Ocean Park Master Redevelopment Project

Quarterly Environmental Monitoring & Audit Report – from October 2009 to December 2009

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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 October 2009 and 25 December 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	0 session for all stations
Holiday daytime noise monitoring	0 session 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
CS-03	Thrill Mountain & Polar Adventure	Kaden – ATAL JV	2 November 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 and CS03 EM&A Works. This report presents the results of EM&A works conducted in the reporting quarter from 26 October 2009 to 25 December 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		
		Oct 09	Nov 09	Dec 09
Waterfront (CI-05), Construction phase had ceased in early-June 2009				
1.	N/A	-	-	-
Vet Hospital (CS-01), Construction phase has ceased in mid-October 2008				

Item	Work Activity	Month		
		Oct 09	Nov 09	Dec 09
1.	N/A	-	-	-
Astounding Asia (CW-02)				
1.	Excavation works, RC works, Steelworks and underground & Surface drainage works at Main (Emerald) Aviary.	✓	✓	✓
2.	Builder's works and E&M works for the Plant Room at Main (Emerald) Aviary	✓	✓	✓
Entry Plaza, Aqua City and Grand Aquarium (CI-07)				
1.	Staircase construction, lift, escalator, plant installation and paving at Entry Plaza;	✓	✓	✓
2.	Electrical room and staircase construction, theme works supporting frame construction, gen-set and lift installation at Aqua City;	✓	✓	✓
3.	T20 tank waterproofing and installation, restaurant theme works, lift and escalator installation, external wall finishing and life support system installation at Grand Aquarium;	✓	✓	✓
4.	External wall finishing, plastering, tiling, and E&M work at Entry Plaza, Aqua City, Grand Aquarium;		✓	✓
5.	Screeding and painting at Entry Plaza and Aqua City;		✓	✓
6.	Roof beam, slab construction, backfill, planter wall construction, water feature construction, E&M work at Carousel Plaza;	✓	✓	✓
7.	Spillway, slab and wall construction, waterproofing and artificial rockworks at Lagoon; and		✓	✓
8.	Switch room and Gen-set installation at Transformer Room (AAA) and Grand Aquarium Transformer Room.		✓	✓
Rainforest (CS-02)				
1.	Drainage, Retaining Wall construction, Draw-pit construction, Duct laying, road works and plastering works etc.	✓	✓	✓
2.	Rapid Ride Trough construction and equipment installation.	✓	✓	✓
3.	Ancillary Building Construction.	✓	✓	✓
Thrill Mountain and Polar Adventure (CS-03)				
1.	Concrete casting for footings of Polar Adventure.		✓	✓
2.	Construction works for Fence wall and Retaining wall		✓	✓

Item	Work Activity	Month		
		Oct 09	Nov 09	Dec 09
3.	Tower Crane Erection			✓
4.	Site formation works and rock dowels installation for Summit Reservoir		✓	✓
5.	Pilling works for Floorless Coaster		✓	✓
6.	Installation of temporary LSS bypass pipeline		✓	✓
7.	Trimming formation for EVA road		✓	✓
8.	Existing stockpile disposal		✓	✓

1.6 Layout plans of the Project are provided in Figure 1.2 to Figure 1.3, Figure 1.4 and Figure 1.5. 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 and Figure 1.5 shows the layout plan of CS-03 Thrill Mountain and Polar Adventure.

1.7 The status of submissions until 25 December 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
Contract CI05			
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	Submitted to the EPD on 5 March 2007

EP-249/2006/A Condition	Submission	Revision	Status
		February 2007	
3.3	Baseline Coral Survey Report	A Dated 13 June 2007	Submitted to the EPD on 18 June 2007
All Contract (including CI05, CW02, CI07, CS02 & CS03)			
3.1 and under Section 13.14 of EM&A Manual	Quarterly EM&A Report for July to September 2009	A Dated 20 October 2009	Submitted to the EPD on 22 October 2009
3.4	Monthly EM&A Report for October 2009	A Dated 30 November 2009	Submitted to the EPD on 2 December 2009
3.4	Monthly EM&A Report for November 2009	A Dated 16 December 2009	Submitted to the EPD on 18 December 2009
3.4	Monthly EM&A Report for December 2009	A Dated 21 January 2010	Submitted to the EPD on 22 January 2010
CityBus Limited			
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 Solidification Treatment of Heavy Metals Contaminated Soil	Dated 17 January 2007	Submitted to the EPD on 22 January 2007.
2.8	As-built Remediation Plan	Dated 14 March 2007	Submitted to the EPD on 16 March 2007
Hong Kong School of Motoring Ltd.			
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 1.6** and **Figure 1.7**. **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) at four stations in the reporting quarter. No Holiday-time noise monitoring and Evening-time noise were 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 eleventh quarter of Ocean Park Master Redevelopment Project including Contract CW02, CI07, CS02 and CS03. 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 30 October 2009, 20 November 2009 and 18 December 2009). No non-compliance was issued for CW02, CI07, CS02 and CS03. 3, 3, 4 and 6 observations were recorded for CW02, CI07, CS02 and CS03 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 Stockpile of idle excavated material were not covered.

4.5 Stockpile of dusty construction materials were not covered with tarpaulin sheets or other means.

4.6 Stagnant water was accumulated on site.

CI07

4.7 Stagnant water and general refuse were accumulated on the deck.

4.8 Over 20 cement bags on site were not properly covered with tarpaulin sheets or other means.

4.9 Idle stockpiles of construction materials were not covered with tarpaulin sheets or other means.

CS02

4.10 A few oil drums were placed on bare-ground. Drip tray should be provided to avoid oil spillage.

4.11 A stockpile of excavated materials was not covered. Tarpaulin sheets should be provided to suppress dust.

4.12 Unpaved areas were dusty and dry.

4.13 Stagnant water was accumulated on site.

CS03

4.14 Some unpaved areas were dry and dusty.

4.15 General refuse were accumulated next to the waste skip.

4.16 Rock breaking operation was not provided with water spray.

4.17 Chemical waste storage area was not labelled.

4.18 Oil stain was observed during drilling rig maintenance

4.19 Over 20 cement bags were not covered.

Status of Environmental Licensing and Permitting

4.20 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

4.21 **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 October 2009 to December 2009.

Materials Type	Estimated Amount (tonnes)			Disposal Locations
	Oct 09	Nov 09	Dec 09	
C&D waste	276.06 tones	435.24 tones	667.74 tones	SENT Landfill
	11.55 tones	17.42 tones	--	TKOSF
Excavated Material (mainly soil)	6,850.40 tones	8,688.81 tones	27,338.89 tones	QBBP / CWPFBP
	12.1 tones	--	--	TKOFB
Chemical waste	--	--	--	Collected by licensed collector
General waste	--	--	--	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, no 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 and Day-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, no 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

Company	Contact Person	Position	Telephone No.
Ocean Park Corporation	Arthur Wong	Project Director	29103106
AECOM Asia Company 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
Kaden – ATEL JV (for Contract CS03)	Ken Yang	Contractor's ETL	92626791

Appendix B

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

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)

October 2009

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

東業領勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

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)

November 2009

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

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

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)

December 2009

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

Appendix C

CALIBRATION DETAILS

Air Quality Monitoring Equipments

Monitoring Location	AM1	AM2	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 Sep 2009	05 Sep 2009	05 Sep 2009
Calibration Due Date	04 Nov 2009	04 Nov 2009	04 Nov 2009
Result	Good	Good	Good

Monitoring Location	AM1	AM2	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	06 Nov 2009	06 Nov 2009	06 Nov 2009
Calibration Due Date	05 Jan 2010	05 Jan 2010	05 Jan 2009
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.	00110024
Date of Calibration	15 April 2009
Calibration Due Date	14 April 2011
Result	Good

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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 September 2009

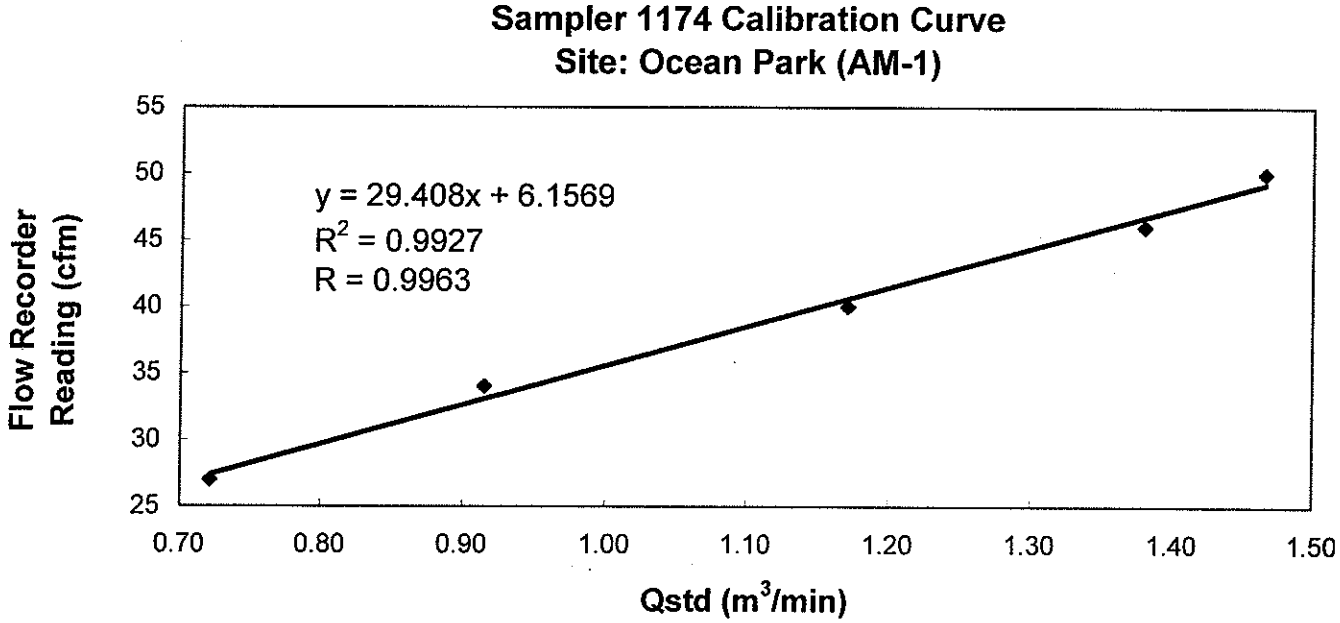
Serial No. : 1174 (ET / EA / 003 / 08)

Calibration Due Date : 04 November 2009

Method : Five-point calibration by using standard calibration kit Tisch TE-5025A refer to the Operations Manual

Results :

Flow recorder reading (cfm)	50	46	40	34	27
Qstd (Actual flow rate, m^3/min)	1.46	1.38	1.17	0.91	0.72
Pressure : 754 mm Hg		Temp. : 305 K			



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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TEST REPORT

Calibration Report of High Volume Air Sampler

Manufacturer : Graseby GMW

Date of Calibration : 06 November 2009

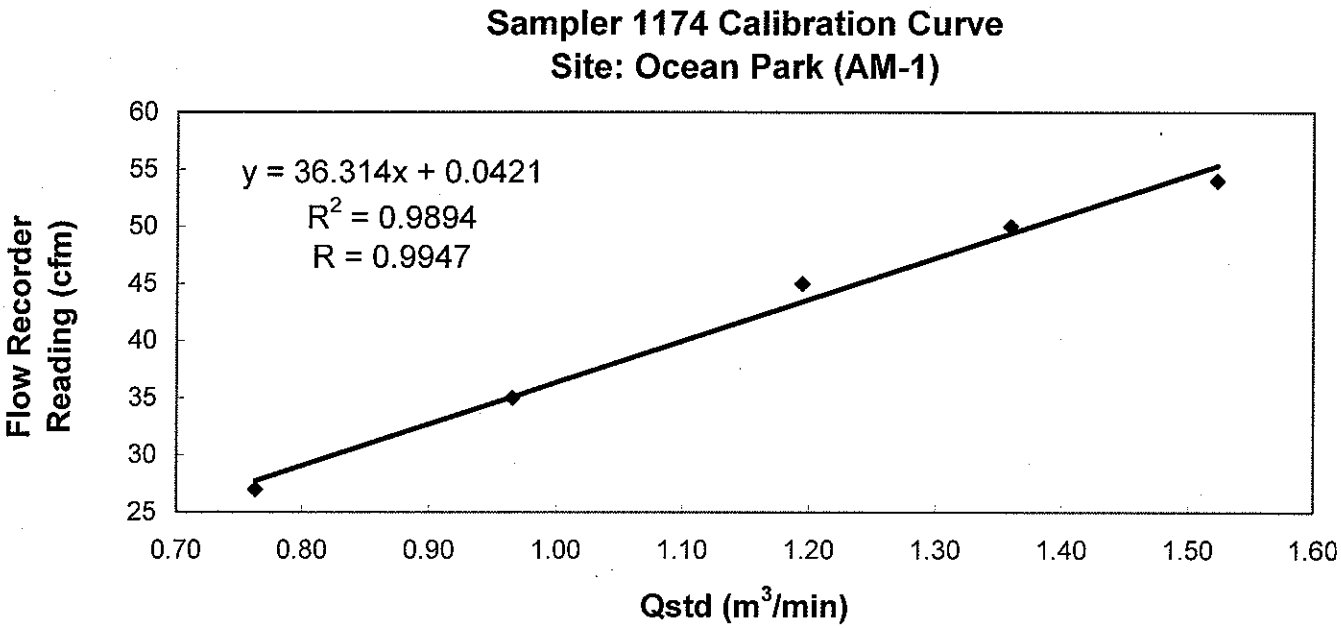
Serial No. : 1174 (ET / EA / 003 / 08)

Calibration Due Date : 05 January 2010

Method : Five-point calibration by using standard calibration kit Tisch TE-5025A refer to the Operations Manual

Results :

Flow recorder reading (cfm)	54	50	45	35	27
Qstd (Actual flow rate, m^3/min)	1.52	1.36	1.19	0.96	0.76
Pressure : 764 mm Hg		Temp. : 302 K			



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

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TEST REPORT

Calibration Report
of
High Volume Air Sampler

Manufacturer : Graseby GMW

Date of Calibration : 05 September 2009

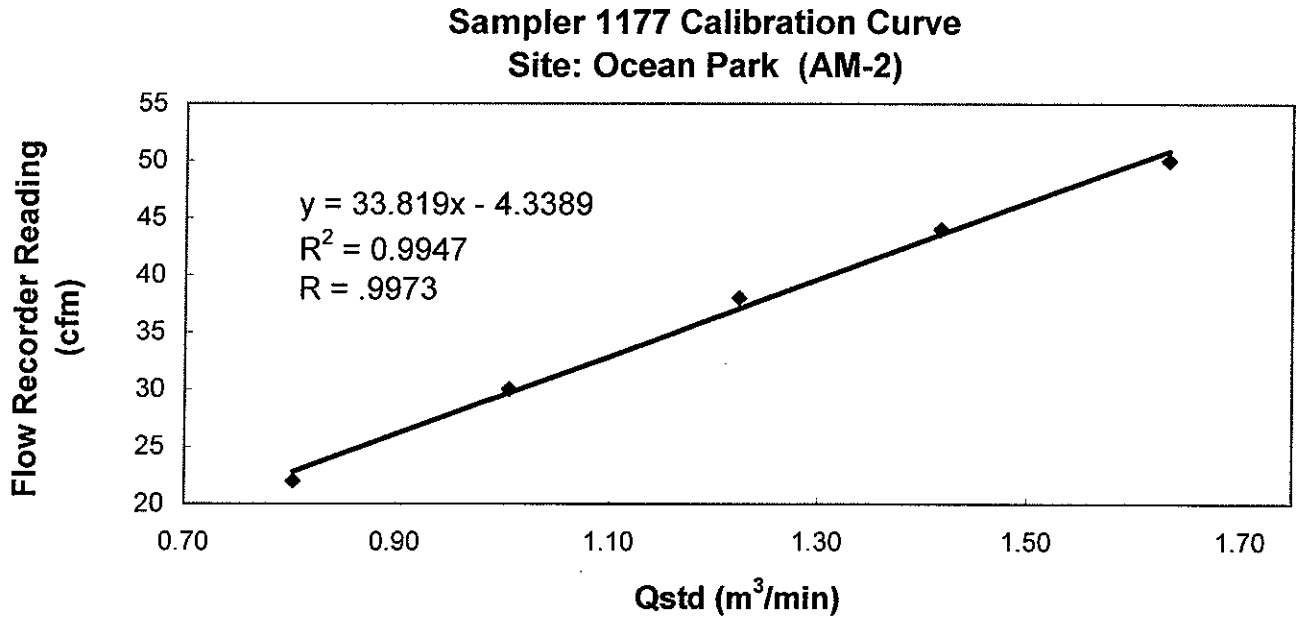
Serial No. : 1177 (ET / EA / 003 / 07)

Calibration Due Date : 04 November 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	38	30	22
Qstd (Actual flow rate, m^3/min)	1.63	1.42	1.22	1.01	0.80
Pressure : 757 mm Hg		Temp. : 305 K			



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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TEST REPORT

Calibration Report of High Volume Air Sampler

Manufacturer : Graseby GMW

Date of Calibration : 06 November 2009

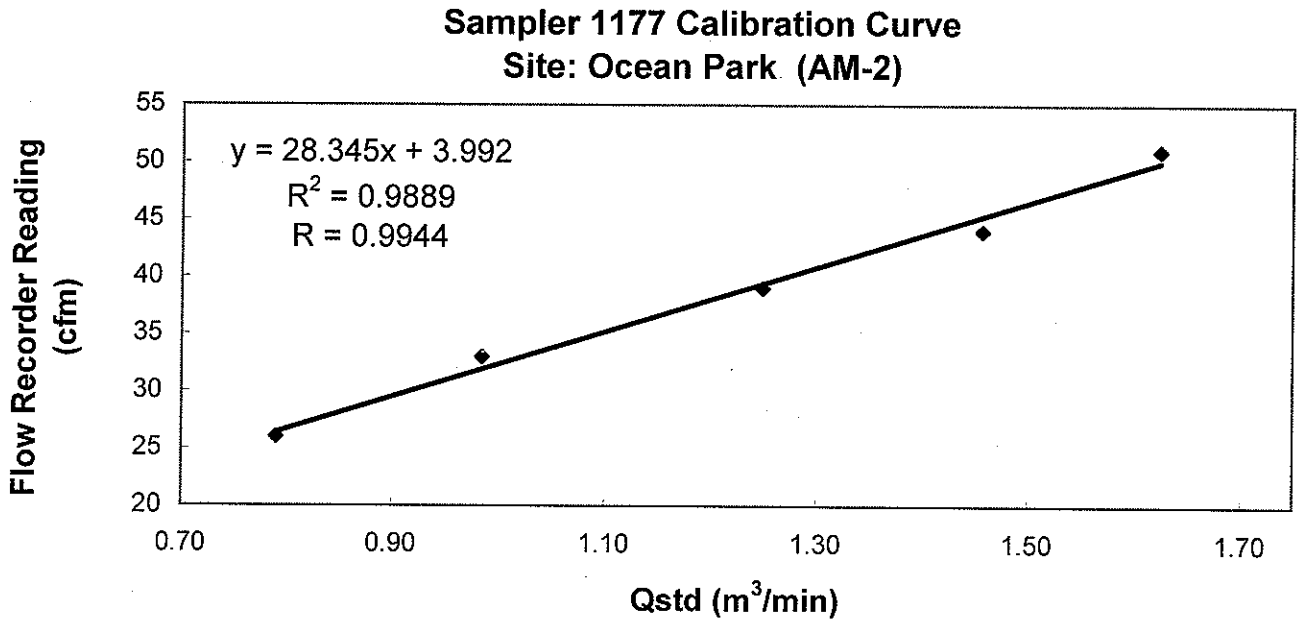
Serial No. : 1177 (ET / EA / 003 / 07)

Calibration Due Date : 05 January 2010

Method : Five-point calibration by using standard calibration kit Tisch TE-5025A refer to the Operations Manual

Results :

Flow recorder reading (cfm)	51	44	39	33	26
Qstd (Actual flow rate, m^3/min)	1.62	1.46	1.25	0.98	0.79
Pressure : 763 mm Hg		Temp. : 305 K			



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, Chi Kwan (Technician)

Approved by : 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 : 05 September 2009

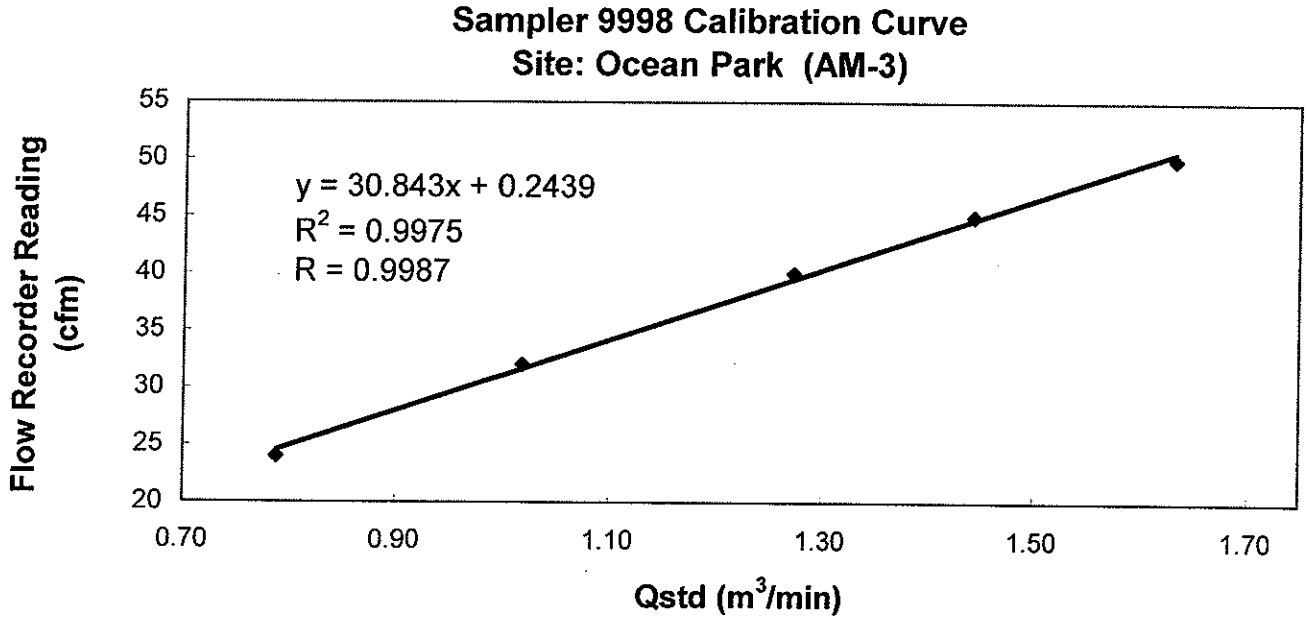
Serial No. : 9998 (ET / EA / 003 / 12)

Calibration Due Date : 04 November 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	32	24
Qstd (Actual flow rate, m^3/min)	1.63	1.44	1.27	1.02	0.79
Pressure : 757 mm Hg		Temp. : 305 K			



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)

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
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TEST REPORT

Calibration Report of High Volume Air Sampler

Manufacturer : Graseby GMW

Date of Calibration : 06 November 2009

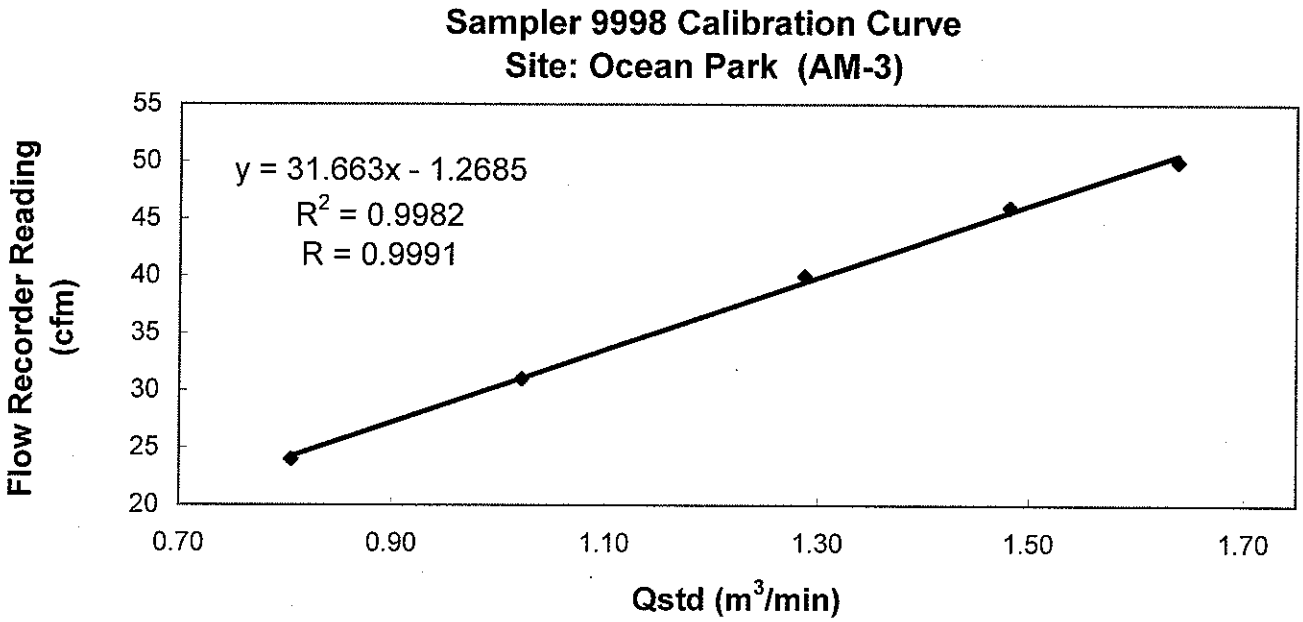
Serial No. : 9998 (ET / EA / 003 / 12)

Calibration Due Date : 05 January 2010

Method : Five-point calibration by using standard calibration kit Tisch TE-5025A refer to the Operations Manual

Results :

Flow recorder reading (cfm)	50	46	40	31	24
Qstd (Actual flow rate, m^3/min)	1.64	1.48	1.29	1.02	0.81
Pressure : 762 mm Hg		Temp. : 305 K			



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, Chi Kwan
(Technician)

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

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

Calibration Certificate

Certificate No. **91495** 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. : Q90663 **Date of receipt :** 1-Apr-09

Item Tested

Description : Precision Integrating Sound Level Meter

Manufacturer : Rion

Model : NL-31 **Serial No. :** 00110024

Test Conditions

Date of Test : 15-Apr-09 **Supply Voltage :** --

Ambient Temperature : (23 ± 3)°C **Relative Humidity :** (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure : Z01.

Test Results

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

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

Main Test equipment used:

Equipment No.	Description	Cert. No.	Due Date	Traceable to
S017A	Multi-Function Generator	86228	11-Dec-09	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 : for Dorothy Cheuk

Date: 16-Apr-09

This Certificate is issued by:
Hong Kong Calibration Ltd.
Unit 8B, 24/F., Well Fung Industrial Centre, No. 58-76, Ta Chuen Ping Street,Kwai Chung, NT,Hong Kong.
Tel: 2425 8801 Fax: 2425 8646

Calibration Certificate

Results :

1. SPL Accuracy

UUT Setting			Applied Value (dB)	UUT Reading (dB)
Level Range (dB)	Weight	Response		
20 – 100	L_A	Fast	94.03	93.7
		Slow		93.7
	L_C	Fast		93.7
	Lp	Fast		93.7
30 – 120	L_A	Fast	94.03	93.6
		Slow		93.6
	L_C	Fast		93.6
	Lp	Fast		93.6
30 – 120	L_A	Fast	113.97	113.6
		Slow		113.6
	L_C	Fast		113.6
	Lp	Fast		113.6

IEC Type 1 Spec. : ± 0.7 dB
Uncertainty : ± 0.1 dB

2. Level Stability : 0.0 dB

IEC 651 Type 1 Spec. : ± 0.3 dB
Uncertainty : ± 0.01 dB

Calibration Certificate

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	113.8	+0.2	± 0.7 dB
130	104.0	103.7	+0.1	
120	94.0	93.6 (Ref.)	- -	
110	84.0	83.6	0.0	
100	74.0	73.6	0.0	
90	64.0	63.7	+0.1	
80	54.0	53.8	+0.2	

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	83.7	+0.1	± 0.4 dB
	94.0	93.6 (Ref.)	- -	
	95.0	94.7	+0.1	± 0.2 dB
	104.0	103.6	0.0	± 0.3 dB
	105.0	104.6	0.0	± 1.0 dB

Uncertainty : ± 0.1 dB

4. Frequency Weighting

A weighting

Frequency	Attenuation (dB)	IEC 651 Type 1 Spec.
31.5 Hz	-39.8	- 39.4 dB, ± 1.5 dB
63 Hz	-26.5	- 26.2 dB, ± 1.5 dB
125 Hz	-16.5	- 16.1 dB, ± 1 dB
250 Hz	-8.9	- 8.6 dB, ± 1 dB
500 Hz	-3.4	- 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	-0.8	- 1.1 dB, + 1.5 dB ~ - 3 dB
16 kHz	-6.4	- 6.6 dB, + 3 dB ~- ∞

Uncertainty : ± 0.1 dB

Calibration Certificate

5. Time Averaging

Applied Burst duty Factor	Applied Leq Value (dB)	UUT Reading (dB)	IEC 804 Type 1 Spec.
continuous	40.0	40.0	--
1/10	40.0	39.8	± 0.5 dB
$1/10^2$	40.0	39.8	
$1/10^3$	40.0	40.0	± 1.0 dB
$1/10^4$	40.0	40.3	

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 : 1 002 hPa.

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

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

Calibration Certificate

Certificate No. **91496** Page 1 of 2 Pages

Customer : ETS-Testconsult Limited

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

Order No. : Q90663 **Date of receipt :** 1-Apr-09

Item Tested

Description : Acoustic Calibrator
Manufacturer : Castle
Model : GA607 **Serial No.** : 038641

Test Conditions

Date of Test : 15-Apr-09 **Supply Voltage** : --
Ambient Temperature : (23 ± 3)°C **Relative Humidity :** (50 ± 25) %

Test Specifications

Calibration check.
Ref. Document/Procedure : F06, F20, Z02.

Test Results

All results were within the IEC 942 Class 1 specification.
The results are shown in the attached page(s).

Main Test equipment used:

Equipment No.	Description	Cert. No.	Due Date	Traceable to
S014	Spectrum Analyzer	83240	30-Jun-09	NIM-PRC & SCL-HKSAR
S024	Sound Level Calibrator	82926	16-Jul-09	NIM-PRC & SCL-HKSAR
S041	Universal Counter	84077	22-Aug-09	SCL-HKSAR
S206	Sound Level Meter	83964	13-Aug-09	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: 16-Apr-09

This Certificate is issued by:
Hong Kong Calibration Ltd.
Unit 8B, 24/F., Well Fung Industrial Centre, No. 58-76, Ta Chuen Ping Street,Kwai Chung, NT,Hong Kong.
Tel: 2425 8801 Fax: 2425 8646

Calibration Certificate

Results :

1. Level Accuracy (at 1 kHz)

UUT Setting (dB)	Measured Value (dB)	IEC 942 Class 1 Spec.
94	93.92	± 0.3 dB

Uncertainty : ± 0.1 dB

2. Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	IEC 942 Class 1 Spec.
1	1.001	± 2 %

Uncertainty : $\pm 3.6 \times 10^{-6}$

3. Level Stability : 0.0 dB
IEC 942 Class 1 Spec. : ± 0.1 dB
Uncertainty : ± 0.01 dB

4. Total Harmonic Distortion : < 2.8 %
IEC 942 Class 1 Spec. : < 3 %
Uncertainty : ± 2.3 % of rdg.

Remark : 1. UUT : Unit-Under-Test
2. The above measured values are the mean of 3 measurements.
3. The uncertainty claimed is for a confidence probability of not less than 95%.
4. Atmospheric Pressure : 1 002 hPa

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

Appendix D

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

Monitoring Location	24-hr TSP ($\mu g/m^3$)		1-hr TSP ($\mu g/m^3$)	
	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

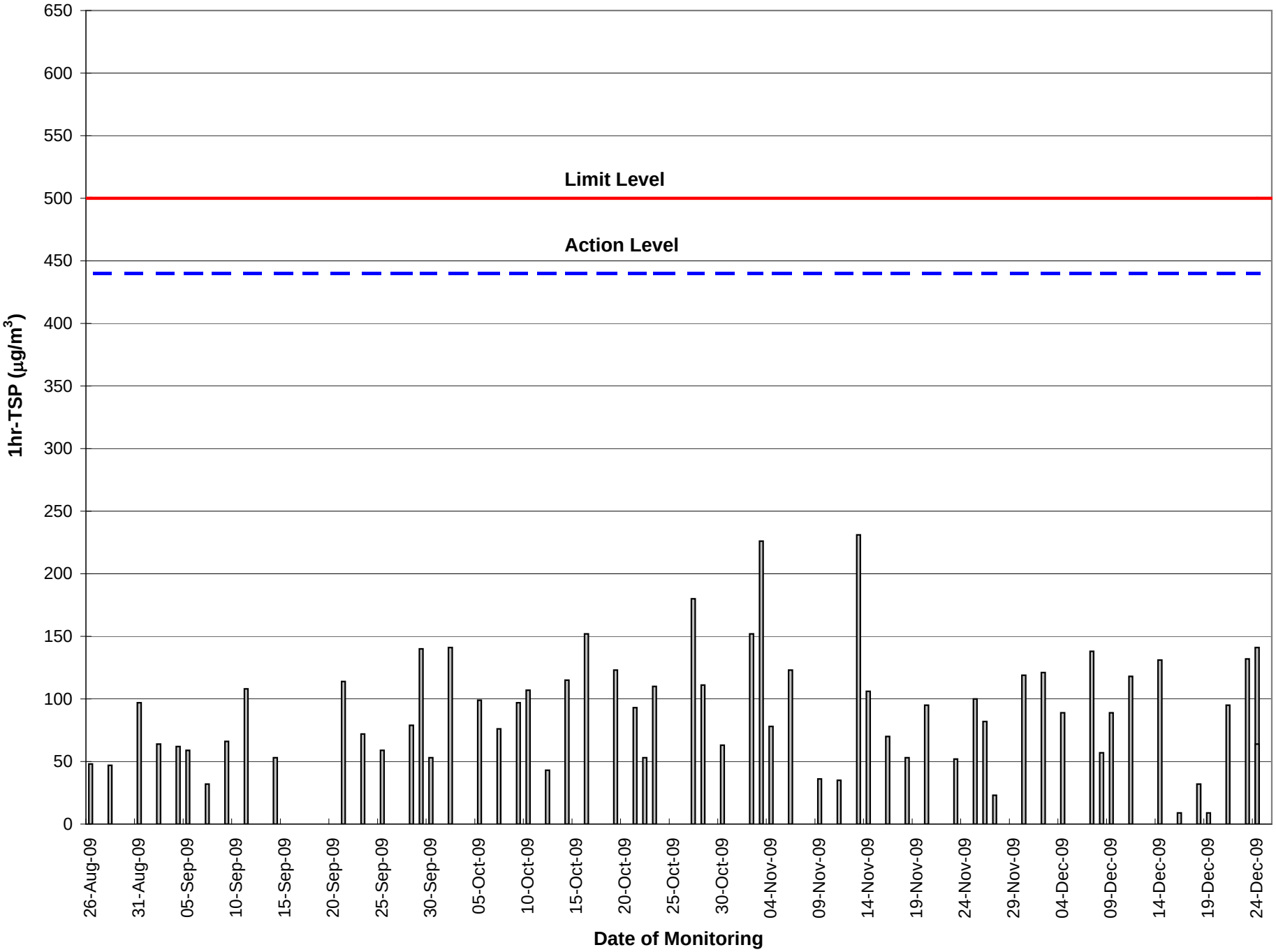


Figure C.2 1-hr TSP monitoring results of Monitoring Station AM2

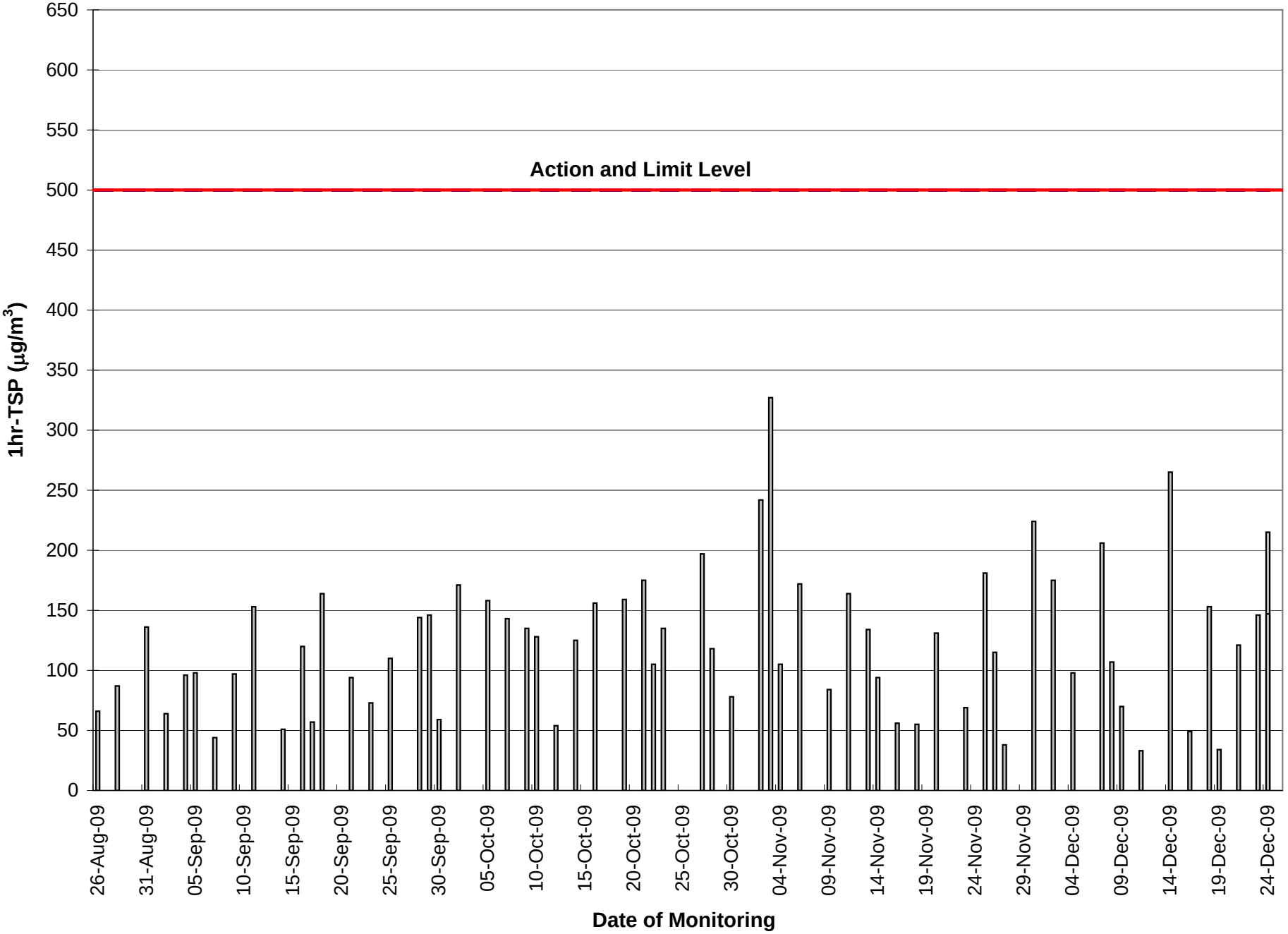


Figure C.3 1-hr TSP monitoring results of Monitoring Station AM3A

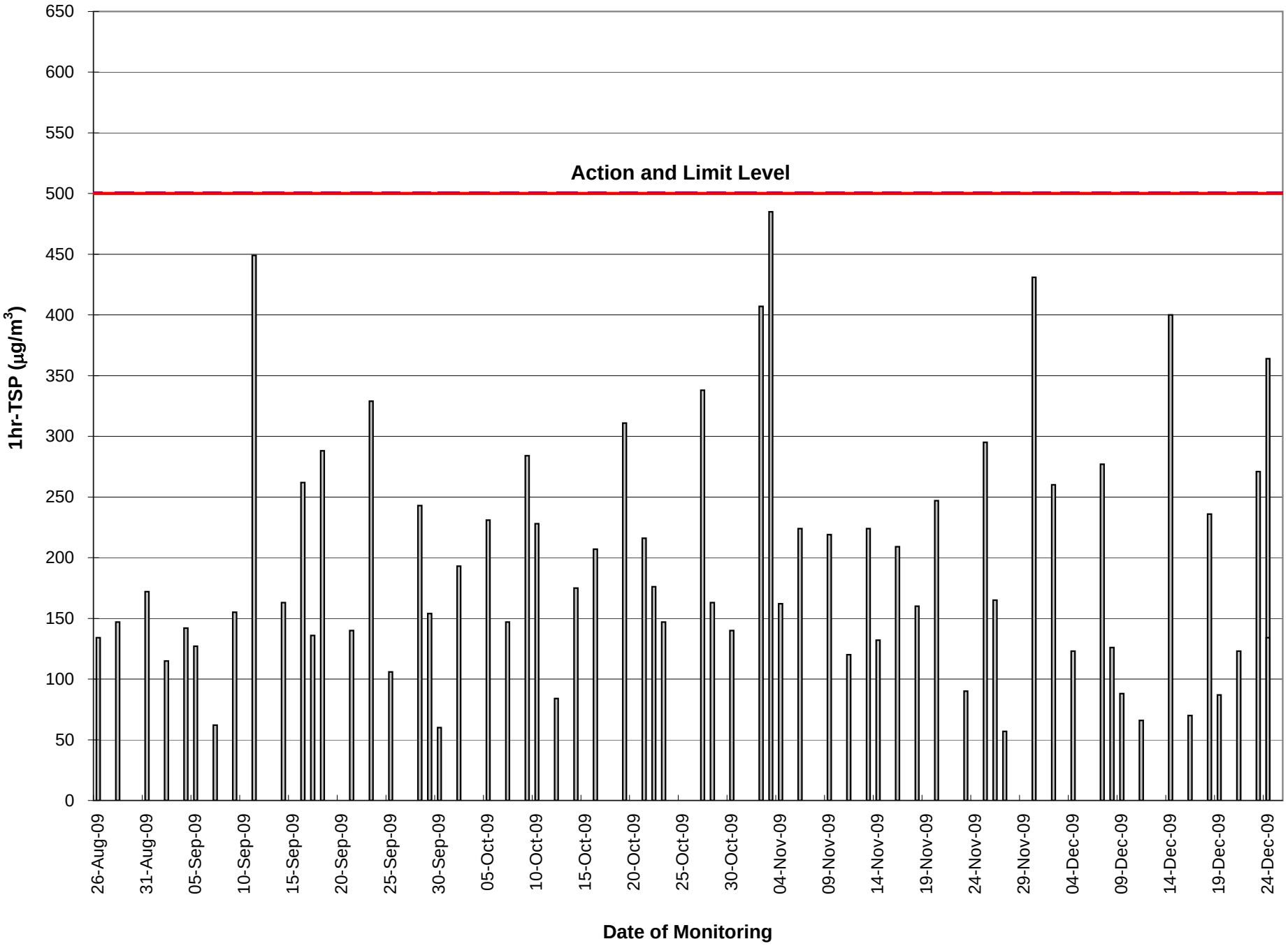
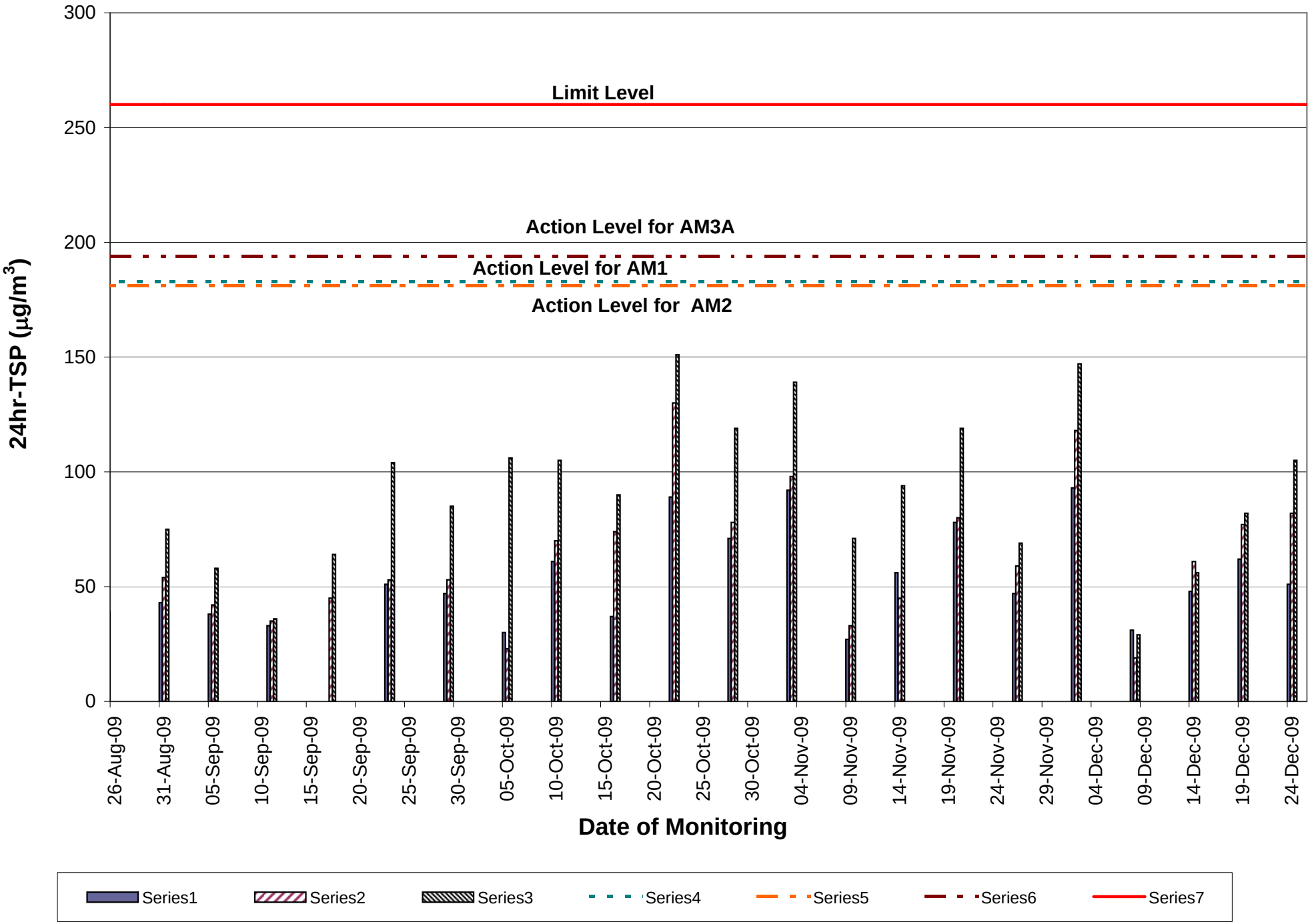
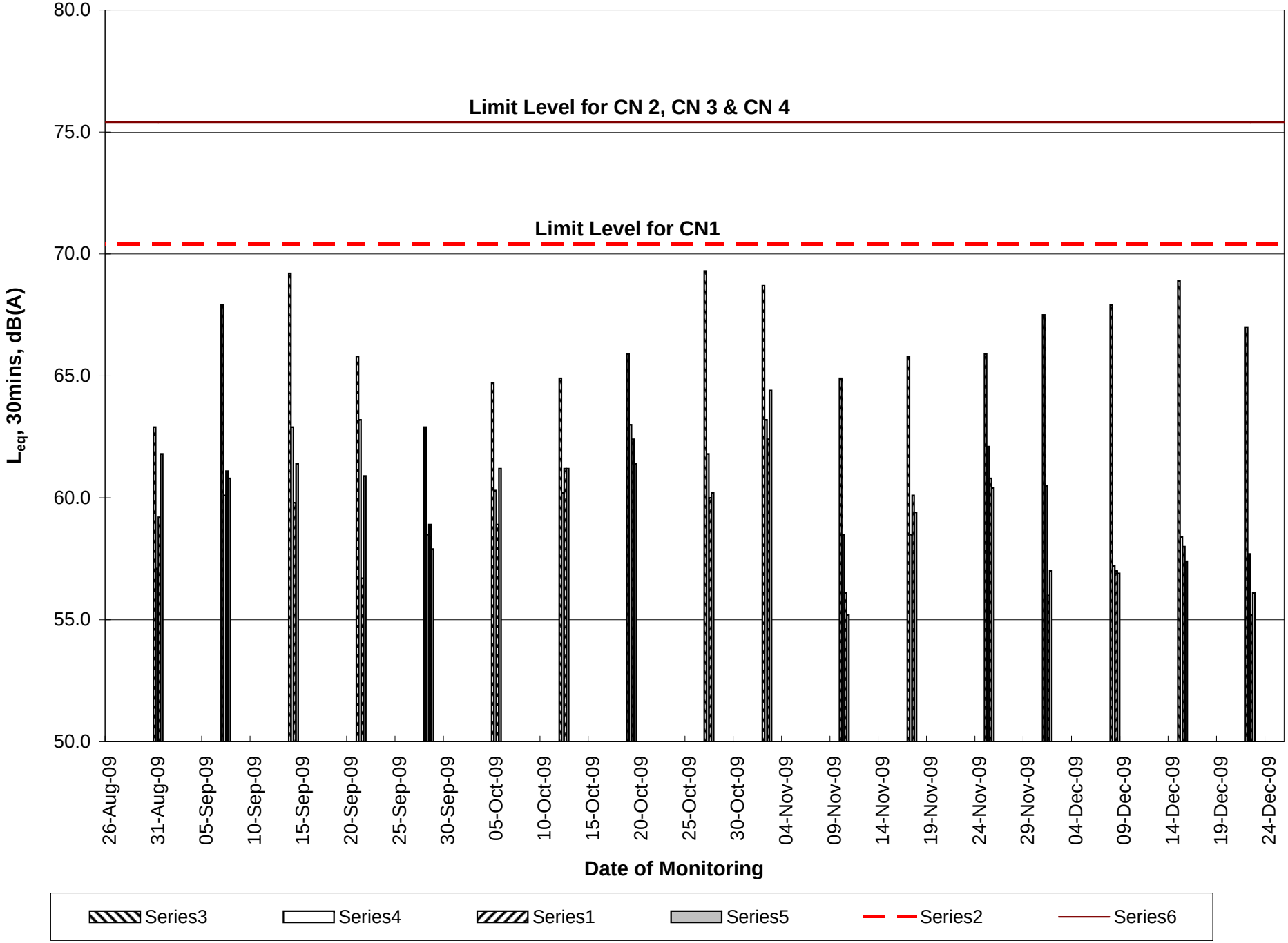


Figure C.4 24-hr TSP monitoring results of Monitoring Station AM1, AM2 & AM3A



Appendix F

Fig D.1 - Daytime 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 Recommeded 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 Recommeded 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 Recommeded 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 Recommeded 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	Exposed soil surfaces should be covered,	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 Recommeded 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. 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 inplace 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-ordiantor 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 $50m^3$ should be covered with tarpaulin or similar fabric during rainstorms	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 Recommeded 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 Recommeded 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 Recommeded 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 Recommeded 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 Recommeded 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 *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes* .	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

CNP

Permit number	Starting Date	Expired Date	Valid Time	Location	Contract No.	Status
CW-02 (W. Hing)						
GW-RS0163-09	1-Mar-09	31-Aug-09	19:00 - 23:00 hours (Not being a general holidays) 07:00 - 19:00 hours (General holidays)	Ocean Park, Wong Chuk Hang	CW-02	Expired
CI07 (LCAL)						
GW-RS0764-09	14-Oct-09	13-Apr-10	For water pumps, generator and wastewater treatment plant operation from 19:00 to 23:00 (any day not being a general holiday) and 07:00 to 23:00 (general holiday including Sunday)	Ocean Park, Wong Chuk Hang	CI-07	Valid
GW-RS0422-09	15-Jun-09	14-Dec-09	For water pump and wastewater treatment plant operation for any day 23:00 to 07:00 on next day	Ocean Park, Wong Chuk Hang	CI-07	Expired
GW-RS0967-09	23-Dec-09	22-Jun-10	For water pump and wastewater treatment plant operation for any day 23:00 to 07:00 on next day	Ocean Park, Wong Chuk Hang	CI-07	Valid
GW-RS0816-09	6-Nov-09	5-May-10	For grout mixer and grout pump operation from 19:00 to 23:00 (any day not being a general holiday) and 07:00 to 23:00 (general holiday including Sunday)	Ocean Park, Wong Chuk Hang	CI-07	Valid
GW-RS0978-09	28-Dec-09	24-May-10	For scissor platform (3), hand-held drill (4); grout mixer and grout pump or diesel mobile crane operation from 19:00 to 23:00 (any day not being a general holiday) and 07:00 to 23:00 (general holiday including Sunday)	Ocean Park, Wong Chuk Hang	CI-07	Valid
CS02 (W. Hing)						
GW-RS0925-09	14-Dec-09	8-Jun-10	Notice of Issue of Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	Ocean Park, Nam Long Shan Road	CS02	Valid
CS03 (KAJV)						
GW-RS0893-09	1-Dec-09	31-May-10	Construction Noise Permit for Top of Nam Long Shan Rd., Ocean Park, 180 Wong Chuk Hang, Hong Kong	Ocean Park, nam Long Shan Road	CS03	Valid

Appendix H Licenses and Permits

Other Permits & Licenses

CW02

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

CI07

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

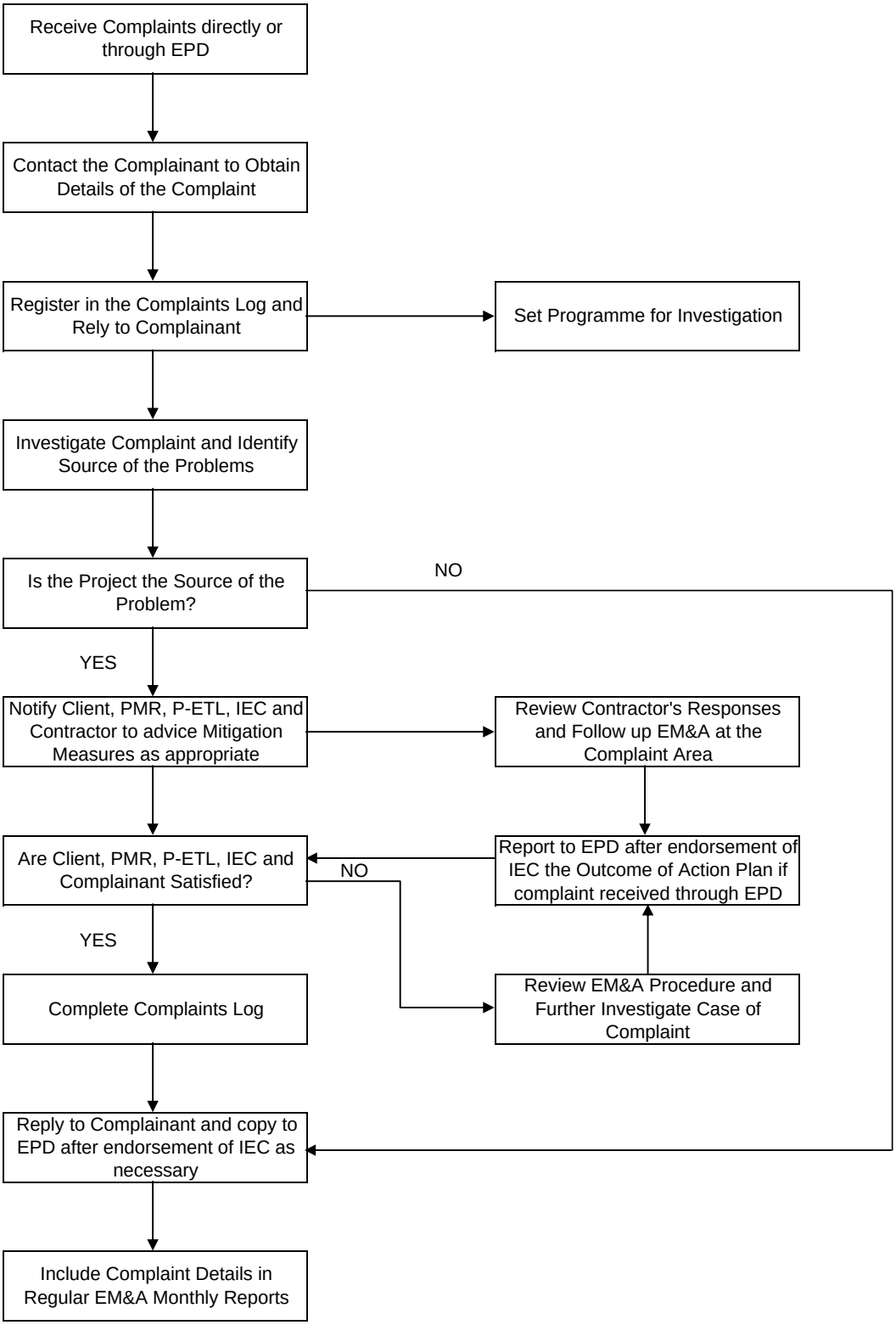
CS02

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

CS03

Permit/Ref/No	Valid Period		Section	Status
Notification of Construction Work under APCO				
N/A	N/A	N/A	Thrill Mountain and Polar Adventure	In Progress
Effluent Discharge License				
N/A	N/A	N/A	Thrill Mountain and Polar Adventure	In Progress
Registration as Chemical Waste Producer				
WPN5213-176-K2880-02	25-Nov-09	N/A	Form Oil, Lubricant oil, paint, solvent and diesel.	Registered
Construction Waste Disposal Billing Account with EPD				
7009695	N/A	N/A	Thrill Mountain and Polar Adventure	Issued

Appendix I


Receive Complaints directly or through EPD
Contact the Complainant to Obtain Details of the Complaint
Register in the Complaints Log and Rely to Complainant
Set Programme for Investigation
Investigate Complaint and Identify Source of the Problems
Is the Project the Source of the Problem?
NO
YES
Notify Client, PMR, P-ETL, IEC and Contractor to advice Mitigation Measures as appropriate
Review Contractor's Responses and Follow up EM&A at the Complaint Area
Are Client, PMR, P-ETL, IEC and Complainant Satisfied?
Report to EPD after endorsement of IEC the Outcome of Action Plan if complaint received through EPD
NO
YES
Complete Complaints Log
Review EM&A Procedure and Further Investigate Case of Complaint
Reply to Complainant and copy to EPD after endorsement of IEC as necessary
Include Complaint Details in Regular EM&A Monthly Reports

Complaint Record Register

Record ID	Data Received	Type (PMR / EPD / Public / Others)	Description	Project	Justified compliant?	Status (Open / Closed)
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 October 2009

No impact coral monitoring was conducted in October 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 November 2009

Site 1

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

Site 2

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

Site 3

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

Site 4

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

Site 5

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

Control Site C

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

The coral monitoring at the 5 Sites and 1 Control Site has been conducted since April 2007. The continuous monitoring has revealed little change in health status of the tagged colonies in terms of sedimentation, bleaching and mortality. While regarded low impact was received form the construction work, selected colonies at both the Monitoring Sites and Control Site have been recorded physically damaged or lost over the monitoring period. Such damage was likely to associate with the attack of tropical cyclones during the monsoon season.

For the monitoring of any impact on the standing coral community from the continuous development, 10 colonies have been selected and re-tagged for each sites in the present work. The 5 Monitoring Sites comprise sheltered to exposed shores, sandy to rocky substratum, shallow to deep habitats with associated coral species around the coast of the construction work. The extensive covers enable comprehensive monitoring over the construction phase of the development.

The re-tagged colonies were generally healthy, as indicated by low level of sedimentation, blenching and mortality. The health status parameters collected in this exercise serve as the baseline data for the subsequent impact monitoring surveys in compliance to the Event Action Plan.

Results for December 2009

No impact coral monitoring was conducted in December 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 February 2010.

Figure 1.1

Figure 1.1 Management Organization

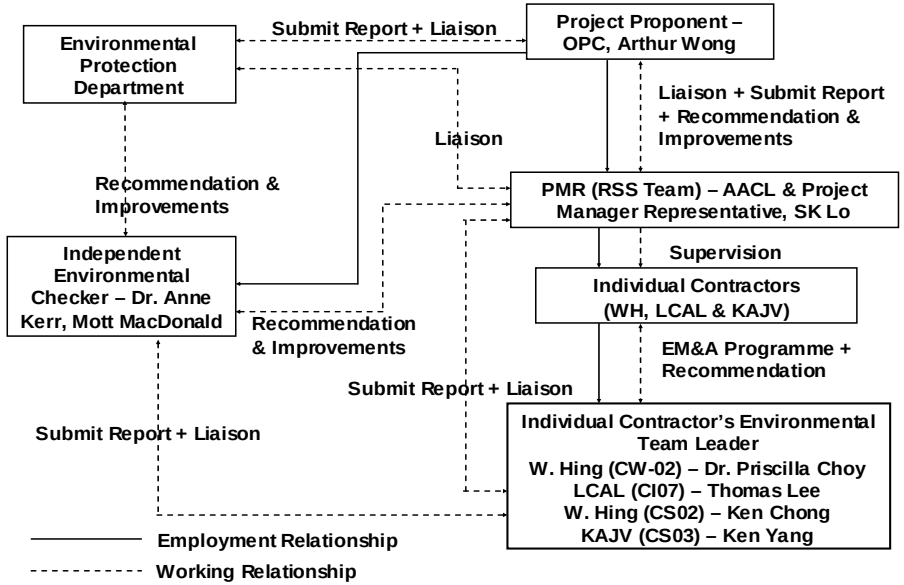
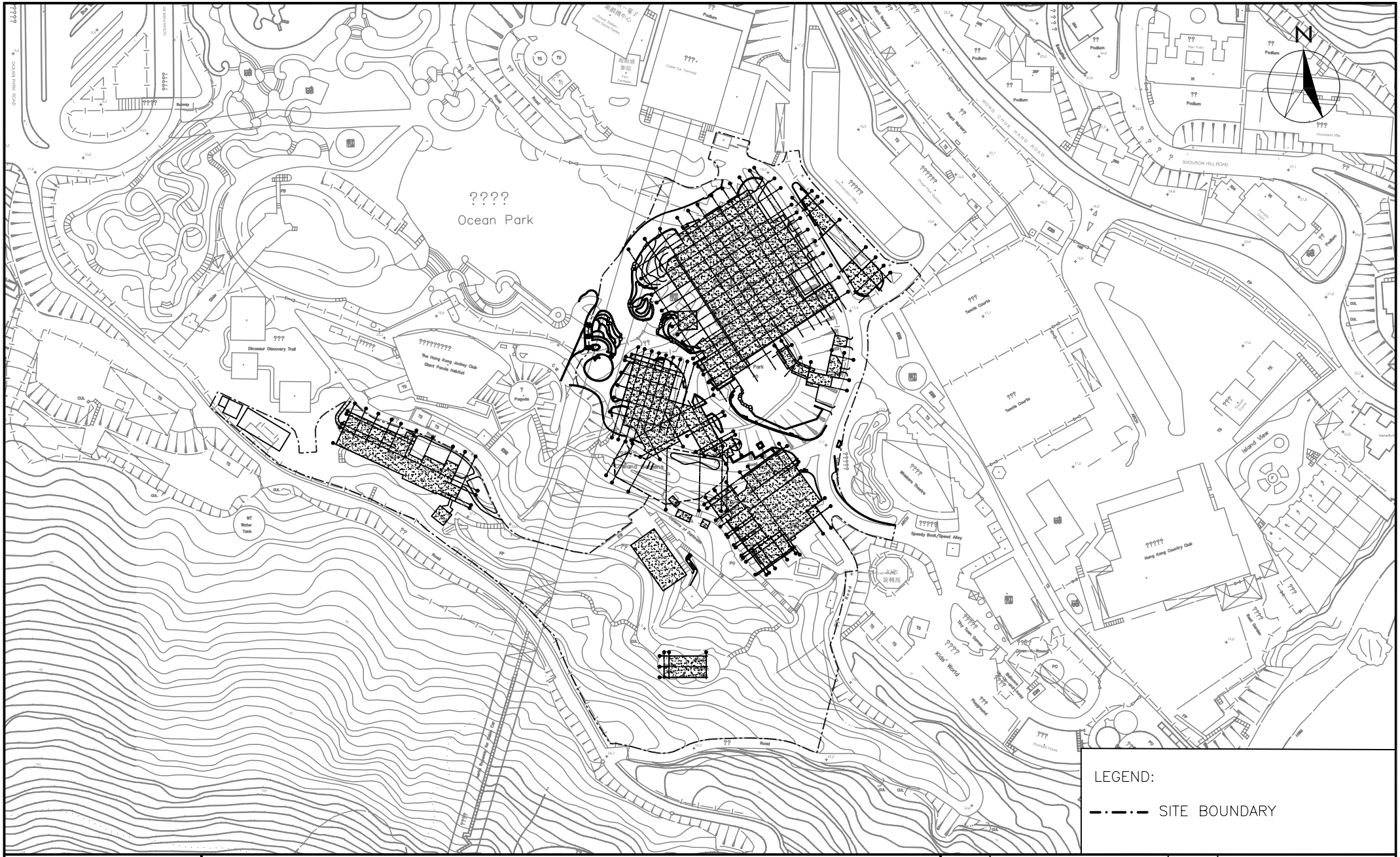


Figure 1.2



CINOTECH
Cinotech Consultants Limited

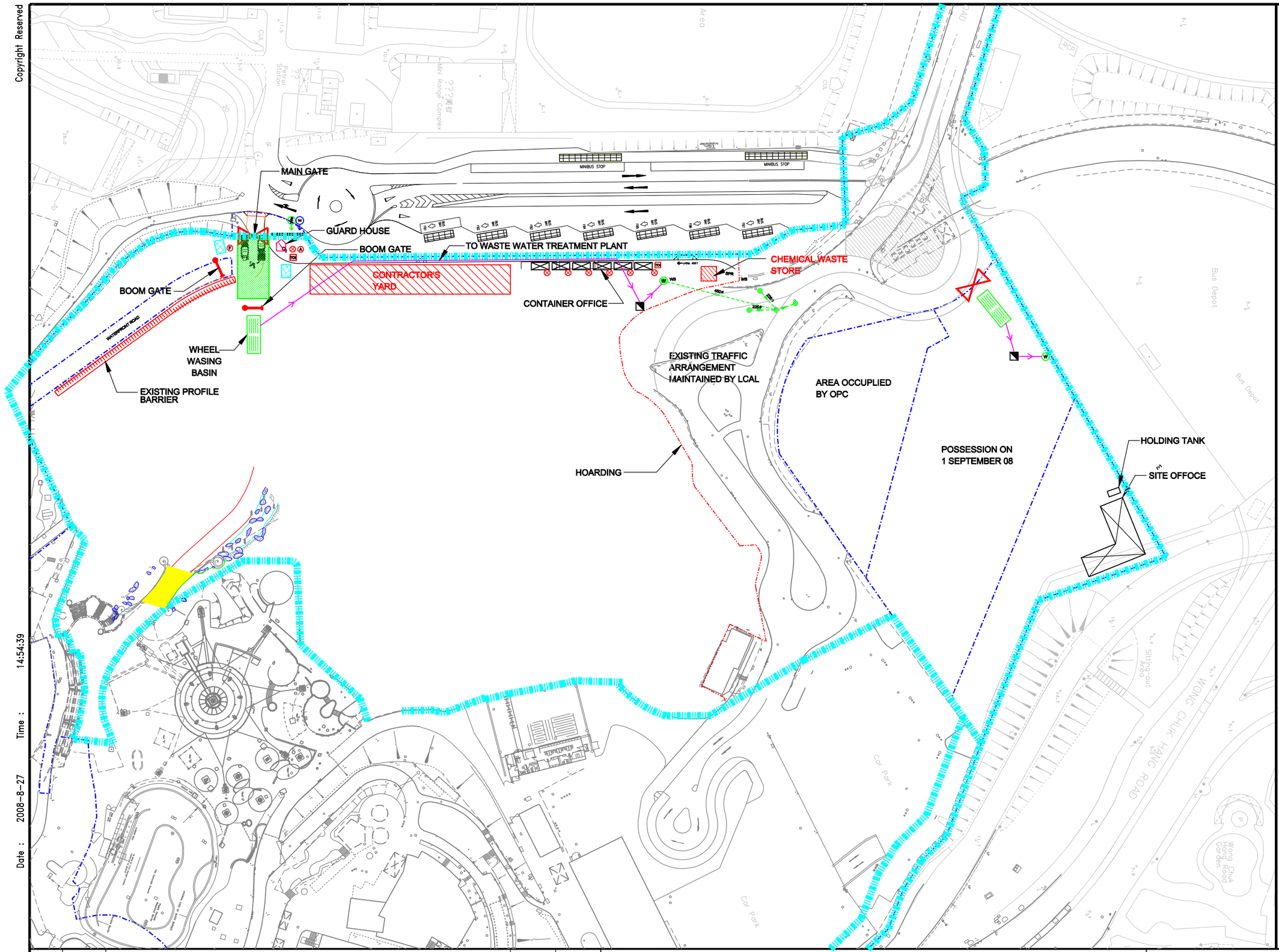
CONTRACT NO. CW02
OCEAN PARK REDEVELOPMENT PROJECT – ASTOUNDING ASIA

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

Figure 1.3



LEGENDS :

- CI07 SITE BOUNDARY
- WHEEL WASING BASIN
- GUARD HOUSE
- MAIN GATE
- BOOM GATE
- BUFFER ZONE FOR SECURITY CHECK & TURN AROUND AREA
- FIRE EXTINGUISHER
- HELMET STORAGE AREA
- (A) FIRST AID CENTRE
- NOTICE BOARD (INCLUDING EMERGENCY TELEPHONE LIST)
- (W) WASTE WATER DISCHARGE POINT
- WASTE WATER TREATMENT POINT (AQUASED)
- U-CHANNEL / DRAIN
- EVA TO BE KEPT CLEAR
- (Wa) TEMPORARY WATER SUPPLY
- (E) TEMPORARY ELECTRICITY SUPPLY
- (F) FLAGMAN LOCATION
- TOI 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

LEIGHTON 禮頓

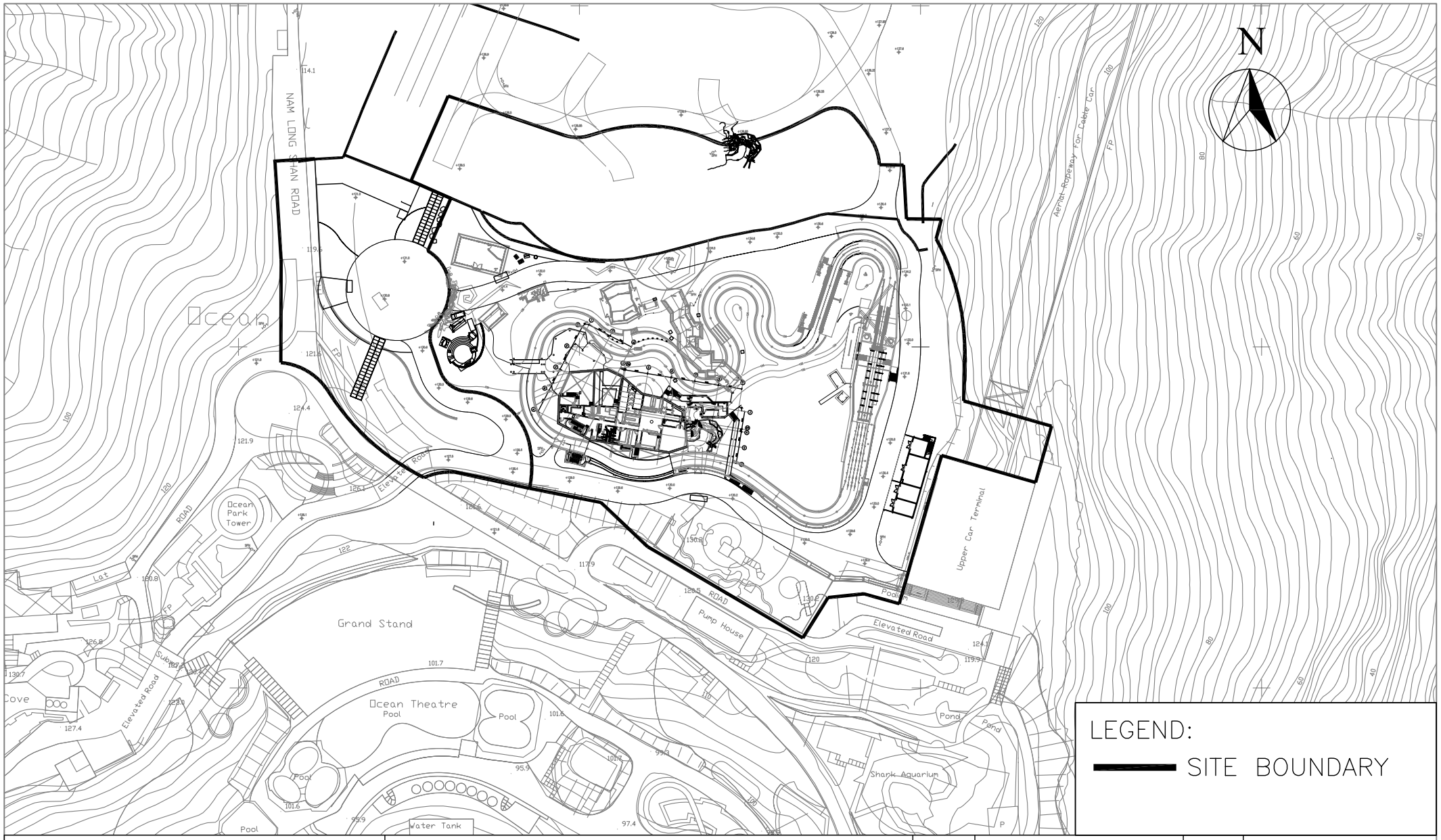
DRAWING NO. H2458/E/4003

DATE 12-8-2008

REV. A

CS Ho
Print By :
Date : 2008-8-27
Time : 14:54:39
Filename : G:\DRAWINGS\JOB\H2458E Ocean Park CI07\4003\4003A.dgn
A3 420mm x 297mm

Figure 1.4



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

CONTRACT NO. CS02

OCEAN PARK REDEVELOPMENT PROJECT – RAINFOREST

SITE LAYOUT PLAN

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

Figure 1.5

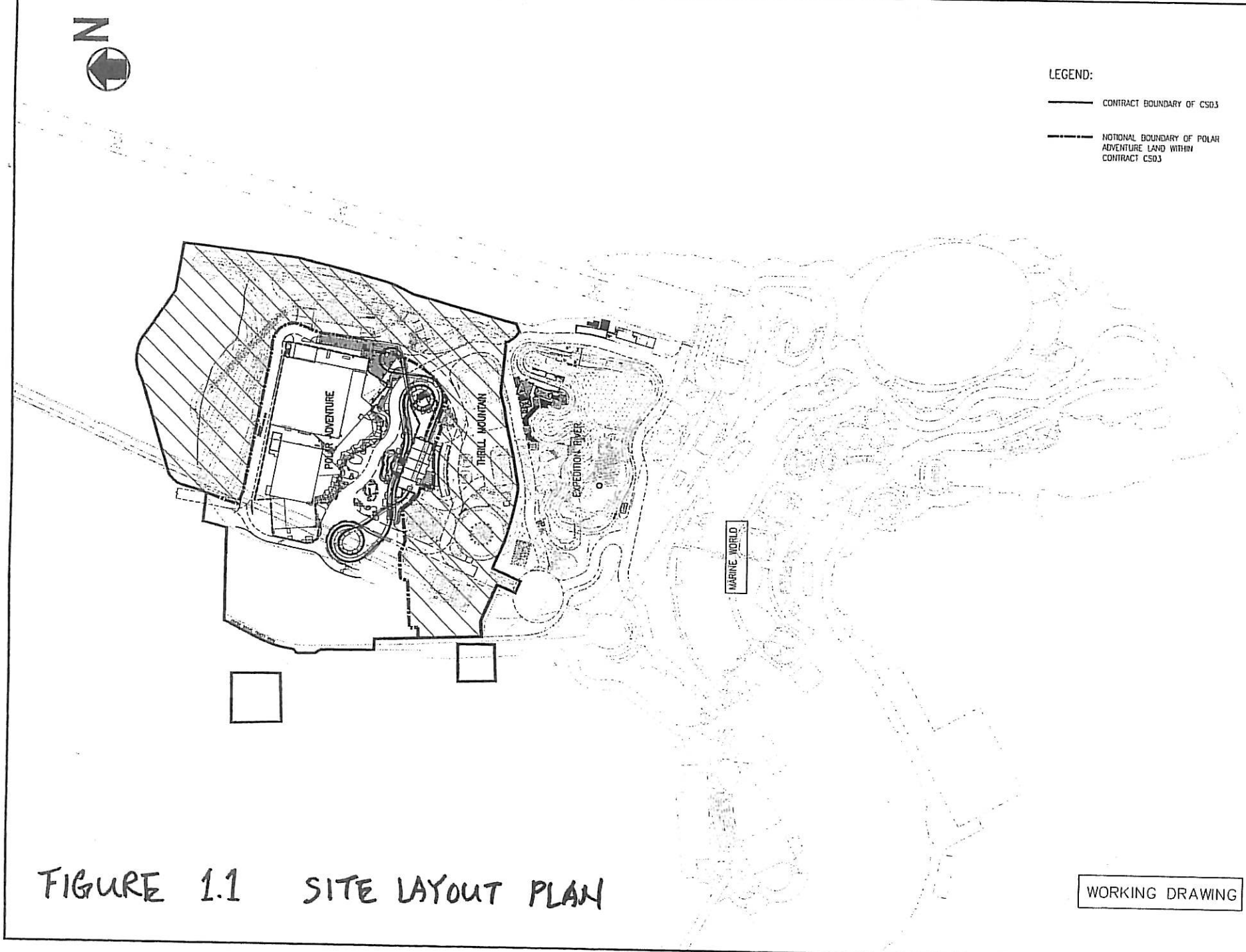


FIGURE 1.1 SITE LAYOUT PLAN

D.O.D. REF.

OCEAN PARK REDEVELOPMENT

CONTRACT NO. CS03 – POLAR ADVENTURE
SITE LOCATION PLAN

SCALE: 1:1000 A1

DATE: -

DRAWN BY: -

CHECKED BY: -

ARCHITECTS & LEAD CONSULTANT: LEIGH & ORANGE LTD.

EXHIBITION & INTERPRETIVE DESIGNER: PJA ARCHITECTS + LANDSCAPE ARCHITECTS, P.S.

STRUCTURAL ENGINEER: JACOBS CHINA LIMITED

BUILDING SERVICES ENGINEER: J. ROGER PRESTON LIMITED

LIFE SUPPORT SYSTEM DESIGNER: LABONNE MER

PREPARED BY: L&O ARCHITECTS

DRG. NO. S-PA-03-ARW-1001

REV. -

Figure 1.6

REV.	DESCRIPTION	DATE

海洋公園 OCEAN PARK HONG KONG

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 EDAW LEVETT & BAILEY

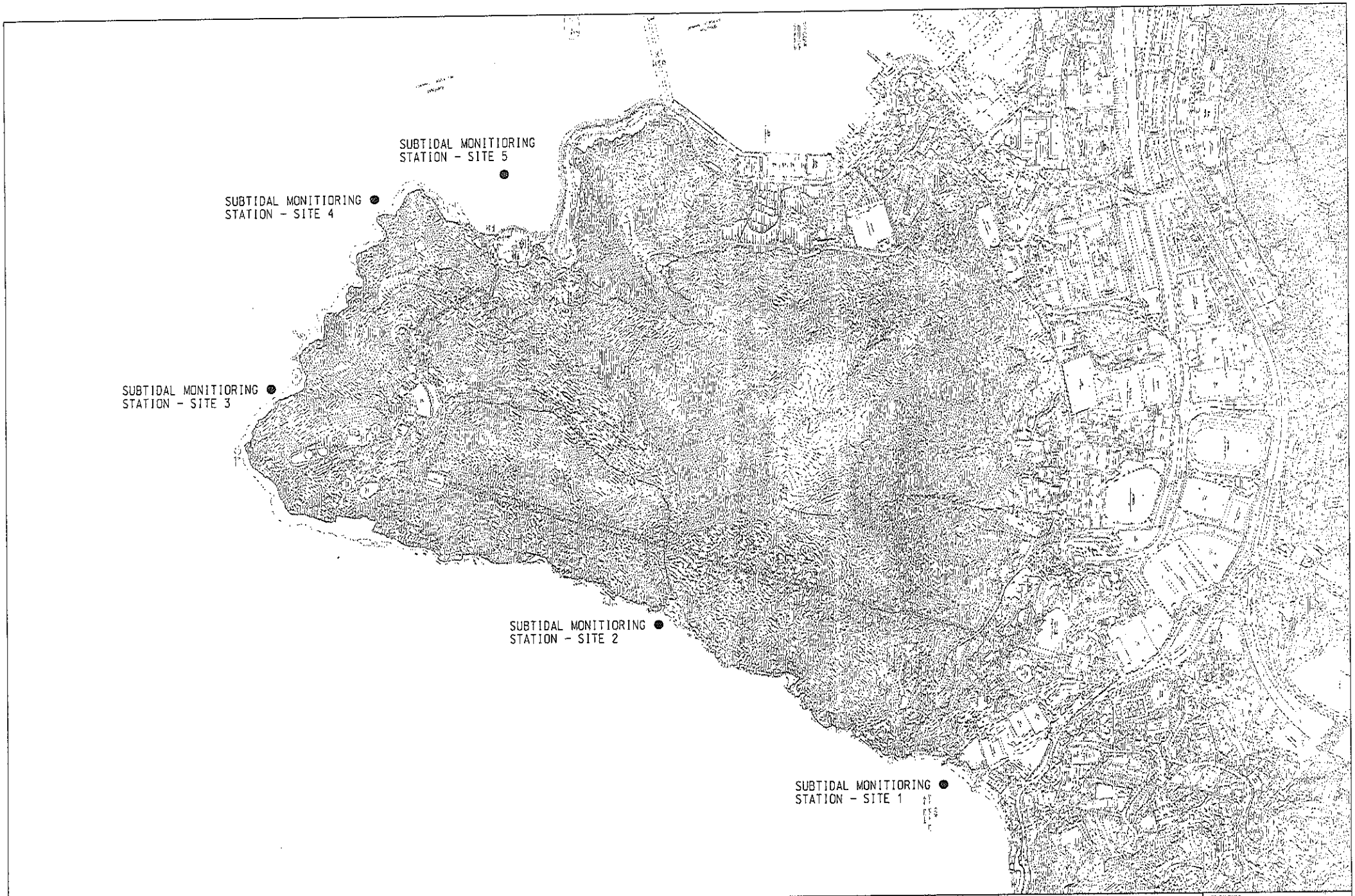
LEIGHTON CONTRACTORS (ASIA) LTD.

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

Date : 3/27/2009 Time : 5:33:19 PM

Filename : I:\Engineering Drawing\Submission Drawing\E0172\E0172.dgn

Figure 1.7



REV.	DATE	BY	DESCRIPTION
A	02APR2007	STG	FIRST ISSUE

DESIGNED BY STG
DRAWN BY GLO
CHECKED BY STG
IN CHARGE YTS
DATE 02APR2007

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

CLIENT : 香港海洋公園 OCEAN PARK HONG KONG

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

DRAWING TITLE :
FIGURE 5.1
LOCATIONS OF
SUBTIDAL MONITORING STATION

CADD FILENAME : 01ENV0016A.DGN
DATE : 02APR2007
SCALE : 1 : 7500 @ A3
DRAWING NUMBER : DBJV/C105/01/ENV/0016
REV. A