



**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,



Roger Leung
Independent Environmental Checker

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

| Reporting Month | Environmental Complaint Statistics | | |
|------------------|------------------------------------|------------|------------------|
| | 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. | Date of Issuance by EPD | Expiry Date | Concerned Location | Status |
|--|------------------------|-------------------------|-------------|--|---|
| Environmental Permit | EP-277/2007 | 09 July 2007 | N.A. | Lin Ma Hang and Man Uk Pin, North District | EP-277/2007/A to supersede EP-277/2007 |
| | EP-277/2007/A | 01 December 2009 | | | |
| 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 Waste Producer under Waste Disposal Ordinance | Pending 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 1-2 Major Construction Activities for the Works during the Reporting Period

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

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&A ACTIVITIES

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*.

Table 2-1 Summary of Monitoring Parameters

| Environmental Aspect | | Parameters |
|----------------------|-------|---|
| Air Quality | | (a) 1-Hour Total Suspended Particulate (hereinafter ‘1-Hr TSP’); and (b) 24-Hour Total Suspended Particulate (hereinafter ‘24-Hr TSP’). |
| Construction 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. |
| Water Quality | | (e) In Situ temperature, Dissolved Oxygen, Dissolved Oxygen Saturation, pH Measurement: value, Water Depth, Temperature & Turbidity |
| | | (f) Laboratory Suspended Solids (hereinafter ‘SS’), Analysis |
| Ecology | MUP05 | (g) The stream conditions monitoring (in-situ measurements of DO, pH and turbidity; laboratory testing of SS); (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 |

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 2-2 Monitoring 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 |
| Water Quality | MUP05 | - | MUP-Wx1 (Up-Stream Control Station) | Throughout the whole construction period |
| | | - | 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

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

Frequency: Once every 6 days for 24-Hour TSP & three times every 6 days for 1-Hour TSP.

Duration: 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

Parameters: 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.

Frequency: 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 2-4 Air 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 2-6 Water 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 90° light scattering. The 1-Hour TSP monitor consists of the following:

- (a) A pump to draw sample aerosol through the optic chamber where TSP is measured;
- (b) A sheath air system 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 20⁰C for ease of comparison of the data under the changing reality, the temperature readings of the DO Meter is recorded.

pH

- 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 4⁰C 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 2-7 Action and Limit Levels for Air Quality

| Monitoring Station | Action Level (µg /m ³) | | Limit Level (µg/m ³) | |
|--------------------|------------------------------------|-------------|----------------------------------|-------------|
| | 1-Hour TSP | 24-Hour TSP | 1-Hour TSP | 24-Hour TSP |
| MUP-A1 | 307 | 156 | 500 | 260 |

Table 2-8 Action 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 Up-Stream Control Station | 130% of the corresponding Levels of 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**.

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

| Date | Start Time | 1-Hour TSP Monitoring Results at MUP-A1 (MUP05), $\mu\text{g}/\text{m}^3$ | | | |
|------------------------|------------|---|-----------------|-----------------|------|
| | | 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 3-2 Air Quality (24-Hour TSP) Monitoring Results at MUP-A1 (MUP05)

| Date | 24-Hour TSP Monitoring Results at MUP-A1 (MUP05), $\mu\text{g}/\text{m}^3$ |
|------------------------|--|
| 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 Manual.
- 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 (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 (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**.

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

| 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 3-6 Water Quality Monitoring Results at MUP-Wx2 (Impact Monitoring Station)

| 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**.

Table 5-1 Observations of Site Inspection during the Reporting Period

| 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. | 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 | <ul style="list-style-type: none"> ● 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 avoid construction dust and water quality impacts. | To be followed up on the next site inspection. |

- 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 6-1 Summary of Environmental Complaints

| Reporting Month | Environmental Complaint Statistics | | |
|------------------|------------------------------------|------------|------------------|
| | Frequency | Cumulative | Complaint Nature |
| May to July 2012 | 0 | 0 | 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 6-2 Summary of Environmental Summons

| Reporting Month | Environmental Summons Statistics | | |
|------------------|----------------------------------|------------|--------|
| | Frequency | Cumulative | Nature |
| May to July 2012 | 0 | 0 | NA |
| August 2102 | 0 | 0 | NA |

Table 6-3 Summary of Environmental Prosecution

| Reporting Month | Environmental Prosecution Statistics | | |
|------------------|--------------------------------------|------------|--------|
| | Frequency | Cumulative | Nature |
| May to July 2012 | 0 | 0 | NA |
| August 2102 | 0 | 0 | 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

| 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

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NOTES:

1. ALL LEVELS ARE IN METERS ABOVE MEAN SEA LEVEL UNLESS OTHERWISE SPECIFIED.
2. UNLESS OTHERWISE SPECIFIED, ALL CHANNELS ARE TO BE CONSTRUCTED WITH 1:1 SLOPES.
3. EMBANKMENTS AND CHANNELS ARE TO BE CONSTRUCTED WITH 1:1 SLOPES UNLESS OTHERWISE SPECIFIED.
4. THE CHANNELS FOR THE DRAINAGE OF THE SITE ARE TO BE CONSTRUCTED WITH 1:1 SLOPES UNLESS OTHERWISE SPECIFIED.
5. THE EXACT LOCATION FOR THE SUBMISSION OF WALLS, BARRIERS AND GATES TO BE AGREED WITH THE ENGINEER IN CHARGE.
6. FLOOD MARKING SIGN NOTICES TO BE SUBMITTED WITHIN 30 DAYS OF THE DATE OF THE DRAWING.

LEGEND:

- HORIZONAL LIMIT
- SETTING OUT POINT (S.O.P.) FOR CHANNEL
- BEGINNING OF ALIGNMENT
- END OF ALIGNMENT
- CHANNEL WITH CONCRETE LINING
- CHANNEL WITH GRAVEL LINING
- PROPOSED ANNALS
- PROPOSED FLOOD MARKING SIGN

FOR TENDER PURPOSES ONLY

| Description | Quantity | Unit | Remarks |
|-------------|----------|------|---------|
| Channel | 1.00 | m | |
| Annals | 1.00 | m | |
| Signs | 1.00 | nos | |
| Other | 1.00 | m | |

Contract No. DC/2011/06

REPRODUCTION OF BOUNDARY, FACTORY, ROAD AND ASSOCIATED SECURITY FACILITIES BETWEEN PING YUEN RIVER AND PAK TU SHAN AND DRAINAGE WORKS IN NORTH DISTRICT

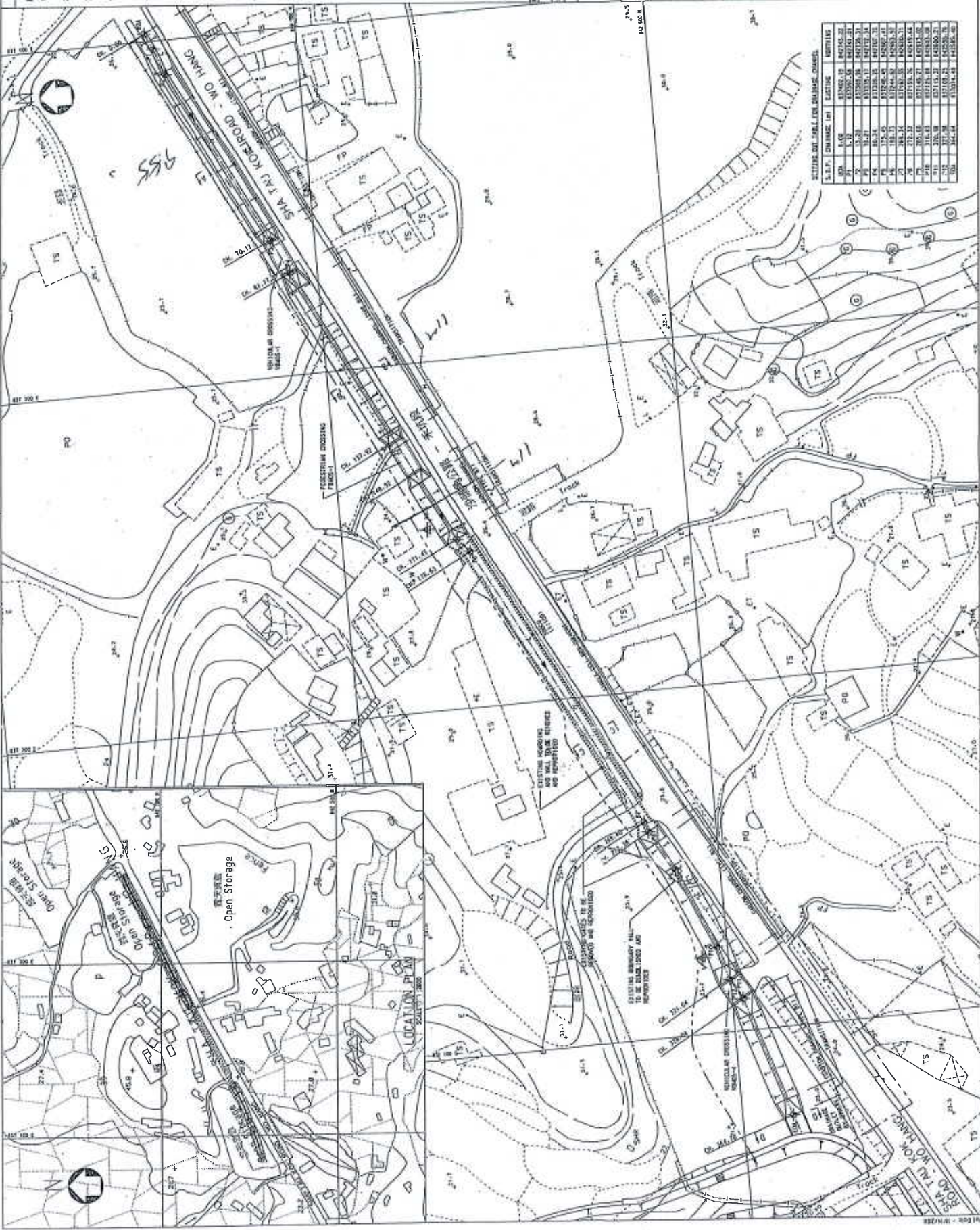
Drawing Title: GENERAL LAYOUT PLAN FOR DRAINAGE CHANNEL MUP05

Scale: 1:500 A1
1:1000 A3

DDP/DC/1106/41011

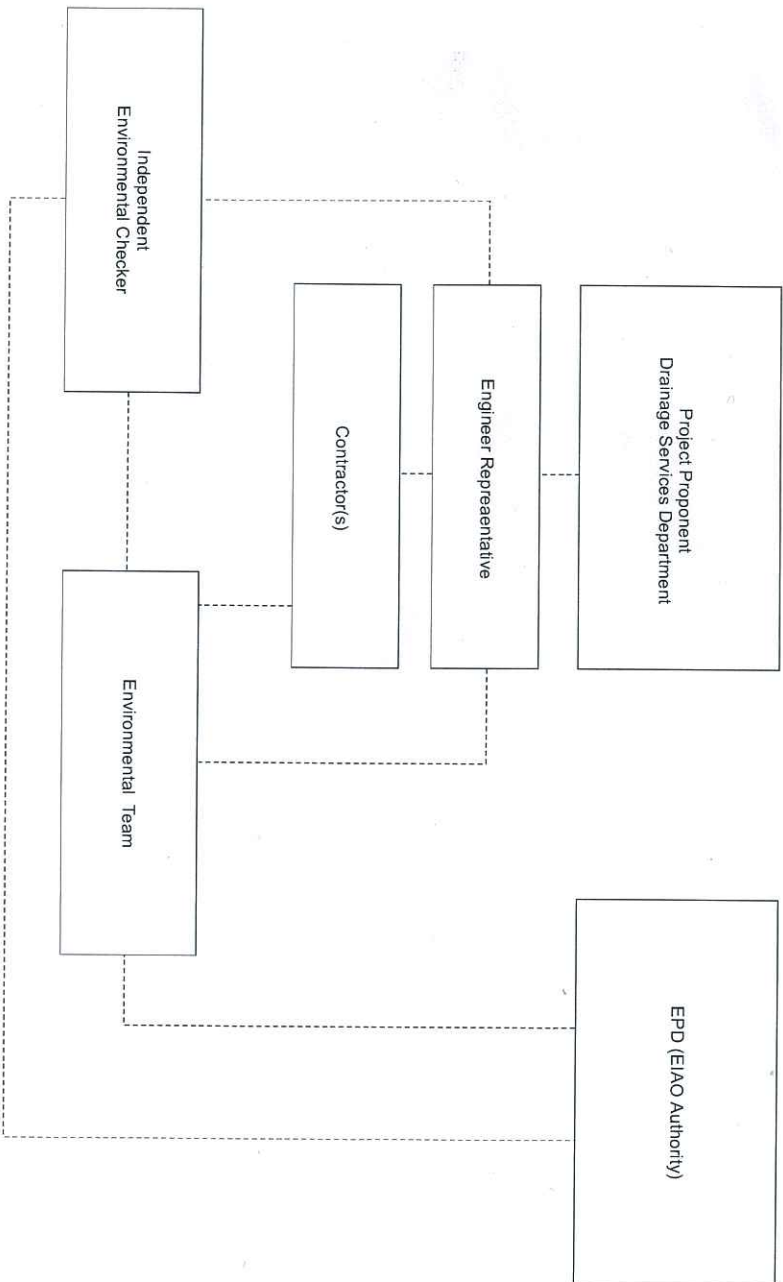
香港特別行政區政府渠務署
THE HONG KONG GOVERNMENT
DRAINAGE SERVICES DEPARTMENT

BLACK & VEATCH ASIA HONG KONG LIMITED
黑川工程顧問有限公司



ANNEX B

***ENVIRONMENTAL MANAGEMENT ORGANIZATION
AND COMMUNICATION LINES***



EM&A Organisation Chart

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

ANNEX C

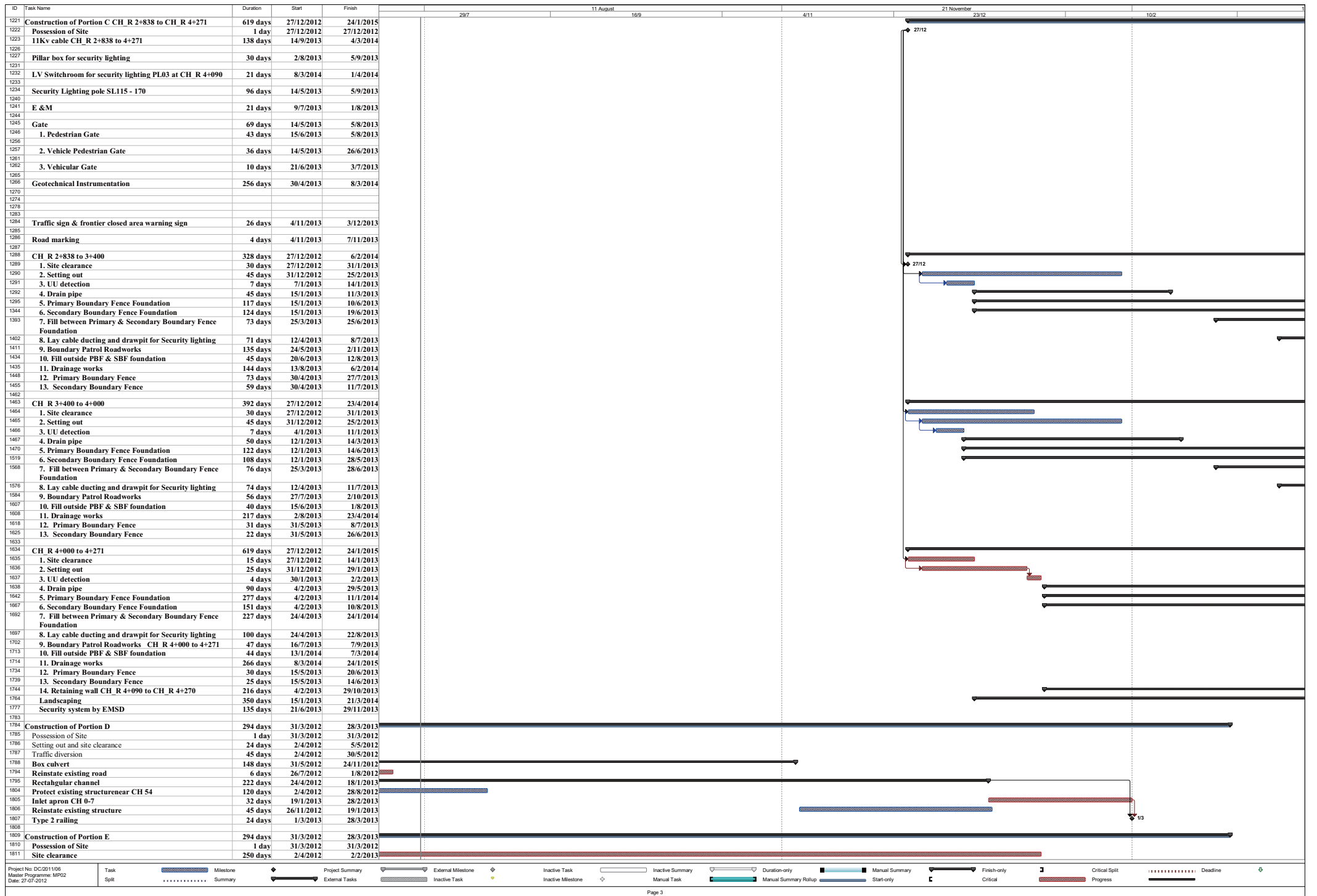
IMPLEMENTATION SCHEDULE

FOR ENVIRONMENTAL MITIGATION MEASURES

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

ANNEX D

3-MONTH ROLLING CONSTRUCTION PROGRAM



| ID | Task Name | Duration | Start | Finish |
|------|--|----------|------------|------------|
| 1812 | Setting out | 45 days | 14/4/2012 | 7/6/2012 |
| 1813 | Utilities detection | 150 days | 10/5/2012 | 6/11/2012 |
| 1814 | Utility Diversion | 21 days | 3/10/2012 | 27/10/2012 |
| 1815 | Liasion with villagers | 45 days | 8/6/2012 | 1/8/2012 |
| 1821 | Reprovisioning of existing boundary fence for private lots | 30 days | 2/8/2012 | 5/9/2012 |
| 1827 | Landscaping Works | 179 days | 8/6/2012 | 11/1/2013 |
| 1832 | Transition Section | 206 days | 16/7/2012 | 22/3/2013 |
| 1842 | Gabion Wall Channel | 196 days | 27/7/2012 | 22/3/2013 |
| 1848 | Box Culvert | 156 days | 6/9/2012 | 16/3/2013 |
| 1850 | Vehicular Crossing | 74 days | 20/8/2012 | 16/11/2012 |
| 1853 | Pedestrian Crossing FBM05-1 | 52 days | 22/10/2012 | 21/12/2012 |
| 1854 | Railing | 107 days | 17/11/2012 | 28/3/2013 |

ANNEX E

IMPACT MONITORING SCHEDULE

IMPACT MONITORING SCHEDULE FOR THE REPORTING PERIOD

| Date | | Air Quality | | 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 | | | | |

| | |
|--|--------------------------|
| | 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

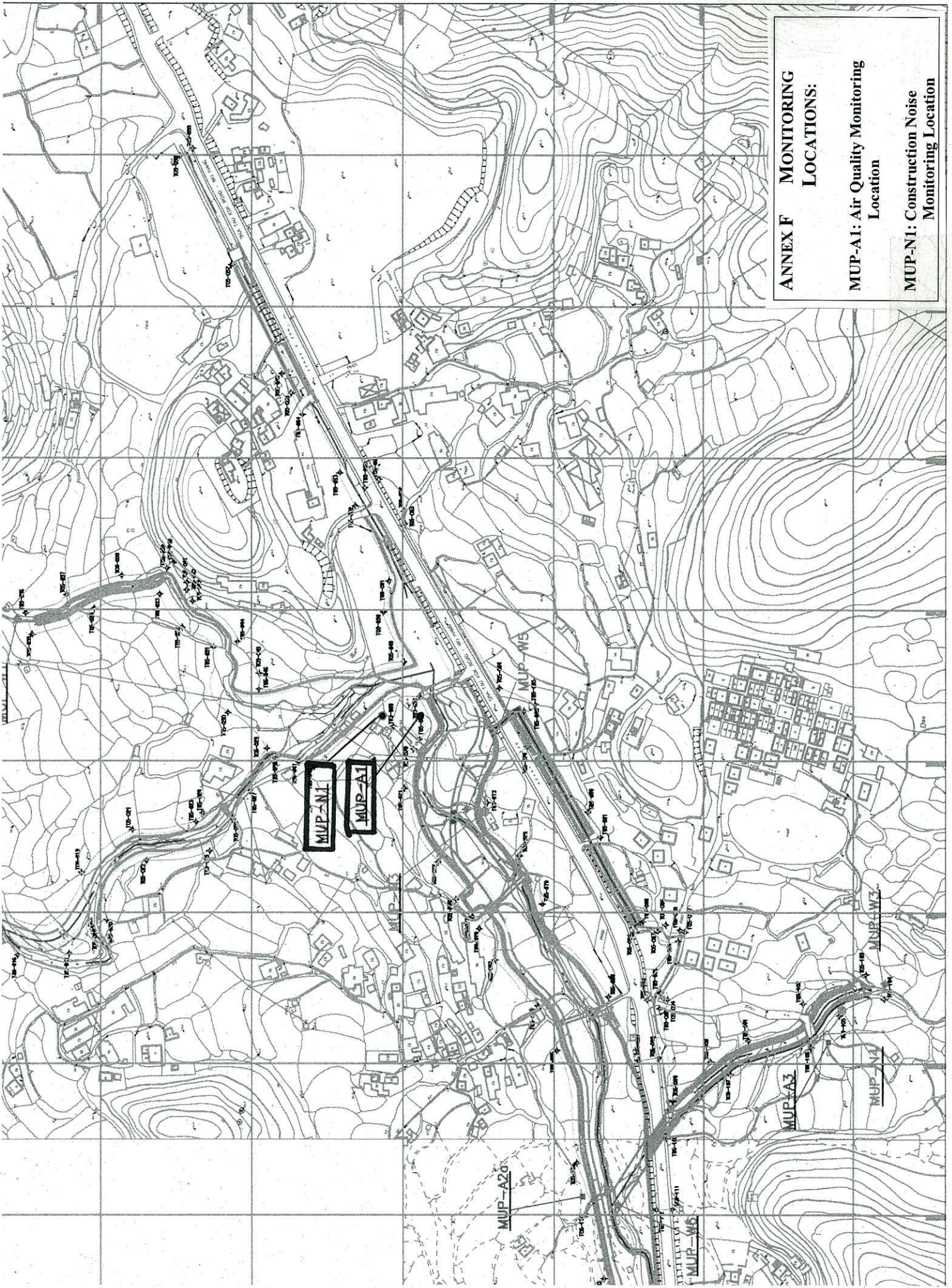
Monitoring Schedule for September 2012

| 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 Day |
| | Sunday or Public Holiday |

ANNEX F

MONITORING LOCATIONS



ANNEX F MONITORING LOCATIONS:

MUP-A1: Air Quality Monitoring Location

MUP-N1: Construction Noise Monitoring Location

ANNEX G
MONITORING EQUIPMENT CALIBRATION CERTIFICATES

MONITORING EQUIPMENT CALIBRATION CERTIFICATES

| Items | Aspect | Description of Equipment | Date of Calibration | Date of Next Calibration |
|-------|--------|--|---------------------|--------------------------|
| 1* | Air | TSP Sampler Calibration Spreadsheet for MUP-A1 | 13 May 12 | 13 Jul 12 |
| 2 | | 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 | Noise | Bruel & Kjaer Integrating Sound Level Meter EQ010 (Serial No. 2285721) | 20 Apr 12 | 20 Apr 13 |
| 6 | | 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 |

Note:

- * *This Appendix G presents only calibration certificates of new monitoring equipment or those expired and re-calibrated 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 : | Man Uk Pin Near DD46 Lot 820 | Date of Calibration: 13-Jul-12 |
| Location ID : | MUP-A1 | Next Calibration Date: 13-Sep-12 |
| | | Technician: Mr. Ben Tam |

CONDITIONS

| | | | |
|--------------------------|------|----------------------------|-------|
| Sea Level Pressure (hPa) | 1006 | Corrected Pressure (mm Hg) | 754.5 |
| Temperature (°C) | 29.2 | Temperature (K) | 302 |

CALIBRATION ORIFICE

| | | | |
|-------------|-------|-------------------|----------|
| Make-> | TISCH | Qstd Slope -> | 2.00279 |
| Model-> | 5025A | Qstd Intercept -> | -0.00494 |
| Serial # -> | 1483 | | |

CALIBRATION

| Plate No. | H2O (L) (in) | H2O (R) (in) | H2O (in) | Qstd (m3/min) | I (chart) | IC corrected | LINEAR REGRESSION |
|-----------|--------------|--------------|----------|---------------|-----------|--------------|--|
| 18 | 5.8 | 5.8 | 11.6 | 1.685 | 48 | 47.16 | Slope = 35.3090 Intercept = -13.2960 Corr. coeff. = 0.9966 |
| 13 | 4.2 | 4.2 | 8.4 | 1.434 | 38 | 37.34 | |
| 10 | 3.5 | 3.5 | 7.0 | 1.310 | 32 | 31.44 | |
| 7 | 2.5 | 2.5 | 5.0 | 1.107 | 26 | 25.55 | |
| 5 | 1.3 | 1.3 | 2.6 | 0.799 | 16 | 15.72 | |

Calculations :

$$Q_{std} = 1/m[\text{Sqrt}(H2O(Pa/P_{std})(T_{std}/T_a))-b]$$

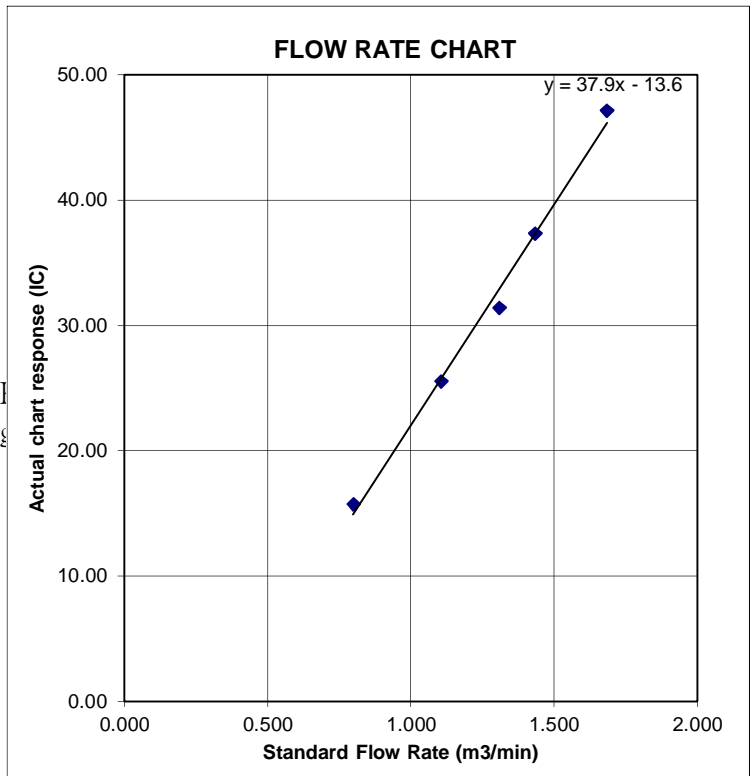
$$IC = I[\text{Sqrt}(Pa/P_{std})(T_{std}/T_a)]$$

Qstd = standard flow rate
 IC = corrected chart responses
 I = actual chart response
 m = calibrator Qstd slope
 b = calibrator Qstd intercept
 Ta = actual temperature during calibration (deg C)
 Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

$$1/m((I)[\text{Sqrt}(298/T_{av})(P_{av}/760)]-b)$$

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



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

| | | |
|---------------|------------------------------|----------------------------------|
| Location : | Man Uk Pin Near DD46 Lot 820 | Date of Calibration: 13-May-12 |
| Location ID : | MUP-A1 | Next Calibration Date: 13-Jul-12 |
| | | Technician: Mr. Ben Tam |

CONDITIONS

| | | | |
|--------------------------|--------|----------------------------|---------|
| Sea Level Pressure (hPa) | 1005.3 | Corrected Pressure (mm Hg) | 753.975 |
| Temperature (°C) | 27.9 | Temperature (K) | 301 |

CALIBRATION ORIFICE

| | | | |
|-------------|-------|-------------------|----------|
| Make-> | TISCH | Qstd Slope -> | 2.00279 |
| Model-> | 5025A | Qstd Intercept -> | -0.00494 |
| Serial # -> | 1483 | | |

CALIBRATION

| Plate No. | H2O (L) (in) | H2O (R) (in) | H2O (in) | Qstd (m3/min) | I (chart) | IC corrected | LINEAR REGRESSION |
|-----------|--------------|--------------|----------|---------------|-----------|--------------|--|
| 18 | 5.5 | 5.5 | 11.0 | 1.644 | 48 | 47.35 | Slope = 38.6957 Intercept = -17.1844 Corr. coeff. = 0.9931 |
| 13 | 4.1 | 4.1 | 8.2 | 1.420 | 38 | 37.48 | |
| 10 | 3.5 | 3.5 | 7.0 | 1.312 | 32 | 31.57 | |
| 7 | 2.3 | 2.3 | 4.6 | 1.064 | 26 | 25.65 | |
| 5 | 1.5 | 1.5 | 3.0 | 0.860 | 16 | 15.78 | |

Calculations :

$$Q_{std} = 1/m[\sqrt{H_2O(P_a/P_{std})(T_{std}/T_a)}] - b$$

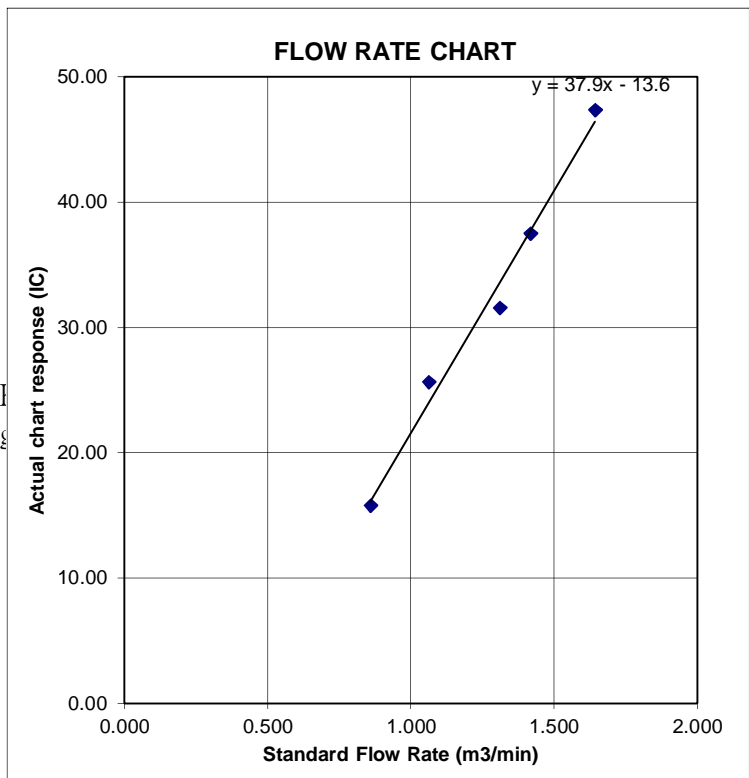
$$IC = I[\sqrt{P_a/P_{std}}(T_{std}/T_a)]$$

Qstd = standard flow rate
 IC = corrected chart responses
 I = actual chart response
 m = calibrator Qstd slope
 b = calibrator Qstd intercept
 Ta = actual temperature during calibration (deg F)
 Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

$$1/m((I) [\sqrt{298/T_{av}}(P_{av}/760)] - b)$$

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





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 : 
核證 : K C Lee

Date of Issue : 23 April 2012
簽發日期

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。局部複印本證書需先獲本實驗所書面批准。

Certificate of Calibration

校正證書

Certificate No. : C122427
證書編號

- 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.
- Self-calibration using the B & K Acoustic Calibrator 4231, S/N : 2713428 was performed before the test.
- The results presented are the mean of 3 measurements at each calibration point.
- Test equipment :

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

- Test procedure : MA101N.

- 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 |

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 - 局部複印本證書需先獲本實驗室書面批准 -

Certificate of Calibration

校正證書

Certificate No. : C122427

證書編號

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) |

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。局部複印本證書需先獲本實驗室所書面批准。

Certificate of Calibration

校正證書

Certificate No. : C122427
證書編號

6.4 Time Averaging

| UUT Setting | | | | Applied Value | | | | | 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 | L _{Aeq} | A | 10 sec. | 4 | 1 | 1/10 | 110.0 | 100 | 99.9 | ± 0.5 |
| | | | 60 sec. | | | 1/10 ² | | 90 | 89.6 | ± 0.5 |
| | | | 5 min. | | | 1/10 ³ | | 80 | 79.8 | ± 1.0 |
| | | | | | | 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.



ALS Technichem (HK) Pty Ltd

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

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

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

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 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

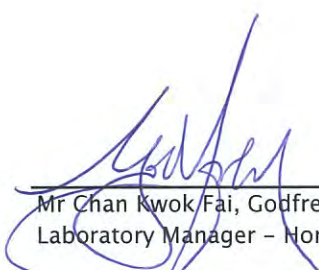
This is the Final Report and supersedes any preliminary report with this batch number.
Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

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: 852-2610 1044
Fax: 852-2610 2021
Email: hongkong@alsglobal.com


Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

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Page 1 of 3

ADDRESS 11/F, Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong PHONE +852 2610 1044 FAX +852 2610 2021
ALS TECHNICHEM (HK) PTY LTD Part of the ALS Laboratory Group A Campbell Brothers Limited Company

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:

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

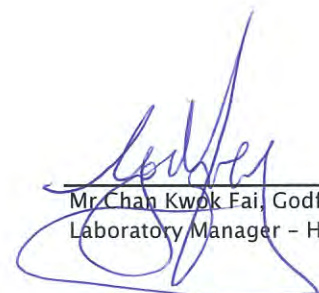
| Expected Reading (mg/L) | Displayed Reading (mg/L) | Tolerance (mg/L) |
|-------------------------|--------------------------|------------------|
| 6.43 | 6.33 | -0.10 |
| 7.80 | 7.76 | -0.04 |
| 8.35 | 8.30 | -0.05 |
| Tolerance Limit (±mg/L) | | 0.20 |

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



Certificate of Calibration

校正證書

Certificate No. : C122426
證書編號

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

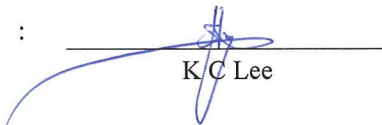
TEST RESULTS / 測試結果

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 : 23 April 2012
 簽發日期

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。局部複印本證書需先獲本實驗所書面批准。

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

Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

| 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 |

ANNEX H

EVENT/ ACTION PLAN

Table 2.4
Event/Action Plan for Air Quality

| EVENT | ACTION | | | |
|---|--|---|---|--|
| | ET Leader | IEC | ER | Contractor |
| ACTION LEVEL | | | | |
| 1. Exceedance for one sample | <ol style="list-style-type: none"> Identify source Inform IEC, ER and Contractor Repeat measurement to confirm findings Increase monitoring frequency to daily | <ol style="list-style-type: none"> Check monitoring data submitted by ET Leader Check Contractor's working method | <ol style="list-style-type: none"> Notify Contractor | <ol style="list-style-type: none"> Rectify any unacceptable practice Amend working methods if appropriate |
| 2. Exceedance for two or more consecutive samples | <ol style="list-style-type: none"> 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 | <ol style="list-style-type: none"> 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 | <ol style="list-style-type: none"> Confirm receipt of notification of failure in writing Notify Contractor Ensure remedial measures properly implemented | <ol style="list-style-type: none"> 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 | <ol style="list-style-type: none"> 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 | <ol style="list-style-type: none"> 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 | <ol style="list-style-type: none"> Confirm receipt of notification of failure in writing Notify Contractor Ensure remedial measures properly implemented | <ol style="list-style-type: none"> 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 | <ol style="list-style-type: none"> 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 | <ol style="list-style-type: none"> 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 | <ol style="list-style-type: none"> Confirm receipt of notification of failure in writing Notify Contractor In consultation with IEC, agree with the Contractor on the remedial measures to be implemented Ensure remedial measures properly implemented 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. | <ol style="list-style-type: none"> 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. |

Table 3.3 Event/Action Plan for Construction Noise Monitoring

| EVENT | ACTION | | | |
|--------------|---|--|--|--|
| | ET Leader | IEC | ER | Contractor |
| Action Level | <ol style="list-style-type: none"> 1. Notify IEC, Contractor and ER 2. Carry out investigation and identify source 3. Report the results of investigation to the IEC, Contractor and ER 4. Discuss with the Contractor and formulate remedial measures 5. Increase monitoring frequency 6. Check compliance to Action/Limit Levels after application of mitigation measures | <ol style="list-style-type: none"> 1. Review the analysed results submitted by the ET Leader 2. Review the proposed remedial measures by the Contractor and advise the ER & ET accordingly 3. Review the implementation of remedial measures | <ol style="list-style-type: none"> 1. Confirm receipt of notification of complaint in writing 2. Notify Contractor 3. Check monitoring data submitted by the ET 4. Require Contractor to propose remedial measures for the analysed noise problem 5. Ensure remedial measures are properly implemented | <ol style="list-style-type: none"> 1. Submit noise mitigation proposals to ER and IEC within three working 2. Liaise with the ER to ensure the effectiveness of the agreed mitigation 3. Amend proposal if required 4. Implement noise mitigation proposals |
| Limit Level | <ol style="list-style-type: none"> 1. Notify IEC, ER, EPD and Contractor 2. Identify Source 3. Repeat measurement to confirm findings 4. Increase monitoring frequency 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented 6. Inform IEC, ER and EPD the causes & actions taken for the exceedances 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results 8. If exceedance stops, cease additional monitoring | <ol style="list-style-type: none"> 1. Check monitoring data submitted by ET 2. Discuss amongst ER, ET Leader and Contractor on the potential remedial actions 3. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER & ET accordingly 4. Audit the implementation of remedial measures | <ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance 2. Notify Contractor 3. Check monitoring data submitted by the ET 4. Require Contractor to propose remedial measures for the analysed noise problem 5. Discuss with ET, IEC and Contractor on proposed remedial actions to be implemented 6. Ensure remedial measures are properly implemented 7. Assess the effectiveness of the remedial actions and keep the Contractor informed 8. 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 | <ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to ER within 3 working days of notification 3. Liaise with the ER to ensure the effectiveness of the agreed mitigation 4. Amend proposal if required 5. Implement the agreed proposals 6. Resubmit proposals if problem still not under control 7. Stop the relevant portion of works as determined by the ER until the exceedance is abated |

Table 4.6 Event and Action Plan for Water Quality

| Event | ET Leader | IEC | ER | Contractor |
|--|---|--|--|---|
| Action Level being exceeded by one sampling day | <ol style="list-style-type: none"> Repeat in-site 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. Repeat measurement on next day of exceedance. | <ol style="list-style-type: none"> 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. | <ol style="list-style-type: none"> Discuss with IEC on the proposed mitigation measures. Make agreement on the mitigation measures to be implemented. Assess effectiveness of the implemented mitigation measures. | <ol style="list-style-type: none"> 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 | <ol style="list-style-type: none"> 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. | <ol style="list-style-type: none"> 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. | <ol style="list-style-type: none"> 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. | <ol style="list-style-type: none"> 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 | <ol style="list-style-type: none"> 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. | <ol style="list-style-type: none"> 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. | <ol style="list-style-type: none"> 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. | <ol style="list-style-type: none"> 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. |

| Event | ET Leader | IEC | ER | Contractor |
|---|---|---|--|--|
| Limit Level being exceeded by more than one consecutive sampling days | <ol style="list-style-type: none"> 1. Repeat in-situ measurement to confirm findings. 2. Identify source(s) 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. | <ol style="list-style-type: none"> 1. Discuss with ET and Contractor on the mitigation measures. 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly. 3. Assess the effectiveness of the implemented mitigation measures. | <ol style="list-style-type: none"> 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 work until no exceedance of Limit Level. | <ol style="list-style-type: none"> 1. Inform the ER and confirm notification of the non-compliance in writing. 2. Rectify unacceptable practice. 3. Check all plant and equipment. 4. Consider changes of working methods. 5. Discuss with ET, 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 work or construction activities. |

ANNEX I

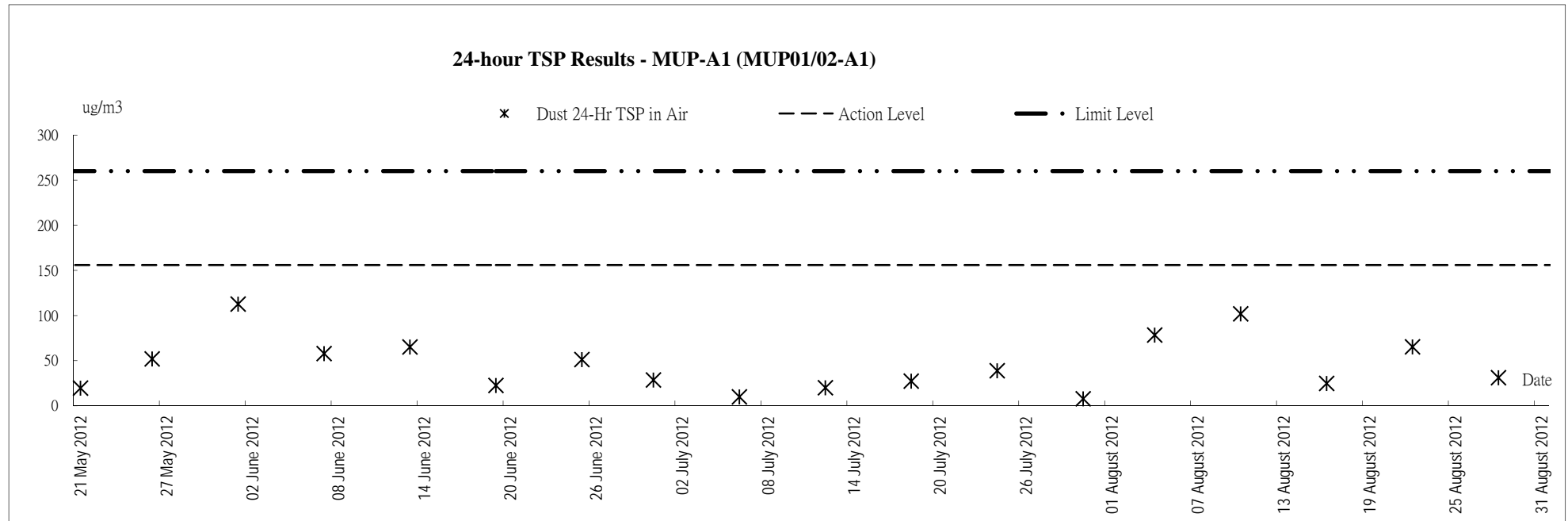
24-Hr TSP DATA

AND

GRAPHICAL PLOTS OF ENVIRONMENTAL MONITORING RESULTS

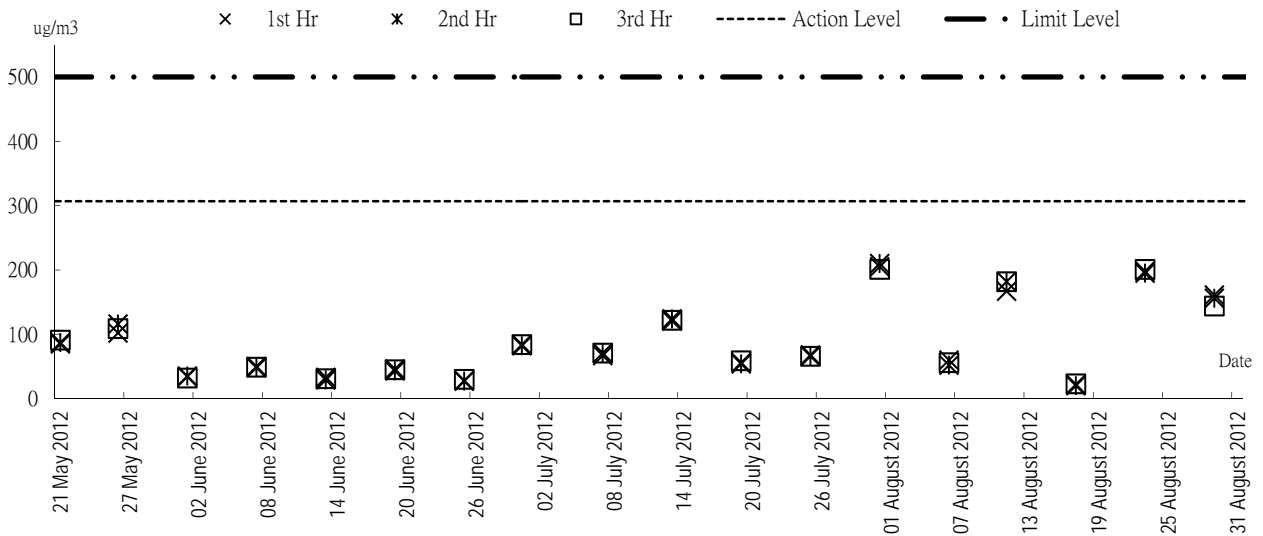
24-Hr TSP Data – MUP-A1 (Action Level: 156 Limit Level: 260)

| DATE | SAMPLE NUMBER | ELAPSED TIME | | | CHART READING | | | AVG TEMP (°C) | STANDARD | | | FILTER WEIGHT (g) | | WEIGHT DUST COLLECTED (g) | 24-hr TSP (µg/m³) |
|-------|---------------|--------------|---------|-------|---------------|------|------|---------------|-----------------|--------------------|---------------------|-------------------|--------|---------------------------|-------------------|
| | | INITIAL | FINAL | (min) | MIN | MAX | AVG | | AVG PRESS (hPa) | FLOW RATE (m3/min) | AIR VOLUME (std m3) | INITIAL | FINAL | | |
| 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 |



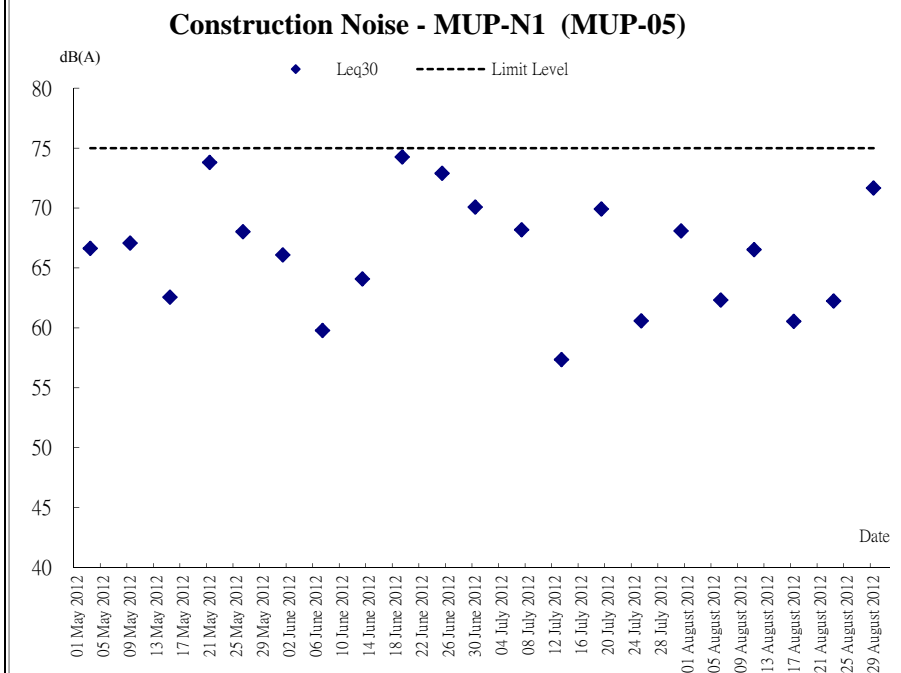
| 1-HOUR TSP MONITORING RESULTS AT MUP-A1 | | | | |
|--|---|-----|-----------------|-----|
| Date | 1-Hour TSP Monitoring Results at MUP-A1 (MUP05) | | | |
| | 1 st | | 1 st | |
| 6-Aug-12 | 11:10 | 60 | 52 | 56 |
| 11-Aug-12 | 10:00 | 167 | 182 | 182 |
| 17-Aug-12 | 10:15 | 22 | 20 | 23 |
| 23-Aug-12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

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



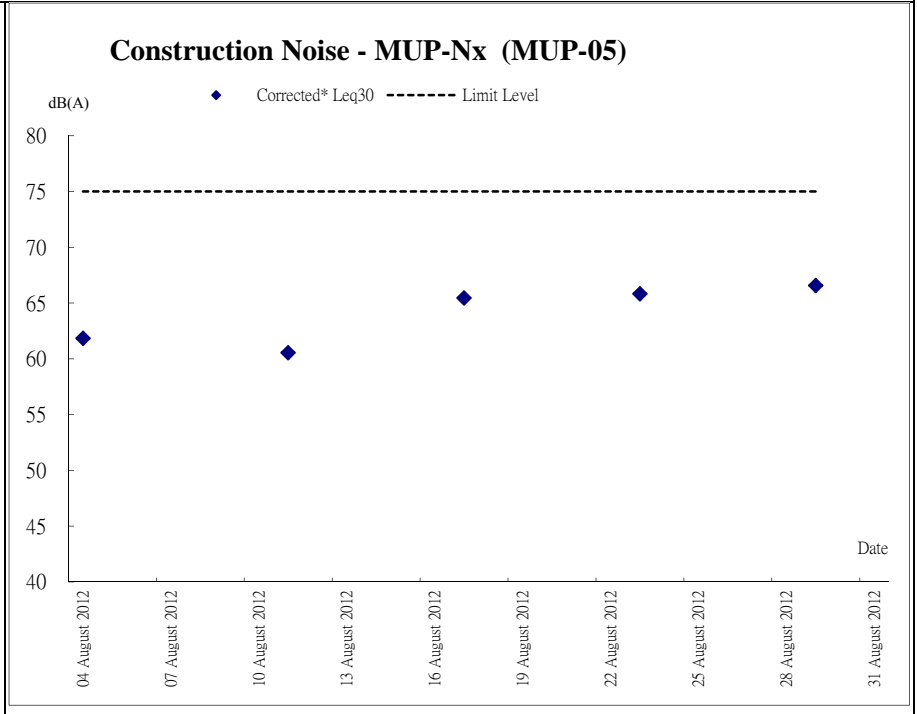
CONSTRUCTION NOISE MONITORING RESULTS AT MUP-N1

| Date | Leq30 |
|-----------------|----------------|
| 6-Aug-12 | 62 |
| 11-Aug-12 | 67 |
| 17-Aug-12 | 61 |
| 23-Aug-12 | 62 |
| 29-Aug-12 | 72 |
| Average (Range) | 65 (60 – 72) |

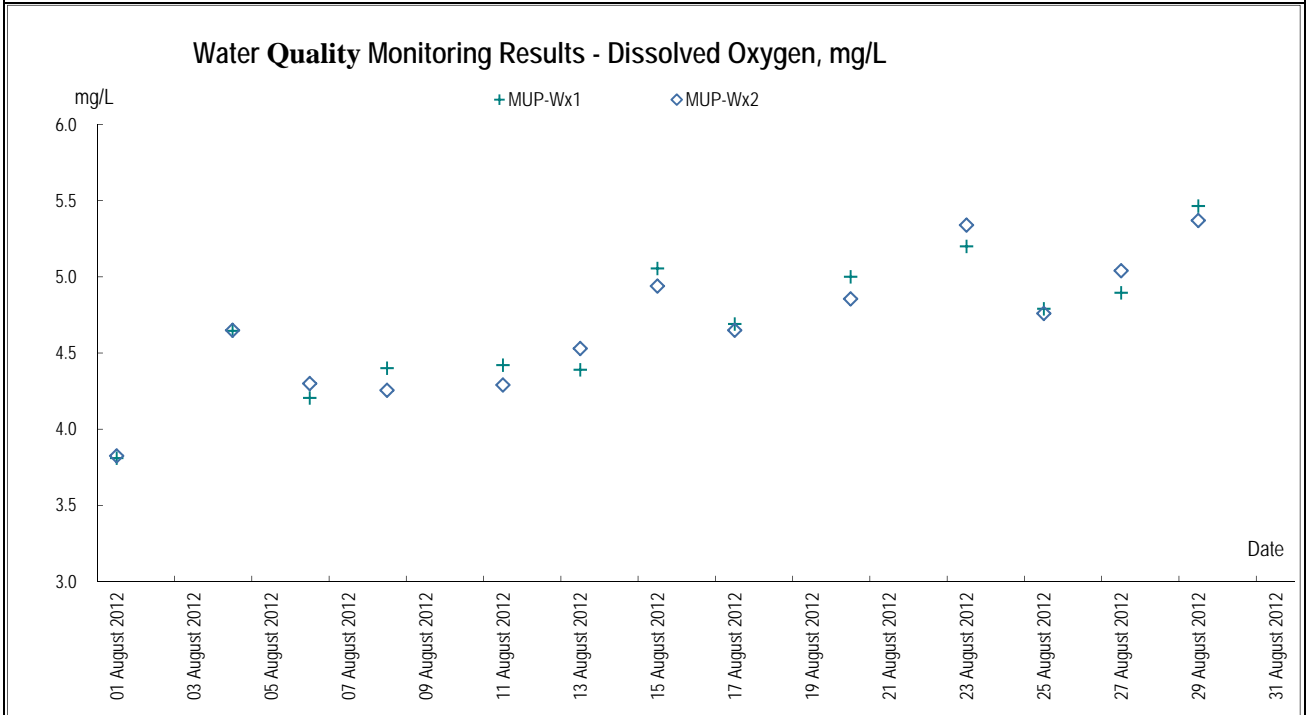


CONSTRUCTION NOISE MONITORING RESULTS AT MUP-Nx

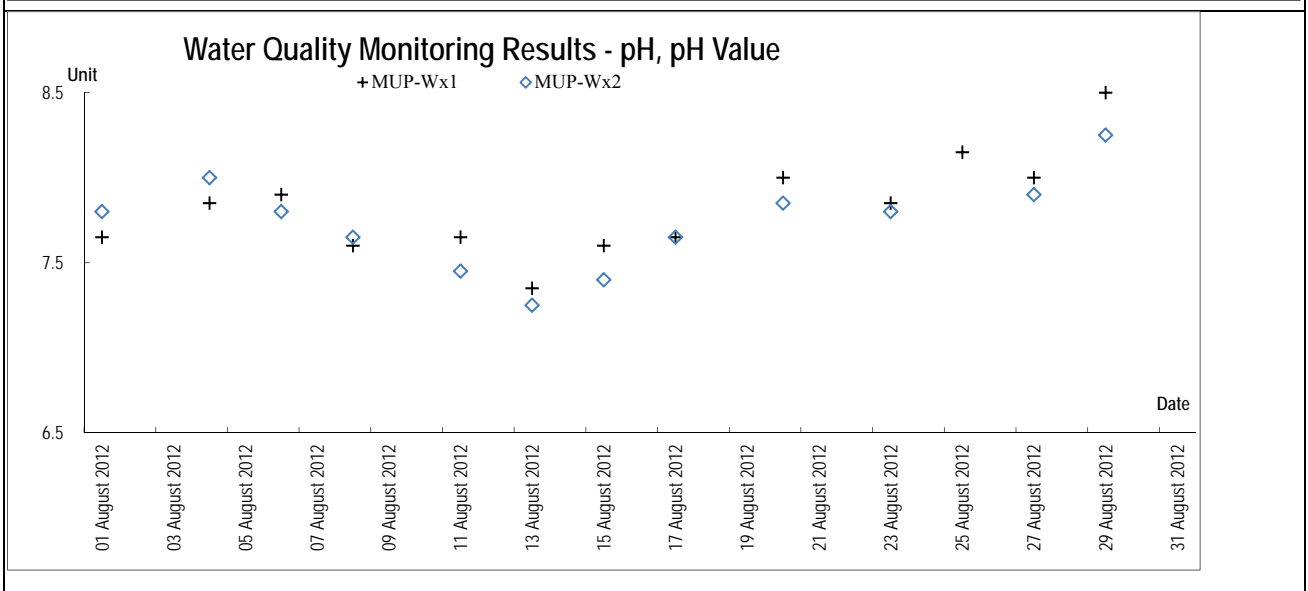
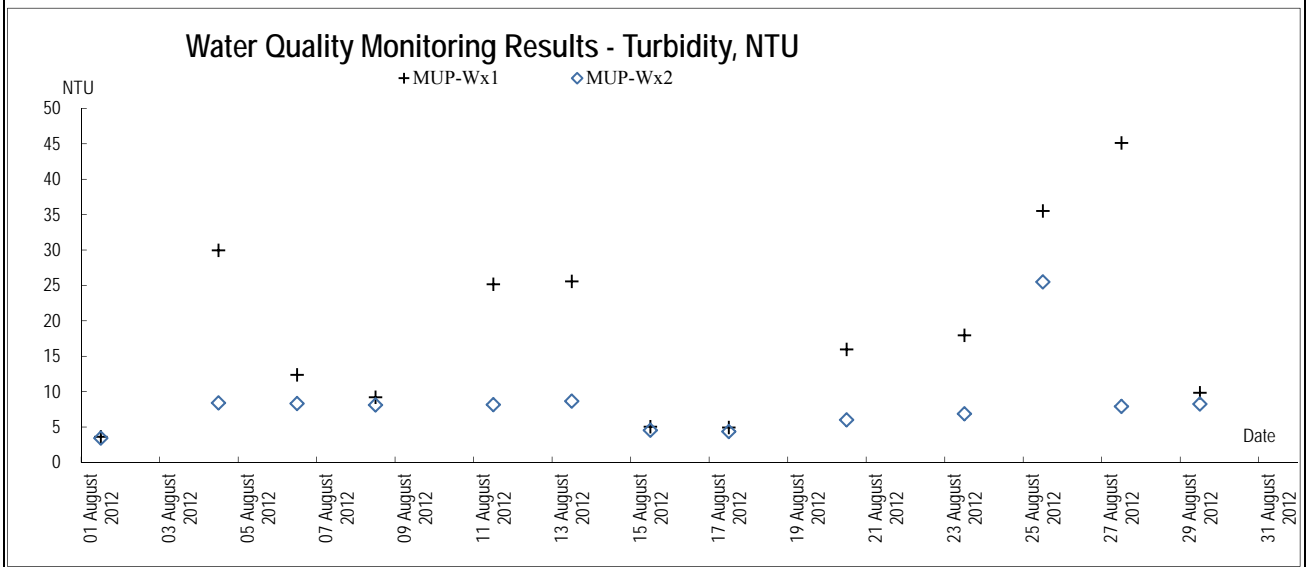
| Date | Leq30 |
|-----------------|--------------|
| 6-Aug-12 | 62 |
| 11-Aug-12 | 61 |
| 17-Aug-12 | 65 |
| 23-Aug-12 | 66 |
| 29-Aug-12 | 67 |
| Average (Range) | 64 (61 – 67) |

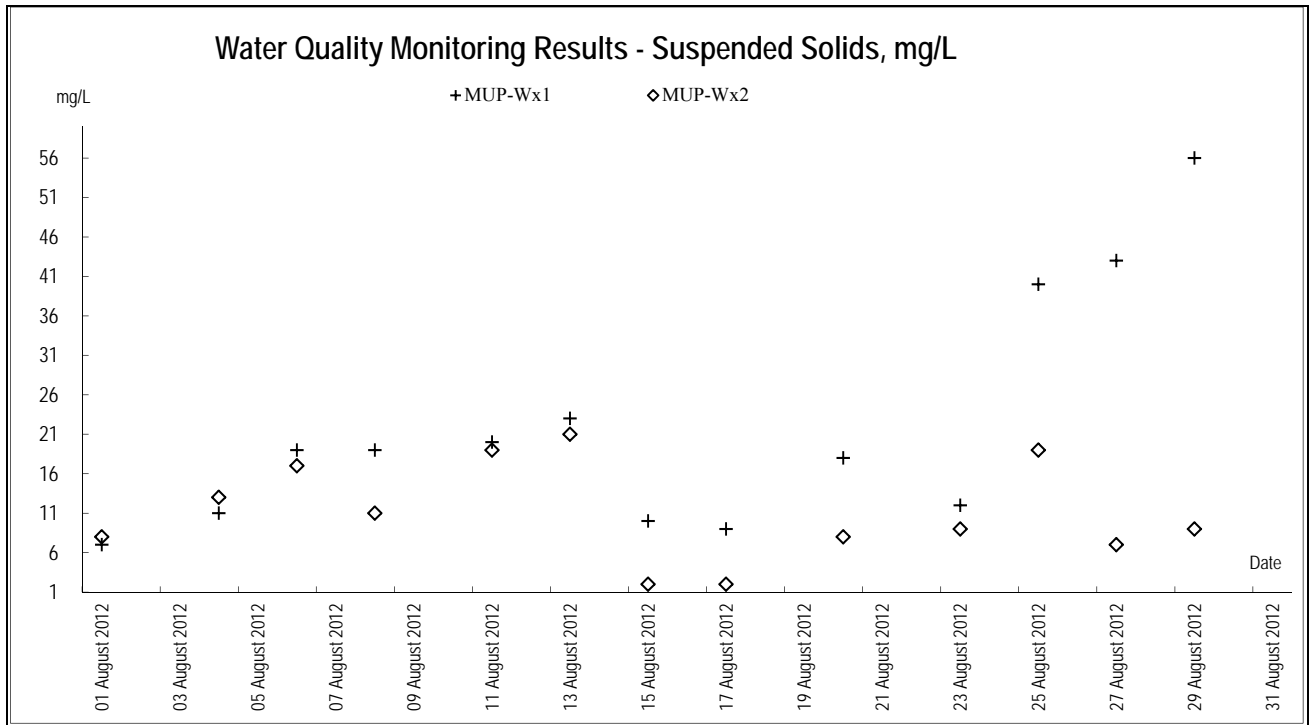


WATER QUALITY MONITORING RESULTS AT MUP-Wx1 AND Wx2



WATER QUALITY MONITORING RESULTS AT MUP-Wx1 AND Wx2 (CONTINUED)





ANNEX J

METEOROLOGICAL DATA

Meteorological Data from HKO for the Reporting Period

| Date | | Weather | Total Rainfall (mm) | Ta Kwu Ling | | | |
|-----------|-----|---|---------------------|---------------------|-------------------|----------------------------|----------------|
| | | | | 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 | E |
| 14-Aug-12 | Tue | Fine and very hot but hazy. | 1.9 | 28.8 | 6.6 | 80.5 | E |
| 15-Aug-12 | Wed | It will be very hot | 0 | 29 | 4.9 | 73 | N |
| 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 | E |
| 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**

ANNEX L

RESPONSE TO COMMENTS

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