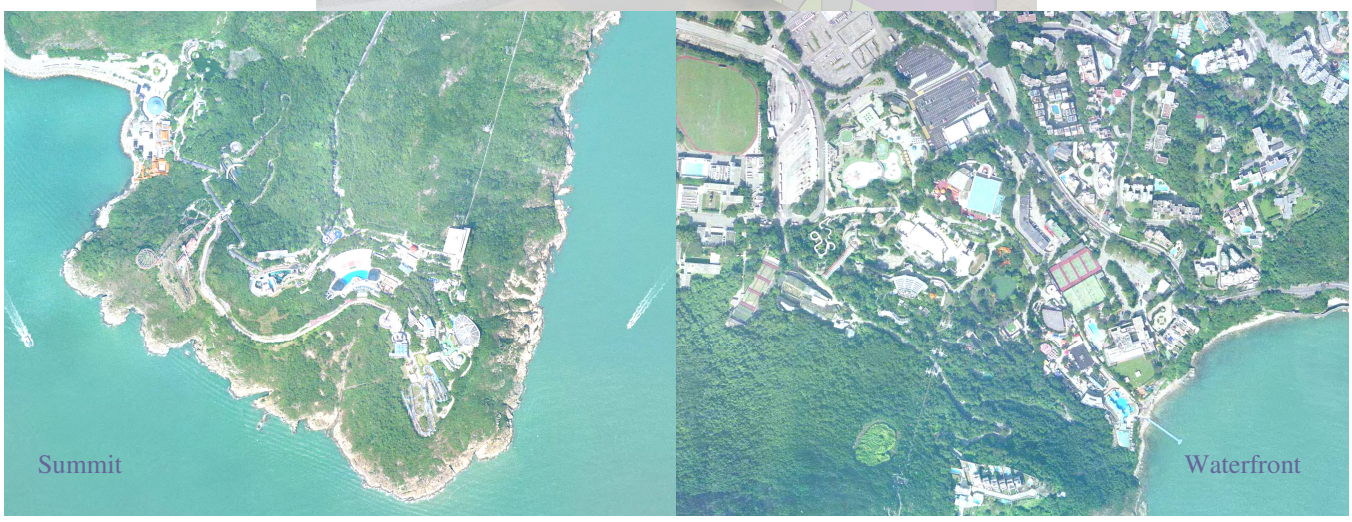
Ocean Park Master Redevelopment Project

Monthly Environmental Monitoring & Audit Report – February 2008



Ocean Park Master Redevelopment Project

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

Monthly EM&A Report – February 2008

Submitted by Maunsell Consultants Asia Ltd on 12-03-2008

This is to verify that

Monthly EM&A Report – February 2008

Submitted by Maunsell Consultants Asia Ltd

On 12-03-2008

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 March 2008

Ocean Park Master Redevelopment Project

EP-249/2006/A – Condition 3.4

Monthly EM&A Report – February 2008

Certified by _____ **on** 14-Mar-08

Terence Kong

Project Environmental Team Leader

Verified by Independent Environmental Checker **on** 14-Mar-08

IEC Certificate attached in the submission? Yes

Submitted to Ocean Park on 15-Mar-08

Table of Content

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 February 2008 (from 26 January 2008 to 25 February 2008).

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

1-hour TSP monitoring	16 sessions for AM1, AM2 & AM3A
24-hour TSP monitoring	5 sessions for AM1, AM2 & AM3A
Daytime noise monitoring	5 sessions for CN1-CN4
Evening and night time noise monitoring	4 sessions
Holiday time noise monitoring	0 sessions
Terrestrial ecology monitoring	1 sessions
Coral monitoring	1 session for Site 1-4 1 session for Site 5 and Control Station
Environmental Site Inspection	4 sessions (including IEC audit)

No exceedance was recorded on the 1-hour TSP monitoring, 24-hour TSP monitoring, daytime & evening time noise, terrestrial ecology monitoring and coral monitoring.

No non-compliance from IEC, summons or prosecution related to environmental issues was made against the Ocean Park Master Redevelopment Project in the reporting period of February 2008.

1 complaint from the resident of Lee Tung Estate through EPD was received on 13 February 2008. The complaint was concerned about the noise nuisance from Ocean Park construction site, TSW barging point, during restricted hours. Valid CNP was granted within the reporting month for the construction activities.

With regards to the complaint, immediate action was taken as follows:

- Additional noise control measures, including noise enclosure at the junction of the conveyors at Tai Shue Wan; and
- Well manage the working sequence in order to minimize the noise impacts to the vicinity.

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.

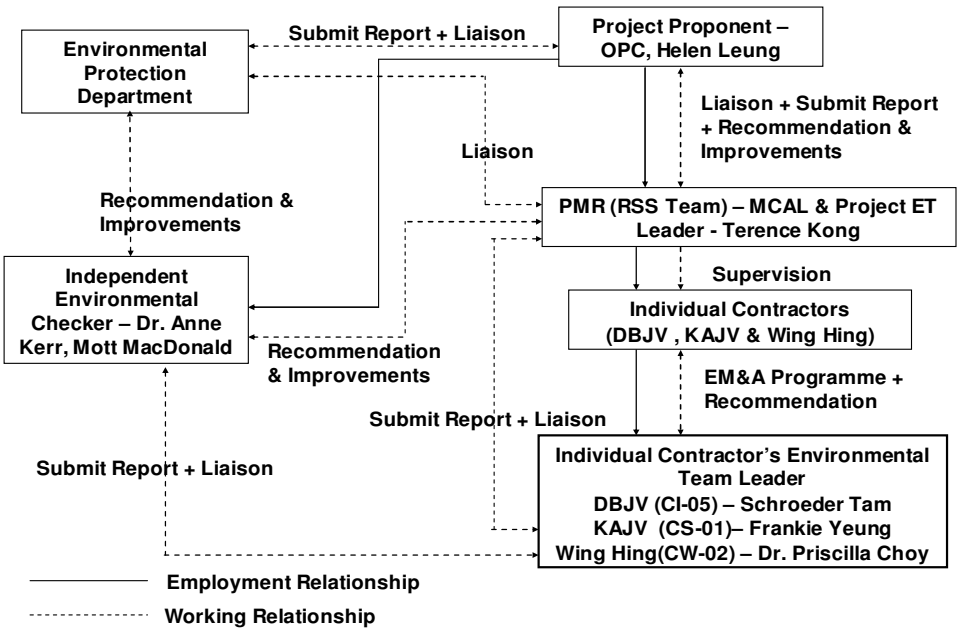
Contract No.	Contract Title	Contractor	Construction Commencement
CI-05	Site Formation, Funicular Tunnel and Miscellaneous Works	Dragages-Bouygues JV	12 March 2007
CS-01	Back of House for Marine Mammal Veterinary Hospital	Kaden – ATAL JV	26 March 2007
CW-02	Astounding Asia	W. Hing Construction Co. Ltd	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 February 2008 (from 26 January 2008 to 25 February 2008).

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

- Soft Ground Tunnel Excavation
- Waterfront Terminus Excavation – North
- Waterfront Access Road (e.g. Trench Excavation, Temporary Road Diversion)
- Utilities Diversion (e.g. Storm Drainage, Watermain & Sewerage) at Entry Plaza Advance Work
- Permanent Bus Terminus
- Works for Grand Aquarium Advance Works

Summit

- Main Tunnel Excavation from Adit to Summit and Waterfront
- Tunnel Permanent Lining
- Drill and Blast for Summit Site Formation
- Excavation at Summit
- Site Formation Works for Summit Terminus & FS Tank Building
- Crusher and Conveyor Belts Operation

Tai Shue Wan

- Conveyor Belt and Barging Point Operation

Nam Long Shan Road Entrusted Works

- Excavation, Trail Pit Excavation, Construction of Manhole, pipe laying (e.g. sewer & water main), Road Surface Reinstatement and Backfilling at NLS Road Entrusted Work
- Excavation, construction of manhole, pipe laying and backfilling at Wong Chuk Hang Road

CS-01

- R.C. structure: construction of dolphin pools.
- E&M & LSS installation: plumber, electric installation, A/C system, etc.
- Lift shaft and upper roof floor finishing: concrete plinths, doghouse and parapet at main roof floor; alignment revised, etc.
- Internal finishing: plasterer works, installation of wooden doors, waterproof in building and roof.
- E&M work at LV and fuel tank room.
- Cable laying: excavation, installation of cable and backfill, etc.

CW-02

- Superstructure works, builder's and finishing work and E&M work at the New Bird House,
- Structural steel works at the Flight Exercise Aviary,
- Minor touch up and clearance works at the Birds Central Kitchen,
- General clearance works at Main Aviary,
- Footing construction works at Astounding Asia Restaurant,
- R.C. for footings and MVAC Culvert (RC Works) and superstructure work at the New Panda Habitat,
- Tree planting work at New Bird Theatre,
- External drainage, services pipelines and ducting works.

4. Permits and License Status

4.1. Environmental Permit

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

EP No.	Issue Date	Key Variation
EP-249/2006	28 July 2006	First EP
EP-249/2006/A	25 September 2006	• Enhance the roosting habitat for freshwater birds by enlarging Pond 35 and its surrounds with a total area of no less than 120 squares meters and no construction works and discharge from construction sites shall be allowed within Pond 35 after enhancement. • Filling of Pond 37 at the Lowland Area. • Submission of the as-built drawings showing the enhancement works of Pond 35.

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-RS0548-07	04-Sep-07	20-Feb-08	*PME* 00:00 - 07:00 hours & 19:00 - 24:00 hours (Not being a general holidays) 07:00 - 23:00 hours (general holidays) *PCW* 00:00 - 07:00 hours & 19:00 - 24:00 hours (Not being a general holidays) 07:00 - 23:00 hours (General holidays) One group of equipment shall be allowed in above time	Summit (At the top of Nam Long Shan Road)	CI-05	Expired
GW-RS0768-07	30-Nov-07	29-May-08	*PME* 19:00 - 23:00 hours (not being a general holidays) 07:00 - 19:00 (General holidays) *PCW* 19:00 - 23:00 hour (Not being a general holidays) 07:00 - 19:00 hours (General holidays) One group of equipment shall be allowed in above time	Upper portion of Nam Long Shan Hill Road	CI-05	Cancelled
GW-RS0780-07	11-Dec-07	06-Jun-08	*PME* 19:00 - 23:00 hours (Not being a general holidays) 07:00 - 23:00 (General holidays) *PCW* 19:00 - 23:00 hours (Not being a general holiday) 07:00 - 23:00 (general holidays)	Crusher, Conveyor and Barging Point	CI-05	Cancelled
GW-RS0786-07	11-Dec-07	10-Jun-08	*PME* 19:00 - 23:00 hours (not being a general holidays) 09:00 - 19:00 (General holidays) *PCW* 19:00 - 23:00 hour (Not being a general holidays) 09:00 - 19:00 (General holidays) One group of equipment shall be allowed in above time	Waterfront (Panda Access Ramp)	CI-05	Valid

Permit number	Starting Date	Expired Date	Valid Time	Location	Contract No.	Status
GW-RS0787-07	11-Dec-07	10-Jun-08	*PME* 00:00 - 07:00 hours & 19:00 - 24:00 hours (Not being a general holidays) 00:00 - 24:00 (general holidays) *PCW* 00:00 - 07:00 hours & 19:00 - 24:00 hours (Not being a general holidays) 00:00 - 24:00 hours (General holidays) One group of equipment shall be allowed in above time.	Main tunnel excavation	CI-05	Valid
GW-RS0037-08	4-Feb-08	1-Mar-08	*PME* 00:00 - 07:00 hours and 19:00 - 24:00 (Not being a general holiday) 00:00 - 24:00 hours (General holidays) *PCW* 00:00 - 07:00 hours & 19:00 - 24:00 hours (Not being a general holidays) 00:00 - 24:00 hours (General holidays)	Crusher, Conveyor and Barging Point	CI-05	Valid
GW-RS0061-08	13-Feb-08	20-Aug-08	*PME* 00:00 - 07:00 hours & 19:00 - 24:.00 hours (Not being a general holiday) 07:00 - 23:00 (General holidays) *PCW* 00:00 - 07:00 hours & 19:00 - 24:00 hours (Not being a general holidays) 07:00 - 23:00 (General holidays) One group of equipment shall be used.	Summit (At the top of Nam Long Shan Road)	CI-05	Valid
GW-RS0063-08	15-Feb-08	15-Jul-08	*PME* 00:00- 07:00 hours & 19:00 - 23:00 hours (not being a general holidays) 00:00 - 24:00 (General holidays) *PCW* 00:00- 07:00 hours & 19:00 - 23:00 hour (Not being a general holidays) 00:00 - 24:00 hours (General holidays) One group of equipment shall be allowed in above time Group C& D shall not operated between 23:00-07:00 on the next day	Upper portion of Nam Long Shan Hill Road	CI-05	Valid

Permit number	Starting Date	Expired Date	Valid Time	Location	Contract No.	Status
CS-01 (KAJV)						
GW-RS0695-07	29-Oct-07	9-Apr-08	*PME* 19:00 - 23:00 hours (Not being a general holidays) 07:00 - 19:00 hours (General holidays) *PCW* 19:00 - 21:00 hours (Not being a general holidays) 08:00 - 17:00 hours (General holidays) One group of equipment shall be allowed in above time.	Summit (At top of Nam Long Shan Road)	CS-01	Valid
CW-02 (W. 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				
L-11-044 (1)	20-Sep-07	19-Sep-12	Conduct Specified Process in the premises at Ocean Park MRP Contract CI-05 (at top of Nam Long Shan Road)	Valid
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				
001022480	11 July 07	-	Astounding Asia	Notified
Effluent Discharge License				
EP820/W9/XW240	12 Oct 07	31 Oct 12	Astounding Asia	Valid
Registration as Chemical Waste Producer				
5213-199-W2894-18	20 Aug 07	-	Form Oil, Lubricant oil, paint, solvent and diesel.	Registered
Construction Waste Disposal Charging Scheme				
7005864	-	-	Astounding Asia	Issued

5. EP Submissions Status

Environmental submissions to EPD since the commencement of construction works at Ocean Park, i.e. from 12 March 2007 to 25 February 2008 are as below,

Contract	Submissions
CI-05	• Notification of Commencement Date • Management Organisation Chart • Construction Programme • Drainage Proposal • Silt Curtain Proposal • Waste Management Plan • Baseline Air Quality and Noise Monitoring Report • Transplantation Proposal for Uncommon Species • Baseline Coral Survey Report • As-built Drawings of Pond 35 • Detailed Compensatory Planting As-built Drawing
CI-05, CS-01 & CW-02	• Combined Monthly EM&A Report (January 2008)
City Bus Limited	• Written Notice on Completion of TPH Contaminated Soil Disposal • Written Notice on Completion of Solidification Treatment of Heavy Metals Contaminated • As-built Remediation Plan
Hong Kong School of Motoring Ltd.	• Confirmation Letter to confirm that Land Contamination remediation Works within HKSM has been completed

6. Materials Management

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

According to EIA recommendations and CI05-WMP, the materials were reused in other projects specified as below:

- TKOGV (Green Valley), the soil materials were reused as the topsoil of landfill. This would be delivered by DBJV subcontractor's trucks. The delivery was started in May 2007 and no excavated materials were delivered to TKOGV in the reporting month.
- NW-SW (Swire Sita), the soil materials were reused as the topsoil of landfill. This would be delivered by DBJV subcontractor's barges. The delivery was started in September 2007 and excavated materials were delivered to the site within the reporting period.
- Central Reclamation Phase III, the excavated materials were reused as forming an access road. This would be delivered by barges from the Contractor's of Central Reclamation Phase III. The delivery was started in November 2007 and excavated materials were delivered to the site within the reporting period.
- Ma On Shan Waterfront Promenade Project, the rock materials were reused as the seawall layer. This would be delivered by DBJV subcontractor's barges. The delivery was started in December 2007 and no rock materials were delivered to the site within the reporting period.
- Shenzhen Airport Extension, the rock materials (size less than 300mm) would be exported as usable materials by DBJV subcontractor's barges to the Shenzhen Airport Extension site for site formation works. The rock materials would be exported as goods in compliance with the Import and Export Ordinance. The delivery was started by the end of September 2007, however, no rock materials were delivered to Shenzhen Airport Extension in the reporting month.
- Hung Wan Quarry at Zhuhai, it was proposed to EPD on 8 November 2007 and no rock materials were delivered to Zhuhai within the reporting month for reuse purpose. This would be delivered by DBJV subcontractor's barges.

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

Materials Type	Disposal Locations	CI-05	CS-01	CW-02	Total
C& D Waste	SENT	29.63 tonnes	36.47 tonnes	15.01 tonnes	81.11 tonnes
	TKOSF	--	53.00 tonnes	4.58 tonnes	57.58 tonnes
Excavated Material (mainly soil)	QBBP	5,229.59 tonnes	--	708.19 tonnes	5,937.78 tonnes
	TKOFB	--	11.46 tonnes	--	11.46 tonnes
	Alternative site (Central Reclamation Phase III)	151,348.68 tonnes	--	--	151,348.68 tonnes
	Alternative site (Swire Sita)	20,944.69 tonnes	--	--	20,944.69 tonnes
Chemical Waste	Collected by licensed collector	--	--	--	--
General Waste	Collected by licensed collector	53.0m^3	--	--	53.0m^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 terrestrial ecology were conducted by the Contract of CI-05 within the reporting period.

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	Identity/Description
AM1	Whisker's Theatre, Ocean Park
AM2	San Wai Village, Wong Chuk Hang
AM3A	Open Area of PMR & OPC temporary Site Offices (from 14 September 2007)

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	Identity/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	Identity/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 (μg/m^3)		
	AM1	AM2	AM3A
26 January 08 to 25 February 08	49-169	71-215	118-378

Monitoring Period	24-hr TSP (μg/m^3)		
	AM1	AM2	AM3A
26 January 08 to 25 February 08	32-79	41-92	63-110

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 January 08 to 25 February 08	63.7-67.8	55.3-59.0	55.2-59.2	59.8-67.1

Monitoring Period	Evening time Noise Level, Leq (15min), dB(A)			
	CN1	CN2	CN3	CN4
26 January 08 to 25 February 08	54.0-59.3	56.2-59.2	56.8-59.4	48.2-50.2

Terrestrial Ecology

The monitoring results showed that the survival rate of Sword-leaved Orchid was 100%. The above ground part of the Chinese Lily were became withered due to natural seasonality while the underground roots are alive and Balloon Flowers ere experience seasonal shrunken. It is expected that more Chinese Lily and Balloon Flower would geminate in the coming growing season since few new seedlings for these two plants were observed in the monitoring during the reporting period. Detailed observations would be describes in CI-05 monthly EM&A report (i.e. in Appendix E of Part 2 of the report).

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 1

Code	Coral Species	Area (cm^2)	Sedimentation (%, mm)				Bleaching (%)				Mortality (%)			
			Apr 07 (baseline)	21 Jul 07	10 Nov 07	16 Feb 08	Apr 07 (baseline)	21 Jul 07	10 Nov 07	16 Feb 08	Apr 07 (baseline)	21 Jul 07	10 Nov 07	16 Feb 08
A01	*Platygyra carnosus*	1000	0, 0	0, 0	1, 1▲	0, 0	0	0	0	0	0	0	0	0
A02	*Platygyra carnosus*	2000	0, 0	0, 0	0, 0	0, 0	0	0	0	0	0	0	0	0
A03	*Favites pentagona*	200	0, 0	**2, 1▲**	0, 0	0, 0	0	0	0	0	0	0	0	0
A04	*Leptastrea pruinosa*	400	5, 1	**4, 1▼**	**0, 0▼**	**3, 1▼**	0	0	0	0	0	0	0	0
A05	*Platygyra carnosus*	1200	0, 0	0, 0	0, 0	0, 0	0	0	0	0	5	5	5	5
A06	*Platygyra carnosus*	1600	0, 0	0, 0	0, 0	0, 0	0	**1▲**	0	0	0	0	0	0
A07	*Favia rotumana*	800	5,1	5, 1	**1, 1▼**	**1, 1▼**	0	0	0	0	0	0	0	0
A08	*Platygyra carnosus*	1000	0, 0	0, 0	**4, 1▲**	0, 0	0	0	0	0	0	0	0	0
A09	*Platygyra carnosus*	350	0, 0	0, 0	0, 0	0, 0	0	**1▲**	0	0	0	0	0	0
A10	*Platygyra carnosus*	700	0, 0	**2, 1▲**	**9, 1▲**	0, 0	0	0	0	0	0	0	0	0

Site 2

Code	Coral Species	Area (cm^2)	Sedimentation (%, mm)				Bleaching (%)				Mortality (%)			
			Apr 07 (baseline)	21 Jul 07	10 Nov 07	16 Feb 08	Apr 07 (baseline)	21 Jul 07	10 Nov 07	16 Feb 08	Apr 07 (baseline)	21 Jul 07	10 Nov 07	16 Feb 08
B01	*Platygyra carnosus*	450	0, 0	0, 0	0, 0	0, 0	0	0	0	0	0	0	0	0
B02	*Plesiastrea versipora*	300	0, 0	0, 0	0, 0	**1, 1▲**	0	0	0	0	0	0	0	0
B03	*Psammocora superficialis*	1000	5, 1	**3, 1▼**	**3, 1▼**	5, 1	0	0	0	0	0	0	0	0
B04	*Favia speciosa*	300	4, 1	**2, 1▼**	**8, 1▲**	**5, 1▲**	0	0	0	0	0	0	0	0
B05	*Plesiastrea versipora*	900	3, 1	3, 1	**2, 1▼**	**0, 0▼**	0	0	0	2 ▲	0	0	0	0
B06	*Platygyra carnosus*	600	0, 0	**1, 1▲**	**1, 1▲**	**1, 1▲**	0	0	0	0	0	0	0	0
B07	*Cyphastrea serailia*	700	0, 0	0, 0	**3, 1▲**	**3, 1▲**	0	0	0	0	0	0	0	0
B08	*Plesiastrea versipora*	1200	0, 0	**1, 1▲**	**5, 1▲**	**2, 1▲**	0	0	0	0	0	0	0	0
B09	*Favites pentagona*	600	0, 0	**1, 1▲**	**1, 1▲**	**2, 1▲**	0	0	0	2 ▲	0	0	0	0
B10	*Favites pentagona*	400	0, 0	**3, 1▲**	0, 0	**2, 1▲**	0	2▲	2▲	0	0	0	0	2 ▲

Site 3

Code	Coral Species	Area (cm^2)	Sedimentation (%, mm)				Bleaching (%)				Mortality (%)			
			Apr 07 (baseline)	21 Jul 07	10 Nov 07	16 Feb 08	Apr 07 (baseline)	21 Jul 07	10 Nov 07	16 Feb 08	Apr 07 (baseline)	21 Jul 07	10 Nov 07	16 Feb 08
C01	*Platygyra acuta*	2000	0, 0	0, 0	0, 0	0, 0	0	0	0	0	0	0	0	0
C02	*Platygyra carnosus*	1000	0, 0	0, 0	0, 0	0, 0	0	0	0	0	0	0	0	0
C03	*Porites sp.*	400	5, 1	**10,1▲**	5, 1	3, 1▼	0	0	0	15 ▲*	1	1	1	5 ▲
C04	*Cyphastrea serailia*	600	4, 1	**5, 1▲**	**5, 1▲**	**5, 1▲**	0	0	0	0	0	0	0	0
C05	*Pavona decussata*	600	0, 0	0, 0	0, 0	0, 0	0	0	0	0	0	0	0	0
C06	*Pavona decussata*	1200	0, 0	0, 0	0, 0	0, 0	0	0	0	0	0	0	0	0
C07	*Montipora cf. turgescens*	200	2, 1	**1, 1▼**	**0, 0▼**	2, 1	0	0	0	0	0	0	0	0
C08	*Favia favus*	600	4, 1	**5, 1▲**	**5, 1▲**	0, 0▼	0	0	0	0	4	4	4	4
C09	*Favites pentagona*	150	1, 1	1, 1	1, 1	1, 1	0	0	0	0	0	0	0	0
C10	*Montipora peltiformis*	300	0, 0	0, 0	0, 0	1, 1▲	0	**5 ▲**	**2 ▲**	**2 ▲**	0	0	0	0

* Paleness of colony recorded; Further observation is needed to evaluate the percentage of bleaching.

Site 4

Code	Coral Species	Area (cm^2)	Sedimentation (%, mm)				Bleaching (%)				Mortality (%)			
			Apr 07 (baseline)	21 Jul 07	10 Nov 07	16 Feb 08	Apr 07 (baseline)	21 Jul 07	10 Nov 07	16 Feb 08	Apr 07 (baseline)	21 Jul 07	10 Nov 07	16 Feb 08
E01	*Goniopora stutchburyi*	300	0, 0	**5, 1▲**	**3, 1▲**	0, 0	0	0	0	0	0	0	0	0
E02	*Goniopora stutchburyi*	200	0, 0	**2, 1▲**	0, 0	0, 0	0	0	0	0	0	0	0	0
E03	*Goniopora stutchburyi*	150	0, 0	**2, 1▲**	0, 0	0, 0	0	0	0	0	0	0	0	0
E04	*Porites sp.*	400	5, 1	2, 1▼	**2, 1▼**	**1, 1▼**	0	0	0	30 ▲*	0	0	0	5 ▲
E05	*Goniopora stutchburyi*	300	0, 0	**5, 1▲**	**5, 1▲**	**2, 1▲**	0	0	0	0	0	0	0	0
E06	*Goniopora stutchburyi*	450	0, 0	0, 0	0, 0	**3, 1▲**	0	0	0	0	0	0	0	0
E07	*Favia speciosa*	600	10, 1	**2, 1▼**	**1, 1▼**	**1, 1▼**	0	0	0	0	0	0	0	0
E08	*Porites sp.*	150	0, 0	0, 0	0, 0	0, 0	0	0	0	0	4	4	4	4
E09	*Porites sp.*	200	8, 1	**4, 1▼**	**4, 1▼**	**2, 1▼**	0	**2 ▲**	**2 ▲**	5 ▲	4	4	4	4
E10	*Porites sp.*	500	0, 0	**2, 1▲**	0, 0	**1, 1▲**	3	3	3	3	0	0	0	4 ▲

* Paleness of colony recorded; Further observation is needed to evaluate the percentage of bleaching.

Site 5

Code	Coral Species	Area (cm^2)	Sedimentation (%, mm)				Bleaching (%)				Mortality (%)			
			Apr 07 (baseline)	14 Oct 07	10 Nov 07	16 Feb 08	Apr 07 (baseline)	14 Oct 07	10 Nov 07	16 Feb 08	Apr 07 (baseline)	14 Oct 07	10 Nov 07	16 Feb 08
D01	*Psammocora sp.*	600	10, 1	**6, 1 ▼**	**8, 1 ▼**	**5, 1 ▼**	0	0	0	0	0	0	0	**2 ▲**
D02	*Montipora cf. turgescens*	100	6, 1	**5, 1 ▼**	**5, 1 ▼**	**5, 1 ▼**	0	**2 ▲**	**2 ▲**	0	0	0	0	0
D03	*Goniopora stutchburyi*	400	0, 0	**5, 1▲**	**2, 1▲**	0, 0	0	0	0	0	0	0	0	0
D04	*Leptastrea pruinosa*	500	4, 1	**8, 1 ▲**	**1, 1 ▼**	**2, 1 ▼**	0	0	0	0	0	**5 ▲**	**5 ▲**	5 ▲
D05	*Porites sp.*	400	5, 1	**3, 1 ▼**	**0, 0 ▼**	5, 1	1	**3 ▲**	**3 ▲**	**13 ▲***	4	4	4	Unknown[#]
D06	*Plesiastrea versipora*	1000	0, 0	**1, 1 ▲**	0, 0	**3, 1 ▲**	0	0	0	0	5	5	5	5
D07	*Leptastrea pruinosa*	800	0, 0	**3, 1 ▲**	**5, 1 ▲**	**3, 1 ▲**	0	0	0	0	0	0	0	0
D08	*Plesiastrea versipora*	100	0, 0	**2, 0 ▲**	0, 0	0, 0	0	0	0	**5 ▲**	0	0	0	0
D09	*Leptastrea pruinosa*	150	5, 1	0, 0 ▼	5, 1	**3, 1 ▼**	0	0	0	0	0	0	0	0
D10	*Montipora cf. turgescens*	200	0, 0	**2, 1 ▲**	**2, 1 ▲**	0, 0	0	0	0	0	0	0	0	0

* Paleness of colony recorded; [#] Colony surface was temporarily covered by mucus and microalgae; Further observation is needed to evaluate the extent of bleaching and morality.

Control Site C

Code	Coral Species	Area (cm^2)	Sedimentation (%, mm)				Bleaching (%)				Mortality (%)			
			Apr 07 (baseline)	14 Oct 07	10 Nov 07	16 Feb 08	Apr 07 (baseline)	14 Oct 07	10 Nov 07	16 Feb 08	Apr 07 (baseline)	14 Oct 07	10 Nov 07	16 Feb 08
F01	*Favia speciosa*	900	0, 0	**5, 1 ▲**	0, 0	0, 0	0	0	0	0	0	0	0	0
F02	*Favites pentagona*	1000	4, 1	**15, 1 ▲**	**2, 1 ▼**	**2, 1 ▼**	0	0	0	0	0	**3 ▲**	**3 ▲**	**3 ▲**
F03	*Favites pentagona*	800	0, 0	**5, 1 ▲**	**2, 1 ▲**	**1, 1 ▲**	0	0	**2 ▲**	0	0	**2 ▲**	**2 ▲**	**2 ▲**
F04	*Porites sp.*	800	5, 1	7, 1 ▲	5, 1	**8, 1 ▲**	4	**3▼**	**3▼**	**7 ▲***	4	4	4	Unknown[#]
F05	*Cyphastrea serailia*	800	4, 1	**1, 1 ▼**	**3, 1 ▼**	**1, 1 ▼**	0	0	0	0	1	1	1	1
F06	*Psammocora sp.*	1800	0, 0	**3, 1 ▲**	**6, 1 ▲**	**2, 1 ▲**	0	**1 ▲**	**1 ▲**	0	0	0	0	0
F07	*Plesiastrea versipora*	3000	0, 0	**2, 1▲**	0, 0	0, 0	0	0	0	0	0	0	0	0
F08a	*Favia speciosa*	150	0, 0	**2, 1 ▲**	**1, 1 ▲**	0, 0	0	0	0	0	0	0	0	0
F08b	*Goniastrea favulus*	300	0, 0	**7, 1 ▲**	**3, 1 ▲**	**2, 1 ▲**	0	0	0	0	0	0	0	0
F09	*Favites pentagona*	1800	10, 1	**5, 1 ▼**	**2, 1 ▼**	**2, 1 ▼**	0	0	0	0	0	**1 ▲**	**1 ▲**	**3 ▲**
F10	*Platygyra carnosus*	2800	0, 0	0, 0	**1, 1▲**	0, 0	0	0	0	0	0	0	0	0

* Paleness of colony recorded; [#] Colony surface was temporarily covered by mucus and microalgae; Further observation is needed to evaluate the extent of bleaching and morality.

In the monitoring surveys conducted in February 2008, sedimentation on the tagged colonies form all the 5 Monitoring Sites 1 to 5 and the Control Site C increased by 1 to 3% (n=18 out of 60 colonies) when compared with the Initial Survey conducted 7 & 12 April 2007. In another 15 colonies from all six sites, their sedimentation decreased by 1 to 9% when compared with the Initial Survey conducted on 07 to 12 April 2007. Bleaching increased in 4 colonies by 2 to 5 %. Partial mortality increased in 9 colonies by 2 to 5%.

In all monitoring sites and control station, level of sedimentation on the tagged corals varied within a small range (<10%) without an observable trend. The variation were believed to be resulted from combined environmental factors such as monsoonal wind, tidal current, peripheral transports, substratum type, etc. The low level of increment in bleaching and partial mortality suggested minor adverse effect was caused by the observed sedimentation.

Four of the tagged Porites colonies (each in Sites 3, 4 and 5 and Control Site C) showed abnormal status with symptoms of paleness polyps, production of a mucus layer on colony surface and overgrowth of microalgae on the mucus layer. These symptoms were only observed in Porties sp.. Similar phenomenon was also recorded in the eastern and southern waters in the same period. The phenomenon has never been reported in Hong Kong before. The symptom is believed not to be caused by construction work, as no apparent increment of sediment is recognized, and the observation is not limited to the impact sites.

The data from this monitoring survey showed no significant enhancement in sedimentation, bleaching or mortality in all the 5 Monitoring Sites 1 to 5 when compared with the Control Site C. 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 & evening time noise monitoring, terrestrial ecology 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 22 February 2008. Audit checklists are attached in Appendix A of Part I.

CI-05 Observations

Observations for last month:
Items 2 and 6 from the last audit were closed.

Observations for the month:

Barging Point
(i) The flexible curtain at outlet of the conveyor belt system was not entirely closed.

Top of Summit
(ii) Some of the rock breaking and excavation activities were not provided with water spray to suppress dust.
(iii) Access road was very muddy.
(iv) Wheel wash facility was removed due to works.

Citybus Depot
(v) A few gully pits within the site were not provided with sandbags and discharge of turbid surface runoff was not diverted.

Waterfront –S Road
(vi) Exposed Slope Surface was not covered with tarpaulin or other means.

CS-01 Observations

(i) Scrap material and general refuse was still scattered along the slope of Pool Block and Plant Block. The Contractor shall remove and dispose them properly.

(ii) The temporary drainage channel was blocked by rocks and wood panels and scrap material. The Contractor shall ensure that it is clear of blockage.

CW-02 Observations

i) Observations from the last audit, item 1 & 2 were closed.

ii) The permanent drainage channel at Flight Exercise Aviary was accumulated with sand and soil.

iii) Exposed soil surfaces under the tree at New Panda Habitat were not covered with tarpaulin or other means.

iv) Stockpiles of excavated material next to Generator Room and between Main Aviary and AA Restaurant were not covered with tarpaulin or other means.

v) Mud was accumulated on the road and drain between the Main Aviary and AA Restaurant.

8.2. Non-Compliance

No non-compliances were recorded in February 2008.

9. Implementation status of Environmental Mitigation Measures

Please see Part 2, Part 3 and Part 4 of the individual contractual reports for the details of the implementation of environmental mitigation measures.

10. Summary of Complaint, Summon or Prosecution

1 complaint from the resident of Lee Tung Estate through EPD was received on 13 February 2008. The complaint was concerned about the noise nuisance from Ocean Park construction site, TSW barging point, during restricted hours. Valid CNP was granted within the reporting month for the construction activities.

With regards to the complaint, immediate action was taken as follows:

- Additional noise control measures, including noise enclosure at the junction of the conveyors at Tai Shue Wan; and
- Well manage the working sequence in order to minimize the noise impacts to the vicinity.

No summons or prosecution related to environmental issues was received or made against the Project in February 2008.

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 site area
- To implement dust suppression measures on dry surfaces especially crusher and conveyor area stockpiles and on dust generating activities.
- Provision of temporary drainage system, treatment to turbid water from activities, run-off before discharge.
- Avoid accumulation of mud on access road, at permanent and temporary channels, catchpits and sedimentation tanks.
- Avoid oil spillage on site.
- To provide wheel wash to all vehicles leaving the site

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.
- Remove construction waste and

CS-01

- Noise from operating equipment and machinery on-site.
- Avoid accumulation of mud at the sedimentation tank and blockage at the temporary channels.
- To implement dust suppression measures on dry surfaces and dusty works.
- To implement on-site cleanliness.
- To remove general refuse from the site regularly.

general refuse from the site regularly.

- Avoid blockage of temporary channels on access and haul roads.
- To implement dust suppression measures on exposed soil surfaces and stockpiles.

12. Conclusion and Recommendation

12.1. Conclusion

Environmental impact monitoring was performed in February 2008. 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 & evening time noise monitoring, terrestrial ecology and coral monitoring for the reporting period.

No non-compliance from IEC, summons or prosecution related to environmental issues was made against the Ocean Park Master Redevelopment Project in the reporting period of February 2008.

1 complaint from the resident of Lee Tung Estate through EPD was received on 13 February 2008. The complaint was concerned about the noise nuisance from Ocean Park construction site, TSW barging point, during restricted hours. Valid CNP was granted within the reporting month for the construction activities.

With regards to the complaint, immediate action was taken as follows:

- Additional noise control measures, including noise enclosure at the junction of the conveyors at Tai Shue Wan; and
- Well manage the working sequence in order to minimize the noise impacts to the vicinity.

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, at the crusher and conveyor belt area by the Contractors.
- To increase the water spraying at the truck loading area of the crusher and along haul road.

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	22/02/2008	Time	09:30	Inspected By	EM: Terence Kong IEC: Florence Yuen Contractor: CI05: S. Tam CS01 T.F. Chao CW02: B. Lee
Site Location	CI05 CS01 CW02				

Weather

Condition	☐	Sunny	☐	Fine	☐	Overcast	☑	Drizzle	☐	Rain	☐	Storm	☐ Hazy
Temperature	18 °C					Humidity	☑	High	☐	Moderate	☐	Low	
Wind	☐	Calm	☑	Light	☐	Breeze	☐	Strong	☐	Direction			

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

• Is sufficient time allowed for alerting all the potential NSRs prior to every blasting work?			✓		
• Are proper procedures put in place to alert and minimise any startling effect on the staff working in Ocean Park?			✓		
• Is the optimal amount of charge used evaluated for noise reduction?			✓		

Landscape and Visual

S3.10	Consideration on existing surrounding vegetation:				
	• Are temporary tree nurseries set up?		✓		
	• Is "no-intrusion zones" implemented?		✓		
	• Is the existing vegetation protected from damage?			✓	
	• Are hill fire prevention measures taken?			✓	
	• Is dust and erosion controlled for exposed soil?			✓	
	• Are the irrigation networks set up throughout the Establishment Period?		✓		
	• Is Quarterly Report on existing trees to be retained or transplanted prepared by the Contractor?		✓		
S3.11	Consideration on appearance and view:				
	• Is the appearance of hoardings suitable?			✓	
	• Is the appearance of construction workers, plants/machines suitable?			✓	
	• Are the screening and alignment of the temporary barging point and conveyor system suitable?			✓	
	• Are the selected security floodlights suitable		✓		

Ecology

S4.5	Transplantation:				
	• Is the transplantation work supervised by a qualified botanist/horticulturalist in the ET?			✓	
	• Are the transplanted plant species of conservation interest monitored during the first 12 months after transplantation?			✓	
S4.7	Construction:				
	• Is the runoff entering watercourses avoided by control measure, especially during heavy rain?			✓	
	• Is the site runoff directed to regularly cleaned and maintained silt traps (or oil separators)?			✓	
	• Are sediment traps included in drainage to collect and control construction run-off?			✓	
	• Is suitable size silt traps or oil interceptor used?			✓	
	• Is vegetation survey carried out to determine the feasibility and suitability of individual plants for transplantation?			✓	
	• Are the trees located within the works area preserved suitably?			✓	
	• Are individual plants of conservation interest transplanted prior to the construction phase?			✓	

• Are the equipments and stockpiles placed in designated works areas and access routes selected on existing disturbed land to minimise disturbance to natural habitats?			✓		
• Are construction activities restricted to the work areas demarcated?			✓		
• Are waste skips provided to collect general refuse and construction wastes?			✓		
• Are the wastes disposed of timely and properly off-site?			✓		
• Is open burning on works sites prohibited?			✓		
• Are native plant species made use of as far as possible on newly formed land?		✓			

Construction Waste

S5.4	Good Site Practices				
	• Are arrangements made for collection and effective disposal of all wastes generated?			✓	
	• Are the waste management and chemical handling procedures followed?			✓	
	• Are sufficient waste disposal points provided?				✓ CS01① P1050575
	• 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?				✓ CW02① P1050557& P1050558
S5.5	Waste Reduction Measures:				
	• Is the C&D waste from demolition and decommissioning of existing facilities sorted to recover recyclable materials?			✓	
	• Are different types of wastes segregated and stored in different containers, skips or stockpiles to enhance reuse or recycling and the proper disposal?			✓	
	• Are aluminium cans segregated in labelled bins and collected by individual collectors for recycling?			✓	
	• Are proper storage and site practices maintained to minimise the potential for damage or contamination of construction material?			✓	
	• Are the construction materials planned and stocked carefully to avoid unnecessary generation of waste?			✓	
S5.7	General Refuse				
	• Is the general refuse stored in enclosed bins or compaction units separate from C&D material?			✓	
	• Is the general refuse removed regularly by a waste collector?			✓	
S5.8	C&D Material				
	• Are the excavated materials from site formation of the expansion areas and tunnel construction for the funicular system reused on-site as backfilling material and for landscape works?			✓	
	• Are the surplus rock and other inert C&D material disposed of at the public fill sites?			✓	
	• Is a waste management plan prepared?			✓	

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

• Are the mixing process and other associated material handling activities properly scheduled to minimise potential noise impact?		✓			
• Are impermeable liners placed at the bottom of biopile?		✓			
• Is leachate collection sump construction along the perimeter of biopile?		✓			
• Is the lachate recycled back to the biopile or truck away to Chemical Waste Treatment Centre for disposal?		✓			
• Is the mixing of contaminated soils and cement/water/other additive(s) undertaken at a solidification plant to minimise the potential for leaching?		✓			
• Is a concrete bund construction along the perimeter of the solidification/stabilisation area to prevent runoff?		✓			
• Are the loading, unloading, handling, transfer and storage of cement carried out in an enclose system?		✓			
• Are the contaminated soils transported by roll-off trucks (contrainerisation)?		✓			
• 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?				✓	CI05② P1050611
• 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?				✓	CW02③ P1050567 P1050570
• 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?				✓	CI05④ P1050595
• 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?				✓	CI05 ① P1050638
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?				✓	CI05 ⑤ P1050646
• 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?				✓	CW02 ④ P1050569 CS01 ② P1050572 CW02 ① P1050557 & CW02 ② P1050558 CW02 ② P1050556 CI05 ⑥ P1050643
• 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?				✓	CW02 ④ P1050569 CI05 ③ P1050621 & P1050622

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

• Is the control of (small) fires planned and provided through the following?					
- Weekly checking of fire fighting equipment and the on-site fire water tank level.			✓		
- Daily checking of all critical safety equipment on vehicle, including the fire extinguishers.			✓		
- Maintaining back-up means of fighting fire on the explosive vehicles.			✓		
- Providing safety training for drivers and other personnel present during explosive delivery with regard to operating fire hydrants and fighting of explosive fires.			✓		
• Is the magazine secured against unauthorised entry and theft of explosive through the following?					
- Maintaining a list of persons authorised to enter the magazine and ensuring the list is available to the magazine security guard.			✓		
- Activating an alarm system that limits times at which explosive can be removed from the magazine and connecting the system to central security station.			✓		
- Incorporating "Duress code" function in the alarm system.			✓		
- Maintaining alarm system in good condition.			✓		
• Is the magazine security guard located separately from the magazine complex?			✓		
• Is the communication maintained in emergency with the following measures?					
- Providing non-hazardous electronic equipment for persons working within 60 m of detonators.			✓		
- Ensuring availability of phone numbers for all key personnel.			✓		
• If there is a typhoon signal no. 3 or above, or black rainstorm signal, are all operations at magazine and transport ceased?		✓			
• Is the risk of detonators explosion on vehicle reduced during transit through the following?					
- Ensuring that magazine within vehicle is lined.			✓		
- Limiting off-site transport to 5 to 6 a.m. each day.			✓		
- Escorting vehicles with separate security vehicle when using the public road.			✓		
- Ensuring that UN 1.4B packaging of detonators remains intact until handed over at blasting site.			✓		
• Is the fuel isolation switch available on vehicle to prevent fire spreading in case a fire breaks out?			✓		
• Is an experienced driver with accident-free record employed for explosive vehicle and security escort?			✓		
• Are the drivers checked for health before employing?			✓		
• Are the vehicles regularly checked to maintain in good condition to reduce chance of accident due to breaking down?			✓		
• Is the truck fuel fire escalating to cause explosion avoided through the following means?					
- Ensuring that the Contractor is aware of the potential hazards to site.			✓		

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

	the likelihood of vehicle accident?					
	• Is lighting for explosive vehicles provided on temporary road(s)?			✓		
S11.4	• Is ammonium nitrate emulsion (ANE) delivered outside of Park opening times?			✓		

Observations from last month

Items ① and ② are outstanding.

Observations for this month

① Scrap material and general refuse were still scattered along the slope of Pool Block and Plant Block. The Contractor shall remove and dispose them properly.

② The temporary drainage channel was blocked by rocks and wood panels and scrap material. The Contractor shall ensure that it is clear of blockage.

IEC Representative	Environmental Manager	Contractor's Representative CS01
Florence Yuen	Terence Kong	
(Florence Yuen)	(Terence Kong)	(Chan Ting Fung)

Observations from last month

Items ② and ⑥ were closed.

Barging Point

① The outlet of the conveyor belt system was not entirely closed. (flexible curtain at)

Top of Summit

② Some of the rock breaking and excavation activities were not provided with water spray to suppress dust.

③ Access road is very muddy.

④ Wheel wash facility was removed due to works.

Citybus Depot

⑤ A few gully pits within the site were not ~~blocked~~ provided with sandbags and discharge of turbid surface runoff was not diverted.

S Round

⑥ Exposed Slope Surface ~~the~~ was not covered with tarpaulin or other means, ~~the~~

IEC Representative	Environmental Manager	Contractor's Representative CI05
Florence Yuen	Terence Kong	
(Florence Yuen)	(Terence Kong)	(SCHROEDER TAM)

Observations from last month

Items ③ was closed.

Observations for the month

① The permanent drainage channel at ~~Dew~~ Flight Exercise Aviary was accumulated with sand and soil.

② Exposed soil surfaces under the tree at New Panda Habitat was not covered with tarpaulin or other means.

③ Stockpiles of excavated material next to Generator Room and between Main Aviary and AA Restaurant were not covered with tarpaulin or other means.

④ Mud was accumulated on the road and drain between the Main Aviary and AA Restaurant.

IEC Representative	Environmental Manager	Contractor's Representative CW02
Florence Yuen	Tr. Kong	
(Florence Yuen)	(Terence Kong)	(Billy Lee)

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 January 2008	
Observation in last site inspection	**Observation in this site inspection**
Crusher Area & Conveyor Crusher Area	
 	 
P1050440:& P1050452: The Crusher Area and the Conveyor Crusher Area were generally dusty. The Contractor shall ensure the automatic water sprays were working properly to suppress dust.	Closed – P1050633 & P1050624: The Crusher Area and the Conveyor Crusher Area were less dusty due to heavy rain.
Barging Point	
	
P1050425: The flexible curtain at the outlet of the conveyor belt system was partly damaged. The Contractor shall repair the damaged part as soon as possible to prevent dust emission.	P1050638: The flexible curtain at the outlet of the conveyor belt system was still partly damaged. The Contractor shall repair the damaged part as soon as possible to prevent dust emission.

MONTHLY SITE INSPECTION PHOTOS

<table>
<tr><td colspan="2">Summit Terminus</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>P1050433: Some of the rock breaking and excavation activities were not provided with water spray to suppress dust. More water sprinklers shall be provided to ensure dust generated from all rock breaking and excavation activities were suppressed.</td><td>P1050611: Some of the rock breaking and excavation activities were still not provided with water spray to suppress dust. More water sprinklers shall be provided to ensure dust generated from all rock breaking and excavation activities were suppressed.</td></tr>
<tr><td colspan="2">Top of Summit</td></tr>
<tr><td> 
  </td><td> 
  </td></tr>
<tr><td>P1050436 & P1050437: The permanent drainage channels and catchpits were accumulated with mud and debris. The Contractor shall ensure they are clear of blockage at all times.</td><td>Closed - P1050623 & P1050617: The permanent drainage channels and catchpits were sealed.</td></tr>
<tr><td colspan="2">Nam Long Shan Road and Citybus Depot</td></tr>
</table>

MONTHLY SITE INSPECTION PHOTOS

 	 
P1050438 & P1050466: A few gully pits and catchpit outlets within the site were not provided with sandbags. The Contractor shall ensure discharge of muddy surface runoff into public drains were avoided.	P10505620 & P1050646: The catchpit outlets within the site were blocked while a few gully pits were not provided with sandbags to divert the site runoff. The Contractor shall ensure discharge of muddy surface runoff into public drains be prohibited.
Citybus Depot	
 	
P1050459 & P1050461: Stockpiles of dusty materials were idled and uncovered. The Contractor shall ensure they are compacted and covered by tarpaulin sheets or other means to suppress dust.	Closed - P1050645: Stockpiles of dusty materials were either compacted or no longer observed.

MONTHLY SITE INSPECTION PHOTOS

Observations in February 2008	
Summit	
	 
P1050595: Wheel wash facility was removed due to permanent works. The Contractor was reminded to provide wheel wash to all vehicles leaving the site during the construction phase.	P1050621 & P1050622: The entire access road was accumulated with mud. The Contractor shall ensure the access road is clear of mud.
S Round	
	
P1050643: Exposed slope surface was not covered with tarpaulin or other means. The Contractor shall cover it with tarpaulin or other means to avoid surface runoff.	

MONTHLY SITE INSPECTION PHOTOS

Contract CS01 Back of House for Marine Mammal Veterinary Hospital	
Follow up observations in January 2008	
Observation in last site inspection	**Observation in this site inspection**
	
P1050411: Scrap material and general refuse were still scattered along the slope of Pool Block. The Contractor shall remove and dispose them properly	P1050575: Scrap material and general refuse was still scattered along the slope of Pool Block. The Contractor shall remove and dispose them properly.
	
P1050407: The temporary drainage channel was blocked by rocks and scrap materials. The Contractor shall ensure that it is clear of blockage at all times.	P1050572: The temporary drainage channel was still blocked by rocks and scrap materials. The Contractor shall ensure that it is clear of blockage at all times.

Contract CW02 Astounding Asia	
Follow up observations in January 2008	
Observation in last site inspection	**Observation in this site inspection**
 	 
P1050390 & P1050398: Scrap materials and general refuse were accumulated near the Bird Exercise Aviary and the Transformer Room. The Contractor shall remove and dispose them properly.	Closed: P1050556 & P1050567: Scrap materials and general refuse accumulated near the Bird Exercise Aviary and the Transformer Room were removed.
	N/A
P1050393: Stockpile of backfill material at the New Panda House was idle and uncovered. The Contractor shall cover it with tarpaulin or other means.	Closed: Stockpile of backfill material was no longer observed at the New Panda House.
	

P1050394: Excavation was in progress next to the staircase behind the Bird Central Kitchen. The Contractor shall erect sandbags along the edge to avoid excavated materials from dropping into Pond 35.	Closed: P1050561: Excavation next to the staircase behind the Bird Central Kitchen was near completion.
	
P1050402: The U channel within the site for surface runoff was blocked. The Contractor shall ensure the u channel is clear of blockage at all times.	Closed - P1050564: Sand and leaves accumulated in the U channel at New Panda Habitat was cleared.
Observations in February 2008	
 	
P1050557 & P1050558: The permanent drainage channel at Flight Exercise Aviary was accumulated with sand and soil. The Contractor shall ensure the channel is clear of blockage at all times.	P1050556: Exposed soil surfaces under the tree at New Panda Habitat was not covered with tarpaulin sheets or other means.

MONTHLY SITE INSPECTION PHOTOS

 	
P1050567 & P1050570: Stockpiles of excavated materials located next to the Generator Room and between Main Aviary and AA Restaurant were not covered with tarpaulin sheets or other means. The Contractor shall cover them with tarpaulin sheets or other means properly.	P1050569: Mud was accumulated on the access road and drainage channel between the Main Aviary and AA Restaurant. The Contractor shall remove the mud on the access road and any blockage of the drainage channel as soon as possible.

Part 2 CI-05 EM&A REPORTS (February 2008)

OCEAN PARK MASTER REDEVELOPMENMT PROJECT

CONTRACT NO. CI05

SITE FORMATION, FUNICULAR TUNNEL AND MISCELLANEOUS WORKS

Monthly EM&A Report – February 2008

CLIENT:

Ocean Park Corporation

OCEAN PARK, Aberdeen,
Hong Kong

PREPARED BY:

Dragages-Bouygues J.V.

OCEAN PARK Aberdeen
(top of Nam Long Shan Road)

Telephone: (852) 2552 0336
Facsimile: (852) 2552 1036

Schroeder TAM
QSE Officer

REVIEWED BY:

YT SO / Peter IP
Project QSE Manager / General Construction Manager

AUTHORISED BY:

Seved ROBIN
Project Director

DATE:

02 March 2008

TABLE OF CONTENTS

List of Tables

List of Figures

List of Appendices

EXECUTIVE SUMMARY

This is the twelfth 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 February 2008 (from 26 January 2008 to 25 February 2008).

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

Waterfront

- Soft Ground Tunnel Excavation;
- Waterfront Terminus Excavation – North;
- Waterfront Access Road (e.g. Trench Excavation, Temporary Road Diversion);
- Utilities Diversion (e.g. Storm Drainage, Watermain & Sewerage) at Entry Plaza Advance Work;
- Permanent Bus Terminus; and
- Works for Grand Aquarium Advance Works.

Summit

- Main Tunnel Excavation from Adit to Summit and Waterfront;
- Tunnel Permanent Lining;
- Drill & Blast for Summit Site Formation;
- Excavation at Summit;
- Site Formation Works for Summit Terminus and FS Tank Building;
- Crusher and Conveyor Belts Operation.

Tai Shue Wan

- Conveyor Belt and Barging Point Operation.

Government Entrusted Works

- Excavation, Trial Pit Excavation, Construction of Manhole, Pipe Laying (e.g. sewer & water main), Road Surface Reinstatement and Backfilling at Nam Long Shan Road Entrusted Work; and
- Excavation, Construction of Manhole, Pipe Laying and Backfilling 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 February 2008, was 5,229.59 tonnes, 0.00 tonnes and 0.00 tonnes while the volume to the landfills was 29.63 tonnes. Besides the total disposal volume to the alternative dumpsites - Swire Sita by barge was 20,944.69 tonnes and no internal transfer of excavated materials within the reporting month of February 2008.

Apart from the above, DBJV has been a source to provide the excavated material to the Contractor of Central Reclamation Phase III and the volume was 151,348.68 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 AM3A)
24-hour TSP monitoring	5 sessions for all air quality monitoring stations (AM1, AM2 and AM3A)
Daytime noise monitoring	5 sessions for all noise monitoring stations
Evening and night time noise monitoring	4 sessions for all noise monitoring stations
Holiday time noise monitoring	0 session for all noise monitoring stations
Terrestrial ecology monitoring	1 sessions
Subtidal monitoring	1 session
Joint environmental site inspection	4 sessions (include the IEC audit)

Air Quality

The air quality monitoring results obtained in the reporting period of February 2008 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 February 2008 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 that no exceedance was recorded.

Terrestrial Ecology

The terrestrial monitoring was conducted in the reporting period of February 2008 and the finding showed that the transplanted plants were in good condition.

Subtidal Monitoring

The seventh impact subtidal ecology monitoring was conducted in the reporting period of February 2008. 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.

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 and water truck were deployed for the haul road watering and spraying at summit areas; water sprinklers were in operation in the necessary working areas. The Contractor was reminded to keep watering the haul road and working area surfaces once the surfaces are dry, especially during the dry seasons.

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.

The updated temporary drainage system, including the drainage channels and wheel washing bay for both Summit and Waterfront would be installed soon. 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.

Chemical waste store was set and the disposal of chemical waste would be followed the procedures in WMP.

The disposal of C&D wastes by using both the Chits and trip tickets have been implemented in February 2008. 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

One public complaint, no warning, summons or prosecution related to environmental issues was made against the Ocean Park Master Redevelopment Project Contract CI05 in the reporting period of February 2008.

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 February 2008 (from 26 January 2008 to 25 February 2008) 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 February 2008 included Soft Ground Tunnel Excavation; Waterfront Terminus Excavation – North; Waterfront Access Road (e.g. Hoarding, Trench Excavation, Temporary Road Diversion); Utilities Diversion (e.g. Storm Drainage, Watermain & Sewerage) at Entry Plaza Advance Work; Permanent Bus Terminus; and Works for Grand Aquarium Advance Works.

1.7 At Summit, Main Tunnel Excavation from Adit to Summit and Waterfront; Tunnel Permanent Lining; Drill & Blast for Summit Site Formation; Excavation at Summit; Site Formation Works for Summit Terminus & FS Tank Building; and Crusher and Conveyor Belts Operation.

1.8 At Tai Shue Wan, Conveyor belt and barging point operation.

1.9 The entrusted works including Excavation, Trial Pit Excavation, Construction of Manhole, Pipe Laying (e.g. sewer & water main), Road Surface Reinstatement and Backfilling at Nam Long Shan Road Entrusted Work; and Excavation, Construction of Manhole, Pipe Laying and Backfilling at Wong Chuk Hang Road

1.10 Layout plan of the Project is provided in Figures 1.2 and 1.3.

1.11 The amounts of different types of material generated by the activities of the Project in the reporting month are shown in Table 1.1.

Table 1.1 Amounts of Material Generated in the reporting of February 2008

Material Type	Delivery / Disposal Location	Estimated Amount (tonnes unless specified)
C&D waste	SENT	29.63
	TKOSF	0.00
C&D material	Swire Sita *	20,944.69
	QBBP	5,229.59
	Central Reclamation Phase III *	151,348.68
	TKOFB	0.00
	INTL **	0.00
Chemical waste	Collected by licensed collector	0 L
General waste	Collected by licensed collector	53.00m^3

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

Compliance with EP conditions

1.12 A summary of the reporting requirement of compliance with EP conditions of Contract CI05 of the Project as of February 2008 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.

Table 1.2 Environmental Permit Submission

Environmental Permit Submission	EP-249/2006/A Condition No.	Status
Drainage Proposal	2.13	Deposited in the EIAO Register Office for public inspection on 30 May 2007.
Silt Curtain Proposal	2.14	Deposited in the EIAO Register Office for public inspection on 01 March 2007.
Transplantation Proposal	2.20 (a)	Deposited in the EIAO Register Office for public inspection on 25 September 2007.
As-built drawing of transplantation	2.20 (b)	Deposited in the EIAO Register Office for public inspection on 31 October 2007.
Waste Management Plan	2.21	Deposited in the EIAO Register Office for public inspection on 25 September 2007.
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 Jan '07	4.2	Submitted on 12 February 2008.

Summary of EM&A Requirements

1.13 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.

1.14 The environmental licensing and permits are described in Section 6.

1.15 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
AM3A	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
AM3A	Open areas of PMR & OPC temporary site offices

Monitoring Methodology

24-hour / 1-hour TSP Monitoring

Installation

2.5 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 m^3/min. The range specified in the EM&A Manual was between 0.6-1.7 m^3/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

2.6 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.

2.7 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 (μg/m^3)		
	AM1	AM2	AM3A
28-Jan-08	91	71	176
30-Jan-08	110	73	206
31-Jan-08	148	126	221
01-Feb-08	111	73	118
04-Feb-08	138	141	278
06-Feb-08	49	81	172
06-Feb-08	114	89	125
11-Feb-08	116	146	177
12-Feb-08	136	144	206
13-Feb-08	158	146	164
15-Feb-08	156	150	160
18-Feb-08	154	178	378
20-Feb-08	122	161	192
22-Feb-08	169	215	294
23-Feb-08	93	118	141
25-Feb-08	98	112	148

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

Table 2.5 Monitoring Results of 24-hr TSP

Date of Monitoring	24-hr TSP (μg/m^3)		
	AM1	AM2	AM3A
31-Jan-08	32	41	63
06-Feb-08	60	80	95
12-Feb-08	73	85	95
18-Feb-08	61	82	110
23-Feb-08	79	92	109

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

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 February 2008 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
28-Jan-08	64.8	57.3	56.6	59.8
04-Feb-08	67.8	56.6	55.8	64.5
11-Feb-08	64.8	55.3	55.2	62.7
18-Feb-08	64.9	59.0	58.7	66.5
25-Feb-08	63.7	58.2	59.2	67.1

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

Table 3.5 Monitoring Results of Evening Noise

Date of Monitoring	Noise Level, Leq (15-min), dB(A)			
	CN1	CN2	CN3	CN4
31-Jan-08	55.0	58.8	57.1	49.2
04-Feb-08	59.3	59.2	59.4	48.2
13-Feb-08	54.0	58.4	59.2	50.2
20-Feb-08	55.3	56.2	56.8	49.6

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 monitored at least once a month during the first 12 months after transplantation.

Monitoring Parameters, Frequency and Duration

4.2. The health condition of the transplanted plant has been investigated within the reporting month of February 2008.

Monitoring Locations

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

Monitoring Methodology

4.4. The monitoring methodology would be as follows:

- Check and control pests;
- Check and control exotic plants;
- Adding soil to compensate soil erosion by rain and run off; and
- Provide fertiliser.

Results and Observations

4.5. The monitoring results showed that all transplanted plants were in good condition. All the transplanted Sword-leaved Orchids were healthy and most of the transplanted Balloon Flowers at the receptor site were experience seasonal shrunken.

4.6. The above ground part of the Chinese Lily and Balloon Flower (partially) were became withered due to natural seasonality while the underground roots are alive. It is expected that more Balloon Flower and Chinese Lily would geminate in the coming growing season since few new seedlings for these two plants were observed during the monitoring.

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 seventh impact subtidal monitoring conducted within the reporting month of February 2008.

5.10 The results of monitoring show that sedimentation on tagged colonies from all monitoring stations and the control site (n=18 out of 60 colonies) increased by 1% to 3% when compared with the initial survey conducted in April 2007. In another 15 colonies from all six sites, the sedimentation decreased by 1% to 9% when compared with the initial survey. Bleaching increased in 4 colonies by 2% to 5% while the partial mortality increased by 2% to 5% in 9 colonies.

5.11 In all monitoring sites and control station, level of sedimentation on the tagged corals varied within a small range (<10%) without an observable trend. The variation was believed to be resulted from combined environmental factors such as monsoonal wind, tidal current, peripheral transports, substratum type etc. The low level of increment in bleaching and partial mortality suggested minor adverse effect was caused by the observed sedimentation.

5.12 Four of the tagged ***Porites*** colonies (each in Sites 3, 4 & 5 and Control Site C) showed abnormal status with symptoms of paleness polyps, production of a mucus layer on colony surface and overgrowth of microalgae on the mucus layer. These symptoms were only observed in ***Porites*** sp. Similar phenomenon was also reduced in the eastern and southern waters in the same period. This phenomenon has never been reported in Hong Kong before. The symptom is believed not to be caused by construction work, as no apparent increment of sediment is recognized and the observation is not limited to the impact sites.

5.13 The prolong (~ 3 weeks), extremely low water temperature (13 - 15°C) has been recorded from later January to late February 2008 and is going to extend to a couple of weeks in Hong Kong waters (Hong Kong Observatory). As mean winter water temperature in Hong Kong is usually ~ 17°C, the below-average water temperature in this winter is believed to have adverse effect on the survival of tropical marine communities, in particular the hard coral species including the ***Porities*** colonies.

5.14 Further observation is necessary in order to evaluate the bleaching and mortality status of the tagged ***Porities*** colonies (C03, D05, E04 and F04). If the symptoms persist, or mortality increase due to factors other than the construction sources (as indicated by concomitant occurrence in both impact and control sites), the colonies will be considered not suitable for monitoring purpose and new colonies of other species will be tagged to accomplish the objectives.

5.15 The data from this monitoring survey showed no significant enhancement in sedimentation, bleaching or mortality in all the monitoring sites when compared with the Control Site C. Hence, no adverse impact by the construction activity on the coral community was evidenced.

5.16 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

- The sixth monitoring has been conducted in the reporting month of February 2008 to check the health condition of the transplanted plants.

Subtidal Monitoring

- The seventh impact subtidal monitoring conducted within the reporting month of February 2008 to monitor the condition of the subtidal environment during the construction.

Status of Environmental Licensing and Permitting

6.3 All permits/licences obtained as of February 2008 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-RS0548-07	04-Sep-07	20-Feb-08	Generator, silenced, 75dB(A) at 7m; Excavator, tracked; Dump truck; Emulsion pump truck; Light tower; and Crawler crane.	Expired
GW-RS0768-07	30 Nov 07	29 May 08	Breaker, min-robot mounted; Excavator, mini-robot mounted; Light goods vehicle, GVW ≤ 5.5 tonnes; Air compressor, with noise emission label showing SWL ≤ 100dB(A); Breaker, hand-held (electric), mass ≤ 10kg; Concrete lorry mixer; Compactor, vibratory; Mini-compacting roller; Welding generator and Lorry with crane.	Valid
GW-RS0786-07	11 Dec 07	10 Jun 08	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-RS0780-07	11 Dec 07	06 Jun 08	Crushing Plant; Dump trucks; Conveyor belt and Excavator, tracked.	Surrendered
GW-RS0787-07	11 Dec 07	10 Jun 08	Ventilation fan; Excavator, tracked; Shotcrete machine; Concrete lorry mixer; Hydraulic drill; Cherry picker; Welding set; Air compressor, with noise emission label showing SWL ≤ 102dB(A); Loader, wheeled.	Valid
GW-RS-0037-08	04 Feb 08	01 Mar 08	Crushing Plant; Dump trucks; Conveyor belt and Excavator, tracked.	Valid
GW-RS0061-08	13 Feb 08	20 Aug 08	Generator, silenced, 75dB(A) at 7m; Excavator, tracked; Dump truck; Emulsion pump truck; Light tower; and Crawler crane.	Valid
GW-RS-0063-08	15 Feb 08	14 Jul 08	Breaker, min-robot mounted; Excavator, mini-robot mounted; Light goods vehicle, GVW ≤ 5.5 tonnes; Air compressor, with noise emission label showing SWL ≤ 100dB(A); Breaker, hand-held (electric), mass ≤ 10kg; Concrete lorry mixer; Compactor, vibratory; Mini-compacting roller; Welding generator and Lorry with crane.	Valid

Table 6.1 Summary of Environmental Licensing and Permit Status

Permit No.	Valid Period		Section/Description	Status
	From	To		
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				
L-11-044 (1)	20-Sep-07	19-Sep-12	Conduct Specified Process, viz., Mineral Works, in the premises at "Ocean Park Master Redevelopment Project Contract CI05 – Site Formation, Funicular Tunnel and Miscellaneous Works, Ocean Park, Aberdeen, Hong Kong (at top of Nam Long Shan Road)"	Valid
Notification of Construction Works under APCO				
Waterfront sent on 31-Jan-07 (ref. 001017998)				
Summit sent on 05-Feb-07 (ref. 001018054)				
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 01, 05 and 15 February 2008. The IEC has undertaken the monthly audit on 22 February 2008. During site inspections in this reporting month, the following observations and recommendations were made.

Land Based Water Quality Mitigation Measures

6.5 The surface channel near the main tunnel entrance at summit was accumulated with sand and mud. The sediment should be removed as soon as possible and maintained free flow in all of the times.

Air Quality Mitigation Measures

6.6 Increase the watering frequency at the exposed surface especially the crushing plant and conveyor system at Summit.

6.7 Provision of sufficient water sprinklers to suppress dust especially the rock breaking and excavation activities at the Summit Terminus.

6.8 Stockpiles of dusty materials should be covered with tarpaulin or other means in order to reduce the dust nuisance to the vicinity.

Noise

6.9 No violation was observed during site inspections in the reporting month of February 2008.

Ecology

6.10 No violation was observed during site inspections in the reporting month of February 2008.

Waste / Chemical Management

6.11 Cleaning of drainage channel and catchpits in order to ensure that no blockage of the water flows. Besides, sandbags or blocked by other means should be provided to prevent surface runoff and/or mud discharged offsite.

6.12 Regular cleaning of construction debris along the conveyor belts in order to keep tidiness of the site.

Landscape and Visual

6.13 No violation was observed during site inspections in the reporting month of February 2008.

Environmental Mitigation Implementation Schedule (EMIS)

6.14 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

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

6.16 No exceedance of air quality (i.e. 1 hour & 24-hour TSP) was recorded during the reporting month of February 2008.

6.17 No exceedance of noise limit level during daytime and evening was recorded in the reporting month of February 2008.

6.18 No exceedance of subtidal monitoring was recorded in the reporting month of February 2008.

Implementation Status of Environmental Complaint Handling Procedures

Summary of the Complaints and Prosecutions

6.19 Appendix J presents the environmental complaint flow diagram of the Project.

6.20 One complaint, no summons or prosecution related to environmental issues from EPD was received or made against the Project in February 2008.

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 February 2008. 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 February 2008.

8.3 The seventh impact subtidal monitoring conducted within the reporting month of February 2008 and the results showed that no exccedances of Action and Limit Levels.

8.4 The sixth terrestrial ecology monitoring conducted in the reporting month of February 2008 and the condition of transplanted plants was good according to the monitoring results.

8.5 One complaint from public and no summons or prosecution related to environmental issues from EPD were made against the Project in the reporting period.

Recommendations

8.6 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

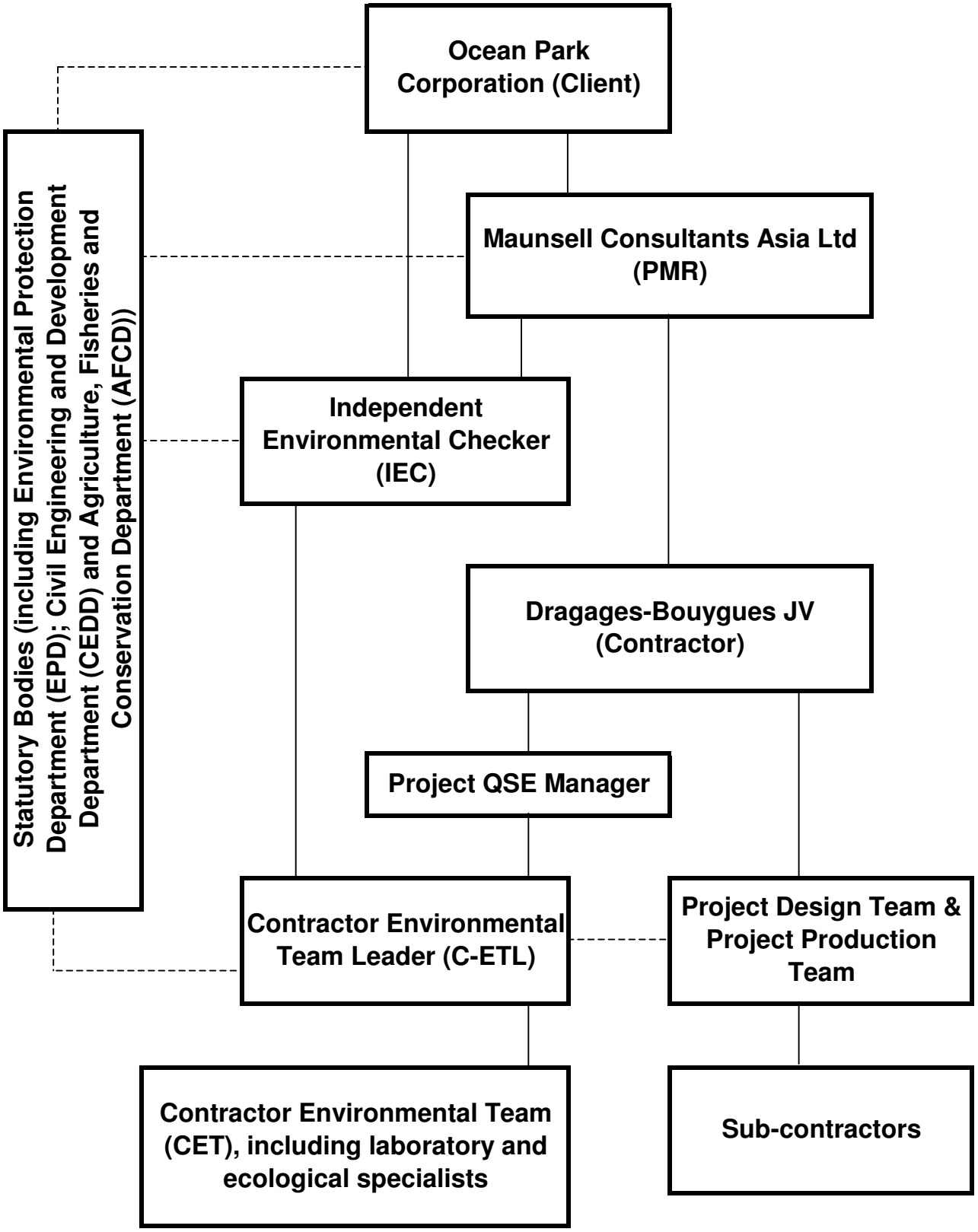
- To inspect the noise sources from inside and outside of the site.
- To follow up any exceedance caused by the construction works.
- To space out noisy equipment and position as far away as possible from sensitive receivers.
- To have regular maintenance of vessels and equipment used.

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 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	MAIN CONTRACTOR :	CLIENT :
				DRAWN BY	BLo	Dragages-Bouygues JV 寶嘉-布依格聯營	香港海洋公園 OCEAN PARK HONG KONG
				CHECKED BY	GCh		
				IN CHARGE	DNg		
A	02APR2007	GCh	FIRST ISSUE	DATE	02APR2007		
REV.	DATE	BY	DESCRIPTION				

PROJECT TITLE :

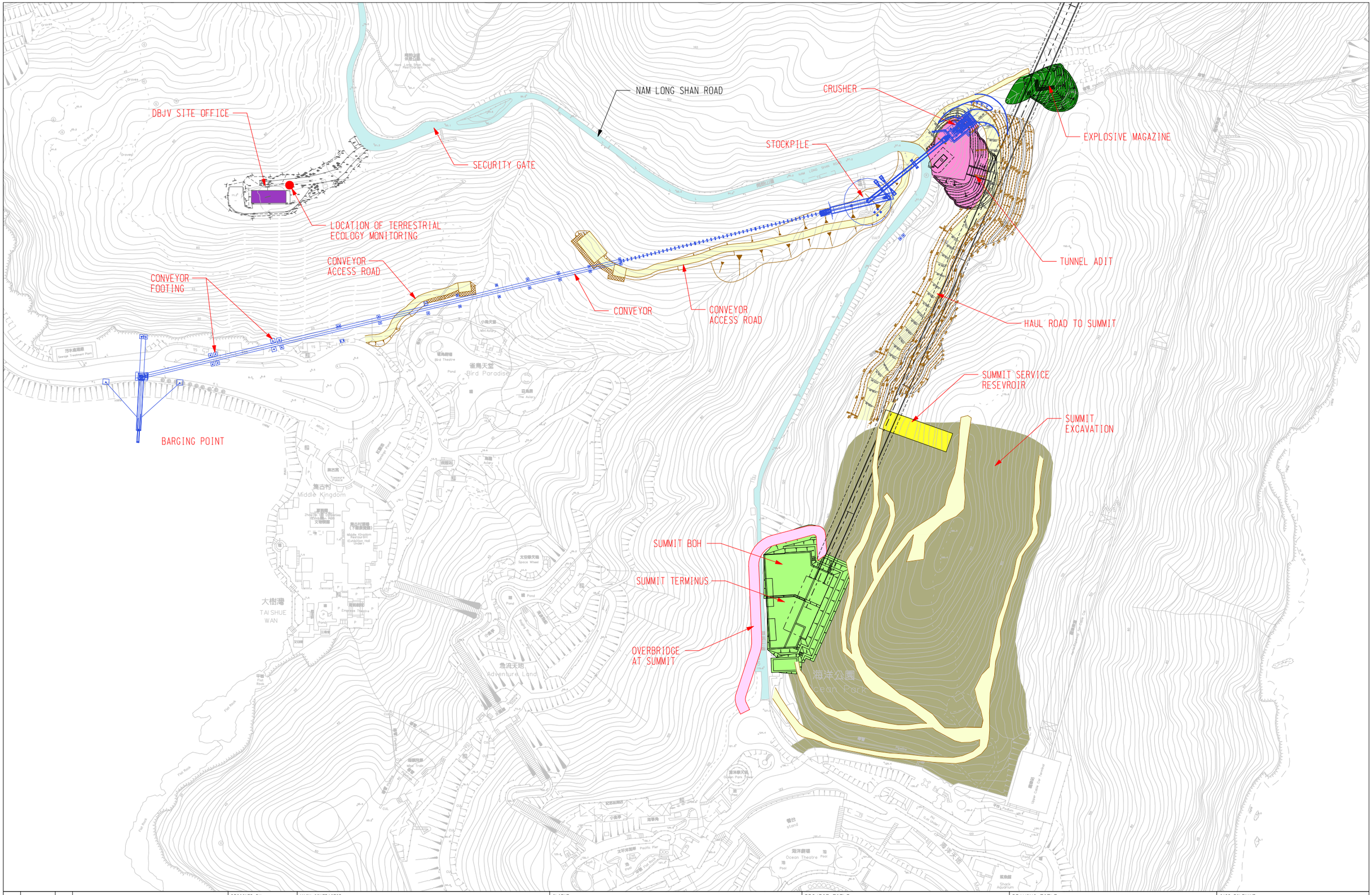
OCEAN PARK REDEVELOPMENT

Contract No. CI05
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/CI05/01/ENV/0013
REV.	A



REV.	DATE	BY	DESCRIPTION
B	10AUG2007	GCb	FIRST ISSUE
A	02APR2007	GCb	FIRST ISSUE

DESIGNED BY BLo
DRAWN BY BLo
CHECKED BY GCb
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. CI05
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 : 01ENV0014B.DGN
DATE : 10AUG2007
SCALE : 1 : 2500 @ A3
DRAWING NUMBER : DBJV/CI05/Q1/ENV/0014
REV. B

REV.	DATE	BY	DESCRIPTION
D	07NOV2007	STa	AM3 DELETED
C	31JUL2007	STa	PROPOSED AM3 RELOCATED
B	25JUN2007	STa	PROPOSED AM3 ADDED
A	02APR2007	STa	FIRST ISSUE

DESIGNED BY	STa
DRAWN BY	BLo
CHECKED BY	STa
IN CHARGE	YTS
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. CI05
Site Formation, Funicular Tunnel and Miscellaneous Works

DRAWING TITLE :

FIGURE 1.4
AIR QUALITY AND NOISE MONITORING STATIONS LOCATION PLAN

CADD FILENAME :	01ENV0015D.DGN
DATE :	07NOV2007
SCALE :	1 : 3000 @ A3
DRAWING NUMBER :	DBJV/CI05/01/ENV/0015
REV.	D

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 :

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. CI05
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/CI05/01/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 (μg/m^3)		1-hr TSP (μg/m^3)	
	Action Level	Limit Level	Action Level	Limit Level
AM1	183	260	440	500
AM2	181	260	500	500
AM3/AM3A	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 February 2008 to 25 March 2008

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

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 ($\mu g/m^3$)	Weather Condition	Particular weight (g)	Average flow (m^3/min)	Total volume (m^3)
From		To													
Date	Time	Date	Time	Initial	Final	Initial	Final	Initial	Final						
28-Jan-08	13:10	28-Jan-08	14:10	2.8034	2.8093	1.1	1.1	10803.76	10804.76	1	91	Cloudy	0.0059	1.1	65
30-Jan-08	9:00	30-Jan-08	10:00	2.8570	2.8643	1.1	1.1	10804.76	10805.76	1	110	Rainy	0.0073	1.1	66
31-Jan-08	9:00	31-Jan-08	10:00	2.8235	2.8331	1.1	1.1	10805.76	10806.76	1	148	Rainy	0.0096	1.1	148
01-Feb-08	13:10	01-Feb-08	14:10	2.8147	2.8219	1.1	1.1	10830.76	10831.76	1	111	Cloudy	0.0072	1.1	65
04-Feb-08	9:00	04-Feb-08	10:00	2.8099	2.8186	1.1	1.1	10831.76	10832.76	1	138	Cloudy	0.0087	1.1	63
06-Feb-08	9:00	06-Feb-08	10:00	2.8176	2.8207	1.1	1.1	10832.76	10833.76	1	49	Cloudy	0.0031	1.1	63
06-Feb-08	10:55	06-Feb-08	11:55	2.7892	2.7964	1.1	1.1	10833.76	10834.76	1	114	Cloudy	0.0072	1.1	63
11-Feb-08	10:57	11-Feb-08	11:57	2.8067	2.8142	1.1	1.1	10858.76	10859.76	1	116	Cloudy	0.0075	1.1	65
12-Feb-08	9:00	12-Feb-08	10:00	2.7858	2.7946	1.1	1.1	10859.76	10860.76	1	136	Cloudy	0.0088	1.1	65
13-Feb-08	13:30	13-Feb-08	14:30	2.8131	2.8231	1.1	1.1	10884.76	10885.76	1	158	Cloudy	0.0100	1.1	63
15-Feb-08	9:00	15-Feb-08	10:00	2.8103	2.8204	1.1	1.1	10885.76	10886.76	1	156	Cloudy	0.0101	1.1	65
18-Feb-08	9:00	18-Feb-08	10:00	2.8327	2.8424	1.1	1.1	10886.76	10887.76	1	154	Cloudy	0.0097	1.1	63
20-Feb-08	13:00	20-Feb-08	14:00	2.8473	2.8550	1.1	1.1	10911.76	10912.76	1	122	Fine	0.0077	1.1	63
22-Feb-08	9:00	22-Feb-08	10:00	2.9022	2.9129	1.1	1.1	10912.76	10913.76	1	169	Fine	0.0107	1.1	63
23-Feb-08	9:00	23-Feb-08	10:00	2.8184	2.8243	1.1	1.1	10913.76	10914.76	1	93	Sunny	0.0059	1.1	63
25-Feb-08	10:50	25-Feb-08	10:49	2.8051	2.8112	1.1	1.1	10938.75	10939.75	1	98	Fine	0.0061	1.1	63

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)

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 ($\mu g/m^3$)	Weather Condition	Particular weight (g)	Average flow (m^3/min)	Total volume (m^3)
From		To													
Date	Time	Date	Time	Initial	Final	Initial	Final	Initial	Final						
28-Jan-08	13:07	28-Jan-08	14:07	2.8361	2.8411	1.2	1.2	10540.01	10541.01	1	71	Cloudy	0.0050	1.2	71
30-Jan-08	9:00	30-Jan-08	10:00	2.7687	2.7739	1.2	1.2	10541.01	10542.01	1	73	Rainy	0.0052	1.2	71
31-Jan-08	9:00	31-Jan-08	10:00	2.8357	2.8446	1.2	1.2	10542.01	10543.01	1	126	Rainy	0.0089	1.2	71
01-Feb-08	13:00	01-Feb-08	14:00	2.8289	2.8342	1.2	1.2	10567.01	10568.01	1	73	Cloudy	0.0053	1.2	73
04-Feb-08	9:00	04-Feb-08	10:00	2.8128	2.8228	1.2	1.2	10568.01	10569.01	1	141	Cloudy	0.0100	1.2	71
06-Feb-08	9:00	06-Feb-08	10:00	2.8036	2.8095	1.2	1.2	10569.01	10570.01	1	81	Cloudy	0.0059	1.2	73
06-Feb-08	10:47	06-Feb-08	11:47	2.7837	2.7902	1.2	1.2	10570.01	10571.01	1	89	Cloudy	0.0065	1.2	73
11-Feb-08	10:45	11-Feb-08	11:45	2.8154	2.8257	1.2	1.2	10595.01	10596.01	1	146	Cloudy	0.0103	1.2	71
12-Feb-08	9:00	12-Feb-08	10:00	2.8158	2.8260	1.2	1.2	10596.01	10597.01	1	144	Cloudy	0.0102	1.2	71
13-Feb-08	13:25	13-Feb-08	14:25	2.8421	2.8524	1.2	1.2	10621.01	10622.01	1	146	Cloudy	0.0103	1.2	71
15-Feb-08	9:00	15-Feb-08	10:00	2.7889	2.7995	1.2	1.2	10622.01	10623.01	1	150	Cloudy	0.0106	1.2	71
18-Feb-08	9:00	18-Feb-08	10:00	2.8202	2.8323	1.1	1.1	10623.01	10624.00	1	178	Cloudy	0.0121	1.1	68
20-Feb-08	13:00	20-Feb-08	14:00	2.9192	2.9303	1.1	1.1	10647.99	10648.99	1	161	Fine	0.0111	1.1	69
22-Feb-08	9:00	22-Feb-08	10:00	2.8756	2.8904	1.1	1.1	10648.99	10649.99	1	215	Fine	0.0148	1.1	69
23-Feb-08	9:00	23-Feb-08	10:00	2.8376	2.8457	1.1	1.1	10649.99	10650.99	1	118	Sunny	0.0081	1.1	69
25-Feb-08	10:46	25-Feb-08	11:46	2.8478	2.8557	1.2	1.2	10674.99	10675.99	1	112	Fine	0.0079	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

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

1-hr TSP Monitoring Results at Station AM3A

Monitoring Period				Filter Weight (g)		Flow Rate (m^3/min)		Elapse Time (hour)		Sampling Time (hours)	Concentration ($\mu g/m^3$)	Weather Condition	Particular weight (g)	Average flow (m^3/min)	Total volume (m^3)
From		To													
Date	Time	Date	Time	Initial	Final	Initial	Final	Initial	Final						
28-Jan-08	13:20	28-Jan-08	14:20	2.8155	2.8281	1.2	1.2	12960.76	12961.76	1	176	Cloudy	0.0126	1.2	72
30-Jan-08	9:00	30-Jan-08	10:00	2.8171	2.8315	1.2	1.2	12961.76	12962.76	1	206	Rainy	0.0144	1.2	70
31-Jan-08	9:00	31-Jan-08	10:00	2.8574	2.8724	1.1	1.1	12962.76	12963.76	1	221	Rainy	0.0150	1.1	68
01-Feb-08	13:20	01-Feb-08	14:20	2.8322	2.8407	1.2	1.2	12987.76	12988.76	1	118	Cloudy	0.0085	1.2	72
04-Feb-08	9:00	04-Feb-08	10:00	2.8150	2.8355	1.2	1.2	12988.76	12989.76	1	278	Cloudy	0.0205	1.2	74
06-Feb-08	9:00	06-Feb-08	10:00	2.8204	2.8324	1.2	1.2	12990.23	12991.23	1	172	Cloudy	0.0120	1.2	70
06-Feb-08	11:00	06-Feb-08	12:00	2.8011	2.8101	1.2	1.2	12991.23	12992.23	1	125	Cloudy	0.0090	1.2	72
11-Feb-08	10:35	11-Feb-08	11:35	2.8042	2.8176	1.3	1.3	13056.33	13057.33	1	177	Cloudy	0.0134	1.3	76
12-Feb-08	9:00	12-Feb-08	10:00	2.7578	2.7730	1.2	1.2	13057.33	13058.33	1	206	Cloudy	0.0152	1.2	74
13-Feb-08	13:15	13-Feb-08	14:15	2.8186	2.8310	1.3	1.3	13082.33	13083.33	1	164	Cloudy	0.0124	1.3	76
15-Feb-08	9:00	15-Feb-08	10:00	2.8258	2.8379	1.3	1.3	13083.33	13084.33	1	160	Cloudy	0.0121	1.3	76
18-Feb-08	9:00	18-Feb-08	10:00	2.8543	2.8814	1.2	1.2	13084.33	13085.33	1	378	Cloudy	0.0271	1.2	72
20-Feb-08	13:00	20-Feb-08	14:00	2.8602	2.8736	1.2	1.2	13109.32	13110.32	1	192	Fine	0.0134	1.2	70
22-Feb-08	9:00	22-Feb-08	10:00	2.8849	2.9054	1.2	1.2	13110.32	13111.32	1	294	Fine	0.0205	1.2	70
23-Feb-08	9:00	23-Feb-08	10:00	2.8346	2.8442	1.1	1.1	13111.32	13112.32	1	141	Sunny	0.0096	1.1	68
25-Feb-08	11:10	25-Feb-08	12:10	2.8270	2.8379	1.2	1.2	13136.32	13137.32	1	148	Fine	0.0109	1.2	74

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 AM1

Monitoring Period				Filter Weight (g)		Flow Rate (m^3/min)		Elapse Time (hour)		Sampling Time (hours)	Concentration ($\mu g/m^3$)	Weather Condition	Particular weight (g)	Average flow (m^3/min)	Total volume (m^3)
From		To													
Date	Time	Date	Time	Initial	Final	Initial	Final	Initial	Final						
31-Jan-08	10:20	01-Feb-08	10:20	2.8382	2.8864	1.1	1.1	10806.76	10830.76	24	32	Cloudy	0.0482	1.1	1516
06-Feb-08	14:50	07-Feb-08	14:50	2.7861	2.8786	1.1	1.1	10834.76	10858.76	24	60	Cloudy	0.0925	1.1	1554
12-Feb-08	13:20	13-Feb-08	13:20	2.7886	2.9018	1.1	1.1	10860.76	10884.76	24	73	Cloudy	0.1132	1.1	1554
18-Feb-08	11:28	19-Feb-08	11:28	2.8399	2.9276	1.0	1.0	10887.76	10911.76	24	61	Cloudy	0.0877	1.0	1441
23-Feb-08	15:44	24-Feb-08	15:44	2.8232	2.9461	1.1	1.1	10914.76	10938.76	24	79	Cloudy	0.1229	1.1	1554

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 ($\mu g/m^3$)	Weather Condition	Particular weight (g)	Average flow (m^3/min)	Total volume (m^3)
From		To													
Date	Time	Date	Time	Initial	Final	Initial	Final	Initial	Final						
31-Jan-08	10:10	01-Feb-08	10:10	2.8181	2.8905	1.2	1.2	10543.01	10567.01	24	41	Cloudy	0.0724	1.2	1746
06-Feb-08	14:40	07-Feb-08	14:40	2.7670	2.9061	1.2	1.2	10571.01	10595.01	24	80	Cloudy	0.1391	1.2	1746
12-Feb-08	13:20	13-Feb-08	13:20	2.8277	2.9721	1.2	1.2	10597.01	10621.01	24	85	Cloudy	0.1444	1.2	1699
18-Feb-08	11:14	19-Feb-08	11:13	2.8259	2.9648	1.2	1.2	10624.00	10647.99	24	82	Cloudy	0.1389	1.2	1698
23-Feb-08	15:30	24-Feb-08	15:30	2.8518	3.0128	1.2	1.2	10650.99	10674.99	24	92	Cloudy	0.1610	1.2	1746

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 AM3A

Monitoring Period				Filter Weight (g)		Flow Rate (m^3/min)		Elapse Time (hour)		Sampling Time (hours)	Concentration ($\mu g/m^3$)	Weather Condition	Particular weight (g)	Average flow (m^3/min)	Total volume (m^3)
From		To													
Date	Time	Date	Time	Initial	Final	Initial	Final	Initial	Final						
31-Jan-08	10:35	01-Feb-08	10:35	2.8432	2.9568	1.3	1.3	12963.76	12987.76	24	63	Cloudy	0.1136	1.3	1815
06-Feb-08	14:30	07-Feb-08	14:30	2.8019	2.9658	1.2	1.2	12992.23	13016.23	24	95	Cloudy	0.1639	1.2	1722
12-Feb-08	13:10	13-Feb-08	13:10	2.8171	2.9812	1.2	1.2	13058.33	13082.33	24	95	Cloudy	0.1641	1.2	1722
18-Feb-08	11:50	19-Feb-08	11:49	2.8445	3.0386	1.2	1.2	13085.33	13109.32	24	110	Cloudy	0.1941	1.2	1768
23-Feb-08	15:59	24-Feb-08	15:59	2.8723	3.0607	1.2	1.2	13112.32	13136.32	24	109	Cloudy	0.1884	1.2	1722

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

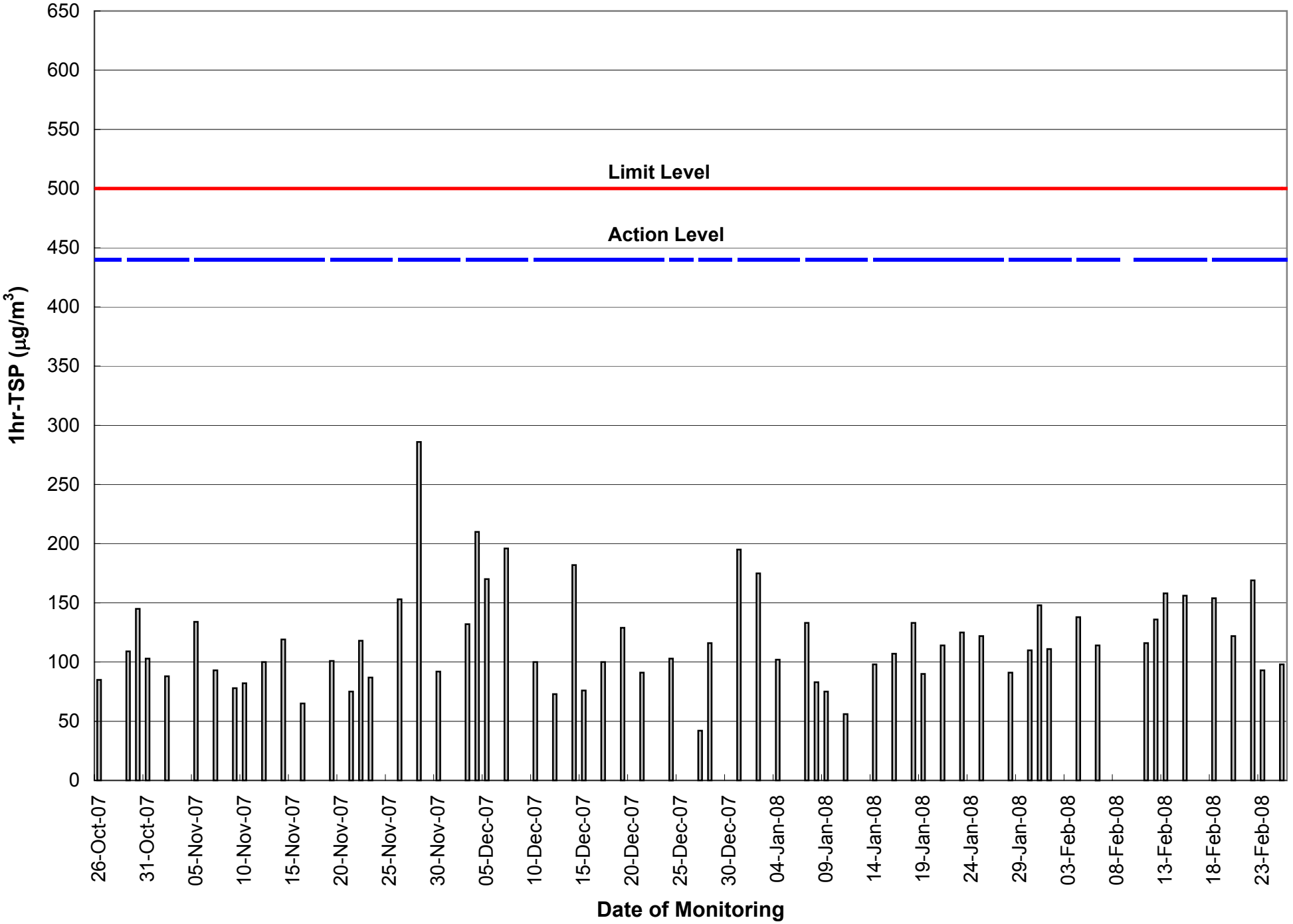


Figure C.2 1-hr TSP monitoring results of Monitoring Station AM2

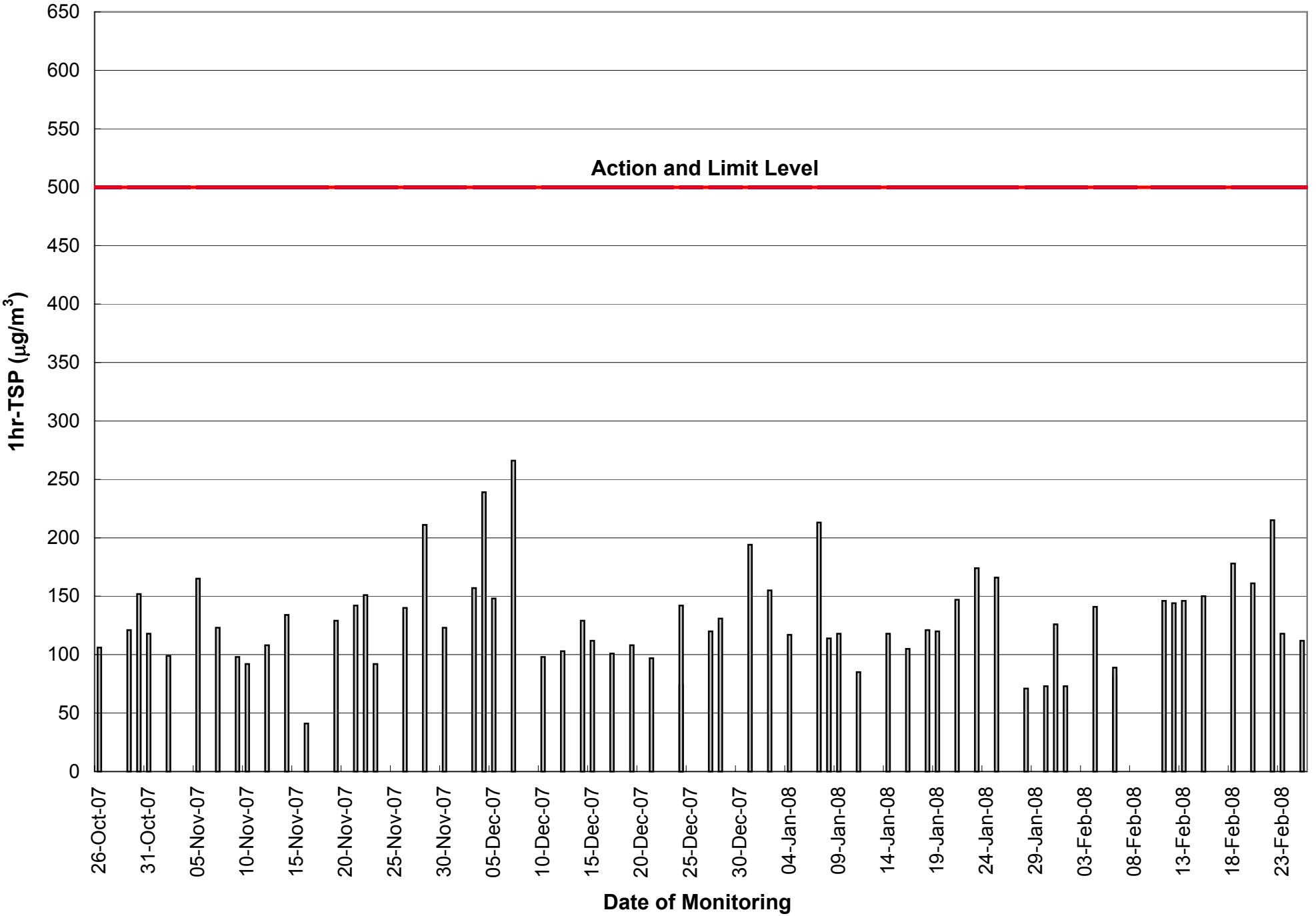


Figure C.3 1-hr TSP monitoring results of Monitoring Station AM3A

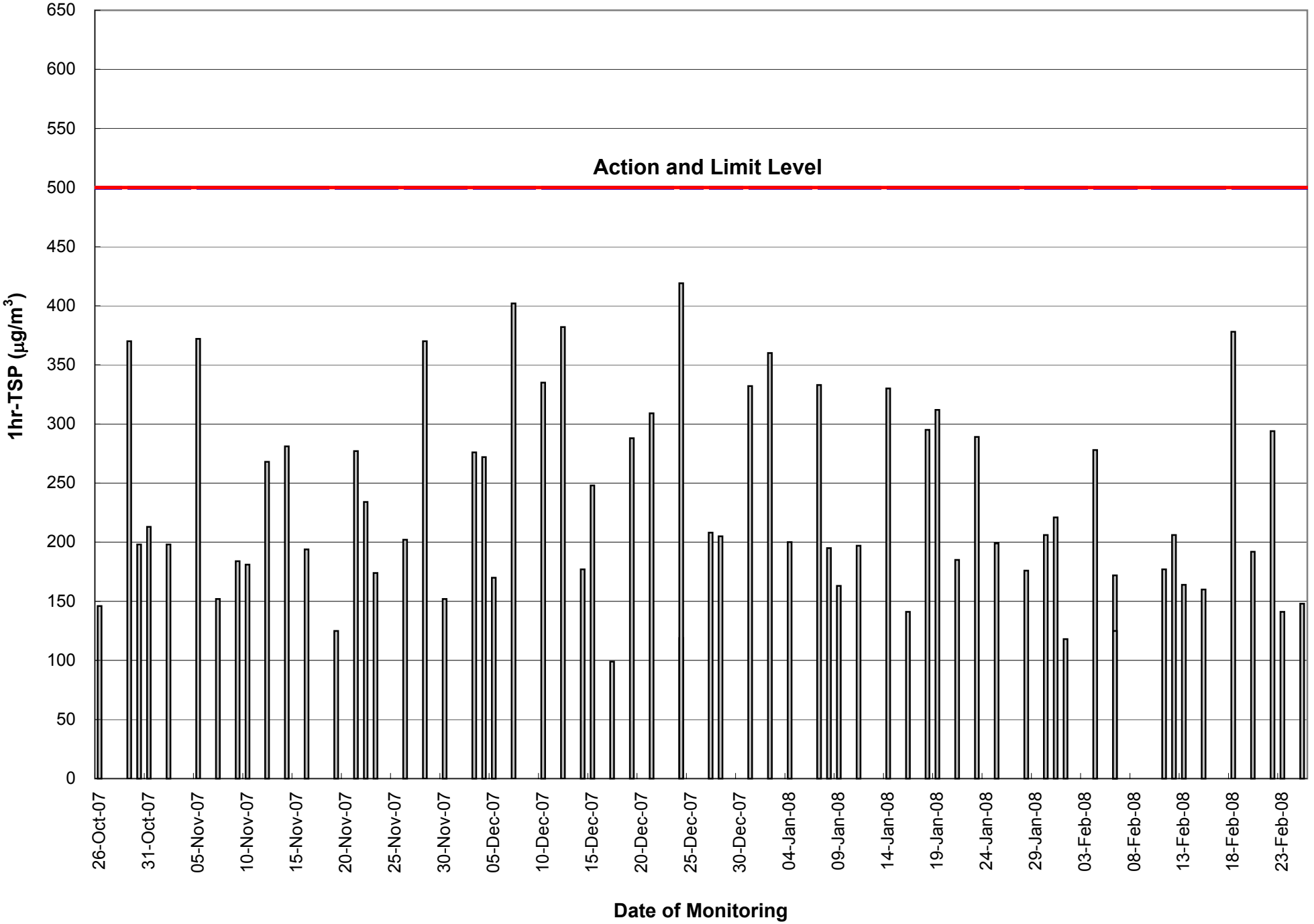
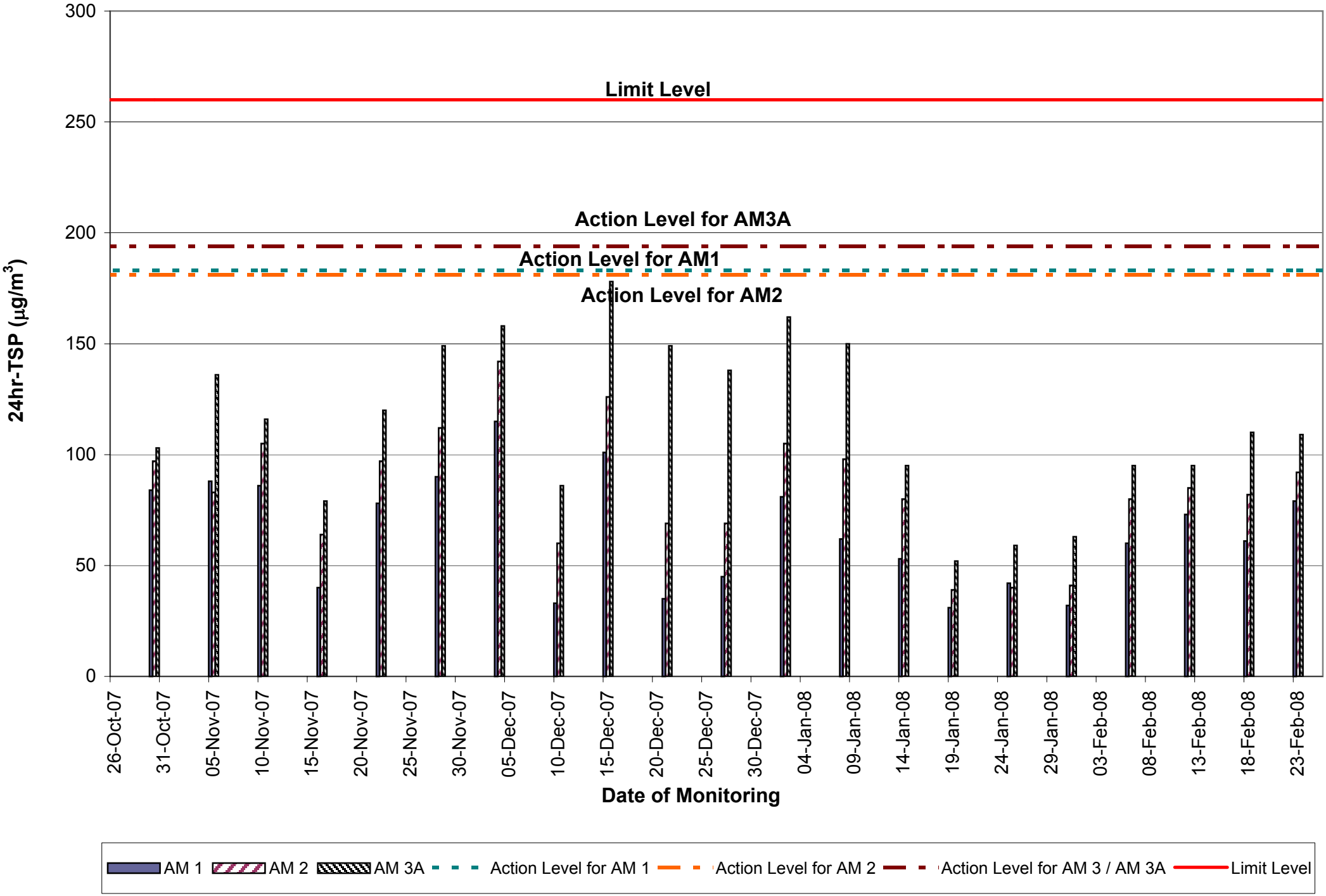


Figure C.4 24-hr TSP monitoring results of Monitoring Station AM1, AM2 & AM3A



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			
28-Jan-08	Cloudy	9:00	64.8	67.6	62.9	63.2	70	N
04-Feb-08	Cloudy	9:20	67.8	69.9	65.6	63.2	70	N
11-Feb-08	Cloudy	8:50	64.8	67.6	61.3	63.2	70	N
18-Feb-08	Fine	8:00	64.9	67.7	61.2	63.2	70	N
25-Feb-08	Cloudy	10:30	63.7	66.9	60.8	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			
28-Jan-08	Cloudy	9:40	57.3	60.2	53.5	64.0	75	N
04-Feb-08	Cloudy	10:50	56.6	59.0	54.2	64.0	75	N
11-Feb-08	Cloudy	10:23	55.3	58.1	53.2	64.0	75	N
18-Feb-08	Fine	9:19	59.0	62.5	56.1	64.0	75	N
25-Feb-08	Cloudy	11:20	58.2	61.8	55.4	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			
28-Jan-08	Cloudy	10:25	56.6	59.4	53.9	59.3	75	N
04-Feb-08	Cloudy	11:26	55.8	58.7	54.3	59.3	75	N
11-Feb-08	Cloudy	11:01	55.2	58.3	53.3	59.3	75	N
18-Feb-08	Fine	9:53	58.7	62.0	55.8	59.3	75	N
25-Feb-08	Cloudy	13:00	59.2	62.5	56.2	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			
28-Jan-08	Cloudy	11:05	59.8	63.4	57.0	59.9	75	N
04-Feb-08	Cloudy	10:07	64.5	67.1	61.1	59.9	75	N
11-Feb-08	Cloudy	9:38	62.7	67.0	61.1	59.9	75	N
18-Feb-08	Fine	8:38	66.5	70.1	63.2	59.9	75	N
25-Feb-08	Cloudy	17:00	67.1	70.5	64.4	59.3	75	N

Remarks: Bold & Italic value indicated an Limit Level exceedance

APPENDIX D – NOISE MONITORING RESULTS (CONT'D)

Evening Noise Monitoring Results at Station CN1

Date	Weather Condition	Measured Noise Level for 15 mins., dB(A)				Baseline Noise Level, dB(A)	Limit Level, dB(A)	Exceedance (Y/N)
		Time	Leq	L10	L90			
31-Jan-08	Cloudy	19:30	55.0	56.6	44.9	57.0	60	N
04-Feb-08	Cloudy	19:28	59.3	60.6	45.9	57.0	60	N
13-Feb-08	Cloudy	19:30	54.0	57.2	49.6	57.0	60	N
20-Feb-08	Cloudy	19:25	55.3	56.6	47.8	57.0	60	N

Evening Noise Monitoring Results at Station CN2

Date	Weather Condition	Measured Noise Level for 15 mins., dB(A)				Baseline Noise Level, dB(A)	Limit Level, dB(A)	Exceedance (Y/N)
		Time	Leq	L10	L90			
31-Jan-08	Cloudy	20:05	58.8	61.2	54.7	58.5	60	N
04-Feb-08	Cloudy	19:50	59.2	60.4	56.1	58.5	60	N
13-Feb-08	Cloudy	19:55	58.4	61.5	55.9	58.5	60	N
20-Feb-08	Cloudy	19:53	56.2	57.4	52.8	58.5	60	N

Evening Noise Monitoring Results at Station CN3

Date	Weather Condition	Measured Noise Level for 15 mins., dB(A)				Baseline Noise Level, dB(A)	Limit Level, dB(A)	Exceedance (Y/N)
		Time	Leq	L10	L90			
31-Jan-08	Cloudy	20:32	57.1	58.2	55.6	56.1	60	N
04-Feb-08	Cloudy	20:14	59.4	60.2	59.0	56.1	60	N
13-Feb-08	Cloudy	20:18	59.2	62.4	58.8	56.1	60	N
20-Feb-08	Cloudy	20:20	56.8	57.2	53.6	56.1	60	N

Remarks: Bold & Italic value indicated an Limit Level exceedance

APPENDIX D – NOISE MONITORING RESULTS (CONT'D)

Evening Noise Monitoring Results at Station CN4

Date	Weather Condition	Measured Noise Level for 15 mins., dB(A)				Baseline Noise Level, dB(A)	Limit Level, dB(A)	Exceedance (Y/N)
		Time	Leq	L10	L90			
31-Jan-08	Cloudy	19:00	49.2	49.3	44.8	55.8	60	N
04-Feb-08	Cloudy	19:00	48.2	50.3	43.8	55.8	60	N
13-Feb-08	Cloudy	19:00	50.2	53.6	45.3	55.8	60	N
20-Feb-08	Cloudy	19:00	49.6	51.1	45.3	55.8	60	N

Remarks: Bold & Italic value indicated an Limit Level exceedance

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

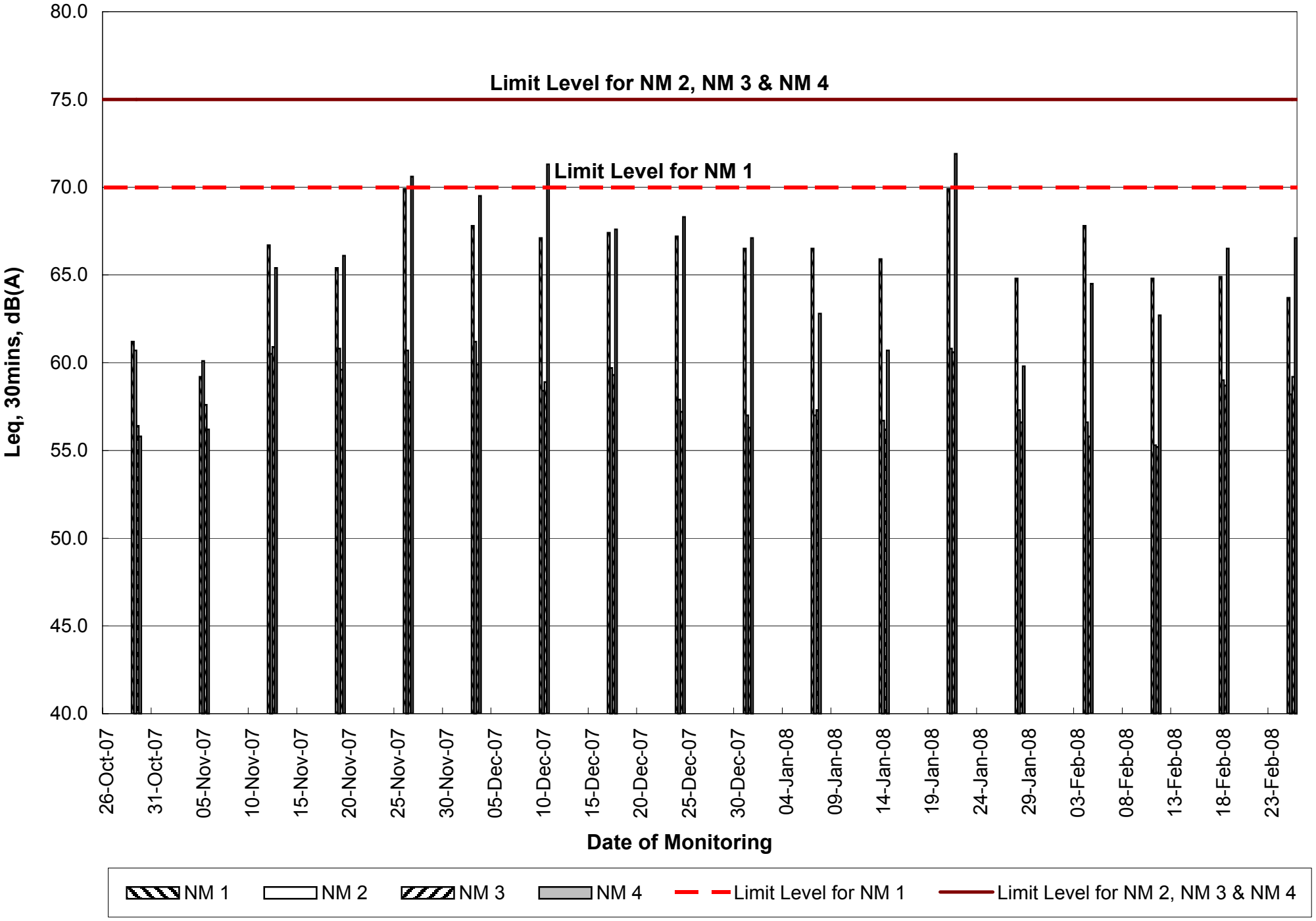
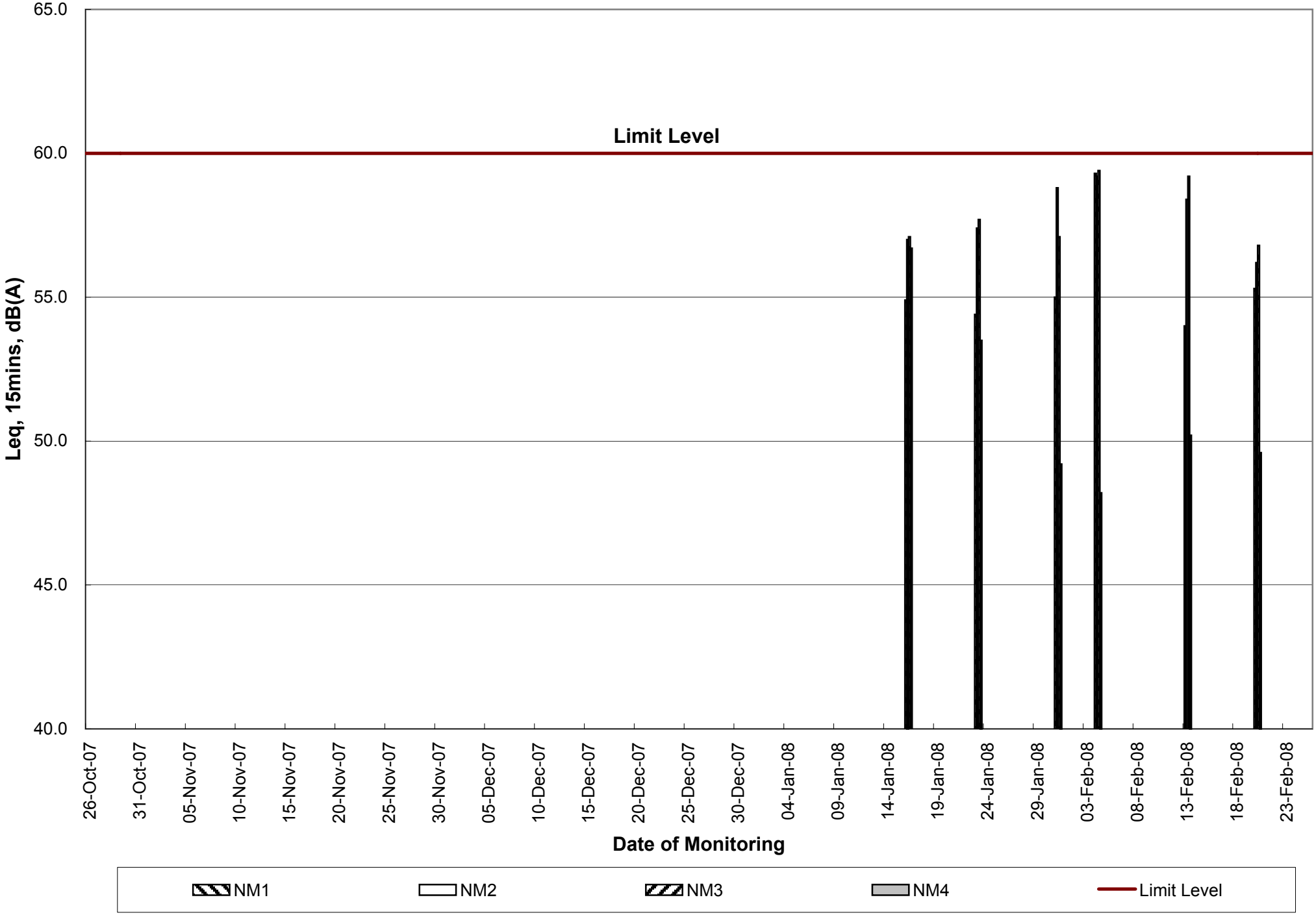


Fig D.2 - Evening Noise Monitoring Results of Monitoring Stations NM1, NM2, NM3 & NM4



APPENDIX E – TERRESTRIAL ECOLOGY MONITORING RESULTS

Ocean Park Master Redevelopment Project

Contractor No. CI05 – Site Formation, Funicular Tunnel and Miscellaneous Works

Environmental Monitoring Works (Terrestrial Ecology)

Plant Transplantation Monitoring Report
(No. 6)
February 2008

Issue and Revision Record

Rev	Date	Originator	Checker	Approver	Description
A	Jan '08	Dr. Mark Shea	Schroeder TAM	Seved ROBIN	Monthly report

China-Hong Kong Ecology Consultants Co
1F, 25 Sun Chun Street,
Tai Hang, Hong Kong

Tel: (852) 2529 9593
Fax: (852) 2574 4822
E-mail: ecology2002@netvigator.com

TABLE OF CONTENTS

LIST OF TABLES

1. SUMMARY

1.1 This is the sixth routine monitoring report of the transplanted plants for Ocean Park Master Redevelopment Project in February 2008.

1.2 Major activities undertaken for the plant receptor during current monitoring period including watering, weeding and observation of plant health.

1.3 Data collected during filed monitoring was given in Table 2. The transplanted plants were generally health. Few new plant seedlings were appeared due to normal plant re-generation indicating the start of growing season.

2. MONITORING PROGRAMME

2.1 As specified in the project contract, routine monitoring of the trans-located uncommon plants is required and will be monitored for the first 12 months after plant trans-location operation. Scopes of monitoring include: plant health, survival, receptor condition, photo record and reporting of findings of monitoring. The monitoring schedule in February 2008 was presented in Table 1.

Table 1 Plant monitoring programme

No.	Monitoring Date	Action taken
1	20 February 2008	Receptor site monitoring, weeding and watering

2.2 Three plant species were transplanted from the affected works area to the plant receptor and are the target species for monitoring (Photo 1). Those three plant species were part of the identified plants during baseline surveys and were transplanted to the receptor site before site formation works: i.e. a) Sword-leaved Orchid; b) Balloon Flower; and c) Chinese Lily.

3 MONITORING RESULTS

3.1 The field monitoring results of the transplanted plants at the receptor site was summarized in Table 2.

Table 2 Summary of field monitoring results of the transplanted plants at the receptor site

Year	Month	Common name of plant	No. of plant transplanted	No. of Survived	Survival rate	Remarks
2008	February	Balloon Flower	30	*Seasonal shrunken with two seedlings appeared*		
		Chinese Lily	25	*Two seedlings appeared, hence indicating that the growing season has been commenced.*		
		Sword-leaved Orchid	45	45	100%	

3.2 The survival rate of the monitored plant - Sword-leaved Orchid was still 100%. The above ground part of the Chinese Lily and Balloon Flower (partially) were became withered due to natural seasonality while the underground roots are alive. It is expected that more Balloon Flower (photos 3 & 4) and Chinese Lily (Photo 5) would geminate in the coming growing season since few new seedlings for these two plants were observed in the monitoring in February 2008.

3.3 The transplanted plants and the plant receptor (Photo 1) is generally in good condition. Most of the transplanted Sword-leaved Orchids were healthy (Photo 2). Most of the transplanted Balloon Flowers at the receptor site were experience seasonal shrunken (Photo 3).

3.4 Regular maintenance including watering, weeding, apply fertilizer and pest checking to be applied continuously at the receptor site in order to achieve higher survival rate. Twice a week watering was continuously implemented during the current dry season.

4 PHOTOS

Photo 1 - Plant nursery.

Photo 2 - Transplanted Sword-leaved Orchid at the plant nursery site.

Photo 3 - Balloon Flower: seasonal shrunken.

Photo 4 - Balloon Flower: new seedling.

Photo 5 - Chinese Lily: new seedling.

APPENDIX F – SUBTIDAL MONITORING RESULTS

OCEAN PARK CORPORATION MASTER REDEVELOPMENT PROJECT

CONTRACT NO. CI05

SITE FORMATION, FUNICULAR TUNNEL AND MISCELLANEOUS WORKS

CORAL IMPACT MONITORING FEBRUARY 2008

CLIENT:

Dragages-Bouygues Joint Venture

Ocean Park
Aberdeen
Hong Kong

CHECKED BY:

Lam Environmental Services Limited

11/F, Centre Point,
181-185 Gloucester Road
Wan Chai, H.K.

Telephone: (852) 2882-3939
Facsimile: (852) 2882-3331
E-mail: info@lamenviro.com
Website: http://www.lamenviro.com

APPROVED BY:

Raymond Dai
Project Manager

DATE:

4 Mar 2008

Ocean Park Corporation Master Redevelopment Project

Contract No. C105

Site Formation, Funicular Tunnel and Miscellaneous Works

Report for

Coral Monitoring Survey

February 2008

miniprojects co. Ltd.

Ocean Park Corporation Master Redevelopment Project

Contract No. C105

Site Formation, Funicular Tunnel and Miscellaneous Works

Report for

Coral Monitoring Survey

February 2008

Prepared by:

miniprojects co. Ltd.

Lam Environmental Services Limited

Contents

Appendix

List of Figures

List of Tables

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.

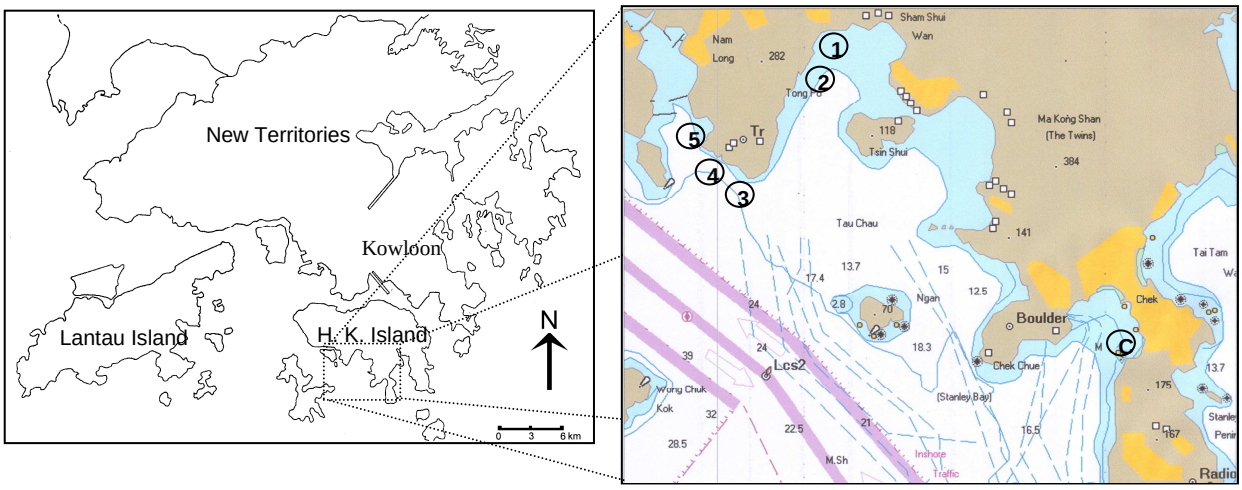
1.1.4 This report presents the results of the ninth Coral Monitoring Surveys conducted on 16 February 2008.

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 5 Impact Monitoring Sites and the Control Site C, and conditions during the survey on 16 February 2008 are summarized in Table 3.1.

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



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 commenced in June 2007. A particular focus of the Impact Monitoring is the effects of sedimentation, bleaching and mortality on corals.

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

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

2.2.5 This report presents the results of Monitoring Survey in month 9 (i.e. February 2008), in which one survey is required at Sites 1 to 5 and Control Site C, and the schedule is summarized as follow,

	Impact Monitoring Date
	16 February 2008
Site 1	✓
Site 2	✓
Site 3	✓
Site 4	✓
Site 5	✓
Control Site C	✓

2.2.6 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.

2.2.7 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.

2.2.8 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

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

Table 2.1 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.

3 RESULTS

3.1 Sites 1 to 5 and Control Site C - Survey date: 16 February 2008

3.1.1 Sites 1 to 5 and Control Site C were monitored on 16 February 2007. The physical conditions of each site are summarized in Table 3.1.

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

Site	Site 1	Site 2	Site 3	Site 4	Site 5	Control Site C
GPS Coordinates	N 22º14'34.1" E 114º10'43.6"	N 22º14'25.39" E 114º10'37.2"	N 22º13'49.3" E 114º10'14.2"	N 22º13'53.3" E 114º10'07.3"	N 22º14'01.9" E 114º09'59.3"	N 22º12'48.3" E 114º12'51.2"
Date	16 February 2008					
Sedimentation on Rock surfaces (mm)	0-1	0-1	1-2	0-1	0-1	0-1
Visibility (m)	1.5-2.0	1.5-2.0	1.5-2.0	1.0-1.5	1.0-1.5	1.0-1.5
Weather	Beaufort Force 3-4 (Northeast) Sunny					
Tide	Flood	Flood	Ebb	Ebb	Ebb	Flood
Current (Knot)	0-0.5	0-0.5	0.5-1.0	0.5-1.0	0-0.5	0-0.5
Remark	Cold water temperature (~13-14°C) in the last 3 weeks					

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

3.1.3 In the present survey, abnormal status was recorded on the tagged colonies of *Porites sp*. (4 out of 7) in both impact and control sites; one in Site 3 (C03), one in Site 4 (E04), one in Site 5 (D05) and one in Control Site C (F04) (Tables 3.2 and 3.3). The 4 colonies exhibited paleness or covering by algae. The symptoms were also observed in other, untagged *Porites* colonies in the 6 survey sites, and in other sites in both eastern and western Hong Kong waters. The observation may be related to the prolonged period of low water temperature prior to the survey.

3.1.4 The algal overgrowth on the tagged *Porites* colonies prevented the estimation of mortality level as the living status under the overgrowth is unknown. Further observation in the next monitoring survey (May 2008) will confirm the levels of bleaching or mortality of these colonies.

Site 1

3.1.5 When compared with baseline data in April 2007, no sedimentation increment was recorded. Decrease in sedimentation was observed in 2 colonies (A04 and A07), ranged from 2 to 4%. No bleaching and further partial mortality were recorded (Table 3.2).

Site 2

3.1.6 When compared with baseline data in April 2007, increased sedimentation cover was recorded on 7 colonies (B02, B04, B06, B07, B08, B09 and B10), ranged from 1 to 3%. Decrease in sedimentation was observed in 1 colony (B05) by 3%. Bleaching was observed in 2 colonies (B05 and B09) by 2%, and bleaching in B10 found in previous surveys was not observed. Partial mortality was recorded in 1 colony (B10) by 2% (Table 3.2).

Site 3

3.1.7 When compared with baseline data in April 2007, increased sedimentation cover was recorded on 2 colonies (C04 and C10), ranged from 1%. Decrease in sedimentation was observed in 2 colonies (C03 and C08), ranged from 2 to 4%. Bleaching was observed in 1 colony (C10) by 2%. Paleness was observed in 1 colony (C03, *Porites* sp.) by 15%; bleaching or mortality level will be evaluated in the next monitoring survey (May 2008). Martial mortality was recorded in 2 colonies (C03 and C08), ranged from 4 to 5% (Table 3.2).

Site 4

3.1.8 When compared with baseline data in April 2007, increased sedimentation cover was recorded on 3 colonies (E05, E06 and E10), ranged from 1 to 3%. Decrease in sedimentation was observed in 3 colonies (E04, E07 and E09), ranged from 4 to 9%. Paleness was observed in 2 colonies (E04 and E09, both *Porites* sp.), ranged from 5 to 15%; bleaching or mortality level will be evaluated in the next monitoring survey (May 2008). Bleaching found in 1 colony (E10) in previous survey did not change. No further partial mortality was recorded in 2 colonies (E08 and E09) from the past monitoring surveys (Table 3.2). Partial mortality was first observed in 2 colonies (E04 and E10), ranged from 4 to 5% (Table 3.2).

Site 5

3.1.9 When compared with baseline data in April 2007, increased sedimentation cover was recorded on 2 colonies (D06 and D07) by 3%. Decrease in sedimentation was observed in 4 colonies (D01, D02, D04 and D09), ranged from 1 to 5%. Bleaching in 1 colony (D02) observed in previous surveys was not found, with 1 colony (D08) was first observed by 5%. Paleness was observed in 1 colony (D05, *Porites* sp.) by 13%; bleaching or mortality level will be evaluated in the next monitoring survey (May 2008). Partial mortality in 2 colonies (D04 and D06) showed no further increment, with 1 colony (D01) was first observed by 2%. Partial mortality found in 1 colony (D05) will be evaluated in the next monitoring survey (May 2008) due to the overgrowth of algae on the colony (Table 3.3).

Control Site C

3.1.10 When compared with baseline data in April 2007, increased sedimentation cover was recorded on 4 colonies (F03, F04, F06 and F08b), ranged from 1 to 3%. Decrease in sedimentation was found in 3 colonies (F02, F05 and F09), ranged from 2 to 8%. Bleaching recorded in 2 colonies (F03 and F06) in previous surveys was not found. Paleness was observed in 1 colony (F04, *Porites* sp.) by 7%; bleaching or mortality level will be evaluated in the next monitoring survey (May 2008). Partial mortality was found in 4 colonies (F02, F03, F05 and F09) by 1 to 3%. Partial mortality found in 1 colony (F04) will be evaluated in the next monitoring survey (May 2008) due to the overgrowth of algae on the colony (Table 3.3).

Table 3.2 Sites 1 to 4 - Percentage of Sedimentation, Bleaching and Mortality of the Tagged Coral Colonies in Initial Coral Survey (07-12 April 2007), the Previous 2 Monitoring Surveys (21 July 2007 and 10 November 2007) and the Present Monitoring Survey (16 February 2008). "▲" and "▼" indicate increased and decreased in percentage, respectively, when compared with the Initial Coral Survey.

Site 1

Code	Coral Species	Area (cm^2)	Sedimentation (%, mm)				Bleaching (%)				Mortality (%)			
			Apr 07 (baseline)	21 Jul 07	10 Nov 07	16 Feb 08	Apr 07 (baseline)	21 Jul 07	10 Nov 07	16 Feb 08	Apr 07 (baseline)	21 Jul 07	10 Nov 07	16 Feb 08
A01	*Platygyra carnosus*	1000	0, 0	0, 0	1, 1▲	0, 0	0	0	0	0	0	0	0	0
A02	*Platygyra carnosus*	2000	0, 0	0, 0	0, 0	0, 0	0	0	0	0	0	0	0	0
A03	*Favites pentagona*	200	0, 0	**2,** 1▲	0, 0	0, 0	0	0	0	0	0	0	0	0
A04	*Leptastrea pruinosa*	400	5, 1	**4**, 1▼	**0,** 0▼	**3**, 1▼	0	0	0	0	0	0	0	0
A05	*Platygyra carnosus*	1200	0, 0	0, 0	0, 0	0, 0	0	0	0	0	5	5	5	5
A06	*Platygyra carnosus*	1600	0, 0	0, 0	0, 0	0, 0	0	**1**▲	0	0	0	0	0	0
A07	*Favia rotumana*	800	5,1	5, 1	**1,** 1▼	**1,** 1▼	0	0	0	0	0	0	0	0
A08	*Platygyra carnosus*	1000	0, 0	0, 0	**4,** 1▲	0, 0	0	0	0	0	0	0	0	0
A09	*Platygyra carnosus*	350	0, 0	0, 0	0, 0	0, 0	0	**1**▲	0	0	0	0	0	0
A10	*Platygyra carnosus*	700	0, 0	**2**, 1▲	**9**, 1▲	0, 0	0	0	0	0	0	0	0	0

Site 2

Code	Coral Species	Area (cm^2)	Sedimentation (%, mm)				Bleaching (%)				Mortality (%)			
			Apr 07 (baseline)	21 Jul 07	10 Nov 07	16 Feb 08	Apr 07 (baseline)	21 Jul 07	10 Nov 07	16 Feb 08	Apr 07 (baseline)	21 Jul 07	10 Nov 07	16 Feb 08
B01	*Platygyra carnosus*	450	0, 0	0, 0	0, 0	0, 0	0	0	0	0	0	0	0	0
B02	*Plesiastrea versipora*	300	0, 0	0, 0	0, 0	**1**, 1▲	0	0	0	0	0	0	0	0
B03	*Psammocora superficialis*	1000	5, 1	**3**, 1▼	**3**, 1▼	5, 1	0	0	0	0	0	0	0	0
B04	*Favia speciosa*	300	4, 1	**2**, 1▼	**8**, 1▲	**5**, 1▲	0	0	0	0	0	0	0	0
B05	*Plesiastrea versipora*	900	3, 1	3, 1	**2,** 1▼	**0**, 0▼	0	0	0	2 ▲	0	0	0	0
B06	*Platygyra carnosus*	600	0, 0	**1**, 1▲	**1**, 1▲	**1**, 1▲	0	0	0	0	0	0	0	0
B07	*Cyphastrea serailia*	700	0, 0	0, 0	**3,** 1▲	**3,** 1▲	0	0	0	0	0	0	0	0
B08	*Plesiastrea versipora*	1200	0, 0	**1**, 1▲	**5**, 1▲	**2**, 1▲	0	0	0	0	0	0	0	0
B09	*Favites pentagona*	600	0, 0	**1**, 1▲	**1**, 1▲	**2**, 1▲	0	0	0	2 ▲	0	0	0	0
B10	*Favites pentagona*	400	0, 0	**3**, 1▲	0, 0	**2,** 1▲	0	2▲	2▲	0	0	0	0	2 ▲

Site 3

Code	Coral Species	Area (cm^2)	Sedimentation (%, mm)				Bleaching (%)				Mortality (%)			
			Apr 07 (baseline)	21 Jul 07	10 Nov 07	16 Feb 08	Apr 07 (baseline)	21 Jul 07	10 Nov 07	16 Feb 08	Apr 07 (baseline)	21 Jul 07	10 Nov 07	16 Feb 08
C01	*Platygyra acuta*	2000	0, 0	0, 0	0, 0	0, 0	0	0	0	0	0	0	0	0
C02	*Platygyra carnosus*	1000	0, 0	0, 0	0, 0	0, 0	0	0	0	0	0	0	0	0
C03	*Porites sp.*	400	5, 1	**10**,1▲	5, 1	3, 1▼	0	0	0	15 ▲*	1	1	1	5 ▲
C04	*Cyphastrea serailia*	600	4, 1	**5**, 1▲	**5**, 1▲	**5**, 1▲	0	0	0	0	0	0	0	0
C05	*Pavona decussata*	600	0, 0	0, 0	0, 0	0, 0	0	0	0	0	0	0	0	0
C06	*Pavona decussata*	1200	0, 0	0, 0	0, 0	0, 0	0	0	0	0	0	0	0	0
C07	*Montipora cf. turgescens*	200	2, 1	**1**, 1▼	**0,** 0▼	2, 1	0	0	0	0	0	0	0	0
C08	*Favia favus*	600	4, 1	**5**, 1▲	**5**, 1▲	0, 0▼	0	0	0	0	4	4	4	4
C09	*Favites pentagona*	150	1, 1	1, 1	1, 1	1, 1	0	0	0	0	0	0	0	0
C10	*Montipora peltiformis*	300	0, 0	0, 0	0, 0	1, 1▲	0	**5** ▲	**2** ▲	**2** ▲	0	0	0	0

* Paleness of colony recorded; Further observation is needed to evaluate the percentage of bleaching.

Site 4

Code	Coral Species	Area (cm^2)	Sedimentation (%, mm)				Bleaching (%)				Mortality (%)			
			Apr 07 (baseline)	21 Jul 07	10 Nov 07	16 Feb 08	Apr 07 (baseline)	21 Jul 07	10 Nov 07	16 Feb 08	Apr 07 (baseline)	21 Jul 07	10 Nov 07	16 Feb 08
E01	*Goniopora stutchburyi*	300	0, 0	**5**, 1▲	**3**, 1▲	0, 0	0	0	0	0	0	0	0	0
E02	*Goniopora stutchburyi*	200	0, 0	**2**, 1▲	0, 0	0, 0	0	0	0	0	0	0	0	0
E03	*Goniopora stutchburyi*	150	0, 0	**2**, 1▲	0, 0	0, 0	0	0	0	0	0	0	0	0
E04	*Porites sp.*	400	5, 1	2, 1▼	**2,** 1▼	**1,** 1▼	0	0	0	30 ▲*	0	0	0	5 ▲
E05	*Goniopora stutchburyi*	300	0, 0	**5**, 1▲	**5**, 1▲	**2**, 1▲	0	0	0	0	0	0	0	0
E06	*Goniopora stutchburyi*	450	0, 0	0, 0	0, 0	**3**, 1▲	0	0	0	0	0	0	0	0
E07	*Favia speciosa*	600	10, 1	**2**, 1▼	**1**, 1▼	**1**, 1▼	0	0	0	0	0	0	0	0
E08	*Porites sp.*	150	0, 0	0, 0	0, 0	0, 0	0	0	0	0	4	4	4	4
E09	*Porites sp.*	200	8, 1	**4**, 1▼	**4**, 1▼	**2**, 1▼	0	**2** ▲	**2** ▲	5 ▲	4	4	4	4
E10	*Porites sp.*	500	0, 0	**2**, 1▲	0, 0	**1**, 1▲	3	3	3	3	0	0	0	4 ▲

* Paleness of colony recorded; Further observation is needed to evaluate the percentage of bleaching.

Table 3.3 Site 5 and Control Site C - Percentage of Sedimentation, Bleaching and Mortality of the Tagged Coral Colonies in Initial Coral Survey (07-12 April 2007), the Previous 2 Monitoring Surveys (14 October 2007 and 10 November 2007) and the Present Monitoring Survey (16 February 2008). "▲" 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 (baseline)	14 Oct 07	10 Nov 07	16 Feb 08	Apr 07 (baseline)	14 Oct 07	10 Nov 07	16 Feb 08	Apr 07 (baseline)	14 Oct 07	10 Nov 07	16 Feb 08
D01	*Psammocora* sp.	600	10, 1	**6,** 1 ▼	**8,** 1 ▼	**5,** 1 ▼	0	0	0	0	0	0	0	2 ▲
D02	*Montipora cf. turgescens*	100	6, 1	**5,** 1 ▼	**5,** 1 ▼	**5,** 1 ▼	0	**2** ▲	**2** ▲	0	0	0	0	0
D03	*Goniopora stutchburyi*	400	0, 0	**5**, 1▲	**2**, 1▲	**0,** 0	0	0	0	0	0	0	0	0
D04	*Leptastrea pruinosa*	500	4, 1	**8,** 1 ▲	**1,** 1 ▼	**2,** 1 ▼	0	0	0	0	0	**5** ▲	**5** ▲	5 ▲
D05	*Porites* sp.	400	5, 1	**3,** 1 ▼	**0,** 0 ▼	5, 1	1	**3** ▲	**3** ▲	**13** ▲*	4	4	4	Unknown[#]
D06	*Plesiastrea versipora*	1000	0, 0	**1,** 1 ▲	0, 0	**3,** 1 ▲	0	0	0	0	5	5	5	5
D07	*Leptastrea pruinosa*	800	0, 0	**3,** 1 ▲	**5,** 1 ▲	**3,** 1 ▲	0	0	0	0	0	0	0	0
D08	*Plesiastrea versipora*	100	0, 0	**2**, 0 ▲	0, 0	0, 0	0	0	0	**5** ▲	0	0	0	0
D09	*Leptastrea pruinosa*	150	5, 1	0, 0 ▼	5, 1	**3,** 1 ▼	0	0	0	0	0	0	0	0
D10	*Montipora cf. turgescens*	200	0, 0	**2,** 1 ▲	**2,** 1 ▲	**0,** 0	0	0	0	0	0	0	0	0

* Paleness of colony recorded; [#] Colony surface was temporarily covered by mucus and microalgae; Further observation is needed to evaluate the extent of bleaching and morality.

Control Site C

Code	Coral Species	Area (cm^2)	Sedimentation (%, mm)				Bleaching (%)				Mortality (%)			
			Apr 07 (baseline)	14 Oct 07	10 Nov 07	16 Feb 08	Apr 07 (baseline)	14 Oct 07	10 Nov 07	16 Feb 08	Apr 07 (baseline)	14 Oct 07	10 Nov 07	16 Feb 08
F01	*Favia speciosa*	900	0, 0	**5**, 1 ▲	0, 0	**0,** 0	0	0	0	0	0	0	0	0
F02	*Favites pentagona*	1000	4, 1	**15,** 1 ▲	**2,** 1 ▼	**2,** 1 ▼	0	0	0	0	0	**3** ▲	**3** ▲	**3** ▲
F03	*Favites pentagona*	800	0, 0	**5,** 1 ▲	**2,** 1 ▲	**1,** 1 ▲	0	0	**2** ▲	0	0	**2** ▲	**2** ▲	**2** ▲
F04	*Porites sp.*	800	5, 1	7, 1 ▲	5, 1	**8**, 1 ▲	4	**3**▼	**3**▼	**7** ▲*	4	4	4	Unknown[#]
F05	*Cyphastrea serailia*	800	4, 1	**1,** 1 ▼	**3,** 1 ▼	**1,** 1 ▼	0	0	0	0	1	1	1	1
F06	*Psammocora sp.*	1800	0, 0	**3,** 1 ▲	**6,** 1 ▲	**2,** 1 ▲	0	**1** ▲	**1** ▲	0	0	0	0	0
F07	*Plesiastrea versipora*	3000	0, 0	**2**, 1▲	0, 0	0, 0	0	0	0	0	0	0	0	0
F08a	*Favia speciosa*	150	0, 0	**2**, 1 ▲	**1**, 1 ▲	0, 0	0	0	0	0	0	0	0	0
F08b	*Goniastrea favulus*	300	0, 0	**7,** 1 ▲	**3,** 1 ▲	**2,** 1 ▲	0	0	0	0	0	0	0	0
F09	*Favites pentagona*	1800	10, 1	**5,** 1 ▼	**2,** 1 ▼	**2,** 1 ▼	0	0	0	0	0	**1** ▲	**1** ▲	**3** ▲
F10	*Platygyra carnosus*	2800	0, 0	0, 0	**1,** 1▲	0, 0	0	0	0	0	0	0	0	0

* Paleness of colony recorded; [#] Colony surface was temporarily covered by mucus and microalgae; Further observation is needed to evaluate the extent of bleaching and morality.

4 SUMMARY AND CONCLUSION

4.1 Summary – Monitoring Surveys

4.1.1 In the monitoring surveys conducted in February 2008, sedimentation on the tagged colonies from all the 5 Monitoring Sites 1 to 5 and the Control Site C increased by 1 to 3% (n = 18 out of 60 colonies) when compared with the Initial Survey conducted on 07 to 12 April 2007. In another 15 colonies from all six sites, their sedimentation decreased by 1 to 9% when compared with the Initial Survey conducted on 07 to 12 April 2007. Bleaching increased in 4 colonies by 2 to 5%. Partial mortality increased in 9 colonies by 2 to 5% (Tables 3.2 and 3.3).

4.1.2 In all the 5 Monitoring Sites and 1 Control Site, level of sedimentation on the tagged corals varied within a small range (<10%) without an observable trend. The variation was believed to be resulted from combined environmental factors such as monsoonal wind, tidal current, peripheral transports, substratum type, etc. The low level of increment in bleaching and partial mortality suggested minor adverse effect was caused by the observed sedimentation.

4.1.3 Four of the tagged *Porites* colonies (each in Sites 3, 4 and 5 and Control Site C) showed abnormal status with symptoms of paleness polyps, production of a mucus layer on colony surface and overgrowth of microalgae on the mucus layer. These symptoms were only observed in *Porites* sp.. Similar phenomenon was also recorded in the eastern and southern waters in the same period (see Fig. 4.1). The phenomenon has never been reported in Hong Kong before. The symptom is believed not to be caused by construction work, as no apparent increment of sediment is recognized, and the observation is not limited to the impact sites.

Fig. 4.1 Symptoms showing by *Porites* colonies. Paleness polyps, production of a mucus layer on colony surface and algal overgrowth on the mucus layer.

4.1.4 The prolong (~3 weeks), extremely low water temperature (13-15°C) has been recorded from late January to late February 2008 and is going to extend to a couple of weeks in Hong Kong waters (Hong Kong Observatory). As mean winter water temperature in Hong Kong is usually ~17°C, the below-average water temperature in this winter is believed to have adverse effect on the survival of tropical marine communities, in particular the hard coral species including the *Porites* colonies.

4.1.5 Further observation is necessary in order to evaluate the bleaching and mortality status of the tagged Porites colonies (C03, D05, E04 and F04). If the symptoms persist, or mortality increase due to factors other than the construction sources (as indicated by concomitant occurrence in both impact and control sites), the colonies will be considered not suitable for monitoring purpose and new colonies of other species will be tagged to accomplish the objective.

4.1.6 The data from this monitoring survey showed no significant enhancement in sedimentation, bleaching or mortality in all the 5 Monitoring Sites 1 to 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 morality were observed in both Monitoring and Control Sites. Neither action/limit level of sedimentation, bleaching or mortality was exceeded in the monitoring survey conducted in February 2008 (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.

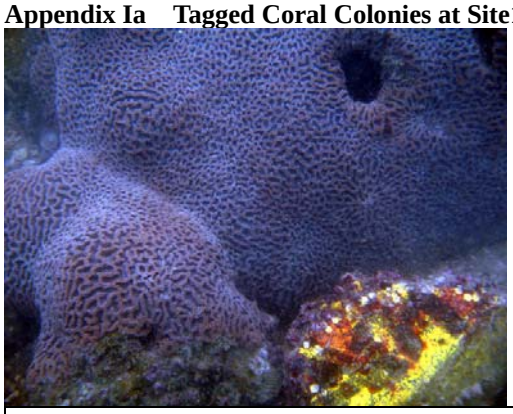
16 February 2008

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

APPENDIX I

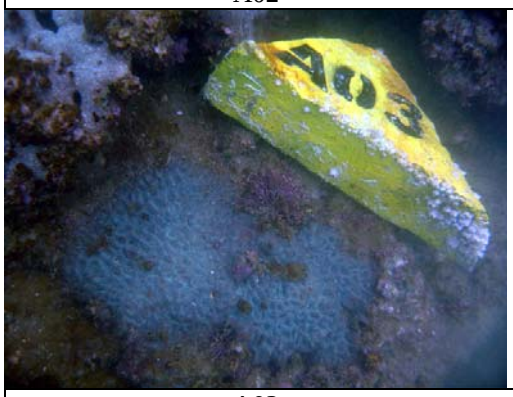
Photographs of the Tagged Corals at Sites 1 to 5 and Control Site C Surveyed on 16 February 2008

Appendix Ia Tagged Coral Colonies at Site1.

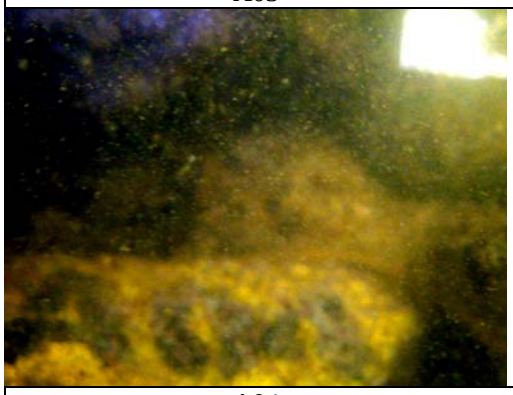


A01 *Platygyra carnosus*

A02 *Platygyra carnosus*



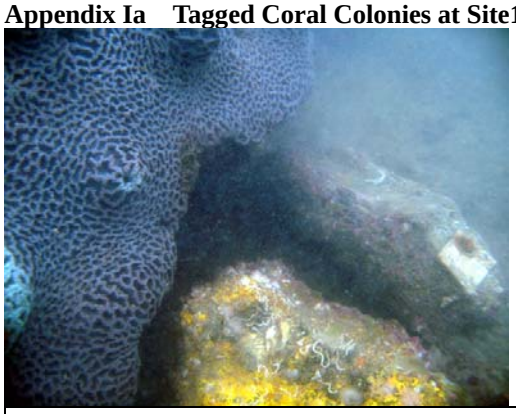
A03 *Favites pentagona*



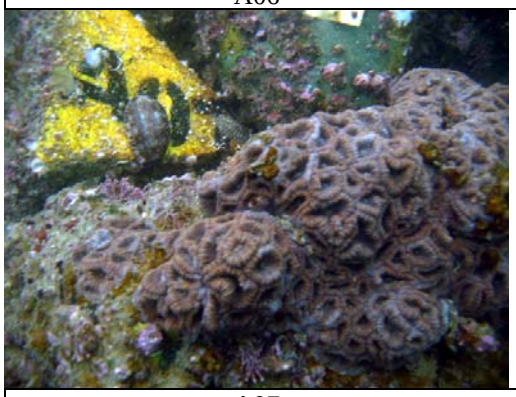
A04 *Leptastrea pruinosa*

A05 *Platygyra carnosus*

Appendix Ia Tagged Coral Colonies at Site1…continued.

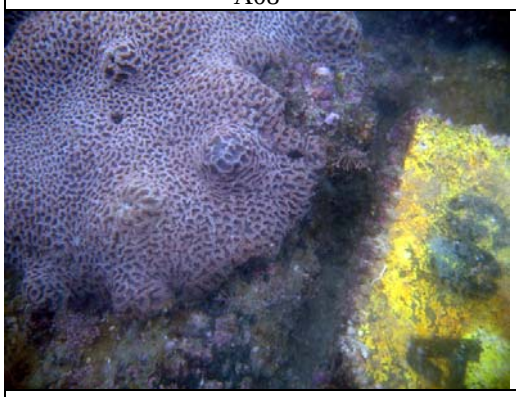


A06 *Platygyra carnosus*

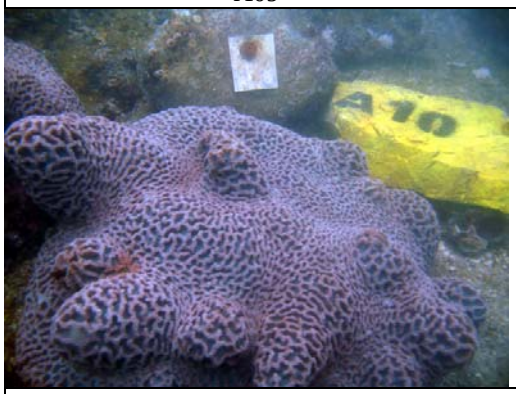


A07 *Favia rotumana*

A08 *Platygyra carnosus*

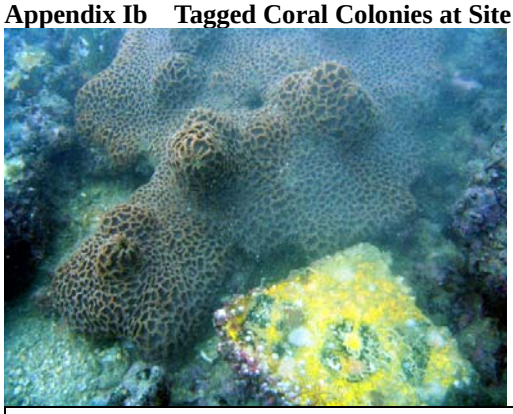


A09 *Platygyra carnosus*

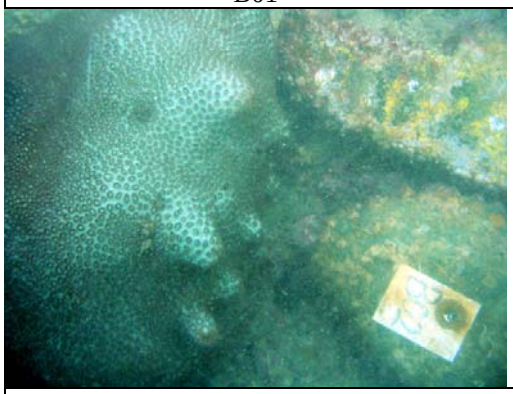
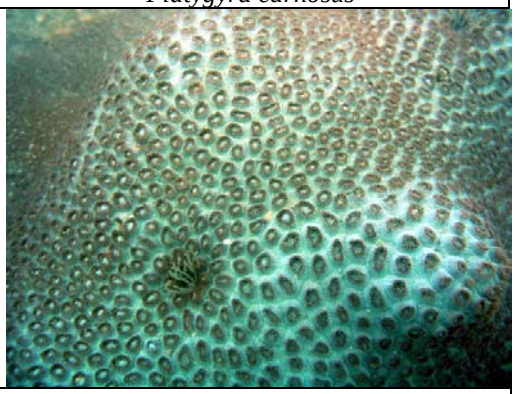


A10 *Platygyra carnosus*

Appendix Ib Tagged Coral Colonies at Site 2.




B01 *Platygyra carnosus*

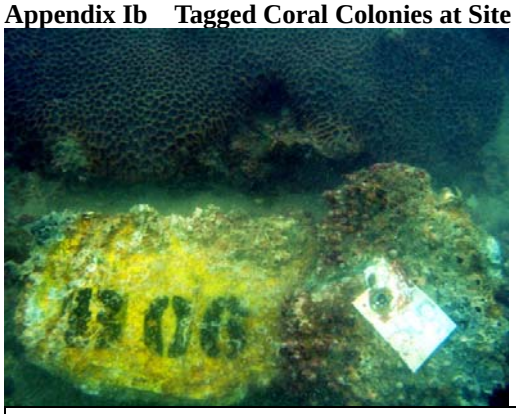
B02 *Plesiastrea versipora*


B03 *Psammocora superficialis*

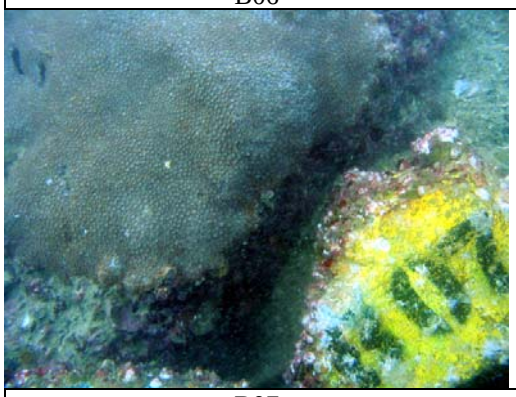

B04 *Favia speciosa*


B05 *Plesiastrea versipora*

Appendix Ib Tagged Coral Colonies at Site 2…continued.

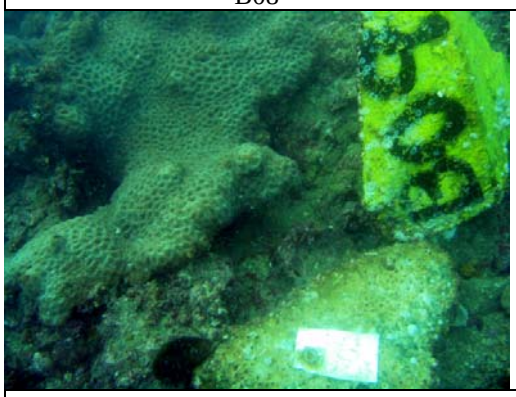


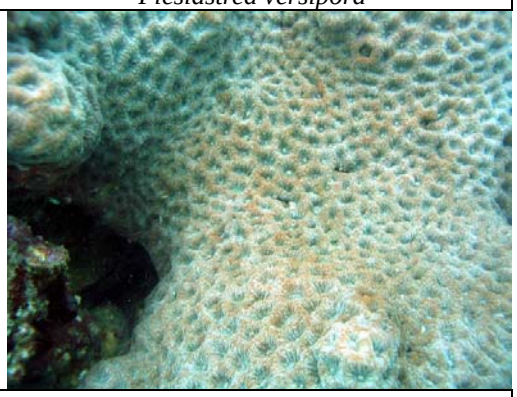
B06 *Platygyra carnosus*



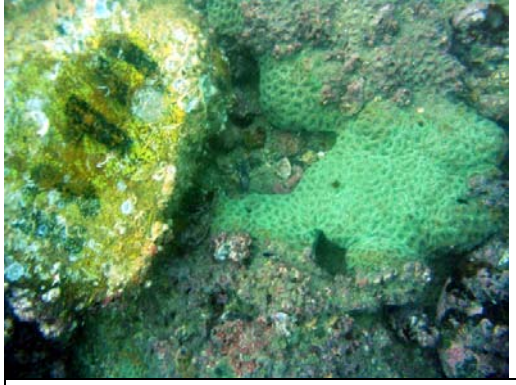
B07 *Cyphastrea serailia*

B08 *Plesiastrea versipora*



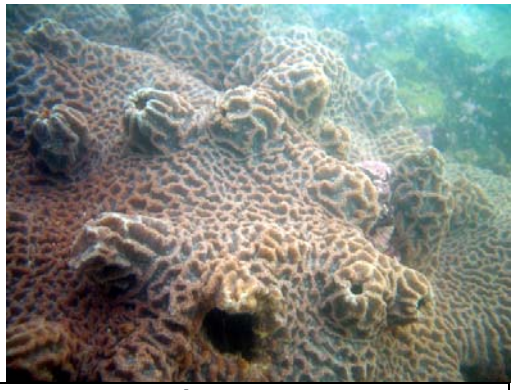


B09 *Favites pentagona*

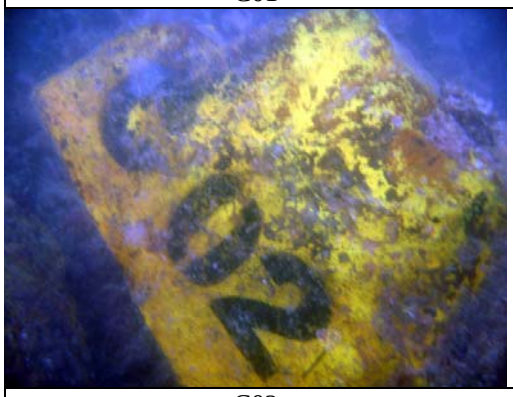


B10 *Favites pentagona*

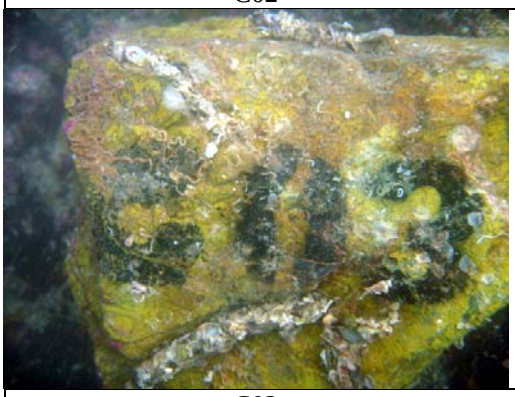
Appendix Ic Tagged Coral Colonies at Site 3.



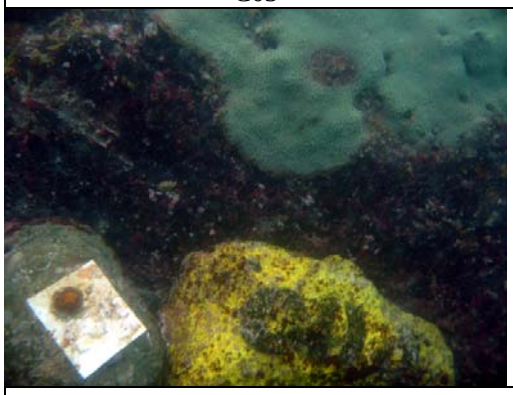
C01 *Platygyra acuta*



C02 *Platygyra carnosus*



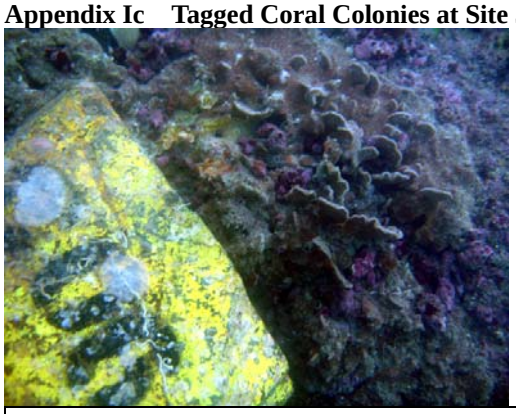
C03 *Porites* sp.



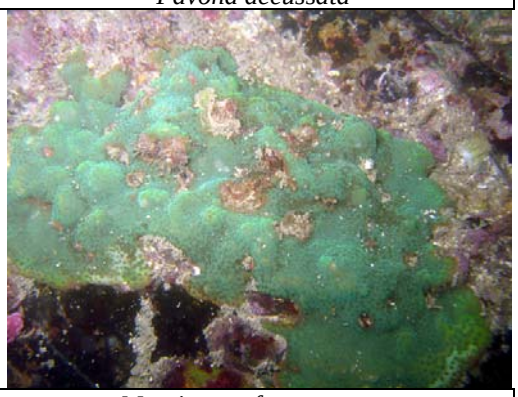
C04 *Cyphastrea serailia*

C05 *Pavona decussata*

Appendix Ic Tagged Coral Colonies at Site 3…continued.

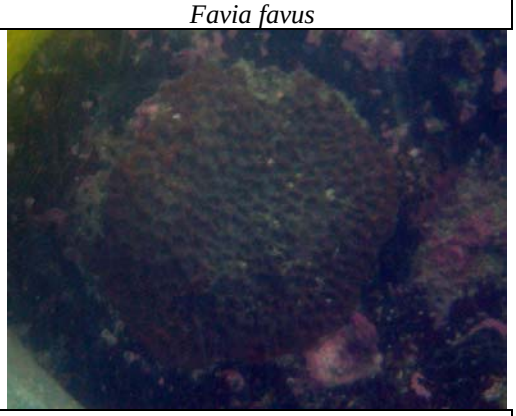


C06	*Pavona decussata*



C07	*Montipora cf. turgescens*

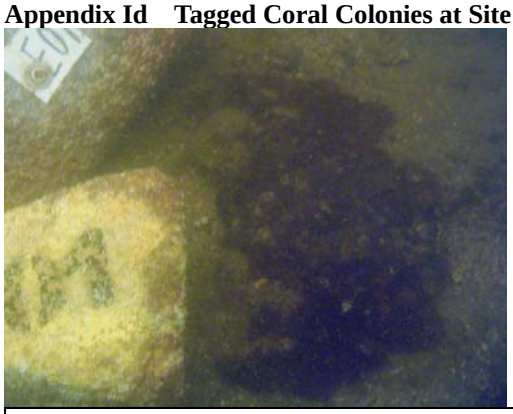
C08	*Favia favus*



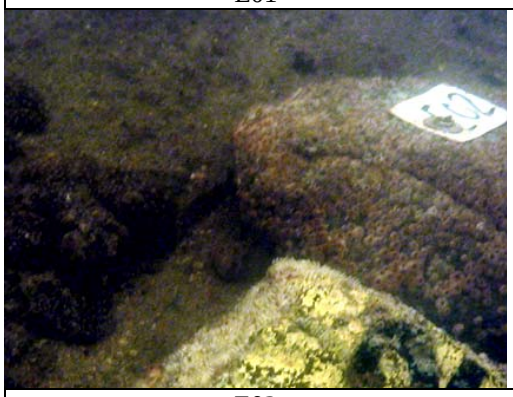
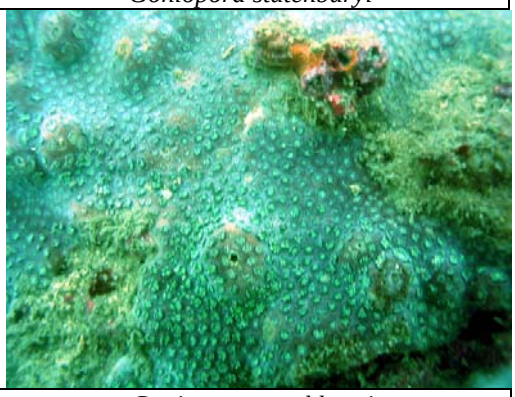
C09	*Favites pentagona*

C10	*Montipora peltiformis*

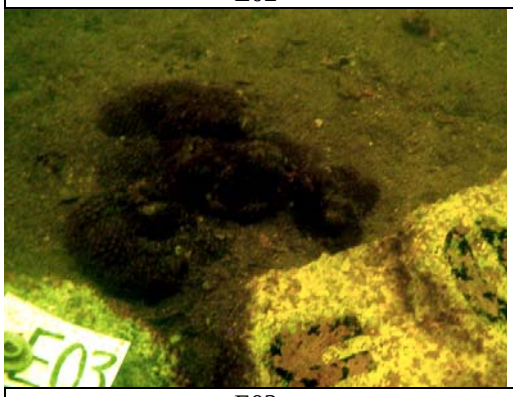
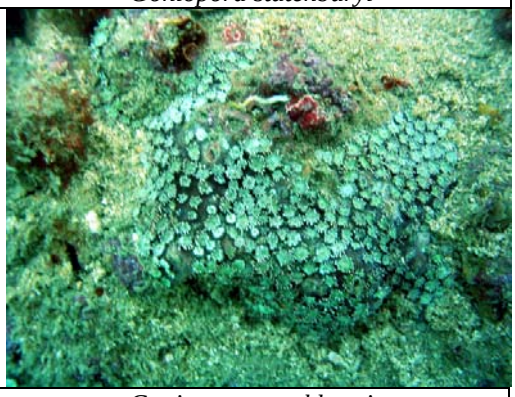
Appendix Id Tagged Coral Colonies at Site 4.



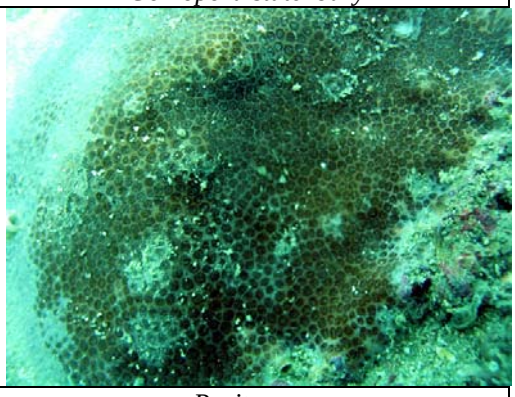

E01 *Goniopora stutchburyi*

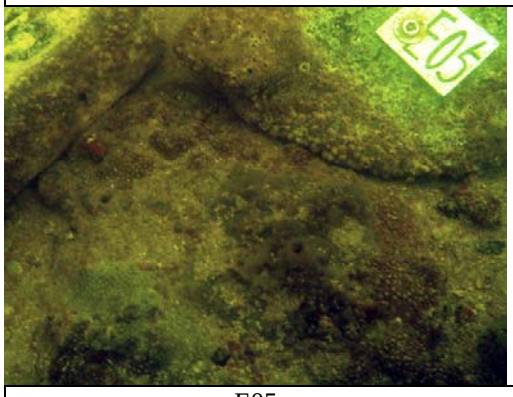
E02 *Goniopora stutchburyi*

E03 *Goniopora stutchburyi*

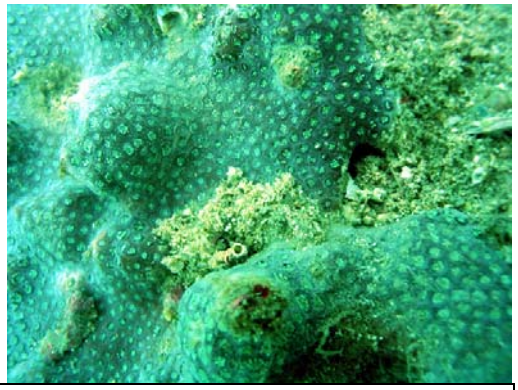



E04 *Porites* sp.



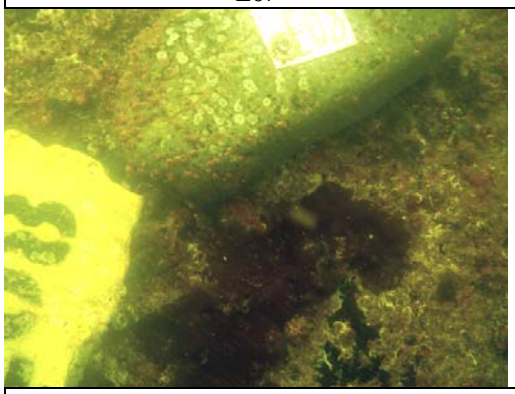

E05 *Goniopora stutchburyi*

Appendix Id Tagged Coral Colonies at Site 4…continued.

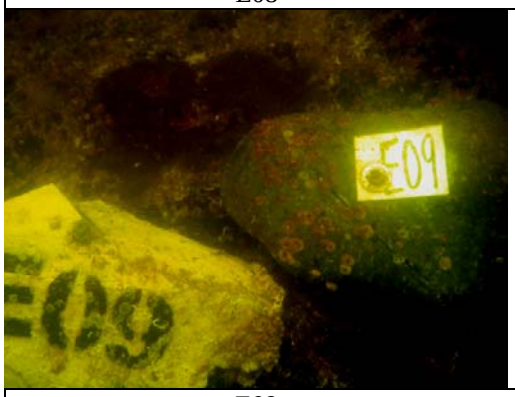


E06	*Goniopora stutchburyi*

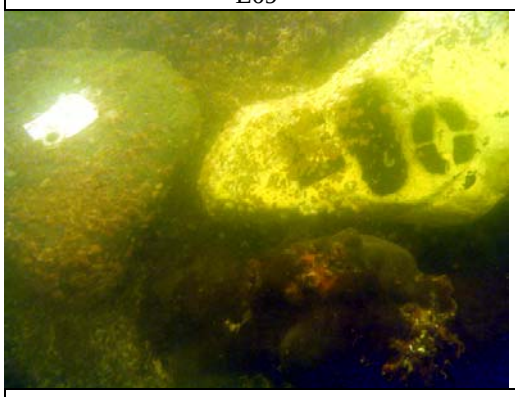
E07	*Favia speciosa*

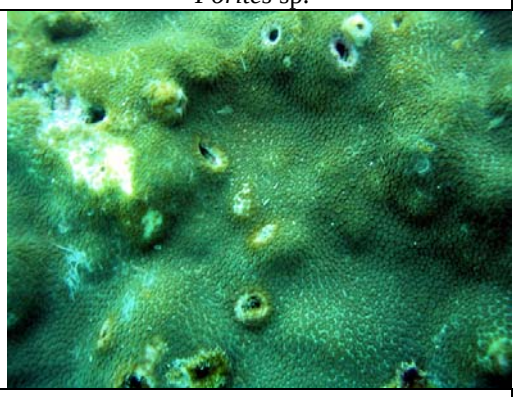


E08	*Porites* sp.



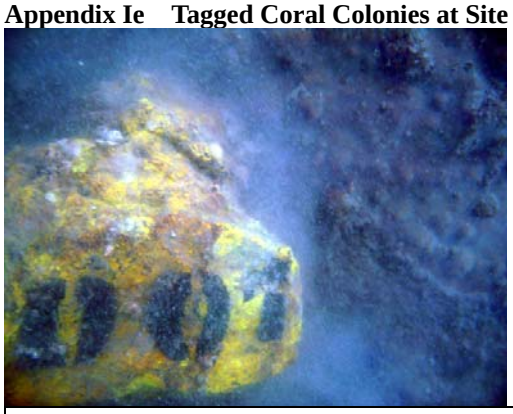
E09	*Porites* sp.

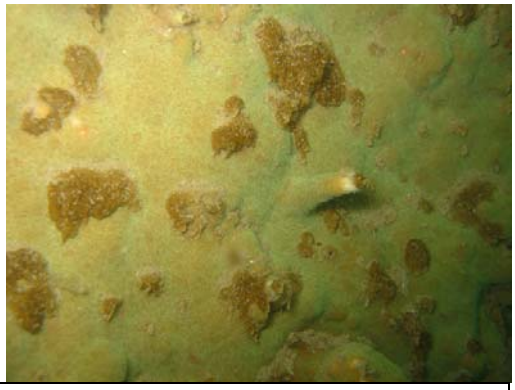




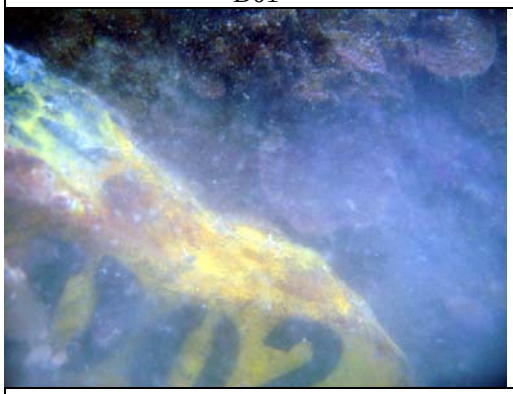
E10	*Porites* sp.

Appendix Ie Tagged Coral Colonies at Site 5.



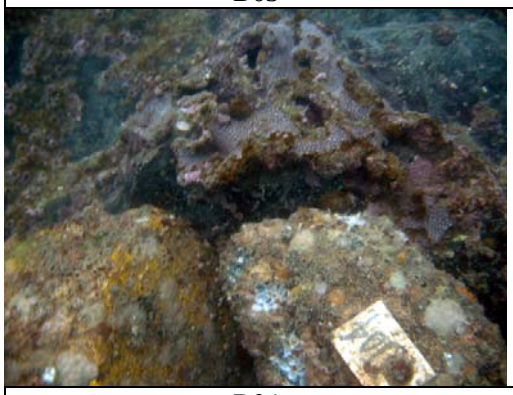


D01 *Psammocora* sp.



D02 *Montipora cf. turgescens*

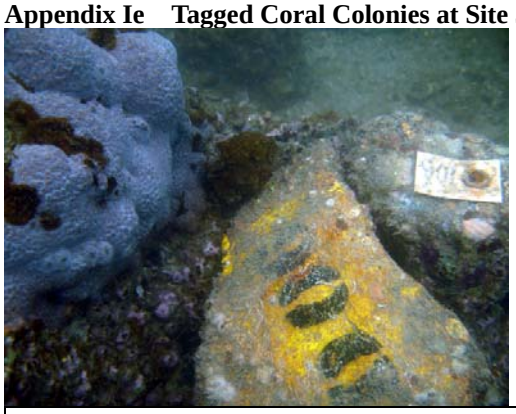
D03 *Goniopora stutchburyi*



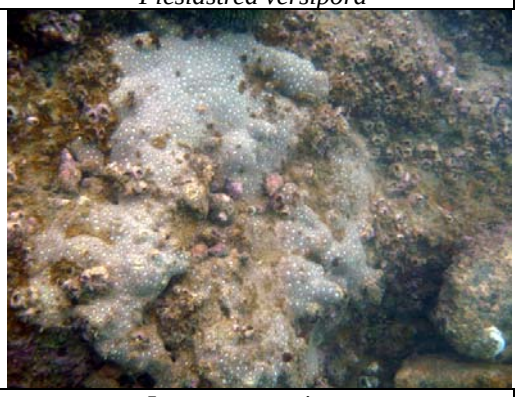
D04 *Leptastrea pruinosa*

D05 *Porites* sp.

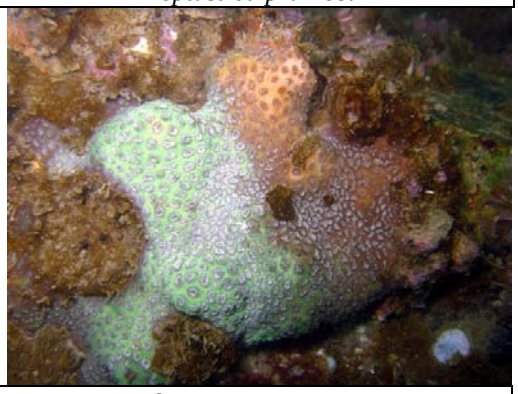
Appendix Ie Tagged Coral Colonies at Site 5…continued.



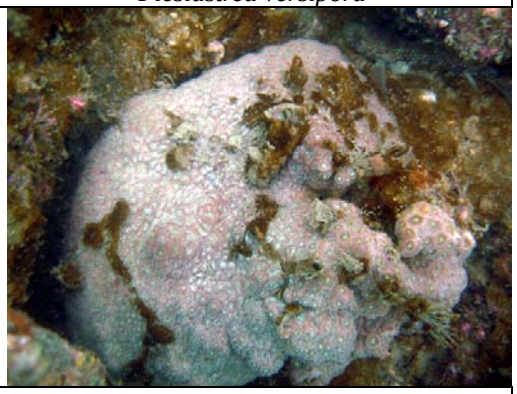

D06 *Plesiastrea versipora*

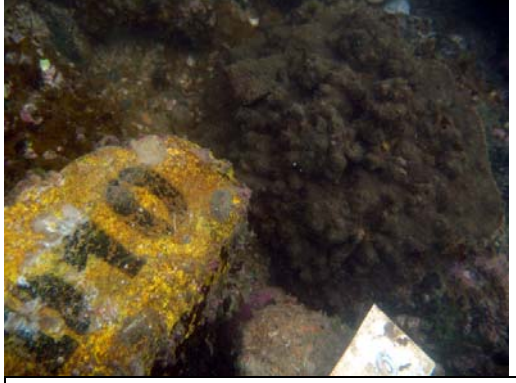
D07 *Leptastrea pruinosa*

D08 *Plesiastrea versipora*

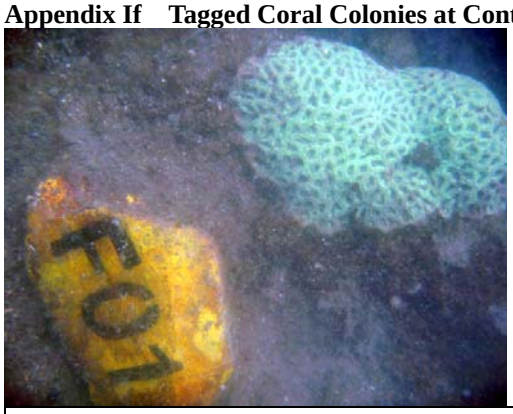



D09 *Leptastrea pruinosa*

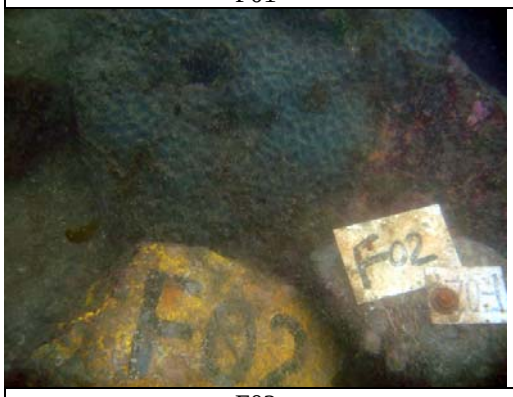



D10 *Montipora cf. turgescens*

Appendix If Tagged Coral Colonies at Control Site C.

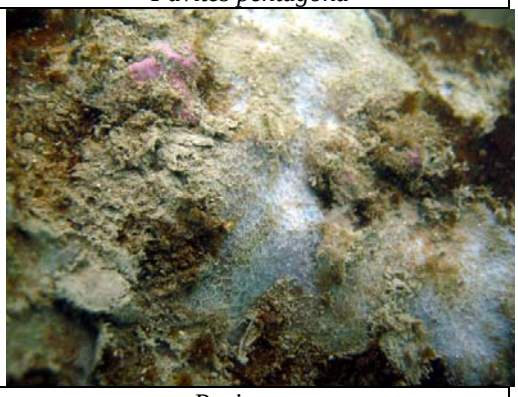


F01 *Favites speciosa*



F02 *Favites pentagona*

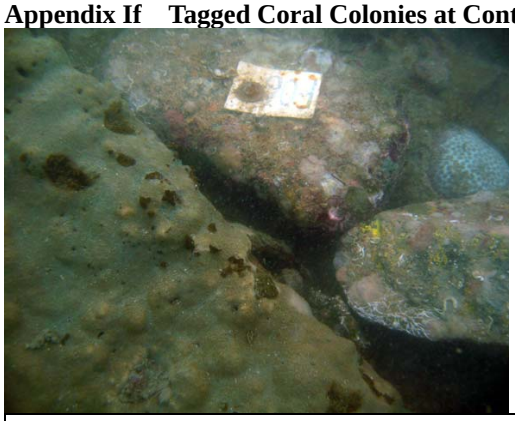
F03 *Favites pentagona*



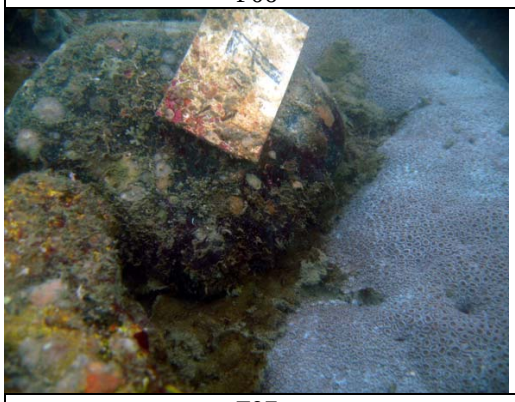
F04 *Porites* sp.

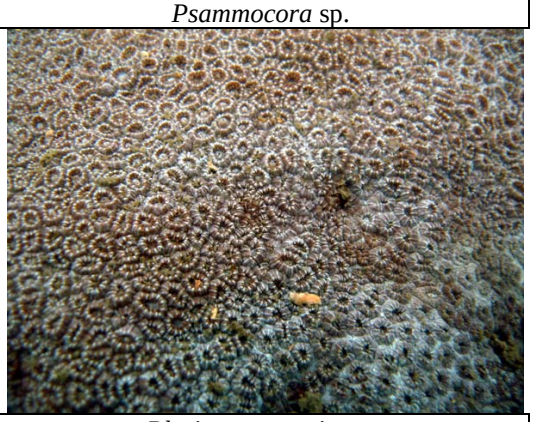
F05 *Cyphastrea serailia*

Appendix If Tagged Coral Colonies at Control Site C…continued.

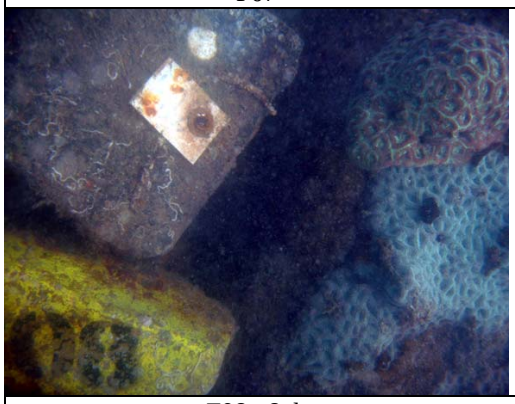


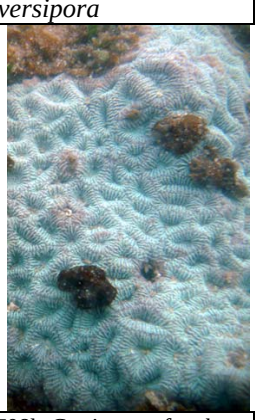
F06 *Psammocora* sp.



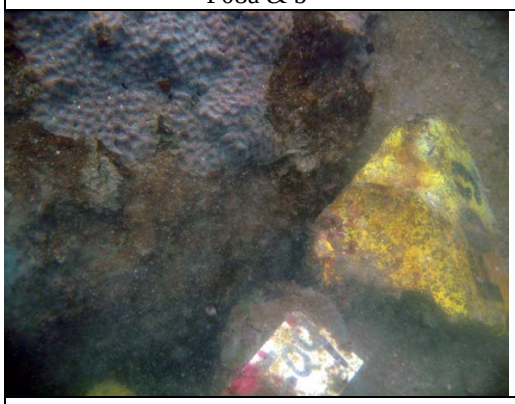


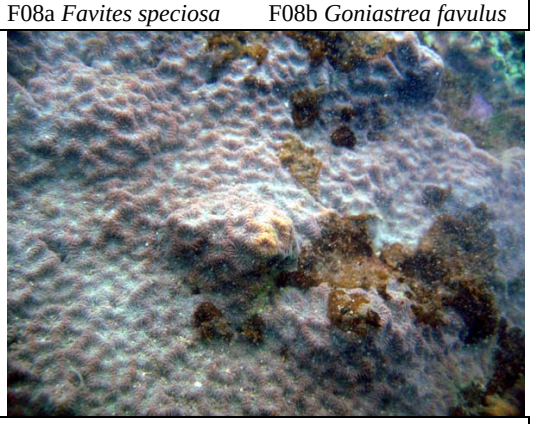
F07 *Plesiastrea versipora*



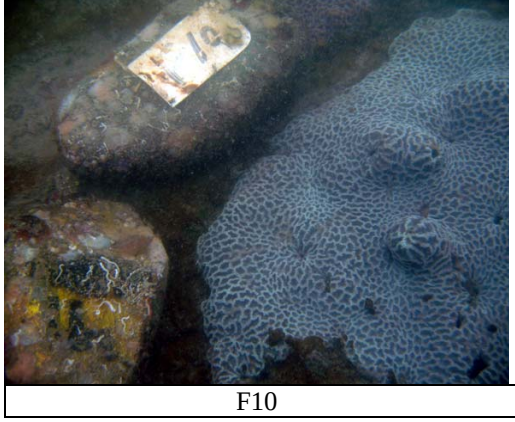


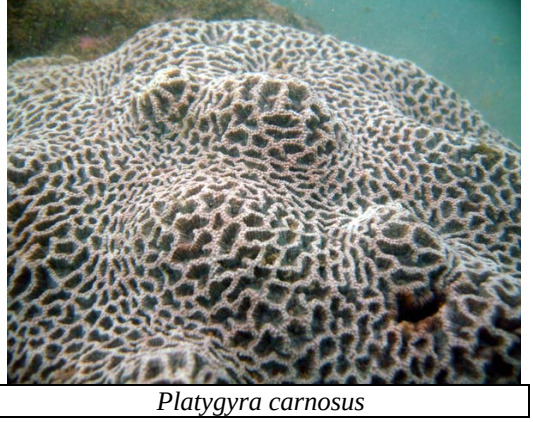
F08a & b F08a *Favites speciosa* F08b *Goniastrea favulus*





F09 *Favites pentagona*





F10 *Platygyra carnosus*

APPENDIX G – CALIBRATION DETAILS

Air Quality Monitoring Equipments

Monitoring Location	AM1	AM2	AM3/AM3A
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	02 January 2008	02 January 2008	02 January 2008
Calibration Due Date	01 March 2008	01 March 2008	01 March 2008
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	17 April 2007
Calibration Due Date	16 April 2008
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 : 02 January 2008

Serial No. : 1174 (ET / EA / 003 / 08)

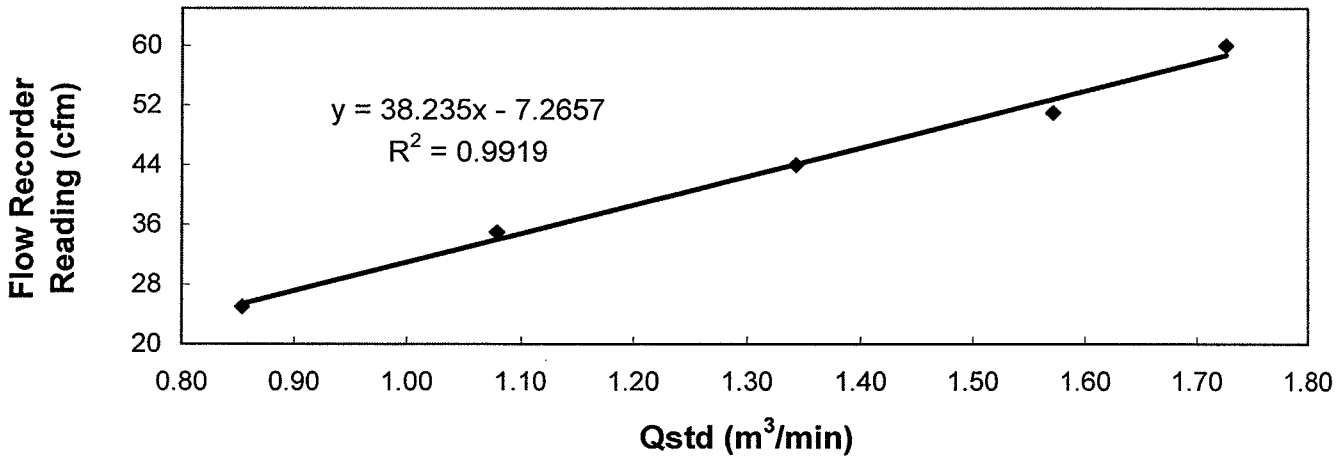
Calibration Due Date : 01 March 2008

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	35	25
Qstd (Actual flow rate, m^3/min)	1.73	1.57	1.34	1.08	0.85
Pressure : 769.56 mm Hg		Temp. : 295 K			

Sampler 1174 Calibration Curve
Site: Ocean Park (AM-1)
Date of Calibration: 02 January 2008



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 : Mak Kei Wai
MAK Kei Wai
(Senior 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 : 02 January 2008

Serial No. : 1177 (ET / EA / 003 / 07)

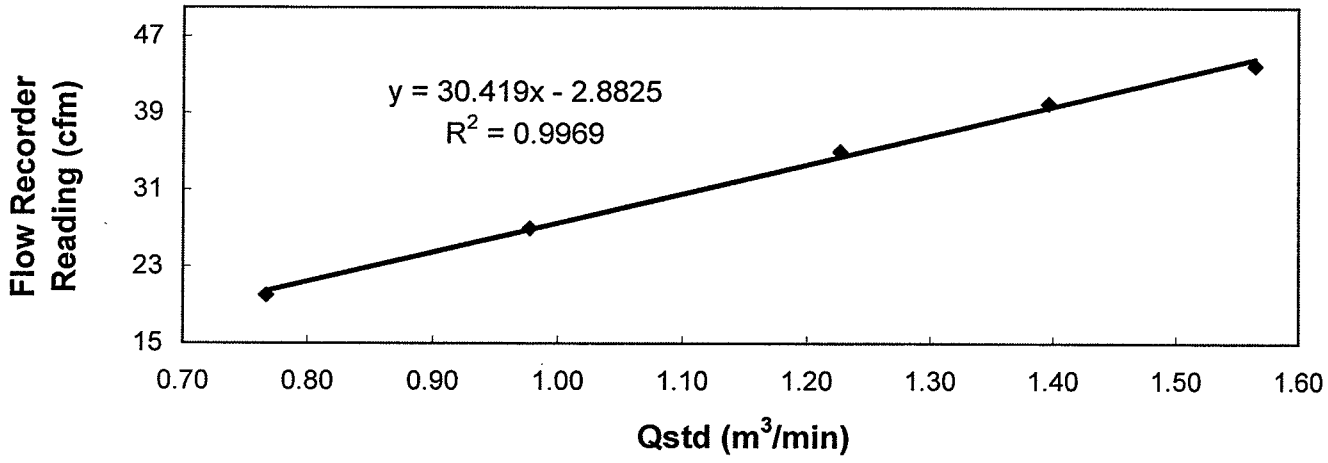
Calibration Due Date : 01 March 2008

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)	44	40	35	27	20
Qstd (Actual flow rate, m^3/min)	1.56	1.40	1.23	0.98	0.77
Pressure : 771.06 mm Hg		Temp. : 289 K			

Sampler 1177 Calibration Curve
Site: Ocean Park (AM-2)
Date of Calibration: 02 January 2008



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 : Mak Kei Wai
MAK Kei Wai
(Senior 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 : 02 January 2008

Serial No. : 9998 (ET / EA / 003 / 12)

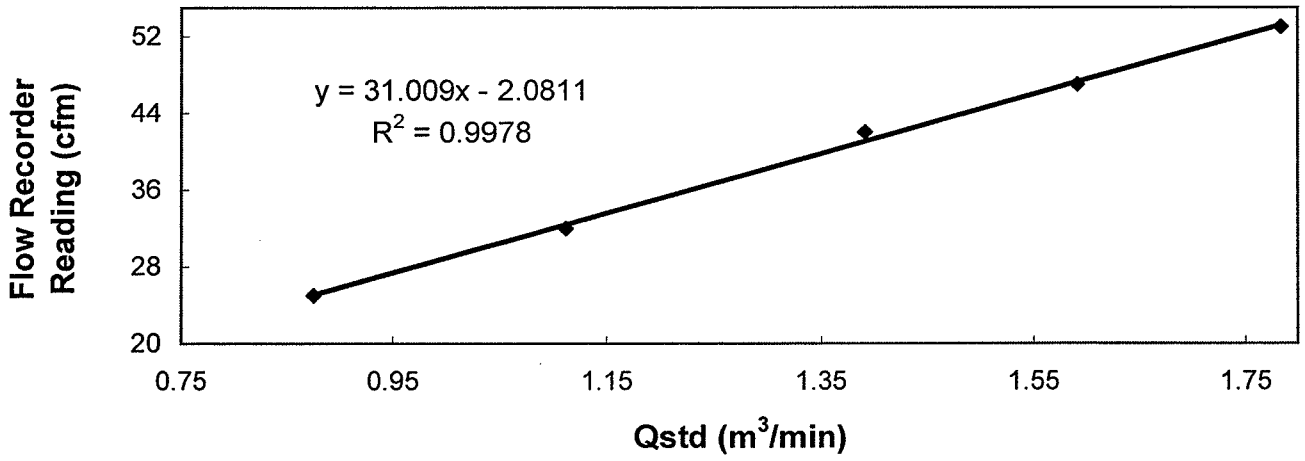
Calibration Due Date : 01 March 2008

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)	53	47	42	32	25
Qstd (Actual flow rate, m^3/min)	1.78	1.59	1.39	1.11	0.88
Pressure : 771.06 mm Hg		Temp. : 291 K			

Sampler 9998 Calibration Curve
Site: Ocean Park (AM-3)
Date of Calibration: 02 January 2008



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 : Mak Kei Wai
MAK Kei Wai
(Senior Technician)

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

Hong Kong Calibration Ltd.
香港校正有限公司

Calibration Certificate

Certificate No. 71391

Customer : ETS-Testconsult Limited

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

Order No. : Q70569 **Date of receipt :** 30-Mar-07

Item Tested

Description : Precision Integrating Sound Level Meter
Manufacturer : Rion
Model : NL-31 **Serial No. :** 00110024

Test Conditions

Date of Test : 17-Apr-07 **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).

Main Test equipment used:

Equipment No.	Description	Cert. No.	Due Date	Traceable to
S017	Multi-Function Generator	C071115	14-Mar-08	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 :** Dorothy Cheuk

Date: 17-Apr-07

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

Calibration Certificate

Results :

1. SPL Accuracy

UUT Setting			Applied Value (dB)	UUT Reading (dB)
Level Range (dB)	Weight	Response		
20 – 100	L_A	Fast	94.07	94.0
		Slow		94.0
	L_C	Fast		94.1
	Lp	Fast		94.1
30 – 120	L_A	Fast	94.07	94.0
		Slow		94.0
	L_C	Fast		94.0
	Lp	Fast		94.1
30 – 120	L_A	Fast	113.95	113.9
		Slow		113.9
	L_C	Fast		113.9
	Lp	Fast		114.0

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)	Variation (dB)	IEC 651 Type 1 Spec. (inside Primary)
130	114.0	114.1	0.1	± 0.7 dB
130	104.0	104.0	0.0	
120	94.0	94.0 (Ref.)	0.0	
110	84.0	84.1	0.1	
100	74.0	74.1	0.1	
90	64.0	64.1	0.1	
80	54.0	54.1	0.1	

Uncertainty : ± 0.1 dB

Calibration Certificate

3.2 Differential level linearity

UUT Range	Applied Value (dB)	UUT Rdg (dB)	Variation (dB)	IEC 651 Type 1 Spec.
120	84.0	84.0	0.0	± 0.4
	94.0	94.0 (Ref.)	--	
	95.0	95.0	0.0	± 0.2
	104.0	104.0	0.0	± 0.3
	105.0	105.0	0.0	± 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	- 26.3	- 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	- 3.3	- 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	39.9	± 0.5 dB
$1/10^2$	40.0	40.0	
$1/10^3$	40.0	39.9	± 1.0 dB
$1/10^4$	40.0	39.9	

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 : 990 hPa.
4. The internal cal reference of UUT was drifted from 94.0 dB to 93.4 dB.

---------- END ----------

Hong Kong Calibration Ltd.
香港校正有限公司

Calibration Certificate

Certificate No. 71392A

Customer : ETS-Testconsult Limited

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

Order No. : Q70569 **Date of receipt :** 30-Mar-07

Item Tested

Description : Sound Level Calibrator
Manufacturer : Rion
Model : NC-73 **Serial No. :** 10644871

Test Conditions

Date of Test : 17-Apr-07 **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).

Main Test equipment used:

Equipment No.	Description	Cert. No.	Due Date	Traceable to
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 :** Dorothy Cheuk

Date: 2-May-07

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

Hong Kong Calibration Ltd.
香 港 校 正 有限公司

Calibration Certificate

Results :

1. Level Accuracy (at 1 kHz)

UUT Nominal Value	Measured Value	Mfr's Spec.
94 dB	93.96 dB	± 1 dB

Uncertainty : ± 0.1 dB

2. Frequency Accuracy

UUT Nominal Value	Measured Value	Mfr's Spec.
1 kHz	0.981 kHz	± 2 %

Uncertainty : ± 0.1 %

3. Level Stability : 0.1 dB
Uncertainty : ± 0.01 dB

4. Total Harmonic Distortion : < 1.0 %
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 : 990hPa
5. This certificate is to supercede our former certificate no. : 71392

---------- 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)	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:					
			• 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.	✓		✓	✓	
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:					
			• Use of sediment traps, oil interceptors; and	✓		✓	✓	
			• Adequate maintenance of drainage systems to prevent flooding and overflow.		✓	✓	✓	

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		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.	✓		✓	o	Updated Drainage Proposal is being implemented
WQ09		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.		✓	✓	o	
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.	✓	✓	✓	o	
WQ11		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		EP Clause2.12 & 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		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		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	Flooding and wastewater including surface runoff discharges from the construction site/work to inland coastal waters, communal sewers and drains	PS 26.12	Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.	✓			✓	
WQ19		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

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)								
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.	✓			N/A	
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.	✓			✓	
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 • 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)	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:					
			• 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)	• 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:					
			• 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:					
			• Vegetation survey and subsequent transplantation of locally uncommon or restricted species as far as practicable;		✓		Uncommon or restricted species including Long Tentacle Orchid, Sword-leaved Orchid, Green-flowered Rattlesnake-Plantain, Cycad-fern, Balloon Flower and Chinese Lily	
			• 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;	✓		✓	✓	

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	• 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:					
			1. careful choice between 'impermeable' and 'permeable' hoardings.	✓			✓	
			2. control over the appearance of construction workers, construction plants/ machines.			✓	✓	
			3. proper screening and careful alignment of the temporary barging point and conveyor system.	✓			In the design	
			4. careful selection of security floodlights to avoid light pollution.	✓			✓	

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.
o denotes to be implemented.

APPENDIX I – EVENT AND ACTION PLANS

Event/Action Plan for Air Quality Monitoring

Event	Action			
Action Level	CET	Contractor	PMR	IEC
Exceedance for one sample	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.	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.	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.	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	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.	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.	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.	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	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.	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.	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.	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	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.	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.	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.	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

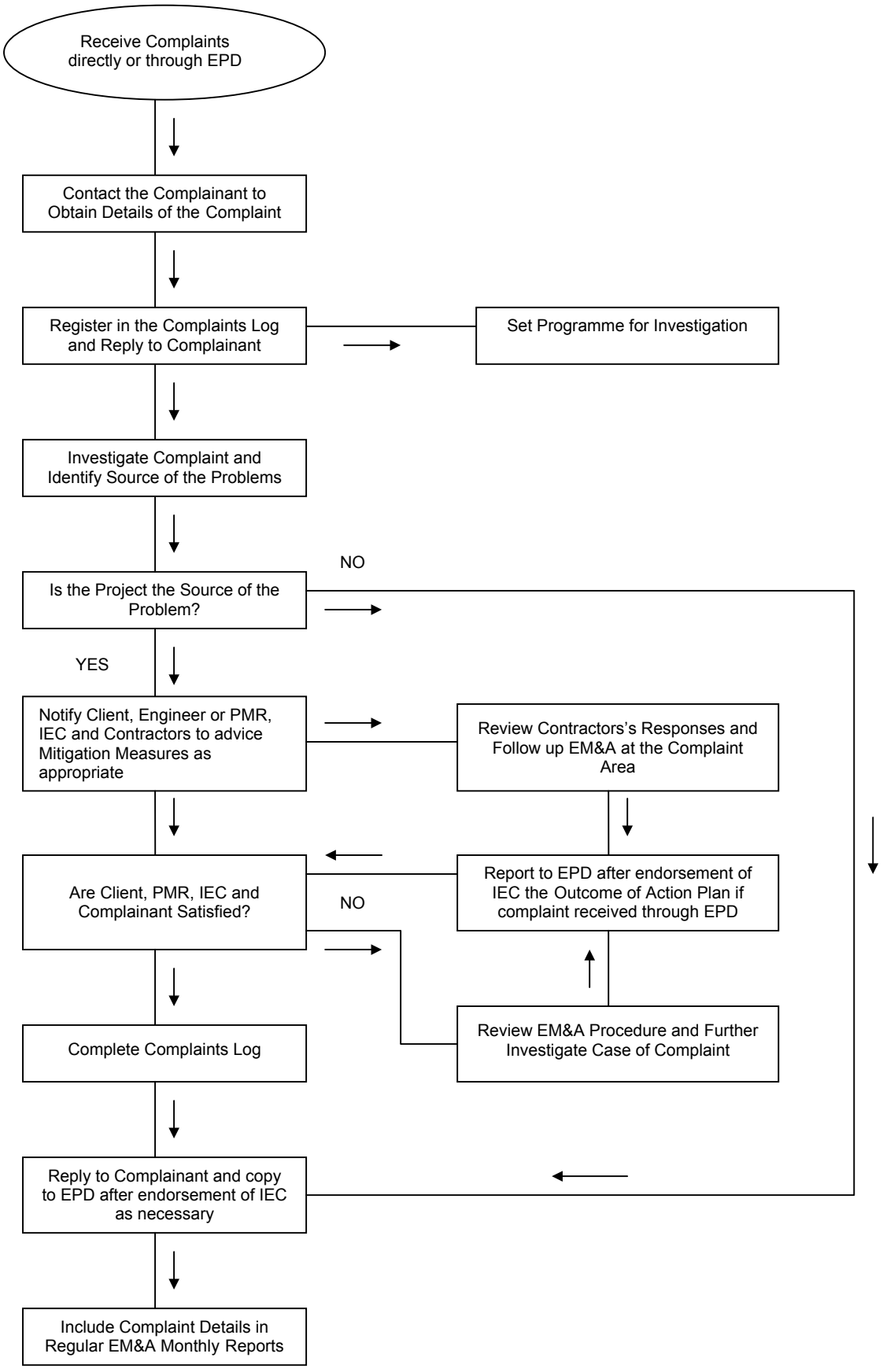
Event	Action			
	CET	Contractor	PMR	IEC
Action Level Exceedance	1. Identify source. 2. Notify IEC, PMR and Contractor. 3. Conduct additional noise monitoring to investigate the causes. 4. Report the investigation results to the IEC, PMR and Contractor. 5. Discuss with Contractor for their formulation of remedial measures if the exceedance is related to construction works. 6. Conduct additional monitoring to check mitigation effectiveness.	1. Take immediate action to avoid further exceedance. 2. Submit noise mitigation proposals to ET, PMR and IEC. 3. Implement noise mitigation proposals.	1. Confirm receipt of notification of failure in writing. 2. Notify Contractor. 3. Require Contractor to propose remedial measures for the analysed noise problem. 4. Ensure remedial measures are properly implemented.	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	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.	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.	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.	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	**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) **Step 2 -** Audit the implementation of mitigation measures on site. **Step 3 -** If non-compliance continues, check and confirm the effectiveness of mitigation measures and repeat monitoring survey measurements.
Limit Level Exceedance	Undertake **Steps 1-3**. If further exceedance of Limit Level, suspend construction works until an effective solution is identified. Once the solutions have been identified and agreed with all parties, construction works may commence.

APPENDIX J – COMPLAINT FLOW DIAGRAM AND COMPLAINT LOG



COMPLAINT RECORD REGISTER

Record ID	Date Received	Type (PMR / EPD / Public / Others, please specify)	Description	Responsible Project	Justified complaint?	Status (Open / Closed)
OPE/DBJV/PROJ/QSE/ECR/001	05-Nov-07	Public thro' EPD	The complainant claimed that dust nuisance was observed at Tai Shue Wan on 03-Nov-07.	CI05	N/A	The inspector of EPD came to the scene on 05-Nov-07 and no significant observation was made, hence the complaint was closed.
OPE/DBJV/PROJ/QSE/ECR/002	09-Jan-08	Public thro' OPC	The complainant claimed that noise nuisance was heard from the Ocean Park construction sites during the restricted hours	CI05	Justified	Under investigation, the noise nuisance was concluded from the soft ground tunnel support work adjacent to GPH. Rock breaking had to be carried out within the tunnel works areas due to safety and emergency in order to prevent the collapse of the ground support structure.
OPE/DBJV/PROJ/QSE/ECR/003						With regards to the complaints, immediate action was taken and summarized as follows: • The enclosure and the acoustic doors have been built and completed on 21-Jan-08; and • Surveillance was stepped up in order to ensure that timely actions could be taken to rectify any complaints.

COMPLAINT RECORD REGISTER

Record ID	Date Received	Type (PMR / EPD / Public / Others, please specify)	Description	Responsible Project	Justified complaint?	Status (Open / Closed)
OPE/DBJV/PROJ/QSE/ECR/004	13-Feb-08	Public thro' EPD	The complainant claimed that noise nuisance was heard from the Ocean Park construction sites during the restricted hours at Tai Shue Wan	CI05	Justified	With regards to the complaints, immediate action was taken and summarized as follows: • Additional noise control measures, including noise enclosure at the junction of the conveyors at Tai Shue Wan; and • Well manage the working sequence in order to minimize the impacts to the vicinity.

APPENDIX K – CONSTRUCTION PROGRAMME

Early Start	Activity Description
CI05 - Tunnel, Site Formation & Misc.	
Cost Centre B-Misc. Site Formation at Waterfront	
Construction	
B4 - Access Rd to Astounding Asia at Waterfront	
12/SEP/07A	Access Rd from Ch. 100 - 300
18/FEB/08	Access Road Remaining Works
Cost Centre C-Misc. Site Formation at Summit	
Construction	
C1/C2/C6 - Preparation Works - Summit Excav	
18/FEB/08	Drainage Works at Tai Shue Wan
C1 / C2 / C5 - Summit Excavation	
21/JUN/07A	Soft Excavation (50,000cu.m.)
15/SEP/07A	Excavation Summit Terminus Area
22/NOV/07A	Ph. 1 -Bench Formation at+168mPD,+158mPD&+148mPD
26/NOV/07A	Ph. 2 Blast top to +176mPD
18/FEB/08	Ph. 1 Excavate from 168mPD to +158mPD
29/FEB/08	Ph. 1 -Bench Formation at +138mPD
07/MAR/08	Ph. 2 -Bench Formation at +168mPD
10/APR/08	Ph. 1 Excavate from +158mPD to +148mPD
03/MAY/08	Ph. 1 Excavate from +148mPD to +138mPD
03/JUN/08	Ph. 1 Excavate from +138mPD to +131mPD(Fin Lvl)
Cost Centre D - Funicular Tunnel and Adit Tunnel	
Construction	
D1 - Tunnel Ch.940 - Ch.1240	
21/FEB/08	Assembly,Transfer,Install & Comm Lining formwork
23/FEB/08	Invert - 200 li.m./wk
12/MAR/08	Waterproofing - 100 li.m./wk
03/APR/08	Tunnel (Lining) - 84 li.m./wk
30/APR/08	Builder's Works - 84 lin.m./wk
04/JUN/08	Trackbed - 200 li.m./wk
D2 - Tunnel Ch. 0 - Ch.940	
29/DEC/07A	Excavation CH21 towards CH120 - 7.5m/wk
30/DEC/07A	Excavation CH740 towards CH500 - 48 li.m./wk
26/FEB/08	Excavation CH695 - CH580 (Enlarge)
07/MAR/08	Excavation CH500 towards CH300 - 48 li.m./wk
11/APR/08	Excavation CH300 towards CH120 - 48 li.m./wk
10/MAY/08	Tunnel Invert CH940-400: 200 li.m./wk
10/MAY/08	Tunnel Invert CH21 - CH400: 200 lin.m./wk
17/MAY/08	Tunnel Waterproofing CH21 - 580: 84 li.m./wk
28/MAY/08	Tunnel Lining CH21 - 580: 84 li.m/wk
28/MAY/08	Tunnel Waterproofing CH940 - 705: 84 li.m/wk
28/MAY/08	Tunnel Waterproofing CH695 - 580: 50 li.m./wk
30/MAY/08	Tunnel Builder's Works CH21 - CH580:84 lin.m./wk
06/JUN/08	Tunnel Lining CH695 - 580: 50 li.m./wk
Cost Centr E-Funicular Termini-Summit&Waterfront	
Construction	
E2 - Hoarding / Tower Crane - Summit Terminus	
18/FEB/08	Tower Crane Erection
E2 - Summit Terminus Construction	
18/FEB/08	BA 14 for Summit Terminus Site Formation Works
18/FEB/08	Foundation Excavation with Haul Road
01/APR/08	+112mPD Slab, Column&Wall upto +115mPD (BOH)
01/APR/08	U/G Drainage & Utilities
09/MAY/08	+116mPD Slab, Column&Wall upto +119mPD
22/MAY/08	+120mPD Slab, Column&Wall upto +123mPD
E1 - North Part of Waterfront Terminus	
31/JAN/08A	Consent for Commencement of Works from BD
28/FEB/08	Install Waling & Strut with Excavation
24/APR/08	Minipiles Installation
07/MAY/08	BA14 for Pile Loading Test
07/MAY/08	Pile Loading Test
15/MAY/08	Pilecap, Pad Footing w U/G Drainage & Utilities
06/JUN/08	Construct Base Slab @ +8mPD: G.L.B-C & D-J
Cost Centre F- Reservoir at Summit with Pipework	
Construction	
F2 / F3 / F5 - Pumping Station - Mid-Level	
06/MAR/08*	Pumping Station Structures & Foundation
03/APR/08*	Foundation & Baseslab Construction
06/MAY/08	Roof Construction
Cost Centre H-Option Government Entrust Works	
Construction	
H2 - Nam Long Shan Road	
01/NOV/07A	F1.35 to F1.34 (P40) - Steel Deck & Pipe Install
28/JAN/08A	F1.72 to F1.71 (P3)- Excavation
04/FEB/08A	F1.43 to 20m (P33)- Excavation
18/FEB/08	F1.56 to F1.54 (P23)- Excavation
18/FEB/08	F1.41 to F1.40 (P35)- Excavation
18/FEB/08*	F1.37 to F1.35 (P39)- Excavation
18/FEB/08	F1.68 to F1.67 (P8)- Excavation
18/FEB/08	F1.64 to 20m (P13)- Excavation
18/FEB/08	F1.65 to 6m (P11)- Pipe Laying
26/FEB/08	F1.37 to F1.35 (P39)- Pipe Laying
26/FEB/08	F1.65 to 6m (P11)- Backfill & Reinstatement
29/FEB/08	F1.37 to F1.35 (P39)- Backfill & Reinstatement
04/MAR/08	F1.34 to F1.33 (P41)- Excavation
05/MAR/08	F1.72 to F1.71 (P3)- Pipe Laying
05/MAR/08	8m to F1.64 (P12) - Pipe Laying+Watermain Works
08/MAR/08	F1.43 to 20m (P33)- Pipe Laying
12/MAR/08	F1.34 to F1.33 (P41)- Pipe Laying
15/MAR/08	F1.34 to F1.33 (P41)- Backfill & Reinstatement
19/MAR/08	F1.72 to F1.71 (P3)- Backfill & Reinstatement
19/MAR/08	F1.33 to F1.31 (P42)-Excavation

Early Start	Activity Description
19/MAR/08	F1.64 to 20m (P13)- Pipe Laying+Watermain Works
19/MAR/08	8m to F1.64 (P12) - Backfill & Reinstatement
25/MAR/08	F1.43 to 20m (P33)- Backfill & Reinstatement
28/MAR/08	F1.56 to F1.54 (P23)- Pipe Laying+Watermain Work
28/MAR/08	F1.41 to F1.40 (P35)- Pipe Laying
31/MAR/08	F1.33 to F1.31 (P42)- Pipe Laying
01/APR/08	F1.68 to F1.67 (P8)- Pipe Laying
03/APR/08	F1.33 to F1.31 (P42)- Backfill & Reinstatement
05/APR/08	F1.64 to 20m (P13)- Backfill & Reinstatement
07/APR/08	F1.71 to F1.70 (P4)- Excavation
08/APR/08	20m to F1.42 (P34)- Excavation
08/APR/08	F1.31 to F1.30 (P43)- Excavation
14/APR/08	F1.56 to F1.54 (P23)- Backfill & Reinstatement
14/APR/08	F1.41 to F1.40 (P35)- Backfill & Reinstatement
16/APR/08	F1.31 to F1.30 (P43)- Pipe Laying
18/APR/08	F1.68 to F1.67 (P8)- Backfill & Reinstatement
18/APR/08	12m to F1.63 (P14)- Excavation
19/APR/08	F1.31 to F1.30 (P43)- Backfill & Reinstatement
23/APR/08	F1.30 to F1.28 (P44)- Excavation
29/APR/08	20m to F1.50 (P26)- Backfill & Reinstatement
29/APR/08	F1.57 to F1.56 (P22)- Excavation
02/MAY/08	F1.30 to F1.28 (P44)- Pipe Laying
06/MAY/08	F1.30 to F1.28 (P44)- Backfill & Reinstatement
06/MAY/08	F1.69 to F1.68 (P7)- Excavation
09/MAY/08	20m to F1.42 (P34)- Pipe Laying
09/MAY/08	F1.28 to F1.27 (P45)- Excavation
13/MAY/08	F1.71 to F1.70 (P4)- Pipe Laying
16/MAY/08	F1.50 to F1.49 (P27)- Excavation
19/MAY/08	F1.28 to F1.27 (P45)- Pipe Laying
21/MAY/08	12m to F1.63 (P14)- Pipe Laying+Watermain Works
22/MAY/08	F1.28 to F1.27 (P45)- Backfill & Reinstatement
23/MAY/08	20m to F1.42 (P34)- Backfill & Reinstatement
23/MAY/08	F1.23 to F1.21 (P48)- Excavation
26/MAY/08	F1.27 to F1.25 (P46)- Excavation
27/MAY/08	F1.71 to F1.70 (P4)- Backfill & Reinstatement
31/MAY/08	F1.23 to F1.21 (P48)- Pipe Laying
03/JUN/08	F1.27 to F1.25 (P46)- Pipe Laying
03/JUN/08	12m to F1.63 (P14)- Backfill & Reinstatement
04/JUN/08	F1.23 to F1.21 (P48)- Backfill & Reinstatement
05/JUN/08	F1.60 to F1.59 (P19)- Excavation
06/JUN/08	F1.57 to F1.56 (P22)- Pipe Laying+Watermain Work
06/JUN/08	F1.27 to F1.25 (P46)- Backfill & Reinstatement
11/JUN/08	F1.70 to 10m (P5)- Excavation
11/JUN/08	F1.25 to F1.23 (P47)- Excavation
17/JUN/08	F1.69 to F1.68 (P7)- Pipe Laying
19/JUN/08	F1.25 to F1.23 (P47)- Pipe Laying
23/JUN/08	F1.50 to F1.49 (P27)- Pipe Laying+Watermain Work
23/JUN/08	F1.57 to F1.56 (P22)- Backfill & Reinstatement
23/JUN/08	F1.25 to F1.23 (P47)- Backfill & Reinstatement
Ocean Park Private Road	
22/SEP/07A	20m to 1.14 to 12a(P51)- Excavation
15/OCT/07A	F1.18 to F1.15 + 20m (P50)- Excavation
27/OCT/07A	20m to 1.14 to 12a(P51)- Pipe Laying
01/NOV/07A	20m to 1.14 to 12a(P51- Backfill & Reinstatement
26/NOV/07A	F1.12a to F1.09 (P52)- Excavation
06/DEC/07A	F1.03 to F1.01 (P56)- Excavation
27/DEC/07A	F1.09 to F1.07 (P53)- Backfill & Reinstatement
05/JAN/08A	F1.05 to F1.03 (P55)- Backfill & Reinstatement
09/JAN/08A	F1.03 to F1.01 (P56)- Pipe Laying
14/JAN/08A	F1.07 to F1.05 (P54)- Excavation
18/JAN/08A	F1.03 to F1.01 (P56)- Backfill & Reinstatement
23/JAN/08A	F1.12a to F1.09 (P52)- Pipe Laying
30/JAN/08A	F1.12a to F1.09 (P52)- Backfill & Reinstatement
22/FEB/08	F1.18 to F1.15 + 20m (P50)- Pipe Laying
22/FEB/08	F1.07 to F1.05 (P54)- Pipe Laying
23/MAY/08	F1.21 to F1.20a (P48a)- Excavation
31/MAY/08	F1.21 to F1.20a (P48a)- Pipe Laying
04/JUN/08	F1.21 to F1.20a (P48a)- Backfill & Reinstatement
07/JUN/08	F1.20a to F1.18 (P49)- Excavation
24/JUN/08	F1.20a to F1.18 (P49)- Pipe Laying
30/JUN/08	F1.20a to F1.18 (P49)- Backfill & Reinstatement
Cost Centre J - Entry Plaza Advance Works	
Construction	
H3 - Wong Chuk Hang Road	
24/DEC/07A	F2.06 to F2.04 (Q3)- Excavation
14/FEB/08A	F2.07 to F2.06 (Q2)- Excavation
18/FEB/08*	F2.02 to 60m (Q5)- Excavation
19/MAR/08	F2.02 to 60m (Q5)- Pipe Laying
25/MAR/08	F2.07 to F2.06 (Q2)- Pipe Laying
05/APR/08	F2.02 to 60m (Q5)- Backfill & Reinstatement
10/APR/08	F2.07 to F2.06 (Q2)- Backfill & Reinstatement
25/APR/08	14m from F2.01+15m (Q8)- Excavation
03/MAY/08	F2.06 to F2.04 (Q3)- Pipe Laying
20/MAY/08	F2.06 to F2.04 (Q3)- Backfill & Reinstatement
28/MAY/08	14m from F2.01+15m (Q8)- Pipe Laying
04/JUN/08	8m to F2.01 (Q6)- Excavation
11/JUN/08	14m from F2.01+15m (Q8- Backfill & Reinstatement
24/JUN/08	13m to F2.00 (Q9)- Excavation
Bus Depot (Portion 1)	
05/MAY/07A	TTA for temp Ocean Park Road
05/NOV/07A	Excavation
01/DEC/07A	Extract sheet pile
21/JAN/08A	Install DN200 & DN150
23/FEB/08	Diversion Gas / PCCW & 11Kv

Early Start	Activity Description
14/MAR/08	Drainage works for bus terminus
16/APR/08	Irrigation water main
23/APR/08	Street Lighting
30/APR/08	Road works at Bus terminus
28/MAY/08	Road furntiure+footpath+buse shelter+planter
28/JUN/08	Landscaping
Existing Bus Terminus (Portion 2)	
21/JAN/08A	Drainage works for the 1800 dia. pipe
22/FEB/08	Dia 150 Salt water main
22/FEB/08	Dia 200 Fresh water main
14/MAR/08	11kV cable diversion
01/APR/08	Diversion of Gas main & PCCW cables
21/APR/08	Drainage works for the bus terminus
21/MAY/08	Irrigation water main
27/MAY/08	Landscaping
28/MAY/08	Street light
03/JUN/08	Road Funiture + footpath + bus shelter + planter
04/JUN/08	Road works at the bus terminus
HK School of Motoring (Portion 3)	
18/FEB/08	Drainage for permanent road
18/FEB/08	Permanent Road and Curing
28/FEB/08	Permanent Road and Curing
29/FEB/08	Sheet Pile&Excav DN450,DN300,DN200,DN1650 & 11kv
10/MAR/08	Upgrade existing Utility up to carriageway req.
15/MAR/08	DN450, 300, 200, 1650 & 11kv pipe laying
20/MAR/08*	Additional Island
25/MAR/08	Upgrade existing Utility up to carriageway req.
31/MAR/08	Additional 1650 dm manhole
10/APR/08	DN450, 300, 200, 1650 & 11kv pipe laying
19/APR/08	Drainage for permanent road
30/APR/08	Permanent Road and Curing
23/MAY/08	Excavation for Telephone Cable
23/MAY/08	Construct Road crossing
23/MAY/08*	Crawler crane & hammer mobilization
27/MAY/08	Driving sheet pile 45m, 225nos. 14nos/day ~ 15
02/JUN/08	1650 pipe laying
03/JUN/08	Extract sheet piling
04/JUN/08	Lay PCCW Cables
04/JUN/08	Reinstall Pavement
05/JUN/08	Waling & Strutting, 4m spacing, 13nos.
05/JUN/08	Manhole for 1650 drainage, 2 nos. (1 no add'l)
06/JUN/08	Excavation 500mm below waling
07/JUN/08	Road Reinstatement and Curing
07/JUN/08	Excavation, app 220m3
20/JUN/08	Excavation for Telephone Cable
30/JUN/08	Lay PCCW Cables

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 (Env.)	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

Contractor's Submission Reference No.				**OPE/DBJV/MCAL/103192/STa ~ Project Monthly EM&A Report (December 2007)**		**For MCAL Use**		
Item No	**Review By**	**Document / Drawing Reference**	**Reply Code**	**EPD / PMR's Comments**	**DBJV's Response**	**Action**	**Action Date**	**Closed Date**
1	EPD	Appendix E – Monthly Report (Dec '07)		a) Please try to provide in the next report a close-up shot of Chinese Lily with emphasis on the withered parts of the plants. b) Please indicate the shrunken Balloon Flower in the photos.	The upper ground leaves and stem were shrunken shortly after transplanting in mid of 2007 and no photos recorded. However two new seedlings of Chinese Lily were re-generated at the nursery site in February 2008. Photos were taken and it is indicated that some of the underground parts were alive and more seedlings would be likely appear in the coming months. Noted. Photo will be included in the February's monitoring report.			

Reply Code: A- Comment must be incorporated into a resubmission. B - Comment to be noted and implemented but does not require resubmission.
C – PMR preferred solution, to be incorporated if possible. D - For information only. E - New requirement to be incorporated - variation may be required.

Part 3 CS-01 EM&A REPORTS (February 2008)

CONTENTS

List of Tables

List of Appendices

EXECUTIVE SUMMARY

This is the 11th EM&A Monthly report prepared by Kaden – ATAL Joint Venture for the Project "Vet Hospital". This report presents the results of the construction activities conducted in the month.

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

- R.C. structure: construction of dolphin pools.
- E&M & LSS installation: plumber, electric installation, A/C system, etc.
- Lift shaft and upper roof floor finishing: concrete plinths, doghouse and parapet at main roof floor; alignment revised, etc.
- Internal finishing: plasterer works, installation of wooden doors, waterproof in building and roof.
- E&M work at LV and fuel tank room.
- Cable laying: excavation, installation of cable and backfill, etc.

Environmental Licensing and Permitting

Permits granted to the Project include the Environmental Permit (EP) for the Project and Construction Noise Permit (CNP). Information of these permits is provided in Table 2.1.

Implementation Status of Environmental Mitigation Measures

Site inspections in the month made following observations and recommendations.

Water Quality Mitigation Measures

- Some debris or soils were observed accumulating along the temporary U-channel. The Contractor was reminded to clean up the U-channel in regular basis.
- Stagnant water was observed accumulating at voided area of plant block. The Contractor was reminded to clean it up.
- Some concreting related work that produced gravel is observed carrying out at the U-channel area. The Contractor was reminded to cover the channel to prevent debris falling within the channel.

Air Quality Mitigation Measures

- Stockpile should be properly covered to prevent dust generation by wind erosion.

Noise

- No violation was observed nor recorded.

Ecology

- No violation was observed nor recorded.

Waste / Chemical Management

- Waste material is stacked at on-site to prevent that may induce hygiene and environmental problem(s).
- Designated waste collection point should be clearly labeled.
- Rubbish was observed at slope where it was not designated collection point. The Contractor was reminded to clean up the slope as soon as possible
- A diesel drum below lower level of pool block was required means of drip tray.

Others

- No other violation was observed nor recorded.

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 month include:

- General material management to prevent spillage or dust spreading.
- Regular maintenance to the temporary u-channel.
- To prevent gravels/debris contained waste water from flowing into permanent drainage.
- Regular remove construction waste that is stacked at designated construction waste area.
- 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 the month of February 2008.

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 the month included:

- R.C. structure: construction of dolphin pools.
- E&M & LSS installation: plumber, electric installation, A/C system, etc.
- Lift shaft and upper roof floor finishing: concrete plinths, doghouse and parapet at main roof floor; alignment revised, etc.
- Internal finishing: plasterer works, installation of wooden doors, waterproof in building and roof.
- E&M work at LV and fuel tank room.
- Cable laying: excavation, installation of cable and backfill, etc.

1.5 A layout plan of the Project is provided in Appendix B.

1.6 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 February 2008

Waste Type	Examples	Actual quantity disposed (T.)	Disposal Locations
C&D Waste	Plastic, wood and bamboo	36.47	SENT Landfill
		11.46	TKO Area 137
		53.00	TKO Sorting Facilities
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 March 07.

2.2 The weekly site inspection was only carried out on 06th, 14th, 22nd (IEC audit) and 27th February 2008 in the 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 in the reporting month 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-RS0695-07	29/10/07	09/04/08	Generator, dump truck, tracked excavator, concrete pump, tower crane, poker, air compressor, concrete lorry mixer.	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 the month, the following observations and recommendations were made.

Water Quality Mitigation Measures

- Some debris or soils were observed accumulating along the temporary U-channel. The Contractor was reminded to clean up the U-channel in regular basis.
- Stagnant water was observed accumulating at voided area of plant block. The Contractor was reminded to clean it up.
- Some concreting related work that produced gravel is observed carrying out at the U-channel area. The Contractor was reminded to cover the channel to prevent debris falling within the channel.

Air Quality Mitigation Measures

- Stockpile should be properly covered to prevent dust generation by wind erosion.

Noise

- No violation was observed nor recorded.

Ecology

- No violation was observed nor recorded.

Waste / Chemical Management

- Waste material is stacked at on-site to prevent that may induce hygiene and environmental problem(s).
- Designated waste collection point should be clearly labeled.
- Rubbish was observed at slope where it was not designated collection point. The Contractor was reminded to clean up the slope as soon as possible
- A diesel drum below lower level of pool block was required means of drip tray.

Others

- No other violation was observed nor recorded.

Implementation Status of Environmental Complaint Handling Procedures

Summary of the Complaints and Prosecutions

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

3. FUTURE KEY ISSUES

3.1 Key issues to be considered in the month include:

- General material management to prevent spillage or dust spreading.
- Regular maintenance to the temporary u-channel.
- To prevent gravels/debris contained waste water from flowing into permanent drainage.
- Regular remove construction waste that is stacked at designated construction waste area.
- Avoid accumulation of stagnant / muddy water discharge on-site.

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 month.

4.2 IEC audit was carried out on 22 February 2008. 2 observations and no non-compliances were raised.

4.3 4 nos. of site inspections were carried out. All identified issues are rectified within the reporting month.

Recommendations

4.4 According to the environmental audit performed in the 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 regular waste removal to prevent over 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.

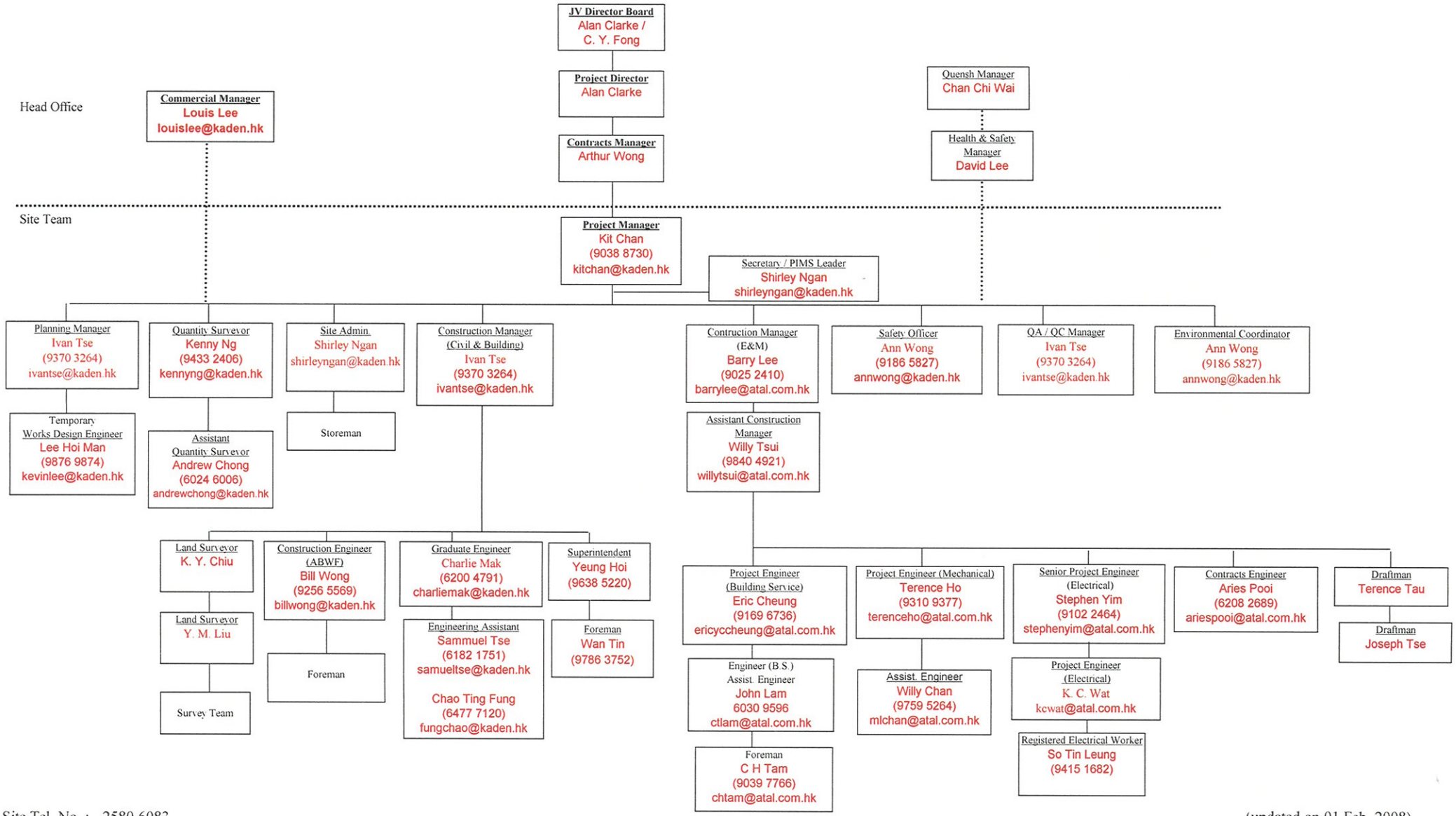
Appendix A

Kaden 基利

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

KADEN - ATAL JOINT VENTURE
PROJECT ORGANIZATION CHART

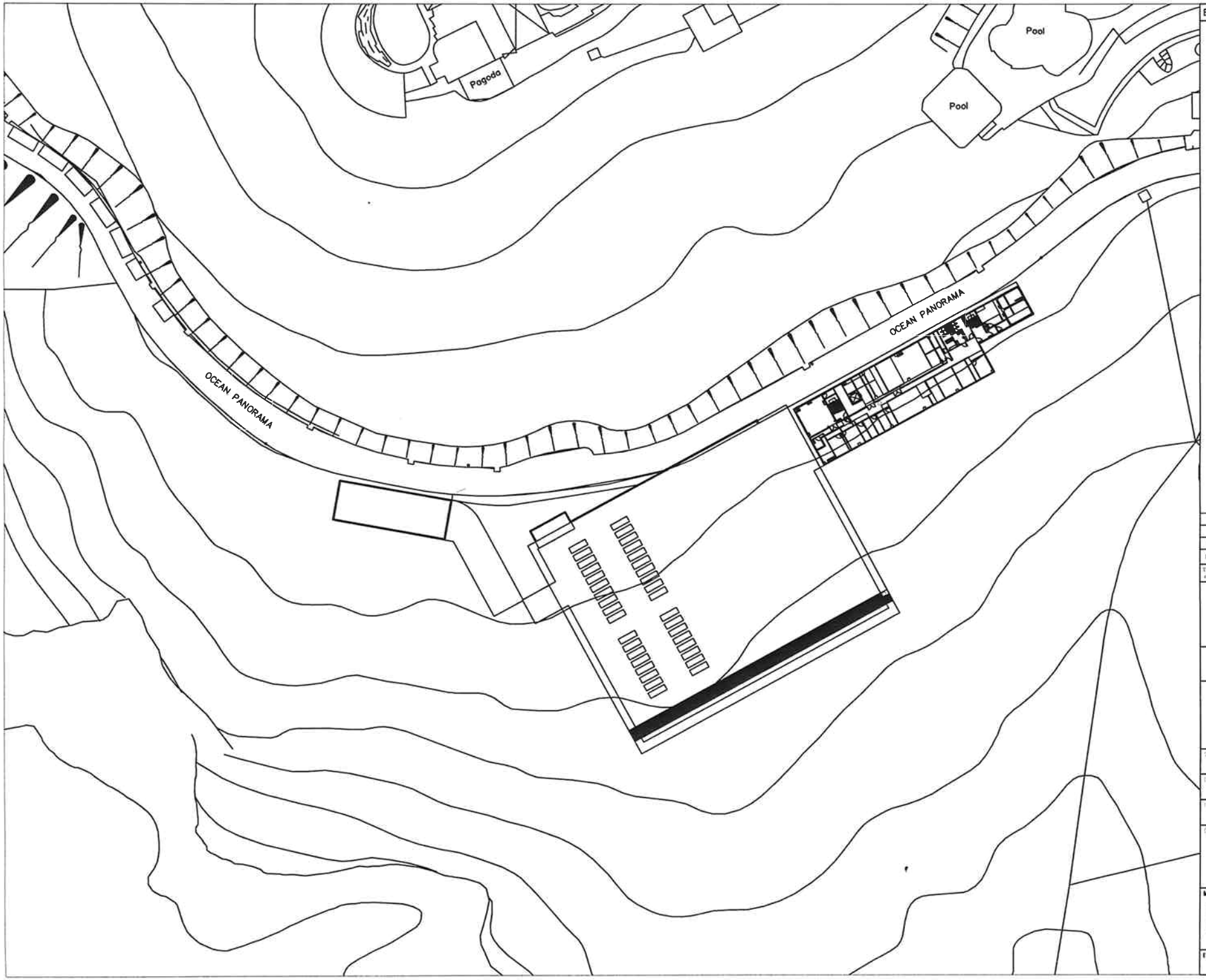
ATAL



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

(updated on 01 Feb. 2008)

Appendix B



B.O.O. REF.

REV.	DESCRIPTION	CHECKED	
A	FIRST ISSUE	ST	03/10

香港海洋公園
OCEAN PARK HONG KONG

OCEAN PARK REDEVELOPMENT

CONTRACT NO. CS01
OCEAN PARK VET HOSPITAL

SITE LOCATION PLAN

SCALE	DATE
N. T. S.	3-10-2007
DRAWN BY	CHECKED BY
ST	DC

RESPONSIBLE OFF
MAUNSELL CONSULTANTS ASIA LTD.

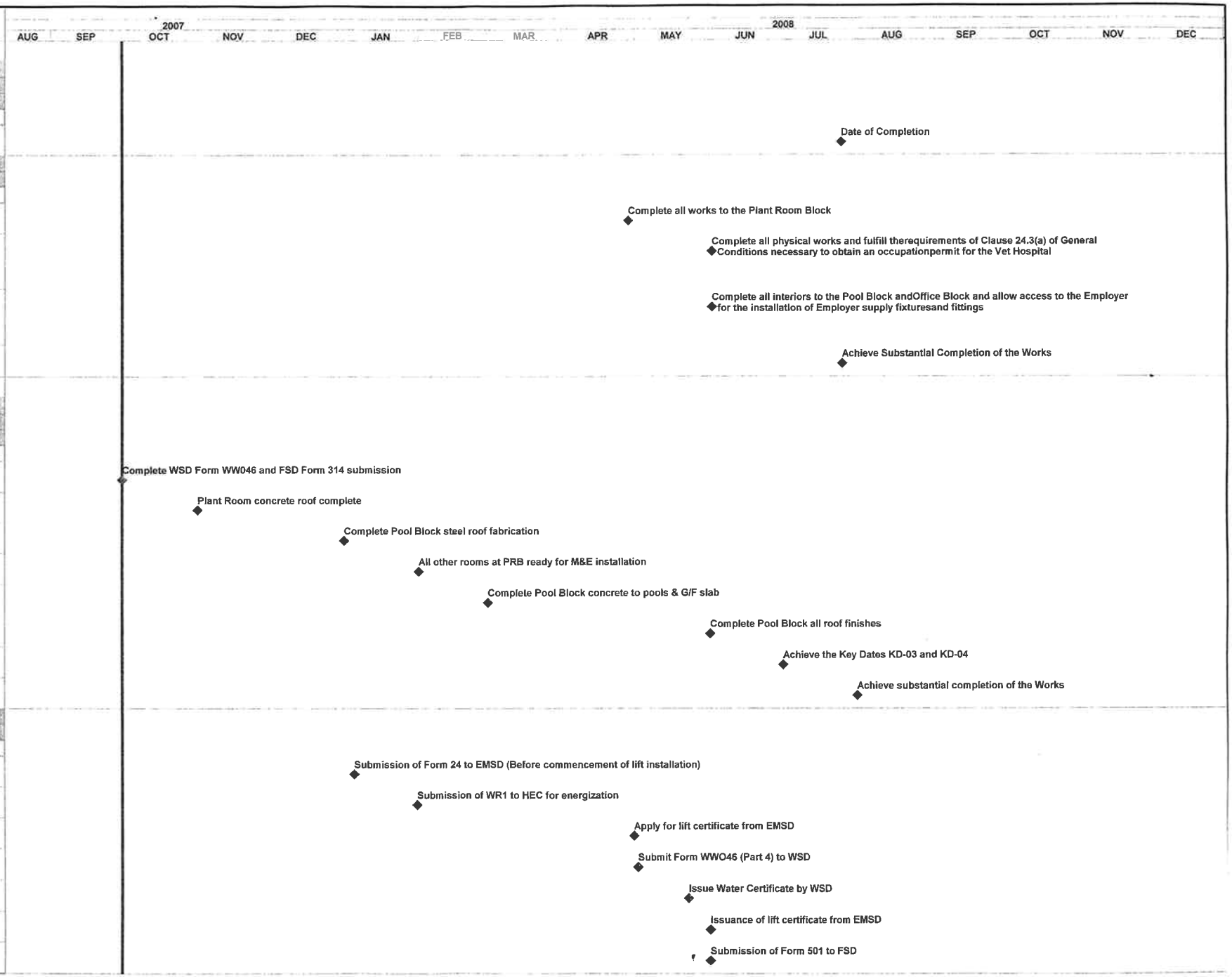
CONSULTANT
MAUNSELL | AECOM
Maunsell Consultants Asia Ltd.
茂盛(亞洲)工程顧問有限公司
In association with
ARDAS LIDAW LEVETT & BAILEY

MAIN CONTRACTOR
Kaden 英開 ATAL

DRG. NO. KAJV/CS01/T/1019 REV. A

Appendix C

Activity ID	Early Start	Early Finish	Orig Dur	Total Float
General				
Contract Commencement & Completion Date				
VHJCD99		25-07-2008*	0	0
Key Dates				
VHJKD01		27-04-2008*	0	0
VHJKD03		01-06-2008*	0	0
VHJKD04		01-06-2008*	0	0
VHJKD05		25-07-2008*	0	0
Preliminaries				
Cost Centre A - Preliminaries				
Schedule of Milestones				
VHKA.06		30-09-2007*	0	0
VHKA.07		31-10-2007*	0	0
VHKA.08		31-12-2007*	0	0
VHKA.09		31-01-2008*	0	0
VHKA.10		29-02-2008*	0	0
VHKA.11		31-05-2008*	0	0
VHKA.12		30-06-2008*	0	0
VHKA.13		31-07-2008*	0	0
Statutory Submission				
VHVPSS025	05-01-2008*		0	0
VHVPSS030	31-01-2008*		0	0
VHVPSS080	30-04-2008		0	0
VHVPSS040	02-05-2008		0	9
VHVPSS050	23-05-2008		0	9
VHVPSS090		31-05-2008*	0	0
VHVPSS070	01-06-2008*		0	0



Start Date	26-03-2007
Finish Date	23-10-2008
Data Date	01-10-2007
Run Date	09-10-2007 17:04

Delay Bar due to ELS
Progress Bar
Critical Activity

DRP1

Sheet 1 of 10

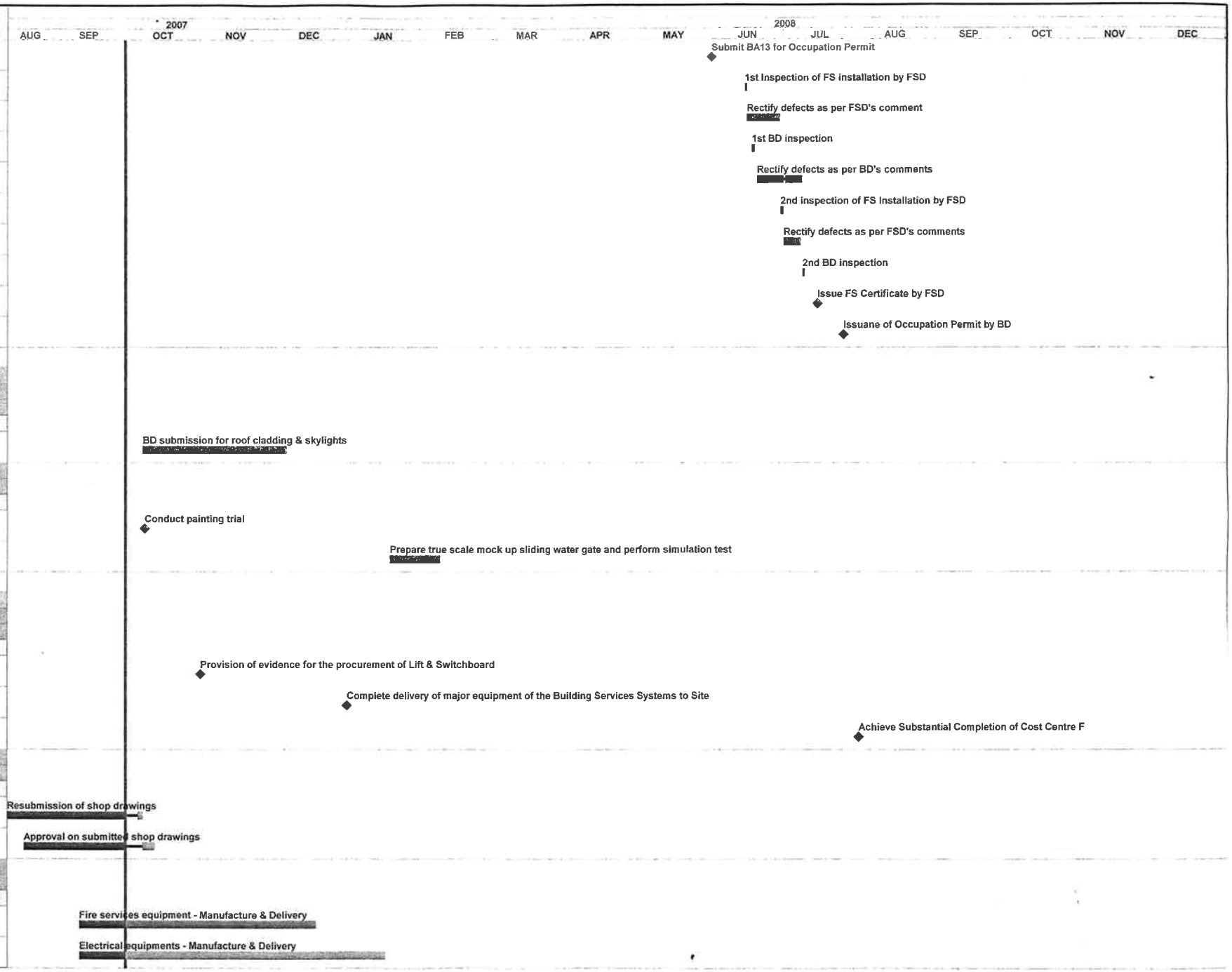
KADEN - ATAL JOINT VENTURE

Ocean Park Master Redevelopment
Contract No. CS01 - Vet Hospital

Delay Recovery Programme (DRP1)

Date	Revision	Checked	Approved
29-09-2006	Tender Programme	KC	AC
26-03-2007	Construction Programme	KC	AC
27-04-2007	Construction Programme (Rev. A)	KC	AC

Activity ID	Early Start	Early Finish	Orig Dur	Total Float
VHVPSS100	01-06-2008		0	0
VHVPSS071	15-06-2008	15-06-2008	1	8
VHVPSS072	16-06-2008	29-06-2008	14	8
VHVPSS110	18-06-2008	18-06-2008	1	0
VHVPSS120	20-06-2008	08-07-2008	15	0
VHVPSS073	30-06-2008	30-06-2008	1	8
VHVPSS074	01-07-2008	07-07-2008	7	8
VHVPSS130	09-07-2008	09-07-2008	1	0
VHVPSS075	15-07-2008		0	8
VHVPSS140		25-07-2008	0	0
Design, Submission and Approval				
Roof Cladding System				
VHTDSA430	08-10-2007*	06-12-2007	60	27
Architectural, Builder's Works and Finishes				
VHTDSA530	09-10-2007		0	22
VHTDSA550	19-01-2008	08-02-2008	21	63
M&E and Building Services				
Cost Centre F - Building Services				
Schedule of Milestones				
VHKF.08		31-10-2007*	0	0
VHKF.10		31-12-2007*	0	0
VHKF.17		31-07-2008*	0	0
E&M Shop Drawings				
VHTEMSD080	24-05-2007A	07-10-2007	31	83
VHTEMSD090	20-08-2007A	12-10-2007	7	83
Equipment Manufacture & Delivery				
VHUEQ010	12-09-2007A	18-12-2007	90	0
VHUEQ020	12-09-2007A	16-01-2008	120	2



Start Date 26-03-2007
Finish Date 23-10-2008
Data Date 01-10-2007
Run Date 09-10-2007 17:04

Delay Bar due to ELS
Progress Bar
Critical Activity

DRP1

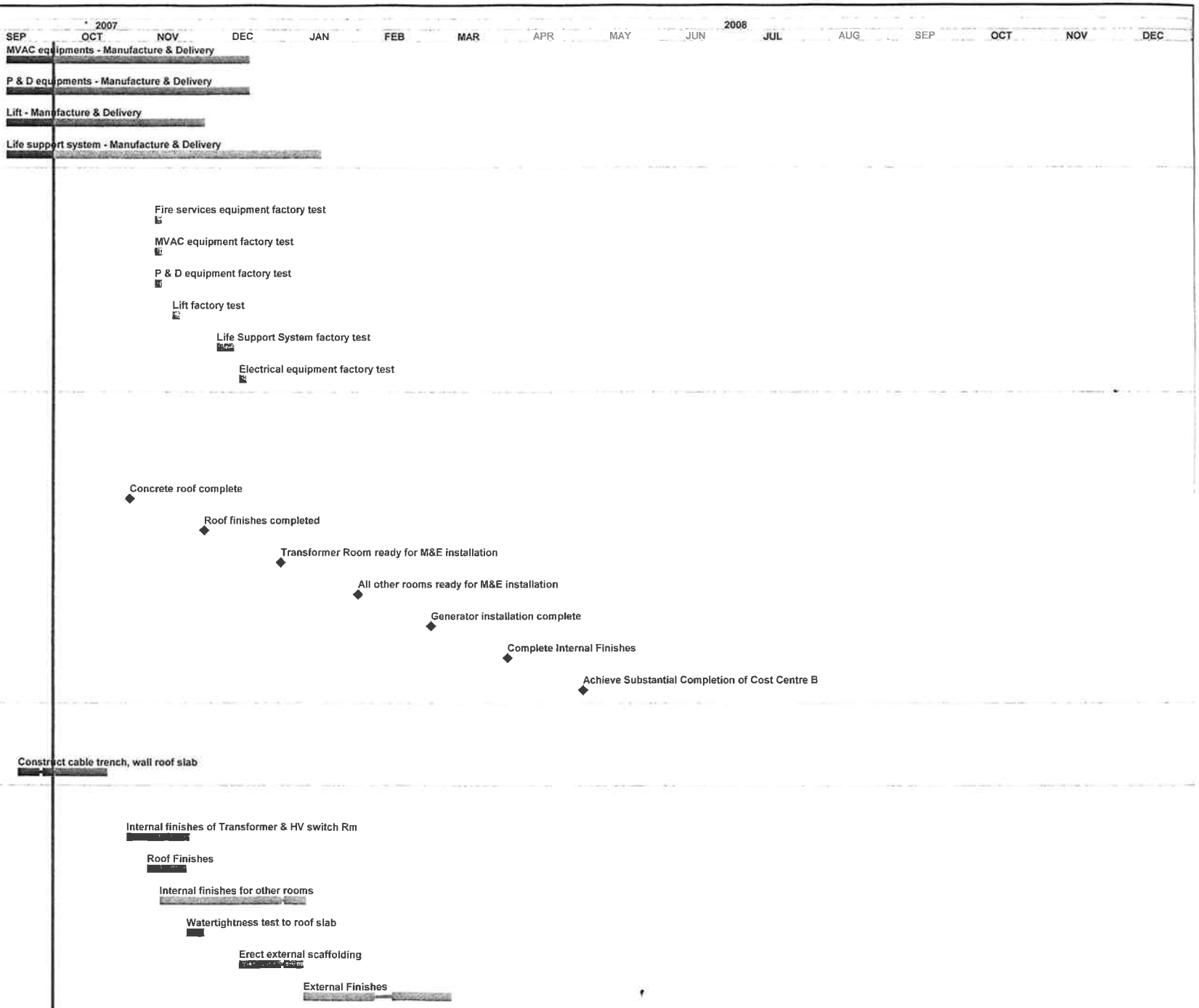
KADEN - ATAL JOINT VENTURE

Ocean Park Master Redevelopment
Contract No. CS01 - Vet Hospital

Delay Recovery Programme (DRP1)

Date	Revision	Checked	Approved
26-09-2006	Tender Programme	KC	AC
26-03-2007	Construction Programme	KC	AC
27-04-2007	Construction Programme (Rev. A)	KC	AC

Activity ID	Early Start	Early Finish	Orig Dur	Total Float
VHUEQ030	12-09-2007A	18-12-2007	90	0
VHUEQ040	12-09-2007A	18-12-2007	90	0
VHUEQ050	12-09-2007A	30-11-2007	120	0
VHUEQ060	12-09-2007A	16-01-2008	120	3
Equipment Factory Test				
VHUEQ100	11-11-2007	13-11-2007	3	39
VHUEQ130	11-11-2007	13-11-2007	3	39
VHUEQ140	11-11-2007	13-11-2007	3	39
VHUEQ120	18-11-2007	20-11-2007	3	75
VHUEQ150	06-12-2007	12-12-2007	7	12
VHUEQ110	15-12-2007	17-12-2007	3	32
Plant Room Block				
Cost Centre B - Plant Room Block				
Schedule of Milestones				
VHKB.05		31-10-2007*	0	0
VHKB.06		30-11-2007*	0	0
VHKB.07		31-12-2007*	0	0
VHKB.08		31-01-2008*	0	0
VHKB.09		29-02-2008*	0	0
VHKB.10		31-03-2008*	0	0
VHKB.11		30-04-2008*	0	0
Civil and Structural Works				
Superstructure				
VHUTBS020	17-09-2007A	22-10-2007	28	0
ABWF				
VHUTBS100	31-10-2007	24-11-2007	22	0
VHUTBS120	08-11-2007	23-11-2007	14	0
VHUTBS101	13-11-2007	10-01-2008	50	11
VHUTBS130	24-11-2007	30-11-2007	7	0
VHUTBS105	15-12-2007	09-01-2008	21	11
VHUTBS110	10-01-2008	08-03-2008	45	41



Start Date	26-03-2007
Finish Date	23-10-2008
Data Date	01-10-2007
Run Date	09-10-2007 17:04

Delay Bar due to ELS
Progress Bar
Critical Activity

DRP1

Sheet 3 of 10

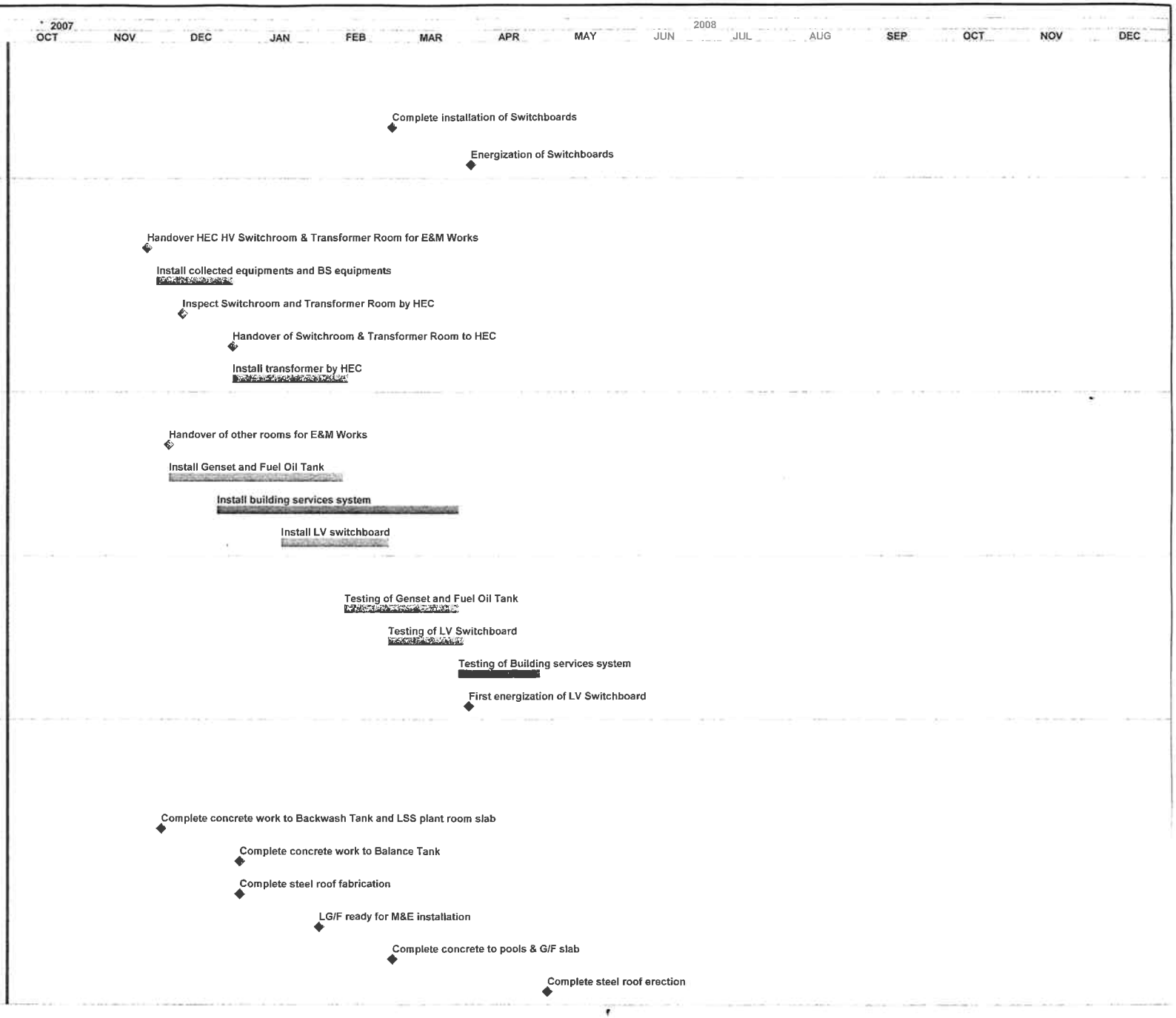
KADEN - ATAL JOINT VENTURE

Ocean Park Master Redevelopment
Contract No. CS01 - Vet Hospital

Delay Recovery Programme (DRP1)

Date	Revision	Checked	Approved
29-09-2006	Tender Programme	KC	AC
28-03-2007	Construction Programme	KC	AC
27-04-2007	Construction Programme (Rev. A)	KC	AC

Activity ID	Early Start	Early Finish	Orig Dur	Total Float
Cost Centre F - Building Services				
Schedule of Milestones				
VHKF.12		29-02-2008*	0	0
VHKF.13		31-03-2008*	0	0
E&M Works				
Installation Works at Transformer Room				
VHUTBE050	25-11-2007		0	1
VHUTBE080	29-11-2007	28-12-2007	30	1
VHUTBE070	09-12-2007		0	21
VHUTBE090	29-12-2007		0	1
VHUTBE095	29-12-2007	11-02-2008	45	1
Installation Works at Other Rooms				
VHUTBE100	04-12-2007		0	19
VHUTBE120	04-12-2007	09-02-2008	68	20
VHUTBE130	23-12-2007	26-03-2008	95	0
VHUTBE110	17-01-2008	27-02-2008	42	2
Testing and Commissioning				
VHUTBE220	11-02-2008	26-03-2008	45	32
VHUTBE200	28-02-2008	28-03-2008	30	2
VHUTBE230	27-03-2008	27-04-2008	32	0
VHUTBE210	31-03-2008*		0	0
Pool Block				
Cost Centre C - Pool Block				
Schedule of Milestones				
VHKC.06		30-11-2007*	0	0
VHKC.07		31-12-2007*	0	0
VHKC.08		31-12-2007*	0	0
VHKC.09		31-01-2008*	0	0
VHKC.10		29-02-2008*	0	0
VHKC.11		30-04-2008*	0	0



Start Date	26-03-2007
Finish Date	23-10-2008
Data Date	01-10-2007
Run Date	09-10-2007 17:04

Delay Bar due to ELS
Progress Bar
Critical Activity

DRP1

Sheet 4 of 10

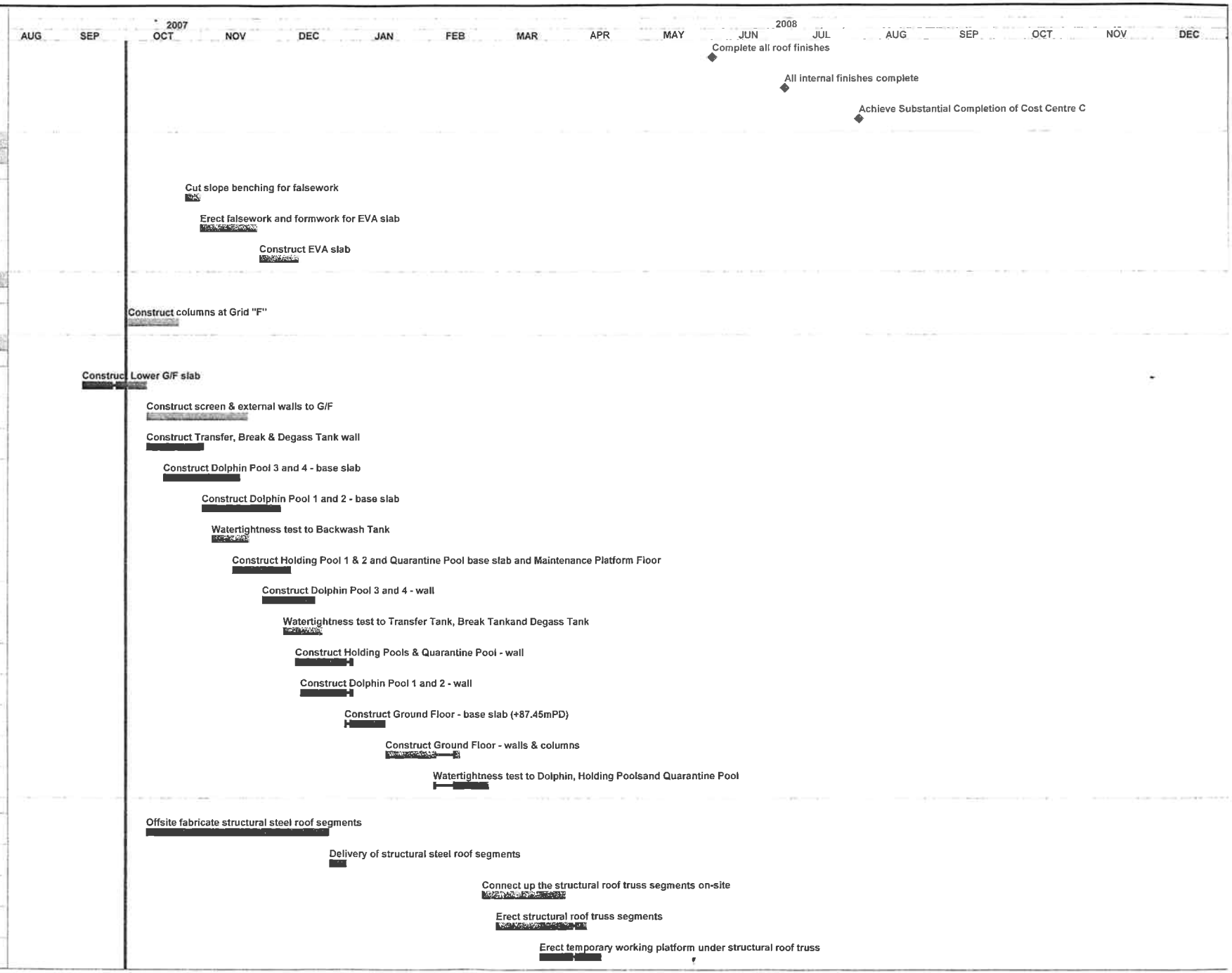
KADEN - ATAL JOINT VENTURE

Ocean Park Master Redevelopment
Contract No. CS01 - Vet Hospital

Delay Recovery Programme (DRP1)

Date	Revision	Checked	Approved
29-09-2006	Tender Programme	KC	AC
26-03-2007	Construction Programme	KC	AC
27-04-2007	Construction Programme (Rev A)	KC	AC

Activity ID	Early Start	Early Finish	Orig Dur	Total Float
VHKC.12		31-05-2008*	0	0
VHKC.13		30-06-2008*	0	0
VHKC.14		31-07-2008*	0	0
Main Structural Works				
Emergency Vehicular Access				
VHUEVA010	26-10-2007	31-10-2007	5	1
VHUEVA020	01-11-2007	24-11-2007	21	1
VHUEVA030	26-11-2007	11-12-2007	14	1
Foundation				
Grid "F"				
VHUPBFF40	02-10-2007	22-10-2007	18	4
Superstructure				
R.C. Works				
VHUPBS045	13-09-2007A	09-10-2007	28	0
VHUPBS050	10-10-2007	20-11-2007	36	19
VHUPBS060	10-10-2007	02-11-2007	21	0
VHUPBS070	17-10-2007	17-11-2007	28	0
VHUPBS080	02-11-2007	04-12-2007	28	0
VHUPBS141	06-11-2007	21-11-2007	14	29
VHUPBS090	15-11-2007	08-12-2007	21	0
VHUPBS100	27-11-2007	18-12-2007	19	0
VHUPBS150	06-12-2007	21-12-2007	14	17
VHUPBS120	11-12-2007	03-01-2008	20	0
VHUPBS110	13-12-2007	03-01-2008	18	0
VHUPBS130	31-12-2007	16-01-2008	14	0
VHUPBS140	17-01-2008	16-02-2008	21	2
VHUPBS160	06-02-2008	28-02-2008	14	0
Structural Steel Roof				
VHUPBS300	10-10-2007	24-12-2007	65	0
VHUPBS310	25-12-2007	31-12-2007	7	0
VHUPBS320	26-02-2008	31-03-2008	30	2
VHUPBS330	03-03-2008	09-04-2008	32	2
VHUPBS340	21-03-2008	15-04-2008	21	0



Start Date	26-03-2007
Finish Date	23-10-2008
Data Date	01-10-2007
Run Date	09-10-2007 17:04

Delay Bar due to ELS
Progress Bar
Critical Activity

DRP1

Sheet 5 of 10

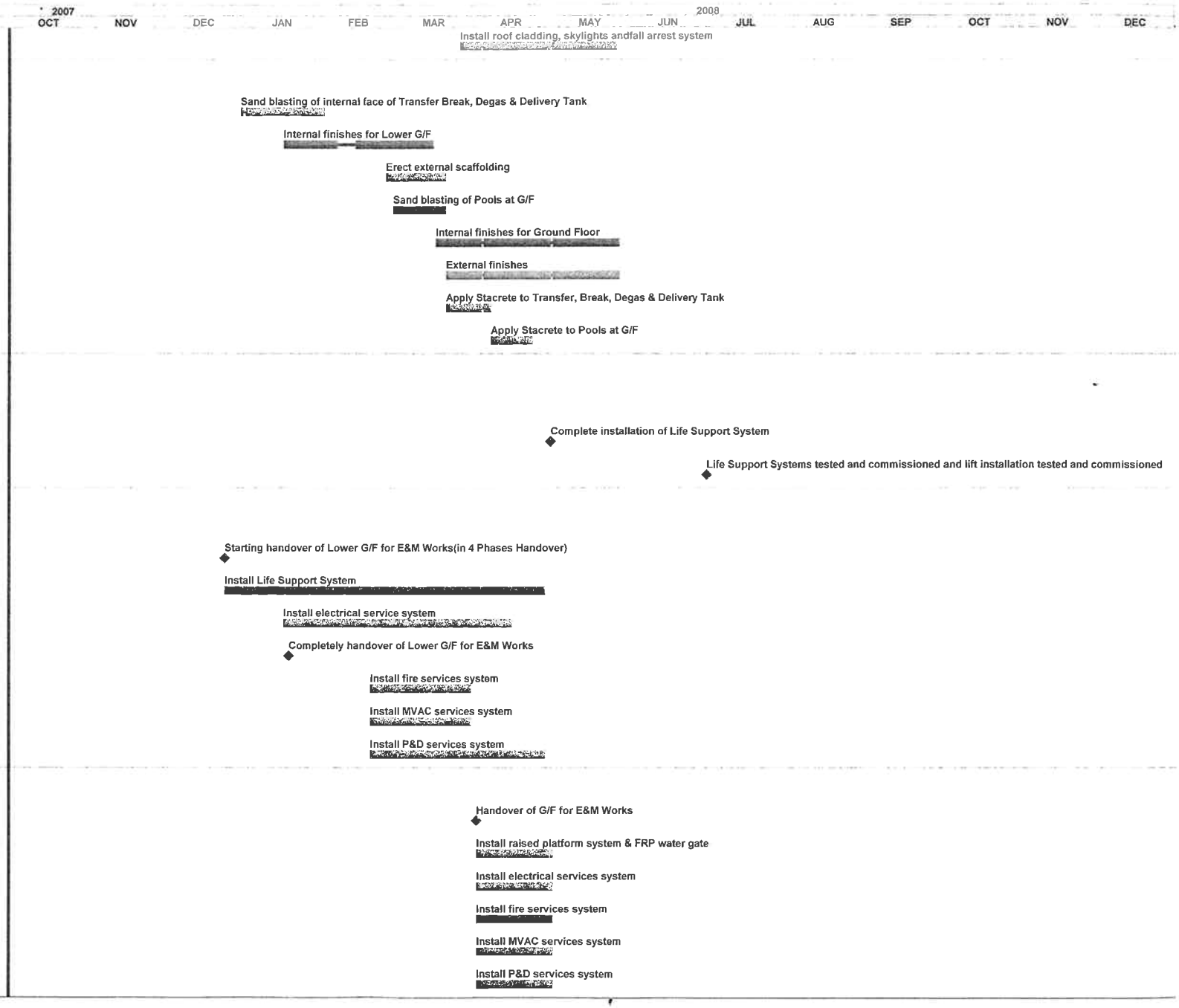
KADEN - ATAL JOINT VENTURE

Ocean Park Master Redevelopment
Contract No. CS01 - Vet Hospital

Delay Recovery Programme (DRP1)

Date	Revision	Checked	Approved
20-09-2006	Tender Programme	KC	AC
26-03-2007	Construction Programme	KC	AC
27-04-2007	Construction Programme (Rev. A)	KC	AC

Activity ID	Early Start	Early Finish	Orig Dur	Total Float
VHUPBS360	27-03-2008	26-05-2008	50	5
ABWF				
VHUPBS512	31-12-2007	01-02-2008	28	17
VHUPBS515	17-01-2008	15-03-2008	45	0
VHUPBS540	26-02-2008	20-03-2008	21	4
VHUPBS513	29-02-2008	20-03-2008	18	0
VHUPBS520	17-03-2008	27-05-2008	60	0
VHUPBS550	21-03-2008	27-05-2008	56	4
VHUPBS560	21-03-2008	07-04-2008	14	56
VHUPBS570	08-04-2008	23-04-2008	14	56
Cost Centre F - Building Services				
Schedule of Milestones				
VHKF.15		30-04-2008*	0	0
VHKF.16		30-06-2008*	0	0
E&M Works				
Installation Works at Lower Ground Floor				
VHUPBE060	25-12-2007*		0	0
VHUPBE070	25-12-2007	28-04-2008	126	0
VHUPBE079	17-01-2008	15-04-2008	90	38
VHUPBE065		18-01-2008	0	0
VHUPBE080	20-02-2008	30-03-2008	40	2
VHUPBE082	20-02-2008	30-03-2008	40	54
VHUPBE083	20-02-2008	28-04-2008	69	17
Installation Works at Ground Floor				
VHUPBE090	02-04-2008		0	0
VHUPBE100	02-04-2008	01-05-2008	30	31
VHUPBE109	02-04-2008	01-05-2008	30	22
VHUPBE110	02-04-2008	01-05-2008	30	0
VHUPBE111	02-04-2008	01-05-2008	30	22
VHUPBE112	02-04-2008	01-05-2008	30	22



Start Date	26-03-2007
Finish Date	23-10-2008
Data Date	01-10-2007
Run Date	09-10-2007 17:04

Delay Bar due to ELS
Progress Bar
Critical Activity

DRP1

Sheet 6 of 10

KADEN - ATAL JOINT VENTURE

Ocean Park Master Redevelopment
Contract No. CS01 - Vet Hospital

Delay Recovery Programme (DRP1)

Date	Revision	Checked	Approved
20-09-2006	Tender Programme	KC	AC
26-03-2007	Construction Programme	KC	AC
27-04-2007	Construction Programme (Rev. A)	KC	AC

Activity ID	Early Start	Early Finish	Orig Dur	Total Float
Testing and Commissioning				
VHUPBE350	24-01-2008	23-03-2008	60	20
VHUPBE450	24-02-2008	24-03-2008	30	20
VHUPBE600	24-03-2008	12-05-2008	50	20
VHUPBE500	25-03-2008	23-04-2008	30	20
VHUPBE200	29-04-2008	27-06-2008	60	0
VHUPBE400	29-04-2008	12-06-2008	45	17
VHUPBE209	02-05-2008	31-05-2008	30	22
VHUPBE210	02-05-2008	31-05-2008	30	0
VHUPBE211	02-05-2008	31-05-2008	30	22
VHUPBE212	02-05-2008	31-05-2008	30	22
VHUPBE550	08-05-2008	12-05-2008	5	20
VHUPBE650	13-05-2008	11-06-2008	30	17
VHUPBE700	09-06-2008	08-07-2008	30	17
VHUPBE217	28-06-2008	25-07-2008	28	0
VHUPBE300	26-07-2008	23-10-2008	90	0
Office Block				
Cost Centre D - Office Block				
Schedule of Milestones				
VHKD.04		11-10-2007	0	0
VHKD.05		31-10-2007*	0	0
VHKD.06		30-11-2007*	0	0
VHKD.07		31-12-2007*	0	0
VHKD.08		31-01-2008*	0	0
VHKD.09		29-02-2008*	0	0
VHKD.10		31-03-2008*	0	0
VHKD.11		30-04-2008*	0	0
VHKD.12		31-05-2008*	0	0
VHKD.13		30-06-2008*	0	0
VHKD.14		31-07-2008*	0	0

Start Date 26-03-2007
Finish Date 23-10-2008
Data Date 01-10-2007
Run Date 09-10-2007 17:04

Delay Bar due to ELS
Progress Bar
Critical Activity

DRP1

Sheet 7 of 10

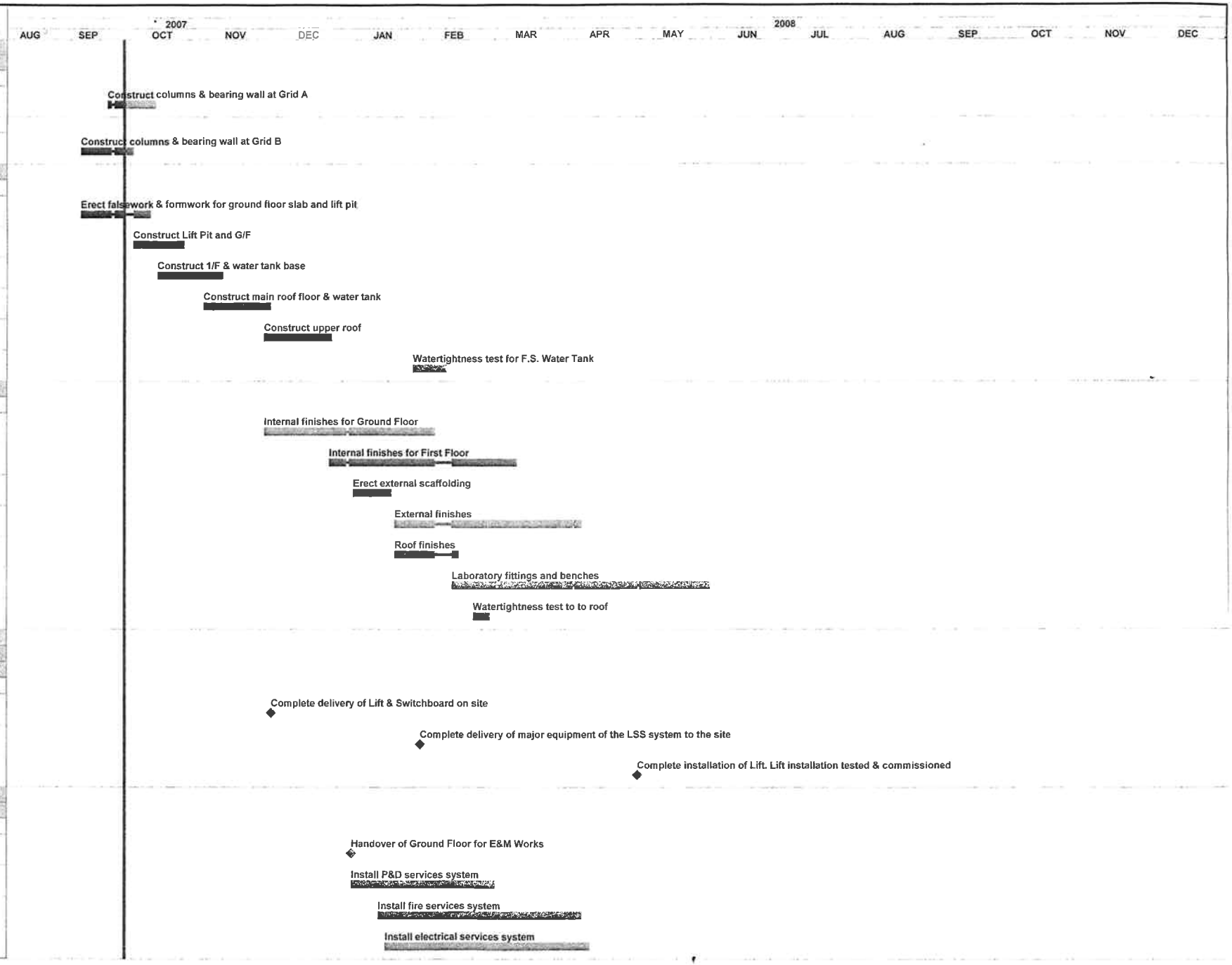
KADEN - ATAL JOINT VENTURE

Ocean Park Master Redevelopment
Contract No. CS01 - Vet Hospital

Delay Recovery Programme (DRP1)

Date	Revision	Checked	Approved
29-09-2006	Tender Programme	KC	AC
26-02-2007	Construction Programme	KC	AC
27-04-2007	Construction Programme (Rev. A)	KC	AC

Activity ID	Early Start	Early Finish	Orig Dur	Total Float
Foundation				
Grid "A"				
VHUOBFA30	24-09-2007A	13-10-2007	15	3
Grid "B"				
VHUOBFB30	13-09-2007A	04-10-2007	15	0
Superstructure				
VHUOBS010	13-09-2007A	11-10-2007	14	0
VHUOBS020	05-10-2007	25-10-2007	18	0
VHUOBS030	15-10-2007	10-11-2007	24	0
VHUOBS040	03-11-2007	30-11-2007	24	0
VHUOBS050	28-11-2007	25-12-2007	24	0
VHUOBS060	29-01-2008	11-02-2008	14	50
ABWF				
VHUOBS300	28-11-2007	06-02-2008	60	1
VHUOBS301	25-12-2007	11-03-2008	60	0
VHUOBS320	04-01-2008	19-01-2008	14	0
VHUOBS330	21-01-2008	07-04-2008	60	90
VHUOBS340	21-01-2008	16-02-2008	18	0
VHUOBS310	14-02-2008	30-05-2008	90	1
VHUOBS350	23-02-2008	29-02-2008	7	0
Cost Centre F - Building Services				
Schedule of Milestones				
VHKF.09		30-11-2007*	0	0
VHKF.11		31-01-2008*	0	0
VHKF.14		30-04-2008*	0	0
E&M Works				
Installation Works at Ground Floor				
VHUOBE060	03-01-2008		0	29
VHUOBE072	03-01-2008	02-03-2008	60	48
VHUOBE070	14-01-2008	07-04-2008	85	33
VHUOBE069	17-01-2008	10-04-2008	85	21



Start Date 26-03-2007
Finish Date 23-10-2008
Data Date 01-10-2007
Run Date 09-10-2007 17:04

Delay Bar due to ELS
Progress Bar
Critical Activity

DRP1

Sheet 8 of 10

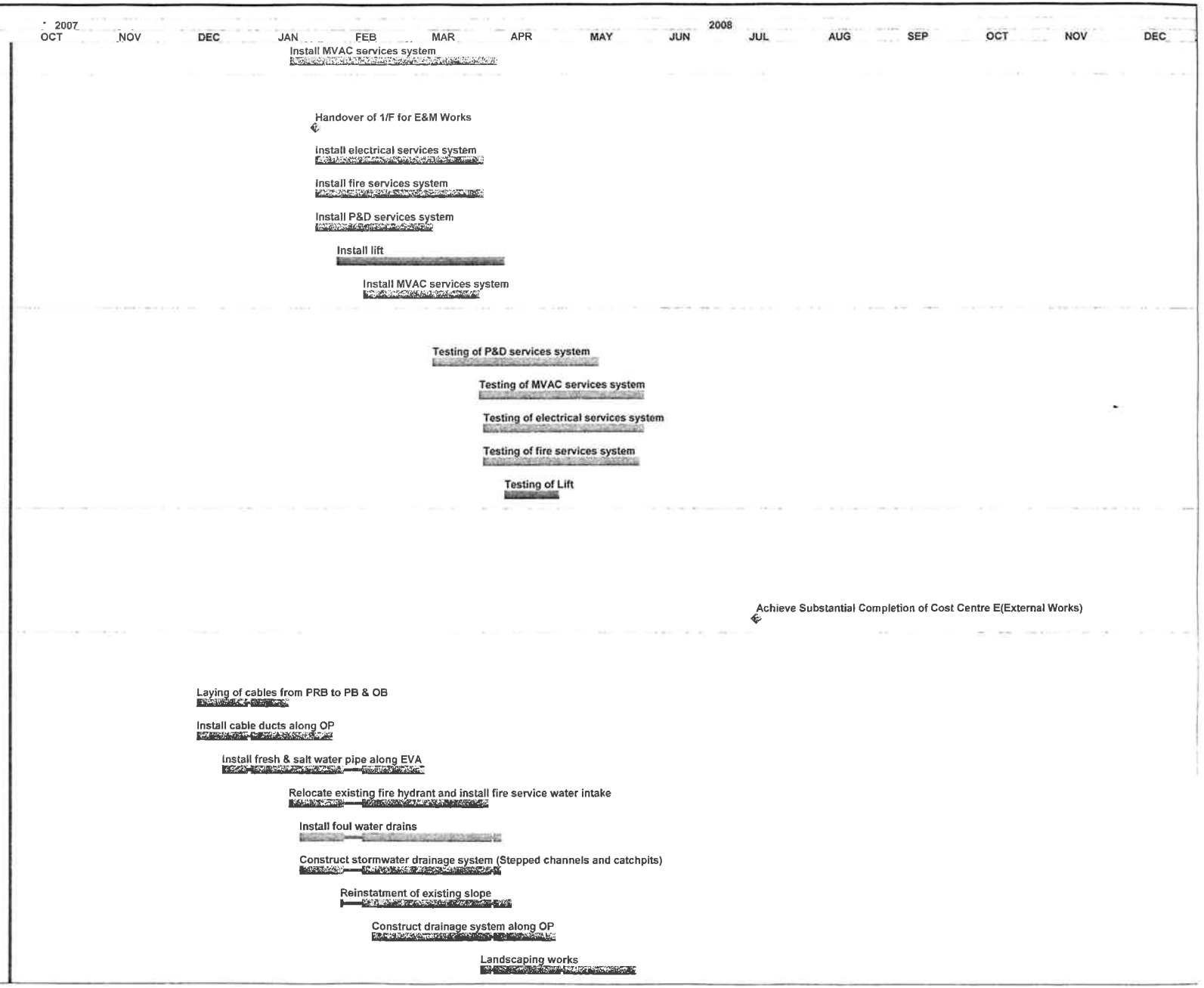
KADEN - ATAL JOINT VENTURE

Ocean Park Master Redevelopment
Contract No. CS01 - Vet Hospital

Delay Recovery Programme (DRP1)

Date	Revision	Checked	Approved
29-09-2006	Tender Programme	KC	AC
26-03-2007	Construction Programme	KC	AC
27-04-2007	Construction Programme (Rev A)	KC	AC

Activity ID	Early Start	Early Finish	Orig Dur	Total Float
VHUOBE071	17-01-2008	05-04-2008	80	21
Installation Works at First Floor				
VHUOBE080	27-01-2008		0	1
VHUOBE089	27-01-2008	31-03-2008	65	21
VHUOBE090	27-01-2008	31-03-2008	65	1
VHUOBE092	27-01-2008	11-03-2008	45	39
VHUOBE081	04-02-2008	08-04-2008	65	0
VHUOBE091	14-02-2008	29-03-2008	45	21
Testing and Commissioning				
VHUOBE212	12-03-2008	14-05-2008	64	39
VHUOBE211	30-03-2008	01-06-2008	64	21
VHUOBE209	01-04-2008	01-06-2008	62	21
VHUOBE210	01-04-2008	30-05-2008	60	1
VHUOBE200	09-04-2008	29-04-2008	21	0
Utility Works				
Cost Centre E - External Works				
Schedule of Milestones				
VHKE.13		14-07-2008	0	11
Utility Works				
VHUEW220	12-12-2007	16-01-2008	30	34
VHUEW240	12-12-2007	02-02-2008	45	34
VHUEW050	22-12-2007	08-03-2008	60	42
VHUEW030	17-01-2008	02-04-2008	60	31
VHUEW040	21-01-2008	07-04-2008	60	70
VHUEW090	21-01-2008	07-04-2008	60	2
VHUEW100	06-02-2008	11-04-2008	50	2
VHUEW230	18-02-2008	28-04-2008	60	28
VHUEW110	31-03-2008	29-05-2008	50	2



Start Date 26-03-2007
Finish Date 23-10-2008
Data Date 01-10-2007
Run Date 09-10-2007 17:04

Delay Bar due to ELS
Progress Bar
Critical Activity

DRP1

Sheet 9 of 10

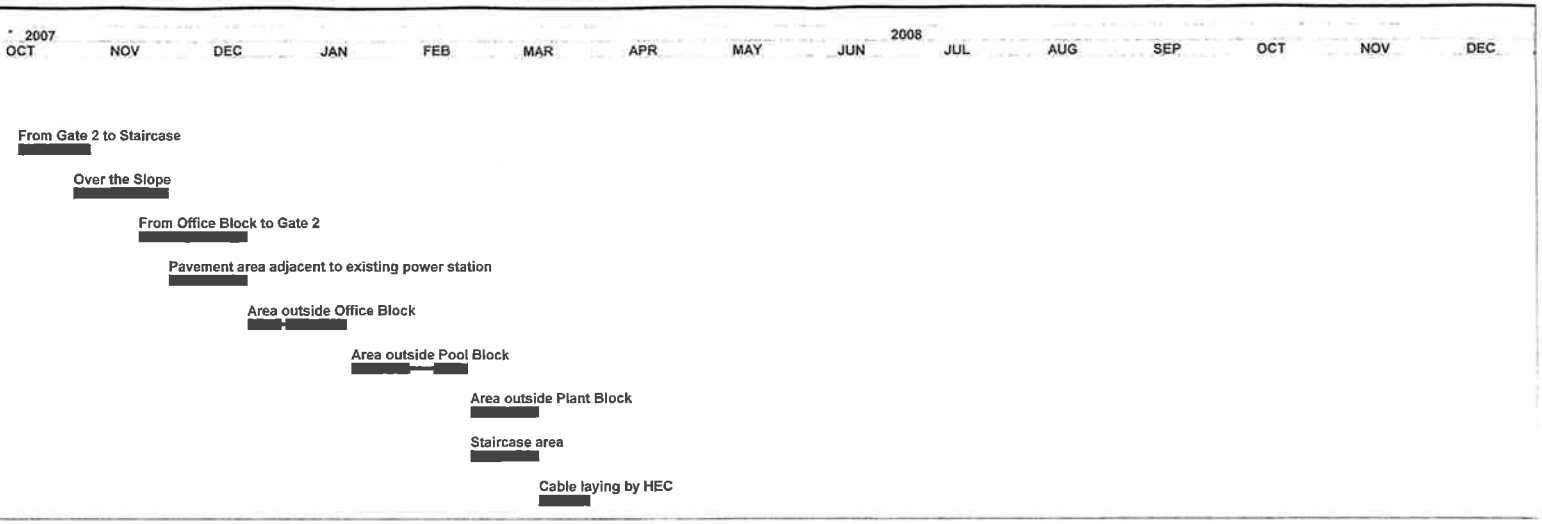
KADEN - ATAL JOINT VENTURE

Ocean Park Master Redevelopment
Contract No. CS01 - Vet Hospital

Delay Recovery Programme (DRP1)

Date	Revision	Checked	Approved
29-09-2006	Tender Programme	KC	AC
26-03-2007	Construction Programme	KC	AC
27-04-2007	Construction Programme (Rev. A)	KC	AC

Activity ID	Early Start	Early Finish	Orig Dur	Total Float
VHUEW130	16-10-2007*	05-11-2007	18	0
VHUEW140	01-11-2007	28-11-2007	24	0
VHUEW160	20-11-2007	21-12-2007	28	0
VHUEW150	29-11-2007	21-12-2007	20	0
VHUEW170	22-12-2007	19-01-2008	24	0
VHUEW180	21-01-2008	23-02-2008	24	0
VHUEW190	25-02-2008	15-03-2008	18	0
VHUEW200	25-02-2008	15-03-2008	18	0
VHUEW210	16-03-2008	30-03-2008	15	0



Start Date 26-03-2007
Finish Date 23-10-2008
Data Date 01-10-2007
Run Date 09-10-2007 17:04

Delay Bar due to ELS
Progress Bar
Critical Activity

DRP1

Sheet 10 of 10

KADEN - ATAL JOINT VENTURE

Ocean Park Master Redevelopment
Contract No. CS01 - Vet Hospital

Delay Recovery Programme (DRP1)

Date	Revision	Checked	Approved
29-09-2006	Tender Programme	KC	AC
29-03-2007	Construction Programme	KC	AC
27-04-2007	Construction Programme (Rev. A)	KC	AC

Appendix D

Summary of Environmental Mitigation Implementation Schedule

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
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.						
Air Mitigation Measures	Work Site / during construction	Contractor		X		Air Pollution Control Ordinance,
a) For Breaking, Excavation or earth moving, the working area shall be sprayed with water to maintain the entire surface wet.						Air Pollution Control (Construction Dust) Regulation,
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.						

Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages**			Relevant Legislation & Guidelines
			D	C	O	
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 qualities.						
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						
Chemical Mitigation Measures	Work Site / during construction	Contractor		X		Waste Disposal (Chemical Waste) (General) Regulation
a) Chemical waste should be packed and stored in suitable containers in the Chemical Waste Store						Code of Practice on the Packaging Labelling and Storage of Chemical Waste
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						
g) Where the storage area is not within a building, be provided with a roof or a similar covering						
h) Chemical waste store shall has a retention structure with the capacity to 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 “CHEMICAL WASTE"						
j) Chemical waste stored shall be properly located and easily accessed						

Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages**			Relevant Legislation & Guidelines
			D	C	O	
k) Chemical should be properly stored in suitable containers						
l) Chemical should be properly stored and sited on sealed areas to prevent leakage						
m) Any opened chemical container shall be placed into a drip tray to prevent chemical leakage						
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 been 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						
Ecological Mitigation Measures	Work Site / during construction	Contractor		X		EP-249/2006/A, Clause 2.12, 2.15 & 2.17
a) Trees adjacent to or within the construction site area shall be protected						
b) To conserve the marine ecological resources in the vicinity of this Contract, no marine-based construction works shall be allowed for this Contract.						
c) Site inspection had been carried out before site clearance to ensure no nesting activities of Black Kites at locations of this Contact.						
d) To avoid impacts on coral communities in the marine water of this Contract, temporary drainage system (U-channel) and the sedimentation tank should be installed. In addition, all water mitigation measures will be followed.						

Part 4 CW-02 EM&A REPORTS (February 2008)

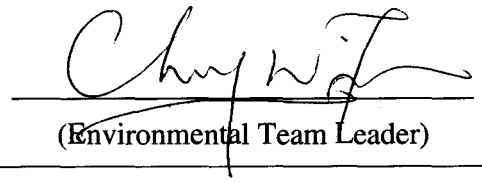
W. Hing Construction Co., Ltd

Contract No. CW02

Ocean Park Redevelopment Project
- Astounding Asia

Monthly EM&A Report
(Version 1.0)

February 2008

Certified By 

(Environmental Team Leader)

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.

CINOTECH CONSULTANTS LTD
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong
Tel: (852) 2151 2083 Fax: (852) 3107 1388
Email: info@cinotech.com.hk

TABLE OF CONTENTS

LIST OF FIGURE

LIST OF APPENDICES

EXECUTIVE SUMMARY

Introduction

This is the 7th 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 February 2008.

The major site activities undertaken in the reporting month included:

- Superstructure works, builder's and finishing work and E&M work at the New Bird House:
- Structural steel works at the Flight Exercise Aviary;
- Minor touch up and clearance works at the Birds Central Kitchen;
- General clearance works at Main Aviary;
- Footing construction works at Astounding Asia Restaurant;
- R.C. for footings and MVAC Culvert (RC Works) and superstructure work at the New Panda Habitat:
- Tree planting work at New Bird Theatre
- External drainage, services pipelines and ducting works.

Environmental Monitoring and Audit Works

Environmental monitoring and audit works for the Project was performed as stipulated in the updated EM&A Manual. Site audits were conducted once per week. Environmental site audits were conducted on 5th, 12th, 22nd and 26th February 2008. No non-compliance was observed during the site audits.

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

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

Table I Summary Table for Events Recorded in the Reporting Month

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

Environmental Licenses and Permits

Licenses/Permits granted to the Project include the Environmental Permit (EP) for the Redevelopment Project, Registration of Waste Producer, Water Discharge License and one Construction Noise Permit (CNP). No 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:

- Superstructure works(e.g. R.C. & Structural Steel Works), builder's & finishing works, E&M works, windows and doors installation and fitting out works at New Bird House;
- Superstructure works (i.e structural steel works), E&M, fitting and paving works at the Flight Exercise Aviary;
- Make-good defect works at Birds Central Kitchen;
- Drainage works at Main Aviary;
- Superstructure work, footing construction and underground drainage works at Astounding Asia Restaurant;
- Pile Piling ,ELS & R.C works for footing, RC works on MVAC culvert RC works on superstructure works and underground drainage works at New Panda Habitat;
- Tree transplantation at New Bird Theatre;
- External services pipeline and ducting works; and
- External drainage works.

INTRODUCTION

Background

1.1 The "Repositioning and Long Term Operation Plan of Ocean Park" has been implementing by the Ocean Park Corporation at its existing site of Ocean Park and Nam Long Shan, Aberdeen. The purpose of this project is to upgrade and expand the existing Ocean Park to meet anticipated visitor demands and to position Ocean Park as a premium tourist attraction and a regional leader in themed recreational and educational park experience. The site layout plan is illustrated in Figure 1.1.

1.2 An environmental impact assessment (EIA) report for "Repositioning and Long Term Operation Plan of Ocean Park" (Report No. 121/2006 and Register No. AEIAR-101/2006) has been prepared in 2006 and the Environmental Monitoring and Audit Manual (Project's EM&A Manual) was also included as part of the EIA report in the register. An Environmental Permit (EP) No. EP-249/2006 was issued on 28 July 2006 for the above project to Ocean Park Corporation as Permit Holder and a varied EP No. EP-249/2006/A was subsequently issued on 23 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 7th monthly EM&A Report summarizing the EM&A works for the Project in February 2008.

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)	2871 5893	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
	Mr. Ian Ip	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 site activities undertaken in the reporting month were:

- Superstructure works, builder's and finishing work and E&M work at the New Bird House:
- Structural steel works at the Flight Exercise Aviary;
- Minor touch up and clearance works at the Birds Central Kitchen;
- General clearance works at Main Aviary;
- Footing construction works at Astounding Asia Restaurant;
- R.C. for footings and MVAC Culvert (RC Works) and superstructure work at the New Panda Habitat:
- Tree planting work at New Bird Theatre
- External drainage, services pipelines and ducting works.

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 February 2008.

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 5th, 12th, 22nd and 26th February 2008. 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**.

2.4

Table 2.1 Observations and Recommendations of Site Audits

Parameters	Date	Observations / Recommendations	Remediation/ Follow up
Water Quality	05/02/08	Exposed stockpiles were still observed without cover at the New Panda Habitat. The Contractor was reminded to cover them properly to prevent water wash off from the stockpile to the drain nearby.	This item is still outstanding so follow up is needed at the next audit session
	12/02/08	Follow up on last audit session, the exposed stockpiles were still found without cover at New Panda Habitat. The Contractor was reminded to cover them as soon as possible to prevent dust generation over the dry season and water wash off from the stockpile to the drain nearby	This item is still outstanding so follow up is needed at the next audit session
	22/02/08	Sand and soil was accumulated at the drainage channel at the Flight Excise Aviary. The Contractor was advised to clean them up.	This item was rectified at 26/02/08
	22/02/08	Mud was accumulated on the road and the drainage between Main Aviary and AA Restaurant. Contractor was reminded to clean them up.	This item was rectified at 26/02/08
	26/02/08	• Follow up on last audit session, the exposed stockpiles were still found without cover at New Panda Habitat. The Contractor was reminded to cover them to prevent dust generation.	This item is still outstanding so follow up is needed at the next audit session

Air Quality	05/02/08	Exposed stockpiles were still observed without cover at the New Panda Habitat. The Contractor was reminded to cover them properly to prevent dust generation over the dry season	This item is still outstanding so follow up is needed at the next audit session
	12/02/08	Follow up on last audit session, the exposed stockpiles were still found without cover at New Panda Habitat. The Contractor was reminded to cover them as soon as possible to prevent dust generation over the dry season and water wash off from the stockpile to the drain nearby.	This item is still outstanding so follow up is needed at the next audit session
	22/02/08	Stockpiles at the New Panda Habit, Generator Room and AA Restaurant were not covered by tarpaulin and other measures. Contractor was advised to cover them with tarpaulin.	This item was rectified at 26/02/08
	22/02/08	Mud was accumulated on the road and the drainage between Main Aviary and AA Restaurant. Contractor was reminded to clean them up	This item was rectified at 26/02/08
Waste/ Chemical Management	05/02/08	General refuse was found at New Panda Habitat. The Contractor was advised to clear them up	This item was rectified at 12/02/08
	12/02/08	Construction waste was accumulated at New Panda Habitat. The Contractor was advised to clear them.	This item was rectified at 26/02/08
	22/02/08	Construction waste was accumulated at New Panda Habitat and generator room. The Contractor was advised to clear them.	This item was rectified at 26/02/08

Status of Environmental Licensing and Permitting

2.5 All valid permits/licenses obtained for the Project are summarized in **Table 2.2**. Total of 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
Registration of Chemical Waste Producer				
WPN2513-199-W2894-18	20/08/2007	N/A	Waste Disposal (Chemical Waste) (General) Regulation -- Registration of Waste Producer	Valid
Construction Noise Permit				
GW-RS0488-07	01/09/2007	01/03/2008	Construction Noise Permit for Ocean Park, Wong Chuk Hang, Hong Kong	Valid
Water Discharge License				
EP820/W9/XW240	12/10/2007	31/10/2012	Discharge of industrial trade effluent arising from the Sedimentation tank at the construction site (CW02 Astounding Asia, Ocean Park Redevelopment Project) to communal storm water drain.	Valid
Others				
001022180	N/A	N/A	Notification Pursuant to Section 3(1) of the Air Pollution Control (Construction Dust) Regulation	Valid
7005864	N/A	N/A	Construction Waste Disposal Billing Account with EPD	Valid

Status of Waste Management

2.6 The amount of waste generated by the construction activities of the Project in the reporting month is attached in **Appendix B**.

Implementation Status of Environmental Mitigation Measures

2.7 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 C**.

Summary of Exceedances

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

Implementation Status of Event Action Plans

2.9 The Event Action Plans for air quality and construction noise are presented in **Appendix D**.

Summary of Complaints and Prosecutions

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

FUTURE KEY ISSUES

Key Issues for the Coming Month

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

- Dust generation from excavation, slopes, stockpiles and underground drainage works;
- Noise generated from operation equipment and machinery on-site;
- Storage of chemicals/fuel and chemical waste/waste oil on site;
- Sorting of C&D materials at source;
- Ensure proper collection and disposal of rubbish generated on site; and
- 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 E**.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

4.1 Four environmental site audits were performed in February 2008. 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.

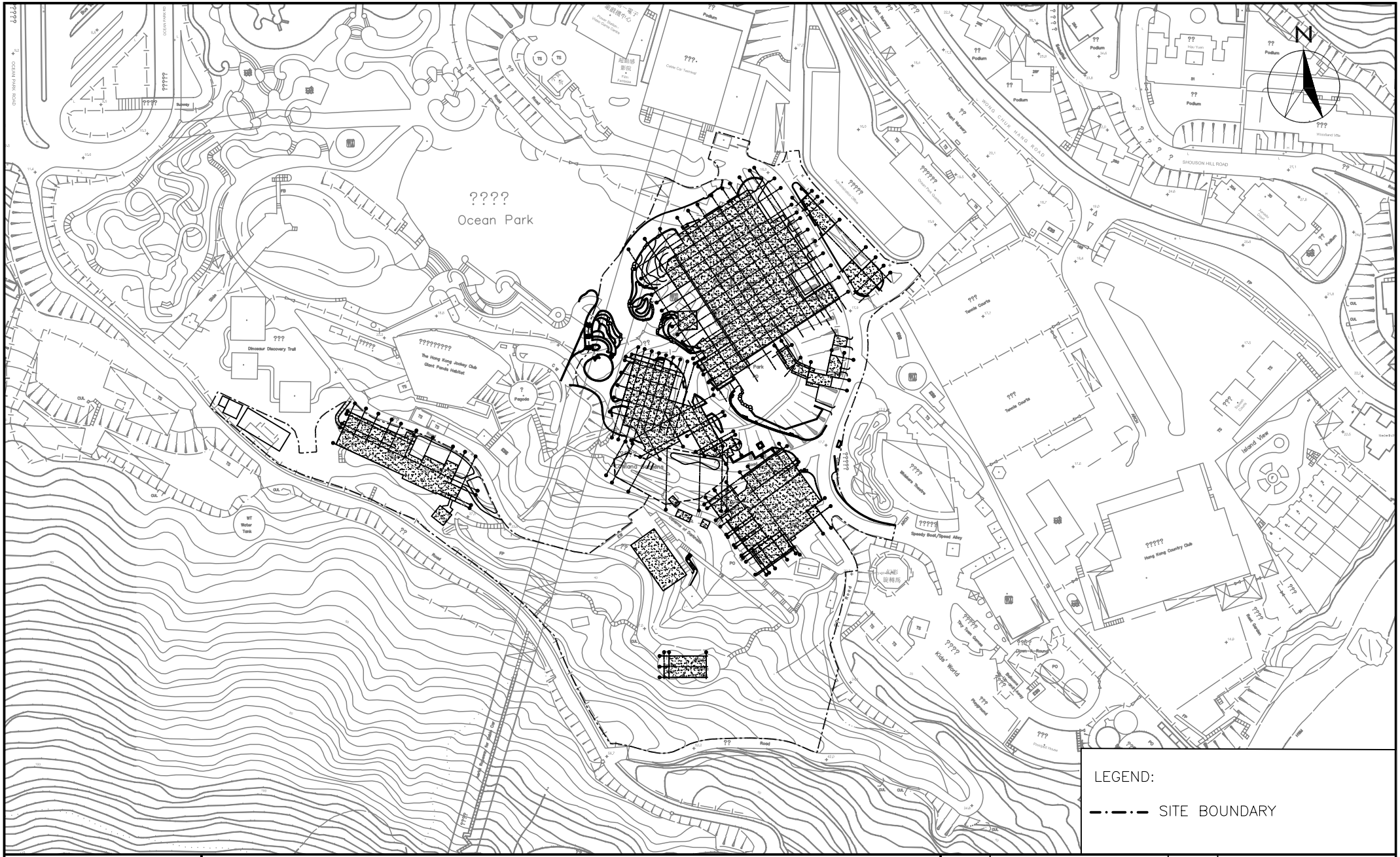
Water Quality Impact

- 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 refuse on site.
- To avoid any discharge of oil directly from the site.
- To avoid improper handling or storage of oil drum on site.

FIGURE



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 –

F:\PROJECT_DRAWINGS\MA7025\EM&A MANUAL\FIGURE_1.DWG

APPENDIX A
SITE AUDIT SUMMARY

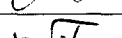
Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	80205
Date	5 February 2008 (Tuesday)
Time	10:15 – 11:15

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

Ref. No.	Remarks/Observations	Related Item No.
01	***A. Water Quality*** • Exposed stockpiles were still observed without cover at the New Panda Habitat. The Contractor was reminded to cover them properly to prevent water wash off from the stockpile to the drain nearby. •	2.8
01	***B. Air Quality*** • Exposed stockpiles were still observed without cover at the New Panda Habitat. The Contractor was reminded to cover them properly to prevent dust generation over the dry season. •	3.3
	C. Noise • No environmental deficiency was identified during the site inspection.	
02	***D. Waste / Chemical Management*** • General refuse was found at New Panda Habitat. The Contractor was advised to clear them up. •	5.1.1 & 5.1.2
	E. Permit / Licenses • No environmental deficiency was identified during the site inspection.	
	F. Others • Follow-up on previous audit (Ref. No.:80129-01). Follow-up action is needed for the item 80129-01.	

	Name	Signature	Date
Recorded by	Grace Wong		5 February 2008
Checked by	Dr. Priscilla Choy		5 february 2008

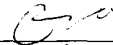
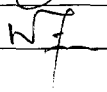
Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	80212
Date	12 February 2008 (Tuesday)
Time	10:20 – 11:20

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

Ref. No.	Remarks/Observations	Related Item No.
01	***A. Water Quality*** • Follow up on last audit session, the exposed stockpiles were still found without cover at New Panda Habitat. The Contractor was reminded to cover them as soon as possible to prevent dust generation over the dry season and water wash off from the stockpile to the drain nearby. •	2.8
01	***B. Air Quality*** • Follow up on last audit session, the exposed stockpiles were still found without cover at New Panda Habitat. The Contractor was reminded to cover them as soon as possible to prevent dust generation over the dry season and water wash off from the stockpile to the drain nearby. •	3.3
	C. Noise • No environmental deficiency was identified during the site inspection.	
02	***D. Waste / Chemical Management*** • Construction waste was accumulated at New Panda Habitat. The Contractor was advised to clear them. •	5.4.3
	E. Permit / Licenses • No environmental deficiency was identified during the site inspection.	
	F. Others • Follow-up on previous audit (Ref. No.:80205). Follow-up action is needed for the item 80205-01.	

	Name	Signature	Date
Recorded by	Grace Wong		12 February 2008
Checked by	Dr. Priscilla Choy		12 February 2008

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	80222
Date	22nd February 2008 (Friday)
Time	9:45 – 10:45

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

Ref. No.	Remarks/Observations	Related Item No.
	A. Water Quality	
01	• Sand and soil was accumulated at the drainage channel at the Flight Excise Aviary. The Contractor was advised to clean them up.	2.8
04	• Mud was accumulated on the road and the drainage between Main Aviary and AA Restaurant. Contractor was reminded to clean them up.	
	B. Air Quality	
01,02,03	• Stockpiles at the New Panda Habit, Generator Room and AA Restaurant were not covered by tarpaulin and other measures. Contractor was advised to cover them with tarpaulin.	3.3
04	• Mud was accumulated on the road and the drainage between Main Aviary and AA Restaurant. Contractor was reminded to clean them up	
	C. Noise	
	• No environmental deficiency was identified during the site inspection.	
	D. Waste / Chemical Management	
02,03	• Construction waste was accumulated at New Panda Habitat and generator room. The Contractor was advised to clear them.	5.4.3
	E. Permit / Licenses	
	• No environmental deficiency was identified during the site inspection.	
	F. Others	
	• Follow-up on previous audit (Ref. No.:80212). Follow-up action is needed for the item 80212-01.	

	Name	Signature	Date
Recorded by	Ian Ip		22 February 2008
Checked by	Dr. Priscilla Choy		22 February 2008

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	80226
Date	26 February 2008 (Tuesday)
Time	10:00 – 10:31

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

Ref. No.	Remarks/Observations	Related Item No.
80226 – 01	***A. Water Quality*** • Follow up on last audit session, the exposed stockpiles were still found without cover at New Panda Habitat. The Contractor was reminded to cover them to prevent dust generation. ***B. Air Quality*** • No environmental deficiency was identified during the site inspection. ***C. Noise*** • No environmental deficiency was identified during the site inspection.	2.8
02	***D. Waste / Chemical Management*** • No environmental deficiency was identified during the site inspection. ***E. Permit / Licenses*** • No environmental deficiency was identified during the site inspection. ***F. Others*** • Follow-up on previous audit (Ref. No.:80222). Items 80222-01, 80222-03 and 80222-04 were rectified. Follow up action is needed for item 80222-02.	

	Name	Signature	Date
Recorded by	Ian Ip		26 February 2008
Checked by	Dr. Priscilla Choy		27 February 2008

APPENDIX B
SUMMARY OF AMOUNT OF WASTE GENERATED

Appendix B

Name of Department: W. Hing Construction Co., Ltd

Contract No.: CW-02

Monthly Summary Waste Flow Table For February 2008

Month	Actual Quantities of Inert C&D Materials Generated		Non-inert C&D Waste disposed to Tseung Kwan O Sorting Facility	Non-inert C&D Waste disposed to SENT Landfill	Chemical Waste disposed to Chemical Waste Treatment Facility at Tsing Yi	Recycle Metals	Packaging (e.g. Plastic, paper wrapping etc.) and other general refuse
	Disposed to Public filling area at Tseung Kwan O	Disposed to Public Barging area at Quarry Bay					
	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in litres)	(in tonnes)	(in tonnes)
Sep-07	100.49	28.75	8.61	1.94	N/A	N/A	N/A
Oct-07	16.42	19.61	8.47	16.06	N/A	N/A	N/A
Nov-07	N/A	95.29	N/A	4.95	N/A	N/A	N/A
Dec-07	N/A	15.63	10.68	3.83	N/A	N/A	N/A
Jan-08	N/A	158.91	13.18	16.37	N/A	N/A	N/A
Feb-08	N/A	708.19	4.58	15.01	N/A	N/A	N/A
Sub-total	**116.91**	**1026.38**	**45.52**	**58.16**	**0.00**	**0.00**	**0.00**
Mar-08							
Apr-08							
May-08							
Jun-08							
Jul-08							
Aug-08							
Total	**116.91**	**1026.38**	**45.52**	**58.16**	**0.00**	**0.00**	**0.00**

APPENDIX C
ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

Appendix C - Summary of Environmental Mitigation Implementation Schedule

Types of Impacts	Mitigation Measures	Status
Construction Dust	• Use of regular watering, with complete coverage, to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather.	^
	• Use of frequent watering for particularly dusty construction areas, temporary stockpiles and areas close to ASRs.	^
	• 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
	• Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs.	*
	• Restricting heights from which materials are dropped, as far as practicable to minimise the fugitive dust arising from unloading/ loading.	^
	• Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations.	^
	• Use of vehicle wheel and body washing facilities at the exit points of the site.	^
	• 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
	• Imposition of speed controls for vehicles on unpaved site roads. Ten kilometers per hour is the recommended limit.	^
	• Dusty activities should be re-scheduled if high-wind conditions are encountered.	N/A
	• Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs.	N/A
	• Suitable buffer zone should be provided and the works areas should be fenced off with hoarding. The height of hoarding should not be less than 2.4m from ground level.	N/A
	Crushing Plant • Water sprays on the crusher. • 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
	Barging Point & Conveyor Belt System	
	• The conveyors would be placed within a totally enclosed structure	N/A
	• Profiled steel cladding would be provided at two sides of loading point.	N/A
	• Dust suppression sprays would be installed and operated in strategic locations at the feeding inlet and outlet.	N/A
	• The barging point would be placed within a totally enclosed structure incorporating an enclosed chute for material transfer to the barge. Flexible curtain would be hanged on the enclosed chute prevent dust emission when excavated materials/rocks transported into the barge.	N/A
	• Some areas of the Park would remain open for visitors during the construction period. Therefore, suitable buffer zones from major construction activities should be provided where practical and the works areas should be fenced off with hoarding during the construction phase. It is recommended to erect hoarding of a height not less than 2.4m from ground level.	^
Construction Noise	*Construction Phase*	
	• 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	N/A
	• Mobile plant, if any, should be sited as far from NSRs as possible.	N/A
	• 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	N/A
	Adoption of Quieter Plant	
	• In order to reduce the excessive noise impacts at the affected NSRs at the Waterfront during normal daytime working hours, quieter plants are recommended. The Contractors do not have to use specific items of quiet plant adopted in this assessment. The Contractors may use other type of quiet plant, which have the same total SWL, to meet their needs	^

Types of Impacts	Mitigation Measures	Status
	Use of Movable Noise Barrier	
	• The use of movable barrier for certain PME could further alleviate the construction noise impacts. In general, 5dB (A) reduction for movable PME and 10dB (A) for stationary PME can be achieved depending on the actual design of movable noise barrier.	N/A
	• 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.	N/A
	• 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).	N/A
Ecology	*Construction Phase*	
	• All excavation works carried out close to water bodies shall be carefully controlled to avoid runoff entering watercourses, especially during periods of heavy rain.	^
	• Site runoff shall be directed towards regularly cleaned and maintained silt traps and where appropriate, oil/grease separators to minimize risk of sedimentation and pollution.	N/A
	• Suitable size / capacity silt traps and oil/grease interceptors shall be used.	N/A
	• Noise mitigation measures including the use of quiet construction plant and movable noise barriers shall be implemented to minimize disturbance to habitats adjacent to the work areas.	N/A
	• Trees located within the works areas shall be preserved as far as practicable.	^
	• 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.	N/A
	• 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	^

Types of Impacts	Mitigation Measures	Status
Water Quality	*Construction Runoff and Drainage* • Before commencing any site formation work, all sewer and drainage connections should be sealed to prevent debris, soil, sand etc. from entering public sewers/drains. • 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. Interceptiong channels should be provided (e.g. along the crest/ edge of the excavation) to prevent storm runoff from washing across exposed soil surfaces. Arrangements should always be in place to ensure that adequate surface protection measures can be safely carried out well before the arrival of a rainstorm.. Other measures that need to be implemented before, during and after rainstorms are summarized in ProPECC PN 1/94. • 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
	• Open stockpiles of construction materials or construction wastes on-site of more than $50m^3$ should be covered with tarpaulin or similar fabric during rainstorms	N/A
	General Construction Activities • 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	^ ^
	Sewage from Construction Workforce • Temporary sanitary facilities, such as portable chemical toilets, should be employed on-site where necessary to handle sewage from the workforce. A licensed contractor would be responsible for appropriate disposal of waste matter and maintenance of these facilities	^
Waste / Chemical	*Good Site Practice* • nomination of an approved personnel, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site • regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors • training of site personnel in proper waste management and chemical handling procedures • provision of sufficient waste disposal points and regular collection for disposal • appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers	^ N/A ^ * ^
	Waste Reduction Measures • 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
	General Refuse • General refuse should be stored in enclosed bins or compaction units separate from C&D material. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D material. Preferably an enclosed and covered area should be provided to reduce the occurrence of 'wind blown' light material.	^
	Construction and Demolition Material • A Waste Management Plan should be prepared. • In order to monitor the disposal of C&D and solid wastes at public filling facilities and landfills and to control fly-tipping, a trip-ticket system should be included. One may make reference to ETWB TCW No.31/2004 for details. • A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be proposed.	^ ^ ^
	Chemical Waste • If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a Chemical Waste Producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the Chemical Waste Treatment Centre at Tsing Yi, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation	^

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 D
EVENT ACTION PLANS

Appendix D: Event and Action Plan for Construction Noise

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

Appendix D: Event and Action Plan for Air Quality

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

APPENDIX E
TENTATIVE WORKS PROGRAMME

CONTRACT CW02 - ASTOUNDING ASIA

OUTLINE PROGRAMME