

Ocean Park Tai Shue Wan Water World Project

Monthly EM&A Report September 2018

October 2018

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This Monthly EM&A Report for September 2018 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:



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Date:

12 Oct. 2018

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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 16th 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 September 2018.

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 – Two numbers of *Platycodon grandifloras* was found in fence up area in the Reporting Period. No sign of construction activities was noted in the fence up area.

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 7, 14, 21 and 28 September 2018. Furthermore, IEC performed the site inspection and audit on 14 September 2018. During site inspection, non-compliance was not observed by the ET and IEC.

Future Key Issues

- Site formation for ride footing construction
- Cut soil slope and soil nail installation for Ride P1, P2, P3,P4 and P5
- Rock breaking and slope stabilization works for Ride P1 to P5
- Utilities diversion at A4

- Drainage works at A4
- Ricing Main construction (PJD & slope portions)
- Main Building: Column and wall construction ,L3 column to Roof construction, B1 water tank, drainage and on grade slab. Block works and ABWF in B1, L1, L2 and L3 Secondary structure construction; area Pool B, C, D; Roof construction. L2, L1 on grade slab construction, L1 on grade slab construction, Lift Shift works
- South Transformer Room: ABWF
- South Plant Room : E&M
- North Plant Room : Construction of surface channel, Temp. backfill road for HKE deliver transformer.
- External Area: Laying of underground utilities, removal of concrete paving, manholes and watermain construction, trench exaction for cables & pipes.

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 16th monthly EM&A report presenting the monitoring results and inspection findings for the Project during the Reporting Period from 1 to 30 September 2018.

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 construction
- Cut soil slope and soil nail installation for Ride P1, P2, P3,P4 and P5
- Rock breaking and slope stabilization works for Ride P1 to P5
- Utilities diversion at A4
- Drainage works at A4
- Ricing Main construction (PJD & slope portions)
- Main Building: Column and wall construction ,L3 column to Roof construction, Steel Platform for Shell A construction, B1 water tank, drainage and on grade slab. Block works and ABWF in B1, L1, L2 and L3 Secondary structure construction; area Pool B, C, D; Roof construction. L2, L1 on grade slab construction, L3 Slab B1-2, L3 A4-2, core structure and staircase, re L3 Slab construction.
- South Transformer Room: ABWF
- South Plant Room : E&M
- North Plant Room : Removal of falsework, waterproofing for double slab and ABWF
- Spiral Ramp : Falsework for the RC construction.
- External Area: Laying of underground utilities, removal of concrete paving

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
Renew Construction Noise Permit under NCO GW-RS1024-17	3-Nov-17	422922	21-Nov-17	16-May-18	Expired
Renew Construction Noise Permit under NCO GW-RS0356-18	16-Apr-18	432628	30-Apr-18	16-Nov-18	Superseded by GW-RS0469-18

Type of Permit/ License	Submissi on Date	Reference / License No.	Date of Issue	Date of Expiry	Status
Renew Construction Noise Permit under NCO GW-RS0469-18	18-May-18	433713	04-Jun-18	30-Nov-18	Valid

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 5, 13, 19 and 27 September 2018 during the Reporting Period and four additional impact monitoring for the construction works held during restricted hour period on 2, 9, 23 and 30 September 2018 to access the compliance with environmental requirements. No restricted hour monitoring was conducted on 16 September 2018 due to typhoon Mangkhut. A total of 16 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					
5-Sep-18	9:10	9:40	56.1	59.1	70
13-Sep-18	10:05	10:35	56.3	59.3	70
19-Sep-18	10:10	10:40	57.9	60.9	70
27-Sep-18	9:50	10:20	56.8	59.8	70
NM2					
5-Sep-18	8:30	9:00	51.9	-	70
13-Sep-18	9:25	9:55	52.3	-	70
19-Sep-18	9:20	9:50	53.0	-	70
27-Sep-18	9:00	9:30	52.6	-	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.

As shown in **Table 8**, results of the additional noise monitoring measurement were below 70dB(A) and 65dB(A). No exceedance (Action/Limit Level) of construction noise was thus recorded in this period.

Table 8: Summary of Construction Noise Monitoring Results (Noise level for 15 minutes)

Monitoring date	Time		Mean and range of noise levels, dB(A)		Limit Level for L_{eq} (dB(A)) ²
	Start	Finish	L_{eq} (15min)	Corrected L_{eq} (15min) ¹	
NM1A					
2-Sep-18	13:35	13:50	54.0	57.0	70
9-Sep-18	10:35	10:50	53.5	56.5	70
23-Sep-18	13:40	13:55	54.8	57.8	70
30-Sep-18	10:10	10:25	54.2	57.2	70
NM2					
2-Sep-18	13:10	13:25	47.7	-	65
9-Sep-18	10:10	10:25	48.4	-	65
23-Sep-18	13:10	13:25	48.5	-	65
30-Sep-18	9:40	9:55	48.1	-	65

Note: 1. A correction of +3dB(A) was made to the free field measurement at monitoring station NM1A.
 2. Technical memorandum on noise from construction work other than percussive piling – Section 4 Table 2.

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 14 September 2018 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 their locations) that were recorded in 2015's growing season within the fenced area (see Photos 1 and 2 of **Appendix L** of this report).

On the other hand, 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 3 of **Appendix L** of this report), and there are no signs or evidence (e.g. dust coating of plant) to prove that the on-going construction activities within the Project Area has affected the health condition of the *Platycodon grandiflorus*.

Nesting Activities of Ardeids in Breeding Season

This monitoring parameter only required during the breeding season of ardeids, i.e., from April to July, and the last monitoring event for nesting activities of Ardeids in the 2018's breeding season was undertaken on 20 July 2018, and such monitoring would not be required for the reporting period.

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 1 November to 31 March. The last monitoring event for roosting activities of ardeids in Peak Wintering Season 2018's was undertaken on 16 March 2018.

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. The two groups of *Platycodon grandiflorus* within the fenced area were found to be vigorous and all new branches were in healthy condition.

The tentative ecological inspection and monitoring in the next Reporting Period is scheduled on 12 October 2018.

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 7 and 21 September 2018.

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 7, 14, 21, and 28 September 2018. Furthermore, IEC performed the site inspection and audit on 14 September 2018.

During site inspections, non-compliance was not observed by the ET and IEC. However, a total of six observations were recorded in the Reporting Period. The findings / deficiencies of the Project observed during the weekly site inspections are listed in **Table 9**.

Table 9: Summary of findings / deficiencies

Date	Findings / Deficiencies	Follow-up Status
7 September 2018	Broken Non-Road Mobile Machinery (NRMM) label should be replaced by a new one.	NRMM label has been replaced and display properly.
7 September 2018	Chemical container should be placed on drip tray.	Chemical container has been removed accordingly.
7 September 2018	Stagnant water shall be removed.	Stagnant water has been cleared.
14 September 2018	Water spraying should be enforced for construction activities	Water spraying has been enforced to prevent fugitive dust.
14 September 2018	Stagnant water near Tower Crane 4 (TC4) shall be removed.	Stagnant water near Tower Crane 4 (TC4) has been removed.
28 September 2018	Chemical and oil containers should be placed on drip tray.	Chemical and oil containers have been removed.

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.

Special attention shall be paid on the proper implementation of mitigation measures to prevent runoff flow to public area.

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 the 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 10**.

Table 10: 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 Period are summarized in **Table 11**.

Table 11: 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 construction
- Cut soil slope and soil nail installation for Ride P1, P2, P3,P4 and P5
- Rock breaking and slope stabilization works for Ride P1 to P5
- Utilities diversion at A4
- Drainage works at A4
- Ricing Main construction (PJD & slope portions)
- Main Building: Column and wall construction ,L3 column to Roof construction, B1 water tank, drainage and on grade slab. Block works and ABWF in B1, L1, L2 and L3 Secondary structure construction; area Pool B, C, D; Roof construction. L2, L1 on grade slab construction, L1 on grade slab construction, Lift Shift works
- South Transformer Room: ABWF
- South Plant Room : E&M
- North Plant Room : Construction of surface channel, Temp. backfill road for HKE deliver transformer.
- External Area: Laying of underground utilities, removal of concrete paving, manholes and watermain construction, trench exaction for cables & pipes.

9.3 Key Issues for the Coming Month

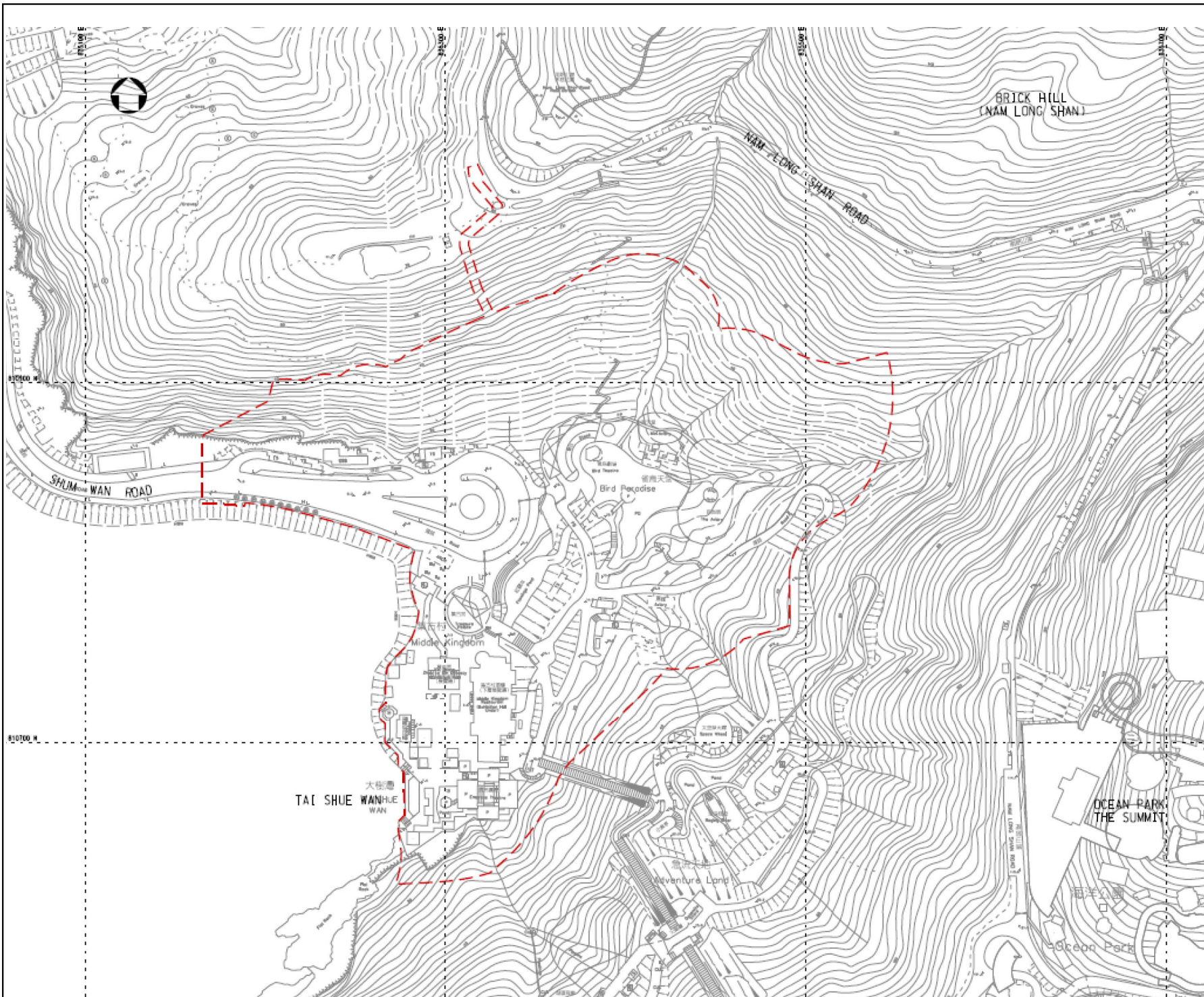
Based on construction activities as undertaken in the coming month, key environment issues consider to be included:

- 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 in specific machine.
- 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 1620 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

This document is issued for the party which commissioned it and for specific purpose connected with the captioned project only. It should not be relied upon by any other party or used for any other purpose. We accept no responsibility for the consequences of this document being relied upon by any other party, or being used for any other purpose, or containing any error or omission which is due to an error or omission in data supplied to us by other parties.

B. Project Organisation

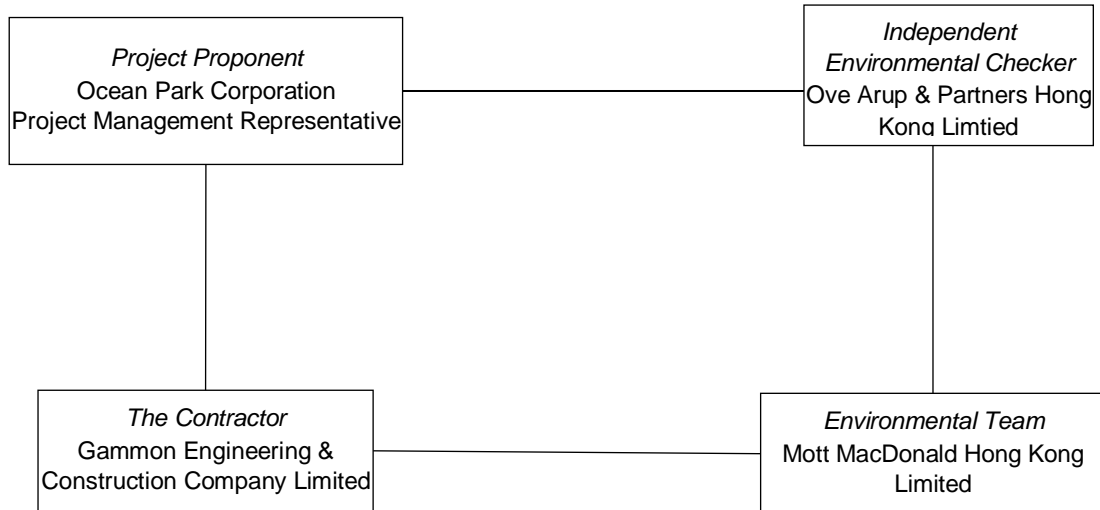


Table A: Contact information

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 Gerald Kam	2268 3915	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	September 16				October 17				November 18				December 19			
						03	10	17	24	01	08	15	22	29	05	12	19	26	03	10	17
OCEAN PARK - TSW WW PROJECT SA rev2 (Option B PMI228 footings after roof A) Revised NSC KD 20180926																					
CONTRACT DATES																					
Key Dates																					
Approval - Consent Dates																					
Foundations (Main Building)																					
BD.CFPW250	Consent Package SB14 Backfill retaining walls (SPR)	0		02-Oct-18*	0%																
▼ Consent Package SB14 Backfill retaining walls (SPR)																					
Ride Formation																					
BD.CSS.R360	ELS Approval P1	0		02-Oct-18*	0%																
▼ ELS Approval P1																					
Superstructure (Main Building)																					
Level 3 to Roof																					
BD.CSS.R280	BD approval Consent SB10E8	42	14-Aug-18	03-Oct-18	0%																
BD approval Consent SB10E8																					
BD.CSS.R260	Consent Package SB10E8 SS for -Above L3 to roof -Main Building Shell B remaining	0		03-Oct-18	0%																
▼ Consent Package SB10E8 SS for -Above L3 to roof -Main Building Shell B remaining																					
BD.CSS.R400	Consent Roof shell B Cantilever portion Bay RB7 RFI 1654	0		03-Oct-18	0%																
▼ Consent Roof shell B Cantilever portion Bay RB7 RFI 1654																					
BD.CSS.R410	Ammendment to 10E8 to accommodate cantilever portion	0		03-Oct-18	0%																
▼ Amendment to 10E8 to accommodate cantilever portion																					
Secondary Structure																					
OP.970	L2 secondary Slab approval Zone A	0		02-Oct-18*	0%																
▼ L2 secondary Slab approval Zone A																					
OP.990	L2 secondary Slab approval Zone B	0		02-Oct-18*	0%																
▼ L2 secondary Slab approval Zone B																					
OP.3300	L3 secondary Slab approval Zone B	0		04-Oct-18*	0%																
▼ L3 secondary Slab approval Zone B																					
OP.1070	L3 secondary Slab approval Zone A	0		10-Oct-18*	0%																
▼ L3 secondary Slab approval Zone A																					
SPRLC5160	Zone RC: External wall Level 2 -Roof C (Secondary Structure) Approval and consent	0		15-Oct-18*	0%																
▼ Zone RC: External wall Level 2 -Roof C (Secondary Structure) Approval and consent																					
Facade																					
BD.CSS.R430	Consent to manufacture glazed panels	0		06-Nov-18	0%																
▼ Consent to manufacture glazed panels																					
Milestones																					
Structure																					
Roof Completion																					
BD.CSS.R300	Completion of Shell A roof (including strike scaffold)	0		02-Nov-18	0%																
▼ Completion of Shell A roof (including strike scaffold)																					
BD.CSS.R310	Completion of Shell C roof (including strike scaffold)	0		08-Nov-18	0%																
▼ Completion of Shell C roof (including strike scaffold)																					
Slab completion Dates																					
OP.790	Complete Level 3 RC slab	0		02-Oct-18	0%																
▼ Complete Level 3 RC slab																					
OP.800	Complete Roof A RC slab	0		09-Oct-18	0%																
▼ Complete Roof A RC slab																					
OP.820	Complete Roof C RC slab	0		12-Oct-18	0%																
▼ Complete Roof C RC slab																					
OP.810	Complete Roof B RC slab	0		21-Nov-18	0%																
▼ Complete Roof B RC slab																					
Summary Bars																					
Secondary Structure																					
OP.1760	Level 2 Secondary Slab Zone B including Pools including striking	106	15-May-18	05-Jan-19	0%																
Level 3 Secondary Slab Zone B including Pools including striking																					
OP.1770	Level 3 Secondary Slab Zone B including Pools including striking	56	20-Sep-18	08-Dec-18	0%																
Level 2 Secondary Slab Zone A including Pools including striking																					
OP.1690	Level 2 Secondary Slab Zone A including Pools including striking	246	02-Oct-18	01-Aug-19	0%																
Level 3 Secondary Slab Zone A including Pools including striking																					
OP.1700	Level 3 Secondary Slab Zone A including Pools including striking	113	03-Nov-18	21-Mar-19	0%																
Primary Structure																					
OP.1660	Roof Shell -B including striking	108	06-May-18	21-Nov-18	0%																
Roof Shell -B including striking																					
OP.1650	Roof Shell -A including striking	76	22-Jun-18	09-Oct-18	0%																
Roof Shell -A including striking																					
ABWF																					
Blockwork																					
OP.3270	L2 Blockwork	67	04-Oct-18	21-Dec-18	0%																
L2 Blockwork																					
OP.3290	L3 Blockwork	46	20-Nov-18	15-Jan-19	0%																
L3 Blockwork																					
Suspended Ceilings																					
OP.3230	Ceiling Finishes	205	15-Aug-18	30-Jul-19	0%																
Ceiling Finishes																					
OP.3370	Level Basement Ceiling	45	15-Aug-18	11-Dec-18	0%																
Level Basement Ceiling																					
OP.3130	Catwalk Fabricate and Install	90	05-Nov-18	23-Feb-19	0%																
Catwalk Fabricate and Install																					
Facade																					
OP.3440	Facade	236	04-Oct-18	23-Jul-19	0%																
Facade																					
OP.3510	L3 Facade	211	03-Nov-18	23-Jul-19	0%																
L3 Facade																					
OP.3500	L2 Facade	140	05-Nov-18	27-Apr-19	0%																
L2 Facade																					
BD.CSS.R440	Consent to manufacture glazed panels	0		06-Nov-18	0%																
▼ Consent to manufacture glazed panels																					
Wall Finishes																					
OP.3240	Wall Finishes	234	15-Aug-18	18-Jul-19	0%																
Wall Finishes																					
OP.3400	Basement Level Wall Finishes	90	15-Aug-18	26-Feb-19	0%																
Basement Level Wall Finishes																					
OP.3410	L1 Wall Finishes	90	15-Aug-18	26-Feb-19	0%																
L1 Wall Finishes																					

NOMINATED SUB-CONTRACTORS		C011- Water Filtration System Advance Contract	
Contract Dates		Area Possession Date	
Access Dates		Target Access Dates	
NS.C11.A11	C011 -Installation	147	30-May-18 29-Mar-19 20%
OP.1490	C011 - Target Access to Plant Room and Pipe Works Area BL (Room	0	02-Oct-18 0%
OP.1500	C011 - Target Access to Plant Room and Pipe Works Area L1	0	02-Oct-18 0%

ID	Activity	Duration	Start	Finish	Activity % Complete	September 16				October 17				November 18				December 19			
						03	10	17	24	01	08	15	22	29	05	12	19	26	03	10	17
Installation																					
Plant Rooms																					
NS.C11.120	C011 Pipe work installation Plant room to Pool	242	02-Oct-18	27-Jul-19	0%	[Gantt bar from 02-Oct-18 to 27-Jul-19]															
NS.C11.130	C011 Mechanical Electrical and Water Treatment Plant room Installation BL (Room 022, 003)	110	02-Oct-18	14-Feb-19	0%	[Gantt bar from 02-Oct-18 to 14-Feb-19]															
NS.C11.140	C011 Mechanical Electrical and Water Treatment Plant room Installation L1 (Room 158)	120	02-Oct-18	26-Feb-19	0%	[Gantt bar from 02-Oct-18 to 26-Feb-19]															
NS.C11.230	C011 Installation (Summary)	242	02-Oct-18	27-Jul-19	0%	[Gantt bar from 02-Oct-18 to 27-Jul-19]															
Pipework																					
Main Building																					
OP.2170	C011 Basement Pipework	45	15-May-18	23-Nov-18	25%	[Gantt bar from 15-May-18 to 23-Nov-18, 25% complete]															
OP.2090	C011 Level 1 Pipework Zone A	45	02-Oct-18	23-Nov-18	0%	[Gantt bar from 02-Oct-18 to 23-Nov-18]															
OP.2180	C011 Level 1 Pipework Zone B	45	31-Oct-18	21-Dec-18	0%	[Gantt bar from 31-Oct-18 to 21-Dec-18]															
OP.2190	C011 Level 2 Pipework Zone B	45	20-Nov-18	14-Jan-19	0%	[Gantt bar from 20-Nov-18 to 14-Jan-19]															
OP.2210	C011 Level 3 Pipework Zone B	45	20-Nov-18	14-Jan-19	0%	[Gantt bar from 20-Nov-18 to 14-Jan-19]															
Ride Pipework Support																					
OP.2640	Ride External Pipework (main building to ride flume) Slope Supports	0		02-Oct-18*	0%	[Milestone at 02-Oct-18]															
Procurement and Delivery																					
NS.C11.110	C011 Pipes Fittings Pumps UV system Electrical equipment Delivery	110	02-Oct-18	14-Feb-19	0%	[Gantt bar from 02-Oct-18 to 14-Feb-19]															
C012A - Gas Absorption Chillers & Associated Works																					
NS.C12A.1170	C012A Delivery	6	14-May-18	08-Oct-18	0%	[Gantt bar from 14-May-18 to 08-Oct-18]															
NS.C12A.1130	C012A - Gas Absorption Chillers Installation	145	09-Oct-18	03-Apr-19	0%	[Gantt bar from 09-Oct-18 to 03-Apr-19]															
Contract Dates																					
Contract Area Possession Date																					
Access Dates																					
NS.C11.A12A	C012A - Access to Plant Room and Pipe Works Area	0	30-Sep-18		0%	[Milestone at 30-Sep-18]															
NS.C11.A12A10	C012A - Installation	150	02-Oct-18	02-Apr-19	0%	[Gantt bar from 02-Oct-18 to 02-Apr-19]															
C012B - Gas Condensing Boilers & Associated Works																					
NS.C12B.1130	C012B - Gas Condensing Boiler Installation	150	13-Nov-18	20-May-19	0%	[Gantt bar from 13-Nov-18 to 20-May-19]															
NS.C12B.1180	C012B Delivery	6	13-Nov-18	19-Nov-18	0%	[Gantt bar from 13-Nov-18 to 19-Nov-18]															
Contract Dates																					
Contract Area Possession Date																					
Access Dates																					
NS.C12BA12A	C012AB - Access to Plant Room and Pipe Works Area	0	30-Sep-18		0%	[Milestone at 30-Sep-18]															
NS.C11.A12A30	C012A - Installation	150	02-Oct-18	02-Apr-19	0%	[Gantt bar from 02-Oct-18 to 02-Apr-19]															
C012C - Chimney for Gas Chillers & Boilers																					
NS.C12C.1130	C012C - Chimney Installation	150	13-Nov-18	20-May-19	0%	[Gantt bar from 13-Nov-18 to 20-May-19]															
NS.C12C.1140	C012C - Delivery	6	13-Nov-18	19-Nov-18	0%	[Gantt bar from 13-Nov-18 to 19-Nov-18]															
Contract Dates																					
Contract Area Possession Date																					
Access Dates																					
NS.C12CA12A	C012AC - Access to Plant Room and Pipe Works Area	0	30-Sep-18		0%	[Milestone at 30-Sep-18]															
NS.C11.A12A50	C012A - Installation	150	02-Oct-18	02-Apr-19	0%	[Gantt bar from 02-Oct-18 to 02-Apr-19]															
Thematic Works & Wayfinding Signage																					
NS.DS.1100	Thematic Wayfinding Works - Latest Date for Client to instruct invitation (TA.4)	0		30-Sep-18	0%	[Milestone at 30-Sep-18]															
NS.DS.1110	Thematic Works Tender Period & return of Tender	42	30-Sep-18	10-Nov-18	0%	[Gantt bar from 30-Sep-18 to 10-Nov-18]															
NS.DS.1120	Joint review & award of Thematic Works contract	30	11-Nov-18	10-Dec-18	0%	[Gantt bar from 11-Nov-18 to 10-Dec-18]															
DESIGN																					
Contractor Design																					
CSDs																					
Prepare CBWD																					
Roof																					
DS.CBWD.240	Prepare Submit CBWD model Level 3 - Roof	24	02-Oct-18	30-Oct-18	0%	[Gantt bar from 02-Oct-18 to 30-Oct-18]															
Review and Approval-CSD																					
Basement																					
Additional Review PMI 140																					
OP.420	Additional review and Approve PMI 140 Review and Approve CSDs from BIM model Basement - Zone 02	21	16-Oct-18	09-Nov-18	0%	[Gantt bar from 16-Oct-18 to 09-Nov-18]															
OP.430	Additional review and Approve PMI 140 Review and Approve CSDs from BIM model Basement - Zone 04	21	16-Oct-18	09-Nov-18	0%	[Gantt bar from 16-Oct-18 to 09-Nov-18]															
Roof																					
DS.CSD.RA260	Review and Approve CSDs from BIM model Level 3 - Roof	21	09-Oct-18	02-Nov-18	0%	[Gantt bar from 09-Oct-18 to 02-Nov-18]															
Review and Approval-CBWD																					
Basement																					
Additional Review PMI 140																					
OP.400	Additional review and Approve PMI 140 CBWDs from BIM model Basement - Zone 04	21	10-Nov-18	04-Dec-18	0%	[Gantt bar from 10-Nov-18 to 04-Dec-18]															
OP.410	Additional review and Approve PMI 140 CBWDs from BIM model Basement - Zone 02	21	10-Nov-18	04-Dec-18	0%	[Gantt bar from 10-Nov-18 to 04-Dec-18]															
Roof																					
DS.CBWD.RA260	Review and Approve CBWDs from BIM model Level 3 - Roof	21	02-Oct-18	26-Oct-18	0%	[Gantt bar from 02-Oct-18 to 26-Oct-18]															
Balustrade																					
DS.CDBL.1170	Balustrade Metal Approval	0		18-Oct-18	0%	[Milestone at 18-Oct-18]															

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

Project: Ocean Park Tai Shue Wan Water World Project
 Project ID: T16004-194
 Layout: 3 Month look ahead 20181001
 Page: 2 of 15

OCEAN PARK - TAI SHUE WAN DEVELOPMENT
Contract No. TSW-C006
3 month rolling program _OCT 2018



Date	Revision	Checked	Approved
14-May-18	3M rolling		
31-May-18	3M rolling		
30-Jun-18	3M rolling		
31-Aug-18	3M rolling		
01-Oct-18	3M rolling		

ID	Activity	Duration	Start	Finish	Activity % Complete	September 16				October 17				November 18				December 19							
						03	10	17	24	01	08	15	22	29	05	12	19	26	03	10	17	24			
DS.CDBL.1180	Balustrade Glass Approval	0		18-Oct-18	0%																				
DS.CDBL.1190	Balustrade Metal Consent	0		20-Nov-18	0%																				
DS.CDBL.1200	Balustrade Glass Consent	0		20-Nov-18	0%																				
DS.CDBL.1120	Balustrade Metal - Fabricate & progressively deliver	90	21-Nov-18	12-Mar-19	0%																				
DS.CDBL.1210	Balustrade Glass - Fabricate & progressively deliver	90	21-Nov-18	12-Mar-19	0%																				
Acrylic Panel																									
DS.CDAP.1120	Acrylic Panel - Fabricate & progressively deliver	100	23-Nov-18	26-Mar-19	0%																				
Light Gantry at Stage																									
DS.CDLG.1130	Light Gantry at Stage - Sub-Con.procurement	50	31-Jul-18 A	31-Oct-18	0%																				
DS.CDLG.1140	Light Gantry at Stage - Design submission and approval	50	01-Nov-18	31-Dec-18	0%																				
Tensile Roof to Ride Platform																									
DS.CDTR.1120	Tensile Roof to Ride Platform - Fabricate & progressively deliver	90	26-Oct-18	14-Feb-19	0%																				
Automatic Drip Irrigation System																									
DS.CDIS.1110	Automatic Drip Irrigation System - Design submission & Approvals	85	31-Jul-18 A	31-Oct-18	0%																				
DS.CDIS.1120	Automatic Drip Irrigation System - Fabricate & Deliver	90	01-Nov-18	20-Feb-19	0%																				
Catwalk platform over L1 Locker room																									
DS.CDCP.1180	Cat walk Approval	0		02-Oct-18	0%																				
DS.CDCP.1170	Cat walk Consent	0		03-Nov-18	0%																				
C010 - Facade Curtain Wall & Skylight																									
Key Dates																									
CD.C10-KD13	C10-KD1-Complete and achieve approval of Visual Mock-up	0		26-Oct-18*	0%																				
Target Key Dates																									
CD.C10-TD33	C10-KD3 Target Completion of C010 KD3	0		30-Sep-18	0%																				
CD.C10-TD13	C10-KD1 Target Completion of C010 KD1	0		26-Oct-18	0%																				
C010 - Design and Material Submission																									
Make Up Doors FSD Design																									
DS.DMFD100	Make up Doors: Procure supplier	56	31-Jul-18 A	05-Oct-18	0%																				
DS.DMFD110	Make up Doors: Design	28	06-Oct-18	08-Nov-18	0%																				
DS.DMFD120	Make up Doors: Prepare Technical Design	28	24-Oct-18	24-Nov-18	0%																				
DS.DMFD130	Make up Doors: Prepare Technical Shop drawings submission	28	17-Nov-18	19-Dec-18	0%																				
Smoke Vent FSD Design																									
DS.DMSV100	Skylight Smoke Vent: Procure supplier	56	02-Oct-18	06-Dec-18	0%																				
DS.DMSV140	Skylight Smoke Vent: Review and approval	28	19-Oct-18	20-Nov-18	0%																				
C010 - Fabrication and Delivery																									
DS.DMFD1000	Facade Curtain Wall & Skylight - Material Fabricate, Assemble & Deliver	250	30-Apr-18	07-Nov-18	50%																				
DS.DMFD1020	Facade Curtain Wall & Skylight - Glass fabricate commencement date subject to completion of Roof structure	200	07-Nov-18	13-Jul-19	0%																				
E&M Major Equipment / Material																									
Preliminary, Material Submission																									
CCMS																									
EM.PD006003	Subm.& Approval of Technical Info. - Interfacing panel	60	02-Oct-18	11-Dec-18	0%																				
PROCUREMENT																									
Ride Procurement																									
STEELWORK																									
NEW00020	Detailed steel arm Design Received	0	10-Oct-18*		0%																				
Ride P3																									
RSW.SD.1210	Ride P3 support steel work arms shop drawings prepare	18	10-Oct-18	31-Oct-18	0%																				
RSW.SD.1220	Ride P3 support steel work arms shop drawings submit and review	28	01-Nov-18	03-Dec-18	0%																				
RSW.SD.1250	Ride P3 Embed fabrication	28	01-Nov-18	03-Dec-18	0%																				
Target Dates																									
PR.R03.1025	Ride P3 OP Conformation of Tornado 60 supporting steel frame delivery	0		02-Oct-18	0%																				
PR.R03.1050	Ride P3 OP Conformation of conveyors delivery date	0		02-Oct-18	0%																				
PR.R03.1060	Ride P3 conveyor delivery	0		02-Oct-18	0%																				
PR.R03.1030	Ride P3 fibre glass flumes, flume Yokes and conveyor delivery	0		23-Oct-18	0%																				
Ride P2																									
RSW.SD.1150	Ride P2 support steel work arms shop drawings prepare	18	10-Oct-18	31-Oct-18	0%																				
RSW.SD.1160	Ride P2 support steel work arms shop drawings submit and review	28	01-Nov-18	03-Dec-18	0%																				
RSW.SD.1480	Ride P2 Embed fabrication	28	01-Nov-18	03-Dec-18	0%																				
Target Dates																									
PR.R02.1020	Ride P2 OP Conformation of fibre glass flume delivery date	0		02-Oct-18	0%																				
PR.R02.1050	Ride P2 Conformation of conveyor delivery	0		02-Oct-18	0%																				
Ride P1																									
RSW.SD.1090	Ride P1 support steel work arms shop drawings prepare	18	10-Oct-18	31-Oct-18	0%																				
RSW.SD.1100	Ride P1 support steel work arms shop drawings submit and review	28	01-Nov-18	03-Dec-18	0%																				
RSW.SD.1500	Ride P1 Embed fabrication	28	01-Nov-18	03-Dec-18	0%																				
Target Dates																									
OP.1850	Ride P1 Conformation, conveyor delivery	0		13-Oct-18	0%																				
PR.R01.1020	Ride P1 OP Conformation of fibre glass flume	0		06-Nov-18	0%																				
Ride P5																									

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

Project: Ocean Park Tai Shue Wan Water World Project
 Project ID: T16004-194
 Layout: 3 Month look ahead 20181001
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OCEAN PARK - TAI SHUE WAN DEVELOPMENT
Contract No. TSW-C006
3 month rolling program _OCT 2018



Date	Revision	Checked	Approved
14-May-18	3M rolling		
31-May-18	3M rolling		
30-Jun-18	3M rolling		
31-Aug-18	3M rolling		
01-Oct-18	3M rolling		

ID	Activity	Duration	Start	Finish	Activity % Complete	September 16				October 17				November 18				December 19							
						03	10	17	24	01	08	15	22	29	05	12	19	26	03	10	17	24			
						Gantt chart bars representing activity progress across the months.																			
NEW.1A.0040	Zone 1A-1b: Platform +16.20mPD - +16.6mPD to +16.2mPD (Rock Dowels)	14	15-May-18	10-Oct-18	50%	Zone 1A-1b: Platform +16.20mPD - +16.6mPD to +16.2mPD (Rock Dowels)																			
Phase 1B																									
Phase 1B-1																									
NEW.1B.0050	Zone 1B-1: Platform +27.00mPD - +31.5mPD to +29.5mPD (Rock Dowels) (subject to SB5 Amdmt 12)	14	18-Oct-18	02-Nov-18	0%	Zone 1B-1: Platform +27.00mPD - +31.5mPD to +29.5mPD (Rock Dowels)																			
NEW.1B.0060	Zone 1B-1: Platform +27.00mPD - +29.5mPD to +27.5mPD (Rock Dowels)	14	03-Nov-18	19-Nov-18	0%	Zone 1B-1: Platform +27.00mPD - +29.5mPD to +27.5mPD (Rock Dowels)																			
NEW.1B.0070	Zone 1B-1: Platform +27.00mPD - +27.5mPD to +27.0mPD (Rock Dowels)	14	20-Nov-18	05-Dec-18	0%	Zone 1B-1: Platform +27.00mPD - +27.5mPD to +27.0mPD (Rock Dowels)																			
Phase 1B-2																									
FM.P1.1B-2.280	Zone 1B-2: Excavate soil as per Ammdment to site formation queue path	36	02-Oct-18	13-Nov-18	0%	Zone 1B-2: Excavate soil as per Ammdment to site formation queue path																			
Additional Buttress wall (RFI 1291)																									
OP.2400	Buttress wall formation	100	18-Apr-18	30-Jan-19	10%	Buttress wall formation																			
Ride P5																									
SF.P5.CPP120	Phasing Plan for P5 Footing Consent: Preparation submission and approval	48	02-Oct-18	27-Nov-18	0%	Phasing Plan for P5 Footing Consent: Preparation submission and approval																			
Phase 5A																									
5A-2																									
NEW.5A.1050	Zone 5A-2: Additional excavation due to SB5 Ammdment 13	36	02-Oct-18	13-Nov-18	0%	Zone 5A-2: Additional excavation due to SB5 Ammdment 13																			
Phase 5C																									
5C-1																									
NEW.5A.1120	Zone 5C-1: +27.95 platform - +29.9mPD to +27.95mPD (Rock Dowels)	14	02-Oct-18	18-Oct-18	0%	Zone 5C-1: +27.95 platform - +29.9mPD to +27.95mPD (Rock Dowels)																			
NEW.5D.4010	Complete Shell B Shear Key Vertical Dowels	0		02-Oct-18	0%	Complete Shell B Shear Key Vertical Dowels																			
5C-2																									
NEW.5D.0015	Complete Shell B Shear Key Vertical Dowels	0		02-Oct-18	0%	Complete Shell B Shear Key Vertical Dowels																			
NEW.5D.0020	Zone 5C-2: +26.00 platform - +29.9mPD to +27.7mPD (Rock Dowels)	15	19-Oct-18	05-Nov-18	0%	Zone 5C-2: +26.00 platform - +29.9mPD to +27.7mPD (Rock Dowels)																			
Phase 5D																									
NEW.5D.0110	Zone 5D: +26.90 platform - +27.9mPD to +26.9mPD (Rock Dowels)	14	23-Jul-18 A	02-Oct-18	0%	Zone 5D: +26.90 platform - +27.9mPD to +26.9mPD (Rock Dowels)																			
FM.P5.5D.140	Zone 5D: Partial complete excavation to +28 mPD for roof B falsework erection	12	02-Oct-18	15-Oct-18	0%	Zone 5D: Partial complete excavation to +28 mPD for roof B falsework erection																			
Outstanding Information																									
OP.2890	Zone 5D Unforseen ground conditions RFI254 RFI474 PMI 280 GI (Exp resolution 20180719)	0		02-Oct-18*	0%	Zone 5D Unforseen ground conditions RFI254 RFI474 PMI 280 GI (Exp resolution 20180719)																			
Additional works to Ride walkway SB5 Ammdment 11																									
OP.2390	Zone 5D-a: Excavate Soil from 19 mPD to 17 mPD (hand dig)	36	02-Oct-18	13-Nov-18	0%	Zone 5D-a: Excavate Soil from 19 mPD to 17 mPD (hand dig)																			
Phase 5B																									
5B-3																									
NEW.5B.0055	Zone 5B-3: +28.40 platform - +32.0mPD to +30.0mPD (Rock Dowels)	14	02-Oct-18	18-Oct-18	0%	Zone 5B-3: +28.40 platform - +32.0mPD to +30.0mPD (Rock Dowels)																			
5B-2																									
NEW.5A.1150	Zone 5B-2: +32.63 platform - +33.5mPD to +32.63mPD (Rock Dowels)	14	02-Oct-18*	18-Oct-18	0%	Zone 5B-2: +32.63 platform - +33.5mPD to +32.63mPD (Rock Dowels)																			
NEW.5A.1160	Zone 5B-2: +30.00 platform - +31.5mPD to +30.30mPD (Rock Dowels)	14	19-Oct-18	03-Nov-18	0%	Zone 5B-2: +30.00 platform - +31.5mPD to +30.30mPD (Rock Dowels)																			
5B-5																									
FM.P5.5B-5.110	Zone 5B-5: Excavate soil and rock from 33.1 mPD to 31.1 mPD	15	02-Oct-18	19-Oct-18	0%	Zone 5B-5: Excavate soil and rock from 33.1 mPD to 31.1 mPD																			
FM.P5.5B-5.140	Zone 5B-5: Prepare Geological assessment report	6	02-Oct-18	08-Oct-18	0%	Zone 5B-5: Prepare Geological assessment report																			
FM.P5.5B-5.150	Zone 5B-5: Submit BA14 site formation works	14	09-Oct-18	25-Oct-18	0%	Zone 5B-5: Submit BA14 site formation works																			
FM.P5.5B-5.120	Zone 5B-5: Excavate soil and rock from 31.1 mPD to 29.1 mPD	21	20-Oct-18	13-Nov-18	0%	Zone 5B-5: Excavate soil and rock from 31.1 mPD to 29.1 mPD																			
5B-4																									
NEW.5B.0040	Zone 5B-4: +29.6 platform - +32.5mPD to +30.60mPD (Rock Dowels)	14	02-Oct-18	18-Oct-18	0%	Zone 5B-4: +29.6 platform - +32.5mPD to +30.60mPD (Rock Dowels)																			
NEW.5B.0050	Zone 5B-4: +29.6 platform - +30.5mPD to +29.60mPD (Rock Dowels)	14	19-Oct-18	03-Nov-18	0%	Zone 5B-4: +29.6 platform - +30.5mPD to +29.60mPD (Rock Dowels)																			
Ride P4																									
Phase 4B																									
Phase 4B-2																									
NEW.P4.0070	Zone 4B-2: Complete Stabilization	0		02-Oct-18	0%	Zone 4B-2: Complete Stabilization																			
Phase 4C																									
Phase 4C-2																									
NEW.P4.0090	Zone 4C-2: Complete Stabilization	0		02-Oct-18	0%	Zone 4C-2: Complete Stabilization																			
FM.P4.4C-2.130	Zone 4C-2: Excavate 3 layers (for construction of RC escape corridor)	36	04-Oct-18	15-Nov-18	0%	Zone 4C-2: Excavate 3 layers (for construction of RC escape corridor)																			
5E-2																									
NEW.5E.0030	Zone 5E-2: +19.46 platform - +23.9mPD to +22.34mPD (Rock Dowels)	14	24-May-18	18-Oct-18	20%	Zone 5E-2: +19.46 platform - +23.9mPD to +22.34mPD (Rock Dowels)																			
NEW.5E.0040	Zone 5E-2: +19.46 platform - +21.9mPD to +21.79mPD (Rock Dowels)	14	19-Oct-18	03-Nov-18	0%	Zone 5E-2: +19.46 platform - +21.9mPD to +21.79mPD (Rock Dowels)																			
FM.P5.5E-2.130	Zone 5E-2: Excavate soil and rock from 20.4 mPD to 18.4 mPD	16	05-Nov-18	22-Nov-18	0%	Zone 5E-2: Excavate soil and rock from 20.4 mPD to 18.4 mPD																			
FM.P5.5E-2.140	Zone 5E-2: Excavate rock from 18.4 mPD to 16.4 mPD	13	23-Nov-18	07-Dec-18	0%	Zone 5E-2: Excavate rock from 18.4 mPD to 16.4 mPD																			
5E-1																									
NEW.5E.0010	Zone 5E-1: +19.46 platform - +19.9mPD to +19.46mPD (Rock Dowels)	14	02-Oct-18	18-Oct-18	0%	Zone 5E-1: +19.46 platform - +19.9mPD to +19.46mPD (Rock Dowels)																			
5C-3																									
FM.P5.5C-3.120	Zone 5C-3: Excavate soil and rock from 31.3 mPD to 29.3 mPD	17	19-Oct-18	07-Nov-18	0%	Zone 5C-3: Excavate soil and rock from 31.3 mPD to 29.3 mPD																			
FM.P5.5C-3.130	Zone 5C-3: Excavate soil and rock from 29.3 mPD to 27.3 mPD	19	05-Nov-18	26-Nov-18	0%	Zone 5C-3: Excavate soil and rock from 29.3 mPD to 27.3 mPD																			
FM.P5.5C-3.140	Zone 5C-3: Excavate soil and rock from 27.3 mPD to 25.3 mPD	22	23-Nov-18	18-Dec-18	0%	Zone 5C-3: Excavate soil and rock from 27.3 mPD to 25.3 mPD																			
Ride P2																									
Phase 2A																									
NEW.2A.0065	Zone 2A-1: Platforms to +13mPD to accomodate escape corridor GL10-12	16	13-Nov-18	30-Nov-18	0%	Zone 2A-1: Platforms to +13mPD to accomodate escape corridor GL10-12																			
Phase 2B																									
Zone 2B-1																									
NEW.2B.0030	Zone 2B-1: 3rd Layer - +22.65mPD to 20.96mPD (Rock Dowels)	19	02-Oct-18	24-Oct-18	0%	Zone 2B-1: 3rd Layer - +22.65mPD to 20.96mPD (Rock Dowels)																			
Zone 2B-2																									

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

Project: Ocean Park Tai Shue Wan Water World Project
 Project ID: T16004-194
 Layout: 3 Month look ahead 20181001
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OCEAN PARK - TAI SHUE WAN DEVELOPMENT
Contract No. TSW-C006
3 month rolling program _OCT 2018



Date	Revision	Checked	Approved
14-May-18	3M rolling		
31-May-18	3M rolling		
30-Jun-18	3M rolling		
31-Aug-18	3M rolling		
01-Oct-18	3M rolling		

ID	Activity	Duration	Start	Finish	Activity % Complete	September				October				November				December			
						16				17				18				19			
						03	10	17	24	01	08	15	22	29	05	12	19	26	03	10	17
NEW.2B.0090	Zone 2B-2 (Lower Portal): 2nd Layer - +24.65mPD to 23.32mPD (Rock Dowels)	35	31-Aug-18	12-Nov-18	0%	Zone 2B-2 (Lower Portal): 2nd Layer - +24.65mPD to 23.32mPD (Rock Dowels)															
NEW.2B.0050	Zone 2B-2 (Conveyor): 2nd Layer - +24.65mPD to 22.65mPD (Rock Dowels)	35	04-Sep-18	12-Nov-18	0%	Zone 2B-2 (Conveyor): 2nd Layer - +24.65mPD to 22.65mPD (Rock Dowels)															
NEW.2B.0060	Zone 2B-2 (Conveyor): 3rd Layer - +22.65mPD to 20.65mPD (Rock Dowels)	35	13-Nov-18	22-Dec-18	0%	Zone 2B-2 (Conveyor): 3rd Layer - +22.65mPD to 20.65mPD (Rock Dowels)															
Phase 2C																					
NEW.2C.0060	Zone 2D: +27mPD to 25mPD (ELS only) (after 3c)	10	02-Oct-18	12-Oct-18	0%	Zone 2D: +27mPD to 25mPD (ELS only) (after 3c)															
Ride P3																					
Phase 3C																					
Portion A																					
NEW.3C.0070	Zone 3C: Portion A (Zone 3D) - 5th Layer (+24.5mPD to +22.5mPD)	12	12-Oct-18	26-Oct-18	0%	Zone 3C: Portion A (Zone 3D) - 5th Layer (+24.5mPD to +22.5mPD)															
NEW.3C.0080	Zone 3C: Portion A (Zone 3D) - 6th Layer (+20.5mPD to +20mPD)	12	03-Nov-18	16-Nov-18	0%	Zone 3C: Portion A (Zone 3D) - 6th Layer (+20.5mPD to +20mPD)															
Portion B																					
NEW.3C.0110	Zone 3C: Portion B - 3rd Layer (+26.5mPD to +24.5mPD)	18	21-Sep-18	11-Oct-18	0%	Zone 3C: Portion B - 3rd Layer (+26.5mPD to +24.5mPD)															
NEW.3C.0120	Zone 3C: Portion B - 4th Layer (+24.5mPD to +22.5mPD)	18	12-Oct-18	02-Nov-18	0%	Zone 3C: Portion B - 4th Layer (+24.5mPD to +22.5mPD)															
NEW.3C.0130	Zone 3C: Portion B - 5th Layer (+22.5mPD to +20.5mPD)	12	03-Nov-18	16-Nov-18	0%	Zone 3C: Portion B - 5th Layer (+22.5mPD to +20.5mPD)															
NEW.3C.0140	Zone 3C: Portion B - 6th Layer (+20.5mPD to +18.5mPD)	12	16-Nov-18	29-Nov-18	0%	Zone 3C: Portion B - 6th Layer (+20.5mPD to +18.5mPD)															
Portion C																					
NEW.3C.0180	Zone 3C: Portion C - 3rd Layer Layer (+28.5mPD to +26.5mPD)	17	30-Jul-18 A	10-Oct-18	0%	Zone 3C: Portion C - 3rd Layer Layer (+28.5mPD to +26.5mPD)															
3C-1 PMI 272 RFI 1033C Buttress wall																					
NEW.3C.3010	Zone 3C-1:1st layer 25.7mPD to 23.7mPD	18	20-Sep-18	11-Oct-18	0%	Zone 3C-1:1st layer 25.7mPD to 23.7mPD															
NEW.3C.3020	Zone 3C-1:2nd layer 23.7mPD to 21.7mPD	18	12-Oct-18	02-Nov-18	0%	Zone 3C-1:2nd layer 23.7mPD to 21.7mPD															
NEW.3C.3030	Zone 3C-1:3rd layer 21.7mPD to 19.7mPD	18	03-Nov-18	23-Nov-18	0%	Zone 3C-1:3rd layer 21.7mPD to 19.7mPD															
NEW.3C.3040	Zone 3C-1:4th layer 19.7mPD to 17.7mPD	12	24-Nov-18	07-Dec-18	0%	Zone 3C-1:4th layer 19.7mPD to 17.7mPD															
Phase 3E																					
NEW.3E.0100	Zone 3E-1: Excavation for Footing (ELS) & remove haul road.	7	02-Oct-18	09-Oct-18	0%	Zone 3E-1: Excavation for Footing (ELS) & remove haul road.															
Phase 3F																					
NEW.3F.0040	Zone 3F: +41.0 platform - +43.7mPD to +41.7mPD (Rock Dowels)	10	18-Aug-18	08-Oct-18	0%	Zone 3F: +41.0 platform - +43.7mPD to +41.7mPD (Rock Dowels)															
NEW.3F.0050	Zone 3F: +41.0 platform - +41.7mPD to +41.0mPD (Rock Dowels)	12	30-Aug-18	10-Oct-18	0%	Zone 3F: +41.0 platform - +41.7mPD to +41.0mPD (Rock Dowels)															
Phase 3G																					
NEW.3G.0080	Zone 3G (Queuing Path): Platform +33.30mPD	11	29-May-18	13-Oct-18	0%	Zone 3G (Queuing Path): Platform +33.30mPD															
Phase 3H																					
NEW.3H.0020	Zone 3H (Related to Queing Path): Platform +30.70mPD	11	13-Aug-18	10-Oct-18	0%	Zone 3H (Related to Queing Path): Platform +30.70mPD															
NEW.3H.0030	Zone 3H (Related to Queing Path): Platform +29.27mPD	11	11-Oct-18	24-Oct-18	0%	Zone 3H (Related to Queing Path): Platform +29.27mPD															
Drainage Channel to Slopes																					
P1																					
SFD.P1.1000	Excavate and Construct catchpits -3No	9	02-Oct-18	11-Oct-18	0%	Excavate and Construct catchpits -3No															
SFD.P1.1010	Excavate and Construct 375 SC -17m	16	10-Oct-18	29-Oct-18	0%	Excavate and Construct 375 SC -17m															
SFD.P1.1020	Excavate and Construct 375 UC -25m	9	27-Oct-18	06-Nov-18	0%	Excavate and Construct 375 UC -25m															
SFD.P1.1030	Excavate and Construct 450 SC -11m	14	05-Nov-18	20-Nov-18	0%	Excavate and Construct 450 SC -11m															
SFD.P1.1040	Excavate and Construct 525 UC -24m	9	19-Nov-18	28-Nov-18	0%	Excavate and Construct 525 UC -24m															
RIDES - PILING & FOOTINGS																					
General																					
NEW.2B.2060	Design varification submission and review 3E-2, 4B-3, 2C-1, 3E-4	60	01-Jun-18	29-Oct-18	0%	Design varification submission and review 3E-2, 4B-3, 2C-1, 3E-4															
NEW.2B.2070	Ammendment submission 3E-2, 4B-3, 2C-1, 3E-4	48	15-Aug-18	26-Nov-18	0%	Ammendment submission 3E-2, 4B-3, 2C-1, 3E-4															
Pile load Test 1																					
NEW.2B.3070	BD Review and Select Test Location (1)	7	27-Nov-18	04-Dec-18	0%	BD Review and Select Test Location (1)															
Ride P1 - Giant Aquatube Slide																					
Phase 1A-1																					
Footing																					
Zone 1A-1b																					
NEW.1A.2500	1A-1B: Initial Report Submission	7	11-Oct-18	19-Oct-18	0%	1A-1B: Initial Report Submission															
RC.P1.1A2110	1A-1B: Submit BA8/10 for Foundation Works	28	20-Oct-18	21-Nov-18	0%	1A-1B: Submit BA8/10 for Foundation Works															
RC.P1.1A2140	1A-1B: Construct Footings (2)	10	13-Nov-18	23-Nov-18	0%	1A-1B: Construct Footings (2)															
Zone 1A-1a																					
OP.2980	1A-1a: Construct Footings for link bridge -Ride thoroughfare to Level 3	24	10-Nov-18	07-Dec-18	0%	1A-1a: Construct Footings for link bridge -Ride thoroughfare to Level 3															
Zone 1A-1c																					
NEW.1A.2400	1A-1C: Report Submission	7	02-Oct-18	09-Oct-18	0%	1A-1C: Report Submission															
NEW.1A.2410	1A-1C: Submit BA8/10	28	10-Oct-18	12-Nov-18	0%	1A-1C: Submit BA8/10															
NEW.1A.2420	1A-1C: Footing Construction (2)	10	05-Nov-18	15-Nov-18	0%	1A-1C: Footing Construction (2)															
Ride P2 - Aqua Twist Mat Races																					
Phase 2B																					
Minipiles																					
NEW.2B.2000	2B-1: Initial Report Submission	7	25-Oct-18	01-Nov-18	0%	2B-1: Initial Report Submission															
MP.P2.2B1330	2B-1: Submit BA8/10 for Minipiles	28	02-Nov-18	04-Dec-18	0%	2B-1: Submit BA8/10 for Minipiles															
Footing																					
NEW.2B.3030	2B-2 (Lower Portal): Initial Report Submission	7	13-Nov-18	20-Nov-18	0%	2B-2 (Lower Portal): Initial Report Submission															
NEW.2B.3040	2B-2 (Lower Portal): Submit BA8/10	28	21-Nov-18	22-Dec-18	0%	2B-2 (Lower Portal): Submit BA8/10															
Phase 2C																					

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

Project: Ocean Park Tai Shue Wan Water World Project
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OCEAN PARK - TAI SHUE WAN DEVELOPMENT
Contract No. TSW-C006
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Date	Revision	Checked	Approved
14-May-18	3M rolling		
31-May-18	3M rolling		
30-Jun-18	3M rolling		
31-Aug-18	3M rolling		
01-Oct-18	3M rolling		

ID	Activity	Duration	Start	Finish	Activity % Complete	September 16				October 17				November 18				December 19			
						03	10	17	24	01	08	15	22	29	05	12	19	26	03	10	17
Basement Level																					
Basement Level																					
SB.BLS.0190	Construct wall at EVA and Plant rooms	12	02-Oct-18	15-Oct-18	0%	Construct wall at EVA and Plant rooms															
NATURAL POND																					
Pond structure																					
HL.NP.1000	Natural Pond: Excavate to formation level +14.330 mPd	6	02-Oct-18	08-Oct-18	0%	Natural Pond: Excavate to formation level +14.330 mPd															
HL.NP.1010	Natural Pond: Construct RC Ring Beam	28	09-Oct-18	10-Nov-18	0%	Natural Pond: Construct RC Ring Beam															
HL.NP.1020	Natural Pond: Backfill to Ring Beam	6	12-Nov-18	17-Nov-18	0%	Natural Pond: Backfill to Ring Beam															
Drainage																					
HL.NP.1030	Natural Pond: Install 100 D Water supply pipe	12	19-Nov-18	01-Dec-18	0%	Natural Pond: Install 100 D Water supply pipe															
HL.NP.1040	Natural Pond: Construct catchpit for water feature overflow and backfill	6	19-Nov-18	24-Nov-18	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	26-Nov-18	08-Dec-18	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	26-Nov-18	01-Dec-18	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		02-Oct-18	0%	▼ Complete Level 1 RC slab															
OP.690	Complete Level 2 RC slab	0		02-Oct-18	0%	▼ Complete Level 2 RC slab															
OP.700	Complete Level 2 10E4 activities	0		02-Oct-18	0%	▼ Complete Level 2 10E4 activities															
OP.710	Complete Level 3 RC slab	0		02-Oct-18	0%	▼ Complete Level 3 RC slab															
OP.740	Complete Roof C RC slab	0		02-Oct-18	0%	▼ Complete Roof C RC slab															
OP.720	Complete Roof A RC slab	0		09-Oct-18	0%	▼ Complete Roof A RC slab															
OP.730	Complete Roof B RC slab	0		21-Nov-18	0%	▼ Complete Roof B RC slab															
Basement Level BL																					
Zone B1-2																					
SPBLS.1230	B1-2: On-Grade Slab (31 bays)	12	02-May-18	02-Nov-18	85%	B1-2: On-Grade Slab (31 bays)															
Zone B1-3																					
SPBLS.1330	B1-3: On-Grade Slab (55 bays)	17	02-Apr-18	08-Oct-18	100%	B1-3: On-Grade Slab (55 bays)															
Zone B1-4																					
SPBLS.1430	B1-4: On-Grade Slab (80 bays)	27	13-Apr-18	02-Nov-18	80%	B1-4: On-Grade Slab (80 bays)															
Foundations																					
PMI 228 Footings M-11a, M-12-A, M-13-A and M-14-A																					
OP.2550	Remove Roof A Falsework Decking	8	03-Nov-18	12-Nov-18	0%	Remove Roof A Falsework Decking															
OP.2560	Remove temp footings	2	13-Nov-18	14-Nov-18	0%	Remove temp footings															
OP.2290	Formation to new footings M-11a, M-12-A, M-13-A and M-14-A	14	15-Nov-18	30-Nov-18	0%	Formation to new footings M-11a, M-12-A, M-13-A and M-14-A															
OP.2270	Construct new footings M-11a, M-12-A, M-13-A and M-14-A	14	24-Nov-18	10-Dec-18	0%	Construct new footings															
Zone 03 (North Wall-Foundation Level 3) GL19-27																					
SPL1S.1115	Zone 03: GL 19-27: Strike Formwork & Backfill	8	02-Oct-18	11-Oct-18	0%	Zone 03: GL 19-27: Strike Formwork & Backfill															
Level 1																					
Slab																					
OP.630	Complete Level 1 RC slab	0		02-Oct-18	0%	▼ Complete Level 1 RC slab															
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	19-Oct-18	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	20	29-Jun-18	25-Oct-18	10%	GL 12-24: L2 On-grade Slab															
Zone A																					
OP.610	Complete Level 2 RC slab	0		02-Oct-18	0%	▼ Complete Level 2 RC slab															
OP.620	Complete 10E4 activities	0		02-Oct-18	0%	▼ Complete 10E4 activities															
Zone B																					
Escape corridor																					
OP.2960	Construct Escape corridor GL 174 to 176	24	16-Nov-18	13-Dec-18	0%	Construct Escape corridor															
Level 3																					
OP.640	Complete Level 3 RC slab	0		02-Oct-18	0%	▼ Complete Level 3 RC slab															
Zone B																					
Zone B1																					
SPL3B.3130	Zone B1: Strike & Falsework Dismantling	9	01-Sep-18	03-Oct-18	90%	Zone B1: Strike & Falsework Dismantling															
Roof Level																					
Slab																					
Roof A																					
OP.650	Complete Roof A RC slab	0		09-Oct-18	0%	▼ Complete Roof A RC slab															
Zone R-A1																					
SP.RLA.5130	Zone R-A1: RL Slab	32	20-Jul-18 A	09-Oct-18	5%	Zone R-A1: RL Slab															
SP.RLA.5140	Zone R-A1: Strike & Falsework Dismantling	11	22-Oct-18	02-Nov-18	0%	Zone R-A1: Strike & Falsework Dismantling															
Zone R-A2																					
SP.RLA.5240	Zone R-A2: Strike & Falsework Dismantling	11	22-Oct-18	02-Nov-18	0%	Zone R-A2: Strike & Falsework Dismantling															
Zone R-A3																					

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Date	Revision	Checked	Approved
14-May-18	3M rolling		
31-May-18	3M rolling		
30-Jun-18	3M rolling		
31-Aug-18	3M rolling		
01-Oct-18	3M rolling		

ID	Activity	Duration	Start	Finish	Activity % Complete	September				October				November				December			
						16				17				18				19			
						03	10	17	24	01	08	15	22	29	05	12	19	26	03	10	17
Zone A5																					
SS.L2A.2510	Zone-A5: L2 Secondary Slab	28	02-Oct-18	03-Nov-18	0%																
SS.L2A.2520	Zone-A5: Strike Formwork & Dismantling	5	15-Nov-18	20-Nov-18	0%																
Zone A6																					
SS.L2A.2610	Zone-A6: L2 Secondary Slab (Including Lift 2 Core structure)	28	02-Oct-18	03-Nov-18	0%																
SS.L2A.2620	Zone-A6: L2 Strike Formwork & Dismantling	5	15-Nov-18	20-Nov-18	0%																
Zone A7																					
SS.L2A.2710	Zone-A7: L2 Secondary Slab	28	02-Oct-18	03-Nov-18	0%																
SS.L2A.2720	Zone-A7: Strike Formwork & Dismantling	5	15-Nov-18	20-Nov-18	0%																
Zone A8																					
SS.L2A.2810	Zone-A8: L2 Secondary Slab	28	02-Oct-18	03-Nov-18	0%																
SS.L2A.2820	Zone-A8: Strike Formwork & Dismantling	5	15-Nov-18	20-Nov-18	0%																
Zone A9																					
SS.L2A.2910	Zone-A9: L2 Secondary Slab	30	02-Oct-18	06-Nov-18	0%																
SS.L2A.2920	Zone-A9: Strike Formwork & Dismantling	5	17-Nov-18	22-Nov-18	0%																
Zone B																					
Zone B1																					
SS.L2B.2110	Zone-B1: L2 Secondary Slab	27	02-Oct-18	02-Nov-18	0%																
SS.L2B.2120	Zone-B1: Strike Formwork & Dismantling	5	14-Nov-18	19-Nov-18	0%																
Zone B2																					
SS.L2B.2210	Zone-B2: L2 Secondary Slab (Wave Pool)	22	15-May-18	19-Oct-18	25%																
SS.L2B.2220	Zone-B2: Strike Formwork & Dismantling	5	31-Oct-18	05-Nov-18	0%																
Zone B3																					
SS.L2B.2310	Zone-B3: L2 Secondary Slab (Wave Pool)	23	15-May-18	19-Oct-18	25%																
SS.L2B.2320	Zone-B3: Strike Formwork & Dismantling	5	31-Oct-18	05-Nov-18	0%																
Zone B4																					
SS.L2B.2410	Zone-B4: L2 Secondary Slab (Landscape)	25	02-Oct-18	31-Oct-18	0%																
SS.L2B.2420	Zone-B4: Strike Formwork & Dismantling	5	12-Nov-18	16-Nov-18	0%																
Zone B5																					
SS.L2B.2510	Zone-B5: L2 Secondary Slab (above Chinese Resto)	15	02-Oct-18	19-Oct-18	0%																
SS.L2B.2520	Zone-B5: Strike Formwork & Dismantling	5	31-Oct-18	05-Nov-18	0%																
Level 3																					
Zone A (Under Roof A)																					
RC slab																					
SS.L3A.3130	Zone-A: L3 Secondary Slab A1	10	03-Nov-18	14-Nov-18	0%																
SS.L3A.3140	Zone-A: L3 Secondary Slab A2	16	03-Nov-18	21-Nov-18	0%																
SS.L3A.3160	Zone-A: L3 Secondary Slab A4	10	03-Nov-18	14-Nov-18	0%																
SS.L3A.3170	Zone-A: L3 Secondary Slab A5	10	03-Nov-18	14-Nov-18	0%																
SS.L3A.3200	Zone-A: L3 Secondary Slab A8	10	03-Nov-18	14-Nov-18	0%																
SS.L3A.3150	Zone-A: L3 Secondary Slab A3	18	10-Nov-18	30-Nov-18	0%																
SS.L3A.3190	Zone-A: L3 Secondary Slab A7	10	10-Nov-18	21-Nov-18	0%																
SS.L3A.3180	Zone-A: L3 Secondary Slab A6	8	22-Nov-18	30-Nov-18	0%																
SS.L3A.3210	Zone-A: L3 Secondary Slab A9	10	22-Nov-18	03-Dec-18	0%																
Strike falsework																					
SS.L3A.3220	Zone-A: L3 Secondary Slab A1 -Strike Falsework	4	26-Nov-18	29-Nov-18	0%																
SS.L3A.3250	Zone-A: L3 Secondary Slab A4 -Strike Falsework	4	26-Nov-18	29-Nov-18	0%																
SS.L3A.3260	Zone-A: L3 Secondary Slab A5 -Strike Falsework	4	26-Nov-18	29-Nov-18	0%																
SS.L3A.3290	Zone-A: L3 Secondary Slab A8 -Strike Falsework	4	26-Nov-18	29-Nov-18	0%																
Zone B (Zone 5)																					
SS.L3B.3110	Zone-5: L3 Secondary Slab	27	20-Sep-18	02-Nov-18	5%																
SS.L3B.3120	Zone-5: Strike Formwork & Dismantling	5	14-Nov-18	19-Nov-18	0%																
Zone C (Under Roof C)																					
SS.L3C.3110	Zone-C: L3 Secondary Slab	25	09-Nov-18	07-Dec-18	0%																
Pool Unit																					
Level 2																					
Pool A - Outdoor Wave Pool																					
SS.PUPA.1110	Pool A: Construct Slab Outdoor Wave Pool	35	15-May-18	19-Oct-18	85%																
SS.PUPA.1120	Pool A: Construct Wall Outdoor Wave Pool	30	14-Jul-18 A	06-Nov-18	80%																
SS.PUPA.1140	Pool A: Cure Outdoor Wave Pool	6	07-Nov-18	13-Nov-18	0%																
SS.PUPA.1150	Pool A: Waterproof & Test Outdoor Wave Pool	30	14-Nov-18	18-Dec-18	0%																
Pool C - Indoor River Pool (Lazy River)																					
SS A2																					
SS.PUPC.2150	Pool C: Construct Slab Indoor River Pool	8	09-Nov-18	17-Nov-18	0%																
SS.PUPC.2160	Pool C: Construct Wall Indoor River Pool	7	19-Nov-18	26-Nov-18	0%																
SS A5																					
SS.PUPC.2230	Pool C: Construct Slab Indoor River Pool	8	02-Oct-18	10-Oct-18	0%																
SS.PUPC.2240	Pool C: Construct Wall Indoor River Pool	12	11-Oct-18	25-Oct-18	0%																

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Date	Revision	Checked	Approved
14-May-18	3M rolling		
31-May-18	3M rolling		
30-Jun-18	3M rolling		
31-Aug-18	3M rolling		
01-Oct-18	3M rolling		

ID	Activity	Duration	Start	Finish	Activity % Complete	September				October				November				December							
						16				17				18				19							
						03	10	17	24	01	08	15	22	29	05	12	19	26	03	10	17	24			
SS A6																									
SS.PUPC.2250	Pool C: Construct Slab Indoor River Pool	8	02-Oct-18	10-Oct-18	0%																				
SS.PUPC.2260	Pool C: Construct Wall Indoor River Pool	12	11-Oct-18	25-Oct-18	0%																				
SS A7																									
SS.PUPC.2270	Pool C: Construct Slab Indoor River Pool	8	02-Oct-18	10-Oct-18	0%																				
SS.PUPC.2310	Pool C: Construct Wall Indoor River Pool	12	11-Oct-18	25-Oct-18	0%																				
SS A8																									
SS.PUPC.2290	Pool C: Construct Slab Indoor River Pool	8	02-Oct-18	10-Oct-18	0%																				
SS.PUPC.2300	Pool C: Construct Wall Indoor River Pool	33	11-Oct-18	19-Nov-18	0%																				
Level 3																									
Pool S - Spa Pool																									
SS.PUPS.1110	Pool S: Construct Slab Spa Pool	28	04-Oct-18	06-Nov-18	0%																				
SS.PUPS.1120	Pool S: Construct Wall Spa Pool	28	07-Nov-18	08-Dec-18	0%																				
ABWF WORKS																									
Access Dates																									
Level 1 & 2																									
NS.C10.A1	C010 - Access to Level 2	0	30-Sep-18		0%																				
NS.C10.A1a	C010 - Earliest Access to Level 1	0	02-Oct-18		0%																				
ETFE Roof																									
Steel Beam																									
SP.RLB.6020	RL Zone RA: Install 21 nos. Steel Beam	36	03-Nov-18	14-Dec-18	0%																				
EWS08A																									
OP.2950	ETFE Procurement	36	02-Oct-18	13-Nov-18	0%																				
OP.2940	ETFE Approval	124	14-Nov-18	15-Apr-19	0%																				
Binnacles																									
BIN.GDP.1010	Binnacles Shop drawing Approval	14	16-Oct-18	01-Nov-18	0%																				
BIN.GDP.1020	Binnacles Fabrication and deliver to site	6	02-Nov-18	08-Nov-18	0%																				
Facade Installation																									
EWS04																									
NS.C10.A210	Facade installation: Level 2, Pool C between GL. 13-17 (Steelwork only)	70	05-Nov-18	28-Jan-19	0%																				
EWS03																									
NS.C10.A240	Facade installation: Level 1, 2 & 3 Main Lobby Entance between GL. CC-JJ (Steelwork only)	70	02-Oct-18	22-Dec-18	0%																				
NS.C10.A480	Facade installation: Level 1, 2 & 3 Main Lobby Entance between GL. HH-NN (Steelwork only)	70	04-Oct-18	27-Dec-18	0%																				
EWS01 & 02																									
NS.C10.A310	Facade installation: Level 3, Indoor Waterpool H between GL. 8-21 South (Steelwork only)	69	03-Nov-18	25-Jan-19	0%																				
NS.C10.A380	EWS01 and EWS02 Summary	211	03-Nov-18	23-Jul-19	0%																				
Blockwork																									
Basement Level																									
AB.BWBL.0140	BL Zone-B1-4: Install Blockwork	10	25-Apr-18	06-Oct-18	90%																				
AB.BWBL.0180	BL Zone-B1-4: Install Blockwork Room 041	8	25-Apr-18	06-Oct-18	90%																				
AB.BWBL.0110	BL Zone-B1-1: Install Blockwork	18	07-May-18	08-Oct-18	90%																				
AB.BWBL.0160	BL Zone-B1-6: Install Blockwork	10	21-May-18	01-Nov-18	90%																				
AB.BWBL.0150	BL Zone-B1-5: Install Blockwork	10	23-May-18	10-Oct-18	90%																				
AB.BWBL.0120	BL Zone-B1-2: Install Blockwork	12	03-Nov-18	16-Nov-18	0%																				
Level 1																									
Zone A																									
AB.BWL1.1110	L1 Zone-A1: Install Blockwork	18	16-Apr-18	11-Oct-18	90%																				
AB.BWL1.1140	L1 Zone-A4: Install Blockwork	10	10-Oct-18	22-Oct-18	0%																				
Level 2																									
Zone B																									
AB.BWL2.2530	L2 Zone-B3: Install Blockwork	12	04-Oct-18	18-Oct-18	0%																				
AB.BWL2.2540	L2 Zone-B4: Install Blockwork	12	04-Oct-18	18-Oct-18	0%																				
Zone A																									
AB.BWL2.2160	L2 Zone-A6: Install Blockwork	18	05-Nov-18	24-Nov-18	0%																				
AB.BWL2.2180	L2 Zone-A8: Install Blockwork	7	05-Nov-18	12-Nov-18	0%																				
AB.BWL2.2210	L2 Zone-A11: Install Blockwork	14	21-Nov-18	06-Dec-18	0%																				
AB.BWL2.2190	L2 Zone-A9: Install Blockwork	12	23-Nov-18	06-Dec-18	0%																				
Level 3																									
Zone B																									
AB.BWL3.3510	L3 Zone-B1: Install Blockwork	16	20-Nov-18	07-Dec-18	0%																				
ABWF Works to Enable E&M Access																									
Basement Level																									
AB.EABL.0150	BL Zone-B1-3,7: ABWF to enable E&M access - Pool Filtration Plant Rm (022)	30	15-May-18	02-Oct-18	50%																				
AB.EABL.0160	BL Zone-B1-2: ABWF to enable E&M access - Pump Rm (032)	18	29-May-18	02-Oct-18	50%																				
AB.EABL.0170	BL Zone-B-3: ABWF to enable E&M access - Cooling Tower Trans. Pump Rm (028)	18	09-Oct-18	30-Oct-18	0%																				
Level 1																									

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						16				17					18				19			
						03	10	17	24	01	08	15	22	29	05	12	19	26	03	10	17	24
AB.EAL1.1110	L1 GL 1-9: ABWF to enable E&M access - Emergency Gen. Rm 2(109) & North Substation(103&105)	30	07-Apr-18	02-Oct-18	75%	L1 GL 1-9: ABWF to enable E&M access - Emergency Gen. Rm 2(109) & North Substation(103&105)																
AB.EAL1.1140	L1 Zone B3 Ride /Pool Pump Room(158)	24	08-May-18	02-Oct-18	50%	L1 Zone B3 Ride /Pool Pump Room(158)																
AB.EAL1.1120	L1 SSB: ABWF to enable E&M access - Cooling Tower	24	02-Oct-18	30-Oct-18	0%	L1 SSB: ABWF to enable E&M access - Cooling Tower																
Level 2																						
AB.EAL2.2235	L2 Zone For Wave Generation room (Rm 242)	40	20-Nov-18	08-Jan-19	0%																	
AB.EAL2.2160	L2 Zone A-8, 9,10: ABWF to enable E&M access - Elec. Rm(211)	40	26-Nov-18	14-Jan-19	0%																	
Ceiling Finishes - Remainder																						
Basement Level																						
AB.CFBL.0110	BL: Ceiling Finishes	60	15-Aug-18	11-Dec-18	10%	BL: Ceiling Finishes																
Wall Finishes - Remainder																						
Basement Level																						
AB.WFBL.0110	BL: Wall Finishes	90	15-Aug-18	26-Feb-19	10%																	
Catwalk Platform over L1 Locker room																						
DS.CDCP.1160	Catwalk Platform - Fabricate & progressively deliver	60	05-Nov-18	16-Jan-19	0%																	
SHUM WAN ROAD (Area A4)																						
General Requirements																						
EW.GENR.0130	Obtain Approval for TTM Proposal	28	13-Apr-18	08-Oct-18	90%	Obtain Approval for TTM Proposal																
PR.SWGE.1050	Mobilise, Survey & Setting out - Shum Wan Rd.	6	02-Oct-18	08-Oct-18	0%	Mobilise, Survey & Setting out - Shum Wan Rd.																
PR.SWGE.1025	Site Clearance and Hoarding Erection - Shum Wan Rd.	6	09-Oct-18	15-Oct-18	0%	Site Clearance and Hoarding Erection - Shum Wan Rd.																
Temporary Traffic Management																						
TTM Preparation Works																						
EW.TTMS.2120	Lane Widening 2: Outbound for TTM 3 outside site boundary	18	08-Sep-18	12-Oct-18	50%	Lane Widening 2: Outbound for TTM 3 outside site boundary																
EW.TTMS.2130	Lane Widening 3: Inbound for TTM 5 outside site boundary	18	13-Oct-18	03-Nov-18	0%	Lane Widening 3: Inbound for TTM 5 outside site boundary																
TTM Implementation																						
EW.TTMS.1120	Prepare Shum Wan Road TTM Stage 2	1	13-Oct-18	13-Oct-18	0%	Prepare Shum Wan Road TTM Stage 2																
EW.TTMS.2140	Prepare Shum Wan Road TTM Stage 1	1	13-Oct-18	13-Oct-18	0%	Prepare Shum Wan Road TTM Stage 1																
EW.TTMS.1125	Implement Shum Wan Road TTM Stage 2	0	15-Oct-18		0%	Implement Shum Wan Road TTM Stage 2																
EW.TTMS.2150	Implement Shum Wan Road TTM Stage 1	0	15-Oct-18		0%	Implement Shum Wan Road TTM Stage 1																
EW.TTMS.1130	Prepare Shum Wan Road TTM Stage 3	1	19-Nov-18	19-Nov-18	0%	Prepare Shum Wan Road TTM Stage 3																
EW.TTMS.1135	Implement Shum Wan Road TTM Stage 3	0	20-Nov-18		0%	Implement Shum Wan Road TTM Stage 3																
Utilities																						
Water Main																						
EW.UTWM2000	Install Pipe FS250 Ch 0+00 to Ch0+18 inc Tee off 25.0m	12	31-Oct-18	13-Nov-18	0%	Install Pipe FS250 Ch 0+00 to Ch0+18 inc Tee off 25.0m																
EW.UTWM2010	Connect to existing FS250 at Ch 0+18	4	14-Nov-18	17-Nov-18	0%	Connect to existing FS250 at Ch 0+18																
Pipe installation out of Meter room																						
EW.UTWM1070	Watermain-Connect to existing pipes (by others) Ch 0+095 (FS 180, FW 250, FL100)	5	31-Oct-18	05-Nov-18	0%	Watermain-Connect to existing pipes (by others) Ch 0+095 (FS 180, FW 250, FL100)																
Water Meter room																						
EW.UTWM1010	Watermain-Construct water meter room (4.5m*6.5m)	28	02-Oct-18	03-Nov-18	0%	Watermain-Construct water meter room (4.5m*6.5m)																
EW.UTWM1020	Watermain-Construct incoming water trough	12	05-Nov-18	17-Nov-18	0%	Watermain-Construct incoming water trough																
Building services																						
EM.IN012001	BS Installation - 1st fix - New Master Water Meter Rm	20	19-Nov-18	11-Dec-18	0%	BS Installation - 1st fix																
EM.IN012000	BS Access to New Master Water Meter Rm	0	19-Nov-18		0%	BS Access to New Master Water Meter Rm																
Pipe Installation into Meter room																						
EW.UTWM1080	Watermain-Install, Test & Backfill: In Pipe run Ch. 0+000-Ch. 0+025 (FS 180, FW 250, FL100)	18	20-Nov-18	10-Dec-18	0%	Watermain-Install, Test & Backfill																
EW.UTWM1090	Watermain-Construct and Backfill Thrust block W3 (Ch 0+018)	6	26-Nov-18	01-Dec-18	0%	Watermain-Construct and Backfill																
SHUM WAN ROAD (WA.A2 & A3B)																						
Utilities																						
Water Main																						
EW.UTWM.2110	Watermain (WA.A2-N) - Install Pipe (FL80, FS180, FW250, FS250 x 160.0m)	12	02-Oct-18	15-Oct-18	0%	Watermain (WA.A2-N) - Install Pipe (FL80, FS180, FW250, FS250 x 160.0m)																
EW.UTWM.2120	Watermain (WA.A2-N) - Install Pipe (FS125 x 50.0m)	6	16-Oct-18	23-Oct-18	0%	Watermain (WA.A2-N) - Install Pipe (FS125 x 50.0m)																
EW.UTWM.1150	Watermain (WA.A3b) - Install Pipe (1 x FL80, FS180, FS250, x 25.0m)	6	24-Oct-18	30-Oct-18	0%	Watermain (WA.A3b) - Install Pipe (1 x FL80, FS180, FS250, x 25.0m)																
EW.UTWM.2150	Watermain (WA.A2-S) - Install Pipe (2 x FW80 x 20.0m)	6	31-Oct-18	06-Nov-18	0%	Watermain (WA.A2-S) - Install Pipe (2 x FW80 x 20.0m)																
EW.UTWM.2160	Watermain (WA.A2-S) - Install Pipe (FW80 x 10.0m)	3	07-Nov-18	09-Nov-18	0%	Watermain (WA.A2-S) - Install Pipe (FW80 x 10.0m)																
EW.UTWM.2130	Divert Watermain in way of TC1	24	10-Nov-18	07-Dec-18	0%	Divert Watermain in way of TC1																
Gas Main																						
EW.UTGM.2110	Gas Main (WA.2-N) - Install Gas Main (1 x 315d x 147.0m)	12	24-Oct-18	06-Nov-18	0%	Gas Main (WA.2-N) - Install Gas Main (1 x 315d x 147.0m)																
EW.UTGM.1120	Gas Main (WA.A3b) - Install Gas Main (1 x 315d x 20.0m)	6	07-Nov-18	13-Nov-18	0%	Gas Main (WA.A3b) - Install Gas Main (1 x 315d x 20.0m)																
EW.UTGM.1130	Gas Main (WA.A3b) - Install Gas Governor Kiosk	6	14-Nov-18	20-Nov-18	0%	Gas Main (WA.A3b) - Install Gas Governor Kiosk																
EW.UTGM.2120	Divert Gas Main in way of TC1	24	21-Nov-18	18-Dec-18	0%	Divert Gas Main																
E&M WORKS																						
New Water Park																						
Basement Level																						
Basement Areas																						
EM.IN021003	BS Installation - Final Fix - Basement	50	22-May-18	27-Jun-19	15%																	
EM.IN0210014	BS Installation - 1st fix - Basement (100%)	45	21-Aug-18	03-Nov-18	39%	BS Installation - 1st fix - Basement (100%)																
EM.IN0210023	BS Installation - 2nd fix - Basement (75%)	40	29-Sep-18	17-Nov-18	0%	BS Installation - 2nd fix - Basement (75%)																

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

Project: Ocean Park Tai Shue Wan Water World Project
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OCEAN PARK - TAI SHUE WAN DEVELOPMENT
Contract No. TSW-C006
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Date	Revision	Checked	Approved
14-May-18	3M rolling		
31-May-18	3M rolling		
30-Jun-18	3M rolling		
31-Aug-18	3M rolling		
01-Oct-18	3M rolling		

ID	Activity	Duration	Start	Finish	Activity % Complete	September				October				November				December			
						16				17				18				19			
						03	10	17	24	01	08	15	22	29	05	12	19	26	03	10	17
Chiller Plant Rooms																					
EM.IN021011	BS Installation - High level works	30	14-May-18	08-Oct-18	80%	BS Installation - High level works															
EM.IN021014	BS Installation - Branch pipe	30	02-Oct-18	06-Nov-18	0%	BS Installation - Branch pipe															
EM.IN021041	BS Access to Open Area for Cooling Towers	0	15-Oct-18	15-Oct-18	0%	BS Access to Open Area for Cooling Towers															
EM.IN021071	BS Installation Open Area for Cooling Towers	8	16-Oct-18	25-Oct-18	0%	BS Installation Open Area for Cooling Towers															
Boiler Plant Room																					
EM.IN021024	BS Installation - Branch pipe	30	09-Oct-18	13-Nov-18	0%	BS Installation - Branch pipe															
EM.IN021026	Boiler related Pumps, MCC / LMCP Installation by C012B	30	14-Nov-18	18-Dec-18	0%	Boiler related															
Pool Filtration Rooms																					
EM.IN021030	BS Installation - Pool Filtration Rms	65	23-May-18	13-Dec-18	5%	BS Installation - Pool															
Electrical Rooms																					
EM.IN021040	BS Installation - Electrical Rms	90	31-Jul-18 A	14-Jan-19	5%	BS Installation - Electrical Rms															
Water Pump Rooms																					
EM.IN021050	BS Installation - Water Pump Rms	90	16-Jul-18 A	27-Dec-18	20%	BS Installation - Water Pump Rms															
FS Street Hydrant Pump Room																					
EM.IN021100	BS Installation - FS Street Hydrant Pump Rm	70	15-Nov-18	12-Feb-19	0%	BS Installation - FS Street Hydrant Pump Rm															
Cooling Tower Transfer Pump Rooms																					
EM.IN021070	BS Installation - Cooling Tower Transfer Pump Rms	70	15-Nov-18	11-Feb-19	0%	BS Installation - Cooling Tower Transfer Pump Rms															
Sewage Pump room																					
EM.IN021090	BS Installation - Sewage Pump Room	90	02-Oct-18	18-Jan-19	0%	BS Installation - Sewage Pump Room															
Level 1																					
L1 Areas																					
EM.IN0220022	BS Installation - 2nd fix - Essential for FSI - L1 (50%)	28	30-Aug-18	13-Oct-18	62%	BS Installation - 2nd fix - Essential for FSI - L1 (50%)															
EM.IN0220014	BS Installation - 1st fix - L1 (100%)	35	20-Sep-18	09-Nov-18	6%	BS Installation - 1st fix - L1 (100%)															
EM.IN0220041	BS Installation - 2nd fix - Non-Essential for FSI - L1 (50%)	45	02-Oct-18	23-Nov-18	0%	BS Installation - 2nd fix - Non-Essential for FSI															
EM.IN0220023	BS Installation - 2nd fix - Essential for FSI - L1 (75%)	28	12-Oct-18	15-Nov-18	0%	BS Installation - 2nd fix - Essential for FSI - L1 (75%)															
EM.IN0220024	BS Installation - 2nd fix - Essential for FSI - L1 (100%)	28	15-Nov-18	18-Dec-18	0%	BS Installation															
EM.IN0220042	BS Installation - 2nd fix - Non-Essential for FSI - L1 (100%)	45	24-Nov-18	18-Jan-19	0%	BS Installation															
LV Main Switch Room (Supplied by East & West Substations)																					
EM.IN022011	BS Installation - LV Main Switch Rm (Supplied by E/W SS)	90	06-Jun-18	13-Nov-18	60%	BS Installation - LV Main Switch Rm (Supplied by E/W SS)															
LV Main Switch Room (Supplied by South Substation)																					
EM.IN022021	BS Installation - LV Main Switch Rm (Supplied by S SS)	90	28-May-18	13-Nov-18	60%	BS Installation - LV Main Switch Rm (Supplied by S SS)															
East Substation																					
EM.IN022032	Inspection and handover to HEC	6	15-Sep-18	05-Oct-18	33.33%	Inspection and handover to HEC															
EM.IN022033	East Substation ready for HEC	0		05-Oct-18*	0%	East Substation ready for HEC															
EM.IN022034	HV Installation by HEC - East Substation	100	06-Oct-18	13-Jan-19	0%	HV Installation by HEC - East Substation															
West Substation																					
EM.IN022042	Inspection and handover to HEC	12	15-Sep-18	04-Oct-18	75%	Inspection and handover to HEC															
EM.IN022043	West Substation ready for HEC	0		04-Oct-18	0%	West Substation ready for HEC															
EM.IN022044	HV Installation by HEC - West Substation	100	05-Oct-18	12-Jan-19	0%	HV Installation by HEC - West Substation															
South Substation																					
EM.IN022054	HEC Installation and Energization - South Substation	100	30-Sep-18	07-Jan-19	0%	HEC Installation and Energization - South Substation															
Electrical Rooms																					
EM.IN022060	BS Installation - Electrical Rms	80	31-Jul-18 A	13-Nov-18	55%	BS Installation - Electrical Rms															
Emergency Generator Room																					
EM.IN022070	BS Installation - Emergency Generator Rm	90	26-May-18	23-Nov-18	50%	BS Installation - Emergency Generator Rm															
Fuel Tank Room																					
EM.IN022076	BS Installation - Fuel Tank Rm	60	02-Oct-18	11-Dec-18	0%	BS Installation - Fuel T															
AHU/Fan Rooms																					
EM.IN022080	BS Installation - AHU/Fan Rms	80	30-Apr-18	30-Oct-18	70%	BS Installation - AHU/Fan Rms															
Pump Rooms																					
EM.IN022100	BS Installation - Pump Rms	60	02-Oct-18	11-Dec-18	0%	BS Installation - Pump															
M&E Services Zone																					
EM.IN022093	BS Installation - 2nd fix - M&E Services Zone (50%)	40	24-May-18	30-Oct-18	40%	BS Installation - 2nd fix - M&E Services Zone (50%)															
EM.IN022095	BS Installation - Final Fix - M&E Services Zone	30	15-Sep-18	06-Oct-18	1%	BS Installation - Final Fix - M&E Services Zone															
EM.IN022094	BS Installation - 2nd fix - M&E Services Zone (50%)	40	31-Oct-18	15-Dec-18	0%	BS Installation - 2															
Level 2																					
EM.IN023000	BS Access to L2 (Room)	0	20-Oct-18		0%	BS Access to L2 (Room)															
L2 Areas (L2-L3)																					
EM.IN0230021	BS Installation - 2nd fix - Essential for FSI - L2 (25%)	25	16-Jul-18 A	26-Oct-18	19%	BS Installation - 2nd fix - Essential for FSI - L2 (25%)															
EM.IN023003	BS Installation - Final fix - Essential for FSI - L2	40	30-Jul-18 A	18-Feb-19	5%	BS Installation - Final fix - Essential for FSI - L2															
EM.IN0230012	BS Installation - 1st fix - L2 (50%)	30	14-Sep-18	30-Oct-18	21%	BS Installation - 1st fix - L2 (50%)															
EM.IN0230041	BS Installation - 2nd fix - Non-Essential for FSI - L2 (25%)	25	02-Oct-18	31-Oct-18	0%	BS Installation - 2nd fix - Non-Essential for FSI - L2 (25%)															
EM.IN0230022	BS Installation - 2nd fix - Essential for FSI - L2 (50%)	25	26-Oct-18	24-Nov-18	0%	BS Installation - 2nd fix - Essential for FSI - L2															
EM.IN0230013	BS Installation - 1st fix - L2 (75%)	30	30-Oct-18	04-Dec-18	0%	BS Installation - 1st fix - L2 (75%)															
EM.IN0230042	BS Installation - 2nd fix - Non-Essential for FSI - L2 (50%)	25	01-Nov-18	29-Nov-18	0%	BS Installation - 2nd fix - Non-Essential															
EM.IN0230023	BS Installation - 2nd fix - Essential for FSI - L2 (75%)	25	24-Nov-18	24-Dec-18	0%	BS Installation															

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

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OCEAN PARK - TAI SHUE WAN DEVELOPMENT
Contract No. TSW-C006
3 month rolling program _OCT 2018



Date	Revision	Checked	Approved
14-May-18	3M rolling		
31-May-18	3M rolling		
30-Jun-18	3M rolling		
31-Aug-18	3M rolling		
01-Oct-18	3M rolling		

ID	Activity	Duration	Start	Finish	Activity % Complete	September 16				October 17				November 18				December 19				
						03	10	17	24	01	08	15	22	29	05	12	19	26	03	10	17	24
						Pool A - Outdoor Wave Pool																
EM.IN023060	Pool A Lighting Installation - 1st fix	65	02-Oct-18	17-Dec-18	0%																	
Level 3 to Roof																						
Pool S - Spa Pool																						
EM.IN024080	Pool S Lighting Installation - 1st fix	65	04-Oct-18	19-Dec-18	0%																	
Open Area																						
Cooling Tower System																						
EM.IN025000	BS Access to Cooling Tower Area	0	15-Nov-18		0%																	
EM.IN025001	BS Installation	100	15-Nov-18	18-Mar-19	0%																	

- critical level of effort
- Current
- Milestone
- Milestone
- % Complete
- Critical Remaining Work

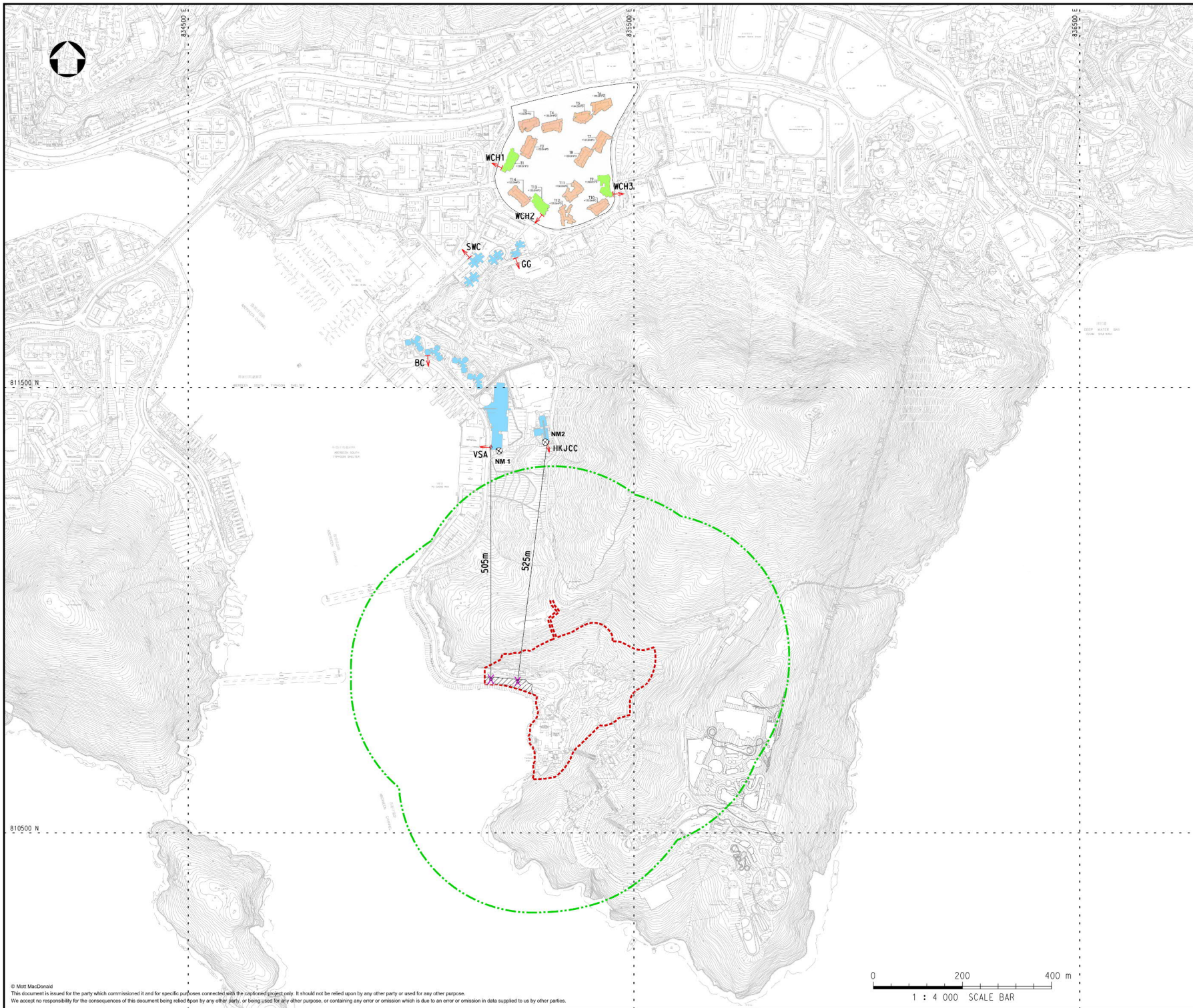
Project: Ocean Park Tai Shue Wan Water World Project
Project ID: T16004-194
Layout: 3 Month look ahead 20181001
Page: 15 of 15

OCEAN PARK - TAI SHUE WAN DEVELOPMENT
Contract No. TSW-C006
3 month rolling program _OCT 2018



Date	Revision	Checked	Approved
14-May-18	3M rolling		
31-May-18	3M rolling		
30-Jun-18	3M rolling		
31-Aug-18	3M rolling		
01-Oct-18	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'kd	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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Project

**TAI SHUE WAN DEVELOPMENT
 AT OCEAN PARK**

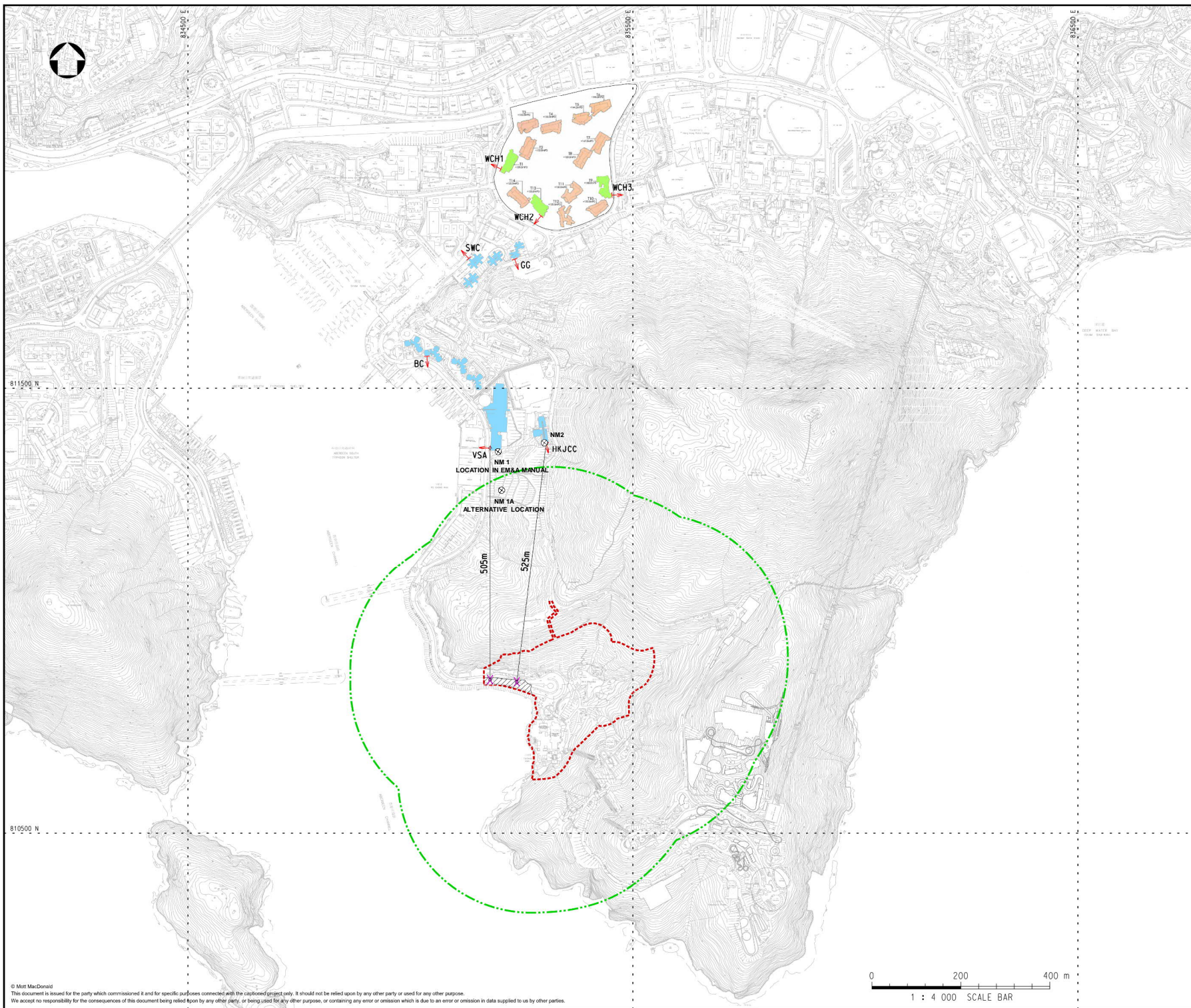
Title

**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
HKJCC	HONG KONG JUVENILE CARE CENTRE
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GG	GRANDVIEW GARDEN

Reference drawings


Rev	Date	Drawn	Description	Ch'kd	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

M

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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



Certificate of Calibration 校正證書

Certificate No. : C181259
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC18-0475) Date of Receipt / 收件日期 : 5 March 2018
Description / 儀器名稱 : Sound Level Meter
Manufacturer / 製造商 : Rion
Model No. / 型號 : NL-52
Serial No. / 編號 : 01010406
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 : 11 March 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 : H T Wong
Technical Officer

Certified By : 
核證 : K C Lee
Engineer

Date of Issue : 12 March 2018
簽發日期

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

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

Certificate of Calibration

校正證書

Certificate No. : C181259
證書編號

1. 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.
2. Self-calibration was performed before the test.
3. The results presented are the mean of 3 measurements at each calibration point.
4. Test equipment :

<u>Equipment ID</u>	<u>Description</u>	<u>Certificate No.</u>
CL280	40 MHz Arbitrary Waveform Generator	C180024
CL281	Multifunction Acoustic Calibrator	PA160023

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	94.1	± 1.1

- 6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 130	L _A	A	Fast	94.00	1	94.1 (Ref.)
				104.00		104.1
				114.00		114.1

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	94.1	Ref.
			Slow				

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。

Certificate of Calibration

校正證書

Certificate No. : C181259
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	67.8	-26.2 ± 1.5
					125 Hz	77.9	-16.1 ± 1.5
					250 Hz	85.4	-8.6 ± 1.4
					500 Hz	90.9	-3.2 ± 1.4
					1 kHz	94.1	Ref.
					2 kHz	95.3	+1.2 ± 1.6
					4 kHz	95.1	+1.0 ± 1.6
					8 kHz	93.1	-1.1 (+2.1 ; -3.1)
					12.5 kHz	89.7	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L _C	C	Fast	94.00	63 Hz	93.3	-0.8 ± 1.5
					125 Hz	93.9	-0.2 ± 1.5
					250 Hz	94.1	0.0 ± 1.4
					500 Hz	94.1	0.0 ± 1.4
					1 kHz	94.1	Ref.
					2 kHz	93.9	-0.2 ± 1.6
					4 kHz	93.3	-0.8 ± 1.6
					8 kHz	91.2	-3.0 (+2.1 ; -3.1)
					12.5 kHz	87.7	-6.2 (+3.0 ; -6.0)

Remarks : - UUT Microphone Model No. : UC-59 & S/N : 04870

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value :

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

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

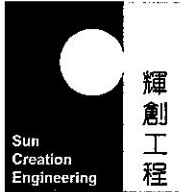
Note :

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

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

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

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



輝創工程

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. : C175522

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC17-2161) Date of Receipt / 收件日期 : 18 September 2017

Description / 儀器名稱 : Precision Acoustic Calibrator

Manufacturer / 製造商 : LARSON DAVIS

Model No. / 型號 : CAL200

Serial No. / 編號 : 11334

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 : 2 October 2017


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


H T Wong
Technical Officer

Certified By
核證


K C Lee
Engineer

Date of Issue
簽發日期

3 October 2017

This certificate is valid only if used in accordance with the National Standard specified in the certificate. This certificate shall not be reproduced, except in full, with out the prior written consent of the issuer.

此證書只適用於按照證書內所列之國家標準進行校準。此證書不得被複製，除非事先獲得發行人之書面同意。

Sun Creation Engineering Limited, Calibration and Testing Laboratory

Co. 11, My Loft, 9 Hoi Wing Road, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司, 校準及測試實驗室

Co. 11, My Loft, 9 Hoi Wing Road, Tuen Mun, New Territories, Hong Kong

Tel: 3426 1111 Fax: 3426 1111 E-mail: info@suncreation.com.hk Website: www.suncreation.com



輝創工程

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. : C175522
證書編號

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

Equipment ID	Description	Certificate No.
CL130	Universal Counter	C173864
CL281	Multifunction Acoustic Calibrator	PA160023
TST150A	Measuring Amplifier	C161175

- 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	93.9	± 0.2	± 0.2
114 dB, 1 kHz	113.9		

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec. (Hz)	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.



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
簽發日期

:

16 October 2017

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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Sun Creation Engineering Limited - Calibration & Testing Laboratory

c/o 4/F, 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

Certificate of Calibration

校正證書

Certificate No. : C175727

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 10 measurements at each calibration point.
- Test equipment :

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

- Test procedure : MA130N.

- 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.

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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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

SEPTEMBER 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday																																																																																				
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2 Noise Monitoring	3	4	5 Noise Monitoring	6	7 ET weekly site inspection Landscape and Visual Monitoring	8																																																																																				
9 Noise Monitoring	10	11	12	13 Noise Monitoring	14 ET weekly site inspection Ecological Monitoring	15																																																																																				
16	17	18	19 Noise Monitoring	20	21 ET weekly site inspection Landscape and Visual Monitoring	22																																																																																				
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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} (dB(A)) ⁽²⁾
	Start	Finish	Corrected L _{eq} (30min) ⁽¹⁾	Corrected L ₉₀ ⁽¹⁾	Corrected L ₁₀ ⁽¹⁾		
5-Sep-18	9:10	9:40	59.1	57.7	60.6	0.2	70
13-Sep-18	10:05	10:35	59.3	58.0	60.9	0.3	70
19-Sep-18	10:10	10:40	60.9	58.0	62.7	0.2	70
27-Sep-18	9:50	10:20	59.8	58.4	61.4	0.2	70

NM2 - Hong Kong Juvenile Care Centre							
Date	Time		Noise Levels, dB(A)			Wind Speed (ms-1)	Limit Level for L _{eq} (dB(A)) ⁽²⁾
	Start	Finish	L _{eq} (30min)	L ₉₀	L ₁₀		
5-Sep-18	8:30	9:00	51.9	50.7	52.4	0.2	70
13-Sep-18	9:25	9:55	52.3	50.9	53.8	0.3	70
19-Sep-18	9:20	9:50	53.0	50.8	54.4	0.2	70
27-Sep-18	9:00	9:30	52.6	50.8	54.1	0.2	70

Noise Monitoring Data - Summary of Construction Noise Monitoring Results (15mins), dB(A)

NM1A - Slope near the Victoria Shanghai Academy							
Date	Time		Noise Levels, dB(A)			Wind Speed (ms-1)	Limit Level for L _{eq} (dB(A)) ⁽³⁾
	Start	Finish	Corrected L _{eq} (15min) ⁽¹⁾	Corrected L ₉₀ ⁽¹⁾	Corrected L ₁₀ ⁽¹⁾		
2-Sep-18	13:35	13:50	57.0	55.7	58.5	0.3	70
9-Sep-18	10:35	10:50	56.5	55.1	58.1	0.5	70
23-Sep-18	13:40	13:55	57.8	56.2	59.4	0.3	70
30-Sep-18	10:10	10:25	57.2	55.9	58.6	0.2	70

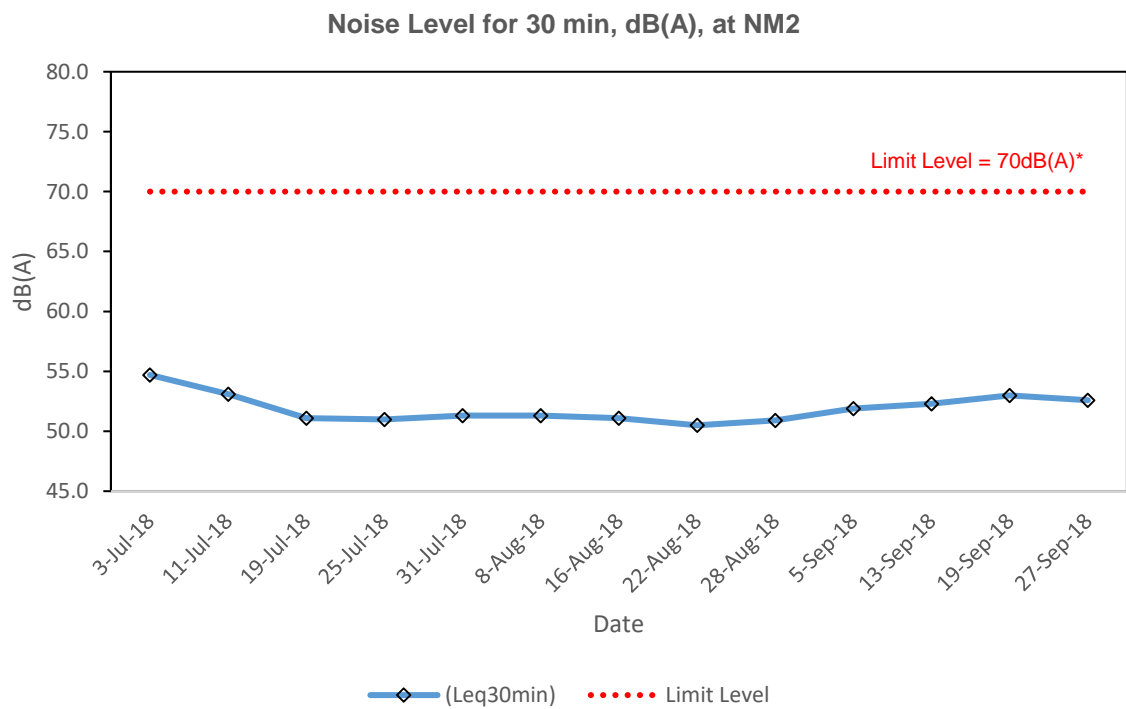
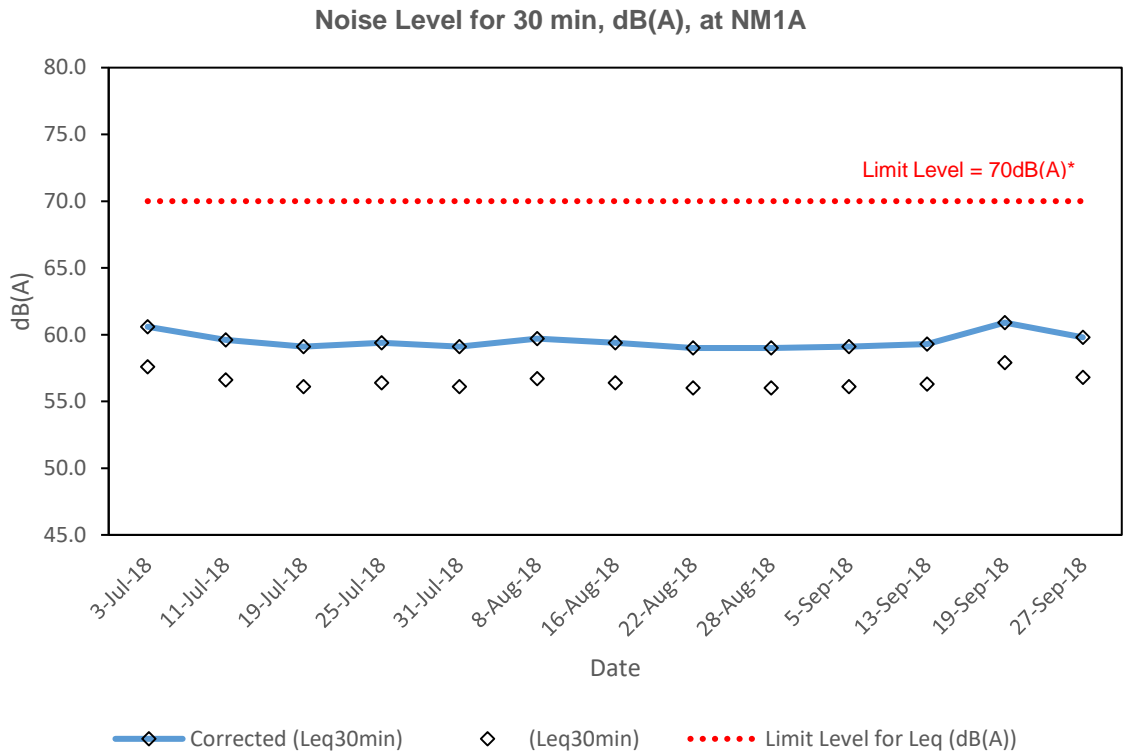
NM2 - Hong Kong Juvenile Care Centre							
Date	Time		Noise Levels, dB(A)			Wind Speed (ms-1)	Limit Level for L _{eq} (dB(A)) ⁽³⁾
	Start	Finish	L _{eq} (15min)	L ₉₀	L ₁₀		
2-Sep-18	13:10	13:25	47.7	46.4	49.0	0.3	65
9-Sep-18	10:10	10:25	48.4	47.1	49.8	0.5	65
23-Sep-18	13:10	13:25	48.5	46.8	50.1	0.3	65
30-Sep-18	9:40	9:55	48.1	46.8	49.3	0.2	65

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.
- (3) Technical memorandum on noise from construction work other than percussive piling – Section 4 Table 2.

J. Graphical Plots for Noise Monitoring Data

Graphical Plot for Noise Monitoring Data (July - September 2018)

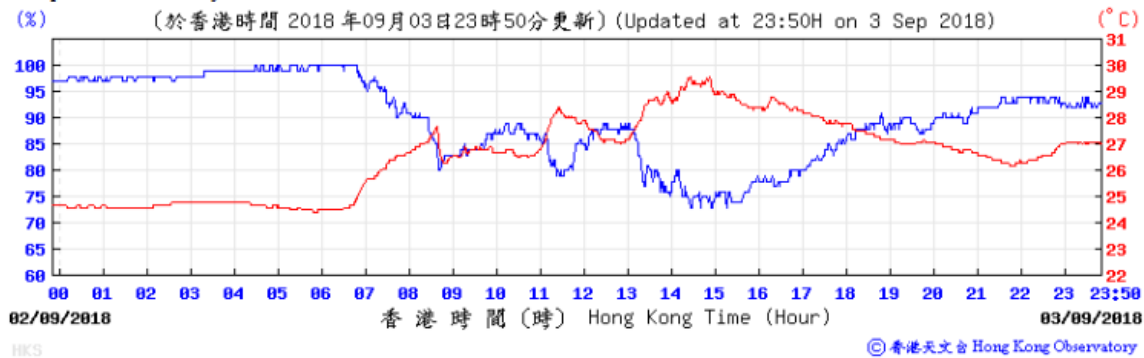


K. Meteorological Data

3/9/2018

Wong Chuk Hang Station

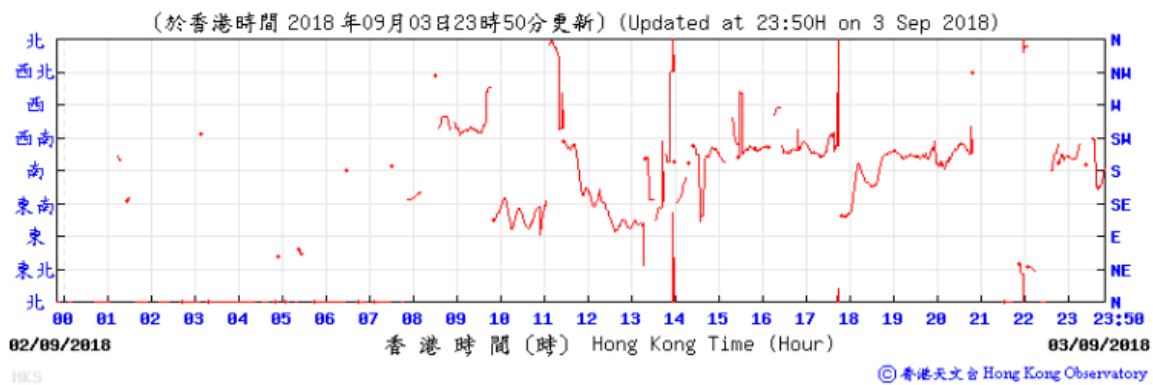
Temperature/Humidity:



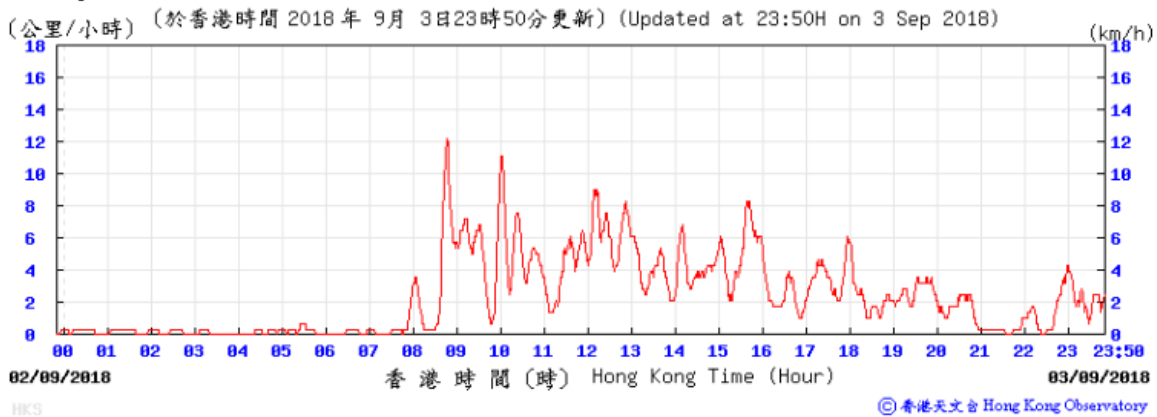
Pressure:



Wind Direction:

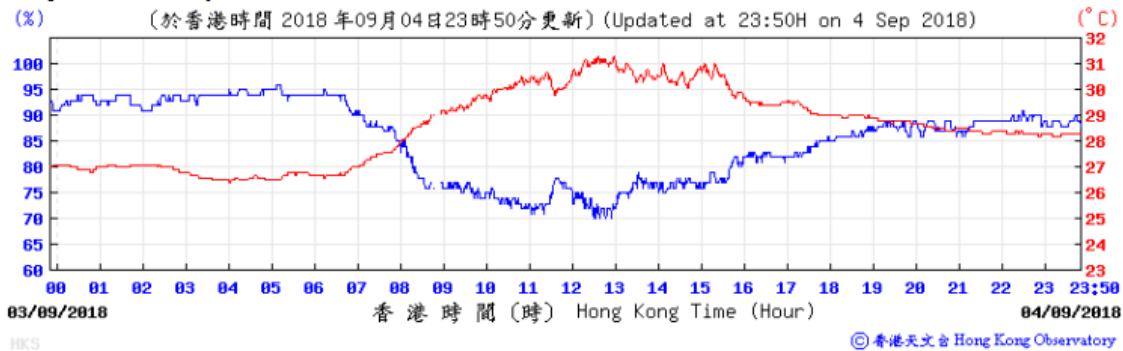


Wind Speed:



4/9/2018

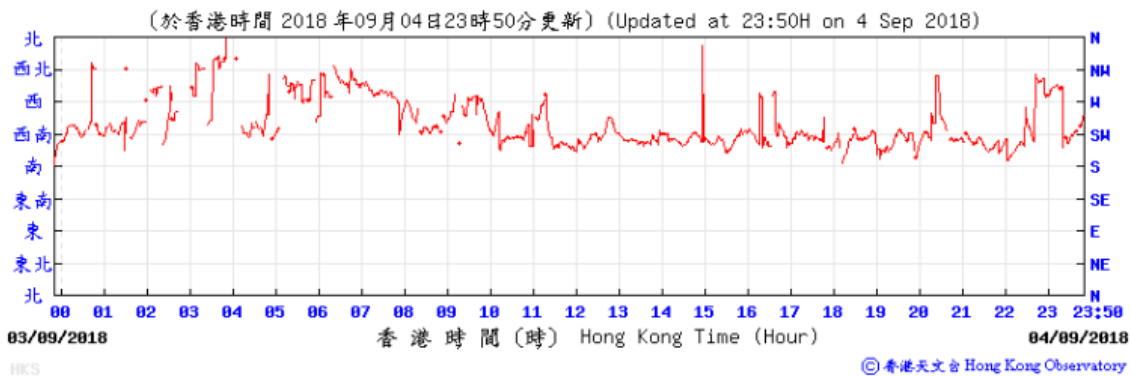
Temperature/Humidity:



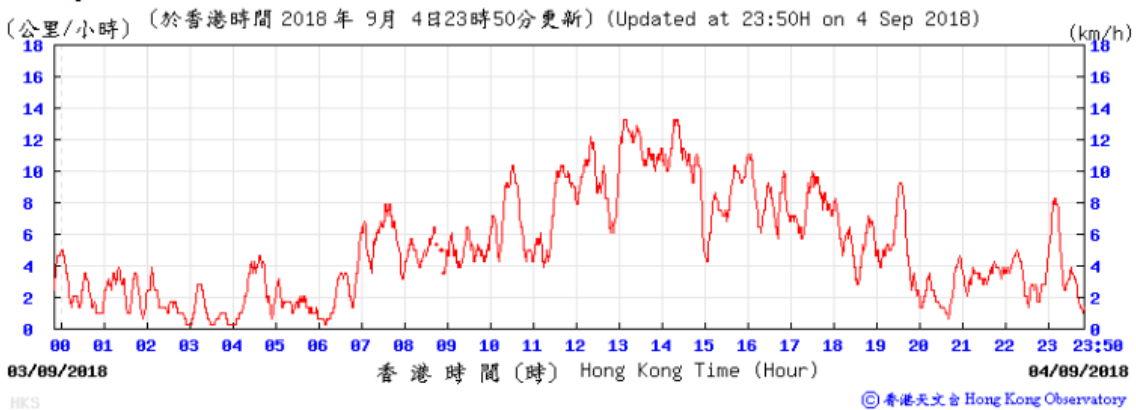
Pressure:



Wind Direction:

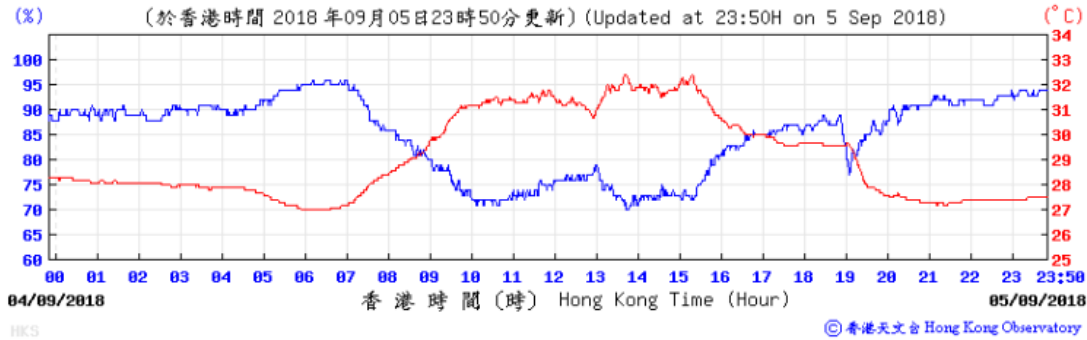


Wind Speed:



5/9/2018

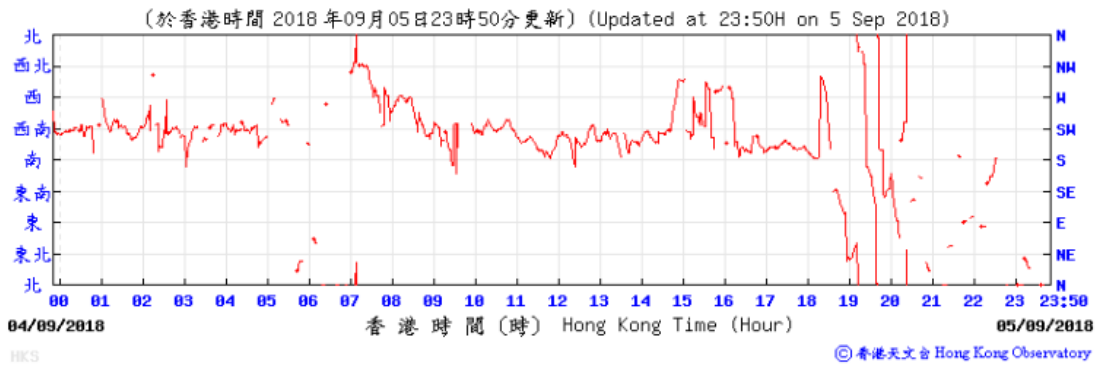
Temperature/Humidity:



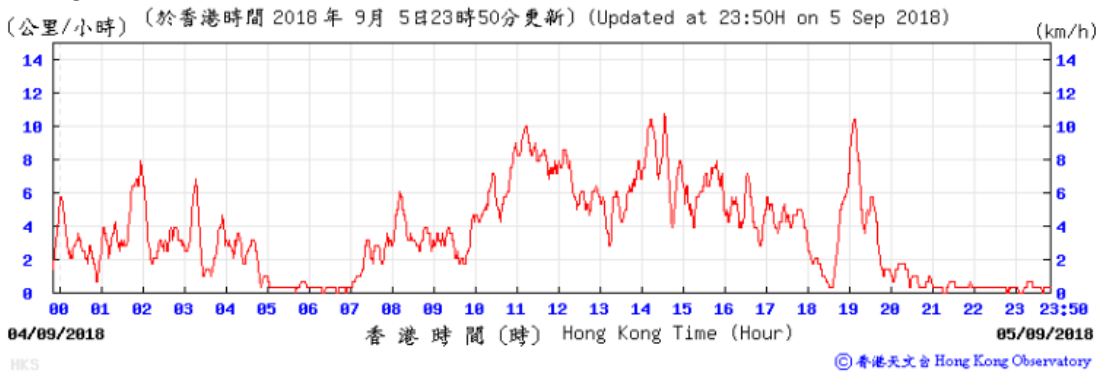
Pressure:



Wind Direction:

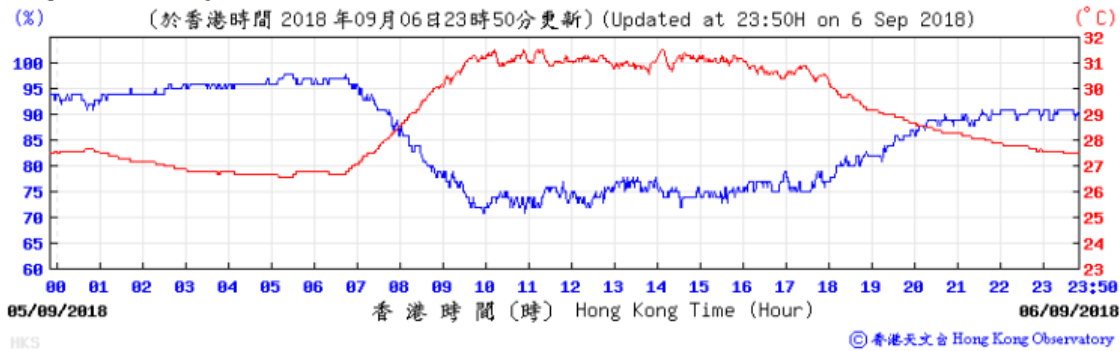


Wind Speed:



6/9/2018

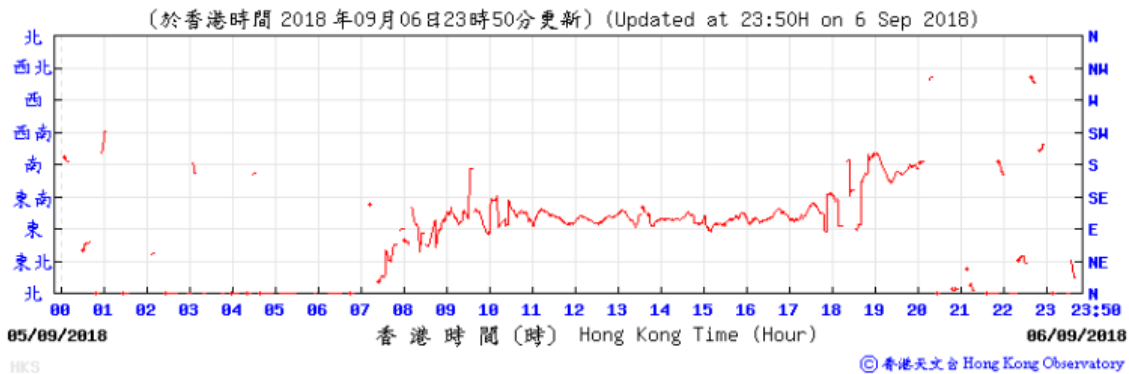
Temperature/Humidity:



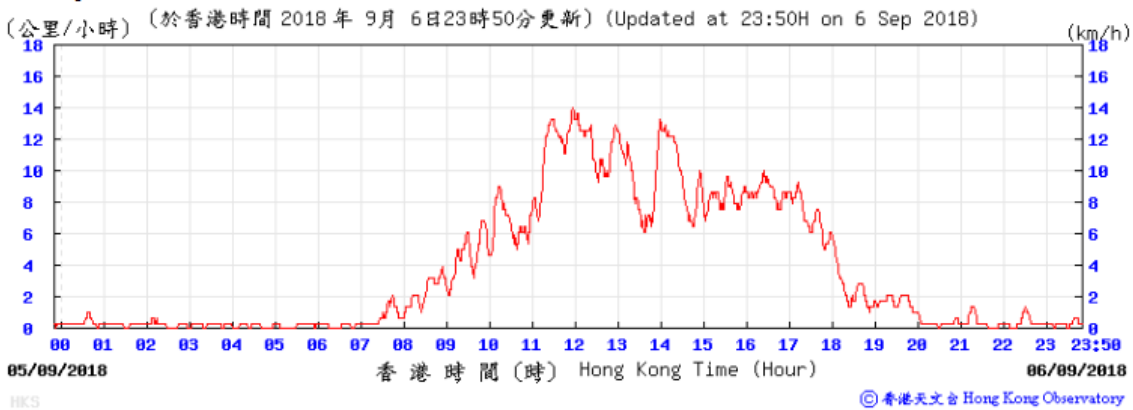
Pressure:



Wind Direction:



Wind Speed:



7/9/2018

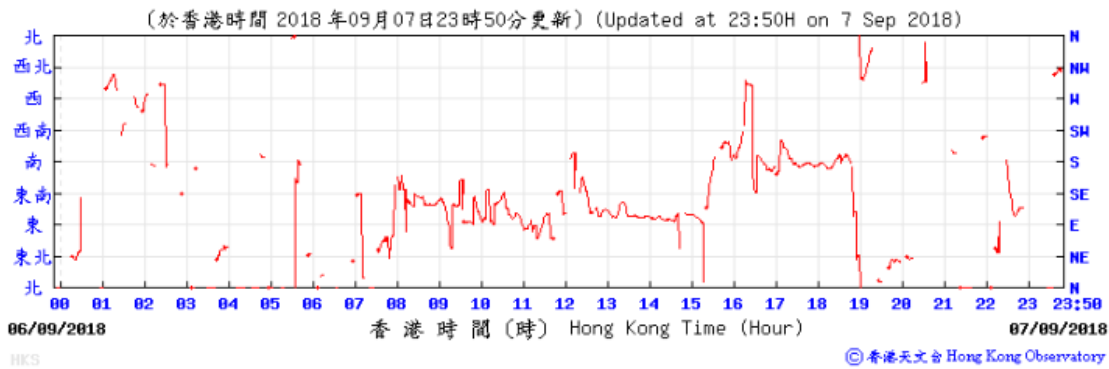
Temperature/Humidity:



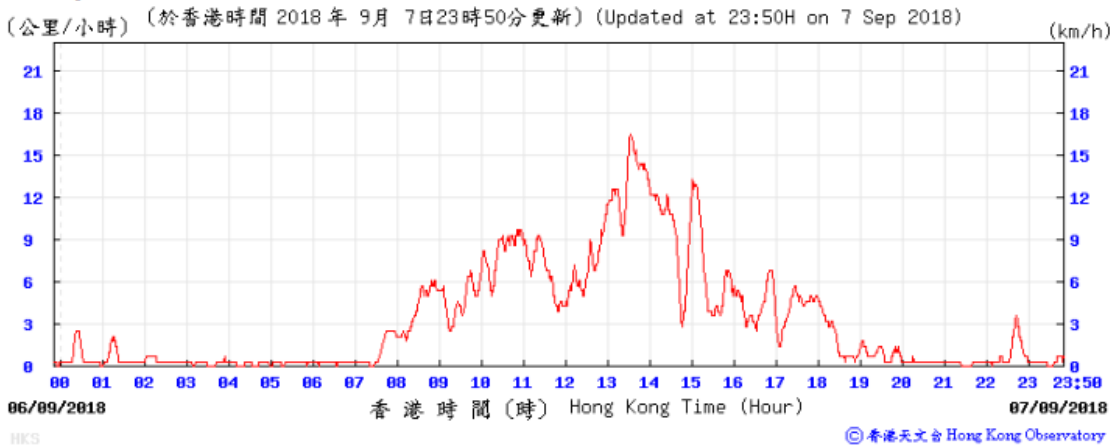
Pressure:



Wind Direction:

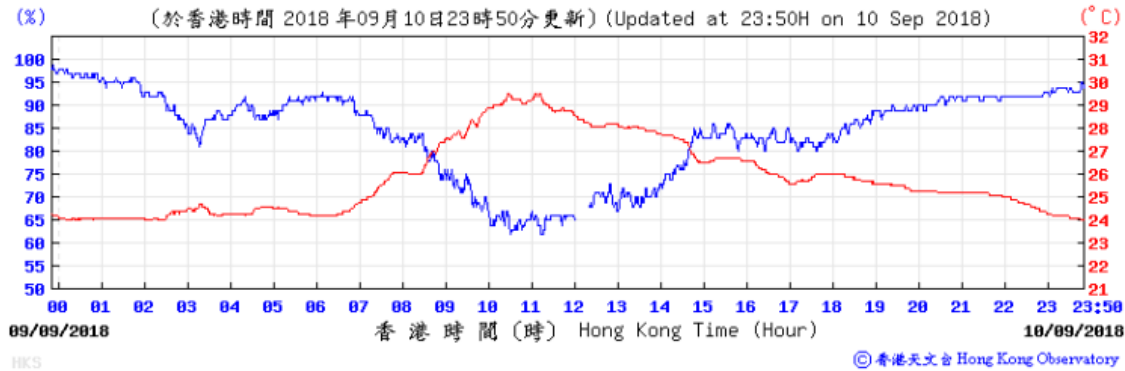


Wind Speed:



10/9/2018

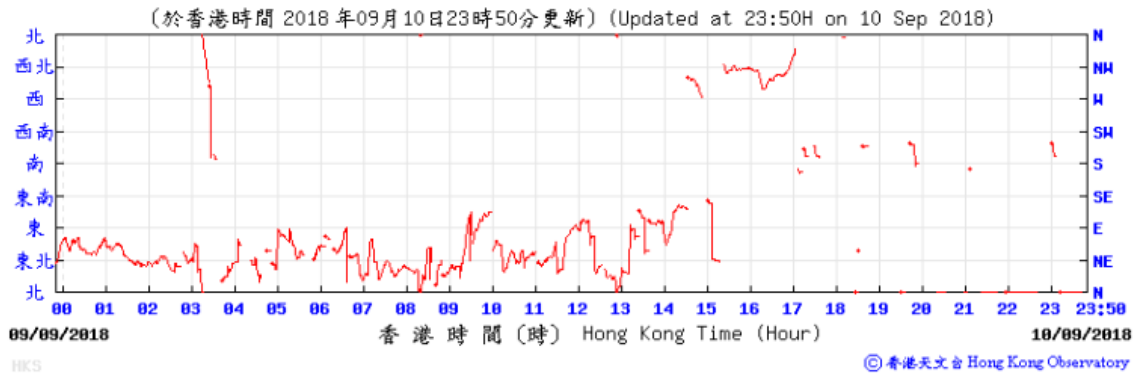
Temperature/Humidity:



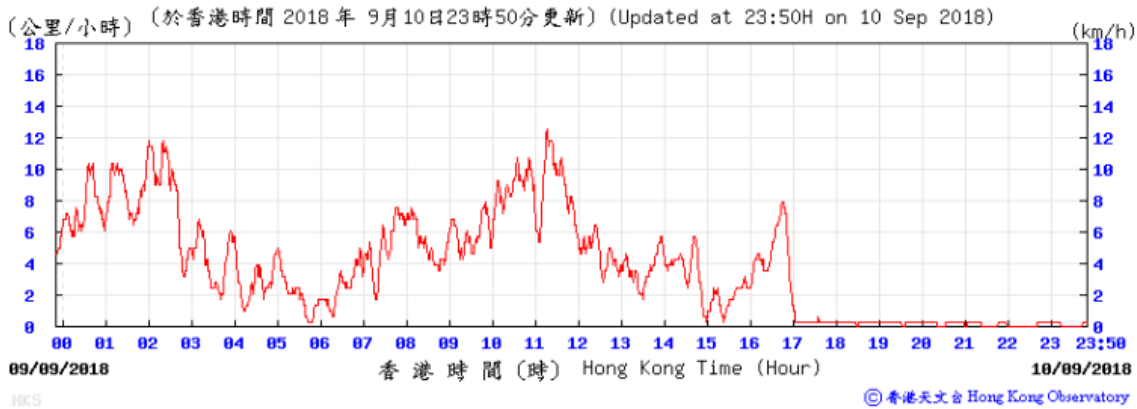
Pressure:



Wind Direction:

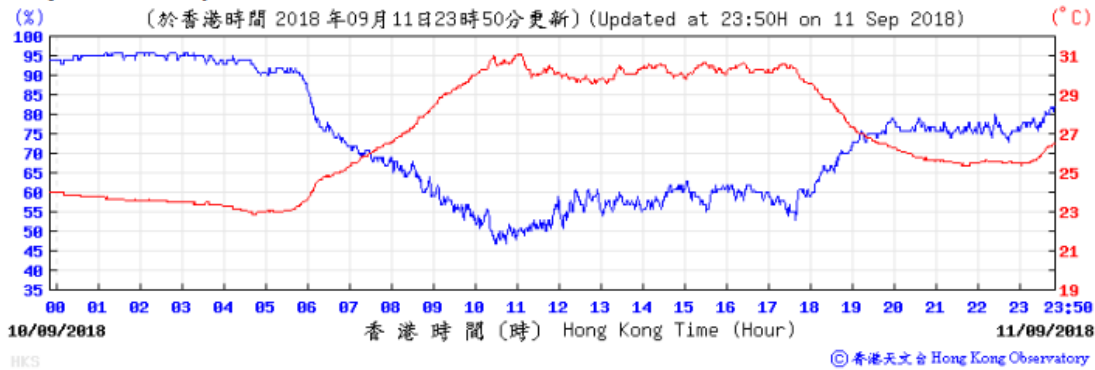


Wind Speed:



11/9/2018

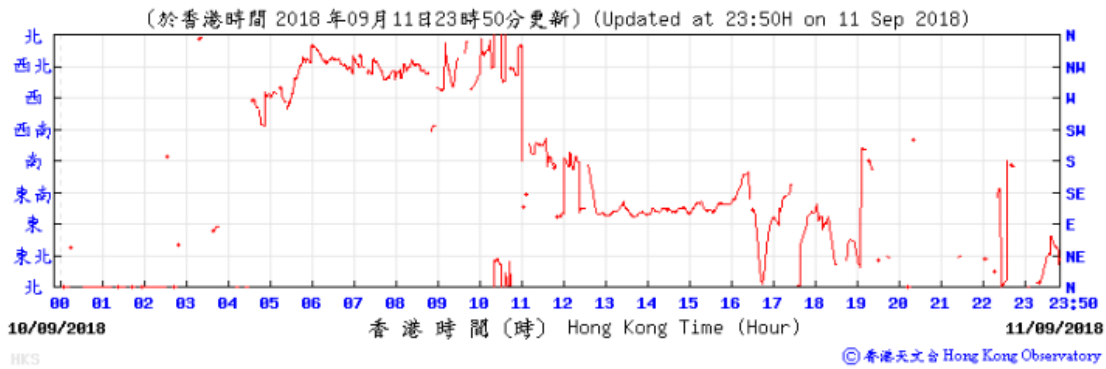
Temperature/Humidity:



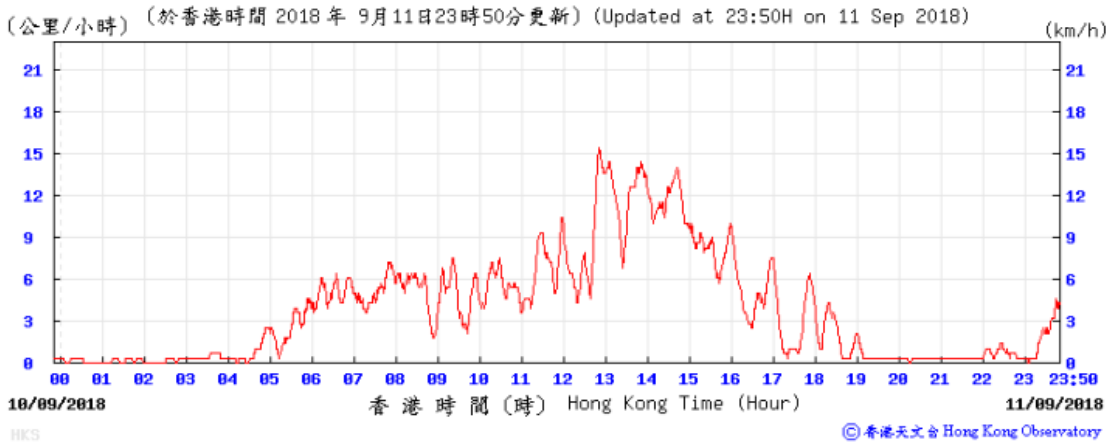
Pressure:



Wind Direction:

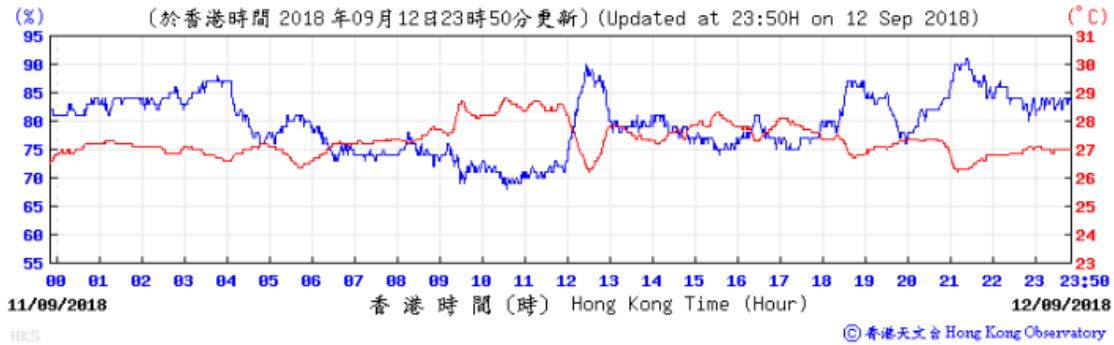


Wind Speed:



12/9/2018

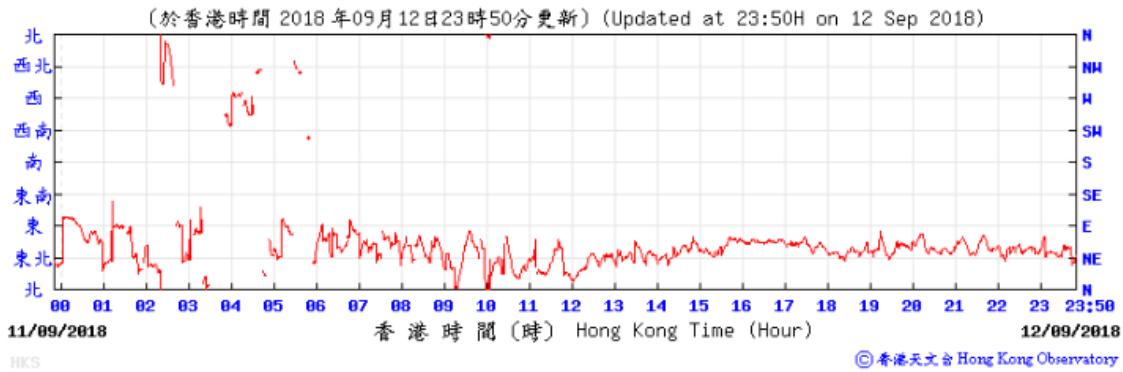
Temperature/Humidity:



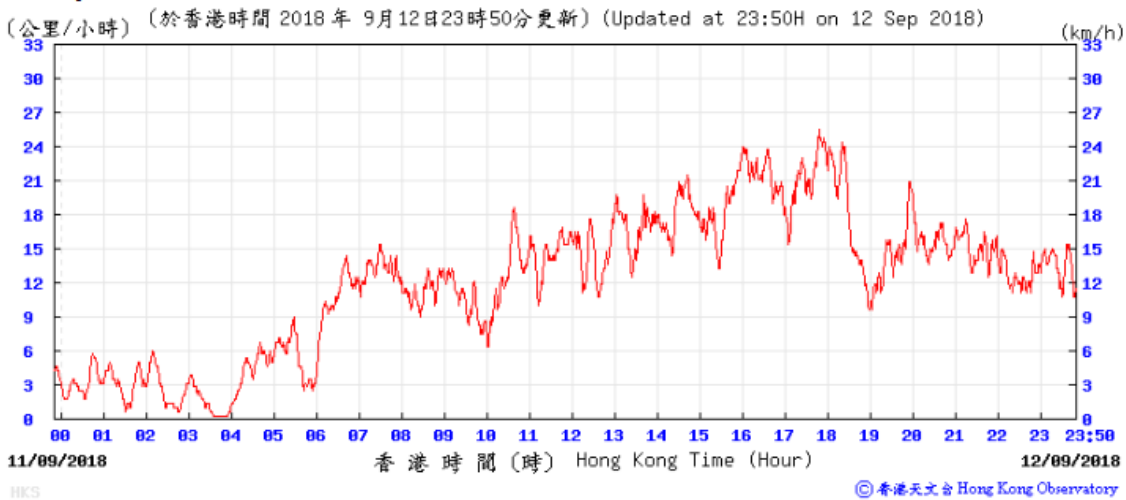
Pressure:



Wind Direction:

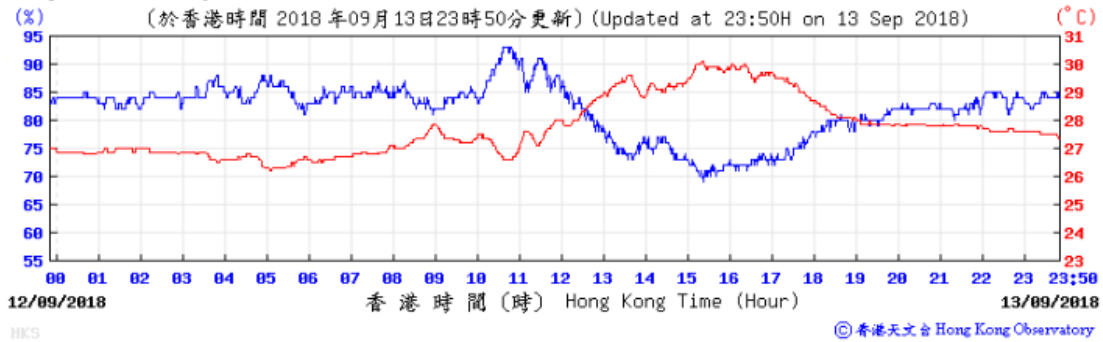


Wind Speed:



13/9/2018

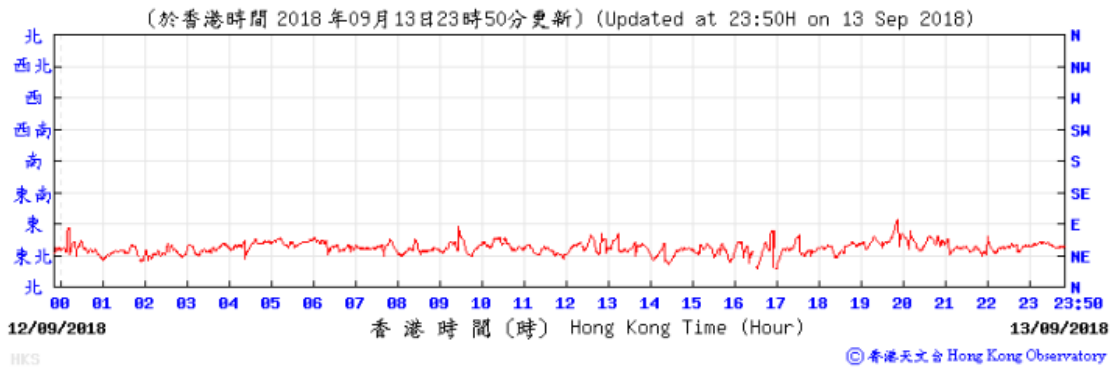
Temperature/Humidity:



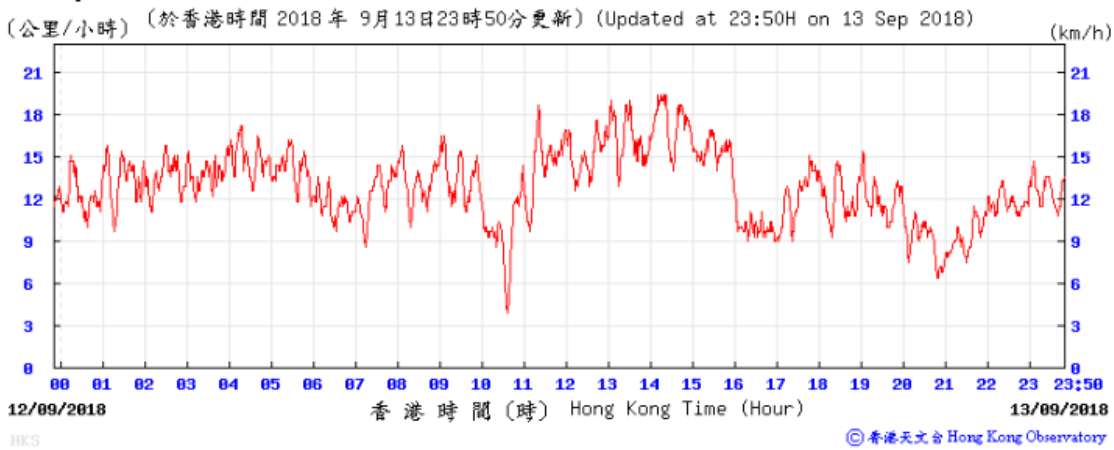
Pressure:



Wind Direction:

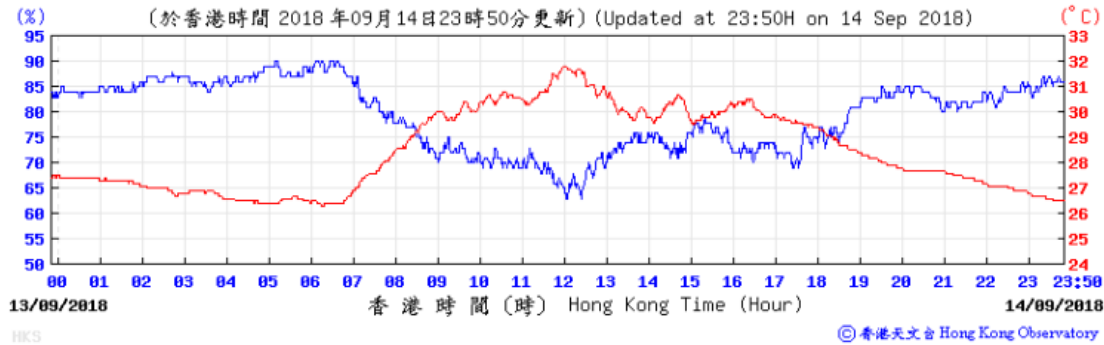


Wind Speed:



14/9/2018

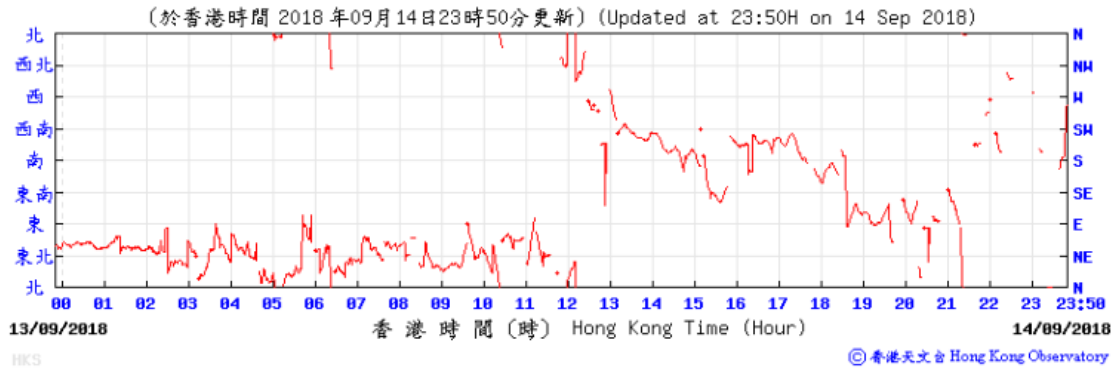
Temperature/Humidity:



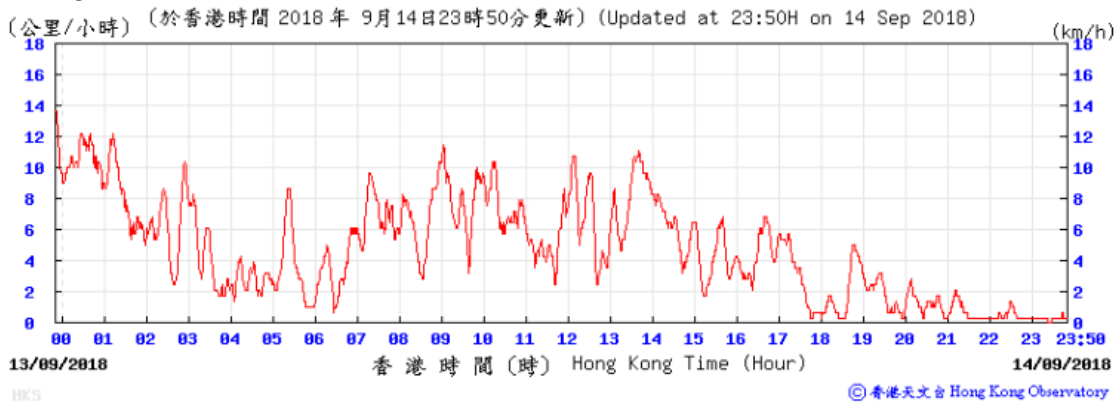
Pressure:



Wind Direction:

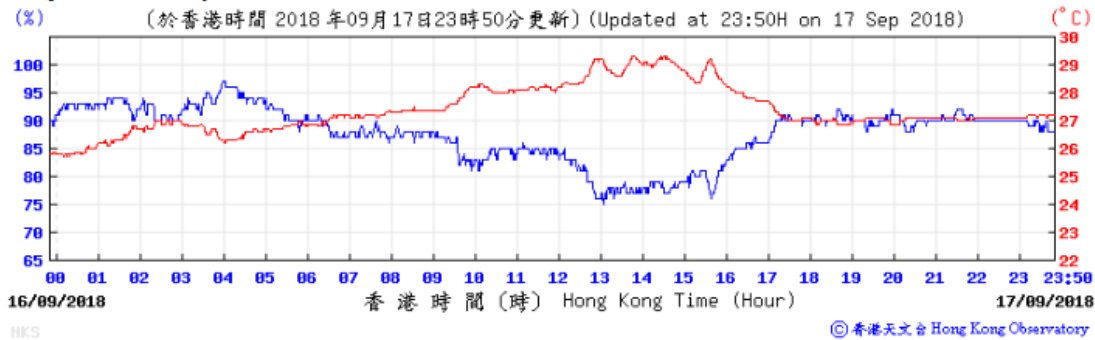


Wind Speed:



17/9/2018

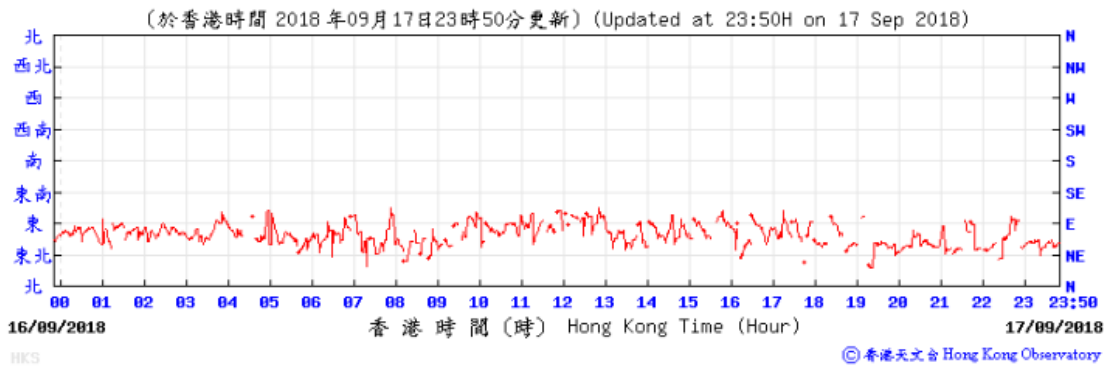
Temperature/Humidity:



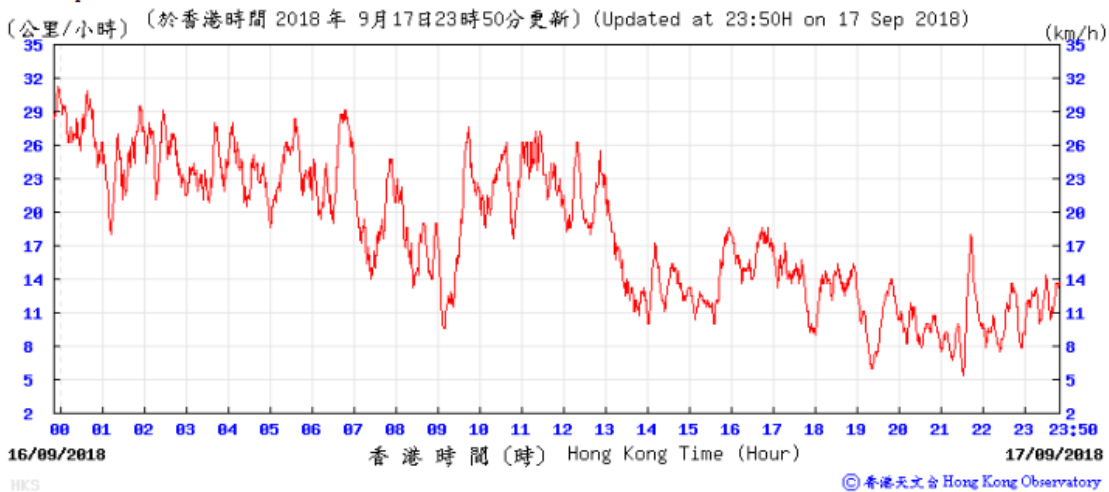
Pressure:



Wind Direction:

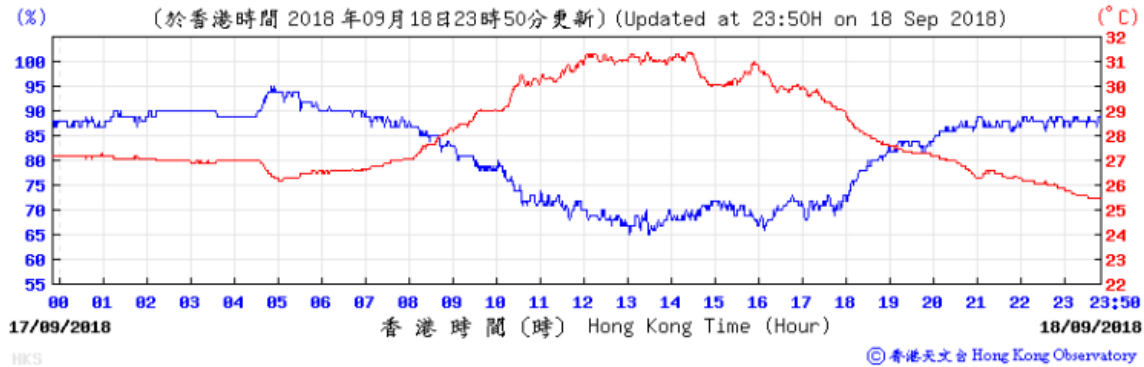


Wind Speed:



18/9/2018

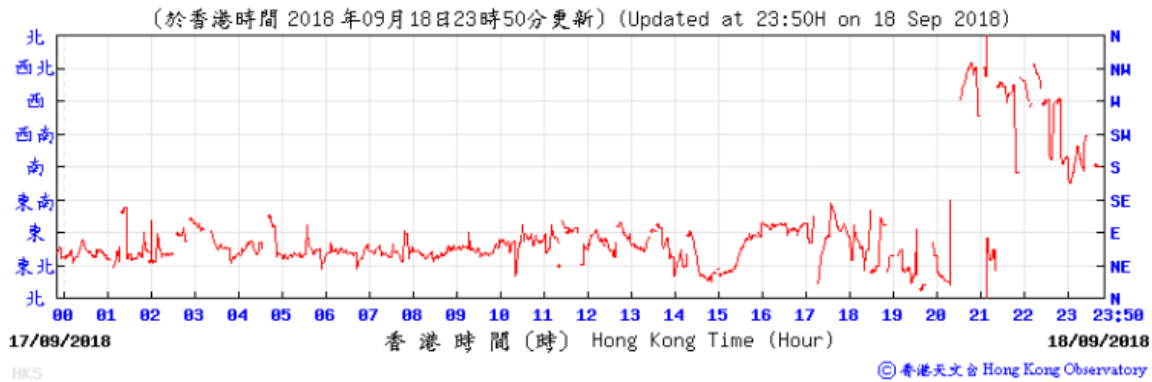
Temperature/Humidity:



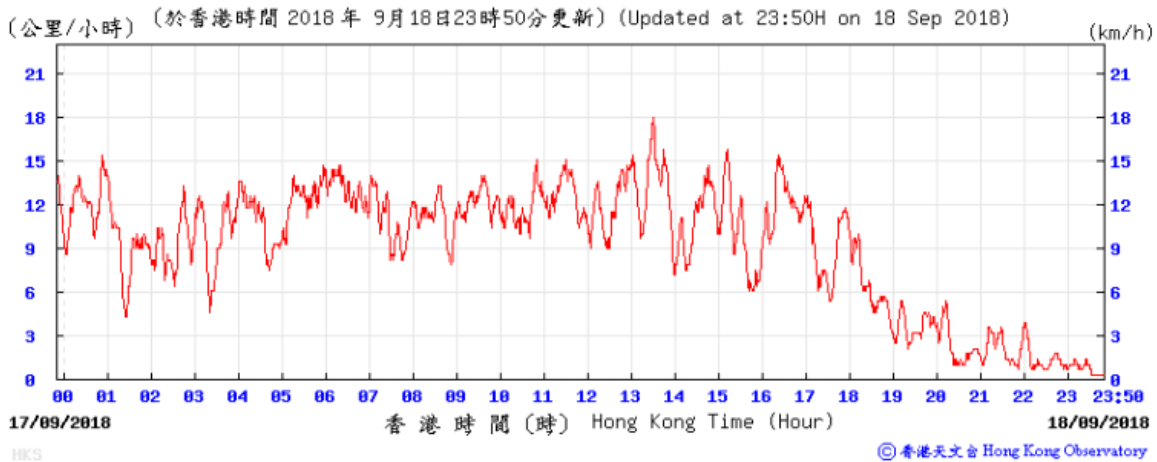
Pressure:



Wind Direction:

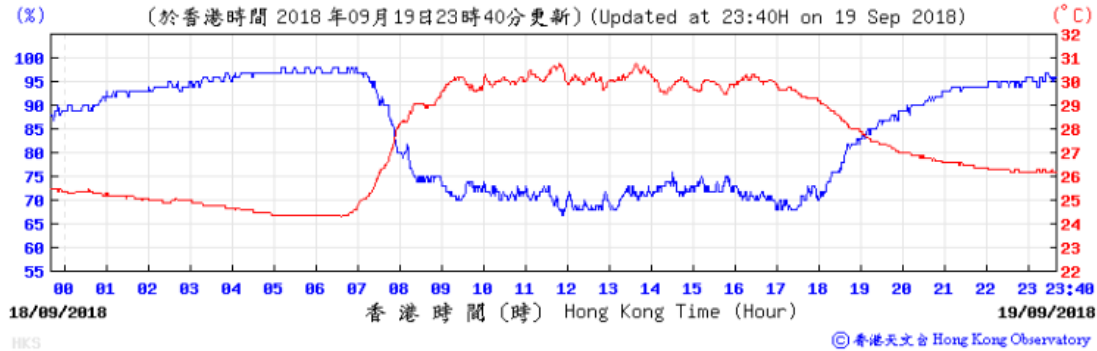


Wind Speed:



19/9/2018

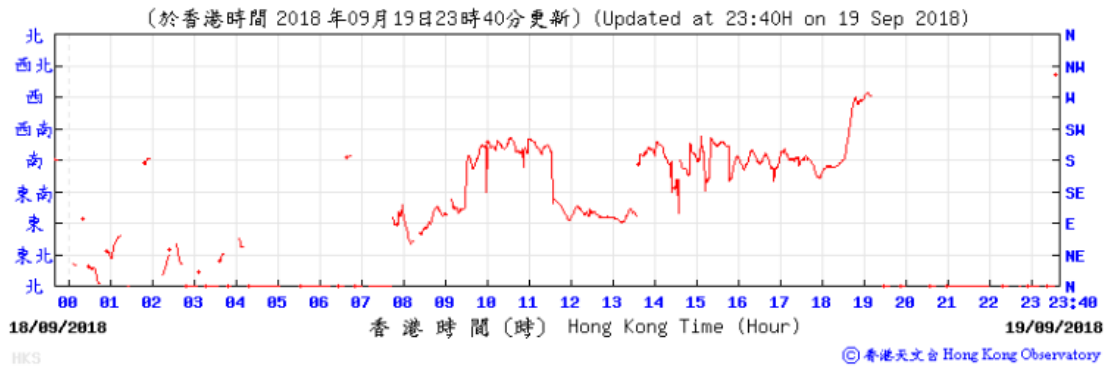
Temperature/Humidity:



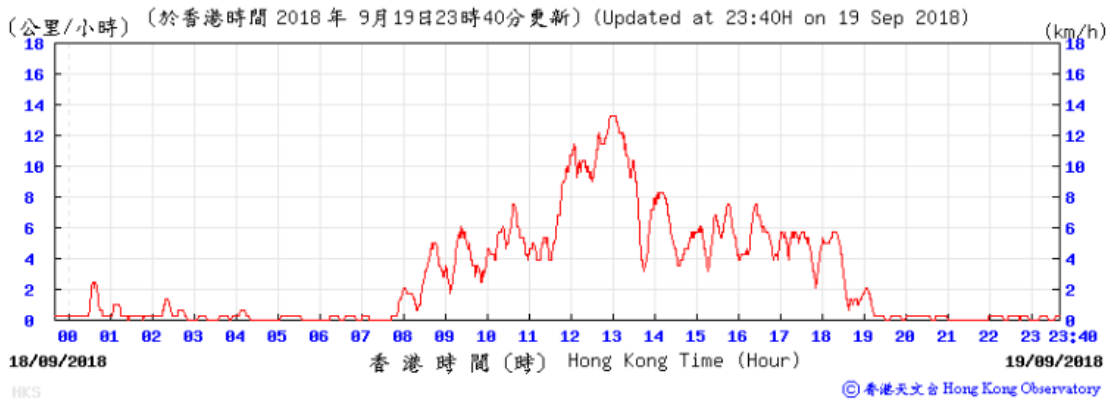
Pressure:



Wind Direction:

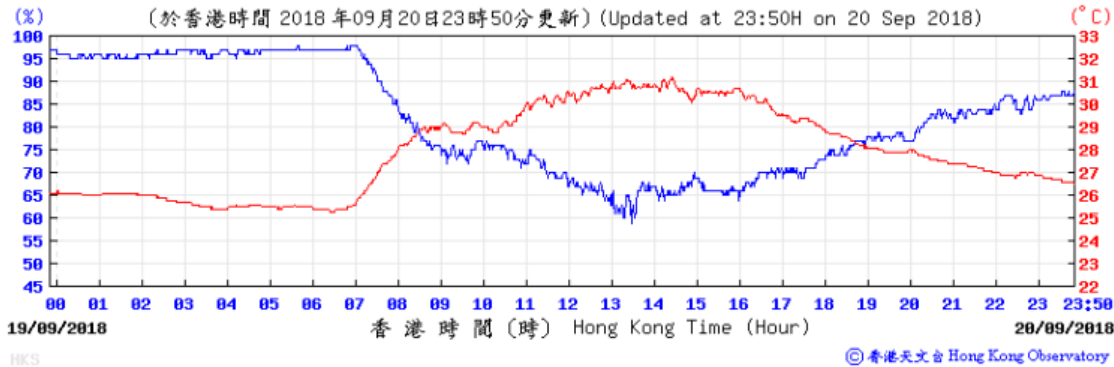


Wind Speed:



20/9/2018

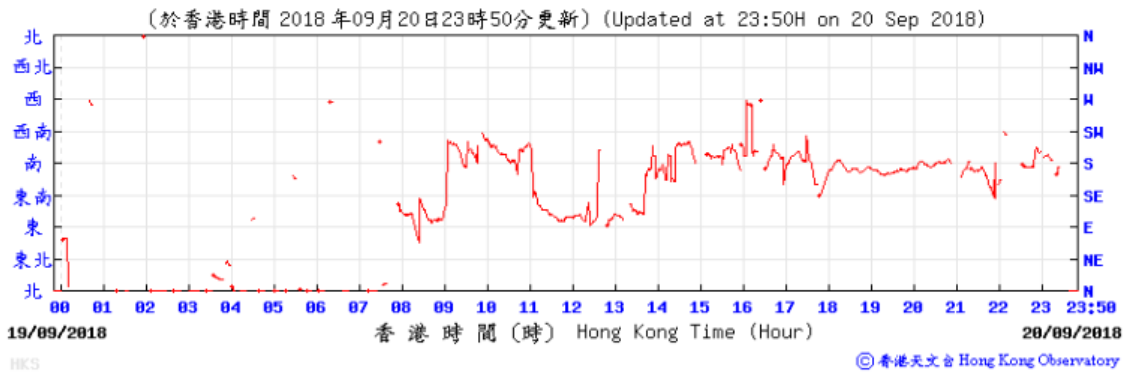
Temperature/Humidity:



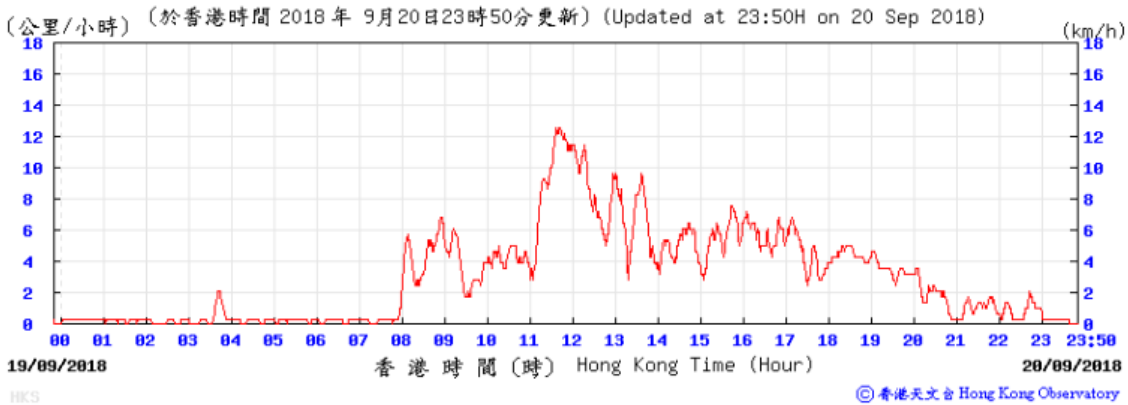
Pressure:



Wind Direction:

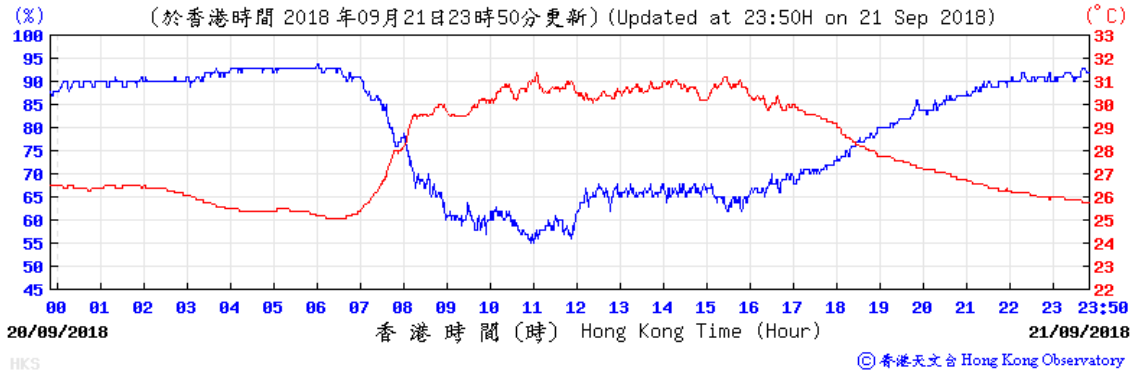


Wind Speed:



21/9/2018

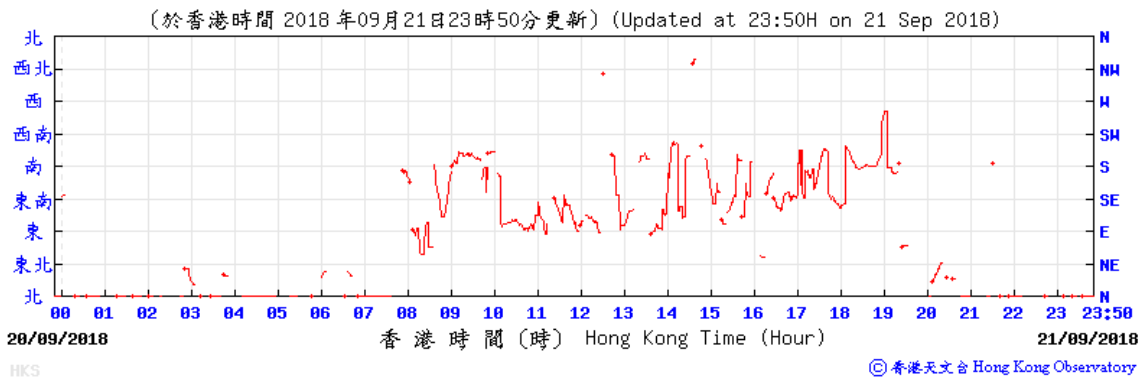
Temperature/Humidity:



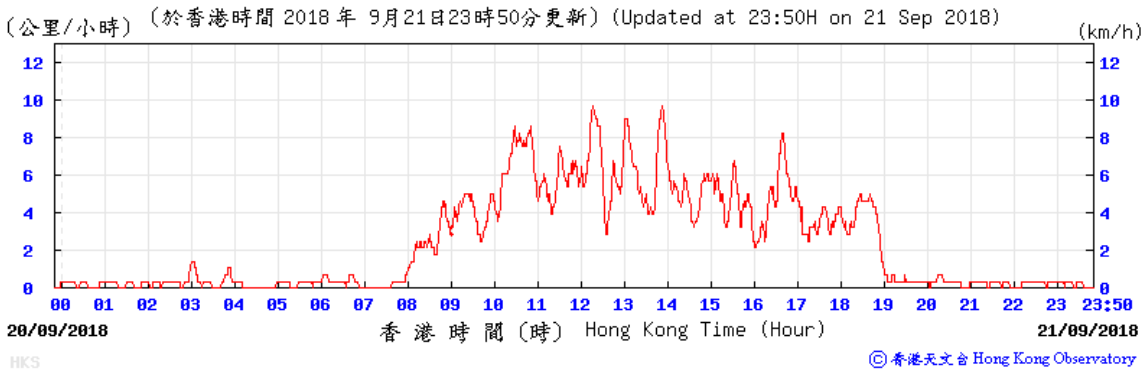
Pressure:



Wind Direction:



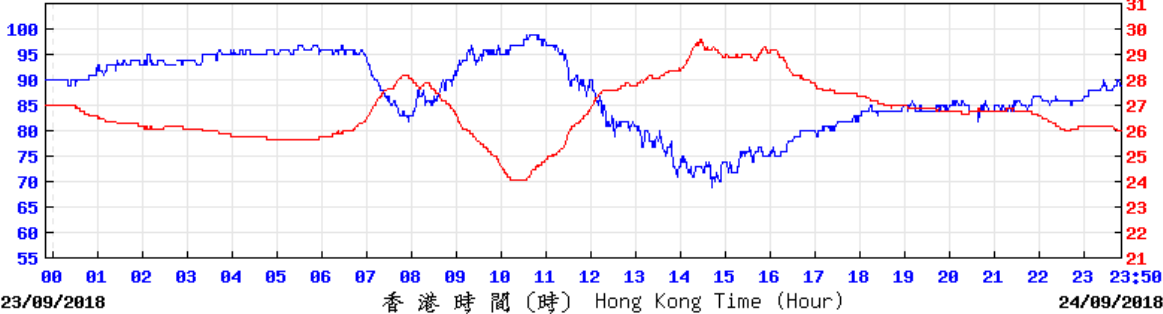
Wind Speed:



24/9/2018

Temperature/Humidity:

(%) (於香港時間 2018年09月24日23時50分更新) (Updated at 23:50H on 24 Sep 2018) (°C)



HKS

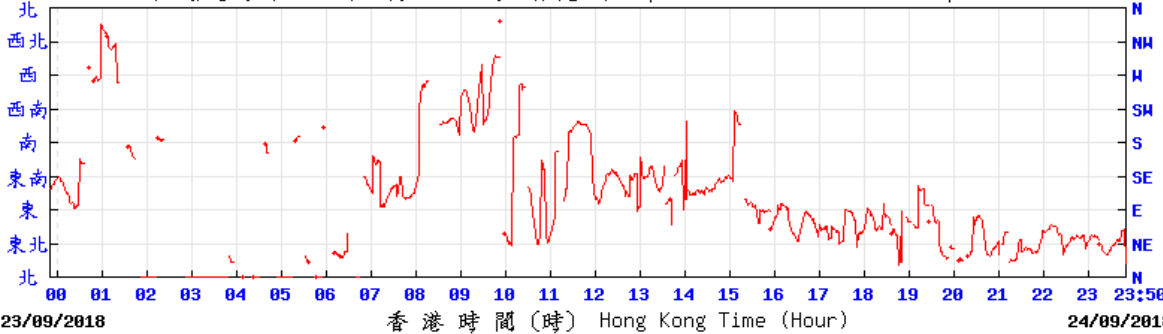
© 香港天文台 Hong Kong Observatory

Pressure:



Wind Direction:

(於香港時間 2018年09月24日23時50分更新) (Updated at 23:50H on 24 Sep 2018)

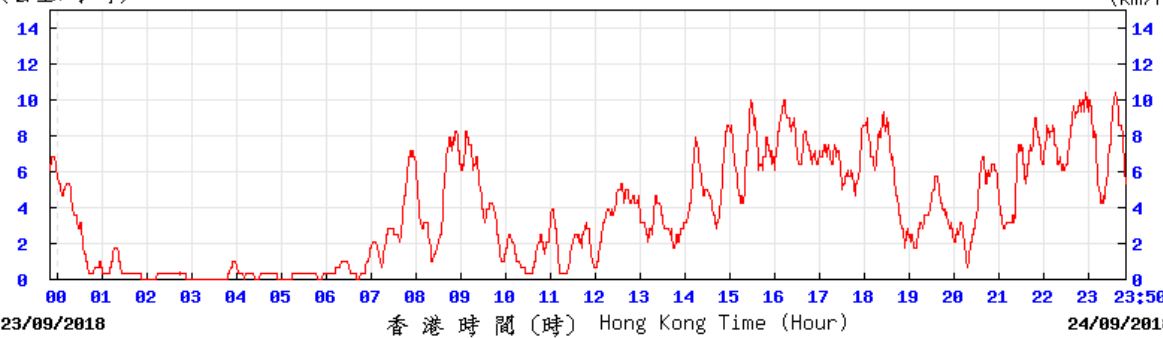


HKS

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Wind Speed:

(公里/小時) (於香港時間 2018年9月24日23時50分更新) (Updated at 23:50H on 24 Sep 2018) (km/h)

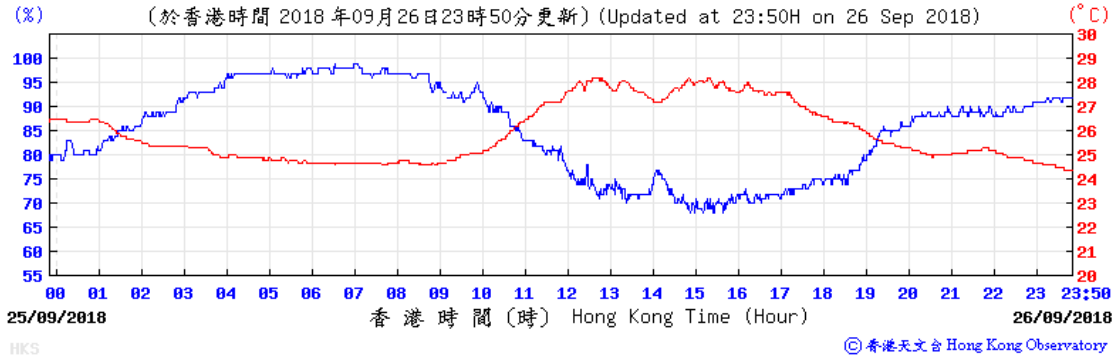


HKS

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26/9/2018

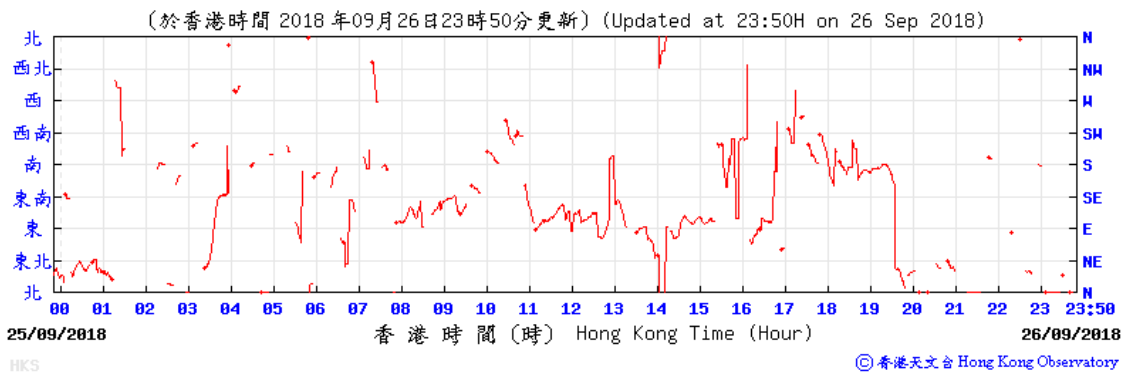
Temperature/Humidity:



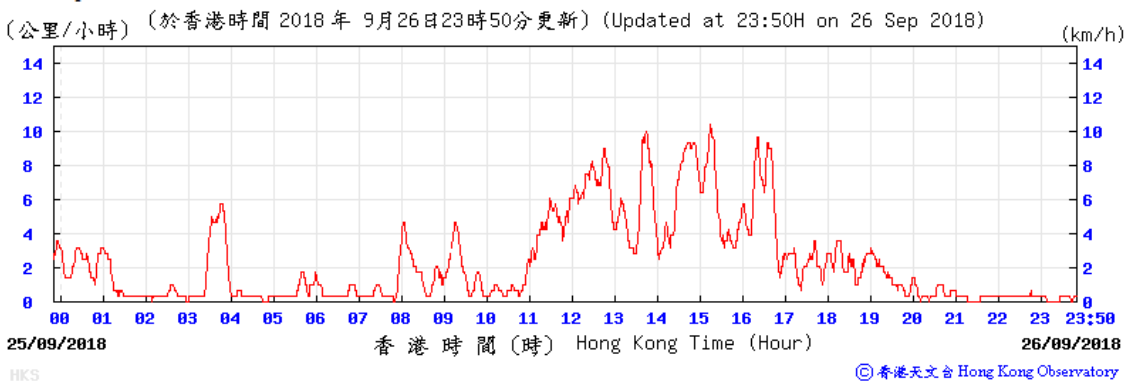
Pressure:



Wind Direction:

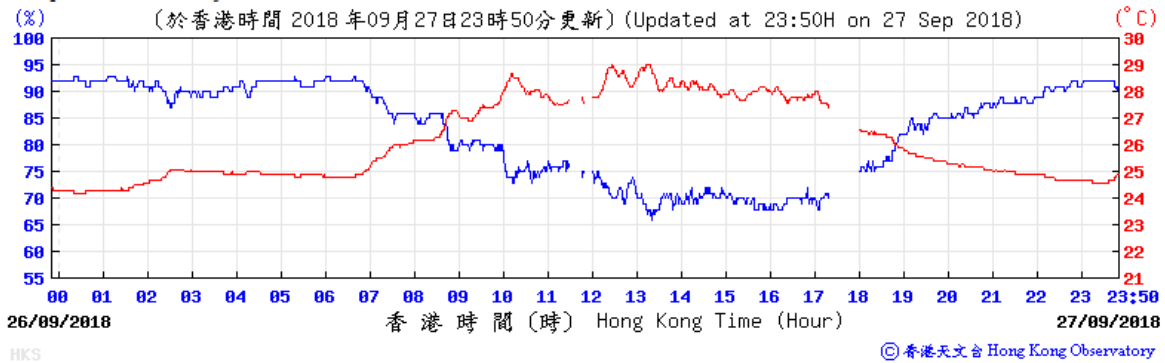


Wind Speed:



27/9/2018

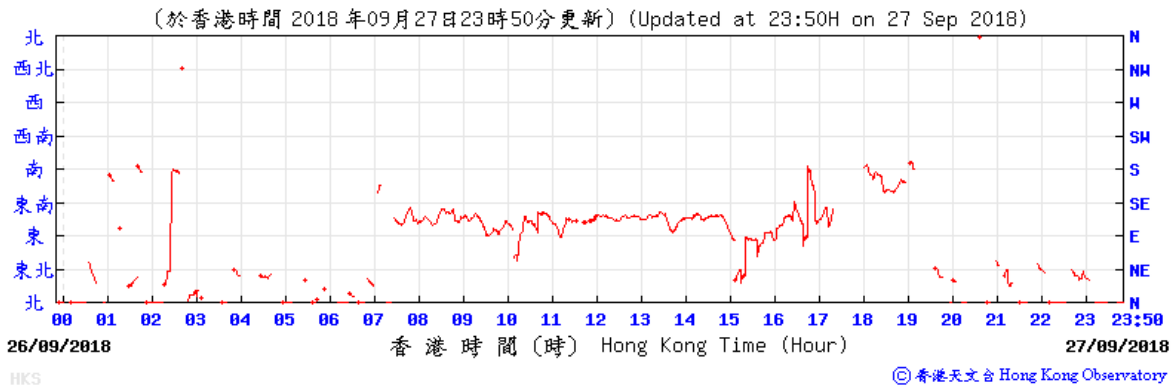
Temperature/Humidity:



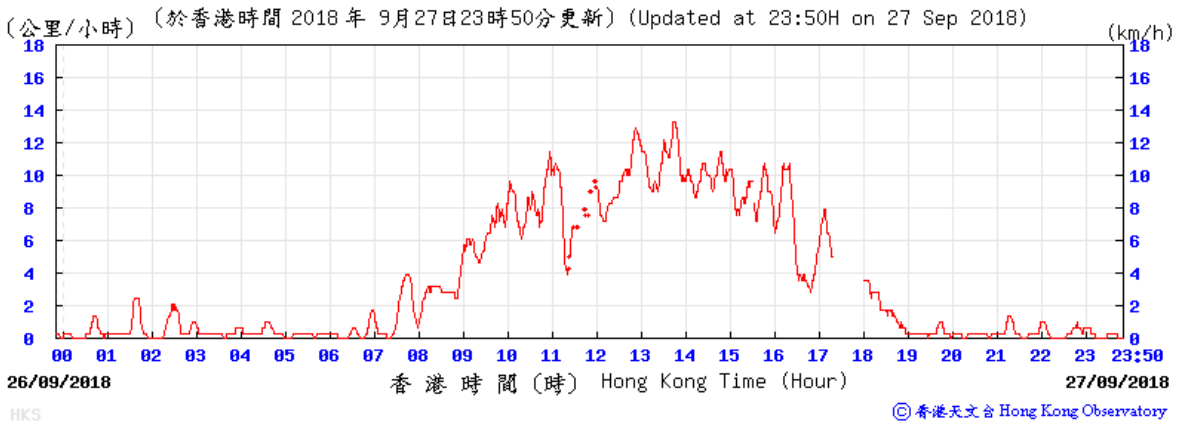
Pressure:



Wind Direction:

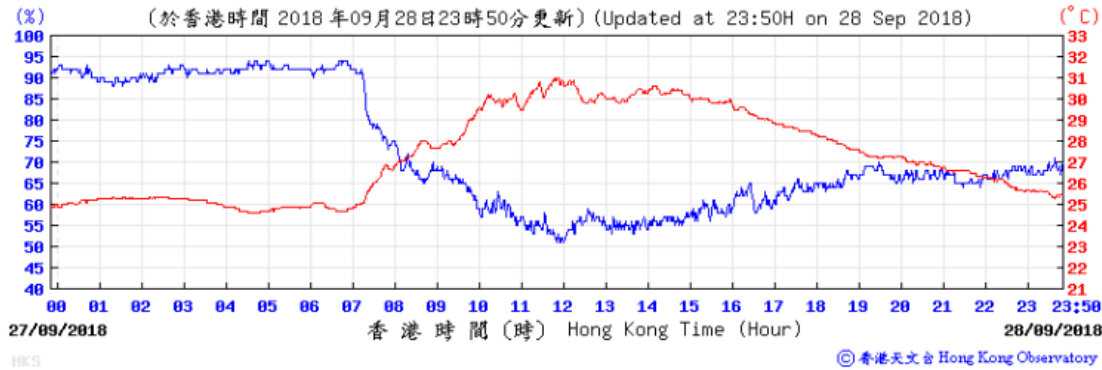


Wind Speed:



28/9/2018

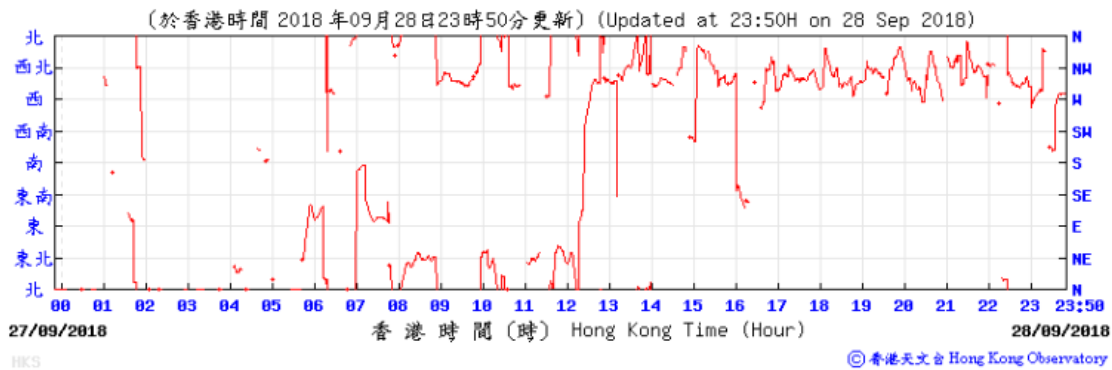
Temperature/Humidity:



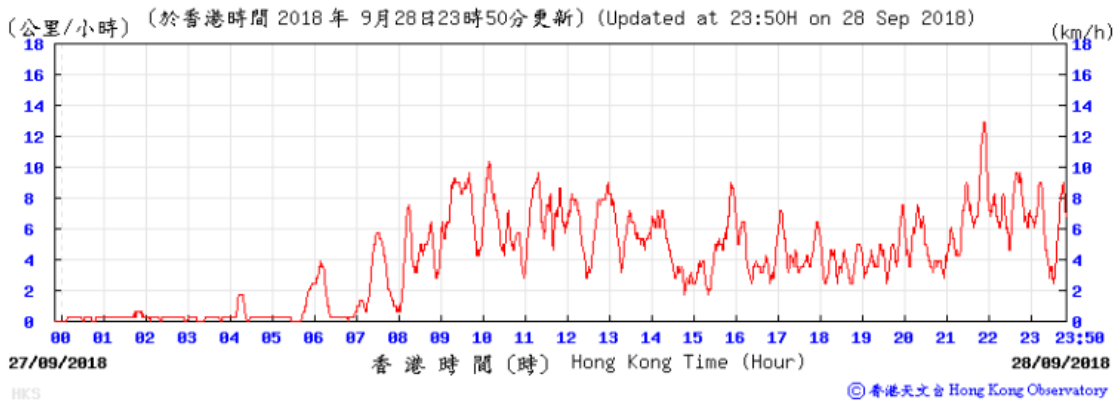
Pressure:



Wind Direction:



Wind Speed:



L. Ecological Inspection Records

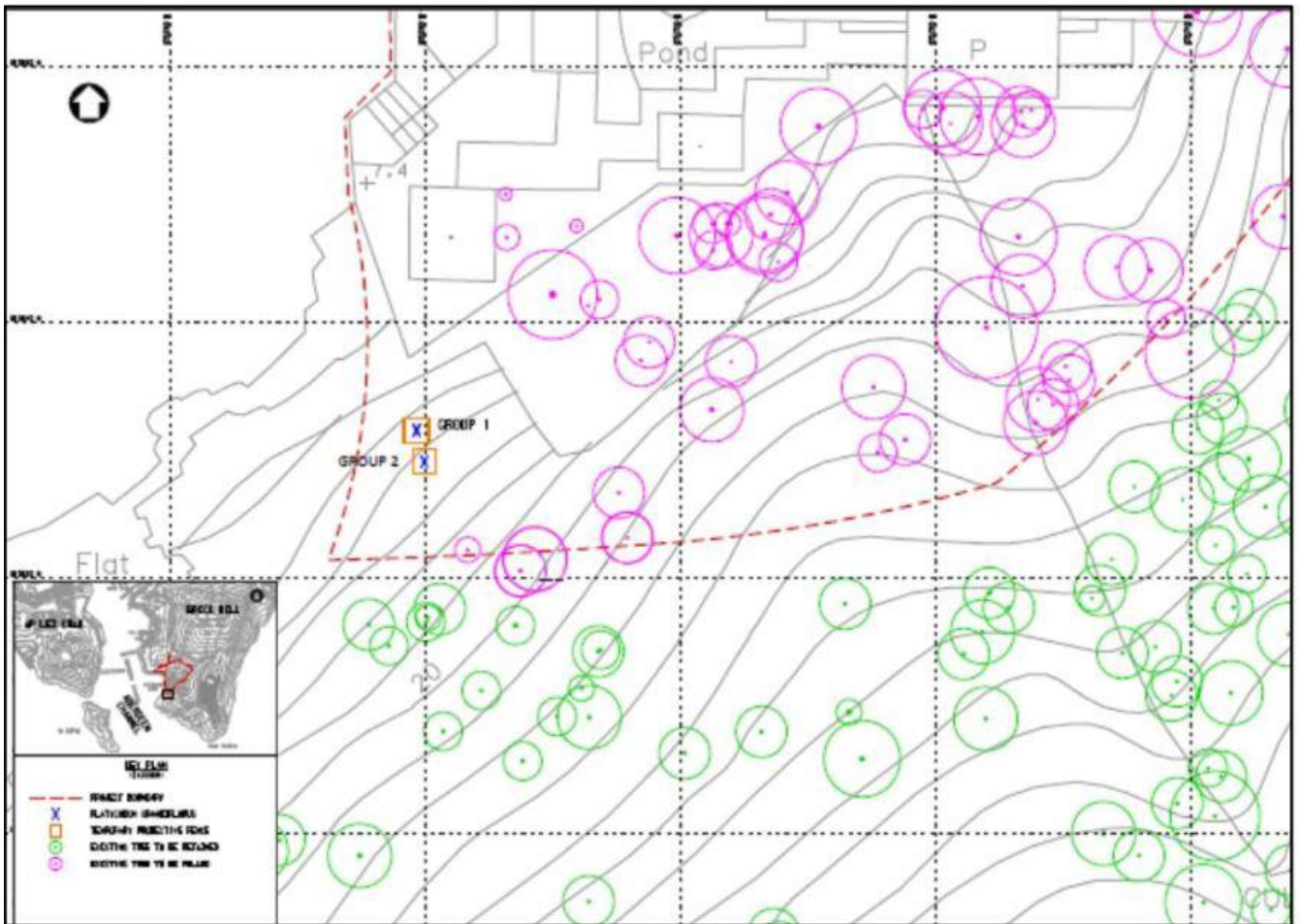


Figure 1 – Location of Two Groups of *Platycodon Grandiflorus*



Photo 1 – Group 1 of *Platycodon Grandiflorus*

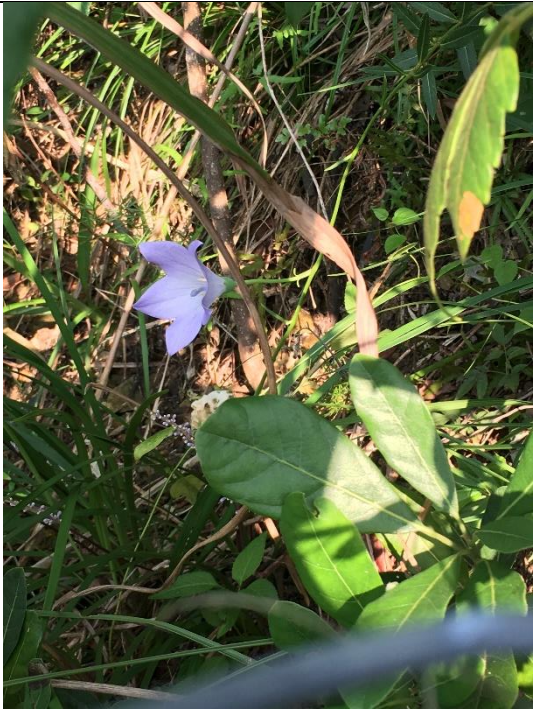


Photo 2 – Group 2 of *Platycodon Grandiflorus*



Photo 3 – 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 2018 (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	7573.16	6488.47	430.69	0.00	6919.16	600.00	54.00	654.00	74670.00	0.00	0.00	0.00	134.96
Feb	6413.22	5417.91	495.31	0.00	5913.22	500.00	0.00	500.00	6520.00	91.00	0.00	0.00	95.61
Mar	5196.18	4092.33	358.36	75.49	4526.18	602.00	68.00	670.00	7180.00	271.00	0.00	0.00	234.16
Apr	5322.94	4399.56	411.38	0.00	4810.94	512.00	0.00	512.00	5200.00	231.00	0.00	0.00	163.40
May	3197.41	1701.51	195.90	0.00	1897.41	1300.00	0.00	1300.00	6690.00	101.00	0.00	0.00	287.390
Jun	4511.40	3746.81	404.59	0.00	4151.40	360.00	0.00	360.00	15620.00	315.00	0.00	0.00	223.85
SUB-TOTAL	32214.31	25846.59	2296.23	75.49	28218.31	3874.00	122.00	3996.00	115880.00	1009.00	0.00	0.00	1139.37
Jul	2779.37	2335.98	263.39	0.00	2599.37	180.00	0.00	180.00	100.00	262.00	0.00	200.00	256.12
Aug	2589.30	2131.24	358.06	0.00	2489.30	100.00	0.00	100.00	0.00	546.00	0.00	0.00	262.69
Sep	1754.92	1526.65	123.44	14.83	1664.92	90.00	0.00	90.00	0.00	0.00	0.00	0.00	207.83
Oct													
Nov													
Dec													
TOTAL	39337.90	31840.46	3041.12	90.32	34971.90	4244.00	122.00	4366.00	115980.00	1817.00	0.00	200.00	1866.01

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

Tai Shue Wan Development at Ocean Park Environmental Monitoring and Audit Manual



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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Environmental Monitoring and Audit Manual



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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		building structures.	phase					
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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<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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		<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 	<p>stage / Until completion of all construction activities</p>	appointed by OPC					<p>Disposal (Chemical Wastes) (General) Regulation; and ETWB Technical Circular (Works) No. 19/2005 Environmental Management on Construction Site</p>	
			<p>Project construction site / Throughout construction stage / Until completion of all construction activities</p>	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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		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

