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PROJECT CONSTRUCTION ENVIRONMENTAL MONITORING & AUDIT MANUAL

1.0 INTRODUCTION

1.1 Background

The background to the development of the area may be chronicled thus: -

- a. In 1989, the Port and Airport Development Strategy Study (PADS) identified North-East Lantau Island as the primary area for expanding the port facilities in Hong Kong. Subsequently, the Project area was earmarked for container terminals (CT10 and CT11) and port related uses, including container back-up areas, business park and industrial uses under the Lantau Port and Western Harbour Development Studies (LAPH) which were conducted in 1993. Based on the findings and recommendations of the LAPH, the Outline Zoning Plan (OZP) for North-East Lantau was developed, with the main development theme evolving around the port development for North-East Lantau which was gazetted under the Town Planning Ordinance in March 1995 and has since had minor amendments in 1996 and 1998.
- b. The 1997/98 Port Cargo Forecast (PCF) indicated a general slow down of the growth rate of cargo throughput in Hong Kong. On the basis of those findings, the planned development programme for port facilities was subsequently reviewed, and the 1998 Territorial Development Strategy Review (TDSR) identified North-East Lantau as having potential for a range of other land uses, such as tourism/recreation, housing, business estate and major transport interchange.
- c. The land use of the Project Site was thus revised to incorporate a theme park and related resort development in accordance with the draft North-East Lantau OZP that was gazetted in August 1999. The two container terminals to the south-southeast of the Theme Park have not been amended.
- d. On the 3 November 1999, the Civil Engineering Department (CED) submitted an application for an Environmental Impact Assessment (EIA) Study Brief (Project Profile No. PP066/1999) under Section 5(1) of the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499). That EIA Study Brief (No. ESB-043/1999) was issued on the 6 December 1999 under Section 7(4)(a) of the EIAO, and an EIA thereupon undertaken (EIAO Register No. AEIAR-032/2000) that was completed in February 2000 (the "EIA Report"), from whence an Environmental Monitoring and Audit (EM&A) Manual was prepared and an Environmental Permit (EP) was issued to CED.
- e. Pursuant to that EP and particular to the Project, the Project's owner and developer, Hongkong International Theme Parks (HKITP) has subsequently applied for and was issued a Further Environmental Permit on 21 July 2000 (FEP-01/059/2000) for the construction and operation of a theme park and related infrastructure (the FEP").

1.2 The Project

- a. HKITP will construct and operate a Disney-branded theme park and resort, and associated complex and infrastructure at Penny's Bay, Hong Kong (the "Theme Park") in accordance with the requirements of a Master Project Agreement (MPA) between The Government of the Hong Kong Special Administrative Region and HKITP, the aforementioned FEP and the EIA Report precedent thereto and such other laws, enactments and regulations as may apply relevant to environmental matters. Accordingly, HKITP has devised a comprehensive "Project EM&A Programme" for the management and implementation of its obligations thereunder, of which this Project EM&A Manual is a major element.
- b. The construction of the Theme Park will comprise several large scale construction contracts taking place on-Site between the end of 2002 to 2005. Whilst the exact details and sequencing of the construction works are still being developed, it is anticipated that a number of the construction contracts will be undertaken concurrently. The most up-to-date Master Programme is attached in Figure 2.
- c. As there will be multiple construction contractors working concurrently within close proximity, issues regarding the potential for adverse environmental impacts need to be considered. The magnitude of this issue will relate to the actual sequencing of the construction contracts and the sequencing of the works within each contract.
- d. In order to ensure that potential adverse environmental impacts are effectively managed, and that they do not give rise to on-Site problems, consideration needs to be given to developing effective procedures for monitoring, and if necessary, responding to and rectifying any potential adverse environmental cumulative impacts, relevant to which: -
 - 1) all of HKITP's construction contractors and their sub-contractors involved in the construction of the Theme Park will be responsible for, amongst other things: -
 - assuming complete responsibility for the environmental protection management of any portions of the Project Site under their control;
 - obligating themselves to compliance with the aforementioned FEP and the EIA Report precedent thereto and such other laws, enactments and regulations as may apply relevant to environmental matters to the same extent as HKITP is so obligated;
 - their own monitoring, protection and remediation works in accordance with any licenses or construction permits required for their specific construction works; and
 - 2) Under an agreement reached between CED and HKITP, CED will conduct those monitoring and audit works specified in the EIA Report for the construction of the Theme Park (including baseline and impact monitoring for air, noise, water quality and ecology) and will provide the information to all relevant parties;

- 3) Specifically, HKITP is not required to undertake any monitoring, with the exception of ad hoc monitoring which may be necessary in response to formal written complaints or as a result of observations made by HKITP during their site inspections;
- 4) Although according to the FEP, HKITP shall conduct baseline and impact monitoring on terrestrial ecology, it has been agreed at the start of the project that monitoring of the white bellied sea eagle will be the full responsibility of CED until completion of Government's works in the Penny's Bay Development Area (refer to Annex A of the HKITP application for Further Environmental Permit dated 14 July 2000). Hence HKITP will not be involved in any collection of ecological data on site until Government's works finishes sometime after the Theme Park opens. Instead, reference to the CED monitoring results will be made in these monthly EM&A reports prepared by HKITP during the construction phase; and
- 5) For the HKITP baseline monitoring report, it was agreed with EPD that a summary of three months of standard impact monitoring data prior to start of HKITP construction work as collected by the Penny's Bay Infrastructure Contract 1 team would be referenced as the baseline condition. For the HKITP monthly EM&A report, a clear reference to the CED ecological monitoring results will be provided.

1.3 The Project organisation and lines of communication with respect to environmental protection works are shown in Figure 1, and particulars of the responsibilities of individuals therein are given in Part 5 of this Manual, but for avoidance of doubt: -

- a. the term "Project Manager" refers to the Project Manager as defined in the Contractor's contract, who is an entity engaged by HKITP to represent it in and administer all its construction and operating endeavours for the Project;
- b. the term "HKITP's Environmental Team Leader" (ETL) refers to the person delegated the role of administrative oversight of the Project EM&A Programme in accordance with this Manual who is responsible for and in charge of HKITP's Environmental Team (ET);
- c. the term "Independent Environmental Checking Consultant" (IECK) is the consultant engaged by HKITP in accordance with the requirement of the FEP therefor; and
- d. the collective term "Contractors" (and individually, "Contractor") refers to HKITP's construction contractors and their sub-contractors involved in the construction of the Theme Park.

2.0 PURPOSE AND CONTENTS OF THE MANUAL

2.1 The primary purposes of this Project Environmental Monitoring and Audit (EM&A) Manual (the "Project EM&A Manual", or simply, "this Manual") are: -

- a. to provide reference and instruction to those charged with environmental duties during the construction of the Theme Park;

-
- b. set forth the Project EM&A Programme developed by HKITP and the IECK; and
 - c. set forth systematic procedures for the monitoring, auditing and remedying of potential adverse environmental impacts that may arise from the Contractors' works during the construction of the Theme Park.
- 2.2 Further, this Manual also serves to provide a reference document for the implementation of the contract-specific EM&A Manual required of each Contractor, so as to: -
- a. ensure compliance with, amongst other things, the EIA Study recommendations, the FEP and Land Grant as they apply to the Theme Park's construction (for Phase 1);
 - b. assess the effectiveness of the recommended mitigation measures; and
 - c. identify any further need for additional mitigation measures or remedial action.
- 2.3 This Manual is only concerned with the construction phase of the Theme Park, and a separate "Operations EM&A Manual" will be prepared for the operational phase of the Theme Park.
- 2.4 In particular, this Manual sets forth or provides: -
- a. the Project organisation relevant to environmental protection management;
 - b. HKITP's requirements with respect to the Project EM&A Programme during the construction of the Theme Park;
 - c. HKITP's particular requirements with respect to the programme for construction and the necessary environmental monitoring and audit programme to track the varying environmental impacts thereof;
 - d. a definition of "Action and Limit Levels";
 - e. the establishment of "Event and Action Plans";
 - f. the requirements for reviewing pollution sources and working procedures required in the event of non-compliance with established criteria; and
 - g. the requirements for presentation of EM&A data and appropriate reporting procedures.
- 3.0 PROJECT ENVIRONMENTAL MONITORING & AUDIT SCHEME
- 3.1 The general objectives of the Project EM&A Programme are: -
- a. to provide a database against which substantial adverse environmental impacts arising out of the Contractors' works can be determined;
 - b. to provide an early indication should any of the environmental control measures or practices fail to achieve the acceptable standards;

-
- c. to monitor the performance of the Contractors' works and the effectiveness of their mitigation measures,
 - d. to verify the environmental impacts predicted in the EIA Report;
 - e. to determine environmental compliance with regulatory requirements, standards and government policies;
 - f. to take remedial action if unexpected problems or unacceptable environmental impacts arise; and
 - g. to provide data against which environmental audits may be undertaken.
- 3.2 The potential impacts resulting from the construction of the Theme Park are specified in the EIA Report. This Project EM&A Manual has been prepared having regard to Annex N of the EIA Report and has been certified by HKITP's ETL and verified by the IECK in accordance with "permit condition 2.3" of the FEP.
- 3.3 In general, the scope of the Project EM&A Programme is to: -
- a. establish baseline air quality and noise levels at specified locations and review these baseline levels every six months;
 - b. evaluate impact monitoring data for air quality and noise collected by CED and review any mitigation measures as necessary;
 - c. implement inspection and audit requirements for waste management;
 - d. liaise with and provide environmental advice (as requested or when otherwise necessary) to Project Manager's and Contractors' construction site staff on the comprehension and consequences of the environmental monitoring data;
 - e. identify and consider environmental issues and other functions arising from the works;
 - f. check and quantify the Contractor's overall environmental performance, the implementation of Event and Action Plans and remedial actions taken to mitigate adverse environmental effects arising from the works;
 - g. conduct monthly reviews of monitored impact data as the basis for assessing compliance with the defined criteria and to ensure that necessary mitigation measures are identified and implemented;
 - h. undertake additional ad hoc monitoring and auditing as required by special circumstances;
 - i. evaluate and interpret all environmental monitoring data to provide an early indication should any of the environmental control measures or practices fail to achieve the acceptable standards, and to verify the environmental impacts predicted in the EIA Report;

- j. liaise with other individuals or parties concerning other environmental issues deemed to be relevant to the construction process;
 - k. conduct regular Project Site inspections to assess:
 - 1) the levels of Contractors' general environmental awareness;
 - 2) Contractors' implementation of the recommendations in the EIA Report;
 - 3) Contractors' performance as measured by the Project EM&A Programme;
 - 4) the need for specific mitigation measures to be implemented or the continued usage of those previously agreed; and
 - 5) to advise Project Manager's and Contractors' site staff of any identified potential environmental issues; and
 - l. submit monthly EM&A Reports which summarise Project monitoring and auditing data, with full interpretation illustrating the acceptability or otherwise of any environmental impacts and identification or assessment of the implementation status of agreed mitigation measures.
- 3.4 Material changes to this Project EM&A Manual, including changing the agreed monitoring locations, must be agreed between the Project Manager, HKITP's ETL, IECK and EPD, but in the event of a dispute, EPD's decision will prevail.

4.0 CONTRACTORS' ENVIRONMENTAL MONITORING & AUDIT

- 4.1 The construction of the Theme Park will be carried out in a series of separate contract packages, generally as set forth in Annex A to the Project Construction Mitigation Monitoring Manual [Attachment 1 to Section 00136 of the General Requirements].
- 4.2 This EM&A Manual forms the detailed reference document for all Contractors to prepare their Site-specific "Contractor EM&A Manuals", which will in turn form part of their "Contractor's Environmental Management Plans" (C-EMP's) that will set forth each Contractor's own construction methodology.
- 4.3 As required under their respective contracts, each Contractor must submit, in final (not draft) form, their Contractor EM&A Manual (as part of their C-EMP) to Project Manager for forwarding to HKITP's ETL and IECK for approval.
- 4.4 HKITP's ETL and IECK will certify and verify each Contractor's EM&A Manual submitted, which, subject to any revisions by HKITP's ETL, the Environmental Protection Department (EPD), any other relevant jurisdictional agency and/or IECK, will be employed by Contractor to perform its EM&A obligations. During that certification and verification, a key criteria will be the degree to which the impacts predicted and the recommended mitigation measures remain consistent and appropriate to the manner in which the Contractor's works are to be carried out.

- 4.5 If, during the construction of the Theme Park, HKITP's ETL, EPD, any other relevant jurisdictional agency and/or IECK are of the view that the Contractor's EM&A Manual requires amendment, such instruction will be forwarded to the Project Manager for instruction of the relevant Contractor of the required amendment, which amendment Contractor will promptly implement.
- 4.6 Each Contractor's EM&A Manual may need further review once that Contractor's proposed work processes and activities have been defined following any supplementary environmental reviews (or issue of compliance reports) such as may be required to reflect changes in proposed construction methods or design.
- 4.7 For the avoidance of doubt, Contractors must, unless otherwise specified in this EM&A Manual or required by law, only take instruction and direction from the Project Manager or HKITP's ETL in respect to anything relating to or associated with this Project EM&A Manual.

5.0 STRUCTURE AND ORGANISATION OF THE PROJECT EM&A PROGRAMME

5.1 Structure

- a. In accordance with the requirements of the FEP, HKITP has: -
- 1) established an ET, and designated a person as HKITP's ETL;
 - 2) engaged an IECK to verify and certify all aspects of the FEP that require such verification and certification.
- b. Neither HKITP's ETL nor IECK are responsible for conducting any monitoring works, however they will jointly and independently inspect the Project Site during construction of the Theme Park to verify whether all construction works carried out by the Contractors substantially comply with, amongst other things: -
- 1) the requirements of the FEP and EIA Report;
 - 2) the Contractor's Waste Management Plan;
 - 3) the Contractor's Environmental Management Plan; and
 - 4) the specifications for environmental protection management in the relevant contract.
- c. CED will also be responsible for establishing an Environmental Project Office (ENPO) that: -
- 1) will only liaise with HKITP's ETL;
 - 2) notwithstanding that it is retained by CED to coordinate EM&A Programmes for CED work sites only, and thus has no direct authority over HKITP's ET or the Contractors, will in such cases as necessary may jointly determine with HKITP's ETL that exceedences may have taken place within a Contractor's work areas;

- 3) will interpret the air and noise environmental monitoring data received from CED's contractors and determine, in consultation with HKITP's ETL and IECK, whether there are any breaches of the agreed environmental criteria provided for in the EIA Report; and
 - 4) in such cases, will investigate exceedances and, if appropriate, in consultation with HKITP's ETL, assist in the specification of remediation action by the Contractors.
- d. Relevant air and noise monitoring will be the responsibility of CED, as indicated in Part 7 of this Manual.
- 1) Monitoring data will be provided to Contractor routinely by the monitoring party for Contractor's action and reporting as set forth in Paragraph 10.4(b) below.
 - 2) If CED does not carry out the environmental monitoring for air quality and noise during the construction of the Theme Park, the Contractor will be required (in accordance with this Manual) to fulfil that monitoring role and carry out all necessary environmental monitoring (including setting up all monitoring stations and carrying out baseline monitoring) prior to commencing its works.

5.2 Organisation

- a. The Project organisation and lines of communication with respect to environmental matters are shown in Figure 1.
- b. The particular roles, responsibilities and obligations of the various parties involved in the construction Project EM&A Programme set forth herein are: -
 - 1) HKITP's ET is responsible for: -
 - the administrative oversight of the Project EM&A Programme;
 - liaising with ENPO, IECK and the Contractors on compliance matters;
 - conducting regular site inspections in accordance with Part 9 of this Manual; and
 - preparing and submitting monthly EM&A Reports to EPD in the form referred to in Part 10 of this Manual,
 and can be contacted as follows:

HKITP's ET Leader:	Richard Morse
Tel:	2203 2539
Fax:	2203 1388
Address:	Hongkong International Theme Parks Limited c/o: Hong Kong Disneyland Management Limited 20/F Shell Tower, Times Square, 1 Matheson Street, Causeway Bay, Hong Kong
e-mail:	rick.morse@disney.com

HKITP's ET Deputy: Tina Chow
 Tel: 2203 2561
 Fax: 2203 1388
 Address: [same as ETL]
 e-mail: tina.chow@disney.com

2) IECK is responsible for: -

- auditing the Project EM&A Programme, including the administrative oversight of all environmental mitigation measures, submissions relating to EM&A and any other submissions required under Section 2 of the FEP; and
- verifying and certifying the environmental acceptability of permanent and temporary works, relevant design plans and submissions under the FEP,

and can be contacted as follows:

IECK: Dr Anne Watker-Zeris
 Tel: 2828 5793
 Fax: 2827 1823
 Address: Mott MacDonald Hong Kong Ltd.
 40/F Hopewell Centre,
 183 Queen's Road East, Wanchai,
 Hong Kong
 e-mail: awatker@mottconnell.com.hk

3) ENPO is responsible to CED and can be contacted as follows:

ENPO: Steve V Jones
 Tel : 2503-6688
 Fax : 2807-1577
 Address : Mouchel Asia Ltd.
 12/F CEF Life Tower,
 248 Queen's Road East, Wanchai,
 Hong Kong
 e-mail : steve_jones@mouchel.com.hk

4) Contractors report to Project Manager and HKITP's ETL, and must, amongst other things: -

- work strictly within the scope of and comply with all terms and conditions contained in their Contractor EM&A Manual and the construction contract;
- participate in all site inspections undertaken by HKITP's ETL and IECK, as required, and immediately undertake any corrective or remedial actions instructed by the Project Manager or HKITP's ETL;
- provide periodic information/advice from time to time to HKITP's ETL and IECK regarding works activities which may contribute, or be contributing to the generation of adverse environmental conditions and provide any information required by HKITP's ETL;

- take responsibility and strictly adhere to the guidelines of the Contractor EM&A Manual and complementary protocols developed by his project staff;
 - receive monitoring data from the monitoring party and assess all exceedences of Action and Limit Levels shown in that data;
 - immediately implement measures to reduce or remove impact where Action and Limit Levels are exceeded and attributable to Contractor's operations;
 - prepare monthly environmental progress reports as required under the Contractor's Environmental Management Plan and submit same to HKITP's ETL, which shall address the assessment and response to all exceedences of Action and Limit Levels shown in the monitoring data (i.e., assessment measures employed, whether or not findings attributed to Contractor's operations and measures implemented if so attributed).
- 5) Project Manager is responsible for overseeing the Contractor's construction works and for ensuring that they are undertaken in accordance with the specification and contractual requirements relevant thereto, and will, amongst other things: -
- monitor the Contractors' compliance with contract specifications, including the effective implementation and operation of environmental mitigation measures and other aspects of the Project EM&A Programme;
 - cooperate with and provide to HKITP's ET and IECK any information or documentation reasonably require to assist them in preparing their EM&A Reports;
 - comply with the agreed Event and Action Plan in the event of any exceedance;
 - liaise with HKITP's ET and IECK, and assist as necessary in the implementation of the Project EM&A Programme; and
 - ensure that Contractors follow the protocols in the contract specifications or as otherwise agreed in the event of exceedances or complaints.

6.0 ACTION & LIMIT LEVELS / EVENT & ACTION PLANS

- 6.1 "Action and Limit Levels" ("A/L Levels") are defined levels of impact recorded by the environmental monitoring activities that represent levels at which a prescribed response is required. These levels are quantitatively defined later in the relevant Parts of this Manual, but can be described in principle thusly: -
- a. Action Limits are those limits beyond which there is a clear indication of a deteriorating ambient environment for which appropriate remedial actions are likely to be necessary to prevent environmental quality from falling outside the Limit Levels, which would be unacceptable; and

- b. Limit Levels are those statutory and/or agreed contract limits stipulated in the relevant pollution control ordinances, the HKPSG or the Environmental Quality Objectives established by the EPD such that, if exceeded, works should not proceed without appropriate remedial action, including a critical review of plant and working methods.
- 6.2 “Event and Action Plans” (EAP’s) provide, in association with the monitoring and audit activities, procedures for ensuring that if any significant adverse environmental incident caused accidentally or through inadequate implementation of mitigation measures on the part of the Contractor should occur, the cause will be immediately identified and remediated by the Contractor, and risk of a similar event occurring reduced or removed (and shall also apply to exceedances of A/L criteria).

7.0 MONITORING

- 7.1 For the avoidance of doubt the monitoring details in Part 7.4 (Air Quality Monitoring) and Part 7.5 (Noise Monitoring) of this Manual will only apply to the Contractor if, in the determination of Project Manager and HKITP’s ETL, CED does not carry out the anticipated air quality and noise monitoring or fails to satisfy the requirements therefor.
- 7.2 For the avoidance of doubt the Event and Action Plan requirements shall apply whether or not the Contractors are required to conduct monitoring.

7.3 Air Quality Monitoring

a. Introduction

- 1) In this section, the requirements, methodology, equipment, monitoring locations, criteria and protocols for the monitoring and audit of air quality impact during the construction of the Theme Park are presented.
- 2) This reflects the work to be carried out by CED with the results coordinated by the ENPO (in consultation with HKITP’s ETL) and provided to HKITP’s ETL and IECK for their use in preparing their audit reports.
- 3) For the avoidance of doubt, this section also applies to the Contractor if it is requested to fulfil CED’s monitoring role.
- 4) The objectives of the air quality monitoring for TSP will be to: -
 - identify the extent of construction dust impacts on sensitive receivers;
 - determine the effectiveness of mitigation measures to control dust from construction activities;
 - audit the compliance of the Contractor with regard to dust control, contract conditions and the relevant dust impact criteria;
 - recommend further mitigation measures if found to be necessary; and
 - comply with A/L Levels for air quality as defined in this Manual.

b. Methodology and Criteria

- 1) Monitoring and audit of the TSP levels will be carried out by all Contractors to ensure that any deterioration in air quality can be readily detected and timely actions taken to rectify the situation.
- 2) The criteria against which air quality (measured as TSP) monitoring is assessed are:
 - The Hong Kong Air Quality Objectives (AQOs) for TSP, 24-hour TSP levels of $260 \mu\text{g m}^{-3}$; and
 - The statutory 1-hour TSP limit of $500 \mu\text{g m}^{-3}$.
 - These levels are not to be exceeded at ASRs.
- 3) The 1-hour and 24-hour TSP levels will be measured to indicate the impacts of construction dust. The TSP levels will be measured by following the standard high volume sampling method as set out in High Volume Method for Total Suspended Particulates, Part 50 Chapter 1 Appendix B, Title 40 of the Code of Federal Regulations of the USEPA.
- 4) Twenty-four hour average TSP concentrations should be measured by drawing air through a high volume sampler (HVS) fitted with a conditioned, pre-weighed filter paper, at a controlled rate. After sampling for 24-hours, the filter paper with retained particles is collected and returned to the laboratory for drying in a desiccator followed by accurate weighing. 24-hour average TSP levels are calculated from the ratio of the mass of particulates retained on the filter paper to the total volume of air sampled. The analysis process normally takes about two days to complete.
- 5) 1-hour average TSP concentrations shall be measured using the same monitoring method as 24-hour average TSP (i.e. the HVS).
- 6) An alternative means of monitoring 1-hour average TSP concentrations is by undertaking real-time airborne particulate measurements undertaken using a direct reading meter such as the MIE Data-Ram Portable Real Time Aerosol Monitor ("MIE"). One hour average TSP concentrations measured by a hand held real-time aerosol monitor require no laboratory analysis and will give an instant reading of the dust levels. Air samples are drawn through the optically-sensitive area of the monitor for a continuous period of 1-hour and the monitor will calculate the time-average dust levels.
- 7) Despite the advantages of using a real time monitor to measure particulate concentrations such as in response to dust complaints, results are not comparable with 24-hour HVS data. It is suggested that the real time monitoring technique be used to supplement the HVS sampling.
- 8) All relevant data including temperature, pressure, weather conditions, elapsed-time meter reading for the start and stop of sampler, identification and weight of the filter paper, and other special phenomena and work progress of the concerned site etc shall be recorded down in detail.

c. Monitoring Equipment

- 1) A HVS to the following specifications will be used for carrying out the 1-hr and 24-hr TSP monitoring:
 - 0.6 - 1.7 m³ min⁻¹ (20-60 SCFM) adjustable flow range;
 - equipped with a timing/control device with +/-5 minutes accuracy for 24 hours operation;
 - installed with elapsed-time meter with +/-2 minutes accuracy for 24 hours operation;
 - capable of providing a minimum exposed area of 406 cm² (63 in²);
 - flow control accuracy: +/-2.5% deviation over 24-hour sampling period;
 - incorporated with an electronic mass flow rate controller or other equivalent devices;
 - equipped with a flow recorder for continuous monitoring;
 - provided with a peaked roof inlet;
 - incorporated with a manometer;
 - able to hold and seal the filter paper to the sampler housing at horizontal position;
 - easy to change the filter; and
 - capable of operating continuously for 24-hr period.
- 2) The monitoring party shall provide the required monitoring equipment and must ensure that sufficient number of HVSs with an appropriate calibration kit are available for carrying out the baseline, regular impacts monitoring and ad hoc monitoring.
- 3) The HVSs must be equipped with an electronic mass flow controller and be calibrated against a traceable standard at regular intervals, in accordance with requirements stated in the manufacturers operating manual and as described below. All the equipment, calibration kit, filter papers, etc must be clearly labeled.
- 4) The flow rate of each HVS with mass flow controller shall be calibrated using an orifice calibrator. Initial calibration of the dust monitoring equipment shall be conducted upon installation and prior to commissioning. One point flow rate calibration shall be carried out every two months. Five point calibration shall be carried out every six months.
- 5) The flow-rate of the sampler before and after the sampling exercise with the filter in position shall be verified to be constant and be recorded down on the data sheet.
- 6) If the monitoring party proposes to use a direct reading dust meter to supplement the monitoring of 1-hour TSP, then this must be capable of sampling in the range of 0.1-100 mg m⁻³. The monitoring party must submit sufficient information to Project Manager and HKITP's ETL to prove to them that the instrument is acceptable for its intended use. The instrument must be calibrated regularly or as required by HKITP's ET.

- 7) Wind monitoring equipment must also be provided by the monitoring party and set up at conspicuous locations for logging wind speed and wind direction near to the dust monitoring locations. The location of the equipment will be determined by HKITP's ET in consultation with IECK and Project Manager.
- 8) For installation and operation of the wind data monitoring equipment, the following points must be observed: -
 - the wind sensors should be installed on masts at an elevated level 10m above the ground, so that they are clear of obstructions or turbulence caused by building(s);
 - the wind data should be captured by a data logger and to be downloaded for processing at least once a month;
 - the wind data monitoring equipment should be re-calibrated as least once every six months; and
 - wind direction should be divided into 16 sectors of 22.5 degrees
- 9) In exceptional situations, the monitoring party may propose alternative methods to obtain representative wind data upon written approval from HKITP's ET in consultation with IECK and Project Manager.
- 10) Table 7.1 presents the recommended types and quantities of TSP monitoring equipment required, although the exact requirements will depend upon the final organisation of the Project EM&A Programme.

Table 7.1 TSP Recommended Monitoring Equipment

Description	Quantity
High Volume sampler	1 unit
Hand-held direct reading dust meter	1 unit

d. Laboratory Measurement/Analysis

- 1) A clean laboratory with constant temperature and humidity control, and equipped with the necessary measuring and conditioning instruments to handle the dust samples, must be available for sample analysis and equipment calibration and maintenance. The laboratory will be either HOKLAS accredited for the specific tests or another internationally accredited laboratory of no less standing.
- 2) The monitoring party must conduct a regular audit to determine the accuracy of the measurement results. The audits will be provided to HKITP's ET for consideration. HKITP's ET may call for more regular audits if it requires. The monitoring party must provide Project Manager and HKITP's ET with one copy of the Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50), Annex B for reference.

e. Monitoring Location

- 1) One air quality monitoring station has been identified in the vicinity of the Theme Park. The location of the monitoring station is presented in Table 7.2 and shown in Figure 3.

Table 7.2 EM&A Representative Air Quality Monitoring Station During Construction Phase

ASR No.	Identity/Description
AM1	Penny's Bay Power Station

- 2) Prior to the commencement of the EM&A programme, the proposed air quality monitoring station will be discussed and agreed with Project Manager, HKITP's ET and IECK. EPD will be consulted. In the event of a dispute, EPD's decision will prevail.
- 3) When positioning the samplers, the following points must be noted: -
 - a horizontal platform with appropriate support to secure the samples against gusty wind shall be provided.
 - no two sampler shall be placed less than 2m apart;
 - the distance between the sampler and an obstacle, such as buildings, must be at least twice the height that the obstacle protrudes above the sampler;
 - a minimum of 2m separation from walls, parapets and penthouses is required for rooftops samplers;
 - a minimum of 2m separation from any supporting structure, measures horizontally is required;
 - no furnace or incinerator flue is nearby;
 - airflow around the sampler is unrestricted;
 - the sampler is more than 20m from the dripline;
 - any wire fence and gate to protect the sampler, shall not cause any obstruction during monitoring;
 - permission must be obtained to set up the samplers and to obtain access to the monitoring stations; and
 - a secured supply of electricity is needed to operate the samplers.

f. Baseline Monitoring

- 1) Baseline monitoring must be carried out to determine the ambient 24-hour TSP and 1-hour levels at the monitoring locations prior to the commencement of the construction works. During the baseline monitoring, there must be no construction or dust generating activities in the vicinity of the monitoring station.
- 2) Baseline monitoring must be carried out for a continuous period of at least two weeks under typical weather conditions with the 24-hour and three 1-hour ambient measurements taken daily at each monitoring location.

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- 3) As noted above, monitoring results of HVS and direct reading methods are not directly comparable and the same instrument must therefore be used for both baseline and impact monitoring in the case of 1-hour TSP. General meteorological conditions (wind speed, direction and precipitation) and notes regarding any significant adjacent dust producing sources shall also be recorded throughout the baseline monitoring period.
 - 4) The baseline monitoring will provide data for the determination of the appropriate Action Levels with the Limit Levels set against statutory or otherwise agreed limits.
 - 5) Baseline checking of ambient dust levels must be carried out every six months at each monitoring location, when no dusty works activities are in operation.
 - 6) If HKITP's ET considers that significant changes in the ambient conditions have arisen, a repeat of the baseline monitoring may need to be carried out to update the baseline levels, after consultation and agreement with Project Manager, HKITP's ET and IECK. EPD will be consulted. In the event of a dispute, EPD's decision will prevail.
- g. Impact Monitoring
- 1) The monthly schedule of the compliance and impact monitoring programme must be drawn up by the monitoring party one month prior to the commencement of the scheduled construction period. For regular impact monitoring, a sampling frequency of at least once in every six days must be strictly observed at all of the monitoring stations for 24-hour TSP monitoring.
 - 2) In case of public complaints, 1-hour TSP monitoring must be conducted at least three times in every six-days when the highest dust impacts are likely to occur. Before commencing the baseline monitoring, the monitoring party must inform HKITP's ET of the impact monitoring programme such that HKITP's ET can conduct an on-site audit to ensure the accuracy of the impact monitoring results. IECK will be consulted during this activity. In the event of a dispute, HKITP's ETL's decision will prevail.
 - 3) The specific time to start and stop the 24-hour TSP monitoring shall be clearly defined for each location and shall be strictly followed by the operator.
- h. Compliance Assessment
- 1) A/L Levels provide an appropriate framework for the interpretation of monitoring results. The air quality monitoring data shall be checked against the agreed A/L levels as listed in Tables 7.3 and 7.4.

Table 7.3 Derivation of Action and Limit Levels for 24-Hour TSP Monitoring

Level	Total Suspended Particulates ($\mu\text{g m}^{-3}$)
Baseline	Numerical average of physical measurements prior to construction commencement
Action	For baseline $<108 \mu\text{g m}^{-3}$, average of 130% of baseline and the Limit Level For $108 \mu\text{g m}^{-3} <\text{baseline}> 154 \mu\text{g m}^{-3}$, $200 \mu\text{g m}^{-3}$ For baseline $>154 \mu\text{g m}^{-3}$, 130% of baseline level
Limit	AQO for 24-hour TSP: $260 \mu\text{g m}^{-3}$

Table 7.4 Derivation of Action and Limit Levels for 1-Hour TSP Monitoring

Level	Total Suspended Particulates ($\mu\text{g m}^{-3}$)
Baseline	Numerical average of physical measurements prior to construction commencement
Action	For baseline $<154 \mu\text{g m}^{-3}$, average of 130% of baseline and the Limit Level For $154 \mu\text{g m}^{-3} <\text{baseline}> 269 \mu\text{g m}^{-3}$, $350 \mu\text{g m}^{-3}$ For baseline $>269 \mu\text{g m}^{-3}$, 130% of baseline level
Limit	EIAO Statutory Limit: $500 \mu\text{g m}^{-3}$

- i. Event and Action Plan (EAP)
- 1) The principle upon which the EAP is based is the prescription of procedures and actions associated with the measurement of certain defined levels of air pollution recorded by the environmental monitoring process and defined in the tables above.
 - 2) ENPO and HKITP will compare the impact monitoring results with the air quality criteria (Tables 7.3 and 7.4) established for 24-hour TSP and 1-hour TSP. In cases where exceedance of these criteria occurs, the monitoring party must strictly observe the relevant actions of the EAP shown in Table 7.5 below.

Table 7.5 Event and Action Plan for Construction Phase Air Quality

EVENT	CED (or Contractor's ET if requested to perform monitoring)	HKITP's ETL	IECK	Project Manager	Contractor
Action Level					
1. Exceedance for one sample	2. Repeat measurement to confirm findings.	1. Identify the source(s) of impact (refer action 1 under Project Manager)	1. Check monitoring data submitted by CED.	1. Notify HKITP's ETL who will in turn notify EPD and other relevant Government Agencies in writing within 24 hours of identification of the exceedance	1. In consultation with HKITP's ETL and Project Manager submit proposals for remedial actions to Project Manager within four working days of notification.
	4. Increase monitoring frequency to daily to assess efficacy of remedial measures	3. Confirm receipt of notification of exceedance and notify Project Manager and Contractor in writing within 24 hours.	2. Check Contractors' working methods.	2. Remind the Contractor of his contractual obligations and discuss remedial actions to be implemented.	2. Amend proposals if required by Project Manager or HKITP's ETL.
		5. Check monitoring data trends and Contractors' working methods.			3. Implement the remedial actions immediately upon instruction from Project Manager.
2. Exceedance for two or more consecutive samples	2. Repeat measurement to confirm findings	1. Identify the source(s) of impact. (refer to action 1 under Project Manager)	1. Check monitoring data submitted by CED.	1. Notify HKITP's ETL who will in turn notify EPD and other relevant Government Agencies in writing within 24 hours of identification of the exceedance	1. In consultation with HKITP's ETL and Project Manager, submit proposals for remedial actions to Project Manager within four working days of notification.
	4. Increase monitoring frequency to daily to assess efficacy of remedial measures.	3. Confirm receipt of notification of exceedance and notify Project Manager and Contractor in writing within 24 hours.	2. Check Contractor's working methods.	2. Remind the Contractor of his contractual obligations and discuss remedial actions to be implemented.	2. Amend proposals if required by Project Manager or HKITP's ETL.
	10. If exceedance stops after the implementation of the mitigation measures, cease additional monitoring	5. Check monitoring data trends and Contractors' working methods.	3. Discuss with HKITP's ETL and Contractor on possible remedial measures within 3 working days.	3. Discuss remedial actions required with HKITP's ETL and the Contractor within 3 working days.	3. Implement the remedial actions immediately upon instruction from Project Manager.
		6. Discuss remedial actions required with Project Manager and the Contractor within 3 working days.	4. Advise Project Manager on the effectiveness of the proposed remedial measures.	4. Ensure agreed mitigation measures are fully implemented.	4. Liaise with Project Manager to optimise the effectiveness of the agreed mitigation.
		7. Ensure agreed mitigation measures are fully implemented.	5. Supervise implementation of remedial measures.		
8. Assess the efficacy of remedial actions and keep the Contractor informed.					

EVENT	CED (or Contractor's ET if requested to perform monitoring)	HKITP's ETL	IECK	Project Manager	Contractor
		9. If exceedance continues, arrange meeting with Project Manager to review implementation and identify further appropriate mitigation measures			
Limit Level					
1. Exceedance for one sample	3. Repeat measurement to confirm findings.	1. Identify the source(s) of impact. (refer to action 1 under Project Manager)	1. Check monitoring data submitted by CED.	1. Notify HKITP's ETL who will in turn notify EPD and other relevant Government Agencies in writing within 24 hours of identification of the exceedance	1. Take immediate action to avoid further exceedance.
	4. Increase monitoring frequency to assess efficacy of remedial measures.	2. Confirm receipt of notification of exceedance and notify Project Manager, Contractor and EPD in writing within 24 hours.	2. Check Contractor's working methods.	2. Remind the Contractor of his contractual obligations and discuss remedial actions to be implemented.	2. In consultation with HKITP's ETL and Project Manager, submit proposals for remedial actions to Project Manager within four working days of notification.
		5. Check monitoring data trends and Contractors' working methods.	3. Discuss with HKITP's ETL and Contractor on possible remedial measures within 3 working days.	3. Discuss remedial actions required with HKITP's ETL and the Contractor within 3 working days.	3. Amend proposals if required by Project Manager or HKITP's ETL.
		6. Discuss remedial actions required with EPD, Project Manager and the Contractor within 3 working days.	4. Advise Project Manager on the effectiveness of the proposed remedial measures.	4. Ensure agreed mitigation measures are fully implemented.	4. Implement the remedial actions immediately upon instruction from Project Manager.
		7. Ensure agreed mitigation measures are fully implemented.	5. Supervise implementation of remedial measures.		5. Liaise with Project Manager to optimise the effectiveness of the agreed mitigation.
		8. Assess the efficacy of remedial actions and keep EPD, Project Manager and Contractor informed.			
2. Exceedance for two or more consecutive samples	3. Repeat measurement to confirm findings.	1. Identify the source(s) of impact. (refer to action 1 under Project Manager)	1. Discuss among Project Manager, HKITP's ETL and Contractor on the potential remedial actions within 3 working days.	1. Notify HKITP's ETL who will in turn notify EPD and other relevant Government Agencies in writing within 24 hours of identification of the exceedance	1. Take immediate action to avoid further exceedance.

EVENT	CED (or Contractor's ET if requested to perform monitoring)	HKITP's ETL	IECK	Project Manager	Contractor
	4. Increase monitoring frequency to assess efficacy of remedial measures.	2. Confirm receipt of notification of exceedance and notify Project Manager, Contractor and EPD in writing within 24 hours.	2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise Project Manager accordingly.	2. Remind the Contractor of his contractual obligations and discuss remedial actions to be implemented.	2. In consultation with HKITP's ETL and Project Manager, submit proposals for remedial actions to Project Manager within four working days of notification.
	10. if exceedance stops after the implementation of the mitigation measures, cease additional monitoring.	5. Check monitoring data trends and Contractors' working methods.	3. Supervise that implementation of remedial measures.	3. Discuss remedial actions required with HKITP's ETL and the Contractor within 3 working days.	3. Amend proposals if required by Project Manager or HKITP's ETL.
		6. Discuss remedial actions required with EPD, Project Manager and the Contractor within 3 working days.		4. Ensure agreed mitigation measures are fully implemented.	4. Implement the remedial actions immediately upon instruction from Project Manager.
		7. Ensure agreed mitigation measures are fully implemented.		5. If exceedance continues arrange meeting with HKITP's ETL, Contractor and IEC to determine which portion of the works is responsible for the exceedance.	5. Resubmit proposal to HKITP's ETL and Project Manager if the problem is still not under control.
		8. Assess the efficacy of remedial actions and keep EPD, Project Manager and Contractor informed.		6. Instruct the Contractor to stop that portion of the work until the exceedance is abated.	6. Stop the relevant portion of works as determined by HKITP's ETL and Project Manager, until the exceedance is abated.
		9. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.			

j. Mitigation Measures

- 1) The EIA Report recommends air quality control and mitigation measures during the construction of the Theme Park. These are outlined in the "Construction" and other Implementation Schedules in Annex C to the Project Construction Mitigation Monitoring Manual [Attachment 1 to Section 00136 of the General Requirements].

- 2) In the event of exceedances or complaints, the Contractor will be responsible for reviewing the effectiveness of these measures and for proposing, designing and implementing alternative measures as agreed with HKITP's ET, IECK and Project Manager. In the event of a dispute, Project Manager's decision will prevail.

7.4 Noise Monitoring

a. Introduction

- 1) In this section, the requirements, methodology, equipment, monitoring locations and mitigation measures for the monitoring and audit of noise impacts associated with the construction of the Theme Park are described.
- 2) This reflects work to be carried out by CED and the data to be assimilated by the ENPO and provided to HKITP's ETL and IECK for their use in preparing their audit reports.
- 3) For the avoidance of doubt, this section also applies to the Contractor if it is requested to fulfil CED's monitoring role.

b. Methodology and Criteria

- 1) Noise level measurement must be carried out using the methodology set out in Sub-section 3 of the Annex - General Calibration and Measurement Procedures, as stated in the Technical Memorandum on Noise from Construction Work other than Percussive Piling (GW-TM).
- 2) The appropriate parameter for measuring construction noise impacts will be the A-weighted equivalent continuous sound pressure level (L_{Aeq}) measured in decibels (dB). The two statistical sound levels L_{10} and L_{90} ; the levels exceeded for 10 and 90 percent of the time respectively, must also be recorded during the monitoring for reference.
- 3) Whilst the Noise Control Ordinance ("NCO") does not provide for the statutory control of construction activities occurring on weekdays during normal working hours (that is, Monday to Saturday inclusive 0700-1900), a daytime limit of $L_{Aeq (30 \text{ minute})}$ 75dB, recommended in the Practice Note for Professional Persons - Noise from Construction Activities - Non-statutory Controls, EPD, May 1993 (ProPECC PN2/93) was proposed in the EIA Report and agreed with EPD as the appropriate criterion for all residential dwellings; while a daytime limit of $L_{Aeq (30 \text{ minute})}$ 70dB was proposed in the EIA Report as the appropriate criterion for all educational institutions during normal school days and of $L_{Aeq (30 \text{ minute})}$ 65dB during examination periods.
- 4) The NCO provides statutory controls on general construction works during restricted hours (ie 1900-0700 hours Monday to Saturday and at any time on Sunday and public holidays). The ANLs for evenings and holidays and for night-time are dependent on the Area Sensitivity Rating at the NSR. The relevant ANLs are provided in Table 7.6.

Table 7.6 Acceptable Noise Levels (ANLs)

Time Period	Area Sensitivity Rating		
	A	B	C
All days during the evening (1900-2300 hours) and general holidays (including Sundays) during the day and evening (0700-2300 hours)	60	65	70
All days during the night-time (2300-0700)	45	50	55

c. Monitoring Equipment

- 1) The monitoring party will be responsible for providing and maintaining a sufficient number of sound level meters to conduct the necessary baseline monitoring, regular impact monitoring and ad hoc monitoring at the agreed monitoring locations.
- 2) Sound level meters and calibrators must comply with the International Electrotechnical Commission (IEC) Publication 651 : 1979 (Type 1) and 804 : 1985 (Type 1) specification as referred to in the GW-TM. The sound level meters must be supplied and used with the manufacturers recommended wind shield and with a tripod.
- 3) The calibration of the sound level meters must be carried out in accordance with the manufacturer's requirements. The sound level meters, including the calibrators, must be verified by the manufacturers once a year to ensure that they perform to the same level of accuracy as stated in the manufacturers specifications. Calibrated hand-held anemometers capable of measuring the wind speed in ms^{-1} must also be supplied for the measurement of wind speeds during noise monitoring periods. The anemometers must be used and calibrated in accordance with the manufacturers recommendations.
- 4) Sound level meters must be calibrated using a portable calibrator before and after each measurement. The calibration levels will be noted with the measurement results and where the difference between the calibration levels is greater than 1 dB(A) the measurement will be repeated.
- 5) The monitoring party must ensure that the equipment is kept in a good state of repair and condition strictly in accordance with the manufacturer's recommendations and maintained in proper working order with sufficient spare equipment available in the event of breakdown to maintain the planned monitoring programme.
- 6) Noise measurements must not be made in the presence of fog, rain, and wind with a steady speed exceeding 5 ms^{-1} or wind with gusts exceeding 10 ms^{-1} . The wind speed must be checked with the hand-held anemometers. Table 7.7 lists the suggested quantities of noise monitoring equipment required for the works, although the exact requirements will depend upon the final organisation of the Project EM&A Programme.

Table 7.7 Noise Monitoring Equipment

Description	Quantity
Noise meter	1 unit
Calibrator	1 unit
Hand-held anemometer	1 unit

d. Monitoring Locations

- 1) Based on the noise sensitive receivers identified and stated with the EIA Report, representative noise monitoring locations have been determined in the vicinity of the works associated with the construction of the Theme Park.
- 2) Their locations are list below in Table 7.8 and shown in Figure 4. prior to the commencement of the Project construction, the proposed noise monitoring locations will be discussed and agreed with Project Manager, HKITP's ET, IECK and the EPD. In the event of a dispute, the EPD's decision will prevail.

Table 7.8 EM&A Representative Monitoring Locations

NSR No.	Identity/Description
NW1	Sea Creast Villa (Peng Chau)
NW2	Crestmont Villa (Discovery Bay)
NW3	Luk Keng Tsuen

- 3) If, for example, there are difficulties obtaining access to the proposed noise monitoring locations, alternative monitoring locations may be proposed. The selection of these alternative monitoring locations must be based on the following criteria: -
 - at locations close to the major site activities which are likely to have noise impacts;
 - close to the NSRs (any domestic premises, hotel, hostel, temporary housing accommodation, hospital, medical clinic, educational institution, place of public worship, library, court of law, performing arts centre shall be considered as a NSR); and
 - for monitoring locations located in the vicinity of the NSRs, care shall be taken to cause minimal disturbance to the occupants during monitoring.
- 4) The monitoring locations shall normally be at a point 1 m from the exterior of the sensitive receiver building façade and at a height approximately 1.2m above the ground or at the height that has the least obstructed view of the construction activity in relation to the receiver. If there is a problem with access to the normal monitoring position, an alternative position may be chosen, and a correction to the measurements shall be made. For reference, a correction of +3dB(A) will be made to the free field measurements.

- 5) The monitoring party must agree with HKITP's ET, IECK and Project Manager on the monitoring positions and the corrections adopted. Once the positions for the monitoring stations are selected, the baseline monitoring and impact monitoring will be carried out at the same positions. In the event of a dispute, Project Manager's decision will prevail
- e. Baseline Monitoring
- 1) The monitoring party must carry out the baseline noise monitoring prior to the commencement of the construction works. To obtain fully satisfactory baseline results, a waterproof sound level meter and noise logger must be used.
 - 2) Baseline noise levels must be measured over one consecutive 7-day calendar week at a minimum logging interval of 15 minutes. The L_{Aeq} , L_{10} , and L_{90} will be recorded at the specified interval. The survey period must be selected prior to the commencement of construction activities and so as to avoid other atypical noise sources.
 - 3) The proper functioning of the logger must be ensured during this period and must be visited for a period of not less than one hour every two days to ensure its continued operation and to detail specifics of audible noise sources at the monitoring locations. The calibration of the logger kit must be as recommended by the manufacturer. Measurements must be recorded at the nearest 0.1 dB.
 - 4) Checking for changes in the baseline noise levels throughout the construction of the Theme Park will be carried out by taking "sample" noise measurements every six months, when no noisy construction activities are in progress.
 - 5) If significant changes that can be validated are observed to have arisen, the baseline may be adjusted accordingly after consultation and agreement with Project Manager, HKITP's ET and IECK. In the event of a dispute, Project Manager's decision prevails.
- f. Impact Monitoring
- 1) During normal construction working hours (0700-1900 Monday to Saturday), monitoring of $L_{Aeq, 30 \text{ min}}$ noise levels (as six consecutive $L_{Aeq, 5 \text{ min}}$ readings) must be carried out at the agreed monitoring locations once every six days in accordance with the methodology in the GW-TM. The six consecutive $L_{Aeq, 5 \text{ min}}$ readings must be used to calculate the $L_{Aeq, 30 \text{ min}}$ noise level and this must be compared to the $L_{Aeq, 30 \text{ min}}$ noise criteria.
 - 2) If restricted hours works are undertaken, monitoring of $L_{Aeq, 5 \text{ min}}$ noise levels must be carried out at the agreed monitoring stations at the same frequency as specified for normal working hours. Three consecutive $L_{Aeq, 5 \text{ min}}$ readings must be taken to ensure the validity of the results. Each of the $L_{Aeq, 5 \text{ min}}$ noise readings must be compared to the $L_{Aeq, 5 \text{ min}}$ noise criteria.

- 3) In relation to the monitored noise levels, other noise sources such as marine traffic, construction vehicles (marine or land based) or aircraft may make a significant contribution to the overall noise environment. Therefore, the results of the noise monitoring activities will take into account any such influencing factors which were not present during the baseline monitoring period. All measurements must be recorded to the nearest 0.1 dB.

g. Compliance Assessment

- 1) A/L Levels provide an appropriate framework for the interpretation of monitoring results. As an Area Sensitivity Rating has been assigned to individual affected NSRs, it is proposed that the interpretation of monitoring results is undertaken through checking them against the Action and Limit (A/L) Levels defined in Table 7.9.

Table 7.9 Action and Limit Levels for Construction Noise dB(A)

Time Period	Action	Limit
0700-1900 on any day not being a Sunday or public holiday.	When one documented complaint is received	75 dB(A) ⁽¹⁾
1900-2300 on all days and 0700-2300 on general holidays (including Sundays)	When one documented complaint is received	60/65/70 dB(A) ⁽²⁾⁽³⁾
2300-0700 on all days	When one documented complaint is received	45/50/55 dB(A) ⁽²⁾⁽³⁾
(1) For educational establishments the limit level shall be 70 dB(A), reduced to 65 dB(A) during examination periods. (2) Acceptable Noise Levels for Area Sensitivity Rating of A/B/C. (3) NSR1 and 2 have been assigned an ASR of 'A' and NSR3 has been assigned an ASR of B		

- 2) To account for cases where ambient noise levels, as identified by baseline monitoring, approach or exceed the stipulated Limit Level prior to commencement of construction, a Maximum Acceptable Impact Level, which incorporates the baseline noise level and the identified construction noise Limit Level, may be defined upon agreement with HKITP's ET and IECK.
- 3) This amended level will, therefore, be greater than 75 dB(A) and will represent the maximum acceptable noise level at a specific monitoring station. Correction factors for the effects of acoustic screening and / or architectural features of NSRs may also be considered, as specified in the GW-TM.
- 4) For the purposes of compliance checking, after taking into account any adjustments agreed with EPD, comparison with either the Limit or the Maximum Acceptable Impact Level will represent the governing criteria for noise impact assessment during the construction of the Theme Park, after consultation with HKITP's ET and IECK.

h. Event and Action (“EAP”)

- 1) The principle on which the EAP is based is the prescription of procedures and actions associated with the measurement of defined levels of noise impact recorded by the environmental monitoring process and defined in the table above. In case where exceedance of these criteria occurs, the Contractor will strictly observe the relevant actions of the EAP shown in Table 7.10.

Table 7.10 Event and Action Plan for Construction Noise

EVENT	CED (or Contractor’s ET if requested to perform monitoring)	HKITP’s ETL	IECK	Project Manager	Contractor
Action Level					
1. i.e. When one documented complaint is received	2. Repeat measurement to confirm findings	1. Identify the source(s) of impact. (refer to action 1 under Project Manager)	1. Check monitoring data submitted by CED.	1. Notify HKITP’s ETL who will in turn notify EPD and other relevant Government Agencies in writing within 24 hours of identification of the exceedance	1. In consultation with HKITP’s ETL and Project Manager, submit proposals for remedial actions to Project Manager within four working days of notification.
	4. Increase monitoring frequency to daily to assess efficacy of remedial measures.	3. Confirm receipt of notification of exceedance and notify Project Manager and Contractor in writing within 24 hours.	2. Check Contractor’s working methods.	2. Remind the Contractor of his contractual obligations and discuss remedial actions to be implemented.	2. Amend proposals if required by Project Manager or HKITP’s ETL.
	10. If exceedance stops after the implementation of the mitigation measures, cease additional monitoring	5. Check monitoring data trends and Contractors’ working methods.	3. Discuss with HKITP’s ETL and Contractor on possible remedial measures within 3 working days.	3. Discuss remedial actions required with HKITP’s ETL and the Contractor within 3 working days.	3. Implement the remedial actions immediately upon instruction from Project Manager.
		6. Discuss remedial actions required with Project Manager and the Contractor within 3 working days.	4. Advise Project Manager on the effectiveness of the proposed remedial measures.	4. Ensure agreed mitigation measures are fully implemented.	4. Liaise with Project Manager to optimise the effectiveness of the agreed mitigation.
		7. Ensure agreed mitigation measures are fully implemented.	5. Supervise implementation of remedial measures.		
	8. Assess the efficacy of remedial actions and keep the Contractor informed.				
		9. If exceedance continues, arrange meeting with Project Manager to review implementation and identify further appropriate mitigation measures			

EVENT	CED (or Contractor's ET if requested to perform monitoring)	HKITP's ETL	IECK	Project Manager	Contractor
Limit Level					
1. Exceedance for one sample	3. Repeat measurement to confirm findings.	1. Identify the source(s) of impact. (refer to action 1 under Project Manager)	1. Check monitoring data submitted by CED.	1. Notify HKITP's ETL who will in turn notify EPD and other relevant Government Agencies in writing within 24 hours of identification of the exceedance	1. Take immediate action to avoid further exceedance.
	4. Increase monitoring frequency to assess efficacy of remedial measures.	2. Confirm receipt of notification of exceedance and notify Project Manager, Contractor and EPD in writing within 24 hours.	2. Check Contractor's working methods.	2. Remind the Contractor of his contractual obligations and discuss remedial actions to be implemented.	2. In consultation with HKITP's ETL and Project Manager, submit proposals for remedial actions to Project Manager within four working days of notification.
		5. Check monitoring data trends and Contractors' working methods.	3. Discuss with HKITP's ETL and Contractor on possible remedial measures within 3 working days.	3. Discuss remedial actions required with HKITP's ETL and the Contractor within 3 working days.	3. Amend proposals if required by Project Manager or HKITP's ETL.
		6. Discuss remedial actions required with EPD, Project Manager and the Contractor within 3 working days.	4. Advise Project Manager on the effectiveness of the proposed remedial measures.	4. Ensure agreed mitigation measures are fully implemented.	4. Implement the remedial actions immediately upon instruction from Project Manager.
		7. Ensure agreed mitigation measures are fully implemented.	5. Supervise implementation of remedial measures.		5. Liaise with Project Manager to optimise the effectiveness of the agreed mitigation.
		8. Assess the efficacy of remedial actions and keep EPD, Project Manager and Contractor informed.			
2. Exceedance for two or more consecutive samples	3. Repeat measurement to confirm findings.	1. Identify the source(s) of impact. (refer to action 1 under Project Manager)	1. Discuss among Project Manager, HKITP's ETL and Contractor on the potential remedial actions within 3 working days.	1. Notify HKITP's ETL who will in turn notify EPD and other relevant Government Agencies in writing within 24 hours of identification of the exceedance	1. Take immediate action to avoid further exceedance.

EVENT	CED (or Contractor's ET if requested to perform monitoring)	HKITP's ETL	IECK	Project Manager	Contractor
	4. Increase monitoring frequency to assess efficacy of remedial measures.	2. Confirm receipt of notification of exceedance and notify Project Manager, Contractor and EPD in writing within 24 hours.	2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise Project Manager accordingly.	2. Remind the Contractor of his contractual obligations and discuss remedial actions to be implemented.	2. In consultation with HKITP's ETL and Project Manager, submit proposals for remedial actions to Project Manager within four working days of notification.
	10. If exceedance stops after the implementation of the mitigation measures, cease additional monitoring.	5. Check monitoring data trends and Contractors' working methods.	3. Supervise the implementation of remedial measures.	3. Discuss remedial actions required with HKITP's ETL and the Contractor within 3 working days.	3. Amend proposals if required by Project Manager or HKITP's ETL.
6. Discuss remedial actions required with EPD, Project Manager and the Contractor within 3 working days.		4. Ensure agreed mitigation measures are fully implemented.		4. Implement the remedial actions immediately upon instruction from Project Manager.	
7. Ensure agreed mitigation measures are fully implemented.		5. If exceedance continues arrange meeting with HKITP's ETL, Contractor and IEC to determine which portion of the works is responsible for the exceedance.		5. Resubmit proposal to HKITP's ETL and Project Manager if the problem is still not under control.	
8. Assess the efficacy of remedial actions and keep EPD, Project Manager and Contractor informed.		6. Instruct the Contractor to stop that portion of the work until the exceedance is abated.		6. Stop the relevant portion of works as determined by HKITP's ETL and Project Manager, until the exceedance is abated.	
If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.					

8.0 WASTE MANAGEMENT

8.1 Introduction

- a. This section sets out the handling, recycling, storage, transportation and disposal measures which are recommended to avoid or minimise potential adverse environmental impacts associated with waste arising from the construction of the Theme Park.

8.2 Waste Management Plan

- a. The Project Waste Management Plan (the “Project WMP”), as set forth in Annex E [to Attachment 1 to Section 00136 of the General Requirements] has been provided to each Contractor as a reference document for guiding the preparation of their own, contract-specific Contractor Waste Management Plan (C-WMP), which shall: -
- 1) adopt and apply the principles set forth in the Project WMP;
 - 2) incorporate site-specific factors, such as the designation of areas for the segregation and temporary storage of reusable and recyclable materials;
 - 3) have due regard to their waste management obligations as set forth in their respective construction contracts;
 - 4) incorporate the Contractor’s own construction methodology;
 - 5) outline the requirements for a waste audit programme to ensure that the measures outlined are effectively implemented and followed; and
 - 6) have all revisions, updating and amendments thereto submitted to Project Manager for HKITP’s ETL’s approval.

9.0 ENVIRONMENTAL AUDITING

9.1 Site Inspections

- a. Given that on-site inspections provide a direct means to track and ensure the enforcement of specified environmental protection and pollution control measures, HKITP’s ETL and IECK will undertake Project Site inspections at regular intervals to ensure that the compliance of the conditions of the Permit and relevant EIA findings and recommendations being checked and audited, as well as the Contractors implement reasonably appropriate measures, similar to those set forth in this Project EM&A Manual, for environmental protection management and pollution control mitigation. The environmental mitigation implementation schedule is summarised in Table 9.1 of Appendix A in accordance with the Section 16 of the approved EIA Report (EIAO Register No. AEIAR-03212000).
- b. HKITP’s ETL will carry out such cursory Project Site environmental inspections at least once per week, and will be joined every other week by IECK, the focus of which will include: -
- 1) the general environmental conditions in the immediate neighbouring vicinity of the Project Site; and
 - 2) the pollution control and mitigation measures adopted by the Contractors within the Project Site.
- c. During such inspections, HKITP’s ETL and/or IECK may make reference to any or all of the following: -

- 1) the EIA Report and its EM&A recommendations on environmental protection and pollution control mitigation measures;
 - 2) ongoing results of the Project EM&A Programme implementation;
 - 3) Contractors' works progress and programme;
 - 4) individual Contractors' works method statements which shall include proposals on associated pollution control measures;
 - 5) the Contractors' contract specifications on environmental protection;
 - 6) the relevant environmental protection and pollution control laws; and
 - 7) results of previous Project Site inspections undertaken.
- d. During such inspections, the Contractors shall duly and promptly cooperate with HKITP's ETL and/or the IECK and promptly respond to any instructions they determine necessary to provide.
- e. Following each such inspection, HKITP's ETL will: -
- 1) provide the inspection results and the associated recommendations to Project Manager and the Contractor, as appropriate, for reference and for taking of immediate action, whereupon the Contractor shall strictly follow the recommendations, procedures and time-frames in those results and recommendations for the implementation of mitigation proposals and the resolution of deficiencies; and
 - 2) include the inspection results and the associated recommendations, along with a summary of the remedial actions taken by the Contractor, in his monthly EM&A Report.
- f. Ad hoc Project Site inspections will also be carried out by HKITP's ETL and/or IECK if significant environmental problems are identified during the regular inspections.
- g. Further inspections may also be required subsequent to receipt of a formal written environmental complaint by Project Manager or HKITP's ETL, as discussed in Part 9.3 below.

9.2 Compliance with Legal and Contractual Requirements

- a. In addition to Hong Kong's environmental protection and pollution control laws and other regulatory requirements, each Contractor will have contractual environmental protection and pollution control requirements with which he must strictly comply.
- b. As part of that compliance, the Contractors shall, amongst other things: -
- 1) regularly provide to Project Manager any relevant information or documentation arising in the course of discharging the environmental protection management obligations under the construction contract;

- 2) provide any information and documentation as may be reasonably requested by HKITP's ETL and/or IECK so that their environmental site inspection process can be duly and promptly carried out, which shall, at a minimum, include copies of: -
 - the updated Works Programme bar charts;
 - any application letters for licenses and/or permits under the applicable regulatory requirements;
 - any such licenses and/or permits obtained;
 - all monitoring data collected; and
 - the "site diary" which does not need to be copied but shall be made available to HKITP's ETL and IECK during their site inspections.
- c. After reviewing the documentation, HKITP's ETL may inform Project Manager and the Contractors of any non-compliance observed therein, pursuant to which Project Manager will instruct Contractor to comply and Contractor shall undertake such remedial action as instructed strictly within the procedures and time-frames set forth therein or additionally by Project Manager.
- d. Project Manager will ensure that appropriate action has been promptly and effectively taken by the Contractors, and provide regular detailed reports and any other required information relevant to the remedial actions to HKITP's ETL and IECK.
- e. For the avoidance of doubt, HKITP's ETL and IECK are not responsible to anyone in relation to the nature, accuracy and scope of their opinions, views or recommendations to the extent those opinions, views and recommendation are based on information provided to them by others, which shall, for the avoidance of doubt, include Contractors.

9.3 Environmental Complaint

- a. Enquiries, complaints and requests for information relating to Project environmental matters can be expected from a wide range of individuals and organisations, including members of the public, Government departments, the press, television media and community groups, relevant to which: -
 - 1) all enquiries concerning the environmental effects of the Project, irrespective of how they are received, must be immediately reported to Project Manager and directed by him to HKITP's ET and IECK; and
 - 2) if complaints are received directly by ENPO, they must be immediately provided to HKITP's ETL and/or IECK for their consideration; and
 - 3) other formal written complaints will be referred by Project Manager or other recipient to HKITP's ETL, who will co-ordinate investigations, in accordance with procedures to be set up by HKITP's ET and IECK for handling, investigation and storage of same.
- b. HKITP's ETL will notify IECK and will implement the following complaint investigation procedures upon receipt thereof: -

-
- 1) HKITP's ETL and/or IECK will notify Project Manager of the nature of the enquiry;
 - 2) HKITP's ETL and IECK will use their reasonable endeavours to investigate and identify the source of the problem and to determine its validity and source;
 - 3) HKITP's ETL will log the complaint and date of receipt into his complaint database;
 - 4) if, following consultation with Project Manager, HKITP's ETL considers additional monitoring to be necessary, he will ensure that such is undertaken to verify the existence and severity of the alleged complaint;
 - 5) HKITP's ETL will liaise with the relevant Contractors to identify remedial measures;
 - 6) the relevant Contractors shall immediately implement such mitigation measures as may be identified by HKITP's ETL;
 - 7) Project Manager will endeavour to ensure that all required measures have been duly and promptly carried out by the relevant Contractor, and will report to HKITP's ETL on the progress of same;
 - 8) if necessary, HKITP's ETL will repeat the monitoring to verify the effectiveness of the mitigation measures so implemented;
 - 9) if the repeat monitoring results substantiate the complaint, HKITP's ETL and Project Manager will repeat their review of the procedures to identify further possible improved or alternate mitigation measures, which the relevant Contractors shall immediately implement; and
 - 10) HKITP's ETL will record each complaint, investigation, subsequent actions and results in the monthly EM&A Reports.
- c. HKITP's ETL's determination as to the validity of each complaint will be final and conclusive relevant to the Contractors, and further: -
- 1) during HKITP's ETL's complaint investigation efforts, the relevant Contractors shall promptly and duly co-operate with same, which shall include providing all necessary information and assistance for completion of the investigation;
 - 2) the outcome of HKITP's ETL's investigation and the actions taken by Project Manager and/or the relevant Contractors will be documented by HKITP's ETL on a complaint proforma of his preparation;
 - 3) a formal response to each formal written complaint received will be prepared by HKITP's ETL and submitted to Project Manager for forwarding to concerned parties as notice that action has been taken; and
 - 4) following resolution of any matters subject to a valid complaint, the relevant Contractors shall implement such audit/remedial procedures as may be called for in HKITP's ETL's findings to ensure that the problem does not recur,

however, Project Manager and HKITP's ETL acknowledge that the receipt of a complaint or enquiry will not, solely of itself, be sufficient reason to introduce or require additional mitigation measures of the Contractors, and agree not to require same absent reasonable indication of necessity therefor.

10.0 REPORTING

10.1 General

- a. The primary reporting functions undertaken within the Project EM&A Programme will be: -
 - 1) the issuance of formal exceedance notifications by HKITP's ETL to the relevant Contractors following his Project Site inspections;
 - 2) corrective actions pursuant thereto; and
 - 3) ongoing feedback relevant thereto between HKITP's ET, IECK, ENPO, the relevant Contractor and Project Manager.
- b. Reporting will be derived from the results of the established monitoring and audit programme and will be recorded through written correspondence, Project Site inspections and minutes/notes of meetings.
- c. In addition, periodic reviews of the overall EM&A process will be prepared and circulated to relevant Contractors as a means of gauging site staff and contractor performance, and any revisions necessitated by such review made to the Project EM&A Manual. Such periodic reviews will form a part of the monthly, biannual and annual EM&A Reports prepared by HKITP's ETL and will distributed to EPD for their comment.
- d. The reporting requirements set forth herein are based on a "paper-document" approach, however, the same information can be provided by electronic media (e.g., EPD's "Specialised Electronic Environmental Monitoring and Audit" (SEEMA) software) if same is submitted to and agreed by Project Manager, HKITP's ET, IECK and EPD. If used, all the monitoring data (baseline and impact) shall also be submitted electronically in an agreed format.
- e. In accordance with the requirement of Further Environmental Permit (FEP) (FEP-01/059/2000), the following reporting mechanism will be put in place:-
 - 1) To enable the public inspection of the Baseline Monitoring Report, monthly EM&A Reports and monitoring results during operational via the EIAO Internet Website and at the EIAO Register Office, electronic copies of monthly EM&A Reports shall be prepared in Hyper Text Markup Language (HTML) (version 4.0 or later) and in Portable Document Format (PDF version 4.0 or later), unless otherwise agreed by the Director and shall be submitted at the same time as the hard copies as described in Conditions 4.4, 4.5 and 5.2 of Further Environmental Permit (FEP) (FEP-01/059/2000). For the HTML version, a content page capable of providing hyperlink to each section and sub-section of the EM&A Reports shall be included in the beginning of the document. Hyperlinks

to all figures, drawings and tables in the EM&A Reports shall be provided in the main text from where the respective references are made. All graphics in the report shall be in interlaced GIF format unless otherwise agreed by the Director. The content of the electronic copies of the monthly EM&A Reports must be the same as the hard copies.

- 2) All environmental monitoring data as described in Conditions 4.2 and 5.2 of FEP (FEP-01/059/2000) shall be made available to the public via internet access in the form of a website, in the shortest possible time and in no event later than 2 weeks after the relevant environmental monitoring data are collected or become available, unless otherwise agreed with the Director. The Permit Holder shall notify the Director in writing within 8 weeks after the commencement of works the Internet address where the environmental monitoring data are to be placed. The Internet address and the environmental monitoring data shall be made available to the public via the EIAO Internet Website and the EIAO Register Office.
- 3) The internet website as described in Condition 6.2 of FEP (FEP-01/059/2000) shall enable user friendly public access to the monitoring data and with features capable of:
 - providing access to all environmental monitoring data collected since the commencement of works;
 - searching by data;
 - searching by types of monitoring data (air quality, water quality and noise); and
 - hyperlinks to relevant monitoring data after searching or otherwise as agreed by the Director.

10.2 Baseline Monitoring Report

- a. HKITP will prepare and submit to EPD a draft Baseline Environmental Monitoring Report (“Baseline Report”) upon completion of the baseline monitoring by CED within such time as is set forth in the FEP or as may be agreed otherwise with CED.
- b. Copies of the Baseline Report shall be submitted to Project Manager, HKITP’s ETL, IECK and EPD. The exact number of copies required by each party will be established through liaison.
- c. The draft report shall be supported by the baseline monitoring data in electronic format, along with information covering the monitoring locations and conditions, equipment and protocols. The agreed Baseline Report shall then be reissued by the Contractor as a stand-alone report.
- d. The Baseline Report will include: -
 - 1) brief project background information;
 - 2) locations of the baseline monitoring stations;

- 3) an updated general construction programme;
- 4) monitoring results together with the following information: -
 - monitoring methodology;
 - name of laboratory and types of equipment used and calibration details;
 - parameters monitored;
 - monitoring locations (and depth/height);
 - monitoring date, time, frequency and duration;
 - QA/QC results and detection limits;
 - details of influencing factors, including: -
 - major activities, if any, being carried out on the site during the period;
 - weather conditions during the period; and
 - other factors which might affect the results; and
 - determination of the A/L Levels for each monitoring parameter and statistical analysis of the baseline data; the analysis shall conclude if there is any significant difference between control and impact stations for the parameters monitored;
 - revisions for inclusion in the Project EM&A Manual (if any); and
 - comments and conclusions.

10.3 Environmental Progress Report

- a. Pursuant to their approved C-EMP, each of the Contractors shall prepare and submit a “Contractor’s Monthly Environmental Progress Report” (CMEPR) to Project Manager, HKITP’s ET and IECK.
- b. The requirements of the CMEPR are provided for in the contractual specifications, but are copied below for ease of reference:
 - “ Prepare and maintain the following records for Contractor and all Sub-contractors: -
 - Construction Noise Permits;
 - Noise Labels for Compressors and Hand Held Breakers;
 - License to Operate a Specified Process;
 - Effluent Discharge licenses;
 - Monitoring of Noise, Air Quality or Effluent Discharge as required under the specific license and permits;
 - Dumping Permits;
 - Registration as a Chemical Waste Producer;
 - Trip tickets and documentation for collection and tipping of waste and waste removal;
 - Records of wastes generated, recycled and disposed;
 - All correspondences with the EPD relevant to the Project;
 - Details of all monitoring data taken; and

- *All fines imposed by the EPD for all work undertaken by Contractor, his Sub-contractors and joint venture partner (if applicable) for the last five (5) years in Hong Kong.*

Submit a monthly report summarising the information kept pursuant to Paragraph [] above entitled the “Environmental Progress Report” concurrent with each application for interim payment. ”

10.4 Monthly EM&A Reports

- a. The results and findings of all EM&A work required by this Project EM&A Manual will be recorded in the “Monthly Project EM&A Reports” prepared by HKITP’s ETL and IECK.
 - 1) Contractors shall each attach to every CMEPR a ‘Contractor’s Monthly EM&A Summary’ for use by HKITP’s ETL and IECK in preparing the Monthly Project EM&A Report.
 - 2) Once HKITP’s ETL and IECK have gathered and received all necessary information and documentation from all relevant entities, and satisfactorily concluded the necessary Project Site inspections, the Report will be submitted to the EPD with copies to the Contractors and Project Manager for information.
 - 3) HKITP’s ETL and/or IECK may liaise with the relevant parties to confirm the exact number of monthly reports required, however, each party will not receive more than a maximum 4 copies of each Monthly Project EM&A Report.
 - 4) HKITP’s ETL and IECK will use their reasonable endeavours to submit the report within 10 working days of the end of each calendar month, and will endeavour to submit the first report during the month following the commencement of the Contractor’s construction works.
 - 5) For the avoidance of doubt: -
 - the contents, notifications, recommendations and other matters addressed in the Monthly Project EM&A Reports will be based solely upon the information and documentation obtained by and/or provided to them pursuant to this Project EM&A Manual; and
 - HKITP’s ETL and IECK will not be liable for any inaccuracies contained in the Monthly Project EM&A Reports where the inaccurate information is based upon or derived from information obtained from or provided by others, including, for the avoidance of doubt, the Contractors; and
 - HKITP’s ETL is not required to verify, substantiate or corroborate the accuracy of any information or documentation obtained from or provided by others, including, for the avoidance of doubt, the Contractors.
- b. The first Contractor’s Monthly EM&A Summary shall include the following as relevant to the Works: -
 - 1) an executive summary (1-2 pages) describing and/or providing: -

-
- Breaches of A/L Levels;
 - a copy of the Complaint Log;
 - notifications of any summons and successful prosecutions;
 - reporting changes; and
 - future key issues; and
- 2) Basic Project Information, including: -
- Project organisation including key personnel contact names and telephone numbers;
 - updated construction programme;
 - management structure; and
 - works undertaken during the month; and
- 3) Environmental Status, including: -
- works undertaken during the month with illustrations (such as location of works, daily dredging/filling rates, percentage fines in the fill material used); and
 - description of the location of any environmental sensitive receivers and monitoring and control stations for any monitoring undertaken by Contractor; and
- 4) Summary of EM&A requirements, including: -
- A/L Level monitoring parameters;
 - environmental quality performance limits (A/L Levels);
 - Event-Action Plans;
 - environmental mitigation measures, as recommended in the EIA Report; and
 - environmental requirements in Contractors' contract documents; and
- 5) Implementation Status – advice on the implementation status of environmental protection and pollution control/mitigation measures, including measures for ecological and visual impacts as recommended in the EIA Report, summarised in the updated implementation schedule;
- 6) Monitoring Results for monitoring undertaken by Contractor with the following information: -
- monitoring methodology;
 - name of laboratory and types of equipment used and calibration details;
 - parameters monitored;
 - monitoring locations (and depth/height);
 - monitoring date, time, frequency, and duration;
 - weather conditions during the period;
 - graphical plots of trends of monitored parameters in the month annotated against;

-
- the major activities being carried out on-Site during the period;
 - weather conditions that may affect the results; and
 - any other factors which might affect the monitoring results;
- 7) QA/QC results and detection limits, including: -
- report on non-compliance, complaints, notifications of summons and successful prosecutions
 - record of all noncompliance (exceedances) of the environmental quality performance limits (A/L Levels);
 - record of all complaints received (written or verbal), including locations and nature of complaint investigation, liaison and consultation undertaken, actions and follow-up procedures taken, results and summary;
 - record of notifications of summons and successful prosecutions for breaches of the current environmental protection/pollution control legislation, including locations and nature of the breaches, investigation, follow-up actions taken, results and summary;
 - review of the reasons for and the implications of non-compliance, complaints, summons and prosecutions including review of pollution sources and working procedures; and
 - description of the actions taken in the event of non-compliance and deficiency reporting and any follow-up procedures related to earlier non-compliance.
- 8) FEP Implementation Status (including the status of submissions under the FEP)
- c. The first Monthly Project EM&A Report will generally include the following: -
- 1) an executive summary (1-2 pages) describing and/or providing: -
- Breaches of A/L Levels;
 - a copy of the Complaint Log;
 - notifications of any summons and successful prosecutions;
 - reporting changes; and
 - future key issues; and
- 2) Basic Project Information, including: -
- Project organisation including key personnel contact names and telephone numbers;
 - updated construction programme;
 - management structure; and
 - works undertaken during the month; and

-
- 3) Environmental Status, including: -
 - works undertaken during the month with illustrations (such as location of works, daily dredging/filling rates, percentage fines in the fill material used); and
 - drawings showing the Project area, any environmental sensitive receivers and the locations of the monitoring and control stations; and
 - 4) Summary of EM&A requirements, including: -
 - A/L Level monitoring parameters;
 - environmental quality performance limits (A/L Levels);
 - Event-Action Plans;
 - environmental mitigation measures, as recommended in the EIA Report; and
 - environmental requirements in Contractors' contract documents; and
 - 5) Implementation Status – advice on the implementation status of the FEP (including the status of submissions under the FEP), environmental protection and pollution control/mitigation measures, including measures for ecological and visual impacts as recommended in the EIA Report, summarised in the updated implementation schedule;
 - 6) Monitoring Results together with the following information: -
 - monitoring methodology;
 - name of laboratory and types of equipment used and calibration details;
 - parameters monitored;
 - monitoring locations (and depth/height);
 - monitoring date, time, frequency, and duration;
 - weather conditions during the period;
 - graphical plots of trends of monitored parameters in the month annotated against;
 - the major activities being carried out on-Site during the period;
 - weather conditions that may affect the results; and
 - any other factors which might affect the monitoring results;
 - 7) QA/QC results and detection limits, including: -
 - report on non-compliance, complaints, notifications of summons and successful prosecutions
 - record of all noncompliance (exceedances) of the environmental quality performance limits (A/L Levels);
 - record of all complaints received (written or verbal), including locations and nature of complaint investigation, liaison and consultation undertaken, actions and follow-up procedures taken, results and summary;

-
- record of notifications of summons and successful prosecutions for breaches of the current environmental protection/pollution control legislation, including locations and nature of the breaches, investigation, follow-up actions taken, results and summary;
 - review of the reasons for and the implications of non-compliance, complaints, summons and prosecutions including review of pollution sources and working procedures; and
 - description of the actions taken in the event of non-compliance and deficiency reporting and any follow-up procedures related to earlier non-compliance.
- 8) Other information, including: -
- an account of the future key issues as reviewed from the Contractors' works programmes and works method statements;
 - advice on the solid and liquid waste management status; and
 - submission of implementation status proforma, proactive environmental protection proforma, regulatory compliance proforma, site inspection proforma, data recovery schedule and complaint log summarising the EM&A of the period.
- d. The subsequent Contractor's Monthly EM&A Reports shall include the following as relevant to the Works: -
- 1) an executive summary (1-2 pages) describing and/or providing: -
 - Breaches of A/L Levels;
 - a copy of the Complaint Log;
 - notifications of any summons and successful prosecutions;
 - reporting changes; and
 - future key issues; and
 - 2) Environmental Status, including: -
 - updated construction programme;
 - works undertaken during the month with illustrations (such as location of works, daily dredging/filling rates, percentage fines in the fill material used); and
 - description of the location of any environmental sensitive receivers and monitoring and control stations for any monitoring undertaken by Contractor; and
 - 3) Implementation Status – advice on the implementation status of the FEP (including the status of submission under the FEP), environmental protection and pollution control/mitigation measures, including measures for ecological and visual impacts as recommended in the EIA Report, summarised in the updated implementation schedule;
 - 4) Monitoring Results for monitoring undertaken by Contractor with the following information: -
 - monitoring methodology;

-
- name of laboratory and types of equipment used and calibration details;
 - parameters monitored;
 - monitoring locations (and depth/height);
 - monitoring date, time, frequency, and duration;
 - weather conditions during the period;
 - graphical plots of trends of monitored parameters in the month annotated against;
 - the major activities being carried out on-Site during the period;
 - weather conditions that may affect the results; and
 - any other factors which might affect the monitoring results;
- 5) QA/QC results and detection limits, including: -
- report on non-compliance, complaints, notifications of summons and successful prosecutions
 - record of all noncompliance (exceedances) of the environmental quality performance limits (A/L Levels);
 - record of all complaints received (written or verbal), including locations and nature of complaint investigation, liaison and consultation undertaken, actions and follow-up procedures taken, results and summary;
 - record of notifications of summons and successful prosecutions for breaches of the current environmental protection/pollution control legislation, including locations and nature of the breaches, investigation, follow-up actions taken, results and summary;
 - review of the reasons for and the implications of non-compliance, complaints, summons and prosecutions including review of pollution sources and working procedures; and
 - description of the actions taken in the event of non-compliance and deficiency reporting and any follow-up procedures related to earlier non-compliance.
- e. The subsequent Monthly Project EM&A Reports will generally include the following: -
- 1) an executive summary (1-2 pages) describing and/or providing: -
 - Breaches of A/L Levels;
 - a copy of the Complaint Log;
 - notifications of any summons and successful prosecutions;
 - reporting changes; and
 - future key issues; and
 - 2) Environmental Status, including: -
 - updated construction programme;

-
- works undertaken during the month with illustrations (such as location of works, daily dredging/filling rates, percentage fines in the fill material used); and
 - drawings showing the Project area, any environmental sensitive receivers and the locations of the monitoring and control stations; and
- 3) Implementation Status – advice on the implementation status of the FEP, environmental protection and pollution control/mitigation measures, including measures for ecological and visual impacts as recommended in the EIA Report, summarised in the updated implementation schedule;
- 4) Monitoring Results, together with the following information: -
- monitoring methodology;
 - name of laboratory and types of equipment used and calibration details;
 - parameters monitored;
 - monitoring locations (and depth/height);
 - monitoring date, time, frequency, and duration;
 - weather conditions during the period;
 - graphical plots of trends of monitored parameters in the month annotated against;
 - the major activities being carried out on-Site during the period;
 - weather conditions that may affect the results; and
 - any other factors which might affect the monitoring results;
- 5) QA/QC results and detection limits, including: -
- report on non-compliance, complaints, notifications of summons and successful prosecutions
 - record of all noncompliance (exceedances) of the environmental quality performance limits (A/L Levels);
 - record of all complaints received (written or verbal), including locations and nature of complaint investigation, liaison and consultation undertaken, actions and follow-up procedures taken, results and summary;
 - record of notifications of summons and successful prosecutions for breaches of the current environmental protection/pollution control legislation, including locations and nature of the breaches, investigation, follow-up actions taken, results and summary;
 - review of the reasons for and the implications of non-compliance, complaints, summons and prosecutions including review of pollution sources and working procedures; and
 - description of the actions taken in the event of non-compliance and deficiency reporting and any follow-up procedures related to earlier non-compliance.
- 6) Other information, including: -

- an account of the future key issues as reviewed from the Contractors' works programmes and works method statements;
 - advice on the solid and liquid waste management status; and
- 7) Appendix
- A/L Levels: Graphical plots of trends of monitored parameters at key stations over the past four reporting periods for representative monitoring stations annotated against the following: -
 - major activities being carried out on-Site during the period;
 - weather conditions during the period; and
 - any other factors which might affect the monitoring results; and
 - monitoring schedule for the present and next reporting period
 - cumulative statistics on complaints, notifications of summons and successful prosecutions; and
 - outstanding issues and deficiencies.

10.5 Quarterly Project EM&A Summary Reports

- a. HKITP's ETL and IECK will prepare a Quarterly Project EM&A Summary Report, which should generally be around five pages in length (i.e., three of text and tables and two of figures), and should contain at least the following or similar information: -
- 1) up to one-half page executive summary;
 - 2) basic project information including a synopsis of the project organisation, programme, contacts of key management, and a synopsis of work undertaken during the quarter;
 - 3) a brief summary of EM&A requirements including:
 - monitoring parameters;
 - environmental quality performance limits (A/L Levels); and
 - environmental mitigation measures, as recommended in the project EIA study final report;
 - 4) advice on the implementation status of environmental protection and pollution control/mitigation measures, as recommended in the project EIA study report, summarised in the updated implementation schedule, including: -
 - drawings showing the Project area, any environmental sensitive receivers and the locations of the monitoring and control stations;
 - graphical plots of the trends of monitored parameters over the past four months (the last month of the previous quarter and the present quarter) for representative monitoring stations annotated against;
 - the major activities being carried out on-Site during the period;
 - weather conditions during the period; and
 - any other factors which might affect the monitoring results;
 - 5) advice on the solid and liquid waste management status;

- 6) a summary of non-compliance (exceedances) of the environmental quality performance limits (A/L Levels);
- 7) a brief review of the reasons for and the implications of non-compliance including review of pollution sources and working procedures;
- 8) where measurement of suspended solids is required, a quarterly assessment of construction impacts on suspended solids at the Project Site, including, but not limited to, a comparison of the difference between the quarterly mean and 1.3 times of the ambient mean, which is defined as 30% increase of the baseline data or EPD data, of the related parameters by using appropriate statistical procedures. Suggest of appropriate mitigation measures if the quarterly assessment analytical results demonstrate that the quarterly mean is significantly higher than the 1.3 on water quality times of the ambient mean ($p < 0.05$);
- 9) a summary description of the actions taken in the event of non-compliance and any follow-up procedures related to earlier non-compliance;
- 10) a summary record of all complaints received (written or verbal), liaison and consultation undertaken, actions and follow-up procedures taken;
- 11) a summary record of notification of summons and successful prosecutions for breaches of the current environmental protection/pollution control legislation', locations and nature of the breaches, investigation, follow-up actions taken and results;
- 12) comments (e.g., effectiveness and efficiency of the mitigation measures), recommendations (e.g. any improvement in the Project EM&A Programme) and conclusions for the quarter; and
- 13) proponents' contacts and any hotline telephone number for the public to make enquiries.

10.6 Final Project EM&A Summary Report

- a. The construction Project EM&A Programme will be terminated upon completion of all construction activities, or as directed by Project Manager.
- b. HKITP's ETL's Final Project EM&A Summary Report will generally include, amongst other things: -
 - 1) an executive summary;
 - 2) basic project information including a synopsis of the project organisation, programme, contracts of key management, and a synopsis of work undertaken during the entire construction period;
 - 3) a brief summary of EM&A requirements including:
 - monitoring parameters;
 - environmental quality performance limits (A/L Levels); and
 - environmental mitigation measures, as recommended in the EIA Report;

-
- advice on the implementation status of environmental protection and pollution control/mitigation measures, as recommended in the project EIA Report, summarised in the updated implementation schedule;
 - drawings showing the Project area, any environmental sensitive receivers and the locations of the monitoring and control stations;
 - graphical plots of the trends of monitored parameters over the past four months (the last month of the previous quarter and the present quarter) for representative monitoring stations annotated against;
 - the major activities being carried out on-Site during the period;
 - weather conditions during the period;
 - any other factors which might affect the monitoring results; and
- 4) the return of ambient environmental conditions in comparison with baseline data;
 - 5) compare and contrast the EM&A data with the EIA Report predictions and annotate with explanation for any discrepancies;
 - 6) provide clear-cut decisions on the environmental acceptability of the Project with reference to the specific impact hypothesis;
 - 7) advice on the solid and liquid waste management status;
 - 8) a summary of non-compliance (exceedances) of the environmental quality performance limits (A/L Levels);
 - 9) a brief review of the reasons for and the implications of non-compliance including review of pollution sources and working procedures;
 - 10) a summary description of the actions taken in the event of non-compliance and any follow-up procedures related to earlier non-compliance;
 - 11) a summary record of all complaints received (written or verbal), liaison and consultation undertaken, actions and follow-up procedures taken;
 - 12) review the monitoring methodology adopted and with the benefit of hindsight, comment on its effectiveness (including cost effectiveness);
 - 13) a summary record of notification of summons and successful prosecutions for breaches of the current environmental protection/pollution control legislation's, locations and nature of the breaches, investigation, follow-up actions taken and results;
 - 14) review the practicality and effectiveness of the EIA process and construction Project EM&A Programme (e.g., effectiveness and efficiency of the mitigation measures); and
 - 15) a conclusion to state the return of ambient and/or the predicted scenario as per EIA Report findings.

10.7 Datakeeping

- a. Although documentation such as the monitoring field records, laboratory analysis records and Project Site inspection forms are not required to be included in HKITP's EM&A Reports, such documents must be kept by HKITP's ETL and/or IECK for at least one year after completion of the last of the Contractor's on-Site operations.
- b. Monitoring data (if taken) will be recorded in electronic form, and the software copy will be made available to EPD upon their request.

11.0 FIGURES

- 11.1 Figure 1: Project Organisation Diagram
- 11.2 Figure 2: Construction Programme
- 11.3 Figure 3: Location of the Air Monitoring Station
- 11.4 Figure 4: Location of the Noise Monitoring Stations

END OF ANNEX

Figure 1

Project Organisation and Line of Communication

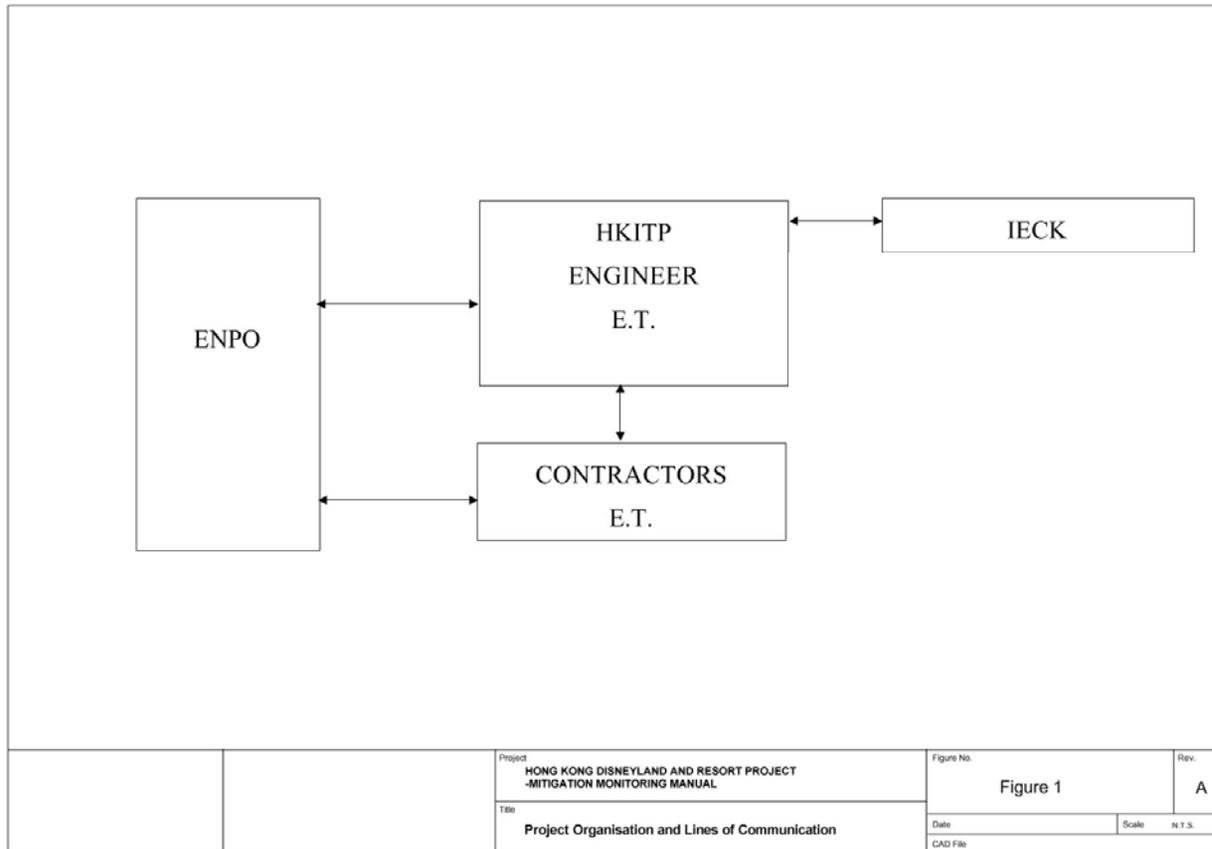


Figure 2
Construction Program

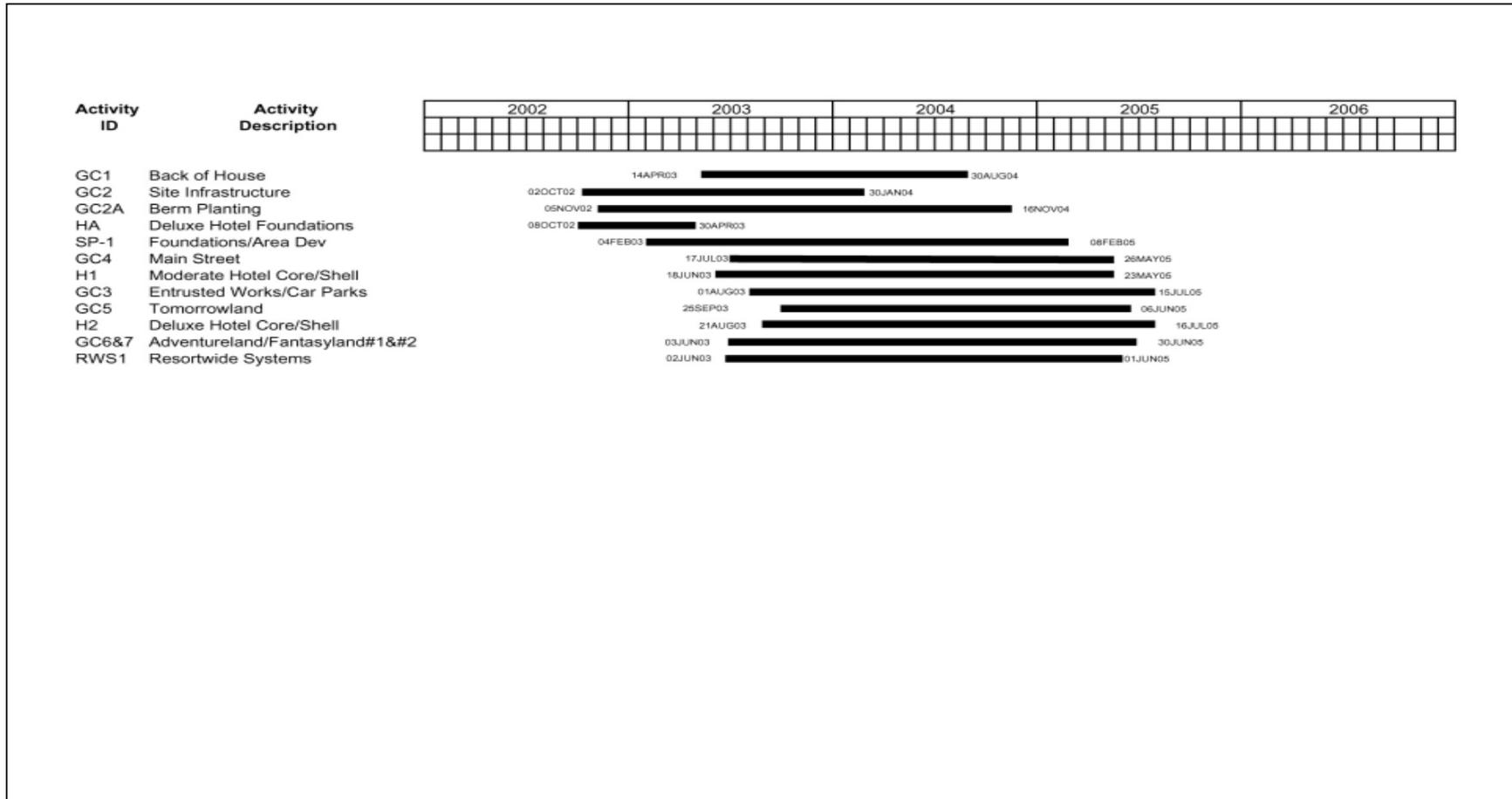


Figure 3 Location of the Air Monitoring Station

(Figure was extracted from "Infrastructure for Penny's Bay Development Contract 1 No. Cv/2000/09 Impact Environmental Monitoring and Audit Report August 2002")



Figure 4 Location of the Noise Monitoring Stations

(Figure was extracted from "Infrastructure for Penny's Bay Development Contract 1 No. Cv/2000/09 Impact Environmental Monitoring and Audit Report August 2002")

