Ocean Park Master Redevelopment Project

Monthly Environmental Monitoring & Audit Report – May 2008

Ocean Park Master Redevelopment Project

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

Monthly EM&A Report – May 2008

Submitted by Maunsell Consultants Asia Ltd on 12-06-2008

This is to verify that

Monthly EM&A Report – May 2008

Submitted by Maunsell Consultants Asia Ltd

On 12-06-2008

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 12 June 2008

Ocean Park Master Redevelopment Project

EP-249/2006/A – Condition 3.4

Monthly EM&A Report – May 2008

Certified by _____ **on** 13-Jun-08

Terence Kong

Project Environmental Team Leader

Verified by Independent Environmental Checker **on** 12-Jun-08

IEC Certificate attached in the submission? Yes

Submitted to Ocean Park on 16-Jun-08

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Part 1 Project Overview

Executive Summary

This is the combined monthly EM&A Report for Ocean Park Master Redevelopment Project, which includes Contract CI-05 "Site Formation, Funicular Tunnel and Miscellaneous Work", CS-01 "The Vet Hospital" and CW02 "The Astounding Asia". This report presents the results of EM&A works conducted in the reporting month of May 2008 (from 26 April 2008 to 25 May 2008).

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

1-hour TSP monitoring	15 sessions for AM1, AM2 and AM3A,
24-hour TSP monitoring	5 sessions for AM1, AM2 and AM3A,
Daytime noise monitoring	4 sessions for CN1-CN4
Evening or night time noise monitoring	4 sessions for CN1-CN4
Holiday time noise monitoring	0 sessions
Terrestrial ecology monitoring	1 session
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 May 2008.

1 complaint was received on 23 May 2008 from the local resident through EPD regarding noise nuisance from the heavy vehicles travelling along NLS Road within the restricted hours. With regards to the complaint, action was taken as follows:

- The temporary steel plates at NLS Road was ensured to be placed tight without loose and gap and daily checking on the steel cover plate was also performed.
- Heavy vehicle drivers was informed not step on the metal plate when driving on NLS Road and also reduce the vehicle's speed when driving along NLS Road.

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	

8. Site Audit

8.1. IEC Site Audit

IEC conducted monthly site audit on CI-05, CS-01 and CW-02 on 23 May 2008. Audit checklists are attached in Appendix A of Part I.

CI-05 Observations

Observations for the month:

Hong Kong Police Training School & Waterfront Access Road

(i) Stockpiles of Excavated Material were uncovered. The Contractor shall cover the stockpiles when they were not in use.

Access Road at Summit

(ii) Haul road was dry and dusty. The Contractor shall ensure watering by water trucks are applied frequently.

Crusher Area

(iii) The Crusher Area was generally dry and dusty. The Contractor shall apply water spray more frequently.

CS-01 Observations

(i) The temporary drainage channel was still blocked by rocks and construction material. The Contractor shall ensure that it is clear of blockage at all times.

(ii) Stockpile of construction waste was accumulated at the site entrance. The Contractor shall remove the construction waste immediately.

(iii) Stockpile of construction material was not covered with tarpaulin or other means. The Contractor shall remove or cover the material.

CW-02 Observations

(i) One oil drum near the generator room was not provided with drip tray. The Contractor shall ensure drip trays were provided to all oil drums on site.

(ii) Idle stockpile located next to the Bird House was not covered with tarpaulin or other means. The Contractor shall ensure all idle stockpiles on site were covered.

(iii) Storm drains around the Bird Exercise Aviary was deposited with sand and mud. The Contractor shall clean up the storm drains in regular basis.

8.2. Non-Compliance

No non-compliances were recorded in May 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

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 May 2008.

1 complaint was received on 23 May 2008 from the local resident through EPD regarding noise nuisance from the heavy vehicles travelling along NLS Road within the restricted hours. With regards to the complaint, action was taken as follows:

- The temporary steel plates at NLS Road was ensured to be placed tight without loose and gap and daily checking on the steel cover plate was also performed.
- Heavy vehicle drivers was informed not step on the metal plate when driving on NLS Road and also reduce the vehicle's speed when driving along NLS Road.

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 general refuse from the site regularly.
- Avoid blockage of storm drains and temporary channels.
- To implement dust suppression measures on exposed soil surfaces and stockpiles.

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.

12. Conclusion and Recommendation

12.1. Conclusion

Environmental impact monitoring was performed in May 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, 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 May 2008.

1 complaint was received on 23 May 2008 from the local resident through EPD regarding noise nuisance from the heavy vehicles travelling along NLS Road within the restricted hours. With regards to the complaint, action was taken as follows:

- The temporary steel plates at NLS Road was ensured to be placed tight without loose and gap and daily checking on the steel cover plate was also performed.
- Heavy vehicle drivers was informed not step on the metal plate when driving on NLS Road and also reduce the vehicle's speed when driving along NLS Road.

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	23/05/2008	Time	09:30	Inspected By	EM: Terence Kong IEC: Florence Yuen Contractor: CI05: S. Tam CS01 T. F. Chau CW02: B. Lee
Site Location	CI05 CS01 CW02				

Weather

Condition	✓	Sunny		Fine		Overcast		Drizzle		Rain		Storm		Hazy
Temperature	30 °C				Humidity	✓	High		Moderate		Low			
Wind	✓	Calm		Light		Breeze		Strong		Direction				

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

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

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

Construction Waste

S5.4 Good Site Practices

• Are arrangements made for collection and effective disposal of all wastes generated?			✓		
• Are the waste management and chemical handling procedures followed?			✓		
• Are sufficient waste disposal points provided?			✓		
• Are the wastes disposed of regularly?				✓	CS01 ② P1060273
• 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?	✓			✓	CW02 ③ P1060264

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?	✓			✓	CW02① P1060272
	• 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?				✓	CI05 ③ P1060257
• Is watering frequently carried out for particularly dusty construction areas, temporary stockpiles and areas close to ASRs?				✓	CI05 ② P1060251
• 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?	✓			✓	CS01 ③ P1060279
• Is open stockpiles avoided or covered and placed far enough from the ASRs?				✓	CW02 ② P1060262 CI05 ① P1060208 & P1060209
• Is the dropping height of material restricted to minimise the fugitive dust from unloading/loading?			✓		
• Is tarpaulin used to cover all dusty vehicle loads transported to, from and within the site?			✓		
• Are vehicle wheel and body washing facilities available at the exit points of the site?			✓		
• Are wind shield and dust extraction units or similar dust mitigation measures provided at the loading points? If dust generation is likely during the process, particularly in dry seasons, is water sprinklers provided at the loading site?			✓		
• Do the vehicles comply with the recommended speed limit of 10 km/h on unpaved roads?			✓		
• Are dusty activities rescheduled during high-wind conditions?		✓			
• Are the routing of vehicles and positioning of construction plants at maximum possible distance from the ASRs?		✓			
• Is suitable buffer zone provided and work areas fenced off with hoarding (not less than 2.4m from ground level)?			✓		

S7.24 Drilling & Blasting

	• Is watering carried out on the exposed area after blasting?			✓		
	• Is vacuum extraction drilling method used?			✓		
	• Is the blasting process carefully sequenced?			✓		
	• Is the firing of explosive carried out in the morning prior to opening of the Park?			✓		
S7.25	Crushing Plant					
	• Is water sprayed on the crusher?				✓	CI05③ P1060257
	• Are fabric filters installed for the crushing plant?			✓		
	• Is chute or dust curtain used for controlling dust when transferring materials from crusher to the conveyors?			✓		
S7.26	Barging Point & Conveyor Belt System					
	• Are the conveyors placed within enclosed structures?			✓		
	• Is profiled steel cladding provided at two sides of loading point?			✓		
	• Are dust suppression sprays installed and operated at the feeding inlet and outlet?			✓		
	• Is the barging point placed within an enclosed structure incorporating an enclosed chute for material transfer to the barge?			✓		
	• Is a flexible curtain hanged on the enclosed chute to prevent dust emission when excavated materials/rocks transported into the barge?			✓		
	Water Quality					
S8.3	Site Run-off and Drainage					
	• Are all sewer and drainage connections sealed to prevent debris, soil, sand etc. from entering public sewer before commencing any site formation work?			✓		
	• Are temporary ditches provided to facilitate runoff discharge into appropriate watercourses, via appropriate sized silt retention pond?	✓				
	• Are cut-off ditches provided for all major site clearance/excavation works where soils would be exposed to control runoff from the areas?			✓		
	• Are channels, earth/concrete bunds and sand bags deployed to direct surface runoff?			✓		
	• Are catchpits and perimeter channels constructed in advance of relevant site formation works?			✓		
	• Are the boundaries of earthworks marked and surrounded by dykes or embankments for flood protection?			✓		
	• Are sand/silt traps and sediment basins provided to remove sand/silt particles from runoff?			✓		
	• Are silt removal facilities, channels and manholes maintained and deposited silt/grit removed regularly to ensure that these facilities are functioning properly at all times?	✓			✓	CS01 ① P1060274
	• Are exposed soil surfaces covered?	✓				
	• Is the water pumped out from foundation excavations discharged into silt removal facilities?			✓		
	• Are exposed soil areas minimised to reduce potential for increased siltation and contamination of runoff?			✓		

	• Are earthwork final surfaces well compacted and is subsequent permanent work or surface protection performed immediately?			✓	
	• Is the rainwater pumped out from trenches or excavation directed to silt removal facilities before discharge?			✓	
	• Are open stockpiles of construction materials or construction wastes of more than 50m^3 covered with tarpaulin during rainstorm?		✓		
	In case of an excavation in rainy seasons: • Is temporary exposed slope/soil surfaces covered by tarpaulin as far as practicable?	✓			✓	CI05 ① P1060213 & P1060214
	• 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 for last month

Item 4 was closed.

Observations for this month

1. The temporary drainage channel was still blocked by rocks and construction material. The Contractor shall ensure that it is clear of blockage at all times
2. stockpile of construction waste was accumulated at the site entrance.
3. Stockpile of construction material was not covered with tarpaulin or other means.

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

Observations for last month

Items ①, ③, ④ and ⑤ were ~~not to~~ closed.

Observations for this month

Hong Kong Police Training School & Waterfront Access Road

① Stockpiles of excavated material were uncovered.

Access Road at Summit

② Haul road was dry and dusty. The Contractor shall ensure watering by water trucks are applied frequently. ~~The~~

Crusher Area

③ The Crusher Area was generally dry and dusty. The Contractor shall apply water spray more frequently.

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

Observations for last month

Items ②, ③ and ④ were closed

Observations for this month

① One oil drum near the Generator Room wa
with drip tray.

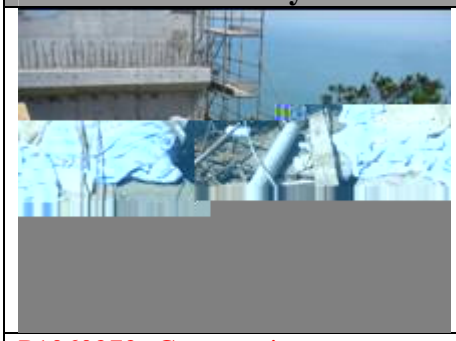
② Idle Stockpile located next to the Bird Hou
with tarpaulin or other means.

③ Stormdrains around the Bird Exercise Aviar
with sand and mud.

IEC Representative	Environmental Manager	Co Re C
Florence Yuen	Terence Kong	
(Florence Yuen)	(Terence Kong)	(

MONTHLY SITE INSPECTION PHOTOS

Contract CS01 Back of House for Marine Mammal Veterinary Hospital	
Follow up observations in April 2008	
Observation in last site inspection	**Observation in this site inspection**
P1060161: The temporary drainage channel was still blocked by rocks and construction materials. The Contractor shall ensure that it is clear of blockage at all times.	P1060274: The temporary drainage channel was still blocked by rocks and construction materials. The Contractor shall ensure that it is clear of blockage at all times.
P1060163: Sedimentation tank was accumulated with mud. The Contractor shall maintain the tank more frequently.	Closed - P1060276: Mud accumulated in the sedimentation tank has been removed.

Observations in May 2008	
	
P1060273: Construction waste was accumulated at the site entrance. The Contractor shall ensure that they are disposed off properly and regularly.	P1060279: An idle stockpile of construction material was uncovered. The Contractor shall ensure all idle stockpiles are covered with tarpaulin or other means.

MONTHLY SITE INSPECTION PHOTOS

P1060178: Oil drums located next to the Generator Room were not provided with drip trays. The Contractor shall provide drip trays to all oil drums on-site.	P1060272: An oil drum located next to the Generator Room was not provided with drip tray. The Contractor shall provide drip trays to all oil drums on-site.

Observations in May 2008	
P1060262: An idle stockpile located next to the Bird House was uncovered. The Contractor shall cover it with tarpaulin sheets or other means.	P1060264: Storm drain surrounding the Bird Exercise Aviary was deposited with sand and mud. The Contractor shall ensure that it is clear of blockage at all times.

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

OCEAN PARK MASTER REDEVELOPMENMT PROJECT

CONTRACT NO. CI05

SITE FORMATION, FUNICULAR TUNNEL AND MISCELLANEOUS WORKS

Monthly EM&A Report - May 2008

CLIENT:

Ocean Park Corporation

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05 Jun 2008

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EXECUTIVE SUMMARY

This is the fifteenth 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 May 2008 (from 26 April 2008 to 25 May 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. Excavation and Concrete Pavement);
- Works for Grand Aquarium Advance Works;
- Utilities Diversion (e.g. Storm Drainage) at Entry Plaza Advance Work; and
- Permanent Bus Terminus (e.g. Erection of Bus Shelter, Construction of Road Kerb, Cable and Light Poles).

Summit

- Main Tunnel Excavation;
- Tunnel Permanent Lining;
- Tunnel Internal Structure;
- Drill and Blast for Summit Site Formation;
- Excavation at Summit;
- Soil nail works at the North Haul Road;
- Summit Terminus & FS Tank Building (e.g. Foundation Works and Superstructure Works); and
- 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, Trial Pit Excavation 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 May 2008, was 6,539.76 tonnes, 58.73 tonnes and 86.92 tonnes while the volume to the landfills was 72.89 tonnes. Besides the total disposal volume to the alternative dumpsites - Swire Sita by barge was 10,305.48 tonnes and no internal transfer of excavated materials within the reporting month of May 2008.

Apart from the above, DBJV has been a source to provide the excavated material (mainly rock with small quantity of soil) to the Contractor of Central Reclamation Phase III, Yuen Long DSD Improvement Works, Ma On Shan Waterfront Promenade Upgrading Project and Tai Shing Quarry (Jiangmen). The volume within the reporting month of May 2008 was 59,055.00 tonnes, 9434.00 tonnes, 1,557.00 tonnes and 24,901.00 tonnes respectively.

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	15 sessions for all air quality monitoring stations AM1; AM2; and AM3A
24-hour TSP monitoring	5 sessions for air quality monitoring stations AM1; AM2 and AM3A
Daytime noise monitoring	4 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 session
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 May 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 May 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 May 2008 and the finding showed that the transplanted plants were in good condition.

Subtidal Monitoring

The eight impact subtidal ecology monitoring was conducted in the reporting period of May 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 weather.

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 have been installed and in use. The vehicle drivers were reminded 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 May 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, no summons or prosecution related to environmental issues was made against the Ocean Park Master Redevelopment Project Contract CI05 in the reporting period of May 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 May 2008 (from 26 April 2008 to 25 May 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 May 2008 included Soft Ground Tunnel Excavation; Waterfront Terminus Excavation – North; Waterfront Access Road (e.g. Excavation and Concrete Pavement); Works for Grand Aquarium Advance Works; Utilities Diversion (e.g. Storm Drainage) at Entry Plaza Advance Work and Permanent Bus Terminus (e.g. Erection of Bus Shelter, Construction of Road Kerb, Cable and Light Poles)

1.7 At Summit, Main Tunnel Excavation; Tunnel Permanent Lining; Tunnel Internal Structure; Drill and Blast for Summit Site Formation; Excavation at Summit; Soil nail works at the North Haul Road; Summit Terminus & FS Tank Building (e.g. Foundation Works and Superstructure Works); 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, Trial Pit Excavation 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 May 2008

Material Type	Delivery / Disposal Location	Estimated Amount (tonnes unless specified)
C&D waste	SENT	71.25
	NENT	1.64
	TKOSF	86.92
C&D material	Swire Sita *	10,305.48
	QBBP	6,539.76
	Central Reclamation Phase III *	59,055.00
	TKOFB	58.73
	Yuen Long DSD Project *	9,434.00
	Ma On Shan	1,557.00
	Tai Shing Quarry (Jiangmen) * #	24,901.00
	INTL **	0.00
Chemical waste	Collected by licensed collector	0.00
General waste	Collected by licensed collector	63.00m^3

Notes: * *denotes alternative dumpsite as disposal location.*
** *denotes internal transfer.*
# *denotes the main portion of excavated material to Mainland China was rock materials.*

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 May 2008 was listed in Table 1.2.

Table 1.2 Environmental Permit Submission

Environmental Permit Submission	EP-249/2006/A Condition No.	Status
Management Organization	2.3	Submitted on 15 December 2006.
Construction Programme	2.4	Submitted on 14 February 2007.
Drainage Proposal	2.13	Deposited in the EIAO Register Office for public inspection on 30 May 2007.
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 Mar '08	4.2	Submitted on 08 April 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 was 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 1-hour and 24-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-Apr-08	68	98	208
29-Apr-08	61	89	78
30-Apr-08	70	80	155
02-May-08	170	105	189
05-May-08	59	75	228
07-May-08	90	104	95
09-May-08	110	76	188
10-May-08	72	95	250
13-May-08	87	118	136
14-May-08	136	145	191
16-May-08	121	153	199
19-May-08	125	118	135
21-May-08	109	116	121
22-May-08	128	141	169
23-May-08	51	102	75

*Notes: * Exceedance of Limit Level*
 # Exceedance of Action Level
x denotes no measurement due to power supply failure.

Table 2.5 Monitoring Results of 24-hr TSP

Date of Monitoring	24-hr TSP (μg/m^3)		
	AM1	AM2	AM3A
29-Apr-08	52	59	74
05-May-08	46	58	91
10-May-08	43	51	67
16-May-08	88	92	130
22-May-08	30	44	57

*Notes: * Exceedance of Limit Level*
 # Exceedance of Action Level
x denotes no measurement due to power supply failure.

3. NOISE MONITORING

Monitoring Requirements

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

Monitoring Equipment

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

Table 3.1 Noise Monitoring Equipment

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

Monitoring Parameters, Frequency and Duration

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

Table 3.2 Noise Monitoring Parameters, Period and Frequency

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

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

Monitoring Locations

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

Table 3.3 Noise Monitoring Locations

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

Monitoring Methodology

Field Monitoring

- The Sound Level Meter was set on a tripod at a height of 1.2 m above the ground.
- For free field measurement, the meter was positioned away from any nearby reflective surfaces. For reference, a correction of +3dB(A) was made to the free field measurements.
- The battery condition was checked to ensure the correct functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
  - frequency weighting : A
  - time weighting : Fast
  - time measurement : 30 minutes / 5 minutes
- Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94 dB at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1 dB(A), the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.
- The wind speed was frequently checked with a portable wind meter.
- During the monitoring period, the L_{eq} was recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- Noise measurement was paused during periods of high intrusive noise (e.g. dog barking, helicopter noise) if possible. Observations were recorded when intrusive noise was unavoidable.
- Noise monitoring was cancelled in the presence of fog, rain, wind with a steady speed exceeding 5 m/s, or wind with gusts exceeding 10 m/s.

Maintenance and Calibration

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

Results and Observations

3.5 Noise monitoring was conducted at the 4 designated monitoring stations during daytime in the reporting month. The monitoring was carried out as scheduled in the reporting month of May 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-Apr-08	70.3	67.4	68.2	66.9
05-May-08	64.3	58.7	58.0	63.8
13-May-08	62.7	59.3	57.5	64.3
19-May-08	67.6	59.8	58.9	67.7

*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
30-Apr-08	51.9	52.5	52.5	51.8
07-May-08	50.8	51.9	52.9	50.9
14-May-08	51.2	50.8	52.8	51.2
21-May-08	51.6	51.2	52.7	51.6

Notes: * *Exceedance of Limit Level*
Exceedance of Action Level
- *denotes no measurement due to raining*

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 May 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. Most of the transplanted Balloon Flowers and Chinese Lily at the receptor site were generated in the current growing season.

4.6. Most of the transplanted Sword-leaved Orchid was healthy except two were not in health condition due to the pest attack. Most of the transplanted Balloon Flower at the receptor site were experience seasonal shrunken in dry season and re-generated in the wet season.

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 eight impact subtidal monitoring conducted within the reporting month of May 2008.

5.10 The results of monitoring show that sedimentation on tagged colonies from all monitoring stations and the control site (n=33 out of 60 colonies) increased by 2% to 10% when compared with the initial survey conducted in April 2007. In another 10 colonies from all six sites, the sedimentation decreased by 1% to 8% when compared with the initial survey. Bleaching increased in 2 colonies by 2% to 5% while the partial mortality increased by 2% to 5% in 12 colonies with 4 colonies from the Control Site C.

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 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.

5.13 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 ninth monitoring has been conducted in the reporting month of May 2008 to check the health condition of the transplanted plants.

Subtidal Monitoring

- The eighth impact subtidal monitoring conducted within the reporting month of May 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 May 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-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.	Surrendered
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-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-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-RS0063-08	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
GW-RS0144-08	19 Mar 08	16 Sep 08	Breaker, mini-robot mounted; Excavator, mini-robot mounted; Light goods vehicle, gross vehicle weight ≤ 5.5 tonnes; Air compressor, with noise emission label showing a sound power level of ≤ 100dB(A); Breaker, hand-held (electric), mass ≤ 10kg; 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		
Construction Noise Permits				
GW-RS0234-08	15 Apr 08	14 Oct 08	Concrete lorry mixer; Poker, vibrating, hand-held (electric); and Crane, tower.	Valid
GW-RS0224-08	18 Apr 08	17 Jun 08	Crushing Plant; Dump trucks; Conveyor belt and Excavator, tracked.	Surrendered
GW-RS0242-08	21 Apr 08	09 Jun 08	Hydraulic drill; Loader, wheeled; Excavator, tracked; Shotcrete machine; and Air compressor, with noise emission label showing a sound power level of ≤ 102dB(A)	Valid
GW-RS0283-08	06 May 08	05 Jul 08	Crushing Plant; Dump trucks; Conveyor belt and Excavator, tracked.	Valid
Chemical Waste Producer Registration				
WPN5213-199-D2373-01	07-May-07	N/A	For disposal of chemical wastes, mainly spent lubricants	Valid
Effluent Discharge License				
EP820/W9/XW232	20-Jun-07	30-Jun-12	For discharge of industrial trade effluent arising from construction site at Summit and Tunnel	Valid
EP820/W9/XW234	13-Jul-07	31-Jul-12	For discharge of industrial trade effluent arising from construction site at Waterfront	Valid
Specific Process License				
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 02, 09 and 16 May 2008. The IEC has undertaken the monthly audit on 23 May 2008 and the observations and recommendations that were made have summarized in the following paragraphs.

Land Based Water Quality Mitigation Measures

6.5 Clean the surface channels more frequently, especially at the elbow area of Nam Long Shan Road. The Contractor was also reminded that no untreated water was allowed to discharge offsite in all the times.

Air Quality Mitigation Measures

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

6.7 The crusher area, haul road and access road were generally dry and dusty. The Contractor shall ensure watering by water trucks or water sprinklers are applied more frequently.

Noise

6.8 No violation was observed during site inspections in the reporting month of May 2008.

Ecology

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

Waste / Chemical Management

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

Landscape and Visual

6.11 No violation was observed during site inspections in the reporting month of May 2008.

Environmental Mitigation Implementation Schedule (EMIS)

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

Implementation Status of Event/Action Plans

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

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

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

Implementation Status of Environmental Complaint Handling Procedures

Summary of the Complaints and Prosecutions

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

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

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

8.4 The ninth terrestrial ecology monitoring conducted in the reporting month of May 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 was 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

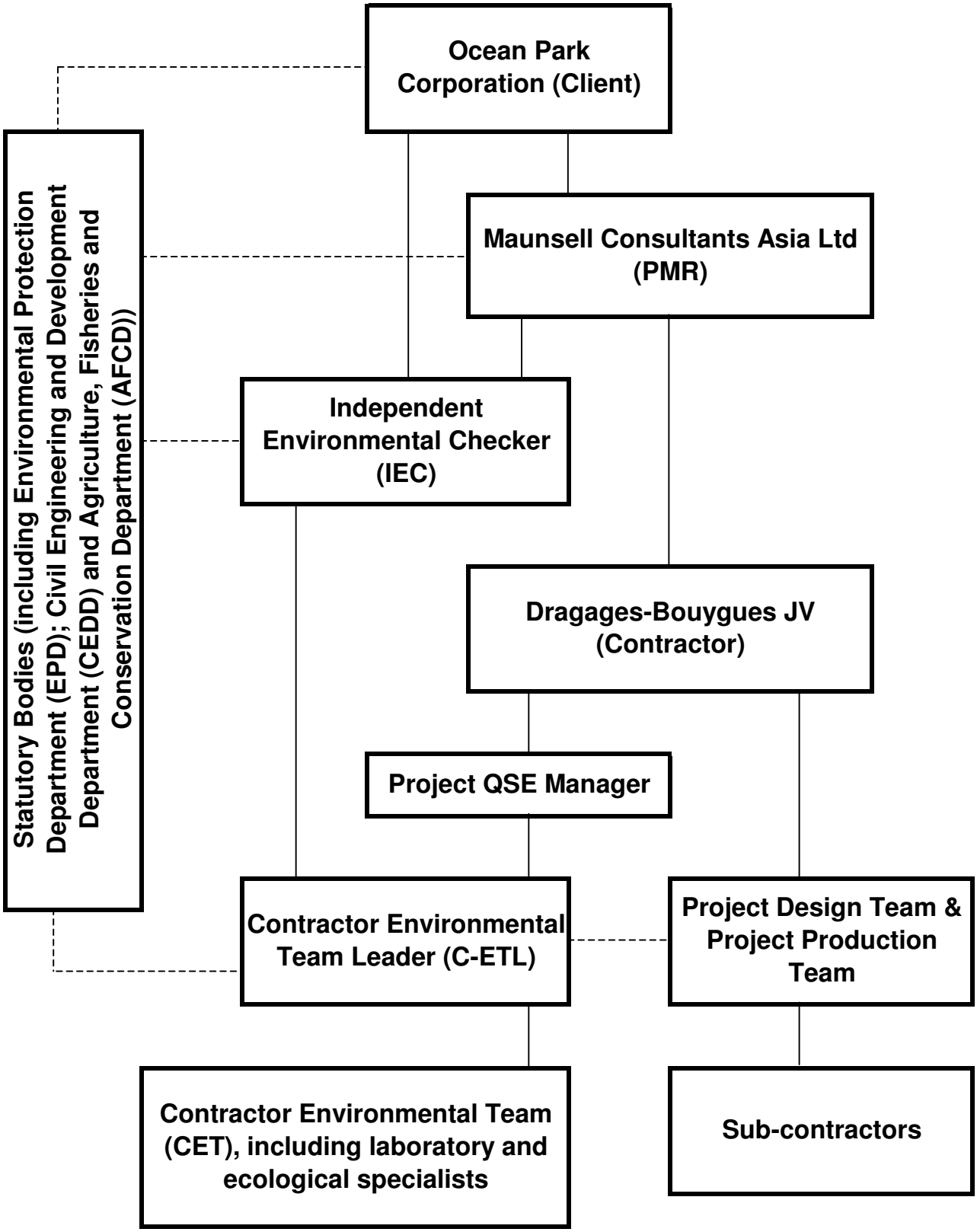
- To inspect the noise sources from inside and outside of the site.
- To follow up any exceedance caused by the construction works.
- To space out noisy equipment and position as far away as possible from sensitive receivers.
- To have regular maintenance of vessels and equipment used.

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

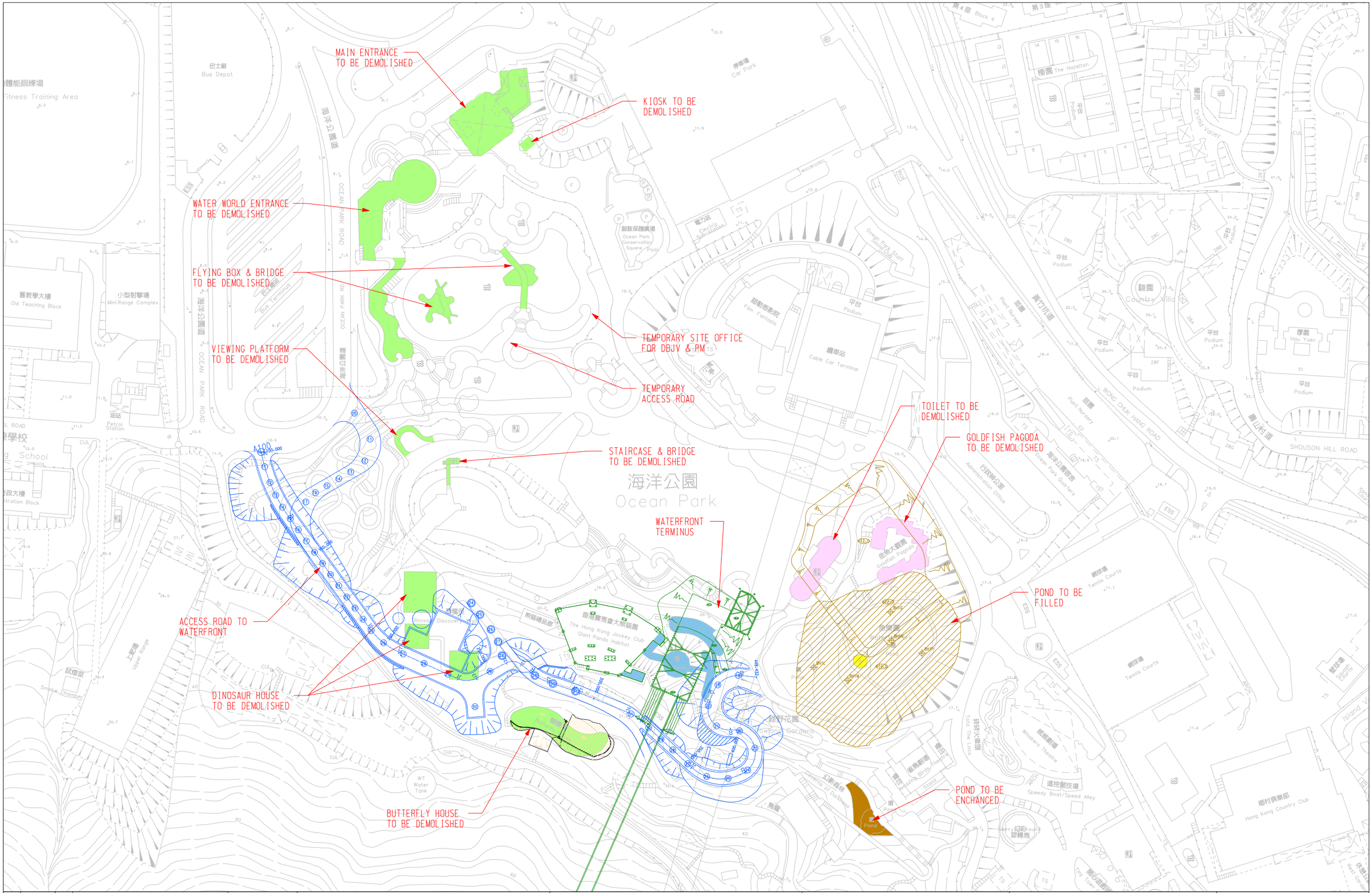
- - - - - - - - - - - - - - Line of Authority

Dragages-Bouygues JV 寶嘉–布依格聯營

Ocean Park Master Redevelopment Project Contract CI05

Figure 1.1

Project Environmental Organisation Chart



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A	02APR2007	GCh	FIRST ISSUE

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

MAIN CONTRACTOR :
Dragages-Bouygues JV 寶嘉-布依格聯營

CLIENT :
香港海洋公園
OCEAN PARK HONG KONG

PROJECT TITLE :
OCEAN PARK REDEVELOPMENT
Contract No. CI05
Site Formation, Funicular Tunnel and Miscellaneous Works

DRAWING TITLE :
FIGURE 1.2
LAYOUT OF WORK SITE
(WATERFRONT)

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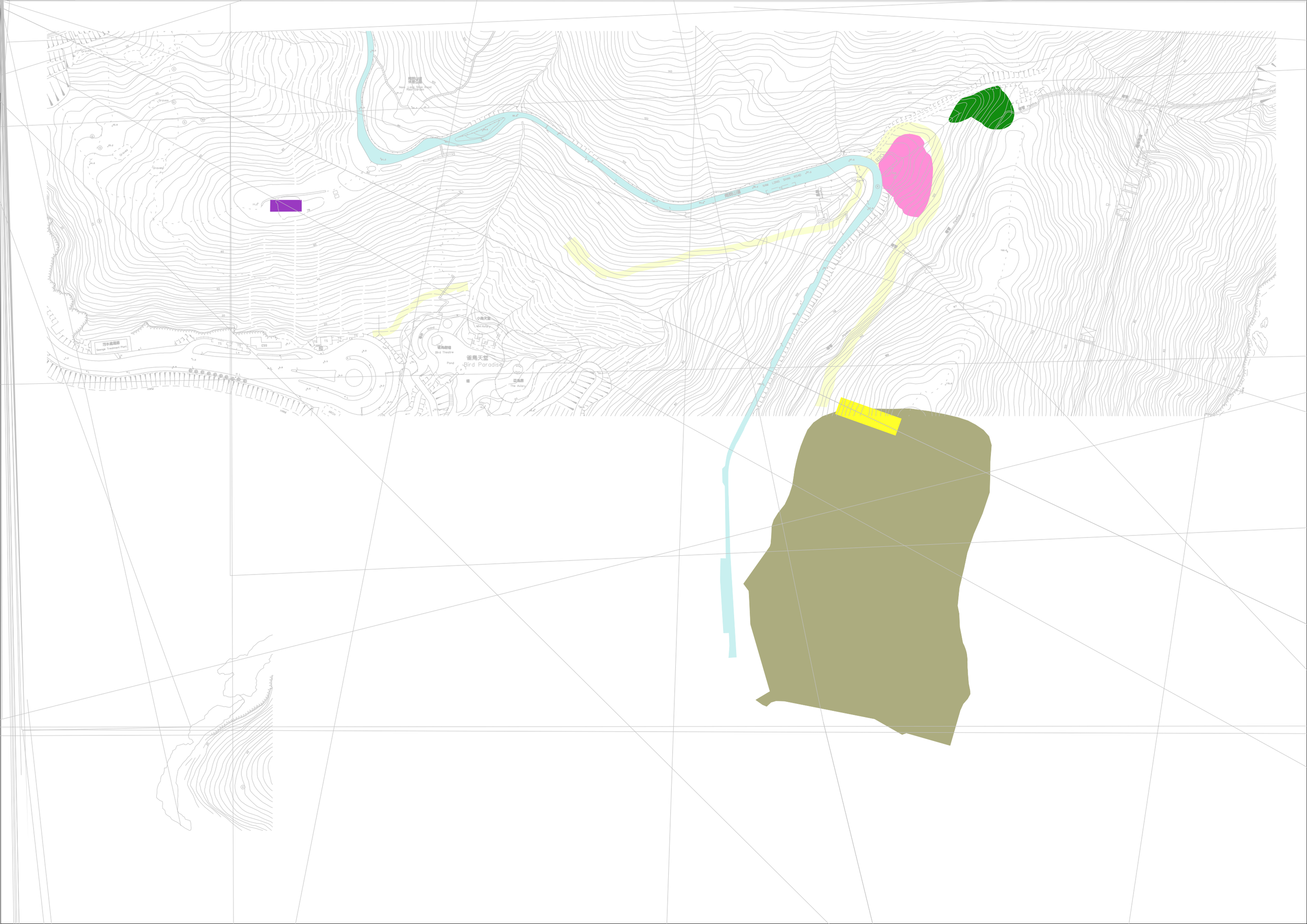
DATE :	02APR2007
SCALE :	1 : 1500 @ A3
DRAWING NUMBER :	DBJV/CI05/01/ENV/0013
REV.	A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C	31JUL2007	STa	PROPOSED AM3 RELOCATED
B	25JUN2007	STa	PROPOSED AM3 ADDED
A	02APR2007	STa	FIRST ISSUE

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

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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
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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 May 2008 to 25 June 2008

Sun	Mon	Tue	Wed	Thu	Fri	Sat
25	26 1-hr TSP NM (D)	27	28 1-hr TSP 24-hr TSP NM (E)	29	30	31
1	2 1-hr TSP NM (D)	3 1-hr TSP 24-hr TSP	4 1-hr TSP NM (E)	5	6 1-hr TSP	7 1-hr TSP
8	9	10 1-hr TSP 24-hr TSP NM (D)	11 1-hr TSP NM (E)	12	13 1-hr TSP	14 1-hr TSP 24-hr TSP TM
15	16 1-hr TSP NM (D)	17	18 1-hr TSP NM (E)	19	20 1-hr TSP 24-hrTSP	21
22	23 1-hr TSP NM (D)	24	25 1-hr TSP NM (E)	26 1-hr TSP 24-hr TSP	27 1-hr TSP	28
29	30 1-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 (μg/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-Apr-08	9:00	28-Apr-08	10:00	2.8490	2.8533	1.1	1.1	11183.77	11184.77	1	68	Cloudy	0.0043	1.1	64
29-Apr-08	9:00	29-Apr-08	10:00	2.8572	2.8611	1.1	1.1	11184.77	11185.77	1	61	Cloudy	0.0039	1.1	64
30-Apr-08	11:00	30-Apr-08	12:00	2.8261	2.8300	0.9	0.9	11209.77	11210.77	1	70	Cloudy	0.0039	0.9	56
02-May-08	9:00	02-May-08	10:00	2.8334	2.8429	0.9	0.9	11210.77	11211.77	1	170	Fine	0.0095	0.9	56
05-May-08	9:00	05-May-08	10:00	2.8559	2.8595	1.0	1.0	11211.77	11212.77	1	59	Fine	0.0036	1.0	61
07-May-08	11:00	07-May-08	12:00	2.8107	2.8159	1.0	1.0	11236.77	11237.77	1	90	Sunny	0.0052	1.0	58
09-May-08	9:00	09-May-08	10:00	2.8151	2.8216	1.0	1.0	11237.77	11238.77	1	110	Fine	0.0065	1.0	59
10-May-08	9:00	10-May-08	10:00	2.8531	2.8576	1.0	1.0	11238.77	11239.77	1	72	Cloudy	0.0045	1.0	63
13-May-08	13:20	13-May-08	14:20	2.8797	2.8850	1.0	1.0	11263.77	11264.77	1	87	Fine	0.0053	1.0	61
14-May-08	9:00	14-May-08	10:00	2.8725	2.8810	1.0	1.0	11264.77	11265.77	1	136	Fine	0.0085	1.0	63
16-May-08	9:00	16-May-08	10:00	2.8334	2.8408	1.0	1.0	11265.77	11266.77	1	121	Fine	0.0074	1.0	61
19-May-08	11:00	19-May-08	12:00	2.8508	2.8586	1.0	1.0	11290.77	11291.77	1	125	Cloudy	0.0078	1.0	63
21-May-08	9:00	21-May-08	10:00	2.8107	2.8175	1.0	1.0	11291.77	11292.77	1	109	Fine	0.0068	1.0	63
22-May-08	9:00	22-May-08	10:00	2.8378	2.8458	1.0	1.0	11292.77	11293.77	1	128	Fine	0.0080	1.0	63
23-May-08	13:45	23-May-08	14:45	2.8185	2.8215	1.0	1.0	11317.77	11318.77	1	51	Cloudy	0.0030	1.0	59

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 (μg/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-Apr-08	9:00	28-Apr-08	10:00	2.9008	2.9070	1.1	1.1	10946.00	10947.00	1	98	Cloudy	0.0062	1.1	63
29-Apr-08	9:00	29-Apr-08	10:00	2.8718	2.8776	1.1	1.1	10947.00	10948.00	1	89	Cloudy	0.0058	1.1	65
30-Apr-08	11:00	30-Apr-08	12:00	2.8586	2.8635	1.0	1.0	10972.00	10973.00	1	80	Cloudy	0.0049	1.0	61
02-May-08	9:00	02-May-08	10:00	2.8613	2.8679	1.1	1.1	10973.00	10974.00	1	105	Fine	0.0066	1.1	63
05-May-08	9:00	05-May-08	10:00	2.8841	2.8889	1.1	1.1	10974.00	10975.00	1	75	Fine	0.0048	1.1	64
07-May-08	11:00	07-May-08	12:00	2.7762	2.7830	1.1	1.1	10999.00	11000.00	1	104	Sunny	0.0068	1.1	65
09-May-08	9:00	09-May-08	10:00	2.7897	2.7947	1.1	1.1	11000.00	11001.00	1	76	Fine	0.0050	1.1	65
10-May-08	9:00	10-May-08	10:00	2.8623	2.8687	1.1	1.1	11001.00	11002.00	1	95	Cloudy	0.0064	1.1	67
13-May-08	13:10	13-May-08	14:10	2.8696	2.8775	1.1	1.1	11026.00	11027.00	1	118	Fine	0.0079	1.1	67
14-May-08	9:00	14-May-08	10:00	2.8694	2.8789	1.1	1.1	11027.00	11028.00	1	145	Fine	0.0095	1.1	65
16-May-08	9:00	16-May-08	10:00	2.8135	2.8235	1.1	1.1	11028.00	11029.00	1	153	Fine	0.0100	1.1	65
19-May-08	10:55	19-May-08	11:55	2.8090	2.8165	1.1	1.1	11053.00	11054.00	1	118	Cloudy	0.0075	1.1	64
21-May-08	9:00	21-May-08	10:00	2.8455	2.8529	1.1	1.1	11054.00	11055.00	1	116	Fine	0.0074	1.1	64
22-May-08	9:00	22-May-08	10:00	2.8039	2.8129	1.1	1.1	11055.00	11056.00	1	141	Fine	0.0090	1.1	64
23-May-08	14:00	23-May-08	15:00	2.8377	2.8442	1.1	1.1	11080.00	11081.00	1	102	Cloudy	0.0065	1.1	64

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 (μg/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-Apr-08	9:00	28-Apr-08	10:00	2.8785	2.8927	1.1	1.1	13406.33	13407.33	1	208	Cloudy	0.0142	1.1	68
29-Apr-08	9:00	29-Apr-08	10:00	2.8571	2.8623	1.1	1.1	13407.33	13408.33	1	78	Cloudy	0.0052	1.1	66
30-Apr-08	11:00	30-Apr-08	12:00	2.8304	2.8416	1.2	1.2	13432.33	13433.33	1	155	Cloudy	0.0112	1.2	72
02-May-08	9:00	02-May-08	10:00	2.8420	2.8553	1.2	1.2	13433.33	13434.33	1	189	Fine	0.0133	1.2	70
05-May-08	9:00	05-May-08	10:00	2.8550	2.8702	1.1	1.1	13434.33	13435.33	1	228	Fine	0.0152	1.1	67
07-May-08	11:10	07-May-08	12:10	2.8221	2.8288	1.2	1.2	13459.33	13460.33	1	95	Sunny	0.0067	1.2	71
09-May-08	9:00	09-May-08	10:00	2.7695	2.7828	1.2	1.2	13460.33	13461.33	1	188	Fine	0.0133	1.2	71
10-May-08	9:00	10-May-08	10:00	2.8726	2.8903	1.2	1.2	13461.33	13462.33	1	250	Cloudy	0.0177	1.2	71
13-May-08	13:00	13-May-08	14:01	2.8485	2.8577	1.1	1.1	13486.32	13487.33	1	136	Fine	0.0092	1.1	67
14-May-08	9:00	14-May-08	10:00	2.8348	2.8483	1.2	1.2	13487.33	13488.33	1	191	Fine	0.0135	1.2	71
16-May-08	9:00	16-May-08	10:00	2.8397	2.8534	1.1	1.1	13488.33	13489.33	1	199	Fine	0.0137	1.1	69
19-May-08	11:00	19-May-08	12:00	2.8343	2.8436	1.1	1.1	13513.33	13514.33	1	135	Cloudy	0.0093	1.1	69
21-May-08	9:00	21-May-08	10:00	2.8438	2.8521	1.1	1.1	13514.33	13515.33	1	121	Fine	0.0083	1.1	69
22-May-08	9:00	22-May-08	10:00	2.8082	2.8198	1.1	1.1	13515.33	13516.33	1	169	Fine	0.0116	1.1	69
23-May-08	14:05	23-May-08	15:05	2.8021	2.8074	1.2	1.2	13540.33	13541.33	1	75	Cloudy	0.0053	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)

24-hr TSP Monitoring Results at Station AM1

Monitoring Period				Filter Weight (g)		Flow Rate (m^3/min)		Elapse Time (hour)		Sampling Time (hours)	Concentration (μg/m^3)	Weather Condition	Particular weight (g)	Average flow (m^3/min)	Total volume (m^3)
From		To													
Date	Time	Date	Time	Initial	Final	Initial	Final	Initial	Final						
29-Apr-08	10:32	30-Apr-08	10:32	2.8787	2.9484	0.9	0.9	11185.77	11209.77	24	52	Cloudy	0.0697	0.9	1343
05-May-08	13:38	06-May-08	13:38	2.8265	2.8909	1.0	1.0	11212.77	11236.77	24	46	Fine	0.0644	1.0	1385
10-May-08	10:40	11-May-08	10:40	2.8676	2.9291	1.0	1.0	11239.77	11263.77	24	43	Fine	0.0615	1.0	1424
16-May-08	11:25	17-May-08	11:25	2.8612	2.9899	1.0	1.0	11266.77	11290.77	24	88	Fine	0.1287	1.0	1463
22-May-08	13:42	23-May-08	13:42	2.8019	2.8447	1.0	1.0	11293.77	11317.77	24	30	Cloudy	0.0428	1.0	1424

24-hr TSP Monitoring Results at Station AM2

Monitoring Period				Filter Weight (g)		Flow Rate (m^3/min)		Elapse Time (hour)		Sampling Time (hours)	Concentration (μg/m^3)	Weather Condition	Particular weight (g)	Average flow (m^3/min)	Total volume (m^3)
From		To													
Date	Time	Date	Time	Initial	Final	Initial	Final	Initial	Final						
29-Apr-08	10:46	30-Apr-08	10:46	2.8878	2.9776	1.1	1.1	10948.00	10972.00	24	59	Cloudy	0.0898	1.1	1516
05-May-08	13:20	06-May-08	13:20	2.8688	2.9591	1.1	1.1	10975.00	10999.00	24	58	Fine	0.0903	1.1	1569
10-May-08	10:30	11-May-08	10:30	2.7871	2.8693	1.1	1.1	11002.00	11026.00	24	51	Fine	0.0822	1.1	1610
16-May-08	11:10	17-May-08	11:10	2.8174	2.9620	1.1	1.1	11029.00	11053.00	24	92	Fine	0.1446	1.1	1569
22-May-08	13:54	23-May-08	13:54	2.8079	2.8763	1.1	1.1	11056.00	11080.00	24	44	Cloudy	0.0684	1.1	1569

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 (μg/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						
29-Apr-08	10:53	30-Apr-08	10:53	2.8182	2.9459	1.2	1.2	13408.33	13432.33	24	74	Cloudy	0.1277	1.2	1733
05-May-08	13:02	06-May-08	13:02	2.8744	3.0251	1.1	1.1	13435.33	13459.33	24	91	Fine	0.1507	1.1	1651
10-May-08	10:50	11-May-08	10:49	2.8427	2.9590	1.2	1.2	13462.33	13486.32	24	67	Fine	0.1163	1.2	1748
16-May-08	11:05	17-May-08	11:05	2.8184	3.0336	1.1	1.1	13489.33	13513.33	24	130	Fine	0.2152	1.1	1651
22-May-08	14:01	23-May-08	14:01	2.7903	2.8898	1.2	1.2	13516.33	13540.33	24	57	Cloudy	0.0995	1.2	1748

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

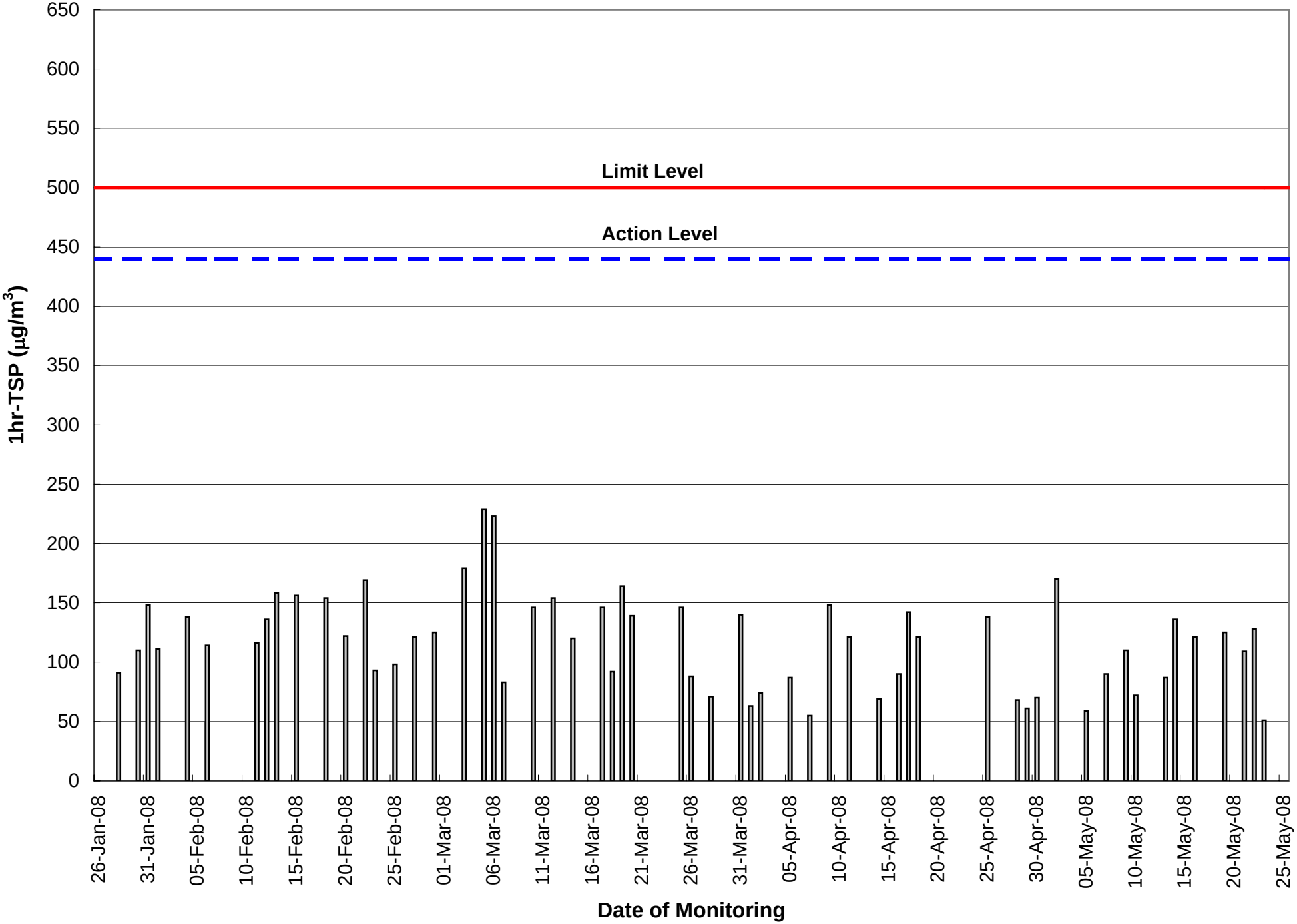


Figure C.2 1-hr TSP monitoring results of Monitoring Station AM2

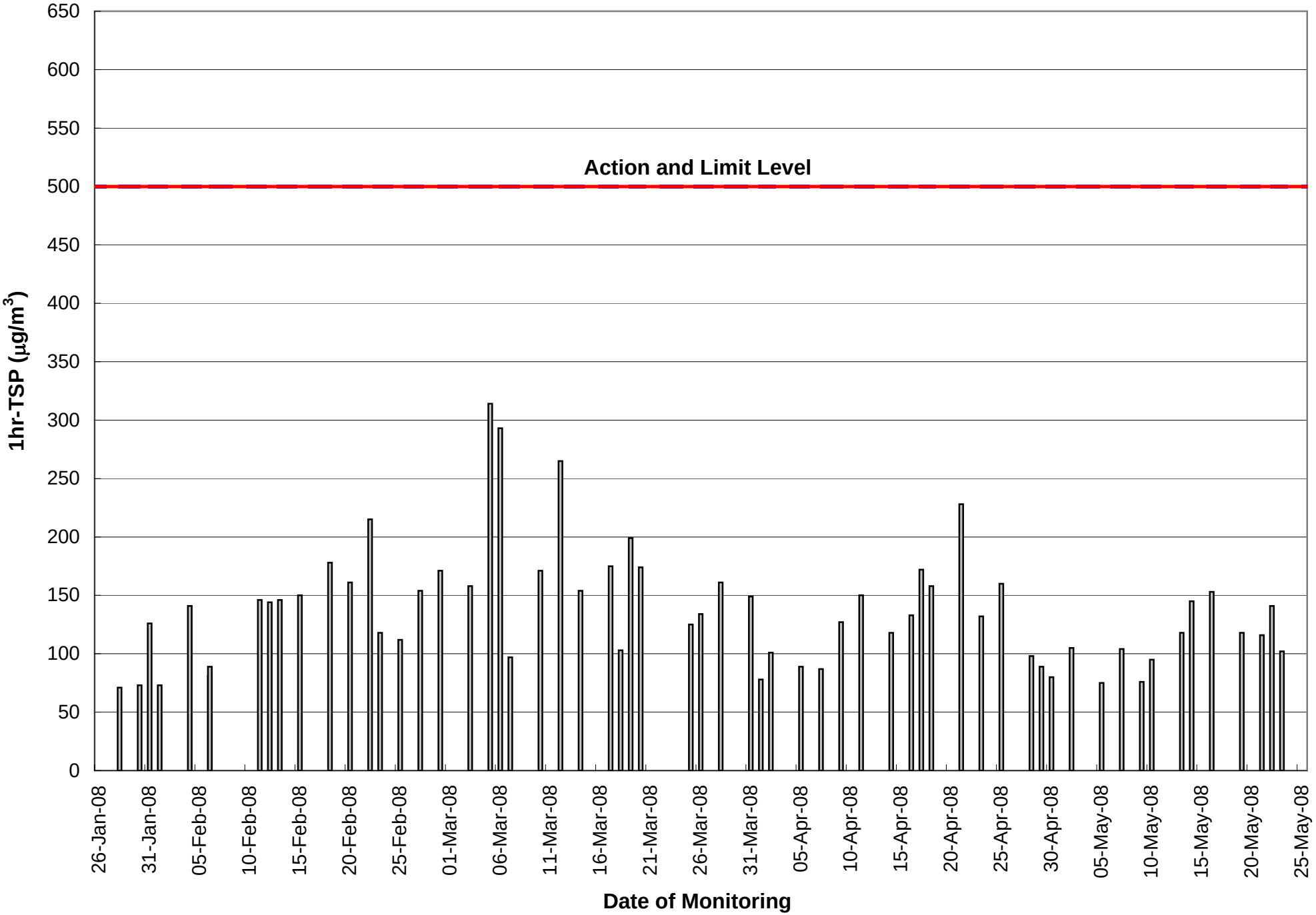


Figure C.3 1-hr TSP monitoring results of Monitoring Station AM3A

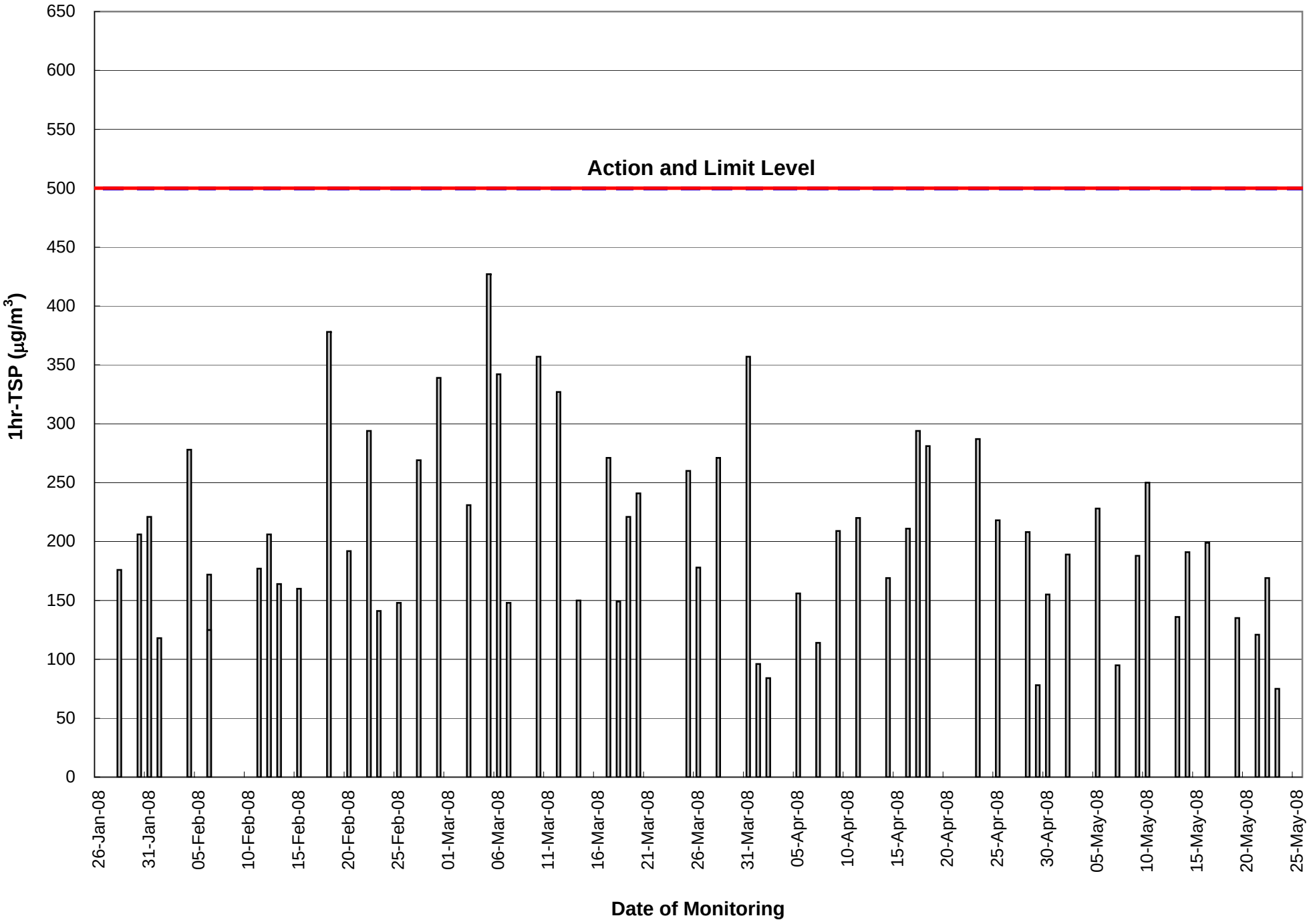
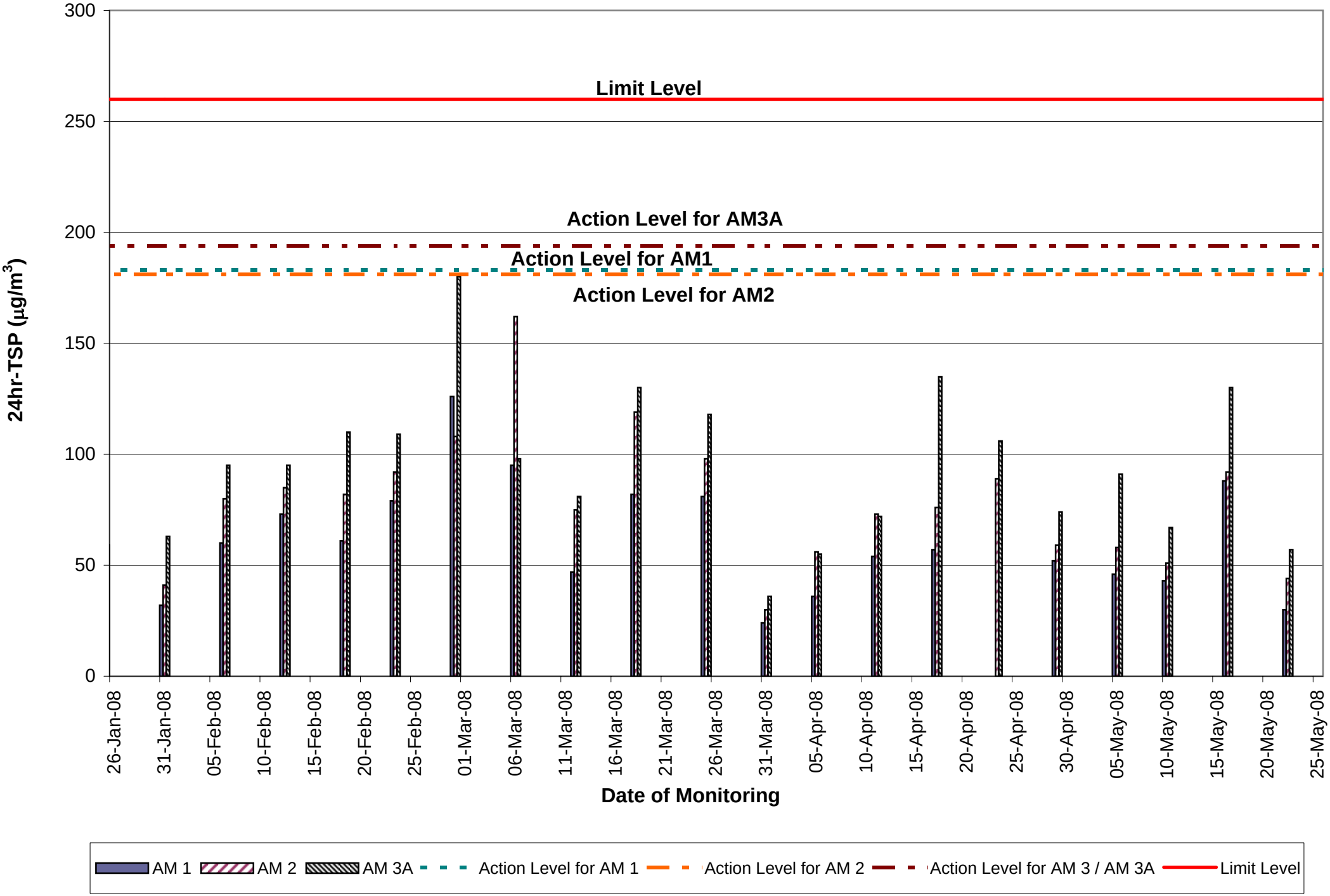


Figure C.4 24-hr TSP monitoring results of Monitoring Station AM1, AM2 & AM3A



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-Apr-08	Cloudy	10:00	70.3	72.5	67.1	63.2	70	N
05-May-08	Fine	16:54	64.3	67.2	62.5	63.2	70	N
13-May-08	Sunny	15:00	62.7	65.8	61.0	63.2	70	N
19-May-08	Cloudy	14:15	67.6	71.1	64.1	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-Apr-08	Cloudy	10:40	67.4	70.8	65.1	64.0	75	N
05-May-08	Fine	15:00	58.7	60.9	56.6	64.0	75	N
13-May-08	Sunny	15:40	59.3	62.4	57.2	64.0	75	N
19-May-08	Cloudy	14:55	59.8	63.3	57.5	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-Apr-08	Cloudy	15:10	68.2	70.8	65.4	59.3	75	N
05-May-08	Fine	15:37	58.0	60.4	56.2	59.3	75	N
13-May-08	Sunny	16:20	57.5	60.0	55.9	59.3	75	N
19-May-08	Cloudy	15:37	58.9	62.3	56.5	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-Apr-08	Cloudy	14:30	66.9	69.4	63.6	59.9	75	N
05-May-08	Fine	16:17	63.8	67.1	61.3	59.9	75	N
13-May-08	Sunny	17:00	64.3	67.8	62.2	59.9	75	N
19-May-08	Cloudy	16:15	67.7	71.5	64.6	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			
30-Apr-08	Cloudy	19:25	51.9	54.8	49.2	57.0	60	N
07-May-08	Fine	19:20	50.8	55.3	50.1	57.0	60	N
14-May-08	Sunny	19:20	51.2	55.5	49.8	57.0	60	N
21-May-08	Fine	19:25	51.6	56.2	50.3	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			
30-Apr-08	Cloudy	19:55	52.5	58.2	50.6	58.5	60	N
07-May-08	Fine	19:50	51.9	54.3	49.6	58.5	60	N
14-May-08	Sunny	19:50	50.8	54.5	49.8	58.5	60	N
21-May-08	Fine	19:55	51.2	55.3	49.9	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			
30-Apr-08	Cloudy	20:23	52.5	55.5	49.5	56.1	60	N
07-May-08	Fine	20:20	52.9	54.8	49.4	56.1	60	N
14-May-08	Sunny	20:20	52.8	55.3	49.6	56.1	60	N
21-May-08	Fine	20:20	52.7	55.8	50.1	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			
30-Apr-08	Cloudy	19:00	51.8	54.5	50.3	55.8	60	N
07-May-08	Fine	19:00	50.9	54.4	49.9	55.8	60	N
14-May-08	Sunny	19:00	51.2	54.5	50.2	55.8	60	N
21-May-08	Fine	19:00	51.6	55.2	49.7	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

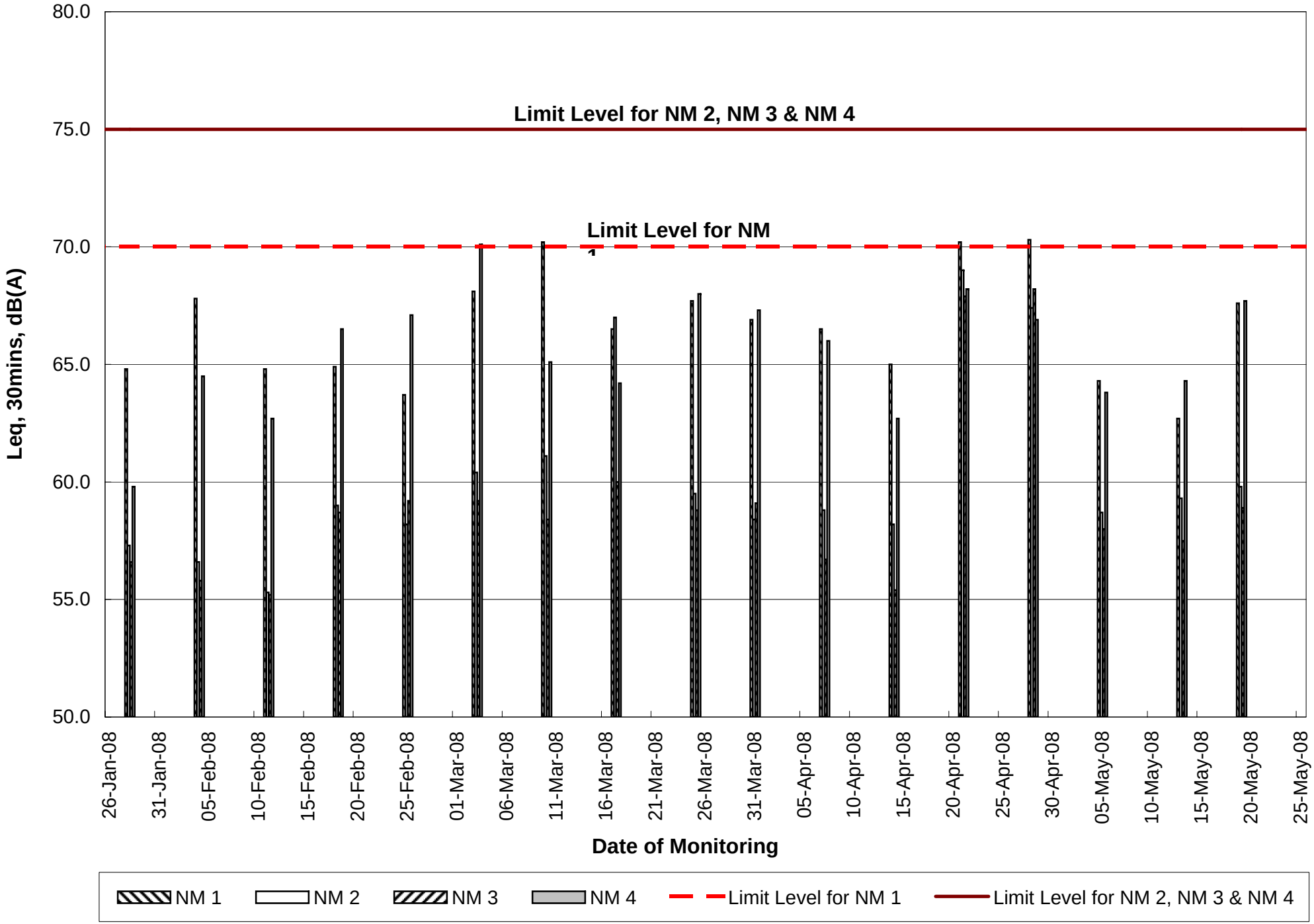
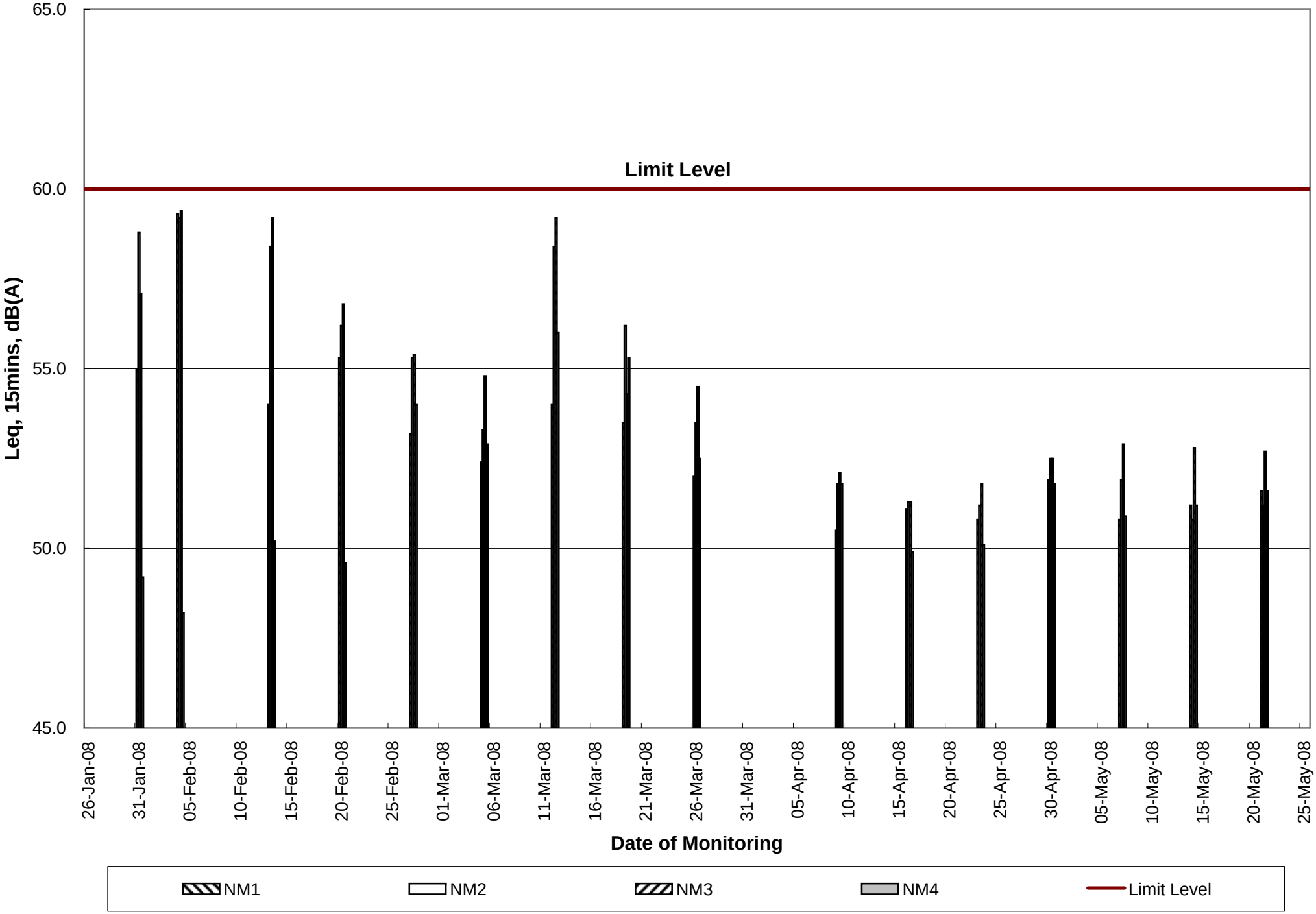


Fig D.2 - Evening Noise Monitoring Results of Monitoring Stations NM1, NM2, NM3 & NM4



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. 9)

May 2008

Issue and Revision Record

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

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3 MONITORING RESULTS

4 PHOTOS

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Table 1 Plant monitoring programme

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

1. SUMMARY

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

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

1.3 Data collected during filed monitoring was given in Table 2. The transplanted plants were generally health. New plant seedlings were appeared as a result of normal plant re-generation in the 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 May 2008 was presented in Table 1.

Table 1 Plant monitoring programme

No.	Monitoring Date	Action taken
1	16 May 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	May	Balloon Flower	30	28	93.3%	
		Chinese Lily	25	25	100%	
		Sword-leaved Orchid	45	43	95.6%	

3.2 The survival rate of the monitored plant varied from 93.3% to 100%.

3.3 Most of the transplanted Balloon Flowers (Photo 4) and all the transplanted Chinese Lily (Photo 3) at the receptor site were generated in the current growing season.

3.4 Most of the transplanted Sword-leaved Orchid was healthy (Photo 2) except two were not in health condition due to the pest attack and most of the transplanted Balloon Flower at the receptor site were experience seasonal shrunken in dry season and re-generated in the wet season.

3.5 Regular maintenance including watering, weeding, apply fertilizer (Photo 5) and pest checking to be applied continuously at the receptor site in order to achieve higher survival rate. Daily watering is recommended during the current growing season.

4 PHOTOS

Photo 1 - Plant nursery.

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

Photo 3 - Chinese Lily.

Photo 4 - Balloon Flower.

Photo 5 - Fertilizer.

APPENDIX F – SUBTIDAL MONITORING RESULTS

OCEAN PARK CORPORATION MASTER REDEVELOPMENT PROJECT

CONTRACT NO. CI05

SITE FORMATION, FUNICULAR TUNNEL AND MISCELLANEOUS WORKS

CORAL IMPACT MONITORING MAY 2008

CLIENT:

Dragages-Bouygues Joint Venture

Ocean Park
Aberdeen
Hong Kong

CHECKED BY:

Lam Environmental Services Limited

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Website: http://www.lamenviro.com

DATE:

22 May 2008

Ocean Park Corporation Master Redevelopment Project

Contract No. C105

Site Formation, Funicular Tunnel and Miscellaneous Works

Report for

Coral Monitoring Survey

May 2008

miniprojects co. Ltd.

miniprojects co. Ltd.

Ocean Park Corporation Master Redevelopment Project

Contract No. C105

Site Formation, Funicular Tunnel and Miscellaneous Works

Report for

Coral Monitoring Survey

May 2008

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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.

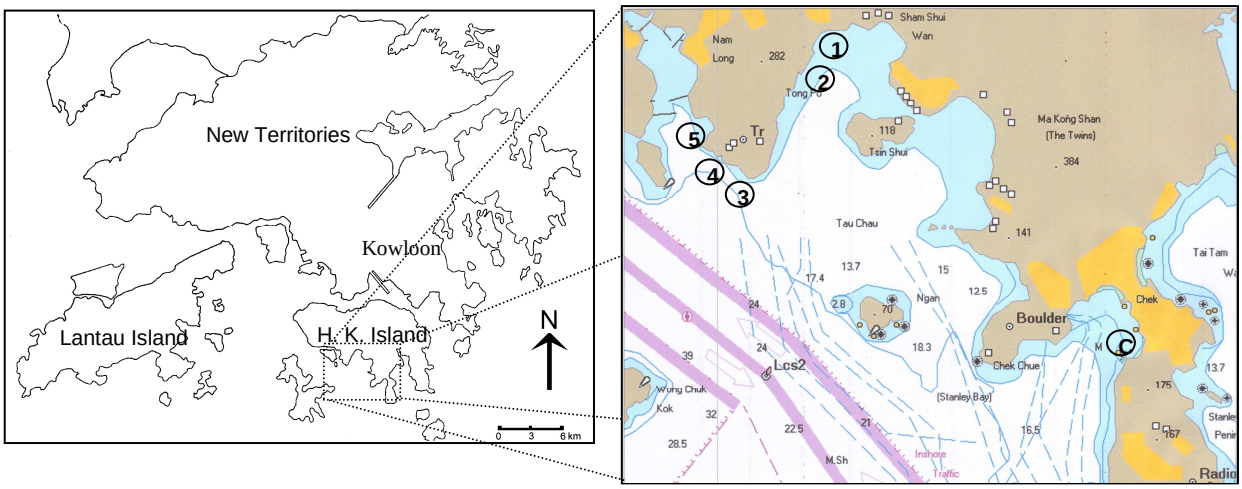
1.1.4 This report presents the results of the eleventh Coral Monitoring Surveys conducted on 10 May 2008.

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 10 May 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 12 (i.e. May 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
	10 May 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: 10 May 2008

3.1.1 Sites 1 to 5 and Control Site C were monitored on 10 May 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	10 May 2008					
Sedimentation on Rock surfaces (mm)	2-3	2-3	1-2	1-2	3-4	1-2
Visibility (m)	0.5-1.0	1.5-2.0	0.5-1.0	1.0-1.5	0.5-1.0	1.0-1.5
Weather	Northeast wind; Beaufort force 3; Cloudy					
Tide	Ebb	Ebb	Ebb	Ebb	Ebb	Ebb
Current (Knot)	0.5-1.0	0.5-1.0	0.5-1.0	0.5-1.0	0.5-1.0	0.5-1.0
Remark						

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 February 2008 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). 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, during and after February 2008 survey. In this survey (May 2008), the tagged *Porites* colonies have showed certain levels of recovery (Tables 3.2 and 3.3; Appendices Ic-f).

Site 1

3.1.4 When compared with baseline data in April 2007, increased sedimentation cover was recorded on 6 colonies, ranged from 2 to 3% (A03, A05, A06, A08, A09 and A10). Decrease in sedimentation was observed in 2 colonies (A04 and A07), ranged from 2 to 5%. No bleaching and further partial mortality were recorded (Table 3.2).

Site 2

3.1.5 When compared with baseline data in April 2007, increased sedimentation cover was recorded on 7 colonies (B01, B02, B04, B07, B08, B09 and B10), ranged from 2 to 4%. Decrease in sedimentation was observed in 1 colony (B03) by 3%. Bleaching was observed in 1 colony (B05) by 2%, and found in B09 and B10 in previous surveys not

observed. Partial mortality was recorded in 2 colonies (B03 and B10) by 2% (Table 3.2).

Site 3

3.1.6 When compared with baseline data in April 2007, increased sedimentation cover was recorded on 3 colonies (C05, C06 and C09), ranged from 2% to 4%. Decrease in sedimentation was observed in 1 colony (C03) by 2%. Bleaching was not recorded. Martial mortality was recorded in 3 colonies (C03, C08 and C09), ranged from 4 to 5%; no further increase in C08, and increased in C03 and C09 (Table 3.2).

Site 4

3.1.7 When compared with baseline data in April 2007, increased sedimentation cover was recorded on 6 colonies (E01, E03, E05, E06, E08 and E10), ranged from 2 to 3%. Decrease in sedimentation was observed in 3 colonies (E04, E07 and E09), ranged from 3 to 8%. Bleaching found in 1 colony (E10) in previous surveys 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 observed in 2 colonies (E04 and E10), ranged from 4 to 5% (Table 3.2).

Site 5

3.1.8 When compared with baseline data in April 2007, increased sedimentation cover was recorded on 7 colonies (D03, D05, D06, D07, D08, D09 and D10), ranged from 3 to 10%. Decrease in sedimentation was observed in 1 colony (D04) by 1%. Bleaching was observed in 1 colony (D08) by 5%. Partial mortality was observed in 4 colonies (D02, D04, D05 and D06), ranged from 2 to 5% (Table 3.3).

Control Site C

3.1.9 When compared with baseline data in April 2007, increased sedimentation cover was recorded on 4 colonies (F01, F03, F06 and F08a), ranged from 2 to 5%. Decrease in sedimentation was found in 2 colonies (F05 and F09), ranged from 2 to 8%. Bleaching was not found. Partial mortality was found in 5 colonies (F02, F03, F04, F05 and F09) by 1 to 3% (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 (10 November 2007 and 16 February 2008) and the Present Monitoring Survey (10 May 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)	10 Nov 07	16 Feb 08	10 May 08	Apr 07 (baseline)	10 Nov 07	16 Feb 08	10 May 08	Apr 07 (baseline)	10 Nov 07	16 Feb 08	10 May 08
A01	*Platygyra carnosus*	1000	0, 0	1, 1▲	0, 0	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	0, 0	0, 0	**2**, 1▲	0	0	0	0	0	0	0	0
A04	*Leptastrea pruinosa*	400	5, 1	**0,** 0▼	**3**, 1▼	**0**, 0▼	0	0	0	0	0	0	0	0
A05	*Platygyra carnosus*	1200	0, 0	0, 0	0, 0	**2**, 1▲	0	0	0	0	5	5	5	5
A06	*Platygyra carnosus*	1600	0, 0	0, 0	0, 0	**3**, 1▲	0	0	0	0	0	0	0	0
A07	*Favia rotumana*	800	5,1	**1,** 1▼	**1,** 1▼	**2,** 1▼	0	0	0	0	0	0	0	0
A08	*Platygyra carnosus*	1000	0, 0	**4,** 1▲	0, 0	**2**, 1▲	0	0	0	0	0	0	0	0
A09	*Platygyra carnosus*	350	0, 0	0, 0	0, 0	**3**, 1▲	0	0	0	0	0	0	0	0
A10	*Platygyra carnosus*	700	0, 0	**9**, 1▲	0, 0	**3**, 1▲	0	0	0	0	0	0	0	0

Site 2

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

Site 3

Code	Coral Species	Area (cm^2)	Sedimentation (%, mm)				Bleaching (%)				Mortality (%)			
			Apr 07 (baseline)	10 Nov 07	16 Feb 08	10 May 08	Apr 07 (baseline)	10 Nov 07	16 Feb 08	10 May 08	Apr 07 (baseline)	10 Nov 07	16 Feb 08	10 May 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	5, 1	**3**, 1▼	**3**, 1▼	0	0	15 ▲*	0	1	1	5 ▲	5 ▲
C04	*Cyphastrea serailia*	600	4, 1	**5**, 1▲	**5**, 1▲	4, 1	0	0	0	0	0	0	0	0
C05	*Pavona decussata*	600	0, 0	0, 0	0, 0	**4**, 1▲	0	0	0	0	0	0	0	0
C06	*Pavona decussata*	1200	0, 0	0, 0	0, 0	**2**, 1▲	0	0	0	0	0	0	0	0
C07	*Montipora cf. turgescens*	200	2, 1	**0,** 0▼	2, 1	2, 1	0	0	0	0	0	0	0	0
C08	*Favia favus*	600	4, 1	**5**, 1▲	**0**, 0▼	4, 1	0	0	0	0	4	4	4	4
C09	*Favites pentagona*	150	1, 1	1, 1	1, 1	**4**, 1▲	0	0	0	0	0	0	0	5 ▲
C10	*Montipora peltiformis*	300	0, 0	0, 0	**1**, 1▲	0, 0	0	**2** ▲	**2** ▲	0	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)	10 Nov 07	16 Feb 08	10 May 08	Apr 07 (baseline)	10 Nov 07	16 Feb 08	10 May 08	Apr 07 (baseline)	10 Nov 07	16 Feb 08	10 May 08
E01	*Goniopora stutchburyi*	300	0, 0	**3**, 1▲	0, 0	**2**, 1▲	0	0	0	0	0	0	0	0
E02	*Goniopora stutchburyi*	200	0, 0	0, 0	0, 0	0, 0	0	0	0	0	0	0	0	0
E03	*Goniopora stutchburyi*	150	0, 0	0, 0	0, 0	**3**, 1▲	0	0	0	0	0	0	0	0
E04	*Porites sp.*	400	5, 1	**2,** 1▼	**1,** 1▼	**2,** 1▼	0	0	30 ▲*	0	0	0	5 ▲	5 ▲
E05	*Goniopora stutchburyi*	300	0, 0	**5**, 1▲	**2**, 1▲	**2**, 1▲	0	0	0	0	0	0	0	0
E06	*Goniopora stutchburyi*	450	0, 0	0, 0	**3**, 1▲	**2**, 1▲	0	0	0	0	0	0	0	0
E07	*Favia speciosa*	600	10, 1	**1**, 1▼	**1**, 1▼	**2**, 1▼	0	0	0	0	0	0	0	0
E08	*Porites sp.*	150	0, 0	0, 0	0, 0	**2**, 1▲	0	0	0	0	4	4	4	4
E09	*Porites sp.*	200	8, 1	**4**, 1▼	**2**, 1▼	**2**, 1▼	0	**2** ▲	5 ▲	0	4	4	4	4
E10	*Porites sp.*	500	0, 0	0, 0	**1**, 1▲	**2**, 1▲	3	3	3	3	0	0	4 ▲	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 (10 November 2007 and 16 February 2008) and the Present Monitoring Survey (10 May 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)	10 Nov 07	16 Feb 08	10 May 08	Apr 07 (baseline)	10 Nov 07	16 Feb 08	10 May 08	Apr 07 (baseline)	10 Nov 07	16 Feb 08	10 May 08
D01	*Psammocora* sp.	600	10, 1	**8,** 1 ▼	**5,** 1 ▼	10**,** 1	0	0	0	0	0	0	2 ▲	2 ▲
D02	*Montipora cf. turgescens*	100	6, 1	**5,** 1 ▼	**5,** 1 ▼	6, 1	0	**2** ▲	0	0	0	0	0	0
D03	*Goniopora stutchburyi*	400	0, 0	**2**, 1▲	0**,** 0	**5**, 1▲	0	0	0	0	0	0	0	0
D04	*Leptastrea pruinosa*	500	4, 1	**1,** 1 ▼	**2,** 1 ▼	**3,** 1 ▼	0	0	0	0	0	**5** ▲	5 ▲	5 ▲
D05	*Porites* sp.	400	5, 1	**0,** 0 ▼	5, 1	**10**, 1▲	1	**3** ▲	**13** ▲*	0	4	4	Unknown#	4
D06	*Plesiastrea versipora*	1000	0, 0	0, 0	**3,** 1 ▲	**3,** 1 ▲	0	0	0	0	5	5	5	5
D07	*Leptastrea pruinosa*	800	0, 0	**5,** 1 ▲	**3,** 1 ▲	**5,** 1 ▲	0	0	0	0	0	0	0	0
D08	*Plesiastrea versipora*	100	0, 0	0, 0	0, 0	**5,** 1 ▲	0	0	**5** ▲	**5** ▲	0	0	0	0
D09	*Leptastrea pruinosa*	150	5, 1	5, 1	**3,** 1 ▼	**9,** 1 ▲	0	0	0	0	0	0	0	0
D10	*Montipora cf. turgescens*	200	0, 0	**2,** 1 ▲	0**,** 0	**10**, 1▲	0	0	0	0	0	0	0	0

* Paleness of colony recorded; # Colony surface was temporarily covered by mucus and microalgae.

Control Site C

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

* Paleness of colony recorded; # Colony surface was temporarily covered by mucus and microalgae.

4 SUMMARY AND CONCLUSION

4.1 Summary – Monitoring Surveys

4.1.1 In the monitoring surveys conducted in May 2008, sedimentation on the tagged colonies from all the 5 Monitoring Sites 1 to 5 and the Control Site C increased by 2 to 10% (n = 33 out of 60 colonies) when compared with the Initial Survey conducted on 07 to 12 April 2007. In another 10 colonies from all six sites, their sedimentation decreased by 1 to 8% when compared with the Initial Survey conducted on 07 to 12 April 2007. Bleaching increased in 2 colonies by 2 to 5%. Partial mortality increased in 12 colonies by 2 to 5%, with 4 from the Control Site C (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 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 May 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.

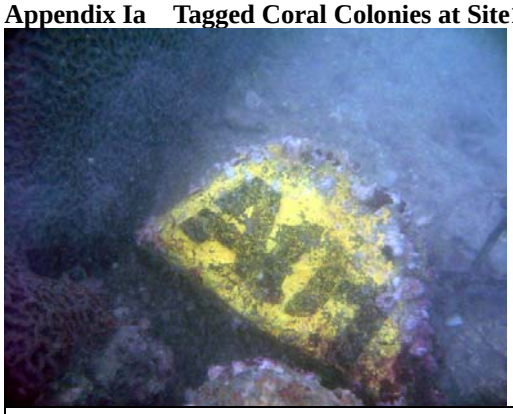
10 May 2008

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

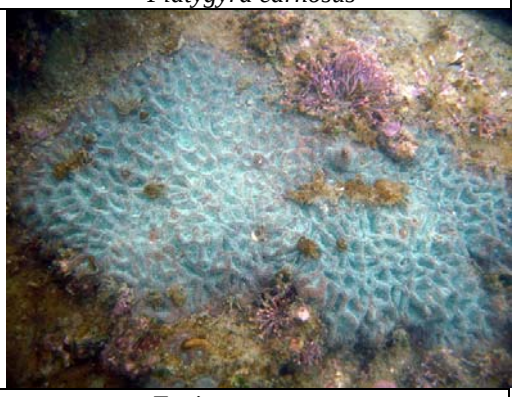
Photographs of the Tagged Corals at Sites 1 to 5 and Control Site C Surveyed on 10 May 2008

Appendix Ia Tagged Coral Colonies at Site1.

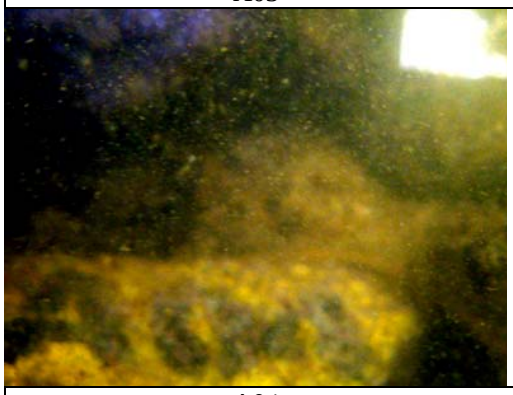


A01 *Platygyra carnosus*

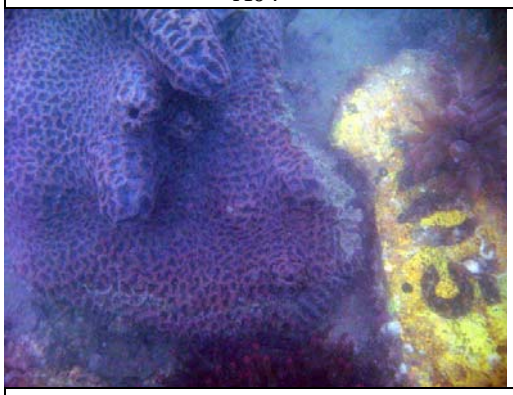
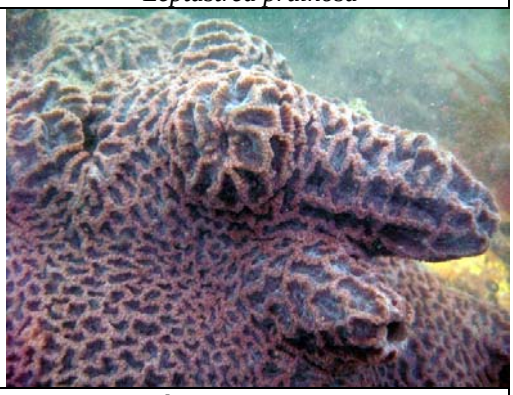
A02 *Platygyra carnosus*



A03 *Favites pentagona*

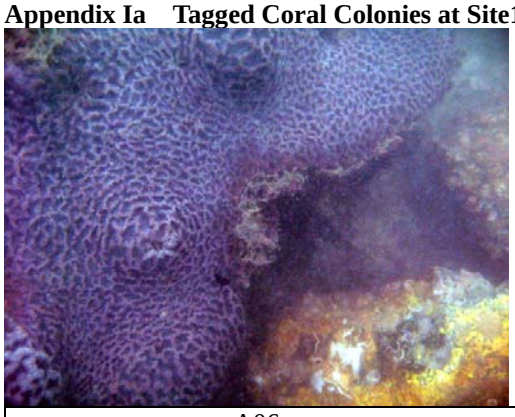


A04 *Leptastrea pruinosa*

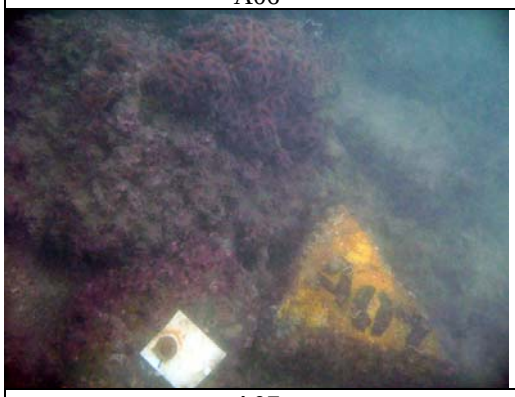
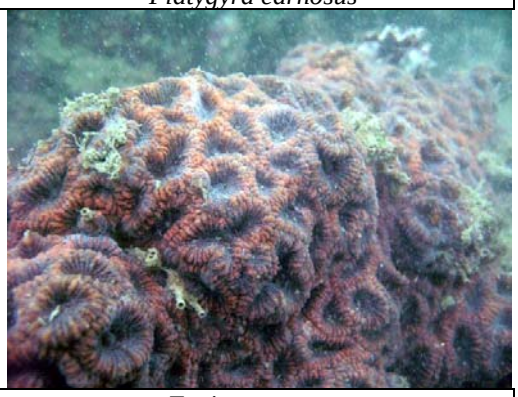



A05 *Platygyra carnosus*

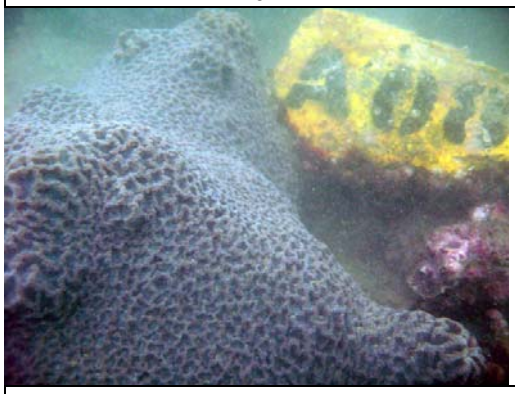
Appendix Ia Tagged Coral Colonies at Site1…continued.



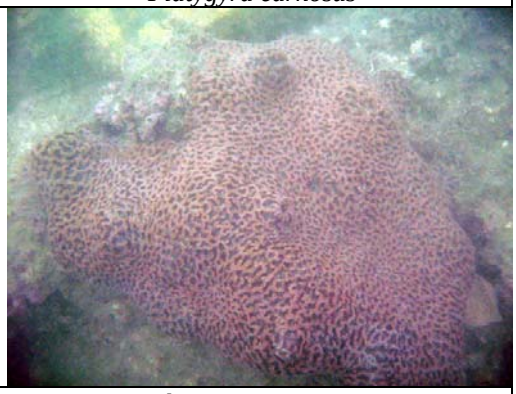
A06 *Platygyra carnosus*

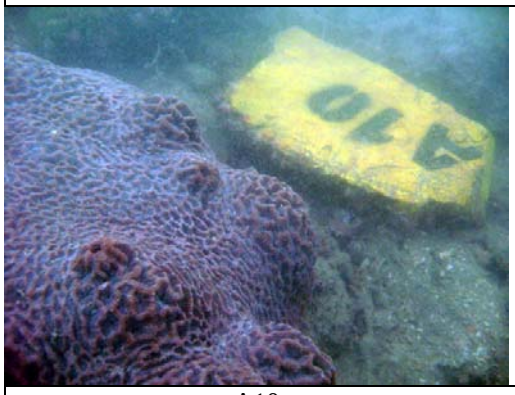
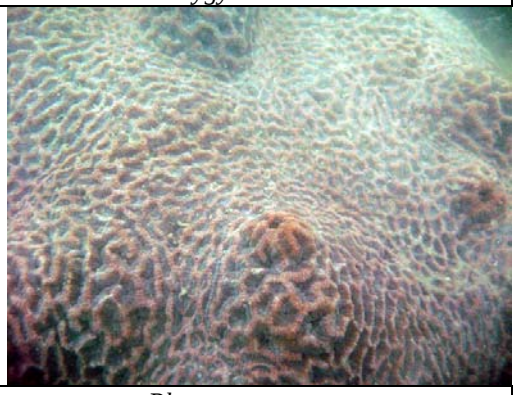
A07 *Favia rotumana*



A08 *Platygyra carnosus*

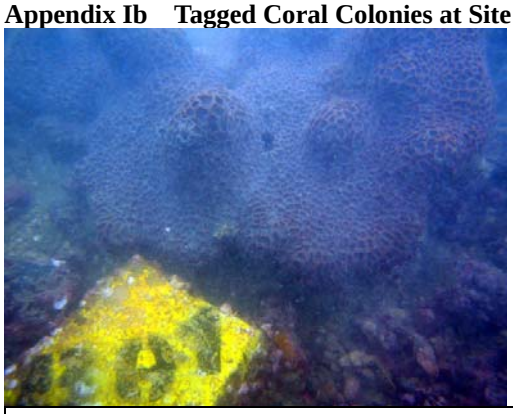


A09 *Platygyra carnosus*

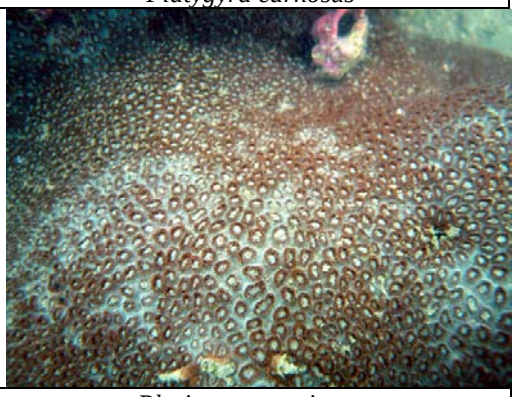



A10 *Platygyra carnosus*

Appendix Ib Tagged Coral Colonies at Site 2.

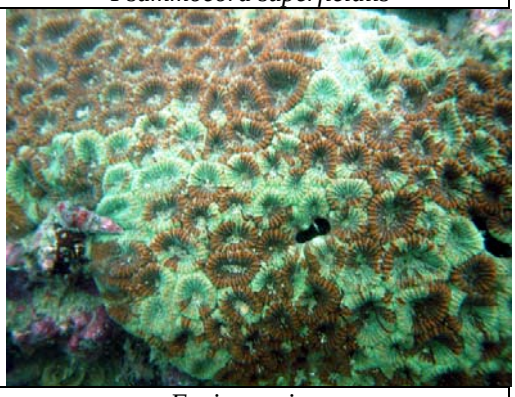


B01 *Platygyra carnosus*

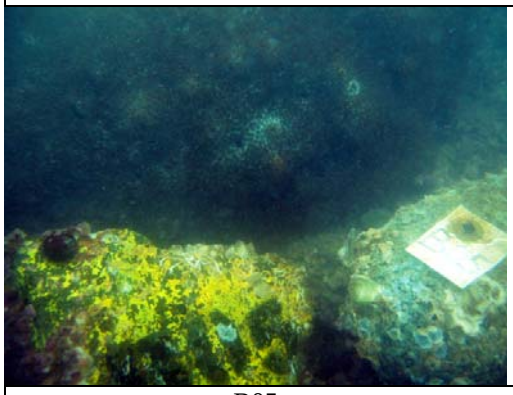


B02 *Plesiastrea versipora*

B03 *Psammocora superficialis*

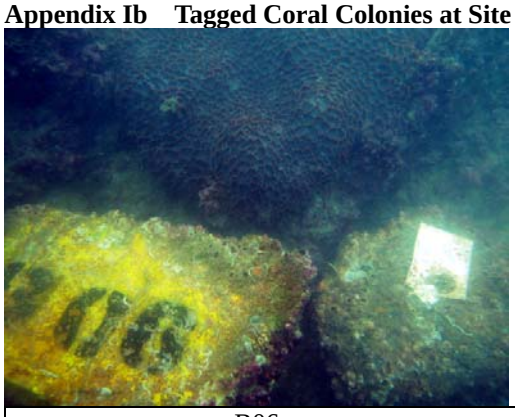
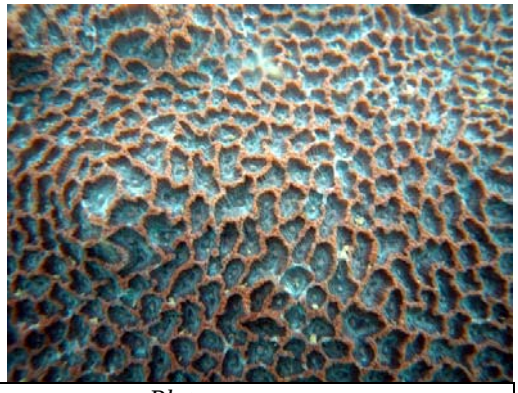


B04 *Favia speciosa*

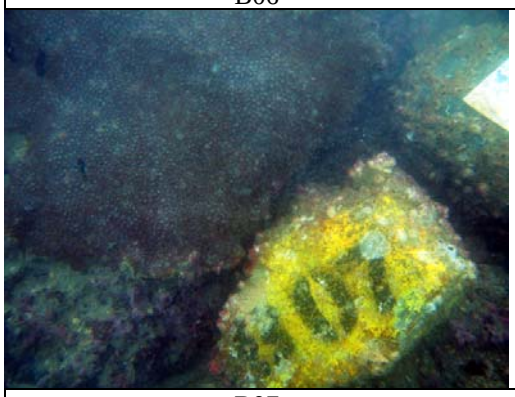
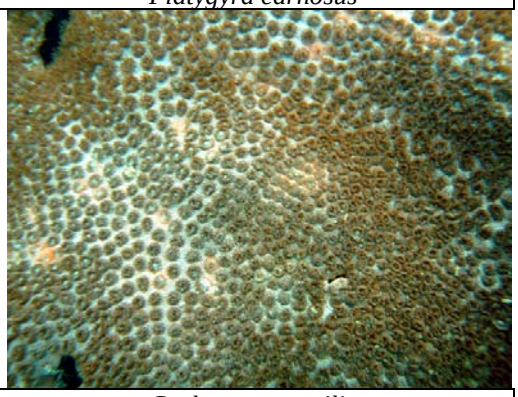


B05 *Plesiastrea versipora*

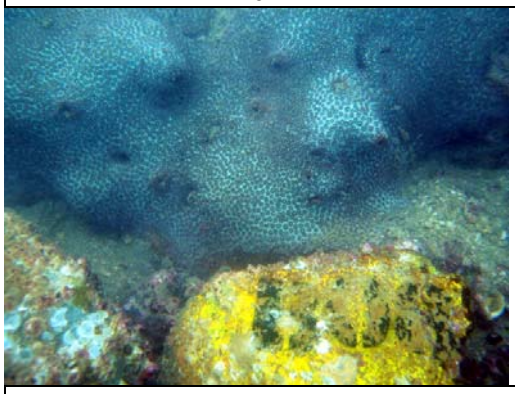
Appendix Ib Tagged Coral Colonies at Site 2…continued.

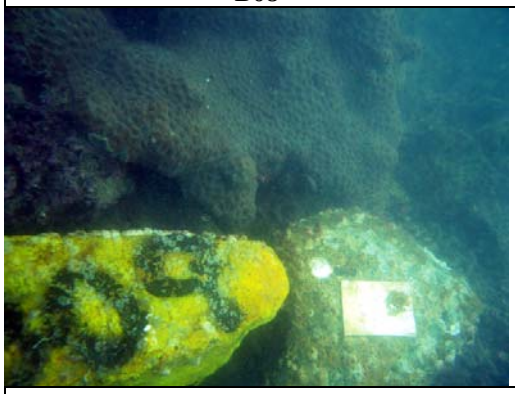
B06 *Platygyra carnosus*

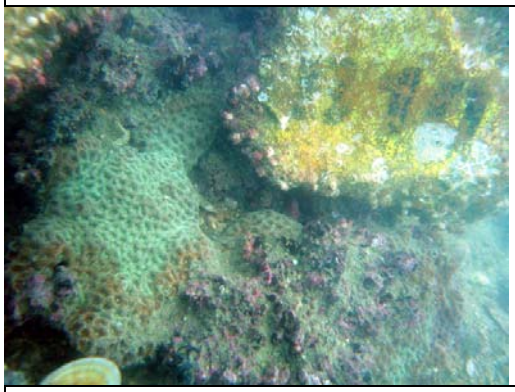
B07 *Cyphastrea serailia*



B08 *Plesiastrea versipora*



B09 *Favites pentagona*

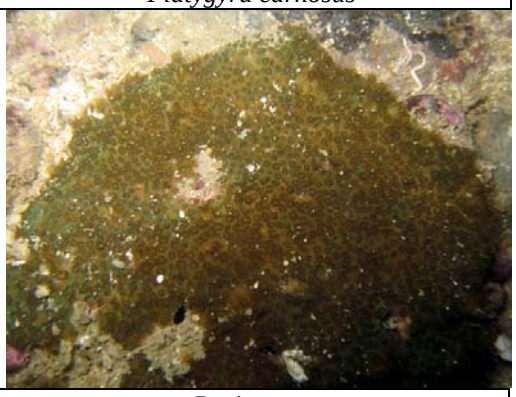


B10 *Favites pentagona*

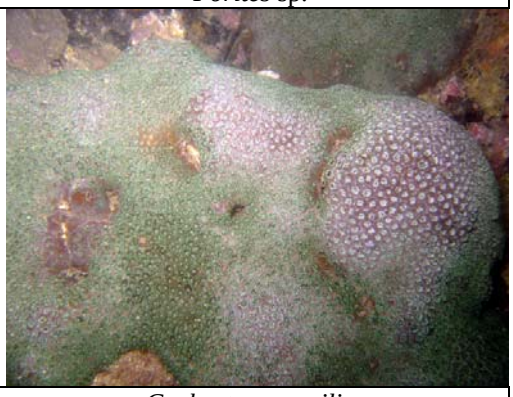
Appendix Ic Tagged Coral Colonies at Site 3.

C01 *Platygyra acuta*

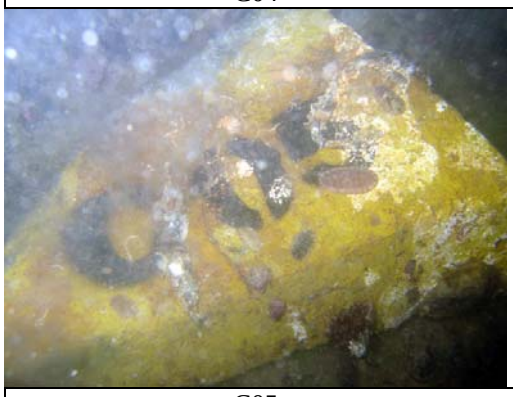
C02 *Platygyra carnosus*



C03 *Porites* sp.

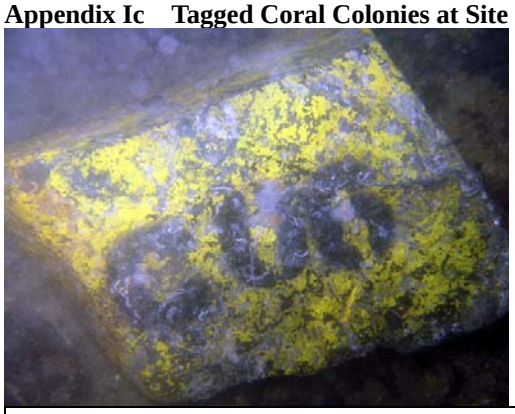
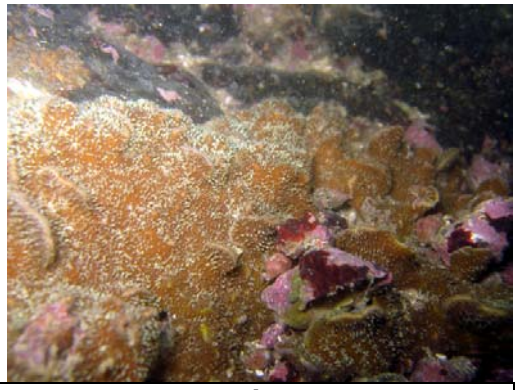


C04 *Cyphastrea serailia*

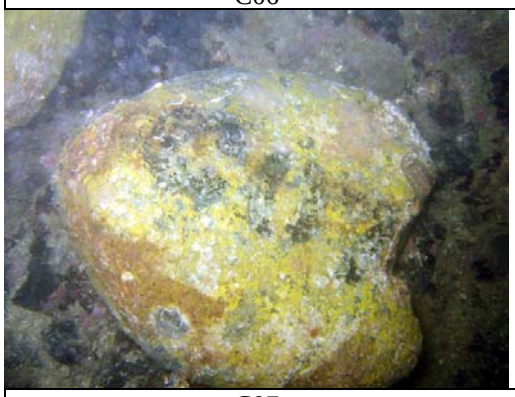


C05 *Pavona decussata*

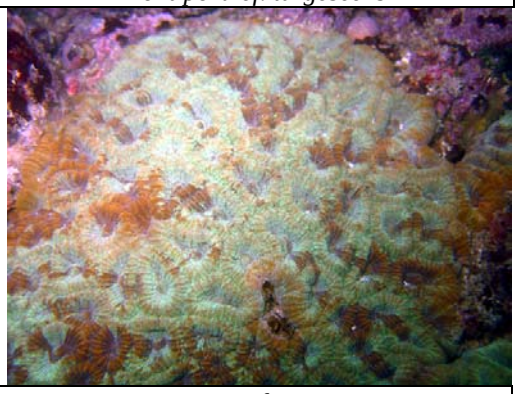
Appendix Ic Tagged Coral Colonies at Site 3…continued.

C06	*Pavona decussata*



C07	*Montipora cf. turgescens*

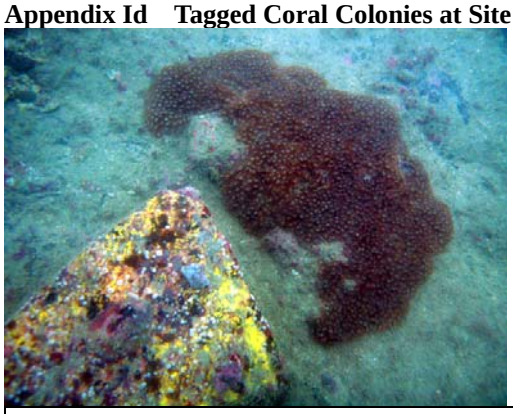
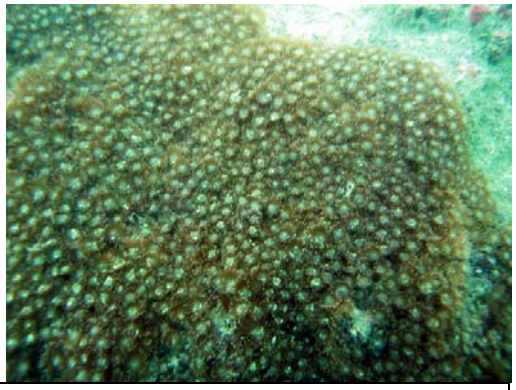


C08	*Favia favus*

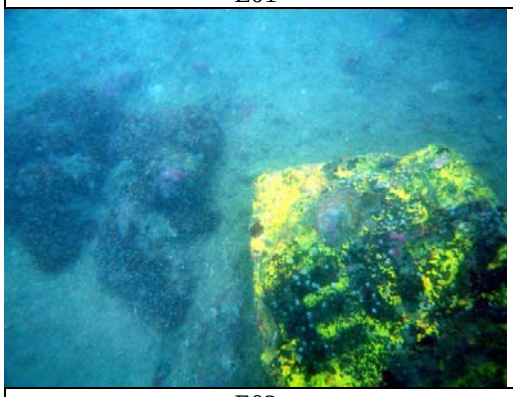
C09	*Favites pentagona*

C10	*Montipora peltiformis*

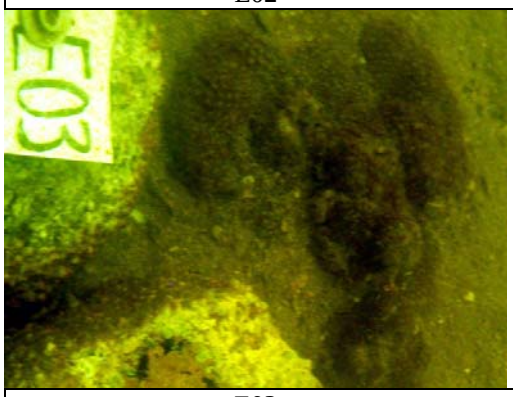
Appendix Id Tagged Coral Colonies at Site 4.

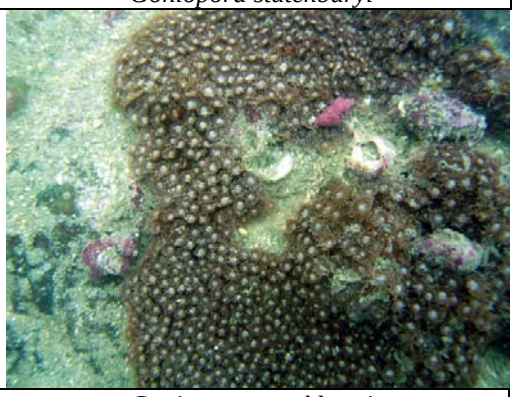



E01	*Goniopora stutchburyi*

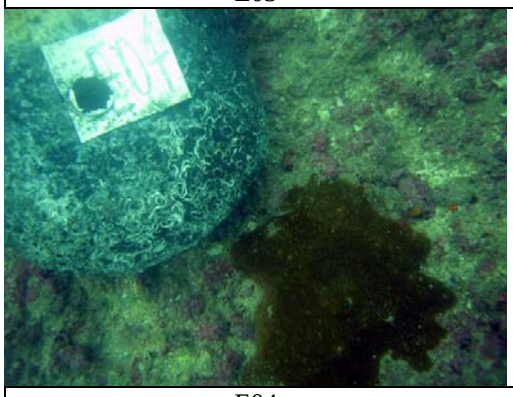


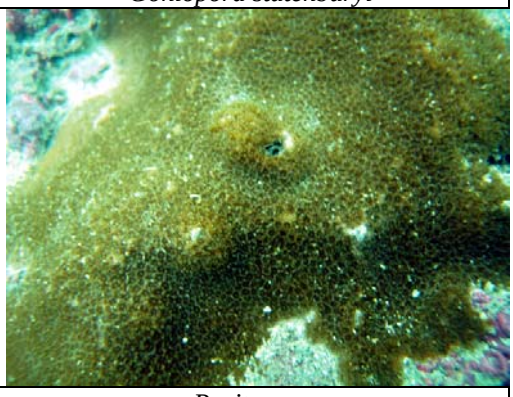
E02	*Goniopora stutchburyi*





E03	*Goniopora stutchburyi*

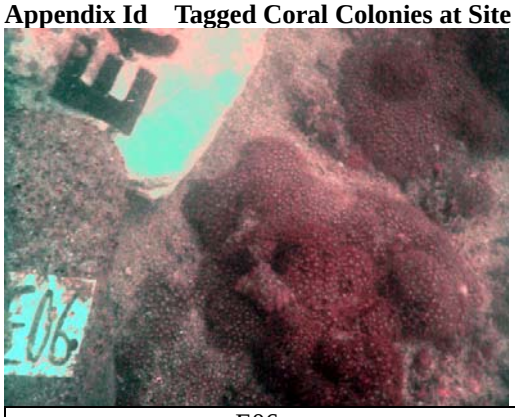




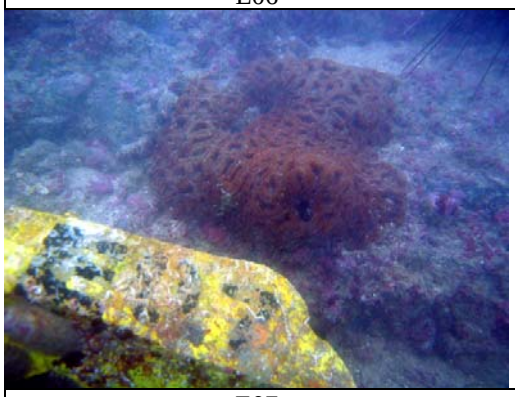
E04	*Porites* sp.

E05	*Goniopora stutchburyi*

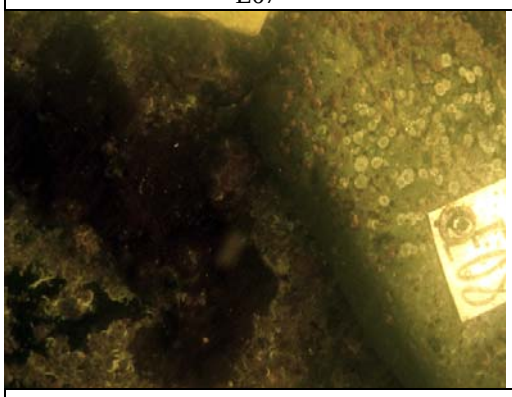
Appendix Id Tagged Coral Colonies at Site 4…continued.



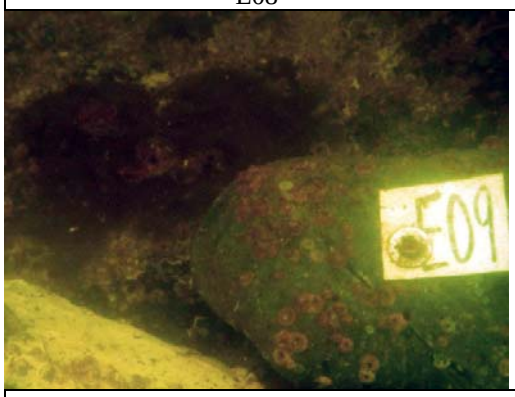
E06 *Goniopora stutchburyi*



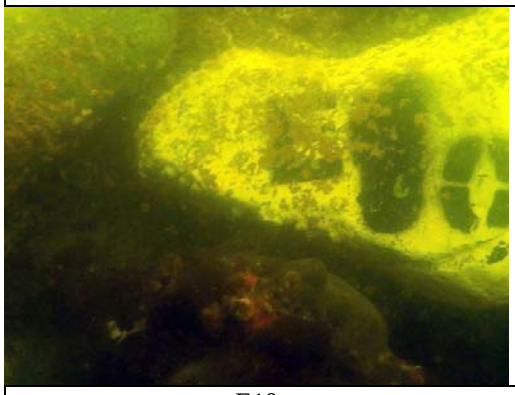
E07 *Favia speciosa*



E08 *Porites* sp.



E09 *Porites* sp.



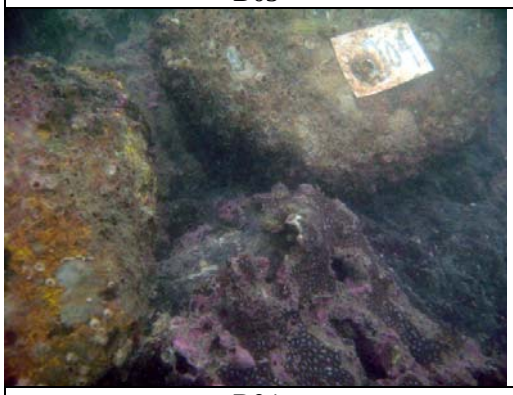
E10 *Porites* sp.

Appendix Ie Tagged Coral Colonies at Site 5.

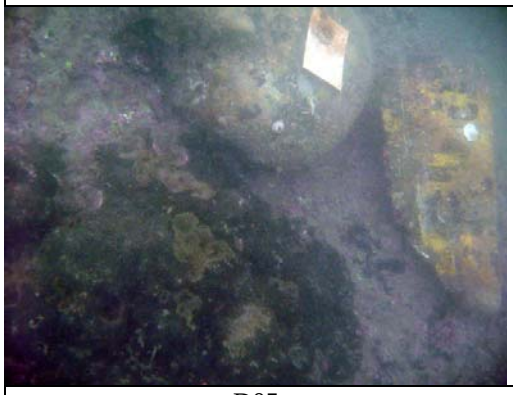
D01 *Psammocora* sp.

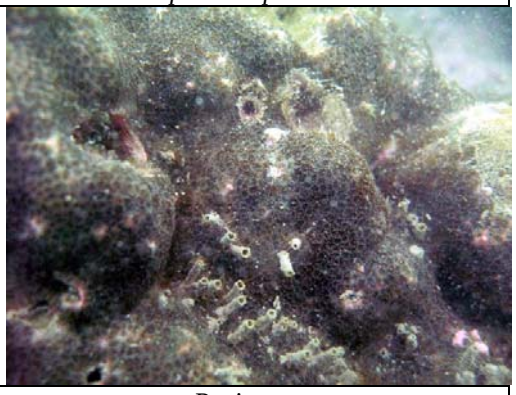
D02 *Montipora cf. turgescens*

D03 *Goniopora stutchburyi*



D04 *Leptastrea pruinosa*

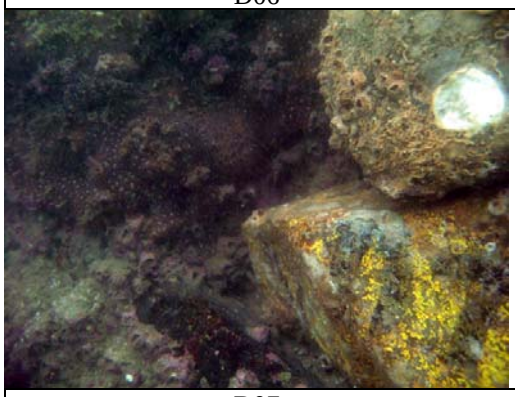
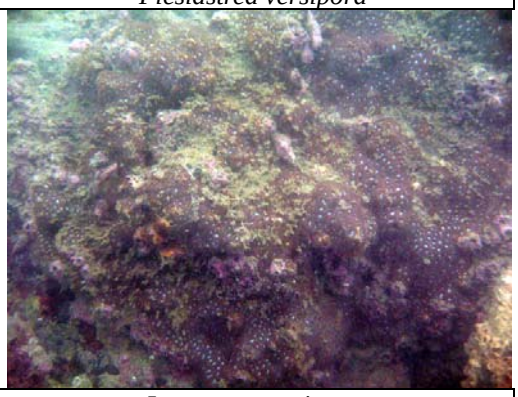




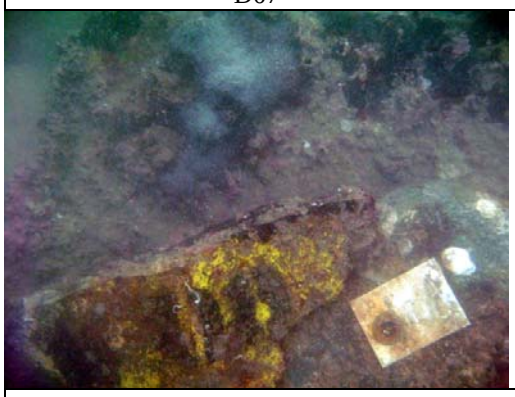
D05 *Porites* sp.

Appendix Ie Tagged Coral Colonies at Site 5…continued.

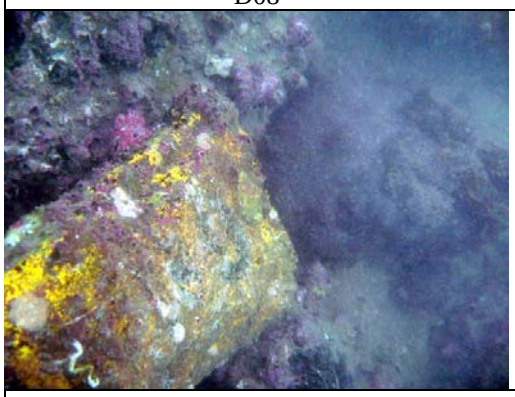
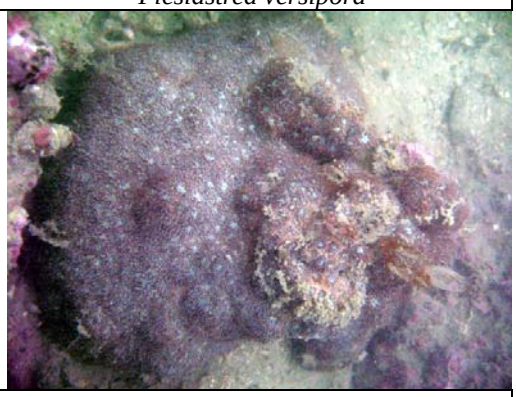
D06 *Plesiastrea versipora*

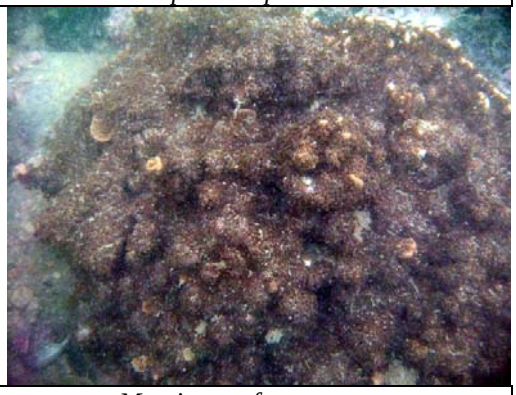
D07 *Leptastrea pruinosa*



D08 *Plesiastrea versipora*

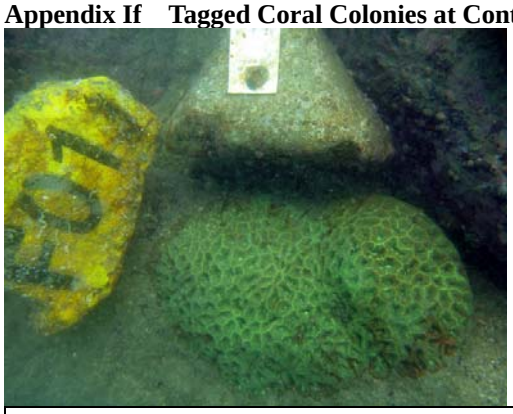
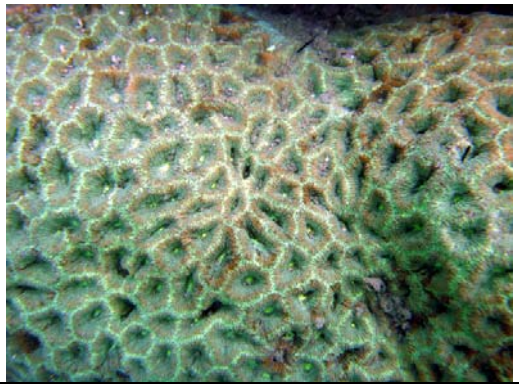



D09 *Leptastrea pruinosa*



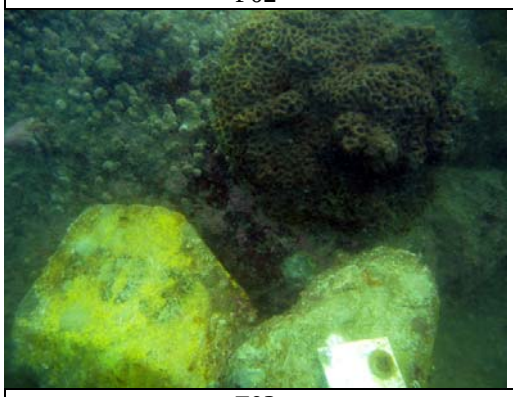
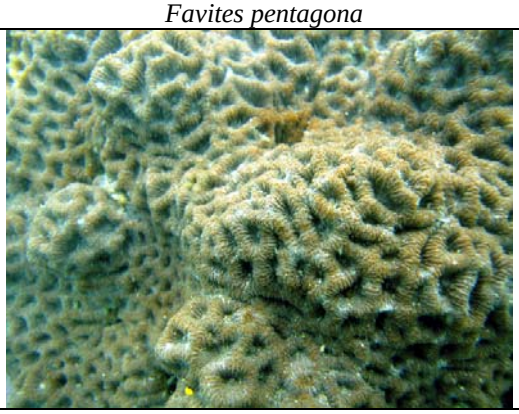
D10 *Montipora cf. turgescens*

Appendix If Tagged Coral Colonies at Control Site C.

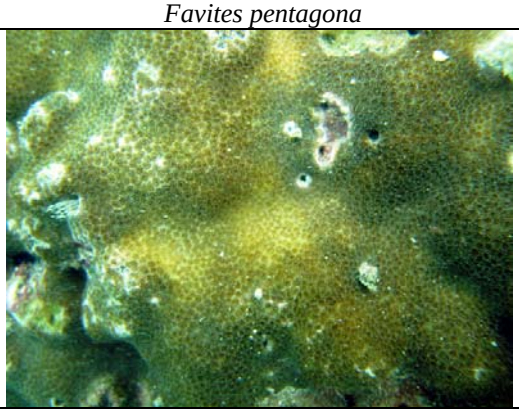



F01 *Favites speciosa*

F02 *Favites pentagona*

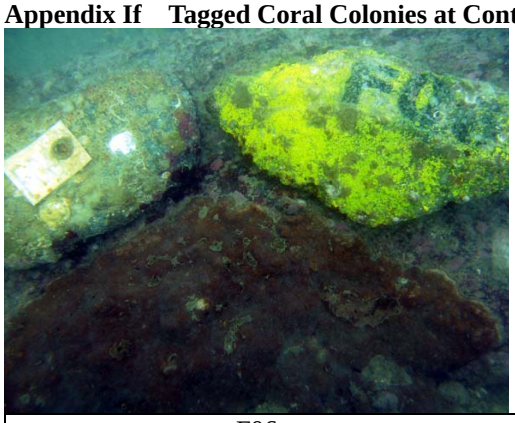
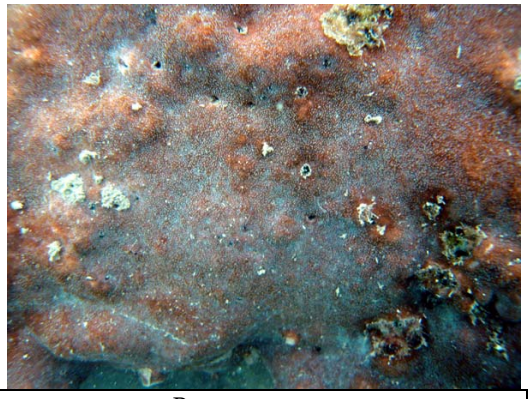
F03 *Favites pentagona*



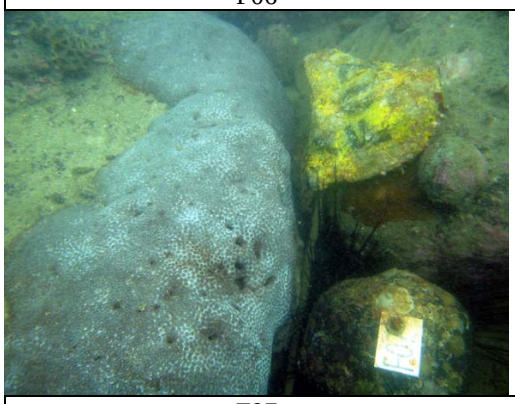
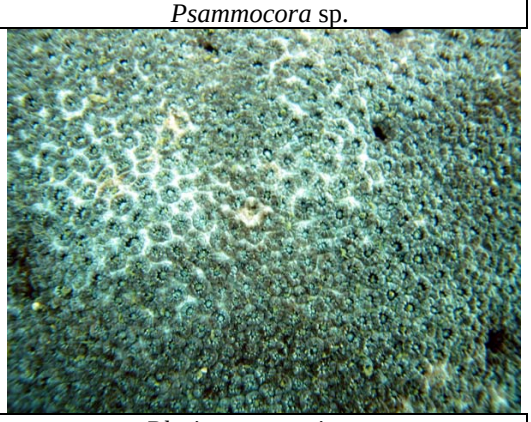
F04 *Porites* sp.

F05 *Cyphastrea serailia*

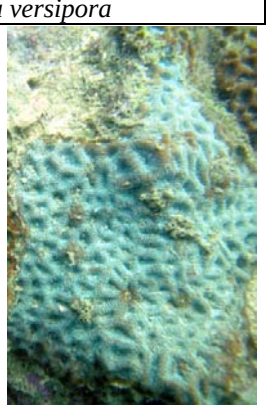
Appendix If Tagged Coral Colonies at Control Site C…continued.

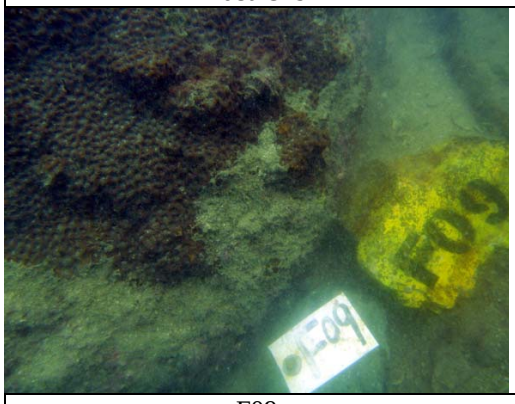
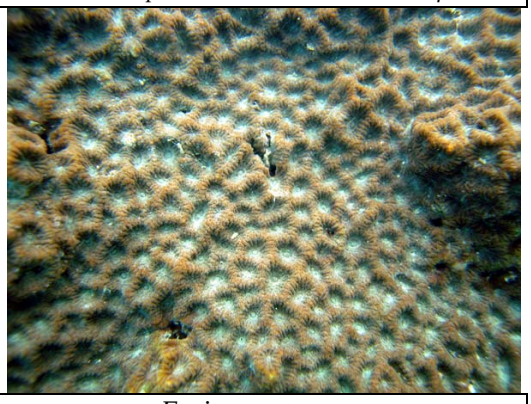
F06 *Psammocora* sp.

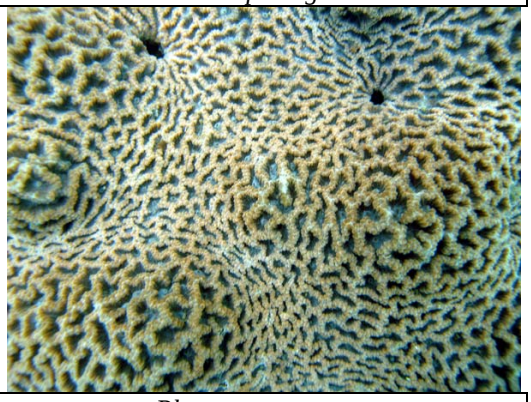
F07 *Plesiastrea versipora*



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	05 May 2008	05 May 2008	05 May 2008
Calibration Due Date	04 July 2008	04 July 2008	04 July 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.	00773032
Date of Calibration	26 November 2007
Calibration Due Date	25 November 2009
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 : 05 May 2008

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

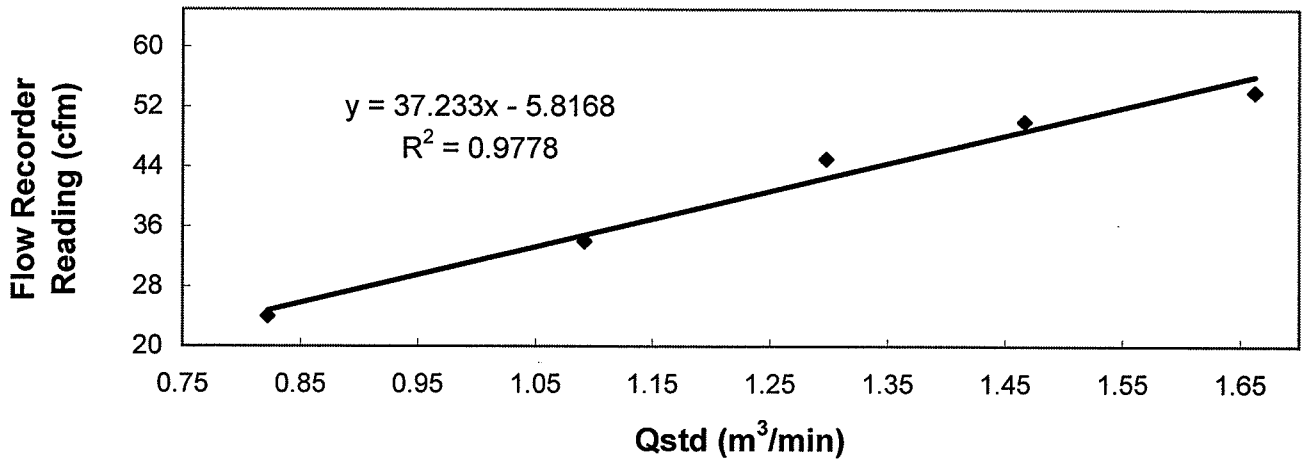
Calibration Due Date : 04 July 2008

Method : Based on Operations Manual for in series calibration method by TISCH ENVIROMENTAL Model Te-5025A calibration kit

Results :

Flow recorder reading (cfm)	54	50	45	34	24
Qstd (Actual flow rate, m^3/min)	1.66	1.47	1.30	1.09	0.82
Pressure : 759.06 mm Hg		Temp. : 303 K			

Sampler 1174 Calibration Curve
Site: Ocean Park (AM-1)
Date of Calibration: 05 May 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 : _____
LI, Wan Lung
(Technician)

Approved by : _____
CHOW, Hoi Tat
(Asst. Environmental Officer)

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Fax : 2695 3944 Web site : www.ets-testconsult.com

TEST REPORT

Calibration Report of High Volume Air Sampler

Manufacturer : Graseby GMW

Date of Calibration : 05 May 2008

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

Calibration Due Date : 04 July 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)	50	43	38	29	21
Qstd (Actual flow rate, m^3/min)	1.62	1.46	1.28	1.02	0.81

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)								
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.	✓		✓	✓	
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.	✓	✓	✓	✓	

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								
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.	✓		✓	✓	
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.	✓	✓	✓	✓	

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	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;	✓		✓	✓	
			• 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.	✓	✓	✓	✓	

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		
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.	✓			✓	
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	Action			
Limit Level	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

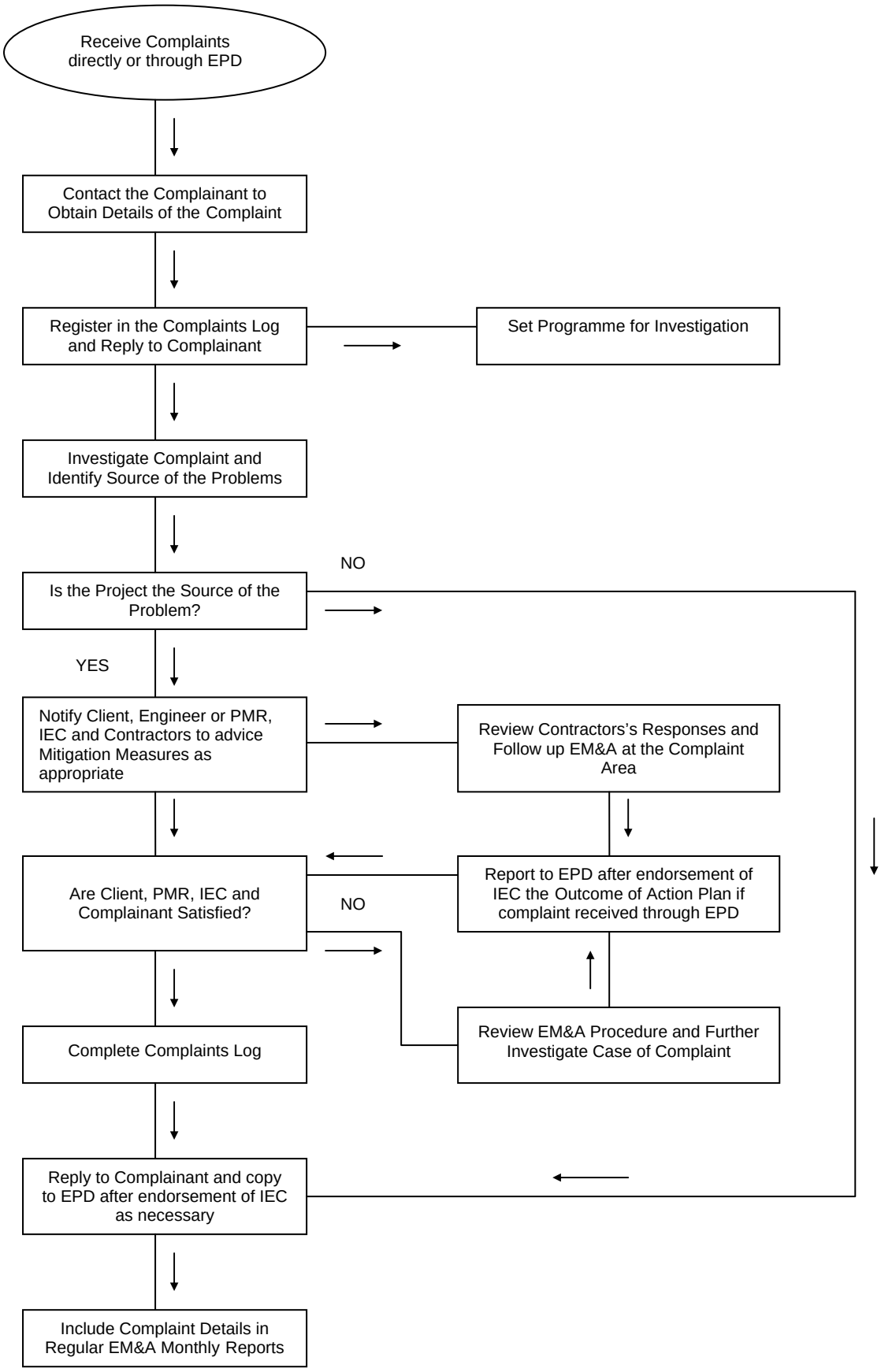
Event	Action			
	CET	Contractor	PMR	IEC
Action Level Exceedance	1. Identify source. 2. Notify IEC, PMR and Contractor. 3. Conduct additional noise monitoring to investigate the causes. 4. Report the investigation results to the IEC, PMR and Contractor. 5. Discuss with Contractor for their formulation 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. 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.
OPE/DBJV/PROJ/QSE/ECR/003						
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.
OPE/DBJV/PROJ/QSE/ECR/005	12-Mar-08	Public thro' EPD	The resident from Broadview Court claimed that noise nuisance from the night works at Nam Long Shan Road	CI05	Justified	With regards to the complaint, investigation has conducted and the findings and action to be taken were summarized as follows: • Movable noise panels and the noise shield have been used during the breaking works. The potential cause of the noise nuisance might be the panels were not placed properly and the noise emitted from the gap. The in-charge foreman has been reminded to place the panels properly in order to minimize the noise nuisance to the vicinity.
OPE/DBJV/PROJ/QSE/ECR/006	13-Mar-08	Public thro' EPD	The complainant claimed that noise nuisance from the night works at Nam Long Shan Road	CI05	Justified	Please refer to the findings of Record ID No. OPE/DBJV/PROJ/QSE/ECR/005.
OPE/DBJV/PROJ/QSE/ECR/007	20-Mar-08	Public thro' EPD	The complainant claimed that noise nuisance from the night works at Nam Long Shan Road	CI05	Justified	With regards to the complaint, investigation has conducted and the findings could not made any conclusions. In this context, the in-charge engineer/foreman of each CNP has notified and reminded that all requirements under the CNP should be complied with all the times.
OPE/DBJV/PROJ/QSE/ECR/008	15-Mar-08	Public thro' EPD	The complainant claimed that dust nuisance from the crusher, Nam Long Shan Road	CI05	Justified	With regards to the complaint, action was taken as follows: • Enhance the water spraying, especially the frequency, in order to minimize the dust nuisance to the vicinity. Besides, the length of dust screen was extended to increase the coverage area of stockpile to minimize the dust nuisance due to strong wind.
OPE/DBJV/PROJ/QSE/ECR/009	19-Mar-08	Public thro' EPD	The complainant claimed that noise from the temporary steel plates over trenches at Nam Long Shan Road	CI05	Justified	With regards to the complaint, immediate action was taken and summarized as follows: • Inform the in-charge foreman to provide sufficient sandbags or rubber pad before placing the temporary steel plates back to cover the trench.
OPE/DBJV/PROJ/QSE/ECR/010	25-Mar-08	Public thro' EPD	Police Training School claimed that dust nuisance from CI12C to the school	CI05	Justified	With regards to the complaint, immediate action was taken and summarized as follows: • Inform the in-charge foreman to increase the frequency of water spraying of the exposed areas.

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/011	23-May-08	Public thro' EPD	The complainant claimed that noise from the temporary steel plates over trenches at Nam Long Shan Road	CI05	Justified	With regards to the complaint, immediate action was taken and summarized as follows: • Inform the in-charge foreman to ensure that the temporary steel plates should be placed tight without loose and gap before leaving. • Inform the heavy vehicle drivers try to not step on the metal plate when driving thro' the metal plates and reduce the speed.

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		
	18/FEB/08A	Access Road Remaining Works
Cost Centre C-Misc. Site Formation at Summit		
Construction		
C1/C2/C6 - Preparation Works - Summit Excav		
	13/MAY/08	Drainage Works at Tai Shue Wan
C1 / C2 / C5 - Summit Excavation		
	21/JUN/07A	Soft Excavation (50,000cu.m.)
	07/MAR/08A	Ph. 2 -Bench Formation at +168mPD
	31/MAR/08A	Ph. 1 Excavate from +158mPD to +148mPD
	05/MAY/08A	Ph. 1 Excavate from +148mPD to +138mPD
	25/JUN/08	Ph. 1 Excavate from +138mPD to +131mPD(Fin Lvl)
	02/AUG/08	Ph. 2 Excavate from +176mPD to +168mPD
Cost Centre D - Funicular Tunnel and Adit Tunnel		
Construction		
D3 - Adit (Ch.935)		
	08/AUG/08	Tunnel Lining Construction
	15/AUG/08	Waterproofing
	22/AUG/08	Invert Construction
D1 - Tunnel Ch.940 - Ch.1240		
	17/APR/08A	Builder's Works - 84 lin.m./wk
	22/MAY/08	Trackbed - 200 li.m./wk
D2 - Tunnel Ch. 0 - Ch.940		
	13/MAY/08A	Tunnel Waterproofing CH21 - 580: 84 li.m./wk
	13/MAY/08	Tunnel Invert CH940-400: 200 li.m./wk
	13/MAY/08	Tunnel Invert CH21 - CH400: 200 lin.m./wk
	03/JUN/08	Tunnel Waterproofing CH940 - 705: 84 li.m/wk
	03/JUN/08	Tunnel Waterproofing CH695 - 580: 50 li.m./wk
	06/JUN/08	Tunnel Lining CH21 - 580: 84 li.m/wk
	10/JUN/08	Tunnel Builder's Works CH21 - CH580:84 lin.m./wk
	13/JUN/08	Tunnel Lining CH695 - 580: 50 li.m./wk
	08/JUL/08	Tunnel Lining CH940-695: 84 li.m/wk
	17/JUL/08	Tunnel Trackbed CH21 - CH380: 200 lin.m./wk
	28/JUL/08	Tunnel Builder's Works CH940-580: 84 li.m/wk
	29/AUG/08	Tunnel Trackbed CH940-580: 200 li.m./wk
Cost Centr E-Funicular Termini-Summit&Waterfront		
Construction		
E2 - Summit Terminus Construction		
	31/MAR/08A	+112mPD Slab, Column&Wall upto +115mPD (BOH)
	28/MAY/08	+116mPD Slab, Column&Wall upto +119mPD
	07/JUL/08	+120mPD Slab, Column&Wall upto +123mPD
	15/AUG/08	Transformer Installation
	15/AUG/08	+124mPD Slab, Column&Wall upto +130mPD
	15/AUG/08	Finishing & E&M Works with T&C ready for OP
	15/AUG/08	External Works with Utilities
E1 - South Part of Waterfront Terminus		
		Finishing Date of the Tunnelling Works Ch21 -580
	01/AUG/08	2nd Stage-Waling&Strut with Soil Nail&Excavation
E1 - North Part of Waterfront Terminus		
	11/APR/08A	Pilecap, Pad Footing w U/G Drainage & Utilities
	04/JUL/08	Construct Base Slab @ +8mPD: G.L.B-C & D-J
	28/JUL/08	Base Slab@+13.85mPD:G.L.B-C&D-J & Retaining Wall
	21/AUG/08	Column,Retaining Wall& Suspended Slab @ +18.3mPD
Cost Centre F- Reservoir at Summit with Pipework		
Construction		
F2 / F3 / F5 - Pumping Station - Mid-Level		
	30/MAY/08*	Pumping Station Structures & Foundation
	27/JUN/08*	Foundation & Baseslab Construction
	31/JUL/08	Roof Construction
Cost Centre H-Option Government Entrust Works		
Construction		
H3 - Wong Chuk Hang Road		
	24/DEC/07A	F2.06 to F2.04 (Q3)- Excavation
	20/MAR/08A	F2.02 to 60m (Q5)- Excavation
	03/APR/08A	13m to F2.00 (Q9)- Excavation
	21/APR/08A	F2.02 to 60m (Q5)- Pipe Laying
	10/MAY/08A	F2.07 to F2.06 (Q2)- Backfill & Reinstatement
	20/MAY/08	13m to F2.00 (Q9)- Pipe Laying
	26/MAY/08	14m from F2.01+15m (Q8)- Excavation
	02/JUN/08	13m to F2.00 (Q9)- Backfill & Reinstatement
	03/JUN/08	F2.02 to 60m (Q5)- Backfill & Reinstatement
	26/JUN/08	14m from F2.01+15m (Q8)- Pipe Laying
	02/JUL/08	F2.06 to F2.04 (Q3)- Pipe Laying
	10/JUL/08	14m from F2.01+15m (Q8- Backfill & Reinstatement
	17/JUL/08	F2.06 to F2.04 (Q3)- Backfill & Reinstatement
	23/JUL/08	15m from F2.01 (Q7)- Excavation
	01/AUG/08	8m to F2.01 (Q6)- Excavation
	28/AUG/08	15m from F2.01 (Q7)- Pipe Laying
H2 - Nam Long Shan Road		
	01/NOV/07A	F1.35 to F1.34 (P40) - Steel Deck & Pipe Install
	05/MAR/08A	F1.50 to F1.49 (P27)- Excavation
	11/MAR/08A	10m to F1.69 (P6)- Excavation
	14/MAR/08A	F1.59 to F1.58 (P20)- Excavation
	01/APR/08A	F1.28 to F1.27 (P45)- Excavation
	07/APR/08A	F1.50 to F1.49 (P27)- Pipe Laying+Watermain Work
	14/APR/08A	F1.56 to F1.54 (P23)- Excavation
	14/APR/08A	F1.41 to F1.40 (P35)- Excavation
	14/APR/08A	20m to F1.42 (P34)- Excavation

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Early Start	Activity Description
21/APR/08A	F1.49 to F1.46 (P28)- Excavation
05/MAY/08A	20m to F1.42 (P34)- Pipe Laying
08/MAY/08A	F1.59 to F1.58 (P20)- Pipe Laying+Watermain Work
13/MAY/08	F1.68 to F1.67 (P8)- Excavation
13/MAY/08*	F1.37 to F1.35 (P39)- Excavation
13/MAY/08	12m to F1.63 (P14)- Excavation
13/MAY/08	8m to F1.64 (P12) - Backfill & Reinstatement
21/MAY/08	F1.37 to F1.35 (P39)- Pipe Laying
24/MAY/08	F1.37 to F1.35 (P39)- Backfill & Reinstatement
27/MAY/08	F1.41 to F1.40 (P35)- Pipe Laying
28/MAY/08	F1.59 to F1.58 (P20)- Backfill & Reinstatement
28/MAY/08	F1.34 to F1.33 (P41)- Excavation
30/MAY/08	10m to F1.69 (P6)- Pipe Laying
03/JUN/08	20m to F1.42 (P34)- Backfill & Reinstatement
04/JUN/08	F1.56 to F1.54 (P23)- Pipe Laying+Watermain Work
05/JUN/08	F1.34 to F1.33 (P41)- Pipe Laying
05/JUN/08	F1.50 to F1.49 (P27)- Backfill & Reinstatement
10/JUN/08	F1.34 to F1.33 (P41)- Backfill & Reinstatement
12/JUN/08	F1.41 to F1.40 (P35)- Backfill & Reinstatement
13/JUN/08	F1.33 to F1.31 (P42)-Excavation
13/JUN/08	12m to F1.63 (P14)- Pipe Laying+Watermain Works
17/JUN/08	10m to F1.69 (P6)- Backfill & Reinstatement
20/JUN/08	F1.56 to F1.54 (P23)- Backfill & Reinstatement
21/JUN/08	F1.33 to F1.31 (P42)- Pipe Laying
23/JUN/08	F1.68 to F1.67 (P8)- Pipe Laying
25/JUN/08	F1.33 to F1.31 (P42)- Backfill & Reinstatement
26/JUN/08	12m to F1.63 (P14)- Backfill & Reinstatement
28/JUN/08	F1.57 to F1.56 (P22)- Excavation
28/JUN/08	F1.31 to F1.30 (P43)- Excavation
04/JUL/08	F1.71 to F1.70 (P4)- Excavation
08/JUL/08	F1.31 to F1.30 (P43)- Pipe Laying
10/JUL/08	F1.68 to F1.67 (P8)- Backfill & Reinstatement
10/JUL/08	F1.49 to F1.46 (P28)- Pipe Laying+Watermain Work
11/JUL/08	F1.31 to F1.30 (P43)- Backfill & Reinstatement
15/JUL/08	F1.30 to F1.28 (P44)- Excavation
23/JUL/08	F1.30 to F1.28 (P44)- Pipe Laying
25/JUL/08	F1.49 to F1.46 (P28)- Backfill & Reinstatement
26/JUL/08	F1.69 to F1.68 (P7)- Excavation
26/JUL/08	F1.30 to F1.28 (P44)- Backfill & Reinstatement
05/AUG/08	F1.57 to F1.56 (P22)- Pipe Laying+Watermain Work
07/AUG/08	F1.71 to F1.70 (P4)- Pipe Laying
07/AUG/08	F1.28 to F1.27 (P45)- Pipe Laying
11/AUG/08	F1.28 to F1.27 (P45)- Backfill & Reinstatement
20/AUG/08	F1.57 to F1.56 (P22)- Backfill & Reinstatement
21/AUG/08	F1.71 to F1.70 (P4)- Backfill & Reinstatement
Ocean Park Private Road	
22/SEP/07A	20m to 1.14 to 12a(P51)- 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
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/08A	F1.07 to F1.05 (P54)- Pipe Laying
07/JUL/08	F1.07 to F1.05 (P54)- Backfill & Reinstatement
Cost Centre J - Entry Plaza Advance Works	
Construction	
Bus Depot (Portion 1)	
05/MAY/07A	TTA for temp Ocean Park Road
31/MAR/08A	Drainage works for bus terminus
15/MAY/08	Irrigation water main
22/MAY/08	Street Lighting
29/MAY/08	Road works at Bus terminus
25/JUN/08	Road furntiure+footpath+buse shelter+planter
26/JUL/08	Landscaping
Existing Bus Terminus (Portion 2)	
21/JAN/08A	Drainage works for the 1800 dia. pipe
07/MAY/08A	Drainage works for the bus terminus
08/MAY/08A	11kV cable diversion
20/MAY/08	Diversion of Gas main & PCCW cables
28/MAY/08	Irrigation water main
03/JUN/08	Landscaping
04/JUN/08	Street light
11/JUN/08	Road Funiture + footpath + bus shelter + planter
12/JUN/08	Road works at the bus terminus
HK School of Motoring (Portion 3)	
15/MAR/08A	Additional 1650 dm manhole
13/MAY/08*	Additional Island
21/MAY/08	DN450, 300, 200, 1650 & 11kv pipe laying
30/MAY/08	Drainage for permanent road
11/JUN/08	Permanent Road and Curing
03/JUL/08	Excavation for Telephone Cable
03/JUL/08	Construct Road crossing
03/JUL/08*	Crawler crane & hammer mobilization
07/JUL/08	Driving sheet pile 45m, 225nos. 14nos/day ~ 15
12/JUL/08	1650 pipe laying
14/JUL/08	Extract sheet piling
15/JUL/08	Lay PCCW Cables
15/JUL/08	Reinstall Pavement
16/JUL/08	Waling & Strutting, 4m spacing, 13nos.
16/JUL/08	Manhole for 1650 drainage, 2 nos. (1 no add'l)

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Early Start	Activity Description
17/JUL/08	Excavation 500mm below waling
18/JUL/08	Road Reinstatement and Curing
18/JUL/08	Excavation, app 220m3
30/JUL/08	Excavation for Telephone Cable
08/AUG/08	Lay PCCW Cables
09/AUG/08	Road Reinstatement and Curing
23/AUG/08	Excavation for Telephone Cable
23/AUG/08	Construct Road crossing

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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	2910 3151
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

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

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EXECUTIVE SUMMARY

This is the 14th 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:

- Truss installation: material delivery, installation of purline, cladding and glasses.
- E&M & LSS installation: plumber, electric installation, A/C system, etc.
- Lift installation: installation of electric devices, relevant accessories and testing, etc.
- Internal finishing: plasterer works, installation of wooden doors, waterproof in building and roof.
- Cable laying: excavation, installation of cable and backfill, etc.
- Sand Blasting.
- Testing & Correction, Construction of EVA.

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

- Debris and gravels were observed stacking at part of u-channel in front of Plant block. The Contractor was reminded to maintain no blockage at the u-channel.
- The sedimentation tank was accumulated with mud. The Contractor was reminded to maintain the tank more frequently.

Air Quality Mitigation Measures

- Haul road was observed dusty. The Contractor was reminded to provide water spraying more frequently.
- No water spraying was provided during concrete breaking. The Contractor was reminded to provide water spraying during such works.
- The Contractor was reminded to cover the stockpile and cement bags in the site when they were not in use.

Noise

- Air compressor was observed without noise label. The Contractor was reminded to display the noise label on the air compressor.

Ecology

- No violation was observed nor recorded.

Waste / Chemical Management

- Rubbish was observed stacking at slope. The Contractor was reminded to clean up the area.

Others

- No 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.
- To maintain the temporary drainage system in good condition of flow.
- To prevent stagnant water after rain to prevent mosquito breeding.
- To promote the awareness of protecting the slope. Workers should dispose rubbish to designated area or tubs. Regular remove construction waste that is stacked at designated construction waste area.

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 May 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:

- Truss installation: material delivery, installation of purline, cladding and glasses.
- E&M & LSS installation: plumber, electric installation, A/C system, etc.
- Lift installation: installation of electric devices, relevant accessories and testing, etc.
- Internal finishing: plasterer works, installation of wooden doors, waterproof in building and roof.
- Cable laying: excavation, installation of cable and backfill, etc.
- Sand Blasting.
- Testing & Correction, Construction of EVA.

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 May 2008

Waste Type	Examples	Actual quantity disposed (Tonnes)	Disposal Locations
C&D Waste	Construction waste(Plastic, wood and bamboo)	38.45	SENT Landfill
		3.21	NENT Landfill
	Mixed rock & soil	20.04	TKO Area 137
		274.68	Quarry Bay
Chemical waste	Used oil, spent solvent	--	Collected by licensed collector

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 08th, 15th, 23rd (IEC audit) and 29th May 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-RS0175-08	10/4/08	9/10/08	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

- Debris and gravels were observed stacking at part of u-channel in front of Plant block. The Contractor was reminded to maintain no blockage at the u-channel.
- The sedimentation tank was accumulated with mud. The Contractor was reminded to maintain the tank more frequently.

Air Quality Mitigation Measures

- Haul road was observed dusty. The Contractor was reminded to provide water spraying more frequently.
- No water spraying was provided during concrete breaking. The Contractor was reminded to provide water spraying during such works.
- The Contractor was reminded to cover the stockpile and cement bags in the site when they were not in use.

Noise

- Air compressor was observed without noise label. The Contractor was reminded to display the noise label on the air compressor.

Ecology

- No violation was observed nor recorded.

Waste / Chemical Management

- Rubbish was observed stacking at slope. The Contractor was reminded to clean up the area.

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.
- To maintain the temporary drainage system in good condition of flow.
- To prevent stagnant water after rain to prevent mosquito breeding.
- To promote the awareness of protecting the slope. Workers should dispose rubbish to designated area or tubs. Regular remove construction waste that is stacked at designated construction waste area.

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 23 May 2008. 3 observations and no non-compliances were raised.

4.3 4 nos. of site inspections were carried out. Parts of identified issues are rectified within the reporting month. Others are under on-going improvement.

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.

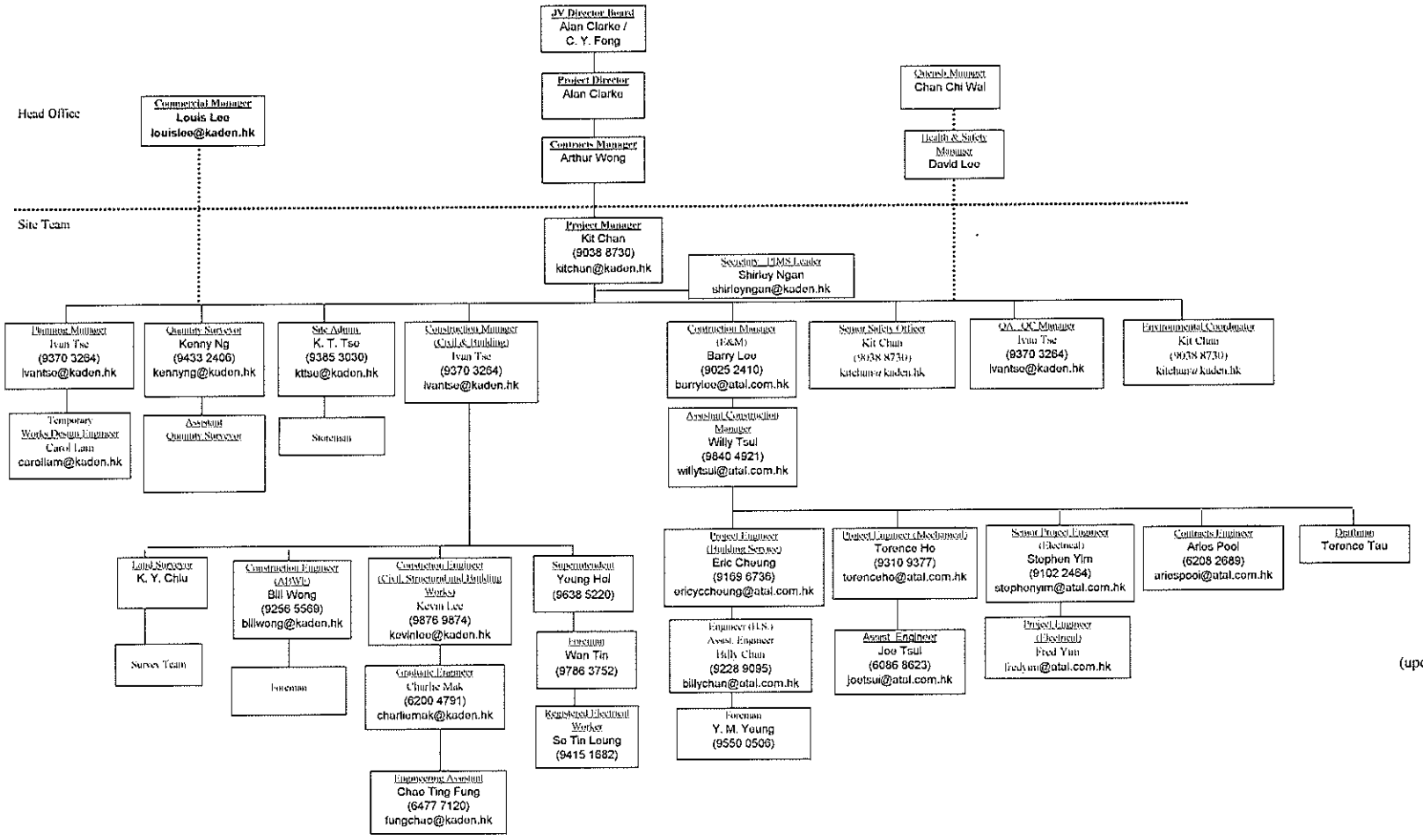
Waste/Chemical Management

- 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

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

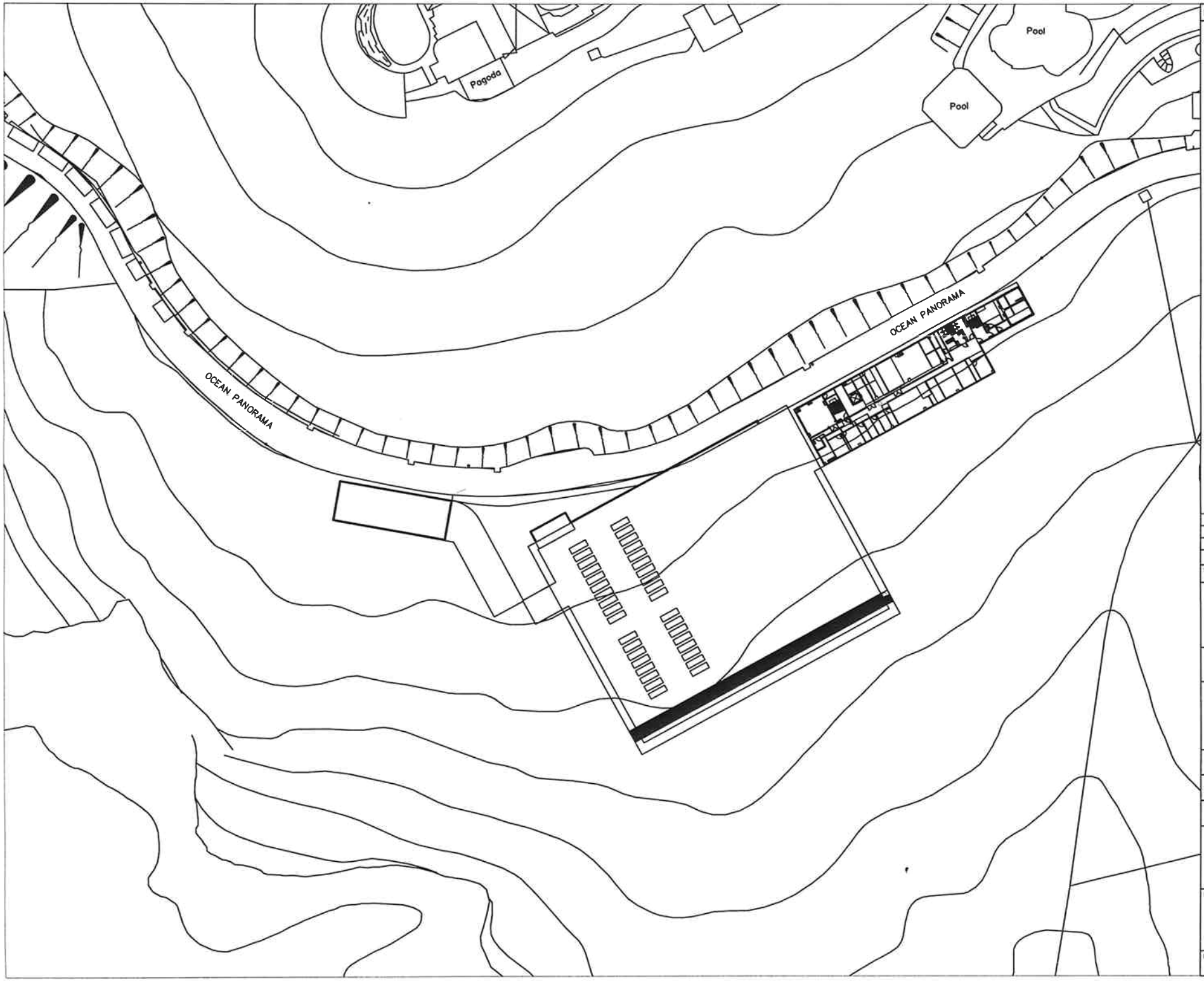
KADEN - ATAL JOINT VENTURE
PROJECT ORGANIZATION CHART



(updated on 1 March 2008)

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

Appendix B



B.O.O. REF.

REV.	DESCRIPTION	CHECKED	
A	FIRST ISSUE	ST	03/10

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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 ST	CHECKED BY DC

PREPARED BY
MAUNSELL CONSULTANTS ASIA LTD.

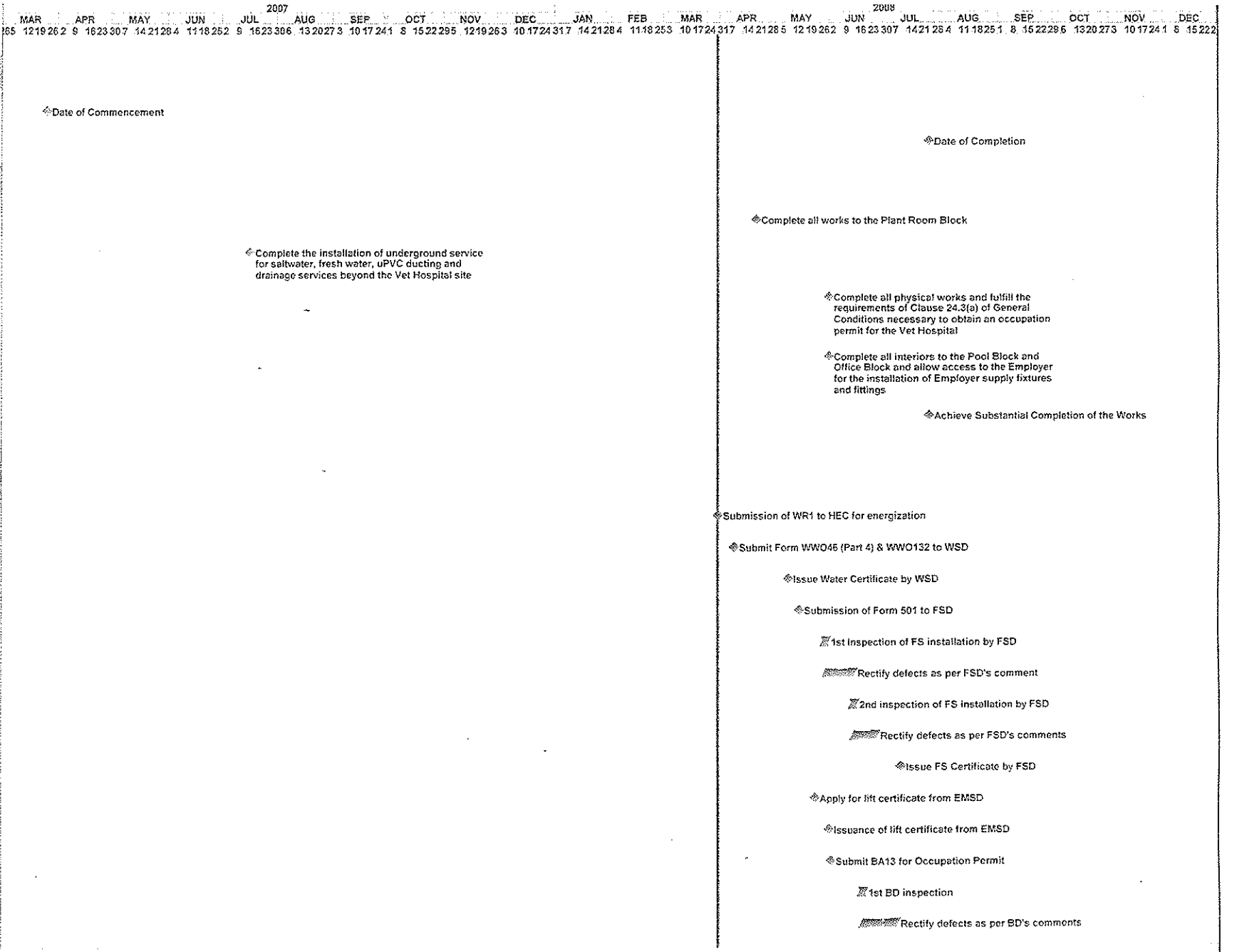
CONSULTANT
MAUNSELL | AECOM
Maunsell Consultants Asia Ltd.
茂盛(亞洲)工程顧問有限公司
In association with
ARDAS LIDAR LEVETT & BAILEY

MAIN CONTRACTOR
Kaden 康商 ATAL

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

Appendix C

Activity ID	Orig Dur	Early Start	Early Finish	Total Float	% Comp
General					
Critical Commencement & Completion Date					
VHJCD01	0	26-03-2007A			100
VHJCD99	0		25-07-2008*	0	0
Key Dates					
VHJKD01	0		20-04-2008*	0	0
VHJKD02	0		16-07-2007A		100
VHJKD03	0		31-05-2008*	0	0
VHJKD04	0		31-05-2008*	0	0
VHJKD05	0		25-07-2008*	0	0
Preliminaries					
Submit for Submission					
VHVPSS030	0	31-03-2008*		0	0
VHVPSS040	0	09-04-2008*		0	0
VHVPSS050	0	09-05-2008		0	0
VHVPSS070	0	15-05-2008*		0	0
VHVPSS071	1	29-05-2008	29-05-2008	0	0
VHVPSS072	15	30-05-2008	13-06-2008	0	0
VHVPSS073	1	14-06-2008	14-06-2008	0	0
VHVPSS074	12	15-06-2008	26-06-2008	0	0
VHVPSS075	0	11-07-2008		0	0
VHVPSS080	0	24-05-2008*		0	0
VHVPSS090	0		31-05-2008	0	0
VHVPSS100	0	02-06-2008*		0	0
VHVPSS110	1	19-06-2008	19-06-2008	0	0
VHVPSS120	14	20-06-2008	07-07-2008	0	0



Start Date	26-03-2007
Finish Date	22-10-2008
Data Date	31-03-2008
Run Date	02-04-2008 11:20

As-Built Bar
Progress Bar
Critical Activity

?Primavera Systems, Inc.

AS02

KADEN - ATAL JOINT VENTURE

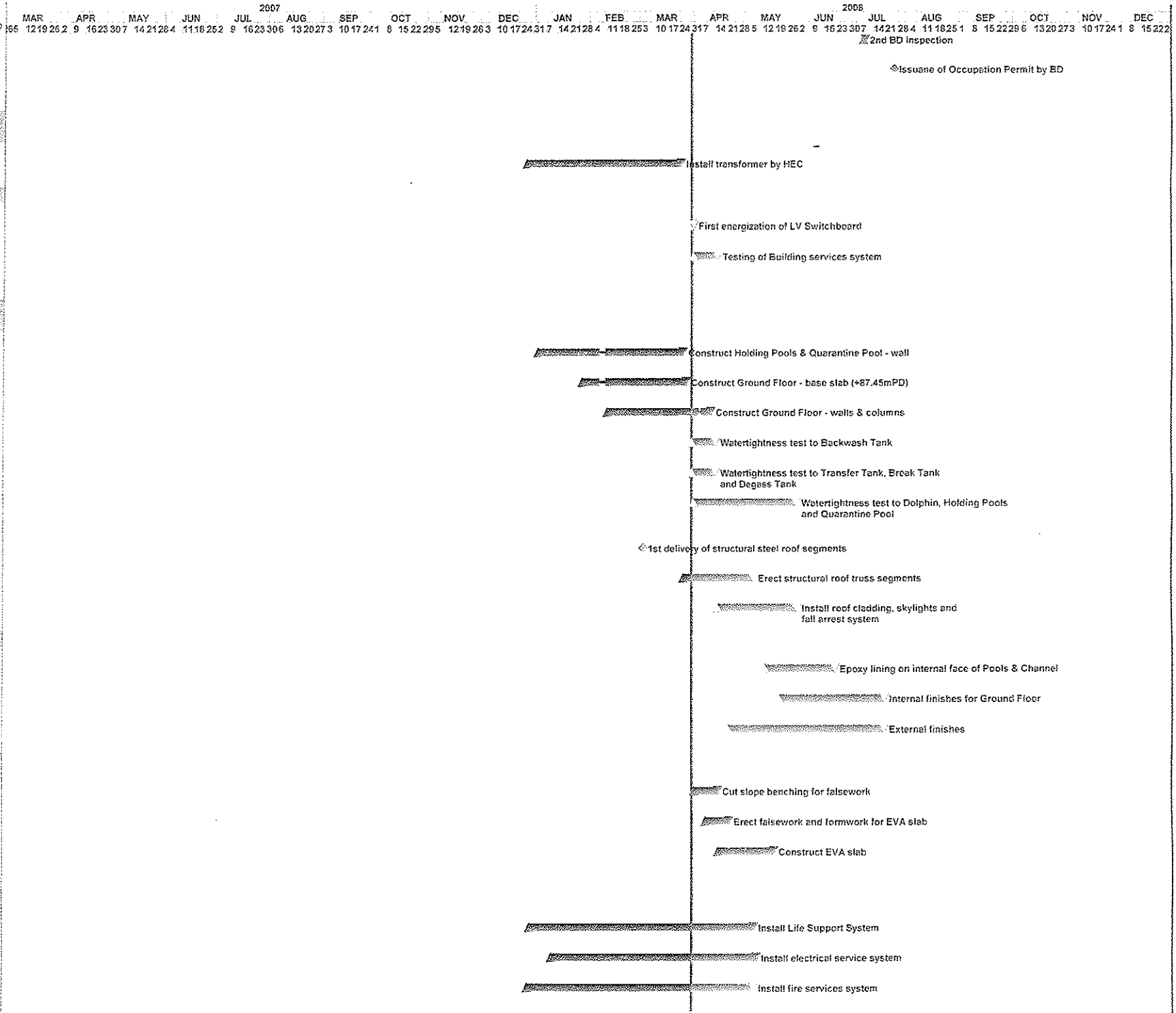
Ocean Park Master Redevelopment
Contract No. CS01 - Vet Hospital

Construction Program

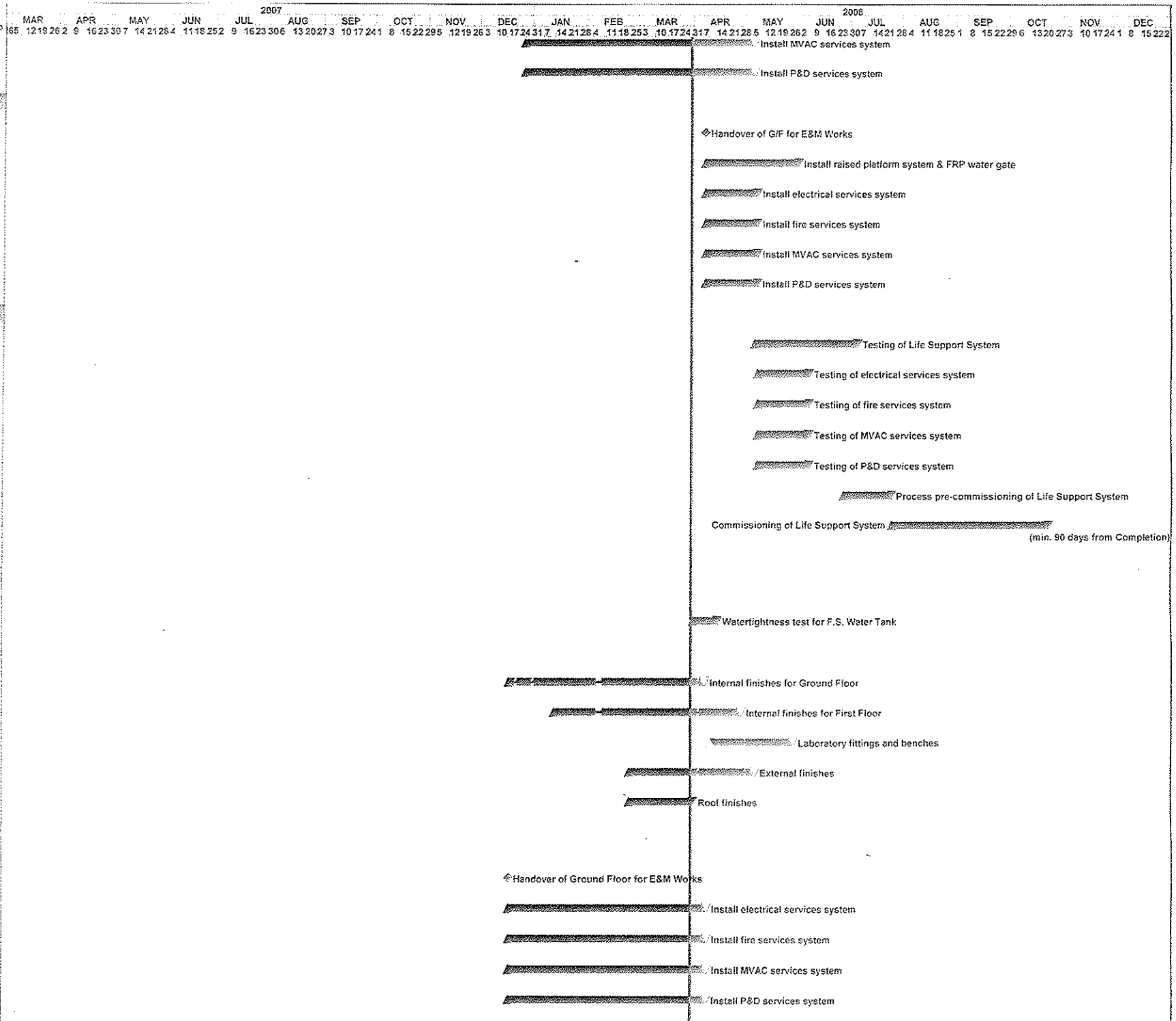
Sheet 1 of 4

Date	Revision	Checked	Approved
29-03-2006	Tender Programme	KC	AC
26-03-2007	Construction Programme	KC	AC
27-04-2007	Construction Programme (Rev. A)	KC	AC
10-20-2007	Construction Programme (Rev.B)	KC	AC

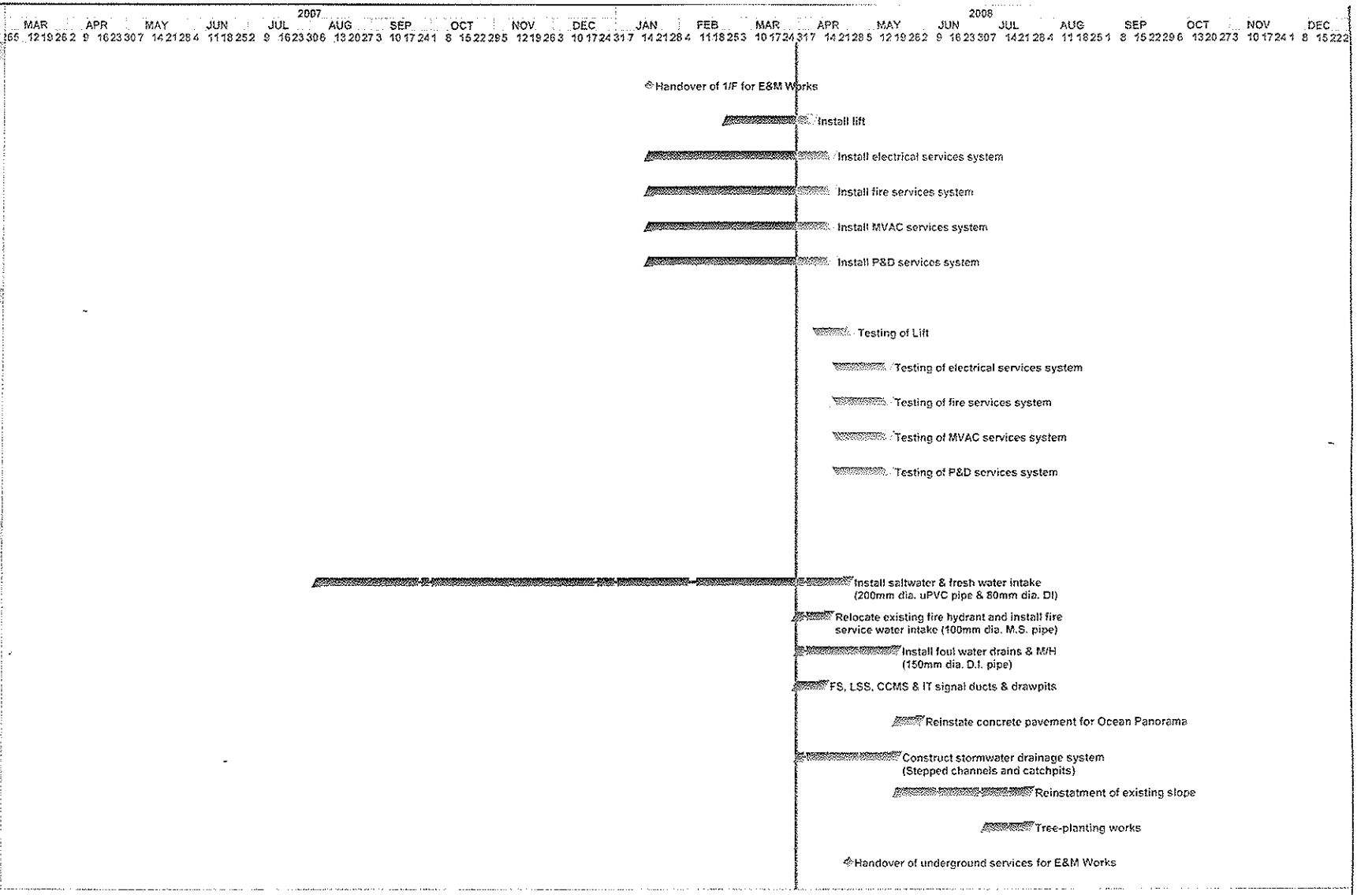
Activity ID	Orig Dur	Early Start	Early Finish	Total Float	% Comp
VHVPSS130	1	08-07-2008	08-07-2008	0	0
VHVPSS140	0		25-07-2008	0	0
Plant Room Block					
Exit Works					
Installation Works at Transformer Room					
VHUTBE095	45	27-12-2007A	24-03-2008A		100
Testing and Commissioning					
VHUTBE210	1	31-03-2008	31-03-2008	6	0
VHUTBE230	14	01-04-2008	14-04-2008	6	0
Pool Block					
Substructure/Superstructure					
Superstructure					
R.C. Works					
VHUPBS120	60	02-01-2008A	25-03-2008A		100
VHUPBS130	60	28-01-2008A	27-03-2008A		100
VHUPBS140	45	11-02-2008A	10-04-2008	0	80
VHUPBS141	14	31-03-2008*	13-04-2008	6	0
VHUPBS150	14	31-03-2008*	13-04-2008	6	0
VHUPBS160	60	01-04-2008*	30-05-2008	12	0
Structural Steel Roof					
VHUPBS310	0	03-03-2008A			100
VHUPBS330	45	26-03-2008A	05-05-2008	1	20
VHUPBS360	46	15-04-2008	30-05-2008	1	0
EVA					
VHUPBS513	40	13-05-2008	21-06-2008	6	0
VHUPBS520	60	21-05-2008	19-07-2008	6	0
VHUPBS550	90	21-04-2008	19-07-2008	6	0
Emergency Vehicular Access					
VHUEVA010	14	01-04-2008	14-04-2008	0	0
VHUEVA020	14	08-04-2008	21-04-2008	0	0
VHUEVA030	28	15-04-2008	17-05-2008	0	0
Exit Works					
Installation Works at Lower Ground Floor					
VHUPBE070	120	28-12-2007A	05-05-2008	0	70
VHUPBE079	120	10-01-2008A	07-05-2008	0	68
VHUPBE080	120	27-12-2007A	05-05-2008	2	70



Activity ID	Orig Dur	Early Start	Early Finish	Total Float	% Comp
VHUPBE082	120	27-12-2007A	05-05-2008	2	70
VHUPBE083	120	27-12-2007A	05-05-2008	2	70
Installation Works at Ground Floor					
VHUPBE090	0	08-04-2008		0	0
VHUPBE100	54	08-04-2008	31-05-2008	0	0
VHUPBE109	30	08-04-2008	07-05-2008	0	0
VHUPBE110	30	08-04-2008	07-05-2008	0	0
VHUPBE111	30	08-04-2008	07-05-2008	0	0
VHUPBE112	30	08-04-2008	07-05-2008	0	0
Testing and Commissioning					
VHUPBE200	60	06-05-2008	04-07-2008	0	0
VHUPBE209	30	06-05-2008	06-06-2008	0	0
VHUPBE210	30	06-05-2008	06-06-2008	0	0
VHUPBE211	30	06-05-2008	06-06-2008	0	0
VHUPBE212	30	06-05-2008	06-06-2008	0	0
VHUPBE217	28	27-06-2008	24-07-2008	0	0
VHUPBE300	90	25-07-2008	22-10-2008	0	0
Office Block					
Civil and Structural Works					
Superstructure					
VHUOBS060	14	01-04-2008*	14-04-2008	0	0
ABVF					
VHUOBS300	60	18-12-2007A	07-04-2008	13	90
VHUOBS301	60	14-01-2008A	28-04-2008	3	60
VHUOBS310	40	11-04-2008	28-05-2008	3	0
VHUOBS330	60	25-02-2008A	06-05-2008	22	50
VHUOBS340	21	25-02-2008A	31-03-2008A		100
E&M Works					
Installation Works at Ground Floor					
VHUOBE060	0	18-12-2007A			100
VHUOBE069	90	18-12-2007A	08-04-2008	25	90
VHUOBE070	90	18-12-2007A	08-04-2008	25	90
VHUOBE071	90	18-12-2007A	08-04-2008	25	90
VHUOBE072	90	18-12-2007A	08-04-2008	25	90



Activity ID	Orig Dur	Early Start	Early Finish	Total Float	% Comp
Installation Works at Fwd & Rwd Floor					
VHUOBE080	0	18-01-2008A			100
VHUOBE081	55	25-02-2008A	07-04-2008	26	85
VHUOBE089	90	18-01-2008A	17-04-2008	16	80
VHUOBE090	90	18-01-2008A	17-04-2008	16	80
VHUOBE091	90	18-01-2008A	17-04-2008	16	80
VHUOBE092	90	18-01-2008A	17-04-2008	16	80
Testing and Commissioning					
VHUOBE200	30	08-04-2008	27-04-2008	26	33
VHUOBE209	28	18-04-2008	15-05-2008	16	0
VHUOBE210	28	18-04-2008	15-05-2008	16	0
VHUOBE211	28	18-04-2008	15-05-2008	16	0
VHUOBE212	28	18-04-2008	15-05-2008	16	0
External Works					
External Works					
VHUEW020	28	06-08-2007A	25-04-2008	-14	20
VHUEW030	14	31-03-2008*	16-04-2008	-6	0
VHUEW040	40	01-04-2008*	19-05-2008	0	0
VHUEW050	14	31-03-2008*	13-04-2008	-14	0
VHUEW080	11	20-05-2008	31-05-2008	0	0
VHUEW090	40	01-04-2008*	19-05-2008	0	0
VHUEW100	55	20-05-2008	25-07-2008	0	0
VHUEW110	18	04-07-2008	25-07-2008	0	0
VHUEW120	0	26-04-2008		-16	0



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 (May 2008)

W. Hing Construction Co., Ltd

Contract No. CW02

Ocean Park Redevelopment Project
- Astounding Asia

Monthly EM&A Report
(Version 1.0)

May 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.

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EXECUTIVE SUMMARY

Introduction

This is the 10th 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 May 2008.

The major site activities undertaken in the reporting month included:

- Builder's and finishing work ,E&M work and fitting out works at the New Bird House:
- E&M and fitting out works and paving works at the Flight Exercise Aviary;
- Underground Drainage works at Main Aviary;
- Underground drainage works ,builder's and finishing and E&M work at Astounding Asia Restaurant;
- Pipe piling works for footing F1 ,MVAC Culvert (RC Works) , superstructure works (RC works) and structure works for Artificial Rockworks at the New Panda Habitat:
- 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 6th, 13th, 23rd and 27th May 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:

- Builder's finishing works, E&M Works and fitting out works at Astounding Asia Restaurant;
- Excavation works for footing F1, R.C works for footing & MVAC culvert, RC works on superstructure works, builder's & finishing work, E&M works, fitting out works, underground drainage works and structure works for Artificial Rockworks at New Panda Habitat;
- Tree transplantation and excavation works for footing at New Bird Theatre;
- External services pipeline and ducting works;
- External road formation & structural paving; and
- External drainage works.

1. 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 10th monthly EM&A Report summarizing the EM&A works for the Project in May 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)	2910 3151	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:

- Builder's and finishing work ,E&M work and fitting out works at the New Bird House:
- E&M and fitting out works and paving works at the Flight Exercise Aviary;
- Underground Drainage works at Main Aviary;
- Underground drainage works ,builder's and finishing and E&M work at Astounding Asia Restaurant;
- Pipe piling works for footing F1 ,MVAC Culvert (RC Works) , superstructure works (RC works) and structure works for Artificial Rockworks at the New Panda Habitat:
- 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 May 2008.

2. ENVIRONMENTAL AUDIT

Environmental Site Audits

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

2.2 Site audits for the Project in the reporting month were conducted on 6th, 13th, 23rd, 27th May 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**.

Table 2.1 Observations and Recommendations of Site Audits

Parameters	Date	Observations / Recommendations	Remediation/ Follow up
Water Quality	13/05/08	Stagnant water observed at New Bird house, the tank next to the New Bird Theatre and the rear of site office. Contractor was reminded to pump the water out or take measure to pest control.	This item was rectified at 23/05/08
	23/05/08	Sand and rock were accumulated at the U-channel of Flight exercise Aviary. Contractor was reminded to clear them to prevent any blockage of the drainage system.	This item was rectified at 27/05/08
	23/05/08	Stagnant water was still accumulated at the New Bird House. Contractor was reminded to take measure for pest control.	This item is still outstanding so follow up is needed at the next audit session
	27/05/08	Stagnant water was accumulated next to Bird Theatre. Contractor was reminded to clear them or take other measure to avoid standing water accumulated.	This item is still outstanding so follow up is needed at the next audit session
	27/05/08	Debris and sand were accumulated at U-channel at Flight Exercise Aviary. Contractor was reminded to clear the blockage of the U-channel.	This item is still outstanding so follow up is needed at the next audit session
Air Quality	06/05/08	Stockpiles were accumulated at New Panda Habitat. Contractor was reminded to cover them with tarpaulin or other means.	This item was rectified at 13/05/08
	23/05/08	Stockpile was accumulated at the New Panda Habitat and New Bird House. Contractor was reminded to cover them with tarpaulin or take measure to avoid any dust generation.	This item is still outstanding so follow up is needed at the next audit session
Waste/ Chemical Management	06/05/08	Oil drums at Flight exercise Aviary are still not provided with drip tray. Contractor was reminded to provide the oil drums with drip tray and clear the empty oil drums so as to avoid oil spillage and leakage.	This item was rectified at 13/05/08

Parameters	Date	Observations / Recommendations	Remediation/ Follow up
	06/05/08	Stagnant water and general refuse were found at the rear of Site Office. Debris was accumulated at New Birds House, AA Restaurant. Contractor was reminded to clear the debris regularly and do it better in house keeping.	This item was rectified at 13/05/08
	06/05/08	Oil leaking from the generator at New Generator Room. Contractor was reminded to take measure to avoid any land contamination.	This item was rectified at 13/05/08
	13/05/08	Debris was accumulated at New Bird Theatre. Contractor was reminded to clear them.	This item was rectified at 23/05/08
	23/05/08	Debris at Bird Theatre was still not clear. Contractor was reminded to clear and dispose the waste properly.	This item was rectified at 27/05/08
	23/05/08	One oil drum at the New Generator Room was not provided with drip tray. Contractor was reminded to provide it with drip tray to prevent any land contamination.	This item is still outstanding so follow up is needed at the next audit session
	27/05/08	One oil drum at the New Generator Room was not provided with drip tray. Contractor was reminded to provide it with drip tray to prevent any land contamination.	This item is still outstanding so follow up is needed at the next audit session

Status of Environmental Licensing and Permitting

2.4 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-RS0123-08	10/03/2008	01/09/2008	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

2.5 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

2.6 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

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

Implementation Status of Event Action Plans

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

Summary of Complaints and Prosecutions

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

3. FUTURE KEY ISSUES

Key Issues for the Coming Month

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

- 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;
- Ensure the operation of sedimentation tank in collecting the rainstorm.

Construction Program for the Next Month

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

4. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

4.1 Four environmental site audits were performed in May 2008. No non-compliance was observed during the site audits.

4.2 No execeedance 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.

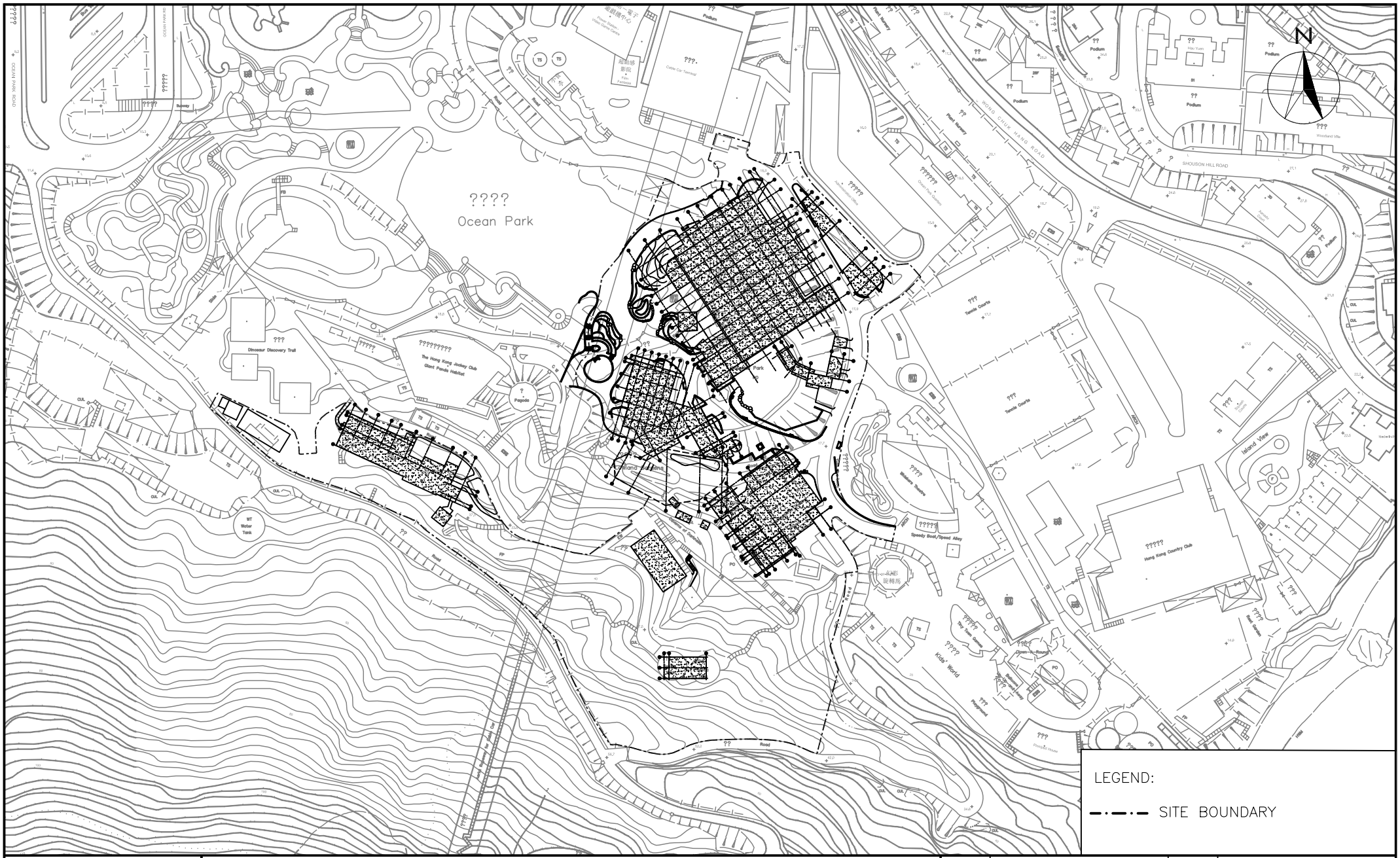
Water Quality Impact

- 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.
- To avoid any blockage of the outlet and the operation of sedimentation tank.

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	80506
Date	6 May 2008 (Tuesday)
Time	10:30-11:30

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

Ref. No.	Remarks/Observations	Related Item No.
	A. Water Quality	
80506 – 02	• Contractor was reminded to maintain the sedimentation tank operating during raining season.	
80506 – 06	• Contractor was reminded to bund the site boundary of New Generator Room to prevent any waste water from running out.	
	B. Air Quality	
80506 – 04	• Stockpiles were accumulated at New Panda Habitat. Contractor was reminded to cover them with tarpaulin or other means.	3.3
	C. Noise	
	• No environmental deficiency was identified during the site inspection.	
	D. Waste / Chemical Management	
80506 – 01	• Oil drums at Flight exercise Aviary are still not provided with drip tray. Contractor was reminded to provide the oil drums with drip tray and clear the empty oil drums so as to avoid oil spillage and leakage.	5.3.4
80506 – 03	• Stagnant water and general refuse were found at the rear of Site Office. Debris was accumulated at New Birds House, AA Restaurant. Contractor was reminded to clear the debris regularly and do it better in house keeping.	5.1.1, 5.1.3
80506 – 05	• Oil leaking from the generator at New Generator Room. Contractor was reminded to take measure to avoid any land contamination.	5.7
	E. Permit / Licenses	
	• No environmental deficiency was identified during the site inspection.	
	F. Others	
	• Follow-up on previous audit (Ref. No.:80429). Item 80429 – 03 was not rectified in this site inspection. Follow up action is needed for item 80429 – 03.	

	Name	Signature	Date
Recorded by	Ian Ip		6 May 2008
Checked by	Dr. Priscilla Choy		6 May 2008

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	80513
Date	13 May 2008 (Tuesday)
Time	14:30-15:45

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

Ref. No.	Remarks/Observations	Related Item No.
	A. Water Quality	
80513 – 01	• Stagnant water observed at New Bird house, the tank next to the New Bird Theatre and the rear of site office. Contractor was reminded to pump the water out or take measure to pest control.	2.18
80513 – 02	• Contractor was reminded to bund the site boundary at New Generator Room at raining season to prevent waste water goes out.	
	B. Air Quality	
80513 – 04	• Contractor was reminded to water the site when it is dry to prevent dust generation.	
	C. Noise	
	• No environmental deficiency was identified during the site inspection.	
	D. Waste / Chemical Management	
80513 – 03	• Debris was accumulated at New Bird Theatre. Contractor was reminded to clear them.	5.1.3
	E. Permit / Licenses	
	• No environmental deficiency was identified during the site inspection.	
	F. Others	
	• Follow-up on previous audit (Ref. No.:80506). All the deficiencies are rectified in this site inspection.	

	Name	Signature	Date
Recorded by	Ian Ip		13 May 2008
Checked by	Dr. Priscilla Choy		15 May 2008

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	80523
Date	23 May 2008 (Friday)
Time	13:30-14:30

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

Ref. No.	Remarks/Observations	Related Item No.
	A. Water Quality	
80523 – 05	• Sand and rock were accumulated at the U-channel of Flight exercise Aviary. Contractor was reminded to clear them to prevent any blockage of the drainage system.	2.17
80523 – 06	• Stagnant water was still accumulated at the New Bird House. Contractor was reminded to take measure for pest control.	2.18
80523 – 02,07	• Contractor was reminded to bund the gate at New Generator Room to avoid waste water goes out of the site boundary and to maintain the operation of the sedimentation tank during the raining season	
	B. Air Quality	
80523 – 04	• Stockpile was accumulated at the New Panda Habitat and New Bird House. Contractor was reminded to cover them with tarpaulin or take measure to avoid any dust generation.	3.3
	C. Noise	
	• No environmental deficiency was identified during the site inspection.	
	D. Waste / Chemical Management	
80523 – 01	• Debris at Bird Theatre was still not clear. Contractor was reminded to clear and dispose the waste properly.	5.1.3
80523 – 03	• One oil drum at the New Generator Room was not provided with drip tray. Contractor was reminded to provide it with drip tray to prevent any land contamination.	5.3.4
	E. Permit / Licenses	
	• No environmental deficiency was identified during the site inspection.	
	F. Others	
	• Follow-up on previous audit (Ref. No.:80513). All the deficiencies are not rectified in this site inspection. Follow up action is needed for the items.	

	Name	Signature	Date
Recorded by	Ian Ip		23 May 2008
Checked by	Dr. Priscilla Choy		27 May 2008

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	80527
Date	27 May 2008 (Tuesday)
Time	10:15-11:15

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

Ref. No.	Remarks/Observations	Related Item No.
	A. Water Quality	
80527 – 02	• Stagnant water was accumulated next to Bird Theatre. Contractor was reminded to clear them or take other measure to avoid standing water accumulated.	2.18
80523 – 03	• Debris and sand were accumulated at U-channel at Flight Exercise Aviary. Contractor was reminded to clear the blockage of the U-channel.	2.17
80527 – 04	• Contractor was reminded to bund the gate at New Generator Room to avoid waste water goes out of the site boundary and to maintain the operation of the sedimentation tank during the raining season	
	B. Air Quality	
	• No environmental deficiency was identified during the site inspection.	
	C. Noise	
	• No environmental deficiency was identified during the site inspection.	
	D. Waste / Chemical Management	
80527 – 01	• One oil drum at the New Generator Room was not provided with drip tray. Contractor was reminded to provide it with drip tray to prevent any land contamination.	5.3.4
	E. Permit / Licenses	
	• No environmental deficiency was identified during the site inspection.	
	F. Others	
	• Follow-up on previous audit (Ref. No.:80523). Item 80523-01, 80523-04 and 80523-06 are rectified in this site inspection. Follow up action is needed for the outstanding items.	

	Name	Signature	Date
Recorded by	Ian Ip		27 May 2008
Checked by	Dr. Priscilla Choy		27 May 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 May 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
Mar-08	N/A	857.78	25.17	36.22	N/A	N/A	N/A
Apr-08	N/A	1,309.35	N/A	52.10	N/A	N/A	N/A
May-08	N/A	334.03	11.44	40.86	N/A	N/A	N/A
Sub-total	**116.91**	**3527.54**	**82.13**	**187.34**	**0.00**	**0.00**	**0.00**
Jun-08							
Jul-08							
Aug-08							
Total	**116.91**	**3527.54**	**82.13**	**187.34**	**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.	N/A
	• Fabric filters installed for the crushing plant.	N/A
	• When transferring materials from crusher to the conveyors, chutes or dust curtains would be used for controlling dust.	N/A

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.	

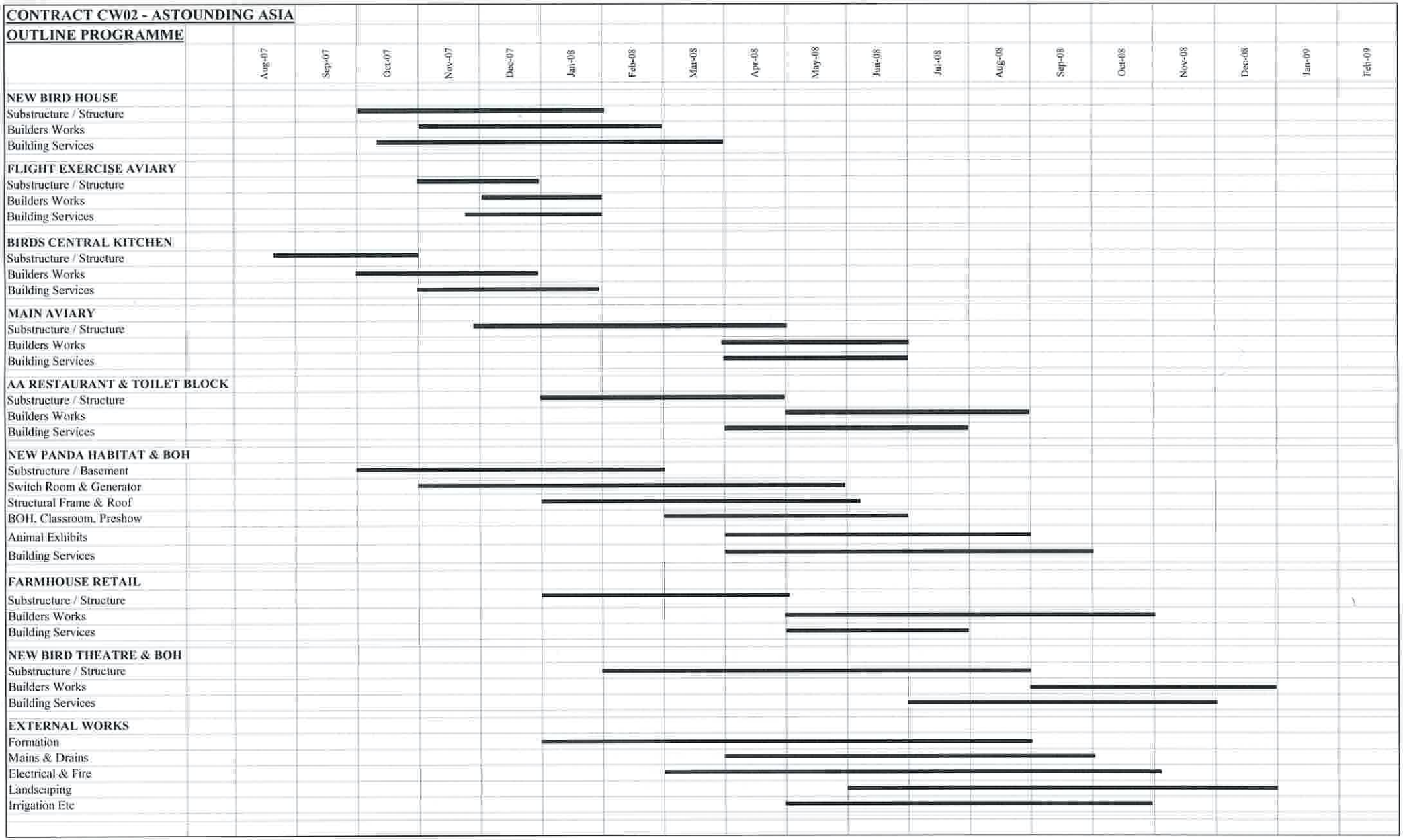
APPENDIX D
EVENT ACTION PLANS

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