

DRAINAGE SERVICES DEPARTMENT CONTRACT NO. DC/2011/06

REPROVISIONING OF BOUNDARY PATROL ROAD AND ASSOCIATED SECURITY FACILITIES BETWEEN PING YUEN RIVER AND PAK FU SHAN AND DRAINAGE WORKS IN NORTH DISTRICT

EM&A REPORT FOR DRAINAGE WORKS UNDER EP-277/2007/A (AUGUST 2012)

PREPARED FOR SANG HING CIVIL CONSTRUCTORS CO., LTD.

Quality Index

Date	Reference No.	Prepared By	Approval By
11 Sep 2012	TCS00599/12/600/R0036v1	F. N. Wong Senior Environmental Consultant	T. W. Tam Environmental Team Leader

Version	Date	Description
0	31 Aug 2012	First submission.
1	11 Sep 2012	Amended against IEC's comments

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Ref.: DSDBPRNDEM00_0_0062L.12

14 September 2012

By Post and Fax (2403 1162)

Action-United Environmental Services & Consulting Unit A, 20/F, Gold King Industrial Building, New Territories, Hong Kong

Attention: Mr. TW Tam

Dear Sir,

Re: Contract No. DC/2011/06 Reprovisioning of Boundary Patrol Road and Associated Security Facilities between Ping Yuen River and Pak Fu Shan and Drainage Works in North District EM&A report for Drainage Works under EP-277/2007/A (August 2012)

Reference is made to the Environmental Team's submission of the captioned report (Version 1) dated 11 September 2012 received through E-mail on 11 September 2012 for our review and comment.

Please be informed that we have no adverse comment on the captioned submission. We write to verify the captioned submission in accordance with Condition 3.4 in the captioned Environmental Permit.

Thank you for your kind attention and please do not hesitate to contact the undersigned should you have any queries.

Yours sincerely,

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Roger Leung Independent Environmental Checker

c.c. DSD SHCCCL Mr. W.H. Poon Mr. Raymond W.M. Yau by fax: 2827 8700 by fax: 2403 1162

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EXECUTIVE SUMMARY

BREACHES OF ENVIRONMENTAL QUALITY CRITERIA (A/L LEVELS)

ES04 Monitoring results indicated no exceedances of A/L Levels for air quality and construction noise during the Reporting Period. Neither NOE nor remedial actions were required.

COMPLAINTS LOG

ES05 No environmental complaint was registered in the Reporting Period. The complaint log is presented as follows:

Donorting Month	Environmental Complaint Statistics			
Reporting Month	Frequency	Cumulative	Complaint Nature	
May to July 2012	0	0	NA	
August 2012	0	0	NA	

NOTIFICATIONS OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES06 No notifications of summons and successful prosecutions were registered during the Reporting Period.

REPORTING CHANGES

ES07 No reporting changes were made during the Reporting Period.

FUTURE KEY ISSUES

- ES08 Construction dust, noise and water quality continue to be the key environmental issues for construction of the Works during the coming Reporting Period.
- ES09 As predicted in the EIA Report (Register No. in the EP: AEIAR-108/2007), with full implementation of the recommended environmental protection measures, adverse environmental impacts generated from future construction activities under the Works can be eliminated to acceptable levels.
- ES10 In wet season, full implementation of the required water quality mitigation measures is reminded to eliminate adverse water quality impacts generated from surfaces runoff of haul roads, stock pile of excavated materials, etc.
- ES11 Special attention is drawn to implementation of air quality mitigation measures, in particular construction dust suppression measures during dusty construction activities under dry and windy conditions.
- ES12 In addition, construction noise mitigation measures should also be implemented during noisy construction activities.



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ANNEX L RESPONSE TO COMMENT

1 ENVIRONMENTAL IMPLEMENTATION STATUS

- 1.01 This is the third monthly (August 2012) EM&A report (herein after "this Report") for Drainage Works under EP-277/2007/A for the period from 1 to 31 July 2012 (hereinafter "the Reporting Period").
- 1.02 Location plan for the works under the Contract is shown in *Annex A*, whereas environmental management organization and communication lines, including contacts of key personnel under the Contract are shown in *Annex B*.
- 1.03 Status of environmental licenses and permit is summarized in the following *Table 1-1*.

 Table 1-1
 Status of Environmental Licenses and Permit

Permit Type	Licenses / Permit No.			Concerned Location	Status
	EP-277/2007	09 July 2007		Lin Ma Hang and	EP- 277/2007/A
Environmental Permit	EP-277/2007/A	01 December 2009	N.A	Man Uk Pin, North District	to supersede EP- 277/2007
Notification pursuant to Section 3(1) of the Air Pollution Control Ordinance (APCO) (Construction Dust) Regulation	N.A.	Pending	N.A.	All Locations	The Notification was submitted to EPD on 28 May 2012
Construction Noise Permit Application under Noise Control Ordinance (NCO)	N.A.	N.A.	N.A.	N.A.	N.A.
Account for Disposal of Construction Waste	7015003	07 May 2012	N.A.	All Locations	Valid
Application for Wastewater Discharge License under Water Pollution Control Ordinance (WPCO)	Pending EPD's Approval		Ma Wat Wai & Man Uk Pin	The application form was submitted to EPD on 7 May 2012	
Register as a Chemical WasteProducer under WasteDisposal Ordinance		ng EPD's Approval		All Locations	Pending EPD's Approval

1.04 Construction program of the Works with fine tuning of construction activities showing the interrelationship with environmental protection/mitigation measures is presented in Implementation Schedule for the recommended mitigation measures attached in *Annex C* of this Report whereas updated 3-Month Construction Program of the Works is shown in *Annex D*.

MAJOR CONSTRUCTION ACTIVITIES

THE REPORTING PERIOD

1.05 Major construction activities of the Works undertaken during the Reporting Period are listed in *Table 1-2* below:

Table 1-2Major Construction Activities for the Works during the Reporting Period



Portion E (Man Uk Pin)	a. b.	Concreting of the transition at CH 364.70; Excavation for the construction of gabion wall; and Temporary diversion of existing drain.
	U.	remporary diversion of existing dram.

FORTHCOMING TWO MONTHS

1.06 Major construction activities of the Works for the forthcoming two months are listed in *Table 1-3* below:

Table 1-3 Major Construction Activities for the Works for the Forthcoming Two Months

Portion of the Works	Major Construction Activities
Portion E	 a. Pruning, felling and transporting of existing trees; b. Construction of box culvert transition; c. Construction of box culvert; d. Construction of gabion channel; and e. Construction of vehicular crossing VBM05-1 and VBM05-4.

EM&AACTIVITIES

BASELINE MONITORING AND ENVIRONMENTAL QUALITY CRITERIA

- 1.07 The baseline monitoring for air quality, construction noise and water quality has been carried out since 17 September 2008, whereas that for ecology has been performed since 16 September 2008 in close accordance with the requirements of the EM&A Manual.
- 1.08 It is agreed amongst the Engineer, IEC, Contractor and ET that the established environmental quality criteria i.e. Action/Limit Levels (hereinafter "the A/L Levels") for air quality, construction noise and water quality as shown in *Tables 2-7* and *Tables 2-8* respectively are to be used in the EM&A for air quality, construction noise and water quality under Drainage Works under EP-277/2007/A.

IMPACT MONITORING

1.09 The environmental monitoring schedules for the Works for the Reporting Period and the coming month have been submitted to relevant parties upon agreement with the IEC and ER prior to implementation. They are presented in *Annex E*.

2 SUMMARY OF REQUIREMENTS FOR CONSTRUCTION IMPACT MONITORING

2.01 The requirements for EM&A for Drainage Works under EP-277/2007/A are detailed in *Methodology for Environmental Monitoring and Audit under the Contract* (hereinafter "the Methodology", which has been verified by the IEC on 27 July 2012 and submitted to EPD for approval subsequently. They are summarized as follows.

MONITORING PARAMETERS

2.02 The monitoring parameters required for the Works are summarized in *Table 2-1*.

Environ Asp		Parameters		
Air Quali	ity	 (a) 1-Hour Total Suspended Particulate (hereinafter '1-Hr TSP'); and (b) 24-Hour Total Suspended Particulate (hereinafter '24-Hr TSP'). 		
Construct	tion Noise	 (c) A-weighted equivalent continuous sound pressure level (30min) (hereinafter 'Leq(30min)' during the normal working hours; and (d) A-weighted equivalent continuous sound pressure level (5min) (hereinafter 'Leq(5min)' for construction work during the restricted hours. 		
		(g) The stream conditions monitoring (in-situ measurements of DO, pH and turbidity; laboratory testing of SS);		
Ecology	MUP05	 (h) Riparian vegetation along the banks of channel monitoring; (i) General site audit to ensure the existing natural stream channel is protected; and (j) Reported the sediment condition during the construction phase 		

Table 2-1 Summary of Monitoring Parameters

MONITORING LOCATIONS

DESIGNATED LOCATIONS IN THE EM&A MANUAL

- 2.03 Monitoring locations for EM&A under EP-277/2007/A have been identified in the EM&A Manual. They are shown in *Annex F*. According to the EM&A Manual and agreement among the Engineer, IEC, Contractor and ET, the environmental monitoring stations closest to the construction site are to be adopted for the EM&A under the Contract. As sensitive receiver MUP05-2 is the closest location to the Works site, it will most likely be impacted by the construction under the Works. The sensitive receiver MUP05-1 is therefore adopted as environmental monitoring locations for air quality namely MUP-A1 and construction noise namely MUP-N1.
- 2.04 On the other hand, as there was neither riparian vegetation along the banks of channel nor existing natural stream channel within the site of the Works, no ecology monitoring is required during the construction period of the Works.
- 2.05 *Table 2-2* summarizes all the monitoring locations under the Works.

Table 2-2Monitoring Locations

Issue	Channel	Sensitive Receiver	Monitoring Location ID	Detailed Address
Air	MUP05	MUP05-2	MUP-A1	Village house at Man Uk Pin
Noise	MUP05	MUP05-2	MUP-N1	same as Village house at Man Uk Pin

ADDITIONAL MONITORING LOCATIONS

2.06 In order to monitor the potential construction impacts more effectively, additional environmental monitoring for construction noise and water quality has been recommended by the Engineer and IEC. They are summarized in *Table 2-3* and shown in *Annex F*.

Table 2-3 Summary of Additional Environmental Monitoring Locations

Issue	Channel	Sensitive Receiver	Monitoring Location ID	Monitoring Time
Construction Noise	MUP05	MUP05-2	MUP-Nx (Village house)	Throughout the whole construction period
		-	MUP-Wx1 (Up-Stream Control Station)	Throughout the whole construction period
Water Quality	MUP05	-	MUP-Wx2 (Impact Monitoring Station)	Prior to connection of stream diversion
		-	MUP-Wx3 (Impact Monitoring Station)	After connection of stream diversion

2.07 The additional monitoring is scheduled to be performed in August 2012 upon verification of the Methodology.

MONITORING FREQUENCY

2.08 The impact monitoring should be conducted during the construction period to ensure the environmental conditions comply with the environmental quality criteria i.e. A/L Levels. The impact monitoring frequency as stipulated in the EM&A Manual is summarized below.

AIR QUALITY

<u>Parameters</u>: 24-Hour TSP and 1-Hour TSP. <u>Frequency</u>: Once every 6 days for 24-Hour TSP & three times every 6 days for 1-Hour TSP. <u>Duration</u>: During the course of construction works

CONSTRUCTION NOISE

Parameters:Leq(30 min) in six consecutive Leq(5 min) measurements..Frequency:Once a week during 0700-1900 on normal weekdays:Duration:During the course of construction works

WATER QUALITY

- <u>Parameters</u>: Duplicate in-situ measurements of water depth, temperature, DO, pH & turbidity; and laboratory testing of SS. Relevant data will also be measured time of sampling, DO Saturation, weather conditions and special phenomena.
- **Depths:** All measurements will be carried out at three water depths, namely, 1 m below water surface, mid-water depth, and 1 m above river bed. If the water depth is less than 6 m, the mid-depth measurement will be omitted. If the depth is less than 3 m, only the mid-depth measurement will be taken.
- <u>Frequency</u>: 3 times a week with an interval of at least 36 hours between two consecutive sampling days
- **Duration**: During the construction period of the channel works



MONITORING EQUIPMENT

2.09 The monitoring equipment for air quality, construction noise, stream water quality and ecology are summarized below.

AIR QUALITY

2.10 Air quality monitoring equipment is listed in the following *Table 2-4*.

Table 2-4Air Quality Monitoring Equipment

Equipment	Model		
24-Hour TSP			
High Volume Air Sampler (herein after 'HVS')	Grasby Anderson GMWS 2310 HVS		
Calibration Kit	TISCH Model TE-5025A		
1-Hour TSP			
Portable Dust Meter	TSI DustTrak Model 8520		

CONSTRUCTION NOISE

2.11 Construction noise monitoring equipment is listed in *Table 2-5*.

Table 2-5 Construction Noise Monitoring Equipment

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

WATER QUALITY

2.12 Monitoring equipment for water quality is listed in *Table 2-6*.

Table 2-6Water Quality Monitoring Equipment

Equipment	Model / Description				
In-situ Measurement					
Water Depth Detector	Eagle Sonar or steel ruler				
Water Sampler	Teflon bailer / bucket				
Thermometer & DO meter	YSI Multimeter				
pH meter	Extech pH EC 500				
Turbidimeter	Hach 2100p				
Sample Container and Storage	High density polythene bottles (provided by laboratory) and 'Willow' 33-liter plastic cool box				
Laboratory Analysis					
Suspended Solids	HOKLAS accredited Laboratory				

EQUIPMENT CALIBRATION

2.13 The calibrations certificate of all monitoring equipment are used during the impact monitoring program are attached in *Annex G* and the calibration requirement are described in below:

AIR QUALITY

2.14 The calibration of the HVS is performed at a bimonthly interval in accordance with the manufacturer's instruction using the NIST-certified standard calibrator (Tisch Calibration Kit Model No.TE-5025A). The calibration data are properly documented and the associated records are maintained by the ET for future reference.

2.15 The 1-Hour TSP meter is calibrated at a year intervals in accordance with the in-house method. Zero response of the equipment is checked before and after each monitoring event.

NOISE

2.16 The sound level meters are calibrated using an acoustic calibrator prior to and after spot checking measurements. The meters are calibrated annually by HOKLAS accredited laboratory. Prior to and following each noise measurement, the accuracy of the sound level meter is checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements are considered valid only if the calibration levels before and after the noise measurement agree to within 1.0 dB.

WATER QUALITY

2.17 Once every three months, the in-situ monitoring instruments are calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme.

MONITORING PROCEDURE

2.18 The monitoring methodology and procedure during the impact monitoring are presented as below:

AIR QUALITY

1-Hour TSP

- 2.19 Operation of the 1-Hour TSP meter is follow manufacturer's Operation and Service Manual. The 1-Hour TSP monitor, a TSI Dust Track Aerosol Monitor Model 8520, or Sibata LD-3 Laser Dust Meter is a portable, battery-operated laser photometer. The 1-Hour TSP meter provides a real time 1-Hour TSP measurement based on 90⁰ 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 to isolate 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.
- 2.20 The 1-Hour TSP meter using was within the valid period, calibrated by the manufacturer prior to purchasing. Zero response of the instrument was checked before and after each monitoring event.

24 -hour TSP

- 2.21 The equipment used for 24-Hour TSP measurement is the HVS brand named Thermo Andersen, Model GS2310 TSP high volume air sampling system, which complied with EPA Code of Federal Regulation, Annex B to Part 50. The 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 6-day mechanical timer, and
 - (g) A power supply of 220v/50 Hz
- 2.22 The HVS is calibrated prior the impact monitoring to following the manufacturer's instruction using the NIST-certified standard calibrator brand named Tisch Calibration Kit Model TE-5028A. Regular HVS operation and maintenance as well as filter paper installation and collection was performed by the ET's competent technicians, whereas laboratory analyses were conducted in a local HOKLAS accredited laboratory, ALS Technichem (HK) Pty Ltd (hereinafter 'ALS'). The analyzed 24-Hour TSP filters were kept in ALS for six months prior to disposal.

METEOROLOGICAL INFORMATION

- 2.23 All relevant data including temperature, pressure, weather conditions, elapsed-time meter reading for the start and stop of the sampler, identification and weight of the filter paper is recorded in detail.
- 2.24 Meteorological information is sourced from the Hong Kong Observatory (Ta Kwu Ling Station). The data included wind direction, wind speed, humidity, rainfall, air pressure and temperature etc that in general is required for evaluating the air quality for air quality monitoring.

CONSTRUCTION NOISE

- 2.25 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 BE issued under the Noise Control Ordinance (NCO).
- 2.26 All noise measurements are performed with the meter set to FAST response and on the A-weighted equivalent continuous sound pressure level (Leq). Leq(30min) measurements are used as the monitoring parameter for the time period throughout the construction phase.
- 2.27 The sound level meter is set higher than 1.2m above the existing ground. The microphone is pointed to the site with the microphone facing perpendicular to the line of sight. The windshield is fitted for all measurements. As the measurement point at impact locations is set close to the exterior of the building, i.e. no free field noise measurement is performed, free field correction will not be made for monitoring results.
- 2.28 Immediately prior to and following each noise measurement the accuracy of the sound level meter is checked using an acoustic calibrator generating a known sound pressure level at a known frequency (94 dBA). Measurements are accepted as valid due to the calibration levels from before and after the noise measurement agree to within 1.0 dB.

WATER QUALITY

2.29 Water quality monitoring is conducted at the middle of the water columns (Mid-Depth) due to water columns at all sampling locations are less than 3.0 meters during monitoring.

Water Depth

2.30 Water depths are determined prior to measurement and sampling. A steel ruler with a suitable weight was dropped to the bottom of the water column to measure the water depth which is actually well below 1 meter.

Dissolved Oxygen (DO)

- 2.31 A portable Extech Instrument, ExStikR DO600 DO Meter is used for in-situ DO measurement. The DO meter is capable of measuring DO in the range of 0 20 mg/L and 0 200 % saturation and checked against water saturated ambient air on each monitoring day prior to monitoring.
- 2.32 Although the DO Meter automatically compensates ambient water temperature to a standard temperature of 20° C for ease of comparison of the data under the changing reality, the temperature readings of the DO Meter is recorded.

pН

2.33 A portable Extech Instrument, ExStikTM Models pH EC 500 or a Hanna HI98107 pH Meter is used for in-situ pH measurement. The pH meter is capable of measuring pH in the range of 0 - 14 and readable to 0.1. Standard buffer solutions of pH 7 and pH 10 are used for calibration of the instrument before and after measurement.

Turbidity

2.34 A portable Hach 2100p turbidity Meter is used for in-situ turbidity measurement. The turbidity meter is



capable of measuring turbidity in the range of 0 - 1000 NTU.

Suspended Solids (SS)

2.35 SS is determined by ALS using HOKLAS accredited analytical methods namely ALS Method EA-025. The *Limit of Reporting* (hereinafter "LOR") is 2 mg/L.

Water Sampler

2.36 Water samples are collected by the ET using a plastic sampler to avoid metal contamination. Due to water depth for both sampling locations are lesser than 0.5 m, a cleaned plastic beaker is used for sample collection. The sampler is rinsed before collection with the sample to be taken. 1,000mL water sample is collected from depth for laboratory analyses.

Sample Container

2.37 Water samples are contained in screw-cap PE (Poly-Ethylene) bottles as provided by ALS. The PE bottles are pretreated by laboratory in accordance with the corresponding analytical requirements of HOKLAS. Where appropriate, the sampling bottles are rinsed with the water to be contained. Water sample is transferred from the sampler to the sample bottles to 95% bottle capacity to allow possible volume expansion during delivery and storage.

Sample Storage and delivery

2.38 A 'Willow' 33-liter plastic cool box packed with ice is used to preserve the collected water samples prior to arrival at the laboratory. The temperature of the cool box is maintained as close to 4^oC as possible without being frozen. Samples are delivered to the laboratory end of sampling day or following day within the maximum storage time requirement.

Chemical Analysis

2.39 ALS Technichem (HK) Pty Ltd (HOKLAS No. 66) is appointed by ET to provide analytical services for this project. The analysis of suspended solids is carried out to follow the APHA Standard Methods for the Examination of Water and Wastewater 19ed 2540D. The sample preparation and analysis under the QA/QC control is follow the HOKLAS QA/QC requirements and undertaken by the laboratory.

ENVIRONMENTAL QUALITY PERFORMANCE LIMITS

2.40 Baseline monitoring for air quality and construction noise was carried out during 17 September to 13 October 2008 in close accordance with the requirements stipulated in the EM&A Manual. The A/L Levels of MUP-A1 and MUP-N1 will be adopted for EM&A for air quality and construction noise respectively. They are summarized in *Table 2-7, Table 2-8 and Table 2-9* respectively.

Table 2-7Action and Limit Levels for Air Quality

Monitoring Station	Action Lev	vel ($\mu g / m^3$)	Limit Level (µg/m ³)		
Womtoring Station	1-Hour TSP	24-Hour TSP	1-Hour TSP	24-Hour TSP	
MUP-A1	307	156	500	260	

Table 2-8Action and Limit Levels for Construction Noise (dB(A))

Time Period	Action Level	Limit Level
0700-1900 hours on normal weekdays	When one documented complaint is received	75* dB(A)

* Reduces to 70 dB(A) for schools and 65 dB(A) during the school examination periods.

2.41 Environmental quality criteria for additional water quality monitoring are proposed in *Table 2-9* as follows:



Table 2-9 Action and Limit Levels for Additional Water Quality Monitoring

Action Level	Limit Level
120% of the corresponding Levels of	130% of the corresponding Levels of
Up-Stream Control Station	Up-Stream Control Station

VENT AND ACTION PLANS

2.42 Event Action Plan for air quality, construction noise and water quality as stipulated in *Annex H* will be triggered in cases of exceedances of A/L Levels.

ENVIRONMENTAL MITIGATION MEASURES

2.43 Environmental mitigation measures to minimize potential environmental impacts arising from the construction of the Contract have been recommended and summarized in *Annex C* of the previous *First Monthly EM&A Report for Drainage Works under EP-277/2007/A*. Those related to the construction activities for the up-coming construction period are summarized in *Table 7-2 Environmental Mitigation Measures for the Coming Month* in *Section 7* of this Report.

DATA MANAGEMENT AND DATA QUALITY CONTROL

- 2.44 The impact monitoring data is handled by the ET's systematic data recording and management, which complies with an in-house certified (ISO 9001:2000) Quality Management System. Standard Field Data Sheets (FDS) are used in the EM&A program.
- 2.45 The monitoring data recorded in the equipment e.g. 1-Hour TSP meters and noise meters are downloaded directly 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 are input directly into the computerized database and QA/QC checked by personnel other than those who input the data.
- 2.46 For monitoring activities which require laboratory analysis, the responsible laboratory, ALS, follows the QA/QC requirements as set out under their HOKLAS scheme for all laboratory testing.

3 ENVIRONMENTAL MONITORING RESULTS

AIR QUALITY

3.01 As agreed among the Engineer, IEC, Contractor and ET, the construction noise monitoring is performed at MUP-A1 of Channel MUP05.

MONITORING RESULTS

3.02 The air quality monitoring results of 24-Hour and 1-Hour TSP during the Reporting Period are summarized in *Tables 3-1* and *Table 3-2*. Detailed 24-Hour TSP monitoring data and the graphic plots of both 24-Hour and 1-Hour TSP are shown in *Annex I*.

Date	Start Time	Start Time 1-Hour TSP Monitoring Results at MUP-A1 (MUP05), µg/m ³					
	~	1 st	2 nd	3 rd	Mean		
6-Aug-12	11:10	60	52	56	56		
11-Aug-12	10:00	167	182	182	177		
17-Aug-12	10:15	22	20	23	22		
23-Aug-12	10:40	198	195	201	198		
29-Aug-12	10:00	161	156	144	154		
Average (Range)	121 (20-201)						
A/L Levels	307 / 500						

 Table 3-1
 Air Quality (1-Hour TSP) Monitoring Results at MUP-A1 (MUP05)

Date	24-Hour TSP Monitoring Results at MUP-A1 (MUP05), μ g/m ³
4-Aug-12	78
10-Aug-12	102
16-Aug-12	25
22-Aug-12	65
28-Aug-12	31
Average (Range)	60
A/L Levels	25 / 60

DISCUSSION

- 3.03 As shown in *Table 3-1* and *Table 3-2*, no exceedances of A/L Levels were recorded for 1-Hour TSP and 24-Hour TSP during the Reporting Period.
- 3.04 Neither Notice of Exceedance (hereinafter "NOE") nor the associated remedial actions were required during the Reporting Period.

RECOMMENDATION

3.05 Nevertheless, the required environmental protection measures is reminded to be fully implemented and maintained as appropriate, in particular construction dust suppression measures during dusty construction activities under dry and windy conditions.

CONSTRUCTION NOISE

- 3.06 As agreed among the Engineer, IEC, Contractor and ET, the construction noise monitoring is performed at MUP-N1 of Channel MUP05 as recommended in the EM&A Maunal.
- 3.07 Additional construction noise monitoring has been commenced since August 2012 at MUP-Nx upon verification of the Methodology by the IEC on 27 July 1012.

MONITORING RESULTS

3.08 Construction noise monitoring results are summarized in *Table 3-3* and *Table 3-4* below and graphic plots of the monitoring results are shown in *Annex I*.

Table 3-3

Construction Noise Monitoring Results at MUP-N1 (MUP05)

Date	Start Time	1 st Leq5	2 nd Leq5	3 rd Leq5	4 th Leq5	5 th Leq5	6 th Leq5	Leq30 (dB(A))
6-Aug-12	11:17	64.5	60.1	62.3	61.3	59.4	63.9	62
11-Aug-12	11:22	64.8	65.9	66.4	64.6	69.0	66.8	67
17-Aug-12	10:24	59.0	59.3	60.2	60.8	60.6	62.4	61
23-Aug-12	11:21	60.1	62.9	61.5	64.5	61.4	61.6	62
29-Aug-12	13:44	72.8	71.2	73.6	71.6	70.8	68.0	72
Average (F	Average (Range) 65 (60-72)							

 Table 3-4
 Construction Noise Monitoring Results at MUP-Nx (MUP05)

Date	Start Time	1 st Leq5	2 nd Leq5	3 rd Leq5	4 th Leq5	5 th Leq5	6 th Leq5	Leq30	Corrected Leq30 (dB(A))
4-Aug-12	10:30	63.7	56.8	56.4	57.1	55.3	56.8	59	62
11-Aug-12	10:00	61.3	57.9	59.3	52.6	54.6	50.9	58	61
17-Aug-12	10:30	69.0	59.9	55.1	57.7	56.8	53.7	62	65
23-Aug-12	10:50	69.5	57.9	57.7	56.8	56.1	57	63	66
29-Aug-12	13:35	62.7	64.3	63.5	64	64.4	62	64	67
Average (F	Average (Range) 64 (61-67)								

DISCUSSION

- 3.09 No environmental complaints against construction noise were registered, indicating no Action Level exceedances were documented during the Reporting Period. In addition, as shown in *Table 4-3*, no exceedances of construction noise Limit Level of 75 dB(A) were recorded.
- 3.10 Neither NOE nor the associated remedial actions were required during the Reporting Period for construction noise.

RECOMMENDATION

3.11 Attention is drawn to construction noise mitigation measures during noisy construction activities.



WATER QUALITY

- 3.12 The EM&A Manual recommends no water quality monitoring for construction of the Works.
- 3.13 However, additional water quality monitoring at MUP-Wx1 (Up-Stream Control Station) and MUP-Wx2 (Impact Monitoring Station) is recommended by the Engineer and IEC to commence from August 2012 upon verification of the Methodology by the IEC on 27 July 2012.

MONITORING RESULTS

3.14 Water quality monitoring results are summarized in *Table 3-5* and *Table 3-6* below and graphic plots of the monitoring results are shown in *Annex I*.

r				,				
Date	MUP-Wx1							
	DO, mg/L	Turbidity, NTU	pH, pH Value	SS, mg/L				
1-Aug-12	3.8	4	7.65	7				
4-Aug-12	4.6	30	7.85	11				
6-Aug-12	4.2	12	7.90	19				
8-Aug-12	4.4	9	7.60	19				
11-Aug-12	4.4	25	7.65	20				
13-Aug-12	4.4	26	7.35	23				
15-Aug-12	5.1	5	7.60	10				
17-Aug-12	4.7	5	7.65	9				
20-Aug-12	5.0	16	8.00	18				
23-Aug-12	5.2	18	7.85	12				
25-Aug-12	4.8	36	8.15	40				
27-Aug-12	4.9	45	8.00	43				
29-Aug-12	5.5	10	8.50	56				

 Table 3-5
 Water Quality Monitoring Results at MUP-Wx1 (Up-Stream Control Station)

Table 3-6 Water Quality Monitoring Results at MUP-Wx2 (Impact Monitorin

Date	MUP-Wx2							
	DO, mg/L	Turbidity, NTU	pH, pH Value	SS, mg/L				
1-Aug-12	3.8	3	7.80	8				
4-Aug-12	4.7	8	8.00	13				
6-Aug-12	4.3	8	7.80	17				
8-Aug-12	4.3	8	7.65	11				
11-Aug-12	4.3	8	7.45	19				
13-Aug-12	4.5	9	7.25	21				
15-Aug-12	4.9	5	7.40	2				
17-Aug-12	4.7	4	7.65	2				
20-Aug-12	4.9	6	7.85	8				
23-Aug-12	5.3	7	7.80	9				
25-Aug-12	4.8	26	8.55	19				
27-Aug-12	5.0	8	7.90	7				
29-Aug-12	5.4	8	8.25	9				

DISCUSSION

3.15 Nether exceedances of 120% (Action Level) nor 130% (Limit Level) of the corresponding Up-Stream Control levels were documented during the Reporting Period. Therefore, neither NOE nor the associated remedial actions were required during the Reporting Period for construction noise.

RECOMMENDATION

3.16 Attention is drawn to water quality mitigation measures during wet season to alleviate adverse water quality impacts on the nearby receiving water body.



METEOROLOGICAL DATA

3.17 Meteorological information downloaded from the Hong Kong Observatory Ta Kwu Ling Weather Station was summarized in *Annex J* and used in the EM&A of the Works.

CONCLUSION

- 3.18 As agreed among the Engineer, IEC, Contractor and ET, the air quality and construction noise monitoring is performed at the sensitive receiver closest to the Works site, i.e. MUP-A1 and MUP-N1 of Channels MUP05 respectively.
- 3.19 Additional water quality monitoring recommended by the Engineer and IEC has been commenced since August 2012 at MUP-Wx1 and MUP-Wx2 upon verification of the Methodology by the IEC on 27 July 2012.
- 3.20 Monitoring results indicated neither NOE nor the associated remedial actions were required for air quality, construction noise and water quality during the Reporting Period.
- 3.21 Nevertheless, the required environmental protection measures are reminded to be fully implemented and maintained as appropriate, in particular construction dust suppression measures during dusty construction activities under dry and windy conditions and water quality protection measures during wet season.

4 WASTE MANAGEMENT

- 4.01 Waste management is routinely carried out by the on-site Environmental Officer or Environmental Supervisor.
- 4.02 The quantity of waste for disposal or reuse is summarized in *Monthly Summary of Waste Flow Table and Disposal Records of Construction Waste* in *Annex K*.
- 4.03 To ensure satisfactory performance of the waste management, the Contractor is reminded to comply with all relevant regulatory requirements, including those stipulated in the effluent discharge licenses and chemical waste producer registration, as well as the EM&A Manual, etc.
- 4.04 Where possible, construction materials should be reused on-site as far as practicable to reduce the construction waste, which should then be sorted or classified on site for proper recycling and disposal as recommended in the Environmental Management Plan and the associated Waste Management Plan.

5 ENVIRONMENTAL SITE INSPECTION

- 5.01 According to the EM&A Manual, the environmental site inspection should be formulated by the ET Leader and regularly conducted jointly by the representatives of the ET, Contractor and ER. During the Reporting Period, a total of four (4) occasions of the site inspection were conducted on 5, 12, 19 & 26 July 2012.
- 5.02 No non-compliance with the relevant regulatory requirements was identified. Observations of the regular site inspection and environmental audit during the Reporting Period are summarized in *Table 5-1*.

Date	Findings / Deficiencies	Follow-Up Status				
2 August 2012	Groundwater was observed flowing in the channel at MUP05. The groundwater was clear and soaked away within the site. However, water quality mitigation measures are reminded to be fully implemented to prevent ingress of the turbidity into the receiving water body.	Not required for general reminders				
9 August 2012	Dusty surface beside the sand bags to prevent direct discharge of the wastewater to the stream was observed. Regular clearance of the place and proper maintenance of the sand bags is required.	tewater to the stream was observed. Not required for general reminders				
16 August 2012	No adverse environmental impacts were observed. However, full Implementation of the required n environmental mitigation measures is reminded.	Not required for general reminders				
23 August 2012	Neither construction activities nor adverse environmental impacts were observed during the site inspection and environmental audit. However, full Implementation of the required n environmental mitigation measures is reminded.	Not required for general reminders				
30 August 2012	 Excavation was observed at MUP05. Manual wheel washing was observed for dump trucks prior to exit the site. No soil trails were observed on the joining public road. Maintenance of the wheel washing practice is reminded during transportation of construction waste. Rain water was observed ponding within the excavated site at MUP05. Proper desilting is reminded prior to discharge the ponding water to the receiving water body. Stock piles of C&D materials were observed within the site at MUP05. Regular clearing or covering with tarpaulin sheeting the dusty stock piles is reminded to 	To be followed up on the next site inspection.				

Table 5-1 Observations of Site Inspection during the Reporting Period	Table 5-1	Observations of Site	Inspection during	the Reporting Period
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5.03 Site inspection checklists completed and endorsed by all related parties on the date of site inspection have been kept by the ET and are available for inspection upon request.

6 ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION

6.01 No environmental complaint was received during the Reporting Period. Summary of environmental complaint is presented in *Table 6-1* below.

Table 6-1Summary of Environmental Complaints

Bononting Month	Environmental Complaint Statistics							
Reporting Month	Frequency	Cumulative	Complaint Nature					
May to July 2012	0	<mark>0</mark>	NA					
August 2102	0	0	NA					

6.02 No summons and prosecution was received during the Reporting Period. Summary of summon and prosecution is presented in *Table 6-2* and *Table 6-3* below.

Table 6-2Summary of Environmental Summons

Bonorting Month	Environmental Summons Statistics							
Reporting Month	Frequency	Cumulative	Nature					
May to July 2012	<mark>0</mark>	0	NA					
August 2102	<mark>0</mark>	0	NA					

Table 6-3 Summary of Environmental Prosecution

Bonorting Month	Environmental Prosecution Statistics							
Reporting Month	Frequency	Cumulative	Nature					
May to July 2012	0	<mark>0</mark>	NA					
August 2102	0	<mark>0</mark>	NA					

7 IMPACT FORECAST

KEY ENVIRONMENTAL ISSUES

7.01 Key environmental issues to be considered in the up-coming month are summarized in *Table 7-1* below:

Table 7-1	Key Environmental Issues	for the Up-Coming Month
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Item	Environmental Issue	Description
(a)	Air Quality	Despite approaching of Hong Kong wet season, construction activities under the Contract may have the potential of generating adverse construction dust impacts during dusty construction activities under dry and windy conditions.
(b)	Water Quality	As the Hong Kong wet season has approached, surface runoff during heavy storm/rain may pollute the surrounding water bodies with suspended solids or turbidity, and concrete washing may change the alkalinity or acidity or pH value of the water bodies;
(c)	Chemical Waste	There exists the potential of adverse water quality and soil contamination impacts via chemicals used or chemical waste generated during construction of the Contract, e.g., organic solvents, cleaning solutions, waste batteries, oil & grease spillage or leakage from construction equipment and the associated oil containers within site areas;
(d)	Construction Noise	Construction noise impacts may be caused from noisy construction activities;

ENVIRONMENTAL MITIGATION MEASURES FOR THE COMING MONTH

7.02 Environmental mitigation measures for construction of the Contract have been compiled in *Annex C*. Attention is drawn to implementation of the environmental mitigation measures for construction activities in the up-coming month as summarized in *Table 7-2* below:

 Table 7-2
 Environmental Mitigation Measures for the Up-Coming Month

Item	Environmental Issue	Description
(a)	Air Quality	Dust suppression measures, in particular proper watering during dusty construction activities under dry and dusty conditions, should be fully implemented;
(b)	Water Quality	Sedimentation or silt removal facilities of adequate capacity should be used, for proper treatment of any site effluent generated from stockpiles of construction materials/waste or dusty haul roads or excavated surfaces within the site during storm rain, prior to discharge to nearby water bodies in order to remove suspended solids or turbidity;
(c)	Chemical Waste	Proper handling and storage of chemical wastes should be maintained;
(d)	Construction Noise	Implementation of the construction noise mitigation measures during noisy construction works
(e)	Other	Follow-up actions for any defects identified during regular site inspection should be promptly taken to rectify the situation.



8 CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

- 8.01 The environmental monitoring during the Reporting Period was conducted at MUP-A1 for air quality and at MUP- N1 for construction noise.
- 8.02 Additional construction water quality monitoring recommended by the Engineer and IEC has been commenced since August 2012 at MUP-Wx1 (Up-Stream Control) and MUP-Wx2 (Impact Monitoring Station) upon verification of the Methodology by the IEC on 27 July 2012.
- 8.03 Monitoring results indicated that no exceedances of A/L Levels for air quality, construction noise and water quality during the Reporting Period. Neither NOE nor remedial actions were therefore required during the Reporting Period.
- 8.04 No environmental complaint, notification of summons or successful prosecution was registered during the Reporting Period.
- 8.05 No non-compliance with regulatory requirements was identified during the site inspection and environmental audit of the Reporting Period, including the regular joint site inspection by the ER, IEC, ET and Contractor. Defects of minor environmental significance sometimes observed during the site inspection were normally rectified on site or within the specified time prior to the next site inspection.

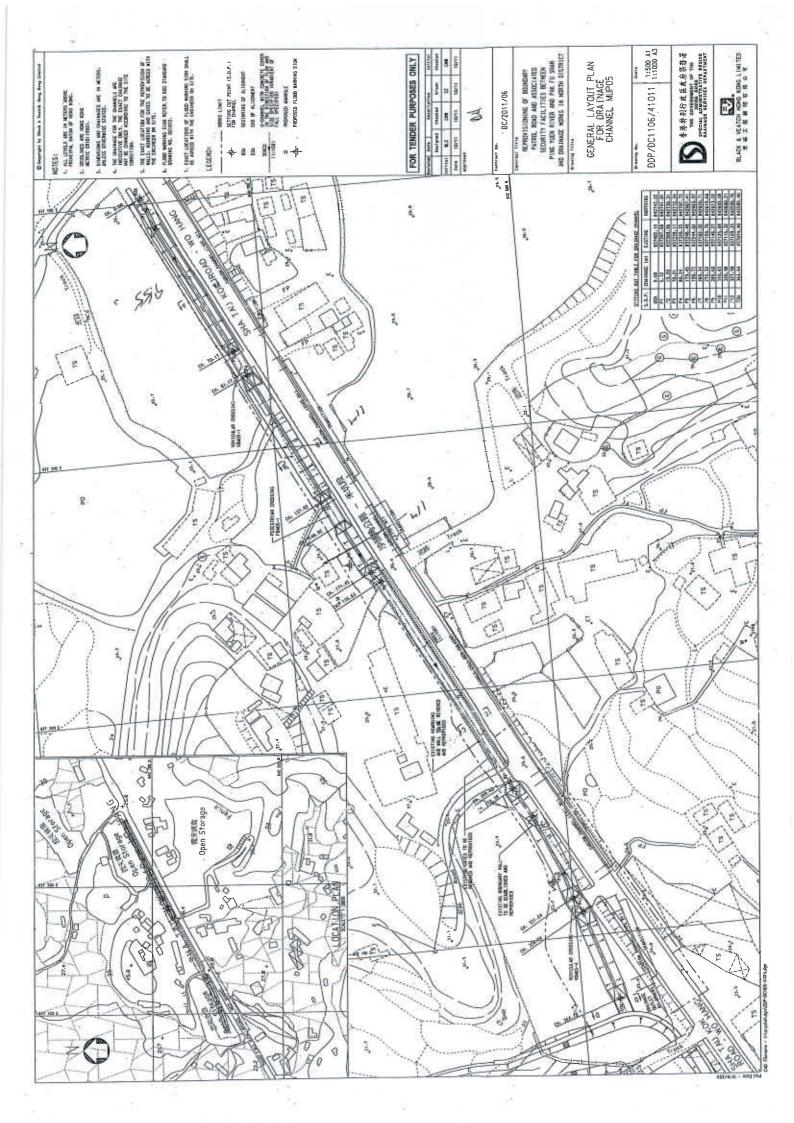
RECOMMENDATIONS

- 8.06 The Contractor is reminded to fully comply with all relevant regulatory environmental requirements, including environmental mitigation measures stipulated in the EM&A Manual.
- 8.07 Despite the approach of wet season, attention is drawn to full implementation of air quality mitigation measures, in particular the construction dust suppression measures during dusty construction activities under dry and windy conditions.
- 8.08 On the other hand, during rainy conditions, full implementation of the required water quality mitigation measures is reminded to eliminate adverse water quality impacts generated from surfaces of haul roads, stock pile of excavated materials, etc.
- 8.09 In addition, attention is drawn to implementation of the construction noise mitigation measures during noisy construction works.



ANNEX A

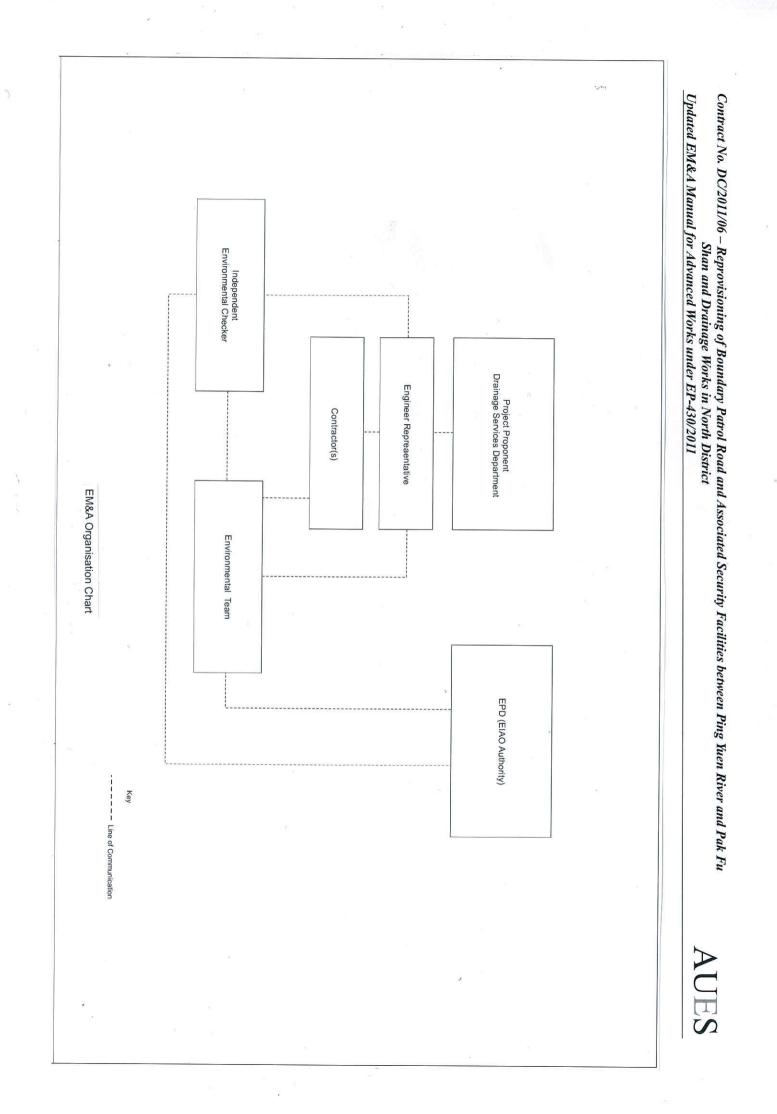
LOCATION PLAN FOR THE WORKS UNDER EP-277/2007/A





ANNEX B

ENVIRONMENTAL MANAGEMENT ORGANIZATION AND COMMUNICATION LINES



Contact Details of Key Personnel

Organization	Project Role	Name of Key Staff	Tel No.	Fax No.
DSD	Project Proponent / Engineer	Mr. WH POON	2594 7450	2827 8700
Environ	Independent Environmental Checker	Mr. Roger W.K. Leung	3743 0754	3548 6988
SHCC	Project Manager	Mr. Raymond Yau	2403 1165	2640 9286
SHCC	Site Agent	Mr. Elvin Lam	2640 9230	2640 9286
SHCC	Environmental Officer	Mr. Keith Li	2640 9230	2640 9286
AUES	Environmental Team Leader	Mr. T.W. Tam	2959-6059	2959-6079
AUES	Environmental Consultant	Mr. Wong Fu Nam	2959-6059	2959-6079
AUES	Environmental Team Supervisor	Mr. Ben Tam	2959-6059	2959-6079

Legends:

DSD	(Project Proponent / Engineer) – Drainage Services Department
SHCC	(Main Contractor) –Sang Hing Civil Constructors Co., Ltd
Environ	(IEC) – Environ Hong Kong Limited
AUES	(ET) – Action-United Environmental Services & Consulting



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ANNEX C

IMPLEMENTATION SCHEDULE

FOR ENVIRONMENTAL MITIGATION MEASURES

(REFER TO ANNEX C OF THE First Monthly EM&A Report for Drainage Works under EP-277/2007/A)



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ANNEX D

3-MONTH ROLLING CONSTRUCTION PROGRAM

	ID Ta	ek Nama	Duration	Start	Einieh	11 August		21 Nevember	
					• • • • • • • • • • • • • • • • • • •	29/7 16/9	4/11	23/12	10/2
								A 27/12	
	1226	11KV cable CH_R 2+838 to 4+271	138 days	14/9/2013	4/3/2014				
	220	Pillar box for security lighting	30 days	2/8/2013	5/9/2013				
	231		Jouays						
	32	LV Switchroom for security lighting PL03 at CH R 4+090	21 days	8/3/2014	1/4/2014				
	233								
	34	Security Lighting pole SL115 - 170	96 days	14/5/2013	5/9/2013				
	40	FOM	21.2	0/5/0012	1/9/2012				
	941 944	E & M	21 days	9/7/2013	1/8/2013				
		Gate	69 dave	14/5/2013	5/8/2013				
	46								
	56	n reachthan Gau	45 uays	15/5/2013	5/0/2013				
	57	2. Vehicle Pedestrian Gate	36 days	14/5/2013	26/6/2013				
	61								
	62	3. Vehicular Gate	10 days	21/6/2013	3/7/2013				
	65 66	Controlution Instrumentation	256 days	20/4/2012	8/2/2014				
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	274								
	78 83								
		Traffic sign & frontier closed area warning sign	26 dave	4/11/2012	3/12/2013				
	85	rrane sign & frontier closed area warming sign	20 uays	4/11/2013	3/12/2013				
	36	Road marking	4 days	4/11/2013	7/11/2013				
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No. DC/2011/06 Task Image: Milestore Milestor		Possession of Site							
Programmer MP22 Splt			250 days	2/4/2012	2/2/2013		· · · · · · · · · · · · · · · · · · ·		
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	ar Pro: 27-0	ogramme: MP02 7-2012 Split Summa							
	_	I				Page 3			

45 day	s 14/4/2012	7/6/2012		29/7			16/9						
	s 14/4/2012	7/6/2012					16/9		4/11	23/12		10/2	
		//0/2012		1									
150 day	s 10/5/2012												
21 day	s 3/10/2012	27/10/2012											
45 day	s 8/6/2012	1/8/2012											
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179 day	s 8/6/2012												
206 day	s 16/7/2012	22/3/2013											
196 day	s 27/7/2012	22/3/2013											
156 day	s 6/9/2012	16/3/2013											
74 day	s 20/8/2012	16/11/2012						Q					
52 day	s 22/10/2012	21/12/2012											
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oriv	45 day ate lots 30 day 179 day 206 day 196 day 156 day 74 day 52 day	45 days 8/6/2012 ate lots 30 days 2/8/2012 179 days 8/6/2012 206 days 16/7/2012 196 days 2/7/2012 196 days 2/7/2012 156 days 6/9/2012 74 days 2/0/8/2012 52 days 22/10/2012 52 days 2/2/10/2012	45 days 8/6/2012 1/8/2012 179 days 2/8/2012 5/9/2012 179 days 2/8/2012 5/9/2012 170 days 8/6/2012 11/1/2013 206 days 16/7/2012 22/3/2013 156 days 6/9/2012 16/3/2013 74 days 20/8/2012 16/3/2013 52 days 22/10/2012 21/12/2012	45 days 8/6/2012 1/8/2012 179 days 8/6/2012 5/9/2012 179 days 8/6/2012 1/1/1/2013 206 days 16/7/2012 22/3/2013 196 days 16/7/2012 22/3/2013 156 days 6/9/2012 16/3/2013 74 days 20/8/2012 16/1/2012 52 days 20/8/2012 16/1/2012	45 days 8/6/2012 1/8/2012 179 days 2/8/2012 5/9/2012 179 days 8/6/2012 11/1/2013 206 days 16/7/2012 22/3/2013 196 days 6/9/2012 11/1/2013 196 days 6/9/2012 11/1/2013 156 days 6/9/2012 16/3/2013 74 days 20/8/2012 16/1/2012 52 days 22/10/2012 1/1/2/2012	45 days 88/6/2012 1/8/2012 ate lots 30 days 2/8/2012 5/9/2012 179 days 88/6/2012 11/1/2013	45 days 8/6/2012 1/8/2012 ate lots 30 days 2/8/2012 5/9/2012 179 days 8/6/2012 11/1/2013 206 days 16/7/2012 22/3/2013 196 days 6/9/2012 16/3/2013 156 days 6/9/2012 16/3/2013 74 days 20/8/2012 16/11/2012 52 days 22/10/2012 21/12/2012	45 days 88/6/2012 1/8/2012 ate lots 30 days 28/6/2012 5/9/2012 179 days 88/6/2012 11/1/2013	45 days 88/6/2012 1/8/2012 ate lots 30 days 28/6/2012 5/9/2012 179 days 88/6/2012 11/1/2013	45 days 86/2012 1/8/2012 ate lots 30 days 2/8/2012 5/9/2012 179 days 8/6/2012 11/1/2013	45 days 86/2012 1/8/2012 ate lots 30 days 2/8/2012 5/9/2012 179 days 8/6/2012 11/1/2013 206 days 16/7/2012 22/3/2013 196 days 6/9/2012 16/3/2013 156 days 6/9/2012 16/3/2013 74 days 20/8/2012 16/1/2012 52 days 2/10/2012 16/1/2012	45 days 86/2012 1/8/2012 ate lots 30 days 2/8/2012 5/9/2012 179 days 8.6/2012 11/1/2013 206 days 16/7/2012 22/3/2013 196 days 6/9/2012 16/3/2013 156 days 6/9/2012 16/1/2012 74 days 20/8/2012 16/1/2012 52 days 2/10/2012 16/1/2012	45 days 88/6/2012 1/8/2012 ate lots 30 days 2/8/2012 5/9/2012 179 days 88/6/2012 11/1/2013

	Project No: DC/2011/06 Master Programme: MP02 Date: 27-07-2012	Task Split	Milestone Summary	÷	Project Summary External Tasks	External Milesto	• •	Inactive Task Inactive Milestone	¢	Inactive Summary Manual Task	▽ ───▽	Duration-only Manual Summary Ro	alup	Manual Summary Start-only	Ç	Finish-only Critical	3	Critical Split Progress	Deadline	¢
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тос

ANNEX E

IMPACT MONITORING SCHEDULE



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

IMPACT MONITORING SCHEDULE FOR THE REPORTING PERIOD

Monitoring Day
Sunday or Public Holiday

- *Note: Additional construction noise monitoring recommended by the Engineer and IEC will be commenced in August 2012 at MUP-Nx upon verification of the Methodology by the IEC on 27 July 2012.
- **Note: Additional water quality monitoring recommended by the Engineer and IEC will be commenced in August 2012 at MUP-Wx1 and MUP-Wx2 upon verification of the Methodology by the IEC by the IEC on 27 July 2012.



IMPACT MONITORING SCHEDULE FOR THE UP-COMING MONTH

	Date	Noise, (Leq _{30min})	Water Quality
Sat	1-Sep-12		
Sun	2-Sep-12		
Mon	3-Sep-12		
Tue	4-Sep-12		
Wed	5-Sep-12		
Thu	6-Sep-12		
Fri	7-Sep-12		
Sat	8-Sep-12		
Sun	9-Sep-12		
Mon	10-Sep-12		
Tue	11-Sep-12		
Wed	12-Sep-12		
Thu	13-Sep-12		
Fri	14-Sep-12		
Sat	15-Sep-12		
Sun	16-Sep-12		
Mon	17-Sep-12		
Tue	18-Sep-12		
Wed	19-Sep-12		
Thu	20-Sep-12		
Fri	21-Sep-12		
Sat	22-Sep-12		
Sun	23-Sep-12		
Mon	24-Sep-12		
Tue	25-Sep-12		
Wed	26-Sep-12		
Thu	27-Sep-12		
Fri	28-Sep-12		
Sat	29-Sep-12		
Sun	30-Sep-12		

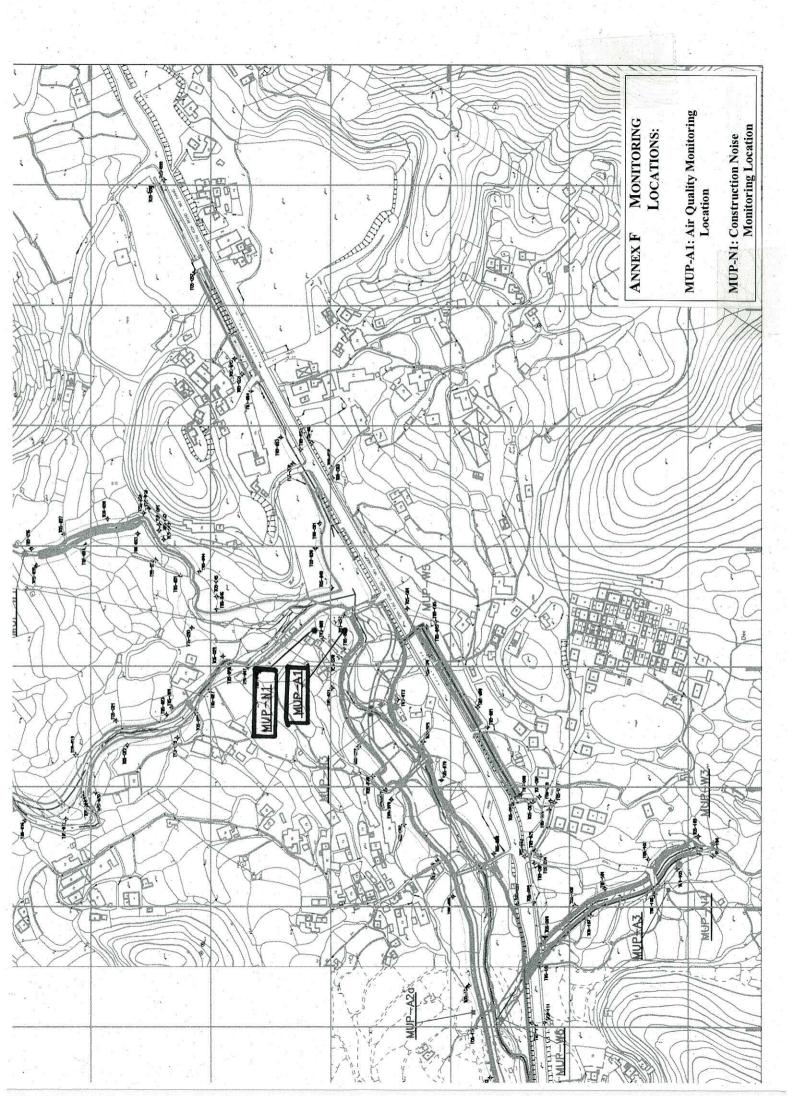
Monitoring Schedule for September 2012

Monitoring Day
Sunday or Public Holiday



ANNEX F

MONITORING LOCATIONS





ANNEX G MONITORING EQUIPMENT CALIBRATION CERTIFICATES

Items	Aspect	Description of Equipment	Date of Calibration	Date of Next Calibration
1*		TSP Sampler Calibration Spreadsheet for MUP-A1	13 May 12	13 Jul 12
2	Air	TSP Sampler Calibration Spreadsheet for MUP-A1	13 Jul 12	13 Sep 12
3	DustTrak Model 8520 EQ064		13 Sep 2011	13 Sep 2012
4		AM510 11008017	10 Oct 2011	10 Oct 2012
5		Bruel & Kjaer Integrating Sound Level Meter EQ010 (Serial No. 2285721)	20 Apr 12	20 Apr 13
6	Noise	Bruel & Kjaer Integrating Sound Level Meter EQ082 (Serial No. 2713428)	20 Apr 12	20 Apr 13
7		NL-31 Rion Sound Level Meter EQ068 (Serial No. 00410247)	20 Apr 12	20 Apr 13
8		Bruel & Kjaer 4231 Acoustical Calibrator (Serial number 2713428)	20 Apr 12	20 Apr 13

MONITORING EQUIPMENT CALIBRATION CERTIFICATES

Note:

* This Appendix G presents only calibration certificates of new monitoring equipment or those expired and recalibrated during the Reporting Period (**Renewed Item No. and Calibration dates will be highlighted for ease** of checking). No valid calibration certificates presented in the previous report will be dittoed under environmental consideration.

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :		Mon Ill	Din No	ar DD46 Lo	+ 820	Data of C	Calibration: 13-Jul-12		
Location I		MUP-A		ai DD40 L0			ation Date: 13-Sep-12		
Location	D .	MUI -A	1		1		echnician: Mr. Ben Tam		
					CONDI				
	Se	a Level I	Pressure	(hPa)	1006		Corrected Pressure (mm Hg)	754.5	
		Temp	erature	(°C)	29.2				
						•			
				C	ALIBRATIC	ON ORIFICE			
				Make->]		2.00279	
				Model->			Qstd Intercept ->	-0.00494	
				Serial # ->	1483	J			
					CALIBR	ATION			
Plate	Plate H20 (L)H2O (R) H20 Qstd					IC	LINEAR		
No.	(in)	(in)	(in)	(m3/min)	(chart)	corrected	REGRESSION		
18	5.8	5.8	11.6	1.685	48	47.16	Slope = 35.3090		
13	4.2	4.2	8.4	1.434	38	37.34	Intercept = -13.2960		
10	3.5	3.5	7.0	1.310	32	31.44	Corr. coeff. = 0.9966		
7	2.5	2.5	5.0	1.107	26	25.55			
5	1.3	1.3	2.6	0.799	16	15.72			
Calculatio	ons :						FLOW RATE CHART		
Qstd = 1/r	n[Sqrt(H	20(Pa/Ps	td)(Tstd	/Ta))-b]	50.00)	y = 37.9x	- 13.6	
IC = I[Squ	rt(Pa/Psto	l)(Tstd/T	a)]				• • • • • • • • • • • • • • • • • • •		
Qstd = sta					40.00)			
IC = correction		-	es				×		
I = actual		-			e (IC)				
m = calibi b = calibra	-	-	+		Actual Charles and Actual Solution and Actual Actual Solution and Actual Actual Solution and Actual Actual Solution and Actual Solution and Actual Actual Solution and)			
	-	-		oration (deg			/		
	_		_	ation (mm)	s, interest Hart ⊵				
	F		8)			
For subse	equent ca	alculatio	n of san	pler flow:	Act		◆		
1/m((I)[S	Sqrt(298/	Tav)(Pav	r/760)]-t))					
					10.00)			
m = samp	ler slope								
b = samp		ept							
I = chart r	-				0.00) 0.000	0.500 1.000 1.500	2.000	
Tav = dail		-					Standard Flow Rate (m3/min)	-	
Pav = dail	y averag	e pressur	e		L]	

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Location]		Man Uk MUP-A		ar DD46 Lo	1	Next Calibra Te	alibration: 13-May-12 tion Date: 13-Jul-12 echnician: Mr. Ben Tam	
				-	CONDI	TIONS		
	Se	a Level I Temp	Pressure perature	` '	<u>1005.3</u> 27.9		Corrected Pressure (mr Temperature (K)	
				CA	LIBRATIC	ON ORIFICE		
				Make-> Model-> Serial # ->	5025A		Qstd Slope -> Qstd Intercept ->	2.00279 -0.00494
					CALIBR	ATION		
Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSIC)N
18 18 13 10 7 5	5.5 4.1 3.5 2.3 1.5	5.5 4.1 3.5 2.3 1.5	11.0 8.2 7.0 4.6 3.0	1.644 1.420 1.312 1.064 0.860	48 38 32 26 16	47.35 37.48 31.57 25.65 15.78	Slope = 38 Intercept = -17 Corr. coeff. = 0	3.6957 7.1844
Calculatio Qstd = 1/n IC = I[Squ	n[Sqrt(H rt(Pa/Pstc	l)(Tstd/T		/Ta))-b]	50.00		FLOW RATE CHART	= 37.9x - 13.6
	ected cha chart res cator Qsto ator Qstd al temper	rt respon ponse l slope intercep ature dur	t ring calil	pration (deg ation (mm])	•	
For subse 1/m((I)[\$	-			npler flow:	Actin 10.00)		
m = samp b = samp I = chart r Tav = dai Pav = dail	ler interc esponse ly averag	e temper			0.00	0.000	0.500 1.000 1.5 Standard Flow Rate (m3/min)	500 2.000



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 Line Voltage / 電壓 : --- Relative Humidity / 相對濕度 : (55±20)%

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 Date of Issue 23 April 2012 1 核證 簽發日期 K/C Lee

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部視印本證書需先獲本實驗所書面批准。

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



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

6.1.2 Linearity

	UU	Γ Setting		Applie	d Value	UUT Reading (dB)	
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 130	LAFP	A	A F 94.00	1	94.0 (Ref.)		
			1.124	104.00		104.0	
				114.00		114.0	

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

6.2 Time Weighting

6.2.1 Continuous Signal

	UUT	Setting		Applie	d Value	UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Type 1 Spec. (dB)
50 - 130	LAFP	Α	F	94.00	1	94.0	Ref.
	L _{ASP}		S			94.0	± 0.1
	LAIP		I			94.1	± 0.1

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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6.2.2 Tone Burst Signal (2 kHz)

	UUT	Setting		App	lied Value	UUT	IEC 60651	
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Burst Duration	Reading (dB)	Type 1 Spec. (dB)	
30 - 110	LAFP	A	F	106.0	Continuous	106.0	Ref.	
	LAFMax				200 ms	105.0	-1.0 ± 1.0	
	L _{ASP}		S		Continuous	106.0	Ref.	
	LASMax			A	500 ms	101.9	-4.1 ± 1.0	

6.3 Frequency Weighting

6.3.1 A-Weighting

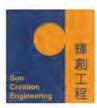
	UUT	Setting		Appli	ed Value	UUT	IEC 60651	
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.	Reading (dB)	Type 1 Spec. (dB)	
50 - 130	LAFP	Α	F	94.00	31.5 Hz	54.6	-39.4 ± 1.5	
					63 Hz	67.8	-26.2 ± 1.5	
					125 Hz	77.8	-16.1 ± 1.0	
					250 Hz	85.3	-8.6 ± 1.0	
					500 Hz	90.7	-3.2 ± 1.0	
					1 kHz	94.0	Ref.	
					2 kHz	95.2	$+1.2 \pm 1.0$	
					4 kHz	95.0	$+1.0 \pm 1.0$	
					8 kHz	92.9	-1.1 (+1.5 ; -3.0)	
		11.0-000001	1		12.5 kHz	89.7	-4.3 (+3.0 ; -6.0)	

6.3.2 C-Weighting

	UUT	Setting		Appli	ed Value	UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.	Reading (dB)	Type 1 Spec. (dB)
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)

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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Certificate No. : C122427 證書編號

6.4 Time Averaging

	UUT Setting				A		UUT	IEC 60804		
Range (dB)	Parameter	Frequency Weighting	Integrating Time	Frequency (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)	Reading (dB)	Type 1 Spec. (dB)
30 - 110	LAcq	A	10 sec.	4	1	1/10	110.0	100	99.9	± 0.5
		1 C Y 1 B		1.1	11 () (1/102		90	89.6	± 0.5
		1.00	60 sec.			1/103		80	79.8	± 1.0
			5 min.		1	1/104		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 250 Hz - 500 Hz 1 kHz 2 kHz 4 kHz 8 kHz 12.5 kHz 104 dB : 1 kHz 114 dB : 1 kHz	: $\pm 0.30 \text{ dB}$: $\pm 0.20 \text{ dB}$: $\pm 0.40 \text{ dB}$: $\pm 0.50 \text{ dB}$: $\pm 0.70 \text{ dB}$: $\pm 1.20 \text{ dB}$: $\pm 0.10 \text{ dB} (\text{Ref. 94 dB})$
	114 dB : 1 kHz Burst equivalent level	$\pm 0.10 \text{ dB} (\text{Ref. 94 dB})$ $\pm 0.2 \text{ dB} (\text{Ref. 110 dB})$ 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.

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prime written approval of this laboratory.

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ALS Technichem (HK) Pty Ltd

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT: MR BEN TAM CLIENT: ACTION UNITED ENVIRO SERVICES RM A 20/F., GOLDEN KING IND BLDG. ADDRESS: NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T., HONG KONG. PROJECT:

WORK ORDER:	HK1210811
LABORATORY:	HONG KONG
DATE RECEIVED:	25/04/2012
DATE OF ISSUE:	02/05/2012

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 acceptance criteria of ALS will be followed.

Scope of Test:	Dissolved Oxygen, pH, Salinity, Temperature and Turbidity
Description:	YSI Sonde
Brand Name:	YSI
Model No.:	YSI 6820 / 650MDS
Serial No.:	02J0912 / 02K0788 AA
Equipment No.:	
Date of Calibration:	27 April, 2012

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

ALS Technichem (HK) Pty Ltd

11/F Chung Shun Knitting Centre 1-3 Wing Yip Street Kwai Chung HONG KONG

Phone: Fax: Email:

852-2610 1044 852-2610 2021 hongkong@alsglobal.com

Mr Chan Kwok/Fai, Godfrey Laboratory Manager - Hong Kong

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Page 1 of 3

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order:	HK1210811
Date of Issue:	02/05/2012
Client:	ACTION UNITED ENVIRO SERVICES



Description:	YSI Sonde		
Brand Name:	YSI		
Model No.:	YSI 6820 / 650MDS		
Serial No.:	02J0912 / 02K0788 AA		
Equipment No.:			
Date of Calibration:	27 April, 2012	Date of next Calibration:	27 July, 2012

Parameters:

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
6.43	6.33	-0.10
7.80	7.76	-0.04
8.35	8.30	-0.05
	Tolerance Limit (±mg/L)	0.20

pH Value

Method Ref: APHA 21st Ed. 4500H:B

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
4.0	4.07	0.07
7.0	7.08	0.08
10.0	9.94	-0.06
	Tolerance Limit (±unit)	0.2

Salinity

Method Ref: APHA (21st edition), 2520B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.00	
10	10.67	6.7
20	21.12	5.6
30	31.59	5.3
	Tolerance Limit (±%)	10.0

Mr Chan Kwok Fai, Godfrey Laboratory Manager - Hong Kong

ALS Technichem (HK) Pty Ltd ALS Environmental



Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No. : C122426 證書編號

ITEM TESTED / 送檢	頁目	(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 : $(23 \pm 2)^{\circ}C$ Line Voltage / 電壓 :

Relative Humidity / 相對濕度 : $(55 \pm 20)\%$

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

Date of Issue 23 April 2012 Certified By 1 核證 簽發日期 K/C Lee

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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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

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order:	HK1210811
Date of Issue:	02/05/2012
Client:	ACTION UNITED ENVIRO SERVICES



Description:	YSI Sonde		
Brand Name:	YSI		
Model No.:	YSI 6820 / 650MDS		
Serial No.:	02J0912 / 02K0788 AA		
Equipment No.:			
Date of Calibration:	27 April, 2012	Date of next Calibration:	27 July, 2012

Parameters:

Temperature

Method Ref: Section 6 of International Accreditation New Zealand Technical

Expected Reading (°C)	Displayed Reading (°C)	Tolerance (°C)	
16.0	15.46	-0.5	
25.0	24.66	-0.3	
35.0	34.40	-0.6	
	Tolerance Limit (°C)	2.0	

Turbidity

Method Ref: APHA (21st edition), 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.7	
4	4.31	7.7
10	10.7	7.0
20	20.9	4.5
50	53.8	7.6
100	107.4	7.4
	Tolerance Limit (±%)	10.0

Mr Chan Kwok Fai, Godfrey Laboratory Manager - Hong Kong Page 3 of 3



тос

ANNEX H

EVENT/ACTION PLAN

Table 2.4Event/Action Plan for Air Quality

		ACTION		
EVENT	ET Leader	IEC	ER	Contractor
ACTION LEVEL				
1. Exceedance for one sample	 Identify source Inform IEC, ER and Contractor Repeat measurement to confirm findings Increase monitoring frequency to daily 	 Check monitoring data submitted by ET Leader Check Contractor's working method 	1. Notify Contractor	 Rectify any unacceptable practice Amend working methods if appropriate
 Exceedance for two or more consecutive samples 	 Identify source Inform IEC, ER and Contractor Repeat measurement to confirm findings Increase monitoring frequency to daily Discuss with IEC, Contractor and ER on remedial actions required If exceedance continue, arrange meeting with IEC, ER and Contractor If exceedance stops, cease additional monitoring 	 Checking monitoring data submitted by ET Leader. Check Contractor's working method Discuss with ET Leader and Contractor on possible remedial measures Advise the ER on the effectiveness of the proposed remedial measures Supervise implementation of remedial measures 	 Confirm receipt of notification of failure in writing Notify Contractor Ensure remedial measures properly implemented 	 Submit proposals for remedial actions to IEC and ER within 3 working days of notification Implement the agreed proposals Amend proposal if appropriate
LIMIT LEVEL				
1. Exceedance for one sample	 Identify source Inform IEC, ER, EPD and Contractor Repeat measurement to confirm findings Increase monitoring frequency to daily Assess effectiveness of Contractor's remedial actions and kept IEC, EPD and ER informed of the results 	 Check monitoring data submitted by ET Leader Check Contractor's working method Discuss with ET Leader and Contractor on possible remedial measures Advise the ER on the effectiveness of the proposed remedial measures Audit implementation of remedial measures 	 Confirm receipt of notification of failure in writing Notify Contractor Ensure remedial measures properly implemented 	 Take immediate action to avoid for the exceedance Submit proposals for remedial actions to IEC and ER within 3 working days of notification Implement the agreed proposals Amend proposal if appropriate
2. Exceedance for two or more consecutive samples	 Notify IEC, ER, Contractor and EPD Identify source Repeat measurement to confirm findings Increase monitoring frequency to daily Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented Arrange meeting with IEC, Contractor and ER to discuss the remedial actions to be taken Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results If exceedance stops, cease additional monitoring 	 Discuss amongst ER, ET leader and Contractor on the potential remedial actions Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly Audit the implementation of remedial measures 		 Take immediate action to avoid for the exceedance Submit proposals for remedial actions to IEC and ER within 3 working days of notification Implement the agreed proposals Resubmit proposals if problem still not under control Stop the relevant portion of works as determined by the ER until the exceedance is abate.

			ACT	TION			
EVENT	ET Leader		IEC		ER		Contractor
Action Level	 Notify IEC, Contractor and ER Carry out investigation and identify source Report the results of investigation to the IEC, Contractor and ER Discuss with the Contractor and formulate remedial measures Increase monitoring frequency Check compliance to Action/Limit Levels after application of mitigation measures 	1. 2. 3.	Review the analysed results submitted by the ET Leader Review the proposed remedial measures by the Contractor and advise the ER & ET accordingly Review the implementation of remedial measures	 1. 2. 3. 4. 5. 	complaint in writing Notify Contractor Check monitoring data submitted by the ET	1. 2. 3. 4.	Submit noise mitigation proposals to ER and IEC within three working Liaise with the ER to ensure the effectiveness of the agreed mitigation Amend proposal if required Implement noise mitigation proposals
Limit Level	 Notify IEC, ER, EPD and Contractor Identify Source Repeat measurement to confirm findings Increase monitoring frequency Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented Inform IEC, ER and EPD the causes & actions taken for the exceedances Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results If exceedance stops, cease additional monitoring 	1. 2. 3. 4.	Check monitoring data submitted by ET Discuss amongst ER, ET Leader and Contractor on the potential remedial actions Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER & ET accordingly Audit the implementation of remedial measures	1. 2. 3. 4. 5. 6. 7. 8.	remedial measures for the analysed noise problem Discuss with ET, IEC and	1. 2. 3. 4. 5. 6. 7.	Take immediate action to avoid further exceedance Submit proposals for remedial actions to ER within 3 working days of notification Liaise with the ER to ensure the effectiveness of the agreed mitigation Amend proposal if required Implement the agreed proposals Resubmit proposals if problem still not under control Stop the relevant portion of works as determined by the ER until the exceedance is abated

Table 3.3 Event/Action Plan for Construction Noise Monitoring

Event	ET Leader	IEC	ER	Contractor
Action Level being exceeded by one sampling day	 Repeat in-site measurement to confirm findings. Identify source(s) of impact. Inform IEC an Contractor. Check monitoring data, all plant, equipment and Contractor's working methods. Discuss mitigation measures with IEC and Contractor. Repeat measurement on next day of exceedance. 	 Discuss with ET and Contractor on the mitigation measures. Review proposals on mitigation measures. submitted by Contractor and advise the ER accordingly. Assess the effectiveness of the implemented mitigation measures. 	 Discuss with IEC on the proposed mitigation measures. Make agreement on the mitigation measures to be implemented. Assess effectiveness of the implemented mitigation measures. 	 Inform the ER and confirm notification of the non- compliance in writing. Rectify unacceptable practice. Check all plant and equipment. Consider changes of working methods. Discuss with ET and IEC and propose mitigation measures to IEC and ER. Implement the agreed mitigation measures.
Action Level being exceeded by more than one consecutive sampling days	 Repeat in-situ measurement to confirm findings; Identify source(s) of impact. Inform IEC and Contractor. Check monitoring data, all plant, equipment and Contractor's working methods. Discuss mitigation measures with IEC and Contractor. Ensure mitigation measures are implemented. Prepare to increase the monitoring frequency to daily. Repeat measurement on next day of exceedance. 	 Discuss with ET and Contractor on the mitigation measures. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly. Assess the effectiveness of the implemented mitigation measures. 	 Discuss with IEC on the proposed mitigation measures. Make agreement on the mitigation measures to be implemented. Assess the effectiveness of the implemented mitigation measures. 	 Inform the ER and confirm notification of the non- compliance in writing. Rectify unacceptable practice. Check all plant and equipment. Consider changes of working methods. Discuss with ET and IEC and propose mitigation measures to IEC and ER within 3 working days. Implement the agreed mitigation measures.
Limit Level being exceeded by one sampling day	 Repeat in-situ measurement to confirm findings. Identify source(s) of impact. Inform IEC, contractor and EPD. Check monitoring data, all plant, equipment and Contractor's working methods. Discuss mitigation measures with IEC, ER and Contractor. Ensure mitigation measures are implemented; Increase the monitoring frequency to daily until no exceedance of Limit Level. 	 Discuss with ET and Contractor on the mitigation measures. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly. Assess the effectiveness of the implemented mitigation measures. 	 Discuss with IEC, ET and Contractor on the proposed mitigation measures. Request Contract to critically review the working methods. Make agreement on the mitigation measures to be implemented. Assess the effectiveness of the implemented mitigation measures. 	 Inform the ER and confirm notification of the non- compliance in writing. Rectify unacceptable practice. Check all plant and equipment. Consider changes of working methods. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 3 working days. Implement the agreed mitigation measures.

Table 4.6Event and Action Plan for Water Quality

Event	ET Leader	IEC	ER	Contractor
Limit Level being exceeded by more than one consecutive sampling days	 Repeat in-situ measurement to confirm findings. Identify source(s) of impact. Inform IEC, contractor and EPD. Check monitoring data, all plant, equipment and Contractor's working methods. Discuss mitigation measures with IEC, ER and Contractor. Ensure mitigation measures are implemented. Increase the monitoring frequency to daily until no exceedance of Limit Level for two consecutive days. 	 Discuss with ET and Contractor on the mitigation measures. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly. Assess the effectiveness of the implemented mitigation measures. 	 Discuss with IEC, ET and Contractor on the proposed mitigation measures. Request Contractor to critically review the working methods. Make agreement on the mitigation measures to be implemented. Assess the effectiveness of the implemented mitigation measures. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the work until no exceedance of Limit Level. 	 Inform the ER and confirm notification of the non- compliance in writing. Rectify unacceptable practice. Check all plant and equipment. Consider changes of working methods. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 3 working days. Implement the agreed mitigation measures. As directed by the ER, to slow down or to stop all or part of the work or construction activities.



ANNEX I

24-HR TSP DATA

AND

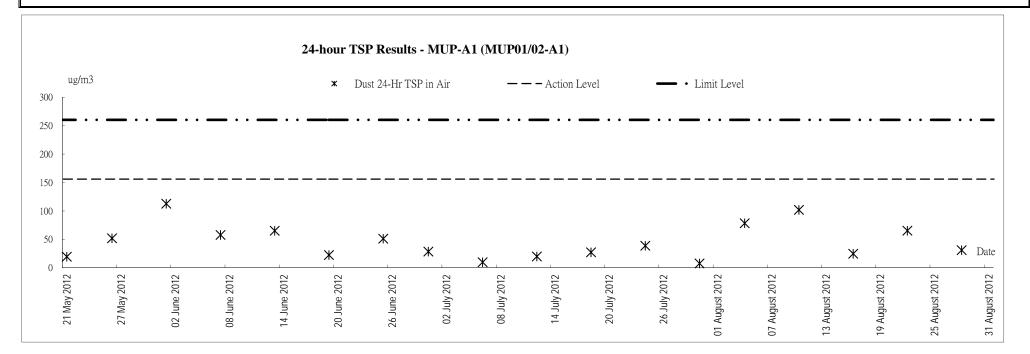
GRAPHICAL PLOTS OF ENVIRONMENTAL MONITORING RESULTS

Contract No. DC/2011/06 – Reprovisioning of Boundary Patrol Road and Associated Security Facilities between Ping Yuen River and Pak Fu Shan and Drainage Works in North District

EM&A Report for Drainage Works under EP-277/2007/A (August 2012)

	SAMPLE	ELA	APSED TIM	Έ	CHA	ART READ	DING	AVG		STANDARI)	FILTER (g		WEIGHT DUST	24-hr TSP
DATE	NUMBER	INITIAL	FINAL	(min)	MIN	MAX	AVG	TEMP (℃)	AVG PRESS (hPa)	FLOW RATE (m3/min)	AIR VOLUME (std m3)	INITIAL	FINAL	COLLECTED (g)	(μg/m ³)
24942	3923.69	3949.51	1549.20	38	39	38.5	28.6	1004.6	1.4557	2255.22	24942	2.7765	2.9544	0.1779	78
24954	3949.51	3974.57	1503.60	37	39	38	28.7	1004.6	1.4415	2167.50	24954	2.6464	2.8681	0.2217	102
24906	3974.57	3998.64	1444.20	32	36	34	28.6	1001.5	1.3281	1918.07	24906	2.7679	2.8165	0.0486	25
24908	3998.64	4023.43	1487.40	37	39	38	28	1006.3	1.4437	2147.33	24908	2.8122	2.9556	0.1434	65
25011	4023.43	4048.46	1501.80	38	39	38.5	31	1004.3	1.4513	2179.56	25011	2.7842	2.8521	0.0679	31

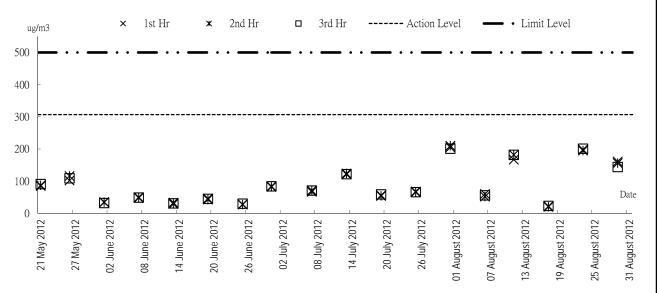
24-Hr TSP Data – MUP-A1 (Action Level: 156 Limit Level: 260)





Date	1-Hour TSP Monitoring Results at MUP-A1 (MUP05)									
Date	1 st		1^{st}							
6-Aug-12	11:10	60	52	56						
11-Aug-12	10:00	167	182	182						
17-Aug-12	10:15	22	20	23						
23-Aug-12	10:40	198	195	201						
29-Aug-12	10:00	161	156	144						
Average (Range)		121 (20	0 – 201)							
A/L Levels		307 /	500							

1-hour TSP Results - MUP-A1 (MUP01/02-A1)



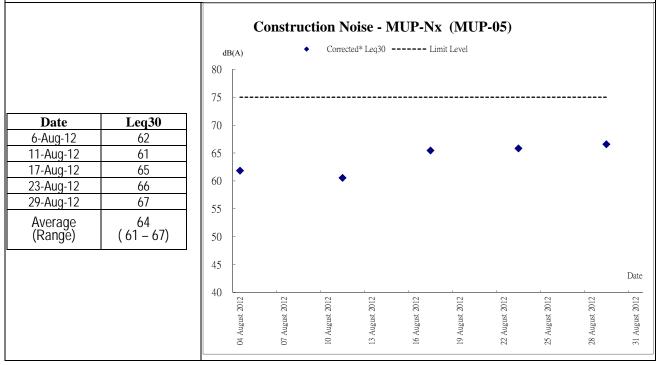
T

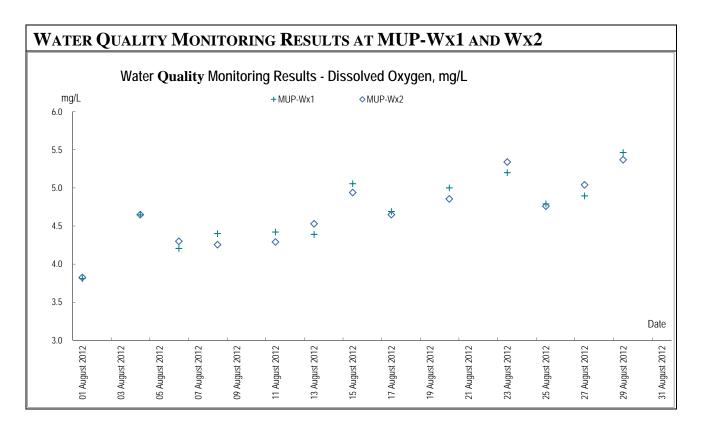
		80	dB(#	A)		Co	onst	tru	ctio •		No i .eq30					-N		MU	J P	-05	5)					
Date	Leq30	70	-				•					•		•	٠			•	•		•					
6-Aug-12	62	65						•	•							•					•		٠			
11-Aug-12	67 61	05			•	•					•											٠				•
17-Aug-12 23-Aug-12	62	60	-							٠														4	•	
29-Aug-12	72	55															•									
Average (Range)	65 (60 – 72)	50	-																							
		45	_																							Ι
		40																					1			
			01 May 2012	05 May 2012	13 May 2012	17 May 2012	21 May 2012	29 May 2012	02 June 2012	06 June 2012 10 June 2013	14 June 2012	18 June 2012	22 June 2012	26 June 2012	30 June 2012 04 Tulu 2012	04 July 2012 08 July 2012	12 July 2012	16 July 2012	24 July 2012	28 July 2012	August 2012	August 2012	it 2012	August 2012 Anonst 2012	August 2012 August 2012	August 2012
			01 May	05 Ma;	13 May	17 Ma	21 Ma; 25 May	29 May	02 Jun	06 Jun 10 Iun	14 June	18 Jun	22 Jun	26 Jun	30 Jun	jult 40 08 July	12 Jul	16 Jul	24 July	28 Jul	01 Augus	05 Augus	09 August 2012	13 August 2012 17 Anonst 2012	21 Augus	25 August 2012

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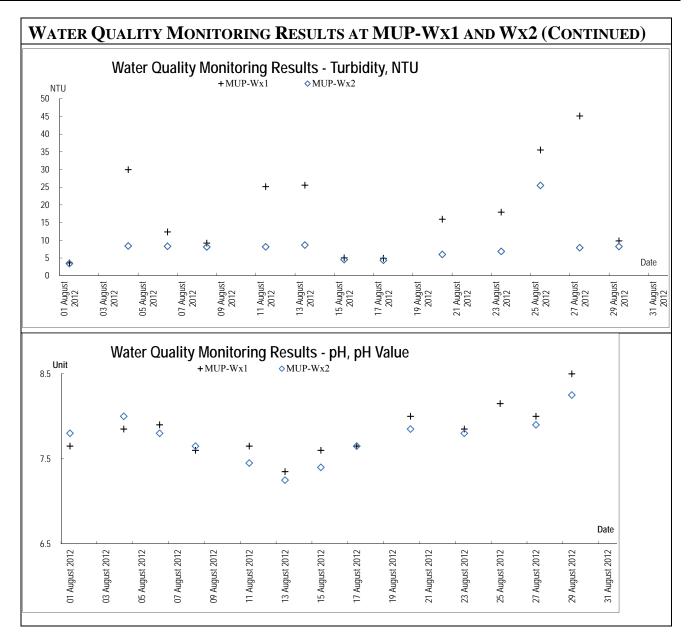


CONSTRUCTION NOISE MONITORING RESULTS AT MUP-NX



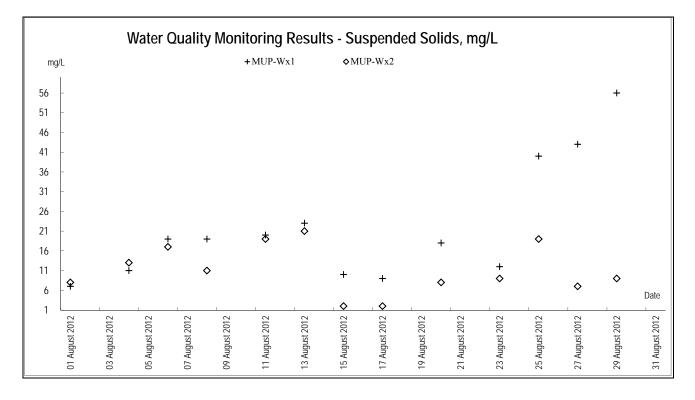






Contract No. DC/2011/06 – Reprovisioning of Boundary Patrol Road and Associated Security Facilities between Ping Yuen River and Pak Fu Shan and Drainage Works in North District EM&A Report for Drainage Works under EP-277/2007/A (August 2012)







ANNEX J

METEOROLOGICAL DATA

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Meteorological Data from HKO for the Reporting Period

			Total		<u>Ta Kv</u>	vu Ling	
Date		Weather	Rainfall (mm)	Mean Air Temp. (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction
1-Aug-12	Wed	Isolated showers and thunderstorms	0.2	Maintenance	5.4	Maintenance	N/NW
2-Aug-12	Thu	Sunny periods with haze.	0	Maintenance	4.9	Maintenance	N/NW
3-Aug-12	Fri	isolated showers and one or two thunderstorms.	Trace	29.8	5.5	70.7	SW
4-Aug-12	Sat	It will be very hot	0.4	29.2	7.8	69.2	SW
5-Aug-12	Sun	Light to moderate westerly winds.	6.8	29.3	8.5	72.5	E/SE
6-Aug-12	Mon	Isolated showers and thunderstorms	2.8	28.8	6.6	80	E/SE
7-Aug-12	Tue	Fine and very hot but hazy.	Trace	29.7	5	76.7	SW
8-Aug-12	Wed	Sunny periods with haze.	0	30.8	5.7	73	SW
9-Aug-12	Thu	Cloudy with showers and isolated thunderstorms.	0	30.9	8.5	68	SW
10-Aug-12	Fri	Moderate southwesterly winds.	7.7	29	5.3	78	S/SE
11-Aug-12	Sat	Light to moderate southerly winds.	64.7	28.4	7.7	81	S/SE
12-Aug-12	Sun	Mainly cloudy with showers	12.4	28.3	5.8	78	E/SE
13-Aug-12	Mon	Light to moderate southerly winds.	9.5	28	6	85.5	Е
14-Aug-12	Tue	Fine and very hot but hazy.	1.9	28.8	6.6	80.5	Е
15-Aug-12	Wed	It will be very hot	0	29	4.9	73	Ν
16-Aug-12	Thu	Cloudy with occasional squally showers and thunderstorms.	15.4	29.4	9	76.7	E/NE
17-Aug-12	Fri	Light winds.	Trace	27.7	16.4	79	Е
18-Aug-12	Sat	Mainly fine and hot	0.1	28.9	4.9	74.5	W/NW
19-Aug-12	Sun	Light winds.	0	28.8	8.2	76	N/NW
20-Aug-12	Mon	Hot during the day	0	29	5.5	75	SE
21-Aug-12	Tue	Sunny periods with haze	Trace	28.1	6.6	78	E/SE
22-Aug-12	Wed	fine, very hot, hazy	0.2	28.9	4.9	74.5	N/NW
23-Aug-12	Thu	isolated showers	0	28.8	8.2	76	N/NW
24-Aug-12	Fri	winds moderate	Trace	29.8	5.5	70.7	SW
25-Aug-12	Sat	very hot, fine , haze.	0.4	29.2	7.8	69.2	SW
26-Aug-12	Sun	fine, very hot, hazy	6.8	29.3	8.5	72.5	E/SE
27-Aug-12	Mon	very hot, fine , haze.	2.8	28.8	6.6	80	E/SE
28-Aug-12	Tue	cloudy, isolated showers, thunderstorms	Trace	29.7	5	76.7	SW
29-Aug-12	Wed	Sunny periods, hot	0	30.8	5.7	73	SW
30-Aug-12	Thu	cloudy, a few showers,	0	30.9	8.5	68	SW
31-Aug-12	Fri	hot, sunny intervals	7.7	29	5.3	78	S/SE



ANNEX K

WASTE FLOW TABLE AND

SUMMARY OF WORKS PROCESSES OR ACTIVITIES REQUIRING TIMBER FOR TEMPORARY WORKS

Monthly Summary Waste Flow Table

Name of Department: DSD

Contract No.: DC/2011/06

Monthly Summary Waste Flow Table for Aug 2012

	1	<u> </u>	T	Ē	r -	r ·	1		<u> </u>	1	I -	—	T	<u> </u>	r -	-	<u> </u>	1	
hly	Others, e.g. general refuse	(in '000m ³)		I	I	0.000	12.560	1.436		0.000	0.000								13.996
s Generated Mont	Chemical Waste	(in '000kg)		1		0.000	0.000	0.000		0.000	0000		-						0 000
Non C&D Wast	Plastics (see Note 3)	(in '000kg)		1	1	0.000	0.000	0.00.0		0.000	0.000								0.000
Actual Quantities of Non C&D Wastes Generated Monthly	Paper/ cardboard packaging	(in '000kg)	1			0.000	0.000	0.000		000'0	0.200								0.200
V	Metals	(in '000 kg)	1	ł	1	0.000	0:000	0.000		0.000	0.000								0:000
	Imported Fill	(_c m000, uj)	ł	1	1	0.000	0.000	0.000		0.000	0.000								0.000
onthly	Disposed as Public Fill	(^e m000, mj)	1			0.000	0.000	0.000		0.000	00070								0'000
Materials Generated Monthly	Reused in other Projects	(in '000m ³)	1	I		0.000	0.000	0.000		0.000	0.000								0:000
	Reused in the Contract	(, m000, ui)	ł	l	1	0.000	0.000	0.000		0,000	6.800								6.300
Actual Quantities of Inert C&D	Hard Rock and Large Broken Concrete	(in '000m ³)	-	1	1	0.000	0,000	0.000		0.000	0.000						_		0.000
Ac	Total Quantity Generated	(in '000m ³)	N/A	. N/A	N/A	0.000	0.000	0.000		0.000	6.800								6.800
	Montîn		Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12		Jul-12	Aug-12								Total

Notes :

(1) Note Used.

(2) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Sites.

(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging materials.

(4) The summary table shall be submitted to the Engineer's Representative monthly together with the Waste Flow Table for review and monitoring.

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. || Summary Table for Work Processes or Activities Requiring Timber for Temporary Works

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Contract No.: DC/2011/06

Contract Title: Reprovisioning of Boundary Patrol Road and Associated Security Facilities between Ping Yuen River and Pak Fu Shan and Drainage Works in North District

Report Period: Aug 2012

Item No	Description of Works Process or Activity [see note (a) below]	Justifications for Using Timber in Temporary Construction Works	Est. Quantities of Timber Used (m ³)	Actual Quantities used (m ³)	Remarks
	work	Temperary formwork & falsework design	10	6	
		· ·			
	-				
	Total Es	Estimated Quantity of Timber Used	10		

(a) The Contractor shall list out all the work items requiring timber for use in temporary construction works. Several minor work items may be grouped into one

Notes

for ease of updating.

(b) The summary table shall be submitted to the Engineer's Representative monthly together with the Waste Flow Table for review and monitoring

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ANNEX L

Response to Comments

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Contract no. DC/2011/06

Reprovisional of Boundary Patrol Road and Associated Security Facilities between Ping Yuen River and Pak Fu Shan and Drainage Works in North District IEC Comments on the Monthly EM&A Report (Aug 2012) For Drainage Works under EP-277/2007/A

Item	Section / Paragraph	IEC Comments	ET's Response
1.	Table of contents	Please update in the table of contents the titles in 'LIST OF TABLES'	Table of contents has been updated.
2.	Table 1-2	Please check and provide correct major construction activities in portion E	Table 1-2 updated.
3.	Section 6	Please simplify the Complaint, summons, prosecution summary tables	Section 6 updated.
4.	Annex B	Please improve quality of O-chart	O-chart amended.
5.	Annex K	Please also include Estimated Timber Use summary table	Estimated Timber Use summary table included.

Date: 5 Sept 2012