

# **Ocean Park Tai Shue Wan Water World Project**

Monthly EM&A Report May 2018

June 2018



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**This Monthly EM&A Report for May 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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Gary Chow  
Environmental Team Leader (ETL)  
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**Date:**

14 JUN 2018

**Verified by:**



\_\_\_\_\_  
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Ove Arup and Partners Hong Kong Limited

**Date:**

14 Jun 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 12<sup>th</sup> 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 31 May 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.

No ardeids nest or potential breeding activities were observed.

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 4, 11, 18 and 25 May 2018. Furthermore, IEC performed the site inspection and audit on 11 May 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
- Construction of drainage channels to slopes
- Mini pile construction
- Utilities diversion at A4
- Drainage works at PJD office and A4
- Backfilling at South Plant Room
- Main Building: Column and wall construction, L3 column to Roof construction, Steel Platform for Shell A construction, B1 underground manhole, drainage and on grade slab. Block works and ABWF in B1, L1 and L2 Secondary structure construction; Roof construction.
- South Transformer Room: ABWF
- South Plant Room: Construction of wall and plinths
- North Plant Room: Removal of falsework, waterproofing for double slab and ABWF
- Sprial Ramp: Falsework for the RC construction.
- External Area: Laying of underground utilities

# 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 12<sup>th</sup> monthly EM&A report presenting the monitoring results and inspection findings for the Construction Phase of Waterpark Main Building Works during the Reporting Period from 1 to 31 May 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
- Construction of drainage channels to slopes
- Mini pile construction
- Utilities diversion at A4
- Drainage works at PJD office and A4
- Backfilling at South Plant Room
- North Plant Room: Removal of falsework, waterproofing for double slab, concreting for high level slab and ABWF
- Main Building: L1 and L2 slab, column and wall construction, L3 column for Roof construction, Steel ramp for Platform construction, B1 underground manhole, drainage and on grade slab. Block works and ABWF in B1, L1 and L2 Secondary structure construction.
- South Transformer Room: Removal of falsework and ABWF
- South Plant Room: Construction of wall and plinths
- Spiral Ramp: On grade slab and Falsework for the RC construction



## 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	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	Superseded
Renew Construction Noise Permit under NCO GW-RS0356-18	16-Apr-18	432628	30-Apr-18	16-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"> <li><math>L_{eq}(30min)</math> on normal working days (Monday to Saturday) 07:00-19:00 except public holiday;</li> <li>3 sets of consecutive <math>L_{eq}(5min)</math> during restricted hours i.e. 19:00 to 07:00 next day, and whole day of public holiday or Sunday when applicable, and</li> <li>Supplementary information for data auditing and statistical results such as <math>L_{10}</math> and <math>L_{90}</math> shall also be obtained for reference</li> </ul>

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) <sup>1,2</sup>

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  $\text{ms}^{-1}$ . 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  $5 \text{ms}^{-1}$  or wind with gust exceeding  $10 \text{ms}^{-1}$ .

### 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) <sup>1, 2</sup>

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 2, 8, 17, 24 and 30 May 2018 during the Reporting Period and four additional impact monitoring for the construction works held during restricted hour period on 6, 13, 20 and 27 May 2018 to access the compliance with environmental requirements. A total of eighteen 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)) <sup>2</sup>
	Start	Finish	$L_{eq}$ (30min)	Corrected $L_{eq}$ (30min) <sup>1</sup>	
<b>NM1A</b>					
02-May-18	09:02	09:32	56.6	59.6	70
08-May-18	10:18	10:48	56.8	59.8	70
17-May-18	10:12	10:42	56.1	59.1	70
24-May-18	10:10	10:40	56.4	59.4	70
30-May-18	08:42	09:12	56.6	59.6	70
<b>NM2</b>					
02-May-18	10:35	11:05	51.6	-	70
08-May-18	09:40	10:10	53.0	-	70
17-May-18	09:30	10:00	52.1	-	70
24-May-18	09:30	10:00	53.5	-	70
30-May-18	10:30	11:00	51.4	-	70

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

As shown in **Table 8**, results of the additional noise monitoring measurement were below 70dB(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)) <sup>2</sup>
	Start	Finish	$L_{eq}$ (15min)	Corrected $L_{eq}$ (15min) <sup>1</sup>	
<b>NM1A</b>					
06-May-18	16:35	16:50	51.4	54.4	70
13-May-18	14:45	15:00	49.4	52.4	70
20-May-18	15:40	15:55	50.7	53.7	70
27-May-18	13:30	13:45	51.5	54.5	70
<b>NM2</b>					
06-May-18	16:10	16:25	48.5	-	65
13-May-18	14:20	14:35	46.1	-	65
20-May-18	15:10	15:25	47.5	-	65
27-May-18	13:05	13:20	48.5	-	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 11 May 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

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

#### Roosting Activities of Ardeids in Peak Wintering Season.

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

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

The tentative ecological inspection and monitoring in the next Reporting Period is scheduled on 8 June 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 4 and 18 May 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.

## 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 4, 11, 18 and 25 May 2018. Furthermore, IEC performed the site inspection and audit on 11 May 2018.

During site inspections, non-compliance was not observed by the ET and IEC. However, a total of four 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
11 May 2018	Mitigation measure for fugitive dust should be enhanced.	Mitigation measure for fugitive dust was enhanced.
18 May 2018	Chemical containers observed without drip tray at 10E4.	The chemical containers observed without drip tray at 10E4 have been placed in a drip tray.
18 May 2018	Some chemicals stored in water bottles were found in a drip tray on L3. Appropriate chemical containers should be provided for the chemicals.	Appropriate chemical containers have been provided for the chemicals on L3.
25 May 2018	Stagnant water was observed near the toilet at 1/F zone B and the contractor shall clear the stagnant water properly.	Stagnant water was cleared from the toilet area at 1/F zone B.

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

## 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
- Construction of drainage channels to slopes
- Mini pile construction
- Utilities diversion at A4
- Drainage works at PJD office and A4
- Backfilling at South Plant Room
- Main Building: Column and wall construction, L3 column to Roof construction, Steel Platform for Shell A construction, B1 underground manhole, drainage and on grade slab. Block works and ABWF in B1, L1 and L2 Secondary structure construction; Roof construction.
- South Transformer Room: ABWF
- South Plant Room: Construction of wall and plinths
- North Plant Room: Removal of falsework, waterproofing for double slab and ABWF
- Sprial Ramp: Falsework for the RC construction.
- External Area: Laying of underground utilities

## 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.

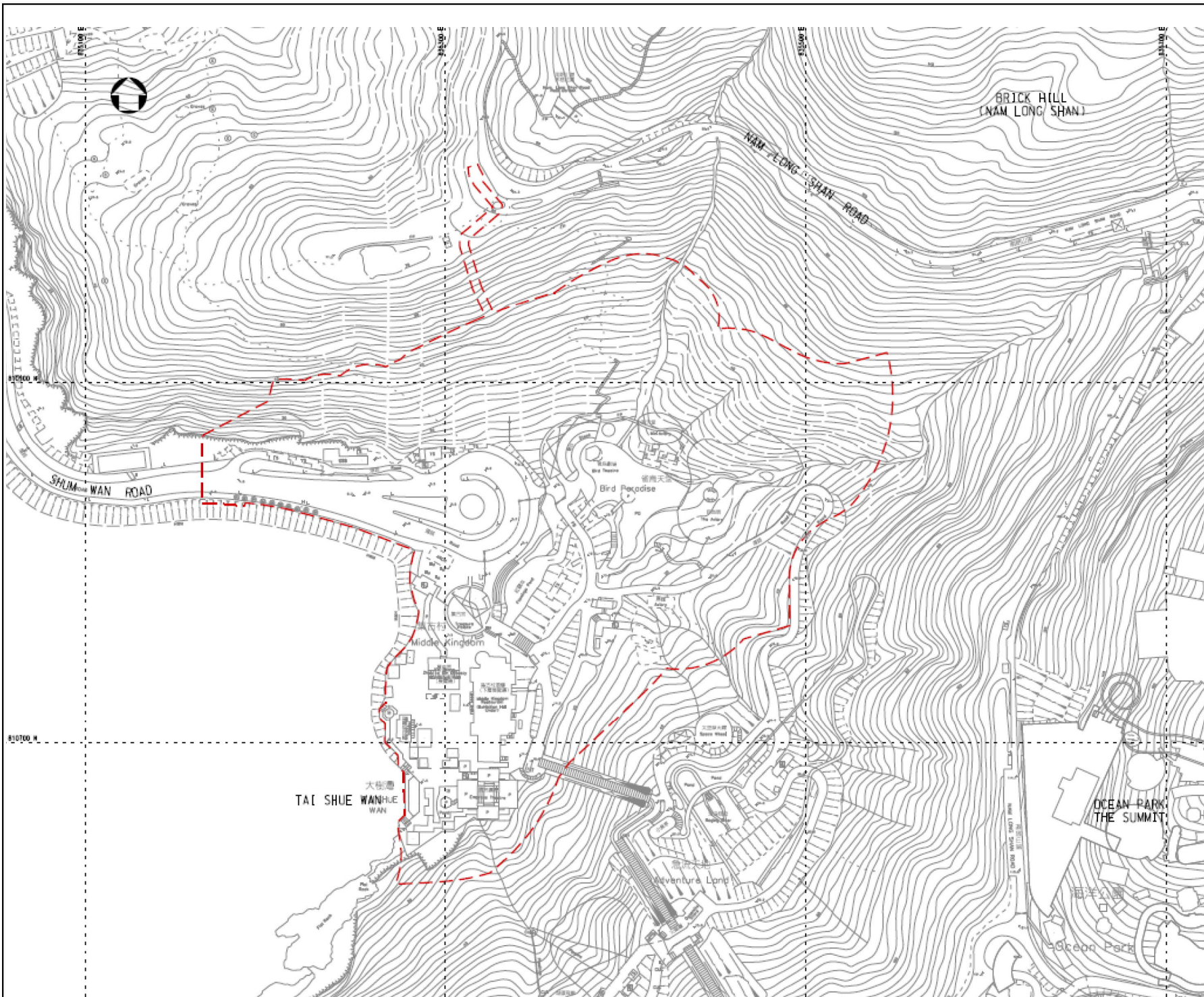
## 10 Recommendation

- Dust mitigation measures for potential fugitive dust impact should be implemented in dry season.
- 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

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Key to symbols

--- Project Boundary  
項目範圍

---

Reference drawings

---

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

Client

Project

**TAI SHUE WAN DEVELOPMENT  
AT OCEAN PARK**

Title

**PROJECT LOCATION**

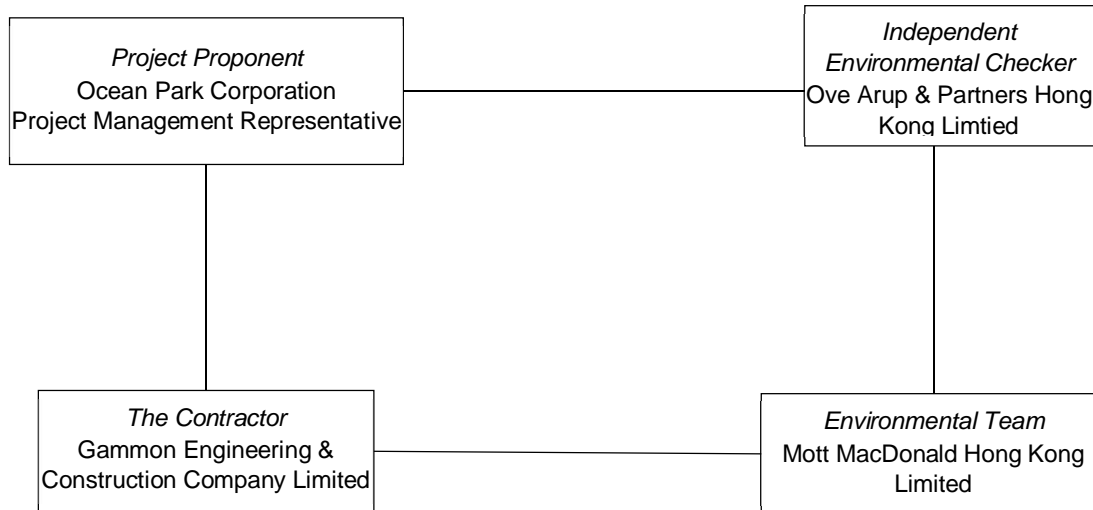
Designed		Eng check	
Drawn		Coordination	
Dwg check		Approved	
Scale at A1	Status		Rev

Drawing Number

**APPENDIX A**

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## 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 Michelle Tang	-	2148 2890



## C. 3-month Look-ahead Program

**OCEAN PARK - TAI SHUE WAN WATER WORLD PROJECT Master Rev 3 As built 20180430**

**CONTRACT DATES**

CD.C06.1000	C006 Commencement of the Work	0	30-Apr-18*	0%
CD.C06.1010	Contract commencement date	0	30-Apr-18*	0%

**Key Dates**

CD.C06.KD2	KD2-Complete all relevant work and provide access to C012A, B & C Contractors	0	30-Apr-18*	0%
CD.C10-KD2	C10-KD2-Obtain BD Approval of all Designs Submission	0	30-Apr-18*	0%
CD.C10-KD3	C10-KD3-Complete Performance Test to Curtain Wall	0	30-Apr-18*	0%
CD.C10-KD1	C10-KD1-Complete and achieve approval of Visual Mock-up	0	30-Apr-18*	0%
CD.C06-KD5	KD5-H/O works areas related to Lift C009 & Filtration Plant Room C011 Contractors	0	06-Jun-18*	0%

**Target**

CD.C10-TD2	C10-KD2 Target Completion of C010 KD2	0	30-Apr-18	0%
CD.C10-TD3	C10-KD3 Target Completion of C010 KD3	0	30-Apr-18	0%
CD.C10-TD1	C10-KD1 Target Completion of C010 KD1	0	30-Apr-18	0%

**Access Dates**

CD.C06.A1	Access to Works Area A1	0	30-Apr-18	0%
CD.C06.A2	Access to Works Area A2	0	30-Apr-18	0%
CD.C06.A4	Access to Works Area A4	0	30-Apr-18	0%

**SLOPE WORKS - SITE FORMATION**

**General**

PR.SWGE.1090	Form Haul Road A4 for access to P5 (inc temp fill)	18	30-Apr-18	21-May-18	0%
PR.SWGE.1110	Removal Haul Road A2a	12	30-Apr-18	14-May-18	0%
PR.SWGE.1120	Removal Haul Road A3	6	30-Apr-18	07-May-18	0%
PR.SWGE.1100	Provide 4 No GI PBH40, 41, 42, 43 in area 3	24	02-May-18	30-May-18	0%
PR.SWGE.1190	Removal Haul Road A2b	12	15-May-18	29-May-18	0%

**Site Offices**

PR.SWSO.1010	Site Offices - Proposal & Approval	24	30-Apr-18	23-May-18	0%
PR.SWSO.1020	Site Offices - Procurement container office	21	24-May-18	13-Jun-18	0%
PR.SWSO.1040	Site Offices - Submit BA 18	21	24-May-18	13-Jun-18	0%
PR.SWSO.1030	Site Offices - Establishment	18	14-Jun-18	09-Jul-18	0%

**Tower Crane**

PR.STC5.5140	TC5 - Tower Crane in Use	107	30-Apr-18	19-Sep-18	0%
PR.STC2.2140	TC2 - Tower Crane in Use	303	30-Apr-18	24-May-19	0%
PR.STC4.4140	TC4 - Tower Crane in Use	151	30-Apr-18	14-Nov-18	0%
PR.STC1.1130	TC1 - Tower Crane in Use	303	30-Apr-18	24-May-19	0%
PR.STC3.3140	TC3 - Tower Crane in Use	421	30-Apr-18	29-Oct-19	0%

**Works for Root B Horizontal Pipe Piles**

LR.STC5.7110	Mobilise Horizontal Pipe Pile Plant	12	30-Apr-18	14-May-18	0%
LR.STC5.7130	Erect Temporary Steel Access Platform for Mini-Piles	24	30-Apr-18	29-May-18	0%
LR.STC5.7170	Horizontal Pipe Piles Pre-drill 2No	5	30-May-18	04-Jun-18	0%
LR.STC5.7120	Horizontal Pipe Piles - 15no, 273dia @ 3days/pile at Phase 3B	45	05-Jun-18	04-Aug-18	0%

**Horizontal Piling**

SF.P1.CPP110	Phasing Plan for P1 Footing Consent: Preparation submission and approval	48	30-Apr-18	27-Jun-18	0%
SF.P1.A1120	Submit BA14 for Site Formation	14	11-Jun-18	27-Jun-18	0%
SF.P1.B1490	Submit BA14 for Site Formation	14	07-May-18	23-May-18	0%
OP.2400	Butress wall formation	145	30-Apr-18	23-Oct-18	0%

**Phase 1A-1**

SF.P1.A1120	Submit BA14 for Site Formation	14	11-Jun-18	27-Jun-18	0%
SF.P1.CPP110	Phasing Plan for P1 Footing Consent: Preparation submission and approval	48	30-Apr-18	27-Jun-18	0%

**Phase 1A-2**

SF.P1.A1210	Cut Soil and rock slope to +24mPd Rock Joint Mapping -Stabilization Design and ;	34	05-Jan-18	14-Jun-18	5%
SF.P1.A1220	Submit BA14 for Site Formation	14	15-Jun-18	03-Jul-18	0%

**Phase 1B**

SF.P1.B1490	Submit BA14 for Site Formation	14	07-May-18	23-May-18	0%
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**Ride P1**

BD.CSS.R290	Consent Package SB5 Amendment 11 (including working drawings)	0	30-Apr-18*	30-Apr-18*	0%
SF.P5.CPP120	Phasing Plan for P5 Footing Consent: Preparation submission and approval	48	30-Apr-18	27-Jun-18	0%

CD.C06.1000	C006 Commencement of the Work	0	30-Apr-18*	0%
CD.C06.1010	Contract commencement date	0	30-Apr-18*	0%

Date	Revision	Checked	Approved
14-May-18	3M rolling	PL LN ME	
02-Apr-18	3M rolling		

**Gammon**

**OCEAN PARK - TAI SHUE WAN DEVELOPMENT**

**Contract No. TSW-C006**

**3 month rolling program - May 2018**

Project: Ocean Park Tai Shue Wan Water

World Project ID: T16004-171

Layout: 3 Month look ahead 20180430

Page: 1 of 11

**critical level of effort** █

**critical Remaining Work** █

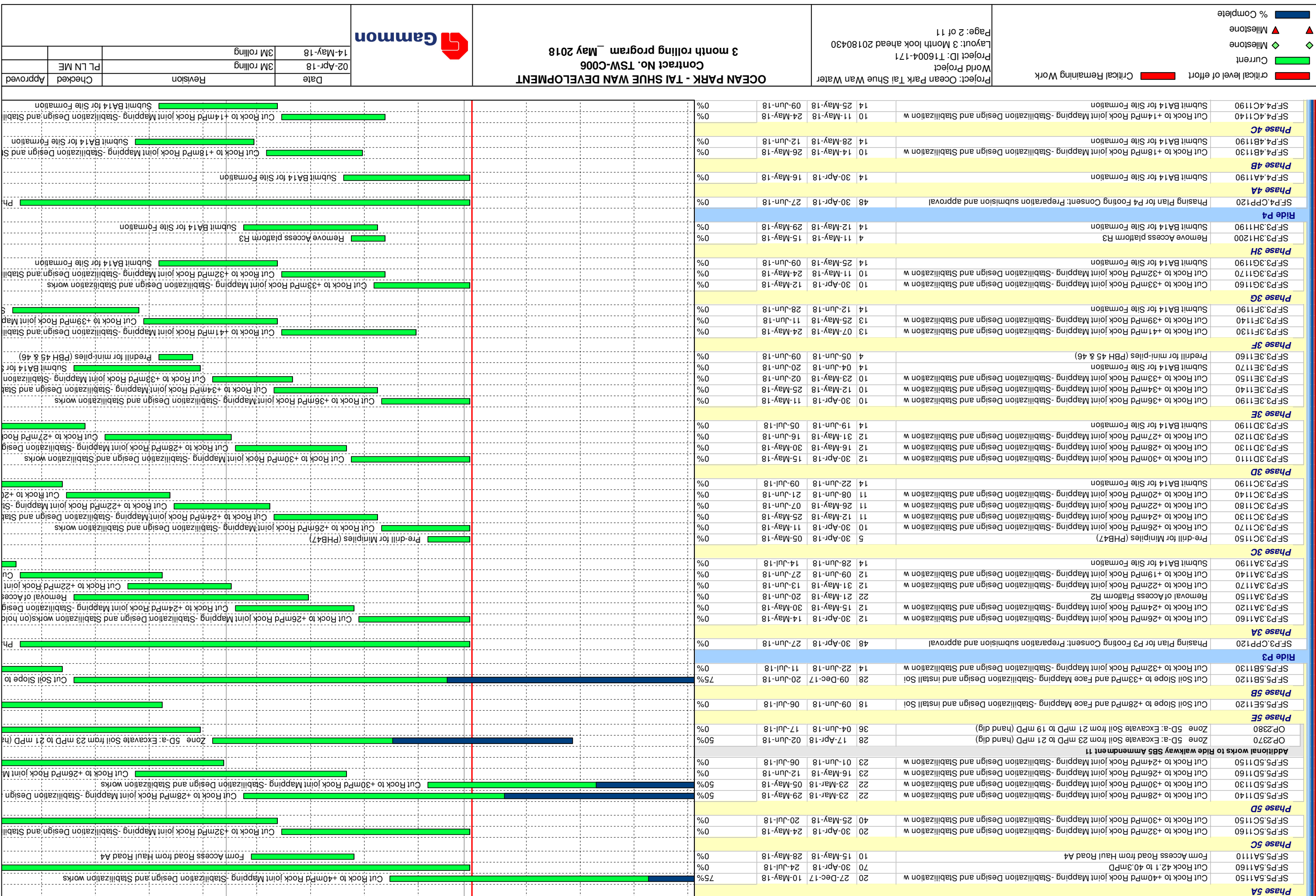
**Current** █

**Milestone** ▲

**Milestone** ◆

**% Complete** █

Activity	Start	Finish	Duration	Activity %
Phase 5A	20	27-Dec-17	07	75%
SF.P5.5A1150	20	27-Dec-17	07	75%
Cut Rock to +40mPd Rock joint Mapping - Stabilization Design and Stabilization works	20	27-Dec-17	07	75%
SF.P5.5A1160	20	30-Apr-18	10	0%
Cut Rock 42.1 to 40.3mPd	20	30-Apr-18	10	0%
SF.P5.5A1110	20	30-Apr-18	10	0%
Form Access Road from Haul Road A4	20	30-Apr-18	10	0%
Phase 5C	20	30-Apr-18	10	0%
SF.P5.5C1160	20	30-Apr-18	10	0%
Cut Rock to +32mPd Rock joint Mapping - Stabilization Design and Stabilization w	20	30-Apr-18	10	0%
SF.P5.5C1150	20	25-May-18	05	0%
Cut Rock to +30mPd Rock joint Mapping - Stabilization Design and Stabilization	20	25-May-18	05	0%
Phase 5D	22	23-Mar-18	01	50%
SF.P5.5D1140	22	23-Mar-18	01	50%
Cut Rock to +28mPd Rock joint Mapping - Stabilization Design and Stabilization w	22	23-Mar-18	01	50%
SF.P5.5D1130	22	23-Mar-18	01	50%
Cut Rock to +30mPd Rock joint Mapping - Stabilization Design and Stabilization w	22	23-Mar-18	01	50%
SF.P5.5D1160	23	16-May-18	14	0%
Cut Rock to +26mPd Rock joint Mapping - Stabilization Design and Stabilization w	23	16-May-18	14	0%
SF.P5.5D1150	23	01-Jun-18	04	0%
Cut Rock to +24mPd Rock joint Mapping - Stabilization Design and Stabilization w	23	01-Jun-18	04	0%
Additional works to Ride walkway S5s Ammendment 11	28	17-Apr-18	19	50%
OP.2370	28	17-Apr-18	19	50%
Zone 5D-a: Excavate Soil from 23 mPD to 21 mPD (hand dig)	28	17-Apr-18	19	50%
OP.2380	36	04-Jun-18	07	0%
Zone 5D-a: Excavate Soil from 21 mPD to 19 mPD (hand dig)	36	04-Jun-18	07	0%
Phase 5E	18	09-Jun-18	12	0%
SF.P5.5E1120	18	09-Jun-18	12	0%
Cut Soil Slope to +28mPd and Face Mapping - Stabilization Design and Install Soi	18	09-Jun-18	12	0%
Phase 5B	28	09-Dec-17	19	75%
SF.P5.5B1120	28	09-Dec-17	19	75%
Cut Soil Slope to +33mPd and Face Mapping - Stabilization Design and Install Soi	28	09-Dec-17	19	75%
SF.P5.5B1130	14	22-Jun-18	08	0%
Cut Rock to +32mPd Rock joint Mapping - Stabilization Design and Stabilization w	14	22-Jun-18	08	0%
Ride P3	48	30-Apr-18	12	0%
SF.P3.CPP120	48	30-Apr-18	12	0%
Phasing Plan for P3 Footing Consent: Preparation submission and approval	48	30-Apr-18	12	0%
Phase 3A	12	30-Apr-18	18	0%
SF.P3.3A1160	12	30-Apr-18	18	0%
Cut Rock to +26mPd Rock joint Mapping - Stabilization Design and Stabilization w	12	30-Apr-18	18	0%
SF.P3.3A1120	12	15-May-18	03	0%
Cut Rock to +24mPd Rock joint Mapping - Stabilization Design and Stabilization w	12	15-May-18	03	0%
SF.P3.3A1150	22	21-May-18	09	0%
Removal of Access Platform R2	22	21-May-18	09	0%
SF.P3.3A1170	12	31-May-18	19	0%
Cut Rock to +22mPd Rock joint Mapping - Stabilization Design and Stabilization w	12	31-May-18	19	0%
SF.P3.3A1140	11	26-May-18	15	0%
Cut Rock to +22mPd Rock joint Mapping - Stabilization Design and Stabilization w	11	26-May-18	15	0%
SF.P3.3C1180	11	12-May-18	01	0%
Cut Rock to +24mPd Rock joint Mapping - Stabilization Design and Stabilization w	11	12-May-18	01	0%
SF.P3.3C1130	10	30-Apr-18	10	0%
Cut Rock to +26mPd Rock joint Mapping - Stabilization Design and Stabilization w	10	30-Apr-18	10	0%
SF.P3.3C1170	5	30-Apr-18	05	0%
Pre-drill for Minipiles (PHB47)	5	30-Apr-18	05	0%
SF.P3.3C1150	10	05-May-18	05	0%
Cut Rock to +26mPd Rock joint Mapping - Stabilization Design and Stabilization works	10	05-May-18	05	0%
SF.P3.3C1140	10	11-May-18	11	0%
Cut Rock to +24mPd Rock joint Mapping - Stabilization Design and Stabilization works	10	11-May-18	11	0%
SF.P3.3E1140	10	12-May-18	12	0%
Cut Rock to +34mPd Rock joint Mapping - Stabilization Design and Stabilization w	10	12-May-18	12	0%
SF.P3.3E1150	10	23-May-18	13	0%
Cut Rock to +32mPd Rock joint Mapping - Stabilization Design and Stabilization w	10	23-May-18	13	0%
SF.P3.3E1170	14	04-Jun-18	10	0%
Submit BA14 for Site Formation	14	04-Jun-18	10	0%
SF.P3.3E1160	4	05-Jun-18	01	0%
Pre-drill for mini-piles (PBH 45 & 46)	4	05-Jun-18	01	0%
Phase 3F	13	07-May-18	14	0%
SF.P3.3F1130	13	07-May-18	14	0%
Cut Rock to +41mPd Rock joint Mapping - Stabilization Design and Stabilization w	13	07-May-18	14	0%
SF.P3.3F1140	13	25-May-18	12	0%
Cut Rock to +39mPd Rock joint Mapping - Stabilization Design and Stabilization w	13	25-May-18	12	0%
SF.P3.3F1190	14	12-Jun-18	08	0%
Submit BA14 for Site Formation	14	12-Jun-18	08	0%
Phase 3G	10	30-Apr-18	20	0%
SF.P3.3G1160	10	30-Apr-18	20	0%
Cut Rock to +33mPd Rock joint Mapping - Stabilization Design and Stabilization w	10	30-Apr-18	20	0%
SF.P3.3G1170	10	11-May-18	11	0%
Cut Rock to +32mPd Rock joint Mapping - Stabilization Design and Stabilization w	10	11-May-18	11	0%
SF.P3.3G1190	14	25-May-18	15	0%
Submit BA14 for Site Formation	14	25-May-18	15	0%
Phase 3H	4	11-May-18	07	0%
SF.P3.3H1200	4	11-May-18	07	0%
Remove Access platform R3	4	11-May-18	07	0%
SF.P3.3H1190	14	12-May-18	08	0%
Submit BA14 for Site Formation	14	12-May-18	08	0%
Ride P4	48	30-Apr-18	12	0%
SF.P4.CPP120	48	30-Apr-18	12	0%
Phasing Plan for P4 Footing Consent: Preparation submission and approval	48	30-Apr-18	12	0%
Phase 4A	14	30-Apr-18	16	0%
SF.P4.4A1190	14	30-Apr-18	16	0%
Submit BA14 for Site Formation	14	30-Apr-18	16	0%
Phase 4B	10	14-May-18	04	0%
SF.P4.4B1130	10	14-May-18	04	0%
Cut Rock to +18mPd Rock joint Mapping - Stabilization Design and Stabilization w	10	14-May-18	04	0%
SF.P4.4B1190	14	28-May-18	14	0%
Submit BA14 for Site Formation	14	28-May-18	14	0%
Phase 4C	10	11-May-18	01	0%
SF.P4.4C1140	10	11-May-18	01	0%
Cut Rock to +14mPd Rock joint Mapping - Stabilization Design and Stabilization w	10	11-May-18	01	0%
SF.P4.4C1190	14	25-May-18	14	0%
Submit BA14 for Site Formation	14	25-May-18	14	0%



critical level of effort █ Critical Remaining Work █

Current █

Milestone ◆ Milestone ▲

% Complete █

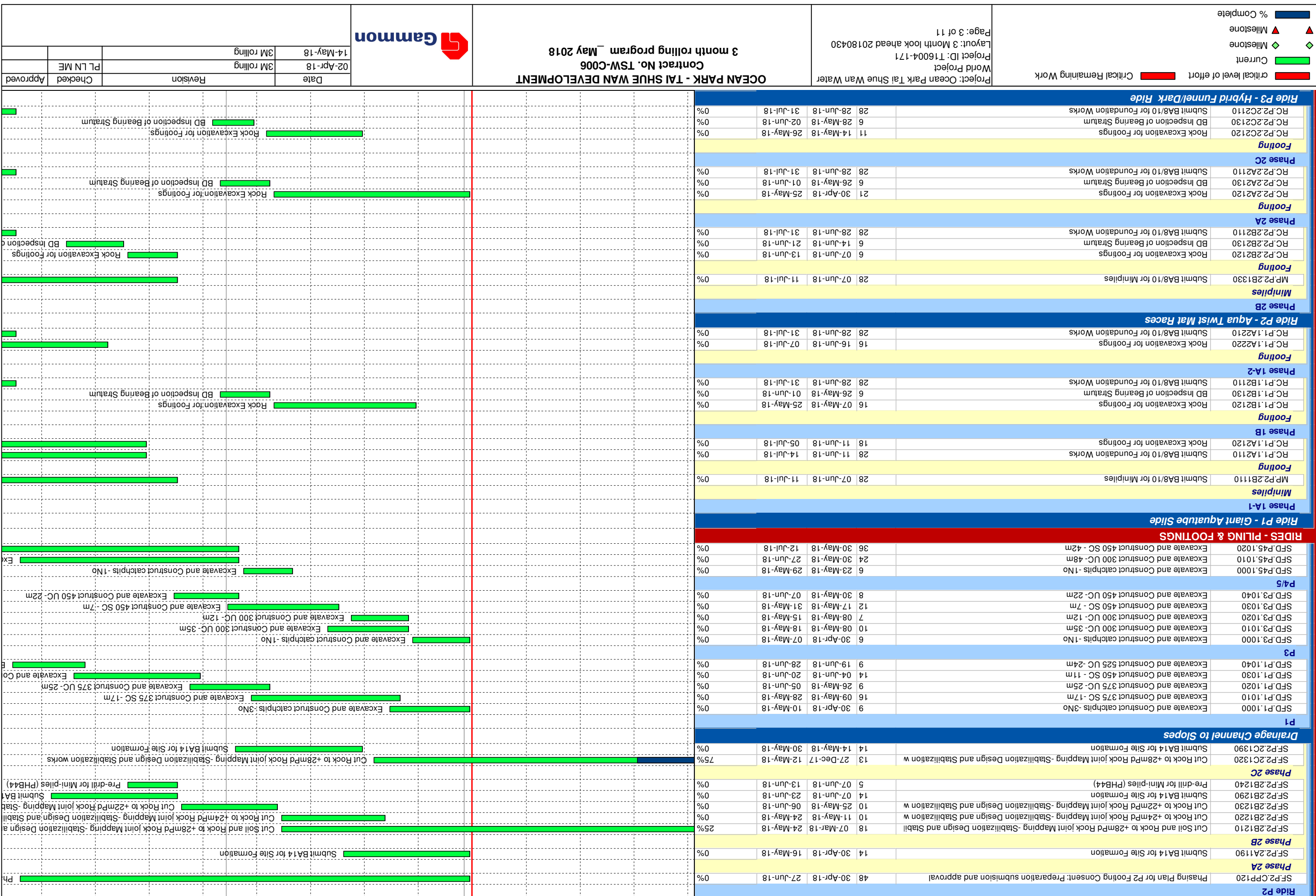
Project: Ocean Park Tai Shue Wan Water  
 World Project  
 Project ID: T16004-171  
 Layout: 3 Month look ahead 20180430  
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OCEAN PARK - TAI SHUE WAN DEVELOPMENT  
 Contract No. TSW-C006  
 3 month rolling program - May 2018



Date	Revision	Checked	Approved
02-Apr-18	3M rolling	PL LN ME	Approved
14-May-18	3M rolling		

Activity	Start	Finish	Duration	Activity % Complete
Ride P2	02	25		
Phase 2A	02	25		
Phase 2B	02	25		
Phase 2C	02	25		
Drainage Channel to Slopes	02	25		
P1	02	25		
P3	02	25		
P4/5	02	25		
RIDES - PILING & FOOTINGS	02	25		
Ride P1 - Giant Aquatube Slide	02	25		
Phase 1A-1	02	25		
Minipiles	02	25		
Footings	02	25		
Phase 1B	02	25		
Footings	02	25		
Phase 1A-2	02	25		
Footings	02	25		
Ride P2 - Aqua Twist Mat Races	02	25		
Phase 2B	02	25		
Minipiles	02	25		
Footings	02	25		
Phase 2A	02	25		
Footings	02	25		
Ride P3 - Hybrid Funnel/Dark Ride	02	25		



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

Project: Ocean Park Tai Shue Wan Water  
 World Project  
 Project ID: T16004-171  
 Layout: 3 Month look ahead 20180430  
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**OCEAN PARK - TAI SHUE WAN DEVELOPMENT**  
**Contract No. TSW-C006**  
**3 month rolling program - May 2018**



Date	Revision	Checked	Approved
02-Apr-18	3M rolling	PL LN ME	
14-May-18	3M rolling		



▲ Milestone

◆ Milestone

■ Current

Critical level of effort

Critical Remaining Work

Project: Ocean Park Tai Shue Wan Water

World Project

Project ID: T16004-171

Layout: 3 Month look ahead 20180430

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OCEAN PARK - TAI SHUE WAN DEVELOPMENT

Contract No. TSW-C006

3 month rolling program - May 2018



Date

Revision

Checked

Approved

14-May-18

02-Apr-18

3M rolling

3M rolling

PL LN ME

Activity	Start	Finish	Duration	Activity % Complete
	02	09	09	02
	16	23	07	16
	30	07	07	30
	28	14	14	28
	21	21	07	21
	14	14	07	14
	07	14	07	07
	30	21	09	30
	23	21	08	23
	16	14	02	16
	09	11	02	09
	02	11	09	02
	18	11	07	18
	25	13	12	25

Basement Level	SB.BLS.0130	SB.BLS.0180	SB.BLS.0190
BL: On-Grade Slab (28 days)	14	21-Nov-17	25-May-18
BL: Construct on grade slab at 7.525	26	30-Apr-18	31-May-18
Construct wall at EVA and Plant rooms	12	10-May-18	24-May-18
Level 1			
Level 1			
SB.L1.S.1030	24	30-Apr-18	29-May-18
L1: Walls columns Slab at +1.45 Connection to existing structure			
Earthworks			
Backfill to +15mPd	28	30-May-18	03-Jul-18
OP.260			
PRIMARY RC STRUCTURE			
General			
OP.280	23	04-Dec-17	30-Apr-18
Provide mobile cranes for Level 1 construction until TC3 commissioned			
Basement Level BL			
Zone B1-1			
SP.BLS.1150	16	21-Mar-18	30-Apr-18
B1-1: On-Grade Slab - 1 (28 days)			
SP.BLS.1160	16	21-Mar-18	30-Apr-18
B1-1: On-Grade Slab - 2 (28 days)			
SP.BLS.1170	16	21-Mar-18	30-Apr-18
B1-1: On-Grade Slab - 3 (28 days)			
Zone B1-2			
SP.BLS.1220	21	15-Dec-17	03-May-18
B1-2: Underground Utilities (4 pits)			
SP.BLS.1230	12	04-May-18	17-May-18
B1-2: On-Grade Slab (24 days)			
Zone B1-3			
SP.BLS.1320	21	15-Dec-17	04-May-18
B1-3: Underground Utilities (11 pits)			
SP.BLS.1330	17	17-Mar-18	04-May-18
B1-3: On-Grade Slab (34 days)			
Zone B1-4			
SP.BLS.1430	27	24-Apr-18	16-May-18
B1-4: On-Grade Slab (80 days)			
Zone B1-5			
SP.BLS.1520	21	15-Dec-17	08-May-18
B1-5: Underground Utilities (11 pits)			
SP.BLS.1530	25	16-Apr-18	30-May-18
B1-5: On-Grade Slab (50 days)			
Zone B1-7			
SP.BLS.1720	21	28-Dec-17	02-May-18
B1-7: Underground Utilities (16 pits)			
SP.BLS.1730	20	17-Mar-18	07-May-18
B1-7: On-Grade Slab (40 days)			
Zone B1-6			
SP.BLS.1620	21	05-Feb-18	07-May-18
B1-6: Underground Utilities (7 pits)			
SP.BLS.1630	30	23-Mar-18	07-May-18
B1-6: On-Grade Slab (90 days)			
Foundations			
PMI 228 Footings M-11a, M-12-A, M-13-A and M-14-A			
OP.2310	0	30-Apr-18*	
Consent for demolition footings M-11a, M-12-A, M-13-A and M-14-A			
OP.2340	0	30-Apr-18*	
Consent for Formation M-11a, M-12-A, M-13-A and M-14-A			
OP.2350	0	30-Apr-18*	
Consent for Footings M-11a, M-12-A, M-13-A and M-14-A			
Zone 01 (Foundation transformer room) (GL A-C/1-9)			
SP.L1.S.1030	23	04-Jan-18	07-May-18
Zone 01: GL A-C/1-9: On-Grade Slab +8.6mpd (40 days)			
Zone 03 (North Wall-Foundation Level 3) GL19-27			
SP.L1.S.1115	8	26-Mar-18	04-May-18
Zone 03: GL 19-27: Strike Formwork & Backfill			
Level 1			
Slab			
On Grade Slab			
OG.L1.1010	21	26-May-18	23-Jun-18
Construct on grade slab GL MM /47-174			
Spiral slab			
OG.L1.1020	14	12-Apr-18	07-May-18
Construct on grade slab - Spiral GL FF-JJ /23-27			
Zone A			
Zone A3			
SP.L1.A.1340	6	30-Apr-18	07-May-18
Zone A3: Faisework Dismantling (350)			
Zone A5			
SP.L1.A.1540	5	30-Apr-18	05-May-18
Zone A5: Faisework Dismantling (350)			
Zone B			
Zone B3			
SP.L1.B.1340	5	11-May-18	16-May-18
Zone B3: Faisework Dismantling (350)			
Level 2			
On Grade Slab			
SP.L2.S.2010	10	30-Apr-18	11-May-18
GL 172-KK: On-grade Slab			
SP.L2.S.2020	10	12-May-18	24-May-18
GL 12-24: On-grade Slab			
Zone A			
Zone A10			
SP.L2.A.2960	9	20-Apr-18	04-May-18
Zone A10: Strike & Faisework Dismantling			

critical level of effort

critical level of effort

Current

Milestone

Milestone

Milestone

% Complete

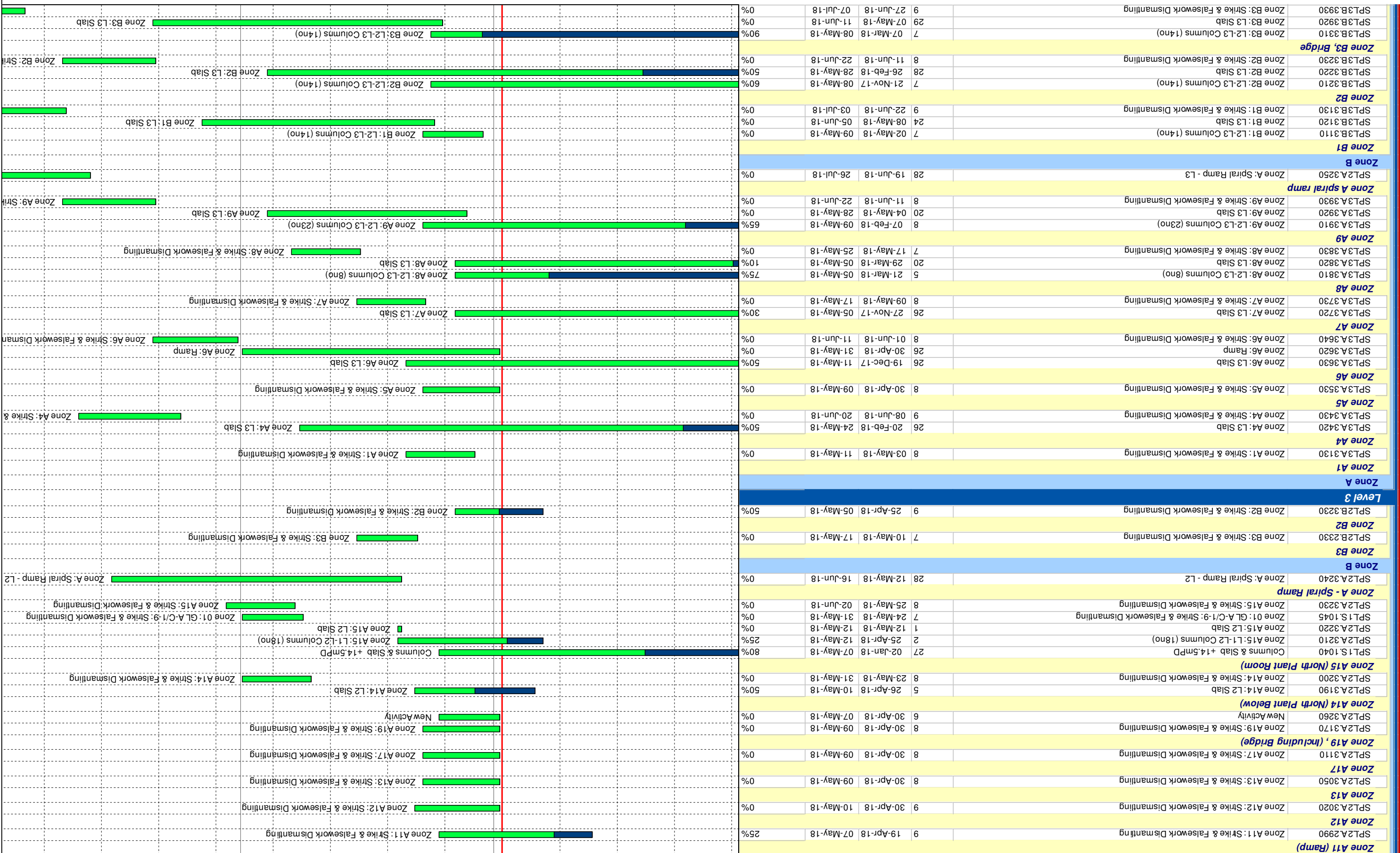
Project: Ocean Park Tai Shue Wan Water  
 World Project  
 Project ID: T16004-171  
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**OCEAN PARK - TAI SHUE WAN DEVELOPMENT**  
 Contract No. TSW-C006  
 3 month rolling program - May 2018



Date	Revision	Checked	Approved
14-May-18	3M rolling		
02-Apr-18	3M rolling	PL LN ME	

Activity	Start	Finish	Duration	Activity % Complete
Zone A11 (Ramp)	19-Apr-18	07-May-18	19	25%
Zone A12	30-Apr-18	10-May-18	9	0%
Zone A13	30-Apr-18	09-May-18	8	0%
Zone A17	30-Apr-18	09-May-18	8	0%
Zone A17, Strike & Falsework Dismantling	30-Apr-18	09-May-18	8	0%
Zone A19, (Including Bridge)	30-Apr-18	09-May-18	8	0%
Zone A19: Strike & Falsework Dismantling	30-Apr-18	09-May-18	8	0%
New Activity	30-Apr-18	07-May-18	6	0%
SPL2A.3260	30-Apr-18	07-May-18	6	0%
Zone A14 (North Plant Below)	26-Apr-18	10-May-18	5	50%
Zone A14: L2 Slab	26-Apr-18	10-May-18	5	50%
SPL2A.3190	26-Apr-18	10-May-18	5	50%
Zone A14: Strike & Falsework Dismantling	23-May-18	31-May-18	8	0%
SPL2A.3200	23-May-18	31-May-18	8	0%
Zone A15 (North Plant Room)	02-Jan-18	07-May-18	27	80%
Columns & Slab +14.5mPD	02-Jan-18	07-May-18	27	80%
SPL1S.1040	02-Jan-18	07-May-18	27	80%
Zone A15: L1-L2 Columns (18no)	25-Apr-18	12-May-18	2	25%
SPL2A.3210	25-Apr-18	12-May-18	2	25%
Zone A15: L2 Slab	12-May-18	31-May-18	1	0%
SPL2A.3220	12-May-18	31-May-18	1	0%
Zone 01: GL A-C/1-9: Strike & Falsework Dismantling	24-May-18	31-May-18	7	0%
SPL1S.1045	24-May-18	31-May-18	7	0%
Zone A15: Strike & Falsework Dismantling	25-May-18	02-Jun-18	8	0%
SPL2A.3230	25-May-18	02-Jun-18	8	0%
Zone A - Spiral Ramp	12-May-18	16-Jun-18	28	0%
SPL2A.3240	12-May-18	16-Jun-18	28	0%
Zone B				
Zone B3				
Zone B3: Strike & Falsework Dismantling	10-May-18	17-May-18	7	0%
SPL2B.2330	10-May-18	17-May-18	7	0%
Zone B2				
Zone B2: Strike & Falsework Dismantling	25-Apr-18	05-May-18	9	50%
SPL2B.3230	25-Apr-18	05-May-18	9	50%
Level 3				
Zone A				
Zone A1				
Zone A1: Strike & Falsework Dismantling	03-May-18	11-May-18	8	0%
SPL3A.3130	03-May-18	11-May-18	8	0%
Zone A4				
Zone A4: L3 Slab	20-Feb-18	24-May-18	26	50%
SPL3A.3420	20-Feb-18	24-May-18	26	50%
Zone A4: Strike & Falsework Dismantling	08-Jun-18	20-Jun-18	9	0%
SPL3A.3430	08-Jun-18	20-Jun-18	9	0%
Zone A5				
Zone A5: Strike & Falsework Dismantling	30-Apr-18	09-May-18	8	0%
SPL3A.3530	30-Apr-18	09-May-18	8	0%
Zone A6				
Zone A6: L3 Slab	19-Dec-17	11-May-18	26	50%
SPL3A.3630	19-Dec-17	11-May-18	26	50%
Zone A6: Ramp	30-Apr-18	31-May-18	26	0%
SPL3A.3620	30-Apr-18	31-May-18	26	0%
Zone A6: Strike & Falsework Dismantling	01-Jun-18	11-Jun-18	8	0%
SPL3A.3640	01-Jun-18	11-Jun-18	8	0%
Zone A7				
Zone A7: L3 Slab	27-Nov-17	05-May-18	26	30%
SPL3A.3720	27-Nov-17	05-May-18	26	30%
Zone A7: Strike & Falsework Dismantling	09-May-18	17-May-18	8	0%
SPL3A.3730	09-May-18	17-May-18	8	0%
Zone A8				
Zone A8: L2-L3 Columns (8no)	21-Mar-18	05-May-18	5	75%
SPL3A.3810	21-Mar-18	05-May-18	5	75%
Zone A8: L3 Slab	29-Mar-18	05-May-18	20	10%
SPL3A.3820	29-Mar-18	05-May-18	20	10%
Zone A8: Strike & Falsework Dismantling	17-May-18	25-May-18	7	0%
SPL3A.3830	17-May-18	25-May-18	7	0%
Zone A9				
Zone A9: L2-L3 Columns (23no)	07-Feb-18	09-May-18	8	65%
SPL3A.3910	07-Feb-18	09-May-18	8	65%
Zone A9: L3 Slab	04-May-18	28-May-18	20	0%
SPL3A.3920	04-May-18	28-May-18	20	0%
Zone A9: Strike & Falsework Dismantling	11-Jun-18	22-Jun-18	8	0%
SPL3A.3930	11-Jun-18	22-Jun-18	8	0%
Zone A spiral ramp				
Zone A: Spiral Ramp - L3	19-Jun-18	26-Jun-18	28	0%
SPL2A.3250	19-Jun-18	26-Jun-18	28	0%
Zone B				
Zone B1				
Zone B1: L2-L3 Columns (14no)	02-May-18	09-May-18	7	0%
SPL3B.3110	02-May-18	09-May-18	7	0%
Zone B1: L3 Slab	08-May-18	05-Jun-18	24	0%
SPL3B.3120	08-May-18	05-Jun-18	24	0%
Zone B1: Strike & Falsework Dismantling	22-Jun-18	03-Jul-18	9	0%
SPL3B.3130	22-Jun-18	03-Jul-18	9	0%
Zone B2				
Zone B2: L2-L3 Columns (14no)	21-Nov-17	08-May-18	7	60%
SPL3B.3210	21-Nov-17	08-May-18	7	60%
Zone B2: L3 Slab	26-Feb-18	28-May-18	28	50%
SPL3B.3220	26-Feb-18	28-May-18	28	50%
Zone B2: Strike & Falsework Dismantling	11-Jun-18	22-Jun-18	8	0%
SPL3B.3230	11-Jun-18	22-Jun-18	8	0%
Zone B3, Bridge				
Zone B3: L2-L3 Columns (14no)	07-Mar-18	08-May-18	7	90%
SPL3B.3310	07-Mar-18	08-May-18	7	90%
Zone B3: L3 Slab	07-May-18	11-Jun-18	29	0%
SPL3B.3920	07-May-18	11-Jun-18	29	0%
Zone B3: Strike & Falsework Dismantling	27-Jun-18	07-Jul-18	9	0%
SPL3B.3930	27-Jun-18	07-Jul-18	9	0%



■ critical level of effort ▲ Milestone ■ Current ■ % Complete

Project: Ocean Park Tai Shue Wan Water  
 World Project  
 Project ID: T16004-171  
 Layout: 3 Month look ahead 20180430  
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**OCEAN PARK - TAI SHUE WAN DEVELOPMENT**  
 Contract No. TSW-C006  
 3 month rolling program - May 2018



Date	Revision	Checked	Approved
02-Apr-18	3M rolling	PL LN ME	
14-May-18	3M rolling		

Platform Level	Zone PL	Root Level	Slab	Root A	Zone R-A1	Zone R-A2	Zone R-A3	Zone R-A4	Zone R-A5	Zone R-A6	Zone R-A7	Zone R-A8	Zone R-A9	Zone R-B1	Zone R-B2	Zone R-B3	Zone R-B4	Zone R-B5	Zone R-B7	Rock Dowels to slopes	Rock Dowels to Zone B (PMI 215 Associated with Root Shell B Shear Key)	Rock Dowels to Slopes	Zone A	Zone B	Zone C	Shear Key Pit	Zone A	Zone B	Zone C	Excavation and stabilization Zone A	Excavation and stabilization Zone B	Excavation and stabilization Zone C			
June		13																																	
May		12																																	
April		11																																	
02		09																																	
16		23																																	
30		07																																	
09		16																																	
23		30																																	
12		14																																	
28		21																																	
04		28																																	
18		04																																	
25		13																																	
		11																																	
		25																																	
		13																																	

Zone PL: PL Slab Grid 170/14-18 at 33.95mPD strike falsework

Zone PL: PL Slab Grid 170/14-18 at 33.95mPD strike falsework

Zone R-A1: L3-RL Inclined Column S3

Zone R-A1: L3-RL Inclined Column S4 (2nd lift)

Zone R-A1: L3-RL Inclined Column S3

Zone R-A2: L3-RL Inclined Column S2

Zone R-A3: L3-RL Inclined Column R15

Zone R-A3: L3-RL Inclined Column S7

Zone R-A4: L3-RL Inclined Column S6

Zone R-A5: L3-RL Inclined Column S5

Zone R-A6: RL Slab

Zone R-A7: L3-RL Inclined Column S8

Zone R-A8: L3-RL Inclined Column S9

Zone R-A9: L3-RL Inclined Column S1

Zone R-A9: L3-RL Slab

Zone R-B1: L3-RL Inclined Column S11

Zone R-B2: L3-RL Inclined Column S10

Zone R-B3: L3-RL Inclined Column S20

Zone R-B4: L3-RL Inclined Column S19

Zone R-B5: L2-RL Inclined Columns S13 (1st lift)

Zone R-B5: L2-RL Inclined Columns S13 (2nd lift)

Zone R-B7: L3-RL Inclined Columns S17

Erect Access Scaffold for Rock Dowel Installation

Rock Dowel Installation

Rock Dowel Installation R93 (To be completed before Root shell B RB6 and RB7)

Rock Dowel Installation R39 (To be completed before Root shell B RB6 and RB7)

Install Vertical rock dowels Zone A

Install Vertical rock dowels Zone C

Excavation and stabilization Zone C

Excavation

PL LN ME

Approved

14-May-18  
02-Apr-18  
Date  
Revision  
Checked  
Approved

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

Project: Ocean Park Tai Shue Wan Water  
World Project  
Project ID: T16004-171  
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critical level of effort  
critical level of effort  
Critical Remaining Work  
Milestone  
Milestone  
Milestone  
Current  
Complete



Activity	Start	Finish	Duration	Activity % Complete
Excavation and stabilization Zone A 28mPD to 26.1mPD	20	25-Jun-18	18-Jul-18	0%
Excavation and slope stabilization Zone A 32.5mPD to 30.1mPD	18	30-Apr-18	21-May-18	0%
Excavation and slope stabilization Zone B 32.5mPD to 30.1mPD	11	08-Mar-18	12-May-18	0%
Excavation and slope stabilization Zone C 32.5mPD to 30.1mPD	11	18-Mar-18	12-May-18	0%

Activity	Start	Finish	Duration	Activity % Complete
Excavation and slope stabilization Zone A 32.5mPD to 30.1mPD	18	30-Apr-18	21-May-18	0%
Excavation and slope stabilization Zone B 32.5mPD to 30.1mPD	11	08-Mar-18	12-May-18	0%
Excavation and slope stabilization Zone C 32.5mPD to 30.1mPD	11	18-Mar-18	12-May-18	0%
Zone R-C				
Zone RC: Columns (9no)	21	30-Apr-18	25-May-18	0%
Zone RC: Columns first lift (3no)	8	30-Apr-18	09-May-18	0%
Zone RC: Columns second lift (3no)	8	14-May-18	23-May-18	0%
Zone RC: RL Slab	60	24-May-18	11-Aug-18	0%

Activity	Start	Finish	Duration	Activity % Complete
Secondary BL structures	79	16-Apr-18	05-Jul-18	0%
Water Tanks				
Construct Flushing Water Tank (Room 021)	15	30-Apr-18	17-May-18	0%
Construct Cooling Tower Transfer Water Tank (Room 029)	21	04-May-18	29-May-18	0%
Construct Potable Water Buffer Tank (Room 025)	27	04-May-18	05-Jun-18	0%
Construct Street Fire Hydrant Tank (Room 039)	21	04-May-18	29-May-18	0%
Construct Sprinkler Tank (Room 035)	19	04-May-18	26-May-18	0%
Construct Rainwater Harvesting Tank (Room 046)	17	28-May-18	15-Jun-18	0%
Construct FS Tank (Room 037)	17	30-May-18	19-Jun-18	0%
Construct Rainwater Recycle Water Tank (Room 033)	15	06-Jun-18	23-Jun-18	0%
Construct Potable Water Buffer Tank (Room 027)	24	06-Jun-18	05-Jul-18	0%

Activity	Start	Finish	Duration	Activity % Complete
Zone-4: L1 Secondary structures	20	07-Jun-18	04-Jul-18	0%
Zone-4: L1 Strike Formwork & Dismantling	8	21-Jun-18	29-Jun-18	0%
Zone A				
Zone A1				
Zone A10				
Zone A10: L2 Secondary Slab	41	25-May-18	18-Jul-18	0%
Zone A10: L2 Secondary Slab	40	01-Jun-18	26-Jul-18	0%
Zone A2				
Zone A2: L2 Secondary Slab	30	28-May-18	06-Jul-18	0%
Zone A3				
Zone A3: L2 Secondary Slab	30	30-Apr-18	05-Jun-18	0%
Zone A3: Strike Formwork & Dismantling	5	20-Jun-18	25-Jun-18	0%
Zone A5				
Zone A5: L2 Secondary Slab	28	11-May-18	14-Jun-18	0%
Zone A5: Strike Formwork & Dismantling	5	29-Jun-18	05-Jul-18	0%
Zone A6				
Zone A6: L2 Secondary Slab	28	12-Jun-18	20-Jul-18	0%
Zone A7				
Zone A7: L2 Secondary Slab	28	18-May-18	25-Jun-18	0%
Zone A8				
Zone A8: L2 Secondary Slab	28	28-May-18	04-Jul-18	0%
Zone A9				
Zone A9: L2 Secondary Slab	30	23-Jun-18	01-Aug-18	0%
Zone B				
Zone B1				
Zone B1: L2 Secondary Slab	27	26-Jun-18	31-Jul-18	0%
Zone B2				
Zone B2: L2 Secondary Slab (Wave Pool)	22	30-Apr-18	26-May-18	0%
Zone B2: Strike Formwork & Dismantling	5	08-Jun-18	13-Jun-18	0%
Zone B3				
Zone B3: L2 Secondary Slab (Wave Pool)	23	30-Apr-18	28-May-18	0%
Zone B3: Strike Formwork & Dismantling	5	09-Jun-18	14-Jun-18	0%
Zone B4				
Zone B4: L2 Secondary Slab (Landscape)	25	30-Apr-18	30-May-18	0%
Zone B4: Strike Formwork & Dismantling	5	12-Jun-18	16-Jun-18	0%

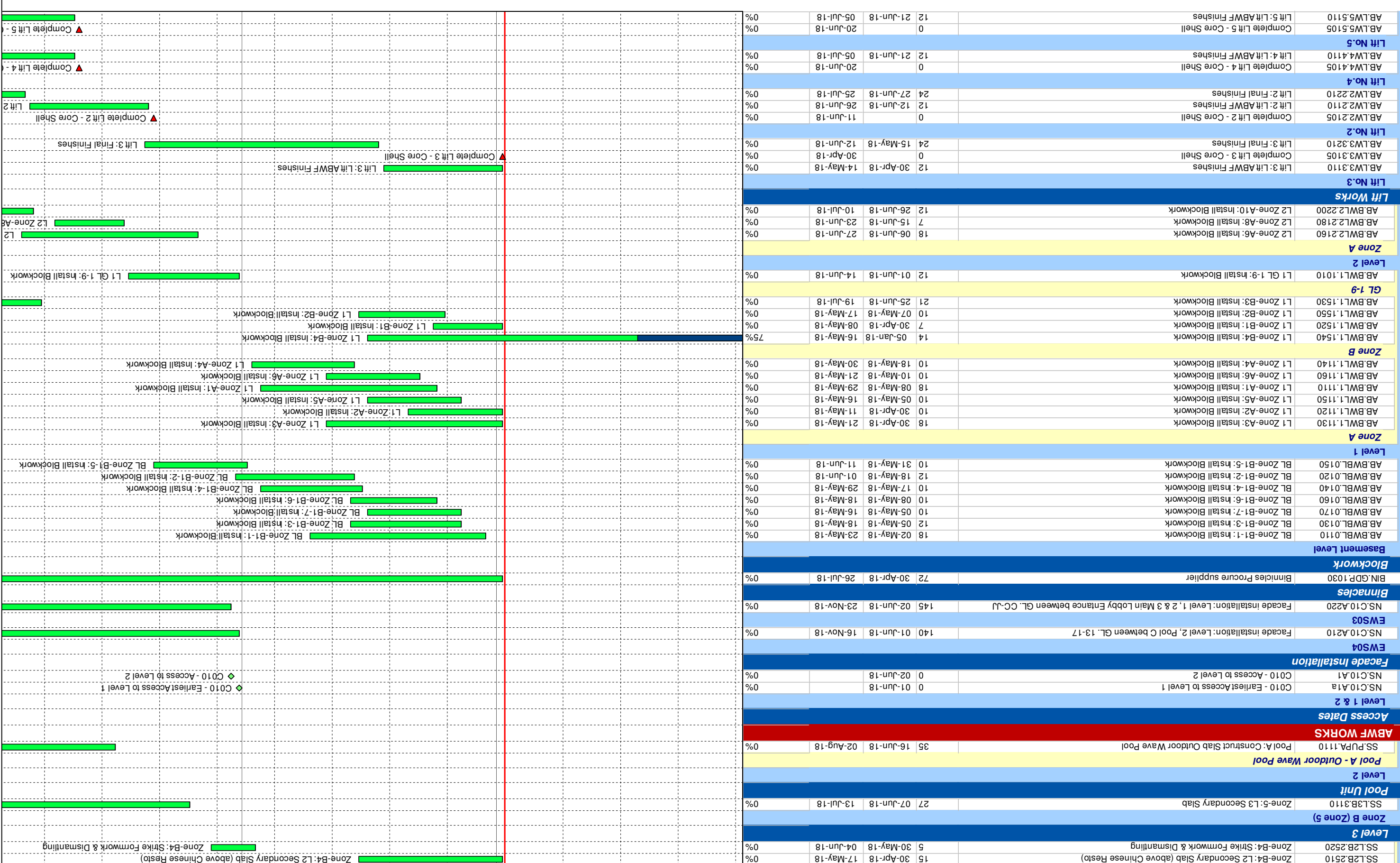
Project: Ocean Park Tai Shue Wan Water  
 Project ID: T16004-171  
 Layout: 3 Month look ahead 20180430  
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**OCEAN PARK - TAI SHUE WAN DEVELOPMENT**  
 Contract No. TSW-C006  
 3 month rolling program - May 2018

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

Date	Revision	Checked	Approved
02-Apr-18	3M rolling	PL LN ME	
14-May-18	3M rolling		

Activity	Start	Finish	Duration	Activity % Complete
Zone-B4: L2 Secondary Slab (above Chinese Resto)	30-Apr-18	17-May-18	15	0%
Zone-B4: Strike Formwork & Dismantling	5	30-May-18	5	0%
Zone-B4: L2 Secondary Slab (above Chinese Resto) & Dismantling	07	30		
Zone-B4: Strike Formwork & Dismantling	14	21		
Zone-B4: L2 Secondary Slab (above Chinese Resto)	21	28		
Zone-B4: Strike Formwork & Dismantling	28	04		
Zone-B4: L2 Secondary Slab (above Chinese Resto)	04	11		
Zone-B4: Strike Formwork & Dismantling	11	18		
Zone-B4: L2 Secondary Slab (above Chinese Resto)	18	25		

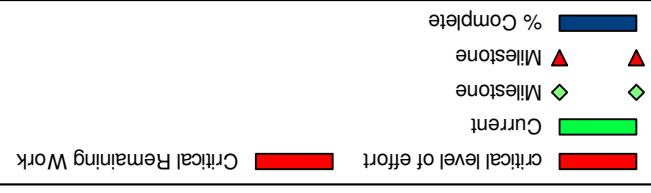


Date	Revision	Checked	Approved
02-Apr-18	3M rolling	PL LN ME	
14-May-18	3M rolling		



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

Project: Ocean Park Tai Shue Wan Water  
 World Project  
 Project ID: T16004-171  
 Layout: 3 Month look ahead 20180430  
 Page: 9 of 11



Lift No.	Activity	Start	Finish	Activity % Complete
25				
18				
13				
11				
12				
14				
21				
28				
04				
11				
18				
25				

Lift No.	Activity	Start	Finish	Activity % Complete
AB.LW1.1105	Complete Lift 1 - Core Shell	17-May-18	0	0%
AB.LW1.1110	Lift 1: Lift ABWF Finishes	18-May-18	12	0%
AB.LW1.1210	Lift 1: Final Finishes	02-Jun-18	24	0%
<b>ABWF Works to Enable E&amp;M Access</b>				
AB.EABL.0110	BL SSB: ABWF to enable E&M access - Water Heater Plant Rm (031)	18-May-18	18	0%
AB.EABL.0120	BL SSB: ABWF to enable E&M access - Cooling Tower	24-May-18	24	0%
AB.EABL.0135	BL Zone SSB: ABWF to enable E&M access - Fan & MCC Rm (050)	18-May-18	18	0%
AB.EABL.0150	BL Zone-B1-3: ABWF to enable E&M access - Pool Filtration Plant Rm (022)	30-May-18	30	0%
AB.EABL.0170	BL Zone-B-3: ABWF to enable E&M access - Cooling Tower Trans. Pump Rm (028)	18-May-18	18	0%
AB.EABL.0130	BL Zone-B1-1: ABWF to enable E&M access - Pool Filtration Plant Rm (003 & 008)	18-May-18	18	0%
AB.EABL.0155	BL Zone-B1-1: ABWF to enable E&M access - Colorifier Rm (010)	18-May-18	18	0%
AB.EABL.0140	BL Zone-B1-4: ABWF to enable E&M access - Chiller Plant Rm (041)	18-May-18	18	0%
AB.EABL.0145	BL Zone-B1-4: ABWF to enable E&M access - Fan & MCC Rm (048 & 049)	18-May-18	18	0%
AB.EABL.0160	BL Zone-B1-2: ABWF to enable E&M access - Pump Rm (032)	18-May-18	18	0%
AB.EAL1.1120	L1 SSB: ABWF to enable E&M access - Cooling Tower	24-May-18	24	0%
AB.EAL1.1180	L1 Zone B-4: ABWF to enable E&M access - Emergency Gen. Rm 1 (184)	18-May-18	18	0%
AB.EAL1.1130	L1 Zone B-5: ABWF to enable E&M access - South Substation (189) & Main Switch	31-May-18	31	0%
AB.EAL1.1110	L1 GL 1-9: ABWF to enable E&M access - Emergency Gen. Rm 2 (109) & North Su	30-May-18	30	0%
AB.EAL2.2160	L2 Zone A-8, 9, 10: ABWF to enable E&M access - Elec. Rm (211)	28-Jun-18	40	0%
AB.EAL2.2235	L2 Zone For Wave Generation room (Rm 242)	28-Jun-18	40	0%
<b>Ceiling Finishes - Remainder</b>				
AB.CFBL.0110	BL: Ceiling Finishes	12-Jun-18	45	0%
<b>Changing / Washrooms</b>				
AB.CRL1.1110	L1 Zone-A3: Male Shower and Toilet Area	20-Sep-18	90	0%
AB.CRL1.1120	L1 Zone-A3: Female Shower and Toilet Area	20-Sep-18	90	0%
AB.CRL2.2110	L2 Zone B/D: Public Toilets	16-Aug-18	90	0%
<b>Catwalk Platform over L1 Locker room</b>				
AB.CW.1000	Install Catwalk platform over L1 Locker room	12-Jul-18	60	0%
<b>Balustrade</b>				
AB.BAL.1030	L1 Balustrade installation	16-Jun-18	40	0%
AB.BAL.1060	L2 Balustrade installation	04-Aug-18	80	0%
AB.BAL.1090	L3 Balustrade installation	30-Apr-18	60	0%
<b>SHUM WAN ROAD (Area A4)</b>				
<b>General Requirements</b>				
EW.GENR.0110	Application of Excavation Permit	30-Apr-18	180	0%
EW.GENR.0120	Prepare & Submit TTM Proposal	30-Apr-18	28	0%
PR.SWGE.1050	Mobilise, Survey & Setting out - Shum Wan Rd.	05-Jun-18	6	0%
EW.GENR.0130	Obtain Approval for TTM Proposal	04-Jun-18	28	0%
PR.SWGE.1025	Site Clearance and Hoarding Erection - Shum Wan Rd.	06-Jun-18	6	0%
<b>E&amp;M WORKS</b>				
EM.IN020002	Cast-in installation works	03-Dec-18	180	0%
EM.IN020001	Setting out for installation of first fix items	30-May-18	30	0%
<b>Basement Level</b>				
EM.IN021080	BS Access to Basement (General Area)	02-Jun-18	0	0%
EM.IN022000	BS Access to L1 (General)	08-May-18	0	0%
<b>Level 1</b>				
EM.IN022020	BS Access to LV Main Switch Rm (Supplied by S SS)	26-Jun-18	0	0%
<b>South Substation</b>				
EM.IN022050	BS Access to South Substation	26-Jun-18	0	0%
<b>Level 2</b>				
EM.IN023060	Pool A Lighting Installation - 1st fix	16-Jun-18	65	0%

<p><b>Lift No. 1</b></p> <p>AB.LW1.1105 Complete Lift 1 - Core Shell</p> <p>AB.LW1.1110 Lift 1: Lift ABWF Finishes</p> <p>AB.LW1.1210 Lift 1: Final Finishes</p>	<p><b>Basement Level</b></p> <p>AB.EABL.0110 BL SSB: ABWF to enable E&amp;M access - Water Heater Plant Rm (031)</p> <p>AB.EABL.0120 BL SSB: ABWF to enable E&amp;M access - Cooling Tower</p> <p>AB.EABL.0135 BL Zone SSB: ABWF to enable E&amp;M access - Fan &amp; MCC Rm (050)</p> <p>AB.EABL.0150 BL Zone-B1-3: ABWF to enable E&amp;M access - Pool Filtration Plant Rm (022)</p> <p>AB.EABL.0170 BL Zone-B-3: ABWF to enable E&amp;M access - Cooling Tower Trans. Pump Rm (028)</p> <p>AB.EABL.0130 BL Zone-B1-1: ABWF to enable E&amp;M access - Pool Filtration Plant Rm (003 &amp; 008)</p> <p>AB.EABL.0155 BL Zone-B1-1: ABWF to enable E&amp;M access - Colorifier Rm (010)</p> <p>AB.EABL.0140 BL Zone-B1-4: ABWF to enable E&amp;M access - Chiller Plant Rm (041)</p> <p>AB.EABL.0145 BL Zone-B1-4: ABWF to enable E&amp;M access - Fan &amp; MCC Rm (048 &amp; 049)</p> <p>AB.EABL.0160 BL Zone-B1-2: ABWF to enable E&amp;M access - Pump Rm (032)</p>	<p><b>Level 1</b></p> <p>AB.EAL1.1120 L1 SSB: ABWF to enable E&amp;M access - Cooling Tower</p> <p>AB.EAL1.1180 L1 Zone B-4: ABWF to enable E&amp;M access - Emergency Gen. Rm 1 (184)</p> <p>AB.EAL1.1130 L1 Zone B-5: ABWF to enable E&amp;M access - South Substation (189) &amp; Main Switch</p> <p>AB.EAL1.1110 L1 GL 1-9: ABWF to enable E&amp;M access - Emergency Gen. Rm 2 (109) &amp; North Su</p>	<p><b>Level 2</b></p> <p>AB.EAL2.2160 L2 Zone A-8, 9, 10: ABWF to enable E&amp;M access - Elec. Rm (211)</p> <p>AB.EAL2.2235 L2 Zone For Wave Generation room (Rm 242)</p>	<p><b>Ceiling Finishes - Remainder</b></p> <p>AB.CFBL.0110 BL: Ceiling Finishes</p>	<p><b>Changing / Washrooms</b></p> <p>AB.CRL1.1110 L1 Zone-A3: Male Shower and Toilet Area</p> <p>AB.CRL1.1120 L1 Zone-A3: Female Shower and Toilet Area</p> <p>AB.CRL2.2110 L2 Zone B/D: Public Toilets</p>	<p><b>Catwalk Platform over L1 Locker room</b></p> <p>AB.CW.1000 Install Catwalk platform over L1 Locker room</p>	<p><b>Balustrade</b></p> <p>AB.BAL.1030 L1 Balustrade installation</p> <p>AB.BAL.1060 L2 Balustrade installation</p> <p>AB.BAL.1090 L3 Balustrade installation</p>	<p><b>SHUM WAN ROAD (Area A4)</b></p> <p><b>General Requirements</b></p> <p>EW.GENR.0110 Application of Excavation Permit</p> <p>EW.GENR.0120 Prepare &amp; Submit TTM Proposal</p> <p>PR.SWGE.1050 Mobilise, Survey &amp; Setting out - Shum Wan Rd.</p> <p>EW.GENR.0130 Obtain Approval for TTM Proposal</p> <p>PR.SWGE.1025 Site Clearance and Hoarding Erection - Shum Wan Rd.</p>	<p><b>E&amp;M WORKS</b></p> <p>EM.IN020002 Cast-in installation works</p> <p>EM.IN020001 Setting out for installation of first fix items</p>	<p><b>Basement Level</b></p> <p>EM.IN021080 BS Access to Basement (General Area)</p> <p>EM.IN022000 BS Access to L1 (General)</p>	<p><b>Level 1</b></p> <p>EM.IN022020 BS Access to LV Main Switch Rm (Supplied by S SS)</p>	<p><b>South Substation</b></p> <p>EM.IN022050 BS Access to South Substation</p>	<p><b>Level 2</b></p> <p>EM.IN023060 Pool A Lighting Installation - 1st fix</p>
--	--	--	--	---	--	---	--	--	--	---	--	---	---

critical level of effort █ Critical Remaining Work █

Current █

Milestone ◆ Milestone ▲

% Complete █

Project: Ocean Park Tai Shue Wan Water  
 World Project  
 Project ID: T16004-171  
 Layout: 3 Month look ahead 20180430  
 Page: 10 of 11

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



Date	Revision	Checked	Approved
02-Apr-18	3M rolling	PL LN ME	
14-May-18	3M rolling		

critical level of effort  
 Current  
 Milestone  
 Milestone  
 % Complete

Project: Ocean Park Tai Shue Wan Water  
 World Project  
 Project ID: T16004-171  
 Layout: 3 Month look ahead 20180430  
 Page: 11 of 11

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



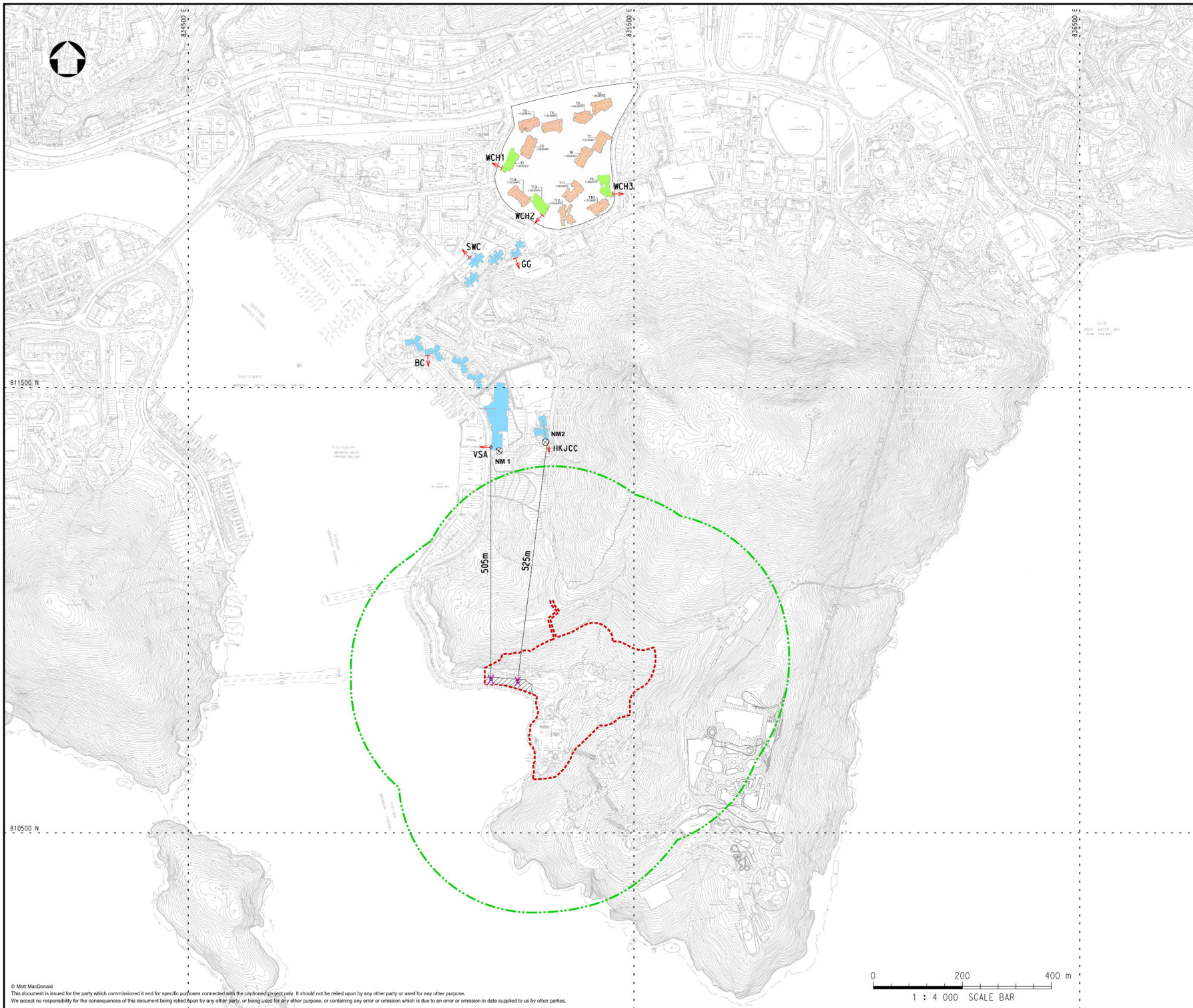
Date	Revision	Checked	Approved
02-Apr-18	3M rolling	PL LN ME	
14-May-18	3M rolling		



ID	Activity	Duration	Start	Finish	Activity % Complete
<b>Statutory Submission, Inspection &amp; Approval</b>					
EM.SS010000	Submit WWO46 Part III for PD	0	08-Jun-18	08-Jun-18	0%
EM.SS010005	Submit WWO46 Part III for FS	0	08-Jun-18	08-Jun-18	0%
<b>Obtain SPL and PPEL</b>					
EM.SS020020	Prepare all submission material SPL Form FEHD105	35	30-Apr-18	11-Jun-18	0%
EM.SS020041	Submit FEHD 105 & related documents for SPL	0	11-Jun-18	11-Jun-18	0%
EM.SS020021	SPL Process and inspections	130	12-Jun-18	19-Oct-18	0%



## **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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 W mottmac.com

Client

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

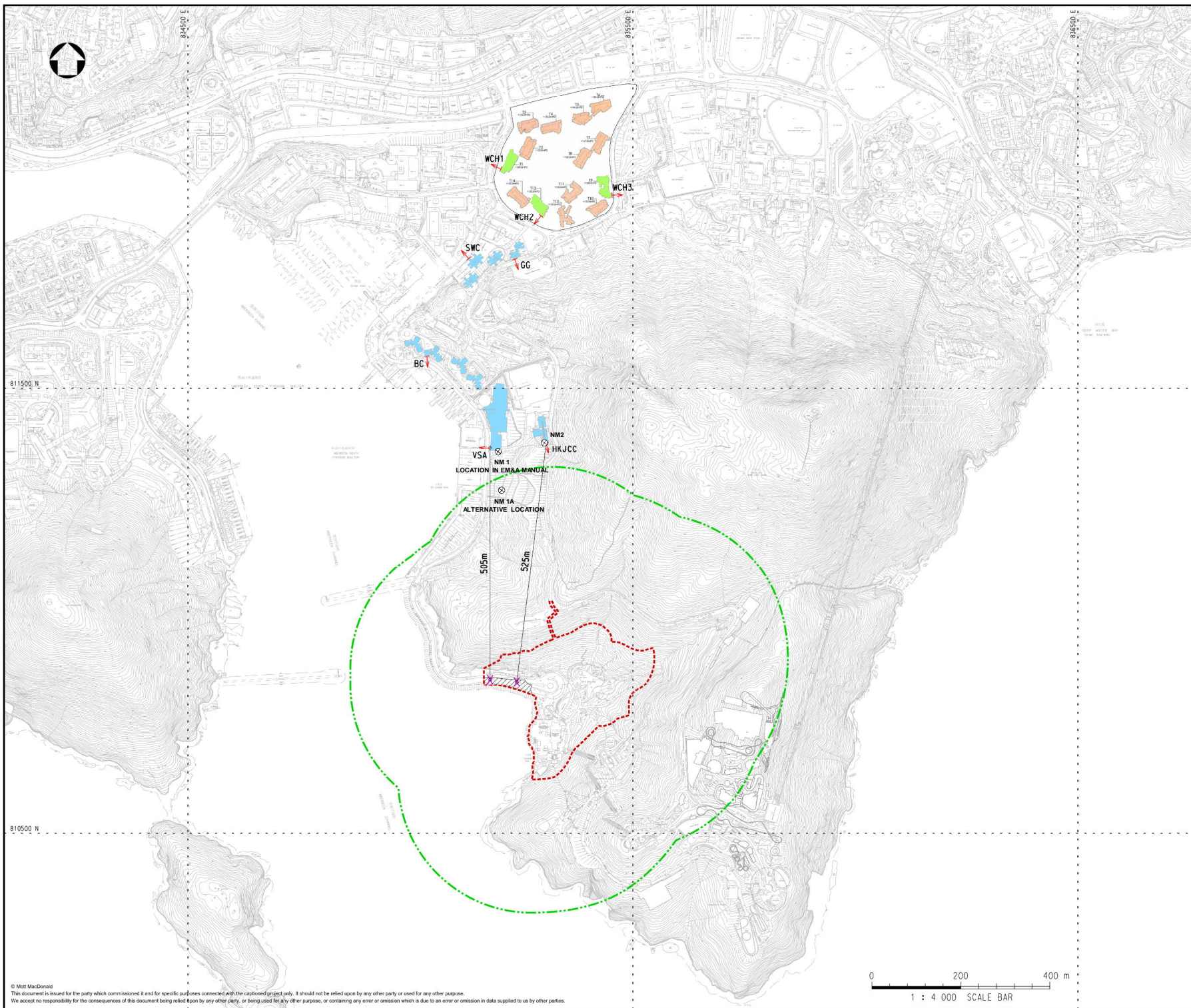
**APPENDIX D**

0 200 400 m  
1 : 4 000 SCALE BAR

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

## **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
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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W mottmac.com

Client



Project

**TAI SHUE WAN DEVELOPMENT  
AT OCEAN PARK**

Title

**ACTUAL LOCATION OF  
IMPACT MONITORING**

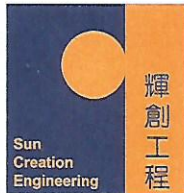
Designed	HL	Eng check	JC
Drawn	MING	Coordination	HC
Dwg check	HL	Approved	EC
Scale at A1	1:4000	Status	PRE
Drawing Number		Rev	P4

**APPENDIX E**

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

## F. Calibration Certificates



輝創工程有限公司

Sun Creation Engineering Limited

Calibration and Testing Laboratory

# Certificate of Calibration

## 校正證書

Certificate No. : C173120

證書編號

ITEM TESTED / 送檢項目 ( Job No. / 序引編號 : IC17-1220 )

Date of Receipt / 收件日期 : 1 June 2017

Description / 儀器名稱 : Sound Level Meter

Manufacturer / 製造商 : Rion

Model No. / 型號 : NL-52

Serial No. / 編號 : 00643049

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 :  $(55 \pm 20)\%$

Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 8 June 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.

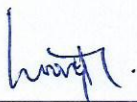
The results are detailed in the subsequent page(s).

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

8 June 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.

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

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. : C173120

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 :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C170048
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 <sub>A</sub>	A	Fast	94.00	1	93.9	± 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 <sub>A</sub>	A	Fast	94.00	1	93.9 (Ref.)
				104.00		104.0
				114.00		114.0

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

- 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 <sub>A</sub>	A	Fast	94.00	1	93.9	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.

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# Certificate of Calibration

## 校正證書

Certificate No. : C173120

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 <sub>A</sub>	A	Fast	94.00	63 Hz	67.6	-26.2 ± 1.5
					125 Hz	77.7	-16.1 ± 1.5
					250 Hz	85.2	-8.6 ± 1.4
					500 Hz	90.6	-3.2 ± 1.4
					1 kHz	93.9	Ref.
					2 kHz	95.1	+1.2 ± 1.6
					4 kHz	94.9	+1.0 ± 1.6
					8 kHz	92.8	-1.1 (+2.1 ; -3.1)
					12.5 kHz	89.4	-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 <sub>C</sub>	C	Fast	94.00	63 Hz	93.0	-0.8 ± 1.5
					125 Hz	93.7	-0.2 ± 1.5
					250 Hz	93.9	0.0 ± 1.4
					500 Hz	93.9	0.0 ± 1.4
					1 kHz	93.9	Ref.
					2 kHz	93.7	-0.2 ± 1.6
					4 kHz	93.1	-0.8 ± 1.6
					8 kHz	90.9	-3.0 (+2.1 ; -3.1)
					12.5 kHz	87.5	-6.2 (+3.0 ; -6.0)

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

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value :

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

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

Note :

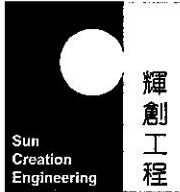
Only the original copy or the laboratory's certified true copy is valid.

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

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).

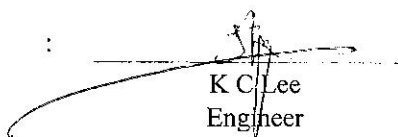
The test equipment used for calibration are traceable to National Standards via :

- 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.

此證書之效力，僅限於按照證書所註之國家標準使用。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, Hoi Wing Road, My Loft, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司, 校核實驗室

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

Tel: 3425 2222 Fax: 3425 2222 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

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

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

4. Test procedure : MA100N.

5. 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

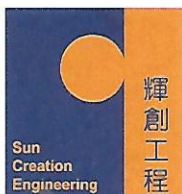
UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	1.000	1 kHz ± 1 %	± 1

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.



# Certificate of Calibration 校正證書

Certificate No. : C165934  
證書編號

ITEM TESTED / 送檢項目 ( Job No. / 序引編號 : IC16-2438 )      Date of Receipt / 收件日期 : 26 October 2016

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 :  $(23 \pm 2)^{\circ}\text{C}$       Relative Humidity / 相對濕度 :  $(55 \pm 20)\%$   
Line Voltage / 電壓 : ---

## TEST SPECIFICATIONS / 測試規範


Calibration check

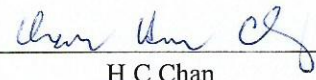
DATE OF TEST / 測試日期 : 27 October 2016

## 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

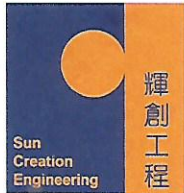
Tested By :   
測試 : \_\_\_\_\_  
T L Shek  
Assistant Engineer

Certified By :   
核證 : \_\_\_\_\_  
H C Chan  
Engineer

Date of Issue : 28 October 2016  
簽發日期

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

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



輝創工程有限公司

Sun Creation Engineering Limited

Calibration and Testing Laboratory

# Certificate of Calibration 校正證書

Certificate No. : C165934  
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	S12109

- 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
2.0	1.8	+0.2	0.2	2.0
4.0	3.8	+0.2	0.2	2.0
6.0	5.8	+0.2	0.3	2.0
8.1	8.0	+0.1	0.3	2.0
10.0	10.0	0.0	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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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

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

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





## H. Impact Monitoring Schedule

# MAY 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday																																																																																				
		<b>1</b>	<b>2</b> Noise Monitoring	<b>3</b>	<b>4</b> ET weekly site inspection Landscape and Visual Monitoring	<b>5</b>																																																																																				
<b>6</b> Noise Monitoring	<b>7</b>	<b>8</b> Noise Monitoring	<b>9</b>	<b>10</b>	<b>11</b> ET weekly site inspection Ecological Monitoring	<b>12</b>																																																																																				
<b>13</b> Noise Monitoring	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b> Noise Monitoring	<b>18</b> ET weekly site inspection Landscape and Visual Monitoring	<b>19</b>																																																																																				
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<b>27</b> Noise Monitoring	<b>28</b>	<b>29</b>	<b>30</b> Noise Monitoring	<b>31</b>																																																																																						
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# I. Noise Monitoring Data

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

<b>NM1A - Slope near the Victoria Shanghai Academy</b>							
Date	Time		Noise Levels, dB(A)			Wind Speed (ms-1)	Limit Level for L <sub>eq</sub> (dB(A)) <sup>(2)</sup>
	Start	Finish	Corrected L <sub>eq</sub> (30min) <sup>(1)</sup>	Corrected L <sub>90</sub> <sup>(1)</sup>	Corrected L <sub>10</sub> <sup>(1)</sup>		
02-May-18	09:02	09:32	59.6	57.5	61.2	0.4	70
08-May-18	10:18	10:48	59.8	57.7	61.4	0.5	70
17-May-18	10:12	10:42	59.1	57.3	60.7	0.3	70
24-May-18	10:10	10:40	59.4	57.4	61.1	0.4	70
30-May-18	08:42	09:12	59.6	57.6	61.2	0.3	70

<b>NM2 - Hong Kong Juvenile Care Centre</b>							
Date	Time		Noise Levels, dB(A)			Wind Speed (ms-1)	Limit Level for L <sub>eq</sub> (dB(A)) <sup>(2)</sup>
	Start	Finish	L <sub>eq</sub> (30min)	L <sub>90</sub>	L <sub>10</sub>		
02-May-18	10:35	11:05	51.6	50.3	53.1	0.2	70
08-May-18	09:40	10:10	53.0	51.5	54.5	0.3	70
17-May-18	09:30	10:00	52.1	50.4	53.6	0.3	70
24-May-18	09:30	10:00	53.5	52.0	55.1	0.4	70
30-May-18	10:30	11:00	51.4	50.0	53.0	0.3	70

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

<b>NM1A - Slope near the Victoria Shanghai Academy</b>							
Date	Time		Noise Levels, dB(A)			Wind Speed (ms-1)	Limit Level for $L_{eq}$ (dB(A)) <sup>(2)</sup>
	Start	Finish	Corrected $L_{eq}(15min)$ <sup>(1)</sup>	Corrected $L_{90}$ <sup>(1)</sup>	Corrected $L_{10}$ <sup>(1)</sup>		
06-May-18	16:35	16:50	54.4	49.7	56.2	0.4	70
13-May-18	14:45	15:00	52.4	49.9	54.3	0.2	70
20-May-18	15:40	15:55	53.7	49.1	56.6	0.2	70
27-May-18	13:30	13:45	54.5	49.9	55.8	0.2	70

<b>NM2 - Hong Kong Juvenile Care Centre</b>							
Date	Time		Noise Levels, dB(A)			Wind Speed (ms-1)	Limit Level for $L_{eq}$ (dB(A)) <sup>(2)</sup>
	Start	Finish	$L_{eq}(15min)$	$L_{90}$	$L_{10}$		
06-May-18	16:10	16:25	48.5	44.6	49.8	0.4	65
13-May-18	14:20	14:35	46.1	43.8	48.0	0.4	65
20-May-18	15:10	15:25	47.5	45.9	48.6	0.3	65
27-May-18	13:05	13:20	48.5	44.9	49.8	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.

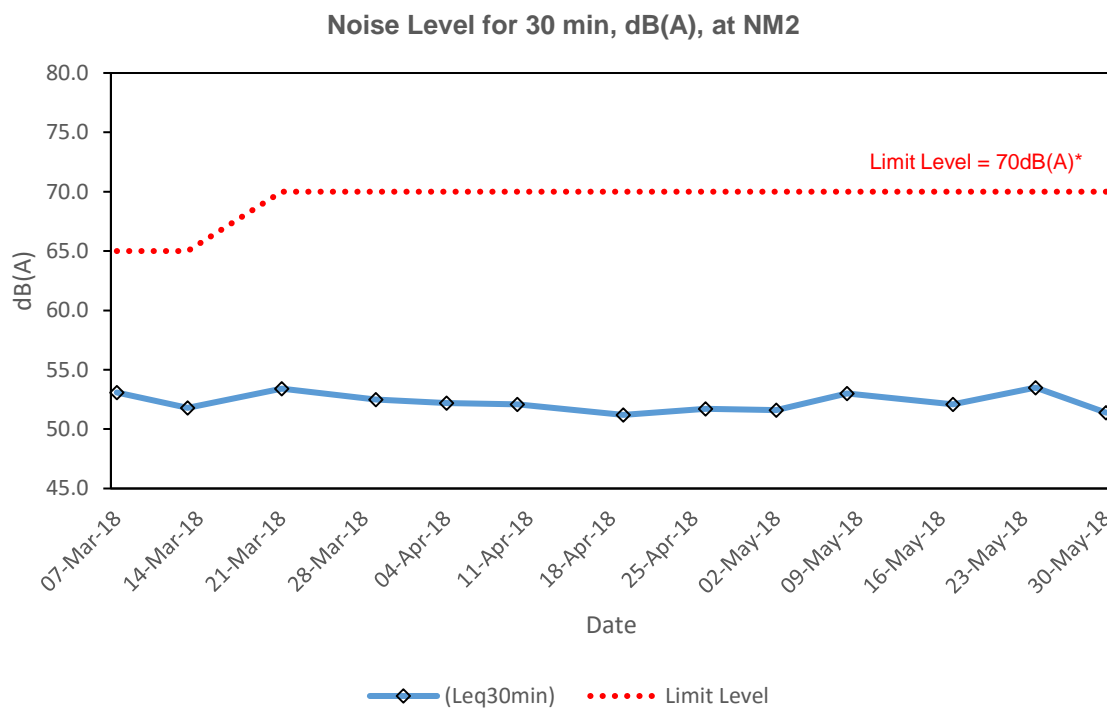
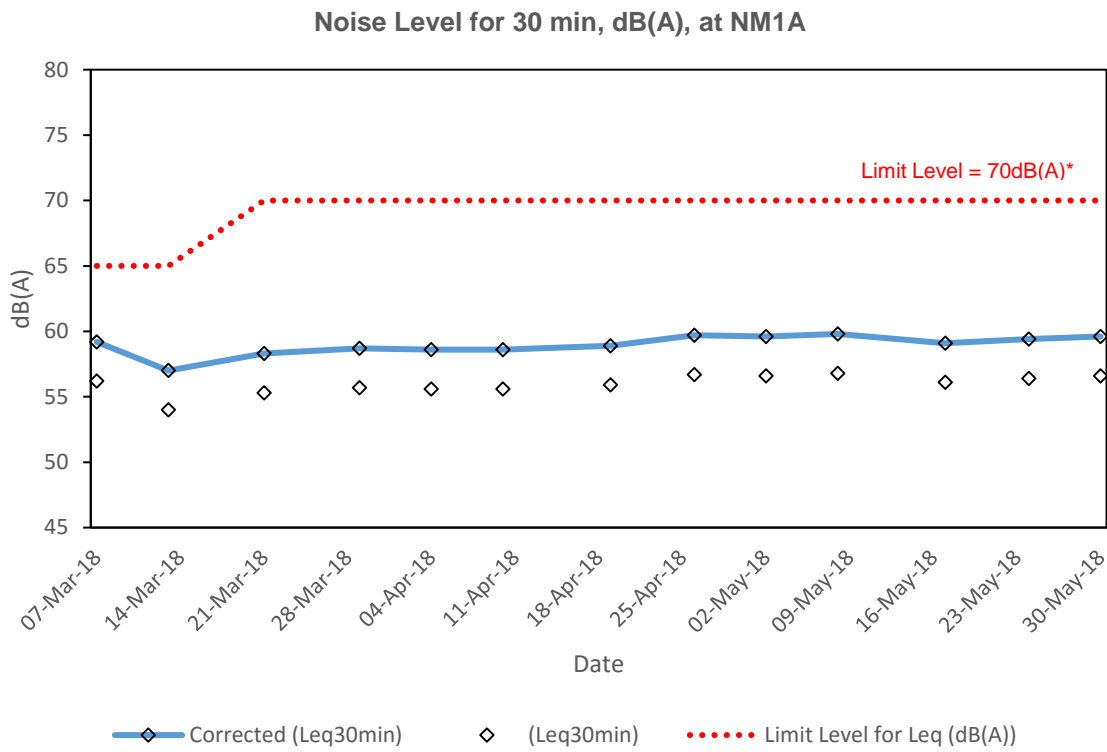
(2) Acceptable noise level should be 65dB(A) according to Technical Memorandum on noise from construction works other than percussive piling.





## J. Graphical Plots for Noise Monitoring Data

## Graphical Plot for Noise Monitoring Data (March - May 2018)



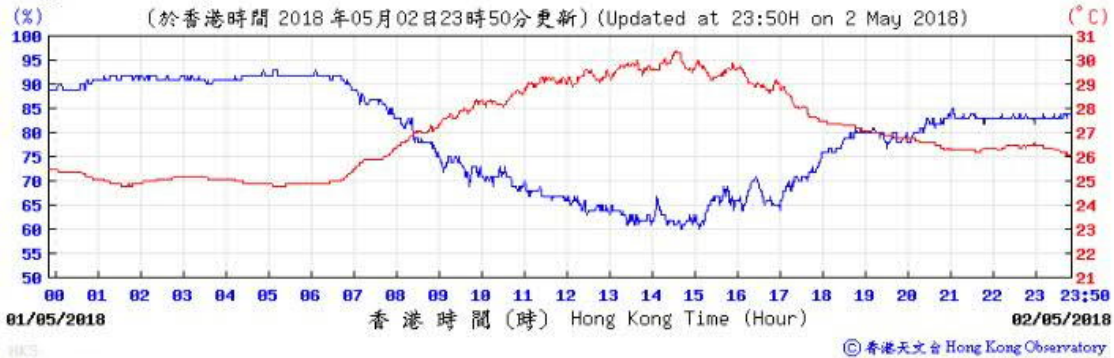
Note: \*Acceptable Noise Levels for school should be reduced to 65 dB(A) during examination period.

## K. Meteorological Data

2/5/2018

Wong Chuk Hang Station

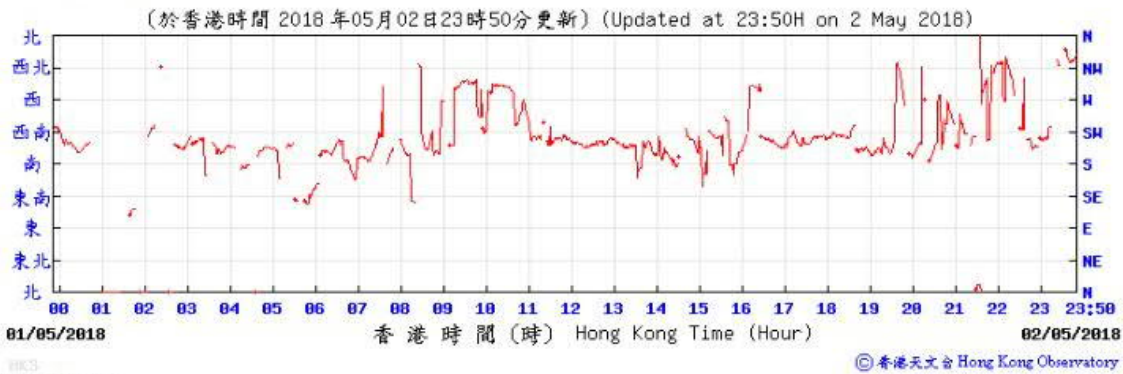
Temperature/Humidity:



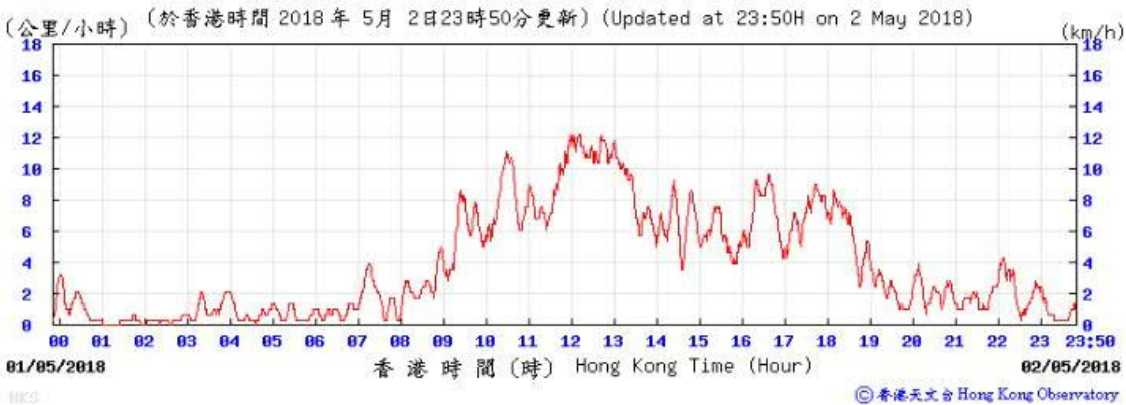
Pressure:



Wind Direction:

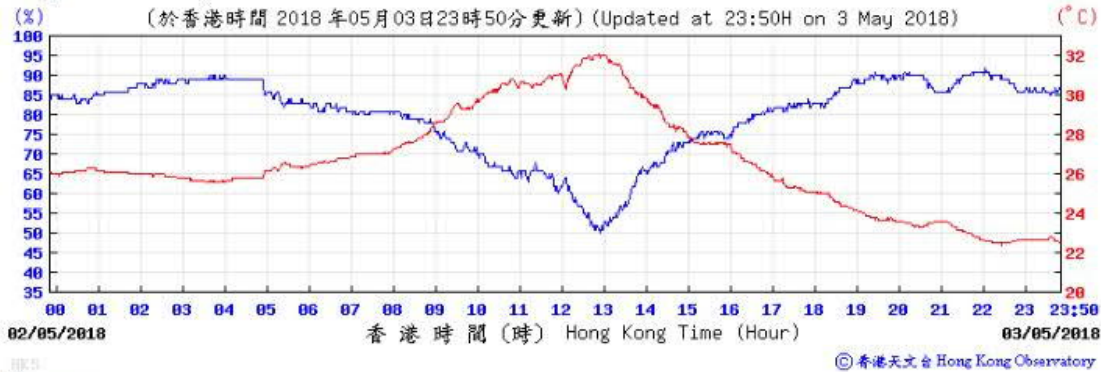


Wind Speed:



3/5/2018

Temperature/Humidity:



Pressure:



Wind Direction:

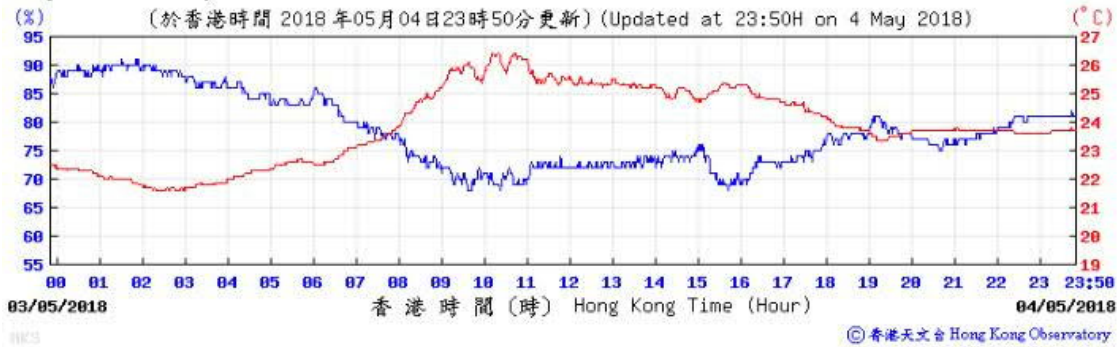


Wind Speed:



4/5/2018

Temperature/Humidity:



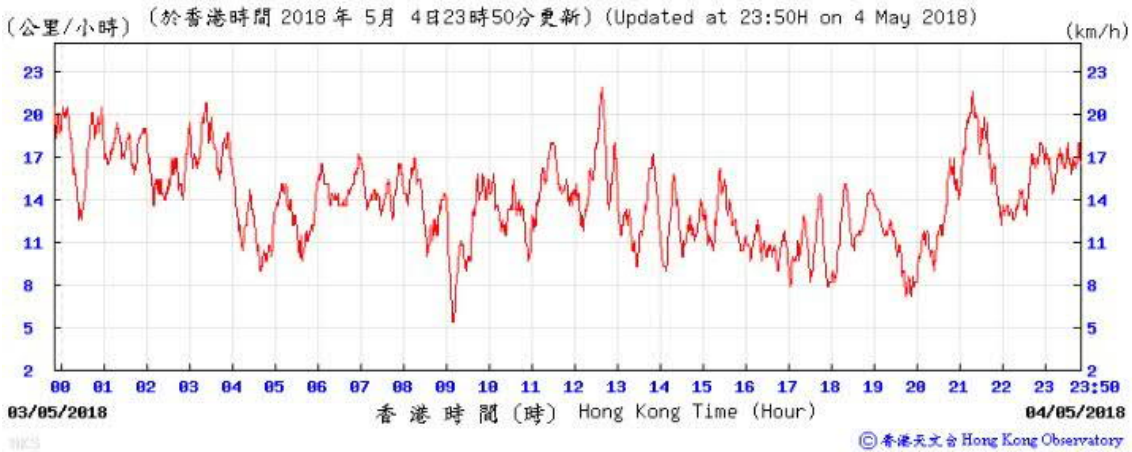
Pressure:



Wind Direction:

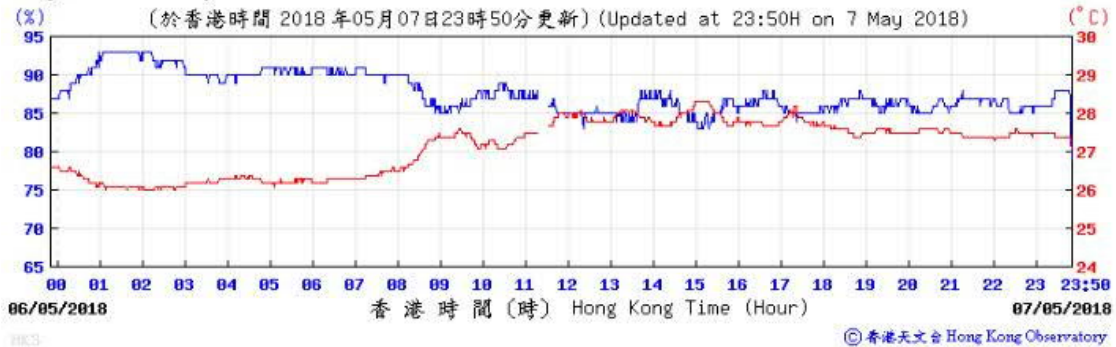


Wind Speed:



7/5/2018

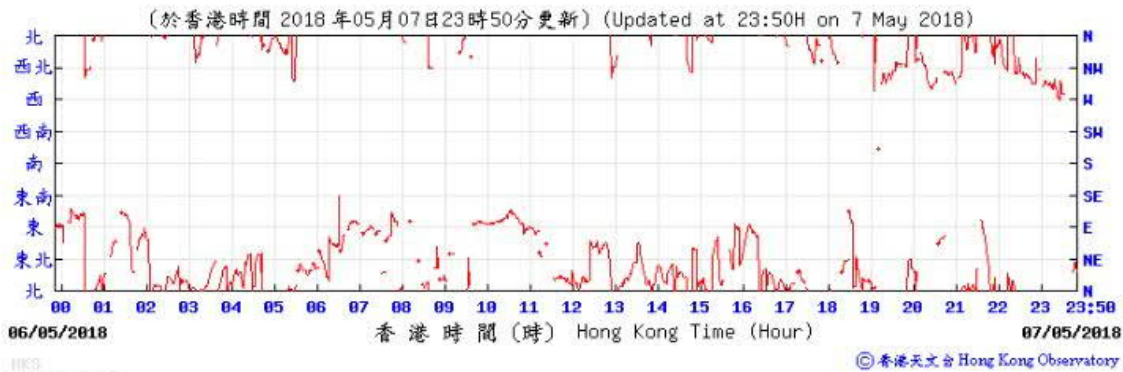
Temperature/Humidity:



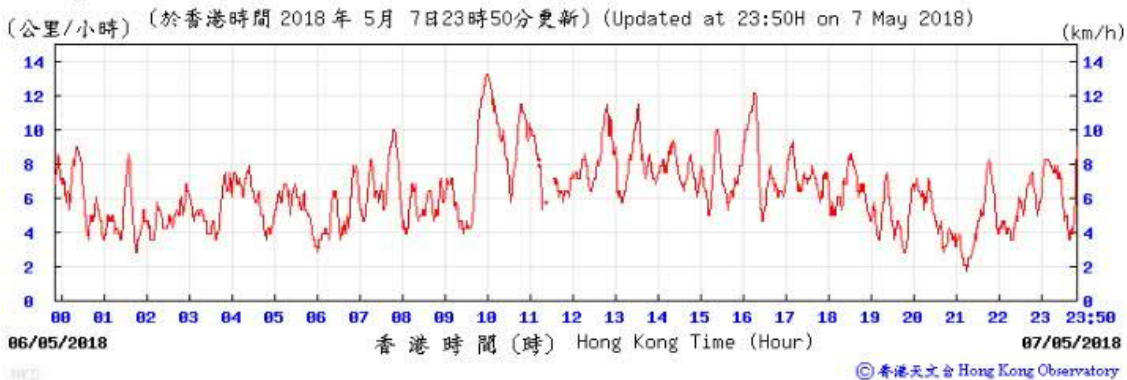
Pressure:



Wind Direction:

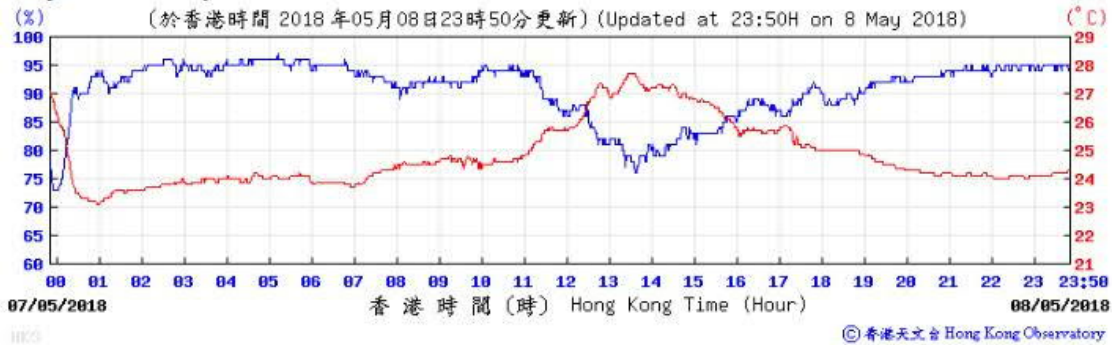


Wind Speed:



8/5/2018

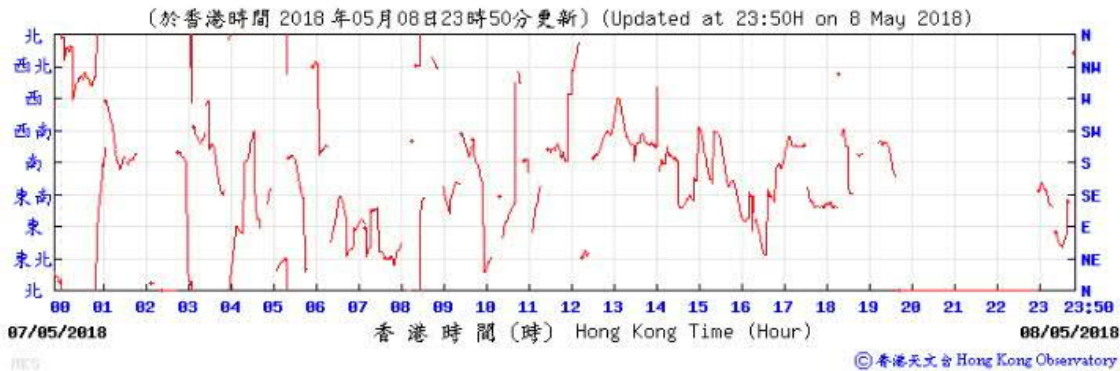
Temperature/Humidity:



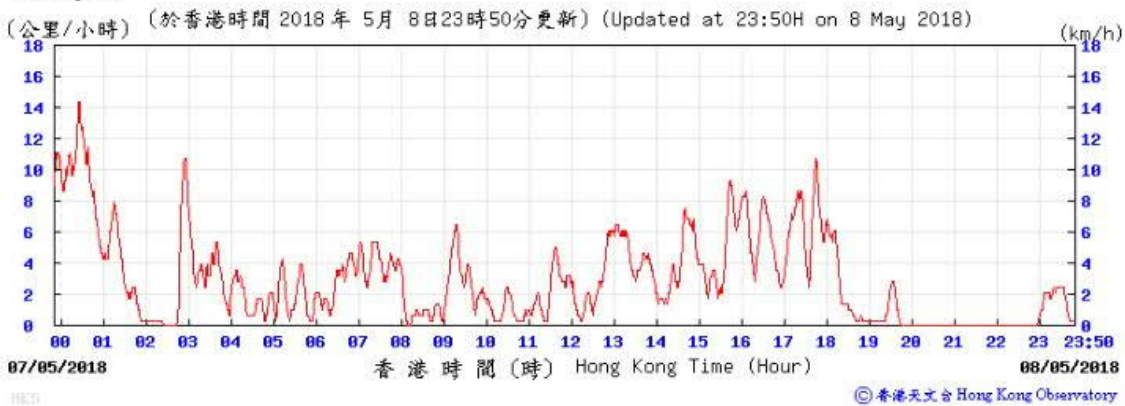
Pressure:



Wind Direction:



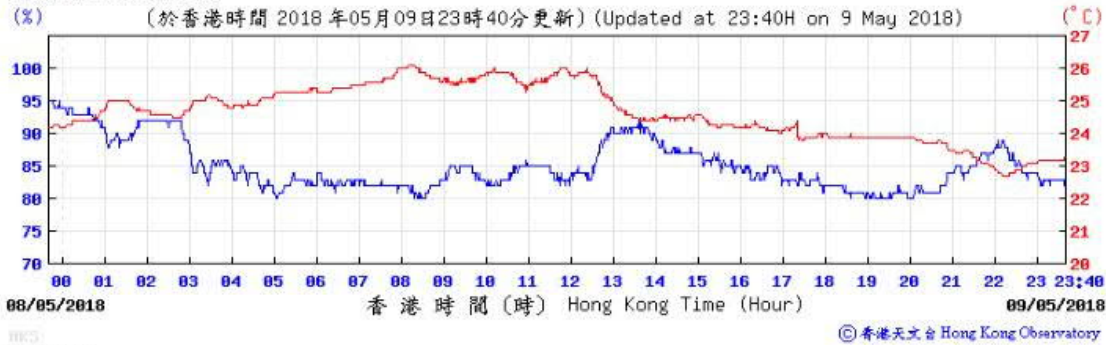
Wind Speed:





9/5/2018

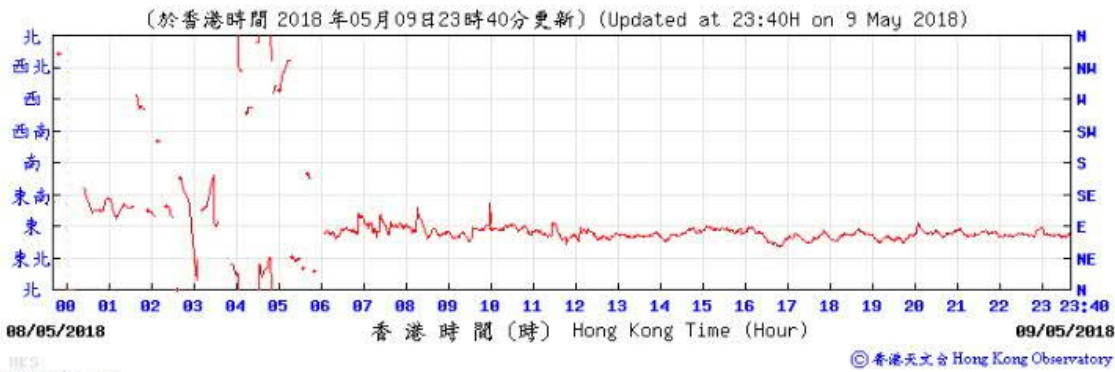
Temperature/Humidity:



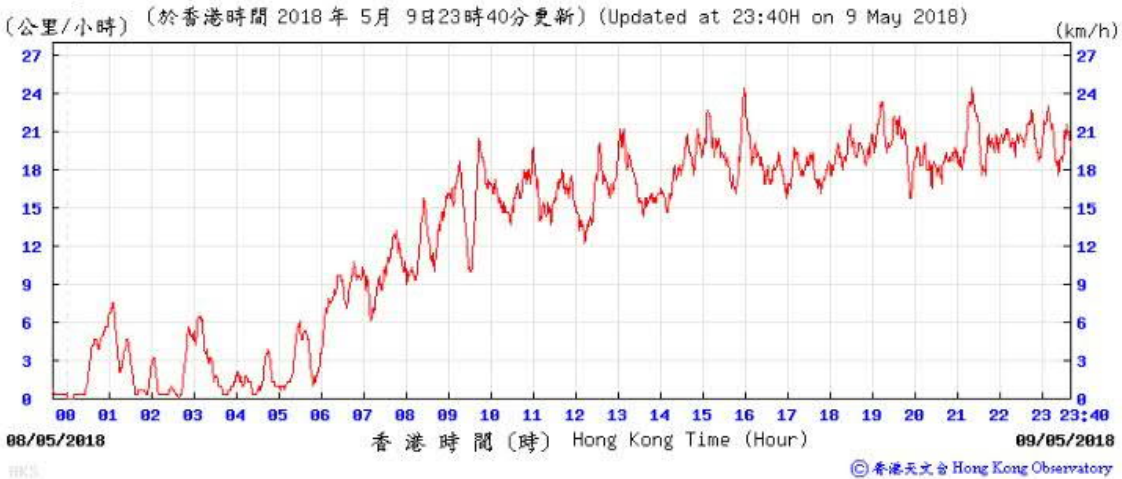
Pressure:



Wind Direction:

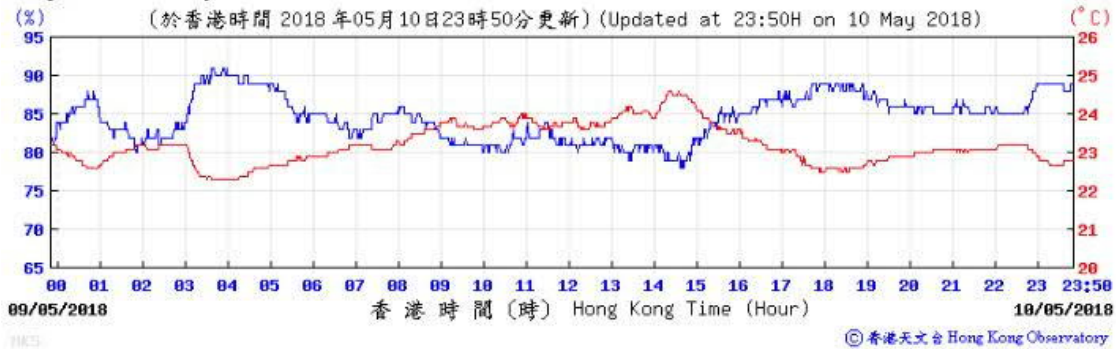


Wind Speed:



10/5/2018

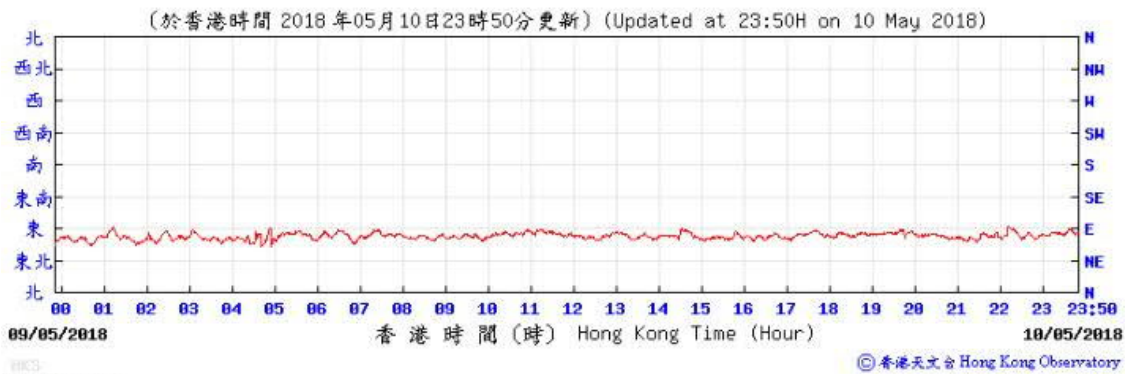
Temperature/Humidity:



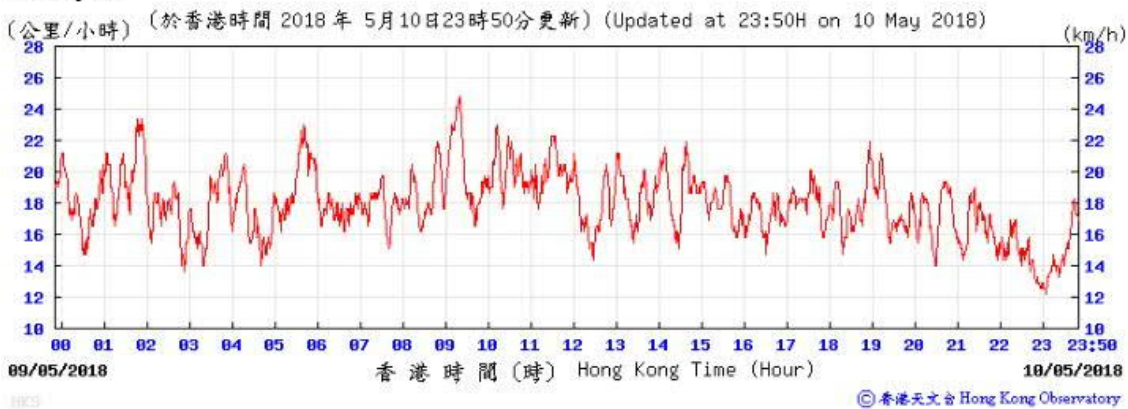
Pressure:



Wind Direction:

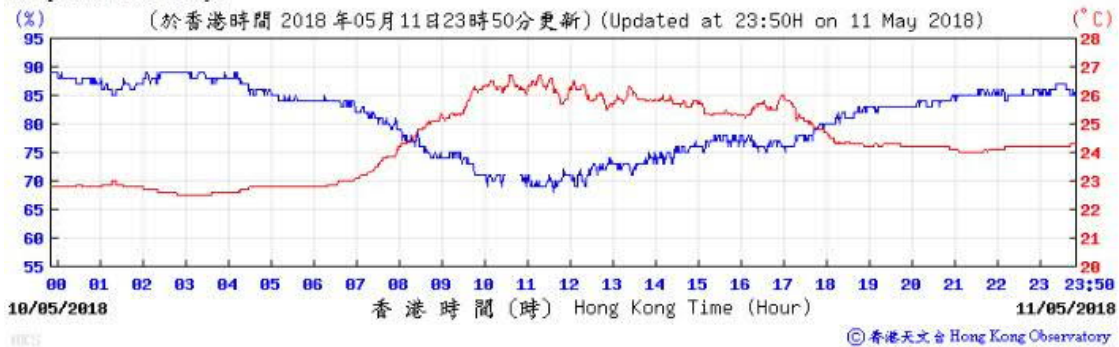


Wind Speed:



11/5/2018

Temperature/Humidity:



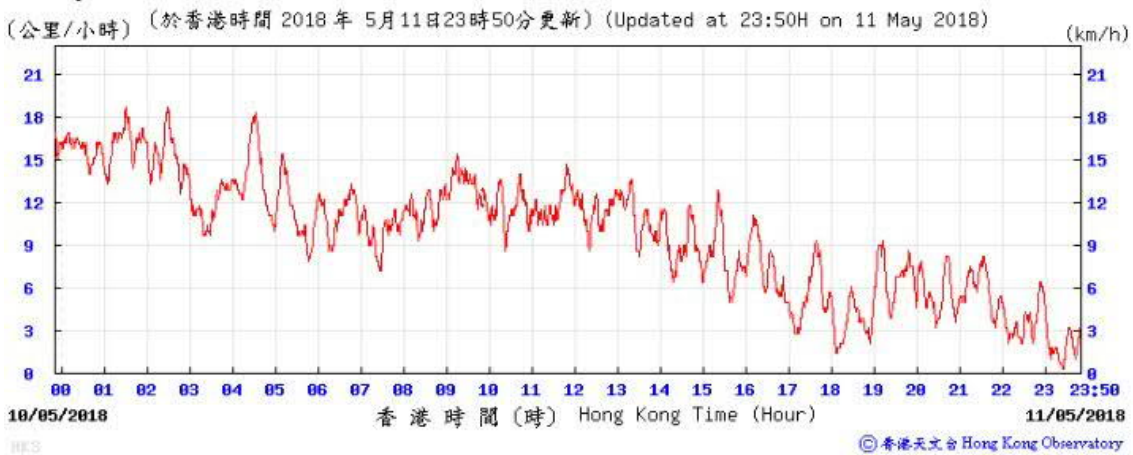
Pressure:



Wind Direction:

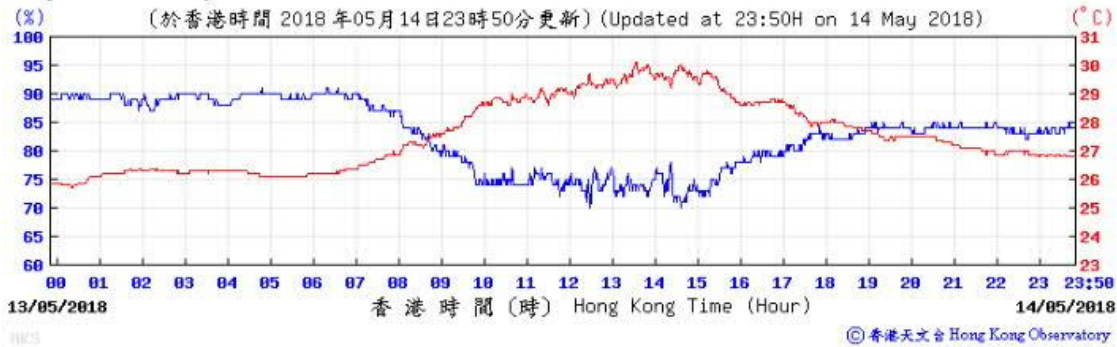


Wind Speed:



14/5/2018

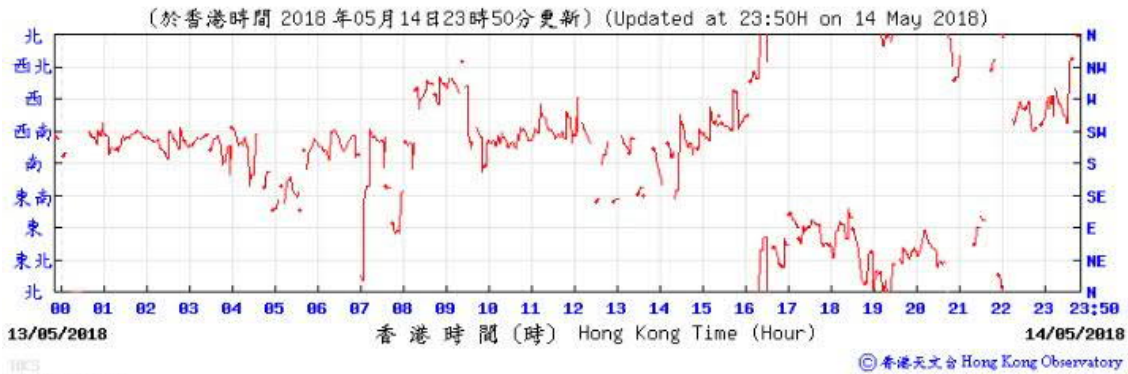
Temperature/Humidity:



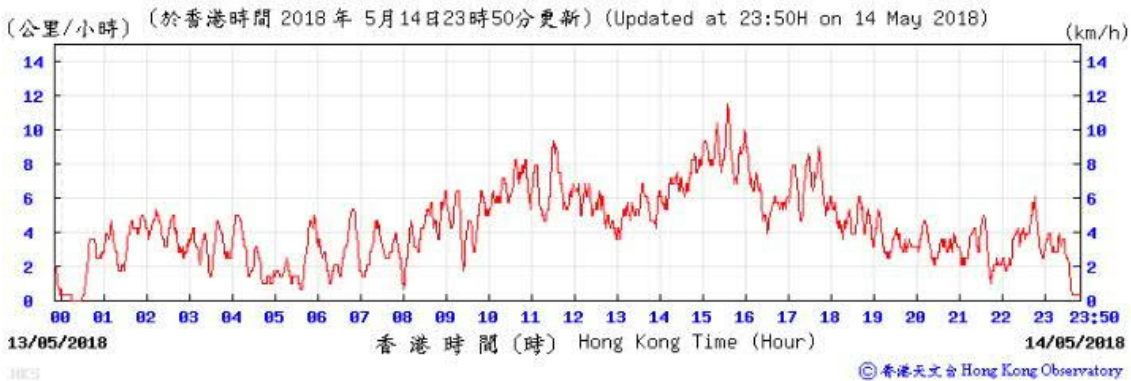
Pressure:



Wind Direction:

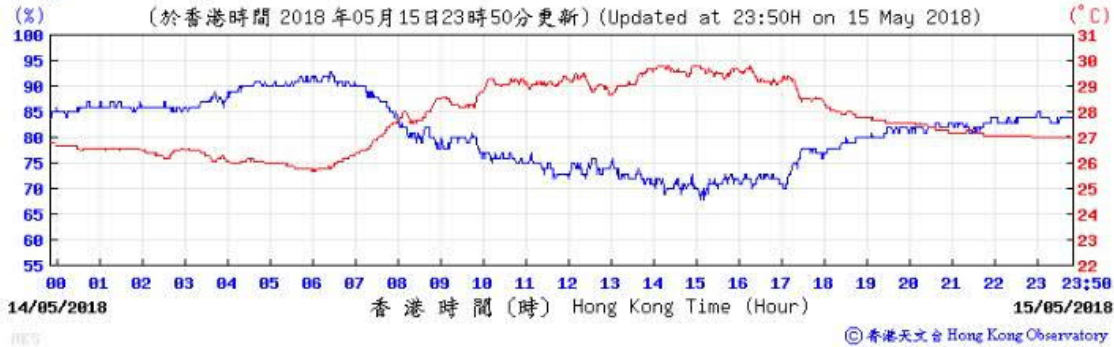


Wind Speed:



15/5/2018

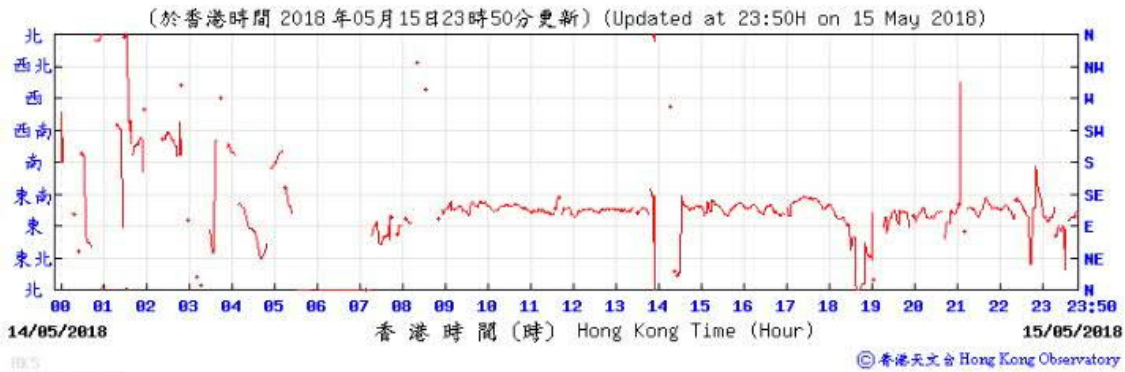
Temperature/Humidity:



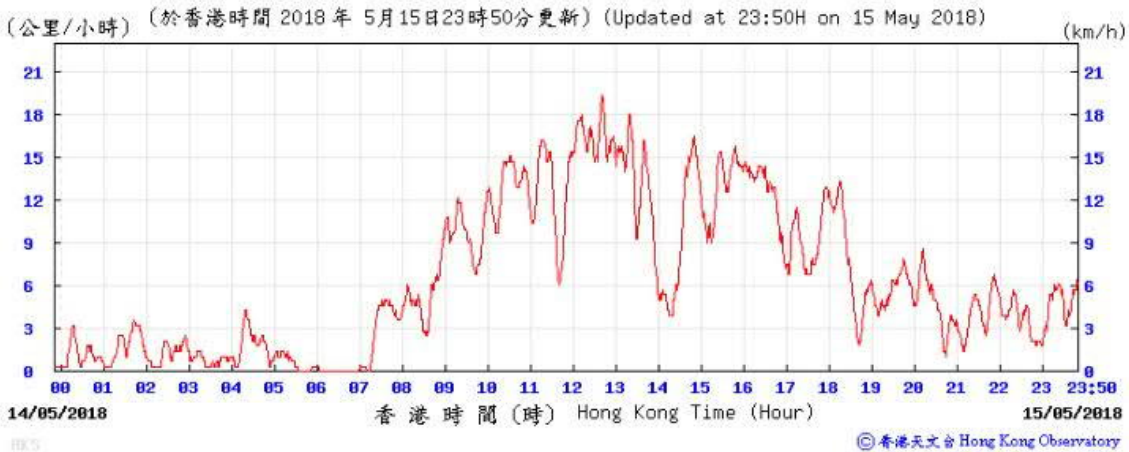
Pressure:



Wind Direction:

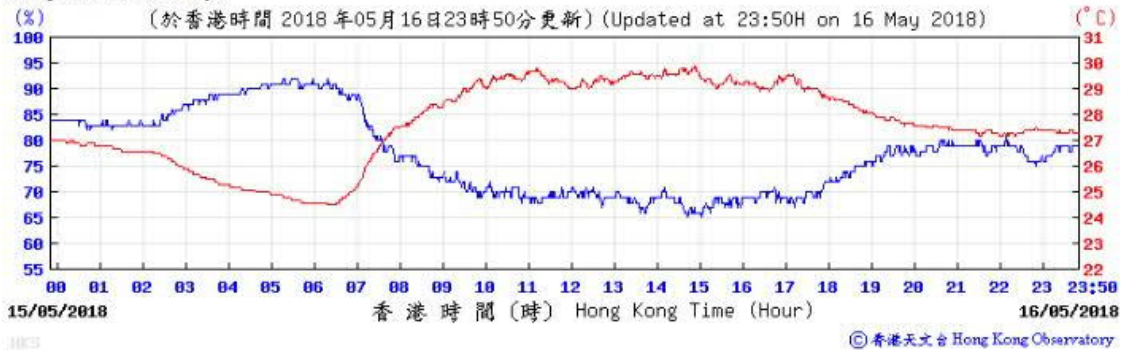


Wind Speed:



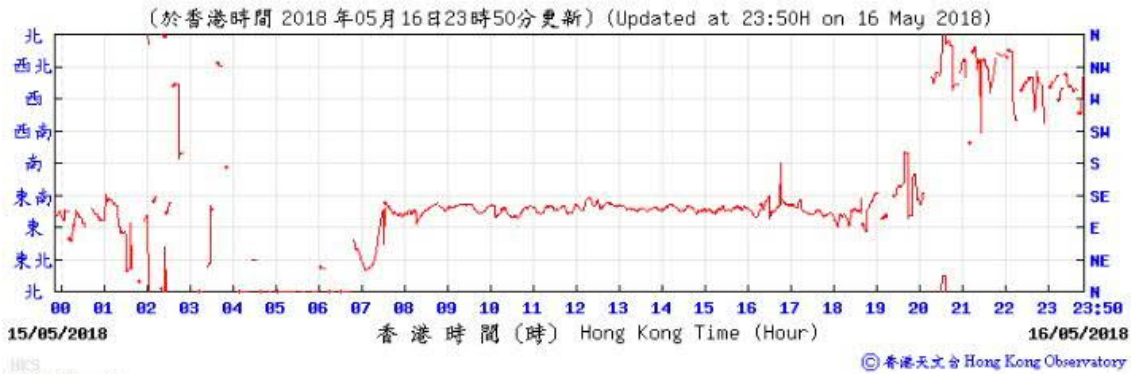
16/5/2018

Temperature/Humidity:

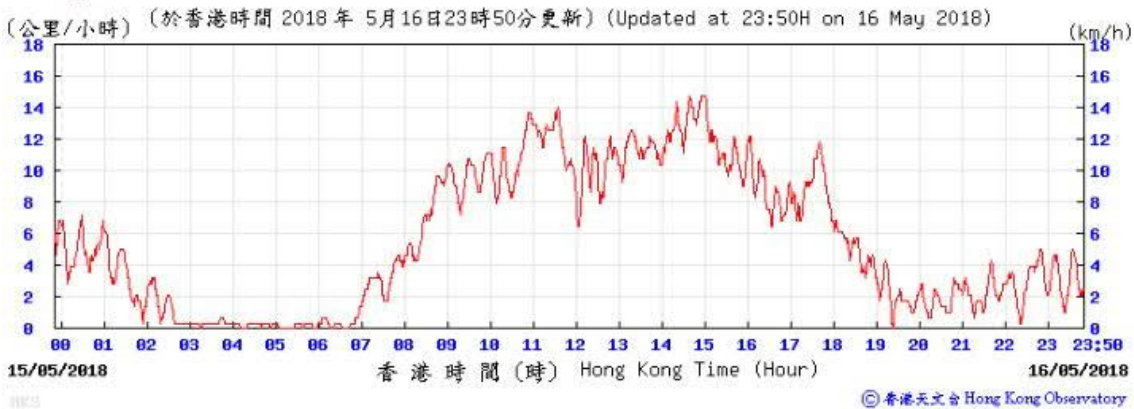


Pressure:

Wind Direction:

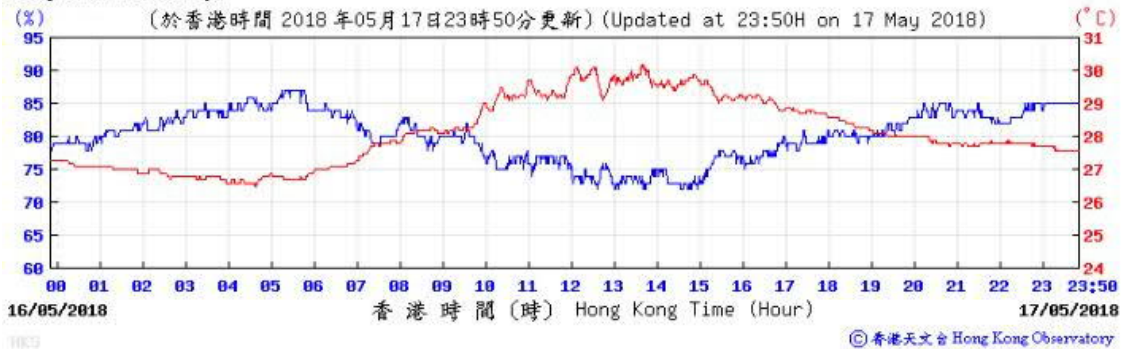


Wind Speed:



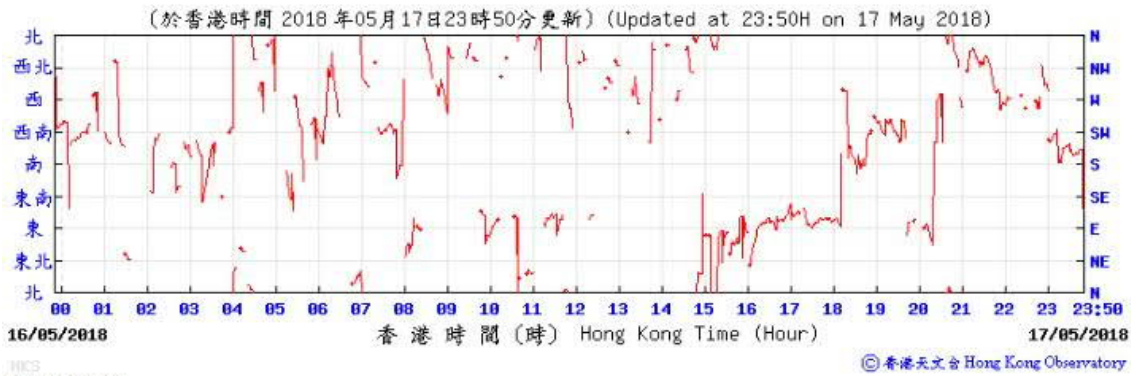
17/5/2018

Temperature/Humidity:

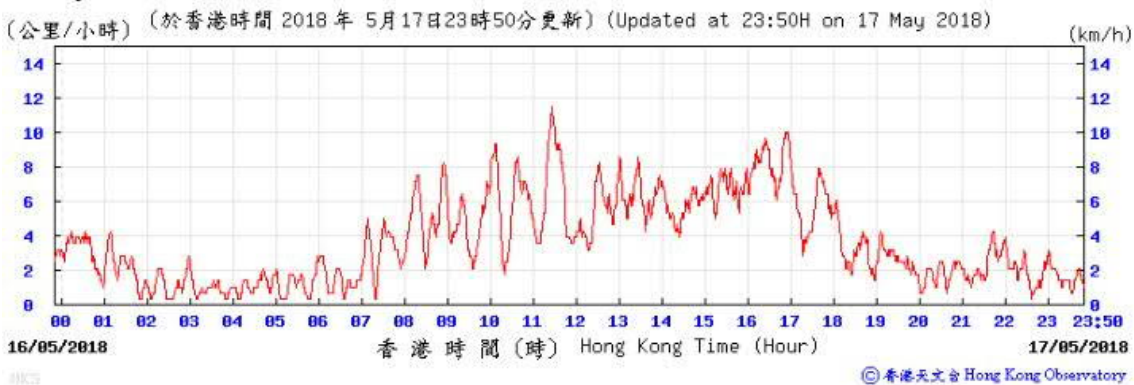


Pressure:

Wind Direction:

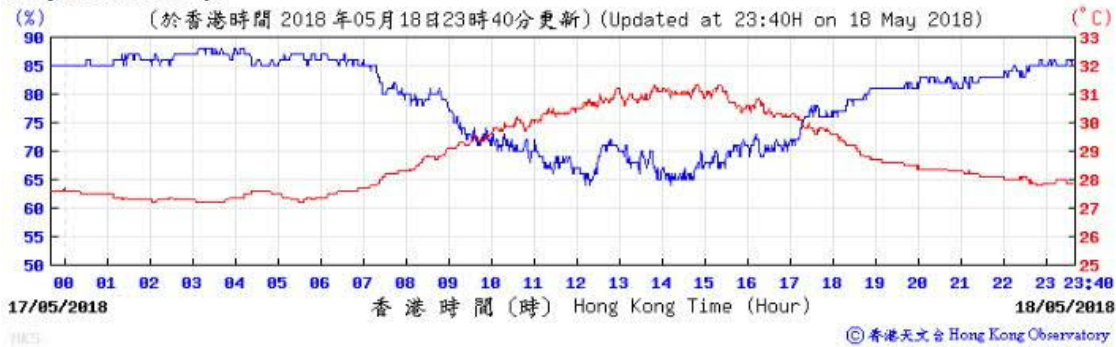


Wind Speed:



18/5/2018

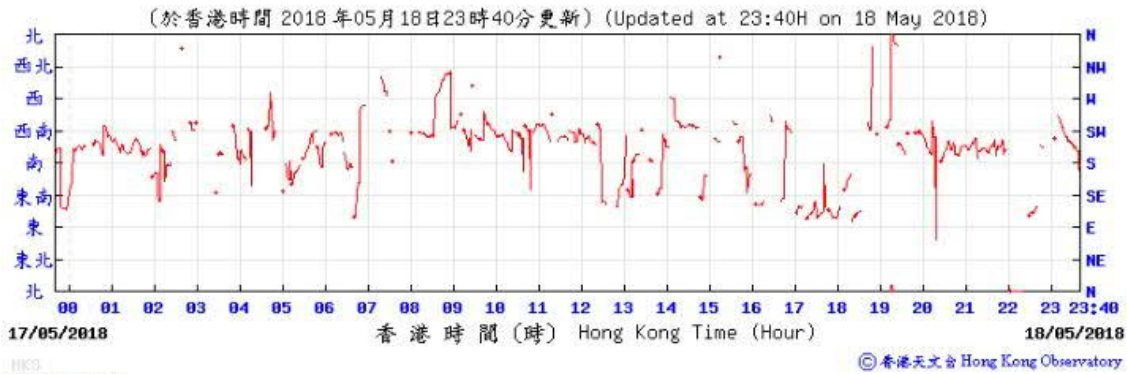
Temperature/Humidity:



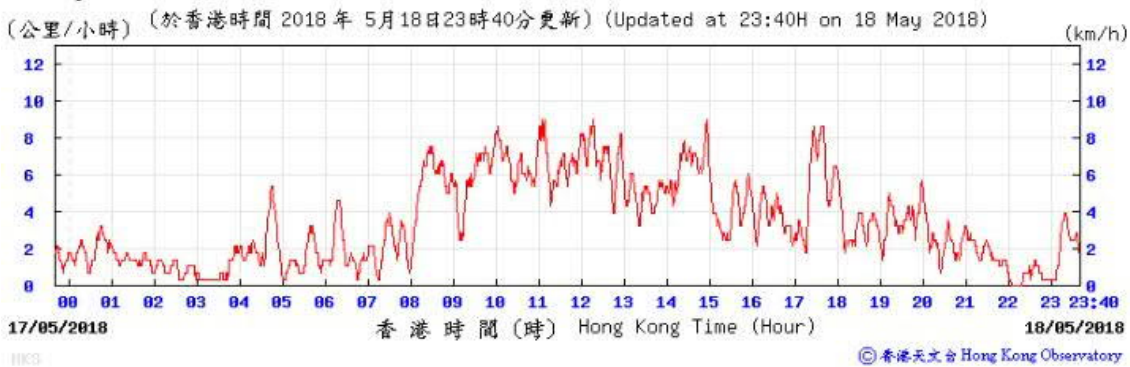
Pressure:



Wind Direction:



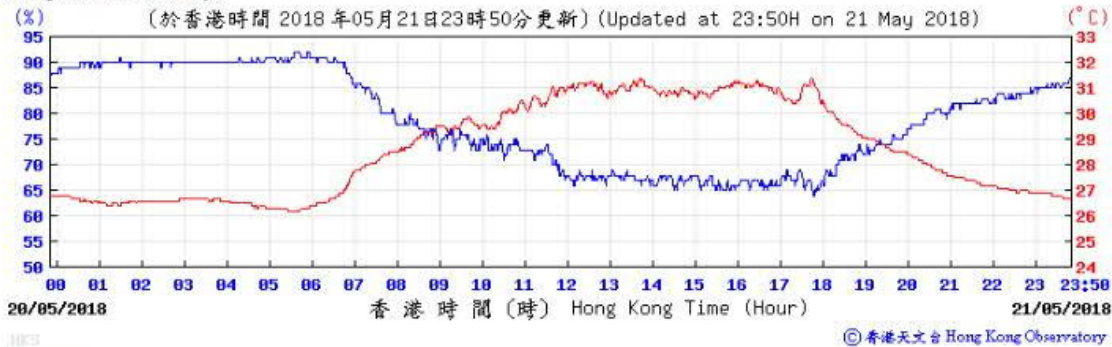
Wind Speed:





21/5/2018

Temperature/Humidity:

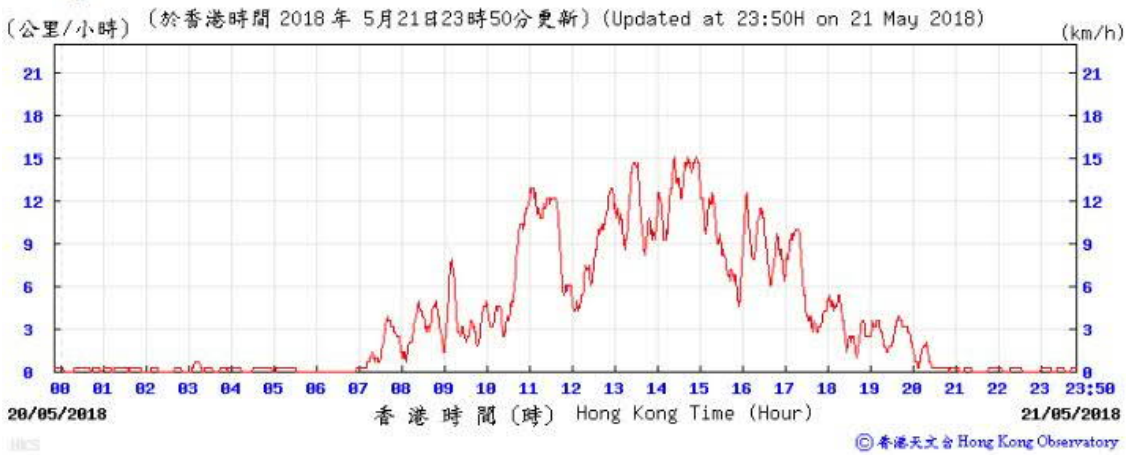


Pressure:

Wind Direction:

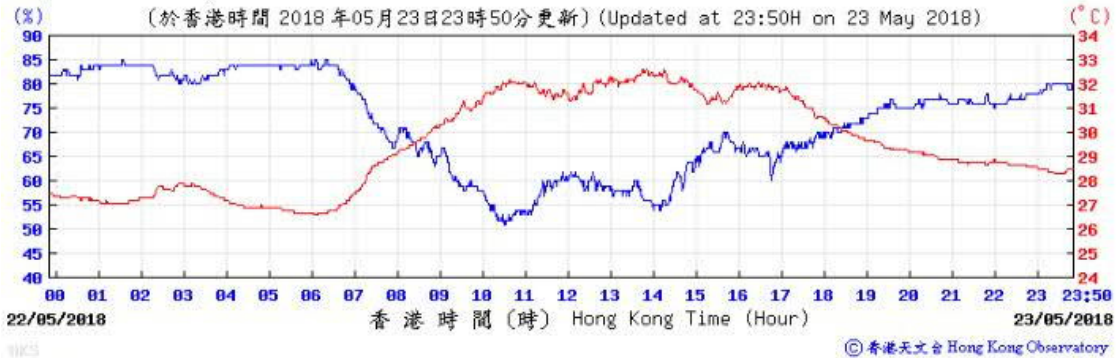


Wind Speed:



23/5/2018

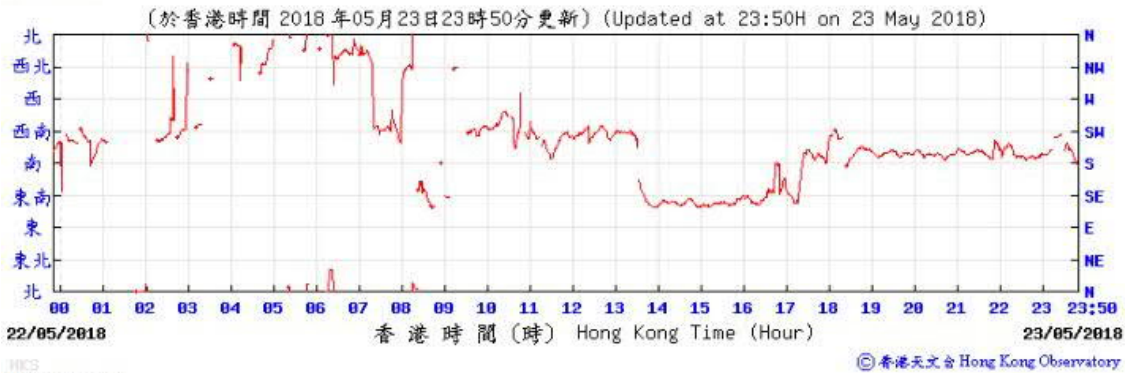
Temperature/Humidity:



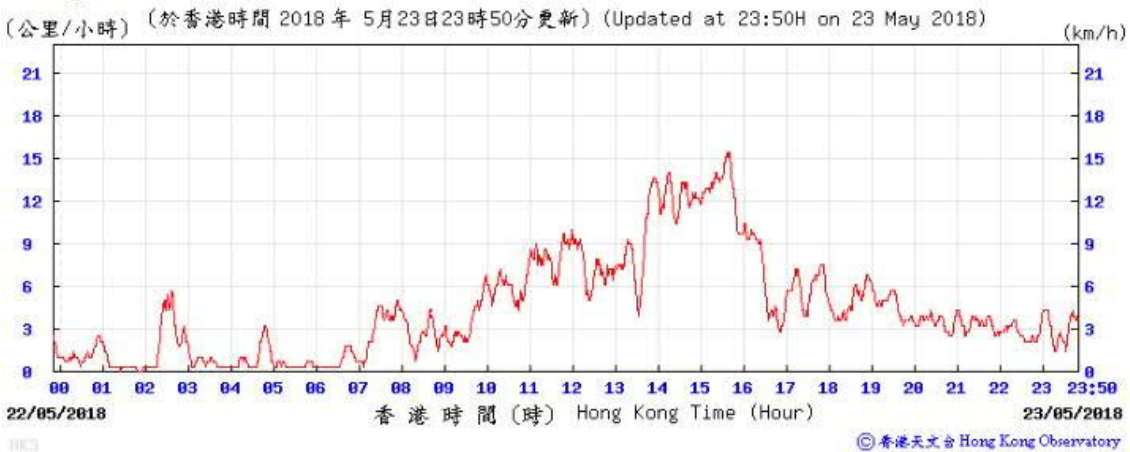
Pressure:



Wind Direction:

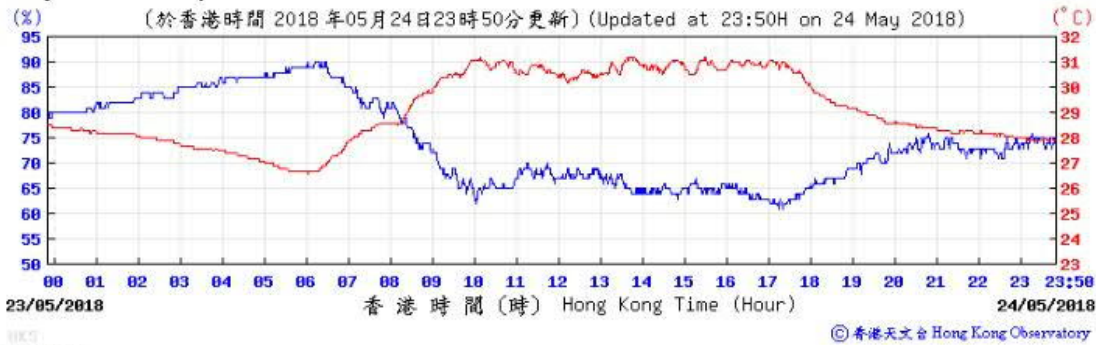


Wind Speed:



24/5/2018

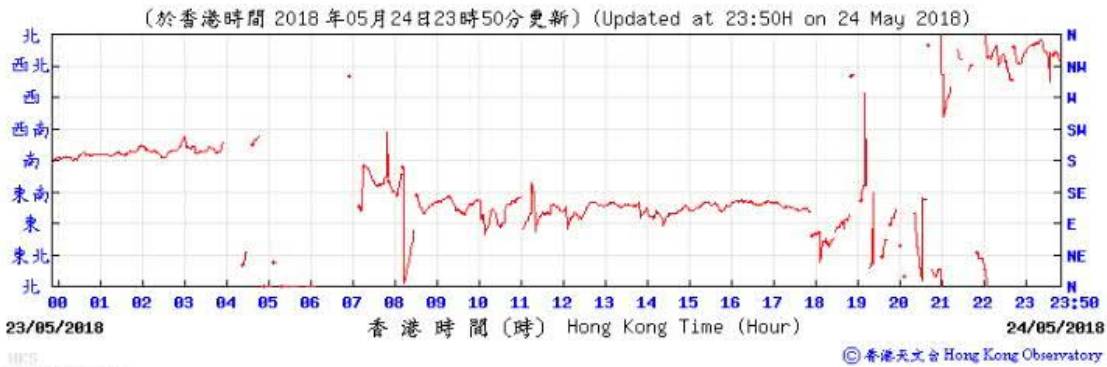
Temperature/Humidity:



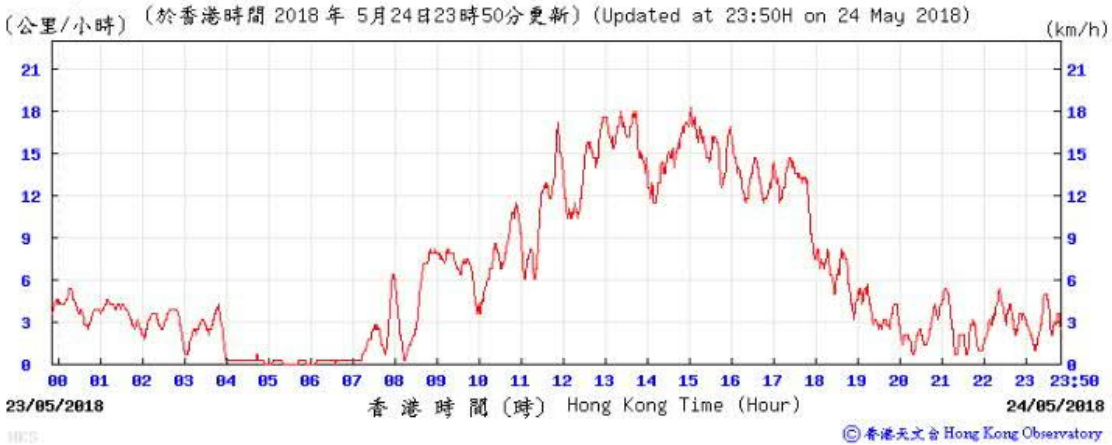
Pressure:



Wind Direction:

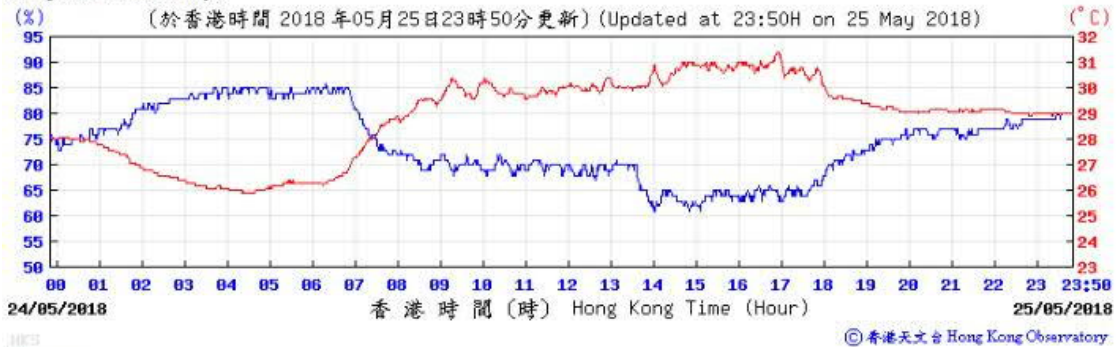


Wind Speed:



25/5/2018

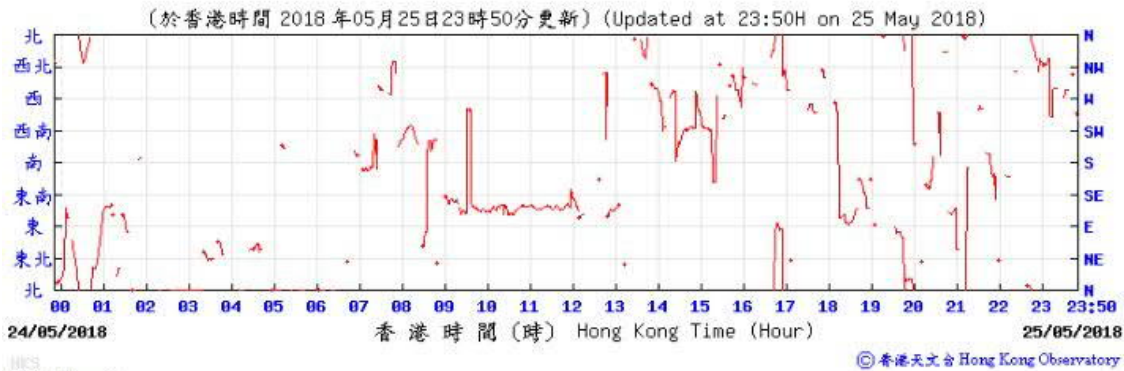
Temperature/Humidity:



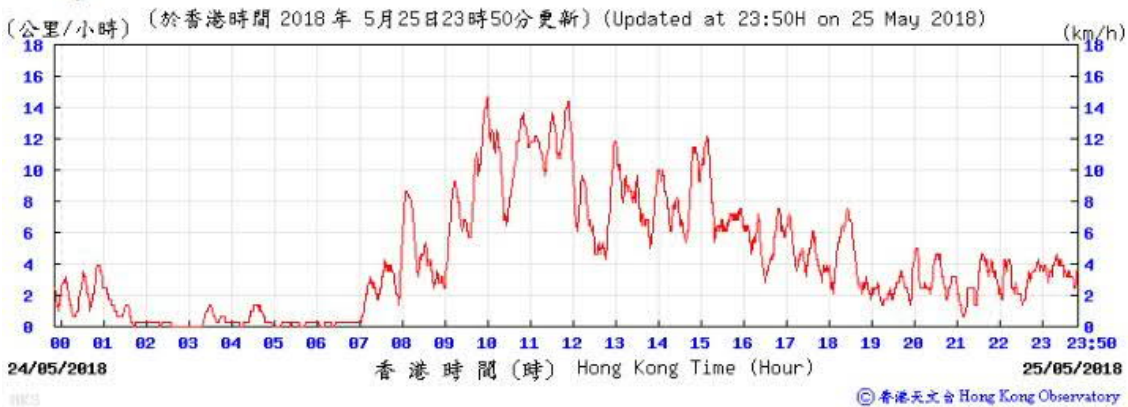
Pressure:



Wind Direction:

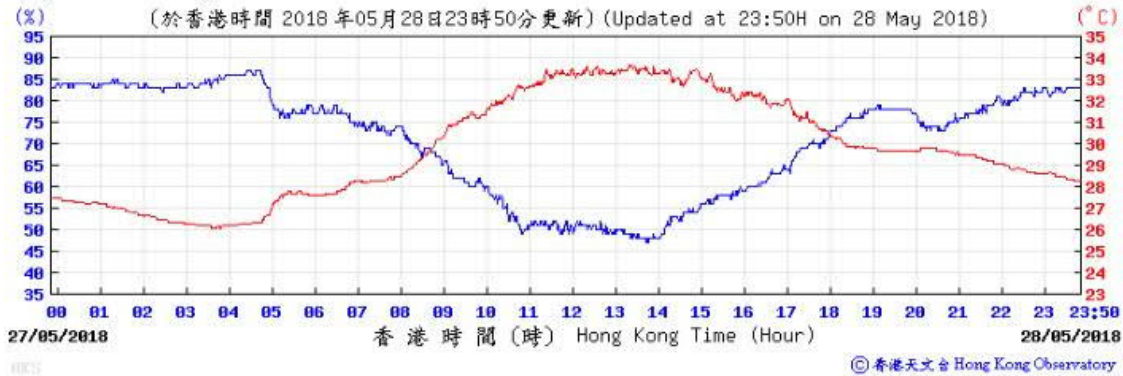


Wind Speed:



28/5/2018

Temperature/Humidity:



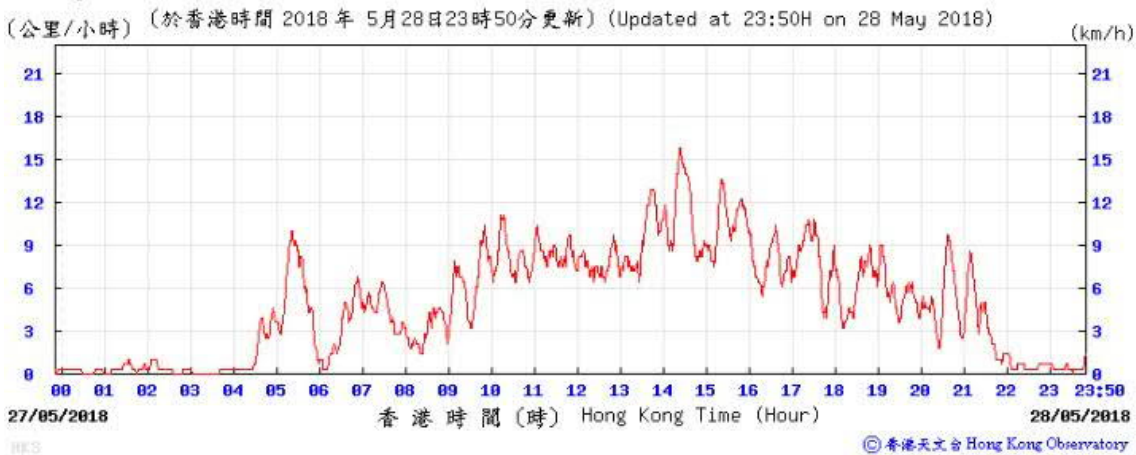
Pressure:



Wind Direction:

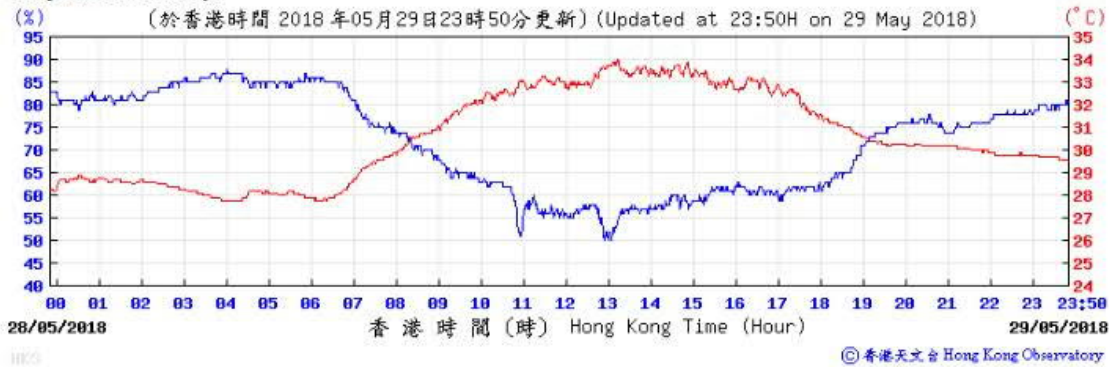


Wind Speed:



29/5/2018

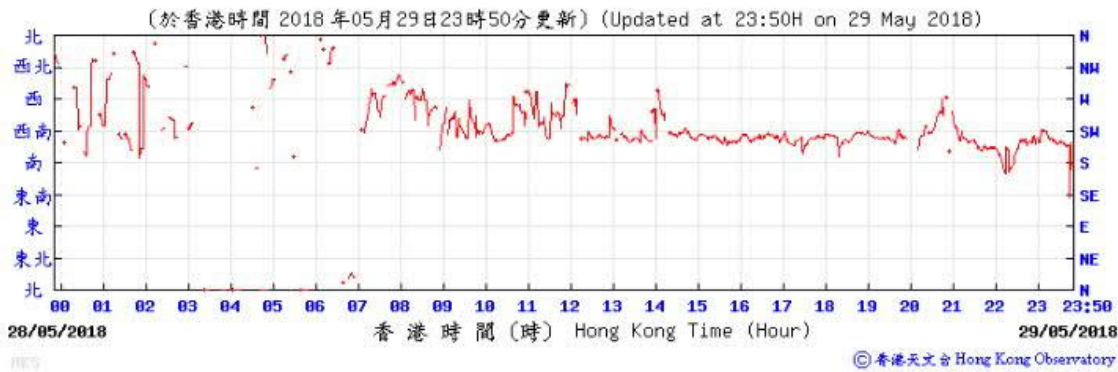
Temperature/Humidity:



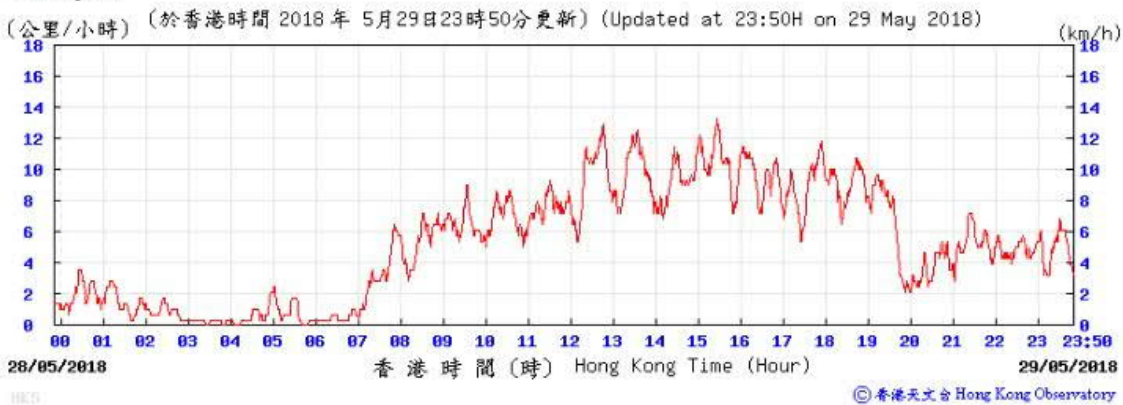
Pressure:



Wind Direction:

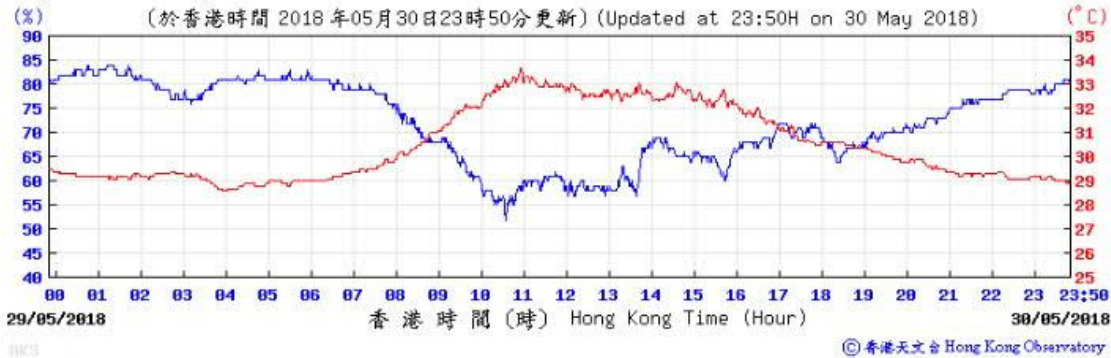


Wind Speed:



30/5/2018

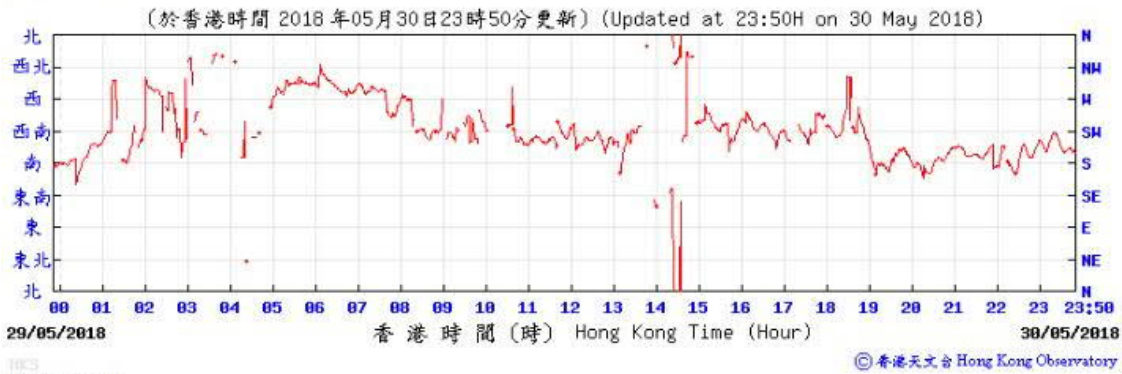
Temperature/Humidity:



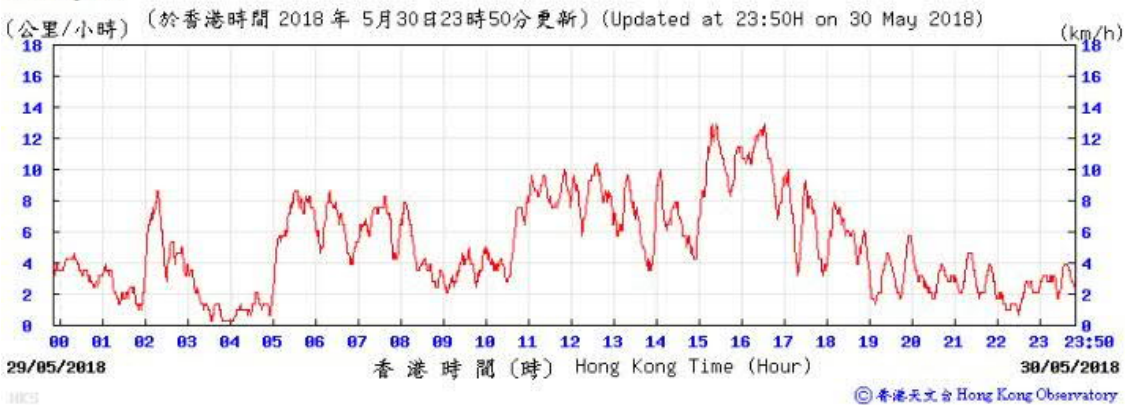
Pressure:



Wind Direction:

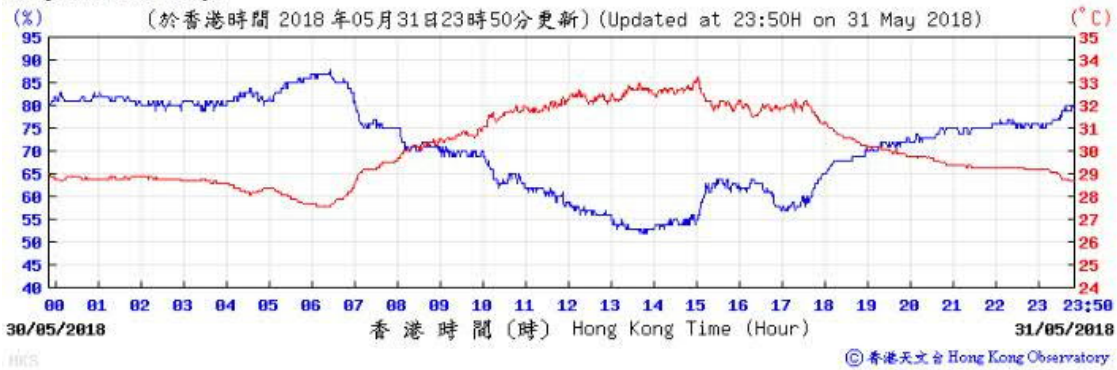


Wind Speed:



31/5/2018

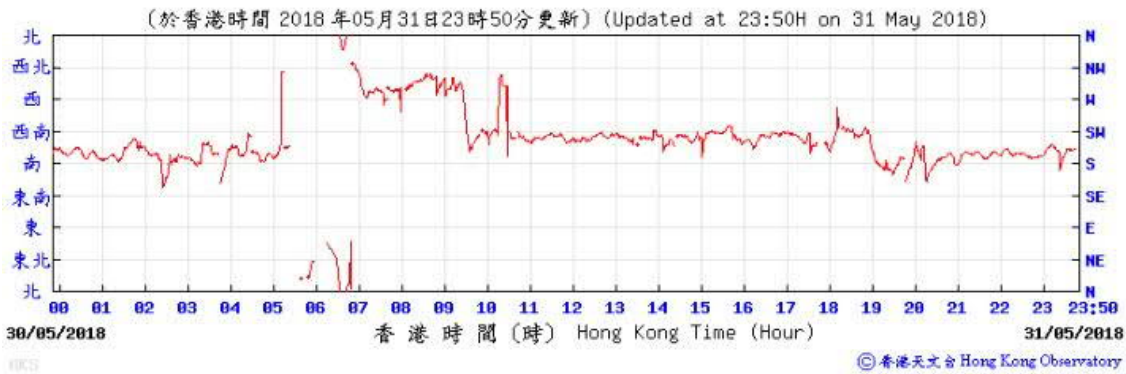
Temperature/Humidity:



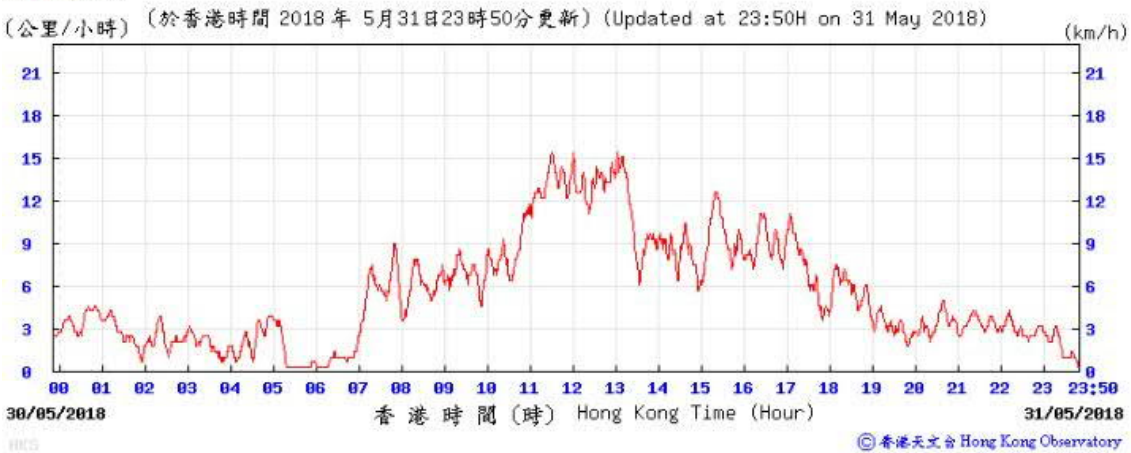
Pressure:



Wind Direction:



Wind Speed:





## L. Ecological Inspection Records

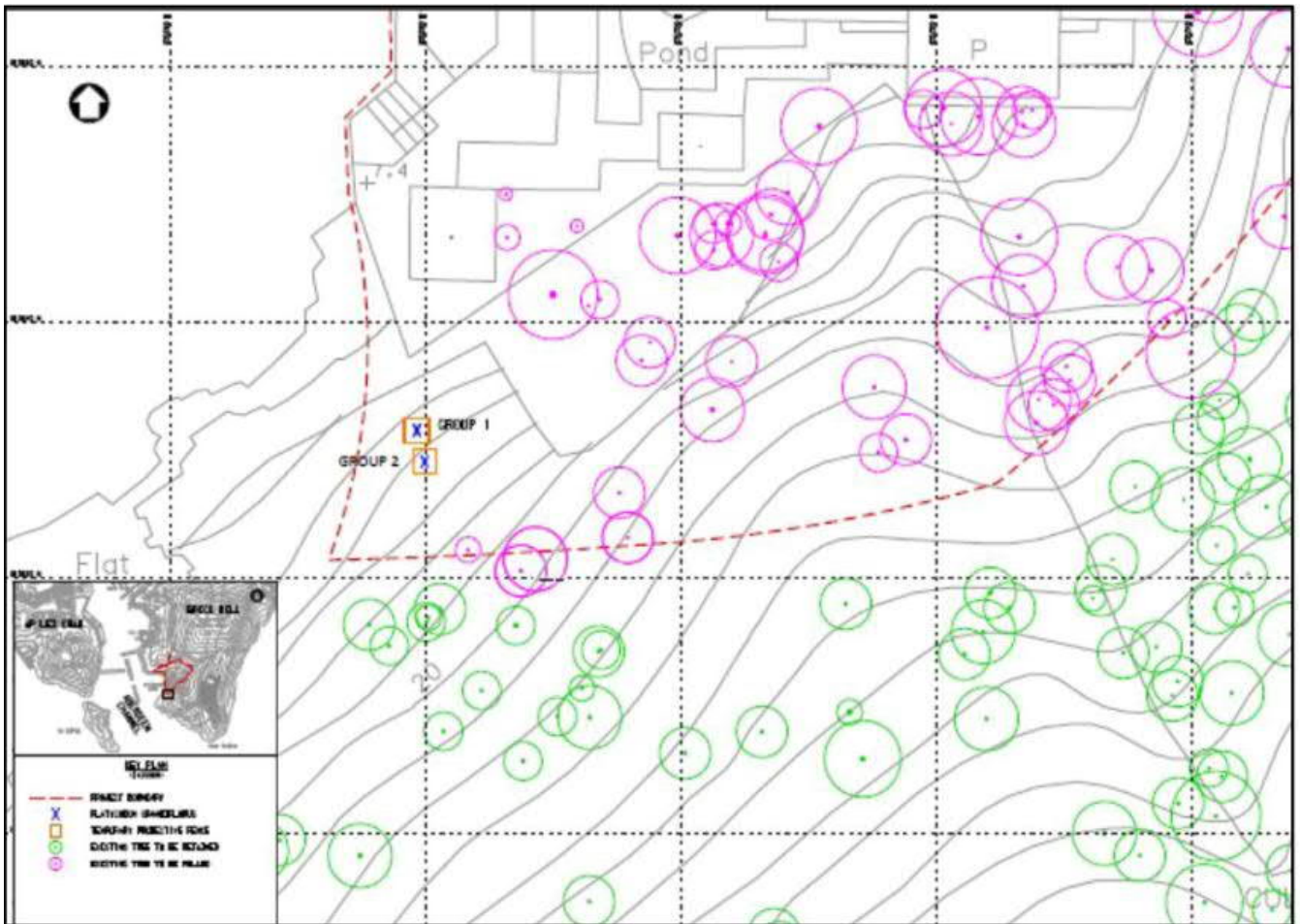





Figure 1 – Location of Two Groups of *Platycodon Grandiflorus*

	<p>Photo 1 – Group 1 of <i>Platycodon Grandiflorus</i></p>
	<p>Photo 2 – Group 2 of <i>Platycodon Grandiflorus</i></p>
	<p>Photo 3 – Current situation of fencing and warning sign</p>



## 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)	(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	0.00	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	100.00	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	1000.00	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	0.00	101.00	0.00	0.00	287.39
Jun													
SUB-TOTAL	27702.91	22099.78	1891.64	75.49	24066.91	3514.00	122.00	3636.00	75770.00	694.00	0.00	0.00	915.52
Jul													
Aug													
Sep													
Oct													
Nov													
Dec													
TOTAL	27702.91	22099.78	1891.64	75.49	24066.91	3514.00	122.00	3636.00	75770.00	694.00	0.00	0.00	915.52

## **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 <sup>1</sup>				Relevant Legislation & Guidelines
					Des	Con	Op	Dec	
<b>Cat.1 Key/specific proposed mitigation measure</b>									
<b>Noise Impact (Construction)</b>									
5.7	3.2	<b>Selecting Quiet Plant</b> 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	<b>Use of Movable Barriers</b> 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
<b>Ecological Impact</b>									
10.7	8.3	<b>Inspection of Active Ardeid Nest</b> 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	<b>Inspection of Short-nosed Fruit Bat</b> 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 <sup>1</sup>				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	<b>In-situ Preservation of Plant Species of Conservation Interest</b> 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	<b>Inspection of Ardeid Nest during breeding season</b> 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	<b>Timing of site clearance and tree felling works</b> 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	<b>Compensation for Ardeid Roosting Site</b> An enhancement area with following features should be provided as an alternative roosting site for ardeids. <ul style="list-style-type: none"> <li>▪ The location is at southern part of the Project area (location indicated in Figure 8.1)</li> <li>▪ The enhancement area shall include a Flamingo Pond</li> <li>▪ 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.</li> <li>▪ Heavy standard sized trees shall be considered for planting to allow early establishment of the trees around the Flamingo</li> </ul>	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

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 <sup>1</sup>				Relevant Legislation & Guidelines
					Des	Con	Op	Dec	
10.7	8.3	<p>Pond.</p> <p><b>Compensation for Woodland Habitat</b></p> <ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ 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>.</li> </ul>	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	
<b>Landscape and Visual Impact (Construction)</b>									
Table 12.13 (CP07)	Table 9.1 (CP07)	<p><b>Temporary Tree Nurseries</b></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><b>Advance Planting</b></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	
<b>Landscape and Visual Impact (Operation)</b>									
Table 12.14 (OP04)	Table 9.2 (OP04)	<p><b>Green Roofs and Vertical Greening</b></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)	<b>Reprovision of Flamingo Pond</b> 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)	<b>Woodland Compensation</b> 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
<b>Cat. 2 Submission required post EIA stage</b>								
<b>Sewerage and Sewage Treatment Implications</b>								
7.7	5.2	<b>Detailed Sewerage Design Report</b> 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
<b>Ecological Impact (Construction)</b>								
10.7	8.3	<b>Vegetation Survey for Plant Species of Conservation Interest</b> 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	<b>Woodland Compensation Plan</b> 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"> <li>▪ Timing of planting works</li> <li>▪ Planting location</li> <li>▪ Species, size and number of trees</li> <li>▪ Monitoring methodology</li> </ul>	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>									
<b>Landscapes and Visual Impact (Construction)</b>									
Table 12.13 (CP05)	Table 9.1 (CP05)	<p><b>Transplantation of Existing Trees</b></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
<b>Landscapes and Visual Impact (Operation)</b>									
Table 12.14 (OP02)	Table 9.2 (OP02)	<p><b>Compensatory Tree Planting</b></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
<b>Cat. 3 Good site practice/housekeeping measures under EM&amp;A mechanism</b>									
<b>Air Quality Impact (Construction)</b>									
3.9.1	2.2	<p><b>Dust Control Measures</b></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"> <li>■ 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</li> </ul>	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"> <li>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</li> </ul> <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"> <li>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.</li> </ul> <p>Disturbed Parts of the Roads</p> <ul style="list-style-type: none"> <li>Main temporary access points should be paved with concrete, bituminous hardcore materials or metal plates and be kept clear of dusty materials; or</li> <li>Unpaved parts of the road should be sprayed with water or a dust suppression chemical so as to keep the entire road surface wet.</li> </ul> <p>Exposed Earth</p> <ul style="list-style-type: none"> <li>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.</li> </ul> <p>Loading, Unloading or Transfer of Dusty Materials</p> <ul style="list-style-type: none"> <li>All dusty materials should be sprayed with water immediately prior to any loading or transfer operation so as</li> </ul>							

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		<p>to keep the dusty material wet.</p> <p><b>Debris Handling</b></p> <ul style="list-style-type: none"> <li>▪ Any debris should be covered entirely by impervious sheeting or stored in a debris collection area sheltered on the top and the three sides.</li> <li>▪ Before debris is dumped into a chute, water should be sprayed onto the debris so that it remains wet when it is dumped.</li> </ul> <p><b>Transport of Dusty Materials</b></p> <ul style="list-style-type: none"> <li>▪ 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.</li> </ul> <p><b>Wheel washing</b></p> <ul style="list-style-type: none"> <li>▪ 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.</li> </ul> <p><b>Use of vehicles</b></p> <ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ Immediately before leaving the construction site, every vehicle should be washed to remove any dusty materials from its body and wheels.</li> <li>▪ 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.</li> </ul> <p><b>Site hoarding</b></p> <ul style="list-style-type: none"> <li>▪ 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</li> </ul>							
<b>Noise Impact (Construction)</b>									

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5.7	3.2	<p><b>Good Site Practice</b></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"> <li>▪ only well-maintained plant to be operated on-site and plant should be serviced regularly during the construction works;</li> <li>▪ machines and plant that may be in intermittent use to be shut down between work periods or should be throttled down to a minimum;</li> <li>▪ plant known to emit noise strongly in one direction, should, where possible, be orientated to direct noise away from the NSRs;</li> <li>▪ mobile plant should be sited as far away from NSRs as possible; and</li> <li>▪ material stockpiles and other structures to be effectively utilised, where practicable, to screen noise from on-site construction activities.</li> </ul>	Project construction site / Duration of the construction phase / Prior to commencement of operation	Contractor appointed by OPC	✓			EIAO and Noise Control Ordinance	
<b>Noise Impact (Operation)</b>									
5.7	3.3.2	<p><b>Fixed Plant Noise</b></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"> <li>▪ choose quiet plant such as those which have been effectively silenced;</li> <li>▪ include noise levels specification when ordering new plant (including chiller and E&amp;M equipment);</li> <li>▪ locate fixed plant / louvre away from any NSRs as far as practicable;</li> <li>▪ locate fixed plant in walled plant rooms or in specially designed enclosures;</li> <li>▪ locate noisy machine in a basement or a completely separate building;</li> </ul>	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"> <li>install direct noise mitigation measures including silencers, acoustic louvres and acoustic enclosure where necessary; and</li> <li>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.</li> </ul> <p>Prior to the operation of the Project, noise commissioning tests for all major fixed noise sources should be conducted.</p> <p><b>Open Air Entertainment Noise</b> 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"> <li>use small clusters of small power loudspeakers rather than a few large power loudspeakers; and</li> <li>loudspeakers should be pointed away from nearby NSRs.</li> </ul>	Within Project area / Duration of the operation phase / Throughout operation phase	Design Architect / Contractor appointed by OPC	✓	✓			EIAO and Noise Control Ordinance
<b>Water Quality Impact (Construction)</b>									
6.7	4.2	<p><b>Construction Site Runoff</b> 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"> <li>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;</li> <li>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</li> </ul>	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"> <li>▪ 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;</li> <li>▪ 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;</li> <li>▪ 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;</li> <li>▪ 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;</li> <li>▪ 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;</li> <li>▪ Precautions should be taken at any time of the year when</li> </ul>								

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		<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"> <li>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.</li> </ul> <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>							
6.7	4.2	<p><b>General Construction Activities</b> 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>	Project construction site / Duration of the construction phase	Contractor appointed by OPC	✓			EIAO-TM; ProPECC Note PN 1/94	
6.7	4.2	<p><b>Expansion of Existing Storm U-Channel</b> 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><b>Interception of Natural Streams</b> 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><b>Site Formation Works</b> 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><b>Construction of Sewage Sump Pit and Rising Mains</b></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>	Project construction site / Duration of the construction phase	Contractor appointed by OPC		✓		ProPECC Note PN 1/94
6.7	4.2	<p><b>Accidental Spillage</b></p> <p>The Contractor should register as a chemical waste producer if chemical wastes are produced from construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes. This will prevent contamination of top soil and water pollution due to construction site runoff.</p> <p>Maintenance of vehicles and equipment, involving activities with potential for leakage and spillage, should only be undertaken within areas appropriately equipped to control these discharges.</p> <p>Oils and fuels should only be stored in designated areas which have pollution prevention facilities. To prevent spillage of fuels and solvents to any nearby storm water drain, all fuel tanks and storage areas should be provided with locks and be sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank. The bund should be drained of rainwater after a rain event.</p>	Project construction site / Duration of the construction phase	Contractor appointed by OPC		✓		ProPECC Note PN 1/94; Waste Disposal Ordinance (Cap 354); Waste Disposal (Chemical Waste) (General) Regulation

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6.7	4.2	<p>Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows:</p> <ul style="list-style-type: none"> <li>▪ Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport.</li> <li>▪ Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents.</li> <li>▪ Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.</li> </ul> <p><b>Sewage Effluent from the Construction Workforce</b> 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
<b>Water Quality Impact (Operation)</b>									
6.7	4.2	<b>Runoff from Road Surfaces</b> 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.	Within Project area / During operation phase	OPC/Operator appointed by OPC		✓			EIAO-TM; WPCO
6.7	4.2	<b>Runoff from On-site Planting Area</b> 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.	Within Project area / During operation phase	OPC/Operator appointed by OPC		✓			EIAO-TM; WPCO; TM-DSS
<b>Waste Management Implications (Construction)</b>									
8.5.1.1	6.2	<b>Good Site Practice</b>	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"> <li>▪ 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</li> <li>▪ Training of site personnel in proper waste management and chemical handling procedures</li> <li>▪ Provision of sufficient waste disposal points and regular collection of waste</li> <li>▪ Appropriate measures to minimise windblown litter and dust/ odour during transportation of waste by either covering trucks or by transporting wastes in enclosed containers</li> <li>▪ Stockpiles of C&amp;D materials should be kept covered by impervious sheets to avoid wind-blown dust</li> <li>▪ All dusty materials including C&amp;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</li> <li>▪ Provision of wheel washing facilities before the trucks leaving the works area so as to minimise dust introduction to public roads</li> <li>▪ Well planned delivery programme for offsite disposal such that adverse environmental impact from transporting the inert or non-inert C&amp;D materials is not anticipated</li> </ul> <p><b>Waste Reduction Measures</b></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"> <li>▪ Sort inert C&amp;D materials to recover any recyclable portions such as metals</li> <li>▪ Segregation and storage of different types of waste in different containers or skips to enhance reuse or recycling of</li> </ul>	<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		✓			<p>Waste Disposal Ordinance</p>	

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					Des	Con	Op	Dec	
8.5.1.3	6.2	<p>materials and their proper disposal</p> <ul style="list-style-type: none"> <li>▪ 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</li> <li>▪ Proper site practices to minimise the potential for damage or contamination of inert C&amp;D materials</li> <li>▪ Plan the use of construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste</li> </ul> <p><b>Inert and Non-inert C&amp;D materials</b></p> <p>In order to minimise impacts resulting from collection and transportation of inert C&amp;D materials for off-site disposal, the inert C&amp;D materials should be reused on-site as fill material as far as practicable. In addition, inert C&amp;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&amp;D materials will be disposed of at the Government's PFRFs for beneficial use by other projects in Hong Kong.</p> <p>The C&amp;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&amp;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 &amp; 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><b>Chemical Waste</b></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.	Project construction 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	<b>General Refuse</b> 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	<b>Floating Refuse</b> 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
<b>Waste Management Implications (Operation)</b>										
8.5.2.1	6.2	<b>General Refuse</b> 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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					Des	Con	Op	Dec		
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><b>Chemical Waste</b> 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><b>Floating Refuse</b> 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	
<b>Land Contamination (Construction)</b>										
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"> <li>▪ To minimise the incidents of construction workers coming in contact with any contaminated materials, bulk earth-moving excavation equipment should be employed;</li> <li>▪ 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;</li> <li>▪ Stockpiling of contaminated excavated materials on site should be avoided as far as possible;</li> <li>▪ The use of any contaminated soil for landscaping purpose should be avoided unless pre-treatment was carried out;</li> <li>▪ Vehicles containing any excavated materials should be suitably covered to reduce dust emissions and/or release of contaminated wastewater;</li> <li>▪ Truck bodies and tailgates should be sealed to prevent any discharge;</li> <li>▪ 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</li> </ul>	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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			Location / Duration of measures / Timing of completion of measures	Implementation Agent	Des	Con	Op	Dec	Relevant Legislation & Guidelines
		tipping; <ul style="list-style-type: none"> <li>▪ Speed control for trucks carrying contaminated materials should be exercised.</li> <li>▪ 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</li> <li>▪ Maintain records of waste generation and disposal quantities and disposal arrangements.</li> </ul>							
<b>Landscaping and Visual Impact (Construction)</b>									
Table 12.13 (CP01)	Table 9.1 (CP01)	<b>Minimisation of Construction Period</b> 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)	<b>Minimisation of Works Areas</b> 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)	<b>Construction Site Controls</b> 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)	<b>Preservation of Existing Vegetation</b> 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	<b>No Intrusion Zones</b>	Project construction site /	Contractor	✓	✓			EIAO-TM

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					Des	Con	Op	Dec	
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)	<b>Construction Site Hoardings</b> 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)	<b>Dust and Erosion Control for Exposed Soil</b> 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)	<b>Appearance of Construction Plant / Machinery</b> 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)	<b>Construction Lighting Control</b> 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)	<b>Appearance of Construction Workers</b> 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	
<b>Landscape and Visual Impact (Operation)</b>									

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Table 12.14 (OP01)	Table 9.2 (OP01)	<p><b>Sensitive Design and Disposition</b></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><b>Enhancement Planting</b></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><b>Responsive Lighting Design</b></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"> <li>▪ 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.</li> <li>▪ Lighting shall be arranged with due consideration of reflectance so as to avoid glare effect.</li> <li>▪ Lighting shall be regularly monitored during operation.</li> <li>▪ Lights located adjacent or in proximity to neighbours shall be carefully designed to prevent possible light intrusion.</li> <li>▪ Lighting operation schedule shall specify only lights necessary for security to be left on after business hours.</li> <li>▪ Paving materials should be selected as necessary to reduce</li> </ul>	Project area / During design stage / Throughout operation phase	Design Architect / Contractor appointed by OPC	✓	✓	✓	✓	EIAO-TM

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					Des	Con	Op	Dec	Dec	
		potential glare from surface reflectance. <ul style="list-style-type: none"> <li>▪ Particular attention should be paid to the use of lighting having a high intensity or harsher tone (e.g. metal halide lamps).</li> <li>▪ 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.</li> </ul>								

**Remarks:**

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