

Ocean Park Tai Shue Wan Water World Project

Monthly EM&A Report April 2019

May 2019

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Ocean Park Tai Shue Wan Water World Project

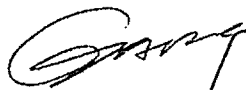
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This Monthly EM&A Report for April 2019 has been reviewed and certified by the Environmental Team Leader (ETL) and verified by the Independent Environmental Checker (IEC) as having complied with the requirements as set out in the EM&A Manual in accordance with

Condition 3.4 of Environmental Permit No. EP-487/2014/A.

Certified by:



Gary Chow
Environmental Team Leader (ETL)
Mott MacDonald Hong Kong Limited

Date:

9 May 2019

Verified by:



Sam Tsoi
Independent Environmental Checker (IEC)
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Date:

9 May 2019

Information class: Standard

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Executive Summary

Mott MacDonald Hong Kong Ltd. (“MMHK”) has been commissioned by the Gammon Engineering & Construction Company Limited, to undertake the Environmental Team (ET) services to carry out environmental monitoring and audit (EM&A) for Ocean Park Tai Shue Wan Development Water World.

This is the 23rd monthly EM&A report for the construction phase of Waterpark Main Building Works submitted under Condition 3.4 of the Environmental Permit (No. EP-487/2014/A). This report summarises the findings on EM&A during the period from 1 to 30 April 2019.

Exceedance of Action and Limit Levels

The summary of measured noise level (as L_{eq}) is presented in **Section 3**. No exceedance of Action or Limit Levels for noise levels were recorded in the Reporting Period.

Result of Ecological Monitoring

The plant species of conservation interest – One number of *Platycodon grandifloras* was found in fence up area in the Reporting Period. Group 1 of *Platycodon grandifloras* could not be found within the fenced area due to natural life cycle of this perennial herbaceous species, and new shoots would be expected to emerge from the underground part in the next growing season. No sign of construction activities was noted in the fence up area.

No ardeids were noted within or in the vicinity of the project area during the monitoring period.

Details of the results are presented in **Section 4**.

Result of Landscape and Visual Monitoring

No non-compliance of Landscape and Visual monitoring was recorded in the Reporting Period. Details of the results are presented in **Section 5**.

Record of Complaints

There was no record of complaints received in the Reporting Period.

Record of Notification of Summons and Successful Prosecutions

There were no record of notification of summons and successful prosecution in the Reporting Period.

Reporting Changes

There are no reporting changes.

Site inspection

In the Reporting Period, joint site inspections were undertaken by the PMR, ET and the Contractor on 3, 12, 18 and 26 April 2019. Furthermore, IEC performed the site inspection and audit on 12 April 2019. During site inspection, non-compliance was not observed by the ET and IEC.

Future Key Issues

- Site formation for ride footing & column construction
- Cut soil slope and soil nail installation for Ride P1 and P3

- Rock breaking and slope stabilization works for Ride P1 to P5
- Utilities diversion at A4
- Drainage works at A4
- Rising Main construction (PJD & slope portions)
- Footing construction at P3
- Backfilling for ride footing
- Main Building: B1 water tank, drainage and on grade slab. Block works and ABWF in B1, L1, L2 and L3 Secondary structure construction; L2M E&M works; L2 Block work and ABWF works, area Pool B, C, D, E, F, H, R filtration pipe works installation and pool structure construction; Indoor Wave Pool construction, Outdoor Wave Pool A ABWF works, Roof ABWF & Landscape works (Green Roof, Curtain Wall, ETFE), Lift installation works & ABWF, L2 On-grade Slab (rebar fixing and concreting of on-grade slab etc.), L2 North Cladding Wall construction, core 3 staircase, lift shaft installation works and ABWF works
- South Transformer Room: ABWF
- South Plant Room: E&M
- External Area: Laying of underground utilities, removal of concrete paving, manholes and watermain construction, trench excavation for cables & pipes, backfilling

1 Introduction

1.1 Introduction

On 27 August 2014, the Environment Impact Assessment (EIA) Report and Environmental Monitoring and Audit (EM&A) Manual (Register No.: AEIAR-184/2014) for the “Tai Shue Wan Development at Ocean Park” (the Project) was approved and an Environmental Permit (EP) (Permit No.: EP-487/2014) was issued to the Ocean Park Corporation (Project Proponent).

The current valid EP (Permit No.: EP-487/2014/A) was issued on 10 January 2018 based on the Variation of Environmental Permit No. VEP-539/2017 which comprise variation of project boundary, location of sump pit and size of rising main. The Project location is indicated in **Appendix A**.

Mott MacDonald Hong Kong Ltd. (“MMHK”) has been commissioned by Gammon Engineering & Construction Company Limited to undertake the Environmental Team (ET) services to carry out environmental monitoring and audit for the Ocean Park Tai Shue Wan Water World Project.

As part of the EM&A program, baseline monitoring for the required parameters including background noise, landscape & visual baseline review and baseline ardeid inspection were carried out between 24 October 2014 and 10 December 2014 by the environmental consultants of Ocean Park Corporation. Furthermore, the baseline monitoring report which verified by the previous IEC was submitted to EPD and endorsed in December 2014.

The previous contract (Contract No.: TSW-C004) of Site Formation and Foundation Works has been completed since 31 May 2017, the next construction phase (Contract No.: TSW-C006) for the Ocean Park Tai Shue Wan Development was handed over to Gammon Engineering & Construction Company Limited on 31 May 2017. This is 23rd monthly EM&A report presenting the monitoring results and inspection findings for the Project during the Reporting Period from 1 to 30 April 2019.

2 Project Organization and Construction Progress

2.1 Project Organization

The project organization is shown in **Appendix B**. The responsibilities of respective parties are:

Ocean Park Corporation

Ocean Park Corporation is the Project Proponent and the Permit Holder of the EP for the development of the Project and will assume overall responsibility for the project. An Independent Environmental Checker (IEC) shall be employed by Ocean Park Corporation to audit the results of the EM&A works carried out by the ET.

Environmental Protection Department (EPD)

EPD is the statutory enforcement body for environmental protection matters in Hong Kong.

Project Management Representative (PMR) of Ocean Park Corporation

The PMR is responsible for overseeing the construction works and for ensuring that the works are undertaken by the Contractor in accordance with the specification and contract requirements. The duties and responsibilities of the ER with respect to EM&A are:

- Monitor the Contractors' compliance with contract specifications, including the implementation and operation of the environmental mitigation measures and their effectiveness
- Monitor Contractors', ET's and IEC's compliance with the requirements in the Environmental Permit (EP) and EM&A Manual
- Facilitate ET's implementation of the EM&A programme
- Participate in joint site inspection by the ET and IEC
- Oversee the implementation of the agreed Event / Action Plan in the event of any exceedance
- Adhere to the procedures for carrying out complaint investigation
- Liaison with the related government departments, ET, IEC, the Contractor and the other Contractors of the Project discussing regarding the cumulative impact issues.

The Contractor

The duties and responsibilities of the Contractor are:

- Comply with the relevant contract conditions and specifications on environmental protection
- Employ an Environmental Team (ET) to undertake monitoring, laboratory analysis and reporting of EM & A Facilitate ET's monitoring and site inspection activities
- Participate in the site inspections by the ET and IEC, and undertake any corrective actions
- Provide information / advice to the ET regarding works programme and activities which may contribute to the generation of adverse environmental impacts
- Submit proposals on mitigation measures in case of exceedances of Action and Limit levels in accordance with the Event / Action Plans

- Implement measures to reduce impact where Action and Limit levels are exceeded
- Adhere to the procedures for carrying out complaint investigation

Environmental Team (ET)

The ET should be employed by the Contractor to conduct the EM&A programme. The ET should be managed by the ET Leader. ET Leader should have relevant professional qualifications in environmental control and possess at least seven years' experience in EM&A. Suitably qualified professional and technical staff should be included in the ET, and resources for the implementation of the EM&A programme should be allocated in the time under the Contract, to enable fulfilment of the Project's EM&A requirements as specified in the EM&A Manual during construction of the Project. The ET shall include qualified botanist/ecologist for the ecological service and a Registered Landscape Architect for review of implementation of landscape and visual mitigation measures. The ET should report to the OPC and the duties should include:

- to monitor and audit various environmental parameters as required in the Approved EM&A Manual;
- to analyse the EM&A data, review the success of EM&A programme and the adequacy of mitigation measures implemented, confirm the validity of the EIA predictions, and identify any adverse environmental impacts arising;
- to monitor compliance with conditions in the EP, environmental protection, pollution prevention and control regulations and contract specifications;
- to audit environmental conditions on site;
- to report on the EM&A results to EPD, the ER, the IEC and Contractor or their delegated representatives;
- to recommend suitable mitigation measures to the Contractor in the case of exceedance of Action and Limit levels in accordance with the Event and Action Plans;
- to liaise with the IEC on all environmental performance matters, and ensure timely submission of all relevant EM&A pro forma for IEC's approval;
- to provide advice to the Contractor on environmental improvement, awareness and enhancement matters, etc. on site;
- to adhere to the procedures for carrying out complaint investigation;
- to prepare reports on the environmental monitoring data and the site environmental conditions;
- to submit the EM&A report to Director of Environmental Protection (DEP) timely;
- to review proposals of mitigation measures from the Contractor in case of exceedance of Action and Limit levels, in accordance with the Event and Action Plan; and
- to carry out site inspection to investigate and audit the Contractor's site practice, equipment and work methodologies with respect to pollution control and mitigation measures.

Independent Environmental Checker (IEC)

- The IEC is empowered to audit the environmental performance of construction, but is independent from the management of construction works. As such, the IEC should not be in any way an associated body of the Contractor or the ET for the Project. The IEC should be employed by OPC prior to the commencement of the construction of the Project. The IEC should be a person who has relevant professional qualifications in environmental control and

at least seven years' experience in EM&A and environmental management. The duties and responsibilities of the IEC are:

- to provide proactive advice to the ER and OPC on EM&A matters related to the project;
- to review and verify the monitoring data and all submissions in connection with the EP and EM&A Manual submitted by the ET;
- to arrange and conduct regular, at least monthly site inspections of the works during the construction phase, and to carry out ad hoc inspections if significant environmental problems are identified;
- to check compliance with the agreed Event and Action Plan in the event of any exceedance;
- to check compliance with the procedures for carrying out complaint investigation;
- to check the effectiveness of corrective measures;
- to feedback audit results to the ET by signing off relevant EM&A pro forma;
- to check that mitigation measures are effectively implemented;
- to report the works conducted, and the findings, recommendations and improvements of the site inspections, after reviewing ET's and Contractor's works, the ER and OPC on a monthly basis;
- to verify the investigation result of the environmental complaint cases and the effectiveness of corrective measures;
- to verify EM&A report that has been certified by the ET leader; and
- to audit EIA recommendations and requirements against the status of implementation of environmental mitigation measures on site.

2.2 Construction Progress

The construction program is enclosed in **Appendix C**. In the Reporting Period, the major construction activity conducted under the Contract is summarized below:

- Site formation for ride footing & column construction
- Cut soil slope and soil nail installation for Ride P1 and P3
- Rock breaking and slope stabilization works for Ride P1 to P5
- Utilities diversion at A4
- Drainage works at A4
- Rising Main construction (PJD & slope portions)
- Footing construction at P3
- Backfilling for ride footing
- Main Building: B1 water tank, drainage and on grade slab. Block works and ABWF in B1, L1, L2 and L3 Secondary structure construction; L2M E&M works; L2 Block work and ABWF works, area Pool B, C, D, E, F, H, R filtration pipe works installation and pool structure construction; Indoor Wave Pool construction, Outdoor Wave Pool A ABWF works, Roof ABWF & Landscape works (Green Roof, Curtain Wall, ETFE), Lift installation works & ABWF, L2 On-grade Slab (rebar fixing and concreting of on-grade slab etc.), L2 North Cladding Wall construction, core 3 staircase, lift shat installation works and ABWF works
- South Transformer Room: ABWF
- South Plant Room : E&M
- External Area: Laying of underground utilities, removal of concrete paving, manholes and watermain construction, trench exaction for cables & pipes, backfilling

2.3 Summary of Environmental Submissions

Summaries of validity permits, licenses, and/or notifications on environmental protection for the Project are presented in **Table 1**.

Table 1: Status of Environmental Licenses and Permits of the Project

Type of Permit/ License	Submissi on Date	Reference / License No.	Date of Issue	Date of Expiry	Status
Environmental Permit	/	EP-487/2014/A	10-Jan-18	N/A	Valid
Variation of Environmental Permit	18-Dec-17	Application No. VEP-539/2017	10-Jan-18	N/A	Valid
Environmental Permit	/	EP-487/2014	27-Aug-14	N/A	Superseded
Notification pursuant to Air Pollution Control (Construction Dust) Regulation	15-Mar-17	414651	N/A	N/A	Valid
Application for a Billing Account for Disposal of Construction Waste	14-Dec-16	Account No. 7026786	28-Dec-16	N/A	Valid
Discharge Licence under WPCO WT00028196-2017	15-Mar-17	414650	29-May-17	31-May-22	Valid
Registration as a Chemical Waste Producer (WPN: 5213-176-G2785-01)	21-Apr-17	415966	31-May-17	N/A	Completed
Construction Noise Permit under NCO GW-RS0439-17	26-Apr-17	416080	15-May-17	29-Dec-17	Superseded
Construction Noise Permit under NCO GW-RS0825-17	8-Sep-17	420985	22-Sep-17	21-Mar-18	Superseded
Construction Noise Permit under NCO GW-RS1024-17	3-Nov-17	422922	21-Nov-17	16-May-18	Superseded
Construction Noise Permit under NCO GW-RS0356-18	16-Apr-18	432628	30-Apr-18	16-Nov-18	Superseded
Construction Noise Permit under NCO	18-May-18	433713	04-Jun-18	30-Nov-18	Superseded

Type of Permit/ License	Submissi on Date	Reference / License No.	Date of Issue	Date of Expiry	Status
GW-RS0469-18					
Construction Noise Permit under NCO	23-Nov-18	439700	07-Dec-18	06-Jun-19	Superseded
GW-RS1151-18					
Construction Noise Permit under NCO	03-Apr-19	434093	18-Apr-19	17-Oct-19	Valid
GW-RS0345-19					

In accordance with the EP stipulation, the required documents submitted to EPD for retention are as listed below:

- Project Layout Plans
- Management Organization of Main Construction Companies
- Detailed Vegetation Survey Report
- Woodland Compensation Plan
- Ardeid Inspection Report
- Short-nosed Fruit Bat Inspection Report
- Baseline Monitoring Report Revision A of the Project

3 Construction Noise Monitoring

3.1 Monitoring Requirements, Frequency and Duration

Construction noise is one of the key environmental issues during the construction phase of the Project in accordance to the approved EM&A Manual. Following the requirements in the EM&A Manual, continuous noise monitoring for A-weighted levels L_{eq} , L_{10} , L_{90} shall be undertaken once per week during the construction phase. Measurement of $L_{eq}(30min)$ between 07:00-19:00 hours on normal weekdays.

If construction works are necessary to be carried out at other time periods, i.e. restricted time period (19:00-07:00 the next morning and whole day on public holidays) (hereinafter referred as “the restricted hours”), three consecutive $L_{eq}(5min)$ measurements shall be recorded, while complying specific conditions as stipulated on the Construction Noise Permit (CNP). Supplementary information for data auditing and statistical results such as L_{10} and L_{90} shall also be obtained for reference. Summary of these monitoring requirements is shown in **Table 2**.

Table 2: Noise Monitoring Parameters

Monitoring Station	Parameters
NM1A and NM2	<ul style="list-style-type: none"> $L_{eq}(30min)$ on normal working days (Monday to Saturday) 07:00-19:00 except public holiday; 3 sets of consecutive $L_{eq}(5min)$ during restricted hours i.e. 19:00 to 07:00 next day, and whole day of public holiday or Sunday when applicable, and Supplementary information for data auditing and statistical results such as L_{10} and L_{90} shall also be obtained for reference

The baseline results form the basis for determining the environmental acceptance criteria for the impact monitoring. According to the approved EM&A Manual with baseline monitoring results, construction noise criterion, namely Action and Limit levels proposed are listed in **Table 3**.

Table 3: Action and Limit Levels for Construction Noise

Monitoring Location	Action Level	Limit Level in dB(A)
NM1A and NM2	When one or more documented complaints are received	70 dB(A) ^{1,2}

Note: 1. Acceptable noise levels for school should be reduced to 65 dB(A) during examination period
 2. If works are to be carried out during restricted hours, the conditions stipulated in the CNP must be followed.

3.2 Monitoring Locations

Two designated noise monitoring locations as established in the EM&A Manual is shown in **Appendix D**. After the baseline monitoring, alternative location NM1A has been proposed by MMHK due to rejection of the monitoring location set up at NM1. The proposal was verified and agreed by EPD in the Baseline Monitoring Report.

The construction noise monitoring locations for the Project are shown in **Table 4** and **Appendix E**.

Table 4: Impact Monitoring locations

Monitoring location	Descriptions	Type of measurement
NM1A	Slope near Victoria Shanghai Academy (VSA) to replace NM1 of the VSA	Free field
NM2	Hong Kong Juvenile Care Centre (HKJCC)	Facade

3.3 Monitoring Equipment

Integrating sound level meter in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications shall be used for carrying out the noise monitoring. The sound level meter shall be checked using an acoustic calibrator. The wind speed shall be checked with a portable wind speed meter capable of measuring the wind speed in ms^{-1} . The acoustic calibrator and sound level meter to be used in the impact monitoring will be calibrated yearly.

Noise monitoring equipment used for monitoring is listed in **Table 5**.

Table 5: Noise Monitoring Equipment

Equipment	Model
Integrating Sound Level Meter	Rion NL-52
Calibrator	Larson Davis CAL200
Portable Wind Speed Indicator	Anemometer/ Lutron AM-4201

3.4 Monitoring Methodology

Field Monitoring

- Sound Level Meter was set up on a tripod at a height of at least 1.2 m above ground.
- Noise measurements were taken in terms of the A-weighted equivalent sound pressure level (L_{eq}) measured in decibels (dB). Supplementary statistical results (L_{10} and L_{90}) were also obtained for reference.
- Free field measurement was made at NM1A while facade measurement was made at NM2.
- The battery condition was checked to ensure the correct functioning of the meter.
- Prior to and after each noise measurement, the meter was calibrated using an acoustic calibrator for 94 dB at 1 kHz. The checking was performed before and after the noise measurement.
- During the monitoring, all noise measurements would be performed with the meter with Fast time weighting and on the A-weighted equivalent continuous sound pressure level (L_{eq}). $L_{eq}(30\text{min})$ as the monitoring parameter for the time period between 0700-1900 hours on weekdays; and also $L_{eq}(15\text{min})$ in three consecutive $L_{eq}(5\text{min})$ measurements would be used as monitoring parameter for other time periods (e.g. during restricted hours), if necessary. In addition, any site observations and noise sources were recorded on a standard record sheet.
- A correction of +3 dB(A) was made to the free field measurement.
- Noise measurements were not made in fog, rain, wind with a steady speed exceeding 5 ms^{-1} or wind with gust exceeding 10 ms^{-1} .

Equipment calibration

- The sound level meter and calibrator are calibrated and certified by a HOKLAS accredited laboratory at yearly intervals.
- Calibration records of sound level meter and calibrator, together with the Anemometer used for impact monitoring program in the Reporting Period are shown in **Appendix F**.

Meteorological Information

Meteorological information was extracted from “the Hong Kong Observatory Wong Chuk Hang Station” to provide the humidity, wind speed, wind direction and temperature etc. as background weather information. The meteorological data throughout the impact monitoring period is summarized in **Appendix K**.

Derivation of Action/Limit (A/L) Levels

According to the approved EM&A Manual and baseline monitoring results, Action and Limit levels criterion proposed for construction noise monitoring are listed in **Table 6**.

Table 6: Action and Limit Levels for Construction Noise

Monitoring Location	Action Level	Limit Level in dB(A)
	Time Period: 07:00-19:00 hours on normal weekdays	
NM1A and NM2	When one or more documented complaints are received	70 dB(A) ^{1, 2}

Note: 1. A correction of +3dB(A) was made to the free field measurement at monitoring station NM1A.
 2. No examination has taken place during this reporting period.

Should non-compliance of the environmental quality criteria occur, remedial actions will be triggered according to the Event and Action Plan which is presented in **Appendix G**.

Data Management and Data QA/QC Control

All monitoring data will be handled by the ET’s in-house data recording and management system. The monitoring data recorded in the equipment will be downloaded directly from the equipment at the end of each monitoring day. The downloaded monitoring data will be inputted into a computerized database properly maintained by the ET.

3.5 Monitoring Schedule

Monitoring for noise levels due to construction work was undertaken in compliance with the EM&A manual during the Reporting Period. Regular monitoring surveys were carried out on 1, 11, 17, 23 and 29 April 2019 during the Reporting Period. A total of 10 noise monitoring surveys were carried out at the two noise monitoring locations.

3.6 Results of Impact Monitoring

As shown in **Table 7**, results of the noise monitoring measurement were below 70 dB(A). No noise complaints were received in this Reporting Period. No exceedance (Action/Limit Level) of construction noise was recorded in this period.

Table 7: Summary of Construction Noise Monitoring Results (Noise level for 30 minutes)

Monitoring date	Time		Mean and range of noise levels, dB(A)		Limit Level for L_{eq} (dB(A)) ²
	Start	Finish	L_{eq} (30min)	Corrected L_{eq} (30min) ¹	
NM1A					
01-Apr-2019	09:55	10:25	57.8	60.8	70
11-Apr-2019	09:00	09:30	57.3	60.3	70
17-Apr-2019	10:00	10:30	56.3	59.3	70
23-Apr-2019	09:55	10:25	58.0	61.0	70
29-Apr-2019	10:10	10:40	57.9	60.9	70
NM2					
01-Apr-2019	09:12	09:42	52.4	-	70
11-Apr-2019	10:55	11:25	53.1	-	70
17-Apr-2019	09:20	09:50	50.1	-	70
23-Apr-2019	09:15	09:45	51.0	-	70
29-Apr-2019	09:29	09:59	51.6	-	70

Note: 1. A correction of +3 dB(A) was made to the free field measurement at monitoring station NM1A.
 2. Acceptable Noise Levels for school should be reduced to 65 dB(A) during examination period.

Summary of data and the supplementary information for data auditing is presented in **Appendix I**. Graphical plots of the monitoring data are as shown in **Appendix J**.

4 Ecology Monitoring

4.1 General

As required under the Section 8.3.2 of the approved EM&A Manual, the implementation of ecological mitigation measures as detailed in the Section 15 of the EIA report and Appendix C of the approved EM&A Manual shall be routinely audited during the routine environmental audit; and any observations and recommendations shall be reported in periodic EM&A reports.

Among those mitigation measures recommended to avoid or minimize the disturbance to any plants of conservation interest (EM&A reference 8.3.1.1), nested ardeids (EM&A reference 8.3.1.2) and roosted short-nosed fruit bat (EM&A reference 8.3.1.3), the required inspection has already been undertaken in August / September 2014 with the results presented in the submitted respective baseline report. Therefore, the following sections only address those applicable to this stage of the project, i.e., Section 8.3.2 of the approved EM&A Manual.

4.2 Monitoring Requirement

Monitoring of Plants of Conservation Interest (*Platycondon grandiflorus*)

According to Condition 2.6 of Environmental Permit No. EP-487/2014, the Detailed Vegetation Survey Report has located two groups of the protected *Platycondon grandiflorus* and recommended that the plants should be protected with temporary protective fencing to avoid potential impact from construction activities (such as material storage), and monitor the identified *Platycondon grandiflorus* on a monthly basis throughout the construction phase to ensure they are not affected by the construction works of the Project. Accordingly, the following monitoring parameters will be undertaken on a monthly basis during the construction period:

- Effective implementation of the protection measures as recommended in the Section 4.1 of the Detailed Vegetation Survey Report
- Monitoring of the two groups of *Platycondon grandiflorus* identified during the detailed vegetation survey to ensure they are not affected by the construction works

Monitoring of Nesting Activities of Ardeids in Breeding Season

The project area should be checked monthly in breeding season (April to July) for any potential breeding and nesting activities, and if required, suitably sized buffer area will be recommended to avoid human or machinery disturbance until the nest is abandoned.

Monitoring of Roosting Activities of Ardeids in Peak Wintering Season

The existing ardeid night roost within the project area should be monitored monthly during peak wintering season (November to March) during the construction phase by direct observation from a vantage point (i.e., point count method) in the evening from an hour before sunset to nightfall.

Compensation for Ardeid roosting Site

An enhancement area proposed as an alternative roosting site for ardeids should be developed during the first phase of the construction.

Compensation of Woodland Habitat

Mitigation measures recommended in the approved Woodland Compensation Plan should be fully and properly implemented, including but not limited to the creation of 0.84 ha woodland compensation on-site and 0.78 ha on-site woodland reinstatement, to mitigate for permanent loss of woodland habitat.

4.3 Inspection Findings

The ecological inspection was undertaken on 18 April 2019 by the qualified ecologist. The inspection findings are presented below.

Plants of Conservation Interest (*Platycodon grandiflorus*)

Platycodon grandiflorus is a perennial herb up to 120 cm tall. Stems erect with scarcely any branches. It is often found on sunny grassy hillslopes in brushes. Two groups of *Platycodon grandiflorus* (see Figure 1 of **Appendix L** for the location) that were recorded in 2015's growing season within the fenced area.

It was observed that Group 2 of *Platycodon grandiflorus* was found to be vigorous and was in health condition. However, Group 1 of *Platycodon grandiflorus* could not be found within the fenced area due to natural life cycle of this perennial herbaceous species, and new shoots would be expected to emerge from the underground part in the next growing season.

The preventive mitigation measures, i.e., erecting of temporary protective fencing and sign post, were found to be effectively implemented for human disturbance (see Photo 2 of **Appendix L** of this report), and there is no signs or evidence (e.g. dust coating of plant) to suggest that the on-going construction activities with the Project Area has affected the health condition of the *Platycodon grandiflorus*.

Nesting Activities of Ardeids in Breeding Season

No signs or breeding (such as courtship, nest building, brooding, juveniles etc.) of ardeids were noted within the Project Area during the reporting month.

Roosting Activities of Ardeids in Peak Wintering Season.

In accordance with the approved EM&A Manual, this monitoring parameter would not be required beyond the Peak Wintering season, i.e., from 1st November to 31st March. The last monitoring event for roosting activities of ardeids in Peak Wintering Season 2019's was undertaken on 15 March 2019.

Compensation for Ardeid roosting Site

To be implemented.

Compensation of Woodland Habitat

To be implemented.

4.4 Conclusion

The implementation of the mitigation measures for the plant species of conservation interest, i.e., erecting of temporary protective fencing and sign post during the Reporting Period was noted. Group 2 of *Platycodon grandifloras* was found to be vigorous and was in health condition but Group 1 of *Platycodon grandifloras* could not be found within the fenced area due to natural

life cycle of this perennial herbaceous species, and new shoots would be expected to emerge from the underground part in the next growing season.

On the other hand, no sighting of ardeids or signs of any breeding/ nesting activities were noted within the Project Area during the monitoring.

The tentative ecological inspection and monitoring in the next Reporting Period is scheduled on 17 May 2019.

5 Landscape & Visual Monitoring

5.1 General

Landscape and visual mitigation measures for the construction phase are listed in the Approved EM&A Manual Table 9.1.

The design, implementation and maintenance of landscape and visual mitigation measures shall be checked bi-weekly to ensure that they are fully realized during the construction phase. The scope of the site audit during construction shall include the following:

- The extent of the agreed works areas should be regularly checked. No construction activities or storage shall be undertaken outside the limit of the works;
- The progress of the engineering works should be regularly reviewed on site to identify the earliest practical opportunities for the landscape works to be undertaken;
- All landscaping works are carried out in accordance with the specifications; and
- All new plantings are carried out properly and during the right season.

Any potential conflicts between the proposed landscape and visual mitigation measures and any other project works or operational requirements shall be recorded for the Contractor to resolve in an early stage, without compromising the intention of the mitigation measures.

5.2 Inspection Findings

In the Reporting Period, bi-weekly landscape and visual site inspections were conducted on 12 and 26 April 2019.

According to the bi-weekly site inspections, it was observed that the Contractor complied with the intended aims of the mitigation measures, for example, neither construction activities nor materials storage conducted and placed outside of the working site boundary.

The contractor was reminded to remove weeds regularly.

6 Waste Management

6.1 General Waste Management

Waste management was carried out by an on-site Environmental Officer or an Environmental Supervisor from time to time.

6.2 Records of Waste Quantities

All types of waste arising from the construction work are classified into the following:

- Construction & Demolition (C&D) Material;
- Chemical Waste;
- General Refuse; and
- Excavated Soil.

Monthly Summary Waste Flow Table provided by the Contractor is shown in **Appendix M**.
Materials were reused on-site as far as practicable.

7 Site Inspection

7.1 Requirements

According to the approved EM&A Manual, the environmental site inspection shall be formulated by the ET Leader. Weekly environmental site inspections should be carried out to confirm the environmental performance.

7.2 Findings / Deficiencies During the Reporting Period

In the Reporting Period, joint site inspections were undertaken by the PMR, ET and the Contractor on 3, 12, 18 and 26 April 2019. Furthermore, IEC performed the site inspection and audit on 12 April 2019.

During site inspections, non-compliance was not observed by the ET and IEC. However, a total of ten observations were recorded in the Reporting Period. The findings / deficiencies of the Project observed during the weekly site inspections are listed in **Table 8**.

Table 8: Summary of findings / deficiencies

Date	Findings / Deficiencies	Follow-up Status
3 April 2019	NRMM label should be displayed on the excavator.	The Contractor proved that the outlet power of this excavator is under 19KW and thus no NRMM label is required for this plant.
3 April 2019	Drip tray should be provided for accommodating the chemical and oil containers.	The chemical and oil containers were removed off site.
3 April 2019	C&D waste should be separated from the construction material.	C&D waste should be separated from the construction material. The Contractor is advised to ensure proper storage of the construction material.
3 April 2019	Stagnant water was observed accumulating at Zone A, Zone B and Roof C.	Submerged pumps were set up to pump out the standing water.
12 April 2019	Contractor was reminded to maintain best practice to prevent soil and mud water from running off to the stream at Location S28.	-
18 April 2019	Contractor was reminded to clear accumulated water regularly.	-
26 April 2019	Muddy water is observed being discharged to open sea.	Mitigation measure for the construction runoff was provided to prevent muddy water discharge to open sea.
26 April 2019	Stagnant water at Room 156 and 2/F Room 210 should be removed.	Stagnant water at Room 156 and 2/F Room 210 have been removed.
26 April 2019	NRMM label should be provided on excavator.	NRMM label is provided on excavator.
26 April 2019	Contractor was reminded to clear accumulated water regularly.	-

The Contractor has rectified the above deficiencies immediately or within deadline. Therefore, the environmental performance of the Project managed by the Contractor with OPC was considered satisfactory.

As a general reminder, dust mitigation measures should be enforced to prevent fugitive dust from haul road, idle slope work and construction activities; and the site tidiness should be maintained. Furthermore, all chemical materials shall be stored in designated area after use with drip tray.

8 Environmental Complaint, Summons and Prosecution

8.1 Environmental Complaint, Summons and Prosecution

No environmental complaint, summons and prosecution were received in the Reporting Period. The statistical summary for environmental complaints is presented in **Table 9**.

Table 9: Statistics for complaints, notifications of summons and successful prosecutions

Reporting Period	Cumulative Statistics		
	Complaints	Notifications of summons	Successful prosecutions
This report month	0	0	0

9 Implementation Status of Mitigation Measures

9.1 General Requirements

The environmental mitigation measures that were recommended in the Implementation Schedule for Environmental Mitigation Measures in the approved EM&A Manual covered the issues of dust, noise, water and waste and are presented in **Appendix N**.

The Project shall be implementing the required environmental mitigation measures according to the approved EM&A Manual as subject to the site condition. Environmental mitigation measures generally implemented by the Contractor in this Reporting Month are summarized in **Table 10**.

Table 10: Environmental Mitigation Measures

Issues	Environmental Mitigation Measures
Construction Noise	<ul style="list-style-type: none"> Construction equipment shut down when not in use
Ecology	<ul style="list-style-type: none"> Wire fencing was provided for temporary protection of the identified flora species of conservation concern Site inspection of the flora species of conservation and the Ardeid of breeding and nesting activities was undertaken
Landscape & Visual	<ul style="list-style-type: none"> Good site management
Air Quality	<ul style="list-style-type: none"> Good site management to reduce air quality impact Main temporary access road paved with concrete Prior to any loading or transfer operation, all dusty materials were sprayed with water to keep them wet All debris had been covered entirely by impervious sheeting Before debris was dumped into a chute, water was sprayed onto the debris to make them wet Vehicles were covered with tarpaulin during transport of dusty materials When vehicles were leaving the construction site, any vehicles loaded with dusty materials were covered with clean impervious sheeting to prevent fugitive dusty material emission The speed of the trucks passing site areas was controlled to below 10 km/hour Water spraying was provided for soil-nailing work
Water Quality	<ul style="list-style-type: none"> Portable chemical toilets were provided on site A licensed collector has been employed to collect effluent and off-site dispose.
Waste and Chemical Management	<ul style="list-style-type: none"> A temporary container located far away from sea shore and drainage channel was provided for chemical materials and waste storage Drip tray was provided for chemical materials at the working areas Waste skip was provided for general refuse disposal
General	<ul style="list-style-type: none"> The site was generally kept tidy and clean

9.2 Tentative Construction Activities in the Coming Month

Construction activities to be undertaken in the coming month for the Project are listed below:

- Site formation for ride footing & column construction
- Cut soil slope and soil nail installation for Ride P1 and P3
- Rock breaking and slope stabilization works for Ride P1 to P5
- Utilities diversion at A4
- Drainage works at A4
- Rising Main construction (PJD & slope portions)
- Footing construction at P3
- Backfilling for ride footing
- **Main Building:** B1 water tank, drainage and on grade slab. Block works and ABWF in B1, L1, L2 and L3 Secondary structure construction; L2M E&M works; L2 Block work and ABWF works, area Pool B, C, D, E, F, H, R filtration pipe works installation and pool structure construction; Indoor Wave Pool construction, Outdoor Wave Pool A ABWF works, Roof ABWF & Landscape works (Green Roof, Curtain Wall, ETFE), Lift installation works & ABWF, L2 On-grade Slab (rebar fixing and concreting of on-grade slab etc.), L2 North Cladding Wall construction, core 3 staircase, lift shaft installation works and ABWF works
- **South Transformer Room:** ABWF
- **South Plant Room:** E&M
- **External Area:** Laying of underground utilities, removal of concrete paving, manholes and watermain construction, trench excavation for cables & pipes, backfilling

9.3 Key Issues for the Coming Month

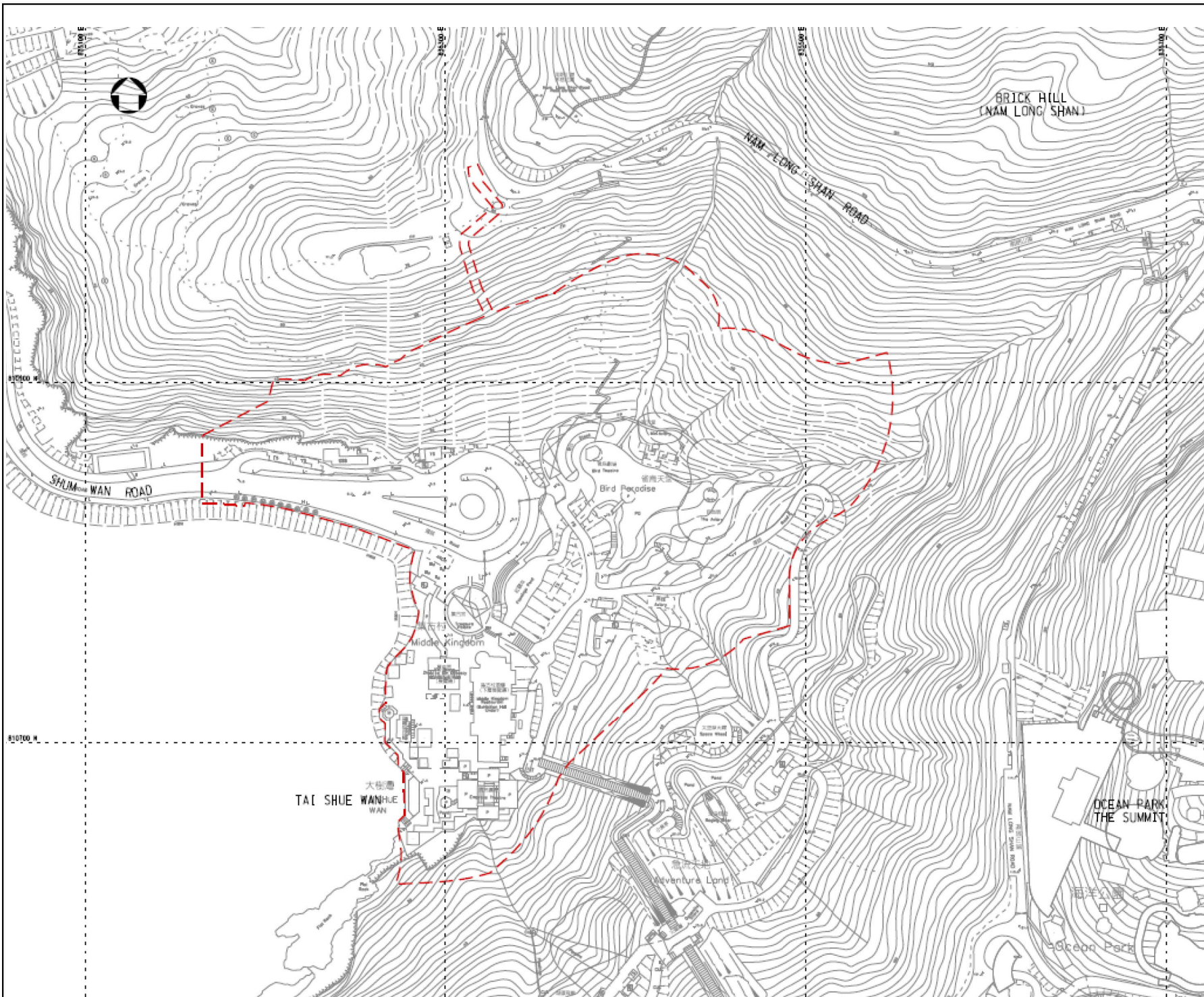
Based on construction activities as undertaken in the coming month, key environment issues consider to be included:

- Potential fugitive dust impact due to the dry/loose/exposure soil surface/dusty material;
- Potential water quality impact due to surface runoff especially on the hillside;
- Potential wastewater impact due to dust suppression measures;
- Implement dust suppression measures at all times;
- Ensure noise and dust mitigation measures are implemented properly;
- Sediment catch-pits and silt removal facilities should be regularly maintained;
- Site effluent discharge shall be fulfilled the discharge license requirements;
- Proper implementation of the management of chemical wastes;
- Ensure chemical storage is managed properly;
- Implementation of construction noise preventative control measures; and
- Cleanliness and tidiness in construction site should be maintained properly.

10 Recommendation

- All drainage facilities, erosion and sedimentation control structures (including the sedimentation tanks installed on site) should be regularly inspected and maintained in good condition, especially during the wet season.
- Appropriate label should be provided on specific machines.
- Noise mitigation measures, including the use of quiet plants, should be implemented in accordance with the EM&A requirement.
- Cleanliness and tidiness in construction site should be enhanced.

A. Project Location



Notes


Key to symbols

--- Project Boundary
項目範圍

Reference drawings

Rev	Date	Drawn	Description	Ch'kd	App'd
M		M	20/F AIA Kowloon Tower Landmark East 100 How Ming Street Kwun Tong, Kowloon Hong Kong T +852 2828 5757 F +852 2827 1820 W mottmac.com		

Client



Project

**TAI SHUE WAN DEVELOPMENT
AT OCEAN PARK**

Title

PROJECT LOCATION

Designed		Eng check	
Drawn		Coordination	
Dwg check		Approved	
Scale at A1	Status		Rev

Drawing Number

APPENDIX A

B. Project Organisation

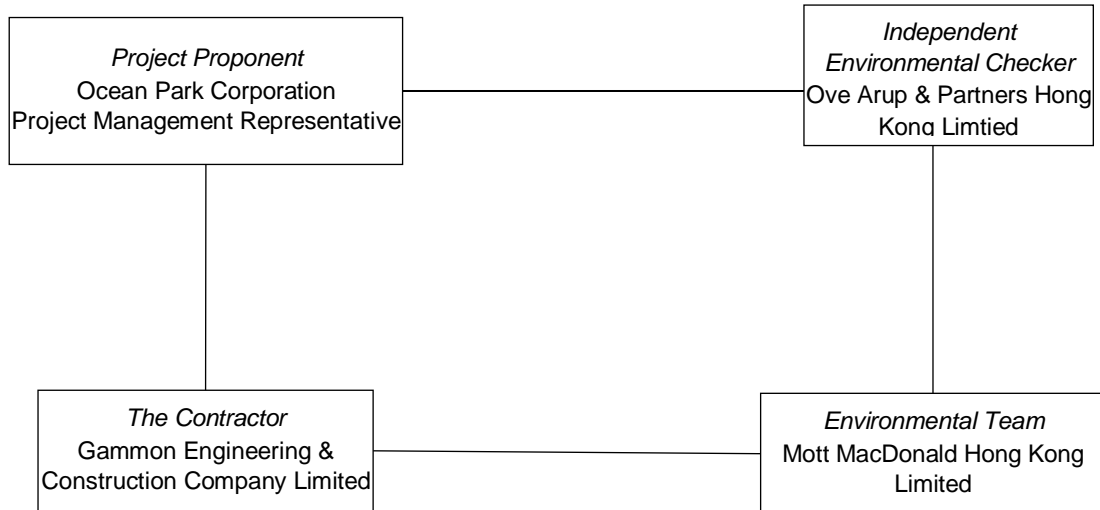


Table A: Contact information

Company / Department	Position	Name	Telephone / Mobile	Fax No.
Ocean Park Corporation	Project Management Representative	Mr Augustine Li	2870 6130	2814 0179
Ove Arup & Partners Hong Kong Ltd.	Independent Environmental Checker	Mr Sam Tsoi	2268 3208	2268 3950
Mott MacDonald Hong Kong Ltd.	Environmental Team Leader	Mr Gary Chow	2828 5874	2827 1823
Mott MacDonald Hong Kong Ltd.	Qualified Ecologist	Mr Roy Hung	2828 5965	2827 1823
Gammon Engineering & Construction Company Limited	Construction Manager	Mr Paul Leaver	3690 9229	2148 2890
Gammon Engineering & Construction Company Limited	Environmental Officer	Ms Sammie Chan	3690 9233	2148 2890

C. 3-month Look-ahead Program

ID	Activity	Duration	Start	Finish	Activity % Complete	April 23					May 24					June 25				July 26			
						5	01	08	15	22	29	06	13	20	27	03	10	17	24	01	08	15	22
OCEAN PARK - TSW WW PROJECT Target (NEW) 20190315																							
NOMINATED SUB-CONTRACTORS																							
C011- Water Filtration System Advance Contract																							
ORIGINAL CONTRACT DATES																							
OP.2450	C011 - KD2: Complete Water Filtration System Installation	0		19-Mar-19*	0%	D2: Complete Water Filtration System Installation																	
OP.2460	C011 - KD3: Complete T&C To Water Filtration System	0		19-Mar-19*	0%	D3: Complete T&C To Water Filtration System																	
OP.2470	C011 - KD4: Substantial Completion of Works incl. Swimming Pool License	0		28-May-19*	0%	▼ C011 - KD4: Substantial Completion of Works incl. Swimming Pool License																	
Installation																							
Pipework																							
Ride Pipework Support																							
OP.2640	Ride External Pipework (main building to ride flume) Slope Supports	0		19-Mar-19*	0%	Ride External Pipework (main building to ride flume) Slope Supports																	
Procurement and Delivery																							
NS.C11.110	C011 Pipes Fittings Pumps UV system Electrical equipment Delivery	110	19-Mar-19	02-Aug-19	0%																		
C012A - Gas Absorption Chillers & Associated Works																							
NS.C12A.1170	C012A Delivery	6	14-May-18	25-Mar-19	0%	C012A Delivery																	
NS.C12A.1130	C012A - Gas Absorption Chillers Installation	145	26-Mar-19	20-Sep-19	0%																		
C012B - Gas Condensing Boilers & Associated Works																							
NS.C12B.1130	C012B - Gas Condensing Boiler Installation	150	01-Apr-18	26-Apr-19	80%	C012B - Gas Condensing Boiler Installation																	
NS.C12B.1140	C012B - Gas Condensing Boiler T&C	72	27-Apr-19	24-Jul-19	0%	C012B - Gas Condensing Boiler T&C																	
NS.C12B.1180	C012B Delivery	6	04-May-19	10-May-19	0%	C012B Delivery																	
C012C - Chimney for Gas Chillers & Boilers																							
NS.C12C.1130	C012C - Chimney Installation	150	01-Jan-19	29-Mar-19	85%	C012C - Chimney Installation																	
NS.C12C.1140	C012C - Delivery	6	19-Mar-19	25-Mar-19	0%	C012C - Delivery																	
NS.C12B.1150	C012C - Chimney T&C	72	25-Mar-19	24-Jun-19	0%	C012C - Chimney T&C																	
DESIGN																							
E&M Major Equipment / Material																							
Preliminary, Material Submission																							
CCMS																							
EM.PD006003	Subm.& Approval of Technical Info. - Interfacing panel	60	19-Mar-19	03-Jun-19	0%	Subm.& Approval of Technical Info. - Interfacing panel																	
PROCUREMENT																							
Ride Procurement																							
STEELWORK																							
NEW00020	Detailed steel arm Design Received	0	19-Mar-19*		0%	Detailed steel arm Design Received																	
PR.R03.1070	Ride P3 Tornado 60 supporting steel frame Fabrication	48	11-May-19	09-Jul-19	0%	Ride P3 Tornado 60 supporting steel frame Fabrication																	
Ride P3																							
RSW.SD.1230	Ride P3 support steelwork arms fabrication	40	19-Mar-19	09-May-19	0%	Ride P3 support steelwork arms fabrication																	
RSW.SD.1250	Ride P3 Embed fabrication	28	19-Mar-19	24-Apr-19	0%	Ride P3 Embed fabrication																	
RSW.SD.1260	Ride P3 embed delivery	0		24-Apr-19	0%	▼ Ride P3 embed delivery																	
RSW.SD.1240	Ride P3 support steelwork delivery	0		09-May-19	0%	▼ Ride P3 support steelwork delivery																	
Ride P2																							
RSW.SD.1480	Ride P2 Embed fabrication	28	01-Mar-19	12-Apr-19	25%	Ride P2 Embed fabrication																	
RSW.SD.1160	Ride P2 support steel work arms shop drawings submit and review	28	19-Mar-19	24-Apr-19	0%	Ride P2 support steel work arms shop drawings submit and review																	
RSW.SD.1490	Ride P2 embed delivery	0		12-Apr-19	0%	▼ Ride P2 embed delivery																	
RSW.SD.1170	Ride P2 support steelwork arms fabrication	40	25-Apr-19	13-Jun-19	0%	Ride P2 support steelwork arms fabrication																	
RSW.SD.1180	Ride P2 support steelwork delivery	0		13-Jun-19	0%	▼ Ride P2 support steelwork delivery																	
Ride P5																							
RSW.SD.1330	Ride P5 support steel work arms shop drawings prepare	18	19-Mar-19	09-Apr-19	0%	Ride P5 support steel work arms shop drawings prepare																	
RSW.SD.1340	Ride P5 support steel work arms shop drawings submit and review	28	10-Apr-19	17-May-19	0%	Ride P5 support steel work arms shop drawings submit and review																	
RSW.SD.1520	Ride P5 Embed fabrication	28	10-Apr-19	17-May-19	0%	Ride P5 Embed fabrication																	
RSW.SD.1530	Ride P5 embed delivery	0		17-May-19	0%	▼ Ride P5 embed delivery																	
RSW.SD.1350	Ride P5 support steelwork arms fabrication	60	18-May-19	29-Jul-19	0%	Ride P5 support steelwork arms fabrication																	
Ride P4																							
RSW.SD.1270	Ride P4 support steel work arms shop drawings prepare	18	19-Mar-19	09-Apr-19	0%	Ride P4 support steel work arms shop drawings prepare																	
RSW.SD.1280	Ride P4 support steel work arms shop drawings submit and review	60	10-Apr-19	25-Jun-19	0%	Ride P4 support steel work arms shop drawings submit and review																	
RSW.SD.1540	Ride P4 Embed fabrication	28	10-Apr-19	17-May-19	0%	Ride P4 Embed fabrication																	
RSW.SD.1550	Ride P4 embed delivery	0		17-May-19	0%	▼ Ride P4 embed delivery																	
E&M Procurement																							
Procurement, Manufacture & Delivery																							
Electrical																							
EM.PM002011	Manufacture & Delivery to HK - LV Switch Board	90	11-Feb-18	05-Apr-19	80%	Manufacture & Delivery to HK - LV Switch Board																	
EM.PM002061	Manufacture & Delivery to HK - FOH & BOH Lightings	135	19-Mar-19	31-Jul-19	0%																		
EM.PM002071	Manufacture & Delivery to HK - Uninterruptible Power Supply	121	19-Mar-19	17-Jul-19	0%	Manufacture & Delivery to HK - Uninterruptible Power Supply																	
EM.PM002050	Place order - Street Lightings	6	22-Mar-19	28-Mar-19	0%	Place order - Street Lightings																	
EM.PM002051	Manufacture & Delivery to HK - Street Lightings	135	29-Mar-19	10-Aug-19	0%																		
Fire Services																							

■ critical level of effort ■ Critical Remaining Work
■ Current
◆ Milestone
▼ Milestone
 % Complete

Project: Ocean Park Tai Shue Wan Water World Project
 Project ID: T16004-219
 Layout: 3 Month look ahead 20190401
 Page: 1 of 4

OCEAN PARK - TAI SHUE WAN DEVELOPMENT
Contract No. TSW-C006
3 month rolling program _April 2019



Date	Revision	Checked	Approved
01-Dec-18	3M rolling		
01-Jan-19	3M rolling		
01-Feb-19	3M rolling		
01-Mar-19	3M rolling		
01-Apr-19	3M rolling		

ID	Activity	Duration	Start	Finish	Activity % Complete	April 23					May 24					June 25				July 26				
						5	01	08	15	22	29	06	13	20	27	03	10	17	24	01	08	15	22	29
EM.PM003021	Manufacture & Delivery to HK - FS Pipework	60	02-Feb-18	17-Apr-19	50%	Manufacture & Delivery to HK - FS Pipework																		
EM.PM003011	Manufacture & Delivery to HK - FS Pump & Motor	93	07-Mar-18	04-May-19	50%	Manufacture & Delivery to HK - FS Pump & Motor																		
EM.PM003060	Place order - Other Materials	6	15-Mar-18	22-Mar-19	40%	Place order - Other Materials																		
EM.PM003051	Manufacture & Delivery to HK - LMCP	89	16-Mar-18	22-May-19	50%	Manufacture & Delivery to HK - LMCP																		
EM.PM003061	Manufacture & Delivery to HK - Other Materials	60	30-Mar-18	11-May-19	10%	Manufacture & Delivery to HK - Other Materials																		
EM.PM003030	Place order - FH/HR System	6	15-May-18	23-Mar-19	20%	Place order - FH/HR System																		
EM.PM003091	Manufacture & Delivery to HK - Linear Heat Detection System	90	15-May-18	07-Jun-19	10%	Manufacture & Delivery to HK - Linear Heat Detection System																		
EM.PM003081	Manufacture & Delivery to HK - Aspirating Smoke Detection System	90	02-Jun-18	29-May-19	20%	Manufacture & Delivery to HK - Aspirating Smoke Detection System																		
EM.PM003071	Manufacture & Delivery to HK - AVA Sytem	90	19-Mar-19	16-Jun-19	0%	Manufacture & Delivery to HK - AVA Sytem																		
EM.PM003031	Manufacture & Delivery to Site - FH/HR System	60	23-Mar-19	22-May-19	0%	Manufacture & Delivery to Site - FH/HR System																		
Plumbing & Drainage																								
EM.PM004010	Place order - Water Pump	6	10-Mar-18	19-Mar-19	95%	Place order - Water Pump																		
EM.PM004060	Place order - Other Materials	6	10-Mar-18	23-Mar-19	30%	Place order - Other Materials																		
EM.PM004011	Manufacture & Delivery to HK - Water Pump	155	21-Mar-18	05-Jul-19	30%	Manufacture & Delivery to HK - Water Pump																		
EM.PM004061	Manufacture & Delivery to HK - Other Materials	60	21-Mar-18	05-May-19	20%	Manufacture & Delivery to HK - Other Materials																		
EM.PM004070	Place order - Hot water System	6	15-May-18	20-Mar-19	80%	Place order - Hot water System																		
EM.PM004071	Manufacture & Delivery to HK - Hot water System	60	23-May-18	08-May-19	15%	Manufacture & Delivery to HK - Hot water System																		
EM.PM004051	Manufacture & Delivery to HK - LMCP	150	01-Jun-18	31-Jul-19	10%	Manufacture & Delivery to HK - LMCP																		
ELV																								
EM.PM005051	Manufacture & Delivery to HK - Lift Intercom	121	17-Jul-18 A	29-Jun-19	15%	Manufacture & Delivery to HK - Lift Intercom																		
EM.PM005031	Manufacture & Delivery to HK - Radio System	121	24-Jul-18 A	05-Jul-19	10%	Manufacture & Delivery to HK - Radio System																		
EM.PM005010	Place order - CCTV Camera	6	19-Mar-19	25-Mar-19	0%	Place order - CCTV Camera																		
EM.PM005020	Place order - Access Control System	6	19-Mar-19	25-Mar-19	0%	Place order - Access Control System																		
Facade Procurement (C010)																								
PC.NSC.1110	Manufacture glazed panels	180	25-Apr-19	28-Nov-19	0%	Manufacture glazed panels																		
PRELIMINARIES																								
E&M Submission																								
Drawing and Method Statement																								
CCMS																								
EM.DM4011	Submission and approval of Installation Method Statement	90	19-Mar-19	16-Jun-19	0%	Submission and approval of Installation Method Statement																		
RISING MAIN (SEWERAGE)																								
Thrust Block, Pipe Trough & Slope Pipe																								
RM.PTHL.1020	Pipe Trough 3: Construct (1.90m x 5.90m)	14	19-Mar-19	03-Apr-19	0%	Pipe Trough 3: Construct (1.90m x 5.90m)																		
RM.PTHL.1060	Install Concrete Pipe Supports 4no.	5	19-Mar-19	23-Mar-19	0%	Install Concrete Pipe Supports 4no.																		
RM.PTHL.1030	Pipe Trough 2: Construct (1.90m x 14.45m)	24	04-Apr-19	10-May-19	0%	Pipe Trough 2: Construct (1.90m x 14.45m)																		
RM.PTHL.1010	Install Concrete Slope Pipe Supports 17no.	34	18-Apr-19	05-Jun-19	0%	Install Concrete Slope Pipe Supports 17no.																		
RM.PTHL.1040	Pipe Trough 1: Construct (1.90m x 11.00m)	24	11-May-19	11-Jun-19	0%	Pipe Trough 1: Construct (1.90m x 11.00m)																		
Pipeworks & Fittings																								
RM.PIHL.1150	Backfill: CH220 - CH250	24	09-Aug-18	17-Apr-19	50%	Backfill: CH220 - CH250																		
RM.PIHL.1140	Install Pipe: Discharge Chamber - Exstg.MH	18	19-Mar-19	09-Apr-19	0%	Install Pipe: Discharge Chamber - Exstg.MH																		
RM.PILL.1230	Backfill: CH0 - CH125	35	11-Apr-19	29-May-19	0%	Backfill: CH0 - CH125																		
RM.PIHL.1160	Backfill: CH250 - Existing Manhole	8	11-Apr-19	23-Apr-19	0%	Backfill: CH250 - Existing Manhole																		
RM.PILL.1210	Install Pipe: CH80 - CH130	16	12-Apr-19	04-May-19	0%	Install Pipe: CH80 - CH130																		
RM.PILL.1220	Install Pipe: CH0 - CH80	20	06-May-19	29-May-19	0%	Install Pipe: CH0 - CH80																		
RM.PIHL.1100	Install Pipe: CH162 - CH220	21	06-Jun-19	08-Jul-19	0%	Install Pipe: CH162 - CH220																		
RM.PIHL.1110	Install Pipe: CH130 - CH162	24	13-Jun-19	17-Jul-19	0%	Install Pipe: CH130 - CH162																		
NATURAL POND																								
Drainage																								
HL.NP.1030	Natural Pond: Install 100 D Water supply pipe	12	10-May-19	24-May-19	0%	Natural Pond: Install 100 D Water supply pipe																		
HL.NP.1040	Natural Pond: Construct catchpit for water feature overflow and backfill	6	10-May-19	17-May-19	0%	Natural Pond: Construct catchpit for water feature overflow and backfill																		
HL.NP.1050	Natural Pond: Install Drain 300 W channel, crest over flow weir to Catchpit	12	18-May-19	31-May-19	0%	Natural Pond: Install Drain 300 W channel, crest over flow weir to Catchpit																		
HL.NP.1060	Natural Pond: Lay 300D RWP U/G from Catchpit to existing Hillside Catchpit	6	18-May-19	24-May-19	0%	Natural Pond: Lay 300D RWP U/G from Catchpit to existing Hillside Catchpit																		
PRIMARY RC STRUCTURE																								
Summary completion dates																								
OP.680	Complete Level 1 RC slab	0		19-Mar-19	0%	Level 1 RC slab																		
OP.690	Complete Level 2 RC slab	0		19-Mar-19	0%	Level 2 RC slab																		
OP.700	Complete Level 2 10E4 activities	0		19-Mar-19	0%	Level 2 10E4 activities																		
OP.710	Complete Level 3 RC slab	0		19-Mar-19	0%	Level 3 RC slab																		
OP.720	Complete Roof A RC slab	0		19-Mar-19	0%	Roof A RC slab																		
OP.730	Complete Roof B RC slab	0		19-Mar-19	0%	Roof B RC slab																		
OP.740	Complete Roof C RC slab	0		19-Mar-19	0%	Roof C RC slab																		
Basement Level BL																								
Zone B1-1																								
SPBLS.1160	B1-1: On-Grade Slab - 2 (49 bays)	16	16-Mar-18	02-Apr-19	90%	B1-1: On-Grade Slab - 2 (49 bays)																		
Zone B1-6																								
SPBLS.1630	B1-6: On-Grade Slab (90 bays)	30	23-Mar-18	18-Apr-19	85%	B1-6: On-Grade Slab (90 bays)																		
Foundations																								

■ critical level of effort ■ Critical Remaining Work
■ Current
◆ Milestone ◆ Milestone
■ % Complete


Project: Ocean Park Tai Shue Wan Water World Project
 Project ID: T16004-219
 Layout: 3 Month look ahead 20190401
 Page: 2 of 4

OCEAN PARK - TAI SHUE WAN DEVELOPMENT
Contract No. TSW-C006
3 month rolling program _April 2019



Date	Revision	Checked	Approved
01-Dec-18	3M rolling		
01-Jan-19	3M rolling		
01-Feb-19	3M rolling		
01-Mar-19	3M rolling		
01-Apr-19	3M rolling		

ID	Activity	Duration	Start	Finish	Activity % Complete	April 23					May 24					June 25				July 26				
						5	01	08	15	22	29	06	13	20	27	03	10	17	24	01	08	15	22	29
PMI 228 Footings M-11a, M-12-A, M-13-A and M-14-A																								
OP.2290	Formation to new footings M-11a, M-12-A, M-13-A (2layer)	103	30-Nov-18	25-Mar-19	90%	Formation to new footings M-11a, M-12-A, M-13-A (2layer)																		
OP.2320	Formation to new footing M-14-A (-3 layers) (subject to RGE verification of unforeseen ground conditions)	98	30-Nov-18	29-Mar-19	85%	Formation to new footing M-14-A (-3 layers) (subject to RGE verification of unforeseen ground conditions)																		
OP.2270	Construct new footings M-11a, M-12-A and M-13-A (affected by proximity/ access for M-14-A Formation works)	14	19-Mar-19	03-Apr-19	0%	Construct new footings M-11a, M-12-A and M-13-A (affected by proximity/ access for M-14-A Formation works)																		
OP.2770	ELS Approval and drawings Footing M-14-A	0		28-Mar-19*	0%	ELS Approval and drawings Footing M-14-A																		
OP.2780	Construct new footing M-14-A	6	30-Mar-19	06-Apr-19	0%	Construct new footing M-14-A																		
Level 3 Link Bridge Footing																								
OP.3550	Initial report submission	7	02-May-19	09-May-19	0%	Initial report submission																		
OP.3560	Submit BA8/10 for Foundation Works	28	10-May-19	13-Jun-19	0%	Submit BA8/10 for Foundation Works																		
OP.3570	Construct Footings and butress wall	18	14-Jun-19	05-Jul-19	0%	Construct Footings and butress wall																		
Level 2																								
On Grade Slab																								
SPL2S.2010	GL 172-KK: On-grade Slab Under Level 2 secondary slab (A4-1, A4-2))	15	07-May-18	04-Apr-19	45%	GL 172-KK: On-grade Slab Under Level 2 secondary slab (A4-1, A4-2))																		
SPL2S.2020	GL 12-24: L2 On-grade Slab	18	29-Jun-18	11-Apr-19	10%	GL 12-24: L2 On-grade Slab																		
SPL2S.2060	GL 15-19 Remove access road	6	25-Mar-19	30-Mar-19	0%	GL 15-19 Remove access road																		
SPL2S.2040	GL 19-24: L2 On-grade Slab	24	01-Apr-19	03-May-19	0%	GL 19-24: L2 On-grade Slab																		
SPL2S.2050	GL 15-19: L2 On-grade Slab	24	01-Apr-19	03-May-19	0%	GL 15-19: L2 On-grade Slab																		
SPL2S.2070	GL 24-25.5: L2 On-grade Slab	6	01-Apr-19	08-Apr-19	0%	GL 24-25.5: L2 On-grade Slab																		
SPL2S.2030	GL 12-24: Remaining On-grade Slab Up to P3 ride pedestrian walkway	24	18-May-19	15-Jun-19	0%	GL 12-24: Remaining On-grade Slab Up to P3 ride pedestrian walkway																		
Zone A																								
OP.610	Complete Level 2 RC slab	0		19-Mar-19	0%	Level 2 RC slab																		
OP.620	Complete 10E4 activities	0		19-Mar-19	0%	10E4 activities																		
Zone A3																								
SPL2A.2340	Cast Column P3C54 (including ride cast ins)	12	15-Apr-19	02-May-19	0%	Cast Column P3C54 (including ride cast ins)																		
Level 3																								
OP.640	Complete Level 3 RC slab	0		19-Mar-19	0%	Level 3 RC slab																		
Zone A																								
Zone A4																								
SPL3A.3430	Zone A4: Strike & Falsework Dismantling	9	19-Mar-19	28-Mar-19	0%	Zone A4: Strike & Falsework Dismantling																		
Zone A6																								
SPL3A.3670	Zone A6-2: RC ramp wall GL 11-15 Level 3 to 28.9 (internal adjacent to secondary slab A1, A2 E&M rooms) (B)	18	19-Mar-19	09-Apr-19	0%	Zone A6-2: RC ramp wall GL 11-15 Level 3 to 28.9 (internal adjacent to secondary slab A1, A2 E&M rooms) (B)																		
SPL3A.3990	Zone A6-2: RC ramp wall GL 11-15 28.9 to 34.25 (internal adjacent to secondary slab A1, A2 E&M rooms) (B)	18	10-Apr-19	04-May-19	0%	Zone A6-2: RC ramp wall GL 11-15 28.9 to 34.25 (internal adjacent to secondary slab A1, A2 E&M rooms) (B)																		
SPL3A.3620	Zone A6: Ramp	17	29-Apr-19	20-May-19	0%	Zone A6: Ramp																		
Zone A9																								
SPL3A.3980	Zone A9-2: Construct link bridge L3 to ride thoroughfare	26	16-Jun-18	21-Jun-19	50%	Zone A9-2: Construct link bridge L3 to ride thoroughfare																		
SECONDARY RC STRUCTURE (M & E Zone) External secondary walls																								
External Secondary Wall																								
Grid 07-15																								
OP.2300	Zone RA2, RA1 Construct secondary walls Ramp to 31.0mPD GL 07-15 (external) (J)	18	29-May-19	19-Jun-19	0%	Zone RA2, RA1 Construct secondary walls Ramp																		
Level 1																								
SS.L1S.1310	Zone-4: L1 Secondary structures	21	01-May-18	01-Apr-19	90%	Zone-4: L1 Secondary structures																		
SS.L1S.1340	Zone-3: L1 Secondary structures	20	01-Aug-18	23-Mar-19	90%	Zone-3: L1 Secondary structures																		
SS.L1S.1350	Zone-3: L1 Secondary slab Strike Formwork & Dismantling	8	06-Apr-19	15-Apr-19	0%	Zone-3: L1 Secondary slab Strike Formwork & Dismantling																		
SS.L1S.1320	Zone-4: L1 Strike Formwork & Dismantling	8	15-Apr-19	26-Apr-19	0%	Zone-4: L1 Strike Formwork & Dismantling																		
Level 3																								
Zone A (Under Roof A)																								
EM.IN240660	Secondary slab E&M Access openings infills Zone A5 - A6	12	28-May-19	12-Jun-19	0%	Secondary slab E&M Access openings infills Zone A5 - A6																		
EM.IN240670	Secondary slab E&M Access openings infills Zone A3 - A4	12	06-Jun-19	21-Jun-19	0%	Secondary slab E&M Access openings infills Zone A3 - A4																		
EM.IN240680	Secondary slab E&M Access openings infills Zone A7 - A8	12	06-Jun-19	21-Jun-19	0%	Secondary slab E&M Access openings infills Zone A7 - A8																		
Strike falsework																								
SS.L3A.3270	Zone-A: L3 Secondary Slab A6 -Strike Falsework	3	30-May-19	01-Jun-19	0%	Zone-A: L3 Secondary Slab A6 -Strike Falsework																		
SS.L3A.3290	Zone-A: L3 Secondary Slab A8 -Strike Falsework	4	06-Jun-19	11-Jun-19	0%	Zone-A: L3 Secondary Slab A8 -Strike Falsework																		
SS.L3A.3300	Zone-A: L3 Secondary Slab A9 -Strike Falsework	4	06-Jun-19	11-Jun-19	0%	Zone-A: L3 Secondary Slab A9 -Strike Falsework																		
SS.L3A.3220	Zone-A: L3 Secondary Slab A1 -Strike Falsework	4	10-Jun-19	13-Jun-19	0%	Zone-A: L3 Secondary Slab A1 -Strike Falsework																		
SS.L3A.3280	Zone-A: L3 Secondary Slab A7 -Strike Falsework	4	13-Jun-19	17-Jun-19	0%	Zone-A: L3 Secondary Slab A7 -Strike Falsework																		
SS.L3A.3230	Zone-A: L3 Secondary Slab A2 -Strike Falsework	4	14-Jun-19	18-Jun-19	0%	Zone-A: L3 Secondary Slab A2 -Strike Falsework																		
SS.L3A.3260	Zone-A: L3 Secondary Slab A5 -Strike Falsework	4	17-Jun-19	20-Jun-19	0%	Zone-A: L3 Secondary Slab A5 -Strike Falsework																		
Zone B (Zone 5)																								
SS.L3B.3110	Zone-5: L3 Secondary Slab	27	20-Sep-18	16-Apr-19	5%	Zone-5: L3 Secondary Slab																		
SS.L3B.3120	Zone-5: Strike Formwork & Dismantling	5	02-May-19	07-May-19	0%	Zone-5: Strike Formwork & Dismantling																		
Zone C (Under Roof C)																								
SS.L3C.3110	Zone-C: L3 Secondary Slab	25	19-Mar-19	17-Apr-19	0%	Zone-C: L3 Secondary Slab																		
SS.L3C.3120	Zone-C: Strike Formwork & Dismantling	5	03-May-19	08-May-19	0%	Zone-C: Strike Formwork & Dismantling																		
EM.IN240700	Secondary slab E&M Access openings infills Zone C	12	06-Jun-19	21-Jun-19	0%	Secondary slab E&M Access openings infills Zone C																		
Pool Unit																								
Level 3																								

<ul style="list-style-type: none"> ■ critical level of effort ■ Current ◆ Milestone ▼ Milestone ■ % Complete 	Project: Ocean Park Tai Shue Wan Water World Project Project ID: T16004-219 Layout: 3 Month look ahead 20190401 Page: 3 of 4	OCEAN PARK - TAI SHUE WAN DEVELOPMENT Contract No. TSW-C006 3 month rolling program _April 2019		<table border="1"> <thead> <tr> <th>Date</th> <th>Revision</th> <th>Checked</th> <th>Approved</th> </tr> </thead> <tbody> <tr> <td>01-Dec-18</td> <td>3M rolling</td> <td></td> <td></td> </tr> <tr> <td>01-Jan-19</td> <td>3M rolling</td> <td></td> <td></td> </tr> <tr> <td>01-Feb-19</td> <td>3M rolling</td> <td></td> <td></td> </tr> <tr> <td>01-Mar-19</td> <td>3M rolling</td> <td></td> <td></td> </tr> <tr> <td>01-Apr-19</td> <td>3M rolling</td> <td></td> <td></td> </tr> </tbody> </table>	Date	Revision	Checked	Approved	01-Dec-18	3M rolling			01-Jan-19	3M rolling			01-Feb-19	3M rolling			01-Mar-19	3M rolling			01-Apr-19	3M rolling		
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ID	Activity	Duration	Start	Finish	Activity % Complete	April					May					June				July									
						23					24					25				26									
						01	08	15	22	29	06	13	20	27	03	10	17	24	01	08	15	22	29						
Pool K - Toddlers Pool																													
SS.PUPK.1110	Pool K: Construct Slab Toddlers Pool	12	02-May-19	16-May-19	0%																								
SS.PUPK.1120	Pool K: Construct Wall Toddlers Pool	12	17-May-19	30-May-19	0%																								
SS.PUPK.1130	Pool K: Cure Toddlers Pool	7	31-May-19	10-Jun-19	0%																								
SS.PUPK.1140	Pool K: Waterproof & Test Toddlers Pool	24	11-Jun-19	12-Jul-19	0%																								
Pool L - Play Structure																													
SS.PUPL.1110	Pool L: Construct Slab Play Structure	22	02-May-19	28-May-19	0%																								
SS.PUPL.1120	Pool L: Construct Wall Play Structure	23	29-May-19	28-Jun-19	0%																								
Pool S - Spa Pool																													
SS.PUPS.1110	Pool S: Construct Slab Spa Pool	28	02-May-19	05-Jun-19	0%																								
SS.PUPS.1120	Pool S: Construct Wall Spa Pool	28	06-Jun-19	13-Jul-19	0%																								
SHUM WAN ROAD (Area A4)																													
General Requirements																													
EW.GENR.0130	Obtain Approval for TTM Proposal	28	13-Apr-18	19-Mar-19	90%																								
PR.SWGE.1050	Mobilise, Survey & Setting out - Shum Wan Rd.	6	19-Mar-19	25-Mar-19	0%																								
PR.SWGE.1025	Site Clearance and Hoarding Erection - Shum Wan Rd.	6	26-Mar-19	01-Apr-19	0%																								
Temporary Traffic Management																													
TTM Implementation																													
EW.TTMS.1110	Prepare Shum Wan Road TTM Stage 5	1	19-Mar-19	19-Mar-19	0%																								
EW.TTMS.1115	Implement Shum Wan Road TTM Stage 5	0	20-Mar-19		0%																								
EW.TTMS.1120	Prepare Shum Wan Road TTM Stage 2	1	30-Mar-19	30-Mar-19	0%																								
EW.TTMS.2140	Prepare Shum Wan Road TTM Stage 1	1	30-Mar-19	30-Mar-19	0%																								
EW.TTMS.1125	Implement Shum Wan Road TTM Stage 2	0	01-Apr-19		0%																								
EW.TTMS.2150	Implement Shum Wan Road TTM Stage 1	0	01-Apr-19		0%																								
EW.TTMS.1130	Prepare Shum Wan Road TTM Stage 3	1	17-Apr-19	17-Apr-19	0%																								
EW.TTMS.1135	Implement Shum Wan Road TTM Stage 3	0	18-Apr-19		0%																								
EW.TTMS.1140	Prepare Shum Wan Road TTM Stage 4	1	25-Apr-19	25-Apr-19	0%																								
EW.TTMS.1145	Implement Shum Wan Road TTM Stage 4	0	26-Apr-19		0%																								

critical level of effort
 Critical Remaining Work
 Current
◆ Milestone
▼ Milestone
 % Complete

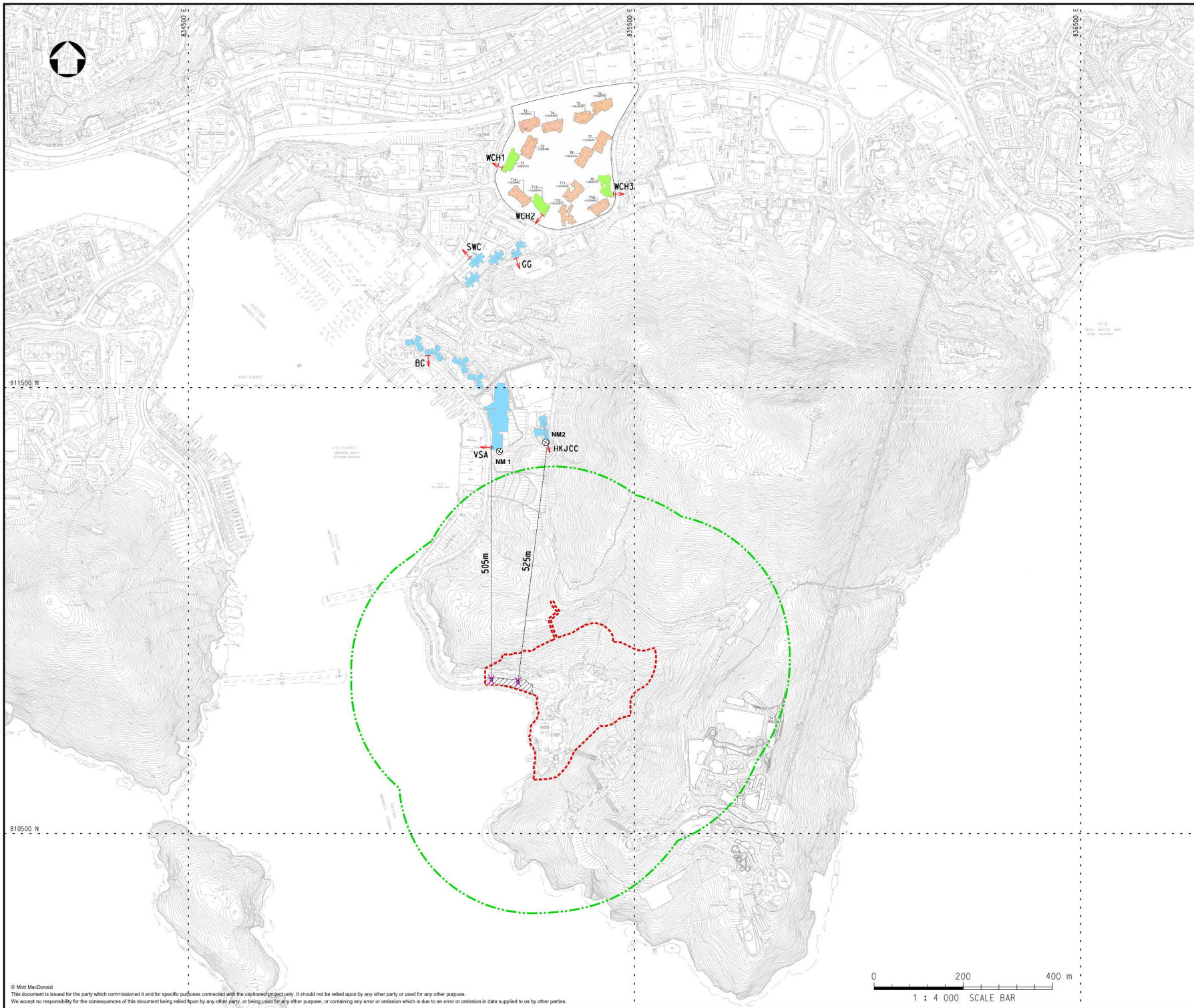
Project: Ocean Park Tai Shue Wan Water World Project
 Project ID: T16004-219
 Layout: 3 Month look ahead 20190401
 Page: 4 of 4

OCEAN PARK - TAI SHUE WAN DEVELOPMENT
Contract No. TSW-C006
3 month rolling program _April 2019



Date	Revision	Checked	Approved
01-Dec-18	3M rolling		
01-Jan-19	3M rolling		
01-Feb-19	3M rolling		
01-Mar-19	3M rolling		
01-Apr-19	3M rolling		

D. Designated Monitoring Locations as Recommended in the Approved EM&A Manual



Notes

Key to symbols

- ⊗ NOISE MONITORING STATION
- 300m ASSESSMENT AREA
- - - REVISED PROJECT BOUNDARY
- ▨ ADDITIONAL WORKS AREA AT SHUM WAN ROAD
- ← EXISTING NOISE SENSITIVE RECEIVER
- ← PLANNED NOISE SENSITIVE RECEIVER
- X NOTIONAL SOURCE POSITION

NSRID	DESCRIPTION
VSA	VICTORIA SHANGHAI ACADEMY
HKJCC	HONG KONG JUVENILE CARE CENTRE
BC	BROADVIEW COURT
SWC	SOUTH WAVE COURT
WCH	PLANNED DEVELOPMENT ON WONG CHUK HANG STATION DEPOT
GG	GRANDVIEW GARDEN

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd
P4	NOV 17	MING	FOURTH ISSUE	HL	EC
P3	NOV 17	MING	THIRD ISSUE	HL	EC
P2	AUG 17	TSE	SECOND ISSUE	HL	EC
P1	JUL 17	TSE	FIRST ISSUE	HL	EC

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 F +852 2827 1823
 W mottmac.com



Project

**TAI SHUE WAN DEVELOPMENT
 AT OCEAN PARK**

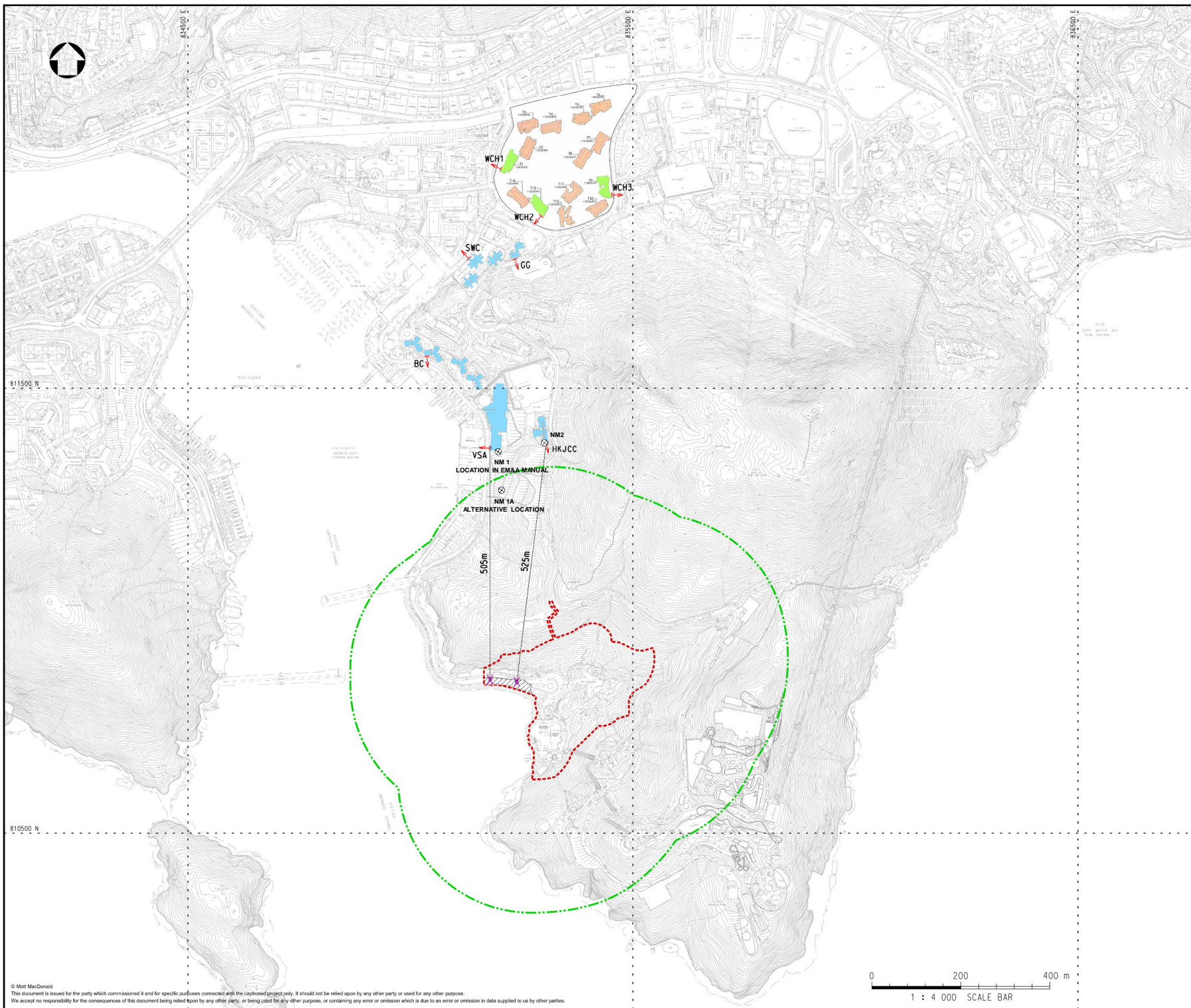
Title

**DESIGNATED MONITORING
 LOCATIONS AS RECOMMENDED
 IN THE APPROVED EM&A MANUAL**

Designed	HL	Eng check	JC
Drawn	MING	Coordination	HC
Dwg check	HL	Approved	EC
Scale at A1	1:4000	Status	PRE
Drawing Number		Rev	P4

APPENDIX D

E. Actual Locations of Impact Monitoring



Notes

Key to symbols

- ⊗ NOISE MONITORING STATION
- 300m ASSESSMENT AREA
- - - REVISED PROJECT BOUNDARY
- ▨ ADDITIONAL WORKS AREA AT SHUM WAN ROAD
- ← EXISTING NOISE SENSITIVE RECEIVER
- ← PLANNED NOISE SENSITIVE RECEIVER
- X NOTIONAL SOURCE POSITION

NSRID	DESCRIPTION
VSA	VICTORIA SHANGHAI ACADEMY
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Reference drawings

Rev	Date	Drawn	Description	Ch'kd	App'd
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P2	AUG 17	TSE	SECOND ISSUE	HL	EC
P1	JUL 17	TSE	FIRST ISSUE	HL	EC

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Client



Project

**TAI SHUE WAN DEVELOPMENT
AT OCEAN PARK**

Title

**ACTUAL LOCATION OF
IMPACT MONITORING**

Designed	HL	Eng check	JC
Drawn	MING	Coordination	HC
Dwg check	HL	Approved	EC
Scale at A1	1:4000	Status	PRE
Drawing Number		Rev	P4

APPENDIX E

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J:\387094\DRAWING\FIG 4-1_P4.dwg DATE: 23/11/2017 TIME: 14:11:32 USER: ym42169

F. Calibration Certificates



輝創工程有限公司

Sun Creation Engineering Limited

Calibration & Testing Laboratory

Certificate of Calibration

校正證書

Certificate No. : C185608

證書編號

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

Description / 儀器名稱 : Sound Level Meter

Manufacturer / 製造商 : Rion

Model No. / 型號 : NL-52

Serial No. / 編號 : 00131627

Supplied By / 委託者 : Envirotech Services Co.

Room 113, 1/F, My Loft, 9 Hoi Wing Road, Tuen Mun,
New Territories, Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 溫度 : $(23 \pm 2)^{\circ}\text{C}$

Relative Humidity / 相對濕度 : $(50 \pm 25)\%$

Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 14 October 2018

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.

The results do not exceed manufacturer's specification.

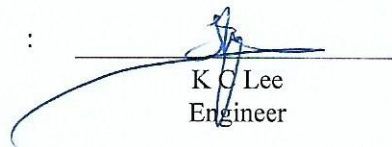
The results are detailed in the subsequent page(s).

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

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

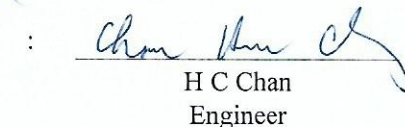
Tested By

測試


K O Lee
Engineer

Certified By

核證


H C Chan
Engineer

Date of Issue

簽發日期

19 October 2018

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

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

Sun Creation Engineering Limited - Calibration & Testing Laboratory

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

輝創工程有限公司 - 校正及檢測實驗室

c/o 香港新界屯門興安里一號四樓

Tel/電話: (852) 2927 2606

Fax/傳真: (852) 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com



輝創工程有限公司

Sun Creation Engineering Limited

Calibration & Testing Laboratory

Certificate of Calibration 校正證書

Certificate No. : C185608

證書編號

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

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

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L _A	A	Fast	94.00	1	93.3	± 1.1

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 130	L _A	A	Fast	94.00	1	93.3 (Ref.)
				104.00		103.3
				114.00		113.3

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

6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L _A	A	Fast	94.00	1	93.3	Ref.
			Slow			93.3	± 0.3

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

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

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輝創工程有限公司 - 校正及檢測實驗室

c/o 香港新界屯門興安里一號四樓

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E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com

Page 2 of 4

Certificate of Calibration

校正證書

Certificate No. : C185608
證書編號

6.3 Frequency Weighting

6.3.1 A-Weighting

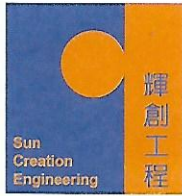
UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L _A	A	Fast	94.00	63 Hz	67.0	-26.2 ± 1.5
					125 Hz	77.1	-16.1 ± 1.5
					250 Hz	84.6	-8.6 ± 1.4
					500 Hz	90.0	-3.2 ± 1.4
					1 kHz	93.3	Ref.
					2 kHz	94.5	+1.2 ± 1.6
					4 kHz	94.3	+1.0 ± 1.6
					8 kHz	92.3	-1.1 (+2.1 ; -3.1)
					12.5 kHz	88.9	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L _C	C	Fast	94.00	63 Hz	92.5	-0.8 ± 1.5
					125 Hz	93.1	-0.2 ± 1.5
					250 Hz	93.3	0.0 ± 1.4
					500 Hz	93.3	0.0 ± 1.4
					1 kHz	93.3	Ref.
					2 kHz	93.1	-0.2 ± 1.6
					4 kHz	92.5	-0.8 ± 1.6
					8 kHz	90.4	-3.0 (+2.1 ; -3.1)
					12.5 kHz	86.9	-6.2 (+3.0 ; -6.0)

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

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輝創工程有限公司

Sun Creation Engineering Limited

Calibration & Testing Laboratory

Certificate of Calibration

校正證書

Certificate No. : C185608

證書編號

Remarks : - UUT Microphone Model No. : UC-59 & S/N : 06829

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value :

94 dB	63 Hz - 125 Hz	: ± 0.35 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz - 4 kHz	: ± 0.35 dB
	8 kHz	: ± 0.45 dB
	12.5 kHz	: ± 0.70 dB
104 dB	1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB	1 kHz	: ± 0.10 dB (Ref. 94 dB)

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

Note :

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

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

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Sun Creation Engineering Limited - Calibration & Testing Laboratory

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

輝創工程有限公司 — 校正及檢測實驗室

c/o 香港新界屯門興安里一號四樓

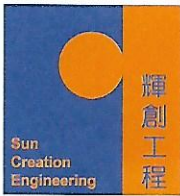
Tel/電話: (852) 2927 2606

Fax/傳真: (852) 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com

Page 4 of 4



Certificate of Calibration

校正證書

Certificate No. : C183084
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC18-1101)

Date of Receipt / 收件日期 : 30 May 2018

Description / 儀器名稱 : Precision Acoustic Calibrator

Manufacturer / 製造商 : LARSON DAVIS

Model No. / 型號 : CAL200

Serial No. / 編號 : 11333

Supplied By / 委託者 : Envirotech Services Co.

Room 113, 1/F, My Loft, 9 Hoi Wing Road, Tuen Mun,
New Territories, Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 溫度 : $(23 \pm 2)^{\circ}\text{C}$

Relative Humidity / 相對濕度 : $(50 \pm 25)\%$

Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 9 June 2018

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.


The results do not exceed manufacturer's specification.

The results are detailed in the subsequent page(s).

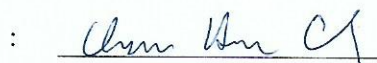
The test equipment used for calibration are traceable to National Standards via :

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

Tested By
測試


K C Lee
Engineer

Certified By
核證


H C Chan
Engineer

Date of Issue
簽發日期

14 June 2018

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

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Certificate of Calibration

校正證書

Certificate No. : C183084

證書編號

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

<u>Equipment ID</u>	<u>Description</u>	<u>Certificate No.</u>
CL130	Universal Counter	C173864
CL281	Multifunction Acoustic Calibrator	PA160023
TST150A	Measuring Amplifier	C181288

- Test procedure : MA100N.

- Results :

5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	93.8	± 0.2	± 0.2
114 dB, 1 kHz	113.8		

5.2 Frequency Accuracy

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

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

Note :

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

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

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

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輝創工程有限公司

Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No. : C175727
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC17-2277) Date of Receipt / 收件日期 : 3 October 2017

Description / 儀器名稱 : Anemometer
Manufacturer / 製造商 : Lutron
Model No. / 型號 : AM-4201
Serial No. / 編號 : AF.27513
Supplied By / 委託者 : Envirotech Services Co.
Room 113, 1/F, My Loft, 9 Hoi Wing Road, Tuen Mun,
New Territories, Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範


Calibration check

DATE OF TEST / 測試日期 : 13 October 2017

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- Testo Industrial Services GmbH, Germany

Tested By : 
測試 H C Chan
 Engineer

Certified By : 
核證 K C Lee
 Engineer

Date of Issue : 16 October 2017
簽發日期

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

校正證書

Certificate No. : C175727

證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.
2. The results presented are the mean of 10 measurements at each calibration point.
3. Test equipment :

<u>Equipment ID</u>	<u>Description</u>	<u>Certificate No.</u>
CL386	Multi-function Measuring Instrument	S16493

4. Test procedure : MA130N.

5. Results :

Air Velocity

Applied Value (m/s)	UUT Reading (m/s)	Measured Correction		
		Value (m/s)	Measurement Uncertainty	
			Expanded Uncertainty (m/s)	Coverage Factor
1.9	1.7	+0.2	0.2	2.0
4.0	3.8	+0.2	0.2	2.0
6.0	5.9	+0.1	0.3	2.0
8.0	8.0	0.0	0.3	2.0
10.0	10.1	-0.1	0.4	2.0

Remarks : - The Measured Corrections are defined as :
Value = Applied Value - UUT Reading

- The expanded uncertainties are for a level of confidence of 95 %.

Note :

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

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Sun Creation Engineering Limited Calibration & Testing Laboratory

c/o 4F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司 校正及檢測實驗室

c/o 香港新界屯門興安里一號青山灣機樓四樓

Tel 電話: 2927 2606

Fax 傳真: 2744 8986

E-mail 電郵: callab@suncreation.com

Website 網址: www.suncreation.com

G. Event and Action Plan

Event and Action Plan for Construction Noise

Event	Action			
	ET	IEC	ER	Contractor
Action Level	<ol style="list-style-type: none"> 1. Notify ER, IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the IEC and Contractor on remedial measures required; 5. Increase monitoring frequency to check mitigation effectiveness. 	<ol style="list-style-type: none"> 1. Review the investigation results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Advise the ER on the effectiveness of the proposed remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to IEC and ER; 2. Implement noise mitigation proposals.
Limit Level	<ol style="list-style-type: none"> 1. Inform IEC, ER, Contractor and EPD; 2. Repeat measurements to confirm findings; 3. Increase monitoring frequency; 4. Identify source and investigate the cause of exceedance; 5. Carry out analysis of Contractor's working procedures; 6. Discuss with the IEC, Contractor and ER on remedial measures required; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures; 5. If exceedance continues, consider stopping the Contractor to continue working on that portion of work which causes the exceedance until the exceedance is abated. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC and ER within 3 working days of notification; 3. Implement the agreed proposals; 4. Submit further proposal if problem still not under control; 5. Stop the relevant portion of works as instructed by the ER until the exceedance is abated.

Event and Action Plan for Landscape and Visual Impact during Construction Phase

Action Level	Environmental Team Leader (ETL)	Independent Environmental Checker (IEC)	Engineer's Representative (ER)	Contractor
Non-conformity on one occasion	<ol style="list-style-type: none"> 1. Identify source 2. Inform the IEC and the ER 3. Discuss remedial actions with the IEC, the ER and the Contractor 4. Monitor remedial action until rectification has been completed 	<ol style="list-style-type: none"> 1. Check report 2. Check the Contractor's working method 3. Discuss with the ER and the Contractor on possible remedial measures 4. Advise the ER on effectiveness of proposed remedial measures 	<ol style="list-style-type: none"> 1. Notify the Contractor 2. Ensure remedial measures are properly implemented 	<ol style="list-style-type: none"> 1. Amend working methods 2. Rectify damage and undertake remedial measures or any necessary replacement
Repeated Non-conformity	<ol style="list-style-type: none"> 1. Identify source 2. Inform the IEC and the ER 3. Increase monitoring (site audit) frequency 4. Discuss remedial actions with the IEC, the ER and the Contractor 5. Monitor remedial actions until rectification has been completed 6. If exceedance stops, cease additional monitoring (site audit) 	<ol style="list-style-type: none"> 1. Check report 2. Check the Contractor's working method 3. Discuss with the ER and the Contractor on possible remedial measures 4. Advise the ER on effectiveness of proposed remedial measures 5. Supervise implementation of remedial measures 		

H. Impact Monitoring Schedule

APRIL 2019

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday																																																																																										
	1 Noise Monitoring	2	3 ET weekly site inspection	4	5	6																																																																																										
7	8	9	10	11 Noise Monitoring	12 ET weekly site inspection Landscape and Visual Monitoring	13																																																																																										
14	15	16	17 Noise Monitoring	18 ET weekly site inspection Ecological Monitoring	19	20																																																																																										
21	22	23 Noise Monitoring	24	25	26 ET weekly site inspection Landscape and Visual Monitoring	27																																																																																										
28	29 Noise Monitoring	30																																																																																														
		March 2019 <table border="1"> <thead> <tr><th>S</th><th>M</th><th>T</th><th>W</th><th>Th</th><th>F</th><th>Sa</th></tr> </thead> <tbody> <tr><td></td><td></td><td></td><td></td><td></td><td>1</td><td>2</td></tr> <tr><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr> <tr><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td></tr> <tr><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td></tr> <tr><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr> <tr><td>31</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table>	S	M	T	W	Th	F	Sa						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31							May 2019 <table border="1"> <thead> <tr><th>S</th><th>M</th><th>T</th><th>W</th><th>Th</th><th>F</th><th>Sa</th></tr> </thead> <tbody> <tr><td></td><td></td><td></td><td></td><td>1</td><td>2</td><td>3</td><td>4</td></tr> <tr><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td></tr> <tr><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td></tr> <tr><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td></tr> <tr><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td><td>31</td><td></td></tr> </tbody> </table>	S	M	T	W	Th	F	Sa					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		Notes: © 2016 Vertex42 LLC Calendar Template by Vertex42.com
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I. Noise Monitoring Data

Noise Monitoring Data - Summary of Construction Noise Monitoring Results (30mins), dB(A)

NM1A - Slope near the Victoria Shanghai Academy							
Date	Time		Noise Levels, dB(A)			Wind Speed (ms-1)	Limit Level for L _{eq} (30min/dB(A)) ⁽²⁾
	Start	Finish	Corrected L _{eq} (30min) ⁽¹⁾	Corrected L ₉₀ ⁽¹⁾	Corrected L ₁₀ ⁽¹⁾		
01-Apr-19	09:55	10:25	60.8	58.7	62.8	0.5	70
11-Apr-19	09:00	09:30	60.3	57.0	64.1	0.3	70
17-Apr-19	10:00	10:30	59.3	57.7	60.8	0.5	70
23-Apr-19	09:55	10:25	61.0	57.5	63.8	0.9	70
29-Apr-19	10:10	10:40	60.9	55.6	64.1	0.5	70

NM2 - Hong Kong Juvenile Care Centre							
Date	Time		Noise Levels, dB(A)			Wind Speed (ms-1)	Limit Level for L _{eq} (30min/dB(A)) ⁽²⁾
	Start	Finish	L _{eq} (30min)	L ₉₀	L ₁₀		
01-Apr-19	09:12	09:42	52.4	50.4	54.5	0.5	70
11-Apr-19	10:55	11:25	53.1	51.8	54.1	0.3	70
17-Apr-19	09:20	09:50	50.1	47.4	51.8	0.5	70
23-Apr-19	09:15	09:45	51.0	46.8	53.5	0.9	70
29-Apr-19	09:29	09:59	51.6	45.6	54.4	0.5	70

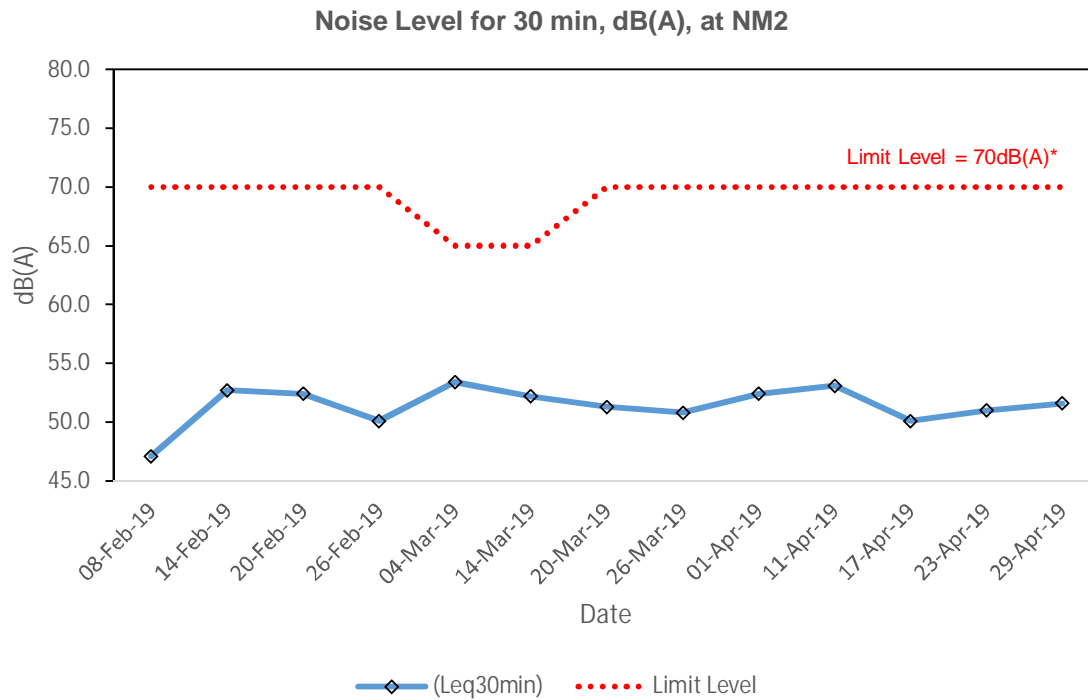
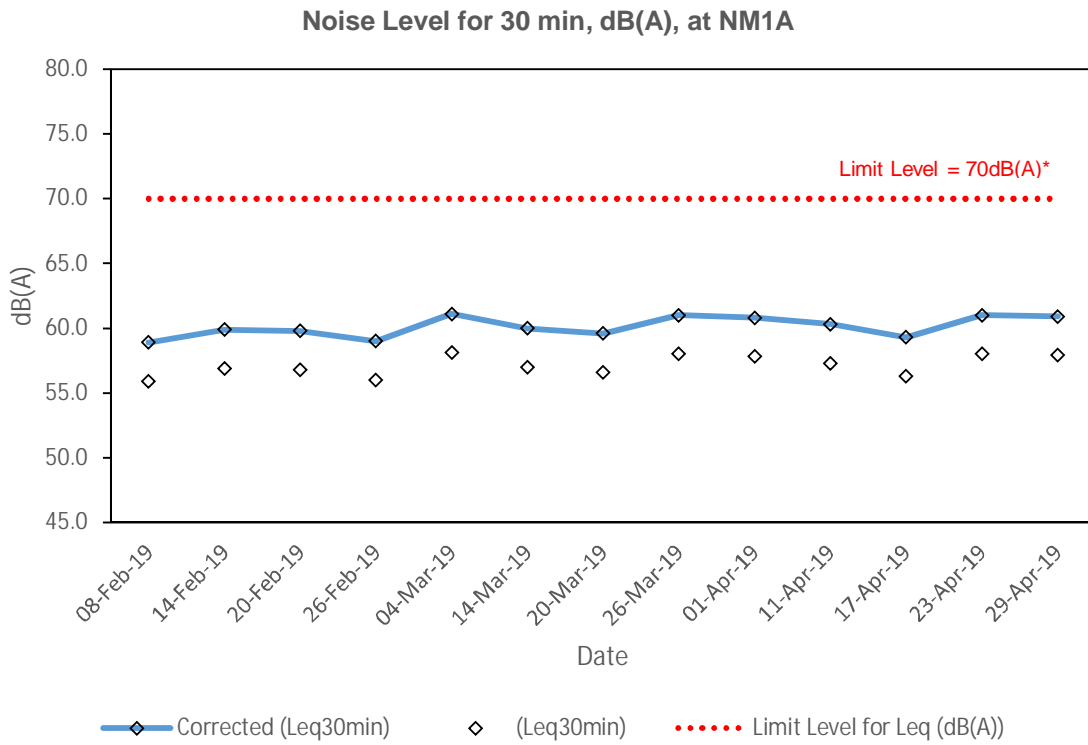
Notes:

(1) A free field correction of +3dB(A) has been made to these measurements as specified in the EM&A Manual and EPD guidelines.

(2) Acceptable Noise Levels for school should be reduced to 65 dB(A) during examination period.

J. Graphical Plots for Noise Monitoring Data

Graphical Plot for Noise Monitoring Data (April 2019)

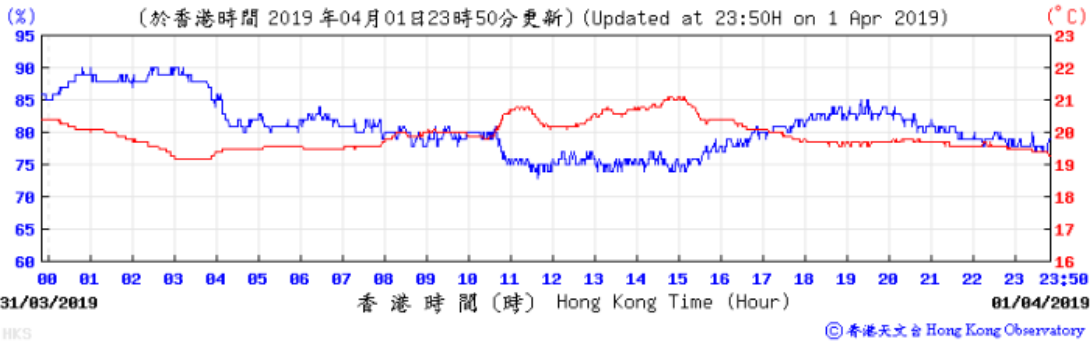


K. Meteorological Data

Wong Chuk Hang Station

01/04/2019

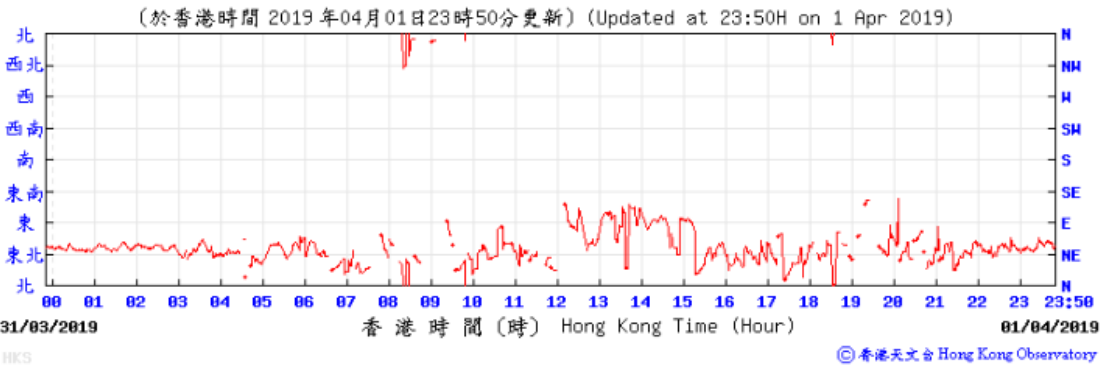
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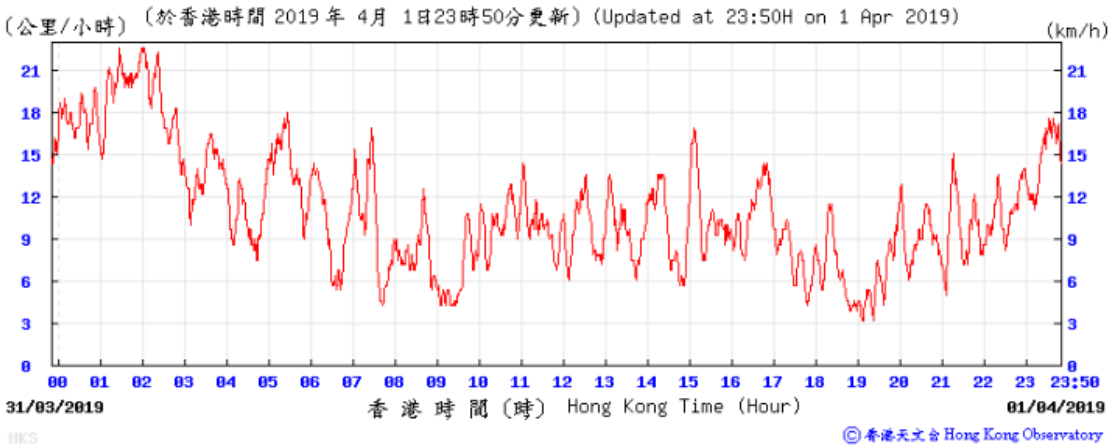
Pressure:



Wind Direction:

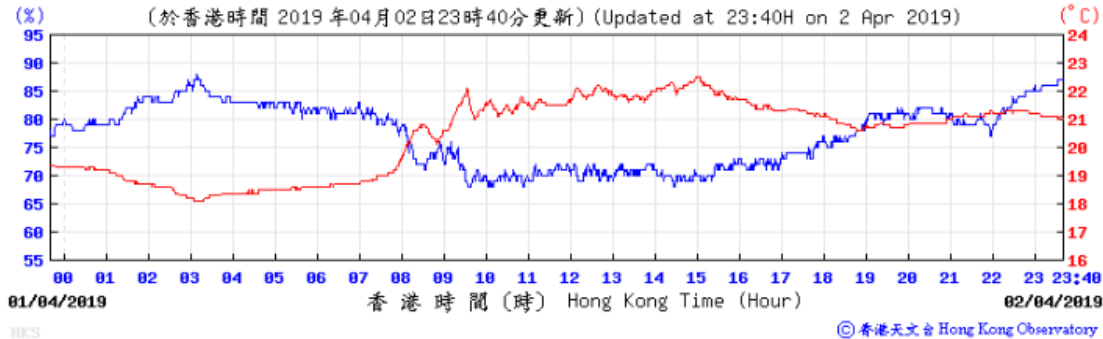


Wind Speed:



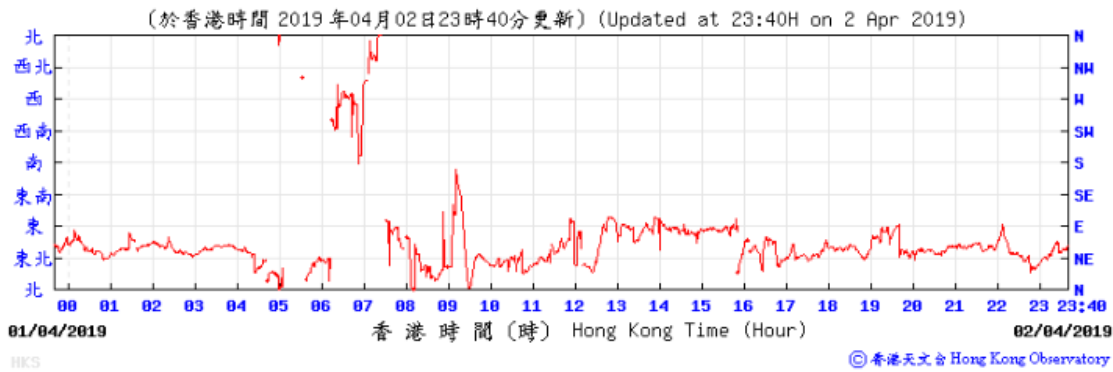
02/04/2019

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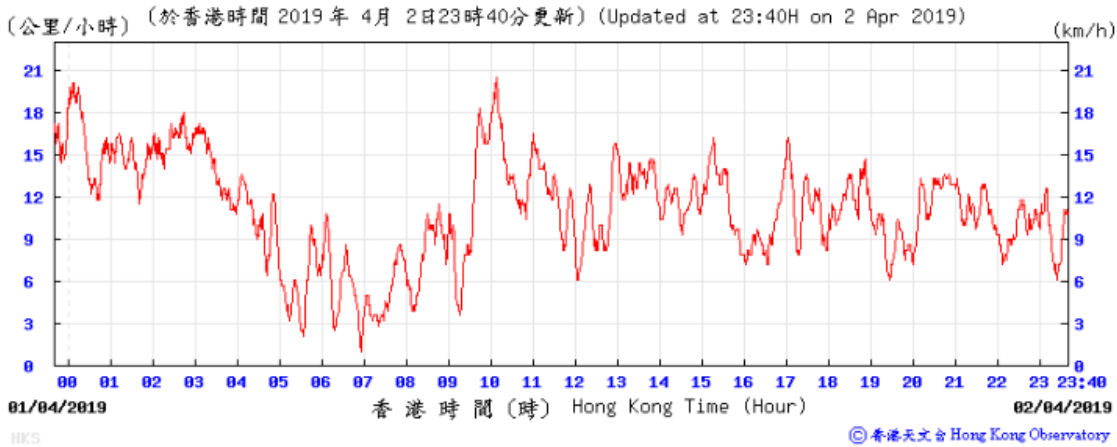


Pressure:

Wind Direction:

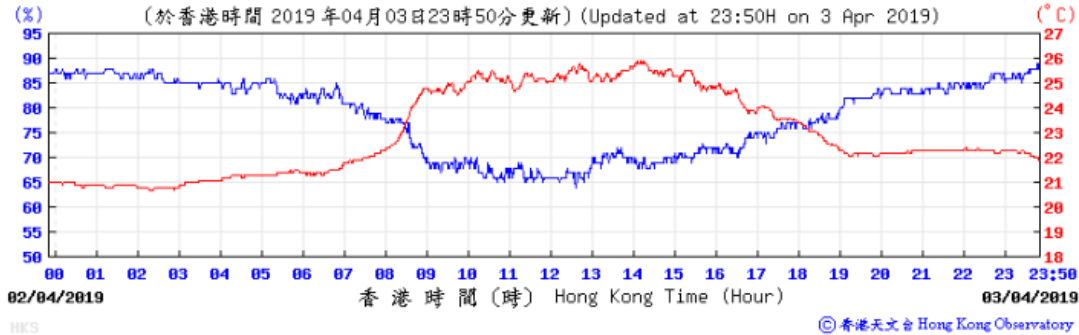


Wind Speed:



03/04/2019

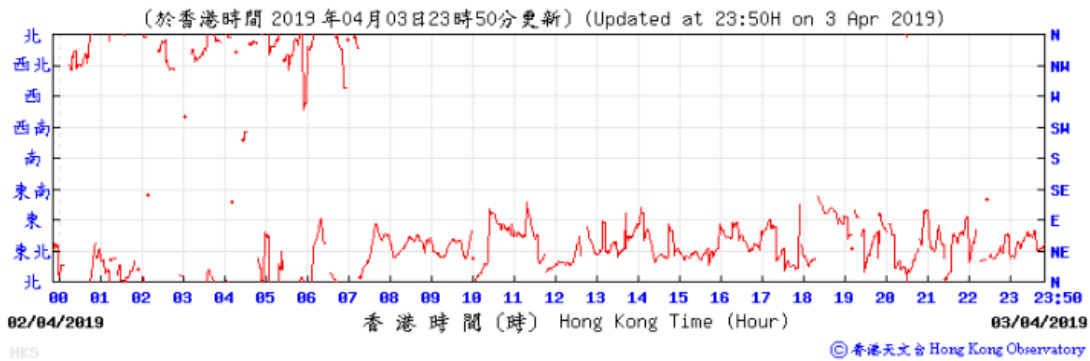
Temperature/Humidity:



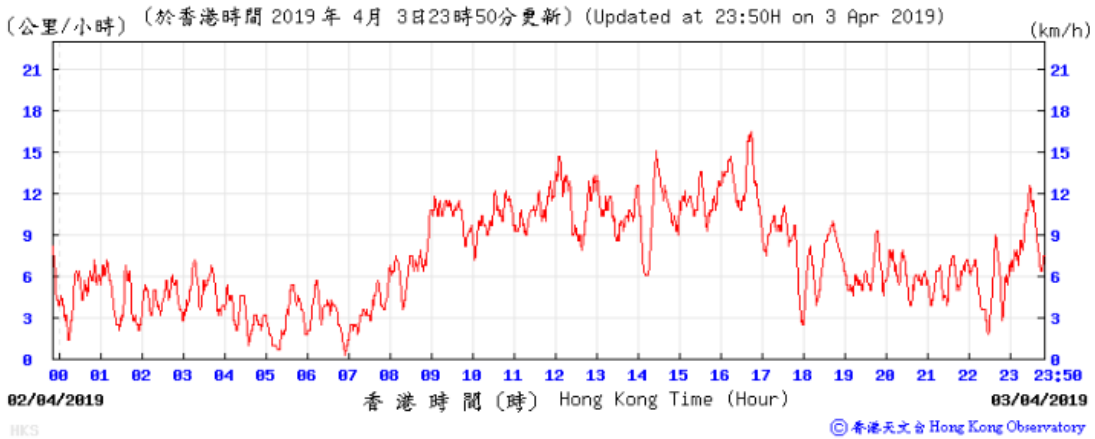
Pressure:



Wind Direction:

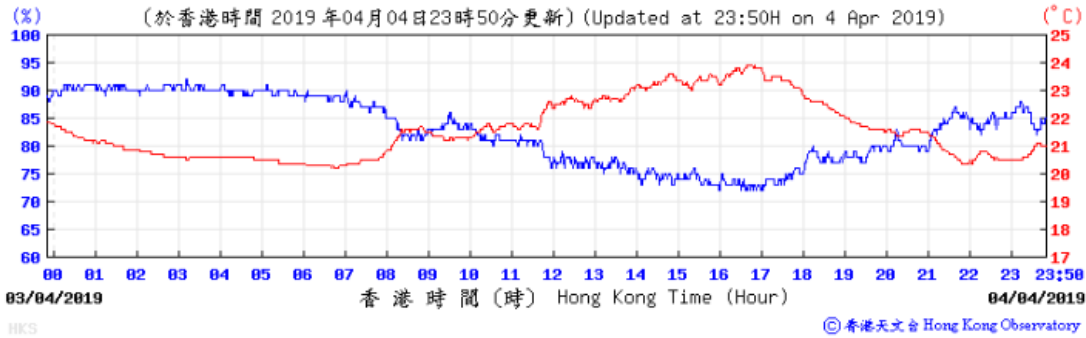


Wind Speed:



04/04/2019

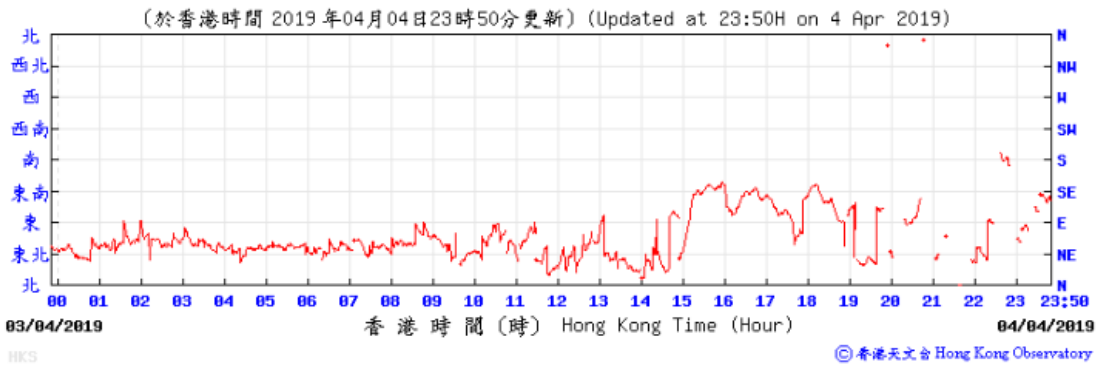
Temperature/Humidity:



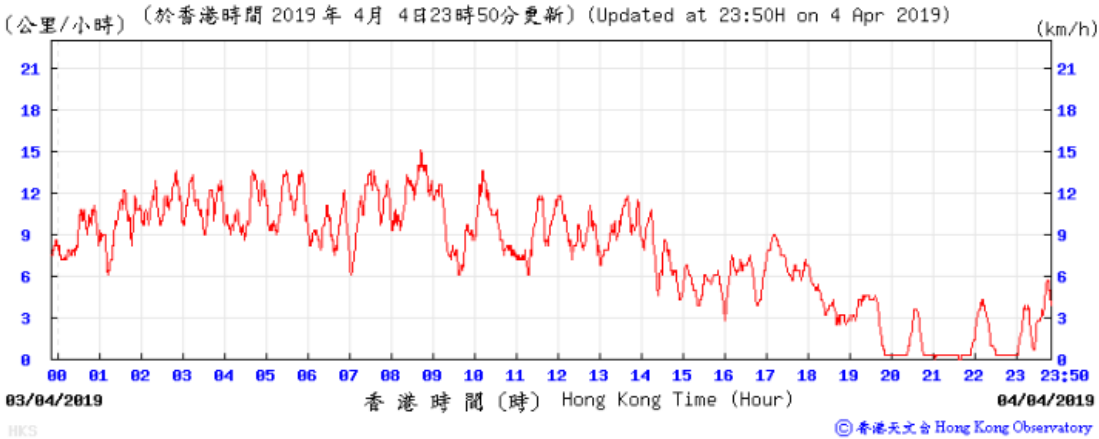
Pressure:



Wind Direction:

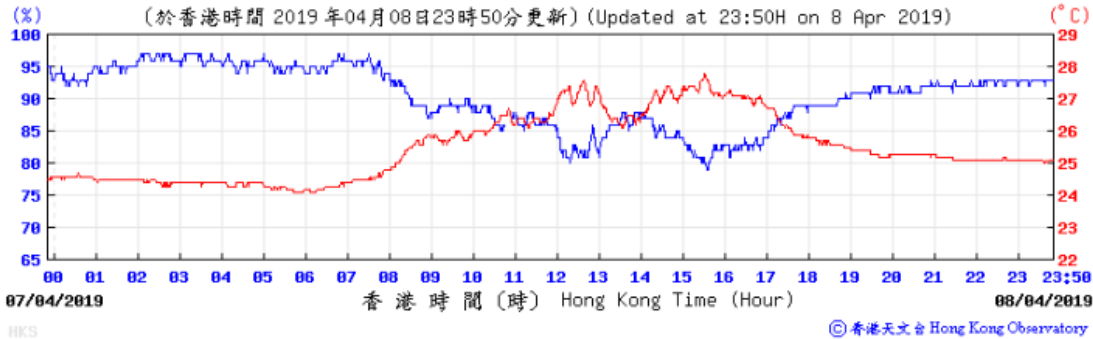


Wind Speed:



08/04/2019

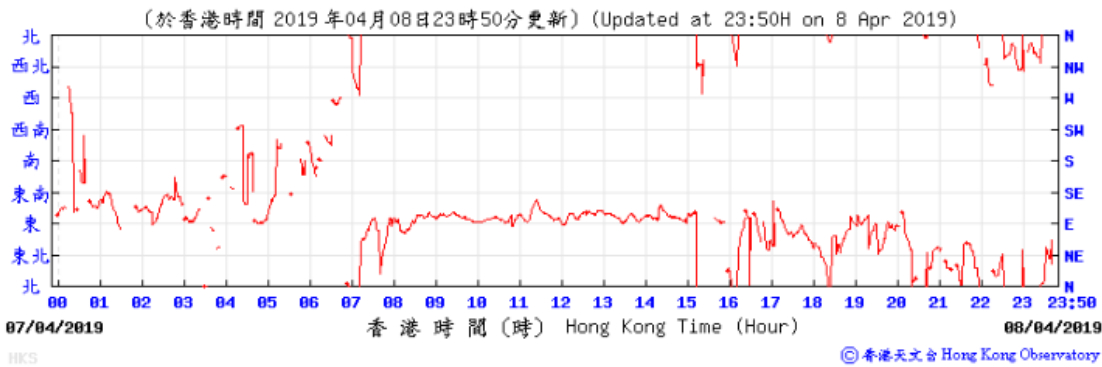
Temperature/Humidity:



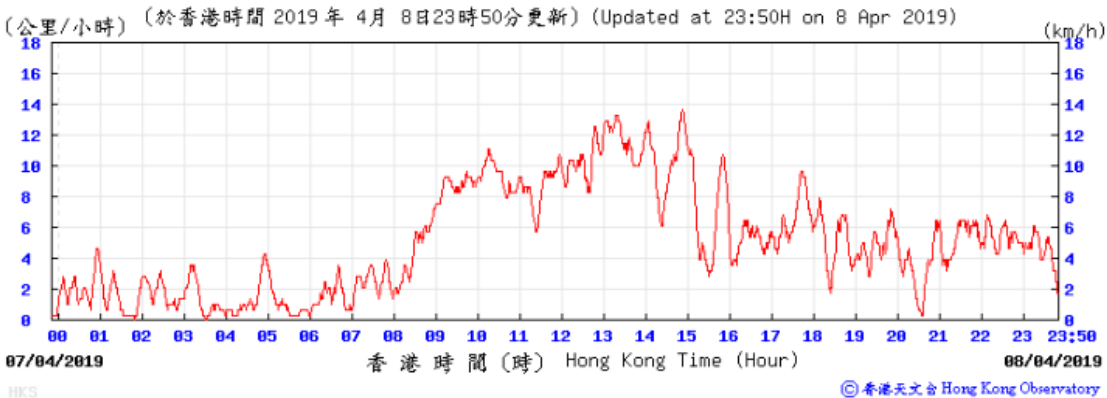
Pressure:



Wind Direction:

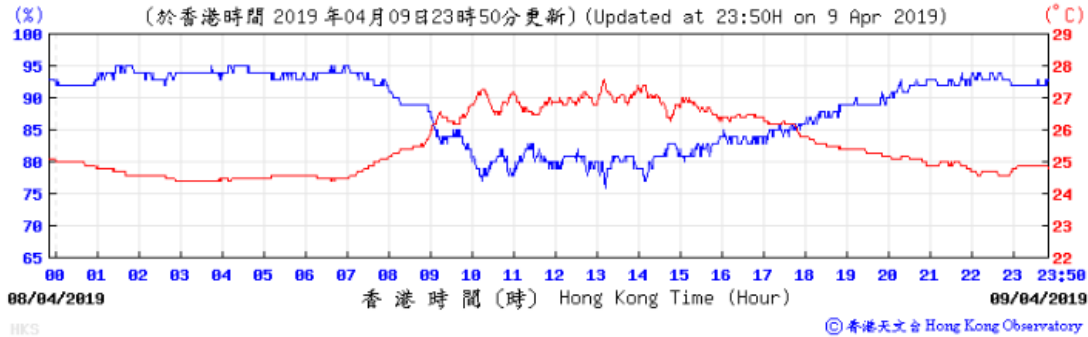


Wind Speed:



09/04/2019

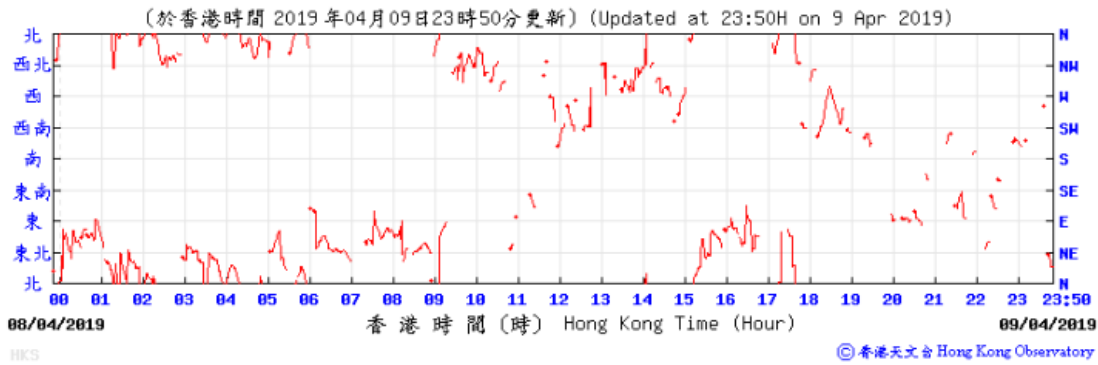
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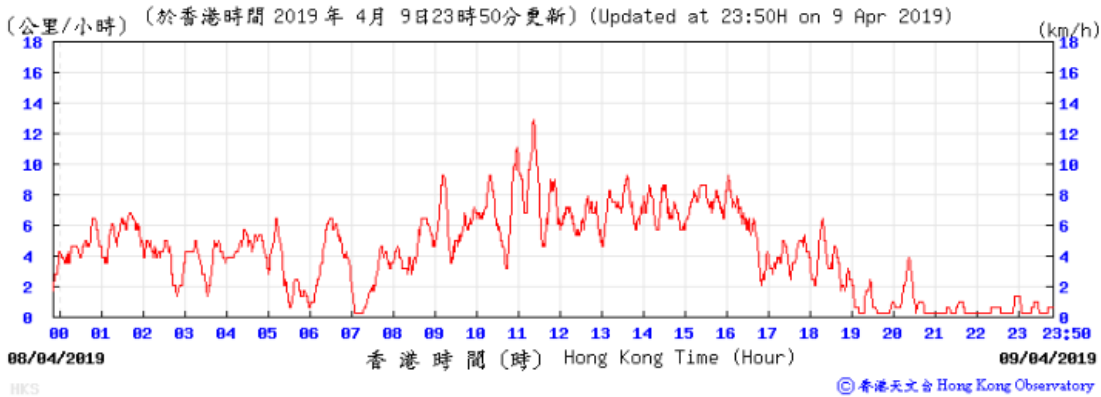
Pressure:



Wind Direction:

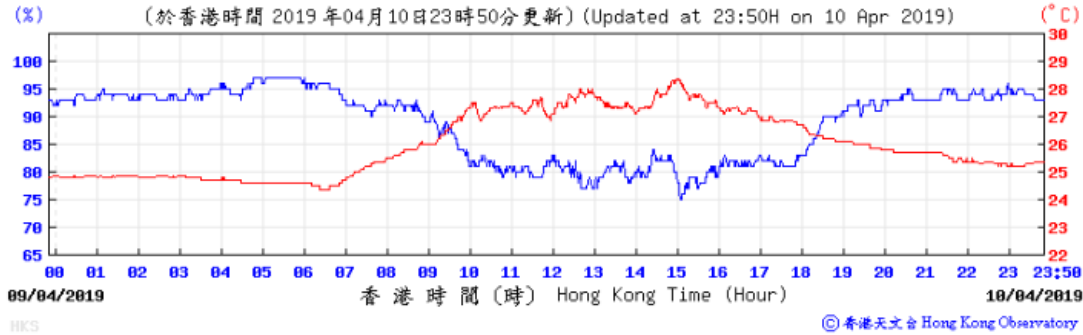


Wind Speed:



10/04/2019

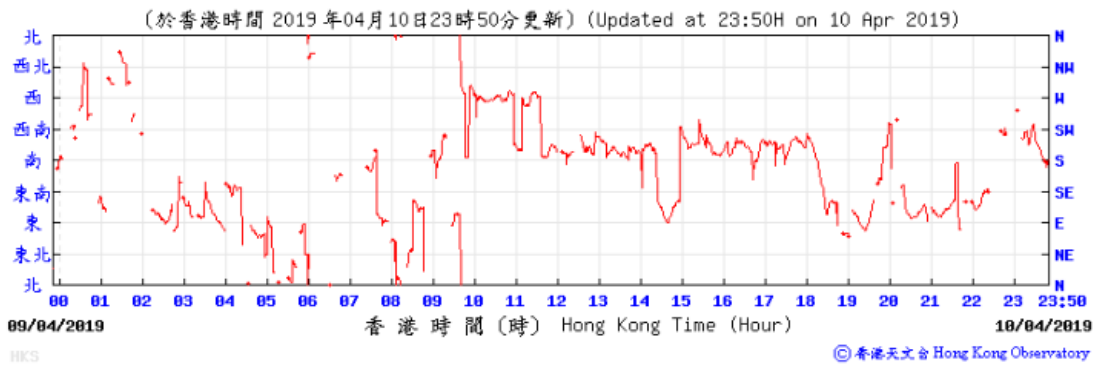
Temperature/Humidity:



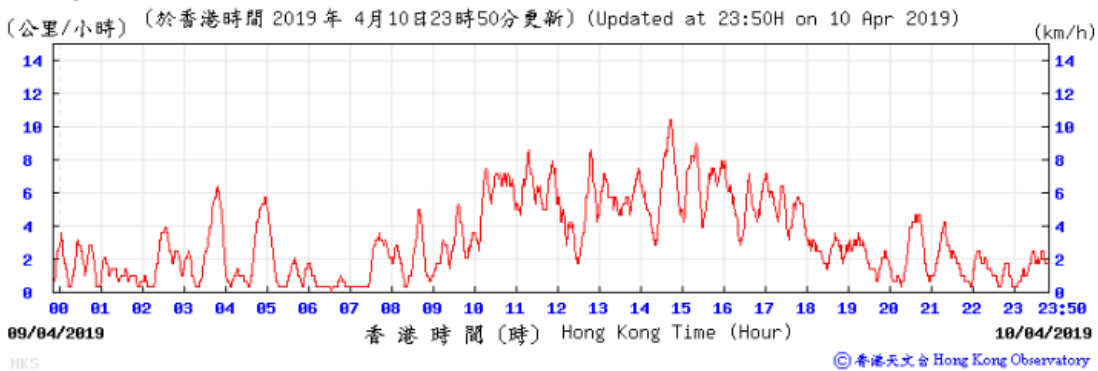
Pressure:



Wind Direction:

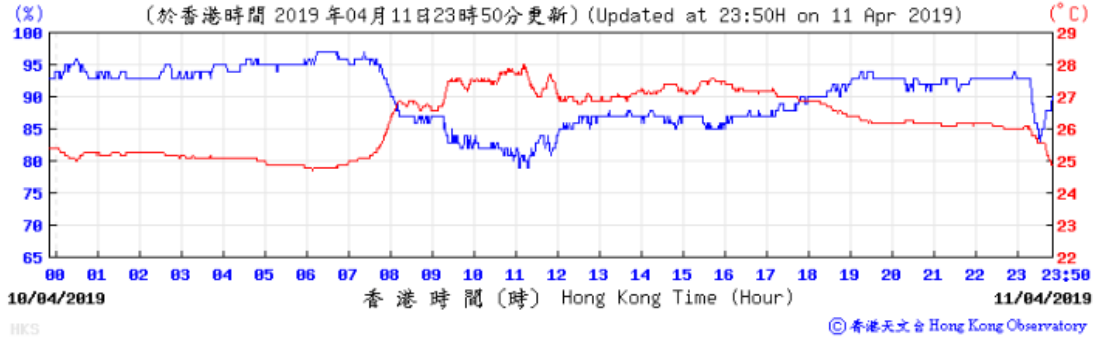


Wind Speed:



11/04/2019

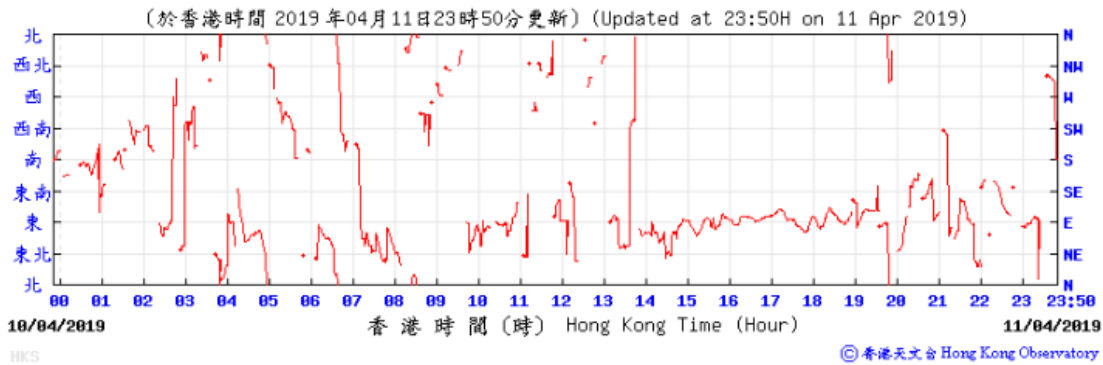
Temperature/Humidity:



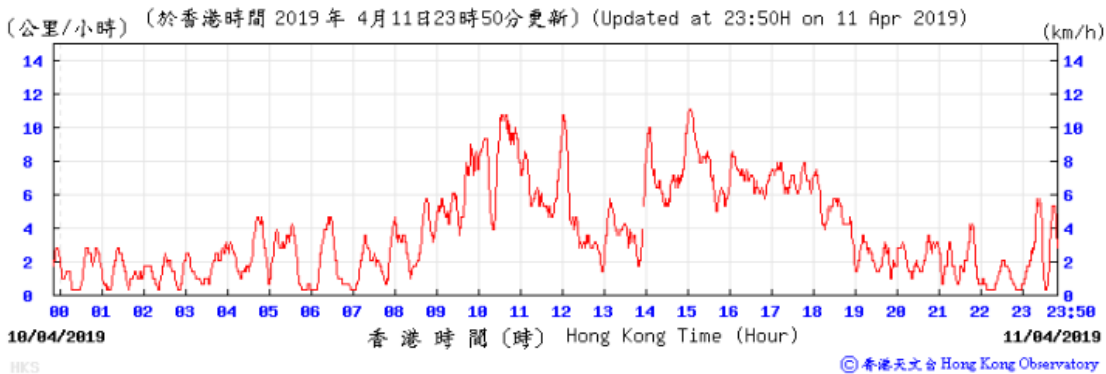
Pressure:



Wind Direction:

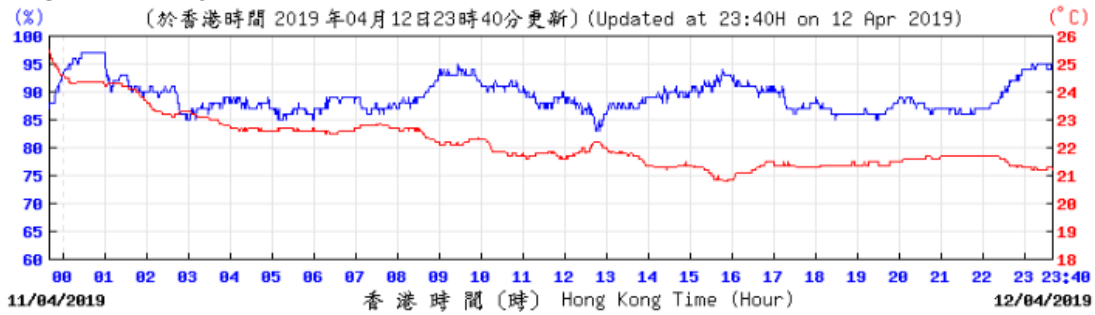


Wind Speed:



12/04/2019

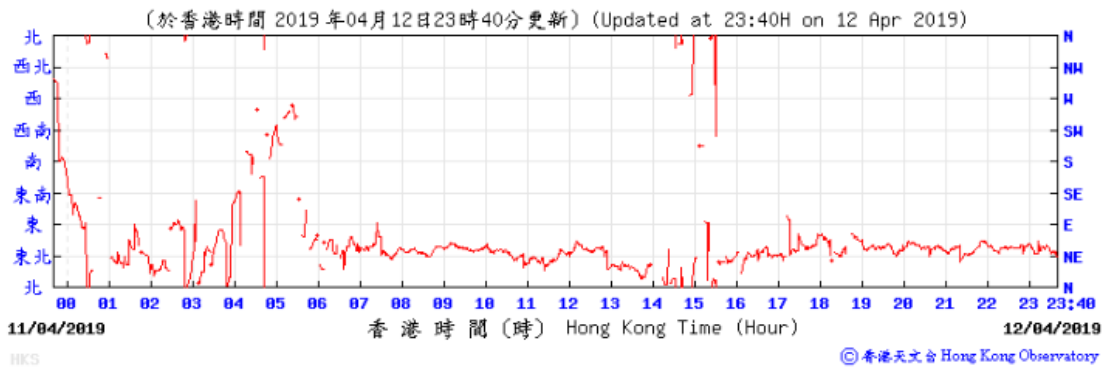
Temperature/Humidity:



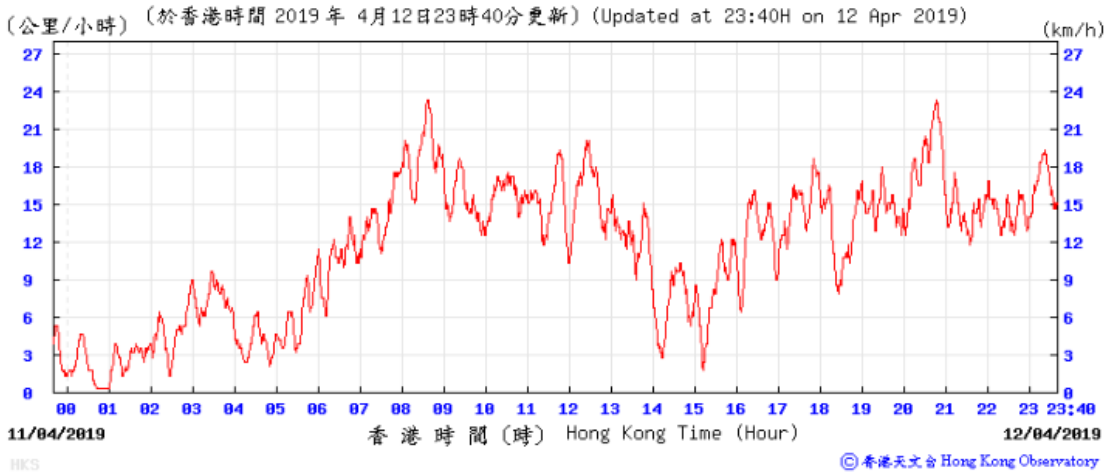
Pressure:



Wind Direction:

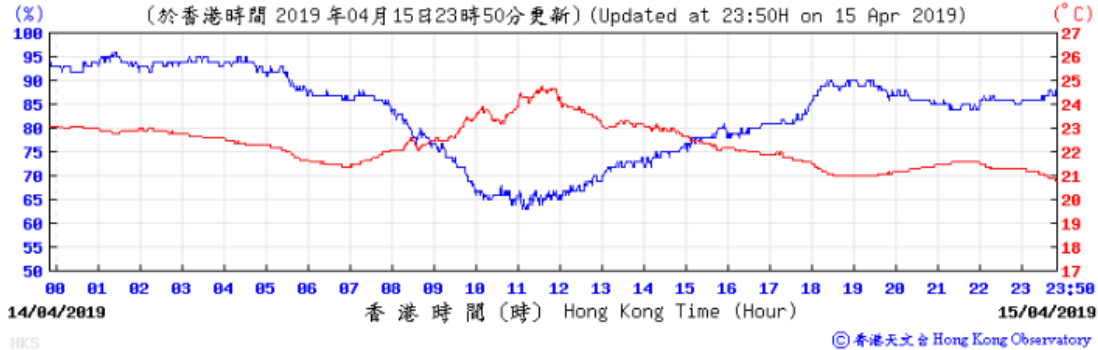


Wind Speed:



15/04/2019

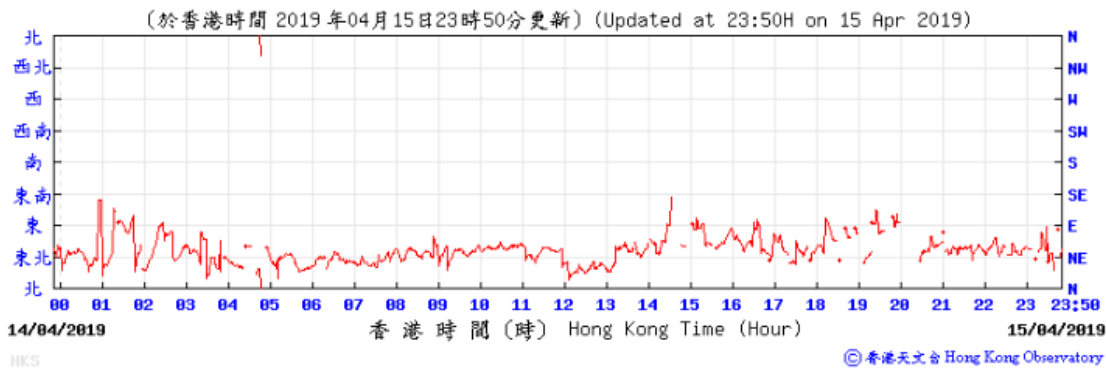
Temperature/Humidity:



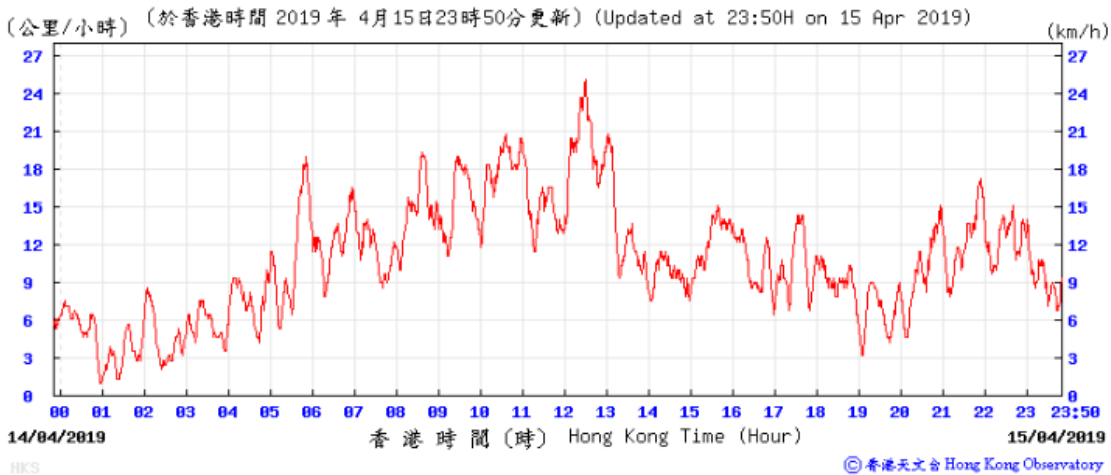
Pressure:



Wind Direction:

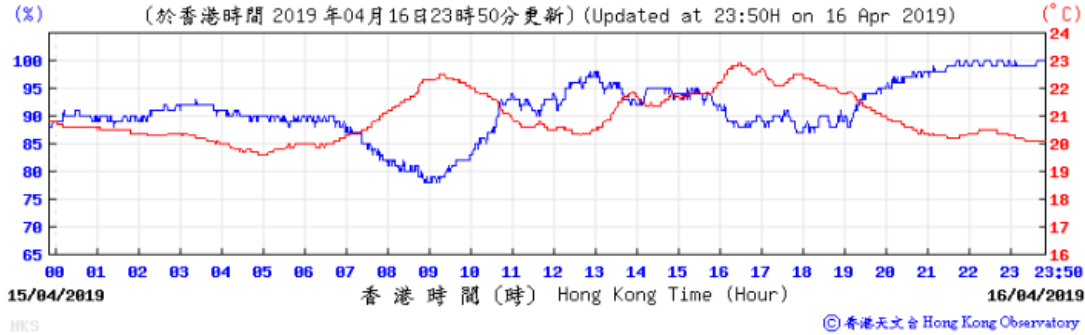


Wind Speed:



16/04/2019

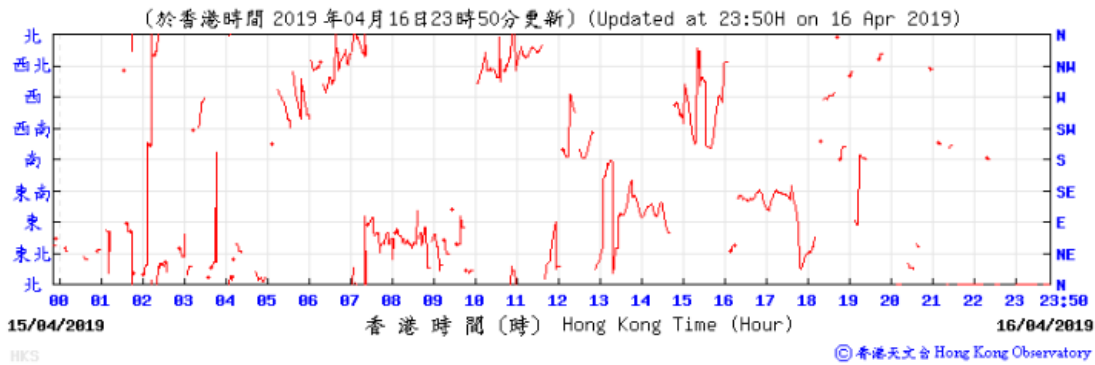
Temperature/Humidity:



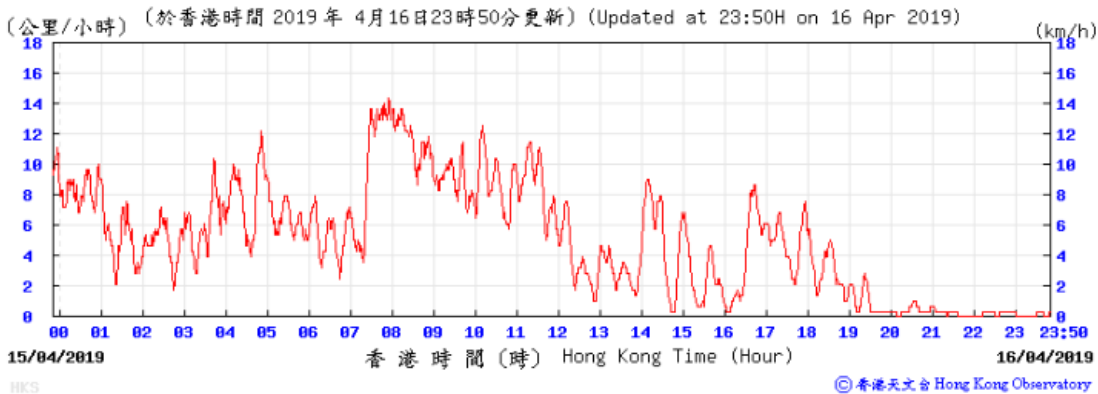
Pressure:



Wind Direction:

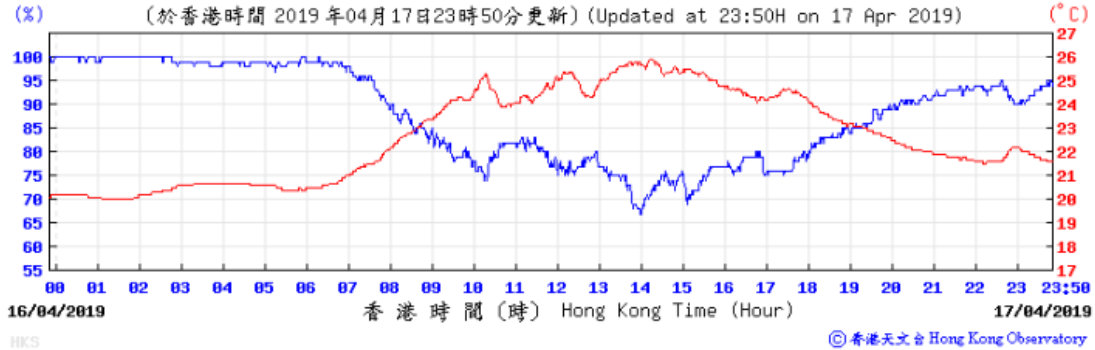


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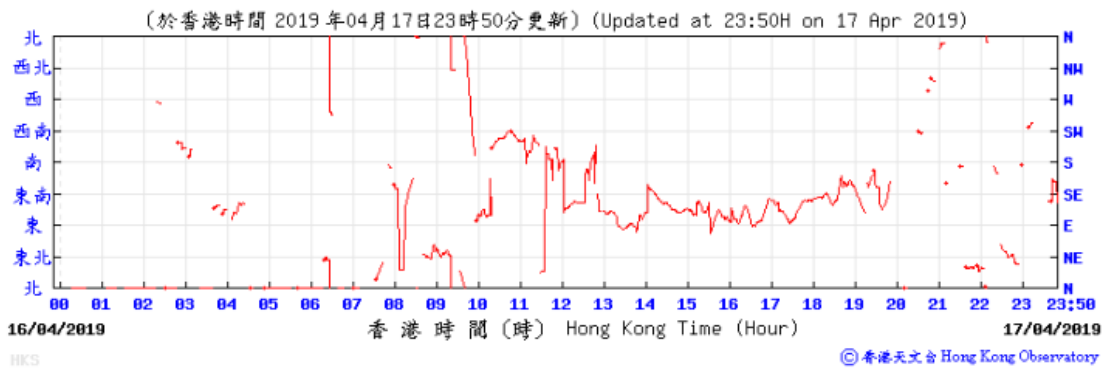
17/04/2019

Temperature/Humidity:

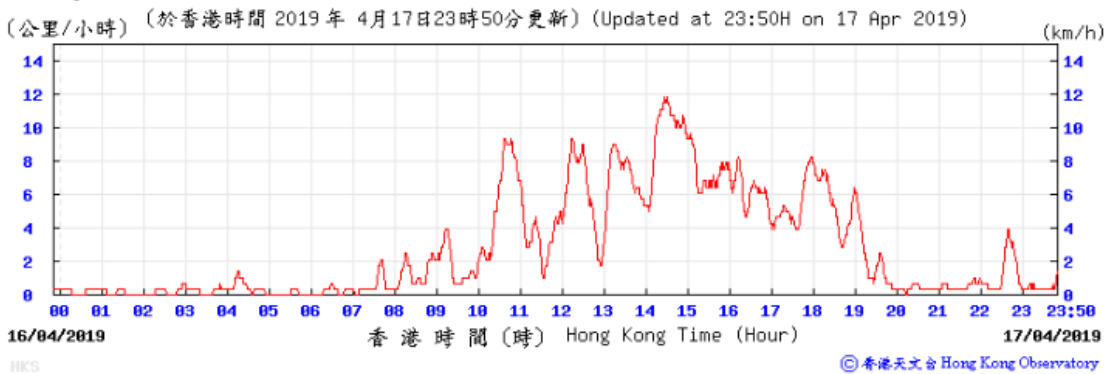


Pressure:

Wind Direction:

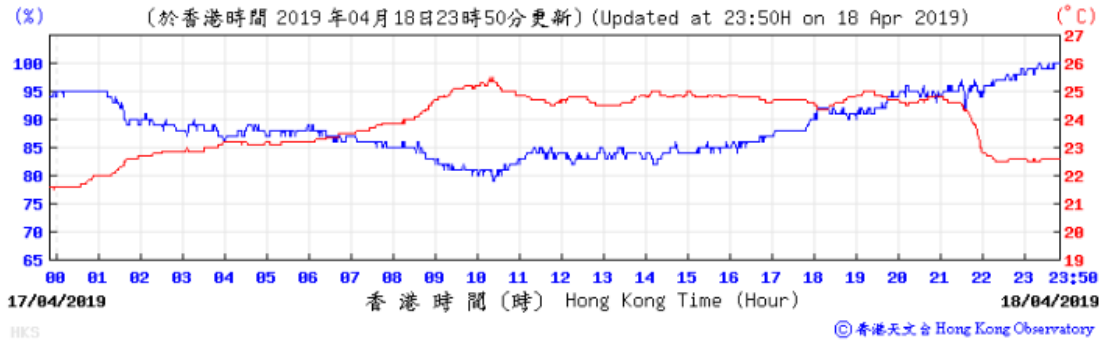


Wind Speed:



18/04/2019

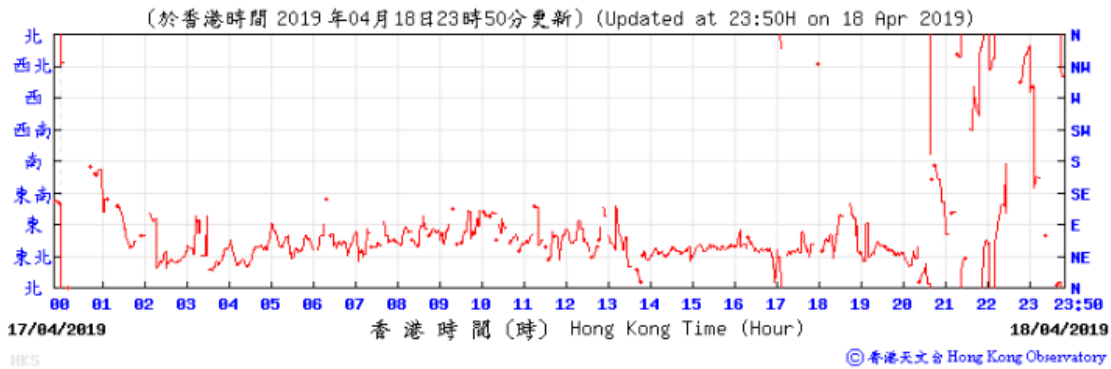
Temperature/Humidity:



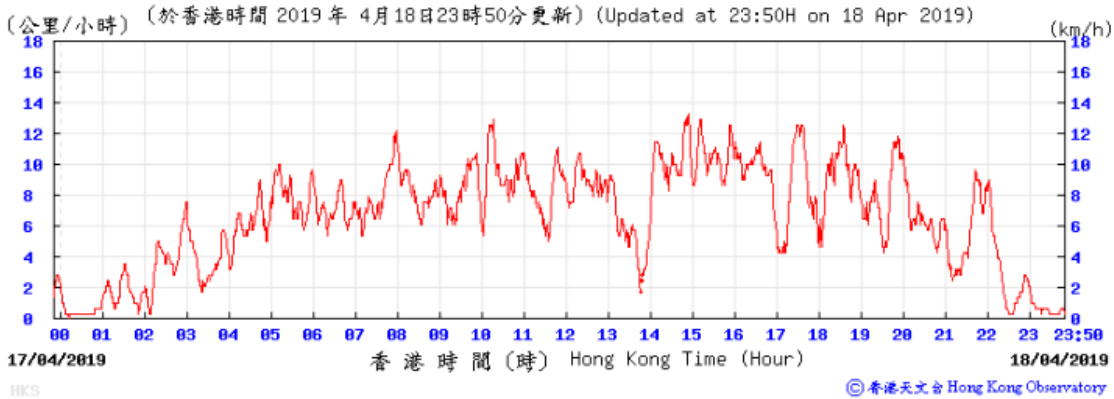
Pressure:



Wind Direction:

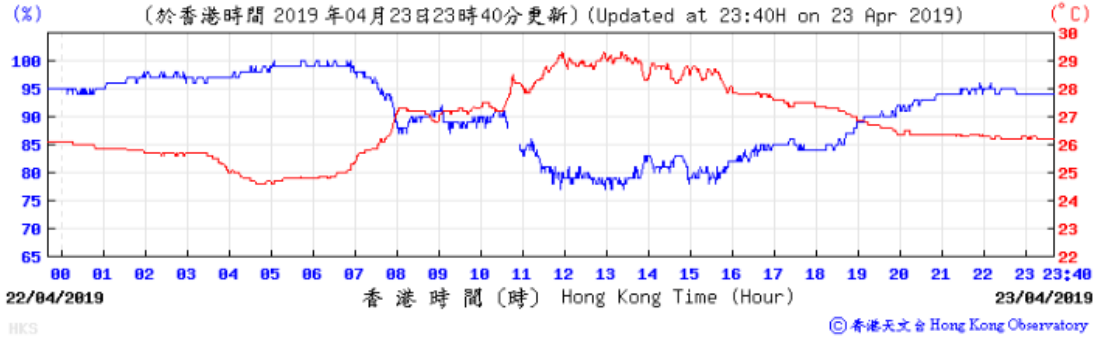


Wind Speed:



23/04/2019

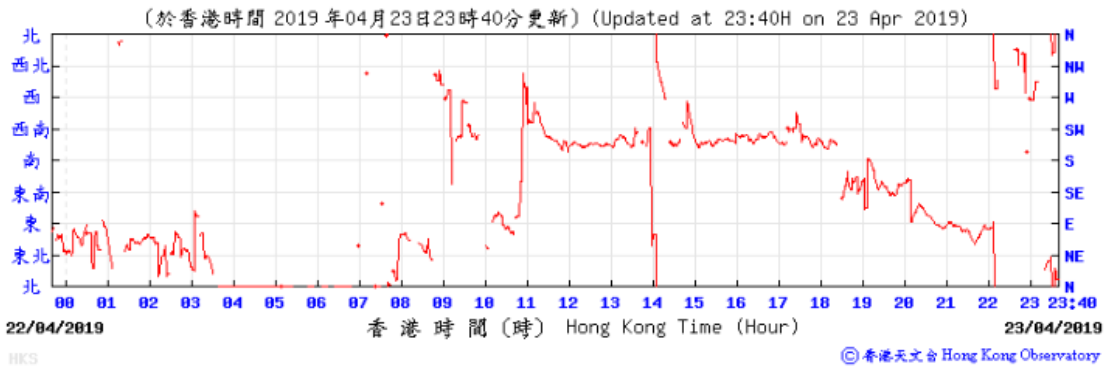
Temperature/Humidity:



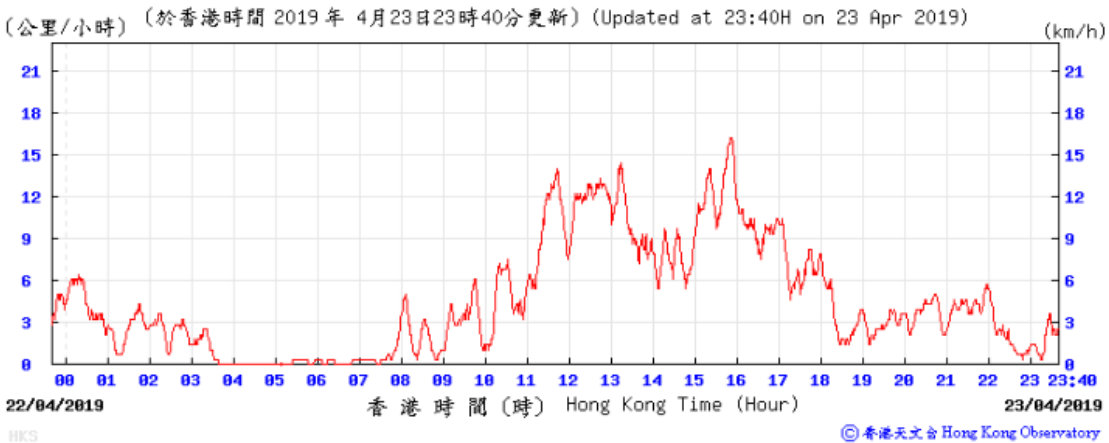
Pressure:



Wind Direction:

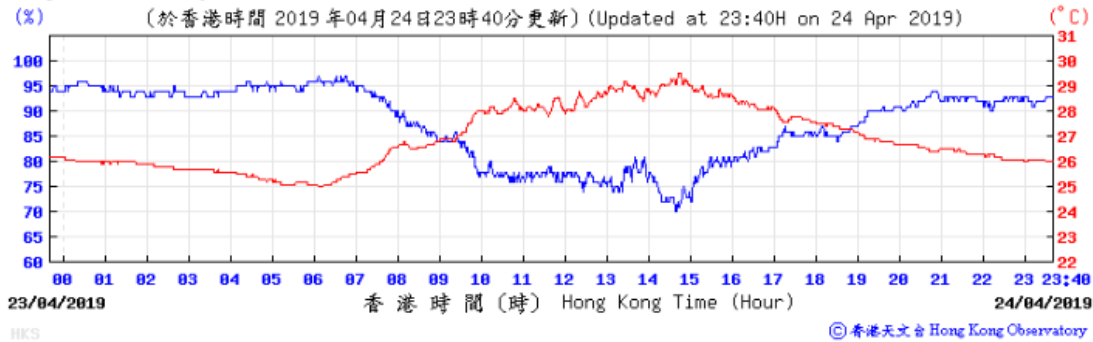


Wind Speed:



24/04/2019

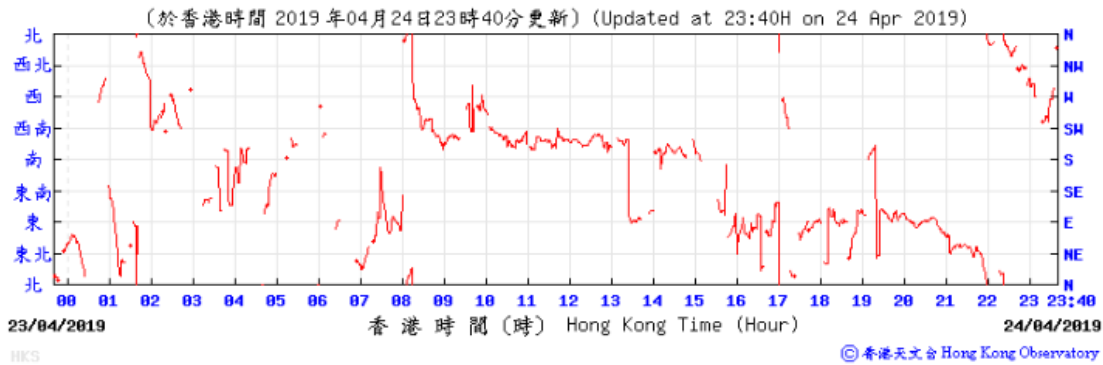
Temperature/Humidity:



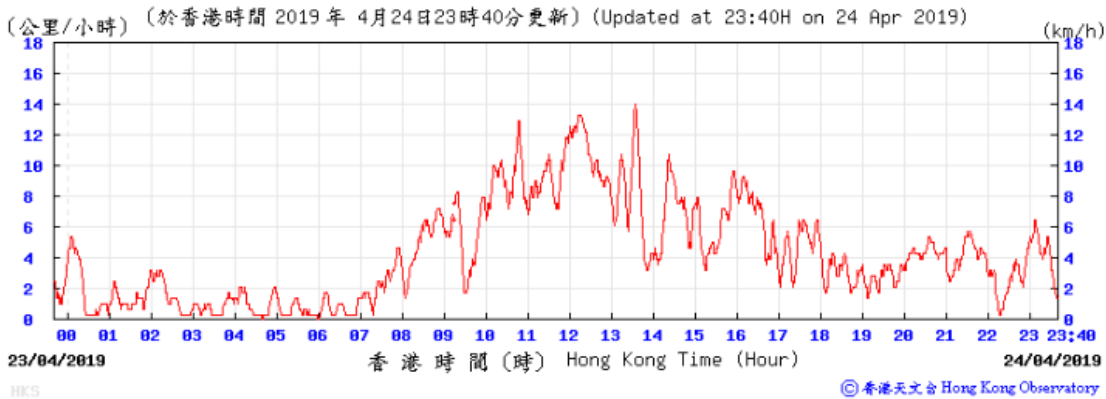
Pressure:



Wind Direction:

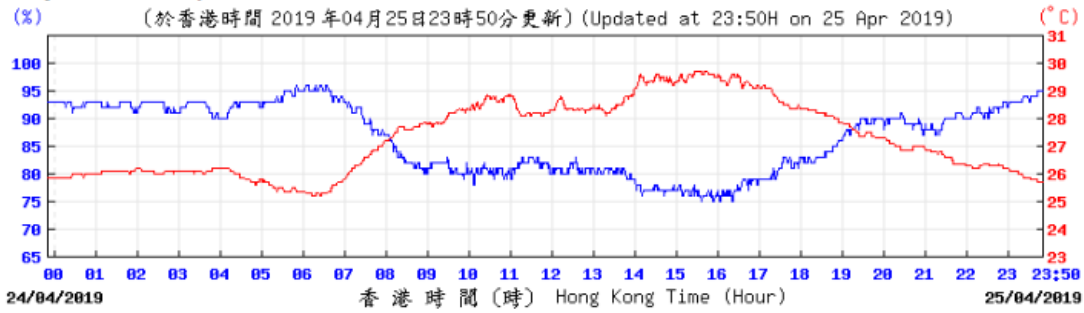


Wind Speed:



25/04/2019

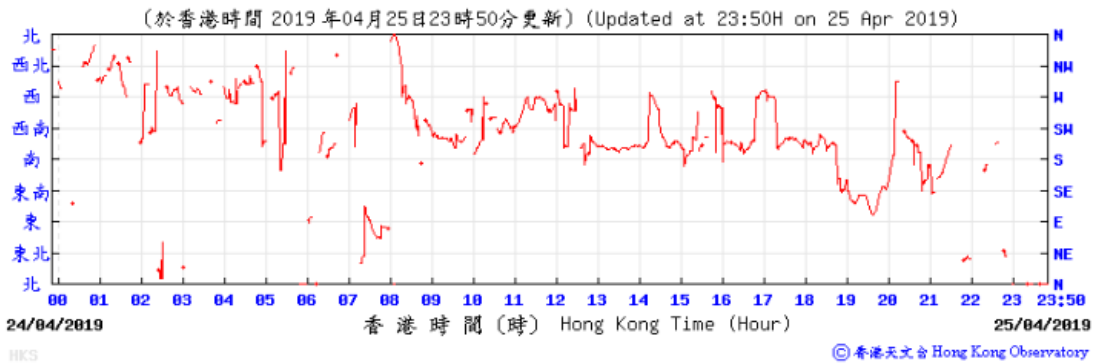
Temperature/Humidity:



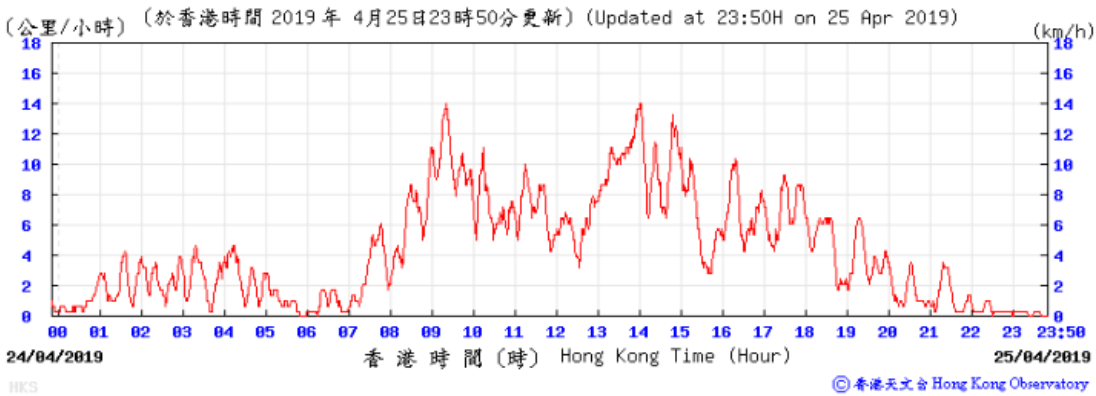
Pressure:



Wind Direction:

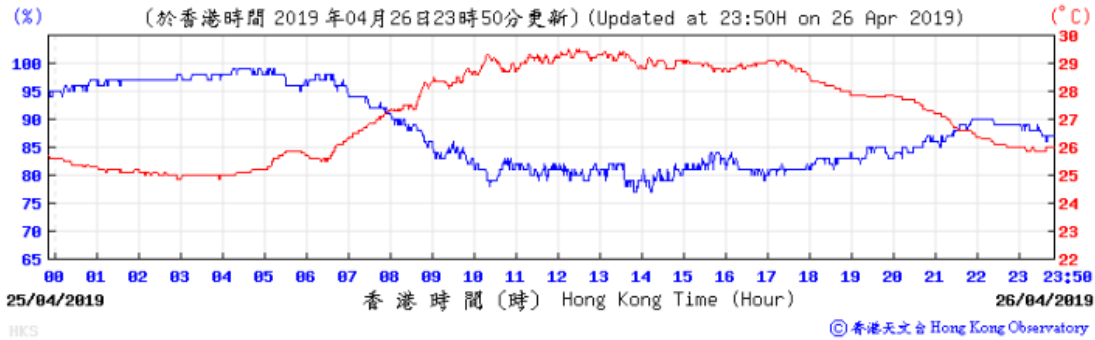


Wind Speed:



26/04/2019

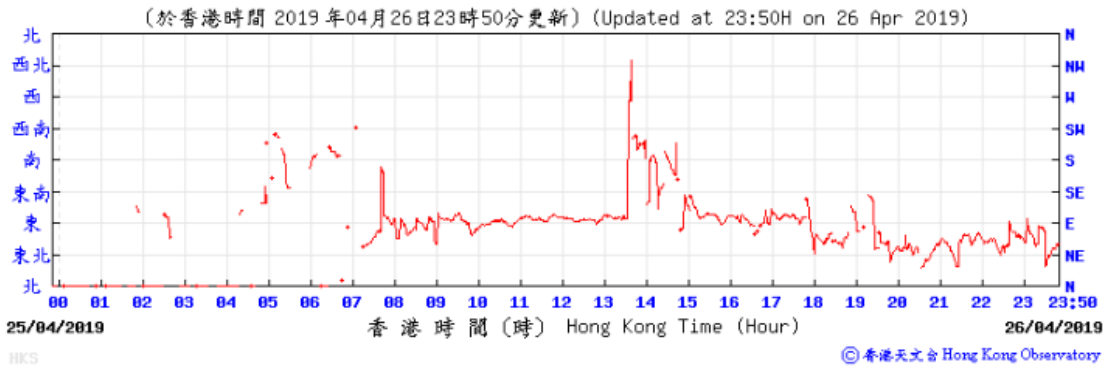
Temperature/Humidity:



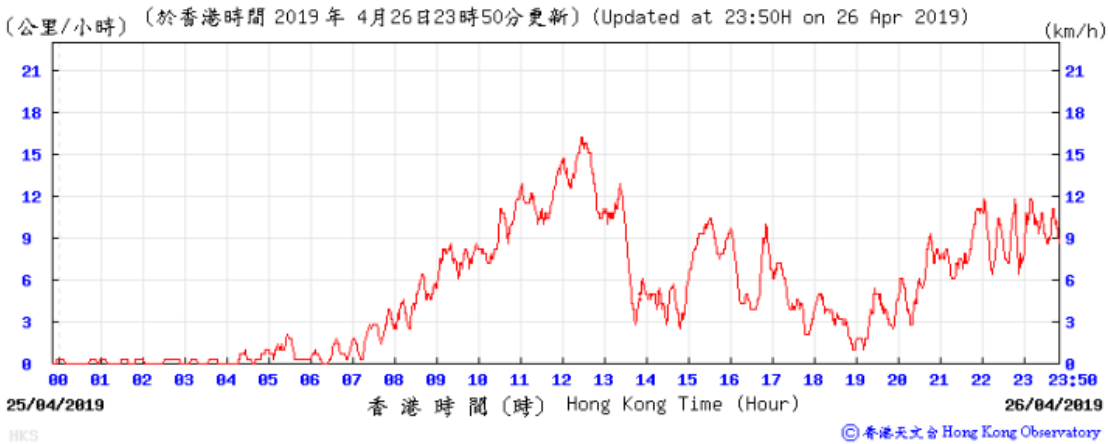
Pressure:



Wind Direction:

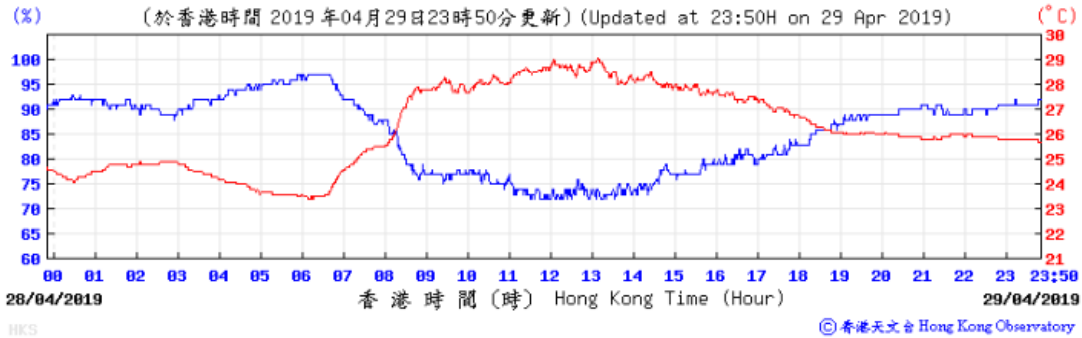


Wind Speed:



29/04/2019

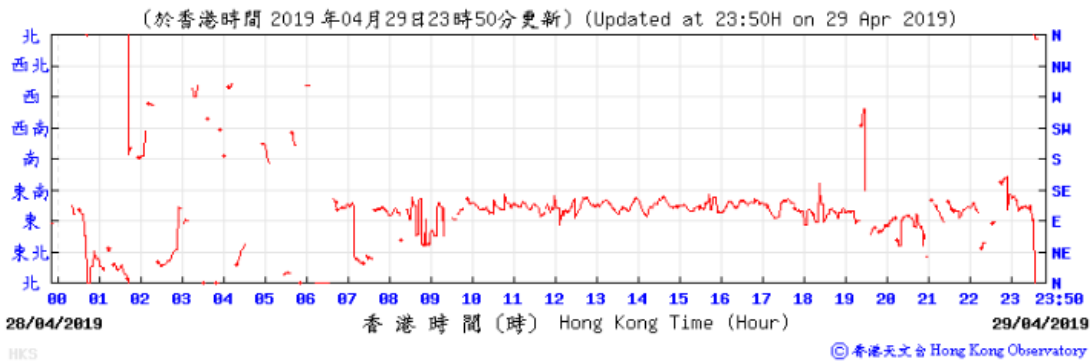
Temperature/Humidity:



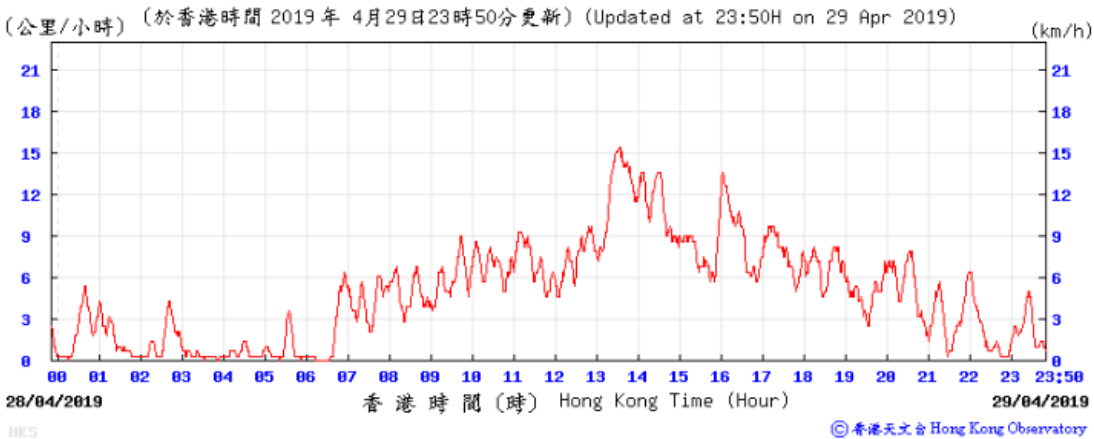
Pressure:



Wind Direction:

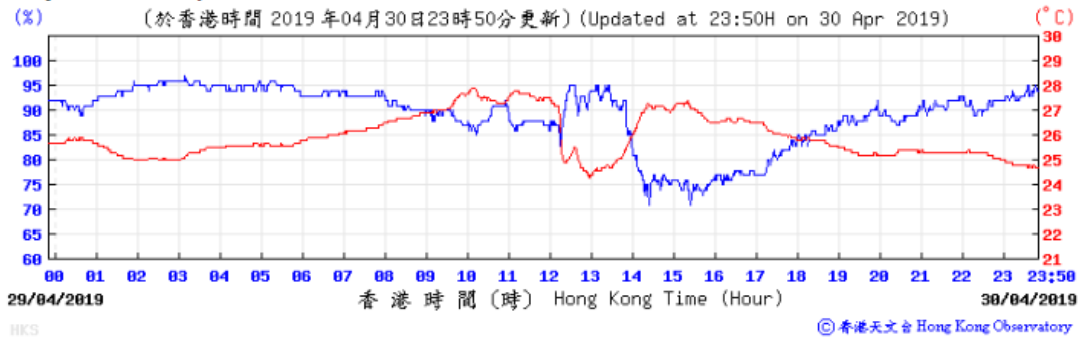


Wind Speed:



30/04/2019

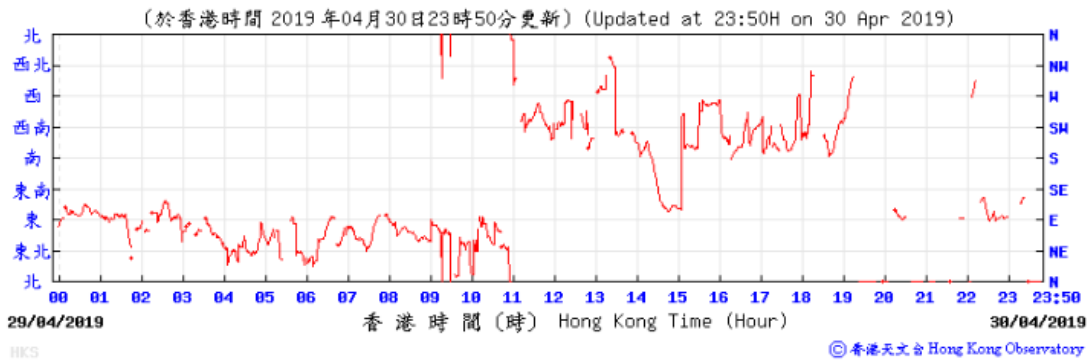
Temperature/Humidity:



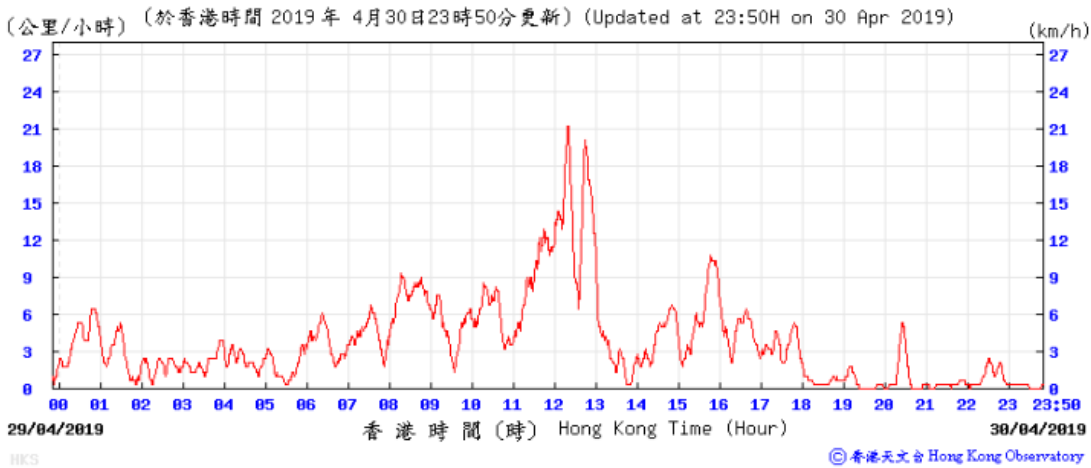
Pressure:



Wind Direction:



Wind Speed:



L. Ecological Inspection Records

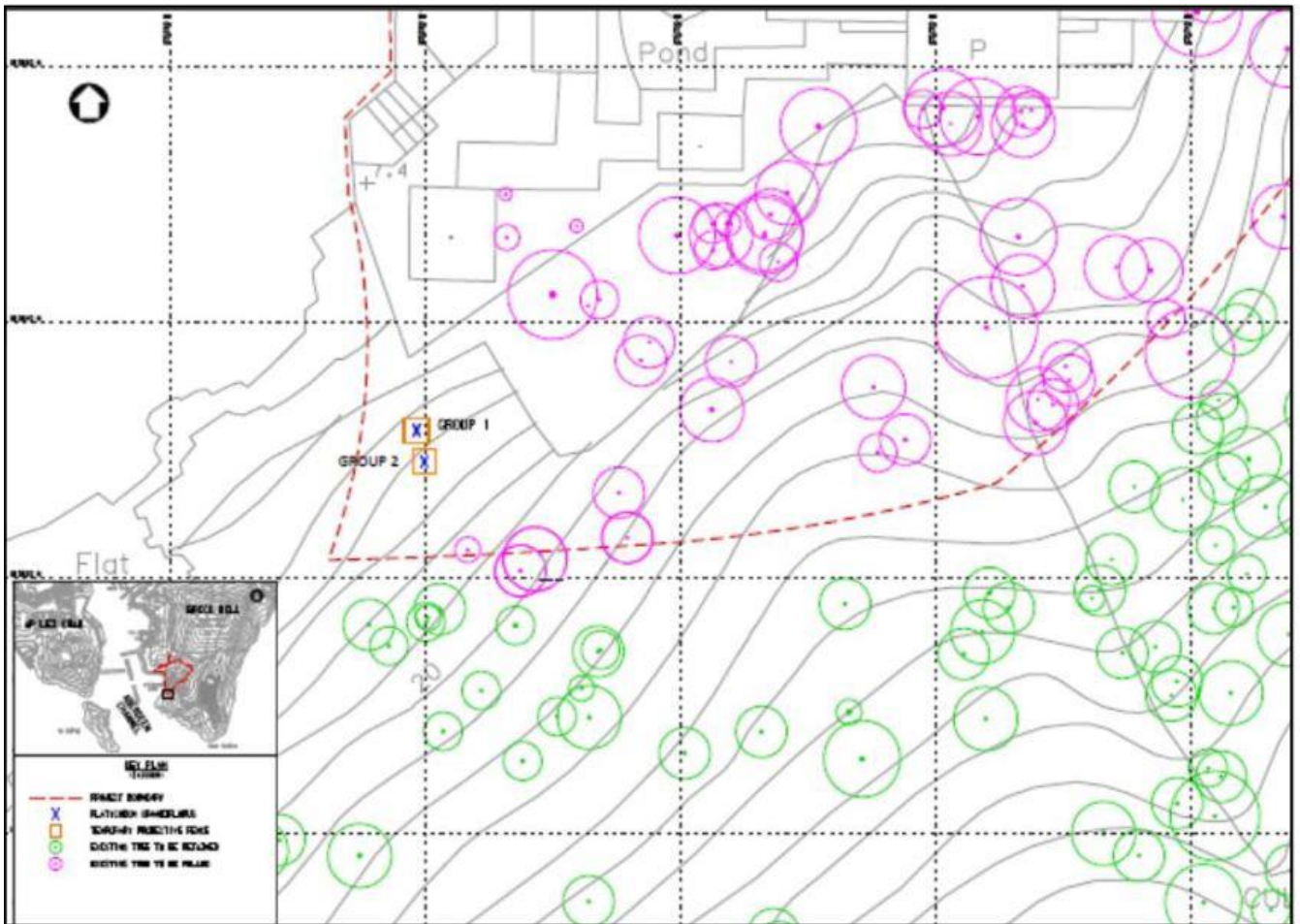


Figure 1 – Location of Two Groups of *Platycodon Grandiflorus*



Photo 1 – Group 2 of *Platycodon Grandiflorus*



Photo 2 – Current situation of fencing and warning sign

M. Waste Flow Table

Ocean Park Tai Shue Wan Water World Project Contract No. TSW-C006
Waterpark - Main Building Works
Monthly Summary Waste Flow Table for 2019 (Year)

Month	Quantity of Inert C&D Materials								Quantity of Non-inert C&D Materials (i.e. C&D Wastes)				
	Generated	Disposed				Reused			Recycled			Disposed	
	Total Quantity Generated	Disposed as Public Fill at CW-PFBP	Disposed as Public Fill at TKO137	Disposed as Public Fill at TM38	Total Quantity Disposal	Reused in the Contract	Reused in other Projects	Total Quantity Reused	Metals	Paper/ cardboard packaging	Plastics	Chemical Waste	General Refuse
Unit	(Tonne)	(Tonne)	(Tonne)	(Tonne)	(Tonne)	(Tonne)	(Tonne)	(Tonne)	(kg)	(kg)	(kg)	(kg/ L)	(Tonne)
Jan	3178.28	2548.89	214.95	14.44	2778.28	400.00	0.00	400.00	0.00	0.00	0.00	0.00	311.84
Feb	2095.76	1038.04	57.72	0.00	1095.76	1000.00	0.00	1000.00	0.00	0.00	0.00	0.00	196.96
Mar	4128.68	3746.69	81.99	0.00	3828.68	300.00	0.00	300.00	0.00	0.00	0.00	0.00	289.31
Apr	3079.71	2392.94	86.77	0.00	2479.71	600.00	0.00	600.00	0.00	0.00	0.00	0.00	257.30
May													
Jun													
SUB-TOTAL	12482.43	9726.56	441.43	14.44	10182.43	2300.00	0.00	2300.00	0.00	0.00	0.00	0.00	1055.41
Jul													
Aug													
Sep													
Oct													
Nov													
Dec													
TOTAL	12482.43	9726.56	441.43	14.44	10182.43	2300.00	0.00	2300.00	0.00	0.00	0.00	0.00	1055.41

N. Implementation Schedule for Environmental Mitigation Measures

Appendix C. Implementation Schedule for Environmental Mitigation Measures

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of measures / Timing of completion of measures	Implementation Agent	Implementation Stage ¹				Relevant Legislation & Guidelines
					Des	Con	Op	Dec	
Cat.1 Key/specific proposed mitigation measure									
Noise Impact (Construction)									
5.7	3.2	Selecting Quiet Plant The actual SWL of quiet plant is less than the value specified in GW-TM for the same piece of equipment. It should be noted that the silenced PME taken from EPD's Quality Powered Mechanical Equipment (QPME) Inventory.	Within Project area / Duration of the construction phase / Prior to commencement of operation	Contractor appointed by OPC	✓				EIAO and Noise Control Ordinance
5.7	3.2	Use of Movable Barriers Movable noise barriers can be very effective in screening noise from particular items of plant when constructing the Project. Noise barriers located along the active works area close to the noise generating component of a PME could produce at least 10 dB(A) screening for stationary plant and 5 dB(A) for mobile plant provided that the direct line of sight between the PME and the NSRs is blocked.	Within Project area / Duration of the construction phase / Prior to commencement of operation	Contractor appointed by OPC	✓				EIAO and Noise Control Ordinance
Ecological Impact									
10.7	8.3	Inspection of Active Ardeid Nest Prior to site clearance works at the planting area abandoned for ardeid breeding, the area around the boundary of the ardeids roosting site as indicatively shown in Figure 8.1 should be inspected to confirm no active ardeid nest is present. If any active ardeid nest is observed, suitably sized buffer area should be established to avoid human or machinery disturbance until the nest is abandoned.	Indicative boundary of the ardeids roosting site within Project construction site (location indicated in Figure 8.1) / For once / Before site clearance	Qualified ecologist appointed by OPC	✓				EIAO-TM; HK Ordinance Cap. 170
10.7	8.3	Inspection of Short-nosed Fruit Bat As precautionary measure, prior to any proposed arboricultural works of the trees (particularly the Chinese Fan-palms), daytime	Project construction site / For once / Before arboricultural works of	ET appointed by OPC	✓				EIAO-TM; HK Ordinance Cap. 170

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EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of measures / Timing of completion of measures	Implementation Agent	Implementation Stage ¹				Relevant Legislation & Guidelines
					Des	Con	Op	Dec	
		inspection should be carried out to confirm no Short-nosed Fruit Bat is present. If any Short-nosed Fruit Bat is observed roosting, suitably sized buffer area should be established around the tree to minimise human or machinery disturbance until the bat has left.	the trees						
10.7	8.3	In-situ Preservation of Plant Species of Conservation Interest During construction phase, protective fence for the identified flora species of conservation concern shall be erected and maintained.	Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC	✓				EIAO-TM
10.7	8.3	Inspection of Ardeid Nest during breeding season After commencement of construction phase, the Site should be monitored monthly in breeding season (April to July) to check for any potential breeding and nesting activities.	Project construction site / Throughout construction stage / Until completion of all construction activities	Qualified ecologist appointed by OPC	✓				EIAO-TM
10.7	8.2	Timing of site clearance and tree felling works Site clearance and tree felling works at the existing ardeid night roost location as shown in Figure 8.1 should be avoided during the peak wintering season of ardeids, i.e. between November and March.	Indicative boundary of the ardeids roosting site within Project construction site (location indicated in Figure 8.1) / Throughout construction stage / Until completion of site clearance and tree felling works within the boundary	Contractor appointed by OPC	✓				EIAO-TM
10.7	8.3	Compensation for Ardeid Roosting Site An enhancement area with following features should be provided as an alternative roosting site for ardeids. <ul style="list-style-type: none"> ▪ The location is at southern part of the Project area (location indicated in Figure 8.1) ▪ The enhancement area shall include a Flamingo Pond ▪ Native tree species <i>Macaranga tanarius</i> and <i>Celtis sinensis</i> and tree species which was used by ardeids for roosting <i>Mallotus paniculatus</i>, <i>Ficus hispida</i> and <i>Cratogeomys cochinchinense</i> shall be considered in the plan. ▪ Heavy standard sized trees shall be considered for planting to allow early establishment of the trees around the Flamingo 	Southern part of Project construction site (location indicated in Figure 8.1) / Before and throughout construction stage / Until completion of Flamingo Pond construction and tree planting activities at that area	Qualified ecologist and Contractor appointed by OPC	✓	✓			EIAO-TM

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EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of measures / Timing of completion of measures	Implementation Agent	Implementation Stage ¹				Relevant Legislation & Guidelines
					Des	Con	Op	Dec	
10.7	8.3	<p>Pond.</p> <p>Compensation for Woodland Habitat</p> <ul style="list-style-type: none"> ▪ Provision of a Woodland Area of about 1.62 ha, which includes 0.84 ha woodland compensation on-site and 0.78 ha on-site woodland reinstatement, to mitigate for permanent loss of woodland habitat. ▪ In the woodland compensation area, whips should be planted with predominately native tree species similar to the affected woodland, such as <i>Celtis sinensis</i>, <i>Cratogeomys cochinchinense</i>, <i>Polyspora axillaris</i> and <i>Sterculia lanceolata</i>. 	Location of Woodland Compensation Area indicated in Figure 8.2/ Before and throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC	✓	✓	✓	EIAO-TM	
Landscape and Visual Impact (Construction)									
Table 12.13 (CP07)	Table 9.1 (CP07)	<p>Temporary Tree Nurseries</p> <p>Temporary tree nurseries may be set up within the Project area at an early stage to allow small trees to grow during the construction period. By the time these trees are needed for landscape planting at the end of the construction phase, they will have grown larger, require minimal pruning and suffer much less damage during transplanting, as the moving distance from an on-site rather than off-site nursery will be much smaller. The temporary tree nurseries can also temporarily hold the existing trees to be transplanted if direct transplantation from their original locations to the final recipient location is impracticable. The locations of the temporary tree nurseries should be carefully selected so that the trees can also act as screen planting to block the views of the Project area from the VSRs during the construction phase, if practicable.</p>	Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC	✓	✓	✓	EIAO-TM	
Table 12.13 (CP08)	Table 9.1 (CP08)	<p>Advance Planting</p> <p>Advance planting should be undertaken at the earliest possible stage of the construction phase of the project. Plant species, preferably native ones, should be carefully selected to blend in with the existing preserved vegetation. Landscape planting in movable planters should also be considered as a temporary greening measure for the Project area.</p>	Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC	✓	✓	✓	EIAO-TM	
Landscape and Visual Impact (Operation)									
Table 12.14 (OP04)	Table 9.2 (OP04)	<p>Green Roofs and Vertical Greening</p> <p>Green Roofs and Vertical Greening should be provided where feasible and appropriate to screen and soften the hard edges of</p>	Project building rooftops / During design stage / Throughout operation	Design Architect / Contractor appointed by OPC	✓	✓	✓	EIAO-TM	

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EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Implementation Stage ¹					Relevant Legislation & Guidelines	
			Location / Duration of measures / Timing of completion of measures	Implementation Agent	Des	Con	Op		Dec
		building structures.							
Table 12.14 (OP05)	Table 9.2 (OP05)	Reprovision of Flamingo Pond A pond is recommended to replace the demolished Flamingo Pond as compensation for the loss of semi-natural ponds, where wildlife, such as birds, can utilise.	Project area / During design stage / Throughout operation phase	Design Architect / Contractor appointed by OPC	✓	✓		EIAO-TM	
Table 12.14 (OP07)	Table 9.2 (OP07)	Woodland Compensation 1.53ha of affected woodland is recommended to be reinstated / compensated by 1.62ha of whip tree planting adjacent to the existing unaffected woodland and tall shrubland. Native species should be proposed as far as practicable to re-create a native landscape, restore the ecological habitats and blend in with the existing native vegetation.	Project area / During design stage / Throughout operation phase	Design Architect / Contractor appointed by OPC	✓	✓		EIAO-TM	
Cat. 2 Submission required post EIA stage									
Sewerage and Sewage Treatment Implications									
7.7	5.2	Detailed Sewerage Design Report In order to prevent septicity problems during operation phase, a detailed sewerage design report should be submitted to DSD for approval prior to installation of the rising mains.	Rising mains site / During design stage	Design Engineer	✓			Sewerage Manual Part 1	
Ecological Impact (Construction)									
10.7	8.3	Vegetation Survey for Plant Species of Conservation Interest For precautionary purposes and to further ensure no flora species of conservation interest to be affected, a detailed vegetation survey need to conduct to the exact locations, number and condition of individuals of <i>Platycodon grandiflorus</i> .	Project construction site / For once / Before site clearance	Qualified botanist/ecologist of the ET appointed by OPC	✓			EIAO-TM; Hong Kong Ordinance Cap. 96	
10.7	8.3	Woodland Compensation Plan A Woodland Compensation Plan shall be prepared and submitted to AFCD for approval no later than one month prior to commencement of site clearance. The plan shall include but not limited to the following: <ul style="list-style-type: none"> ▪ Timing of planting works ▪ Planting location ▪ Species, size and number of trees ▪ Monitoring methodology 	Location of Woodland Compensation Area indicated in Figure 8.2/ Before construction stage / No later than one month prior to commencement of site clearance	Qualified botanist/ecologist of the ET appointed by OPC	✓			EIAO-TM	

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EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Implementation Stage ¹					Relevant Legislation & Guidelines
			Location / Duration of measures / Timing of completion of measures	Implementation Agent	Des	Con	Op	
<p>■ Action Plan</p>								
Landscapes and Visual Impact (Construction)								
Table 12.13 (CP05)	Table 9.1 (CP05)	<p>Transplantation of Existing Trees</p> <p>Trees which are in direct conflict with the development proposals and suitable for transplantation should be transplanted as far as practicable. A tree transplantation proposal should be submitted together with the tree removal application. Trees proposed to be transplanted should preferably be transplanted from their original locations directly to their final recipient locations in one go. If this is infeasible, the trees should be held in a temporary tree nursery, preferably within the Project area, where the trees will be properly maintained.</p>	Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC	✓	✓	EIAO-TM; LAO PN No. 07/2007	
Landscapes and Visual Impact (Operation)								
Table 12.14 (OP02)	Table 9.2 (OP02)	<p>Compensatory Tree Planting</p> <p>Existing trees to be felled should be compensated as far as practicable. Native species should be proposed as far as practicable to re-create a native landscape, restore the ecological habitats and blend in with the existing native vegetation. A compensatory tree planting proposal should be submitted together with the tree removal application for approval by relevant authorities in accordance with LAO Practice Note No. 7/2007. It is recommended that approximately 608 heavy standard trees and approximately 18,202 whip trees could be planted on-site. The availability of off-site compensatory tree planting area is still subject to further investigation and agreement with relevant authorities.</p>	Project area / During design stage / Throughout operation phase	Design Architect / Contractor appointed by OPC	✓	✓	EIAO-TM; LAO PN No. 07/2007	
Cat. 3 Good site practice/housekeeping measures under EM&A mechanism								
Air Quality Impact (Construction)								
3.9.1	2.2	<p>Dust Control Measures</p> <p>To achieve compliance with the FSP, RSP and TSP criteria during the construction phase, good practices for dust control should be implemented to reduce dust impacts. The dust control measures are detailed as follows:</p> <ul style="list-style-type: none"> ■ Use of regular water spraying (once every 2.5 hours or 4 times per day) to reduce dust emissions from heavy construction activities (including ground excavation, earth moving, etc.) at all active works area exposed site surfaces and unpaved 	Project construction site / Duration of the construction phase / Prior to commencement of operation	Contractor appointed by OPC	✓		EIA Recommendation and Air Pollution Control (Construction Dust) Regulation	

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		<p>roads, particularly during dry weather.</p> <ul style="list-style-type: none"> Covering 80% of stockpiling area by impervious sheets and spraying all dusty material with water immediately prior to any loading transfer operations to keep the dusty materials wet during material handling at the stockpile areas <p>Relevant dust control practices as stipulated in the Air Pollution Control (Construction Dust) Regulation should be adopted:</p> <p>Good Site Management</p> <ul style="list-style-type: none"> Good site management is important to help reduce potential air quality impact down to an acceptable level. As a general guide, the Contractor should maintain high standards of housekeeping to prevent emissions of fugitive dust. Loading, unloading, handling and storage of raw materials, wastes or by-products should be carried out in a manner so as to minimise the release of visible dust emission. Any piles of materials accumulated on or around the work areas should be cleaned up regularly. Cleaning, repair and maintenance of all plant facilities within the work areas should be carried out in a manner minimising generation of fugitive dust emissions. The material should be handled properly to prevent fugitive dust emission before cleaning. <p>Disturbed Parts of the Roads</p> <ul style="list-style-type: none"> Main temporary access points should be paved with concrete, bituminous hardcore materials or metal plates and be kept clear of dusty materials; or Unpaved parts of the road should be sprayed with water or a dust suppression chemical so as to keep the entire road surface wet. <p>Exposed Earth</p> <ul style="list-style-type: none"> Exposed earth should be properly treated by compaction, hydroseeding, vegetation planting or seeding with latex, vinyl, bitumen within six months after the last construction activity on the site or part of the site where the exposed earth lies. <p>Loading, Unloading or Transfer of Dusty Materials</p> <ul style="list-style-type: none"> All dusty materials should be sprayed with water immediately prior to any loading or transfer operation so as 							

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		<p>to keep the dusty material wet.</p> <p>Debris Handling</p> <ul style="list-style-type: none"> Any debris should be covered entirely by impervious sheeting or stored in a debris collection area sheltered on the top and the three sides. Before debris is dumped into a chute, water should be sprayed onto the debris so that it remains wet when it is dumped. <p>Transport of Dusty Materials</p> <ul style="list-style-type: none"> Vehicles used for transporting dusty materials/spoils should be covered with tarpaulin or similar material. The cover should extend over the edges of the sides and tailboards. <p>Wheel washing</p> <ul style="list-style-type: none"> Vehicle wheel washing facilities should be provided at each construction site exit. Immediately before leaving the construction site, every vehicle should be washed to remove any dusty materials from its body and wheels. <p>Use of vehicles</p> <ul style="list-style-type: none"> The speed of the trucks within the site should be controlled to about 10 km/hour in order to reduce adverse dust impacts and secure the safe movement around the site. Immediately before leaving the construction site, every vehicle should be washed to remove any dusty materials from its body and wheels. Where a vehicle leaving the construction site is carrying a load of dusty materials, the load should be covered entirely by clean impervious sheeting to ensure that the dusty materials do not leak from the vehicle. <p>Site hoarding</p> <ul style="list-style-type: none"> Where a site boundary adjoins a road, street, service lane or other area accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length of that portion of the site boundary except for a site entrance or exit 							
Noise Impact (Construction)									

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5.7	3.2	<p>Good Site Practice</p> <p>Good site practice and noise management can significantly reduce the impact of construction site activities on nearby NSRs.</p> <ul style="list-style-type: none"> ▪ only well-maintained plant to be operated on-site and plant should be serviced regularly during the construction works; ▪ machines and plant that may be in intermittent use to be shut down between work periods or should be throttled down to a minimum; ▪ plant known to emit noise strongly in one direction, should, where possible, be orientated to direct noise away from the NSRs; ▪ mobile plant should be sited as far away from NSRs as possible; and ▪ material stockpiles and other structures to be effectively utilised, where practicable, to screen noise from on-site construction activities. 	Project construction site / Duration of the construction phase / Prior to commencement of operation	Contractor appointed by OPC	✓			EIAO and Noise Control Ordinance	
Noise Impact (Operation)									
5.7	3.3.2	<p>Fixed Plant Noise</p> <p>With the adoption of the proposed maximum allowable SWLs, all representative NSRs is expected to comply with the relevant noise criteria for the daytime and evening time periods. No adverse fixed plant noise impact is anticipated.</p> <p>It is also recommended that the following noise reduction measures should be considered as far as practicable during design stage:</p> <ul style="list-style-type: none"> ▪ choose quiet plant such as those which have been effectively silenced; ▪ include noise levels specification when ordering new plant (including chiller and E&M equipment); ▪ locate fixed plant / louvre away from any NSRs as far as practicable; ▪ locate fixed plant in walled plant rooms or in specially designed enclosures; ▪ locate noisy machine in a basement or a completely separate building; 	Within Project area / Prior to operation phase / Duration of the operation phase / Throughout operation phase	Design Architect / Contractor appointed by OPC	✓	✓	✓	EIAO and Noise Control Ordinance	

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5.7	3.3.2	<ul style="list-style-type: none"> install direct noise mitigation measures including silencers, acoustic louvres and acoustic enclosure where necessary; and develop and implement a regularly scheduled plant maintenance programme so that equipment is properly operated and serviced in order to maintain a controlled level of noise. <p>Prior to the operation of the Project, noise commissioning tests for all major fixed noise sources should be conducted.</p> <p>Open Air Entertainment Noise With the adoption of the proposed maximum allowable SWLs, all representative NSRs is expected to comply with the relevant noise criteria for the daytime and evening periods, the following measures should be considered as far as practicable during stage:</p> <ul style="list-style-type: none"> use small clusters of small power loudspeakers rather than a few large power loudspeakers; and loudspeakers should be pointed away from nearby NSRs. 	Within Project area / Duration of the operation phase / Throughout operation phase	Design Architect / Contractor appointed by OPC	✓	✓			EIAO and Noise Control Ordinance
Water Quality Impact (Construction)									
6.7	4.2	<p>Construction Site Runoff The site practices outlined in ProPECC Note PN 1/94 should be followed as far as practicable in order to minimise surface runoff and erosion. The following measures are recommended to protect water quality of the inland areas:</p> <ul style="list-style-type: none"> At the start of site establishment, perimeter cut-off drains to direct off-site water around the site should be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels, earth bunds or sand bag barriers should be provided on site to direct storm water to silt removal facilities. The design of the temporary on-site drainage system should be undertaken by the Contractors prior to the commencement of construction; Sand/ silt removal facilities such as sand/silt traps and sediment basins should be provided to remove sand/silt particles from runoff to meet the requirements of the TM standards under the WPCO. The design of efficient silt removal facilities should be based on the guidelines in 	Project construction site / Duration of the construction phase	Contractor appointed by OPC	✓				EIAO-TM; ProPECC Note PN 1/94; WPCO; TM-DSS

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		<p>Appendix A1 of ProPECC Note PN 1/94. Sizes may vary depending upon the flow rate. The detailed design of the sand/silt traps should be undertaken by the Contractors prior to the commencement of construction;</p> <ul style="list-style-type: none"> ▪ All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly during rainstorms. Deposited silt and grit should be regularly removed, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times; ▪ Measures should be taken to minimise the ingress of site drainage into excavations. If excavation of trenches in wet periods is necessary, they should be dug and backfilled in short sections wherever practicable. Water pumped out from site formation excavations should be discharged into storm drains via silt removal facilities; ▪ All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing facility should be provided at construction site exit where practicable. Wash-water should have sand and silt settled out and removed regularly to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road should be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains; ▪ Open stockpiles of construction materials or construction wastes on-site should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system; ▪ Manholes (including newly constructed ones) should be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and stormwater runoff being directed into foul sewers; ▪ Precautions should be taken at any time of the year when 								

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6.7	4.2	<p>rainstorms are likely. Actions should be taken when a rainstorm is imminent or forecasted and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC Note PN 1/94. Particular attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes; and,</p> <ul style="list-style-type: none"> Bentonite slurries used on site should be reconditioned and reused wherever practicable. Temporary enclosed storage locations should be provided on site for any unused bentonite that needs to be transported away after all the related construction activities are completed. The requirements in ProPECC Note PN 1/94 should be adhered to in the handling and disposal of bentonite slurries. <p>The Contractor would be required to obtain a license from EPD under the WPCO for discharge to the public drainage system or the marine environment. Construction site discharge should be collected by the temporary drainage system installed by the Contractor and treated or desilted on-site to fulfil the WPCO discharge license requirements before discharge.</p>	Project construction site / Duration of the construction phase	Contractor appointed by OPC	✓			EIAO-TM; ProPECC Note PN 1/94	
6.7	4.2	<p>General Construction Activities Best Management Practices (BMPs) should be implemented at the construction site, including proper handling, sorting and storage of construction solid waste, debris and refuse generated on-site prior to disposal. Stockpiles of cement and other construction materials should be kept covered when not being used. The Contractor should also follow the guidelines set in the "Pesticides Used for Outdoor Mosquito Control", published by AFCD in 2010, for mosquito control on site.</p> <p>Expansion of Existing Storm U-Channel Guidelines and measures summarised in ProPECC PN 1/94 for trenching activities should be implemented.</p>	Project construction site / Duration of the construction phase	Contractor appointed by OPC	✓			ProPECC Note PN 1/94	
6.7	4.2	<p>Interception of Natural Streams Guidelines and measures summarised in ProPECC PN 1/94 for excavation and stockpiling activities should be implemented.</p>	Project construction site / Duration of the construction phase	Contractor appointed by OPC	✓			ProPECC Note PN 1/94	
6.7	4.2	<p>Site Formation Works The construction programme should be properly planned to minimise excavation works during the wet season (April to September), temporarily exposed slope/soil surfaces should be</p>	Project construction site / Duration of the construction phase	Contractor appointed by OPC	✓			ProPECC Note PN 1/94	

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		covered by a tarpaulin or other means, as far as practicable. Interception channels should be provided (e.g. along the crest/edge of the excavation) to prevent storm runoff from washing across exposed soil surfaces. Arrangements should be in place to ensure that adequate surface protection measures can be safely carried out well before the arrival of a rainstorm. Measures will be taken to minimise water ingress into the excavation. Diverting any water from the excavated areas to on-site wastewater treatment facilities for treatment prior to discharge should also be performed. Other measures that need to be implemented before, during and after rainstorms are summarised in ProPECC PN 1/94.						
6.7	4.2	<p>Construction of Sewage Sump Pit and Rising Mains</p> <p>Measures for excavation works summarised for site formation works should also be implemented during construction of the sewage sump pit.</p> <p>During the laying of rising mains, guidelines and measures summarised in ProPECC PN 1/94 for trenching activities should be performed. Concrete water generated from the construction of the concrete support should be collected and treated with the wastewater treatment facilities prior to discharge.</p> <p>Accidental Spillage</p> <p>The Contractor should register as a chemical waste producer if chemical wastes are produced from construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes. This will prevent contamination of top soil and water pollution due to construction site runoff.</p> <p>Maintenance of vehicles and equipment, involving activities with potential for leakage and spillage, should only be undertaken within areas appropriately equipped to control these discharges.</p> <p>Oils and fuels should only be stored in designated areas which have pollution prevention facilities. To prevent spillage of fuels and solvents to any nearby storm water drain, all fuel tanks and storage areas should be provided with locks and be sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank. The bund should be drained of rainwater after a rain event.</p>	Project construction site / Duration of the construction phase	Contractor appointed by OPC		✓		ProPECC Note PN 1/94
6.7	4.2	<p>Accidental Spillage</p> <p>The Contractor should register as a chemical waste producer if chemical wastes are produced from construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes. This will prevent contamination of top soil and water pollution due to construction site runoff.</p> <p>Maintenance of vehicles and equipment, involving activities with potential for leakage and spillage, should only be undertaken within areas appropriately equipped to control these discharges.</p> <p>Oils and fuels should only be stored in designated areas which have pollution prevention facilities. To prevent spillage of fuels and solvents to any nearby storm water drain, all fuel tanks and storage areas should be provided with locks and be sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank. The bund should be drained of rainwater after a rain event.</p>	Project construction site / Duration of the construction phase	Contractor appointed by OPC		✓		ProPECC Note PN 1/94; Waste Disposal Ordinance (Cap 354); Waste Disposal (Chemical Waste) (General) Regulation

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6.7	4.2	<p>Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows:</p> <ul style="list-style-type: none"> ▪ Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. ▪ Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents. ▪ Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area. 							
6.7	4.2	<p>Sewage Effluent from the Construction Workforce The Contractor should provide temporary sanitary facilities, such as portable chemical toilets within the construction site to handle sewage from the workforce. The Contractor has the responsibility to ensure that chemical toilets are used and properly maintained, and that licensed Contractors are employed to collect and dispose of the waste off-site at approved locations.</p>	Project construction site / Duration of the construction phase	Contractor appointed by OPC		✓			ProPECC Note PN 1/94
Water Quality Impact (Operation)									
6.7	4.2	<p>Runoff from Road Surfaces Road drainage system design has already included silt traps in the gully inlets to remove silt and grit before the runoff enters the public storm water drainage system. Silt traps should be regularly checked and maintained to ensure efficient operation.</p>	Within Project area / During operation phase	OPC/Operator appointed by OPC		✓			EIAO-TM; WPCO
6.7	4.2	<p>Runoff from On-site Planting Area Watering of plants on site should always be performed before application of pesticides, herbicides and fertilizers. Regular training should also be provided to frontline staff on the appropriate treatment and disposal of pesticides, herbicides and fertilizers.</p>	Within Project area / During operation phase	OPC/Operator appointed by OPC		✓			EIAO-TM; WPCO; TM-DSS
Waste Management Implications (Construction)									
8.5.1.1	6.2	Good Site Practice	Project construction site / Throughout construction	Contractor		✓			Waste Disposal Ordinance; Waste

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8.5.1.2	6.2	<p>Recommendations for good site practices during the construction activities include:</p> <ul style="list-style-type: none"> ▪ Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site ▪ Training of site personnel in proper waste management and chemical handling procedures ▪ Provision of sufficient waste disposal points and regular collection of waste ▪ Appropriate measures to minimise windblown litter and dust/ odour during transportation of waste by either covering trucks or by transporting wastes in enclosed containers ▪ Stockpiles of C&D materials should be kept covered by impervious sheets to avoid wind-blown dust ▪ All dusty materials including C&D materials should be sprayed with water immediately prior to any loading transfer operation so as to keep the dusty material wet during material handling at the stockpile areas ▪ Provision of wheel washing facilities before the trucks leaving the works area so as to minimise dust introduction to public roads ▪ Well planned delivery programme for offsite disposal such that adverse environmental impact from transporting the inert or non-inert C&D materials is not anticipated <p>Waste Reduction Measures</p> <p>Good management and control can prevent the generation of a significant amount of waste. Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include:</p> <ul style="list-style-type: none"> ▪ Sort inert C&D materials to recover any recyclable portions such as metals ▪ Segregation and storage of different types of waste in different containers or skips to enhance reuse or recycling of 	stage / Until completion of all construction activities	appointed by OPC					Disposal (Chemical Wastes) (General) Regulation; and ETWB Technical Circular (Works) No. 19/2005 Environmental Management on Construction Site	
			Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC			✓		Waste Disposal Ordinance	

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8.5.1.3	6.2	<p>materials and their proper disposal</p> <ul style="list-style-type: none"> ▪ Encourage collection of recyclable waste such as waste paper and aluminium cans by providing separate labelled bins to enable such waste to be segregated from other general refuse generated by the work force ▪ Proper site practices to minimise the potential for damage or contamination of inert C&D materials ▪ Plan the use of construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste <p>Inert and Non-inert C&D materials</p> <p>In order to minimise impacts resulting from collection and transportation of inert C&D materials for off-site disposal, the inert C&D materials should be reused on-site as fill material as far as practicable. In addition, inert C&D materials generated from excavation works could be reused as fill materials in local projects that require public fill for reclamation.</p> <p>The surplus inert C&D materials will be disposed of at the Government's PFRFs for beneficial use by other projects in Hong Kong.</p> <p>The C&D materials generated from general site clearance should be sorted on site to segregate any inert materials for reuse or disposal at PFRFs whereas the non-inert materials will be disposed of at the designated landfill site.</p> <p>In order to monitor the disposal of inert and non-inert C&D materials at respectively PFRFs and the designated landfill site, and to control fly-tipping, it is recommended that the Contractor should follow the DEVB Technical Circular (Works) No.6/2010 for Trip Ticket System for Disposal of Construction & Demolition Materials issued by Development Bureau. In addition, it is also recommended that the Contractor should prepare and implement a Waste Management Plan detailing their various waste arising and waste management practices in accordance with the relevant requirements of the ETWB Technical Circular (Works) No. 19/2005 Environmental Management on Construction Site.</p>	Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC	✓				Waste Disposal Ordinance ; DEVB Technical Circular (Works) No.6/2010 for Trip Ticket System for Disposal of Construction & Demolition Materials; and ETWB Technical Circular (Works) No. 19/2005 Environmental Management on Construction Site
8.5.1.4	6.2	<p>Chemical Waste</p> <p>If chemical wastes are produced at the construction site, the</p>	Project construction site / Throughout construction	Contractor appointed by OPC	✓				Code of Practice on the Packaging

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		Contractor will be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the "Code of Practice on the Packaging Labelling and Storage of Chemical Wastes". Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidising, irritant, toxic, harmful, corrosive, etc. The Contractor should use a licensed collector to transport and dispose of the chemical wastes at the approved Chemical Waste Treatment Centre or other licensed recycling facilities, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	stage / Until completion of all construction activities							Labelling and Storage of Chemical Wastes; Waste Disposal (Chemical Waste) (General) Regulation
8.5.1.5	6.2	General Refuse General refuse should be stored in enclosed bins or compaction units separated from inert C&D materials. A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from inert C&D materials. Preferably an enclosed and covered area should be provided to reduce the occurrence of 'wind blown' light material.	Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC		✓				Waste Disposal Ordinance and Public Health and Municipal Services Ordinance - Public Cleansing and Prevention of Nuisances Regulation
8.5.1.6	6.2	Floating Refuse Provide general refuse collection points on site can minimise the refuse contaminate the marine environment. The construction contractors will be required to regularly check and clean any refuse trapped or accumulated along the artificial seawall. Such refuse will then be stored and disposed of together with the general refuse.	Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC		✓				Waste Disposal Ordinance
Waste Management Implications (Operation)										
8.5.2.1	6.2	General Refuse General refuse should be collected on daily basis and delivered	Project area / On a regular basis /	Contractor appointed by OPC				✓		Waste Disposal Ordinance

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8.5.2.2	6.2	<p>to the refuse collection point accordingly. A reputable waste collector should be employed to remove general refuse regularly to avoid odour nuisance or pest/vermin problem. Sufficient recycling containers are recommended to be provided at suitable locations of the Project to encourage recycling of such waste as aluminium cans, plastics and waste paper.</p> <p>Chemical Waste If chemical wastes are expected to be produced during the operation phase, the Project Proponent should register with the EPD as a chemical waste producer and follow the guidelines stated in the "Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes". Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidising, irritant, toxic, harmful, corrosive, etc. Licensed collector should be deployed to transport and dispose of the chemical wastes at the approved Chemical Waste Treatment Centre or other licensed recycling facilities, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.</p>	Throughout operation stage	Contractor appointed by OPC			✓		Code of Practice on the Packaging Labelling and Storage of Chemical Wastes; Waste Disposal (Chemical Waste) (General) Regulation	
8.5.2.3	6.2	<p>Floating Refuse Regular inspection should be carried out along the artificial seawall of the Project boundary for any entrapment or accumulation of floating refuse. Where an appreciable amount of floating refuse is found on the artificial seawall during the inspection, the locations of such refuse will be recorded and arrangements with the project proponent will immediately be made to collect and clear the refuse from the seawall.</p>	Project area / On a regular basis / Throughout operation stage	Contractor appointed by OPC			✓		Waste Disposal Ordinance	
Land Contamination (Construction)										
9.6	7.2	In any case where contaminated soil is identified after the commencement of works, a Contamination Assessment Plan (CAP) is required to be prepared for EPD's endorsement prior to	Project construction site / Before construction stage	Contractor appointed by OPC	✓				Guidance Note for Contaminated Land Assessment and Remediation	

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9.6	7.2	<p>the site investigation. The Contamination Assessment Report (CAR) and/ or Remediation Action Plan (RAP) should be prepared for EPD's approval after the site investigation. If land contamination is confirmed, remediation works should be carried out according to the approved RAP. A Remediation Report (RR) should also be prepared for EPD's endorsement to demonstrate that the clean-up of the contaminated land is completed. No construction work or development of site should be carried out before the approval of the RR.</p> <p>If contaminated soil is identified, the following mitigation measures are for the excavation and transportation of contaminated materials (if any):</p> <ul style="list-style-type: none"> ▪ To minimise the incidents of construction workers coming in contact with any contaminated materials, bulk earth-moving excavation equipment should be employed; ▪ Contact with contaminated materials can be minimised by wearing appropriate clothing and personal protective equipment such as gloves and masks (especially when working directly with contaminated material), provision of washing facilities and prohibition of smoking and eating on site; ▪ Stockpiling of contaminated excavated materials on site should be avoided as far as possible; ▪ The use of any contaminated soil for landscaping purpose should be avoided unless pre-treatment was carried out; ▪ Vehicles containing any excavated materials should be suitably covered to reduce dust emissions and/or release of contaminated wastewater; ▪ Truck bodies and tailgates should be sealed to prevent any discharge; ▪ Only licensed waste haulers should be used to collect and transport contaminated material to treatment/disposal site and should be equipped with tracking system to avoid fly 	Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC		✓		<p>Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management</p> <p>Practice Guide for Investigation and Remediation of Contaminated Land</p> <p>Waste Disposal Ordinance (Cap 354)</p> <p>Waste Disposal (Chemical Waste) (General) Regulation (Cap 354)</p>

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		tipping; <ul style="list-style-type: none"> ▪ Speed control for trucks carrying contaminated materials should be exercised. ▪ Observe all relevant regulations in relation to waste handling, such as Waste Disposal Ordinance (Cap 354), Waste Disposal (Chemical Waste) (General) Regulation (Cap 354) and obtain all necessary permits where required; and ▪ Maintain records of waste generation and disposal quantities and disposal arrangements. 						
Landscaping and Visual Impact (Construction)								
Table 12.13 (CP01)	Table 9.1 (CP01)	Minimisation of Construction Period The construction programme should be carefully designed to minimise the length of the construction period.	Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC	✓	✓		EIAO-TM
Table 12.13 (CP02)	Table 9.1 (CP02)	Minimisation of Works Areas The footprint of the proposed hard structures as well as the extent of temporary works areas should be minimised as far as practicable.	Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC	✓	✓		EIAO-TM
Table 12.13 (CP03)	Table 9.1 (CP03)	Construction Site Controls Construction site controls should be enforced, where possible, to ensure that the landscape and visual impacts arising from the construction phase activities, such as the storage of materials, the location and appearance of site accommodation, etc. are minimised.	Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC	✓	✓		EIAO-TM
Table 12.13 (CP04)	Table 9.1 (CP04)	Preservation of Existing Vegetation The development proposal should avoid disturbance to existing vegetation as far as practicable. A formal tree removal application should be submitted for approval by relevant authorities in accordance with LAO PN No. 07/2007 "Tree Preservation and Tree Removal Application for Building Development in Private Projects" during the detailed design phase of the Project. Where possible, all trees which are not in direct conflict with the development proposals should be retained <i>in situ</i> .	Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC	✓	✓		EIAO-TM; LAO PN No. 07/2007
Table	Table	No Intrusion Zones	Project construction site /	Contractor	✓	✓		EIAO-TM

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12.13 (CP06)	9.1 (CP06)	Where practicable, "no intrusion zones" should be designated within the Project area for protection of existing vegetation. Durable boundary fences should be erected to clearly demarcate these "no intrusion zones". No construction activities, storage of materials and vehicular access will be allowed within the "no intrusion zones" to prevent potential damage to canopies and root zones of vegetation.	Throughout construction stage / Until completion of all construction activities	appointed by OPC					
Table 12.13 (CP09)	Table 9.1 (CP09)	Construction Site Hoardings Two types of hoardings should be considered. One is used for areas in close contact with visitors and for areas where visual intrusion is a key concern. It should be graphical and thematic, and visually 'impermeable' to block the views of construction activities from the VSRs. The other is used for areas to be viewed at a distance. It should be subtle and camouflaged so that it blends in with the surrounding landscape.	Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC	✓			EIAO-TM	
Table 12.13 (CP10)	Table 9.1 (CP10)	Dust and Erosion Control for Exposed Soil Exposed soil shall be covered or "camouflaged" and watered frequently. Areas that are expected to be left with bare soil for a long period of time should be hydroseeded and / or covered with suitable protective fabrics.	Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC	✓			EIAO-TM	
Table 12.13 (CP11)	Table 9.1 (CP11)	Appearance of Construction Plant / Machinery To minimise the visual intrusion of construction activities to visitors and other VSRs, a suitable colour scheme of construction machines and plants should be adopted where possible.	Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC	✓			EIAO-TM	
Table 12.13 (CP12)	Table 9.1 (CP12)	Construction Lighting Control All security floodlights for construction sites should be equipped with adjustable shield, frosted diffusers and reflective covers, and be carefully controlled to minimise light pollution and night-time glare to the VSRs.	Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC	✓			EIAO-TM	
Table 12.13 (CP13)	Table 9.1 (CP13)	Appearance of Construction Workers To protect Ocean Park's image, construction workers should be required to enter the park areas with their helmets and safety vests properly stored or carried in non-transparent bags. They should also dress properly and cleanly.	Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC	✓			EIAO-TM	
Landscape and Visual Impact (Operation)									

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Table 12.14 (OP01)	Table 9.2 (OP01)	<p>Sensitive Design and Disposition</p> <p>All proposed hard structures should be sensitively designed in a manner that responds to the existing and planned landscape context, and minimises potential adverse landscape and visual impacts. The structural design should seek to reduce the apparent visual mass through the use of natural materials such as wooden frame and semi-transparent panels. Subdued tones should be considered for the colour palette with non-reflective finishes to reduce glare effect. Site specific measures, such as the disposition of the key structures closer to the northern slopes, the design of building forms as extension along the existing slope topography, the use of concave roof form and the location of ride platforms on or near the slopes to minimise structural support, should also be considered for better integration with the surroundings and minimisation of potential visual impacts.</p>	Project buildings / During design stage / Throughout operation phase	Design Architect / Contractor appointed by OPC	✓	✓	✓	✓	EIAO-TM
Table 12.14 (OP03)	Table 9.2 (OP03)	<p>Enhancement Planting</p> <p>Other than compensatory tree planting, additional trees, shrubs, groundcovers and lawn should also be considered to maximise greening within the redevelopment area.</p>	Project area / During design stage / Throughout operation phase	Design Architect / Contractor appointed by OPC	✓	✓	✓	✓	EIAO-TM
Table 12.14 (OP06)	Table 9.2 (OP06)	<p>Responsive Lighting Design</p> <p>Overall lighting design would carefully consider a reasonable level of functional and thematic lighting with due consideration of possible light pollution and night-time glare to the surroundings. Consideration shall be made by the lighting designers to the following measures:</p> <ul style="list-style-type: none"> ▪ Lighting shall be designed with due consideration of mounting height and direction of light fixtures so as not to point directly towards any sensitive receiver. ▪ Lighting shall be arranged with due consideration of reflectance so as to avoid glare effect. ▪ Lighting shall be regularly monitored during operation. ▪ Lights located adjacent or in proximity to neighbours shall be carefully designed to prevent possible light intrusion. ▪ Lighting operation schedule shall specify only lights necessary for security to be left on after business hours. ▪ Paving materials should be selected as necessary to reduce 	Project area / During design stage / Throughout operation phase	Design Architect / Contractor appointed by OPC	✓	✓	✓	✓	EIAO-TM

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					Des	Con	Op	Dec		
		potential glare from surface reflectance. <ul style="list-style-type: none"> ▪ Particular attention should be paid to the use of lighting having a high intensity or harsher tone (e.g. metal halide lamps). ▪ Lights shall generally be models having precise cut-off range (such as full cut-off optics where available and practicable) and if necessary be fitted with adjustable anti-glare shields. 								

Remarks:

1. Des – Design Stage, Con – Construction Stage, Op – Operation, Dec - Decommissioning