MOTT MACDONALD

Ocean Park Tai Shue Wan Water World Project

Monthly EM&A Report August 2017

September 2017

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Mott MacDonald Hong Kong Limited
registered in Hong Kong no. 236497

This Monthly EM&A Report for August 2017 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.

Certified by:

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

Date: 13 September 2017.

Verified by:

Gerald Kam
Independent Environmental Checker (IEC)
Ove Arup and Partners Hong Kong Limited

Date: 13-Sep-2017

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Contents

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 3rd 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). This report summarises the findings on EM&A during the period from 1 to 31 August 2017.

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 month.

Result of Ecological Monitoring

The plant species of conservation interest - *Platycodon grandifloras* was found in fence up area in the reporting month. No sign of construction activities was noted in the fence up area.

Detail of the result is presented in **Section 4**.

Result of Landscape and Visual Monitoring

No non-compliance of Landscape and Visual monitoring was recorded in the reporting month. Detail of the result is presented in **Section 5.**

Record of Complaints

There was no record of complaints received in the reporting month.

Record of Notification of Summons and Successful Prosecutions

There were no record of notification of summons and successful prosecution in the reporting month.

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 August 2017. Furthermore, IEC performed the site inspection and audit on 11 August 2017. During site inspection, non-compliance was not observed by the ET and IEC.

Future Key Issues

- Site formation for haul road construction
- Foundation construction for tower crane erection
- Cut soil slope and soil nail installation for Ride P1, P2 and P4
- Rock breaking and slope stabilization works for Ride P2, P3 and P5
- Construction of drainage channels to slopes

- Footing and underground utility construction for South Services Building
- Footing construction for primary RC structure at zone 01/03/06
- Column and slab construction at Level 1 of primary RC structure

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 layout plan of the Project 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 3rd 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 August 2017.

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 7 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 7 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 in below:

- Site formation for haul road construction
- Cut soil slope and soil nail installation for Ride P1, P2, P3, P4 and P5
- Rock breaking and slope stabilization works for Ride P3 and P5
- Construction of drainage channels to slopes
- Column and slab construction at Level 1 of primary RC structure
- Footing excavation for Plant room
- Bearing wall and Core wall construction
- Coring wall work
- Footing and underground utility construction for South Services Building
- Footing construction for primary RC structure at zone 01/03/04/05/06
- Scaffolding erection for A1 / B1 working area

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	Submission Date	Reference / License No.	Date of Issue	Date of Expiry	Status
Environmental Permit	/	EP-487/2014	27-Aug-14	N/A	Valid
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	Valid

To according with the EP stipulation, the required documents has been submitted to EPD for retention 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 issue 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 every 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 carry 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"), 3 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, statistical results such as L_{10} and L_{90} shall also be obtained for reference. Summary of these monitoring requirements is listed in **Table 2**.

Table 2: Noise Monitoring Parameters

Monitoring Station	Parameters
NM1A and NM2	• $L_{eq(30min)}$ in normal working days (Monday to Saturday) 07:00-19:00 except public holiday; • 3 sets of consecutive Leq(5min) on restricted hours i.e. 19:00 to 07:00 next day, and whole day of public holiday or Sunday when applicable, and • Supplementary information for data auditing, statistical results such as L_{10} and L_{90} shall also be obtained for reference

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

Table 3: Action and Limit Levels for Construction Noise

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

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

Table 4 and **Appendix E** respectively list and show the construction noise monitoring locations for the Project.

Table 4: Impact Monitoring locations

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

3.3 Monitoring Equipment

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

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

Table 5: Noise Monitoring Equipment

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

3.4 Monitoring Methodology

Field Monitoring

- Sound Level Meter was set on a tripod at a height of at least 1.2m 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 of and after each noise measurement, the meter is calibrated using an acoustic calibrator for 94dB at 1kHz. The checking is 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}(30min) as the monitoring parameter for the time period between 0700-1900 hours on weekdays; and also L_{eq}(15min) in three consecutive L_{eq}(5min) 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 +3dB(A) was made to the free field measurement.
- Noise measurements were not made in fog, rain, wind with a steady speed exceeding $5ms^{-1}$ or wind with gust exceeding $10ms^{-1}$.

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 proposed on construction noise criterion monitoring are listed in **Table 6**.

Table 6: Action and Limit Levels for Construction Noise

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

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

Should non-compliance of the environmental quality criteria occur, remedial actions will be triggered according to the Event and Action Plan which 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 input into a computerized database properly maintained by the ET.

3.5 Monitoring Schedule

Monitoring for noise levels due to construction work was undertaken during the reporting month in compliance with the EM&A manual in the Reporting Period. Regular monitoring surveys were carried out on 2nd, 9th, 16th, 22nd, 30th August 2017 during the reporting month to access the compliance with environmental requirements. A total of 10 occasions of 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 70dB(A). No noise complaints were received in this reporting period. No exceedance (Action/Limit Level) of construction noise was thus recorded in this period.

Table 7: Summary of Construction Noise Monitoring Results

Monitoring date	Time		Mean and range of noise levels, dB(A)		Limit Level for L_{eq} (dB(A))[2]
	Start	Finish	L_{eq} (30min)	Corrected L_{eq}(30min)[1]	
NM1A					
02-Aug-17	11:00	11:30	58.8	61.8	70

Monitoring date	Time		Mean and range of noise levels, dB(A)		Limit Level for L_{eq} (dB(A))[2]
	Start	Finish	L_{eq} (30min)	Corrected L_{eq}(30min)[1]	
09-Aug-17	10:45	11:15	56.5	59.5	70
16-Aug-17	13:55	14:25	56.5	59.5	70
22-Aug-17	09:38	10:08	59.1	62.1	70
30-Aug-17	10:50	11:20	58.2	61.2	70
NM2					
02-Aug-17	10:10	10:40	53.0	-	70
09-Aug-17	10:00	10:30	50.4	-	70
16-Aug-17	13:03	13:33	56.9	-	70
22-Aug-17	09:00	09:30	53.5	-	70
30-Aug-17	10:02	10:32	54.5	-	70

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

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 *Platycodon 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 *Platycodon grandiflorus* on a monthly basis throughout the construction phase to make sure that 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 *Platycodon grandiflorus* identified during the detailed vegetation survey to make sure that 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 using direct observation from a vantage point (i.e., point count method) at evening time from an hour before sunset, and last until the nightfall.

Compensation for Ardeid roosting Site

An enhancement area provided 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 25 August 2017 by the qualified ecologist. The inspection findings are presented below.

Plants of Conservation Interest (Platycondon grandiflorus)

Platycodon grandiflorus is a perennial herb up to 120 cm high. Stems erect and 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.

It was observed that the whole plant prostrated on the ground due to severe typhoon HATO battered Hong Kong on 23 August 2017. The Hong Kong Observatory was issued a highest signal hoisted - no.10 hurricane signal and sea level was raised up above normal chart datum. It was expected severe typhoon and high sea water level cause adverse impact to the *Platycodon grandiflorus* because of the strong wind and low salt tolerant (see Photos 1 and 2 of **Appendix L** of this report). Close monitoring on the *Platycodon grandiflorus* is recommended.

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 is no signs or evidence (e.g. dust coating of plant) to suggest that the on-going construction activities within the Project Area has affected the health condition of the *Platycodon grandiflorus*.

Nesting Activities of Ardeids in Breeding Season

This monitoring parameter only required during the breeding season of ardeids, i.e., from April to July, and the last monitoring event for nesting activities of Ardeids in the 2017's breeding season was undertaken on 21 July 2017, and such monitoring would not be required for the reporting period.

Roosting Activities of Ardeids in Peak Wintering Season.

In accordance with the approved EM&A Manual, this monitoring parameter would not be required beyond the Peak Wintering season, i.e., from 1st November to 31st March.

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 prostrated

on the ground due to severe typhoon HATO battered Hong Kong on 23 August 2017 as mentioned in Section 4.3.

The tentative ecological inspection and monitoring in the next reporting period is scheduled on 22 September 2017.

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 inspection were conducted on 11 August 2017 and 25 August 2017.

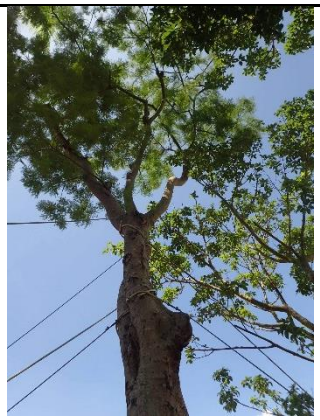
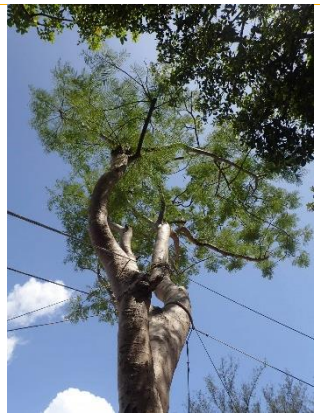
According to the bi-weekly site inspections, it was observed that the Contractor complied with the intended aims of the mitigation measures, for example, no construction activities or materials storage conducted and placed outside of the working site boundary.

The Contractor was advised to improve and maintain the tree protection zone.

On 11 August 2017, no other observation in the bi-weekly landscape and visual site inspection.

On 23 August 2017, severe typhoon HATO battered Hong Kong. The Hong Kong Observatory was issued a highest signal hoisted - no.10 hurricane signal and sea level was raised up above normal chart datum, some of the trees including A0090 and A0091 were observed with yellowing of normally green leaves and large portion of drooping leaves on 25 August 2017 (e.g. sparse foliage, chlorosis as shown in **Table 8**). Close monitoring of these trees is recommended. Also, loose wire was observed, tighten up of the wire is recommended.

Table 8: Photo record for the tree condition

Tree no.		
A0090		
	Photo taken on 11 August 2017	Photo taken on 25 August 2017
A0091		
	Photo taken on 11 August 2017	Photo taken on 25 August 2017

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 month

In the Reporting Period, joint site inspections were undertaken by the PMR, ET and the Contractor on 4, 11, 18 and 25 August 2017. Furthermore, IEC performed the site inspection and audit on 11 August 2017. During site inspection, non-compliance was not observed by the ET and IEC.

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

Table 9: Summary of findings / deficiencies

Date	Findings / Deficiencies	Follow-up Status
4 Aug 2017	Water accumulated in drip tray under electric generator should be cleared.	Water accumulated in drip tray under electric generator has been cleared on 18 Aug 2017.
4 Aug 2017	Sand accumulated in drip tray under electric generator should be cleared.	Sand accumulated in drip tray under electric generator was cleared on 11 Aug 2017.
4 Aug 2017	Chemical container observed without drip tray.	Drip tray was provided for chemical container on 11 Aug 2017.
18 Aug 2017	Mixed waste should be separated to general waste and non-inert C&D material.	Mixed waste has been separated to general waste and non-inert C&D material on 25 Aug 2017.
18 Aug 2017	Leakage oil at the top of container should be cleared.	Leakage oil have been cleared from the surface of the container on 25 Aug 2017.
25 Aug 2017	Trip tray should be provided for the chemical containers.	Chemical container has been removed and chemical tank has been used on 1 Sept 2017.

For the above deficiencies found in the Reporting Period, the Contractor has rectified immediately or within deadline. So, environmental performance of the Project managed by the Contractor with OPC was considered satisfactory.

Specially, attention on the mitigation measures to prevent runoff flow to public area and the sea shall be paid and properly implemented.

General reminded that dust mitigation measures should be provided to prevent fugitive dust from haul road, stockpile materials and construction activities; and the site housekeeping should be maintained. Furthermore, all chemical materials after using shall be stored in the designated area.

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

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

9 Implementation Status of Mitigation Measures

9.1 General Requirements

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

The Project shall be implementing the required environmental mitigation measures according to the approved EM&A Manual as subject to the site condition. Environmental mitigation measures generally implemented by the Contractor in this Reporting Month are summarized in **Table 11.**

Table 11: Environmental Mitigation Measures

Issues	Environmental Mitigation Measures
Construction Noise	• Shut down construction equipment when not using
Ecology	• Wire fencing provided for temporary protect the identified flora species of conservation concern • Undertake site inspection of the flora species of conservation and the Ardeid of breeding and nesting activities
Landscape & Visual	• Good site management
Air Quality	• Good site management to reduce air quality impact • Main temporary access road paved with concrete • Prior to any loading or transfer operation, all dusty materials has sprayed with water to keep its wet • Any debris has covered entirely by impervious sheeting • Before debris dumped into a chute, water has sprayed onto the debris to make its wet • Vehicles has covered with tarpaulin during transporting dusty materials • When vehicles leaving the construction site, any vehicles loaded dusty materials covered with clean impervious sheeting as prevent fugitive dusty materials emission • The speed of the trucks passing site areas was controlled to below 10 km/hour • Water spray has been provided for soil-nailing work
Water Quality	• Portable chemical toilets have provided on site • A licensed collector has employed to collect effluent and off-site dispose.
Waste and Chemical Management	• A temporary container which located far away from sea shore and drainage channel, has provided for chemical materials and waste storage • Drip tray is provided for chemical materials which use on the working areas • Has provided a waste skip for general refuse disposal
General	• The site was generally kept tidy and clean

9.2 Tentative Construction Activities in the Coming Month

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

- Site formation for haul road construction

- Foundation construction for tower crane erection
- Cut soil slope and soil nail installation for Ride P1, P2 and P4
- Rock breaking and slope stabilization works for Ride P2, P3 and P5
- Construction of drainage channels to slopes
- Footing and underground utility construction for South Services Building
- Footing construction for primary RC structure at zone 01/03/06
- Column and slab construction at Level 1 of primary RC structure

9.3 Key Issues for the Coming Month

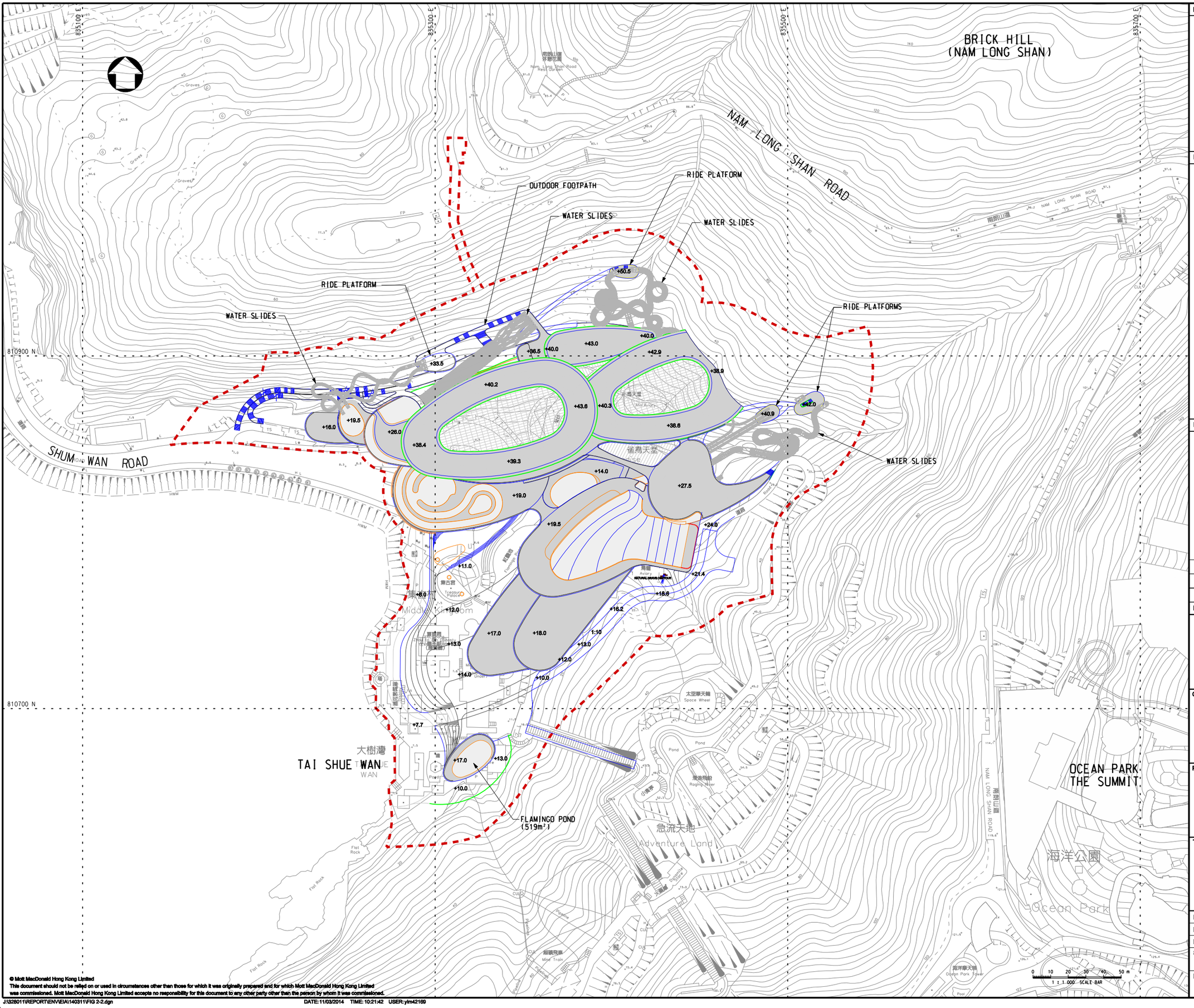
Based on construction activities as undertaken in the coming month, key environment issues consider to be included:

- 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;
- Implement dust suppression measures at the 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;
- Management of chemical wastes properly implement;
- Follow-up of improvement on general waste management issues; and
- Implementation of construction noise preventative control measures.

10 Recommendation

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

A. Layout Plan of the Project



Notes

Key to symbols

PROJECT BOUNDARY

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd
P3	MAR 14	MING	GENERAL REVISION	RH	AFK
P2	FEB 14	MING	GENERAL REVISION	RH	AFK
P1	JAN 14	MING	FIRST ISSUE	GC	AFK

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Client

Ocean Park Hong Kong 香港海洋公園

Project

TAI SHUE WAN DEVELOPMENT AT OCEAN PARK

Title

PROJECT LAYOUT PLAN

Designed	HY		Eng check	FW	
Drawn	MING		Coordination	FW	
Dwg check	HY		Approved	AFK	
Scale at A1 1:1000		Status PRE		Rev P3	

Drawing Number

FIGURE 2.6

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B. Project Organisation

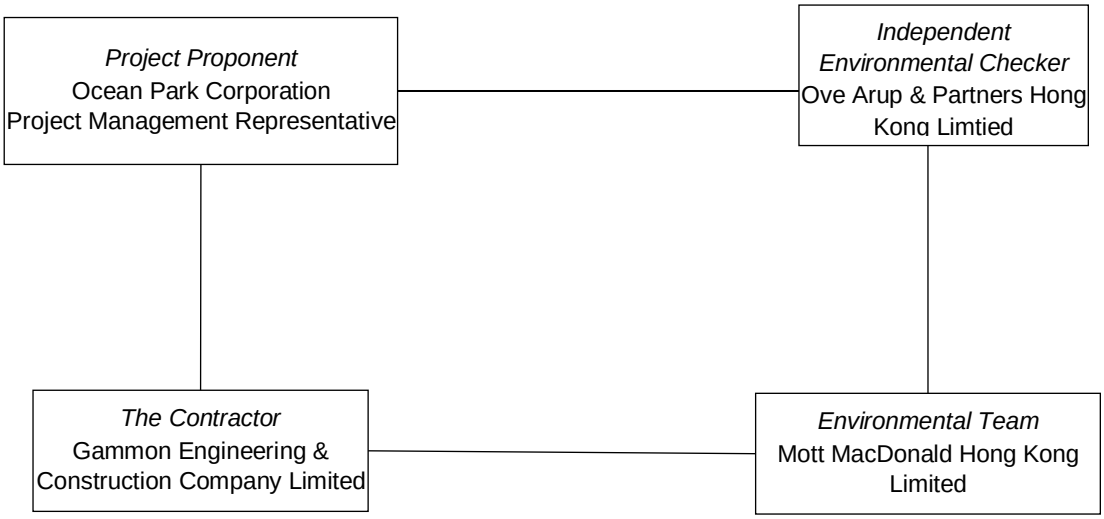
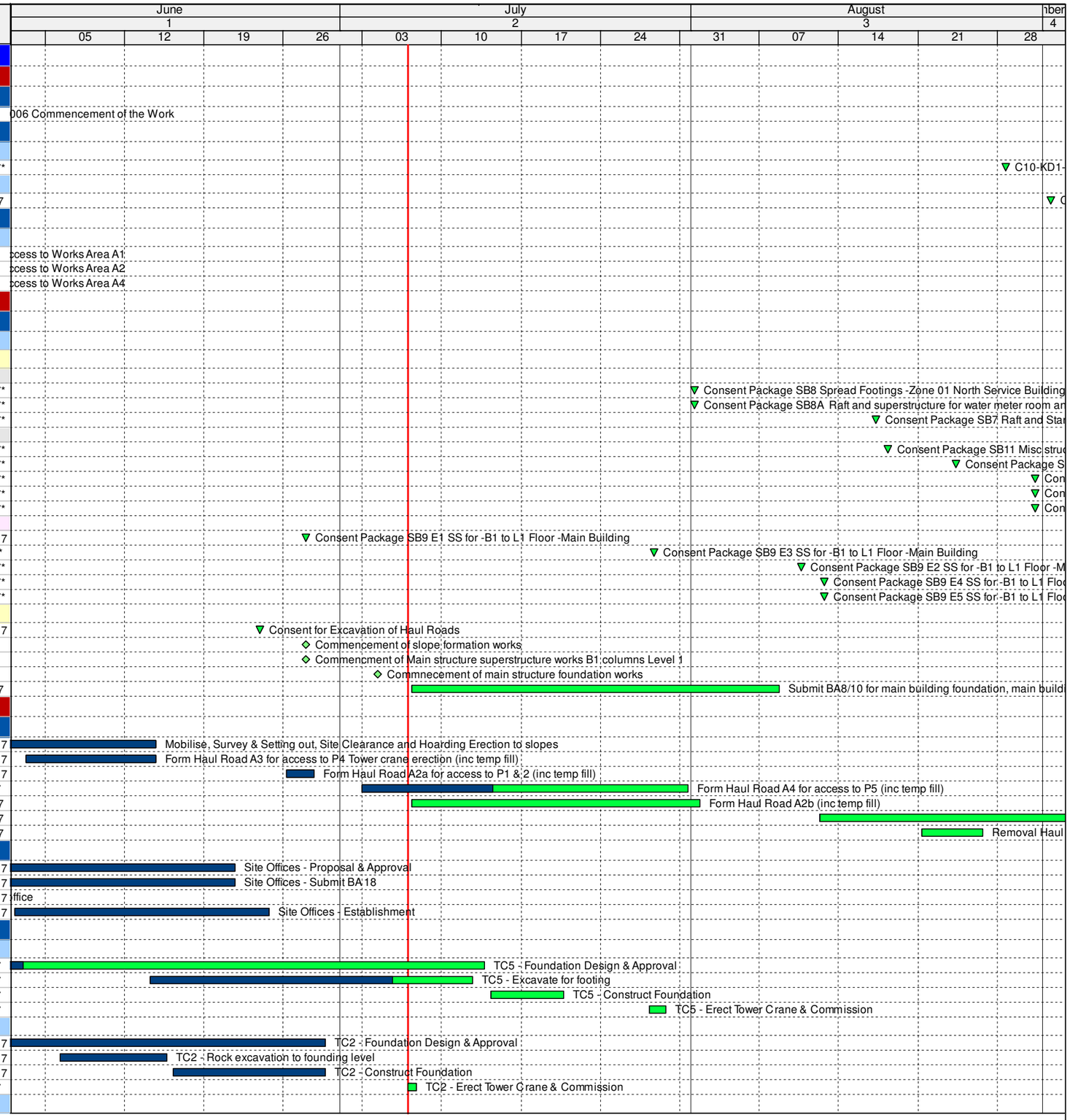


Table A: Contact information

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 Sammie Chan	2269 1507	2148 2890

C. 3-month Look-ahead Program

ID	Activity	Duration	Start	Finish
OCEAN PARK - TAI SHUE WAN WATER WORLD PROJECT Master ((CONST 3MR Programme 2				
CONTRACT DATES				
Commencement of the Works				
CD.C06.1000	C006 Commencement of the Work	0	31-May-17	
Key Dates				
Contract				
CD.C10-KD1	C10-KD1-Complete and achieve approval of Visual Mock-up	0		28-Aug-17*
Target				
CD.C10-TD1	C10-KD1 Target Completion of C010 KD1	0		01-Sep-17
Site Possession Date				
Access Dates				
CD.C06.A1	Access to Works Area A1	0	31-May-17	
CD.C06.A2	Access to Works Area A2	0	31-May-17	
CD.C06.A4	Access to Works Area A4	0	31-May-17	
PRELIMINARIES				
Submission				
General				
BD Consent				
Foundations (Main Building)				
BD.CF.PW160	Consent Package SB8 Spread Footings -Zone 01 North Service Building	0		01-Aug-17*
BD.CF.PW170	Consent Package SB8A Raft and superstructure for water meter room ar	0		01-Aug-17*
BD.CF.PW150	Consent Package SB7 Raft and Starter bars -South Plant Room	0		17-Aug-17*
Superstructure (Main Building)				
BD.CSS.PW130	Consent Package SB11 Misc structures -Bridge ramps staircases -Main	0		18-Aug-17*
BD.CSS.PW120	Consent Package SB10E1 SS for -Above L1 to roof -Main Building	0		24-Aug-17*
BD.CSS.PW100	Consent Package S7A Foundations and SS for- EVA and south plant roor	0		31-Aug-17*
BD.CSS.PW140	Consent Package SB12 Secondary Structure for -Main Building	0		31-Aug-17*
BD.CSS.PW210	Consent Package SB10(Remainder) SS for -Above L1 to roof -Main Buil	0		31-Aug-17*
Basement to Level 1				
BD.CSS.PW110	Consent Package SB9 E1 SS for -B1 to L1 Floor -Main Building	0		28-Jun-17
BD.CSS.PW160	Consent Package SB9 E3 SS for -B1 to L1 Floor -Main Building	0		28-Jul-17*
BD.CSS.PW150	Consent Package SB9 E2 SS for -B1 to L1 Floor -Main Building	0		10-Aug-17*
BD.CSS.PW190	Consent Package SB9 E4 SS for -B1 to L1 Floor -Main Building	0		12-Aug-17*
BD.CSS.PW200	Consent Package SB9 E5 SS for -B1 to L1 Floor -Main Building	0		12-Aug-17*
Structure Foundation, Main Building Superstructure (all areas) & Slope Formation Works				
PR.GEN.1120	Consent for Excavation of Haul Roads	0		24-Jun-17
PR.GEN.1100	Commencement of slope formation works	0	28-Jun-17	
PR.GEN.1110	Commencment of Main structure superstructure works B1 columns Level 1	0	28-Jun-17	
PR.GEN.1070	Commnecement of main structure foundation works	0	04-Jul-17 A	
PR.GEN.1060	Submit BA8/10 for main building foundation, main building founds & sup	28	07-Jul-17	08-Aug-17
SLOPE WORKS -SITE FORMATION				
General				
PR.SWGE.1010	Mobilise, Survey & Setting out, Site Clearance and Hoarding Erection to	12	31-May-17	14-Jun-17
PR.SWGE.1080	Form Haul Road A3 for access to P4 Tower crane erection (inc temp fill)	22	03-Jun-17	14-Jun-17
PR.SWGE.1070	Form Haul Road A2a for access to P1 & 2 (inc temp fill)	28	26-Jun-17	28-Jun-17
PR.SWGE.1090	Form Haul Road A4 for access to P5 (inc temp fill)	18	03-Jul-17 A	31-Jul-17
PR.SWGE.1240	Form Haul Road A2b (inc temp fill)	22	07-Jul-17	01-Aug-17
PR.SWGE.1100	Provide 4 No GI PBH40, 41,42, 43 in area 3	24	12-Aug-17	08-Sep-17
PR.SWGE.1120	Removal Haul Road A3	6	21-Aug-17	26-Aug-17
Site Offices				
PR.SWSO.1010	Site Offices - Proposal & Approval	24	16-Mar-17	21-Jun-17
PR.SWSO.1040	Site Offices - Submit BA 18	21	21-Apr-17	21-Jun-17
PR.SWSO.1020	Site Offices - Procurement container office	21	25-Apr-17	15-May-17
PR.SWSO.1030	Site Offices - Establishment	18	02-Jun-17	24-Jun-17
Tower Crane				
TC5				
PR.STC5.5110	TC5 - Foundation Design & Approval	36	01-Feb-17	13-Jul-17
PR.STC5.5160	TC5 - Excavate for footing	5	14-Jun-17	12-Jul-17
PR.STC5.5120	TC5 - Construct Foundation	6	14-Jul-17	20-Jul-17
PR.STC5.5130	TC5 - Erect Tower Crane & Commission	2	28-Jul-17	29-Jul-17
TC2				
PR.STC2.2110	TC2 - Foundation Design & Approval	36	01-Feb-17	29-Jun-17
PR.STC2.2160	TC2 - Rock excavation to founding level	6	06-Jun-17	15-Jun-17
PR.STC2.2120	TC2 - Construct Foundation	12	16-Jun-17	29-Jun-17
PR.STC2.2130	TC2 - Erect Tower Crane & Commission	3	07-Jul-17 A	07-Jul-17
TC4				



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

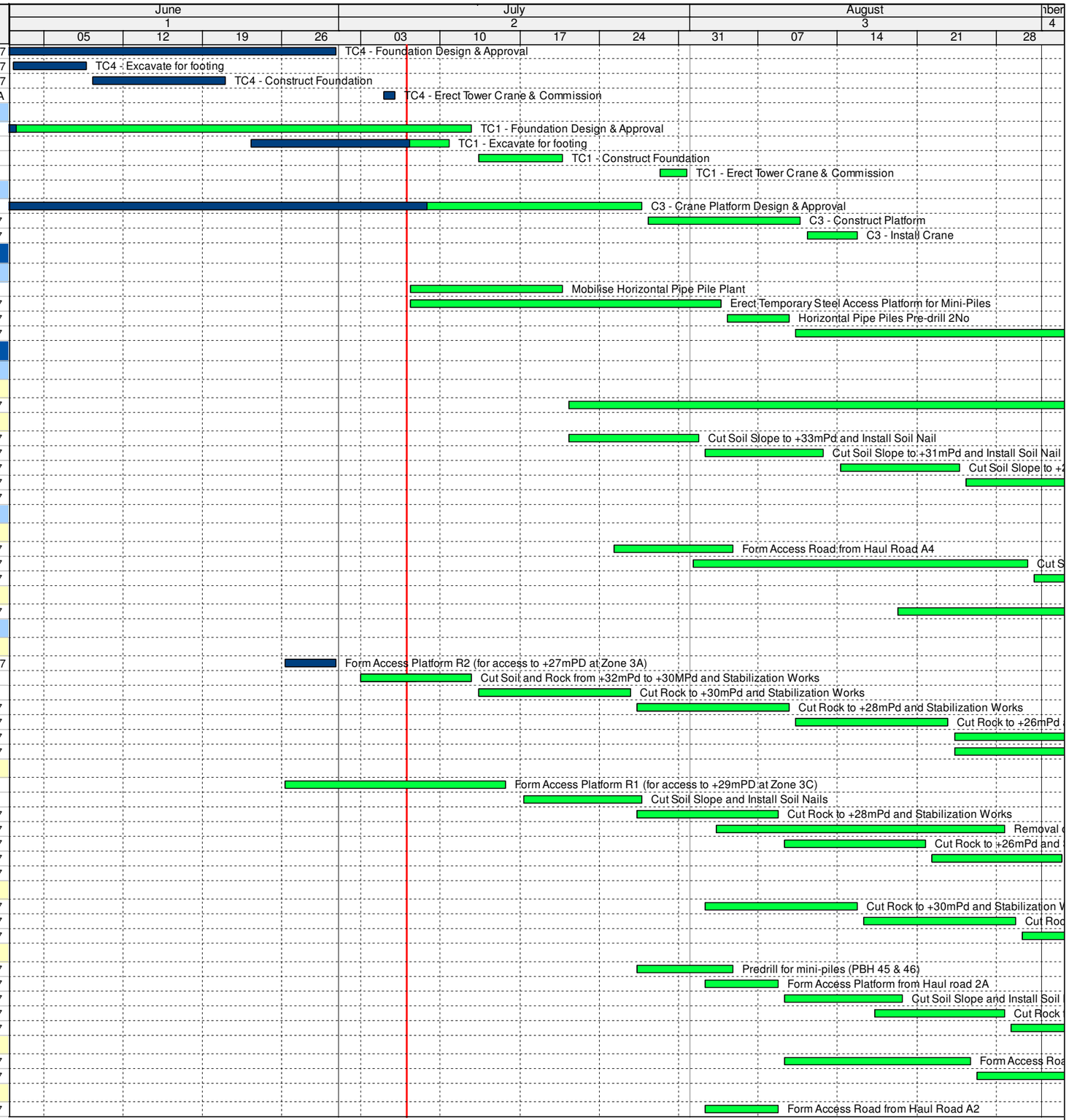
Project: Ocean Park Tai Shue Wan Water World Project
Project ID: T16004-39
Layout: 3 Month look ahead Construction JULY17
Page: 1 of 7

OCEAN PARK - TAI SHUE WAN DEVELOPMENT
Contract No. TSW-C006
3 month Look-ahead Construction program _JULY 2017

Gammon

Date	Revision	Checked	Approved
30-Jun-17	Rev 0	PL LN TC ME	

ID	Activity	Duration	Start	Finish
PR.STC4.4110	TC4 - Foundation Design & Approval	36	02-Feb-17	30-Jun-17
PR.STC4.4160	TC4 - Excavate for footing	5	02-Jun-17	08-Jun-17
PR.STC4.4120	TC4 - Construct Foundation	12	09-Jun-17	21-Jun-17
PR.STC4.4130	TC4 - Erect Tower Crane & Commission	6	05-Jul-17 A	06-Jul-17 A
TC1				
PR.STC1.1100	TC1 - Foundation Design & Approval	36	02-Feb-17	12-Jul-17
PR.STC1.1150	TC1 - Excavate for footing	5	23-Jun-17	10-Jul-17
PR.STC1.1110	TC1 - Construct Foundation	7	13-Jul-17	20-Jul-17
PR.STC1.1120	TC1 - Erect Tower Crane & Commission	2	29-Jul-17	31-Jul-17
Mobile Crane				
PR.STC3.3110	C3 - Crane Platform Design & Approval	36	13-May-17	27-Jul-17
PR.STC3.3120	C3 - Construct Platform	12	28-Jul-17	10-Aug-17
PR.STC3.3130	C3 - Install Crane	4	11-Aug-17	15-Aug-17
Works for Roof B Horizontal Pipe Piles				
Horizontal Piling (On Hold)				
LR.STC5.7110	Mobilise Horizontal Pipe Pile Plant	12	07-Jul-17	20-Jul-17
LR.STC5.7130	Erect Temporary Steel Access Platform for Mini-Piles	24	07-Jul-17	03-Aug-17
LR.STC5.7170	Horizontal Pipe Piles Pre-drill 2No	5	04-Aug-17	09-Aug-17
LR.STC5.7120	Horizontal Pipe Piles - 15no. 273dia @ 3days /pile at Phase 3B	45	10-Aug-17	30-Sep-17
Slope Works for Rides				
Ride P1				
Phase 1A-1				
SF.P1.1A1110	Cut Soil and Rock slope to +13mPd and Stabilization Works	42	21-Jul-17	07-Sep-17
Phase 1B				
SF.P1.1B1310	Cut Soil Slope to +33mPd and Install Soil Nail	10	21-Jul-17	01-Aug-17
SF.P1.1B1320	Cut Soil Slope to +31mPd and Install Soil Nail	10	02-Aug-17	12-Aug-17
SF.P1.1B1330	Cut Soil Slope to +29mPd and Install Soil Nail	10	14-Aug-17	24-Aug-17
SF.P1.1B1340	Cut Soil Slope to +27mPd and Install Soil Nail	10	25-Aug-17	05-Sep-17
SF.P1.1B1350	Cut Soil Slope to +25mPd and Install Soil Nail	10	06-Sep-17	16-Sep-17
Ride P5				
Phase 5A				
SF.P5.5A1110	Form Access Road from Haul Road A4	10	25-Jul-17	04-Aug-17
SF.P5.5A1120	Cut Soil Slope to +44mPd and Install Soil Nails	26	01-Aug-17	30-Aug-17
SF.P5.5A1130	Cut Rock to +46mPd and Stabilization Works	20	31-Aug-17	22-Sep-17
Phase 5C				
SF.P5.5C1120	Cut Soil Slope to +40mPd and Install Soil Nails	36	19-Aug-17	29-Sep-17
Ride P3				
Phase 3A				
SF.P3.3A1100	Form Access Platform R2 (for access to +27mPD at Zone 3A)	5	26-Jun-17	30-Jun-17
SF.P3.3A1110	Cut Soil and Rock from +32mPd to +30MPd and Stabilization Works	12	03-Jul-17 A	12-Jul-17
SF.P3.3A1160	Cut Rock to +30mPd and Stabilization Works	12	13-Jul-17	26-Jul-17
SF.P3.3A1200	Cut Rock to +28mPd and Stabilization Works	12	27-Jul-17	09-Aug-17
SF.P3.3A1210	Cut Rock to +26mPd and Stabilization Works	12	10-Aug-17	23-Aug-17
SF.P3.3A1120	Cut Rock to +24mPd and Stabilization Works	12	24-Aug-17	06-Sep-17
SF.P3.3A1150	Removal of Access Platform R2	30	24-Aug-17	27-Sep-17
Phase 3C				
SF.P3.3C1100	Form Access Platform R1 (for access to +29mPD at Zone 3C)	11	26-Jun-17	15-Jul-17
SF.P3.3C1110	Cut Soil Slope and Install Soil Nails	10	17-Jul-17	27-Jul-17
SF.P3.3C1120	Cut Rock to +28mPd and Stabilization Works	11	27-Jul-17	08-Aug-17
SF.P3.3C1160	Removal of Access Platform at R1	22	03-Aug-17	28-Aug-17
SF.P3.3C1170	Cut Rock to +26mPd and Stabilization Works	11	09-Aug-17	21-Aug-17
SF.P3.3C1130	Cut Rock to +24mPd and Stabilization Works	11	22-Aug-17	02-Sep-17
SF.P3.3C1180	Cut Rock to +22mPd and Stabilization Works	11	04-Sep-17	15-Sep-17
Phase 3D				
SF.P3.3D1110	Cut Rock to +30mPd and Stabilization Works	12	02-Aug-17	15-Aug-17
SF.P3.3D1130	Cut Rock to +28mPd and Stabilization Works	12	16-Aug-17	29-Aug-17
SF.P3.3D1120	Cut Rock to +27mPd and Stabilization Works	12	30-Aug-17	12-Sep-17
Phase 3E				
SF.P3.3E1160	Predrill for mini-piles (PBH 45 & 46)	8	27-Jul-17	04-Aug-17
SF.P3.3E1110	Form Access Platform from Haul road 2A	6	02-Aug-17	08-Aug-17
SF.P3.3E1120	Cut Soil Slope and Install Soil Nails	10	09-Aug-17	19-Aug-17
SF.P3.3E1130	Cut Rock to +38mPd and Stabilization Works	10	17-Aug-17	28-Aug-17
SF.P3.3E1190	Cut Rock to +36mPd and Stabilization Works	10	29-Aug-17	08-Sep-17
Phase 3F				
SF.P3.3F1110	Form Access Road from Ramp R3 to +43Mpd	15	09-Aug-17	25-Aug-17
SF.P3.3F1120	Cut Soil and Rock to +45mPd and Stabilization Works	23	26-Aug-17	21-Sep-17
Phase 3G				
SF.P3.3G1110	Form Access Road from Haul Road A2	6	02-Aug-17	08-Aug-17



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

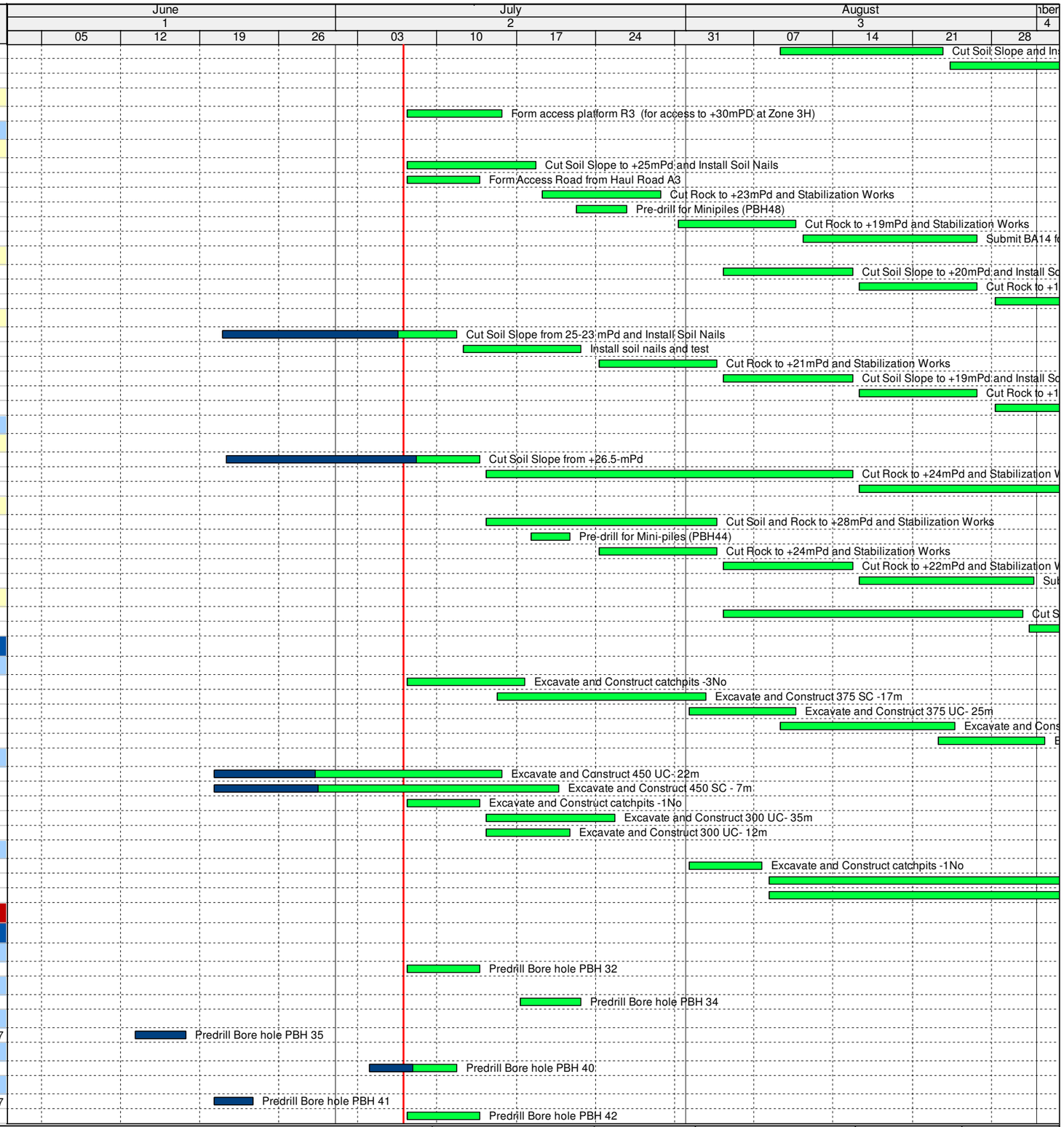
Project: Ocean Park Tai Shue Wan Water World Project
Project ID: T16004-39
Layout: 3 Month look ahead Construction JULY17
Page: 2 of 7

OCEAN PARK - TAI SHUE WAN DEVELOPMENT
Contract No. TSW-C006
3 month Look-ahead Construction program _JULY 2017

Gammon

Date	Revision	Checked	Approved
30-Jun-17	Rev 0	PL LN TC ME	

ID	Activity	Duration	Start	Finish
SF.P3.3G1120	Cut Soil Slope and Install Soil Nails	13	09-Aug-17	23-Aug-17
SF.P3.3G1130	Cut Rock to +45mPd and Stabilization Works	10	24-Aug-17	04-Sep-17
SF.P3.3G1180	Cut Rock to +43mPd and Stabilization Works	10	05-Sep-17	15-Sep-17
Phase 3H				
SF.P3.3H1130	Form access platform R3 (for access to +30mPD at Zone 3H)	8	07-Jul-17	15-Jul-17
Ride P4				
Phase 4A				
SF.P4.4A1120	Cut Soil Slope to +25mPd and Install Soil Nails	10	07-Jul-17	18-Jul-17
SF.P4.4A1110	Form Access Road from Haul Road A3	6	07-Jul-17	13-Jul-17
SF.P4.4A1130	Cut Rock to +23mPd and Stabilization Works	10	19-Jul-17	29-Jul-17
SF.P4.4A1180	Pre-drill for Minipiles (PBH48)	4	22-Jul-17	26-Jul-17
SF.P4.4A1140	Cut Rock to +19mPd and Stabilization Works	10	31-Jul-17	10-Aug-17
SF.P4.4A1190	Submit BA14 for Site Formation	14	11-Aug-17	26-Aug-17
Phase 4B				
SF.P4.4B1120	Cut Soil Slope to +20mPd and Install Soil Nails	10	04-Aug-17	15-Aug-17
SF.P4.4B1130	Cut Rock to +18mPd and Stabilization Works	10	16-Aug-17	26-Aug-17
SF.P4.4B1190	Submit BA14 for Site Formation	14	28-Aug-17	12-Sep-17
Phase 4C				
SF.P4.4C1120	Cut Soil Slope from 25-23 mPd and Install Soil Nails	28	21-Jun-17	11-Jul-17
SF.P4.4C1130	Install soil nails and test	10	12-Jul-17	22-Jul-17
SF.P4.4C1200	Cut Rock to +21mPd and Stabilization Works	10	24-Jul-17	03-Aug-17
SF.P4.4C1150	Cut Soil Slope to +19mPd and Install Soil Nails	10	04-Aug-17	15-Aug-17
SF.P4.4C1140	Cut Rock to +17mPd and Stabilization Works	10	16-Aug-17	26-Aug-17
SF.P4.4C1190	Submit BA14 for Site Formation	14	28-Aug-17	12-Sep-17
Ride P2				
Phase 2A				
SF.P2.2A1110	Cut Soil Slope from +26.5-mPd	19	21-Jun-17	13-Jul-17
SF.P2.2A1120	Cut Rock to +24mPd and Stabilization Works	28	14-Jul-17	15-Aug-17
SF.P2.2A1140	Cut Rock to +22mPd and Stabilization Works	28	16-Aug-17	16-Sep-17
Phase 2B				
SF.P2.2B1210	Cut Soil and Rock to +28mPd and Stabilization Works	18	14-Jul-17	03-Aug-17
SF.P2.2B1240	Pre-drill for Mini-piles (PBH44)	4	18-Jul-17	21-Jul-17
SF.P2.2B1220	Cut Rock to +24mPd and Stabilization Works	10	24-Jul-17	03-Aug-17
SF.P2.2B1230	Cut Rock to +22mPd and Stabilization Works	10	04-Aug-17	15-Aug-17
SF.P2.2B1290	Submit BA14 for Site Formation	14	16-Aug-17	31-Aug-17
Phase 2C				
SF.P2.2C1310	Cut Soil and Rock to +32mPd and Stabilization Works	23	04-Aug-17	30-Aug-17
SF.P2.2C1330	Cut Rock to +30mPd and Stabilization Works	13	31-Aug-17	14-Sep-17
Drainage Channel to Slopes				
P1				
SFD.P1.1000	Excavate and Construct catchpits -3No	9	07-Jul-17	17-Jul-17
SFD.P1.1010	Excavate and Construct 375 SC -17m	16	15-Jul-17	02-Aug-17
SFD.P1.1020	Excavate and Construct 375 UC- 25m	9	01-Aug-17	10-Aug-17
SFD.P1.1030	Excavate and Construct 450 SC - 11m	14	09-Aug-17	24-Aug-17
SFD.P1.1040	Excavate and Construct 525 UC -24m	9	23-Aug-17	01-Sep-17
P3				
SFD.P3.1040	Excavate and Construct 450 UC- 22m	8	20-Jun-17	15-Jul-17
SFD.P3.1030	Excavate and Construct 450 SC - 7m	12	20-Jun-17	20-Jul-17
SFD.P3.1000	Excavate and Construct catchpits -1No	6	07-Jul-17	13-Jul-17
SFD.P3.1010	Excavate and Construct 300 UC- 35m	10	14-Jul-17	25-Jul-17
SFD.P3.1020	Excavate and Construct 300 UC- 12m	7	14-Jul-17	21-Jul-17
P4/5				
SFD.P45.1000	Excavate and Construct catchpits -1No	6	01-Aug-17	07-Aug-17
SFD.P45.1010	Excavate and Construct 300 UC- 48m	24	08-Aug-17	04-Sep-17
SFD.P45.1020	Excavate and Construct 450 SC - 42m	36	08-Aug-17	18-Sep-17
RIDES - PILING & FOOTINGS				
Predrill Borehole				
Phase 1A-2				
PBH-SL.180	Predrill Bore hole PBH 32	6	07-Jul-17	13-Jul-17
Phase 3H				
PBH-SL.210	Predrill Bore hole PBH 34	6	17-Jul-17	22-Jul-17
Phase 2A				
PBH-SL.100	Predrill Bore hole PBH 35	6	13-Jun-17	17-Jun-17
Phase 3G				
PBH-SL.190	Predrill Bore hole PBH 40	6	04-Jul-17 A	11-Jul-17
Phase 3E				
PBH-SL.160	Predrill Bore hole PBH 41	6	20-Jun-17	23-Jun-17
PBH-SL.120	Predrill Bore hole PBH 42	6	07-Jul-17	13-Jul-17



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Current
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OCEAN PARK - TAI SHUE WAN DEVELOPMENT
Contract No. TSW-C006
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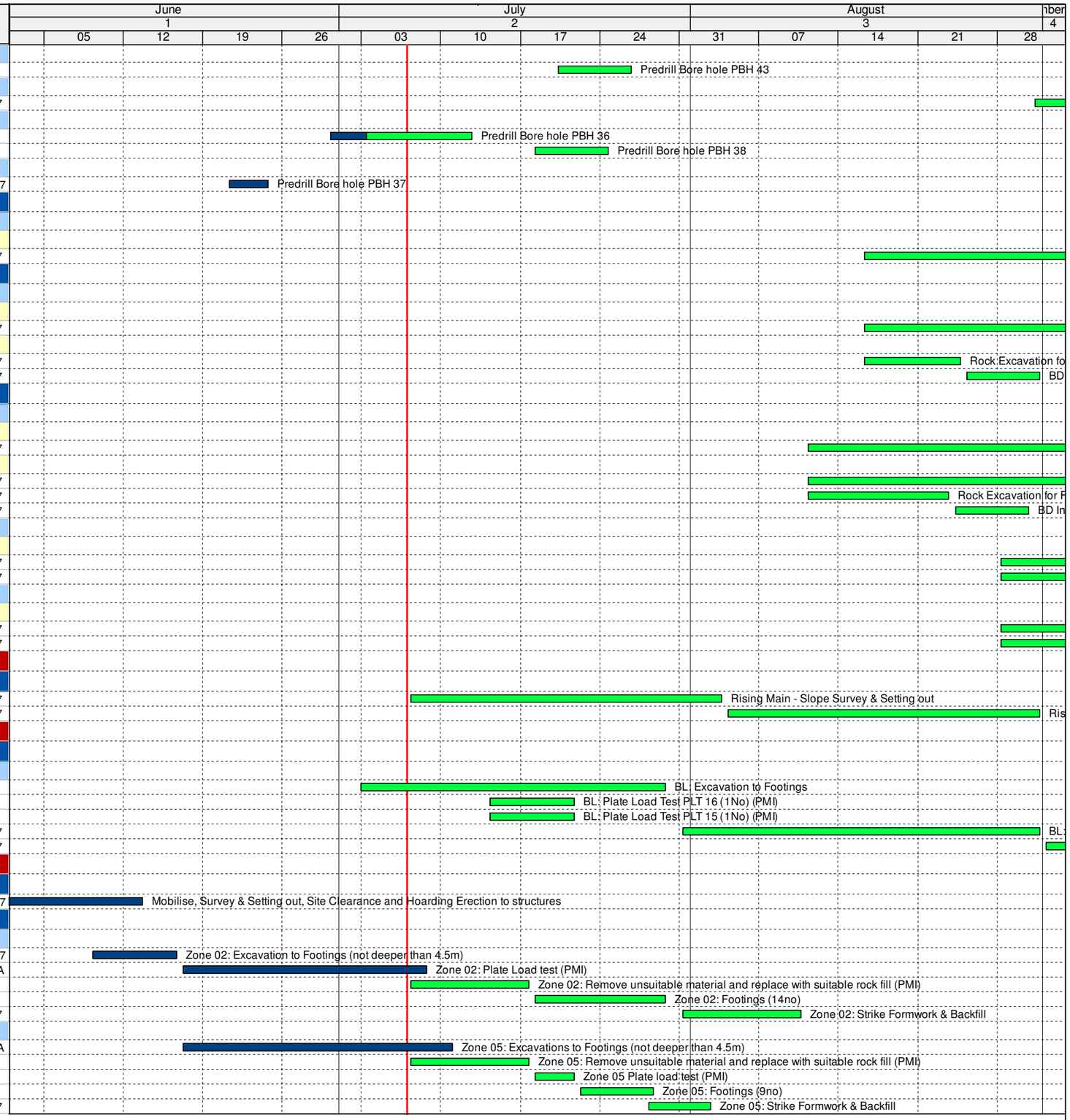
Date	Revision	Checked	Approved
30-Jun-17	Rev 0	PL LN TC ME	

ID	Activity	Duration	Start	Finish
Phase 3B				
PBH-SL.150	Predrill Bore hole PBH 43	6	20-Jul-17	26-Jul-17
Phase 5C				
PBH-SL.200	Predrill Bore hole PBH 39	6	31-Aug-17	06-Sep-17
Phase 5E				
PBH-SL.110	Predrill Bore hole PBH 36	6	30-Jun-17	12-Jul-17
PBH-SL.130	Predrill Bore hole PBH 38	6	18-Jul-17	24-Jul-17
Phase 4A				
PBH-SL.140	Predrill Bore hole PBH 37	6	21-Jun-17	24-Jun-17
Ride P1 - Giant Aquatube Slide				
Phase 1A-1				
Minipiles				
MP.P2.2B1110	Submit BA8/10 for Minipiles	28	16-Aug-17	16-Sep-17
Ride P2 - Aqua Twist Mat Races				
Phase 2B				
Minipiles				
MP.P2.2B1330	Submit BA8/10 for Minipiles	28	16-Aug-17	16-Sep-17
Footing				
RC.P2.2B2120	Rock Excavation for Footings	8	16-Aug-17	24-Aug-17
RC.P2.2B2130	BD Inspection of Bearing Stratum	6	25-Aug-17	31-Aug-17
Ride P4 - Aqua Drop Speed Slide				
Phase 4A				
Minipile				
MP.P4.4A0110	Submit BA8/10 for Minipiles	28	11-Aug-17	12-Sep-17
Pilecap / Footing				
RC.P4.4A2110	Submit BA8/10 for Foundation Works	28	11-Aug-17	12-Sep-17
RC.P4.4A2120	Rock Excavation for Footings	11	11-Aug-17	23-Aug-17
RC.P4.4A2130	BD Inspection of Bearing Stratum	6	24-Aug-17	30-Aug-17
Phase 4B				
Footing				
RC.P4.4B2110	Submit BA8/10 for Foundation Works	28	28-Aug-17	28-Sep-17
RC.P4.4B2120	Rock Excavation for Footings	12	28-Aug-17	09-Sep-17
Phase 4C				
Footing				
RC.P4.4C2110	Submit BA8/10 for Foundation Works	28	28-Aug-17	28-Sep-17
RC.P4.4C2120	Rock Excavation for Footings	26	28-Aug-17	26-Sep-17
RISING MAIN (SEWERAGE)				
Site Formation/Access/ Excavation				
RM.SFGE.1010	Rising Main - Slope Survey & Setting out	24	07-Jul-17	03-Aug-17
RM.SFGE.1020	Rising Main Access Steps	24	04-Aug-17	31-Aug-17
SOUTH SERVICES BUILDING				
Basement Level				
Basement Level				
SB.BLS.0110	BL: Excavation to Footings	8	03-Jul-17 A	29-Jul-17
SB.BLS.0140	BL: Plate Load Test PLT 16 (1No) (PMI)	7	14-Jul-17	21-Jul-17
SB.BLS.150	BL: Plate Load Test PLT 15 (1No) (PMI)	7	14-Jul-17	21-Jul-17
SB.BLS.160	BL: BA8	28	31-Jul-17	31-Aug-17
SB.BLS.130	BL: Raft Footings & Wall Kickers	15	01-Sep-17	18-Sep-17
PRIMARY RC STRUCTURE				
General				
PR.SWGE.1250	Mobilise, Survey & Setting out, Site Clearance and Hoarding Erection to	12	31-May-17	13-Jun-17
Foundations				
Zone 02 (Foundation Level 1) (GL 46-49/DD-FF)				
SPL1S.1090	Zone 02: Excavation to Footings (not deeper than 4.5m)	7	09-Jun-17	16-Jun-17
SPL1S.1120	Zone 02: Plate Load test (PMI)	7	17-Jun-17	08-Jul-17 A
SPL1S.1050	Zone 02: Remove unsuitable material and replace with suitable rock fill (	9	07-Jul-17	17-Jul-17
SPL1S.1290	Zone 02: Footings (14no)	11	18-Jul-17	29-Jul-17
SPL1S.1060	Zone 02: Strike Formwork & Backfill	10	31-Jul-17	10-Aug-17
Zone 05 (Foundation Level 1) (GL35-40/HH-KK)				
SPL1S.1100	Zone 05: Excavations to Footings (not deeper than 4.5m)	5	17-Jun-17	11-Jul-17 A
SPL1S.1130	Zone 05: Remove unsuitable material and replace with suitable rock fill (	9	07-Jul-17	17-Jul-17
SPL1S.1140	Zone 05 Plate load test (PMI)	4	18-Jul-17	21-Jul-17
SPL1S.1070	Zone 05: Footings (9no)	6	22-Jul-17	28-Jul-17
SPL1S.1080	Zone 05: Strike Formwork & Backfill	5	28-Jul-17	02-Aug-17



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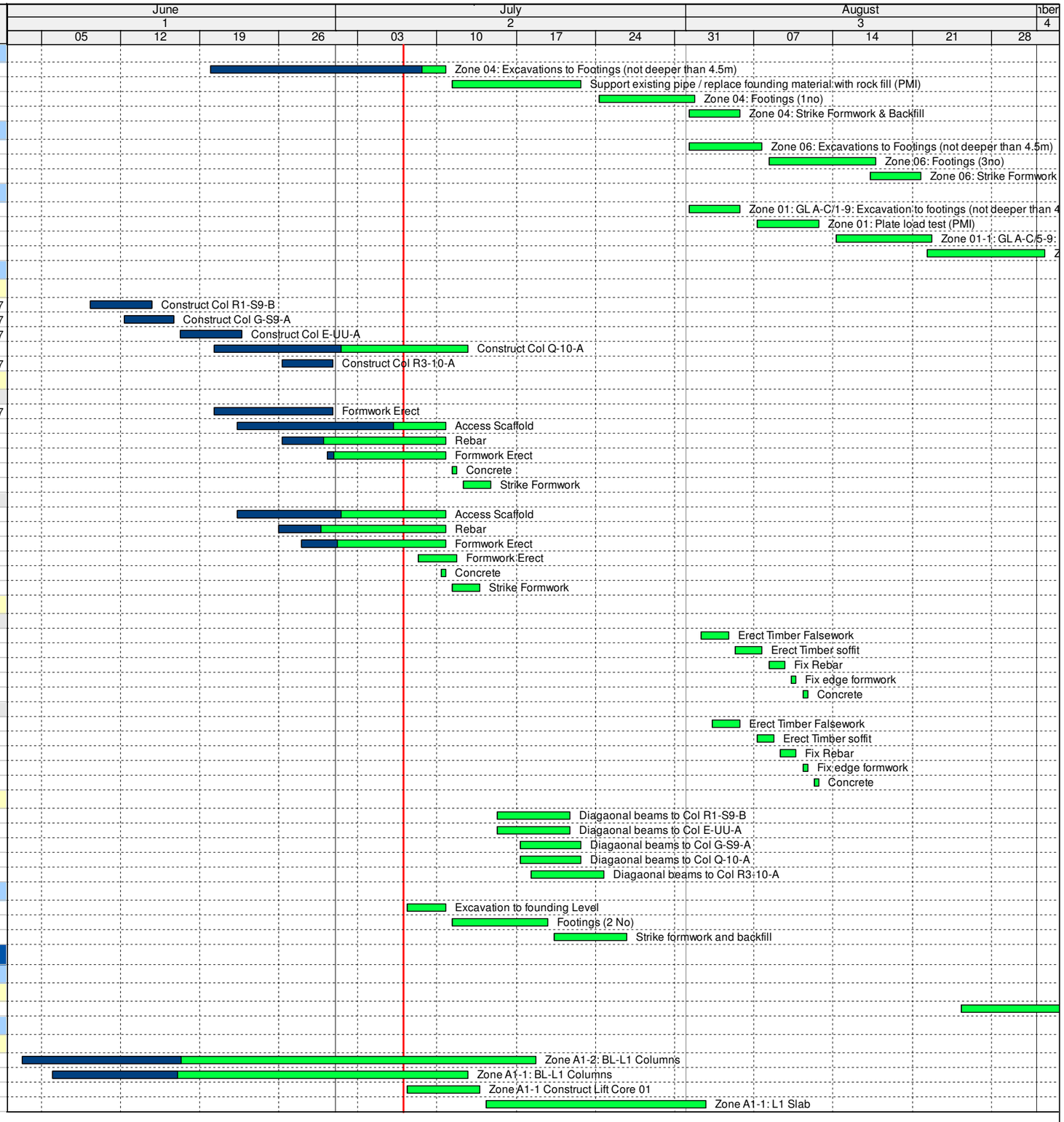
Zone 04 (GL 33-36/BB-EE)				
SPL1S.1145	Zone 04: Excavations to Footings (not deeper than 4.5m)	5	20-Jun-17	10-Jul-17
SPL1S.1155	Support existing pipe / replace founding material with rock fill (PMI)	11	11-Jul-17	22-Jul-17
SPL1S.1280	Zone 04: Footings (1no)	8	24-Jul-17	01-Aug-17
SPL1S.1165	Zone 04: Strike Formwork & Backfill	5	01-Aug-17	05-Aug-17
Zone 06 Foundation Level 2 (GL 173-175/PP-MM)				
SPL1S.1175	Zone 06: Excavations to Footings (not deeper than 4.5m)	6	01-Aug-17	07-Aug-17
SPL1S.1185	Zone 06: Footings (3no)	9	08-Aug-17	17-Aug-17
SPL1S.1195	Zone 06: Strike Formwork & Backfill	4	17-Aug-17	21-Aug-17
Zone 01 (Foundation transformer room) (GL A-C/1-9)				
SPL1S.1110	Zone 01: GL A-C/1-9: Excavation to footings (not deeper than 4.5m)	5	01-Aug-17	05-Aug-17
SPL1S.1300	Zone 01: Plate load test (PMI)	6	07-Aug-17	12-Aug-17
SPL1S.1220	Zone 01-1: GL A-C/5-9: Footings	8	14-Aug-17	22-Aug-17
SPL1S.1230	Zone 01-2: GL A-C/1-5: Footings	10	22-Aug-17	01-Sep-17
L2 Columns support diaphragm wall GL T-171				
Columns				
OP.550	Construct Col R1-S9-B	5	09-Jun-17	14-Jun-17
OP.590	Construct Col G-S9-A	5	12-Jun-17	16-Jun-17
OP.600	Construct Col E-UU-A	5	17-Jun-17	22-Jun-17
OP.610	Construct Col Q-10-A	5	20-Jun-17	12-Jul-17
OP.620	Construct Col R3-10-A	5	26-Jun-17	30-Jun-17
Bearing Walls				
1st Pour BWF01				
OP.670	Formwork Erect	3	20-Jun-17	30-Jun-17
OP.630	Access Scaffold	3	22-Jun-17	10-Jul-17
OP.660	Rebar	3	26-Jun-17	10-Jul-17
OP.650	Formwork Erect	3	30-Jun-17	10-Jul-17
OP.680	Concrete	1	11-Jul-17	11-Jul-17
OP.690	Strike Formwork	3	12-Jul-17	14-Jul-17
2nd Pour BWF01				
OP.700	Access Scaffold	3	22-Jun-17	10-Jul-17
OP.720	Rebar	3	26-Jun-17	10-Jul-17
OP.750	Formwork Erect	3	28-Jun-17	10-Jul-17
OP.710	Formwork Erect	3	08-Jul-17	11-Jul-17
OP.730	Concrete	1	10-Jul-17	10-Jul-17
OP.740	Strike Formwork	3	11-Jul-17	13-Jul-17
Top Slab				
First Pour				
OP.570	Erect Timber Falsework	3	02-Aug-17	04-Aug-17
OP.640	Erect Timber soffit	2	05-Aug-17	07-Aug-17
OP.760	Fix Rebar	2	08-Aug-17	09-Aug-17
OP.860	Fix edge formwork	1	10-Aug-17	10-Aug-17
OP.770	Concrete	1	11-Aug-17	11-Aug-17
Second Pour				
OP.780	Erect Timber Falsework	3	03-Aug-17	05-Aug-17
OP.790	Erect Timber soffit	2	07-Aug-17	08-Aug-17
OP.800	Fix Rebar	2	09-Aug-17	10-Aug-17
OP.870	Fix edge formwork	1	11-Aug-17	11-Aug-17
OP.810	Concrete	1	12-Aug-17	12-Aug-17
Diagonal beams				
OP.580	Diagaonal beams to Col R1-S9-B	6	15-Jul-17	21-Jul-17
OP.830	Diagaonal beams to Col E-UU-A	6	15-Jul-17	21-Jul-17
OP.820	Diagaonal beams to Col G-S9-A	6	17-Jul-17	22-Jul-17
OP.840	Diagaonal beams to Col Q-10-A	6	17-Jul-17	22-Jul-17
OP.850	Diagaonal beams to Col R3-10-A	6	18-Jul-17	24-Jul-17
Foundation (GL 50-173/KK)				
OP.880	Excavation to founding Level	3	07-Jul-17	10-Jul-17
OP.890	Footings (2 No)	8	11-Jul-17	19-Jul-17
OP.900	Strike formwork and backfill	6	20-Jul-17	26-Jul-17
Level 1				
Slab				
Spiral slab				
OG.L1.1020	Construct on grade slap - Spiral GL FF-JJ / 23-27	14	25-Aug-17	09-Sep-17
Zone A				
Zone A1				
SPL1A.1680	Zone A1-2: BL-L1 Columns	7	03-Jun-17	18-Jul-17
SPL1A.1670	Zone A1-1: BL-L1 Columns	8	06-Jun-17	12-Jul-17
SPL1A.1150	Zone A1-1 Construct Lift Core 01	6	07-Jul-17	13-Jul-17
SPL1A.1650	Zone A1-1: L1 Slab	17	14-Jul-17	02-Aug-17



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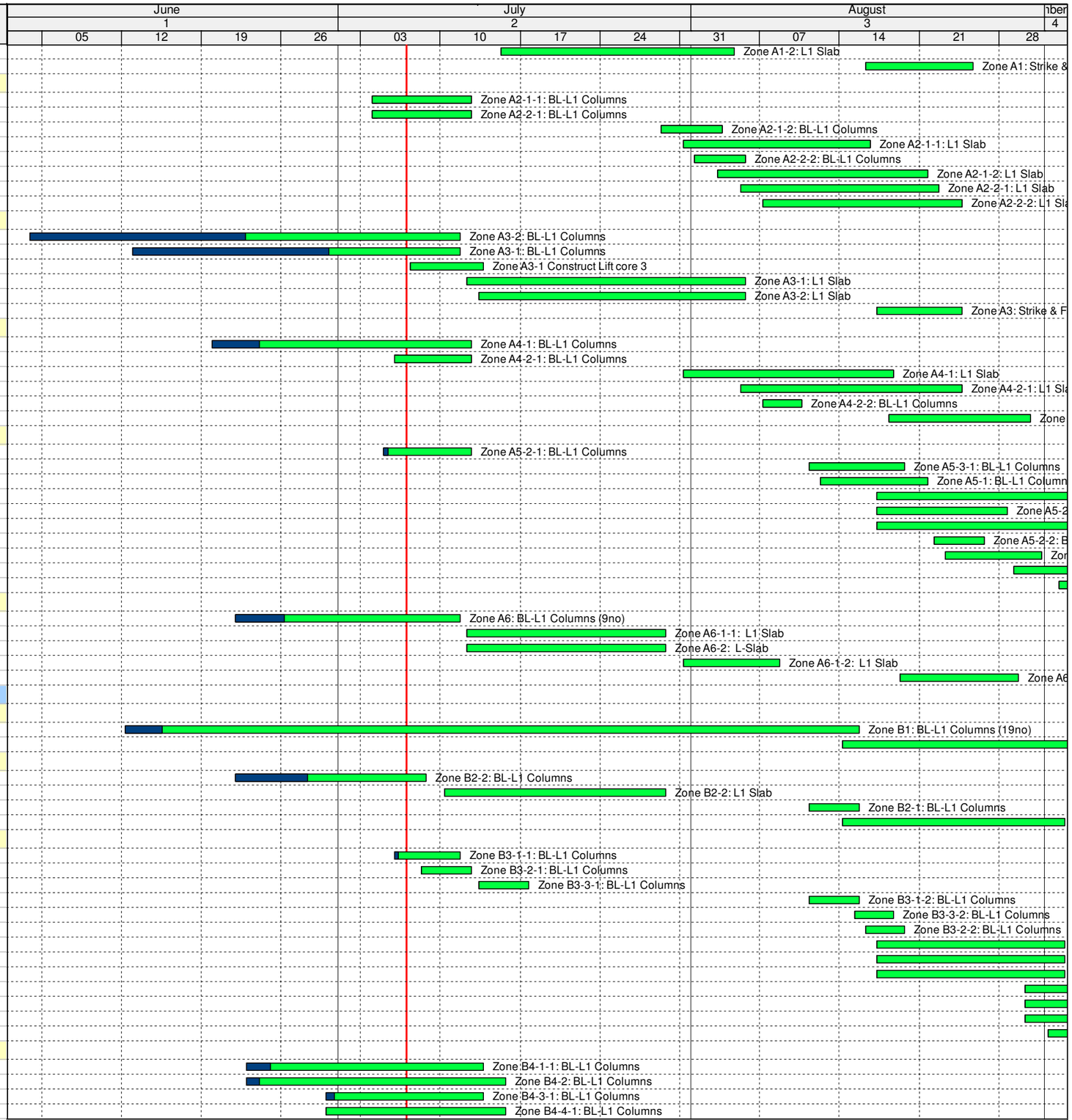
ID	Activity	Duration	Start	Finish
SPL1A.1660	Zone A1-2: L1 Slab	18	15-Jul-17	04-Aug-17
SPL1A.1130	Zone A1: Strike & Falsework Dismantling	9	16-Aug-17	25-Aug-17
Zone A2				
SPL1A.1730	Zone A2-1-1: BL-L1 Columns	5	04-Jul-17 A	12-Jul-17
SPL1A.1740	Zone A2-2-1: BL-L1 Columns	5	04-Jul-17 A	12-Jul-17
SPL1A.1880	Zone A2-1-2: BL-L1 Columns	5	29-Jul-17	03-Aug-17
SPL1A.1780	Zone A2-1-1: L1 Slab	15	31-Jul-17	16-Aug-17
SPL1A.1890	Zone A2-2-2: BL-L1 Columns	5	01-Aug-17	05-Aug-17
SPL1A.1900	Zone A2-1-2: L1 Slab	16	03-Aug-17	21-Aug-17
SPL1A.1790	Zone A2-2-1: L1 Slab	15	05-Aug-17	22-Aug-17
SPL1A.1910	Zone A2-2-2: L1 Slab	16	07-Aug-17	24-Aug-17
Zone A3				
SPL1A.1720	Zone A3-2: BL-L1 Columns	4	04-Jun-17	11-Jul-17
SPL1A.1710	Zone A3-1: BL-L1 Columns	4	13-Jun-17	11-Jul-17
SPL1A.1770	Zone A3-1 Construct Lift core 3	6	07-Jul-17	13-Jul-17
SPL1A.1750	Zone A3-1: L1 Slab	22	12-Jul-17	05-Aug-17
SPL1A.1760	Zone A3-2: L1 Slab	21	13-Jul-17	05-Aug-17
SPL1A.1330	Zone A3: Strike & Falsework Dismantling	7	17-Aug-17	24-Aug-17
Zone A4				
SPL1A.1850	Zone A4-1: BL-L1 Columns	5	20-Jun-17	12-Jul-17
SPL1A.1860	Zone A4-2-1: BL-L1 Columns	5	06-Jul-17 A	12-Jul-17
SPL1A.1920	Zone A4-1: L1 Slab	17	31-Jul-17	18-Aug-17
SPL1A.1930	Zone A4-2-1: L1 Slab	17	05-Aug-17	24-Aug-17
SPL1A.1870	Zone A4-2-2: BL-L1 Columns	4	07-Aug-17	10-Aug-17
SPL1A.1940	Zone A4-2-2: L1 Slab	11	18-Aug-17	30-Aug-17
Zone A5				
SPL1A.1970	Zone A5-2-1: BL-L1 Columns	5	05-Jul-17 A	12-Jul-17
SPL1A.1990	Zone A5-3-1: BL-L1 Columns	8	11-Aug-17	19-Aug-17
SPL1A.1960	Zone A5-1: BL-L1 Columns	8	12-Aug-17	21-Aug-17
SPL1A.2000	Zone A5-1: L1 Slab	17	17-Aug-17	05-Sep-17
SPL1A.2010	Zone A5-2-1: L1 Slab	10	17-Aug-17	28-Aug-17
SPL1A.2030	Zone A5-3-1: L1 Slab	17	17-Aug-17	05-Sep-17
SPL1A.1980	Zone A5-2-2: BL-L1 Columns	5	22-Aug-17	26-Aug-17
SPL1A.2050	Zone A5-3-2: BL-L1 Columns	8	23-Aug-17	31-Aug-17
SPL1A.2020	Zone A5-2-2: L1 Slab	11	29-Aug-17	09-Sep-17
SPL1A.2040	Zone A5-3-2: L1 Slab	17	02-Sep-17	21-Sep-17
Zone A6				
SPL1A.1610	Zone A6: BL-L1 Columns (9no)	5	22-Jun-17	11-Jul-17
SPL1A.1820	Zone A6-1-1: L1 Slab	16	12-Jul-17	29-Jul-17
SPL1A.1840	Zone A6-2: L-Slab	16	12-Jul-17	29-Jul-17
SPL1A.1830	Zone A6-1-2: L1 Slab	8	31-Jul-17	08-Aug-17
SPL1A.1630	Zone A6: Strike & Falsework Dismantling	9	19-Aug-17	29-Aug-17
Zone B				
Zone B1				
SPL1B.1110	Zone B1: BL-L1 Columns (19no)	7	12-Jun-17	15-Aug-17
SPL1B.1120	Zone B1: L1 Slab	23	14-Aug-17	08-Sep-17
Zone B2				
SPL1B.1560	Zone B2-2: BL-L1 Columns	7	22-Jun-17	08-Jul-17
SPL1B.1550	Zone B2-2: L1 Slab	18	10-Jul-17	29-Jul-17
SPL1B.1570	Zone B2-1: BL-L1 Columns	4	11-Aug-17	15-Aug-17
SPL1B.1580	Zone B2-1: L1 Slab	18	14-Aug-17	02-Sep-17
Zone B3				
SPL1B.1590	Zone B3-1-1: BL-L1 Columns	4	06-Jul-17 A	11-Jul-17
SPL1B.1610	Zone B3-2-1: BL-L1 Columns	4	08-Jul-17	12-Jul-17
SPL1B.1630	Zone B3-3-1: BL-L1 Columns	4	13-Jul-17	17-Jul-17
SPL1B.1600	Zone B3-1-2: BL-L1 Columns	4	11-Aug-17	15-Aug-17
SPL1B.1640	Zone B3-3-2: BL-L1 Columns	4	15-Aug-17	18-Aug-17
SPL1B.1620	Zone B3-2-2: BL-L1 Columns	4	16-Aug-17	19-Aug-17
SPL1B.1650	Zone B3-1-1: L1 Slab	15	17-Aug-17	02-Sep-17
SPL1B.1670	Zone B3-2-1: L1 Slab	15	17-Aug-17	02-Sep-17
SPL1B.1690	Zone B3-3-1: L1 Slab	15	17-Aug-17	02-Sep-17
SPL1B.1660	Zone B3-1-2: L1 Slab	15	30-Aug-17	15-Sep-17
SPL1B.1680	Zone B3-2-2: L1 Slab	15	30-Aug-17	15-Sep-17
SPL1B.1700	Zone B3-3-2: L1 Slab	15	30-Aug-17	15-Sep-17
SPL1B.1350	Zone B3: BL-L1 Columns (4no)	5	01-Sep-17	06-Sep-17
Zone B4				
SPL1B.1710	Zone B4-1-1: BL-L1 Columns	6	23-Jun-17	13-Jul-17
SPL1B.1730	Zone B4-2: BL-L1 Columns	8	23-Jun-17	15-Jul-17
SPL1B.1740	Zone B4-3-1: BL-L1 Columns	6	30-Jun-17	13-Jul-17
SPL1B.1760	Zone B4-4-1: BL-L1 Columns	8	30-Jun-17	15-Jul-17



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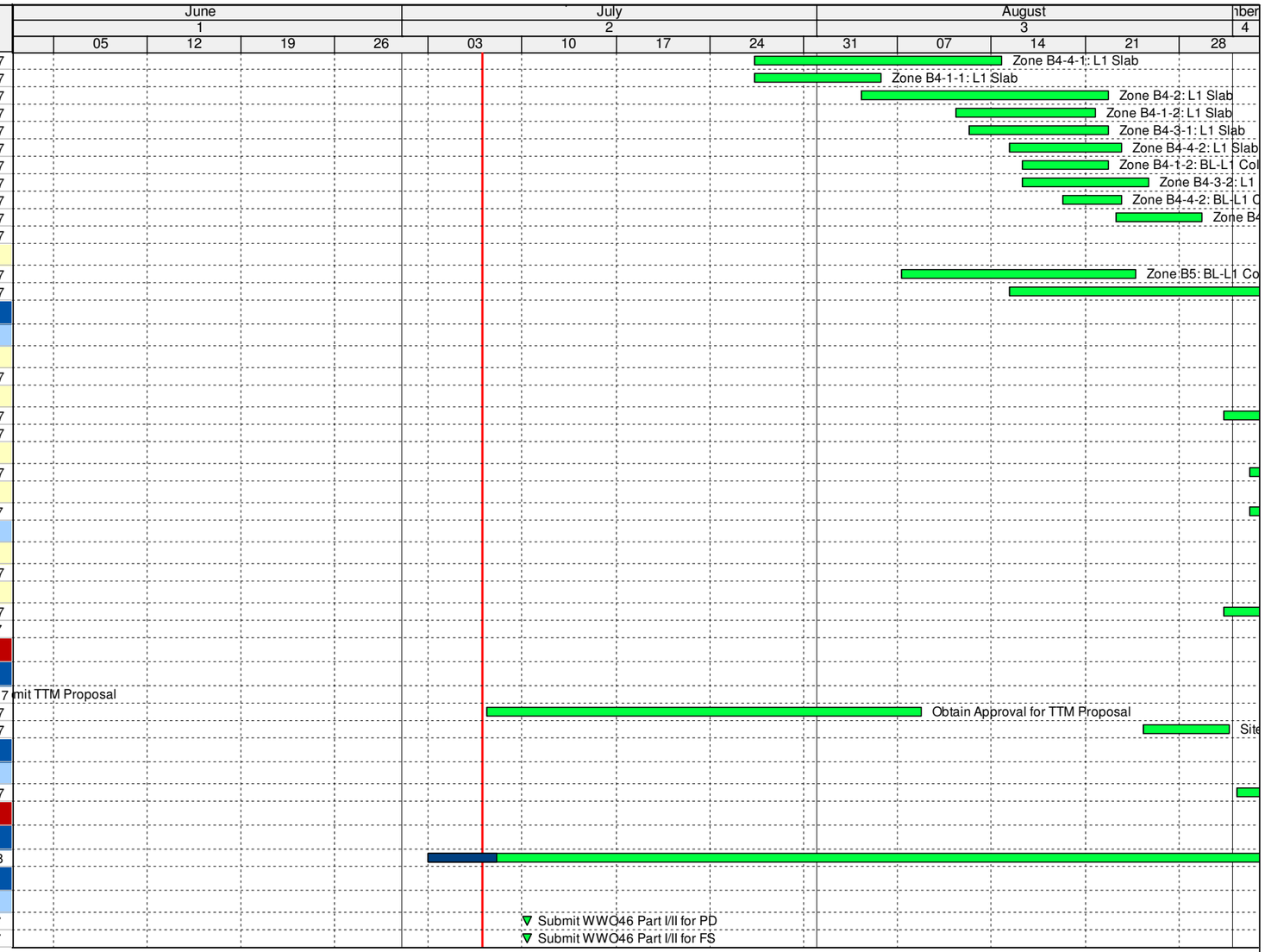
SPL1B.1780	Zone B4-4-1: L1 Slab	16	27-Jul-17	14-Aug-17
SPL1B.1810	Zone B4-1-1: L1 Slab	9	27-Jul-17	05-Aug-17
SPL1B.1770	Zone B4-2: L1 Slab	16	04-Aug-17	22-Aug-17
SPL1B.1820	Zone B4-1-2: L1 Slab	9	11-Aug-17	21-Aug-17
SPL1B.1790	Zone B4-3-1: L1 Slab	9	12-Aug-17	22-Aug-17
SPL1B.1840	Zone B4-4-2: L1 Slab	8	15-Aug-17	23-Aug-17
SPL1B.1720	Zone B4-1-2: BL-L1 Columns	6	16-Aug-17	22-Aug-17
SPL1B.1800	Zone B4-3-2: L1 Slab	9	16-Aug-17	25-Aug-17
SPL1B.1830	Zone B4-4-2: BL-L1 Columns	4	19-Aug-17	23-Aug-17
SPL1B.1750	Zone B4-3-2: BL-L1 Columns	6	23-Aug-17	29-Aug-17
SPL1B.1430	Zone B4: Strike & Falsework Dismantling	10	06-Sep-17	16-Sep-17
Zone B5				
SPL1B.1510	Zone B5: BL-L1 Columns (42no)	16	07-Aug-17	24-Aug-17
SPL1B.1520	Zone B5: L1 Slab	35	15-Aug-17	23-Sep-17
Level 2				
Zone A				
Zone A1				
SPL2A.2110	Zone A1: L1-L2 Columns (13no)	6	04-Sep-17	09-Sep-17
Zone A9				
SPL2A.2910	Zone A9: L1-L2 Columns (7no)	5	31-Aug-17	05-Sep-17
SPL2A.2920	Zone A9: L2 Slab	23	04-Sep-17	29-Sep-17
Zone A14 (North Plant Below)				
SPL2A.3180	Zone A14: L1-L2 Columns (8no)	5	02-Sep-17	07-Sep-17
Zone A15 (North Plant Room)				
SPL2A.3210	Zone A15: L1-L2 Columns (18no)	8	02-Sep-17	11-Sep-17
Zone B				
Zone B3				
SPL2B.2310	Zone B3: L1-L2 Columns (13no)	6	04-Sep-17	09-Sep-17
Zone B7				
SPL2B.2710	Zone B7: L1-L2 Columns (12no)	6	31-Aug-17	06-Sep-17
SPL2B.2720	Zone B7: L2 Slab	28	06-Sep-17	10-Oct-17
SHUM WAN ROAD (Area A4)				
General Requirements				
EW.GENR.0120	Prepare & Submit TTM Proposal	28	09-May-17	25-May-17
EW.GENR.0130	Obtain Approval for TTM Proposal	28	07-Jul-17	08-Aug-17
PR.SWGE.1025	Site Clearance and Hoarding Erection - Shum Wan Rd.	6	25-Aug-17	31-Aug-17
Temporary Traffic Management				
TTM Preparation Works				
EW.TTMS.2110	Lane Widening 1: Outbound for TTM 2 within site boundary	18	01-Sep-17	21-Sep-17
E&M WORKS				
New Water Park				
EM.IN020002	Cast-in installation works	180	03-Jul-17 A	12-Mar-18
Statutory Submission, Inspection & Approval				
Obtain Occupation Permit				
EM.SS010000	Submit WWO46 Part I/II for PD	0		10-Jul-17
EM.SS010005	Submit WWO46 Part I/II for FS	0		10-Jul-17



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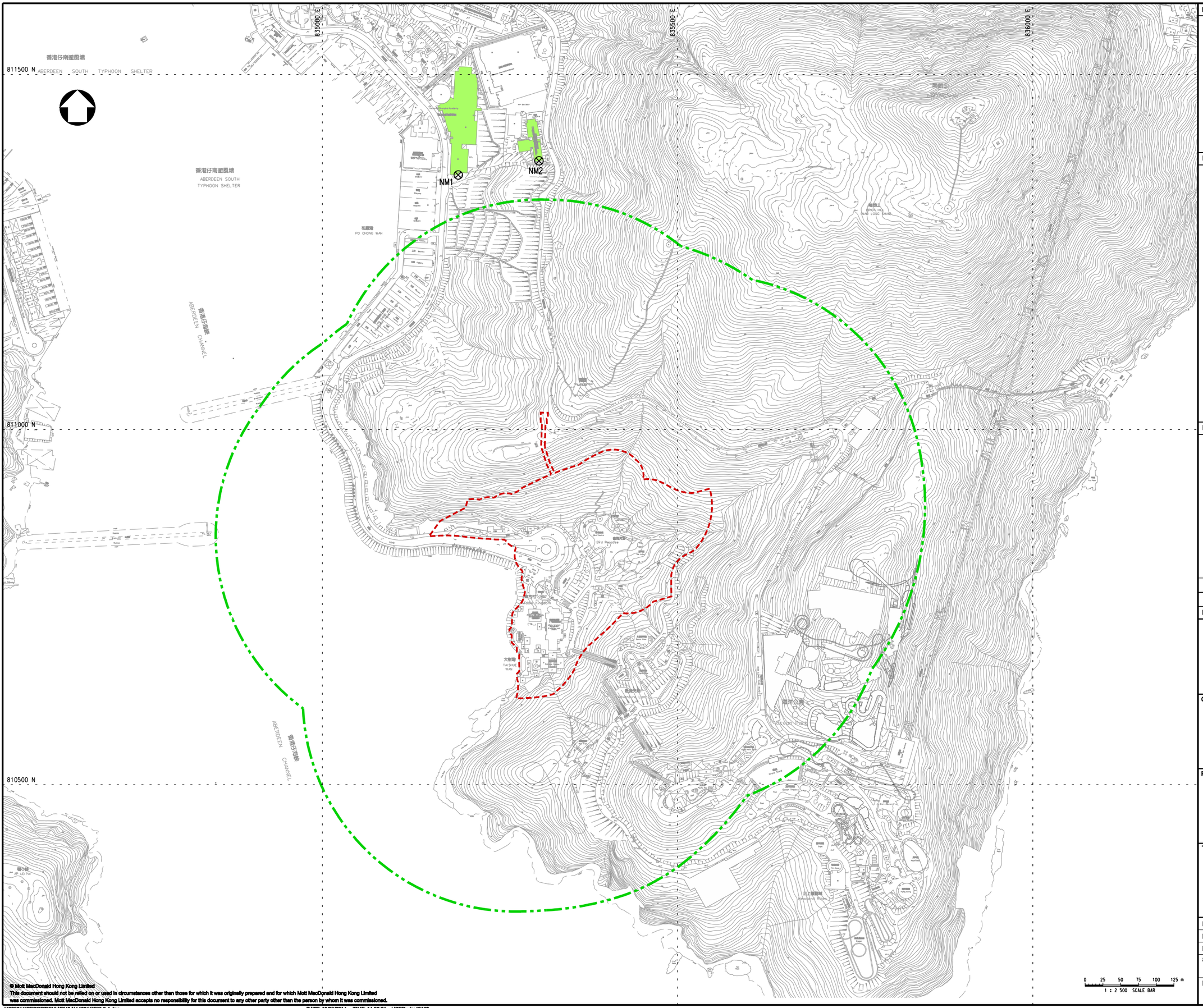
D. Designated Monitoring Locations as Recommended in the Approved EM&A Manual



Notes

Key to symbols

- 300m ASSESSMENT AREA
- PROJECT BOUNDARY
- ⊗ CONSTRUCTION NOISE MONITORING STATION

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd
P2	MAR 14	MING	GENERAL REVISION	AM	AFK
P1	FEB 14	MING	FIRST ISSUE	AM	AFK

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W www.mottmac.com.hk

Client

Ocean Park Hong Kong 香港海洋公園

Project

TAI SHUE WAN DEVELOPMENT AT OCEAN PARK

Title

DESIGNATED MONITORING LOCATONS AS RECOMMENDED IN THE APPROVED EM&A MANUAL

Designed	AM		Eng check	FW	
Drawn	MING		Coordination	FW	
Dwg check	AM		Approved	AFK	
Scale at A1	1:2500	Status	PRE	Rev	P2

Drawing Number

FIGURE 3.1

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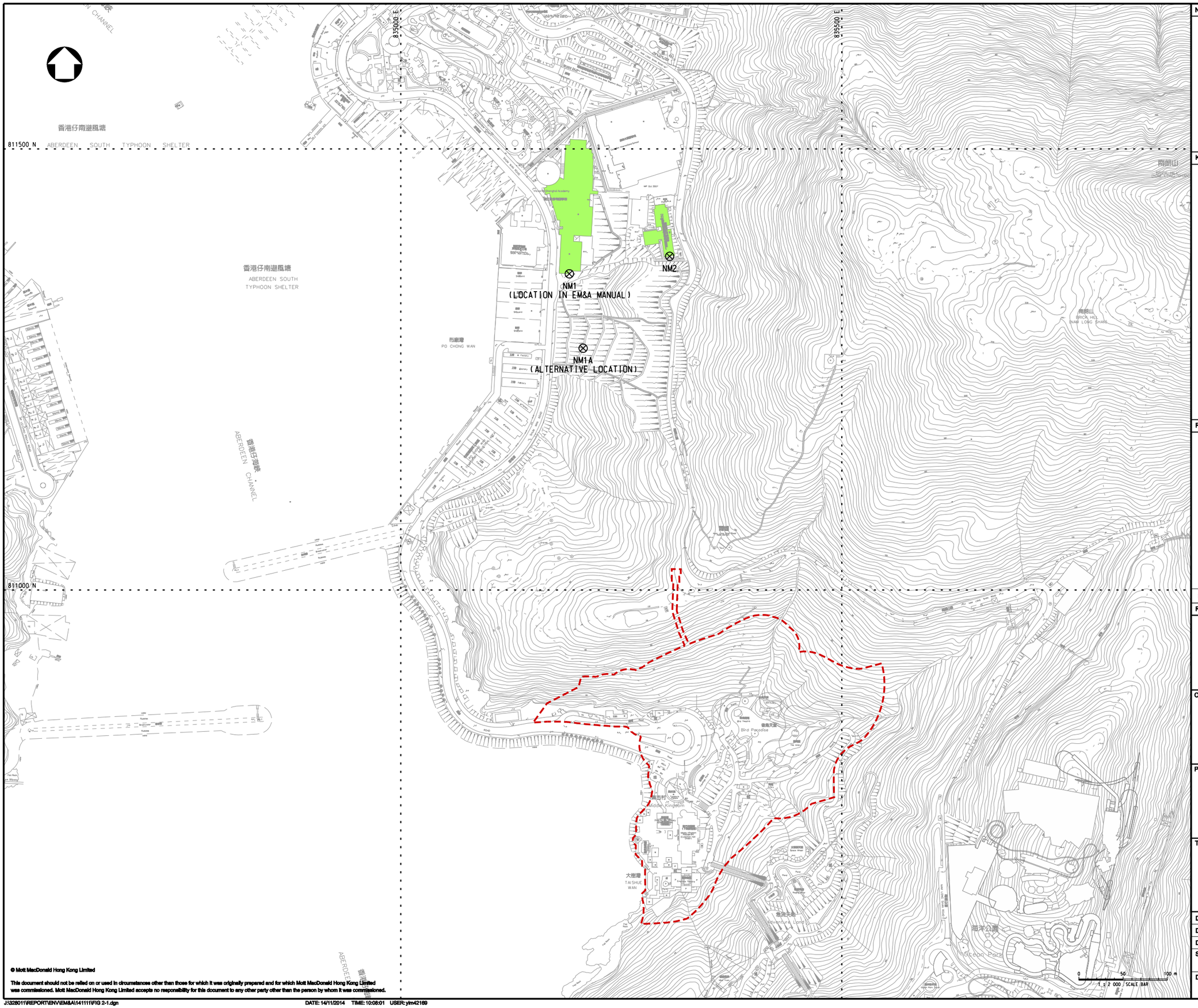
E. Actual Locations of Impact Monitoring



Notes

Key to symbols

PROJECT BOUNDARY

CONSTRUCTION NOISE MONITORING STATION

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	NOV 14	MING	FIRST ISSUE	BW	AFK

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Client

Ocean Park Hong Kong 香港海洋公園

Project

TAI SHUE WAN DEVELOPMENT AT OCEAN PARK

Title

ACTUAL LOCATIONS OF IMPACT MONITORING

Designed	BW		Eng check	FW	
Drawn	MING		Coordination	FW	
Dwg check	BW		Approved	AFK	
Scale at A1	1:2000	Status	PRE	Rev	P1

Drawing Number

FIGURE 2.1

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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. : C171427
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC17-0555) Date of Receipt / 收件日期 : 9 March 2017

Description / 儀器名稱 : Sound Level Meter
Manufacturer / 製造商 : Rion
Model No. / 型號 : NL-52
Serial No. / 編號 : 00643040
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

DATE OF TEST / 測試日期 : 16 March 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, Project Engineer

Date of Issue 簽發日期 : 20 March 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所書面批准。

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Certificate of Calibration
校正證書

Certificate No. : C171427
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 using the internal standard (After Adjustment) was performed before the test 6.1.1.2 to 6.3.2.

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

6.1.1.1 Before Adjustment

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L_A	A	Fast	94.00	1	94.9	± 1.1

6.1.1.2 After Adjustment

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L_A	A	Fast	94.00	1	94.0	± 1.1

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 130	L_A	A	Fast	94.00	1	94.0 (Ref.)
				104.00		104.1
				114.00		114.0

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

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Certificate of Calibration
校正證書

Certificate No. : C171427
證書編號

6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L_A	A	Fast	94.00	1	94.0	Ref.
			Slow			94.0	± 0.3

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L_A	A	Fast	94.00	63 Hz	67.8	-26.2 ± 1.5
					125 Hz	95.2	-16.1 ± 1.5
					250 Hz	85.3	-8.6 ± 1.4
					500 Hz	90.7	-3.2 ± 1.4
					1 kHz	94.0	Ref.
					2 kHz	95.2	+1.2 ± 1.6
					4 kHz	95.0	+1.0 ± 1.6
					8 kHz	93.0	-1.1 (+2.1 ; -3.1)
					12.5 kHz	89.6	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L_C	C	Fast	94.00	63 Hz	93.1	-0.8 ± 1.5
					125 Hz	93.8	-0.2 ± 1.5
					250 Hz	94.0	0.0 ± 1.4
					500 Hz	94.0	0.0 ± 1.4
					1 kHz	94.0	Ref.
					2 kHz	93.8	-0.2 ± 1.6
					4 kHz	93.2	-0.8 ± 1.6
					8 kHz	91.0	-3.0 (+2.1 ; -3.1)
					12.5 kHz	87.6	-6.2 (+3.0 ; -6.0)

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
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. : C171427
證書編號

Remarks : - UUT Microphone Model No. : UC-59 & S/N : 10445

- 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.
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輝創工程有限公司
Sun Creation Engineering Limited
Calibration and Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C165412
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC16-2211) Date of Receipt / 收件日期 : 26 September 2016

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 : 29 September 2016

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, Project Engineer

Date of Issue 簽發日期 : 30 September 2016

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
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輝創工程有限公司
Sun Creation Engineering Limited
Calibration and Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C165412
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 :

Equipment ID	Description	Certificate No.
CL130	Universal Counter	C163709
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	114.0		

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

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
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Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

輝創工程有限公司
Sun Creation Engineering Limited
Calibration and Testing Laboratory

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 ± 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 : 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 / 簽發日期 : 28 October 2016

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

Sun Creation Engineering Limited – Calibration & Testing Laboratory
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輝創工程有限公司
Sun Creation Engineering Limited
Calibration and Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C165934
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.

2. The results presented are the mean of 10 measurements at each calibration point.

3. Test equipment :

Equipment ID	Description	Certificate No.
CL386	Multi-function Measuring Instrument	S12109

4. Test procedure : MA130N.

5. Results :

Air Velocity

Applied Value (m/s)	UUT Reading (m/s)	Measured Correction		
		Value (m/s)	Measurement Uncertainty	
			Expanded Uncertainty (m/s)	Coverage Factor
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.

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。

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G. Event and Action Plan

Event and Action Plan for Construction Noise

Event	Action			
	ET	IEC	ER	Contractor
Action Level	1. Notify ER, IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the IEC and Contractor on remedial measures required; 5. Increase monitoring frequency to check mitigation effectiveness.	1. Review the investigation results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Advise the ER on the effectiveness of the proposed remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures.	1. Submit noise mitigation proposals to IEC and ER; 2. Implement noise mitigation proposals.
Limit Level	1. Inform IEC, ER, Contractor and EPD; 2. Repeat measurements to confirm findings; 3. Increase monitoring frequency; 4. Identify source and investigate the cause of exceedance; 5. Carry out analysis of Contractor's working procedures; 6. Discuss with the IEC, Contractor and ER on remedial measures required; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures; 5. If exceedance continues, consider stopping the Contractor to continue working on that portion of work which causes the exceedance until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC and ER within 3 working days of notification; 3. Implement the agreed proposals; 4. Submit further proposal if problem still not under control; 5. Stop the relevant portion of works as instructed by the ER until the exceedance is abated.

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

Action Level	Environmental Team Leader (ETL)	Independent Environmental Checker (IEC)	Engineer's Representative (ER)	Contractor
Non-conformity on one occasion	1. Identify source 2. Inform the IEC and the ER 3. Discuss remedial actions with the IEC, the ER and the Contractor 4. Monitor remedial action until rectification has been completed	1. Check report 2. Check the Contractor's working method 3. Discuss with the ER and the Contractor on possible remedial measures 4. Advise the ER on effectiveness of proposed remedial measures	1. Notify the Contractor 2. Ensure remedial measures are properly implemented	1. Amend working methods 2. Rectify damage and undertake remedial measures or any necessary replacement
Repeated Non-conformity	1. Identify source 2. Inform the IEC and the ER 3. Increase monitoring (site audit) frequency 4. Discuss remedial actions with the IEC, the ER and the Contractor 5. Monitor remedial actions until rectification has been completed 6. If exceedance stops, cease additional monitoring (site audit)	1. Check report 2. Check the Contractor's working method 3. Discuss with the ER and the Contractor on possible remedial measures 4. Advise the ER on effectiveness of proposed remedial measures 5. Supervise implementation of remedial measures		

H. Impact Monitoring Schedule

AUGUST 2017

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2 Noise Monitoring	3	4 ET weekly site inspection	5
6	7	8	9 Noise Monitoring	10	11 ET weekly site inspection Landscape and Visual Monitoring	12
13	14	15	16 Noise Monitoring	17	18 ET weekly site inspection	19
20	21	22 Noise Monitoring	23	24	25 ET weekly site inspection Ecological Monitoring Landscape and Visual Monitoring	26
27	28	29	30 Noise Monitoring	31		

July 2017

S	M	T	W	Th	F	Sa
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

September 2017

S	M	T	W	Th	F	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

Notes:

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SEPTEMBER 2017

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1 ET weekly site inspection	2
3	4	5	6 Noise Monitoring	7	8 ET weekly site inspection Landscape and Visual Monitoring	9
10	11	12	13 Noise Monitoring	14	15 ET weekly site inspection	16
17	18	19	20 Noise Monitoring	21	22 ET weekly site inspection Ecological Monitoring Landscape and Visual Monitoring	23
24	25	26	27 Noise Monitoring	28	29 ET weekly site inspection	30

August 2017

S	M	T	W	Th	F	Sa
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

October 2017

S	M	T	W	Th	F	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Notes:

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I. Noise Monitoring Data

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

NM1A - Slope near the Victoria Shanghai Academy						
Date	Time		Noise Levels, dB(A)			Limit Level for L_{eq} (dB(A)) (2)
	Start	Finish	Corrected L_{eq}(30min) (1)	Corrected L_{90} (1)	Corrected L_{10} (1)	
02-Aug-17	11:00	11:30	61.8	59.6	63.5	70
09-Aug-17	10:45	11:15	59.5	55.4	61.8	70
16-Aug-17	13:55	14:25	59.5	55.2	61.8	70
22-Aug-17	09:38	10:08	62.1	57.8	64.3	70
30-Aug-17	10:50	11:20	61.2	57.7	62.4	70

NM2 - Hong Kong Juvenile Care Centre						
Date	Time		Noise Levels, dB(A)			Limit Level for L_{eq} (dB(A))(2)
	Start	Finish	L_{eq}(30min)	L_{90}	L_{10}	
02-Aug-17	10:10	10:40	53.0	51.6	54.8	70
09-Aug-17	10:00	10:30	50.4	49.5	51.5	70
16-Aug-17	13:03	13:33	56.9	50.5	59.8	70
22-Aug-17	09:00	09:30	53.5	52.1	54.6	70
30-Aug-17	10:02	10:32	54.5	52.7	55.7	70

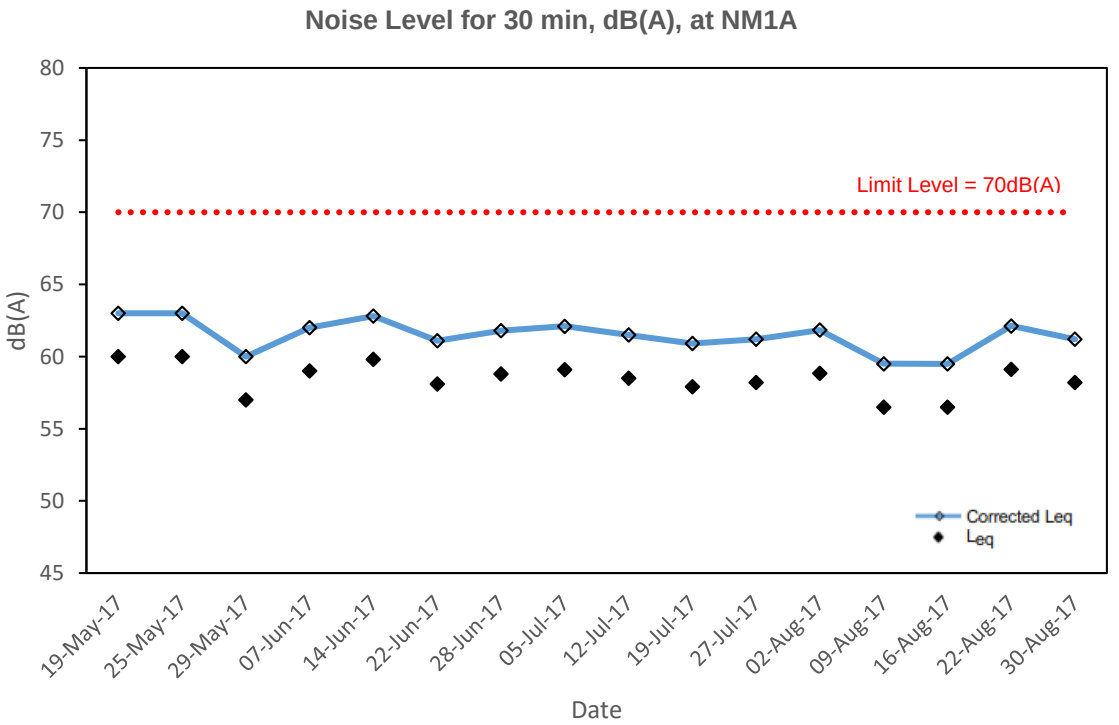
Notes:

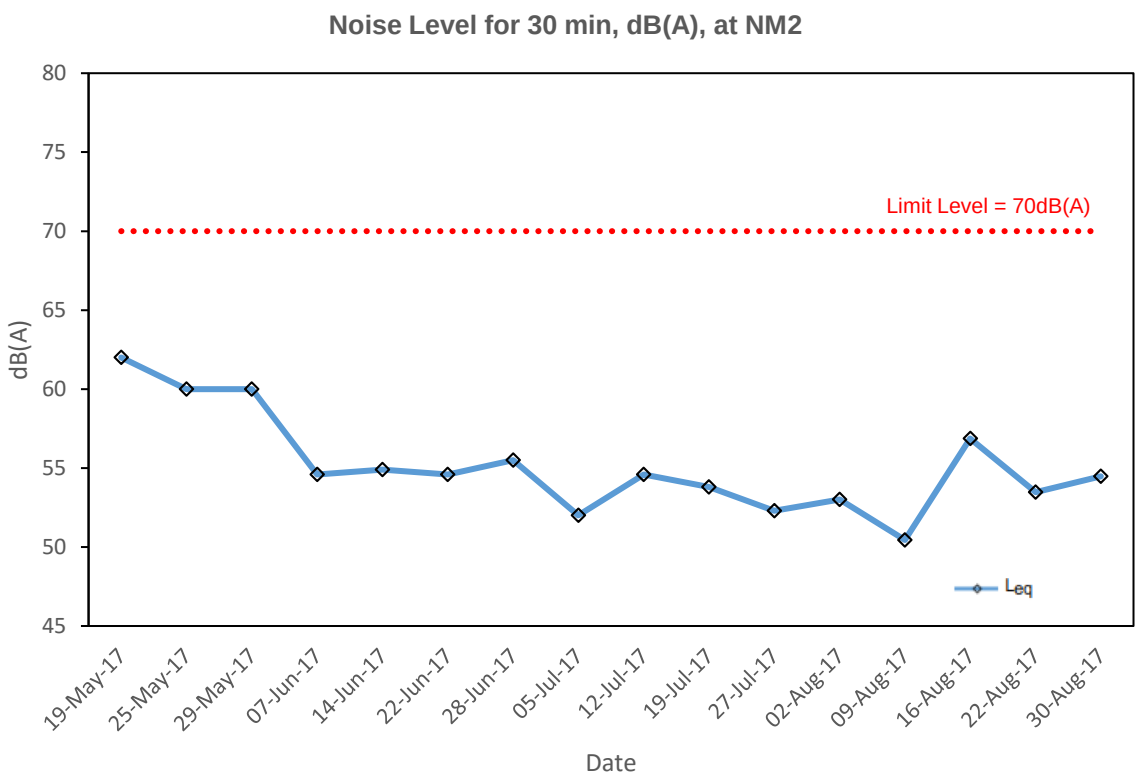
(1) A free field correction of +3dB(A) has been made to these measurements as specified in the EM&A Manual and EPD guidelines.

(2) Acceptable noise level should be reduced to 65dB(A) upon school examination period.

J. Graphical Plots for Noise Monitoring Data

Graphical Plot for Noise Monitoring Data (May - August 2017)

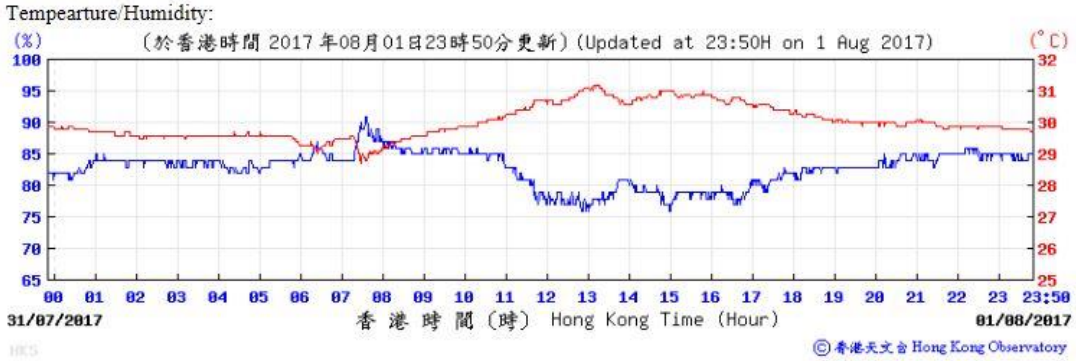




K. Meteorological Data

1/8/2017 **Wong Chuk Hang Station**

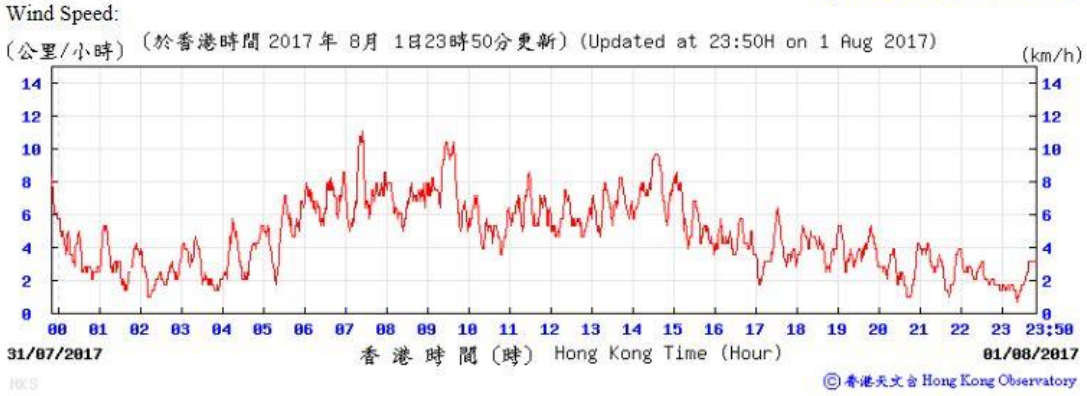
Tempearture/Humidity:



Pressure:

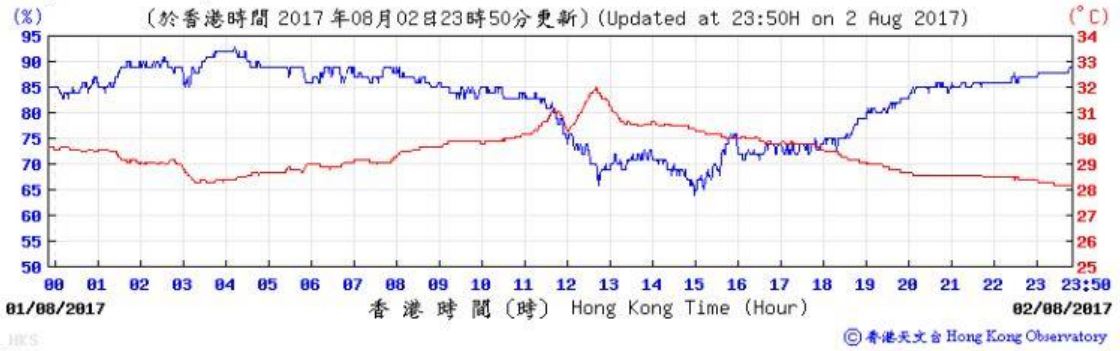
Wind Direction:

Wind Speed:



2/8/2017

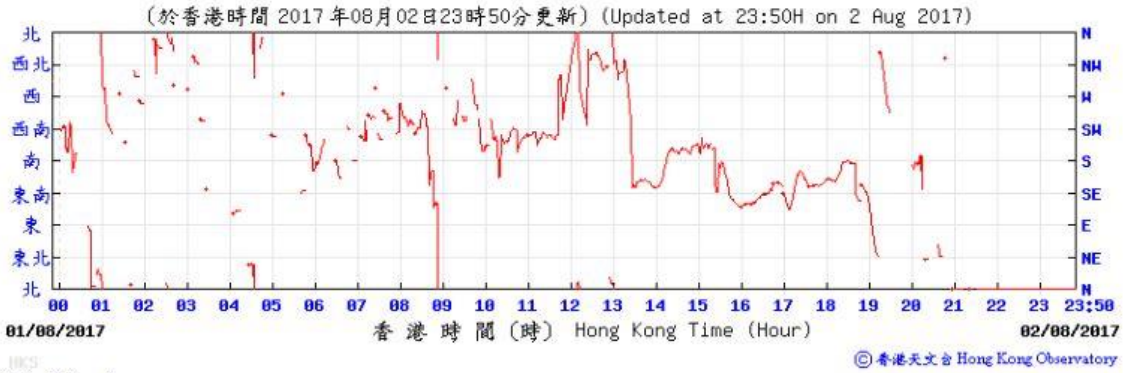
Tempearture/Humidity:



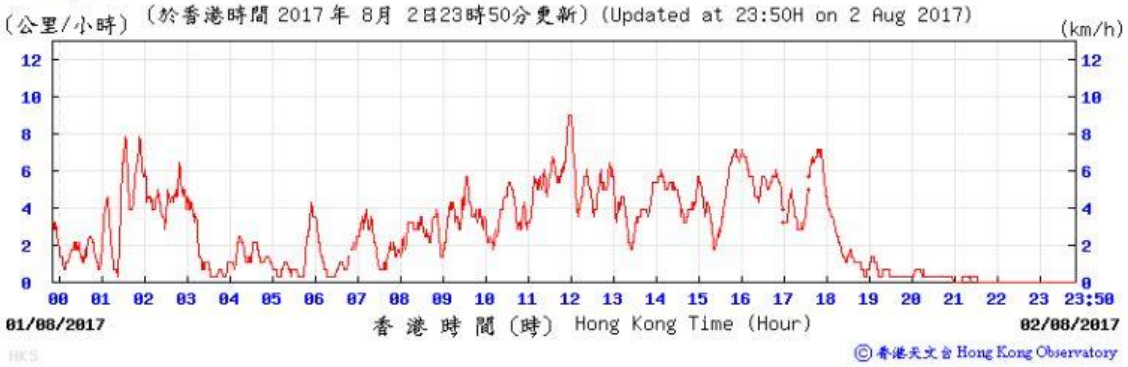
Pressure:

☒

Wind Direction:

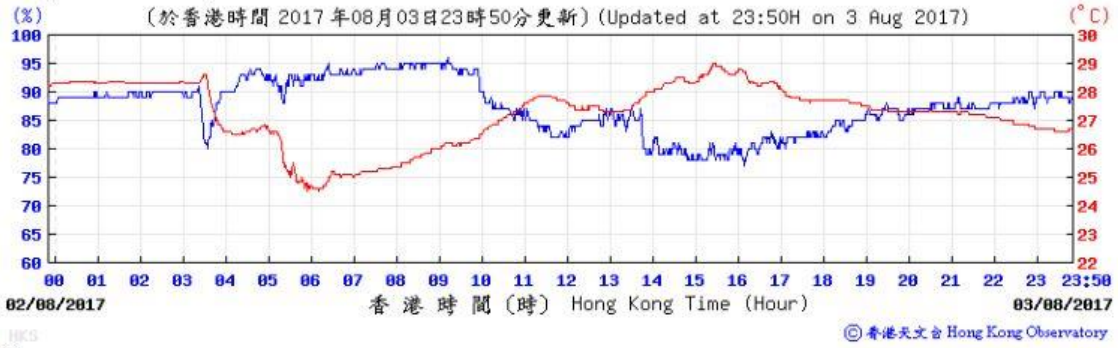


Wind Speed:



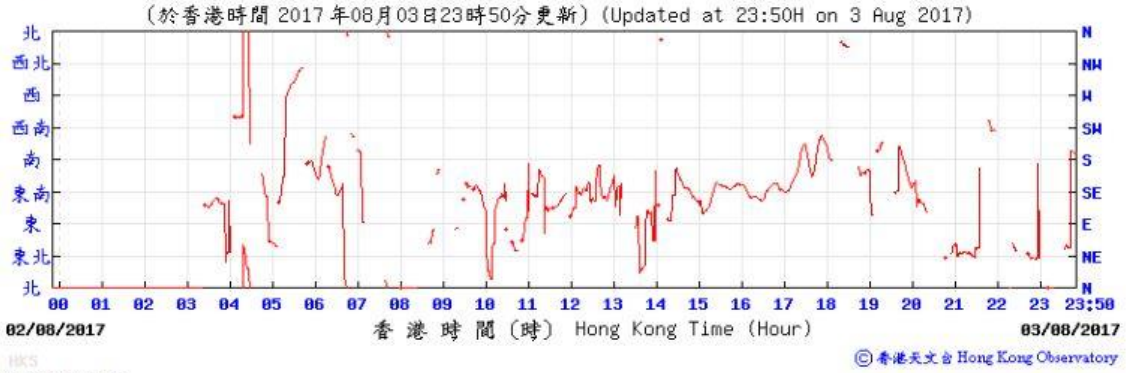
3/8/2017

Tempearture/Humidity:

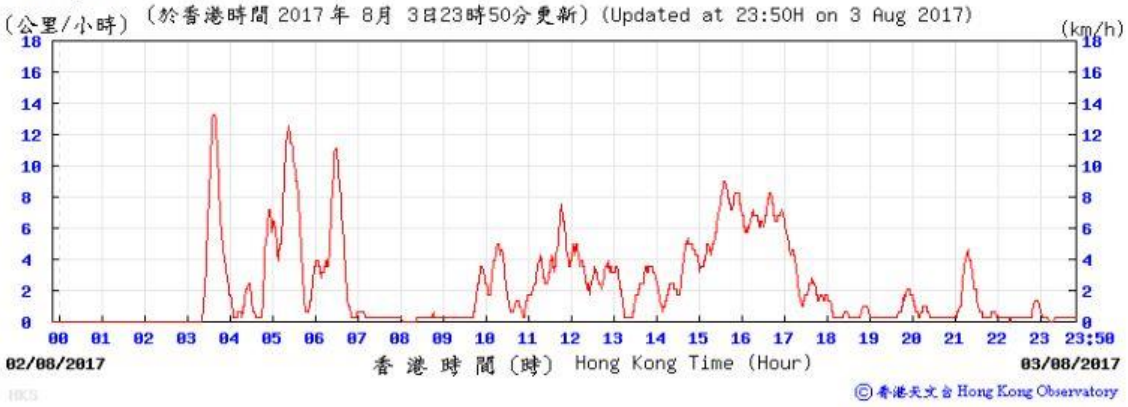


Pressure:

Wind Direction:

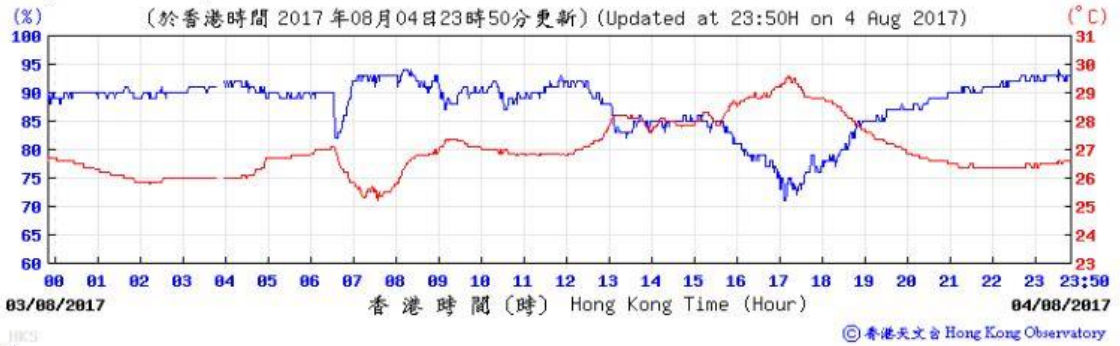


Wind Speed:



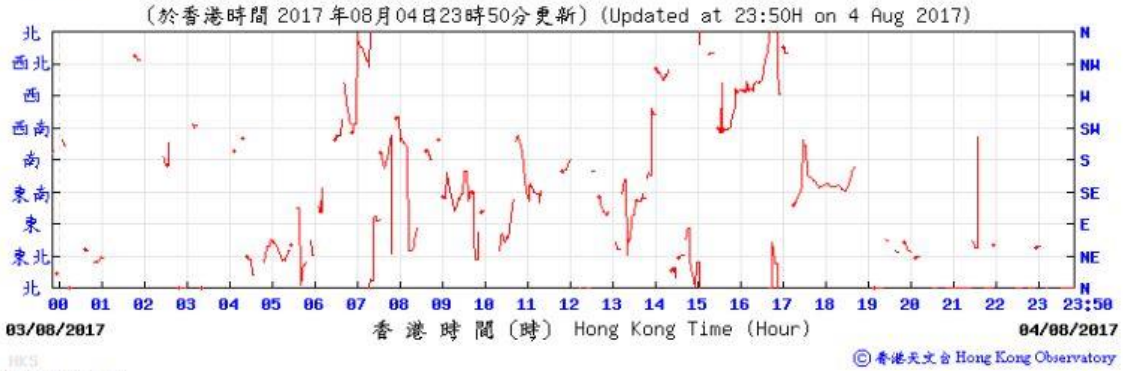
4/8/2017

Tempearture/Humidity:

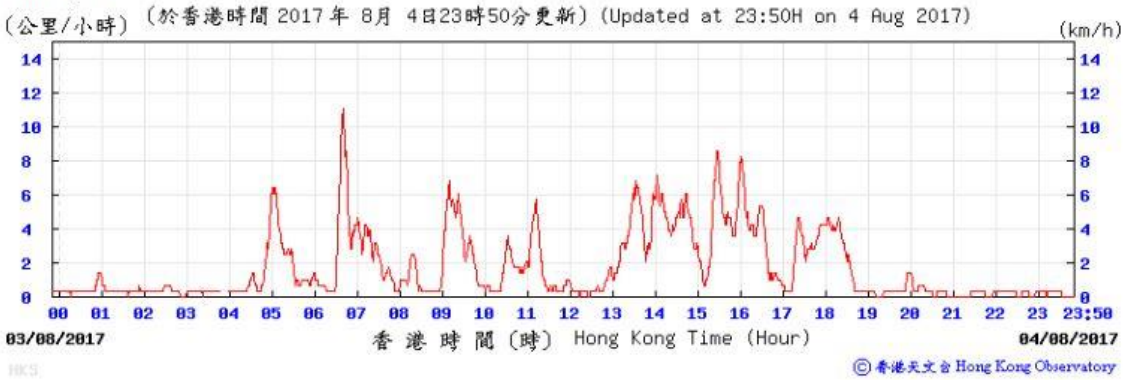


Pressure:

Wind Direction:

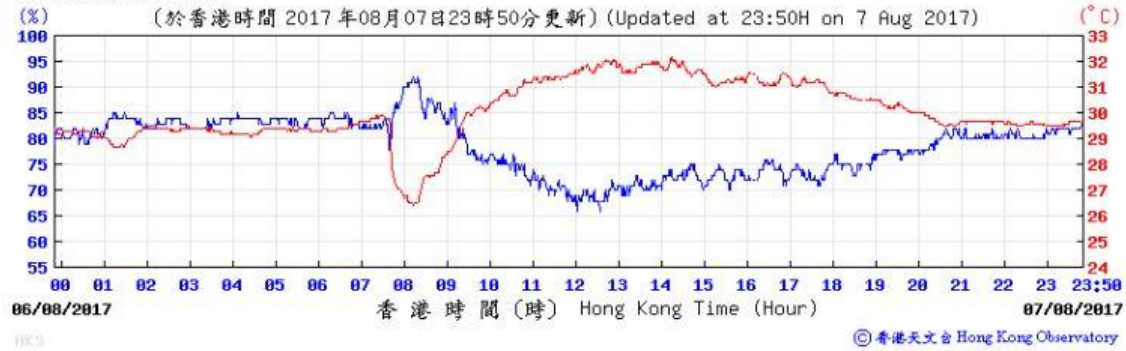


Wind Speed:



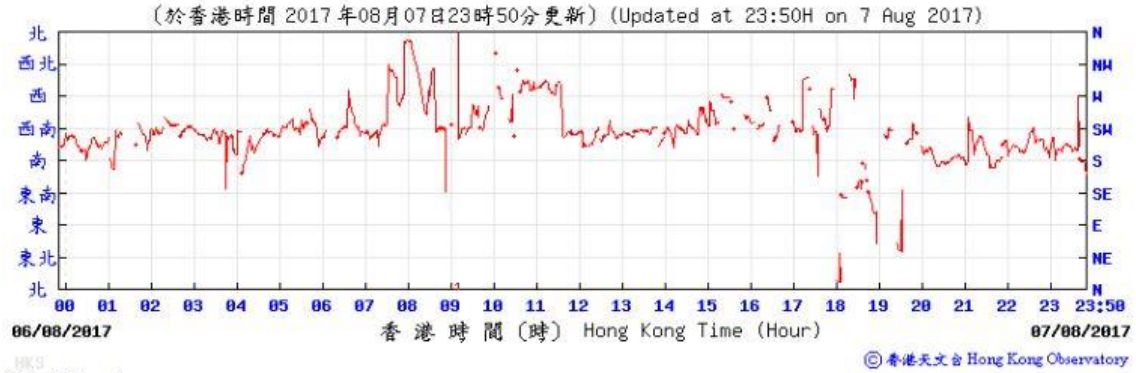
7/8/2017

Tempearture/Humidity:



Pressure:

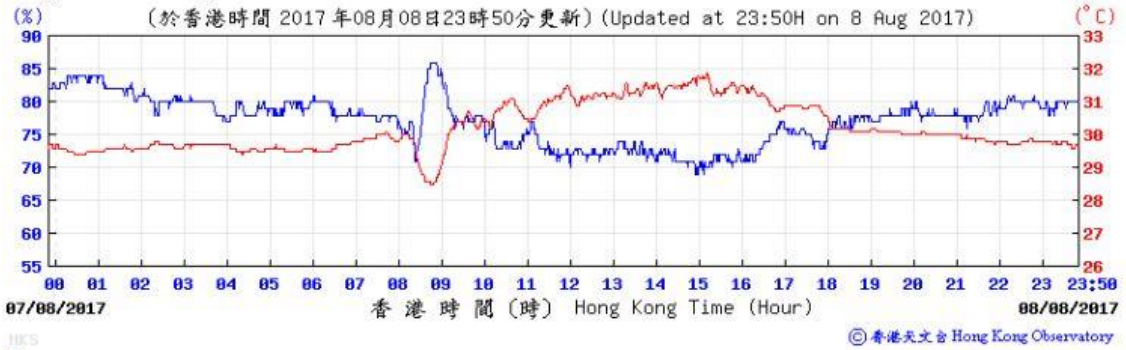
Wind Direction:



Wind Speed:

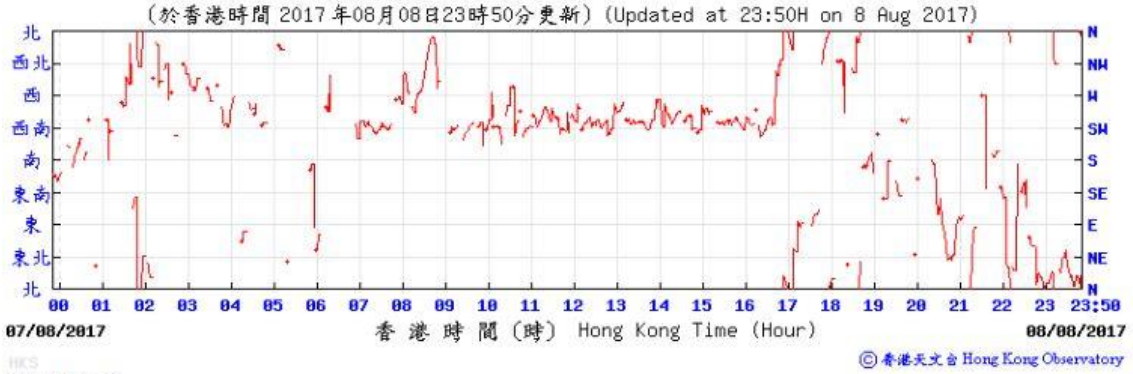
8/8/2017

Tempearture/Humidity:

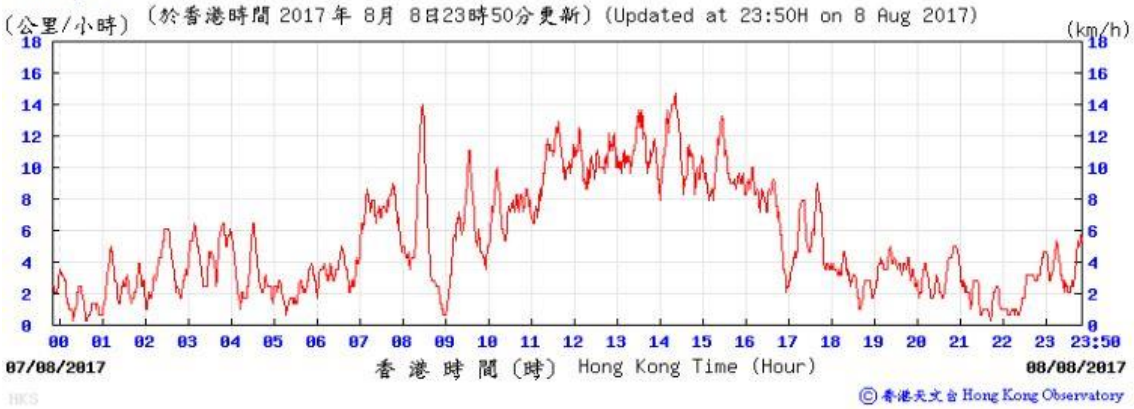


Pressure:

Wind Direction:

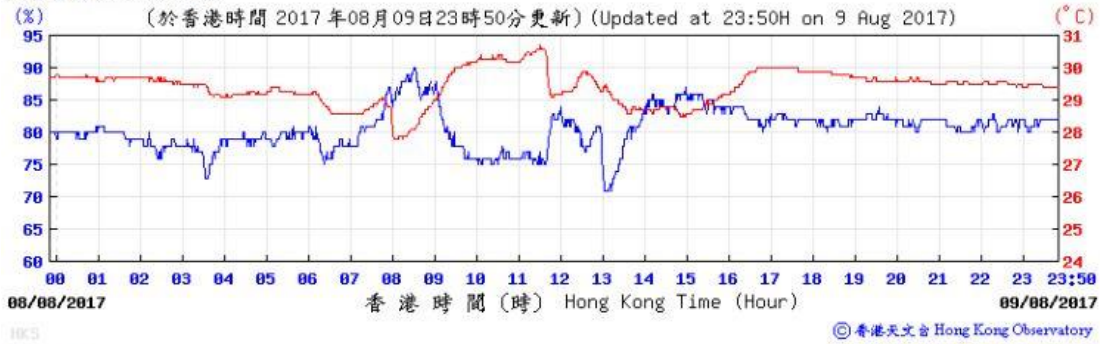


Wind Speed:



9/8/2017

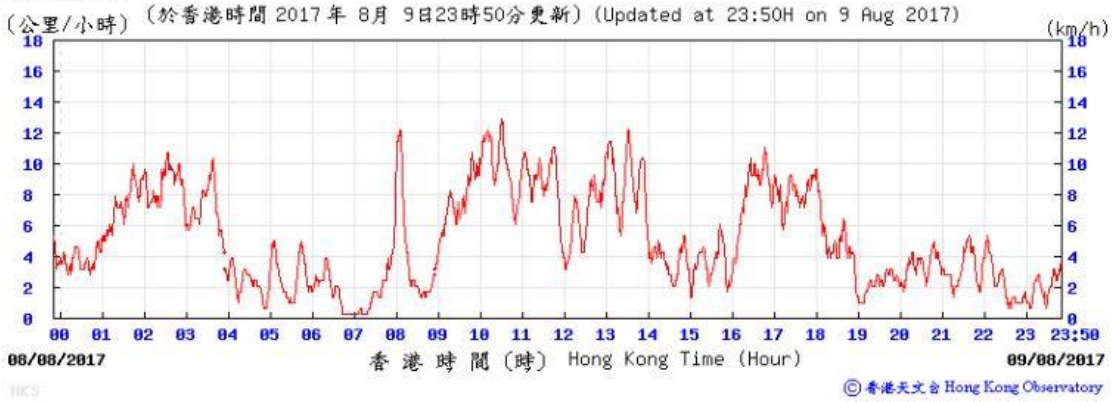
Tempearture/Humidity:



Pressure:

Wind Direction:

Wind Speed:



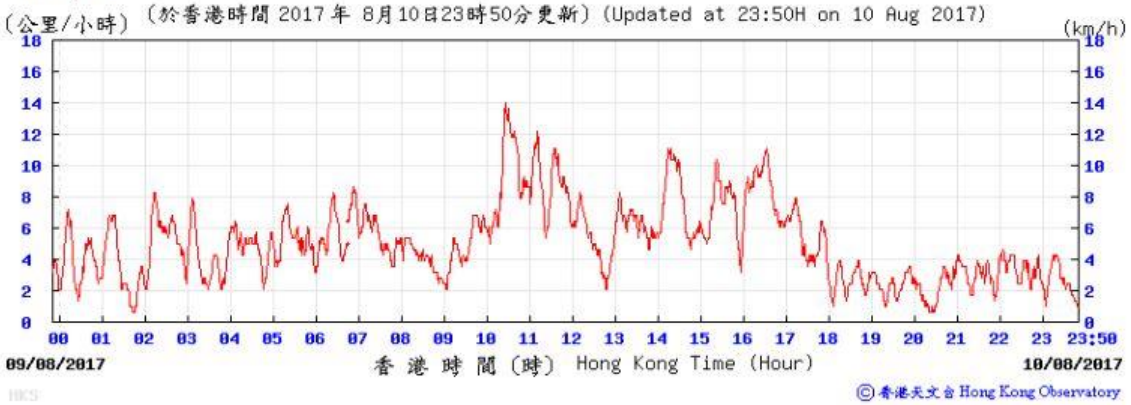
10/8/2017

Tempearture/Humidity:

Pressure:

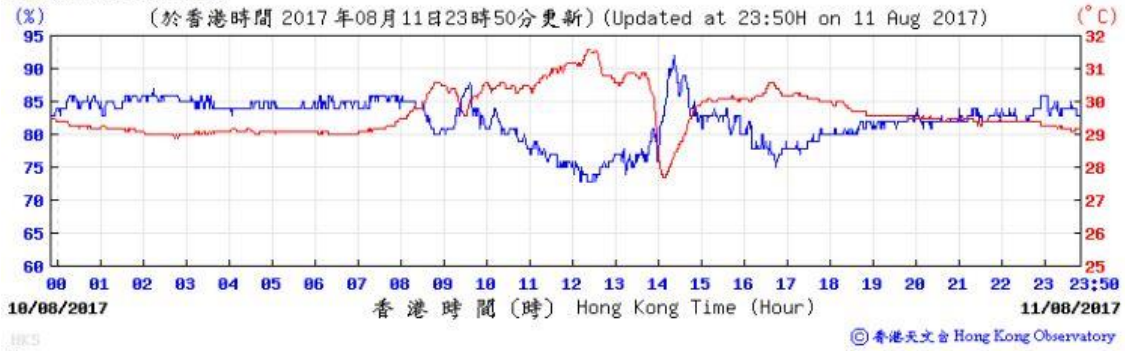
Wind Direction:

Wind Speed:



11/8/2017

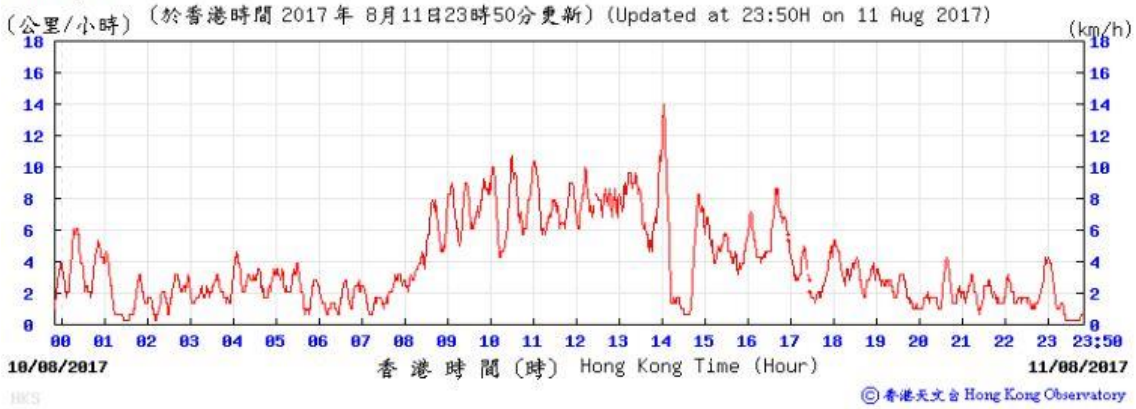
Tempearture/Humidity:



Pressure:

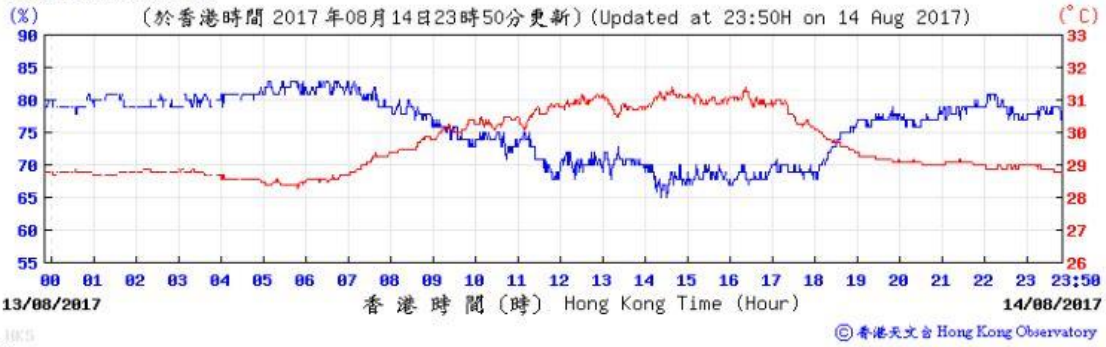
Wind Direction:

Wind Speed:



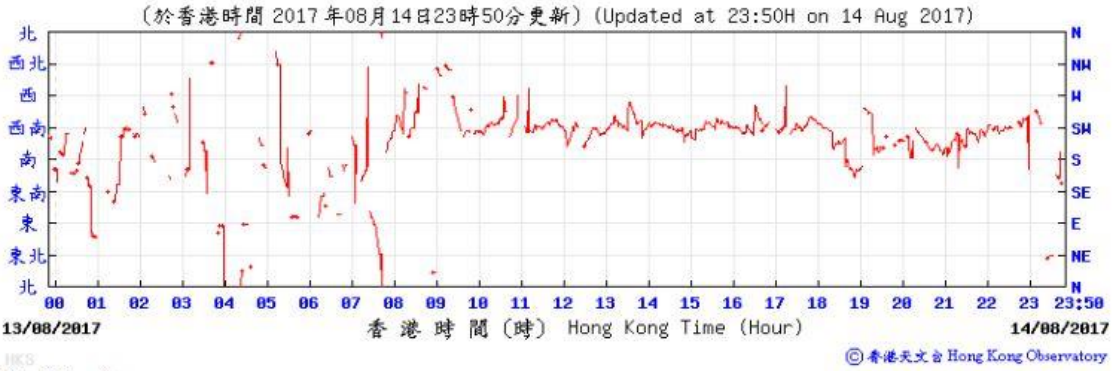
14/8/2017

Tempearture/Humidity:

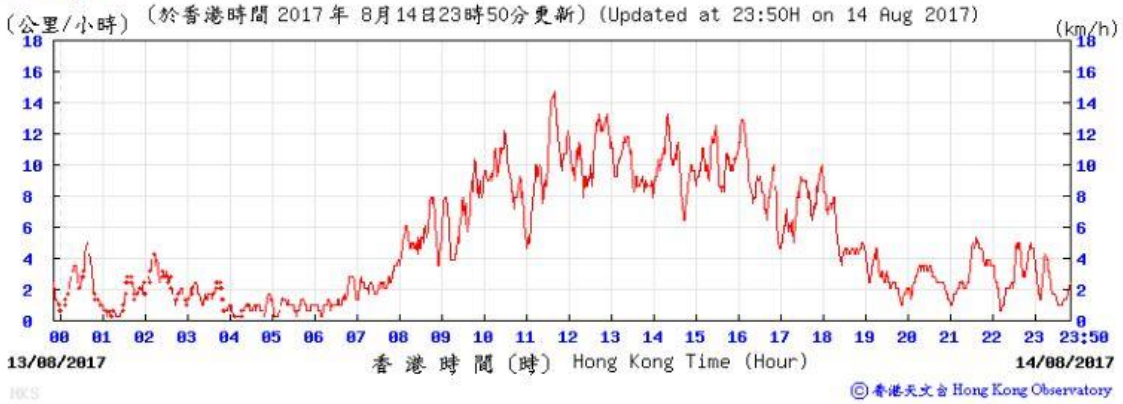


Pressure:

Wind Direction:

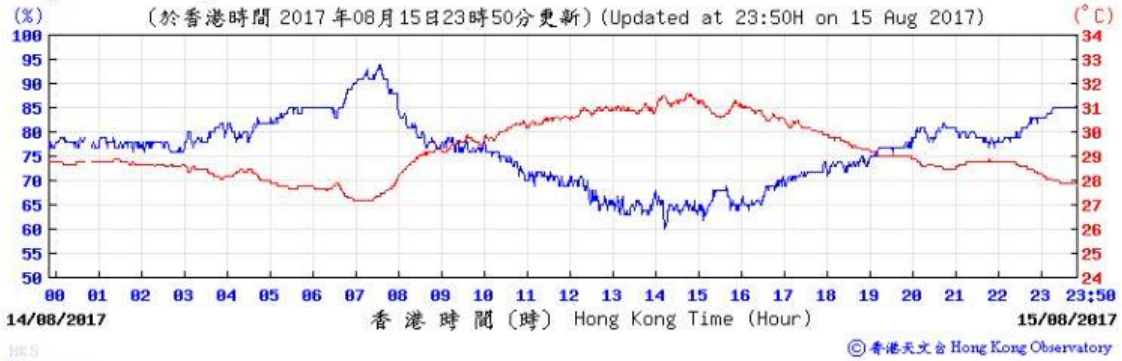


Wind Speed:



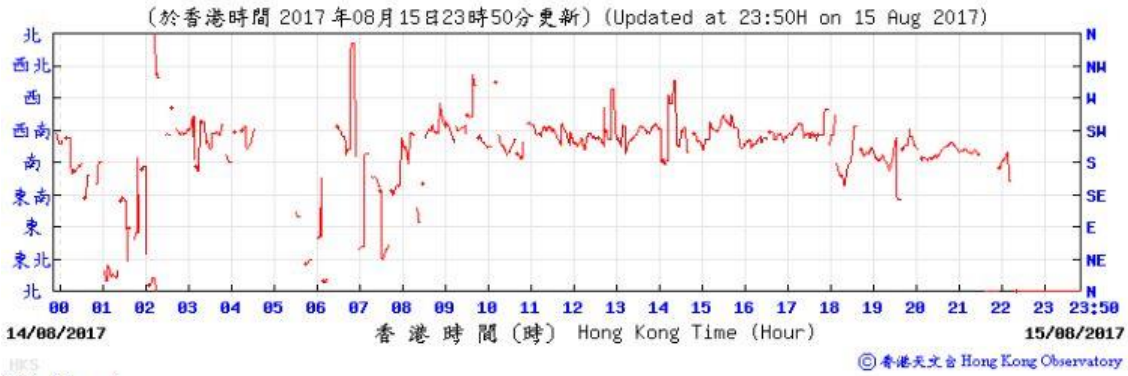
15/8/2017

Tempearture/Humidity:

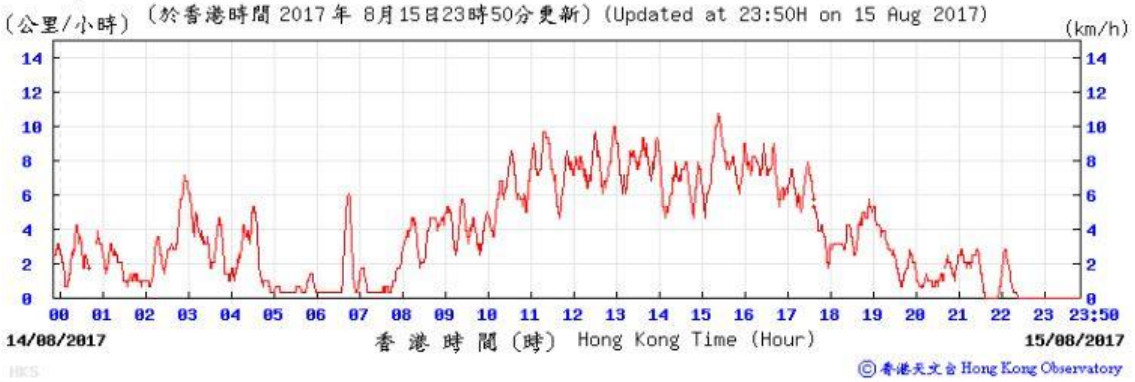


Pressure:

Wind Direction:

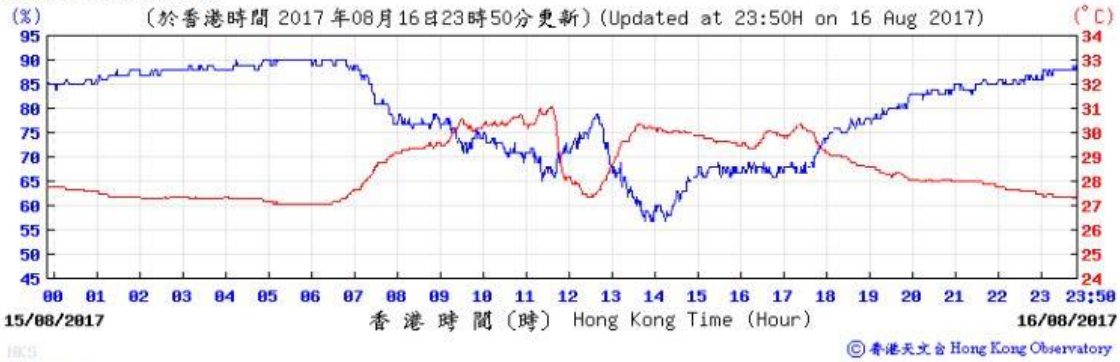


Wind Speed:



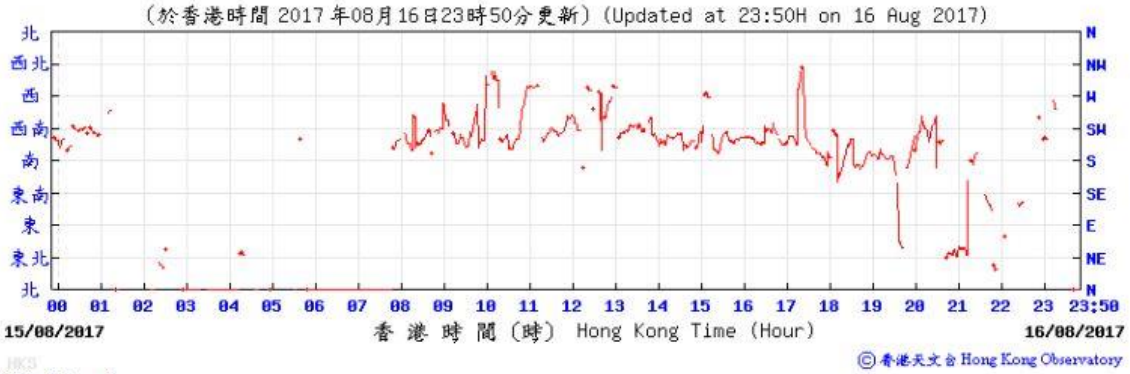
16/8/2017

Tempearture/Humidity:

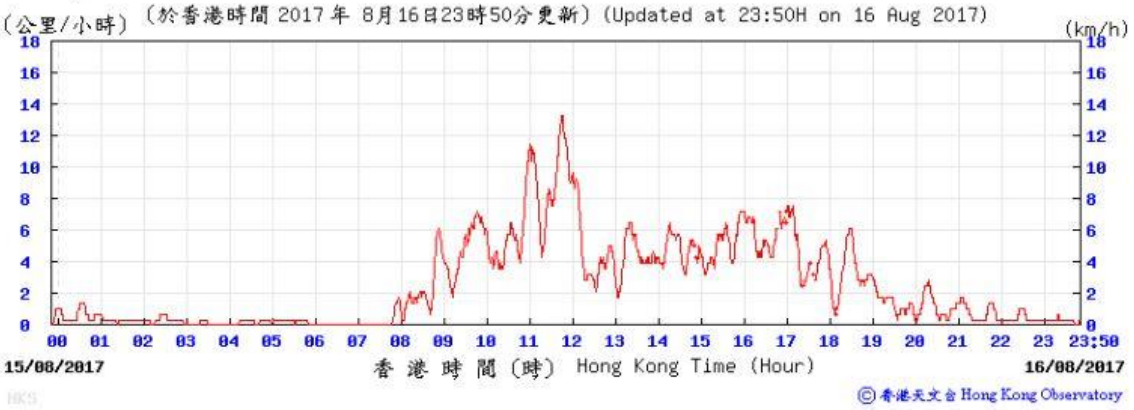


Pressure:

Wind Direction:

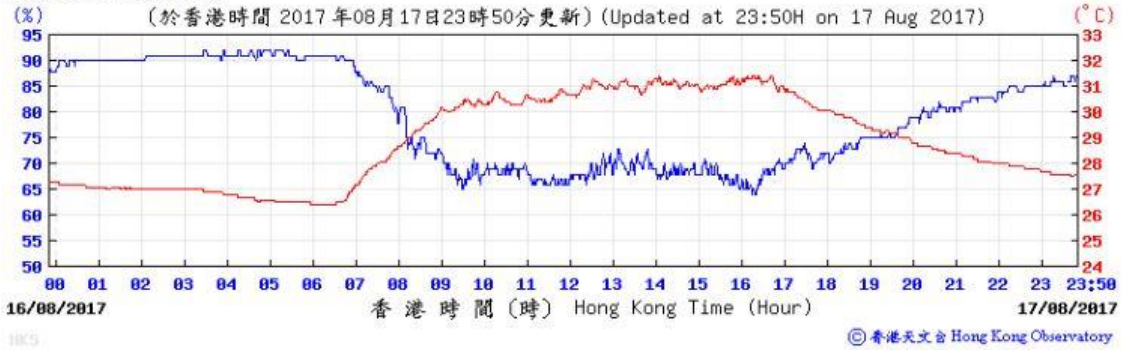


Wind Speed:



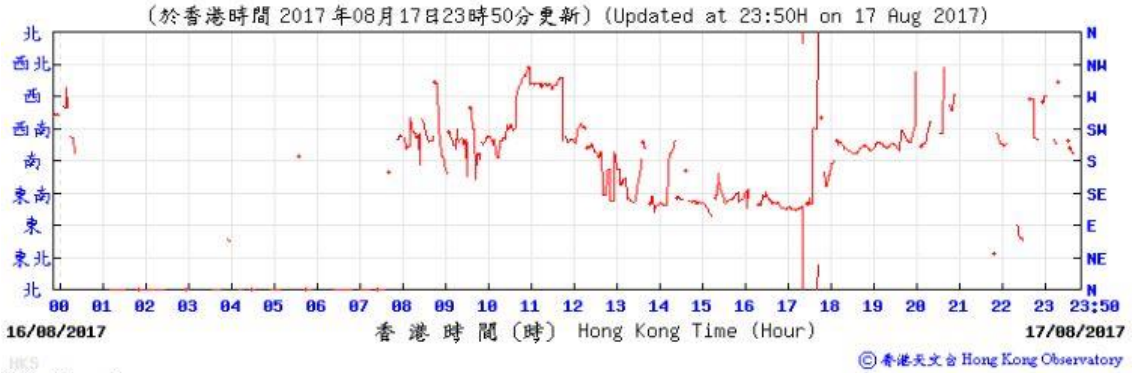
17/8/2017

Tempearture/Humidity:

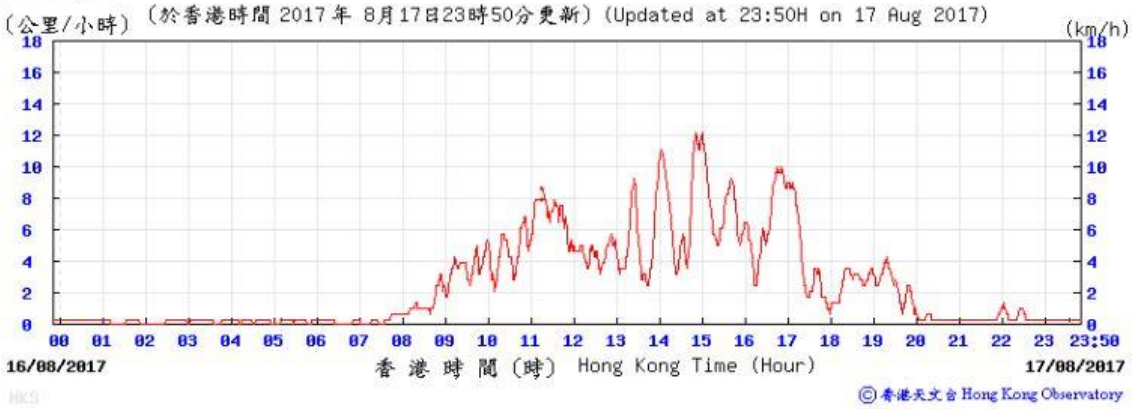


Pressure:

Wind Direction:

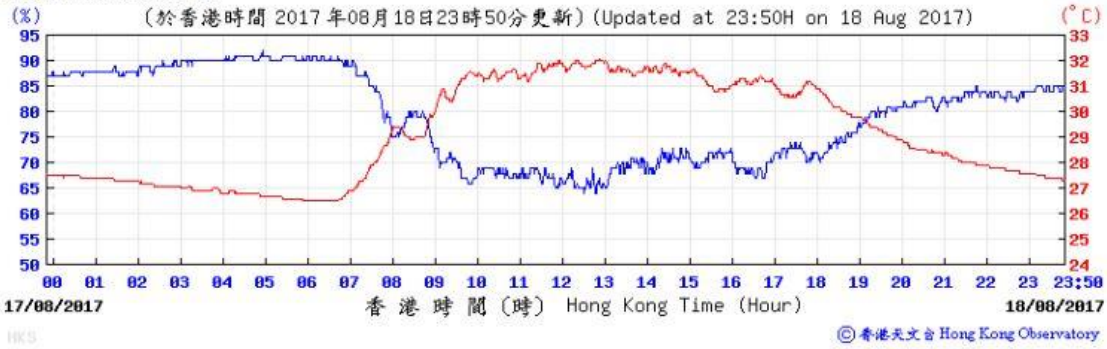


Wind Speed:



18/8/2017

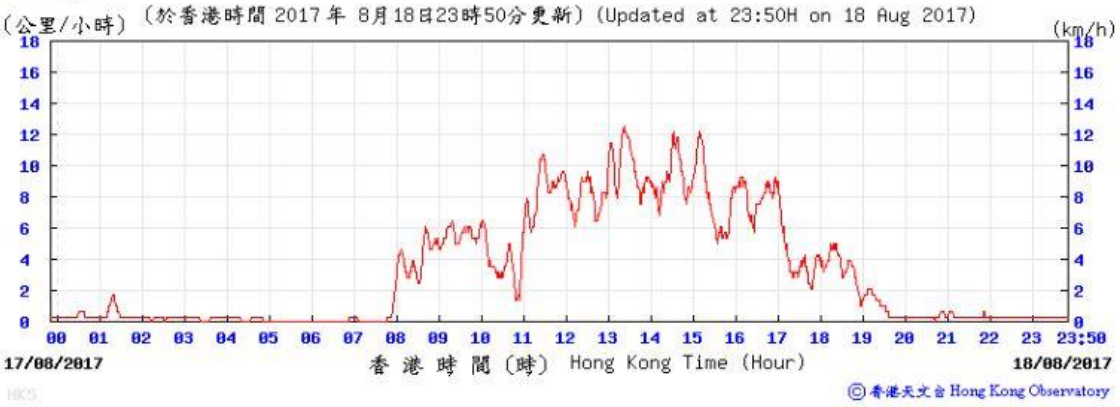
Tempearture/Humidity:



Pressure:

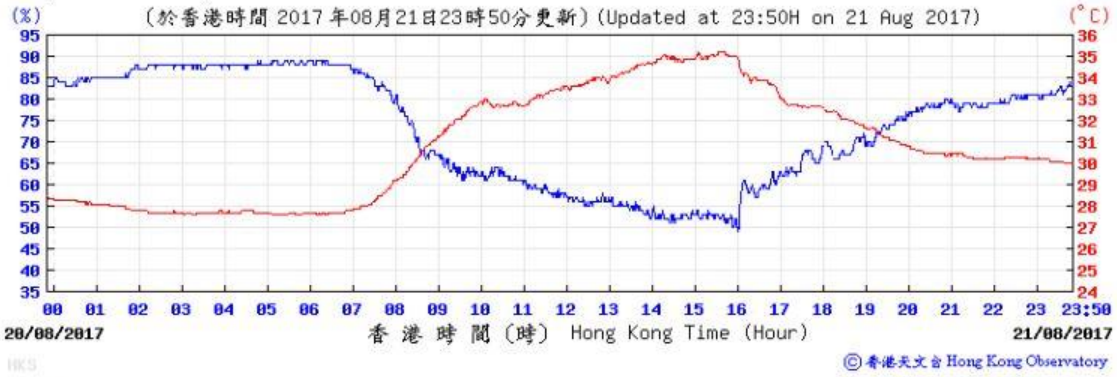
Wind Direction:

Wind Speed:



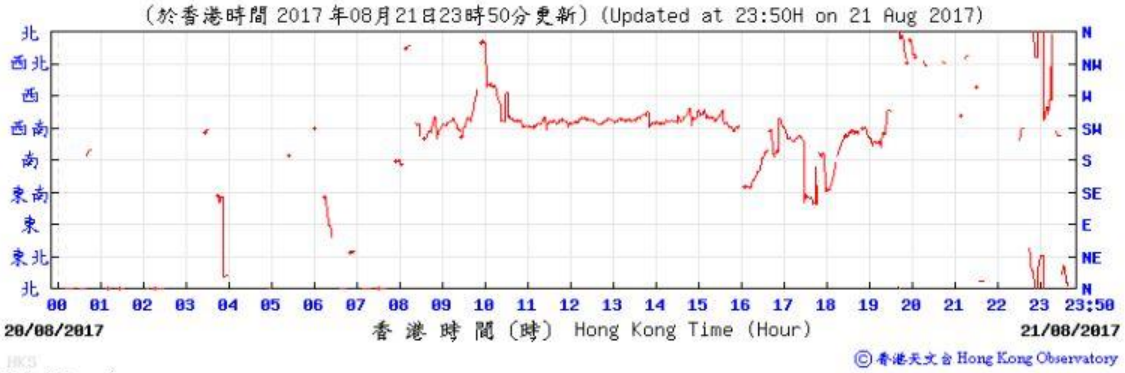
21/8/2017

Tempearture/Humidity:

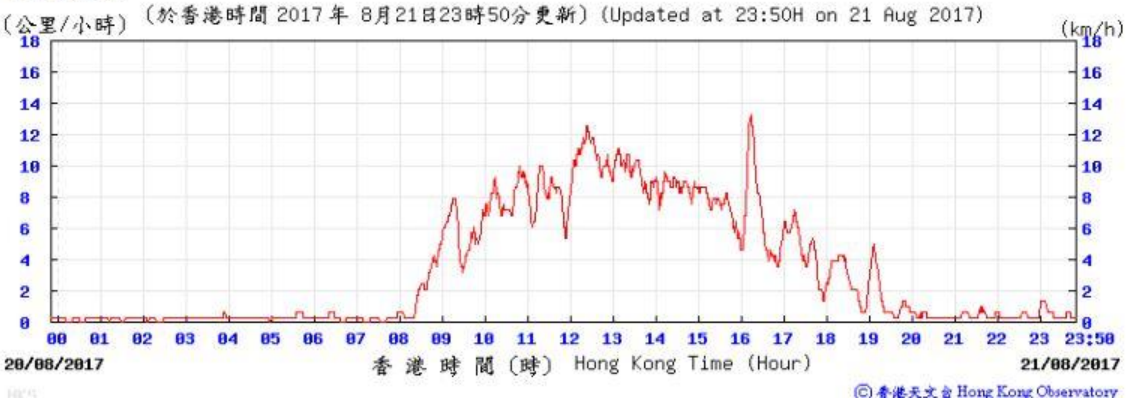


Pressure:

Wind Direction:

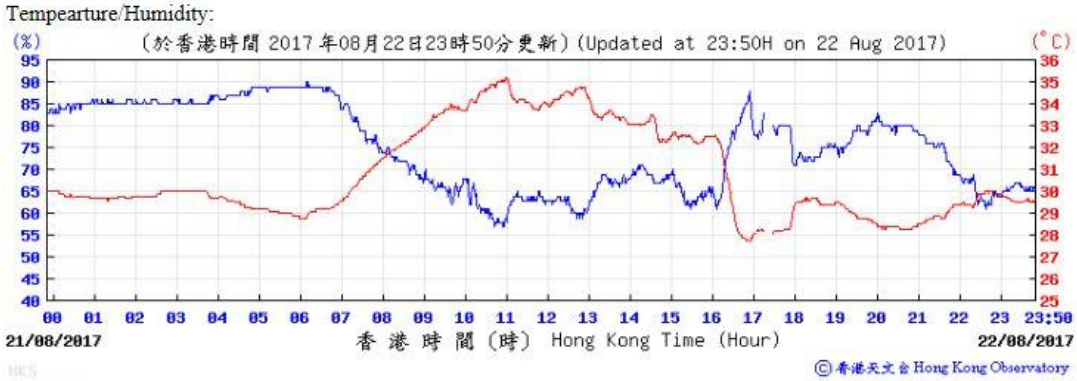


Wind Speed:



22/8/2017

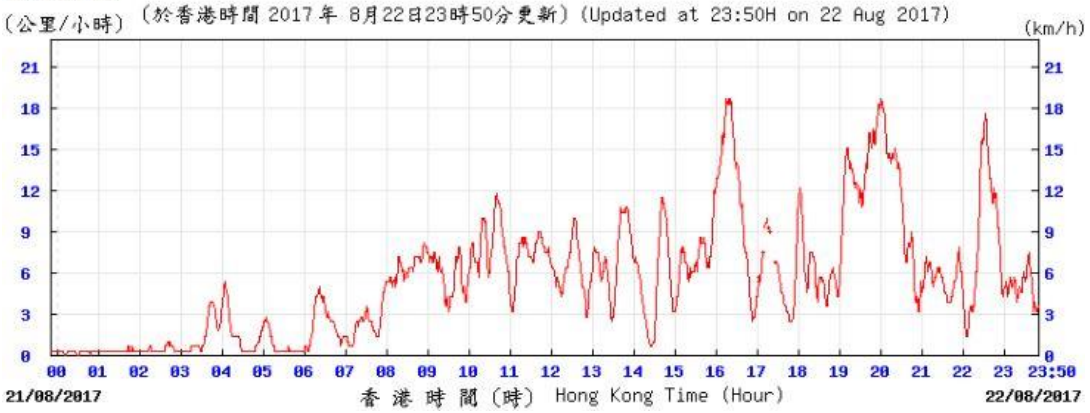
Tempearture/Humidity:



Pressure:

Wind Direction:

Wind Speed:



23/8/2017

Tempearture/Humidity:

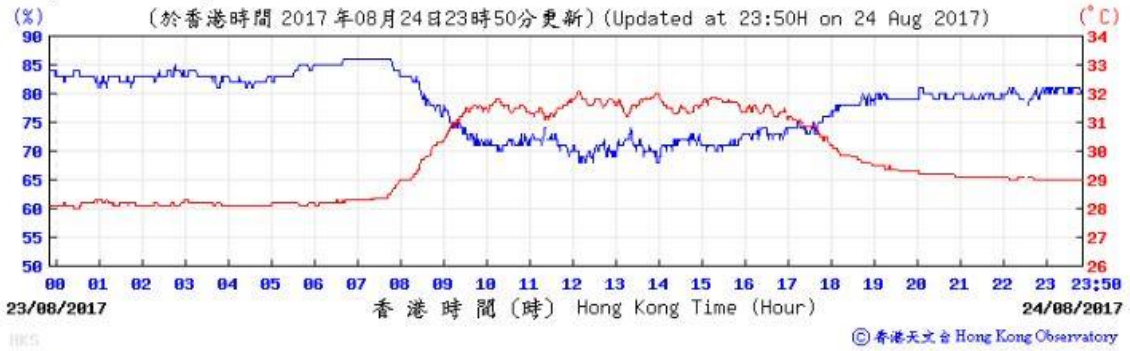
Pressure:

Wind Direction:

Wind Speed:

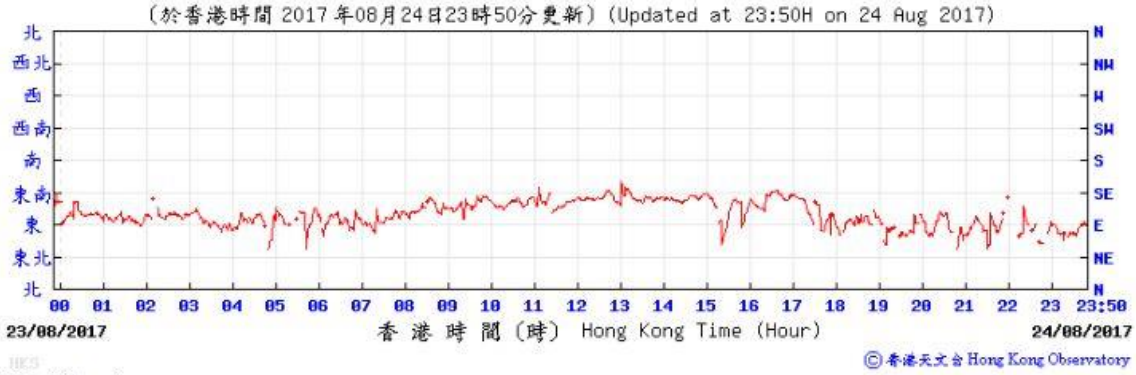
24/8/2017

Tempearture/Humidity:

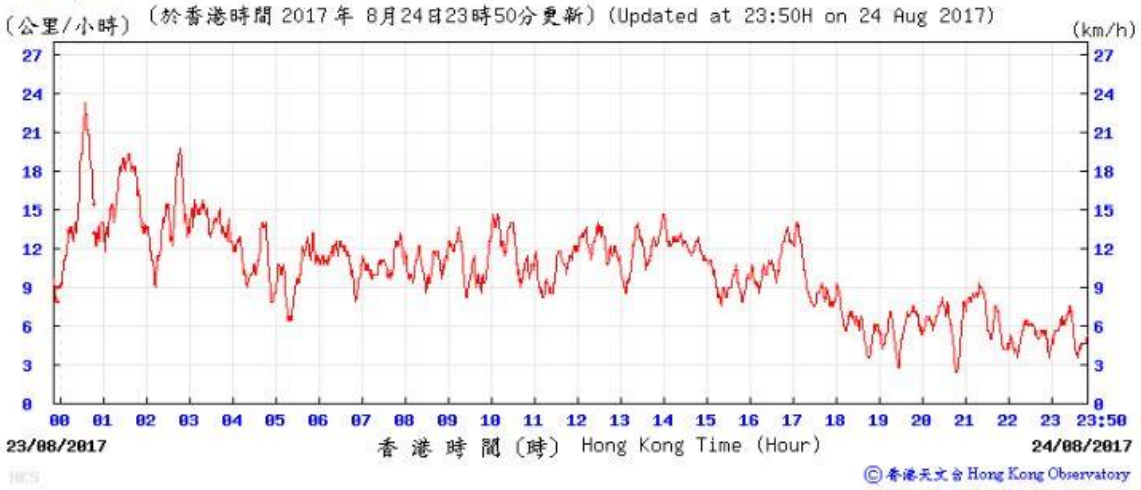


Pressure:

Wind Direction:

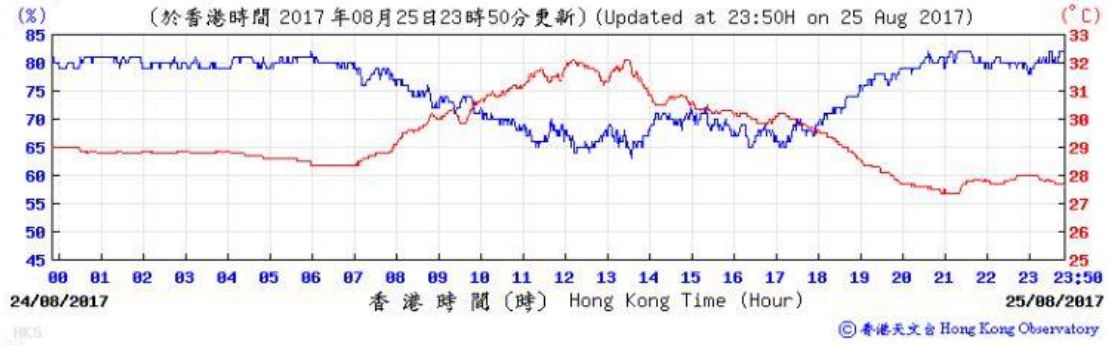


Wind Speed:



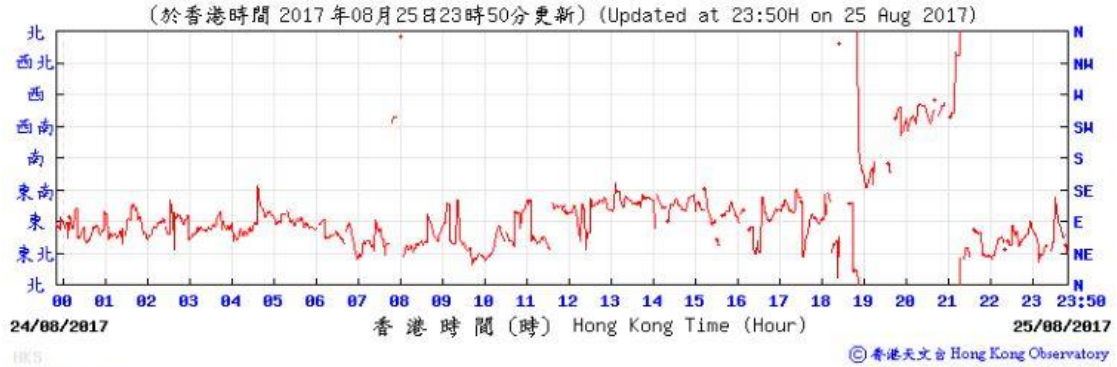
25/8/2017

Tempearture/Humidity:

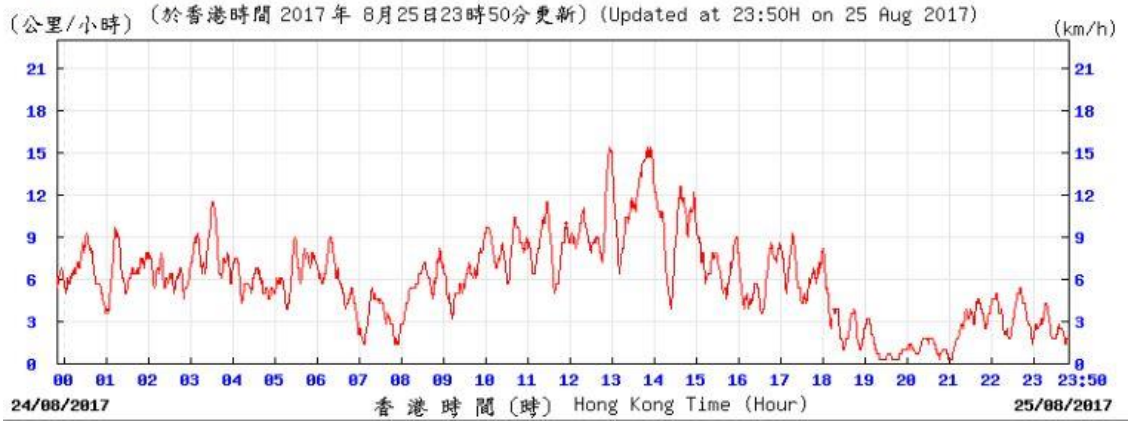


Pressure:

Wind Direction:

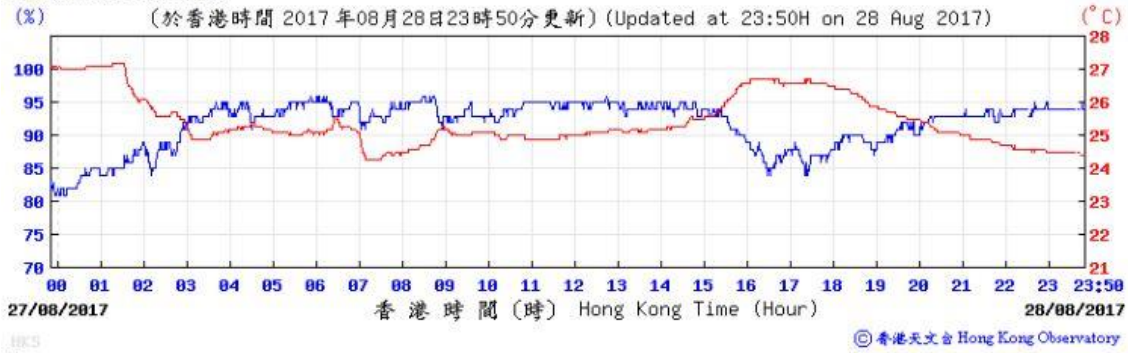


Wind Speed:



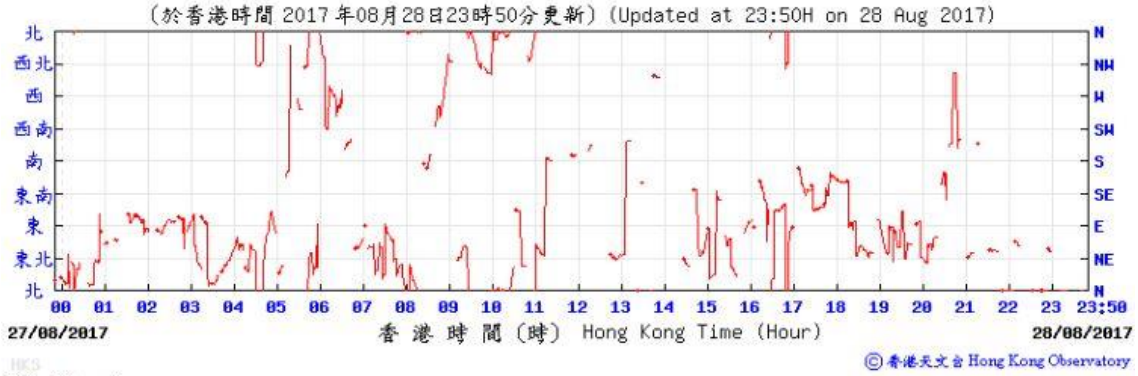
28/8/2017

Tempearture/Humidity:



Pressure:

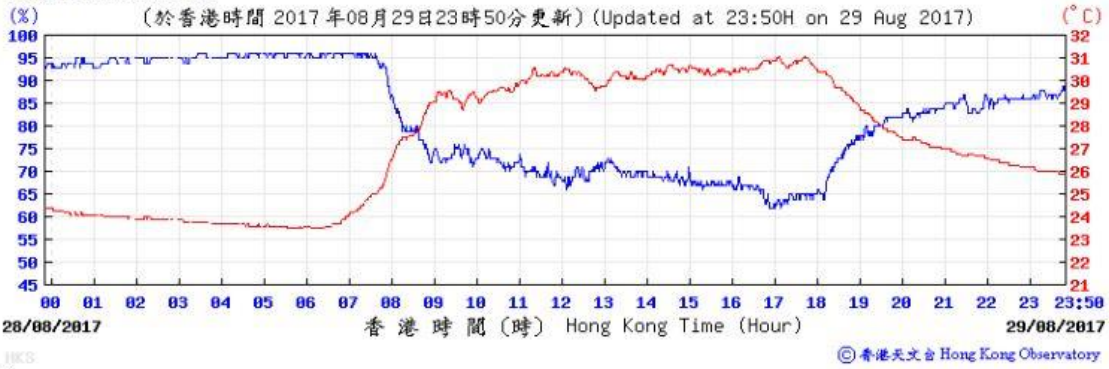
Wind Direction:



Wind Speed:

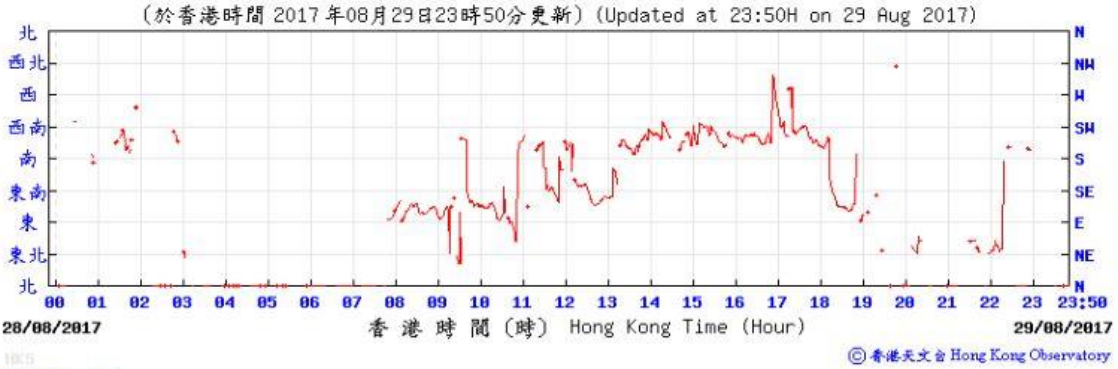
29/8/2017

Tempearture/Humidity:

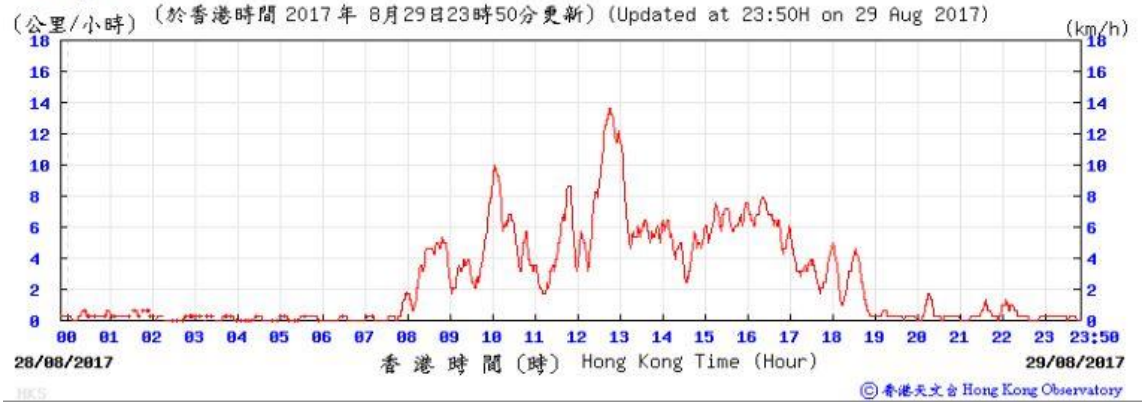


Pressure:

Wind Direction:



Wind Speed:



30/8/2017

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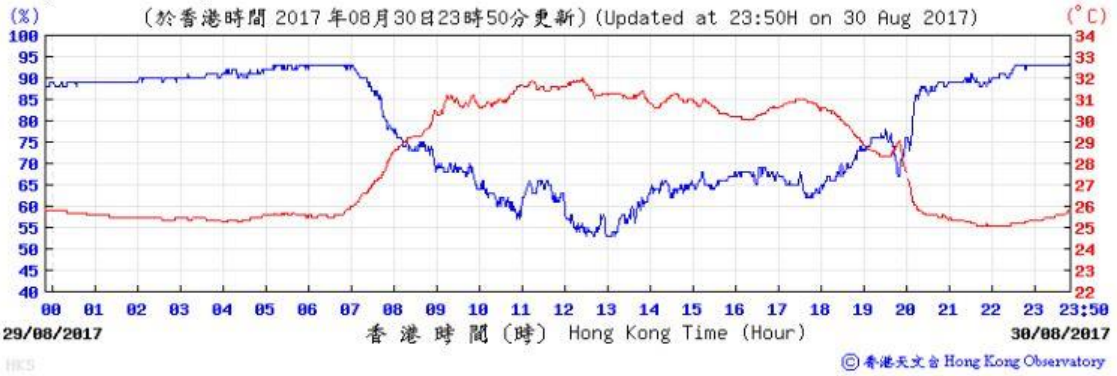
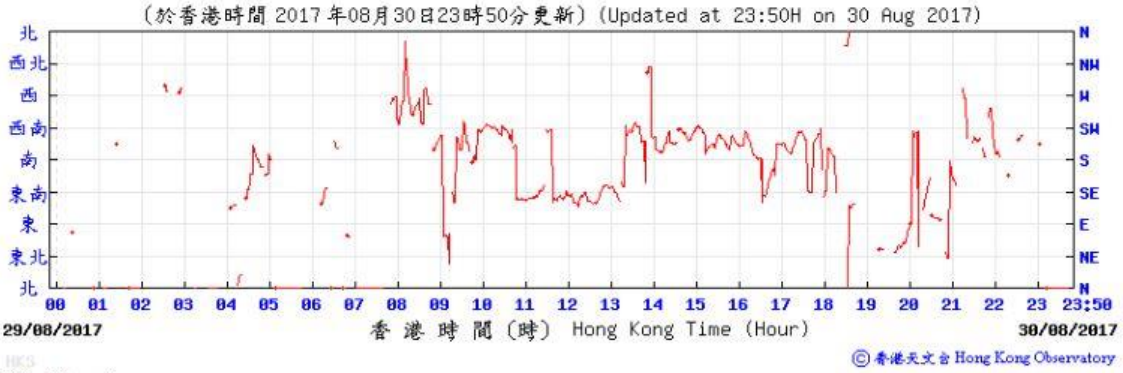


Pressure:

Wind Direction:



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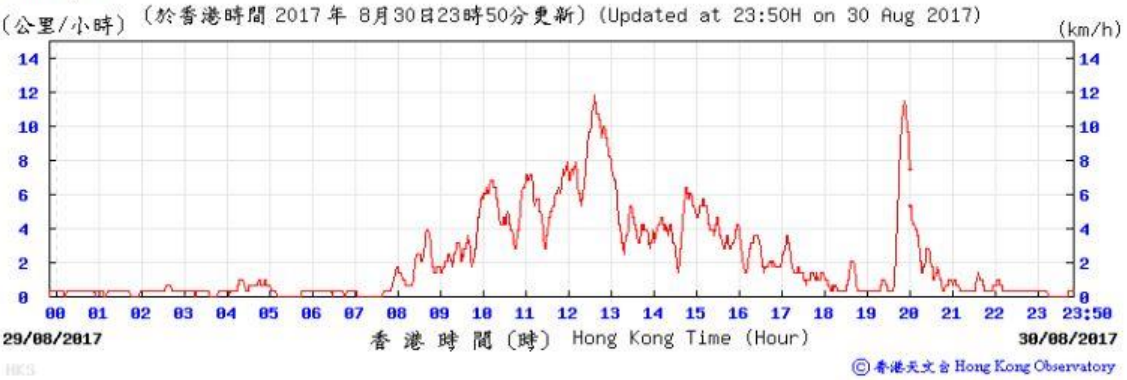
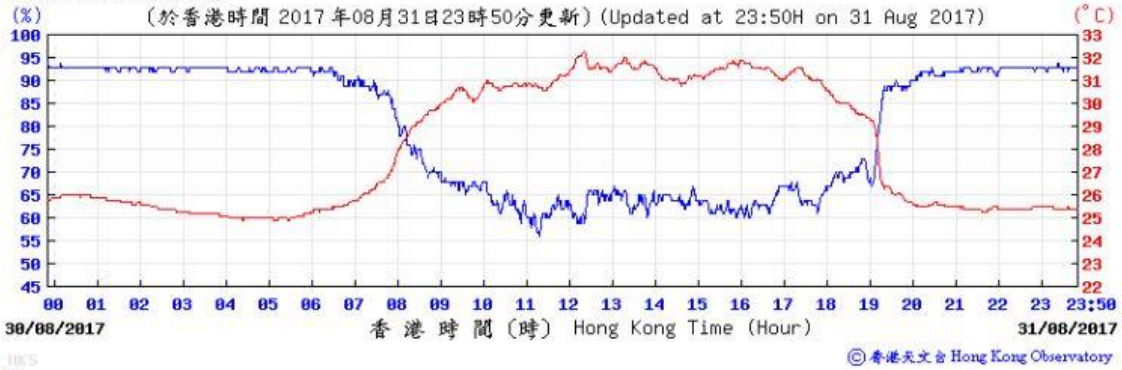


31/8/2017

Tempearture/Humidity:



Pressure:

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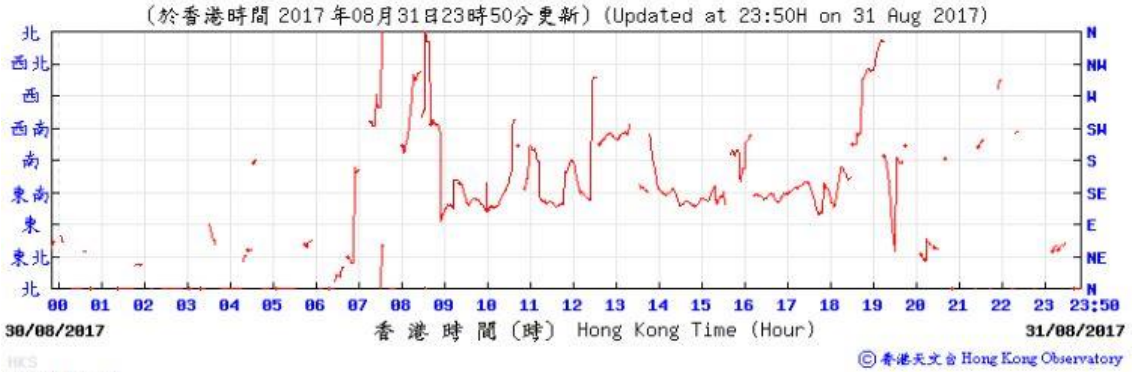
Wind Direction:



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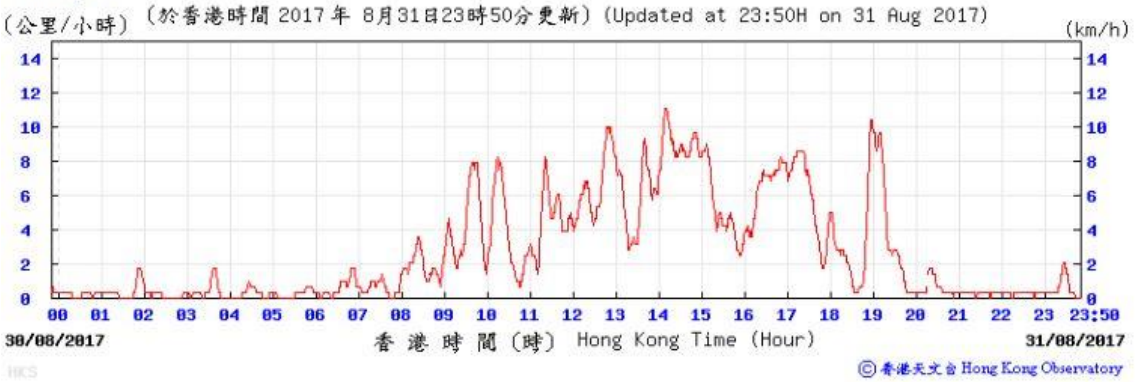

L. Ecological Inspection Records

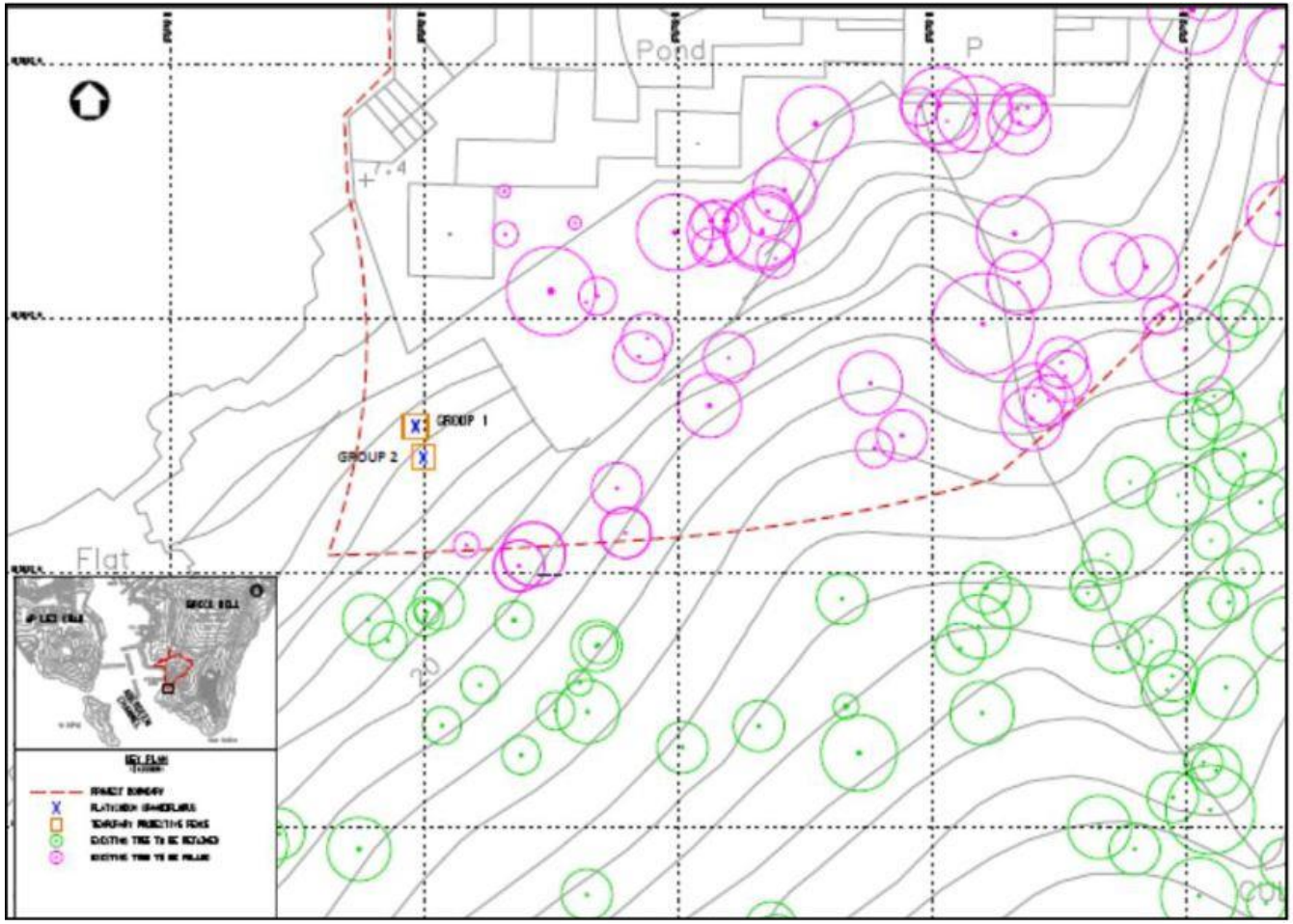

Figure 1 – Location of Two Groups of *Platycodon Grandiforus*

	Photo 1 – Group 1 of *Platycodon Grandiforus*
	Photo 2 – Group 2 of *Platycodon Grandiforus*

	Photo 3 – Current situation of fencing and warning sign

M. Waste Flow Table

Ocean Park
Tai Shue Wan Water World Project Contact No. TSW-C006
Waterpark - Main Building Works

Monthly Summary Waste Flow Table for 2017 (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	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)	(kg)	(kg)	(kg)	(kg)	(Tonne)
Jan												
Feb												
Mar												
Apr												
May												
Jun	4917.45	3061.36	156.09	3217.45	1700.00	0.00	1700.00	0.00	210.00	0.00	0.00	60.93
SUB-TOTAL	4917.45	3061.36	156.09	3217.45	1700.00	0.00	1700.00	0.00	210.00	0.00	0.00	60.93
Jul	7447.78	6416.15	191.63	6607.78	840.00	0.00	840.00	0.00	210.00	0.00	0.00	45.82
Aug	4168.41	2211.67	356.74	2568.41	1600.00	0.00	1600.00	0.00	336.00	0.00	0.00	52.86
Sep												
Oct												
Nov												
Dec												
TOTAL	16533.64	11689.18	704.46	12393.64	4140.00	0.00	4140.00	0.00	756.00	0.00	0.00	159.61

N. Implementation Schedule for Environmental Mitigation Measures

Appendix C. Implementation Schedule for Environmental Mitigation Measures

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

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of measures / Timing of completion of measures	Implementation Agent	Implementation Stage[1]				Relevant Legislation & Guidelines
					Des	Con	Op	Dec	
		inspection should be carried out to confirm no Short-nosed Fruit Bat is present. If any Short-nosed Fruit Bat is observed roosting, suitably sized buffer area should be established around the tree to minimise human or machinery disturbance until the bat has left.	the trees						
10.7	8.3	**In-situ Preservation of Plant Species of Conservation Interest** During construction phase, protective fence for the identified flora species of conservation concern shall be erected and maintained.	Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC		✓			EIAO-TM
10.7	8.3	**Inspection of Ardeid Nest during breeding season** After commencement of construction phase, the Site should be monitored monthly in breeding season (April to July) to check for any potential breeding and nesting activities.	Project construction site / Throughout construction stage / Until completion of all construction activities	Qualified ecologist appointed by OPC		✓			EIAO-TM
10.7	8.2	**Timing of site clearance and tree felling works** Site clearance and tree felling works at the existing ardeid night roost location as shown in Figure 8.1 should be avoided during the peak wintering season of ardeids, i.e. between November and March.	Indicative boundary of the ardeids roosting site within Project construction site (location indicated in Figure 8.1) / Throughout construction stage / Until completion of site clearance and tree felling works within the boundary	Contractor appointed by OPC		✓			EIAO-TM
10.7	8.3	**Compensation for Ardeid Roosting Site** An enhancement area with following features should be provided as an alternative roosting site for ardeids. ▪ The location is at southern part of the Project area (location indicated in Figure 8.1) ▪ The enhancement area shall include a Flamingo Pond ▪ Native tree species *Macaranga tanarius* and *Celtis sinensis* and tree species which was used by ardeids for roosting *Mallotus paniculatus, Ficus hispida* and *Cratoxylum cochinchinense* shall be considered in the plan. ▪ Heavy standard sized trees shall be considered for planting to allow early establishment of the trees around the Flamingo	Southern part of Project construction site (location indicated in Figure 8.1) / Before and throughout construction stage / Until completion of Flamingo Pond construction and tree planting activities at that area	Qualified ecologist and Contractor appointed by OPC	✓	✓	✓		EIAO-TM

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of measures / Timing of completion of measures	Implementation Agent	Implementation Stage[1] Des	Con	Op	Dec	Relevant Legislation & Guidelines
		Pond.							
10.7	8.3	**Compensation for Woodland Habitat** ▪ Provision of a Woodland Area of about 1.62 ha, which includes 0.84 ha woodland compensation on-site and 0.78 ha on-site woodland reinstatement, to mitigate for permanent loss of woodland habitat. ▪ In the woodland compensation area, whips should be planted with predominately native tree species similar to the affected woodland, such as *Celtis sinensis*, *Cratoxylum cochinchinense*, *Polyspora axillaris* and *Sterculia lanceolata*.	Location of Woodland Compensation Area indicated in Figure 8.2/ Before and throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC	✓	✓	✓		EIAO-TM
Landscape and Visual Impact (Construction)									
Table 12.13 (CP07)	Table 9.1 (CP07)	**Temporary Tree Nurseries** 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.	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)	**Advance Planting** 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.	Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC	✓	✓			EIAO-TM
Landscape and Visual Impact (Operation)									
Table 12.14 (OP04)	Table 9.2 (OP04)	**Green Roofs and Vertical Greening** Green Roofs and Vertical Greening should be provided where feasible and appropriate to screen and soften the hard edges of	Project building rooftops / During design stage / Throughout operation	Design Architect / Contractor appointed by OPC	✓		✓		EIAO-TM

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of measures / Timing of completion of measures	Implementation Agent	Implementation Stage[1] Des	Con	Op	Dec	Relevant Legislation & Guidelines
		building structures.	phase						
Table 12.14 (OP05)	Table 9.2 (OP05)	**Reprovision of Flamingo Pond** A pond is recommended to replace the demolished Flamingo Pond as compensation for the loss of semi-natural ponds, where wildlife, such as birds, can utilise.	Project area / During design stage / Throughout operation phase	Design Architect / Contractor appointed by OPC	✓		✓		EIAO-TM
Table 12.14 (OP07)	Table 9.2 (OP07)	**Woodland Compensation** 1.53ha of affected woodland is recommended to be reinstated / compensated by 1.62ha of whip tree planting adjacent to the existing unaffected woodland and tall shrubland. Native species should be proposed as far as practicable to re-create a native landscape, restore the ecological habitats and blend in with the existing native vegetation.	Project area / During design stage / Throughout operation phase	Design Architect / Contractor appointed by OPC	✓		✓		EIAO-TM
Cat. 2 Submission required post EIA stage									
Sewerage and Sewage Treatment Implications									
7.7	5.2	**Detailed Sewerage Design Report** In order to prevent septicity problems during operation phase, a detailed sewerage design report should be submitted to DSD for approval prior to installation of the rising mains.	Rising mains site / During design stage	Design Engineer	✓				Sewerage Manual Part 1
Ecological Impact (Construction)									
10.7	8.3	**Vegetation Survey for Plant Species of Conservation Interest** For precautionary purposes and to further ensure no flora species of conservation interest to be affected, a detailed vegetation survey need to conduct to the exact locations, number and condition of individuals of *Platycodon grandiflorus*.	Project construction site / For once / Before site clearance	Qualified botanist/ecologist of the ET appointed by OPC	✓				EIAO-TM; Hong Kong Ordinance Cap. 96
10.7	8.3	**Woodland Compensation Plan** A Woodland Compensation Plan shall be prepared and submitted to AFCD for approval no later than one month prior to commencement of site clearance. The plan shall include but not limited to the following: ▪ Timing of planting works ▪ Planting location ▪ Species, size and number of trees ▪ Monitoring methodology	Location of Woodland Compensation Area indicated in Figure 8.2/ Before construction stage / No later than one month prior to commencement of site clearance	Qualified botanist/ecologist of the ET appointed by OPC	✓				EIAO-TM

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of measures / Timing of completion of measures	Implementation Agent	Implementation Stage[1] Des	Con	Op	Dec	Relevant Legislation & Guidelines
		▪ Action Plan							
Landscape and Visual Impact (Construction)									
Table 12.13 (CP05)	Table 9.1 (CP05)	**Transplantation of Existing Trees** 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.	Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC	✓	✓			EIAO-TM; LAO PN No. 07/2007
Landscape and Visual Impact (Operation)									
Table 12.14 (OP02)	Table 9.2 (OP02)	**Compensatory Tree Planting** 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.	Project area / During design stage / Throughout operation phase	Design Architect / Contractor appointed by OPC	✓		✓		EIAO-TM; LAO PN No. 07/2007
Cat. 3 Good site practice/housekeeping measures under EM&A mechanism									
Air Quality Impact (Construction)									
3.9.1	2.2	**Dust Control Measures** 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: ▪ Use of regular water spraying (once every 2.5 hours or 4 times per day) to reduce dust emissions from heavy construction activities (including ground excavation, earth moving, etc.) at all active works area exposed site surfaces and unpaved	Project construction site / Duration of the construction phase / Prior to commencement of operation	Contractor appointed by OPC		✓			EIA Recommendation and Air Pollution Control (Construction Dust) Regulation

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of measures / Timing of completion of measures	Implementation Agent	Implementation Stage[1] Des	Con	Op	Dec	Relevant Legislation & Guidelines
		roads, particularly during dry weather. ▪ 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 Relevant dust control practices as stipulated in the Air Pollution Control (Construction Dust) Regulation should be adopted: Good Site Management ▪ 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. Disturbed Parts of the Roads ▪ Main temporary access points should be paved with concrete, bituminous hardcore materials or metal plates and be kept clear of dusty materials; or ▪ Unpaved parts of the road should be sprayed with water or a dust suppression chemical so as to keep the entire road surface wet. Exposed Earth ▪ Exposed earth should be properly treated by compaction, hydroseeding, vegetation planting or seating 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. Loading, Unloading or Transfer of Dusty Materials ▪ All dusty materials should be sprayed with water immediately prior to any loading or transfer operation so as							

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of measures / Timing of completion of measures	Implementation Agent	Implementation Stage[1] Des	Con	Op	Dec	Relevant Legislation & Guidelines
		to keep the dusty material wet. Debris Handling ▪ Any debris should be covered entirely by impervious sheeting or stored in a debris collection area sheltered on the top and the three sides. ▪ Before debris is dumped into a chute, water should be sprayed onto the debris so that it remains wet when it is dumped. Transport of Dusty Materials ▪ 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. Wheel washing ▪ 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. Use of vehicles ▪ The speed of the trucks within the site should be controlled to about 10 km/hour in order to reduce adverse dust impacts and secure the safe movement around the site. ▪ Immediately before leaving the construction site, every vehicle should be washed to remove any dusty materials from its body and wheels. ▪ Where a vehicle leaving the construction site is carrying a load of dusty materials, the load should be covered entirely by clean impervious sheeting to ensure that the dusty materials do not leak from the vehicle. Site hoarding ▪ Where a site boundary adjoins a road, street, service lane or other area accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length of that portion of the site boundary except for a site entrance or exit							
Noise Impact (Construction)									

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of measures / Timing of completion of measures	Implementation Agent	Implementation Stage[1] Des	Con	Op	Dec	Relevant Legislation & Guidelines
5.7	3.2	**Good Site Practice** Good site practice and noise management can significantly reduce the impact of construction site activities on nearby NSRs. ▪ only well-maintained plant to be operated on-site and plant should be serviced regularly during the construction works; ▪ machines and plant that may be in intermittent use to be shut down between work periods or should be throttled down to a minimum; ▪ plant known to emit noise strongly in one direction, should, where possible, be orientated to direct noise away from the NSRs; ▪ mobile plant should be sited as far away from NSRs as possible; and ▪ material stockpiles and other structures to be effectively utilised, where practicable, to screen noise from on-site construction activities.	Project construction site / Duration of the construction phase / Prior to commencement of operation	Contractor appointed by OPC		✓			EIAO and Noise Control Ordinance
Noise Impact (Operation)									
5.7	3.3.2	**Fixed Plant Noise** With the adoption of the proposed maximum allowable SWLs, all representative NSRs is expected to comply with the relevant noise criteria for the daytime and evening time periods. No adverse fixed plant noise impact is anticipated. It is also recommended that the following noise reduction measures should be considered as far as practicable during design stage: ▪ choose quiet plant such as those which have been effectively silenced; ▪ include noise levels specification when ordering new plant (including chiller and E&M equipment); ▪ locate fixed plant / louvre away from any NSRs as far as practicable; ▪ locate fixed plant in walled plant rooms or in specially designed enclosures; ▪ locate noisy machine in a basement or a completely separate building;	Within Project area / Prior to operation phase / Duration of the operation phase / Throughout operation phase	Design Architect / Contractor appointed by OPC	✓	✓	✓		EIAO and Noise Control Ordinance

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of measures / Timing of completion of measures	Implementation Agent	Implementation Stage[1] Des	Con	Op	Dec	Relevant Legislation & Guidelines
		▪ install direct noise mitigation measures including silencers, acoustic louvres and acoustic enclosure where necessary; and ▪ develop and implement a regularly scheduled plant maintenance programme so that equipment is properly operated and serviced in order to maintain a controlled level of noise. Prior to the operation of the Project, noise commissioning tests for all major fixed noise sources should be conducted.							
5.7	3.3.2	**Open Air Entertainment Noise** With the adoption of the proposed maximum allowable SWLs, all representative NSRs is expected to comply with the relevant noise criteria for the daytime and evening periods, the following measures should be considered as far as practicable during stage: ▪ use small clusters of small power loudspeakers rather than a few large power loudspeakers; and ▪ loudspeakers should be pointed away from nearby NSRs.	Within Project area / Duration of the operation phase / Throughout operation phase	Design Architect / Contractor appointed by OPC	✓	✓			EIAO and Noise Control Ordinance
Water Quality Impact (Construction)									
6.7	4.2	**Construction Site Runoff** The site practices outlined in ProPECC Note PN 1/94 should be followed as far as practicable in order to minimise surface runoff and erosion. The following measures are recommended to protect water quality of the inland areas: ▪ At the start of site establishment, perimeter cut-off drains to direct off-site water around the site should be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels, earth bunds or sand bag barriers should be provided on site to direct storm water to silt removal facilities. The design of the temporary on-site drainage system should be undertaken by the Contractors prior to the commencement of construction; ▪ Sand/ silt removal facilities such as sand/silt traps and sediment basins should be provided to remove sand/silt particles from runoff to meet the requirements of the TM standards under the WPCO. The design of efficient silt removal facilities should be based on the guidelines in	Project construction site / Duration of the construction phase	Contractor appointed by OPC		✓			EIAO-TM; ProPECC Note PN 1/94; WPCO; TM-DSS

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of measures / Timing of completion of measures	Implementation Agent	Implementation Stage[1] Des	Con	Op	Dec	Relevant Legislation & Guidelines
		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; ▪ All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly during rainstorms. Deposited silt and grit should be regularly removed, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times; ▪ Measures should be taken to minimise the ingress of site drainage into excavations. If excavation of trenches in wet periods is necessary, they should be dug and backfilled in short sections wherever practicable. Water pumped out from site formation excavations should be discharged into storm drains via silt removal facilities; ▪ All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing facility should be provided at construction site exit where practicable. Wash-water should have sand and silt settled out and removed regularly to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road should be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains; ▪ Open stockpiles of construction materials or construction wastes on-site should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system; ▪ Manholes (including newly constructed ones) should be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and stormwater runoff being directed into foul sewers; ▪ Precautions should be taken at any time of the year when								

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of measures / Timing of completion of measures	Implementation Agent	Implementation Stage[1] Des	Con	Op	Dec	Relevant Legislation & Guidelines
		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, ▪ 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. 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.							
6.7	4.2	**General Construction Activities** Best Management Practices (BMPs) should be implemented at the construction site, including proper handling, sorting and storage of construction solid waste, debris and refuse generated on-site prior to disposal. Stockpiles of cement and other construction materials should be kept covered when not being used. The Contractor should also follow the guidelines set in the "Pesticides Used for Outdoor Mosquito Control", published by AFCD in 2010, for mosquito control on site.	Project construction site / Duration of the construction phase	Contractor appointed by OPC		✓			EIAO-TM; ProPECC Note PN 1/94
6.7	4.2	**Expansion of Existing Storm U-Channel** Guidelines and measures summarised in ProPECC PN 1/94 for trenching activities should be implemented.	Project construction site / Duration of the construction phase	Contractor appointed by OPC		✓			ProPECC Note PN 1/94
6.7	4.2	**Interception of Natural Streams** Guidelines and measures summarised in ProPECC PN 1/94 for excavation and stockpiling activities should be implemented.	Project construction site / Duration of the construction phase	Contractor appointed by OPC		✓			ProPECC Note PN 1/94
6.7	4.2	**Site Formation Works** The construction programme should be properly planned to minimise excavation works during the wet season (April to September), temporarily exposed slope/soil surfaces should be	Project construction site / Duration of the construction phase	Contractor appointed by OPC		✓			ProPECC Note PN 1/94

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of measures / Timing of completion of measures	Implementation Agent	Implementation Stage[1] Des	Con	Op	Dec	Relevant Legislation & Guidelines
		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	**Construction of Sewage Sump Pit and Rising Mains** Measures for excavation works summarised for site formation works should also be implemented during construction of the sewage sump pit. 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.	Project construction site / Duration of the construction phase	Contractor appointed by OPC		✓			ProPECC Note PN 1/94
6.7	4.2	**Accidental Spillage** 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. 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. 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.	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

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of measures / Timing of completion of measures	Implementation Agent	Implementation Stage[1] Des	Con	Op	Dec	Relevant Legislation & Guidelines
		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: ▪ Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. ▪ Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents. ▪ Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.							
6.7	4.2	**Sewage Effluent from the Construction Workforce** The Contractor should provide temporary sanitary facilities, such as portable chemical toilets within the construction site to handle sewage from the workforce. The Contractor has the responsibility to ensure that chemical toilets are used and properly maintained, and that licensed Contractors are employed to collect and dispose of the waste off-site at approved locations.	Project construction site / Duration of the construction phase	Contractor appointed by OPC		✓			ProPECC Note PN 1/94
Water Quality Impact (Operation)									
6.7	4.2	**Runoff from Road Surfaces** Road drainage system design has already included silt traps in the gully inlets to remove silt and grit before the runoff enters the public storm water drainage system. Silt traps should be regularly checked and maintained to ensure efficient operation.	Within Project area / During operation phase	OPC/Operator appointed by OPC			✓		EIAO-TM; WPCO
6.7	4.2	**Runoff from On-site Planting Area** Watering of plants on site should always be performed before application of pesticides, herbicides and fertilizers. Regular training should also be provided to frontline staff on the appropriate treatment and disposal of pesticides, herbicides and fertilizers.	Within Project area / During operation phase	OPC/Operator appointed by OPC			✓		EIAO-TM; WPCO; TM-DSS
Waste Management Implications (Construction)									
8.5.1.1	6.2	**Good Site Practice**	Project construction site / Throughout construction	Contractor		✓			Waste Disposal Ordinance; Waste

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of measures / Timing of completion of measures	Implementation Agent	Implementation Stage[1] Des	Con	Op	Dec	Relevant Legislation & Guidelines
		Recommendations for good site practices during the construction activities include: ▪ Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site ▪ Training of site personnel in proper waste management and chemical handling procedures ▪ Provision of sufficient waste disposal points and regular collection of waste ▪ Appropriate measures to minimise windblown litter and dust/ odour during transportation of waste by either covering trucks or by transporting wastes in enclosed containers ▪ Stockpiles of C&D materials should be kept covered by impervious sheets to avoid wind-blown dust ▪ All dusty materials including C&D materials should be sprayed with water immediately prior to any loading transfer operation so as to keep the dusty material wet during material handling at the stockpile areas ▪ Provision of wheel washing facilities before the trucks leaving the works area so as to minimise dust introduction to public roads ▪ Well planned delivery programme for offsite disposal such that adverse environmental impact from transporting the inert or non-inert C&D materials is not anticipated	stage / Until completion of all construction activities	appointed by OPC					Disposal (Chemical Wastes) (General) Regulation; and ETWB Technical Circular (Works) No. 19/2005 Environmental Management on Construction Site
8.5.1.2	6.2	**Waste Reduction Measures** 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: ▪ Sort inert C&D materials to recover any recyclable portions such as metals ▪ Segregation and storage of different types of waste in different containers or skips to enhance reuse or recycling of	Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC		✓			Waste Disposal Ordinance

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of measures / Timing of completion of measures	Implementation Agent	Implementation Stage[1] Des	Con	Op	Dec	Relevant Legislation & Guidelines
		materials and their proper disposal ▪ Encourage collection of recyclable waste such as waste paper and aluminium cans by providing separate labelled bins to enable such waste to be segregated from other general refuse generated by the work force ▪ Proper site practices to minimise the potential for damage or contamination of inert C&D materials ▪ Plan the use of construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste							
8.5.1.3	6.2	**Inert and Non-inert C&D materials** In order to minimise impacts resulting from collection and transportation of inert C&D materials for off-site disposal, the inert C&D materials should be reused on-site as fill material as far as practicable. In addition, inert C&D materials generated from excavation works could be reused as fill materials in local projects that require public fill for reclamation. The surplus inert C&D materials will be disposed of at the Government's PFRFs for beneficial use by other projects in Hong Kong. The C&D materials generated from general site clearance should be sorted on site to segregate any inert materials for reuse or disposal of at PFRFs whereas the non-inert materials will be disposed of at the designated landfill site. In order to monitor the disposal of inert and non-inert C&D materials at respectively PFRFs and the designated landfill site, and to control fly-tipping, it is recommended that the Contractor should follow the DEVB Technical Circular (Works) No.6/2010 for Trip Ticket System for Disposal of Construction & Demolition Materials issued by Development Bureau. In addition, it is also recommended that the Contractor should prepare and implement a Waste Management Plan detailing their various waste arising and waste management practices in accordance with the relevant requirements of the ETWB Technical Circular (Works) No. 19/2005 Environmental Management on Construction Site.	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	**Chemical Waste** If chemical wastes are produced at the construction site, the	Project construction site / Throughout construction	Contractor appointed by OPC		✓			Code of Practice on the Packaging

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of measures / Timing of completion of measures	Implementation Agent	Implementation Stage[1] Des	Con	Op	Dec	Relevant Legislation & Guidelines
		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. Potential environmental impacts arising from the handling activities (including storage, collection, transportation and disposal of chemical waste) are expected to be minimal with the implementation of appropriate mitigation measures as recommended.	stage / Until completion of all construction activities						Labelling and Storage of Chemical Wastes; Waste Disposal (Chemical Waste) (General) Regulation
8.5.1.5	6.2	**General Refuse** General refuse should be stored in enclosed bins or compaction units separated from inert C&D materials. A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from inert C&D materials. Preferably an enclosed and covered area should be provided to reduce the occurrence of 'wind blown' light material.	Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC		✓			Waste Disposal Ordinance and Public Health and Municipal Services Ordinance - Public Cleansing and Prevention of Nuisances Regulation
8.5.1.6	6.2	**Floating Refuse** Provide general refuse collection points on site can minimise the refuse contaminate the marine environment. The construction contractors will be required to regularly check and clean any refuse trapped or accumulated along the artificial seawall. Such refuse will then be stored and disposed of together with the general refuse.	Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC		✓			Waste Disposal Ordinance
Waste Management Implications (Operation)									
8.5.2.1	6.2	**General Refuse** General refuse should be collected on daily basis and delivered	Project area / On a regular basis /	Contractor appointed by OPC			✓		Waste Disposal Ordinance

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of measures / Timing of completion of measures	Implementation Agent	Implementation Stage[1] Des	Con	Op	Dec	Relevant Legislation & Guidelines
		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.	Throughout operation stage						
8.5.2.2	6.2	**Chemical Waste** If chemical wastes are expected to be produced during the operation phase, the Project Proponent should register with the EPD as a chemical waste producer and follow the guidelines stated in the "Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes". Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidising, irritant, toxic, harmful, corrosive, etc. Licensed collector should be deployed to transport and dispose of the chemical wastes at the approved Chemical Waste Treatment Centre or other licensed recycling facilities, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	Project area / On a regular basis / 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	**Floating Refuse** Regular inspection should be carried out along the artificial seawall of the Project boundary for any entrapment or accumulation of floating refuse. Where an appreciable amount of floating refuse is found on the artificial seawall during the inspection, the locations of such refuse will be recorded and arrangements with the project proponent will immediately be made to collect and clear the refuse from the seawall.	Project area / On a regular basis / Throughout operation stage	Contractor appointed by OPC			✓		Waste Disposal Ordinance
Land Contamination (Construction)									
9.6	7.2	In any case where contaminated soil is identified after the commencement of works, a Contamination Assessment Plan (CAP) is required to be prepared for EPD's endorsement prior to	Project construction site / Before construction stage	Contractor appointed by OPC	✓				Guidance Note for Contaminated Land Assessment and Remediation

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of measures / Timing of completion of measures	Implementation Agent	Implementation Stage[1] Des	Con	Op	Dec	Relevant Legislation & Guidelines
		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.							Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management Practice Guide for Investigation and Remediation of Contaminated Land
9.6	7.2	If contaminated soil is identified, the following mitigation measures are for the excavation and transportation of contaminated materials (if any): ▪ To minimise the incidents of construction workers coming in contact with any contaminated materials, bulk earth-moving excavation equipment should be employed; ▪ Contact with contaminated materials can be minimised by wearing appropriate clothing and personal protective equipment such as gloves and masks (especially when working directly with contaminated material), provision of washing facilities and prohibition of smoking and eating on site; ▪ Stockpiling of contaminated excavated materials on site should be avoided as far as possible; ▪ The use of any contaminated soil for landscaping purpose should be avoided unless pre-treatment was carried out; ▪ Vehicles containing any excavated materials should be suitably covered to reduce dust emissions and/or release of contaminated wastewater; ▪ Truck bodies and tailgates should be sealed to prevent any discharge; ▪ Only licensed waste haulers should be used to collect and transport contaminated material to treatment/disposal site and should be equipped with tracking system to avoid fly	Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC		✓			Waste Disposal Ordinance (Cap 354) Waste Disposal (Chemical Waste) (General) Regulation (Cap 354)

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of measures / Timing of completion of measures	Implementation Agent	Implementation Stage[1] Des	Con	Op	Dec	Relevant Legislation & Guidelines
		tipping; ▪ Speed control for trucks carrying contaminated materials should be exercised. ▪ Observe all relevant regulations in relation to waste handling, such as Waste Disposal Ordinance (Cap 354), Waste Disposal (Chemical Waste) (General) Regulation (Cap 354) and obtain all necessary permits where required; and ▪ Maintain records of waste generation and disposal quantities and disposal arrangements.							
Landscape and Visual Impact (Construction)									
Table 12.13 (CP01)	Table 9.1 (CP01)	**Minimisation of Construction Period** The construction programme should be carefully designed to minimise the length of the construction period.	Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC	✓	✓			EIAO-TM
Table 12.13 (CP02)	Table 9.1 (CP02)	**Minimisation of Works Areas** The footprint of the proposed hard structures as well as the extent of temporary works areas should be minimised as far as practicable.	Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC	✓	✓			EIAO-TM
Table 12.13 (CP03)	Table 9.1 (CP03)	**Construction Site Controls** Construction site controls should be enforced, where possible, to ensure that the landscape and visual impacts arising from the construction phase activities, such as the storage of materials, the location and appearance of site accommodation, etc. are minimised.	Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC	✓	✓			EIAO-TM
Table 12.13 (CP04)	Table 9.1 (CP04)	**Preservation of Existing Vegetation** The development proposal should avoid disturbance to existing vegetation as far as practicable. A formal tree removal application should be submitted for approval by relevant authorities in accordance with LAO PN No. 07/2007 "Tree Preservation and Tree Removal Application for Building Development in Private Projects" during the detailed design phase of the Project. Where possible, all trees which are not in direct conflict with the development proposals should be retained *in situ*.	Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC	✓	✓			EIAO-TM; LAO PN No. 07/2007
Table	Table	**No Intrusion Zones**	Project construction site /	Contractor	✓	✓			EIAO-TM

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of measures / Timing of completion of measures	Implementation Agent	Implementation Stage[1] Des	Con	Op	Dec	Relevant Legislation & Guidelines
12.13 (CP06)	9.1 (CP06)	Where practicable, "no intrusion zones" should be designated within the Project area for protection of existing vegetation. Durable boundary fences should be erected to clearly demarcate these "no intrusion zones". No construction activities, storage of materials and vehicular access will be allowed within the "no intrusion zones" to prevent potential damage to canopies and root zones of vegetation.	Throughout construction stage / Until completion of all construction activities	appointed by OPC					
Table 12.13 (CP09)	Table 9.1 (CP09)	**Construction Site Hoardings** Two types of hoardings should be considered. One is used for areas in close contact with visitors and for areas where visual intrusion is a key concern. It should be graphical and thematic, and visually 'impermeable' to block the views of construction activities from the VSRs. The other is used for areas to be viewed at a distance. It should be subtle and camouflaged so that it blends in with the surrounding landscape.	Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC	✓	✓			EIAO-TM
Table 12.13 (CP10)	Table 9.1 (CP10)	**Dust and Erosion Control for Exposed Soil** Exposed soil shall be covered or "camouflaged" and watered frequently. Areas that are expected to be left with bare soil for a long period of time should be hydroseeded and / or covered with suitable protective fabrics.	Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC		✓			EIAO-TM
Table 12.13 (CP11)	Table 9.1 (CP11)	**Appearance of Construction Plant / Machinery** To minimise the visual intrusion of construction activities to visitors and other VSRs, a suitable colour scheme of construction machines and plants should be adopted where possible.	Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC		✓			EIAO-TM
Table 12.13 (CP12)	Table 9.1 (CP12)	**Construction Lighting Control** All security floodlights for construction sites should be equipped with adjustable shield, frosted diffusers and reflective covers, and be carefully controlled to minimise light pollution and night-time glare to the VSRs.	Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC		✓			EIAO-TM
Table 12.13 (CP13)	Table 9.1 (CP13)	**Appearance of Construction Workers** To protect Ocean Park's image, construction workers should be required to enter the park areas with their helmets and safety vests properly stored or carried in non-transparent bags. They should also dress properly and cleanly.	Project construction site / Throughout construction stage / Until completion of all construction activities	Contractor appointed by OPC		✓			EIAO-TM
Landscape and Visual Impact (Operation)									

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of measures / Timing of completion of measures	Implementation Agent	Implementation Stage[1] Des	Con	Op	Dec	Relevant Legislation & Guidelines
Table 12.14 (OP01)	Table 9.2 (OP01)	**Sensitive Design and Disposition** 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.	Project buildings / During design stage / Throughout operation phase	Design Architect / Contractor appointed by OPC	✓		✓		EIAO-TM
Table 12.14 (OP03)	Table 9.2 (OP03)	**Enhancement Planting** Other than compensatory tree planting, additional trees, shrubs, groundcovers and lawn should also be considered to maximise greening within the redevelopment area.	Project area / During design stage / Throughout operation phase	Design Architect / Contractor appointed by OPC	✓		✓		EIAO-TM
Table 12.14 (OP06)	Table 9.2 (OP06)	**Responsive Lighting Design** 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: ▪ Lighting shall be designed with due consideration of mounting height and direction of light fixtures so as not to point directly towards any sensitive receiver. ▪ Lighting shall be arranged with due consideration of reflectance so as to avoid glare effect. ▪ Lighting shall be regularly monitored during operation. ▪ Lights located adjacent or in proximity to neighbours shall be carefully designed to prevent possible light intrusion. ▪ Lighting operation schedule shall specify only lights necessary for security to be left on after business hours. ▪ Paving materials should be selected as necessary to reduce	Project area / During design stage / Throughout operation phase	Design Architect / Contractor appointed by OPC	✓		✓		EIAO-TM

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of measures / Timing of completion of measures	Implementation Agent	Implementation Stage[1] Des	Con	Op	Dec	Relevant Legislation & Guidelines
		potential glare from surface reflectance. ▪ Particular attention should be paid to the use of lighting having a high intensity or harsher tone (e.g. metal halide lamps). ▪ Lights shall generally be models having precise cut-off range (such as full cut-off optics where available and practicable) and if necessary be fitted with adjustable anti-glare shields.							

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