

Hip Hing Joint Venture

Hong Kong Convention and
Exhibition Centre Expansion
Project:
*Monthly Environmental Monitoring
and Audit Report for September 2009*

October 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


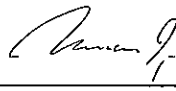
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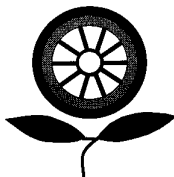
Reference 0050690

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>27 October 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

27 October 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
Monthly EM&A Audit Report for September 2009
(Environmental Permit No. EP-239/2006/B)

With reference to the captioned document concerning the Monthly EM&A report for September 2009 received from ERM on 23 October 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>3.2</i>	<i>MARINE WATER QUALITY MONITORING</i>	<i>9</i>
<i>4</i>	<i>IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS</i>	<i>12</i>
<i>5</i>	<i>MONITORING RESULTS</i>	<i>13</i>
<i>5.1</i>	<i>AIR QUALITY</i>	<i>13</i>
<i>5.2</i>	<i>MARINE WATER QUALITY</i>	<i>13</i>
<i>5.3</i>	<i>WASTE MANAGEMENT</i>	<i>14</i>
<i>6</i>	<i>ENVIRONMENTAL SITE AUDITING</i>	<i>15</i>
<i>7</i>	<i>ENVIRONMENTAL NON-CONFORMANCE</i>	<i>16</i>
<i>7.1</i>	<i>SUMMARY OF ENVIRONMENTAL EXCEEDANCE</i>	<i>16</i>
<i>7.2</i>	<i>SUMMARY OF ENVIRONMENTAL NON-COMPLIANCE</i>	<i>16</i>
<i>7.3</i>	<i>SUMMARY OF ENVIRONMENTAL COMPLAINT</i>	<i>16</i>
<i>7.4</i>	<i>SUMMARY OF ENVIRONMENTAL SUMMONS AND PROSECUTION</i>	<i>16</i>
<i>8</i>	<i>FUTURE KEY ISSUES</i>	<i>17</i>
<i>8.1</i>	<i>KEY ISSUES FOR THE COMING MONTH</i>	<i>17</i>
<i>8.2</i>	<i>MONITORING SCHEDULE FOR THE COMING MONTHS</i>	<i>17</i>
<i>9</i>	<i>REVIEW OF THE EM&A DATA AND EIA PREDICTIONS</i>	<i>18</i>
<i>9.1</i>	<i>AIR QUALITY</i>	<i>18</i>
<i>9.2</i>	<i>WATER QUALITY</i>	<i>18</i>
<i>9.3</i>	<i>WASTE MANAGEMENT</i>	<i>18</i>
<i>9.4</i>	<i>CONCLUSION OF REVIEW</i>	<i>19</i>

LIST OF TABLES

Table 2.1	Summary of Construction Activities Undertaken during the Reporting Month
Table 2.2	Summary of Environmental Licensing, Notification and Permit Status
Table 3.1	Air Monitoring Stations
Table 3.2	TSP Monitoring Parameter and Frequency
Table 3.3	Action and Limit Levels for Air Quality
Table 3.4	TSP Monitoring Equipment
Table 3.5	Marine Water Quality Monitoring Locations
Table 3.6	Marine Water Quality Monitoring Parameters & Frequency
Table 3.7	Action and Limit Levels for Water Quality
Table 5.1	Quantities of Waste Generated from the Project
Table 8.1	Construction Works to be Undertaken in the Coming Month
Table 9.1	Comparison of the HKAQO and Air Quality Monitoring Results
Table 9.2	Comparison of Estimated and Actual Amounts of Waste Generated

LIST OF ANNEXES

Annex A	Location of Works Areas
Annex B	Location of Construction Activities during the Reporting Month
Annex C	Project Organization Chart and Contact Detail
Annex D	Locations of Air and Marine Water Quality Monitoring Stations
Annex E	Monitoring Schedule of the Reporting Month and Next Month
Annex F	Calibration Reports for HVSs
Annex G	24-hour and 1-hour TSP Monitoring Results
Annex H	Calibration Certificates of Marine Water Monitoring Equipment
Annex I	Marine Water Quality Monitoring Results
Annex J	Event / Action Plans for Air and Marine Water Quality Monitoring
Annex K	Summary of Implementation Status
Annex L	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-eighth monthly Environmental Monitoring and Audit (EM&A) report presenting the EM&A work carried out during the period from 1 to 30 September 2009 in accordance with the EM&A Manual.

Summary of Construction Works undertaken during the Reporting month

The major construction works undertaken during this reporting month included the extraction of temporary marine piles and temporary marine platform and the reinstatement of promenade and sea parapet.

Environmental Monitoring and Audit Progress

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

24-hour Total Suspended Particulates (TSP) monitoring	5 sets
1-hour TSP monitoring	16 sets
Marine water quality monitoring	2 sets
Environmental site auditing	5 times

Air Quality

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

Marine Water Quality

Two sets of marine water quality monitoring for dissolved oxygen, turbidity and suspended solids were carried out at the designated monitoring stations W3, W4 and W5 at mid-ebb and mid-flood tides. Two exceedances of Action Level of turbidity were recorded on 4 September 2009. Investigations indicated that these exceedances were unlikely to be caused by the works in the Project.

Construction Waste Management

A total of 50 tonnes of inert C&D materials and 40.11 tonnes of C&D wastes were generated during this reporting month. 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 month.

Environmental Site Auditing

Five 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 month.

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

Future Key Issues

Major works to be undertaken in the coming month will be reinstatement of the promenade.

Potential environmental impacts arising from the construction activities in the coming month are mainly associated with dust, site runoff and waste management.

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-eighth EM&A report which summarises the impact monitoring results and audit findings of the EM&A programme during the reporting month from **1 to 30 September 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 month.

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 month.

Section 5 : **Monitoring Results**

summarises the monitoring results obtained in the reporting month.

Section 6 : **Environmental Site Auditing**

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

Section 7 : **Environmental Non-conformance**

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

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.

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 month 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 during the Reporting Month*

Construction Activities Undertaken
<ul style="list-style-type: none">• Extraction of Temporary Marine Piles• Removal of Temporary Marine Platform• Reinstatement of Parapet on top of Seawall• 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.
Valid Construction Noise Permit for area inside the Atrium Link	GW-RS0553-09	Valid from 1 August 2009 to 30 September 2009	

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 this and next three months 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 foul 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 adjust 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 J*.

3.2 *MARINE WATER QUALITY MONITORING*

3.2.1 *Monitoring Location*

In accordance with the EM&A Manual, the marine water quality monitoring was conducted at the designated monitoring stations during the removal of temporary marine piles listed in *Table 3.5*. The map and photographs showing the monitoring stations are presented in *Annex D*.

Table 3.5 *Marine Water Quality Monitoring Locations*

Station	Location	Intake Level	Easting	Northing
W3	Hong Kong Convention and Exhibition Centre Phase I Cooling Water Intake	7.5m below the existing pump house floor	835852	815907
W4	Wan Chai Tower/ Revenue Tower/ Immigration Tower Cooling Water Intake ^(a)	5m below the top of the existing sea wall	835944	815885
W5	Great Eagle Centre, China Resources Building Cooling Water Intake	5m below the top of the existing sea wall	835963	815886

Note:
(a) The cooling water intake for Wan Chai Tower / Revenue Tower/ Immigration Tower was partially relocated to the new pump house adjacent to Station W3.

3.2.2 *Monitoring Parameters, Frequency and Programme*

The marine water quality monitoring was conducted in accordance with *Table 3.6* during the period of installation and removal of temporary marine piles. The monitoring programme for the reporting month is shown in *Annex E*.

Table 3.6 *Marine Water Quality Monitoring Parameters & Frequency*

Parameter	Frequency	No. of Samples per Monitoring Event	Duration
Dissolved Oxygen (DO) Suspended Solids (SS) Turbidity	3 days per week at mid-flood & mid-ebb tides	2	During removal of temporary marine piles.

Reference was made to the predicted tides at Quarry Bay, which is the tidal station nearest to the Project Site, published on the web site of Hong Kong Observatory (<http://www.hko.gov.hk/tide/eQUBtide.htm>). Where mid-ebb or mid-flood tides occurred beyond the normal working hours (in the middle of the night or early morning), the marine water quality monitoring session was moved to within normal working hours (0800-1800) when potential water quality impacts from disturbed sediments are expected to be highest, to ensure that these potential water quality impacts are captured.

Measurements of suspended solids (SS), turbidity in Nephelometric Turbidity Units (NTU) and dissolved oxygen (DO) in mgL⁻¹ were undertaken at designated monitoring stations. The first parameter was determined in the laboratory with the latter two were measured in-situ.

3.2.3 *Action and Limit Levels*

The Action and Limit levels were established in accordance with the EM&A Manual and are presented in *Table 3.7*.

Table 3.7 *Action and Limit Levels for Water Quality*

Parameter	Tide	Action Level	Limit Level
Dissolved Oxygen (DO) in mgL ⁻¹	Mid-Ebb	3.26	3.23
	Mid-Flood	3.25	3.14
Suspended Solids (SS) in mgL ⁻¹	Mid-Ebb	9.00	10.00
	Mid-Flood	8.18	8.40
Turbidity (Tby) in NTU	Mid-Ebb	5.32	6.19
	Mid-Flood	4.76	5.79

3.2.4 *Monitoring Equipment and Methodology*

Dissolved Oxygen and Temperature Measuring Equipment

The portable and weatherproof dissolved oxygen (DO) measuring meter (YSI Model 95) was used in the impact monitoring.

The DO measuring meter has a membrane electrode with automatic temperature compensation complete with a 50-foot cable. Wet bulb calibration for a DO meter was carried out before measurement at each monitoring station.

Turbidity Measurement Instrument

The turbidity measurements were carried out on split water sample collected from the same depths of SS samples. A portable and weatherproof turbidity-measuring meter (HACH 2100P) was used in the impact monitoring. It has a photoelectric sensor capable of measuring turbidity between 0-1000 NTU. Response of the sensor was checked with certified standard turbidity solutions before the start of measurement.

Suspended Solids

Water samples for suspended solids measurement were collected by means of a transparent PVC cylinder (Kahlsico Water Sampler), packed in ice (cooled to 4°C without being frozen) and delivered to the laboratory as soon as possible after collection. The SS determination work was started within 24 hours after the collection of the water samples, and the testing method of SS was carried by ETS-Testconsult Ltd (HOKLAS accredited laboratory) in accordance with the APHA 19ed 2540D⁽¹⁾ and the lowest detection limit is 1 mgL⁻¹. The

(1) American Public Health Association Standard Methods for the Examination of Water and Wastewater.

Quality Assurance/Quality Control (QA/QC) procedures were followed as per HOKLAS requirements.

Water Depth Detector

A portable, battery-operated echo sounder (Speedtech instrument SM-5A) was used for the determination of water depth at each designated monitoring station.

Location of the Monitoring Sites

A hand-held GPS (MLR SP24) and together with a suitably scaled map was used for locating the marine water quality monitoring stations.

Calibration of Equipment

All in-situ monitoring instruments were checked, calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme before use, and subsequently re-calibrated at 3 monthly intervals throughout the marine water quality monitoring. The calibration records for the monitoring instruments are given in *Annex H*.

3.2.5 *Event / Action Plan*

The Event / Action Plan (EAP) for marine water quality monitoring is presented in *Annex J*.

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 month are summarised in *Annex K*.

(1) The last Monthly EM&A Report for August 2009 was submitted to the EPD on 6 October 2009.

5.1 AIR QUALITY

The monitoring data at AM1 and AM2 were provided by ETS-Testconsult Ltd. Five sets of 24-hour TSP monitoring and sixteen sets of 1-hour TSP monitoring were carried out at the designated monitoring stations during this reporting month. A power supply failure incident recorded at AM1 on 16 September 2009, and subsequently the 1-hr TSP monitoring was re-done on 17 September 2009. 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

Works for extraction of temporary marine piles in the marine channel started on 20 April 2009, and therefore marine water quality monitoring was conducted in the reporting period. The results of marine water quality monitoring were provided by ETS-Testconsult Ltd. Two sets of water quality measurements were carried out at the designated monitoring stations W3, W4 and W5. The monitoring data and graphical presentations are summarized in *Annex I*. The monitoring results can also be found in the web-site (<http://www.hkcecema.com/index.html>).

During this reporting month, two exceedances of water quality parameters of the monitoring stations were summarized in *Table 5.1*. Notification of Exceedances with detailed investigation reports were issued to IEC when the exceedances were identified.

Table 5.1 *Summary of Exceedance recorded in September 2009*

Station	Record of Exceedance
W4	Exceedance of Action Level of Turbidity on 4 Sept 2009 during the mid-flood tide
W5	Exceedance of Action Level of Turbidity on 4 Sept 2009 during the mid-flood tide

Two exceedances of Action Level of turbidity were recorded on 4 September 2009. No land-based construction works were observed on the promenade immediately adjacent to W4 and W5 at the time of monitoring. It was reported by the Contractor that pile extraction had already been completed at around 10:00am on 4 September 2009, and no further marine works were conducted on that day. The exceedances were however recorded at around 18:00 hours on the same day. The Contractor also confirmed that silt curtains had been properly deployed during the extraction of temporary marine piles.

Given that the general tidal currents flow from the east to the west in the middle of the flood tide, it would be highly unlikely that such currents would carry suspended particles, if any had been released from the pile extraction operations, with the marine water to induce an elevation of turbidity levels at the two monitoring stations concerned located directly south of the pile extraction works already completed much early that day.

From observations during site audits conducted on 2 and 7 September 2009, there was no evidence of surface runoff from land-based works area discharged into the channel, and therefore the possibility of the exceedance caused by silty runoff was also discounted.

It is also noted that the suspended solids (SS) in the water samples measured gravimetrically in the laboratory was within the relevant Action Level for SS, indicating that the water quality was acceptable.

Based on the above, it is considered that the exceedance was unlikely caused by the works of the Project.

With the completion of the pile extraction works, the owners of the cooling water intakes were notified and the silt curtains at these intakes were removed on 19 September 2009. No issue on water quality in the marine channel was observed in subsequent site inspections and no complaint has been received from the cooling water intake owners since the removal of the silt curtains.

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 L*). 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 5.2 Quantities of Waste Generated from the Project

Month / Year	Quantity		
	C&D Materials (inert) ^(a)	C&D Materials (non-inert) ^(b)	Chemical Waste
September 2009	50.0 tonnes	40.11 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. Five site inspections were conducted on 2, 7, 18, 24 and 30 September 2009, respectively. There was no non-compliance event recorded in this reporting month.

No recommendations or reminders were made on 2, 18 and 30 September 2009. The recommendations and reminders on 7 and 24 September 2009 given to the Contractor were summarized as below:

7 September 2009

- (i) Oil drums were observed to be placed on the ground near gate no.4 of the Site. The Contractor was reminded to provide secondary containment measures for the temporary storage of chemicals on site to avoid potential spillages.

24 September 2009

- (ii) An open stockpile of sand was observed near the north-eastern corner of the Site at the intersection of Expo Drive East and Expo Drive Central. The Contractor was reminded to implement appropriate dust control measures for idle stockpiles.
- (iii) Silty water from tile cutting for the pedestrian pavement reinstatement works was observed to be flowing into nearby drain gullies under the completed Atrium Link Extension on Convention Avenue. The Contractor was recommended to contain, collect and properly treat water generated from tile cutting before discharge.

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 K*.

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.

Two exceedances of the Action Level of water quality parameters were recorded at monitoring stations during the reporting period. Details of the exceedance are summarized in *Table 5.1*.

7.2 SUMMARY OF ENVIRONMENTAL NON-COMPLIANCE

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

7.3 SUMMARY OF ENVIRONMENTAL COMPLAINT

No complaint was received during this reporting month.

7.4 SUMMARY OF ENVIRONMENTAL SUMMONS AND PROSECUTION

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

8.1 *KEY ISSUES FOR THE COMING MONTH*

Key works to be carried out for the coming monitoring period are summarised in *Table 8.1*.

Table 8.1 Construction Work to be Undertaken in the Coming Month

Work to be taken
<ul style="list-style-type: none">• Promenade Reinstatement Works

Potential environmental impacts arising from the above construction activities are mainly associated with dust, site runoff and waste management.

8.2 *MONITORING SCHEDULE FOR THE COMING MONTHS*

The tentative schedule of TSP monitoring for next month is presented in *Annex E*. The environmental monitoring will be conducted at the same monitoring locations as those for this reporting month.

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 tentative finish 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	79	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 month.

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 month 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 to 30 September 2009 in accordance with the EM&A Manual and the requirements under EP-239/2006/B.

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

Two exceedances of the Action Level of water quality parameters were recorded at monitoring stations during the reporting period. Investigations were carried out and it indicated that these exceedances were unlikely to be caused by the works in the Project. The exceedances and details of investigation are summarized in *Section 5.2*.



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

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

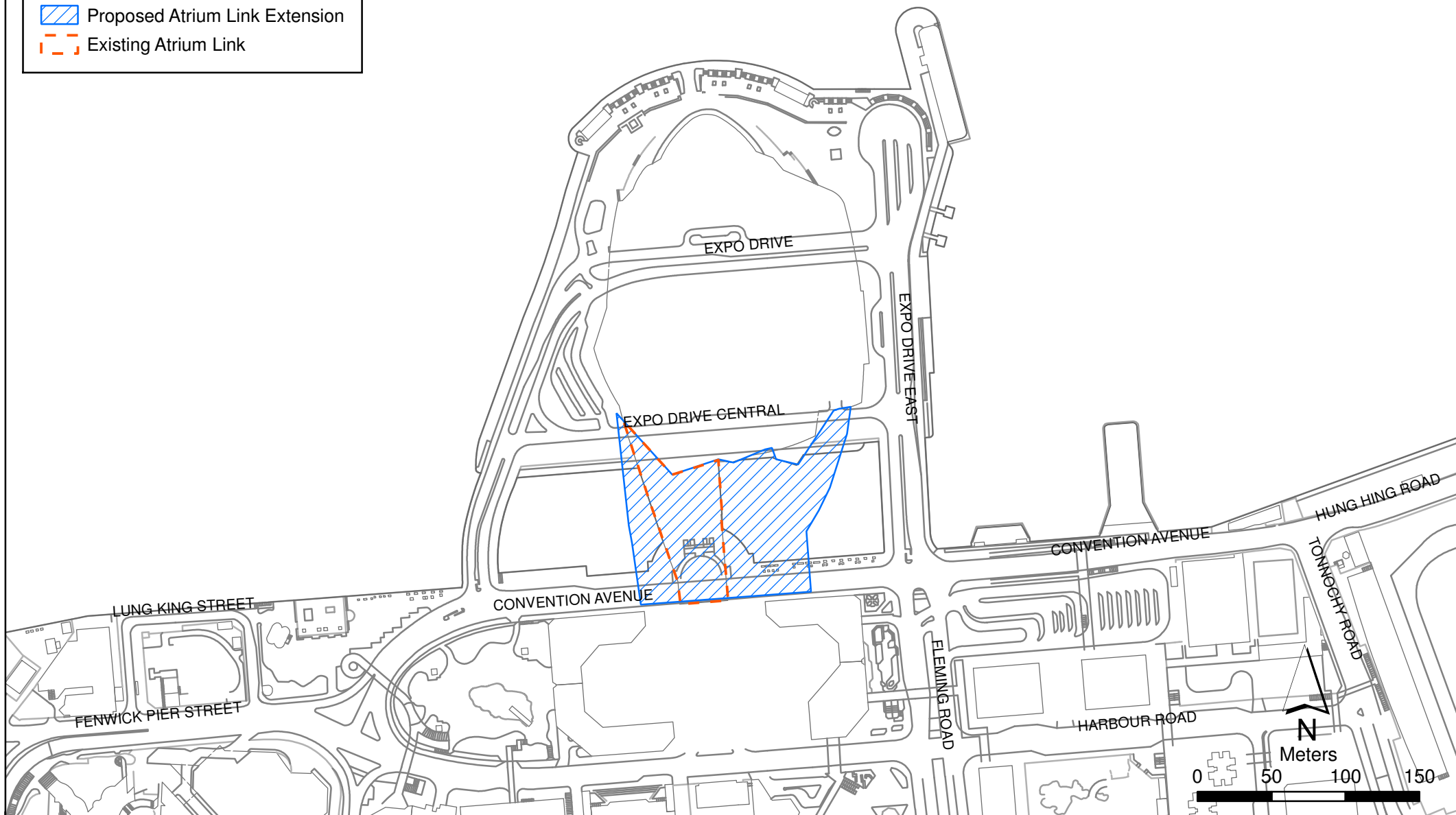


Figure A1

Location of Atrium Link Extension



Annex B

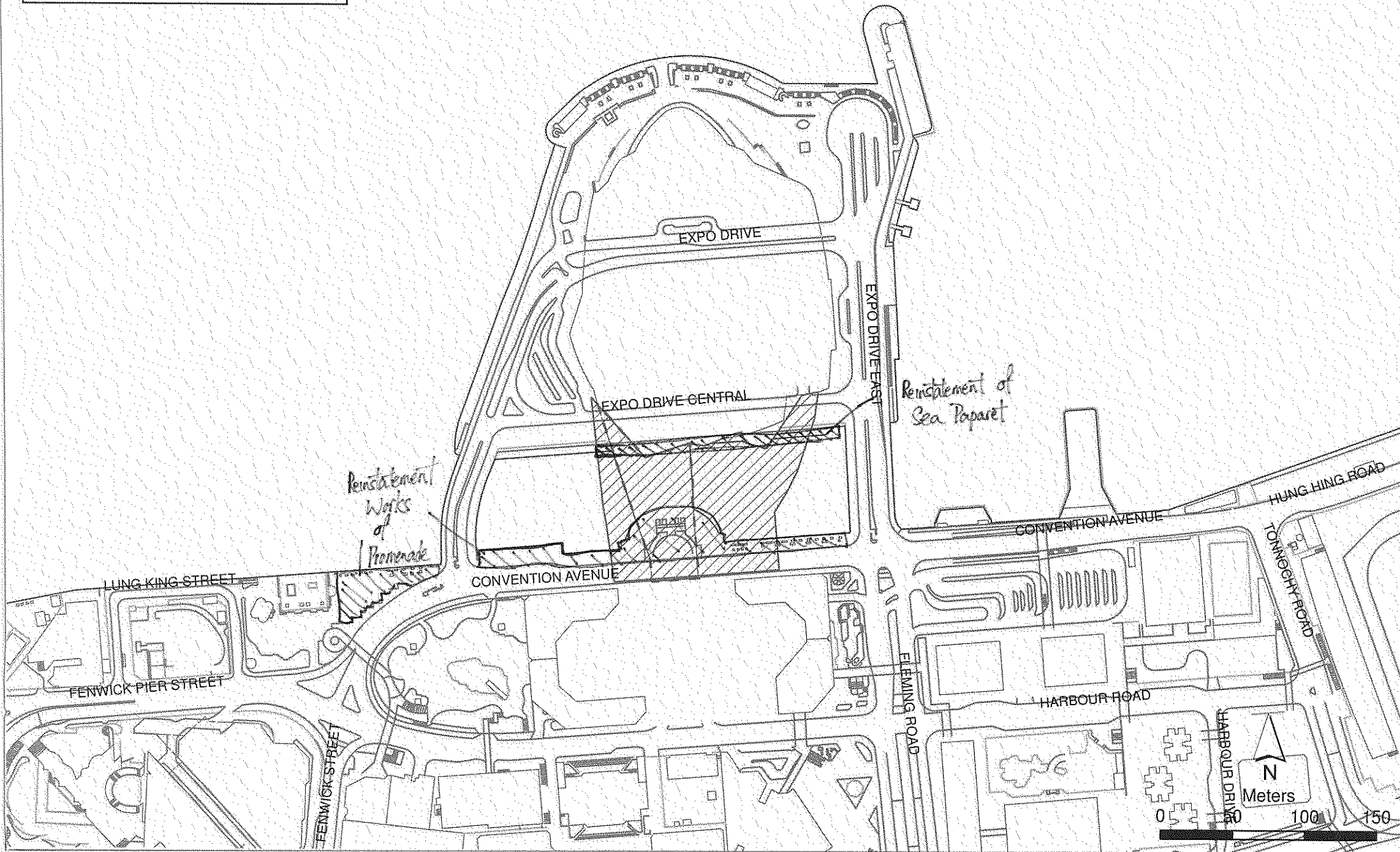
Location of Construction
Activities during the
Reporting Month

Summary of Works for September 2009

Description	Location	Finish Date
Extraction of Temporary Marine Piles	Eastern Marine Channel	Completed (Early September 2009)
Reinstatement of Sea Paparet	Along Sea Paparet	Completed (Mid-September 2009)
Reinstatement of promenade and landscape works	Convention Avenue and Expo Drive Central	Mid-October 2009

Key

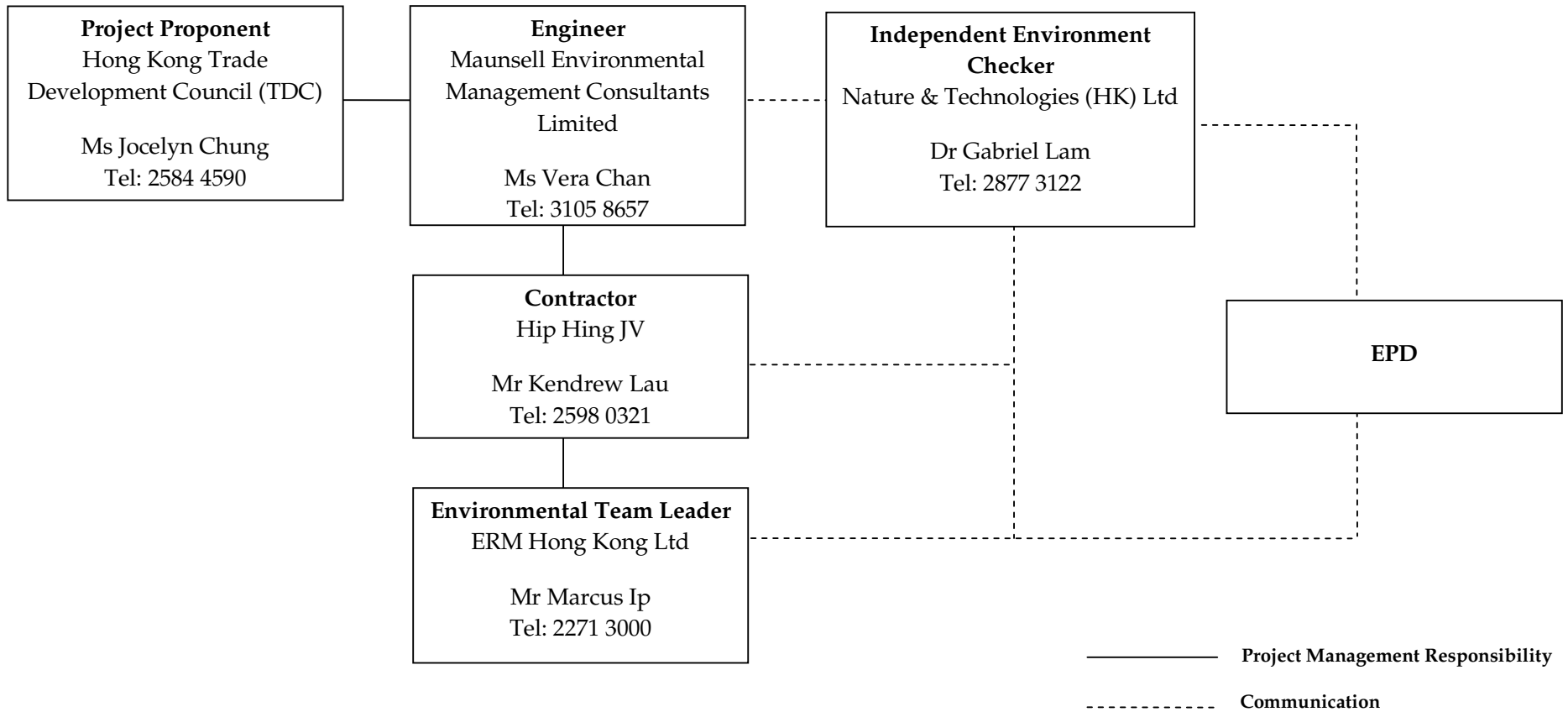
-  Proposed Atrium Link Extension
-  Existing Atrium Link



Annex C

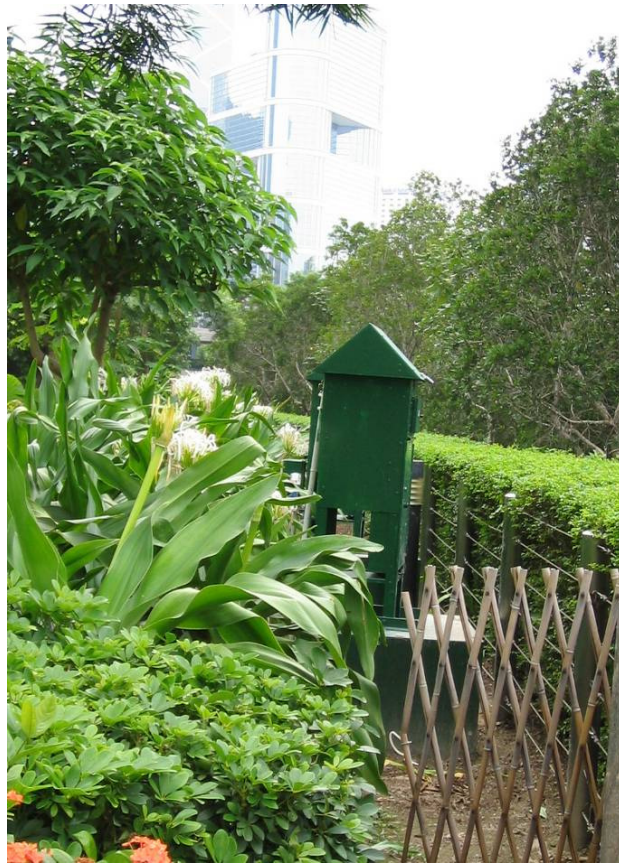
Project Organization Chart and Contact Detail

Project Organization (with contact details)



Annex D

Location of Air and Marine Water Quality Monitoring Stations



Air Quality Monitoring Station (AM1)



Air Quality Monitoring Station (AM2)

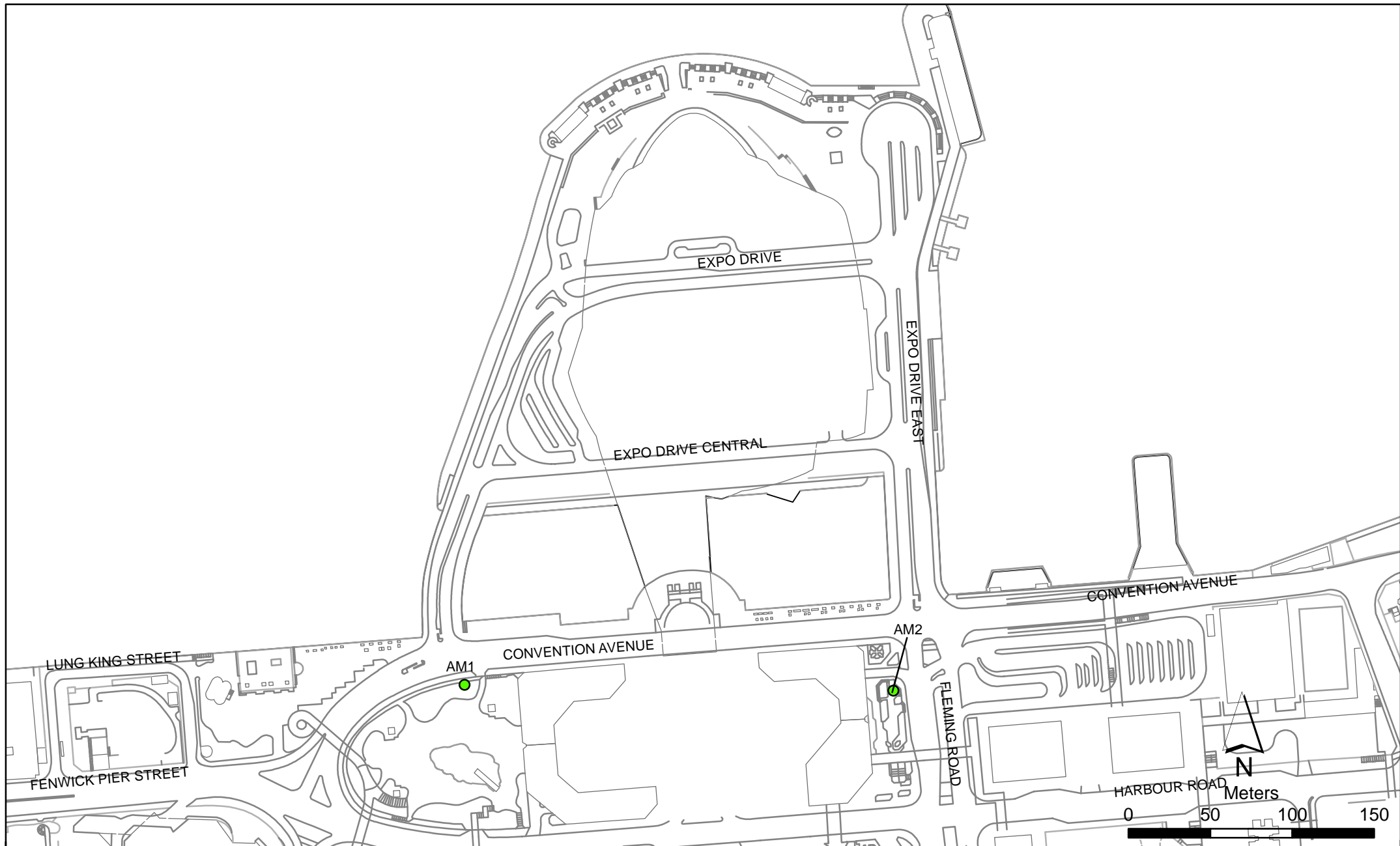


Figure D1

Air Quality Monitoring Station

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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

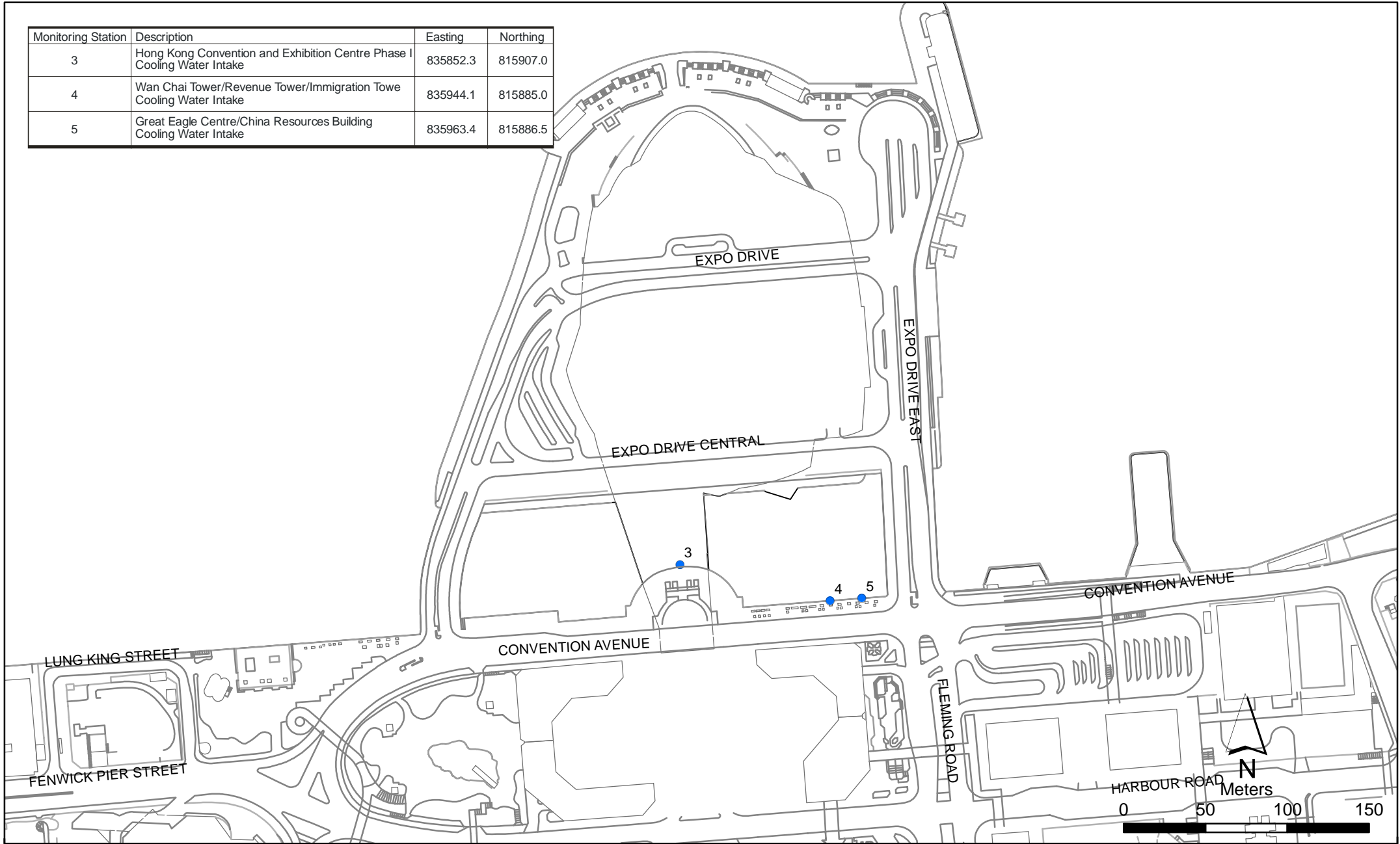


Figure D2

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 - July 2009**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1-Jul	2-Jul	3-Jul	4-Jul
					1hr TSP	
5-Jul	6-Jul	7-Jul	8-Jul	9-Jul	10-Jul	11-Jul
	1 hr TSP		1 hr TSP	1hr and 24hr TSP	1 hr TSP	
12-Jul	13-Jul	14-Jul	15-Jul	16-Jul	17-Jul	18-Jul
	1 hr TSP		1hr and 24hr TSP		1 hr TSP	
19-Jul	20-Jul	21-Jul	22-Jul	23-Jul	24-Jul	25-Jul
	1hr TSP	1hr and 24hr (AM2 only) TSP	1hr TSP	24 hr (AM1 only) TSP	1hr TSP	
26-Jul	27-Jul	28-Jul	29-Jul	30-Jul	31-Jul	
	1hr and 24hr TSP		1hr TSP		1hr TSP	1hr and 24hr TSP

**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
Impact Marine Water Quality Monitoring Schedule - June 2009**

Reference Tidal Station: Quarry Bay (source: HK Observatory Department)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1-Jun	2-Jun	3-Jun	4-Jun	5-Jun	6-Jun
	Mid-Ebb 7:15 Start 7:00 Mid-Flood 12:58 Start 12:30 <i>Impact Monitoring</i>		Mid-Ebb 9:29 Start 10:00 Mid-Flood 15:47 Start 15:30 <i>Impact Monitoring</i>		Mid-Ebb 10:53 Start 10:30 Mid-Flood 17:51 Start 17:30 <i>Impact Monitoring</i>	
7-Jun	8-Jun	9-Jun	10-Jun	11-Jun	12-Jun	13-Jun
	Mid-Ebb 12:40 Start 12:30 Mid-Flood 20:07 Start 18:00 <i>Impact Monitoring</i>		Mid-Ebb 6:25 Start 7:00 Mid-Flood 13:50 Start 13:30 <i>Impact Monitoring</i>		Mid-Ebb 7:35 Start 7:15 Mid-Flood 15:00 Start 14:30 <i>Impact Monitoring</i>	
14-Jun	15-Jun	16-Jun	17-Jun	18-Jun	19-Jun	20-Jun
	Mid-Ebb 10:40 Start 10:00 Mid-Flood 16:57 Start 16:30 <i>Impact Monitoring</i>		Mid-Ebb 7:47 Start 7:30 Mid-Flood 13:21 Start 13:00 <i>Impact Monitoring</i>		Mid-Ebb 9:27 Start 9:00 Mid-Flood 16:04 Start 15:30 <i>Impact Monitoring</i>	
21-Jun	22-Jun	23-Jun	24-Jun	25-Jun	26-Jun	27-Jun
	Mid-Ebb 11:41 Start 11:30 Mid-Flood 19:04 Start 18:00 <i>Impact Monitoring</i>		Mid-Ebb 6:11 Start 7:00 Mid-Flood 13:30 Start 13:00 <i>Impact Monitoring</i>		Mid-Ebb 8:06 Start 7:30 Mid-Flood 15:11 Start 15:00 <i>Impact Monitoring</i>	
28-Jun	29-Jun	30-Jun				
	Mid-Flood 11:14 Start 11:00 Mid-Ebb 17:45 Start 17:30 <i>Impact Monitoring</i>		<i>Holiday</i>			

- Remark:
- (a) WQM monitoring will be carried out during the time window of 1.5 hours before and after the mid-tide.
 - (b) **As mid-flood / mid-ebb tides are not occurring during the diurnal working period (07:00-19:00), WQM will be started at round 07:00 and 17:30.**
 - (c) The schedule will be revised after reviewing the progress of the construction works or due to adverse (safety, weather etc) conditions.

**Hong Kong Convention and Exhibition Centre Atrium Link Extension
Impact Water Quality Monitoring Schedule - July 2009**

Reference Tidal Station: Quarry Bay (source: HK Observatory Department)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1-Jul	2-Jul	3-Jul	4-Jul
			<i>Holiday</i>		Mid-Ebb 10:06 Start 10:00 Mid-Flood 17:24 Start 17:00 <i>Impact Monitoring</i>	
5-Jul	6-Jul	7-Jul	8-Jul	9-Jul	10-Jul	11-Jul
	Mid-Ebb 11:50 Start 11:30 Mid-Flood 19:24 Start 18:00 <i>Impact Monitoring</i>		Mid-Ebb 13:01 Start 13:00 Mid-Flood 20:27 Start 18:00 <i>Impact Monitoring</i>		Mid-Flood 7:05 Start 7:00 Mid-Ebb 14:04 Start 13:30 <i>Impact Monitoring</i>	
12-Jul	13-Jul	14-Jul	15-Jul	16-Jul	17-Jul	18-Jul
	Mid-Flood 9:13 Start 9:00 Mid-Ebb 15:42 Start 15:00 <i>Impact Monitoring</i>		Mid-Flood 11:08 Start 11:00 Mid-Ebb 17:00 Start 16:00 <i>Impact Monitoring</i>		Mid-Ebb 7:59 Start 8:00 Mid-Flood 14:39 Start 14:00 <i>Impact Monitoring</i>	
19-Jul	20-Jul	21-Jul	22-Jul	23-Jul	24-Jul	25-Jul
	Mid-Ebb 10:42 Start 10:30 Mid-Flood 18:18 Start 17:30 <i>Impact Monitoring</i>		Mid-Ebb 12:29 Start 12:00 Mid-Flood 19:39 Start 18:00 <i>Impact Monitoring</i>		Mid-Flood 7:12 Start 7:30 Mid-Ebb 14:04 Start 14:00 <i>Impact Monitoring</i>	
26-Jul	27-Jul	28-Jul	29-Jul	30-Jul	31-Jul	
	Mid-Flood 9:51 Start 9:30 Mid-Ebb 16:12 Start 16:00 <i>Impact Monitoring</i>		Mid-Flood 12:27 Start 12:00 Mid-Ebb 18:01 Start 17:30 <i>Impact Monitoring</i>		Mid-Ebb 9:14 Start 9:00 Mid-Flood 21:36 Start 18:00 <i>Impact Monitoring</i>	

- Remark:
- (a) WQM monitoring will be carried out during the time window of 1.5 hours before and after the mid-tide.
 - (b) **As mid-flood / mid-ebb tides are not occurring during the diurnal working period (07:00-19:00), WQM will be started at round 07:00 and 18:00.**

- (c) The schedule will be revised after reviewing the progress of the construction works or due to adverse (safety, weather etc) conditions.

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

Reference Tidal Station: Quarry Bay (source: HK Observatory Department)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1-Aug
2-Aug	3-Aug	4-Aug	5-Aug	6-Aug	7-Aug	8-Aug
	Mid-Ebb 10:55 Start 10:30 Mid-Flood 18:38 Start 18:00 <i>Impact Monitoring</i>		Mid-Ebb 12:06 Start 11:30 Mid-Flood 19:27 Start 18:00 <i>Impact Monitoring</i>		Mid-Flood 6:22 Start 7:00 Mid-Ebb 13:10 Start 12:45 <i>Impact Monitoring</i>	
9-Aug	10-Aug	11-Aug	12-Aug	13-Aug	14-Aug	15-Aug
	Mid-Flood 8:29 Start 8:00 Mid-Ebb 14:46 Start 14:15 <i>Impact Monitoring</i>		Mid-Flood 10:05 Start 9:30 Mid-Ebb 15:57 Start 15:30 <i>Impact Monitoring</i>		Mid-Ebb 12:57 Start 12:30 Mid-Flood 17:57 Start 17:30 <i>Impact Monitoring</i>	
16-Aug	17-Aug	18-Aug	19-Aug	20-Aug	21-Aug	22-Aug
	Mid-Ebb 9:40 Start 9:15 Mid-Flood 17:28 Start 17:00 <i>Impact Monitoring</i>		Mid-Ebb 11:26 Start 11:00 Mid-Flood 18:33 Start 18:00 <i>Impact Monitoring</i>		Mid-Flood 6:18 Start 7:00 Mid-Ebb 12:59 Start 12:30 <i>Impact Monitoring</i>	
23-Aug	24-Aug	25-Aug	26-Aug	27-Aug	28-Aug	29-Aug
	Mid-Flood 8:47 Start 8:15 Mid-Ebb 15:00 Start 14:30 <i>Impact Monitoring</i>		Mid-Flood 10:41 Start 10:15 Mid-Ebb 16:26 Start 16:00 <i>Impact Monitoring</i>		Mid-Ebb 7:16 Start 7:00 Mid-Flood 19:44 Start 18:00 <i>Impact Monitoring</i>	
30-Aug	31-Aug					
	Mid-Flood 9:42 Start 9:15 Mid-Ebb 17:45 Start 17:15 <i>Impact Monitoring</i>					

Remark:

- (a) WQM monitoring will be carried out during the time window of 1.5 hours before and after the mid-tide.
(b) As mid-flood / mid-ebb tides are not occurring during the diurnal working period (07:00-19:00), WQM will be started at round 07:00 and 18:00.
(c) The schedule will be revised after reviewing the progress of the construction works or due to adverse (safety, weather etc) conditions.
(c) The schedule will be revised after reviewing the progress of the construction works or due to adverse (safety, weather etc) conditions.

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

Reference Tidal Station: Quarry Bay (source: HK Observatory Department)

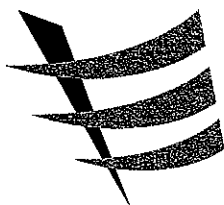
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1-Sep	2-Sep	3-Sep	4-Sep	5-Sep
			Mid-Flood 11:02 Start 10:30 Mid-Ebb 18:21 Start 18:00 <i>Impact Monitoring</i>		Mid-Flood 12:11 Start 11:30 Mid-Ebb 18:57 Start 18:00 <i>Impact Monitoring</i>	
6-Sep	7-Sep	8-Sep	9-Sep	10-Sep	11-Sep	12-Sep
13-Sep	14-Sep	15-Sep	16-Sep	17-Sep	18-Sep	19-Sep
20-Sep	21-Sep	22-Sep	23-Sep	24-Sep	25-Sep	26-Sep
27-Sep	28-Sep	29-Sep	30-Sep			

Remark:

- (a) WQM monitoring will be carried out during the time window of 1.5 hours before and after the mid-tide.
- (b) **As mid-flood / mid-ebb tides are not occurring during the diurnal working period (07:00-19:00), WQM will be started at round 07:00 and 18:00.**
- (c) The schedule will be revised after reviewing the progress of the construction works or due to adverse (safety, weather etc) conditions.

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

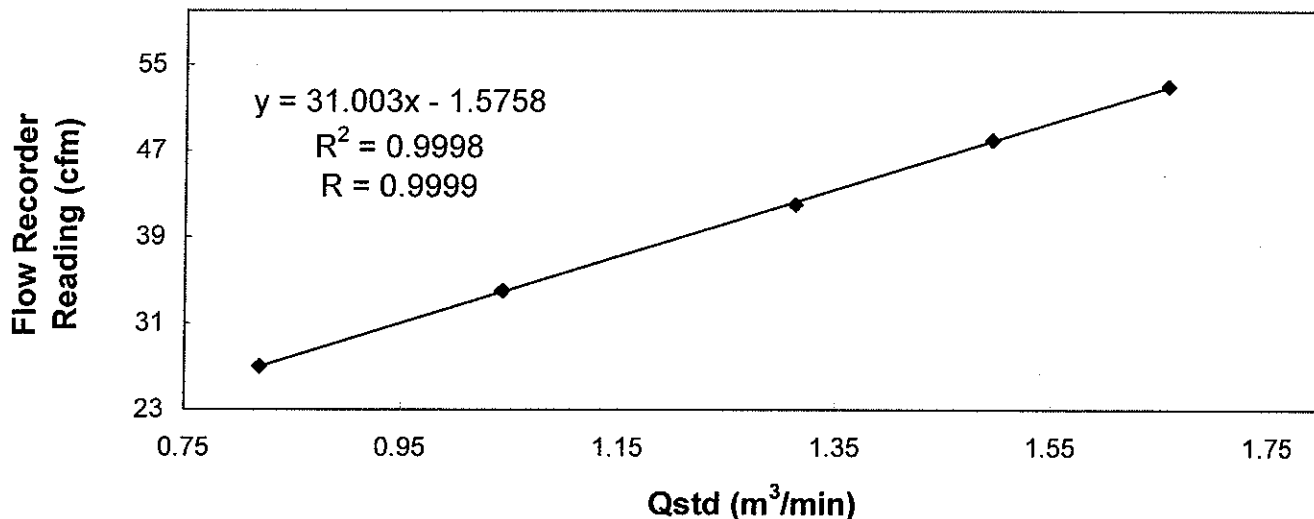
TEST REPORT

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

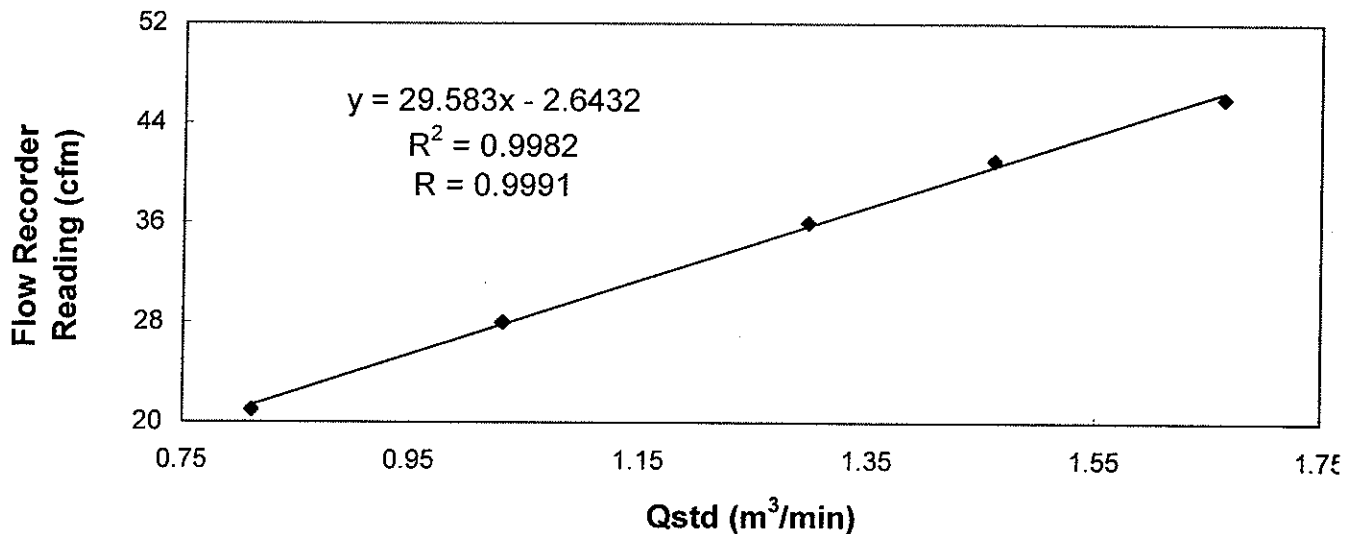
Calibration Report
of
High Volume Air Sampler

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)

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								
5 Sep 2009 to 6 Sep 2009	2.8512	2.9458	1.3361	1.3361	15682.59	15706.59	24.0	49	Sunny	30	0.0946	1.3361	1923.98	
11 Sep2009 to 12 Sep 2009	2.8057	2.8956	0.9813	0.9813	15709.59	15733.59	24.0	64	Rainy	27	0.0899	0.9813	1413.07	
17 Sep2009 to 18 Sep 2009	2.8346	2.9316	1.0458	1.0458	15736.59	15760.59	24.0	64	Sunny	29	0.0970	1.0458	1505.95	
23 Sep 2009 to 24 Sep 2009	2.8128	2.9356	1.0136	1.0136	15763.59	15787.59	24.00	84	Sunny	28	0.1228	1.0136	1459.58	
29 Sep 2009 to 30 Sep 2009	2.8115	2.8800	1.0136	1.0136	15790.59	15814.59	24.0	47	Rainy	25	0.0685	1.0136	1459.58	
								Min	47					
								Max	84					
								Average	62					

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								
5 Sep 2009 to 6 Sep 2009	2.7663	2.8402	1.2387	1.2387	14033.61	14057.61	24.0	41	Sunny	30	0.0739	1.2387	1783.73	
11 Sep2009 to 12 Sep 2009	2.8134	2.8759	1.2049	1.2049	14060.61	14084.61	24.0	36	Rainy	27	0.0625	1.2049	1735.06	
17 Sep2009 to 18 Sep 2009	2.8311	2.9247	1.1711	1.1711	14087.61	14111.61	24.0	56	Sunny	29	0.0936	1.1711	1686.38	
23 Sep 2009 to 24 Sep 2009	2.8333	2.9265	1.1034	1.1034	14114.61	14138.62	24.0	59	Sunny	28	0.0932	1.1034	1589.56	
29 Sep 2009 to 30 Sep 2009	2.8053	2.8644	1.1034	1.1034	14141.62	14165.62	24.0	37	Rainy	25	0.0591	1.1034	1588.90	
								Min	36					
								Max	59					
								Average	46					

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 Sep 09	2.8120	2.8186	1.2716	1.2716	15679.59	15680.59	1.00	87	Sunny	30	0.0066	1.2716	76.30
04 Sep 09	2.8307	2.8407	1.4974	1.4974	15680.59	15681.59	1.00	111	Sunny	30	0.0100	1.4974	89.84
05 Sep 09	2.8491	2.8546	1.4329	1.4329	15681.59	15682.59	1.00	64	Sunny	30	0.0055	1.4329	85.97
07 Sep 09	2.8116	2.8176	1.3039	1.3039	15706.59	15707.59	1.00	77	Sunny	30	0.0060	1.3039	78.23
09 Sep 09	2.8182	2.8286	1.4329	1.4329	15707.59	15708.59	1.00	121	Rainy	29	0.0104	1.4329	85.97
11 Sep 09	2.8189	2.8317	0.9813	0.9813	15708.59	15709.59	1.00	217	Rainy	27	0.0128	0.9813	58.88
14 Sep 09	2.8395	2.8482	0.9813	0.9813	15733.59	15734.59	1.00	148	Rainy	28	0.0087	0.9813	58.88
17 Sep 09	2.8162	2.8206	1.0781	1.0781	15734.59	15735.59	1.00	68	Sunny	29	0.0044	1.0781	64.69
17 Sep 09	2.8094	2.8176	0.9491	0.9491	15735.59	15736.59	1.00	144	Sunny	29	0.0082	0.9491	56.95
18 Sep 09	2.8727	2.8827	1.0136	1.0136	15760.59	15761.59	1.00	164	Sunny	30	0.0100	1.0136	60.82
21 Sep 09	2.8540	2.8679	1.0136	1.0136	15761.59	15762.59	1.00	229	Rainy	29	0.0139	1.0136	60.82
23 Sep 09	2.8568	2.8623	1.0136	1.0136	15762.59	15763.59	1.00	90	Sunny	28	0.0055	1.0136	60.82
25 Sep 09	2.8235	2.8317	0.9813	0.9813	15787.59	15788.59	1.00	139	Sunny	29	0.0082	0.9813	58.88
28 Sep 09	2.8325	2.8414	1.0136	1.0136	15788.59	15789.59	1.00	146	Rainy	25.3#	0.0089	1.0136	60.82
29 Sep 09	2.8046	2.8158	1.0136	1.0136	15789.59	15790.59	1.00	184	Rainy	25	0.0112	1.0136	60.82
30 Sep 09	2.8158	2.8209	1.0136	1.0136	15814.59	15815.59	1.00	84	Rainy	27	0.0051	1.0136	60.82
							Min	64					
							Max	229					
							Average	130					

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 Sep 09	2.8433	2.8516	1.5091	1.5091	14030.61	14031.61	1.00	92	Sunny	30	0.0083	1.5091	90.55
04 Sep 09	2.8161	2.8241	1.5091	1.5091	14031.61	14032.61	1.00	88	Sunny	30	0.0080	1.5091	90.55
05 Sep 09	2.8228	2.8286	1.4753	1.4753	14032.61	14033.61	1.00	66	Sunny	30	0.0058	1.4753	88.52
07 Sep 09	2.8371	2.8404	1.1711	1.1711	14057.61	14058.61	1.00	47	Sunny	30	0.0033	1.1711	70.27
09 Sep 09	2.8126	2.8202	1.1711	1.1711	14058.61	14059.61	1.00	108	Rainy	29	0.0076	1.1711	70.27
11 Sep 09	2.8470	2.8561	1.1372	1.1372	14059.61	14060.61	1.00	133	Rainy	27	0.0091	1.1372	68.23
14 Sep 09	2.8515	2.8584	1.1711	1.1711	14084.61	14085.61	1.00	98	Rainy	28	0.0069	1.1711	70.27
16 Sep 09	2.8369	2.8450	1.1034	1.1034	14085.61	14086.61	1.00	122	Rainy	28	0.0081	1.1034	66.20
17 Sep 09	2.8354	2.8389	1.1711	1.1711	14086.61	14087.61	1.00	50	Sunny	29	0.0035	1.1711	70.27
18 Sep 09	2.8680	2.8781	1.1372	1.1372	14111.61	14112.61	1.00	148	Sunny	30	0.0101	1.1372	68.23
21 Sep 09	2.8485	2.8592	1.1372	1.1372	14112.61	14113.61	1.00	157	Rainy	29	0.0107	1.1372	68.23
23 Sep 09	2.8930	2.8964	1.1034	1.1034	14113.61	14114.61	1.00	51	Sunny	28	0.0034	1.1034	66.20
25 Sep 09	2.8247	2.8294	1.1034	1.1034	14138.62	14139.62	1.00	71	Sunny	29	0.0047	1.1034	66.20
28 Sep 09	2.8315	2.8396	1.1372	1.1372	14139.62	14140.62	1.00	119	Rainy	25.3#	0.0081	1.1372	68.23
29 Sep 09	2.8125	2.8212	1.1372	1.1372	14140.62	14141.62	1.00	128	Rainy	25	0.0087	1.1372	68.23
30 Sep 09	2.8194	2.8246	1.1372	1.1372	14165.62	14166.62	1.00	76	Rainy	27	0.0052	1.1372	68.23
							Min	47					
							Max	157					
							Average	97					

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)
9/2/09	Sunny	29.8	70	0.0	110	11.8
9/4/09	Sunny	29.6	75	0.0	110	9.4
9/5/09	Sunny	29.6	71	0.0	110	10.7
9/7/09	Sunny	29.5	74	0.0	110	10.8
9/9/09	Rainy	28.7	77	48.0	110	11.7
9/11/09	Rainy	27.3	84	13.0	100	15.4
9/14/09	Rainy	27.8	80	46.5	50	19.5
9/16/09	Rainy	27.6	91	20.0	110#	8.8#
9/17/09	Sunny	28.8	84	0.0	280#	6.7#
9/18/09	Sunny	29.5	80	0.0	270	9.6
9/21/09	Rainy	28.6	82	10.0	110	5.1
9/23/09	Sunny	28.4	71	0.0	100	11.5
9/25/09	Sunny	28.7	72	0.0	110	13.3
9/28/09	Rainy	25.3#	88#	53.5#	050#	11.3#
9/29/09	Rainy	25.3	85	34.0	70	14.0
9/30/09	Rainy	26.5	86	60.0	90	8.8

Notes:

- missing (less than 24 hourly observations a day)

NA - not available

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

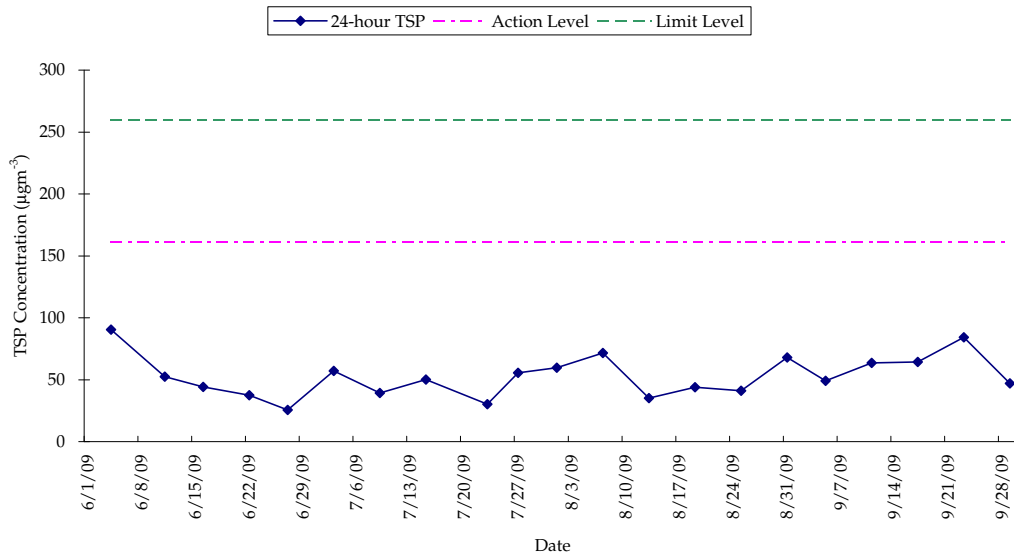


Figure G2 - Measured 24-hour TSP Concentration ($\mu\text{g}\text{m}^{-3}$) at AM2

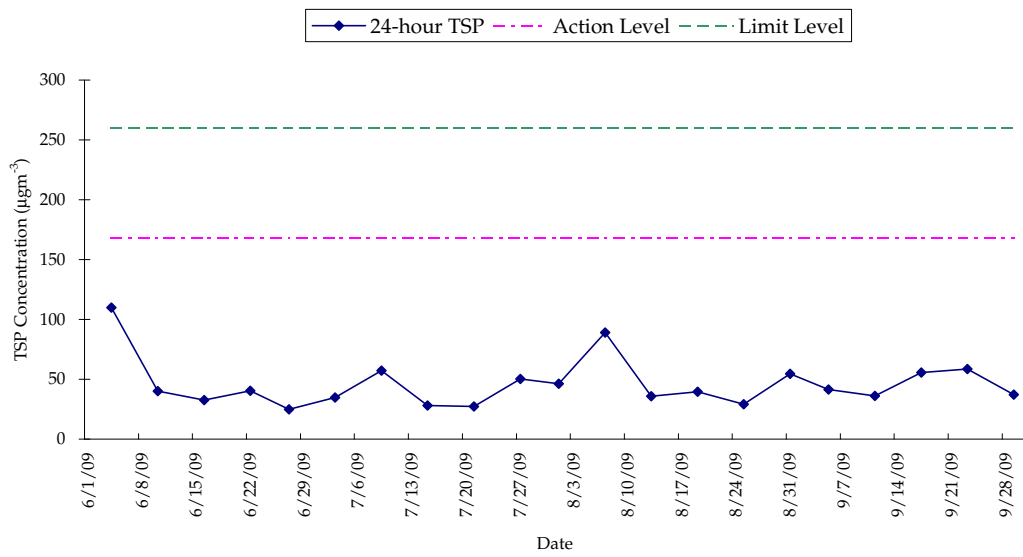


Figure G3 - Measured 1-hour TSP Concentration ($\mu\text{g}\text{m}^{-3}$) at AM1

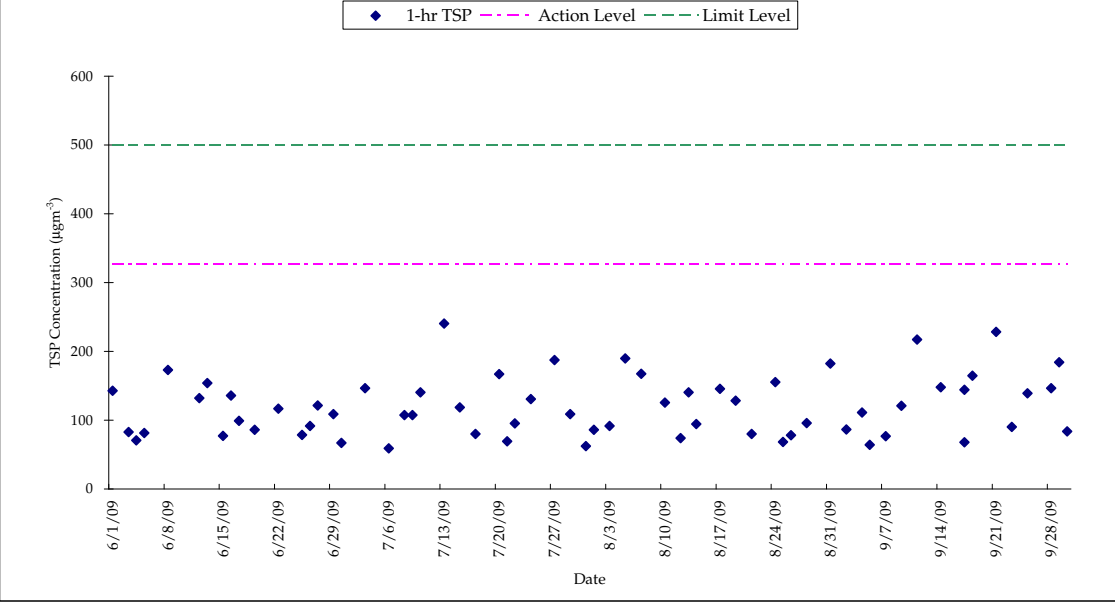
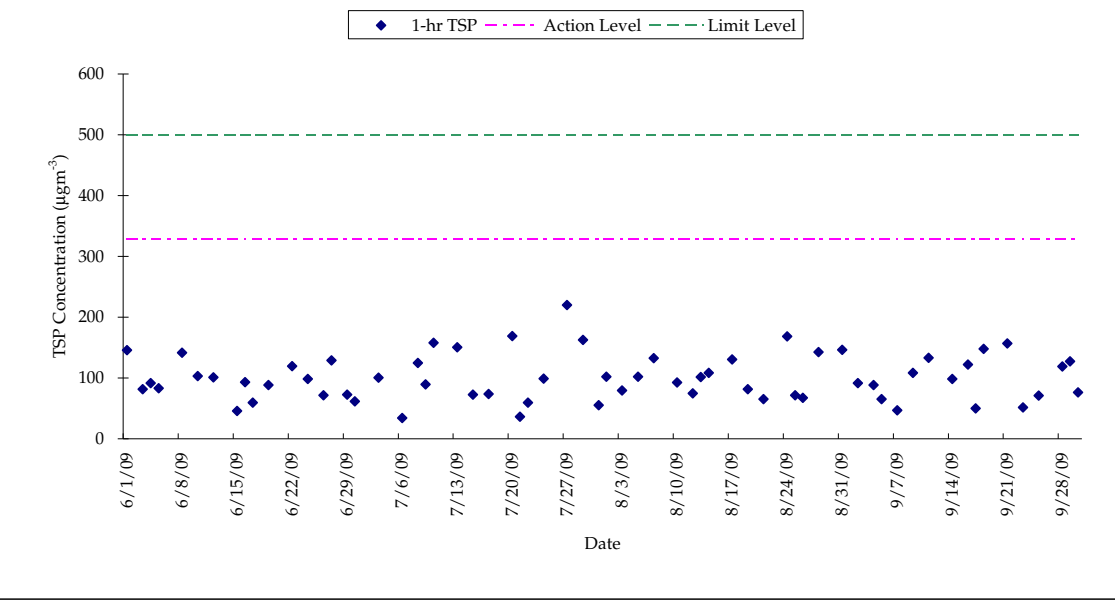


Figure G4 - Measured 1-hour TSP Concentration ($\mu\text{g}\text{m}^{-3}$) at AM2



Annex H

Calibration Certificates of Marine Water Monitoring Equipment



Internal Calibration Report of Dissolved Oxygen Meter

Equipment Ref. No. : <u>ET/EW10081002</u>	Manufacturer : <u>YSI</u>
Model No. : <u>85</u>	Serial No. : <u>06C1998AD</u>
Date of Calibration : <u>27/8/09</u>	Calibration Due Date : <u>27/11/09</u>

Ref. No. of Reference Thermometer : ET10521/001

Ref. No. of Potassium Dichromate : ET705201003103

Temperature Verification

	Temperature (°C)
Thermometer reading	27.5
Meter reading	27.9

Linearity Checking

Purging time, min	DO meter reading, mg/L			Winkler Titration result, mg/L			Difference (%) of DO Content
	1	2	Average	1	2	Average	
2	7.27	7.28	7.28	7.45	7.43	7.44	2.17
5	5.20	5.18	5.19	5.20	5.22	5.21	0.38
10	3.37	3.39	3.38	3.41	3.43	3.42	1.18
Linear regression coefficient				0.9995			

Zero Point Checking

DO meter reading, mg/L	0.00
------------------------	------

Salinity Checking

Salinity (ppt)	DO meter reading, mg/L			Winkler Titration result, mg/L			Difference (%) of DO Content
	1	2	Average	1	2	Average	
10	6.54	6.56	6.55	6.65	6.63	6.64	1.86
30	6.12	6.10	6.11	6.04	6.06	6.05	0.99

Acceptance Criteria

- (1) Difference between temperature readings from temperature sensor of DO probe and reference thermometer : < 0.5 °C
- (2) Linear regression coefficient : > 0.99
- (3) Zero checking: 0.0mg/L
- (4) Difference (%) of DO content from the meter reading and by winkler titration : within ± 5%

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

* Delete as appropriate

Calibrated by :

Approved by :



Performance Check of Salinity Meter

Equipment Ref. No. : ET/BW/008/02 Manufacturer : YSI
Model No. : 85 Serial No. : 06C 1998 AD
Date of Calibration : 27/8/09 Due Date : 27/11/09

Ref. No. of Salinity Standard used (30ppt)



J341.

Salinity Standard (ppt)	Measured Salinity (ppt)	Difference %
30	28.7.	4.43 %.

Acceptance Criteria

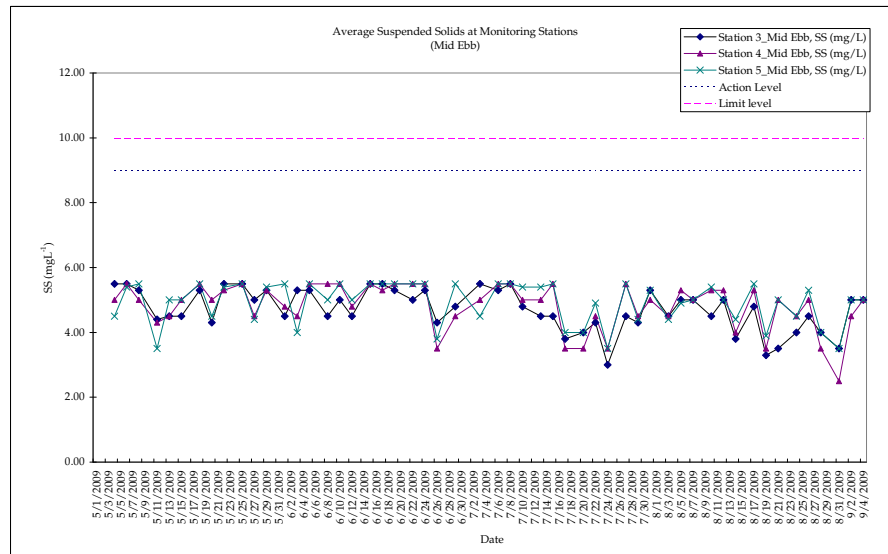
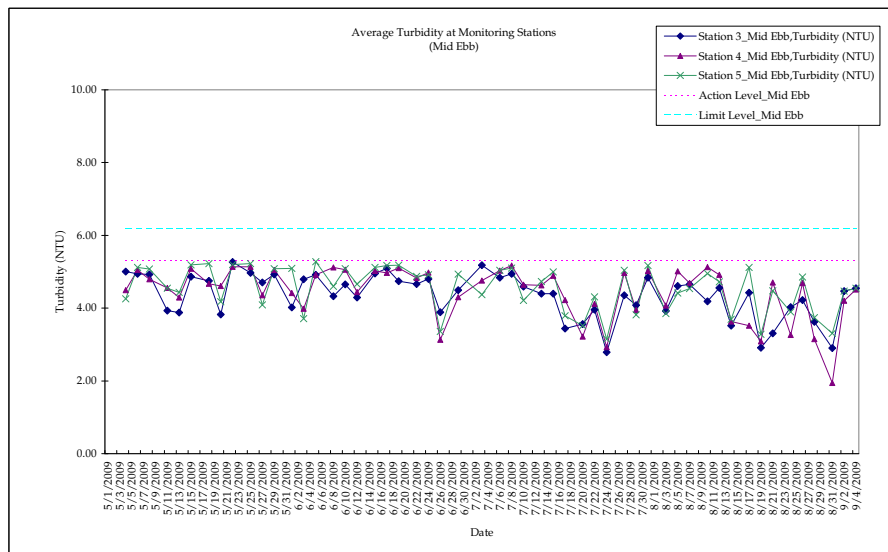
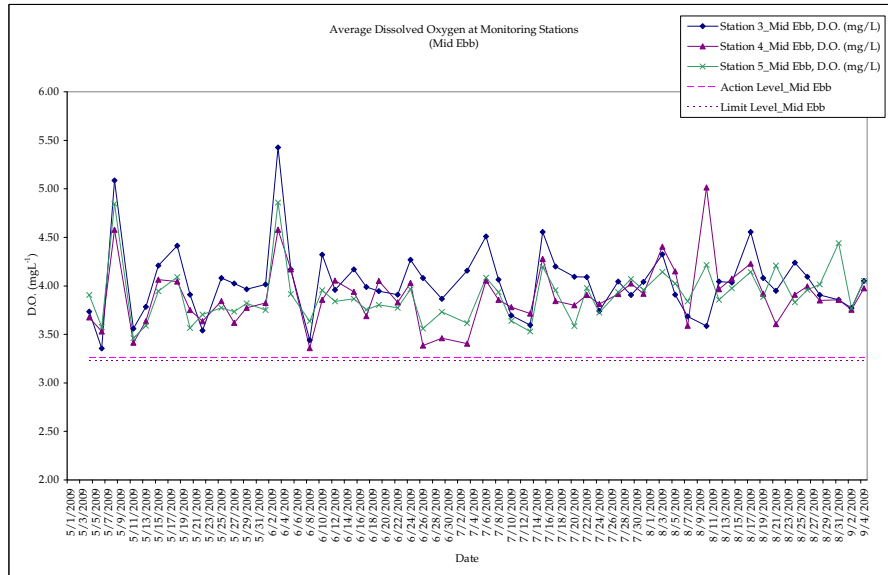
Difference : <10 %

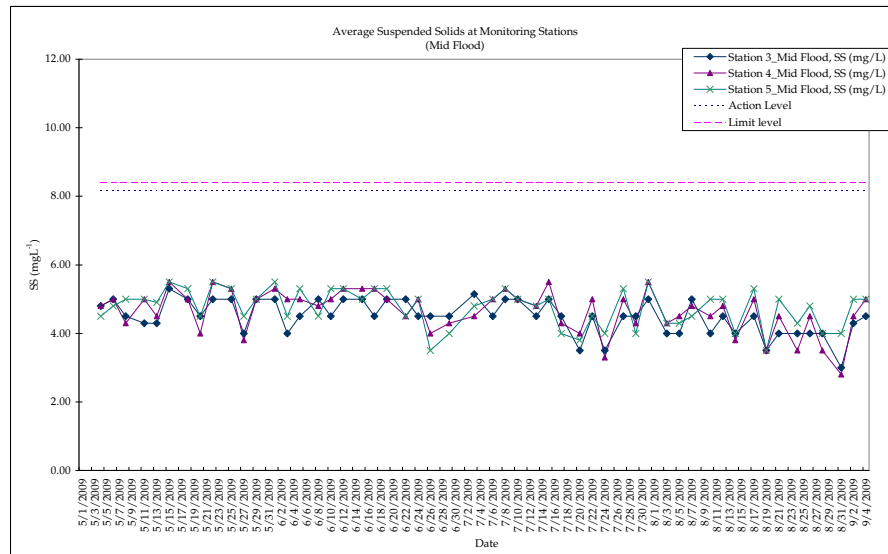
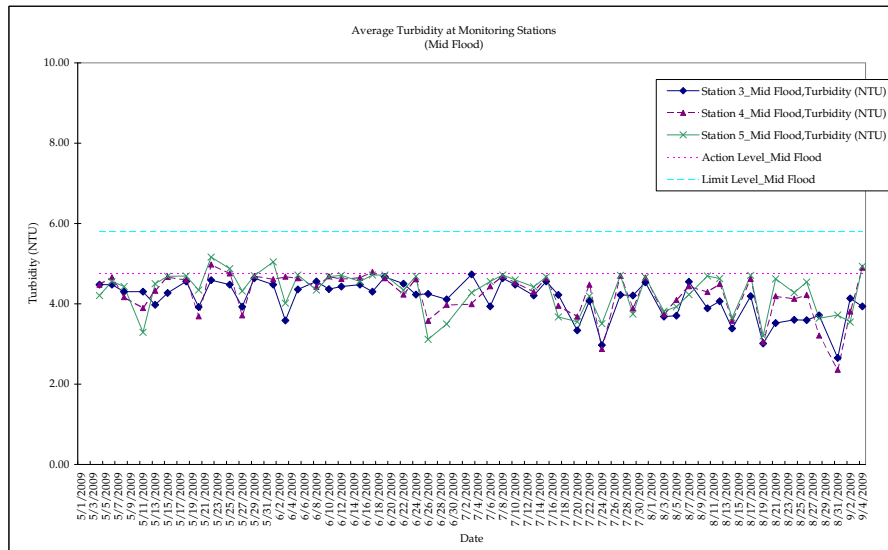
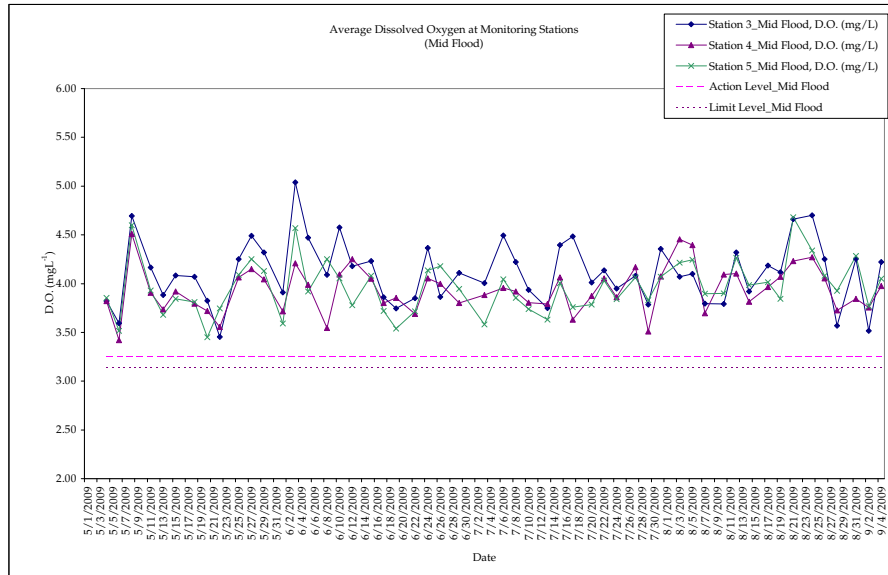
The salinity meter complies * / ~~does not comply~~ * with the specified requirements and is deemed acceptable * / ~~unacceptable~~ * for use. Measurements are traceable to national standards.

Checked by :  Approved by : 

Annex I

Marine Water Quality Monitoring Results





Water Quality Monitoring Results for Station 3												
Date	9/2/2009			9/2/2009			9/4/2009			9/4/2009		
Time (hh:mm)	11:30 - 11:43			18:00 - 18:14			11:30 - 11:44			18:00 - 18:14		
Ambient Temperature	32			29			32			32		
Weather	Sunny			Fine			Cloudy			Cloudy		
Water Depth (m)	7.20			8.40			10.20			9.60		
Monitoring Depth	7.50			7.50			7.50			7.50		
Tide	Mid-Ebb			Mid-Flood			Mid-Ebb			Mid-Flood		
Trial	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average
Water Temperature (°C)	27.4	27.5	27.5	26.2	26.2	26.2	28.4	28.5	28.5	28.5	28.4	28.5
Salinity (ppt)	30.6	30.6	30.6	31.2	31.0	31.1	30.2	30.1	30.2	30.2	30.2	30.2
D.O. (mg/L)	3.46	3.57	3.5	4.16	4.28	4.2	4.20	4.24	4.2	4.52	4.47	4.5
D.O. Saturation (%)	48.5	50.1	49.3	58.6	60.2	59.4	61.7	62.3	62.0	66.4	65.7	66.1
Turbidity (NTU)	3.92	4.08	4.0	4.18	4.09	4.1	4.25	4.30	4.3	3.96	3.91	3.9
SS* (mg/L)	4.3	4.3	4.3	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Remarks	General eath work			No construction activities were observed.			No construction activities were observed.			No construction activities were observed.		

Colour "N"

* For the values of suspended solids less than 5mg/L (PQL), the results are for reference only. PQL stands for practical quantitation Limit, or lowest reporting limit, which is estimated from the method detection limit (MDL). Normally PQL is about 5 times the MDL.

Within Action Level ?

Date	9/2/2009		
D.O. (mg/L)	Y	Y	Y
Turbidity (NTU)	Y	Y	Y
SS (mg/L)	Y	Y	Y

9/2/2009		
Y	Y	Y
Y	Y	Y
Y	Y	Y

9/4/2009		
Y	Y	Y
Y	Y	Y
Y	Y	Y

9/4/2009		
Y	Y	Y
Y	Y	Y
Y	Y	Y

Within Limit Level ?

Date	9/2/2009		
D.O. (mg/L)	Y	Y	Y
Turbidity (NTU)	Y	Y	Y
SS (mg/L)	Y	Y	Y

9/2/2009		
Y	Y	Y
Y	Y	Y
Y	Y	Y

9/4/2009		
Y	Y	Y
Y	Y	Y
Y	Y	Y

9/4/2009		
Y	Y	Y
Y	Y	Y
Y	Y	Y

Water Quality Monitoring Results for Station 4

Date	9/2/2009			9/2/2009			9/4/2009			9/4/2009		
Time (hh:mm)	11:49 - 12:03			19:20 - 19:33			11:52 - 12:05			19:22 - 19:35		
Ambient Temperature	32			29			32			32		
Weather	Sunny			Fine			Cloudy			Cloudy		
Water Depth (m)	3.00			4.20			4.40			4.00		
Monitoring Depth	5.00			5.00			5.00			5.00		
Tide	Mid-Ebb			Mid-Flood			Mid-Ebb			Mid-Flood		
Trial	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average
Water Temperature (°C)	27.8	27.8	27.8	26.7	26.5	26.6	28.8	28.7	28.8	28.9	28.9	28.9
Salinity (ppt)	30.8	30.9	30.9	31.0	31.0	31.0	30.7	30.8	30.8	30.8	30.9	30.9
D.O. (mg/L)	3.82	3.69	3.8	3.99	3.93	4.0	3.99	3.96	4.0	4.16	4.12	4.1
D.O. Saturation (%)	53.6	52.7	53.2	56.2	55.4	55.8	58.6	58.2	58.4	60.7	60.1	60.4
Turbidity (NTU)	4.17	4.24	4.2	3.75	3.86	3.8	4.50	4.53	4.5	4.87	4.93	4.9
SS* (mg/L)	4.5	4.5	4.5	4.0	4.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0
Remarks	No construction activities were observed.			No construction activities were observed.			No construction activities were observed.			No construction activities were observed.		

Colour "N"

* For the values of suspended solids less than 5mg/L (PQL), the results are for reference only. PQL stands for practical quantitation Limit, or lowest reporting limit, which is estimated from the method detection limit (MDL). Normally PQL is about 5 tim

Within Action Level ?

Date	9/2/2009	
D.O. (mg/L)	Y	Y
Turbidity (NTU)	Y	Y
SS (mg/L)	Y	Y

9/2/2009		
Y	Y	
Y	Y	
Y	Y	

9/4/2009		
Y	Y	
Y	Y	
Y	Y	

9/4/2009		
Y	Y	
N	N	
Y	Y	

Within Limit Level ?

Date	9/2/2009	
D.O. (mg/L)	Y	Y
Turbidity (NTU)	Y	Y
SS (mg/L)	Y	Y

9/2/2009		
Y	Y	
Y	Y	
Y	Y	

9/4/2009		
Y	Y	
Y	Y	
Y	Y	

9/4/2009		
Y	Y	
Y	Y	
Y	Y	

Water Quality Monitoring Results for Station 5

Date	9/2/2009			9/2/2009			9/4/2009			9/4/2009		
Time (hh:mm)	12:08 - 12:22			18:38 - 18:52			12:08 - 12:21			18:38 - 18:41		
Ambient Temperature	32			29			32			32		
Weather	Sunny			Fine			Cloudy			Cloudy		
Water Depth (m)	3.20			4.40			4.60			4.20		
Monitoring Depth	5.00			5.00			5.00			5.00		
Tide	Mid-Ebb			Mid-Flood			Mid-Ebb			Mid-Flood		
Trial	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average
Water Temperature (°C)	27.9	27.9	27.9	26.5	26.5	26.5	28.8	28.7	28.8	28.9	28.8	28.9
Salinity (ppt)	30.5	30.4	30.5	31.0	30.8	30.9	30.8	30.9	30.9	30.9	30.9	30.9
D.O. (mg/L)	3.73	3.81	3.8	4.05	3.97	4.0	4.03	4.07	4.1	4.17	4.14	4.2
D.O. Saturation (%)	52.3	53.4	52.9	57.0	55.9	56.5	58.8	59.4	59.1	60.8	60.4	60.6
Turbidity (NTU)	4.50	4.43	4.5	3.60	3.49	3.5	4.58	4.51	4.5	4.90	4.97	4.9
SS* (mg/L)	5.0	5.0	5.0	4.0	4.0	4.0	5.0	5.0	5.0	5.5	5.5	5.5
Remarks	No construction activities were observed			No construction activities were observed			No construction activities were observed			No construction activities were observed		

Colour "N"

* For the values of suspended solids less than 5mg/L (PQL), the results are for reference only. PQL stands for practical quantitation Limit, or lowest reporting limit, which is estimated from the method detection limit (MDL). Normally PQL is about 5 tim

Within Action Level ?

Date	9/2/2009	
D.O. (mg/L)	Y	Y
Turbidity (NTU)	Y	Y
SS (mg/L)	Y	Y

9/2/2009	
Y	Y
Y	Y
Y	Y

9/4/2009	
Y	Y
Y	Y
Y	Y

9/4/2009	
Y	Y
N	N
Y	Y

Within Limit Level ?

Date	9/2/2009	
D.O. (mg/L)	Y	Y
Turbidity (NTU)	Y	Y
SS (mg/L)	Y	Y

9/2/2009	
Y	Y
Y	Y
Y	Y

9/4/2009	
Y	Y
Y	Y
Y	Y

9/4/2009	
Y	Y
Y	Y
Y	Y

Annex J

Event / Action Plans for Air and Marine Water Quality Monitoring

Table J1 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.

Table J2 Event Action Plans for Water Quality

Event	Action			
	ET	IC(E)	ER	Contractor
Action level being exceeded by one sampling day	<ol style="list-style-type: none"> 1. Repeat in-situ measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IC(E) and Contractor; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IC(E) and Contractor; 6. (The above actions should be taken within 1 working day after the exceedance is identified) 7. Repeat measurement on next day of exceedance. 	<ol style="list-style-type: none"> 1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures. 4. (The above actions should be taken within 1 working day after the exceedance is identified) 	<ol style="list-style-type: none"> 1. Discuss with IC(E) on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented. 3. (The above actions should be taken within 1 working day after the exceedance is identified) 	<ol style="list-style-type: none"> 1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET and IC(E) and propose mitigation measures to IC(E) and ER; 6. Implement the agreed mitigation measures. 7. (The above actions should be taken within 1 working day after the exceedance is identified)
Action level being exceeded by more than one consecutive sampling days	<ol style="list-style-type: none"> 1. Identify source(s) of impact; 2. Inform IC(E) and Contractor; 3. Check monitoring data, all plant, equipment and Contractor's working methods; 4. Discuss mitigation measures with IC(E) and Contractor; 5. Ensure mitigation measures are implemented; 6. Prepare to increase the monitoring frequency to daily; 7. (The above actions should be taken within 1 working day after the exceedance is identified) 8. Repeat measurement on next working day of exceedance. 	<ol style="list-style-type: none"> 1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures. 4. (The above actions should be taken within 1 working day after the exceedance is identified) 	<ol style="list-style-type: none"> 1. Discuss with IC(E) on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented; 3. Assess the effectiveness of the implemented mitigation measures. 4. (The above actions should be taken within 1 working day after the exceedance is identified) 	<ol style="list-style-type: none"> 1. Inform the Engineer and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET and IC(E) and propose mitigation measures to IC(E) and ER within 3 working days; 6. Implement the agreed mitigation measures. 7. (The above actions should be taken within 1 working day after the exceedance is identified)

Event	Action			
	ET	IC(E)	ER	Contractor
Limit level being exceeded by one sampling day	<ol style="list-style-type: none"> 1. Repeat in-situ measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IC(E), contractor and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IC(E), ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit level. 8. (The above actions should be taken within 1 working day after the exceedance is identified) 	<ol style="list-style-type: none"> 1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures. 4. (The above actions should be taken within 1 working day after the exceedance is identified) 	<ol style="list-style-type: none"> 1. Discuss with IC(E), ET and Contractor on the proposed mitigation measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Assess the effectiveness of the implemented mitigation measures. 5. (The above actions should be taken within 1 working day after the exceedance is identified) 	<ol style="list-style-type: none"> 1. Inform the Engineer and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET , IC(E) and ER and propose mitigation measures to IC(E) and ER within 3 working days; 6. Implement the agreed mitigation measures. 7. (The above actions should be taken within 1 working day after the exceedance is identified)
Limit level being exceeded by more than one consecutive sampling days	<ol style="list-style-type: none"> 1. Identify source(s) of impact; 2. Inform IC(E), contractor and EPD; 3. Check monitoring data, all plant, equipment and Contractor's working methods; 4. Discuss mitigation measures with IC(E), ER and Contractor; 5. Ensure mitigation measures are implemented; 6. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days. 7. (The above actions should be taken within 1 working day after the exceedance is identified) 	<ol style="list-style-type: none"> 1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures. 4. (The above actions should be taken within 1 working day after the exceedance is identified) 	<ol style="list-style-type: none"> 1. Discuss with IC(E), ET and Contractor on the proposed mitigation measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Assess the effectiveness of the implemented mitigation measures; 5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the marine work until no exceedance of Limit level. 6. (The above actions should be taken within 1 working day after the exceedance is identified) 	<ol style="list-style-type: none"> 1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET , IC(E) and ER and propose mitigation measures to IC(E) and ER within 3working days; 6. Implement the agreed mitigation measures; 7. As directed by the Engineer, to slow down or to stop all or part of the marine work or construction activities. 8. (The above actions should be taken within 1 working day after the exceedance is identified)

Annex K

Summary of Implementation Status

Annex K - 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 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.
3.2	Baseline Monitoring Report	One week before the commencement of construction	

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 started on 20 April 2009 and completed on 4 September

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.		2009.
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	√. Silt screens have been reinstalled at seawater intakes before 20 April 2009. Silt curtains are removed from the water intakes after extraction of temporary marine piles have been completed.
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	Δ

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	√

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	Δ

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 L

Waste Flow Table

HKCEC – Expansion Project

Name of Project Proponent: HKTDC

Project Commencement Date: 1 Aug 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	Disposal	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															
November															
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.