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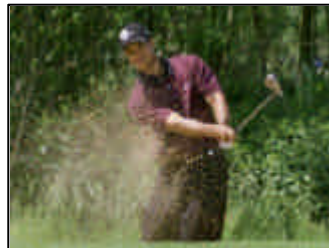
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# Development of SkyCity Golf Course



Environmental Monitoring & Audit Manual  
Final / 28 February 2006

**Airport  
Management  
Services  
Limited**

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## 1. INTRODUCTION

### 1.1 Project Background and Organisation

- 1.1.1 The purpose of this Project is to construct and operate, without the use of artificial chemicals, a 9-hole Golf Course at the east side of the North Commercial District (NCD) on the Airport Island as an interim arrangement prior to the area's future development as a business park. The proposed interim golf facility, known as "SkyCity Golf Course" is intended to serve airport passengers, overseas visitors and airport workers until at least August 2013.
- 1.1.2 In addition to the 9-hole Golf Course itself, associated infrastructure facilities such as an irrigation system, a sub-surface drainage system, artificial lakes, a connection to the existing sewerage system, a maintenance area, a car park and a clubhouse will be constructed and temporarily operated at the site.
- 1.1.3 The project will be managed by Airport Management Services Limited (AMS) who will employ a Works Contractor to carry out the construction and also an Operator to oversee operation of the facility. An Environmental Team (ET), who are part of AMS, will be responsible for implementing the EM&A programme. Section 3 provides more details of this organisation.

### 1.2 Project Location

- 1.2.1 The Project is located about 500m east of the existing Passenger Terminal on the Airport Island, North of Lantau Island, as shown in Figure 1.1. The Project site is fully contained on the Airport Island and will be developed entirely on existing land.
- 1.2.2 The Project is small scale, with a total area of 11.56ha, and will comprise :
- An executive 9-hole Golf Course (comprising greens, tees, fairways, rough, bunkers and two inter-connected lakes with a total surface area of 1.13ha).
  - A clubhouse (comprising reception, snack bar/restaurant, changing rooms/restrooms and pro shop). The maximum Gross Floor Area (GFA) of the clubhouse will be 1,200m<sup>2</sup>, and the maximum building height will be 6m.
  - Refreshment counters.
  - Maintenance building and yard. The maintenance building maximum GFA will be 1,500m<sup>2</sup>, and the maximum building height will be 6m.
  - Car parking – a maximum of 80 spaces.
  - Two loading/unloading Bays and two boarding/alighting Lay-bys.
- 1.2.3 The Golf Course is designed to operate from 6am to 11pm, or later, as night-golf is possible with a proposed floodlighting system. The course can accommodate around 44 golfers at any one time, or up to 464 golfers in a day (depending on opening hours) and will require about 50 full-time staff to provide an executive level of service.

### 1.3 Previous Submissions Under the EIAO

- 1.3.1 A Project Profile (designated DIR-126/2005) was submitted under Section 5(11) of the Environmental Impact Assessment Ordinance (EIAO) on 3 August 2005, for permission to apply directly for an Environmental Permit (EP).
- 1.3.2 On 13 September 2005, permission was granted (with conditions) for direct application. These conditions were incorporated into the EP for SkyCity Golf Course (designated EP-229/2005), which was issued to AMS (as the Permit Holder) on 17 October 2005. A copy of

this permit is provided in Appendix A for reference.

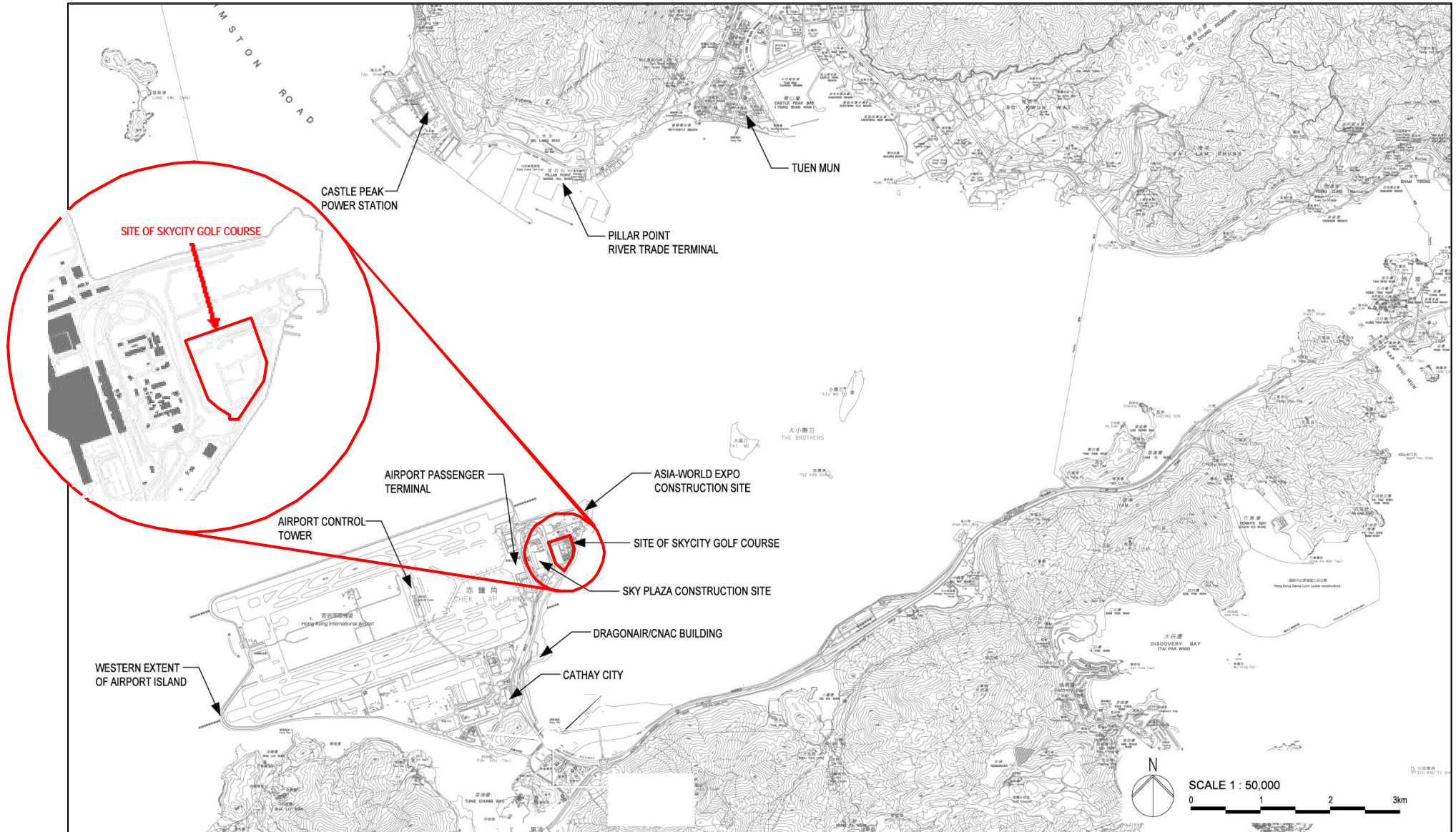
#### 1.4 Purpose of the EM&A Manual

- 1.4.1 This Environmental Monitoring and Audit (EM&A) Manual has been prepared and submitted pursuant to EP Condition No. 2.6. It is based, in part, on the Project Profile, which included sections on environmental protection and on EM&A.
- 1.4.2 The purpose of the Manual is to provide information, guidance and instruction to personnel charged with environmental duties and those responsible for undertaking EM&A work during construction and operation of SkyCity Golf Course. It provides systematic procedures for monitoring and auditing of potential environmental impacts that may arise.

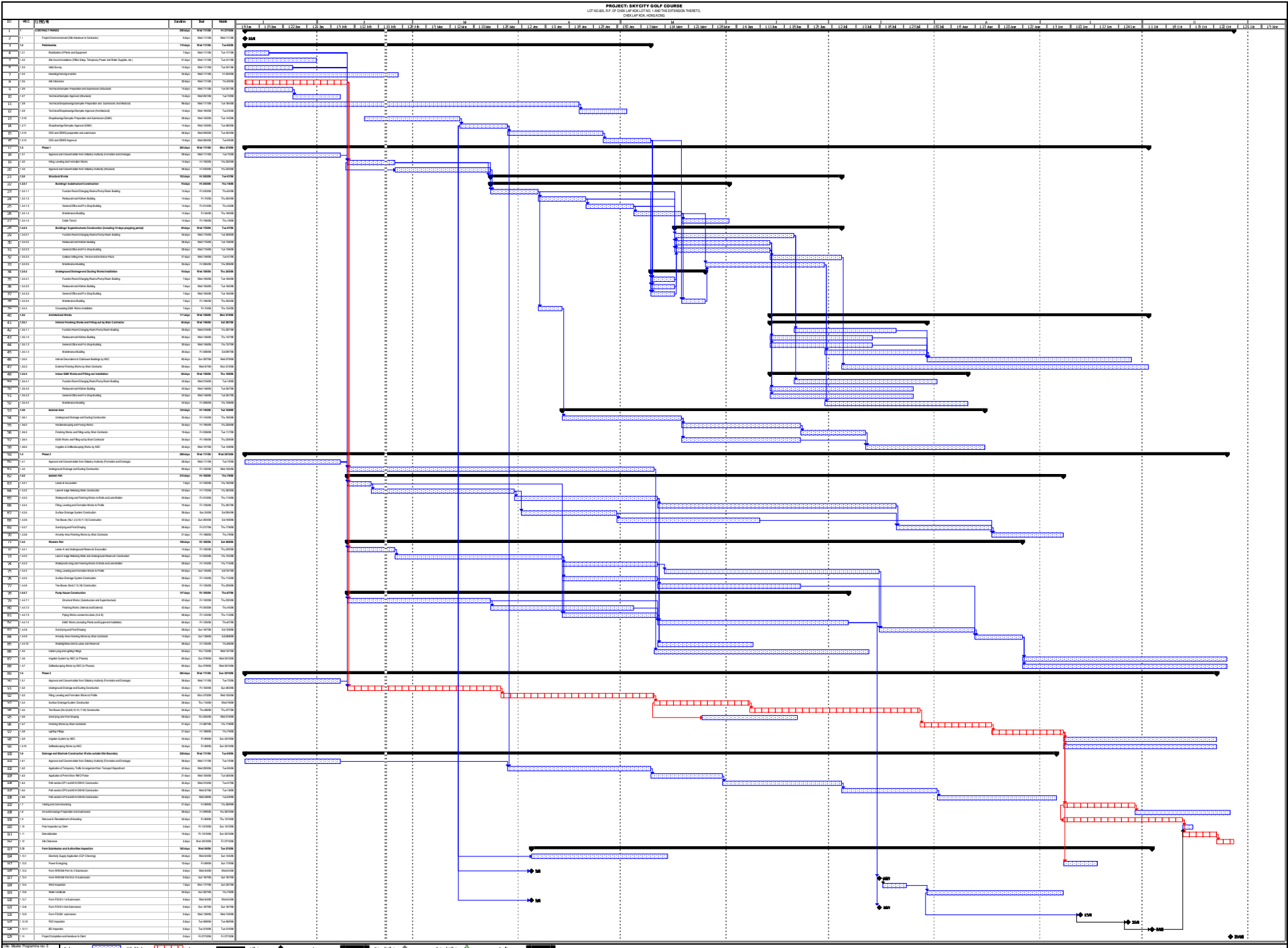
#### 1.5 Scope and Objectives of the EM&A Programme

- 1.5.1 No unacceptable environmental impacts have been identified as occurring during the construction or operation of the Golf Course, nevertheless, these are covered by the EM&A programme. To ensure effective and timely implementation of the mitigation measures, it is considered necessary to provide EM&A procedures and mechanisms by which the EM&A programme may be tracked and its effectiveness assessed.
- 1.5.2 This Manual provides the EM&A requirements that were recommended in the Project Profile in order to ensure compliance with the specified mitigation. The main objectives of the EM&A programme are to :
- Provide a database against which any short- or long-term environmental impacts of the Project can be determined.
  - Provide an early indication should any of the environmental control measures or practices fail to achieve the acceptable standards.
  - Monitor the performance of the Project and the effectiveness of mitigation measures.
  - Verify the environmental impacts predicted in the Project Profile.
  - Take remedial action if unexpected problems or unacceptable impacts arise.
  - Provide data against which environmental audits may be undertaken.
- 1.5.3 The latest Project programme is shown in Figure 1.2 (the A3 drawing on page 4). Within this programme, there are five main periods relating to EM&A Works, namely :
1. Baseline Period – prior to placement of the impermeable liner for the artificial lake (for soil sampling only) and prior to the “commencement of works” (for marine water quality monitoring).
  2. Construction Period – during which SkyCity Golf Course is constructed.
  3. Operation Period (Turfgrass Establishment + 3 Months) – during which turfgrass is laid and matures and the first three months of operation.
  4. Operation Period (Turfgrass Maintenance) – After three months of operation until the closure of SkyCity Golf Course.
  5. Post-operation Period (for soil sampling only) – after the Operation Period has finished and the impermeable liner for the artificial lake has been removed, but prior to the site being handed over to the subsequent user.
- 1.5.4 For the purposes of this Manual, the “Works Contractor” refers to the Construction Contractor to be engaged by AMS to construct SkyCity Golf Course (i.e. encompassing the Construction Periods). “Operator” refers to the operator of SkyCity Golf Course, who will manage all the facilities subsequent to construction (i.e. during the Operation Period).

Figure 1.1 : Location of SkyCity Golf Course on the Airport Island







## 2. SCHEDULE OF MITIGATION MEASURES TO BE IMPLEMENTED

### 2.1 Air Quality

#### *Construction Period*

- 2.1.1 The Air Pollution (Construction Dust) Regulation shall be complied with and the Works Contractor should at all times prevent dust nuisance as a result of his activities. Site formation works have the potential to cause short-term dust impacts and therefore preventive measures for dust suppression, such as regular watering of exposed areas and haulage routes, etc., should be implemented as of good site practice.
- 2.1.2 Other dust suppression measures are highlighted below :
- (i) The Works Contractor shall undertake at all times to prevent dust nuisance as a result of his activities. Effective dust suppression measures shall be employed to ensure that the air quality at the boundary of his site and at any ASRs, complies with the Hong Kong Air Quality Objectives.
  - (ii) The Works Contractor shall ensure that there will be adequate water supply / storage for dust suppression purposes.
  - (iii) The Works Contractor shall frequently clean and water the site to minimise fugitive dust emissions.
  - (iv) Effective water sprays shall be used during the delivery and handling of aggregate, and other similar materials, when dust is likely to be created and to dampen all stored materials during dry and windy weather.
  - (v) Watering of exposed surfaces shall be exercised as often as possible depending on the circumstance.
  - (vi) Areas within the site where there is a regular movement of vehicles shall be regularly watered.
  - (vii) Where dusty materials are being discharged to a vehicle from a conveying system at a fixed transfer point, a three-sided roofed enclosure with a flexible curtain across the entry shall be provided. Exhaust fans shall be provided for this enclosure and vented to a suitable fabric filter system.
  - (viii) The Works Contractor shall restrict all motorized vehicles within the site, excluding those on public roads, to a maximum speed of 15 km per hour and confine haulage and delivery vehicles to designated roadways inside the site.
  - (ix) Wheel washing facilities shall be installed and used by all vehicles leaving the site. No earth, mud, debris, dust and the like shall be deposited on public roads. The water in wheel cleaning facility shall be changed at frequent intervals and sediments shall be removed regularly. The Works Contractor shall submit detailed proposals for the wheel cleaning facilities to the Engineer prior to construction of the facility. Such wheel washing facilities shall be usable prior to the commencement of any earthworks excavation activity on the site. The Works Contractor shall also provide a hard-surfaced road between any washing facilities and the public road.
  - (x) The Works Contractor shall devise, arrange methods of working and carrying out the works in such a manner so as to minimise dust impacts on the surrounding environment, and shall provide experienced personnel with suitable training to ensure that these methods are implemented.
  - (xi) All site vehicles' exhausts shall be directed vertically upwards or directed away from the ground.
  - (xii) Any stockpile of dusty material shall be either: (a) covered entirely by impervious sheeting; (b) placed in an area sheltered on the top and the three sides; or (c) sprayed with water or a dust suppression chemical so as to maintain the entire surface wet.

- 2.1.3 After the establishment of the turfgrass, the landscape area of the Project will be vegetated and no bare ground will be exposed. No further construction dust impact is anticipated after landscaping and turfgrass establishment.

#### ***Operation Period***

- 2.1.4 No mitigation measures during the operational phase of the Project are required, other than an appropriate three-sided enclosure for stockpiled bunker sand in the maintenance area to minimise the potential dust nuisance.

## **2.2 Noise**

#### ***Construction Period***

- 2.2.1 Given the relatively small scale of construction works compared to other projects in the area, and the fact that the surrounding airport-related users are considered to be noise tolerant, construction noise impact is not anticipated. As such, no noise mitigation measures are considered necessary, however, if available, "quiet" plant should be used by the Works Contractor in preference to non-"quiet" plant.

## **2.3 Water Quality**

#### ***Construction Period***

- 2.3.1 The Works Contractor will be required to apply for a Discharge Licence under the Water Pollution Control Ordinance (WPCO) and to meet any conditions stipulated in the Licence to protect off-site water quality. Prior to the completion of the lakes, de-silting chambers and/or sedimentation tanks (the designs of which have been proved to be effective) will be used to prevent silt-laden run-off from leaving the site and to enable compliance with any Discharge Licence.
- 2.3.2 The Works Contractor shall follow good site practice and be responsible for the design, construction, operation and maintenance of all the mitigation measures as specified in *ProPECC PN 1/94* on construction site drainage :
- 2.3.3 Surface run-off from construction sites shall be discharged into storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels or earth bunds or sand bag barriers shall be provided on site to properly direct stormwater to such silt removal facilities. Perimeter channels at site boundaries shall be provided where necessary to intercept storm run-off from outside the site so that it will not wash across the site. Catchpits and perimeter channels shall be constructed in advance of site formation works and earthworks.
- 2.3.4 Silt removal facilities, channels and manholes shall be maintained and the deposited silt and grit should be removed regularly, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times.
- 2.3.5 For the purpose of preventing soil erosion, temporarily exposed slope surfaces shall be covered e.g. by tarpaulin, and temporary access roads shall be protected by crushed stone or gravel, as excavation proceeds. Intercepting channels shall be provided (e.g. along the crest/edge of excavation) to prevent storm runoff from washing across exposed soil surfaces. Arrangements shall always be in place to ensure that adequate surface protection measures can be safely carried out well before the arrival of a rainstorm.



- 2.3.6 Earthworks final surfaces shall be well compacted and the subsequent permanent work or surface protection shall be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Appropriate drainage like intercepting channels shall be provided where necessary.
- 2.3.7 Measures shall be taken to minimise the ingress of rainwater into trenches. If excavation of trenches in wet seasons is necessary, they shall be dug and backfilled in short sections. Rainwater pumped out from trenches or foundation excavations shall be discharged into storm drains via silt removal facilities.
- 2.3.8 Open stockpiles of construction materials (e.g. aggregates, sand and fill material) on sites shall be covered with tarpaulin or similar fabric during rainstorms. Measures shall be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.
- 2.3.9 Manholes (including newly constructed ones) shall always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers.
- 2.3.10 Discharge of surface run-off into foul sewers shall always be prevented in order not to unduly overload the foul sewerage system.

#### ***Operation Period***

- 2.3.11 The drainage infrastructure will be in place before the start of turfgrass establishment. This comprises a sub-soil drainage system (sand plus compacted sub-base) that directs all run-off (whether rainfall or from irrigation) into the lakes. A 1.5m high bund surrounds the site and prevents any uncontrolled run-off from leaving the site. Thus, any run-off from the turfgrass can only flow into the lakes. The lakes are inter-connected through two underground pipes (shown in Figure 3.2) that allow water to flow between the lakes in either direction. The lakes will allow any sediments to settle out and the constant re-circulation of water for irrigation will ensure that any surplus nutrients within the lake water are taken up by the turfgrass during each irrigation cycle, thereby constantly removing nutrients from the lakes.
- 2.3.12 Lake A contains an overflow weir (shown in Figure 3.2) connected to the off-site stormwater drainage system via a control valve, which is either open (allowing water to flow off-site) or closed (preventing water from flowing off-site). When the lake water level rises above the weir it will overflow. This is the only route by which water from the lakes can be discharged off-site. The off-site stormwater drain discharges into the sea through Outfall No.8.
- 2.3.13 Under normal circumstances, the control valve shall be closed. However, on occasion, the valve may need to be opened (e.g. should there be a danger of flooding). In this situation, the following procedures shall be followed :
1. The Golf Facility Supervisor shall determine the need to open the control valve.
  2. The most recent lake water quality monitoring results shall be examined to determine whether lake water is of an acceptable standard for discharge.
  3. If lake water is of an acceptable standard, then the Golf Facility Supervisor shall authorise the opening of the control valve. This activity (date and time) shall be recorded in a log book kept on-site. The Golf Facility Supervisor shall authorise the closing of the control valve when, in his opinion, circumstances have returned to normal. This activity shall also be recorded in the log book, which shall be made available for inspection as required.
  4. If the lake water is not of an acceptable standard, then the control valve shall remain closed and there shall be no discharge off-site. Only when lake water has returned to an acceptable quality (as determined by subsequent monitoring), shall the Golf Facility Supervisor authorise the opening of the control valve.

### Turfgrass Management Plan (TMP)

- 2.3.14 A TMP will be developed during the design of the project and followed throughout the construction and operation of the Golf Course (an outline TMP is included in Appendix B for reference). The TMP will specify nutrient application rates and IPM during establishment and maintenance periods, and irrigation requirements throughout the year. The nutrient application rates to be specified shall be no greater than those assessed in this Project Profile. The TMP will be submitted to the appropriate authority for review and approval prior to the commencement of the establishment period for the turfgrass.
- 2.3.15 Under the TMP, there will be no application of organic nutrients or biological pest control when it is raining, when rain is expected or when a Rainstorm Warning or a Typhoon Signal No. 3 or above is issued. This will prevent the application from needlessly being washed off and thereby will maintain the water quality in the lakes.

### Irrigation and Drainage

- 2.3.16 When there is insufficient rainfall, "pop up" sprinklers will be used to irrigate the Golf Course using water predominantly from the lakes. The topography of the Golf Course and the surrounding 1.5m high landscaped bund will ensure that rainfall and irrigation water flow into the lakes. The water level of the lakes will be controlled through extraction for irrigation and through pumping of groundwater to maintain lake level and water capacity.

## **2.4 Waste Management**

### ***Construction Period***

- 2.4.1 The Works Contractor shall observe and comply with the Waste Disposal Ordinance (WDO) and its subsidiary regulations, especially the Waste Disposal (Chemical Waste) (General) Regulation. If chemical waste is to be produced, the Works Contractor shall apply for registration as a chemical waste producer under the Waste Disposal (Chemical Waste) (General) Regulation. All chemical waste shall be properly stored, labelled, packaged and collected in accordance with the Regulation.
- 2.4.2 The Works Contractor shall minimise the generation of waste from his work. Avoidance and minimisation of waste generation can be achieved through changing or improving design and practices, careful planning and good site management.
- 2.4.3 The reuse and recycling of waste shall be practised as far as possible. The recycled materials shall include paper/cardboard, timber, metal, etc. Also, rather than import new fill, the Works Contractor will make use of existing stockpiles of fill at other locations within the Airport Island (with the permission of the Airport Authority and providing that these materials meet specification requirements). For alternative sources of aggregate, the Works Contractor will examine the use of recycled aggregate from CEDD's facility in Tuen Mun Area 38.
- 2.4.4 The Works Contractor shall ensure that Construction and Demolition (C&D) materials are sorted into public fill (inert portion) and C&D waste (non-inert portion). The public fill which comprises soil, rock, concrete, brick, cement plaster/mortar, inert building debris, aggregates and asphalt shall be reused in earth filling, reclamation or site formation works. The C&D waste which comprises metal, timber, paper, glass, junk and general refuse shall be reused or recycled where possible and, as the last resort, disposed of at landfills.
- 2.4.5 The Works Contractor shall record the amount of waste generated, recycled and disposed of (including the disposal sites). The Works Contractor shall use a trip ticket system for the disposal of C&D materials to any designated public filling facility and/or landfill.

- 2.4.6 In order to avoid creating dust or odour impacts, any vehicles leaving a works area carrying construction waste or public fill should have their loads covered. To avoid the excessive use of wood, reusable steel shutters should be used as a preferred alternative to formwork and falsework where possible.

## 2.5 Landscape and Visual

### ***Construction Period***

- 2.5.1 The visual intrusion of the works area is expected to be transient and localised. The Works Contractor shall keep the works area tidy and ensure that construction wastes are properly stored and disposed of.

### ***Operation Period***

- 2.5.2 The floodlights will be installed at an angle to avoid glare impact and nuisance to visually sensitive receivers in the residential developments along the north edge of North Lantau New Town. Although these receivers are some distance from the Golf Course (approximately 2.3km) they will still be able to see the floodlit Golf Course and so glare will be avoided by appropriate angling of the floodlights onto the course and away from North Lantau New Town and by fixing of visors/louvers to the floodlights to prevent light "spillage".
- 2.5.3 No other mitigation measures are required as the Golf Course will enhance the landscape and visual quality of the area.

## 2.6 Land Contamination

### ***Pre-operation and Mid-operation Periods***

- 2.6.1 Soil sampling will be carried out in accordance with the *Soil Sampling and Monitoring Plan* during pre-operation and mid-operation periods, but no mitigation measures are anticipated to be required.

### ***Post-operation Period***

- 2.6.2 Soil sampling will be carried out in accordance with the *Soil Sampling and Monitoring Plan* during post-operation period. Should it be necessary to carry out remedial/mitigation measures to reduce land contamination to an acceptable level, a separate Contamination Assessment Report (CAR) and Remediation Action Plan (RAP) shall be prepared in accordance with standard EPD guidance, and shall be agreed beforehand with EPD.
- 2.6.3 According to *ProPECC PN3/94*, a wide range of land remediation/mitigation measures are adopted world-wide for the restoration of contaminated sites. These include :
- Recovery Trenches or Wells – often used for the removal of leaked oil
  - Soil Venting – commonly used for removal of volatile or semi-volatile organics
  - Biotreatment – a number of methods are available that degrade a wide range of organics
  - Immobilisation – mainly applicable to heavy metals
  - Excavation and Landfilling – convenient but should only be considered as a "last resort" and only when there is localised contamination and where the extent of contamination is small

- 2.6.4 According to *ProPECC PN3/94*, the selection of an appropriate remedial/mitigation measure will depend on a number of factors, including :
- Nature of the contamination
  - Degree of the contamination
  - Who/which is the potential receiver
  - Time allowable
  - Treatment cost
  - Availability of local expertise for undertaking the treatment
- 2.6.5 The majority of these factors are unknown at this time and can only be determined when the results from the post-operation monitoring are available. Therefore, the appropriate remedial /mitigation measure(s) will be recommended in the CAR and RAP in due course and will be agreed beforehand with EPD.

### 3. ENVIRONMENTAL MONITORING AND AUDIT

#### 3.1 Responsibility and Organisation

3.1.1 The EM&A programme identified in this Manual shall be carried out by the ET, who shall be part of AMS. The ET shall also be responsible for managing any specialist environmental monitoring sub-contractors and/or testing laboratories as required. The organisation of the ET and their relationship with other parties is illustrated in Figure 3.1.

3.1.2 Figures 3.2 and 3.3 show the locations of the designated monitoring points that are referred to in the following sub-sections and Figure 3.4 defines the complaint handling procedures. Site inspections by the ET will not be necessary.

#### 3.2 Baseline Monitoring

##### *Marine Water Quality*

3.2.1 The Airport Authority (AA) already performs comprehensive water quality monitoring around the Airport Island once every two months, covering the following parameters :

- Temperature
- Salinity
- Turbidity
- Suspended Solids
- Dissolved Oxygen
- Biological Oxygen Demand
- Total Kjeldahl Nitrogen

3.2.2 The suspended solids, dissolved oxygen, turbidity, salinity and temperature data from AA for a period of six months prior to the "commencement of works" shall be used as baseline data for this EM&A programme and shall be included in the Baseline Report with AA's permission. The Works Contractor shall not need to carry out additional baseline monitoring.

3.2.3 The Action Level and Limit Levels (A/L) for suspended solids shall be the 95<sup>th</sup> percentile and the 99<sup>th</sup> percentile of the baseline data, respectively. The A/L for dissolved oxygen shall be the 5<sup>th</sup> percentile and 1<sup>st</sup> percentile of the baseline data, respectively. These A/L Levels shall be determined and included in the Baseline Report.

##### *Land Contamination*

3.2.4 Soil samples shall be taken at locations designated S1 to S12 on see Figure 3.2, which were proposed in the *Soil Sampling and Monitoring Plan*, submitted separately. The timing for soil sampling shall ensure that samples can be taken prior to placement of the impermeable liner for the artificial lakes, prior to the laying of hard surfacing for the maintenance and car park areas, and after the sub-soil drainage system has been constructed. Notwithstanding, all baseline sampling shall be completed prior to the operation of the Golf Course.

3.2.5 For the maintenance and car park areas (locations S1 and S4), sampling shall be carried out at three depths, namely 0.5m, 1m and 1.5m, using an appropriate method such as borehole, trial pit, etc. Within the Golf Course area (locations S2, S3, S7, S8, S10, S11 and S12) samples shall be taken from within the 200-300mm deep sand layer that lies above the sub-base but below the turfgrass. To maintain consistency within the area occupied by the artificial lakes (locations S5, S6 and S9), samples shall also be taken at 200-300mm below the final lake bed level.

3.2.6 Samples from locations S1 and S4 shall be analysed in a laboratory to determine the initial (pre-operation) concentrations of total petroleum hydrocarbons. Samples from all other locations shall be analysed in a laboratory to determine the initial (pre-operation)



concentrations of total pesticides.

### 3.3 Impact Monitoring (Construction Period)

#### *Marine Water Quality*

##### Parameters

- 3.3.1 Throughout the Construction Period (until such time as there is no possibility for any run-off from the site to affect the marine environment) marine water quality shall be monitored for suspended solids, dissolved oxygen, turbidity, salinity and temperature, since these are the parameters that would be affected by silt-containing surface run-off from the site. Any early termination of marine water quality monitoring shall require EPD's prior approval.

##### Location and Frequency

- 3.3.2 As the water depth around the Airport Island is less than 10m, only one water sample shall be taken at the mid-depth between the seabed and the surface – this approach follows that adopted by AA in their non-statutory marine water quality monitoring, which forms the baseline data for this EM&A programme.
- 3.3.3 Marine water shall be monitored bi-weekly at monitoring locations M1 and M2 and at control stations C1 and C2, as shown on Figure 3.3, on both the mid-ebb and mid-flood tides (i.e. a total of 16 no. samples per week).

##### Event Action Plan

- 3.3.4 Should any monitoring results indicate that marine water is not of an acceptable standard (i.e. has exceeded the A/L Levels determined in the Baseline Report) the Event/Action Plan shown in Table 3.1 shall be implemented :

**Table 3.1 : Event Action Plan for Marine Water Quality Monitoring**

Event	Action	
	ET	Works Contractor
Exceedance of Action Level	<ol style="list-style-type: none"> <li>1. Identify the source(s) of impact. If not from the Project then provide justification and document this</li> <li>2. If exceedance is caused by the Project then inform Contractor</li> <li>3. Check monitoring data and Contractor's working methods</li> <li>4. Discuss possible mitigation measures with Contractor</li> <li>5. Repeat measurement on next day of exceedance</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm notification of the exceedance in writing</li> <li>2. Rectify any unacceptable practice</li> <li>3. Check all plant and equipment</li> <li>4. Amend working methods if appropriate</li> <li>5. Discuss possible mitigation measures with ET</li> <li>6. Implement the agreed mitigation measures</li> </ol>
Exceedance of Limit Level	<ol style="list-style-type: none"> <li>1. Identify the source(s) of impact. If not from the Project then provide justification and document this in the EM&amp;A Report</li> <li>2. If exceedance is caused by the Project then inform Contractor</li> <li>3. Check monitoring data and Contractor's working methods</li> <li>4. Agree mitigation measures with Contractor</li> <li>5. Ensure mitigation measures are implemented immediately</li> <li>6. Increase the monitoring frequency</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm notification of the exceedance in writing</li> <li>2. Rectify any unacceptable practice</li> <li>3. Check all plant and equipment</li> <li>4. Amend working methods if appropriate</li> <li>5. Agree possible mitigation measures with ET</li> <li>6. Implement the agreed mitigation measures immediately</li> </ol>

Event	Action	
	ET	Works Contractor
	to daily until no further exceedance of Limit Level	

### 3.4 Compliance Monitoring (Operation Period)

#### Lake Water Quality

##### Parameters

- 3.4.1 During turfgrass establishment and maintenance the ET shall carry out regular monitoring of water quality parameters recommended in the Project Profile :

**Table 3.2 : Water Quality Standards for Compliance Monitoring**

Parameter	Acceptable Standard (mg/ )*	
	"Action Level"	"Limit Level"
Suspended Solids	20	30
BOD <sub>5</sub>	13.5	20
Dissolved Oxygen	4	3
Total Nitrogen	20	30
Total Phosphorous	3.5	5

**Note :** \* Limit Level is the most stringent value from Table 10a, *Technical Memorandum – Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters*, WPCO (Cap 358AK). Action Level at 2/3 of Limit Level.

##### Frequency

- 3.4.2 The frequency of monitoring shall be as required by Table 3.3, below. Monthly monitoring for the first 3 months of operation has been specified to allow a more rapid accumulation of operational monitoring data and thereby provide greater confidence in the efficacy of the operation of the Golf Course and the EM&A programme itself.

**Table 3.3 : Water Quality Monitoring Frequency**

	Turfgrass Establishment and First 3 Months of Operation		After First 3 Months of Operation	
	Below Action/Limit Level	Action/Limit Level Exceedance	Below Action/Limit Level	Action/Limit Level Exceedance
Monitoring	Weekly	Bi-weekly	Monthly	Weekly

##### Monitoring Methodology

- 3.4.3 Samples of lake water shall be taken at monitoring points W1 to W4, as indicated on Figure 3.2. Location W1 is at the overflow weir from the artificial lake and is the only point that water can be discharged from both lakes into the surrounding environment (via Outfall No.8).
- 3.4.4 Samples shall be collected using a Kahlsico Sampler (or equivalent) which shall have a positive latching system to keep it open and prevent premature closure until released by a messenger when the sampler is at the correct water depth. The sample shall be collected at 0.5m from the surface (the mid-point of the 1m deep lake).
- 3.4.5 The volume of the sample shall not be less than 1 and shall be decanted into clean high density polythene bottles, packed in ice (cooled to 4°C without being frozen), and delivered to a laboratory on the same day as the sample was collected.

- 3.4.6 Dissolved Oxygen (DO) readings shall be taken *in situ* at "W1" using a portable, weatherproof instrument complete with cable and sensor, and shall be operable from a DC power source (such as YSI models or similar). It shall be capable of measuring DO levels in the range of 0 to 20mg/ and 0 to 200% saturation. It shall have a membrane electrode with automatic temperature compensation complete with a cable of not less than 1m in length. Sufficient stocks of spare electrodes and cables shall be available for replacement where necessary.
- 3.4.7 The DO-measuring instrument shall be checked, calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme before use, and subsequently re-calibrated at monthly intervals throughout all stages of the water quality monitoring. Responses of sensors and electrodes shall be checked with certified standard solutions before each use.
- 3.4.8 The Operator may be required to apply for a Discharge Licence under the WPCO for discharges from the lake. In this case, the monitoring carried out under the Discharge Licence shall also be reported as part of this EM&A programme, but shall not replace it.

#### Laboratory Analysis

- 3.4.9 Laboratory work shall be carried out in a HOKLAS accredited laboratory for suspended solids, BOD<sub>5</sub>, total nitrogen and total phosphorous. The determination work shall start within the next working day after collection of the water samples. It is anticipated that laboratory results will be available within 48 to 72 hours of sampling.
- 3.4.10 The analyses shall follow the standard methods as described in *APHA Standard Methods for the Examination of Water and Wastewater, 19th Edition*, unless otherwise specified (APHA 2540D for suspended solids) with a detection limit of 1mg/ or less.
- 3.4.11 The submitted information should include pre-treatment procedures, instrument use, Quality Assurance/ Quality Control (QA/QC) details (such as blank, spike recovery, number of duplicate samples per-batch etc), detection limits and accuracy. The QA/QC details shall be in accordance with requirements of HOKLAS or another internationally accredited scheme.
- 3.4.12 With the prior agreement of EPD, and as an alternative to laboratory analysis, on-site/in-situ analysis may be carried out using electronic probes and/or "test kits". Suspended solids may also be calculated from turbidity readings with the prior agreement of EPD.

#### Event Action Plan

- 3.4.13 Monitoring results shall be compared to the standards shown in Table 3.3. Should monitoring results indicate that lake water has exceeded the "Action Level" then this will be considered as a warning of a potential water quality problem and the "Action Level" contingency plan shall be implemented immediately by the ET. Should monitoring results indicate that lake water quality has exceeded the "Limit Level" this means there is a water quality problem and the "Limit Level" contingency plan shall be implemented immediately by the ET.

#### Contingency Plan for "Action Level" Exceedance

1. Notify the Golf Facility Supervisor of the exceedance, providing full details (time, location, parameter, level, etc.).
2. Increase the frequency of monitoring of the particular parameter(s) to "Action/Limit Level Exceedance" as shown in Table 3.3.
3. If water quality continues to worsen, it may be prudent to review the TMP in terms of application of nutrients and agree any revisions with the Golf Facility Supervisor.
4. Notify the Golf Facility Supervisor when water quality falls below "Action Level" and reduce monitoring frequency to "Below Action/Limit Level" as shown in Table 3.3.

#### Contingency Plan for "Limit Level" Exceedance

1. Notify EPD and Golf Facility Supervisor of the exceedance, providing full details (time, location, parameter, level, etc.).
2. Suspend any ongoing application of organic nutrients.
3. Determine the likely cause of the exceedance(s). Review the TMP in terms of application of nutrients and agree any revisions with the Golf Facility Supervisor. Continue to irrigate the Golf Course using lake water.
4. Increase the frequency of monitoring of the particular parameter(s) to "Action/Limit Level Exceedance" as shown in Table 3.3 (if not already at this frequency) to demonstrate the effectiveness of remedial measures and to confirm that water quality has returned to acceptable levels.
5. Notify EPD and Golf Facility Supervisor when water quality falls below "Action Level" (not "Limit Level") and reduce monitoring frequency to "Below Action/Limit Level" as shown in Table 3.3.

#### **Land Contamination**

- 3.4.14 Soil samples shall be taken at locations within the Golf Course area (locations S2, S3, S7, S8, S10, S11 and S12) shown in Figure 3.2, which were proposed in the *Soil Sampling and Monitoring Plan*, submitted separately. Samples shall be taken from within the 200-300mm deep sand layer that lies above the sub-base but below the turfgrass.
- 3.4.15 One set of samples is required during the operation period. These samples shall be taken at the mid-point of the operation period, which at present is expected to occur in mid-2009.
- 3.4.16 Samples shall be analysed in a laboratory to determine the concentrations of total pesticides.

### **3.5 Post-Operation Monitoring**

#### **Land Contamination**

- 3.5.1 Soil samples shall be taken at locations S1 to S12 on see Figure 3.2, which were proposed in the *Soil Sampling and Monitoring Plan*, submitted separately. The timing for soil sampling shall ensure that samples can be taken after removal of the impermeable liner for the artificial lakes, and after removal of hard surfacing for the maintenance and car park areas, and before the turfgrass has been removed. Notwithstanding, all post-operation sampling shall be completed after the operation of the Golf Course has ceased.
- 3.5.2 For the maintenance and car park areas (locations S1 and S4), sampling shall be carried out at three depths, namely 0.5m, 1m and 1.5m, using an appropriate method such as borehole, trial pit, etc. Within the Golf Course area (locations S2, S3, S7, S8, S10, S11 and S12) samples shall be taken from within the 200-300mm deep sand layer that lies above the sub-base but below the turfgrass. To maintain consistency within the area occupied by the artificial lakes (locations S5, S6 and S9), samples shall also be taken at 200-300mm below the lake bed level.
- 3.5.3 Samples from locations S1 and S4 shall be analysed in a laboratory to determine the final (post-operation) concentrations of total petroleum hydrocarbons. Samples from all other locations shall be analysed in a laboratory to determine the final (post-operation) concentrations of total pesticides.
- 3.5.4 The initial (pre-operation) and final (post-operation) sampling results shall be compared to indicate any potential land contamination caused by the operation of the Golf Course. Reference to mid-operation sampling results shall be made as appropriate.

- 3.5.5 It is anticipated that the comparison would demonstrate that there has been no significant contamination caused by the Golf Course such that any future user would not be constrained by land contamination issues. Notwithstanding, should contamination be evident, this shall be fully examined and, if necessary, remediation/mitigation measures (including a CAR and RAP) shall be carried out as described in Section 2.6.



Figure 3.1 : Organisation Chart for EM&A

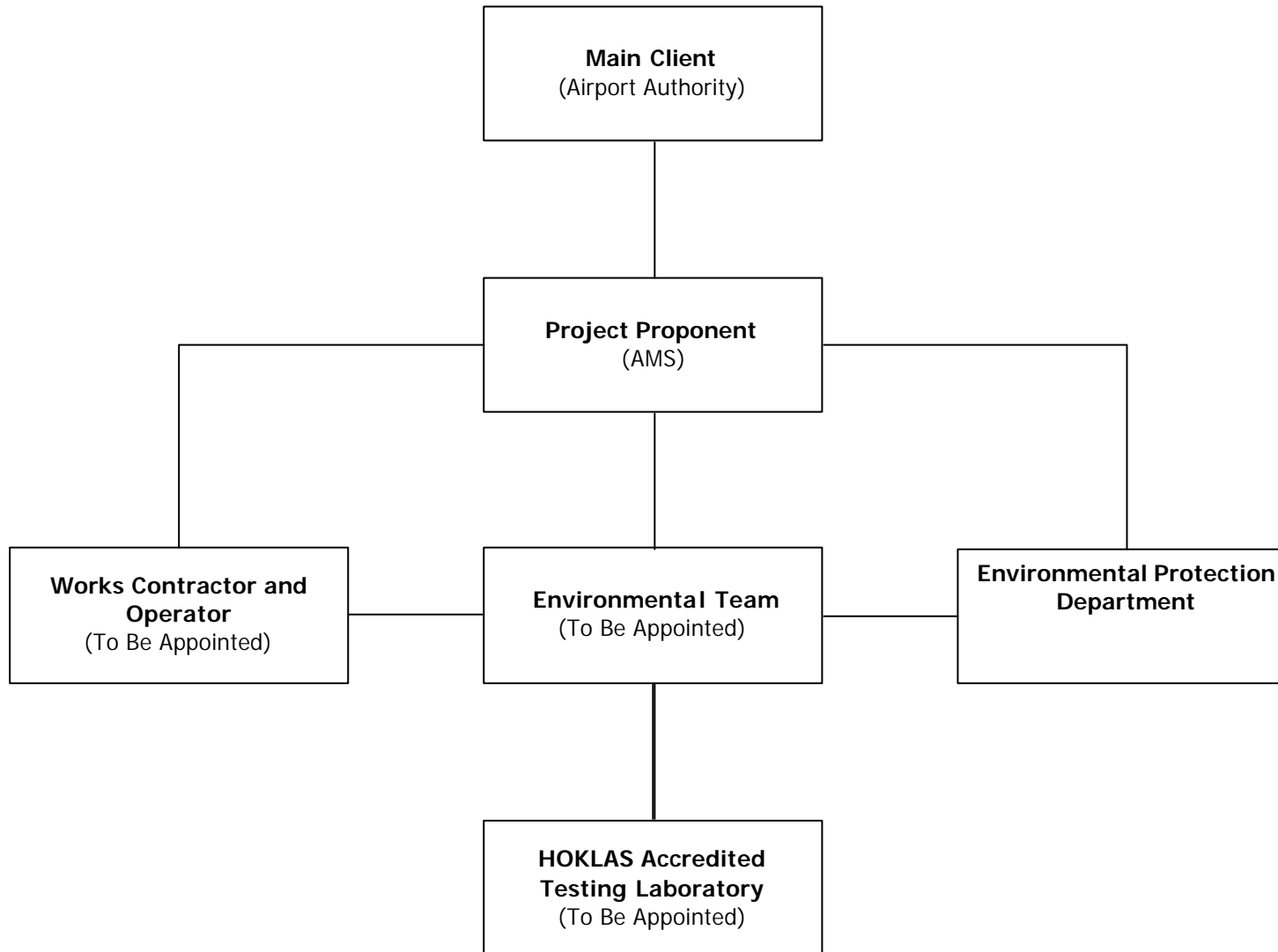
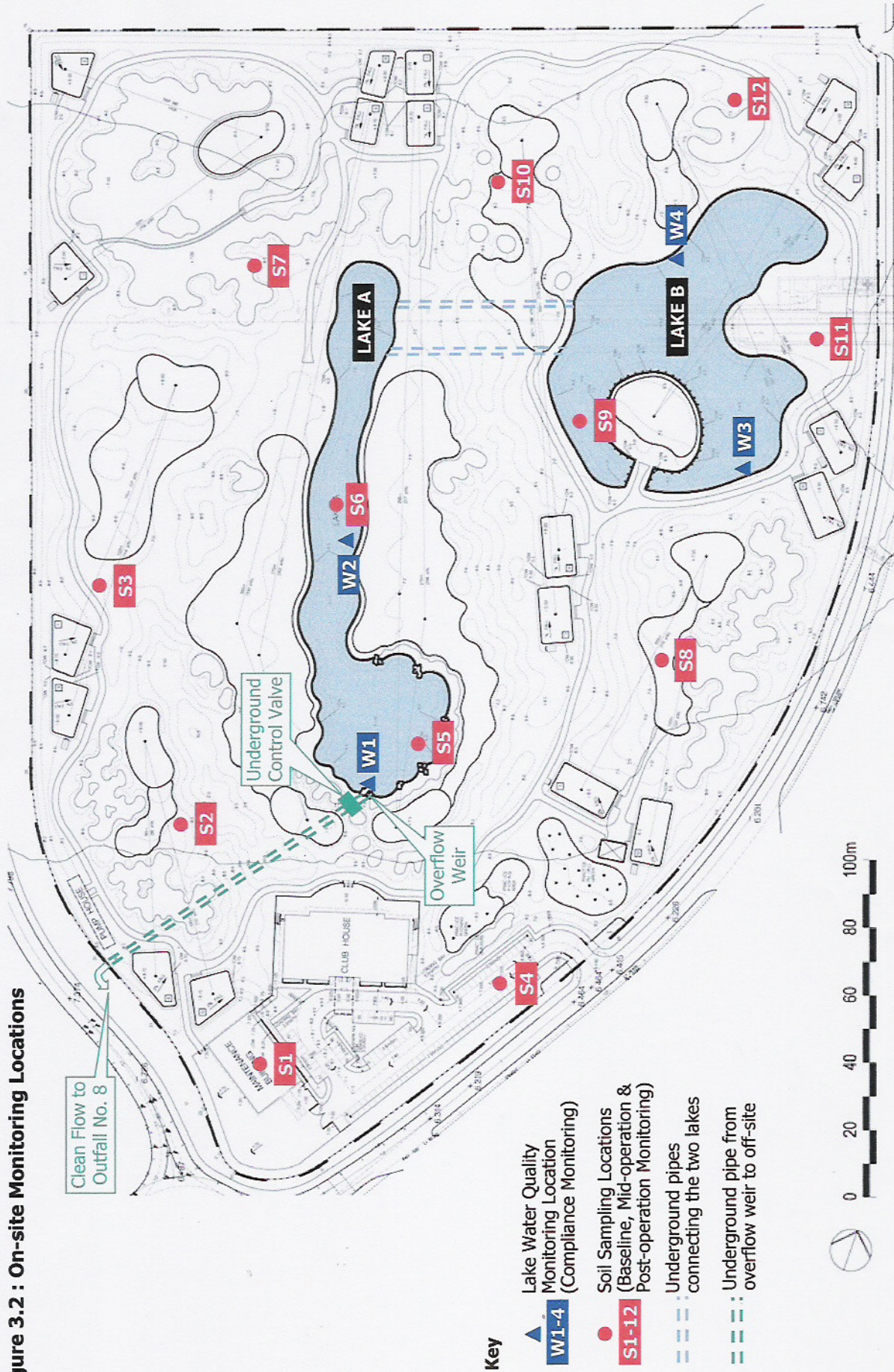




Figure 3.2 : On-site Monitoring Locations



Key

- Lake Water Quality Monitoring Location (Compliance Monitoring) W1-4
- Soil Sampling Locations (Baseline, Mid-operation & Post-operation Monitoring) S1-12
- Underground pipes connecting the two lakes
- Underground pipe from overflow weir to off-site



Figure 3.3 : Off-site Monitoring Locations

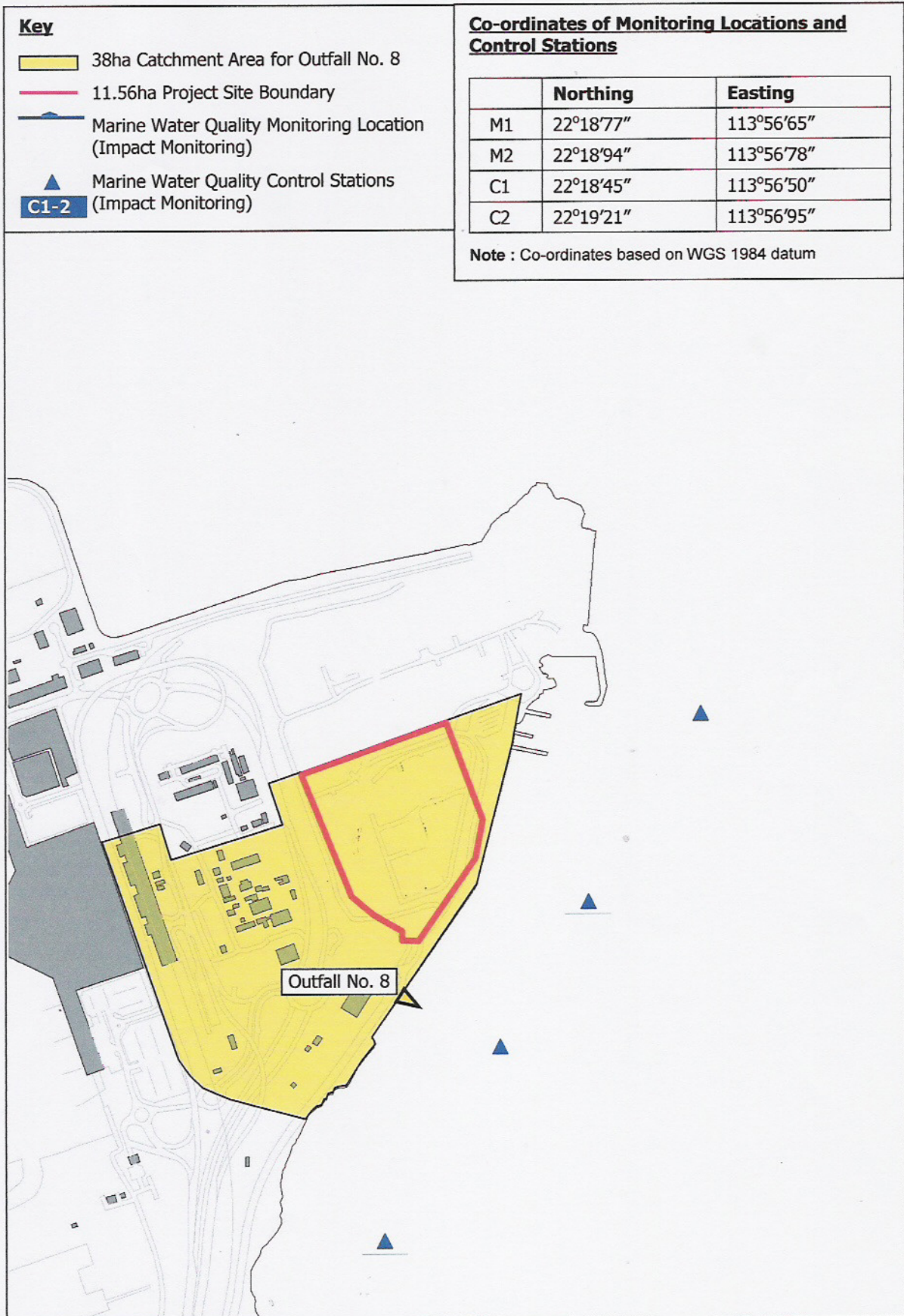
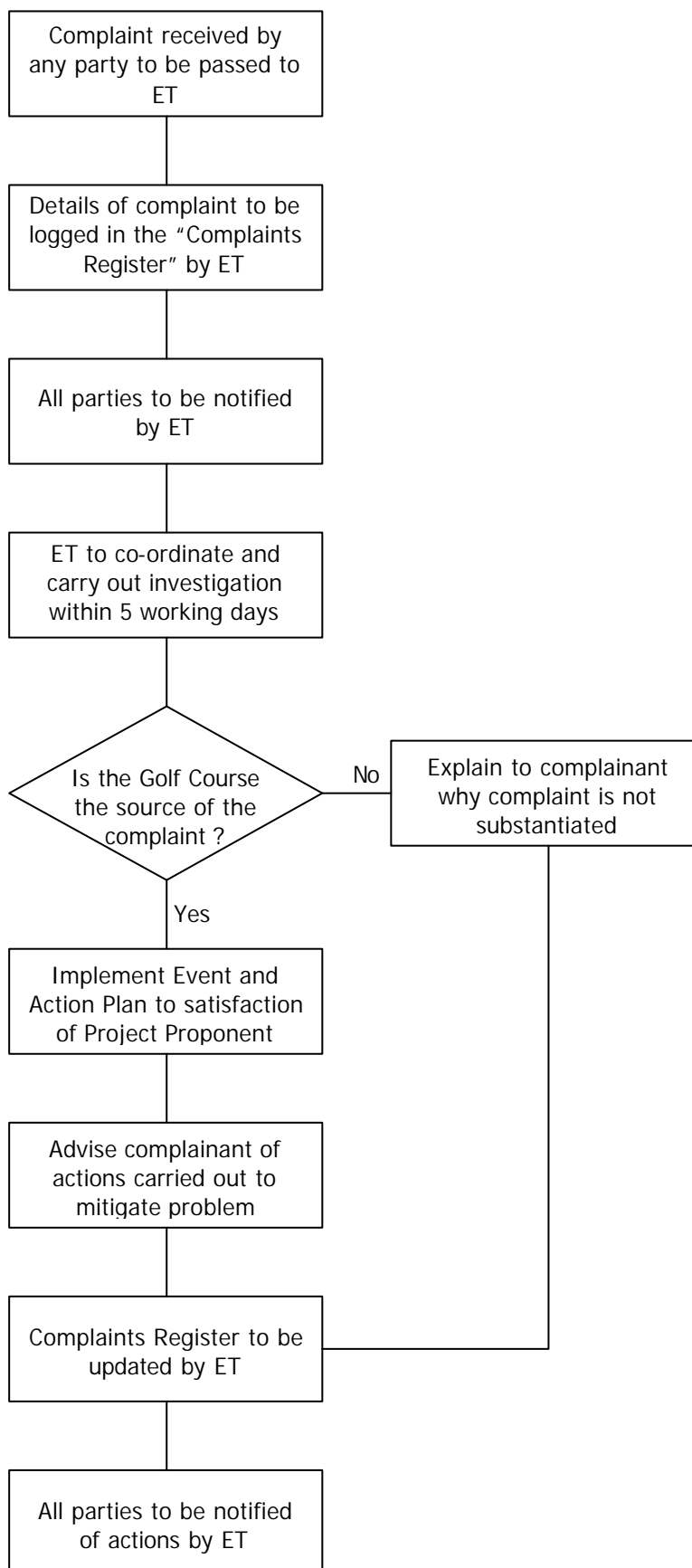


Figure 3.4 : Complaints Handling Procedure



## 4. REPORTING

### 4.1 Submissions

- 4.1.1 All reporting described in this Section shall be prepared by the ET and submitted to : EPD, Project Proponent (AMS), Works Contractor (during Construction Period only) and the Operator (during Operation Period only).
- 4.1.2 Submissions (including the number of copies) may be made as a hardcopy and/or softcopy subject to the preference of, and as agreed beforehand with, each recipient. Distribution of softcopies as .pdf files by email is strongly recommended.

### 4.2 Baseline Monitoring Report

- 4.2.1 A Baseline Monitoring Report relating to marine water quality and land contamination prior to the laying of the impermeable liner for the artificial lakes shall be prepared.
- 4.2.2 The report shall be prepared and submitted within ten working days of completing the laying of the impermeable liner for the artificial lakes and shall include :
- Drawings showing locations of the baseline monitoring locations.
  - Monitoring results together with the following information :
    - monitoring methodology
    - equipment used and calibration details (from the testing laboratory)
    - parameters monitored
    - monitoring locations
    - monitoring date, time, frequency and duration
  - Details on influencing factors, including :
    - major activities, if any, being carried out on the site during the period
    - weather conditions during the period
    - other factors which might affect the results
  - Determination of existing ambient concentrations for each land contamination parameter.
  - Determination of Action and Limit Levels for marine water quality.
  - AA' s marine water quality monitoring data.

### 4.3 Impact Monitoring Reports (Construction Period)

- 4.3.1 An Impact Monitoring Report relating to discharged water quality from Construction Works shall be prepared covering all of the monitoring carried out in the previous month. The report shall be submitted within ten working days of the following month and shall include :
- Executive Summary.
  - Advice on the implementation status of environmental protection, mitigation and pollution control measures, as recommended in the Project Profile.
  - Monitoring results together with the following information :
    - monitoring methodology
    - equipment used and calibration details (from the testing laboratory)
    - parameters monitored
    - monitoring locations
    - monitoring date, time, frequency, and duration



- Graphical plots of trends of monitored parameters over the past four months (if available) for representative monitoring stations annotated against the following :
  - major activities being carried out on site during the period
  - weather conditions during the period
  - any other factors which might affect the monitoring results
- A summary of any exceedances of the Action or Limit Levels, or Discharge Licence conditions.
- A review of the reasons for and the implications of any exceedance, including review of pollution sources and working procedures.
- A description of the actions taken in the event of any exceedance and deficiency reporting and any follow-up procedures related to any earlier exceedances.
- A summary record of all complaints received (written or verbal) for each media, including locations and nature of complaints, liaison and consultation undertaken, actions and follow-up procedures taken and summary of complaints.
- A summary record of notification of summons, successful prosecutions for breaches of environmental protection/pollution control legislation, and actions taken to rectify such breaches.
- A forecast of the Works Programme, impact predictions and monitoring schedule for the next three months or until the end of the Construction Period.
- Comments, recommendations and conclusions for the monitoring period.

#### 4.4 Compliance Monitoring Reports (Operation Period)

- 4.4.1 A Compliance Monitoring Report relating to lake water quality during turfgrass establishment and turfgrass maintenance shall be prepared at the frequency shown in Table 4.1, and shall cover all of the monitoring carried out in the previous reporting period.

**Table 4.1 : Compliance Monitoring Reporting Frequency**

Turfgrass Establishment Period and First 3 Months of Operation Period	After First 3 Months of Operation Period
Monthly	Quarterly

- 4.4.2 The report shall be submitted within ten working days after the reporting period and shall include :
- Executive Summary.
  - Advice on the implementation status of environmental protection, mitigation and pollution control measures, as recommended in the Project Profile.
  - Monitoring results together with the following information :
    - monitoring methodology
    - equipment used and calibration details (from the testing laboratory)
    - parameters monitored
    - monitoring locations (and depth)
    - monitoring date, time, frequency, and duration
  - Graphical plots of trends of monitored parameters over the past four months (if available) for representative monitoring stations annotated against the following :
    - major activities being carried out on site during the period (e.g. turf maintenance)
    - weather conditions during the period
    - any other factors which might affect the monitoring results

- A summary of any exceedances of the Action or Limit Levels, Discharge Licence conditions, or any flooding incidents (with excerpts from the log).
- A review of the reasons for and the implications of any exceedance, including review of pollution sources and working procedures.
- A description of the actions taken in the event of any exceedance (e.g. flooding of the golf course) and deficiency reporting and any follow-up procedures related to any earlier exceedances.
- A summary record of all complaints received (written or verbal) for each media, including locations and nature of complaints, liaison and consultation undertaken, actions and follow-up procedures taken and summary of complaints.
- A summary record of notification of summons, successful prosecutions for breaches of environmental protection/pollution control legislation, and actions taken to rectify such breaches.
- Monitoring schedule for the next three months.
- Comments, recommendations and conclusions for the monitoring period.

4.4.3 The EM&A report shall also include any updated monitoring data from the AA's own non-statutory marine environmental monitoring, which is carried out at a number of locations around the Airport Island, to further confirm that there are no adverse marine water quality impacts arising from the construction and operation of the Golf Course.

#### 4.5 Post-operation Monitoring Report

4.5.1 A Post-operation Monitoring Report (Final Monitoring Report) relating to land contamination after removal of the impermeable liner for the artificial lakes shall be prepared and submitted no later than two weeks prior to the handover of the project site to the subsequent user. The Final Report shall include :

- Drawings showing locations of the monitoring locations.
- Monitoring results together with the following information :
  - monitoring methodology
  - equipment used and calibration details (from the testing laboratory)
  - parameters monitored
  - monitoring locations
  - monitoring date, time, frequency and duration
- Details on influencing factors, including :
  - major activities, if any, being carried out on the site during the period
  - weather conditions during the period
  - other factors which might affect the results
- A comparison of baseline and final monitoring results and a review of the reasons for and the implications of any significant differences, including review of pollution sources and operating procedures.
- A description of any necessary remedial measures to be carried out to ensure that any contamination caused by the operation of the project is cleaned up to an acceptable level such the next user would not be constrained by any land contamination issues.
- Comments, recommendations and conclusions.

4.5.2 Should it be necessary to carry out remedial measures to reduce land contamination to an acceptable level, a separate "clean up" report shall be prepared and submitted to EPD, the contents and scope of which shall be agreed beforehand with EPD, in relation to the actual level of contamination that has resulted from the operation of the project.

# Appendix A

## Environmental Permit No. EP-229/2005

Environmental Permit No. EP-229/2005  
環境許可証編號 EP-229/2005

ENVIRONMENTAL IMPACT ASSESSMENT ORDINANCE  
(CHAPTER 499)  
Section 10

環境影響評估條例  
(第 499 章)  
第 10 條

ENVIRONMENTAL PERMIT TO CONSTRUCT AND OPERATE A DESIGNATED PROJECT  
建造及營辦指定工程項目的環境許可証

PART A (MAIN PERMIT)

A 部 (許可証主要部分)

Pursuant to Section 10 of the Environmental Impact Assessment Ordinance (EIAO), the Director of Environmental Protection (the Director) grants this environmental permit to the **Airport Management Services Limited** (hereinafter referred to as the "Permit Holder") to construct and operate the designated project described in Part B subject to the conditions specified in Part C. The issue of this environmental permit is based on the documents, approvals or permissions described below:

根據《環境影響評估條例》(環境評估條例)第 10 條的規定，環境保護署署長(署長)將本環境許可証批予機場管理服務有限公司(下稱“許可証持有人”)，以建造及營辦B部所說明的指定工程項目，但須遵守C部所列明的條件。本環境許可証是依據下列文件、批准或許可而簽發：

<b>Application No.</b> 申請書編號	AEP-229/2005
<b>Document in the Register :</b> 登記冊上的文件:	<ol style="list-style-type: none"> <li>1. Project Profile - “Development of SkyCity Golf Course” (Register No.: PP-256/2005)  工程項目簡介 - “航天城高爾夫球場項目發展”(登記冊編號：PP-256/2005)</li> <li>2. The Director’s letter of permission to apply directly for environmental permit dated 13 September 2005 referenced EP2/N9/0/110 II  環境保護署署長於二 00 五年九月十三日發出准許直接申請環境許可証的信件檔案編號 EP2/N9/0/110 II</li> <li>3. Application for Environmental Permit submitted by the Permit Holder on 24 September 2005 (Application No. AEP-229/2005)  許可証持有人於二 00 五年九月二十四日提交的環境許可証申請(申請書編號：AEP-229/2005)</li> </ol>

17 October 2005

Date  
日期

(Simon Y.M. HUI)  
Principal Environmental Protection Officer  
for Director of Environmental Protection  
環境保護署署長  
(首席環境保護主任 許一鳴代行)

**PART B (DESCRIPTION OF DESIGNATED PROJECT)**

**B 部 (指定工程項目的說明)**

Hereunder is the description of the designated project mentioned in Part A of this environmental permit (hereinafter referred to as “the Permit”):

下列為本環境許可証(下稱“許可証”)A部所提述的指定工程項目的說明:

<p><b>Title of Designated Project</b> 指定工程項目的名稱</p>	<p>Interim Ancillary Recreation and Golf Facility Development, North Commercial District, Hong Kong International Airport (SkyCity Golf Course) (This designated project is hereafter referred to as “the Project”) 香港國際機場北部商業區高爾夫球設施及娛樂配套設施臨時發展項目(航天城高爾夫球場) (本指定工程項目下稱“工程項目”)</p>
<p><b>Nature of Designated Project</b> 指定工程項目的性質</p>	<p>The Project involves the construction and operation of a 9-hole outdoor golf course and all manage turf areas. 工程項目包括在建造及營辦 9 洞戶外高爾夫球場及全部受管理的草地範圍</p>
<p><b>Location of Designated Project</b> 指定工程項目的地點</p>	<p>North-eastern part of the Airport Island, North Lantau Island The location of the Project is shown in Figure 1 of this Permit. 北大嶼山之機場島東北面 工程項目的地點展示於本許可証圖 1</p>
<p><b>Scale and Scope of Designated Project</b> 指定工程項目的規模和範圍</p>	<p>The proposed work involves the construction and operation of a 9-hole temporary golf facility of about 11.56 hectares in size. The golf facility comprises:</p> <ul style="list-style-type: none"> <li>- A 9-hole golf course including greens, tees, fairways, rough, bunkers, artificial lakes and streams);</li> <li>- a clubhouse;</li> <li>- refreshment counters;</li> <li>- maintenance building and yard;</li> <li>- car parks; and</li> <li>- associated infrastructure.</li> </ul> <p>建議工程包括建造及營辦面積約 11.56 公頃的 9 洞臨時高爾夫球設施。設施包括：</p> <ul style="list-style-type: none"> <li>- 一個九個洞的高爾夫球場（包括果嶺、開球球座、球道、深草區、沙池、人工湖及河流）；</li> <li>- 會所；</li> <li>- 茶點站；</li> <li>- 維修大樓及庭園；</li> <li>- 停車場及</li> <li>- 相關設施。</li> </ul>

## PART C (PERMIT CONDITIONS)

### 1. General Conditions

- 1.1 The Permit Holder and any person working on the Project shall comply with all conditions set out in this Permit. Any non-compliance by any person may constitute a contravention of the Environmental Impact Assessment Ordinance (Cap.499) and may become the subject of appropriate action being taken under the Ordinance.
- 1.2 The Permit Holder shall ensure full compliance with all legislation from time to time in force including, without limitation to, the Noise Control Ordinance (Cap. 400), Air Pollution Control Ordinance (Cap. 311), Water Pollution Control Ordinance (Cap. 358), Dumping at Sea Ordinance (Cap. 466) and Waste Disposal Ordinance (Cap. 354). This Permit does not of itself constitute any ground of defence against any proceedings instituted under any legislation or imply any approval under any legislation.
- 1.3 The Permit Holder shall make copies of this Permit together with all documents referred to in this Permit and the documents referred to in Part A of the Permit readily available at all times for inspection by the Director or his authorised officers at all sites/offices covered by this Permit. Any reference to the Permit shall include all documents referred to in the Permit and also the relevant documents in the Register.
- 1.4 The Permit Holder shall give a copy of this Permit to the person(s) in charge of the site(s) and ensure that such person(s) fully understands all conditions and all requirements incorporated by the Permit. The site refers to site of construction and operation of the Project and shall mean the same hereafter.
- 1.5 The Permit Holder shall display conspicuously a copy of this Permit on the Project site(s) at all vehicular site entrances/exits or at a convenient location for public's information at all times. The Permit Holder shall ensure that the most updated information about the Permit, including any amended Permit, is displayed at such locations. If the Permit Holder surrenders a part or the whole of the Permit, the notice he sends to the Director shall also be displayed at the same locations as the original Permit. The suspended, varied or cancelled Permit shall be removed from display at the Project site(s).
- 1.6 The Permit Holder shall construct and operate the Project in accordance with the project descriptions in Part B of this Permit.
- 1.7 The Permit Holder shall ensure that the Project is designed, constructed and operated in accordance with the information and recommendations described in the Project Profile (Register No. PP-256/2005), other relevant documents in the Register, the information and mitigation measures described in this Permit, mitigation measures to be recommended in submissions that shall be deposited with or approved by the Director as a result of permit conditions contained in this Permit, and mitigation measures to be recommended under on-going surveillance and monitoring activities during all stages of the Project. Where recommendations referred to in the documents of the Register are not expressly referred to in this Permit, such recommendations are nevertheless to be implemented unless expressly excluded or impliedly amended in this Permit.
- 1.8 All submissions, as required under this Permit, shall be rectified and resubmitted in accordance with the comments, if any, made by the Director, within one month of the receipt of the Director's comments or otherwise as specified by the Director.
- 1.9 All submissions approved by the Director, all submissions deposited without comments by the Director, or all submissions rectified in accordance with comments by the Director under this Permit shall be construed as part of the permit conditions described in Part C of this Permit. Any variation of the submissions shall be approved by the Director in writing or as prescribed in the relevant permit conditions. Any non-compliance with the submissions may constitute a contravention of the Environmental Impact Assessment Ordinance (Cap. 499).
- 1.10 The Permit Holder shall release all finalized submissions as required under this Permit, to the public by depositing copies in the Environmental Impact Assessment Ordinance Register Office, or in any other places, or any internet websites as specified by the Director, or by any other means as specified by the Director for public inspection. For this purpose, the Permit Holder shall provide sufficient copies of the submissions.

- 1.11 All submissions to the Director required under this Permit shall be delivered either in person or by registered mail to the Environmental Impact Assessment Ordinance Register Office (currently at 27/F, Southorn Centre, 130 Hennessy Road, Wanchai, Hong Kong). Electronic copies of all finalized submissions required under this Permit 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.
- 1.12 The Permit Holder shall notify the Director in writing the commencement date of construction of the Project prior to the commencement of construction of the Project. The Permit Holder shall notify the Director in writing immediately if there is any change of the commencement date of the construction.
- 1.13 For the purpose of this Permit, “commencement of construction” does not include works related to site clearance and preparations, or other works as agreed by the Director.

## 2. Specific Conditions

- 2.1 No artificial chemical fertilizers shall be used on the golf course and turf area.
- 2.2 No artificial chemical pesticides shall be used on the golf course and turf area.
- 2.3 A continuous earth bund, of at least 1.5m high, shall be formed along the perimeter of the golf course to contain surface runoff.
- 2.4 The Project shall be constructed with a subsurface drainage system to direct the rainfall and irrigation water inwards to the artificial lakes as indicated in Figure 2.
- 2.5 The artificial lakes and the stream system of the Project shall be constructed with an impermeable liner system as indicated in Figure 3 to retain water and to prevent any leakage downwards into the ground.
- 2.6 The Permit Holder shall submit an Environmental Monitoring and Audit (EM&A) Manual to the Director for approval no later than two weeks before commencement of construction of the Project. The EM&A Manual shall cover details of the water quality monitoring programme for construction and operation of the Project. The Permit Holder shall fully implement the EM&A programme in accordance with the requirements set out in the approved EM&A Manual for construction and operation of the Project.
- 2.7 The Permit Holder shall submit a turfgrass management plan (TMP) to the Director for approval no later than two weeks before laying of turfgrass for the Project. The plan shall be prepared by a competent personnel trained in the theory and practice of turfgrass management and maintenance. The TMP shall cover in sufficient detail on, but not limiting to, the following aspects: -
- (i) Turfgrass species (including name, type and origin);
  - (ii) Fertilizers usage (including the type, dosage, frequency of application of fertilizers);
  - (iii) Integrated pest management methodology (including a monitoring and record-keeping programme on pest occurrence, defining pest response threshold levels, recording the control methods including the type, dosage, frequency of application of biological pest control agents);
  - (iv) Review calculations on worst-case nutrient loading of the golf course during turfgrass establishment and operation; and
  - (v) Reporting schedule to the Director.
- 2.8 No overflows from the artificial lakes of the golf course shall be allowed, via Outfall No.8 as indicated in Figure 4 or any other outfalls, if the water quality of the lake fails to meet the criteria for discharge as stipulated in EM&A Manual approved under Condition 2.6. The proposed golf course shall be designed to be a self-containing structure to retain rainwater and to prevent any overflow from the artificial lakes to the surrounding marine water if required.
- 2.9 Floodlights shall be installed at an angle downwards away from the sensitive receivers including air traffic controllers in the Airport Traffic Control Tower.



- 2.10 To prevent attraction of birds, the golf course shall be designed with the following measures: -
- (i) The area of water surface shall not be more than 10% of the total site area;
  - (ii) The lake edge shall be profiled to prevent birds from wading; and
  - (iii) Plant species which will discourage foraging, perching or nesting of birds shall be selected and planted in the Project.
- 2.11 The Permit Holder shall conduct a regular soil sampling and testing before operation, during operation and before expiry of operation of the Project to confirm and verify that there is no land contamination caused as a result of the operation of the golf course. The Permit Holder shall deposit the following submissions to the Director:
- (i) A soil sampling and monitoring plan no later than two weeks before commencement of construction of the Project to include details of sampling plan, parameters to be analysed, necessary remedial measures and reporting requirements;
  - (ii) A baseline monitoring report no later than two weeks before operation of the Project to confirm the baseline condition of the soil;
  - (iii) A soil contamination assessment report no later than four weeks after expiry of operation of the Project to include all soil monitoring and testing results and interpretations and if any remedial measures are required.

**Notes :**

1. This Permit consists of three parts, namely, Part A (Main Permit), Part B (Description of Designated Project) and Part C (Permit Conditions). Any person relying on this permit should obtain independent legal advice on the legal implications under the Ordinance, and the following notes are for general information only.
2. If there is a breach of any conditions of this Permit, the Director or his authorized officer may, with the consent of the Secretary for the Environment, Transport and Works, order the cessation of associated work until the remedial action is taken in respect of the resultant environmental damage, and in that case the Permit Holder shall not carry out any associated works without the permission of the Director or his authorized officer.
3. The Permit Holder may apply under Section 13 of the Environmental Impact Assessment Ordinance (the "Ordinance") to the Director for a variation of the conditions of this Permit. The Permit Holder shall replace the original permit displayed on the Project site by the amended permit.
4. A person who assumes the responsibility for the whole or a part of the Project may, before he assumes responsibility of the Project, apply under Section 12 of the Ordinance to the Director for a further environmental permit.
5. Under Section 14 of the Ordinance, the Director may with the consent of the Secretary for the Environment, Transport and Works, suspend, vary or cancel this Permit. The suspended, varied or cancelled Permit shall be removed from display at the Project site.
6. If this Permit is cancelled or surrendered during construction or operation of the Project, another environmental permit must be obtained under the Ordinance before the Project could be continued. It is an offence under Section 26 (1) of the Ordinance to construct or operate a designated project listed in Schedule 2 of the Ordinance without a valid environmental permit.
7. Any person who constructs or operates the Project contrary to the conditions in the Permit, and is convicted of an offence under the Ordinance, is liable:
  - (i) on a first conviction on indictment to a fine of \$2 million and to imprisonment for 6 months;
  - (ii) on a second or subsequent conviction on indictment to a fine of \$5 million and to imprisonment for 2 years;
  - (iii) on a first summary conviction to a fine at level 6 and to imprisonment for 6 months;
  - (iv) on a second or subsequent summary conviction to a fine of \$1 million and to imprisonment for 1 year; and

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- (v) in any case where the offence is of a continuing nature, the court or magistrate may impose a fine of \$10,000 for each day on which he is satisfied the offence continued.
8. The Permit Holder may appeal against any condition of this Permit under Section 17 of the Ordinance within 30 days of receipt of this Permit.
9. The Notes are for general reference only and that the Permit Holder should refer to the EIA Ordinance for details and seek independent legal advice.