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Ocean Park Master Redevelopment Project

Monthly Environmental Monitoring & Audit Report – August 2007



Ocean Park Master Redevelopment Project

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

Monthly EM&A Report – August 2007

Submitted by Maunsell Consultants Asia Ltd on 11-09-2007

This is to verify that

Monthly EM&A Report – August 2007

Submitted by Maunsell Consultants Asia Ltd

On 11-09-2007

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/A

Date

13 September 2007

Ocean Park Master Redevelopment Project

EP-249/2006/A – Condition 3.4

Monthly EM&A Report – August 2007

Certified by Terence Kong on 13-Sep-07

Terence Kong

Project Environmental Team Leader

Verified by Independent Environmental Checker on 13-Sep-07

IEC Certificate attached in the submission? Yes

Submitted to Ocean Park on 13-Sep-07

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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 Contract CI-05 “Site Formation, Funicular Tunnel and Miscellaneous Work”, CS-01 “The Vet Hospital” and CW02 “The Astounding Asia”. This report presents the results of EM&A works conducted in the reporting month of August 2007 (from 26 July 2007 to 25 August 2007).

A summary of monitoring and audit activities conducted in the reporting period is listed below:

1-hour TSP monitoring	16 sessions for AM1, AM2 & AM3
24-hour TSP monitoring	5 sessions for AM1, AM2 & AM3
Daytime noise monitoring	4 sessions for CN1-CN4
Evening and night time noise monitoring	0 sessions
Holiday time noise monitoring	0 sessions
Terrestrial ecology monitoring	0 sessions
Coral monitoring	0 sessions for Site 1-4 2 sessions for Site 5 and Control Station
Environmental Site Inspection	4 sessions

No exceedance was recorded on the 1-hour TSP monitoring, 24-hour TSP monitoring, daytime noise and coral monitoring. 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 August 2007.

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, and therefore under Environmental Permit, EP-249/2006/A.

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.

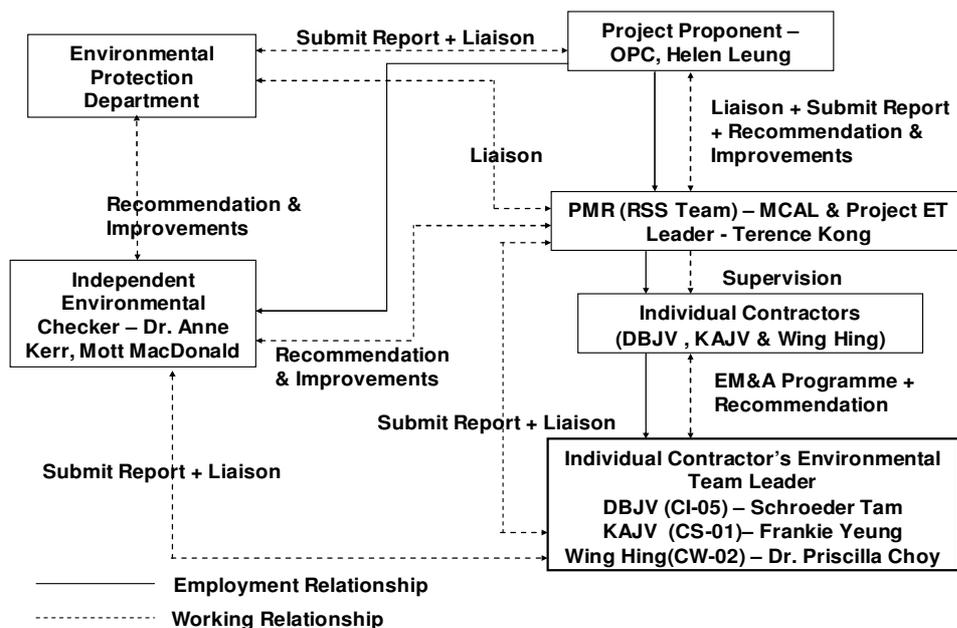
Contract No.	Contract Title	Contractor	Construction Commencement
CI-05	Site Formation, Funicular Tunnel and Miscellaneous Works	Dragages-Bouygues JV	12 March 2007
CS-01	Back of House for Marine Mammal Veterinary Hospital	Kaden – ATAL JV	26 March 2007
CW-02	Astounding Asia	W. Hing Construction Co. Ltd	1 August 2007

The Contractors will conduct environmental monitoring and audits during the construction stage and produce contract specific monthly EM&A reports. The RSS will prepare a combined monthly EM&A report for the project. This is the combined monthly EM&A Report including the IEC audit findings, CI05, CS01 and CW02 Monthly EM&A Report. This report presents the results of EM&A works conducted in the reporting month of August 2007 (from 26 July 2007 to 25 August 2007).

2. Project Organisation

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

Management Organization



3. Construction Works Undertaken during the Reporting Month

In the reporting month, the construction activities summarise as follows.

CI-05

Waterfront

- Excavation;
- North Portal Soft Ground Tunnel Temporary Support;
- Grouting Works at Electrical Supply Station Building;
- Waterfront Access Road;
- Filling of Lagoon
- Utilities Diversion (e.g. water main & storm drain); and
- Temporary Bus Terminus

Tai Shue Wan

- Conveyor Belt Installation; and
- Barging Point.

CS-01

- Plant Block's formwork enforcement for wall and ground slab;
- Office Block's footing, concreting & column;
- Pool Block's footing,
- Back Wash Tank's formwork & falsework,
- Formwork and falsework for lower ground.

CW-02

- Erection of Site Office;
- Site formation of the Birdhouse.

Summit

- Adit Tunnel Excavation & Lateral Support;
- Slope Improvement Work;
- Utilities Diversion (Life Support System pipe);
- North Haul Road Excavation;
- Conveyor System Installation and Crusher Platform Installation;
- Excavation; and
- Summit Site Formation (Drill & Blast)

Nam Long Shan Road Entrusted Works

- Excavation at NLS Road & Wong Chuk Hang Road.

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	<ul style="list-style-type: none"> • 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.

4.2. CNP

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

Permit number	Starting Date	Expired Date	Valid Time	Location	Contract No.	Status
CI-05 (DBJV)						
GW-RS0408-07	1-Jul-07	30-Aug-07	<i>PME</i> 19:00 - 23:00 hours (Not being a general holidays) 09:00 - 19:00 hours (general holidays)	Summit (At the top of Nam Long Shan Road)	CI-05	Valid
GW-RS0434-07	16-Jul-07	10-Dec-07	<i>PME</i> 19:00 - 23:00 hours (Not being a general holiday) 09:00 -19:00 hours (general holidays) <i>PCW</i> 19:00-23:00 hours (Not being a general holidays) 09:00-19:00 hours (general holidays)	Waterfront (Panda Access Ramp)	CI-05	Valid
GW-RS0440-07	18-Jul-07	30-Aug-07	<i>PME</i> 19:00 - 23:00 hours (Not being a general holidays) 09:00 - 19:00 hours (General holidays) <i>PCW</i> 00:00 - 07:00 hours, 19:00 - 24:00 hours (Not being a general holidays)	Ocean Park Shum Wan Road	CI-05	Valid
GW-RS0448-07	20-Jul-07	20-Jan-08	<i>PME</i> 19:00 - 23:00 hours (Not being a general holidays) 09:00 - 19:00 hours (General holidays)	Entry Plaza (Hong Kong School of Motoring)	CI-05	Valid
GW-RS0530-07	23-Aug-07	21-Oct-07	<i>PME</i> 00:00 - 24:00 hours (General Holiday) 00:00 – 07:00 & 19:00 - 24:00 hours (Not being a general holidays)	Summit (At the top of Nam Long Shan Road)	CI-05	Valid
CS-01 (KAJV)						
GW-RS0286-07	26-May-07	25-Nov-07	<i>PME</i> 19:00 - 23:00 (Not being a general holidays). 07:00 - 19:00 (General holidays). One group of equipment shall be allowed in above time.	Summit (At top of Nam Long Shan Road)	CS-01	Valid
GW-RS0321-07	1-Jun-07	30-Nov-07	<i>PME</i> 19:00-23:00 (Not being a general holiday) 07:00-23:00 (general holiday)	Summit (At top of Nam Long Shan Road)	CS-01	Valid
GW-RS0493-07	10-Aug-07	9-Oct-07	<i>PME</i> 19:00-23:00 (Not being a general holiday) 07:00-19:00 (general holiday) <i>PCW</i> 19:00-21:00 (Not being a general holiday) 09:00-18:00 (general holiday)	Summit (At top of Nam Long Shan Road)	CS-01	Valid

Permit number	Starting Date	Expired Date	Valid Time	Location	Contract No.	Status
CW-02 (Wing Hing)						
GW-RS0488-07	1-Sep-07	1-Mar-08	PME 19:00-23:00 (Not being a general holiday) 07:00-19:00 (general holiday)	Ocean Park, Wong Chuk Hang	CW-02	Valid

4.3. Other Permits & Licenses

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

CI – 05

Permit /Ref/ No	Valid Period		Section	Status
Notification of Construction Work under APCO				
001017998	-	-	Waterfront	Notified
001018054	-	-	Summit	Notified
Effluent Discharge License				
EP820/W9/XW232	20 Jun 07	30 Jun 12	Summit	Valid
EP820/W9/XW234	13 Jul 07	31 Jul 12	Waterfront	Valid
Specific Process License				
Application sent on 3-Apr-07 and the supplementary information was provided on 20 & 25 July 2007 for EPD consideration. Such information would be placed in newspaper for public inspection.				
Registration as Chemical Waste Producer				
WPN5213-199-D2373-01	7-May-07	-	For disposal of chemical wastes, mainly spent lubricants	Registered
Construction Waste Disposal Charging Scheme				
7004888	-	-	Waterfront + Summit	Issued

CS-01

Permit/Ref/No	Valid Period		Section	Status
Notification of Construction Work under APCO				
001018953	-	-	Vet Hospital	Notified
Effluent Discharge License				
EP820/W2/XC041	31 May 07	30 Jun 12	Vet Hospital	Valid
Registration as Chemical Waste Producer				
WPN5213-199-K2880-01	19 Mar 07	-	Used battery, used lubricating oil and lubricating oil / gasoline / diesel contaminated soil.	Registered
Construction Waste Disposal Charging Scheme				
7005185	-	-	Vet Hospital	Issued

CW-02

Permit/Ref/No	Valid Period		Section	Status
Notification of Construction Work under APCO				
001022180	-	-	Astounding Asia	Notified

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 August 2007 are as below,

Contract	Submissions
CI-05	<ul style="list-style-type: none"> • 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
CI-05 & CS-01	<ul style="list-style-type: none"> • Combined Monthly EM&A Report (July 2007)
City Bus Limited	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • Confirmation Letter to confirm that Land Contamination remediation Works within HKSM has been completed

6. Waste Management

The estimated amounts of different types of waste generated by the activities of the Project in the month are shown in following table. Mitigation measures under the Waste Management Plan (WMP) have been implemented during the reporting period.

Waste Type	Disposal Locations	CI-05	CS-01	CW-02	Total
C& D Waste	SENT	22.61 tonnes	4.88 tonnes	--	27.49 tonnes
	NENT	--	--	--	--
	WENT	--	--	--	--
	TKOSF	34.17 tonnes	--	--	34.17 tonnes
	TMSF	--	--	--	--
Excavated Material	QBBP	1,165.33 tonnes	1,129 tonnes	--	2,294.33 tonnes
	TKOFB	--	--	--	--
	Alternative site (Green Valley)	10,962.00 tonnes	--	--	10,962.00 tonnes
	Alternative site (Swire Sita)	5,733.00 tonnes	--	--	5,733.00 tonnes
	Internal Transfer	243.00 tonnes	--	--	243.00 tonnes
Chemical Waste	Collected by licensed collector	--	--	--	--
General Waste	Collected by licensed collector	38.0m ³	--	--	38.0m ³

7. Environmental Monitoring and Results

7.1. Requirements

Under EP-249/2006/A 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. The environmental monitoring including air quality, noise and coral were conducted by the Contract of CI-05 within the reporting period. Transplantation was carried out in August 2007. Monitoring of terrestrial ecology was scheduled to commence in September 2007.

The items below would not be described in Part 1 report and would be described in CI-05 monthly EM&A report (i.e. Part 2 of the report).

- Methodology and Criteria
- Action and Limit Levels
- Event and Action Plan

7.2. Monitoring Locations

Air Quality (TSP)

The locations of the air monitoring stations are presented in the table below. The figure was shown in the CI-05 Monthly EM&A Report.

Air Quality Monitoring Stations	Identify/Description
AM1	Whisker's Theatre, Ocean Park
AM2	San Wai Village, Wong Chuk Hang
AM3	Ocean Park Road, 50m adjacent to Police Training School

Construction Noise

The locations of the noise monitoring stations are presented in the table below. The figure was shown in the CI-05 Monthly EM&A Report.

Noise Monitoring Stations	Identify/Description
CN1	Open Area adjacent to Police Training School
CN2	Project Development Office, Ocean Park
CN3	Rinniped House, Ocean Park
CN4	Manly Villa

Terrestrial Ecology

Monitoring of the health and condition of the transplanted plant species of conservation interest should be monitored 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 shown in figure 1.3 of Part 2 of the report.

Coral

The locations of the coral monitoring stations are presented in the table below. The figure was shown in the CI-05 Monthly EM&A Report.

Coral Impact Monitoring Stations	Identify/Description
Site 1	Seaside near the Lowland
Site2 to Site 5	Around Headland
Control Station	Between Near Round Island and Chung Hom Kok

7.3. Monitoring Results

Air Quality (TSP)

The monitoring data reported below was provided by the CI-05 Contractor's Environmental Team Leader.

Monitoring Period	1-hr TSP ($\mu\text{g}/\text{m}^3$)		
	AM1	AM2	AM3
26 July 07 to 25 August 07	44-122	75-180	82-175

Monitoring Period	24-hr TSP ($\mu\text{g}/\text{m}^3$)		
	AM1	AM2	AM3
26 July 07 to 25 August 07	18-60	21-78	18-73

Construction Noise

The monitoring data reported below was provided by the CI-05 Contractor's Environmental Team Leader.

Monitoring Period	Daytime Noise Level, Leq (30min), dB(A)			
	CN1	CN2	CN3	CN4
26 July 07 to 25 August 07	67.2-67.8	63.5-66.8	61.8-66.1	56.3-62.5

Note: No evening time noise monitoring was carried out since there was no scheduled construction activity within the reporting period.

Terrestrial Ecology

Transplantation was carried out in August 2007. Monitoring of terrestrial ecology was scheduled to commence in September 2007.

Coral

The monitoring data summarized below was provided by the CI-05 Contractor's Environmental Team Leader. Detailed results would be described in CI-05 monthly EM&A report (i.e. in Appendix F of Part 2 of the report).

Site 5

Code	Coral Species	Area (cm ²)	Sedimentation (% , mm)				Bleaching (%)				Mortality (%)			
			Apr 07	21 Jul 07	05 Aug 07	19 Aug 07	Apr 07	21 Jul 07	05 Aug 07	19 Aug 07	Apr 07	21 Jul 07	05 Aug 07	19 Aug 07
D01	<i>Psammocora</i> sp.	600	10, 1	5, 1 ▼	5, 1 ▼	1, 1 ▼	0	0	0	0	0	0	0	0
D02	<i>Montipora</i> cf. <i>turgescens</i>	100	6, 1	1, 1 ▼	10, 2 ▲	1, 1 ▼	0	0	0	0	0	0	0	0
D03	<i>Goniopora</i> <i>stutchburyi</i>	400	0, 0	2, 1 ▲	0, 0	0, 0	0	0	0	0	0	0	0	0
D04	<i>Leptastrea</i> <i>pruinosa</i>	500	4, 1	13, 1 ▲	13, 1 ▲	10, 1 ▲	0	0	0	0	0	5 ▲	5 ▲	5 ▲
D05	<i>Porites</i> sp.	400	5, 1	5, 1	1, 1 ▼	1, 1 ▼	1	5 ▲	3 ▲	3 ▲	4	4	4	4
D06	<i>Plesiastrea</i> <i>versipora</i>	1000	0, 0	2, 1 ▲	5, 1 ▲	2, 1 ▲	0	2 ▲	0	0	5	5	5	5
D07	<i>Leptastrea</i> <i>pruinosa</i>	800	0, 0	3, 1 ▲	10, 1 ▲	8, 1 ▲	0	0	0	0	0	0	0	0
D08	<i>Plesiastrea</i> <i>versipora</i>	100	0, 0	3, 1 ▲	2, 1 ▲	2, 1 ▲	0	0	0	0	0	0	0	0
D09	<i>Leptastrea</i> <i>pruinosa</i>	150	5, 1	5, 1	0, 0 ▼	1, 1 ▼	0	0	0	0	0	0	0	0
D10	<i>Montipora</i> cf. <i>turgescens</i>	200	0, 0	0, 0	1, 1 ▲	1, 1 ▲	0	0	1 ▲	1 ▲	0	0	0	0

Control Site C

Code	Coral Species	Area (cm ²)	Sedimentation (% , mm)				Bleaching (%)				Mortality (%)			
			Apr 07	21 Jul 07	05 Aug 07	19 Aug 07	Apr 07	21 Jul 07	05 Aug 07	19 Aug 07	Apr 07	21 Jul 07	05 Aug 07	19 Aug 07
F01	<i>Favia</i> <i>speciosa</i>	900	0, 0	3, 1 ▲	1, 1 ▲	1, 1 ▲	0	0	0	0	0	0	0	0
F02	<i>Favites</i> <i>pentagona</i>	1000	4, 1	10, 2 ▲	10, 2 ▲	0, 0 ▼	0	2 ▲	0	0	0	1 ▲	1 ▲	1 ▲
F03	<i>Favites</i> <i>pentagona</i>	800	0, 0	2, 1 ▲	2, 1 ▲	1, 1 ▲	0	0	0	0	0	0	0	0
F04	<i>Porites</i> sp.	800	5, 1	8, 2 ▲	5, 1	5, 1	4	2 ▼	2 ▼	2 ▼	4	4	4	4
F05	<i>Cyphastrea</i> <i>sevathi</i>	800	4, 1	5, 1 ▲	5, 1 ▲	1, 1 ▼	0	0	0	0	1	1	1	1
F06	<i>Psammocora</i> sp.	1800	0, 0	0, 0	2, 1 ▲	2, 1 ▲	0	1 ▲	1 ▲	1 ▲	0	0	0	0
F07	<i>Plesiastrea</i> <i>versipora</i>	3000	0, 0	0, 0	3, 1 ▲	1, 1 ▲	0	0	0	0	0	0	0	0
F08a	<i>Favia</i> <i>speciosa</i>	150	0, 0	3, 1 ▲	2, 1 ▲	2, 1 ▲	0	0	0	0	0	0	0	0
F08b	<i>Goniastrea</i> <i>favulus</i>	300	0, 0	1, 1 ▲	1, 1 ▲	1, 1 ▲	0	0	0	0	0	0	0	0
F09	<i>Favites</i> <i>pentagona</i>	1800	10, 1	6, 1 ▼	5, 1 ▼	1, 1 ▼	0	1 ▲	0	0	0	1 ▲	1 ▲	1 ▲
F10	<i>Platygyra</i> <i>carnosus</i>	2800	0, 0	0, 0	0, 0	0, 0	0	0	0	0	0	0	0	0

The results of monitoring show that sediment cover, bleaching and mortality on some of the tagged colonies from Site 5 and the control station increased by 1 to 10% when compared with the Baseline Survey results on 7 to 12 April 2007. The enhanced sedimentation was believed to be contributed by multiple environmental factors, such as south-west monsoon, heavy rainfall and also typhoon during 8-11 August 2007.

The health status of the tagged coral colonies was normal, with low to medium levels of sedimentation. Low levels of bleaching and mortality were observed in both monitoring and control sites. Neither action nor limit level of sedimentation, bleaching or mortality was recorded; hence no adverse impact by the construction activity on the coral community was evidenced.

7.4. Exceedances

No exceedance was recorded on the 1-hour TSP monitoring, 24-hour TSP monitoring, daytime noise monitoring and coral monitoring for the reporting period.

8. Site Audit

8.1. IEC Site Audit

IEC conducted monthly site audit on CI-05, CS-01 and CW-02 on 23 August 2007. Audit checklists are attached in Appendix A of Part I.

CI-05 Observations

Item No. 1, 3 and 4 from last month were closed.

Next to Panda House

- (i) C&D materials were banked around two trees. The Contractor shall remove the C&D materials as soon as possible.

Top of Summit & Adit Portal

- (ii) Water was accumulated in a few drip trays. The Contractor was reminded to remove the water as soon as possible.

Southern Access Road

- (iii) Wheel wash bay and sedimentation tank were accumulated with sand and mud. The Contractor shall maintain them more frequently.

CS-01 Observations

- (i) Item No. 1 and Item 2 from last month were closed.
- (ii) Item No. 3 from last month was outstanding. The drainage channel was still blocked by debris and rocks. The Contractor shall remove all blockages as soon as possible.
- (iii) Stagnant water was observed in a few drip trays and on site. The Contractor shall remove them as soon as possible.
- (iv) A sedimentation tank was full of water. The Contractor shall pump the water to the sedimentation tank next to the discharge point for treatment prior to discharge.
- (v) A chemical container was placed on bareground. The Contractor was reminded to place it on paved area and/or provide it with drip tray.

CW-02 Observations

- (i) Exposed slope was observed near the footpath of common access road. The slope should be compacted or to seal the edge of the site boundary with sandbags to prevent the silt running out from the site.

8.2. Non-Compliance

No non-compliances were recorded in August 2007.

9. Implementation status of Environmental Mitigation Measures

Please see Part 2 and Part 3 of the individual contractual reports for the details of the implementation of environmental mitigation measures.

10. Summary of Complaint, Summon or Prosecution

No complaint, summons or prosecution related to environmental issues was received or made against the Project in August 2007.

11. Future Issues

Key Issues to be considered in the coming month include:

CI-05

- Noise from operating equipment and machinery on-site
- Maintenance of the silt curtain at Tai Shue Wan
- Construction waste management at the demolition work area
- Avoid accumulation of stagnant/muddy water on-site in order to prevent mosquito breeding.
- To implement dust suppression measures on dry surfaces
- Provision of temporary drainage system, treatment to turbid water from activities, run-off before discharge.

CW-02

- Generation of dust from stockpiles, haul road and vehicular movement on-site.
- Noise from operation equipment and machinery on-site.
- Storage of chemicals/fuel and chemical waste/waste oil on site.
- Surface runoff generated on rainy days.
- Larviciding against mosquito breeding in stagnant water should be carried out at least on a weekly basis.

CS-01

- Noise from operating equipment and machinery on-site
- On-site waste management
- Avoid accumulation of stagnant/muddy water on-site in order to prevent mosquito breeding.
- To implement dust suppression measures on dry surfaces
- Well maintenance to equipment to avoid black smoke from machinery

12. Conclusion and Recommendation

12.1. Conclusion

Environmental impact monitoring was performed in August 2007. All monitoring results in the reporting month were checked and reviewed.

No exceedance was recorded on the 1-hour TSP monitoring, 24-hour TSP monitoring, daytime noise monitoring and coral monitoring for the reporting period.

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 August 2007.

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 recommend that the Contractors should regularly maintain the machinery and vehicles on site.
- To follow up any exceedance caused by the construction works.
- To monitor the implementation dust suppression measures on dry surfaces by the Contractors.

Noise Impact

- To inspect the noise sources from inside and outside of the site.
- To follow up any exceedance caused by the construction works.
- To recommend that the Contractors should space out noisy equipment and position as far away as possible from sensitive receivers.
- To recommend the Contractors should have regular maintenance of vehicles and equipment used.

Water Quality Impact

- To recommend that the Contractor of CI-05 should regularly maintain the silt curtains and make sure they are in the right positions and maintain their functionalities.
- To monitor whether open stockpiles of construction materials are covered by Contractors with tarpaulin or similar fabric during rainstorm.
- To remind the Contractor to fully implementation of the temporary drainage system and all sedimentation tank and WetSep should be fully operated.

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

Independent Environmental Checker's Site Inspection Records

Ocean Park Master Redevelopment Project
Contract P007
Independent Environmental Checker
MONTHLY SITE INSPECTION CHECKLIST

Inspection Date	23/8/2007	Time	8:45	Inspected By	EM: T. Kong IEC: F. Yuen
Site Location	CI05 CS01 CW02				Contractor: CI05: S. Tam CS01: F. Yeung CW02: E. Chu

Weather

Condition	<input type="checkbox"/> Sunny	<input type="checkbox"/> Fine	<input checked="" type="checkbox"/> Overcast	<input type="checkbox"/> Drizzle	<input type="checkbox"/> Rain	<input type="checkbox"/> Storm	<input type="checkbox"/> Hazy
Temperature	30°C		Humidity	<input checked="" type="checkbox"/> High	<input type="checkbox"/> Moderate	<input type="checkbox"/> Low	
Wind	<input checked="" type="checkbox"/> Calm	<input type="checkbox"/> Light	<input type="checkbox"/> Breeze	<input type="checkbox"/> Strong	Direction <input type="text"/>		

		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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
S2.26	Good Site Practices:					
	• Are the operating plants well-maintained and serviced regularly?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
	• Are silencers or mufflers utilized on construction equipment? Are they properly maintained?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
	• Is the mobile plant sited far enough from NSRs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
	• Are intermittently used machines and plants shut down between work periods?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
	• Is the plant known to emit noise strongly in one direction, if any, oriented to direct noise away from the NSRs?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	• Is the stockpile or other structures utilized effectively, wherever practicable, in screening noise from the works?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
S2.27	Are suitable quiet plants adopted?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
S2.28	Are movable barriers used for both movable PME and stationary PME?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
S2.29	Do the screening materials used achieve the predicted noise reduction?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
S2.30	Are the noisy works avoided during examination period of the nearby school?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Blasting Noise						
S2.32	• Are the NSRs informed of the blasting work in advance?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

- 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?

			✓
--	--	--	---

CI050P1030796
 - 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?

			✓
--	--	--	---

es01①P1030809

- S5.5 Waste Reduction Measures:
- Is the C&D waste from demolition and decommissioning of existing facilities sorted to recover recyclable materials?

		✓	
--	--	---	--
 - Are different types of wastes segregated and stored in different containers, skips or stockpiles to enhance reuse or recycling and the proper disposal?

		✓	
--	--	---	--
 - Are aluminium cans segregated in labelled bins and collected by individual collectors for recycling?

		✓	
--	--	---	--
 - Are proper storage and site practices maintained to minimise the potential for damage or contamination of construction material?

		✓	
--	--	---	--
 - Are the construction materials planned and stocked carefully to avoid unnecessary generation of waste?

		✓	
--	--	---	--

- S5.7 General Refuse
- Is the general refuse stored in enclosed bins or compaction units separate from C&D material?

		✓	
--	--	---	--
 - Is the general refuse removed regularly by a waste collector?

		✓	
--	--	---	--

- S5.8 C&D Material
- Are the excavated materials from site formation of the expansion areas and tunnel construction for the funicular system reused on-site as backfilling material and for landscape works?

		✓	
--	--	---	--
 - Are the surplus rock and other inert C&D material disposed of at the public fill sites?

		✓	
--	--	---	--
 - Is a waste management plan prepared?

		✓	
--	--	---	--

	<ul style="list-style-type: none"> Is a recording system present for the record of amount of wastes generated, recycled and disposed? 	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
	<ul style="list-style-type: none"> Is the trip-ticket system required in ETWB TCW No.31/2004 followed on site? 	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
S5.9	<p>Chemical Wastes</p> <p>Is chemical wastes generated from the works? And if yes,</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
	<ul style="list-style-type: none"> Is the Contractor registered as a Chemical Waste Producer? 	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
	<ul style="list-style-type: none"> Are good quality containers used for separating and storing chemical wastes? 	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
	<ul style="list-style-type: none"> Are appropriate labels securely attached on each chemical waste container to indicate their corresponding chemical characteristics? 	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
	<ul style="list-style-type: none"> Is the Contractor licensed to transport and dispose of the chemical wastes? 	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
	Land Contamination					
S6.11	<ul style="list-style-type: none"> Is the contact of construction workers with contaminated materials minimised by using bulk earth-moving excavator equipment? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<ul style="list-style-type: none"> Are appropriate cloth, personal protective equipment, hygiene and washing facilities provided to minimise exposure to any contaminated material? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<ul style="list-style-type: none"> Is stockpiling of contaminated excavated materials avoided? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<ul style="list-style-type: none"> Is the use of contaminated soil for landscaping without proper treatment prohibited? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<ul style="list-style-type: none"> Are vehicles containing excavated materials covered properly to limit potential dust emissions or contaminated wastewater runoff? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<ul style="list-style-type: none"> Is the speed of the trucks carrying contaminated materials controlled? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<ul style="list-style-type: none"> Are the necessary waste disposal permits obtained from appropriate authorities in according with Waste Disposal (Chemical Waste) (General) Regulation? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<ul style="list-style-type: none"> Are silt removal facilities provided with retention time for silt/sand traps of 5 minutes under maximum flow conditions? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<ul style="list-style-type: none"> Are the records maintained for quantity of wastes generated and disposal of? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
S6.12	<p>Remediation Process</p> <ul style="list-style-type: none"> Is biopile covered by tarpaulin or low permeable sheet to avoid dust emission? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<ul style="list-style-type: none"> Is vented air from biopile treated by blower and carbon adsorption system before released to the atmosphere? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<ul style="list-style-type: none"> Are the materials which may generate airborne dust emissions adequately wetted prior to and during the loading, unloading and handling operations? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<ul style="list-style-type: none"> Are silencers installed at biopile blower to minimise noise impact? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<ul style="list-style-type: none"> Are quiet plants such as generator and blower used for biopile? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

- 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 (contrainersisation)?

	✓		
--	---	--	--
- 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?

		✓	
--	--	---	--
- 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?

		✓	
--	--	---	--

P1030779 &
C105③ P1030781

• Are earthwork final surfaces well compacted and is subsequent permanent work or surface protection performed immediately?

			✓
--	--	--	---

CW02① P1030820

• Is the rainwater pumped out from trenches or excavation directed to silt removal facilities before discharge?

			✓
--	--	--	---

CS01③ P1030813

• Are open stockpiles of construction materials or construction wastes of more than 50m³ 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?

		✓	
--	--	---	--

S8.4

Coral Sites

• Are enhanced (with the use of flocculants added) sand/silt removal facilities employed for treatment of runoff from the major excavation at the Summit?

		✓	
--	--	---	--

• Is a silt curtain system used to enclose the construction phase discharge point at Tai Shue Wan?

		✓	
--	--	---	--

• Are debris and refuse collected, handled and disposed of properly to avoid entering any nearby water bodies and public drainage system?

		✓	
--	--	---	--

• Are stockpiles of cement and other construction materials kept covered when not being used?

		✓	
--	--	---	--

• Are oils and fuels used and stored in designated areas which have pollution prevention facilities (Fuel tanks and storage areas provided with locks and sited on sealed areas, within bunds of a capacity equality to 110% of the storage capacity of the largest tank)?

			✓
--	--	--	---

P1030770
CI05② P1030786
CS01② P1030817
④ P1030818

• 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 initiation 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?

		✓	
--	--	---	--

Contract CS01

Observations for last month

Item ① and ② from last month were closed.

Observations for the month

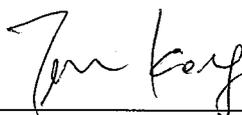
- ① Item No. 3 from last month was outstanding. The drainage channel was still blocked by debris and rocks. The Contractor shall remove all blockages as soon as possible.
- ② Stagnant water was observed in a few drip trays and on site. The Contractor shall remove them as soon as possible.
- ③ A sedimentation tank was full of water. The Contractor shall pump the water to the sedimentation tank next to the discharge point for treatment prior to discharge.
- ④ A chemical container was placed on bareground. The Contractor was reminded to place it on paved area and/or provide it with drip tray.

IEC Representative



(Florence Yuen)

Environmental Manager



(Terence Kong)

Contractor's
Representative
CS01



(FRANKIE YEUNG)

Contract CI05

Observations for last month

Item No. 1, 3 and 4 from last month were closed,

Observations for the month

Next to Panda House

- ① C & D materials were banked around two trees. The Contractor shall remove the C & D materials as soon as possible.

Top of Summit & Adit Portal

- ② Water was accumulated in a few drip trays. The Contractor was reminded to remove the water as soon as possible.

Southern Access Road

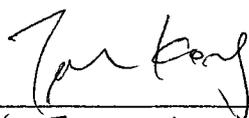
- ③ Wheel wash bay and sedimentation tank were accumulated with sand and mud. The Contractor shall maintain them more frequently.

IEC Representative



(Florence Yuen)

Environmental Manager



(Terence Kong)

Contractor's
Representative
CI05



(SCHROEDER TAM)

Contract CW02

Observations for the month

- ① Exposed slope surface shall be compacted or sandbags shall be provided to avoid erosion which would be deposited onto the common access road. Some soil and mud was deposited on the common access road.

IEC Representative

Environmental Manager

Contractor's
Representative
CW02

Florence Yuen

(Florence Yuen)

Terence Kong

(Terence Kong)

Eddie Chiu

(Eddie Chiu)

**Ocean Park Master Redevelopment Project
Contract P007
Independent Environmental Checker
MONTHLY SITE INSPECTION PHOTOS**

Contract CI05 Site formation, Funicular Tunnel and Miscellaneous Works	
Follow up observations in July 2007	
Observation in last site inspection	Observation in this site inspection
Hong Kong School of Motoring	
	
	
<p>P1030406 & P1030405: A stockpile was being operated by an excavator while another stockpile was idled and uncovered. Tarpaulin sheets shall be provided to cover the idle stockpile entirely.</p>	<p>Closed - P1030769: Stockpile was not observed.</p>
Next to Panda House/Near Wing Hing Road	
	
<p>P1030388: Debris was banked around a couple of trees. The Contractor shall move the debris away from the trees and remove and dispose the debris as soon as possible.</p>	<p>P1030796: C&D material was still banked around a couple of trees. The Contractor should stockpile these materials away from the trees and remove and dispose the C&D material as soon as possible.</p>
Top of Summit	

**Ocean Park Master Redevelopment Project
Contract P007
Independent Environmental Checker**

MONTHLY SITE INSPECTION PHOTOS

			
<p>P1030392: Dust was observed generated from rock breaking activity. Water spray shall be provided during rock breaking activities to suppress dust.</p>		<p>Closed - P1030778: Rock breaking activity was not in operation.</p>	
			
<p>P1030391: Haul roads were dry and dusty. Water spray should be provided to suppress dust.</p>		<p>Closed: P1030771: Haul roads were wetted.</p>	
Observations in August 2007			
Top of Summit		Adit Portal	
			
<p>P1030770: Rainwater was accumulated in the drip tray. The Contractor should remove them as soon as possible.</p>		<p>P1030786: Rainwater was accumulated in the drip tray. The Contractor should remove them as soon as possible.</p>	
Southern Access Road			
			

**Ocean Park Master Redevelopment Project
Contract P007
Independent Environmental Checker
MONTHLY SITE INSPECTION PHOTOS**

		
<p>P1030779 & P1030781: The wheel wash bay and sedimentation tank were accumulated with sand and mud. The Contractor should maintain them more frequently.</p>		

Contract CS01 Back of House for Marine Mammal Veterinary Hospital		
Follow up observations in July 2007		
Observation in last site inspection	Observation in this site inspection	
		
		
<p>P1030417 & P1030421: Sedimentation tank at the discharge point was dry while sedimentation tank at the site entrance was still accumulated with stagnant water. Stagnant water in the sedimentation tank at site entrance shall be removed as soon as possible.</p>	<p>Closed - P1030806 & P1030816: Sedimentation tanks were maintained more frequently.</p>	

**Ocean Park Master Redevelopment Project
Contract P007
Independent Environmental Checker
MONTHLY SITE INSPECTION PHOTOS**

	
<p>P1030416 & P1030418: Haul roads were dry and dusty. Water spray shall be provided more frequently.</p>	<p>Closed - P1030805: Haul roads were paved and not observed to be dusty.</p>
	
<p>P1030419: Debris and rocks were accumulated along the temporary drainage channel. Any blockage of the drainage channel shall be cleared as soon as possible.</p>	<p>P1030809: Debris and rocks were still accumulated along the temporary drainage channel. Any blockage of the drainage channel should be cleared as soon as possible.</p>
Observations in August 2007	
	
<p>P1030817: Stagnant water was observed in a few drip trays with oil drums in them. The</p>	<p>P1030813: A sedimentation tank was full of water. The Contractor should pump the water to</p>

**Ocean Park Master Redevelopment Project
Contract P007
Independent Environmental Checker**

MONTHLY SITE INSPECTION PHOTOS

<p>Contractor should remove them as soon as possible.</p>	<p>the sedimentation tank next to the discharge point for treatment prior to discharge.</p>
	
<p>P1030818: A chemical container was placed on bare ground. The Contractor should place it on paved area and/or provide it with drip tray.</p>	

Contract CW02 Astounding Asia	
Observations in August 2007	
	
<p>P1030820: Some soil and mud was deposited on the common access road. Exposed slope surfaces should be compacted or sandbags should be provided to avoid erosion of soil and subsequent deposition on the common access road.</p>	

Part 2 CI-05 EM&A REPORTS (August 2007)

**OCEAN PARK MASTER
REDEVELOPMENT PROJECT**

CONTRACT NO. CI05

**SITE FORMATION, FUNICULAR TUNNEL
AND MISCELLANEOUS WORKS**

Monthly EM&A Report - August 2007

CLIENT:

Ocean Park Corporation

OCEAN PARK, Aberdeen,
Hong Kong

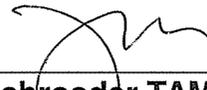
PREPARED BY:

Dragages-Bouygues J.V.

OCEAN PARK Aberdeen
(top of Nam Long Shan Road)

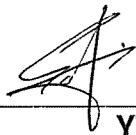
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DATE:

02 September 2007

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EXECUTIVE SUMMARY

This is the [sixth](#) monthly Environmental Monitoring and Audit (EM&A) report prepared by Dragages Bouygues JV (DBJV), the Contractor Environmental Team (CET), for the Ocean Park Master Redevelopment Project Contract CI05 – Site Formation, Funicular Tunnel and Miscellaneous Works. This report presents the results of EM&A works conducted in the reporting month of [August 2007](#) (from [26 July 2007](#) to [25 August 2007](#)).

In the reporting month, the following construction activities took place:

Waterfront

- Excavation
- North Portal Soft Ground Tunnel Temporary Support
- Grouting Works at ESS Building
- Waterfront Access Road
- Filling of Lagoon
- Utilities Diversion (e.g. watermain & stormdrain); and
- Temporary Bus Terminus

Summit

- Adit Tunnel ELS
- Slope Improvement Work
- Utilities Diversion (LSS pipe)
- North Haul Road Excavation
- Conveyor System Installation and Crusher Platform Installation
- Excavation; and
- Summit Site Formation (Drill & Blast)

Tai Shue Wan

- Conveyor Belt Installation at Tai Shue Wan; and
- Barging Point at Tai Shue Wan.

Government Entrusted Works

- Excavation at Nam Long Shan Road; and
- Excavation at Wong Chuk Hang Road

The total disposal volume to the Government facilities, including the barging point, public fill and the sorting facilities in the reporting month of [August 2007](#), was [1,165.33](#) tonnes, [0.00](#) tonnes and [34.17](#) tonnes while the volume to the landfills was [22.61](#) tonnes. Apart from the above, the total disposal volume to the alternative dumpsites; Green Valley and Swire Sita were [10,962](#) tonnes and [5,733](#) tonnes respectively. The volume of internal transfer within the reporting month of [August 2007](#) was approx. [243](#) tonnes.

Monitoring of 1-hour & 24-hour Total Suspended Particulates (TSP) and noise were performed and the results were checked and reviewed. Site inspections were conducted on weekly basis. The implementation of the environmental mitigation measures, Event and Action Plans and environmental complaint handling procedures were also checked.

Environmental Monitoring Works

Environmental Monitoring and Audit Progress

A summary of monitoring and audit activities conducted in the reporting period is listed below:

1-hour TSP monitoring	16 sessions for all air quality monitoring stations (AM1, AM2 and AM3)
24-hour TSP monitoring	5 sessions for all air quality monitoring stations (AM1, AM2 and AM3)
Daytime noise monitoring	4 sessions for all noise monitoring stations
Evening and night time noise monitoring	0 sessions for all noise monitoring stations
Holiday time noise monitoring	0 session for all noise monitoring stations
Terrestrial ecology monitoring	0 session
Subtidal monitoring	2 sessions for Site 5 and Control Station C
Joint environmental site inspection	4 sessions (include the IEC audit)

Air Quality

The air quality monitoring results obtained in the reporting period of [August 2007](#) were audited for the compliance of the Action and Limit levels proposed in the Project Baseline Air Quality and Noise Monitoring Report (rev. B), which were issued in [March 2007](#) and the audit finding showed no exceedance was recorded.

Noise

The noise monitoring results obtained in the reporting period of [August 2007](#) were audited for the compliance of the Action and Limit levels proposed in the Project Baseline Air Quality and Noise Monitoring Report (rev. B), which were issued in February 2007 and the audit finding showed that no exceedance was recorded.

Terrestrial Ecology

No terrestrial monitoring was conducted in the reporting period of [August 2007](#) since the resubmission has sent to EPD and AFCD in the reporting period of [August 2007](#).

Subtidal Monitoring

The [third](#) impact subtidal ecology monitoring was conducted in the reporting period of [August 2007](#). The results were audited for the compliance of the Action and Limit levels proposed in the Project Baseline Coral Survey Report (rev. A), which were issued in [June 2007](#) and the audit finding showed no exceedance was recorded.

Environmental Licensing and Permitting

Permits granted to the Project include the Environmental Permit for the Project, Construction Noise Permits, Effluent Discharge License and Chemical Waste Producer. Information of these permits is provided in Table 6.1.

Implementation Status of Environmental Mitigation Measures

Water hoses were deployed for the haul road watering; water sprinklers were in operation in some of the working areas. The Contractor was reminded to keep watering the haul road and working area surfaces once the surfaces are dry, especially during the hot sunny days.

Anti-mosquito agent has been applied in the required Works Areas and cleaned up stagnant water regularly in order to reduce the possibility of mosquito breeding.

Wheel washing bay for both Summit and Waterfront has been installed and in use. The Contractor was reminded to inform the drivers to wash the vehicles before leaving the site.

Movable noise panels have stored on site and will use wherever necessary.

The disposal of C&D wastes by using both the Chits and trip tickets have been implemented in [August 2007](#). Most of the C&D materials were disposed of to the alternative dumpsite. Disposal to the temporary public filling barging point would be the last resort. The C&D waste was disposed of to the sorting facilities or landfill.

General wastes were collected by a waste skip near the temporary site office in a regular basis. The frontline staff was reminded to keep good housekeeping in order to avoid waste accumulation.

Environmental Non-conformance

No public complaint, warning from OPC or PMR, summons or prosecution related to environmental issues was made against the Ocean Park Master Redevelopment Project Contract CI05 in the reporting period of [August 2007](#).

Future Key Issues

Key issues to be considered in the coming month include:

- Noise from operating equipment and machinery on-site.
- Construction waste management at temporary construction waste area.
- Avoid accumulation of stagnant / muddy water on-site.
- To implement dust suppression measures on dry surfaces.
- Provision of treatment to turbid water (control the SS level) from activities on-site before discharge.

1. INTRODUCTION

Purpose

- 1.1 The purpose of this report is to present the EM&A work carried out during August 2007 (from 26 July 2007 to 25 August 2007) with respect to Ocean Park Master Redevelopment Project Contract No. CI05 – Site Formation, Funicular Tunnel and Miscellaneous Works.

Background

- 1.2 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.

- 1.3 The redevelopment works of Ocean Park will involve

- Civil infrastructure works including road works (including modifying sections of Ocean Park Road, which is a local distributor, around the existing bus terminus as shown in Figure 1.1), drain works, tunnelling and geotechnical works, bulk excavation and slope works, retaining structures, site clearance, decommissioning and demolition works, funicular railway, modify to bus terminus, taxi stands and associated facilities.
- Utilities works including power supply distribution, electrical substations, freshwater and saltwater reservoirs, water supply distribution, gas supply distribution, telecommunications network and distribution, landscape irrigation network, etc.
- Primary life support system works for animal keeping.
- Area development works including service roads, EVAs, external escalators, bridges and elevated walkways, external lighting.
- Parkwide systems works including signage, background music system, toilets facilities, guard sheds, first aid facilities, communications systems, CCTV systems and waste facilities.
- Landscape or theming works including exterior building facade treatment works, themed concrete pavement/ hardscape, soft landscaping, water and faux rockwork features, visual intrusion screens, area props and artwork, etc.
- Works for the attractions venues including animal exhibits, marine animal, terrestrial animal, aviaries, bird exhibits, individual life support systems for animal exhibits; and others non-animal related attractions, e.g. shipwreck play area, bamboo maze, etc.
- Installation of rides including thrill rides, round rides, water rides, kids rides, interactive rides, transportation rides, etc.
- Works for the venues including event halls, outdoor live show area, cinemas and bandstands.
- Works for the merchandise / retail facilities including souvenir stores, novelty stores, games arcade, photo shops, etc.
- Works for the food and beverage facilities including restaurants, bakery, food carts and kiosks.
- Back of house facilities including offices, break areas, warehouses, centralized facilities, operational facilities, etc.

Project Organisation

- 1.4 Under the requirement of EM&A Manual and Environmental Permit, the environmental management team should be set up and the structure of the team is shown in Figure 1.1.
- 1.5 Meanwhile the contacts of key environmental personnel for this project are shown in Appendix L.

Construction Works undertaken during the Reporting Month

- 1.6 The major construction activities undertaken in August 2007 included Excavation; North Portal Soft Ground Tunnel Temporary Support; Grouting Works at ESS Building; Waterfront Access Road; Filling of Lagoon; Utilities Diversion (e.g. watermain & stormdrain); and Temporary Bus Terminus at Waterfront works areas.
- 1.7 At Summit, Adit Tunnel ELS; Slope Improvement Work; Utilities Diversion (LSS pipe); North Haul Road Excavation; Conveyor System Installation and Crusher Platform Installation; Excavation; and Summit Site Formation (Drill & Blast).
- 1.8 At Tai Shue Wan, conveyor belt installation and Barging Point formation are on-going and the entrusted works including excavation at Nam Long Shan Road and Wong Chuk Hang Road.
- 1.9 Layout plan of the Project is provided in Figures 1.2 and 1.3.
- 1.10 The amounts of different types of waste generated by the activities of the Project in the reporting month are shown in Table 1.1.

Table 1.1 Amounts of Waste Generated in the reporting of August 2007

Waste Type	Disposal Locations	Estimated Amount (tonnes unless specified)
C&D waste	SENT	22.61
	TKOSF	34.17
C&D material	Green Valley *	10,962.00
	Swire Sita *	5,733.00
	QBBP	1,165.33
	TKOFB	0.00
	INTL **	243.00
Chemical waste	Collected by licensed collector	0 L
General waste	Collected by licensed collector	38.00m ³

Notes: * denotes alternative dumpsite as disposal location.
** denotes internal transfer

Compliance with EP conditions

- 1.11 A summary of the reporting requirement of compliance with EP conditions of Contract CI05 of the Project as of July 2007 were listed in Table 1.2.

Table 1.2 Environmental Permit Submission

Environmental Permit Submission	EP-249/2006/A Condition No.	Status
Management Organization	2.3	Submitted on 15 December 2006.
Construction Programme	2.4	Submitted on 14 February 2007.
Drainage Proposal	2.13	Deposited in the EIAO Register Office for public inspection on 30 May 2007.

Table 1.2 Environmental Permit Submission

Environmental Permit Submission	EP-249/2006/A Condition No.	Status
Silt Curtain Proposal	2.14	Deposited in the EIAO Register Office for public inspection on 01 March 2007.
Transplantation Proposal	2.20	Comments received on 23 July 2007 and revision is under preparation
Waste Management Plan	2.21	Comments received on 13 July 2007 and revision is under preparation
Baseline Air Quality and Noise Monitoring Report	3.2	Submitted on 28 February 2007.
Baseline Coral Survey Report	3.2	Submitted on 16 June 2007.
Monthly EM&A Report for Jun '07	4.2	Submitted on 13 July 2007.

Summary of EM&A Requirements

- 1.12 The EM&A programme requires environmental monitoring for air quality, noise, terrestrial ecology, subtidal and waste management. The EM&A requirements for each parameter are described in subsequent sections, including:
- All monitoring parameters;
 - Action and Limit levels for all environmental parameters;
 - Event-Action Plans;
 - Environmental mitigation measures and their implementation schedule;
 - Environmental requirements in contract documents.
- 1.13 The environmental licensing and permits are described in Section 6.
- 1.14 The advice on the implementation status of environmental protection and pollution control/mitigation measures is summarized in Section 6 of the Report.

2. AIR QUALITY MONITORING

Monitoring Requirements

- 2.1 24-hour & 1-hour TSP monitoring were conducted to monitor the air quality. Appendix A shows the established Action/Limit Levels for the air quality monitoring works.

Monitoring Equipment

- 2.2 High volume samplers (HVS - Model GMWS-2310 Accu-Vol) complete with the appropriate sampling inlets were installed for 24-hour and 1-hour TSP sampling. The HVS composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complies with USEPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50 Appendix B). Table 2.1 summarises the equipment that was used in the dust-monitoring programme.

Table 2.1 TSP Monitoring Equipment

Equipment	Model
HVS	GMWS 2310 c/w of TSP sampling inlet
Calibration Kit	Tisch TE-5025 A
Dust Trak	TSI-8250

Monitoring Parameters, Frequency and Duration

- 2.3 The monitoring parameters and frequency are summarised in Table 2.2. The monitoring schedule for the reporting month is shown in Appendix B.

Table 2.2 Air Quality Monitoring Parameters and Frequency

Location	Parameter	Duration	Frequency
AM1	1-hour TSP	1 hour	3 times every 6 days*
	24-hour TSP	24 hours	Once every six days
AM2	1-hour TSP	1 hour	3 times every 6 days*
	24-hour TSP	24 hours	Once every six days
AM3	1-hour TSP	1 hour	3 times every 6 days*
	24-hour TSP	24 hours	Once every six days

Notes: * denotes three 1-hr TSP monitoring in three days.

Monitoring Locations

- 2.4 In accordance with the EM&A Manual, three air quality monitoring stations, as shown in Figure 1.4, were selected for 24-hour and 1-hour TSP sampling. Table 2.3 describes the location of the air quality monitoring stations.

Table 2.3 Location of Air Quality Monitoring Stations

Air Quality Monitoring Stations	Identity / Description
AM1	Whisker's Theatre, Ocean Park
AM2	San Wai Village, Wong Chuk Hang
AM3	Ocean Park Road, 50m adjacent to Police Training School

- 2.5 As the works areas under the contract CI05 has been extended to the Ex-Hong Kong School of Motoring and will include the bus terminus at Ocean Park Road in the near future. The existing air quality monitoring location AM3 will no longer be appropriate as it will fall inside the works areas. The proposed re-location is the open areas of PMR & OPC temporary site offices. Proposal has been adopted by PMR and IEC and the relocation is in progress.

Monitoring Methodology

24-hour / 1-hour TSP Monitoring

Installation

2.6 The HVSs were installed in the vicinity of the air sensitive receivers. The following criteria were considered in the installation of the HVS.

- A horizontal platform with appropriate support to secure the samplers against gusty wind was provided.
- No two HVSs were placed less than 2 meters apart.
- The distance between the HVS and any obstacles, such as buildings, was at least twice the height that the obstacle protrudes above the HVS.
- A minimum of 2 meters separation from walls, parapets and penthouses was required for rooftop samplers.
- No furnace or incinerator flues were nearby.
- Airflow around the sampler was unrestricted.
- Permission was obtained to set up the samplers and to obtain access to the monitoring stations.

Preparation of Filter Papers by ETS-Testconsult Limited.

- Glass fibre filters, G810 were labeled and sufficient filters that were clean and without pinholes were selected.
- All filters were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25 °C and not variable by more than ± 3 °C; the relative humidity (RH) was < 50% and not variable by more than ± 5 %. A convenient working RH was 40%.

Field Monitoring

- The power supply was checked to ensure the HVS works properly.
- The filter holder and the area surrounding the filter were cleaned.
- The filter holder was removed by loosening the four bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully.
- The filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter.
- The swing bolts were fastened to hold the filter holder down to the frame. The pressure applied should be sufficient to avoid air leakage at the edges.
- Then the shelter lid was closed and was secured with the aluminum strip.
- The HVS was warmed-up for about 5 minutes to establish run-temperature conditions.
- A new flowrate record sheet was set into the flow recorder.
- The flow rate of the HVS was checked and adjusted at around 1.1 m³/min. The range specified in the EM&A Manual was between 0.6-1.7 m³/min.
- The programmable timer was set for a sampling period of 24 hrs \pm 1 hr or 1 hr + 0.25 hr, and the starting time, weather condition and the filter number were recorded.
- The initial elapsed time was recorded.
- At the end of sampling, the sampled filter was removed carefully and folded in half-length so that only surfaces with collected particulate matter were in contact.
- It was then placed in a clean plastic envelope and sealed.
- All monitoring information was recorded on a standard data sheet.
- Filters were sent to *ETS-Testconsult Ltd.* for analysis.

Maintenance & Calibration

- The HVSs and their accessories are maintained in good working condition, such as replacing motor brushes routinely and checking electrical wiring to ensure a continuous power supply.
- HVSs are calibrated at bi-monthly intervals using GMW-25 Calibration Kit throughout all stages of the air quality monitoring. Calibration details are provided in Appendix G.

Results and Observations

- 2.7 The air quality monitoring results of 1-hr TSP and 24-hr TSP of the reporting month are summarized in Tables 2.4 and 2.5. All monitoring data and graphical presentation of the monitoring results are provided in Appendix C.
- 2.8 All measured 1-hour & 24-hour TSP concentrations were below the Action and Limit (AL) Levels in the reporting month.

Table 2.4 Monitoring Results of 1-hr TSP

Date of Monitoring	1-hr TSP ($\mu\text{g}/\text{m}^3$)		
	AM1	AM2	AM3
27-Jul-07	83	110	128
28-Jul-07	64	105	85
30-Jul-07	69	86	114
01-Aug-07	63	82	119
03-Aug-07	44	75	130
06-Aug-07	113	107	116
08-Aug-07	103	148	169
09-Aug-07	69	128	107
10-Aug-07	119	103	111
13-Aug-07	78	180	175
15-Aug-07	86	92	112
17-Aug-07	72	106	82
20-Aug-07	97	137	157
21-Aug-07	122	150	120
22-Aug-07	110	121	121
24-Aug-07	72	120	145

Notes: * Exceedance of Limit Level
 # Exceedance of Action Level
 x No measurement due to power supply failure
 ^ denotes measurement by Dust Trak

Table 2.5 Monitoring Results of 24-hr TSP

Date of Monitoring	24-hr TSP ($\mu\text{g}/\text{m}^3$)		
	AM1	AM2	AM3
28-Jul-07	22	33	29
03-Aug-07	55	59	70
09-Aug-07	18	21	18
15-Aug-07	60	78	73
21-Aug-07	25	36	34

Notes: * Exceedance of Limit Level
Exceedance of Action Level
x No measurement due to power supply failure

3. NOISE MONITORING

Monitoring Requirements

3.1 Noise monitoring was conducted at four monitoring stations as specified in the EM&A Manual. Appendix A shows the established Action and Limit Levels for noise.

Monitoring Equipment

3.2 Integrating Sound Level Meters were employed for noise monitoring. They were Type 1 sound level meters capable of giving a continuous readout of the noise level readings including equivalent continuous sound pressure level (Leq) and percentile sound pressure level (Lx). They comply with International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1). Portable electronic wind speed indicator capable of measuring the wind speed in m/s was employed to check the wind speed. Table 3.1 details the noise monitoring equipment used.

Table 3.1 Noise Monitoring Equipment

Equipment	Model
Integrating Sound Level Meter	Rion NL 31
Calibrator	Rion NC-73
Portable Wind Speed Indicator	TSI Model 8340-M Air Velocity Meter

Monitoring Parameters, Frequency and Duration

3.3 Noise monitoring was conducted per monitoring day during the daytime. Monitoring to be conducted in the evening and/or night-time only when construction works is in progress. The monitoring period, duration, parameters and frequency of noise measurement are presented in Table 3.2. The monitoring schedule for the reporting month is provided in Appendix B.

Table 3.2 Noise Monitoring Parameters, Period and Frequency

Time Period	Duration (min)	Parameters	Frequency
Daytime (0700 to 1900)	30	L _{eq}	Once a week
*Evening (1900 to 2300)	5		
*Night-time (2300 to 0700 of next day)	5		

Notes: * denotes Noise monitoring to be conducted only when construction work is in progress.

Monitoring Locations

3.4 In accordance with the EM&A Manual, noise monitoring was conducted at four designated monitoring stations as shown in Figure 1.4. Table 3.3 describes the locations of these monitoring stations.

Table 3.3 Noise Monitoring Locations

Noise Monitoring Stations	Identity / Description
CN1	Open Area adjacent to Police Training School
CN2	Project Development Office, Ocean Park
CN3	Rinniped House, Ocean Park
CN4	Manly Villa

Monitoring Methodology

Field Monitoring

- The Sound Level Meter was set on a tripod at a height of 1.2 m above the ground.

- For free field measurement, the meter was positioned away from any nearby reflective surfaces. For reference, a correction of +3dB(A) was made to the free field measurements.
- The battery condition was checked to ensure the correct functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
 - frequency weighting : A
 - time weighting : Fast
 - time measurement : 30 minutes / 5 minutes
- Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94 dB at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1 dB(A), the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.
- The wind speed was frequently checked with a portable wind meter.
- During the monitoring period, the L_{eq} was recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- Noise measurement was paused during periods of high intrusive noise (e.g. dog barking, helicopter noise) if possible. Observations were recorded when intrusive noise was unavoidable.
- Noise monitoring was cancelled in the presence of fog, rain, wind with a steady speed exceeding 5 m/s, or wind with gusts exceeding 10 m/s.

Maintenance and Calibration

- The microphone head of the sound level meter and calibrator is cleaned with soft cloth at quarterly intervals.
- The meters and calibrators are sent to *Hong Kong Calibration Ltd* to check and calibrate at yearly intervals. Calibration details are provided in Appendix G.

Results and Observations

- 3.5 Noise monitoring was conducted at the 4 designated monitoring stations during daytime in the reporting month. The monitoring was carried out as scheduled in the reporting month of [August 2007](#) and the monitoring results are summarized in Table 3.4. All monitoring data and graphical presentation of the monitoring results are provided in Appendix D.
- 3.6 No exceedance of limit level during daytime recorded in the reporting month.

Table 3.4 Monitoring Results of Daytime Noise

Date of Monitoring	Noise Level, Leq (30-min), dB(A)			
	CN1	CN2	CN3	CN4
30-Jul-07	67.8	66.8	66.1	62.5
06-Aug-07	67.4	63.5	64.9	57.8
13-Aug-07	67.2	64.0	64.2	58.2
20-Aug-07	67.8	63.5	61.8	56.3

Notes: * Exceedance of Limit Level
 # Exceedance of Action Level

4. TERRESTRIAL ECOLOGY

Monitoring Requirements

- 4.1. Monitoring of the health and condition of the transplanted plant species of conservation interest should be monitored at least once a month during the first 12 months after transplantation.

Monitoring Parameters, Frequency and Duration

- 4.2. Since the resubmission of the transplantation proposal has been undertaken within the reporting month of [August 2007](#), the proposed monitoring frequency and duration would be confirmed after the proposal has been agreed or approved by EPD.

Monitoring Locations

- 4.3. The proposed monitoring location is shown in Figure 1.3.

Monitoring Methodology

- 4.4. Since the revised transplantation proposal has been submitted during the reporting month of [August 2007](#), the monitoring methodology would be confirmed after the proposal has been agreed or approved by EPD.

Results and Observations

- 4.5. Since the resubmission of the transplantation proposal has been done during the reporting month of [August 2007](#), no monitoring has been undertaken.

5. SUBTIDAL MONITORING

Monitoring Requirement

- 5.1 Even though the conclusion in the EIA stated that adverse impact on coral communities would not be expected during the construction phase of the Project, coral monitoring shall be conducted as a precautionary measure.
- 5.2 Appendix A shows the established Action/Limit Levels for the subtidal monitoring works.

Monitoring Parameters, Frequency, Schedule

- 5.3 Subtidal monitoring is required to be conducted as follows:
- once per month in the first two months in Site 1, Site 2, Site 3, Site 4 and Control Site C.
 - twice a month at first three months in Site 5 and Control Site C.
 - once per month for the next three months in Site 5 and Control Site C.
 - If there is no exceedance, the monitoring frequency would be adjusted to once every three months (i.e. quarterly) until the end of the Contract No CI05 of the Project.

Monitoring Locations

- 5.4 In accordance with the EM&A Manual, subtidal monitoring would be conducted at Tai Shue Wan and Chung Hom Kok. The monitoring locations are shown in Figure 5.1.

Monitoring Procedures

- 5.5 Monitor the tagged corals (ten nos. at each station) for sedimentation, bleaching and mortality.
- 5.6 In the event that there is no exceedance record, the monitoring frequency shall be revised to once in every quarter until the end of the construction phase of CI05.
- 5.7 In the event that there is an exceedance of Action Level record, more frequent monitoring to be carried out until the exceedance stops.
- 5.8 In the event that there is an exceedance of Limit Level record, the Contractor shall suspend all works until an effective solution is identified.

Results and Observations

- 5.9 The purpose of subtidal monitoring is monitor the potential impact during the construction phase of the Project. The [third](#) impact subtidal monitoring conducted within the reporting month of [August 2007](#).
- 5.10 The results of monitoring show that sediment cover, bleaching and mortality on some of the tagged colonies from the Monitoring Site 5 and the Control Station C increased by 1 to 9% when compared with the results in the Initial Surveys on 07 to 12 April 2007. The enhanced sedimentation was believed to be contributed by multiple environmental factors, such as south-west monsoon, heavy rainfall and the typhoons during 08 to 11 August 2007.
- 5.11 The healthy status of the tagged coral colonies was normal, with low to medium levels of sedimentation. Low levels of bleaching and mortality were observed in both monitoring and control sites. Neither action or limit level of sedimentation, bleaching or mortality was recorded in the two monitoring surveys in [August 2007](#); hence no adverse impact by the construction activity on the coral community was evidenced.
- 5.12 The details of the monitoring results are summarized in Appendix F.

6. ENVIRONMENTAL AUDIT

Site Environmental Audit

- 6.1 Site audit would be carried out once per week to monitor environmental issues on the construction sites to ensure that all mitigation measures were implemented timely and properly.

Review of Environmental Monitoring Procedures

- 6.2 The monitoring works conducted by the monitoring team were inspected regularly. The following observations have been recorded for the monitoring works:

Air Quality Monitoring

- The monitoring team recorded all observations around the monitoring stations within and outside of the construction site.
- The monitoring team recorded the temperature, air pressure and weather conditions on the monitoring day.

Noise Monitoring

- The monitoring team recorded all observations around the monitoring stations, which might affect the monitoring result.
- Major noise sources were identified and recorded. Other intrusive noise attributing to the result was trimmed off by pausing the monitoring temporarily.

Terrestrial Monitoring

- No monitoring since the revised transplantation proposal has been submitted and waiting for approval from EPD and AFCD.

Subtidal Monitoring

- The [third](#) impact subtidal monitoring conducted within the reporting month of [August 2007](#) since the site formation at Summit has commenced.

Status of Environmental Licensing and Permitting

- 6.3 All permits/licences obtained as of [August 2007](#) are summarised in Table 6.1.

Table 6.1 Summary of Environmental Licensing and Permit Status

Permit No.	Valid Period		Section/Description	Status
	From	To		
Environmental Permit				
EP-249/2006/A	23-Oct-06	N/A	Add a new condition before Condition 2.18 in Part C stated that "To compensate for the loss of roosting site for freshwater birds due to the filling of Pond 37 at Lowland area; complete the enhancement works for Pond 35 and to avoid disturbing the roosting site for freshwater birds, no construction works and discharge from the construction site(s) shall be allowed with the existing freshwater ponds at Tai Shue Wan area". Renumber Conditions 2.19 to 2.25 in Part C of the EP.	Valid
Construction Noise Permits				
GW-RS0408-07	01-Jul-07	30-Aug-07	Ventilation fan; Cherry picker; Generator, silenced, 75dB(A) at 7m; Welding set; Jumbo; Shotcrete machine, Excavator; Dump truck, Rock splitter; Concrete lorry mixer; and Air compressor with noise emission label showing the SWL of ≤ 102dB(A)	Valid
GW-RS0434-07	16-Jul-07	10-Dec-07	Concrete lorry mixer; Poker, vibrating, hand-held (electric); Excavator, tracked; Generator, silenced, 75dB(A) at 7m; Crane, mobile (diesel); Excavator, tracked; Roller, vibratory; Breaker, hand-held, mass ≤ 10kg; Cutter, circular, steel (electric); Lorry with crane	Valid
GW-RS0440-07	18-Jul-07	30-Aug-07	Aerial platform, mobilized; Trailer; Crane, mobile (diesel); and Lorry with crane	Valid
GW-RS0448-07	20-Jul-07	20-Jan-08	Generator, silenced, 75 dB(A) at 7m	Valid
GW-RS0530-07	23-Aug-07	21-Oct-07	Crane, mobile (350 tonnes); Lorry with crane x 2; Crane, mobile (90 tonnes)	Valid
Chemical Waste Producer Registration				
WPN5213-199-D2373-01	07-May-07	N/A	For disposal of chemical wastes, mainly spent lubricants	Valid
Effluent Discharge License				
EP820/W9/XW232	20-Jun-07	30-Jun-12	For discharge of industrial trade effluent arising from construction site at Summit and Tunnel	Valid
EP820/W9/XW234	13-Jul-07	31-Jul-12	For discharge of industrial trade effluent arising from construction site at Waterfront	Valid
Specific Process License				
Application sent on 03-Apr-07 and the supplementary information has provided on 20 June 2007 and 25 July 2007 for consideration and discussion with EPD is in progress.				
Notification of Construction Works under APCO				
Waterfront sent on 31-Jan-07 (ref. 001017998)				
Summit sent on 05-Feb-07 (ref. 001018054)				

Table 6.1 Summary of Environmental Licensing and Permit Status

Permit No.	Valid Period		Section/Description	Status
	From	To		
Billing Account under Construction Waste Disposal Charging Scheme				
7004888	03-Jan-07	18-Dec-08	For disposal of C&D waste to public fills, sorting facilities and landfills	In use

Implementation Status of Environmental Mitigation Measures

6.4 The weekly joint site inspections have conducted on [02, 10 & 17 August 2007](#). The IEC has undertaken the monthly audit on [23 August 2007](#). During site inspections in this reporting month, the following observations and recommendations were made.

Land Based Water Quality Mitigation Measures

6.5 The Contractor was reminded to remove the stagnant water regularly in order to minimize the potential mosquito breeding problems, especially at the drip trays.

6.6 Accumulation of mud at the wheel washing bay and the sedimentation tank at the haul road to Summit was identified and cleaning is required.

Air Quality Mitigation Measures

6.7 Stockpile and exposed slope surface were partly covered. The Contractor was reminded to cover them entirely and properly with tarpaulin.

Noise

6.8 No violation was observed during site inspections in the reporting month of [August 2007](#).

Ecology

6.9 No violation was observed during site inspections in the reporting month of [August 2007](#).

Waste / Chemical Management

6.10 Accumulation of waste was observed near the Giant Panda Habitat and should be removed asap.

Landscape and Visual

6.11 No violation was observed during site inspections in the reporting month of [August 2007](#).

Environmental Mitigation Implementation Schedule (EMIS)

6.12 According to the Environmental Permit, the mitigation measures detailed in the permits are required to be implemented. An updated summary of the EMIS is presented in Appendix H.

Implementation Status of Event/Action Plans

6.13 The Event and Action Plans for air quality, noise and subtidal monitoring are presented in Appendix I.

6.14 No exceedance of air quality (i.e. 1 hour & 24-hour TSP) was recorded during the reporting month of [August 2007](#).

6.15 No exceedance of noise limit level during daytime and evening was recorded in the reporting month of [August 2007](#).

6.16 No exceedance of subtidal monitoring was recorded in the reporting month of [August 2007](#).

Implementation Status of Environmental Complaint Handling Procedures

Summary of the Complaints and Prosecutions

- 6.17 Appendix J presents the environmental complaint flow diagram of the Project.
- 6.18 No complaint, summons or prosecution related to environmental issues was received or made against the Project in [August 2007](#).

7. FUTURE KEY ISSUES

Key Issues for the Coming Month

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

- Noise from operating equipment and machinery on-site.
- Maintenance of silt curtains.
- Construction waste management at the demolition work areas.
- Avoid accumulation of stagnant / muddy water on-site.
- To implement dust suppression measures on dry surfaces.
- Provision of treatment to turbid water from activities on-site before discharge.

Monitoring Schedules for the Next Month

7.2 The environmental monitoring schedules for the next month are shown in Appendix B.

Construction Program for the Next 3 Months

7.3 The construction programme for the next 3 months is shown in Appendix K.

8. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

- 8.1 Environmental impact monitoring was performed in [August 2007](#). All monitoring results in the reporting month were checked and reviewed.
- 8.2 No exceedances of Action and Limit Level for daytime noise, evening noise, 24-hour TSP and 1-hour TSP were recorded in the reporting month of [August 2007](#).
- 8.3 The second impact subtidal monitoring conducted within the reporting month of [August 2007](#) and the results showed that no exceedances of Action and Limit Levels.
- 8.4 No complaint, summons or prosecution related to environmental issues were made against the Project in the reporting period.

Recommendations

- 8.5 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 regularly maintain the machinery and vehicles on site.
- To follow up any exceedance caused by the construction works.
- To implement dust suppression measures on dry surfaces.

Noise Impact

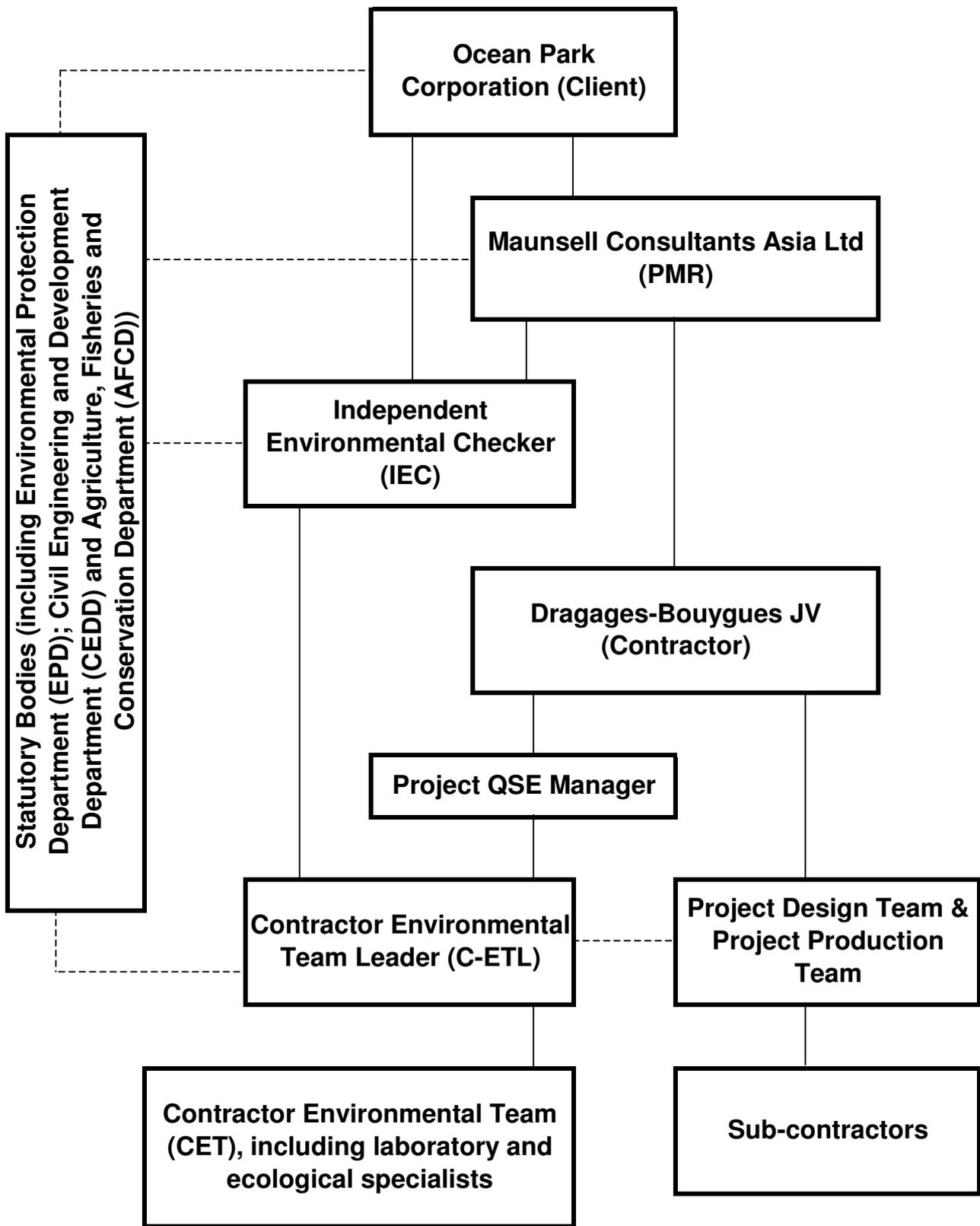
- To inspect the noise sources from inside and outside of the site.
- To follow up any exceedance caused by the construction works.
- To space out noisy equipment and position as far away as possible from sensitive receivers.
- To have regular maintenance of vessels and equipment used.

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 at the sea.

Water Quality Impact

- To minimize water discharge and surface runoff into nearby water body.
- To provide silt and sand traps in channels.
- 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.



LEGEND:

- Line of Communication
- Line of Authority

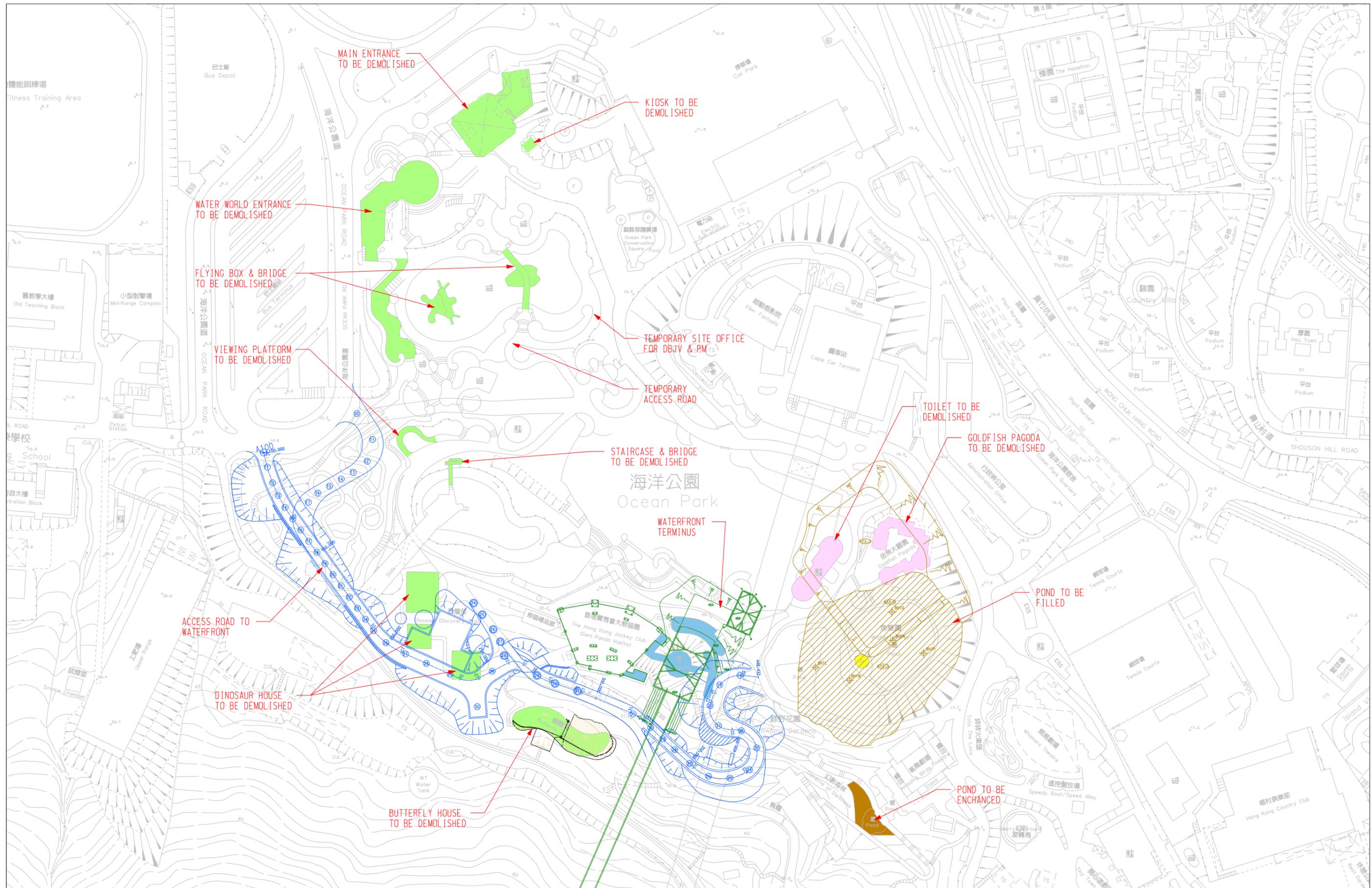


Dragages-Bouygues JV 寶嘉-布依格聯營

Ocean Park Master Redevelopment Project Contract CI05

Figure 1.1

Project Environmental Organisation Chart



DESIGNED BY	BLo
DRAWN BY	BLo
CHECKED BY	GCh
IN CHARGE	DNg
DATE	02APR2007

MAIN CONTRACTOR :



Dragages-Bouygues JV 寶嘉-布依格聯營

CLIENT :



香港海洋公園
OCEAN PARK HONG KONG

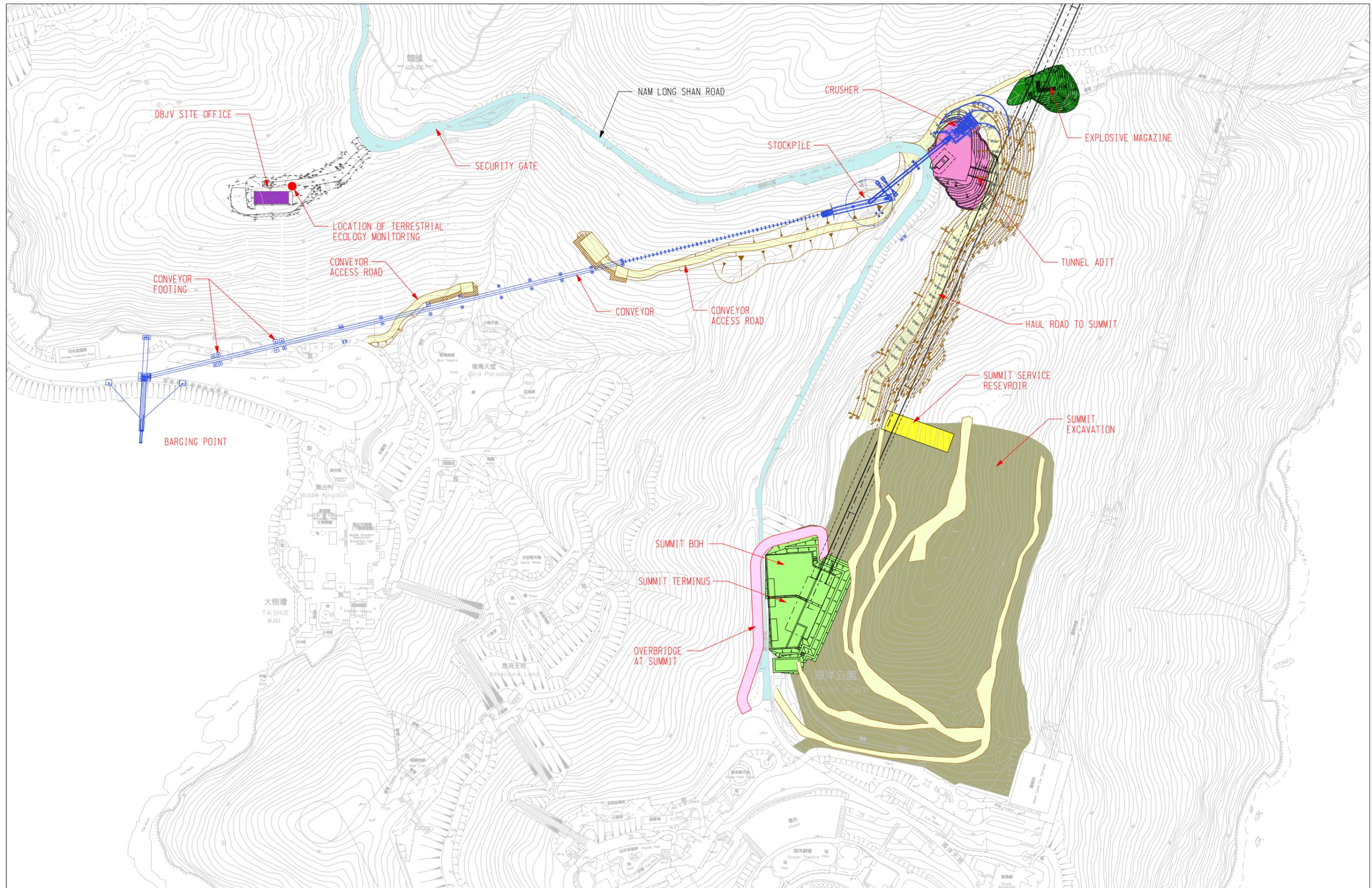
PROJECT TITLE :

OCEAN PARK REDEVELOPMENT
Contract No. C105
Site Formation, Funicular Tunnel
and Miscellaneous Works

DRAWING TITLE :

FIGURE 1.2
LAYOUT OF WORK SITE
(WATERFRONT)

CADD FILENAME :	01ENV0013A.DGN
DATE :	02APR2007
SCALE :	1 : 1500 @ A3
DRAWING NUMBER :	DBJV/C105/01/ENV/0013
REV.	A



DESIGNED BY	BLo		
DRAWN BY	BLo		
CHECKED BY	GCb		
IN CHARGE	DNg		
DATE	02APR2007		
REV.	DATE	BY	DESCRIPTION
B	10AUG2007	GCb	E1B5T_ISSUE
A	02APR2007	GCb	E1B5T_ISSUE

MAIN CONTRACTOR :



Dragages-Bouygues JV 寶嘉-布依格聯營

CLIENT :



香港海洋公園
OCEAN PARK HONG KONG

PROJECT TITLE :

OCEAN PARK REDEVELOPMENT
Contract No. C105
Site Formation, Funicular Tunnel
and Miscellaneous Works

DRAWING TITLE :

FIGURE 1.3
LAYOUT OF WORK SITE (SUMMIT)
AND LOCATION OF
TERRESTRIAL ECOLOGY MONITORING

CADD FILENAME :	Q1ENYQ014B-DGN
DATE :	10AUG2007
SCALE :	1 : 2500 @ A3
DRAWING NUMBER :	DBJV/C105/Q1/ENV/Q014
REV.	B



- LEGEND:
- PROPOSED NOISE MONITORING STATION
 - ▲ PROPOSED AIR QUALITY MONITORING STATION

深水灣
DEEP WATER BAY
(SHAM SHUI WAN)

DESIGNED BY	SIQ
DRAWN BY	BLQ
CHECKED BY	SIQ
IN CHARGE	YIS
DATE	02APR2007

MAIN CONTRACTOR :



Dragages-Bouygues JV 實嘉-布依格聯營

CLIENT :



香港海洋公園
OCEAN PARK HONG KONG

PROJECT TITLE :

OCEAN PARK REDEVELOPMENT
Contract No. C105
Site Formation, Funicular Tunnel
and Miscellaneous Works

DRAWING TITLE :

FIGURE 1.4
AIR QUALITY AND
NOISE MONITORING STATIONS
LOCATION PLAN

CADD FILENAME :	Q1ENV0015A-DGN
DATE :	02APR2007
SCALE :	1 : 2500 @ A3
DRAWING NUMBER :	DBJV/C105/Q1/ENV/Q015
REV.	A

SUBTIDAL MONITORING
STATION - SITE 3

SUBTIDAL MONITORING
STATION - SITE 4

SUBTIDAL MONITORING
STATION - SITE 5

SUBTIDAL MONITORING
STATION - SITE 2

SUBTIDAL MONITORING
STATION - SITE 1

REV.	DATE	BY	DESCRIPTION
A	02APR2007	STa	FIRST ISSUE

DESIGNED BY	STa
DRAWN BY	BLo
CHECKED BY	STa
IN CHARGE	YTS
DATE	02APR2007

MAIN CONTRACTOR :



CLIENT :



PROJECT TITLE :

OCEAN PARK REDEVELOPMENT
Contract No. C105
Site Formation, Funicular Tunnel
and Miscellaneous Works

DRAWING TITLE :

FIGURE 5.1
LOCATIONS OF
SUBTIDAL MONITORING STATION

CADD FILENAME : 01ENV0016A.DGN

DATE : 02APR2007

SCALE : 1 : 7500 @ A3

DRAWING NUMBER : DBJV/C105/01/ENV/0016
REV. : A

APPENDIX A - ACTION AND LIMIT LEVELS

Table A.1 Action and Limit Levels for 1-hour average TSP and 24-hour average TSP Monitoring

Monitoring Location	24-hr TSP ($\mu\text{g}/\text{m}^3$)		1-hr TSP ($\mu\text{g}/\text{m}^3$)	
	Action Level	Limit Level	Action Level	Limit Level
AM1	183	260	440	500
AM2	181	260	500	500
AM3	194	260	500	500

Table A.2 Action and Limit Levels for Daytime, Evening & Night-time Noise Monitoring

Time Period	Action	Limit
0700-1900 hrs on normal weekdays	When one documented complaint is received from any one of the sensitive receivers	75 dB(A) *
1900-2300 hrs on normal weekdays; and 0700-1900 hrs on holidays		60/65/70 dB(A) **
2300-0700 hrs of next day		45/50/55 dB(A) **

* reduce to 70dB(A) for school and 65dB(A) during school examination periods, if applicable
 ** to be selected based on the Area Sensitivity Rating of A/B/C, and the conditions of the CNP(s) must be followed

Table A.3 Action and Limit Levels for Subtidal 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.

APPENDIX B – ENVIRONMENTAL MONITORING SCHEDULES

From 26 August 2007 to 25 September 2007

Sun	Mon	Tue	Wed	Thu	Fri	Sat
26	27 1-hr TSP 24-hr TSP NM (D)	28	29 1-hr TSP	30	31 1-hr TSP	1 1-hr TSP 24-hr TSP
2	3 1-hr TSP NM (D)	4	5 1-hr TSP	6	7 1-hr TSP 24-hr TSP	8 SM (Site 5 and Control Station C)
9	10 1-hr TSP NM (D)	11	12 1-hr TSP	13 1-hr TSP 24-hr TSP	14 1-hr TSP	15 TEC
16	17 1-hr TSP NM (D)	18	19 1-hr TSP 24-hr TSP	20 TEC	21 1-hr TSP	22
23	24 1-hr TSP NM (D)	25 1-hr TSP (2) 24-hr TSP	26 TEC	27	28 1-hr TSP	29

Notes: NM (D) denotes Daytime Noise Monitoring.

NM (E) denotes Evening Noise Monitoring if construction work is in progress.

SM denotes Subtidal Monitoring.

TM denotes Terrestrial Ecology Monitoring.

Any update / change in the schedule due to weather or other safety factors will be reported in the monthly EM&A report.

APPENDIX C – AIR QUALITY MONITORING RESULTS

1-hr TSP Monitoring Results at Station AM1

Monitoring Period				Filter Weight (g)		Flow Rate (m ³ /min)		Elapse Time (hour)		Sampling Time (hours)	Concentration (µg/m ³)	Weather Condition	Particular weight (g)	Average flow (m ³ /min)	Total volume (m ³)
From		To		Initial	Final	Initial	Final	Initial	Final						
Date	Time	Date	Time												
27-Jul-07	09:00	27-Jul-07	10:00	2.8344	2.8398	1.09	1.09	9940.72	9941.72	1	83	Sunny	0.0054	1.1	65
28-Jul-07	09:00	28-Jul-07	10:01	2.9058	2.9099	1.06	1.06	9941.72	9942.72	1	64	Sunny	0.0041	1.1	64
30-Jul-07	10:20	30-Jul-07	11:20	2.8649	2.8692	1.04	1.04	9966.72	9967.72	1	69	Sunny	0.0043	1.0	62
01-Aug-07	09:00	01-Aug-07	10:00	2.8925	2.8965	1.06	1.06	9967.72	9968.72	1	63	Sunny	0.0040	1.1	64
03-Aug-07	09:00	03-Aug-07	10:00	2.8518	2.8546	1.06	1.06	9968.72	9969.72	1	44	Sunny	0.0028	1.1	64
06-Aug-07	11:00	06-Aug-07	12:00	2.8800	2.8874	1.09	1.09	9993.72	9994.72	1	113	Sunny	0.0074	1.1	65
08-Aug-07	09:00	08-Aug-07	10:00	2.9092	2.9159	1.09	1.09	9994.73	9995.73	1	103	Cloudy	0.0067	1.1	65
09-Aug-07	09:00	09-Aug-07	10:00	2.8926	2.8970	1.06	1.06	9995.73	9996.73	1	69	Cloudy	0.0044	1.1	64
10-Aug-07	13:30	10-Aug-07	14:30	2.8285	2.8365	1.11	1.11	10020.72	10021.73	1	119	Cloudy	0.0080	1.1	67
13-Aug-07	09:00	13-Aug-07	10:00	2.8592	2.8643	1.09	1.09	10021.73	10022.73	1	78	Cloudy	0.0051	1.1	65
15-Aug-07	09:00	15-Aug-07	10:00	2.8436	2.8491	1.06	1.06	10022.73	10023.73	1	86	Cloudy	0.0055	1.1	64
17-Aug-07	13:25	17-Aug-07	14:25	2.8229	2.8274	1.04	1.04	10047.73	10048.73	1	72	Cloudy	0.0045	1.0	62
20-Aug-07	09:00	20-Aug-07	10:00	2.8135	2.8197	1.06	1.06	10048.73	10049.73	1	97	Sunny	0.0062	1.1	64
21-Aug-07	09:00	21-Aug-07	10:00	2.8045	2.8123	1.06	1.06	10049.73	10050.73	1	122	Sunny	0.0078	1.1	64
22-Aug-07	13:11	22-Aug-07	14:11	2.8157	2.8227	1.06	1.06	10074.72	10075.72	1	110	Sunny	0.0070	1.1	64
24-Aug-07	09:00	24-Aug-07	10:00	2.8273	2.8318	1.04	1.04	10075.72	10076.72	1	72	Cloudy	0.0045	1.0	62

Remarks: Bold value indicated an Action Level exceedance
 Bold & Italic value indicated an Limit Level exceedance
 X - denotes no measurement due to power supply failure
 * - denotes measurement by using Dust Trak

APPENDIX C – AIR QUALITY MONITORING RESULTS (CONT'D)

1-hr TSP Monitoring Results at Station AM2

Monitoring Period				Filter Weight (g)		Flow Rate (m ³ /min)		Elapse Time (hour)		Sampling Time (hours)	Concentration (µg/m ³)	Weather Condition	Particular weight (g)	Average flow (m ³ /min)	Total volume (m ³)
From		To		Initial	Final	Initial	Final	Initial	Final						
Date	Time	Date	Time	Initial	Final	Initial	Final	Initial	Final						
27-Jul-07	09:00	27-Jul-07	10:00	2.8217	2.8283	1.0	1.0	9677.04	9678.04	1	110	Sunny	0.0066	1.0	60
28-Jul-07	09:00	28-Jul-07	10:00	2.9032	2.9097	1.0	1.0	9678.04	9679.04	1	105	Sunny	0.0065	1.0	62
30-Jul-07	10:10	30-Jul-07	11:10	2.8934	2.8987	1.0	1.0	9703.04	9704.04	1	86	Sunny	0.0053	1.0	62
01-Aug-07	09:00	01-Aug-07	10:00	2.8936	2.8988	1.1	1.1	9704.04	9705.04	1	82	Sunny	0.0052	1.1	64
03-Aug-07	09:00	03-Aug-07	10:00	2.8998	2.9046	1.1	1.1	9705.04	9706.04	1	75	Sunny	0.0048	1.1	64
06-Aug-07	11:00	06-Aug-07	12:00	2.8752	2.8820	1.1	1.1	9730.04	9731.04	1	107	Sunny	0.0068	1.1	64
08-Aug-07	09:00	08-Aug-07	10:00	2.8970	2.9065	1.1	1.1	9731.04	9732.04	1	148	Cloudy	0.0095	1.1	64
09-Aug-07	09:00	09-Aug-07	10:00	2.9019	2.9096	1.0	1.0	9732.04	9733.04	1	128	Cloudy	0.0077	1.0	60
10-Aug-07	13:15	10-Aug-07	14:15	2.8184	2.8252	1.1	1.1	9757.04	9758.04	1	103	Cloudy	0.0068	1.1	66
13-Aug-07	09:00	13-Aug-07	10:00	2.8000	2.8108	1.0	1.0	9758.01	9759.04	1	180	Cloudy	0.0108	1.0	60
15-Aug-07	09:00	15-Aug-07	10:00	2.8185	2.8242	1.0	1.0	9759.04	9760.04	1	92	Cloudy	0.0057	1.0	62
17-Aug-07	13:15	17-Aug-07	14:15	2.8233	2.8297	1.0	1.0	9784.04	9785.04	1	106	Cloudy	0.0064	1.0	60
20-Aug-07	09:00	20-Aug-07	10:00	2.8199	2.8284	1.0	1.0	9785.04	9786.04	1	137	Sunny	0.0085	1.0	62
21-Aug-07	09:00	21-Aug-07	10:00	2.8205	2.8298	1.0	1.0	9786.04	9787.04	1	150	Sunny	0.0093	1.0	62
22-Aug-07	13:45	22-Aug-07	14:45	2.8206	2.8279	1.0	1.0	9811.03	9812.03	1	121	Sunny	0.0073	1.0	60
24-Aug-07	09:00	24-Aug-07	10:00	2.8466	2.8538	1.0	1.0	9812.03	9813.03	1	120	Cloudy	0.0072	1.0	60

Remarks: Bold value indicated an Action Level exceedance
 Bold & Italic value indicated an Limit Level exceedance
 X - denotes no measurement due to power supply failure
 * - denotes measurement by using Dust Trak

APPENDIX C – AIR QUALITY MONITORING RESULTS (CONT'D)

1-hr TSP Monitoring Results at Station AM3

Monitoring Period				Filter Weight (g)		Flow Rate (m ³ /min)		Elapse Time (hour)		Sampling Time (hours)	Concentration (µg/m ³)	Weather Condition	Particular weight (g)	Average flow (m ³ /min)	Total volume (m ³)
From		To		Initial	Final	Initial	Final	Initial	Final						
Date	Time	Date	Time												
27-Jul-07	09:00	27-Jul-07	10:00	2.8130	2.8221	1.2	1.2	12097.11	12098.11	1	128	Sunny	0.0091	1.2	71
28-Jul-07	09:00	28-Jul-07	10:00	2.9041	2.9098	1.1	1.1	12098.11	12099.11	1	85	Sunny	0.0057	1.1	67
30-Jul-07	10:00	30-Jul-07	11:00	2.8615	2.8694	1.2	1.2	12123.11	12124.11	1	114	Sunny	0.0079	1.2	69
01-Aug-07	09:00	01-Aug-07	10:00	2.8957	2.9039	1.2	1.2	12124.11	12125.11	1	119	Sunny	0.0082	1.2	69
03-Aug-07	09:00	03-Aug-07	10:00	2.8932	2.9022	1.2	1.2	12125.11	12126.11	1	130	Sunny	0.0090	1.2	69
06-Aug-07	11:00	06-Aug-07	12:00	2.9000	2.9082	1.2	1.2	12150.11	12151.11	1	116	Sunny	0.0082	1.2	71
08-Aug-07	09:00	08-Aug-07	10:00	2.8918	2.9035	1.2	1.2	12151.11	12152.11	1	169	Cloudy	0.0117	1.2	69
09-Aug-07	09:00	09-Aug-07	10:00	2.9071	2.9143	1.1	1.1	12152.11	12153.11	1	107	Cloudy	0.0072	1.1	67
10-Aug-07	13:00	10-Aug-07	14:00	2.8105	2.8188	1.2	1.2	12177.11	12178.11	1	111	Cloudy	0.0083	1.2	74
13-Aug-07	09:00	13-Aug-07	10:00	2.7983	2.8104	1.2	1.2	12178.11	12179.11	1	175	Cloudy	0.0121	1.2	69
15-Aug-07	09:00	15-Aug-07	10:00	2.8046	2.8128	1.2	1.2	12179.14	12180.17	1	112	Cloudy	0.0082	1.2	73
17-Aug-07	13:00	17-Aug-07	14:00	2.8119	2.8176	1.2	1.2	12204.54	12205.54	1	82	Cloudy	0.0057	1.2	69
20-Aug-07	09:00	20-Aug-07	10:00	2.7909	2.8020	1.2	1.2	12205.54	12206.54	1	157	Sunny	0.0111	1.2	71
21-Aug-07	09:00	21-Aug-07	10:00	2.8251	2.8334	1.2	1.2	12206.54	12207.54	1	120	Sunny	0.0083	1.2	69
22-Aug-07	13:55	22-Aug-07	14:55	2.8379	2.8529	1.3	1.3	12231.53	12232.53	1	121	Sunny	0.0150	1.3	60
24-Aug-07	09:00	24-Aug-07	10:00	2.8416	2.8519	1.2	1.2	12232.53	12233.53	1	145	Cloudy	0.0103	1.2	71

Remarks: Bold value indicated an Action Level exceedance
 Bold & Italic value indicated an Limit Level exceedance
 X - denotes no measurement due to power supply failure
 * - denotes measurement by using Dust Trak

APPENDIX C – AIR QUALITY MONITORING RESULTS (CONT'D)

24-hr TSP Monitoring Results at Station AM1

Monitoring Period				Filter Weight (g)		Flow Rate (m ³ /min)		Elapse Time (hour)		Sampling Time (hours)	Concentration (µg/m ³)	Weather Condition	Particular weight (g)	Average flow (m ³ /min)	Total volume (m ³)
From		To		Initial	Final	Initial	Final	Initial	Final						
Date	Time	Date	Time												
28-Jul-07	11:45	29-Jul-07	11:45	2.9208	2.9549	1.1	1.1	9942.72	9966.72	24	22	Sunny	0.0341	1.1	1532
03-Aug-07	10:52	04-Aug-07	10:53	2.9032	2.9879	1.1	1.1	9969.72	9993.73	24	55	Sunny	0.0847	1.1	1532
09-Aug-07	11:15	10-Aug-07	11:14	2.8845	2.9120	1.1	1.1	9996.73	10020.72	24	18	Rainy	0.0275	1.1	1565
15-Aug-07	13:10	16-Aug-07	13:10	2.8067	2.8962	1.0	1.0	10023.73	10047.73	24	60	Cloudy	0.0895	1.0	1498
21-Aug-07	13:00	22-Aug-07	12:59	2.8046	2.8430	1.1	1.1	10050.73	10074.72	24	25	Cloudy	0.0384	1.1	1531

24-hr TSP Monitoring Results at Station AM2

Monitoring Period				Filter Weight (g)		Flow Rate (m ³ /min)		Elapse Time (hour)		Sampling Time (hours)	Concentration (µg/m ³)	Weather Condition	Particular weight (g)	Average flow (m ³ /min)	Total volume (m ³)
From		To		Initial	Final	Initial	Final	Initial	Final						
Date	Time	Date	Time												
28-Jul-07	11:30	29-Jul-07	11:30	2.8626	2.9135	1.1	1.1	9679.04	9703.04	24	33	Sunny	0.0509	1.1	1527
03-Aug-07	10:37	04-Aug-07	10:37	2.8936	2.9833	1.1	1.1	9706.04	9730.04	24	59	Sunny	0.0897	1.1	1527
09-Aug-07	11:10	10-Aug-07	11:10	2.8755	2.9053	1.0	1.0	9733.04	9757.04	24	21	Rainy	0.0298	1.0	1443
15-Aug-07	12:52	16-Aug-07	12:52	2.8030	2.9163	1.0	1.0	9760.04	9784.04	24	78	Cloudy	0.1133	1.0	1443
21-Aug-07	13:30	22-Aug-07	13:30	2.813	2.8666	1.0	1.0	9787.04	9811.03	24	36	Cloudy	0.0536	1.0	1491

Remarks: Bold value indicated an Action Level exceedance
 Bold & Italic value indicated an Limit Level exceedance
 X – denotes no measurement due to power supply failure

APPENDIX C – AIR QUALITY MONITORING RESULTS (CONT'D)

24-hr TSP Monitoring Results at Station AM3

Monitoring Period				Filter Weight (g)		Flow Rate (m ³ /min)		Elapse Time (hour)		Sampling Time (hours)	Concentration (µg/m ³)	Weather Condition	Particular weight (g)	Average flow (m ³ /min)	Total volume (m ³)
From		To		Initial	Final	Initial	Final	Initial	Final						
Date	Time	Date	Time	Initial	Final	Initial	Final	Initial	Final						
28-Jul-07	11:15	29-Jul-07	11:15	2.8988	2.9518	1.3	1.3	12099.11	12123.11	24	29	Sunny	0.0530	1.3	1830
03-Aug-07	10:50	04-Aug-07	10:50	2.9030	3.0246	1.2	1.2	12126.11	12150.11	24	70	Sunny	0.1216	1.2	1745
09-Aug-07	11:30	10-Aug-07	11:30	2.8932	2.9251	1.2	1.2	12153.11	12177.11	24	18	Rainy	0.0319	1.2	1787
15-Aug-07	13:07	16-Aug-07	13:29	2.8136	2.9399	1.2	1.2	12180.17	12204.54	24	73	Cloudy	0.1263	1.2	1728
21-Aug-07	13:45	22-Aug-07	13:45	2.7917	2.8517	1.2	1.2	12207.54	12231.53	24	34	Cloudy	0.0600	1.2	1786

Remarks: Bold value indicated an Action Level exceedance
 Bold & Italic value indicated an Limit Level exceedance
 X – denotes no measurement due to power supply failure

Figure C.1 1-hr TSP monitoring results of Monitoring Station AM1

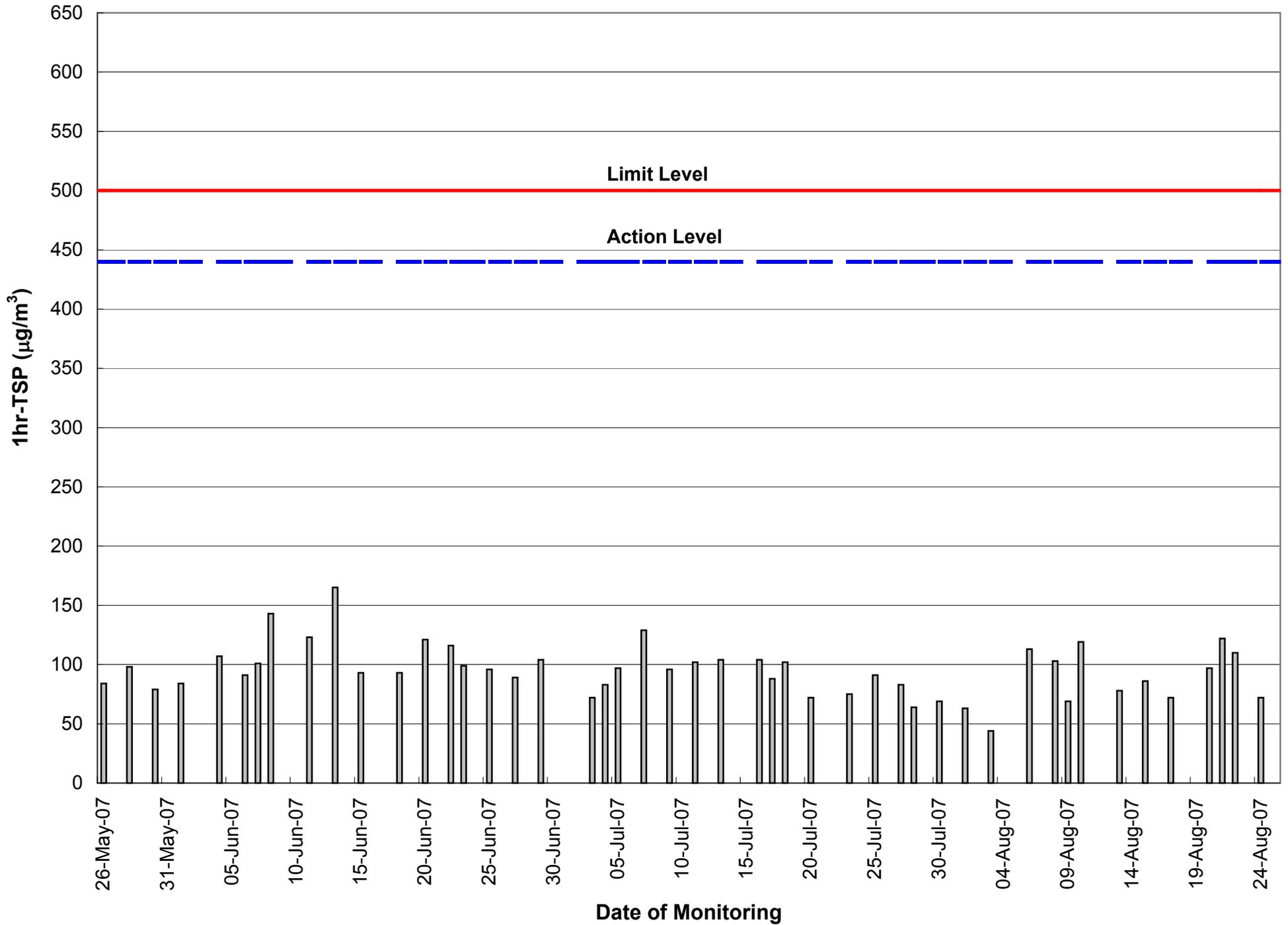


Figure C.2 1-hr TSP monitoring results of Monitoring Station AM2

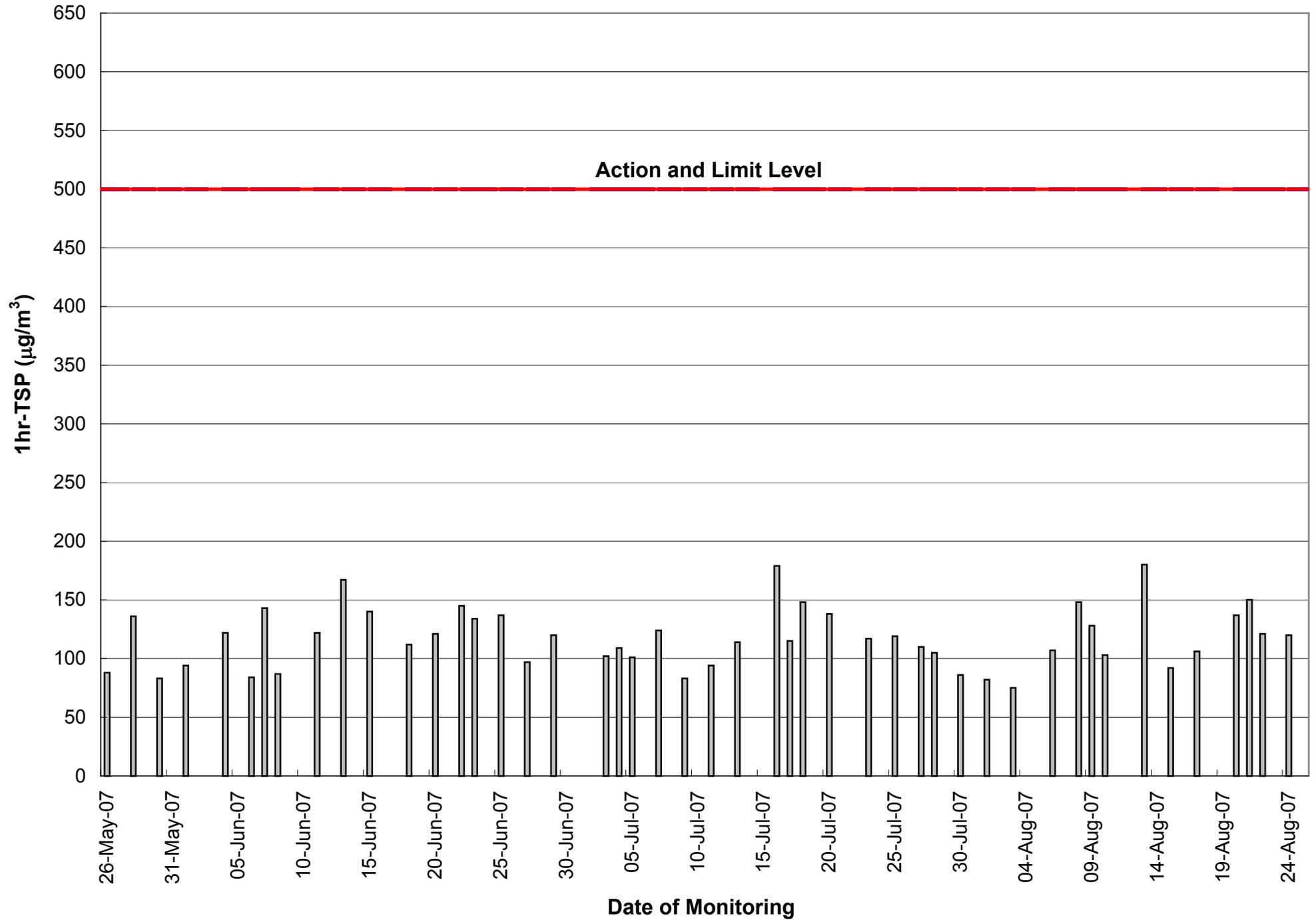


Figure C.3 1-hr TSP monitoring results of Monitoring Station AM3

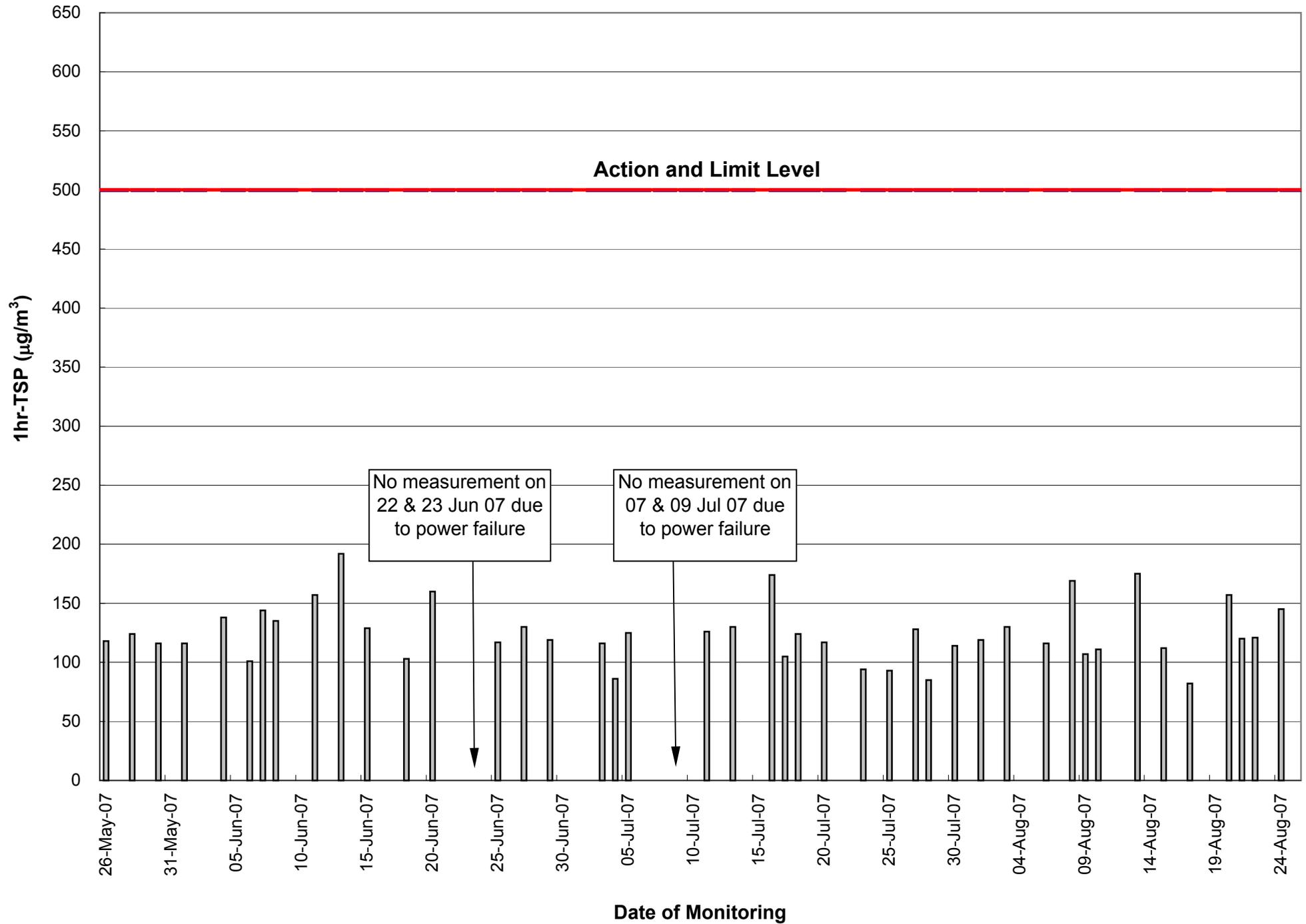
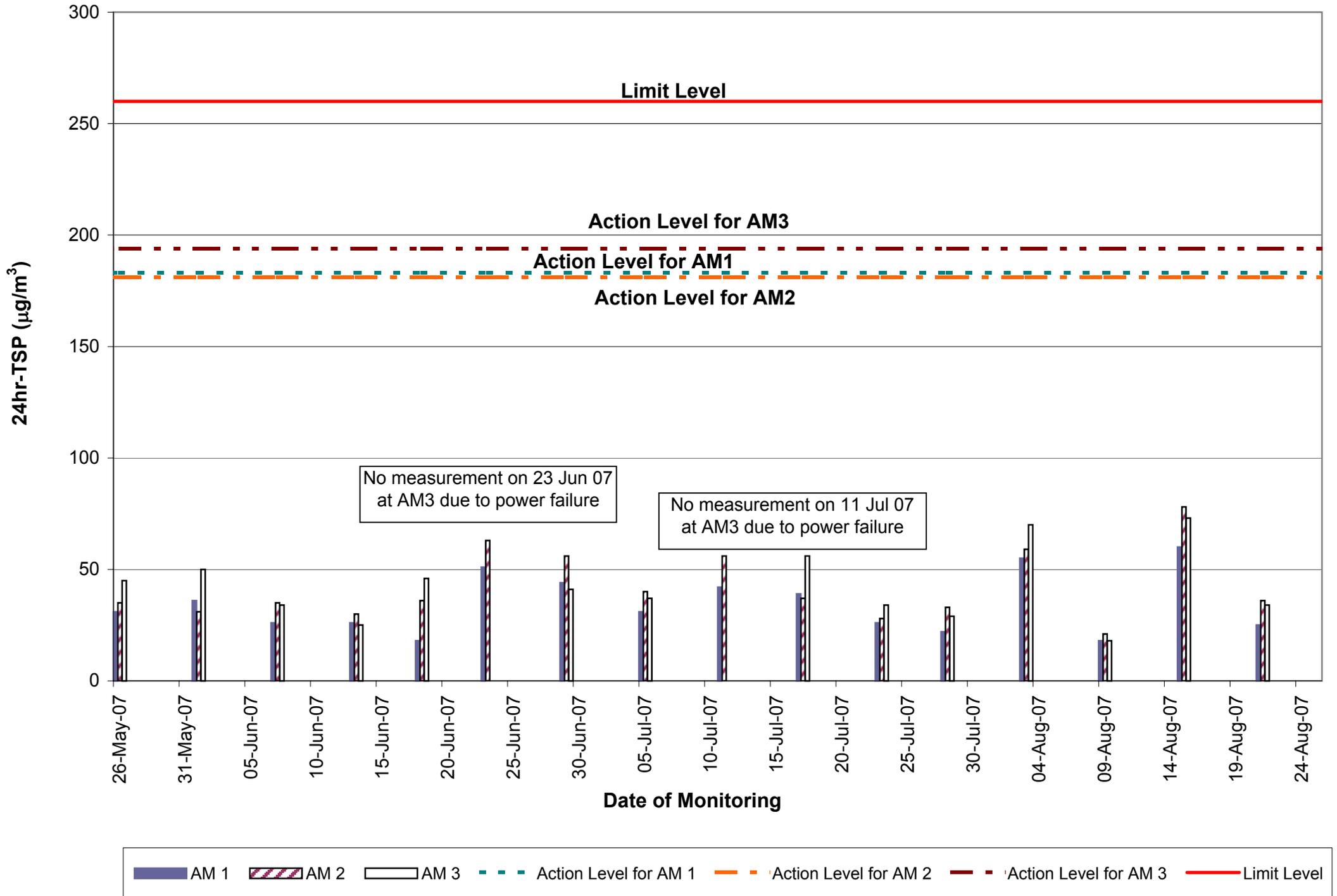


Figure C.4 24-hr TSP monitoring results of Monitoring Station AM1, AM2 & AM3



APPENDIX D – NOISE MONITORING RESULTS

Daytime Noise Monitoring Results at Station CN1

Date	Weather Condition	Measured Noise Level for 30 mins., dB(A)				Baseline Noise Level, dB(A)	Limit Level, dB(A)	Exceedance (Y/N)
		Time	Leq	L10	L90			
30-Jul-07	Sunny	13:00	67.8	70.5	66.0	63.2	70	N
06-Aug-07	Sunny	11:06	67.4	71.2	66.1	63.2	70	N
13-Aug-07	Cloudy	17:15	67.2	70.3	65.9	63.2	70	N
20-Aug-07	Sunny	14:12	67.8	71.2	62.7	63.2	70	N

Daytime Noise Monitoring Results at Station CN2

Date	Weather Condition	Measured Noise Level for 30 mins., dB(A)				Baseline Noise Level, dB(A)	Limit Level, dB(A)	Exceedance (Y/N)
		Time	Leq	L10	L90			
30-Jul-07	Sunny	11:00	66.8	69.2	65.0	64.0	75	N
06-Aug-07	Sunny	09:05	63.5	67.3	60.0	64.0	75	N
13-Aug-07	Cloudy	15:00	64.0	67.4	60.5	64.0	75	N
20-Aug-07	Sunny	10:30	63.5	66.9	60.2	64.0	75	N

Remarks: Bold & Italic value indicated an Limit Level exceedance

APPENDIX D – NOISE MONITORING RESULTS (CONT'D)

Daytime Noise Monitoring Results at Station CN3

Date	Weather Condition	Measured Noise Level for 30 mins., dB(A)				Baseline Noise Level, dB(A)	Limit Level, dB(A)	Exceedance (Y/N)
		Time	Leq	L10	L90			
30-Jul-07	Sunny	16:15	66.1	68.7	64.1	59.3	75	N
06-Aug-07	Sunny	09:45	64.9	67.5	60.6	59.3	75	N
13-Aug-07	Cloudy	15:45	64.2	66.8	59.6	59.3	75	N
20-Aug-07	Sunny	11:15	61.8	64.4	57.2	59.3	75	N

Daytime Noise Monitoring Results at Station CN4

Date	Weather Condition	Measured Noise Level for 30 mins., dB(A)				Baseline Noise Level, dB(A)	Limit Level, dB(A)	Exceedance (Y/N)
		Time	Leq	L10	L90			
30-Jul-07	Sunny	15:30	62.5	65.6	59	59.9	75	N
06-Aug-07	Sunny	10:28	57.8	62.0	55.3	59.9	75	N
13-Aug-07	Cloudy	16:30	58.2	61.4	56.1	59.9	75	N
20-Aug-07	Sunny	13:30	56.3	58.7	54.6	59.3	75	N

Remarks: Bold & Italic value indicated an Limit Level exceedance

Fig D.1 - Daytime Noise Monitoring Results of Monitoring Stations NM1, NM2, NM3 & NM4

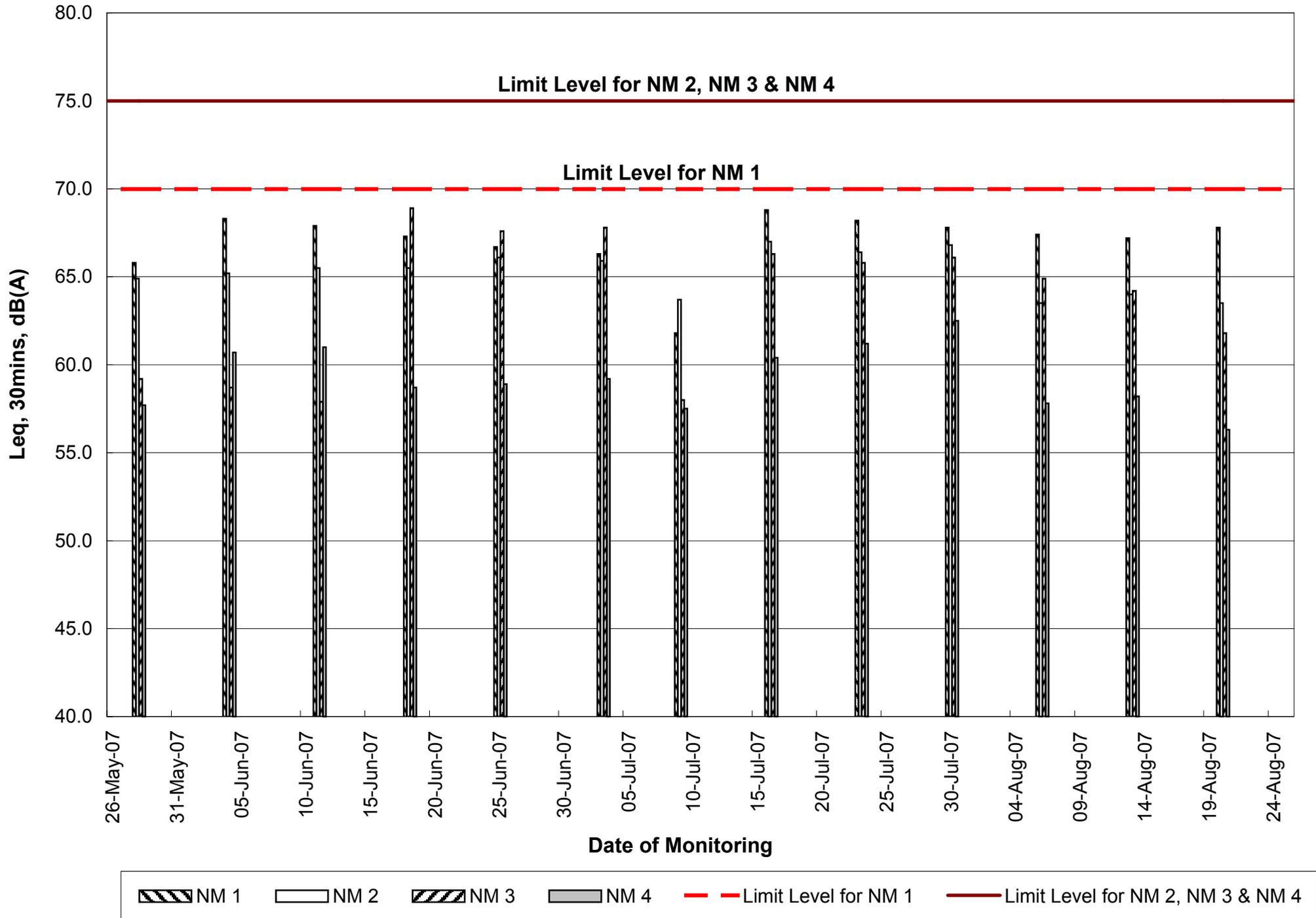


Fig D.2 - Evening Noise Monitoring Results of Monitoring Stations NM1, NM2, NM3 & NM4

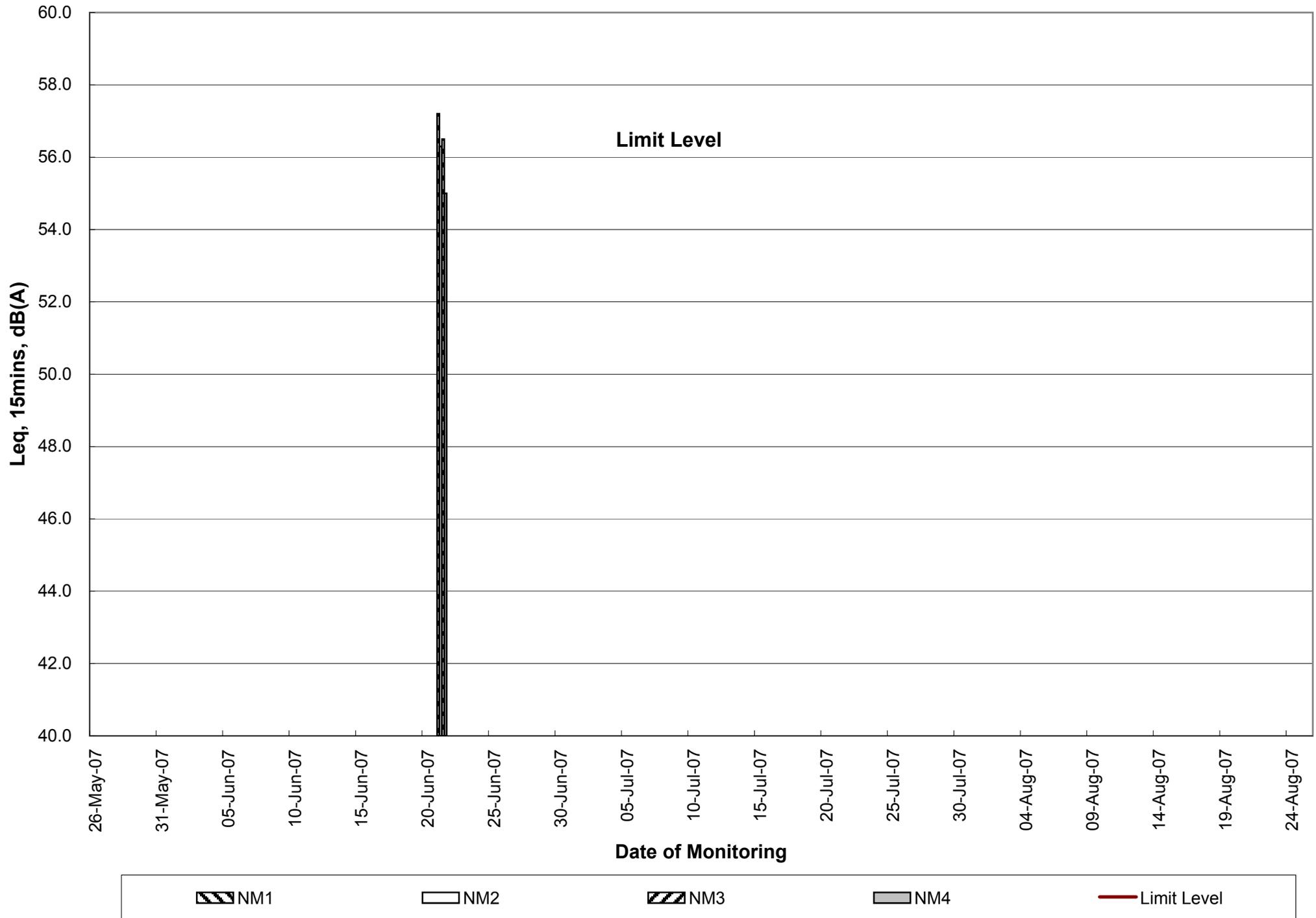
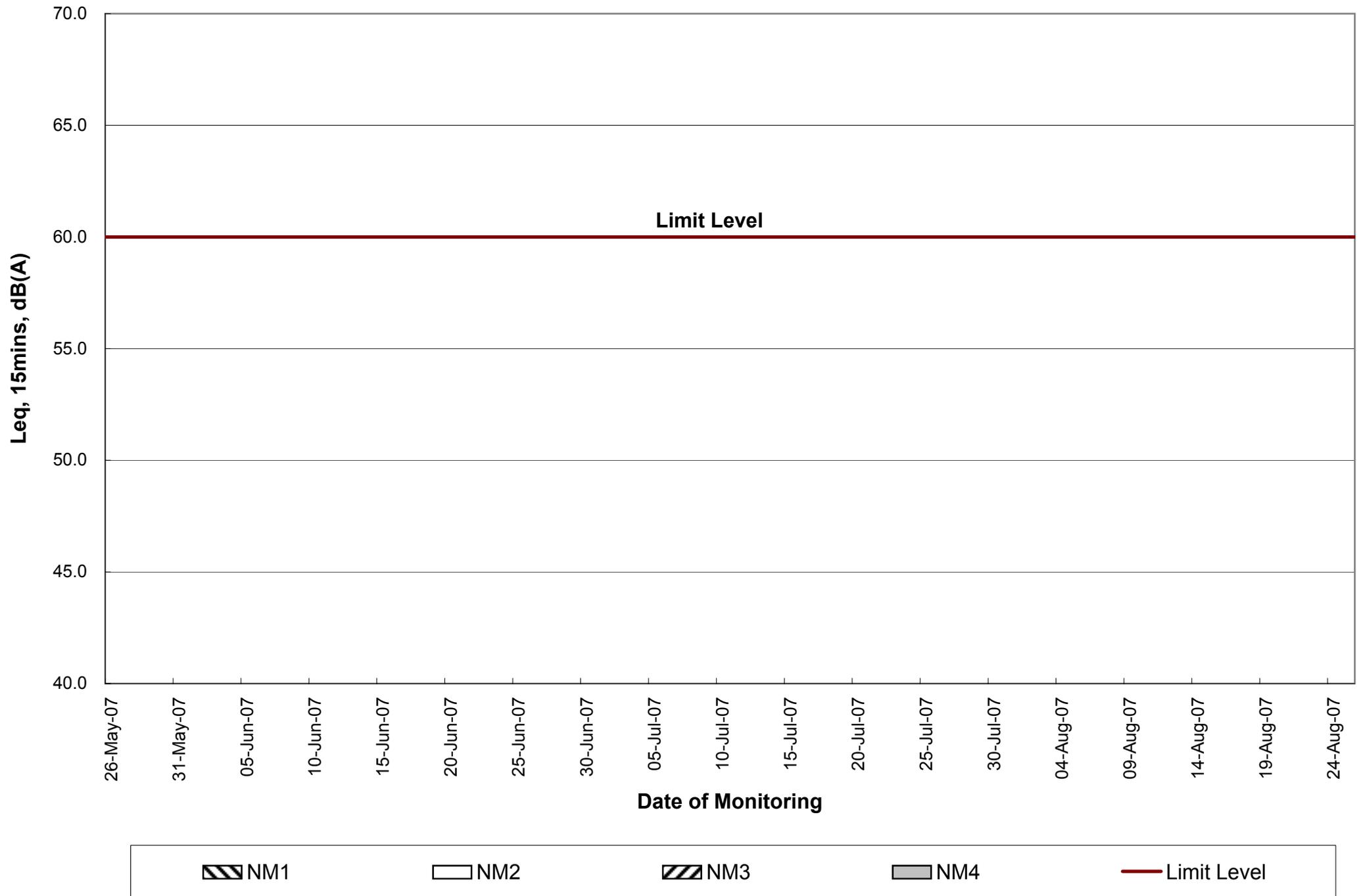


Figure D.3 - Holiday Noise Monitoring Results of Monitoring Stations NM1, NM2, NM3 & NM4



APPENDIX E – TERRESTRIAL ECOLOGY MONITORING RESULTS

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APPENDIX F – SUBTIDAL MONITORING RESULTS



**OCEAN PARK CORPORATION MASTER
REDEVELOPMENT PROJECT**

CONTRACT NO. CI05

**SITE FORMATION, FUNICULAR TUNNEL AND
MISCELLANEOUS WORKS**

**CORAL IMPACT MONITORING
AUGUST 2007**

CLIENT:

Dragages-Bouygues Joint Venture

Ocean Park
Aberdeen
Hong Kong

CHECKED BY:

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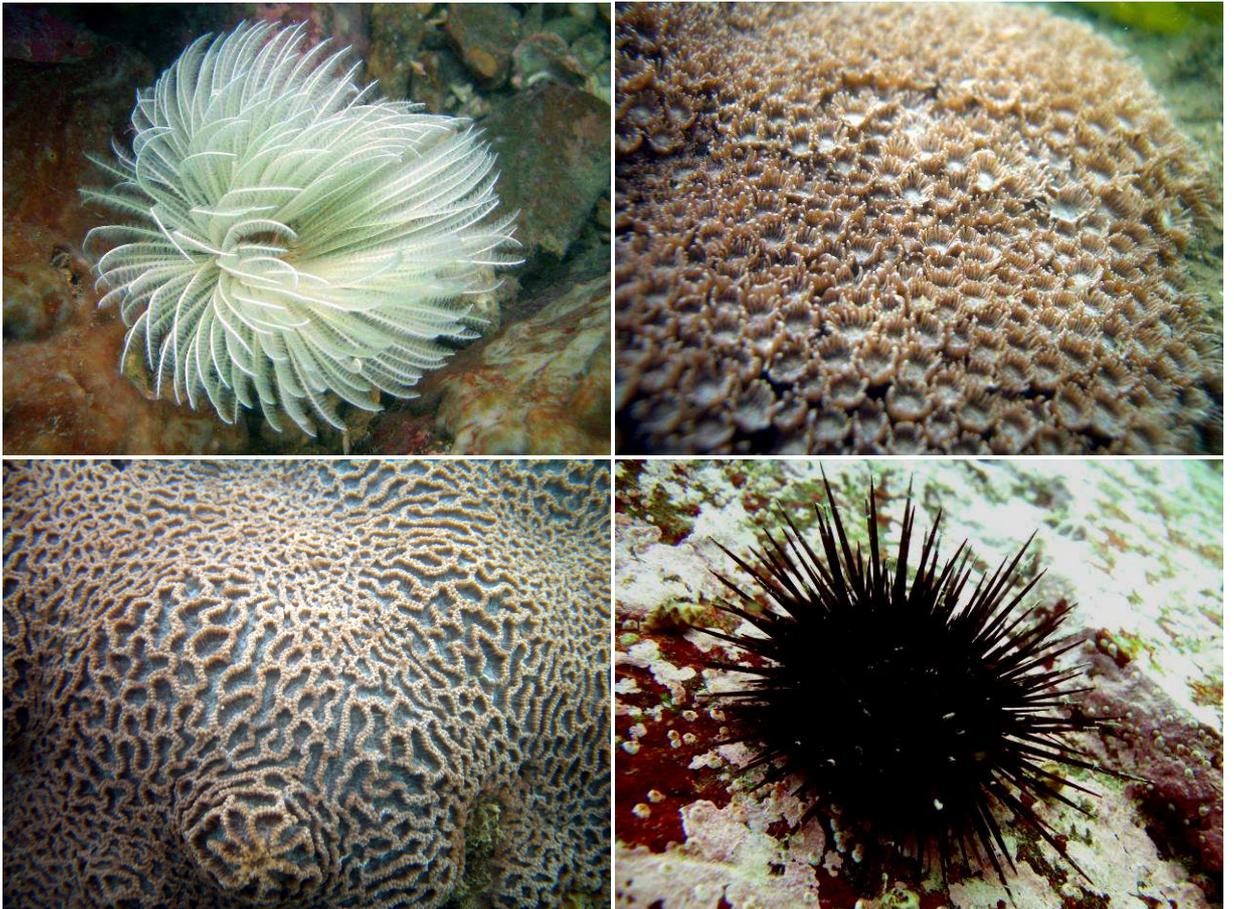
APPROVED BY:

Raymond Dai
Project Manager

DATE:

31 Aug 2007

Ocean Park Corporation Master Redevelopment Project
Contract No. C105
Site Formation, Funicular Tunnel and Miscellaneous Works

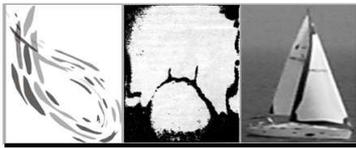


Report for
Coral Monitoring Survey

August 2007



miniprojects co. Ltd.



Ocean Park Corporation Master Development Project
Contract No. C105
Site Formation, Funicular Tunnel and Miscellaneous Works

miniprojects co. Ltd.

Ocean Park Corporation Master Redevelopment Project
Contract No. C105
Site Formation, Funicular Tunnel and Miscellaneous Works

Report for
Coral Monitoring Survey

August 2007

Prepared by:
miniprojects co. Ltd.
Lam Laboratories Limited

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- 4.1 Evaluation of Monitoring Results against Action and Limit Levels 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 Laboratories 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.
- 1.1.3 miniprojects Company Limited (miniprojects co. Ltd.) have been commissioned by LAM to undertake Coral Monitoring Survey on the tagged hard coral colonies at 5 monitoring sites around the construction site and 1 control site for captioned project.
- 1.1.4 This report presents the results of the fifth and sixth Coral Monitoring Surveys conducted on 05 and 19 August 2007, respectively.

2 METHODOLOGY

2.1 Impact 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 Impact Monitoring Site 5 and the Control Site C, and conditions during the surveys on 05 and 19 August 2007 are summarized in Tables 3.1.

2.2 Monitoring Requirements

2.2.1 The construction phase coral monitoring programme comprises an Initial Survey and 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. A particular focus of the Impact Monitoring is the effects of sedimentation 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, while Site 1 to Site 4, and Control Site C should be monitored monthly during the first 2 months of the construction works. The first four monitoring surveys were conducted in June and July 2007. Two surveys were conducted in August 2007, and the schedule is summarized as follow,

	Impact Monitoring Date	
	05 Aug 07	19 Aug 07
Site 5	✓	✓
Control Site C	✓	✓

2.2.4 At each of the Impact Monitoring and Control Sites, 10 hard coral colonies were tagged for continuous monitoring over the course of construction phase. Dive surveys were conducted to record the health status of the tagged corals, including area of bleaching and partial mortality. Level of sedimentation on the tagged colonies was also recorded as percentage of sediment cover and approximate thickness of sediment on the colony and on adjacent hard substrate.

2.2.5 The condition of each tagged coral colony was 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.

2.2.6 The results of the impact monitoring surveys were reviewed with reference to finding of the Initial Coral Survey and the data from Control Site C collected during the Coral Monitoring.

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

Table 2.1 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.

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.

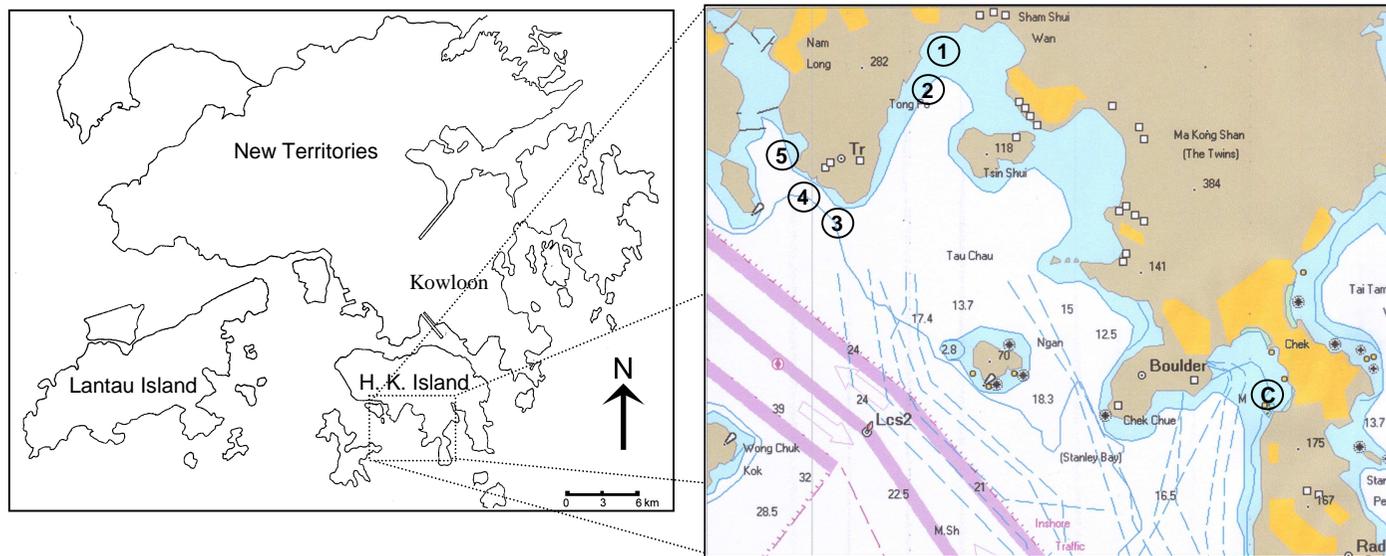


Fig. 2.1 Map Showing the Locations of the 5 Impact Monitoring Sites (1 to 5) and the Control Site (C).

3 RESULTS

3.1 Site 5 and Control Site C - Survey date: 05 and 19 August 2007

3.1.1 Site 5 and Control Site C were monitored twice in August 2007. The survey dates and physical conditions of each site are summarized in Table 3.1.

Table 3.1 Site 5 and Control Site C – Physical Conditions.

Site	Site 5		Control Site C	
GPS Coordinates	N 22°14'01.9" E 114°09'59.3"		N 22°12'48.3" E 114°12'51.2"	
Date	05 Aug 07	19 Aug 07	05 Aug 07	19 Aug 07
Sedimentation on Rock surfaces (mm)	0-1	0-1	0-2	0-2
Visibility (m)	2-4	2-4	0.5-1.0	0.5-1.0
Weather	Beaufort 3-4, Cloudy	Beaufort 3-4, Sunny	Beaufort 3-4, Cloudy	Beaufort 3-4, Sunny
Tide	Flood	Flood	Flood	Flood
Current (Knot)	1.0-1.5	1.0-1.5	1.0-1.5	1.0-1.5
Remark	-	-	-	-

3.1.2 Percentages of sedimentation, bleaching and mortality of each tagged colony are presented in Table 3.2. Photographs of each coral taken on 05 and 19 August 2007 were illustrated in Appendix I (a and b) and II (a and b), respectively.

Site 5

3.1.3 On 05 August 2007, increased sedimentation cover was recorded on 6 colonies (D02, D04, D06, D07, D08 and D10), ranged from 1 to 9%. Increase in bleaching was recorded on 2 colonies (D05 and D10) by 1 to 2%. Partial mortality (5%) was observed on one colony (D04), and no increase in partial mortality was observed on 2 colonies (D05 and D06) (Table 3.2).

3.1.4 On 19 August 2007, increased sedimentation cover was recorded on 5 colonies (D04, D06, D07, D08 and D10), ranged from 1 to 6%. Increase in bleaching was recorded on 2 colonies (D05 and D06) by 1 to 2%. Partial mortality (5%) was observed on one colony (D04), and no increase in partial mortality was observed on 2 colonies (D05 and D06) (Table 3.2).

Control Site C

3.1.5 On 05 August 2007, increased sedimentation cover was recorded on 9 colonies (F01, F02, F03, F05, F06, F07, F08a and F08b), ranged from 1 to 6%. Increased bleaching was recorded on one colony (F06) by 1%. Partial mortality was recorded on 2 colonies (F02 and F09), and no increase in partial mortality was observed on 2 colonies (F04 and F05) (Table 3.2).

3.1.6 On 19 August 2007, increased sedimentation cover was recorded on 6 colonies (F01, F03, F06, F07, F08a and F08b), ranged from 1 to 2%. Increased bleaching was recorded on one colony (F06) by 1%. Partial mortality was recorded on 2 colonies (F02 and F09), and no increase in partial mortality was observed on 2 colonies (F04 and F05) (Table 3.2).

Table 3.2 Site 5 & Control Site C - Percentage of Sedimentation, Bleaching and Mortality of the Tagged Coral Colonies in Initial Coral Survey (07-12 April 07) and Monitoring Surveys (21 July 07, 05 and 19 August 07). “▲” and “▼” indicate increased and decreased in percentage, respectively, when compared with the Initial Coral Survey.

Site 5

Code	Coral Species	Area (cm ²)	Sedimentation (% , mm)				Bleaching (%)				Mortality (%)			
			Apr 07	21 Jul 07	05 Aug 07	19 Aug 07	Apr 07	21 Jul 07	05 Aug 07	19 Aug 07	Apr 07	21 Jul 07	05 Aug 07	19 Aug 07
D01	<i>Psammocora</i> sp.	600	10, 1	5, 1 ▼	5, 1 ▼	1, 1 ▼	0	0	0	0	0	0	0	0
D02	<i>Montipora</i> cf. <i>turgescens</i>	100	6, 1	1, 1 ▼	10, 2 ▲	1, 1 ▼	0	0	0	0	0	0	0	0
D03	<i>Goniopora stutchburyi</i>	400	0, 0	2, 1 ▲	0, 0	0, 0	0	0	0	0	0	0	0	0
D04	<i>Leptastrea pruinosa</i>	500	4, 1	13, 1 ▲	13, 1 ▲	10, 1 ▲	0	0	0	0	0	5 ▲	5 ▲	5 ▲
D05	<i>Porites</i> sp.	400	5, 1	5, 1	1, 1 ▼	1, 1 ▼	1	5 ▲	3 ▲	3 ▲	4	4	4	4
D06	<i>Plesiastrea versipora</i>	1000	0, 0	2, 1 ▲	5, 1 ▲	2, 1 ▲	0	2 ▲	0	0	5	5	5	5
D07	<i>Leptastrea pruinosa</i>	800	0, 0	3, 1 ▲	10, 1 ▲	8, 1 ▲	0	0	0	0	0	0	0	0
D08	<i>Plesiastrea versipora</i>	100	0, 0	3, 1 ▲	2, 1 ▲	2, 1 ▲	0	0	0	0	0	0	0	0
D09	<i>Leptastrea pruinosa</i>	150	5, 1	5, 1	0, 0 ▼	1, 1 ▼	0	0	0	0	0	0	0	0
D10	<i>Montipora</i> cf. <i>turgescens</i>	200	0, 0	0, 0	1, 1 ▲	1, 1 ▲	0	0	1 ▲	1 ▲	0	0	0	0

Control Site C

Code	Coral Species	Area (cm ²)	Sedimentation (% , mm)				Bleaching (%)				Mortality (%)			
			Apr 07	21 Jul 07	05 Aug 07	19 Aug 07	Apr 07	21 Jul 07	05 Aug 07	19 Aug 07	Apr 07	21 Jul 07	05 Aug 07	19 Aug 07
F01	<i>Favia speciosa</i>	900	0, 0	3, 1 ▲	1, 1 ▲	1, 1 ▲	0	0	0	0	0	0	0	0
F02	<i>Favites pentagona</i>	1000	4, 1	10, 2 ▲	10, 2 ▲	0, 0 ▼	0	2 ▲	0	0	0	1 ▲	1 ▲	1 ▲
F03	<i>Favites pentagona</i>	800	0, 0	2, 1 ▲	2, 1 ▲	1, 1 ▲	0	0	0	0	0	0	0	0
F04	<i>Porites</i> sp.	800	5, 1	8, 2 ▲	5, 1	5, 1	4	2 ▼	2 ▼	2 ▼	4	4	4	4
F05	<i>Cyphastrea serailia</i>	800	4, 1	5, 1 ▲	5, 1 ▲	1, 1 ▼	0	0	0	0	1	1	1	1
F06	<i>Psammocora</i> sp.	1800	0, 0	0, 0	2, 1 ▲	2, 1 ▲	0	1 ▲	1 ▲	1 ▲	0	0	0	0
F07	<i>Plesiastrea versipora</i>	3000	0, 0	0, 0	3, 1 ▲	1, 1 ▲	0	0	0	0	0	0	0	0
F08a	<i>Favia speciosa</i>	150	0, 0	3, 1 ▲	2, 1 ▲	2, 1 ▲	0	0	0	0	0	0	0	0
F08b	<i>Goniastrea favulus</i>	300	0, 0	1, 1 ▲	1, 1 ▲	1, 1 ▲	0	0	0	0	0	0	0	0
F09	<i>Favites pentagona</i>	1800	10, 1	6, 1 ▼	5, 1 ▼	1, 1 ▼	0	1 ▲	0	0	0	1 ▲	1 ▲	1 ▲
F10	<i>Platygyra carnosus</i>	2800	0, 0	0, 0	0, 0	0, 0	0	0	0	0	0	0	0	0

4 SUMMARY AND CONCLUSION

4.1 Summary – Monitoring Surveys

4.1.1 Sediment cover, bleaching and mortality on some of the tagged colonies from the Monitoring Site 5 and the Control Site C increased (1 to 9%) when compared with the Initial Survey conducted on 07 to 12 April 2007. The enhanced sedimentation was believed to be contributed by multiple environmental factors, such as south-west monsoon, heavy rainfall and also typhoons during 08-11 August 2007.

4.1.2 The data from the two monitoring surveys (05 and 19 August 2007) showed no significant enhancement in sedimentation in Site 5 when compared with 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 is summarized in Table 4.1

4.2.2 Overall, the healthy status of the tagged coral colonies was normal, with low to medium levels of sedimentation. Low levels of bleaching and mortality were observed in both Monitoring and Control Sites. Neither action/limit level of sedimentation, bleaching or mortality was exceeded in the two monitoring surveys conducted in August 2007 (Table 4.1).

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.

05 August 2007

Site \ Exceedance	Sedimentation		Bleaching		Mortality	
	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level
Site 5	No	No	No	No	No	No
Control Site C	No	No	No	No	No	No

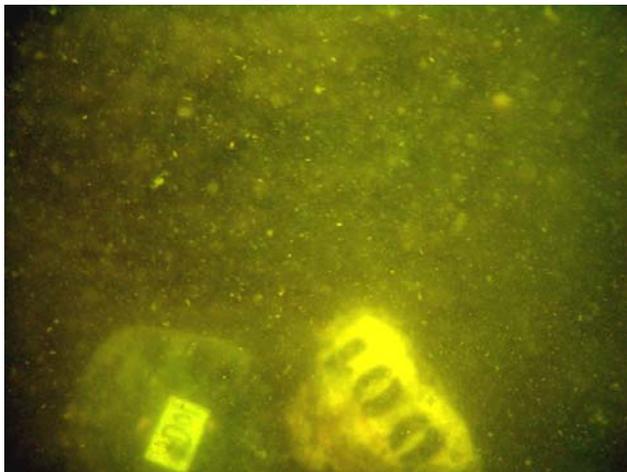
19 August 2007

Site \ Exceedance	Sedimentation		Bleaching		Mortality	
	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level
Site 5	No	No	No	No	No	No
Control Site C	No	No	No	No	No	No

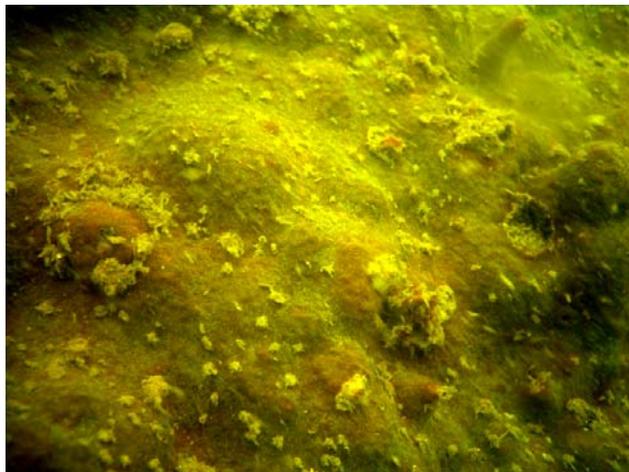
APPENDIX I

Photographs of the tagged corals at Site 5 and Control Site C surveyed on 05 August 2007

Appendix Ia Tagged Coral Colonies at Site 5.



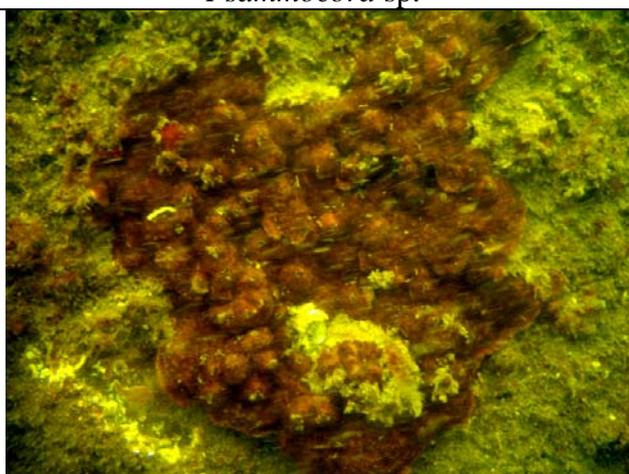
D01



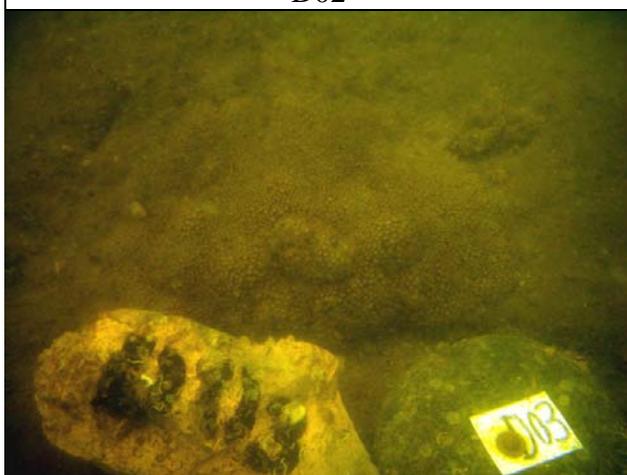
Psammocora sp.



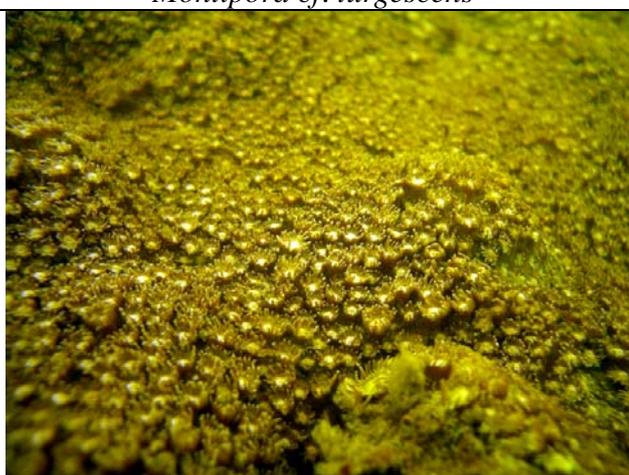
D02



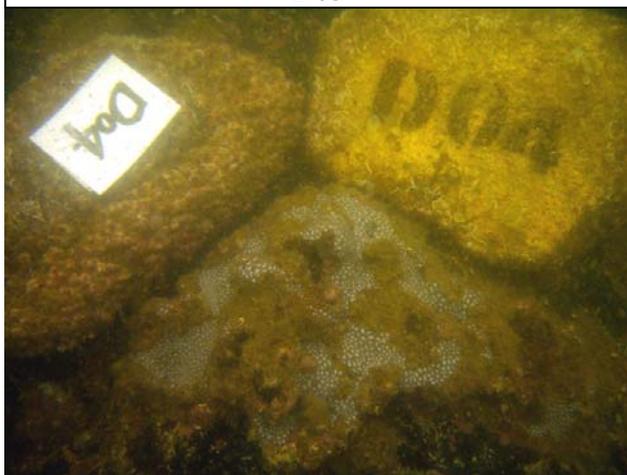
Montipora cf. *turgescens*



D03



Goniopora *stutchburyi*



D04



Leptastrea *pruinosa*

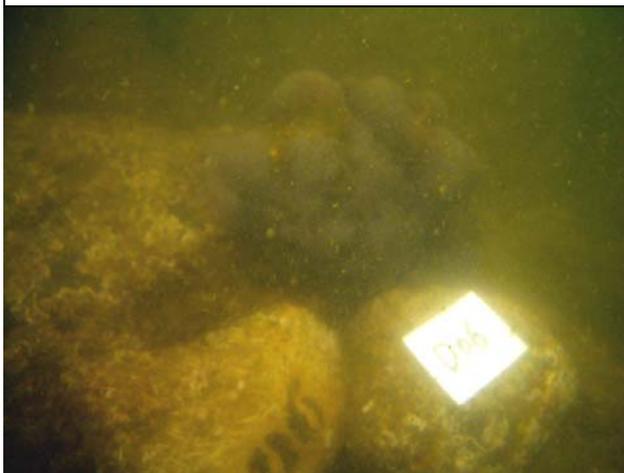
Appendix Ia Tagged Coral Colonies at Site 5.....continued.



D05



Porites sp.



D06



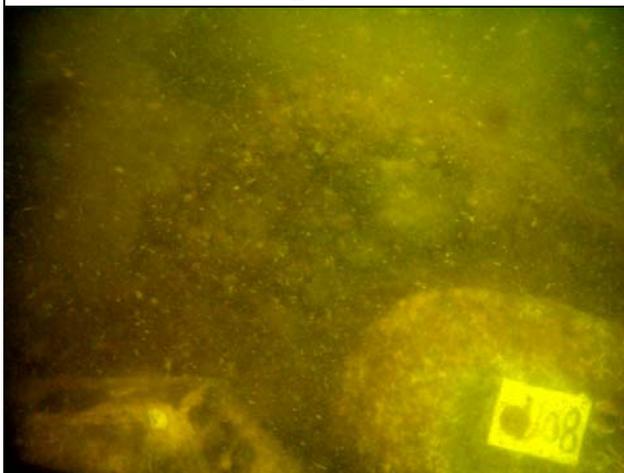
Plesiastrea versipora



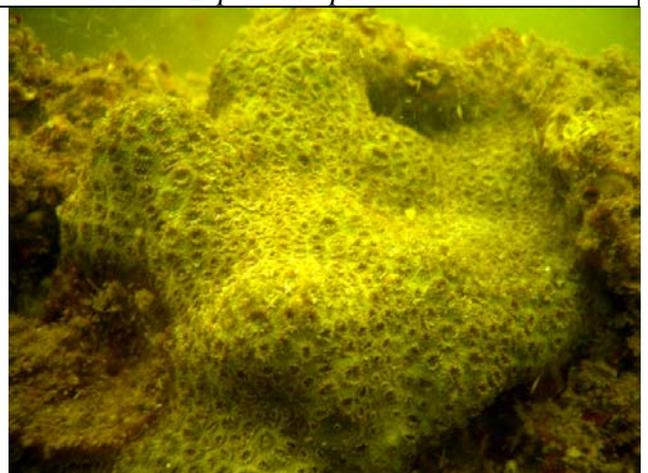
D07



Leptastrea pruinosa

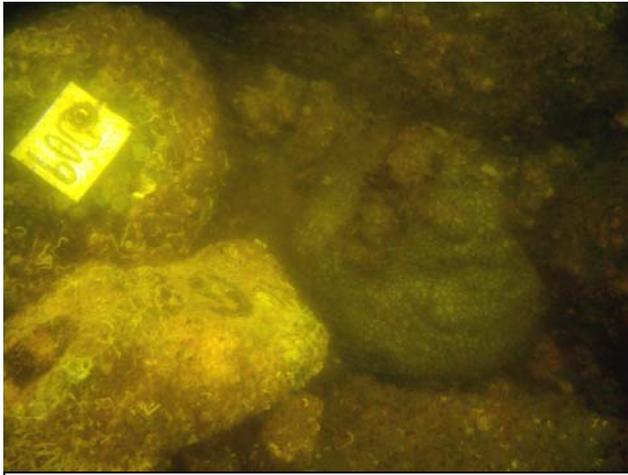


D08

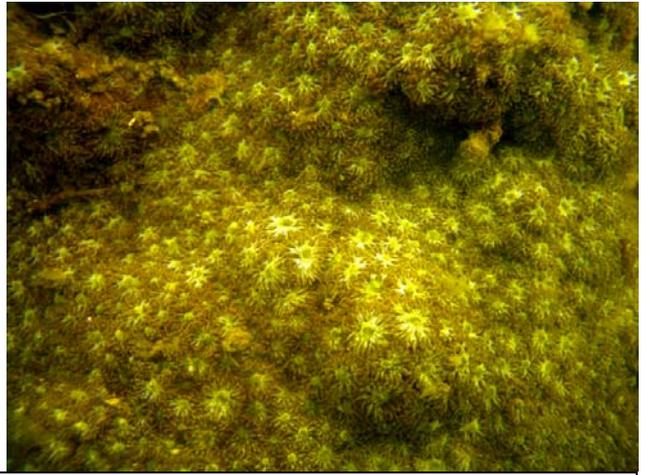


Plesiastrea versipora

Appendix Ia Tagged Coral Colonies at Site 5.....continued.



D09



Leptastrea pruinosa



D10

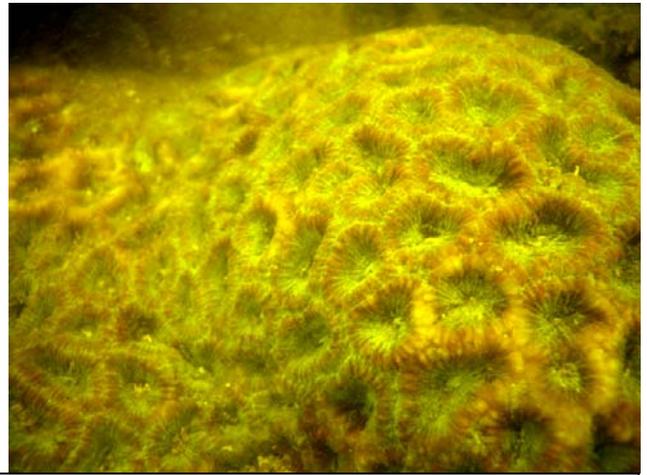


Montipora cf. turgescens

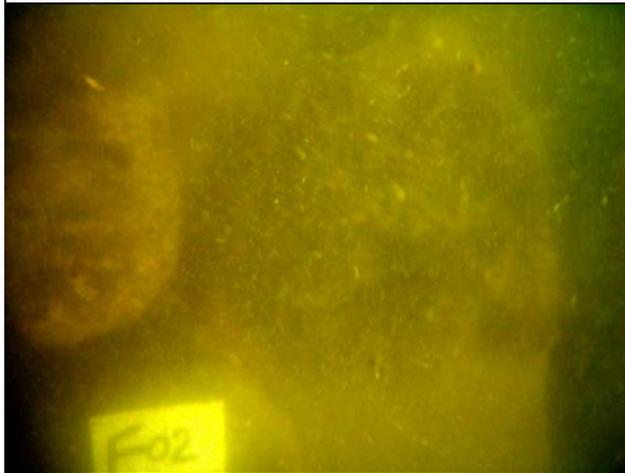
Appendix Ib Tagged Coral Colonies at Control Site C.



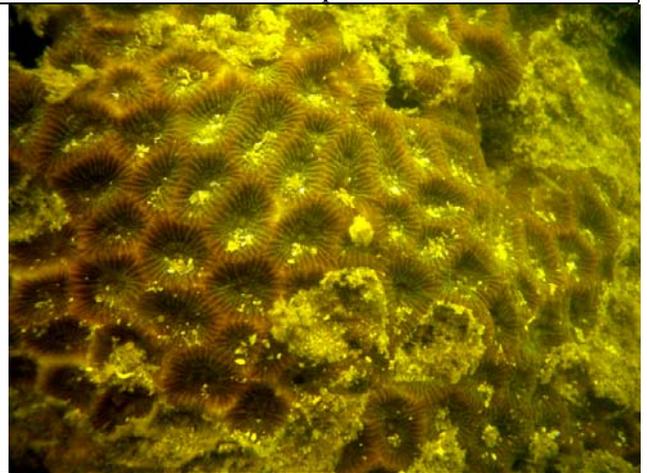
F01



Favites speciosa



F02



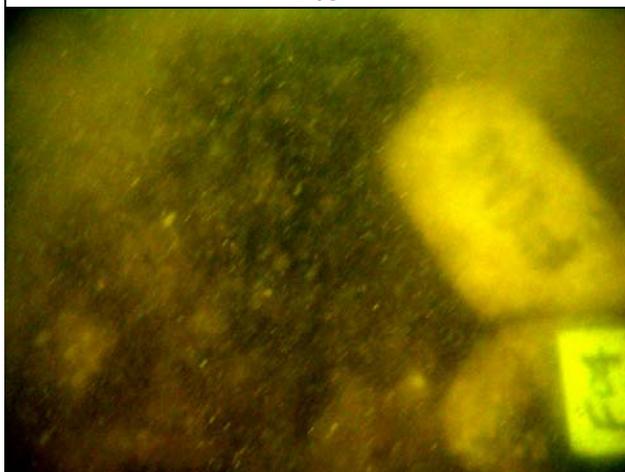
Favites pentagona



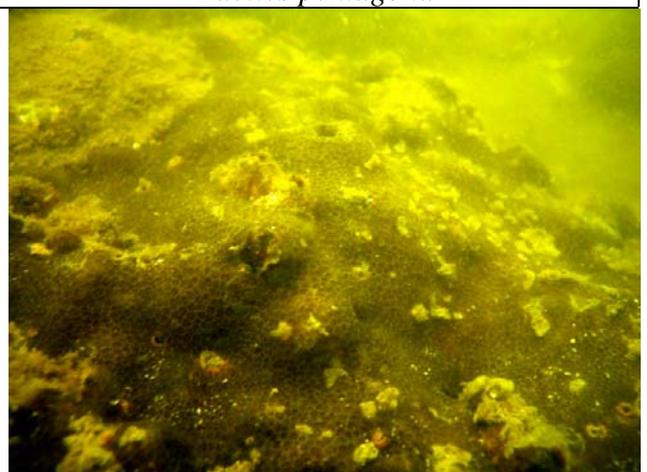
F03



Favites pentagona

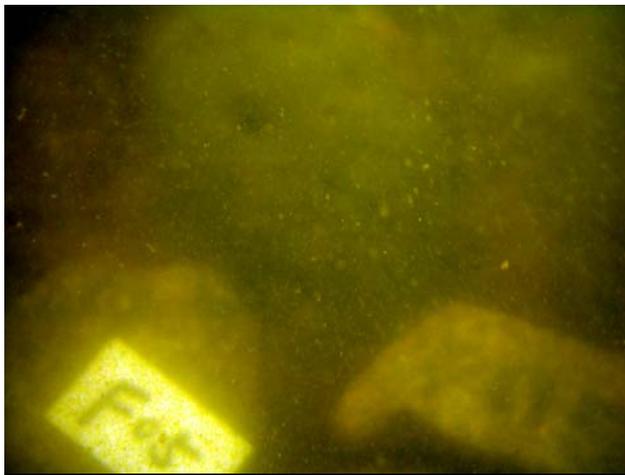


F04

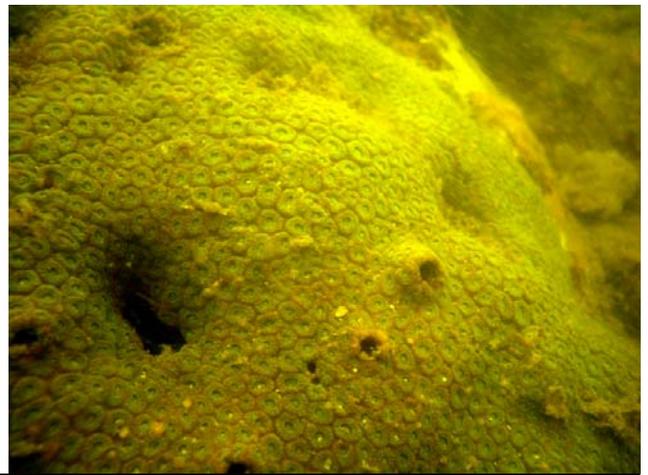


Porites sp.

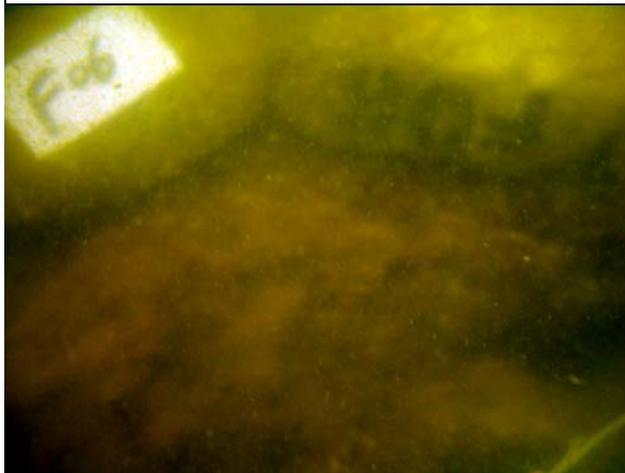
Appendix Ib Tagged Coral Colonies at Control Site C.....continued.



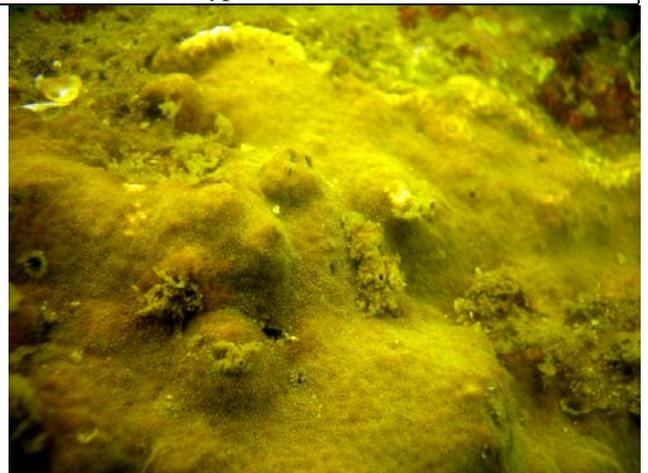
F05



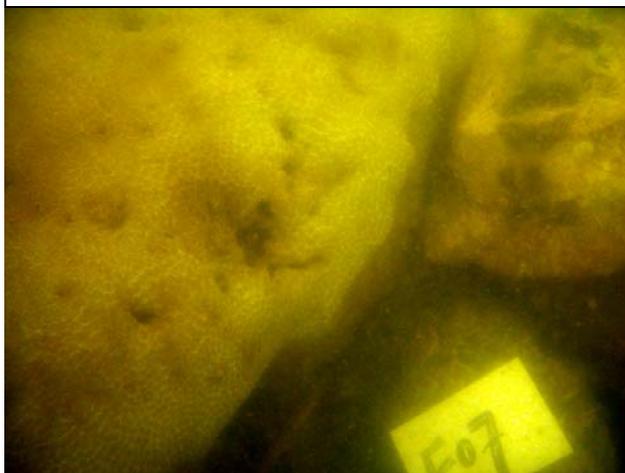
Cyphastrea serailia



F06



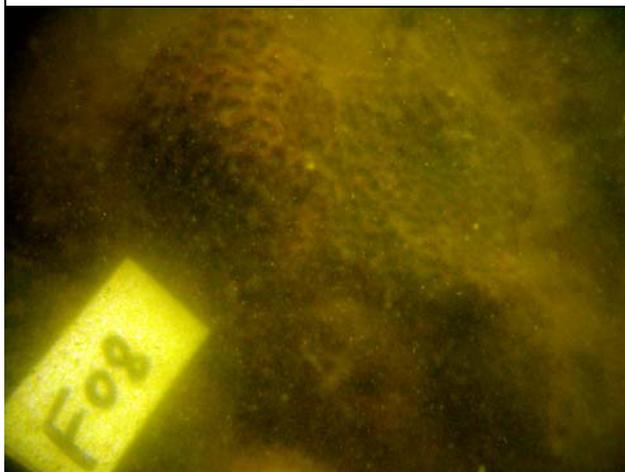
Psammocora sp.



F07



Plesiastrea versipora

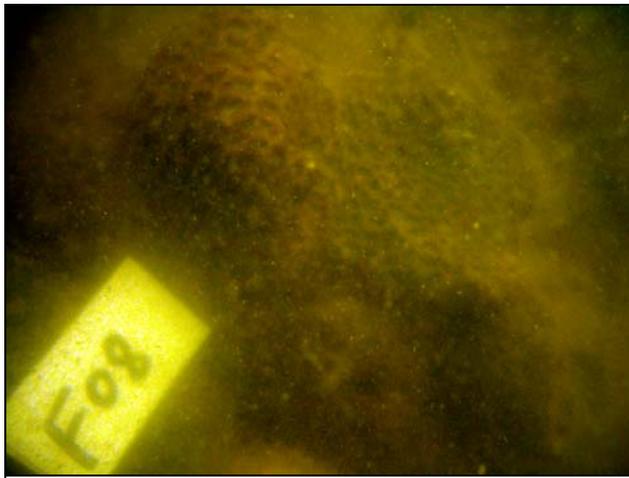


F08a (Left side)

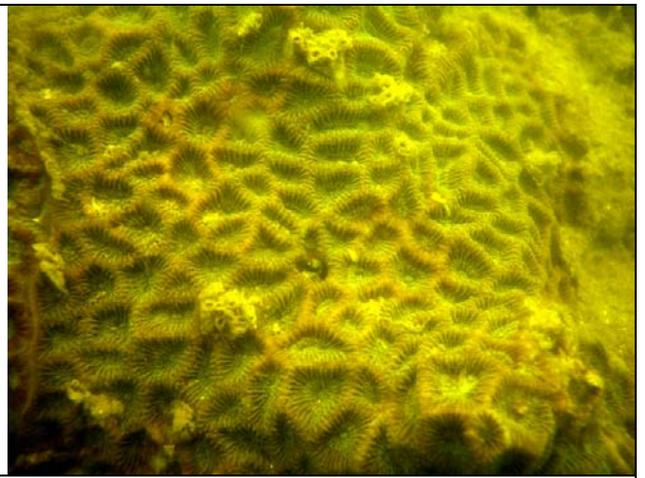


Favites speciosa

Appendix Ib Tagged coral colonies at Control Site C.....continued.



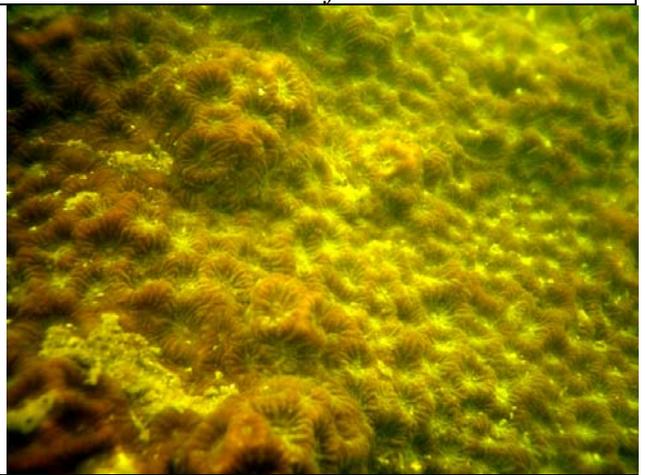
F08b (Right side)



Goniastrea favulus



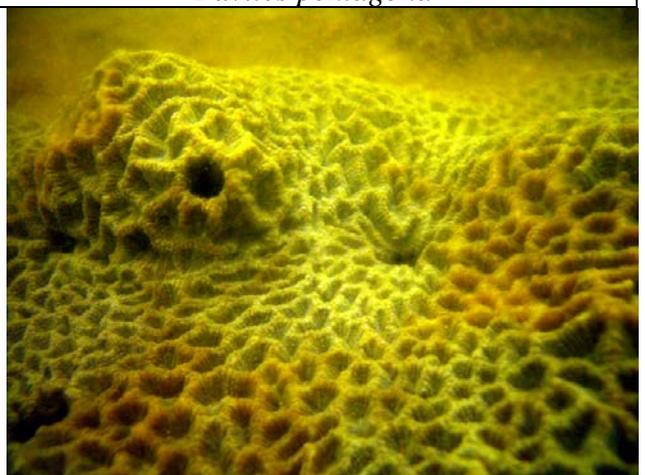
F09



Favites pentagona



F10



Platygyra carnosus

APPENDIX II

Photographs of the tagged corals at Site 5 and Control Site C surveyed on 19 August 2007

Appendix IIa Tagged Coral Colonies at Site 5.



D01



Psammocora sp.



D02



Montipora cf. *turgescens*



D03



Goniopora *stutchburyi*



D04

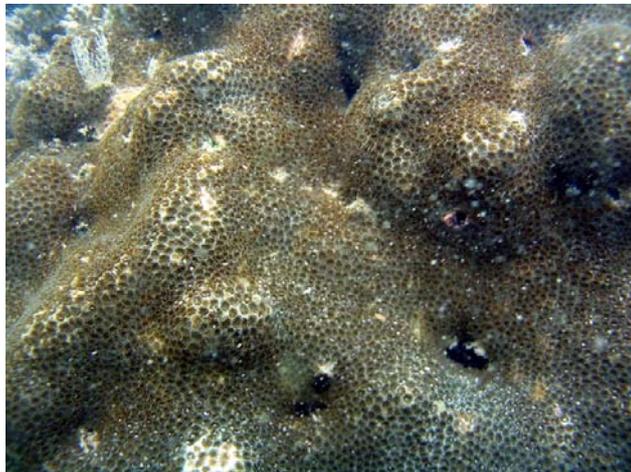


Leptastrea *pruinosa*

Appendix IIa Tagged Coral Colonies at Site 5.....continued.



D05



Porites sp.



D06



Plesiastrea versipora



D07



Leptastrea pruinosa



D08



Plesiastrea versipora

Appendix IIa Tagged Coral Colonies at Site 5.....continued.



D09



Leptastrea pruinosa



D10



Montipora cf. turgescens

Appendix IIb Tagged Coral Colonies at Control Site C.



F01



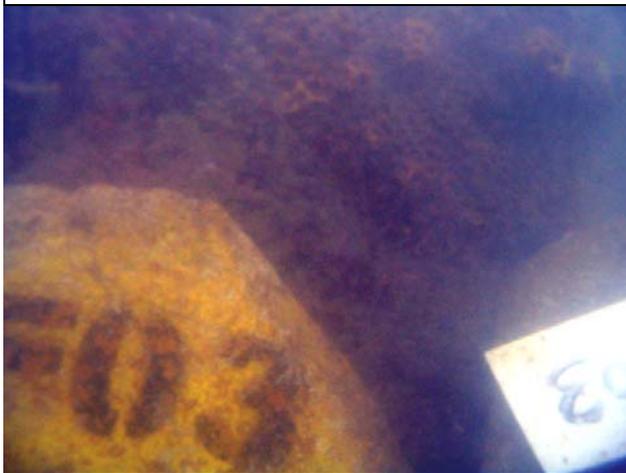
Favites speciosa



F02



Favites pentagona



F03



Favites pentagona



F04



Porites sp.

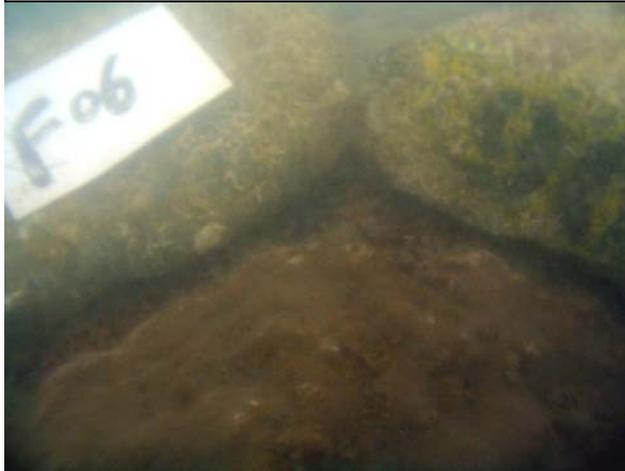
Appendix IIb Tagged Coral Colonies at Control Site C.....continued.



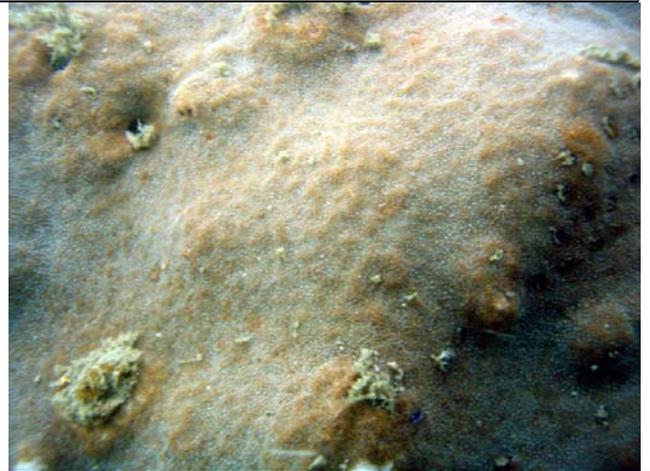
F05



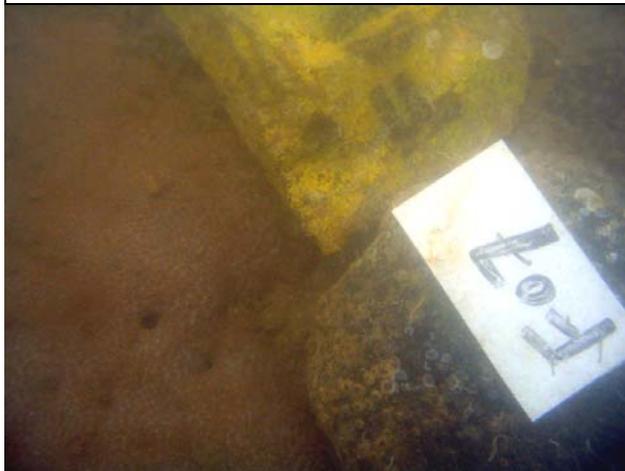
Cyphastrea serailia



F06



Psammocora sp.



F07



Plesiastrea versipora



F08a



Favites speciosa (Left side)

Appendix IIb Tagged coral colonies at Control Site C.....continued.



F08b



Goniastrea favulus (Right side)



F09



Favites pentagona



F10



Platygyra carnosus

APPENDIX G – CALIBRATION DETAILS

Air Quality Monitoring Equipments

Monitoring Location	AM1	AM2	AM3
High Volume Sample/Dust Trak Serial No.	1174	1177	9998
Sampler Identification	ET / EA / 003 / 08	ET / EA / 003 / 07	ET / EA / 003 / 12
Date of Calibration	03 July 2007	08 August 2007	03 July 2007
Calibration Due Date	02 September 2007	07 October 2007	02 September 2007
Result	Good	Good	Good

Noise Monitoring Equipments

Monitoring Location	CN1, CN2, CN3 & CN4
Sound Level Meter Brand Name and Model	Rion NL-31
Serial No.	01120826
Date of Calibration	27 December 2006
Calibration Due Date	26 December 2007
Result	Good



東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

8/F, Block B, Veristrong Industrial Centre, 34-36 Au Pui Wan Street, Fotan, Hong Kong
Tel : 2695 8318 E-mail : etl@ets-testconsult.com
Fax : 2695 3944 Web site : www.ets-testconsult.com

TEST REPORT

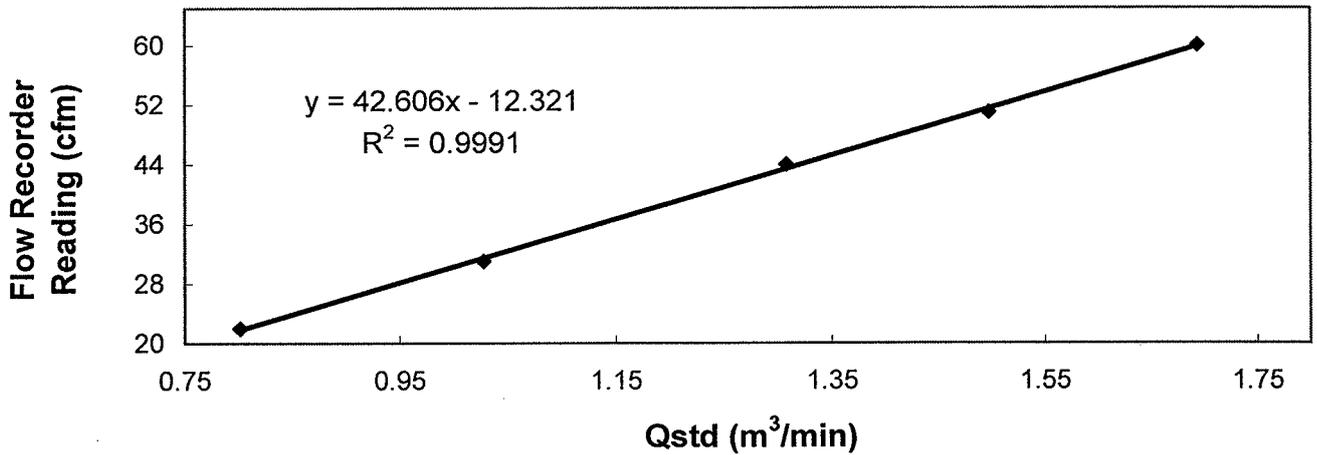
**Calibration Report
of
High Volume Air Sampler**

Manufacturer : Graseby GMW Date of Calibration : 03 July 2007
Serial No. : 1174 (ET / EA / 003 / 08) Calibration Due Date : 02 September 2007
Method : Based on Operations Manual for in series calibration method by TISCH
ENVIROMENTAL Model Te-5025A calibration kit

Results :

Flow recorder reading (cfm)	60	51	44	31	22
Qstd (Actual flow rate, m ³ /min)	1.69	1.50	1.31	1.03	0.80
Pressure :	756.06 mm Hg		Temp. :	306 K	

**Sampler 1174 Calibration Curve
Site: Ocean Park (AM-1)
Date of Calibration: 03 July 2007**



Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after a 5-point calibration

The high volume sampler complies * / ~~does not comply~~ * with the specified requirements and is deemed acceptable * / unacceptable * for use.

Calibrated by :
Kenneth CHIU
(Asst. Technician)

Approved by :
H. T. CHOW
(Asst. Environmental Officer)



東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

8/F., Block B, Veristrong Industrial Centre, 34-36 Au Pui Wan Street, Fotan, Hong Kong
Tel : 2695 8318 E-mail : etl@ets-testconsult.com
Fax : 2695 3944 Web site : www.ets-testconsult.com

TEST REPORT

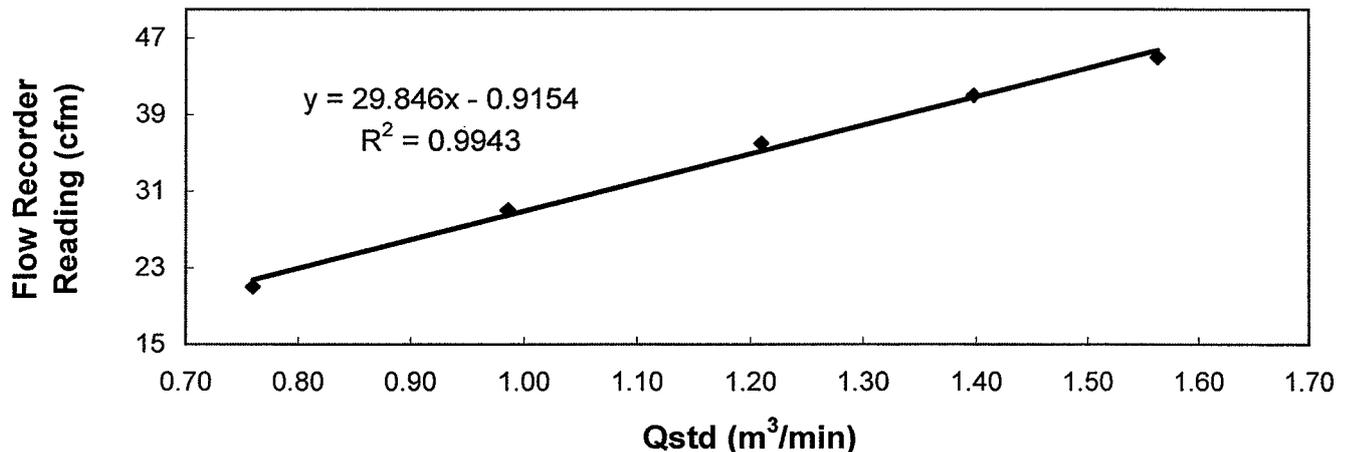
Calibration Report
of
High Volume Air Sampler

Manufacturer : Graseby GMW **Date of Calibration** : 08 August 2007
Serial No. : 1177 (ET/EA/003/07) **Calibration Due Date** : 07 October 2007
Method : Based on Operations Manual for the 5-point calibration using standard calibration kit
manufactured by Tisch TE-5025 A

Results :

Flow recorder reading (cfm)	45	41	36	29	21
Qstd (Actual flow rate, m ³ /min)	1.56	1.40	1.21	0.99	0.76
Pressure :	751.56 mm Hg			Temp. :	300 K

Sampler 1177 Calibration Curve
Site: Ocean Park (AM-2)
Date of Calibration: 08 August 2007



Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after a 5-point calibration

The high volume sampler complies * / ~~does not comply~~ * with the specified requirements and is deemed acceptable * / unacceptable * for use.

Calibrated by : Li Wan Lung
Li Wan Lung
(Technician)

Approved by : H. T. CHOW
H. T. CHOW
(Asst. Environmental Officer)



東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

8/F., Block B, Veristrong Industrial Centre, 34-36 Au Pui Wan Street, Fotan, Hong Kong

Tel : 2695 8318

E-mail : etl@ets-testconsult.com

Fax : 2695 3944

Web site : www.ets-testconsult.com

TEST REPORT

Calibration Report
of
High Volume Air Sampler

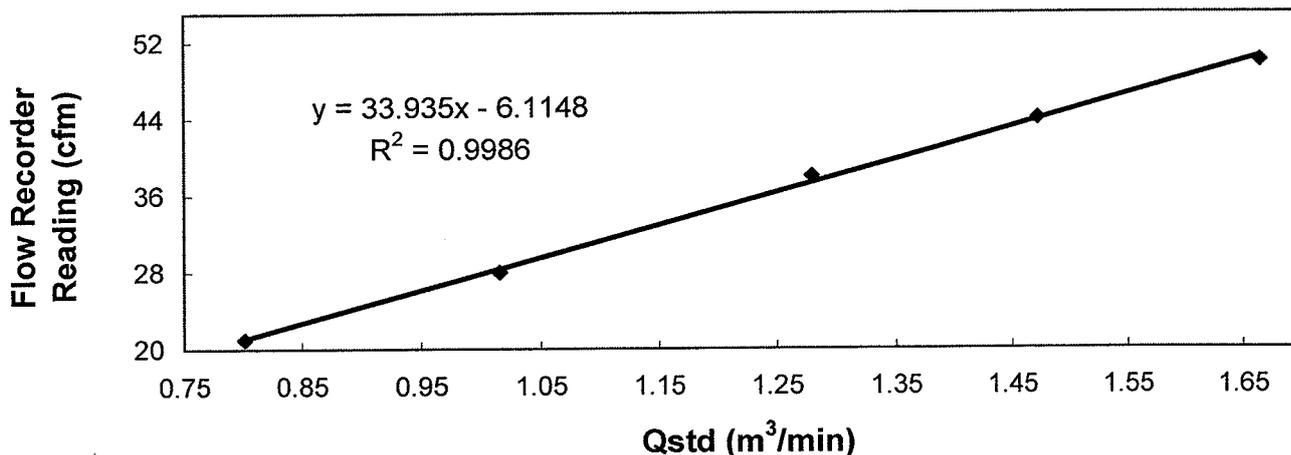
Manufacturer : Graseby GMW Date of Calibration : 03 July 2007

Serial No. : 9998 (ET / EA / 003 / 12) Calibration Due Date : 02 September 2007

Method : Based on Operations Manual for the 5-point calibration using standard calibration kit manufactured by Tisch TE-5025 A

Results	Flow recorder reading (cfm)	50	44	38	28	21
	Qstd (Actual flow rate, m ³ /min)	1.67	1.47	1.28	1.02	0.80
	Pressure : 756.06 mm Hg	Temp. : 306 K				

Sampler 9998 Calibration Curve
Site: Ocean Park (AM-3)
Date of Calibration: 03 July 2007



Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after a 5-point calibration

The high volume sampler complies * / does not comply * with the specified requirements and is deemed acceptable * / unacceptable * for use.

Calibrated by : Kin
Kenneth CHIU
(Assistant Technician)

Approved by : H. T. Chow
H. T. CHOW
(Asst. Environmental Officer)



Calibration Certificate

Certificate No. **65868**

Page 1 of 3 Pages

Customer : ETS-Testconsult Limited

Address : 8/F., Block B, Veristrong Industrial Centre, 34-36 Au Pui Wan St., Fotan, Hong Kong.

Order No. : Q62237

Date of receipt : 16-Dec-06

Item Tested

Description : Precision Integrating Sound Level Meter

Manufacturer : Rion

Model : NL-31

Serial No. : 01120826

Test Conditions

Date of Test : 27-Dec-06

Supply Voltage : --

Ambient Temperature : (23 ± 3)°C

Relative Humidity : (50 ± 25) %

Test Specifications

Calibration check.

Calibration procedure : Z01.

Test Results

All results were within the IEC 651 Type 1 & IEC 804 Type 1 specification.

The results are shown in the attached page(s).

Test equipment used:

<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Due Date</u>	<u>Traceable to</u>
S017	Function Generator	C051022	21-Mar-07	SCL-HKSAR
S024	Sound Level Calibrator	62691	22-Apr-07	NIM-PRC & SCL-HKSAR

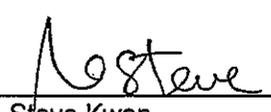
The values given in this Calibration Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to International System of Units (SI).

The test results apply to the above Unit-Under-Test only

Calibrated by : 

P.F. Wong

Approved by : 

Steve Kwan

Date: 27-Dec-06

This Certificate is issued by:

Hong Kong Calibration Ltd.

Unit 8B, 24/F., Well Fung Industrial Centre, No. 58-76, Ta Chuen Ping Street, Kwai Chung, NT, Hong Kong.

Tel: 2425 8801 Fax: 2425 8646

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Calibration Certificate

Certificate No. 65868

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Results :

1. SPL Accuracy

UUT Setting			Applied Value (dB)	UUT Reading (dB)
Level Range (dB)	Weight	Response		
20 - 100	L _A	Fast	94.07	93.9
		Slow		93.9
	L _C	Fast		93.9
	L _p	Fast		94.0
	L _A	Fast		93.9
30 - 120	L _A	Slow	94.07	93.9
		Fast		93.9
	L _C	Fast		93.9
	L _p	Fast		93.9
30 - 120	L _A	Fast	113.95	113.8
		Slow		113.8
	L _C	Fast		113.8
	L _p	Fast		113.8

IEC 651 Type 1 Spec. : ± 0.7 dB

Uncertainty : ± 0.1 dB

2. Level Stability : 0.0 dB

IEC 651 Type 1 Spec. : ± 0.3 dB

Uncertainty : ± 0.01 dB

3. Linearity

3.1 Level Linearity

UUT Range	Applied Value (dB)	UUT Rdg (dB)	IEC 651 Type 1 Spec. (inside Primary)
140	114.0	114.0	± 0.7 dB
130	104.0	104.0	
120	94.0	93.9	
110	84.0	84.1	
100	74.0	74.1	
90	64.0	64.2	
80	54.0	54.1	

Uncertainty : ± 0.1 dB



Calibration Certificate

Certificate No. 65868

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3.2 Differential level linearity

UUT Range	Applied Value (dB)	UUT Rdg (dB)	IEC 651 Type 1 Spec.
120	84.0	83.9	± 0.4
	94.0	93.9	
	95.0	94.9	± 0.2
	104.0	103.9	± 0.3
	105.0	104.9	± 1.0

Uncertainty : ± 0.1 dB

4. Frequency Weighting

A weighting

Frequency	Attenuation (dB)	IEC 651 Type 1 Spec.
31.5 Hz	- 39.6	- 39.4 dB, ± 1.5 dB
63 Hz	- 26.2	- 26.2 dB, ± 1.5 dB
125 Hz	- 16.2	- 16.1 dB, ± 1 dB
250 Hz	- 8.7	- 8.6 dB, ± 1 dB
500 Hz	- 3.2	- 3.2 dB, ± 1 dB
1 kHz	0.0 (Ref.)	0 dB, ± 1 dB
2 kHz	+ 1.3	+ 1.2 dB, ± 1 dB
4 kHz	+ 1.1	+ 1.0 dB, ± 1 dB
8 kHz	- 1.1	- 1.1 dB, + 1.5 dB ~ - 3 dB
16 kHz	- 6.7	- 6.6 dB, + 3 dB ~ ∞

Uncertainty : ± 0.1 dB

5. Time Averaging

Applied Burst duty Factor	Applied Leq Value (dB)	UUT Reading (dB)	IEC 804 Type 1 Spec.
continuous	40.0	40.0	--
1/10	40.0	40.0	± 0.5 dB
1/10 ²	40.0	40.0	
1/10 ³	40.0	40.0	± 1.0 dB
1/10 ⁴	40.0	40.0	

Uncertainty : ± 0.1 dB

Remark : 1. UUT : Unit-Under-Test

2. The uncertainty claimed is for a confidence probability of not less than 95%.

3. Atmospheric Pressure : 1 009 hPa.

----- END -----



Calibration Certificate

Certificate No. **65870**

Page 1 of 2 Pages

Customer : ETS-Testconsult Limited

Address : 8/F., Block B, Veristrong Industrial Centre, 34-36 Au Pui Wan St., Fotan, Hong Kong.

Order No. : Q62237

Date of receipt : 16-Dec-06

Item Tested

Description : Sound Level Calibrator

Manufacturer : Rion

Model : NC-73

Serial No. : 10727835

Test Conditions

Date of Test : 27-Dec-06

Supply Voltage : --

Ambient Temperature : (23 ± 3)°C

Relative Humidity : (50 ± 25) %

Test Specifications

Calibration check.

Calibration procedure : F21, Z02.

Test Results

All results were within the manufacturer's specification.

The results are shown in the attached page(s).

Test equipment used:

<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Due Date</u>	<u>Traceable to</u>
S014	Spectrum Analyzer	62914	7-Jul-07	NIM-PRC & SCL-HKSAR
S024	Sound Level Calibrator	62691	22-Apr-07	NIM-PRC & SCL-HKSAR
S041	Universal Counter	63839	22-Aug-07	SCL-HKSAR

The values given in this Calibration Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to International System of Units (SI).

The test results apply to the above Unit-Under-Test only

Calibrated by : 
P.F. Wong

Approved by : 
Steve Kwan

Date: 27-Dec-06



Calibration Certificate

Certificate No. 65870

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Results :

1. Level Accuracy (at 1 kHz)

UUT Nominal Value	Measured Value	Mfr's Spec.
94 dB	93.73 dB	± 1 dB

Uncertainty : ± 0.1 dB

2. Frequency Accuracy

UUT Nominal Value	Measured Value	Mfr's Spec.
1 kHz	0.998 kHz	± 2 %

Uncertainty : ± 0.1 %

3. Level Stability : 0.0 dB

Uncertainty : ± 0.01 dB

4. Total Harmonic Distortion : < 0.2 %

Mfr's Spec. : < 3 %

Uncertainty : ± 2.3 % of reading

Remark : 1. UUT : Unit-Under-Test

2. The uncertainty claimed is for a confidence probability of not less than 95%.

3. The above measured values are the mean of 3 measurement.

4. Atmospheric Pressure : 1 009 hPa

----- END -----

APPENDIX H – SUMMARY OF ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

No.	Environmental Aspect	Requirement (Classification)	Aspect Mitigation	Delivery Method			Status	Other / Remarks
				Site Installation	Method Statement	Toolbox Talk		
Air Quality								
AQ01	Dust emission from construction site in general	Cap 311, sub leg R Schedule III S.13	Hoardings of not less than 2.4m high from ground level should be erected along the entire length of the site boundary except for site entrance or exit.	✓			✓	
AQ02	Dust emission from construction site in general	Cap 311, sub leg R Schedule III S.13 & PS 26.10(6)(i)(e)	To minimize dust emissions, the amount of soil exposed and the dust generation potential should be kept as low as possible. This can be accomplished by water sprays, surface compaction; temporary fabric covers, minimizing the extent of exposed soil, and prompt re-vegetation of completed earthworks.	✓		✓	✓	
AQ03	Dust emission from construction site in general	Cap 311, sub leg R Schedule III S.13 & PS 26.10(6)(i)(j)	Wheel washing facilities should be provided at all vehicle site entrances/exits to prevent dusty material from being carried off-site on vehicles and deposited on public roads. The facilities shall be provided in advance of any major construction activities.	✓			✓	
AQ04	Dust emission from site clearance	Cap 311, sub leg R Schedule IV S.26 (1), (2) & PS 26.10(6)(i)(l)	The working area for uprooting of trees, shrubs or vegetation or for the removal of boulders, poles, pillars or temporary or permanent structures shall be sprayed with water or a dust suppression agent immediately before, during and immediately after the operation so as to maintain the entire surface wet.		✓	✓	✓	
AQ05	Dust emission from excavation or earth moving	Cap 311, sub leg R Schedule III S.24	The heights from which excavated materials are dropped should be minimized to limit fugitive dust generation from loading/unloading.	✓		✓	✓	
AQ06	Dust emission from excavation or earth moving	Cap 311, sub leg R Schedule III S.24	Working areas of any excavation or earth moving operation will be sprayed with water.		✓	✓	✓	

APPENDIX H – SUMMARY OF ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

No.	Environmental Aspect	Requirement (Classification)	Aspect Mitigation	Delivery Method			Status	Other / Remarks
				Site Installation	Method Statement	Toolbox Talk		
Air Quality								
AQ07	Access Road	PS 26.10(6)(i)(g)	Effective water sprays should be used on the site to dampen potential dust emission sources such as unpaved areas used by site traffic and active construction areas.		✓	✓	✓	
AQ08	Access Road	Cap 311, sub leg R Schedule III S.14 (1) & PS 26.10 (6)(i)(a)	Areas of site with regular movement of vehicles shall have an approved hard surface and be kept clean of loose material.	✓			✓	
AQ09	Access Road	PS 26.10 (6)(i)(d)	All on-site motorized vehicles speeds shall be restricted to a max. speed of 10km/h and delivery vehicles to designated roadways inside the Site to reduce dust re-suspension and dispersion.			✓	✓	
AQ10	Access Road	Cap 311, sub leg R Schedule III S.14 (1) & PS 26.10(6)(i)(a)	The roadway between the wheel wash and the public road will be paved.	✓			✓	
AQ11	Dust emission from material transporting and handling	PS 26.10(6)(i)(h) & (i)	Vehicles transporting materials with the potential to generate dust should have properly fitting side and tailboards.	✓		✓	✓	
AQ12	Dust emission from material transporting and handling	PS 1.110 (a)	The cover of the bed of dump truck shall be power operated with manual backup, so that the operator would not need to climb on the dump bed to operate the cover (both under power mode and manual mode). Operation from driver cab or with the operator standing on ground is acceptable. After the cover to the dump bed is closed, any gap left on the system of enclosure should be less than 25mm wide measured in a direction across the gap. Any remaining gap is to be sealed up tightly with a layer of nylon bristle of sufficient length to bridge across the gap.	✓		✓	✓	

APPENDIX H – SUMMARY OF ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

No.	Environmental Aspect	Requirement (Classification)	Aspect Mitigation	Delivery Method			Status	Other / Remarks
				Site Installation	Method Statement	Toolbox Talk		
Air Quality								
AQ12	Dust emission from material transporting and handling	Cap 311, sub leg R Schedule IV S.26 (1)	Materials transported by vehicles should be covered, with the cover properly secured and extended over the edges of the side and tail boards.	✓		✓	✓	
AQ13	Dust emission from material transporting and handling	PS 26.10(6)(i)(k)	Spraying all dusty materials with water prior to any loading, unloading or transfer operation so as to maintain the dusty material wet.	✓		✓	✓	
AQ14	Dust emission from material transporting and handling	PS 26.10(6)(i)(a)	Material storage and handling areas shall be located on hard core or paved.	✓		✓	✓	
AQ15	Dust emission from material transporting and handling	Cap 311, sub leg R Schedule IV S.26	All stockpiled aggregate or spoil of more than 50 m ³ should be enclosed or covered and water applied twice per day during dry or windy conditions.	✓		✓	✓	
AQ16	Dust emission from materials transporting and handling	Cap 311, sub leg R Schedule III S.15 (1) & PS 26.10(6)(i)(f)	Stockpiles of dusty materials shall be covered and minimized the extent of spoil exposed at any given time.	✓		✓	✓	
AQ17	Dust emission from materials transporting and handling	Cap 311, sub leg R Schedule III S.15 (1)	Every stock of more than 20 bags of cement shall be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides.	✓		✓	✓	
AQ18	Dust emission from materials transporting and handling	Cap 311, sub leg R Schedule III S.15 (1) & PS 26.10 (6)(i)(b)	Material conveyors for the transfer of dusty materials shall be fitted with windboards and enclosed conveyor transfer points and hopper discharge areas to minimize dust emission.	✓	✓		✓	
AQ19	Dust emission from materials transporting and handling	PS 26.10 (6)(i)(c)	Totally enclosing all conveyors carrying materials which have the potential to create dust and fitting them with belt cleaners.	✓	✓		✓	
AQ20	Dust emission from materials transporting and handling	PS26.16 (2)(ii)	Profiled steel cladding should be provided at two sides of loading point at barge.	✓	✓		✓	

APPENDIX H – SUMMARY OF ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

No.	Environmental Aspect	Requirement (Classification)	Aspect Mitigation	Delivery Method			Status	Other / Remarks
				Site Installation	Method Statement	Toolbox Talk		
Air Quality								
AQ21	Dust emission from materials transporting and handling	PS 26.16 (2)(iii)	Dust suppression sprays should be installed and operated in strategic locations at the feeding inlet and outlet.	✓	✓		✓	
AQ22	Dust emission from materials transporting and handling	PS 26.16 (2)(iv)	The barging point should be placed within a totally enclosed structure incorporating an enclosed chute for material transfer to barge.	✓	✓		✓	
AQ23	Dust emission from materials transporting and handling	PS 26.16 (2)(iv)	Flexible curtain should be hanged on the enclosed chute to prevent dust emission when excavated material/rocks are transported into the barge.	✓	✓		✓	
AQ24	Dust emission from materials transporting and handling	Cap 311, sub leg R Schedule III S.15	Debagging of cement and similar materials to be done in a ventilated enclosure with a filtered extraction system.	✓		✓	✓	
AQ25	Dust Emission from Blasting	Cap 311. sub leg R Schedule IV S.27 (1), (2)	Wet the area within 30m from the blasting area with water prior to blasting.	✓	✓	✓	✓	
AQ26	Dust Emission from Blasting	Cap 311. sub leg R Schedule IV S.27 (1), (2)	Wire mesh, gunnysack and sandbag should be used on top of the blast area on each shot to prevent flying rock and reduce fugitive dust generation.	✓			✓	
AQ27	Dust Emission from Blasting	Cap 311. sub leg R Schedule IV S.27 (1), (2)	Do not carry out blasting when the strong wind signal or tropical cyclone warning no. 3 is hoisted unless prior permission of the Commissioner of Mines is obtained.		✓	✓	✓	
AQ28	Dust Emission from Blasting	Cap 311. sub leg R Schedule IV S.27 (1), (2)	Blasting shall not be carried out when a Hong Kong Observatory Thunderstorm Warning is in force.		✓	✓	✓	
AQ29	Dust Emission from Blasting	Cap 311. sub leg R Schedule IV S.27 (1), (2)	Use of vacuum extraction drilling methods and sequenced the blasting works carefully.		✓		✓	

APPENDIX H – SUMMARY OF ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

No.	Environmental Aspect	Requirement (Classification)	Aspect Mitigation	Delivery Method			Status	Other / Remarks
				Site Installation	Method Statement	Toolbox Talk		
Air Quality								
AQ30	Dust Emission from Blasting	Cap 311. sub leg R Schedule IV S.27 (1), (2); PS 26.13(4)(iv)	Firing of explosive shall be carried out in the morning prior to opening of the Park.	✓	✓	✓	✓	
AQ31	Dust Emission from Tunnel		Exhausts from tunnel ventilation should face away from sensitive receivers.	✓	✓	✓	○	
AQ32	Dust Emission from Tunnel		Forced ventilation shall be maintained in the tunnel to ensure noxious or asphyxiating gases do not accumulate. At the tunnel access shaft or portal the expelled air shall be vented to the atmosphere ensuring adequate diffusion of gases. Expelled air shall be directed away from nearby buildings.	✓	✓	✓	○	
AQ33	Dust Emission from Tunnel		Tunnel ventilation containing high level of Total Suspended Particulates (TSP) shall be filtered at least to the satisfaction of the Safety and Environmental Officers prior to being vented to the atmosphere. The filters should be changed weekly to prevent blockages, which may affect the performance of the system.	✓		✓	○	
AQ34	Dust Emission from Crushing Plant	PS 26.10(2)	The crushing plant shall be operated in accordance with the specified process licence.	✓		✓	○	
AQ35	Gas Emission Smoke/fume from construction plants and equipments	Cap 311, sub leg C S.3	All plants and equipments should be well maintenance to avoid dark smoke.	✓		✓		An owner, who operates any plant in such a manner that any dark smoke is emitted for more than 6 minutes in any period of 4 hours or for more than 3 minutes continuously at any one time, commits an offence.
AQ36	Smoke/fume from construction plants and equipments	Cap 311, sub leg A S.4, 5 & 6	Prior approval should be obtained before the installation of the emergency generator.	✓			N/A	Include in the design

APPENDIX H – SUMMARY OF ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

No.	Environmental Aspect	Requirement (Classification)	Aspect Mitigation	Delivery Method			Status	Other / Remarks
				Site Installation	Method Statement	Toolbox Talk		
Air Quality								
AQ37	Smoke from open burning	Cap 311, sub leg O S.4 (1)	Open burning for the purpose of disposal of construction waste/tyres, the salvage of metal or the clearance of site in preparation for construction work is prohibited.			✓	✓	
AQ38	Smoke/fume from all site vehicles	Cap 374, sub leg A S.31(1)	Black smoke should be avoided from any vehicle whether or not mechanically propelled which is constructed or adapted for use on roads (exclude a vehicle of the North-west Railway or a tram)	✓		✓	✓	
AQ39	Smoke/fume from all site vehicles	Cap 311, sub leg L Schedule I	Ensure the correct diesel used in any vehicle whether or not mechanically propelled which is constructed or adapted for use on roads (exclude a vehicle of the North-west Railway or a tram)		✓	✓	✓	
AQ40	Emission from spraying products	Cap 403, sub. leg C s.3	Ozone depleting paint sprayers shall not be used on sites.		✓	✓	✓	
Noise/Vibration								
NV01	Noise from construction work other than percussive piling	Cap 400, S.6(1), PS 26.11 (2)	Work required for the use of powered mechanical equipment (PME) in restricted hours, i.e. the hours between 7pm and 7am on weekdays or at any time on Sundays or a public holiday, for carrying out construction activity shall be required a valid Construction Noise Permit (CNP).		✓	✓	✓	
NV02	Noise Emission from construction plants and equipments	PS 26.11 (9)	Relocation of noise-emitting plant, the use of silencers, mufflers, acoustic sheds or shields or acoustic sheds or screens upon the best reasonable practice.	✓		✓	✓	
NV03	Noise Emission from construction plants and equipments	PS 26.11 (10)	Maintain all plant and silencing equipment in good condition so as to minimize the noise emission during the works.			✓	✓	

APPENDIX H – SUMMARY OF ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

No.	Environmental Aspect	Requirement (Classification)	Aspect Mitigation	Delivery Method			Status	Other / Remarks
				Site Installation	Method Statement	Toolbox Talk		
Noise/Vibration								
NV04	Noise Emission from construction plants and equipments	Cap 400, sub. leg. C, s17(1)	Compressors should have Noise Emission Labels (NELS).			✓	✓	
NV05	Noise Emission from construction plants and equipments	Cap 400, sub. leg. D, s17(1)	Hand held breakers should have Noise Emission Labels (NELS).			✓	✓	
NV06	Noise Emission from construction plants and equipments	PS 26.11 (13)(i)	<p>If the work causing serious noise pollution impacts or reached the Target Limit as stated in the Contractor's EM&A Manual, the Contractor shall provide the following proposed remedial measures:</p> <ul style="list-style-type: none"> • Change of construction equipment location and scheduling of activities; • Change of construction equipment location and scheduling of activities; • Installation of construction equipment soundproofing; • Provision of alternative Contractor's equipment; • Erection of sound barriers around the part of the Site or the location of the construction noise source; or • Any other measures that may be effective in reducing noise. 		✓	✓	✓	
NV07	Noise Emission from Blasting	PS 26.13(4)(iv)	Firing of explosive shall be carried out in the morning prior to opening of the Park.	✓	✓	✓	✓	

APPENDIX H – SUMMARY OF ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

No.	Environmental Aspect	Requirement (Classification)	Aspect Mitigation	Delivery Method			Status	Other / Remarks
				Site Installation	Method Statement	Toolbox Talk		
Noise/Vibration								
NV08	Noise Emission from Blasting	GEP Technical Guidance Note No. 25 (TGN 25)	Blast doors on tunnels to be closed during blasting if required by the blasting period.	✓		✓	O	
NV09	Noise Emission for Vehicles	Cap 374, sub leg A S.30(1)	Every vehicle propelled by an internal combustion engine shall be fitted with a silencer, expansion chamber or other contrivance suitable and sufficient for reducing, as far as may be reasonable, the noise caused by the escape of the exhaust gases from the engine.	✓		✓	✓	
Water Quality (Refer to Drainage Management Plan as stated in PS 26.17(7))								
WQ01	Flooding and wastewater including surface runoff discharges from the construction site/work to inland coastal waters, communal sewers and drains	PS 26.12 (2)	Before commencing any site formation work, all sewer and drainage connection should be sealed to prevent debris, soil, sand and etc from entering public sewers/drains	✓		✓	The existing drainage system is in use and the temporary drainage system is under preparation	
WQ02		PS 26.12 (2)	The boundaries of critical areas of earthworks should be marked and surrounded by dykes or embankments for flood protection.	✓			N/A	
WQ03		PS 26.12 (2)	Wheel wash water shall be changed frequently and sediment removed regularly	✓		✓	✓	
WQ04		PS 26.12 (2)	Construction runoff related impacts associated with tunneling and above ground construction activities can be readily controlled through the use of appropriate mitigations measures which include: <ul style="list-style-type: none"> • Use of sediment traps, oil interceptors; and • Adequate maintenance of drainage systems to prevent flooding and overflow. 	✓		✓	O	
					✓	✓	O	

APPENDIX H – SUMMARY OF ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

No.	Environmental Aspect	Requirement (Classification)	Aspect Mitigation	Delivery Method			Status	Other / Remarks
				Site Installation	Method Statement	Toolbox Talk		
Water Quality (Refer to Drainage Management Plan as stated in PS 26.17(7))								
WQ05	Flooding and wastewater including surface runoff discharges from the construction site/work to inland coastal waters, communal sewers and drains	PS 26.12 (2)	Exposed areas should be minimised to reduce the potential for increased siltation, runoff contamination, and erosion.	✓	✓	✓	✓	
WQ06		EIA Ref. S9.44 EM&A Ref. S8.3	Temporary ditches should be provided to facilitate runoff discharge into the appropriate watercourses via silt retention points.	✓	✓	✓	○	
WQ07	Flooding and wastewater including surface runoff discharges from the construction site/work to inland coastal waters, communal sewers and drains	EPD ProPECC Note No. PN1/94; PS 26.17(6)(ii)	The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC Note PN 1/94.	✓	✓		○	
WQ08		EP Clause2.13	To improve the coagulation and sedimentation process for construction phase discharges from excavation works at Headland, sand/silt removal facilities, including sand/silt traps and sediment basins should be provided.	✓		✓	○	Drainage Proposal
WQ09	Flooding and wastewater including surface runoff discharges from the construction site/work to inland coastal waters, communal sewers and drains	PS 26.12(4)	All exposed earth areas should be completed as soon as possible after earthworks have been completed, or alternatively, within 14 days of the cessation of earthworks where practicable.		✓	✓	○	
WQ10		PS 26.12	If excavation of soil cannot be avoided during the rainy season, or at any time of year when rainstorms are likely, exposed slope surfaces should be covered by tarpaulin or other means.	✓	✓	✓	○	
WQ11	Flooding and wastewater including surface runoff discharges from the construction site/work to inland coastal waters, communal sewers and drains	PS 26.12(6)(iv)	Sediment tanks of sufficient capacity are recommended as a general mitigation measure that can be used for settling surface runoff prior to disposal. The system capacity should be flexible and able to handle multiple inputs from a variety of sources and particularly suited to applications where the influent is pumped.	✓		✓	○	
WQ12		PS 26.12(6)(ii)	All silt removal facilities will be inspected daily and cleaned whenever necessary.			✓	○	

APPENDIX H – SUMMARY OF ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

No.	Environmental Aspect	Requirement (Classification)	Aspect Mitigation	Delivery Method			Status	Other / Remarks
				Site Installation	Method Statement	Toolbox Talk		
Water Quality (Refer to Drainage Management Plan as stated in PS 26.17(7))								
WQ13	Flooding and wastewater including surface runoff discharges from the construction site/work to inland coastal waters, communal sewers and drains	PS 26.12(6)(iv)	Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed in to foul sewers.		✓	✓	✓	
WQ14	Flooding and wastewater including surface runoff discharges from the construction site/work to inland coastal waters, communal sewers and drains	EP Clause 2.12 & 2.14; PS 26.17(6)(iii)	Design and install a silt curtain system to enclose the existing 1000mm diameter storm water pipe outlet at Tai Shue Wan to minimize the water quality impacts on the marine environment during rainy seasons.	✓	✓		✓	Silt curtain proposal was deposited in the EIAO Register Office for public inspection.
WQ15	Flooding and wastewater including surface runoff discharges from the construction site/work to inland coastal waters, communal sewers and drains	EPD ProPECC Note No. PN1/94; PS 26.17(8)(e)	Precautions should be taken at any time of year when rainstorms are likely. Actions to be taken when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms, are summarized in Appendix A2 or ProPECC Note PN 1/94. Particular attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes.			✓	○	Heavy rain procedures
WQ16	Flooding and wastewater including surface runoff discharges from the construction site/work to inland coastal waters, communal sewers and drains	PS 26.12(6)(i)	Oil interceptors should be provided in the drainage system and these should be regularly cleaned to prevent the release of oils and grease into the storm water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain.	✓			○	
WQ17		PS 26.12(2)	All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited on roads.			✓	✓	

APPENDIX H – SUMMARY OF ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

No.	Environmental Aspect	Requirement (Classification)	Aspect Mitigation	Delivery Method			Status	Other / Remarks
				Site Installation	Method Statement	Toolbox Talk		
Water Quality (Refer to Drainage Management Plan as stated in PS 26.17(7))								
WQ18		PS 26.12	Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.	✓			✓	
WQ19	Flooding and wastewater including surface runoff discharges from the construction site/work to inland coastal waters, communal sewers and drains	PS 26.12(6)(iii)	An adequately designed and located wheel washing bay should be provided at every site exit and wash-water should have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process.	✓			○	
WQ21		PS 26.12	Open stockpiles of construction materials of more than 50m ³ should be covered with tarpaulin or similar fabric.			✓	○	
WQ20		PS 26.12	The section of access road leading to, and exiting from, the wheel wash bay to the public road should be paved with sufficient backfall towards the wheel wash bay towards the wheel wash bay to prevent transport of soils and silty water to public roads and drains.	✓			○	
Drainage and Sewage (Refer to Drainage Management Plan as stated in PS 26.17(7) and Drainage Proposals as stated in EP Clause 2.13)								
DS01	Polluted water discharge from construction site or works	PS 26.17(4)	All temporary and permanent drainage pipes and culverts provided to facilitate runoff discharges should be adequately designed for the controlled release of storm flow (one in five year event).	✓			✓	Drainage Proposal
DS02	Polluted water entry stormwater system during the site activities	PS 26.17(6)	All sediment control measures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rain storms.	✓		✓	○	
DS03	Polluted water from site reinstatement	PS 26.17(2)	Temporarily diverted drainage systems should be reinstated to their original condition when the construction work has finished, or the temporary diversion is no longer required.				○	Note

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No.	Environmental Aspect	Requirement (Classification)	Aspect Mitigation	Delivery Method			Status	Other / Remarks
				Site Installation	Method Statement	Toolbox Talk		
Drainage and Sewage (Refer to Drainage Management Plan as stated in PS 26.17(7) and Drainage Proposals as stated in EP Clause 2.13)								
DS04	Polluted water from concrete lorry washing	PS 26.17	Wash water from concrete trucks and pumps is to be collected in skips for treatment.	✓		✓	✓	
DS05	Polluted water from the plant yard	WMP	Plant maintenance areas to be enclosed.	✓			○	
DS06	Polluted water from excavation	PS 26.17(6)(ii)	Temporary open storage of excavated materials used for backfill on site should be covered with tarpaulin or similar fabric during rainstorms. Any washout of construction or excavated materials should be diverted through appropriate sediment traps before discharge to storm water drainage systems.			✓	○	
DS07	Polluted water entry from waste collected area	PS 26.18(2)	Debris and rubbish on site should be collected, handled and disposed of properly to avoid entering the water column to cause water quality impacts.	✓		✓	✓	
DS08	Polluted water and sewage entry the chemical toilets	PS 26.12(3)	Construction sewage may need to be handled by portable chemical toilets if construction workers are likely to be dispersed along the alignment.	✓			✓	
DS09	Polluted water and sewage entry the chemical toilets	PS 26.12(3)	Appropriate numbers of portable toilets should be provided by a licensed contractor to serve the construction workers. This contractor will also be responsible for waste disposal and maintenance practices.	✓			✓	
DS10	Polluted water from chemical storage area	PS 26.12(9)	All fuel tanks and storage areas should be provided with locks and be located on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank, to prevent spilled fuel oils from reaching WSRs.	✓			✓	
DS11	Polluted water from spillage	WMP; PS 26.12(10)	Spill action plan is to be prepared.			✓	✓	Spill procedures
DS12	Polluted water from petrol filling activity	WMP; PS 26.17(8)(l)	Petrol interception for oil filling point.	✓			○	

APPENDIX H – SUMMARY OF ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

No.	Environmental Aspect	Requirement (Classification)	Aspect Mitigation	Delivery Method			Status	Other / Remarks
				Site Installation	Method Statement	Toolbox Talk		
Drainage and Sewage (Refer to Drainage Management Plan as stated in PS 26.17(7) and Drainage Proposals as stated in EP Clause 2.13)								
DS13	Polluted water from tunnel pump out	PS 26.17(8)	Ground water pumped from tunnels etc., should be discharged into drainage channels that incorporate sediment traps to entrance deposition rates and to remove silt.	✓			O	
DS14	Polluted water from construction works	PS 26.17(8)(i)	Construction work force sewage discharges on site should be connected to the existing trunk sewer or sewage treatment facilities, if practicable.	✓		✓	✓	
DS15	Polluted water from pantry	PS 26.17(8)(k)	Wastewater collected from pantry including that from basins, sinks and floor drains, should be discharged into foul sewers via grease traps capable of providing at least 20 minutes retention during peak flow.	✓			O	
Waste Management (Refer to Waste Management Plan as stated in EP Clause 2.21)								
WM01	Disposal of waste (general)	PS 26.18	Minimize the generation of waste from Works. Avoidance and minimization of waste generation shall be achieved through changing or improving design and practices, careful planning and good site management.			✓	✓	Note
WM02	Disposal of waste (general)	PS 26.18	Different types of waste are segregated on-site and stored in different containers, skips or stockpiles to facilitate the reuse/recycling of materials, thus avoiding disposal (generally with only limited processing and reprocessing may be required).	✓		✓	✓	
WM03	Disposal of waste (general)	WMP	A trip ticket system for the disposal of Construction and Demolition (C&D) materials following the guidelines stipulated in the Environment, Transport and Works Bureau Technical Circular (Works) No. 31/2004 shall be used to prevent any illegal dumping.			✓	✓	

APPENDIX H – SUMMARY OF ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

No.	Environmental Aspect	Requirement (Classification)	Aspect Mitigation	Delivery Method			Status	Other / Remarks
				Site Installation	Method Statement	Toolbox Talk		
Waste Management (Refer to Waste Management Plan as stated in EP Clause 2.21)								
WM04	Disposal of waste (general)	PS 26.18	No construction waste of more than 20% inert material by volume shall be disposed of to landfill. Inert materials like rock, sand, concrete debris should be sorted out from construction waste before disposal. Dry concrete waste or the excavated materials should be recycled for reuse or sorted for disposal at public dumps.			✓	✓	
WM05	Generation and disposal of construction and demolition waste	WMP; PS 26.18	All non-inert construction waste material deemed unsuitable for reclamation or land formation and all other waste material shall be disposed at public dumps.	✓		✓	✓	Note
WM06	Generation and disposal of construction and demolition waste	WMP; PS 26.18	The C&D materials shall be sorted into public fill (inert portion) and C&D waste (non-inert portion). The inert portion which comprises soil, rock, concrete, brick, cement plaster/mortar, inert building debris, aggregates and asphalt shall be reused in earth filling, reclamation or site formation works as far as possible. Where excavated rock is of the appropriate grade, it shall be crushed and reused as aggregate or for other surfacing uses, wherever possible. The non-inert portion, which comprises metal, timber, paper, glass, junk and general garbage shall be reused or recycled.	✓	✓	✓	✓	
WM07	Disposal of waste (general)	WMP; PS 26.18	Record of the amount of waste generated, recycled and disposed of shall be kept on site for easy reference and checking.			✓	✓	
WM08	Disposal of waste (general)	WMP; PS 26.18	Authorized/Licensed Waste Hauliers/Collectors should be used to collect and transport different category wastes to the appropriate disposal points.			✓	✓	

APPENDIX H – SUMMARY OF ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

No.	Environmental Aspect	Requirement (Classification)	Aspect Mitigation	Delivery Method			Status	Other / Remarks
				Site Installation	Method Statement	Toolbox Talk		
Waste Management (Refer to Waste Management Plan as stated in EP Clause 2.21)								
WM09	Disposal of waste (general)	WMP; PS 26.18	Handle and store wastes in a manner, which ensures that they are held securely without loss or leakage, thereby minimizing the potential for pollution.			✓	✓	Note
WM10	Disposal of waste (general)	WMP; PS 26.18	Remove wastes in a timely manner and maintain the waste storage areas clean regularly.			✓	✓	
WM11	Disposal of waste (general)	WMP; PS 26.17(8)	Regular cleaning and maintenance the drainage system, sumps, oil interceptors and grease traps. The waste from these facilities shall be collected and disposed of by a licensed Collector.	✓		✓	○	
WM12	Disposal of waste (general)	WMP	Obtain the necessary permits and licenses with regards to the waste management from the appropriate authorities wherever necessary, in accordance with <ul style="list-style-type: none"> • The Waste Disposal Ordinance (Cap 354), • Waste Disposal (Chemical Waste)(General) Regulation (Cap 354), • The Crown Land Ordinance (Cap 28), and • Dumping at Sea Ordinance (Cap 466) 			✓	○	
WM13	Disposal of waste (general)	WMP	Provide training for workers about the concepts of site cleanliness and appropriate waste management procedures, including waste reduction, reuse and recycling.			✓	✓	
WM14	Generation and disposal of construction and demolition waste	WMP & WBTC 5/99 (Appendix A)	The Contractor shall produce a Construction and Demolition Material Disposal Delivery Form (the Form) for each and every vehicular trip transporting Construction and Demolition (C&D) materials off-site. The Contractor shall complete the Form and maintain records as per procedures.			✓	✓	

APPENDIX H – SUMMARY OF ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

No.	Environmental Aspect	Requirement (Classification)	Aspect Mitigation	Delivery Method			Status	Other / Remarks
				Site Installation	Method Statement	Toolbox Talk		
Waste Management (Refer to Waste Management Plan as stated in EP Clause 2.21)								
WM15	Production of Chemical Waste (general)	Magnitude	For those processes that generate chemical waste, it may be possible to find alternatives that generate reduced quantities or even no chemical wastes, or less dangerous types of chemical waste	✓	✓		○	
WM16	Production of Chemical Waste (general)	Cap 354 sub. leg. C; PS 26.18 (4)	The Contractor shall be required to register with EPD as a chemical waste producer and to follow the guidelines as stated in the Code of Practice on the Packaging, Labeling and Storage of Chemical Wastes.				✓	Register as chemical waste producer has done
WM17	Storage of Chemical Waste	Cap 354 sub. leg. C s. 13, 14, 15, 16, 18 & 19; PS 26.18(4)	<p>Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste)(General) Regulation, should be handled in accordance with the Code of Practice on the Packaging, Labeling and Storage of Chemical Wastes as follows:</p> <ul style="list-style-type: none"> • A suitable area (special container(s) would be proposed to use) for temporary storage of chemical waste shall be provided. The best location for the storage area shall be located close to the source of chemical waste generation. • The container used for the storage of chemical waste should be used for chemical waste only and kept clean and dry all the times. • The container shall be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed. 	✓			○	
				✓		✓	○	
				✓		✓	○	

APPENDIX H – SUMMARY OF ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

No.	Environmental Aspect	Requirement (Classification)	Aspect Mitigation	Delivery Method			Status	Other / Remarks
				Site Installation	Method Statement	Toolbox Talk		
Waste Management (Refer to Waste Management Plan as stated in EP Clause 2.21)								
WM17 (contd)	Storage of Chemical Waste	Cap 354 sub. leg. C s. 13, 14, 15, 16, 18 & 19; PS 26.18(4)	<ul style="list-style-type: none"> The container should have a capacity of less than 450 l unless the specifications have been approved by EPD. If the container is not used as the storage, the storage area shall be enclosed on at least three sides by a wall, partition or fence with a height of not less than 2m or the total height in stack, whichever is less. Adequate ventilation shall be allowed by leaving some space between the top of the enclosure walls and ceiling, or provision of louvers on the sides of the enclosure walls. The storage area should have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20% of the total volume of waste stored in that area, whichever is the greatest The storage area should be covered to prevent rainfall entering (water collected within the bund must be tested and disposed as chemical waste if necessary) Every chemical waste storage area should display a hazard-warning panel, notice or marking at or near the entrance or opening of the storage area in English and Chinese characters “CHEMICAL WASTE” and “化學廢物” clearly and boldly in red on a white background with a letter/character size of not less than 60mm high. 	✓			○	
				✓		✓	○	
				✓		✓	○	
				✓		✓	○	
				✓		✓	○	
				✓		✓	○	

APPENDIX H – SUMMARY OF ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

No.	Environmental Aspect	Requirement (Classification)	Aspect Mitigation	Delivery Method			Status	Other / Remarks
				Site Installation	Method Statement	Toolbox Talk		
Waste Management (Refer to Waste Management Plan as stated in EP Clause 2.21)								
WM18	Disposal of Chemical Waste	WMP; PS 26.18	Disposal of chemical waste be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Facility that also offers a chemical waste collection service and can supply the necessary storage containers, or to a re-user of the waste under approval from EPD.			✓	○	
WM19	Disposal of Chemical Waste	Cap 354, sub. leg. C s21 & 22	Disposal of chemical waste should be via a licensed waste collector.			✓	○	
WM20	Generation of general refuse	Cap 311, sub leg O S.4 (1)	Law prohibits the burning of refuse on construction sites.			✓	✓	
WM21	Generation of general refuse	Magnitude	Office wastes can be reduced through recycling of paper if volumes are large enough to warrant collection. Participation in a local collection scheme should be considered if one is available.	✓		✓	✓	
WM22	Generation of general refuse	WMP	General refuse generated on site should be stored in enclosed bins or compaction units separate from construction and chemical wastes. A reputable waste collector should be employed to remove general refuse from the site, separately from construction and chemical wastes, on a daily or every second day basis to minimize odour, pest and litter impacts.	✓		✓	✓	
WM23	Generation of general refuse	Magnitude	General refuse will be generated largely by food service activities on site, so reusable rather than disposable dishware should be used if feasible. Individual collectors often recover aluminum cans from the waste stream if they are segregated or easily accessible, so separate labeled bins for their deposit should be provided wherever feasible.	✓		✓	✓	

APPENDIX H – SUMMARY OF ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

No.	Environmental Aspect	Requirement (Classification)	Aspect Mitigation	Delivery Method			Status	Other / Remarks
				Site Installation	Method Statement	Toolbox Talk		
Ecology								
EC01	Ozone Emission entry the ambient environment	PS 26.08 (3) (i)	Ozone depleting fire extinguishers shall not be used for temporary firefighting measures and ozone depleting substances shall not be used in carrying out the Works.				✓	Note restriction
EC02	Disturbance the marine ecological sensitive receivers	EP Clause 2.12; PS 26.14(5)	Divert the construction phase discharges from excavation works at Headland to an existing 1000mm diameter storm water pipe outlet at Tai Shue Wan to avoid impacts on coral communities in the marine water around the Nam Long Shan headland.	✓		✓	✓	Drainage Proposal
EC03	Disturbance the marine ecological sensitive receivers	EP Clause 2.15	No marine-based construction works shall be allowed for the Project to conserve the marine ecological resources in the vicinity of the project area.	✓	✓	✓	✓	
EC04	Disturbance the ecological sensitive receivers	EP Clause 2.17 & PS 26.14 (1)	The site clearance works before bulk excavation to the existing mountain to provide a new platform for the Summit shall commence before or outside the breeding season of Black Kites, i.e. from October to May of the next year.	✓	✓	✓	✓	
EC05	Disturbance the ecological sensitive receivers	PS 26.14 (2)	Design of temporary conveyor belt system and the location of temporary adit portals should be considered to avoid impact to potential nest sites in the tall shrubland habitat at Tai Shue Wan area where possible.	✓	✓	✓	○	
EC06	Disturbance the ecological sensitive receivers	EP Clause 2.19	No construction works and discharge from the construction site(s) shall be allowed within the existing freshwater ponds at the Tai Shue Wan area and within the enhanced Pond 35 after enhancement works.	✓		✓	○	

APPENDIX H – SUMMARY OF ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

No.	Environmental Aspect	Requirement (Classification)	Aspect Mitigation	Delivery Method			Status	Other / Remarks
				Site Installation	Method Statement	Toolbox Talk		
Ecology								
EC07	Disturbance the ecological sensitive receivers	EM&A section 6.2.5	Minimize the impact due to construction on the existing surrounding vegetation by: <ul style="list-style-type: none"> • Set up of temporary tree nurseries; • Designation of “no-intrusion zones” and to record any trespass, including the damage to the existing vegetation; • Hill fire prevention; • Dust and erosion control for exposed soil; and • Well-planned irrigation networks throughout the establishment period. 	✓ ✓ ✓	✓ ✓	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	
EC08	Disturbance the ecological sensitive receivers	EM&A section 7.17 & EIA section 5.138	Minimize the impact due to construction on the uncommon plant species by: <ul style="list-style-type: none"> • Vegetation survey and subsequent transplantation of locally uncommon or restricted species as far as practicable; • Trees located within the works areas shall be preserved as far as practicable; • Placement of equipment or stockpile in designated works areas and access routes selected on existing disturbed land to minimize disturbance to natural habitats; • Construction activities shall be restricted to the works areas that would be clearly demarcated; 	✓ ✓	✓ ✓	✓ ✓ ✓	Uncommon or restricted species including Long Tentacle Orchid, Sword-leaved Orchid, Green-flowered Rattlesnake-Plantain, Cycad-fern, Balloon Flower and Chinese Lily ✓ ✓ ✓	

APPENDIX H – SUMMARY OF ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

No.	Environmental Aspect	Requirement (Classification)	Aspect Mitigation	Delivery Method			Status	Other / Remarks
				Site Installation	Method Statement	Toolbox Talk		
Ecology								
EC08 (cont'd)	Disturbance the ecological sensitive receivers	EM&A section 7.17 & EIA section 5.138	<ul style="list-style-type: none"> The work areas shall be reinstated immediately after the completion of works; Landscaping works on newly formed land shall as far as possible make use of native plant species. 	✓			✓	
				✓			✓	
Hazard to Life								
HL01	Hazard to life due to blasting activities	EM&A section 11.3 & EIA Section 12.15	The blasting activities shall be inspected and audited at practical intervals to ensure that the assumptions and recommendations from the Quantitative Risk Assessment (QRA) study are implemented.	✓	✓	✓	✓	
HL02			The recommendations from the systematic hazard identification are consistently implemented in accordance with the intent of the hazard to life assessment.	✓	✓	✓	✓	
Landscape and Visual								
LV01	Visual and Appearance considerations	EM&A Section 6.2.5	Minimize the visual and appearance impact by: <ol style="list-style-type: none"> careful choice between 'impermeable' and 'permeable' hoardings. control over the appearance of construction workers, construction plants/ machines. proper screening and careful alignment of the temporary barging point and conveyor system. careful selection of security floodlights to avoid light pollution. 	✓		✓	✓	
						✓	✓	
				✓			In the design	
				✓			✓	

APPENDIX H – SUMMARY OF ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

No.	Environmental Aspect	Requirement (Classification)	Aspect Mitigation	Delivery Method			Status	Other / Remarks
				Site Installation	Method Statement	Toolbox Talk		
Cultural and Heritage Impact								
CH01	Cultural and Heritage Impact	EP clause 2.22	To preserve the grave G1, no works shall be allowed within one metre from the vicinity of such grave.	✓		✓	✓	Note requirement

Notes:

- EP denotes the Environmental Permit No. 249/2006 and its subsequent permits.
- EM&A Manual denotes the Contractor specific EM&A Manual.
- WMP denotes the Waste Management Plan.
- EIA denotes the Final EIA Report No. AEIAR-101/2006.
- PS denotes the Particular Specification of the Project.
- ✓ denotes implemented.
- denotes to be implemented.

APPENDIX I – EVENT AND ACTION PLANS

Event/Action Plan for Air Quality Monitoring

Event Action Level	Action			
	CET	Contractor	PMR	IEC
Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify source. 2. Notify IEC, PMR and Contractor. 3. Conduct additional monitoring to investigate the causes. 4. Report the investigation results and if exceedance is due to contractor's construction works to the IEC, PMR and Contractor. 5. Increase monitoring frequency to once per 2 days for 24-hour TSP and daily for 1-hour TSP until exceedance stops if exceedances are considered related to contractor's construction works and report the results to IEC, PMR and Contractor. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance and rectify any unacceptable practice. 2. Submit air mitigation proposal to IEC and PMR for agreement if CET indicated that exceedance is related to the construction works. 3. Implement agreed proposal within a time scale agreed with PMR and IEC. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Review monitoring data and investigation report submitted by CET. 2. Review Contractor's air mitigation proposal and advise the PMR accordingly. 3. Supervise and confirm in writing the implementation of remedial measures.
Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 5. Identify source. 6. Notify EPD, IEC, PMR and Contractor. 7. Conduct additional monitoring to investigate the causes. 8. Report the investigation results and if exceedances are due to contractor's construction works to EPD, IEC, PMR and Contractor within 3 working days after additional monitoring. 9. Increase monitoring frequency to daily for 24-hour TSP and 1-hour TSP if exceedances are considered related to contractor's construction works until exceedance stops, and report the results to EPD, IEC, PMR and Contractor. 10. If exceedances continue after 1-week monitoring events, request PMR to arrange meeting with PMR, IEC and contractor to discuss remedial actions. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance and rectify any unacceptable practice. 2. In consultation with the IEC, submit air mitigation proposal to IEC and PMR for agreement within 3 working days of notification if ET indicated that exceedances are related to construction works. 3. Implement agreed proposal within a time scale agreed with PMR and IEC. 4. Amend working methods if appropriate. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Review monitoring data and investigation report submitted by CET. 2. Discuss amongst PMR, CET and Contractor in order to formulate air mitigation proposal. 3. Review Contractor's air mitigation proposal and advise the PMR accordingly. 4. Supervise and confirm in writing the implementation of remedial measures.

APPENDIX I – EVENT AND ACTION PLANS (CONT'D)

Event/Action Plan for Air Quality Monitoring

Event Limit Level	Action			
	CET	Contractor	PMR	IEC
Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify source. 2. Notify EPD, IEC, PMR and Contractor. 3. Conduct additional monitoring to investigate the causes. 4. Report the investigation results and if exceedances are due to contractor's construction works to EPD, IEC, PMR and Contractor within 3 working days after additional monitoring. 5. Increase monitoring frequency to daily if exceedances are considered related to contractor's construction works until exceedance stops, and report the results to EPD, IEC, PMR and Contractor. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance and rectify any unacceptable practice 2. In consultation with the IEC, submit air mitigation proposal to IEC and PMR for agreement within 3 working days of notification if CET indicated that exceedances are related to construction works 3. Implement agreed proposal within a time scale agreed with PMR and IEC. 4. Amend working methods if appropriate. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Review monitoring data and investigation report submitted by CET. 2. Discuss amongst PMR, CET and Contractor in order to formulate air mitigation proposal. 3. Review Contractor's air mitigation proposal and advise the PMR accordingly. 4. Supervise and confirm in writing the implementation of remedial measures.
Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Identify source. 2. Notify EPD, IEC, PMR and Contractor. 3. Conduct additional monitoring to investigate the causes. 4. Report the investigation results and if exceedances are due to contractor's construction works to EPD, IEC, PMR and Contractor within 3 working days after additional monitoring. 5. Increase monitoring frequency to daily if exceedances are considered related to contractor's construction works until exceedance stops, and report the results to EPD, IEC, PMR and Contractor. 6. If exceedances continue after 2 consecutive monitoring events, request PMR to arrange meeting with IEC and contractor to discuss remedial actions. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance and rectify any unacceptable practice. 2. In consultation with the IEC, submit air mitigation proposal to IEC and PMR for agreement within 3 working days of notification if CET indicated that exceedances are related to construction works. 3. Implement agreed proposal within a time scale agreed with PMR and IEC. 4. Amend working methods and proposal if appropriate. 5. Stop relevant portion(s) of works as required by PMR, CET and IEC. 	<ol style="list-style-type: none"> 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. 5. If exceedances continue arrange meeting with Contractor, IEC and CET and to consider what portion(s) of works should be further mitigated or have to stop. 	<ol style="list-style-type: none"> 1. Review monitoring data and investigation report submitted by CET. 2. Discuss amongst PMR, CET and Contractor in order to formulate air mitigation proposal. 3. Review Contractor's air mitigation proposal and advise the PMR accordingly. 4. Supervise and confirm in writing the implementation of remedial measures.

APPENDIX I – EVENT AND ACTION PLANS (CONT'D)

Event/Action Plan for Regular Construction Noise Monitoring

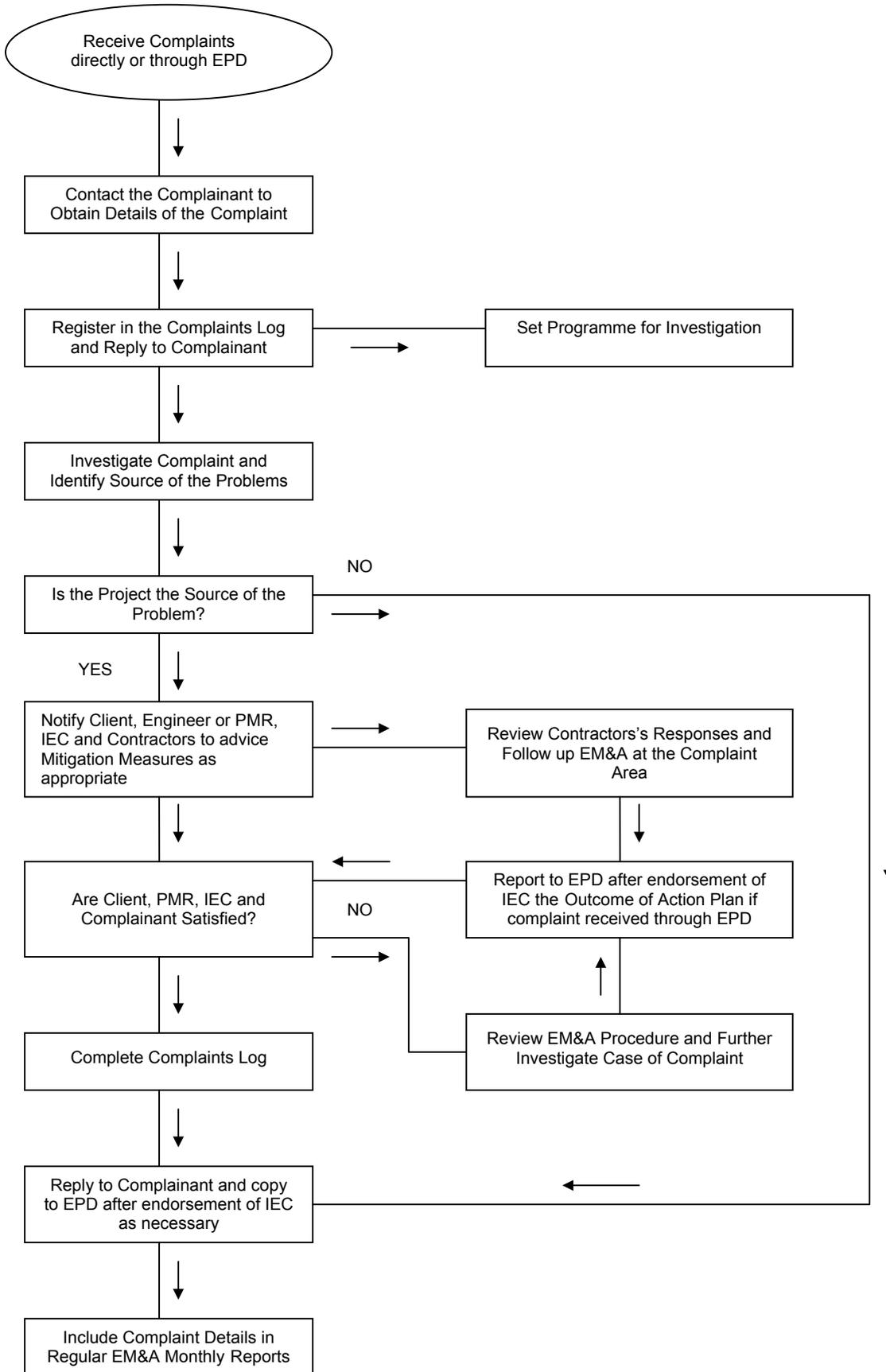
Event	Action			
	CET	Contractor	PMR	IEC
Action Level Exceedance	<ol style="list-style-type: none"> 1. Identify source. 2. Notify IEC, PMR and Contractor. 3. Conduct additional noise monitoring to investigate the causes. 4. Report the investigation results to the IEC, PMR and Contractor. 5. Discuss with Contractor for their formulation of remedial measures if the exceedance is related to construction works. 6. Conduct additional monitoring to check mitigation effectiveness. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance. 2. Submit noise mitigation proposals to ET, PMR and IEC. 3. Implement noise mitigation proposals. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Review the analysed results submitted by the CET. 2. Review the proposed remedial measures by the Contractor and advise the PMR accordingly. 3. Supervise and confirm in writing the implementation of remedial measures
Limit Level Exceedance	<ol style="list-style-type: none"> 1. Identify source. 2. Notify EPD, IEC, PMR and Contractor. 3. Conduct additional noise monitoring and analyse Contractor's working procedures to determine possible cause of exceedance. 4. Provide interim report to EPD, IEC and PMR on the causes and proposed actions to be taken for the exceedances if exceedance is related to construction works. 5. Assess effectiveness by additional monitoring and report to EPD, IEC, PMR and Contractor the results. 6. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance. 2. Submit proposals for remedial actions to CET, PMR and IEC 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 PMR until the exceedance is abated. 	<ol style="list-style-type: none"> 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 portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated. 	<ol style="list-style-type: none"> 1. Discuss amongst PMR, CET and Contractor on the potential remedial actions. 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the PMR accordingly. 3. Supervise and confirm in writing the implementation of remedial measures.

APPENDIX I – EVENT AND ACTION PLANS (CONT'D)

Event/Action Plan for Subtidal Monitoring

Event	CET
Action Level Exceedance	<p>Step 1 - Inform the IEC, ER, Contractor, Project Proponent, EPD, and AFCD and discuss the most appropriate method of reducing sediment in the discharge (e.g. check and increase effectiveness of construction site drainage and sediment and other site run-off removal facilities)</p> <p>Step 2 - Audit the implementation of mitigation measures on site.</p> <p>Step 3 - If non-compliance continues, check and confirm the effectiveness of mitigation measures and repeat monitoring survey measurements.</p>
Limit Level Exceedance	<p>Undertake Steps 1-3.</p> <p>If further exceedance of Limit Level, suspend construction works until an effective solution is identified.</p> <p>Once the solutions have been identified and agreed with all parties, construction works may commence.</p>

APPENDIX J – COMPLAINT FLOW DIAGRAM AND COMPLAINT LOG



APPENDIX K – CONSTRUCTION PROGRAMME

Early Start	Activity Description
CI05 - Tunnel, Site Formation & Misc.	
Cost Centre B-Misc. Site Formation at Waterfront	
Construction	
Hoarding for Portion 1 & 2 & Tree Felling	
05/FEB/07A	Tree Felling at Waterfront
B4 - Access Rd to Astounding Asia at Waterfront	
07/JUN/07A	Divert Existing Fresh/Saltwater&FS System Mains
03/SEP/07	Install Salt Water mains
07/SEP/07	Install New Freshwater & FS System Mains
07/SEP/07	Remove Existing Saltwater/Freshwater Mains
12/SEP/07	Access Rd from Ch. 100 - 300
Cost Centre C-Misc. Site Formation at Summit	
Construction	
Summit Hoarding & Tree Felling	
03/SEP/07	Tree Felling for Overbridge Construction
C3 - Access Road & Overbridge	
11/OCT/07	Form Temp. Access Road & Divert Existing Utility
24/OCT/07	Site Formation & Erected A Temp. Bridge/Road
05/NOV/07	Substructure Construction
C1/C2/C6 - Preparation Works - Summit Excav	
03/SEP/07	Drainage Works
C1/C2 - Explosive Magazine	
03/SEP/07*	Explosive Magazine & Emulsion Plant Appv'd
C1/C2 - Preparation Works for Temp. Conveyor Sys	
25/MAY/07A	Conveyor & Barging Point Erection
24/AUG/07A	Conveyor & Crusher Commissioning
	Completion of Conveyor & Barging Point
C1 / C2 / C5 - Summit Excavation	
21/JUN/07A	Soft Excavation (50,000cu.m.)
02/AUG/07A	Trial Blasting-Summit Area
13/AUG/07A	Excavation Summit Terminus Area
20/SEP/07	Comp Trial Blast-Ph 1 Blast top to +171mPD
11/OCT/07	Form Access for Summit Site Formation (North)
24/OCT/07	Ph. 1 -Bench Formation at+168mPD,+158mPD&+148mPD
25/OCT/07	Ph. 2 -Bench Formation at +168mPD
19/NOV/07	Ph. 2 Blast top to +176mPD
21/NOV/07	Ph. 1 -Bench Formation at +138mPD
21/NOV/07	Ph. 1 Excavate from +178mPD to +168mPD
13/DEC/07	Ph. 1 Excavate from 168mPD to +158mPD
Cost Centre D - Funicular Tunnel and Adit Tunnel	
Construction	
D3 - Adit (Ch.935)	
01/AUG/07A	Adit Tunnel Forepoling & Excav w/ Temp. Works
D1 - Tunnel Ch.940 - Ch.1240	
08/OCT/07	Excavation - 36 li.m./wk
07/DEC/07	Invert - 200 li.m./wk
27/DEC/07	Waterproofing - 100 li.m./wk
D2 - Tunnel Ch. 0 - Ch.940	
08/OCT/07	Excavation CH940 towards CH740 - 24 li.m./wk
28/NOV/07	Forepoling for Soft Ground Tunnel from Ch24
05/DEC/07	Excavation CH740 towards CH500 - 48 li.m./wk
06/DEC/07	Raking Drains Installation at Ch21
07/DEC/07	Excavation CH21 towards CH120 - 7.5m/wk
Cost Centr E-Funicular Termini-Summit&Waterfront	
Construction	
E2 - Hoarding / Tower Crane - Summit Terminus	
15/NOV/07	Tower Crane Erection
E2 - Summit Terminus Construction	
01/NOV/07	BA 14 for Summit Terminus Site Formation Works
15/NOV/07	Foundation Excavation with Haul Road
15/NOV/07	Erect Blast Screen Around Terminus @ +131&138mPD
07/DEC/07	+112mPD Slab, Column&Wall upto +115mPD (BOH)
07/DEC/07	U/G Drainage & Utilities
07/DEC/07	+116mPD Slab, Column&Wall upto +119mPD
29/DEC/07	Backfilling
E1 - South Part of Waterfront Terminus	
17/JUN/07A	Consent + BA10 for Commencement of Works from BD
13/SEP/07	1st Stage-Waling&Strut with Soil Nail&Excavation
28/NOV/07	Starting Date of the Tunnelling Works Ch21 - 580
E1 - North Part of Waterfront Terminus	
20/OCT/07	Pipe Pile & Cut-off Wall Installation
08/DEC/07	Consent for Commencement of Works from BD
08/DEC/07	Pumping test
22/DEC/07	Prep. & sub'm of pumping test report to BD
Cost Centre F- Reservoir at Summit with Pipework	
Construction	
F2 / F3 / F5 - Pumping Station - Mid-Level	
25/SEP/07*	Pumping Station Structures & Foundation
23/OCT/07*	Foundation & Baseslab Construction
21/NOV/07	Roof Construction
Cost Centre H-Option Government Entrust Works	
Construction	
H3 - Wong Chuk Hang Road	
30/JUL/07A	F2.08 to F2.07 (Q1)
05/OCT/07	F2.07 to F2.06 (Q2)
04/DEC/07	F2.06 to F2.04 (Q3)

Start Date 02/OCT/06
 Finish Date 06/APR/09
 Data Date 03/SEP/07
 Run Date 04/SEP/07 08:49

OP3A
Dragages - Bouygues JV
Ocean Park Master Redevelopment Project
Contract CI05
Construction Programme Rev 2
ENVIRONMENT DEPARTMENT
3 Month Rolling Forecast

Sheet 1 of 2



Date	Revision	Checked	Approved

Early Start	Activity Description
H2 - Nam Long Shan Road	
14/MAY/07A	Existing MH to F1.73 (P1)
07/JUL/07A	F1.63 to F1.62 (P15)
07/JUL/07A	F1.46 to 15m (P29)
23/JUL/07A	13m to F1.45 (P30)
26/JUL/07A	F1.40 to F1.39 (P36)
01/AUG/07A	F1.62 to F1.61 (P16)
03/SEP/07	F1.41 to F1.40 (P35)
03/SEP/07*	F1.35 to F1.34 (P40)
12/SEP/07	F1.73 to F1.72 (P2)
12/SEP/07	F1.54 to F1.52 (P24) include Watermain works
14/SEP/07*	F1.67 to F1.66 (P9)
02/OCT/07	F1.39 to F1.38 (P37)
02/OCT/07*	F1.28 to F1.27 (P45)
08/OCT/07	F1.66 to F1.65 (P10)
17/OCT/07	F1.52 to 20m (P25) include Watermain works
05/NOV/07	F1.38 to F1.37 (P38)
09/NOV/07	F1.27 to F1.25 (P46)
12/NOV/07	F1.70 to 10m (P5)
19/NOV/07	20m to F1.50 (P26) include Watermain works
05/DEC/07	F1.31 to F1.30 (P43)
08/DEC/07	F1.37 to F1.35 (P39)
08/DEC/07	F1.25 to F1.23 (P47)
27/DEC/07	F1.50 to F1.49 (P27) include Watermain works
31/DEC/07	10m to F1.69 (P6)

Other Works

Complete HyD Shun Wan Rd junction work by others
 Comp Reloc residents-Wong Chuk Hang Rd by others

Cost Centre J - Entry Plaza Advance Works

Construction

Bus Depot (Portion 1)

05/MAY/07A	TTA for temp Ocean Park Road
06/AUG/07A	Driving sheet pile for 1800 drainage
06/OCT/07	BA8 - Consent for Excavation
06/OCT/07	BA14 - For completion of sheet piling
03/NOV/07	BA10
10/NOV/07	Waling +strutting
17/NOV/07	Excavation
01/DEC/07	Manhole for 1800 drainage, 3nos.
08/DEC/07	1800 pipe laying
08/DEC/07	Install DN200 & DN150
15/DEC/07	Extract sheet pile
22/DEC/07	Diversion Gas / PCCW & 11Kv

Existing Bus Terminus (Portion 2)

15/SEP/07	Driving sheet pile for 1800 drainage section 3&4
15/SEP/07	temp. road to police school
09/OCT/07	Diversion of ocean park road to temp. road
10/OCT/07	Driving of sheet pile for drainage works sec. 2
08/NOV/07	BA8 - Consent from BD before Exacavation Start
08/NOV/07	BA14
08/NOV/07	Dia 150 Salt water main
08/NOV/07	Dia 200 Fresh water main
29/NOV/07	11kV cable diversion
06/DEC/07	BA10 - Notification Commencement of Excav Works
13/DEC/07	Drainage works for the 1800 dia. pipe
13/DEC/07	Diversion of Gas main & PCCW cables

HK School of Motoring (Portion 3)

16/AUG/07A	Drainage for permanent road
17/AUG/07A	DN450, 300, 200, 1650 & 11kv pipe laying
01/SEP/07A	2 Week Gazette prior opening Temp bus terminus
01/SEP/07A	Add'l entry for early handover area of carpark
10/SEP/07	Permanent Road and Curing
03/OCT/07	Upgrade existing Utility up to carriageway req.
09/OCT/07	DN450, 300, 200, 1650 & 11kv pipe laying
18/OCT/07	Drainage for permanent road
30/OCT/07	Permanent Road and Curing
20/NOV/07*	Additional Island
01/DEC/07	Sheet Pile&Excav DN450, DN300, DN200, DN1650 & 11kv
22/DEC/07	Upgrade existing Utility up to carriageway req.
31/DEC/07	Additional 1650 dm manhole

Start Date 02/OCT/06
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Ocean Park Master Redevelopment Project
Contract CI05
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ENVIRONMENT DEPARTMENT
3 Month Rolling Forecast

Sheet 2 of 2

Date	Revision	Checked	Approved

APPENDIX L – CONTACTS OF KEY ENVIRONMENTAL PERSONNEL

Company	Contact Person	Position	Telephone No.
Ocean Park Corporation	Helen LEUNG	Project Manager	2910 3106
Maunsell Consultants Asia Ltd	Edmund Pang	Project Manager Representative (PMR)	2871 5888
	Terence KONG	Project ETL	2871 5893
Dragages-Bouygues J.V.	YT SO	Project QSE Manager	2555 4110
	Schroeder TAM	Project QSE Officer	2555 4113
Mott MacDonald Hong Kong Ltd	Dr. Anne KERR	Independent Environmental Checker	2828 5757
ETS-Testconsult Limited	CL LAU	Environmental. Monitoring Team Supervisor	2695 8318

Part 3 CS-01 EM&A REPORTS (August 2007)



KADEN - ATAL JOINT VENTURE
OCEAN PARK MASTER REDEVELOPMENT PROJECT
CONTRACT NO. CS01 - VET HOSPITAL



Transmittal

To	Maunsell	Fax No	--
Attn	PMR - Mr Edmund Pang	Ref	KAJV/CS01/Transmittal/0056/A
From	Kit Chan	Pages	8 pages including this one
Date	6 September 2007	Contact	--

**Contract No. CS01 - Vet Hospital
Ocean Peak Master Redevelopment Project
Monthly EM&A Report for August 2007**

Please find attached the Monthly EM&A Report for August 2007 of the project for your perusal and information.

Regards,

**Kit Chan
Project Manager**

KC/FY/fy

Encl.

Kaden Construction Limited

Units 1601-1605, 16/F., Tower 2 Grand Central Plaza, 138 Shatin Rural Committee Road, Shatin, N.T., Hong Kong.
Tel : (852) 2527 9188 Fax : (852) 2528 1751
A MEMBER OF BUILD KING HOLDINGS

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Appendix B	Layout of Work Site
Appendix C	Construction Programme
Appendix D	Summary of Environmental Mitigation Implementation Schedule

EXECUTIVE SUMMARY

This is the 5th EM&A Monthly report prepared by Kaden – ATAL Joint Venture for the Project “Vet Hospital”. This report presents the results of EM&A works conducted in the month of August 2007.

In the reporting month, the following construction activities took place:

- Plant Block’s formwork enforcement for wall and ground slab;
- Office Block’s footing, concreting & column;
- Pool Block’s footing,
- Back Wash Tank’s formwork & falsework, and
- Formwork and falsework for lower ground.

Environmental Licensing and Permitting

Permits granted to the Project include the Environmental Permit for the Project and construction noise permit. Information of these permits is provided in Table 2.1.

Implementation Status of Environmental Mitigation Measures

Sedimentation tanks at the site entrance and discharge point were maintained more frequently.

Exposed slopes were covered entirely with tarpaulin sheets.

Dust generated by plant movement was observed. KAJV was reminded to keep watering the haul road and working area surfaces once the surfaces are dry.

Some debris was observed nearby the footing no. FL-9, FL-14 to FL-15. KAJV was reminded to remove the debris regularly.

Over accumulation of C&D waste was observed at the waste skip beside EVA. KAJV was reminded to remove the C&D waste on skip in frequent basis to avoid accumulation.

Stagnant water was observed near plant block. KAJV was reminded to remove all the stagnant water after rainfall.

Not all CNPs were displayed on the board of entrance. KAJV was reminded to display all the CNPs on the board of the entrance.

Environmental Non-conformance

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

Future Key Issues

Key issues to be considered in the coming month include:

- General chemical waste management on site.
- Construction waste management at temporary construction waste area.
- To implement dust suppression measures on dry surfaces.
- To keep well maintenance to equipment to avoid black smoke emission from machinery.
- Noise from operating equipment and machinery on-site.
- Avoid accumulation of stagnant / muddy water discharge on-site.

1. INTRODUCTION

Background

- 1.1 Under the requirements of Environmental Permit EP-249/2006/A, EM&A programme as set out in the EM&A Manual is required to be implemented.
- 1.2 This report summarises the environmental monitoring and audit works for the Project in August 2007.

Project Organisation

- 1.3 The structure of the Project Organisation is shown in Appendix A.

Construction Works undertaken during the Reporting Month

- 1.4 The major construction activities undertaken in August 2007 included Plant Block's formwork enforcement for wall and ground slab; Office Block's footing, concreting & column; Pool Block's footing, Back Wash Tank's formwork & falsework, and formwork and falsework for lower ground.
- 1.5 A layout plan of the Project is provided in Appendix B.
- 1.6 The total volume of excavated material disposal at Quarry Bay is 1,129 tonnes. The actual amounts of different types of waste generated by the activities of the Project in the month are shown in Table 1.1.

Table 1.1 Actual Quantity of Waste Generated in August 2007

Waste Type	Examples	Actual quantity disposed	Disposal Locations
Excavated material	Rock and soil	1,129 tonnes	Quarry Bay
C&D Waste	Plastic, wood and bamboo	4.88 tonnes	SENT Landfill
Chemical waste	Used oil, spent solvent	--	Collected by licensed collector
General waste	Domestic waste (site) collected in garbage bins	--	SENT landfill

Summary of EM&A Requirements

- 1.7 The environmental licensing and permits are described in Section 2.
- 1.8 The advice on the implementation status of environmental protection and pollution control/mitigation measures is summarized in Section 2 of the Report.
- 1.9 The implementation status of the environmental mitigation is attached in Appendix D.

2. ENVIRONMENTAL AUDIT

Site Inspection

- 2.1 The contract commencement date is 26 Mar 07.
- 2.2 The weekly site inspection was only carried out on 7 August 07, 14 August 07, 23 August 07(IEC audit), 28 August 07 within the reporting month.
- 2.3 The purpose is to monitor environmental issues on the construction sites to ensure that all mitigation measures were implemented timely and properly.

Status of Environmental Licensing and Permitting

- 2.4 All permits/licences obtained as of August 2007 are summarised in Table 2.1.

Table 2.1 Summary of Environmental Licensing and Permit Status

Permit No.	Valid Period		Section	Status
	From	To		
Environmental Permit				
EP-249/2006/A	28/07/06	N/A	Expansion of existing Ocean Park and reconstruction / modification of its existing facilities.	Valid
Construction Noise Permits				
GW-RS0286-07	26/05/07	25/11/07	Generator, dump truck, tracked excavator, concrete pump, tower crane, poker, air compressor, concrete lorry mixer.	Valid
GW-RS0321-07	01/06/07	30/11/07	Crane Lorry, excavator, tracked, Hand-held breaker, air compressor	Valid
GW-RS0493-07	10/08/07	09/10/07	Generator, dump truck, tracked excavator, concrete pump, tower crane, poker, air compressor, concrete lorry mixer, hand held breaker, crane lorry, excavator mounted breaker	Valid
Chemical Waste Producer				
WPN5213-199-K2880-01	19/03/07	N/A	-	Valid
Air Pollution Control (Construction Dust) Licence				
001018953	16/03/07	N/A	-	Valid
Water Discharge Licence				
EP820/W2/XC041	31/05/07	30/06/12	Vet Hospital	Valid
Billing Account for Disposal of Construction Waste and Application for Issuance of Chits				
7005185	12/4/07	N/A	-	Valid

Implementation Status of Environmental Mitigation Measures

- 2.5 During site inspections in this reporting month, the following observations and recommendations were made.

Water Quality Mitigation Measures

- 2.6 Sedimentation tanks at the site entrance and discharge point were maintained more frequently
- 2.7 Stagnant water was observed near plant block. KAJV was reminded to remove all the stagnant water after rainfall.

Air Quality Mitigation Measures

- 2.8 Exposed slopes were covered entirely with tarpaulin sheets.
- 2.9 Dust generated by plant movement was observed. KAJV was reminded to keep watering the haul road and working area surfaces once the surfaces are dry.

Noise

- 2.10 No violation was observed during site inspections in the month.

Ecology

- 2.11 No violation was observed during site inspections in the month.

Waste / Chemical Management

- 2.12 Some debris was observed nearby the footing no. FL-9, FL-14 to FL-15. KAJV was reminded to remove the debris regularly.
- 2.13 Over accumulation of C&D waste was observed at the waste skip beside EVA. KAJV was reminded to remove the C&D waste on skip in frequent basis to avoid accumulation.

Others

- 2.14 Not all CNPs were displayed on the board of entrance. KAJV was reminded to display all the CNPs on the board of the entrance.

Implementation Status of Environmental Complaint Handling Procedures

Summary of the Complaints and Prosecutions

- 2.15 No complaint, summons or prosecution related to environmental issues was received or made against the Project in August 2007.

3. FUTURE KEY ISSUES

Key Issues for the Coming Month

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

- Noise from operating equipment and machinery on-site.
- Avoid accumulation of stagnant / muddy water on-site.
- Avoid accumulation of mud at the temporary channels and the sedimentation tank.
- To implement dust suppression measures on dry surfaces and dusty works.
- To implement on-site cleanliness.

Construction Program for the Next Months

3.2 The construction programme for the next months is shown in Appendix C.

4. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

- 4.1 No complaint, summons or prosecution related to environmental issues were made against this project in the reporting period.
- 4.2 IEC audit was carried out on 23 August 07. 4 observations and 0 non-compliances were raised.
- 4.3 Five site inspections were carried out 7 August 07, 14 August 07, 23 August 07 (IEC audit), 28 August 07 within the reporting month.

Recommendations

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

Air Quality Impact

- To implement dust suppression measures on dry surfaces and dusty works.

Noise Impact

- To inspect the noise sources from inside and outside of the site.
- To space out noisy equipment and position as far away as possible from sensitive receivers.
- To have regular maintenance of vehicles and equipment used.

Water Quality Impact

- To ensure open stockpiles of construction materials are covered with tarpaulin or similar fabric during rainstorm.
- To fully operate the temporary on-site drainage system and all sedimentation tank.
- To clean up the mud accumulated in the temporary drainage system and sedimentation tank in frequent basis.

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.

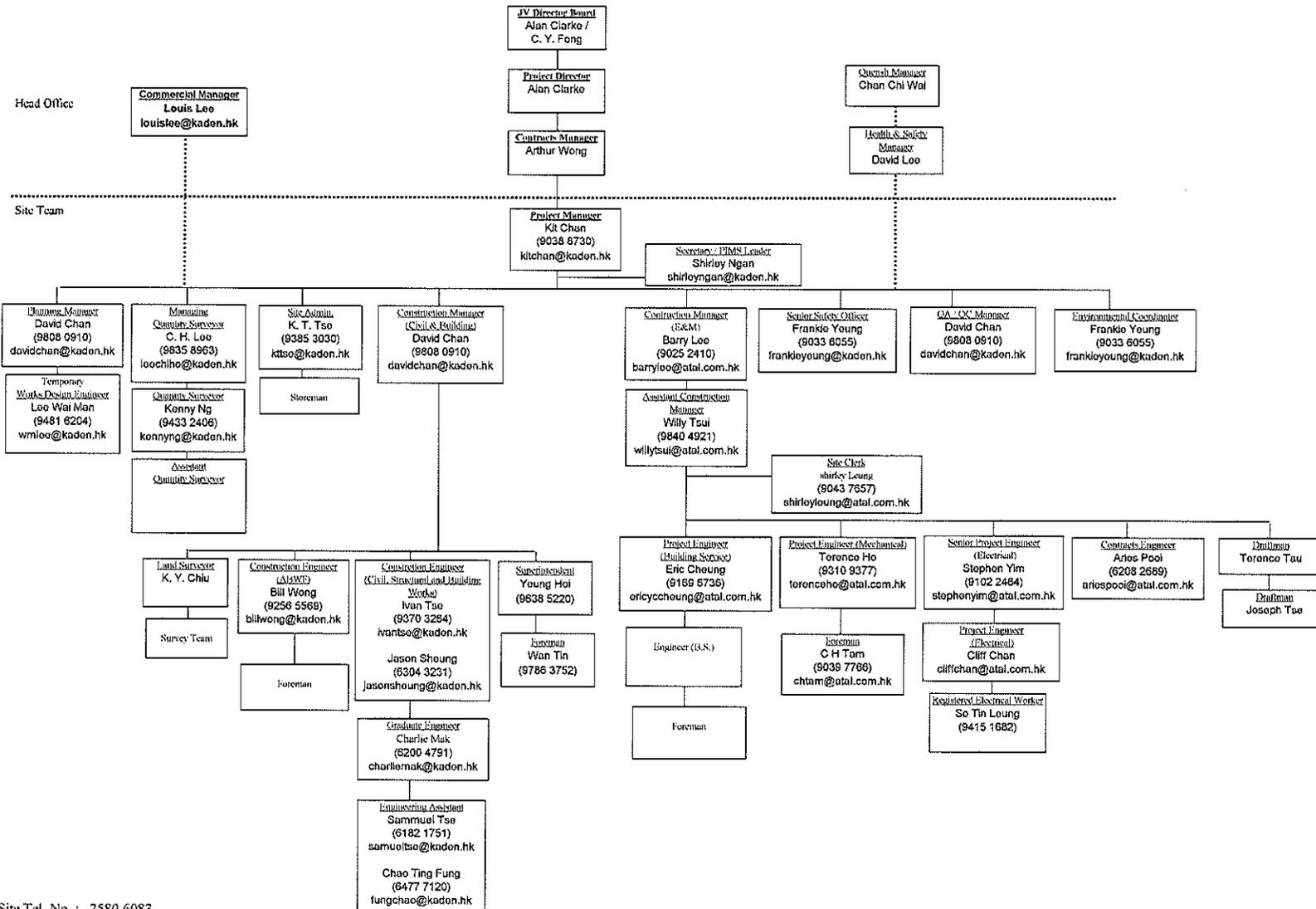
Appendix A



OCEAN PARK MASTER REDEVELOPMENT PROJECT
CONTRACT NO. CS01 - VET HOSPITAL



KADEN - ATAL JOINT VENTURE
PROJECT ORGANIZATION CHART

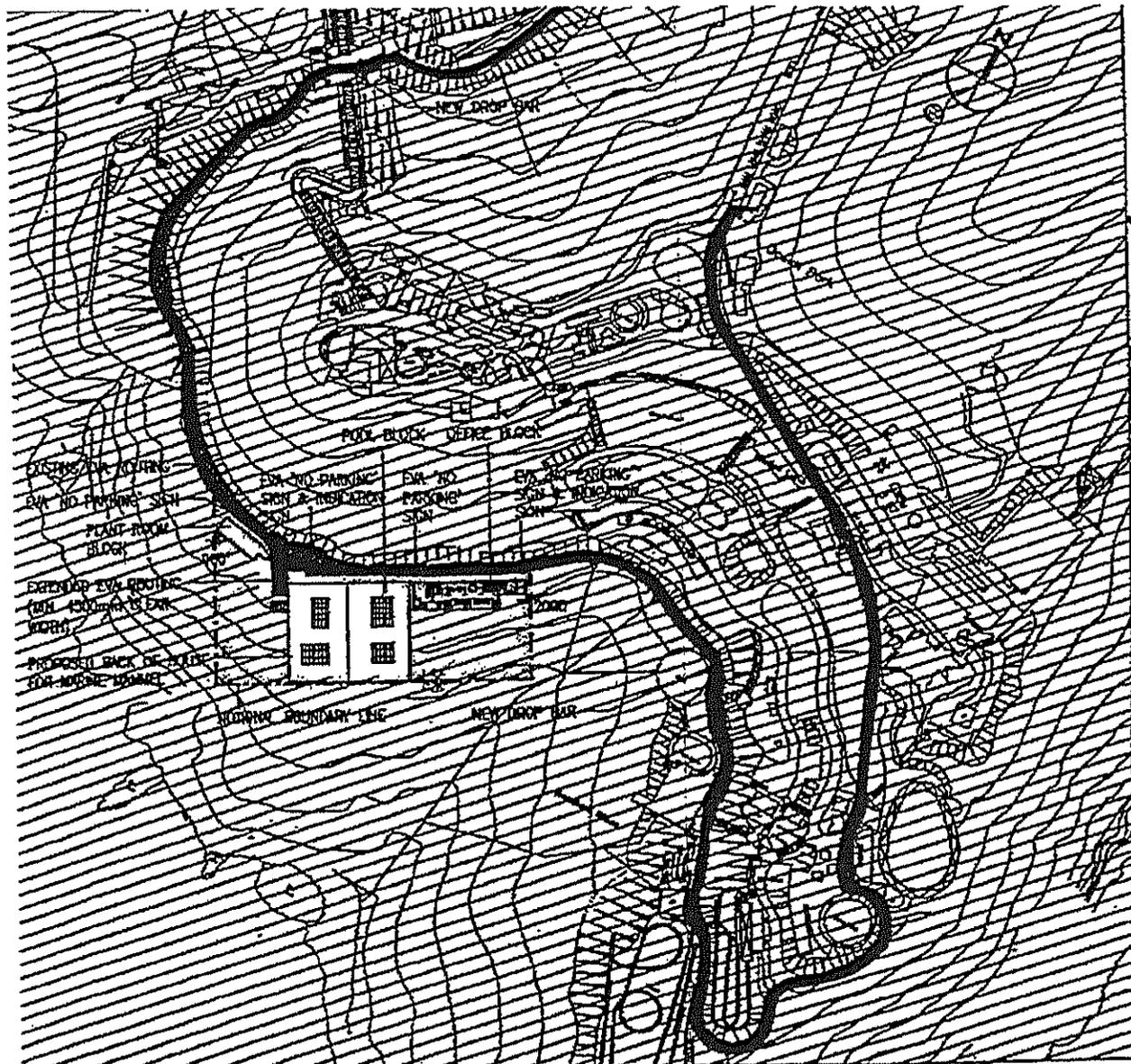


Site Tel. No. : 2580 6083
Site Fax No. : 2580 6115

(updated on 1 August 2007)

(updated on 1 August 2007)

Appendix B



BU REF. BU 2/2012/06

FSD REF. FP 8/7720 'P' 1

NOTE:

BLOCK PLAN / EVA PLAN

SCALE 1:2000 SITE LOCATION PLAN SCALE 1:5000

LEGENDS (FOR ALL BLOCK)

A	20/02/06	Yusuf Adnan 1
-	22/04/06	Yusuf Yusof
REV.	DATE	DESCRIPTION
REVISION ISSUE		

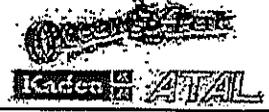
Appendix C

GENERAL CONTRACTOR & COMPLETION DATE				MONTHS											
Activity	Start Date	Finish Date	Typical	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Contract Commencement & Completion Date															
VHCCD01	0	28-03-2007	0	◆ Date of Commencement											
VHCCD02	0	28-04-2008	0	◆ Date of Completion											
Key Dates															
VHAKD01	0	28-03-2007	0	◆ The Vet Hospital Site											
VHAKD10	0	13-05-2007	0	◆ To all locations for the installation of underground services for substrate, fresh water, uPVC ducting and drainage services beyond the Vet Hospital site											
Key Dates															
VHAKD01	0	28-01-2008	0	◆ Complete all works to the Plant Room Block											
VHAKD02	0	16-07-2007	0	◆ Complete the installation of underground service for substrate, fresh water, uPVC ducting and drainage services beyond the Vet Hospital site											
VHAKD03	0	05-03-2008	0	◆ Complete all physical works and fulfil the requirements of Clause 24.3(a) of General Conditions necessary to obtain an occupation permit for the Vet Hospital											
VHAKD04	0	16-03-2008	0	◆ Complete all interiors to the Pool Block and Office Block and allow access to the Employer for the installation of Employer supply fixtures and fittings											
VHAKD05	0	25-04-2008	0	◆ Achieve Substantial Completion of the Works											
Programme of Milestones															
VHKA01	0	31-03-2007	0	◆ Submission of Site Safety Supervision Plan											
VHKA02	0	30-04-2007	0	◆ Submission of the preliminary construction programme and reviewed without objection by the Project Manager											
VHKA03	0	31-05-2007	0	◆ Complete substantially site establishment and mobilisation											
VHKA04	0	30-05-2007	0	◆ All concrete footing completed											
VHKA05	0	31-07-2007	0	◆ Plant room concrete roof completed ◆ Achieve the Key Date KD-02											
VHKA06	0	30-08-2007	0	◆ Complete WPD Form WW146 and FSD Form 3-4 submission											
VHKA07	0	31-10-2007	0	◆ All other rooms at Plant Block ready for MEIE installation											
VHKA08	0	30-11-2007	0	◆ Complete Pool Block concrete to pools and ground floor slab											
VHKA09	0	31-12-2007	0	◆ Complete Pool Block steel roof fabrication											

Start Date: 26-03-2007
 Finish Date: 27-07-2008
 Date Date: 26-03-2007
 Run Date: 27-04-2007 15:28

KADEN - ATAL JOINT VENTURE
 Cowan Park Master Redevelopment
 Contract No. CSD1 - Vet Hospital
 Construction Programme

Sheet 1 of 16



Item	Quantity	Unit	Value

Code	Start	End	Actual	Remarks
VHKA10	0	31-01-2008*	0	
VHKA11	0	29-02-2008*	0	
VHKA12	0	31-03-2008*	0	
VHKA13	0	30-04-2008*	0	
Site Safety				
VHTPSM01	0	31-03-2007	0	◆ Site Safety Supervision Plan
VHTPSM02	0	23-04-2007	0	◆ Submit Safety Plan
VHTPSM03	0	18-04-2007	0	◆ Submit Risk Assessment of the Works
Quality Management				
VHTPQM01	0	23-04-2007	0	◆ Submit Quality Plan
VHTPQM02	0	31-03-2007	0	◆ Submit Site Supervision Plan
Environmental Assessment				
VHTPEM01	0	02-04-2007	0	◆ Submit Waste Management Plan
VHTPEM02	0	02-04-2007	0	◆ Submit Environmental Risk Assessment Report
VHTPEM03	0	02-04-2007	0	◆ Apply for Construction Noise Permit
VHTPEM04	0	02-04-2007	0	◆ Apply for Water Discharge License
VHTPEM05	0	23-04-2007	0	◆ Submit Contractor Environmental Management Plan
Permits & Approvals				
VHVPSS005	0	26-03-2007	0	◆ Obtain EDC approval on the commencement of Works
VHVPSS010	0	30-04-2007	0	◆ Submit Form WWD46 (Part 1 & 2) to WSD
VHVPSS012	0	30-04-2007	0	◆ Submission of FSI 314 Stage 1 to FSD
VHVPSS013	0	01-06-2007	0	◆ Application to EPC for approval of installation of exhaust pipe for emergency generator
VHVPSS015	0	30-06-2007	0	◆ Submission of Form 425 to FSD (Before commencement of MVAC installation)
VHVPSS020	0	04-07-2007	0	◆ Apply for electricity meter from HK Electric Co.
VHVPSS025	0	01-09-2007	0	◆ Submission of Form 24 to EMSD (Before commencement of IRV installation)
VHVPSS030	0	01-11-2007	0	◆ Submission of WRS to HEC for verification
VHVPSS040	0	09-02-2008	38	◆ Submit Form WWD46 (Part 4) & WWO122 to WSD
VHVPSS050	0	09-03-2008	38	◆ Issue Water Certificate by WSD
VHVPSS070	0	10-03-2008	0	◆ Submission of Form 501 to FSD
VHVPSS071	1	24-03-2008	24-03-2008	◆ 1st inspection of FG installation by FSD
VHVPSS072	14	25-03-2008	07-04-2008	◆ Rectify defects as per FSD's comment

Code	Start	End	Days	Notes	
VHTDSA220	7	23-04-2007	29-04-2007	15	▲▲▲ Conduct plant and laboratory trials for waterproof concrete
VHTDSA230	7	14-06-2007	20-05-2007	16	▲▲▲ Construct trial concrete panels for waterproof concrete
Structural Steel Roof					
VHTDSA310	0	14-06-2007		1	◆ Submit structural steel roof erection method statement
VHTDSA320	0	23-05-2007		23	◆ Submit fire resisting coating material for the PM's approval
VHTDSA330	0	17-07-2007		1	◆ Submit structural steel roof shop drawings for the PM's approval
Roof Cladding System					
VHTDSA410	0	24-07-2007		37	◆ Submit shop drawings of roof cladding system & skylights for the PM's approval
VHTDSA420	0	14-06-2007		37	◆ Submit sample of roof cladding & skylights for the PM's approval
VHTDSA430	14	04-09-2007	17-09-2007	37	▲▲▲ Prepare mock-up for roof cladding & skylights
Architectural Glazing Windows and Partitions					
VHTDSA520	0	25-05-2007		66	◆ Submit shop drawings and conduct mock-up for glazing
VHTDSA530	0	09-08-2007		66	◆ Conduct painting trial
VHTDSA533	0	24-06-2007		51	◆ Submit shop drawings of aluminium windows, louvers, doors, roller shutters etc for the PM's approval
VHTDSA540	0	09-07-2007		56	◆ Prepare material submission on STA-CRETE for the PM's approval
VHTDSA542	14	06-09-2007	10-09-2007	55	▲▲▲ Prepare mock panel for STA-CRETE
VHTDSA545	0	22-08-2007		39	◆ Submit sliding water gate design & shop drawings for the PM's approval
VHTDSA550	21	06-11-2007	28-11-2007	59	▲▲▲ Prepare full scale mock up sliding water gate and factors of isolation test
M&E and Building Services					
Structural Steel Fabrication					
VHKF.01	0		31-03-2007*	0	◆ Upon award of the Contract
VHKF.02	0		30-04-2007*	0	◆ Submission on LIT Shop Drawings, Vertical Line Plumbing Diagram and Fire Services Drawings
VHKF.03	0		31-05-2007*	0	◆ Submit shop drawing for Life Support System
VHKF.04	0		20-06-2007*	0	◆ LIT shop drawings completed and reviewed without objection by the Project Manager
VHKF.05	0		31-07-2007*	0	◆ Provision of evidence for the procurement of the major equipment of the Life Support System
VHKF.06	0		31-08-2007*	0	◆ Provision of evidence for the procurement of the major equipment of Building Services System
VHKF.07	0		30-09-2007*	0	◆ Complete the installation of underground services for sewerage, fresh water, LVP, cooling and drainage services beyond the Vet Hospital site
VHKF.14	0		30-04-2008*	0	◆ Achieve Substantial Completion of Core Centre F

Shop Drawings

VHTEMSD010	35	25-03-2007	30-04-2007	0
VHTEMSD020	60	25-03-2007	24-05-2007	0
VHTEMSD030	35	26-03-2007	30-04-2007	0
VHTEMSD040	60	26-03-2007	24-05-2007	0
VHTEMSD050	35	26-03-2007	30-04-2007	0
VHTEMSD060	67	25-03-2007	31-05-2007	0
VHTEMSD070	35	01-05-2007	07-06-2007	0
VHTEMSD080	31	15-05-2007	14-06-2007	0
VHTEMSD090	7	15-05-2007	21-06-2007	0

- Prepare fire services equipment shop drawings
- Prepare electrical equipment shop drawings
- Prepare lift shop drawings
- Prepare MVAC shop drawings
- Prepare plumbing & drainage equipment drawings
- Prepare Life Support System shop drawings
- Review of shop drawings by the Project Manager
- Reconciliation of shop drawings
- Approval on submitted shop drawings

VHUEQ010	20	22-06-2007	19-09-2007	0
VHUEQ020	120	22-06-2007	19-10-2007	0
VHUEQ030	90	22-06-2007	18-09-2007	0
VHUEQ040	90	22-06-2007	19-09-2007	0
VHUEQ050	120	22-06-2007	19-10-2007	12
VHUEQ060	120	22-06-2007	19-10-2007	0

- Fire services equipment - Manufacture & Delivery
- Electrical equipments - Manufacture & Delivery
- MVAC equipments - Manufacture & Delivery
- P & D equipments - Manufacture & Delivery
- Lift - Manufacture & Delivery
- Life support system - Manufacture & Delivery

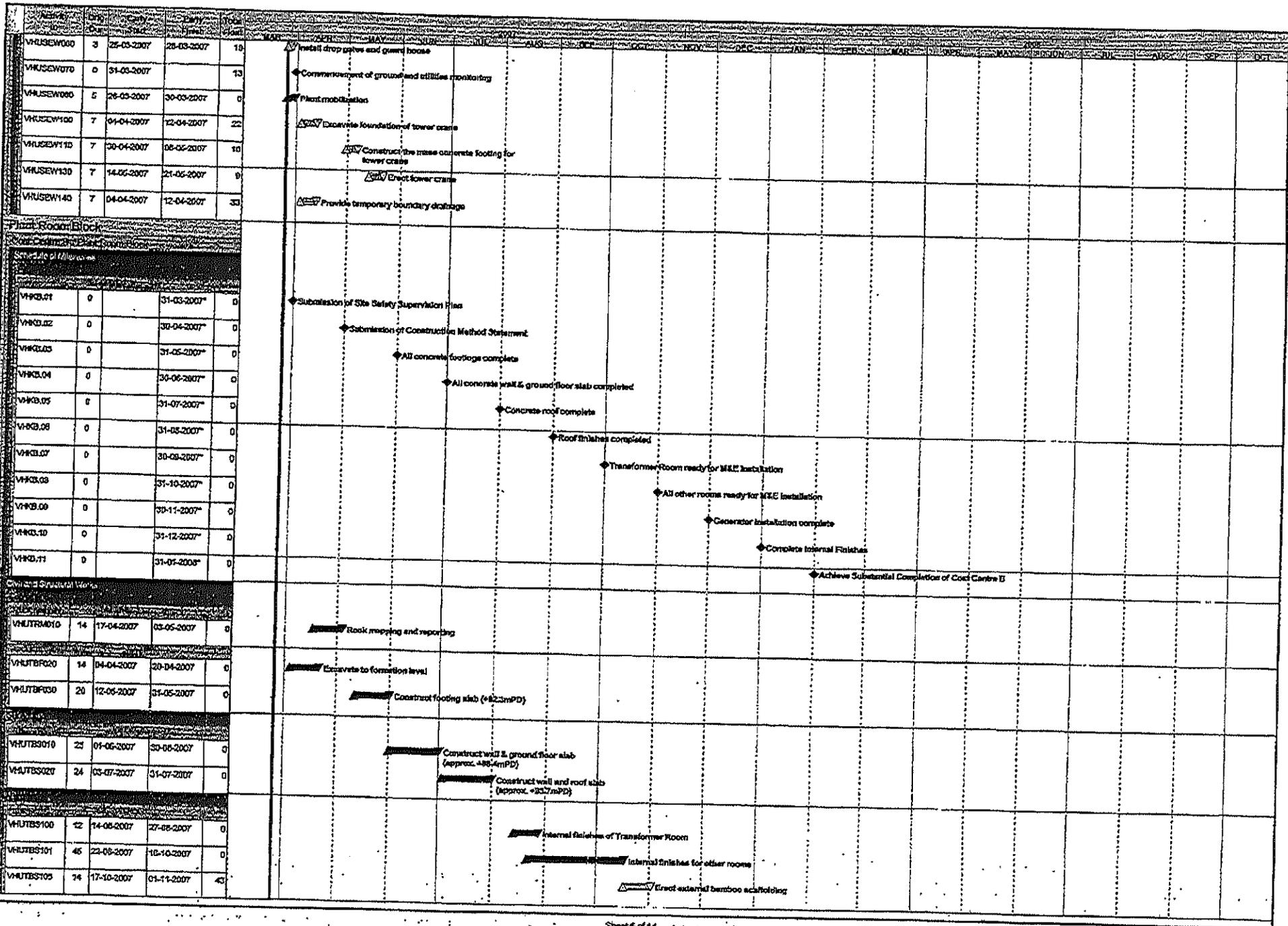
VHUEQ100	3	13-06-2007	15-06-2007	39
VHUEQ110	3	12-09-2007	14-09-2007	33
VHUEQ120	3	12-09-2007	14-09-2007	05
VHUEQ150	3	13-06-2007	15-06-2007	39
VHUEQ140	3	13-06-2007	15-06-2007	39
VHUEQ180	7	06-09-2007	14-09-2007	13

- Fire services equipment factory test
- Electrical equipment factory test
- Lift factory test
- MVAC equipment factory test
- P & D equipment factory test
- Lift Support System factory test

Site Establishment Works

VHUSEW010	25	25-03-2007	25-04-2007	30
VHUSEW020	5	25-03-2007	30-03-2007	36
VHUSEW030	6	25-03-2007	03-04-2007	0
VHUSEW040	10	28-03-2007	09-04-2007	61
VHUSEW050	5	25-03-2007	30-03-2007	13

- Contractor's storage shed and site accommodation
- Joint topographical survey
- General site clearance (including tree-felling)
- Erect safety fence along downhill side of excavation limit on slope
- Condition survey for adjacent structures



Schedule of Milestones					
ID	Start	End	Duration	Notes	
VHUTBS116	30	02-11-2007	06-12-2007	43	
VHUTBS120	14	09-06-2007	24-06-2007	0	
VHUTBS130	7	25-06-2007	31-08-2007	0	
Roof Finishes					
Watertightness test to roof slab					
Electrical Milestones					
VHKE.06	0		30-11-2007*	0	◆ Complete installation of Switchboards
VHKE.10	0		31-12-2007*	0	◆ Energization of Switchboards
MEP Milestones					
VHUTBE00	0	26-06-2007		0	◆ Handover HEC HV Switchroom & Transformer Room for E&M Works
VHUTBE06	0	26-07-2007		0	◆ Collect equipments from HK Electric Co.
VHUTBE07	0	13-09-2007		0	◆ Inspect Switchroom and Transformer Room by HEC
VHUTBE08	30	07-09-2007	30-09-2007	0	◆ Install collected equipments and EB equipments
VHUTBE09	0	01-10-2007		0	◆ Handover of Switchroom & Transformer Room to HEC
VHUTBE09S	45	01-10-2007	14-11-2007	0	◆ Install transformer by HEC
MEP Milestones					
VHUTBE100	0	24-09-2007*		0	◆ Handover of other rooms for E&M Works
VHUTBE110	42	20-10-2007	30-11-2007	0	◆ Install LV switchboard
VHUTBE120	63	24-09-2007	30-11-2007	0	◆ Install Generator and Fuel Oil Tank
VHUTBE130	86	24-09-2007	27-12-2007	0	◆ Install building services system
MEP Milestones					
VHUTBE200	30	01-12-2007	30-12-2007	0	◆ Testing of LV Switchboard
VHUTBE210	1	31-12-2007	31-12-2007	0	◆ First energization of LV Switchboard
VHUTBE220	45	02-12-2007	15-01-2008	13	◆ Testing of Generator and Fuel Oil Tank
VHUTBE230	32	28-12-2007	28-01-2008	0	◆ Testing of building services system
Pool Block					
Structural Milestones					
VHIC.01	0		31-03-2007*	0	◆ Submission of Site Safety Supervision Plan
VHIC.02	0		30-04-2007*	0	◆ Submission of Construction Method Statement
VHIC.03	0		31-05-2007*	0	◆ All concrete footings complete
VHIC.04	0		30-06-2007*	0	◆ Sub-structure completed
VHIC.05	0		31-07-2007*	0	◆ All roof steel shop drawings completed and reviewed without objection by the Project Manager

Activity	Start	End	Duration	ES	EF	LS	LF	Activity
VHKC.06	0	31-08-2007*	0					◆ Complete concrete work to Backwash Tank and LSS plant reservoir
VHKC.07	0	30-09-2007*	0					◆ Complete concrete work to Balance Tank
VHKC.08	0	31-10-2007*	0					◆ Lower Ground Floor ready for M&E Installation
VHKC.09	0	30-11-2007*	0					◆ Complete concrete to pools and ground floor slab
VHKC.10	0	31-12-2007*	0					◆ Complete steel roof fabrication
VHKC.11	0	31-01-2008*	0					◆ Complete steel roof erection
VHKC.12	0	29-02-2008*	0					◆ Complete all roof finishes
VHKC.13	0	31-03-2008*	0					◆ All internal finishes complete
VHKC.14	0	30-04-2008*	0					◆ Achieve Substantial Completion of Cost Centre C
Civil and Structural Works								
VHUEVA010	14	17-04-2007	03-06-2007	0				Excavate fencing for falsework
VHUEVA020	14	04-05-2007	19-05-2007	0				Erect falsework and formwork for EVA slab
VHUEVA030	28	28-06-2007	30-06-2007	0				Construct EVA slab
VHUPBF20	14	08-06-2007	23-06-2007	0				Excavate to footing formation level at Grid "F"
VHUPBF30	15	16-06-2007	31-06-2007	0				Construct pad footing at Grid "F"
VHUPBF40	15	07-06-2007	25-06-2007	0				Construct column and bearing walls at Grid "F"
VHUPBF20	14	03-05-2007	17-05-2007	0				Excavate to footing & screen wall formation level at Grid "G"
VHUPBF30	15	10-05-2007	23-05-2007	0				Construct pad footing at Grid "G"
VHUPBF40	20	28-05-2007	20-06-2007	0				Construct screen wall & columns at Grid "G"
VHUPBF60	9	21-06-2007	30-06-2007	0				Lay subsoil drains and mass concrete behind screen wall
VHUPBF20	14	23-04-2007	09-05-2007	0				Excavate to footing & screen wall formation level at Grid "H"
VHUPBF30	18	09-05-2007	25-06-2007	0				Construct pad footing at Grid "H"
VHUPBF40	20	26-05-2007	18-06-2007	0				Construct screen wall & columns at Grid "H"
VHUPBF60	9	21-06-2007	30-06-2007	0				Lay subsoil drains and mass concrete behind screen wall
VHUPBF20	10	17-04-2007	27-04-2007	0				Excavate to footing formation level at Grid "J"
VHUPBF30	10	10-05-2007	21-05-2007	0				Construct pad footing at Grid "J"
VHUPBF40	12	19-05-2007	01-06-2007	0				Construct column at Grid "J"
VHUPBF20	10	11-04-2007	21-04-2007	0				Excavate to footing formation level at Grid "K"
VHUPBF30	10	05-05-2007	16-05-2007	0				Construct pad footing at Grid "K"

Activity	Code	Start	End	Days	Notes
VHUPBRK40	12	15-05-2007	28-05-2007	0	Construct columns at Grid "K" (1st Floor)
VHUPBRK60	12	24-05-2007	06-06-2007	0	Construct columns at Grid "K" (2nd Floor)
VHUPBR20	10	04-04-2007	18-04-2007	0	Excavate to footing formation level at Grid "L"
VHUPBFL30	10	28-04-2007	10-05-2007	0	Construct pad footing at Grid "L"
VHUPBFL40	14	15-05-2007	30-05-2007	0	Construct columns at Grid "L" (1st Floor)
VHUPBFL80	14	12-05-2007	28-05-2007	0	Construct columns at Grid "L" (2nd Floor)
VHUPRMO010	14	17-04-2007	30-04-2007	0	Rock mapping and reporting for footing at Grid J to Grid L
VHUPRMO020	14	10-06-2007	22-06-2007	0	Rock mapping and reporting for footing at Grid G to Grid H
VHUPRMO025	14	16-06-2007	22-06-2007	0	Rock mapping and reporting for footing at Grid F
VHUPBFI10	10	31-05-2007	11-06-2007	0	Construct tie beam at Grid "K" & "L" (+72.2mPD)
VHUPBFI20	10	05-06-2007	20-06-2007	0	Construct tie beam at Grid "K" & "J" (+75.0mPD)
VHUPBS010	4	07-06-2007	11-06-2007	0	Erect falsework & formwork for Backwash Tank - base slab
VHUPBS020	8	12-06-2007	21-06-2007	0	Construct Backwash Tank - base slab (+78.5mPD)
VHUPBS030	14	25-06-2007	11-07-2007	0	Construct Backwash Tank - walls & columns
VHUPBS040	14	21-06-2007	07-07-2007	0	Erect falsework & formwork for Lower G/F slab
VHUPBS045	25	20-06-2007	02-08-2007	0	Construct Lower G/F slab (+78.75mPD)
VHUPBS050	28	29-07-2007	24-08-2007	0	Construct external wall to GP
VHUPBS060	17	20-07-2007	09-08-2007	0	Construct Transfer, Break and Degass Tank - wall and soffit slab
VHUPBS070	14	30-07-2007	14-08-2007	0	Construct Dolphin Pool 1 and 2 - base slab
VHUPBS080	14	09-08-2007	24-08-2007	0	Construct Dolphin Pool 3 and 4 - base slab
VHUPBS090	14	21-08-2007	05-09-2007	0	Construct Holding Pool 1 & 2 and Quarantine Pool - base slab and Maintenance Platform (Floor +84.2mPD)
VHUPBS100	22	21-08-2007	15-09-2007	0	Construct Dolphin Pool 1 and 2 - wall
VHUPBS110	22	03-09-2007	29-09-2007	0	Construct Dolphin Pool 3 and 4 - wall
VHUPBS120	18	07-08-2007	29-09-2007	0	Construct Holding Pools & Quarantine Pool - wall
VHUPBS130	21	27-09-2007	17-10-2007	0	Construct Ground Floor - base slab (+87.6mPD)
VHUPBS140	24	15-10-2007	08-11-2007	0	Construct Ground Floor - walls & columns
VHUPBS141	14	19-10-2007	30-10-2007	40	Water-tightness test to Backwash Tank
VHUPBS150	74	07-09-2007	20-09-2007	85	Water-tightness test to Transfer Tank, Break Tank and Degass Tank
VHUPBS160	14	07-11-2007	20-11-2007	80	Water-tightness test to Dolphin, Holding Pools and Quarantine Pool

Code	Start	End	Duration	Days	Notes
VHUPBS300	00	14-08-2007	29-11-2007	13	
VHUPBS310	0	25-10-2007		15	
VHUPBS320	30	10-11-2007	14-12-2007	0	
VHUPBS330	30	22-11-2007	27-12-2007	0	
VHUPBS340	12	18-12-2007	03-01-2008	0	
VHUPBS350	21	04-01-2008	28-01-2008	0	
VHUPBS360	30	23-01-2008	29-02-2008	0	
RESULTS OF VISITATIONS					
VHUPBS311	10	19-09-2007	02-10-2007	45	
VHUPBS312	10	18-08-2007	27-08-2007	45	
VHUPBS313	18	10-10-2007	27-10-2007	80	
VHUPBS316	30	11-10-2007	14-11-2007	28	
VHUPBS320	60	19-11-2007	29-01-2008	23	
VHUPBS340	16	13-11-2007	05-12-2007	58	
VHUPBS350	80	06-12-2007	18-02-2008	60	
RESULTS OF VISITATIONS					
VHUPBS311	0		31-01-2008*	0	
VHUPBS313	0		31-03-2008*	0	
RESULTS OF VISITATIONS					
VHUPBE000	0	28-09-2007		0	
VHUPBE005	0		19-10-2007	0	
VHUPBE070	126	28-09-2007	31-01-2008	0	
VHUPBE079	90	20-10-2007	17-01-2008	38	
VHUPBE080	40	24-11-2007	02-01-2008	37	
VHUPBE082	40	24-11-2007	02-01-2008	61	
VHUPBE083	69	24-11-2007	31-01-2008	22	
RESULTS OF VISITATIONS					
VHUPBE090	0	10-01-2008		0	
VHUPBE100	30	10-01-2008	09-02-2008	36	
VHUPBE109	30	10-01-2008	04-02-2008	14	

Offsite fabricate structural steel roof segments

1st delivery of structural steel roof segments

Connect up the structural roof truss segments on-site (by bolted connection method)

Erect structural roof truss segments

Erect temporary working platform under structural roof truss

Apply fire-proof cementitious coating on structural steel truss

Install roof cladding, skylights and fall arrest system

Epoxy lining on internal face of Beddown Tank

Epoxy lining on internal face of Transfer Tank, Grease Tank and Drip Tank

Epoxy lining on internal face of Dolphin Holding Pools and Quarantine Pool

Internal finishes for Lower GIF

Internal finishes for Ground Floor

Erect external barbed wire fencing

External finishes

Complete installation of Life Support System

Life Support Systems tested and commissioned and 2nd installation tested and commissioned

Starting handover of Lower GIF for E&M Works (in 4 Phases Handover)

Completely handover of Lower GIF for E&M Works

Install Life Support System

Install electrical service system

Install fire services system

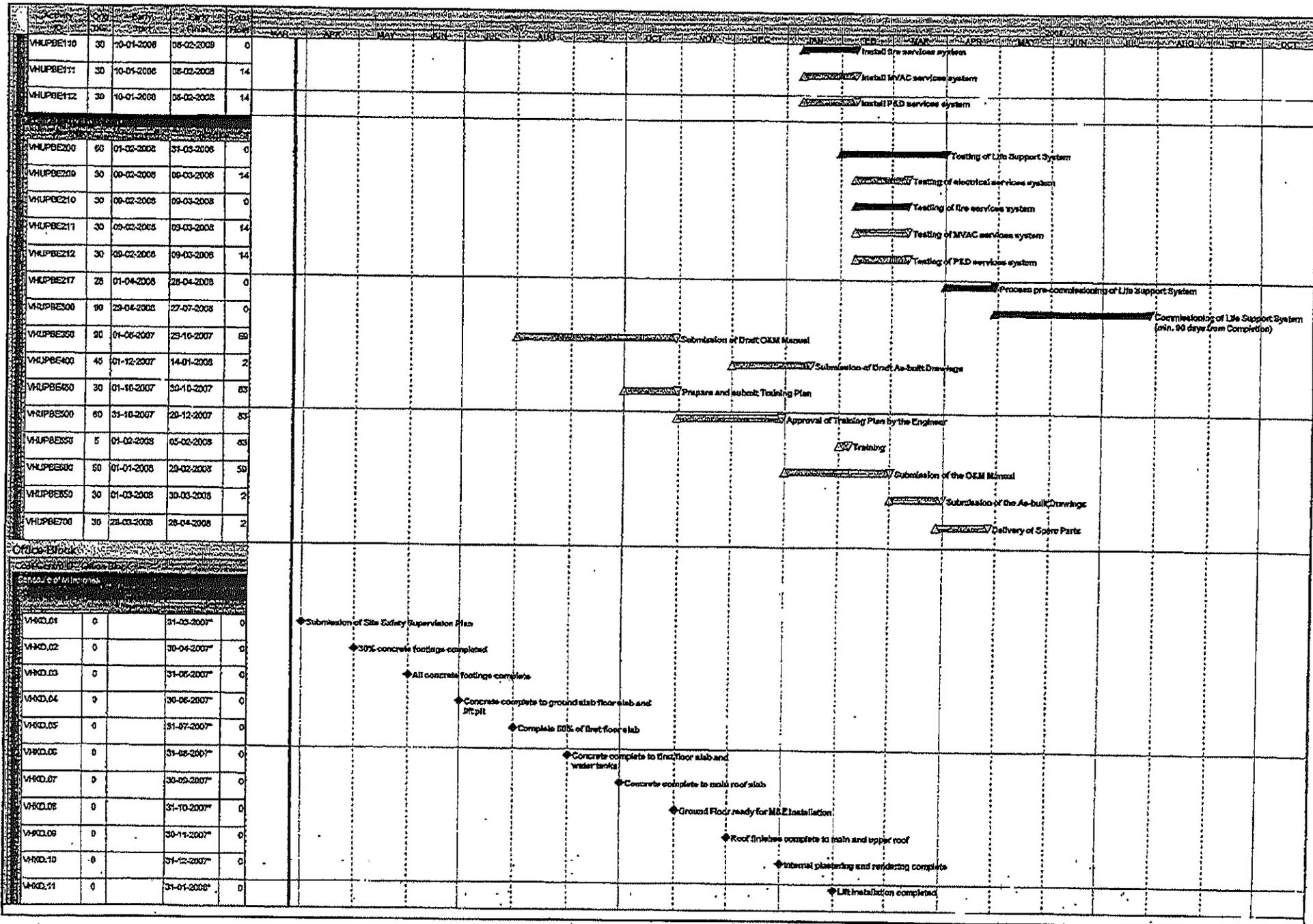
Install HVAC services system

Install PSD services system

Handover of GIF for E&M Works

Install raised platform system & RO2 water gas

Install electrical service system



Activity	Start	End	Duration	Notes	
VHUCD.12	0	29-02-2007	0		
VHUCD.13	0	31-03-2007	0		
VHUCD.14	0	30-04-2007	0		
Civil and Structural Works					
VHUCBFA15	12	07-05-2007	19-05-2007	3	Excavate to footing formation level at Grid "A"
VHUCBFA20	12	15-05-2007	28-05-2007	3	Construct pad footing at Grid "A"
VHUCBFA30	15	24-05-2007	09-06-2007	12	Construct columns & bearing wall at Grid "A"
VHUCBFB15	12	17-04-2007	30-04-2007	7	Excavate to footing formation level at Grid "B"
VHUCBFB20	12	10-05-2007	23-05-2007	1	Construct pad footing at Grid "B"
VHUCBFB30	15	19-05-2007	05-06-2007	1	Construct columns & bearing wall at Grid "B"
VHUCBFC15	10	04-04-2007	16-04-2007	0	Excavate to footing formation level at Grid "C"
VHUCBFC20	10	19-04-2007	30-04-2007	0	Construct pad footing at Grid "C"
VHUCBFC30	15	02-05-2007	19-05-2007	12	Construct columns & bearing wall at Grid "C"
VHUCBMD010	14	17-04-2007	30-04-2007	0	Rock mapping and reporting for Grid C
VHUCBMD020	14	10-05-2007	23-05-2007	1	Rock mapping and reporting for Grid A & B
VHUCBFT10	10	29-05-2007	08-06-2007	4	Construct tie bases at Grid "B" & "C" (+30.22mPD)
VHUCBS010	5	06-06-2007	11-06-2007	1	Erect falsework & formwork for ground floor slab and R/R pit
VHUCBS020	18	08-06-2007	29-08-2007	1	Construct L/R Pit and Grouped Floor - slab
VHUCBS030	28	20-06-2007	23-07-2007	5	Construct First Floor - slab and wall
VHUCBS040	28	14-07-2007	16-08-2007	11	Construct Main Roof Floor - slab and wall and P.S. water tank - base slab
VHUCBS050	28	08-06-2007	08-09-2007	11	Construct Upper Roof - slab and wall and P.S. water tank - wall and roof slab
VHUCBS051	10	28-09-2007	10-10-2007	10	Epoxy Doping on internal face of P.S. water tank
VHUCBS060	14	17-10-2007	30-10-2007	19	Water-tightness test for P.S. Water Tank
VHUCBS090	60	10-09-2007	22-10-2007	17	Internal finishes for Ground Floor
VHUCBS091	60	11-09-2007	21-11-2007	13	Internal finishes for First Floor
VHUCBS096	90	23-10-2007	08-02-2008	17	Laboratory fittings and benches
VHUCBS320	14	28-08-2007	15-10-2007	11	Erect external bamboo scaffolding
VHUCBS330	60	16-10-2007	25-12-2007	37	External finishes

Code	Start Date	End Date	Days	Remarks	
VHUCS340	13	16-10-2007	05-11-2007	11	
VHUCS350	7	11-11-2007	17-11-2007	18	
Schedule of Milestones					
VHUCS360	0		31-10-2007*	0	
VHUCS370	0		20-02-2008*	0	
Schedule of Milestones					
VHUCS380	0	09-10-2007*		0	
VHUCS390	05	20-10-2007	12-01-2008	107	
VHUCS400	06	20-10-2007	12-04-2008	63	
VHUCS410	08	09-10-2007	27-12-2007	213	
VHUCS420	00	00-10-2007	07-12-2007	43	
Schedule of Milestones					
VHUCS430	0	31-10-2007*		0	
VHUCS440	03	31-10-2007	03-01-2008	8	
VHUCS450	05	31-10-2007	03-01-2008	16	
VHUCS460	05	31-10-2007	03-01-2008	16	
VHUCS470	43	31-10-2007	14-12-2007	36	
VHUCS480	46	31-10-2007	14-12-2007	36	
Schedule of Milestones					
VHUCS490	21	04-01-2008	24-01-2008	3	
VHUCS500	04	04-01-2008	07-03-2008	16	
VHUCS510	04	04-01-2008	07-03-2008	16	
VHUCS520	04	15-12-2007	19-02-2008	38	
VHUCS530	04	15-12-2007	16-02-2008	38	
External Works					
Schedule of Milestones					
VHUCS540	0		31-03-2007*	0	
VHUCS550	0		30-04-2007*	0	
VHUCS560	0		31-05-2007*	0	
VHUCS570	0		30-08-2007*	0	
<p>◆ Submission of Site Safety Supervision</p> <p>◆ Submission of Construction Method Statement</p> <p>◆ Submission of Material</p> <p>◆ Approval of Construction Method and Material Complete material procurement and delivery</p>					
<p>▲ Complete/ Roof Flashing</p> <p>▲ Water-tightness test to 40 roof</p> <p>◆ Complete delivery of LTB Switchboard on site</p> <p>◆ Complete Installation of LTB Complete delivery of major equipment of the Building Services System to the Site</p> <p>◆ Handover of Ground Floor for E&M Works</p> <p>▲ Install electrical services system</p> <p>▲ Install fire services system</p> <p>▲ Install MVAC services system</p> <p>▲ Install P&D services system</p> <p>◆ Handover of 0/F for E&M Works</p> <p>▲ Install E&T</p> <p>▲ Install electrical services system</p> <p>▲ Install fire services system</p> <p>▲ Install MVAC services system</p> <p>▲ Install P&D services system</p> <p>▲ Testing of LTB</p> <p>▲ Testing of electrical services system</p> <p>▲ Testing of fire services system</p> <p>▲ Testing of MVAC services system</p> <p>▲ Testing of P&D services system</p>					

Work Item	Start	End	Duration	Notes	
VHKE05	0	31-07-2007	0		
VHKE06	0	30-09-2007	0	Complete all underground services installations area beyond the boundary of Vet Hospital site	
VHKE13	0	30-04-2008	0	Complete all underground services to areas beyond the boundary of the Vet Hospital site	
Ground Works					
VHUEW005	12	02-04-2007	16-04-2007	75	Remove and cap off existing irrigation pipe
VHUEW010	21	13-06-2007	09-07-2007	0	Install fresh water intake (80mm dia. D.I. pipe)
VHUEW020	21	13-06-2007	09-07-2007	0	Install subwater & flooding water intake (200mm dia. uPVC pipe)
VHUEW030	21	13-06-2007	09-07-2007	0	Remove socket the hydrant and install the service water intake (100mm dia. M.S. pipe)
VHUEW040	21	13-06-2007	09-07-2007	0	Install foul water drain (50mm dia. D.I. pipe)
VHUEW060	21	13-06-2007	09-07-2007	0	Lay fibre optic signal & electrical cable ducts and ductwork
VHUEW060	12	03-07-2007	18-07-2007	0	Reinstate concrete pavement for Ocean Paving
VHUEW090	45	26-10-2007	17-12-2007	83	Construct stormwater drainage system (Grassed channels and catchpits)
VHUEW100	30	26-12-2007	30-01-2008	37	Reinstatement of existing slope
VHUEW110	46	19-01-2008	14-03-2008	37	Tree-planting work
VHUEW120	0	29-09-2007	0	Handover of underground services for ECM Works	

Appendix D

Summary of Environmental Mitigation Implementation Schedule

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages**			Relevant Legislation & Guidelines
					D	C	O	
		Noise Mitigation Measures	Work Site / during construction	Contractor		X		PN 2/93 & EIAO
5.4.15		a) Use of Powered Mechanical Equipment in restricted hours without a valid Construction Noise Permit (CNP) in restricted hours is prohibited, i.e. 7pm and 7am or at any time on general holiday including Sunday						
		b) If CNP is grant, construction works shall accord with conditions of CNP						
		c) Every air compressor shall be fitted with a noise emission label issued in respect of that air compressor.						
		d) Every hand held percussive breaker shall be fitted with a noise emission label issued in respect of that hand held percussive breaker.						
		e) Noise barrier should be provided for site which have sufficient space for installation.						
		f) Idle equipment should be turned-off or throttled down. Noisy equipment should be properly maintained and used no more often than is necessary.						
		g) Noisy equipment and activities should be sited by the Contractor as far from close-proximity sensitive receivers as practical.						
		h) Idle equipment should be turned-off or throttled down. Noisy equipment should be properly maintained and used no more often than is necessary.						
		i) Construction plant should be properly maintained and operated.						
6.5.9		Air Mitigation Measures	Work Site / during construction	Contractor		X		Air Pollution Control Ordinance, Air Pollution Control (Construction Dust) Regulation,
		a) For Breaking, Excavation or earth moving, the working area shall be sprayed with water to maintain the entire surface wet.						
		b) Any debris shall be covered or stored in sheltered area and before debris is dumped into a chute, it is to be sprayed with water.						
		c) For use of vehicles, load of dusty materials shall be covered entirely						
		d) Open burning is prohibited.						
		e) A stockpile of dusty materials shall not extend beyond the pedestrian barriers, fencing or traffic cones.						
		f) Vehicle washing facilities shall be provided at every exit point.						
		g) Main haul road shall be sprayed with water.						

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages**			Relevant Legislation & Guidelines
					D	C	O	
7.11.1 - 7.11.2		Water Mitigation Measures	Work Site / during construction	Contractor		X		ETWB TCW No. 5/2005 and DSD TC No. 2/2004
		a) Temporary drainage system (U-channel) and the sedimentation tank should be installed and maintained frequently to prevent adverse impacts on the stream water						
		b) The slope should be covered up to avoid being washed into nearby stream by rain and local runoff.						
		c) Any discharges into drainage or sewage systems, inland or coastal waters, or into the ground (e.g. from septic tanks) are required a valid discharge licence, except the discharge of domestic sewage into foul sewers or the discharge of unpolluted water.						
		d) The terms and conditions of a discharge licence shall be complied						
		e) Manholes should always be adequately covered and temporarily sealed						
8.7.9- 8.7.12		Chemical Mitigation Measures	Work Site / during construction	Contractor		X		Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the Packaging Labelling and Storage of Chemical
		a) Chemical waste should be packed and stored in suitable containers in the Chemical Waste Store						
		b) There is displayed on every container of chemical waste a label						
		c) Chemical waste store shall not be used for any purpose other than the storage of chemical waste						
		d) Chemical waste store shall be enclosed on at least 3 sides by a wall, partition fence or a similar device, which shall not be less than the height of the tallest container						
		e) Chemical waste store shall not have any connection to any surface water drains or foul sewers						
		f) Chemical waste store shall be kept clean and dry						
		covering						
		accommodate						
		i) Every storage area where chemical waste is stored displays a warning panel, notice or marking at or near the entrance or the opening, indicate in bold legible red English words and Chinese characters not less than 6 cm in height on a white background						
		j) Chemical waste stored shall be properly located and easily accessed						
		k) Chemical should be properly stored in suitable containers						
		l) Chemical should be properly stored and sited on sealed areas to prevent leakage						
		leakage						

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages**			Relevant Legislation & Guidelines
					D	C	O	
8.7.5		Waste Mitigation Measures	Work Site / during construction	Contractor		X		Waste Disposal Ordinance ETWB TCW No. 31/2004
		a) The proposals in the waste management plan are able to meet the target of avoidance, minimization, recycling and reuse of C&D material with particular reference to the nature of the Contract						
		b) Trip-ticket system shall be properly implemented						
		c) Waste disposal points shall be provided and regular collection for disposal to keep the site tidy						
		d) Adequate and proper records with respect to waste management shall be kept						
		General Mitigation Measures						
		a) Trees adjacent to or within the construction site area shall be protected						

Part 4 CW-02 EM&A REPORTS (August 2007)

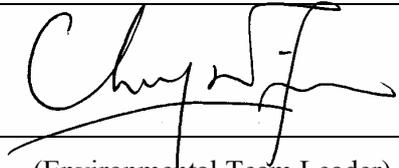
W. Hing Construction Co., Ltd

Contract No. CW02

**Ocean Park Redevelopment Project
- Astounding Asia**

**Monthly EM&A Report
(Version 1.0)**

August 2007

Certified By  (Environmental Team Leader)
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REMARKS:

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

CINOTECH accepts no responsibility for changes made to this report by third parties.

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Figure 1.1 Site Layout Plan

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- A Site Audit Summary
- B Environmental Mitigation Implementation Schedule (EMIS)
- C Event Action Plans
- D Tentative Works Programme

EXECUTIVE SUMMARY**Introduction**

This is the first monthly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited (Cinotech) for the Contract No. CW02 “Ocean Park Redevelopment Project – Astounding Asia” (hereinafter called “the Project”). The Project was commenced on 1st August 2007. This document reports the findings of the environmental auditing works conducted in August 2007.

The major construction activities undertaken in the reporting month included erection of the site office and site formation for the Birdhouse.

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. The first environmental site audit for the Project was conducted on 15th August 2007. Environmental site audits were conducted on 15th, 23rd and 30th August 2007. 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 and one Construction Noise Permit (CNP). One new CNP was issued to the Project by EPD in the reporting month.

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:

- Site Formation at Panda Attractions;
- Construction of the Birdhouse;
- Construction of the Flight Exercise Aviary;
- Construction of the Birds Central Kitchen;
- Construction of the Aviary;
- Builders and Building services works at the Aviary;
- Builders and building services works at the Birds Central Kitchen;
- Formation at the External Works.

1 INTRODUCTION

Background

- 1.1 The “Relocation and Long Term Operation Plan of Ocean Park” has been implemented 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 Figure 1.1.
- 1.2 An environmental impact assessment (EIA) report for “Relocation 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 October 2006 for the above project to Ocean Park Corporation as Permit Holder.
- 1.3 W. Hing Construction Co., Ltd. (the Contractor) was commissioned by the Employer to undertake the design and construction of the Contract No. CW02 “Ocean Park Redevelopment Project – Astounding Asia” (hereinafter call “the Project”).
- 1.4 The Project includes design and construction of:
 - (a) ETFE roof membrane system including the membrane, mullion, supporting frame, fixing to main structure, openings and all associated elements
 - (b) Aviary netting including mesh and supporting wire and fixing to main structures
 - (c) Artificial Rockwork including concrete foundations, internal structural supporting systems and fixing details
 - (d) All GRC works
 - (e) Skylight at back of house of Panda Habitat
 - (f) Nest box of Red Panda
 - (g) E&M supporting structures
 - (h) Balustrade
 - (i) Mural
 - (j) Exhibit glazing at the alligator, panda mountain viewing shelter, otter viewing, and goldfish exhibit
 - (k) Bamboo Rail including foundation
 - (l) Bamboo and Reed Barriers including foundation
 - (m) Planter Wall
 - (n) Fog system within Panda Habitat
 - (o) Glass Guard Rails
 - (p) Snow Production System
 - (q) Chilled rock system
 - (r) Fire Services
 - (s) “Rock Delta” Stone Wool Intensive Medium for the rice paddy wall
 - (t) Woven willow cladding for fence wall/gate
 - (u) Foundation for shelter support pole for panda mountain viewing shelter
 - (v) Kid’s climbing tree & giant panda climbing structure

1.5 Cinotech Consultants Ltd. (Cinotech) was commissioned by the Contractor to undertake the Environmental Team (ET) services for the Project. This is the first monthly EM&A Report summarizing the EM&A works for the Project in August 2007.

Project Organizations

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

- The Engineer and Project Environmental Team Leader (ETL) – Maunsell Consultants Asia Ltd.
- Contractor – W. Hing Construction Co. Ltd.
- Contractor Environmental Team (CET) – Cinotech Consultants Ltd.
- Independent Environmental Checker (IEC) – Mott MacDonald HK Ltd.

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

1.8 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. Terence Kong	Project ET Leader (ETL)	9097-9549	2552 1256
Contractor	Mr. Billy Lee	Project Manager	6193 4096	8343 9188
	Mr. Eddie Chiu	Environmental & Safety Manager	6105 4075	
Contractor's ET	Dr. Priscilla Choy	Contractor's Environmental Team Leader (CETL)	2151 2089	3107 1388
	Miss Grace Wong	ET Coordinator & Audit Team Leader	2151 2095	
	Mr. Henry Leung	Monitoring Team Leader	9779 7340	
IEC	Miss Florence Yuen	Independent Environmental Checker (IEC) Representative	2828 5757	28271823

Construction Programme

1.9 The construction activities undertaken in the reporting month were:

- Erection of Site Office; and
- Site formation of the Birdhouse.

Summary of EM&A Requirements

1.10 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 Sections 7.11 to 7.14 of the Contractor's EM&A Manual.

1.11 This report presents the environmental monitoring and audit works for the Project in August 2007.

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 15th, 23rd and 30th August 2007. The audit session on 23rd August 2007 was conducted with the representatives of ETL, IEC, ER, the Contractor and CET. 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
Water Quality	30/08/07	.Exposed u-channel was observed out of the Birds Kitchen. The Contractor was reminded to provide mitigation measures to prevent any silt running into the existing drainage system.	This item will be followed up in the next audit session.
Air Quality	23/08/07	Exposed slope was observed near the footpath of the common access road. The Contractor was recommended to compact the slope or to seal the edge of the site boundary with sandbags to prevent the silty run off from the site to the public access road.	This item was not rectified during the follow-up audit session. Follow up action was needed for the outstanding item.
	30/08/07	Exposed slope was observed on the footpath of the common access road. The Contractor was advised to provide mitigation measures to prevent any silt running out from the site boundary to the common road. (e.g. cover it with tarpauline)	This item will be followed up in the next audit session.
Waste/ Chemical Management	30/08/07	Suspected chemical was observed at Aviary Exercise. The Contractor was reminded to remove it from the site	This item will be followed up in the next audit session.

Status of Environmental Licensing and Permitting

- 2.4 All permits/licenses obtained are summarized in **Table 2.2**. One new CNP was issued to the Project in the reporting month.

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
Construction Noise Permit				

Permit No.	Valid Period		Details	Status
	From	To		
GW-RS0488-07	01/09/2007	01/03/2008	Construction Noise Permit for Ocean Park, Wong Chuk Hang, Hong Kong	Valid
Others:				
001022180	N/A	N/A	Notification Pursuant to Section 3(1) of the Air Pollution Control (Construction Dust) Regulation	Valid

Implementation Status of Environmental Mitigation Measures

- 2.5 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 B**.

Summary of Exceedances

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

Implementation Status of Event Action Plans

- 2.7 The Event Action Plans for air quality and construction noise are presented in **Appendix C**.

Summary of Complaints and Prosecutions

- 2.8 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:

- Generation of dust from stockpiles, haul road and vehicular movement on-site.
- Noise from operation equipment and machinery on-site.
- Storage of chemicals/fuel and chemical waste/waste oil on site.
- Surface runoff generated on rainy days.
- Larviciding against mosquito breeding in stagnant water should be carried out at least on a weekly basis.

Construction Program for the Next Month

3.2 The tentative construction program for the Project is provided in **Appendix D**.

4 CONCLUSIONS AND RECOMMENDATIONS

Conclusions

- 4.1 Two environmental site audits were performed in August 2007. 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 recommended:

Dust Impact

- To ensure water spray is applied for the dust emissive works, such as breaking, loading and unloading of soil materials
- To implement dust suppression measures on haul road, stockpiles and dry surfaces.

Noise Impact

- To space out noisy equipment and position as far away as possible from sensitive receivers.
- To review the works sequence of site activities so as to reduce the number of noisy equipment in concurrent operation.
- To provide temporary noise barriers for noisy activities, such as breaking works and drilling works.
- To employ quiet powered mechanical equipment if possible.
- To ensure compliance of CNP conditions during restricted-hour works.

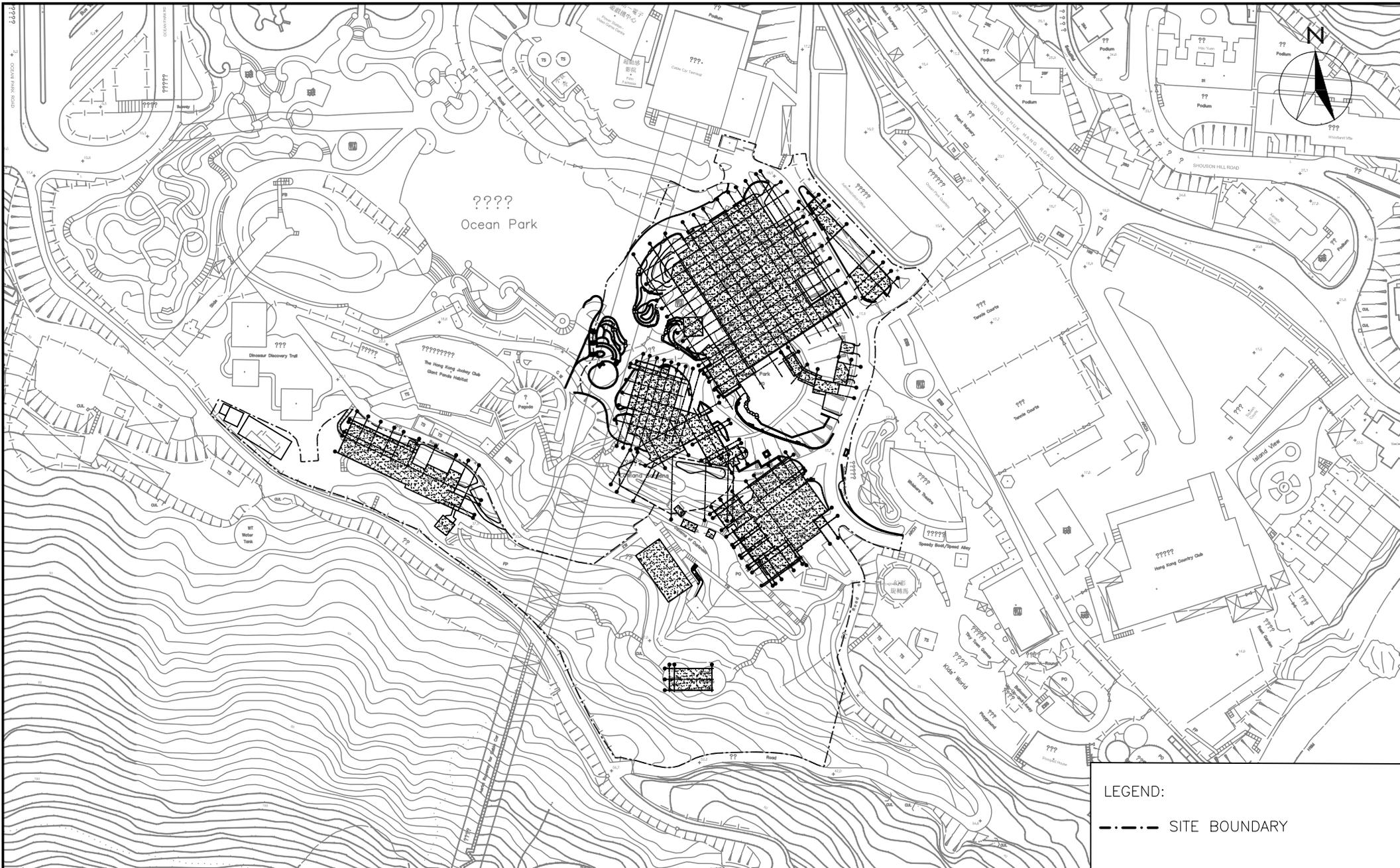
Water Quality Impact

- To identify any wastewater discharges from site.
- To regularly maintain the condition of u-channel, catch pits and wheel washing facilities on site.
- To regularly maintain the sediment control measures after rainstorms.
- To avoid water from accumulation on site and carry out larviciding against mosquito breeding for stagnant water when mosquito larvae are observed.

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 avoid improper handling or storage of oil drum on site.

FIGURE



LEGEND:

--- SITE BOUNDARY

CINOTECH
Cinotech Consultants Limited

CONTRACT NO. CW02
OCEAN PARK REDEVELOPMENT PROJECT – ASTOUNDING ASIA

SITE LAYOUT PLAN

SCALE	A4 1:2000	DATE	AUG 2007	
CHECK	EW	DRAWN	TL	
JOB No.	MA7025	DRAWING No.	1.1	REV
				—

APPENDIX A
SITE AUDIT SUMMARY

Ocean Park Master Redevelopment Project

Contract No. CW02 – Astounding Asia

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	70815
Date	15 August 2007 (Wed)
Time	10:00 – 11:10

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
	<p>A. Water Quality</p> <ul style="list-style-type: none">• No environmental deficiency was identified during the site inspection. <p>B. Air Quality</p> <ul style="list-style-type: none">• No environmental deficiency was identified during the site inspection. <p>C. Noise</p> <ul style="list-style-type: none">• No environmental deficiency was identified during the site inspection. <p>D. Waste / Chemical Management</p> <ul style="list-style-type: none">• No environmental deficiency was identified during the site inspection. <p>E. Permit / Licenses</p> <ul style="list-style-type: none">• No environmental deficiency was identified during the site inspection. <p>F. Others</p> <ul style="list-style-type: none">• Preliminary site walk with the representatives of the Contractor and Project ET, there was no environmental findings were observed during the environmental inspection.	

	Name	Signature	Date
Recorded by	Jason Lai		15 August 2007
Checked by	Dr. Priscilla Choy		15 August 2007

Ocean Park Master Redevelopment Project

Contract No. CW02 – Astounding Asia

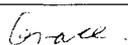
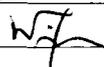
Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	70823
Date	23 August 2007 (Thursday)
Time	11:30 – 12:00 am

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
70815-001	<p>A. Water Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>B. Air Quality</p> <ul style="list-style-type: none"> Exposed slope was observed near the footpath of the common access road. The Contractor was advised to compact the slope or to seal the edge of the site boundary with sandbags to prevent the silt running out from the site. <p>C. Noise</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>D. Waste / Chemical Management</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>E. Permit / Licenses</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>F. Others</p> <ul style="list-style-type: none"> Follow-up on previous site audit session (Ref. No. 70815), there was no environmental deficiency identified during the site inspection. 	C4

	Name	Signature	Date
Recorded by	Grace Wong		23 August 2007
Checked by	Dr. Priscilla Choy		23 August 2007

Ocean Park Master Redevelopment Project

Contract No. CW02 – Astounding Asia

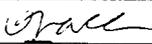
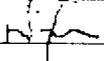
Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	70830
Date	30 August 2007 (Thursday)
Time	10:00 – 10:50 am

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
70830-R01	<p>A. Water Quality</p> <ul style="list-style-type: none"> Exposed u-channel was observed out of the Birds Kitchen. The Contractor was reminded to provide mitigation measures to prevent any silt running into the existing drainage system. 	B6
70830-O01	<p>B. Air Quality</p> <ul style="list-style-type: none"> Exposed slope was observed on the footpath of the common access road. The Contractor was advised to provide mitigation measures to prevent any silt running out from the site boundary to the common road. (e.g. cover it with tarpauline) 	C4
70830-R02	<p>C. Noise</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>D. Waste / Chemical Management</p> <ul style="list-style-type: none"> Suspected chemical was observed at Aviary Exercise. The Contractor was reminded to remove it from the site. <p>E. Permit / Licenses</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>F. Others</p> <ul style="list-style-type: none"> The environmental deficiency identified in previous audit session (item 70823-O01) was not rectified by the Contractor. Follow-up action is needed for the outstanding items. 	E3iv

	Name	Signature	Date
Recorded by	Grace Wong		30 August 2007
Checked by	Dr. Priscilla Choy		30 August 2007

**APPENDIX B
ENVIRONMENTAL MITIGATION
IMPLEMENTATION SCHEDULE**

Appendix B - Summary of Environmental Mitigation Implementation Schedule

Types of Impacts	Mitigation Measures	Status
Construction Dust	<ul style="list-style-type: none"> Use of regular watering, with complete coverage, to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather. 	^
	<ul style="list-style-type: none"> Use of frequent watering for particularly dusty construction areas, temporary stockpiles and areas close to ASRs. 	^
	<ul style="list-style-type: none"> 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. 	N/A
	<ul style="list-style-type: none"> Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs. 	^
	<ul style="list-style-type: none"> Restricting heights from which materials are dropped, as far as practicable to minimise the fugitive dust arising from unloading/ loading. 	^
	<ul style="list-style-type: none"> Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations. 	*
	<ul style="list-style-type: none"> Use of vehicle wheel and body washing facilities at the exit points of the site. 	^
	<ul style="list-style-type: none"> 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. 	N/A
	<ul style="list-style-type: none"> Imposition of speed controls for vehicles on unpaved site roads. Ten kilometers per hour is the recommended limit. 	N/A
	<ul style="list-style-type: none"> Dusty activities should be re-scheduled if high-wind conditions are encountered. 	^
	<ul style="list-style-type: none"> Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs. 	N/A
	<ul style="list-style-type: none"> 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
	<i>Crushing Plant</i> <ul style="list-style-type: none"> Water sprays on the crusher. Fabric filters installed for the crushing plant. When transferring materials from crusher to the conveyors, chutes or dust curtains would be used for controlling dust. 	N/A
N/A		
N/A		

Types of Impacts	Mitigation Measures	Status
	<p><i>Barging Point & Conveyor Belt System</i></p> <ul style="list-style-type: none"> • The conveyors would be placed within a totally enclosed structure • Profiled steel cladding would be provided at two sides of loading point. • Dust suppression sprays would be installed and operated in strategic locations at the feeding inlet and outlet. • 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. • 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. 	<p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p>
<p>Construction Noise</p>	<p><i>Construction Phase</i></p> <ul style="list-style-type: none"> • Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme • Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction programme • Mobile plant, if any, should be sited as far from NSRs as possible. • 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 • 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 • Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities <p><i>Adoption of Quieter Plant</i></p> <ul style="list-style-type: none"> • 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 	<p>^</p> <p>N/A</p> <p>N/A</p> <p>^</p> <p>^</p> <p>N/A</p> <p>^</p>

Types of Impacts	Mitigation Measures	Status
	<p><i>Use of Movable Noise Barrier</i></p> <ul style="list-style-type: none"> • 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 Police Training School (NSR PTS) during the examination periods. Early liaison with the principal of this impacted school 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 school to comply with the noise criterion of 65dB(A). 	<p>N/A</p> <p>N/A</p> <p>N/A</p>
<p>Ecology</p>	<p><i>Construction Phase</i></p> <ul style="list-style-type: none"> • All excavation works carried out close to water bodies shall be carefully controlled to avoid runoff entering watercourses, especially during periods of heavy rain. • 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. • Suitable size / capacity silt traps and oil/grease interceptors shall be used. • 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. • Trees located within the works areas shall be preserved as far as practicable. • Placement of equipment or stockpile in designated works areas and access routes selected on existing disturbed land to minimise disturbance to natural habitats • Construction activities shall be restricted to the work areas that would be clearly demarcated • The work areas shall be reinstated immediately after completion of the works • Waste skips shall be provided to collect general refuse and construction wastes. The wastes would be disposed of timely and properly off-site. • Drainage arrangements shall include sediment traps to collect and control construction run-off • Open burning on works sites is illegal, and shall be strictly enforced • Landscaping works on newly formed land shall as far as possible make use of native plant species 	<p>^</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>N/A</p> <p>^</p> <p>^</p> <p>^</p>

Types of Impacts	Mitigation Measures	Status
Water Quality	<p><i>Construction Runoff and Drainage</i></p> <ul style="list-style-type: none"> • 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. ^ • 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. Catchpits and perimeter channels should be constructed in advance of relevant site formation works. ^ • Boundaries of earthworks should be marked and surrounded by dykes or embankments for flood protection, as necessary. * • 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. ^ • 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. ^ • Exposed soil surfaces should be covered. ^ • Water pumped out from foundation excavations should be discharged into silt removal facilities. ^ • 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. Intercepting 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. ^ • Exposed soil areas should be minimized to reduce potential for increased siltation and contamination of runoff. * • 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. ^ 	

Types of Impacts	Mitigation Measures	Status
	<ul style="list-style-type: none"> Open stockpiles of construction materials or construction wastes on-site of more than 50m³ should be covered with tarpaulin or similar fabric during rainstorms 	N/A
	<i>General Construction Activities</i>	
	<ul style="list-style-type: none"> Debris and refuse generated on-site should be collected 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 	^ ^
	<i>Sewage from Construction Workforce</i>	
	<ul style="list-style-type: none"> 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 	^
Waste / Chemical	<i>Good Site Practice</i>	
	<ul style="list-style-type: none"> 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 	^
	<ul style="list-style-type: none"> regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors 	N/A
	<ul style="list-style-type: none"> training of site personnel in proper waste management and chemical handling procedures 	^
	<ul style="list-style-type: none"> provision of sufficient waste disposal points and regular collection for disposal 	^
	<ul style="list-style-type: none"> appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers 	^
	<i>Waste Reduction Measures</i>	
	<ul style="list-style-type: none"> sort C&D waste from demolition and decommissioning of the existing facilities to recover recyclable portions such as metals 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. proper storage and site practices to minimise the potential for damage or contamination of construction materials 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. plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste. 	* * ^ ^ ^

Types of Impacts	Mitigation Measures	Status
	<p><i>General Refuse</i></p> <ul style="list-style-type: none"> 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. 	^
	<p><i>Construction and Demolition Material</i></p> <ul style="list-style-type: none"> 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. 	^
	<p><i>Chemical Waste</i></p> <ul style="list-style-type: none"> 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 	^

Remarks:

- | | | | |
|-----|---|---|---|
| ^ | Compliance of mitigation measure; | X | Non-compliance of mitigation measure; |
| N/A | Not Applicable; | • | Non-compliance but rectified by the contractor; |
| * | Recommendation was made during site audit but improved/rectified by the contractor. | | |

APPENDIX C
EVENT ACTION PLANS

Appendix C: Event and Action Plan for Construction Noise

Event	Action		
	Contractor's ET	Contractor	PM
Action Level	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance 2. Submit noise mitigation proposals to Contractor's ET and PM 3. Implement noise mitigation proposals 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to Contractor'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 	<ol style="list-style-type: none"> 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 portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated

Appendix C: Event and Action Plan for Air Quality

Event	Action		
	Contractor's ET	Contractor	PM
Action Level	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 1. Identify source 2. Notify Contractor and PM 3. Conduct additional monitoring and investigate the causes, if necessary 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 D
TENTATIVE WORKS PROGRAMME
