

Hip Hing Joint Venture

Hong Kong Convention and
Exhibition Centre Expansion

Project:

*39th Environmental Monitoring and
Audit Report*

November 2009

Environmental Resources Management

21/F Lincoln House
979 King's Road
Taikoo Place
Island East, Hong Kong
Telephone: (852) 2271 3000
Facsimile: (852) 2723 5660
E-mail: post.hk@erm.com
<http://www.erm.com>

ENVIRONMENTAL MONITORING &
AUDIT REPORT

Hip Hing Joint Venture


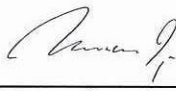
Hong Kong Convention and
Exhibition Centre Expansion

Project:

*39th Environmental Monitoring and
Audit Report*

November 2009

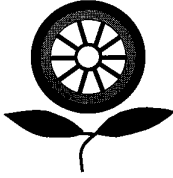
Reference 0050690

For and on behalf of ERM-Hong Kong, Limited
Approved by: <u>Dr Robin Kennish</u>
Signed: <u></u>
Position: <u>Director</u>
Certified by: <u></u> (Environmental Team Leader - Marcus Ip)
Date: <u>24 November 2009</u>

This report has been prepared by ERM Hong-Kong, Limited with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client.

We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.



NATURE & TECHNOLOGIES (HK) LIMITED
科技環保(香港)有限公司

Unit 2 & 3, 4/F., Wellborne Commercial Centre, 8 Java Road, North Point, Hong Kong.
香港北角渣華道8號威邦商業中心4樓2及3室 Tel電話 : (852) 2877 3122 Fax傳真 : (852) 2511 0922
Email電郵: enquiry@nt.com.hk Web page網址 : http://www.nt.com.hk

Our Ref: 3.16/014/2006/at

23 November 2009

Maunsell Consultants Asia Ltd
Grand Central Plaza, Tower 2
138 Shatin Rural Committee Road
Shatin, N.T., Hong Kong

Attn: Ms Vera Chan

Dear Sir/Madam,

Hong Kong Convention Centre Expansion Project
39th Monthly Environmental Monitoring and Audit Report
(Environmental Permit No.: EP-239/2006/B)

With reference to the captioned document concerning the Monthly EM&A report received from ERM on 23 November 2009, we are pleased to provide our verification for the document pursuant to condition 3 of the Environmental Permit (EP) No. EP-239/2006/B.

Yours faithfully,
Nature & Technologies (HK) Limited

Ir Dr Gabriel C K Lam
Independent Environmental Checker

cc: - Hong Kong Trade Development Council (Attn: Mr. K. F. Chan)
- Hip Hing Ngo Kee Joint Venture (Attn: Mr. Eric Lau & Mr. William Tam)
- ERM (Attn: Mr. Marcus Ip)

CONTENTS

	<i>EXECUTIVE SUMMARY</i>	<i>I</i>
<i>1</i>	<i>INTRODUCTION</i>	<i>1</i>
<i>1.1</i>	<i>PURPOSE OF THE REPORT</i>	<i>1</i>
<i>1.2</i>	<i>STRUCTURE OF THE REPORT</i>	<i>1</i>
<i>2</i>	<i>PROJECT INFORMATION</i>	<i>3</i>
<i>2.1</i>	<i>BACKGROUND</i>	<i>3</i>
<i>2.2</i>	<i>SITE DESCRIPTION</i>	<i>4</i>
<i>2.3</i>	<i>CONSTRUCTION ACTIVITIES</i>	<i>4</i>
<i>2.4</i>	<i>PROJECT ORGANISATION</i>	<i>4</i>
<i>2.5</i>	<i>STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS</i>	<i>4</i>
<i>3</i>	<i>ENVIRONMENTAL MONITORING METHODOLOGY</i>	<i>6</i>
<i>3.1</i>	<i>AIR QUALITY MONITORING</i>	<i>6</i>
<i>4</i>	<i>IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS</i>	<i>10</i>
<i>5</i>	<i>MONITORING RESULTS</i>	<i>11</i>
<i>5.1</i>	<i>AIR QUALITY</i>	<i>11</i>
<i>5.2</i>	<i>MARINE WATER QUALITY</i>	<i>11</i>
<i>5.3</i>	<i>WASTE MANAGEMENT</i>	<i>11</i>
<i>6</i>	<i>ENVIRONMENTAL SITE AUDITING</i>	<i>13</i>
<i>7</i>	<i>ENVIRONMENTAL NON-CONFORMANCE</i>	<i>14</i>
<i>7.1</i>	<i>SUMMARY OF ENVIRONMENTAL EXCEEDANCE</i>	<i>14</i>
<i>7.2</i>	<i>SUMMARY OF ENVIRONMENTAL NON-COMPLIANCE</i>	<i>14</i>
<i>7.3</i>	<i>SUMMARY OF ENVIRONMENTAL COMPLAINT</i>	<i>14</i>
<i>7.4</i>	<i>SUMMARY OF ENVIRONMENTAL SUMMONS AND PROSECUTION</i>	<i>14</i>
<i>8</i>	<i>FUTURE KEY ISSUES</i>	<i>15</i>
<i>8.1</i>	<i>KEY ISSUES FOR THE COMING MONTH</i>	<i>15</i>
<i>8.2</i>	<i>MONITORING SCHEDULE FOR THE COMING MONTHS</i>	<i>15</i>
<i>9</i>	<i>REVIEW OF THE EM&A DATA AND EIA PREDICTIONS</i>	<i>16</i>
<i>9.1</i>	<i>AIR QUALITY</i>	<i>16</i>
<i>9.2</i>	<i>WATER QUALITY</i>	<i>16</i>
<i>9.3</i>	<i>WASTE MANAGEMENT</i>	<i>16</i>
<i>9.4</i>	<i>CONCLUSION OF REVIEW</i>	<i>17</i>
<i>10</i>	<i>CONCLUSIONS</i>	<i>18</i>

LIST OF TABLES

<i>Table 2.1</i>	<i>Summary of Construction Activities Undertaken from 1 October to 4 November 2009</i>
<i>Table 2.2</i>	<i>Summary of Environmental Licensing, Notification and Permit Status</i>
<i>Table 3.1</i>	<i>Air Monitoring Stations</i>
<i>Table 3.2</i>	<i>TSP Monitoring Parameter and Frequency</i>
<i>Table 3.3</i>	<i>Action and Limit Levels for Air Quality</i>
<i>Table 3.4</i>	<i>TSP Monitoring Equipment</i>
<i>Table 5.1</i>	<i>Quantities of Waste Generated from the Project</i>
<i>Table 9.1</i>	<i>Comparison of the HKAQO and Air Quality Monitoring Results</i>
<i>Table 9.2</i>	<i>Comparison of Estimated and Actual Amounts of Waste Generated</i>

LIST OF ANNEXES

Annex A	Location of Works Areas
Annex B	Location of Construction Activities during the Reporting Period
Annex C	Project Organization Chart and Contact Detail
Annex D	Locations of Air Quality Monitoring Stations
Annex E	Monitoring Schedule of the Reporting Period
Annex F	Calibration Reports for HVSSs
Annex G	24-hour and 1-hour TSP Monitoring Results
Annex H	Event / Action Plans for Air Quality Monitoring
Annex I	Summary of Implementation Status
Annex J	Waste Flow Table

EXECUTIVE SUMMARY

The construction works for Hong Kong Convention and Exhibition Centre Expansion Project (EIAO Register No: AEIAR-100/2006) commenced on 1 August 2006. This is the thirty-ninth Environmental Monitoring and Audit (EM&A) report presenting the EM&A work carried out during the period from 1 October to 4 November 2009 in accordance with the EM&A Manual. The proposal for the termination of the construction phase EM&A programme was submitted to EPD on 28 October 2009 (ref: AKWL: VCML:JWHW:lcl:98705/EN100-776) and was approved on 4 November 2009. With the receipt of EPD's approval, the construction phase EM&A programme was terminated on 5 November 2009.

Summary of Construction Works undertaken during the Reporting Period

The major construction works undertaken during this reporting period included the reinstatement of promenade.

Environmental Monitoring and Audit Progress

A summary of the monitoring activities in this reporting period is listed below:

24-hour Total Suspended Particulates (TSP) monitoring	6 sets
1-hour TSP monitoring	18 sets
Environmental site auditing	2 times

Air Quality

Six sets of 24-hour and eighteen sets of 1-hour TSP monitoring were carried out at the designated monitoring stations (AM1 & AM2) during this reporting period. There were no exceedances recorded during this reporting period.

Marine Water Quality

Water quality monitoring at the designated monitoring stations (W3, W4 and W5) was not conducted during this reporting period subsequent to the completion of temporary marine piles extraction on 4 September 2009.

Construction Waste Management

No inert C&D materials and no C&D wastes were generated during this reporting period. The C&D wastes and inert C&D materials generated from the Project were disposed of at SENT Landfill / Tseung Kwan O Area 137 Fill Bank and the public fill barging point at Quarry Bay respectively. No steel materials were sent to recyclers within this reporting period.

Environmental Site Auditing

Two weekly environmental site audits were carried out by the ET. Details of the audit findings and implementation status are presented in *Section 6*.

Environmental Non-conformance

No environmental non-compliance was identified during this reporting period.

No environmental complaint or summons was received during this reporting period.

Future Key Issues

No major works will be undertaken due to completion of project. No potential environmental impacts are therefore expected to arise from the Project. The Final EM&A Report of the Project will be submitted shortly after the termination of the construction phase EM&A programme. The Contractor is in the course of demobilization from Project site. The commencement of operational phase EM&A programme will follow upon the completion of demobilization.

ERM-Hong Kong, Limited (ERM) was appointed by Hip Hing Joint Venture as the Environmental Team (ET) to implement the Environmental Monitoring and Audit (EM&A) programme for Hong Kong Convention and Exhibition Centre Expansion Project (the Project).

1.1 PURPOSE OF THE REPORT

This is the thirty-ninth EM&A report which summarises the impact monitoring results and audit findings of the EM&A programme from **1 October to 4 November 2009**.

1.2 STRUCTURE OF THE REPORT

The structure of the report is as follows:

Section 1 : Introduction

details the scope and structure of the report.

Section 2 : Project Information

summarises background and scope of the Project, site description, project organisation and contact details, construction programme, the construction works undertaken and the status of Environmental Permits/Licences during the reporting period.

Section 3 : Environmental Monitoring Requirement

summarises the monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations, Action and Limit Levels and Event / Action Plans.

Section 4 : Implementation Status on Environmental Mitigation Measures

summarises the implementation of environmental protection measures during the reporting period.

Section 5 : Monitoring Results

summarises the monitoring results obtained in the reporting period.

Section 6 : Environmental Site Auditing

summarises the audit findings of the weekly site inspections undertaken within the reporting period.

Section 7 : Environmental Non-conformance

summarises any environmental exceedance, environmental complaints and environmental summons received within the reporting period.

Section 8 : **Future Key Issues**

summarises the impact forecast and monitoring schedule for the next three months.

Section 9 : **Review of EM&A Data and EIA Predictions**

compares and contrasts the EM&A data in the month with the EIA predictions and annotates with explanation for any discrepancies.

Section 10 : **Conclusion**

2.1

BACKGROUND

The Hong Kong Trade Development Council (HKTDC) is expanding its existing facilities to provide additional space for Hong Kong's leading trade fairs to be held at the Hong Kong Convention and Exhibition Centre (HKCEC). The Project is located in North Wan Chai and will occupy the aerial space between Phase I and Phase II of the HKCEC. The new Atrium Link Extension (ALE) will span across the water channel between Phase I and Phase II of the HKCEC to accommodate 3 main levels of Exhibition Hall Extensions. The level of the main roof of the Extension will be of similar height as that of the podium roof of the Phase I building. A northern row of permanent supporting columns will be located on land close to Expo Drive Central and similarly a southern row will land near to Convention Avenue. There will be no permanent intermediate columns in the waterway.

The major works activities for the ALE will comprise the following:

- Construction and demolition of the temporary footbridge;
- Demolition of the existing Atrium Link;
- Construction and demolition of a temporary working platform;
- Construction of foundations and pile caps for the ALE; and
- Construction of superstructure for the ALE.

The potential environmental impacts of the Project have been studied in the "Hong Kong Convention and Exhibition Centre, Atrium Link Extension – Environmental Impact Assessment Report" (EIAO Register No: AEIAR-100/2006). The EIA was approved on 21 April 2006 under the *Environmental Impact Assessment Ordinance* (EIAO). An Environmental Permit (EP-239/2006) for the works was granted on 12 May 2006. An application for variation of the Environmental Permit was made on 25 January 2007, an amended Environmental Permit (EP-239/2006/A) was granted on 12 February 2007. An application for further variation of the Environmental Permit was made on 18 April 2008, and an amended Environmental Permit (EP-239/2006/B) was granted on 12 May 2008. Under the requirements of Condition 3.1 of Environmental Permit EP-239/2006/B, an EM&A programme as set out in the EM&A Manual and its supplement is required to be implemented.

The construction works commenced on 1 August 2006. All construction works, except minor works for the reinstatement of the Promenade, have been completed on 30 September 2009 as reported by the Contractor. The proposal for the termination of the construction phase EM&A programme was

submitted to EPD on 28 October 2009 (ref: AKWL: VCML:JWHW:lcl:98705/EN100-776) and was approved on 4 November 2009. With the receipt of EPD's approval, the construction phase EM&A programme was terminated on 5 November 2009.

2.2 *SITE DESCRIPTION*

The works areas of the Project are illustrated in *Annex A*.

2.3 *CONSTRUCTION ACTIVITIES*

A summary of the major construction activities undertaken in this reporting period is shown in *Table 2.1*. The locations of the construction activities are shown in *Annex B*.

Table 2.1 Summary of Construction Activities Undertaken from 1 October to 4 November 2009

Construction Activities Undertaken
<ul style="list-style-type: none">• Reinstatement of Promenade

2.4 *PROJECT ORGANISATION*

The Project organization chart and contact details are shown in *Annex C*.

2.5 *STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS*

A summary of the relevant permits, licences, and/or notifications on environmental protection for this Project since August 2006 is presented in *Table 2.2*.

Table 2.2 *Summary of Environmental Licensing, Notification and Permit Status*

Permit/ Licenses/ Notification	Reference	Validity Period	Remarks
Environmental Permit	EP-239/2006/B	Throughout the Contract	Environmental Permit (EP) EP-239/2006 granted originally on 12 May 2006. Since then the EP have been varied twice. The latest revised EP was issued on 12 May 2008
Notification of Construction Works under Air Pollution Control (Construction Dust) Regulation	--	--	Notification on 23 June 2006
Discharge Licence under Water Pollution Control Ordinance	EP860/W10/XY0 145	N/A	-
Chemical Waste Producer Registration	WPN5213-134-H3125-01	N/A	Chemical waste types: spent paint, acid, alkaline, adhesive, diesel fuel, lubricating oil and bitumen.
Proposal for Termination of Construction Phase EM&A Programme	-	-	Approved on 4 November 2009 by EPD.

3.1 AIR QUALITY MONITORING

3.1.1 Monitoring Location

In accordance with the EM&A Manual, 24-hour and 1-hour Total Suspended Particulates (TSP) levels were conducted at the monitoring stations listed in *Table 3.1*. Maps and photographs showing the monitoring stations are presented in *Annex D*.

Table 3.1 *Air Monitoring Stations*

Monitoring Station	Description
AM1	Pedestrian Plaza
AM2	Renaissance Harbour View Hotel Hong Kong

3.1.2 Monitoring Parameters, Frequency and Programme

Air quality monitoring was conducted in accordance with the requirements stipulated in the EM&A Manual (*Table 3.2*). The monitoring programme for the last 3 months and from 1 – 4 November 2009 is shown in *Annex E*.

Table 3.2 *TSP Monitoring Parameter and Frequency*

Parameter	Frequency
24-hour TSP	Once every 6 days
1-hour TSP	3 times every 6 days

3.1.3 Action and Limit Levels

The Action and Limit levels were established in accordance with the EM&A Manual and are presented in *Table 3.3*.

Table 3.3 *Action and Limit Levels for Air Quality*

Parameter	Air Monitoring Station	Action Level, μgm^{-3}	Limit Level, μgm^{-3}
24-hour TSP	AM1	161	260
	AM2	168	260
1-hour TSP	AM1	327	500
	AM2	329	500

3.1.4 Monitoring Equipment

Continuous 24-hour and 1-hour TSP monitoring were performed using High Volume Samplers (HVS) with appropriate sampling inlets installed, located at the designated monitoring station. The performance specification of HVS complies with the standard method “*Determination of Suspended Particulate Matter in the Atmosphere (High Volume Method)*” as stipulated in *US EPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50 Appendix B)*.

Table 3.4 summarises the equipment that was used in the 24-hour and 1-hour TSP monitoring.

Table 3.4 TSP Monitoring Equipment

Monitoring Station	Equipment	Model (HVS, Calibration Kit)
AM1 (for 24-hr TSP)	HVS, Calibration Kit	GMW-9503, Tisch TE-5025A
AM2 (for 24-hr TSP)	HVS, Calibration Kit	GMW-9795, Tisch TE-5025A
AM1 (for 1-hr TSP)	HVS, Calibration Kit	GMW-9864, Tisch TE-5025A
AM2 (for 1-hr TSP)	HVS, Calibration Kit	GMW-8115, Tisch TE-5025A

3.1.5 Monitoring Methodology

Installation

The HVS's at AM1 and AM2 were placed at about 1.3 m above local ground level and about 4.3 m above local ground respectively. All of the HVS's were free-standing with no obstruction.

The following criteria were considered in the installation of the HVS's:

- horizontal platform with appropriate support to secure the samplers against gusty wind were provided at AM1 & AM2;
- a minimum of 2 m separation from walls, parapets and penthouses was required for rooftop samplers;
- no furnace or incinerator flues were nearby;
- airflow around the sampler was unrestricted; and
- permission was obtained to set up the samplers and to gain access to the monitoring stations.

Preparation of Filter Papers by ETS-Testconsult Ltd

- glass fibre filters were labelled and sufficient filters that were clean and without pinholes were selected;
- all filters were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25 °C and not variable by more than ± 3 °C; the relative humidity (RH) was 40%; and
- ETS-Testconsult Ltd, a HOKLAS accredited laboratory, implements comprehensive quality assurance and quality control programmes.

Field Monitoring

- the power supply was checked to ensure that the HVS's were working properly;
- the filter holder and the area surrounding the filter were cleaned;

- the filter holder was removed by loosening the four bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully;
- the filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter;
- the swing bolts were fastened to hold the filter holder down to the frame. The pressure applied should be sufficient to avoid air leakage at the edges;
- then the shelter lid was closed and secured with the aluminium strip;
- the HVS's were warmed-up for about 5 minutes to establish run-temperature conditions;
- a new flowrate record sheet was set into the flow recorder;
- the flow rate of the HVS's was checked and adjusted at around 0.6 -1.44 m³/min. The range specified in the EM&A Manual was between 0.6 – 1.7 m³/min;
- the programmable timer was set for a sampling period of 24 hours ± 1 hour, and the starting time, weather condition and the filter number were recorded;
- the initial elapsed time was recorded;
- at the end of sampling, the sampled filter was removed carefully and folded in half length so that only surfaces with collected particulate matter were in contact;
- it was then placed in a clean plastic envelope and sealed;
- all monitoring information was recorded on a standard data sheet; and
- filters were sent to ETS-Testconsult Ltd for analysis.

3.1.6 *Maintenance and Calibration*

The HVS's and their accessories were maintained in good working condition, such as replacing motor brushes routinely and checking electrical wiring to ensure a continuous power supply.

The flow rate of each HVS with mass flow controller was calibrated using an orifice calibrator. Initial calibration of the dust monitoring equipments was conducted upon installation and prior to commissioning. Five-point calibration was carried out for HVS's using Tisch TE-5025A Calibration Kit. The calibration records for the HVS's are given in *Annex F*.

3.1.7 *Event Action Plan*

The Event / Action Plan (EAP) for air quality monitoring are presented in *Annex H*.

IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS

The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Report, the Environmental Permit and EM&A Manual. The implementation status of environmental mitigation and status of relevant required submissions under the EP are reported as part of the monthly EM&A report ⁽¹⁾. Relevant submissions made on these measures and requirements during the reporting period are summarised in *Annex I*.

(1) The last Monthly EM&A Report for September 2009 was submitted to the EPD on 29 October 2009.

5 *MONITORING RESULTS*

5.1 *AIR QUALITY*

The monitoring data at AM1 and AM2 were provided by ETS-Testconsult Ltd. Six sets of 24-hour TSP monitoring and eighteen sets of 1-hour TSP monitoring were carried out at the designated monitoring stations during the reporting period. The monitoring results from both 24-hour and 1-hour TSP were below the respective Action and Limit Levels. The monitoring data for the 24-hour TSP and 1-hour TSP together with wind data and graphical presentations are presented in *Annex G*. In addition, the monitoring results can also be found at the web-site (<http://www.hkcecema.com/index.html>).

Monitoring of air samples were carried out under both sunny and rainy conditions. The local impacts observed near the monitoring stations were mainly vehicle emissions along Convention Avenue and Fleming Road.

5.2 *MARINE WATER QUALITY*

Water quality monitoring for marine pile installation works was not conducted during this reporting period at the designated monitoring stations (W3, W4 and W5) subsequent to the completion of temporary marine piles extraction on 4 September 2009.

5.3 *WASTE MANAGEMENT*

Waste generated from this Project includes inert construction and demolition (C&D) materials and non-inert C&D wastes. Reference has been made on the Monthly Summary Waste Flow Table prepared by Hip Hing Joint Venture (*Annex J*). With reference to relevant handling records and trip tickets of this Project, the quantities of different types of waste generated in the reporting quarter are summarised in *Table 5.1*. The C&D wastes and inert C&D materials generated from the Project were disposed of at SENT Landfill / Tseung Kwan O Area 137 Fill Bank and the public fill barging point at Quarry Bay respectively.

Table 5.1 Quantities of Waste Generated from the Project

Month / Year	Quantity		
	C&D Materials (inert) ^(a)	C&D Materials (non-inert) ^(b)	Chemical Waste
1 October – 4 November 2009	0.0 tonnes	0.0 tonnes (no steel materials were sent to recyclers this month)	0

Notes:

(a) Inert C&D materials include bricks, concrete, building debris, rubble and excavated soil. No inert C&D material was reused in this Project during the reporting period. Non-reused inert C&D materials were disposed of at the public fill barging point at Quarry Bay.

(b) C&D wastes include steel materials generated from demolition of footbridge, the existing Atrium Link and working platform, paper / cardboard packaging waste, chemical waste and other wastes such as general refuse. The C&D wastes other than general refuse were disposed of at SENT Landfill / Tseung Kwan O Area 137 temporary construction waste sorting facility.

Weekly site inspections were carried out by the ET. Two site inspections were conducted on 9 and 16 October 2009, respectively. As reported by the Contractor and confirmed by the ET, no further works were conducted for the period from 18 October to 4 November 2009. With the termination of works for the Project, no site inspections were arranged after 16 October 2009. There was no non-compliance event recorded in this reporting period.

No recommendations or reminders were made on 16 October 2009. The recommendations and reminders on 9 October 2009 given to the Contractor were summarized as below:

9 October 2009

- (i) Loose sand was observed on the reinstated promenade near the south-eastern and north-eastern corner of the site. The Contractor was reminded to clean up the promenade to avoid sand from running into nearby storm drains in rainy weather.
- (ii) Brick cutting activities were generating dust under the Atrium Link Extension on the promenade near Convention Avenue. The Contractor was reminded to implement dust suppression measures for dusty works to avoid deterioration of nearby air quality.

Landscape and Visual Monitoring

In accordance with *Section 6.7* of the EM&A Manual, bi-weekly landscape and visual monitoring is required to ensure that the design, implementation and maintenance of landscape and visual mitigation measures are fully achieved. The monitoring has commenced since January 2007 and is conducted by Earthasia Limited. Landscape and visual mitigation measures were implemented by the Contractor and the implementation status is given in *Annex I*.

7 ENVIRONMENTAL NON-CONFORMANCE

7.1 SUMMARY OF ENVIRONMENTAL EXCEEDANCE

No exceedance of the Action and Limit Levels of 24-hour and 1-hour TSP was recorded at monitoring stations during this reporting period.

7.2 SUMMARY OF ENVIRONMENTAL NON-COMPLIANCE

No non-compliance event was recorded during this reporting period.

7.3 SUMMARY OF ENVIRONMENTAL COMPLAINT

No complaint was received during this reporting period.

7.4 SUMMARY OF ENVIRONMENTAL SUMMONS AND PROSECUTION

No summons or prosecution on environmental matters was received during this reporting period.

8 *FUTURE KEY ISSUES*

8.1 *KEY ISSUES FOR THE COMING MONTH*

All construction work in the Project has been completed by the Contractor. No further works are expected to be conducted by the Contractor. No further environmental impacts are expected from the Project in the coming month.

The Contractor is in the course of demobilization from Project site. The commencement of operational phase EM&A programme will follow upon the completion of demobilization.

8.2 *MONITORING SCHEDULE FOR THE COMING MONTHS*

All construction work in the Project has been completed by the Contractor. TSP monitoring will be terminated from 5 November 2009 upon approval of termination proposal for construction phase EM&A programme by EPD received on 4 November 2009. This report is also the last monthly EM&A report to be submitted for this construction phase EM&A programme. The Final EM&A Report of the Project will be submitted shortly after the approval of the proposal for the termination of the construction phase EM&A programme by EPD.

Works for extraction of temporary marine piles have been completed on 4 September 2009, and marine water quality monitoring has been terminated by 7 September 2009.

The completion date for construction works is also presented in *Annex B*.

9.1 AIR QUALITY

Since the EIA only have qualitative assessment of dust impact during construction phase, the comparison was made between the monitoring results and the Hong Kong Air Quality Objectives (HKAQO) (*Table 9.1*).

Table 9.1 Comparison of the HKAQO and Air Quality Monitoring Results

Monitoring Station	Corresponding ASR in EIA	HKAQO, $\mu\text{g}\cdot\text{m}^{-3}$	Measured 24-hour TSP Monitoring Results, $\mu\text{g}\cdot\text{m}^{-3}$ (a) (b)	
		24 hour ⁽¹⁾	Average	Range
AM1	AM8	260	80	23 – 160
AM2	AM6	260	71	14 - 161

Notes:

- (a) Only 24-hour TSP monitoring results were compared as there is no 1 hour TSP criterion in HKAQO.
- (b) Average and range of data were calculated between the commencement of construction works and this reporting period.

The monitoring results show that the average and range of 24-hour TSP levels recorded since the commencement of the construction works were well below the 24-hour TSP criterion in the HKAQO. Recommended mitigation measures in *Section 4.24* of EIA were implemented throughout the construction period and were considered effective.

9.2 WATER QUALITY

The hydrodynamic modelling assessment undertaken in the approved EIA Report was targeted at assessing the potential effects of the marine works on the flushing capacity of the water channel during the construction phase and no prediction was made on the change in water quality, hence no comparison can be made with the monitoring results.

9.3 WASTE MANAGEMENT

The estimated amount of waste generated in this Project and the accumulated quantities of waste generated up to this reporting period are presented in *Table 9.2*. Recommended mitigation measures in *Sections 6.35 to 6.41* of the EIA were implemented during the construction stage and regarded as effective.

Table 9.2 Comparison of Estimated and Actual Amounts of Waste Generated

Type of Material	Estimated Amount of C&D Materials in EIA (inert & non-inert)	Accumulated Actual Amount of C&D Materials Recorded ^(a) (inert & non-inert)
Demolition of temporary footbridge	585 tonnes	0
Demolition of existing Atrium Link	4,680 tonnes	2,681.5 tonnes
Demolition of temporary working platform	390 tonnes	0
Construction of foundations and pile caps	20,000 tonnes	27,945.4 tonnes
General Refuse	Insignificant	6055.9 tonnes
Chemical Waste	Small	288 litres

Note:
(a) The actual amount of C&D Materials was recorded since the commencement of construction works.

9.4 CONCLUSION OF REVIEW

The EIA predictions and the monitoring results since the commencement of construction works have been reviewed. The EIA concluded that the Project would not cause adverse impacts to the environment, and the monitoring results also indicated that the construction of the Project has not caused adverse impacts to the environment. Recommendations given in the EIA are also considered to be adequate and effective for minimising the environmental impacts.

The Environmental Monitoring and Audit (EM&A) Report presents the EM&A work undertaken during the period from 1 October to 4 November 2009 in accordance with the EM&A Manual and the requirements under EP-239/2006/B. The proposal for the termination of the construction phase EM&A programme was submitted to EPD on 28 October 2009 (ref: AKWL: VCML:JWHW:lcl:98705/EN100-776) and was approved on 4 November 2009. As a result, the construction phase EM&A programme was terminated on 5 November 2009. The Final EM&A Report of the Project will be submitted shortly after the termination of the construction phase EM&A programme.

No exceedance of the Action and Limit Levels of 24-hour and 1-hour TSP was recorded at the monitoring stations during this reporting period.



No complaint and summons/prosecution was received during this reporting period.

The ET will keep track of the EM&A programme to ensure compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

Annex A

Locations of Works Areas

Key

-  Proposed Atrium Link Extension
-  Existing Atrium Link

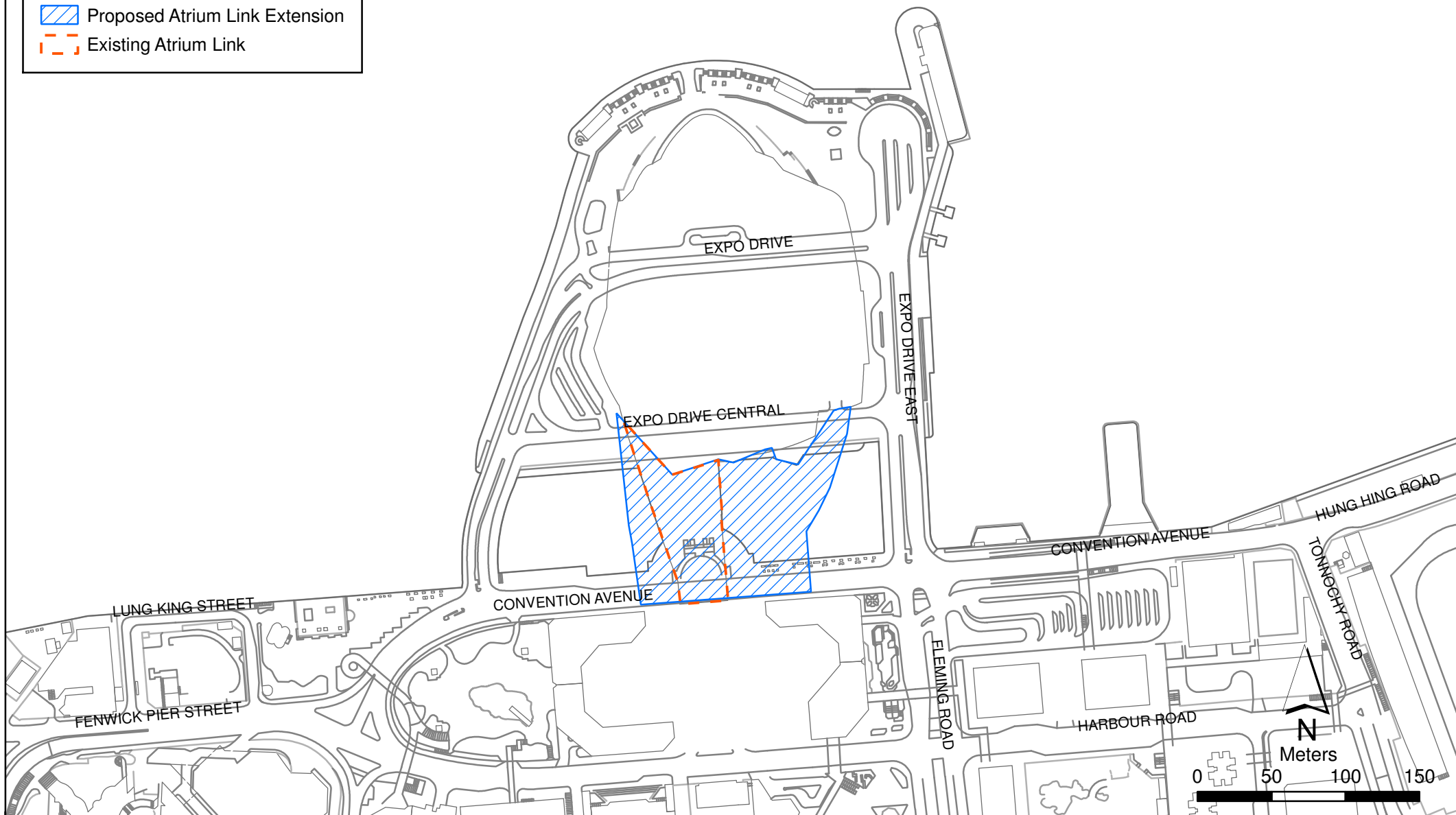


Figure A1

Location of Atrium Link Extension



Annex B

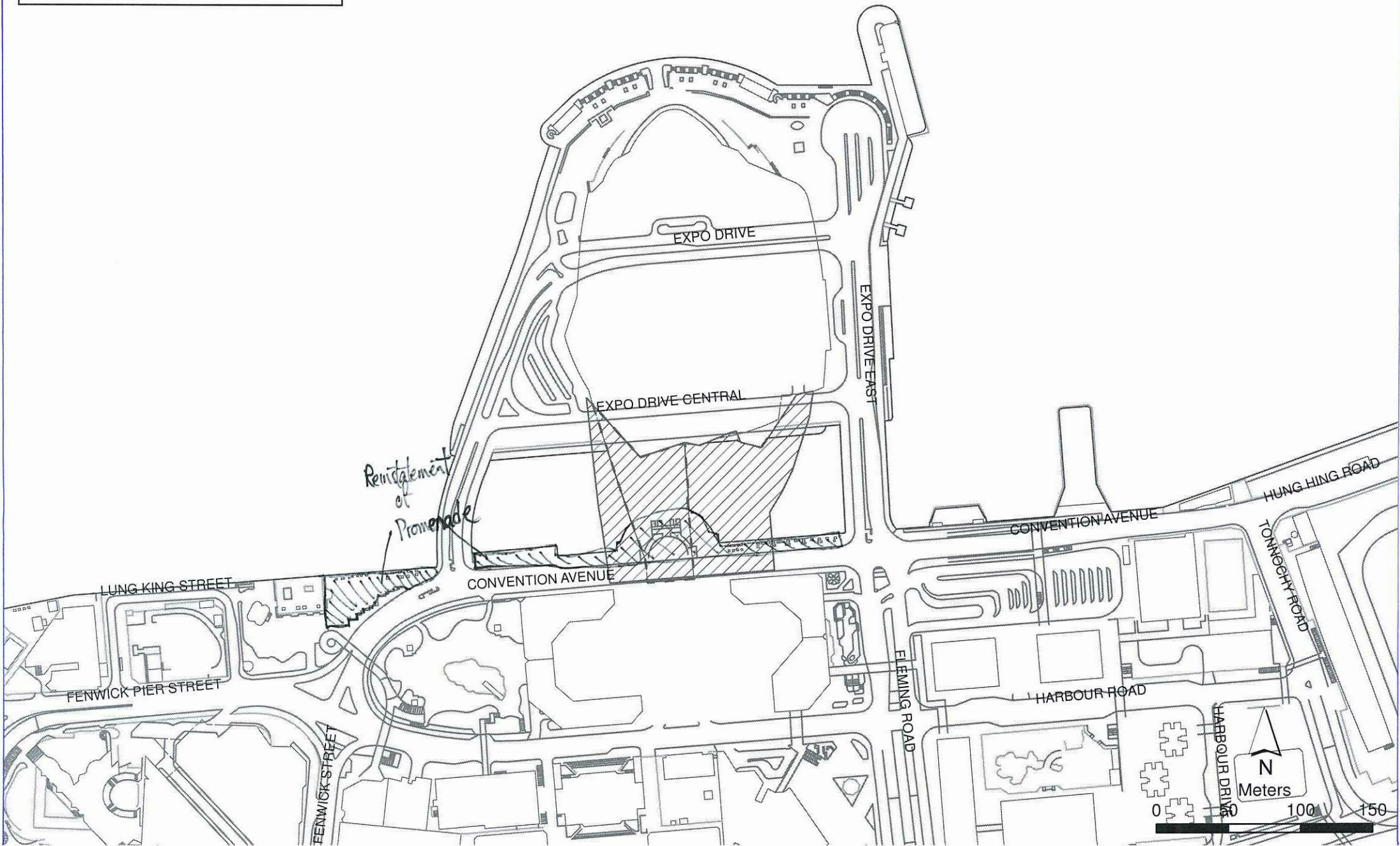
Location of Construction
Activities during the
Reporting Month

Summary of Works from 1 October to 4 November 2009

Description	Location	Finish Date
Reinstatement of promenade	Convention Avenue and Expo Drive Central	Mid- October 2009

Key

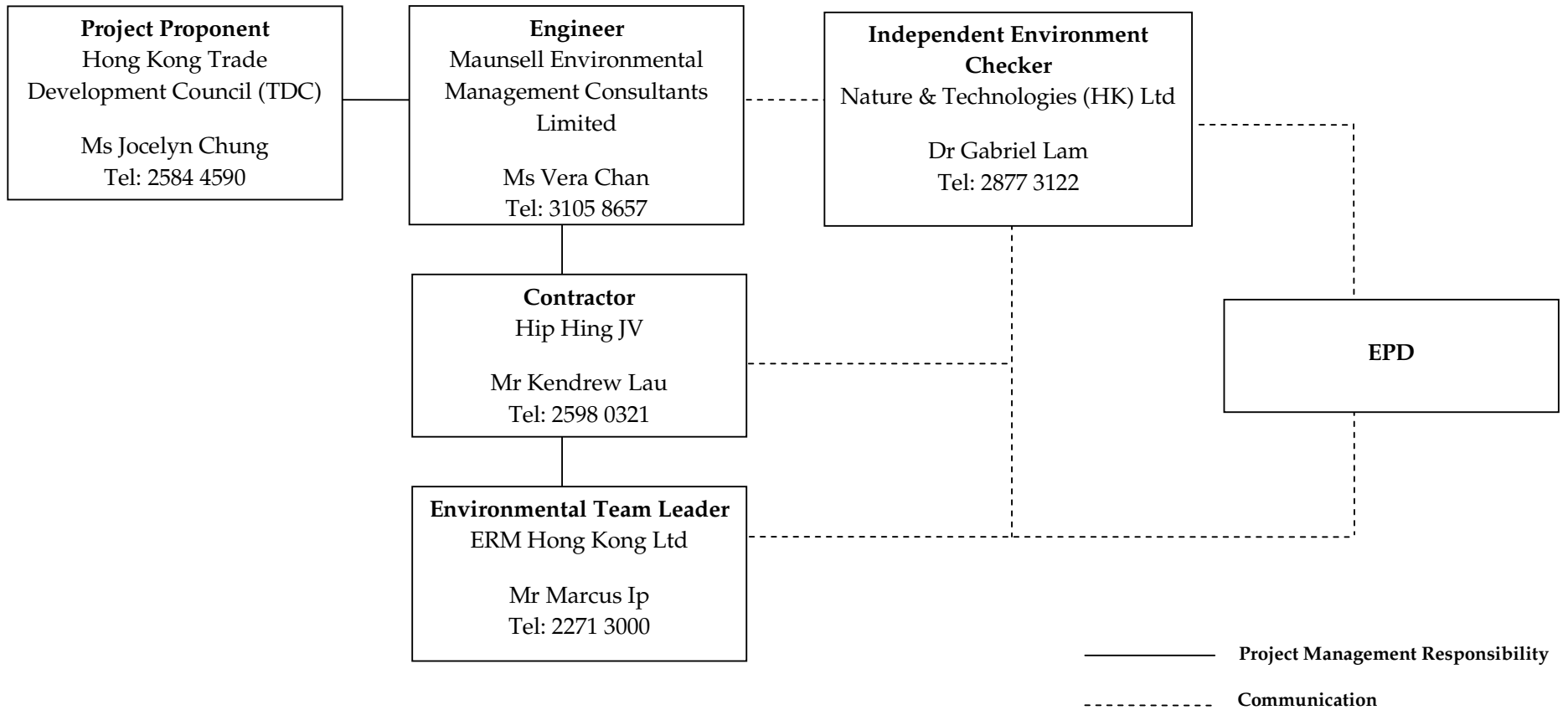
-  Proposed Atrium Link Extension
-  Existing Atrium Link



Annex C

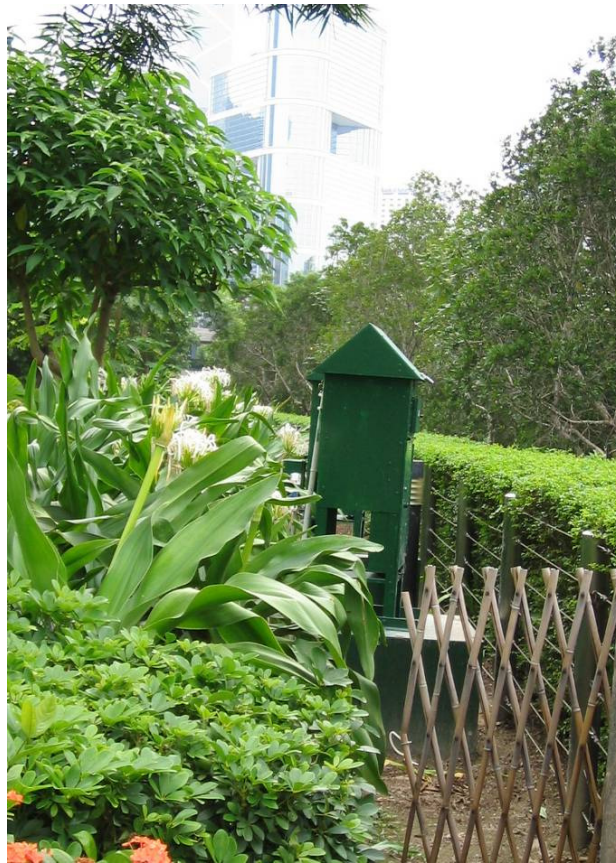
Project Organization Chart and Contact Detail

Project Organization (with contact details)



Annex D

Location of Air Quality Monitoring Stations



Air Quality Monitoring Station (AM1)



Air Quality Monitoring Station (AM2)

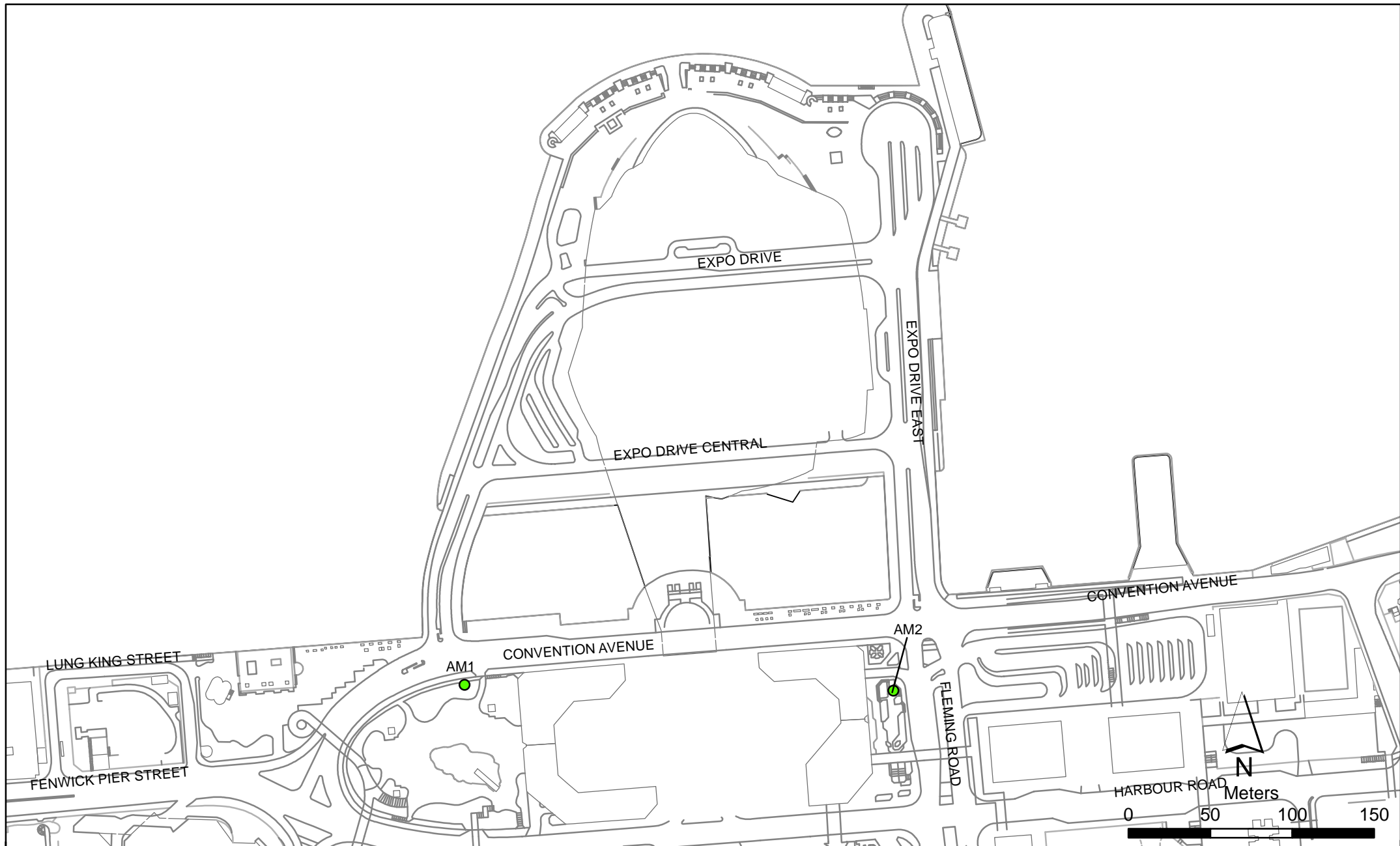


Figure D1

Air Quality Monitoring Station

File: 0050690_2.mxd
Date: 08/09/2006

Environmental
Resources
Management





Water Quality Monitoring Location – Station W3



Water Quality Monitoring Location – Stations W4 and W5

Monitoring Station	Description	Easting	Northing
3	Hong Kong Convention and Exhibition Centre Phase I Cooling Water Intake	835852.3	815907.0
4	Wan Chai Tower/Revenue Tower/Immigration Tower Cooling Water Intake	835944.1	815885.0
5	Great Eagle Centre/China Resources Building Cooling Water Intake	835963.4	815886.5

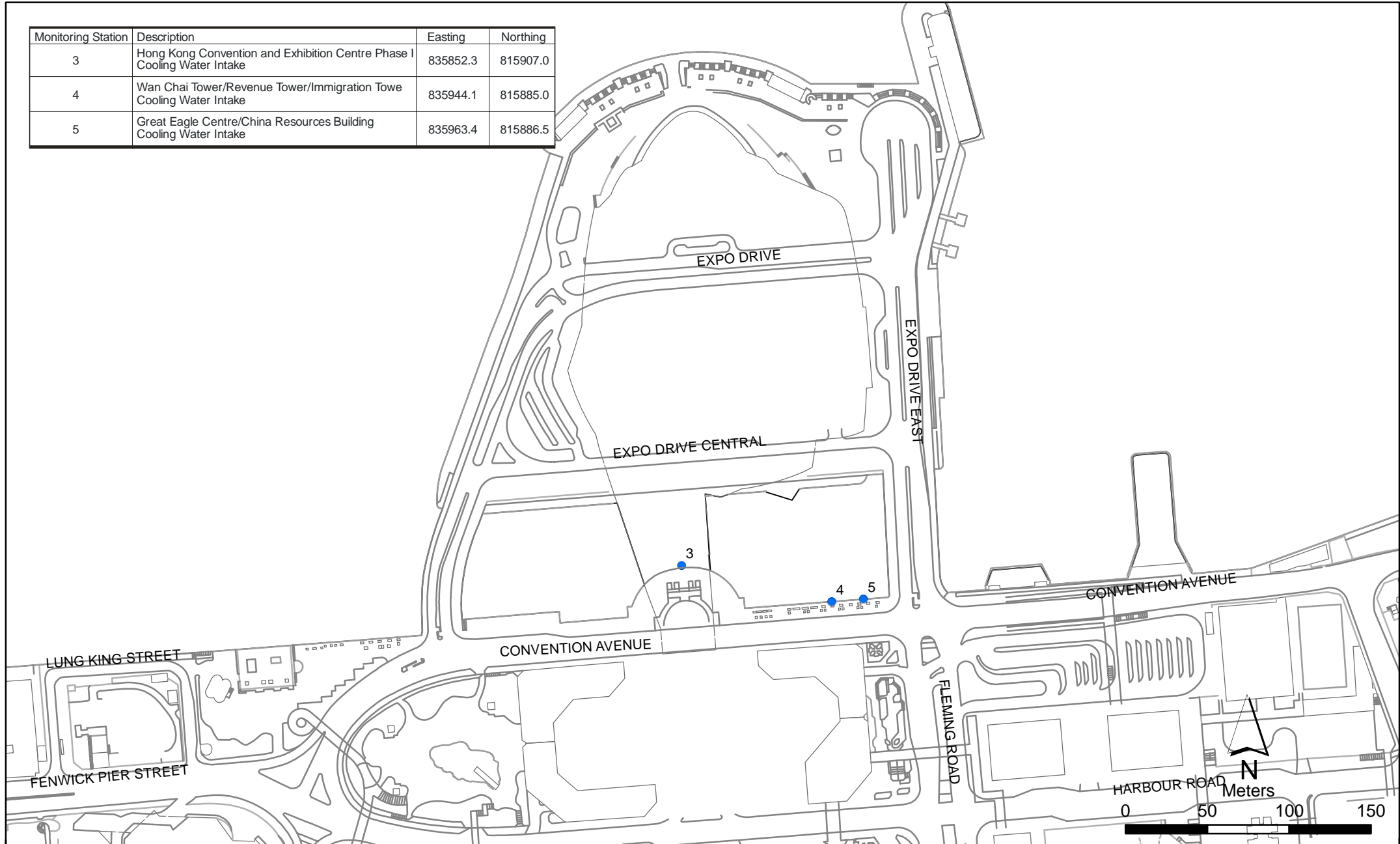


Figure D2

Marine Water Quality Monitoring Station

Annex E

Monitoring Schedule for the Reporting Period and Next Month

**Hong Kong Convention and Exhibition Centre, Atrium Link Extension
Air Quality Monitoring Schedule - August 2009**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1-Aug
					1hr TSP	1hr and 24hr TSP
2-Aug	3-Aug	4-Aug	5-Aug	6-Aug	7-Aug	8-Aug
	1 hr TSP		1 hr TSP		1hr and 24hr TSP	
9-Aug	10-Aug	11-Aug	12-Aug	13-Aug	14-Aug	15-Aug
	1 hr TSP		1 hr TSP	1hr and 24hr TSP	1 hr TSP	
16-Aug	17-Aug	18-Aug	19-Aug	20-Aug	21-Aug	22-Aug
	1hr TSP		1hr and 24hr TSP		1hr TSP	
23-Aug	24-Aug	25-Aug	26-Aug	27-Aug	28-Aug	29-Aug
	1hr TSP	1hr and 24hr TSP	1hr TSP		1hr TSP	
30-Aug	31-Aug					
	1hr and 24hr TSP					

**Hong Kong Convention and Exhibition Centre, Atrium Link Extension
Air Quality Monitoring Schedule - September 2009**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1-Sep	2-Sep	3-Sep	4-Sep	5-Sep
			1hr TSP		1hr TSP	1hr and 24hr TSP
6-Sep	7-Sep	8-Sep	9-Sep	10-Sep	11-Sep	12-Sep
	1 hr TSP		1 hr TSP		1hr and 24hr TSP	
13-Sep	14-Sep	15-Sep	16-Sep	17-Sep	18-Sep	19-Sep
	1 hr TSP		1 hr TSP	1hr and 24hr TSP	1 hr TSP	
20-Sep	21-Sep	22-Sep	23-Sep	24-Sep	25-Sep	26-Sep
	1hr TSP		1hr and 24hr TSP		1hr TSP	
27-Sep	28-Sep	29-Sep	30-Sep			
	1hr TSP	1hr and 24hr TSP	1hr TSP			

**Hong Kong Convention and Exhibition Centre, Atrium Link Extension
Air Quality Monitoring Schedule - October 2009**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1-Oct	2-Oct	3-Oct
				holdiy	1hr TSP	holdiy
4-Oct	5-Oct	6-Oct	7-Oct	8-Oct	9-Oct	10-Oct
	1hr and 24hr TSP		1 hr TSP		1 hr TSP	1hr and 24hr TSP
11-Oct	12-Oct	13-Oct	14-Oct	15-Oct	16-Oct	17-Oct
	1 hr TSP		1 hr TSP		1hr and 24hr TSP	
18-Oct	19-Oct	20-Oct	21-Oct	22-Oct	23-Oct	24-Oct
	1hr TSP		1hr TSP	1hr and 24hr TSP	1hr TSP	
25-Oct	26-Oct	27-Oct	28-Oct	29-Oct	30-Oct	31-Oct
	holdiy	1hr TSP	1hr and 24hr TSP		1hr TSP	

**Hong Kong Convention and Exhibition Centre, Atrium Link Extension
Air Quality Monitoring Schedule - November 2009**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1-Nov	2-Nov	3-Nov	4-Nov	5-Nov	6-Nov	7-Nov
	1hr TSP	1hr and 24hr TSP	1hr TSP			
8-Nov	9-Nov	10-Nov	11-Nov	12-Nov	13-Nov	14-Nov
15-Nov	16-Nov	17-Nov	18-Nov	19-Nov	20-Nov	21-Nov
22-Nov	23-Nov	24-Nov	25-Nov	26-Nov	27-Nov	28-Nov
29-Nov	30-Nov					

Annex F

Calibration Reports for HVS



東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

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

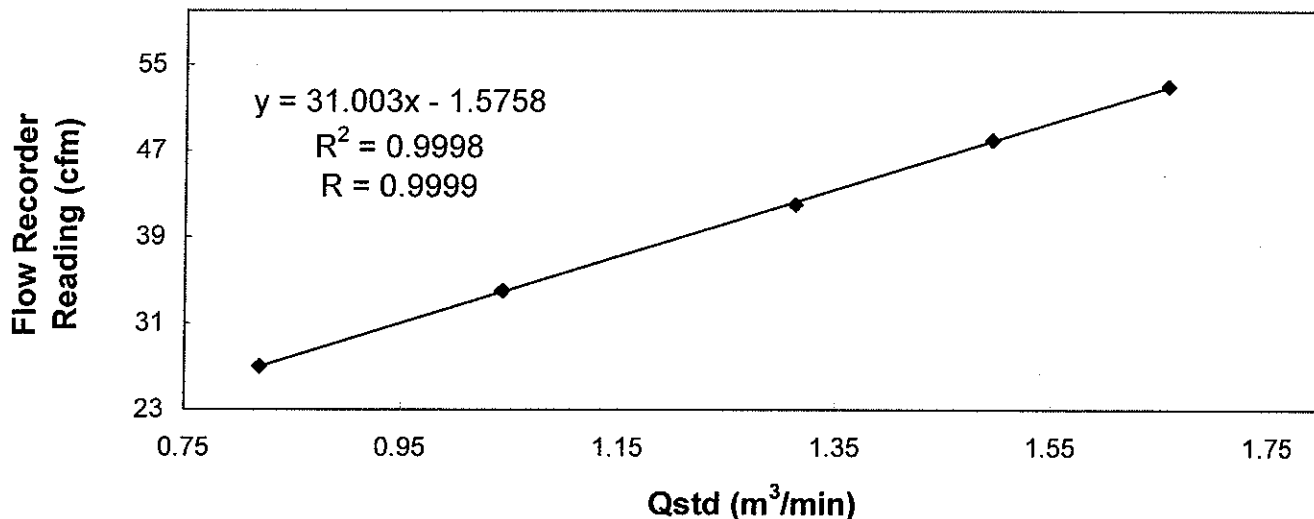
TEST REPORT

Calibration Report
of
High Volume Air Sampler

Manufacturer : Graseby GMW Date of Calibration : 02 September 2009
Serial No. : 9864 (ET/EA/003/19) Calibration Due Date : 01 November 2009
Method : Five-point calibration by using standard calibration kit Tisch TE-5025A refer to the Operations Manual

Results	Flow recorder reading (cfm)	53	48	42	34	27
	Qstd (Actual flow rate, m ³ /min)	1.66	1.49	1.31	1.04	0.82
	Pressure : 759.06 mm Hg	Temp. : 305 K				

Sampler 9864 Calibration Curve
Site: Wan Chai (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 Technician)

Approved by : CHOW Hoi Tat
CHOW, Hoi Tat
(Assistant 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 : ett@ets-testconsult.com
 Fax : 2695 3944 Web site : www.ets-testconsult.com

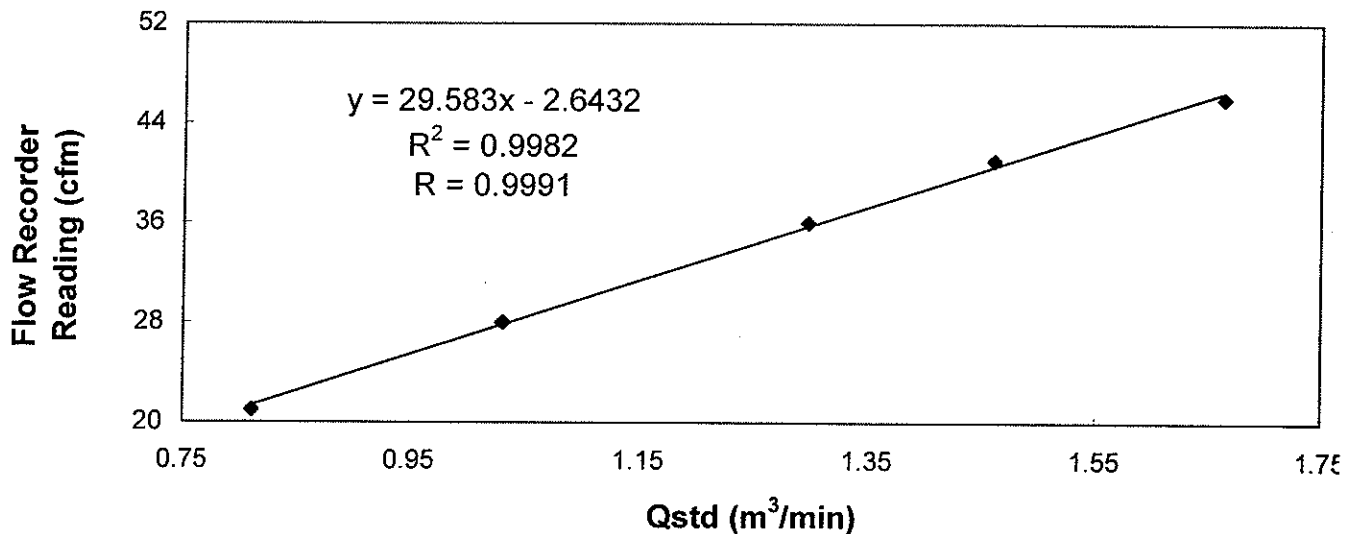
TEST REPORT

Calibration Report
 of
High Volume Air Sampler

Manufacturer : Graseby GMW **Date of Calibration** : 02 September 2009
Serial No. : 9795 (ET / EA / 003 / 18) **Calibration Due Date** : 01 November 2009
Method : Five-point calibration by using standard calibration kit Tisch TE-5025A refer to the Operations Manual

Results	Flow recorder reading (cfm)	46	41	36	28	21
	Qstd (Actual flow rate, m ³ /min)	1.66	1.46	1.30	1.03	0.81
	Pressure : 757.56 mm Hg	Temp. : 305 K				

Sampler 9795 Calibration Curve
 Site: Wan Chai (AM-2)

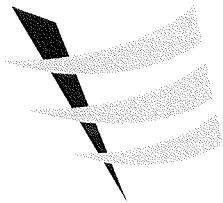


Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after a 5-point calibration

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 Technician)

Approved by : CHOW, Hoi Tat
 CHOW, Hoi Tat
 (Assistant Environmental Officer)



東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

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

TEST REPORT

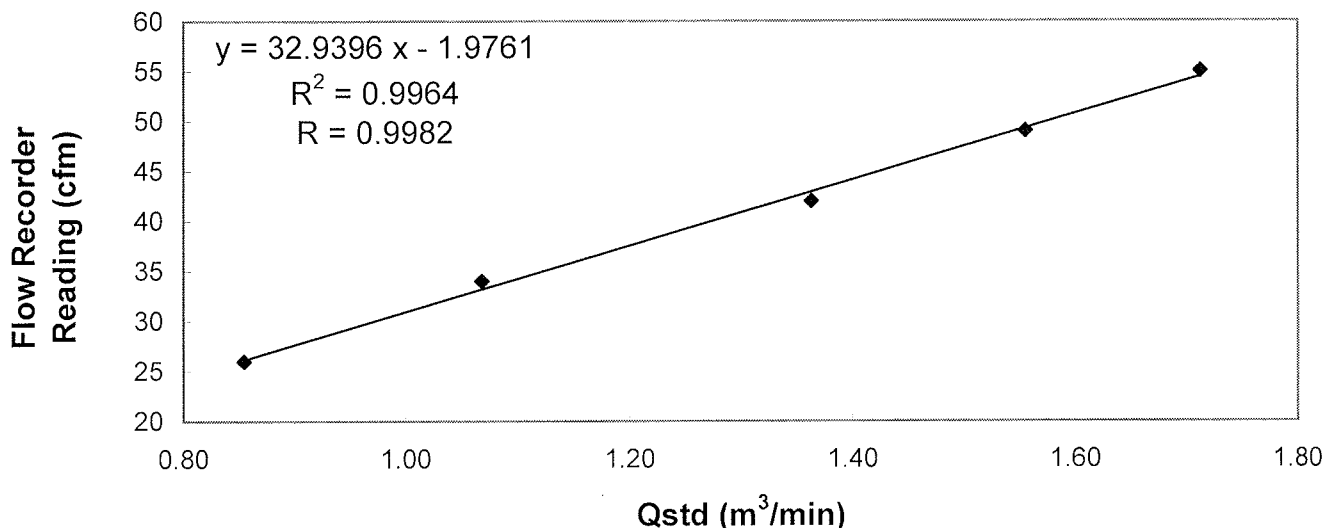
Calibration Report
of
High Volume Air Sampler

Manufacturer : Graseby GMW Date of Calibration : 02 November 2009
Serial No. : 9864 (ET / EA / 003 / 19) Calibration Due Date : 01 January 2010
Method : Five-point calibration by using standard calibration kit Tisch TE-5025A refer to the Operations Manual

Results :

Flow recorder reading (cfm)	55	49	42	34	26
Qstd (Actual flow rate, m ³ /min)	1.71	1.56	1.36	1.07	0.85
Pressure :	773.31 mm Hg			Temp. :	296 K

Sampler 9864 Calibration Curve
Site: Wan Chai (AM-1)

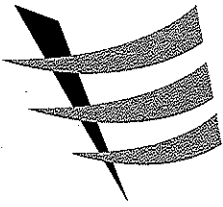


Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after a 5-point calibration

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

Calibrated by : LI, Wan Lung
LI, Wan Lung
(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

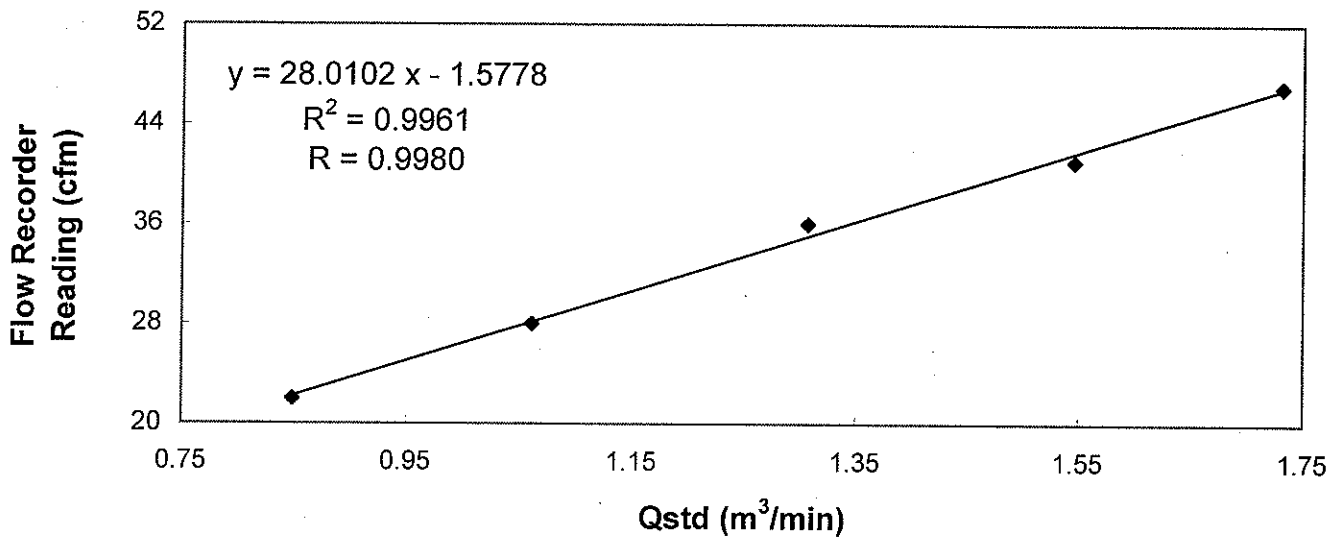
Calibration Report
of
High Volume Air Sampler

Manufacturer : Graseby GMW **Date of Calibration** : 02 November 2009
Serial No. : 9795 (ET / EA / 003 / 18) **Calibration Due Date** : 01 January 2010
Method : Five-point calibration by using standard calibration kit Tisch TE-5025A refer to the Operations Manual

Results :

Flow recorder reading (cfm)	47	41	36	28	22
Qstd (Actual flow rate, m ³ /min)	1.73	1.55	1.31	1.06	0.85
Pressure :	771.06 mm Hg			Temp. :	299 K

Sampler 9795 Calibration Curve
Site: Wan Chai (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 Technician)

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

Annex G

24-hour and 1-hour TSP Monitoring Results

24-hour TSP Monitoring Results

24-hour TSP Monitoring Results at Station AM1 (Nearby The Grand Hyatt)

Date	Filter Weight (g)		Flow Rate (m ³ /min.)		Elapse Time		Sampling Time(hrs.)	Conc. (µg/m ³)	Weather Condition	Ave. Air Temp. (°C)	Particulate weight(g)	Av. flow (m ³ /min)	Total vol. (m ³)	
	Initial	Final	Initial	Final	Initial	Final								
05 Oct 09 to 06 Oct 09	2.8156	2.9523	1.0136	1.0136	15817.59	15841.59	24.0	94	Sunny	28	0.1367	1.0136	1459.58	
10 Oct 09 to 11 Oct 09	2.8216	2.9257	0.9813	0.9813	15844.59	15868.59	24.0	74	Sunny	27	0.1041	0.9813	1413.07	
16 Oct 09 to 17 Oct 09	2.8448	2.9789	0.9813	0.9813	15871.59	15895.59	24.0	95	Sunny	25	0.1341	0.9813	1413.07	
22 Oct 09 to 23 Oct 09	2.8228	3.0121	0.9813	0.9813	15898.59	15922.59	24.0	134	Sunny	26	0.1893	0.9813	1413.07	
28 Oct 09 to 29 Oct 09	2.8131	2.9584	0.9491	0.9491	15925.60	15949.60	24.0	106	Sunny	24	0.1453	0.9491	1366.70	
03 Nov 09 to 04 Nov 09	2.8125	2.9839	1.0315	1.0315	15952.60	15976.60	24.0	115	Sunny	19	0.0113	1.0315	1485.36	
								Min	74					
								Max	134					
								Average	103					

24-hour TSP Monitoring Results at Station AM2 (Nearby Renaissance Harbour View Hotel)

Date	Filter Weight (g)		Flow Rate (m ³ /min.)		Elapse Time		Sampling Time(hrs.)	Conc. (µg/m ³)	Weather Condition	Ave. Air Temp. (°C)	Particulate weight(g)	Av. flow (m ³ /min)	Total vol. (m ³)	
	Initial	Final	Initial	Final	Initial	Final								
05 Oct 09 to 06 Oct 09	2.8154	2.9733	1.2049	1.2049	14168.62	14192.62	24.0	91	Sunny	28	0.1579	1.2049	1735.06	
10 Oct 09 to 11 Oct 09	2.8169	2.9531	1.1372	1.1372	14195.62	14219.62	24.0	83	Sunny	27	0.1362	1.1372	1637.57	
16 Oct 09 to 17 Oct 09	2.8569	3.0015	1.1372	1.1372	14222.62	14246.00	23.4	91	Sunny	25	0.1446	1.1372	1595.26	
22 Oct 09 to 23 Oct 09	2.8312	3.0354	1.1711	1.1711	14249.00	14273.00	24.0	121	Sunny	26	0.2042	1.1711	1686.38	
28 Oct 09 to 29 Oct 09	2.8615	3.0512	1.4753	1.4753	14276.00	14300.00	24.0	89	Sunny	24	0.1897	1.4753	2124.43	
03 Nov 09 to 04 Nov 09	2.7409	2.9021	1.1274	1.1274	14303.00	14327.00	24.0	99	Sunny	19	0.1612	1.1274	1623.46	
								Min	83					
								Max	121					
								Average	96					

1-hour TSP Monitoring Results

1-hour TSP Monitoring Results at Station AM1 (Nearby The Grand Hyatt)

Date	Filter Weight (g)		Flow Rate (m ³ /min.)		Elapse Time		Sampling Time(hrs.)	Conc. (µg/m ³)	Weather Condition	Ave. Air Temp. (°C)	Particulate weight(g)	Av. flow (m ³ /min)	Total vol. (m ³)
	Initial	Final	Initial	Final	Initial	Final							
02 Oct 09	2.8248	2.8341	1.0136	1.0136	15815.59	15816.59	1.00	153	Sunny	28	0.0093	1.0136	60.82
05 Oct 09	2.8245	2.8358	1.0136	1.0136	15816.59	15817.59	1.00	186	Sunny	28	0.0113	1.0136	60.82
07 Oct 09	2.8208	2.8310	1.0136	1.0136	15841.59	15842.59	1.00	168	Rainy	28	0.0102	1.0136	60.82
09 Oct 09	2.8236	2.8315	1.0136	1.0136	15842.59	15843.59	1.00	130	Sunny	26	0.0079	1.0136	60.82
10 Oct 09	2.8077	2.8177	0.9813	0.9813	15843.59	15844.59	1.00	170	Sunny	27	0.0100	0.9813	58.88
12 Oct 09	2.8647	2.8725	0.9813	0.9813	15868.59	15869.59	1.00	132	Rainy	25	0.0078	0.9813	58.88
14 Oct 09	2.8521	2.8634	0.9813	0.9813	15869.59	15870.59	1.00	192	Rainy	25	0.0113	0.9813	58.88
16 Oct 09	2.8349	2.8443	0.9813	0.9813	15870.59	15871.59	1.00	160	Sunny	25	0.0094	0.9813	58.88
19 Oct 09	2.8515	2.8621	0.9813	0.9813	15895.59	15896.59	1.00	180	Rainy	26	0.0106	0.9813	58.88
21 Oct 09	2.8015	2.8125	0.9813	0.9813	15896.59	15897.59	1.00	187	Sunny	25	0.0110	0.9813	58.88
22 Oct 09	2.8214	2.8367	0.9813	0.9813	15897.59	15898.59	1.00	260	Sunny	26	0.0153	0.9813	58.88
23 Oct 09	2.8229	2.8340	0.9813	0.9813	15922.59	15923.60	1.01	187	Sunny	26	0.0111	0.9813	59.47
27 Oct 09	2.8086	2.8191	0.7555	0.7555	15923.60	15924.60	1.00	232	Sunny	24	0.0105	0.7555	45.33
28 Oct 09	2.8488	2.8561	0.9491	0.9491	15924.60	15925.60	1.00	128	Sunny	24	0.0073	0.9491	56.95
30 Oct 09	2.8515	2.8604	0.9813	0.9813	15949.60	15950.60	1.00	151	Sunny	24	0.0089	0.9813	58.88
02 Nov 09	2.8675	2.8788	1.0315	1.0315	15950.60	15951.60	1.00	183	Sunny	23	0.0113	1.0315	61.89
03 Nov 09	2.8521	2.8649	1.0315	1.0315	15951.60	15952.60	1.00	207	Sunny	19	0.0128	1.0315	61.89
04 Nov 09	2.8348	2.8452	0.9707	0.9707	15976.60	15977.60	1.00	179	Sunny	21	0.0104	0.9707	58.24
								Min	128				
								Max	260				
								Average	177				

1-hour TSP Monitoring Results at Station AM2 (Nearby Renaissance Harbour View Hotel)

Date	Filter Weight (g)		Flow Rate (m ³ /min.)		Elapse Time		Sampling Time(hrs.)	Conc. (µg/m ³)	Weather Condition	Ave. Air Temp. (°C)	Particulate weight(g)	Av. flow (m ³ /min)	Total vol. (m ³)
	Initial	Final	Initial	Final	Initial	Final							
02 Oct 09	2.8204	2.8267	1.1372	1.1372	14166.62	14167.62	1.00	92	Sunny	28	0.0063	1.1372	68.23
05 Oct 09	2.8247	2.8333	1.1372	1.1372	14167.62	14168.62	1.00	126	Sunny	28	0.0086	1.1372	68.23
07 Oct 09	2.8056	2.8147	1.2049	1.2049	14192.62	14193.62	1.00	126	Rainy	28	0.0091	1.2049	72.29
09 Oct 09	2.8159	2.8220	1.1711	1.1711	14193.62	14194.62	1.00	87	Sunny	26	0.0061	1.1711	70.27
10 Oct 09	2.8056	2.8145	1.1372	1.1372	14194.62	14195.62	1.00	130	Sunny	27	0.0089	1.1372	68.23
12 Oct 09	2.8769	2.8829	1.1711	1.1711	14219.62	14220.62	1.00	85	Rainy	25	0.0060	1.1711	70.27
14 Oct 09	2.8369	2.8479	1.1711	1.1711	14220.62	14221.62	1.00	157	Rainy	25	0.0110	1.1711	70.27
16 Oct 09	2.8414	2.8515	1.1711	1.1711	14221.62	14222.62	1.00	144	Sunny	25	0.0101	1.1711	70.27
19 Oct 09	2.8656	2.8771	1.1372	1.1372	14246.00	14247.00	1.00	169	Rainy	26	0.0115	1.1372	68.23
21 Oct 09	2.7843	2.8025	1.1372	1.1372	14247.00	14248.00	1.00	267	Sunny	25	0.0182	1.1372	68.23
22 Oct 09	2.8125	2.8288	1.1711	1.1711	14248.00	14249.00	1.00	232	Sunny	26	0.0163	1.1711	70.27
23 Oct 09	2.8569	2.8681	1.1711	1.1711	14273.00	14274.00	1.00	159	Sunny	26	0.0112	1.1711	70.27
27 Oct 09	2.8374	2.8537	1.3739	1.3739	14274.00	14275.00	1.00	198	Sunny	24	0.0163	1.3739	82.43
28 Oct 09	2.8251	2.8325	1.4415	1.4415	14275.00	14276.00	1.00	86	Sunny	24	0.0074	1.4415	86.49
30 Oct 09	2.8683	2.8769	1.4077	1.4077	14300.00	14301.00	1.00	102	Sunny	24	0.0086	1.4077	84.46
02 Nov 09	2.8746	2.8877	1.4487	1.4487	14301.00	14302.00	1.00	151	Sunny	23	0.0131	1.4487	86.92
03 Nov 09	2.8398	2.8536	1.2345	1.2345	14302.00	14303.00	1.00	186	Sunny	19	0.0138	1.2345	74.07
04 Nov 09	2.8248	2.8323	1.3416	1.3416	14327.00	14328.00	1.00	93	Sunny	21	0.0075	1.3416	80.50
								Min	85				
								Max	267				
								Average	144				

Meteorological Data Extracted from King's Park Stations of the Hong Kong Observatory

Date	Weather	King's Park Station				
		Average Air Temperature (°C)	Average Relative Humidity (%)	Total Rainfall (mm)	Wind Direction (Degree)	Average Wind Speed (km/h)
10/2/2009	Sunny	27.9	70	0.0	110	7.9
10/5/2009	Sunny	28.3	46	0.0	20	9.3
10/7/2009	Rainy	27.6	67	1.5	160	6.3
10/9/2009	Sunny	26.3	66	0.0	100	4.6
10/10/2009	Sunny	26.7	63	0.0	100	8.0
10/12/2009	Rainy	25.1	83	1.5	100	14.9
10/14/2009	Rainy	25.4	86	9.5	110	11.1
10/16/2009	Sunny	25.4	78	0.0	110	10.2
10/19/2009	Rainy	25.5	82	2.0	110	12.7
10/21/2009	Sunny	24.6	77	0.0	100	10.0
10/22/2009	Sunny	25.6	73	0.0	270	5.2
10/23/2009	Sunny	26.1	65	0.0	280	6.3
10/27/2009	Sunny	24	71	0.0	110	14.5
10/28/2009	Sunny	24.3	70	0.0	110	11.7
10/30/2009	Sunny	24.4	75	0.0	100	8.9
11/2/2009*	Sunny	22.9	45	0.0	NE	0-27
11/3/2009*	Sunny	18.5	47	0.0	NE	6-33
11/4/2009*	Sunny	21	53	0.0	NE	0-21

Notes:

- missing (less than 24 hourly observations a day)

NA - not available

* - Extract of Meteorological Data from Hong Kong Observatory

Figure G1 - Measured 24-hour TSP Concentration ($\mu\text{g}\text{m}^{-3}$) at AM1

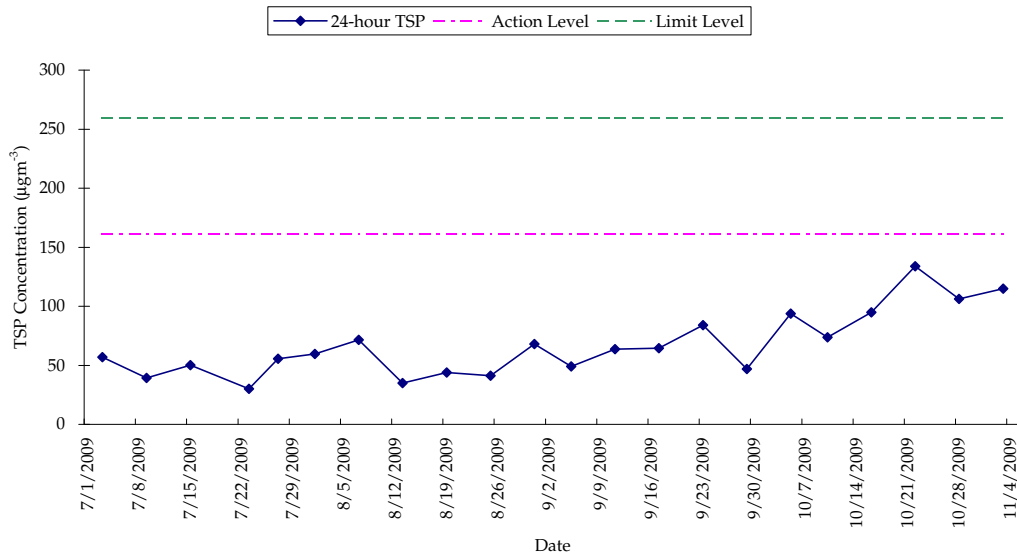


Figure G2 - Measured 24-hour TSP Concentration ($\mu\text{g}\text{m}^{-3}$) at AM2

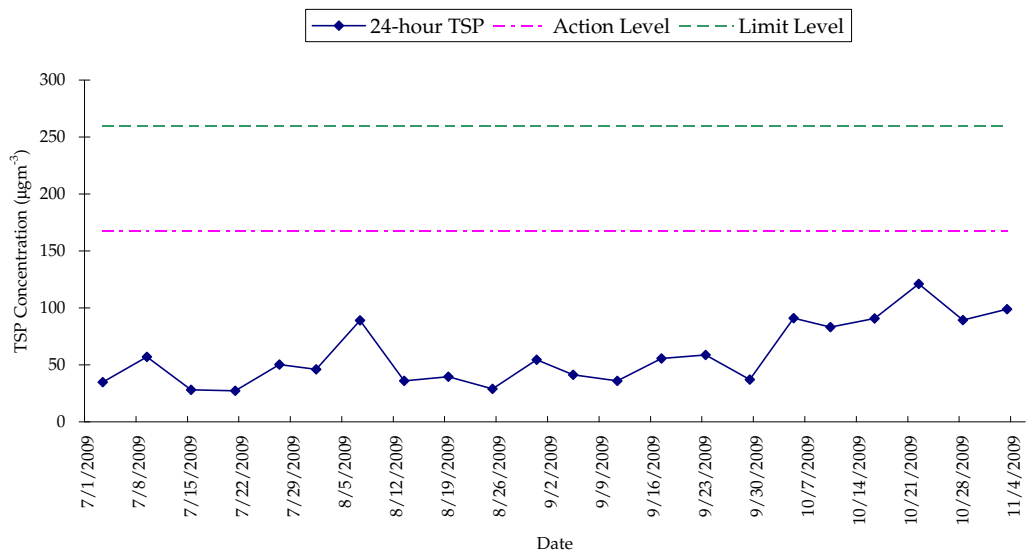


Figure G3 - Measured 1-hour TSP Concentration ($\mu\text{g}\text{m}^{-3}$) at AM1

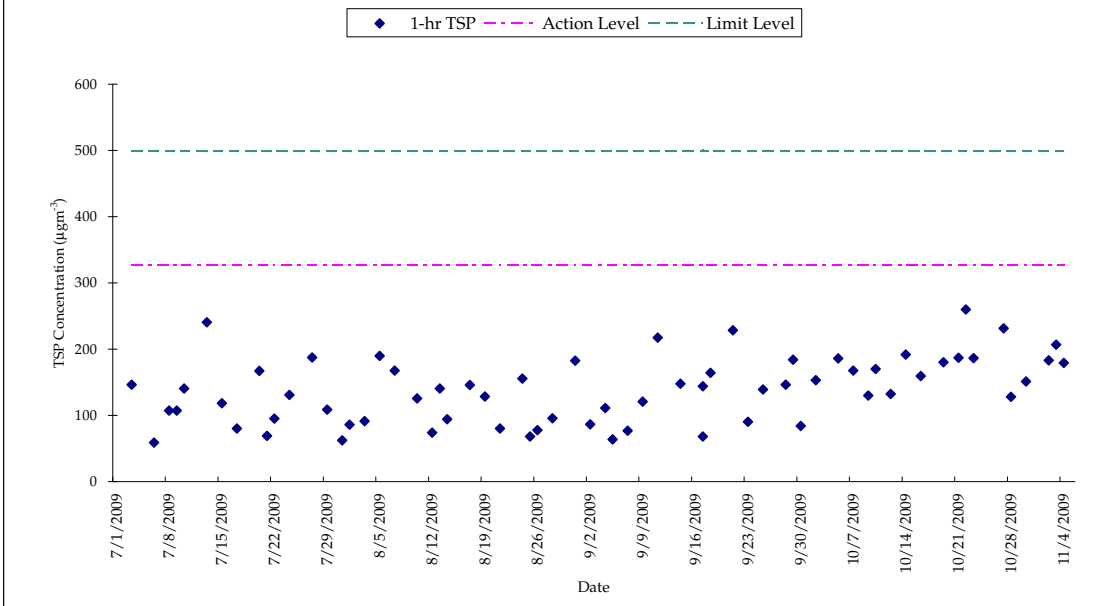
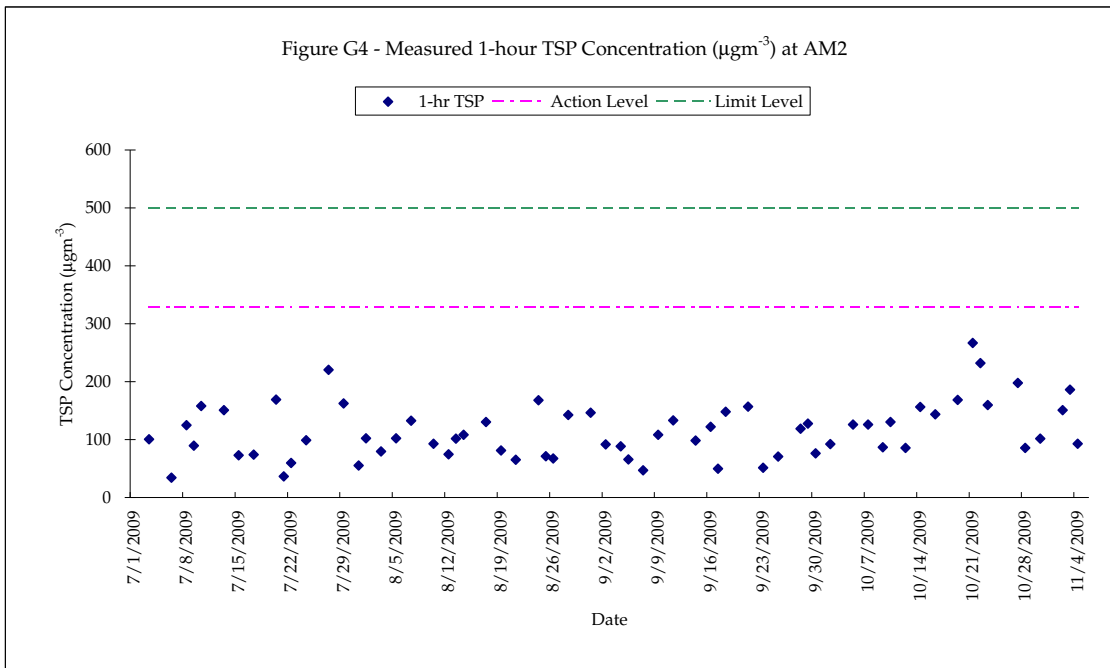


Figure G4 - Measured 1-hour TSP Concentration ($\mu\text{g}\text{m}^{-3}$) at AM2



Annex H

Event / Action Plans for Air Quality Monitoring

Table H1 Event Action Plans for Air Quality

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

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

Annex I

Summary of Implementation Status

Annex I - Summary of Environmental Protection / Mitigation Activities

Environmental Permit No. EP-239/2006/B

EP Condition Ref	Submission	Action Required by the Permit Holder	Implementation Status
Measures for Mitigating Water Quality Impact			
2.4	Method statement on silt screens for seawater intakes (including design and maintenance requirements)	2 weeks before commencement of marine pile installation works	Method statement was submitted to the EPD on 21/6/06. Method statement (Revision A) was submitted to the EPD on 29/9/06. Method statement (Revision B) and supplementary information was submitted to the EPD on 23/5/07 and 18/6/07 respectively.
2.5	Method statement on silt curtain system for marine piling works (including design and maintenance requirements)	2 weeks before commencement of marine pile installation works	Method statement was submitted to the EPD on 15/9/06.
2.8	Design drawings specifying pile dimension and layout	2 weeks before commencement of marine pile installation works	Marine pile layout (final stage) was submitted to the EPD on 15/2/07. Revised marine pile layout (final stage) was submitted to the EPD on 26/3/07.
Measures for Mitigating Air Quality Impact			
2.9	Design drawings of ventilation facility for fresh air intakes (req'd only before operation of Project)	2 weeks before commencement of installation of ventilation facility	Design drawings were submitted to EPD on 17/03/09
Measures for Mitigating Landscape and Visual Impact			
2.10	Implementation programme for landscape and visual mitigation measures (for both construction and operational phases of Project)	Within 6 months after commencement of construction of Project	Implementation programme (CM01, CM04 and CM05) was submitted to the EPD on 8/12/06.
2.10	Details of each landscape and visual mitigation measures package (incl plans)	2 weeks before implementation of a particular mitigation package	Proposal on protection and transplantation of existing trees was submitted to the EPD on 8/12/06. Proposal for CM03 was submitted to the EPD on 8/12/06. Proposal for CM01, CM04 and CM05 was submitted to the EPD on 15/12/06. CM01 Rev 1 was submitted to the EPD on 22/1/07. Proposal CM02 was submitted to the EPD on 13/3/07. Proposal for OM01 was submitted to the EPD on 15/11/07. Proposal for OM05 was submitted to the EPD on 25/02/09. Proposal for OM02 and OM09 were submitted to EPD on 15/04/09.
3.2	Baseline Monitoring Report	One week before the commencement of construction	Report was submitted to the EPD on 24/7/06 and comments from the EPD was received on 3/8/06. Revised report was submitted to EPD on 17/8/06 and no further comments received.

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
<i>Construction Phase</i>			
Air Quality	<p>The Air Pollution Control (Construction Dust) Regulation shall be implemented and good site practices shall be incorporated in the contract clauses to minimize construction dust impact. A number of practical measures are listed below:</p> <ul style="list-style-type: none"> • skip hoist for material transport should be totally enclosed by impervious sheeting; • every vehicle should be washed to remove any dusty materials from its body and wheels before leaving a construction site; • the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; • where a site boundary adjoins a road, streets or other accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length except for a site entrance or exit; • every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the 3 sides; • all dusty materials should be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet; • the height from which excavated materials dropped should be controlled to a minimum practical height to limit fugitive dust generation from unloading; • the load of dusty materials carried by vehicle leaving a construction site should be covered entirely by clean impervious sheeting to ensure dust materials do not leak from the vehicle; and • instigation of an environmental monitoring auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise. 	Work site / during construction	Δ

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
<i>Operational Phase</i>			
Air Quality	Some fresh air intakes of the Hong Kong Convention and Exhibition Centre Phase I, Renaissance Harbour View Hotel and Grand Hyatt Hotel (ASRs A4, A5 and A6) should be re-diverted to the new air vent shaft provided for Atrium Link Extension where fresh air intake located at +55.8mPD.	Location of ASRs A4, A5 & A6 / Design & Operation Stage (Long-term and Interim Scenario)	Measures not required until commencement of operational phase
Air Quality	Monitoring of NO ₂ concentration underneath the Atrium Link Extension should be conducted.	Underneath the deckover / The first six months upon completion of the ALE.	Measures not required until commencement of operational phase
<i>Construction Phase</i>			
Noise	<p>Good Site Practice:</p> <ul style="list-style-type: none"> only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program; silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program; mobile plant, if any, should be sited as far from NSRs as possible; machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities; <p>Environmental audit shall be carried out to ensure that appropriate noise control measures would be properly implemented.</p>	Construction work areas / Construction period	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
<i>Operational Phase</i>			
Noise	<p>The following noise reduction measures should be considered as far as practicable during detailed design:</p> <ul style="list-style-type: none"> • choose quieter plant such as those which have been effectively silenced; • include noise levels specification when ordering new plant; • locate fixed plant away from any NSRs as far as practicable; • locate fixed plant in plant rooms with thick walls or specially designed enclosure; • locate noisy machines in basement or a completely separate building; and • develop and implement a regularly scheduled plant maintenance programme in order to maintain controlled level of noise. 	Plant Room / Design and Operation Stage	√
<i>Construction Phase</i>			
Water Quality	There should be no permanent structure in the water channel.	At the ALE sea channel / during operational phase	√
Water Quality	No dredging and no reclamation should be carried out for the Project.	At work sites / during construction phase	√
Water Quality	The marine pile layout as shown in Figure 3 of the Environmental Permit should be adopted. No more than approximately 80 numbers of temporary marine piles should be installed in the ALE sea channel during the construction phase. The dimension of each temporary marine pile should be 800mm nominal diameter. These piles should be driven into position and internal space should not be excavated, i.e. left as soil. No dredging or soil /sediment excavation should be carried out. Marine piles would be removed by reverse driving.	At work sites / during construction phase	√
Water Quality	Two layers of silt curtain should be installed around each of the marine piling and pile extraction locations. The proposed silt curtain should be extended to seabed with sinker blocks and regularly inspected and maintained to ensure it is serviceable.	At marine work sites and nearby seawater intakes / during marine piling and marine pile extraction	√ Notes: Extraction of temporary marine piles were completed on 4 September 2009 and silt curtains are

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	All marine works should be carried out in a controlled manner such that release of sediments into the marine environment would be minimized. All wastewater generated from the piling activities should be collected and be treated before controlled discharge. Spoil should also be properly collected for proper disposal.		no longer necessary to be implemented.
Water Quality	In view of the close vicinity of the seawater intakes to the work site, silt screens are recommended to be deployed at the seawater intakes shown in Figure 5.2 of the EIA report during the whole construction period. Silt screens to be provided at seawater intakes should be regularly checked and maintained to ensure that they are serviceable. Refuse collection vessel should be mobilized on a need basis to collect any floating refuse lost from/ trapped at the work site during the construction period.	At seawater intakes / during the whole construction period	√ Notes: Extraction of temporary marine piles were completed on 4 September 2009 and silt screens are no longer necessary to be implemented.
Water Quality	Surface run-off from construction sites should be discharged into storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sedimentation basins. Channels or earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Perimeter channels at site boundaries should be provided where necessary to intercept storm runoff from outside the site so that it will not wash across the site. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks. Silt removal facilities, channels and manholes should be maintained and the deposited silt and grit should be removed regularly, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times. Any practical options for the diversion and re-alignment of drainage should comply with both engineering and environmental requirements in order to ensure adequate hydraulic capacity of all drains. Minimum distances of 100 m should be maintained between the discharge points of construction site runoff and the nearby saltwater intakes.	Works areas / construction period	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	<p>There is a need to apply to EPD for a discharge license for discharge of effluent from the construction site under the WPCO. The discharge quality must meet the requirements specified in the discharge license. All the runoff and wastewater generated from the works areas should be treated so that it satisfies all the standards listed in the TM-DSS. Reuse and recycling of the treated effluent can minimize water consumption and reduce the effluent discharge volume. The beneficial uses of the treated effluent may include dust suppression, wheel washing and general cleaning. It is anticipated that only a small quantity of wastewater would be generated from the works areas. Any effluent discharge from the construction activities should be diverted away from the sea channel so as to avoid adverse water quality impact. Construction works should be programmed to minimize excavation works in rainy seasons (April to September). If excavation in soil could not be avoided in these months or at any time of year when rainstorms are likely, for the purpose of preventing soil erosion, temporary exposed slope surfaces should be covered e.g. by tarpaulin, 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 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.</p>	Works areas / construction period	√
Water Quality	<p>Earthworks final surfaces should be well compacted and the subsequent permanent work or surface protection should be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Appropriate drainage like intercepting channels should be provided where necessary.</p> <p>Measures should be taken to minimize the ingress of rainwater into trenches. If excavation of trenches in wet seasons is necessary, they should be dug and backfilled in short sections. Rainwater pumped out from trenches or foundation excavations</p>	Works areas / construction period	Δ

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	<p>should be discharged into storm drains via silt removal facilities.</p> <p>Open stockpiles of construction materials (e.g. aggregates, sand and fill material) on sites should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.</p> <p>Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers. Discharge of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.</p>		
Water Quality	Good site practices should be adopted to remove rubbish and litter from construction sites so as to prevent the rubbish and litter from spreading from the site area. It is recommended to clean the construction sites on a regular basis.	Works areas / construction period	√
Water Quality	Under normal circumstances, groundwater pumped out of wells, etc. for the lowering of ground water level in basement or foundation construction should be discharged into storm drains after the removal of silt in silt removal facilities.	Works areas / construction period	√
Water Quality	Water used in ground boring and drilling or rock /soil anchoring should as far as practicable be re-circulated after sedimentation. When there is a need for final disposal, the wastewater should be discharged into storm drains via silt removal facilities.	Works areas / construction period	√
Water Quality	Wastewater generated from the washing down of mixing trucks and drum mixers and similar equipment should whenever practicable be recycled. The discharge of wastewater should be kept to a minimum.	Works areas / construction period	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	<p>To prevent pollution from wastewater overflow, the pump sump of any water recycling system should be provided with an on-line standby pump of adequate capacity and with automatic alternating devices.</p> <p>Under normal circumstances, surplus wastewater may be discharged into foul sewers after treatment in silt removal and pH adjustment facilities (to within the pH range of 6 to 10). Disposal of wastewater into storm drains will require more elaborate treatment.</p>		
Water Quality	<p>All vehicles and plant should be cleaned before they leave a construction site to ensure no earth, mud, debris and the like is deposited by them on roads.</p> <p>A wheel washing bay should be provided at every site exit if practicable and wash-water should have sand and silt settled out or removed before discharging into storm drains. The section of construction road between the wheel washing bay and the public road should be paved with backfall to reduce vehicle tracking of soil and to prevent site run-off from entering public road drains.</p>	Works areas / construction period	√
Water Quality	<p>Bentonite slurries used in diaphragm wall and bore-pile construction should be reconditioned and reused wherever practicable. If the disposal of a certain residual quantity cannot be avoided, the used slurry may be disposed of at the marine spoil grounds subject to obtaining a marine dumping licence from EPD on a case-by-case basis.</p> <p>If the used bentonite slurry is intended to be disposed of through the public drainage system, it should be treated to the respective effluent standards applicable to foul sewer, storm drains or the receiving waters as set out in the WPCO Technical Memorandum on Effluent Standards.</p>	Works areas / construction period	√
	Water used in water testing to check leakage of structures and pipes should be reused for other purposes as far as practicable.	Works areas / construction period	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	<p>Surplus unpolluted water could be discharged into storm drains.</p> <p>Sterilization is commonly accomplished by chlorination. Specific advice from EPD should be sought during the design stage of the works with regard to the disposal of the sterilizing water. The sterilizing water should be reused wherever practicable.</p> <p>Discharge of sterilization effluent should be properly pre-treated for compliance with TM/WPCO requirements, such as but not limited to total residual chlorine.</p>		
Water Quality	<p>Effluent discharges from building construction and other construction site activities are subject to WPCO control. Before commencing any demolition works, all sewer and drainage connections should be sealed to prevent building debris, soil, sand etc. from entering public sewers/drains.</p> <p>Wastewater generated from building construction activities including concreting, plastering, internal decoration, cleaning of works and similar activities should not be discharged into the stormwater drainage system. If the wastewater is to be discharged into foul sewers, it should undergo the removal of settleable solids in a silt removal facility, and pH adjustment as necessary.</p>	Works areas / construction period	√
Water Quality	<p>Acidic wastewater generated from acid cleaning, etching, pickling and similar activities should be neutralized to within the pH range of 6 to 10 before discharging into foul sewers. If there is no public foul sewer in the vicinity, the neutralized wastewater should be tinkered off site for disposal into foul sewers or treated to a standard acceptable to storm drains and the receiving waters.</p>	Works areas / construction period	No acidic wastewater will be generated.
Water Quality	<p>Wastewater collected from canteen kitchens, including that from basins, sinks and floor drains, should be discharged into foul sewer via grease traps capable of providing at least 20 minutes retention during peak flow.</p>	Works areas / construction period	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	<p>Drainage serving an open oil filling point should be connected to storm drains via a petrol interceptors with peak storm bypass.</p> <p>Vehicle and plant servicing areas, vehicle wash bays and lubrication bays should as far as possible be located within roofed areas. The drainage in these covered areas should be connected to foul sewers via a petrol interceptor. Oil leakage or spillage should be contained and cleaned up immediately. Waste oil should be collected and stored for recycling or disposal in accordance with the Waste Disposal Ordinance.</p>		
Water Quality	<p>It is recommended to provide sufficient chemical toilets in the works areas. The toilet facilities should be more than 30 m from the seafront or any watercourse. A licensed waste collector should be deployed to clean the chemical toilets on a regular basis.</p> <p>Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment. Regular environmental audit on the construction site can provide an effective control of any malpractices and can encourage continual improvement of environmental performance on site.</p>	Works areas / construction period	√
Water Quality	<p>Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.</p>	Works areas / construction period	√
Water Quality	<p>Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas</p>	Works areas / construction period	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	<p>appropriately equipped to control these discharges.</p> <p>Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows:</p> <ul style="list-style-type: none"> • suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport; • chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents; and • storage area should be selected at a safe location on site and adequate space should be allocated to the storage area. 		
Water Quality	<p>To minimize the potential water quality impacts from the construction works located at or near the storm system or seafront, the following mitigation measures should be adopted:</p> <ul style="list-style-type: none"> • the use of less or smaller construction plants may be specified to reduce the disturbance to the seabed; • temporary sewerage system should be designed to prevent wastewater from entering the storm system and sea; • temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any water courses during carrying out of the construction works; • stockpiling of construction materials and dusty materials should be covered and located away from any water courses; • construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers; • construction activities, which generate large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable; 	Works areas / construction period	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	<ul style="list-style-type: none"> mitigation measures to control site runoff from entering the nearby water environment should be implemented to minimize water quality impacts. Surface channels should be provided along the edge of the waterfront within the work sites to intercept the runoff; construction effluent, site run-off and sewage should be properly collected and/or treated; proper shoring may need to be erected in order to prevent soil/mud from slipping into the storm culvert/sea; and supervisory staff should be assigned to station on site to closely supervise and monitor the works. 		
Water Quality	If monitoring of the treated effluent quality from the Works Areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the WPCO license which is under the ambit of regional office (RO) of EPD. The contractor should submit detailed monitoring programme to EPD for approval before commencement of the construction activities.	Works areas / construction period	√
Water Quality	Monitoring of the water quality at the seawater intakes inside the ALE sea channel should be conducted.	ALE sea channel / Before construction period and during installation and removal of temporary marine piles.	√
Water Quality	All barges should be fitted with tight seals to their bottom opening to prevent leakage of materials. The decks of all vessels should be kept tidy and free of oil or other substances that might be accidentally or otherwise washed overboard. Loading of barges should be controlled to prevent splashing of materials to the surrounding environment and barges should under no circumstances be filled to a level which would cause overflowing of material or sediment laden water during loading and transportation. All barges should maintain adequate clearance between vessels and the seabed at all states of the tide and should operate at a reduced speeds to ensure that undue turbidity is not generated by turbulence from vessel movement	Works areas / construction period	No barge will be required for the project.

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	or propeller wash.		
Water Quality	Connection of sewage generated from the ALE will be connected to the existing public sewer. For handling, treatment and disposal of other operational stage effluent, the practices outlined in ProPECC PN 5/93 should be adopted where applicable. Consensus from DSD should be sought on technical details of the drainage and sewerage proposals.	Project site / design and construction period	Relevant works have yet to be commenced / completed
<i>Construction Phase</i>			
Waste	<p>Recommendations for good site practices during the construction activities include:</p> <ul style="list-style-type: none"> • 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; • training of site personnel in proper waste management and chemical handling procedures; • provision of sufficient waste disposal points and regular collection of waste; • appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; and • regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors. 	Work site / during the construction period	√
Waste	<p>Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include:</p> <ul style="list-style-type: none"> • sorting of demolition debris and excavated materials from demolition works to recover reusable/ recyclable portions (ie soil, broken concrete, metal, etc); • 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; • encourage collection of aluminum cans by individual 	Work site / during the construction period	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	<p>collectors by providing separate labeled bins to enable this waste to be segregated from other general refuse generated by the work force;</p> <ul style="list-style-type: none"> • proper storage and site practices to minimize the potential for damage to contamination of construction materials; and • plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste. 		
Waste	<p><u>General Refuse</u></p> <p>General refuse should be stored in enclosed bins or compaction units separate from C&D material. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D material. Preferably an enclosed and covered area should be provided to reduce the occurrence of 'wind blown' light material.</p>	Work site / during the construction period	√
Waste	<p><u>Construction and Demolition Material</u></p> <ul style="list-style-type: none"> • In order to minimize the impact resulting from collection and transportation of C&D material for off-site disposal, the C&D material from the following construction activities should be reused and recycled as far as possible to reduce the net amount of C&D material generated from the Project; • a Waste Management Plan should be prepared in accordance with ETWB TCW No. 19/2005; • a recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be proposed; • in order to monitor the disposal of C&D and solid wastes at public filling facilities and landfills and to control fly-tipping, a trip-ticket system should be included. One may make reference to ETWB TCW No.31/2004 for details; • the large amount of C&D waste generated is mainly due to 	Work site / during the construction period	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	the piling works of large diameter piles' excavation at the sea front site. If however marine sediment is found during pile excavation, the handling and disposal of such wastes will be managed in accordance with the requirements of the DASO and the current ETWB Tech. Circular no. 34/2002.		
Waste	<p><u>Chemical Wastes</u></p> <p>If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a Chemical Waste Producer and to follow the guidelines stated in the <i>Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes</i>. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosives, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the Chemical Waste Treatment Centre at Tsing Yi, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation. For this Project, the amount of chemical wastes produced would be small.</p>	Work site / during the construction period	√
<i>Operational Phase</i>			
Waste	<p><u>General Refuse</u></p> <p>Similar to the existing situation, the main waste type generated during the operation stage of the Project will be general refuse generated by the public and staff. These include waste paper, food wrappings and beverage containers. The disposal of future waste arisings generated at the HKCEC would follow the existing handling and disposal arrangement. Provided proper arrangements are made with licensed contractors to collect the generated waste, adverse waste-related impact is not anticipated</p>	Work site / during the construction period	Measures not required until commencement of operational phase

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	during the operation stage. It is expected that there will be a 5-7% increase ratio in the future operations.		
<i>Construction Phase</i>			
Landscape & Visual	Due consideration of appearance and view to 'hide' the construction through careful use of: (a) hoarding design; (b) temporary partition walls; (c) screen for hotels; and (d) temporary footbridge.	Entire works area and adjacent hotels	√
Landscape & Visual	Due consideration to protect existing trees.	Entire works area	√
Landscape & Visual	Due consideration of visual impact from construction activities: (a) construction workers access to reach construction areas without passing through hotels and existing HKCEC; and (b) construction light.	Entire works area	√
<i>Operational Phase</i>			
Landscape & Visual	Sensitive soft and hard landscape design for exposed rooftop garden and shady covered area underneath the Atrium Link Extension. Maximize greening opportunity via various in-situ planting and potted planting to achieve 30% of the roof area as planting area for the project.	Roof top and area underneath the Atrium Link Extension	Mitigation measures to be implemented during operational phase
Landscape & Visual	Sensitive building architecture to visually reduce the bulkiness of the building structure, to visually break down the scale of the facades, and to create rooftops for greening opportunities.	Building of the Atrium Link Extension	Mitigation measures to be implemented during operational phase
Landscape & Visual	Appearance and view considerations: (a) avoid industrial feel of building service elements; (b) interior visual screens for lower levels of the hotels; (c) consider relocation of facilities of interior spaces of hotels; and	Entire proposed works and adjacent hotels	Mitigation measures to be implemented during operational phase

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	(d) careful lighting design at roofs and for building façade to avoid night-time glare.		
Landscape & Visual	Transplanting of trees to adjacent locations.	Convention Avenue	Mitigation measures to be implemented during operational phase
Landscape & Visual	Reinstatement of existing waterfront public footpaths along Convention Avenue and the existing open spaces near Fenwick Street.	Convention Avenue and Fenwick Street	Mitigation measures to be implemented during operational phase

Remark:

- √ Compliance of Mitigation Measures
- <> Compliance of Mitigation but need improvement
- x Non-compliance of Mitigation Measures
- ▲ Non-compliance of Mitigation Measures but rectified by Hip Hing JV
- Δ Deficiency of Mitigation Measures but rectified by Hip Hing JV

Annex J

Waste Flow Table

HKCEC – Expansion Project

Name of Project Proponent: HKTDC

Project Commencement Date: 1 August 2006

Construction Completion Date: September 2009

Monthly Summary Waste Flow Table for Year 2009

Year	Actual Quantities of inert C&D Materials (in 10 ³ Kg) ⁽¹⁾⁽²⁾					Actual Quantities of C&D Wastes (in 10 ³ Kg) ⁽⁴⁾									
	Total Quantity Generated	Broken Concrete ⁽³⁾	Reused in the Contract	Reused in other Projects ⁽³⁾	Disposed as Public Fill	Steel Materials				Paper/cardboard packaging		Chemical Waste (L)		General refuse	Other waste ⁽⁶⁾
						Demolition of existing Atrium Link		Demolition of existing working platform		Recycle	Disposal	Recycle	Disposal	Recycle	Disposal
(a)	(b)	(c)	(d)	(a)-(b)-(c)-(d)	Recycle	Disposal	Recycle	Disposal	Recycle	Disposal	Recycle	Disposal	Disposal	Disposal	
January	485.8	0	0	0	485.8	6 ⁽⁵⁾	0	0	0	0.3	0.05	0	0	815	370.5
February	105.0	0	0	0	105.0	0	0	0	0	0.3	0.05	0	0	1610	586.5
March	305.0	0	0	0	305.0	0	0	3.0	0	0.3	0.05	0	0	927.5	250.8
April	200.0	0	0	0	200.0	0	0	3.0	0	0.3	0.02	0	0	312.5	210.5
May	825.0	0	0	0	825.0	0	0	3.0	0	0.3	0.02	0	0	115	105
June	400.0	0	0	0	400.0	0	0	3.0	0	0.3	0.01	0	0	100	80
July	350	0	0	0	350	0	0	3.0	0	0.3	0.01	0	0	80	60
August	100	0	0	0	100	0	0	2.0	0	0.3	0.01	0	0	50	50
Sep	50	0	0	0	50	0	0	0	0	0.1	0.01	0	0	20	20
October	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
November	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
December															
Total	2821	0	0	0	2821	6 ⁽⁵⁾	0	17	0	2.5	0.23	0	0	3840.0	1733

Note: ⁽¹⁾ Inert C&D materials include bricks, concrete, building debris, rubble and excavated soil.

⁽²⁾ Inert C&D material mainly generated from demolition of atrium link.

⁽³⁾ Broken concrete fro recycling into aggregates.

⁽⁴⁾ C&D wastes include steel materials generated from demolition, paper / cardboard packaging waste, chemical waste and other wastes such as general refuse. Wastes other than general refuse will be disposed of at Tsung Kwan O Area 137 temporary construction waste sorting facility.

⁽⁵⁾ Waste from demolition of steel structure at existing Atrium Link of HKCEC (Phase 2).

⁽⁶⁾ Wastes include materials associated with additional and alternation (A&A) works of HKCEC (e.g. demolition of E&M equipment and finishing materials, bamboo scaffolding) and piling works.