

JOB No.: TCS00491/09

DSD CONTRACT NO.: DC/2009/08

CONSTRUCTION OF YUEN LONG SOUTH BRANCH
SEWERS AND EXPANSION OF HA TSUEN SEWAGE
PUMPING STATION

12TH ENVIRONMENTAL MONITORING & AUDIT
MONTHLY REPORT – JANUARY 2011

PREPARED FOR

CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG)
COMPANY LIMITED

Quality Index

Date	Reference No.	Prepared By	Certified By
5 July 2011	TCS00491/09/600/R0200v2	Dennis Ho (Environmental Consultant)	T.W. Tam (Environmental Team Leader)
			

Version	Date	Description
1	4 July 2011	First Submission
2	5 July 2011	Amended against IEC's comments on 5 July 2011

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6 July 2011

By Post

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Your Ref:

Our Ref: EB000586-F/E11-096141

For attention of: Mr. T. W. Tam

Dear Mr. Tam,

Contract No.: DC/2009/08
Construction of Yuen Long South Branch Sewers and Expansion of Ha Tsuen Sewage Pumping Station
Monthly EM&A Report for Designated Project, January 2011 – IEC Verification

With reference to ET's captioned report (ET's ref.: TCS00491/09/600/R0200v2 dated 5 July 2011) received on 5 July 2011, we have no comment and hereby verify the captioned report excluding the Landscape and Visual Impact section of the report.

We request the ET to submit the separate submission of Landscape and Visual Impact section of the report as soon as possible, for the completion of the captioned report.

Should there be any queries, please feel free to contact our William Law on 2911 2511.

Yours sincerely

F.C. TSANG
Independent Environmental Checker
HYDER CONSULTING LIMITED

FCT/WL/my

EXECUTIVE SUMMARY

- ES01. The China State Construction Engineering (Hong Kong) Limited (hereinafter “The Contractor”) has been awarded by the Drainage Services Department (DSD) the Contract **DC/2009/08 Construction of Yuen Long South Branch Sewers and Expansion of Ha Tsuen Sewage Pumping Station** (the Project) in October 2009.
- ES01. For ease of reporting, it has been agreed among the Engineer’s Representatives (ER, AECOM), Independent Environmental Checker (IEC, Hyder Consulting Limited), The Contractor (The China State Construction Engineering (Hong Kong) Limited), Environmental Team (Action-United Environmental Services and Consulting, ET) and Environmental Protection Department (EPD) that the EM&A report under the Project is split to the following two stand-alone parts:
- Expansion of the existing Ha Tsuen Sewage Pumping Station (under Environmental Permit No.EP-327/2009/A)
 - Construction of a sewage pumping station near Shui Tsiu San Tsuen Road in Yuen Long South; and construction of about 9km of sewers and rising mains with diameter ranging from 200-1500mm in Yuen Long South and Ha Tsuen areas (without Environmental Permit).
- ES02. This is the **12th** monthly EM&A Report – *Expansion of Ha Tsuen Sewage Pumping Station* (hereinafter ‘this Report’) for designated works under Environmental Permit No.EP327/2009A (hereinafter ‘the EP’), covering a period from **1 to 31 January 2011** (hereinafter ‘the Reporting Period’).

ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

- ES03. Environmental monitoring activities under the EM&A program in this reporting month are summarized in the following table.

Aspects	Environmental Monitoring Parameters / Inspection	Occasions
Air Quality	1-hour Total Suspended Particulates (TSP)	30
	24-hour Total Suspended Particulates (TSP)	10
Construction Noise	Leq (30min) Daytime	10
Water Quality	Dissolved Oxygen	13
	Turbidity	13
	Total Suspended Solids	13
Inspection / Audit	ET Weekly Environmental Site Inspection	4

BREACH OF ACTION AND LIMIT (A/L) LEVELS

- ES04. Breach of the air quality, construction noise and water quality in this reporting period is summarized in the following table.

Environmental Aspects	Monitoring Parameters	Action Level	Limit Level	Event & Action		
				NOE Issued	Investigation	Corrective Actions
Air Quality	1-hour TSP	0	0	0	--	--
	24-hour TSP	0	0	0	--	--
Construction Noise	Leq (30min) Daytime	0	0	0	--	--
Water Quality	Dissolved Oxygen	0	0	0	--	--
	Turbidity	0	0	0	--	--
	Suspended Solids	0	5	5	Not project related	--

Note: NOE – Notification of Exceedance

In this reporting period, no exceedance was recorded in air quality and noise quality. However, five Limit Level exceedances in Suspended Solids were found in stream water quality monitoring. NOEs were issued to relevant parties upon confirmation of the results; The results was found that such exceedances were not project related.

ENVIRONMENTAL COMPLAINT

ES05. No environmental complaint was recorded / received in this reporting month. The statistics of environmental complaint are summarized in the following table.

Reporting Period	Environmental Complaint Statistics		
	Frequency	Cumulative	Complaint Nature
1– 31 Jan 2011	0	0	NA

NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES06. No environmental summons and successful prosecutions were recorded in this reporting month. The statistics of environmental complaint are summarized in the following tables.

Reporting Period	Environmental Summons Statistics		
	Frequency	Cumulative	Complaint Nature
1– 31 Jan 2011	0	0	NA

Reporting Period	Environmental Prosecution Statistics		
	Frequency	Cumulative	Complaint Nature
1– 31 Jan 2011	0	0	NA

REPORTING CHANGE

ES07. There are no reporting changes in this reporting month.

SITE INSPECTION BY EXTERNAL PARTIES

ES08. In this reporting period, no site inspection was carried by EPD or AFCD.

FUTURE KEY ISSUES

ES09. During dry season, special attention should be paid to the dust mitigation measures to avoid fugitive dust emissions from loose soil surface or haul road. Nevertheless, mitigation measures implemented for control the surface runoff including wheel wash facilities, covering of the loose soil surface or stockpile with tarpaulin sheet, etc., should be properly maintained to prevent any muddy or sandy runoff from the loose soil surface overflow on the site boundary; and also with construction noise and other environmental issues stipulated in the Environmental Monitoring and Audit Manual.

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1. INTRODUCTION

BACKGROUND

- 1.01 The China State Construction Engineering (Hong Kong) Limited (hereinafter “The Contractor”) has been awarded by the Drainage Services Department (DSD) the Contract DC/2009/08 *Construction of Yuen Long South Branch Sewers and Expansion of Ha Tsuen Sewage Pumping Station* (the Project) in October 2009.
- 1.02 The Project involves construction of about 9km of sewers and rising mains with diameter ranging from 200-1500mm in Yuen Long South and Ha Tsuen areas, a sewage pumping station near Shui Tsiu San Tsuen Road in Yuen Long South, expansion of existing Ha Tsuen Sewage Pumping Station. The site layout plan is shown in **Appendix A**.
- 1.03 The construction of expansion Ha Tsuen Sewage Pumping Station is under a statutory EIA (Register No. AEIAR-072/2003) study for “*Upgrading and expansion of San Wai Sewage Treatment Works and expansion of Ha Tsuen Pumping Station*” commissioned by the DSD. An Environmental Permit (No. EP-327/2009/A) for upgrading and expansion of Sewage Treatment Works at San Wai (excluded for the Project) and Ha Tsuen Sewage Pumping Station has been obtained by DSD in January 2009 for the relevant works.
- 1.04 According to the Section 25 of the Particular Specification (PS) and the Environmental Permit No. EP-327/2009/A, the scope of monitoring includes air quality, construction noise, water quality and environmental site audit. It should be undertaken in accordance with the Environmental Monitoring and Audit Manual as part of EIA report [AEIAR-072/2003] (hereafter “the EM&A Manual”) by an independent Environmental Team (ET). Also, monitoring and audit works for landscaping and visual will be undertaken as part of the EM&A programme.
- 1.05 As the works of the Project has been commenced in different periods of time, the EM&A Report for the Project are split to two separate parts as follows:
- (a) Expansion Ha Tsuen Sewage Pumping Station (under Environmental Permit No.EP-327/2009/A);
 - (b) Construction of sewers and rising mains with diameter ranging from 200-1500mm in Yuen Long South and Ha Tsuen areas and a sewage pumping station near Shui Tsiu San Tsuen Road in Yuen Long South (the works without Environmental Permit)
- 1.06 Action-United Environmental Services and Consulting (AUES) has been commissioned by the Contractor as the ET to implement the relevant EM&A program. As part of the project EM&A program, baseline monitoring was conducted between **22 December 2009** and **18 January 2010** to determine the ambient environmental conditions before the project commence any major construction works at Ha Tsuen Sewage Pumping Station and it had been verified by IEC and endorsed by EPD.
- 1.07 This is the **12th** monthly EM&A Report – *Expansion of Ha Tsuen Sewage Pumping Station* (hereinafter ‘this Report’) for designated works under Environmental Permit No.EP-327/2009 (hereinafter ‘the EP’), covering a period from **1 to 31 January 2011** (hereinafter ‘the Reporting Period’).

REPORT STRUCTURE

- 1.08 The Monthly Environmental Monitoring and Audit (EM&A) Report is structured into the following sections:-
- SECTION 1** INTRODUCTION
 - SECTION 2** PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS
 - SECTION 3** SUMMARY OF IMPACT MONITORING REQUIREMENTS
 - SECTION 4** IMPACT MONITORING RESULTS
 - SECTION 5** WASTE MANAGEMENT

SECTION 6	SITE INSPECTIONS
SECTION 7	ENVIRONMENTAL COMPLAINTS AND NON-COMPLIANCE
SECTION 8	IMPLEMENTATION STATUSES OF MITIGATION MEASURES
SECTION 9	IMPACT FORECAST
SECTION 10	CONCLUSIONS AND RECOMMENDATIONS

2. PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS

PROJECT ORGANIZATION AND MANAGEMENT STRUCTURE

- 2.01 Organization structure and contact details of the Contractor and relevant parties with respect to the on-site environmental management are shown in [Appendix B](#).

CONSTRUCTION PROGRESS

- 2.02 The tentative master construction programs and a three month rolling construction programme are enclosed in [Appendix C](#). Also, the major construction activities undertaken in this reporting month are listed below:
- Installation of temporary shoring system
 - Excavation

SUMMARY OF ENVIRONMENTAL SUBMISSIONS

- 2.03 Summary of the relevant permits, licences, and/or notifications on environmental protection for this Project in this reporting month is presented in [Table 2-1](#).

Table 2-1 Status of Environmental Licenses and Permits

Item	Description	License/Permit Status
1	Environmental Permit (EP-329/2009/A)	Updated on 1 June 2010
2	Chemical waste Producer Registration Registration No. 5213-511-C3570-01	Issued on 13 Nov 2009
3	Water Pollution Control Ordinance (Discharge License) License No. WT00005671-2009	Issued on 12 Jan 2010 Expiry date: 31 Jan 2015
4	Billing Account for Disposal of Construction Waste (Account Number: 700947)	Issued on 7 October 2009

- 2.04 The baseline monitoring report - *Expansion of Ha Tsuen Sewage Pumping Station (Ref: TCS00491/09/600/R0023v6)* had been verified by IEC and endorsed by EPD.

3. SUMMARY OF IMPACT MONITORING REQUIREMENTS

- 3.01 The Environmental Monitoring and Audit requirements are set out in the EM&A Manual. Environmental issues such as air quality, construction noise and water quality were identified as the key issues during the construction phase of expansion of Ha Tsuen Pumping Station. Also, monitoring and audit works for landscaping and visual shall be undertaken as part of the EM&A programme.

MONITORING PARAMETERS

- 3.02 According to the *EM&A Manual*, the environmental aspect implemented by ET has to be included air quality, construction noise and water quality, also the landscape and visual impact to be monitored by a competent landscape architect. The monitoring parameters are summarized in **Table 3-1**.

Table 3-1 Summary of Monitoring Parameters

Environmental Aspect	Parameters
Air Quality	1-hour Total Suspended Particulates (hereinafter ‘1-hr TSP’); and 24-hour Total Suspended Particulates (hereinafter ‘24-hr TSP’).
Construction Noise	- A-weighted equivalent continuous sound pressure level (30min) (hereinafter ‘Leq(30min)’ during the normal working hours; and - A-weighted equivalent continuous sound pressure level (5min) (hereinafter ‘Leq(5min)’ for construction work during the restricted hours.
Water Quality – Local Stream Course	- In Situ Measurement - Dissolved Oxygen (DO) and Turbidity - Laboratory Analysis - Suspended Solids (SS)
Water Quality – Effluent Discharge	- In Situ Measurement - pH value - Laboratory Analysis - SS and Chemical oxygen demand (COD)
Landscape and Visual Resources	- Vegetation survey undertaken on an “area” basis to identify representative types and species composition; - Assessment of landscape character; and - Tree survey report. - The inspection findings will be submitted separately.

MONITORING LOCATIONS

Monitoring Location Stipulation in the EM&A Manual

- 3.03 According to *EM&A Manual Sections 2.2.1.18, 3.4.1.1 & 4.4.1.4*, and Figures 2.1, 2.2, 3.1, 3.2 and 4.2, there are four air and noise monitoring stations and one water quality monitoring station identified as sensitivity receivers during construction phase of the Project. For the four designated air and noise monitoring locations, two are located within the San Wai STW and other two are within the existing Ha Tsuen Pumping Station. Also, a local stream course of water quality monitoring station is identified in Tin Shui Wai Nullah. Besides, the area of landscape and visual monitoring is recommended for the entire selected route and within compounds in accordance with *the EM&A Manual Section 6.3.1.1*.

Air Quality

- 3.04 In order to identify and seek for the access for the air monitoring locations designated in the EM&A Manual, site inspection and the premises request about the monitoring locations have been carried out by the Contractor and ET. The designated monitoring location Yeung Chun Pui Care & Attention Home located at Sha Chau Lei Road has been identified, but the premise was granted by CEDD existing project CV/2008/03 for air quality monitoring. Also, the HVS installation at the other one designated air monitoring station Tin Shing Court, the premises is refused by the incorporated owners.

- 3.05 In this case, the alternative location Ho Tak Sum Primary School as one sensitive receiver

mentioned in the EIA Report (Register No. AEIAR-072/2003) is proposed to be the replacement to undertake air quality monitoring during the expansion works of Ha Tsuen Sewage Pumping Station in accordance with the EM&A Manual Clauses 2.2.1.20. Simultaneously, air monitoring at the designated location Yeung Chun Pui Care & Attention Home is proposed to be performed. The proposal and recommendation is agreed by IEC and as endorsed by EPD. The monitoring stations are detailed to list in **Table 3-2** and illustrated in **Appendix D**.

Table 3-2 Air Quality Monitoring Stations

Monitoring Location ID	Identified Address	Remarks
AM1	Ho Tak Sum Primary School	Replace the Designated Monitoring Station Tin Shing Court
AM2	Yeung Chun Pui Care & Attention Home	Designated in the EM&A Manual

3.06 The graphic of air monitoring stations are illustrated in **Appendix D**.

Construction Noise

3.07 Similar to the air monitoring, the construction noise monitoring stations undertaken for EM&A programme is agreed by IEC and as endorsed by EPD. The detailed monitoring stations are listed in **Table 3-3** and shown in **Appendix D**.

Table 3-3 Construction Noise Monitoring Stations

Monitoring Location ID	Identified Address	Remarks
NM1	Ho Tak Sum Primary School	Replace the Designated Monitoring Station Tin Shing Court
NM2	Yeung Chun Pui Care & Attention Home	Designated in the EM&A Manual

Water Quality

3.08 One designated location of a local stream course, Tin Shui Wai Nullah, is proposed to carry out water quality monitoring in accordance with the EM&A Manual. The designated sampling location R1 is located at the midpoint between two pedestrian flyovers athwart Tin Shui Wai Nullah, which are 320 meters apart, there is technical difficulty and safety is concerned. So, a new sampling point located at approximately 160m upstream of the R1 (hereinafter as R1b) was therefore proposed for the local stream impact monitoring. A proposal (submission ref.: TCS00491/09/300/L0080) has been verified by IEC and submitted to EPD with no further comments received.

3.09 The detailed monitoring station is listed in **Table 3-4** and show in **Appendix D**.

Table 3-4 Local Stream Water Quality Monitoring Station

Monitoring Location ID	Identified Address	Remarks
R1b	The athwart Tin Shui Wai Nullah pedestrian flyover	About 160 meters upstream from the designated location as stipulated in the EM&A Manual. Also, closer the existing Ha Tsuen Pumping Station

3.10 According to the EM&A Manual Section 4.3.1.5, the effluent water quality monitoring are proposed to be carried out at representative discharge point(s) where effluent from the construction sites is discharged into the local water course after being treated in a wastewater treatment system.

Landscape and Visual

- 3.11 The selected route and area, frequency and requirements of landscape & visual monitoring is proposed by a competent landscape architect.

MONITORING FREQUENCY

- 3.12 According to the *EM&A Manual* Sections 2.2.1.27, 3.6 and 4.4.1.8, impact monitoring is covered air quality, noise and water quality of local stream course.

Air Quality Monitoring

Parameters: 1-hour TSP and 24-hour TSP.

Frequency: Once every six days for 24-hour TSP and three times every six days for 1-hour TSP.

Duration: Throughout the construction period.

Noise Monitoring

Parameters: One set of Leq(30min) as 6 consecutive Leq(5min) between 0700-1900 hours on normal weekdays.

Leq (5min), L10 and L90 during the construction undertaken during Restricted Hours (19:00 to 07:00 hours next of normal working day and full day of public holiday and Sunday)

Frequency: Once every six days during 0700-1900 hours on normal weekdays. Restricted Hour monitoring should depend on conditions stipulated in Construction Noise Permit.

Duration: Throughout the construction period.

Water Quality Monitoring of Local Stream Course

Parameters: DO, Turbidity and SS.

Frequency: 3 days per week.

Depths: mid-depth

Duration: Throughout the construction period and the interval between 2 sets of monitoring is not less than 36 hours

Water Quality Monitoring of Effluent Discharge

Parameters: pH, COD and SS.

Frequency: Depend on conditions stipulated in discharge license under **Section 20** of the **Water Pollution Control Ordinance**.

Duration: Throughout the construction period

Landscape and Visual Monitoring

Parameters: Site inspection with broad scope of audit as listed in the EM&A Manuals

Frequency: Once every 2 weeks

Duration: Throughout the construction period

- 3.13 Post Project Monitoring will be performed at water quality monitoring local stream course. The requirements are same as baseline monitoring are presented below:

Parameters: DO, Turbidity and SS.

Frequency: 3 days per week.

Depths: mid-depth

Duration: 4 weeks and the interval between 2 sets of monitoring is not less than 36 hours upon completion of the construction activities

MONITORING METHODOLOGY AND EQUIPMENT

Air Quality

- 3.14 The air quality monitoring equipment for 1-hour and 24-hour TSP are listed in **Table 3-5** and the specification of equipment was submitted before the EM&A programme commencement.

Table 3-5 Air Quality Monitoring Equipment

Equipment	Description
1-hour TSP	
Portable dust meter	TSI DustTrak Model 8520 / Sibata LD-3 Laser Dust Meter
24-hour TSP	
High Volume Air Sampler	Thermo Andersen GS 2310 HVS
Calibration Kit	TISCH Model TE-5025A

1-hour TSP

- 3.15 The 1-hour TSP monitor is conducted either with a TSI Dust Track Aerosol Monitor Model 8520 or a Sibata LD-3 Laser Dust Meter which is a portable, battery-operated laser photometer. The 1-hour TSP meter provides a real time 1-hour TSP measurement based on 90° light scattering. The 1-hour TSP monitor consists of the following:
- (a.) A pump to draw sample aerosol through the optic chamber where TSP is measured;
 - (b.) A sheath air system isolates the aerosol in the chamber to keep the optics clean for maximum reliability; and
 - (c.) A built-in data logger compatible with Windows based program to facilitate data collection, analysis and reporting.
- 3.16 The 1-hour TSP meter is used within the valid period as follow manufacturer's Operation and Service Manual.

24-hour TSP

- 3.17 The equipment used for 24-hour TSP measurement is Thermo Andersen Model GS2310 TSP high volume air sampling system, which complied with EPA Code of Federal Regulation, Appendix B to Part 50. The High Volume Air Sampler (HVS) consists of the following:
- (a.) An anodized aluminum shelter;
 - (b.) A 8"x10" stainless steel filter holder;
 - (c.) A blower motor assembly;
 - (d.) A continuous flow/pressure recorder;
 - (e.) A motor speed-voltage control/elapsed time indicator;
 - (f.) A 7-day mechanical timer; and
 - (g.) A power supply of 220V/50 Hz.
- 3.18 The HVS was operated and calibrated on a regular basis in accordance to the manufacturer's instruction using the NIST-certified standard calibrator (Tisch Calibration Kit Model TE-5025A). One point checking would be carried out in two-month interval while full point checking every six months.
- 3.19 24-hour TSP was collected by the ET on filters of HVS and quantified by a local HOKLAS accredited laboratory, ALS Technichem (HK) Pty Ltd (ALS), upon receipt of the samples. The ET kept all the sampled 24-hour TSP filters in normal air conditioned room conditions, i.e. 70% RH (Relative Humidity) and 25°C, for six months prior to disposal.

Noise

- 3.20 The equipment for noise monitoring is summarized in **Table 3-6** and the specification was submitted before the EM&A programme commencement.

Table 3-6 Noise Monitoring Equipment

Equipment	Description
Integrating Sound Level Meter	B&K Type 2238 or 2236
Calibrator	B&K Type 4231
Portable Wind Speed Indicator	Testo Anemometer

- 3.21 Sound level meters listed above comply with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications, as recommended in Technical Memorandum (TM) issued under the Noise Control Ordinance (NCO).
- 3.22 Noise measurements were taken in terms of the A-weighted equivalent sound pressure level (L_{eq}) measured in decibels (dB). Supplementary statistical results (L_{10} and L_{90}) were also obtained for reference.
- 3.23 During the construction noise monitoring, all noise measurements were performed with the meter set to FAST response and on the A-weighted equivalent continuous sound pressure level (L_{eq}). $L_{eq(30min)}$ in six consecutive $L_{eq(5min)}$ measurements were used as the monitoring parameter for the time period between 0700-1900 hours on weekdays; and also $L_{eq(15min)}$ in three consecutive $L_{eq(5min)}$ measurements were used as monitoring parameter for other time periods (e.g. during restricted hours).
- 3.24 No noise extension cable was used to link the microphone with sound level meter for the measurement. The microphone was set about 1.2m height above ground and oriented such that it was pointed to the site with the microphone facing perpendicular to the line of sight. The windshield was fitted for all measurements. The monitoring locations AM1 and AM2 were normally set in a free field situation.
- 3.25 In prior of impact noise measurement, the accuracy of the sound level meter was checked using an acoustic calibrator generating a known sound pressure level at a known frequency. The checking was performed before and after the noise measurement. Also, the wind speed was checked with a portable wind speed meter. No fog and rain were encountered during the noise measurement, and the wind speed and gusts were also below 5m/s and 10m/s respectively.

Water quality of Local Stream Course

- 3.26 The equipment for water monitoring is summarized in **Table 3-7** and the specifications were submitted before the EM&A programme commencement.

Table 3-7 Water Quality Monitoring Equipments

Equipment	Model / Description
Water Sampler	Teflon bailer / bucket
Thermometer & DO meter	YSI 550A DO Meter
Turbidimeter	Hach 2100p
Sample Container	High density polythene bottles (provided by laboratory)
Storage Container	'Willow' 33-litter plastic cool box

- 3.27 Water quality monitoring was conducted at mid-depth of the water column.

Dissolved Oxygen (DO)

- 3.28 A portable YSI 550A DO Meter was used for in-situ DO measurement, which automates the measurements of temperature, dissolved oxygen and dissolved oxygen saturation simultaneously. The DO meter is capable of measuring DO in the range of 0 - 20 mg/L and 0 - 200 % saturation. Before each round of monitoring, the dissolved oxygen probe is calibrated by the wet bulb method with distilled water. Calibration of the equipment are performed by ALS on quarterly

basis.

Turbidity

- 3.29 A portable Hach 2100p turbidity Meter was used for in-situ turbidity measurement. The turbidity meter is capable of measuring turbidity in the range of 0 – 1000 NTU. Calibration of the equipment is performed by ALS on quarterly basis.

Suspended Solids (SS)

- 3.30 SS will be determined by ALS upon receipt of the water samples using HOKLAS accredited analytical methods namely ALS Method EA-025.

Water Sampler

- 3.31 Water samples were collected by the ET using a plastic sampler, which has a volume of not less than 2 litres and can be sealed at both ends with cups to prevent metal contamination. The sampler was rinsed before collection with the sample to be taken. The water sample was collected at mid-depth level at the selected monitoring location for SS determination.

Sample Container

- 3.32 Water sample was contained in screw-cap PE (Poly-Ethylene) sampling bottle (1,000ml) to be provided by HOKLAS accredited laboratory ALS. Where appropriate, the sampling bottle was rinsed with the water to be contained in prior. Water sample was then transferred from the sampler to the sample bottles to 95% bottle capacity to allow possible volume expansion during delivery and storage.

Sample Storage

- 3.33 A 'Willow' 33-litter plastic cool box packed with ice was used to preserve the collected water samples prior to arrival at the laboratory. The water temperature of the cool box was maintained at a temperature as close to 4°C as possible without being frozen. Samples were delivered to laboratory within 24 hours and analyzed within 2 days of delivery or within the holding time as advised by the laboratory.

EQUIPMENT CALIBRATION

- 3.34 Calibration of the HVS was performed upon installation in accordance with the manufacturer's instruction using the NIST-certified standard calibrator (Tisch Calibration Kit Model TE-5025A). The calibration data are properly documented and the records are maintained by ET for future reference.
- 3.35 The 1-hour TSP meter was calibrated by the supplier prior to purchase. Zero response of the equipment was checked before and after each monitoring event. In-house calibration with the High Volume Sampler (HVS) in same condition was undertaken in yearly basis.
- 3.36 The sound level meter and calibrator are calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme at yearly basis.
- 3.37 All updated calibration certificates of the monitoring equipment used for the impact monitoring program in this Reporting Month are attached in [Appendix E](#).

METEOROLOGICAL INFORMATION

- 3.38 The meteorological information in this reporting month was downloaded from Lau Fau Shan Station of the Hong Kong Observatory (HKO) and presented in [Appendix F](#).

DATA MANAGEMENT AND DATA QA/QC CONTROL

- 3.39 The impact monitoring data are handled by the ET's systematic data recording and management, which complies with in-house Quality Management System. Standard Field Data Sheets (FDS) are used in the impact monitoring program.
- 3.40 The monitoring data recorded in the equipment e.g. 1-hour TSP meters and noise meters are downloaded directly from the equipment at the end of each monitoring day. The downloaded

monitoring data are input into a computerized database properly maintained by the ET. The laboratory results or water quality in-situ measurement records are input directly into the computerized database and QA/QC checked by personnel other than those who input the data.

- 3.41 For monitoring activities that require laboratory analysis, the local laboratory follows the QA/QC requirements as set out under the HOKLAS scheme for all laboratory testing.

DETERMINATION OF ACTION/LIMIT (A/L) LEVELS

- 3.42 According to the EM&A Manual, the air quality, construction noise and water quality criteria were set up, namely Action and Limit levels are listed in **Tables 3-8, 3-9 and 3-10** as below:-

Table 3-8 Action and Limit Levels for Air Quality Monitoring

Monitoring Location	Action Level ($\mu\text{g}/\text{m}^3$)		Limit Level ($\mu\text{g}/\text{m}^3$)	
	1-hour	24-hour	1-hour	24-hour
AM1	305	162	> 500	> 260
AM2	310	190	> 500	> 260

Table 3-9 Action and Limit Levels for Construction Noise

Monitoring Location	Action Level	Limit Level in dB(A)
	0700-1900 hrs on normal weekdays	
NM1	When one or more documented complaints are received	70 dB(A) of Leq(30min) during normal hours from 0700 to 1900 hours on normal weekdays, reduced to 65 dB(A) during school examination periods
NM2		70 dB(A) of Leq(30min) during normal hours from 0700 to 1900 hours on normal weekdays

Note: * Reduces to 65 dB(A) during the school examination periods.

Table 3-10 Action and Limit Levels for a Local Stream Water Quality Monitoring (R1b)

Parameter	Action Level	Limit Level
DO (mg/L)	4.6	4 mg/L or 40% saturation at 15°C
Turbidity (NTU)	15.6	16.2
SS (mg/L)	31.5	31.9

- 3.43 Should non-compliance of the environmental quality criteria occurs, remedial actions will be triggered according to the Event and Action Plan enclosed in [Appendix G](#).

4. IMPACT MONITORING RESULTS

- 4.01 Further to the Contractor's instructions, the EM&A program commenced on 8 February 2010. The monitoring schedule was issued to relevant parties in prior impact monitoring. The monitoring activities undertaken in this reporting month is listed in [Appendix H](#). The monitoring results are presented in the following sub-sections.

RESULTS OF AIR QUALITY MONITORING

- 4.02 In this reporting period, a total of **10** events of 24-hour TSP monitoring and **30** events of 1-hour TSP monitoring were undertaken and the results are summarized in **Tables 4-1 and 4-2**. The 24-hour TSP raw data sheets are shown in [Appendix I](#). Also, the graphical plots for the 24-hour and 1-hour TSP monitoring result are shown in [Appendix J](#).

Table 4-1 Summary of 24-hour and 1-hour TSP Monitoring Results – AM1

Date	24-hour TSP ($\mu\text{g}/\text{m}^3$)	1-hour TSP ($\mu\text{g}/\text{m}^3$)				
		Date	Start Time	1 st hour measured	2 nd hour measured	3 rd hour measured
5-Jan-11	50	6-Jan-11	9:06	74	81	69
11-Jan-11	71	12-Jan-11	9:08	64	76	79
17-Jan-11	75	18-Jan-11	13:16	90	81	86
22-Jan-11	119	24-Jan-11	9:09	73	95	90
28-Jan-11	105	29-Jan-11	9:09	67	73	86
Average (Range)	84 (50-119)	Average (Range)		79 (64-95)		

Table 4-2 Summary of 24-hour and 1-hour TSP Monitoring Results – AM2

Date	24-hour TSP ($\mu\text{g}/\text{m}^3$)	1-hour TSP ($\mu\text{g}/\text{m}^3$)				
		Date	Start Time	1 st hour measured	2 nd hour measured	3 rd hour measured
5-Jan-11	51	6-Jan-11	9:16	80	78	73
11-Jan-11	119	12-Jan-11	9:16	73	81	80
17-Jan-11	87	18-Jan-11	13:36	96	98	91
22-Jan-11	97	24-Jan-11	9:17	86	99	97
28-Jan-11	114	29-Jan-11	9:18	86	79	81
Average (Range)	94 (51-119)	Average (Range)		85 (73-99)		

- 4.03 As shown in [Tables 4-1](#) and [4-2](#), 1-hour and 24-hour TSP monitoring results fluctuated well below the Action Level in this Reporting Period.
- 4.04 The meteorological data during the impact monitoring days are summarized in [Appendix F](#).

RESULTS OF CONSTRUCTION NOISE MONITORING

- 4.05 The noise monitoring results conducted at the designated locations are summarized in [Tables 4-3](#) and [4-4](#). The sound level were set up in a free field situation and, therefore, a façade correction of +3 dB(A) was added according to acoustical principles and EPD guidelines.

Table 4-3 Summary of Construction Noise Monitoring Results – NM1

Date	Start Time	1 st Leq _{5min}	2 nd Leq _{5min}	3 rd Leq _{5min}	4 th Leq _{5min}	5 th Leq _{5min}	6 th Leq _{5min}	Leq _{30min}	Corrected* Leq _{30min}
6-Jan-11	9:15	60.7	62.8	69.5	60.9	62.2	61.6	64.3	67.3
12-Jan-11	9:31	62.6	63.2	65.1	61.2	64.8	60.1	63.2	66.2
18-Jan-11	13:08	58.2	59.7	59.4	61.7	60.8	60.2	60.1	63.1
24-Jan-11	9:48	57.3	61.8	60.6	61.7	62.8	63.3	61.6	64.6
29-Jan-11	9:46	57.3	61.2	59.7	60.8	59.2	61.6	60.2	63.2
Limit Level		-						> 70 dB(A)	

(*) A façade correction of +3 dB(A) has been added according to acoustical principles and EPD guidelines.

Table 4-4 Summary of Construction Noise Monitoring Results – NM2

Date	Start Time	1 st Leq _{5min}	2 nd Leq _{5min}	3 rd Leq _{5min}	4 th Leq _{5min}	5 th Leq _{5min}	6 th Leq _{5min}	Leq _{30min}	Corrected* Leq _{30min}
6-Jan-11	10:03	65.2	64.2	63.8	65.2	63.9	64.3	64.5	67.5
12-Jan-11	10:26	68.4	68.8	66.6	65.3	62.2	61.1	66.3	69.3
18-Jan-11	14:01	63.3	64.8	62.6	64.3	61.7	60.0	63.1	66.1
24-Jan-11	10:32	65.4	67.2	62.6	65.7	66.5	65.8	65.7	68.7
29-Jan-11	10:33	64.3	62.6	63.2	60.8	61.1	58.2	62.1	65.1
Limit Level		-						> 70 dB(A)	

(*) A façade correction of +3 dB(A) has been added according to acoustical principles and EPD guidelines.

- 4.06 It was noted that no noise complaint (which is an Action Level exceedance) was received. In view of the results shown in [Tables 4-3](#) and [4-4](#), No Action/Limit level exceedance was recorded during the reporting month. No corrective action was therefore required. The graphical plot is shown in [Appendix J](#).

RESULTS OF WATER QUALITY MONITORING – LOCAL STREAM COURSE

- 4.07 In this Reporting Month, a total of **12** sampling days were performed for water quality monitoring at R1b of the local stream course, Tin Shui Wai Nullah. The monitoring results including in-situ measurements and laboratory testing results are provided in [Appendix I](#). The graphical plots are shown in [Appendix J](#).
- 4.08 Monitoring results of 3 key parameters: dissolved oxygen (DO), turbidity and suspended solids (SS) in this Reporting Month, are summarized in [Table 4-5](#).

Table 4-5 Summaries of Water Quality Results – R1b

Sampling date	DO conc. (mg/L)	Turbidity (NTU)	SS (mg/L)
4-Jan-2011	11.9	13.2	20.0
6-Jan-2011	17.6	14.5	28.0
8-Jan-2011	15.3	13.5	23.0
10-Jan-2011	14.9	12.3	26.0
12-Jan-2011	5.8	13.2	23.0
15-Jan-2011	14.5	14.2	28.0
18-Jan-2011	20.1	15.0	41.0
20-Jan-2011	9.9	8.0	22.0
22-Jan-2011	9.6	8.2	36.0
24-Jan-2011	10.8	9.6	62.0

27-Jan-2011	16.6	15.4	31.0
29-Jan-2011	18.6	15.2	35.0
31-Jan-2011	19.2	15.4	40.0

Remarks: *Bold indicated Action Level exceedance*

Bold and Italic indicated Limit Level exceedance

- 4.09 In this Reporting Period, five Limit Level exceedances in Suspended Solids were resulted from the samples collected at location R1b. NOEs were issued to relevant parties upon confirmation of the results; The results was found that such exceedances were not project related.
- 4.10 During the Reporting Period, field measurements showed that water temperature and pH value of the local stream are within 11.9°C to 21.7°C, and 8.3 to 9.8 respectively.

RESULTS OF LANDSCAPE AND VISUAL IMPACT

- 4.11 The landscape and visual impacts monitoring results and findings will be submitted separately as a stand-alone document.

5. WASTE MANAGEMENT

- 5.01 Waste management was carried out by an on-site Environmental Officer or an Environmental Supervisor from time to time.

RECORDS OF WASTE QUANTITIES

- 5.02 All types of waste arising from the construction work are classified into the following:
- Construction & Demolition (C&D) Material;
 - Chemical Waste;
 - General Refuse; and
 - Excavated Soil.
- 5.03 The quantities of waste for disposal in this Reporting Period are summarized in [Tables 5-1](#) and [5-2](#) and the Monthly Summary Waste Flow Table is shown in [Appendix K](#). Whenever possible, materials were reused on-site as far as practicable.

Table 5-1 Summary of Quantities of Inert C&D Materials

Type of Waste	Quantity	Disposal Location
C&D Materials (Inert) (m ³)	0	-
Reused in this Contract (Inert) (m ³)	0	-
Reused in other Projects (Inert) (m ³)	0	-
Disposal as Public Fill (Inert) (m ³)	4579	Tuen Mun Area 38

Table 5-2 Summary of Quantities of C&D Wastes

Type of Waste	Quantity	Disposal Location
Recycled Metal (kg)	0	-
Recycled Paper / Cardboard Packing (kg)	0	-
Recycled Plastic (kg)	2575	Collected by local recycling operators (Professional Recycle Services Ltd/Yat Wai Renewable Resources Co. Ltd)
Chemical Wastes (kg)	0	-
General Refuses (m ³)	1	NENT

- 5.04 There was no site effluent or surface runoff discharged in this monthly period.
- 5.05 To control over the site performance on waste management, the Contractor shall ensure that all solid and liquid waste management works are in full compliance with the relevant license/permit requirements, such as the effluent discharge licence and the chemical waste producer registration. The Contractor is also reminded to implement the recommended environmental mitigation measures according to the EM&A Manual based on actual site conditions.

6. SITE INSPECTIONS

- 6.01 According to the Environmental Monitoring and Audit Manual, the environmental site inspection should be formulated by ET Leader. Regular environmental site inspections had been carried out by ET joined with the Contractor and ER to confirm the environmental performance. During this Reporting Period, the joint site inspection was undertaken on **4, 11, 20 and 26 January 2011** to evaluate the site environmental performance. No non-compliance was noted.
- 6.02 Observations for the site inspections and monthly audit found at Ha Tsuen Pumping Station within this Reporting Period are summarized in **Table 6-1** and inspection checklists are attached in **Appendix L**.

Table 6-1 Site Observations in the Reporting Month

Date	Findings / Deficiencies	Follow-Up
4 January 2011	Nil	N/A
11 January 2011	Nil	N/A
20 January 2011	- Stockpile without cover was observed, the contractor was reminded to provide proper mitigation measure to prevent dust generation. - C&D and general waste scattered on site was observed, housekeeping should be improve at Ha Tsuen Road works area.	Rectified before the next inspection Rectified before the next inspection
26 January 2011	No adverse environmental observation was observed	N/A

7. ENVIRONMENTAL COMPLAINTS AND NON-COMPLIANCE

ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION

- 7.01 No environmental complaint, summons and prosecution was received in this Reporting Period. The statistical summary table of environmental complaint is presented in [Tables 7-1, 7-2](#) and [7-3](#).

Table 7-1 Statistical Summary of Environmental Complaints

Reporting Period	Environmental Complaint Statistics		
	Frequency	Cumulative	Complaint Nature
Feb – Dec 2010	-	3	Air/Noise
1 Jan - 31 Jan 2011	0	0	NA

Table 7-2 Statistical Summary of Environmental Summons

Reporting Period	Environmental Complaint Statistics		
	Frequency	Cumulative	Complaint Nature
Feb – Dec 2010	0	0	NA
1 Jan - 31 Jan 2011	0	0	NA

Table 7-3 Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Complaint Statistics		
	Frequency	Cumulative	Complaint Nature
Feb – Dec 2010	0	0	NA
1 Jan - 31 Jan 2011	0	0	NA

8. IMPLEMENTATION STATUS OF MITIGATION MEASURES

8.01 The environmental mitigation measures that recommended in the Environmental Monitoring and Audit Manual covered the issues of dust, noise and waste and they are summarized as following:

Dust Mitigation Measure

- (a) The contractor shall frequently clean and water the site to minimize fugitive dust emissions.
- (b) Effective water sprays shall be used during the delivery and handling of aggregate, and other similar materials, when dust is likely to be created and to dampen all sited material during dry and windy weather.
- (c) Watering of exposed surfaces shall be exercised as often as possible depending on the circumstance.
- (d) Areas within the site where there is regular movement of vehicles must be regularly watered as often as necessary for effective suppression of dust or as often as directed by the Engineer.
- (e) Where dusty materials are being discharged to vehicle from a conveying system at a fixed transfer point, a three-sided roofed enclosure with a flexible curtain across the entry shall be provided. Exhausted fans shall be provided for this enclosure and vented to a suitable fabric filter system.
- (f) The Contractor shall restrict all motorized vehicles within the site, excluding those on public roads, to a maximum speed of 5km per hour and confine haulage and delivery vehicles to designated roadways inside the site.
- (g) Wheel washing facilities shall be installed and used by all vehicles leaving the site. No earth, mud, debris, dust and the like shall be deposited on public roads, water in wheel cleaning facility shall be changed at frequent intervals and sediments shall be removed regularly. The Contractor shall submit detailed proposals for the wheel cleaning facilities to the Engineer prior to construction of the facility. Such wheel washing facilities shall be usable prior to any earthworks excavating activity in the site.
- (h) Any material dropped in the roads will need to be cleaned up immediately to prevent dust nuisance.

Noise Mitigation Measure

- (a) During construction of the Project, temporary noise barriers should be used in order to reduce the noise impacts emanating from the construction sites on nearby Noise Sensitive Receivers (NSRs). The location of the temporary noise barriers should be along the site boundary of the expanded portion of Ha Tsuen Pumping Station.
- (b) Noisy equipment and activities should be sited by the Contractor as far from close-proximity sensitive receivers as practical. Prolonged operation of noisy equipment close to dwellings and schools should be avoided.
- (c) The Contractor should minimize construction noise exposure to the schools. Especially during examination periods, the Contractor should not carry out any construction activities. Activities shall be restricted to transit movements by construction vehicles during this period.
- (d) Noisy plant or processes should be replaced by quieter alternatives where possible. Silenced diesel and gasoline generators and power units, as well as silenced and super-silenced air compressors should be used.
- (e) Noisy activities should be scheduled to minimize exposure of nearby sensitive receivers to high levels of construction noise. For example, noisy activities can be scheduled for midday, or at times coinciding with periods of high background noise (such as during peak traffic hours).
- (f) Idle equipment should be turned off or throttled down. Noisy equipment should be properly maintained and used no more often than is necessary.
- (g) The power units of non-electric stationary plant and earth-moving plant should be quietened

- by vibration isolation and partial or full acoustic enclosures for individual noise-generating components.
- (h) Construction activities should be planned so that parallel operation of several sets of equipment close to a given receiver is avoided, thus reducing the cumulative impacts between operations. The numbers of operating items of powered mechanical equipment should be minimized.
 - (i) Construction plant should be properly maintained (well-greased, damage and worn parts promptly replaced) and operated. Construction equipment often has silencing measures built in or added on, e.g. bulldozer silencers, compressor panels, and mufflers. Silencing measures should be properly maintained and utilized. Where possible, rubber or damping materials should be introduced between metal panels to avoid rattle and reverberation of noise.
 - (j) Equipment known to emit sound strongly in one direction, should where possible, be oriented so that the noise is directed away from nearby NSRs.
 - (k) Material stockpiles and other structures (such as site offices) should be effectively utilized, where practicable, to screen noise from on-site construction activities.
 - (l) The Contractor should devise, arrange methods of working and carry out the works in such manner as to minimize noise impacts on the surrounding environment, and should provide experienced personnel with suitable training to ensure that these measures are implemented properly.

Water Quality Mitigation Measures

- (a) Exposed stockpiles should be covered with tarpaulin or impervious sheets before a rainstorm occurs;
- (b) The exposed soil surfaces should also be properly protected to minimise dust emission;
- (c) The stockpiles of materials should be placed in the locations away from the drainage channel so as to avoid releasing materials into the channel;
- (d) Wheel washing facilities should be provided at site exits to ensure that earth, mud and debris would not be carried out of the works areas by vehicles;
- (e) Provision of site drainage systems and treatment facilities would be required to minimize the water pollution;
- (f) A discharge licence needs to be applied from EPD for discharging effluent from the construction site;
- (g) The treated effluent quality is required to meet the requirements specified in the discharge licence;
- (h) Provision of chemical toilets is required to collect sewage from workforce. The chemical toilets should be cleaned on a regular basis;
- (i) Wastewater generated from kitchens should be discharged to public foul sewers or collected in a temporary storage tank if connection to public foul sewers is not feasible;
- (j) A licensed waste collector should be employed to clean the chemical toilets and temporary storage tank on a regular basis;
- (k) Illegal disposal of chemicals should be strictly prohibited;
- (l) Registration as a chemical waste producer is required if chemical wastes are generated and need to be disposed of. 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;
- (m) 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 should be used as a guideline for handling chemical wastes; and
- (n) The impact from accidental spillage of chemicals can be effectively controlled through good management practices.

Waste Mitigation Measures

- (a) Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal;
- (b) To encourage collection of aluminium cans by individual collectors, separate labelled bins should be provided to segregate this waste from other general refuse generated by the workforce;
- (c) Any unused chemicals or those with remaining functional capacity should be recycled;
- (d) Prior to disposal of C&D waste, it is recommended that wood, steel and other metals be separated for re-use and/or recycling and inert waste utilised as fill material to minimise the quantity of waste to be disposed of to landfill;
- (e) Proper storage and site practices to minimise the potential for damage or contamination of construction materials; and
- (f) Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.

Landscape and Visual Mitigation Measures

- (a) Prior to construction work the detailed tree survey should have been completed and, if appropriate, trees to be transplanted moved to their final positions.
- (b) The transplants and existing trees to be retained should be properly protected from damage by stout hoarding positioned as directed by a qualified Landscape Architect.
- (c) Hoarding will help screen the construction work from the view of passers by.
- (d) Typically a minimum of 4 months should be allowed prior to construction to prepare trees for transplanting.
- (e) During construction regular inspections of the retained and transplanted trees should be made to ensure the effectiveness of the hoarding.
- (f) Any topsoil excavated in the course of the works shall be stored and protected on site for reuse for restoration and screen planting works.

- 8.02 The Contractor had been implementing the required environmental mitigation measures according to the Environmental Monitoring and Audit Manual subject to the site condition. Environmental mitigation measures generally implemented by the Contractor in this Reporting Period are summarized in [Table 8-1](#).

Table 8-1 Environmental Mitigation Measures

Issues	Environmental Mitigation Measures
Water Quality	• Wastewater were appropriately treated by treatment facilities; • Drainage channels were provided to convey run-off into the treatment facilities; • Drainage systems were regularly and adequately maintained. • De-silting facility was provided to treat the discharged water; also the treated water is reused for spraying the road surface; • Exposed stockpiles and exposed soil surfaces were covered with tarpaulin or impervious sheets to minimise dust emission; • The stockpiles of materials were placed in the locations away from the drainage channel so as to avoid releasing materials into the channel; • Wheel washing facilities should have been provided at site exits to ensure that earth, mud and debris would not be carried out of the works areas by vehicles; • Provision of site drainage systems and treatment facilities would be required to minimize the water pollution; • A discharge licence was applied from EPD for discharging effluent from the construction site; • A licensed waste collector have been applied from EPD; • Illegal disposal of chemicals should be strictly prohibited; and • Registration as a chemical waste producer have been applied from EPD
Air Quality	• Regular watering to reduce dust emissions from all exposed site surface, particularly during dry weather; • Frequent watering for particularly dusty construction areas and areas close to air sensitive receivers; • Cover all excavated or stockpile of dusty material by impervious sheeting or sprayed with water to maintain the entire surface wet; • Public roads around the site entrance/exit had been kept clean and free from dust; • Tarpaulin covering of any dusty materials on a vehicle leaving the site; • Water sprinkler system is provided at haul road to reduce dust emissions during the vehicles passing through the haul road' • The vehicle speed within the site is limited to 5km/hr; • Wheel washing facilities have been provided at the site exit
Noise	• Good site practices to limit noise emissions at the sources; • Use of quiet plant and working methods according to EP-329/2009; • Use of site hoarding with noise barriers to screen noise at ground level of NSRs; • Use of shrouds/temporary noise barriers to screen noise from relatively static PMEs according to EP-329/2009; • Use of temporary noise barrier with surface density 7kg/m² to be assumed that the noise reduction is 10 dB(A) for stable plants and 5dB(A) for movable plant in accordance with approved EIA Report Appendix 4A Table 4A3.2; • Idle equipment are turned off or throttled down; • No construction works shall be undertaken during school examination period in the Ha Tsuen Pumping Station according to EP-329/2009; and • Alternative use of plant items within one worksite, where practicable.

Issues	Environmental Mitigation Measures
Waste and Chemical Management	- Excavated material should be reused on site as far as possible to minimize off-site disposal. Scrap metals or abandoned equipment should be recycled if possible; - Waste arising should be kept to a minimum and be handled, transported and disposed of in a suitable manner; - The Contractor should adopt a trip ticket system for the disposal of C&D materials to any designed public filling facility and/or landfill; and - Chemical waste shall be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes. - Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal; - To encourage collection of aluminium cans by individual collectors, separate labelled bins should be provided to segregate this waste from other general refuse generated by the workforce; - Any unused chemicals or those with remaining functional capacity should be recycled; - Prior to disposal of C&D waste, it is recommended that wood, steel and other metals be separated for re-use and/or recycling and inert waste utilised as fill material to minimise the quantity of waste to be disposed of to landfill; - Proper storage and site practices to minimise the potential for damage or contamination of construction materials; and - Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.
Landscape and Visual	The landscape and visual impacts monitoring results and findings will be submitted in the stand-alone document.
General	The site was generally kept tidy and clean.

9. IMPACT FORECAST

KEY ISSUES FOR THE COMING MONTH

9.01 Key issues to be considered in the coming month include:

- Implementation of dust suppression measures at all times;
- Potential wastewater quality impact due to surface runoff;
- Potential fugitive dust quality impact due from the dry/loose/exposure soil surface/dusty material;
- Disposal of empty engine oil containers within site area;
- Ensure dust suppression measures are implemented properly;
- Sediment catch-pits and silt removal facilities should be regularly maintained;
- Management of chemical wastes;
- Discharge of site effluent to the nearby nullah or storm drainage, stockpiling or disposal of materials, and any dredging or construction area at this area are prohibited;
- Follow-up of improvement on general waste management issues; and
- Implementation of construction noise preventative control measures.

10. CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

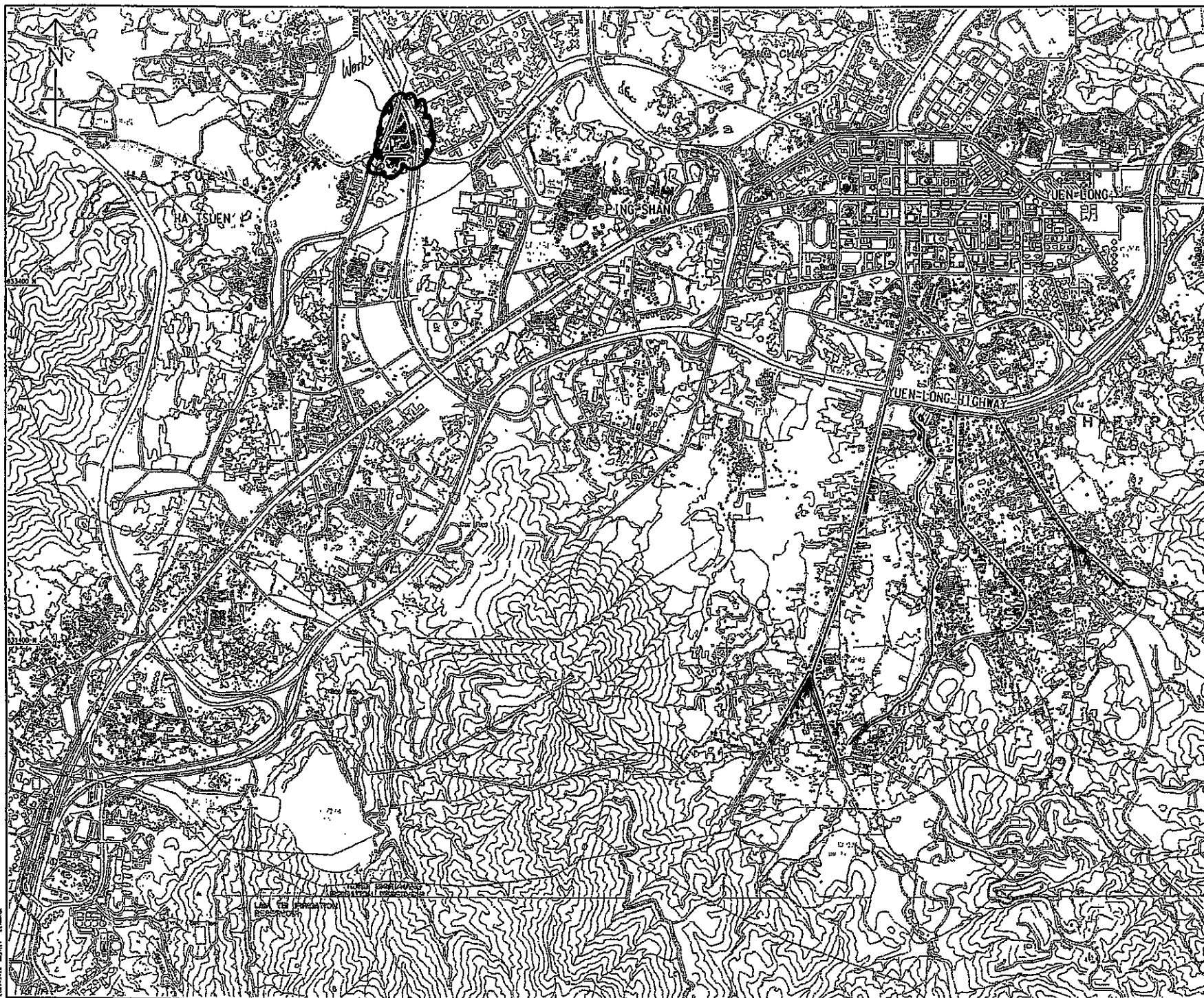
- 10.01 This is the 12th monthly EM&A report, covering the construction period from 1 to 31 January 2011 (the Reporting Period).
- 10.02 No 1-hour TSP and 24-hour monitoring results that triggered the Action or Limit Level was recorded in this Reporting Period.
- 10.03 No noise complaint (which is an Action Level exceedance) was received and no construction noise measurement results that exceeded the Limit Level were recorded in this Reporting Period. No NOEs or the associated corrective actions were therefore issued.
- 10.04 In this Reporting Period, five Limit Level exceedances were recorded in the water quality monitoring. Investigations were conducted and it was concluded that the exceedances were not related to the works under the Project.
- 10.05 No documented complaint, notification of summons or successful prosecution was received.
- 10.06 The ET had carried out a site inspection on 4, 11, 20 and 26 January 2011. No non-compliance was observed during the inspections. In general, it was reminded that good housekeeping practice should be maintained; beside, the accumulation of stagnant water should be removed to or applied larvidical oil to prevent mosquitoes breeding during wet season. The environmental performance of the Project was therefore considered satisfactory.
- 10.07 The landscape and visual impacts monitoring results and findings will be submitted separately as a stand-alone document. The Contractor is reminded that the landscape and visual impacts site audit shall be carried out by a competent landscape architect, as a member of ET to implement the EM&A programme.

RECOMMENDATIONS

- 10.08 During dry season, special attention should be paid to the dust mitigation measures to avoid fugitive dust emissions from loose soil surface or haul road. Nevertheless, mitigation measures implemented for control the surface runoff including wheel wash facilities, covering of the loose soil surface or stockpile with tarpaulin sheet, etc., should be properly maintained to prevent any muddy or sandy runoff from the loose soil surface overflow on the site boundary; and also with construction noise and other environmental issues stipulated in the Environmental Monitoring and Audit Manual.
- 10.09 To control the site performance on waste management, the Contractor shall ensure that all solid and liquid waste management works are fully in compliance with the relevant license/permit requirements, such as the effluent discharge license and the chemical waste producer registration. The Contractor is also reminded to implement the recommended environmental mitigation measures according to the Environmental Monitoring and Audit Manual.

Appendix A

Site Layout Plan



LEGEND:

- SEWERAGE PIPE
- RISING MAIN
- SEWER PUMPING STATION

1	TENDER DRAWING	05/01/2017	05-09
2	REVISION		

D DRAINAGE SERVICES DEPARTMENT,
THE GOVERNMENT OF THE HONG KONG
SPECIAL ADMINISTRATIVE REGION

YUEN LONG AND KAM TIN SEWERAGE
AND SEWAGE DISPOSAL -
CONSTRUCTION OF YUEN LONG SOUTH
BRANCH SEWERS AND EXPANSION OF
HA TSUEN SEWER PUMPING STATION

LOCATION PLAN

AECOM

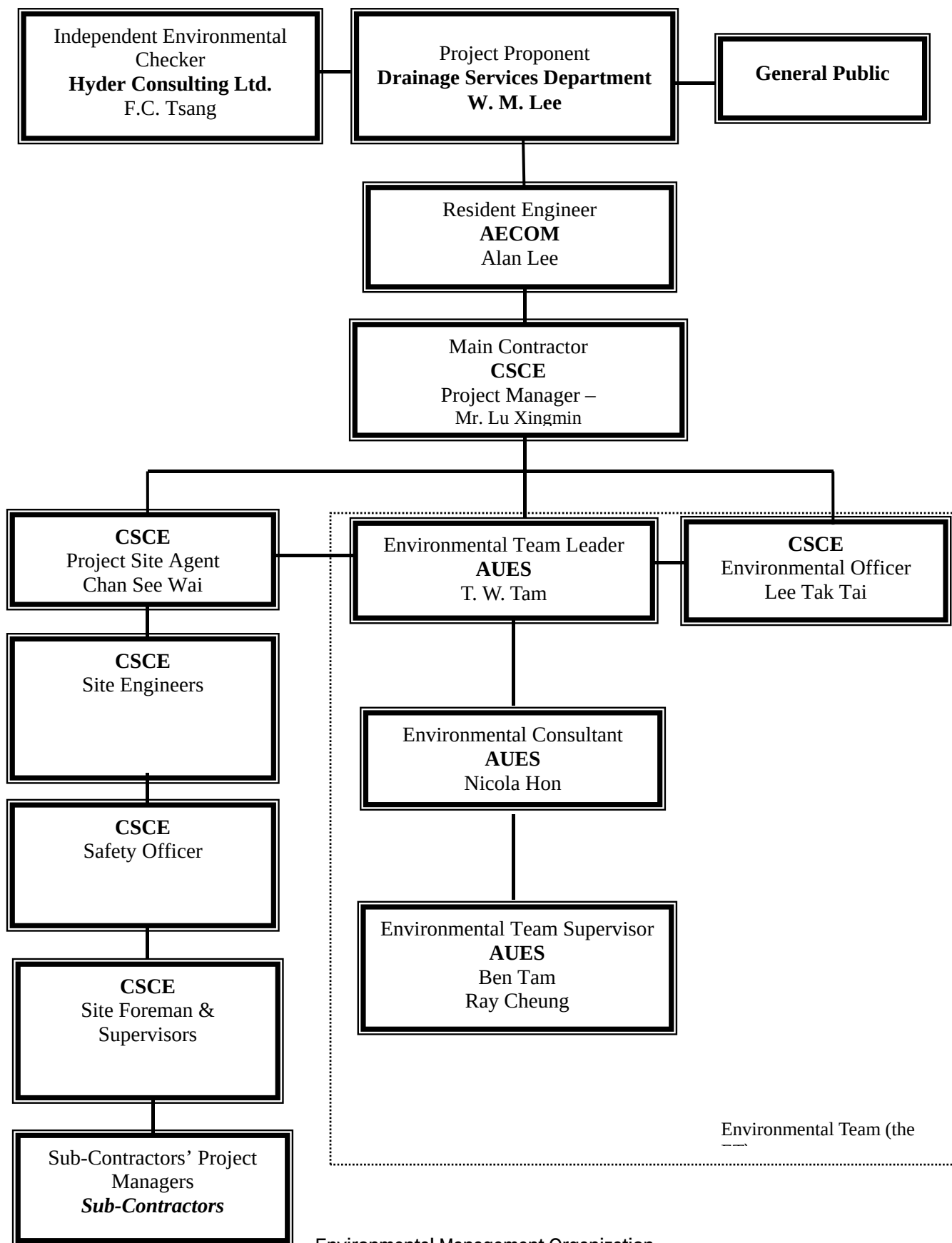
DWG. NO. 60022017/C1/1001

DATE	05/01/2017	SCALE	1:10000
BY	05/01/2017	DATE	05/01/2017
BY	05/01/2017	DATE	05/01/2017
BY	05/01/2017	DATE	05/01/2017

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Appendix B

On-site environmental management



Environmental Management Organization

Contact Details of Key Personnel

Organization	Project Role	Name of Key Staff	Tel No.	Fax No.
DSD	Employer	Mr. W. M. Lee	--	2827-8700
AECOM	Engineer's Representative	Mr. Alan Lee	9706 9568	2472 0132
Hyder	Independent Environmental Checker	Dr. F C Tsang	2911 2730	2805 5028
CSCE	Project Manager	Mr. Lu Xingmin	2472 0113	2472-0229
CSCE	Site Agent	Mr. Chan See Wai	2472 0113	2472-0229
CSCE	Site Engineer	Mr. Poon Kwong Keung	2472 0113	2472-0229
CSCE	Environmental Officer	Mr. Lee Tak Tai	2472 0113	2472-0229
CSCE	Safety Officer	Mr. Ng Ka Po	2472 0113	2472-0229
AUES	Environmental Team Leader	Mr. T. W. Tam	2959-6059	2959-6079
AUES	Environmental Consultant	Ms. Nicola Hon	2959-6059	2959-6079
AUES	Assistance Environmental Consultant	Mr. Ray Cheung	2959-6059	2959-6079
AUES	Team Supervisor	Mr. Ben Tam	2959-6059	2959-6079

Legend:

DSD (Employer) – Drainage Services Department

AECOM (Engineer) – AECOM

CSCE (Main Contractor) – China State Construction Engineering (Hong Kong) Ltd

Hyder (IEC) – Hyder Consulting Limited

AUES (ET) – Action-United Environmental Services & Consulting

Appendix C

Master construction program

Contract No. DC/2009/08
Construction of Yuen Long South Branch Sewers and Expansion of HTS Pumping Station

Activity ID	Description	Original Duration	Early Start	Early Finish	Total Float																																																
						2009				2010												2011												2012												2013							
						SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR					
Ha Tsuen Area																																																					
Pumping Station																																																					
H/200020	Site investigation and report	42	18NOV09	08JAN10	67d																																																
H/200030	Install acoustic screen	25	31DEC09	29JAN10	154d																																																
H/200040	Installation of monitoring point	15	09JAN10	26JAN10	157d																																																
H/200050	Prebored H-piles	210	08FEB10	21DEC10	147d																																																
H/200070	Substructure	252 *	22DEC10	27DEC11	147d																																																
H/201800	Superstructure	84	28DEC11	09JUN12	158d																																																
H/202100	Finishes	75	11JUN12	06SEP12	158d																																																
Rising Main																																																					
H/300010	Gang B: RM from station to extg valve chamber	70	28DEC11	24MAR12	192d																																																
H/300020	Testing of RM bet station and extg valve chamber	20	26MAR12	21APR12	192d																																																
H/300200	Trial pit to locate existing sleeve at nullah	21	19JAN10	11FEB10	116d																																																
H/300210	Rising Main under existing nullah	100	16APR10	14AUG10	133d																																																
H/300400	Rising Main bet ch274 to ch298 & washout chamber	112	12JUN10	26OCT10	4d																																																
H/300500	Rising Main between ch0 to ch89	155	26FEB10	03SEP10	116d																																																
H/300600	Pipe jacking between ch385 to ch815	330 *	16JAN10	04MAR11	96d																																																
H/300665	Pipe jacking between ch298 to ch385	88	23FEB10	11JUN10	4d																																																
H/300800	Gang A : RM between ch815 to ch1002	264 *	05MAR11	28JAN12	96d																																																
H/300900	Gang A : RM between ch1002 to ch1585	651 *	22FEB10	10MAY12	13d																																																
H/301430	Testing of RM bet ch1787 to extg valve chamber	40	11MAY12	28JUN12	13d																																																
H/302000	Pipe jacking between ch 1585 to ch1787.2	219 *	09APR10	30DEC10	359d																																																
Road and Drain																																																					
H/400020	Concrete pipe between extension to FM17	60	28DEC11	13MAR12	153d																																																
H/400030	Sewage between FM17 to FM15 and manholes	100 *	25OCT10	26FEB11	169d																																																
H/400050	Concrete pipe between M1 to FM16	50	28FEB11	25JUN11	169d																																																
H/400090	Manhole M1 and sewage connection	40	27JUN11	12AUG11	169d																																																
H/400100	Storm water drain	36	07MAR12	16JUN12	153d																																																
H/400110	Power supply to pumping station	60	30MAR12	08AUG12	153d																																																
H/400115	Roadworks	60 *	05JUL12	12SEP12	153d																																																
H/400135	Pipe jacking between FM16 to existing FM7	74 *	27JUL10	23OCT10	169d																																																
H/410010	Pipe jacking between FM16 to FM15	89 *	12MAR10	25AUG10	169d																																																
Landscaping																																																					
H/600110	Tree transplant at HTSPS Extension	70	31OCT09	23JAN10	7d																																																
H/600120	Tree transplant at Ping Ha Road	70	05DEC09	12FEB10	158d																																																
H/600130	Landscaping finishes at HTSPS	40	28JUL12	12SEP12	153d																																																

Start date	17SEP09		Early bar
Finish date	02JUL15		Critical bar
Run date	05FEB10		Summary bar
Project name	WP11		
Page number	1A		Start milestone point
c Primavera Systems, Inc.			Finish milestone point

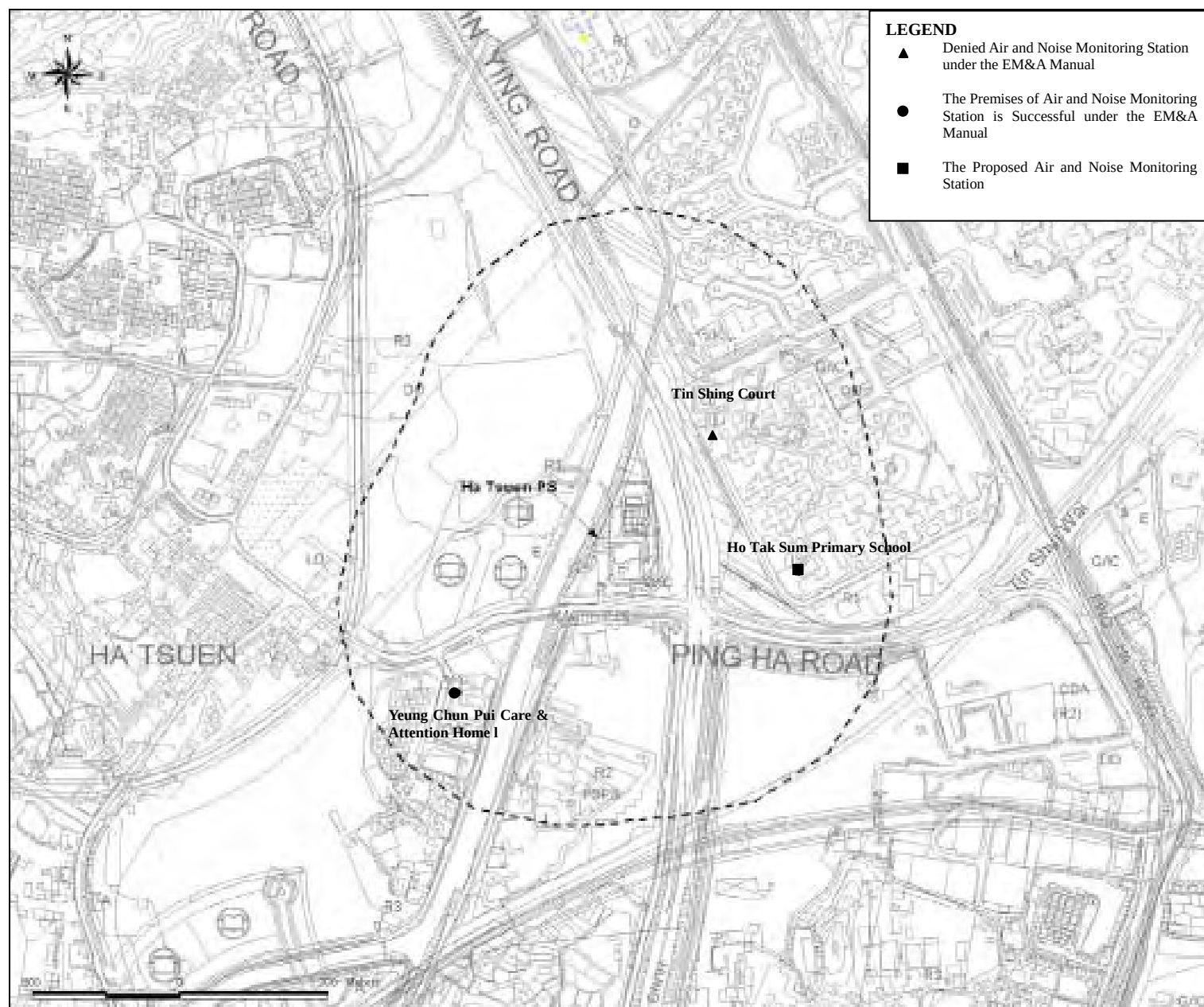
Initial Works Programme - Rev 02 (Ha Tsuen Area)



Appendix D

Monitoring Location of EM&A Programme

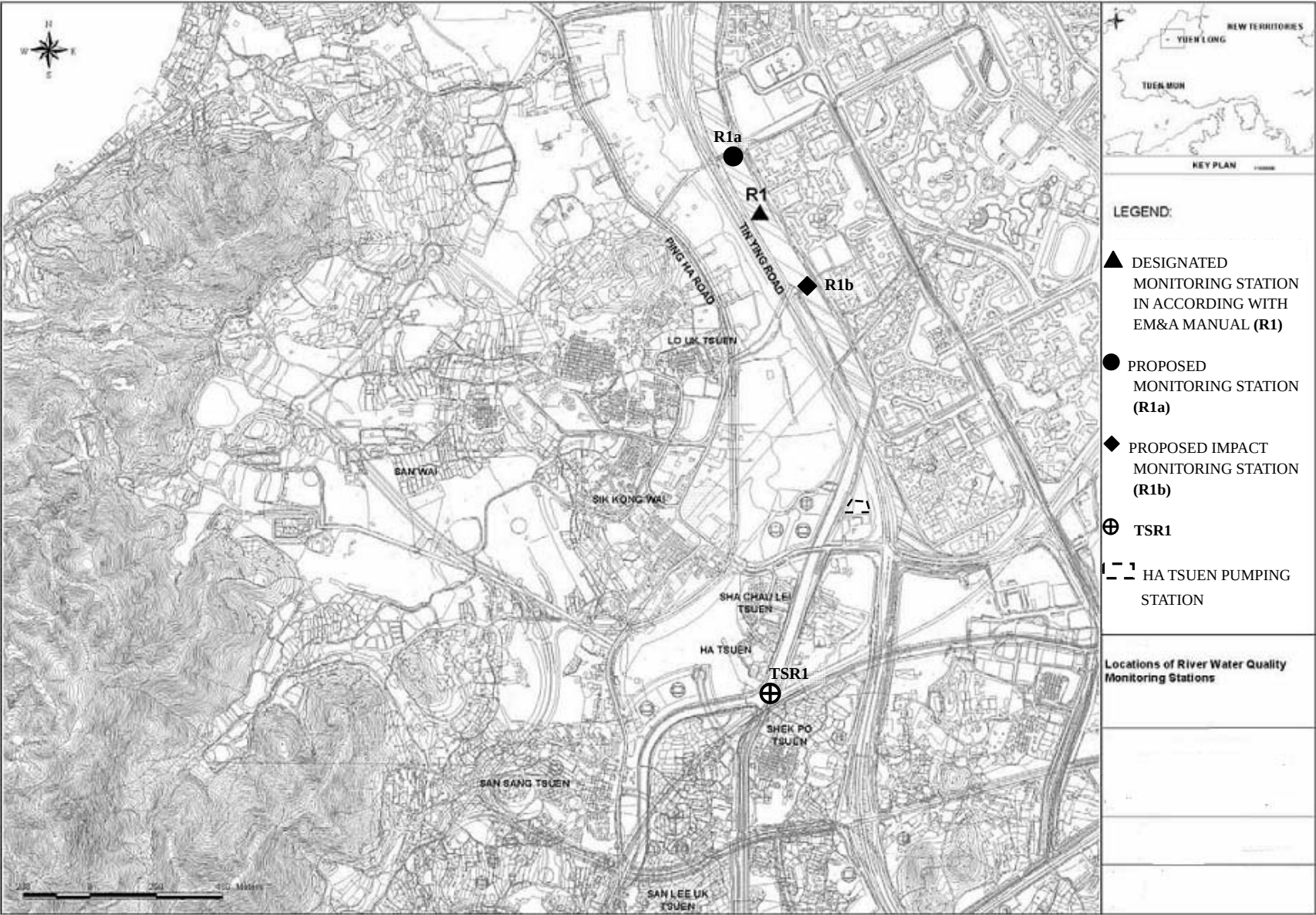
Proposed Air and Noise Monitoring Station



**DSD Contract No. DC/2009/08 – Construction of Yuen Long South Branch Sewers
And Extension of Ha Tsuen Sewage Pumping Station**

Proposed Water Quality Monitoring Location

AUES



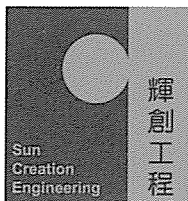
Appendix E

Calibration certificates

Equipment Calibration Certificates List

Items	Aspect	Description of Equipment	Date of Calibration	Date of Next Calibration
1	Air	Thermo Andersen Model GS2310 TSP high volume air sampling system (AM1 - Yeung Chun Pui Care & Attention Home)	2 Dec 10	2 Feb 11
2		Thermo Andersen Model GS2310 TSP high volume air sampling system (AM2 - Ho Tak Sum Primary School)	2 Dec 10	2 Feb 11
3		Calibration Kit TISCH Model TE-5025A –Orifcs ID 1612 and Rootsmeter S/N 9833620	2 Jun 10	2 Jun 11
4		TSI DustTrak Model 8520 (Serial Number 21060)	2 Dec 10	2 Dec 11
5		TSI DustTrak Model 8520 (Serial Number 23080)	2 Dec 10	2 Dec 11
6	Noise	Bruel & Kjaer 4231 Acoustical Calibrator (Serial Number 2326408)	26 Apr 10	26 Apr 11
7		Bruel & Kjaer 2238 Integrating Sound Level Meter (Serial Number 2285722)	26 Apr 10	26 Apr 11
8	Water	YSI 550A (Serial No. 05F2063AZ)	19 Oct 10 19 Jan 11	19 Jan 11 19 Apr 11
9		Extech pH Meter EC500 (Serial No. CE133298)	19 Oct 10 19 Jan 11	19 Jan 11 19 Apr 11
10		Turbidimeter HACH 2100p (Serial No. 950900008735)	19 Oct 10 19 Jan 11	19 Jan 11 19 Apr 11

Note: *Calibration certificates will only be provided when monitoring equipment is re-calibrated or new.



輝創工程有限公司

Sun Creation Engineering Limited Calibration and Testing Laboratory

Certificate No. : C102287

Certificate of Calibration

This is to certify that the equipment

Description : Integrating Sound Level Meter (EQ009)

Manufacturer : Bruel & Kjaer

Model No. : 2238

Serial No. : 2285722

*has been calibrated for the specific items and ranges.
The results are shown in the Calibration Report No. C102287.*

The equipment is supplied by

Co. Name : Action-United Environmental Services and Consulting

*Address : Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.*

Date of Issue : 27 April 2010

Certified by :

K C Lee

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration and Testing Laboratory of Sun Creation Engineering Limited

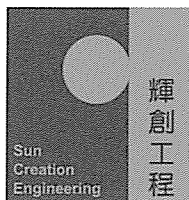
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

Tel: 2927 2606

Fax: 2744 8986

E-mail: callab@suncreation.com

Website: www.suncreation.com



輝創工程有限公司

Sun Creation Engineering Limited Calibration and Testing Laboratory

Report No. : C102287

Calibration Report

ITEM TESTED

DESCRIPTION : Integrating Sound Level Meter (EQ009)
MANUFACTURER : Bruel & Kjaer
MODEL NO. : 2238
SERIAL NO. : 2285722

TEST CONDITIONS

AMBIENT TEMPERATURE : $(23 \pm 2)^{\circ}\text{C}$ RELATIVE HUMIDITY : $(55 \pm 20)\%$
LINE VOLTAGE : ---

TEST SPECIFICATIONS

Calibration check

DATE OF TEST : 26 April 2010

JOB NO. : IC10-0951

TEST RESULTS

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested by :


W L Lai

Date : 27 April 2010

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration and Testing Laboratory of Sun Creation Engineering Limited

c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

Tel: 2927 2606

Fax: 2744 8986

E-mail: callab@suncreation.com

Website: www.suncreation.com

Page 1 of 4

Report No. : C102287

Calibration Report

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
2. Self-calibration using the B & K Acoustic Calibrator 4231, S/N : 2326408 was performed before the test.
3. The results presented are the mean of 3 measurements at each calibration point.
4. Test equipment :

<u>Equipment ID</u>	<u>Description</u>	<u>Certificate No.</u>
CL280	40 MHz Arbitrary Waveform Generator	C100067
CL281	Multifunction Acoustic Calibrator	C101008

5. Test procedure : MA101N.

6. Results :

- 6.1 Sound Pressure Level

- 6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 130	L _{AFP}	A	F	94.00	1	94.0	± 0.7

- 6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
50 - 130	L _{AFP}	A	F	94.00	1	94.0 (Ref.)
				104.00		104.0
				114.00		114.0

IEC 60651 Type 1 Spec. : ± 0.4 dB per 10 dB step and ± 0.7 dB for overall different.

- 6.2 Time Weighting

- 6.2.1 Continuous Signal

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 130	L _{AFP}	A	F	94.00	1	94.0	Ref.
	L _{ASP}		S			94.0	± 0.1
	L _{AIP}		I			94.0	± 0.1

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration Report

6.2.2 Tone Burst Signal (2 kHz)

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Burst Duration		
30 - 110	L _{AFP}	A	F	106.0	Continuous	106.0	Ref.
	L _{AFMax}				200 ms	105.0	-1.0 ± 1.0
	L _{ASP}	S	Continuous		106.0	Ref.	
	L _{ASMax}		500 ms		102.0	-4.1 ± 1.0	

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L _{AFP}	A	F	94.00	31.5 Hz	54.5	-39.4 ± 1.5
					63 Hz	67.7	-26.2 ± 1.5
					125 Hz	77.8	-16.1 ± 1.0
					250 Hz	85.3	-8.6 ± 1.0
					500 Hz	90.7	-3.2 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	95.2	+1.2 ± 1.0
					4 kHz	95.0	+1.0 ± 1.0
					8 kHz	92.8	-1.1 (+1.5 ; -3.0)
					12.5 kHz	89.7	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L _{CFP}	C	F	94.00	31.5 Hz	90.9	-3.0 ± 1.5
					63 Hz	93.2	-0.8 ± 1.5
					125 Hz	93.8	-0.2 ± 1.0
					250 Hz	94.0	0.0 ± 1.0
					500 Hz	94.0	0.0 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	93.8	-0.2 ± 1.0
					4 kHz	93.1	-0.8 ± 1.0
					8 kHz	90.9	-3.0 (+1.5 ; -3.0)
					12.5 kHz	87.8	-6.2 (+3.0 ; -6.0)

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration Report

6.4 Time Averaging

UUT Setting				Applied Value					UUT Reading	IEC 60804
Range (dB)	Mode	Frequency Weighting	Integrating Time	Frequency (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)	(dB)	Type 1 Spec. (dB)
30 - 110	L _{Aeq}	A	10 sec.	4	1	1/10	110.0	100	99.9	± 0.5
						1/10 ²		90	89.8	± 0.5
			60 sec.			1/10 ³		80	79.2	± 1.0
			5 min.			1/10 ⁴		70	69.2	± 1.0

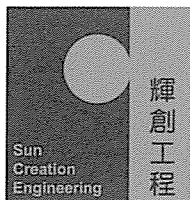
Remarks : - Mfr's Spec. : IEC 60651 Type 1 & IEC 60804 Type 1

- Uncertainties of Applied Value :
 - 94 dB : 31.5 Hz - 125 Hz : ± 0.40 dB
 - 250 Hz - 500 Hz : ± 0.30 dB
 - 1 kHz : ± 0.20 dB
 - 2 kHz : ± 0.40 dB
 - 4 kHz : ± 0.50 dB
 - 8 kHz : ± 0.70 dB
 - 12.5 kHz : ± 1.20 dB
 - 104 dB : 1 kHz : ± 0.10 dB (Ref. 94 dB)
 - 114 dB : 1 kHz : ± 0.10 dB (Ref. 94 dB)
 - Burst equivalent level : ± 0.2 dB (Ref. 110 dB continuous sound level)

- The uncertainties are for a confidence probability of not less than 95 %.

Note :

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



輝創工程有限公司

Sun Creation Engineering Limited Calibration and Testing Laboratory

Certificate No. : C102285

Certificate of Calibration

This is to certify that the equipment

Description : Acoustical Calibrator (EQ081)

Manufacturer : Bruel & Kjaer

Model No. : 4231

Serial No. : 2326408

*has been calibrated for the specific items and ranges.
The results are shown in the Calibration Report No. C102285.*

The equipment is supplied by

Co. Name : Action-United Environmental Services and Consulting

*Address : Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.*

Date of Issue : 27 April 2010

Certified by :

K.C. Lee

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration and Testing Laboratory of Sun Creation Engineering Limited

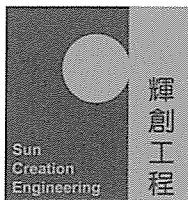
c/o 4/F. Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

Tel: 2927 2606

Fax: 2744 8986

E-mail: callab@suncreation.com

Website: www.suncreation.com



輝創工程有限公司

Sun Creation Engineering Limited Calibration and Testing Laboratory

Report No. : C102285

Calibration Report

ITEM TESTED

DESCRIPTION : Acoustical Calibrator (EQ081)
MANUFACTURER : Bruel & Kjaer
MODEL NO. : 4231
SERIAL NO. : 2326408

TEST CONDITIONS

AMBIENT TEMPERATURE : $(23 \pm 2)^{\circ}\text{C}$ RELATIVE HUMIDITY : $(55 \pm 20)\%$
LINE VOLTAGE : ---

TEST SPECIFICATIONS

Calibration check

DATE OF TEST : 26 April 2010

JOB NO. : IC10-0951

TEST RESULTS

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Rohde & Schwarz Laboratory, Germany
- Fluke Precision Measurement Ltd., UK
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested by :


W L Lai

Date : 27 April 2010

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration and Testing Laboratory of Sun Creation Engineering Limited

c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

Tel: 2927 2606

Fax: 2744 8986

E-mail: callab@suncreation.com

Website: www.suncreation.com

Page 1 of 2

Calibration Report

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours before the commencement of the test.
2. The results presented are the mean of 3 measurements at each calibration point.
3. Test equipment :

<u>Equipment ID</u>	<u>Description</u>	<u>Certificate No.</u>
TST150A	Measuring Amplifier	C101008
CL130	Universal Counter	C093122
CL281	Multifunction Acoustic Calibrator	DC090052

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	94.0	± 0.2	± 0.2
114 dB, 1 kHz	114.0		

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	1.000 0	1 kHz ± 0.1 %	± 0.1

Remark : - The uncertainties are for a confidence probability of not less than 95 %.

Note :

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

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Yeung Chun Pui Care & Attention Home				Date of Calibration: 2-Dec-10			
Location ID : AM1				Next Calibration Date: 2-Feb-11			
Technician: Mr. Ben Tam							
CONDITIONS							
Sea Level Pressure (hPa)		1014.5		Corrected Pressure (mm Hg)		760.875	
Temperature (°C)		21.6		Temperature (K)		295	
CALIBRATION ORIFICE							
Make->		TISCH		Qstd Slope ->		2.00279	
Model->		5025A		Qstd Intercept ->		-0.00494	
Calibration Date->		2-Jun-10		Expiry Date->		2-Jun-11	
CALIBRATION							
Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	4.5	4.5	9.0	1.510	53	53.64	Slope = 40.5478 Intercept = -7.9708 Corr. coeff. = 0.9977
13	3.2	3.2	6.4	1.274	42	42.51	
10	2.3	2.2	4.5	1.068	36	36.44	
7	1.6	1.6	3.2	0.901	28	28.34	
5	1.1	1.1	2.2	0.748	22	22.27	

Calculations :

Qstd = $1/m[\text{Sqrt}(\text{H2O}(\text{Pa}/\text{Pstd})(\text{Tstd}/\text{Ta})) - b]$

IC = $I[\text{Sqrt}(\text{Pa}/\text{Pstd})(\text{Tstd}/\text{Ta})]$

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

$1/m((I) [\text{Sqrt}(298/\text{Tav})(\text{Pav}/760)] - b)$

m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure

FLOW RATE CHART

Standard Flow Rate (m3/min)	Actual chart response (IC)
0.748	22.27
0.901	28.34
1.068	36.44
1.274	42.51
1.510	53.64

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location Lions Clubs International Ho Tak Sum Primary School
Location ID : AM2

Date of Calibration: 2-Dec-10
Next Calibration Date: 2-Feb-11
Technician: Ben Tam

CONDITIONS

Sea Level Pressure (hPa)	1014.5	Corrected Pressure (mm Hg)	760.875
Temperature (°C)	21.6	Temperature (K)	295

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.00279
Model->	5025A	Qstd Intercept ->	-0.00494
Calibration Date->	2-Jun-10	Expiry Date->	2-Jun-11

CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	4.5	4.5	9	1.510	52	52.63	Slope = 41.9671 Intercept = -11.7885 Corr. coeff. = 0.9975
13	3.6	3.6	7.2	1.351	43	43.52	
10	2.6	2.6	5.2	1.148	36	36.44	
7	1.8	1.8	3.6	0.956	28	28.34	
5	1.2	1.2	2.4	0.781	21	21.25	

Calculations :

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K

Pstd = actual pressure during calibration (mm Hg

For subsequent calculation of sampler flow:

$$1/m((I)[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

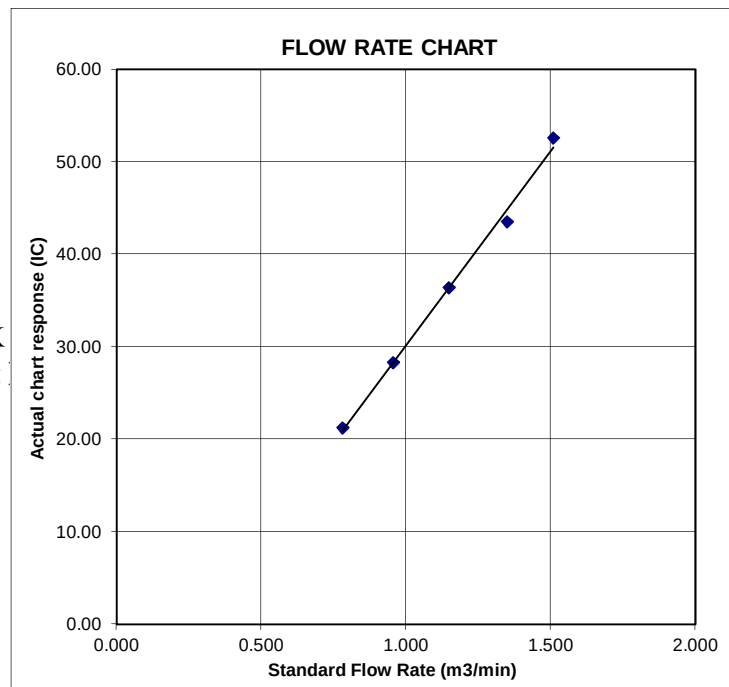
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



Equipment Calibration Record

Equipment Calibrated:

Type: Dust Trak Model 8520
 Manufacturer: TSI
 Serial No. 21060
 Equipment Ref: EQ021

Standard Equipment:

Standard Equipment: Higher Volume Sampler
 Location & Location ID: Block A of Government Dockyard Offices
 Equipment Ref: AM8
 Last Calibration Date: 2-Nov-10

Equipment Calibration Results:

Calibration Date: 1-Dec-10

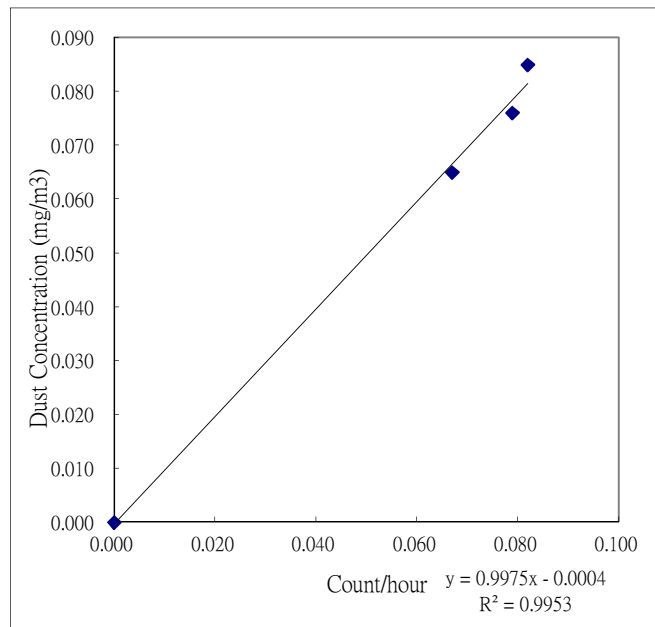
Hour	Time	Temp °C	RH %	Dust Concentration in mg/m ³	
				(Standard Equipment)	(Calibrated Equipment)
1	9:00 ~ 10:00	22.9	75	0.079	0.076
1	10:05 ~ 11:05	23.1	75	0.082	0.085
1	11:10 ~ 12:10	23.4	74	0.067	0.065

Sensitivity Adjustment Zero Calibration (Before Calibration) 0 (mg/m³)

Sensitivity Adjustment Zero Calibration (After Calibration) 0 (mg/m³)

Linear Regression of Y or X

Slope: 0.9975
 Correlation Coefficient 0.9953
 Validity of Calibration Record 1-Dec-11



Operator : Ray Cheung

Signature : 

Date : 5/12/2010

QC Reviewer Ben Tam

Signature : 

Date : 5/12/2010

Equipment Calibration Record

Equipment Calibrated:

Type: Dust Trak Model 8520
 Manufacturer: TSI
 Serial No. 23080
 Equipment Ref: EQ063

Standard Equipment:

Standard Equipment: Higher Volume Sampler
 Location & Location ID: Block A of Government Dockyard Offices
 Equipment Ref: AM8
 Last Calibration Date: 2-Nov-10

Equipment Calibration Results:

Calibration Date: 1-Dec-10

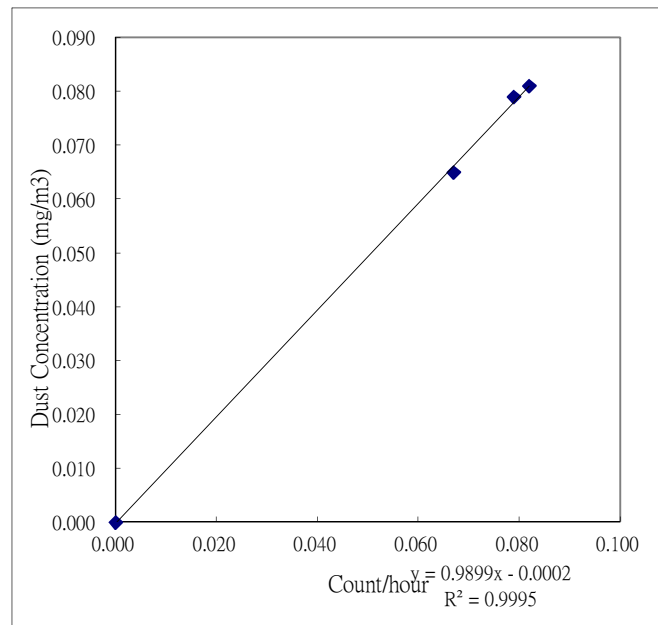
Hour	Time	Temp °C	RH %	Dust Concentration in mg/m ³	
				(Standard Equipment)	(Calibrated Equipment)
1	9:00 ~ 10:00	22.9	75	0.079	0.079
1	10:05 ~ 11:05	23.1	75	0.082	0.081
1	11:10 ~ 12:10	23.4	74	0.067	0.065

Sensitivity Adjustment Zero Calibration (Before Calibration) 0 (mg/m³)

Sensitivity Adjustment Zero Calibration (After Calibration) 0 (mg/m³)

Linear Regression of Y or X

Slope: 0.9899
 Correlation Coefficient 0.9995
 Validity of Calibration Record 1-Dec-11



Operator : Ray Cheung

Signature : 

Date : 5/12/2010

QC Reviewer Ben Tam

Signature : 

Date : 5/12/2010



TISCH ENVIRONMENTAL, INC.
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AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Jun 02, 2010 Rootsmeter S/N 9833620 Ta (K) - 297
 Operator Tisch Orifice I.D. - 1483 Pa (mm) - 746.76

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER	ORFICE
					DIFF Hg (mm)	DIFF H2O (in.)
1	NA	NA	1.00	1.3990	3.2	2.00
2	NA	NA	1.00	0.9820	6.4	4.00
3	NA	NA	1.00	0.8770	7.9	5.00
4	NA	NA	1.00	0.8350	8.8	5.50
5	NA	NA	1.00	0.6910	12.8	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
0.9816	0.7017	1.4042		0.9957	0.7117	0.8919
0.9775	0.9954	1.9858		0.9914	1.0096	1.2613
0.9754	1.1122	2.2202		0.9893	1.1281	1.4102
0.9742	1.1668	2.3286		0.9882	1.1835	1.4790
0.9689	1.4023	2.8084		0.9828	1.4223	1.7837
Qstd slope (m) = 2.00279				Qa slope (m) = 1.25411		
intercept (b) = -0.00494				intercept (b) = -0.00314		
coefficient (r) = 0.99994				coefficient (r) = 0.99994		
y axis = SQRT[H2O(Pa/760) (298/Ta)]				y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

Vstd = Diff. Vol [(Pa-Diff. Hg)/760] (298/Ta)
 Qstd = Vstd/Time

Va = Diff Vol [(Pa-Diff Hg)/Pa]
 Qa = Va/Time

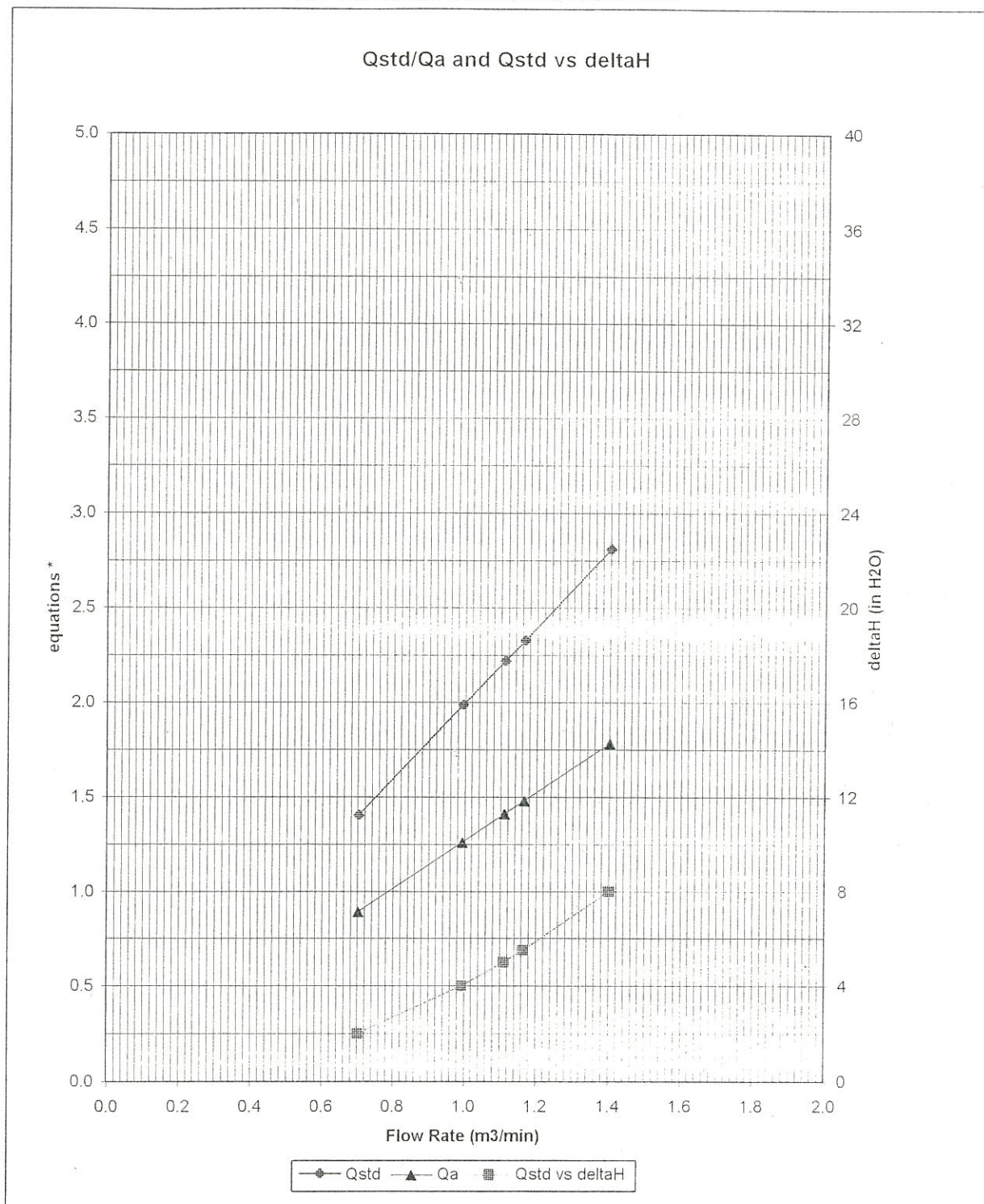
For subsequent flow rate calculations:

Qstd = 1/m{ [SQRT(H2O(Pa/760) (298/Ta))] - b}
 Qa = 1/m{ [SQRT H2O(Ta/Pa)] - b}



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AIR POLLUTION MONITORING EQUIPMENT



* y-axis equations:

Qstd series:

$$\sqrt{\Delta H \left(\frac{P_a}{P_{std}} \right) \left(\frac{T_{std}}{T_a} \right)}$$

Qa series:

$$\sqrt{(\Delta H (T_a / P_a))}$$

#1483

CERTIFICATE OF ANALYSIS



Batch: HK1024697
Date of Issue: 22/10/2010
Client: ACTION UNITED ENVIRO SERVICES
Client Reference:

Calibration of Multimeter

Item : pH Meter
ALS Lab ID: HK1024697-001
Date of Calibration: 19 October, 2010

Model No.: EXTECH EC500
Equipment No.: --
Serial No.: CE133298

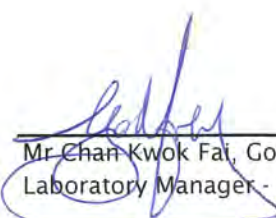
Testing Results :

pH

Expected Reading	Recording Reading
4.00	3.92
7.00	7.00
10.0	9.92
Allowing Deviation	± 0.2 unit

Testing Method:

APHA (20th edition), 4500-H⁺B


Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

CERTIFICATE OF ANALYSIS



Batch: HK1024695
Date of Issue: 22/10/2010
Client: ACTION UNITED ENVIRO SERVICES
Client Reference:

Calibration of Multimeter

Item : Multimeter
ALS Lab ID: HK1024695-001
Date of Calibration: 19 October, 2010

Model No.: YSI 550A
Equipment No.: --
Serial No.: 05F2063AZ

Testing Results :

DO

Expected Reading	Recording Reading
3.57 mg/L	3.52 mg/L
6.15 mg/L	6.14 mg/L
8.18 mg/L	8.15 mg/L
Allowing Deviation	± 0.2 mg/L

Testing Method:

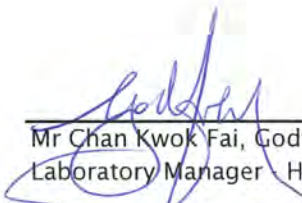
APHA (20th edition), 4500-OC & G

Temperature

Expected Reading	Recording Reading
14.5 °C	14.9 °C
23.5 °C	23.6 °C
34.0 °C	33.9 °C
Allowing Deviation	±2.0°C

Testing Method:

In-House Method


Mr Chan Kwok Fai, Godfrey
Laboratory Manager Hong Kong

CERTIFICATE OF ANALYSIS



Batch: HK1024699
Date of Issue: 22/10/2010
Client: ACTION UNITED ENVIRO SERVICES
Client Reference:

Calibration of Multimeter

Item : Turbidimeter
ALS Lab ID: HK1024699-001
Date of Calibration: 19 October, 2010

Model No.: HACH 2100P
Equipment No.: EQ091
Serial No.: 950900008735

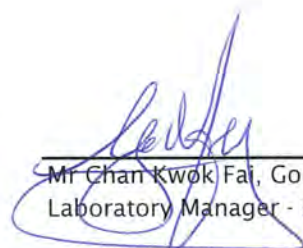
Testing Results :

Turbidity

Expected Reading	Recording Reading
0.00 NTU	0.10 NTU
4.00 NTU	3.81 NTU
40.0 NTU	36.4 NTU
80.0 NTU	77.1 NTU
400 NTU	382 NTU
Allowing Deviation	± 10%

Testing Method:

APHA (19th edition), 2130B


Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

CERTIFICATE OF ANALYSIS



Work Order: HK1101570
Date of Issue: 20/01/2011
Client: ACTION UNITED ENVIRO SERVICES
Client Reference:

Calibration of Multimeter

Item : Multimeter
ALS Lab ID: HK1101570 -001
Date of Calibration: 19 January, 2011

Model No.: YSI 550A
Equipment No.: --
Serial No.: 05F2063AZ

Testing Results :

Dissolved Oxygen

Expected Reading	Recording Reading
0.00 mg/L	0.03 mg/L
5.39 mg/L	5.31 mg/L
7.43 mg/L	7.35 mg/L
9.28 mg/L	9.11 mg/L
Allowing Deviation	± 0.2 mg/L

Testing Method:

APHA (20th edition), 4500-OC & G

Temperature

Expected Reading	Recording Reading
9.0 °C	9.0 °C
17.5 °C	17.4 °C
35.5 °C	35.3 °C
Allowing Deviation	±2.0°C

Testing Method:

In-House Method

CERTIFICATE OF ANALYSIS



Work Order: HK1101567
Date of Issue: 20/01/2011
Client: ACTION UNITED ENVIRO SERVICES
Client Reference:

Calibration of Multimeter

Item : pH Meter
ALS Lab ID: HK1101567 -001
Date of Calibration: 19 January, 2011

Model No.: EXTECH EC500
Equipment No.: --
Serial No.: CE133298

Testing Results :

pH

Expected Reading	Recording Reading
4.00	3.94
7.00	7.00
10.0	9.83
Allowing Deviation	± 0.2 unit

Testing Method:

APHA (20th edition), 4500-H⁺B

CERTIFICATE OF ANALYSIS



Work Order: HK1101568
Date of Issue: 20/01/2011
Client: ACTION UNITED ENVIRO SERVICES
Client Reference:

Calibration of Multimeter

Item : Turbidimeter
ALS Lab ID: HK1101568 -001
Date of Calibration: 19 January, 2011

Model No.: HACH 2100P
Equipment No.: EQ091
Serial No.: 950900008735

Testing Results :

Turbidity

Expected Reading	Recording Reading
0.00 NTU	0.25 NTU
4.00 NTU	3.95 NTU
40.0 NTU	37.0 NTU
80.0 NTU	76.3 NTU
400 NTU	414 NTU
800 NTU	864 NTU
Allowing Deviation	± 10%

Testing Method:

APHA (19th edition), 2130B

Appendix F

Meteorological information

Meteorological Data Extracted from HKO during the Reporting Period

Date		Weather	Lau Fau Shan Weather Station				
			Total Rainfall (mm)	Mean Air Temperature (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction
1-Jan-11	Sat	Holiday					
2-Jan-11	Sun	Holiday					
3-Jan-11	Mon	Moderate northeasterly winds	Trace	11.3	17.5	65	NE
4-Jan-11	Tue	Mainly cloudy.	1.2	8.9	12.5	87.5	E/NE
5-Jan-11	Wed	Cloudy at first	0	12.6	9.5	77.5	N
6-Jan-11	Thu	Moderate to fresh northerly winds.	Trace	11.4	18.7	70.5	N
7-Jan-11	Fri	sunny periods	0	9.4	16.5	56.7	NE
8-Jan-11	Sat	Mainly fine apart from some haze.	0	11.7	9.5	57	E/NE
9-Jan-11	Sun	Very cold and cloudy.	0	13.8	18.5	50.7	N
10-Jan-11	Mon	Fresh north to northeasterly winds.	0	11.8	14.4	45.7	N/NE
11-Jan-11	Tue	Cold and cloudy.	Trace	8.3	19.5	61	N/NE
12-Jan-11	Wed	Moderate north to northeasterly winds.	4.2	6	10.5	88.5	N/NE
13-Jan-11	Thu	Mainly fine and dry.	Trace	11.3	9	73.7	E/NE
14-Jan-11	Fri	Cold in the morning.	0	15.2	10	71.5	W/SW
15-Jan-11	Sat	Moderate east to northeasterly winds.	0	12.4	31.5	57	N
16-Jan-11	Sun	It will be dry.	0	10.9	12.5	56.5	N/NE
17-Jan-11	Mon	Moderate east to northeasterly winds, freshening later.	0	10.4	12.2	56.3	E/NE
18-Jan-11	Tue	Mainly fine apart from some haze	0	15.7	12.2	60	E/NE
19-Jan-11	Wed	Moderate east to northeasterly winds.	0	14.7	13.7	65.2	E/NE
20-Jan-11	Thu	Fine and dry apart from some haze.	0	15.3	14.6	66.2	N
21-Jan-11	Fri	Moderate northeasterly winds	0	12	12	60.7	E/NE
22-Jan-11	Sat	Rather cool in the morning.	0	11.2	12.5	58.2	N/NW
23-Jan-11	Sun	Cold and cloudy.	0	14.4	14.5	57.7	N/NW
24-Jan-11	Mon	Fresh north to northeasterly winds.	0	12.4	14.5	57	NE
25-Jan-11	Tue	sunny periods	0	13.5	10.2	63	NE
26-Jan-11	Wed	There will also be haze.	0	13.7	11	68.7	SW
27-Jan-11	Thu	Moderate northerly winds, fresh offshore.	0	15.8	11.5	77.2	E/NE
28-Jan-11	Fri	Mainly cloudy.	0	14.6	15.2	67.2	N/NE
29-Jan-11	Sat	Mainly fine	0	12	14.2	57.5	N
30-Jan-11	Sun	Moderate northeasterly winds.	0	11	13.7	47	N
31-Jan-11	Mon	Dry with some haze.	Trace	12.4	14.7	47	NE

Remark: The local wind speed was checked with a portable wind speed meter during the course of construction noise monitoring.

Appendix G

Event and Action Plan

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action Level being exceeded for one sample	1. Identify source; 2. Inform IEC and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
Action Level being exceeded for two or more consecutive samples	1. Identify source; 2. Inform IEC and ER; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency to daily; 5. Discuss with IEC and Contractor on remedial actions required; 6. If exceedance continues, arrange meeting with IEC and ER; 7. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures are properly implemented.	1. Submit proposals for remedial actions to IEC within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.
Limit Level being exceeded for one sample	1. Identify source; 2. Inform IEC, ER and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions; 6. Keep EPD and ER informed of the results.	1. Check monitoring data submitted by ET and Contractor's working method; 2. Discuss with Contractor on the possible mitigation measures; 3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Check monitoring data and Contractor's working methods; 4. Discuss with IEC and Contractor on potential remedial actions; 5. Ensure remedial actions properly implemented.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to ER within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
Limit Level being exceeded for two or more consecutive samples	1. Identify source; 2. Inform IEC, ER and EPD the causes & actions taken for the exceedances; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Investigate the causes of exceedance; 6. Arrange meeting with EPD and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET and Contractor's working method; 2. Discuss with Contractor on the possible mitigation measures; 3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly; 4. Supervise the implementation of mitigation measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 4. Discuss with IEC and the Contractor on potential remedial actions; 5. Review Contractor's remedial actions whenever necessary to assure their effectiveness; 6. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to ER within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not resolved; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action level	1. Notify IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC and Contractor; 4. Discuss with the Contractor and formulate remedial measures ; 5. Increase monitoring frequency to check the effectiveness of mitigation measures.	1. Review the analyzed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analyzed noise problem; 4. Ensure mitigation measures are properly implemented.	1. Submit noise mitigation proposal to IEC; 2. Implement noise mitigation proposals.
Limit level	1. Notify IEC, ER, EPD & Contractor; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances; 7. Assess the effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analyzed noise problem; 4. Ensure mitigation measures are properly implemented; 5. If exceedances continue, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Undertake immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by ER, until the exceedance is abated.

DSD Contract No. DC/2009/08 – Construction of Yuen Long South Branch Sewers and Expansion of Ha Tsuen Sewage Pumping Station
Event Action Plan – Water Quality (Local Stream)

Event	Action			
	ET Leader	IEC	ER	Contractor
Action Level being exceeded by one sampling day	1. Repeat in-situ measurement to confirm findings; 2. Identify reasons for non-compliance and sources of impact; 3. Inform IEC and Contractor; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC and Contractor; 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.	1. Discuss with IEC on the proposed mitigation measures; 2. make agreement on the mitigation measures to be implemented; 3. 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 and IEC and propose mitigation measures to IEC and ER; 6. Implement the agreed mitigation measures.
Action Level being exceeded by more than two consecutive sampling days	1. Repeat in-situ measurement to confirm findings; 2. Identify reasons for non-compliance and sources of impact; 3. Inform IEC and Contractor; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC and Contractor; 6. Ensure mitigation measures are implemented; 7. Prepare to increase the monitoring frequency to daily; 8. 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.	1. Discuss with IEC on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented; 3. 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 and IEC and propose mitigation measures to IEC and ER within 3 working days; 6. Implement the agreed mitigation measures.
Limit Level being exceeded by one sampling day	1. Repeat in-situ measurement to confirm findings; 2. Identify reasons for non-compliance and sources of impact; 3. Inform IEC, Contractor and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit Level.	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.	1. Discuss with IEC, 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, IEC and ER and propose mitigation measures to IEC and ER within 3 working days; 6. Implement the agreed mitigation measures.
Limit Level being exceeded by more than two consecutive sampling days	1. Repeat in-situ measurement to confirm findings; 2. Identify reasons for non-compliance and sources of impact; 3. Inform IEC, Contractor and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit Level for two consecutive days.	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.	1. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Assess the effectiveness of the implemented mitigation measures; 5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the marine work until no exceedance of Limit Level.	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, IEC and ER and propose mitigation measures to IEC and ER within 3 working days; 6. Implement the agreed mitigation measures; 7. As directed by the ER, to slow down or to stop all or part of the marine work or construction activities.

Appendix H

Monitoring Schedule in Reporting Month and Coming Month

Monitoring Schedule for Reporting Period

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

	Monitoring Day
	Sunday or Public Holiday

Monitoring Schedule for Coming Month

Date		Dust Monitoring		Noise Monitoring	Water Quality
		1-hour TSP	24-hour TSP		
Tue	1-Feb-11				
Wed	2-Feb-11				
Thu	3-Feb-11				
Fri	4-Feb-11				
Sat	5-Feb-11				
Sun	6-Feb-11				
Mon	7-Feb-11				
Tue	8-Feb-11				
Wed	9-Feb-11				
Thu	10-Feb-11				
Fri	11-Feb-11				
Sat	12-Feb-11				
Sun	13-Feb-11				
Mon	14-Feb-11				
Tue	15-Feb-11				
Wed	16-Feb-11				
Thu	17-Feb-11				
Fri	18-Feb-11				
Sat	19-Feb-11				
Sun	20-Feb-11				
Mon	21-Feb-11				
Tue	22-Feb-11				
Wed	23-Feb-11				
Thu	24-Feb-11				
Fri	25-Feb-11				
Sat	26-Feb-11				
Sun	27-Feb-11				
Mon	28-Feb-11				

	Monitoring Day
	Sunday or Public Holiday

Appendix I

Results Data

DSD Contract No DC/2009/08 – Construction of Yuen Long South Branch Sewers and Expansion of Ha Tsuen Sewage Pumping Station

Impact 24-Hour TSP Monitoring Results - AM1 (Lions Clubs International Ho Tak Sum Primary School)

DATE	SAMPLE NUMBER	ELAPSED TIME			MIN CHART READING	MAX CHART READING	AVG CHART READING	AVG TEMP (oC)	STANDARD			INITIAL FILTER WEIGHT (g)	FINAL FILTER WEIGHT (g)	WEIGHT DUST COLLECTED (g)	Dust 24-hr TSP in air (ug/m ³)
		INITIAL	FINAL	(min)					AVG PRESS (hPa)	FLOW RATE (m3/min)	AIR VOLUME (std m3)				
5-Jan-11	23186	9153.63	9179.48	1551.00	37	38	37.5	15.7	1018.6	1.19	1847	2.7541	2.8458	0.0917	50
11-Jan-11	22935	9179.48	9204.73	1515.00	35	37	36.0	11.2	1018.7	1.16	1760	2.8005	2.9246	0.1241	71
17-Jan-11	23152	9204.73	9228.31	1414.80	36	38	37.0	11.8	1024.2	1.19	1680	2.7391	2.8648	0.1257	75
22-Jan-11	23179	9228.31	9252.87	1473.60	35	37	36.0	13.7	1019.3	1.16	1706	2.7502	2.9543	0.2041	119
28-Jan-11	23220	9252.87	9278.56	1541.40	36	38	37.0	15.1	1023.9	1.18	1822	2.8177	3.0078	0.1901	105

Action Level : 162 Limit Level : 260

Impact 24-Hour TSP Monitoring Results - AM2 (Yeung Chun Pui Care & Attention Home)

DATE	SAMPLE NUMBER	ELAPSED TIME			MIN CHART READING	MAX CHART READING	AVG CHART READING	AVG TEMP (oC)	STANDARD			INITIAL FILTER WEIGHT (g)	FINAL FILTER WEIGHT (ug/m ³)	WEIGHT DUST COLLECTED (g)	Dust 24-hr TSP in air (ug/m ³)
		INITIAL	FINAL	(min)					AVG PRESS (hPa)	FLOW RATE (m3/min)	AIR VOLUME (std m3)				
5-Jan-11	23163	10743.72	10769.08	1521.60	37	38	37.5	15.7	1018.6	1.14	1733	2.732	2.8196	0.0876	51
11-Jan-11	22883	10769.08	10793.56	1468.80	36	38	37.0	11.2	1018.7	1.13	1665	2.9044	3.1025	0.1981	119
17-Jan-11	23153	10793.56	10819.94	1582.80	37	39	38.0	11.8	1024.2	1.16	1837	2.7393	2.8986	0.1593	87
22-Jan-11	23180	10819.94	10844.39	1467.00	36	38	37.0	13.7	1019.3	1.13	1657	2.7511	2.9116	0.1605	97
28-Jan-11	23221	10844.39	10870.36	1558.20	35	37	36.0	15.1	1023.9	1.10	1721	2.8094	3.0053	0.1959	114

Action Level : 190 Limit Level : 260

Construction of Yuen Long South Branch Sewers and Extension of Ha Tsuen Sewage Pumping Station

Summary of Water Quality Monitoring Results - R1b

Date	ACTION/ LIMIT									
Location				DO (mg/L)		DOS (%)		Turbidity (NTU)		pH
R1b				ACT	4.6			ACT	15.6	ACT
				LIM	4			LIM	16.2	LIM

Date	4-Jan-11									
Location	Time	Depth (m)	Temp (oC)	DO (mg/L)		DOS (%)		Turbidity (NTU)		pH
R1b	15:37	0.70	15.5	12.06	11.9	125.3	123.9	14.0	13.2	9.03
			15.3	11.71		122.4		12.3		8.97

Date	6-Jan-11									
Location	Time	Depth (m)	Temp (oC)	DO (mg/L)		DOS (%)		Turbidity (NTU)		pH
R1b	16:53	0.70	16.8	17.33	17.6	162.3	161.2	14.5	14.5	8.74
			16.9	17.84		160.1		14.4		8.98

Date	8-Jan-11									
Location	Time	Depth (m)	Temp (oC)	DO (mg/L)		DOS (%)		Turbidity (NTU)		pH
R1b	15:30	0.70	16.4	15	15.3	154.1	157.2	12.9	13.5	9.67
			16.6	15.61		160.3		14.1		9.33

Date	10-Jan-11									
Location	Time	Depth (m)	Temp (oC)	DO (mg/L)		DOS (%)		Turbidity (NTU)		pH
R1b	15:00	0.60	16.0	13.26	14.9	132.1	147.8	11.6	12.3	9.52
			16.3	16.45		163.4		13.0		9.61

Date	12-Jan-11									
Location	Time	Depth (m)	Temp (oC)	DO (mg/L)		DOS (%)		Turbidity (NTU)		pH
R1b	16:09	0.80	12.2	5.88	5.8	60.4	60.1	13.4	13.2	8.42
			11.5	5.77		59.7		12.9		8.08

Date	15-Jan-11									
Location	Time	Depth (m)	Temp (oC)	DO (mg/L)		DOS (%)		Turbidity (NTU)		pH
R1b	11:31	0.60	16.8	14.62	14.5	162.4	160.8	14.2	14.2	9.08
			16.7	14.34		159.2		14.1		9.14

Date	18-Jan-11									
Location	Time	Depth (m)	Temp (oC)	DO (mg/L)		DOS (%)		Turbidity (NTU)		pH
R1b	17:03	0.60	18.8	20.19	20.1	236.1	229.8	14.8	15.0	9.85
			18.6	20.04		223.4		15.1		9.76

Date	20-Jan-11									
Location	Time	Depth (m)	Temp (oC)	DO (mg/L)		DOS (%)		Turbidity (NTU)		pH
R1b	11:31	0.70	17.3	9.88	9.9	107.5	107.5	8.0	8.0	8.42
			17.3	9.88		107.5		8.0		8.4

Date	22-Jan-11									
Location	Time	Depth (m)	Temp (oC)	DO (mg/L)		DOS (%)		Turbidity (NTU)		pH
R1b	11:40	0.60	17.2	9.62	9.6	99.4	99.4	8.2	8.2	8.56
			17.2	9.61		99.4		8.2		8.56

Date	24-Jan-11									
Location	Time	Depth (m)	Temp (oC)	DO (mg/L)		DOS (%)		Turbidity (NTU)		pH
R1b	16:53	0.70	17.3	10.76	10.8	100.4	100.5	9.6	9.6	8.49
			17.3	10.77		100.5		9.5		8.49

Date	27-Jan-11									
Location	Time	Depth (m)	Temp (oC)	DO (mg/L)		DOS (%)		Turbidity (NTU)		pH
R1b	16:30	0.70	21.8	14.51	16.6	172.3	192.2	15.6	15.4	9.21
			21.6	18.73		212.0		15.1		9.35

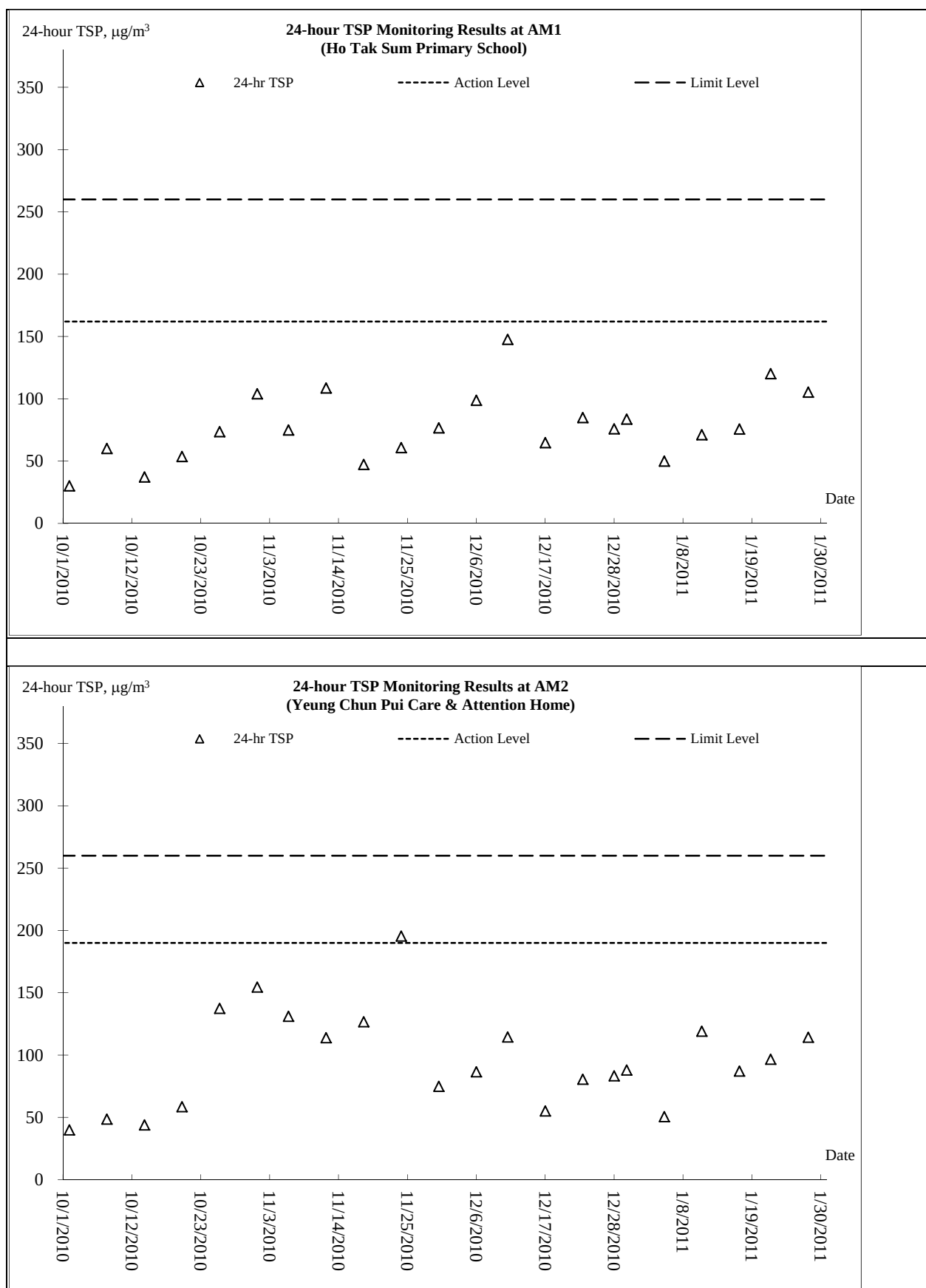
Date	29-Jan-11									
Location	Time	Depth (m)	Temp (oC)	DO (mg/L)		DOS (%)		Turbidity (NTU)		pH
R1b	16:41	0.60	17.2	18.64	18.6	197.5	197.6	15.3	15.2	8.73
			17.2	18.65		197.6		15.1		8.72

Date	31-Jan-11									
Location	Time	Depth (m)	Temp (oC)	DO (mg/L)		DOS (%)		Turbidity (NTU)		pH
R1b	14:49	0.70	18.7	19.22	19.2	215.4	215.4	15.7	15.4	8.96
			18.7	19.2		215.4		15.1		8.8

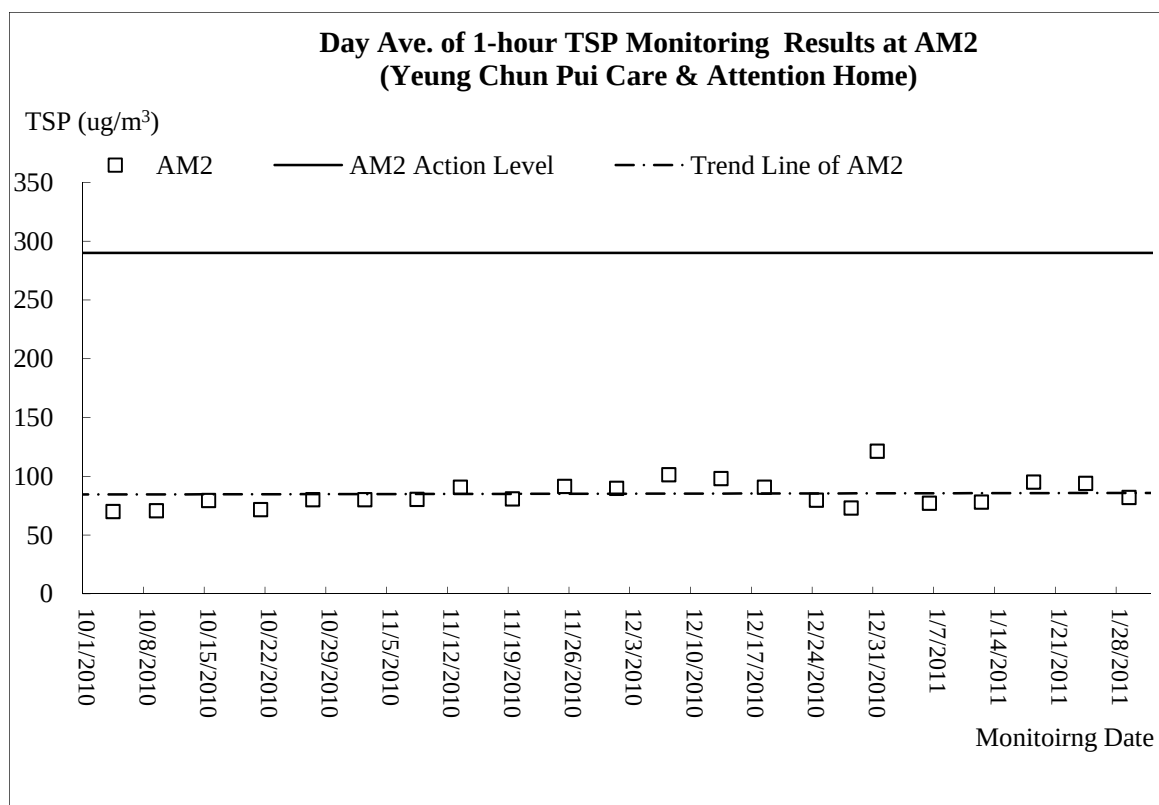
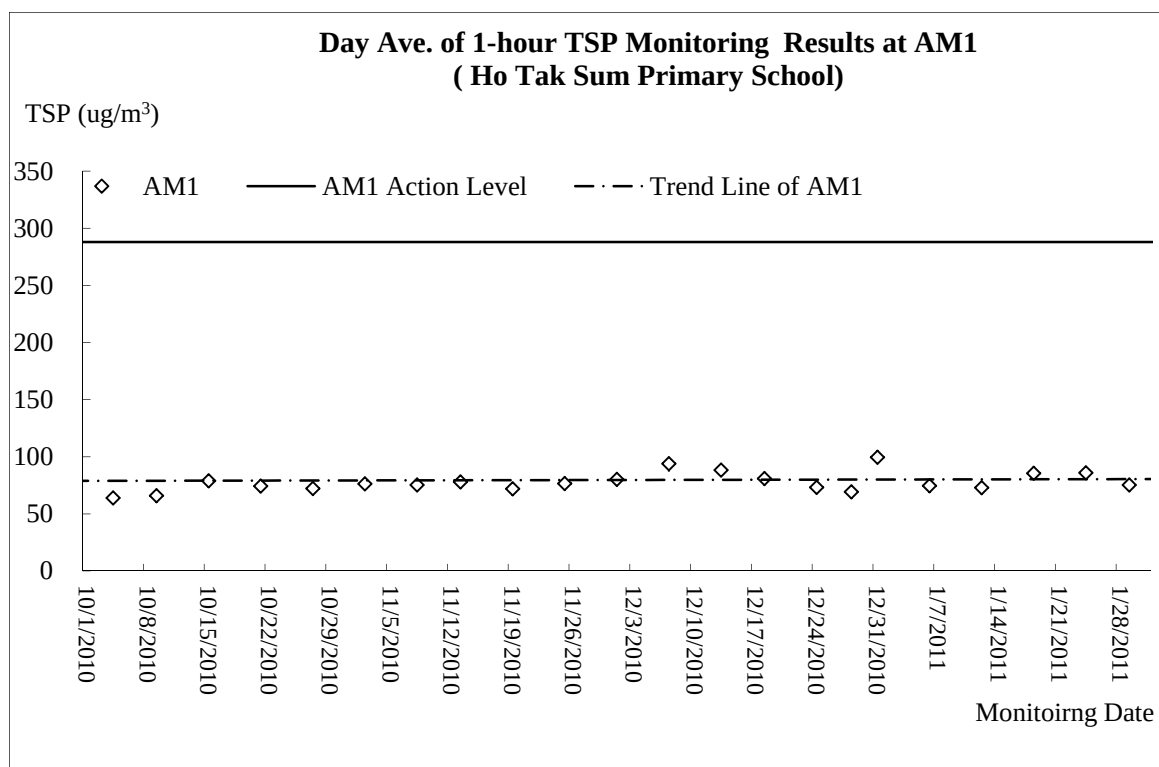
Appendix J

Graphical plots

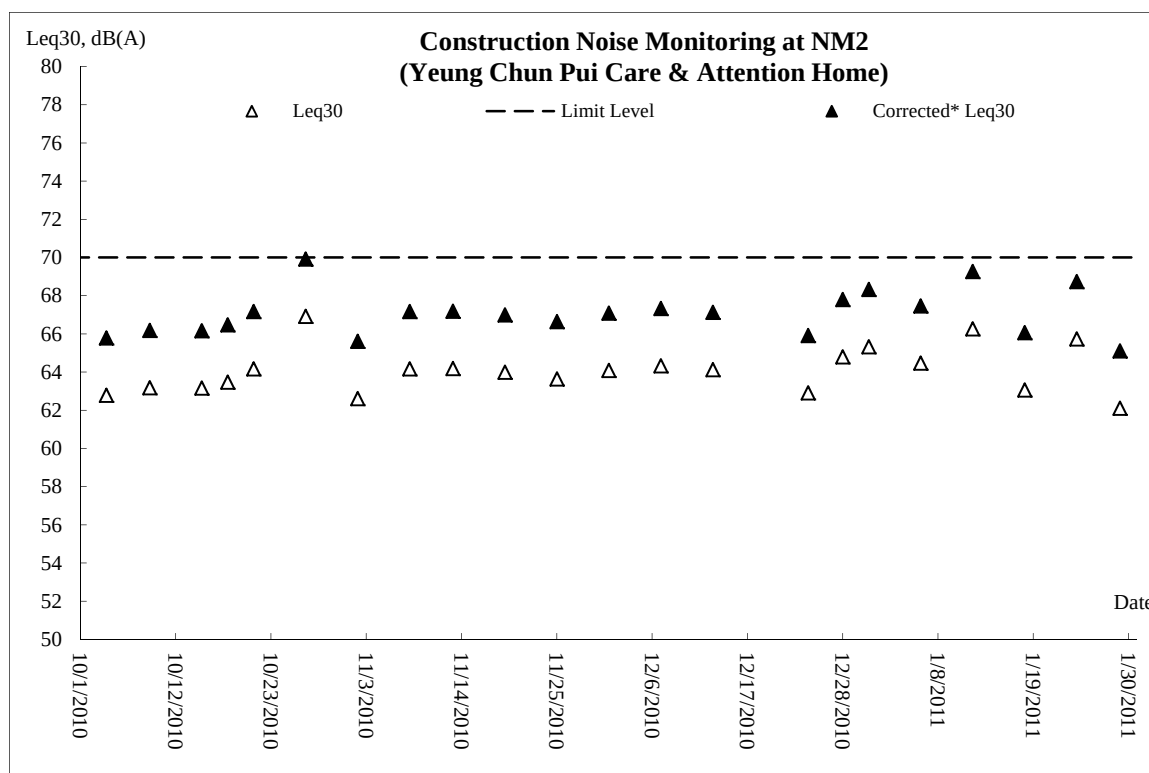
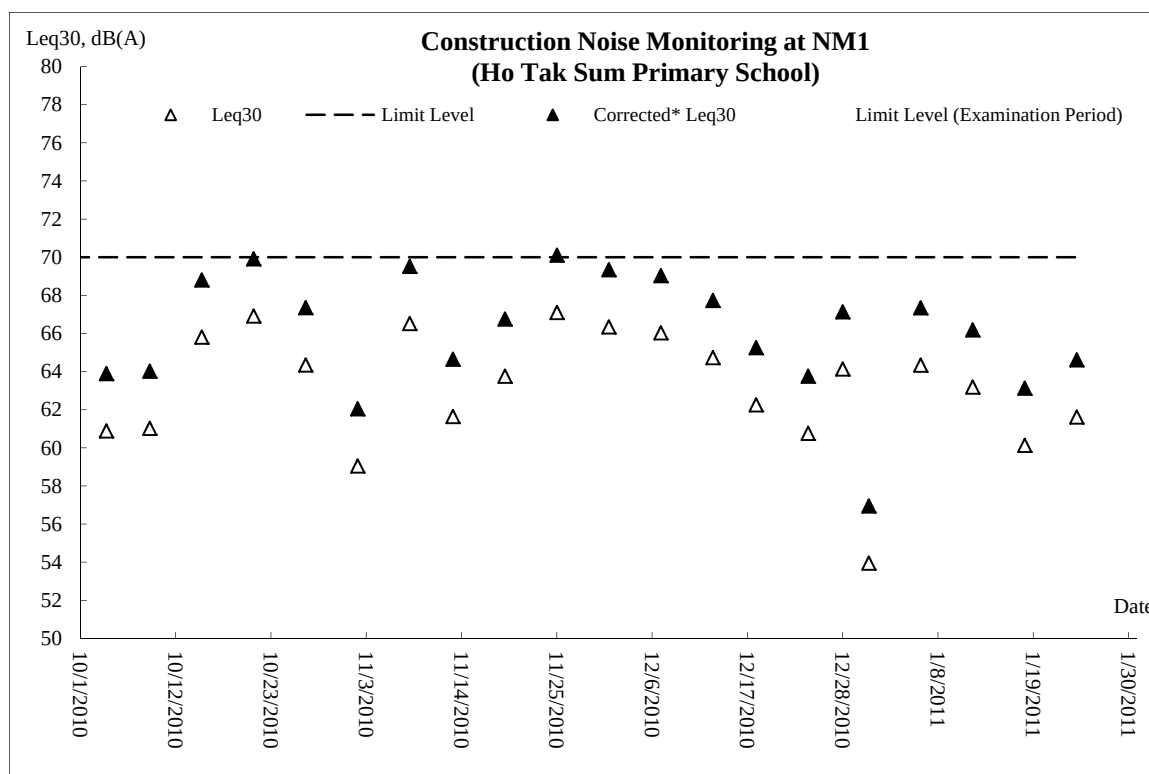
Air Quality – 24-Hr TSP



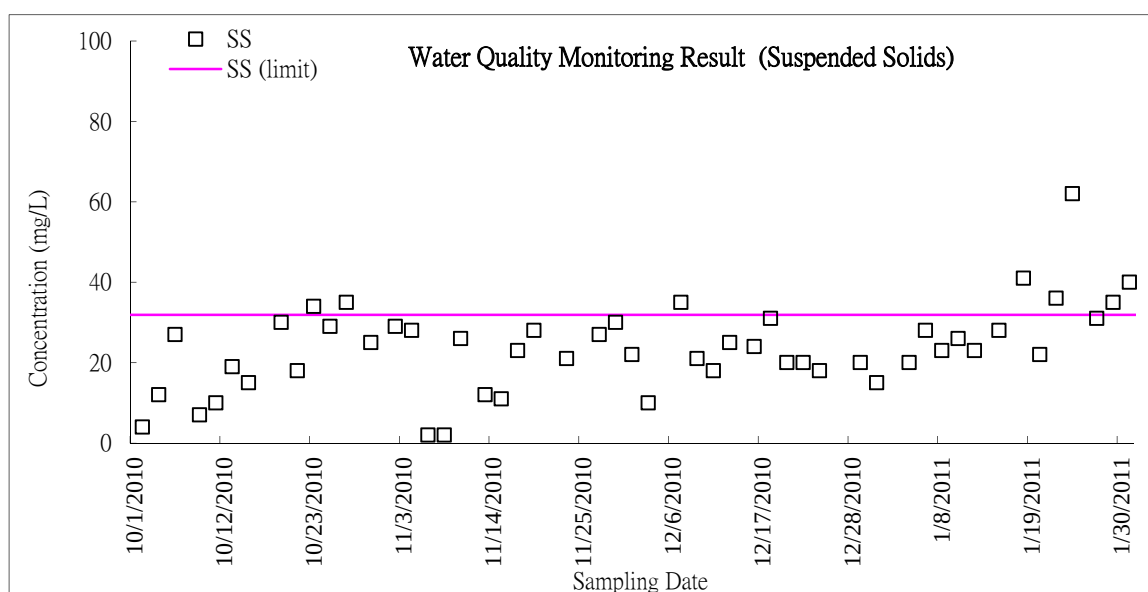
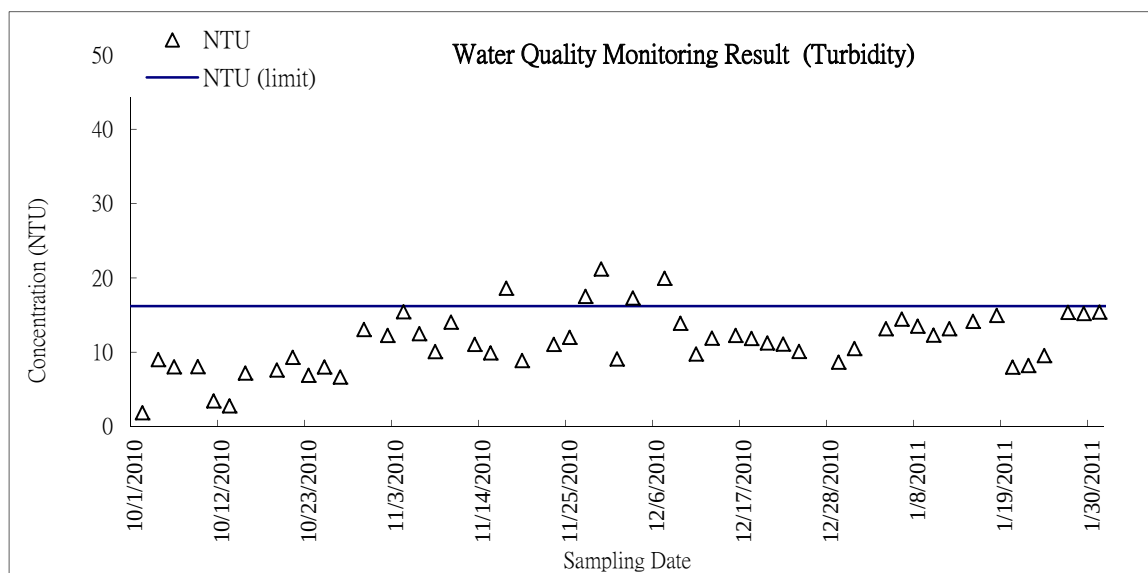
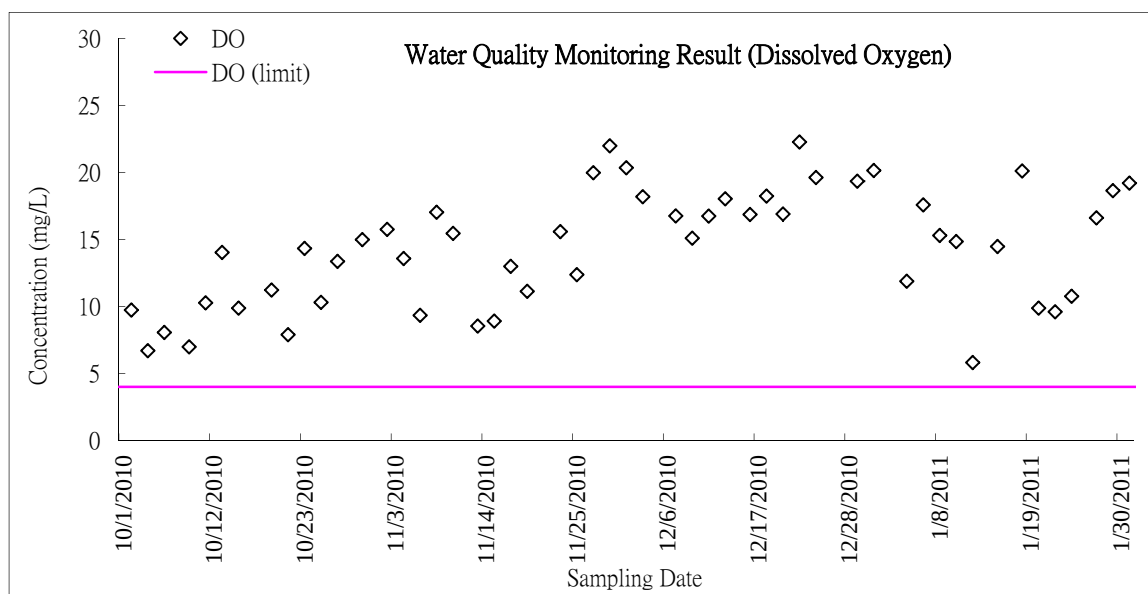
Air Quality – 1 Hour TSP



Construction Noise



Water Quality – Local Stream Course (R1b)



Remarks: For better presenting the trend of the results, the monitoring data of 25 Nov 2010 (387mg/L) is not shown.

Appendix K

Monthly Summary Waste Flow Table

Drainage Service Department
Monthly Summary Waste Flow Table
for Contract with Waste Management Plan under ETWB TCW No. 15/2003
Reporting Year: 2011
Contract No. DC/2009/08

(To be submitted to C&D MM Coordinator of Respective Division/Region via Engineer's Representative before 15th of the following month)

Month	Actual Quantities of Inert C&D Materials Generated / Imported (in '000 m ³)						Actual Quantities of Other C&D Materials / Wastes Generated				
	Total Quantities Generated	Broken Concrete (including rock for recycling into aggregates)	Reused in the Contract	Reused in Other Projects	Disposed as Public Fill	Imported C&D Material	Metal	Paper/ Cardboard Packaging	Plastic (bottles/containers, plastic sheets/ foams from package material)	Chemical Waste	Others (e.g. General Refuse etc.)
	[a+b+c+d]	(a)	(b)	(c)	(d)		(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m ³)
January	4.579	0	0	0	4.579	0	0	0	2.575	0	0.001
February											
March											
April											
May											
June											
Half-year total	4.579	0	0	0	4.579	0	0	0	2.575	0	0.001
July											
August											
September											
October											
November											
December											
Yearly Total	4.579	0	0	0	4.579	0	0	0	2.575	0	0.001

Appendix L

Inspection Checklist

Project:	<u>DC/2009/08</u>	Inspected by	<u></u>
	<u>Construction of Yuen Long South Branch Sewers and Expansion of Ha Tsuen PS</u>	RE's representative:	<u>K.P. Cheung</u>
Inspection	<u></u>	IEC's representative:	<u>-</u>
Date:	<u>4 January 2011</u>	ET's representative:	<u>Ben Tam</u>
Time:	<u>10:00</u>	Contractor's representative:	<u>T.T. Lee</u>
		Checklist No.	<u>DC200908-040111</u>

PART A: GENERAL INFORMATION Environmental Permit No.: N/A

Weather: ☒ Sunny ☐ Fine ☐ Cloudy ☐ Rainy

Temperature: 14.0 °C

Humidity: ☐ High ☐ Moderate ☒ Low

Wind: ☐ Strong ☐ Breeze ☒ Light ☐ Calm

PART B: SITE AUDIT

Section 1: Water Quality

		Not Obs.	Yes	No	Follow up	N/A	Photo/Remarks
1.01	Is an effluent discharge license obtained for the Project?	☐	☒	☐	☐	☐	
1.02	Is the effluent discharged in accordance with the discharge licence?	☐	☒	☐	☐	☐	
1.03	Is the discharge of turbid water avoided?	☐	☐	☐	☒	☐	Photo 3
1.04	Are there proper desilting facilities in the drainage systems to reduce SS levels in effluent?	☐	☒	☐	☐	☐	
1.05	Are there channels, sandbags or bunds to divert the surface run-off to sedimentation tanks/desilting system prior discharge?	☐	☒	☐	☐	☐	
1.06	Are there any temporary perimeter channels provided at site boundaries to intercept storm runoff from crossing the site?	☒	☐	☐	☐	☐	
1.07	Is temporary drainage system (within site boundaries) and the nearby permanent drainage system (outside site boundaries) are well maintained?	☐	☒	☐	☐	☐	
1.08	As excavation proceeds, are temporary access roads protected by crushed stone or gravel?	☐	☒	☐	☐	☐	
1.09	Are temporary exposed slopes properly covered?	☐	☒	☐	☐	☐	
1.10	Are earthworks final surfaces well compacted or protected?	☐	☒	☐	☐	☐	
1.11	Are manholes adequately covered or temporarily sealed?	☐	☒	☐	☐	☐	
1.12	Are there any procedures and equipment for rainstorm protection?	☒	☐	☐	☐	☐	
1.13	Are wheel washing facilities well maintained?	☐	☒	☐	☐	☐	
1.14	Is overflow runoff from wheel washing facilities avoided?	☐	☒	☐	☐	☐	
1.15	Are there chemical toilets provided on site?	☐	☒	☐	☐	☐	
1.16	Are chemical toilets properly maintained?	☐	☒	☐	☐	☐	
1.17	Are the vehicle and plant servicing areas paved and located within roofed areas?	☐	☐	☐	☐	☒	
1.18	Is the oil leakage from the on-site vehicles/plants or spillage during the fuel refilling avoided?	☐	☐	☐	☒	☐	Photo 1
1.19	Are there any measures to prevent oil leakage entering the temporary/permanent drainage system?	☐	☒	☐	☐	☐	
1.20	Are there any measures to collect spilt cement and concrete washings during concreting works?	☐	☐	☐	☐	☒	
1.21	Are there any oil interceptors/grease traps in the drainage systems for vehicle and plant servicing areas, canteen kitchen, etc?	☒	☐	☐	☐	☐	
1.22	Are the oil interceptors/grease traps maintained properly?	☐	☒	☐	☐	☐	

	Not Obs.	Yes	No	Follow up	N/A	Photo/ Remarks
1.23 Is used bentonite recycled where appropriate?	☐	☐	☐	☐	☒	
1.24 Is the sediment laden runoff from the unpaved surface to avoid discharge into the nearby aquatic environments, marsh lands and moat ponds?	☐	☒	☐	☐	☐	
Section 2: Air Quality						
2.01 Are there wheel washing facilities with high pressure jets provided at every vehicle exit point?	☐	☐	☐	☐	☒	
2.02 Are vehicles washed to remove any dusty materials from their bodies and wheels before leaving construction sites?	☐	☒	☐	☐	☐	
2.03 Are the excavated materials or exposure soil surface sprayed with water during handling?	☐	☒	☐	☐	☐	
2.04 Are stockpiles of dusty materials sprayed with water, covered or placed in sheltered areas?	☐	☒	☐	☐	☐	
2.05 Is the exposed earth properly treated within six months after the last construction activities?	☐	☒	☐	☐	☐	
2.06 Are the access roads sprayed with water to maintain the entire road surface wet or paved and speed control (<15km/hr)?	☐	☒	☐	☐	☐	
2.07 Is the surface where any drilling, cutting, polishing or breaking operation continuously sprayed with water?	☐	☒	☐	☐	☐	
2.08 Is the load on vehicles covered entirely by clean impervious sheeting?	☐	☒	☐	☐	☐	
2.09 Is the loading of materials to a level higher than the side and tail boards during transportation by vehicles avoided?	☐	☒	☐	☐	☐	
2.10 Is the road leading to the construction site within 30m of the vehicle entrance kept clear of dusty materials?	☐	☒	☐	☐	☐	
2.11 Is dark smoke emission from plant/equipment avoided?	☐	☒	☐	☐	☐	
2.12 Are de-bagging, batching and mixing processes carried out in sheltered areas (3-sided roofed enclosure) during the use of bagged cement?	☐	☒	☐	☐	☐	
2.13 Are site vehicles travelling within the speed limit (<15km/hour)?	☐	☒	☐	☐	☐	
2.14 Are hoardings of not less than 2.4m high provided along the site boundary, which adjoins areas accessible to the public?	☐	☒	☐	☐	☐	
2.15 Is open burning avoided?	☐	☒	☐	☐	☐	
2.16 Are any materials dropped on the roads (Outside the site boundaries) had clean up immediately?	☐	☒	☐	☐	☐	
Section 3: Noise						
3.01 Are noisy equipment and activities positioned as far as practicable from the sensitive receivers?	☐	☒	☐	☐	☐	
3.02 Is silenced equipment adopted?	☐	☒	☐	☐	☐	
3.03 Is idle equipment turned off or throttled down?	☐	☒	☐	☐	☐	
3.04 Are all plant and equipment well maintained and in good condition?	☐	☒	☐	☐	☐	
3.05 Are noise barriers or enclosures provided at areas where construction activities cause noise impact on sensitive receivers?	☐	☒	☐	☐	☐	
3.06 Are hand held breakers fitted with valid noise emission labels during operation?	☒	☐	☐	☐	☐	
3.07 Are air compressors fitted with valid noise emission labels during operation?	☐	☒	☐	☐	☐	
3.08 Are flaps and panels of mechanical equipment closed during operation?	☐	☒	☐	☐	☐	
3.09 Are Construction Noise Permit(s) applied for percussive piling works?	☐	☐	☐	☐	☒	
3.10 Are Construction Noise Permit(s) applied for general construction works during restricted hours?	☐	☐	☐	☐	☒	
3.11 Are valid Construction Noise Permit(s) posted at site entrances?	☐	☒	☐	☐	☐	
Section 4: Waste/Chemical Management						
4.01 Are receptacles available for general refuse collection?	☐	☒	☐	☐	☐	

	Not Obs.	Yes	No	Follow up	N/A	Photo/ Remarks
4.02 Is general refuse sorting or recycling implemented?	☐	☒	☐	☐	☐	
4.03 Is general refuse disposed of properly and regularly?	☐	☒	☐	☐	☐	
4.04 Is the Contractor registered as a chemical waste producer?	☐	☒	☐	☐	☐	
4.05 Are the chemical waste containers properly labelled?	☐	☒	☐	☐	☐	
4.06 Are the chemical wastes stored in proper storage areas?	☐	☒	☐	☐	☐	
4.07 Is the chemical waste storage area properly labelled?	☐	☒	☐	☐	☐	
4.08 Is the chemical waste storage area used for storage of chemical waste only?	☐	☒	☐	☐	☐	
4.09 Are incompatible chemical wastes stored in different areas?	☒	☐	☐	☐	☐	
4.10 Are the chemical wastes disposed of by licensed collectors?	☒	☐	☐	☐	☐	
4.11 Are trip tickets for chemical wastes disposal available for inspection?	☐	☒	☐	☐	☐	
4.12 Are chemical/fuel storage areas bunded?	☐	☒	☐	☐	☐	
4.13 Are designated areas identified for storage and sorting of construction wastes?	☐	☒	☐	☐	☐	
4.14 Are construction wastes sorted on site?	☐	☒	☐	☐	☐	
4.15 Are construction wastes reused?	☐	☒	☐	☐	☐	
4.16 Are construction wastes disposed of properly?	☐	☐	☐	☒	☐	Photo 2
4.17 Are site hoardings and signboards made of durable materials instead of timber?	☐	☒	☐	☐	☐	
4.18 Is trip ticket system implemented for the disposal of construction wastes and records available for inspection?	☐	☒	☐	☐	☐	
4.19 Are appropriate procedures followed if contaminated material exists?	☐	☒	☐	☐	☐	
4.20 Is relevant license/ permit for disposal of construction waste or excavated materials available for inspection?	☐	☒	☐	☐	☐	
Section 5: Landscape & Visual						
5.01 Are retained and transplanted trees in health condition?	☐	☒	☐	☐	☐	
5.02 Are retained and transplanted trees properly protected?	☐	☒	☐	☐	☐	
5.03 Are surgery works carried out for the damaged trees?	☒	☐	☐	☐	☐	
5.04 Is damage to trees outside site boundary due to construction activities avoided?	☐	☒	☐	☐	☐	
5.05 Is the night-time lighting controlled to minimize glare to sensitive receivers?	☐	☒	☐	☐	☐	
Section 6: Others						
6.01 Are relevant Environmental Permits posted at all vehicle site entrances/exits?	☐	☒	☐	☐	☐	

Remarks

Follow up of last Site Inspection:



Photo 1: Oil leakage from the air compressor was observed at Tai Shiu Ha works area, the contractor was request to clean up immediately to prevent ant contamination.

Observations recorded in this Site Inspection: (4-1-2011)



Photo 2: C&D waste cumulated on site was observed at Shui Tsui San Tsuen Pumping Station, the contractor was reminded to dispose the waste in regular basis.



Photo 3: Turbidity water discharged from the Tai Shiu Ha works area was observed, the contractor was requested to improve the de-silting facility immediately to prevent discharge of turbid water.

RE's representative

IEC's representative

ET's representative

Contractor's representative

(_____)

(_____)

(Ben Tam)

(_____)

PART A: GENERAL INFORMATION		Environmental Permit No.: N/A	
Weather:	☐ Sunny	☐ Fine	☒ Cloudy ☐ Rainy
Temperature:	11.2 °C		
Humidity:	☐ High	☒ Moderate	☐ Low
Wind:	☐ Strong	☐ Breeze	☒ Light ☐ Calm

Not Obs.	Yes	No	Follow up	N/A	Photo/ Remarks
----------	-----	----	-----------	-----	----------------

1.01	Is an effluent discharge license obtained for the Project?	☐	☒	☐	☐	☐	
1.02	Is the effluent discharged in accordance with the discharge licence?	☐	☒	☐	☐	☐	
1.03	Is the discharge of turbid water avoided?	☐	☒	☐	☐	☐	Photo 2
1.04	Are there proper desilting facilities in the drainage systems to reduce SS levels in effluent?	☐	☐	☐	☒	☐	Photo 3
1.05	Are there channels, sandbags or bunds to divert the surface run-off to sedimentation tanks/desilting system prior discharge?	☐	☒	☐	☐	☐	
1.06	Are there any temporary perimeter channels provided at site boundaries to intercept storm runoff from crossing the site?	☒	☐	☐	☐	☐	
1.07	Is temporary drainage system (within site boundaries) and the nearby permanent drainage system (outside site boundaries) are well maintained?	☐	☒	☐	☐	☐	
1.08	As excavation proceeds, are temporary access roads protected by crushed stone or gravel?	☐	☒	☐	☐	☐	
1.09	Are temporary exposed slopes properly covered?	☐	☒	☐	☐	☐	
1.10	Are earthworks final surfaces well compacted or protected?	☐	☒	☐	☐	☐	
1.11	Are manholes adequately covered or temporarily sealed?	☐	☒	☐	☐	☐	
1.12	Are there any procedures and equipment for rainstorm protection?	☒	☐	☐	☐	☐	
1.13	Are wheel washing facilities well maintained?	☐	☒	☐	☐	☐	
1.14	Is overflow runoff from wheel washing facilities avoided?	☐	☒	☐	☐	☐	
1.15	Are there chemical toilets provided on site?	☐	☒	☐	☐	☐	
1.16	Are chemical toilets properly maintained?	☐	☒	☐	☐	☐	
1.17	Are the vehicle and plant servicing areas paved and located within roofed areas?	☐	☐	☐	☐	☒	
1.18	Is the oil leakage from the on-site vehicles/plants or spillage during the fuel refilling avoided?	☐	☒	☐	☐	☐	Photo 1
1.19	Are there any measures to prevent oil leakage entering the temporary/permanent drainage system?	☐	☒	☐	☐	☐	
1.20	Are there any measures to collect spilt cement and concrete washings during concreting works?	☐	☐	☐	☐	☒	
1.21	Are there any oil interceptors/grease traps in the drainage systems for vehicle and plant servicing areas, canteen kitchen, etc?	☒	☐	☐	☐	☐	
1.22	Are the oil interceptors/grease traps maintained properly?	☐	☒	☐	☐	☐	

	Not Obs.	Yes	No	Follow up	N/A	Photo/Remarks
1.23 Is used bentonite recycled where appropriate?	☐	☐	☐	☐	☒	
1.24 Is the sediment laden runoff from the unpaved surface to avoid discharge into the nearby aquatic environments, marsh lands and moat ponds?	☐	☒	☐	☐	☐	
Section 2: Air Quality						
2.01 Are there wheel washing facilities with high pressure jets provided at every vehicle exit point?	☐	☐	☐	☐	☒	
2.02 Are vehicles washed to remove any dusty materials from their bodies and wheels before leaving construction sites?	☐	☒	☐	☐	☐	
2.03 Are the excavated materials or exposure soil surface sprayed with water during handling?	☐	☒	☐	☐	☐	
2.04 Are stockpiles of dusty materials sprayed with water, covered or placed in sheltered areas?	☐	☒	☐	☐	☐	
2.05 Is the exposed earth properly treated within six months after the last construction activities?	☐	☒	☐	☐	☐	
2.06 Are the access roads sprayed with water to maintain the entire road surface wet or paved and speed control (<15km/hr)?	☐	☒	☐	☐	☐	
2.07 Is the surface where any drilling, cutting, polishing or breaking operation continuously sprayed with water?	☐	☒	☐	☐	☐	
2.08 Is the load on vehicles covered entirely by clean impervious sheeting?	☐	☒	☐	☐	☐	
2.09 Is the loading of materials to a level higher than the side and tail boards during transportation by vehicles avoided?	☐	☒	☐	☐	☐	
2.10 Is the road leading to the construction site within 30m of the vehicle entrance kept clear of dusty materials?	☐	☒	☐	☐	☐	
2.11 Is dark smoke emission from plant/equipment avoided?	☐	☒	☐	☐	☐	
2.12 Are de-bagging, batching and mixing processes carried out in sheltered areas (3-sided roofed enclosure) during the use of bagged cement?	☐	☒	☐	☐	☐	
2.13 Are site vehicles travelling within the speed limit (<15km/hour)?	☐	☒	☐	☐	☐	
2.14 Are hoardings of not less than 2.4m high provided along the site boundary, which adjoins areas accessible to the public?	☐	☒	☐	☐	☐	
2.15 Is open burning avoided?	☐	☒	☐	☐	☐	
2.16 Are any materials dropped on the roads (Outside the site boundaries) had clean up immediately?	☐	☒	☐	☐	☐	
Section 3: Noise						
3.01 Are noisy equipment and activities positioned as far as practicable from the sensitive receivers?	☐	☒	☐	☐	☐	
3.02 Is silenced equipment adopted?	☐	☒	☐	☐	☐	
3.03 Is idle equipment turned off or throttled down?	☐	☒	☐	☐	☐	
3.04 Are all plant and equipment well maintained and in good condition?	☐	☒	☐	☐	☐	
3.05 Are noise barriers or enclosures provided at areas where construction activities cause noise impact on sensitive receivers?	☐	☒	☐	☐	☐	
3.06 Are hand held breakers fitted with valid noise emission labels during operation?	☒	☐	☐	☐	☐	
3.07 Are air compressors fitted with valid noise emission labels during operation?	☐	☒	☐	☐	☐	
3.08 Are flaps and panels of mechanical equipment closed during operation?	☐	☒	☐	☐	☐	
3.09 Are Construction Noise Permit(s) applied for percussive piling works?	☐	☐	☐	☐	☒	
3.10 Are Construction Noise Permit(s) applied for general construction works during restricted hours?	☐	☐	☐	☐	☒	
3.11 Are valid Construction Noise Permit(s) posted at site entrances?	☐	☒	☐	☐	☐	
Section 4: Waste/Chemical Management						
4.01 Are receptacles available for general refuse collection?	☐	☒	☐	☐	☐	

	Not Obs.	Yes	No	Follow up	N/A	Photo/ Remarks
4.02 Is general refuse sorting or recycling implemented?	☐	☒	☐	☐	☐	
4.03 Is general refuse disposed of properly and regularly?	☐	☒	☐	☐	☐	
4.04 Is the Contractor registered as a chemical waste producer?	☐	☒	☐	☐	☐	
4.05 Are the chemical waste containers properly labelled?	☐	☒	☐	☐	☐	
4.06 Are the chemical wastes stored in proper storage areas?	☐	☒	☐	☐	☐	
4.07 Is the chemical waste storage area properly labelled?	☐	☒	☐	☐	☐	
4.08 Is the chemical waste storage area used for storage of chemical waste only?	☐	☒	☐	☐	☐	
4.09 Are incompatible chemical wastes stored in different areas?	☒	☐	☐	☐	☐	
4.10 Are the chemical wastes disposed of by licensed collectors?	☒	☐	☐	☐	☐	
4.11 Are trip tickets for chemical wastes disposal available for inspection?	☐	☒	☐	☐	☐	
4.12 Are chemical/fuel storage areas bunded?	☐	☒	☐	☐	☐	
4.13 Are designated areas identified for storage and sorting of construction wastes?	☐	☒	☐	☐	☐	
4.14 Are construction wastes sorted on site?	☐	☒	☐	☐	☐	
4.15 Are construction wastes reused?	☐	☒	☐	☐	☐	
4.16 Are construction wastes disposed of properly?	☐	☒	☐	☐	☐	
4.17 Are site hoardings and signboards made of durable materials instead of timber?	☐	☒	☐	☐	☐	
4.18 Is trip ticket system implemented for the disposal of construction wastes and records available for inspection?	☐	☒	☐	☐	☐	
4.19 Are appropriate procedures followed if contaminated material exists?	☐	☒	☐	☐	☐	
4.20 Is relevant license/ permit for disposal of construction waste or excavated materials available for inspection?	☐	☒	☐	☐	☐	
Section 5: Landscape & Visual						
5.01 Are retained and transplanted trees in health condition?	☐	☒	☐	☐	☐	
5.02 Are retained and transplanted trees properly protected?	☐	☒	☐	☐	☐	
5.03 Are surgery works carried out for the damaged trees?	☒	☐	☐	☐	☐	
5.04 Is damage to trees outside site boundary due to construction activities avoided?	☐	☒	☐	☐	☐	
5.05 Is the night-time lighting controlled to minimize glare to sensitive receivers?	☐	☒	☐	☐	☐	
Section 6: Others						
6.01 Are relevant Environmental Permits posted at all vehicle site entrances/exits?	☐	☒	☐	☐	☐	

Remarks

Follow up of last Site Inspection:



Photo 1: Oil leakage from the air compressor at Tai Shiu Ha works area was cleared.



Photo 2: No Turbidity water discharged from the Tai Shiu Ha works area was observed.

C&D waste cumulated at Shui Tsui San Tsuen Pumping Station was cleared.

Observations recorded in this Site Inspection: (11-1-2011)



Photo 3: Poor performance of de-silting tank was observed at Tai Shiu Ha works area, the contractor was reminded to improve the de-silting facility.

RE's representative

IEC's representative

ET's representative

Contractor's representative

Ben Tam

Project:	<u>DC/2009/08</u>	Inspected by	<u></u>
	<u>Construction of Yuen Long South Branch Sewers and Expansion of Ha Tsuen PS</u>	RE's representative:	<u>K.P. Cheung</u>
Inspection	<u></u>	IEC's representative:	<u>F. C. Tsang</u>
Date:	<u>20 January 2011</u>	ET's representative:	<u>T W Tam</u>
Time:	<u>10:00</u>	Contractor's representative:	<u>T.T. Lee</u>
		Checklist No.	<u>DC200908-200111</u>

PART A: GENERAL INFORMATION

Environmental Permit No.: N/A

Weather:	☐ Sunny	☒ Fine	☐ Cloudy	☐ Rainy
Temperature:	<u>16.1</u> °C			
Humidity:	☐ High	☒ Moderate	☐ Low	
Wind:	☐ Strong	☐ Breeze	☒ Light	☐ Calm

PART B: SITE AUDIT
Section 1: Water Quality

		Not Obs.	Yes	No	Follow up	N/A	Photo/Remarks
1.01	Is an effluent discharge license obtained for the Project?	☐	☒	☐	☐	☐	
1.02	Is the effluent discharged in accordance with the discharge licence?	☐	☒	☐	☐	☐	
1.03	Is the discharge of turbid water avoided?	☐	☒	☐	☐	☐	
1.04	Are there proper desilting facilities in the drainage systems to reduce SS levels in effluent?	☐	☒	☐	☐	☐	
1.05	Are there channels, sandbags or bunds to divert the surface run-off to sedimentation tanks/desilting system prior discharge?	☐	☐	☐	☒	☐	Photo 3
1.06	Are there any temporary perimeter channels provided at site boundaries to intercept storm runoff from crossing the site?	☒	☐	☐	☐	☐	
1.07	Is temporary drainage system (within site boundaries) and the nearby permanent drainage system (outside site boundaries) are well maintained?	☐	☒	☐	☐	☐	
1.08	As excavation proceeds, are temporary access roads protected by crushed stone or gravel?	☐	☒	☐	☐	☐	
1.09	Are temporary exposed slopes properly covered?	☐	☒	☐	☐	☐	
1.10	Are earthworks final surfaces well compacted or protected?	☐	☒	☐	☐	☐	
1.11	Are manholes adequately covered or temporarily sealed?	☐	☒	☐	☐	☐	
1.12	Are there any procedures and equipment for rainstorm protection?	☒	☐	☐	☐	☐	
1.13	Are wheel washing facilities well maintained?	☐	☒	☐	☐	☐	
1.14	Is overflow runoff from wheel washing facilities avoided?	☐	☒	☐	☐	☐	
1.15	Are there chemical toilets provided on site?	☐	☒	☐	☐	☐	
1.16	Are chemical toilets properly maintained?	☐	☒	☐	☐	☐	
1.17	Are the vehicle and plant servicing areas paved and located within roofed areas?	☐	☐	☐	☐	☒	
1.18	Is the oil leakage from the on-site vehicles/plants or spillage during the fuel refilling avoided?	☐	☒	☐	☐	☐	
1.19	Are there any measures to prevent oil leakage entering the temporary/permanent drainage system?	☐	☒	☐	☐	☐	
1.20	Are there any measures to collect spilt cement and concrete washings during concreting works?	☐	☐	☐	☐	☒	
1.21	Are there any oil interceptors/grease traps in the drainage systems for vehicle and plant servicing areas, canteen kitchen, etc?	☒	☐	☐	☐	☐	
1.22	Are the oil interceptors/grease traps maintained properly?	☐	☒	☐	☐	☐	

	Not Obs.	Yes	No	Follow up	N/A	Photo/Remarks
1.23 Is used bentonite recycled where appropriate?	☐	☐	☐	☐	☒	
1.24 Is the sediment laden runoff from the unpaved surface to avoid discharge into the nearby aquatic environments, marsh lands and moat ponds?	☐	☒	☐	☐	☐	
Section 2: Air Quality						
2.01 Are there wheel washing facilities with high pressure jets provided at every vehicle exit point?	☐	☐	☐	☐	☒	
2.02 Are vehicles washed to remove any dusty materials from their bodies and wheels before leaving construction sites?	☐	☒	☐	☐	☐	
2.03 Are the excavated materials or exposure soil surface sprayed with water during handling?	☐	☒	☐	☐	☐	
2.04 Are stockpiles of dusty materials sprayed with water, covered or placed in sheltered areas?	☐	☐	☐	☒	☐	Photo 1
2.05 Is the exposed earth properly treated within six months after the last construction activities?	☐	☒	☐	☐	☐	
2.06 Are the access roads sprayed with water to maintain the entire road surface wet or paved and speed control (<15km/hr)?	☐	☒	☐	☐	☐	
2.07 Is the surface where any drilling, cutting, polishing or breaking operation continuously sprayed with water?	☐	☒	☐	☐	☐	
2.08 Is the load on vehicles covered entirely by clean impervious sheeting?	☐	☒	☐	☐	☐	
2.09 Is the loading of materials to a level higher than the side and tail boards during transportation by vehicles avoided?	☐	☒	☐	☐	☐	
2.10 Is the road leading to the construction site within 30m of the vehicle entrance kept clear of dusty materials?	☐	☒	☐	☐	☐	
2.11 Is dark smoke emission from plant/equipment avoided?	☐	☒	☐	☐	☐	
2.12 Are de-bagging, batching and mixing processes carried out in sheltered areas (3-sided roofed enclosure) during the use of bagged cement?	☐	☒	☐	☐	☐	
2.13 Are site vehicles travelling within the speed limit (<15km/hour)?	☐	☒	☐	☐	☐	
2.14 Are hoardings of not less than 2.4m high provided along the site boundary, which adjoins areas accessible to the public?	☐	☒	☐	☐	☐	
2.15 Is open burning avoided?	☐	☒	☐	☐	☐	
2.16 Are any materials dropped on the roads (Outside the site boundaries) had clean up immediately?	☐	☒	☐	☐	☐	
Section 3: Noise						
3.01 Are noisy equipment and activities positioned as far as practicable from the sensitive receivers?	☐	☒	☐	☐	☐	
3.02 Is silenced equipment adopted?	☐	☒	☐	☐	☐	
3.03 Is idle equipment turned off or throttled down?	☐	☒	☐	☐	☐	
3.04 Are all plant and equipment well maintained and in good condition?	☐	☒	☐	☐	☐	
3.05 Are noise barriers or enclosures provided at areas where construction activities cause noise impact on sensitive receivers?	☐	☒	☐	☐	☐	
3.06 Are hand held breakers fitted with valid noise emission labels during operation?	☒	☐	☐	☐	☐	
3.07 Are air compressors fitted with valid noise emission labels during operation?	☐	☒	☐	☐	☐	
3.08 Are flaps and panels of mechanical equipment closed during operation?	☐	☒	☐	☐	☐	
3.09 Are Construction Noise Permit(s) applied for percussive piling works?	☐	☐	☐	☐	☒	
3.10 Are Construction Noise Permit(s) applied for general construction works during restricted hours?	☐	☐	☐	☐	☒	
3.11 Are valid Construction Noise Permit(s) posted at site entrances?	☐	☒	☐	☐	☐	
Section 4: Waste/Chemical Management						
4.01 Are receptacles available for general refuse collection?	☐	☒	☐	☐	☐	

	Not Obs.	Yes	No	Follow up	N/A	Photo/ Remarks
4.02 Is general refuse sorting or recycling implemented?	☐	☒	☐	☐	☐	
4.03 Is general refuse disposed of properly and regularly?	☐	☒	☐	☐	☐	
4.04 Is the Contractor registered as a chemical waste producer?	☐	☒	☐	☐	☐	
4.05 Are the chemical waste containers properly labelled?	☐	☒	☐	☐	☐	
4.06 Are the chemical wastes stored in proper storage areas?	☐	☒	☐	☐	☐	
4.07 Is the chemical waste storage area properly labelled?	☐	☒	☐	☐	☐	
4.08 Is the chemical waste storage area used for storage of chemical waste only?	☐	☒	☐	☐	☐	
4.09 Are incompatible chemical wastes stored in different areas?	☒	☐	☐	☐	☐	
4.10 Are the chemical wastes disposed of by licensed collectors?	☒	☐	☐	☐	☐	
4.11 Are trip tickets for chemical wastes disposal available for inspection?	☐	☒	☐	☐	☐	
4.12 Are chemical/fuel storage areas bunded?	☐	☒	☐	☐	☐	
4.13 Are designated areas identified for storage and sorting of construction wastes?	☐	☒	☐	☐	☐	
4.14 Are construction wastes sorted on site?	☐	☒	☐	☐	☐	
4.15 Are construction wastes reused?	☐	☒	☐	☐	☐	
4.16 Are construction wastes disposed of properly?	☐	☐	☐	☒	☐	Photo 2
4.17 Are site hoardings and signboards made of durable materials instead of timber?	☐	☒	☐	☐	☐	
4.18 Is trip ticket system implemented for the disposal of construction wastes and records available for inspection?	☐	☒	☐	☐	☐	
4.19 Are appropriate procedures followed if contaminated material exists?	☐	☒	☐	☐	☐	
4.20 Is relevant license/ permit for disposal of construction waste or excavated materials available for inspection?	☐	☒	☐	☐	☐	
Section 5: Landscape & Visual						
5.01 Are retained and transplanted trees in health condition?	☐	☒	☐	☐	☐	
5.02 Are retained and transplanted trees properly protected?	☐	☒	☐	☐	☐	
5.03 Are surgery works carried out for the damaged trees?	☒	☐	☐	☐	☐	
5.04 Is damage to trees outside site boundary due to construction activities avoided?	☐	☒	☐	☐	☐	
5.05 Is the night-time lighting controlled to minimize glare to sensitive receivers?	☐	☒	☐	☐	☐	
Section 6: Others						
6.01 Are relevant Environmental Permits posted at all vehicle site entrances/exits?	☐	☒	☐	☐	☐	

Remarks

Follow up of last Site Inspection:

No turbidity water was observed discharged from the de-silting tank.	

Observations recorded in this Site Inspection: (21-1-2011)

	
Photo 1: Stockpile without cover was observed, the contractor was reminded to provide proper mitigation measure to prevent dust generation.	Photo 2: C&D and general waste scattered on site was observed, housekeeping should be improve at Ha Tsuen Road works area.
	
Photo 3: Loose soil and debits was cumulated inside the u-channel, the contractor was reminded to clean.	

RE's representative

IEC's representative

ET's representative

Contractor's representative

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(T W Tam)

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Project:	<u>DC/2009/08</u>	Inspected by	<u></u>
	<u>Construction of Yuen Long South Branch Sewers and Expansion of Ha Tsuen PS</u>	RE's representative:	<u>K.P. Cheung</u>
Inspection	<u></u>	IEC's representative:	<u>-</u>
Date:	<u>26 January 2011</u>	ET's representative:	<u>Ben Tam</u>
Time:	<u>10:00</u>	Contractor's representative:	<u>T.T. Lee</u>
		Checklist No.	<u>DC200908-260111</u>

PART A: GENERAL INFORMATION

Environmental Permit No.: N/A

Weather:	☐ Sunny	☒ Fine	☐ Cloudy	☐ Rainy
Temperature:	<u>15.0</u> °C			
Humidity:	☐ High	☒ Moderate	☐ Low	
Wind:	☐ Strong	☐ Breeze	☒ Light	☐ Calm

PART B: SITE AUDIT
Section 1: Water Quality

		Not Obs.	Yes	No	Follow up	N/A	Photo/Remarks
1.01	Is an effluent discharge license obtained for the Project?	☐	☒	☐	☐	☐	
1.02	Is the effluent discharged in accordance with the discharge licence?	☐	☒	☐	☐	☐	
1.03	Is the discharge of turbid water avoided?	☐	☒	☐	☐	☐	
1.04	Are there proper desilting facilities in the drainage systems to reduce SS levels in effluent?	☐	☒	☐	☐	☐	
1.05	Are there channels, sandbags or bunds to divert the surface run-off to sedimentation tanks/desilting system prior discharge?	☐	☒	☐	☐	☐	
1.06	Are there any temporary perimeter channels provided at site boundaries to intercept storm runoff from crossing the site?	☒	☐	☐	☐	☐	
1.07	Is temporary drainage system (within site boundaries) and the nearby permanent drainage system (outside site boundaries) are well maintained?	☐	☒	☐	☐	☐	
1.08	As excavation proceeds, are temporary access roads protected by crushed stone or gravel?	☐	☒	☐	☐	☐	
1.09	Are temporary exposed slopes properly covered?	☐	☒	☐	☐	☐	
1.10	Are earthworks final surfaces well compacted or protected?	☐	☒	☐	☐	☐	
1.11	Are manholes adequately covered or temporarily sealed?	☐	☒	☐	☐	☐	
1.12	Are there any procedures and equipment for rainstorm protection?	☒	☐	☐	☐	☐	
1.13	Are wheel washing facilities well maintained?	☐	☒	☐	☐	☐	
1.14	Is overflow runoff from wheel washing facilities avoided?	☐	☒	☐	☐	☐	
1.15	Are there chemical toilets provided on site?	☐	☒	☐	☐	☐	
1.16	Are chemical toilets properly maintained?	☐	☒	☐	☐	☐	
1.17	Are the vehicle and plant servicing areas paved and located within roofed areas?	☐	☐	☐	☐	☒	
1.18	Is the oil leakage from the on-site vehicles/plants or spillage during the fuel refilling avoided?	☐	☒	☐	☐	☐	
1.19	Are there any measures to prevent oil leakage entering the temporary/permanent drainage system?	☐	☒	☐	☐	☐	
1.20	Are there any measures to collect spilt cement and concrete washings during concreting works?	☐	☐	☐	☐	☒	
1.21	Are there any oil interceptors/grease traps in the drainage systems for vehicle and plant servicing areas, canteen kitchen, etc?	☒	☐	☐	☐	☐	
1.22	Are the oil interceptors/grease traps maintained properly?	☐	☒	☐	☐	☐	

	Not Obs.	Yes	No	Follow up	N/A	Photo/Remarks
1.23 Is used bentonite recycled where appropriate?	☐	☐	☐	☐	☒	
1.24 Is the sediment laden runoff from the unpaved surface to avoid discharge into the nearby aquatic environments, marsh lands and moat ponds?	☐	☒	☐	☐	☐	
Section 2: Air Quality						
2.01 Are there wheel washing facilities with high pressure jets provided at every vehicle exit point?	☐	☐	☐	☐	☒	
2.02 Are vehicles washed to remove any dusty materials from their bodies and wheels before leaving construction sites?	☐	☒	☐	☐	☐	
2.03 Are the excavated materials or exposure soil surface sprayed with water during handling?	☐	☒	☐	☐	☐	
2.04 Are stockpiles of dusty materials sprayed with water, covered or placed in sheltered areas?	☐	☒	☐	☐	☐	
2.05 Is the exposed earth properly treated within six months after the last construction activities?	☐	☒	☐	☐	☐	
2.06 Are the access roads sprayed with water to maintain the entire road surface wet or paved and speed control (<15km/hr)?	☐	☒	☐	☐	☐	
2.07 Is the surface where any drilling, cutting, polishing or breaking operation continuously sprayed with water?	☐	☒	☐	☐	☐	
2.08 Is the load on vehicles covered entirely by clean impervious sheeting?	☐	☒	☐	☐	☐	
2.09 Is the loading of materials to a level higher than the side and tail boards during transportation by vehicles avoided?	☐	☒	☐	☐	☐	
2.10 Is the road leading to the construction site within 30m of the vehicle entrance kept clear of dusty materials?	☐	☒	☐	☐	☐	
2.11 Is dark smoke emission from plant/equipment avoided?	☐	☒	☐	☐	☐	
2.12 Are de-bagging, batching and mixing processes carried out in sheltered areas (3-sided roofed enclosure) during the use of bagged cement?	☐	☒	☐	☐	☐	
2.13 Are site vehicles travelling within the speed limit (<15km/hour)?	☐	☒	☐	☐	☐	
2.14 Are hoardings of not less than 2.4m high provided along the site boundary, which adjoins areas accessible to the public?	☐	☒	☐	☐	☐	
2.15 Is open burning avoided?	☐	☒	☐	☐	☐	
2.16 Are any materials dropped on the roads (Outside the site boundaries) had clean up immediately?	☐	☒	☐	☐	☐	
Section 3: Noise						
3.01 Are noisy equipment and activities positioned as far as practicable from the sensitive receivers?	☐	☒	☐	☐	☐	
3.02 Is silenced equipment adopted?	☐	☒	☐	☐	☐	
3.03 Is idle equipment turned off or throttled down?	☐	☒	☐	☐	☐	
3.04 Are all plant and equipment well maintained and in good condition?	☐	☒	☐	☐	☐	
3.05 Are noise barriers or enclosures provided at areas where construction activities cause noise impact on sensitive receivers?	☐	☒	☐	☐	☐	
3.06 Are hand held breakers fitted with valid noise emission labels during operation?	☒	☐	☐	☐	☐	
3.07 Are air compressors fitted with valid noise emission labels during operation?	☐	☒	☐	☐	☐	
3.08 Are flaps and panels of mechanical equipment closed during operation?	☐	☒	☐	☐	☐	
3.09 Are Construction Noise Permit(s) applied for percussive piling works?	☐	☐	☐	☐	☒	
3.10 Are Construction Noise Permit(s) applied for general construction works during restricted hours?	☐	☐	☐	☐	☒	
3.11 Are valid Construction Noise Permit(s) posted at site entrances?	☐	☒	☐	☐	☐	
Section 4: Waste/Chemical Management						
4.01 Are receptacles available for general refuse collection?	☐	☒	☐	☐	☐	

	Not Obs.	Yes	No	Follow up	N/A	Photo/ Remarks
4.02 Is general refuse sorting or recycling implemented?	☐	☒	☐	☐	☐	
4.03 Is general refuse disposed of properly and regularly?	☐	☒	☐	☐	☐	
4.04 Is the Contractor registered as a chemical waste producer?	☐	☒	☐	☐	☐	
4.05 Are the chemical waste containers properly labelled?	☐	☒	☐	☐	☐	
4.06 Are the chemical wastes stored in proper storage areas?	☐	☒	☐	☐	☐	
4.07 Is the chemical waste storage area properly labelled?	☐	☒	☐	☐	☐	
4.08 Is the chemical waste storage area used for storage of chemical waste only?	☐	☒	☐	☐	☐	
4.09 Are incompatible chemical wastes stored in different areas?	☒	☐	☐	☐	☐	
4.10 Are the chemical wastes disposed of by licensed collectors?	☒	☐	☐	☐	☐	
4.11 Are trip tickets for chemical wastes disposal available for inspection?	☐	☒	☐	☐	☐	
4.12 Are chemical/fuel storage areas bunded?	☐	☒	☐	☐	☐	
4.13 Are designated areas identified for storage and sorting of construction wastes?	☐	☒	☐	☐	☐	
4.14 Are construction wastes sorted on site?	☐	☒	☐	☐	☐	
4.15 Are construction wastes reused?	☐	☒	☐	☐	☐	
4.16 Are construction wastes disposed of properly?	☐	☒	☐	☐	☐	
4.17 Are site hoardings and signboards made of durable materials instead of timber?	☐	☒	☐	☐	☐	
4.18 Is trip ticket system implemented for the disposal of construction wastes and records available for inspection?	☐	☒	☐	☐	☐	
4.19 Are appropriate procedures followed if contaminated material exists?	☐	☒	☐	☐	☐	
4.20 Is relevant license/ permit for disposal of construction waste or excavated materials available for inspection?	☐	☒	☐	☐	☐	
Section 5: Landscape & Visual						
5.01 Are retained and transplanted trees in health condition?	☐	☒	☐	☐	☐	
5.02 Are retained and transplanted trees properly protected?	☐	☒	☐	☐	☐	
5.03 Are surgery works carried out for the damaged trees?	☒	☐	☐	☐	☐	
5.04 Is damage to trees outside site boundary due to construction activities avoided?	☐	☒	☐	☐	☐	
5.05 Is the night-time lighting controlled to minimize glare to sensitive receivers?	☐	☒	☐	☐	☐	
Section 6: Others						
6.01 Are relevant Environmental Permits posted at all vehicle site entrances/exits?	☐	☒	☐	☐	☐	

Remarks

Follow up of last Site Inspection:

Stockpile was observed coved with tarpaulin sheet.	C&D waste observed at last inspection was cleared.
Loose soil and debits observed at last inspection was cleared.	

Observations recorded in this Site Inspection: (26-1-2011)

No environmental issue was observed during the site inspection.	

RE's representative

IEC's representative

ET's representative

**Contractor's
representative**

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(Ben Tam)

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