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

38TH ENVIRONMENTAL MONITORING & AUDIT MONTHLY REPORT – MARCH 2013

PREPARED FOR

CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) COMPANY LIMITED

Quality Index

Date	Reference No.	Prepared By	Certified By
17 April 2013	TCS00491/09/600/R0457v2	 Nicola Hon (Environmental Consultant)	 T.W. Tam (Environmental Team Leader)

Version	Date	Description
1	15 April 2013	First submission
2	17 April 2013	Amended against IEC's comments on 17 April 2013

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By Email

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Your Ref:

Our Ref: EB000586-F/THW13-11421

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, March 2013 – IEC Verification

With reference to ET's captioned report (ET's ref.: TCS00491/09/600/R0457v2) received on 17 April 2013, we have no comment and hereby verify the captioned report excluding the Landscape and Visual Impact section of the report.

Should there be any queries, please feel free to contact the undersigned on 2911 2744.

Yours sincerely,

F.C. TSANG
Independent Environmental Checker
HYDER CONSULTING LIMITED

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EXECUTIVE SUMMARY

ES01. This is the **38th** Monthly Environmental Monitoring and Audit (EM&A) Report for the designated work of Project under Environmental Permit No.EP-327/2009/A (hereinafter 'the EP'), covering a period from **1 to 31 March 2013** (hereinafter 'the Reporting Period').

ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

ES02. Environmental monitoring activities under the EM&A programme in this Reporting Period 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	$L_{eq(30min)}$ Daytime	**10**
Water Quality	Dissolved Oxygen	**12**
	Turbidity	**12**
	Suspended Solids	**12**
Inspection / Audit	ET Weekly Environmental Site Inspection	**4**

BREACH OF ACTION AND LIMIT (A/L) LEVELS

ES03. In this reporting period, no exceedance was recorded in air quality, noise and water quality monitoring. The summary of breach of environmental performance is shown below.

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	$L_{eq(30min)}$ Daytime	0	0	0	--	--
Water Quality	Dissolved Oxygen	0	0	0	--	--
	Turbidity	0	0	0	--	--
	Suspended Solids	0	0	0	--	--

Note: NOE – Notification of Exceedance

SITE INSPECTION

ES04. Regular environmental site inspections had been carried out by ET joined with the Contractor and ER on **5, 12, 19 and 28 March 2013**. No non-compliance was observed during the inspections.

ENVIRONMENTAL COMPLAINT

ES05. No environmental complaint was recorded / received in this Reporting Period.

NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES06. No environmental summons and successful prosecutions were recorded in this Reporting Period.

REPORTING CHANGE

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

RECOMMENDATIONS

ES08. As wet season is approaching, muddy water or other water pollutants from site surface runoff into the local stream will be key environment issue. Therefore, water mitigation measures to prevent surface runoff into nearby water bodies should be paid on special attention. Moreover,

mitigation measures should be properly maintained to avoid fugitive dust emissions from loose soil surface or haul road.

ES09. Other environmental issues such as construction noise as well as waste management, as stipulated in the Environmental Monitoring and Audit Manual should be implemented and maintained, as appropriate.

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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 expansion of 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 Sewage 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 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 of 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 **38th** Monthly EM&A Report – *Expansion of Ha Tsuen Sewage Pumping Station* (hereinafter 'this Report') for designated works of the Project under Environmental Permit No.EP-327/2009/A (hereinafter 'the EP'), covering a period from **1 to 31 March 2013**.

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

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 is enclosed in ***Appendix C.*** Also, the major construction activities undertaken in this reporting month are listed below:

- Construction of sewage pumping station

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-327/2009/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 Sewage 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 EM&A implemented by ET has to include air quality, construction noise and water quality; the landscape and visual impact shall 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 '$L_{eq(30min)}$') during the normal working hours; and • A-weighted equivalent continuous sound pressure level (5min) (hereinafter '$L_{eq(5min)}$') 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 quality and noise monitoring stations and one water quality monitoring station identified as sensitive receivers during construction phase of the Project. For the four designated air quality and noise monitoring stations, two are located within the San Wai STW and other two are within the existing Ha Tsuen Sewage 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 quality 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 access to premises at the other designated air quality monitoring station at Tin Shing Court was 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) was 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 quality monitoring at the designated location Yeung Chun Pui Care & Attention Home was proposed to be performed. The proposal and recommendation was agreed by IEC and as endorsed by EPD.

3.06 As requested by the occupants of Yeung Chun Pui Care & Attention Home (AM2) due to safety reasons, the High Volume Air Sampler (HVS) for AM2 was relocated to a nearby location on 27 October 2011. Details of the relocation were given in the October 2011 Monthly EM&A Report.

3.07 As reported to the RE and IEC on 16 October 2012, the power supply for the HVS at AM2 was disconnected since the office that provides the electric support has been dismantled. A new location AM2(a) was therefore proposed. The proposal of new location AM2(a) has been formally submit to EPD on 14 November 2012 prior agreement by the RE and IEC. No further comments were received from EPD regards on the proposal.

3.08 Details of monitoring stations are presented 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(a)	RE Site Office which opposite to the original location Yeung Chun Pui Care & Attention Home	Replace the Designated Monitoring Station Yeung Chun Pui Care & Attention Home

Construction Noise

3.09 Similar to the air quality monitoring, the construction noise monitoring stations undertaken for EM&A programme is agreed by IEC and as endorsed by EPD.

3.10 Details of the monitoring stations are presented 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

3.11 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 are technical difficulty and safety issue to sample at R1. So, a new sampling point located at approximately 160m upstream of the R1 (hereinafter as R1b) was therefore proposed for the local stream water quality impact monitoring and was verified by IEC, without comment from EPD.

3.12 Details of the monitoring station are presented in ***Table 3-4*** and shown 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 m upstream from the designated location as stipulated in the EM&A Manual and is closer to the existing Ha Tsuen Sewage Pumping Station

3.13 According to the EM&A Manual Section 4.3.1.5, the effluent water quality monitoring should 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

3.14 The inspection area would be around the works area at Ha Tsuen Sewage Pumping Station. During construction regular inspections of the retained and transplanted trees should be made to ensure the effectiveness of the hoarding.

MONITORING FREQUENCY

3.15 According to the *EM&A Manual* Sections 2.2.1.27, 3.6 and 4.4.1.8, impact monitoring covers 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 $L_{eq(30min)}$ as 6 consecutive $L_{eq(5min)}$ between 0700-1900 hours on normal weekdays.
$L_{eq(5min)}$, L_{10} and L_{90} 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 Manual
Frequency: Once every 2 weeks
Duration: Throughout the construction period

3.16 Post-project monitoring will be performed at water quality monitoring station of the local stream course. The requirements that 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

3.17 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 Aerosol Monitor Model 8520
24-hour TSP	
High Volume Air Sampler	Thermo Anderson GS 2310 HVS
Calibration Kit	TISCH Model TE-5025A

1-hour TSP

3.18 The 1-hour TSP monitoring is conducted with a portable dust meter, brand named, TSI DustTrak Aerosol Monitor Model 8520 which is a portable, battery-operated laser photometer. The 1-hour TSP meter provides a real time 1-hour TSP measurement based on 90^{o} 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.

3.19 The 1-hour TSP meter is used within the valid period following manufacturer's Operation and Service Manual.

24-hour TSP

3.20 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.

3.21 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.

3.22 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 room conditions for six months before disposal.

Noise

3.23 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
Calibrator	B&K Type 4231
Portable Wind Speed Indicator	Testo Anemometer

3.24 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 issued under the Noise Control Ordinance (NCO).

3.25 Noise measurements were taken in terms of the A-weighted equivalent continuous sound pressure level (L_{eq}) measured in decibels (dB). Supplementary statistical results (L_{10} and L_{90}) were also obtained for reference.

3.26 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).

3.27 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 NM1 and NM2 were normally set in a free field situation.

3.28 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

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

Table 3-7 Water Quality Monitoring Equipment

Equipment	Model / Description
Water Sampler	Teflon bailer / bucket
Thermometer & DO meter	YSI Pro 20
Turbidimeter	Turbidimeter HACH 2100Q
Sample Container	High density polythene bottles (provided by laboratory)
Storage Container	'Willow' 33-litter plastic cool box

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

Dissolved Oxygen (DO)

3.31 A multiple meter, brand named YSI Pro 20 was used for in-situ DO measurement, which automates the measurements of temperature, dissolved oxygen and dissolved oxygen saturation simultaneously. The multiple meter is capable of measuring DO in the range of 0 - 20 mg/L. Before each round of monitoring, the multiple meter, is calibrated by the wet bulb method with distilled water. Calibration of the equipment is performed by ALS on quarterly basis.

3.32 *Turbidity*
A portable turbiditmeter, brand named HACH Turbidmeter 2100Q 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)

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

Water Sampler

3.34 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

3.35 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

3.36 A 'Willow' 33-liter 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℃ 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

3.37 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.

3.38 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.

3.39 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.

3.40 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

3.41 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

3.42 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.

3.43 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.

3.44 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

3.45 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 ($\mu g/m^3$)		Limit Level ($\mu g/m^3$)	
	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 $L_{eq(30min)}$ 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 $L_{eq(30min)}$ 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

3.46 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 The impact monitoring schedule for air quality, noise and water quality in this Reporting Period is shown 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 (μg/m³)	1-hour TSP (μg/m³)				
		Date	Start Time	1st hour measured	2nd hour measured	3rd hour measured
4-Mar-13	105	4-Mar-13	10:08	152	118	97
9-Mar-13	102	9-Mar-13	9:58	186	142	153
15-Mar-13	67	15-Mar-13	9:17	111	109	85
21-Mar-13	31	21-Mar-13	10:01	89	102	111
27-Mar-13	41	27-Mar-13	9:12	55	61	91
Average (Range)	**69 (31-105)**	Average (Range)		**111 (55 – 186)**		

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

Date	24-hour TSP (μg/m³)	1-hour TSP (μg/m³)				
		Date	Start Time	1st hour measured	2nd hour measured	3rd hour measured
4-Mar-13	134	4-Mar-13	9:19	186	143	214
9-Mar-13	96	9-Mar-13	10:31	121	108	142
15-Mar-13	35	15-Mar-13	10:12	130	160	146
21-Mar-13	65	21-Mar-13	10:50	103	104	94
27-Mar-13	37	27-Mar-13	9:59	57	56	80
Average (Range)	**73 (35-134)**	Average (Range)		**123 (56 – 214)**		

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 graphical plots of the monitoring results are shown in ***Appendix J***. The sound level were measured 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	1st $L_{eq(5min)}$	2nd $L_{eq(5min)}$	3rd $L_{eq(5min)}$	4th $L_{eq(5min)}$	5th $L_{eq(5min)}$	6th $L_{eq(5min)}$	$L_{eq(30min)}$	Corrected* $L_{eq(30min)}$
4-Mar-13	10:02	62.5	60.5	62.5	59.4	59.0	60.7	61.0	64.0
9-Mar-13	10:05	61.6	62.7	62.1	63.5	61.8	64.7	62.9	65.9
15-Mar-13	9:19	63.6	63.1	68.5	67.5	65.7	67.5	66.4	69.4
21-Mar-13	9:50	61.6	58.4	69.1	62.9	63.7	62.3	64.3	67.3
27-Mar-13	9:18	60.8	62.1	62.2	60.7	66.5	65.5	63.6	66.6
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	1st $L_{eq(5min)}$	2nd $L_{eq(5min)}$	3rd $L_{eq(5min)}$	4th $L_{eq(5min)}$	5th $L_{eq(5min)}$	6th $L_{eq(5min)}$	$L_{eq(30min)}$	Corrected* $L_{eq(30min)}$
4-Mar-13	11:12	57.9	56.8	61.6	60.8	55.5	57.5	58.9	61.9
9-Mar-13	11:06	62.7	65.6	64.1	64.8	65.2	66.1	64.9	67.9
15-Mar-13	10:19	64.7	61.8	61.2	61.0	60.9	63.6	62.5	65.5
21-Mar-13	11:01	62.8	59.5	62.6	60.6	63.9	59.1	61.8	64.8
27-Mar-13	13:01	65.2	63.0	63.7	61.7	61.8	60.7	62.9	65.9
Limit Level		-						**70 dB(A)**	

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

4.06 In this Reporting Period, no noise complaint (which is an Action Level exceedance) was received. As shown in ***Tables 4-3*** and ***4-4,*** no Limit level exceedance was recorded and no corrective action was therefore required. The graphical plots of the monitoring results are shown in ***Appendix J***.

RESULTS OF WATER QUALITY MONITORING – LOCAL STREAM COURSE

4.07 In this Reporting Period, 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 of the monitoring results are shown in ***Appendix J***.

4.08 Monitoring results of 3 key parameters: dissolved oxygen (DO), turbidity and suspended solids (SS) in this Reporting Period, 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)
2-Mar-13	6.8	14.3	11.0
4-Mar-13	9.1	9.8	24.0
6-Mar-13	7.7	12.5	30.0
9-Mar-13	5.4	5.8	18.0
11-Mar-13	4.7	6.9	18.0
13-Mar-13	5.1	11.7	26.0
15-Mar-13	5.8	7.4	9.0
18-Mar-13	5.7	11.8	24.0
21-Mar-13	5.0	12.4	11.0
23-Mar-13	4.7	10.1	11.0
25-Mar-13	5.1	8.8	13.0
27-Mar-13	4.8	13.5	17.0

4.09 During the Reporting Period, field measurements showed that water temperature and pH value of the local stream are within **22.3℃** to **25.1℃** and **8.4 to 8.9** respectively.

4.10 In Reporting Period, no exceedance of water quality monitoring recorded at water samples

collected from location "R1b". No NOE was therefore issued and no corrective measures recommended.

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.

RESULTS OF EFFLUENT MONITORING

4.12 Monitoring of effluent quality should follow the requirements specified in Section 4.3 of the approved EM&A Manual. A discharge license under Water Pollution Control Ordinance has been obtained by the Contractor upon commencement of the Project. The licensee shall perform self-monitoring as and when required by the Authority.

4.13 Since no effluent discharge was made in this Reporting Period, no effluent quality monitoring was carried out by the Contractor.

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)	1925	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)	0	-
Chemical Wastes (kg)	0	-
General Refuses (m^3)	1	NENT

5.04 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 license 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 **5, 12, 19 and 28 March 2013** 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 Sewage 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 Status
5 March 2013	- Dusty stockpile was observed in Ha Tsuen Sewage Pumping Station, the Contractor should cover it with impervious sheet or remove it off site properly.	The sand stockpile in Ha Tsuen Sewage Pumping Station has been removed on 12 March 2013.
12 March 2013	No environmental issue was observed during site inspection.	N.A.
19 March 2013	No environmental issue was observed during site inspection.	N.A.
28 March 2013	- Dusty stockpile was observed in Ha Tsuen Sewage Pumping Station, the Contractor should cover it with impervious sheet or remove it off site properly.	To be followed.

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	3	Air(2)/Noise(1)
Jan – Dec 2011	0	3	NA
Jan – Dec 2012	0	3	NA
Jan – Feb 2013	0	3	NA
Mar 2013	0	3	NA

Table 7-2 Statistical Summary of Environmental Summons

Reporting Period	Environmental Summon Statistics		
	Frequency	Cumulative	Complaint Nature
Feb – Dec 2010	0	0	NA
Jan – Dec 2011	0	0	NA
Jan – Dec 2012	0	0	NA
Jan – Feb 2013	0	0	NA
Mar 2013	0	0	NA

Table 7-3 Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Prosecution Statistics		
	Frequency	Cumulative	Complaint Nature
Feb – Dec 2010	0	0	NA
Jan – Dec 2011	0	0	NA
Jan – Dec 2012	0	0	NA
Jan – Feb 2013	0	0	NA
Mar 2013	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 Sewage 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 minimize 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 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 as fill material to minimize the quantity of waste to be disposed of to landfill;
(e) Proper storage and site practices to minimize the potential for damage or contamination of construction materials; and
(f) Plan and stock construction materials carefully to minimize 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 screening 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 was reused for spraying the road surface; • Exposed stockpiles and exposed soil surfaces were covered with tarpaulin or impervious sheets to minimize 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 has been provided at site exits to ensure that earth, mud and debris would not be carried out of the works areas by vehicles; • A discharge licence was issued by EPD for discharging effluent from the construction site; • A licensed waste collector have been applied from EPD; and • Illegal disposal of chemicals should be strictly prohibited.

Issues	Environmental Mitigation Measures
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 was 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; and • 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-327/2009/A; • 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-327/2009/A; • Use of temporary noise barrier with surface density 7kg/m^2 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 Sewage Pumping Station according to EP-327/2009/A; and • Alternative use of plant items within one worksite, where practicable.
Waste and Chemical Management	• Excavated material was reused on site as far as possible to minimize off-site disposal. Scrap metals or abandoned equipment was recycled if possible; • Waste arising was kept to a minimum and be handled, transported and disposed of in a suitable manner; • The Contractor adopted a trip ticket system for the disposal of C&D materials to any designed public filling facility and/ or landfill; • Chemical waste was 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 bins were provided to segregate this waste from other general refuse generated by the workforce; • Any unused chemicals or those with remaining functional capacity were recycled; • Prior to disposal of C&D waste, wood, steel and other metals were separated for re-use and recycling and inert waste as fill material to minimize the quantity of waste to be disposed of to landfill; • Proper storage and site practices to minimize the potential for damage or contamination of construction materials; and • Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste.
Landscape and Visual	• Hoarding was erected around site boundary properly; • The transplanted tree and landscaping plants were kept in regular inspection; • All preserved trees were protected and fenced off properly; • No construction activities were carried out in the protection zone of the preserved trees.
General	• The site was generally kept tidy and clean.

9. IMPACT FORCAST

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 impact due to surface runoff;
- Potential fugitive dust impact 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 in the nullah are prohibited;
- Follow-up of improvement on general waste management issues; and
- Implementation of construction noise preventative control measures.

10. CONCLUSIONS AND RECOMMENTATIONS

CONCLUSIONS

10.01 This is the **38th** Monthly EM&A Report for the designated work of the Project, covering the construction period from **1** to **31 March 2013**.

10.02 No 1-hour TSP and 24-hour TSP 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 exceeded the Limit Level were recorded in this Reporting Period.

10.04 No Action/Limit Level exceedance was recorded for the water quality monitoring during Reporting Period.

10.05 No effluent quality monitoring was carried out by the Contractor in this Reporting Period.

10.06 No documented complaint, notification of summons or successful prosecution was received.

10.07 Regular environmental site inspections had been carried out by ET joined with the Contractor and ER on **5, 12, 19 and 28 March 2013.** No non-compliance was observed during the inspections. Overall, the environmental performance of the Project was therefore considered satisfactory.

10.08 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

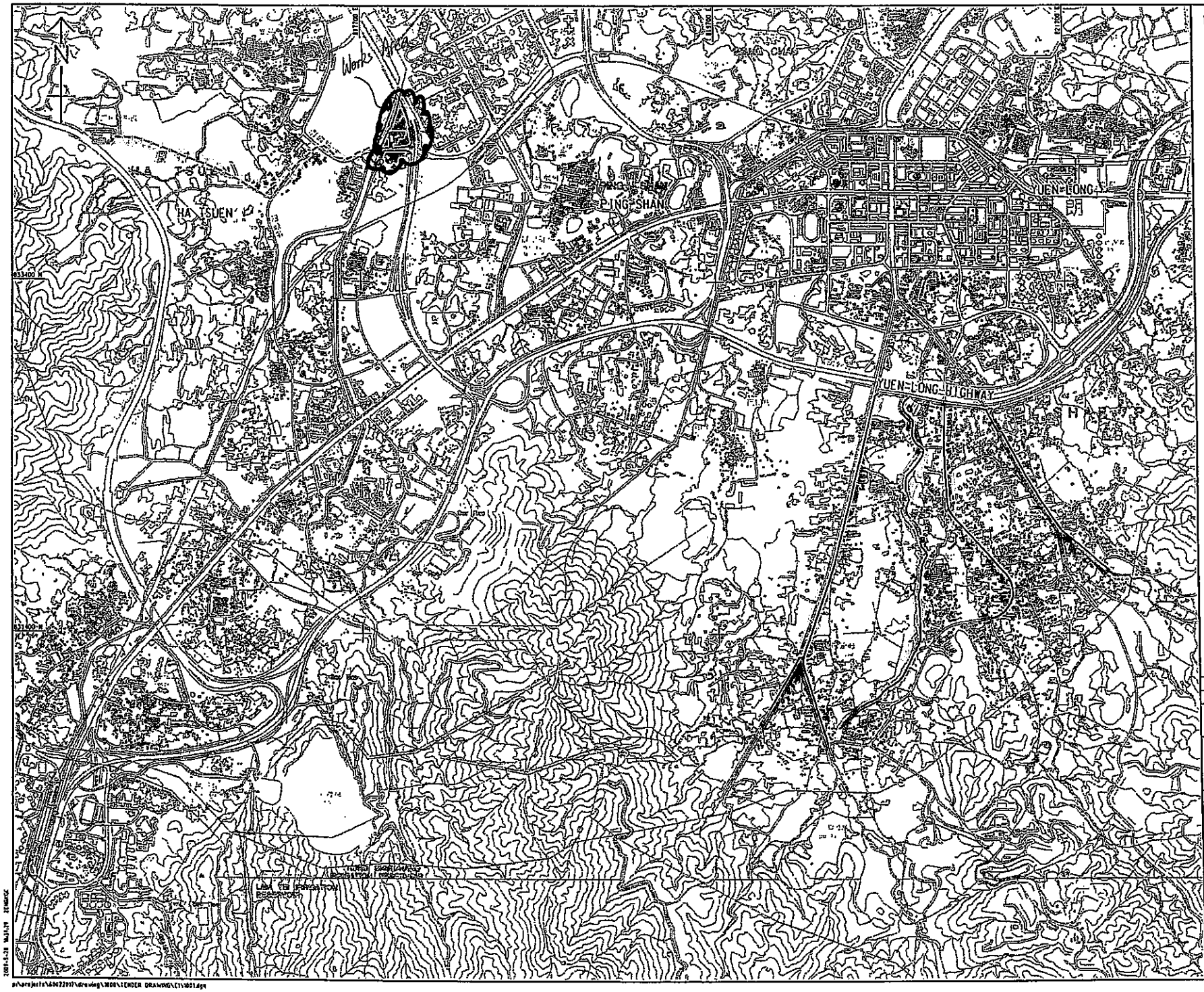
10.09 As wet season is approaching, muddy water or other water pollutants from site surface runoff into the local stream will be key environment issue. Therefore, water mitigation measures to prevent surface runoff into nearby water bodies should be paid on special attention. Moreover, mitigation measures should be properly maintained to avoid fugitive dust emissions from loose soil surface or haul road.

10.10 Other environmental issues such as construction noise as well as waste management, as stipulated in the Environmental Monitoring and Audit Manual should be implemented and maintained, as appropriate.

10.11 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.

Appendix A

Site Layout Plan



LEGEND:

- SEWERAGE PIPE
- RISING MAIN
- SEWAGE PUMPING STATION

-	TENDER DRAWING	DSD/MCTR	05.09

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 SEWAGE PUMPING STATION

LOCATION PLAN

AECOM

DRG NO. 60022017/C1/1001

CONTRACT NO. DC/2009/08

SCALE AS 1 : 10000

METRES

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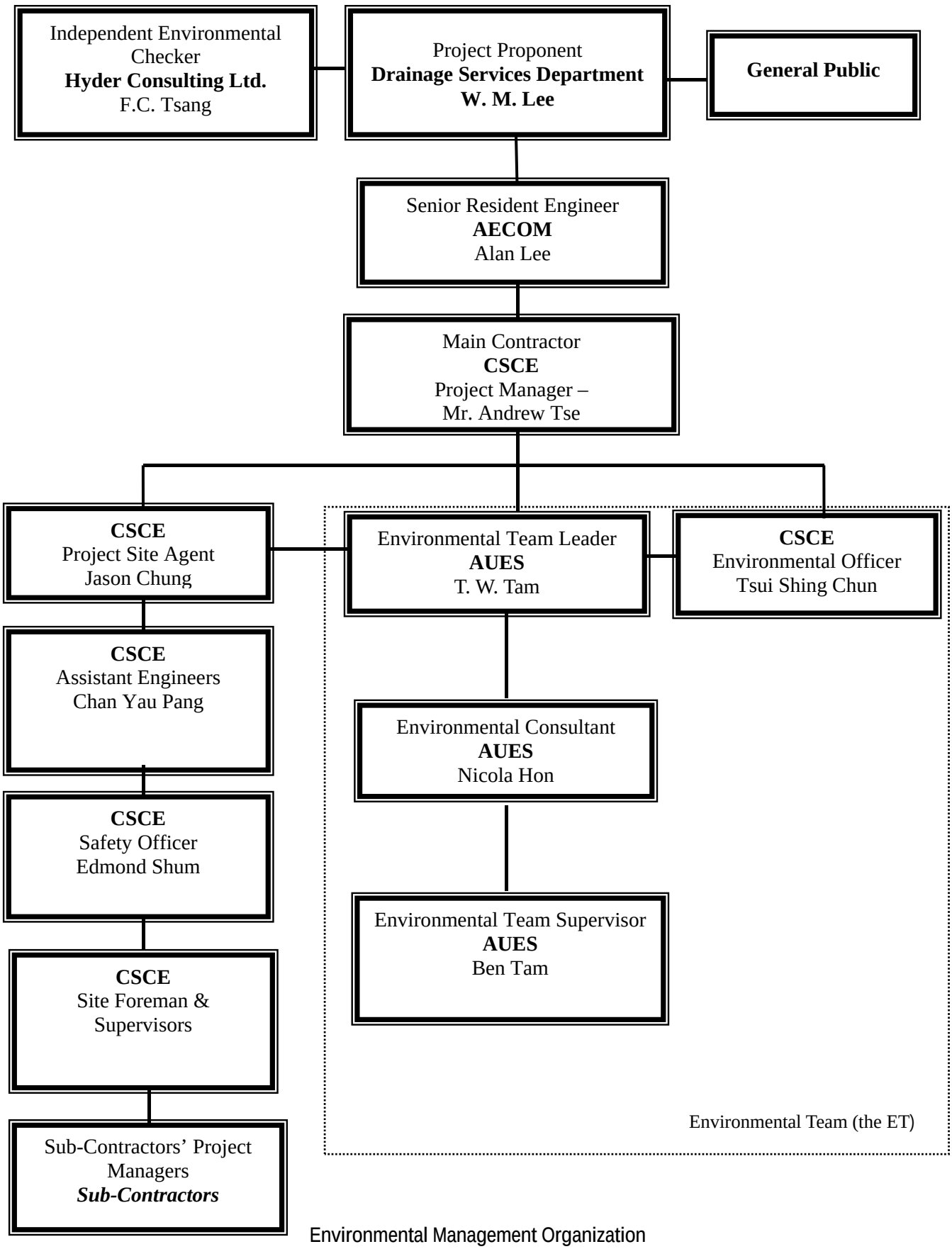
Appendix B

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	Senior Resident Engineer	Mr. Alan Lee	9706 9568	2472 0132
Hyder	Independent Environmental Checker	Dr. F C Tsang	2911 2744	2805 5028
CSCE	Project Manager	Mr. Andrew Tse	2472 0113	2472-0229
CSCE	Site Agent	Mr. Jason Chung	2472 0113	2472-0229
CSCE	Site Engineer	Mr. Michael Kan	2472 0113	2472-0229
CSCE	Environmental Officer	Mr. Scott Tsui	2472 0113	2472-0229
CSCE	Environmental Supervisor	Mr. Chan Yau Pang	2472 0113	2472-0229
CSCE	Safety Officer	Mr. Sham Tsuen Man	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	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

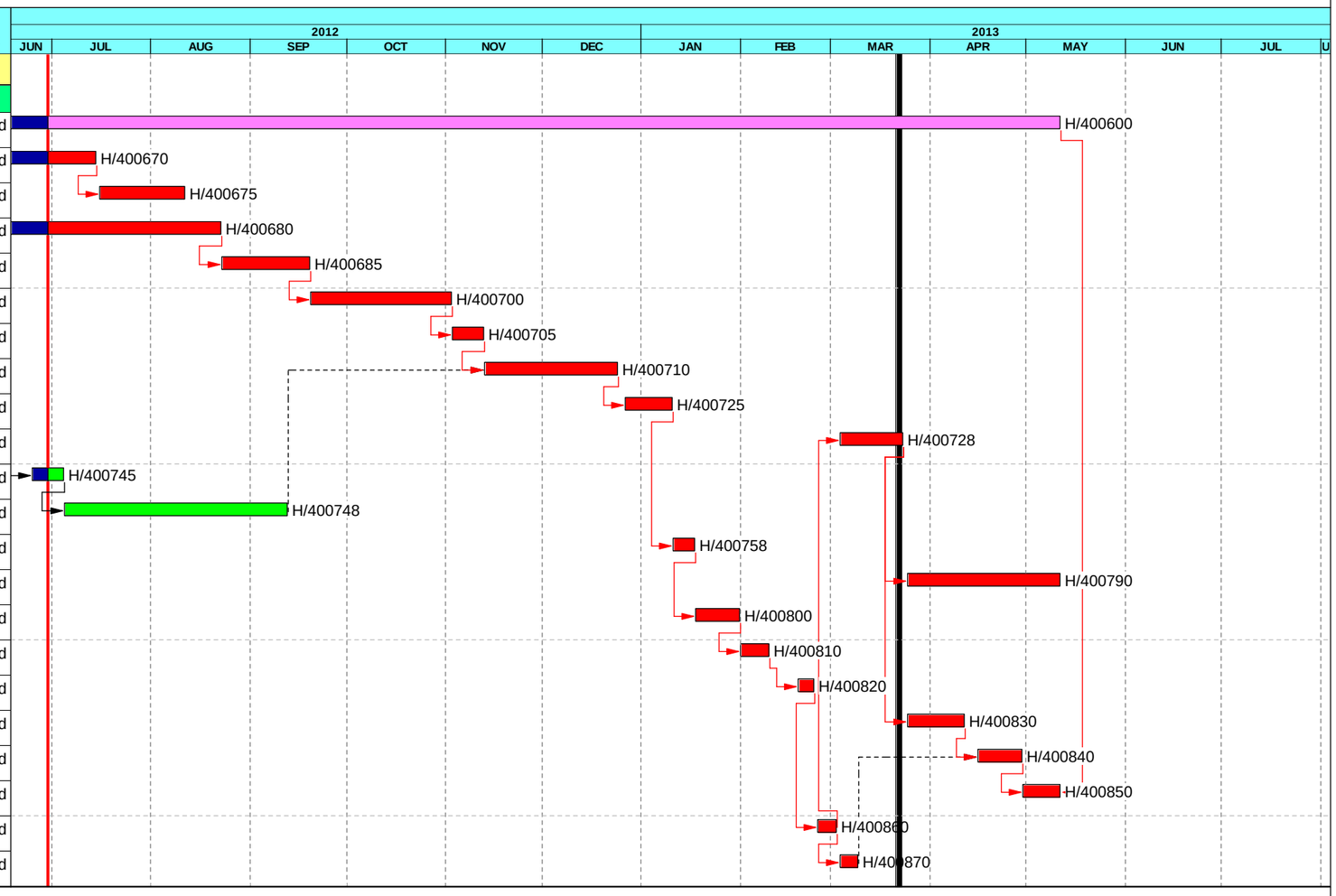
AUES (ET) – Action-United Environmental Services & Consulting

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	Orig Dur	Early Start	Early Finish	Total Float
Ha Tsuen Area					
Road and Drain					
H/400600	Sewerage Works at Ha Tsuen Pumping Station	520 *	04AUG11 A	11MAY13	-39d
H/400670	Construct Remaining Manhole FM17	36	23MAY12 A	14JUL12	-45d
H/400675	Backfill and Remove Sheet Pile at FM17	24	16JUL12	11AUG12	-45d
H/400680	Construct Manhole FM14	75	14MAY12 A	22AUG12	-39d
H/400685	Sheet Piling between FM14 to FM16	24	23AUG12	19SEP12	-39d
H/400700	Excavate Trench bet FM14 to M1	36	20SEP12	02NOV12	-39d
H/400705	Pipe Line between FM14 to M1	8	03NOV12	12NOV12	-39d
H/400710	Construct Manhole FM16	36	13NOV12	24DEC12	-39d
H/400725	Backfill between FM16 to FM14 stage 1	12	27DEC12	10JAN13	-39d
H/400728	Install Stop Log & Penstock at FM16 (by Others)	18	04MAR13	23MAR13	-39d
H/400745	Sheet Piling between M1 and FM6 (2)	15	25JUN12 A	04JUL12	11d
H/400748	Exc and Construct Manhole M1	60	05JUL12	12SEP12	11d
H/400758	Sheet Piling between FM16 to FM6	6	11JAN13	17JAN13	-39d
H/400790	Drainage Connection at M1	37	25MAR13	11MAY13	-39d
H/400800	Excavate Trench between FM16 to FM6	12	18JAN13	31JAN13	-39d
H/400810	Break opening and lay pipe between FM16 to FM6	8	01FEB13	09FEB13	-39d
H/400820	Make Good FM6	5	19FEB13	23FEB13	-39d
H/400830	Backfill Pipe Trenches	15	25MAR13	11APR13	-39d
H/400840	Remove Sheet Pile	12	16APR13	29APR13	-39d
H/400850	Reinstatement of Area	10	30APR13	11MAY13	-39d
H/400860	Install Cat Ladder at FM16	6	25FEB13	02MAR13	-39d
H/400870	CCTV of Sewerage bet PS to M1	6	04MAR13	09MAR13	-12d



Start date	17SEP09
Finish date	13JUN19
Run date	16JUL12
Project name	WP8A
Page number	1A
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Start milestone point
Finish milestone poin

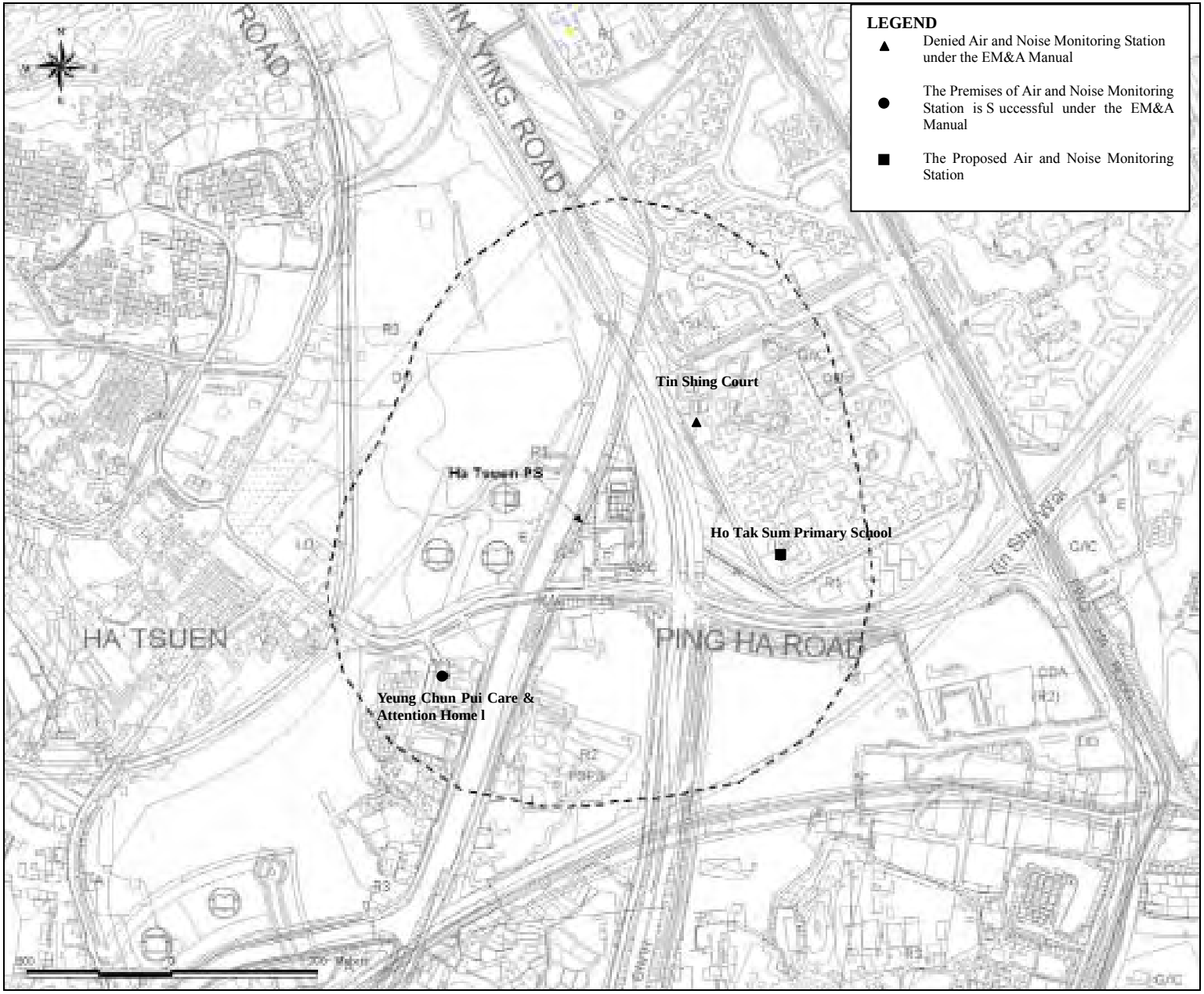
Works Programme Revision 08 - Sewerage at Ha Tsuen Pumping Station

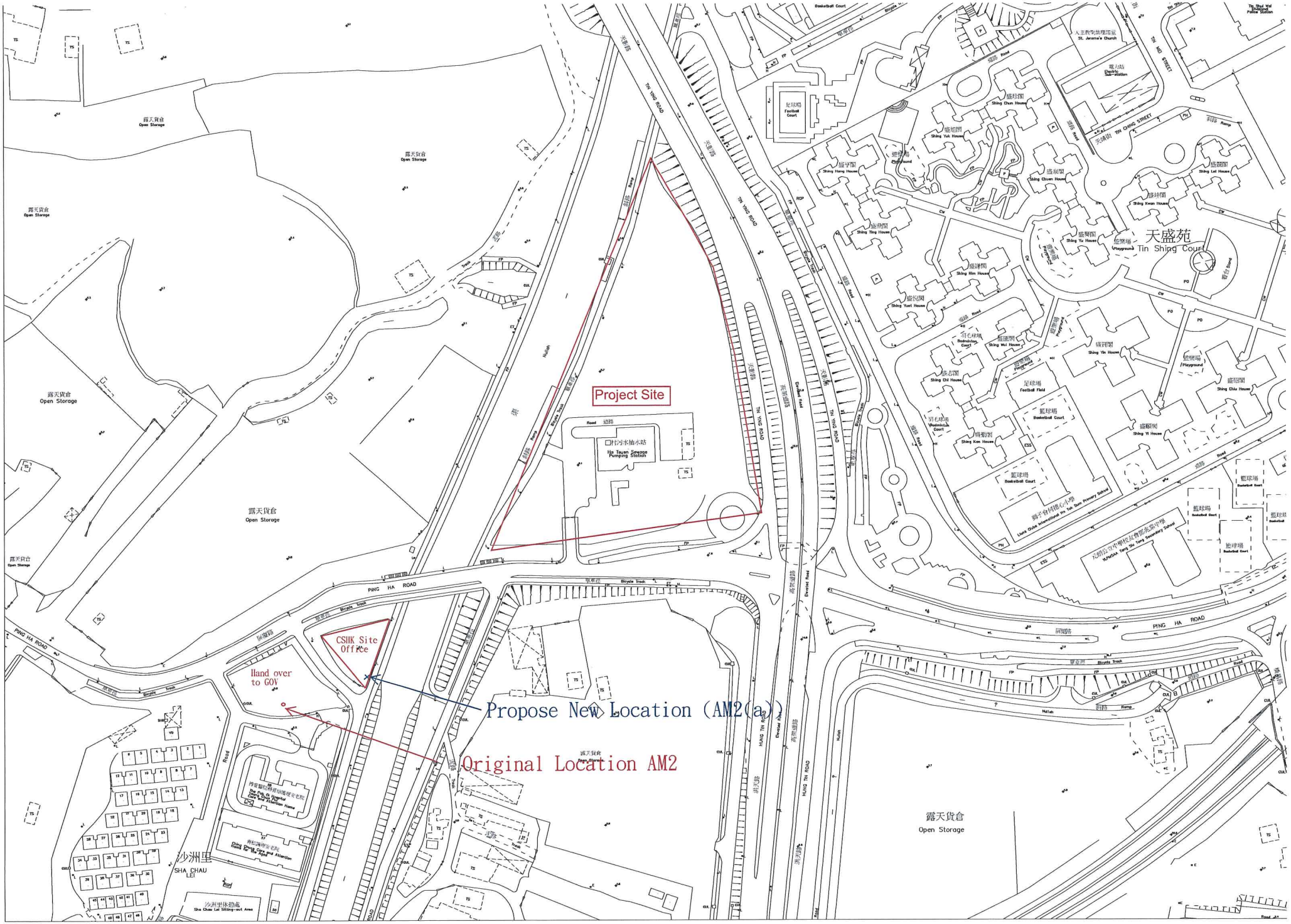
中國建築 CHINA STATE CONSTRUCTION

Appendix D

Monitoring Location of EM&A Programme

Proposed Air and Noise Monitoring Station

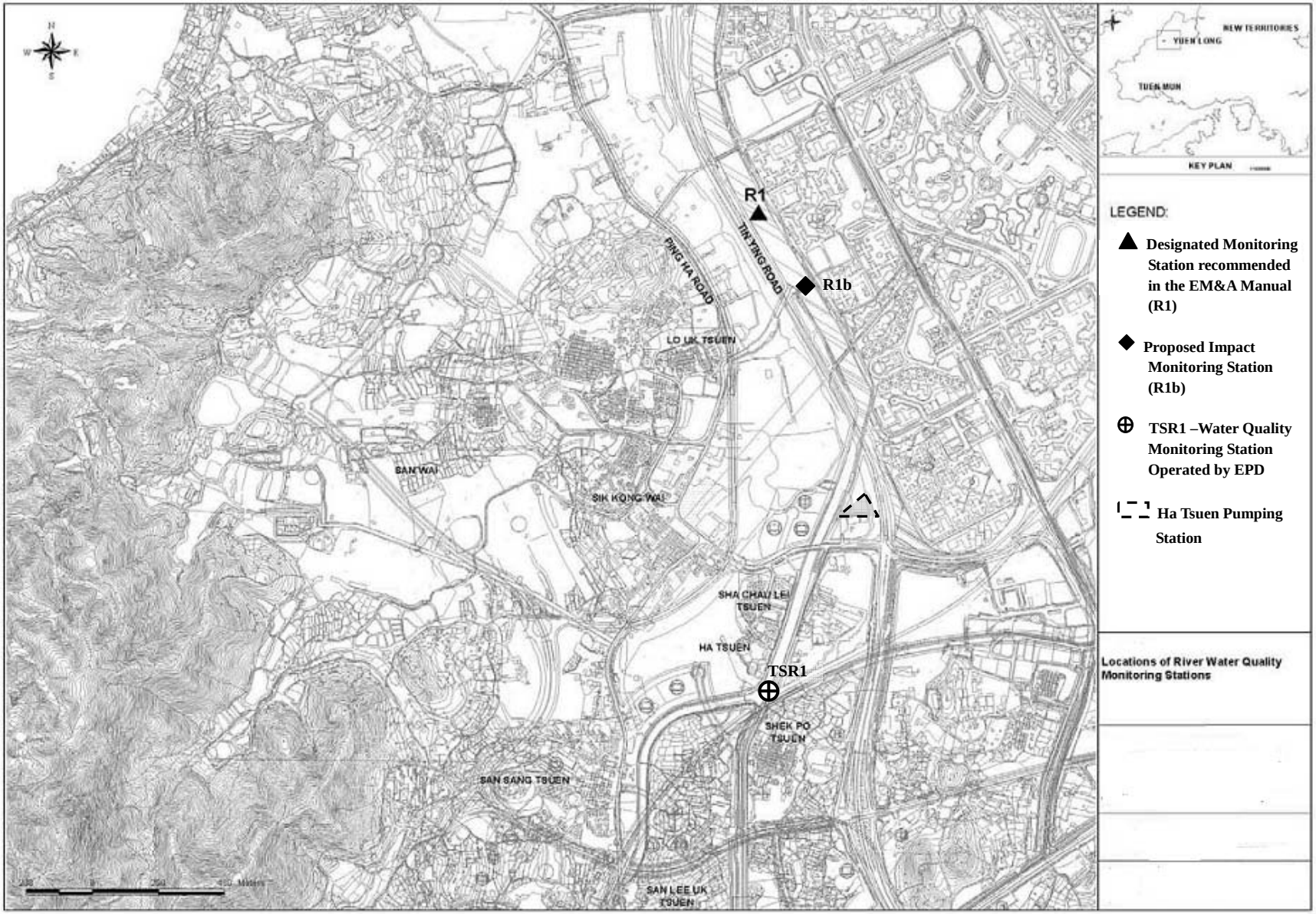



Project Site
CSHK Site Office
Hand over to GOV
Propose New Location (AM2(a))
Original Location AM2
PING HA ROAD
TIN YING ROAD
HUNG TIN ROAD
天盛苑
Tin Shing Court
露天貨倉
Open Storage
沙洲里
SHA CHAU LEI

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 Anderson Model GS2310 TSP high volume air sampling system (AM1 – Ho Tak Sum Primary School)	28 Jan 13	28 Mar 13
2		Thermo Anderson Model GS2310 TSP high volume air sampling system (AM2 Yeung Chun Pui Care & Attention Home)	2 Mar 13	2 May 13
3		Calibration Kit TISCH Model TE-5025A Orifice ID 1483 and Rootsmeter S/N 0438320	17 May 12	17 May 13
4		TSI DustTrak Model 8520 (Serial number: 21060)	6 Aug 12	6 Aug 13
5		TSI DustTrak Model 8520 (Serial number: 23079)	6 Aug 12	6 Aug 13
6	Noise	Bruel & Kjaer 4231 Acoustical Calibrator (Serial number 2713428)	20 Apr 12	20 Apr 13
7		Bruel & Kjaer 2238 Integrating Sound Level Meter (Serial number: 2285721)	20 Apr 12	20 Apr 13
8		Bruel & Kjaer 2238 Integrating Sound Level Meter (Serial number: 2285722)	20 Jul 12	20 Jul 13
9	Water	DO Meter YSI Pro 20 (Serial number: 12C100570)	8 Jan 13	8 Apr 13
10		Turbidimeter HACH 2100Q (Serial number: 11030C08499)	14 Jan 13	14 Apr 13
11		pH Meter Ecosense pH10A (Serial number: JC00488)	11 Jan 13	11 Apr 13

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location: Lions Clubs International Ho Tak Sum Primary School
Location ID : AM1

Date of Calibration: 28-Jan-13
Next Calibration Date: 28-Mar-13
Technician: Ben Tam

CONDITIONS

Sea Level Pressure (hPa)	1022.4	Corrected Pressure (mm Hg)	766.8
Temperature (°C)	16.2	Temperature (K)	289

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.02742
Model->	5025A	Qstd Intercept ->	-0.02027
Calibration Date->	17-May-12	Expiry Date->	17-May-13

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.2	5.2	10.4	1.632	49	50.72	Slope = 29.4530
13	3.6	3.6	7.2	1.359	42	43.47	Intercept = 2.9824
10	2.5	2.5	5	1.135	35	36.23	Corr. coeff. = 0.9991
7	1.7	1.7	3.4	0.937	30	31.05	
5	1.1	1.1	2.2	0.756	24	24.84	

Calculations :

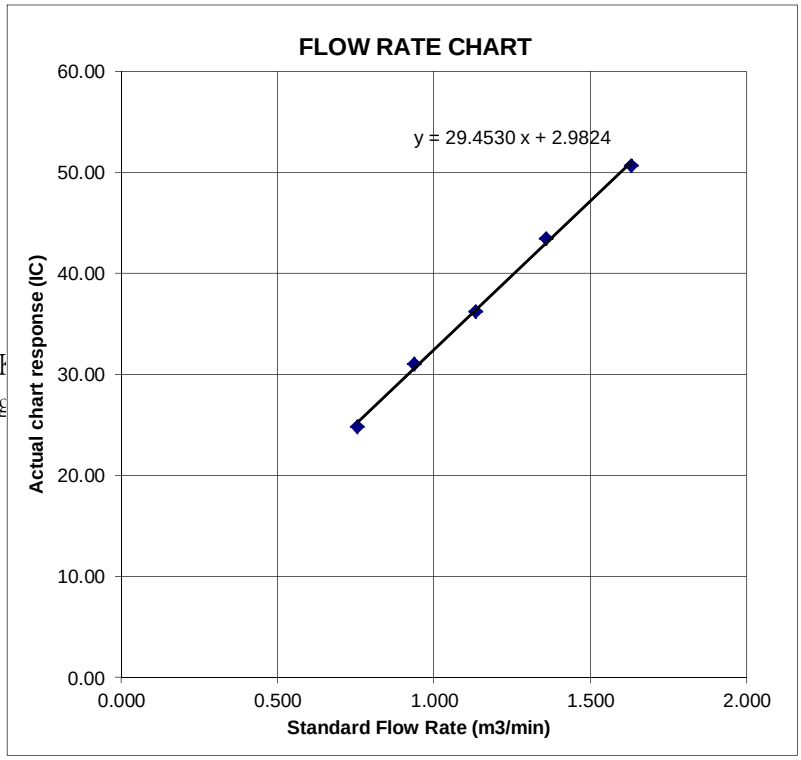
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart respones
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)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Yeung Chun Pui Care & Attention Home
Location ID : AM2

Date of Calibration: 2-Mar-13
Next Calibration Date: 2-May-13
Technician: Mr. Ben Tam

CONDITIONS

Sea Level Pressure (hPa)	1020.4	Corrected Pressure (mm Hg)	765.3
Temperature (°C)	17.9	Temperature (K)	291

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.02742
Model->	5025A	Qstd Intercept ->	-0.02027
Calibration Date->	17-May-12	Expiry Date->	17-May-13

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	4.4	4.4	8.8	1.496	48	49.34	Slope = 31.8517
13	3.4	3.4	6.8	1.316	42	43.17	Intercept = 1.6279
10	2.3	2.3	4.6	1.084	36	37.01	Corr. coeff. = 0.9983
7	1.6	1.6	3.2	0.906	29	29.81	
5	1.0	1.0	2.0	0.718	24	24.67	

Calculations :

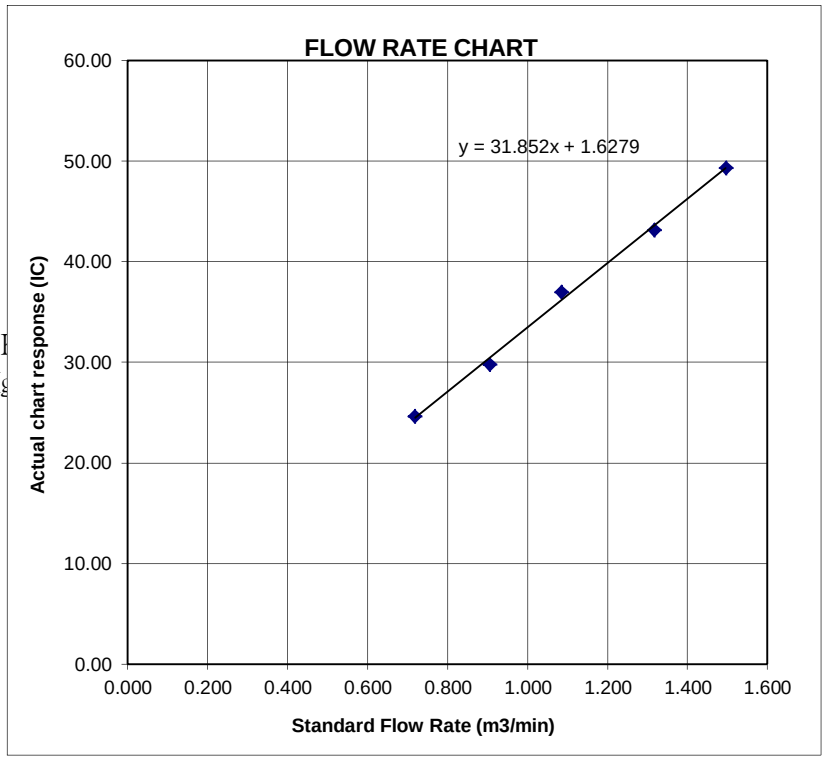
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart respones
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)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



AUES

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:	20-Jul-12

Equipment Calibration Results:

Calibration Date: 6-Aug-12

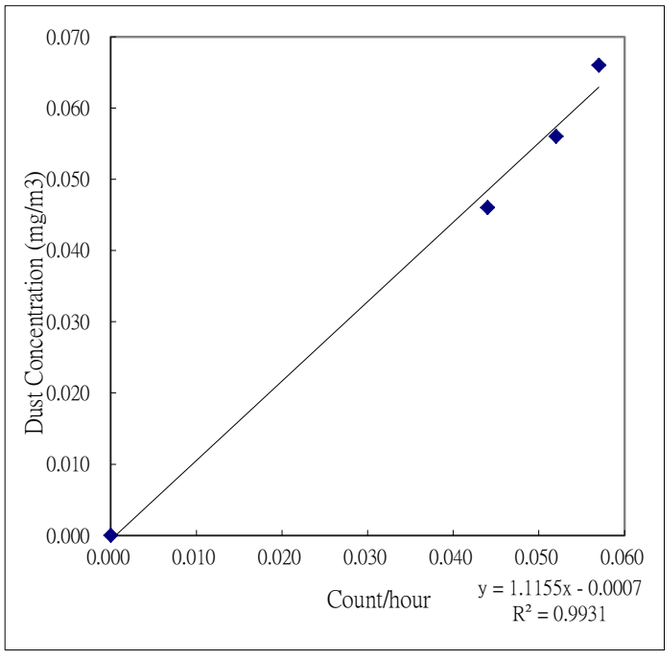
Hour	Time	Temp ℃	RH %	Dust Concentration in mg/m^3	
				(Standard Equipment)	(Calibrated Equipment)
1	9:00 ~ 10:00	29.8	84	0.052	0.056
1	10:05 ~ 11:05	30.2	84	0.057	0.066
1	11:10 ~ 12:10	30.9	84	0.044	0.046

Sensitivity Adjustment Zero Calibration (Before Calibration) 0 (mg/m^3)

Sensitivity Adjustment Zero Calibration (After Calibration) 0 (mg/m^3)

Linear Regression of Y or X

Slope:	**1.1155**
Correlation Coefficient	**0.9931**



Operator : Ray Cheung Signature : Date : 8/8/2012

QC Reviewer Ben Tam Signature : Date : 8/8/2012

AUES

Equipment Calibration Record

Equipment Calibrated:

Type:	Dust Trak Model 8520
Manufacturer:	TSI
Serial No.	23079
Equipment Ref:	EQ064

Standard Equipment:

Standard Equipment:	Higher Volume Sampler
Location & Location ID:	Block A of Government Dockyard Offices
Equipment Ref:	AM8
Last Calibration Date:	20-Jul-12

Equipment Calibration Results:

Calibration Date: 6-Aug-12

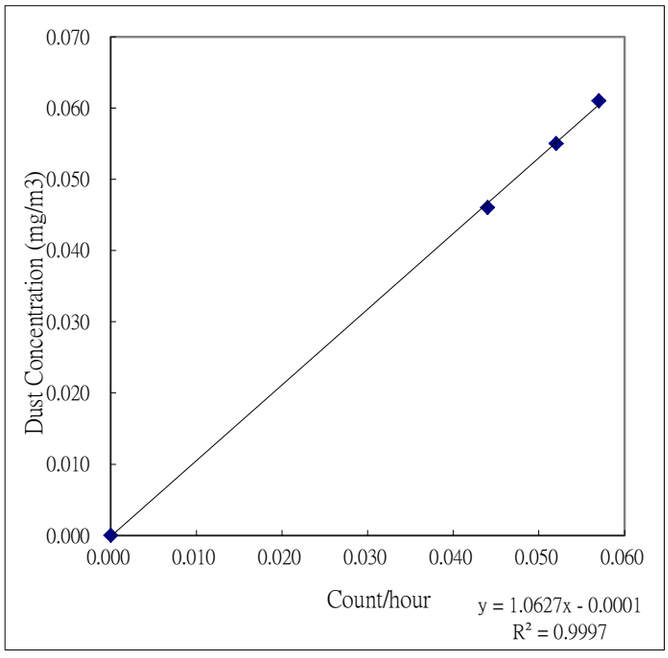
Hour	Time	Temp ℃	RH %	Dust Concentration in mg/m^3	
				(Standard Equipment)	(Calibrated Equipment)
1	9:00 ~ 10:00	29.8	84	0.052	0.055
1	10:05 ~ 11:05	30.2	84	0.057	0.061
1	11:10 ~ 12:10	30.9	84	0.044	0.046

Sensitivity Adjustment Zero Calibration (Before Calibration) 0 (mg/m^3)

Sensitivity Adjustment Zero Calibration (After Calibration) 0 (mg/m^3)

Linear Regression of Y or X

Slope:	**1.0627**
Correlation Coefficient	**0.9997**



Operator : Ray Cheung Signature : Date : 8/8/2012

QC Reviewer Ben Tam Signature : Date : 8/8/2012

TISCH ENVIROMENTAL, INC.
145 SOUTH MIAMI AVE.
VILLAGE OF CLEVES, OH 45002
513.467.9000
877.263.7610 TOLL FREE
513.467.9009 FAX
WWW.TISCH-ENV.COM

AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - May 17, 2012 Rootsmeter S/N 0438320 Ta (K) - 294
Operator Tisch Orifice I.D. - 1483 Pa (mm) - 754.38

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.4140	3.2	2.00
2	NA	NA	1.00	0.9960	6.4	4.00
3	NA	NA	1.00	0.8910	7.9	5.00
4	NA	NA	1.00	0.8510	8.7	5.50
5	NA	NA	1.00	0.7020	12.8	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
1.0018	0.7085	1.4185		0.9957	0.7042	0.8829
0.9976	1.0016	2.0061		0.9915	0.9955	1.2486
0.9955	1.1173	2.2429		0.9894	1.1105	1.3959
0.9945	1.1686	2.3524		0.9884	1.1615	1.4641
0.9890	1.4088	2.8371		0.9830	1.4003	1.7657
Qstd slope (m) =		2.02742		Qa slope (m) =		1.26953
intercept (b) =		-0.02027		intercept (b) =		-0.01262
coefficient (r) =		0.99996		coefficient (r) =		0.99996
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}

輝創工程有限公司
Sun Creation Engineering Limited
Calibration and Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C124263
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC12-0960)

Description / 儀器名稱	:	Integrating Sound Level Meter (EQ009)
Manufacturer / 製造商	:	Bruel & Kjaer
Model No. / 型號	:	2238
Serial No. / 編號	:	2285722
Supplied By / 委託者	:	Action-United Environmental Services and Consulting Unit A, 20/F., Gold King Industrial Building, 35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C
Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 20 July 2012

TEST RESULTS / 測試結果

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 測試 : L K Yeung

Certified By 核證 : K C Lee

Date of Issue 簽發日期 : 20 July 2012

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C124263
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

2. Self-calibration using laboratory acoustic calibrator was performed before the test from 6.1.1.2 to 6.4.

3. The results presented are the mean of 3 measurements at each calibration point.

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C120016
CL281	Multifunction Acoustic Calibrator	DC110233

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

6.1.1.1 Before Self-calibration

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	93.6

6.1.1.2 After Self-calibration

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		113.9

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

Certificate of Calibration
校正證書

Certificate No. : C124263
證書編號

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

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	95.2	+1.0 ± 1.0
					8 kHz	94.0	-1.1 (+1.5 ; -3.0)
					12.5 kHz	89.7	-4.3 (+3.0 ; -6.0)

Certificate of Calibration
校正證書

Certificate No. : C124263
證書編號

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	93.2	-0.8 ± 1.0
					8 kHz	90.9	-3.0 (+1.5 ; -3.0)
					12.5 kHz	87.7	-6.2 (+3.0 ; -6.0)

6.4 Time Averaging

UUT Setting				Applied Value					UUT Reading (dB)	IEC 60804 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Integrating Time	Frequency (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)		
30 - 110	L_{Aeq}	A	10 sec.	4	1	1/10	110.0	100	99.9	± 0.5
						$1/10^2$		90	89.7	± 0.5
			60 sec.			$1/10^3$		80	79.1	± 1.0
			5 min.			$1/10^4$		70	69.1	± 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	: ± 0.35 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz - 4 kHz	: ± 0.35 dB
	8 kHz	: ± 0.45 dB
	12.5 kHz	: ± 0.70 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 Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with 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.

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

輝創工程有限公司
Sun Creation Engineering Limited
Calibration and Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C122427
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC12-0960)

Description / 儀器名稱	:	Integrating Sound Level Meter (EQ010)
Manufacturer / 製造商	:	Bruel & Kjaer
Model No. / 型號	:	2238
Serial No. / 編號	:	2285721
Supplied By / 委託者	:	Action-United Environmental Services and Consulting Unit A, 20/F., Gold King Industrial Building, 35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C
Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 20 April 2012

TEST RESULTS / 測試結果

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 測試 : L K Yeung

Certified By 核證 : K C Lee

Date of Issue 簽發日期 : 23 April 2012

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C122427
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 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 : 2713428 was performed before the test.

3. The results presented are the mean of 3 measurements at each calibration point.

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C120016
CL281	Multifunction Acoustic Calibrator	DC110233

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			94.1	± 0.1

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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	101.9	-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	54.6	-39.4 ± 1.5
					63 Hz	67.8	-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	92.9	-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	91.1	-3.0 ± 1.5
					63 Hz	93.3	-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	93.2	-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)

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6.4 Time Averaging

UUT Setting				Applied Value					UUT Reading (dB)	IEC 60804 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Integrating Time	Frequency (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)		
30 - 110	L_{Aeq}	A	10 sec.	4	1	1/10	110.0	100	99.9	± 0.5
						$1/10^2$		90	89.6	± 0.5
			60 sec.			$1/10^3$		80	79.8	± 1.0
			5 min.			$1/10^4$		70	69.8	± 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 Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with 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 of Calibration
校正證書

Certificate No. : C122426
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ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC12-0960)

Description / 儀器名稱	:	Acoustical Calibrator (EQ082)
Manufacturer / 製造商	:	Bruel & Kjaer
Model No. / 型號	:	4231
Serial No. / 編號	:	2713428
Supplied By / 委託者	:	Action-United Environmental Services and Consulting Unit A, 20/F., Gold King Industrial Building, 35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C
Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration

DATE OF TEST / 測試日期 : 20 April 2012

TEST RESULTS / 測試結果

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 / 測試 : L K Yeung

Certified By / 核證 : K C Lee

Date of Issue / 簽發日期 : 23 April 2012

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

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1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.

2. The results presented are the mean of 3 measurements at each calibration point.

3. Test equipment :

Equipment ID	Description	Certificate No.
CL130	Universal Counter	C113350
CL281	Multifunction Acoustic Calibrator	DC110233
TST150A	Measuring Amplifier	C120886

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

5.1.1 Before Adjustment

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	94.1	± 0.2	± 0.2
114 dB, 1 kHz	114.1		

5.1.2 After Adjustment

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

5.2.1 Before Adjustment

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

5.2.2 After Adjustment

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

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
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Remark : The uncertainties are for a confidence probability of not less than 95 %.

Note :
The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with 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.

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ALS Technichem (HK) Pty Ltd

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM	**WORK ORDER:**	HK1300486
CLIENT:	ACTION UNITED ENVIRO SERVICES	**LABORATORY:**	HONG KONG
ADDRESS:	RM A 20/F., GOLDEN KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T., HONG KONG.	**DATE RECEIVED:**	07/01/2013
		DATE OF ISSUE:	09/01/2013
PROJECT:	--		

COMMENTS

It is certified that the item under calibration/checking has been calibrated/checked by corresponding calibrated equipment in the laboratory.
Maximum Tolerance and calibration frequency stated in the report, unless otherwise stated, the internal aceptance criteria of ALS will be followed.

Scope of Test:	Dissolved Oxygen & Temperature
Description:	DO Meter
Brand Name:	YSI
Model No.:	YSI PRO 20
Serial No.:	12C100570
Equipment No.:	--
Date of Calibration:	08 January, 2013

NOTES

This is the Final Report and supersedes any preliminary report with this batch number.
Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

ISSUING LABORATORY: HONG KONG

Address

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Kwai Chung
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Phone: 852-2610 1044
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Email: hongkong@alsglobal.com

Mr. Fung Lim Chee, Richard
General Manager -
Greater China & Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1300486
Date of Issue: 09/01/2013
Client: ACTION UNITED ENVIRO SERVICES

Description: DO Meter
Brand Name: YSI
Model No.: YSI PRO 20
Serial No.: 12C100570
Equipment No.: --
Date of Calibration: 08 January, 2013 Date of next Calibration: 08 April, 2013

Parameters:

Dissolved Oxygen **Method Ref: APHA (21st edition), 4500O: G**

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
4.04	4.17	0.13
6.11	6.05	-0.06
8.68	8.82	0.14
	Tolerance Limit (±mg/L)	0.20

Temperature **Method Ref: Section 6 of International Accreditation New Zealand Technical Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.**

Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)
11.0	12.0	1.0
21.5	20.8	-0.7
38.0	38.4	0.4
	Tolerance Limit (±°C)	2.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Mr. Fung Lim Chee, Richard
General Manager -
Greater China & Hong Kong

ALS Technichem (HK) Pty Ltd

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM	**WORK ORDER:**	HK1300617
CLIENT:	ACTION UNITED ENVIRO SERVICES	**LABORATORY:**	HONG KONG
ADDRESS:	RM A 20/F., GOLDEN KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T., HONG KONG.	**DATE RECEIVED:**	08/01/2013
		DATE OF ISSUE:	17/01/2013
PROJECT:	--		

COMMENTS

It is certified that the item under calibration/checking has been calibrated/checked by corresponding calibrated equipment in the laboratory.
Maximum Tolerance and calibration frequency stated in the report, unless otherwise stated, the internal aceptance criteria of ALS will be followed.

Scope of Test:	Turbidity
Description:	Turbidimeter
Brand Name:	HACH
Model No.:	2100Q
Serial No.:	11030C008499
Equipment No.:	--
Date of Calibration:	14 January, 2013

NOTES

This is the Final Report and supersedes any preliminary report with this batch number.
Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

ISSUING LABORATORY: HONG KONG

Address

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Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1300617
Date of Issue: 17/01/2013
Client: ACTION UNITED ENVIRO SERVICES

Description: Turbidimeter
Brand Name: HACH
Model No.: 2100Q
Serial No.: 11030C008499
Equipment No.: --
Date of Calibration: 14 January, 2013 Date of next Calibration: 14 April, 2013

Parameters:

Turbidity **Method Ref: ALPHA 21st Ed. 2130B**

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0	--
4	3.9	-2.50
40	42.1	5.25
80	78	-2.50
400	405	1.25
800	815	1.88
	Tolerance Limit (±%)	10.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

ALS Technichem (HK) Pty Ltd

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM	**WORK ORDER:**	HK1300484
CLIENT:	ACTION UNITED ENVIRO SERVICES	**LABORATORY:**	HONG KONG
ADDRESS:	RM A 20/F., GOLDEN KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T., HONG KONG.	**DATE RECEIVED:**	07/01/2013
		DATE OF ISSUE:	14/01/2013
PROJECT:	--		

COMMENTS

It is certified that the item under calibration/checking has been calibrated/checked by corresponding calibrated equipment in the laboratory.
Maximum Tolerance and calibration frequency stated in the report, unless otherwise stated, the internal aceptance criteria of ALS will be followed.

Scope of Test:	pH
Description:	pH Meter
Brand Name:	Ecosense
Model No.:	pH10A
Serial No.:	JC000488
Equipment No.:	--
Date of Calibration:	11 January, 2013

NOTES

This is the Final Report and supersedes any preliminary report with this batch number.
Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

ISSUING LABORATORY: HONG KONG

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Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1300484
Date of Issue: 14/01/2013
Client: ACTION UNITED ENVIRO SERVICES

Description: pH Meter
Brand Name: Ecosense
Model No.: pH10A
Serial No.: JC000488
Equipment No.: --
Date of Calibration: 11 January, 2013 Date of next Calibration: 11 April, 2013

Parameters:

pH Value

Method Ref: APHA (21st edition), 4500H:B

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
4.0	4.03	0.03
7.0	6.86	-0.14
10.0	9.86	-0.14
	Tolerance Limit (±pH unit)	0.20

Remarks: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

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)	Mean Relative Humidity (%)	Wind Direction	Wind Speed (km/h)
1-Mar-13	Fri	Fine, very dry, moderate easterly winds	0.0	21.9	87	130	16.7
2-Mar-13	Sat	Fine, dry, warm, haze,light winds.	0.5	17.6	86	70	15.1
3-Mar-13	Sun	Fine, dry, warm, haze,light winds.	0.0	13.9	62	360	18.1
4-Mar-13	Mon	Fine, very dry, moderate easterly winds	0.0	15.9	54	350	12.4
5-Mar-13	Tue	Fine, very dry, moderate easterly winds	0.0	18.6	49	70	11.1
6-Mar-13	Wed	Fine, very dry, moderate easterly winds	0.0	18.4	61	70	11.6
7-Mar-13	Thu	Fine, dry, warm, haze,light winds.	0.0	18.8	68	240	8.6
8-Mar-13	Fri	Fine, dry, warm, haze,light winds.	0.0	19.8#	58#	130	9.0
9-Mar-13	Sat	Misty, rain, sunny intervals, fresh easterly winds	0.0	19.6	69	140	15.0
10-Mar-13	Sun	Misty, rain, sunny intervals, fresh easterly winds	0.0	19.9	76	240	10.0
11-Mar-13	Mon	Misty, rain, sunny intervals, fresh easterly winds	0.0	20.5	78	80	11.8
12-Mar-13	Tue	Cloudy, misty, fine, moderate easterly winds	0.0	22	75	100#	12.2#
13-Mar-13	Wed	Cloudy, rain, fresh easterly winds	0.0	22.4	82	230#	8.7#
14-Mar-13	Thu	Cloudy, sunny intervals, moderate easterly winds.	0.0	19.5	85	70	13.2
15-Mar-13	Fri	Cloudy, sunny intervals, moderate easterly winds.	0.0	19.5	76	70	10.9
16-Mar-13	Sat	Cloudy, sunny intervals, moderate easterly winds.	0.0	20.9	74	70	10.0
17-Mar-13	Sun	Cloudy, rain, fresh easterly winds	0.0	22.1	81	140	13.3
18-Mar-13	Mon	Cloudy, sunny intervals, moderate easterly winds.	0.0	23	88	140#	8.1#
19-Mar-13	Tue	Amber Rainstorm Warning Signal Special Announcement issued at 3:50 p.m	9.5	23.8	91	140	15.0
20-Mar-13	Wed	Cloudy, mist, rain, moderate to fresh easterly winds	0.0	23.7	89	160	12.5
21-Mar-13	Thu	Cloudy, mist, rain, moderate to fresh easterly winds	0.0	21.4	85	80	12.3
22-Mar-13	Fri	Cloudy, fog, moderate southeasterly winds	0.0	22.2	85	60	11.2
23-Mar-13	Sat	Cloudy, fog, moderate southeasterly winds	0.0	23.5	83	140	9.8
24-Mar-13	Sun	Cloudy, mist, rain, fresh to strong easterly winds.	0.5	23	90	140	5.7
25-Mar-13	Mon	Cloudy, mist, rain, fresh to strong easterly winds.	0.0	22.6	83	90	18.0
26-Mar-13	Tue	Cloudy, rain, squally thunderstorms, fog, fresh easterly winds	25.0	20.3	90	100	19.3
27-Mar-13	Wed	Cloudy, showers, squally thunderstorms, moderate east to northeasterly winds.	1.0	19.7	90	70	10.0
28-Mar-13	Thu	Cloudy, mist, rain, squally thunderstorms, light to moderate easterly winds.	26.5	19.6	95	80	12.0
29-Mar-13	Fri	Cloudy, mist, rain, fresh to strong easterly winds.	0.0	20.3	92	70	8.5
30-Mar-13	Sat	Cloudy, rain, squally thunderstorms, fog, fresh easterly winds	37.5	18.9	96	90	17.6
31-Mar-13	Sun	Cloudy, mist, rain, squally thunderstorms, light to moderate easterly winds.	0.5	20	95	70	10.9

 # missing (less than 24 hourly observations a day)
Rainfall measured in increment of 0.5 mm. Amount of < 0.5 mm cannot be detected

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 m itigation 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 no tification in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for th e 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 analy sis of C ontractor'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 inform ed 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 no tification in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for th e 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 o f works as determined by ER, until the exceedance is abated.

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

	Monitoring Day
	Sunday or Public Holiday

Monitoring Schedule for Coming Month

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

■	Monitoring Day
	Sunday or Public Holiday

Appendix I

Results Data

DSD Contract No DC/2009/08

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		SS (mg/L)	
R1b					ACT	4.6			ACT	15.6	ACT		ACT	31.5
					LIM	4			LIM	16.2	LIM		LIM	31.9
Date	**2-Mar-13**													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DOS (%)**		**Turbidity (NTU)**		**pH**		**SS (mg/L)**	
R1b	13:19	0.70	22.5	22.3	7.19	6.8	81.8	77.1	14.4	14.3	8.8	8.8	11	11.0
			22.1		6.37		72.4		14.2		8.81		11	

Date	**4-Mar-13**													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DOS (%)**		**Turbidity (NTU)**		**pH**		**SS (mg/L)**	
R1b	11:08	0.50	22.7	22.7	9.17	9.1	105.8	105.6	10.8	9.8	8.79	8.8	24	24.0
			22.6		9.1		105.4		8.8		8.78		24	

Date	**6-Mar-13**													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DOS (%)**		**Turbidity (NTU)**		**pH**		**SS (mg/L)**	
R1b	11:50	0.60	23.6	23.6	8.01	7.7	88.6	87.9	12.4	12.5	8.51	8.5	30	30.0
			23.6		7.39		87.1		12.6		8.56		30	

Date	**9-Mar-13**													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DOS (%)**		**Turbidity (NTU)**		**pH**		**SS (mg/L)**	
R1b	12:50	1.00	22.7	23.2	5.41	5.4	58.6	58.0	5.7	5.8	8.58	8.6	18	18.0
			23.7		5.29		57.5		6.0		8.56		18	

Date	**11-Mar-13**													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DOS (%)**		**Turbidity (NTU)**		**pH**		**SS (mg/L)**	
R1b	9:01	0.60	24.2	24.2	4.88	4.7	58.1	55.5	7.2	6.9	8.54	8.6	18	18.0
			24.2		4.54		53.0		6.7		8.56		18	

Date	**13-Mar-13**													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DOS (%)**		**Turbidity (NTU)**		**pH**		**SS (mg/L)**	
R1b	9:08	0.60	25.1	25.1	5.14	5.1	62.6	61.1	11.8	11.7	8.86	8.8	26	26.0
			25.0		4.98		59.6		11.6		8.8		26	

Date	**15-Mar-13**													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DOS (%)**		**Turbidity (NTU)**		**pH**		**SS (mg/L)**	
R1b	11:52	0.60	22.8	23.0	5.83	5.8	69.1	68.7	7.2	7.4	8.45	8.5	9	9.0
			23.1		5.73		68.2		7.6		8.46		9	

Date	**18-Mar-13**													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DOS (%)**		**Turbidity (NTU)**		**pH**		**SS (mg/L)**	
R1b	9:09	0.60	24.8	24.8	5.88	5.7	68.8	67.4	11.9	11.8	8.41	8.4	24	24.0
			24.8		5.52		66.0		11.7		8.42		24	

Date	**21-Mar-13**													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DOS (%)**		**Turbidity (NTU)**		**pH**		**SS (mg/L)**	
R1b	11:43	0.60	23.8	23.8	5.19	5.0	60.6	58.4	12.6	12.4	8.64	8.6	11	11.0
			23.7		4.74		56.2		12.1		8.61		11	

Date	**23-Mar-13**													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DOS (%)**		**Turbidity (NTU)**		**pH**		**SS (mg/L)**	
R1b	9:09	0.50	24.3	24.3	4.87	4.7	42.5	48.3	10.4	10.1	8.93	8.9	11	11.0
			24.3		4.58		54.1		9.9		8.94		11	

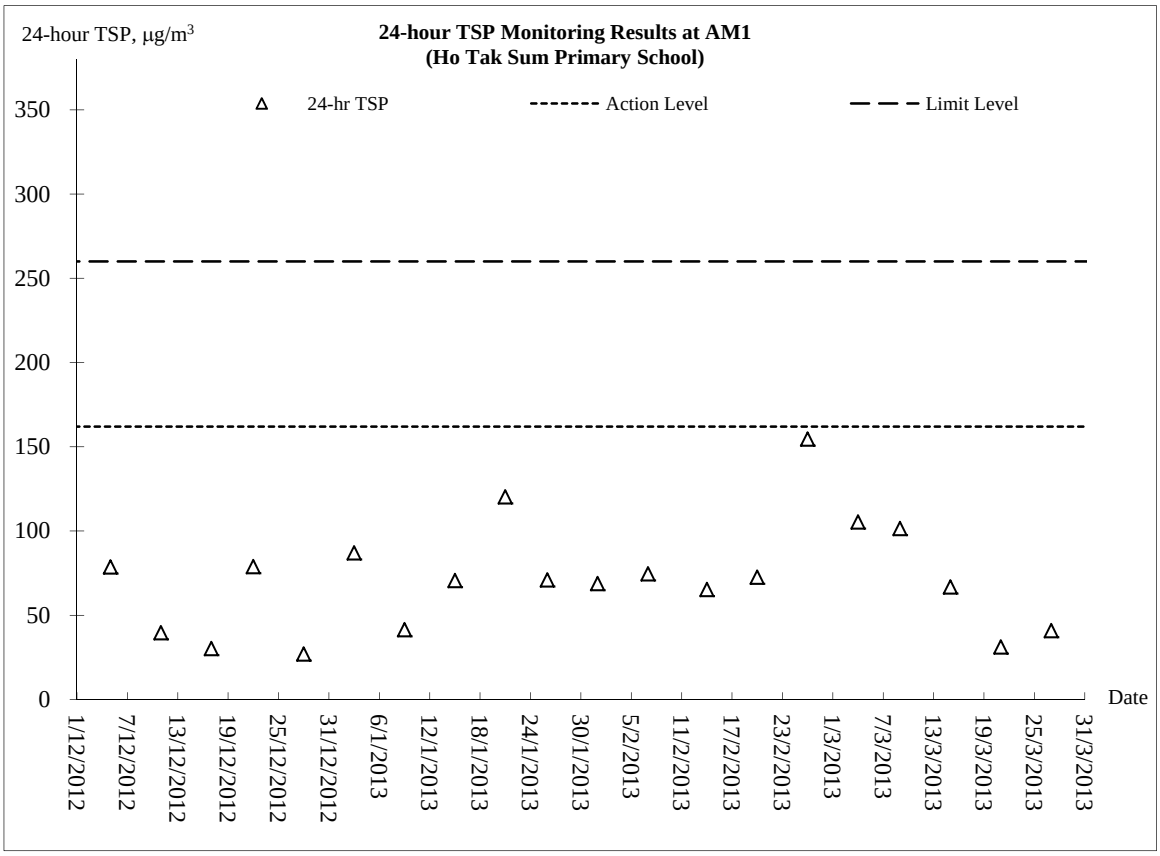
Date	**25-Mar-13**													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DOS (%)**		**Turbidity (NTU)**		**pH**		**SS (mg/L)**	
R1b	9:18	0.60	23.9	23.9	5.24	5.1	62.1	59.2	8.7	8.8	8.46	8.5	13	13.0
			23.9		4.87		56.3		8.9		8.61		13	

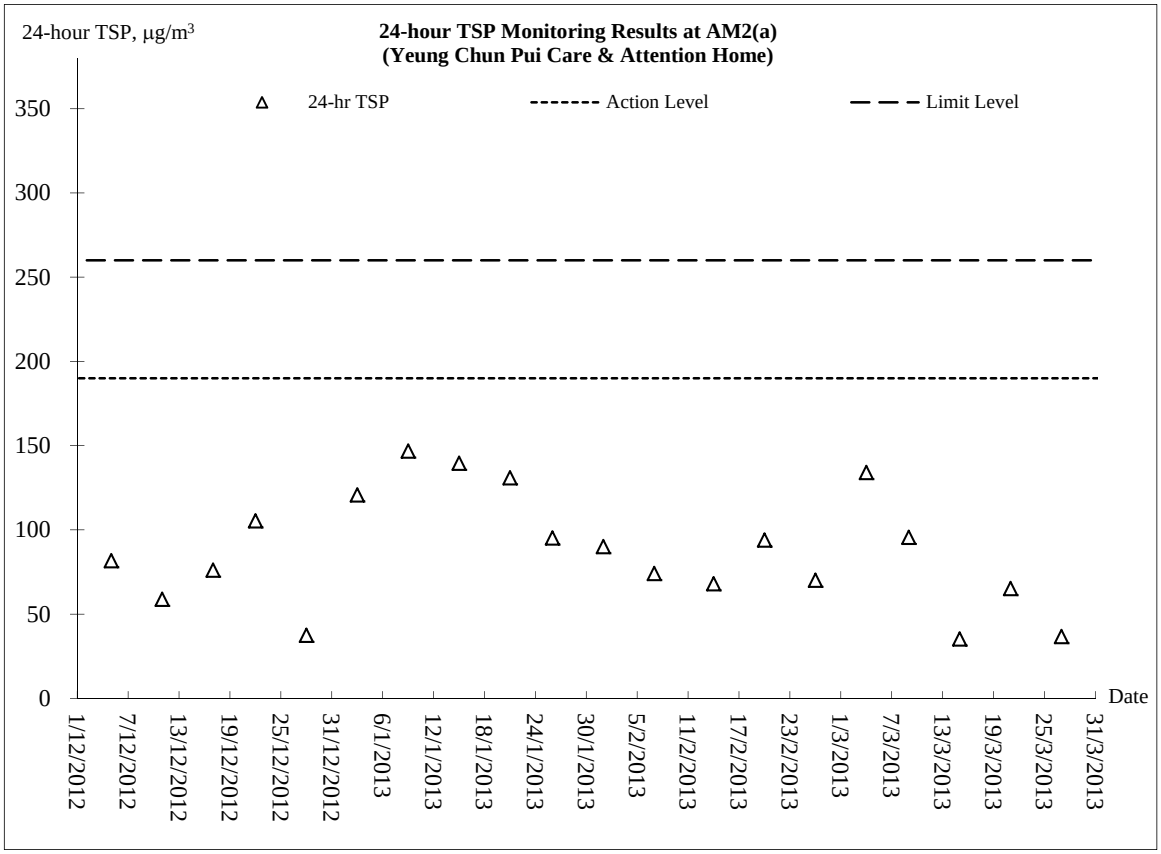
Date	**27-Mar-13**													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DOS (%)**		**Turbidity (NTU)**		**pH**		**SS (mg/L)**	
R1b	13:01	0.60	23.4	23.4	4.93	4.8	57.2	56.0	13.0	13.5	8.83	8.8	17	17.0
			23.4		4.67		54.8		13.9		8.81		17	

Appendix J

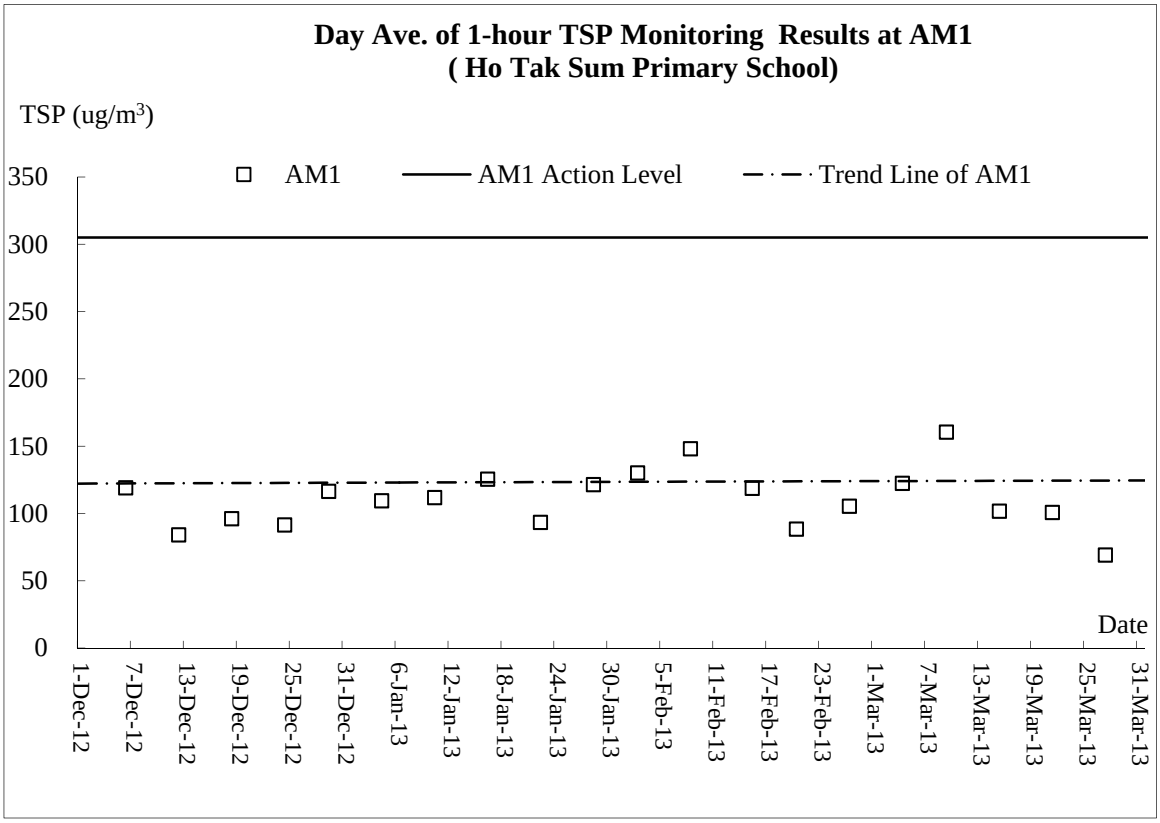
Graphical plots

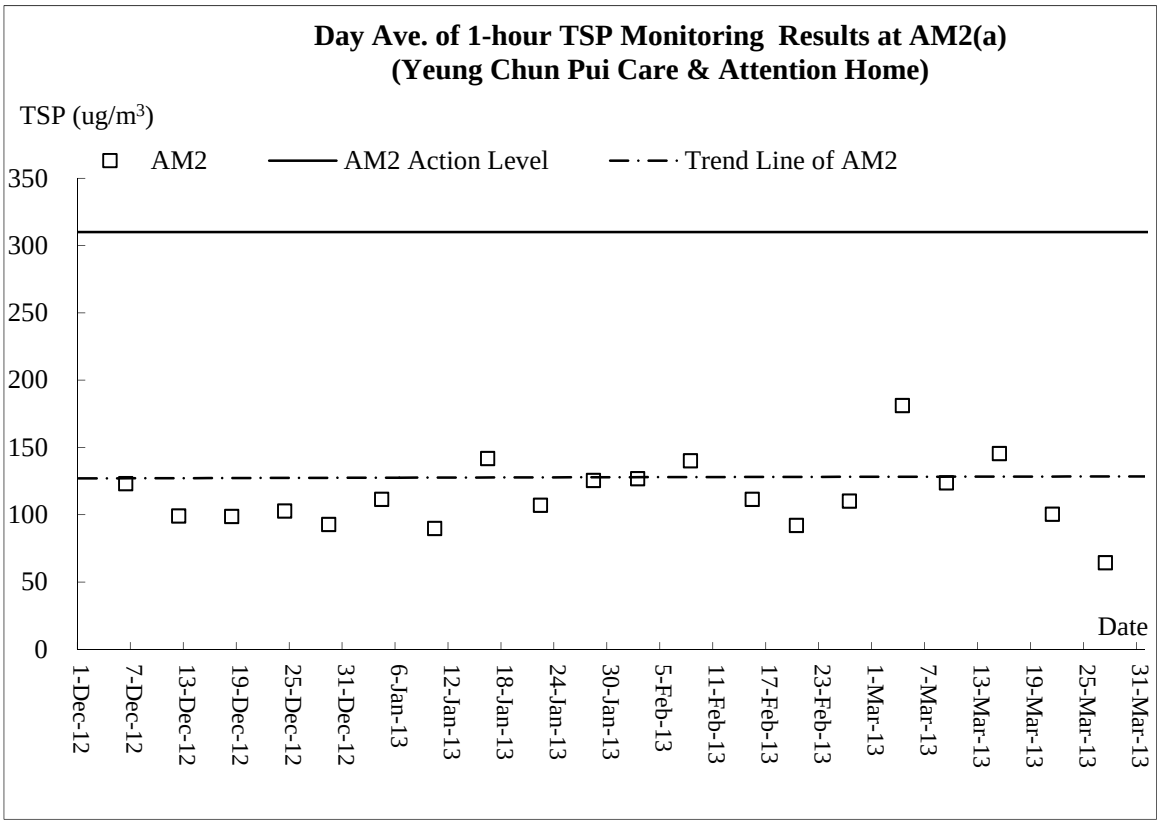
Air Quality – 24-hour TSP



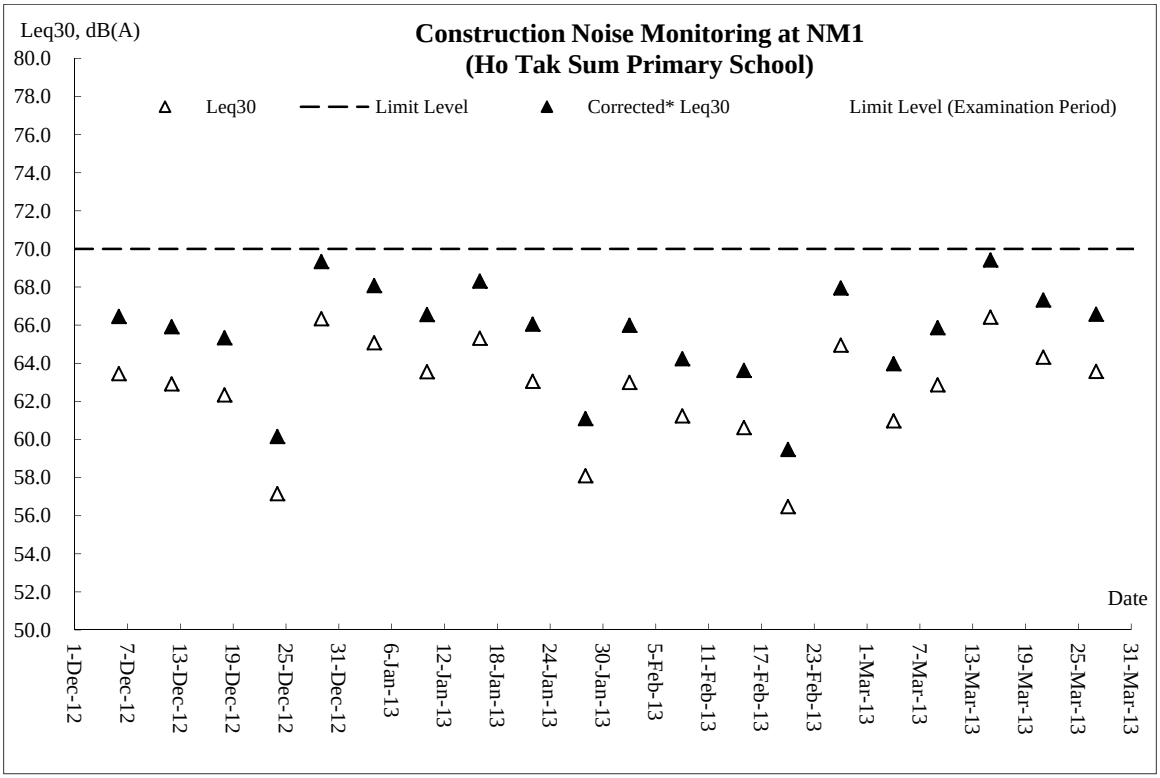


Air Quality – 1 hour TSP

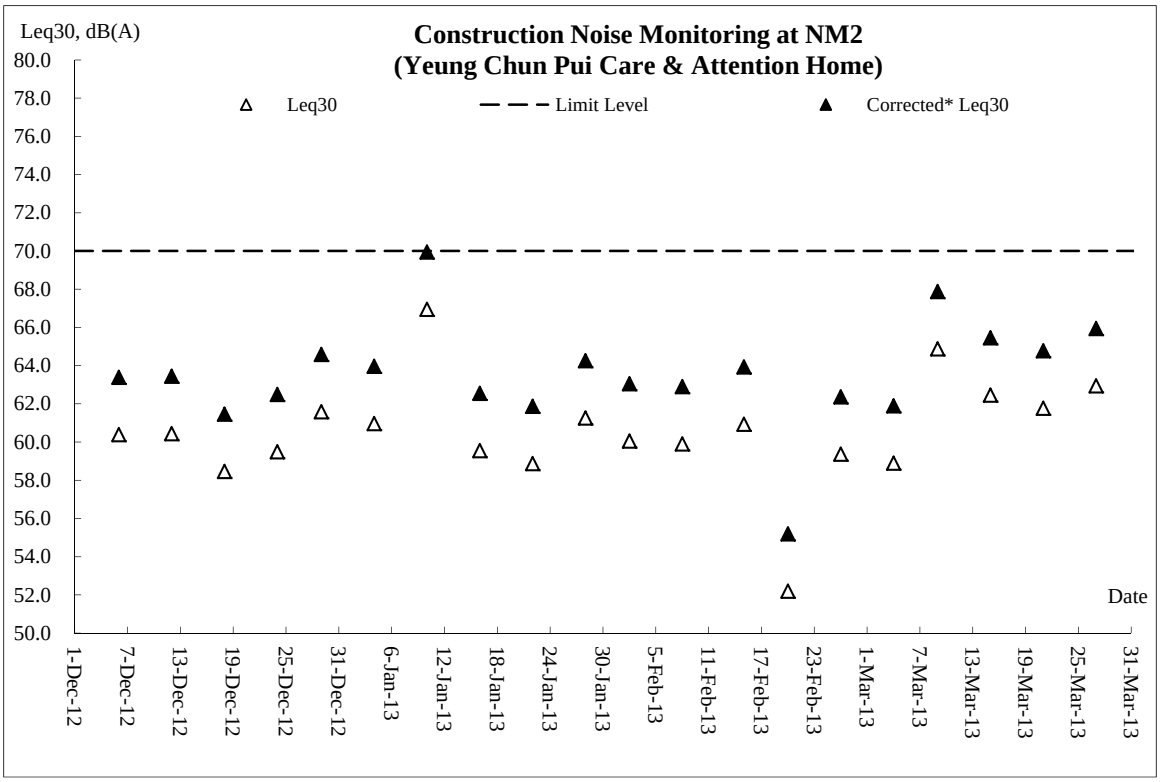




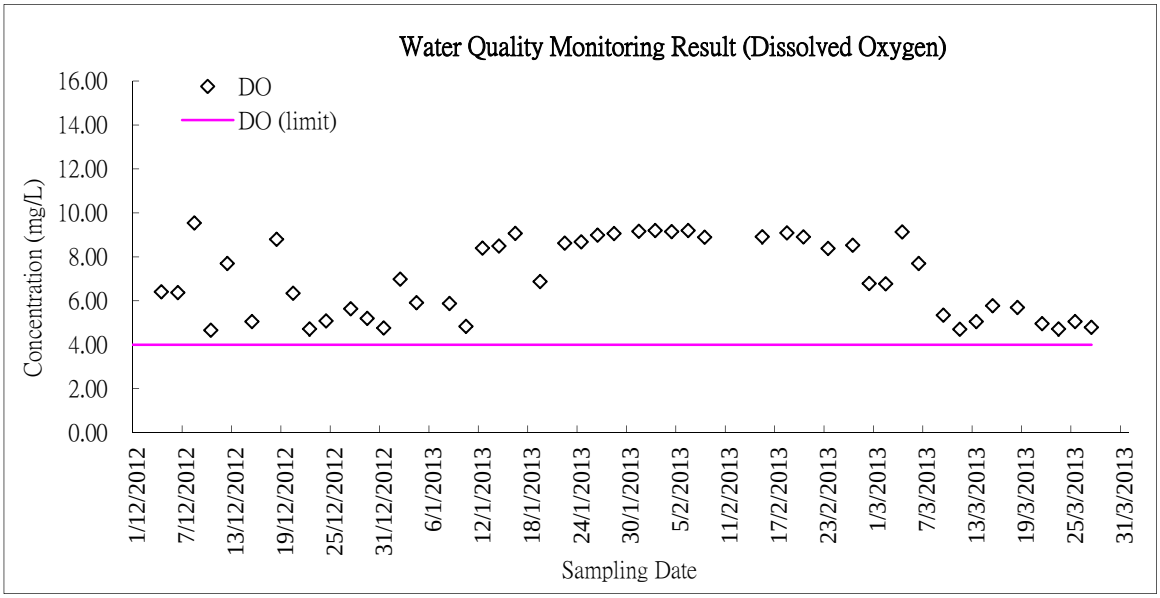
Construction Noise

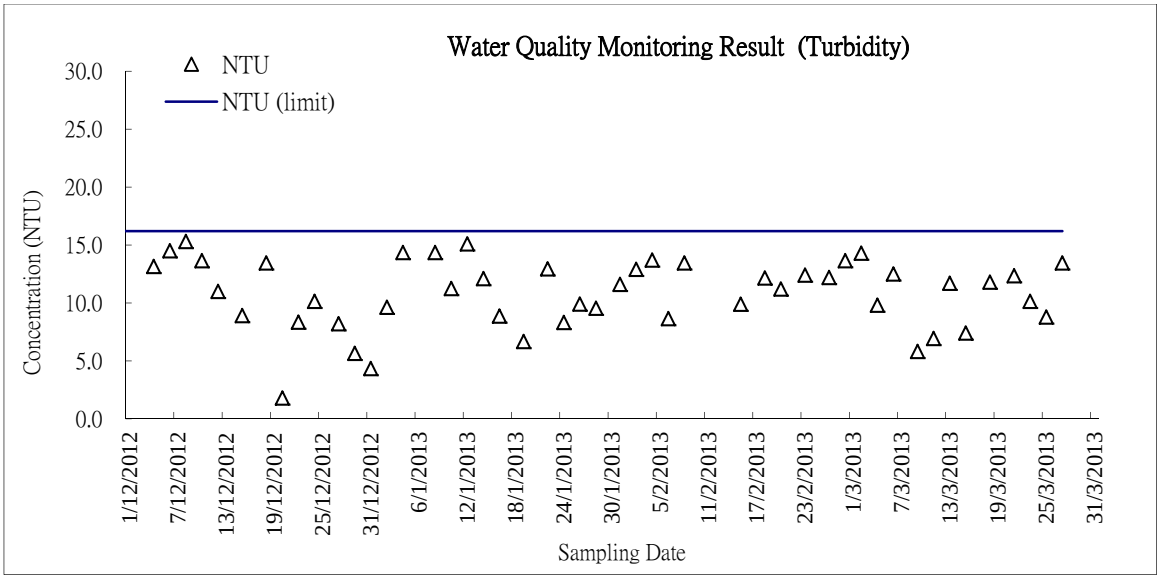


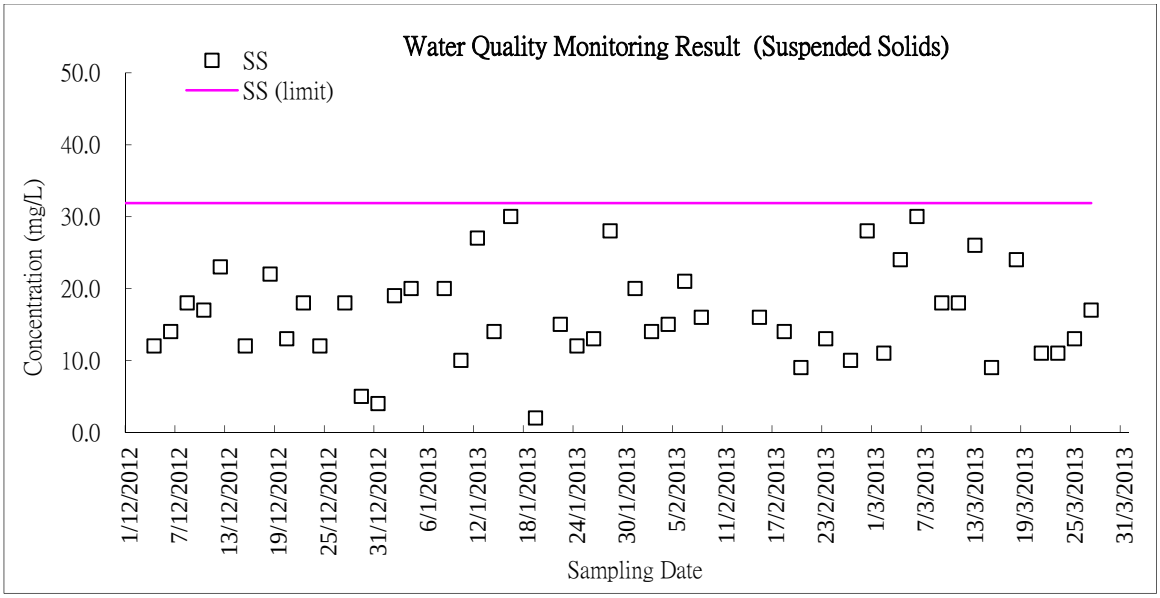
Remark: Limit Level was reduced to 65dB(A) during examination period between 15 and 18 January 2013.



Water Quality – Local Stream Course (R1b)







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: 2013

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)

2013 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 [a+b+c+d]	Broken Concrete (including rock for recycling into aggregates) (a)	Reused in the Contract (b)	Reused in Other Projects (c)	Disposed as Public Fill (d)	Imported C&D Material	Metal (in '000kg)	Paper/ Cardboard Packaging (in '000kg)	Plastic (bottles/containers, plastic sheets/ foams from package material) (in '000kg)	Chemical Waste (in '000kg)	Others (e.g. General Refuse etc.) (in '000m^3)
January	1.765	0	0	0	1.765	0	0	0	0.000	0	0.001
February	0.082	0	0	0	0.082	0	0	0	0.000	0	0.001
March	1.925	0	0	0	1.925	0	0	0	0.000	0	0.001
April	0.000										
May	0.000										
June	0.000										
Half-year total	3.772	0	0	0	3.772	0	0	0	0.000	0	0.003
July	0.000										
August	0.000										
September	0.000										
October	0.000										
November	0.000										
December	0.000										
Yearly Total	3.772	0	0	0	3.772	0	0	0	0.000	0	0.003

Appendix L

Inspection Checklist

Environmental Site Inspection Checklist

AUES

Project:	**DC/2009/08 Construction of Yuen Long South Branch Sewers and Expansion of Ha Tsuen PS**	**Inspected by**	
		RE's representative:	Mr. K.P. Cheung
Inspection		**IEC's representative:**	-
Date:	5 March 2013	**ET's representative:**	Ms. Nicola Hon
Time:	10:00	**Contractor's representative:**	Mr. Scott Tsiu
		Checklist No.	DC200908-5-Mar-2013

PART A: GENERAL INFORMATION **Environmental Permit No.:** EP-327/2009/A

Weather:	☐ Sunny	☑ Fine	☐ Cloudy	☐ Rainy
Temperature:	18.5 ^{0}C			
Humidity:	☐ High	☐ Moderate	☑ Low	
Wind:	☐ Strong	☐ Breeze	☑ Light	☐ Calm

PART B: SITE AUDIT

		Not Observed	Yes	No	Follow up	Not Applicable	Photo/ Remarks
Section 1: Water Quality							
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 Observed	Yes	No	Follow up	Not Applicable	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, mash 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 2**
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 Observed	Yes	No	Follow up	Not Applicable	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?	☐	☑	☐	☐	☐	
6.02	Is mosquito control measures adequately implemented?	☐	☑	☐	☐	☐	

Remarks:

Follow up of Last Site Inspection:

1. Housekeeping in Sham Chung working area has been improved.
2. Debris and mud tails in Ha Tsuen Sewage Pumping Station were cleared.

Observations recorded in this Site Inspection: (5-Mar-2013)

 Photo 1: Generator without drip tray was observed in the working area of Hiu Hing Road, the Contractor should provide drip tray underneath.	 Photo 2: Dusty stockpile was observed in Ha Tsuen Sewage Pumping Station, the Contractor should cover it with impervious sheet or remove it off site properly.

RE's representative	***IEC's representative***	***ET's representative***	***Contractor's representative***
( )	( )	(Nicola Hon)	( )

Environmental Site Inspection Checklist

AUES

Project:	**DC/2009/08 Construction of Yuen Long South Branch Sewers and Expansion of Ha Tsuen PS**	**Inspected by**	
		RE's representative:	Mr. K.P. Cheung
Inspection		**IEC's representative:**	Dr. F.C.Tsang
Date:	12 March 2013	**ET's representative:**	Ms. Nicola Hon
Time:	10:00	**Contractor's representative:**	Mr. Scott Tsiu
		Checklist No.	DC200908-12-Mar-2013

PART A: GENERAL INFORMATION **Environmental Permit No.:** EP-327/2009/A

Weather:	☐ Sunny	☑ Fine	☐ Cloudy	☐ Rainy
Temperature:	20.4 ^{0}C			
Humidity:	☑ High	☐ Moderate	☐ Low	
Wind:	☐ Strong	☐ Breeze	☑ Light	☐ Calm

PART B: SITE AUDIT

		Not Observed	Yes	No	Follow up	Not Applicable	Photo/ Remarks
Section 1: Water Quality							
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?	☐	☐	☐	☑	☐	**Photo 1**
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 Observed	Yes	No	Follow up	Not Applicable	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, mash 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 Observed	Yes	No	Follow up	Not Applicable	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?	☐	☐	☐	☑	☐	**Photo 2**
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?	☐	☑	☐	☐	☐	
6.02	Is mosquito control measures adequately implemented?	☐	☑	☐	☐	☐	

Remarks:

Follow up of Last Site Inspection:

1. The generator in the working area of Hui Hing Road has been removed.
2. The sand stockpile in Ha Tsuen Sewage Pumping Station has been removed.

Observations recorded in this Site Inspection: (12-Mar-2013)

Photo 1: The de-silting tank in the working area of Sham Chung should be cleaned regularly in order to maintain the de-silting capability.

Photo 2: The retained trees in Shui Tsui San Tsuen Road were not fenced off properly, the Contractor should provide proper fencing for it and keep it away from work.

RE's representative	***IEC's representative***	***ET's representative***	***Contractor's representative***
( )	( )	(Nicola Hon)	( )

Environmental Site Inspection Checklist

AUES

Project:	**DC/2009/08 Construction of Yuen Long South Branch Sewers and Expansion of Ha Tsuen PS**	**Inspected by**	
		RE's representative:	Mr. K.P. Cheung
Inspection		**IEC's representative:**	-
Date:	19 March 2013	**ET's representative:**	Ms. Nicola Hon
Time:	10:00	**Contractor's representative:**	Mr. Scott Tsiu
		Checklist No.	DC200908-19-Mar-2013

PART A: GENERAL INFORMATION **Environmental Permit No.:** EP-327/2009/A

Weather:	☐ Sunny	☐ Fine	☐ Cloudy	☑ Rainy
Temperature:	24.3 ^{0}C			
Humidity:	☑ High	☐ Moderate	☐ Low	
Wind:	☐ Strong	☐ Breeze	☑ Light	☐ Calm

PART B: SITE AUDIT

		Not Observed	Yes	No	Follow up	Not Applicable	Photo/ Remarks
Section 1: Water Quality							
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?	☐	☐	☐	☑	☐	**Photo 1**
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 Observed	Yes	No	Follow up	Not Applicable	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, mash 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 Observed	Yes	No	Follow up	Not Applicable	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?	☐	☑	☐	☐	☐	
6.02	Is mosquito control measures adequately implemented?	☐	☑	☐	☐	☐	

Remarks:

Follow up of Last Site Inspection:

1. The de-silting tank in the working area of Sham Chung has been cleaned.
2. Tree protection with fencing has been provided for the retained trees in Shui Tsui San Tsuen Road.

Observations recorded in this Site Inspection: (19-Mar-2013)

Photo 1: Muddy water and debris in exiting u-channel was observed in Tai Shu Ha Road, the Contractor should clean the u-channel properly to avoid drainage blocking.

Photo 2: Generator without drip tray was observed in the working area of Hiu Hing Road, the Contractor should provide drip tray underneath.

RE's representative	***IEC's representative***	***ET's representative***	***Contractor's representative***
( )	( )	(Nicola Hon)	( )

Environmental Site Inspection Checklist

AUES

Project:	**DC/2009/08 Construction of Yuen Long South Branch Sewers and Expansion of Ha Tsuen PS**	**Inspected by**	
		RE's representative:	Mr. K.P. Cheung
Inspection		**IEC's representative:**	-
Date:	28 March 2013	**ET's representative:**	Ms. Nicola Hon
Time:	10:00	**Contractor's representative:**	Mr. Scott Tsiu
		Checklist No.	DC200908-28-Mar-2013

PART A: GENERAL INFORMATION **Environmental Permit No.:** EP-327/2009/A

Weather:	☐ Sunny	☐ Fine	☐ Cloudy	☑ Rainy
Temperature:	19.7 ^{0}C			
Humidity:	☑ High	☐ Moderate	☐ Low	
Wind:	☐ Strong	☐ Breeze	☑ Light	☐ Calm

PART B: SITE AUDIT

		Not Observed	Yes	No	Follow up	Not Applicable	Photo/ Remarks
Section 1: Water Quality							
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 Observed	Yes	No	Follow up	Not Applicable	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, mash 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 3**
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?	☐	☐	☐	☑	☐	**Photo 1**
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 Observed	Yes	No	Follow up	Not Applicable	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?	☐	☑	☐	☐	☐	
6.02	Is mosquito control measures adequately implemented?	☐	☑	☐	☐	☐	

Remarks:

Follow up of Last Site Inspection:

1. The debris in exiting u-channel in Tai Shu Ha Road has been cleaned.
2. Drip tray has been provided for the generator in the working area of Hui Hing Road.

Observations recorded in this Site Inspection: (28-Mar-2013)

Photo 1: Mud tails was observed in Shui Tsui Sewage Pumping Station, the Contractor should clean it properly.

Photo 2: Generator without drip tray was observed in the working area of Shum Chung, the Contractor should provide drip tray underneath.

Photo 3: Dusty stockpile was observed in Ha Tsuen Sewage Pumping Station, the Contractor should cover it with impervious sheet or remove it off site properly.

RE's representative	***IEC's representative***	***ET's representative***	***Contractor's representative***
( )	( )	(Nicola Hon)	( )