ENVIRONMENTAL MONITORING & AUDIT REPORT

Hip Hing – Ngo Kee Joint Venture

Hong Kong Convention and Exhibition Centre Expansion Project:
Monthly Environmental Monitoring and Audit Report for December 2007

January 2008

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

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January 2008

Reference 0050690

For and on behalf of
Environmental Resources Management

Approved by: Dr Robin Kennish

Signed:

Position: Director

Certified by:
(Environmental Team Leader – Marcus Ip)

Date: 14 January 2007

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傳眞 : (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/it

11 January 2008

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 Center Expansion Project
Monthly EM&A Report for December 2007
(Environmental Permit No. EP-239/2006/A)

With reference to the captioned document concerning the Monthly EM&A report for December 2007 received from ERM dated 10 January 2008, we are pleased to provide our verification for the document pursuant to condition 3 of the Environmental Permit (EP) No. EP-239/2006/A.

Yours faithfully,
Nature & Technologies (HK) Limited

Ir Dr Gabriel C K Lam
Managing Director

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)

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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 seventeenth monthly Environmental Monitoring and Audit (EM&A) report presenting the EM&A works carried out during the period from 1 December 2007 to 31 December 2007 in accordance with the EM&A Manual.

Summary of Construction Works undertaken during the Reporting month

The major construction works undertaken during the reporting month included the construction of RC Column, the removal of Level 5 slabs, Transfer Truss installation, Roof Truss A and B Assembly, pile cap construction, construction works for Tx. Room and sea water pump house cable laying.

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
Additional Water Quality Monitoring	7 Sets
Environmental site auditing	4 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 the reporting month. There were no exceedances recorded during the reporting month.

Water Quality

Additional water quality monitoring for the dry season has commenced on the 19 November 2007 and was completed on 14 December 2007. Seven sets of water monitoring were carried out at the designated monitoring stations (C1, C2 and M1). Two exceedances of Limit Level of TIN were recorded during the reporting month. Results of the investigations indicated that the exceedances were likely due to natural fluctuation rather than Project works.

Construction Waste Management

The major construction activities undertaken in the reporting month were the construction of pile cap, the installation of Roof Truss A and B and the removal of Level 5 slabs,

A total of 297 tonnes of inert C&D materials and 92.52 tonnes of C&D wastes were generated during the 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.

Environmental Site Auditing

Four 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 the reporting month.

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

Future Key Issues

Major works to be undertaken in the coming month are the installation and assembly of transfer truss, pile cap construction and the removal of existing structure at Transformer Room.

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

1 INTRODUCTION

ERM-Hong Kong, Limited (ERM) was appointed by Hip Hing – Ngo Kee 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 seventeenth EM&A report which summarises the impact monitoring results and audit findings of the EM&A programme during the reporting month from **1 December 2007** to **31 December 2007**.

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 PROJECT INFORMATION

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. Under the requirements of Condition 3.1 of Environmental Permit EP-239/2006/A, 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 and are scheduled to be completed by March 2009.

2.2 SITE DESCRIPTION

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

2.3 CONSTRUCTION ACTIVITIES

A summary of the major construction activities undertaken in this reporting 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
• Construction of RC Column • Removal of Level 5 slabs • Transfer Truss Installation • Roof Truss A Assembly • Roof Truss B Assembly • Pile Cap Construction • Construction works for Transformer Room • Sea Water Pump House Cable Laying

2.4 PROJECT ORGANISATION

The Project organisation 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/A	Throughout the Contract	Environmental Permit (EP) EP-239/2006 granted originally on 12 May 2006 but superseded by revised EP issued on 12 February 2007
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/XY0145	N/A	-

Permit/ Licenses/ Notification	Reference	Validity Period	Remarks
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-RS0692-07	Valid from 31 October 2007 to 31 January 2008	
	GW-RS0667-07	Valid from 16 October 2007 to 15 April 2008	
	GW-RS0674-07	Valid from 1 November 2007 to 30 April 2008	
	GW-RS0691-07	Valid from 30 April 2007 to 30 April 2008	
	GW-RS0766-07	Valid from 30 November 2007 to 29 February 2008	

3 ENVIRONMENTAL MONITORING METHODOLOGY

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, μg/m³	Limit Level, μg/m³
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-5025 A
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-5025 A

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-Test Consultant 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-Test Consultant 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 m^3/min. The range specified in the EM&A Manual was between 0.6 – 1.7 m^3/min;
- the programmable timer was set for a sampling period of 24 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-Test Consultant 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 were calibrated using an orifice calibrator. Initial calibration of the dust monitoring equipments were conducted upon installation and prior to commissioning. Five-point calibration was carried out for HVS's using Tisch TE-5025 A 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 is presented in *Annex J*.

3.2 *WATER QUALITY MONITORING*

3.2.1 *Water Quality Monitoring*

In accordance with the EM&A Manual, the marine water quality monitoring should be conducted at three designated monitoring stations during the installation and removal of temporary marine piles. The installation of temporary marine piles was completed on 23 April 2007 and therefore water quality monitoring for marine pile installation works was not conducted during the reporting month.

3.2.2 *Additional Water Quality Monitoring*

As part of the Application for Variation of Environmental Permit (Application No. VEP-227/2007) submitted on 25 January 2007, the Permit Holder undertook additional water quality monitoring in the marine channel in connection with the installation of temporary marine piles.

The installation of temporary marine piles was completed on 23 April 2007 and four weeks of additional water quality monitoring was also completed on 21 May 2007 after the completion of marine piling works. In accordance with the additional water quality programme which was submitted to the EPD on 4 April 2007, four weeks of additional water quality monitoring during the dry season commenced on 19 November 2007 and was completed on 14 December 2007.

The following section describes the details of the additional water quality monitoring programme.

Monitoring Locations

Two control stations and an impact monitoring station were selected for the collection of data on water quality within and outside the marine channel. The locations of the control stations and the impact monitoring station are presented in *Table 3.5* and *Annex D*.

Table 3.5 Monitoring Stations for Additional Water Quality Monitoring Programme

Station	Location	Monitoring Water Depth	Easting	Northing
C1(1)	Adjoins Expo Drive	Surface, middle and bottom	835645	815900
C2(2)	Adjoins Expo Drive East	Surface, middle and bottom	836014	815926
M1(3)	Approximately at the centre of the marine channel	Surface, middle and bottom	835852	815907

Station	Location	Monitoring Water Depth	Easting	Northing

Remark:
(1) C1 has been assigned the upstream station during mid-ebb tide with reference to the flow pattern within and in the vicinity of the marine channel.
(2) C2 has been assigned the upstream station during mid-flood tide with reference to the flow pattern within and in the vicinity of the marine channel.
(3) Taking into account the foreseeable difficulty in accessing the exact centre of the marine channel, monitoring station M1 was chosen to be the same location as W3 under the current monitoring programme but outside the silt screen.

Monitoring Schedule and Requirement

The additional water quality monitoring was conducted in accordance with *Table 3.6* during the dry season after the completion of the installation of the temporary marine piles at the proposed monitoring stations listed in *Table 3.5*. The monitoring programme for the reporting and following month is shown in *Annex E*.

Table 3.6 also summarises the monitoring frequency and water quality parameters adopted for the reporting month. Duplicate in-situ measurements and water samples for testing suspended solids (SS), and one water sample for testing total inorganic nitrogen (TIN) were taken for each sampling event.

Table 3.6 Additional Water Quality Monitoring Frequency and Parameters

Activity	Monitoring Frequency	Monitoring Parameters
During the installation of temporary marine piles	Three days per week at mid-flood and mid-ebb tides	Dissolved Oxygen (DO), Turbidity, Suspended Solid (SS), Total Inorganic Nitrogen (TIN)
Four-week monitoring immediately after the completion of the installation of the temporary marine piles	Three days per week at mid-flood and mid-ebb tides	Dissolved Oxygen (DO), Turbidity, Suspended Solid (SS), Total Inorganic Nitrogen (TIN)
Four-week monitoring during the dry season after the completion of the installation of the temporary marine piles	Three days per week at mid-flood and mid-ebb tides	Dissolved Oxygen (DO), Turbidity, Suspended Solid (SS), Total Inorganic Nitrogen (TIN)

Measurements were taken at three water depths, namely 1 m below water surface, mid-depth and 1 m above sea bed, except where the water depth is less than 6 m, in which case the mid-depth sample was omitted. Where the water depth was less than 3 m, monitoring was undertaken only at mid-depth.

Monitoring Equipment and Methodology

<u>Dissolved oxygen and temperature measuring equipment</u>

A portable and weatherproof dissolved oxygen (DO) measuring meter (YSI Model 85) was used in the impact monitoring.

The DO measuring meter has a membrane electrode with automatic temperature compensation complete with a 50-feet 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 as the 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 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) together with a suitably scaled map was used for locating the 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 water quality monitoring. The calibration records for the monitoring instruments are given in *Annex H*.

Laboratory Measurement / Analysis

Water samples for laboratory analyses under the additional water quality monitoring programme were collected following the same procedures described in *Section 3.2.4* for SS. The laboratory analyses were conducted within 24 hours after the collection of the water samples by ETS-Testconsult

[1] American Public Health Association Standard Methods for the Examination of Water and Wastewater.

Ltd (HOKLAS accredited laboratory) in accordance with the analytical methods presented in *Table 3.7*. The Quality Assurance/Quality Control (QA/QC) procedures were followed as per HOKLAS requirements.

Table 3.7 Analytical Methods for Water Quality Parameters Monitored

Water Quality Parameter	Analytical Method	Detection Limit
Suspended Solids (SS)	APHA(1) 2540D or HOKLAS-accredited method	1 mgL^{-1}
Total Inorganic Nitrogen (TIN)	APHA(1) 4500 – NO_3^- F & NH_3 G or HOKLAS-accredited method	0.1 mgL^{-1}

Remark:
(1) American Public Health Association (APHA) *Standard Methods for the Examination of Water and Wastewater*, 19th edition

Action and Limit Levels

The Action and Limit levels were established in accordance with the EM&A Manual and are presented in *Table 3.8*.

Table 3.8 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

3.2.3 Event / Action Plan

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

4 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 November 2007 was submitted to the EPD on 20 December 2007.

5 MONITORING RESULTS

5.1 AIR QUALITY

The monitoring data at AM1 and AM2 were provided by ETS-Testconsult Ltd. Five sets of 24-hour and sixteen sets of 1-hour TSP monitoring were carried out at the designated monitoring stations (AM1 & AM2) during the reporting month. The monitoring data for 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).

The weather condition during the monitoring period was sunny. The local impacts observed near the monitoring stations were mainly vehicle emissions along Convention Avenue and Fleming Road.

5.2 WATER QUALITY

Water quality monitoring for marine pile installation works was not conducted during the reporting month at the designated monitoring stations (W3, W4 and W5) subsequent to the completion of installation of marine piles on 23 April 2007.

Additional dry-season water quality monitoring for the marine channel with piles installed has commenced on 19 November 2007 and was completed on 14 December 2007. Seven sets of water quality measurements were carried out at the designated monitoring station C1, C2 and M1 during the reporting month.

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).

Two exceedances of TIN level at the monitoring station M1 were recorded during the reporting month and was summarised in *Table 5.1*. Notifications of Exceedances with detailed investigation reports was issued to the IEC and EPD immediately when the exceedances were identified.

Table 5.1 Summary of Record of Exceedanace recorded during the Reporting Month

Station	Record of Exceedance
M1	Exceedance of Action Level of TIN on 7 December 2007 during mid-ebb and mid-flood tides
M1	Exceedance of Action Level of TIN on 10 December 2007 during mid-flood tide

Exceedances of Action Level of TIN were recorded on 7 and 10 December 2007. Steel roof truss was being erected in the vicinity of Station M1 during the time of monitoring. No liquid effluent was observed to be discharged

from the site to the water channel. The TIN level for 10 December 2007 at M1 during mid-flood continued to exceed the action level for one instance. However, both the mid-ebb and mid-flood TIN levels returned to compliance during subsequent monitoring. The measured TIN levels of the water samples taken on 12 December 2007 at Station M1 during mid-ebb and mid-flood tides were 0.94 and 0.93 mgL^{-1} respectively, representing compliance of the Action Levels derived based on 120% of the TIN levels recorded at the control stations for the respective tides (ie 1.07 mgL^{-1} at Station C1 for mid-ebb tide and 1.08 mgL^{-1} at Station C2 for mid-flood tide). It is considered that the exceedances were likely due to natural fluctuation rather than Project works.

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 – Ngo Kee 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 5.2*. 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

	Quantity		
Month / Year	**C&D Materials (inert) [(a)]**	**C&D Materials (non-inert) [b)]**	**Chemical Waste**
December 2007	297 tonnes	92.52 tonnes (excluding 0.5 tonnes of steel materials which were collected and recycled)	0

Notes:
(a) Inert C&D materials include bricks, concrete, building debris, rubble and excavated soil. 0.5 tonne of inert C&D materials was reused in this Project. 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. Four site inspections were conducted on 6, 13, 20 and 27 December 2007. There was no non-compliance event recorded in the reporting month.

The following reminders were given to the Contractor:

(i) Oil stains were observed on the marine platform. The Contractor was reminded to implement appropriate measures to prevent oil spillage/leakage on site.

(ii) The catchpit and the perimeter channel near Gate 4 were flooded with water. The Contractor was reminded to maintain the proper functioning of the site drainage system.

Water Discharge Sampling

In accordance with the discharge licence issued under WPCO, water sampling should be conducted quarterly to ensure the quality of treated effluent at three designated discharge points complies with the requirements of discharge license. Two water samples at Discharge Point 2 and Discharge Point 3 were taken on 13 December 2007. *Table 6.1* shows that the effluent discharged from the Project was in compliance with the discharge limit stipulated in the Water Discharge License. The laboratory testing reports of the water sampling and the map showing the locations of discharge points are presented in *Annex N*.

Table 6.1 Results of Water Discharge Sampling

Sampling Location	Parameter	Test Result	Discharge Limit
Discharge Point 2 (H200605 WT-25)	pH	8.3	6-9
	Total Suspended Solids (TSS) Dried at 103-105°C (mg/L)	<7	≤30
	Chemical Oxygen Demand (COD) (mgO_2/L)	<50	≤80
Discharge Point 3 (H200605 WT-21)	pH	8.1	6-9
	Total Suspended Solids (TSS) Dried at 103-105°C (mg/L)	2.9	≤30
	Chemical Oxygen Demand (COD) (mgO_2/L)	<50	≤80

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 with 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 the reporting period.

Two exceedances of the Limit Level of TIN were recorded at the monitoring station M1 during the reporting period. Details of the exceedances have been provided in *Table 5.1*.

7.2 SUMMARY OF ENVIRONMENTAL NON-COMPLIANCE

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

7.3 SUMMARY OF ENVIRONMENTAL COMPLAINT

No complaint was received during the reporting month.

7.4 SUMMARY OF ENVIRONMENTAL SUMMONS AND PROSECUTION

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

8 FUTURE KEY ISSUES

8.1 KEY ISSUES FOR THE COMING MONTH

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

Table 8.1 Construction Works to be Undertaken in the Coming Month

Work to be taken
• Transfer Truss Installation
• Roof Truss A Assembly
• Roof Truss B Assembly
• Pile Cap Construction
• Removal of Existing Structure at Transformer Room

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.

The installation of temporary marine piles was completed on 23 April 2007 and four weeks of additional water quality monitoring was also completed on 21 May 2007 after the completion of marine piling works. Four weeks of additional water quality for the dry season commenced on 19 November 2007 and were completed on 14 December 2007.

The construction programme for the next three months is presented in *Annex M*.

9 REVIEW OF THE EM&A DATA AND EIA PREDICTIONS

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 Stations	Corresponding ASR in EIA	HKAQO, ug/m^3	Measured 24 hour TSP Monitoring Results, ug/m^3 (2)	
		24 hour (1)	Average	Range
AM1	AM8	260	80	23 – 145
AM2	AM6	260	72	14 - 145

Remarks:

(1) Only 24 hours TSP monitoring results were compared as there is no maximum allowable concentration of 1 hour TSP in HKAQO.

(2) Average and range of data were calculated for the period of monitoring between August 2006 and the reporting month.

The monitoring results show that the 24-hour TSP levels during the reporting month were well below the maximum allowable concentration stipulated in the HKAQO. Recommended mitigation measures in *Section 4.24* of EIA were implemented during the reporting month and were considered effective.

9.2 WASTE MANAGEMENT

The estimated amount of waste generated in this Project and the quantities of waste generated during the 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 reporting month and regarded as effective.

Table 9.2 Comparison of the Estimated and Actual Amount of Waste Generated

Type of Material	Estimated Amount of C&D Materials in EIA (inert & non-inert)	Actual Amount of C&D Materials Recorded(1) (inert & non-inert)
Demolition of temporary footbridge	585 tonnes	0
Demolition of existing Atrium Link	4,680 tonnes	2,459.5 tonnes
Demolition of temporary working platform	390 tonnes	0
Construction of foundations and pile caps	20,000 tonnes	18520.5 tonnes
General Refuse	Insignificant	983 tonnes
Chemical Waste	Small	288 Litres

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

9.3 CONCLUSION OF REVIEW

The EIA predictions and the monitoring results during the reporting month 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.

10 CONCLUSION

The Environmental Monitoring and Audit (EM&A) Report presents the EM&A work undertaken during the period from 1 December to 31 December 2007 in accordance with EM&A Manual and the requirements under EP-239/2006/A.

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

Two exceedances of Limit Level of TIN were recorded during the reporting month. Results of investigation indicated that the exceedances were likely due to natural fluctuation or related to other project works rather than Project works.

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

No complaint and summons/prosecution was received during the 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

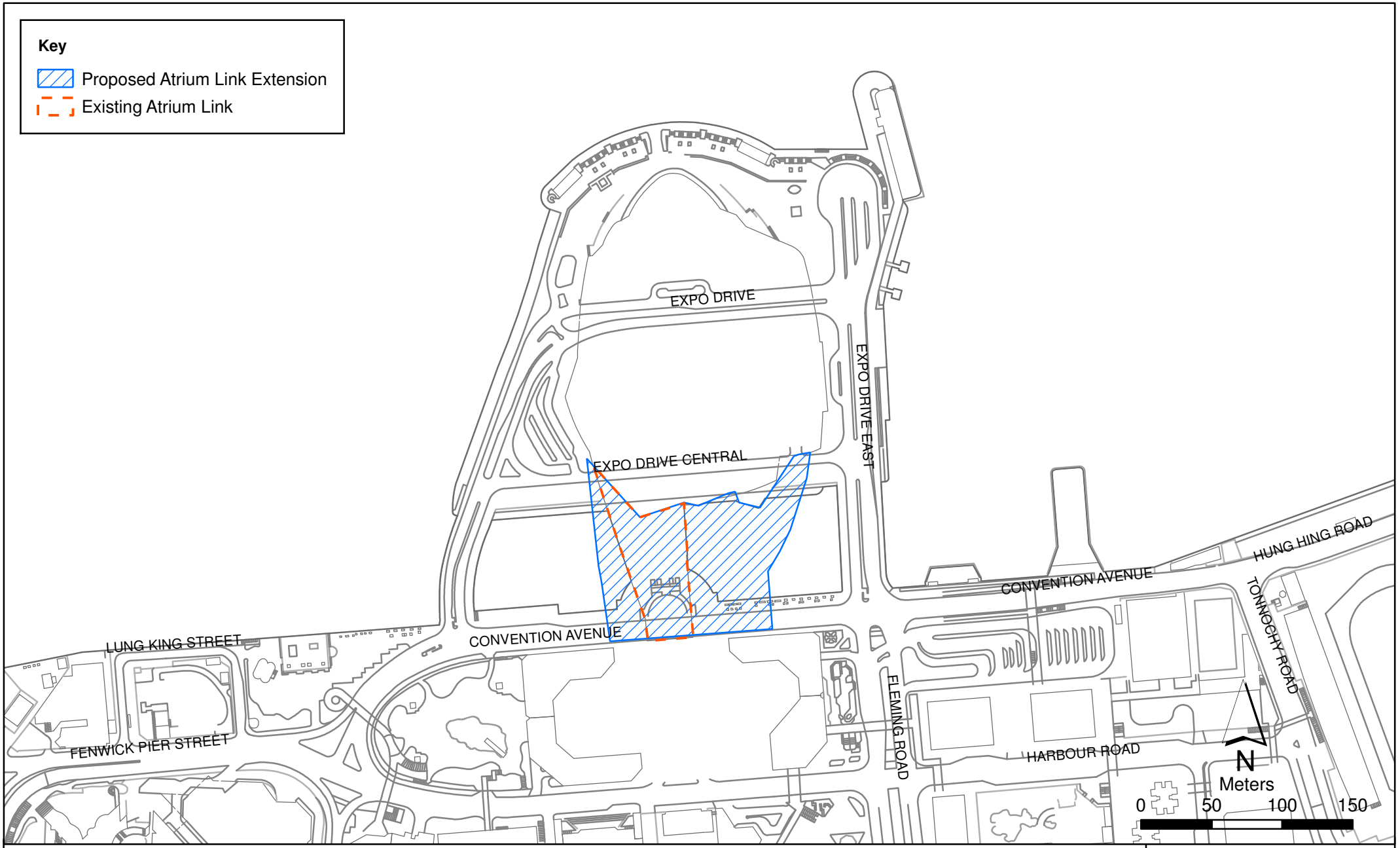


Figure A1

Location of Atrium Link Extension

File: 0050690_4.mxd
Date: 11/09/2006

Environmental Resources Management

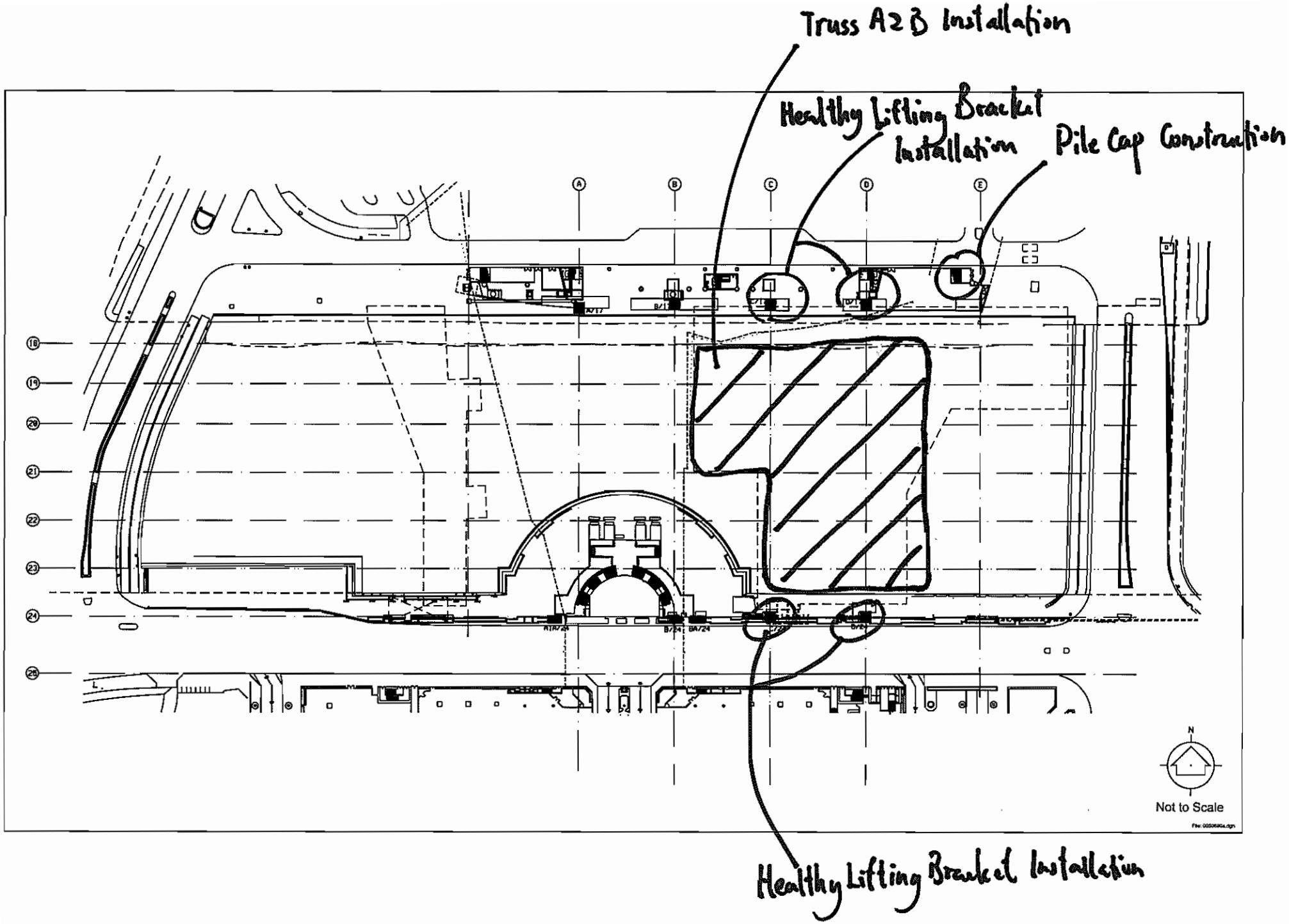
ERM

Annex B

Location of Construction Activities during the Reporting Month

Summary of Works for December 2007

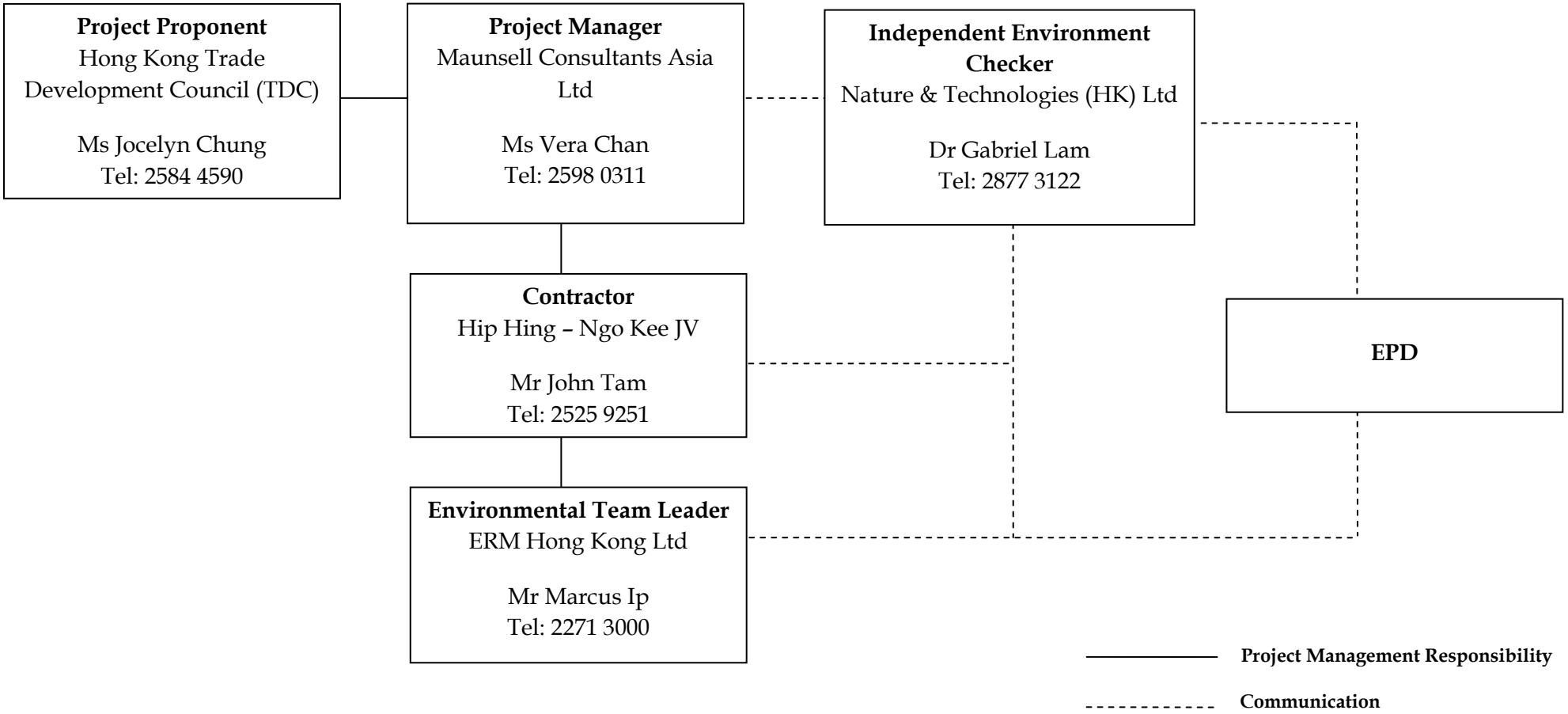
Description	Location
Construction of R.C. column	Grid E/17
Removal of Level 5 slabs	Grid 17-21
Transfer Truss Installation	GridA-B/24
Roof Truss A Assembly	Grid C
Roof Truss B Assembly	Grid D
Pile Cap Construction	Grid E/17a
Construction works for Tx. Room	Li, Phase II
Sea Water Pump House Cable Laying	Li, Phase II


Truss A2B Installation
Healthy Lifting Bracket Installation
Pile Cap Construction
Healthy Lifting Bracket Installation
A
B
C
D
E
18
19
20
21
22
23
24
26
N
Not to Scale

Annex C

Project Organization Chart and Contact Detail

Project Organization (with contact details)



Annex D

Locations of Air and Water Quality Monitoring Stations

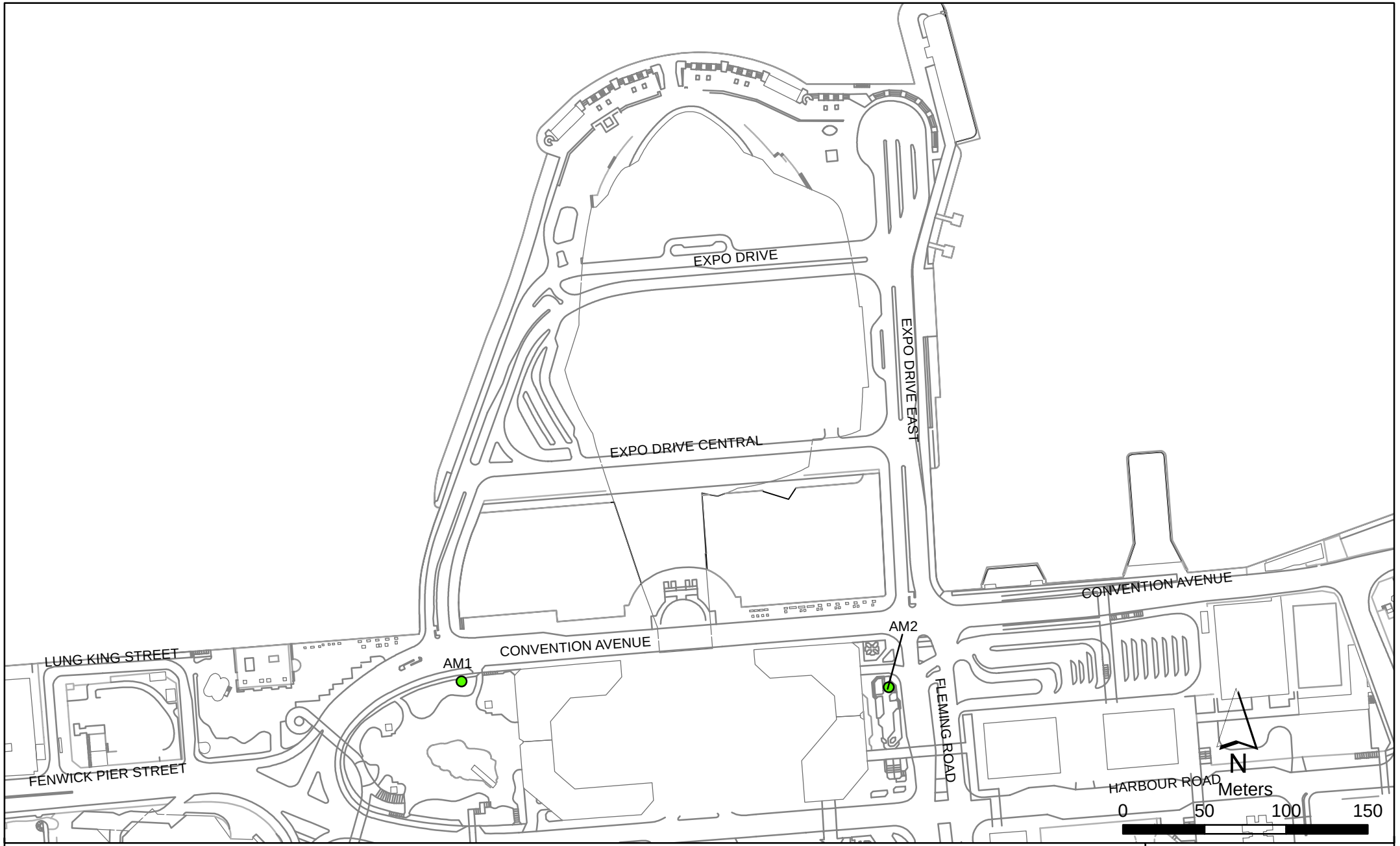


Figure D1

Air Quality Monitoring Station

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

Environmental Resources Management

ERM

Water Quality Monitoring Stations (inside Silt Screen)

Monitoring Station	*Description*	*Easting*	*Northing*
W3	Hong Kong Convention and Exhibition Centre Phase I	835852	815908
W4	Wan Chai Tower/Revenue Tower/Immigration Tower	835944	815885
W5	Great Eagle Centre/China Resources Building	835963	815886

Additional Water Quality Monitoring Stations

Monitoring Station	Description	EASTING	NORTHING
C1	Control Station 1	835645	815900
C2	Control Station 2	836014	815926
M1	Monitoring Station 1	835852	815907

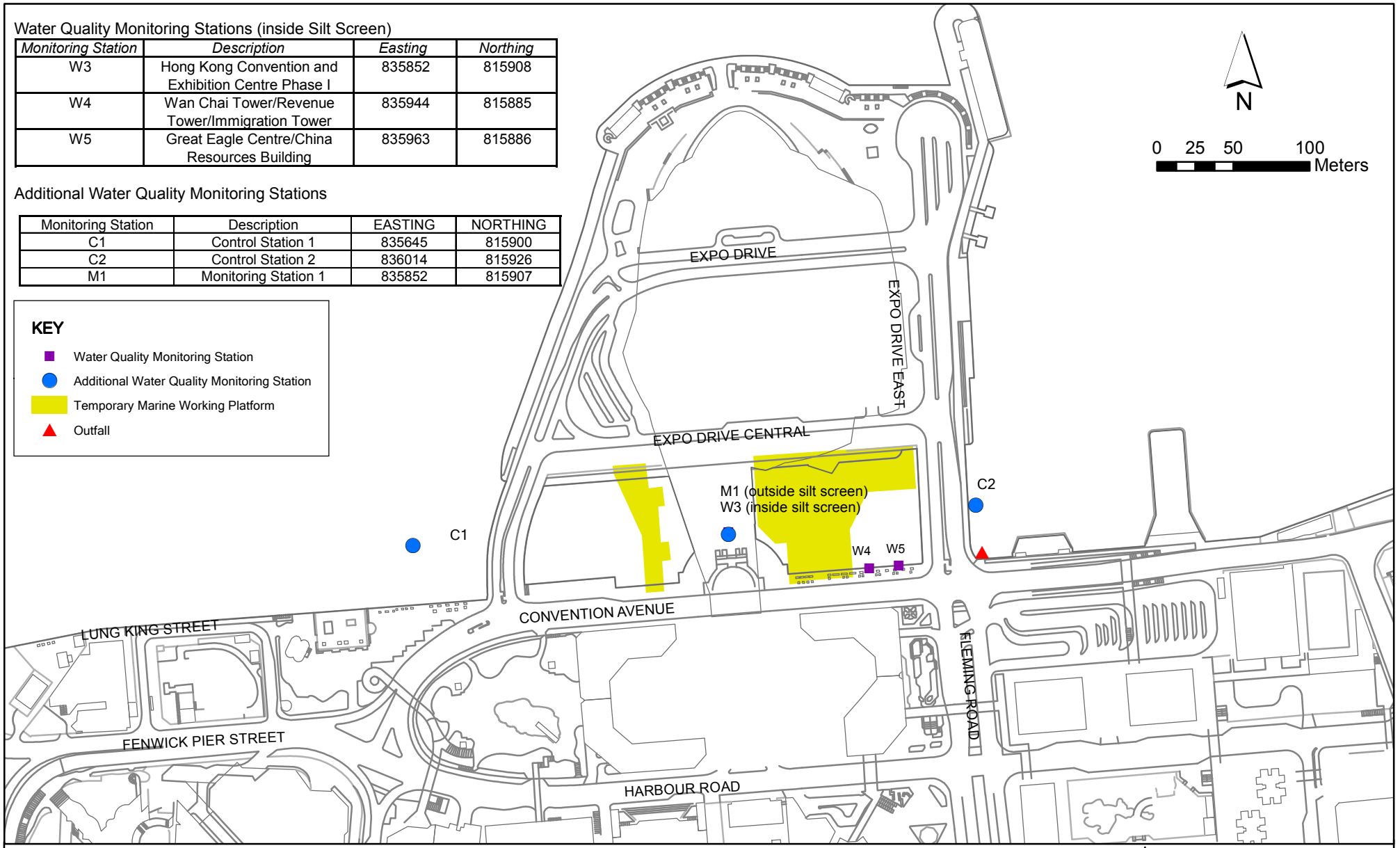


Figure D2

Marine Water Quality Monitoring Stations

File: 0050690_D2.mxd
Date: 30/04/2007

Environmental Resources Management

ERM

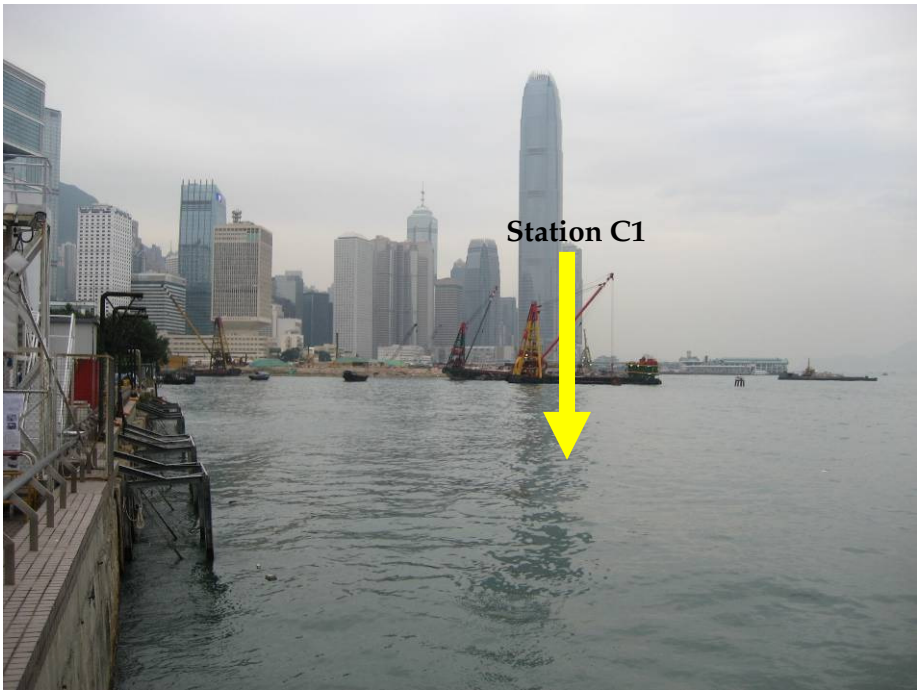
D1 AIR QUALITY MONITORING STATION

Air Quality Monitoring Station (AM1)

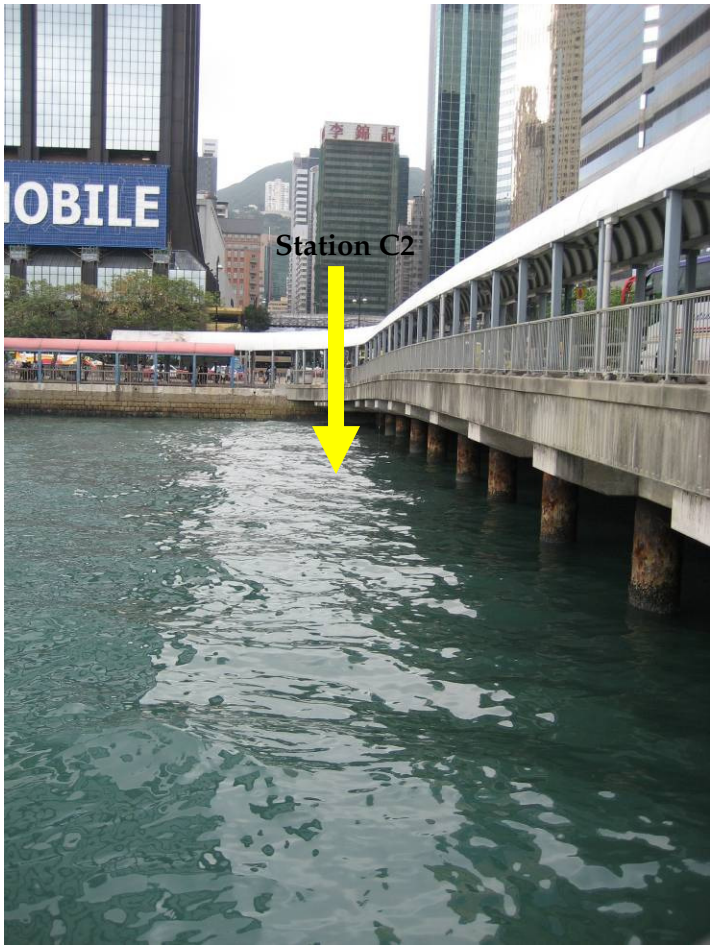
Air Quality Monitoring Station (AM2)

Water Quality Monitoring Location – Station W3

Water Quality Monitoring Location – Stations W4 and W5



Additional Water Quality Monitoring Location – Station C1



Additional Water Quality Monitoring Location – Station C2

Additional Water Quality Monitoring Location – Station M1

Annex E

Monitoring Schedule for the Reporting Period and Next Month

Hong Kong Convention and Exhibition Centre, Atrium Link Extension
Air Quality Monitoring Schedule - December 2007

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
02-Dec	03-Dec	04-Dec	05-Dec	06-Dec	07-Dec	08-Dec
	1 hr TSP	1 hr and 24 hr TSP	1 hr TSP		1 hr TSP	
09-Dec	10-Dec	11-Dec	12-Dec	13-Dec	14-Dec	15-Dec
	1 hr and 24 hr TSP		1 hr TSP		1 hr TSP	1 hr and 24 hr TSP
16-Dec	17-Dec	18-Dec	19-Dec	20-Dec	21-Dec	22-Dec
	1 hr TSP		1 hr TSP		1 hr and 24 hr TSP	
23-Dec	24-Dec	25-Dec	26-Dec	27-Dec	28-Dec	29-Dec
	1 hr TSP x 2			1 hr and 24 hr TSP	1 hr TSP	
30-Dec	31-Dec					
	1 hr TSP					

Hong Kong Convention and Exhibition Centre, Atrium Link Extension
Air Quality Monitoring Schedule - January 2008

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		01-Jan	02-Jan	03-Jan	04-Jan	05-Jan
			1 hr and 24 hr TSP		1 hr TSP	
06-Jan	07-Jan	08-Jan	09-Jan	10-Jan	11-Jan	12-Jan
	1 hr TSP	1 hr and 24 hr TSP	1 hr TSP		1 hr TSP	
13-Jan	14-Jan	15-Jan	16-Jan	17-Jan	18-Jan	19-Jan
	1 hr and 24 hr TSP		1 hr TSP		1 hr TSP	1 hr and 24 hr TSP
20-Jan	21-Jan	22-Jan	23-Jan	24-Jan	25-Jan	26-Jan
	1 hr TSP		1 hr TSP		1 hr and 24 hr TSP	
27-Jan	28-Jan	29-Jan	30-Jan	31-Jan		
	1 hr TSP		1 hr TSP	1 hr and 24 hr TSP		

Hong Kong Convention and Exhibition Centre, Atrium Link Extension
Water Quality Monitoring Schedule - December 2007

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						01-Dec
						Mid-ebb 05:30 Mid-flood 13:15
02-Dec	03-Dec	04-Dec	05-Dec	06-Dec	07-Dec	08-Dec
	Mid-ebb 07:23 Mid-flood 14:24		Mid-ebb 09:21 Mid-flood 15:23		Mid-ebb 10:49 Mid-flood 16:02	
09-Dec	10-Dec	11-Dec	12-Dec	13-Dec	14-Dec	15-Dec
	Mid-ebb 07:43 Mid-flood 12:37		Mid-ebb 09:00 Mid-flood 13:46		Mid-ebb 10:26 Mid-flood 15:11	
16-Dec	17-Dec	18-Dec	19-Dec	20-Dec	21-Dec	22-Dec
23-Dec	24-Dec	25-Dec	26-Dec	27-Dec	28-Dec	

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 : 26 October 2007

Serial No. : 9795 (ET / EA / 003 / 18)

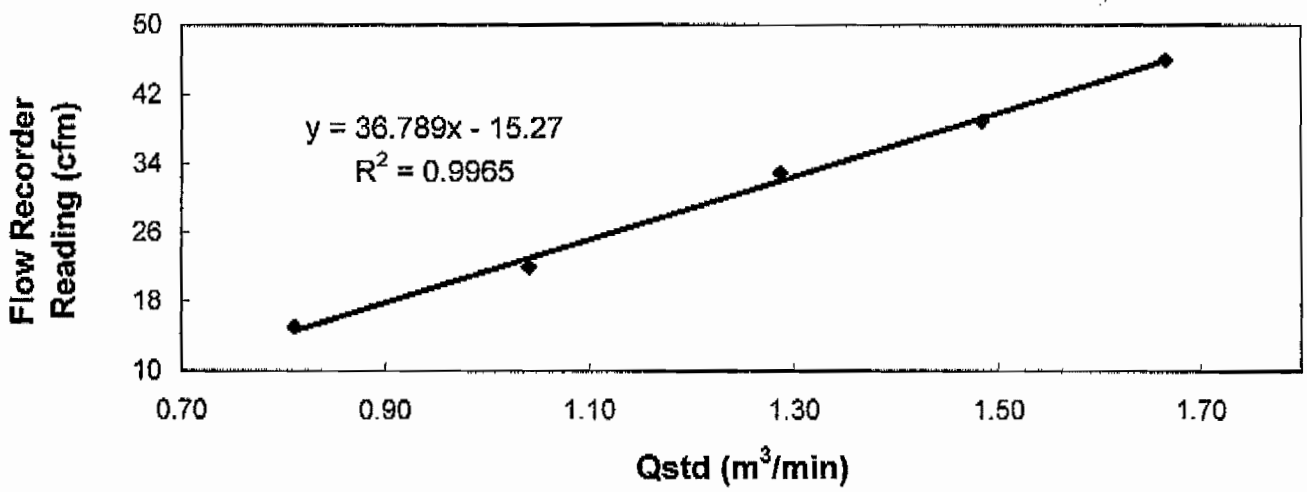
Calibration Due Date : 25 December 2007

Method : Based on Operations Manual for the 5-point calibration using standard calibration kit manufactured by Tisch TE-5025 A

Results :

Flow recorder reading (cfm)	46	39	33	22	15
Qstd (Actual flow rate, m^3/min)	1.67	1.48	1.29	1.04	0.81
Pressure : 763.56 mm Hg		Temp. : 301 K			

Sampler 9795 Calibration Curve
Site: Wan Chai (AM-2)
Date of Calibration: 26 October 2007



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

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

Calibrated by : Mak Kei Wai
(Senior Technician)

Approved by : H. T. CHOW
(Asst. Environmental Officer)

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED
8/F., Block B, Veristrong Industrial Centre, 34-36 Au Pui Wan Street, Fotan, Hong Kong
Tel : 2695 8318 E-mail : etl@ets-testconsult.com
Fax : 2695 3944 Web site : www.ets-testconsult.com

TEST REPORT

Calibration Report of High Volume Air Sampler

Manufacturer : Graseby GMW

Date of Calibration : 26 October 2007

Serial No. : 9864 (ET / EA / 003 / 19)

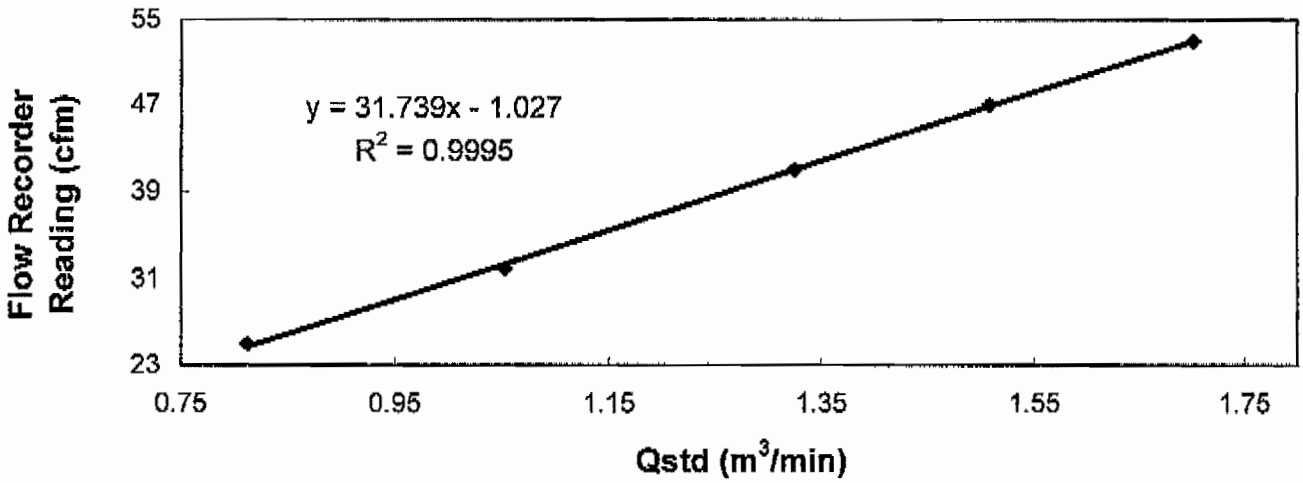
Calibration Due Date : 25 December 2007

Method : Based on Operations Manual for the 5-point calibration using standard calibration kit manufactured by Tisch TE-5025 A

Results :

Flow recorder reading (cfm)	53	47	41	32	25
Qstd (Actual flow rate, m^3/min)	1.70	1.51	1.32	1.05	0.81
Pressure : 763.56 mm Hg		Temp. : 301 K			

Sampler 9864 Calibration Curve
Site: Wan Chai (AM-1)
Date of Calibration: 26 October 2007



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

TEST REPORT

Calibration Report of High Volume Air Sampler

Manufacturer : Graseby GMW

Date of Calibration : 27 December 2007

Serial No. : 9864 (ET / EA / 003 / 19)

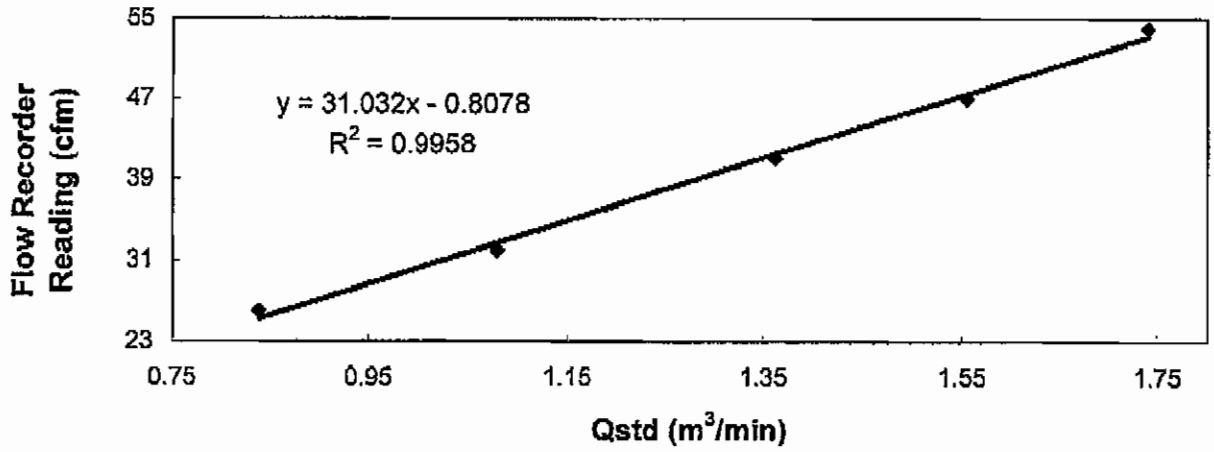
Calibration Due Date : 26 February 2007

Method : Based on Operations Manual for the 5-point calibration using standard calibration kit manufactured by Tisch TE-5025 A

Results :

Flow recorder reading (cfm)	54	47	41	32	26
Qstd (Actual flow rate, m^3/min)	1.74	1.55	1.36	1.08	0.84
Pressure : 764.31 mm Hg		Temp. : 293 K			

Sampler 9864 Calibration Curve
Site: Wan Chai (AM-1)
Date of Calibration: 27 December 2007



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

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TEST REPORT

Calibration Report of High Volume Air Sampler

Manufacturer : Graseby GMW

Date of Calibration : 27 December 2007

Serial No. : 9795 (ET / EA / 003 / 18)

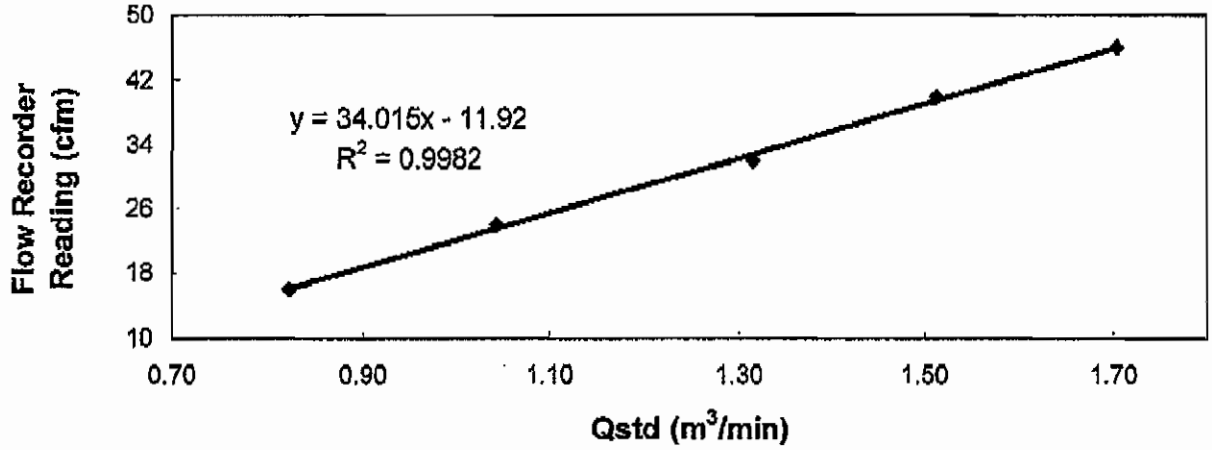
Calibration Due Date : 26 February 2008

Method : Based on Operations Manual for the 5-point calibration using standard calibration kit manufactured by Tisch TE-5025 A

Results :

Flow recorder reading (cfm)	46	40	32	24	16
Qstd (Actual flow rate, m^3/min)	1.70	1.51	1.31	1.04	0.82
Pressure : 764.31 mm Hg		Temp. : 293 K			

Sampler 9795 Calibration Curve
Site: Wan Chai (AM-2)
Date of Calibration: 27 December 2007



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

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

Calibrated by : Mak Kei Wai
(Senior Technician)

Approved by : H. T. CHOW
(Asst. 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. (^oC)	Particulate weight(g)	Av. flow (m^3/min)	Total vol. (m^3)
	Initial	Final	Initial	Final	Initial	Final							
04-Dec-07	2.7733	3.0227	1.29	1.29	12735.4	12759.4	24.0	134	Sunny	22	0.2494	1.29	1861.3
10-Dec-07	2.7060	2.8673	1.36	1.36	12762.4	12786.4	24.0	83	Sunny	22	0.1613	1.36	1952.2
15-Dec-07	2.8518	3.0851	1.29	1.29	12789.4	12813.4	24.0	125	Sunny	23	0.2333	1.29	1861.3
21-Dec-07	2.8515	3.0044	1.39	1.39	12816.4	12840.4	24.0	77	Sunny	21	0.1529	1.39	1997.6
27-Dec-07	2.8328	2.9635	1.12	1.12	12843.4	12867.4	24.0	81	Sunny	16	0.1307	1.12	1612.8

Min	77
Max	134
Average	100

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. (^oC)	Particulate weight(g)	Av. flow (m^3/min)	Total vol. (m^3)
	Initial	Final	Initial	Final	Initial	Final							
04-Dec-07	2.8092	3.0224	1.26	1.26	11063.7	11087.7	24.0	118	Sunny	22	0.2132	1.26	1811.1
10-Dec-07	2.6960	2.8446	1.50	1.50	11090.7	11114.7	24.0	69	Sunny	22	0.1486	1.50	2164.4
15-Dec-07	2.8431	3.0779	1.39	1.39	11117.7	11141.7	24.0	117	Sunny	23	0.2348	1.39	2006.8
21-Dec-07	2.8449	2.9845	1.37	1.37	11144.7	11168.7	24.0	71	Sunny	21	0.1396	1.37	1966.8
27-Dec-07	2.8059	2.9488	1.35	1.35	11171.7	11195.7	24.0	74	Sunny	16	0.1429	1.35	1944.0

Min	69
Max	118
Average	90

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	Conc.	Weather	Ave. Air	Particulate	Av. flow	Total vol.
	Initial	Final	Initial	Final	Initial	Final	Time(hrs.)	(μg/m^3)	Condition	Temp. (^oC)	weight(g)	(m^3/min)	(m^3)
03-Dec-07	2.7341	2.7455	1.07	1.07	12733.4	12734.4	1.0	177	Sunny	20	0.0114	1.07	64.3
04-Dec-07	2.7766	2.7905	1.04	1.04	12734.4	12735.4	1.0	223	Sunny	22	0.0139	1.04	62.4
05-Dec-07	2.8153	2.8357	1.39	1.39	12759.4	12760.4	1.0	245	Sunny	23	0.0204	1.39	83.2
07-Dec-07	2.7649	2.7848	1.07	1.07	12760.4	12761.4	1.0	309	Sunny	23	0.0199	1.07	64.3
10-Dec-07	2.7683	2.7780	1.01	1.01	12761.4	12762.4	1.0	160	Sunny	22	0.0097	1.01	60.6
12-Dec-07	2.7026	2.7088	1.04	1.04	12786.4	12787.4	1.0	99	Sunny	21	0.0062	1.04	62.4
14-Dec-07	2.7209	2.7332	1.04	1.04	12787.4	12788.4	1.0	197	Sunny	21	0.0123	1.04	62.4
15-Dec-07	2.9005	2.9096	0.98	0.98	12788.4	12789.4	1.0	155	Sunny	23	0.0091	0.98	58.7
17-Dec-07	2.8935	2.9037	1.04	1.04	12813.4	12814.4	1.0	163	Sunny	20	0.0102	1.04	62.4
19-Dec-07	2.8261	2.8418	1.04	1.04	12814.4	12815.4	1.0	251	Sunny	21	0.0157	1.04	62.4
21-Dec-07	2.8208	2.8313	1.01	1.01	12815.4	12816.4	1.0	173	Sunny	21	0.0105	1.01	60.5
24-Dec-07	2.8481	2.8585	1.04	1.04	12840.4	12841.4	1.0	167	Rainy	21	0.0104	1.04	62.4
24-Dec-07	2.8191	2.8288	1.04	1.04	12841.4	12842.4	1.0	155	Rainy	22	0.0097	1.04	62.4
27-Dec-07	2.8158	2.8202	1.19	1.19	12842.4	12843.4	1.0	62	Sunny	16	0.0044	1.19	71.2
29-Dec-07	2.8407	2.8508	1.06	1.06	12867.4	12868.4	1.0	159	Sunny	17	0.0101	1.06	63.4
31-Dec-07	2.8478	2.8559	1.09	1.09	12868.4	12869.4	1.0	124	Sunny	17	0.0081	1.09	65.4

Min	62
Max	309
Average	176

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	Conc.	Weather	Ave. Air	Particulate	Av. flow	Total vol.
	Initial	Final	Initial	Final	Initial	Final	Time(hrs.)	(μg/m^3)	Condition	Temp. (^oC)	weight(g)	(m^3/min)	(m^3)
03-Dec-07	2.7262	2.7373	1.28	1.28	11061.8	11062.8	1.0	144	Sunny	20	0.0111	1.28	77.1
04-Dec-07	2.7942	2.8086	1.26	1.26	11062.8	11063.7	1.0	193	Sunny	22	0.0144	1.26	74.7
05-Dec-07	2.7827	2.8076	1.50	1.50	11087.7	11088.7	1.0	276	Sunny	23	0.0249	1.50	90.1
07-Dec-07	2.7811	2.8072	1.42	1.42	11088.7	11089.7	1.0	309	Sunny	23	0.0261	1.42	84.4
10-Dec-07	2.7776	2.7904	1.42	1.42	11089.7	11090.7	1.0	150	Sunny	22	0.0128	1.42	85.2
12-Dec-07	2.7071	2.7144	1.34	1.34	11114.7	11115.7	1.0	91	Sunny	21	0.0073	1.34	80.4
14-Dec-07	2.7082	2.7218	1.31	1.31	11115.7	11116.7	1.0	173	Sunny	21	0.0136	1.31	78.7
15-Dec-07	2.8802	2.8908	1.31	1.31	11116.7	11117.7	1.0	135	Sunny	23	0.0106	1.31	78.7
17-Dec-07	2.8442	2.8557	1.31	1.31	11141.7	11142.7	1.0	146	Sunny	20	0.0115	1.31	78.7
19-Dec-07	2.8382	2.8581	1.31	1.31	11142.7	11143.7	1.0	253	Sunny	21	0.0199	1.31	78.7
21-Dec-07	2.8307	2.8408	1.28	1.28	11143.7	11144.7	1.0	131	Sunny	21	0.0101	1.28	77.1
24-Dec-07	2.8855	2.8946	1.26	1.26	11168.7	11169.7	1.0	121	Rainy	21	0.0091	1.26	75.5
24-Dec-07	2.8478	2.8577	1.31	1.31	11169.7	11170.7	1.0	126	Rainy	22	0.0099	1.31	78.7
27-Dec-07	2.8192	2.8289	1.35	1.35	11170.7	11171.7	1.0	120	Sunny	16	0.0097	1.35	81.0
29-Dec-07	2.8275	2.8369	1.32	1.32	11195.7	11196.7	1.0	119	Sunny	17	0.0094	1.32	79.2
31-Dec-07	2.8322	2.8469	1.35	1.35	11196.7	11197.7	1.0	181	Sunny	17	0.0147	1.35	81.0

Min	91
Max	309
Average	169

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 Humiditiy (%)	Total Rainfall (mm)	Wind Direction (Degree)	Average Wind Speed (km/h)
03-Dec-07	Sunny	20	58	0.0	100	8.9
04-Dec-07	Sunny	18	68	0.0	100	10.2
05-Dec-07	Sunny	18	66	0.0	100	8.9
07-Dec-07	Sunny	19	64	0.0	110	5.0
10-Dec-07	Sunny	24	77	0.0	110	10.2
12-Dec-07	Sunny	22	74	0.0	110	6.3
14-Dec-07	Sunny	19	76	0.0	100	11.8
15-Dec-07	Sunny	19	78	0.0	100	11.2
17-Dec-07	Sunny	21	72	0.0	120	4.5
19-Dec-07	Sunny	19	83	0.0	100	4.0
21-Dec-07	Sunny	21	79	0.0	100	10.8
24-Dec-07	Rainy	17	83	14.5	020	6.1
24-Dec-07	Rainy	17	83	14.5	020	6.1
27-Dec-07	Sunny	18	73	0.0	110	7.9
29-Dec-07	Sunny	18	63	0.0	020	8.5
31-Dec-07	Sunny	14	37	0.0	020	9.0

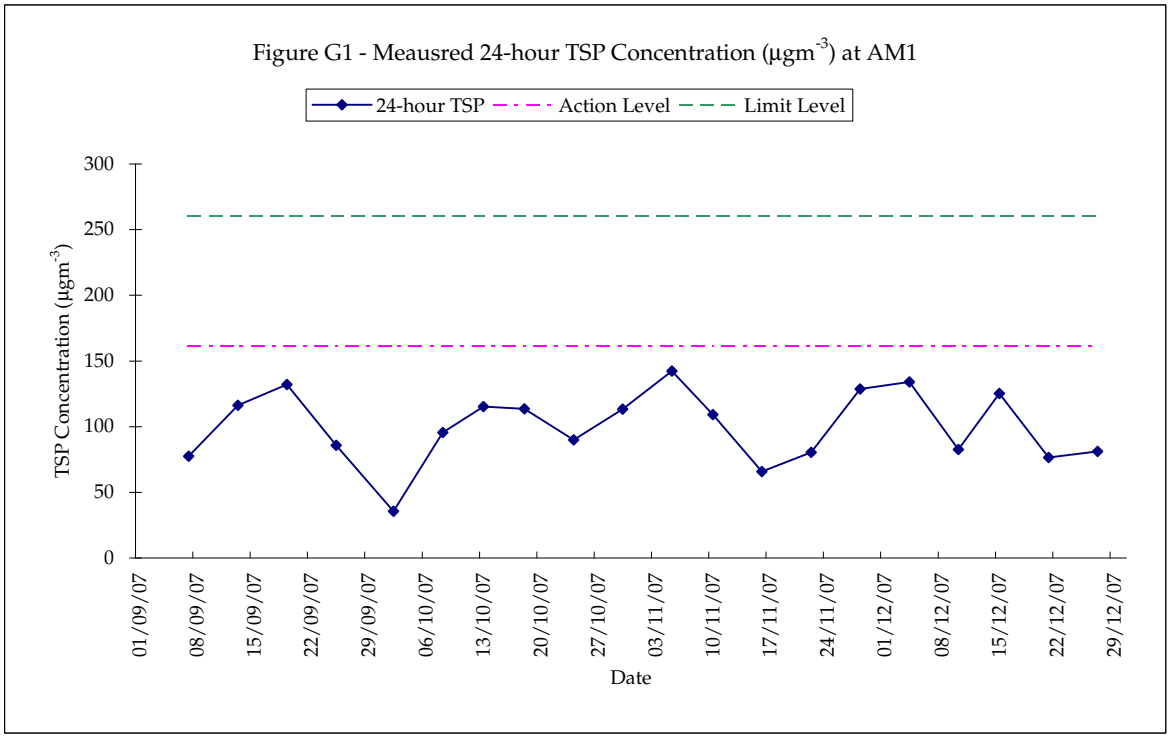


Figure G1 - Meausred 24-hour TSP Concentration (µgm-3) at AM1
24-hour TSP
Action Level
Limit Level
TSP Concentration (µgm-3)
300
250
200
150
100
50
0
01/09/07
08/09/07
15/09/07
22/09/07
29/09/07
06/10/07
13/10/07
20/10/07
27/10/07
03/11/07
10/11/07
17/11/07
24/11/07
01/12/07
08/12/07
15/12/07
22/12/07
29/12/07
Date

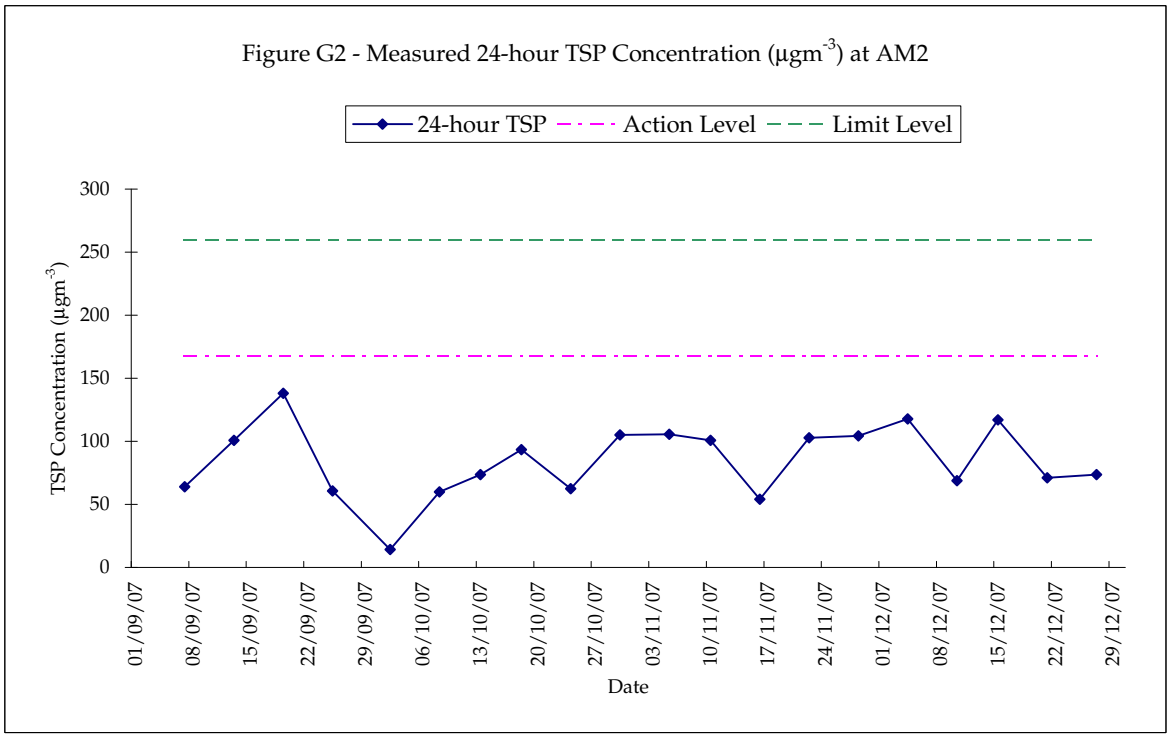


Figure G2 - Measured 24-hour TSP Concentration (µgm-3) at AM2
24-hour TSP
Action Level
Limit Level
TSP Concentration (µgm-3)
300
250
200
150
100
50
0
01/09/07
08/09/07
15/09/07
22/09/07
29/09/07
06/10/07
13/10/07
20/10/07
27/10/07
03/11/07
10/11/07
17/11/07
24/11/07
01/12/07
08/12/07
15/12/07
22/12/07
29/12/07
Date

Figure G3 - Meausred 1-hour TSP Concentration (μgm^{-3}) at AM1

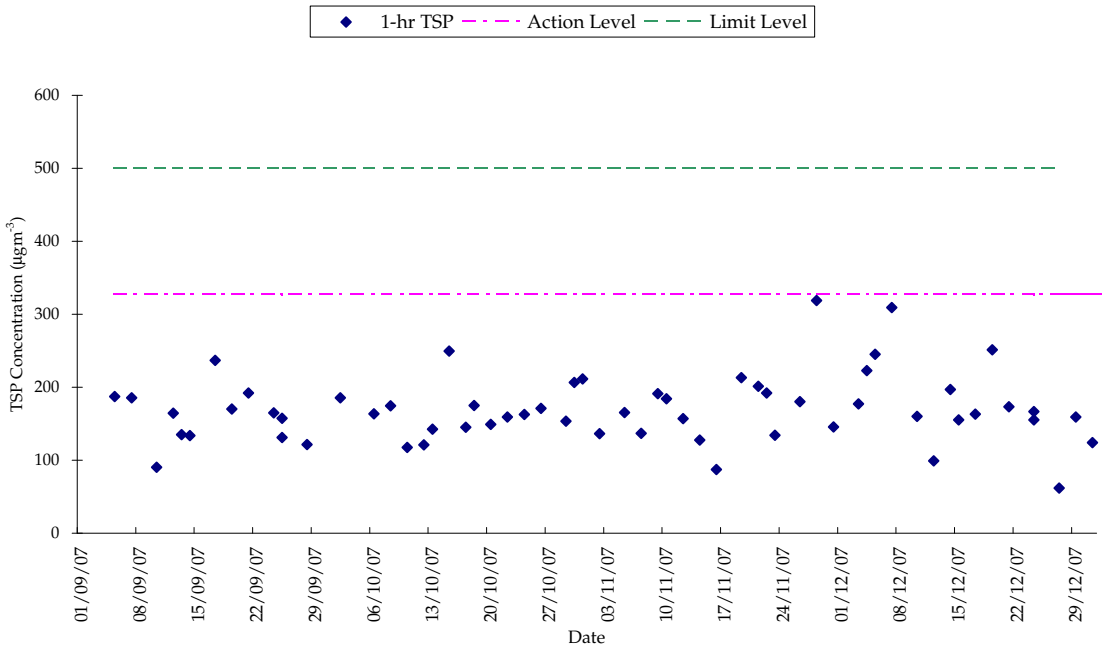
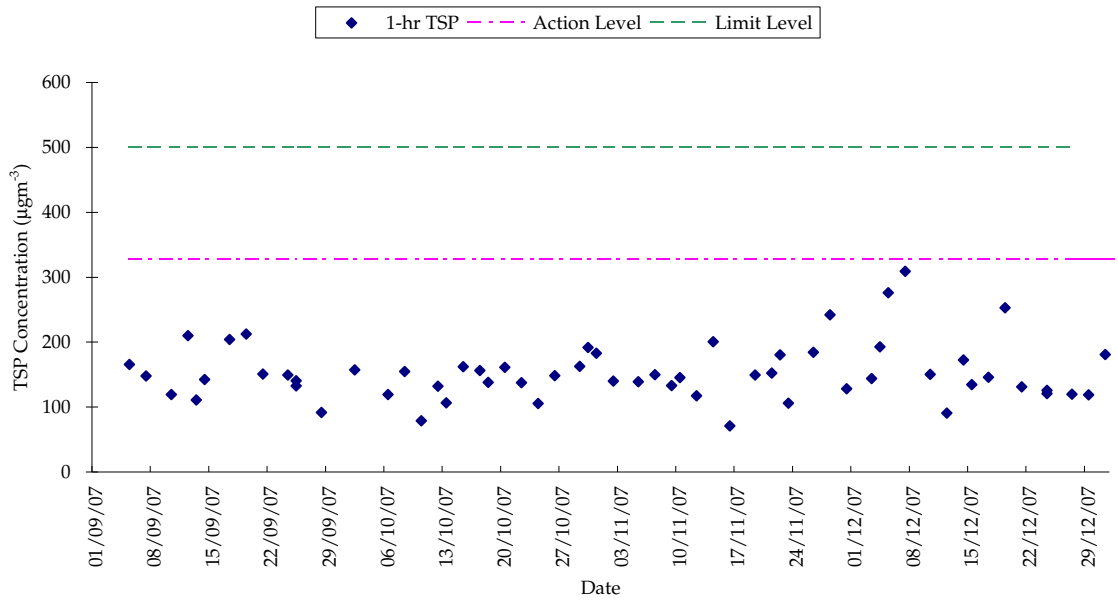


Figure G4 - Measured 1-hour TSP Concentration (μgm^{-3}) at AM2



Annex H

Calibration Certificates of Water Monitoring Equipment

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Performance Check of Salinity Meter

Equipment Ref. No.	: ET/EW/008/001	Manufacturer	: YSI
Model No.	: YSI 85	Serial No.	: 05L1285
Date of Calibration	: 15/11/07	Due Date	: 14/12/08

Ref. No. of Salinity Standard used (30ppt)	J196A

Salinity Standard (ppt)	Measured Salinity (ppt)	Difference %
30	29.5	1.7%

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 : _____

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Form E/CE/R/12 Issue 6 (1/1) [05/05]

Internal Calibration Report of Dissolved Oxygen Meter

Equipment Ref. No. :	ET/EW/008/001	Manufacturer :	YSI
Model No. :	85	Serial No. :	05L 1285
Date of Calibration :	15/11/07	Calibration Due Date :	14/2/08

Ref. No. of Reference Thermometer : ET/2403/01

Ref. No. of Potassium Dichromate : ET/0520/003/02

Temperature Verification

	Temperature (°C)
Thermometer reading	20.0
Meter reading	20.0

Lineality 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	7.05	7.07	7.06	7.16	7.14	7.15	1.27
5	5.21	5.23	5.22	5.15	5.13	5.14	1.54
10	3.13	3.15	3.14	3.05	3.07	3.06	2.58
Linear regression coefficient				0.9994			

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	7.21	7.23	7.22	7.17	7.15	7.16	0.83
30	6.14	6.12	6.13	6.25	6.23	6.24	1.78

Acceptance Criteria

(1) Differenc 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 : [signature]

Approved by : [signature]

CEP/012/W

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Internal Calibration Report of Turbidimeter

Equipment Ref. No. :	ET7080T/002	Manufacturer :	HACH
Model No. :	2100P	Serial No. :	930900003728
Date of Calibration :	24/10/07	Calibration Due :	23/01/08

Data

(4.95)	(49.0)	(409)
0 - 10 NTU Gelex Vial	10 - 100 NTU Gelex Vial	100 - 1000 NTU Gelex Vial
4.94 ~~4.49~~ 24/10/07	49.2	410

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

* Delete as appropriate

Calibrated by : _____ Approved by : _____

LABORATORY SHEET

Determination of nitrogen (ammonia) by using Segmented flow analyser

Information provided by client

Client : ERM-HK Ltd

Source : HKCEC
Sample Type : Sea water
Date Sampled : 10/12/07
No. of Sample : 18

Laboratory information

Lab Ref. No. : W 27642 (49-66)
Date Received : 10/12/07
W.I.No. : ENI 7/12/52
Dated Tested : 11/12/07
Test Method : In-house method TPE/016/W
Description : /
Ref. No. of SFA : ET/0529/001

Preparation of calibration curve

Conc. of standard (mg NH_3-N/L)	Du
0.00	40
0.05	597
0.10	1147
0.25	3070
0.50	6103
1.00	11143

Ref. No. of Calibration standard stock:	L962	Date of preparation:	6/12/07
Ref. No. of cal chk std stock:	L963	Date of preparation:	6/12/07
Ref. No. of calibration curve:	071211 NH31	Date of preparation:	11/12/07
Equation of best fit line (y=mx+c) :	y = 11210.0791 x + 133.4749		(r^2 = 0.9976)

Where m = slope of curve, c = y-intercept

Sample analysis

$\%\,Error = \frac{0.716-0.153}{0.5} \times 100\% = 7.5\%$

Lab. Ref. No.	Client Sample ID.	Dilution (D)	Du (y)	*Nitrogen (ammonia) (mg NH_3-N/L)	Expanded Uncertainty (U_{exp})
	cal chk std	1	6118	0.534	
	MB	1	-26	-0.014	
	QC	1	6136	0.535	
W27635 (49)	7/12 C1F_S	~~10~~ 5	477	0.153	
"	" (Dup)		504	0.165	
"	" (spike)		1738	0.716	
W27635 (50)	C1F_M		*	*	
(51)	C1F_B				
(52)	C2F_S				
(53)	C2F_M				
(54)	C2F_B				
	Cal chk std	1	5840	0.509	

*refer to the print-out or calculated according to the equation : Nitrogen (ammonia) (mgNH_3-N/L) = $\left(\frac{y-c}{m}\right) \times D$

Acceptable criteria

Method Blank :	< 0.025 mgNH_3-N/L	Yes	✓	No	
Calibration check standard:	0.45 - 0.55 mgNH_3-N/L	Yes	✓	No	
Difference between duplicates:	≤10%	Yes	✓	No	
Recovery of spike sample:	80-120%	Yes	✓	No	
Square of correlation coefficient (r^2) :	≥0.995	Yes	✓	No	
QC Sample :	0.479 – 0.567 mg NH_3-N/L	Yes	✓	No	

%recovery of spike
$= \frac{0.716-0.153}{0.5} \times 100\%$
$= 112.6\%$

PQL Drinking water matrix / wastewater matrix (0.025 mgNH_3-N/L)

Remarks : 0.4 ml of 25ppm NH_3 std was added into 20 ml "7/12 C1F_S" as a spike sample.

Tested by : [signature] Checked by : [signature]

TPE/016/W

LABORATORY SHEET

Determination of nitrogen (ammonia) by using Segmented flow analyser

Information provided by client

Client :

Source :
Sample Type :
Date Sampled :
No. of Sample :

Laboratory information

Lab Ref. No. :
Date Received :
W.I.No. :
Dated Tested :
Test Method : In-house method TPE/016/W
Description :
Ref. No. of SFA :

Preparation of calibration curve

Conc. of standard (mg NH_3-N/L)	Du
0.00	
0.05	
0.10	
0.25	
0.50	
1.00	

Ref. No. of Calibration standard stock:		Date of preparation:	
Ref. No. of cal chk std stock:		Date of preparation:	
Ref. No. of calibration curve:		Date of preparation:	
Equation of best fit line (y=mx+c) :			(r^2 =)

Where m = slope of curve, c = y-intercept

Sample analysis

Lab. Ref. No.	Client Sample ID	Dilution (D)	Du (y)	Nitrogen (ammonia) (mg NH_3-N/L)	Expanded Uncertainty (U_{exp})
W22635 (55)	7/12 MIF_S	~ to 5	*	*	
(56)	MIF_M				
(57)	MIF_B				
(58)	C1E_S				
(59)	C1E_M				
(60)	C1E_B				
(61)	C2E_S				
(62)	C2E_M				
(63)	C2E_B				
(64)	M1E_S				
	cal chk std	1	5751	0.501	
W22635 (65)	7/12 M1E_M	~ to 5	*	*	

*refer to the print-out or calculated according to the equation : Nitrogen (ammonia) (mgNH_3-N/L) = $\left(\frac{y-c}{m}\right) \times D$

Acceptable criteria

Method Blank :	< 0.025 mgNH_3-N/L	Yes		No
Calibration check standard:	0.45 - 0.55 mgNH_3-N/L	Yes	✓	No
Difference between duplicates:	≤10%	Yes		No
Recovery of spike sample:	80-120%	Yes		No
Square of correlation coefficient (r^2) :	≥0.995	Yes		No
QC Sample :	-- mg NH_3-N/L	Yes		No

PQL Drinking water matrix / wastewater matrix (0.025 mgNH_3-N/L)

Remarks :

Tested by : Checked by :

TPE/016/W

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

From E/EN/L/16/ Issue 4 (1/1) [05/05]

LABORATORY SHEET

Determination of nitrogen (ammonia) by using Segmented flow analyser

Information provided by client

Client :

Source :
Sample Type :
Date Sampled :
No. of Sample :

Laboratory information

Lab Ref. No. :
Date Received :
W.I.No. :
Dated Tested :
Test Method : In-house method TPE/016/W
Description :
Ref. No. of SFA :

Preparation of calibration curve

Conc. of standard (mg NH_3-N/L)	Du
0.00	
0.05	
0.10	
0.25	
0.50	
1.00	

Ref. No. of Calibration standard stock:		Date of preparation:	
Ref. No. of cal chk std stock:		Date of preparation:	
Ref. No. of calibration curve:		Date of preparation:	
Equation of best fit line (y=mx+c) :			(r^2 =)

Where m = slope of curve, c = y-intercept

Error $\frac{0.168-0.158}{0.168} \times 100\% = 6.1\%$

Sample analysis

Lab. Ref. No.	Client Sample ID	Dilution (D)	Du (y)	Nitrogen (ammonia) (mg NH_3-N/L)	Expanded Uncertainty (U_{exp})
W22635 (66)	7/12 MIE_B	~~1~~ ~~to~~5	*	*	
W22642 (49)	10/12 C1F_S	~~1~~ ~~to~~5	↓	↓	
(50)	C1F_M	~~1~~ ~~to~~5			
	MB	1	-33	-0.015	
	QC	1	5928	0.517	
W22642 (51)	10/12 C1F_B	~~1~~ ~~to~~5	511	0.168	
	" (Dup)	~~1~~ ~~to~~5	488	0.158	
	" (spike)	~~1~~ ~~to~~5	1625	0.665	
(52)	C2F_S	~~1~~ ~~to~~5	*	*	
	cal chk std	1	5568	0.485	
W22642 (53)	10/12 C2F_M	~~1~~ ~~to~~5	*	*	
(54)	C2F_B	~~1~~ ~~to~~5	*	*	

*refer to the print-out or calculated according to the equation : Nitrogen (ammonia) (mgNH_3-N/L) = $\left(\frac{y-c}{m}\right) \times D$

Acceptable criteria

Method Blank :	< 0.025 mgNH_3-N/L	Yes	✓	No	
Calibration check standard:	0.45 - 0.55 mgNH_3-N/L	Yes	✓	No	
Difference between duplicates:	≤10%	Yes	✓	No	
Recovery of spike sample:	80-120%	Yes	✓	No	
Square of correlation coefficient (r^2) :	≥0.995	Yes		No	
QC Sample :	0.479 – 0.567 mg NH_3-N/L	Yes	✓	No	

% Recovery of spike $= \frac{0.665-0.168}{0.5} \times 100\% = 99.4\%$

PQL Drinking water matrix / wastewater matrix (0.025 mgNH_3-N/L)

Remarks : 0.4ml of 25ppm NH_3 std was added into 20ml "10/12 C1F_B" as a spike sample

Tested by : Checked by :

TPE/016/W

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

From E/EN/L/16/ Issue 4 (1/1) [05/05]

LABORATORY SHEET

Determination of nitrogen (ammonia) by using Segmented flow analyser

Information provided by client

Client :

Source :
Sample Type :
Date Sampled :
No. of Sample :

Laboratory information

Lab Ref. No. :
Date Received :
W.I.No. :
Dated Tested :
Test Method : In-house method TPE/016/W
Description :
Ref. No. of SFA :

Preparation of calibration curve

Conc. of standard (mg NH_3-N/L)	Du
0.00	
0.05	
0.10	
0.25	
0.50	
1.00	

Ref. No. of Calibration standard stock:		Date of preparation:	
Ref. No. of cal chk std stock:		Date of preparation:	
Ref. No. of calibration curve:		Date of preparation:	
Equation of best fit line (y=mx+c) :			(r^2 =)

Where m = slope of curve, c = y intercept

Sample analysis

Lab. Ref. No.	Client Sample ID	Dilution (D)	Du (y)	Nitrogen (ammonia) (mg NH_3-N/L)	Expanded Uncertainty (U_{exp})
W22642 (55)	10/12 M1F_S	~~1+05~~	*	*	
(56)	M1F_M	↓	↓	↓	
(57)	M1F_B				
(58)	C1E_S				
(59)	C1E_M				
(60)	C1E_B				
(61)	C2E_S				
(62)	C2E_M	↓	↓	↓	
	cal chk std	1	0.496	0.496	
W22642 (63)	10/12 C2E_B	~~1+05~~	*	*	
(64)	M1E_S	~~1+05~~	↓	↓	
(65)	M1E_M	~~1+05~~	↓	↓	

*refer to the print-out or calculated according to the equation : Nitrogen (ammonia) (mgNH_3-N/L) = $\left(\frac{y-c}{m}\right) \times D$

Acceptable criteria

Method Blank :	< 0.025 mgNH_3-N/L	Yes		No	
Calibration check standard:	0.45 - 0.55 mgNH_3-N/L	Yes	✓	No	
Difference between duplicates:	≤10%	Yes		No	
Recovery of spike sample:	80-120%	Yes		No	
Square of correlation coefficient (r^2) :	≥0.995	Yes		No	
QC Sample :	– mg NH_3-N/L	Yes		No	

PQL Drinking water matrix / wastewater matrix (0.025 mgNH_3-N/L)

Remarks :

Tested by : Checked by :

TPE/016/W

LABORATORY SHEET

Determination of nitrogen (ammonia) by using Segmented flow analyser

Information provided by client

Client :

Source :
Sample Type :
Date Sampled :
No. of Sample :

Laboratory information

Lab Ref. No. :
Date Received :
W.I.No. :
Dated Tested :
Test Method : In-house method TPE/016/W
Description :
Ref. No. of SFA :

Preparation of calibration curve

Conc. of standard (mg NH_3-N/L)	Du
0.00	
0.05	
0.10	
0.25	
0.50	
1.00	

Ref. No. of Calibration standard stock:		Date of preparation:	
Ref. No. of cal chk std stock:		Date of preparation:	
Ref. No. of calibration curve:		Date of preparation:	
Equation of best fit line (y=mx+c) :			(r^2 =)

Where m = slope of curve, c = y-intercept

Sample analysis

Lab. Ref. No.	Client Sample ID	Dilution (D)	Du (y)	Nitrogen (ammonia) (mg NH_3-N/L)	Expanded Uncertainty (U_{exp})
W22642 (66)	19/12 M1Z_B	~105	*	*	
	cal chk std	1	5652	0.492	

*refer to the print-out or calculated according to the equation : Nitrogen (ammonia) (mgNH_3-N/L) = $\left(\frac{y-c}{m}\right) \times D$

Acceptable criteria

Method Blank :	< 0.025 mgNH_3-N/L	Yes		No	
Calibration check standard:	0.45 - 0.55 mgNH_3-N/L	Yes	✓	No	
Difference between duplicates:	≤10%	Yes		No	
Recovery of spike sample:	80-120%	Yes		No	
Square of correlation coefficient (r^2) :	≥0.995	Yes		No	
QC Sample :	-- mg NH_3-N/L	Yes		No	

PQL Drinking water matrix / wastewater matrix (0.025 mgNH_3-N/L)

Remarks :

Tested by : Checked by :

TPE/016/W

FlowAccess Results Report

Date : 15/12/2007

1	Position	Type1	Identity1	NH3/TN/NO2 ppm	Corr.Ht NH3/TN/NO2
2	WT	IW	Initial Wash	-0.012	0
3	1	W	Wash	-0.011	12
4	2	T	Tracer	1.030	11678
5	3	W	Wash	-0.012	0
6	4	S1	Standard 1	-0.008	40
7	5	S2	Standard 2	0.041	597
8	6	S3	Standard 3	0.090	1147
9	7	S4	Standard 4	0.262	3070
10	8	S5	Standard 5	0.533	6103
11	9	S6	Standard 6	0.982	11143
12	10	W	Wash	-0.012	0
13	11	Q0	Cal Chk Std	0.534	6118
14	12	W	Wash	-0.012	0
15	13	U	MB	-0.014	-26
16	14	U	QC	0.535	6136
17	15	U	W22635(49) 7/12 C1F_S *5	0.153	477
18	16	U	.. (Dup)	0.165	504 % Error = 7.5%
19	17	U	.. (Spike)	0.716	1738 % spike = 112.6%
20	18	U	(50) C1F_M	0.428	1093
21	19	U	(51) C1F_B	0.174	524
22	20	U	(52) C2F_S	0.171	517
23	21	U	(53) C2F_M	0.276	752
24	22	U	(54) C2F_B	0.287	777
25	23	W	Wash	-0.012	0
26	24	Q0	Cal Chk Std	0.509	5840
27	25	W	Wash	-0.012	0
28	26	U	W22635(55) 7/12 M1F_S	0.399	1027
29	27	U	(56) M1F_M	0.324	861
30	28	U	(57) M1F_B	0.355	929
31	29	U	(58) C1E_S	0.245	683
32	30	U	(59) C1E_M	0.164	500
33	31	U	(60) C1E_B	0.188	556
34	32	U	(61) C2E_S	0.193	566
35	33	U	(62) C2E_M	0.212	608
36	34	U	(63) C2E_B	0.151	472
37	35	U	(64) M1E_S	0.215	615
38	36	W	Wash	-0.012	0
39	37	Q0	Cal Chk Std	0.501	5751
40	38	W	Wash	-0.012	0
41	39	U	W22635(65) 7/12 M1E_M	0.454	1152
42	40	U	(66) M1E_B	0.339	893
43	41	U	W22642(49) 10/12 C1F_S *5	0.384	994
44	42	U	(50) C1F_M	0.317	844
45	43	U	MB	-0.015	-33
46	44	U	QC	0.517	5928
47	45	U	W22642(51) 10/12 C1F_B *5	0.168	511
48	46	U	.. (Dup)	0.158	488 % Error = 6.1%
49	47	U	.. (Spike)	0.665	1625 % spike = 99.4%
50	48	U	(52) C2F_S *5	0.170	515
51	49	W	Wash	-0.012	0

Run File Name : C:\Data\2007\Dec\071211NH31.Run

Analysis Date : 11/12/2007

FlowAccess Results Report

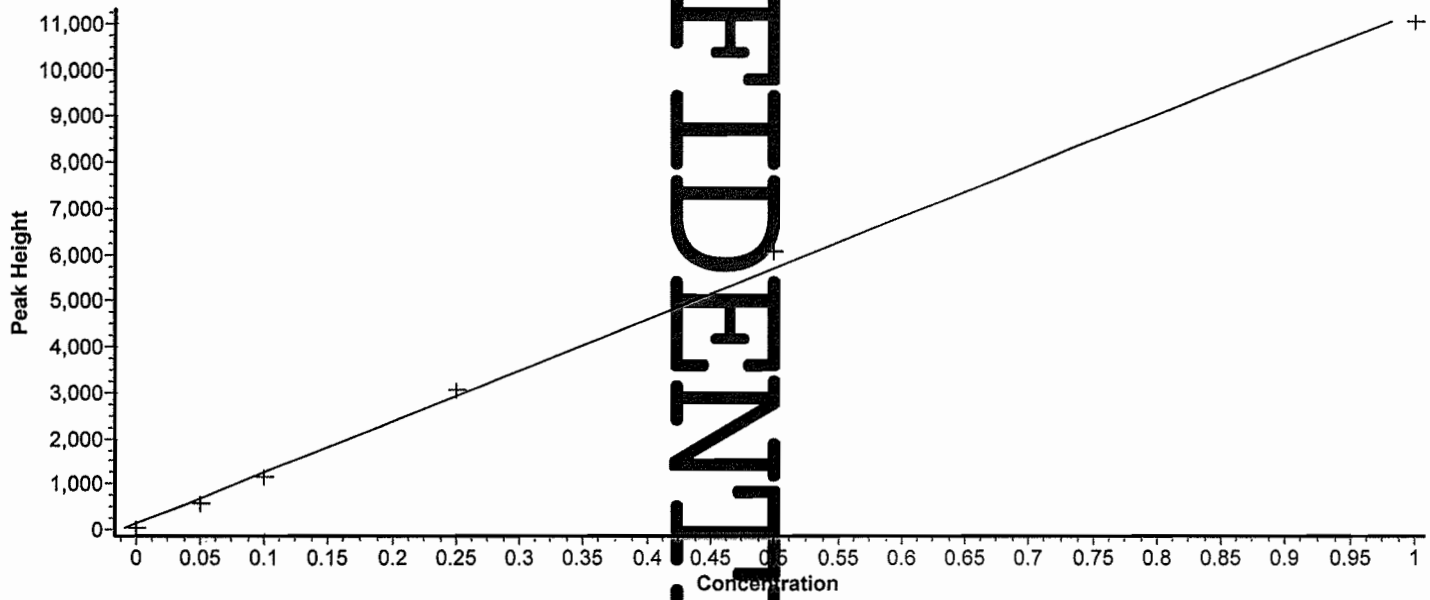
Date : 15/12/2007

1	Position	Type1	Identity1	NH3/TN/NO2 ppm	Corr.Ht NH3/TN/NO2
52	50	Q0	Cal Chk Std	0.485	5568
53	51	W	Wash	-0.012	0
54	52	U	W22642(53) 10/12 C2F_M *5	0.216	618
55	53	U	(54) C2F_B	0.163	498
56	54	U	(55) M1F_S	0.379	983
57	55	U	(56) M1F_M	0.339	894
58	56	U	(57) M1F_B	0.337	889
59	57	U	(58) C1E_S	0.161	495
60	58	U	(59) C1E_M	0.133	431
61	59	U	(60) C1E_B	0.181	539
62	60	U	(61) C2E_S	0.190	560
63	61	U	(62) C2E_M	0.270	739
64	62	W	Wash	-0.012	0
65	63	Q0	Cal Chk Std	0.496	5696
66	64	W	Wash	-0.012	0
67	65	U	W22642(63) 10/12 C2E_B *5	0.202	585
68	66	U	(64) M1E_S	0.124	412
69	67	U	(65) M1E_M	0.136	438
70	68	U	(66) M1E_B	0.423	1082
71	69	W	Wash	-0.012	0
72	70	Q0	Cal Chk Std	0.492	5652
73	71	W	Wash	-0.012	0
74	Wt	E	End Run	-0.026	-157

Run File Name : C:\Data\2007\Dec\071211NH31.Run

Analysis Date : 11/12/2007

FlowAccess Report
Calibration Curve - 1st Order ISO 8466-1 - NH3/TN/NO2



Runfile Name : 071211NH31.Run a = 133.47493 b = 11210.07909 c = 0.00000 RSD = 234.86101 r = 0.99879

Analysis Date : 11/12/2007 4:32:28 PM User Name: Not Available Analyst Name: Renee

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED
Form E/EN/L/23/Issue 3 (1/1) [05/05]

LABORATORY SHEET

Determination of Nirate by using Sigmented Flow Analyzer (SFA)

Information provided by client

Client : ERM-HK Ltd

Source : HKCEC
Sample Type : Sea water
Date Sampled : 10/12/07
No. of Sample : 18

Laboratory information

Lab Ref. No. : W22642 (49-66)
Date Received : 10/12/07
W.I.No. : EN/7/12/52
Dated Tested : 13/12/07
Test Method : In-house method TPE/023/W
Eq. Ref. No. (SFA) : ET/0529/001
Description : /

Preparation of calibration curve

Conc. of standard (mg NO_3^--N/L)	Du
0.00	6
0.02	272
0.04	502
0.06	706
0.08	921
0.10	1100

Ref. No. of Calibration standard stock:	H744	Date of preparation:	20/8/07
Ref. No. of cal chk std stock:	H745	Date of preparation:	20/8/07
Ref. No. of nitrite standard stock:	H770	Date of preparation:	4/12/07
Ref. No. of calibration curve:	071213 NO2+31	Date of preparation:	13/12/07
Equation of best fit line (y=mx+c):	y = 10887.1429 x + 40.1429		(r^2 = 0.9962)

Where m = slope of curve, c = y-intercept

Sample analysis

% Reduction Efficiency = $\frac{0.065}{0.066} \times 100\% = 98.5\%$ % Error = $\frac{0.443-0.442}{0.4425} \times 100\% = 0.2\%$

Lab Ref No	Client Sample ID	Dilution (D)	Du (y)	*Sum of nitrate & nitrite (mg (NO_2+NO_3)-N/L)	**Nitrate (mgNO_3^--N/L)	Expanded Uncertainty (U_{exp})
	Cal chk std	1	753	0.065		
	0.06ppm NO2	1	758	0.066		
	MB	1	14	-0.002		
	QC	1	750	0.065		
W22642 (49)	10/12 C1F_S	0.45	281	0.442		
"	" (Dup)	↓	281	0.443		
"	" (spike)	↓	517	0.875		
W22642 (50)	C1F_M	↓	*	*		
" (51)	C1F_B	↓	↓	↓		
" (52)	C2F_S	↓	↓	↓		
" (53)	C2F_M	↓	↓	↓		
" (54)	C2F_B	↓	↓	↓		

* refer to print-out or caluclated according to the equation = sum of NO_2+NO_3 (mg(NO_2+NO_3)-N/L) = $\left(\frac{y-c}{m}\right) \times D$

** Nitrate (mg NO_3^--N/L) = sum of nitrate & nitrite (mg(NO_2+NO_3)-N/L) - nitrite (mgNO_2^--N/L)

Acceptable criteria

% Recovery of spike $= \frac{0.875-0.442}{0.4} \times 100\% = 108.3\%$

Method Blank :	<0.004mgNO_3^--N/L	Yes	✓	No	
Calibration check standard:	0.054-0.066 mgNO_3^--N/L	Yes	✓	No	
Difference between duplicates:	≤10%	Yes	✓	No	
Recovery of spike sample:	80-120%	Yes	✓	No	
QC Sample :	0.054 -- 0.070 mgNO_3^--N/L	Yes	✓	No	
Square of correlation (r^2):	≥ 0.995	Yes	✓	No	

PQL Drinking water matrix / wastewater matrix (0.004 mgNO_3^--N/L)

Remarks 0.2ml of 10ppm NO_3 std was added into 5 ml "10/12 C1F_S" as a spike sample.

Tested by : [signature] Checked by : [signature]
TPE/023/W

LABORATORY SHEET

Determination of Nirate by using Sigmented Flow Analyzer (SFA)

Information provided by client

Client :

Source :
Sample Type :
Date Sampled :
No. of Sample :

Laboratory information

Lab Ref. No. :
Date Received :
W.I.No. :
Dated Tested :
Test Method : In-house method TPE/023/W
Eq. Ref. No. (SFA) :
Description :

Preparation of calibration curve

Conc. of standard (mg NO_3^--N/L)	Du
0.00	
0.02	
0.04	
0.06	
0.08	
0.10	

Ref. No. of Calibration standard stock:		Date of preparation:	
Ref. No. of cal chk std stock:		Date of preparation:	
Ref. No. of nitrite standard stock:		Date of preparation:	
Ref. No. of calibration curve:		Date of preparation:	
Equation of best fit line (y=mx+c):			(r^2 =)

Where m = slope of curve, c = y-intercept

Sample analysis

Lab Ref No.	Client Sample ID	Dilution (D)	Du (y)	*Sum of nitrate & nitrite (mg (NO_2+NO_3)-N/L)	**Nitrate (mgNO_3^--N/L)	Expanded Uncertainty (U_{exp})
	cal chk std	1	754	0.066		
W22642 (55)	10/02 M1F_S	~~1~~ to 5	*	*		
" (56)	M1F_M					
" (57)	M1F_B					
" (58)	C1E_S					
" (59)	C1E_M					
" (60)	C1E_B					
" (61)	C2E_S					
" (62)	C2E_M					
" (63)	C2E_B					
" (64)	M1E_S	↓	↓	↓		
	cal chk std	1	763	0.066		

* refer to print-out or caluclated according to the equation = sum of NO_2+NO_3 (mg(NO_2+NO_3)-N/L) = $\left(\frac{y-c}{m}\right) \times D$

** Nitrate (mg NO_3^--N/L) = sum of nitrate & nitrite (mg(NO_2+NO_3)-N/L) - nitrite (mgNO_2^--N/L)

Acceptable criteria

Method Blank :	<0.004mgNO_3^--N/L	Yes		No	
Calibration check standard:	0.054-0.066 mgNO_3^--N/L	Yes	✓	No	
Difference between duplicates:	≤10%	Yes		No	
Recovery of spike sample:	80-120%	Yes		No	
QC Sample :	-- mgNO_3^--N/L	Yes		No	
Square of correlation (r^2):	≥ 0.995	Yes		No	

PQL Drinking water matrix / wastewater matrix (0.004 mgNO_3^--N/L)

Remarks

Tested by : Checked by :
TPE/023/W

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED
Form E/EN/L/23/Issue 3 (1/1) [05/05]

LABORATORY SHEET

Determination of Nirate by using Sigmented Flow Analyzer (SFA)

Information provided by client

Client :

Source :
Sample Type :
Date Sampled :
No. of Sample :

Laboratory information

Lab Ref. No. :
Date Received :
W.I.No. :
Dated Tested :
Test Method : In-house method TPE/023/W
Eq. Ref. No. (SFA) :
Description :

Preparation of calibration curve

Conc. of standard (mg NO_3^--N/L)	Du
0.00	
0.02	
0.04	
0.06	
0.08	
0.10	

Ref. No. of Calibration standard stock:		Date of preparation:	
Ref. No. of cal chk std stock:		Date of preparation:	
Ref. No. of nitrite standard stock:		Date of preparation:	
Ref. No. of calibration curve:		Date of preparation:	
Equation of best fit line (y=mx+c):			(r^2 =)

Where m = slope of curve, c = y-intercept

% Error = $\frac{0.0965 - 0.0965}{0.0965} \times 100\%$ = 0.0%

Sample analysis

Lab Ref No.	Client Sample ID	Dilution (D)	Du (y)	Sum of nitrate & nitrite (mg (NO_2+NO_3)-N/L)	**Nitrate (mgNO_3^--N/L)	Expanded Uncertainty (U_{exp})
W22642 (65)	10/12 MIE_M	~105	*	*		
" (66)	MIE_B	↓	↓	↓		
W22652 (49)	12/12 CIF_S					
" (50)	CIF_M	↓	↓	↓		
	MB	1	9	-0.003		
	QC	1	762	0.066		
W22652 (51)	12/12 CIF_B	~105	310	0.495		
"	" (Dup)	~105	311	0.498		
"	" (spike)	~105	542	0.922		
W22652 (52)	C2F_S	~105	*	*		
	cal chk std	1	739	0.064		
W22652 (53)	/ C2F_M	~105	*	*		

* refer to print-out or caluclated according to the equation = sum of NO_2+NO_3 (mg(NO_2+NO_3)-N/L) = $\left(\frac{y-c}{m}\right) \times D$

** Nitrate (mg NO_3^--N/L) = sum of nitrate & nitrite (mg(NO_2+NO_3)-N/L) - nitrite (mgNO_2^--N/L)

Acceptable criteria

Method Blank :	<0.004mgNO_3^--N/L	Yes	✓	No	
Calibration check standard:	0.054-0.066 mgNO_3^--N/L	Yes	✓	No	
Difference between duplicates:	≤10%	Yes	✓	No	
Recovery of spike sample:	80-120%	Yes	✓	No	
QC Sample :	0.054 – 0.070 mgNO_3^--N/L	Yes	✓	No	
Square of correlation (r^2):	≥ 0.995	Yes		No	

% Recovery of spike $= \frac{0.922 - 0.495}{0.4} \times 100\%$ $= 106.8\%$

PQL Drinking water matrix / wastewater matrix (0.004 mgNO_3^--N/L)

Remarks 0.2ml of 10ppm NO_3 std was added into 50 ml " 12/12 CIF_S " as a spike sample.

Tested by : TPE/023/W

Checked by :

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED
Form E/EN/L/23/Issue 3 (1/1) [05/05]

LABORATORY SHEET

Determination of Nirate by using Sigmented Flow Analyzer (SFA)

Information provided by client

Client :

Source :
Sample Type :
Date Sampled :
No. of Sample :

Laboratory information

Lab Ref. No. :
Date Received :
W.I.No. :
Dated Tested :
Test Method : In-house method TPE/023/W
Eq. Ref. No. (SFA) :
Description :

Preparation of calibration curve

Conc. of standard (mg NO_3^--N/L)	Du
0.00	
0.02	
0.04	
0.06	
0.08	
0.10	

Ref. No. of Calibration standard stock:		Date of preparation:	
Ref. No. of cal chk std stock:		Date of preparation:	
Ref. No. of nitrite standard stock:		Date of preparation:	
Ref. No. of calibration curve:		Date of preparation:	
Equation of best fit line (y=mx+c):			(r^2 =)

Where m = slope of curve, c = y-intercept

Sample analysis

Lab Ref No.	Client Sample ID	Dilution (D)	Du (y)	*Sum of nitrate & nitrite (mg (NO_2+NO_3)-N/L)	**Nitrate (mgNO_3^--N/L)	Expanded Uncertainty (U_{exp})
W22652 (54)	12/12 C2F_B	~~1~~ 10 5	*	*		
(55)	M1F_S	↓	↓	↓		
(56)	M1F_M					
(57)	M1F_B					
(58)	C1E_S					
(59)	C1E_M					
(60)	C1E_B					
(61)	C2E_S					
(62)	C2E_M	↓	↓	↓		
	cal chk std	1	742	0.064		
W22652 (63)	12/12 C2E_B	~~1~~ 10 5	*	*		
" (64)	M1E_S	~~1~~ 10 5	*	*		

* refer to print-out or caluclated according to the equation = sum of NO_2+NO_3 (mg(NO_2+NO_3)-N/L) = $\left(\frac{y-c}{m}\right) \times D$

** Nitrate (mg NO_3^--N/L) = sum of nitrate & nitrite (mg(NO_2+NO_3)-N/L) - nitrite (mgNO_2^--N/L)

Acceptable criteria

Method Blank :	<0.004mgNO_3^--N/L	Yes		No	
Calibration check standard:	0.054-0.066 mgNO_3^--N/L	Yes	✓	No	
Difference between duplicates:	≤10%	Yes		No	
Recovery of spike sample:	80-120%	Yes		No	
QC Sample :	– mgNO_3^--N/L	Yes		No	
Square of correlation (r^2):	≥ 0.995	Yes		No	

PQL Drinking water matrix / wastewater matrix (0.004 mgNO_3^--N/L)

Remarks

Tested by : Checked by :
TPE/023/W

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED
Form E/EN/L/23/Issue 3 (1/1) [05/05]

LABORATORY SHEET

Determination of Nirate by using Sigmented Flow Analyzer (SFA)

Information provided by client

Client :

Source :
Sample Type :
Date Sampled :
No. of Sample :

Laboratory information

Lab Ref. No. :
Date Received :
W.I.No. :
Dated Tested :
Test Method : In-house method TPE/023/W
Eq. Ref. No. (SFA) :
Description :

Preparation of calibration curve

Conc. of standard (mg NO_3^--N/L)	Du
0.00	
0.02	
0.04	
0.06	
0.08	
0.10	

Ref. No. of Calibration standard stock:		Date of preparation:	
Ref. No. of cal chk std stock:		Date of preparation:	
Ref. No. of nitrite standard stock:		Date of preparation:	
Ref. No. of calibration curve:		Date of preparation:	
Equation of best fit line (y=mx+c):			(r^2 =)

Where m = slope of curve, c = y-intercept

Sample analysis

Lab Ref No	Client Sample ID	Dilution (D)	Du (y)	*Sum of nitrate & nitrite (mg (NO_2+NO_3)-N/L)	**Nitrate (mgNO_3^--N/L)	Expanded Uncertainty (U_{exp})
W27652 (65)	2/12MIE-M	0.405	*	*		
" (66)	MIE-B	0.405	*	*		
	cal chk std	1	730	0.063		

* refer to print-out or caluclated according to the equation = sum of NO_2+NO_3 (mg(NO_2+NO_3)-N/L) = $\left(\frac{y-c}{m}\right) \times D$

** Nitrate (mg NO_3^--N/L) = sum of nitrate & nitrite (mg(NO_2+NO_3)-N/L) - nitrite (mgNO_2^--N/L)

Acceptable criteria

Method Blank :	<0.004mgNO_3^--N/L	Yes		No	
Calibration check standard:	0.054-0.066 mgNO_3^--N/L	Yes	✓	No	
Difference between duplicates:	≤10%	Yes		No	
Recovery of spike sample:	80-120%	Yes		No	
QC Sample :	– mgNO_3^--N/L	Yes		No	
Square of correlation (r^2):	≥ 0.995	Yes		No	

PQL Drinking water matrix / wastewater matrix (0.004 mgNO_3^--N/L)

Remarks

Tested by : Checked by :
TPE/023/W

P.5

FlowAccess Results Report

Date : 13/12/2007

1	Position	Type1	Identity1	P/TP/NO2+3 ppm	Corr.Ht P/TP/NO2+3	
2	WT	IW	Initial Wash	-0.004	0	
3	1	W	Wash	-0.003	3	
4	2	T	Tracer	0.096	1086	
5	3	W	Wash	-0.004	0	
6	4	S1	Standard 1	-0.003	6	
7	5	S2	Standard 2	0.021	272	
8	6	S3	Standard 3	0.042	502	
9	7	S4	Standard 4	0.061	706	
10	8	S5	Standard 5	0.081	921	
11	9	S6	Standard 6	0.097	1100	
12	10	W	Wash	-0.004	0	
13	11	Q0	Cal Chk Std	0.065	753	
14	12	U	0.06 ppm NO2	0.066	758	% Reduction Efficiency = 98.5%
15	13	W	Wash	-0.004	0	
16	14	U	MB	-0.002	14	
17	15	U	QC	0.065	750	
18	16	U	W22642(49) 10/12 C1F_S *20	0.442	281	
19	17	U	.. (Dup)	0.443	281	% Error = 0.2%
20	18	U	.. (Spike)	0.875	517	% spike = 108.3%
21	19	U	(50) C1F_M	0.478	300	
22	20	U	(51) C1F_B	0.472	297	
23	21	U	(52) C2F_S	0.51	318	
24	22	U	(53) C2F_M	0.479	301	
25	23	U	(54) C2F_B	0.476	299	
26	24	W	Wash	-0.004	0	
27	25	Q0	Cal Chk Std	0.066	754	
28	26	W	Wash	-0.004	0	
29	27	U	W22642(55) 10/12 M1F_S	0.513	319	
30	28	U	(56) M1F_M	0.517	322	
31	29	U	(57) M1F_B	0.505	315	
32	30	U	(58) C1E_S	0.500	312	
33	31	U	(59) C1E_M	0.490	307	
34	32	U	(60) C1E_B	0.520	323	
35	33	U	(61) C2E_S	0.477	300	
36	34	U	(62) C2E_M	0.483	303	
37	35	U	(63) C2E_B	0.478	300	
38	36	U	(64) M1E_S	0.473	298	
39	37	W	Wash	-0.004	0	
40	38	Q0	Cal Chk Std	0.066	763	
41	39	W	Wash	-0.004	0	
42	40	U	W22642(65) 10/12 M1E_M	0.478	301	
43	41	U	(66) M1E_B	0.529	328	
44	42	U	W22652(49) 12/12 C1F_S *20	0.502	314	
45	43	U	(50) C1F_M	0.603	368	
46	44	U	MB	-0.003	9	
47	45	U	QC	0.066	762	
48	46	U	W22652(51) 12/12 C1F_B *20	0.495	310	
49	47	U	.. (Dup)	0.498	311	% Error = 0.6%
50	48	U	.. (Spike)	0.922	542	% spike = 106.8%
51	49	U	(52) C2F_S *20	0.497	310	

Run File Name : C:\Data\2007\Dec\071213NO2+31.Run

Analysis Date : 13/12/2007

FlowAccess Results Report

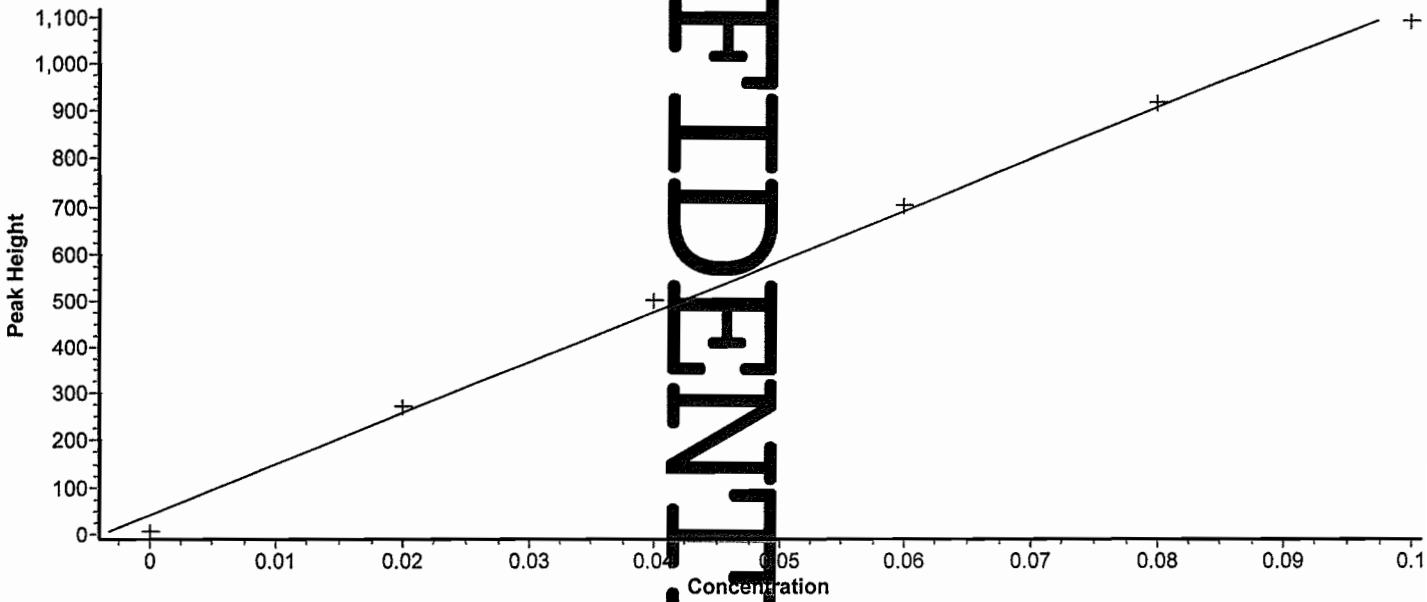
Date : 13/12/2007

1	Position	Type1	Identity1	P/TP/NO2+3 ppm	Corr.Ht P/TP/NO2+3
52	50	W	Wash	-0.004	0
53	51	Q0	Cal Chk Std	0.064	739
54	52	W	Wash	-0.004	0
55	53	U	W22652(53) 12/12 C2F_M *20	0.479	301
56	54	U	(54) C2F_B	0.456	288
57	55	U	(55) M1F_S	0.421	269
58	56	U	(56) M1F_M	0.575	353
59	57	U	(57) M1F_B	0.524	325
60	58	U	(58) C1E_S	0.478	301
61	59	U	(59) C1E_M	0.484	304
62	60	U	(60) C1E_B	0.508	317
63	61	U	(61) C2E_S	0.448	284
64	62	U	(62) C2E_M	0.468	295
65	63	W	Wash	-0.004	0
66	64	Q0	Cal Chk Std	0.064	742
67	65	W	Wash	-0.004	0
68	66	U	W22652(63) 12/12 C2E_B *20	0.530	328
69	67	U	(64) M1E_S	0.541	335
70	68	U	(65) M1E_M	0.461	291
71	69	U	(66) M1E_B	0.552	341
72	70	W	Wash	-0.004	0
73	71	Q0	Cal Chk Std	0.063	730
74	72	W	Wash	-0.004	0
75	[illegible]	[illegible]	End Run	-0.006	29

Run File Name : C:\Data\2007\Dec\071213NO2+31.Run

Analysis Date : 13/12/2007

FlowAccess Report
Calibration Curve - 1st Order ISO 8466-1 - P/TP/NO2+3



Runfile Name : 071213NO2+31.Run a = 40.14286 b = 10887.14286 c = 0.00000 RSD = 28.06396 r = 0.99811

Analysis Date : 13/12/2007 9:13:31 AM User Name: Not Available Analyst Name: Renee

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Form E/EN/L/06/Issue 7 (1/1) [05/05]

LABORATORY SHEET
Determination of Total Suspended Solids Dried at 103°C-105°C

Information provided by client

Client : ERM – Hong Kong Ltd

Client Ref. No. : E 70122HK

Source : HKCEC, Wan Chai

Sample Type : Sea water

Date Sampled : 10 / 12 / 2007

No. of Sample : 36

Description :

Laboratory Information

Lab. Ref. No. : W22642

W. I. No. : EN / 7 / 12 / 52

Date Received : 10 / 12 / 2007

Date Tested : 11 / 12 / 2007

Test Method : In-house Method TPE/006/W

Recovery of Check = $\frac{103}{101.8} \times 100\%$

$= 101.2\%$

	Ref. No.
Drying oven used	ET / 0502 / 002
TSS standard used	J288

CONFIDENTIAL

Lab. Ref. No.			W22642 (13)	(Dup)	(14)	(15)	(16)	(17)	(18)	(19)
Client sample ID	Blank	Check Std	C1F-S	C1F-S	C1F-SD	C1F-M	C1F-MD	C1F-B	C1F-BD	C2F-S
Foil Bowl No.	B1	C1	[illegible]	D1	2	3	4	5	6	7
Mass of Filter	1310.3	[illegible]	[illegible]	1308.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1314.1
+ Foil Bowl (mg) (B)	1310.2	1316.9	1324.6	1308.9	1319.1	1316.5	1312.3	1309.7	1301.9	1314.0
Vol. of Sample (mL)	500	500	200	200	400	400	400	400	400	400
Mass of Filter	1310.5	1368.5	1323.4	1310.8	1320.8	1318.6	1314.4	1311.3	1304.1	1316.3
+ Foil Bowl	1310.4	1368.4	1323.3	1310.7	1320.7	1318.5	1314.3	1311.2	1304.0	1316.2
+ S. S. (mg) (A)										
Total Suspended Solids (mg/L) *	0.0	10.3	4.3	4.5	4.0	5.0	5.0	5.3	5.2	5.5
Chloride Check (✓)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Expanded uncertainty, Uexp										

* Total Suspended Solids (mg/L) = (A – B) / Vol. of Sample used x 1000

Acceptance criteria :
1. Blank : ≤ 0.5mg/L — % elim = -57.1% — Yes ☑ No ☐
2. Difference between duplicates : < 10% — Yes ☑ No ☐
3. Recovery of spike sample : 80% to 120% — Yes ☐ No ☐
4. Check Sample : 80 (%) - 120 (%) — Yes ☑ No ☐

PQL : 5.0mg/L (Seawater / Drinking water / Wastewater)

Remark : 50.9 mg Silica Gel H was added to 500ml distilled water as check. (101.8 mg/L)

Tested By : [signature]

Checked By : [signature]

LABORATORY SHEET
Determination of Total Suspended Solids Dried at 103°C-105°C

Information provided by client

Client : ---
Client Ref. No. : ---
Source : ---
Sample Type : ---
Date Sampled : ---
No. of Sample : ---
Description :

Laboratory Information

Lab. Ref. No. : ---
W. I. No. : ---
Date Received : ---
Date Tested : ---
Test Method : In-house Method TPE/006/W

	Ref. No.
Drying oven used	ET / 0502 / 002
TSS standard used	J 288

Lab. Ref. No.	We2642 (20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)
Client sample ID	C2F-SD	C2F-M	C2F-MD	C2F-B	C2F-BD	M1F-S	M1F-SD	M1F-M	M1F-MD	M1F-B
Foil Bowl No.	8	9	10	11	12	13	14	15	16	17
Mass of Filter	1307.2	1309.7	1305.1	1326.7	1302.7	1328.3	1305.7	1318.2	1317.3	1321.2
+ Foil Bowl (mg) (B)	1307.1	1309.6	1305.0	1325.2	1302.6	1328.2	1305.2	1318.1	1317.4	1321.1
Vol. of Sample (mL)	400	400	400	400	400	400	400	400	400	400
Mass of Filter	1309.4	1311.5	1307.0	1326.8	1304.3	1330.1	1307.2	1320.3	1319.6	1323.0
+ Foil Bowl	1309.3	1311.4	1306.9	1326.7	1304.2	1330.0	1307.1	1320.2	1319.5	1322.9
+ S. S. (mg) (A)										
Total Suspended Solids (mg/L) *	5.5	4.5	4.8	3.8	4.0	4.5	4.7	5.3	5.2	4.5
Chloride Check (✓)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Expanded uncertainty, Uexp										

* Total Suspended Solids (mg/L) = (A – B) / Vol. of Sample used x 1000

Acceptance criteria :
1. Blank : ≤ 0.5mg/L — Yes ☐ No ☐
2. Difference between duplicates : < 10% — Yes ☐ No ☐
3. Recovery of spike sample : 80% to 120% — Yes ☐ No ☐
4. Check Sample : 80 (%) 120 (%) — Yes ☐ No ☐

PQL : 5.0mg/L (Seawater / Drinking water / Wastewater)

Remark :

Tested By : Checked By :

LABORATORY SHEET
Determination of Total Suspended Solids Dried at 103°C-105°C

Information provided by client

Client : ---
Client Ref. No. : ---
Source : ---
Sample Type : ---
Date Sampled : ---
No. of Sample : ---
Description :

Laboratory Information

Lab. Ref. No. : ---
W. I. No. : ---
Date Received : ---
Date Tested : ---
Test Method : In-house Method TPE/006/W

Recovery of Spike = $\frac{34.5 - 4.5}{28.5} \times 100\%$ = 105.3%

	Ref. No.
Drying oven used	ET / 0502 / 002
TSS standard used	J 288

Lab. Ref. No.	W22642 (30)	(spike)								
Client sample ID	M1F-BD	M1F-BD								
Foil Bowl No.	18	S1								
Mass of Filter	1306.8	1319.3								
+ Foil Bowl (mg) (B)	1306.7	1319.2								
Vol. of Sample (mL)	200	200								
Mass of Filter	1307.7	1326.2								
+ Foil Bowl	1307.6	1326.1								
+ S. S. (mg) (A)										
Total Suspended Solids (mg/L) *	4.5	34.5								
Chloride Check (✓)	✓	✓								
Expanded uncertainty, Uexp										

* Total Suspended Solids (mg/L) = (A – B) / Vol. of Sample used x 1000

Acceptance criteria :
1. Blank : ≤ 0.5mg/L — Yes ☐ No ☐
2. Difference between duplicates : < 10% — Yes ☐ No ☐
3. Recovery of spike sample : 80% to 120% — Yes ☑ No ☐
4. Check Sample : 80 (%) 120 (%) — Yes ☐ No ☐

PQL : 5.0mg/L (Seawater / Drinking water / Wastewater)

Remark : 5.7 mg Silica Gel H was added to 200ml "M1F-BD" as spike (28.5 mg/L)

Tested By : [signature] Checked By : [signature]

LABORATORY SHEET
Determination of Total Suspended Solids Dried at 103°C-105°C

Information provided by client

Client : ---
Client Ref. No. : ---
Source : ---
Sample Type : ---
Date Sampled : ---
No. of Sample : ---
Description :

Laboratory Information

Lab. Ref. No. : ---
W. I. No. : ---
Date Received : ---
Date Tested : ---
Test Method : In-house Method TPE/006/W

Recovery of Check = $\frac{106}{104} \times 100\%$ = 101.9%

	Ref. No.
Drying oven used	ET / 0502 / 002
TSS standard used	J 288

Lab. Ref. No.			W22642 (31)	(Dup)	(32)	(33)	(34)	(35)	(36)	(37)
Client sample ID	Blank	Check Std	C1E-S	C1E-S	C1E-SD	C1E-M	C1E-MD	C1E-B	C1E-BD	C2E-S
Foil Bowl No	B2	C2	19	D2	20	21	22	23	24	25
Mass of Filter	1301.7	1309.7	1319.1	1314.4	1303.7	1324.0	1325.6	1316.6	1321.9	1326.4
+ Foil Bowl (mg) (B)	1301.6	1309.6	1319.0	1314.3	1303.6	1323.9	1325.5	1316.5	1321.8	1326.3
Vol. of Sample (mL)	500	500	200	200	400	400	400	400	400	400
Mass of Filter	1301.8	1362.7	1321.0	1316.4	1305.6	1325.7	1327.4	1318.3	1323.6	1328.6
+ Foil Bowl	1301.7	1362.6	1320.9	1316.3	1305.5	1325.6	1327.3	1318.2	1323.5	1328.5
+ S. S. (mg) (A)										
Total Suspended Solids (mg/L) *	0.2	10.6	1.8	5.0	1.8	1.2	1.5	1.3	1.3	5.5
Chloride Check (✓)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Expanded uncertainty, Uexp										

* Total Suspended Solids (mg/L) = (A – B) / Vol. of Sample used x 1000

Acceptance criteria :
1. Blank : ≤ 0.5mg/L — Yes ☑ No ☐
2. Difference between duplicates : < 10% — % error = -5.13% — Yes ☑ No ☐
3. Recovery of spike sample : 80% to 120% — Yes ☐ No ☐
4. Check Sample : 80 (%) 120- (%) — Yes ☑ No ☐

PQL : 5.0mg/L (Seawater / Drinking water / Wastewater)

Remark : 52 mg Silica Gel H was added to 500ml distilled water as check. (104 mg/L)

Tested By : Checked By :

LABORATORY SHEET
Determination of Total Suspended Solids Dried at 103°C-105°C

Information provided by client

Client : ---
Client Ref. No. : ---
Source : ---
Sample Type : ---
Date Sampled : ---
No. of Sample : ---
Description :

Laboratory Information

Lab. Ref. No. : ---
W. I. No. : ---
Date Received : ---
Date Tested : ---
Test Method : In-house Method TPE/006/W

	Ref. No.
Drying oven used	ET / 0502 / 002
TSS standard used	J 288

Lab. Ref. No.	W226042 (38)	(39)	(40)	(41)	(42)	(43)	(44)	(45)	(46)	(47)
Client sample ID	C2E-SD	C2E-M	C2E-MD	C2E-B	C2E-BD	M1E-S	M1E-SD	M1E-M	M1E-MD	M1E-B
Foil Bowl No.	26	27	28	29	30	31	32	33	34	35
Mass of Filter	1321.0	1306.6	1327.0	1319.5	1328.1	1316.2	1318.1	1305.4	1303.5	1326.8
+ Foil Bowl (mg) (B)	1320.9	1306.5	1325.9	1319.4	1328.0	1316.1	1318.0	1303.3	1303.4	1326.7
Vol. of Sample (mL)	400	400	400	400	400	400	400	400	400	400
Mass of Filter	1323.2	1308.6	1328.1	1321.5	1330.0	1317.9	1319.7	1305.6	1305.8	1328.8
+ Foil Bowl	1323.1	1308.5	1328.0	1321.4	1329.9	1317.8	1319.6	1305.5	1305.7	1328.7
+ S. S. (mg) (A)										
Total Suspended Solids (mg/L) *	5.5	5.0	5.2	5.0	4.8	4.3	4.0	5.5	5.7	5.0
Chloride Check (✓)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Expanded uncertainty, Uexp										

* Total Suspended Solids (mg/L) = (A – B) / Vol. of Sample used x 1000

Acceptance criteria :
1. Blank : ≤ 0.5mg/L — Yes ☐ No ☐
2. Difference between duplicates : < 10% — Yes ☐ No ☐
3. Recovery of spike sample : 80% to 120% — Yes ☐ No ☐
4. Check Sample : 80 (%) 120 - (%) — Yes ☐ No ☐

PQL : 5.0mg/L (Seawater / Drinking water / Wastewater)

Remark :

Tested By : Checked By :

LABORATORY SHEET
Determination of Total Suspended Solids Dried at 103°C-105°C

Information provided by client

Client : ---
Client Ref. No. : ---
Source : ---
Sample Type : ---
Date Sampled : ---
No. of Sample : ---
Description :

Laboratory Information

Lab. Ref. No. : ---
W. I. No. : ---
Date Received : ---
Date Tested : ---
Test Method : In-house Method TPE/006/W

Recovery of Spike = $\frac{36-5}{30.5} \times 100\%$ = 101.6%

	Ref. No.
Drying oven used	ET / 0502 / 002
TSS standard used	J288

Lab. Ref. No.	W22642 (48)	(spike)								
Client sample ID	M1E-BD	M1E-BD								
Foil Bowl No	86	S2								
Mass of Filter	1314.4	1328.8								
+ Foil Bowl (mg) (B)	1314.3	1328.7								
Vol. of Sample (mL)	200	200								
Mass of Filter	1315.4	1336.0								
+ Foil Bowl	1315.3	1335.9								
+ S. S. (mg) (A)										
Total Suspended Solids (mg/L) *	510	36								
Chloride Check (✓)	✓	✓								
Expanded uncertainty, Uexp										

* Total Suspended Solids (mg/L) = (A – B) / Vol. of Sample used x 1000

Acceptance criteria :
1. Blank : ≤ 0.5mg/L — Yes ☐ No ☐
2. Difference between duplicates : < 10% — Yes ☐ No ☐
3. Recovery of spike sample : 80% to 120% — Yes ☑ No ☐
4. Check Sample : 80 (%) 120 %) — Yes ☐ No ☐

PQL : 5.0mg/L (Seawater / Drinking water / Wastewater)

Remark : 6.1 mg Silica Gel H was added to 200ml M1E-BD as spike. (30.5 mg/L)

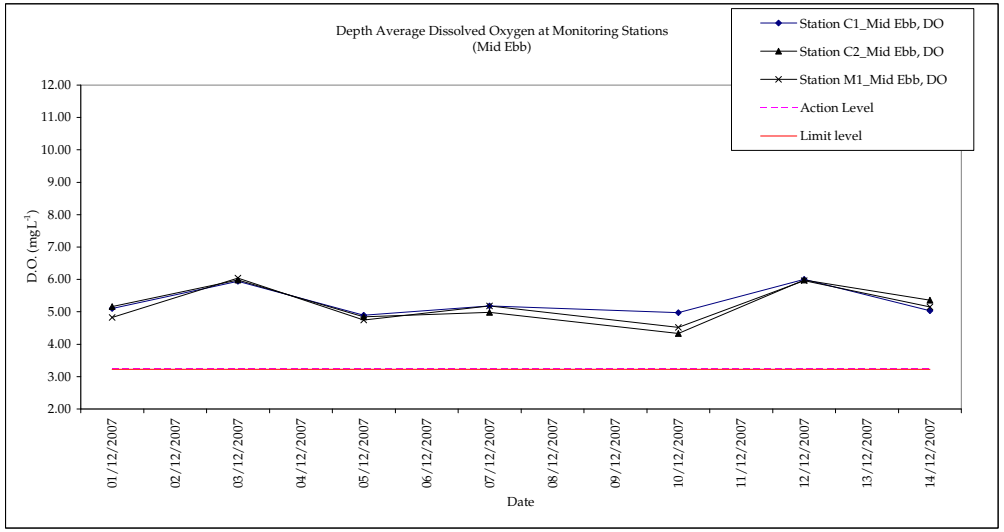
Tested By : [signature]

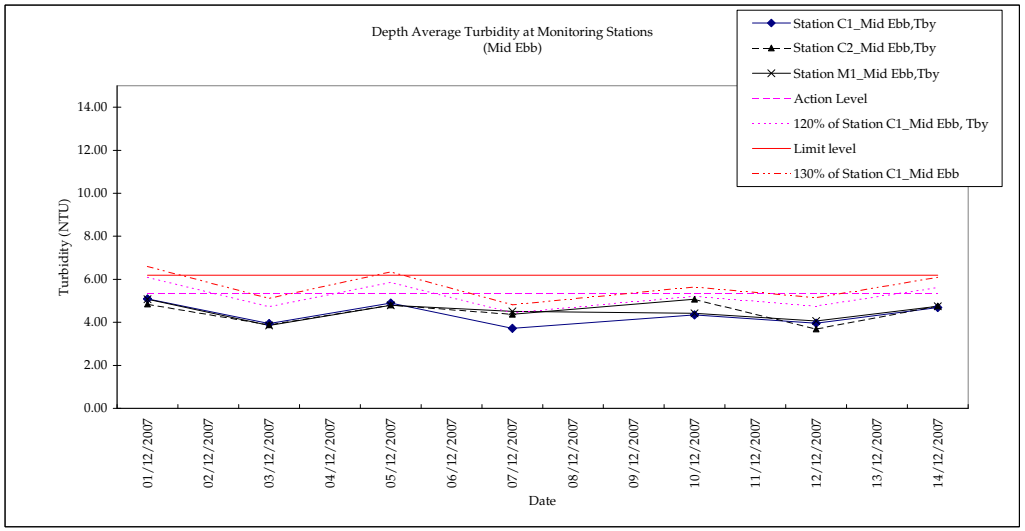
Checked By : [signature]

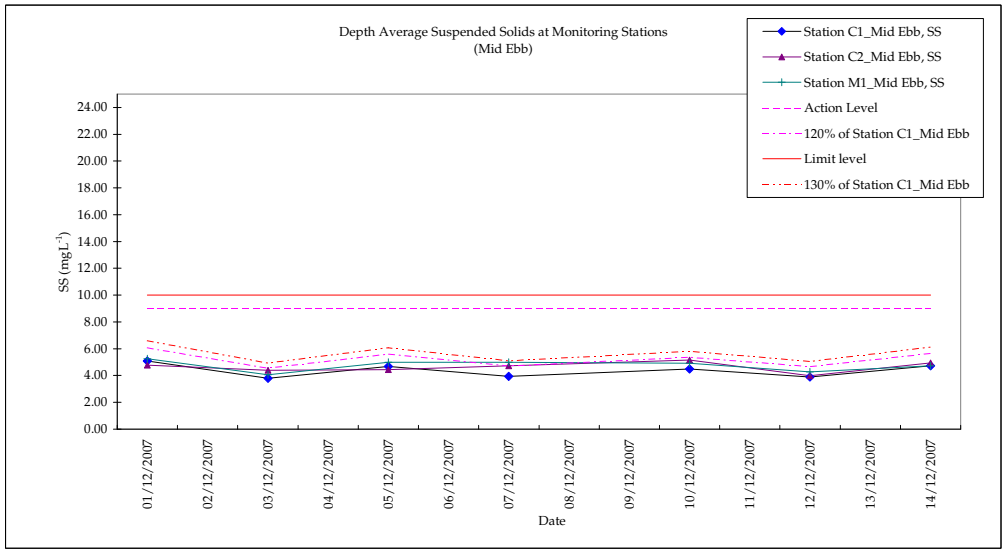
Annex I

Water Quality Monitoring Results

Figure 1 - Additional Water Quality Monitoring Results (Mid Ebb)







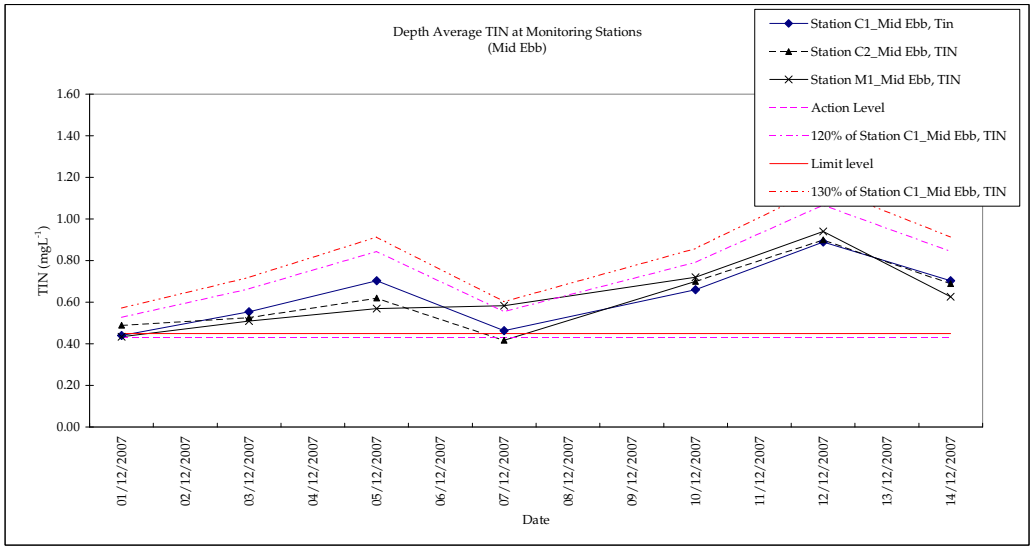
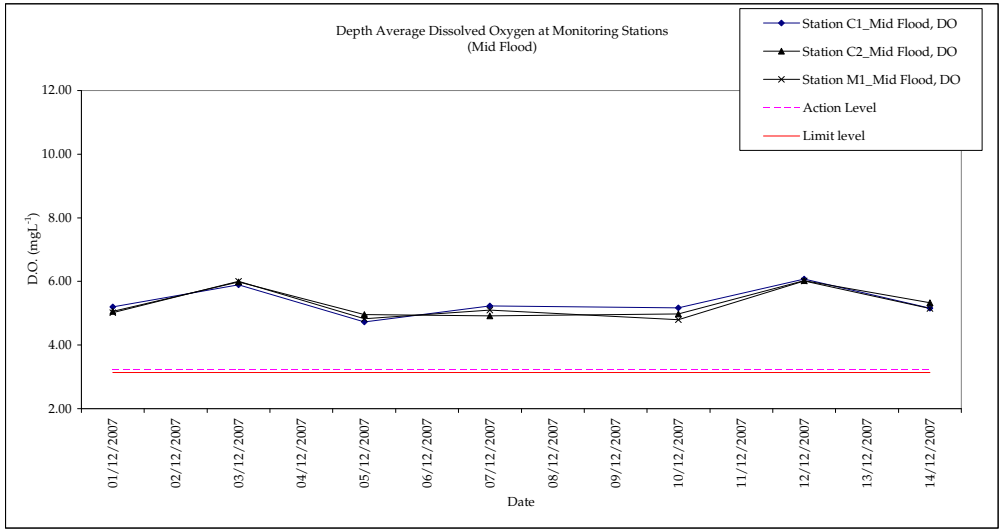
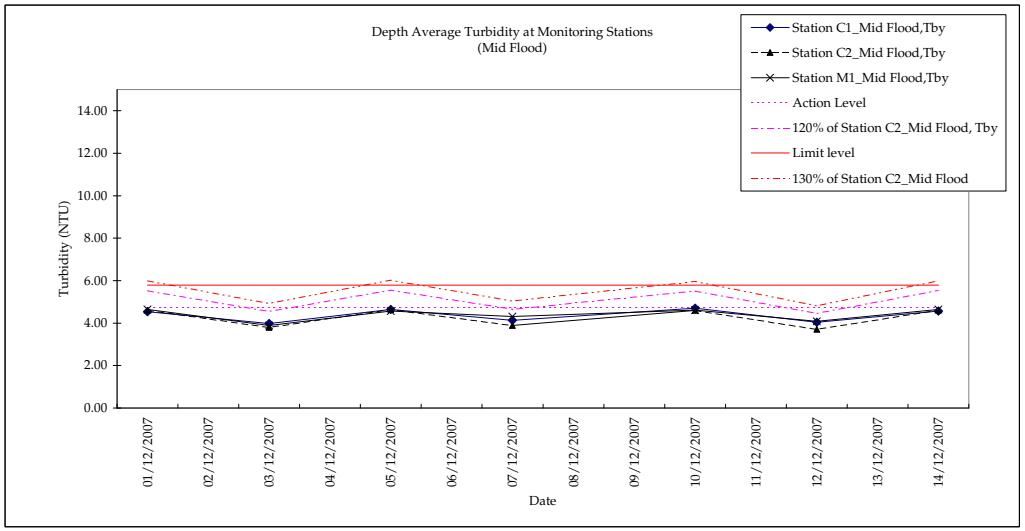
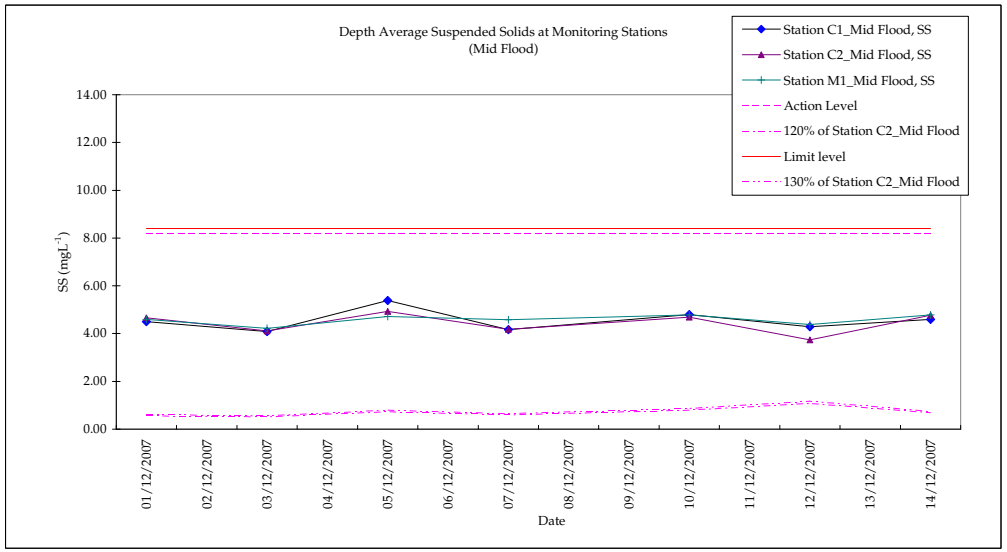
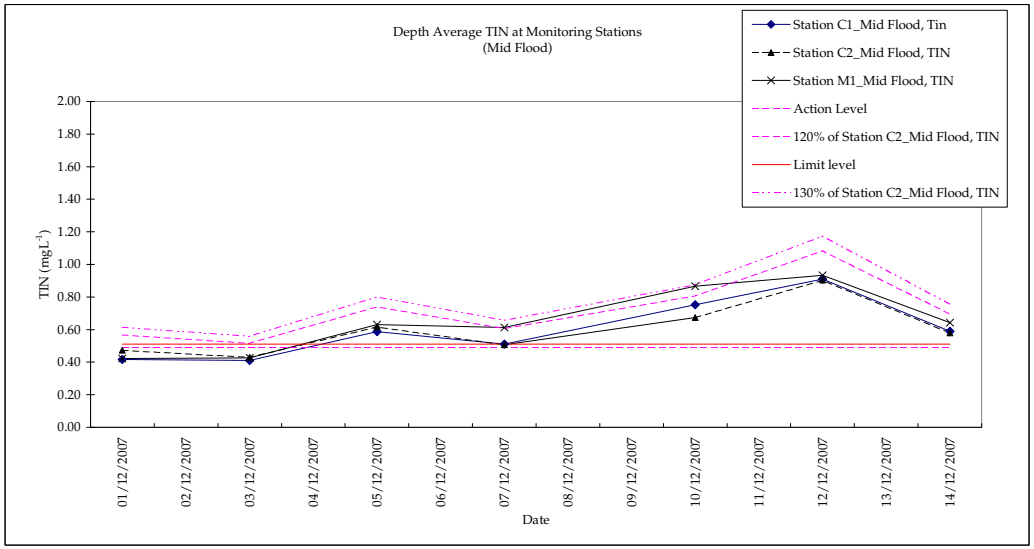


Figure 2 - Additional Water Quality Monitoring Results (Mid Flood)









Water Quality Monitoring Results for Station C1 (Mid-Ebb Tide)

Date	01/12/2007						
Time (hh:mm)	06:00 - 06:15						
Ambient Temperature	16						
Weather	Sunny						
Water Depth (m)	14.20						
Monitoring Depth	1.00		7.10		13.20		
Tide	Mid-Ebb						
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth Average*
Water Temperature (℃)	17.8	17.9	17.4	17.3	17.5	17.4	*17.6*
Salinity (ppt)	30.9	30.8	31.4	31.4	31.6	31.6	*31.3*
D.O. (mg/L)	5.37	5.32	5.12	5.09	4.89	4.85	*5.1*
D.O. Saturation (%)	77.3	76.6	73.7	73.2	70.4	69.8	*73.5*
Turbidity (NTU)	5.15	5.18	4.89	4.88	5.20	5.21	*5.1*
SS* (mg/L)	5.2	5.5	4.7	4.7	5.2	5.2	*5.1*
NO_x, mg N/L	0.16		0.16		0.14		*0.2*
NH_3, mg NH_3-N/L	0.30		0.27		0.29		*0.3*
Total Inorganic Nitrogen (Ammonia + NO_x), mg/L	0.5		0.4		0.4		*0.4*
Remarks	-						

Date	03/12/2007						
Time (hh:mm)	06:45 - 07:00						
Ambient Temperature	17						
Weather	Fine						
Water Depth (m)	14.80						
Monitoring Depth	1.00		7.40		13.80		
Tide	Mid-Ebb						
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth Average*
Water Temperature (℃)	17.9	17.8	18.0	18.1	17.7	17.9	*17.9*
Salinity (ppt)	29.1	29.3	29.6	29.5	29.6	29.7	*29.5*
D.O. (mg/L)	6.15	6.13	6.00	5.96	5.71	5.70	*5.9*
D.O. Saturation (%)	78.5	79.0	72.9	73.5	73.8	73.7	*75.2*
Turbidity (NTU)	4.11	4.09	3.87	3.85	3.85	3.86	*3.9*
SS* (mg/L)	4.2	4.0	3.5	3.5	3.8	3.8	*3.8*
NO_x, mg N/L	0.20		0.19		0.24		*0.2*
NH_3, mg NH_3-N/L	0.45		0.35		0.23		*0.3*
Total Inorganic Nitrogen (Ammonia + NO_x), mg/L	0.7		0.5		0.5		*0.6*
Remarks	-						

Date	05/12/2007						
Time (hh:mm)	09:21 - 09:36						
Ambient Temperature	20						
Weather	Cloudy						
Water Depth (m)	14.00						
Monitoring Depth	1.00		7.00		13.00		
Tide	Mid-Ebb						
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth Average*
Water Temperature (℃)	21.2	21.1	20.7	20.8	20.6	20.6	*20.8*
Salinity (ppt)	29.2	29.1	29.7	29.6	29.8	29.8	*29.5*
D.O. (mg/L)	5.10	5.15	4.82	4.79	4.73	4.76	*4.9*
D.O. Saturation (%)	69.3	70.0	65.5	65.1	64.3	64.7	*66.5*
Turbidity (NTU)	4.90	4.93	4.74	4.73	5.01	5.03	*4.9*
SS* (mg/L)	5.3	5.0	4.8	5.0	4.0	4.0	*4.7*
NO_x, mg N/L	0.36		0.26		0.28		*0.3*
NH_3, mg NH_3-N/L	0.46		0.35		0.40		*0.4*
Total Inorganic Nitrogen (Ammonia + NO_x), mg/L	0.8		0.6		0.7		*0.7*
Remarks	-						

Date	07/12/2007						
Time (hh:mm)	10:02 - 10:18						
Ambient Temperature	19						
Weather	Fine						
Water Depth (m)	13.80						
Monitoring Depth	1.00		6.90		12.80		
Tide	Mid-Ebb						
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth Average*
Water Temperature (℃)	21.0	21.0	20.5	20.5	20.2	20.3	*20.6*
Salinity (ppt)	30.2	30.2	31.2	31.2	31.9	31.8	*31.1*
D.O. (mg/L)	5.48	5.44	5.19	5.17	4.94	4.90	*5.2*
D.O. Saturation (%)	79.4	79.0	75.2	75.0	71.5	71.1	*75.2*
Turbidity (NTU)	3.68	3.75	3.29	3.33	4.15	4.08	*3.7*
SS* (mg/L)	3.8	3.8	3.5	3.5	4.5	4.5	*3.9*
NO_x, mg N/L	0.26		0.27		0.26		*0.26*
NH_3, mg NH_3-N/L	0.25		0.16		0.19		*0.20*
Total Inorganic Nitrogen (Ammonia + NO_x), mg/L	0.5		0.4		0.5		*0.46*
Remarks	-						

Date	10/12/2007						
Time (hh:mm)	12:55 - 13:08						
Ambient Temperature	21						
Weather	Fine						
Water Depth (m)	14.00						
Monitoring Depth	1.00		7.00		13.00		
Tide	Mid-Ebb						
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth Average*
Water Temperature (℃)	21.3	21.3	20.2	20.3	20.1	20.1	*20.6*
Salinity (ppt)	29.2	29.2	30.3	30.5	30.8	30.8	*30.1*
D.O. (mg/L)	5.29	5.27	4.96	4.92	4.71	4.69	*5.0*
D.O. Saturation (%)	75.5	75.3	70.8	70.4	67.2	67.0	*71.0*
Turbidity (NTU)	4.64	4.71	4.25	4.29	4.12	4.08	*4.3*
SS* (mg/L)	4.8	4.8	4.2	4.5	4.3	4.3	*4.5*
NO_x, mg N/L	0.50		0.49		0.52		*0.50*
NH_3, mg NH_3-N/L	0.16		0.13		0.18		*0.16*
Total Inorganic Nitrogen (Ammonia + NO_x), mg/L	0.7		0.6		0.7		*0.66*
Remarks	-						

Date	12/12/2007						
Time (hh:mm)	13:46 - 14:00						
Ambient Temperature	24						
Weather	Sunny						
Water Depth (m)	13.40						
Monitoring Depth	1.00		6.70		12.40		
Tide	Mid-Ebb						
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth Average*
Water Temperature (℃)	24.2	24.3	24.0	23.9	23.8	23.9	*24.0*
Salinity (ppt)	30.6	30.6	30.8	30.8	30.9	30.8	*30.8*
D.O. (mg/L)	6.05	6.08	6.01	6.02	5.94	5.93	*6.0*
D.O. Saturation (%)	89.4	89.0	86.0	86.0	81.4	82.0	*85.6*
Turbidity (NTU)	4.00	3.98	3.97	3.96	3.94	3.93	*4.0*
SS* (mg/L)	4.3	4.5	3.8	3.8	3.5	3.5	*3.9*
NO_x, mg N/L	0.48		0.48		0.51		*0.49*
NH_3, mg NH_3-N/L	0.36		0.43		0.41		*0.40*
Total Inorganic Nitrogen (Ammonia + NO_x), mg/L	0.8		0.9		0.9		*0.89*
Remarks	-						

Date	14/12/2007						
Time (hh:mm)	15:11 - 15:26						
Ambient Temperature	21						
Weather	Cloudy						
Water Depth (m)	14.00						
Monitoring Depth	1.00		7.00		13.00		
Tide	Mid-Ebb						
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth Average*
Water Temperature (℃)	22.4	22.3	21.9	21.8	21.4	21.4	*21.9*
Salinity (ppt)	30.4	30.3	31.1	31.1	31.2	31.2	*30.9*
D.O. (mg/L)	5.29	5.26	5.15	5.11	4.72	4.68	*5.0*
D.O. Saturation (%)	76.1	75.7	74.1	73.5	67.4	66.9	*72.3*
Turbidity (NTU)	4.88	4.87	4.57	4.56	4.63	4.64	*4.7*
SS* (mg/L)	5.0	5.3	4.8	4.5	4.5	4.2	*4.7*
NO_x, mg N/L	0.35		0.27		0.25		*0.3*
NH_3, mg NH_3-N/L	0.46		0.38		0.40		*0.4*
Total Inorganic Nitrogen (Ammonia + NO_x), mg/L	0.8		0.7		0.7		*0.7*
Remarks	-						

*** 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	01/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	N

Within Action Level ?

Date	03/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	N

Within Action Level ?

Date	05/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	N

Within Action Level ?

Date	07/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	N

Within Action Level ?

Date	10/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	N

Within Action Level ?

Date	12/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	N

Within Action Level ?

Date	14/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	N

Within Limit Level ?

Date	01/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	N

Within Limit Level ?

Date	03/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	N

Within Limit Level ?

Date	05/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	N

Within Limit Level ?

Date	07/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	N

Within Limit Level ?

Date	10/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	N

Within Limit Level ?

Date	12/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	N

Within Limit Level ?

Date	14/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	N

Water Quality Monitoring Results for Station M1 (Mid-Ebb Tide)

Date	01/12/2007						
Time (hh:mm)	06:40 - 06:55						
Ambient Temperature	16						
Weather	Sunny						
Water Depth (m)	9.60						
Monitoring Depth	1.00		4.80		8.60		
Tide	Mid-Ebb						
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth Average*
Water Temperature (℃)	17.8	17.7	17.5	17.4	17.4	17.3	*17.5*
Salinity (ppt)	30.8	30.8	31.5	31.4	31.7	31.7	*31.3*
D.O. (mg/L)	5.10	5.15	4.63	4.67	4.71	4.68	*4.8*
D.O. Saturation (%)	73.4	74.1	66.6	67.2	67.5	66.9	*69.3*
Turbidity (NTU)	5.18	5.19	5.07	5.09	4.95	4.94	*5.1*
SS* (mg/L)	5.2	5.3	5.5	5.2	5.3	5.0	*5.3*
NO_x, mg N/L	0.18		0.20		0.13		*0.2*
NH_3, mg NH_3-N/L	0.25		0.23		0.31		*0.3*
Total Inorganic Nitrogen (Ammonia + NO_x), mg/L	0.4		0.4		0.4		*0.4*
Remarks	-						

Date	03/12/2007						
Time (hh:mm)	07:08 - 07:20						
Ambient Temperature	17						
Weather	Fine						
Water Depth (m)	10.60						
Monitoring Depth	1.00		5.30		9.60		
Tide	Mid-Ebb						
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth Average*
Water Temperature (℃)	18.1	18.0	18.1	18.1	17.9	18.0	*18.0*
Salinity (ppt)	27.7	27.8	27.9	27.9	27.8	28.0	*27.9*
D.O. (mg/L)	6.17	6.16	6.11	6.11	5.87	5.85	*6.0*
D.O. Saturation (%)	79.0	79.0	73.5	73.6	70.2	70.1	*74.2*
Turbidity (NTU)	4.00	3.96	3.81	3.82	3.77	3.78	*3.9*
SS* (mg/L)	4.8	5.0	3.8	3.8	3.5	3.5	*4.1*
NO_x, mg N/L	0.22		0.19		0.20		*0.2*
NH_3, mg NH_3-N/L	0.26		0.29		0.37		*0.3*
Total Inorganic Nitrogen (Ammonia + NO_x), mg/L	0.5		0.5		0.6		*0.5*
Remarks	-						

Date	05/12/2007						
Time (hh:mm)	10:01 - 10:16						
Ambient Temperature	20						
Weather	Cloudy						
Water Depth (m)	9.40						
Monitoring Depth	1.00		4.70		8.40		
Tide	Mid-Ebb						
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth Average*
Water Temperature (℃)	21.3	21.2	20.9	20.8	20.8	20.7	*21.0*
Salinity (ppt)	29.2	29.2	29.7	29.8	29.8	29.7	*29.6*
D.O. (mg/L)	4.94	4.90	4.71	4.68	4.60	4.63	*4.7*
D.O. Saturation (%)	67.1	66.6	64.0	63.6	62.5	62.9	*64.5*
Turbidity (NTU)	4.88	4.87	4.75	4.74	4.77	4.75	*4.8*
SS* (mg/L)	5.5	5.5	5.5	5.5	4.0	4.0	*5.0*
NO_x, mg N/L	0.29		0.23		0.26		*0.3*
NH_3, mg NH_3-N/L	0.17		0.28		0.48		*0.3*
Total Inorganic Nitrogen (Ammonia + NO_x), mg/L	0.5		0.5		0.7		*0.6*
Remarks	-						

Date	07/12/2007						
Time (hh:mm)	10:58 - 11:12						
Ambient Temperature	19						
Weather	Fine						
Water Depth (m)	9.40						
Monitoring Depth	1.00		4.70		8.40		
Tide	Mid-Ebb						
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth Average*
Water Temperature (℃)	21.2	21.2	20.8	20.7	20.2	20.3	*20.7*
Salinity (ppt)	30.1	30.1	30.9	31.0	31.6	31.5	*30.9*
D.O. (mg/L)	5.60	5.58	5.22	5.18	4.86	4.64	*5.2*
D.O. Saturation (%)	81.1	80.9	75.6	75.2	70.4	70.2	*75.6*
Turbidity (NTU)	4.11	4.18	5.09	5.11	4.24	4.30	*4.5*
SS* (mg/L)	4.8	5.0	5.5	5.7	4.5	4.5	*5.0*
NO_x, mg N/L	0.24		0.23		0.27		*0.25*
NH_3, mg NH_3-N/L	0.22		0.45		0.34		*0.34*
Total Inorganic Nitrogen (Ammonia + NO_x), mg/L	0.5		0.7		0.6		*0.58*
Remarks	-						

Date	10/12/2007						
Time (hh:mm)	13:50 - 14:04						
Ambient Temperature	21						
Weather	Fine						
Water Depth (m)	9.20						
Monitoring Depth	1.00		4.60		8.20		
Tide	Mid-Ebb						
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth Average*
Water Temperature (℃)	21.2	21.2	20.3	20.3	20.2	20.2	*20.6*
Salinity (ppt)	28.4	28.3	29.5	29.5	30.0	29.9	*29.3*
D.O. (mg/L)	4.79	4.75	4.58	4.56	4.23	4.19	*4.5*
D.O. Saturation (%)	68.3	67.9	65.3	65.1	60.4	60.0	*64.5*
Turbidity (NTU)	4.23	4.33	4.17	4.25	4.80	4.70	*4.4*
SS* (mg/L)	4.3	4.0	5.5	5.7	5.0	5.0	*4.9*
NO_x, mg N/L	0.47		0.48		0.53		*0.49*
NH_3, mg NH_3-N/L	0.12		0.14		0.42		*0.23*
Total Inorganic Nitrogen (Ammonia + NO_x), mg/L	0.6		0.6		1.0		*0.72*
Remarks	-						

Date	12/12/2007						
Time (hh:mm)	14:11 - 14:25						
Ambient Temperature	24						
Weather	Sunny						
Water Depth (m)	9.80						
Monitoring Depth	1.00		4.90		8.80		
Tide	Mid-Ebb						
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth Average*
Water Temperature (℃)	24.3	24.4	24.6	24.2	24.0	24.0	*24.3*
Salinity (ppt)	30.6	30.6	30.9	30.7	30.7	30.8	*30.7*
D.O. (mg/L)	6.00	6.01	5.97	5.96	5.90	5.91	*6.0*
D.O. Saturation (%)	88.4	88.5	85.0	85.1	82.1	82.1	*85.2*
Turbidity (NTU)	4.01	4.03	4.04	4.00	4.14	4.13	*4.1*
SS* (mg/L)	4.3	4.3	4.5	4.8	3.8	4.0	*4.3*
NO_x, mg N/L	0.54		0.46		0.55		*0.52*
NH_3, mg NH_3-N/L	0.39		0.44		0.44		*0.42*
Total Inorganic Nitrogen (Ammonia + NO_x), mg/L	0.9		0.9		1.0		*0.94*
Remarks	-						

Date	14/12/2007						
Time (hh:mm)	15:51 - 16:06						
Ambient Temperature	21						
Weather	Cloudy						
Water Depth (m)	9.80						
Monitoring Depth	1.00		4.90		8.80		
Tide	Mid-Ebb						
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth Average*
Water Temperature (℃)	22.4	22.4	21.8	21.7	21.5	21.4	*21.9*
Salinity (ppt)	30.4	30.4	31.1	31.2	31.3	31.2	*30.9*
D.O. (mg/L)	5.34	5.30	5.18	5.14	5.01	4.97	*5.2*
D.O. Saturation (%)	76.8	76.3	74.5	74.0	72.1	71.5	*74.2*
Turbidity (NTU)	4.77	4.78	4.62	4.63	4.84	4.85	*4.7*
SS* (mg/L)	4.3	4.5	4.8	4.7	5.0	5.0	*4.7*
NO_x, mg N/L	0.30		0.23		0.28		*0.3*
NH_3, mg NH_3-N/L	0.35		0.35		0.37		*0.4*
Total Inorganic Nitrogen (Ammonia + NO_x), mg/L	0.7		0.6		0.7		*0.6*
Remarks	-						

*** 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	01/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	Y

Within Action Level ?

Date	03/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	Y

Within Action Level ?

Date	05/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	Y

Within Action Level ?

Date	07/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	N

Within Action Level ?

Date	10/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	Y

Within Action Level ?

Date	12/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	Y

Within Action Level ?

Date	14/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	Y

Within Limit Level ?

Date	01/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	Y

Within Limit Level ?

Date	03/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	Y

Within Limit Level ?

Date	05/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	Y

Within Limit Level ?

Date	07/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	Y

Within Limit Level ?

Date	10/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	Y

Within Limit Level ?

Date	12/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	Y

Within Limit Level ?

Date	14/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	Y

Water Quality Monitoring Results for Station C2 (Mid-Ebb Tide)

Date	01/12/2007						
Time (hh:mm)	06:20 - 06:35						
Ambient Temperature	16						
Weather	Sunny						
Water Depth (m)	14.40						
Monitoring Depth	1.00		7.20		13.40		
Tide	Mid-Ebb						
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth Average*
Water Temperature (°C)	17.7	17.6	17.4	17.5	17.4	17.4	*17.5*
Salinity (ppt)	30.9	30.9	31.5	31.5	31.6	31.6	*31.3*
D.O. (mg/L)	5.29	5.25	5.15	5.19	5.06	5.02	*5.2*
D.O. Saturation (%)	76.1	75.5	74.1	74.7	72.3	71.7	*74.1*
Turbidity (NTU)	4.82	4.83	4.97	4.96	4.74	4.75	*4.8*
SS* (mg/L)	4.5	4.5	5.2	5.5	4.5	4.5	*4.8*
NO_x, mg N/L	0.18		0.19		0.17		*0.2*
NH_3, mg NH_3-N/L	0.29		0.28		0.36		*0.3*
Total Inorganic Nitrogen (Ammonia + NO_x), mg/L	0.5		0.5		0.5		*0.5*
Remarks	-						

Date	03/12/2007						
Time (hh:mm)	07:31 - 07:45						
Ambient Temperature	17						
Weather	Fine						
Water Depth (m)	15.00						
Monitoring Depth	1.00		7.50		14.00		
Tide	Mid-Ebb						
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth Average*
Water Temperature (°C)	17.9	18.0	18.0	17.8	17.7	17.8	*17.9*
Salinity (ppt)	28.8	28.6	28.8	28.8	29.0	29.0	*28.8*
D.O. (mg/L)	6.18	6.17	6.04	6.03	5.76	5.73	*6.0*
D.O. Saturation (%)	80.1	80.0	72.7	72.9	68.6	68.0	*73.7*
Turbidity (NTU)	4.01	4.02	3.94	3.94	3.71	3.70	*3.9*
SS* (mg/L)	4.3	4.3	4.3	4.5	4.5	4.5	*4.4*
NO_x, mg N/L	0.16		0.19		0.16		*0.2*
NH_3, mg NH_3-N/L	0.23		0.47		0.37		*0.4*
Total Inorganic Nitrogen (Ammonia + NO_x), mg/L	0.4		0.7		0.5		*0.5*
Remarks	-						

Date	05/12/2007						
Time (hh:mm)	09:41 - 09:56						
Ambient Temperature	20						
Weather	Cloudy						
Water Depth (m)	14.40						
Monitoring Depth	1.00		7.20		13.40		
Tide	Mid-Ebb						
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth Average*
Water Temperature (°C)	21.3	21.3	20.9	20.9	20.7	20.7	*21.0*
Salinity (ppt)	29.0	29.0	29.8	29.7	29.8	29.8	*29.5*
D.O. (mg/L)	5.07	5.02	4.64	4.61	4.89	4.85	*4.8*
D.O. Saturation (%)	68.9	68.2	62.7	62.2	66.0	65.4	*65.6*
Turbidity (NTU)	4.98	4.97	4.76	4.72	4.69	4.70	*4.8*
SS* (mg/L)	3.5	3.8	4.5	4.5	5.2	5.2	*4.5*
NO_x, mg N/L	0.28		0.27		0.39		*0.3*
NH_3, mg NH_3-N/L	0.42		0.26		0.24		*0.3*
Total Inorganic Nitrogen (Ammonia + NO_x), mg/L	0.7		0.5		0.6		*0.6*
Remarks	-						

Date	07/12/2007						
Time (hh:mm)	10:31 - 10:43						
Ambient Temperature	19						
Weather	Fine						
Water Depth (m)	14.20						
Monitoring Depth	1.00		7.10		13.20		
Tide	Mid-Ebb						
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth Average*
Water Temperature (°C)	21.1	21.0	20.6	20.6	20.4	20.4	*20.7*
Salinity (ppt)	30.0	30.1	31.1	31.1	31.8	31.8	*31.0*
D.O. (mg/L)	5.35	5.31	5.08	5.06	4.57	4.53	*5.0*
D.O. Saturation (%)	77.5	77.1	73.6	73.4	66.2	65.8	*72.3*
Turbidity (NTU)	4.16	4.22	4.00	4.06	4.85	4.95	*4.4*
SS* (mg/L)	4.3	4.5	4.5	4.5	5.3	5.2	*4.7*
NO_x, mg N/L	0.25		0.25		0.20		*0.23*
NH_3, mg NH_3-N/L	0.19		0.21		0.15		*0.18*
Total Inorganic Nitrogen (Ammonia + NO_x), mg/L	0.4		0.5		0.4		*0.42*
Remarks	-						

Date	10/12/2007						
Time (hh:mm)	13:25 - 13:37						
Ambient Temperature	21						
Weather	Fine						
Water Depth (m)	14.80						
Monitoring Depth	1.00		7.40		13.80		
Tide	Mid-Ebb						
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth Average*
Water Temperature (°C)	21.4	21.4	20.4	20.5	20.3	20.3	*20.7*
Salinity (ppt)	29.5	29.6	29.9	29.9	30.4	30.3	*29.9*
D.O. (mg/L)	4.90	4.88	4.66	4.62	4.64	4.35	*4.3*
D.O. Saturation (%)	69.9	69.7	66.5	66.1	62.1	61.9	*66.0*
Turbidity (NTU)	5.22	5.28	5.03	5.09	4.88	4.95	*5.1*
SS* (mg/L)	5.5	5.5	5.0	5.2	5.0	4.8	*5.2*
NO_x, mg N/L	0.48		0.48		0.48		*0.48*
NH_3, mg NH_3-N/L	0.19		0.27		0.20		*0.22*
Total Inorganic Nitrogen (Ammonia + NO_x), mg/L	0.7		0.8		0.7		*0.70*
Remarks	-						

Date	12/12/2007						
Time (hh:mm)	14:38 -14:50						
Ambient Temperature	24						
Weather	Sunny						
Water Depth (m)	13.00						
Monitoring Depth	1.00		6.50		12.00		
Tide	Mid-Ebb						
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth Average*
Water Temperature (°C)	24.3	24.0	24.0	24.1	23.7	23.9	*24.0*
Salinity (ppt)	30.5	30.6	30.8	30.8	30.9	30.9	*30.8*
D.O. (mg/L)	6.03	6.02	6.00	6.01	5.92	5.92	*6.0*
D.O. Saturation (%)	89.0	88.5	86.0	85.4	83.1	83.1	*85.9*
Turbidity (NTU)	3.50	3.50	3.64	3.74	3.89	3.91	*3.7*
SS* (mg/L)	3.8	4.0	3.8	3.8	4.3	4.2	*4.0*
NO_x, mg N/L	0.45		0.47		0.53		*0.5*
NH_3, mg NH_3-N/L	0.44		0.42		0.39		*0.4*
Total Inorganic Nitrogen (Ammonia + NO_x), mg/L	0.9		0.9		0.9		*0.9*
Remarks	-						

Date	14/12/2007						
Time (hh:mm)	15:31 - 15:46						
Ambient Temperature	21						
Weather	Cloudy						
Water Depth (m)	14.20						
Monitoring Depth	1.00		7.10		13.20		
Tide	Mid-Ebb						
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth Average*
Water Temperature (°C)	22.4	22.5	21.7	21.7	21.4	21.3	*21.8*
Salinity (ppt)	30.4	30.4	31.1	31.1	31.3	31.3	*30.9*
D.O. (mg/L)	5.58	5.54	5.49	5.46	5.07	5.02	*5.4*
D.O. Saturation (%)	80.3	79.7	79.0	78.6	72.5	71.7	*77.0*
Turbidity (NTU)	4.90	4.93	4.77	4.76	4.61	4.62	*4.8*
SS* (mg/L)	5.3	5.5	4.8	5.0	4.5	4.5	*4.9*
NO_x, mg N/L	0.33		0.27		0.27		*0.3*
NH_3, mg NH_3-N/L	0.39		0.41		0.40		*0.4*
Total Inorganic Nitrogen (Ammonia + NO_x), mg/L	0.7		0.7		0.7		*0.7*
Remarks	-						

*** 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	01/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	N

Within Action Level ?

Date	03/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	N

Within Action Level ?

Date	05/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	N

Within Action Level ?

Date	07/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	Y

Within Action Level ?

Date	10/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	N

Within Action Level ?

Date	12/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	N

Within Action Level ?

Date	14/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	N

Within Limit Level ?

Date	01/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	N

Within Limit Level ?

Date	03/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	N

Within Limit Level ?

Date	05/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	N

Within Limit Level ?

Date	07/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	Y

Within Limit Level ?

Date	10/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	N

Within Limit Level ?

Date	12/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	N

Within Limit Level ?

Date	14/12/2007
D.O. (mg/L)	Y
Turbidity (NTU)	Y
SS (mg/L)	Y
TIN (mg/L)	N

Annex J

Event / Action Plans for Air and Water Quality Monitoring

Table J1 Event Action Plans for Air Quality

Event Action Level	Action			
	ET	Contractor	ER	IEC
Exceedance for one sample	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.	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.	1. Confirm receipt of notification of failure in writing. 2. Notify Contractor. 3. Require Contractor to submit air mitigation proposal. 4. Ensure remedial measures are properly implemented.	1. Review monitoring data and investigation report submitted by 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	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.	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.	1. Confirm receipt of notification of failure in writing. 2. Notify Contractor. 3. Require Contractor to submit air mitigation proposal. 4. Ensure remedial measures are properly implemented.	1. Review monitoring data and investigation report submitted by 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	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.	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.	1. Confirm receipt of notification of failure in writing. 2. Notify Contractor. 3. Require Contractor to submit air mitigation proposal. 4. Ensure remedial measures are properly implemented.	1. Review monitoring data and investigation report submitted by 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	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.	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	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.	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 Additional Water Quality Monitoring

Event	Action			
	ET	IC(E)	ER	Contractor
Action level being exceeded by one sampling day	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; (The above actions should be taken within 1 working day after the exceedance is identified) 6. Repeat measurement on next day of exceedance.	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. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Discuss with IC(E) on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented. (The above actions should be taken within 1 working day after the exceedance is identified)	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. (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	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; (The above actions should be taken within 1 working day after the exceedance is identified)	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. (The above actions should be taken within 1 working day after the exceedance is identified)	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. (The above actions should be taken within 1 working day after the exceedance is identified)	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. (The above actions should be

Event	Action			
	ET	IC(E)	ER	Contractor
	7. Repeat measurement on next working day of exceedance.			taken within 1 working day after the exceedance is identified)
Limit level being exceeded by one sampling day	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)	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)	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)	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	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	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. (The above actions should be taken within 1 working day after	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;	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 3 working days;

Event	Action			
	ET	IC(E)	ER	Contractor
	frequency to daily until no exceedance of Limit level for two consecutive days. (The above actions should be taken within 1 working day after the exceedance is identified)	the exceedance is identified)	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. (The above actions should be taken within 1 working day after the exceedance is identified)	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. (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/A

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	---
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.
3.2	Baseline Monitoring Report	One week before the commencement of construction	Report was submitted to the EPD on 24/7/06 and comments from the EPD was received on 3/8/06. Revised report was submitted to EPD on 17/8/06 and no further comments received.

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Construction Phase			
Air Quality	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: • 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
Operational Phase			
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
Construction Phase			
Noise	Good Site Practice: • 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; Environmental audit shall be carried out to ensure that appropriate noise control measures would be properly implemented.	Construction work areas / Construction period	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Operational Phase			
Noise	The following noise reduction measures should be considered as far as practicable during detailed design: • 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	Relevant design and plant procurement procedures to commence at a later stage
Construction Phase			
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	The installation of temporary marine piles was completed on 23 April 2007.

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.		
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	The installation of temporary marine piles was completed on 23 April 2007. Silt screens were removed as requested by the intake owners. Silt screens will be reinstalled at seawater intakes prior to the removal of marine piles.
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	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.	Works areas / construction period	√
Water Quality	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. 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	Works areas / construction period	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	should be discharged into storm drains via silt removal facilities. 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. 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.		
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
	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. 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.		
Water Quality	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. 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.	Works areas / construction period	√
Water Quality	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. 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.	Works areas / construction period	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	Water used in water testing to check leakage of structures and pipes should be reused for other purposes as far as practicable. Surplus unpolluted water could be discharged into storm drains. 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. Discharge of sterilization effluent should be properly pre-treated for compliance with TM/WPCO requirements, such as but not limited to total residual chlorine.	Works areas / construction period	
Water Quality	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. 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.	Works areas / construction period	√
Water Quality	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.	Works areas / construction period	No acidic wastewater will be generated.
Water Quality	Wastewater collected from canteen kitchens, including that from basins, sinks and floor drains, should be discharged into foul	Works areas / construction period	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	sewer via grease traps capable of providing at least 20 minutes retention during peak flow. Drainage serving an open oil filling point should be connected to storm drains via a petrol interceptors with peak storm bypass. 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.		
Water Quality	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. 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.	Works areas / construction period	√
Water Quality	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.	Works areas / construction period	√
Water Quality	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	Works areas / construction period	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges. 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: • 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	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: • 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	Works areas / construction period	Δ

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	wastewater, should be carried out in a distance away from the waterfront, where practicable; • 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	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
	should operate at a reduced speeds to ensure that undue turbidity is not generated by turbulence from vessel movement 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
Construction Phase			
Waste	Recommendations for good site practices during the construction activities include: • 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	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: • 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	Work site / during the construction period	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	recycling of materials and their proper disposal; • encourage collection of aluminum cans by individual collectors by providing separate labeled bins to enable this waste to be segregated from other general refuse generated by the work force; • 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	<u>General Refuse</u> 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.	Work site / during the construction period	√
Waste	<u>Construction and Demolition Material</u> • 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	Work site / during the construction period	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	reference to ETWB TCW No.31/2004 for details; • the large amount of C&D waste generated is mainly due to 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	Chemical Wastes If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a Chemical Waste Producer and to follow the guidelines stated in the *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes*. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container Indicating the corresponding chemical characteristics of the chemical waste, such as 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.	Work site / during the construction period	√
Operational Phase			
Waste	General Refuse 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	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
	arrangements are made with licensed contractors to collect the generated waste, adverse waste-related impact is not anticipated during the operation stage. It is expected that there will be a 5-7% increase ratio in the future operations.		
Construction Phase			
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	√
Operational Phase			
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;	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
	(b) interior visual screens for lower levels of the hotels; (c) consider relocation of facilities of interior spaces of hotels; and (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 – Ngo Kee JV
Δ Deficiency of Mitigation Measures but rectified by Hip Hing – Ngo Kee JV

Annex L

Waste Flow Table

HKCEC – Expansion Project

Name of Project Proponent: HKTDC
Project Commencement Date: 1 Aug 2006
Construction Completion Date: March 2009

Monthly Summary Waste Flow Table for Year 2007

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							
	(a)	(b)	(c)	(d)	(a)-(b)-(c)-(d)	Recycle	Disposal	Recycle	Disposal	Recycle	Disposal	Recycle	Disposal	Disposal	Disposal
January	924	462	0.5	0	462	90 [5]	0	0	0	0.2	0.05	0	0	60	80
February	814	110	0.5	0	704	5 [5]	0	0	0	0.2	0.07	0	288	66	55
March	583	66	0.5	0	517	0	0	0	0	0	0.05	0	0	77	33
April	1034	165	0.5	0	867	0	0	0	0	0.4	0.05	0	0	55	44
May	275.5	33	0.5	0	242	10 [5]	0	0	0	0.4	0.04	0	0	55	154
June	1654	0	0	0	1654	50	0	0	0	0.5	0.03	0	0	80	150
July	614	0	0.5	0	613.5	60	0	0	0	0.5	0.04	0	0	85	298
August	944	0	0.5	0	943.5	1400	0	0	0	0.6	0.01	0	0	70	380
Sep	310	0	0.5	0	309.5	514	0	0	0	0.5	0.02	0	0	50	245
October	406.5	0	0.5	0	406	100	0	0	0	0.5	0.01	0	0	40	38
November	1016.5	0	0.5	0	1016	20	0	0	0	0.5	0.02	0	0	45	150
December	297	0	0.5	0	296.5	0.5	0	0	0	0.5	0.02	0	0	25	67
Total	8872.5	836	5.5	0	8031	2249.5	0	0	0	4.8	0.41	0	288	708	1694

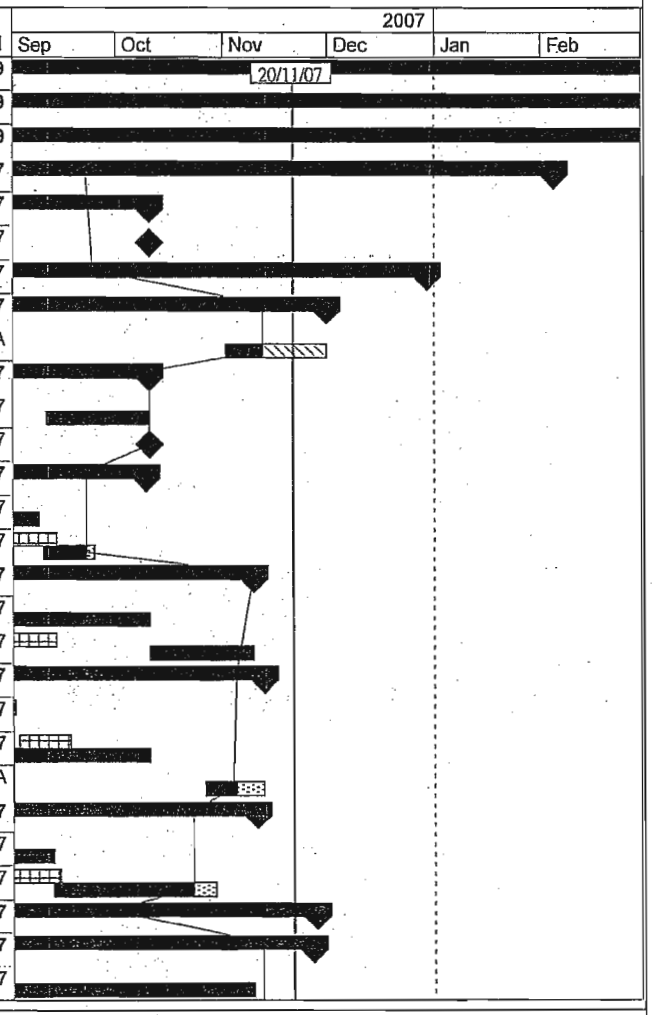
Note:
[1] Inert C&D materials include bricks, concrete, building debris, rubble and excavated soil.
[2] Inert C&D material mainly generated from demolition of atrium link.
[3] Broken concrete fro recycling into aggregates.
[4] C&D wastes include steel materials generated from demolition, paper / cardboard packaging waste, chemical waste and other wastes such as general refuse. Wastes other than general refuse will be disposed of at Tsueng 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.

Annex M

Construction Programme for Next Three Months

Hong Kong Convention and Exhibition Centre
Expansion Project
3 Month Rolling Programme based on revised Master Programme Rev. 2 updating on 20 Nov 07

ID	Task Name	% Compl	Actual Start	Actual Finish	Baseline Start 1	Baseline Finish 1
1	**PROJECT WIDE**	**42%**	**Fri 26/5/06**	**NA**	**Fri 26/5/06**	**Fri 12/6/09**
2	**Critical Dates**	**42%**	**Fri 26/5/06**	**NA**	**Fri 26/5/06**	**Fri 12/6/09**
3	**Project Milestones**	**0%**	**Fri 26/5/06**	**NA**	**Fri 26/5/06**	**Fri 12/6/09**
155	**Design Submission & Approval (Permanent Works)**	**91%**	**Thu 25/5/06**	**NA**	**Thu 25/5/06**	**Mon 24/12/07**
172	**OTTV Calculations**	**100%**	**Thu 12/10/06**	**Wed 10/10/07**	**Thu 12/10/06**	**Mon 17/9/07**
176	RIP/DDR for OTTV	100%	Wed 10/10/07	Wed 10/10/07	Mon 17/9/07	Mon 17/9/07
234	**Architectural Design**	**87%**	**Sat 26/8/06**	**NA**	**Thu 17/8/06**	**Mon 24/12/07**
240	**Fire curtain / Shutter and Smoke curtain schedule**	**95%**	**Mon 28/8/06**	**NA**	**Mon 28/8/06**	**Sat 21/7/07**
248	DDR Resubmit & Review by PM	35%	Fri 2/11/07	NA	NA	NA
276	**External façade Design**	**99%**	**Fri 15/9/06**	**NA**	**Fri 15/9/06**	**Fri 10/8/07**
285	DDR for DD Submission by PM	100%	Tue 11/9/07	Wed 10/10/07	Fri 27/7/07	Fri 10/8/07
286	DDR for External façade Design	0%	NA	NA	Fri 10/8/07	Fri 10/8/07
302	**Foyer Floor and Walls at Level 3 and 6, Interior of**	**79%**	**Fri 27/7/07**	**NA**	**Fri 27/7/07**	**Fri 28/9/07**
303	Detailed Design Preparation	100%	Fri 27/7/07	Sat 8/9/07	Fri 27/7/07	Fri 31/8/07
304	Design Check by Design Checker	90%	Mon 10/9/07	NA	Fri 31/8/07	Thu 13/9/07
312	**Foyer reflected ceiling plan**	**99%**	**Thu 31/5/07**	**NA**	**Thu 31/5/07**	**Thu 13/9/07**
314	Design Check by Design Checker	100%	Sat 7/7/07	Wed 10/10/07	Sat 7/7/07	Thu 30/8/07
315	RIP by PM	100%	Thu 11/10/07	Fri 9/11/07	Fri 31/8/07	Thu 13/9/07
317	**Two Male, Two Female and Baby Room**	**94%**	**Wed 30/5/07**	**NA**	**Wed 30/5/07**	**Mon 17/9/07**
319	Design Check by Design Checker	100%	Fri 6/7/07	Mon 27/8/07	Fri 6/7/07	Sat 1/9/07
320	RIP/DDR by PM	100%	Tue 28/8/07	Wed 10/10/07	Mon 3/9/07	Mon 17/9/07
321	Resubmit & DDR by PM	50%	Sat 27/10/07	NA	NA	NA
323	**Remaining Washrooms**	**82%**	**Fri 27/7/07**	**NA**	**Fri 27/7/07**	**Fri 28/9/07**
324	Detailed Design Preparation	100%	Fri 27/7/07	Wed 12/9/07	Fri 27/7/07	Fri 31/8/07
325	Design Check by Design Checker	87%	Thu 13/9/07	NA	Fri 31/8/07	Fri 14/9/07
328	**Exhibition Halls / Service Counters and Organiser**	**79%**	**Fri 29/9/06**	**NA**	**Fri 29/9/06**	**Sat 15/9/07**
339	**Exhibition Halls**	**92%**	**Wed 30/5/07**	**NA**	**Wed 30/5/07**	**Wed 15/8/07**
341	Design Check by Design Checker	100%	Sat 14/7/07	Fri 9/11/07	Sat 14/7/07	Mon 30/7/07

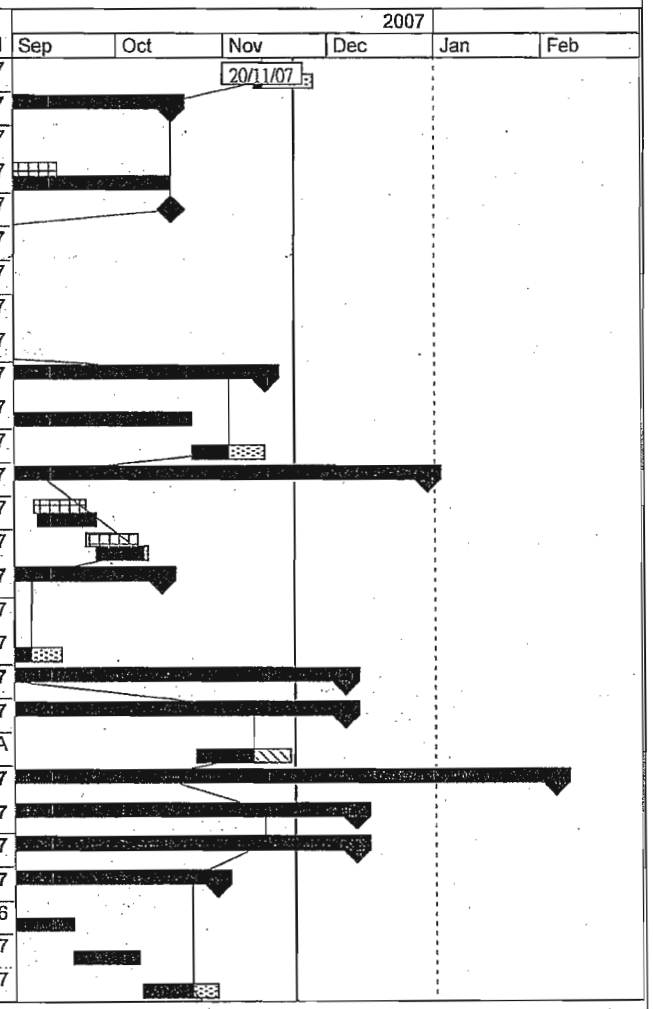


Project:3 Month Rolling Programme based on revised
Date: 20/11/2007

Task
Critical Task
Progress
Milestone
Summary
Split
External Tasks
Project Summary
Group By Summary
Baseline 1

Hong Kong Convention and Exhibition Centre
Expansion Project
3 Month Rolling Programme based on revised Master Programme Rev. 2 updating on 20 Nov 07

ID	Task Name	% Compl	Actual Start	Actual Finish	Baseline Start 1	Baseline Finish 1
342	DDR by PM	10%	Sat 10/11/07	NA	Tue 31/7/07	Wed 15/8/07
358	**Door schedule (incl. sliding and acoustic doors)**	**99%**	**Sat 30/9/06**	**NA**	**Sat 30/9/06**	**Thu 13/9/07**
364	Design Check by Design Checker	100%	Wed 20/6/07	Mon 27/8/07	Wed 20/6/07	Thu 30/8/07
365	DDR by PM	100%	Tue 28/8/07	Tue 16/10/07	Fri 31/8/07	Thu 13/9/07
366	DDR for Door schedule	0%	NA	NA	Thu 13/9/07	Thu 13/9/07
376	**Maintenance access system - Gondola + BMU**	**94%**	**Wed 4/10/06**	**NA**	**Wed 4/10/06**	**Wed 15/8/07**
380	RIP for Maintenance access system / Gondola	100%	Wed 31/1/07	Wed 31/1/07	Wed 31/1/07	Wed 31/1/07
381	Detailed Design Preparation	100%	Thu 1/2/07	Wed 11/7/07	Thu 1/2/07	Wed 11/7/07
382	Design Check by Design Checker	80%	Thu 12/7/07	NA	Thu 12/7/07	Wed 1/8/07
385	**Maintenance access system - Catwalks**	**94%**	**Wed 16/5/07**	**NA**	**Wed 16/5/07**	**Thu 9/8/07**
387	Design Check by Design Checker	100%	Thu 21/6/07	Mon 22/10/07	Thu 21/6/07	Wed 25/7/07
388	RIP/DDR by PM	50%	Tue 23/10/07	NA	Thu 26/7/07	Thu 9/8/07
438	**Landscape Works**	**53%**	**Mon 16/10/06**	**NA**	**Mon 16/10/06**	**Mon 24/12/07**
448	Planting schedule/Material Plans RIP Design Pre	100%	Sat 8/9/07	Mon 24/9/07	Fri 7/9/07	Fri 21/9/07
449	Design Check by Design Checker	90%	Tue 25/9/07	NA	Sat 22/9/07	Sat 6/10/07
481	**Expansion Joint and wall expansion details f**	**81%**	**Fri 6/4/07**	**NA**	**Fri 6/4/07**	**Fri 14/9/07**
485	RIP for Expansion Joint	100%	Thu 9/8/07	Thu 9/8/07	Thu 9/8/07	Thu 9/8/07
486	Detailed Design Preparation	75%	Thu 9/8/07	NA	Thu 9/8/07	Mon 20/8/07
514	**Structural Design**	**89%**	**Fri 26/5/06**	**NA**	**Fri 26/5/06**	**Thu 27/9/07**
600	**Stage 3 A&A Works Modification of Existing /**	**88%**	**Fri 17/11/06**	**NA**	**Fri 17/11/06**	**Sat 22/9/07**
603	Resubmission to IDC for Review	60%	Wed 24/10/07	NA	NA	NA
651	**BS Design**	**93%**	**Thu 1/6/06**	**NA**	**Thu 1/6/06**	**Wed 19/12/07**
652	**BS - HVAC**	**97%**	**Fri 14/7/06**	**NA**	**Fri 14/7/06**	**Wed 19/9/07**
664	**Details Design Review**	**95%**	**Tue 5/9/06**	**NA**	**Tue 5/9/06**	**Wed 19/9/07**
665	**Relocation of Chiller Plant**	**98%**	**Tue 5/9/06**	**NA**	**Tue 5/9/06**	**Fri 10/8/07**
666	Detailed Design Preparation	100%	Tue 5/9/06	Mon 17/9/07	Tue 5/9/06	Sat 25/11/06
667	Design Check by Design Checker	100%	Tue 18/9/07	Sat 6/10/07	Wed 9/5/07	Fri 20/7/07
668	DDR for HVAC Submission by PM	70%	Mon 8/10/07	NA	Sat 21/7/07	Fri 10/8/07



Project:3 Month Rolling Programme based on revised
Date: 20/11/2007

Task
Critical Task
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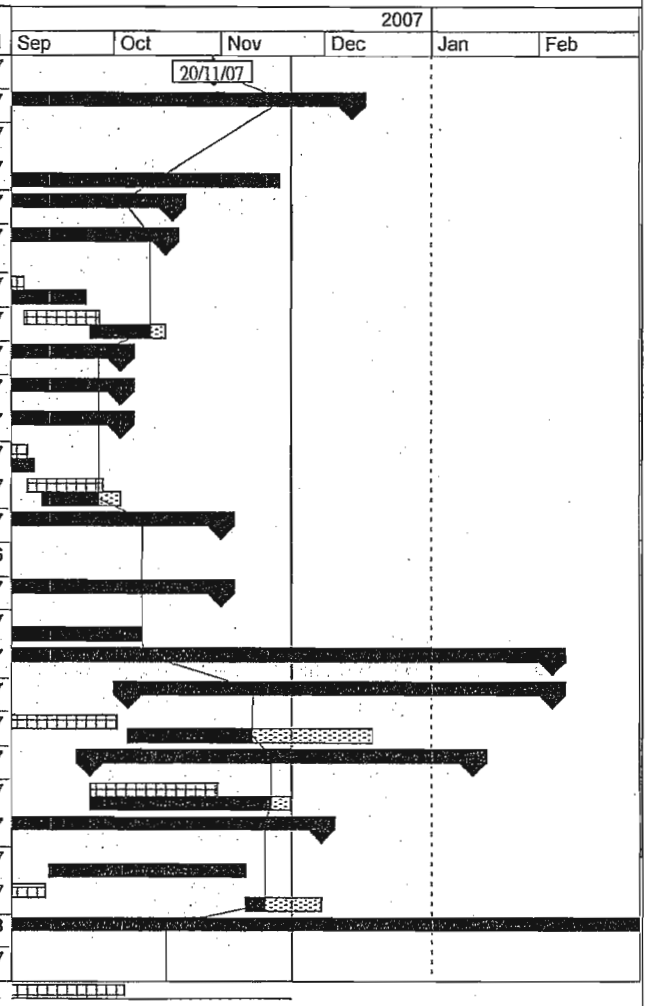
Group By Summary
Baseline 1

Hong Kong Convention and Exhibition Centre
Expansion Project
3 Month Rolling Programme based on revised Master Programme Rev. 2 updating on 20 Nov 07

ID	Task Name	% Compl	Actual Start	Actual Finish	Baseline Start 1	Baseline Finish 1
669	DDR for HVAC	0%	NA	NA	Fri 10/8/07	Fri 10/8/07
670	**HVAC Layout**	**89%**	**Wed 30/5/07**	**NA**	**Wed 30/5/07**	**Wed 19/9/07**
671	Detailed Design Preparation	100%	Wed 30/5/07	Thu 5/7/07	Wed 30/5/07	Thu 5/7/07
672	Design Check by Design Checker	100%	Fri 6/7/07	Sat 17/11/07	Fri 6/7/07	Tue 28/8/07
675	**BS - Electrical**	**96%**	**Fri 21/7/06**	**NA**	**Fri 21/7/06**	**Wed 26/9/07**
676	**Electrical loading calculation & Generator Siz**	**98%**	**Fri 21/7/06**	**NA**	**Fri 21/7/06**	**Wed 26/9/07**
682	Design Check by Design Checker	100%	Tue 8/5/07	Sat 22/9/07	Tue 8/5/07	Tue 4/9/07
683	DDR by PM	80%	Mon 24/9/07	NA	Wed 5/9/07	Wed 26/9/07
722	**BS - Fire Services**	**99%**	**Wed 14/6/06**	**NA**	**Wed 14/6/06**	**Thu 27/9/07**
734	**Details Design Review**	**97%**	**Fri 3/11/06**	**NA**	**Fri 3/11/06**	**Thu 27/9/07**
740	**Stage 2**	**95%**	**Thu 14/6/07**	**NA**	**Thu 14/6/07**	**Thu 27/9/07**
742	Design Check by Design Checker	100%	Thu 19/7/07	Fri 7/9/07	Thu 19/7/07	Wed 5/9/07
743	DDR for Fire Services Submission by F	75%	Mon 10/9/07	NA	Thu 6/9/07	Thu 27/9/07
745	**BS - Plumbing and Drainage**	**97%**	**Fri 2/6/06**	**NA**	**Fri 2/6/06**	**Tue 28/8/07**
746	**Reivew In Principle**	**100%**	**Fri 2/6/06**	**Mon 27/11/06**	**Fri 2/6/06**	**Mon 27/11/06**
767	**Modification of Grease Trap Room at Phase II**	**83%**	**Thu 21/6/07**	**NA**	**Thu 21/6/07**	**Tue 28/8/07**
769	Design Check by Design Checker	100%	Fri 17/8/07	Mon 8/10/07	Fri 27/7/07	Sat 11/8/07
820	**BS - Diversion**	**78%**	**Thu 1/6/06**	**NA**	**Thu 1/6/06**	**Wed 19/12/07**
846	**BS Diversion Plan for Pedestrain Tunnel (Pha**	**30%**	**Fri 5/10/07**	**NA**	**Sat 25/8/07**	**Sat 3/11/07**
847	Design Preparation	50%	Fri 5/10/07	NA	Sat 25/8/07	Tue 2/10/07
871	**BS Diversion Plan for A&A works at Phase II**	**47%**	**Mon 24/9/07**	**NA**	**Mon 24/9/07**	**Wed 19/12/07**
872	Design Preparation	90%	Mon 24/9/07	NA	Mon 24/9/07	Wed 31/10/07
881	**BS Design for Additional Slab at Level 5 & 7 a**	**90%**	**Fri 15/6/07**	**NA**	**Fri 15/6/07**	**Mon 10/9/07**
883	Design Check by Design Checker	100%	Wed 12/9/07	Wed 7/11/07	Sat 21/7/07	Sat 18/8/07
884	RIP/DDR for Submission by PM	25%	Thu 8/11/07	NA	Mon 20/8/07	Mon 10/9/07
934	**Curtain Wall / Cladding**	**24%**	**Fri 20/4/07**	**NA**	**Fri 20/4/07**	**Fri 21/3/08**
935	Subletting preparation (based on DDR submission)	100%	Fri 20/4/07	Fri 3/8/07	Fri 20/4/07	Fri 3/8/07



Project:3 Month Rolling Programme based on revised
Date: 20/11/2007

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Hong Kong Convention and Exhibition Centre
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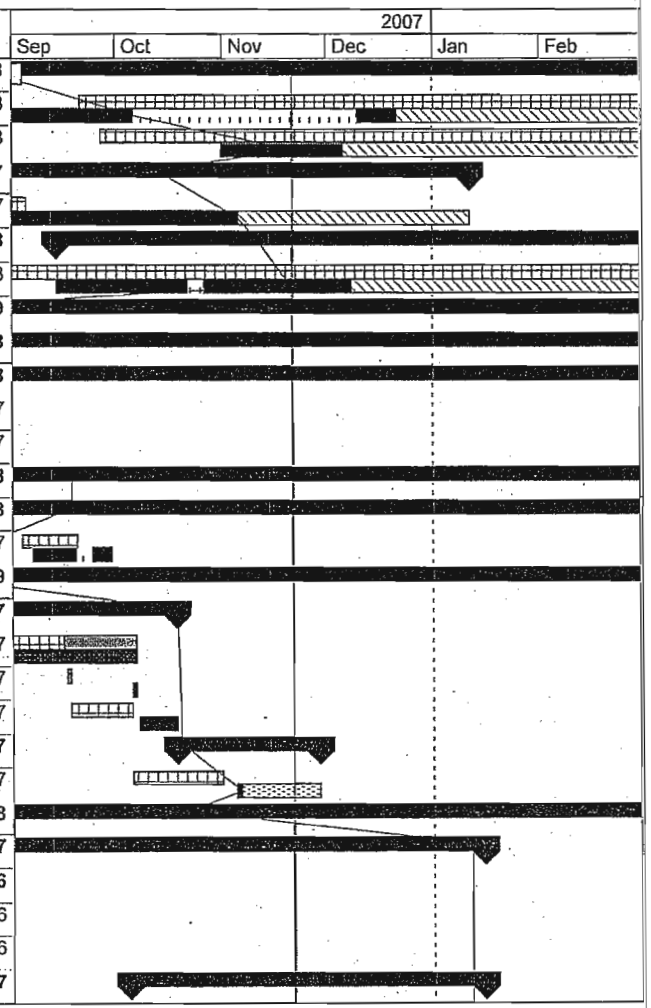
942	**M & E Long - Lead Items**	**6%**	**Sat 16/6/07**	**NA**	**Sat 16/6/07**	**Mon 15/9/08**
943	HVAC Equipment Procurement	25%	Wed 15/8/07	NA	Fri 21/9/07	Sat 14/6/08
944	Electrical Equipment	15%	Thu 1/11/07	NA	Thu 27/9/07	Sat 31/5/08
950	**Bearing for Steel Truss**	**82%**	**Thu 12/10/06**	**NA**	**Thu 12/10/06**	**Wed 5/9/07**
952	Bearing Procument and Delivery	70%	Fri 20/10/06	NA	Fri 20/10/06	Wed 5/9/07
984	**CSWD / CBWD**	**8%**	**Fri 14/9/07**	**NA**	**Wed 15/8/07**	**Sat 27/9/08**
985	CSW/CBW Submission/Comment/Re-submit/Approval	22%	Fri 14/9/07	NA	Wed 15/8/07	Mon 18/8/08
988	**Site Works**	**24%**	**Mon 19/6/06**	**NA**	**Mon 19/6/06**	**Fri 12/6/09**
1014	**A & A Works to Existing HKCEC Phase 1 and 2**	**44%**	**Wed 26/7/06**	**NA**	**Wed 26/7/06**	**Fri 10/10/08**
1018	**HK CEC Phase 1 - New Atrium Link Connection**	**14%**	**Mon 30/4/07**	**NA**	**Mon 30/4/07**	**Fri 10/10/08**
1019	Erect Internal Hoarding (G.L. 25/A1-A)	100%	Mon 30/4/07	Mon 18/6/07	Mon 30/4/07	Mon 18/6/07
1020	Remove Existing Internal Finishes & Feature	70%	Fri 22/6/07	NA	Fri 22/6/07	Tue 14/8/07
1070	**Demolition of Existing Artrium Link**	**92%**	**Wed 14/3/07**	**NA**	**Wed 14/3/07**	**Wed 28/5/08**
1076	**Demolition of Existing Atrium Link**	**90%**	**Wed 14/3/07**	**NA**	**Wed 14/3/07**	**Wed 28/5/08**
1088	Remove Top Portion of Existing Eastern Façade Tru:	100%	Fri 7/9/07	Sat 29/9/07	Tue 4/9/07	Wed 19/9/07
1090	**New Atrium Link Extension**	**18%**	**Tue 27/6/06**	**NA**	**Tue 27/6/06**	**Fri 12/6/09**
1152	**Mini-piles near Grid 16/Al-A, 16/D-E and**	**99%**	**Fri 22/6/07**	**NA**	**Fri 22/6/07**	**Fri 5/10/07**
1153	Mini-pile construction (102 nos)	100%	Fri 22/6/07	Sat 6/10/07	Fri 22/6/07	Sat 15/9/07
1154	Completion Report to IDC	100%	Sat 6/10/07	Sat 6/10/07	Mon 17/9/07	Mon 17/9/07
1155	Load Test for the Selected Piles (2 nos	100%	Mon 8/10/07	Thu 18/10/07	Tue 18/9/07	Fri 5/10/07
1168	**Substructure Construction - Gride 16 & 17 (Minipi**	**3%**	**Fri 19/10/07**	**NA**	**Sat 6/10/07**	**Wed 31/10/07**
1172	Pile Cap Construction /Tie Beams / Ground	5%	Mon 5/11/07	NA	Sat 6/10/07	Wed 31/10/07
1173	**Superstructure**	**36%**	**Thu 30/11/06**	**NA**	**Thu 30/11/06**	**Thu 25/9/08**
1174	**Columns to Steel Truss - Grid 17**	**98%**	**Mon 4/12/06**	**NA**	**Mon 4/12/06**	**Tue 4/12/07**
1175	**Column A1/16**	**100%**	**Mon 4/12/06**	**Wed 27/12/06**	**Mon 4/12/06**	**Wed 27/12/06**
1176	R.C Mega Columns for A1/16(46m3)	100%	Mon 4/12/06	Wed 20/12/06	Mon 4/12/06	Wed 20/12/06
1177	Bearing Installation at Column A1/16	100%	Fri 22/12/06	Wed 27/12/06	Fri 22/12/06	Wed 27/12/06
1178	**Column E/17**	**88%**	**Fri 5/10/07**	**NA**	**Thu 8/11/07**	**Tue 4/12/07**



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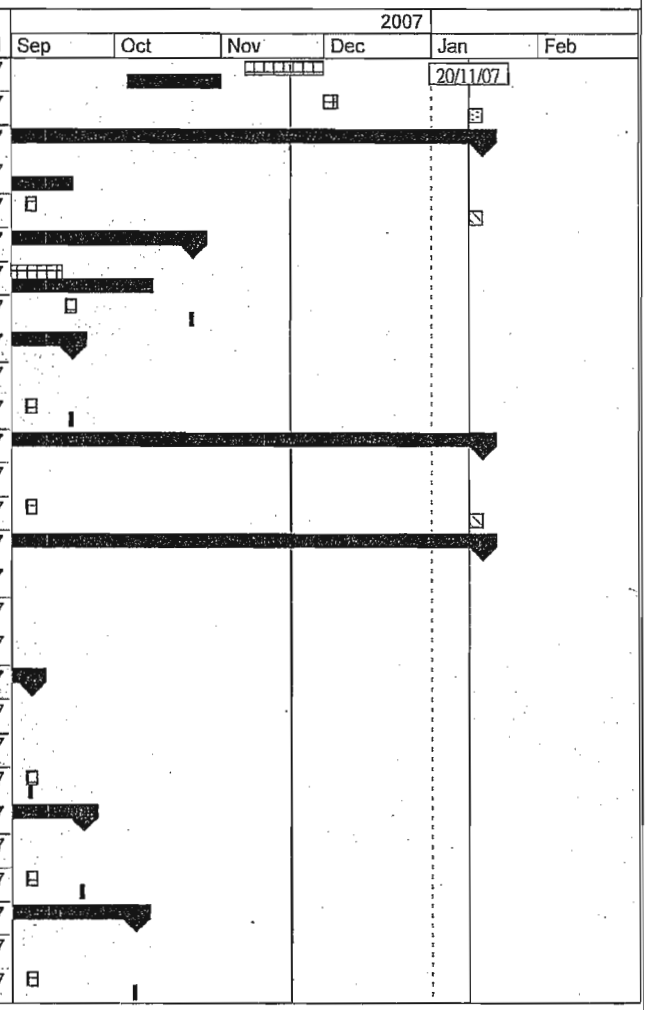
1179	R.C Mega Columns for E/17(91m3)	100%	Fri 5/10/07	Wed 31/10/07	Thu 8/11/07	Fri 30/11/07
1180	Bearing Installation at Column E/17	0%	NA	NA	Sat 1/12/07	Tue 4/12/07
1181	**Column A/17**	**97%**	**Mon 21/5/07**	**NA**	**Mon 21/5/07**	**Sat 8/9/07**
1182	R.C Mega Columns for A/17(310m3)	100%	Mon 21/5/07	Tue 18/9/07	Mon 21/5/07	Fri 31/8/07
1183	Bearing Installation at Column A/17	0%	NA	NA	Wed 5/9/07	Sat 8/9/07
1184	**Column B/17**	**100%**	**Tue 29/5/07**	**Tue 23/10/07**	**Tue 29/5/07**	**Wed 19/9/07**
1185	R.C Mega Columns for B/17(420m3)	100%	Tue 29/5/07	Thu 11/10/07	Tue 29/5/07	Sat 15/9/07
1186	Bearing Installation at Column B/17	100%	Tue 23/10/07	Tue 23/10/07	Mon 17/9/07	Wed 19/9/07
1187	**Column C/17**	**100%**	**Sat 5/5/07**	**Tue 18/9/07**	**Sat 5/5/07**	**Sat 8/9/07**
1188	R.C Mega Columns for C/17(467m3)	100%	Sat 5/5/07	Wed 11/7/07	Sat 5/5/07	Wed 11/7/07
1189	Bearing Installation at Column C/17	100%	Tue 18/9/07	Tue 18/9/07	Wed 5/9/07	Sat 8/9/07
1190	**Column D/17**	**94%**	**Fri 18/5/07**	**NA**	**Fri 18/5/07**	**Sat 8/9/07**
1191	R.C Mega Columns for D/17(314m3)	100%	Fri 18/5/07	Wed 18/7/07	Fri 18/5/07	Wed 18/7/07
1192	Bearing Installation at Column D/17	0%	NA	NA	Wed 5/9/07	Sat 8/9/07
1193	**Columns to Steel Truss - Grid 24**	**99%**	**Thu 14/12/06**	**NA**	**Thu 14/12/06**	**Sat 8/9/07**
1194	**Column A1/24**	**100%**	**Thu 14/12/06**	**Tue 9/1/07**	**Thu 14/12/06**	**Tue 9/1/07**
1195	R.C. Mega Columns for A1/24(52m3)	100%	Thu 14/12/06	Sat 6/1/07	Thu 14/12/06	Sat 6/1/07
1196	Bearing Installation at Column A1/24	100%	Fri 5/1/07	Tue 9/1/07	Fri 5/1/07	Tue 9/1/07
1197	**Column A1a/24**	**100%**	**Fri 2/2/07**	**Thu 6/9/07**	**Fri 2/2/07**	**Sat 8/9/07**
1198	R.C. Mega Columns for A1a/24 (+3.8 to +1	100%	Fri 2/2/07	Fri 9/2/07	Fri 2/2/07	Fri 9/2/07
1199	R.C. Mega Columns for A1a/24 (+14.4 to +	100%	Fri 2/2/07	Wed 4/4/07	Fri 2/2/07	Wed 4/4/07
1200	Bearing Installation at Column A1a/24	100%	Thu 6/9/07	Thu 6/9/07	Wed 5/9/07	Sat 8/9/07
1201	**Column Ba/24**	**100%**	**Mon 12/3/07**	**Fri 21/9/07**	**Mon 12/3/07**	**Sat 8/9/07**
1202	R.C. Mega Columns for Ba/24 (316m3)	100%	Mon 12/3/07	Sat 26/5/07	Mon 12/3/07	Sat 26/5/07
1203	Bearing Installation at Column Ba/24	100%	Fri 21/9/07	Fri 21/9/07	Wed 5/9/07	Sat 8/9/07
1204	**Columns C/24**	**100%**	**Tue 8/5/07**	**Sat 6/10/07**	**Tue 8/5/07**	**Sat 8/9/07**
1205	R.C. Mega Columns for C/24(438m3)	100%	Tue 8/5/07	Mon 16/7/07	Tue 8/5/07	Mon 16/7/07
1206	Bearing Installation at Column C/24	100%	Sat 6/10/07	Sat 6/10/07	Wed 5/9/07	Sat 8/9/07



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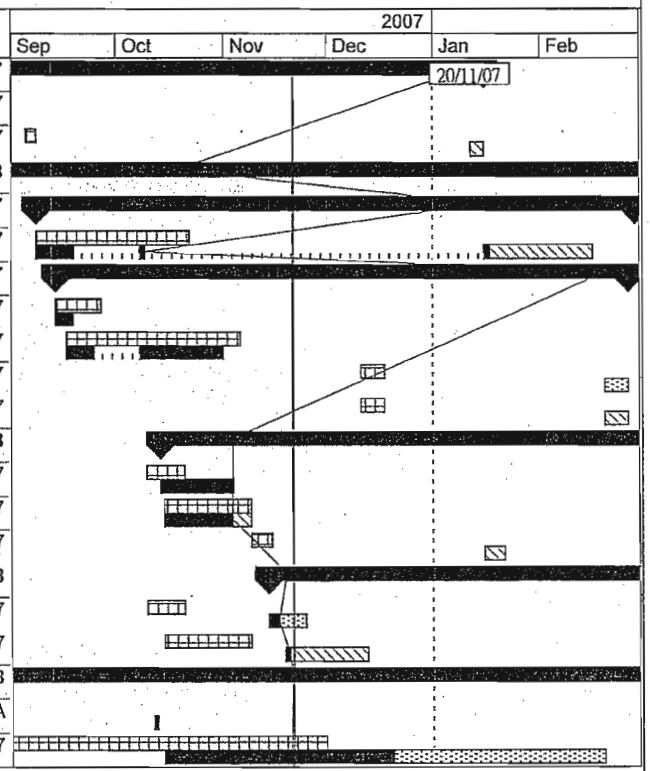
1207	**Columns D/24**	**94%**	**Wed 16/5/07**	**NA**	**Wed 16/5/07**	**Sat 8/9/07**
1208	R.C. Mega Columns for D/24(331m3)	100%	Wed 16/5/07	Fri 13/7/07	Wed 16/5/07	Fri 13/7/07
1209	Bearing Installation at Column D/24	0%	NA	NA	Wed 5/9/07	Sat 8/9/07
1215	**Steel Roof Trusses and Superstructure**	**22%**	**Thu 30/11/06**	**NA**	**Thu 30/11/06**	**Thu 25/9/08**
1278	**Temporary Works for Sliding & Heavy Lifting**	**31%**	**Sat 8/9/07**	**NA**	**Sat 8/9/07**	**Wed 19/12/07**
1279	Heavy Lifting & Sliding System Installation	35%	Sat 8/9/07	NA	Sat 8/9/07	Mon 22/10/07
1281	**Transfer Truss for Grid 24/A-B**	**71%**	**Fri 14/9/07**	**NA**	**Fri 14/9/07**	**Mon 17/12/07**
1282	Delivery of Materials	100%	Fri 14/9/07	Tue 18/9/07	Fri 14/9/07	Wed 26/9/07
1283	Assembly Steel Transfer Truss on Column /	100%	Mon 17/9/07	Wed 31/10/07	Mon 17/9/07	Mon 5/11/07
1284	Connection of Roof Truss A	0%	NA	NA	Tue 11/12/07	Mon 17/12/07
1285	Connection to Roof Truss B	0%	NA	NA	Tue 11/12/07	Mon 17/12/07
1286	**Roof Truss A**	**24%**	**Sun 14/10/07**	**NA**	**Wed 10/10/07**	**Wed 20/2/08**
1287	Delivery of Materials	100%	Sun 14/10/07	Sat 3/11/07	Wed 10/10/07	Sat 20/10/07
1288	Assembly of Steel Roof Truss A on Site	80%	Mon 15/10/07	NA	Mon 15/10/07	Thu 8/11/07
1289	Erect Temp Bracing between Roof Truss A	0%	NA	NA	Fri 9/11/07	Wed 14/11/07
1295	**Roof Truss B**	**4%**	**Wed 14/11/07**	**NA**	**Wed 10/10/07**	**Wed 20/2/08**
1296	Delivery of Materials	30%	Wed 14/11/07	NA	Wed 10/10/07	Sat 20/10/07
1297	Assembly of Steel Roof Truss B on Site	5%	Mon 19/11/07	NA	Mon 15/10/07	Thu 8/11/07
1624	**Transformer Installation at Level 1 Phase 2**	**39%**	**Fri 1/6/07**	**NA**	**Fri 1/6/07**	**Mon 14/7/08**
1629	Consent to A & A Works	100%	Fri 12/10/07	Fri 12/10/07	NA	NA
1630	A&A Works for Transformer room	55%	Mon 15/10/07	NA	Wed 1/8/07	Fri 30/11/07



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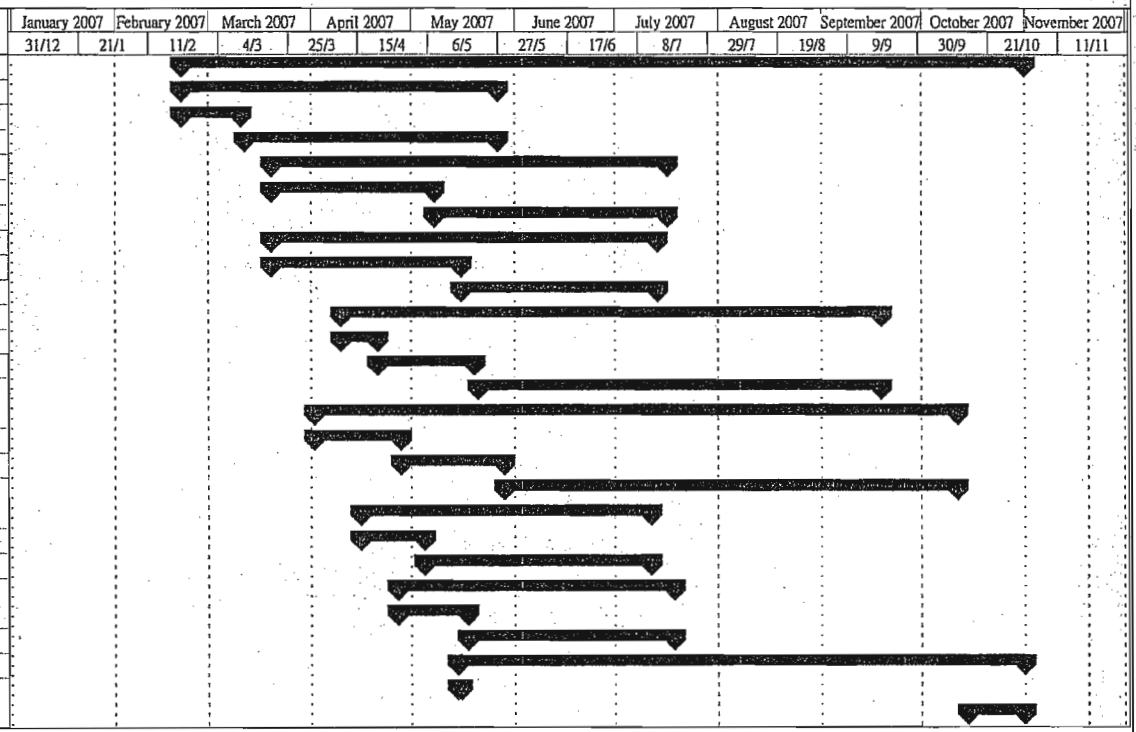
Hip Hing - Ngo Kee Joint Venture
HKCEC - Expansion Project

PILE CAP AND COLUMN CONSTRUCTION FOR GRID 17 & 24 / A - E

ID	Task Name	Duration	Start	Finish
1	Pile Cap & Column Construction	212 days	Wed 21/2/07	Wed 31/10/07
2	For Grid Ba/24	80 days	Wed 21/2/07	Sat 26/5/07
3	Pile Cap Ba/24	16 days	Wed 21/2/07	Sat 10/3/07
9	Column Ba/24	64 days	Mon 12/3/07	Sat 26/5/07
50	For Grid C/24	98 days	Tue 20/3/07	Mon 16/7/07
51	Underground Transfer Section C/24	41 days	Tue 20/3/07	Mon 7/5/07
53	Column C/24	57 days	Tue 8/5/07	Mon 16/7/07
104	For Grid D/24	96 days	Tue 20/3/07	Fri 13/7/07
105	Underground Transfer Section D/24	48 days	Tue 20/3/07	Tue 15/5/07
107	Column D/24	48 days	Wed 16/5/07	Fri 13/7/07
148	For Grid A/17	135 days	Tue 10/4/07	Tue 18/9/07
149	Pile Cap A/17	10 days	Tue 10/4/07	Fri 20/4/07
156	A/17 A&A Works at Atrium Link	24 days	Sat 21/4/07	Sat 19/5/07
158	Column A/17	101 days	Mon 21/5/07	Tue 18/9/07
206	For Grid B/17	161 days	Mon 2/4/07	Thu 11/10/07
207	Pile Cap B/17	23 days	Mon 2/4/07	Fri 27/4/07
220	B/17 A&A Works at Atrium Link	24 days	Sat 28/4/07	Mon 28/5/07
222	Column B/17	114 days	Tue 29/5/07	Thu 11/10/07
289	For Grid C/17	71 days	Mon 16/4/07	Wed 11/7/07
290	Pile Cap C/17	16 days	Mon 16/4/07	Fri 4/5/07
300	Column C/17	55 days	Sat 5/5/07	Wed 11/7/07
353	For Grid D/17	67 days	Fri 27/4/07	Wed 18/7/07
354	Pile Cap D/17	17 days	Fri 27/4/07	Thu 17/5/07
364	Column D/17	50 days	Fri 18/5/07	Wed 18/7/07
400	For Grid E/17	142 days	Tue 15/5/07	Wed 31/10/07
401	Pile Cap E/17	1 day	Tue 15/5/07	Tue 15/5/07
403	Column E/17	15 days	Mon 15/10/07	Wed 31/10/07



Date: Tue 20/11/07 | Task | Milestone | Summary | Progress

Annex N

Laboratory Report of Water Quality Sampling

ENVIRO LABS LIMITED

環境化驗有限公司

TEST REPORT

JOB NO.	:	712093			
DATE OF ISSUE	:	28 December 2007	**PAGE**	:	1 of 1

1. Customer

Hip Hing - Ngo Kee Joint Venture

5/F, 38 Sheung On Street, Chai Wan, Hong Kong

Attn.: Mr. Ken Leung

2. Sample Identification

Sample Description	:	2 batches of water sample said to be wastewater was received in cool condition
Quantity of Sample	:	2 x 1L in plastic bottles (for TSS) and 2 x 250mL in plastic bottles (for COD)
Sampling	:	Conducted by the staff of the Enviro Labs Ltd.
Sampling Point	:	Outlet of Wastewater Treatment Facility (HKCEC Expansion Project, **H200605**)
Preservation	:	Stored under refrigerated condition, COD: conc. H_2SO_4 was added to pH < 2
Sampling Date	:	13 Dec 2007
Received Date	:	13 Dec 2007
Testing Period	:	13 – 28 Dec 2007

3. Test Method

Parameter		*Reference Method*
(i)	pH	APHA[1] 20e 4500 H^+B
(ii)	Total Suspended Solids (TSS) Dried at 103-105°C	APHA[1] 17e 2540 D
(iii)	Chemical Oxygen Demand (COD)	APHA[1] 20e 5220 C

1. APHA Standard Methods for the Examination of Water and Wastewater

4. Test Result*

Label marked by customer	*Test Parameter*	*Sample No.*	*Test Result*	*Discharge Limit ***	*Unit*
HKCEC Expansion Project **H200605** WT-21	pH at 22 °C	712093-1	8.3	6 – 9	--
	TSS	712093-1	< 7	≤30	mg/L
	COD	712093-2	< 50	≤80	mgO_2/L
HKCEC Expansion Project **H200605** WT-25	pH at 24 °C	712093-3	8.1	6 – 9	--
	TSS	712093-3	2.9	≤30	mg/L
	COD	712093-4	< 50	≤80	mgO_2/L

* Test results relate only to the items received.

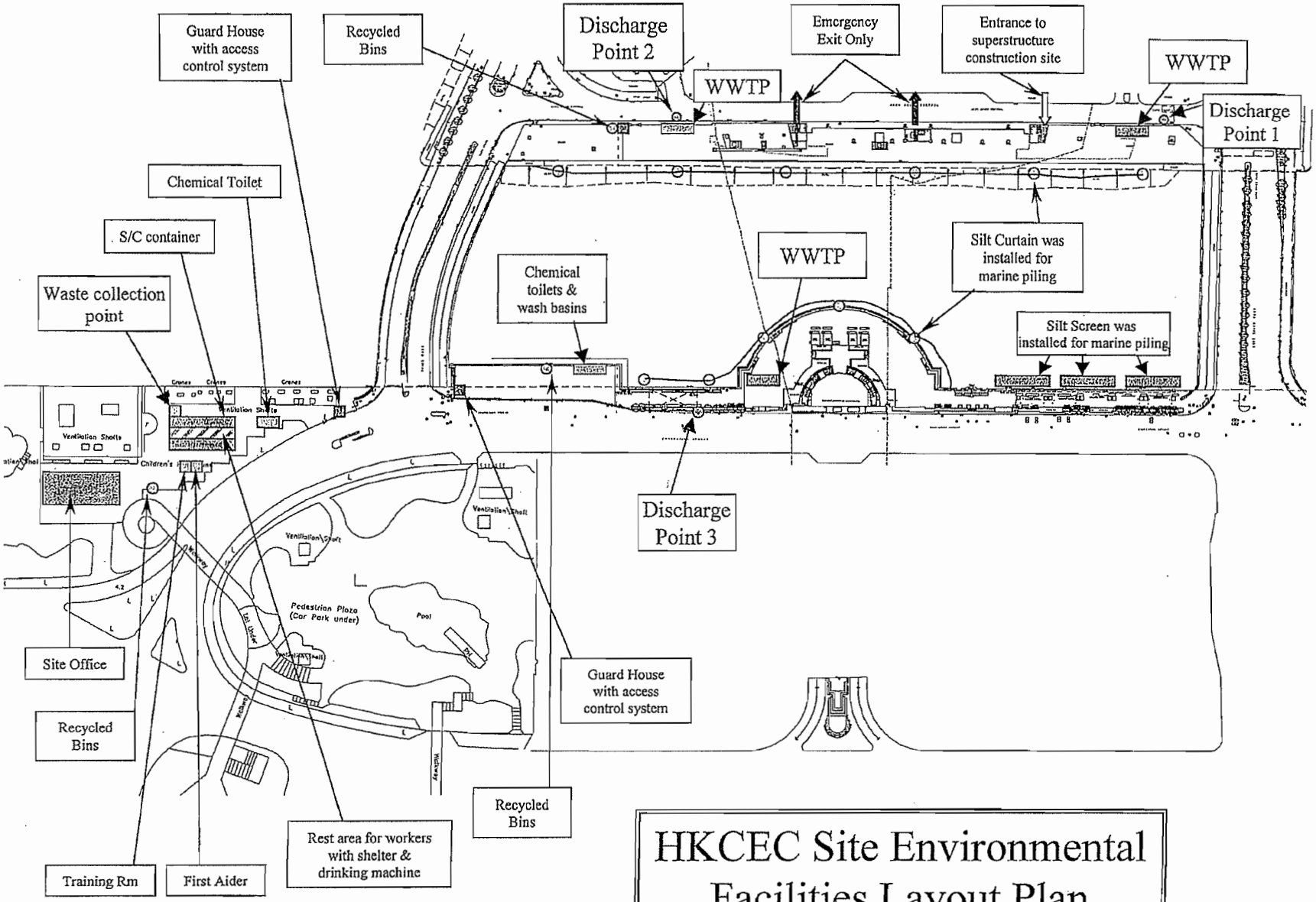
** Information provided by the customer. *(It is not a test result, information for reference only).*

---- END of REPORT ----

APPROVED SIGNATORY : _____

Kenneth Kar Kin LAM
(Laboratory Manager)

Rm 611-612, Hong Leong Plaza, 33 Lok Yip Road, Fanling, N.T., Hong Kong
Tel: (852) 2676 2983
Fax: (852) 2676 2860
http://www.envirolabs.com.hk
e-mail: ell@envirolabs.com.hk



HKCEC Site Environmental Facilities Layout Plan

(1-Aug-06)