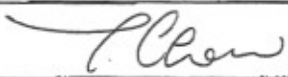
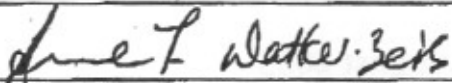


**ENVIRONMENTAL MONITORING AND AUDIT PLAN FOR  
THE HONG KONG DISNEYLAND RESO**

**Prepared by  
HONG KONG INTERNATIONAL THEME PARK  
EP-01/059/2000/A**

**August 2005**

Certified By	:	Ms. Tina Chow
Signed	:	
Position	:	HKITP ET Leader
Date	:	5th Aug. 2005
Verified By	:	Ir Dr A Watker-Zeris
Signed	:	
Position	:	IECK
Date	:	8th August 2005

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## 1. INTRODUCTION

### 1.1 Background

The Hong Kong Disneyland Resort was considered a Designated Project under the Environmental Impact Assessment Ordinance (EIAO) and was assessed under the Environmental Impact Assessment for “*Construction of an International Theme Park in Penny’s Bay of North Lantau and its Essential Associated Infrastructures*” (EIA Report). Annex N of the EIA report is an Environmental Monitoring and Audit Manual (EM&A Manual) prepared as part of the EIA outlining the operational environmental requirements for the Project.

Following approval of the EIA an Environmental Permit (EP) was issued to the Civil Engineering Department (CED), now Civil and Engineering Development Department (CEDD). Pursuant to that EP, HKITP had subsequently applied for and was issued a Further Environmental Permit (FEP) in July 2000 (FEP-01/59/2000). Following the issuance of FEP, HKITP applied for variation and an Environmental Permit (EP) was issued in June 2005 (EP-01/059/2000/A) which contains the requirements and obligations for the resort operations.

HKITP will operate, as of 12<sup>th</sup> September 2005, a Disney-branded theme park and resort, and associated complex and infrastructure at Penny’s Bay, Hong Kong (the “Resort”). The location and general layout plan of the Resort is depicted in Figure 1. This Operational Environmental Monitoring and Audit (EM&A) Plan was prepared in accordance with the EP requirement and the EIA recommendations for the management and implementation of the Resort, of which excluding the operation of a Water Recreation Centre (WRC) which is a designated project covered under different EPs. The environmental monitoring and audit plan for the WRC is prepared and submitted to EPD under a separate submission.

### 1.2 Geographical Scope of the EM&A Program

This EM&A Plan covers the operations of the Resort in the following areas:

- Theme Park and its Back-of-House Area
- Hotels within the Resort
- Public Transport Interchange (PTI)
- Car and Coach Park
- Government Landscaped Area (GLA)
- Ferry Pier

The PTI, GLA and Ferry Pier are Government Areas entrusted to HKITP for its operation.

Areas within the Theme Park resort area that are not covered under this EM&A plan include Water Recreation Centre (a licensed area to HKITP under a separate environmental permit and is addressed in a separate submission) and Government management area such as Western Resort Road, utility yard and some landscape berms along the public roads. The

environmental monitoring and audit plan for the water recreation center was covered under a separate submission as discussed in Section 1.1 above.

### **1.3 Permit Requirements**

Under Condition 3.2 of the EP-01/059/2000/A it is stated that “*no later than one month before the operation of the Project, the Permit Holder shall submit for the Director’s approval an Operational Environmental Monitoring and Audit (EM&A) Plan for the operation of the Project. Before the submission to the Director, the EM&A Plan shall be certified by the IEC as having regard to Annex N of the EIA Report. All measures recommended in the approved EM&A Plan shall be fully and properly implemented in accordance with the requirements and time schedule(s) set out in the EM&A Plan. The Operational Environmental Monitoring and Audit Plan approved under this condition shall hereinafter be referred to as the “EM&A Plan”.*”

Under item 5.2 of the aforementioned EP it also states that “*the EM&A Plan shall contain monitoring locations, monitoring schedules, methodology and qualification of monitoring team members. Monitoring shall be conducted in accordance with the EM&A Plan unless with prior approval from the Director. Monitoring details and results shall be recorded in reports submitted in accordance with the EM&A Plan. A hard copy and a soft copy of the reports shall be deposited with the Director within two weeks of each reporting period as specified in the EM&A Plan. The reports shall be certified by the ET Leader before deposit with the Director.*”

### **1.4 Purpose and Content of the Plan**

In accordance with the requirements of the EIA, the EM&A Plan has been developed using the framework set forth in the EM&A Manual (Annex N to the EIA Report) albeit recognising that the EM&A Plan must be specific to the resort operations. This plan sets out the arrangements for environmental monitoring and auditing, the organisational arrangement of responsible personnel, the mechanisms for ensuring that the recommended mitigation measures are fully and effectively implemented, and the actions to be taken in the event of any exceedances of the event or action limits. The EM&A Plan is a dynamic and live document and HKITP will review and update the plan at least on an annual basis.

The primary purposes of this EM&A Plan are: -

- to provide reference and instruction to those charged with environmental duties during the resort operations;
- set forth the EM&A Programme developed by HKITP and verified by the IECK; and
- set forth systematic procedures for the monitoring, auditing and remedying of potential adverse environmental impacts that may arise from the resort operations.

### **1.5 Objectives of EM&A Programme**

The general objectives of the EM&A Plan are: -

- to provide a database against which any short or long-term environmental impacts arising out of the resort operations can be determined;
- to provide an early indication should any of the environmental control measures or practices fail to achieve the acceptable standards;
- to monitor the implementation of mitigation measures,
- to determine environmental compliance with regulatory requirements, standards and government policies;
- to take remedial action if unexpected problems or unacceptable environmental impacts arise; and
- to provide data against which environmental audits may be undertaken.

## **1.6 Scope of EM&A Program**

The scope of this EM&A programme is to:

- establish baseline air quality at specified locations;
- Implement operational monitoring and inspection programmes for fireworks air quality, fireworks noise and theme park fixed plant noise;
- Implement inspection and audit requirements for waste management;
- Identify and resolve environmental issues as they may arise from the operation;
- Check and quantify the overall environmental performance, the implementation of Event Action Plans (EAPs) and remedial actions taken to mitigate adverse environmental effects as they may arise from the operation;
- Conduct monthly reviews of monitored data as the bases for assessing compliance with the defined criteria and to ensure that necessary mitigation measures are identified and implemented, and to undertake additional ad hoc monitoring and auditing as required by special circumstances;
- 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;
- Conduct regular site inspections of a formal or informal nature to assess:
  - The implementation of the recommendations of the EIA report;
  - The performance as measured by the EM&A;
  - The need for specific mitigation measures to be implemented or the continued usage of those previously agreed;



- To advise the operation team of any identified potential environmental issues
- Submit monthly EM&A reports which summarise project monitoring and auditing data, illustrating the acceptability or otherwise of any environmental impacts and identification or assessment of the implementation status of agreed mitigation measures.

### **1.7 Structure of the EM&A Plan**

Following this introductory chapter, the remainder of the EM&A plan is set out as follows:

- Chapter 2 outlines the EM&A Requirement from the permit and EIA report
- Chapter 3 outlines the EM&A strategy in terms of the organisation of parties involved in the EM&A process and the definition use of Action/ Limit levels
- Chapter 4 details the technical requirements and procedures for air quality monitoring
- Chapter 5 details the technical requirements and procedures for noise monitoring
- Chapter 6 describes the audit procedures related to waste management issues
- Chapter 7 describes the arrangement for monitoring and audit for Terrestrial Ecology
- Chapter 8 described the arrangement for monitoring and audit for Marine Ecology
- Chapter 9 outlines the scope of site auditing and complaint handling procedures
- Chapter 10 details the EM&A reporting requirements

## 2. EM&A REQUIREMENT

It was recommended in the EIA that operation monitoring associated with Theme Park operation should be conducted for the following parameters:

- Fireworks Air quality for the first year of operation
- Fireworks Noise
- Fixed Plant Noise from Theme Park
- Terrestrial Ecology (White Bellied Sea Eagles) for the first 2 years of the operation
- Marine Ecology (Dolphins and Porpoise)

The EIA findings and the associated EM&A recommendations are summarised in the following paragraphs for the above parameters.

### 2.1 Fireworks Air Quality

The EIA reported on the assessments of the fireworks displays which drew on modelling techniques and literature reviews. The EIA demonstrated that based on the Respirable Suspended Particulates (RSPs) modelling and the low percentage of heavy metals in the fireworks, “impact from heavy metals is not expected”. Potential odour from the fireworks (hydrogen sulphide) was also modelled and reported in the EIA to be within the acceptable criteria at the ASRs. Fireworks displays would not be a significant source of atmospheric emissions of dioxins and VOC. In summary, the EIA concluded that the fireworks displays emissions impact on air quality would only contribute to marginal increase in the air pollutant levels in the atmosphere (Section 3.8.8 of the EIA Report).

Under Condition 3.1 of the EP-01/059/2000/A it is stated that “*Before the operation of the Project, the Permit Holder shall carry out trial firework displays and associated air quality and noise monitoring. The details of the trial and monitoring programme shall be submitted to the Director for agreement at least one month prior to the trial fireworks displays. The results of the trial fireworks displays shall be submitted to the Director for agreement prior to the operation of the Project. The results of the trial tests and associated air quality data shall be provided to the Advisory Council on the Environment for consultation, as directed by the Director*”. The details of the trial and monitoring programme were submitted to DEP and were approved on 27 April 2005. Trial displays and associated air quality and noise monitoring were carried out on 6 May 2005 and a backup monitoring was conducted on 7 May 2005. The results of the trial fireworks displays were submitted to DEP and ACE on 29 June 2005. ACE consultation was undertaken on July 11, 2005. The trial displays monitoring results show that all measured pollutants were well below the respective air criteria which concur with EIA prediction that the fireworks program would not cause any significant impacts to the surrounding environment.

Furthermore the EIA also concluded that the “*firework emission assessments predicts that fireworks would only contribute to marginal increase in the air pollutant levels in the atmosphere; operation monitoring for the first operational year is proposed for verification*”

*purposes*". The verification process for such a statement is detailed in Chapter 4 this EM&A Plan.

## **2.2 Fireworks Noise**

The EIA did not predict any adverse impact at the defined Noise Sensitive Receivers (NSRs) in Discovery Bay and Peng Chau. Noise generated by evening firework displays was predicted in the EIA to achieve the  $Leq_{15 \text{ min}} 55\text{dB(A)}$  limit. Noise monitoring was however recommended to check compliance with relevant criteria. In addition, EP condition 3.3 suggests that noise monitoring shall be carried out at Discovery Bay and Peng Chau during the fireworks displays to ensure compliance with the suggested limit in EIA. The noise monitoring arrangement is described in Chapter 5.

## **2.3 Fixed Plant Noise from Theme Park**

The operational noise assessment did not predict any exceedance of the relevant noise criteria due to the operation of the Theme Park and associated developments. Despite this finding, noise monitoring is recommended during the operational phase to ensure compliance with the applicable noise criteria. For fixed plant noise contribution, noise monitoring was suggested to comprise monitoring at the perimeter of the Theme Park to ensure compliance with the noise criterion of 75 dB(A), to assess the cumulative noise contribution from the fixed plant within the resort.

## **2.4 Waste Management**

An estimate of the municipal wastes arisings was included in the EIA Report based on experience at other international Theme Parks. This forecast has been reviewed and incorporated into the Operations Waste Management Plan (OWMP) which is under separate submission to DEP. Recycling options were also discussed and are covered in the OWMP. The EIA concluded that waste management issues "are not anticipated during the operation phase".

## **2.5 Terrestrial Ecology**

The EIA summarised that during the operational phase there exists the potential for the White Bellied Sea Eagles to abandon their nesting site due to noise from the laser shows (which will not be undertaken on opening day program) and the fireworks displays. The EIA also stated that "human interference impact identified may be mitigated by the further prohibition of human access during Project operation by secure fencing of the site". It was also recommended to extend the monitoring programme to monitor the reaction of these birds to the fireworks displays.

- It has been agreed between HKITP, CEDD and EPD that monitoring of white bellied sea eagle will be conducted by CEDD and the monitoring results will be distributed to HKITP until completion of Government's works in the Penny's Bay Development Area. Hence, HKITP is not required to conduct terrestrial monitoring until Government's works finish sometime after the Resort opens.
- It should also be noted that the EIA stated that "in the worst case of abandonment of the

pair from their nest during operation, possible suitable habitat and nesting sites are available in the vicinity of the Assessment Area and thus no residual impact is predicted". It is suggested that the monitoring data be reviewed by HKITP and CEDD towards the completion of Penny's Bay Reclamation Stage 2 contract to ascertain the requirements for continued monitoring of the White Bellied Sea Eagle.

## **2.6 Marine Ecology**

The EIA concluded that operational impacts to marine ecological resources may occur through disturbances to water quality due to changes in the hydrodynamic regime (note however that the water quality assessment in the EIA predicted "no adverse impacts"). It was also predicted in the EIA that there will be an increase in the number of vessels travelling between Victoria Harbour and Penny's Bay. The EIA concluded that these vessels will not be travelling at high speed and as the area is not identified as critical habitat to the Indo-Pacific Humpback Dolphin unacceptable impacts are not predicted (with the inclusion of mitigation measures).

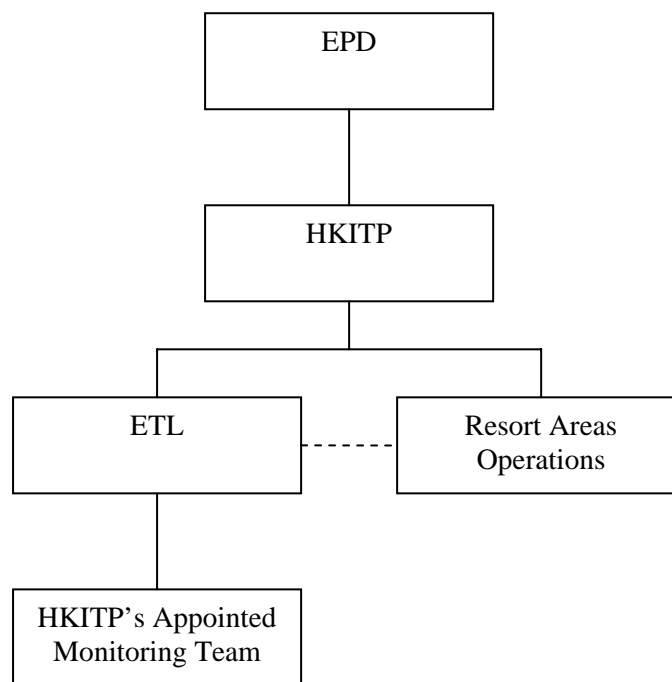
The EIA proposed a construction/operation dolphin/porpoise monitoring programme be established to evaluate whether the works had any effect on the mammals. The monitoring programme for the dolphins/porpoises is being carried out by CEDD and will continue to be so until completion of Penny's Bay Reclamation Stage 2 contract. It is recommended that a similar approach be adopted for this marine monitoring as for the terrestrial monitoring (ie review and revise plan as required after consideration of the long term results up till end of Penny's Bay Reclamation Stage 2 contract).

### 3. EM&A STRATEGY

#### 3.1 Organisation

The organisation and lines of communication with respect to environmental matters are shown in **Figure 3.1**. An Environmental Team (ET) will be established by HKITP. The ET will consist of qualified environmental personnel supervised by an ET Leader (ETL) who has at least 7 years' experience in EM&A or environmental management. The ETL together with the monitoring team will be responsible for the implementation of the EM&A programme in accordance with this plan.

**Figure 3.1** HKITP Environmental Team Organisation Structure



### **3.2 Duty of Environmental Team**

The duties of the ET are:

- a. sampling, analysis and statistical evaluation of monitoring parameters with reference to the EIA/EP recommendations and requirements;
- b. environmental site surveillance;
- c. audit of compliance with environmental protection, and pollution prevention and control regulations;
- d. monitor the implementation of environmental mitigation measures;
- e. complaint investigation, evaluation and identification of corrective measures;
- f. liaison with EPD on all environmental performance matters,
- g. advice to the HKITP on environmental improvement, awareness, enhancement matters, etc on WRC;
- h. timely submission of the EM&A report to HKITP and the Director of Environmental Protection.

### **3.3 Action & Limit Levels / Event & Action Plans**

“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 EM&A Plan, but can be described in principle: -

- 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
- 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.

“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 the cause will be immediately identified and remediated, and risk of a similar event occurring reduced or removed (and shall also apply to exceedances of A/L criteria).

## 4. AIR QUALITY

### 4.1 Introduction

The EIA stated that several air quality parameters will be monitored during the fireworks show throughout the first operational year for verification purposes. The future monitoring programme after the first operational year shall be based on the monitoring results in the first year of operation. The following sections describe the methods for baseline and operational air quality monitoring during the operational phase of the park.

The results of the sampling will be compared to the objective, criteria, or background levels listed in the EIA (Section 3.29, Table 3.2a, Table 3.5n, Sections 3.2.64, and 3.5.79). The following methods will be followed for the Air Quality Monitoring.

### 4.2 Air Quality Sampling and Analytical Methods

Air quality monitoring will be conducted following USEPA protocols. The full description of these methodologies can be found on the USEPA air quality website (<http://www.epa.gov/ttnamti1/inorg.html>). Except for hydrogen sulfide, sampling will occur over a 24 hr period. The purpose of this sampling is to enable comparison of the results with previously collected data, and compare these with the stated criteria.

#### *Respirable Suspended Particles (RSP)*

As noted in the EIA (Sect. 5.2.3), total RSP will be quantified using a high volume sampler (HVS) run continuously over a 24 hr period. The following specifications will be required:

- 0.6-1.7 m<sup>3</sup>/min (20-60 SCFM) adjustable flow range;
- timing/control device for 24 hr operation (+/- 2 min accuracy);
- elapsed timer for 24 hr operation (+/- 2 min accuracy);
- minimum exposed area of 406 cm (63 in');
- flow control accuracy of +/- 2.5% deviation over 24 hr period;
- electronic mass flow rate controller;
- flow recorder for continuous monitoring;
- peaked roof inlet;
- incorporated with a manometer;
- ability to hold and seal the filter paper to the sampler housing at horizontal position.

#### *Barium and Copper*

Barium and copper will be collected from the RSP filter samples used in the high volume samplers. The analytical methods will follow EPA methods IO-2.1 and IO-3.5. Briefly, the procedure will be: Aliquots from the RSP sample will be analyzed for barium and copper. After samples are returned to the laboratory, an inductively coupled plasma mass spectrophotometer (ICP/MS) will be used to quantify Ba and Cu concentrations.

#### *Dioxins*

Total dioxins will be measured during both the baseline and operational sampling periods using a separate high volume sampler equipped with a quartz fiber filter and polyurethane

foam (PUF) adsorbent at each selected location for sampling of 325 to 400 m<sup>3</sup> air over 24 hours (USEPA, Method TO-9A).

### ***Hydrogen Sulfide***

The H<sub>2</sub>S concentrations will be determined on-site using an impinger with the methylene blue spectrophotometric method. H<sub>2</sub>S will be measured once per 24-hour period. The measurement will occur over a period of one hour during the anticipated fireworks display.

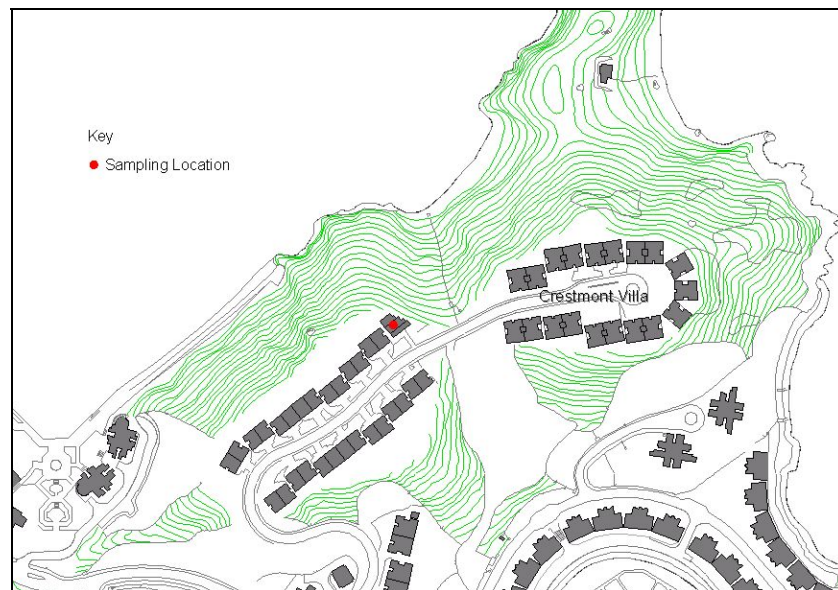
## **4.3 Monitoring Locations**

EP-01/059/2000/A requires air quality monitoring on fireworks displays to be located at Discovery Bay and Peng Chau which are summarised in Table 4.1 and Figure 4.1. Should the proposed air sampling locations be relocated, then prior approval will be obtained from EPD.

**Table 4.1 Air Quality Monitoring Stations**

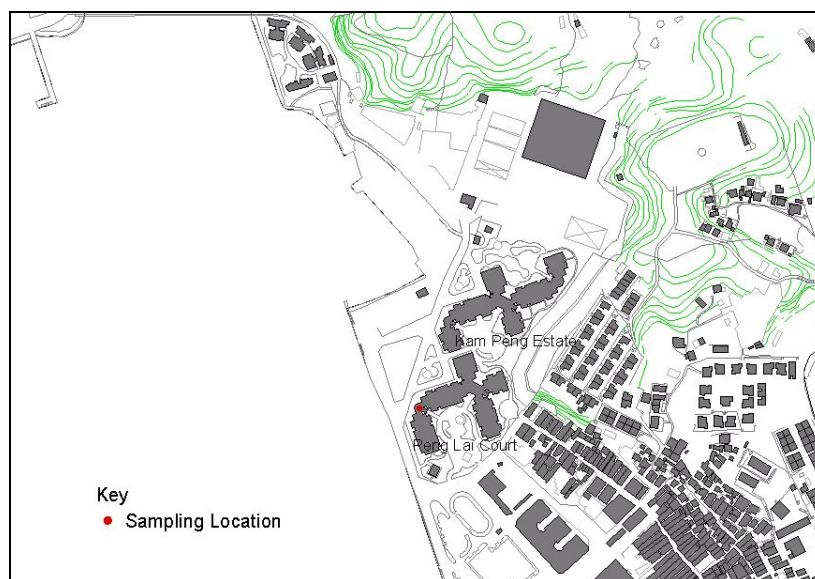
<b>Station ID</b>	<b>Description</b>
AM1	Rooftop of Crestmont Villa Management Office, Discovery Bay
AM2	Rooftop of Peng Lai Court, Peng Chau

**Figure 4.1a AM1 – Proposed Air Quality Monitoring Station at Discovery Bay**





**Figure 4.1b AM2 - Proposed Air Quality Monitoring Station at Peng Chau**



#### 4.4 Baseline Monitoring

Baseline monitoring will be undertaken at AM1 and AM2 to collect background data in the absence of fireworks display. The monitoring will occur for seven consecutive days. Samples for RSP, barium (Ba), copper (Cu), and dioxin, will be collected over a continuous 24-hour period whereas samples of hydrogen sulfide will be collected over a 1-hour period during the approximate time of the firework displays.

#### 4.5 Operational Monitoring

It is recommended in the EIA that operational sampling (Annex N section 5.3.5) will be conducted during the firework shows, once every three months during the first year of operation. The monitoring programme for the first 2 months of operation will be enhanced by increasing the frequency to once every 2 weeks. Samples for RSP, barium, copper, and dioxins will be collected over a 24-hour period, the same as in the baseline sampling, in accordance with the schedule as presented in Table 4.2. Air samples will also be collected over a 1-hour period during the firework show and analyzed for hydrogen sulfide (EM&A, Table 5.3b). The future monitoring programme after the first operational year shall be based on the monitoring results in the first year of operation.

**Table 4.2 Sampling Schedule**

Parameters	Sampling Time (hours)	Methodology	Frequency	Locations
RSP	24	USEPA Method IO-2.1	once every 2 weeks for the first 2 months of operation, thereafter once every three months through the first year of operation	AM1 & AM2
Ba & Cu	24	USEPA Method IO-2.1 & IO3.3		
Dioxins	24	USEPA Method TO-9A		
H <sub>2</sub> S	1 (during fireworks displays)	Methylene Blue		

#### 4.6 Compliance Assessment

Since no relevant air quality criteria were established in the EIA for the proposed sampling time period as recommended in the EM&A Manual for the aforementioned parameters (except for RSP), specific air quality criteria and action limit levels are recommended for RSP only (Table 4.3). For example, air quality criteria used in the EIA for Ba and Cu are annual averages and the monitoring parameters recommended in the EM&A Manual are 24-hour averages and are not comparable. Furthermore, exposure criteria (e.g., Threshold Limit Values, American Conference of Governmental Industrial Hygienists) are based on 8 hour/day, 40 hour/week exposures and are also not comparable.

Results obtained during the operational monitoring will therefore be compared to the results obtained during the baseline sampling period and data collected from the two monitoring locations to identify if the fireworks displays result in increased concentrations of these parameters. It should also be noted that the results obtained in this monitoring may need to make reference to seasonal and regional air quality data and trends as reported by the EPD's routine air quality monitoring stations.

As predicted in the EIA Report and demonstrated in the air quality monitoring results during trial fireworks displays, barium is a representative pollutant attributed to fireworks emissions. It is therefore considered appropriate to trigger the implementation of the Event and Action Plan for those parameters without Air Quality Objective (Ba, Cu, dioxins, and H<sub>2</sub>S) if it is determined by the ETL that there is a trend of increasing Ba concentration due to fireworks emissions from HKDL. The remedial actions would be the same as for RSP exceedance to the action level.

**Table 4.3 Action and Limit Levels**

<b>Parameter</b>	<b>Action Level</b>	<b>Limit Level</b>
RSP	$= (\text{Baseline Level} * 1.3 + \text{Limit Level}) / 2$	180 $\mu\text{g}/\text{m}^3$

#### 4.7 Event Action Plan

In the event that the RSP samples indicate an exceedance to the Action and Limit Levels given in Table 4.3, HKITP will implement the following actions of the Event and Action Plan (EAP) as shown in Table 4.4.

**Table 4.4 Event Action Plan for Air Quality**

<b>Exceedance</b>	<b>Environmental Team Leader</b>	<b>HKITP</b>
<b>Action Level for RSP</b>		
1. Exceedance for one sample	<ol style="list-style-type: none"> <li>1. Notify HKITP and EPD</li> <li>2. Repeat measurement to confirm findings</li> <li>3. Identify the source(s) of impact</li> <li>4. If source of impact confirmed to be from HKITP operation, increase monitoring frequency to monthly</li> <li>5. If exceedance stops, cease additional monitoring</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ETL.</li> <li>2. Notify operation unit responsible for fireworks show</li> <li>3. Review the operation of the fireworks show</li> </ol>
2. Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> <li>1. Notify HKITP and EPD</li> <li>2. Repeat measurement to confirm findings</li> <li>3. Identify the source(s) of impact</li> <li>4. If source of impact confirmed to be from HKITP operation, increase monitoring frequency to weekly</li> <li>5. Discuss with HKITP remedial actions required</li> <li>6. If exceedance stops, cease additional monitoring</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ETL.</li> <li>2. Notify operation unit responsible for fireworks show</li> <li>3. If source of impact confirmed to be from HKITP operation, develop proposals for remedial measures within three working days of notifications</li> <li>4. Implement the agreed proposals</li> </ol>
<b>Limit Level for RSP</b>		
1. Exceedance for one sample	<ol style="list-style-type: none"> <li>1. Notify HKITP and EPD</li> <li>2. Repeat measurement to confirm findings</li> <li>3. Check monitoring data trends and HKITP operations</li> <li>4. Identify the source(s) of impact</li> <li>5. If source of impact confirmed to be from HKITP operation, increase monitoring frequency to monthly</li> <li>6. Assess the efficacy of HKITP's remedial actions and keep EPD informed of the results.</li> <li>7. If exceedance stops, cease additional monitoring</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ETL.</li> <li>2. Notify operation unit responsible for fireworks show</li> <li>3. If source of impact confirmed to be from HKITP operation, develop proposals for remedial measures within three working days of notifications</li> <li>4. Implement the agreed proposals</li> </ol>
2. Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> <li>1. Notify HKITP and EPD</li> <li>2. Repeat measurement to confirm findings</li> <li>3. Check monitoring data trends and HKITP operations</li> <li>4. Identify the source(s) of impact</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ETL.</li> <li>2. Notify operation unit responsible for fireworks show</li> <li>3. If exceedance confirmed to be associated with HKITP's operations, take immediate action to avoid further exceedance.</li> <li>4. Develop proposals for remedial actions within three working days of notification.</li> </ol>

<b>Exceedance</b>	<b>Environmental Team Leader</b>	<b>HKITP</b>
	<p>5. If source of impact confirmed to be from HKITP operation, increase monitoring frequency to monthly</p> <p>6. Discuss remedial actions required with HKITP &amp; EPD.</p> <p>7. Assess the efficacy of HKITP's remedial actions.</p> <p>8. If exceedance stops after the implementation of the mitigation measures, cease additional monitoring.</p>	<p>5. Implement the agreed proposals</p> <p>6. Should exceedance continue after implementation of remedial measures, stop the relevant portions of the fireworks displays until the exceedance is abated.</p>

## 5. NOISE

### 5.1 Introduction

The operational noise assessment contained in the EIA did not predict any exceedance of the relevant noise criteria due to the operation of the Theme Park and associated developments. Despite this finding, noise monitoring was recommended in the EIA to ensure compliance with the operational noise criteria. The EIA further recommended that noise monitoring should be undertaken during the fireworks display to ensure that the resulting noise level does not exceed the required criteria.

### 5.2 Methodology and Criteria

During the operational phase, it is recommended that noise monitoring is undertaken at one on-site location and two off-site locations in order to assess fixed plant noise and noise from the fireworks displays respectively. For the monitoring of fireworks noise, the appropriate parameter will be the  $L_{Aeq,15mins}$  whereas  $L_{Aeq,30 min}$  will be for the fixed plant noise.

Following any significant changes to the park's operations or fireworks displays (such as the introduction of a new ride or a change in the type or number of fireworks included within the display) fixed plant noise and fireworks noise monitoring will be undertaken once every six days for one month to ensure compliance with the noise criteria. At all other times, throughout the operational lifetime of the Theme Park, noise monitoring of fixed plant and fireworks noise will be undertaken once a month.

### 5.3 Monitoring Equipment

Sound level meters and calibrators will 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 will be supplied and used with the manufacturers recommended wind shield and with a tripod.

The calibration of the sound level meters will be carried out in accordance with the manufacturer's requirements. The sound level meters, including the calibrators, will be verified by the manufacturers once every two years 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  $ms^{-1}$  will also be supplied for the measurement of wind speeds during noise monitoring periods. The anemometers will be used and calibrated in accordance with the manufacturers recommendations.

Sound level meters will 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.

The ETL will ensure the equipment will be kept in a good state of repair 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.

Noise measurements should not be made in the presence of fog, rain, wind with a steady speed exceeding  $5 \text{ ms}^{-1}$  or wind with gusts exceeding  $10 \text{ ms}^{-1}$ . The wind speed will be checked with the hand-held anemometers.

#### 5.4 Monitoring Locations

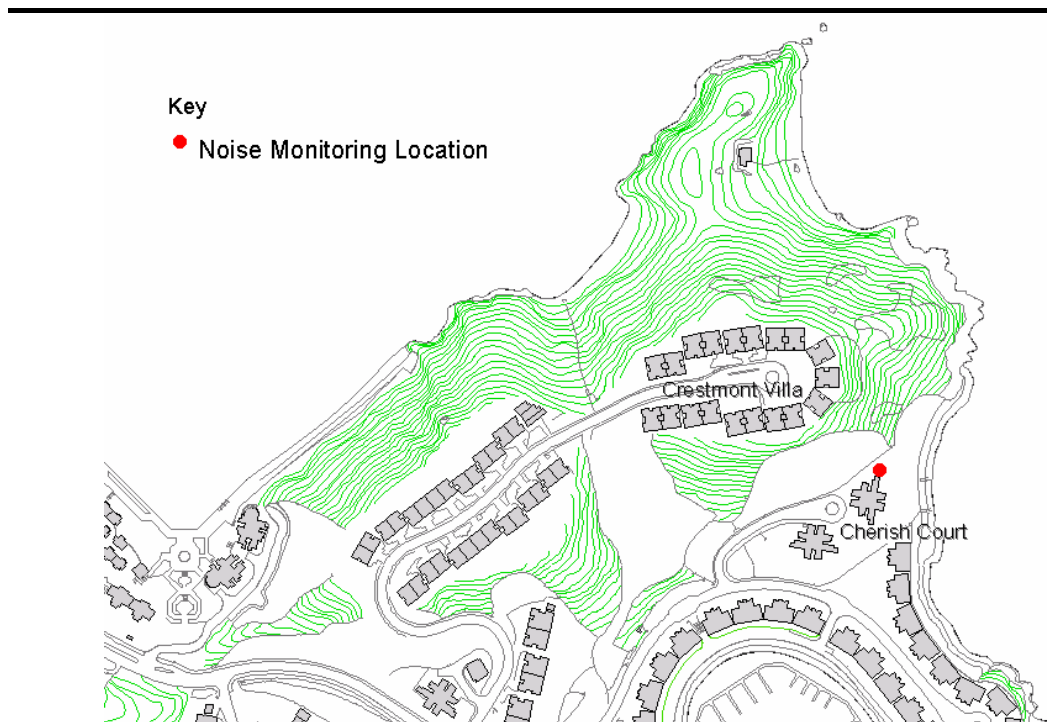
The noise monitoring locations are shown in Figure 5.1 and summarised in Table 5.1. NM1 and NM2 have been approved by EPD for fireworks noise monitoring during trial fireworks displays whereas the exact location of NM4 should be agreed with EPD prior to monitoring.

Should the proposed noise monitoring locations be relocated, or other locations added, then prior approval will be obtained from EPD.

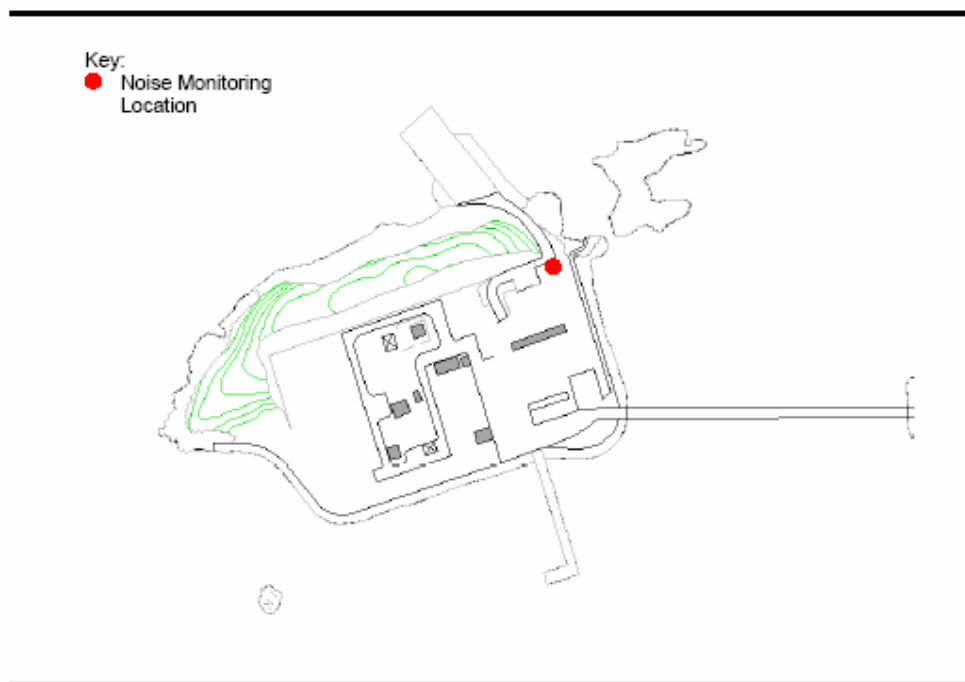
**Table 5.1 Noise Monitoring Stations**

NSR No.	Identity/Description	Parameters
NM1	Rooftop of Cherish Court, Discovery Bay	Noise from Fireworks
NM2	Tai Lei, Peng Chau	
NM4	The Theme Park perimeter (At unshielded position along the top of the 9 m high perimeter earth berm)	Fixed plant noise

**Figure 5.1a NM1 – Proposed Noise Monitoring Station at Discovery Bay**



**Figure 5.1b NM2 – Proposed Noise Monitoring Station at Peng Chau**



## 5.5 Baseline Monitoring

The EIA suggested that fireworks baseline monitoring will be undertaken at NM1 and NM2, prior to the opening of the Theme Park (and avoiding any times of atypical noise generation) over one consecutive 7-day calendar week at a minimum logging interval of 15 minutes. As discussed and agreed with EPD, the baseline fireworks noise monitoring approach has been revised. Two  $Leq_{A15min}$  ambient measurements will be taken on the same day when fireworks noise monitoring is conducted. The first  $Leq_{A15min}$  measurement will be taken immediately prior to the fireworks show and the second immediately following the show. These two ambient measurements will be averaged together to form the Background Noise Level.

Section 6.3.5 of Annex N of EIA specified that no baseline monitoring is required at the theme park berm, hence no baseline noise monitoring will be conducted for fixed plant noise from theme park operation.

## 5.6 Impact Monitoring

### 5.6.1 Fixed Plant Noise

For fixed plant noise, six consecutive monitoring of  $L_{Aeq, 5 min}$  reading will be carried out to calculate the  $L_{Aeq, 30 min}$  noise level.

### 5.6.2 Fireworks Noise

For fireworks noise, a  $Leq_{A15min}$  measurement will be taken for the 15 minutes timeframe that will include all fireworks noise levels. During the measurement, an editing will be made

where appropriate to allow for any significant influence on the measured firework noise level, in accordance with standard acoustical principles and practices. The result of this edited measurement will be the Measured Noise Level.

The Corrected Noise Level created by the fireworks will be computed based on the Background Noise Level and Measured Noise Level

## 5.7 Compliance Assessment

### 5.7.1 Fixed Plant Noise

As suggested in the EIA, HKITP will adopt the maximum fixed plant site perimeter noise level (ie Limit Level) of  $L_{Aeq(30 \text{ minute})}$  75 dB at the perimeter of the Theme Park (NM4). HKITP will follow the Action and Limit (A/L) Levels as suggested in EIA which are summarised in Table 5.2.

**Table 5.2 Action and Limit Levels**

Parameter	Action Level	Limit Level
Fixed Plant Noise	When one documented complaint is received from any one of the sensitive receivers	$L_{Aeq(30 \text{ min})}$ 75 dBA

### 5.7.2 Fireworks Displays

During monitoring, an editing will be made where appropriate to allow for any significant influence on the measured firework noise level (such as significant noise created by aircraft, boat engines, boat horn, etc.), in accordance with standard acoustical principles and practices. The corrected noise level, which will be the noise level created by the Fireworks Show at HKDL, will then be compared against the maximum noise level of  $L_{Aeq(15 \text{ minute})}$  55dB at NM1 and NM2 as suggested in the EIA. HKITP will follow the Limit (A/L) Levels as suggested in EIA which is  $L_{Aeq(15 \text{ minute})}$  55dB.

## 5.8 Event and Action Plan

In the event that the noise from the fireworks displays and fixed plant exceed the noise limit identified above, HKITP will strictly observe the relevant actions of the Event and Action Plan (EAP) as shown below.



**Table 5.3 Event and Action Plan for Fixed Plant Noise**

<b>Exceedance</b>	<b>Environmental Team Leader</b>	<b>HKITP</b>
<b>Action Level</b>		
	<ol style="list-style-type: none"> <li>1. Notify HKITP and EPD</li> <li>2. Carry out investigation</li> <li>3. Report the results of investigation to HKITP and EPD</li> <li>4. If complaint deemed valid, discuss with HKITP and formulate remedial measures</li> <li>5. Increase monitoring frequency to check mitigation effectiveness</li> </ol>	<ol style="list-style-type: none"> <li>1. Review the analysed results and investigation report submitted by ETL.</li> <li>2. Develop remedial measures if complaint deemed valid after investigation</li> <li>3. Implement remedial measures</li> </ol>
<b>Limit Level</b>		
1. Exceedance for one sample	1. Notify HKITP and EPD	1. Check monitoring data submitted by ETL.
	2. Repeat measurement to confirm findings	2. If source of impact confirmed to be from HKITP operation, develop proposals for remedial measures within three working days of notifications
	3. Check monitoring data trends and HKITP operations	3. Implement the agreed proposals
	4. Identify the source(s) of impact	
	5. If source of impact confirmed to be from HKITP operation, increase monitoring frequency to monthly	
	6. Assess the efficacy of HKITP's remedial actions and keep EPD informed of the results.	
	7. If exceedance stops, cease additional monitoring	
2. Exceedance for two or more consecutive samples	1. Notify HKITP and EPD	1. Check monitoring data submitted by ETL.
	2. Repeat measurement to confirm findings	2. If exceedance confirmed to be associated with HKITP's operations, take immediate action to avoid further exceedance.
	3. Check monitoring data trends and HKITP operations	3. Develop proposals for remedial actions within three working days of notification.
	4. Identify the source(s) of impact	4. Implement the agreed proposals
	5. If source of impact confirmed to be from HKITP operation, increase monitoring frequency to monthly	5. Should exceedance continue after implementation of remedial measures, stop the relevant portions of the theme park operation until the exceedance is abated.
	6. Discuss remedial actions required with HKITP & EPD.	
	7. Assess the efficacy of HKITP's remedial actions.	
	8. If exceedance stops after the implementation of the mitigation measures, cease additional monitoring.	

**Table 5.4 Event and Action Plan for Fireworks Noise**

<b>Exceedance</b>	<b>Environmental Team Leader</b>	<b>HKITP</b>
<b>Limit Level</b>		
1. Exceedance for one sample	1. Notify HKITP and EPD	1. Check monitoring data submitted by ETL.
	2. Repeat measurement to confirm findings	2. Notify operation unit responsible for fireworks show
	3. Check monitoring data trends and HKITP operations	3. If source of impact confirmed to be from HKITP operation, develop proposals for remedial measures within three working days of notifications
	4. Identify the source(s) of impact	4. Implement the agreed proposals
	5. If source of impact confirmed to be from HKITP operation, increase monitoring frequency to monthly	
	6. Assess the efficacy of HKITP's remedial actions and keep EPD informed of the results.	
	7. If exceedance stops, cease additional monitoring	
2. Exceedance for two or more consecutive samples	1. Notify HKITP and EPD	1. Check monitoring data submitted by ETL.
	2. Repeat measurement to confirm findings	2. Notify operation unit responsible for fireworks show
	3. Check monitoring data trends and HKITP operations	3. If exceedance confirmed to be associated with HKITP's operations, take immediate action to avoid further exceedance.
	4. Identify the source(s) of impact	4. Develop proposals for remedial actions within three working days of notification.
	5. If source of impact confirmed to be from HKITP operation, increase monitoring frequency to monthly	5. Implement the agreed proposals
	6. Discuss remedial actions required with HKITP & EPD.	6. Should exceedance continue after implementation of remedial measures, stop the relevant portions of the fireworks displays until the exceedance is abated.
	7. Assess the efficacy of HKITP's remedial actions.	
	8. If exceedance stops after the implementation of the mitigation measures, cease additional monitoring.	

## **6. WASTE MANAGEMENT**

### **6.1 Introduction**

The potential environmental impacts associated with the handling and disposal of waste arising from the resort operations have been assessed in the EIA. The EIA Report and EP recommended that an Operational Waste Management Plan (OWMP) shall be prepared and submitted to EPD for approval. The OWMP shall include waste avoidance measures, material recovery and recycling programme and waste management audit framework. With the implementation of the OWMP, the EIA has concluded that minimal environmental impacts are anticipated for the handling, storage, treatment and disposal of waste arising from the resort operations.

### **6.2 Monitoring and Audit on the Implementation of Mitigation Measures**

It is recommended that auditing of each waste stream should be carried out periodically to determine if wastes are being managed in accordance with the approved OWMP. The objectives of the waste management monitoring and audit are:

- to ensure the wastes are handled, collected, stored and transferred and disposed of in compliance with the Waste Disposal Ordinance and the relevant regulations, and
- to ensure the waste management plan, in particular the environmental mitigation measures, is implemented properly and effectively.

The monitoring and audit will cover the wastes handling, recycling and disposal procedures within the Resort, as well as off-site sorting facility and the composting facility. The results of the waste management audit will be reported monthly in the Monthly EM&A report. Records identifying the waste arisings, the nature and composition of materials, the quantities of wastes as well as the volumes or tonnes of reduced, reused, recycled and otherwise recovered materials would be kept for monitoring to check the effectiveness of waste reduction measures implemented.

## **7. TERRESTRIAL ECOLOGY**

### **7.1 Introduction**

It has been agreed between HKITP, CEDD and EPD that monitoring of White-bellied Sea Eagle will be conducted by CEDD and the monitoring results will be distributed to HKITP until completion of Government's works in the Penny's Bay Development Area. Hence, HKITP is not required to conduct terrestrial ecological monitoring until Government's works finish sometime after the Resort opens. Notwithstanding this, HKITP will report the monitoring data collected by CEDD in the monthly EM&A Reports.

## **8. MARINE ECOLOGY**

### **8.1 Introduction**

It has been agreed between HKITP, CEDD and EPD that monitoring of marine mammals will be conducted by CEDD and the monitoring results will be distributed to HKITP until completion of Government's works in the Penny's Bay Development Area. Hence, HKITP is not required to conduct marine ecological monitoring until Government's works finish sometime after the Resort opens. Notwithstanding this, HKITP will report the monitoring data collected by CEDD in the monthly EM&A Reports.

## **9. AUDITING**

### **9.1 Site Inspections**

Site inspections provide a direct means to track and ensure the enforcement of specified environmental protection and pollution control measures. The ETL will undertake site inspections at regular intervals to ensure that the compliance of the conditions of the EP and relevant EIA findings and recommendations are being checked and audited. Additionally, the ETL shall be responsible for defining the scope of the inspections, detailing any deficiencies that are identified, and reporting any necessary action or mitigation measures that were implemented as a result of the inspection.

The ETL will carry out site inspections at least once per week, the focus of which will include:

- the general environmental conditions in the Resort; and
- the measures recommended in the implementation schedule of the EIA report and the EPs applicable to HKITP's operation of the Resort, which are summarized in Appendix A.

During such inspections, the ETL may make reference to any or all of the following:

- the EIA Report and its EM&A recommendations on environmental protection and pollution control mitigation measures;
- ongoing results of the EM&A programme;
- the relevant environmental protection and pollution control laws; and
- results of previous site inspections undertaken.

Following each such inspection, the ETL will: -

- provide the audit results and the associated recommendations to the relevant operations manager as appropriate, for reference and for taking of immediate action

Ad hoc site inspections will also be carried out by the ETL if significant environmental problems are identified during the regular inspections. Inspections may also be conducted subsequent to receipt of an environmental complaint, or as part of the associated investigation work.

### **9.2 Environmental Complaint**

The following procedures apply when complaints are received;

- all enquiries concerning the environmental effects of the Project, irrespective of how they are received, must be addressed immediately to HKITP's ET; and
- other formal written complaints will be referred by to HKITP's ETL, who will co-ordinate investigations, in accordance with procedures to be set up by HKITP's ET for handling, investigation and storage of same.

HKITP's ETL will implement the following complaint investigation procedures upon receipt thereof: -

- HKITP's ETL will endeavour to investigate and identify the source of the problem and to determine its validity and source;
- HKITP's ETL will log the complaint and date of receipt into his complaint database;
- HKITP's ETL will investigate the complaint to determine its validity, and to assess whether the source of the problem is due to resort operations;
- if a complaint is valid and due to resort operations, HKITP'ETL will identify mitigation measures and propose the measures to EPD for approval;
- if HKITP's ETL considers additional monitoring to be necessary, will ensure that such is undertaken to verify the existence and severity of the alleged complaint;
- if the complaint is transferred from EPD, submit interim report to EPD on status of the complaint investigation and follow-up action within the time frame assigned by EPD; and
- HKITP's ETL will record each complaint, investigation, subsequent actions and results in the monthly EM&A Reports.

## 10. REPORTING

### 10.1 General

Reporting will be derived from the results of the established monitoring and audit programme and will be recorded through written correspondence, Site inspections and minutes/notes of meetings.

In accordance with the requirement of Environmental Permit (EP-01/059/2000/A), the following reporting mechanism will be put in place:-

- *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 will 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 will 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 will be included in the beginning of the document. Hyperlinks to all figures, drawings and tables in the EM&A Reports will be provided in the main text from where the respective references are made. All graphics in the report will 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. The website address has been established and will be maintained through the operational phase.*

### 10.2 Baseline Monitoring Report

HKITP will prepare and submit to EPD a Baseline Environmental Monitoring Report (“Baseline Report”) upon completion of the baseline monitoring prior to commencement of operation.

The Baseline Report will include: -

- brief project background information;
- locations of the baseline monitoring stations;
- 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 will 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 Monthly EM&A Reports

The results and findings of all EM&A work required by this EM&A Plan will be recorded in the “Monthly EM&A Reports” prepared by HKITP’s ETL.

The first Monthly EM&A Summary will include the following as relevant to the Project: -

- 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
- Basic Project Information, including: -
  - Project organisation including key personnel contact names and telephone numbers;
  - management structure;
- Environmental Status, including: -
  - description of the location of any environmental sensitive receivers and monitoring and control stations
- Summary of EM&A requirements, including: -
  - All monitoring parameters;
  - environmental quality performance limits (A/L Levels);
  - Event-Action Plans;
  - environmental mitigation measures, as recommended in the EIA Report; and
- Monitoring Results for monitoring undertaken 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;
- any other factors which might affect the monitoring results;
- QA/QC results and detection limits.
- 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.

The subsequent Monthly EM&A Reports will include the following as relevant to the Project:

-

- 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.
- Monitoring Results for monitoring undertaken 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;
- any other factors which might affect the monitoring results;
- QA/QC results and detection limits.
- 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.

Figure 1 – Location Plan for the Hong Kong Disneyland Resort



LEGEND:

- |                  |                             |                          |
|------------------|-----------------------------|--------------------------|
| ① Theme Park     | ⑧ Coach Park                | ⑮ Top Soil Storage       |
| ② Theme Park BOH | ⑨ Disney Rail Station (MTR) | ⑯ Future RD&E            |
| ③ Moderate Hotel | ⑩ Water Recreation Center   | ⑰ Drainage Channel       |
| ④ Deluxe Hotel   | ⑪ Utility Yard              | ⑱ Tree Farm              |
| ⑤ Disney PTI     | ⑫ Arboretum                 | ⑲ Service Bar            |
| ⑥ VEPA           | ⑬ Penny's Bay Rail Link     | ⑳ Car Park               |
| ⑦ GLA            | ⑭ Ferry Pier                | ㉑ Police & Fire Stations |

Illustrative Plan - OPENING DAY



HONG KONG  
**Disneyland**  
香港迪士尼樂園

Master Planning & Urban Design Study, 2005, HKDL, 2005, 2005

**APPENDIX A – MEASURES RECOMMENDED IN THE EP AND  
EIA THAT ARE APPLICABLE TO THE OPERATION OF THE THEME PARK**

<b>Permit Ref.*</b>	<b>EM&amp;A Log Ref<sup>††</sup></b>	<b>Environmental Protection Measures</b>	<b>Location/Duration of Measures/Timing of Completion of Measures</b>	<b>Remarks</b>
		<b><i>AIR QUALITY - Operational Phase</i></b>		
3.5	A3	Pyrotechnics or fireworks that contain chromium, lead, mercury, arsenic, manganese, nickel or zinc shall not be used for any display in the theme park.	Fireworks launching site / during fireworks display	
3.6	-	Before the operation of the Project, the Permit Holder shall deposit with the Director the details and design of the fireworks displays for the Theme Park. Any changes to the details or design of the fireworks displays shall be reviewed by the ET Leader and deposited with the Director.	Fireworks launching site / prior to the commencement of operations at the Theme Park, and deposit the details when there are any changes to the details o design of the fireworks displays	
3.7	-	To mitigate air quality impacts, fireworks displays shall be designed and conducted to achieve the air quality criteria adopted in the EIA Report.	Fireworks launching site / during fireworks display	
3.8	A1	The Permit Holder shall not operate diesel- or petrol-powered vehicles for internal traffic solely within the Theme Park area, except provided herein or otherwise approved by the Director under this condition. The Permit Holder shall provide written notice at least 24 hours in advance to the Director whenever a diesel- or petrol-powered vehicle is placed into operation, state the application for which that vehicle was placed into operation, and why a compressed natural gas (CNG), liquefied petroleum gas (LPG), electric or other clean fuel vehicle was not practicable for that particular application. This condition shall not apply to emergency vehicles, and shall not apply to vehicles not operated by the Permit Holder.	Within the Theme Park for the full duration of its operating lifetime.	
3.9	A2	To mitigate the air quality impacts from the Penny’s Bay Gas Turbine Plant (GTP), building height within the Theme Park shall be restricted at 50 metres above ground within 500 metres from the chimneys of the GTP and restricted at 100 metres above ground between 500 metres and 1,000 metres from the chimneys of the GTP, unless the Permit Holder can demonstrate to the Director’s satisfaction that the buildings shall not affect the dispersion of the emissions from the GTP and shall not cause adverse air quality impacts.	Within the Theme Park for the full duration of its operating lifetime.	
		<b><i>NOISE - Operational Phase</i></b>		
3.10	B7	The bursting height of fireworks displays within the Theme Park shall not exceed 150 meters above Principal Datum.	Fireworks launching site / during fireworks display	A limit of $L_{Aeq, 15 \text{ min}}$ 55 dB at residential NSRs
3.11	B5	Hotels within the Project shall not rely on openable windows for ventilation.	At the resort hotels / throughout the operation of the hotels.	The ventilation systems of the hotels have been designed and constructed to not rely on openable windows for ventilation
-	B1	<i>Fixed Plant noise from Theme Park operation</i> 5 m to 9 m earth berm encircling the Theme Park. (Figure 2.7b in EIA Report refers)	Encircling the Theme Park / throughout the	The berm has been constructed by

\* Ref. to EP-01/059/2000/A. The EP takes precedence whenever there is a similar requirement listed in both the EP and the EIA implementation schedule.

† Ref. to Table 16.1p of the EIA report.

Permit Ref.*	EM&A Log Ref <sup>††</sup>	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Remarks
			operation of the Theme Park.	CEDD
-	B2	A reference noise source level of 75 dB(A) at the Theme Park perimeter	At unshielded position along the top of the 9 m high perimeter earth berm / throughout the operation of the Theme Park.	IND-TM
		<b>WATER QUALITY- Operational Phase</b>		
		<i>Marine Water Quality</i>		
3.13	C1	All storm water shall flow through silt traps within the Project prior to entering the stormwater system.	To be implemented throughout the full operational lifetime of the Theme Park	
3.14	C2	Spent fireworks shall be collected immediately after the completion of the firework displays. The collection and disposal of spent fireworks shall be in accordance with the waste management plan for the operational stage approved under Condition 3.21 of this Permit.	To be undertaken after all fireworks displays throughout the full operational lifetime of the Theme Park	<i>Water Pollution Control Ordinance</i>
3.15	C3	Monitoring of residual chlorine concentration in disinfected water shall be conducted prior to discharge of the disinfected water. No discharge of any water with chlorine concentration higher than 0.01 mg L <sup>-1</sup> shall be allowed.	To be implemented throughout the full operational lifetime of the Theme Park	The TM standard for Chlorine is 1 mg/ L.
3.16	C7	Pesticides and herbicides used in the Project shall be biodegradable and with half-lives of three days or less.	To be implemented throughout the full operational lifetime of the Theme Park	HKITP plans to vary this condition and will update this table accordingly
3.17	C8	A log book shall be kept in the Theme Park to record the application of any pesticides or herbicides, date and time, location of application, quantities applied, pesticide/herbicide used and weather conditions. The logbook shall always be readily available for inspection by the Director throughout the operation stage.	Prior to and throughout the use of pesticides and herbicides	<i>Water Pollution Control Ordinance</i>
		<b>WASTE - Operational Phase</b>		
		Waste Management Plan		
3.21	E1	Three sets of waste management plan for the operational phase of the Project shall be submitted to the Director for approval at least one month before the Project commences operation. The plan shall be certified by the IEC as having regard to Section 6.7 and Section 16 of the EIA Report. The plan shall include details of how the mitigation measures of operational waste management will be implemented, together with the arrangements for avoidance, minimization, material recovery/recycling, collection, transportation and disposal of various types of waste generated during the operation of the Theme Park.	To be produced prior to the commencement of operations at the Theme Park, and to be implemented throughout the full operational life-time of the Theme Park	<i>Waste Disposal Ordinance</i>
		<i>Waste Avoidance Measures</i>		
	E3	The Theme Park Operator shall implement a waste avoidance programme to minimise the production of waste. The waste avoidance programme may consist of the following components:	To be developed prior to the commencement of operations at the Theme Park, and to be implemented throughout the full operational life-time of the Theme Park	<i>Waste Disposal Ordinance</i>
		<ul style="list-style-type: none"> <li>• electronic communications (ie voice mail and email); message boards, routing slips and double-sided copying will be used, as far as practical, to reduce the quantities of paper that otherwise would require disposal at landfill;</li> </ul>		
		<ul style="list-style-type: none"> <li>• worn linens to the maximum extent feasible based upon available markets and third-party recycling facilities be used to make scarves and aprons for cast members;</li> </ul>		
		<ul style="list-style-type: none"> <li>• soft drinks to the maximum extent feasible based upon available markets and third-</li> </ul>		

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		party recycling facilities be served in souvenir cups that are taken home by guests for reuse as opposed to being discarded at the Theme Park as waste, appropriate recycling bins should be set up to recover these cups for reuse or recycling if the visitors choose not to take them home;		
		<ul style="list-style-type: none"> <li>hamburgers will be wrapped in paper or equally environmentally acceptable material instead of in polystyrene clamshells;</li> <li>unused prepared food will be sent to a food bank, and distributed to the needy, to the maximum extent feasible based upon available markets and third-party recycling facilities;</li> </ul>		
		<ul style="list-style-type: none"> <li>excess water-based paints will be reused as far as practical;</li> <li>plastic drink cup lids will be supplied to guests upon their request when purchasing beverages;</li> <li>fast-food service trays in selected locations will be washed and reused (instead of using disposable cardboard carry-out trays); and</li> <li>souvenir, booklets, dining-ware, etc. which are recyclable should have appropriate instruction and signs printed on the surface;</li> </ul>		
		<ul style="list-style-type: none"> <li>waste recycling bins for paper, aluminium cans, plastic bottles, etc. should be provided throughout the Theme Park to promote waste separation at source;</li> <li>all products sold in the Theme Park should be packed in minimal amount of packaging materials;</li> <li>pallets made of more durable and reusable materials plastics than wood should be used in transportation of food, drinks, etc;</li> <li></li> </ul>		
		<ul style="list-style-type: none"> <li>the distribution centre of the Theme Park will utilise reusable shipping containers as far as practical instead of cardboard boxes for internal routing'</li> <li>fabric fender instead of tropical hardwood fender should be used at the proposed piers; and</li> <li>the hoarding of the proposed piers should be metal (aluminium, alloy etc) instead of wood.</li> <li>The distribution centre of the Theme Park will utilise reusable plastic shipping containers as far as practical instead of cardboard boxes for internal routing.</li> </ul>		
		<p><i>Materials Recovery and Recycling Programme</i></p> <p>The Theme Park Operator shall implement a Materials Recovery and Recycling Programme which shall include the following aspects:</p>		
	E4	<p><i>Papers:</i> Recycling bins will be provided at shops and food service locations to collect cardboard containers. Personnel in every office will be provided with individual bins to recycle office paper. Large containers for recycling paper will be placed next to photocopy machines. The collected paper will be transported to RCPs at the back of house for sorting and baling.</p>	To be implemented throughout the full operational life-time of the Theme Park	
	E5	<p><i>Glass Bottles and Glass Jars:</i> Recycling bins will be placed in the service areas next to the restaurants. The collected glass bottles and jars will be transported to the RCP for processing and recycling.</p>	To be implemented throughout the full operational life-time of the Theme Park	
	E6	<p><i>Aluminium Cans:</i> Aluminium can recycling bins will be placed at all break areas and</p>	To be implemented throughout the full	

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		pantries. The collected aluminium cans will be transferred to the RCP for baling.	operational life-time of the Theme Park	
	E7	<i>Plastics</i> :. The Theme Park will implement a source separating programme for polyethylene terephthalate (PET), high-density and low-density polyethylene (HDPE & LDPE). The PET and HDPE bottles collected will be transferred to the RCPs for collection by the recyclers. LDPE will also be recycled. Shrink wrap will be recovered and delivered to the RCPs. Once sufficient material is accumulated to fill a truck, the recycler will be called in to collect the material. The recycling programme may extend to cover other types of plastics or to recycle mixed plastic if the technology is available to make the plastic recycling programme more efficient and cost-effective.	To be implemented throughout the full operational life-time of the Theme Park	
	E8	<i>Kitchen Grease</i> : Should there be a market for kitchen grease in Hong Kong, the Theme Park Operator will consider establishing a kitchen grease recycling programme in Hong Kong.	To be implemented throughout the full operational life-time of the Theme Park	
	E9	<i>Scrap Metal</i> : Scrap metal will be generated and separated at the machine, welding, automotive and sheet metal shops. Scrap metal will also be collected, when feasible, on construction and demolition and rehabilitation projects. Scrap metal will be placed in roll on/off containers. Once the containers is full, the recycler will be called in to remove the loaded container and return an empty one.	To be implemented throughout the full operational life-time of the Theme Park	
	E10	<i>Laser Printer Toner Cartridges</i> : The Theme Park will make arrangements with the toner cartridge suppliers to collect and recycle all the used toner cartridges for laser printers and avoid disposal of the cartridges at the WENT landfill as far as practical.	To be implemented throughout the full operational life-time of the Theme Park	
	E11	<i>Green Waste</i> : As the handling capacity of the existing Sha Ling composting facility is limited (about 15 to 20 tpd) and is unlikely to be able to handle the additional green waste generated from the Theme Park. Should there be a market or facility which could process the green waste arising from the Theme Park, HKITP will consider establishing a recycling programme for green waste.	To be implemented throughout the full operational life-time of the Theme Park	
	E12	<i>Scrap Lumber</i> : Broken pallets, wooden scrap and lumber from demolition projects will be collected and recycled as far as practical. Currently, there is a market for scrap lumber and it is anticipated that the scrap lumber generated from the Theme Park could be adsorbed by the local market.	To be implemented throughout the full operational life-time of the Theme Park	
	E13	<i>Asphalt</i> : The Theme Park will require contractors to reuse and recycle as much as practical of the used asphalt generated from the construction and rehabilitation of asphalt roadways and parking lots. Any surplus used asphalt will be delivered to public filling facilities instead of landfill.	To be implemented throughout the full operational life-time of the Theme Park	
		<i>Chemical Waste</i>		
	E14	Wherever practicable, processes which generate reduced quantities or no chemical waste, or less dangerous types of chemical waste, shall be used.	To be implemented prior to and throughout the full operational life-time of the Theme Park	<i>Waste Disposal Ordinance</i> Waste Disposal (Chemical Waste) (General) Regulation
	E15	Containers used for storage of chemical wastes shall: <ul style="list-style-type: none"> <li>• be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed;</li> <li>• have a capacity of less than 450 L unless the specifications have been approved by the</li> </ul>	To be implemented prior to and throughout the full operational life-time of the Theme Park	<i>Waste Disposal Ordinance</i> <i>Code of Practice on the Packaging, Handling and Storage of Chemical Wastes</i> Waste Disposal (Chemical Waste)



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		EPD; and <ul style="list-style-type: none"> <li>display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulations.</li> </ul>		(General) Regulation
	E16	The storage area for chemical wastes should be: <ul style="list-style-type: none"> <li>by clearly labelled and used solely for the storage of chemical waste;</li> <li>be enclosed on at least 3 sides;</li> <li>have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greatest;</li> <li>have adequate ventilation;</li> <li>be covered to prevent rainfall entering (water collected within the bund must be tested and disposed as chemical waste if necessary); and</li> <li>be arranged so that incompatible materials are adequately separated.</li> </ul>	To be implemented prior to and throughout the full operational life-time of the Theme Park	<i>Waste Disposal Ordinance Code of Practice on the Packaging, Handling and Storage of Chemical Wastes</i> Waste Disposal (Chemical Waste) (General) Regulation
	E17	Disposal of chemical waste shall: <ul style="list-style-type: none"> <li>be via a licensed waste collector;</li> <li>be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Facility which also offers a chemical waste collection service and can supply the necessary storage containers; or</li> <li>be to a re-user of the waste, under approval from the EPD.</li> </ul>	To be implemented prior to and throughout the full operational life-time of the Theme Park	<i>Waste Disposal Ordinance Code of Practice on the Packaging, Handling and Storage of Chemical Wastes</i> Waste Disposal (Chemical Waste) (General) Regulation
		<b><i>TERRESTRIAL ECOLOGY - Operational Phase</i></b>		
3.18	F1	To minimize the disturbance to the White-bellied Sea Eagles at Pa Tau Kwu, no fireworks shall be launched within 800 metres from the Pai Tau Kwu headland, unless otherwise approved by the Director.	Within Theme Park prior to and during the fireworks and laser show for the full operational period of the Theme Park	
3.19	F2	To protect the White-bellied Sea Eagles, laser effects used in the Project shall utilize lasers of power range not greater than 30 Watt and any laser beam shall not be directed towards the Pa Tau Kwu area. All laser effects shall be terminated against fixed, non-reflective objects within the Project to prevent any impacts on people and terrestrial faunal species.	Within Theme Park prior to and during the fireworks and laser show for the full operational period of the Theme Park	No laser is planned to be used for the opening day configuration of the theme park
	F3	Fence off the public land access from the Theme Park to prevent human disturbance to the White-bellied Sea Eagle.	North side of the Theme Park close to Pa Tau Kwu secondary woodland, during and throughout the operational period of the Theme Park	
		<b><i>MARINE ECOLOGY AND FISHERIES - Operational Phase</i></b>		
		<i>Marine Ecological Resources: Marine Mammals</i>		
3.20	G1	The speed of ferries and vessels of the Theme Park shall not exceed 10 knots when passing through an area within 500 metres from the reclamation limit.	During and throughout the operational period of the Theme Park	
	G1	The following mitigation measures shall be implemented to minimize potential operational impacts on dolphins and porpoises:		
		2. The vessel operators shall be required to use predefined and regular routes, as these will become known to dolphins and porpoises using these waters;	During and throughout the operational period of the Theme Park	
		3. The vessel operators shall be required to control and manage all effluent from vessels;	During and throughout the operational period of the Theme Park	
		4. Operation-phase dolphin/porpoise monitoring shall be conducted by a qualified	During and throughout the operational period	

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		research team, to evaluate whether there have been any effects on the animals. The resulting data should be compatible with, and should be made available for, long-term studies of small cetacean ecology in Hong Kong.	of the Theme Park	
		<b><i>HAZARD - Operational Phase</i></b>		
3.12		The Hazard Management Plan as submitted on 14 July 2000 shall be fully implemented.		
		<b><i>Fireworks Storage, Transport &amp; Display</i></b>		
	H1	The fireworks store will be constructed in accordance with the requirements specified in the Dangerous Goods Regulations, CAP 295 and any additional requirements as specified by the Commissioner of Mines and the Director of Fire Services. Such requirements include for example, separation distance of 101m to spectator areas within the Theme Park, 101m to buildings and high occupancy sites outside the Theme Park and 50m to public roads and low occupancy areas outside the Theme Park.	During design	-
	H2	The fireworks display including mid-level shows, low-level shows and stage shows shall be designed and conducted in accordance with the requirements of NFPA 1123 and 1126. This may include for example, separation distance of 107m from the firing site (for mid-level show) to public areas (both Theme Park visitors and off-site public) and separation distance of 214m from the firing site to other dangerous goods stores. Any additional requirements on fireworks display as specified by the Secretary of Home Affairs, Fire Services Department, Commissioner of the Television and Entertainment Licensing Authority will also be adopted. The specific distances above may vary based on maximum shell size as the distances above assume five inch (125 millimetre) shells.	During design and operation	-
	H4	A chain link fence will be installed around the firing site as a ballistic barricade to catch and deflect low trajectory shells (typically less than 15 degrees from horizontal and which have potential to burst near spectators under normal burst times) fired from a disrupted mortar such that they cannot travel towards spectators or members of the public.	During design	-
	H5	The launch system (for mid-level display) will be designed such that mortars will remain in upright position following the failure of any given mortar or even otherwise.	During design	-
	H6	Identify agencies to be contacted and establish mechanisms for reporting incidents of non-recoverable load in the event of load fall into sea while unloading at the jetty.	During operation	-
	H7	Mobile phones, walkie-talkies should not be carried by persons handling fireworks.	During operation	-
	H8	Fireworks store should be kept closed during fireworks display.	During operation	-
	H9	Ensure igniters are not stored with the bulk of fireworks/pyrotechnics.	During design and operation	-
	H10	The site for manipulation of fireworks need to be identified. The site shall be located at adequate safety distance from the store and public areas.	During design and operation	-
	H11	Procedures to be developed to minimise unnecessary handling/sorting of products for fireworks show inside the store. This should include adequate labelling of both outer packaging and product to aid easy identification.	During operation	-
	H12	If vehicles such as fork lift trucks are used for transfer of goods from store to pre-rigging area or display site, it should meet appropriate specifications as identified by the Division of Mines. When feasible, forklifts shall operate in reverse when carrying fireworks..	During design and operation	-
	H14	Disney's vendor supply of 4" and 5" shells must ensure items destined for other Disney locations are not delivered by error to this site unless conforming to requirements of this	During operation	-

Permit Ref.*	EM&A Log Ref <sup>ff</sup>	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Remarks
		site.		
	H15	Procedures to be developed if trailers are to be used for mortar installation.	During operation	-
	H16	Any mechanical system designed for varying mortar orientation should be such that it does not result in mortars orientated towards spectators.	During design and operation	-
	H17	Use of permanently installed mortars or other similar or safer alternatives to be considered.	During design and operation	-
	H18	Design and position of fence to ensure containment of low trajectory shells towards spectators as well as road (off-site).	During design and operation	-
	H19	The weather conditions under which fireworks display need to be moderated should be identified in procedures based on site layout and weather data. The procedures should also identify persons responsible for making such decisions.	During operation	-
	H20	Procedures for safe handling and disposal of unfired and misfired items to be developed.	During operation	-
	H21	Procedures to be established for sweeping site after display.	During operation	-
	H22	Separation distances as specified in NFPA 1123 and 1126 for 'other fireworks items' (ie, other than aerial shells) used for mid-level, low-level and stage shows will be adopted.	During operation	-
	H23	Members of the audience will not be invited on stage during the course of discharge of fireworks or pyrotechnics.	During operation	-
	H25	Quality control measures to ensure that offspec. fireworks items are not received/used at displays/shows.	During operation	-
		<b>EM&amp;A REQUIREMENTS - <i>Operational Phase</i></b>		
		Air Quality and Noise		
3.1		Before the operation of the Project, the Permit Holder shall carry out trial firework displays and associated air quality and noise monitoring. The details of the trial and monitoring programme shall be submitted to the Director for agreement at least one month prior to the trial fireworks displays. The results of the trial fireworks displays shall be submitted to the Director for agreement prior to the operation of the Project. The results of the trial tests and associated air quality data shall be provided to the Advisory Council on the Environment for consultation, as directed by the Director.	During trial fireworks displays only	
3.2		No later than one month before the operation of the Project, the Permit Holder shall submit for the Director's approval an Operational Environmental Monitoring and Audit (EM&A) Plan for the operation of the Project. Before the submission to the Director, the EM&A Plan shall be certified by the IEC as having regard to Annex N of the EIA Report. All measures recommended in the approved EM&A Plan shall be fully and properly implemented in accordance with the requirements and time schedule(s) set out in the EM&A Plan. The Operational Environmental Monitoring and Audit Plan approved under this condition shall hereinafter be referred to as the "EM&A Plan".	To be produced prior to the commencement of operations at the Theme Park, and to be implemented throughout the full operational life-time of the Theme Park	
3.3		Air quality and noise monitoring on fireworks displays, including monitoring stations to be located at Discovery Bay and Peng Chau and to be agreed with by the Director, shall be conducted during the operation of the Project. On the basis of such findings, mitigation measures, if needed, shall be implemented to the satisfaction of the Director. The details of the monitoring shall be included in the EM&A Plan.	At specified air and noise monitoring locations for the 1 <sup>st</sup> operational year and throughout the duration of the operational phase respectively	Air Pollution Control (Construction Dust) Regulations  Noise Control Ordinance (NCO)
		<i>Terrestrial Ecology</i>		
		White-bellied Sea Eagle		

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3.4		Monitoring of the White-bellied Sea Eagles at Pa Tau Kwu shall be carried out for a period of two years during the operational phase of the Theme Park. The two years monitoring period shall commence at the time when all reclamation works under the Environmental Permit No. VEP-18/2000/A/EP-054 are completed. The details of the monitoring shall be included in the EM&A Plan.	The two years monitoring period shall commence at the time when all reclamation works under the Environmental Permit No. VEP-18/2000/A/EP-054 are completed. Field surveys should be undertaken twice per month during periods of breeding activity for a period of two years. At other times of the year (outside of periods of breeding activity) the field surveys should be undertaken once per month.	It has been agreed that CEDD will undertake the monitoring work on White-bellied Sea Eagles until they finished their work of Phase II infrastructure in Penny's Bay.
		<i>Marine Ecology</i>		
	J4	Subject to the Environmental Protection Department's (EPD's) agreement, operational phase monitoring of the dolphin/porpoise population shall be conducted by a qualified research team in accordance with the recommendations of Section 10 of the EM&A Manual.	Throughout the operation of the Theme Park, whenever there is the potential to affect dolphin/porpoise populations	It has been agreed that CEDD will undertake the monitoring work on dolphins and porpoise until they finished their work of Phase II infrastructure in Penny's Bay.