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4 April 2011

Environment Protection Department
Environmental Compliance Division
Regional Office (South)
2/F Chinachem Exchange Square
1 Hoi Wan Street
Quarry Bay
Hong Kong

By Hand

Attention: Mr. Peter Tang

Dear Sir,

Ocean Park Master Redevelopment Project
EP-249/2006A – Condition 3.4 of Monthly EM & A Report (February 2011)

Pursuant to Condition 3.4 of the above referenced Environmental Permit, we enclose herewith one hard copy and one electronic copy of the Monthly EM & A Report for February 2011. The report has been certified by the Project ET Leader and verified by IEC.

Yours faithfully,
For and on behalf of
Ocean Park Corporation

Lindsay Pickles
Project Development Director

LP/ec

Encl + CD

cc Master File (w/e)
OPC - Mr. Arthur Wong, PMR (w/e)
Aecom / PMR - Mr Mike Wong (w/e)
EPD - Ms. Mable Chan (with two hard copies and one soft copy)
AFCD - Dr. Cheung Ka Hong (w/e)

Ocean Park Master Redevelopment Project

EP-249/2006/A – Condition 3.4

Monthly EM&A Report – February 2011

Certified by _____ on 4 April-11

Lindsay Pickles (ETL)

Verified by Independent Environmental Checker on 4-April-11

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 – February 2011

Submitted by Ocean Park Corporation on 01-04-2011

This is to verify that

Monthly EM&A Report – February 2011

Submitted by Ocean Park Corporation

On 01-04-2011

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 4 April 2011

Ocean Park Master Redevelopment Project

Monthly Environmental Monitoring & Audit Report – February 2011

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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"CS02 "Rainforest" and CS03 "Thrill Mountain and Polar Adventure". This report presents the results of EM&A works conducted in the reporting month of February 2011 (from 26 January 2011 to 25 February 2011).

On completion of the works and the opening of the Entry Plaza, Aqua City and Grand Aquarium to the public on 27 January 2011, the construction work for CI07 will be completed. From the end of January, no further construction monitoring has been undertaken, and the operational monitoring, as set out in the Updated and agreed EM&A Manual, has commenced.

The contracts at the Summit, CS02 for the Rainforest and CS03 for the Thrill Mountain and Polar Adventure are still underway. However, 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. Reports of the environmental monitoring for the operation of the Show will be included in this report from March 2011.

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 February 2011.

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
CS-03	Thrill Mountain and Polar Adventure	Kaden – ATAL JV	2 November 2009

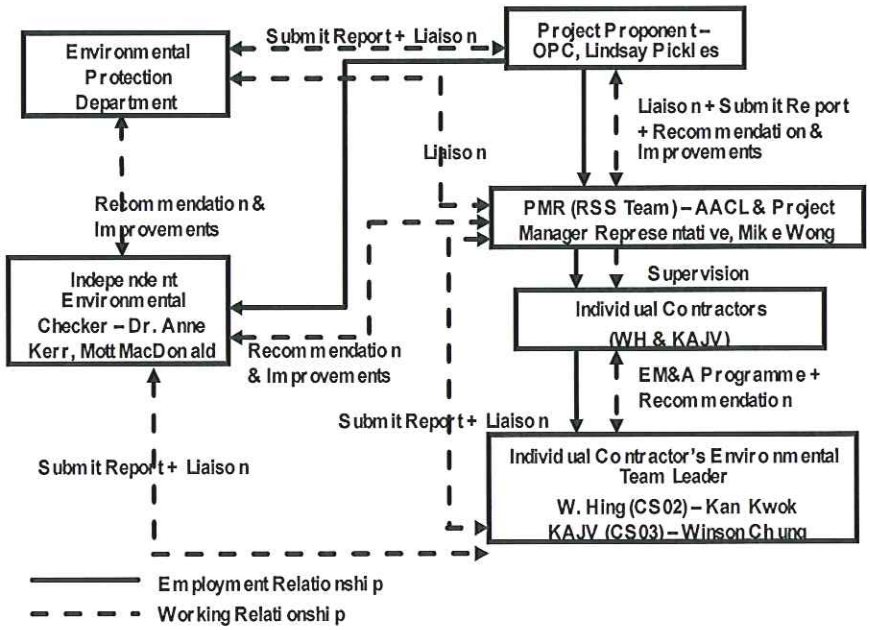
The Contractors will conduct environmental audits during the construction stage and produce contract specific monthly EM&A reports. This is the combined monthly EM&A Report including the IEC audit findings, CS02 and CS03 Monthly EM&A Report.

This report presents the results of EM&A works conducted in the reporting month of February 2011 (from 26 January 2011 to 25 February 2011).

2. Project Organisation

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

Figure 1.1 Management Organization



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

- Rockwork installation, Wiring, E&M Equipment Installation, Metal Works Installation and Finishing Works at Exhibition House.
- Rapid ride Trough Construction, Fit-out works for Rental Shops, Cladding for Ancillary Building. Roadworks, Tree Planting, Paving Works, and Finishing Works at the External Area.

CS-03

- Construction of queue area and pools at North Pole;
- Construction of Tuxedos Restaurant at South Pole;
- Construction of Pools inside North Pole;
- Apply waterproofing membrane and carry out water test for roof of North Pole;
- Construction of Bobsled Station superstructure and installation of rides;
- Construction Footing and superstructure for Thrill Mountain;
- Erection of structure steel works for ride at Floorless Coaster Station;
- Handover of Substation Transformer Room to HEC at Floorless Coaster;
- Carry out wall finishing works for PA Building;
- Installation of Chiller Plant at South Pole Roof;
- Apply waterproofing for water tank at Summit Reservoir;
- Construction of Superstructure for Floorless Coaster;
- Construction of Drainage system and Water main for External Works;
- Construction of Road Work for EVA Access and
- Disposal of 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-02 (W. Hing)						
GW-RS1042-10	09-Dec-10	3-Jun-11	*Notice of Issue of Construction Noise Permit* Pursuant to Section 8(6) of the Noise Control Ordinance		CS02	Valid
CS-03 (KAJV)						
GW-RS0036-11	1-Feb-11	31-Jul-11	*Various*	Top of Nam Long Shan Road	CS03	Valid
GW-RS0932-10	1-Dec-10	31-May-11	*Various*	Top of Nam Long Shan Road	CS03	Valid
GW-RS0933-10	23 Nov 10	09-May-11	*Various*	Shun Wan Road	CS03	Valid

4.3. Other Permits & Licenses

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

CS-02

Permit/Ref/No	Valid Period		Section	Status
Notification of Construction Work under APCO				
305349	N/A	N/A	Rainforest	Notified
Water Discharge License				
WT00004136-2009	19-Jun-09	30-Jun-14	Rainforest	Valid
Registration as Chemical Waste Producer				
WPN5214-176-W1150-03	13-May-09	N/A	Rainforest	Registered
Construction Waste Disposal Billing Account with EPD				
WFG07578	N/A	N/A	Rainforest	Issued

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 February 2011 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
CW02, CI07, CS02 and CS03	• Combined Monthly EM&A Report (January 2011)
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

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-02	CS-03	Total
C&D Waste	SENT	38.95 tonnes	114..50 Tonnes	153.45 tonnes
	TKOSF	--	--	0.00 Tonnes
	TMSF	--	--	0.00 tonne
C&D Material	CWPFBP	92.71 tonnes	964.70 tonnes	1,057.41 tonnes
	TKOFB	--	--	0.00 tonne
Chemical Waste	Collected by licensed collector	--	--	400 litres
General Waste	Collected by licensed collector	--	--	0.00 tonne

7. Environmental Monitoring and Results

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.

On completion of the works and the opening of the Entry Plaza, Aqua City and Grand Aquarium to the public on 27 January 2011, the construction work for CI07 will be completed. From the end of January, no further construction monitoring will be undertaken, and the operational monitoring, as set out in the Updated and agreed EM&A Manual will commence.

The contracts at the Summit, CS02 for the rainforest and Cs03 for the Thrill Mountain and Polar Adventure are still underway. However, please be advised that, other than ongoing Coral Survey, there is no construction monitoring to be undertaken for those works, only auditing works. The audits will continue to be carried out by the Contractors ET and 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 and as shown in the figure 2.1 of the Coral Survey Report (Part 4 of this report).

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

7.1. 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. No further monitoring is recommended and regular inspection would be carried out.

Coral

The 5th coral monitoring survey, after the Coral Re-tagging exercise in November 2009, was conducted on 19 February 2011. The monitoring survey showed no significant change in the level of sedimentation, bleaching or mortality in all the 5 Monitoring Sites 1 to 5 and the Control Site C. Overall the healthy status of the tagged coral colonies was normal, with low levels of sedimentation. Neither action/limit level of sedimentation, bleaching or mortality was exceeded. Hence no adverse impact by the construction activity on the coral community was evidenced.

8. Site Audit

8.1. IEC Site Audit

IEC conducted monthly site audit on CS02 and CS-03 on 16 February 2011. Audit checklists are attached in Appendix A of Part 1.

CS-02 Observations:

- Drip trays of diesel drums were accumulated with sand and mud.
- Waste were accumulated around a waste ship.

CS-03 Observations:

- A stockpile of C&D material was not covered with tarpaulin sheets or other means.
- A few oil drums were not provided with drip trays. Oil stain was observed on bare ground.

8.2. Non-Compliance

No non-compliances were recorded in February 2011.

9. Implementation status of Environmental Mitigation Measures

Please see Part 2, Part 3 and Part 4 of the individual contractual reports 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
- Ensure stockpile materials to be covered by tarpaulin or other means;
- Ensure water spray on haul road to avoid dusty environment
- Remove waste more frequently.
- Ensure drip tray to be provided for oil drum

CS-03
- Remove waste more frequently.
- Ensure drip tray to be provided for oil drum
- Ensure water spray on haul road to avoid dusty environment.
- Ensure stockpile materials to be covered by tarpaulin or other means.

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 February 2011.

12.2. Recommendation

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

Air Quality Impact

- To prohibit any open burning on site.
- To regular maintain the machinery and vehicles on site.
- To follow up any concerns raised or exceedances caused by the construction works.
- To implement dust suppression measures on dry surfaces.

Noise Impact

- To inspect the noise sources from inside and outside of the site.
- To follow up any concerns raised or exceedances caused by the construction works.
- To space out noisy equipment and position as far away as possible from sensitive receivers.
- To have regular maintenance of vessels and equipment used.

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 (comprised of chemical coagulation, sedimentation and pH control)
- To review and implement temporary site drainage management plan.
- Silt removal facilities, channels, manholes and wastewater treatment system should be frequently cleaned the deposited silt and grit to maintain in proper condition.
- To review the adequacy of the desilting facilities' capacity.

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	16/02/2011	Time	15:30	Inspected By	EM: IEC: Florence Yuen Contractor: CS02: L. Wong CS03: W. Chung
Site Location	CS02 CS03				

Weather

Condition	☐	Sunny	☐	Fine	☑	Overcast	☐	Drizzle	☐	Rain	☐	Storm	☐ Hazy
Temperature	13 °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?			✓		pl

- 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? | | | | ✓ | P112058O CS02 ② P112058 I
- 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? | ✓ | | | ✓ | P1120580 CS02 ② P112058 I
- 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? | | ✓ | | | e a:
- Are the surplus rock and other inert C&D material disposed of at the public fill sites? | | | ✓ | | c'
- Is a waste management plan prepared? | | | ✓ | | -par

	• 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?	✓			✓	CS02 ① P1120578 CS03 ② P1120566
	• 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?	✓			✓ CS030/P11 20564
	• 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?			✓	th...
	• Is suitable buffer zone provided and work areas fenced off with hoarding (not less than 2.4m from ground level)?			✓	...il
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?				✓	CS03①P1120564
	• 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?		✓			

Observations for this month

① Drip trays of diesel drums were accumulated with sand and mud.

② Waste were accumulated around a waste skip

IEC Representative	Environmental Manager	Contractor's Representative CS02
Florence Yuen		
(Florence Yuen)	(LINDSAY PICKLES)	(Leo Wong)

Observations for this month

① A stockpile of C&D material was not covered with tarpaulin sheets or other means.

② A few oil drums were not provided with drip trays. Oil stain was observed on bareground.

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

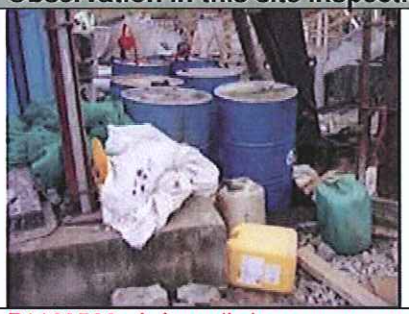
Contract CS02 Rainforest	
Follow up observations in January 2011	
Observation in last site inspection	**Observation in this site inspection**
	
P1110927: General refuse and construction waste were accumulated on site. The Contractor was reminded to remove them from site more frequently to avoid accumulation.	P1120580: General refuse and construction waste were accumulated around the waste skip. The Contractor was reminded to remove them from site more frequently to avoid accumulation.
	
P1110935: Over 20 cement bags were not covered by any means. The Contractor was reminded to cover them with tarpaulin sheets or other means to suppress dust.	Closed - P1120579: Cement bags were covered with tarpaulin sheets to suppress dust.
	
P1110939: Access road was dry and dusty. The Contractor was reminded to provide water spray more frequently to suppress dust.	Closed - P1120582: Water spray was provided to access road to suppress dust.

Ocean Park Master Redevelopment Project
Contract P007
Independent Environmental Checker

MONTHLY SITE INSPECTION PHOTOS

	
P1110937: General refuse and construction waste were accumulated on site. The Contractor was reminded to remove them from site more frequently to avoid accumulation.	P1120581: General refuse and construction waste were accumulated around the waste skip. The Contractor was reminded to remove them from site more frequently to avoid accumulation.

Observations in February 2011	
	
P1120578: A drip tray with diesel drums was accumulated with sand and mud. The Contractor was reminded to clear any materials accumulated in the drip tray to ensure effectiveness.	

Contract CS03 Trill Mountain and Polar Adventure	
Follow up observations in January 2011	
Observation in last site inspection	**Observation in this site inspection**
	
P1110923: An oil drum was not placed in drip tray. The Contractor was reminded to place the oil drum in drip tray to avoid oil spillage.	P1120566: A few oil drums were scattered on bare ground and oil stain was observed. The Contractor was reminded to place them in drip trays to avoid oil spillage and dispose the contaminated sand as chemical waste.

Ocean Park Master Redevelopment Project
Contract P007
Independent Environmental Checker

MONTHLY SITE INSPECTION PHOTOS

	
P1110901: General refuse were scattered on site. The Contractor was reminded to remove them from site more frequently to avoid accumulation.	Closed - P1120568: General refuse were collected and stored at a centralised location for disposal off-site.
	
P1110921: Drip tray of a generator was accumulated with rocks. The Contractor was reminded to clear any materials accumulated in the drip tray to ensure effectiveness.	Closed - P1120574: Rocks accumulated in drip tray with a generator had been cleared.

Observations in February 2011	
	
P1120564: A stockpile of C&D material was uncovered. The Contractor was reminded to cover any idle stockpiles on-site with tarpaulin sheets or other means to suppress dust.	

Part 2 CS-02 EM&A REPORT (February 2011)

W. Hing Construction Co., Ltd.

Ocean Park Redevelopment Project
Contract No. CS02 - Rainforest

Monthly EM&A Report
(Version 1.0)

February 2011

Approved By: _____

Billy Lee
Construction Manager

REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

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EXECUTIVE SUMMARY

Introduction

This is the 21st monthly Environmental Monitoring and Audit (EM&A) Report prepared by W. Hing Construction Co., Ltd. for the Contract No. CS02 "Ocean Park Redevelopment Project – Rainforest" (hereinafter called "the Project"). The Project was commenced on 11th May 2009. This document reports the findings of the environmental auditing works conducted in February 2011.

- Rockwork Installation, Wiring, E&M Equipment Installation, Metal Works Installation and Finishing Works at Exhibition House
- Fit-out Works for Retail Shops, Cladding for Ancillary Building, Tree Planting, Paving Works and Finishing Works at the External Area

Environmental Monitoring and Audit Works

Environmental monitoring and audit works for the Project was performed as stipulated in the updated EM&A Manual. Weekly Environmental site audits were conducted on 10th, 17th 24th February 2011. No non-compliance was observed during the site audits. Monthly Environmental Audit was conducted on 16th February 2011 by Independent Environmental Checker (IEC). No non-compliance was observed during the site audits.

The implementation of the environmental mitigation measures, Event Action Plans and environmental complaint handling procedures were also checked.

No notification of exceedance was received from the Project Environmental Team Leader (ETL) in the reporting month. Summary of the events and action taken in the reporting month is tabulated in **Table I**.

Table I Summary Table for Events Recorded in the Reporting Month

Parameter	No. of Events		No. of Events Due to the Project	Action Taken
	Action Level	Limit Level		
1-hr TSP	0	0	0	N/A
24-hr TSP	0	0	0	N/A
Noise	0	0	0	N/A

Environmental Licenses and Permits

Licenses/Permits granted to the Project include the Environmental Permit (EP) for the Redevelopment Project, Registration of Waste Producer, Registration of Chemical Waste Producer and Water Discharge License.

A notification pursuant to Section 3(1) of the Air Pollution Control (Construction Dust) Regulation was received prior the commencement of the Project.

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:

- Wiring, E&M Equipment Installation, Metal Works Installation, E&M Equipment Testing and Commissioning and Finishing Works at Exhibition House
- Fit-out works for Rental Shops, Cladding for Ancillary Building, Roadworks, Tree Planting, Paving Works, E&M Equipment Testing and Commissioning and Finishing Works at the External Area

1. INTRODUCTION

1.1 Background

1.11 The "Repositioning and Long Term Operation Plan of Ocean Park" has been implementing by the Ocean Park Corporation at its existing site of Ocean Park and Nam Long Shan, Aberdeen. The purpose of this project is to upgrade and expand the existing Ocean Park to meet anticipated visitor demands and to position Ocean Park as a premium tourist attraction and a regional leader in themed recreational and educational park experience. The site layout plan is illustrated in APPENDIX A.

1.12 An environmental impact assessment (EIA) report for "Repositioning and Long Term Operation Plan of Ocean Park" (Report No. 121/2006 and Register No. AEIAR-101/2006) has been prepared in 2006 and the Environmental Monitoring and Audit Manual (Project's EM&A Manual) was also included as part of the EIA report in the register. An Environmental Permit (EP) No. EP-249/2006 was issued on 28 July 2006 for the above project to Ocean Park Corporation as Permit Holder and a varied EP No. EP-249/2006/A was subsequently issued on 23 December 2006 for the above project to Ocean Park Corporation as Permit Holder.

1.13 W. Hing Construction Co., Ltd. (the Contractor) was commissioned by the Employer to undertake the design and construction of the Contract No. CS02 "Ocean Park Redevelopment Project –Rainforest" (hereinafter call "the Project").

1.14 The Project includes design and construction of:

Rainforest Land (July also be referred to as Expedition River).

1. New roadwork and infrastructure support;
2. Open seatin;
3. Construction of elevated walkway;
4. Construction of one to three storey buildings (exhibit building);
5. Construction of back of house facilities;
6. Installation of building services;
7. Construction of associated footpaths;
8. Construction of ride lagoon;
9. Construction of guest route paving and railing, utilities & services works and associated civil engineering works;
10. Soft and hard landscape works;
11. Balustrade, skylight, window, lourve, cladding and canopy, retail/food carts and kiosks, vertical green walls and structure;
12. Provision of new and diversion/decommissioning of existing drainage, sewerage, water mains and underground utilities as necessary for the operation of the Ocean Park;
13. Construction of all ancillary works;
14. Installation of the water rapids ride (also known as raft ride) and associated services;
15. Co-ordination of the works with the Works for the installation of props to be supplied and installed by OTHER Contractors;

16. Construction of underground utilities and services;
17. Construction of earth retaining structures;
18. Take over the completed filtration plant room structure by previous contractor and complete all outstanding works, finishes, waterproofing, E&M installations, etc.
19. Take over and verify completed foundation by previous contractor for the Rainforest Exhibition Building and Rapids Ride elevated structure;

General

20. Take over of existing hoardings with graphics;
21. Tree transplanting and protection to remaining trees if any;
22. Installation of civil provisions for IT system and all operational equipment ;
23. Construction of irrigation and drainage system for planting area;
24. Supply and installation of all elevator(s);
25. Design and build all temporary works with necessary statutory submissions including, but not limited to:
    (a) Temporary support to excavations greater than 2m in depth;
    (b) Temporary cut or fill slopes greater than 2m high;
    (c) Falsework and temporary platforms, structures and the like required;
    (d) Temporary platforms, structures and the like required for supporting construction plant; and
    (e) Excavation and lateral supports for all Rainforest works; and
26. Design and build works as specified in the Contract, but not necessary limited to, with necessary statutory submissions, including the following:
    (a) Artificial Rockwork.
    (b) GRC/GRG/GRP/shotcrete works and associated supporting structures.
    (c) Artificial trees and plants.
    (d) Mesh long span cover structure for Rainforest Exhibit building (also known as exhibition building or Rainforest box) including the metal structural frame.
    (e) Animal exhibits:

    Building Services as further specified in Sections 30 to 37 and Sections 45 to 49
    (g) Water features
    (h) Interpretives, interactive interpretives, and building marquee signs.
    (i) Life support systems.
    (j) Maintenance and delivery machinery including hoist(s).
    (k) Special Effects including lighting and sound effects.
    (l) Rope suspension cross bridge at exhibit exit (cargo crawl bridge).

1.15 This is the 21st monthly EM&A Report summarizing the EM&A works for the Project in February 2011.

1.2 Project Organizations

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

- The Engineer and Project Environmental Team Leader (ETL) – Aecom Asia Consultant Ltd. (AACL)
- Contractor Environmental Team – W. Hing Construction Co. Ltd.
- Independent Environmental Checker (IEC) – Mott MacDonald HK Ltd.

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

1.2.3 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	Ms Lindsay Pickles	Project Development Director	2910 3109	2814 0179
	Mr. Andy Ng		90118067	
Contractor ET	Mr. Billy Lee	Construction Manager	6193 4096	2518 4883
	Mr. Eddie Chiu	Environmental & Safety Manager	6105 4075	
	Mr. Wesley Lo	Environmental Officer	6277 1749	
	Mr. Kan Kwok	ET member (Safety Officer)	6277 1747	
IEC	Miss Florence Yuen	Independent Environmental Checker (IEC) Representative	2828 5757	28271823

1.3 Construction Programme

1.3.1 The site activities undertaken in the reporting month were:

- Rockwork Installation, Wiring, E&M Equipment Installation, Metal Works Installation and Finishing Works at Exhibition House
- Rapid Ride Trough Construction, Fit-out works for Rental Shops, Cladding for Ancillary Building, Roadworks, Tree Planting, Paving Works, and Finishing Works at the External Area

1.4 Summary of EM&A Requirements

1.4.1 The EM&A program 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

1.4.2 This report presents the environmental monitoring and audit works for the Project in February 2011.

2. ENVIRONMENTAL AUDIT

2.1 Environmental Site Audits

2.1.1 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.

2.1.2 Site audits for the Project in the reporting month were conducted on 10th, 17th, 24th February 2011. No non-compliance was observed during the site audits. The monthly site audits conducted by the IEC conducted on 16th February 2011 are attached in APPENDIX B.

2.1.3 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	16/02/2011	Accumulation of construction waste near the metal skip was observed.	This item was rectified on 16/02/2011.
	16/02/2011	Chemical substances shall be stored within the drip tray.	This item was rectified on 16/02/2011.

2.2 Status of Environmental Licensing and Permitting

2.2.1 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				
WPN5214-176-W1150-03	13/05/2009	N/A	Waste Disposal (Chemical Waste) (General) Regulation -- Registration of Waste Producer	Valid
Construction Noise Permit				
GW-RS1042-10	09/12/2010	03/06/2011	Notice of Issue of Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	Valid
GW-RS0504-10	18/06/2010	08/12/2010	Notice of Issue of Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	Expired
GW-RS0925-09	14/12/2009	08/06/2010	Notice of Issue of Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	Expired
GW-RS0756-09	10/10/2009	13/03/2009	Notice of Issue of Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	Cancel
Water Discharge License				
WT00004136-2009	19/06/2009	30/06/2014	Discharge of industrial trade effluent arising from the Sedimentation tank at the construction site (CS02 Rainforest, Ocean Park Redevelopment Project) to communal storm water drain.	Valid
Others				
305349	N/A	N/A	Notification Pursuant to Section 3(1) of the Air Pollution Control (Construction Dust) Regulation	Valid
WFG07578	N/A	N/A	Construction Waste Disposal Billing Account with EPD	Valid

2.3 Status of Waste Management

2.3.1 The amount of waste generated by the construction activities of the Project in the reporting month is attached in APPENDIX C.

2.4 Implementation Status of Environmental Mitigation Measures

2.4.1 According to the Environmental Permit and the Contractor's EM&A Manual, the mitigation measures detailed in the documents are required to be implemented. An updated summary of the EMIS is provided in APPENDIX D.

2.5 Summary of Exceedances

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

2.6 Implementation Status of Event Action Plan

2.6.1 The Event Action Plans for air quality and construction noise are presented in APPENDIX E.

2.7 Summary of Complaints and Prosecutions

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

3. FUTURE KEY ISSUES

3.1 Key Issues for the Coming Month

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

- Wiring, E&M Equipment Installation, Metal Works Installation, E&M Equipment Testing and Commissioning and Finishing Works at Exhibition House
- Fit-out works for Rental Shops, Cladding for Ancillary Building, Roadworks, Tree Planting, Paving Works, E&M Equipment Testing and Commissioning and Finishing Works at the External Area

3.2 Construction Program for the Next Month

3.2.1 The tentative construction program for the Project is provided in APPENDIX F.

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

4.1.1 Three environmental site audits were performed in February 2011. No non-compliance was observed during the site audits.

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

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

4.2 Recommendations

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

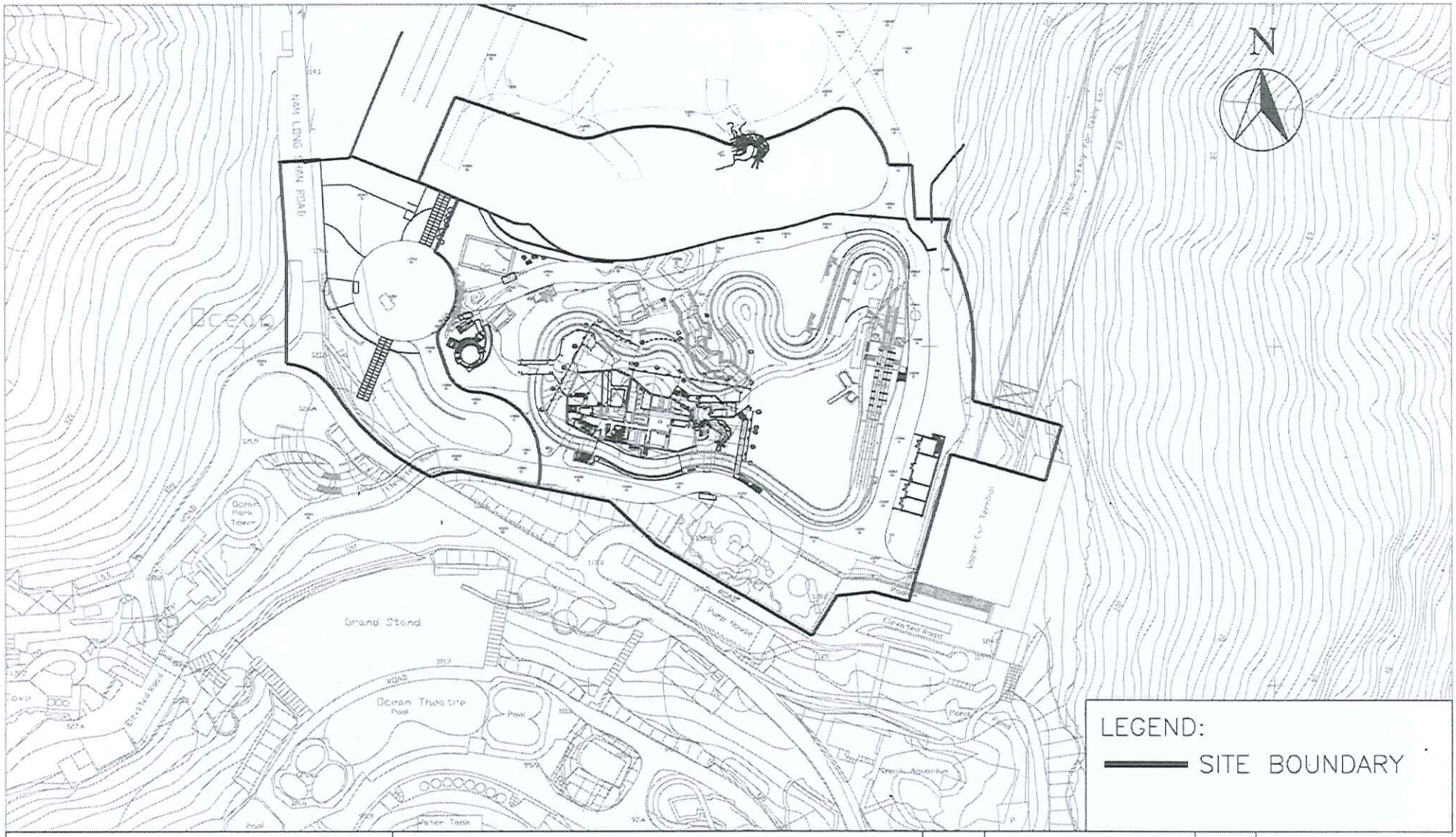
Chemical Management

- Chemical container shall be stored in the drip tray.

Waste Management

- Accumulation of construction waste at the waste collection point was observed. Contractor was reminded to clear and remove waste water from the site more frequently.

APPENDIX A
SITE LAYOUT PLAN



永興聯合建築有限公司
W. HING CONSTRUCTION CO. LTD.

CONTRACT NO. CS02
OCEAN PARK REDEVELOPMENT PROJECT – RAINFOREST

SITE LAYOUT PLAN

SCALE	A4 1:1500	DATE	JULY 2009
CHECK	Kan Kwok	DRAWN	HC LAU
JOB NO.	CS02	DRAWING NO.	CS02/SL/01
		REV	—

APPENDIX B
SITE AUDIT SUMMARY

Ocean Park Master Redevelopment Project
Contract P007
Independent Environmental Checker

MONTHLY SITE INSPECTION CHECKLIST

Inspection Date	16/02/2011	Time	15:30	Inspected By	EM: IEC: Florence Yuen Contractor: CS02: L. Wong CS03: W. Chung
Site Location	CS02 CS03				

Weather

Condition		Sunny		Fine	✓	Overcast		Drizzle		Rain		Storm		Hazy
Temperature	13 °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? | | | | ✓ | P112580 CS02 ② P112581 |
- 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? | ✓ | | | ✓ | P112580 CS02 ② P112581 |
- 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? | | ✓ | | | e a |
- Are the surplus rock and other inert C&D material disposed of at the public fill sites? | | | ✓ | | c |
- Is a waste management plan prepared? | | | ✓ | | par |

	• 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?	✓			✓	CS02 ① P1120578 CS03 ② P1120566
	• 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?	✓			✓ CS030/P11 20564
	• 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				9

• 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?				✓	CS03 (P) 1120564
	• 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?		✓			

Observations for this month

① Drip trays of diesel drums were accumulated with sand and mud.

② Waste were accumulated around a waste skip

IEC Representative	Environmental Manager	Contractor's Representative CS02
Florence Yuen		
(Florence Yuen)	(LINDSAY PICKLES)	(Leo Wong)

Observations for this month

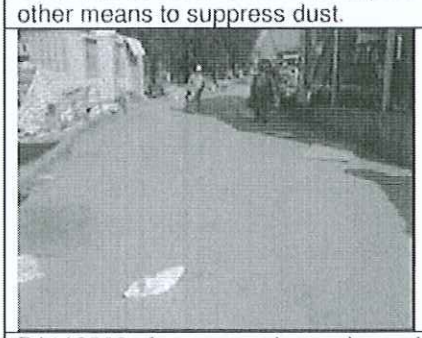
① A stockpile of C&D material was not covered with tarpaulin sheets or other means.

② A few oil drums were not provided with drip trays. Oil stain was observed on background.

IEC Representative	Environmental Manager	Contractor's Representative CS03
Florence Yuen		
(Florence Yuen)	(LINDSAY RICKLES)	(Winson Chung)

Ocean Park Master Redevelopment Project
Contract P007
Independent Environmental Checker

MONTHLY SITE INSPECTION PHOTOS

Contract CS02 Rainforest	
Follow up observations in January 2011	
Observation in last site inspection	**Observation in this site inspection**
	
P1110927: General refuse and construction waste were accumulated on site. The Contractor was reminded to remove them from site more frequently to avoid accumulation.	P1120580: General refuse and construction waste were accumulated around the waste skip. The Contractor was reminded to remove them from site more frequently to avoid accumulation.
	
P1110935: Over 20 cement bags were not covered by any means. The Contractor was reminded to cover them with tarpaulin sheets or other means to suppress dust.	Closed - P1120579: Cement bags were covered with tarpaulin sheets to suppress dust.
	
P1110939: Access road was dry and dusty. The Contractor was reminded to provide water spray more frequently to suppress dust.	Closed - P1120582: Water spray was provided to access road to suppress dust.

Ocean Park Master Redevelopment Project
Contract P007
Independent Environmental Checker

MONTHLY SITE INSPECTION PHOTOS

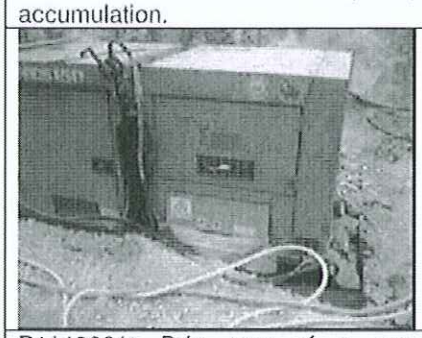
	
P1110937: General refuse and construction waste were accumulated on site. The Contractor was reminded to remove them from site more frequently to avoid accumulation.	P1120581: General refuse and construction waste were accumulated around the waste skip. The Contractor was reminded to remove them from site more frequently to avoid accumulation.

Observations in February 2011	
	
P1120578: A drip tray with diesel drums was accumulated with sand and mud. The Contractor was reminded to clear any materials accumulated in the drip tray to ensure effectiveness.	

Contract CS03 Trill Mountain and Polar Adventure	
Follow up observations in January 2011	
Observation in last site inspection	**Observation in this site inspection**
	
P1110923: An oil drum was not placed in drip tray. The Contractor was reminded to place the oil drum in drip tray to avoid oil spillage.	P1120566: A few oil drums were scattered on bare ground and oil stain was observed. The Contractor was reminded to place them in drip trays to avoid oil spillage and dispose the contaminated sand as chemical waste.

Ocean Park Master Redevelopment Project
Contract P007
Independent Environmental Checker

MONTHLY SITE INSPECTION PHOTOS

	
P1110901: General refuse were scattered on site. The Contractor was reminded to remove them from site more frequently to avoid accumulation.	Closed - P1120568: General refuse were collected and stored at a centralised location for disposal off-site.
	
P1110921: Drip tray of a generator was accumulated with rocks. The Contractor was reminded to clear any materials accumulated in the drip tray to ensure effectiveness.	Closed - P1120574: Rocks accumulated in drip tray with a generator had been cleared.

Observations in February 2011	
	
P1120564: A stockpile of C&D material was uncovered. The Contractor was reminded to cover any idle stockpiles on-site with tarpaulin sheets or other means to suppress dust.	

APPENDIX C
SUMMARY OF WASTE GENERATED

W. Hing Construction Co., Ltd.
Ocean Park Redevelopment Project Contract No. CS02 - Rainforest

Monthly Summary Waste Flow Table

Month	Actual Quantities of Inert C&D Materials Generated		Non-inert C&D Waste disposed to Sorting Facilities at Tseung Kwan O	Non-inert C&D Waste disposed to SENT Landfill	Chemical Waste disposed to Chemical Waste Treatment Facility at Tsing Yi	Recycle Metals	Packaging and other general refuse (e.g. Plastic, paper wrapping etc.)
	Disposed to Fill Bank at Tseung Kwan O	Disposed to Public Fill Barging Point at Quarry Bay / Chai Wan *					
	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)
May-09	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Jun-09	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Jul-09	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Aug-09	N/A	10.1	N/A	23.74	N/A	N/A	N/A
Sep-09	N/A	152.30	N/A	9.27	N/A	N/A	N/A
Oct-09	N/A	256.09	N/A	20.55	N/A	N/A	N/A
Nov-09	N/A	522.69	N/A	23.15	N/A	N/A	N/A
Dec-09	N/A	207.94	N/A	22.46	N/A	N/A	N/A
Jan-10	N/A	427.83	N/A	39.62	N/A	N/A	N/A
Feb-10	N/A	437.81	N/A	21.44	N/A	N/A	N/A
Mar-10	N/A	235.38	N/A	33.51	N/A	N/A	N/A
Apr-10	N/A	504.52	N/A	33.04	N/A	N/A	N/A
May-10	N/A	577.89	N/A	26.1	N/A	N/A	N/A
Jun-10	N/A	565.63	N/A	41.34	N/A	N/A	N/A
Jul-10	N/A	732.8	N/A	37.71	N/A	N/A	N/A
Aug-10	N/A	889.23	N/A	46.38	N/A	N/A	N/A
Sep-10	N/A	1506.21	N/A	42.31	N/A	N/A	N/A
Oct-10	N/A	1025.56	N/A	72.64	N/A	N/A	N/A
Nov-10	N/A	768.63	N/A	124.13	N/A	N/A	N/A
Dec-10	N/A	194.61	N/A	91.33	N/A	N/A	N/A
Jan-11	N/A	47.87	N/A	27.44	N/A	N/A	N/A
Feb-11	N/A	92.71	N/A	38.95	N/A	N/A	N/A
Total:	0	9155.80	0	775.11	0	0	0

APPENDIX D

ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE (EMIS)

APPENDIX D - Summary of Environmental Mitigation Implementation Schedule

Types of Impacts	Mitigation Measures	Status
Construction Dust	◆ Use of regular watering, with complete coverage, to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather.	C
	◆ Use of frequent watering for particularly dusty construction areas, temporary stockpiles and areas close to ASRs.	C
	◆ Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering shall be applied to aggregate fines.	C
	◆ Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs.	C
	◆ Restricting heights from which materials are dropped, as far as practicable to minimize the fugitive dust arising from unloading/ loading.	C
	◆ Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations.	C
	◆ Use of vehicle wheel and body washing facilities at the exit points of the site.	C
	◆ Provision of wind shield and dust extraction units or similar dust mitigation measures at the loading points, and use of water sprinklers at the loading area where dust generation is likely during the loading process of loose material, particularly in dry seasons/ periods.	C
	◆ Imposition of speed controls for vehicles on unpaved site roads. Ten kilometers per hour is the recommended limit.	C
	◆ Dusty activities should be re-scheduled if high-wind conditions are encountered.	N/A
	◆ Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs.	N/A
	◆ Suitable buffer zone should be provided and the works areas should be fenced off with hoarding. The height of hoarding should not be less than 2.4m from ground level.	N/A
	Crushing Plant	
	◆ Water sprays on the crusher. •	N/A
	◆ Fabric filters installed for the crushing plant. •	N/A
	◆ When transferring materials from crusher to the conveyors, chutes or dust curtains would be used for controlling dust.	N/A

Remarks:

C	Compliance of mitigation measure	NC	Non-compliance of mitigation measure	N/A	Not Applicable
*	Non-compliance but rectified by the contractor	R	Recommendation was made during site audit but improved/rectified by the contractor.		

APPENDIX D - Summary of Environmental Mitigation Implementation Schedule

Types of Impacts	Mitigation Measures	Status
Construction Dust	*Barging Point & Conveyor Belt System*	
	◆ The conveyors would be placed within a totally enclosed structure •	N/A
	◆ Profiled steel cladding would be provided at two sides of loading point. •	N/A
	◆ Dust suppression sprays would be installed and operated in strategic locations at the feeding inlet and outlet.	N/A
	◆ The barging point would be placed within a totally enclosed structure incorporating an enclosed chute for material transfer to the barge. Flexible curtain would be hanged on the enclosed chute prevent dust emission when excavated materials/rocks transported into the barge.	N/A
	◆ Some areas of the Park would remain open for visitors during the construction period. Therefore, suitable buffer zones from major construction activities should be provided where practical and the works areas should be fenced off with hoarding during the construction phase. It is recommended to erect hoarding of a height not less than 2.4m from ground level.	N/A
Construction Noise	*Construction Phase*	
	◆ Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme	C
	◆ Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction programme	C
	◆ Mobile plant, if any, should be sited as far from NSRs as possible.	C
	◆ Machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum	C
	◆ Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs	C
	◆ Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities	N/A

Remarks:

C	Compliance of mitigation measure	NC	Non-compliance of mitigation measure	N/A	Not Applicable
*	Non-compliance but rectified by the contractor	R	Recommendation was made during site audit but improved/rectified by the contractor.		

APPENDIX D - Summary of Environmental Mitigation Implementation Schedule

Types of Impacts	Mitigation Measures	Status
Construction Noise	*Adoption of Quieter Plant* ◆ In order to reduce the excessive noise impacts at the affected NSRs at the Waterfront during normal daytime working hours, quieter plants are recommended. The Contractors do not have to use specific items of quiet plant adopted in this assessment. The Contractors may use other type of quiet plant, which have the same total SWL, to meet their needs	C
	Use of Movable Noise Barrier ◆ The use of movable barrier for certain PME could further alleviate the construction noise impacts. In general, 5dB (A) reduction for movable PME and 10dB (A) for stationary PME can be achieved depending on the actual design of movable noise barrier. ◆ The Contractor should be responsible for designing of the movable noise barrier with due consideration given to the size of the PME and the requirement of intercepting the line of sight between the NSRs and PME. Barrier material of surface mass in excess of 7kg/m2 is recommended to achieve the predicted screening effect. ◆ Exceedance of up to 5dB (A) would be predicted at the OPC Guest Route during the examination periods. Early liaison with the OPC of this impacted area is recommended to plan for the construction programme. Noisy construction activities should be avoided during the examination period as far as practicable so as to reduce the potential noise impact at the area to comply with the noise criterion of 65dB(A).	C C N/A

Remarks:

C	Compliance of mitigation measure	NC	Non-compliance of mitigation measure	N/A	Not Applicable
*	Non-compliance but rectified by the contractor	R	Recommendation was made during site audit but improved/rectified by the contractor.		

APPENDIX D - Summary of Environmental Mitigation Implementation Schedule

Types of Impacts	Mitigation Measures	Status
Ecology	*Construction Phase*	
	◆ All excavation works carried out close to water bodies shall be carefully controlled to avoid runoff entering watercourses, especially during periods of heavy rain.	C
	◆ Site runoff shall be directed towards regularly cleaned and maintained silt traps and where appropriate, oil/grease separators to minimize risk of sedimentation and pollution.	N/A
	◆ Suitable size / capacity silt traps and oil/grease interceptors shall be used.	N/A
	◆ Noise mitigation measures including the use of quiet construction plant and movable noise barriers shall be implemented to minimize disturbance to habitats adjacent to the work areas.	N/A
	◆ Trees located within the works areas shall be preserved as far as practicable.	C
	◆ Placement of equipment or stockpile in designated works areas and access routes selected on existing disturbed land to minimise disturbance to natural habitats	C
	◆ Construction activities shall be restricted to the work areas that would be clearly demarcated	C
	◆ The work areas shall be reinstated immediately after completion of the works	C
	◆ Waste skips shall be provided to collect general refuse and construction wastes. The wastes would be disposed of timely and properly off-site.	R
	◆ Drainage arrangements shall include sediment traps to collect and control construction run-off	C
	◆ Open burning on works sites is illegal, and shall be strictly enforced	C
	◆ Landscaping works on newly formed land shall as far as possible make use of native plant species	C

Remarks:

C	Compliance of mitigation measure	NC	Non-compliance of mitigation measure	N/A	Not Applicable
*	Non-compliance but rectified by the contractor	R	Recommendation was made during site audit but improved/rectified by the contractor.		

APPENDIX D - Summary of Environmental Mitigation Implementation Schedule

Types of Impacts	Mitigation Measures	Status
Water Quality	*Construction Runoff and Drainage*	
	◆ Before commencing any site formation work, all sewer and drainage connections should be sealed to prevent debris, soil, sand etc. from entering public sewers/drains	C
	◆ Temporary ditches should be provided to facilitate run-off discharge into appropriate watercourses, via appropriately sized/ designed silt retention pond or similar structure. No site run-off should enter artificial ponds. Cut-off ditches should be provided for all major site clearance/ excavation works where soils would be exposed so that instances of uncontrolled run-off from exposed areas would be minimized. As well as channels, earth/ concrete bunds and/ or sand bags, as appropriate, should be deployed to direct surface run-off towards channels. Catch pits and perimeter channels should be constructed in advance of relevant site formation works.	C
	◆ Boundaries of earthworks should be marked and surrounded by dykes or embankments for flood protection, as necessary.	C
	◆ Sand/silt removal facilities such as sand/silt traps and sediment basins should be provided to remove sand/silt particles from runoff to meet the requirements of the Technical Memorandum standard under the Water Pollution Control Ordinance. The design of silt removal facilities should be based on the guidelines provided in ProPECC PN 1/94. All drainage facilities and erosion and sediment control structures should be inspected monthly and maintained to ensure proper and efficient operation at all times and particularly during rainstorms.	C
	◆ Silt removal facilities, channels and manholes should be maintained and the deposited silt and grit should be regularly removed, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times.	C
	◆ Exposed soil surfaces should be covered.	C

Remarks:

C	Compliance of mitigation measure	NC	Non-compliance of mitigation measure	N/A	Not Applicable
*	Non-compliance but rectified by the contractor	R	Recommendation was made during site audit but improved/rectified by the contractor.		

APPENDIX D - Summary of Environmental Mitigation Implementation Schedule

Types of Impacts	Mitigation Measures	Status
Water Quality	◆ Water pumped out from foundation excavations should be discharged into silt removal facilities.	C
	◆ If excavation cannot be avoided during rainy seasons, temporarily exposed slope/soil surfaces should be covered by a tarpaulin or other means, as far as practicable, and temporary access roads should be protected by crushed stone or gravel, as excavation proceeds. Interceptiong channels should be provided (e.g. along the crest/ edge of the excavation) to prevent storm runoff from washing across exposed soil surfaces. Arrangements should always be in place to ensure that adequate surface protection measures can be safely carried out well before the arrival of a rainstorm. Other measures that need to be implemented before, during and after rainstorms are summarized in ProPECC PN 1/94.	C
	◆ Exposed soil areas should be minimized to reduce potential for increased siltation and contamination of runoff.	C
	◆ Earthwork final surfaces should be well compacted and subsequent permanent work or surface protection should be immediately performed. Appropriate intercepting channels should be provided where necessary. Rainwater pumped out from trenches or excavations should be directed to silt removal facilities before discharge	C
	◆ Open stockpiles of construction materials or construction wastes on-site of more than 50m3 should be covered with tarpaulin or similar fabric during rainstorms	C
	General Construction Activities	
	◆ Debris and refuse generated on-site should be collected	C
	◆ Oils and fuels should only be used and stored in designated areas which have pollution prevention facilities. To prevent spillage of fuels and solvents to nearby water bodies and public drains	C
	Sewage from Construction Workforce	
	◆ Temporary sanitary facilities, such as portable chemical toilets, should be employed on-site where necessary to handle sewage from the workforce. A licensed contractor would be responsible for appropriate disposal of waste matter and maintenance of these facilities	C

Remarks:

C	Compliance of mitigation measure	NC	Non-compliance of mitigation measure	N/A	Not Applicable
*	Non-compliance but rectified by the contractor	R	Recommendation was made during site audit but improved/rectified by the contractor.		

APPENDIX D - Summary of Environmental Mitigation Implementation Schedule

Types of Impacts	Mitigation Measures	Status
Waste / Chemical	*Good Site Practice*	
	◆ nomination of an approved personnel, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site	C
	◆ regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors	C
	◆ training of site personnel in proper waste management and chemical handling procedures	C
	◆ provision of sufficient waste disposal points and regular collection for disposal	C
	◆ appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers	C
	Waste Reduction Measures	
	◆ sort C&D waste from demolition and decommissioning of the existing facilities to recover recyclable portions such as metals	C
	◆ segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal.	C
	◆ proper storage and site practices to minimise the potential for damage or contamination of construction materials	R
	◆ to encourage collection of aluminium cans by individual collectors, separate labelled bins shall be provided to segregate this waste from other general refuse generated by the work force.	C
	◆ plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.	R

Remarks:

C	Compliance of mitigation measure	NC	Non-compliance of mitigation measure	N/A	Not Applicable
*	Non-compliance but rectified by the contractor	R	Recommendation was made during site audit but improved/rectified by the contractor.		

APPENDIX D - Summary of Environmental Mitigation Implementation Schedule

Types of Impacts	Mitigation Measures	Status
Waste / Chemical	*General Refuse* ◆ General refuse should be stored in enclosed bins or compaction units separate from C&D material. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D material. Preferably an enclosed and covered area should be provided to reduce the occurrence of 'wind blown' light material.	R
	Construction and Demolition Material ◆ A Waste Management Plan should be prepared. ◆ In order to monitor the disposal of C&D and solid wastes at public filling facilities and landfills and to control fly-tipping, a trip-ticket system should be included. One may make reference to ETWB TCW No.31/2004 for details. ◆ A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be proposed.	C C C
	Chemical Waste ◆ If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a Chemical Waste Producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the Chemical Waste Treatment Centre at Tsing Yi, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation	C

Remarks:

C	Compliance of mitigation measure	NC	Non-compliance of mitigation measure	N/A	Not Applicable
*	Non-compliance but rectified by the contractor	R	Recommendation was made during site audit but improved/rectified by the contractor.		

APPENDIX E
EVENT ACTION PLANS

APPENDIX E - Event and Action Plan for Construction Noise

Event	Action		
	Contractor's ET	Contractor	PM
Action Level	1. Identify source 2. Notify Contractor and PM 3. Conduct additional noise monitoring to investigate the causes, if necessary 4. Report the investigation results to Contractor and PM 5. Discuss with Contractor for their formulation of remedial measures if the exceedance is related to construction works 6. Conduct additional monitoring to check mitigation effectiveness, if necessary	1. Take immediate action to avoid further exceedance 2. Submit noise mitigation proposals to Contractor's ET and PM. 3. Implement noise mitigation proposals	1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Require Contractor to propose remedial measures for the analysed noise problem 4. Ensure remedial measures are properly implemented
Limit Level	1. Identify source 2. Notify Contractor and PM 3. Conduct additional noise monitoring and analyse Contractor's working procedures to determine possible cause of exceedance, if necessary 4. Provide interim report to Contractor and PM on the causes and proposed action to be taken for the exceedances if exceedance is related to construction works 5. Assess effectiveness by additional monitoring and report Contractor and PM, if necessary 6. If exceedance stops, cease additional monitoring, if any	1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to Contractr's ET, and Pm within 3 working days of notification 3. Implement the agreed proposals 4. Resubmit proposals if problem still not under control. 5. Stop the relevant portion of works as determined by the PM until the exceedance is abated	1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Require Contractor to propose remedial measures for the analysed noise problem 4. Ensure remedial measures are properly implemented 5. If exceedance continues, consider what protion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.

APPENDIX E - Event and Action Plan for Air Quality

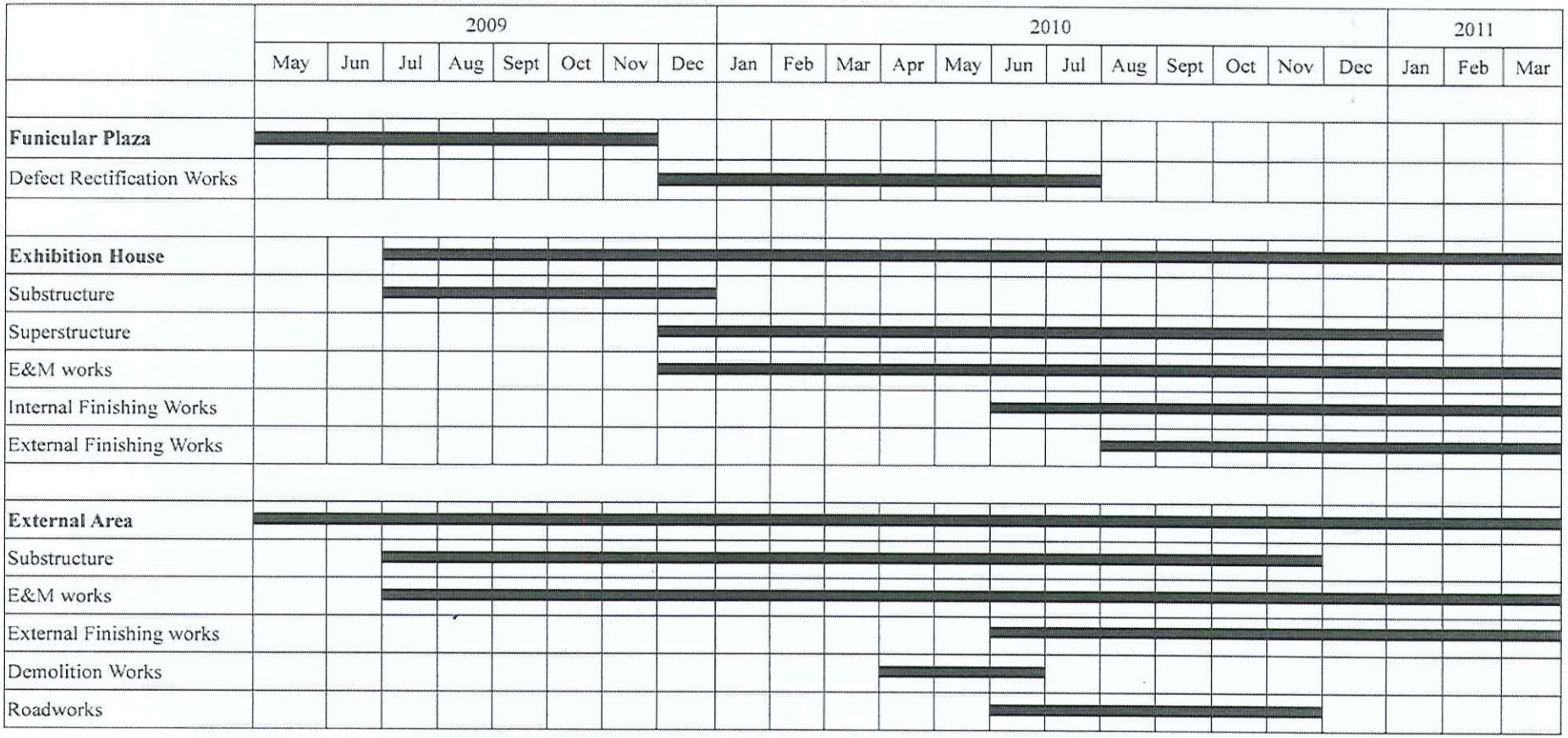
Event	Action		
	Contractor's ET	Contractor	PM
Action Level	1. Identify source 2. Notify Contractor and PM 3. Conduct additional monitoring to investigate the causes, if necessary 4. Report the investigation results and if exceedance to Contractor and PM	1. Take immediate action to avoid further exceedance and rectify any unacceptable practice. 2. Submit air mitigation proposal and PM for agreement if Contractor's ET indicated that exceedance is related to the construction works 3. Implement agreed proposal within a time scale agreed with PM	1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Require Contractor to submit air mitigation proposal 4. Ensure remedial measures are properly implemented
Limit Level	1. Identify source 2. Notify Contractor and PM 3. Conduct additional monitoring and investigate the causes, if necessary	1. Take immediate action to avoid further exceedance and rectify any unacceptable practice 2. In consultation with the PM, submit air mitigation proposal to PM for agreement within 3 working days of notification if Contractor's ET indicated that exceedances are related to construction works 3. Implement agreed proposal within a time scale agreed with PM 4. Amend working methods if appropriate.	1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Require Contractor to submit air mitigation proposal 4. Ensure remedial measures are properly implemented

APPENDIX F
TENTATIVE WORKS PROGRAMME

W. Hing Construction Co., Ltd.

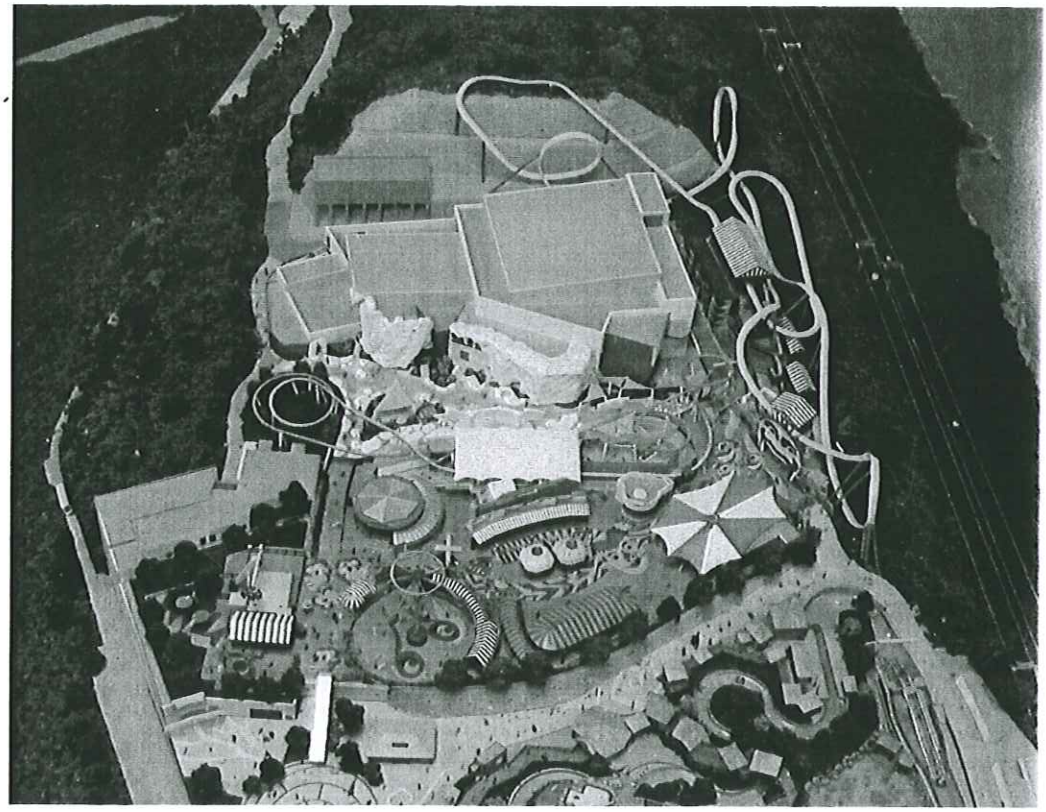
Ocean Park Redevelopment Project Contract No.: CS02 – Rainforest

Outline Program



Part 3 CS-03 EM&A REPORT (February 2011)

KADEN - ATAL JOINT VENTURE



Contract No. CS03

Ocean Park Redevelopment Project - Thrill Mountain & Polar Adventure

Monthly EM&A Report

February 2011

Prepared By	Winson Chung
Certified By	(Eric Wong) (Construction Manager)

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EXECUTIVE SUMMARY

Introduction

This is the 9th 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 February 2011.

The major site activities undertaken in the reporting month included:

- Construction of queue area and pools at North Pole;
- Construction of Tuxedos Restaurant at South Pole;
- Construction of Pools inside North Pole;
- Apply waterproofing membrane and carry out water test for roof of North Pole;
- Construction of Bobsled Station superstructure and installation of rides;
- Construction Footing and superstructure for Thrill Mountain;
- Erection of structure steel works for ride at Floorless Coaster Station;
- Handover of Substation Transformer Room to HEC at Floorless Coaster,
- Carry out wall finishing works for PA Building;
- Installation of Chiller Plant at South Pole Roof;
- Apply waterproofing for water tank at Summit Reservoir;
- Construction of Superstructure for Floorless Coaster;
- Construction of Drainage system and Water main for External Works;
- Construction of Road Work for EVA Access and
- Disposal Existing Stockpile prior to the excavation of footings.

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 11th 18th & 25th February 2011 and the environmental ICE monthly site inspection was conducted on 16th February 2011 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:

- Construction of Pools inside North Pole;
- Construction Superstructure for Floorless Coaster;
- Construction of Communal Toilet Structure at South Pole;
- Construction of Concrete Structure for Bobsled Station;
- Installation of Ride Track at Floorless Coaster and Bobsled Station;
- Construction of Concrete Structure for Thrill Mountain Area;
- Internal Finishing Works at PA Building;
- Construction of road works for permanent EVA Access;
- Construction of Drainage System and Water Main for Thrill Mountain and Bobsled Station Area.

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 February 2011.

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	Deputy Project Manager	3582 6099	3582 4877
	Mr. Eric Wong	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:

- Construction of queue area and pools at North Pole;
- Construction of Tuxedos Restaurant at South Pole;
- Construction of Pools inside North Pole;
- Apply waterproofing membrane and carry out water test for roof of North Pole;
- Construction of Bobsled Station superstructure and installation of rides;
- Construction Footing and superstructure for Thrill Mountain;
- Erection of structure steel works for ride at Floorless Coaster Station;
- Handover of Substation Transformer Room to HEC at Floorless Coaster,
- Carry out wall finishing works for PA Building;
- Installation of Chiller Plant at South Pole Roof;
- Apply waterproofing for water tank at Summit Reservoir;
- Construction of Superstructure for Floorless Coaster;
- Construction of Drainage system and Water main for External Works;
- Construction of Road Work for EVA Access 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 February 2011.

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 11th 18th & 25th February 2011 and the environmental ICE monthly site inspection was conducted on 16th February 2011. 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	11/02/11	General refuse were scattered on site.	Remove the waste from site more frequently or put into skip at nearby area.
	16/02/11	A few oil drums were not provided with drip trays. Oil stain was observed on bareground.	Provide drip tray to avoid oil spillage.
Dust Control	16/02/11	Stockpiles of C&D materials were not covered with tarpaulin sheets or other means.	Remove the C&D material in to the refuse skip and provide tarpaulin sheets to cover the stockpile.
	25/02/11	Some sections of haul roads were dry and dusty.	Provide water spray regularly to suppress dust.

Parameters	Date	Observations / Recommendations	Remediation/ Follow up
Air Pollution	16/2/11	N/A	

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-RS0036-11 GW-RS0932-10 GW-RS0933-10	01/02/2011 01/12/2010 23/11/2010	31/07/2011 31/05/2011 09/05/2011	Construction Noise Permit for Top of Nam Long Shan Rd., Ocean Park, 180 Wong Chuk Hang, Hong Kong	Valid Valid 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 February 2011

Waste Type	Examples	Actual quantity disposed (Tonnes / Liter)	Disposal Locations
C&D Waste	Construction waste (Plastic, wood and bamboo)	114.5 (T)	SENT Landfill

	Mixed rock & soil	964.7 (T)	CW barging point
Chemical waste	Used oil, spent solvent	400 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 waste water was recycled for wheel washing and dust control and Septic Tank should be maintain well functioning.

Air Quality Mitigation Measures

- The Contractor to ensure cement materials was well covered.
- The Contractor to ensure water spray was carry 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:

- Construction of Pools inside North Pole;
- Construction Superstructure for Floorless Coaster;
- Construction of Communal Toilet Structure at South Pole;
- Construction of Concrete Structure for Bobsled Station;
- Installation of Ride Track at Floorless Coaster and Bobsled Station;
- Construction of Concrete Structure for Thrill Mountain Area;
- Internal Finishing Works at PA Building;
- Construction of road works for permanent EVA Access;
- Construction of Drainage System and Water Main for Thrill Mountain and Bobsled Station Area.

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

Conclusions

4.1 Three environmental site audits were performed in February 2011. 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 waterspray 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.

Appendix A

Site Audit Summary

Ocean Park Master Redevelopment Project
Contract P007
Independent Environmental Checker

MONTHLY SITE INSPECTION CHECKLIST

Inspection Date	16/02/2011	Time	15:30	Inspected By	EM: IEC: Florence Yuen Contractor: CS02: L. Wong CS03: W. Chung
Site Location	CS02 CS03				

Weather

Condition	☐	Sunny	☐	Fine	☑	Overcast	☐	Drizzle	☐	Rain	☐	Storm	☐ Hazy
Temperature	13 °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? | | | | ✓ | P112058O CS02 ② P112058 |
- 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? | ✓ | | | ✓ | P112058O CS02 ② P112058 |
- 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? | | ✓ | | | e a |
- Are the surplus rock and other inert C&D material disposed of at the public fill sites? | | | ✓ | | c |
- Is a waste management plan prepared? | | | ✓ | | part

	• 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?	✓			✓	CS02 ① P1120578 CS03 ② P1120566
	• 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? CS03@P11 20564
- 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?				✓	CS03 ① P1120564
	• 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?		✓		

Observations for this month

① Drip trays of diesel drums were accumulated with sand and mud.

② Waste were accumulated around a waste skip

IEC Representative	Environmental Manager	Contractor's Representative CS02
Florence Yuen		
(Florence Yuen)	(LINDSAY PICKLES)	(Leo Wong)

Observations for this month

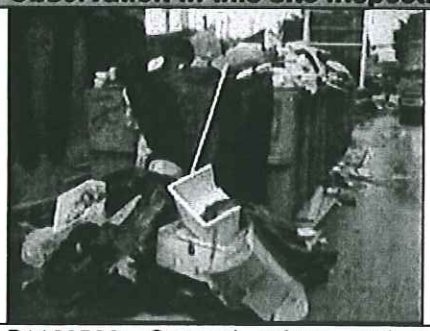
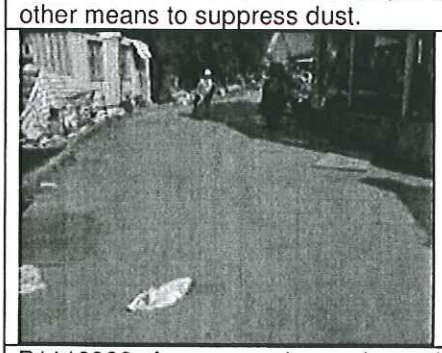
① A stockpile of C&D material was not covered with tarpaulin sheets or other means.

② A few oil drums were not provided with drip trays. Oil stain was observed on bareground.

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 CS02 Rainforest	
Follow up observations in January 2011	
Observation in last site inspection	**Observation in this site inspection**
	
P1110927: General refuse and construction waste were accumulated on site. The Contractor was reminded to remove them from site more frequently to avoid accumulation.	P1120580: General refuse and construction waste were accumulated around the waste skip. The Contractor was reminded to remove them from site more frequently to avoid accumulation.
	
P1110935: Over 20 cement bags were not covered by any means. The Contractor was reminded to cover them with tarpaulin sheets or other means to suppress dust.	Closed - P1120579: Cement bags were covered with tarpaulin sheets to suppress dust.
	
P1110939: Access road was dry and dusty. The Contractor was reminded to provide water spray more frequently to suppress dust.	Closed - P1120582: Water spray was provided to access road to suppress dust.

Ocean Park Master Redevelopment Project
Contract P007
Independent Environmental Checker

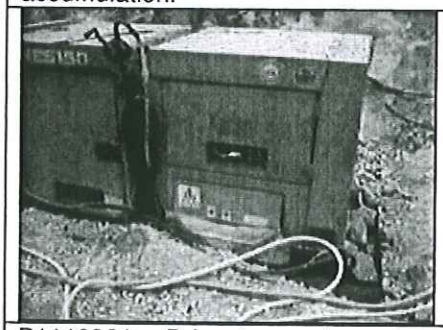
MONTHLY SITE INSPECTION PHOTOS

	
P1110937: General refuse and construction waste were accumulated on site. The Contractor was reminded to remove them from site more frequently to avoid accumulation.	P1120581: General refuse and construction waste were accumulated around the waste skip. The Contractor was reminded to remove them from site more frequently to avoid accumulation.

Observations in February 2011	
	
P1120578: A drip tray with diesel drums was accumulated with sand and mud. The Contractor was reminded to clear any materials accumulated in the drip tray to ensure effectiveness.	

Contract CS03 Trill Mountain and Polar Adventure	
Follow up observations in January 2011	
Observation in last site inspection	**Observation in this site inspection**
	
P1110923: An oil drum was not placed in drip tray. The Contractor was reminded to place the oil drum in drip tray to avoid oil spillage.	P1120566: A few oil drums were scattered on bare ground and oil stain was observed. The Contractor was reminded to place them in drip trays to avoid oil spillage and dispose the contaminated sand as chemical waste.

MONTHLY SITE INSPECTION PHOTOS

	
P1110901: General refuse were scattered on site. The Contractor was reminded to remove them from site more frequently to avoid accumulation.	Closed - P1120568: General refuse were collected and stored at a centralised location for disposal off-site.
	
P1110921: Drip tray of a generator was accumulated with rocks. The Contractor was reminded to clear any materials accumulated in the drip tray to ensure effectiveness.	Closed - P1120574: Rocks accumulated in drip tray with a generator had been cleared.

Observations in February 2011	
	
P1120564: A stockpile of C&D material was uncovered. The Contractor was reminded to cover any idle stockpiles on-site with tarpaulin sheets or other means to suppress dust.	

Part 4 Coral Survey Report

Appendix B
Coral Survey Report

OCEAN PARK CORPORATION MASTER REDEVELOPMENT PROJECT

CONTRACT NO. CS-03

THRILL MOUNTAIN AND POLAR ADVENTURE

CORAL IMPACT MONITORING

FEBRUARY 2011

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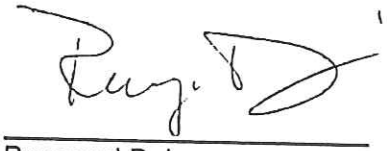


Raymond Dai
Senior Environmental Consultant /
Project Manager

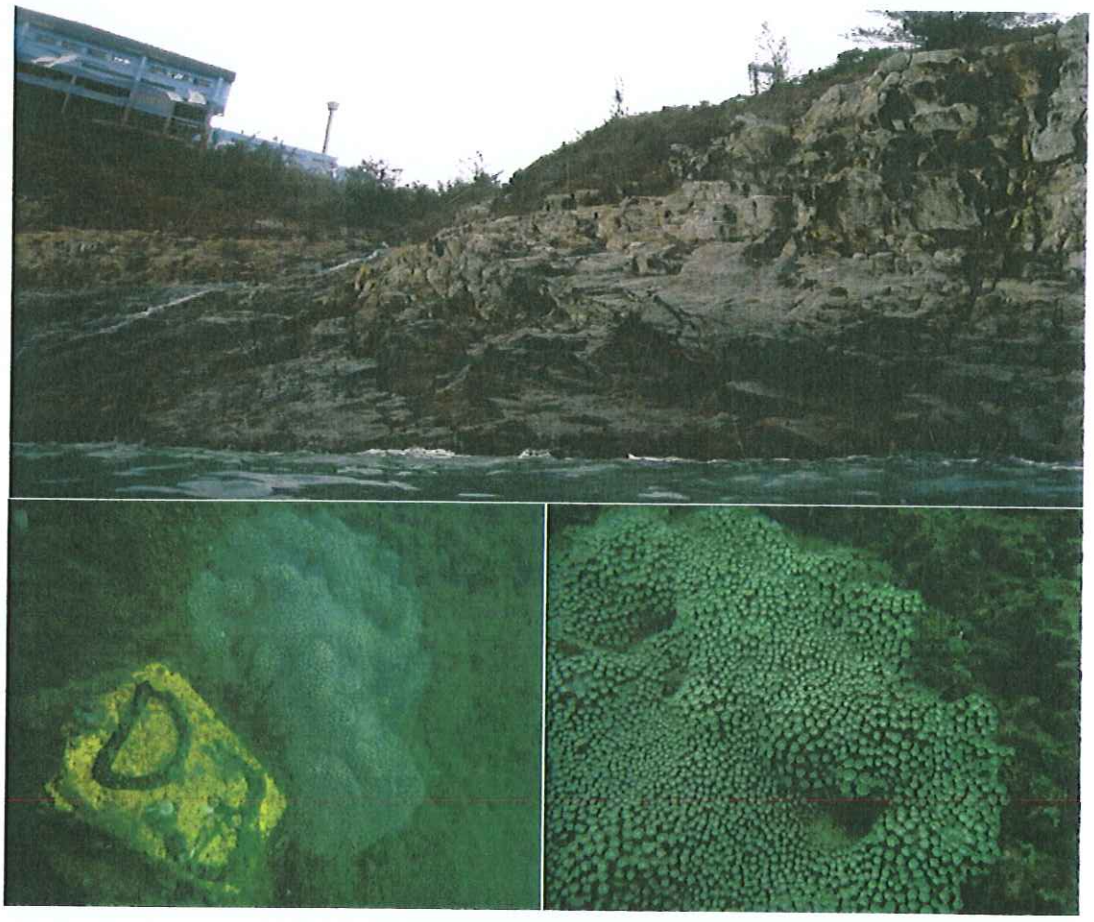
DATE:

2 March 2011

Ocean Park Corporation Master Redevelopment Project

Contract No. CS-03

Thrill Mountain and Polar Adventure



Report for

Coral Monitoring Survey

February 2011

miniprojects co. Ltd.

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3.2 Sites 1 to 5 and Control Site C – Percentage and thickness of Sedimentation, Bleaching and Mortality of the Re-tagged Coral Colonies in Coral Re-tagging Exercise and Baseline Data Collection (November 2009) and the Present Monitoring Survey (February 2011).
4.1 Evaluation of Monitoring Results against Action and Limit Level for Coral Monitoring Survey.

1 INTRODUCTION

1.1 Project Background

1.1.1 Ocean Park planned to upgrade and expand the existing area to meet the anticipated visitor demands and to position Ocean Park as a premium tourist attraction and a regional leader in the themed recreational and educational park experience.

1.1.2 Lam Environmental Services Limited (LAM) has been appointed to formulate a Coral Survey Team to conduct the Marine Ecology Survey for Ocean Park Corporation Master Redevelopment Project Contract No. C105 – Site Formation, Funicular Tunnel and Miscellaneous Works and Contract No. CS-03 – Thrill Mountain and Polar Adventure.

1.1.3 miniprojects Company Limited (miniprojects co. Ltd.) has been commissioned by LAM to undertake Coral Monitoring Survey on the tagged hard coral colonies at five Monitoring Sites around the Construction Site and one Control Site for captioned project.

1.1.4 In the impact monitoring surveys conducted on 16 August 2009, six out of the 60 tagged coral colonies were found to detach completely from their substrate and 46 tagging stones or marks were loss or worn out in all five Monitoring Sites and one Control Site. Such physical damage on the coral colonies and tags was believed to be caused by several strong tropical cyclones attacked Hong Kong prior to the August 2009 surveys.

1.1.5 miniprojects co. Ltd. has been commissioned by LAM to undertake the Coral Re-tagging Exercise and Baseline Data Re-collection on the re-tagged hard coral colonies in November 2009 at all five Monitoring Sites around the Construction Site and one Control Site and subsequent quarterly monitoring surveys since November 2009 for captioned project.

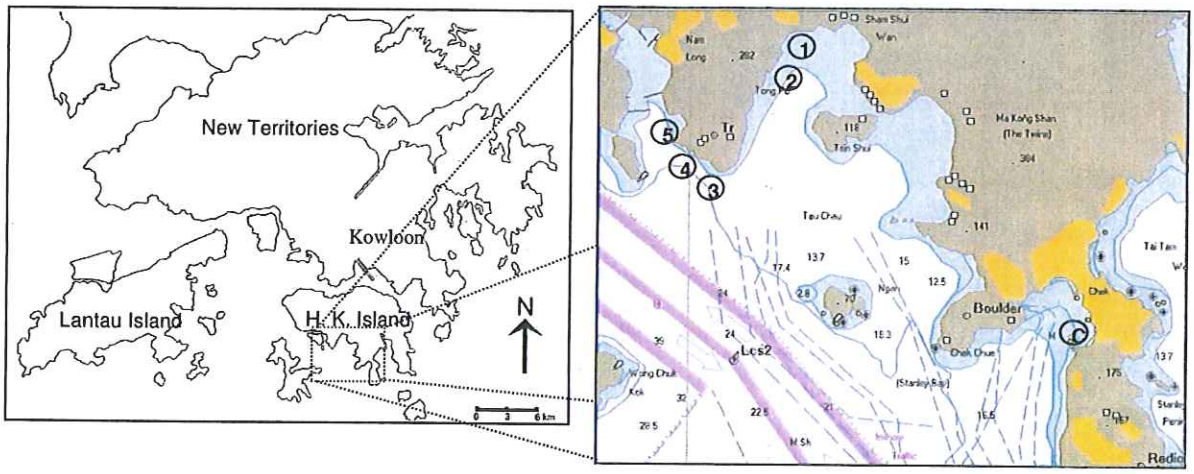
1.1.6 This report presents the results of the 5th Coral Monitoring Survey conducted on 19 February 2011 after Coral Re-tagging Exercise in November 2009.

2 METHODOLOGY

2.1 Monitoring Surveys – Locations

2.1.1 Five locations close to the potential impact areas were identified and designated as Impact Monitoring Sites (Sites 1 to 5; Fig. 2.1). In order to identify background environmental perturbations that are not associated with the construction, St. Stephen Beach, which is away from the impact areas, was designated as the Control Site (Control Site C; Fig. 2.1). Locations (GPS coordinates) of the five Impact Monitoring Sites and one Control Site C are summarized in Table 3.1.

Fig. 2.1 Map Showing the Locations of the Five Impact Monitoring Sites (1 to 5) and One Control Site (C).



2.2 Monitoring Requirements

2.2.1 The construction phase coral monitoring programme comprises an Initial Survey, Coral Tagging Exercise and Impact Monitoring Surveys. Initial Survey and Coral Tagging Exercise were completed on 07-12 April 2007.

2.2.2 Impact monitoring aims to determine whether impacts are occurring on tagged corals during the period of construction works commenced in June 2007. A particular focus of the Impact Monitoring is the effects of sedimentation, bleaching and mortality on corals.

2.2.3 As required in the EM&A manual, coral monitoring at Site 5 and Control Site C should be conducted twice a month at first 3 months of the construction (i.e. June, July and August 2007). The monitoring frequency would be changed to monthly for month 4 to month 6 (i.e. September, October and November 2007) if no adverse effects were recorded (Table 2.1). After that, the monitoring will be changed to quarterly from month 7 (i.e. December 2007) until the end of construction works.

2.2.4 Monitoring Survey for Sites 1 to 4 should be conducted monthly during the first 2 months (i.e. June and July 2007) of the construction works. If there is no exceedance recorded (Table 2.1), the monitoring frequency would be adjusted to quarterly from month 3 (i.e. August 2007) till the end of the construction period.

2.2.5 Several tropical cyclones, attacked Hong Kong between May and August 2009, led to serious physical damage on tagged and un-tagged coral colonies and the loss of the tagging stones and marks in all five Monitoring Sites and one Control Site. Coral re-tagging exercise and baseline data re-collection were undertaken in November 2009 (month 30) at all five Monitoring Sites around the Construction Site and one Control Site. The results will be as reference and reviewed during further Coral Monitoring surveys.

2.2.6 At each of the Impact Monitoring and Control Sites, 10 hard coral colonies were re-tagged for continuous monitoring over the course of construction phase. The health status of the re-tagged corals including area of bleaching and partial mortality, and level of sedimentation as percentage of sediment cover and approximate thickness of sediment on the colony and on adjacent hard substrate were recorded. The condition of each re-tagged coral colony was also recorded by taking photographs that best represents the entire colony. General physical parameters were recorded for each survey site, including visibility, weather, tidal conditions and water current.

2.2.7 The results of the Coral Re-tagging Exercise and Baseline Data Re-collection will be as reference and reviewed with further the Coral Monitoring Surveys.

2.2.8 This report presented the results of the 5th Coral Monitoring Survey in month 45 (February 2011) after Coral Re-tagging Exercise and Baseline Data Re-collection, required at Sites 1 to 5 and Control Site C. The schedule was summarized as follow,

Table 2.1 Schedule of Coral Monitoring

	Coral Monitoring Survey Date
	19 February 2011
Site 1	✓
Site 2	✓
Site 3	✓
Site 4	✓
Site 5	✓
Control Site C	✓

2.3 Compliance / Event Action Plan

2.3.1 Coral monitoring results were evaluated against Action and Limit Levels. Evaluation were based on recorded changes in,

- Percentage of partial mortality
- Percentage of sediment cover
- Percentage of bleaching

2.3.2 Action and Limit Levels are defined in Table 2.1

2.3.3 If the defined Action Level or Limit Levels for coral monitoring were exceeded, the stepwise procedures should be implemented in accordance to the EM&A manual to reverse the unfavourable impact on the coral communities.

Table 2.3 Action and Limit Level for Coral Monitoring

Parameter	Action Level Definition	Limit Level Definition
Sedimentation	If during Impact Monitoring a 15% increase in the percentage of sediment cover on hard corals occurs at more than 20% of the tagged coral at any one Impact Monitoring Site that is not recorded at the Control Site, then the Action Level is exceeded.	If during the Impact Monitoring a 25% increase in the percentage of sediment cover occurs at more than 20% of the tagged coral at any one Impact Monitoring Site that is not recorded at the Control Site, then the Limit Level is exceeded.
Bleaching	If during Impact Monitoring a 15% increase in the percentage of bleaching (bleached white) on hard corals occurs at more than 20% of the tagged coral at any one Impact Monitoring Site that is not recorded at the Control Site, then the Action Level is exceeded.	If during the Impact Monitoring a 25% increase in the percentage of bleaching (bleached white) occurs at more than 20% of the tagged coral at any one Impact Monitoring Site that is not recorded at the Control Site, then the Limit Level is exceeded.
Mortality	If during Impact Monitoring a 15% increase in the percentage of partial mortality on hard corals occurs at more than 20% of the tagged coral at any one Impact Monitoring Site that is not recorded at the Control Site, then the Action Level is exceeded.	If during the Impact Monitoring a 25% increase in the percentage of partial mortality occurs at more than 20% of the tagged coral at any one Impact Monitoring Site that is not recorded at the Control Site, then the Limit Level is exceeded.

3 RESULTS

3.1 Sites 1 to 5 and Control Site C – Coral Monitoring Survey Date: 19 February 2011

3.1.1 Coral monitoring survey at Sites 1 to 5 and Control Site C were conducted on 19 February 2011. The physical conditions of each site are summarized in Table 3.1.

Table 3.1 Sites 1 to 5 and Control Site C – Physical Conditions.

Site	Site 1	Site 2	Site 3	Site 4	Site 5	Control Site C
GPS Coordinates	N 22°14'34.1" E 114°10'43.6"	N 22°14'25.39" E 114°10'37.2"	N 22°13'49.3" E 114°10'14.2"	N 22°13'53.3" E 114°10'07.3"	N 22°14'01.9" E 114°09'59.3"	N 22°12'48.3" E 114°12'51.2"
Date	19 February 2011					
Sedimentation on Rock surfaces (mm)	1-2	1-2	1-2	1-2	1-2	1-2
Visibility (m)	0.5-1.5					
Weather	Northeast wind; Cloudy					
Tide	Neap tide					
Current (Knot)	0-0.5	0-0.5	0.5-1.0	0.5-1.0	0-0.5	0.5-1.0

3.1.2 Percentages of sedimentation, bleaching and mortality of each re-tagged colony were presented in Tables 3.2 and 3.3. Photographs of each re-tagged coral in Sites 1 to 5 and Control Site C were illustrated in Appendices Ia to If, respectively.

Site 1

3.1.3 When compared with baseline data in November 2009, increased sedimentation cover was recorded on 5 colonies (A4, A5, A7, A9 and A10), ranged from 1 to 5%. Decrease in sedimentation was observed in 1 colonies (A24) by 3%. No bleaching was recorded. Partial mortality found in 2 colonies (A2 and A7) in baseline survey remained unchanged (Table 3.2).

Site 2

3.1.4 When compared with baseline data in November 2009, sedimentation increased in 2 colonies (B6 and B9) by 1 to 3%, and decreased in 1 colony (B2) by 2%. No bleaching was recorded. Partial mortality found in 4 colonies (B3, B4, B5 and B9) in baseline survey remained unchanged (Table 3.2).

Site 3

3.1.5 When compared with baseline data in November 2009, 4 colonies showed increase in sedimentation (C1, C2, C7 and C9) by 1 to 2%. Sedimentation decreased in 4 colonies (C3, C4, C5 and C6) by 3 to 5%. No bleaching was recorded. Partial mortality found in 4 colonies (C1, C2, C3, and C5) in baseline survey remained unchanged (Table 3.2).

Site 4

3.1.6 When compared with baseline data in November 2009, 3 colonies showed increase in sedimentation (E2, E7 and E9) by 2%. Sedimentation decreased in 4 colonies (E1, E3, E6 and E10) by 1 to 5%. Partial mortality found in 5 colonies (E3, E5, E6, E8 and E10) in baseline survey remained unchanged (Table 3.2).

Site 5

3.1.7 When compared with baseline data in November 2009, sedimentation increased in 1 colony (D3) by 2% and decreased in 4 colonies (D1, D2, D6 and D7) by 3 to 5%. No bleaching was recorded. Partial mortality found in 5 colonies (D1, D6, D7, D9 and D10) in baseline survey remained unchanged (Table 3.2).

Control Site C

3.1.8 When compared with baseline data in November 2009, 2 colonies (F3 and F5) showed increase in sedimentation. No bleaching was recorded. Partial mortality found in 3 colonies (F2, F3 and F6) in baseline survey remained unchanged (Table 3.2).

Table 3.2 Sites 1 to 5 and Control Site C – Percentage and thickness of Sedimentation, Bleaching and Mortality of the Re-tagged Coral Colonies in Coral Re-tagging Exercise and Baseline Data Collection (November 2009) and the Present Monitoring Survey (February 2011). "▲" and "▼" indicate increased and decreased in percentage, respectively, when compared with the coral re-tagging exercise and baseline data collection.

Site 1

Code	Coral Species	Area (cm^2)	Sedimentation (%, mm)				Bleaching (%)				Mortality (%)			
			21 Nov 09 (baseline)	Aug 2010	Nov 2010	Feb 2011	21 Nov 09 (baseline)	Aug 2010	Nov 2010	Feb 2011	21 Nov 09 (baseline)	Aug 2010	Nov 2010	Feb 2011
A1	*Platygyra carnosus*	1200	0, 0	0, 0	0, 0	0, 0	0	0	0	0	0	0	0	0
A2	*Favites abdita*	400	5, 1	5, 1	0, 0▼	2, 1▼	0	0	0	0	2	2	2	2
A3	*Plesiastrea versipora*	600	0, 0	0, 0	0, 0	0, 0	0	0	0	0	0	0	0	0
A4	*Leptastrea purpurea*	6200	0, 0	4, 1▲	5, 1▲	5, 1▲	0	0	0	0	0	0	0	0
A5	*Platygyra carnosus*	3200	1, 1	1, 1	0, 0▼	3, 1▲	0	0	0	0	0	0	0	0
A6	*Platygyra carnosus*	2600	0, 0	0, 0	0, 0	0, 0	0	0	0	0	0	0	0	0
A7	*Favia speciosa*	500	2, 1	4, 1▲	5, 1▲	3, 1▲	0	0	0	0	0	0	0	0
A8	*Platygyra carnosus*	1500	2, 1	1, 1▼	0, 0▼	2, 1	0	0	0	0	5	5	5	5
A9	*Leptastres purpurea*	700	4, 1	5, 1▲	4, 1	5, 1▲	0	0	0	0	0	0	0	0
A10	*Platygyra carnosus*	2000	0, 0	1, 1▲	0, 0	1, 1▲	0	0	0	0	0	0	0	0

Site 2

Code	Coral Species	Area (cm^2)	Sedimentation (%, mm)				Bleaching (%)				Mortality (%)			
			29 Nov 09 (baseline)	Aug 2010	Nov 2010	Feb 2011	29 Nov 09 (baseline)	Aug 2010	Nov 2010	Feb 2011	29 Nov 09 (baseline)	Aug 2010	Nov 2010	Feb 2011
B1	*Platygyra carnosus*	1300	2, 1	2, 1	0, 0▼	2, 1	0	0	0	0	0	0	0	0
B2	*Plesiastrea versipora*	650	4, 1	2, 1▼	0, 0▼	2, 1▼	0	0	0	0	0	0	0	0
B3	*Psammocora superficialis*	4400	5, 1	8, 1▲	5, 1	5, 1	0	0	0	0	3	3	3	3
B4	*Favia speciosa*	800	0, 0	2, 1▲	0, 0	0, 0	0	0	0	0	2	2	2	2
B5	*Plesiastrea versipora*	1000	2, 1	2, 1	0, 0▼	2, 1	0	0	0	0	2	2	2	2
B6	*Platygyra carnosus*	1500	0, 0	0, 0	0, 0	1, 1▲	0	0	0	0	0	0	0	0
B7	*Hydnophora exesa*	1600	1, 1	1, 1	0, 0▼	1, 1	0	0	0	0	0	0	0	0
B8	*Plesiastrea versipora*	1300	0, 0	0, 0	0, 0	0, 0	0	0	0	0	0	0	0	0
B9	*Favia speciosa*	450	1, 1	4, 1▲	4, 1▲	4, 1▲	0	0	0	0	2	2	2	2
B10	*Psammocora superficialis*	400	0, 0	0, 0	0, 0	0, 0	0	0	0	0	0	0	0	0

Site 3

Code	Coral Species	Area (cm^2)	Sedimentation (%, mm)				Bleaching (%)				Mortality (%)			
			28 Nov 09 (baseline)	Aug 2010	Nov 2010	Feb 2011	28 Nov 09 (baseline)	Aug 2010	Nov 2010	Feb 2011	28 Nov 09 (baseline)	Aug 2010	Nov 2010	Feb 2011
C1	*Porites sp*	100	2, 1	4, 1▲	2, 1	4, 1▲	0	0	0	0	3	3	3	3
C2	*Porites sp*	210	3, 1	4, 1▲	3, 1	5, 1▲	0	0	0	0	5	5	5	5
C3	*Goniopora stutchburyi*	410	5, 1	2, 1▼	0, 0▼	0, 0▼	0	0	0	0	7	7	7	7
C4	*Pavona decussata*	240	4, 1	2, 1▼	4, 1	2, 1▼	0	0	0	0	0	0	0	0
C5	*Pavona decussata*	210	3, 1	3, 1	0, 0▼	0, 0▼	0	0	0	0	1	1	1	1
C6	*Pavona decussata*	200	3, 1	3, 1	0, 0▼	0, 0▼	0	0	0	0	0	0	0	0
C7	*Montipora peltiformis*	960	3, 1	3, 1	0, 0▼	5, 1▲	0	0	0	0	0	0	0	0
C8	*Goniopora stutchburyi*	140	1, 1	1, 1	1, 1	1, 1	0	0	0	0	0	0	0	0
C9	*Porites sp*	300	3, 1	5, 1▲	3, 1	5, 1▲	0	0	0	0	0	0	0	0
C10	*Cyphastrea serailia*	600	4, 1	4, 1	4, 1	4, 1	0	0	0	0	0	0	0	0

Site 4

Code	Coral Species	Area (cm^2)	Sedimentation (%, mm)				Bleaching (%)				Mortality (%)			
			28 Nov 09 (baseline)	Aug 2010	Nov 2010	Feb 2011	28 Nov 09 (baseline)	Aug 2010	Nov 2010	Feb 2011	28 Nov 09 (baseline)	Aug 2010	Nov 2010	Feb 2011
E1	*Goniopora stutchburyi*	290	5, 1	3, 1▼	0, 0▼	3, 1▼	0	0	0	0	0	0	0	0
E2	*Coscinaraea sp.*	620	0, 0	3, 1▲	0, 0	2, 1▲	0	0	0	0	0	0	0	0
E3	*Goniopora stutchbury*	300	4, 1	4, 1	0, 0▼	3, 1▼	0	0	0	0	3	3	3	3
E4	*Goniopora stutchbury*	130	3, 1	3, 1	0, 0▼	3, 1	0	0	0	0	0	0	0	0
E5	*Goniopora stutchbury*	460	6, 1	8, 1▲	0, 0▼	6, 1	0	0	0	0	4	4	4	4
E6	*Goniopora stutchbury*	380	10, 1	5, 1▼	0, 0▼	5, 1▼	0	0	0	0	8	8	8	8
E7	*Goniopora stutchbury*	120	3, 1	8, 1▲	0, 0▼	5, 1▲	0	0	0	0	0	0	0	0
E8	*Goniopora stutchbury*	230	4, 1	4, 1	0, 0▼	4, 1	0	0	0	0	2	2	2	2
E9	*Goniopora stutchbury*	170	3, 1	5, 1▲	0, 0▼	5, 1▲	0	0	0	0	0	0	0	0
E10	*Goniopora stutchbury*	540	7, 1	8, 1▲	5, 1▼	5, 1▼	0	0	0	0	3	3	3	3

Site 5

Code	Coral Species	Area (cm^2)	Sedimentation (%, mm)				Bleaching (%)				Mortality (%)			
			29 Nov 09 (baseline)	Aug 2010	Nov 2010	Feb 2011	29 Nov 09 (baseline)	Aug 2010	Nov 2010	Feb 2011	29 Nov 09 (baseline)	Aug 2010	Nov 2010	Feb 2011
D1	*Psammocora* sp.	800	6, 1	6, 1	0, 0▼	3, 1▼	0	0	0	0	3	3	3	3
D2	*Montipora peltiformis*	600	4, 1	4, 1	0, 0▼	1, 1▼	0	0	0	0	0	0	0	0
D3	*Goniopora stutchburyi*	450	2, 1	0, 0▼	0, 0▼	4, 1▲	0	0	0	0	0	0	0	0
D4	*Cyphastera serailia*	100	3, 1	5, 1▲	0, 0▼	3, 1	0	0	0	0	0	0	0	0
D5	*Montipora cf. turgescens*	320	4, 1	3, 1▼	4, 1	4, 1	0	0	0	0	0	0	0	0
D6	*Montipora peltiformis*	480	10, 1	10, 1	4, 1▼	5, 1▼	0	0	0	0	20	20	20	20
D7	*Montipora peltiformis*	500	8, 1	5, 1▼	4, 1▼	5, 1▼	0	0	0	0	2	2	2	2
D8	*Montipora peltiformis*	410	6, 1	5, 1▼	8, 1▲	6, 1	0	0	0	0	0	0	0	0
D9	*Montipora peltiformis*	200	5, 1	8, 1▲	5, 1	5, 1	0	0	0	0	5	5	5	5
D10	*Goniopora stutchburyi*	510	7, 1	10, 1▲	5, 1▼	7, 1	0	0	0	0	5	5	5	5

Control Site C

Code	Coral Species	Area (cm^2)	Sedimentation (%, mm)				Bleaching (%)				Mortality (%)			
			21 Nov 09 (baseline)	Aug 2010	Nov 2010	Feb 2011	21 Nov 09 (baseline)	Aug 2010	Nov 2010	Feb 2011	21 Nov 09 (baseline)	Aug 2010	Nov 2010	Feb 2011
F1	*Goniastrea aspera*	450	2, 1	1, 1▼	0, 0▼	2, 1	0	0	0	0	0	0	0	0
F2	*Favites pentagona*	2100	2, 1	5, 1▲	0, 0▼	2, 1	0	0	0	0	2	2	2	2
F3	*Favites pentagona*	1000	0, 0	1, 1▲	0, 0	1, 1▲	0	0	0	0	5	5	5	5
F4	*Favites pentagona*	1300	2, 1	3, 1▲	0, 0▼	2, 1	0	0	0	0	0	0	0	0
F5	*Cyphastrea seraili*	2100	0, 0	1, 1▲	0, 0	1, 1▲	0	0	0	0	0	0	0	0
F6	*Porites sp*	2100	5, 1	5, 1	0, 0▼	5, 1	0	0	0	0	2	2	2	2
F7	*Plesiastrea versipora*	3000	2, 1	2, 1	0, 0▼	2, 1	0	0	0	0	0	0	0	0
F8a	*Favites pentagona*	680	0, 0	1, 1▲	0, 0	0, 0	0	0	0	0	0	0	0	0
F9	*Favites pentagona*	2600	0, 0	2, 1▲	0, 0	0, 0	0	0	0	0	0	0	0	0
F10	*Favia rotumana*	600	0, 0	0, 0	0, 0	0, 0	0	0	0	0	0	0	0	0

4 SUMMARY AND CONCLUSION

4.1 Summary

4.1.1 In the monitoring surveys conducted in February 2011, from all the 5 Monitoring Sites 1 to 5 and the Control Site C, the change in level of sedimentation on the tagged colonies was minor (< 5%) when compared with the baseline data in November 2009 and previous survey in November 2010. This small change in sedimentation was likely as a result of reduced rainfall and thus hillstream runoff during the period of monitoring. No increment in level of blenching or partial mortality suggested the all tagged corals were in good condition and healthy.

4.1.2 The data from this monitoring survey showed no significant enhancement in sedimentation, bleaching or mortality in all the 5 Monitoring Sites 1 to 5 and the Control Site C. Hence, no adverse impact by the construction activity on the coral community was evidenced.

4.2 Compliance / Event Action Plan

4.2.1 The monitoring results were evaluated against the Action and Limit Levels as defined in the EM&A manual and summarized in Table 4.1.

4.2.2 Overall, the healthy status of the tagged coral colonies was normal, with low levels of sedimentation. Neither action/limit level of sedimentation, bleaching or mortality was exceeded in the monitoring survey conducted in February 2011.

Table 4.1 Evaluation of Monitoring Results against Action and Limit Level for Coral Monitoring Survey. Note Definition of Action/Limit levels are listed in Table 2.1. "No" indicates NO exceedance.

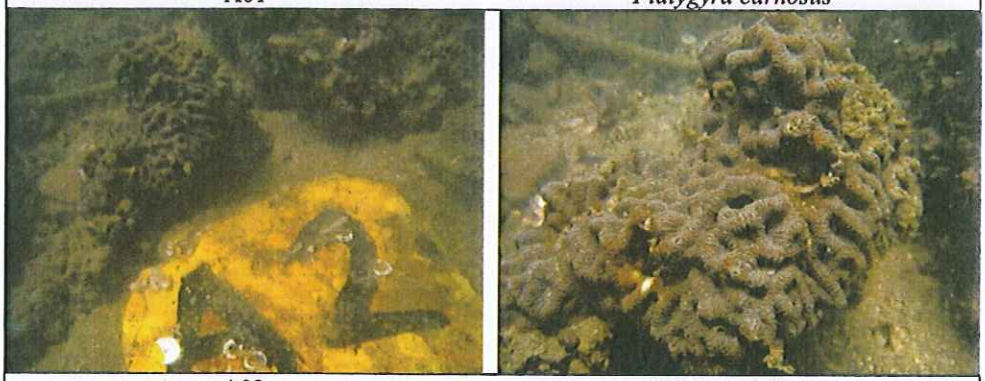
Exceedance / Site	Sedimentation		Bleaching		Mortality	
	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level
Site 1	No	No	No	No	No	No
Site 2	No	No	No	No	No	No
Site 3	No	No	No	No	No	No
Site 4	No	No	No	No	No	No
Site 5	No	No	No	No	No	No
Control Site C	No	No	No	No	No	No

APPENDIX I

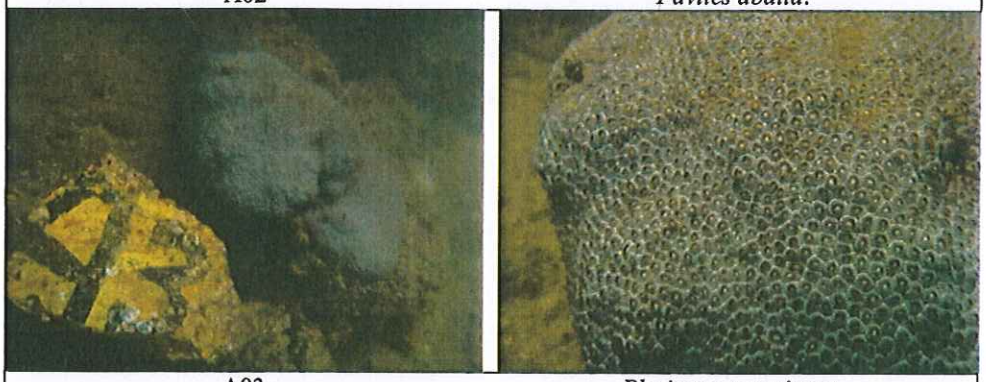
Photographs of the Tagged Corals at Sites 1 to 5 and Control Site C

Appendix Ia Tagged Coral Colonies at Site 1.

A01 *Platygyra carnosus*

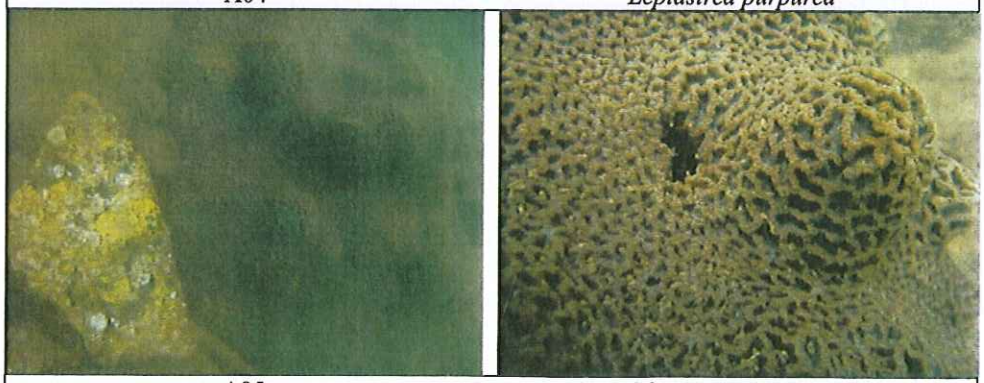


A02 *Favites abdita.*



A03 *Plesiastrea versipora*

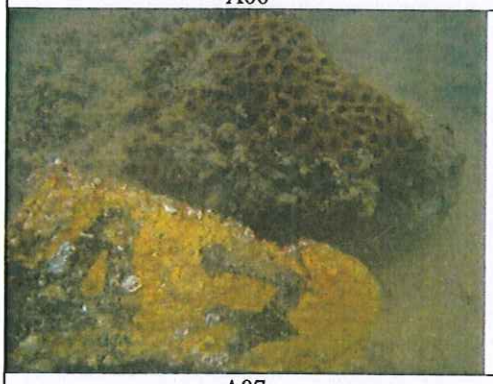
A04 *Leptastrea purpurea*



A05 *Platygyra carnosus*

Appendix Ia Tagged Coral Colonies at Site 1…continued.

A06 *Platygyra carnosus*



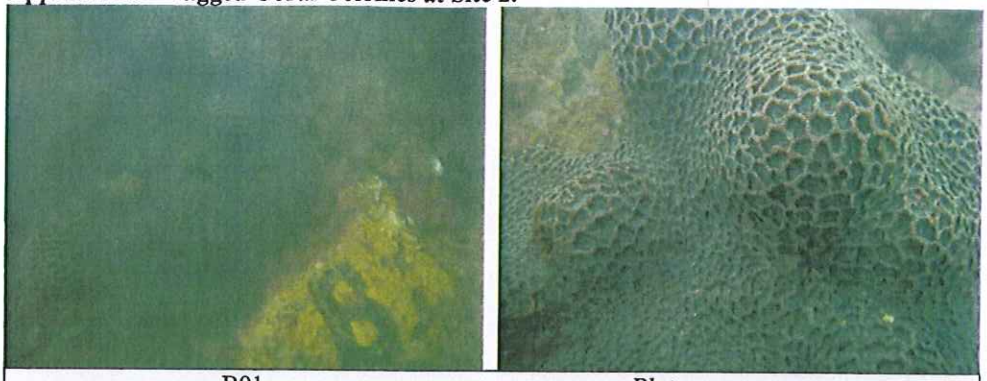
A07 *Favia speciosa*

A08 *Platygyra carnosus*

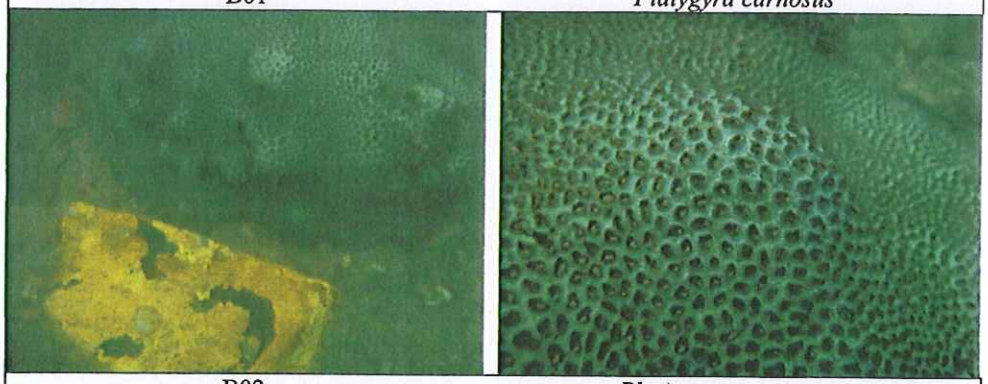
A09 *Leptastrea purpurea*

A10 *Platygyra carnosus*

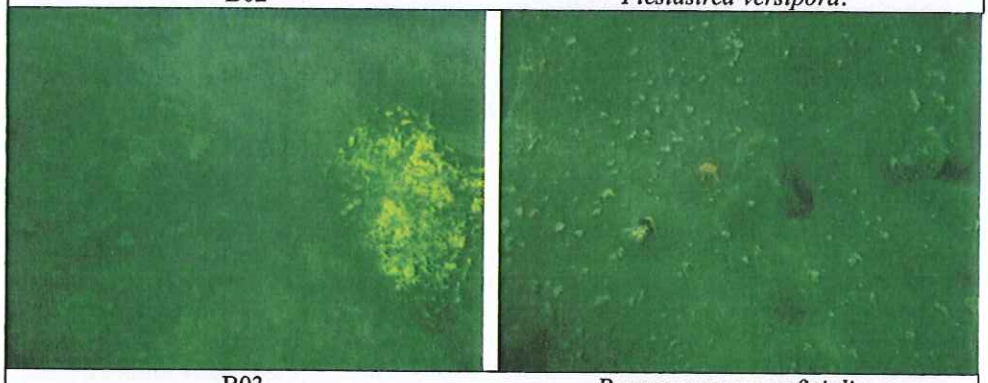
Appendix Ib Tagged Coral Colonies at Site 2.



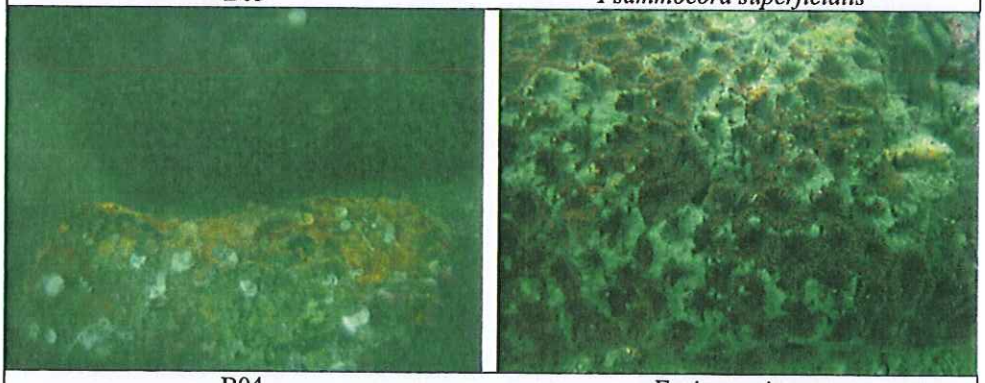
B01 *Platygyra carnosus*



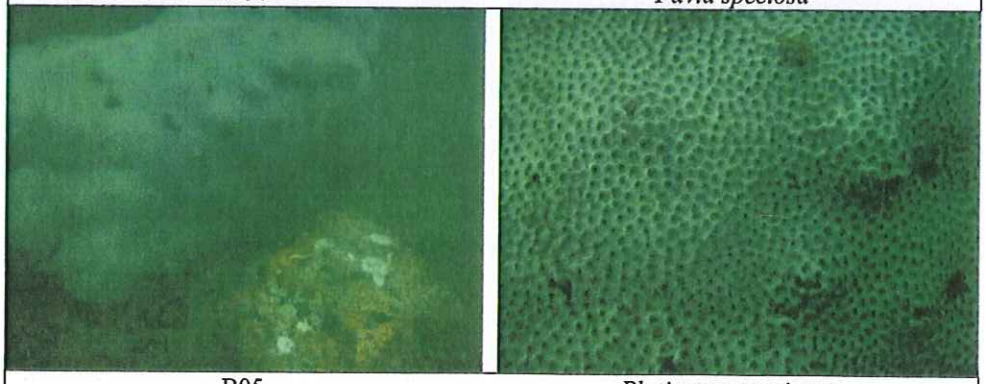
B02 *Plesiastrea versipora.*



B03 *Psammocora superficialis*



B04 *Favia speciosa*



B05 *Plesiastrea versipora*

Appendix Ib Tagged Coral Colonies at Site 2…continued.

B06 *Platygyra carnosus*

B07 *Hydnophora exesa*

B08 *Plesiastrea versipora*

B09 *Favia speciosa*

B10 *Psammocora superficialis*

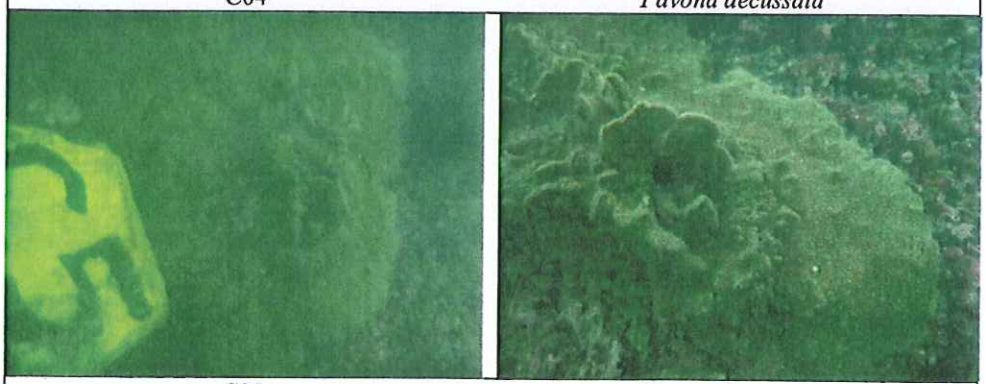
Appendix Ic Tagged Coral Colonies at Site 3.

C01 *Porites* sp.

C02 *Porites* sp.

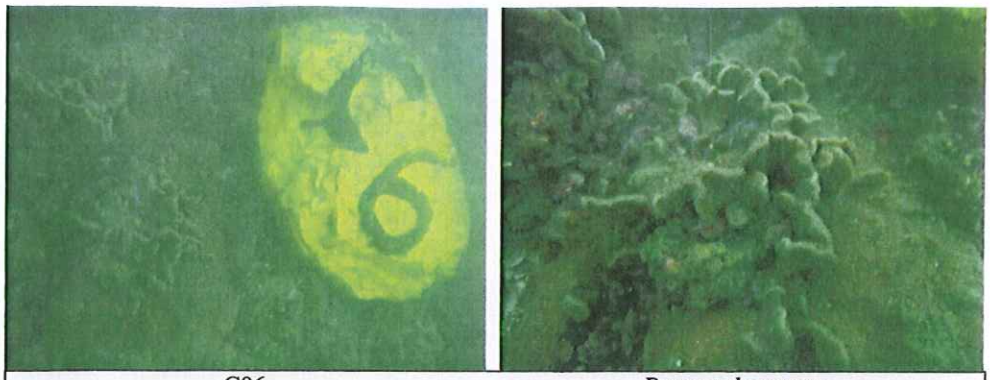
C03 *Goniopora stutchburyi*

C04 *Pavona decussata*

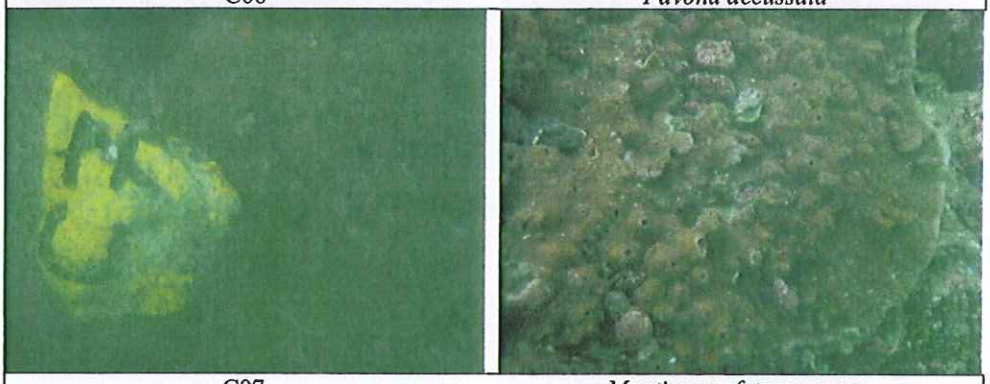


C05 *Pavona decussata*

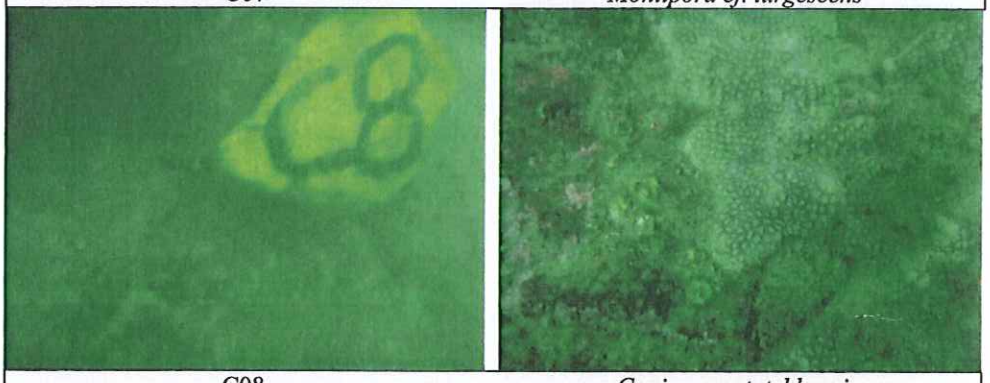
Appendix Ic Tagged Coral Colonies at Site 3...continued.



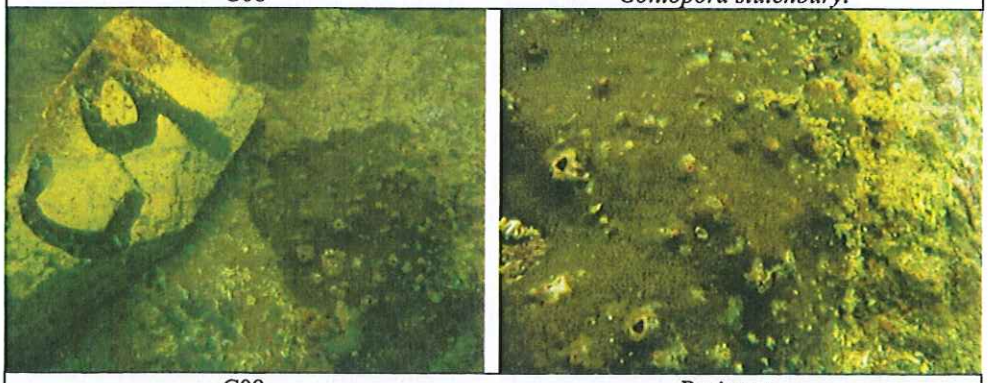
C06 *Pavona decussata*



C07 *Montipora cf. turgescens*



C08 *Goniopora stutchburyi*



C09 *Porites* sp.

C10 *Cyphastrea serailia*