

Ocean Park Tai Shue Wan Water World Project

Quarterly EM&A Report for September –
November 2017 (Rev B)

April 2018

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This Quarterly EM&A Summary Report for September 2017 – November 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 Section 11.4.

Certified by:



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Date:

17 APRIL 2018

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Contents

| | |
|---|-----------|
| Executive Summary | 1 |
| 1 Introduction | 3 |
| 1.1 Project Background | 3 |
| 2 Project Organization | 4 |
| 2.1 Project Organization | 4 |
| 2.2 Construction Progress | 6 |
| 2.3 Summary of Environmental Submissions | 7 |
| 3 Summary of Environmental Monitoring and Audit Requirements | 8 |
| 3.1 General | 8 |
| 3.2 Monitoring Locations | 9 |
| 3.3 Derivation of Action/Limit Levels | 9 |
| 3.4 Meteorological Information | 10 |
| 4 Construction Noise Monitoring | 11 |
| 4.1 Monitoring Results | 11 |
| 5 Ecology Monitoring | 13 |
| 5.1 Inspection Findings | 13 |
| 5.2 Conclusion | 13 |
| 6 Landscape and Visual Monitoring | 15 |
| 6.1 Inspection Findings | 15 |
| 7 Waste Management | 16 |
| 7.1 Record of Waste Quantities | 16 |
| 8 Site Inspection | 17 |
| 8.1 Inspection Findings | 17 |
| 9 Summary of Environmental Quality Performance Limits | 18 |
| 9.1 Record on Non-compliance of Action and Limit Levels | 18 |
| 9.2 Record on Environmental Complaints Received | 18 |

| | | |
|-----------|--|-----------|
| 10 | Implementation Status of Mitigation Measures | 19 |
| 10.1 | General Requirements | 19 |
| 11 | Conclusions and Recommendations | 21 |
| 11.1 | Conclusions | 21 |
| 11.2 | Recommendations | 21 |
| | Appendices | 22 |
| A. | Layout Plan of the Project | 23 |
| B. | Project Organization | 24 |
| C. | Designated Monitoring Locations as Recommended in the Approved EM&A Manual | 25 |
| D. | Actual Locations of Impact Monitoring | 26 |
| E. | Meteorological Data | 27 |
| F. | Noise Monitoring Data | 28 |
| G. | Graphical Plots of Noise Monitoring Data | 29 |
| H. | Implementation Schedule for Environmental Mitigation Measures | 30 |
| | Tables | |
| Table 1: | Status of Environmental Licenses and Permits of the Project | 7 |
| Table 2: | Summary of Impact EM&A Requirements | 8 |
| Table 3: | Impact Monitoring Stations for Construction Noise | 9 |
| Table 4: | Action and Limit Levels for Construction Noise | 9 |
| Table 5: | Summary of Construction Noise Monitoring Results | 11 |
| Table 6: | Summary of Additional Construction Noise Monitoring Results | 12 |
| Table 7: | Summary of Quantities of Inert C&D Materials | 16 |
| Table 8: | Summary of Quantities of Non-inert C&D Materials | 16 |
| Table 9: | Site Observations of the Project | 17 |
| Table 10: | Environmental Mitigation Measures | 19 |

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 2nd Quarterly EM&A Summary report for the Tai Shue Wan Development Water World under Section 11.4 of the EM&A Manual (Register No.: AEIAR-184/2014). This report summarises the findings on EM&A during the period from 1 September to 30 November 2017.

Environmental Monitoring and Audit Activities

Environmental monitoring activities under the EM&A programme in the reporting period are summarized in the following table:

| Environmental Aspect | Environmental Monitoring Parameters / Inspection | Total Occasions |
|-------------------------|--|-----------------|
| Construction Noise | Leq(30min) Daytime | 26 |
| | Leq(15min) Daytime (Addition monitoring) | 2 |
| Ecology | Site Inspection | 3 |
| Landscape and Visual | Inspection of the mitigation measures implementation situation | 6 |
| Site Inspection / Audit | Environmental Team (ET), the Contractor and Project Management Representative (PMR) joint site inspection and auditing | 13 |
| | Independent Environmental Checker (IEC) joint site inspection and auditing | 3 |

Breaches of Action/Limit Levels

No noise complaints (i.e. Action level) were received in the reporting period. No exceedance of construction noise measurement and no Notifications of Exceedances (NOEs) were issued to the PMR, IEC and the Contractor. The statistics of environmental exceedance, NOE issued and investigation of exceedance are summarized in the following table:

| Environmental Aspect | Monitoring Parameter | Action Level | Limit Level | Event & Action | | |
|----------------------|----------------------|--------------|-------------|----------------|---------------|--------------------|
| | | | | NOE Issued | Investigation | Corrective Actions |
| Construction Noise | Leq(30min) Daytime | 0 | 0 | 0 | 0 | 0 |

Environmental Complaints

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

Notification of Summons and Successful Prosecutions

There was no record of notification of summons and successful prosecution in the reporting period.

Reporting Changes

There are no reporting changes.

Future Key Issues

The contractor should pay attention to the following environmental issues and maintain relevant mitigation measures:

- Site formation for ride footing construction
- Cut soil slope and soil nail installation for Ride P1, P2, P3, P4 and P5
- Rock breaking and slope stabilization works for Ride P3 and P5
- Construction of drainage channels to slopes
- Mini pile construction
- North Plant Room Formation: HKE Substation On-grade slab and cable trench excavation and on-grade slab construction. Cart away excavated rock materials.
- North Plant Room and L2 slab (10E4): Column construction, install concrete block retaining wall to form ground for falsework erection, L2 slab falsework erection, formwork, rebar, concreting.
- Zone 3 Foundation at L2: Rock excavation and mucking out, rock mapping inspection, cast concrete blinding, construct footings
- South Plant Room (footing construction, backfilling)
- B1 and L1 underground manholes and drainage
- L1 zone 6 on grade slab
- Core wall
- L1 and L2 slab and column construction

1 Introduction

1.1 Project Background

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 was 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 and 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 report summarizes the findings during the reporting period from 1 September 2017 to 30 November 2017.

2 Project Organization

2.1 Project Organization

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

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 Contractor's, 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 analyze 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 ET leader; and
- to audit EIA recommendations and requirements against the status of implementation of environmental mitigation measures on site.

2.2 Construction Progress

During the reporting period, works of the Project undertaken include:

- Site formation for ride footing construction
- Cut soil slope and soil nail installation for Ride P1, P2, P3, P4 and P5
- Rock breaking and slope stabilization works for Ride P3 and P5
- Construction of drainage channels to slopes
- Mini pile construction
- North Plant Room Formation: HKE Substation On-grade slab and cable trench excavation and on-grade slab construction. Cart away excavated rock materials.
- North Plant Room and L2 slab (10E4): Column construction, install concrete block retaining wall to form ground for falsework erection, L2 slab falsework erection, formwork, rebar, concreting.
- Zone 3 Foundation at L2: Rock excavation and mucking out, rock mapping inspection, cast concrete blinding, construct footings
- South Plant Room (footing construction, backfilling)
- B1 and L1 underground manholes and drainage
- L1 zone 6 on grade slab
- Core wall
- L1 and L2 slab and column construction

2.3 Summary of Environmental Submissions

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

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

| Type of Permit/ License | 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 | Superseded |
| Construction Noise Permit under NCO GW-RS0825-17 | 8-Sep-17 | 420985 | 22-Sep-17 | 21-Mar-18 | Superseded |
| Renew Construction Noise Permit under NCO GW-RS1024-17 | 3-Nov-17 | 422922 | 21-Nov-17 | 16-May-18 | Valid |

According to the EP stipulation, the required documents have 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 Summary of Environmental Monitoring and Audit Requirements

3.1 General

As specified in the approved EM&A Manual, environmental monitoring of construction noise, ecology, landscape and visual impacts as well as waste management are required. A summary of the monitoring parameters is presented in **Table 2**.

Table 2: Summary of Impact EM&A Requirements

| Parameters | Description | Locations | Frequency |
|--------------------|---|---|--|
| Construction Noise | <ul style="list-style-type: none"> • L_{eq} (30min) on normal working days • 3 sets of consecutive L_{eq}(5min) during restricted hours if construction is necessary • Supplementary information for data auditing, statistical results such as L_{10} and L_{90} shall also be obtained for reference | NM1A and NM2 | <p>Weekly Normal working days: (07:00-19:00 except public holiday)</p> <p>Restricted hours: 19:00 to 07:00 next day, and whole day of public holiday or Sunday only when construction is necessary</p> |
| Ecology | <ul style="list-style-type: none"> • Monitoring of in-situ preservation of <i>Platycodon grandifloras</i> • Inspection of ardeids nest during breeding season (April to July) • Monitoring for ardeid night roost (November to March) <hr/> <ul style="list-style-type: none"> • Inspection of enhancement area for ardeid roosting <hr/> <ul style="list-style-type: none"> • Monitoring on woodland compensation | Project area and preservation area for <i>Platycodon grandifloras</i> | <p>Once per month</p> <hr/> <p>An enhancement area provided as an alternative roosting site for ardeids should be developed during the first phase of the construction.</p> <hr/> <p>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.</p> |

| Parameters | Description | Locations | Frequency |
|--|---|--------------|-----------|
| Landscape & Visual Impact | <ul style="list-style-type: none"> Ensure no construction activities / storage are undertaken outside the project boundary Ensure landscaping works are carried out in accordance with the specifications Ensure new planting is carried out properly and during the right season Review progress of engineering works on site to identify the earliest practical opportunities for landscape works | Project site | Bi-weekly |
| Regular Site Inspection Air, water, waste management, | To review the environmental situation, and monitor the implementation of proper environmental protection and pollution control measures for the Project | Project site | Weekly |

3.2 Monitoring Locations

Two designated noise monitoring locations as established in the EM&A Manual are shown in **Appendix C**. After the baseline monitoring, alternative location NM1A was proposed by MMHK due to the rejection of the monitoring location set up at NM1. The proposal was verified and agreed by EPD in the Baseline Monitoring Report. The construction noise monitoring locations for the Project are shown in **Table 3** and **Appendix D**.

Table 3: Impact Monitoring Stations for Construction Noise

| 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 Derivation of Action/Limit Levels

The baseline results formed the basis for determining the environmental acceptance criteria for impact monitoring. According to the approved EM&A Manual and baseline monitoring results, the following construction noise criterion, namely Action and Limit levels listed in **Table 4** were proposed:

Table 4: Action and Limit Levels for Construction Noise

| Monitoring Location | Action Level | Limit Level in dB(A) |
|---------------------|---|----------------------|
| | Time Period: 0700-1900 hours on normal weekdays | |
| NM1A and NM2 | When one or more documented complaints are received | 70 dB(A)* |

Note: Acceptable Noise Levels for school should be reduced to 65 dB(A) during examination period. If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the NCA must be followed.

3.4 Meteorological Information

Meteorological information was extracted from “the Hong Kong Observatory Wong Chuk Hang Station” to provide the humidity, wind speed, wind direction, temperature, and total rainfall as background weather information. The meteorological data for the reporting period is summarized in **Appendix E**.

4 Construction Noise Monitoring

4.1 Monitoring Results

Construction noise monitoring was conducted 26 times at the two designated locations in the reporting period. As shown in the summary of noise monitoring results on **Table 5**, in addition that no noise complaints were received in this reporting period, no exceedance of Action or Limit level in relation to construction noise was recorded.

Table 5: Summary of Construction Noise Monitoring Results

| Monitoring Date | Time | | Mean and range of noise levels, dB(A) | | Limit Level for Leq (dB(A)) ² |
|-----------------|-------|--------|---------------------------------------|-----------------------------------|--|
| | Start | Finish | Leq (30min) | Corrected Leq(30min) ¹ | |
| NM1A | | | | | |
| 06-Sep-17 | 10:00 | 10:30 | 58.6 | 61.6 | 70 |
| 13-Sep-17 | 10:10 | 10:40 | 59.1 | 62.1 | 70 |
| 20-Sep-17 | 09:24 | 09:54 | 57.9 | 60.9 | 70 |
| 27-Sep-17 | 11:00 | 11:30 | 60.9 | 63.9 | 70 |
| 04-Oct-17 | 09:40 | 10:10 | 60.7 | 63.7 | 70 |
| 10-Oct-17 | 13:50 | 14:20 | 57.4 | 60.4 | 70 |
| 18-Oct-17 | 10:00 | 10:30 | 57.2 | 60.2 | 70 |
| 26-Oct-17 | 09:40 | 10:10 | 57.3 | 60.3 | 70 |
| 01-Nov-17 | 09:02 | 09:32 | 58.2 | 61.2 | 70 |
| 07-Nov-17 | 09:35 | 10:05 | 57.6 | 60.6 | 70 |
| 15-Nov-17 | 10:10 | 10:40 | 56.1 | 59.1 | 70 |
| 23-Nov-17 | 10:35 | 11:05 | 57.0 | 60.0 | 70 |
| 29-Nov-17 | 10:00 | 10:30 | 56.2 | 59.2 | 70 |
| NM2 | | | | | |
| 06-Sep-17 | 09:10 | 09:40 | 53.9 | - | 70 |
| 13-Sep-17 | 09:23 | 09:53 | 56.0 | - | 70 |
| 20-Sep-17 | 08:40 | 09:10 | 53.5 | - | 70 |
| 27-Sep-17 | 10:08 | 10:38 | 54.4 | - | 70 |
| 04-Oct-17 | 10:30 | 11:00 | 54.0 | - | 70 |
| 10-Oct-17 | 13:02 | 13:32 | 54.8 | - | 70 |
| 18-Oct-17 | 09:08 | 09:38 | 51.6 | - | 70 |
| 26-Oct-17 | 09:00 | 09:30 | 52.4 | - | 70 |

| Monitoring Date | Time | | Mean and range of noise levels, dB(A) | | Limit Level for Leq (dB(A)) ² |
|-----------------|-------|--------|---------------------------------------|-----------------------------------|--|
| | Start | Finish | Leq (30min) | Corrected Leq(30min) ¹ | |
| 01-Nov-17 | 10:25 | 10:55 | 52.3 | - | 70 |
| 07-Nov-17 | 08:55 | 09:25 | 52.0 | - | 70 |
| 15-Nov-17 | 09:30 | 10:00 | 52.9 | - | 70 |
| 23-Nov-17 | 09:55 | 10:25 | 53.9 | - | 70 |
| 29-Nov-17 | 09:20 | 09:50 | 52.4 | - | 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 period.

As shown in **Table 6**, results of an additional noise monitoring measurement conducted on 26 November 2017 were also tabulated, and were below the limit level 70dB(A). No exceedance in Action/Limit Level in construction noise aspect was thus recorded in this period.

Table 6: Summary of Additional Construction Noise Monitoring Results

| Monitoring date | Time | | Mean and range of noise levels, dB(A) | | Limit Level for Leq (dB(A)) ² |
|-----------------|-------|--------|---------------------------------------|-------------------------------------|--|
| | Start | Finish | Leq(15min) | Corrected Leq (15 min) ¹ | |
| NM1A | | | | | |
| 26-Nov-17 | 15:35 | 15:50 | 51.4 | 54.4 | 70 |
| NM2 | | | | | |
| 26-Nov-17 | 15:00 | 15:15 | 44.9 | - | 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 period.

A summary of data and the supplementary data auditing information are shown in **Appendix F**. Graphical plots of the monitoring data are shown in **Appendix G**.

5 Ecology Monitoring

5.1 Inspection Findings

The ecological inspections were undertaken on 22 September, 20 October, and 10 November 2017 by the qualified ecologist. The inspection findings are presented below.

Plants of Conservation Interest (*Platycondon grandiflorus*)

Platycondon 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 bushes. Two groups of *Platycondon grandiflorus* that were recorded in 2015's growing season within the fenced area.

On the other hand, the preventive mitigation measures, i.e., erecting of temporary protective fencing and sign post, were found to be effectively implemented for human disturbance, and there are no signs or evidence (e.g. dust coating of plant) to prove that the on-going construction activities within the project area has affected the health condition of the *Platycondon 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

According to the Approved EM&A Manual, monitoring of roosting activities of Ardeids within the project area should perform once a month during peak wintering season (November to March) during the construction phase.

Monitoring of roosting activities of Ardeids has been carried out on by direct observation at vantage point on 10 November 2017, and covered the evening time from an hour before sunset to last until nightfall. However, monitoring roosting activities of ardeids is not required to conduct in September and October 2017.

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

Compensation for Ardeid roosting Site

To be implemented.

Compensation of Woodland Habitat

To be implemented.

5.2 Conclusion

The implementation of the mitigation measures for the plant species of conservation interest, i.e., erecting of temporary protective fencing and sign post during the Reporting Period was

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

Roosting activities of ardeids have not been observed within the project area during the monitoring.

6 Landscape and Visual Monitoring

6.1 Inspection Findings

In the Reporting Period, bi-weekly landscape and visual site inspection were conducted on 8, 22 September, 6, 20 October and 3, 17 November 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, neither construction activities were conducted nor materials storage were placed outside of the project site boundary. The Contractor was advised to improve tree protection in the tree protection zone. The Contractor was advised to maintain the tidiness and provide regular weeding in the tree protection zone.

7 Waste Management

7.1 Record of Waste Quantities

The quantity of waste for disposal in this reporting period is summarized in **Table 7** and **Table 8**.

Table 7: Summary of Quantities of Inert C&D Materials

| Type of Waste | Quantity (tonne) | | |
|-------------------|---|-------------------------|---------------------------------|
| | C&D Materials (Inert) | Disposal as Public Fill | Reused in this Contract (Inert) |
| September 2017 | 6370.40 | 5510.40 | 860.00 |
| October 2017 | 5607.83 | 3807.83 | 1800.00 |
| November 2017 | 5587.77 | 4596.57 | 732.00 |
| Total | 17566.00 | 13914.80 | 3392.00 |
| Disposal Location | Chai Wan Barging Point (CW-PFBP) and TKO137 | | |

Table 8: Summary of Quantities of Non-inert C&D Materials

| Type of Waste | Quantity (tonne) | | | | |
|----------------|------------------|------------------------------------|------------------|-----------------|-----------------|
| | Recycled Metal | Recycled Paper / Cardboard Packing | Recycled Plastic | Chemical Wastes | General Refuses |
| September 2017 | 0.00 | 0.00 | 0.00 | 0.00 | 71.06 |
| October 2017 | 0.00 | 210.00 | 0.00 | 0.00 | 61.09 |
| November 2017 | 0.00 | 210.00 | 0.00 | 0.00 | 86.47 |
| Total | 0.00 | 420.00 | 0.00 | 0.00 | 218.62 |

8 Site Inspection

8.1 Inspection Findings

In the reporting period, joint site inspections were undertaken by the PMR, ET and the Contractor on 1, 8, 15, 22 and 29 September 2017, and 6, 13, 20 and 27 October 2017 as well as 3, 10, 17 and 24 November 2017. Furthermore, IEC performed the site inspection and audit on 15 September, 13 October and 10 November 2017. During site inspection, non-compliance was not observed by ET and IEC. The site observations for reporting period is summarized in **Table 9**.

Table 9: Site Observations of the Project

| Reporting period | Findings / Deficiencies |
|------------------|--|
| September 2017 | <ul style="list-style-type: none"> ● Drip tray should be provided for the chemical containers. ● Water accumulated in drip tray of oil drum should be cleared. ● Water accumulated in drip tray under electric generator should be cleared. ● Water accumulated in container should be cleared to prevent mosquito breeding. ● Mixed waste should be separated to general waste and non-inert C&D material. ● Water spraying should be provided for demolish work. ● NRMM label on generator was faded out, the onractor was reminded to rectify. ● General waste was observed in nursery, the contractor was reminded to clear. ● Drip tray should be provided for the diesel containers. ● Stagnant water and general waste was observed in pumping station. |
| October 2017 | <ul style="list-style-type: none"> ● Increase frequency of water spraying should be undertaken during demolish work. ● Broken water barrier was observed, stagnant water may cause adverse environmental impact. ● Oil stain on the access road was observed. ● Stagnant water in the construction area. ● Dust mitigation measures should be enforced. ● Drip tray should be provided for the diesel container. |
| November 2017 | <ul style="list-style-type: none"> ● Drip tray should be provided for diesel container. ● Stagnant water should be cleared. ● Drip tray should be provided at level 2, zone 1. ● Chemical waste label should be shown clearly on the cabinet. |

9 Summary of Environmental Quality Performance Limits

9.1 Record on Non-compliance of Action and Limit Levels

No exceedances of Action level or Limit levels were observed for construction noise during the reporting period.

9.2 Record on Environmental Complaints Received

No environmental complaints were received during the reporting period.

10 Implementation Status of Mitigation Measures

10.1 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 H**.

Environmental mitigation measures generally implemented by the contractor are listed in **Table 10**.

Table 10: Environmental Mitigation Measures

| Issues | Environmental Mitigation Measures |
|-------------------------------|--|
| Construction Noise | <ul style="list-style-type: none"> Construction equipment is shut down when not in use |
| Ecology | <ul style="list-style-type: none"> Wire fencing is provided for temporary protection of the identified flora species of conservation concern Site inspection undertaken for the flora species of conservation and the Ardeid breeding and nesting activities |
| Landscape & Visual | <ul style="list-style-type: none"> Good site management |
| Air Quality | <ul style="list-style-type: none"> Good site management to reduce air quality impact Main temporary access road is paved with concrete. Prior to any loading or transfer operation, all dusty materials have been sprayed with water to keep it wet. Debris is covered by impervious sheeting Debris is sprayed with water before being dumped into a chute to keep it wet Vehicles transporting dusty materials are covered with tarpaulin 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 spraying has been provided for soil-nailing work |
| Water Quality | <ul style="list-style-type: none"> Portable chemical toilets have been provided on site A licensed collector has been employed to collect effluent and off-site disposal |
| Waste and Chemical Management | <ul style="list-style-type: none"> A temporary container located far away from seashore and drainage channel has been provided for chemical materials and waste storage Drip tray is provided for chemical materials which use on the working areas |

Issues

Environmental Mitigation Measures

| | |
|---------|--|
| | <ul style="list-style-type: none">• A waste skip has been provided for general refuse disposal |
| General | <ul style="list-style-type: none">• The site was generally kept tidy and clean |

11 Conclusions and Recommendations

11.1 Conclusions

The EM&A programme as recommended in the EM&A Manual has been undertaken in the reporting period.

Monitoring of construction noise, ecology, landscape and visual, as well as waste management for the Project were conducted as scheduled in the reporting period. Data collected during construction noise monitoring were checked against the established Action and Limit levels and no exceedances were recorded.

For ecological monitoring, the implementation of the mitigation measures for the plant species of conservation interest, i.e., erecting of temporary protective fencing and sign post during the Reporting Period was noted. The two groups of *Platycodon grandiflorus* within the fenced area were found to be vigorous and all new branches were in healthy condition.

Roosting activities of ardeids have not been observed within the project area during the monitoring.

For landscape and visual monitoring, the Contractor was advised to improve and maintain the tree protection zone.

11.2 Recommendations

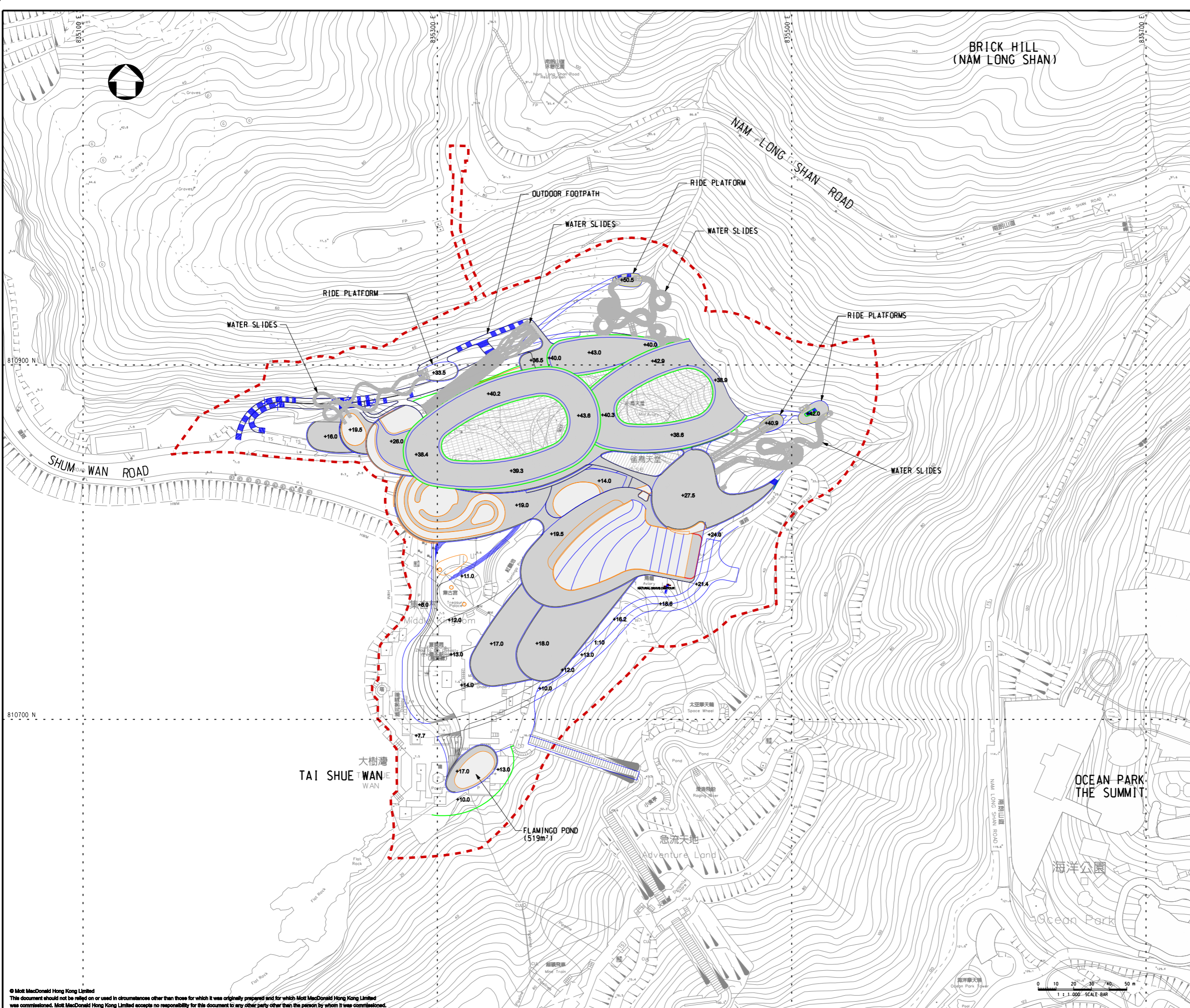
With considerations on the construction activities and environment, the following reminders and recommendations were provided:

- 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.
- Close monitoring of *Platycodon grandifloras* will be necessary to track their condition.
- The Contractor was advised to improve and maintain the tree protection zone.
- Sandbags should be placed next to exposed soil near the stream channel to prevent surface runoff.

Appendices

| | | |
|----|--|----|
| A. | Layout Plan of the Project | 23 |
| B. | Project Organization | 24 |
| C. | Designated Monitoring Locations as Recommended in the Approved EM&A Manual | 25 |
| D. | Actual Locations of Impact Monitoring | 26 |
| E. | Meteorological Data | 27 |
| F. | Noise Monitoring Data | 28 |
| G. | Graphical Plots of Noise Monitoring Data | 29 |
| H. | Implementation Schedule for Environmental Mitigation Measures | 30 |

A. Layout Plan of the Project



Notes

Key to symbols

--- PROJECT BOUNDARY

Reference drawings

| Rev | Date | Drawn | Description | Ch'kd | 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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Project

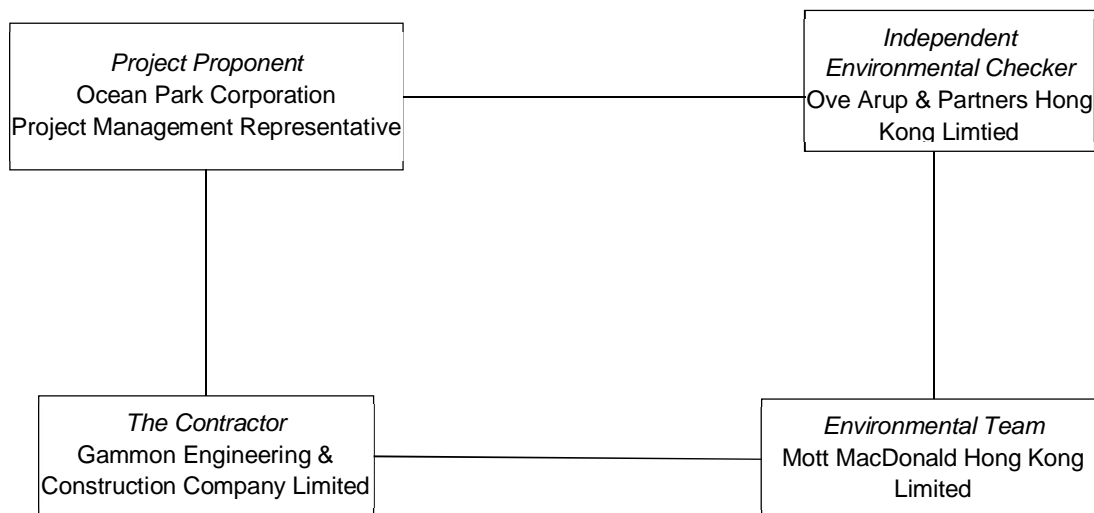
**TAI SHUE WAN DEVELOPMENT
AT OCEAN PARK**

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 |
| Drawing Number | FIGURE 2.6 | Rev | P3 |

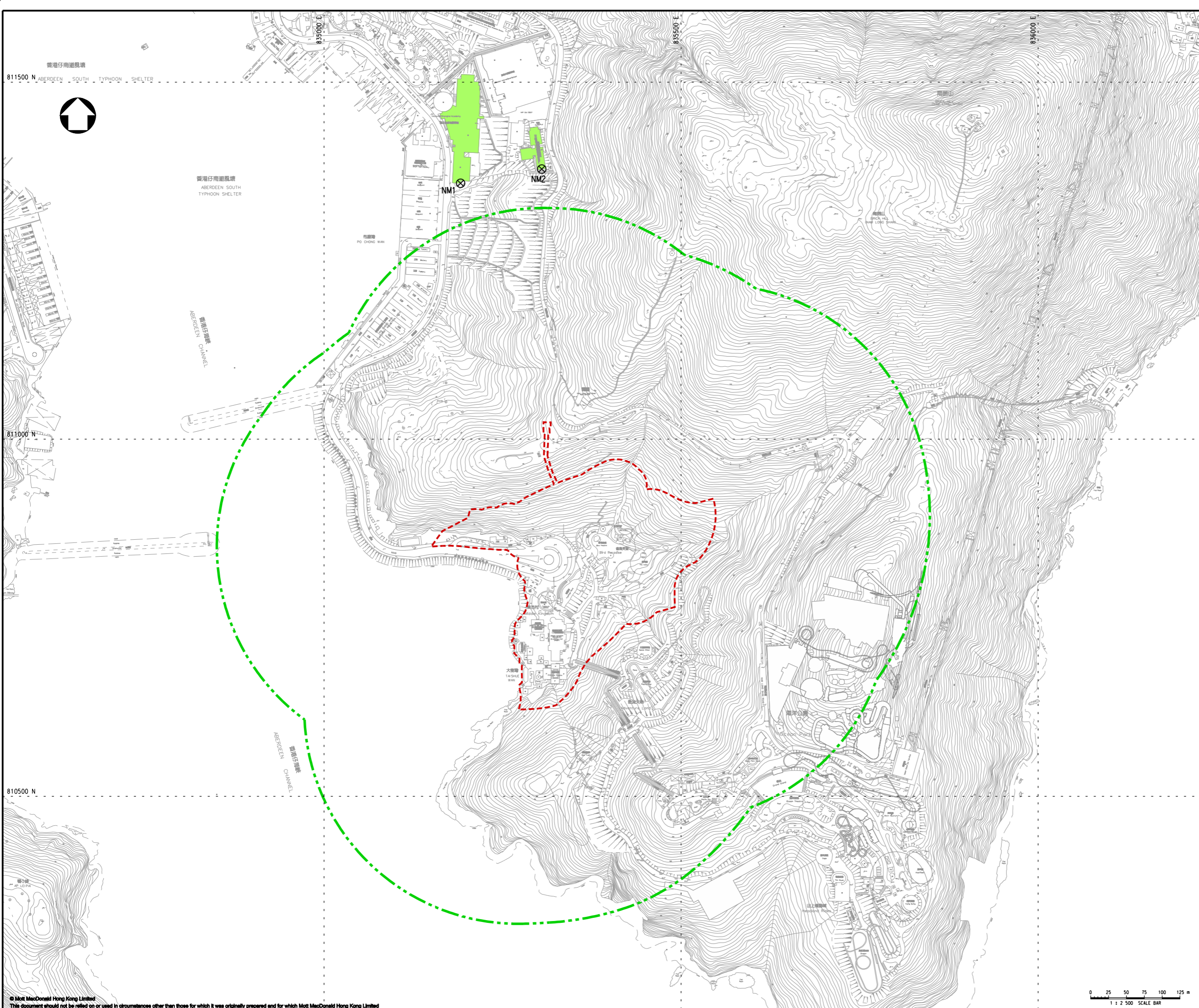
B. Project Organization



Contact information:

| Company / Department | Position | Name | Telephone / Fax No. Mobile | |
|---|-----------------------------------|-----------------|-------------------------------|-----------|
| 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. 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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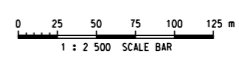
**TAI SHUE WAN DEVELOPMENT
AT OCEAN PARK**

Title

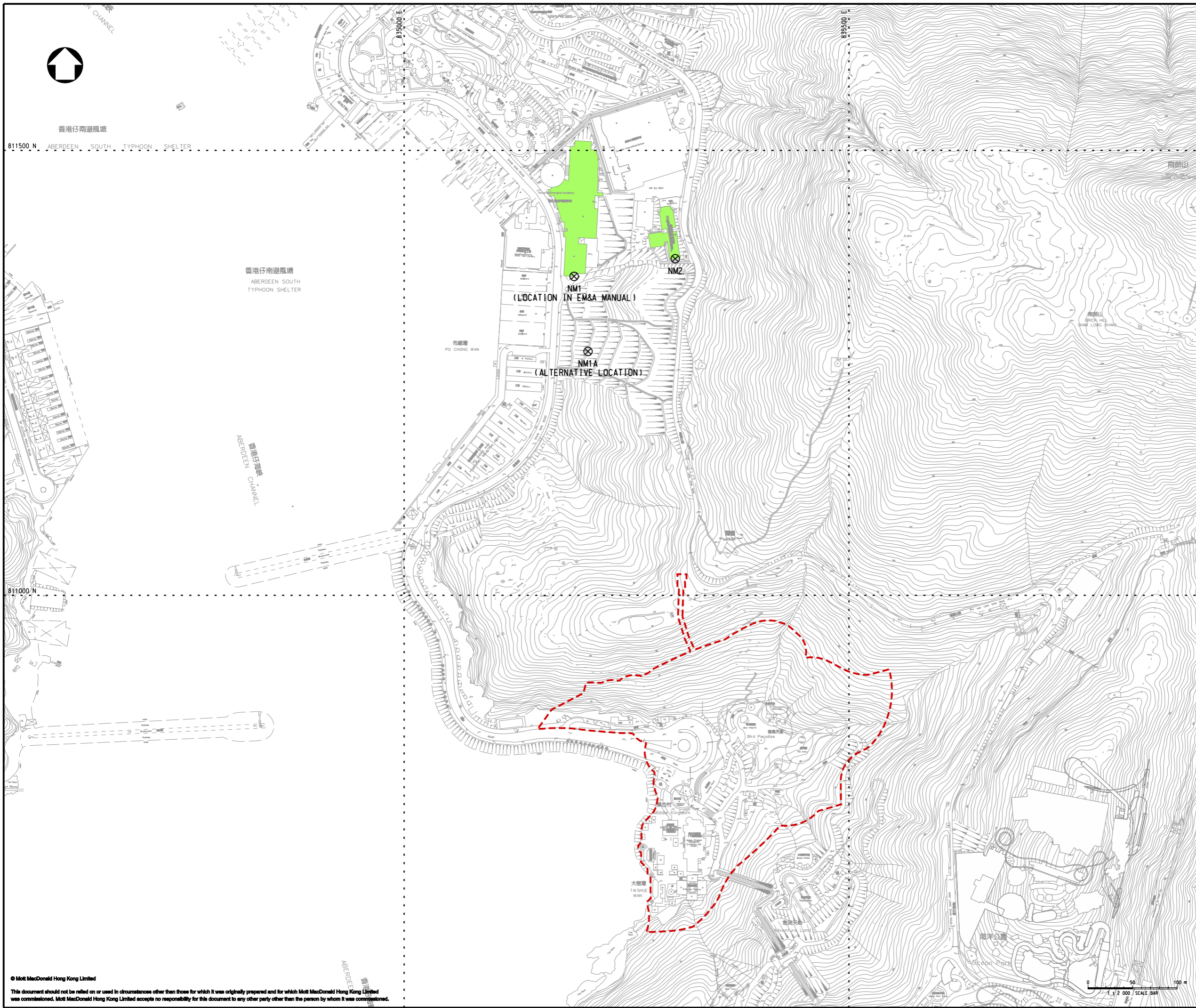
**DESIGNATED MONITORING
LOCATIONS AS RECOMMENDED
IN THE APPROVED EM&A
MANUAL**

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

FIGURE 3.1



D. 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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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 | | |

E. Meteorological Data

Weather Conditions - September 2017

| Date | | Total Rainfall (mm) | Mean Air Temperature (°C) | Mean Relative Humidity (%) | Mean Wind Speed (km/h) | Prevailing Wind Direction (degrees) |
|------|-----------|---------------------|---------------------------|----------------------------|------------------------|-------------------------------------|
| Fri | 01-Sep-17 | 6.5 | 27.1 | 85 | 3.3 | 200 |
| Sat | 02-Sep-17 | 1 | 27.4 | 85 | 3.3 | 240 |
| Sun | 03-Sep-17 | 23.8 | 27.4 | 86 | 4.1 | 280 |
| Mon | 04-Sep-17 | 32.8 | 26.3 | 89 | 7.3 | 290 |
| Tue | 05-Sep-17 | 6.4 | 28.1 | 88 | 4.9 | 110 |
| Date | 06-Sep-17 | Trace | 29.0 | 83 | 4.3 | 120 |
| Thu | 07-Sep-17 | 1.8 | 27.5 | 89 | 3.3 | 120 |
| Fri | 08-Sep-17 | 1.1 | 27.6 | 87 | 3.8 | 120 |
| Sat | 09-Sep-17 | 25.8 | 27.9 | 90 | 4.5 | 120 |
| Sun | 10-Sep-17 | Trace | 28.5 | 92 | 3.5 | 120 |
| Mon | 11-Sep-17 | 0 | 29.2 | 81# | 4.3 | 120 |
| Tue | 12-Sep-17 | 0.6 | 30.0 | 75 | 4.4 | 320 |
| Wed | 13-Sep-17 | 0 | 30.3 | 67 | 11.7 | 80 |
| Thu | 14-Sep-17 | 0 | 29.3 | 59 | 12.3 | 80 |
| Fri | 15-Sep-17 | Trace | 29.1 | 75 | 4.8 | 80 |
| Sat | 16-Sep-17 | 0 | 29.4 | 75 | 4.8 | 120 |
| Sun | 17-Sep-17 | 0 | 29.1 | 74 | 4.4 | 50 |
| Mon | 18-Sep-17 | 0 | 29.2 | 73 | 6.7 | 120 |
| Tue | 19-Sep-17 | 0 | 29.0 | 72 | 4.8# | 120# |
| Wed | 20-Sep-17 | 0.2 | 29.0 | 76 | 4.3 | 120 |
| Thu | 21-Sep-17 | Trace | 29.1 | 76 | 3.9# | 120# |
| Fri | 22-Sep-17 | 17.9 | 29.5 | 76 | 7.0# | 080# |
| Sat | 23-Sep-17 | 33.4 | 29.3 | 78 | 9.7 | 80 |
| Sun | 24-Sep-17 | 5.6 | 29.2 | 76 | 15.4 | 80 |
| Mon | 25-Sep-17 | 0.5 | 29.7 | 77 | 10.6 | 110 |
| Tue | 26-Sep-17 | 0 | 29.1 | 78 | 5 | 140 |
| Wed | 27-Sep-17 | 0 | 29.0 | 79 | 4.4 | 130 |
| Thu | 28-Sep-17 | 0 | 28.8 | 76 | 3.8 | 120 |
| Fri | 29-Sep-17 | Trace | 30.2 | 72 | 8.7 | 80 |
| Sat | 30-Sep-17 | 35 | 29.0 | 77 | 11.5 | 80 |

Incomplete data

*** Data unavailable

Weather Conditions - October 2017

| Date | | Total Rainfall (mm) | Mean Air Temperature (°C) | Mean Relative Humidity (%) | Mean Wind Speed (km/h) | Prevailing Wind Direction (degrees) |
|------|-----------|---------------------|---------------------------|----------------------------|------------------------|-------------------------------------|
| Sun | 01-Oct-17 | 6.6 | 29.7 | 74 | 11.3 | 80 |
| Mon | 02-Oct-17 | 3.6 | 29.9 | 74 | 7.9 | 80 |
| Tue | 03-Oct-17 | 0 | 30.1 | 74 | 6.3 | 70 |
| Wed | 04-Oct-17 | 9.5 | 29.1 | 75 | 10.6 | 80 |
| Thu | 05-Oct-17 | Trace | 28.9 | 69 | 12.1 | 80 |
| Fri | 06-Oct-17 | 0.2 | 29.2 | 69 | 11.8 | 80 |
| Sat | 07-Oct-17 | 0 | 29.5 | 69 | 13.4 | 80 |
| Sun | 08-Oct-17 | 0 | 29.3 | 68 | 9.8 | 70 |
| Mon | 09-Oct-17 | Trace | 30.0 | 65 | 17.5 | 70 |
| Tue | 10-Oct-17 | Trace | 30.2 | 67 | 14.7 | 80 |
| Wed | 11-Oct-17 | 0.2 | 30.2 | 66 | 13 | 80 |
| Thu | 12-Oct-17 | 0 | 29.9 | 62 | 7.7 | 70 |
| Fri | 13-Oct-17 | 0 | 27.7 | 54 | 9.2 | 320 |
| Sat | 14-Oct-17 | 0.4 | 25.2 | 59 | 14.1 | 310 |
| Sun | 15-Oct-17 | 20.7 | 24.3 | 79 | 18.4 | 80 |
| Mon | 16-Oct-17 | 17.1 | 27.7 | 80 | 14.2 | 80 |
| Tue | 17-Oct-17 | 41.3 | 26.7 | 79 | 14.5 | 80 |
| Wed | 18-Oct-17 | Trace | 27.2 | 65 | 6.4 | 60 |
| Thu | 19-Oct-17 | 0 | 26.4 | 61 | 8.2 | 360 |
| Fri | 20-Oct-17 | 0 | 24.9 | 59 | 8 | 310 |
| Sat | 21-Oct-17 | 0 | 24.4 | 55 | 8.4 | 340 |
| Sun | 22-Oct-17 | 0 | 23.7 | 52 | 6.7 | 320 |
| Mon | 23-Oct-17 | 0 | 24.0 | 55 | 5.9 | 50 |
| Tue | 24-Oct-17 | 0 | 24.4 | 60 | 7.5 | 60 |
| Wed | 25-Oct-17 | Trace | 24.2 | 64 | 8.2 | 80 |
| Thu | 26-Oct-17 | 0 | 23.8 | 69 | 3.8 | 220 |
| Fri | 27-Oct-17 | 0 | 23.5 | 65 | 3.5 | 200 |
| Sat | 28-Oct-17 | 0 | 24.4 | 53 | 5.1 | 320 |
| Sun | 29-Oct-17 | 0 | 24.9 | 46 | 7.5 | 350 |
| Mon | 30-Oct-17 | Trace | 22.8 | 51 | 6.9 | 50 |
| Tue | 31-Oct-17 | Trace | 21.8 | 57 | 6.8 | 70 |

Incomplete data

*** Data unavailable

Weather Conditions - November 2017

| Date | | Total Rainfall (mm) | Mean Air Temperature (°C) | Mean Relative Humidity (%) | Mean Wind Speed (km/h) | Prevailing Wind Direction (degrees) |
|------|-----------|---------------------|---------------------------|----------------------------|------------------------|-------------------------------------|
| Wed | 01-Nov-17 | 0 | 23.0 | 62 | 7.5 | 50 |
| Thu | 02-Nov-17 | 0 | 23.5 | 65 | 4.6 | 70 |
| Fri | 03-Nov-17 | 0 | 25.2 | 59 | 6.7 | 100 |
| Sat | 04-Nov-17 | 0.3 | 24.1 | 52 | 7.8 | 90 |
| Sun | 05-Nov-17 | Trace | 23.4 | 58 | 6.8 | 90 |
| Mon | 06-Nov-17 | Trace | 23.8 | 64 | 6.5 | 50 |
| Tue | 07-Nov-17 | 0.3 | 24.1 | 72 | 6 | 40 |
| Wed | 08-Nov-17 | Trace | 25.3 | 72 | 7.5 | 50 |
| Thu | 09-Nov-17 | Trace | 24.8 | 67 | 11.2 | 90 |
| Fri | 10-Nov-17 | 0 | 25.5 | 67 | 7.2 | 60 |
| Sat | 11-Nov-17 | 0 | 25.1 | 71 | 10.6 | 80 |
| Sun | 12-Nov-17 | 14.7 | 22.3 | 81 | 9.8 | 80 |
| Mon | 13-Nov-17 | 12.5 | 22.4 | 83 | 9.3 | 80 |
| Tue | 14-Nov-17 | 0.2 | 23.6 | 80 | 6.7 | 70 |
| Wed | 15-Nov-17 | 0 | 23.7 | 76# | 7.9 | 70 |
| Thu | 16-Nov-17 | 0 | 24.1 | 79# | 7.6# | 050# |
| Fri | 17-Nov-17 | 0 | 24.6 | 80 | 4.3 | 150 |
| Sat | 18-Nov-17 | 1.9 | 23.8 | 81 | 6.5 | 080# |
| Sun | 19-Nov-17 | 1 | 20.3 | 77 | 10.6# | 050# |
| Mon | 20-Nov-17 | 0 | 20.0 | 71 | 4.9# | 320# |
| Tue | 21-Nov-17 | 0 | 20.1 | 70 | 6.8 | 50 |
| Wed | 22-Nov-17 | 0 | 20.8 | 60 | 6.6 | 310 |
| Thu | 23-Nov-17 | 0 | 18.6 | 54 | 6.7 | 360 |
| Fri | 24-Nov-17 | 0 | 18.7 | 56 | 6.4# | 350# |
| Sat | 25-Nov-17 | 0 | 18.7 | 65 | 3.2# | 320# |
| Sun | 26-Nov-17 | 0 | 20.3 | 75# | 3.3# | 320# |
| Mon | 27-Nov-17 | Trace | 20.8 | 70 | 7.4 | 50 |
| Tue | 28-Nov-17 | Trace | 22.9 | 69 | 7.6 | 70 |
| Wed | 29-Nov-17 | 0 | 24.4 | 73 | 9 | 70 |
| Thu | 30-Nov-17 | 0.3 | 22.5 | 83 | 7.6 | 80 |

Incomplete data

*** Data unavailable

F. Noise Monitoring Data

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

| NM1A - Slope near the Victoria Shanghai Academy | | | | | | |
|--|--------------|---------------|---|---|---|--|
| Date | Time | | Noise Levels, dB(A) | | | Limit Level for Leq (dB(A))⁽²⁾ |
| | Start | Finish | Corrected Leq(30min)⁽¹⁾ | Corrected L₉₀⁽¹⁾ | Corrected L₁₀⁽¹⁾ | |
| 06-Sep-17 | 10:00 | 10:30 | 61.6 | 58.4 | 63.0 | 70 |
| 13-Sep-17 | 10:10 | 10:40 | 62.1 | 58.9 | 63.7 | 70 |
| 20-Sep-17 | 09:24 | 09:54 | 60.9 | 57.7 | 62.1 | 70 |
| 27-Sep-17 | 11:00 | 11:30 | 63.9 | 56.0 | 65.5 | 70 |
| 04-Oct-17 | 09:40 | 10:10 | 63.7 | 58.9 | 67.1 | 70 |
| 10-Oct-17 | 13:50 | 14:20 | 60.4 | 57.9 | 62.7 | 70 |
| 18-Oct-17 | 10:00 | 10:30 | 60.2 | 55.3 | 63.8 | 70 |
| 26-Oct-17 | 09:40 | 10:10 | 60.3 | 58.5 | 62.2 | 70 |
| 01-Nov-17 | 09:02 | 09:32 | 61.2 | 59.3 | 62.2 | 70 |
| 07-Nov-17 | 09:35 | 10:05 | 60.6 | 58.4 | 62.3 | 70 |
| 15-Nov-17 | 10:10 | 10:40 | 59.1 | 57.0 | 61.1 | 70 |
| 23-Nov-17 | 10:35 | 11:05 | 60.0 | 54.8 | 63.8 | 70 |
| 29-Nov-17 | 10:00 | 10:30 | 59.2 | 55.3 | 61.3 | 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) | L₉₀ | L₁₀ | |
| 06-Sep-17 | 09:10 | 09:40 | 53.9 | 52.4 | 55.2 | 70 |
| 13-Sep-17 | 09:23 | 09:53 | 56.0 | 54.5 | 57.3 | 70 |
| 20-Sep-17 | 08:40 | 09:10 | 53.5 | 50.8 | 55.8 | 70 |
| 27-Sep-17 | 10:08 | 10:38 | 54.4 | 49.7 | 56.0 | 70 |
| 04-Oct-17 | 10:30 | 11:00 | 54.0 | 48.6 | 56.0 | 70 |
| 10-Oct-17 | 13:02 | 13:32 | 54.8 | 50.8 | 57.4 | 70 |
| 18-Oct-17 | 09:08 | 09:38 | 51.6 | 48.0 | 53.0 | 70 |
| 26-Oct-17 | 09:00 | 09:30 | 52.4 | 49.5 | 54.3 | 70 |
| 01-Nov-17 | 10:25 | 10:55 | 52.3 | 50.9 | 53.9 | 70 |
| 07-Nov-17 | 08:55 | 09:25 | 52.0 | 49.6 | 53.6 | 70 |
| 15-Nov-17 | 09:30 | 10:00 | 52.9 | 51.3 | 58.3 | 70 |
| 23-Nov-17 | 09:55 | 10:25 | 53.9 | 50.8 | 56.7 | 70 |
| 29-Nov-17 | 09:20 | 09:50 | 52.4 | 49.3 | 54.5 | 70 |

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

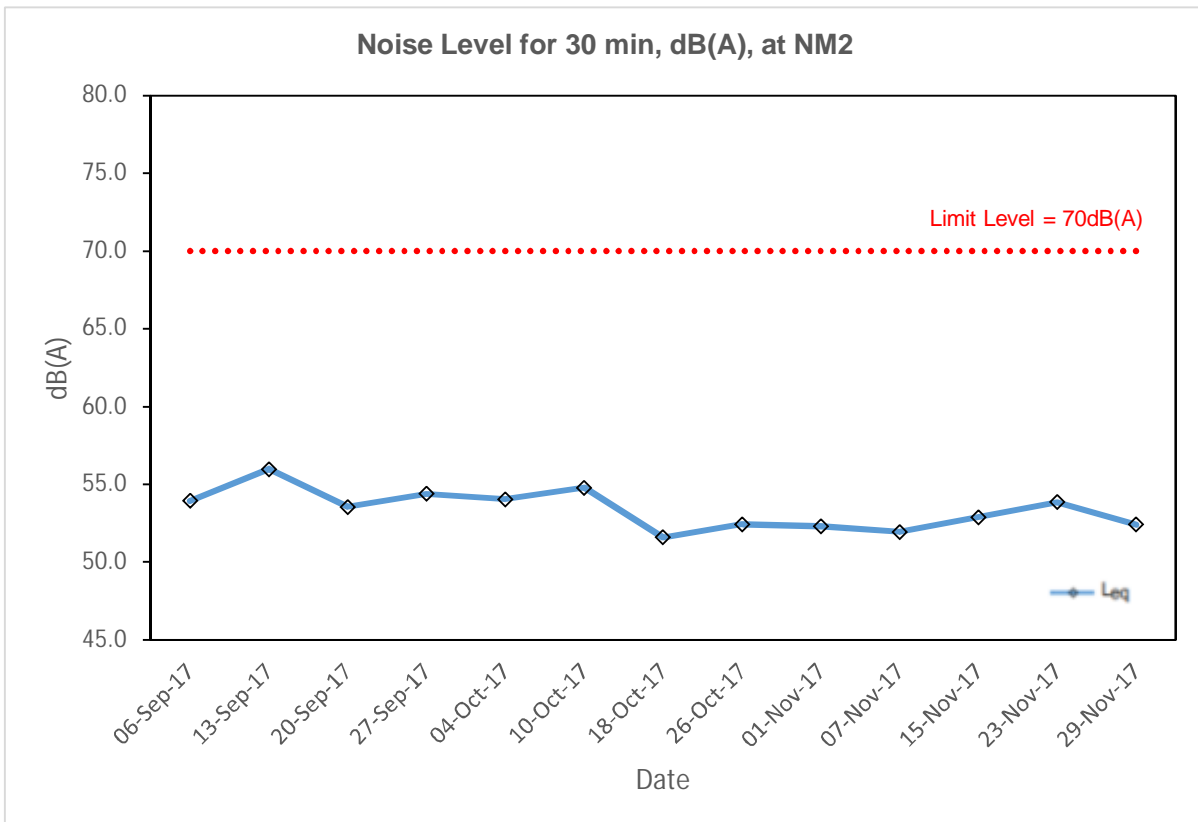
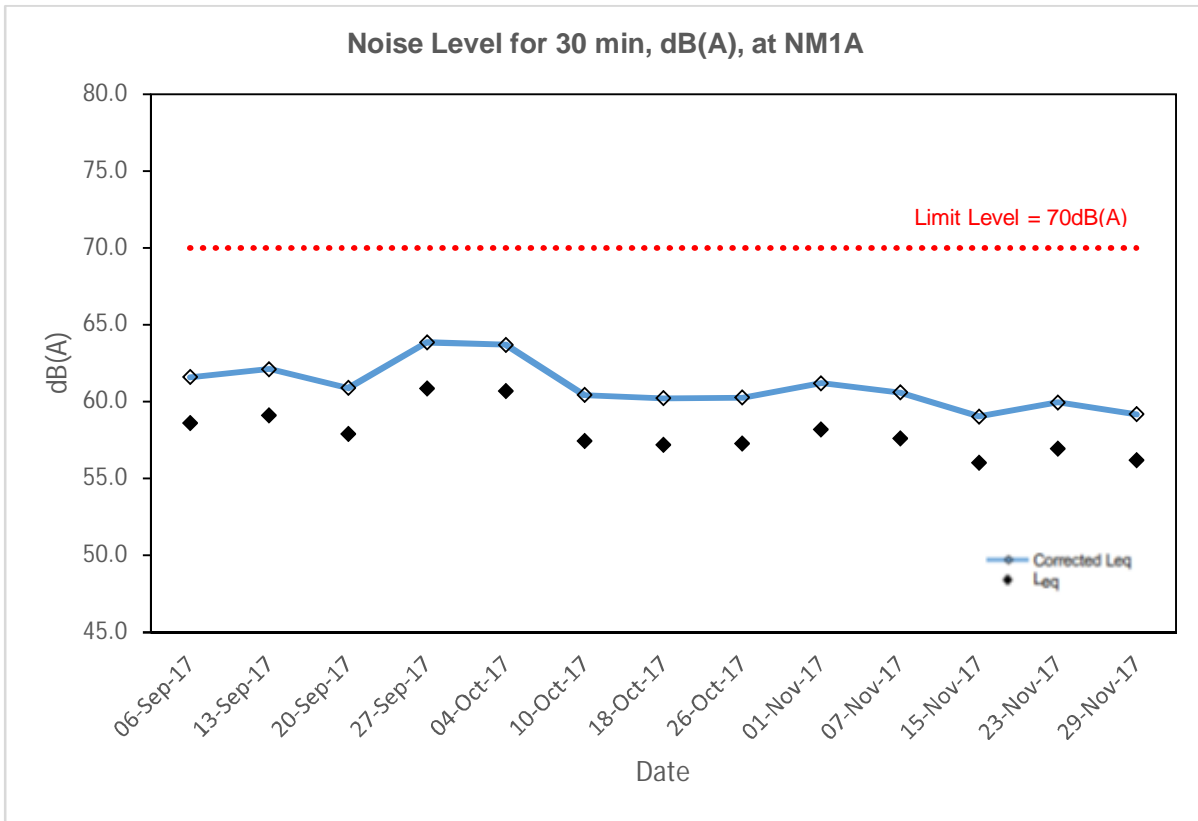
| NM1A - Slope near the Victoria Shanghai Academy | | | | | | |
|--|--------------|---------------|---|---|---|---|
| Date | Time | | Noise Levels, dB(A) | | | Limit Level for L_{eq} (dB(A))⁽²⁾ |
| | Start | Finish | Corrected L_{eq}(5min)⁽¹⁾ | Corrected L₉₀⁽¹⁾ | Corrected L₁₀⁽¹⁾ | |
| 26-Nov-17 | 15:35 | 15:50 | 55.0 | 50.3 | 57.7 | 70 |
| | | | 52.8 | 49.1 | 53.8 | |
| | | | 55.0 | 50.7 | 57.9 | |
| NM2 - Hong Kong Juvenile Care Centre | | | | | | |
| Date | Time | | Noise Levels, dB(A) | | | Limit Level for L_{eq} (dB(A))⁽²⁾ |
| | Start | Finish | L_{eq}(5min) | L₉₀ | L₁₀ | |
| 26-Nov-17 | 15:00 | 15:15 | 45.2 | 42.6 | 47.5 | 70 |
| | | | 45.3 | 41.2 | 41.2 | |
| | | | 44.2 | 42.0 | 42.0 | |

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.

G. Graphical Plots of Noise Monitoring Data

Graphical Plot of Noise Monitoring Data (September - November 2017)



H. Implementation Schedule for Environmental Mitigation Measures

Appendix C. Implementation Schedule for Environmental Mitigation Measures

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

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



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

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



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

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



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

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



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

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



| EIA Ref. | EM&A Log Ref. | Environmental Protection Measures | Location / Duration of measures / Timing of completion of measures | Implementation Agent | Implementation Stage ¹ | | | | Relevant Legislation & Guidelines |
|----------|---------------|--|--|----------------------|-----------------------------------|-----|----|-----|-----------------------------------|
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| | | <p>roads, particularly during dry weather.</p> <ul style="list-style-type: none"> Covering 80% of stockpiling area by impervious sheets and spraying all dusty material with water immediately prior to any loading transfer operations to keep the dusty materials wet during material handling at the stockpile areas <p>Relevant dust control practices as stipulated in the Air Pollution Control (Construction Dust) Regulation should be adopted:</p> <p>Good Site Management</p> <ul style="list-style-type: none"> Good site management is important to help reduce potential air quality impact down to an acceptable level. As a general guide, the Contractor should maintain high standards of housekeeping to prevent emissions of fugitive dust. Loading, unloading, handling and storage of raw materials, wastes or by-products should be carried out in a manner so as to minimise the release of visible dust emission. Any piles of materials accumulated on or around the work areas should be cleaned up regularly. Cleaning, repair and maintenance of all plant facilities within the work areas should be carried out in a manner minimising generation of fugitive dust emissions. The material should be handled properly to prevent fugitive dust emission before cleaning. <p>Disturbed Parts of the Roads</p> <ul style="list-style-type: none"> Main temporary access points should be paved with concrete, bituminous hardcore materials or metal plates and be kept clear of dusty materials; or Unpaved parts of the road should be sprayed with water or a dust suppression chemical so as to keep the entire road surface wet. <p>Exposed Earth</p> <ul style="list-style-type: none"> Exposed earth should be properly treated by compaction, hydroseeding, vegetation planting or seeding with latex, vinyl, bitumen within six months after the last construction activity on the site or part of the site where the exposed earth lies. <p>Loading, Unloading or Transfer of Dusty Materials</p> <ul style="list-style-type: none"> All dusty materials should be sprayed with water immediately prior to any loading or transfer operation so as | | | | | | | |

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



| EIA Ref. | EM&A Log Ref. | Environmental Protection Measures | Location / Duration of measures / Timing of completion of measures | Implementation Agent | Implementation Stage ¹ | | | | Relevant Legislation & Guidelines |
|------------------------------------|---------------|--|--|----------------------|-----------------------------------|-----|----|-----|-----------------------------------|
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| | | <p>to keep the dusty material wet.</p> <p>Debris Handling</p> <ul style="list-style-type: none"> Any debris should be covered entirely by impervious sheeting or stored in a debris collection area sheltered on the top and the three sides. Before debris is dumped into a chute, water should be sprayed onto the debris so that it remains wet when it is dumped. <p>Transport of Dusty Materials</p> <ul style="list-style-type: none"> Vehicles used for transporting dusty materials/spoils should be covered with tarpaulin or similar material. The cover should extend over the edges of the sides and tailboards. <p>Wheel washing</p> <ul style="list-style-type: none"> Vehicle wheel washing facilities should be provided at each construction site exit. Immediately before leaving the construction site, every vehicle should be washed to remove any dusty materials from its body and wheels. <p>Use of vehicles</p> <ul style="list-style-type: none"> The speed of the trucks within the site should be controlled to about 10 km/hour in order to reduce adverse dust impacts and secure the safe movement around the site. Immediately before leaving the construction site, every vehicle should be washed to remove any dusty materials from its body and wheels. Where a vehicle leaving the construction site is carrying a load of dusty materials, the load should be covered entirely by clean impervious sheeting to ensure that the dusty materials do not leak from the vehicle. <p>Site hoarding</p> <ul style="list-style-type: none"> Where a site boundary adjoins a road, street, service lane or other area accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length of that portion of the site boundary except for a site entrance or exit | | | | | | | |
| Noise Impact (Construction) | | | | | | | | | |

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



| EIA Ref. | EM&A Log Ref. | Environmental Protection Measures | Location / Duration of measures / Timing of completion of measures | Implementation Agent | Implementation Stage ¹ | | | | Relevant Legislation & Guidelines |
|---------------------------------|---------------|--|---|--|-----------------------------------|-----|----|----------------------------------|-----------------------------------|
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| 5.7 | 3.2 | <p>Good Site Practice</p> <p>Good site practice and noise management can significantly reduce the impact of construction site activities on nearby NSRs.</p> <ul style="list-style-type: none"> ▪ only well-maintained plant to be operated on-site and plant should be serviced regularly during the construction works; ▪ machines and plant that may be in intermittent use to be shut down between work periods or should be throttled down to a minimum; ▪ plant known to emit noise strongly in one direction, should, where possible, be orientated to direct noise away from the NSRs; ▪ mobile plant should be sited as far away from NSRs as possible; and ▪ material stockpiles and other structures to be effectively utilised, where practicable, to screen noise from on-site construction activities. | Project construction site / Duration of the construction phase / Prior to commencement of operation | Contractor appointed by OPC | ✓ | | | EIAO and Noise Control Ordinance | |
| Noise Impact (Operation) | | | | | | | | | |
| 5.7 | 3.3.2 | <p>Fixed Plant Noise</p> <p>With the adoption of the proposed maximum allowable SWLs, all representative NSRs is expected to comply with the relevant noise criteria for the daytime and evening time periods. No adverse fixed plant noise impact is anticipated.</p> <p>It is also recommended that the following noise reduction measures should be considered as far as practicable during design stage:</p> <ul style="list-style-type: none"> ▪ choose quiet plant such as those which have been effectively silenced; ▪ include noise levels specification when ordering new plant (including chiller and E&M equipment); ▪ locate fixed plant / louvre away from any NSRs as far as practicable; ▪ locate fixed plant in walled plant rooms or in specially designed enclosures; ▪ locate noisy machine in a basement or a completely separate building; | Within Project area / Prior to operation phase / Duration of the operation phase / Throughout operation phase | Design Architect / Contractor appointed by OPC | ✓ | ✓ | ✓ | EIAO and Noise Control Ordinance | |

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



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

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



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

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



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

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



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

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



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

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



| EIA Ref. | EM&A Log Ref. | Environmental Protection Measures | Location / Duration of measures / Timing of completion of measures | Implementation Agent | Implementation Stage ¹ | | | | | Relevant Legislation & Guidelines |
|----------|---------------|--|--|-----------------------------|-----------------------------------|-----|----|-----|---|-----------------------------------|
| | | | | | Des | Con | Op | Dec | | |
| 8.5.1.2 | 6.2 | <p>Recommendations for good site practices during the construction activities include:</p> <ul style="list-style-type: none"> Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site Training of site personnel in proper waste management and chemical handling procedures Provision of sufficient waste disposal points and regular collection of waste Appropriate measures to minimise windblown litter and dust/ odour during transportation of waste by either covering trucks or by transporting wastes in enclosed containers Stockpiles of C&D materials should be kept covered by impervious sheets to avoid wind-blown dust All dusty materials including C&D materials should be sprayed with water immediately prior to any loading transfer operation so as to keep the dusty material wet during material handling at the stockpile areas Provision of wheel washing facilities before the trucks leaving the works area so as to minimise dust introduction to public roads Well planned delivery programme for offsite disposal such that adverse environmental impact from transporting the inert or non-inert C&D materials is not anticipated <p>Waste Reduction Measures</p> <p>Good management and control can prevent the generation of a significant amount of waste. Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include:</p> <ul style="list-style-type: none"> Sort inert C&D materials to recover any recyclable portions such as metals Segregation and storage of different types of waste in different containers or skips to enhance reuse or recycling of | <p>stage / Until completion of all construction activities</p> | appointed by OPC | | | | | <p>Disposal (Chemical Wastes) (General) Regulation; and ETWB Technical Circular (Works) No. 19/2005 Environmental Management on Construction Site</p> | |
| | | | <p>Project construction site / Throughout construction stage / Until completion of all construction activities</p> | Contractor appointed by OPC | | ✓ | | | <p>Waste Disposal Ordinance</p> | |

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



| EIA Ref. | EM&A Log Ref. | Environmental Protection Measures | Location / Duration of measures / Timing of completion of measures | Implementation Agent | Implementation Stage ¹ | | | | Relevant Legislation & Guidelines |
|----------|---------------|---|---|-----------------------------|-----------------------------------|-----|----|-----|--|
| | | | | | Des | Con | Op | Dec | |
| 8.5.1.3 | 6.2 | <p>materials and their proper disposal</p> <ul style="list-style-type: none"> ▪ Encourage collection of recyclable waste such as waste paper and aluminium cans by providing separate labelled bins to enable such waste to be segregated from other general refuse generated by the work force ▪ Proper site practices to minimise the potential for damage or contamination of inert C&D materials ▪ Plan the use of construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste <p>Inert and Non-inert C&D materials</p> <p>In order to minimise impacts resulting from collection and transportation of inert C&D materials for off-site disposal, the inert C&D materials should be reused on-site as fill material as far as practicable. In addition, inert C&D materials generated from excavation works could be reused as fill materials in local projects that require public fill for reclamation.</p> <p>The surplus inert C&D materials will be disposed of at the Government's PFRFs for beneficial use by other projects in Hong Kong.</p> <p>The C&D materials generated from general site clearance should be sorted on site to segregate any inert materials for reuse or disposal at PFRFs whereas the non-inert materials will be disposed of at the designated landfill site.</p> <p>In order to monitor the disposal of inert and non-inert C&D materials at respectively PFRFs and the designated landfill site, and to control fly-tipping, it is recommended that the Contractor should follow the DEVB Technical Circular (Works) No.6/2010 for Trip Ticket System for Disposal of Construction & Demolition Materials issued by Development Bureau. In addition, it is also recommended that the Contractor should prepare and implement a Waste Management Plan detailing their various waste arising and waste management practices in accordance with the relevant requirements of the ETWB Technical Circular (Works) No. 19/2005 Environmental Management on Construction Site.</p> | Project construction site / Throughout construction stage / Until completion of all construction activities | Contractor appointed by OPC | ✓ | | | | Waste Disposal Ordinance ; DEVB Technical Circular (Works) No.6/2010 for Trip Ticket System for Disposal of Construction & Demolition Materials; and ETWB Technical Circular (Works) No. 19/2005 Environmental Management on Construction Site |
| 8.5.1.4 | 6.2 | <p>Chemical Waste</p> <p>If chemical wastes are produced at the construction site, the</p> | Project construction site / Throughout construction | Contractor appointed by OPC | ✓ | | | | Code of Practice on the Packaging |

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



| EIA Ref. | EM&A Log Ref. | Environmental Protection Measures | Location / Duration of measures / Timing of completion of measures | Implementation Agent | Implementation Stage ¹ | | | | | Relevant Legislation & Guidelines |
|--|---------------|--|---|-----------------------------|-----------------------------------|-----|----|-----|--|---|
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| | | Contractor will be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the "Code of Practice on the Packaging Labelling and Storage of Chemical Wastes". Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidising, irritant, toxic, harmful, corrosive, etc. The Contractor should use a licensed collector to transport and dispose of the chemical wastes at the approved Chemical Waste Treatment Centre or other licensed recycling facilities, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation. | Project construction stage / Until completion of all construction activities | | | | | | | Labelling and Storage of Chemical Wastes; Waste Disposal (Chemical Waste) (General) Regulation |
| 8.5.1.5 | 6.2 | General Refuse 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. 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 |

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



| EIA Ref. | EM&A Log Ref. | Environmental Protection Measures | Location / Duration of measures / Timing of completion of measures | Implementation Agent | Implementation Stage ¹ | | | | | Relevant Legislation & Guidelines |
|--|---------------|--|--|-----------------------------|-----------------------------------|-----|----|-----|--|-----------------------------------|
| | | | | | Des | Con | Op | Dec | | |
| 8.5.2.2 | 6.2 | <p>to the refuse collection point accordingly. A reputable waste collector should be employed to remove general refuse regularly to avoid odour nuisance or pest/vermin problem. Sufficient recycling containers are recommended to be provided at suitable locations of the Project to encourage recycling of such waste as aluminium cans, plastics and waste paper.</p> <p>Chemical Waste If chemical wastes are expected to be produced during the operation phase, the Project Proponent should register with the EPD as a chemical waste producer and follow the guidelines stated in the "Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes". Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidising, irritant, toxic, harmful, corrosive, etc. Licensed collector should be deployed to transport and dispose of the chemical wastes at the approved Chemical Waste Treatment Centre or other licensed recycling facilities, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.</p> | Throughout operation stage | Contractor appointed by OPC | | | ✓ | | Code of Practice on the Packaging Labelling and Storage of Chemical Wastes; Waste Disposal (Chemical Waste) (General) Regulation | |
| 8.5.2.3 | 6.2 | <p>Floating Refuse Regular inspection should be carried out along the artificial seawall of the Project boundary for any entrapment or accumulation of floating refuse. Where an appreciable amount of floating refuse is found on the artificial seawall during the inspection, the locations of such refuse will be recorded and arrangements with the project proponent will immediately be made to collect and clear the refuse from the seawall.</p> | Project area / On a regular basis / Throughout operation stage | Contractor appointed by OPC | | | ✓ | | Waste Disposal Ordinance | |
| Land Contamination (Construction) | | | | | | | | | | |
| 9.6 | 7.2 | In any case where contaminated soil is identified after the commencement of works, a Contamination Assessment Plan (CAP) is required to be prepared for EPD's endorsement prior to | Project construction site / Before construction stage | Contractor appointed by OPC | ✓ | | | | Guidance Note for Contaminated Land Assessment and Remediation | |

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



| EIA Ref. | EM&A Log Ref. | Environmental Protection Measures | Implementation Stage ¹ | | | | | Relevant Legislation & Guidelines |
|----------|---------------|---|---|-----------------------------|-----|-----|----|--|
| | | | Location / Duration of measures / Timing of completion of measures | Implementation Agent | Des | Con | Op | |
| 9.6 | 7.2 | <p>the site investigation. The Contamination Assessment Report (CAR) and/ or Remediation Action Plan (RAP) should be prepared for EPD's approval after the site investigation. If land contamination is confirmed, remediation works should be carried out according to the approved RAP. A Remediation Report (RR) should also be prepared for EPD's endorsement to demonstrate that the clean-up of the contaminated land is completed. No construction work or development of site should be carried out before the approval of the RR.</p> <p>If contaminated soil is identified, the following mitigation measures are for the excavation and transportation of contaminated materials (if any):</p> <ul style="list-style-type: none"> ▪ To minimise the incidents of construction workers coming in contact with any contaminated materials, bulk earth-moving excavation equipment should be employed; ▪ Contact with contaminated materials can be minimised by wearing appropriate clothing and personal protective equipment such as gloves and masks (especially when working directly with contaminated material), provision of washing facilities and prohibition of smoking and eating on site; ▪ Stockpiling of contaminated excavated materials on site should be avoided as far as possible; ▪ The use of any contaminated soil for landscaping purpose should be avoided unless pre-treatment was carried out; ▪ Vehicles containing any excavated materials should be suitably covered to reduce dust emissions and/or release of contaminated wastewater; ▪ Truck bodies and tailgates should be sealed to prevent any discharge; ▪ Only licensed waste haulers should be used to collect and transport contaminated material to treatment/disposal site and should be equipped with tracking system to avoid fly | Project construction site / Throughout construction stage / Until completion of all construction activities | Contractor appointed by OPC | | ✓ | | <p>Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management</p> <p>Practice Guide for Investigation and Remediation of Contaminated Land</p> <p>Waste Disposal Ordinance (Cap 354)</p> <p>Waste Disposal (Chemical Waste) (General) Regulation (Cap 354)</p> |

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



| EIA Ref. | EM&A Log Ref. | Environmental Protection Measures | Implementation Stage ¹ | | | | | Relevant Legislation & Guidelines |
|---|------------------|---|---|-----------------------------|-----|-----|----|-----------------------------------|
| | | | Location / Duration of measures / Timing of completion of measures | Implementation Agent | Des | Con | Op | |
| | | tipping; <ul style="list-style-type: none"> ▪ Speed control for trucks carrying contaminated materials should be exercised. ▪ Observe all relevant regulations in relation to waste handling, such as Waste Disposal Ordinance (Cap 354), Waste Disposal (Chemical Waste) (General) Regulation (Cap 354) and obtain all necessary permits where required; and ▪ Maintain records of waste generation and disposal quantities and disposal arrangements. | | | | | | |
| Landscaping and Visual Impact (Construction) | | | | | | | | |
| Table 12.13 (CP01) | Table 9.1 (CP01) | Minimisation of Construction Period The construction programme should be carefully designed to minimise the length of the construction period. | Project construction site / Throughout construction stage / Until completion of all construction activities | Contractor appointed by OPC | ✓ | ✓ | | EIAO-TM |
| Table 12.13 (CP02) | Table 9.1 (CP02) | Minimisation of Works Areas The footprint of the proposed hard structures as well as the extent of temporary works areas should be minimised as far as practicable. | Project construction site / Throughout construction stage / Until completion of all construction activities | Contractor appointed by OPC | ✓ | ✓ | | EIAO-TM |
| Table 12.13 (CP03) | Table 9.1 (CP03) | Construction Site Controls Construction site controls should be enforced, where possible, to ensure that the landscape and visual impacts arising from the construction phase activities, such as the storage of materials, the location and appearance of site accommodation, etc. are minimised. | Project construction site / Throughout construction stage / Until completion of all construction activities | Contractor appointed by OPC | ✓ | ✓ | | EIAO-TM |
| Table 12.13 (CP04) | Table 9.1 (CP04) | Preservation of Existing Vegetation The development proposal should avoid disturbance to existing vegetation as far as practicable. A formal tree removal application should be submitted for approval by relevant authorities in accordance with LAO PN No. 07/2007 "Tree Preservation and Tree Removal Application for Building Development in Private Projects" during the detailed design phase of the Project. Where possible, all trees which are not in direct conflict with the development proposals should be retained <i>in situ</i> . | Project construction site / Throughout construction stage / Until completion of all construction activities | Contractor appointed by OPC | ✓ | ✓ | | EIAO-TM; LAO PN No. 07/2007 |
| Table | Table | No Intrusion Zones | Project construction site / | Contractor | ✓ | ✓ | | EIAO-TM |

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



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

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



| EIA Ref. | EM&A Log Ref. | Environmental Protection Measures | Implementation Stage ¹ | | | | | Relevant Legislation & Guidelines |
|--------------------|------------------|--|--|--|-----|-----|----|-----------------------------------|
| | | | Location / Duration of measures / Timing of completion of measures | Implementation Agent | Des | Con | Op | |
| Table 12.14 (OP01) | Table 9.2 (OP01) | <p>Sensitive Design and Disposition</p> <p>All proposed hard structures should be sensitively designed in a manner that responds to the existing and planned landscape context, and minimises potential adverse landscape and visual impacts. The structural design should seek to reduce the apparent visual mass through the use of natural materials such as wooden frame and semi-transparent panels. Subdued tones should be considered for the colour palette with non-reflective finishes to reduce glare effect. Site specific measures, such as the disposition of the key structures closer to the northern slopes, the design of building forms as extension along the existing slope topography, the use of concave roof form and the location of ride platforms on or near the slopes to minimise structural support, should also be considered for better integration with the surroundings and minimisation of potential visual impacts.</p> | Project buildings / During design stage / Throughout operation phase | Design Architect / Contractor appointed by OPC | ✓ | ✓ | ✓ | EIAO-TM |
| Table 12.14 (OP03) | Table 9.2 (OP03) | <p>Enhancement Planting</p> <p>Other than compensatory tree planting, additional trees, shrubs, groundcovers and lawn should also be considered to maximise greening within the redevelopment area.</p> | Project area / During design stage / Throughout operation phase | Design Architect / Contractor appointed by OPC | ✓ | ✓ | ✓ | EIAO-TM |
| Table 12.14 (OP06) | Table 9.2 (OP06) | <p>Responsive Lighting Design</p> <p>Overall lighting design would carefully consider a reasonable level of functional and thematic lighting with due consideration of possible light pollution and night-time glare to the surroundings. Consideration shall be made by the lighting designers to the following measures:</p> <ul style="list-style-type: none"> ▪ Lighting shall be designed with due consideration of mounting height and direction of light fixtures so as not to point directly towards any sensitive receiver. ▪ Lighting shall be arranged with due consideration of reflectance so as to avoid glare effect. ▪ Lighting shall be regularly monitored during operation. ▪ Lights located adjacent or in proximity to neighbours shall be carefully designed to prevent possible light intrusion. ▪ Lighting operation schedule shall specify only lights necessary for security to be left on after business hours. ▪ Paving materials should be selected as necessary to reduce | Project area / During design stage / Throughout operation phase | Design Architect / Contractor appointed by OPC | ✓ | ✓ | ✓ | EIAO-TM |

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



| EIA Ref. | EM&A Log Ref. | Environmental Protection Measures | Location / Duration of measures / Timing of completion of measures | Implementation Agent | Implementation Stage ¹ | | | | | Relevant Legislation & Guidelines |
|----------|---------------|---|--|----------------------|-----------------------------------|-----|----|-----|--|-----------------------------------|
| | | | | | Des | Con | Op | Dec | | |
| | | potential glare from surface reflectance. <ul style="list-style-type: none"> ▪ Particular attention should be paid to the use of lighting having a high intensity or harsher tone (e.g. metal halide lamps). ▪ Lights shall generally be models having precise cut-off range (such as full cut-off optics where available and practicable) and if necessary be fitted with adjustable anti-glare shields. | | | | | | | | |

Remarks:

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