



AECOM

# Ocean Park Master Redevelopment Project

Quarterly Environmental Monitoring & Audit  
Report – from July 2009 to September 2009





## TABLE OF CONTENTS

	Page
EXECUTIVE SUMMARY .....	I
1. INTRODUCTION .....	1
Background.....	1
Project Organization and Contacts of Key Management.....	1
Construction Activities During The Reporting Quarter .....	1
2. ENVIRONMENTAL MONITORING AND AUDIT REQUIREMENTS .....	5
Monitoring Parameters and Locations.....	5
Monitoring Methodology and Calibration Details .....	5
Environmental Quality Performance Limits (Action and Limit Levels) .....	5
Environmental Mitigation Measures.....	5
3. MONITORING RESULTS .....	6
Air Quality .....	6
Noise .....	6
Terrestrial Ecology .....	6
Marine Ecology .....	6
4. AUDIT RESULTS.....	7
Implementation Status of Environmental Mitigation Measures.....	7
Status of Environmental Licensing and Permitting .....	7
Advice on Solid and Liquid Waste Management Status .....	8
5. NON-COMPLIANCE (EXCEEDANCES) OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMITS (ACTION AND LIMIT LEVELS).....	9
Summary of Exceedances.....	9
Review of the Reasons for and the Implications of Non-compliance .....	9
Summary of Actions Taken .....	9
6. ENVIRONMENTAL COMPLAINTS.....	10
Complaints Log .....	10
Complaints Handling Procedure .....	10
7. NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS .....	10
8. COMMENTS, CONCLUSIONS AND RECOMMENDATIONS .....	11

**List of Tables**

Table 1.1	Details of the Contracts .....	1
Table 1.2	Summary of Works undertaken in the Reporting Quarter .....	1
Table 1.3	Status of Environmental Submissions .....	3
Table 4.1	Estimated Amounts of Different Types of Materials Generation from April to June 2009 .....	8

**List of Figures**

Figure 1.1	Management Organizations
Figure 1.2	Layout of Work Site (Astounding Asia)
Figure 1.3	Layout of Work Site (Entry Plaza, Aqua City and Grand Aquarium)
Figure 1.4	Layout of Work Site (Rainforest)
Figure 1.5	Location of Noise and Air Monitoring Stations
Figure 1.6	Location of Subtidal Monitoring Stations

**List of Appendices**

Appendix A	Contact Details of Key Management
Appendix B	Environmental Monitoring Programme
Appendix C	Summary of Calibration Details
Appendix D	Action and Limit Levels
Appendix E	Graphical Presentation of Air Quality Monitoring Results
Appendix F	Graphical Presentation of Noise Monitoring Results
Appendix G	Implementation Status of Environmental Mitigation Measures
Appendix H	Status of Environmental Licenses and Permits
Appendix I	Complaint Flow Diagram and Complaint Log
Appendix J	Coral Monitoring Results

## EXECUTIVE SUMMARY

This is the tenth combined Quarterly Environmental Monitoring and Audit (EM&A) report for the Project "Master Redevelopment Project of Ocean Park". This report summarizes the EM&A works performed in the period between 26 June 2009 and 25 September 2009.

### Environmental Monitoring Works

#### ***Environmental Monitoring and Audit Progress***

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

1-hour Total Suspended Particulates (TSP) monitoring	48 sessions for AM1 48 sessions for AM2 48 sessions for AM3A
24-hour TSP monitoring	16 sessions for AM1 16 sessions for AM2 16 sessions for AM3A
Daytime noise monitoring	13 sessions for all stations
Evening and night time noise monitoring	13 sessions for all stations
Holiday daytime noise monitoring	0 sessions for all stations
Terrestrial ecology monitoring	0 session
Coral monitoring	1 session for Site 1-5 and Control Station C
Environmental site inspection	14 sessions (include IEC audit)

#### ***Air Quality***

All measured 1-hour TSP and 24-hour TSP concentrations in the reporting quarter were below the Action and Limit Levels.

#### ***Noise***

All measured noise levels during daytime and evening time were below the Action and Limited levels in the reporting quarter.

#### ***Terrestrial Ecology***

Terrestrial ecology monitoring had ceased since September 2008. Hence, terrestrial ecology monitoring was not required in the reporting quarter. Please note that all the terrestrial ecology monitoring have been completed in August 2008 according to the requirement under the EM&A Manual.

#### ***Coral Monitoring***

One session of coral monitoring was scheduled for Site 1-5 & Control Station in the reporting quarter. The results showed that there was no exceedance of Action and Limit Levels.

#### ***Environmental Complaints and Prosecutions***

No complaint, summon or prosecution related to environmental issues was made against the Project within the reporting quarter.

## 1. INTRODUCTION

### Background

- 1.1 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.
- 1.2 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 in **Table 1.1** below.

**Table 1.1 Details of the Contracts**

Contract No.	Contract Title	Contractor	Construction Commencement
CI-05	Site Formation, Funicular Tunnel and Miscellaneous Works	Dragages-Bouygues JV	12 March 2007
CS-01	Vet Hospital	Kaden – ATAL JV	26 March 2007
CW-02	Astounding Asia	W. Hing Construction Co. Ltd.	1 August 2007
CI-07	Entry Plaza, Aqua City and Grand Aquarium	Leighton Construction (Asia) Limited	15 August 2008
CS-02	Rainforest	W. Hing Construction Co. Ltd.	11 May 2009

- 1.3 The contractors will conduct environmental monitoring and audits during the construction stage and produce contract specific monthly & quarterly EM&A reports. The RSS would prepare a combined quarterly EM&A for the whole project. This is the combined quarterly EM&A Report including the IEC audit findings CW02, CI07 & CS02 EM&A Works. This report presents the results of EM&A works conducted in the reporting quarter from 26 June 2009 to 25 September 2009.

### Project Organization and Contacts of Key Management

- 1.4 An organization structure and the line of communication were set up for the Project between the Project Proponent, Project Manager’s Representative (PMR), Independent Environmental Checker (IEC), the Contractor and the Environmental Team (ET). The project organization and contact details of key management are shown in **Figure 1.1** and **Appendix A** respectively.

### Construction Activities during the Reporting Quarter

- 1.5 The site activities during the reporting quarter are summarized in Table 1.2.

**Table 1.2 Summary of Works undertaken in the Reporting Quarter**

Item	Work Activity	Month		
		Jul 09	Aug 09	Sep 09
<b><i>Waterfront (CI-05), Construction phase had ceased in early-June 2009</i></b>				
1.	N/A	-	-	-
<b><i>Vet Hospital (CS-01), Construction phase has ceased in mid-October 2008</i></b>				
1.	N/A	-	-	-
<b>Astounding Asia (CW-02)</b>				

Item	Work Activity	Month		
		Jul 09	Aug 09	Sep 09
1.	Excavation works and Underground Drainage Works at Main (Emerald) Aviary.	✓	✓	
2.	Finishing works and E&M works at New Bird Theatre.	✓	✓	
3.	Footing excavation, RC works for footing and superstructure at Main (Emerald) Aviary			✓
<b>Entry Plaza, Aqua City and Grand Aquarium (CI-07)</b>				
1.	Column, beam, slab and wall construction at Entry Plaza.	✓	✓	✓
2.	Excavation, rock filling, backfilling at Entry Plaza.	✓	✓	✓
3.	Footing, wall, beam, slab (upper floors) and water tank construction at Grand Aquarium.	✓	✓	✓
4.	Stone paving at Funicular Plaza.	✓		
5.	Retaining wall construction at Lagoon.	✓		
6.	Column, wall, beam and slab construction for East & West Building at Aqua City.		✓	
7.	Backfilling at Grand Aquarium Transformer Room.		✓	
8.	T20 Tank construction		✓	
9.	Tree and soft landscaping work at Funicular Plaza.		✓	
<b>Rainforest (CS-02)</b>				
1.	Tree planting, Finishing works, Excavation works at NLSR, Paving works, Lighting/PA/CCTV installation, Cable tray installation at NLSR, Metal works at the Funicular Plaza.	✓	✓	✓
2.	RC Structure, U/G utilities installation, Erection of Tower Crane at the Exhibition House	✓	✓	✓
3.	Drainage works, retaining wall construction, Rock Dowel installation, Draw pit construction, Duct laying at the External Area.	✓	✓	✓
4.	Defects rectification works at Funicular Plaza.		✓	✓

1.6 A layout plan of the Project is provided in **Figure 1.2 to Figure 1.3 and Figure 1.4** Figure 1.2 shows the layout plan of CW-02 Astounding Asia. Figure 1.3 shows the layout plan of CI-07 Entry Plaza, Aqua City and Grand Aquarium. Figure 1.4 shows the layout plan of CS-02 Rainforest.

1.7 The status of submissions until 25 September 2009 as specified in the Environmental Permit No. EP-249/2006/A is presented in **Table 1.3**.

**Table 1.3 Status of Environmental Submissions**

EP-249/2006/A Condition	Submission	Revision	Status
<b>Contract CI05</b>			
1.12	Notification of Commencement Date of construction stage	Dated 14 February 2007	Submitted to EPD on 15 February 2007
2.3	Management Organization	Dated 15 December 2006	Submitted to the EPD on 29 December 2006.
2.4	Construction Programme	2 Dated 14 February 2007	Submitted to the EPD on 15 February 2007
2.13	Drainage Proposal	A2 Dated 26 April 2007	Placed in EIAO Register Office for public information on 30 May 2007
2.14	Silt Curtain Proposal	B Dated 30 January 2007	Placed in EIAO Register Office for public information on 1 March 2007
2.18	As-built Drawing for Enhancement Works for Pond 35	A Dated 17 July 2007	Placed in EIAO Register Office for public information on 7 August 2007
2.20a	Transplantation Proposal for Uncommon Plant Species	D Dated 27 August 2007	Placed in EIAO Register Office for public information on 25 September 2007
2.20b	Detailed Compensatory Planting As-built Drawing	A Dated 4 October 2007	Placed in EIAO Register Office for public information on 30 October 2007
2.21	Waste Management Plan	D Dated 27 August 2007	Placed in EIAO Register Office for public information on 25 September 2007
3.3	Baseline Air Quality and Noise Monitoring Report	B Dated 28 February 2007	Submitted to the EPD on 5 March 2007
3.3	Baseline Coral Survey Report	A Dated 13 June 2007	Submitted to the EPD on 18 June 2007
<b>All Contract (including CI05, CW02, CI07 &amp; CS02)</b>			
3.1 and under Section 13.14 of EM&A Manual	Quarterly EM&A Report for April to June 2009	A Dated 27 July 2009	Submitted to the EPD on 31 July 2009
3.4	Monthly EM&A Report for July 2009	A Dated 24 August 2009	Submitted to the EPD on 28 August 2009
3.4	Monthly EM&A Report for August 2009	A Dated 5 October 2009	Submitted to the EPD on 9 October 2009
3.4	Monthly EM&A Report for September 2009	A Dated 13 October 2009	Submitted to the EPD on 20 October 2009
<b>CityBus Limited</b>			
2.5	Written Notice on Completion of Total Petroleum Hydrocarbon (TPH) Contaminated Soil Disposal	Dated 17 January 2007	Submitted to the EPD on 22 January 2007
2.6	Written Notice on Completion of	Dated 17 January 2007	Submitted to the EPD on 22 January 2007.

EP-249/2006/A Condition	Submission	Revision	Status
	Solidification Treatment of Heavy Metals Contaminated Soil		
2.8	As-built Remediation Plan	Dated 14 March 2007	Submitted to the EPD on 16 March 2007
<b>Hong Kong School of Motoring Ltd.</b>			
2.10	Confirmation letter to confirm that land contamination remediation works within HKSM has been completed	Dated 13 April 2007	Submitted to EPD on 13 April 2007.

## 2. ENVIRONMENTAL MONITORING AND AUDIT REQUIREMENTS

### Monitoring Parameters and Locations

- 2.1 The EM&A Manual designates locations for the CET to monitor environmental impacts in terms of air quality, noise and ecology from the Project. The locations of air quality, noise and ecology monitoring and their control station(s) if applicable; are depicted in **Figure 1.5** and **Figure 1.6**. **Appendix B** gives the details of the monitoring programme.

### Monitoring Methodology and Calibration Details

- 2.2 All monitoring works were conducted and monitoring equipment was regularly calibrated in accordance with the EM&A Manual. The calibration certificates were provided in the Monthly EM&A report. Summary of calibration are attached in **Appendix C**.

### Environmental Quality Performance Limits (Action and Limit Levels)

- 2.3 The environmental quality performance limits, i.e. Action and Limit levels (AL Levels) were derived from the baseline monitoring results and/or other approaches as detailed in the EM&A Manual. Should the measured environmental quality parameters exceed the AL Levels, the respective action plans would be implemented. The AL Levels for each environmental parameter are given in **Appendix D**.

### Environmental Mitigation Measures

- 2.4 Relevant mitigation measures as recommended in the Project EIA Report had been stipulated in the EM&A Manual and EMIS for the Contractor to adopt. A list of mitigation measures is given in **Appendix G**.

### 3. MONITORING RESULTS

#### *Air Quality*

- 3.1 No exceedance of Action and Limit Level for 1-hour TSP and 24-hour TSP was recorded in the reporting quarter. Graphical presentations of the air quality monitoring results are provided in **Appendix E**.

#### *Noise*

- 3.2 Noise monitoring was carried out for daytime (0700-1900) and evening time (1900 -2300) at four stations in the reporting quarter. No Holiday-time noise monitoring was scheduled in the reporting quarter. Graphical presentations of the noise monitoring results are provided in **Appendix F**.

All measured noise levels during daytime and evening time were below the AL levels.

#### *Terrestrial Ecology*

- 3.3 According to the requirement in the EM&A Manual, the monitoring of transplanted plants at the receptor has been completed in August 2008. No further monitoring is recommended and regular inspection would be carried out.

#### *Marine Ecology*

- 3.4 One subtidal monitoring was conducted in the reporting quarter and the results showed that there was no exceedance of Action and Limit Levels. Details of results are shown in **Appendix J**.

#### 4. AUDIT RESULTS

##### Implementation Status of Environmental Mitigation Measures

- 4.1 This was the tenth quarter of Ocean Park Master Redevelopment Project including Contract CW02, CI07 & CS02. The major activities were summarized in Table 1.2. The Contractor and sub-Contractor had implemented most of the mitigation measures to minimize the environmental impacts due to construction activities. Regarding a few minor observations as noted during ET's site inspections, the Contractor and sub-Contractor rectified all the problems and no major environmental impact was induced.
- 4.2 IEC's audits were carried on monthly basis (i.e. on 24 July 2009, 21 August 2009 and 18 September 2009). No non-compliance was issued for CW02, CI07 & CS02. 1, 5 and 6 observations were recorded for CW02, CI07 and CS02 respectively during the reporting quarter. Observations details were provided in the Monthly EM&A report.
- 4.3 The updated implementation status of environmental mitigation measures (EMIS) is given in **Appendix G**.

##### ***CI05 (Construction phase had ceased in early-June 2009)***

##### ***CS01 (Construction phase had ceased in mid-October 2008)***

##### ***CW02***

- 4.4 Waste accumulated on site should be removed more frequently.

##### ***CI07***

- 4.5 Stagnant water was observed at the deck level and ground level and should be removed as soon as possible.
- 4.6 Empty oil drums were observed and should be removed from site as soon as possible.
- 4.7 2 chemical drums were placed on bare ground.
- 4.8 Overflow at a wastewater diversion point was observed.
- 4.9 General refuses were mixed with construction waste in skip.

##### ***CS02***

- 4.10 An oil drum was placed on bare-ground. Drip trays should be provided to avoid oil spillage.
- 4.11 Stockpile of dusty construction materials was not covered. It should be compacted, water sprayed or covered with tarpaulin or other means.
- 4.12 Stockpile of dusty construction materials was not covered with tarpaulin sheets.
- 4.13 2 oil drums were placed on bare ground.
- 4.14 Haul roads were dusty and dry.
- 4.15 Stagnant water was accumulated on site. The Contractor shall remove them more frequently.

**Status of Environmental Licensing and Permitting**

- 4.16 Environmental licenses and permits including Environmental Permit for the Project, construction noise permits, chemical waste producer and effluent discharge license were in place and valid during the reporting quarter. A summary status of licences and permits is given in **Appendix H**.

**Advice on Materials Management Status**

- 4.17 **Table 4.1** summarises the estimated amounts of different types of materials generated from the Project during the reporting quarter as below:

**Table 4.1 Estimated Amounts of Different Types of Materials Generation from July 2009 to September 2009.**

Materials Type	Estimated Amount (tonnes)			Disposal Locations
	Jul 09	Aug 09	Sep 09	
C&D waste	195.61 tonnes	241.34 tonnes	33816 tonnes	SENT Landfill
	49.52 tonnes	18.75 tonnes	--	TKOSF
Excavated Material (mainly soil)	6757.41 tonnes	4069.47 tonnes	7189.91 tonnes	QBBP / CWPFBP
	--	--	--	TKOFB
Chemical waste	962.00 tonnes	--	--	Collected by licensed collector
General waste	171.90 m <sup>3</sup>	--	--	Collected by licensed collector

Notes: All figures are in tonnes unless specific.

**5. NON-COMPLIANCE (EXCEEDANCES) OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMITS (ACTION AND LIMIT LEVELS)**

***Summary of Exceedances***

5.1 No exceedance was recorded in the reporting quarter.

***Review of the Reasons for and the Implications of Non-compliance***

5.2 As there was no non-compliance during the reporting quarter. Thus, no further action was required.

***Summary of Actions Taken***

5.3 The Contractor and sub-contractor generally implemented all the required mitigation measures to suppress the environmental impacts.

## 6. ENVIRONMENTAL COMPLAINTS

### *Complaints Log*

6.1 During this quarter, on complaint was received.

### *Complaints Handling Procedure*

6.2 All complaints will be handled in accordance with the EM&A Manual. The complaint handling procedure and the complaint log are provided in **Appendix I**.

## 7. NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

7.1 No summon or prosecution related to environmental issues was made against the Project within the reporting quarter.

## 8. COMMENTS, CONCLUSIONS AND RECOMMENDATIONS

- 8.1 The implemented EM&A programme ensured that any environmental impacts to the receivers would be readily detected and timely actions could be taken to rectify any non-compliance. Assessment and analysis of monitoring results collected demonstrated the environmental acceptability of the Project. Weekly site inspections ensured that the EIA recommendations were effectively implemented.
- 8.2 The CET carried out air quality, noise monitoring, terrestrial ecology monitoring, coral monitoring and weekly site inspection in accordance with the EM&A Manual. No exceedance, non-compliance was recorded during this quarter.
- 8.3 No exceedance of Action and Limit Level for 1-hour TSP, 24-hour TSP, day time and evening time noise monitoring was recorded in the reporting quarter.
- 8.4 In the reporting quarter, no terrestrial ecology monitoring was conducted. According to the requirement in the EM&A Manual, the last two terrestrial ecology monitoring had been completed in August 2008. No further monitoring is recommended and regular inspection would be carried out.
- 8.5 In the reporting quarter, one subtidal monitoring was conducted and the results showed that there was no exceedance of Action and Limit Levels.
- 8.6 During this quarter, one complaint was received.
- 8.7 No summons and prosecutions related to environmental issues were made against the Project in the reporting quarter.

## **Appendix A**

**APPENDIX A – CONTACTS OF KEY ENVIRONMENTAL PERSONNEL**

<b>Company</b>	<b>Contact Person</b>	<b>Position</b>	<b>Telephone No.</b>
Ocean Park Corporation	Arthur Wong	Project Director	29103106
Maunsell Consultants Asia Ltd	SK Lo	Project Manager Representative (PMR)	28715888
	KC Chan	Safety and Environmental Manager	29103151
Mott MacDonald Hong Kong Ltd	Dr. Anne Kerr	Independent Environmental Checker	28285757
W. Hing Construction Co., Ltd. (for Contract CW02)	Billy Lee	Contractor's Project Manager	61934096
Cinotech Consultant Ltd. (for Contract CW02)	Dr. Priscilla Choy	Contractor's ETL	21512089
Leighton Contractors (Asia) Ltd (for Contract CI07)	Thomas Lee	Contractor's Environmental Coordinator	36652609
W. Hing Construction Co., Ltd. (for Contract CS02)	Ken Chong	Environmental Officer	62761192

## **Appendix B**



**Contract No.: C107**  
**Ocean Park Redevelopment Project – Entry Plaza, Aqua**  
**City & Grand Aquarium – Environmental Monitoring**

**Time Schedule for Impact 1-hour TSP Monitoring (1-TSP), Impact 24-hour TSP Monitoring (24-TSP) and Impact Daytime Noise Monitoring (NM-Daytime)**

**July 2009**

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



**Contract No.: C107**  
**Ocean Park Redevelopment Project – Entry Plaza, Aqua**  
**City & Grand Aquarium – Environmental Monitoring**

**Preliminary Time Schedule for Impact Evening Noise Monitoring (NM- Evening)**

**July 2009**

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



**Contract No.: C107**  
**Ocean Park Redevelopment Project – Entry Plaza, Aqua**  
**City & Grand Aquarium – Environmental Monitoring**

**Time Schedule for Impact 1-hour TSP Monitoring (1-TSP), Impact 24-hour TSP Monitoring (24-TSP) and Impact Daytime Noise Monitoring (NM-Daytime)**

**August 2009**

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



**Contract No.: C107**  
**Ocean Park Redevelopment Project – Entry Plaza, Aqua**  
**City & Grand Aquarium – Environmental Monitoring**

**Preliminary Time Schedule for Impact Evening Noise Monitoring (NM- Evening)**  
**August 2009**

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



**Contract No.: C107**  
**Ocean Park Redevelopment Project – Entry Plaza, Aqua**  
**City & Grand Aquarium – Environmental Monitoring**

**Time Schedule for Impact 1-hour TSP Monitoring (1-TSP), Impact 24-hour TSP Monitoring (24-TSP) and Impact Daytime Noise Monitoring (NM-Daytime)**

**September 2009**

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



**Contract No.: C107**  
**Ocean Park Redevelopment Project – Entry Plaza, Aqua**  
**City & Grand Aquarium – Environmental Monitoring**

**Preliminary Time Schedule for Impact Evening Noise Monitoring (NM- Evening)**

**September 2009**

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	NM - Evening	8	9	10	11	12
13	NM - Evening	15	16	17	18	19
20	NM - Evening	22	23	24	25	26
27	NM - Evening	29	30	1 Holiday	2	3 Holiday

## **Appendix C**

**Ocean Park Redevelopment Project  
 Contract No. CI07 – Entry Plaza, Aqua City and Grand Aquarium  
 Monthly EM&A Report – July, August and September 2009**

**Air Quality Monitoring Equipments**

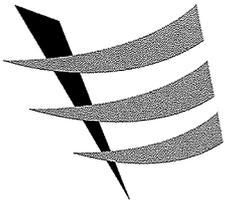
<b>Monitoring Location</b>	AM1	AM2	AM3A
<b>High Volume Sample/Dust Trak Serial No.</b>	1174	1177	9998
<b>Sampler Identification</b>	ET / EA / 003 / 08	ET / EA / 003 / 07	ET / EA / 003 / 12
<b>Date of Calibration</b>	06 May 2009	06 May 2009	06 May 2009
<b>Calibration Due Date</b>	05 July 2009	05 July 2009	05 July 2009
<b>Result</b>	Good	Good	Good

<b>Monitoring Location</b>	AM1	AM2	AM3A
<b>High Volume Sample/Dust Trak Serial No.</b>	1174	1177	9998
<b>Sampler Identification</b>	ET / EA / 003 / 08	ET / EA / 003 / 07	ET / EA / 003 / 12
<b>Date of Calibration</b>	06 July 2009	06 July 2009	06 July 2009
<b>Calibration Due Date</b>	05 Sep 2009	05 Sep 2009	05 Sep 2009
<b>Result</b>	Good	Good	Good

<b>Monitoring Location</b>	AM1	AM2	AM3A
<b>High Volume Sample/Dust Trak Serial No.</b>	1174	1177	9998
<b>Sampler Identification</b>	ET / EA / 003 / 08	ET / EA / 003 / 07	ET / EA / 003 / 12
<b>Date of Calibration</b>	05 Sep 2009	05 Sep 2009	05 Sep 2009
<b>Calibration Due Date</b>	04 Nov 2009	04 Nov 2009	04 Nov 2009
<b>Result</b>	Good	Good	Good

**Noise Monitoring Equipments**

<b>Monitoring Location</b>	CN1, CN2, CN3 & CN4
<b>Sound Level Meter Brand Name and Model</b>	Rion NL-31
<b>Serial No.</b>	00773032
<b>Date of Calibration</b>	26 November 2007
<b>Calibration Due Date</b>	25 November 2009
<b>Result</b>	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**

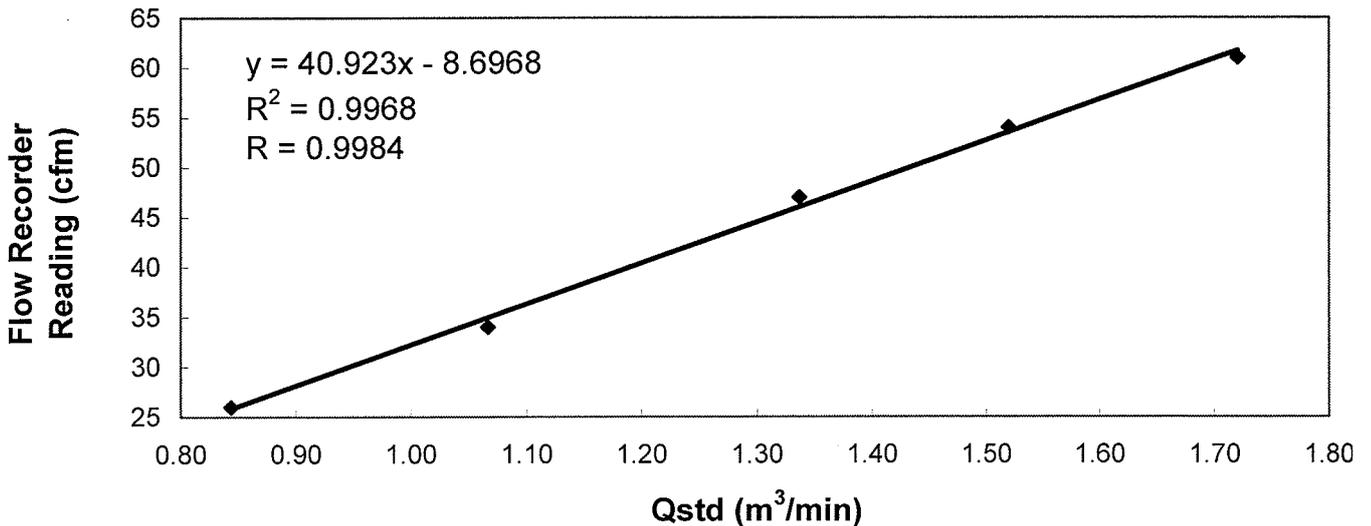
**Calibration Report**  
**of**  
**High Volume Air Sampler**

**Manufacturer** : Graseby GMW Date of Calibration : 06 May 2009  
**Serial No.** : 1174 (ET / EA / 003 / 08) Calibration Due Date : 05 July 2009  
**Method** : Five-point calibration by using standard calibration kit Tisch TE-5025A refer to the Operations Manual

**Results** :

Flow recorder reading (cfm)	61	54	47	34	26
Qstd (Actual flow rate, m <sup>3</sup> /min)	1.72	1.52	1.34	1.07	0.84
Pressure :	759 mm Hg			Temp. :	298 K

**Sampler 1174 Calibration Curve**  
**Site: Ocean Park (AM-1)**



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

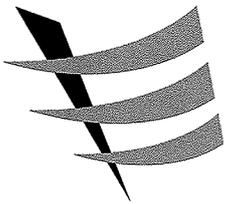
The high volume sampler complies\* / does-not-comply\* with the specified requirements and is deemed acceptable\* / unacceptable\* for use.

Calibrated by : MAK Kei Wai  
MAK, Kei Wai  
(Senior Environmental Technician)

Approved by : LAW Sau, Yee  
LAW, Sau, Yee  
(Senior Environmental Officer)







東業德勤測試顧問有限公司  
ETS-TESTCONSULT LIMITED

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

**TEST REPORT**

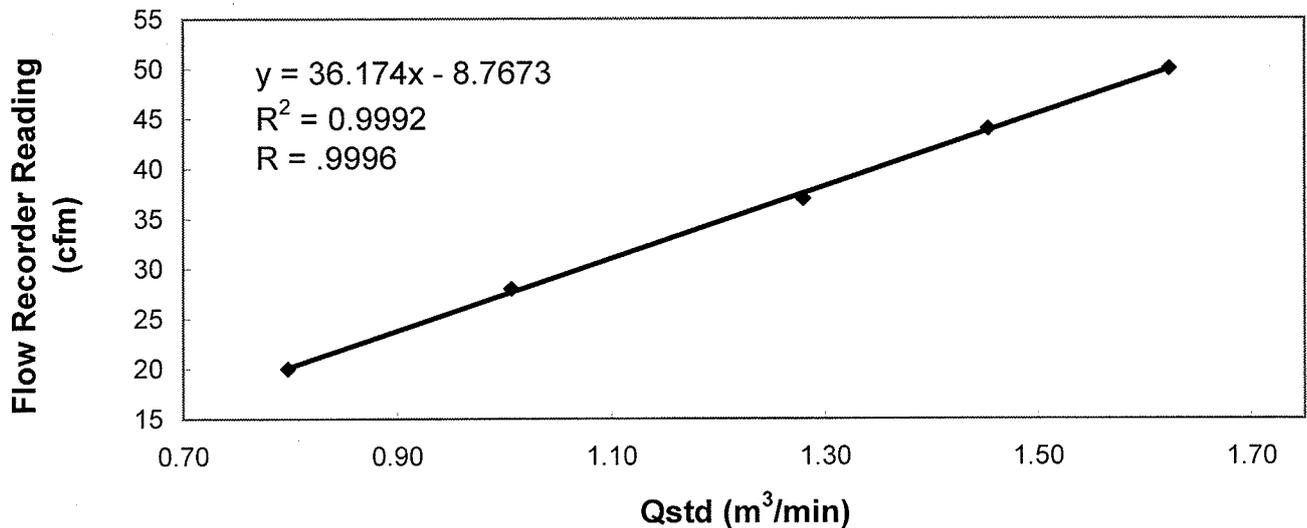
**Calibration Report  
of  
High Volume Air Sampler**

**Manufacturer** : Graseby GMW Date of Calibration : 06 May 2009  
**Serial No.** : 1177 (ET/EA/003/07) Calibration Due Date : 05 July 2009  
**Method** : Five-point calibration by using standard calibration kit Tisch TE-5025A refer to the Operations Manual

**Results** :

Flow recorder reading (cfm)	50	44	37	28	20
Qstd (Actual flow rate, m <sup>3</sup> /min)	1.62	1.45	1.28	1.01	0.80
Pressure :	760 mm Hg		Temp. :	298 K	

**Sampler 1177 Calibration Curve  
Site: Ocean Park (AM-2)**



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

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

Calibrated by : MAK Kei Wai  
MAK, Kei Wai  
(Senior Environmental Technician)

Approved by : LAW Sau Yee  
LAW, Sau Yee  
(Senior Environmental Officer)



東業德勤測試顧問有限公司  
ETS-TESTCONSULT LIMITED

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

**TEST REPORT**

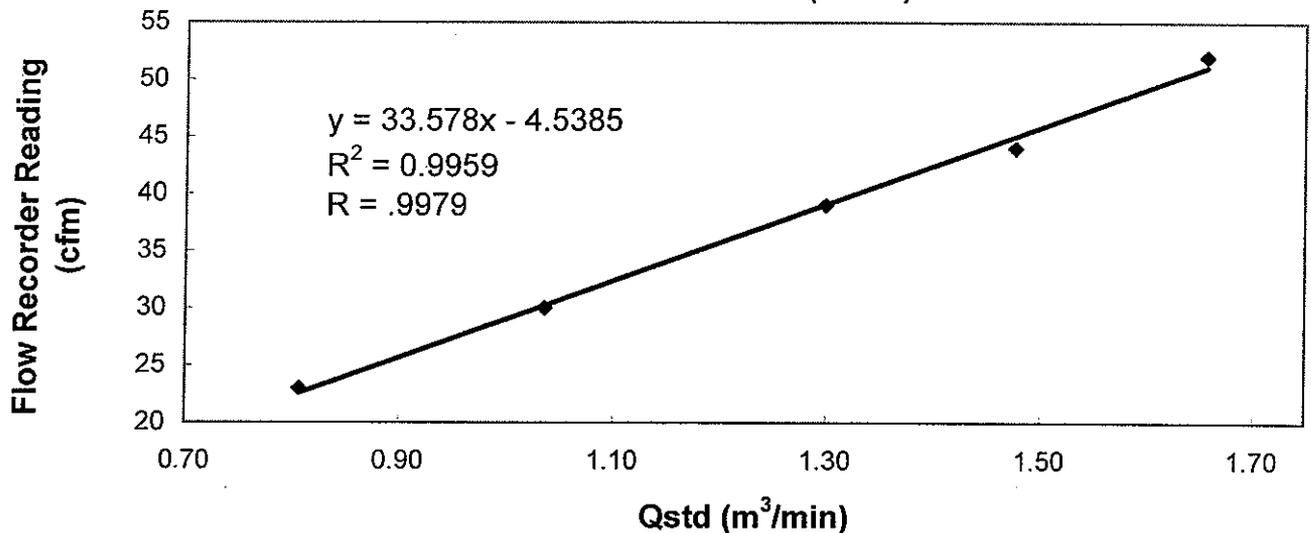
**Calibration Report**  
of  
**High Volume Air Sampler**

Manufacturer : Graseby GMW Date of Calibration : 06 July 2009  
Serial No. : 1177 ( ET / EA / 003 / 07 ) Calibration Due Date : 05 September 2009  
Method : Five-point calibration by using standard calibration kit Tisch TE-5025A refer to the Operations Manual

Results :

Flow recorder reading (cfm)	52	44	39	30	23
Qstd (Actual flow rate, m <sup>3</sup> /min)	1.66	1.48	1.30	1.04	0.81
Pressure :	761 mm Hg		Temp. :	303 K	

**Sampler 1177 Calibration Curve**  
Site: Ocean Park (AM-2)



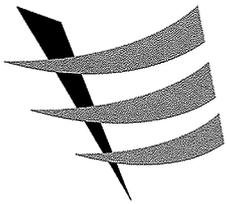
Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after a 5-point calibration.

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

Calibrated by : MAK Kei Wai  
MAK, Kei Wai  
(Senior Environmental Technician)

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





**東業德勤測試顧問有限公司**  
**ETS-TESTCONSULT LIMITED**

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

**TEST REPORT**

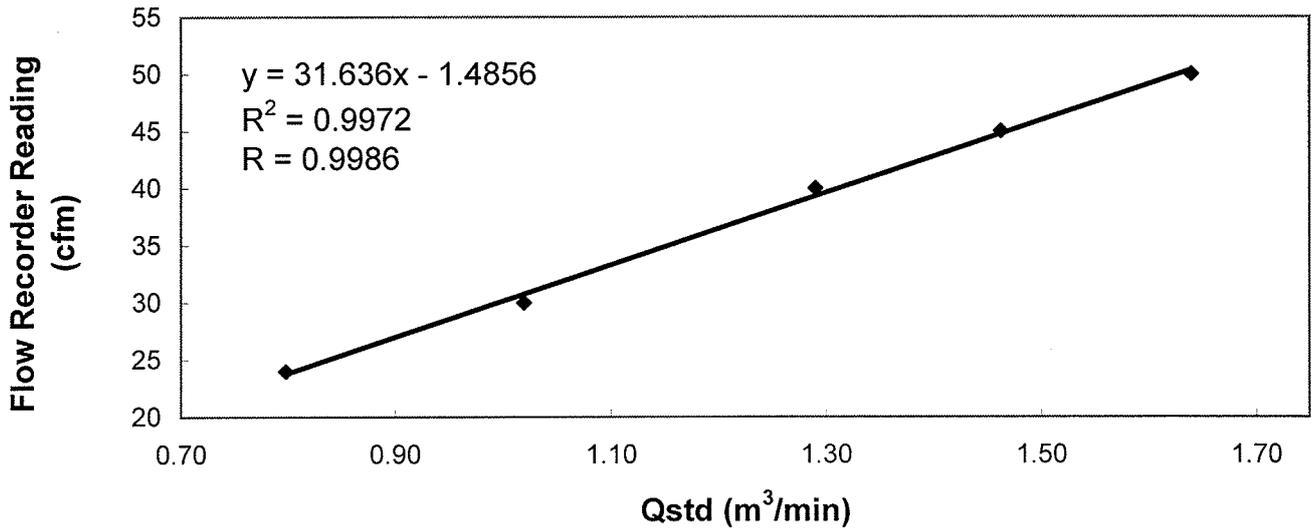
**Calibration Report**  
**of**  
**High Volume Air Sampler**

**Manufacturer** : Graseby GMW Date of Calibration : 06 May 2009  
**Serial No.** : 9998 ( ET / EA / 003 / 12 ) Calibration Due Date : 05 July 2009  
**Method** : Five-point calibration by using standard calibration kit Tisch TE-5025A refer to the Operations Manual

**Results** :

Flow recorder reading (cfm)	50	45	40	30	24
Qstd (Actual flow rate, m <sup>3</sup> /min)	1.64	1.46	1.29	1.02	0.80
Pressure :	760 mm Hg			Temp. :	298 K

**Sampler 9998 Calibration Curve**  
**Site: Ocean Park (AM-3)**



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

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

Calibrated by : MAK, Kei Wai  
 (Senior Environmental Technician)

Approved by : LAW, Sau Yee  
 (Senior Environmental Officer)







# Calibration Certificate

Certificate No. **85826**

Page 1 of 4 Pages

**Customer :** ETS-Testconsult Limited

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

**Order No. :** Q82237

**Date of receipt :** 21-Nov-08

## Item Tested

**Description :** Precision Integrating Sound Level Meter (ET/EN/003/12)

**Manufacturer :** Rion

**Model :** NL-31

**Serial No. :** 00773032

## Test Conditions

**Date of Test :** 26-Nov-08

**Supply Voltage :** --

**Ambient Temperature :**  $(23 \pm 3)^{\circ}\text{C}$

**Relative Humidity :**  $(50 \pm 25) \%$

## Test Specifications

Calibration check.

Calibration procedure : Z01.

## Test Results

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

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

Main Test equipment used:

<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Due Date</u>	<u>Traceable to</u>
S017A	Multi-Function Generator	75932	6-Dec-08	SCL-HKSAR
S024	Sound Level Calibrator	82926	16-Jul-09	NIM-PRC & SCL-HKSAR

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

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

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

Calibrated by : 

P.F. Wong

Approved by : 

Dorothy Cheuk

Date: 28-Nov-08

This Certificate is issued by:

Hong Kong Calibration Ltd.

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

Tel: 2425 8801 Fax: 2425 8646

The copyright of this certificate is owned by Hong Kong Calibration Ltd.. It may not be reproduced except in full.



# Calibration Certificate

Certificate No. 85826

Page 2 of 4 Pages

Results :

## 1. SPL Accuracy

UUT Setting			Applied Value (dB)	UUT Reading (dB)
Level Range (dB)	Weight	Response		
20 – 100	L <sub>A</sub>	Fast	94.03	94.0
		Slow		94.0
	L <sub>C</sub>	Fast		94.0
	L <sub>p</sub>	Fast		94.0
30 – 120	L <sub>A</sub>	Fast	94.03	93.9
		Slow		93.9
	L <sub>C</sub>	Fast		93.9
	L <sub>p</sub>	Fast		93.9
30 – 120	L <sub>A</sub>	Fast	113.97	113.7
		Slow		113.7
	L <sub>C</sub>	Fast		113.7
	L <sub>p</sub>	Fast		113.7

IEC Type 1 Spec. :  $\pm 0.7$  dB

Uncertainty :  $\pm 0.1$  dB

## 2. Level Stability : 0.0 dB

IEC 651 Type 1 Spec. :  $\pm 0.3$  dB

Uncertainty :  $\pm 0.01$  dB



# Calibration Certificate

Certificate No. 85826

Page 3 of 4 Pages

## 3. Linearity

### 3.1 Level Linearity

UUT Range (dB)	Applied Value (dB)	UUT Reading (dB)	Variation (dB)	IEC 651 Type 1 Spec. (Primary Indicator Range)
130	114.0	114.0	- 0.1	± 0.7 dB
130	104.0	103.9	0.0	
120	94.0	93.9 (Ref.)	--	
110	84.0	84.0	- 0.1	
100	74.0	74.1	- 0.2	
90	64.0	64.1	- 0.2	
80	54.0	54.2	- 0.3	

Uncertainty : ± 0.1 dB

### 3.2 Differential level linearity

UUT Range (dB)	Applied Value (dB)	UUT Reading (dB)	Variation (dB)	IEC 651 Type 1 Spec.
120	84.0	83.9	0.0	± 0.4 dB
	94.0	93.9 (Ref.)	--	
	95.0	94.9	0.0	± 0.2 dB
	104.0	103.8	+ 0.1	± 0.3 dB
	105.0	104.8	+ 0.1	± 1.0 dB

Uncertainty : ± 0.1 dB

## 4. Frequency Weighting

### A weighting

Frequency	Attenuation (dB)	IEC 651 Type 1 Spec.
31.5 Hz	- 40.2	- 39.4 dB, ± 1.5 dB
63 Hz	- 26.8	- 26.2 dB, ± 1.5 dB
125 Hz	- 16.7	- 16.1 dB, ± 1 dB
250 Hz	- 9.2	- 8.6 dB, ± 1 dB
500 Hz	- 3.5	- 3.2 dB, ± 1 dB
1 kHz	0.0 (Ref.)	0 dB, ± 1 dB
2 kHz	+ 1.5	+ 1.2 dB, ± 1 dB
4 kHz	+ 1.4	+ 1.0 dB, ± 1 dB
8 kHz	- 0.7	- 1.1 dB, + 1.5 dB ~ - 3 dB
16 kHz	- 6.3	- 6.6 dB, + 3 dB ~ - ∞

Uncertainty : ± 0.1 dB



# Calibration Certificate

Certificate No. 85826

Page 4 of 4 Pages

## 4. Time Averaging

Applied Burst duty Factor	Applied Leq Value (dB)	UUT Reading (dB)	IEC 804 Type 1 Spec.
continuous	40.0	40.0	--
1/10	40.0	40.1	± 0.5 dB
1/10 <sup>2</sup>	40.0	40.2	
1/10 <sup>3</sup>	40.0	40.4	± 1.0 dB
1/10 <sup>4</sup>	40.0	40.5	

Uncertainty : ± 0.1 dB

Remark : 1. UUT : Unit-Under-Test

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

3. Atmospheric Pressure : 1 010 hPa.

----- END -----

## **Appendix D**

Ocean Park Redevelopment Project  
 Contract No. CI07 – Entry Plaza, Aqua City and Grand Aquarium  
 Monthly EM&A Report – July, August and September 2009

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

Monitoring Location	24-hr TSP ( $\mu\text{g}/\text{m}^3$ )		1-hr TSP ( $\mu\text{g}/\text{m}^3$ )	
	Action Level	Limit Level	Action Level	Limit Level
AM1	183	260	440	500
AM2	181	260	500	500
AM3/AM3A	194	260	500	500

**Table B.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

## **Appendix E**

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

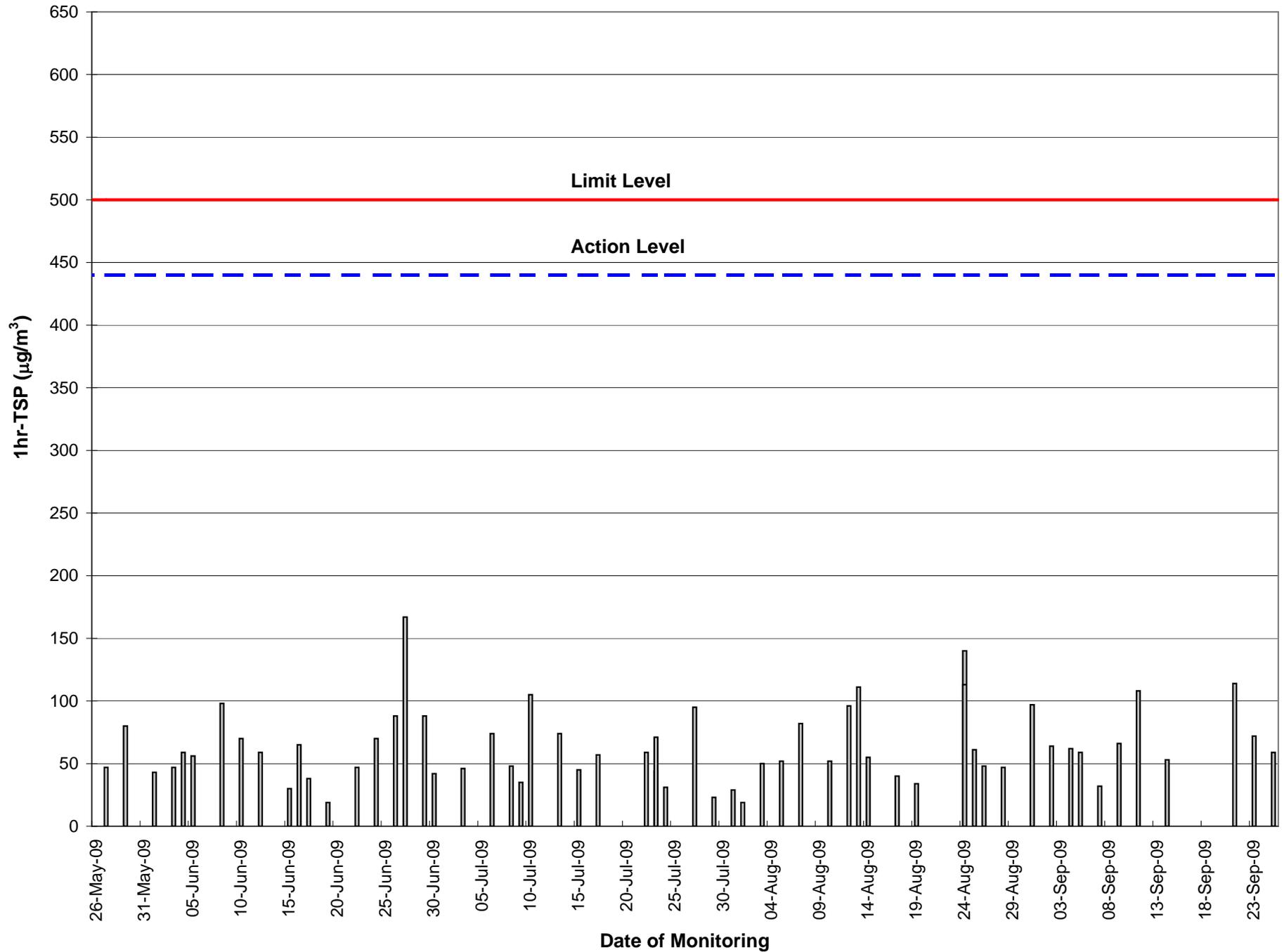
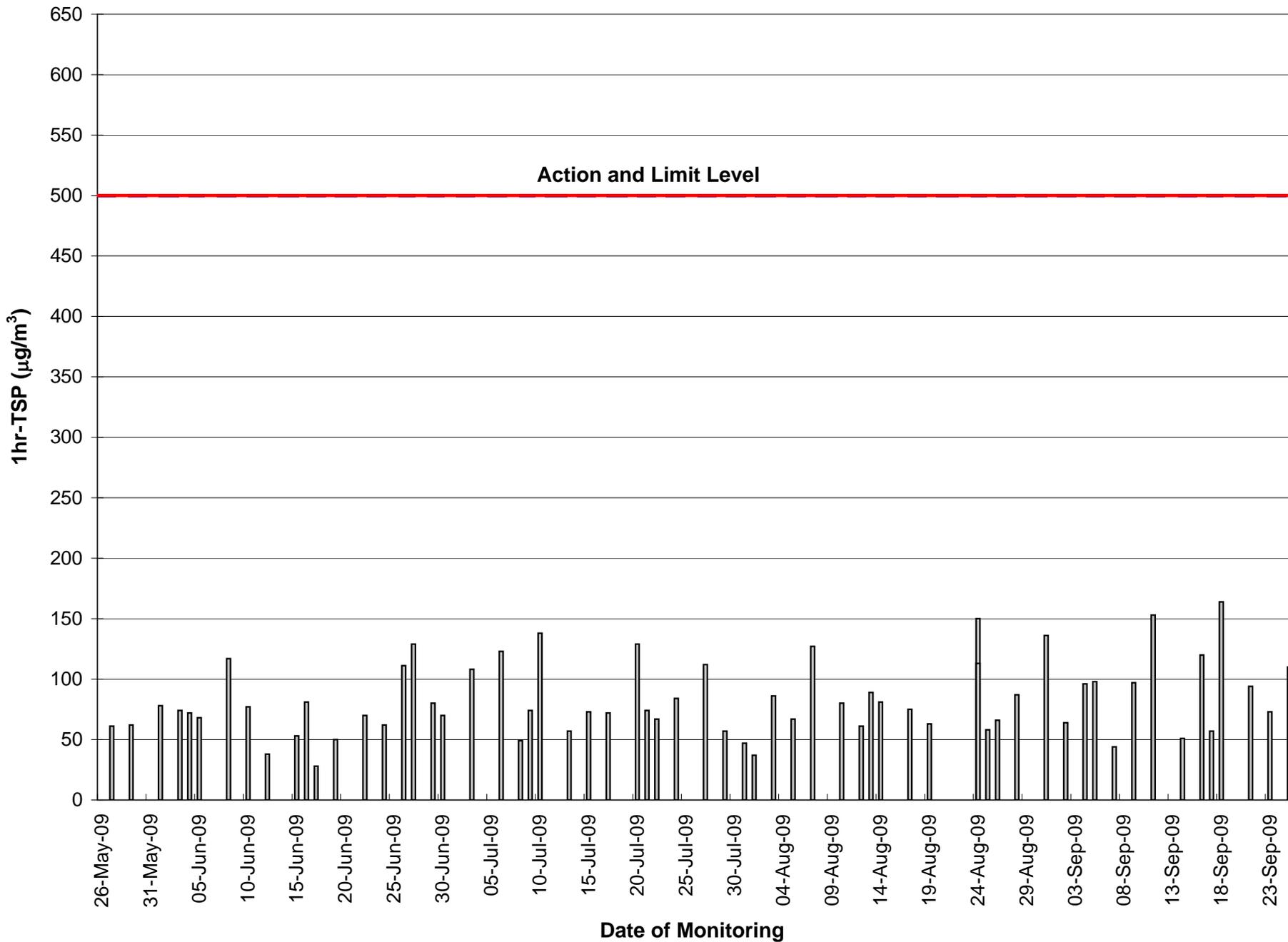


Figure C.2 1-hr TSP monitoring results of Monitoring Station AM2



## **Appendix F**

Fig D.1 - Daytime Noise Monitoring Results of Monitoring Stations CN1, CN2, CN3 & CN4

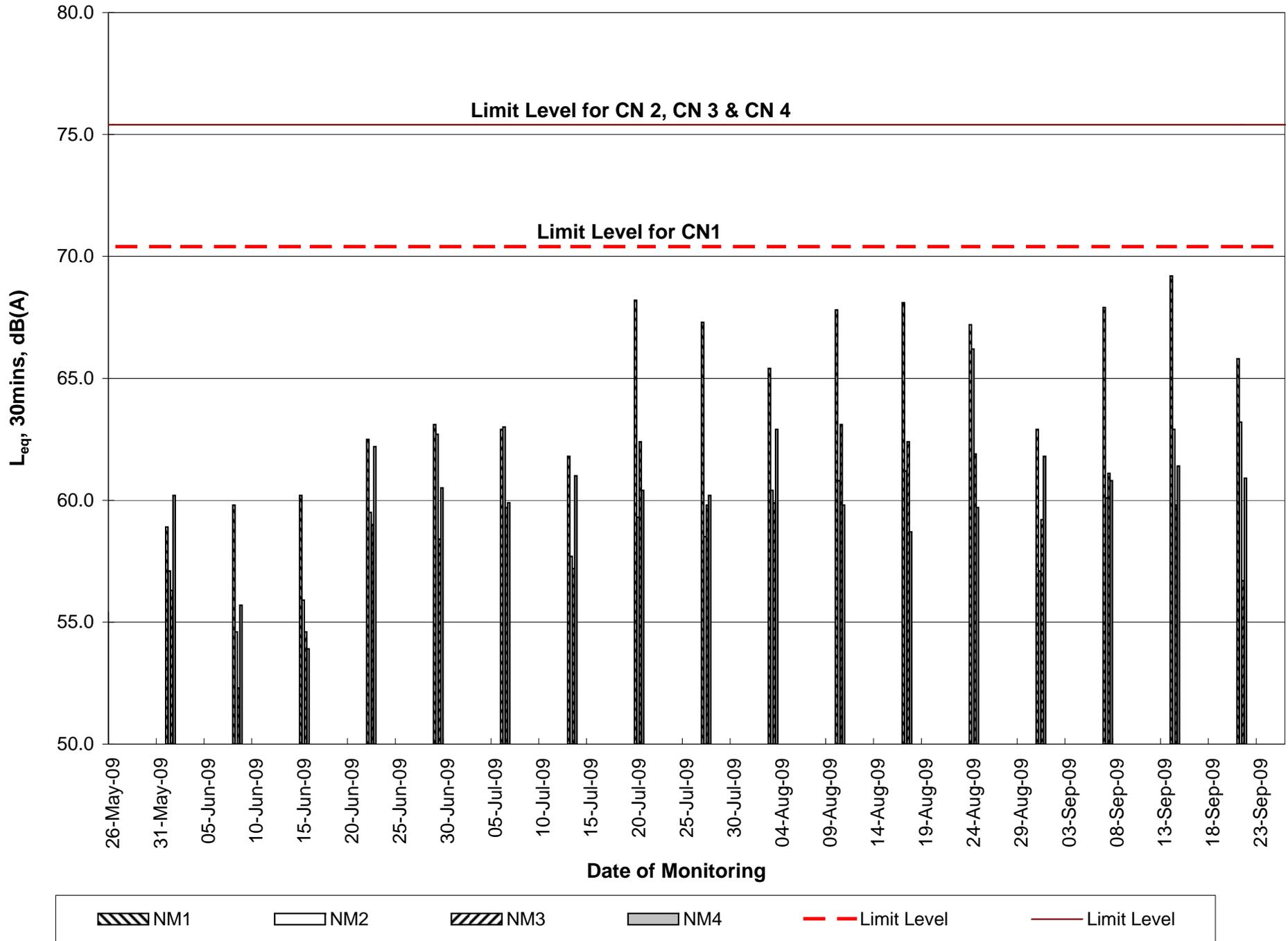
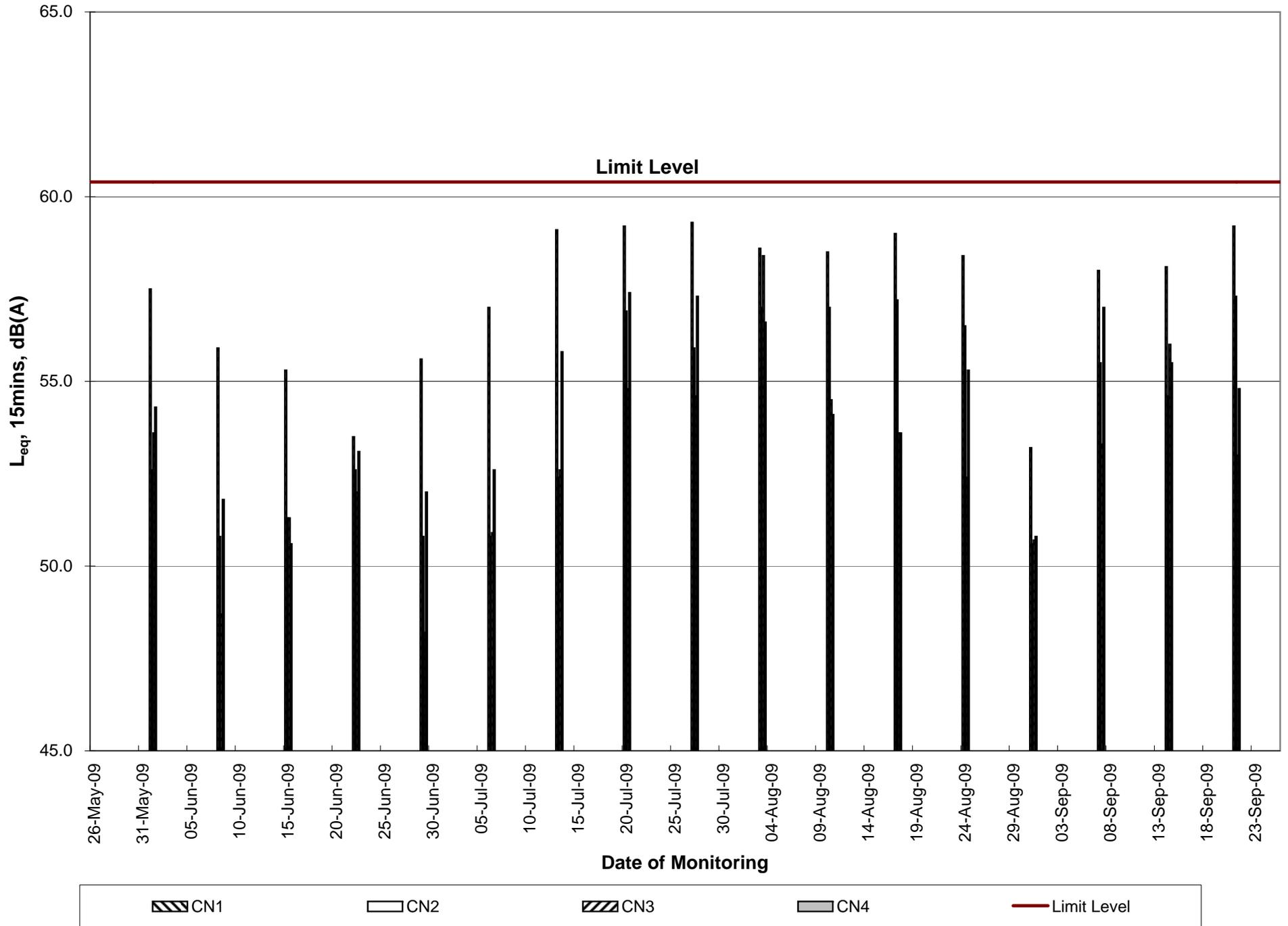


Fig D.2 - Evening Noise Monitoring Results of Monitoring Stations CN1, CN2, CN3 & CN4



## **Appendix G**

Environmental Mitigation Implementation Schedule - Air Emission

ID No	Environmental Aspect (not required for actions specifically recommended in Environmental Impact Assessment)	Specifically Recommended in Environmental Impact Assessment?	Actions Required These actions can be amended if necessary to suit particular needs unless they are in response to a specified legal requirements	Action party(s)	Additional Control/monitoring and measurement procedures/ methods (if necessary)	Scheduled months	Status
1		yes	Use of regular watering, with complete coverage, to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather.	Superintendent/ Supervisor/Foremen	Weekly Environmental Inspection Checklist	08/08 - 11/10	OK
2		yes	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.	Superintendent/ Supervisor/Foremen	Weekly Environmental Inspection Checklist	08/08 - 11/10	OK
3		yes	Use of frequent watering for particularly dusty construction areas, temporary stockpiles and areas close to ASRs.	Superintendent/ Supervisor/Foremen	Weekly Environmental Inspection Checklist	08/08 - 11/10	OK
4		yes	Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs.	Superintendent/ Supervisor/Foremen  Subcontractor	Weekly Environmental Inspection Checklist	08/08 - 11/10	OK
5		yes	Restricting heights from which materials are dropped, as far as practicable to minimise the fugitive dust arising from unloading/loading.	Superintendent/ Supervisor/Foremen  Subcontractor		08/08 - 11/10	OK
6		yes	Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations.	Superintendent/ Supervisor/Foremen  Subcontractor	Weekly Environmental Inspection Checklist	08/08 - 11/10	OK
7		yes	Use of vehicle wheel and body washing facilities at the exit points of the site.	Superintendent/ Supervisor/Foremen Project Environmental Co-ordinator Subcontractor	Weekly Environmental Inspection Checklist	08/08 - 11/10	OK
8		yes	Imposition of speed controls for vehicles on unpaved site roads. Ten kilometers per hour is the recommended limit.	Superintendent/ Supervisor/Foremen Project Environmental Co-ordinator		08/08 - 11/10	OK

Environmental Mitigation Implementation Schedule - Air Emission

ID No	Environmental Aspect (not required for actions specifically recommended in Environmental Impact Assessment)	Specifically Recommended in Environmental Impact Assessment?	Actions Required These actions can be amended if necessary to suit particular needs unless they are in response to a specified legal requirements	Action party(s)	Additional Control/monitoring and measurement procedures/ methods (if necessary)	Scheduled months	Status
9		yes	Dusty activities should be re-scheduled if high-wind conditions are encountered.	Superintendent/ Supervisor/Foremen Project Environmental Co-ordinator		08/08 - 11/10	OK
10		yes	Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs.	Superintendent/ Supervisor/Foremen Project Environmental Co-ordinator		08/08 - 11/10	OK
11		yes	Implementation of an environmental monitoring and auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.	Project Environmental Co-ordinator		08/08 - 11/10	N.A.
12		yes	The works areas shall be fenced off with hoarding. The height of hoarding should not be less than 2.4 m from ground level	Superintendent/ Supervisor/Foremen	Weekly Environmental Inspection Checklist	08/08 - 11/10	OK

Environmental Mitigation Implementation Schedule - Noise

ID No	Environmental Aspect (not required for actions specifically recommended in Environmental Impact Assessment)	Specifically Recommended in Environmental Impact Assessment?	Actions Required These actions can be amended if necessary to suit particular needs unless they are in response to a specified legal requirements	Action party(s)	Additional Control/monitoring and measurement procedures/ methods (if necessary)	Scheduled months	Status
1		yes	Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program	Superintendent/ Supervisor/Foremen Project Environmental Coordinator Subcontractor	Weekly Environmental Inspection Checklist	08/08-11/10	OK
2		yes	Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program	Superintendent/ Supervisor/Foremen  Subcontractor	Weekly Environmental Inspection Checklist	08/08-11/10	N.A.
3		yes	Mobile plant, if any, should be sited as far from NSRs as possible	Superintendent/ Supervisor/Foremen  Subcontractor	Weekly Environmental Inspection Checklist	08/08-11/10	OK
4		yes	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	Superintendent/ Supervisor/Foremen  Subcontractor	Weekly Environmental Inspection Checklist	08/08-11/10	OK
5		yes	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	Superintendent/ Supervisor/Foremen  Subcontractor	Weekly Environmental Inspection Checklist	08/08-11/10	OK
6		yes	Quiet Plant considered for at Entry Plaza construction for Site Clearance, Demolition, Realignment of Ocean Park Road, Drainage Diversion, Sewerage Diversion, Site Formation & Excavation, Piling Works and Superstructure Construction where calculated noise levels exceed limits	Superintendent/ Supervisor/Foremen  Subcontractor	Weekly Environmental Inspection Checklist	08/08-11/10	OK
7		yes	Quiet Plant considered for Aqua City construction during - Site Clearance, Demolition, Slopeworks, Site Formation & Excavation, Piling Works and Superstructure Construction where calculated noise levels exceed limits	Superintendent/ Supervisor/Foremen  Subcontractor	Weekly Environmental Inspection Checklist	08/08-11/10	OK
8		yes	Moveable noise barriers considered for at Entry Plaza construction for Site Clearance, Demolition, Realignment of Ocean Park Road, Drainage Diversion, Sewerage Diversion, Site Formation & Excavation, Piling Works and Superstructure Construction where calculated noise levels exceed limits	Superintendent/ Supervisor/Foremen  Subcontractor	Weekly Environmental Inspection Checklist	08/08-11/10	N.A.
9		yes	Moveable barriers considered for Aqua City construction during - Site Clearance, Demolition, Slopeworks, Site Formation & Excavation, Piling Works and Superstructure Construction where calculated noise levels exceed limits	Superintendent/ Supervisor/Foremen  Subcontractor	Weekly Environmental Inspection Checklist	08/08-11/10	N.A.

Environmental Mitigation Implementation Schedule - Water

ID No	Environmental Aspect (not required for actions specifically recommended in Environmental Impact Assessment)	Specifically Recommended in Environmental Impact Assessment?	Actions Required These actions can be amended if necessary to suit particular needs unless they are in response to a specified legal requirements	Action party(s)	Additional Control/monitoring and measurement procedures/ methods (if necessary)	Scheduled months	Status
1		Yes	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.	Superintendent/ Supervisor/Foremen  Subcontractor	Weekly Environmental Inspection Checklist	08/08 to 09/08	OK
2		Yes	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.	Superintendent/ Supervisor/Foremen  Subcontractor	Weekly Environmental Inspection Checklist	08/08 to 11/10	OK
3		Yes	Boundaries of earthworks should be marked and surrounded by dykes or embankments for flood protection, as necessary.	Superintendent/ Supervisor/Foremen  land surveyor		08/08 to 11/10	OK
4		Yes	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.	Superintendent/ Supervisor/Foremen  project environmental co-ordinator	Weekly Environmental Inspection Checklist	08/08 to 11/10	OK
5		Yes	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.	Superintendent/ Supervisor/Foremen  Subcontractor	Weekly Environmental Inspection Checklist	08/08 to 11/10	OK
6		Yes	<b>Exposed soil surfaces should be covered,</b>	Superintendent/ Supervisor/Foremen  Subcontractor	Weekly Environmental Inspection Checklist	08/08 to 11/10	OK
7		Yes	Water pumped out from foundation excavations should be discharged into silt removal facilities.	Superintendent/ Supervisor/Foremen  Subcontractor	Weekly Environmental Inspection Checklist	08/08 to 11/10	OK

Environmental Mitigation Implementation Schedule - Water

ID No	Environmental Aspect (not required for actions specifically recommended in Environmental Impact Assessment)	Specifically Recommended in Environmental Impact Assessment?	Actions Required  These actions can be amended if necessary to suit particular needs unless they are in response to a specified legal requirements	Action party(s)	Additional Control/monitoring and measurement procedures/ methods (if necessary)	Scheduled months	Status
8		Yes	If excavation cannot be avoided during rainy seasons, temporarily exposed slope/soil surfaces should be covered by a tarpaulin or other means, as far as practicable, and temporary access roads should be protected by crushed stone or gravel, as excavation proceeds. Intercepting channels should be provided (e.g. along the crest/ edge of the excavation) to prevent storm runoff from washing across exposed soil surfaces. Arrangements should always be in place to ensure that adequate surface protection measures can be safely carried out well before the arrival of a rainstorm. Other measures that need to be implemented before, during and after rainstorms are summarized in ProPECC PN 1/94.	Superintendent/ Supervisor/Foremen project environmental co-ordinator Subcontractor	Weekly Environmental Inspection Checklist	08/08 to 11/10	N.A.
9		Yes	Exposed soil areas should be minimized to reduce potential for increased siltation and contamination of runoff.	Superintendent/ Supervisor/Foremen  Subcontractor	Weekly Environmental Inspection Checklist	08/08 to 11/10	OK
10		Yes	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.	Superintendent/ Supervisor/Foremen  Subcontractor	Weekly Environmental Inspection Checklist	08/08 to 11/10	OK
11		Yes	Open stockpiles of construction materials or construction wastes on-site of more than 50m <sup>3</sup> <b>should be covered with tarpaulin or similar fabric during rainstorms</b>	Superintendent/ Supervisor/Foremen  Subcontractor		08/08 to 11/10	OK
12		Yes	Debris and refuse generated on-site should be collected, handled and disposed of properly to avoid entering any nearby water bodies and public drainage system. Stockpiles of cement and other construction materials should be kept covered when not being used.	Superintendent/ Supervisor/Foremen  Subcontractor	Weekly Environmental Inspection Checklist	08/08 to 11/10	OK
13		Yes	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.	Superintendent/ Supervisor/Foremen project environmental co-ordinator Subcontractor	Weekly Environmental Inspection Checklist	08/08 to 11/10	OK

Environmental Mitigation Implementation Schedule - Ecological Resources

ID No	Environmental Aspect (not required for actions specifically recommended in Environmental Impact Assessment)	Specifically Recommended in Environmental Impact Assessment?	Actions Required These actions can be amended if necessary to suit particular needs unless they are in response to a specified legal requirements	Action party(s)	Additional Control/monitoring and measurement procedures/ methods (if necessary)	Scheduled months	Status
1		Yes	All excavation works carried out close to water bodies shall be carefully controlled to avoid runoff entering watercourses, especially during periods of heavy rain.	Superintendent/ Supervisor/Foremen  Subcontractor	Weekly Environmental Inspection Checklist	08/08-11/10	N.A.
2		Yes	Site runoff shall be directed towards regularly cleaned and maintained silt traps and where appropriate, oil/grease separators to minimise risk of sedimentation and pollution.	Superintendent/ Supervisor/Foremen  Subcontractor	Weekly Environmental Inspection Checklist	08/08-11/10	OK
3		Yes	Suitable size / capacity silt traps and oil/grease interceptors shall be used.	Superintendent/ Supervisor/Foremen  Subcontractor	Weekly Environmental Inspection Checklist	08/08-11/10	N.A.
4		Yes	Coral monitoring shall be implemented (by others)	Project Environmental Coordinator		08/08-11/10	N.A.
5		Yes	Noise mitigation measures including the use of quiet excavation methods, quiet construction plant and temporary noise barriers shall be implemented to minimise disturbance to habitats adjacent to the works areas	Superintendent/ Supervisor/Foremen Project Environmental Coordinator/ Engineer Subcontractor	Weekly Environmental Inspection Checklist	08/08-11/10	OK
6		Yes	Vegetation survey and subsequent transplantation of locally uncommon or restricted species (i.e. Long Tentacle Orchid, Sword-leaved Orchid, Green-flowered Rattlesnake-Plantain, Cycad-fern Balloon Flower and Chinese Lily) shall be carried out to determine the feasibility and suitability of individual plants for transplantation to protect plant species of conservation interest	Project Environmental Coordinator/ Engineer		08/08-11/10	OK
7		Yes	Receptor sites shall be identified.	Superintendent/ Supervisor/Foremen Project Environmental Coordinator		08/08-11/10	OK
8		Yes	Transplantation shall be supervised by a suitably qualified botanist/ horticulturist to protect plant species of conservation interest	Project Environmental Coordinator		08/08-11/10	OK
9		Yes	A detailed transplantation methodology shall be formulated during the detailed design stage based on the information collected during the detailed vegetation survey to protect plant species of conservation interest				N.A.

Environmental Mitigation Implementation Schedule - Ecological Resources

ID No	Environmental Aspect (not required for actions specifically recommended in Environmental Impact Assessment)	Specifically Recommended in Environmental Impact Assessment?	Actions Required These actions can be amended if necessary to suit particular needs unless they are in response to a specified legal requirements	Action party(s)	Additional Control/monitoring and measurement procedures/ methods (if necessary)	Scheduled months	Status
10		Yes	Equipment or stockpile shall only be in designated works areas wherever practicable.	Superintendent/ Supervisor/Foremen		08/08-11/10	OK
11		Yes	Access routes shall be selected as far as practicable on existing disturbed land.	Superintendent/ Supervisor/Foremen Project Environmental Coordinator Subcontractor		08/08-11/10	N.A.
12		Yes	Construction activities shall be restricted to designated works areas.	Superintendent/ Supervisor/Foremen	Weekly Environmental Inspection Checklist	08/08-11/10	OK
13		Yes	The works areas shall be reinstated immediately after completion of works.	Superintendent/ Supervisor/Foremen  Subcontractor		08/08-11/10	OK
14		Yes	Waste skips shall be provided to collect general refuse and construction wastes.	Superintendent/ Supervisor/Foremen Project Environmental Coordinator	Weekly Environmental Inspection Checklist	08/08-11/10	OK
15		Yes	The wastes shall be disposed of timely and properly off-site.	Superintendent/ Supervisor/Foremen  Subcontractor	Weekly Environmental Inspection Checklist	08/08-11/10	OK
16		Yes	Drainage arrangements shall include sediment traps to collect and control construction run-off	Superintendent/ Supervisor/Foremen Engineer	Weekly Environmental Inspection Checklist	08/08-11/10	OK
17		Yes	Open burning on works sites is illegal, and shall be strictly enforced.	Superintendent/ Supervisor/Foremen  Subcontractor	Weekly Environmental Inspection Checklist	08/08-11/10	OK

Environmental Mitigation Implementation Schedule - Archaeological and Historical Resources

ID No	Environmental Aspect (not required for actions specifically recommended in Environmental Impact Assessment)	Specifically Recommended in Environmental Impact Assessment?	Actions Required These actions can be amended if necessary to suit particular needs unless they are in response to a specified legal requirements	Action party(s)	Additional Control/monitoring and measurement procedures/ methods (if necessary)	Scheduled months	Status
1		Yes	If any works are planned within one metre of the grave, a one metre buffer zone will be provided around the grave, demarcated by a temporary fence.	Superintendent/ Supervisor/Foremen		08/08-11/10	N.A.

Environmental Mitigation Implementation Schedule - Waste Management

ID No	Environmental Aspect (not required for actions specifically recommended in Environmental Impact Assessment)	Specifically Recommended in Environmental Impact Assessment?	Actions Required These actions can be amended if necessary to suit particular needs unless they are in response to a specified legal requirements	Action party(s)	Additional Control/monitoring and measurement procedures/ methods (if necessary)	Scheduled months	Status
1		Yes	Nomination of an approved person, 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 (Good site practices)	Superintendent/ project environmental coordinator		08/08-11/10	OK
2		Yes	Training of site personnel in proper waste management and chemical handling procedures	project environmental coordinator		08/08-11/10	OK
3		Yes	Provision of sufficient waste disposal points and regular collection of waste	Site supervisor	Weekly Environmental Inspection Checklist	08/08-11/10	OK
4		Yes	Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers	Superintendent/ Supervisor/Foremen  Subcontractor	Weekly Environmental Inspection Checklist	08/08-11/10	OK
5		Yes	Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.	project environmental coordinator	EMP	08/08-11/10	OK
6		Yes	Waste reduction measures: Sort C&D waste from demolition and decommissioning of the existing facilities to recover recyclable portions such as metals	Superintendent/ Supervisor/Foremen project environmental coordinator Subcontractor	Weekly Environmental Inspection Checklist	08/08-11/10	OK
7		Yes	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	Superintendent/ Supervisor/Foremen  Subcontractor	Weekly Environmental Inspection Checklist	08/08-11/10	OK
8		Yes	Encourage collection of aluminium cans by providing separate labelled bins to enable this waste to be segregated from other general refuse generated by the work force	Superintendent/ Supervisor/Foremen project environmental coordinator Subcontractor		08/08-11/10	OK
9		Yes	Proper storage and site practices to minimise the potential for damage or contamination of construction materials	Superintendent/ Supervisor/Foremen  Subcontractor	Weekly Environmental Inspection Checklist	08/08-11/10	OK
10		Yes	Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.	Superintendent/ Supervisor/Foremen  Subcontractor		08/08-11/10	OK

Environmental Mitigation Implementation Schedule - Waste Management

ID No	Environmental Aspect (not required for actions specifically recommended in Environmental Impact Assessment)	Specifically Recommended in Environmental Impact Assessment?	Actions Required These actions can be amended if necessary to suit particular needs unless they are in response to a specified legal requirements	Action party(s)	Additional Control/monitoring and measurement procedures/ methods (if necessary)	Scheduled months	Status
11		Yes	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	Superintendent/ Supervisor/Foremen project environmental coordinator Subcontractor		08/08-11/10	OK
12		Yes	In order to minimise impacts resulting from collection and transportation of C&D material for off-site disposal, the excavated materials arising from site formation should be reused on-site as backfilling material and for landscaping works as far as practicable. In addition, volcanic rock generated from the tunnelling works should be subject to beneficial re-use. Other mitigation requirements are listed below: - A Waste Management Plan should be prepared - A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be used - In order to monitor the disposal of C&D and solid wastes at public filling facilities and landfills, and to control fly-tipping, trip ticket systems will be adopted.	Engineer project environmental coordinator	Weekly Environmental Inspection Checklist	08/08-11/10	OK
13		Yes	Chemical waste: Contractor would be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the <i>Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes</i> .	project environmental coordinator	Weekly Environmental Inspection Checklist	08/08-11/10	OK
14		Yes	Chemical waste: 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 waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc.	Superintendent/ Supervisor/Foremen Subcontractor	Weekly Environmental Inspection Checklist	08/08-11/10	OK
15		Yes	Chemical waste: The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, either to the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation	Superintendent/ Supervisor/Foremen		08/08-11/10	OK

## **Appendix H**



## Appendix H Licenses and Permits

### Other Permits & Licenses

#### CW02

Permit/Ref/No	Valid Period		Section	Status
<b>Notification of Construction Work under APCO</b>				
001022480	11 July 07	-	Astounding Asia	Notified
<b>Effluent Discharge License</b>				
EP820/W9/XW240	12 Oct 07	31 Oct 12	Astounding Asia	Valid
<b>Registration as Chemical Waste Producer</b>				
5213-199-W2894-18	20 Aug 07	-	Form Oil, Lubricant oil, paint, solvent and diesel.	Registered
<b>Construction Waste Disposal Charging Scheme</b>				
7005864	-	-	Astounding Asia	Issued

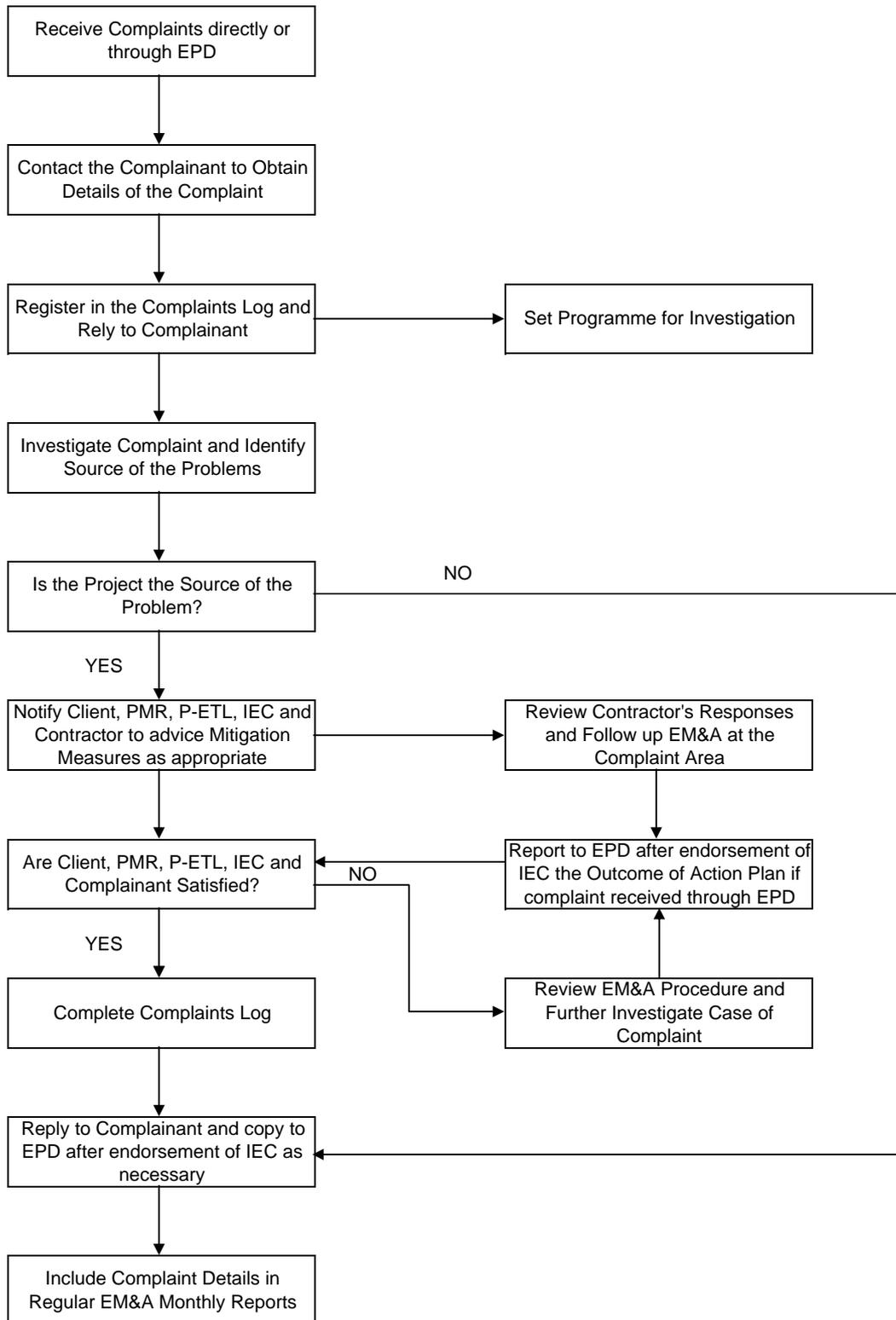
#### CI07

Permit/Ref/No	Valid Period		Section	Status
<b>Notification of Construction Work under APCO</b>				
001032366	-	-	Entry Plaza	Notified
<b>Effluent Discharge License</b>				
EP820/W2/XW246	5 Sep 08	30 Sep 13	Entry Plaza	Valid
<b>Registration as Chemical Waste Producer</b>				
5213-199-L2174-28	22 Sep 08	-	Form Oil, Lubricant oil, paint, solvent and diesel.	Registered
<b>Construction Waste Disposal Charging Scheme</b>				
7007576	-	-	Entry Plaza	Issued

#### CS02

Permit/Ref/No	Valid Period		Section	Status
<b>Notification of Construction Work under APCO</b>				
305349	N/A	N/A	Rainforest	Notified
<b>Effluent Discharge License</b>				
WT00004136-2009	12-Oct-07	30-Jun-14	Rainforest	Valid
<b>Registration as Chemical Waste Producer</b>				
WPN5214-176-W1150-03	13-May-09	N/A	Form Oil, Lubricant oil, paint, solvent and diesel.	Registered
<b>Construction Waste Disposal Billing Account with EPD</b>				
WFG07578	N/A	N/A	Rainforest	Issued

## **Appendix I**



**Ocean Park Redevelopment Project  
 Contract No. CI07 – Entry Plaza, Aqua City and Grand Aquarium  
 Quarterly EM&A Report – April, May and June 2009**

---

**Complaint Record Register**

<b>Record ID</b>	<b>Data Received</b>	<b>Type (PMR / EPD / Public / Others)</b>	<b>Description</b>	<b>Project</b>	<b>Justified compliant?</b>	<b>Status (Open / Closed)</b>
EC/CI07/001	17-Jun-09	Public thru EPD	Police Training School claimed that noise nuisance from CI07	CI07	N/A	The inspector of EPD came to the site and no significant observation was made, hence the complaint was closed.

## **Appendix J**

## Appendix J Coral Monitoring Results for the Reporting Quarter

### Results for July 2009

No impact coral monitoring was conducted in July 2009. It was because the monitoring frequency was changed to quarterly until the end of construction works as recommended in approved EM&A Manual.

### Results for August 2009

Site 1

Code	Coral Species	Area (cm <sup>3</sup> )	Sedimentation (% , mm)				Bleaching (%)				Mortality (%)			
			Apr 07 (baseline)	08 Feb 09	09 May 09	16 Aug 09	Apr 07 (baseline)	08 Feb 09	09 May 09	16 Aug 09	Apr 07 (baseline)	08 Feb 09	09 May 09	16 Aug 09
A01*	<i>Platygyra carnosus</i>	1000	0,0	0,0	0,0	-	0	0	0	-	0	6 ▲	6 ▲	-
A02*	<i>Platygyra carnosus</i>	2000	0,0	0,0	0,0	-	0	0	0	-	0	1 ▲	1 ▲	-
A03	<i>Favites pentagona</i>	200	0,0	1,1 ▲	2,1 ▲	2,1 ▲	0	0	0	0	0	3 ▲	3 ▲	3 ▲
A04	<i>Lepastrea pruinosa</i>	400	5,1	5,1	2,1 ▼	2,1 ▼	0	0	0	0	0	0	0	0
A05	<i>Platygyra carnosus</i>	1200	0,0	2,1 ▲	4,1 ▲	5,1 ▲	0	0	0	0	0	5	5	5
A06	<i>Platygyra carnosus</i>	1600	0,0	0,0	0,0	0,0	0	0	0	0	0	0	0	0
A07	<i>Favia rommana</i>	800	5,1	4,1 ▼	5,1	3,1 ▼	0	0	0	0	0	0	0	0
A08	<i>Platygyra carnosus</i>	1000	0,0	0,0	0,0	0,0	0	0	0	0	0	0	0	0
A09	<i>Platygyra carnosus</i>	350	0,0	0,0	0,0	0,0	0	0	0	0	0	0	0	0
A10	<i>Platygyra carnosus</i>	700	0,0	1,1 ▲	2,1 ▲	4,1 ▲	0	0	0	0	0	0	0	0

Site 2

Code	Coral Species	Area (cm <sup>3</sup> )	Sedimentation (% , mm)				Bleaching (%)				Mortality (%)			
			Apr 07 (baseline)	08 Feb 09	09 May 09	16 Aug 09	Apr 07 (baseline)	08 Feb 09	09 May 09	16 Aug 09	Apr 07 (baseline)	08 Feb 09	09 May 09	16 Aug 09
B01	<i>Platygyra carnosus</i>	450	0,0	0,0	0,0	0,0	0	0	0	0	0	0	0	0
B02	<i>Plesiastrea versipora</i>	300	0,0	0,0	0,0	0,0	0	0	0	0	0	1 ▲	1 ▲	1 ▲
B03	<i>Famnocora superficialis</i>	1000	5,1	3,1 ▼	5,1	7,1 ▲	0	0	0	0	0	2 ▲	2 ▲	2 ▲
B04	<i>Favia speciosa</i>	300	4,1	4,1	4,1	3,1 ▼	0	0	0	0	0	0	0	0
B05	<i>Plesiastrea versipora</i>	900	3,1	1,1 ▼	1,1 ▼	3,1	0	0	0	0	0	0	0	0
B06	<i>Platygyra carnosus</i>	600	0,0	2,1 ▲	3,1 ▲	5,1 ▲	0	0	0	0	0	0	0	0
B07	<i>Cyphastrea serailia</i>	700	0,0	5,1 ▲	3,1 ▲	2,1 ▲	0	0	0	0	0	0	0	0
B08	<i>Plesiastrea versipora</i>	1200	0,0	1,1 ▲	3,1 ▲	1,1 ▲	0	0	0	0	0	0	0	0
B09	<i>Favites pentagona</i>	600	0,0	0,0	0,0	2,1 ▲	0	0	0	0	0	0	0	0
B10	<i>Favites pentagona</i>	400	0,0	0,0	0,0	0,0	0	0	0	0	0	2 ▲	2 ▲	2 ▲

\*, coral colonies loss

Site 3

Code	Coral Species	Area (cm <sup>3</sup> )	Sedimentation (% , mm)				Bleaching (%)				Mortality (%)			
			Apr 07 (baseline)	08 Feb 09	09 May 09	09 May 09	Apr 07 (baseline)	08 Feb 09	09 May 09	09 May 09	Apr 07 (baseline)	08 Feb 09	09 May 09	09 May 09
C01	<i>Platygyra acuta</i>	2000	0,0	0,0	0,0	0,0	0	0	0	0	0	0	0	0
C02	<i>Platygyra carnosus</i>	1000	0,0	0,0	0,0	3,1 ▲	0	0	0	0	0	2 ▲	2 ▲	2 ▲
C03*	<i>Porites sp.</i>	400	5,1	5,1	5,1	-	0	0	0	-	1	5 ▲	5 ▲	-
C04	<i>Cyphastrea serailia</i>	600	4,1	4,1	4,1	4,1	0	0	0	0	0	0	0	0
C05	<i>Pavona decussata</i>	600	0,0	2,1 ▲	2,1 ▲	0,0	0	0	0	0	0	0	0	0
C06	<i>Pavona decussata</i>	1200	0,0	3,1 ▲	2,1 ▲	4,1 ▲	0	0	0	0	0	0	0	0
C07	<i>Montipora cf. turgescens</i>	200	2,1	2,1	2,1	0,0 ▼	0	0	0	0	0	0	0	0
C08	<i>Favia fava</i>	600	4,1	4,1	4,1	6,1 ▲	0	0	0	0	4	4	4	4
C09	<i>Favites pentagona</i>	150	1,1	2,1 ▲	1,1	1,1	0	0	0	0	0	5 ▲	5 ▲	5 ▲
C10	<i>Montipora peltiformis</i>	300	0,0	0,0	0,0	0,0	0	0	0	0	0	0	0	0

Site 4

Code	Coral Species	Area (cm <sup>3</sup> )	Sedimentation (% , mm)				Bleaching (%)				Mortality (%)			
			Apr 07 (baseline)	08 Feb 09	09 May 09	09 May 09	Apr 07 (baseline)	08 Feb 09	09 May 09	09 May 09	Apr 07 (baseline)	08 Feb 09	09 May 09	09 May 09
E01	<i>Goniopora stutchburyi</i>	300	0,0	0,0	0,0	2,1 ▲	0	0	0	0	0	0	0	0
E02	<i>Goniopora stutchburyi</i>	200	0,0	0,0	0,0	0,0	0	0	0	0	0	0	0	0
E03	<i>Goniopora stutchburyi</i>	150	0,0	2,1 ▲	2,1 ▲	2,1 ▲	0	0	0	0	0	0	0	0
E04	<i>Porites sp.</i>	400	5,1	1,1 ▼	5,1	5,1	0	0	0	0	0	5 ▲	5 ▲	5 ▲
E05	<i>Goniopora stutchburyi</i>	300	0,0	0,0	0,0	0,0	0	0	0	0	0	0	0	0
E06	<i>Goniopora stutchburyi</i>	450	0,0	0,0	0,0	1,1 ▲	0	0	0	0	0	0	0	0
E07	<i>Favia spectosa</i>	600	10,1	3,1 ▼	5,1 ▼	5,1 ▼	0	0	0	0	0	0	0	0
E08	<i>Porites sp.</i>	150	0,0	0,0	0,0	0,0	0	0	0	0	4	4	4	4
E09	<i>Porites sp.</i>	200	8,1	3,1 ▼	3,1 ▼	3,1 ▼	0	0	0	0	4	8 ▲	8 ▲	8 ▲
E10	<i>Porites sp.</i>	500	0,0	0,0	0,0	0,0	3	0	0	0	0	4 ▲	4 ▲	4 ▲

\*, coral colonies loss

Site 5

Code	Coral Species	Area (cm <sup>2</sup> )	Sedimentation (% , mm)				Bleaching (%)				Mortality (%)			
			Apr 07 (baseline)	08 Feb 09	09 May 09	16 Aug 09	Apr 07 (baseline)	08 Feb 09	09 May 09	16 Aug 09	Apr 07 (baseline)	08 Feb 09	09 May 09	16 Aug 09
D01	<i>Psammocora</i> sp.	600	10, 1	4, 1 ▼	5, 1 ▼	3, 1 ▼	0	0	0	0	0	2 ▲	2 ▲	2 ▲
D02	<i>Montipora cf. turgescens</i>	100	6, 1	2, 1 ▼	4, 1 ▼	3, 1 ▼	0	0	0	0	0	0	0	0
D03	<i>Goniopora stutchburti</i>	400	0, 0	0, 0	0, 0	1, 1 ▲	0	0	0	0	0	0	0	0
D04*	<i>Leptastrea pruinosa</i>	300	4, 1	2, 1 ▼	4, 1	-	0	0	0	-	0	5 ▲	5 ▲	-
D05	<i>Porites</i> sp.	400	5, 1	5, 1	5, 1	5, 1	1	0	0	0	4	4	4	4
D06	<i>Pleistiastrea versipora</i>	1000	0, 0	5, 1 ▲	5, 1 ▲	5, 1 ▲	0	0	0	0	5	5	5	5
D07	<i>Leptastrea pruinosa</i>	800	0, 0	0, 0	0, 0	0, 0	0	0	0	0	0	0	0	0
D08	<i>Pleistiastrea versipora</i>	100	0, 0	2, 1 ▲	5, 1 ▲	5, 1 ▲	0	0	0	0	0	0	0	0
D09*	<i>Leptastrea pruinosa</i>	150	5, 1	5, 1	5, 1	-	0	0	0	-	0	0	0	-
D10	<i>Montipora cf. turgescens</i>	200	0, 0	0, 0	0, 0	2, 1 ▲	0	0	0	0	0	0	0	2 ▲

Control Site C

Code	Coral Species	Area (cm <sup>2</sup> )	Sedimentation (% , mm)				Bleaching (%)				Mortality (%)			
			Apr 07 (baseline)	08 Feb 09	09 May 09	16 Aug 09	Apr 07 (baseline)	08 Feb 09	09 May 09	16 Aug 09	Apr 07 (baseline)	08 Feb 09	09 May 09	16 Aug 09
F01	<i>Favia speciosa</i>	900	0, 0	3, 1 ▲	5, 1 ▲	5, 1 ▲	0	0	0	0	0	0	0	0
F02	<i>Favites pentagona</i>	1000	4, 1	2, 1 ▼	3, 1 ▼	3, 1 ▼	0	0	0	0	0	3 ▲	3 ▲	3 ▲
F03	<i>Favites pentagona</i>	800	0, 0	2, 1 ▲	2, 1 ▲	5, 1 ▲	0	0	0	0	0	8 ▲	8 ▲	8 ▲
F04	<i>Porites</i> sp.	800	5, 1	5, 1	5, 1	4, 1 ▼	4	0 ▼	0 ▼	0 ▼	4	5 ▲	5 ▲	5 ▲
F05	<i>Cyphastrea serailia</i>	800	4, 1	3, 1 ▼	4, 1	4, 1	0	0	0	0	1	6 ▲	6 ▲	6 ▲
F06	<i>Psammocora</i> sp.	1800	0, 0	5, 1 ▲	7, 1 ▲	3, 1 ▲	0	0	0	0	0	5 ▲	5 ▲	5 ▲
F07	<i>Pleistiastrea versipora</i>	3000	0, 0	0, 0	0, 0	0, 0	0	0	0	0	0	2 ▲	2 ▲	2 ▲
F08a	<i>Favia speciosa</i>	150	0, 0	0, 0	0, 0	3, 1 ▲	0	0	0	0	0	0	0	0
F08b	<i>Goniastrea favulus</i>	300	0, 0	0, 0	0, 0	2, 1 ▲	0	0	0	0	0	0	0	0
F09	<i>Favites pentagona</i>	1800	10, 1	6, 1 ▼	5, 1 ▼	7, 1 ▼	0	0	0	0	0	12 ▲	12 ▲	12 ▲
F10*	<i>Platygyra carnosus</i>	2800	0, 0	0, 0	0, 0	-	0	0	0	-	0	0	0	-

\* , coral colonies loss

In this monitoring surveys conducted in August 2009, sedimentation on the tagged colonies from all the 5 Monitoring Sites 1 to 5 and the Control Site C increased by 1 to 5% (total 23 colonies with 5 from the Control Site C) and decreased by 1 to 7% (total 11 colonies with 3 from the Control Site C) when compared with the Initial Survey conducted on 7 to 12 April 2007. There was no bleaching in all the 5 monitoring Sites and the Control Site C. Partial mortality increased in 18 colonies by 1 to 12% with 7 from the Control Site C.

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.

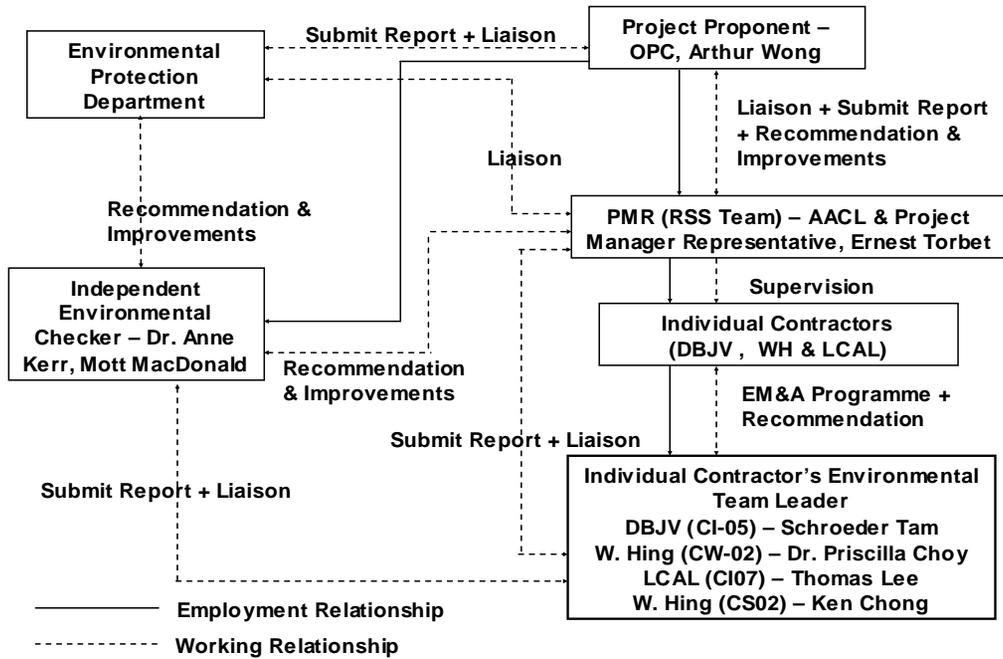
The data from this monitoring survey showed no significant enhancement in sedimentation, bleached or mortality in all the 5 Monitoring Sites 1 to 5 when compared with the Control Site C. Hence, no adverse impact by the construction activity on the coral community was evidenced.

**Results for September 2009**

No impact coral monitoring was conducted in September 2009. It was because the monitoring frequency was changed to quarterly until the end of construction works as recommended in approved EM&A Manual. The next scheduled monitoring should be in November 2009.

**Figure 1.1**

**Figure 1.1 Management Organization**



**Figure 1.2**



LEGEND:

--- SITE BOUNDARY

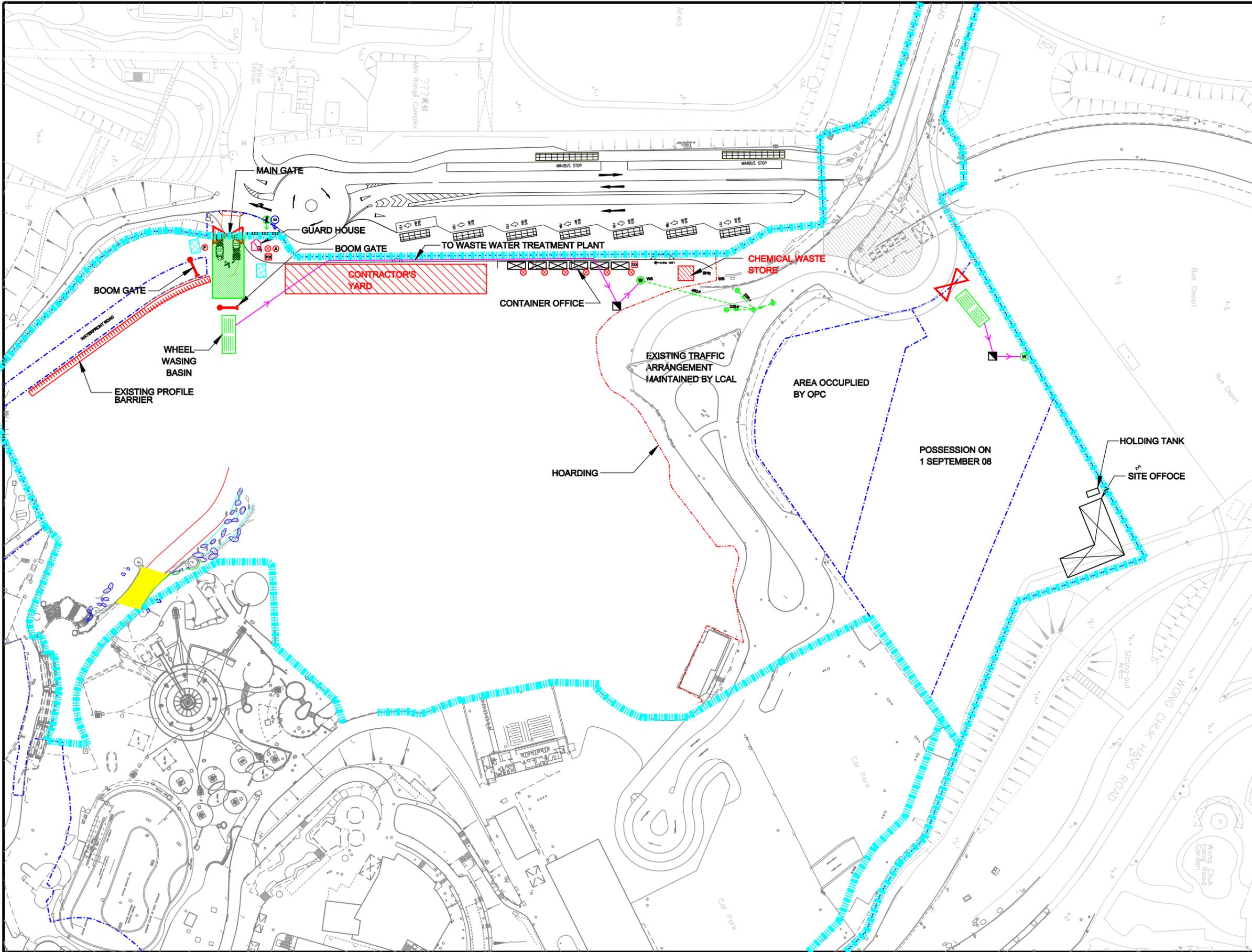
**CINOTECH**  
Cinotech Consultants Limited

CONTRACT NO. CW02  
OCEAN PARK REDEVELOPMENT PROJECT – ASTOUNDING ASIA

**SITE LAYOUT PLAN**

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

**Figure 1.3**



- LEGENDS :**
- CI07 SITE BOUNDARY
  - WHEEL WASHING BASIN
  - GUARD HOUSE
  - MAIN GATE
  - BOOM GATE
  - BUFFER ZONE FOR SECURITY CHECK & TURN AROUND AREA
  - FIRE EXTINGUISHER
  - HELMET STORAGE AREA
  - FIRST AID CENTRE
  - NOTICE BOARD (INCLUDING EMERGENCY TELEPHONE LIST)
  - WASTE WATER DISCHARGE POINT
  - WASTE WATER TREATMENT POINT (AQUASED)
  - U-CHANNEL / DRAIN
  - EVA TO BE KEPT CLEAR
  - TEMPORARY WATER SUPPLY
  - TEMPORARY ELECTRICITY SUPPLY
  - FLAGMAN LOCATION
  - TOILET
  - ACCESS GIVEN
  - ACCESS DENIED
  - CHEMICAL WASTE STORE

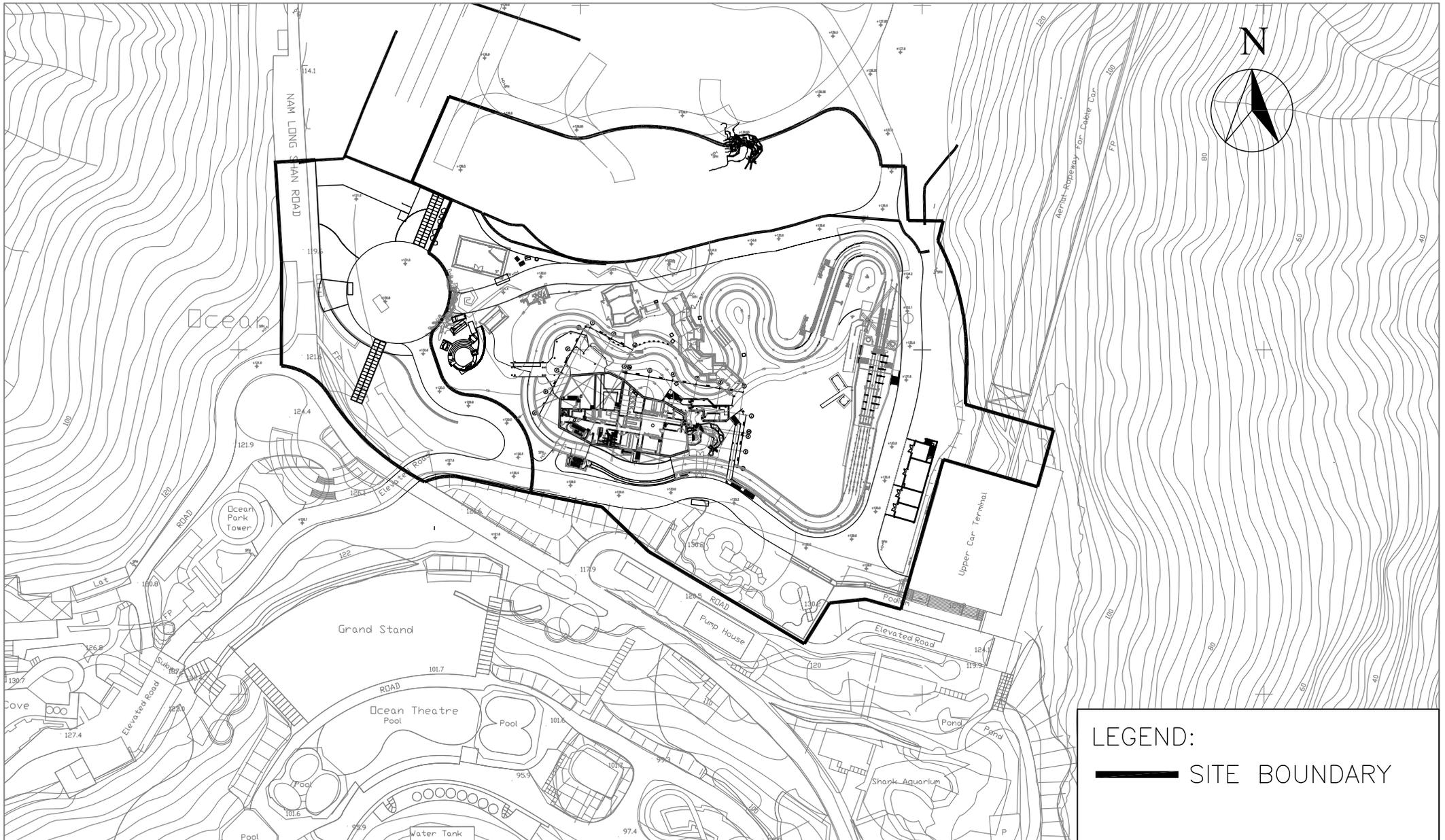
REVISION	DATE	DESCRIPTION	CHK. BY	AUTH. BY
A	27-8-08	CONTRACTOR'S YARD & CHEMICAL WASTE STORE ADDED		

PROJECT TITLE	OCEAN PARK REDEVELOPMENT CONTRACT No. CI07 ENTRY PLAZA, AQUA CITY & GRAND AQUARIUM
DRAWING TITLE	PROPOSED SITE ACCESS / SECURITY ARRANGEMENT

DESIGNED BY	
DRAWN BY	
CHECKED BY	
SCALE @ A3	1 : 1250

DRAWING NO. <b>H2458/E/4003</b>	
DATE	REV.
12-8-2008	A

**Figure 1.4**



LEGEND:  
**————** SITE BOUNDARY

 <b>永興聯合建築有限公司</b> <b>W. HING CONSTRUCTION CO. LTD.</b>	CONTRACT NO. CS02 OCEAN PARK REDEVELOPMENT PROJECT – RAINFOREST <b>SITE LAYOUT PLAN</b>	SCALE	A4 1:1500	DATE	JULY 2009	
		CHECK	Kan Kwok	DRAWN	HC LAU	
		JOB NO.	CS02	DRAWING No.	CS02/SL/01	REV

**Figure 1.5**



LEGEND:  
 ■ NOISE MONITORING STATION  
 ▲ AIR QUALITY MONITORING STATION

深水灣  
 DEEP WATER BAY  
 (SHAM SHUI WARD)

REV.	DESCRIPTION	DATE



**OCEAN PARK REDEVELOPMENT**

CONTRACT NO. C107  
 ENTRY PLAZA, AQUA CITY & GRAND AQUARIUM

**AIR QUALITY AND NOISE  
 MONITORING STATIONS  
 LOCATION PLAN**

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

 **LEIGHTON CONTRACTORS (ASIA) LTD.**

SCALE	DATE
N. T. S.	27/03/2009
DRAWN BY	CHECKED BY
F. LO	T. LEE
DWG NO.	REV.
H2458/E/0172	0

**Figure 1.6**



LEGEND:  
 ■ NOISE MONITORING STATION  
 ▲ AIR QUALITY MONITORING STATION

深水灣  
 DEEP WATER BAY  
 (SHAM SHUI WARD)

REV.	DESCRIPTION	DATE



**OCEAN PARK REDEVELOPMENT**

CONTRACT NO. C107  
 ENTRY PLAZA, AQUA CITY & GRAND AQUARIUM

**AIR QUALITY AND NOISE MONITORING STATIONS LOCATION PLAN**

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

 **LEIGHTON CONTRACTORS (ASIA) LTD.**

SCALE	N. T. S.	DATE	27/03/2009
DRAWN BY	F. LO	CHECKED BY	T. LEE
DWG NO.	H2458/E/0172		REV. 0