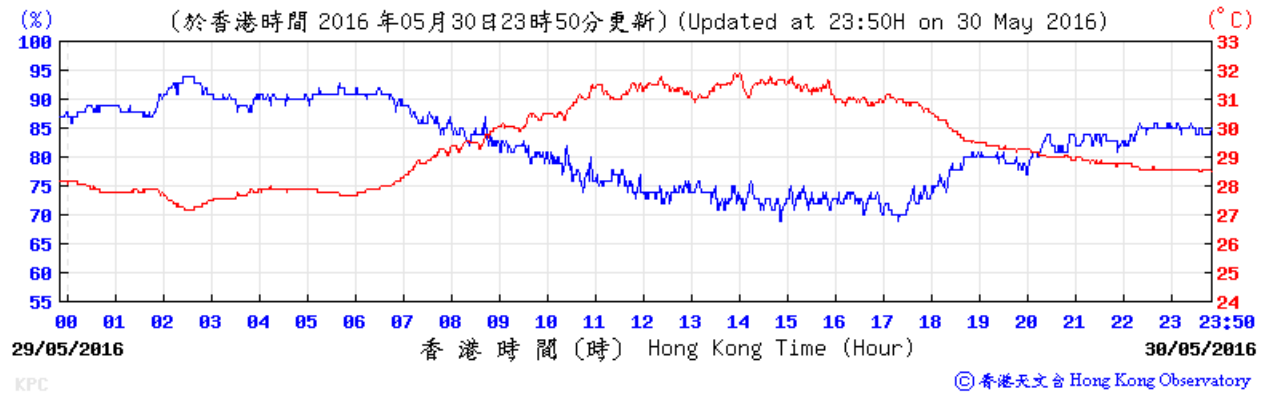


## Wind Speed:

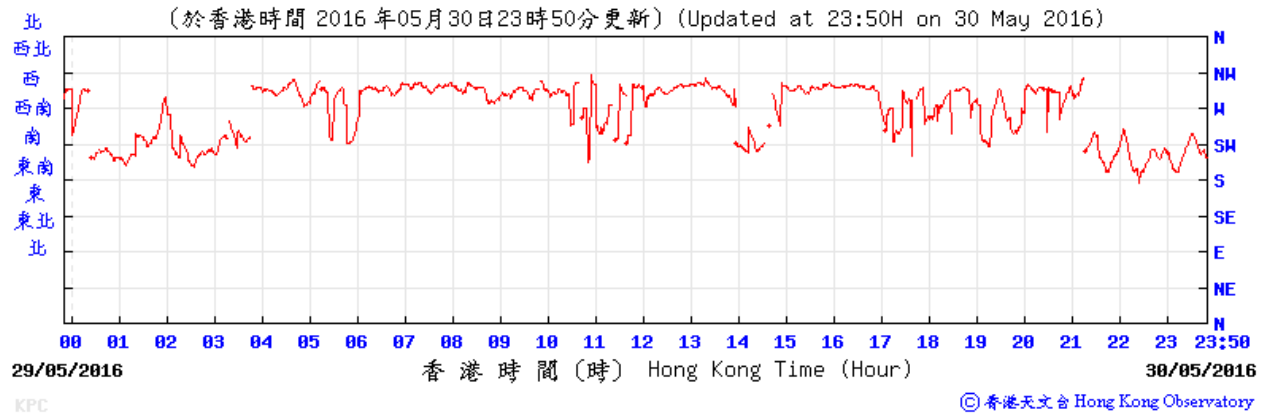


# King's Park Weather Station – 30 May 2016

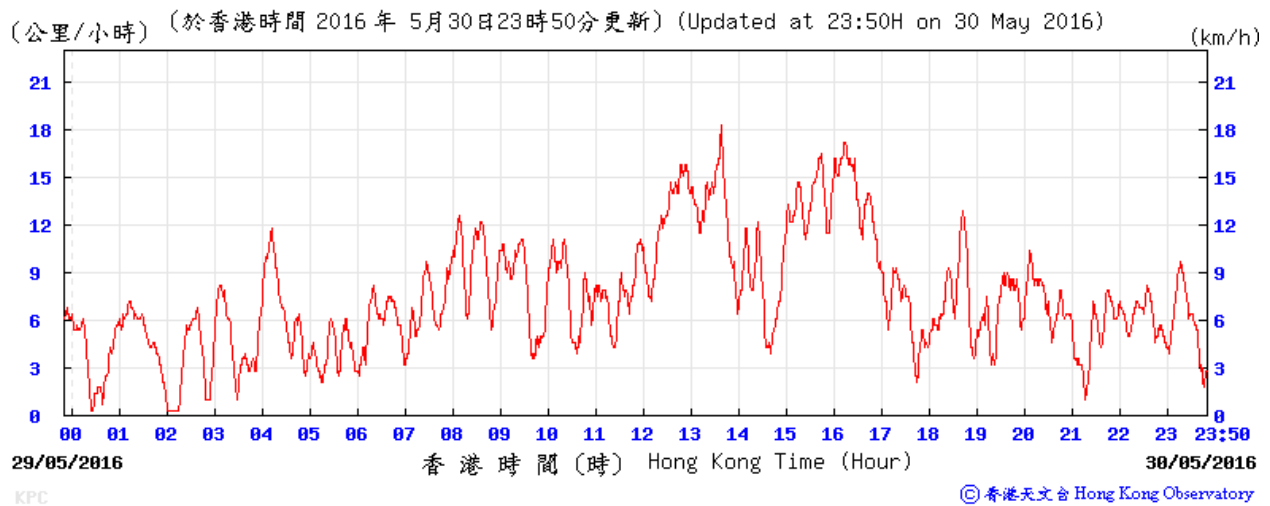
## Temperature/Humidity:



## Wind Direction:

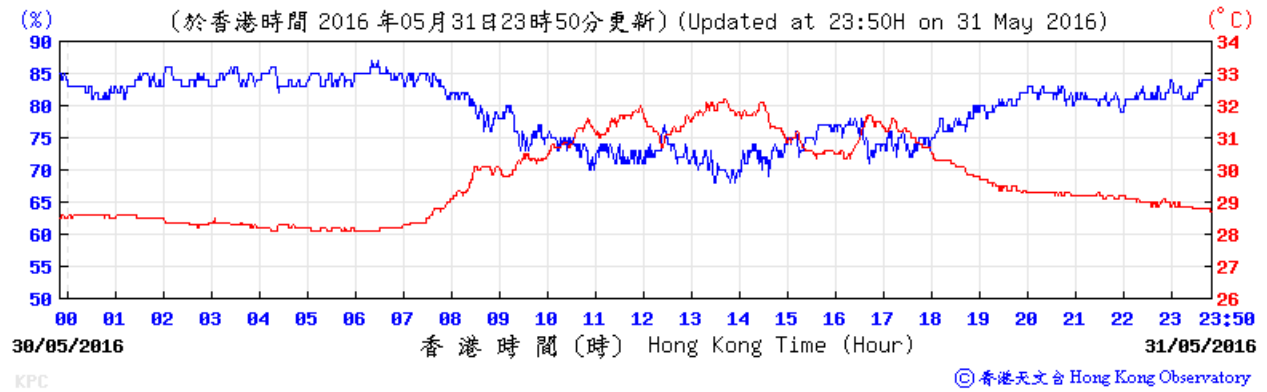


## Wind Speed:

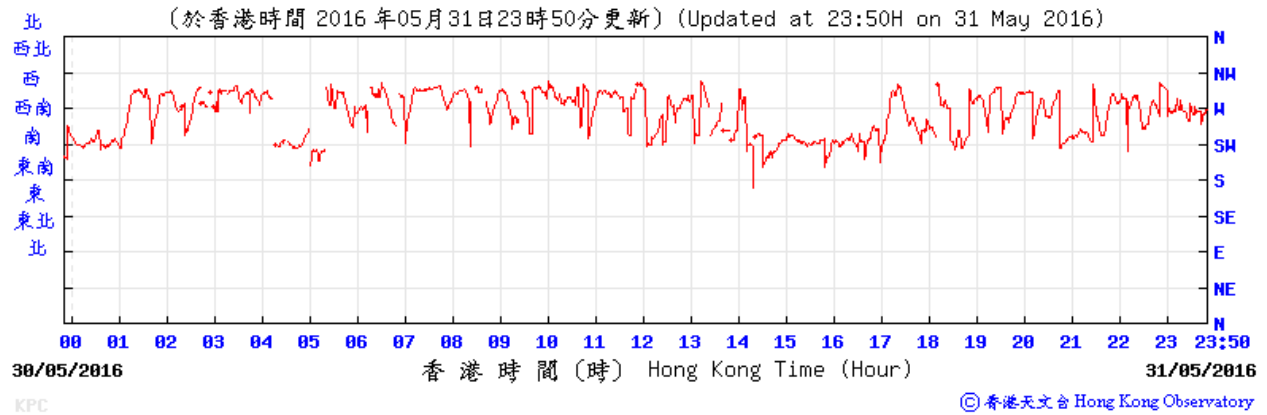


# King's Park Weather Station – 31 May 2016

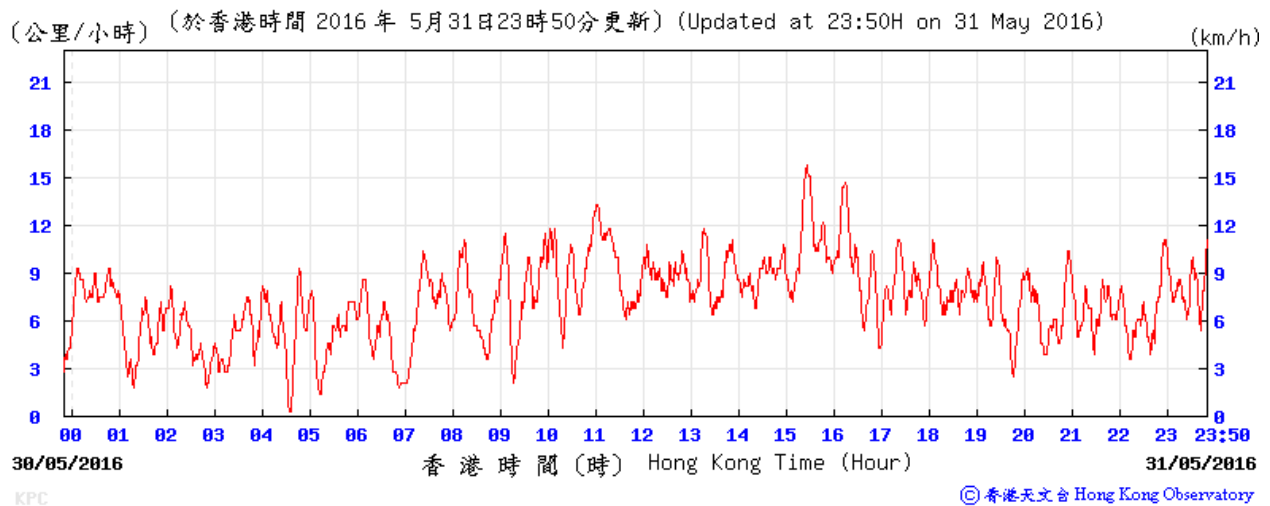
## Temperature/Humidity:



## Wind Direction:



## Wind Speed:





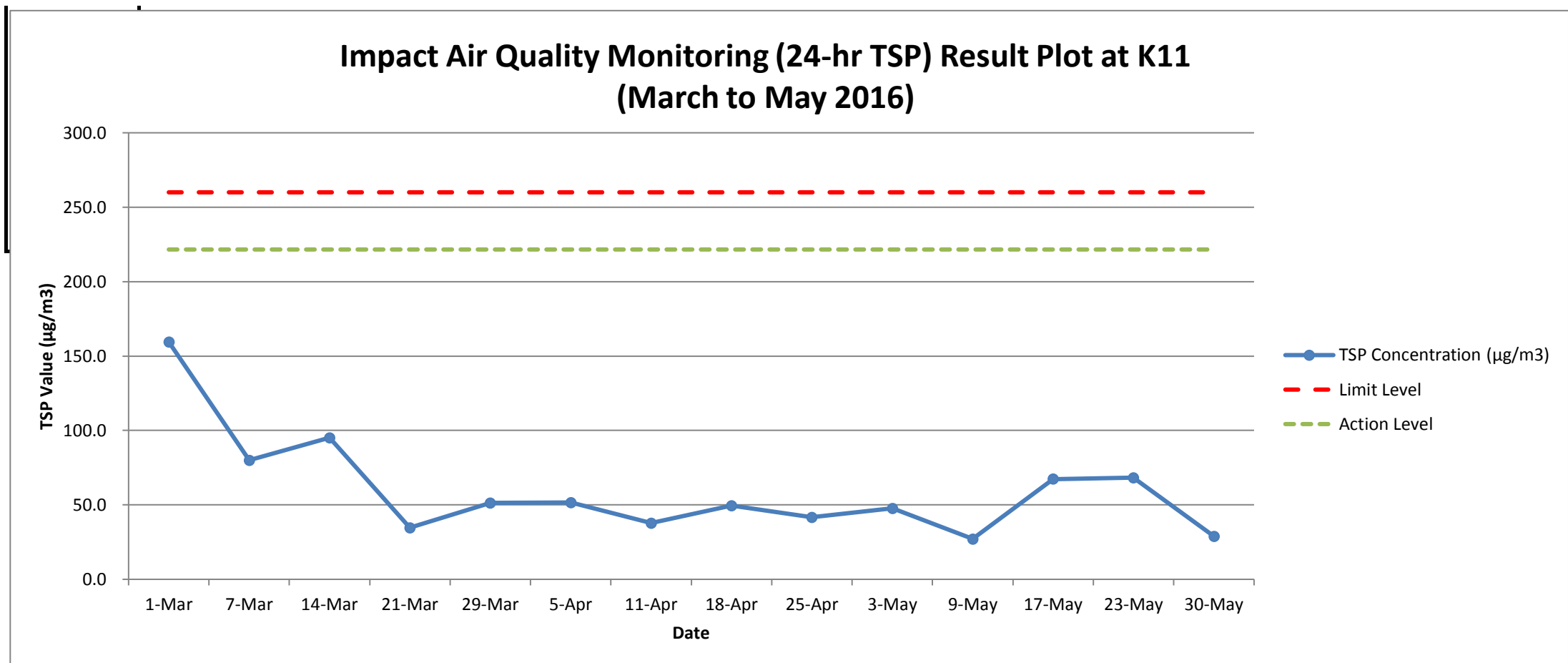
Appendix H

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## Monitoring Results and Plots

**C3840-13C MTRCL Tsim Sha Tsui Station Carnarvon Road Subway and Entrances Modification Works  
Impact Air Quality Monitoring (24-hr TSP) Results at K11 (March to May 2016)**

Location	Monitoring Date	Start Time	Weather Conditions	Temperature	Elapse Time			Flow Rate (CFM)			TSP Concentration (µg/m <sup>3</sup> )	Action/Limit Levels
					Initial	Final	Sampling Hours	Initial	Final	Average Flow Rate		
K11	1-Mar-16	10:26	Sunny	16.7	647158	649868	27	39	39	39	159.5	221.6/260
	7-Mar-16	8:52	Cloudy	18.5	649868	652335	25	39	39	39	80.1	221.6/260
	14-Mar-16	10:47	Cloudy	14.9	652335	654799	25	39	39	39	95.2	221.6/260
	21-Mar-16	9:28	Rainy	15.4	654801	657210	24	39	39	39	34.7	221.6/260
	29-Mar-16	8:20	Sunny	19.7	657210	659740	25	38	39	39	51.4	221.6/260
	5-Apr-16	8:30	Sunny	21.6	659740	662170	24	38	39	39	51.7	221.6/260
	11-Apr-16	9:00	Overcast	19.4	662170	664583	24	39	39	39	37.9	221.6/260
	18-Apr-16	8:55	Overcast	19.6	664583	667055	25	39	39	39	49.5	221.6/260
	25-Apr-16	8:38	Rainy	26.5	667055	669526	25	38	39	39	41.7	221.6/260
	3-May-16	9:00	Overcast	25.4	669526	672018	25	38	39	39	47.7	221.6/260
	9-May-16	8:30	Rainy	25.0	672018	674524	25	38	38	38	27.2	221.6/260
	17-May-16	17:30	Cloudy	24.4	677040	679811	28	39	39	39	67.4	221.6/260
	23-May-16	10:30	Sunny	27.0	679811	682244	24	39	39	39	68.2	221.6/260
	30-May-16	11:30	Sunny	31.0	682244	684644	24	38	39	39	29.0	221.6/260

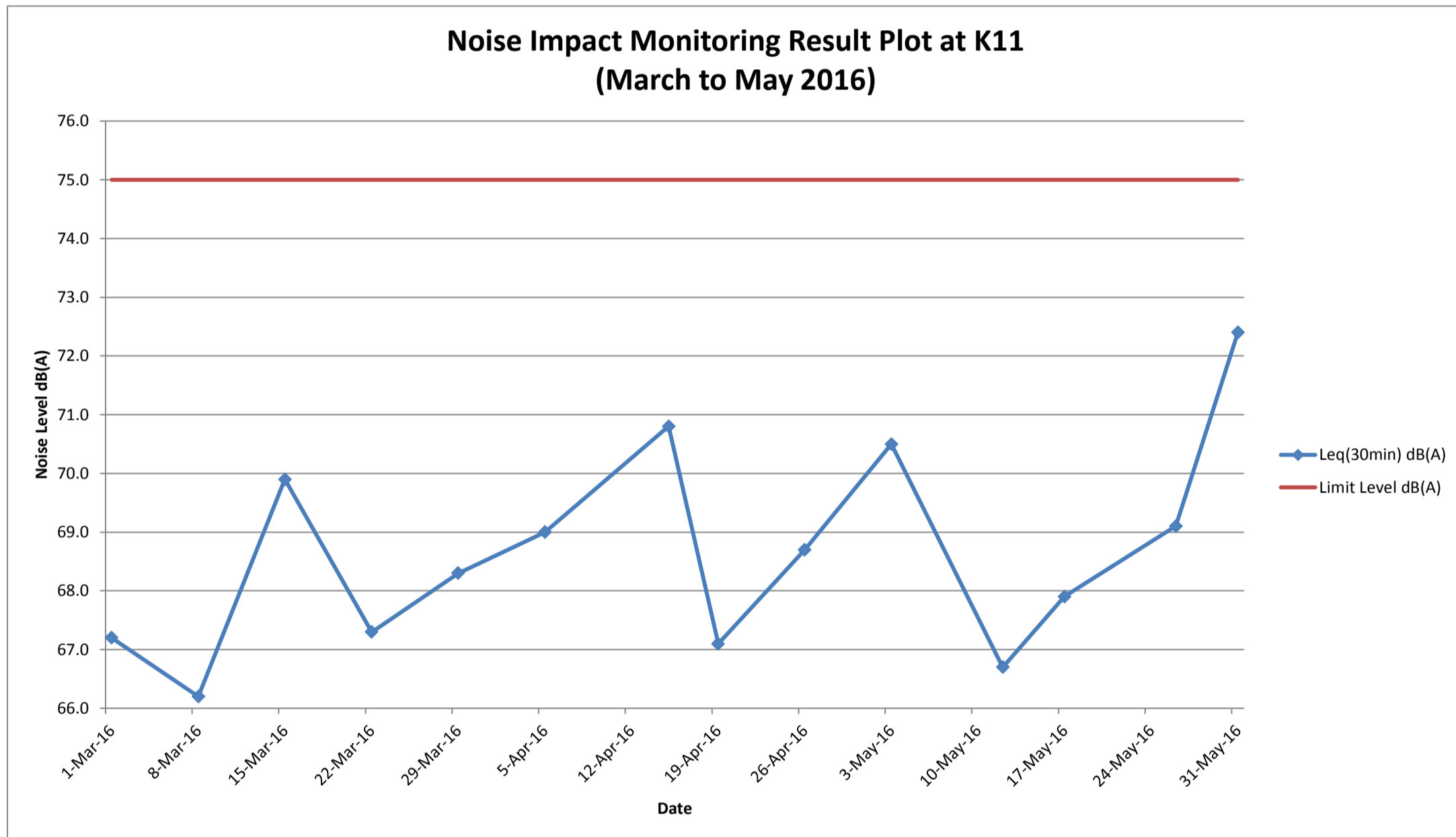


**C3840-13C MTRCL Tsim Sha Tsui Station Carnarvon Road Subway and Entrances Modification Works  
Noise Impact Monitoring Results at K11 (March to May 2016)**

Monitoring Locations	Date	Weather Conditions	Wind Speed (m/s)	Start Time	End Time	Background Level dB(A)	Limit Level dB(A)	Leq(30min) dB(A)	L10(30min) dB(A)	L90(30min) dB(A)
K11 Art Mall	1-Mar-16	Fine	3.4	10:18	10:48	65.3	75	67.2	68.5	64.0
	8-Mar-16	Overcast	0.8	13:33	14:03	65.3	75	66.2	67.0	64.5
	15-Mar-16	Overcast	3.6	10:21	10:51	65.3	75	69.9	69.5	64.5
	22-Mar-16	Drizzle	4.2	10:03	10:33	65.3	75	67.3	68.0	66.5
	29-Mar-16	Fine	0.7	10:30	11:00	65.3	75	68.3	69.5	67.0
	5-Apr-16	Sunny	1.2	13:08	13:38	65.3	75	69.0	70.5	67.0
	15-Apr-16	Drizzle	4.1	10:27	10:57	65.3	75	70.8	74.0	65.0
	19-Apr-16	Overcast	4.8	10:28	10:58	65.3	75	67.1	68.5	65.0
	26-Apr-16	Sunny	2.1	10:04	10:34	65.3	75	68.7	68.5	66.0
	3-May-16	Sunny	1.6	13:18	13:48	65.3	75	70.5	68.0	65.0
	12-May-16	Cloudy	2.5	10:27	10:57	65.3	75	66.7	68.0	64.0
	17-May-16	Cloudy	3.6	10:19	10:49	65.3	75	67.9	68.5	65.5
	26-May-16	Cloudy	2.8	10:51	11:21	65.3	75	69.1	70.0	68.0
	31-May-16	Cloudy	3.2	10:33	11:03	65.3	75	72.4	71.0	67.5

\* Not collected

Red Bold indicates an exceedance of Limit Level

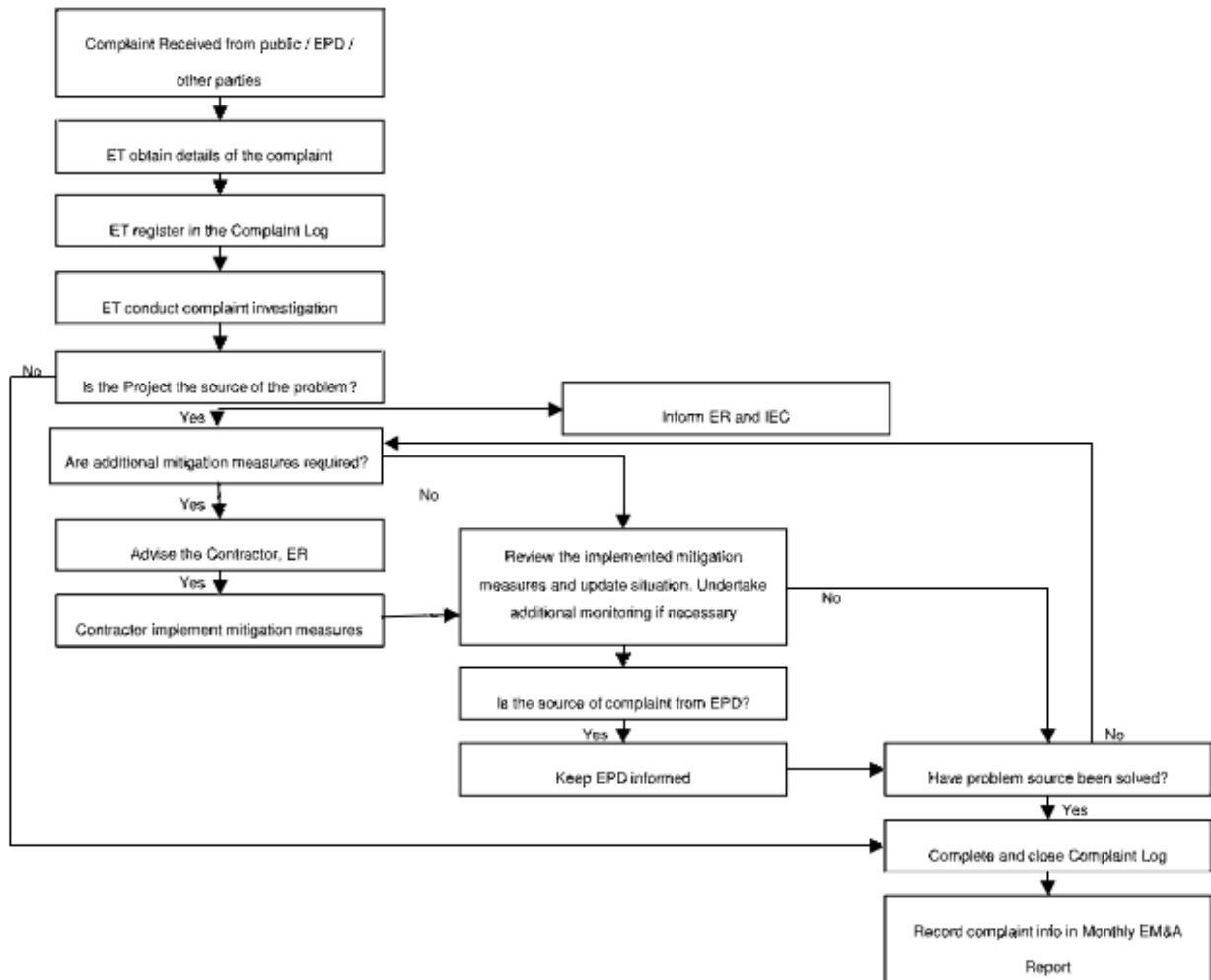


Appendix I

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## Flow Chart for Handling Environmental Complaints

# Complaint Response Procedure



## Appendix J

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### Waste Management Records

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## Monthly Summary Waste Flow Table for 2016 (year)

**Contract No:** C3840-13C Tsim Sha Tsui Station Carnarvon Road Subway  
**Date Reported:** 2-June-2016

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of Non-inert C&D Wastes Generated Monthly					
	Total Quantity Generated	Hard Rocks and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics	Chemical Waste	Others, e.g. general refuse	
		(See Note 3)							(see Note 2)			
(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m <sup>3</sup> /tonne)	
Carried from Project Start	2.5295	-	-	-	2.5295	-	-	-	-	-	0.0202	
Jan	0.1751	-	-	-	0.1751	-	-	-	-	-	0.0036	
Feb	0.0326	-	-	-	0.0326	-	-	-	-	-	0.0029	
Mar	0.0932	-	-	-	0.0932	-	-	-	-	-	0.0023	
Apr	0.0786	-	-	-	0.0786	-	-	-	-	-	0.0000	
May	0.1061	-	-	-	0.1061	-	-	-	-	-	0.0000	
June	-	-	-	-	-	-	-	-	-	-	-	
Sub-total	0.4856	-	-	-	0.4856	-	-	-	-	-	0.0088	
July	-	-	-	-	-	-	-	-	-	-	-	
Aug	-	-	-	-	-	-	-	-	-	-	-	
Sept	-	-	-	-	-	-	-	-	-	-	-	
Oct	-	-	-	-	-	-	-	-	-	-	-	
Nov	-	-	-	-	-	-	-	-	-	-	-	
Dec	-	-	-	-	-	-	-	-	-	-	-	
Total	0.4856	-	-	-	0.4856	-	-	-	-	-	0.0088	
Acc. Total	3.0151	(accumulated quantity of the project = carried amount + this year amount)					-	-	-	-	-	0.0290

**Notes:**

- (1) The performance targets are given below:
  - All excavated materials to be sorted for recovering the inert portion of C&D materials, e.g. hard rocks, soil and broken concrete, for reuse on the Site or disposal to designated outlets;
  - All metallic waste to be recovered for collection by recycling contractors;
  - All cardboard and paper packaging (for plant, equipment and materials) to be recovered, properly stockpiled in dry and covered condition to prevent cross contamination;
  - All chemical wastes to be collected and properly disposed of by specialist contractors; and
  - All demolition debris to be stored to recover broken concrete, reinforcement bars, mechanical and electrical fittings, hardware as well as other fitting / materials that have established recycling outlets.
- (2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
- (3) Broken concrete for recycling into aggregates.
- (4) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.

Appendix K

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## Complaint Investigation Reports

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### **COMPLAINT INVESTIGATION REPORT**

<b>Contractor:</b> Maeda Corporation	<b>Complaint Received Date:</b> 28 April 2016	<b>Complaint Ref:</b> CIR05-v4
<b>Project:</b> C3840-13C MTRCL Tsim Sha Tsui Station Carnarvon Road Subway and Entrances Modification Works		
<b>Complainant:</b> Name: Unknown	Tel: Unknown	Fax: Unknown
Address: Unknown		
Incident Location: Carnarvon road, Tsim Sha Tsui.		
Incident Date/time: 28/04/2016 10:42		
<b>COMPLAINT INVESTIGATION</b>		
<p>1. <u>Complaint of construction dust at Carnarvon Road, Tsim Sha Tsui</u></p> <p>On 28 April 2016 10:42, a complainant from nearby shop complained that an air nuisance was generated from the drilling works under MTRCL construction project at Carnarvon Road and Nathan Road, causing spread of dust to the surrounding. The complainant requested EPD for follow-up and response.</p> <p>The complaint was first received by Environmental Protection Department (EPD) via telephone. It was subsequently referred to MTRCL, Maeda, IEC and the Environmental Team (ET) via e-mail dated Thursday, April 28, 2016 5:36 p.m.</p> <p>A complaint investigation was promptly carried out on 29 April 2016, following the Complaint Handling Procedures stipulated in the Environmental Monitoring and Audit Plan.</p> <p>1. <u>Findings of Complaint Investigation</u></p> <p>As part of the complaint investigation, an ad hoc site inspection was conducted by the ET on Friday, 29 April 2016 13:00. The findings of the ad hoc site inspection were as follows:</p> <ol style="list-style-type: none"> <li>a) According to the information provided by the Contractor, the major dusty construction activity conducted on 28 April 2016 was horizontal pipe piling inside shaft for mined tunnel. Water was injected to suppress the dust to be generated from the pipe piling activities. (Photo 1 &amp; 2)</li> <li>b) Reported by the Contractor, on 28 April 2016, the water pump for dust suppression was incidental broken down causing sudden bloom of dust which then emitted and spread out to the ground level through the ventilation air blower at the point of air vent. (Photo 3 &amp; 6)</li> <li>c) The incident of the dust emission was soon reported to the site management and the situation was promptly rectified upon immediate cessation of the piling work, and the air quality was hence back to satisfactory level. No piling works was allowed until the water pump was replaced. (The replacement water pump is shown in Photo 4)</li> <li>d) Besides dust mitigation measures required in EM&amp;A Plan, further mitigation tailored according to the site condition was implemented, which are:                     <ol style="list-style-type: none"> <li>1) Wrapping of the ventilation blower by wet cloth. (Photo 5)</li> <li>2) A mist diffuser was installed over the ventilation for continuous spraying of water mist for dust mitigation. (Photo 3)</li> </ol> </li> <li>e) The implementation and effectiveness of the mitigation measures were verified on 29 April 2016 by ET during the ad hoc site inspection, and the implemented mitigation measures were found effective that the air quality and site condition was generally satisfactory. (Photo 7 - 8)</li> </ol> <p>2. <u>Conclusion and Recommendation</u></p> <ol style="list-style-type: none"> <li>a) <u>Conclusion</u></li> </ol> <p>The cause of the complained air nuisance on 28 April 2016 was identified to be the incidental dust emission due to failure of the water pump, which was used for water injection to suppress the dust to be generated during horizontal pipe piling inside shaft for mined tunnel.</p> <p>The situation was promptly rectified upon immediate cessation of the piling work and prompt replacement of the failed water pump (Photo 4), and the air quality was hence reinstated in the same afternoon on 28 April 2016.</p>		

b) Recommendations

- 1) The Contractor is recommended to pay special attention to the maintenance of construction plants or equipment to be used within the site under the Project, in order to avoid recurrence of the air nuisance under the complaint or any other adverse environmental impacts on the air quality of the nearby sensitive receivers.
- 2) The Contractor's attention is also drawn to the maintenance, and improvement as appropriate, of the implemented environmental mitigation measures, which have been proven to be effective throughout the construction of the Project to date, in order to minimize adverse environmental impacts on the air quality.
- 3) The Contractor is reminded to foster better public relations with the nearby sensitive receivers or complainants.

**FOLLOW UP ACTION**

No further action is required. However, the Contractor is reminded to regularly review the lesson learned from the complaint to avoid recurrence of the incident and to ensure continuous improvement of the environmental protection performance of the Project.

This complaint case will be registered in the complaint log in the monthly EM&A Report (April 2016).

**Prepared & Confirmed by:**

Name: Fu Nam Wong (ET Leader)

Signature:



Date: 4 May 2016

**Attachment (Photos 1-9)**

Photo 1 Water pump for water injection to suppress the dust generated during horizontal pipe piling inside shaft for mined tunnel

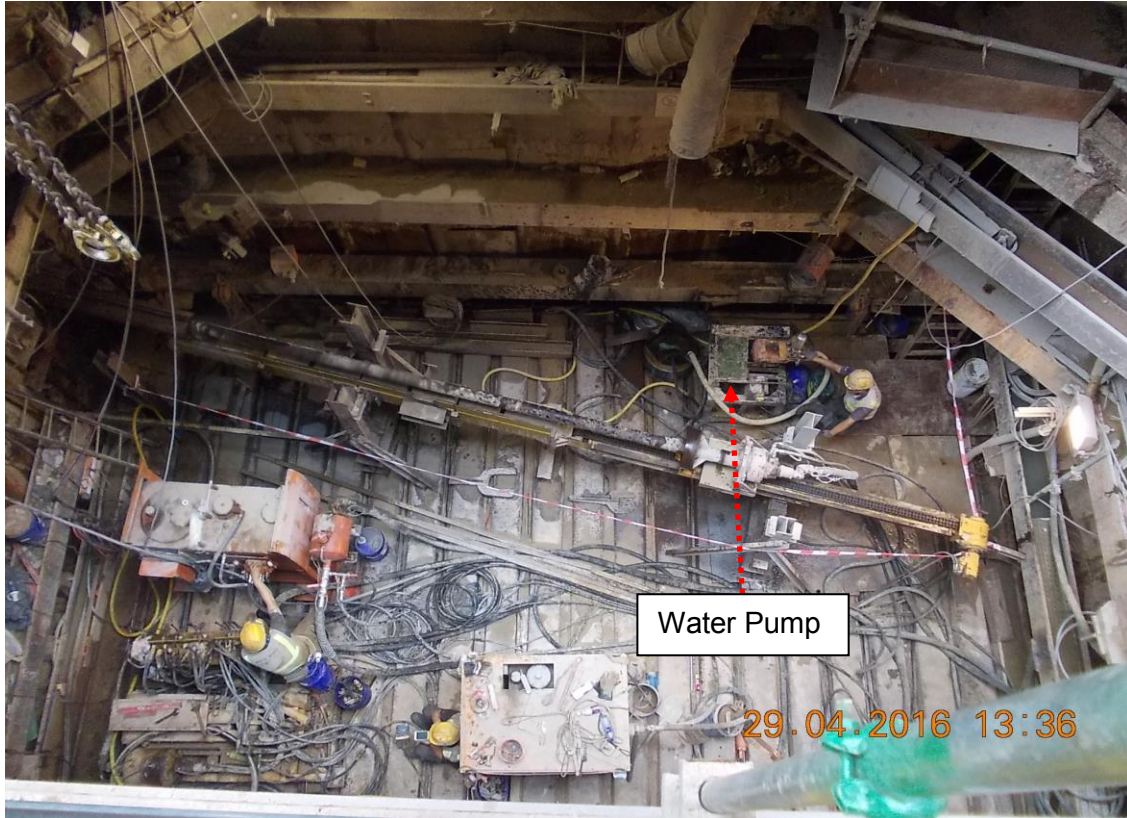


Photo 2 Close-Up: Effective dust suppression of the water pump via water injection during horizontal pipe piling inside shaft for mined tunnel

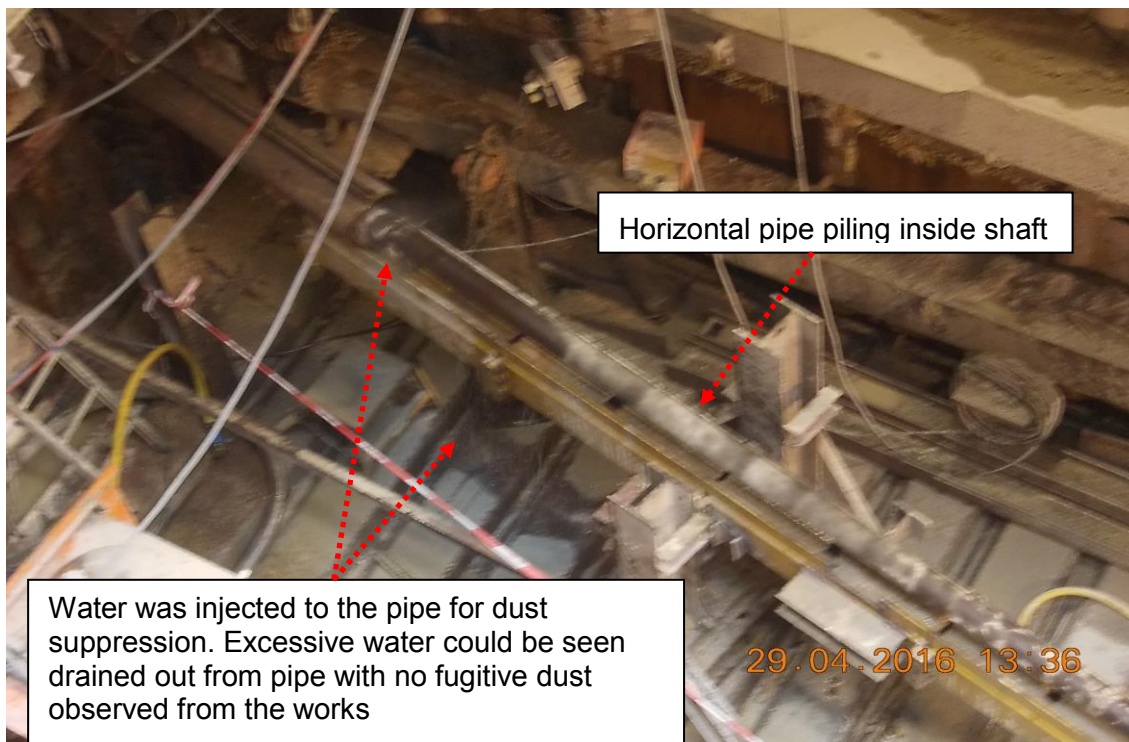


Photo 3



Close-up of Mist diffuser



Photo 4 Replacement water pump

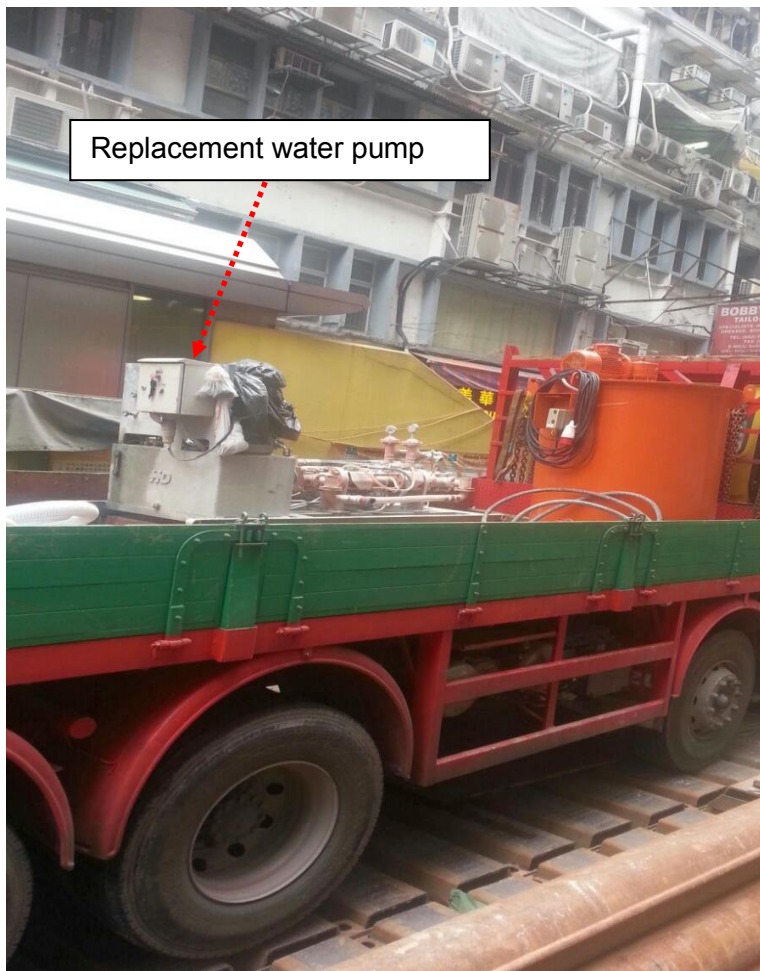


Photo 5



Photo 6



Photo 7 Reinstatement of air quality of the surroundings



Photo 8 Free of construction dust within the site as a result of implementation of effective dust suppression measures

