Ocean Park Master Redevelopment Project

EP-249/2006/B – Condition 3.4

Monthly EM&A Report – April 2012

Certified by _____ **on 15-May-12**

Lindsay Pickles (ETL)

Verified by Independent Environmental Checker on 16-May-12

IEC Certificate attached in the submission? Yes

Ocean Park Master Redevelopment Project

Environmental Permit No. EP-249/2006/B - Condition 3.4

Monthly EM&A Report – April 2012

Submitted by Ocean Park Corporation on 15-05-2012

This is to verify that

Monthly EM&A Report – April 2012

Submitted by Ocean Park Corporation

On 15-05-2012

Has been verified by the undersigned.

Signed

Dr Anne F Kerr
Independent Environmental Checker (IEC)
Retained by Ocean Park Corporation
pursuant to Environmental Permit No. EP-249/2006/B

Date 16 May 2012

Ocean Park Master Redevelopment Project

Monthly Environmental Monitoring & Audit Report – April 2012


Summit


Waterfront

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Part 1 Project Overview

Executive Summary

This is the combined monthly EM&A Report for Ocean Park Master Redevelopment Project, which includes CS03 "Thrill Mountain and Polar Adventure" under Part 2. This report presents the results of EM&A works conducted in the reporting month of April 2012 (from 26 March 2012 to 25 April 2012) for construction works and in the reporting month of March 2012 (27 February 2012 to 26 March 2012) for Operational Monitoring.

Construction works at the Entry Plaza, Aqua City and Grand Aquarium under CI07 have been completed in January 2011 and, as advised to EPD on 1 April (PD/PW/GOV/151/006107), no further construction monitoring will be undertaken.

Construction works at the Summit, CS02 for the Rainforest have been completed in April 2011.

At the Summit, Contract CS03, for the Thrill Mountain and Polar Adventure, is still underway. Other than ongoing Coral Survey, there will be no construction monitoring undertaken. The audits will continue to be carried out by the Contractors ET and OPC's ET and verified by the IEC.

Environmental monitoring for the Park's Operations has commenced upon the opening of Aqua City and with the commencement of the Symbio Show on 27 January 2011. The 14th Air Quality and Noise Monitoring Report for the Ocean Park Symbio Show is included in this report under Part 3.

No complaint, non-compliance from IEC, summons or prosecution related to environmental issues was made against the Ocean Park Master Redevelopment Project in the reporting period of April 2012 for Construction works and in the reporting month of March 2012 (27 February 2012 to 26 March 2012) for Operational Monitoring.

As the request to EPD for termination of the Air Quality (RSP) and Noise monitoring programmes for the operation of the Lagoon night shows has been approved by EPD on 13 February 2012, no noise monitoring was conducted during this operational period and air quality monitoring has been carried out at 2 monitoring stations only.

1. Introduction

The "Master Redevelopment Project of Ocean Park" (hereinafter known as the "Project") is implemented by the Ocean Park Corporation at its existing site of Ocean Park and Nam Long Shan, Aberdeen. The Project involves both reconstruction/modification of existing facilities and expansion of the Park under Environmental Permit, EP-249/2006/B.

The construction works of the project consists of various contracts. Details of the contracts, which are required to perform the EM&A programme, are shown below.

Contract No.	Contract Title	Contractor	Construction Commencement
CI-05	Site Formation, Funicular Tunnel and Miscellaneous Works	Dragages-Bouygues JV	12 March 2007 and Construction phase has ceased in early June 2009
CS-01	Back of House for Marine Mammal Veterinary Hospital	Kaden – ATAL JV	26 March 2007 and Construction phase has ceased in mid-October 2008
CW-02	Astounding Asia	W. Hing Construction Co. Ltd.	1 August 2007 and Construction phase has ceased in mid-February 2010
CI-07	Entry Plaza, Aqua City and Grand Aquarium	Leighton Contractors (Asia) Ltd.	15 August 2008 and Construction Phase has ceased in January 2011
CS-02	Rainforest	W. Hing Construction Co. Ltd.	11 May 2009 and construction has ceased in April 2011
CS-03	Thrill Mountain and Polar Adventure	Kaden – ATAL JV	2 November 2009

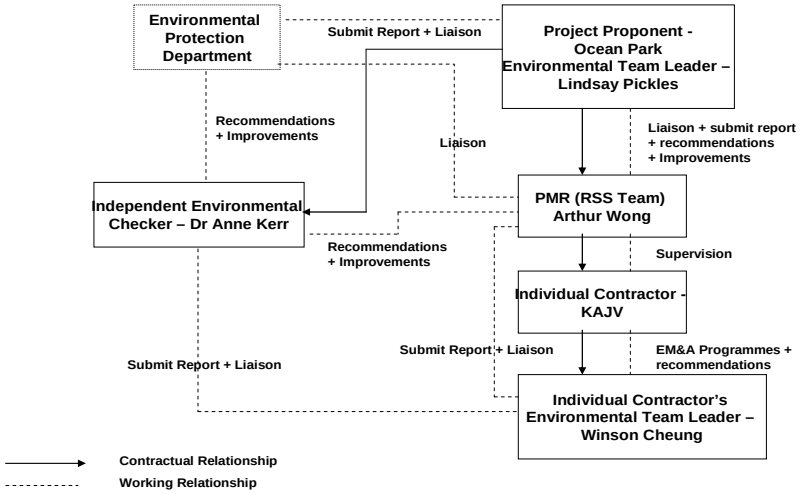
The Contractors conduct environmental audits during the construction stage and produce contract specific monthly EM&A reports. This is the combined monthly EM&A Report including the IEC audit findings, CS03 Monthly EM&A Report, and the Operational Monitoring Report for the Ocean Park Symbio Show.

This report presents the results of EM&A works conducted in the reporting month of April 2012 (from 26 March 2012 to 25 April 2012) for construction works and in the reporting month of March (27 February 2012 to 26 March 2012) for Operational Monitoring.

2. Project Organisation

The structure of the environmental management team is shown in below figure.

Figure 1.1 – Management Organisation



3. Construction Works Undertaken during the Reporting Month

In the reporting month, the construction activities are summarised as follows.

CI-05

- Construction phase has ceased in early June 2009.

CS-01

- Construction phase has ceased in mid-October 2008.

CW-02

- Construction phase has ceased in mid-February 2010.

CI-07

- Construction phase has ceased in January 2011.

CS-02

- Construction phase has ceased in April 2011.

CS-03

- Fitting Out works at Tuxedos Restaurant of South Pole;
- Finishing works at Bobsled Station and trial running of rides;
- Install E&M services;
- Apply wall painting in P.A. Building;
- Installation of glass balustrade in P.A. Building;
- Install seating area wall stone tile
- Seawater infill to Pool of PA
- Install wall stone tile;
- Installation of theme works at P.A. Building and
- Disposal Existing Stockpile.

4. Permits and License Status

4.1 Environmental Permit

The Environmental Impact Assessment (EIA) Report of the Project has been approved by the Environmental Protection Department (EPD) (Register No.: AEIAR-101/2006) on 12 July 2006. Subsequently, EPD issued Environmental Permit (EP) for the construction and operation of the project. Table below is a full list of the EPs.

EP No.	Issue Date	Key Variation
EP-249/2006	28 July 2006	First EP
EP-249/2006/A	25 September 2006	• Enhance the roosting habitat for freshwater birds by enlarging Pond 35 and its surrounds with a total area of no less than 120 squares meters and no construction works and discharge from construction sites shall be allowed within Pond 35 after enhancement. • Filling of Pond 37 at the Lowland Area. • Submission of the as-built drawings showing the enhancement works of Pond 35.
EP-249/2006B	3 November 2010	• Total sound power level of all loudspeaker clusters shall not exceed 109 db(A) and the sound pressure level at 9m away from each loudspeaker cluster shall not exceed 75 db(A). • Submit noise review study. • Submit detail design of night time functional and thematic lighting. • Trial pyrotechnical special effects materials display and submit air quality sampling plan.

4.2 CNP

Table below shows a list of CNP within the reporting month.

Permit No.	Starting Date	Expired Date	Validity	Location	Contract No.	Status
CS-03 (KAJV)						
GW-RS1128-11	9-Dec-11	31-May-12	*Various*	Top of Nam Long Shan Road	CS03	Valid

4.3 Other Permits & Licenses

Tables below show lists of other permits & license for individual contracts.

CS-03

Permit/Ref/No	Valid Period		Section	Status
Notification of Construction Work under APCO				
311433	N/A	N/A	Thrill Mountain and Polar Adventure	Valid
Water Discharge License				
WT00005926-2010	12-Feb-10	28-Feb-15	Thrill Mountain and Polar Adventure	Valid
Registration as Chemical Waste Producer				
WPN5213-176-K2880-02	25-Nov-09	N/A	Thrill Mountain and Polar Adventure	Registered
Construction Waste Disposal Billing Account with EPD				
7009695	N/A	N/A	Thrill Mountain and Polar Adventure	Issued

5. EP Submissions Status

Environmental submissions to EPD since the commencement of construction works at Ocean Park, i.e. from 12 March 2007 to 25 April 2012 are as below.

Contract	Submissions
CI-05	• Notification of Commencement Date • Management Organisation Chart • Construction Programme • Drainage Proposal • Silt Curtain Proposal • Waste Management Plan • Baseline Air Quality and Noise Monitoring Report • Transplantation Proposal for Uncommon Species • Baseline Coral Survey Report • As-built Drawings of Pond 35 • Detailed Compensatory Planting As-built Drawing
CS03	• Monthly EM&A Report (March 2012)
City Bus Limited	• Written Notice on Completion of TPH Contaminated Soil Disposal • Written Notice on Completion of Solidification Treatment of Heavy Metals Contaminated • As-built Remediation Plan
Hong Kong School of Motoring Ltd.	• Confirmation Letter to confirm that Land Contamination remediation Works within HKSM has been completed
Environmental Permit Conditions	• Noise Review Study Report • Glare impact Assessment report • Air Quality Sampling Plan • Trial PSEM Displays - Air Quality Monitoring Report • Use of PSEM for Two Shows - Air Quality Sampling Plan • Trial PSEM Displays - Preliminary Air Quality Monitoring Results

	• Trial Two PSEM displays, Air Quality Monitoring Report (7 Feb 2012) • Shrubland Compensatory Proposal (28 Feb 2012)

6. Materials Management

Section 6.17 in the EIA report specified the disposal of materials to the public fill reception facilities should be considered as last resorts with the preferred approach to reuse the material within the project and/or other projects.

The amounts of different types of materials generated by the activities of the Project in the month are shown in following table. The total materials quantities of the project showed that the reuse of materials was maximized and the disposal to the public filling facilities was minimized. Mitigation measures under the Waste Management Plan (WMP) revision D have been implemented during the reporting period.

Materials Type	Disposal Locations	CS-03	Total
C&D Waste	SENT	249.80 Tonnes	249.80 Tonnes
	TKOSF	--	-
	TMSF	--	-
C&D Material	CWPFBP	88.50 Tonnes	88.50 Tonnes
	TKOFB	--	-
Chemical Waste	Collected by licensed collector	0 Litres	0 litres
General Waste	Collected by licensed collector	--	-

7. Environmental Monitoring and Results

7.1 Monitoring Requirements

Under EP-249/2006/B condition 3.2, impact environmental monitoring including sampling, measurements and necessary remedial action should be conducted in accordance with the requirements of the EM&A Manual, which has been updated to include operational monitoring of the Ocean Park Symbio Show.

7.1.1 Construction Monitoring

Construction works at the Entry Plaza, Aqua City and Grand Aquarium under CI07 have been completed in January 2011 and, as advised to EPD on 1 April 2011 (PD/PW/GOV/151/006107), no further construction monitoring will be undertaken.

One contract at the Summit, CS03 for the Thrill Mountain and Polar Adventure is still underway. However, other than ongoing Coral Survey, no construction monitoring will be undertaken for these works, only auditing works. The audits will continue to be carried out by the Contractors ET, certified by the OPC's ET and verified by the IEC.

Terrestrial Ecology

Monitoring of the health and condition of the transplanted plant species of conservation interest should be conducted at least once a month during the first 12 month after transplantation. Proposed monitoring location would be next to the Contract CI-05 site office.

Coral

The locations of the coral monitoring stations are presented in the table below.

Coral Impact Monitoring Stations	Identity/Description
Site 1	Seaside near the Lowland
Site 2 to Site 5	Around Headland
Control Station	Between Near Round Island and Chung Hom Kok

Ocean Park Symbio Show

Operational Stage Monitoring for Ocean Park Symbio Show for Environmental Monitoring for the Symbio Show commenced on the 27 January 2011. Following the completion of one year's monitoring, a justification paper has been presented for the termination of the Air Quality (RSP) and Noise monitoring programmes for the operation of the Lagoon night shows. Approval has been received on 13 February 2012.

Air Quality Monitoring for AM2 and AM3 only has been carried out, being the final monitoring under the 12 month operational monitoring programme.

Air Quality monitoring was conducted at the agreed designated air quality monitoring station (AQMS) located at locations as presented in the Table below.

AQMS ID	Location	Sampling Height (m above ground)
AM2	Landscape Storage Area in Ocean Park	3
AM3	Rooftop of Main Medical Block of Graham Hospital	20

One 24-hr average RSP sample was collected on each scheduled day for monitoring by a High Volume Sampler (HVS) following the USEPA method, EPA IO-2.1. Calibration of the equipment has followed the requirements set out in EPA IO-2.1.

Termination of noise monitoring has been approved by EPD on 13 February 2012 and hence no noise monitoring was conducted during this reporting period.

7.2 Monitoring Results

7.2.1 Construction Monitoring Results

Terrestrial Ecology

According to the requirement in the EM&A Manual, the monitoring of transplanted plants at the receptor has been completed in August 2008.

Coral

No coral monitoring survey was carried out in March 2012. The next coral monitoring survey will be carried out in May 2012.

7.2.2 Operational Stage Monitoring for Ocean Park Symbio Show

The report on the impact monitoring results for the open-air night show, which commenced on 27 January 2011, is provided at Part 3 of this report.

Air Quality Monitoring

Monthly monitoring of 24-hr average RSP for this reporting period was carried out at AM2 and AM3 on 14 March 2012.

All measured 24-hour average RSP concentrations have been well below the A/L level of μgm^{-3}. No exceedance of A/L Level is monitored during the reporting period. Two similar open air nights shows were performed during hour 19:00 and hour 21:30 respectively. The monitoring covered the RSP contribution from two shows.

Monitoring Location	Monitoring Date	24-hr RSP Concentration (μgm^{-3})	Action/Limit Level (μgm^{-3})
AM2 (Landscape Storage Area)	14 March 2012	31	180
AM3 (Roof top of the Main Medical Block of Graham Hospital)	14 March 2012	30	180

8. Site Audit

8.1 IEC Site Audit

IEC conducted monthly site audit on CS-03 on 17 April 2012. Audit checklists are attached in Appendix A of Part 1.

CS-03 Observations:

- Over 20 cement bags were not fully covered. The Contractor was reminded to fully cover an piles of over 20 cement bags on-site with tarpaulin sheet or other means to suppress dust.

8.2 Non- Compliance

No non-compliances were recorded in April 2012.

9. Implementation status of Environmental Mitigation Measures

Please see Part 2, of this Report for the individual contractual report for the details of the implementation of environmental mitigation measures.

10. Summary of Complaint, Summon or Prosecution

No complaint, summon or prosecution was recorded in the reporting month.

11. Future Issues

Key Issues to be considered in the coming month include:

CI-05

- Construction phase had ceased in early-June 2009.

CS-01

- Construction phase had ceased in mid-October 2008.

CW-02

- Construction phase had ceased in mid-February 2010.

CI-07

- Construction phase had ceased in January 2011.

CS-02

- Construction phase had ceased in April 2011.

CS-03

- Fitting Out works at Tuxedos Restaurant of South Pole;
- Finishing works of Bobsled Station superstructure and trial running of rides;
- Install all the ceiling area;
- Apply wall painting in P.A Building;
- Install wall stone tile;
- Install entrance glass sliding door in P.A Building;
- Lay floor carpet in P.A. Building;
- Installation of glass balustrade at North P.A;
- Install glass partition wall in PA Building;
- Installation of theme works at P.A Building and
- Disposal Existing Stockpile.

12. Conclusion and Recommendation

12.1 Conclusion

No non-compliance from IEC, complaint, summons or prosecution related to environmental issues was made against the Ocean Park Master Redevelopment Project in the reporting period of April 2012 for construction works and in the reporting period of March for operations.

All measured 24-hour average RSP concentrations have been well below the A/L level of μgm^{-3}. No exceedance of A/L Level is monitored during the reporting period.

Termination of noise monitoring has been approved by EPD on 13 February 2012 and hence no noise monitoring was conducted during this reporting period.

12.2 Recommendation

According to the environmental audit performed in the reporting month, the following recommendations are made:

Air Quality Impact

- To implement dust suppression measures on dry surfaces and adequately cover cement stockpiles.

Water Quality Impact

- To minimize water discharge runoff into nearby water body.
- To treat site surface runoffs and wastewater generated from various construction activities with wastewater treatment system.
- Silt removal facilities, channels, manholes and wastewater treatment system should be frequently cleaned the deposited silt and grit to maintain in proper condition.

Waste/Chemical Management

- To check for any accumulation of waste materials or rubbish on site.
- To avoid any discharge of chemical waste or oil directly from the site.
- To regularly and properly collect, store and dispose of all waste types, including floating refuses around the silt curtain.

Appendix A

Part 1 Independent Environmental Checker's Site Inspection Records

Ocean Park Master Redevelopment Project
Contract P007
Independent Environmental Checker

MONTHLY SITE INSPECTION CHECKLIST

Inspection Date	17/04/2012	Time	14:00	Inspected By	EM: Lindsay Pickles IEC: Florence Yuen Contractor: CS03: Winson Chung
Site Location	CS03				

Weather

Condition	☐	Sunny	☐	Fine	☐	Overcast	☐	Drizzle	☑	Rain	☐	Storm	☐ Hazy
Temperature	23°C				Humidity	☑	High	☐	Moderate	☐	Low		
Wind	☐	Calm	☑	Light	☐	Breeze	☐	Strong	☐	Direction			

		Close-out on last comments Y/N	N/A or not obs	Yes	No	Photo/Remarks
	Construction Noise					
S2.18	Is a valid Construction Noise Permit (CNP) obtained for works during restricted hours?			✓		
S2.26	Good Site Practices:					
	• Are the operating plants well-maintained and serviced regularly?			✓		
	• Are silencers or mufflers utilized on construction equipment? Are they properly maintained?			✓		
	• Is the mobile plant sited far enough from NSRs?			✓		
	• Are intermittently used machines and plants shut down between work periods?			✓		
	• Is the plant known to emit noise strongly in one direction, if any, oriented to direct noise away from the NSRs?		✓			
	• Is the stockpile or other structures utilized effectively, wherever practicable, in screening noise from the works?		✓			
S2.27	Are suitable quiet plants adopted?			✓		
S2.28	Are movable barriers used for both movable PME and stationary PME?		✓			
S2.29	Do the screening materials used achieve the predicted noise reduction?		✓			
S2.30	Are the noisy works avoided during examination period of the nearby school?		✓			
	Blasting Noise					
S2.32	• Are the NSRs informed of the blasting work in advance?		✓			
	• Is sufficient time allowed for alerting all the potential NSRs prior to every blasting work?		✓			

	• Are proper procedures put in place to alert and minimise any startling effect on the staff working in Ocean Park?		✓		
	• Is the optimal amount of charge used evaluated for noise reduction?		✓		
	Landscape and Visual				
S3.10	Consideration on existing surrounding vegetation:				
	• Are temporary tree nurseries set up?		✓		
	• Is "no-intrusion zones" implemented?		✓		
	• Is the existing vegetation protected from damage?			✓	
	• Are hill fire prevention measures taken?			✓	
	• Is dust and erosion controlled for exposed soil?			✓	
	• Are the irrigation networks set up throughout the Establishment Period?		✓		
	• Is Quarterly Report on existing trees to be retained or transplanted prepared by the Contractor?		✓		
S3.11	Consideration on appearance and view:				
	• Is the appearance of hoardings suitable?			✓	
	• Is the appearance of construction workers, plants/machines suitable?			✓	
	• Are the screening and alignment of the temporary barging point and conveyor system suitable?		✓		
	• Are the selected security floodlights suitable		✓		
	Ecology				
S4.5	Transplantation:				
	• Is the transplantation work supervised by a qualified botanist/horticulturalist in the ET?			✓	
	• Are the transplanted plant species of conservation interest monitored during the first 12 months after transplantation?			✓	
S4.7	Construction:				
	• Is the runoff entering watercourses avoided by control measure, especially during heavy rain?			✓	
	• Is the site runoff directed to regularly cleaned and maintained silt traps (or oil separators)?			✓	
	• Are sediment traps included in drainage to collect and control construction run-off?			✓	
	• Is suitable size silt traps or oil interceptor used?			✓	
	• Is vegetation survey carried out to determine the feasibility and suitability of individual plants for transplantation?			✓	
	• Are the trees located within the works area preserved suitably?			✓	
	• Are individual plants of conservation interest transplanted prior to the construction phase?			✓	
	• Are the equipments and stockpiles placed in designated works areas and access routes selected on existing disturbed land to minimise disturbance to natural habitats?			✓	

- Are construction activities restricted to the work areas demarcated? | | | ✓ | | |
- Are waste skips provided to collect general refuse and construction wastes? | | | ✓ | | |
- Are the wastes disposed of timely and properly off-site? | | | ✓ | | |
- Is open burning on works sites prohibited? | | | ✓ | | |
- Are native plant species made use of as far as possible on newly formed land? | | | ✓ | | |

Construction Waste

S5.4 Good Site Practices

- Are arrangements made for collection and effective disposal of all wastes generated? | | | ✓ | | |
- Are the waste management and chemical handling procedures followed? | | | ✓ | | |
- Are sufficient waste disposal points provided? | ✓ | | | | |
- Are the wastes disposed of regularly? | ✓ | | | | |
- Are appropriate measures taken to minimise windblown litter and dust during transportation of waste by either covering trucks or transporting wastes in enclosed containers? | | | ✓ | | |
- Are the drainage systems, sumps and oil interceptors regularly cleaned and maintained? | | | ✓ | | |

S5.5 Waste Reduction Measures:

- Is the C&D waste from demolition and decommissioning of existing facilities sorted to recover recyclable materials? | | | ✓ | | |
- Are different types of wastes segregated and stored in different containers, skips or stockpiles to enhance reuse or recycling and the proper disposal? | | | ✓ | | |
- Are aluminium cans segregated in labelled bins and collected by individual collectors for recycling? | | | ✓ | | |
- Are proper storage and site practices maintained to minimise the potential for damage or contamination of construction material? | | | ✓ | | |
- Are the construction materials planned and stocked carefully to avoid unnecessary generation of waste? | | | ✓ | | |

S5.7 General Refuse

- Is the general refuse stored in enclosed bins or compaction units separate from C&D material? | | | ✓ | | |
- Is the general refuse removed regularly by a waste collector? | | | ✓ | | |

S5.8 C&D Material

- Are the excavated materials from site formation of the expansion areas and tunnel construction for the funicular system reused on-site as backfilling material and for landscape works? | | | ✓ | | |
- Are the surplus rock and other inert C&D material disposed of at the public fill sites? | | | ✓ | | |
- Is a waste management plan prepared? | | | ✓ | | |
- Is a recording system present for the record of amount of wastes generated, recycled and disposed? | | | ✓ | | |

	• Is the trip-ticket system required in ETWB TCW No.31/2004 followed on site?			✓		
	Chemical Wastes					
S5.9	Is chemical wastes generated from the works? And if yes,			✓		
	• Is the Contractor registered as a Chemical Waste Producer?			✓		
	• Are good quality containers used for separating and storing chemical wastes?			✓		
	• Are appropriate labels securely attached on each chemical waste container to indicate their corresponding chemical characteristics?			✓		
	• Is the Contractor licensed to transport and dispose of the chemical wastes?			✓		
	Land Contamination					
S6.11	• Is the contact of construction workers with contaminated materials minimised by using bulk earth-moving excavator equipment?		✓			
	• Are appropriate cloth, personal protective equipment, hygiene and washing facilities provided to minimise exposure to any contaminated material?		✓			
	• Is stockpiling of contaminated excavated materials avoided?		✓			
	• Is the use of contaminated soil for landscaping without proper treatment prohibited?		✓			
	• Are vehicles containing excavated materials covered properly to limit potential dust emissions or contaminated wastewater runoff?		✓			
	• Is the speed of the trucks carrying contaminated materials controlled?		✓			
	• Are the necessary waste disposal permits obtained from appropriate authorities in according with Waste Disposal (Chemical Waste) (General) Regulation?		✓			
	• Are silt removal facilities provided with retention time for silt/sand traps of 5 minutes under maximum flow conditions?		✓			
	• Are the records maintained for quantity of wastes generated and disposal of?		✓			
	Remediation Process					
S6.12	• Is biopile covered by tarpaulin or low permeable sheet to avoid dust emission?		✓			
	• Is vented air from biopile treated by blower and carbon adsorption system before released to the atmosphere?		✓			
	• Are the materials which may generate airborne dust emissions adequately wetted prior to and during the loading, unloading and handling operations?		✓			
	• Are silencers installed at biopile blower to minimise noise impact?		✓			
	• Are quiet plants such as generator and blower used for biopile?		✓			
	• Are the mixing process and other associated material handling activities properly scheduled to minimise potential noise impact?		✓			
	• Are impermeable liners placed at the bottom of biopile?		✓			

- Is leachate collection sump construction along the perimeter of biopile? | | ✓ | | | |
- Is the lachate recycled back to the biopile or truck away to Chemical Waste Treatment Centre for disposal? | | ✓ | | | |
- Is the mixing of contaminated soils and cement/water/other additive(s) undertaken at a solidification plant to minimise the potential for leaching? | | ✓ | | | |
- Is a concrete bund construction along the perimeter of the solidification/stabilisation area to prevent runoff? | | ✓ | | | |
- Are the loading, unloading, handling, transfer and storage of cement carried out in an enclose system? | | ✓ | | | |
- Are the contaminated soils transported by roll-off trucks (containerisation)? | | ✓ | | | |
- Is temporary hoarding provided around the treatment area to minimise the visual impact? | | ✓ | | | |

Air Quality

S7.23 Good Site Practices

- Is watering carried out regularly with complete coverage to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather? | | | ✓ | | |
- Is watering frequently carried out for particularly dusty construction areas, temporary stockpiles and areas close to ASRs? | | | ✓ | | |
- Are the aggregate or dusty material storage piles covered with their side enclosed to reduce emissions? Or if this is not practicable, is watering applied to aggregate fines? | | | | ✓ | ①P1150357
- Is open stockpiles avoided or covered and placed far enough from the ASRs? | ✓ | | | | |
- Is the dropping height of material restricted to minimise the fugitive dust from unloading/loading? | | | ✓ | | |
- Is tarpaulin used to cover all dusty vehicle loads transported to, from and within the site? | | | ✓ | | |
- Are vehicle wheel and body washing facilities available at the exit points of the site? | | | ✓ | | |
- Are wind shield and dust extraction units or similar dust mitigation measures provided at the loading points? If dust generation is likely during the process, particularly in dry seasons, is water sprinklers provided at the loading site? | ✓ | | | | |
- Do the vehicles comply with the recommended speed limit of 10 km/h on unpaved roads? | | | ✓ | | |
- Are dusty activities rescheduled during high-wind conditions? | | ✓ | | | |
- Are the routing of vehicles and positioning of construction plants at maximum possible distance from the ASRs? | | | ✓ | | |
- Is suitable buffer zone provided and work areas fenced off with hoarding (not less than 2.4m from ground level)? | | | ✓ | | |

S7.24 Drilling & Blasting

- Is watering carried out on the exposed area after blasting? | | ✓ | | |
- Is vacuum extraction drilling method used? | | ✓ | | |
- Is the blasting process carefully sequenced? | | ✓ | | |

	• Is the firing of explosive carried out in the morning prior to opening of the Park?		✓			
S7.25	Crushing Plant					
	• Is water sprayed on the crusher?		✓			
	• Are fabric filters installed for the crushing plant?		✓			
	• Is chute or dust curtain used for controlling dust when transferring materials from crusher to the conveyors?		✓			
S7.26	Barging Point & Conveyor Belt System					
	• Are the conveyors placed within enclosed structures?		✓			
	• Is profiled steel cladding provided at two sides of loading point?		✓			
	• Are dust suppression sprays installed and operated at the feeding inlet and outlet?		✓			
	• Is the barging point placed within an enclosed structure incorporating an enclosed chute for material transfer to the barge?		✓			
	• Is a flexible curtain hanged on the enclosed chute to prevent dust emission when excavated materials/rocks transported into the barge?		✓			
	Water Quality					
S8.3	Site Run-off and Drainage					
	• Are all sewer and drainage connections sealed to prevent debris, soil, sand etc. from entering public sewer before commencing any site formation work?			✓		
	• Are temporary ditches provided to facilitate runoff discharge into appropriate watercourses, via appropriate sized silt retention pond?			✓		
	• Are cut-off ditches provided for all major site clearance/excavation works where soils would be exposed to control runoff from the areas?			✓		
	• Are channels, earth/concrete bunds and sand bags deployed to direct surface runoff?			✓		
	• Are catchpits and perimeter channels constructed in advance of relevant site formation works?			✓		
	• Are the boundaries of earthworks marked and surrounded by dykes or embankments for flood protection?			✓		
	• Are sand/silt traps and sediment basins provided to remove sand/silt particles from runoff?			✓		
	• Are silt removal facilities, channels and manholes maintained and deposited silt/grit removed regularly to ensure that these facilities are functioning properly at all times?			✓		
	• Are exposed soil surfaces covered?			✓		
	• Is the water pumped out from foundation excavations discharged into silt removal facilities?			✓		
	• Are exposed soil areas minimised to reduce potential for increased siltation and contamination of runoff?			✓		
	• Are earthwork final surfaces well compacted and is subsequent permanent work or surface protection performed immediately?			✓		

	• Is the rainwater pumped out from trenches or excavation directed to silt removal facilities before discharge?			✓	
	• Are open stockpiles of construction materials or construction wastes of more than $50m^3$ covered with tarpaulin during rainstorm?			✓	
	In case of an excavation in rainy seasons: • Is temporary exposed slope/soil surfaces covered by tarpaulin as far as practicable?			✓	
	• Are intercepting channels provided to prevent storm runoff from washing across exposed soil surfaces?			✓	
	• Are surface protection measures and arrangements implemented to prepare for arrival of a rainstorm?			✓	
	Coral Sites				
S8.4	• Are enhanced (with the use of flocculants added) sand/silt removal facilities employed for treatment of runoff from the major excavation at the Summit?			✓	
	• Is a silt curtain system used to enclose the construction phase discharge point at Tai Shue Wan?			✓	
	• Are debris and refuse collected, handled and disposed of properly to avoid entering any nearby water bodies and public drainage system?			✓	
	• Are stockpiles of cement and other construction materials kept covered when not being used?			✓	
	• Are oils and fuels used and stored in designated areas which have pollution prevention facilities (Fuel tanks and storage areas provided with locks and sited on sealed areas, within bunds of a capacity equality to 110% of the storage capacity of the largest tank)?			✓	
	• Are temporary sanitary facilities, such as portable chemical toilets, employed on-site where necessary to hand sewage from the workforce? Is a licensed contractor employed for disposal of waste matter and maintenance of these facilities?			✓	
	• Is a reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimize odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law?			✓	
	• Are aluminium cans recovered from the waste stream and collected separate labelled bins?			✓	
	• Are office wastes reduced through the recycling of paper?			✓	
	• Are training provided to workers on site cleanliness & waste management procedure?			✓	
	Cultural Heritage				
S10.6	If there is any work planned within one metre of the grave, is a one metre buffer zone provided around the grave and is the grave demarcated by temporary fence?			✓	
	Hazard to Life				
S11.3	Good Site Practices: • Is the area around the magazine free of vegetation?		✓		
	• Is the control of (small) fires planned and provided through the following?				

- Weekly checking of fire fighting equipment and the on-site fire water tank level. | | ✓ | | |
- Daily checking of all critical safety equipment on vehicle, including the fire extinguishers. | | ✓ | | |
- Maintaining back-up means of fighting fire on the explosive vehicles. | | ✓ | | |
- Providing safety training for drivers and other personnel present during explosive delivery with regard to operating fire hydrants and fighting of explosive fires. | | ✓ | | |

- Is the magazine secured against unauthorised entry and theft of explosive through the following?

- Maintaining a list of persons authorised to enter the magazine and ensuring the list is available to the magazine security guard. | | ✓ | | |
- Activating an alarm system that limits times at which explosive can be removed from the magazine and connecting the system to central security station. | | ✓ | | |
- Incorporating "Duress code" function in the alarm system. | | ✓ | | |
- Maintaining alarm system in good condition. | | ✓ | | |

- Is the magazine security guard located separately from the magazine complex? | | ✓ | | |

- Is the communication maintained in emergency with the following measures?

- Providing non-hazardous electronic equipment for persons working within 60 m of detonators. | | ✓ | | |
- Ensuring availability of phone numbers for all key personnel. | | ✓ | | |

- If there is a typhoon signal no. 3 or above, or black rainstorm signal, are all operations at magazine and transport ceased? | | ✓ | | |

- Is the risk of detonators explosion on vehicle reduced during transit through the following?

- Ensuring that magazine within vehicle is lined. | | ✓ | | |
- Limiting off-site transport to 5 to 6 a.m. each day. | | ✓ | | |
- Escorting vehicles with separate security vehicle when using the public road. | | ✓ | | |
- Ensuring that UN 1.4B packaging of detonators remains intact until handed over at blasting site. | | ✓ | | |

- Is the fuel isolation switch available on vehicle to prevent fire spreading in case a fire breaks out? | | ✓ | | |
- Is an experienced driver with accident-free record employed for explosive vehicle and security escort? | | ✓ | | |
- Are the drivers checked for health before employing? | | ✓ | | |
- Are the vehicles regularly checked to maintain in good condition to reduce chance of accident due to breaking down? | | ✓ | | |

- Is the truck fuel fire escalating to cause explosion avoided through the following means?

- Ensuring that the Contractor is aware of the potential hazards to site. | | ✓ | | |
- Maintaining appropriate fire fighting equipment. | | ✓ | | |

- Requiring the Contractor to plan and make emergency arrangements. | | ✓ | | |

- Is spare/redundant fire fighting equipment provided? | | ✓ | | |
- Can communications be maintained between two vehicles (drivers and security) during the trip to prevent collision of two explosive vehicles in case of an accident? | | ✓ | | |
- Are the processes of checking of condition of drivers to suspend any driver of concern carried out? | | ✓ | | |

Project specific measures:

- Is the speed of vehicle limited along the Ocean Park portion of Nam Long Shan Road within 100 m of the explosives magazine to 25 km/hr? | | ✓ | | |
- Is other contractors' use of the Ocean Park internal service road restricted during delivery of explosives, i.e. 6 to 7 a.m? | | ✓ | | |
- Is the Ocean Park guard required to call to the magazine guard on an hourly basis when explosives are stored in magazines? | | ✓ | | |
- Is the evacuation of part or all of Ocean Park Headland Area arranged in case of the explosive magazine being engulfed in fire? | | ✓ | | |
- Is the risk to the public from accidental initation during charging and blasting limited by the following means?
  - Closing the Ocean Park from commencement of charging holes until completion of blasting each day. | | ✓ | | |
  - Arranging for relevant authorities to post notices to mariners – warning them of blasting operations and advising them to stay away from a strip 100m wide immediately to the east of Headland from commencement of charge holes until completion of blasting each day (i.e. 9 a.m). | | ✓ | | |
  - Not operating amusement rides in the event of accidental explosion until confirmed free of critical damage. | | ✓ | | |
- If unexploded explosives are found in blasthole(s), is the opening of Ocean Park delayed or is part of the Ocean Park delayed when there are unspent explosives? | | ✓ | | |
- Is the opportunity for arson/deliberate initiation of explosive reduced with the following means?
  - Paying attention to the security alert status from the Government. | | ✓ | | |
  - Developing a security plan to address high alert level. | | ✓ | | |
- Is an emergency plan developed to address uncontrolled fire in magazine area? | | ✓ | | |
- Is the transfer of explosives between 5 to 6 a.m agreed by Mines Division? | | ✓ | | |
- Is the road surface along the explosive transportation route maintained? | | ✓ | | |
- Are the contractor's driver and security escort tested in respect of safety plan? Is the route driven before the driver undertakes the first delivery of explosives? | | ✓ | | |
- Is adequate space provided for the explosive vehicle to manoeuvre without reversing close to the magazine to limit the likelihood of vehicle accident? | | ✓ | | |
- Is lighting for explosive vehicles provided on temporary | | ✓ | | |

	road(s)?				
S11.4	• Is ammonium nitrate emulsion (ANE) delivered outside of Park opening times?		✓		

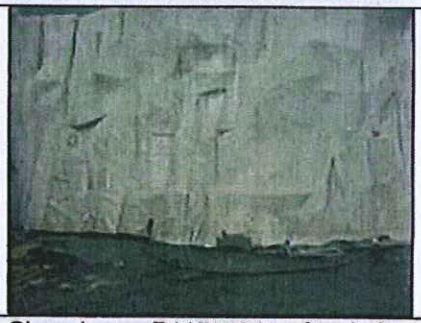
Observation for this month

(1) Over 20 cement bags were not fully covered. The Contractor was reminded to fully cover any piles of over 20 cement bags on-site with tarpaulin sheet or other means to suppress dust.

IEC Representative	Environmental Manager	Contractor's Representative CS03
Florence Yuen		
(Florence Yuen)	(Lindsay Pickles)	(Winson Chung)

Ocean Park Master Redevelopment Project
Contract P007
Independent Environmental Checker

MONTHLY SITE INSPECTION PHOTOS

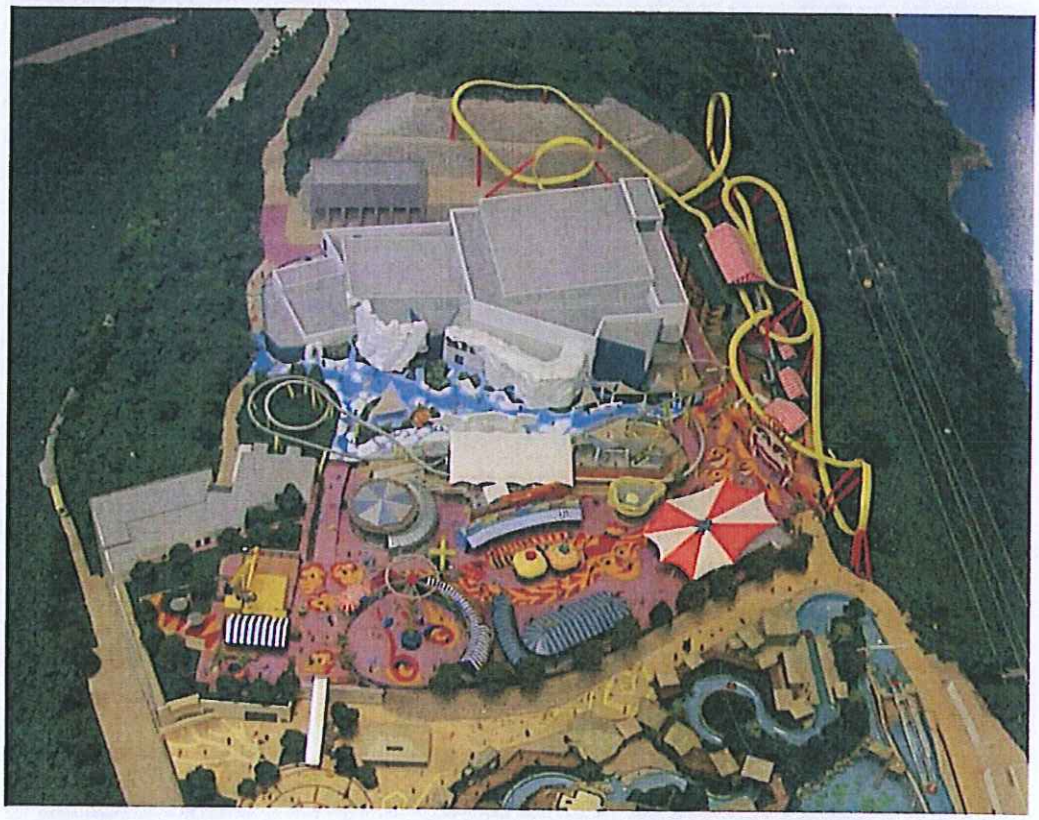
Contract CS03 Thrill Mountain and Polar Adventure	
Follow up observations in March 2012	
Observation in last site inspection	**Observation in this site inspection**
	
P1150156: Over 20 cement bags were not fully covered. The Contractor was reminded to fully cover any piles of over 20 cement bags on-site with tarpaulin sheets or other means to suppress dust.	P1150357: Over 20 cement bags were not fully covered. The Contractor was reminded to fully cover any piles of over 20 cement bags on-site with tarpaulin sheets or other means to suppress dust.
	
P1150158: General refuse and construction waste were scattered around the site. The Contractor was reminded to provide sufficient disposal points and remove the general refuse from site more frequently.	Closed - P1150350: Accumulation of general refuse and construction waste were no longer observed on-site.
	
P1150150: A few idled stockpiles of C&D materials were not covered. The Contractor was reminded to cover them with tarpaulin sheets or other means to suppress dust.	Closed – P1150351: Stockpiles of C&D materials was no longer observed on-site.

MONTHLY SITE INSPECTION PHOTOS

	
P1150154: Concrete mixing was carried with top cover only. The Contractor was reminded to carryout concrete mixing in an enclosure with top and 3 sides enclosed to suppress dust.	Closed – P1150352 Concrete mixing or similar activities was no longer observed on-site.

Part 2 CS-03 EM&A REPORT (April 2012)

KADEN - ATAL JOINT VENTURE



Contract No. CS03

Ocean Park Redevelopment Project - Thrill Mountain & Polar Adventure

Monthly EM&A Report

April 2012

Prepared By	Alex Enagnon Gbaguidi
Certified By	(Keith Kwan) (Acting Project Manager)

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EXECUTIVE SUMMARY

Introduction

This is the 29th monthly Environmental Monitoring and Audit (EM&A) Report prepared by Kaden – ATAL JV for the Contract No. CS03 "Ocean Park Redevelopment Project – Thrill Mountain & Polar Adventure" (hereinafter called "the Project"). The Project was commenced on 2nd November 2009. This document reports the findings of the environmental auditing works conducted in April 2012.

The major site activities undertaken in the reporting month included:

- Fitting Out works at Tuxedos Restaurant of South Pole;
- Finishing works of Bobsled Station and trail running of rides;
- Install E&M services;
- Apply wall painting in P.A Building;
- Installation of Glass Balustrade in P.A. Building;
- Install seating area wall stone tile;
- Seawater infill to Pool of P.A;
- Install wall stone tile;
- Installation of theme works at PA Building and
- Disposal Existing Stockpile.

Environmental Monitoring and Audit Works

Environmental monitoring and audit works for the Project was performed as stipulated in the updated EM&A Manual. Site audits were conducted once per week. Environmental site audits were conducted on 5th, 13th, 17th & 27th April 2012 and the environmental ICE monthly site inspection was conducted on 17th April 2012 and No non-compliance was observed during the site audits.

The implementation of the environmental mitigation measures was checked and the environmental management plan was submitted.

No notification of exceedance was received from the Assistance Project Environmental Team Leader (ETL) in the reporting month.

Environmental Licenses and Permits

Licenses/Permits granted to the Project include the Environmental Permit (EP) for the Redevelopment Project, Construction Noise Permit (CNP), Billing Account for Disposal of Construction Waste and Water Discharge License

Registration of Waste Producer (Chemical Waste), and notification pursuant to Section 3(1) of the Air Pollution Control (Construction Dust) Regulation was acknowledged by EPD.

Complaints and Prosecutions

No environmental complaint and prosecution was received in the reporting month.

Future Key Issues

Key issues to be considered in the coming month include:

- Fitting Out works at Tuxedos Restaurant of South Pole;
- Finishing works of Bobsled Station and Trail running of rides;
- Install all the ceiling area;
- Apply wall painting in P.A Building;
- Install wall stone tile;
- Install entrance glass sliding door in P.A. Building;
- Lay floor carpet in P.A. Building;
- Installation of glass balustrade at North P.A.;
- Install glass partition wall in P.A. Building;
- Installation of theme works at PA Building and
- Disposal Existing Stockpile.

1. INTRODUCTION

Background

1.1 Kaden-ATAL JV (the Contractor) was commissioned by the Employer to undertake the construction of the Contract No. CS03 "Ocean Park Redevelopment Project – Thrill Mountain & Polar Adventure" (the Project) and the project was commenced on 2nd November 2009. The site layout plan is illustrated in Figure 1.1.

1.2 These report summaries the environmental monitoring and audit works for the Project in the month of April 2012.

1.3 The scope of works for the Project includes:

(a) Construction of summit reservoir and associated pump room.
(b) Construction of vehicular bridge.
(c) Construction of the Polar Adventure Building.
(d) Construction of back of house facilities in the Polar Adventure Building.
(e) Construction of other one to three storey buildings in Polar Adventure.
(f) Construction of foundation and installation of Bobsled Ride.
(g) Installation of Life Support Systems.
(h) Construction of one to three storey buildings in Thrill Mountain.
(i) Construction of foundation and installation of the Floorless Coaster.
(j) Installation of the Ultramax, Aviator, Musik Express and Bumper Car.
(k) New roadwork, paving, footpaths and infrastructure support.
(l) Installation of building services.
(m) Soft and hard landscape works.
(n) Construction of underground utilities and services.
(o) Construction of earth retaining structures.
(p) Construction of all interior fitting out works.
(q) Supply and installation of all elevator(s) and escalator(s).
(r) Coral survey and maintenance of existing suit curtain.

Project Organizations

1.4 Different parties with different levels of involvement in the project organization include:

- The Engineer and Project Environmental Team Leader (ETL) – AECOM Consultant Ltd.
- Contractor – Kaden-ATAL JV.
- Independent Environmental Checker (IEC) – Mott MacDonald HK Ltd.

1.5 The responsibilities of respective parties are provided in Section the Contractor's EM&A Manual of the Project.

1.6 The key contacts of the Project are shown in **Table 1.1**.

Table 1.1 Key Project Contacts

Party	Name	Role	Phone No.	Fax No.
Project ET	Mr. Tommy Lau	RSS Representative (Safety & Environmental)	2552 1546	2552 1406
Contractor	Mr. Keith Kwan	Acting Project Manager	3582 6099	3582 4877
	Mr. Lai Tung Yee	Construction Manager	3582 6005	
Contractor's ET	Mr. Alex Enagnon Gbaguidi	Contractor's Assistance Environmental Team Leader	3582 4880	3582 4877
IEC	Miss Florence Yuen	Independent Environmental Checker (IEC) Representative	2828 5757	28271823

Construction Programme

1.7 The site activities undertaken in the reporting month were:

- Fitting Out works at Tuxedos Restaurant of South Pole;
- Finishing works of Bobsled Station and trail running of rides;
- Install E&M services;
- Apply wall painting in P.A Building;
- Installation of Glass Balustrade in P.A. Building;
- Install seating area wall stone tile;
- Seawater infill to Pool of P.A;
- Install wall stone tile;
- Installation of theme works at PA Building and
- Disposal Existing Stockpile.

Summary of EM&A Requirements

1.8 The EM&A programme requires construction phase environmental site audit. The duties and responsibilities comprise the following:

- monitor various environmental parameters, if necessary, as specified in the Contractor's EM&A Manual;
- analyze the environmental monitoring and audit data;
- review the EM&A programme to confirm the adequacy of mitigation measures implemented and the validity of the EIA predictions and to identify and adverse environmental impacts arising;
- carry out site inspection to investigate and audit the Contractor's site practice,

equipment and work methodologies with respect to pollution control and environmental mitigation, and effect proactive action to pre-empt problems;

- audit and prepare EM&A reports on the site environmental conditions;
- report the environmental audit results to the Contractor;
- recommend appropriate mitigation measures to the Contractor in case of exceedance of Action and Limit Levels in accordance with the Event and Action Plans; and
- adhere to the procedures for carrying out complaint investigation in accordance with the Contractor's EM&A Manual.

1.9 This report presents the environmental monitoring and audit works for the Project in April 2012.

2. ENVIRONMENTAL AUDIT

Environmental Site Audits

2.1 Environmental site audits were carried out on weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site.

2.2 Site audits for the Project in the reporting month were conducted on Environmental site audits were conducted on 5th, 13th, 17th & 27th April 2012 and the environmental ICE monthly site inspection was conducted on 17th April 2012 and No non-compliance was observed during the site audits. The summaries of site audits are attached in **Appendix A**.

2.3 During site inspections in the reporting month, no non-conformance was identified. The observations and recommendations are summarized in **Table 2.1**.

Table 2.1 Observations and Recommendations of Site Audits

Parameters	Date	Observations / Recommendations	Remediation/ Follow up
Waste/ Chemical Management	13/412	General refuse were scattered around the site.	General refuse was stored in waste skip and remove offsite regularly.
Dust Control	27/4/12	Stockpiles of C&D material were not covered with tarpaulin sheets to suppress dust.	Stockpiles of excavated material was covered with tarpaulin sheet.

Parameters	Date	Observations / Recommendations	Remediation/ Follow up
	17/4/12	Over 20 cement bags were not fully covered. The contractor was reminded to fully cover any piles of over 20 cement bags on-site with tarpaulin sheet or other means to suppress dust.	Cement stock was covered by tarpaulin sheet.
Water Pollution	13/4/12	Nil	
Air Pollution	27/4/12	Nil	

Status of Environmental Licensing and Permitting

2.4 All valid permits/licenses obtained for the Project are summarized in **Table 2.2.**

Table 2.2 Summary of Environmental Licensing and Permit Status

Permit No.	Valid Period		Details	Status
	From	To		
Environmental Permit				
EP-249/2006/A	23/10/2006	N/A	Expansion of the existing Ocean Park and reconstruction / modification of its existing facilities.	Valid
Registration of Chemical Waste Producer				
WPN5213-176-K2880-02	25/11/2009	N/A	Waste Disposal (Chemical Waste) (General) Regulation - Registration of Waste Producer	Valid
Construction Noise Permit				
GW-RS1128-11	09/12/2011	31/5/2012	Construction Noise Permit for Top of Nam Long Shan Rd., Ocean Park, 180 Wong Chuk Hang, Hong Kong	Valid
Water Discharge License				
WT00005926-2010	05/11/2009	28/02/2015	Discharge of industrial trade effluent arising from the Sedimentation tank at the construction site (CS03 Ocean Park Redevelopment Project) to communal storm water drain.	Valid
Others				
311433	N/A	N/A	Notification Pursuant to Section 3(1) of the Air Pollution Control (Construction Dust) Regulation	Valid
7009695	N/A	N/A	Construction Waste Disposal Billing Account with EPD	Valid

Status of Waste Management

2.5 The amount of waste generated by the construction activities of the Project in the reporting month is attached in **Table 2.3.**

Table 2.3 Actual Quantity of Waste Generated in April 2011

Waste Type	Examples	Actual quantity disposed (Tonnes / Liter)	Disposal Locations
C&D Waste	Construction waste (Plastic, wood and bamboo)	249.8 (T)	SENT Landfill
	Mixed rock & soil	88.5 (T)	CW barging point
Chemical waste	Used oil, spent solvent	0 L	Collected by licensed collector

Implementation Status of Environmental Mitigation Measures

2.6 During site inspections in the month, the following observations and recommendations were made.

Water Quality Mitigation Measures

- The wastewater was recycled for wheel washing and dust control and Septic Tank should be maintained well functioning.

Air Quality Mitigation Measures

- The Contractor to ensure cement materials was well covered.
- The Contractor to ensure water spray was carrying out during breaking of rocks.
- The Contractor was reminded to cover the existing stockpile general fill material when they were not in use.

Noise

- No violation was observed nor recorded.

Ecology

- No violation was observed nor recorded.

Waste / Chemical Management

- Stagnant water was accumulated in drip tray. Contractor to ensure all contaminated water was well collected and stored in chemical waste storage area without spillage.
- Oil drums were observed without drip tray and place on the ground. Ensure no spillage of the chemical oil and provide trip tray accordingly.
- Collection of waste oil by registered waste collector.

Others

- No other violation was observed nor recorded.

Summary of Exceedances

2.7 No Action/Limit Level exceedance was reported in the reporting month.

Implementation Status of Event Action Plans

2.8 No complaint, summons or prosecution related to environmental issues was received or made against the Project in the reporting month.

Summary of Complaints and Prosecutions

2.9 No environmental complaint and prosecution related to the Project works was received during the reporting month.

3. FUTURE KEY ISSUES

Key Issues for the Coming Month

3.1 Key issues to be considered in the coming month include:

- Fitting Out works at Tuxedos Restaurant of South Pole;
- Finishing works of Bobsled Station and Trail running of rides;
- Install all the ceiling area;
- Apply wall painting in P.A Building;
- Install wall stone tile;
- Install entrance glass sliding door in P.A. Building;
- Lay floor carpet in P.A. Building;
- Installation of glass balustrade at North P.A.;
- Install glass partition wall in P.A. Building;

- Installation of theme works at PA Building and
- Disposal Existing Stockpile.

4. CONSTRUCTION OF DRAINAGE, SEWERAGE AND WATER MAIN SYSTEM.CONCLUSIONS AND RECOMMENDATIONS

Conclusions

4.1 Four environmental site audits were performed in April 2012. No non-compliance was observed during the site audits.

4.2 No exceedance of environmental monitoring was reported in the reporting month.

4.3 No environmental complaint and prosecution related to the project was received in the reporting month.

Recommendations

4.4 According to the environmental audits performed in the reporting month, the following recommendations are suggested:

Water Quality Impact

- Should ensure that the sedimentation tank is well function before discharging waste water off site.

Dust Impact

- To carry out routine water spray to all haul roads and during rock breaking activity.
- To cover the existing stockpile general fill material when they were not in use.
- To ensure auto water spray head is on when the floor is dry and dusty.

Waste / Chemical Waste Impact

- To carry out routine inspection for chemical waste storage area after rainy day.
- To ensure spent oil keep in dip tray during drilling rig maintenance.
- To ensure all domestic waste was fully cover in rubbish bin and cleaning up frequently.
- To ensure general refuse were store in the enclosed container or compaction units and separate from C& D materials.

Air Pollution Impact

- To ensure all plants and equipments are well maintained in good condition and replace air filter frequently.

Site Layout Plan

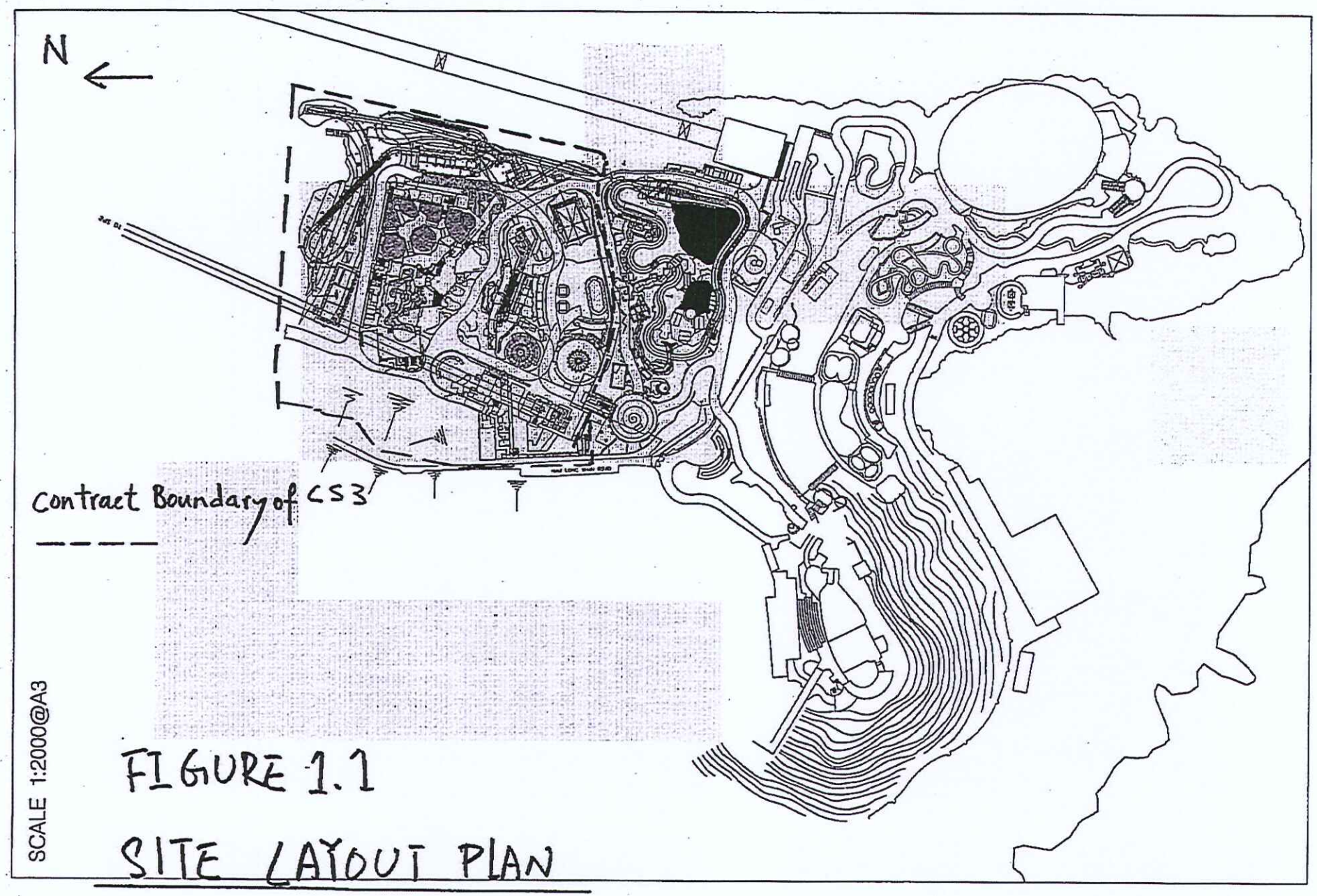

FIGURE 1.1

SITE LAYOUT PLAN

APPENDIX A
Site Audit Summary
(refer to Appendix A of EM & A Report)

Part 3 **Ocean Park Symbio Show**
14th Monthly Monitoring Report

REPORT

Ocean Park Corporation, Hong Kong

Ocean Park Symbio Show: *14th Air Quality and Noise Monitoring Report*

March 2012

Environmental Resources Management
21/F Lincoln House
979 King's Road
Taikoo Place
Island East, Hong Kong
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E-mail: post.hk@erm.com
http://www.erm.com

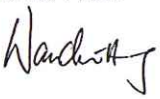
REPORT

Ocean Park Corporation, Hong Kong

Ocean Park Symbio Show: *14th Air Quality and Noise Monitoring Report*

March 2012

Reference 0128330

For and on behalf of ERM-Hong Kong, Limited	
Approved by:	Frank Wan
Signed:	
Position:	Partner
Date:	30 March 2012

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1.1	*PURPOSE OF THE REPORT*	*1*
1.2	*STRUCTURE OF THE REPORT*	*1*
2	*AIR QUALITY MONITORING*	*2*
2.1	*INTRODUCTION*	*2*
2.2	*SAMPLING METHODOLOGY*	*2*
2.3	*MONITORING RESULTS*	*3*
3	*NOISE MONITORING*	*5*
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ANNEXES

Annex A1	*Calibration Record*
Annex A2	*Laboratory Report*
Annex A3	*Detailed Summary and Graphical Presentation of the Cumulative Results since Commencement of Open-air Night Show*
Annex A4	*Recorded RSP Concentrations at EPD's AQMSs in Tung Chung, Shatin, Tai Po, Yuen Long, and Tap Mun on 14 March 2012*
Annex A5	*Recorded Weather Data at HKO's Weather Station in Wong Chuk Hang on 14 March 2012*

1 INTRODUCTION

ERM-Hong Kong, Limited (ERM) has been appointed by Ocean Park Corporation (OPC) to undertake air quality and noise monitoring for the first operational year of the Open-air Night Show under the "*Repositioning and Long Term Operation Plan of Ocean Park*" (the Project).

1.1 PURPOSE OF THE REPORT

The Open-air Night Show commenced on 27 January 2011. This is the 14th air quality and noise monitoring report which summarises the impact monitoring results during the reporting period from **27 February** to **26 March 2012**.

The request for termination of the monitoring program has been approved by EPD on 13 February 2012, therefore, this is the last monthly monitoring report.

1.2 STRUCTURE OF THE REPORT

After this introductory section, the remainder of this report is arranged as follows:

Section 2 describes the air quality sampling methodology, presents the monitoring results and discusses the results;

Section 3 describes the noise monitoring; and

Section 4 presents an overall conclusion of the air quality and noise monitoring.

2 AIR QUALITY MONITORING

2.1 INTRODUCTION

In accordance with Clause 2.31 of the Environmental Permit (EP), an updated air quality monitoring programme shall be developed as part of the updated EM&A Manual for the measurement of air quality impact (in terms of respirable suspended particulates, RSP) during the first operational year of the Open-air Night Show and for submission to the Director of Environmental Protection (DEP) in January 2011. The air quality monitoring has been carried out based on the requirements given in the updated air quality monitoring programme.

2.2 SAMPLING METHODOLOGY

2.2.1 *Sampling Parameters and Frequency*

In accordance with the updated air quality monitoring programme, 24-hr average RSP levels should be monitored on a weekly basis in the first month of the Open-air Night Show. If the monitored results in the first month complied with Action/Limit (A/L) Level, the monitoring frequency should be reduced to a monthly interval for the rest of eleven months in the first operational year.

Monitoring of the 24-hr average RSP for 1 year has been completed in the 13th reporting month. The last 24-hr average RSP monitoring has been taken at AM2 and AM3 on 14 March 2012.

Termination of air quality monitoring programme has been agreed by EPD on 13 February 2012.

2.2.2 *Sampling Locations*

Air quality monitoring was conducted at two designated air quality monitoring stations (AQMS) as presented in *Table 2.1* and illustrated in *Figure 2.1*.

Table 2.1 *Air Quality Monitoring Station*

AQMS ID	Location	Sampling Height (m above ground)
AM2	Landscape Storage Area in Ocean Park	3
AM3	Rooftop of Main Medical Block of Graham Hospital	20

2.2.3 *Sampling and Laboratory Analysis Methodology*

One 24-hr average RSP sample was collected on each scheduled day by a High Volume Sampler (HVS) following the USEPA method, EPA IO-2.1. Calibration of the equipment has followed the requirements set out in EPA

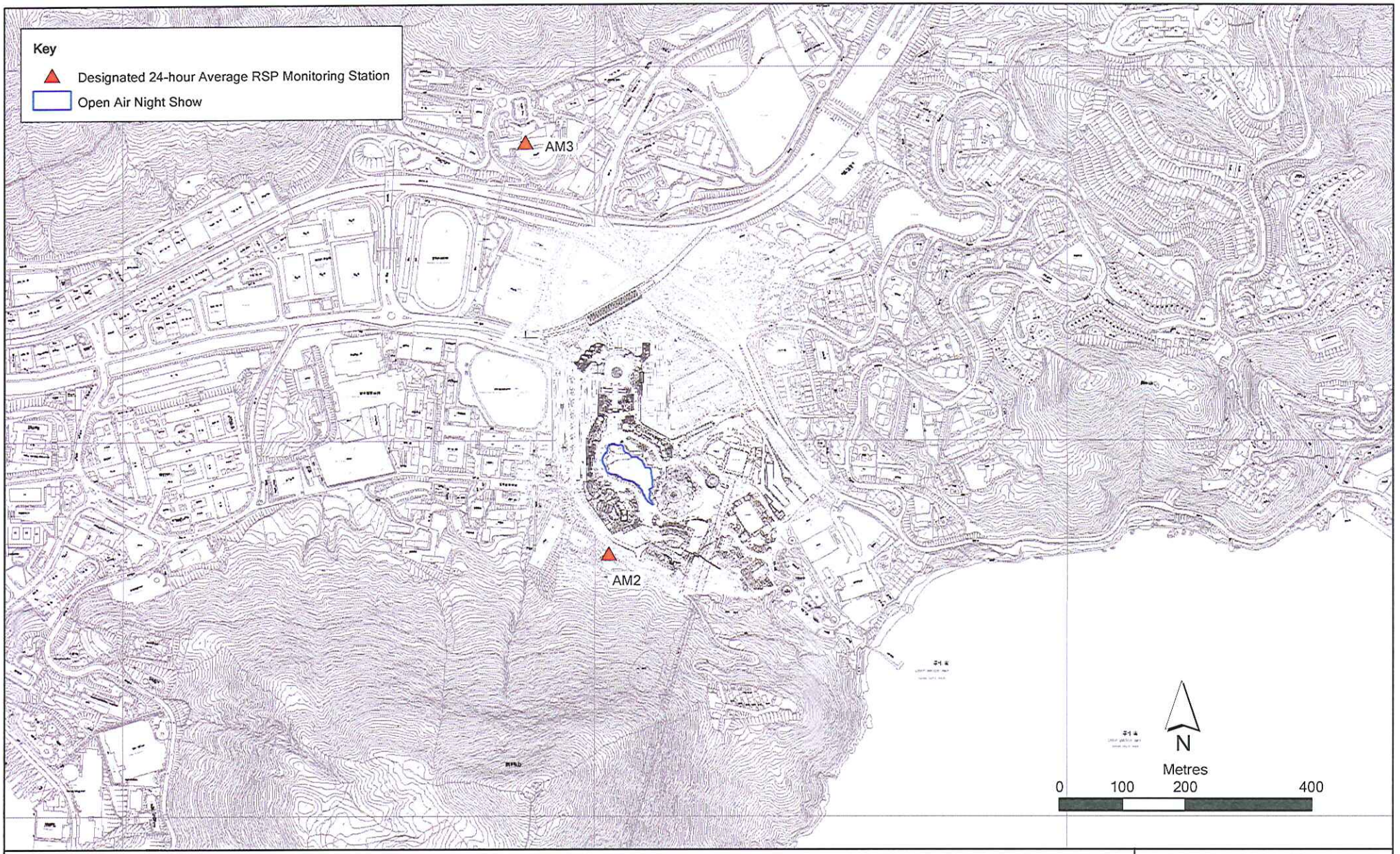

Figure 2.1

Designated 24-hour Average RSP Monitoring Stations during Operation of Open Air Night Show

File: 0128330_RSP_Monitoring_Station_Mar2012.mxd
Date: 27/03/2012

Environmental Resources Management

ERM

IO-2.1 with the calibration record given in *Annex A1*. A summary of the sampling methodology and equipment is presented in *Table 2.2*.

Table 2.2 *Summary of Sampling and Laboratory Analysis Method*

Sampling Parameter	Method	Equipment
24-hr average RSP	EPA IO-2.1	High volume sampler

2.2.4 *Sampling Period*

The sampling periods at AM2 and AM3 are summarized in *Table 2.3*.

Table 2.3 *Sampling Period*

Sampling Parameter	Sampling Period	AQMS
24-hr average RSP	17:00 (14 March 2012) – 17:00 (15 March 2012)	AM2, AM3

2.2.5 *Compliance Assessment*

The measured 24-hr average RSP concentrations have been compared with the Action/Limit Level (A/L Level) which is the 24-hr average AQO for RSP (180 μgm^{-3}). Should exceedance of A/L Level occur, actions summarized in the Event and Action Plan (*Table 7.5* of updated EM&A Manual) should be followed.

2.3 *MONITORING RESULTS*

The 24-hour average RSP concentrations monitored at AM2 and AM3 are summarized in *Table 2.4*. The detailed laboratory report is presented in *Annex A2*.

Table 2.4 *Measured 24-hr Average RSP Monitoring Results during the Reporting Month*

Monitoring Location	Monitoring Date	24-hr RSP Concentration (μgm^{-3})	Action/Limit Level (μgm^{-3})
AM2 (Landscape Storage Area in Ocean Park)	14 March 2012	31	180
AM3 (Rooftop of Main Medical Block of Graham Hospital)	14 March 2012	30	180

All measured 24-hour average RSP concentrations have been well below the A/L Level (ie, 180 μgm^{-3}).

Detailed summary of the air quality monitoring data and graphical presentation of the cumulative results since the commencement of the Open-air Night Show are given in *Annex A3*.

The 24-hour average RSP background concentrations during the Open-air Night Show time measured at five EPD air quality monitoring stations (AQMSs) at Tung Chung, Shatin, Tai Po, Yuen Long and Tap Mun were also provided as a reference (See *Annex A4*).

The 24-hour average background RSP concentrations measured at 5 EPD stations were between 7.5 and 108.7 μg m^{-3} on 14 March 2012 The monitored 24-hr average RSP concentrations at AM2 and AM3 have been compared with those measured at the EPD's AQMSs during the same monitoring period. The measured results are comparable with the background concentrations and are well below the A/L Level.

Wind data (including wind directions and speeds), ambient temperature and relative humidity measured at Wong Chuk Hang weather station operated by the Hong Kong Observatory (HKO) on 14 March 2012 were also provided in *Annex A5* for reference.

3 NOISE MONITORING

Termination of noise monitoring has been approved by EPD on 13 February 2012 and hence no noise monitoring was conducted during this reporting month.

4 OVERALL CONCLUSIONS

The Open-air Night Show commenced on 27 January 2011. According to the requirements set out in the Environmental Permit (EP) and the updated EM&A Manual, air quality and noise monitoring shall be carried out during the first year of the operation of the Open-air Night Show. This is the 14th monthly air quality and noise monitoring report which summarises the impact monitoring results during the reporting period from **27 February** to **26 March 2012**.

24-hr average respirable suspended particulates (RSP) monitoring at rooftop of the Administrative Building in Ocean Park (AM1) has been completed in the 13th reporting month. RSP monitoring at the Landscape Storage Area in Ocean Park (AM2) and rooftop of Main Medical Block of Graham Hospital (AM3) has been conducted at AM2 and AM3 on 14 March 2012. The monitored 24-hour average RSP concentrations measured at AM2 and AM3 were below the Action/Limit (A/L) Levels. Termination of air quality monitoring has been approved by EPD on 13 February 2012.

Termination of noise monitoring has been approved by EPD on 13 February 2012 and hence no noise monitoring was conducted during this reporting month.

Annex A1

HVS Calibration Report

ALS Technichem (HK) Pty Ltd

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MS WINNIE KO	**WORK ORDER:**	HK1207669
CLIENT:	ERM HONG KONG	**LABORATORY:**	HONG KONG
ADDRESS:	21/F, LINCOLN HOUSE, 979 KING'S ROAD, TAIKOO PLACE, ISLAND EAST, QUARRY BAY, HONG KONG.	**DATE RECEIVED:**	22/02/2012
		DATE OF ISSUE:	21/03/2012
		SAMPLE TYPE:	EQUIPMENT
PROJECT:	OPC AIR QUALITY MONITORING FOR OPERATION OF SYMBIO SHOW	**No. of SAMPLES:**	2

COMMENTS

It is certified that the item under calibration/checking has been calibrated/checked by corresponding calibrated equipment in the laboratory.
Maximum Tolerance and calibration frequency stated in the report, unless otherwise stated, the internal aceptance criteria of ALS will be followed.

Scope of Test: Flow Rate
Description: High Volume Sampler
Brand Name: TISCH
Model No.: --
Serial No.: --
Equipment No.: HK647, HK651
Date of Calibration: 07 February, 2012

NOTES

This is the Final Report and supersedes any preliminary report with this batch number.
Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

ISSUING LABORATORY: HONG KONG

Address

ALS Technichem (HK) Pty Ltd

11/F Chung Shun Knitting Centre
1-3 Wing Yip Street
Kwai Chung
HONG KONG

Phone: 852-2610 1044
Fax: 852-2610 2021
Email: hongkong@alsglobal.com

Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

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ALS Technichem (HK) Pty Ltd.

Calibration Report for High Volume Sampler (RSP Sampler)

Report No.	: HK1207669-001	Equipment No.	: HK647
Location	: AM2	Calibration date	: 07/02/2012
		Calibration Due date	: 07/05/2012

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition					
Ambient			Seasonal		
Temperature, Ta	288.0	K	Temperature, Ts	289.0	K
Pressure,Pa	1015.0	hPa	Pressure,Ps	1019.1	hPa
Orifice Transfer Standars Information					
Equipment No.	TE-5025A (#1941)	Slope,m_c	1.32558	Intercept, b_c	-0.01598
Last Calibration Date	02-June-2011	$Q_a = [\sqrt{(\Delta H.Ta/Pa)} - b_c]/m_c$			
Next Calibration Date	02-June-2012				

Calibration of RSP						
Calibration Point	Manometer Reading H(inches of water)			Q_{std} (m^3/min)	Continuous Flow Recorder,	$W((Ta+30)/Pa)^{1/2}$
	(up)	(down)	(ΔH)	X-axis	W (CFM)	Y-axis
1	6.0	6.1	12.1	1.4099	53	29.6658
2	5.0	4.8	9.8	1.2700	45	25.1880
3	3.7	3.9	7.6	1.1199	40	22.3893
4	2.4	2.4	4.8	0.8925	31	17.3517
5	1.5	1.6	3.1	0.7196	20	11.1947

By Linear Regression of Y Vs X

Correlation coefficient, R =	0.9945
Slope,m =	25.4400
Intercept, b =	-6.3773
Calibration result :	

*If the correlation coefficient, R is < 0.9900. Checking and recalibration are requried.

Remarks :

Calibration by	: Sam Wong	Checked by	: Iris Lin
Signature	: Sam Wong	Signature	: Iris Lin
Date	: 07/02/2012	Date	: 07/02/2012

ALS Technichem (HK) Pty Ltd.

Calibration Report for High Volume Sampler (RSP Sampler)

Report No. : HK1207669-002
Location : AM3

Equipment No. : HK651
Calibration date : 07/02/2012
Calibration Due date : 07/05/2012

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition					
Ambient			Seasonal		
Temperature, Ta	287.5	K	Temperature, Ts	289.0	K
Pressure,Pa	1015.0	hPa	Pressure,Ps	1019.1	hPa
Orifice Transfer Standars Information					
Equipment No.	TE-5025A (#1941)	Slope,m_c	1.32558	Intercept, b_c	-0.01598
Last Calibration Date	02-June-2011	$Q_a = [\sqrt{(\Delta H.Ta/Pa) - b_c}]/m_c$			
Next Calibration Date	02-June-2012				

Calibration of RSP						
Calibration Point	Manometer Reading H(inches of water)			Q_{std} (m^3/min)	Continuous Flow Recorder,	$W((Ta+30)/Pa)^{1/2}$
	(up)	(down)	(ΔH)	X-axis	W (CFM)	Y-axis
1	6.3	6.4	12.7	1.4429	51	28.5239
2	5.1	5.1	10.2	1.2943	42	23.4903
3	4.0	4.0	8.0	1.1477	34	19.0159
4	2.6	2.6	5.2	0.9276	22	12.3044
5	1.8	1.6	3.4	0.7524	10	5.5929

By Linear Regression of Y Vs X

Correlation coefficient, R = 0.9991
Slope,m = 32.6456
Intercept, b = -18.5479
Calibration result :

*If the correlation coefficient, R is < 0.9900. Checking and recalibration are requried.

Remarks :

Calibration by : Sam Wong
Signature : Sam Wong
Date : 07/02/2012

Checked by : Iris Lin
Signature : Iris Lin
Date : 07/02/2012

Annex A2

Laboratory Report

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: ERM HONG KONG	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 2
Contact	: MS CELINE LEE	Contact	: Chan Kwok Fai, Godfrey	Work Order	: HK1207471
Address	: 21/F, LINCOLN HOUSE, 979 KING`S ROAD, TAIKOO PLACE, ISLAND EAST, QUARRY BAY, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: Celine.Lee@erm.com	E-mail	: Godfrey.Chan@alsglobal.com		
Telephone	: +852 2271 3000	Telephone	: +852 2610 1044		
Facsimile	: +852 2723 5660	Facsimile	: +852 2610 2021		
Project	: OPC AIR QUALITY MONITORING FOR OPERATION OF SYMBIO SHOW	Quote number	: HK/156b/2011 (revised 1453/10)	Date received	: 16-MAR-2012
Order number	: ----			Date of issue	: 26-MAR-2012
C-O-C number	: ----			No. of samples	- Received : 2
Site	: OCEAN PARK				- Analysed : 2

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1207471 supersedes any previous reports with this reference. The completion date of analysis is 22-MAR-2012. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific comments for Work Order HK1207471 : Sample(s) were collected by ALS Technichem (HK) staff on 16 March, 2012.
Sample(s) analysed and reported on an as received basis.

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This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in the 'Electronic Transactions Ordinance' of Hong Kong, Chapter 553, Section 6.

Signatory	Position	Authorised results for:-
Fung Lim Chee, Richard	General Manager	Inorganics

Analytical Results

Sub-Matrix: **FILTER (TSP/RSP)**

	Compound	HK-RSP: Respirable Suspended Particulate				
	LOR Unit	0.01 mg/m³				
Client sample ID	Client sampling date / time	Laboratory sample ID	EA/ED: Physical and Aggregate Properties				
AM2	[14-MAR-2012]	HK1207471-001	**0.03**				
AM3	[14-MAR-2012]	HK1207471-002	**0.03**				

Annex A3

Detailed Summary and Graphical Presentation of the Cumulative Results since Commencement of Open-air Night Show

Annex A3
Measured 24-hour Average RSP Concentrations

RSP Monitoring Station : AM 2 (Landscape Storage Area in Ocean Park)

Start		Finish		No. of Show	Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			RSP Conc.	Limit Level	Filter
Date[1]	Time	Date	Time			Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(µg/m^3)	(µg/m^3)	ID
28-Mar-11	17:00	29-Mar-11	17:00	1	Cloudy	2.7923	2.8849	5069.23	5092.98	23.75	1.04	1.04	1.04	62	180	202287
04-Apr-11	17:00	05-Apr-11	17:00	1	Cloudy	2.7884	2.9238	5092.98	5116.98	24.00	1.47	1.47	1.47	64	180	202290
10-Apr-11	17:00	11-Apr-11	17:00	1	Cloudy	2.7727	2.8799	5116.98	5140.98	24.00	1.45	1.45	1.45	51	180	202291
18-Apr-11	17:00	19-Apr-11	17:00	1	Sunny	2.8004	2.9833	5140.98	5164.98	24.00	1.43	1.43	1.43	89	180	202292
11-May-11	17:00	12-May-11	17:00	1	Sunny	2.8064	2.8596	5164.98	5188.98	24.00	1.43	1.43	1.43	26	180	202568
16-Jun-11	17:00	17-Jun-11	17:00	1	Sunny	2.7984	2.8285	5189.07	5213.07	24.00	1.19	1.19	1.19	18	180	202571
22-Jul-11	17:00	23-Jul-11	17:00	1	Sunny	2.7834	2.8283	5213.07	5237.07	24.00	1.19	1.19	1.19	26	180	202573
09-Aug-11	17:00	10-Aug-11	17:00	1	Cloudy	2.7829	2.8060	5237.07	5261.06	23.99	1.19	1.19	1.19	14	180	202576
20-Sep-11	17:00	21-Sep-11	17:00	1	Cloudy	2.7870	2.8736	5285.43	5309.43	24.00	1.16	1.16	1.16	52	180	060419
20-Oct-11	17:00	21-Oct-11	17:00	1	Fine	2.7842	2.8692	5309.43	5333.43	24.00	1.16	1.16	1.16	51	180	202589
28-Nov-11	17:00	29-Nov-11	17:00	1	Sunny	2.7825	2.8328	--*	--*	24.00	1.01	1.10	1.06	33	180	202583
13-Dec-11	17:00	14-Dec-11	17:00	1	Sunny	2.8035	2.9200	--*	--*	24.00	1.05	1.05	1.05	77	180	060436
21-Jan-12	17:00	22-Jan-12	17:00	2	Fine	2.7977	2.8586	0.14	24.14	24.00	1.12	1.12	1.12	38	180	060428
04-Feb-12	17:00	05-Feb-12	17:00	1	Cloudy	2.7945	2.8442	26.14	50.14	24.00	1.11	1.11	1.11	31	180	060426
14-Mar-12	17:00	15-Mar-12	17:00	1	Cloudy	2.7850	2.8367	53.48	78.37	24.89	1.11	1.11	1.11	31	180	060423
													Max.	89		
													Average	44		

* Due to the error of the Elapsed Timer, no elapesed time reading was recorded.

[1] Monitoring for 10th reporting period has been rescheduled to 28 November 2011 due to mechanical failure of the HVS

Annex A3
Measured 24-hour Average RSP Concentrations

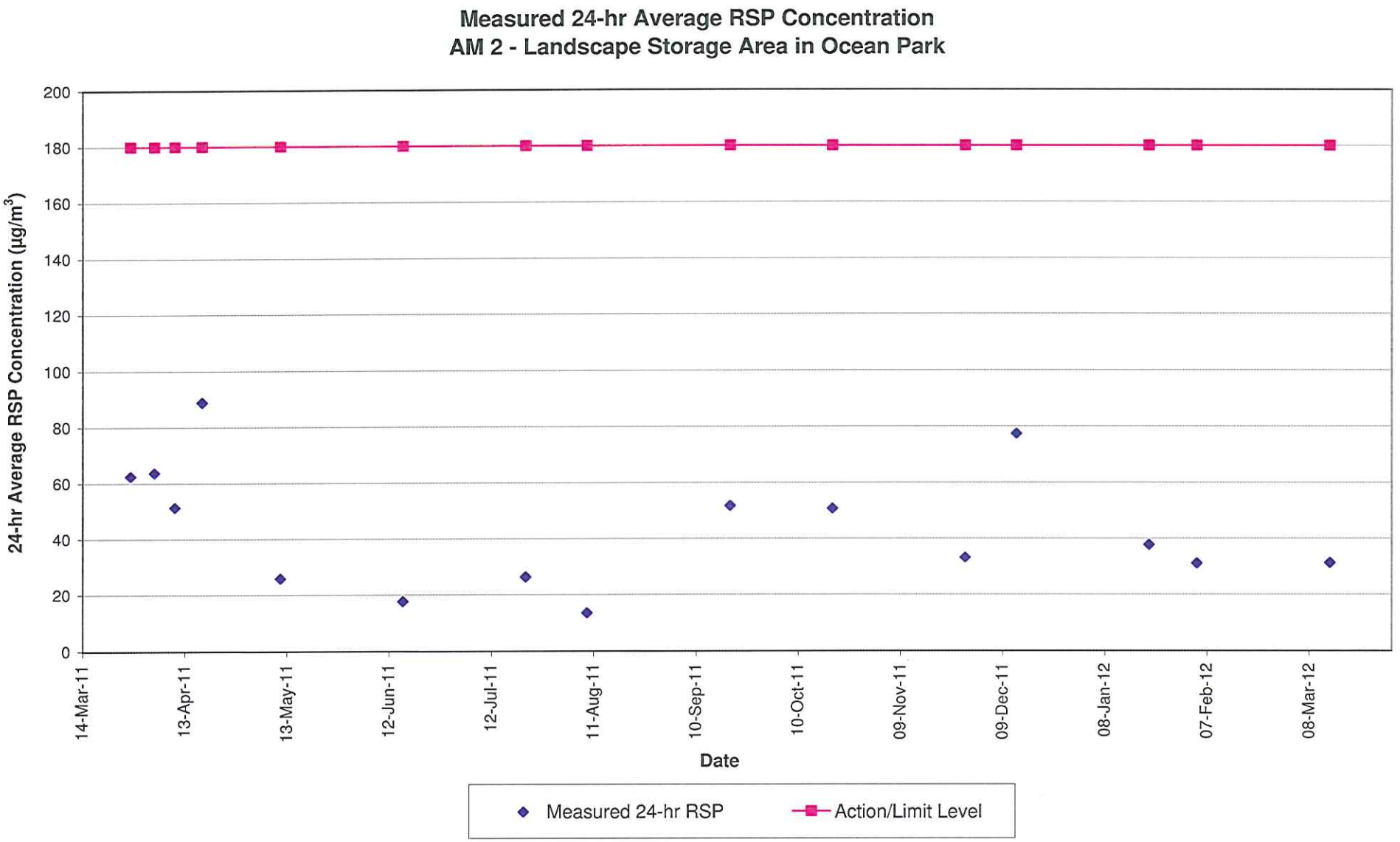
RSP Monitoring Station : AM3 (Rooftop of Main Medical Block of Graham Hospital)

Start		Finish		No. of Show	Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			RSP Conc.	Limit Level	Filter
Date[1]	Time	Date	Time			Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(µg/m^3)	(µg/m^3)	ID
28-Mar-11	17:00	29-Mar-11	17:00	1	Cloudy	2.7946	2.9435	13068.67	13092.67	24.00	0.91	0.91	0.91	114	180	202265
04-Apr-11	17:00	05-Apr-11	17:00	1	Cloudy	2.8005	2.9049	13092.67	13116.68	24.01	0.65	0.65	0.65	112	180	202289
10-Apr-11	17:00	11-Apr-11	17:00	1	Sunny	2.7948	2.8825	13116.68	13140.66	23.98	0.70	0.70	0.70	87	180	202294
18-Apr-11	17:00	19-Apr-11	17:00	1	Sunny	2.7966	2.9578	13140.66	13164.68	24.02	0.70	0.70	0.70	160	180	202295
11-May-11	17:00	12-May-11	17:00	1	Sunny	2.7906	2.8330	13164.68	13188.69	24.01	0.74	0.74	0.74	40	180	202566
16-Jun-11	17:00	17-Jun-11	17:00	1	Sunny	2.8008	2.8294	13188.72	13212.72	24.00	1.08	1.08	1.08	18	180	202569
22-Jul-11	17:00	23-Jul-11	17:00	1	Sunny	2.7983	2.8416	13212.84	13236.84	24.00	1.15	1.17	1.16	26	180	202572
09-Aug-11	17:00	10-Aug-11	17:00	1	Cloudy	2.7983	2.8187	13236.84	13260.84	24.00	1.11	1.09	1.10	13	180	202577
20-Sep-11	17:00	21-Sep-11	17:00	1	Cloudy	2.7921	2.8855	13380.81	13404.81	24.00	1.17	1.17	1.17	56	180	060420
20-Oct-11	17:00	21-Oct-11	17:00	1	Fine	2.8028	2.9051	13404.82	13428.82	24.00	1.17	1.17	1.17	61	180	202293
28-Nov-11	17:00	29-Nov-11	17:00	1	Sunny	2.7812	2.8358	13428.86	13452.63	23.77	1.16	1.14	1.15	33	180	203192
13-Dec-11	17:00	14-Dec-11	17:00	1	Sunny	2.8028	2.9474	13452.63	--*	24.00	1.16	1.16	1.16	87	180	203192
21-Jan-12	17:00	22-Jan-12	17:00	2	Fine	2.7994	2.8644	13452.64	13476.64	24.00	1.06	1.06	1.06	43	180	060430
04-Feb-12	17:00	05-Feb-12	17:00	1	Cloudy	2.8040	2.8550	13476.64	13500.64	24.00	1.09	1.09	1.09	32	180	060425
14-Mar-12	17:00	15-Mar-12	17:00	1	Cloudy	2.7912	2.8381	13620.65	13644.65	24.00	1.08	1.08	1.08	30	180	060424
													Max.	160		
													Average	61		

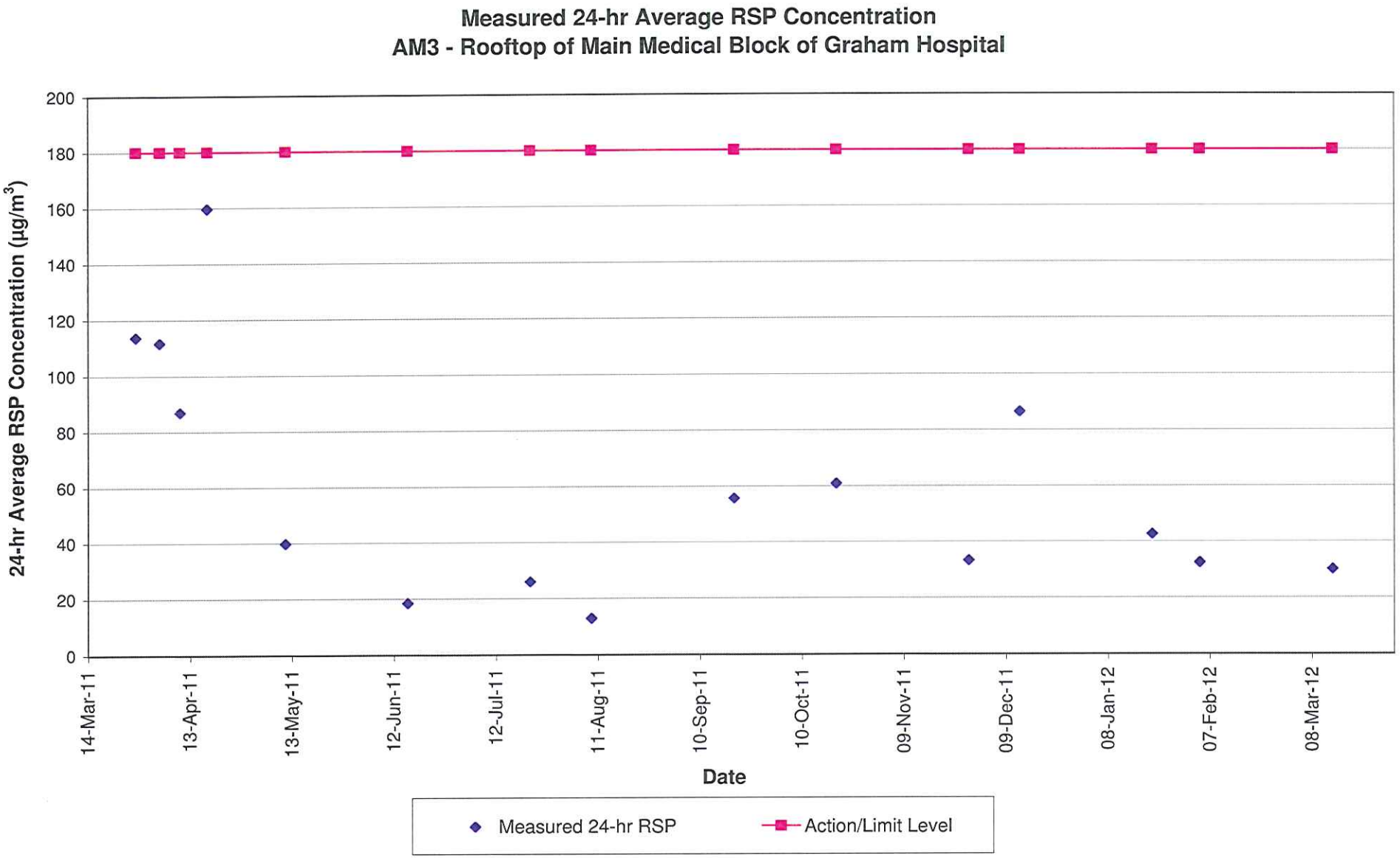
* Due to the error of the Elapsed Timer, no elapesed time reading was recorded.

[1] Monitoring for 10th reporting period has been rescheduled to 28 November 2011 due to mechanical failure of the HVS

Annex A3


Measured 24-hr Average RSP Concentration
AM 2 - Landscape Storage Area in Ocean Park
24-hr Average RSP Concentration (µg/m³)
200
180
160
140
120
100
80
60
40
20
0
14-Mar-11
13-Apr-11
13-May-11
12-Jun-11
12-Jul-11
11-Aug-11
10-Sep-11
10-Oct-11
09-Nov-11
09-Dec-11
08-Jan-12
07-Feb-12
08-Mar-12
Date
Measured 24-hr RSP
Action/Limit Level

Annex A3


Measured 24-hr Average RSP Concentration
AM3 - Rooftop of Main Medical Block of Graham Hospital
24-hr Average RSP Concentration (µg/m³)
200
180
160
140
120
100
80
60
40
20
0
14-Mar-11
13-Apr-11
13-May-11
12-Jun-11
12-Jul-11
11-Aug-11
10-Sep-11
10-Oct-11
09-Nov-11
09-Dec-11
08-Jan-12
07-Feb-12
08-Mar-12
Date
Measured 24-hr RSP
Action/Limit Level

Annex A4

Recorded RSP Concentrations at EPD's AQMSs in Tung Chung, Shatin, Tai Po, Yuen Long and Tap Mun on ***14 March 2012***

Annex A4 *Recorded RSP Concentrations at EPD's AQMSs in Tung Chung, Shatin, Tai Po, Yuen Long, and Tap Mun on 14 March 2012*

Tung Chung

Date & Time	RSP
15/03/2012 16:00	27.5
15/03/2012 15:00	25
15/03/2012 14:00	21.7
15/03/2012 13:00	22.6
15/03/2012 12:00	19.5
15/03/2012 11:00	20.3
15/03/2012 10:00	22.8
15/03/2012 9:00	20.5
15/03/2012 8:00	23.9
15/03/2012 7:00	23
15/03/2012 6:00	17.2
15/03/2012 5:00	17.6
15/03/2012 4:00	13.3
15/03/2012 3:00	15.3
15/03/2012 2:00	20.3
15/03/2012 1:00	26.6
15/03/2012 0:00	35
14/03/2012 23:00	40.4
14/03/2012 22:00	50.9
14/03/2012 21:00	65.2
14/03/2012 20:00	88.2
14/03/2012 19:00	52.2
14/03/2012 18:00	39.8
14/03/2012 17:00	38.6

Shatin

Date & Time	RSP
15/03/2012 16:00	28.1
15/03/2012 15:00	21.7
15/03/2012 14:00	28.2
15/03/2012 13:00	21.5
15/03/2012 12:00	27.9
15/03/2012 11:00	19.5
15/03/2012 10:00	33.6
15/03/2012 9:00	19.9
15/03/2012 8:00	28.2
15/03/2012 7:00	18.4
15/03/2012 6:00	25.7
15/03/2012 5:00	23.9
15/03/2012 4:00	18.7
15/03/2012 3:00	9.1
15/03/2012 2:00	20
15/03/2012 1:00	25.2
15/03/2012 0:00	34.1
14/03/2012 23:00	31.9
14/03/2012 22:00	--
14/03/2012 21:00	49.6
14/03/2012 20:00	59.5
14/03/2012 19:00	37.7
14/03/2012 18:00	40.6
14/03/2012 17:00	31.1

Tai Po

Date & Time	RSP
15/03/2012 16:00	27.8
15/03/2012 15:00	22.6
15/03/2012 14:00	28.7
15/03/2012 13:00	--
15/03/2012 12:00	--
15/03/2012 11:00	39.2
15/03/2012 10:00	42.4
15/03/2012 9:00	38.1
15/03/2012 8:00	40.6
15/03/2012 7:00	39.6
15/03/2012 6:00	38.3
15/03/2012 5:00	31.8
15/03/2012 4:00	32.9
15/03/2012 3:00	34.5
15/03/2012 2:00	37.7
15/03/2012 1:00	40.7
15/03/2012 0:00	39.3
14/03/2012 23:00	36.2
14/03/2012 22:00	49.6
14/03/2012 21:00	62.1
14/03/2012 20:00	61.4
14/03/2012 19:00	57
14/03/2012 18:00	53.3
14/03/2012 17:00	48.4

Yuen Long

Date & Time	RSP
15/03/2012 16:00	51.4
15/03/2012 15:00	108.7
15/03/2012 14:00	67.3
15/03/2012 13:00	41.5
15/03/2012 12:00	48.6
15/03/2012 11:00	38.9
15/03/2012 10:00	22.2
15/03/2012 9:00	23.2
15/03/2012 8:00	18.5
15/03/2012 7:00	14.1
15/03/2012 6:00	12.6
15/03/2012 5:00	12.7
15/03/2012 4:00	7.5
15/03/2012 3:00	8
15/03/2012 2:00	16.3
15/03/2012 1:00	22.9
15/03/2012 0:00	22.9
14/03/2012 23:00	29.8
14/03/2012 22:00	46.1
14/03/2012 21:00	48.3
14/03/2012 20:00	56
14/03/2012 19:00	45
14/03/2012 18:00	35.9
14/03/2012 17:00	38.8

Tap Mun

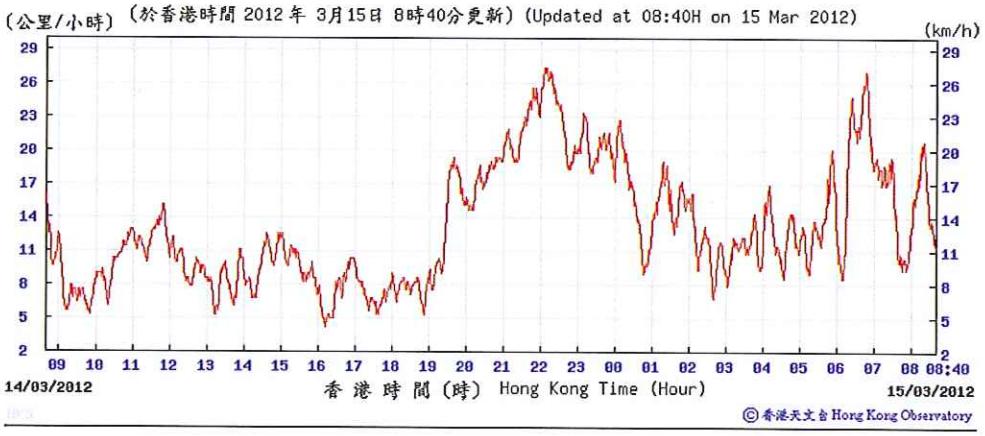
Date & Time	RSP
15/03/2012 16:00	52.6
15/03/2012 15:00	50
15/03/2012 14:00	47.1
15/03/2012 13:00	39
15/03/2012 12:00	30.8
15/03/2012 11:00	40.5
15/03/2012 10:00	37.2
15/03/2012 9:00	41.5
15/03/2012 8:00	38
15/03/2012 7:00	33.9
15/03/2012 6:00	40.7
15/03/2012 5:00	32.5
15/03/2012 4:00	30.7
15/03/2012 3:00	29.3
15/03/2012 2:00	28.7
15/03/2012 1:00	35.8
15/03/2012 0:00	36.3
14/03/2012 23:00	36.4
14/03/2012 22:00	33.8
14/03/2012 21:00	34.7
14/03/2012 20:00	43.4
14/03/2012 19:00	51.6
14/03/2012 18:00	57.2
14/03/2012 17:00	61

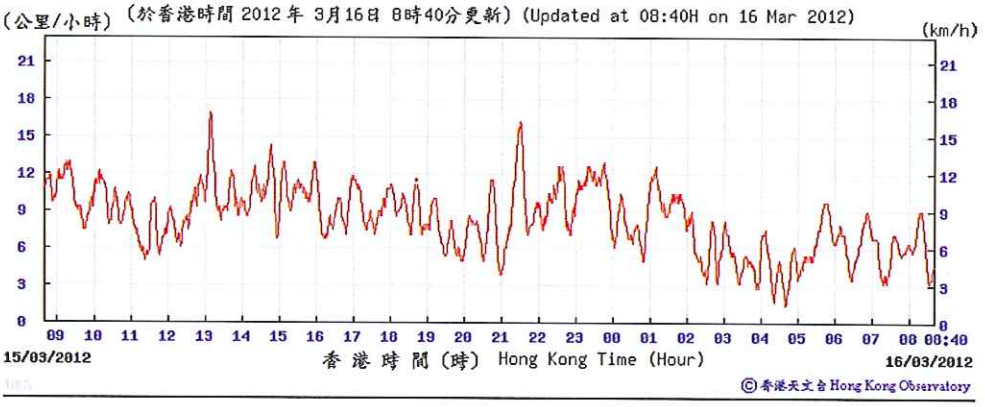
Annex A5

Weather Data Recorded at HKO's Weather Station in Wong Chuk Hang on *14 March 2012*

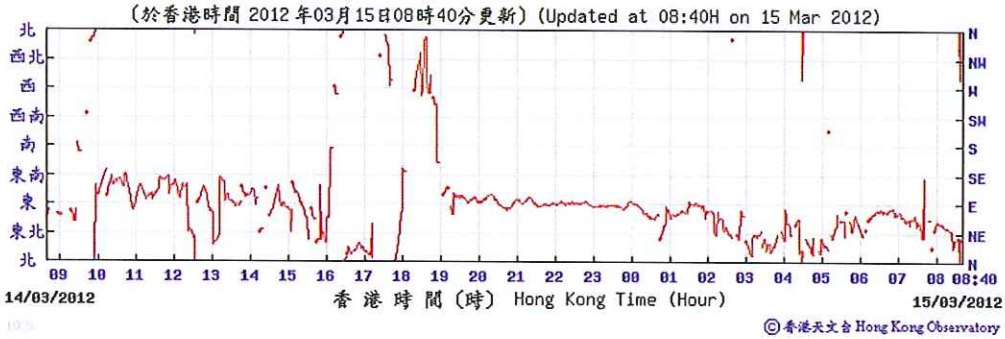
Annex A5 *Recorded Weather Data at HKO's Weather Station in Wong Chuk Hang on 14 March 2012*

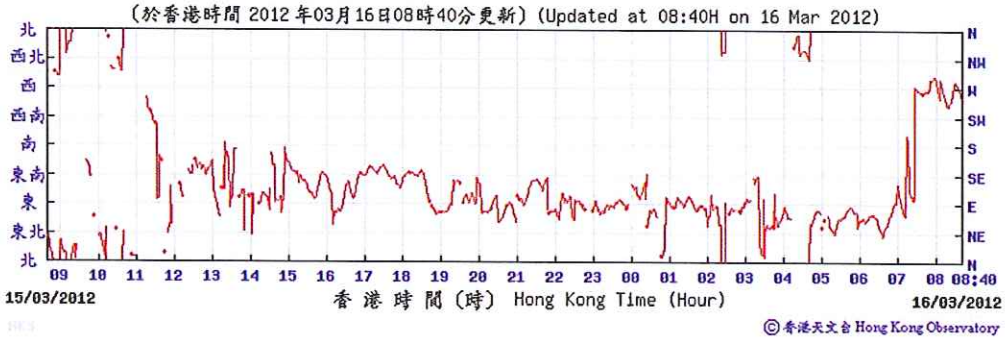
Prevailing Wind Speed





Prevailing Wind Direction





Ambient Temperature and Relative Humidity