

JOB No.: TCS00491/09

DSD CONTRACT No.: DC/2009/08

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

32<sup>ND</sup> ENVIRONMENTAL MONITORING & AUDIT  
MONTHLY REPORT – SEPTEMBER 2012

PREPARED FOR

CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG)  
COMPANY LIMITED

**Quality Index**

| Date            | Reference No.           | Prepared By                                                                                                                      | Certified By                                                                                                                     |
|-----------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| 15 October 2012 | TCS00491/09/600/R0409v2 | <br>Nicola Hon<br>(Environmental Consultant) | <br>T.W. Tam<br>(Environmental Team Leader) |

| Version | Date            | Description                                       |
|---------|-----------------|---------------------------------------------------|
| 1       | 10 October 2012 | First submission                                  |
| 2       | 15 October 2012 | Amended against IEC's comments on 12 October 2012 |
|         |                 |                                                   |

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安誠工程顧問有限公司  
香港灣仔  
皇后大道東183號  
合和中心47樓  
電話: (852) 2911 2233  
傳真: (852) 2805 5028

Hyder Consulting Limited  
Company Number 126012  
47th Floor, Hopewell Centre  
183 Queen's Road East  
Wan Chai, Hong Kong  
Tel: (852) 2911 2233  
Fax: (852) 2805 5028  
hyder.hk@hyderconsulting.com  
www.hyderconsulting.com



17 October 2012

**By Email**

Action-United Environmental Services &  
Consulting  
Unit A, 20/F, Gold King Industrial Building,  
35-41 Tai Lin Pai Road,  
Kwai Chung,  
New Territories,  
Hong Kong.

**Your Ref:**

**Our Ref:** EB000586-F/THW12-9114

For attention of: Mr. T. W. Tam

Dear Mr. Tam,

**Contract No.: DC/2009/08**

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

**Monthly EM&A Report for Designated Project, September 2012 – IEC Verification**

With reference to ET's captioned report (ET's ref.: TCS00491/09/600/R0409v2) received on 15 October 2012, we have no comment and hereby verify the captioned report excluding the Landscape and Visual Impact section of the report.

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

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

Yours sincerely,

F.C. TSANG  
Independent Environmental Checker  
HYDER CONSULTING LIMITED

FCT/my

## EXECUTIVE SUMMARY

- ES01. The China State Construction Engineering (Hong Kong) Limited (hereinafter “The Contractor”) has been awarded by the Drainage Services Department (DSD) the Contract **DC/2009/08 Construction of Yuen Long South Branch Sewers and Expansion of Ha Tsuen Sewage Pumping Station** (the Project) in October 2009.
- ES02. For ease of reporting, it has been agreed among the Engineer’s Representatives (ER, AECOM), Independent Environmental Checker (IEC, Hyder Consulting Limited), the Contractor (The China State Construction Engineering (Hong Kong) Limited), Environmental Team (Action-United Environmental Services and Consulting, ET) and Environmental Protection Department (EPD) that the Environmental Monitoring & Audit (EM&A) Report under the Project is split to the following two stand-alone parts:-
- Expansion of the existing Ha Tsuen Sewage Pumping Station (with Environmental Permit No.EP-327/2009/A)
  - Construction of a sewage pumping station near Shui Tsiu San Tsuen Road in Yuen Long South; and construction of about 9km of sewers and rising mains with diameter ranging from 200-1500mm in Yuen Long South and Ha Tsuen areas (without Environmental Permit).
- ES03. This is the **32<sup>nd</sup>** Monthly Environmental Monitoring and Audit (EM&A) Report for the designated work of Project under Environmental Permit No.EP-327/2009/A (hereinafter ‘the EP’), covering a period from **1 to 30 September 2012** (hereinafter ‘the Reporting Period’).

## ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

- ES04. Environmental monitoring activities under the EM&A programme in this Reporting Period are summarized in the following table.

| Aspects            | Environmental Monitoring Parameters / Inspection | Occasions |
|--------------------|--------------------------------------------------|-----------|
| Air Quality        | 1-hour Total Suspended Particulates (TSP)        | <b>36</b> |
|                    | 24-hour Total Suspended Particulates (TSP)       | <b>10</b> |
| Construction Noise | $L_{eq(30min)}$ Daytime                          | <b>12</b> |
| Water Quality      | Dissolved Oxygen                                 | <b>12</b> |
|                    | Turbidity                                        | <b>12</b> |
|                    | Suspended Solids                                 | <b>12</b> |
| Inspection / Audit | ET Weekly Environmental Site Inspection          | <b>4</b>  |

## BREACH OF ACTION AND LIMIT (A/L) LEVELS

- ES05. Breach of the air quality, construction noise and water quality in this Reporting Period is summarized in the following table.

| Environmental Aspects | Monitoring Parameters   | Action Level | Limit Level | Event & Action |               |                    |
|-----------------------|-------------------------|--------------|-------------|----------------|---------------|--------------------|
|                       |                         |              |             | NOE Issued     | Investigation | Corrective Actions |
| Air Quality           | 1-hour TSP              | 0            | 0           | 0              | --            | --                 |
|                       | 24-hour TSP             | 0            | 0           | 0              | --            | --                 |
| Construction Noise    | $L_{eq(30min)}$ Daytime | 0            | 0           | 0              | --            | --                 |
| Water Quality         | Dissolved Oxygen        | 0            | 0           | 0              | --            | --                 |
|                       | Turbidity               | 0            | 0           | 0              | --            | --                 |
|                       | Suspended Solids        | 0            | 0           | 0              | --            | --                 |

Note: NOE – Notification of Exceedance

- ES06. In this reporting period, no exceedance was recorded in air quality, water quality and noise monitoring. No NOE was issued and thus no follow up action was therefore required.

**ENVIRONMENTAL COMPLAINT**

ES07. No environmental complaint was recorded / received in this Reporting Period.

**NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS**

ES08. No environmental summons and successful prosecutions were recorded in this Reporting Period.

**REPORTING CHANGE**

ES09. There are no reporting changes in this reporting month.

**SITE INSPECTION BY EXTERNAL PARTIES**

ES10. In this Reporting Period, no site inspection was carried out by EPD or AFCD.

**RECOMMENDATIONS**

- ES11. During dry season, special attention should be paid to the dust mitigation measures to avoid fugitive dust emissions from loose soil surface or haul road. Nevertheless, mitigation measures implemented to control the surface runoff including wheel wash facilities, covering of the loose soil surface or stockpile with tarpaulin sheet, etc., should be properly maintained to prevent any muddy or sandy runoff from the loose soil surface overflow on the site boundary.
- ES12. Other environmental issues such as construction noise as well as waste management, as stipulated in the Environmental Monitoring and Audit Manual should be implemented and maintained, as appropriate.

**TABLE OF CONTENTS**

|                                                           |           |
|-----------------------------------------------------------|-----------|
| <b>1. INTRODUCTION</b>                                    | <b>1</b>  |
| BACKGROUND                                                | 1         |
| REPORT STRUCTURE                                          | 1         |
| <b>2. PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS</b>  | <b>3</b>  |
| PROJECT ORGANIZATION AND MANAGEMENT STRUCTURE             | 3         |
| CONSTRUCTION PROGRESS                                     | 3         |
| SUMMARY OF ENVIRONMENTAL SUBMISSIONS                      | 3         |
| <b>3. SUMMARY OF IMPACT MONITORING REQUIREMENTS</b>       | <b>4</b>  |
| MONITORING PARAMETERS                                     | 4         |
| MONITORING LOCATIONS                                      | 4         |
| MONITORING FREQUENCY                                      | 6         |
| MONITORING METHODOLOGY AND EQUIPMENT                      | 7         |
| EQUIPMENT CALIBRATION                                     | 9         |
| METEOROLOGICAL INFORMATION                                | 9         |
| DATA MANAGEMENT AND DATA QA/QC CONTROL                    | 9         |
| DETERMINATION OF ACTION/LIMIT (A/L) LEVELS                | 10        |
| <b>4. IMPACT MONITORING RESULTS</b>                       | <b>11</b> |
| RESULTS OF AIR QUALITY MONITORING                         | 11        |
| RESULTS OF CONSTRUCTION NOISE MONITORING                  | 11        |
| RESULTS OF WATER QUALITY MONITORING – LOCAL STREAM COURSE | 12        |
| RESULTS OF LANDSCAPE AND VISUAL IMPACT                    | 13        |
| <b>5. WASTE MANAGEMENT</b>                                | <b>14</b> |
| RECORDS OF WASTE QUANTITIES                               | 14        |
| <b>6. SITE INSPECTIONS</b>                                | <b>15</b> |
| <b>7. ENVIRONMENTAL COMPLAINTS AND NON-COMPLIANCE</b>     | <b>16</b> |
| ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION          | 16        |
| <b>8. IMPLEMENTATION STATUS OF MITIGATION MEASURES</b>    | <b>17</b> |
| <b>9. IMPACT FORECAST</b>                                 | <b>21</b> |
| KEY ISSUES FOR THE COMING MONTH                           | 21        |
| <b>10. CONCLUSIONS AND RECOMMENDATIONS</b>                | <b>22</b> |
| CONCLUSIONS                                               | 22        |
| RECOMMENDATIONS                                           | 22        |

## **LIST OF TABLES**

|            |                                                                           |
|------------|---------------------------------------------------------------------------|
| TABLE 2-1  | STATUS OF ENVIRONMENTAL LICENSES AND PERMITS                              |
| TABLE 3-1  | SUMMARY OF MONITORING PARAMETERS                                          |
| TABLE 3-2  | AIR QUALITY MONITORING STATIONS                                           |
| TABLE 3-3  | CONSTRUCTION NOISE MONITORING STATIONS                                    |
| TABLE 3-4  | LOCAL STREAM WATER QUALITY MONITORING STATION                             |
| TABLE 3-5  | AIR QUALITY MONITORING EQUIPMENT                                          |
| TABLE 3-6  | NOISE MONITORING EQUIPMENT                                                |
| TABLE 3-7  | WATER QUALITY MONITORING EQUIPMENT                                        |
| TABLE 3-8  | ACTION AND LIMIT LEVELS FOR AIR QUALITY MONITORING                        |
| TABLE 3-9  | ACTION AND LIMIT LEVELS FOR CONSTRUCTION NOISE                            |
| TABLE 3-10 | ACTION AND LIMIT LEVELS FOR A LOCAL STREAM WATER QUALITY MONITORING (R1b) |
| TABLE 4-1  | SUMMARY OF 24-HOUR AND 1-HOUR TSP MONITORING RESULTS – AM1                |
| TABLE 4-2  | SUMMARY OF 24-HOUR AND 1-HOUR TSP MONITORING RESULTS – AM2                |
| TABLE 4-3  | SUMMARY OF CONSTRUCTION NOISE MONITORING RESULTS – NM1                    |
| TABLE 4-4  | SUMMARY OF CONSTRUCTION NOISE MONITORING RESULTS – NM2                    |
| TABLE 4-5  | SUMMARIES OF WATER QUALITY RESULTS – R1b                                  |
| TABLE 5-1  | SUMMARY OF QUANTITIES OF INERT C&D MATERIALS                              |
| TABLE 5-2  | SUMMARY OF QUANTITIES OF C&D WASTES                                       |
| TABLE 6-1  | SITE OBSERVATIONS IN THE REPORTING MONTH                                  |
| TABLE 7-1  | STATISTICAL SUMMARY OF ENVIRONMENTAL COMPLAINTS                           |
| TABLE 7-2  | STATISTICAL SUMMARY OF ENVIRONMENTAL SUMMONS                              |
| TABLE 7-3  | STATISTICAL SUMMARY OF ENVIRONMENTAL PROSECUTION                          |
| TABLE 8-1  | ENVIRONMENTAL MITIGATION MEASURES                                         |

## **LIST OF ANNEXES**

|                   |                                                         |
|-------------------|---------------------------------------------------------|
| <i>APPENDIX A</i> | SITE LAYOUT PLAN                                        |
| <i>APPENDIX B</i> | ON-SITE ENVIRONMENTAL MANAGEMENT                        |
| <i>APPENDIX C</i> | MASTER CONSTRUCTION PROGRAM                             |
| <i>APPENDIX D</i> | MONITORING LOCATION OF EM&A PROGRAMME                   |
| <i>APPENDIX E</i> | CALIBRATION CERTIFICATES                                |
| <i>APPENDIX F</i> | METEOROLOGICAL INFORMATION                              |
| <i>APPENDIX G</i> | EVENT AND ACTION PLAN                                   |
| <i>APPENDIX H</i> | MONITORING SCHEDULE IN REPORTING MONTH AND COMING MONTH |
| <i>APPENDIX I</i> | RESULTS DATA                                            |
| <i>APPENDIX J</i> | GRAPHICAL PLOTS                                         |
| <i>APPENDIX K</i> | MONTHLY SUMMARY WASTE FLOW TABLE                        |
| <i>APPENDIX L</i> | INSPECTION CHECKLIST                                    |

## 1. INTRODUCTION

### BACKGROUND

- 1.01 The China State Construction Engineering (Hong Kong) Limited (hereinafter “The Contractor”) has been awarded by the Drainage Services Department (DSD) the Contract DC/2009/08 *Construction of Yuen Long South Branch Sewers and Expansion of Ha Tsuen Sewage Pumping Station* (the Project) in October 2009.
- 1.02 The Project involves construction of about 9km of sewers and rising mains with diameter ranging from 200-1500mm in Yuen Long South and Ha Tsuen areas, a sewage pumping station near Shui Tsiu San Tsuen Road in Yuen Long South, expansion of existing Ha Tsuen Sewage Pumping Station. The site layout plan is shown in **Appendix A**.
- 1.03 The expansion of Ha Tsuen Sewage Pumping Station is under a statutory EIA (Register No. AEIAR-072/2003) study for “*Upgrading and expansion of San Wai Sewage Treatment Works and expansion of Ha Tsuen Sewage Pumping Station*” commissioned by the DSD. An Environmental Permit (No. EP-327/2009/A) for upgrading and expansion of Sewage Treatment Works at San Wai (excluded for the Project) and Ha Tsuen Sewage Pumping Station has been obtained by DSD in January 2009 for the relevant works.
- 1.04 According to Section 25 of the Particular Specification (PS) and the Environmental Permit No. EP-327/2009/A, the scope of monitoring includes air quality, construction noise, water quality and environmental site audit. It should be undertaken in accordance with the Environmental Monitoring and Audit Manual as part of EIA report [AEIAR-072/2003] (hereafter “the EM&A Manual”) by an independent Environmental Team (ET). Also, monitoring and audit works for landscaping and visual will be undertaken as part of the EM&A programme.
- 1.05 As the works of the Project has been commenced in different periods of time, the EM&A Report for the Project are split to two separate parts as follows:
  - (a) Expansion of Ha Tsuen Sewage Pumping Station (under Environmental Permit No.EP-327/2009/A);
  - (b) Construction of sewers and rising mains with diameter ranging from 200-1500mm in Yuen Long South and Ha Tsuen areas and a sewage pumping station near Shui Tsiu San Tsuen Road in Yuen Long South (the works without Environmental Permit)
- 1.06 Action-United Environmental Services and Consulting (AUES) has been commissioned by the Contractor as the ET to implement the relevant EM&A program. As part of the project EM&A program, baseline monitoring was conducted between 22 December 2009 and 18 January 2010 to determine the ambient environmental conditions before the project commence any major construction works at Ha Tsuen Sewage Pumping Station and it had been verified by IEC and endorsed by EPD.
- 1.07 This is the 32<sup>nd</sup> Monthly EM&A Report – *Expansion of Ha Tsuen Sewage Pumping Station* (hereinafter ‘this Report’) for designated works of the Project under Environmental Permit No.EP-327/2009/A (hereinafter ‘the EP’), covering a period from **1 to 30 September 2012**.

### REPORT STRUCTURE

- 1.08 The Monthly Environmental Monitoring and Audit (EM&A) Report is structured into the following sections:-

|                  |                                                |
|------------------|------------------------------------------------|
| <b>SECTION 1</b> | INTRODUCTION                                   |
| <b>SECTION 2</b> | PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS |
| <b>SECTION 3</b> | SUMMARY OF IMPACT MONITORING REQUIREMENTS      |
| <b>SECTION 4</b> | IMPACT MONITORING RESULTS                      |
| <b>SECTION 5</b> | WASTE MANAGEMENT                               |
| <b>SECTION 6</b> | SITE INSPECTIONS                               |
| <b>SECTION 7</b> | ENVIRONMENTAL COMPLAINTS AND NON-COMPLIANCE    |

|                   |                                              |
|-------------------|----------------------------------------------|
| <b>SECTION 8</b>  | IMPLEMENTATION STATUS OF MITIGATION MEASURES |
| <b>SECTION 9</b>  | IMPACT FORECAST                              |
| <b>SECTION 10</b> | CONCLUSIONS AND RECOMMENDATIONS              |

## 2. PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS

### PROJECT ORGANIZATION AND MANAGEMENT STRUCTURE

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

### CONSTRUCTION PROGRESS

- 2.02 The tentative master construction programs is enclosed in [Appendix C](#). Also, the major construction activities undertaken in this reporting month are listed below:
- Construction of sewage pumping station

### SUMMARY OF ENVIRONMENTAL SUBMISSIONS

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

**Table 2-1 Status of Environmental Licenses and Permits**

| Item | Description                                                                          | License/Permit Status                             |
|------|--------------------------------------------------------------------------------------|---------------------------------------------------|
| 1    | Environmental Permit (EP-327/2009/A)                                                 | Updated on 1 June 2010                            |
| 2    | Chemical Waste Producer Registration<br>Registration No. 5213-511-C3570-01           | Issued on 13 Nov 2009                             |
| 3    | Water Pollution Control Ordinance (Discharge License)<br>License No. WT00005671-2009 | Issued on 12 Jan 2010<br>Expiry date: 31 Jan 2015 |
| 4    | Billing Account for Disposal of Construction Waste (Account<br>Number: 700947)       | Issued on 7 October<br>2009                       |

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

### 3. SUMMARY OF IMPACT MONITORING REQUIREMENTS

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

#### MONITORING PARAMETERS

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

**Table 3-1 Summary of Monitoring Parameters**

| Environmental Aspect                | Parameters                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Air Quality                         | <ul style="list-style-type: none"> <li>1-hour Total Suspended Particulates (hereinafter ‘1-hr TSP’); and</li> <li>24-hour Total Suspended Particulates (hereinafter ‘24-hr TSP’).</li> </ul>                                                                                                                                                                       |
| Construction Noise                  | <ul style="list-style-type: none"> <li>A-weighted equivalent continuous sound pressure level (30min) (hereinafter ‘<math>L_{eq(30min)}</math>’) during the normal working hours; and</li> <li>A-weighted equivalent continuous sound pressure level (5min) (hereinafter ‘<math>L_{eq(5min)}</math>’) for construction work during the restricted hours.</li> </ul> |
| Water Quality – Local Stream Course | <ul style="list-style-type: none"> <li>In Situ Measurement - Dissolved Oxygen (DO) and Turbidity</li> <li>Laboratory Analysis - Suspended Solids (SS)</li> </ul>                                                                                                                                                                                                   |
| Water Quality – Effluent Discharge  | <ul style="list-style-type: none"> <li>In Situ Measurement - pH value</li> <li>Laboratory Analysis - SS and Chemical oxygen demand (COD)</li> </ul>                                                                                                                                                                                                                |
| Landscape and Visual Resources      | <ul style="list-style-type: none"> <li>Vegetation survey undertaken on an “area” basis to identify representative types and species composition;</li> <li>Assessment of landscape character; and</li> <li>Tree survey report (The inspection findings will be submitted separately).</li> </ul>                                                                    |

#### MONITORING LOCATIONS

##### Monitoring Location Stipulation in the EM&A Manual

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

##### Air Quality

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

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

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

- 3.06 As requested by the occupants of Yeung Chun Pui Care & Attention Home (AM2) due to safety reasons, the High Volume Air Sampler (HVS) for AM2 was relocated to a nearby location on 27 October 2011. Details of the relocation were given in the October 2011 Monthly EM&A Report.
- 3.07 Details of monitoring stations are presented in **Table 3-2** and illustrated in **Appendix D**.

**Table 3-2 Air Quality Monitoring Stations**

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

\* HVS shifted to nearby location less than 10 meters from the original location towards the construction site on 27 October 2011.

#### Construction Noise

- 3.08 Similar to the air quality monitoring, the construction noise monitoring stations undertaken for EM&A programme is agreed by IEC and as endorsed by EPD.
- 3.09 Details of the monitoring stations are presented in **Table 3-3** and shown in **Appendix D**.

**Table 3-3 Construction Noise Monitoring Stations**

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

#### Water Quality

- 3.10 One designated location of a local stream course, Tin Shui Wai Nullah, is proposed to carry out water quality monitoring in accordance with the EM&A Manual. The designated sampling location R1 is located at the midpoint between two pedestrian flyovers athwart Tin Shui Wai Nullah, which are 320 meters apart. There are technical difficulty and safety issue to sample at R1. So, a new sampling point located at approximately 160m upstream of the R1 (hereinafter as R1b) was therefore proposed for the local stream water quality impact monitoring and was verified by IEC, without comment from EPD.
- 3.11 Details of the monitoring station are presented in **Table 3-4** and show in **Appendix D**.

**Table 3-4 Local Stream Water Quality Monitoring Station**

| Monitoring Location ID | Identified Address                                 | Remarks                                                                                                                                          |
|------------------------|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| R1b                    | The athwart Tin Shui Wai Nullah pedestrian flyover | About 160 m upstream from the designated location as stipulated in the EM&A Manual and is closer to the existing Ha Tsuen Sewage Pumping Station |

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

Landscape and Visual

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

**MONITORING FREQUENCY**

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

Air Quality Monitoring

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

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

Duration: Throughout the construction period.

Noise Monitoring

Parameters: One set of  $L_{eq(30min)}$  as 6 consecutive  $L_{eq(5min)}$  between 0700-1900 hours on normal weekdays.

$L_{eq(5min)}$ ,  $L_{10}$  and  $L_{90}$  during the construction undertaken during Restricted Hours (19:00 to 07:00 hours next of normal working day and full day of public holiday and Sunday)

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

Duration: Throughout the construction period.

Water Quality Monitoring of Local Stream Course

Parameters: DO, Turbidity and SS.

Frequency: 3 days per week.

Depths: mid-depth

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

Water Quality Monitoring of Effluent Discharge

Parameters: pH, COD and SS.

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

Duration: Throughout the construction period

Landscape and Visual Monitoring

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

Frequency: Once every 2 weeks

Duration: Throughout the construction period

- 3.15 Post-project monitoring will be performed at water quality monitoring station of the local stream course. The requirements that are same as baseline monitoring are presented below:

Parameters: DO, Turbidity and SS.

Frequency: 3 days per week.

Depths: mid-depth

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

## MONITORING METHODOLOGY AND EQUIPMENT

### Air Quality

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

**Table 3-5 Air Quality Monitoring Equipment**

| Equipment               | Description                             |
|-------------------------|-----------------------------------------|
| <b>1-hour TSP</b>       |                                         |
| Portable dust meter     | TSI DustTrak Aerosol Monitor Model 8520 |
| <b>24-hour TSP</b>      |                                         |
| High Volume Air Sampler | Thermo Anderson GS 2310 HVS             |
| Calibration Kit         | TISCH Model TE-5025A                    |

#### 1-hour TSP

- 3.17 The 1-hour TSP monitoring is conducted with a portable dust meter, brand named, TSI DustTrak Aerosol Monitor Model 8520 which is a portable, battery-operated laser photometer. The 1-hour TSP meter provides a real time 1-hour TSP measurement based on 90° light scattering. The 1-hour TSP monitor consists of the following:
- (a.) A pump to draw sample aerosol through the optic chamber where TSP is measured;
  - (b.) A sheath air system isolates the aerosol in the chamber to keep the optics clean for maximum reliability; and
  - (c.) A built-in data logger compatible with Windows based program to facilitate data collection, analysis and reporting.

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

#### 24-hour TSP

- 3.19 The equipment used for 24-hour TSP measurement is Thermo Andersen Model GS2310 TSP high volume air sampling system, which complied with EPA Code of Federal Regulation, Appendix B to Part 50. The High Volume Air Sampler (HVS) consists of the following:
- (a.) An anodized aluminum shelter;
  - (b.) A 8"x10" stainless steel filter holder;
  - (c.) A blower motor assembly;
  - (d.) A continuous flow/pressure recorder;
  - (e.) A motor speed-voltage control/elapsed time indicator;
  - (f.) A 7-day mechanical timer; and
  - (g.) A power supply of 220V/50 Hz.
- 3.20 The HVS was operated and calibrated on a regular basis in accordance to the manufacturer's instruction using the NIST-certified standard calibrator (Tisch Calibration Kit Model TE-5025A). One point checking would be carried out in two-month interval while full point checking every six months.
- 3.21 24-hour TSP was collected by the ET on filters of HVS and quantified by a local HOKLAS accredited laboratory, ALS Technichem (HK) Pty Ltd (ALS), upon receipt of the samples. The ET kept all the sampled 24-hour TSP filters in normal room conditions for six months before disposal.

### Noise

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

**Table 3-6 Noise Monitoring Equipment**

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

- 3.23 Sound level meters listed above comply with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications, as recommended in Technical Memorandum issued under the Noise Control Ordinance (NCO).
- 3.24 Noise measurements were taken in terms of the A-weighted equivalent continuous sound pressure level ( $L_{eq}$ ) measured in decibels (dB). Supplementary statistical results ( $L_{10}$  and  $L_{90}$ ) were also obtained for reference.
- 3.25 During the construction noise monitoring, all noise measurements were performed with the meter set to FAST response and on the A-weighted equivalent continuous sound pressure level ( $L_{eq}$ ).  $L_{eq(30min)}$  in six consecutive  $L_{eq(5min)}$  measurements were used as the monitoring parameter for the time period between 0700-1900 hours on weekdays; and also  $L_{eq(15min)}$  in three consecutive  $L_{eq(5min)}$  measurements were used as monitoring parameter for other time periods (e.g. during restricted hours).
- 3.26 No noise extension cable was used to link the microphone with sound level meter for the measurement. The microphone was set about 1.2m height above ground and oriented such that it was pointed to the site with the microphone facing perpendicular to the line of sight. The windshield was fitted for all measurements. The monitoring locations NM1 and NM2 were normally set in a free field situation.
- 3.27 In prior of impact noise measurement, the accuracy of the sound level meter was checked using an acoustic calibrator generating a known sound pressure level at a known frequency. The checking was performed before and after the noise measurement. Also, the wind speed was checked with a portable wind speed meter. No fog and rain were encountered during the noise measurement, and the wind speed and gusts were also below 5m/s and 10m/s respectively.

#### **Water quality of Local Stream Course**

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

**Table 3-7 Water Quality Monitoring Equipment**

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

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

#### Dissolved Oxygen (DO)

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

Turbidity

- 3.31 A portable turbidimeter, brand named HACH 2100Q, was used for in-situ turbidity measurement. The turbidity meter is capable of measuring turbidity in the range of 0 – 1000 NTU. Calibration of the equipment is performed by ALS on quarterly basis.

Suspended Solids (SS)

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

Water Sampler

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

Sample Container

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

Sample Storage

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

**EQUIPMENT CALIBRATION**

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

**METEOROLOGICAL INFORMATION**

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

**DATA MANAGEMENT AND DATA QA/QC CONTROL**

- 3.41 The impact monitoring data are handled by the ET's systematic data recording and management, which complies with in-house Quality Management System. Standard Field Data Sheets (FDS) are used in the impact monitoring program.

- 3.42 The monitoring data recorded in the equipment e.g. 1-hour TSP meters and noise meters are downloaded directly from the equipment at the end of each monitoring day. The downloaded monitoring data are input into a computerized database properly maintained by the ET. The laboratory results or water quality in-situ measurement records are input directly into the computerized database and QA/QC checked by personnel other than those who input the data.
- 3.43 For monitoring activities that require laboratory analysis, the local laboratory follows the QA/QC requirements as set out under the HOKLAS scheme for all laboratory testing.

#### DETERMINATION OF ACTION/LIMIT (A/L) LEVELS

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

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

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

**Table 3-9 Action and Limit Levels for Construction Noise**

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

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

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

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

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

#### 4. IMPACT MONITORING RESULTS

- 4.01 The monitoring activities undertaken in this Reporting Period is listed in [Appendix H](#). The monitoring results are presented in the following sub-sections.

##### RESULTS OF AIR QUALITY MONITORING

- 4.02 In this Reporting Period, a total of **10** events of 24-hour TSP monitoring and **36** events of 1-hour TSP monitoring were undertaken and the results are summarized in [Tables 4-1 and 4-2](#). The 24-hour TSP raw data sheets are shown in [Appendix I](#). Also, the graphical plots for the 24-hour and 1-hour TSP monitoring result are shown in [Appendix J](#).

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

| Date            | 24-hour TSP ( $\mu\text{g}/\text{m}^3$ ) | 1-hour TSP ( $\mu\text{g}/\text{m}^3$ ) |            |                               |                               |                               |
|-----------------|------------------------------------------|-----------------------------------------|------------|-------------------------------|-------------------------------|-------------------------------|
|                 |                                          | Date                                    | Start Time | 1 <sup>st</sup> hour measured | 2 <sup>nd</sup> hour measured | 3 <sup>rd</sup> hour measured |
| 3-Sep-12        | 16                                       | 4-Sep-12                                | 10:53      | 58                            | 48                            | 61                            |
| 8-Sep-12        | 46                                       | 10-Sep-12                               | 10:52      | 74                            | 75                            | 83                            |
| 14-Sep-12       | 79                                       | 15-Sep-12                               | 10:52      | 183                           | 162                           | 154                           |
| 20-Sep-12       | 36                                       | 17-Sep-12                               | 14:32      | 159                           | 134                           | 126                           |
| 26-Sep-12       | 53                                       | 21-Sep-12                               | 10:31      | 63                            | 54                            | 62                            |
|                 |                                          | 27-Sep-12                               | 10:53      | 111                           | 126                           | 148                           |
| Average (Range) | <b>46 (16-79)</b>                        | Average (Range)                         |            | <b>105 (48 – 183)</b>         |                               |                               |

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

| Date            | 24-hour TSP ( $\mu\text{g}/\text{m}^3$ ) | 1-hour TSP ( $\mu\text{g}/\text{m}^3$ ) |            |                               |                               |                               |
|-----------------|------------------------------------------|-----------------------------------------|------------|-------------------------------|-------------------------------|-------------------------------|
|                 |                                          | Date                                    | Start Time | 1 <sup>st</sup> hour measured | 2 <sup>nd</sup> hour measured | 3 <sup>rd</sup> hour measured |
| 3-Sep-12        | 39                                       | 4-Sep-12                                | 13:18      | 71                            | 63                            | 60                            |
| 8-Sep-12        | 26                                       | 10-Sep-12                               | 11:46      | 91                            | 85                            | 82                            |
| 14-Sep-12       | 84                                       | 15-Sep-12                               | 13:09      | 177                           | 163                           | 145                           |
| 20-Sep-12       | 59                                       | 17-Sep-12                               | 14:03      | 128                           | 174                           | 168                           |
| 26-Sep-12       | 101                                      | 21-Sep-12                               | 11:30      | 80                            | 103                           | 89                            |
|                 |                                          | 27-Sep-12                               | 11:26      | 154                           | 128                           | 97                            |
| Average (Range) | <b>62 (26-101)</b>                       | Average (Range)                         |            | <b>114 (60 – 177)</b>         |                               |                               |

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

##### RESULTS OF CONSTRUCTION NOISE MONITORING

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

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

| Date      | Start Time | 1 <sup>st</sup><br>$L_{\text{eq}}(5\text{min})$ | 2 <sup>nd</sup><br>$L_{\text{eq}}(5\text{min})$ | 3 <sup>rd</sup><br>$L_{\text{eq}}(5\text{min})$ | 4 <sup>th</sup><br>$L_{\text{eq}}(5\text{min})$ | 5 <sup>th</sup><br>$L_{\text{eq}}(5\text{min})$ | 6 <sup>th</sup><br>$L_{\text{eq}}(5\text{min})$ | $L_{\text{eq}}(30\text{min})$ | Corrected*<br>$L_{\text{eq}}(30\text{min})$ |
|-----------|------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------|---------------------------------------------|
| 4-Sep-12  | 11:15      | 64.8                                            | 66.6                                            | 64.1                                            | 64.0                                            | 63.0                                            | 61.2                                            | 64.3                          | 67.3                                        |
| 10-Sep-12 | 10:52      | 62.7                                            | 62.8                                            | 63.5                                            | 67.4                                            | 63.2                                            | 63.9                                            | 64.3                          | 67.3                                        |
| 15-Sep-12 | 11:02      | 59.1                                            | 59.6                                            | 64.0                                            | 64.5                                            | 60.5                                            | 58.0                                            | 61.7                          | 64.7                                        |
| 17-Sep-12 | 14:18      | 59.7                                            | 58.7                                            | 58.8                                            | 58.8                                            | 59.6                                            | 59.5                                            | 59.2                          | 62.2                                        |

| Date               | Start Time | 1 <sup>st</sup><br>L <sub>eq</sub> (5min) | 2 <sup>nd</sup><br>L <sub>eq</sub> (5min) | 3 <sup>rd</sup><br>L <sub>eq</sub> (5min) | 4 <sup>th</sup><br>L <sub>eq</sub> (5min) | 5 <sup>th</sup><br>L <sub>eq</sub> (5min) | 6 <sup>th</sup><br>L <sub>eq</sub> (5min) | L <sub>eq</sub> (30min) | Corrected*<br>L <sub>eq</sub> (30min) |
|--------------------|------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------|---------------------------------------|
| 21-Sep-12          | 10:31      | 62.4                                      | 63.3                                      | 62.9                                      | 64.5                                      | 65.9                                      | 66.5                                      | 64.5                    | 67.5                                  |
| 27-Sep-12          | 10:23      | 65.4                                      | 62.6                                      | 62.7                                      | 62.9                                      | 71.4                                      | 66.0                                      | 66.5                    | 69.5                                  |
| <b>Limit Level</b> |            | <b>-</b>                                  |                                           |                                           |                                           |                                           |                                           | <b>70 dB(A)</b>         |                                       |

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

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

| Date               | Start Time | 1 <sup>st</sup><br>L <sub>eq</sub> (5min) | 2 <sup>nd</sup><br>L <sub>eq</sub> (5min) | 3 <sup>rd</sup><br>L <sub>eq</sub> (5min) | 4 <sup>th</sup><br>L <sub>eq</sub> (5min) | 5 <sup>th</sup><br>L <sub>eq</sub> (5min) | 6 <sup>th</sup><br>L <sub>eq</sub> (5min) | L <sub>eq</sub> (30min) | Corrected*<br>L <sub>eq</sub> (30min) |
|--------------------|------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------|---------------------------------------|
| 4-Sep-12           | 13:21      | 64.7                                      | 63.5                                      | 63.9                                      | 59.6                                      | 64.6                                      | 60.8                                      | 63.2                    | 66.2                                  |
| 10-Sep-12          | 13:03      | 65.1                                      | 58.0                                      | 62.8                                      | 61.1                                      | 58.5                                      | 57.8                                      | 61.4                    | 64.4                                  |
| 15-Sep-12          | 13:18      | 61.6                                      | 60.8                                      | 58.3                                      | 56.2                                      | 59.6                                      | 56.5                                      | 59.3                    | 62.3                                  |
| 17-Sep-12          | 14:26      | 62.0                                      | 63.2                                      | 63.6                                      | 65.3                                      | 63.2                                      | 64.3                                      | 63.7                    | 66.7                                  |
| 21-Sep-12          | 11:29      | 57.7                                      | 56.5                                      | 59.5                                      | 56.4                                      | 61.5                                      | 58.1                                      | 58.7                    | 61.7                                  |
| 27-Sep-12          | 11:22      | 60.2                                      | 58.7                                      | 60.0                                      | 64.0                                      | 60.1                                      | 59.3                                      | 60.8                    | 63.8                                  |
| <b>Limit Level</b> |            | <b>-</b>                                  |                                           |                                           |                                           |                                           |                                           | <b>70 dB(A)</b>         |                                       |

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

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

#### RESULTS OF WATER QUALITY MONITORING – LOCAL STREAM COURSE

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

**Table 4-5 Summaries of Water Quality Results – R1b**

| Sampling date | DO conc. (mg/L) | Turbidity (NTU) | SS (mg/L) |
|---------------|-----------------|-----------------|-----------|
| 4-Sep-12      | 6.5             | 9.1             | 15.0      |
| 6-Sep-12      | 9.4             | 7.6             | 8.0       |
| 8-Sep-12      | 11.1            | 12.5            | 27.0      |
| 10-Sep-12     | 11.1            | 14.7            | 25.0      |
| 13-Sep-12     | 8.1             | 7.2             | 15.0      |
| 15-Sep-12     | 6.7             | 12.5            | 17.0      |
| 17-Sep-12     | 7.1             | 11.1            | 16.0      |
| 19-Sep-12     | 11.1            | 8.0             | 17.0      |
| 21-Sep-12     | 9.8             | 12.8            | 19.0      |
| 24-Sep-12     | 7.9             | 6.2             | 10.0      |
| 27-Sep-12     | 9.3             | 13.0            | 12.0      |
| 29-Sep-12     | 10.0            | 13.7            | 15.0      |

- 4.09 In Reporting Period, no exceedance was recorded at water samples collected from location “R1b”. No NOE was issued to relevant parties upon confirmation of the results. No corrective action was therefore required.
- 4.10 During the Reporting Period, field measurements showed that water temperature and pH value of

the local stream are within 26.9°C to 30.9°C and 7.6 to 8.3 respectively.

#### **RESULTS OF LANDSCAPE AND VISUAL IMPACT**

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

#### **RESULTS OF EFFLUENT MONITORING**

- 4.12 Monitoring of effluent quality should follow the requirements specified in Section 4.3 of the approved EM&A Manual. A discharge license under Water Pollution Control Ordinance has been obtained by the Contractor upon commencement of the Project. The licensee shall perform self-monitoring as and when required by the Authority.
- 4.13 No effluent quality monitoring was carried out by the Contractor in this Reporting Period.

## 5. WASTE MANAGEMENT

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

### RECORDS OF WASTE QUANTITIES

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

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

| Type of Waste                                      | Quantity | Disposal Location |
|----------------------------------------------------|----------|-------------------|
| C&D Materials (Inert) (m <sup>3</sup> )            | 0        | -                 |
| Reused in this Contract (Inert) (m <sup>3</sup> )  | 0        | -                 |
| Reused in other Projects (Inert) (m <sup>3</sup> ) | 0        | -                 |
| Disposal as Public Fill (Inert) (m <sup>3</sup> )  | 1152     | Tuen Mun Area 38  |

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

| Type of Waste                           | Quantity | Disposal Location |
|-----------------------------------------|----------|-------------------|
| Recycled Metal (kg)                     | 0        | -                 |
| Recycled Paper / Cardboard Packing (kg) | 0        | -                 |
| Recycled Plastic (kg)                   | 0        | -                 |
| Chemical Wastes (kg)                    | 0        | -                 |
| General Refuses (m <sup>3</sup> )       | 1        | NENT              |

- 5.04 To control over the site performance on waste management, the Contractor shall ensure that all solid and liquid waste management works are in full compliance with the relevant license/permit requirements, such as the effluent discharge license and the chemical waste producer registration. The Contractor is also reminded to implement the recommended environmental mitigation measures according to the EM&A Manual based on actual site conditions.

## 6. SITE INSPECTIONS

- 6.01 According to the Environmental Monitoring and Audit Manual, the environmental site inspection should be formulated by ET Leader. Regular environmental site inspections had been carried out by ET joined with the Contractor and ER to confirm the environmental performance. During this Reporting Period, the joint site inspection was undertaken on **4, 11, 19 and 25 September 2012** to evaluate the site environmental performance. No non-compliance was noted.
- 6.02 Observations for the site inspections and monthly audit found at Ha Tsuen Sewage Pumping Station within this Reporting Period are summarized in **Table 6-1** and inspection checklists are attached in **Appendix L**.

**Table 6-1 Site Observations in the Reporting Month**

| Date              | Findings / Deficiencies                                                                                                                                                                                                                                                | Follow-Up Status                                                                                                                                                                             |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 September 2012  | <ul style="list-style-type: none"> <li>Mud trail was observed at the exit/entrance of the site of Ha Tsuen Sewage Pumping Station, wheel washing facility should be properly maintained. Also, watering at the site exit should be applied more frequently.</li> </ul> | <ul style="list-style-type: none"> <li>No mud trail was observed at the exit/entrance of the site of Ha Tsuen Sewage Pumping Station during site inspection on 11 September 2012.</li> </ul> |
| 11 September 2012 | <ul style="list-style-type: none"> <li>No environmental issue was observed during site inspection.</li> </ul>                                                                                                                                                          | N.A.                                                                                                                                                                                         |
| 19 September 2012 | <ul style="list-style-type: none"> <li>The chemical storage area at Ha Tsuen Sewage Pumping Station was not labeled correctly, the Contractor should replace it with a right label.</li> </ul>                                                                         | <ul style="list-style-type: none"> <li>Correct label was found in the chemical storage area at Ha Tsuen Sewage Pumping Station during site inspection on 25 September 2012.</li> </ul>       |
| 25 September 2012 | <ul style="list-style-type: none"> <li>No environmental issue was observed during site inspection.</li> </ul>                                                                                                                                                          | N.A.                                                                                                                                                                                         |

## 7. ENVIRONMENTAL COMPLAINTS AND NON-COMPLIANCE

### ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION

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

**Table 7-1 Statistical Summary of Environmental Complaints**

| Reporting Period | Environmental Complaint Statistics |            |                  |
|------------------|------------------------------------|------------|------------------|
|                  | Frequency                          | Cumulative | Complaint Nature |
| Feb – Dec 2010   | 3                                  | 3          | Air(2)/Noise(1)  |
| Jan – Dec 2011   | 0                                  | 3          | NA               |
| Jan – Aug 2012   | 0                                  | 3          | NA               |
| Sep 2012         | 0                                  | 3          | NA               |

**Table 7-2 Statistical Summary of Environmental Summons**

| Reporting Period | Environmental Complaint Statistics |            |                  |
|------------------|------------------------------------|------------|------------------|
|                  | Frequency                          | Cumulative | Complaint Nature |
| Feb – Dec 2010   | 0                                  | 0          | NA               |
| Jan – Dec 2011   | 0                                  | 0          | NA               |
| Jan – Aug 2012   | 0                                  | 0          | NA               |
| Sep 2012         | 0                                  | 0          | NA               |

**Table 7-3 Statistical Summary of Environmental Prosecution**

| Reporting Period | Environmental Complaint Statistics |            |                  |
|------------------|------------------------------------|------------|------------------|
|                  | Frequency                          | Cumulative | Complaint Nature |
| Feb – Dec 2010   | 0                                  | 0          | NA               |
| Jan – Dec 2011   | 0                                  | 0          | NA               |
| Jan – Aug 2012   | 0                                  | 0          | NA               |
| Sep 2012         | 0                                  | 0          | NA               |

## **8. IMPLEMENTATION STATUS OF MITIGATION MEASURES**

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

### **Dust Mitigation Measure**

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

### **Noise Mitigation Measure**

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

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

#### **Water Quality Mitigation Measures**

- (a) Exposed stockpiles should be covered with tarpaulin or impervious sheets before a rainstorm occurs;
- (b) The exposed soil surfaces should also be properly protected to minimize dust emission;
- (c) The stockpiles of materials should be placed in the locations away from the drainage channel so as to avoid releasing materials into the channel;
- (d) Wheel washing facilities should be provided at site exits to ensure that earth, mud and debris would not be carried out of the works areas by vehicles;
- (e) Provision of site drainage systems and treatment facilities would be required to minimize the water pollution;
- (f) A discharge licence needs to be applied from EPD for discharging effluent from the construction site;
- (g) The treated effluent quality is required to meet the requirements specified in the discharge licence;
- (h) Provision of chemical toilets is required to collect sewage from workforce. The chemical toilets should be cleaned on a regular basis;
- (i) Wastewater generated from kitchens should be discharged to public foul sewers or collected in a temporary storage tank if connection to public foul sewers is not feasible;
- (j) A licensed waste collector should be employed to clean the chemical toilets and temporary storage tank on a regular basis;
- (k) Illegal disposal of chemicals should be strictly prohibited;
- (l) Registration as a chemical waste producer is required if chemical wastes are generated and need to be disposed of. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes;
- (m) Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance should be used as a guideline for handling chemical wastes; and
- (n) The impact from accidental spillage of chemicals can be effectively controlled through good management practices.

#### **Waste Mitigation Measures**

- (a) Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal;

- (b) To encourage collection of aluminium cans by individual collectors, separate 19inimiz bins should be provided to segregate this waste from other general refuse generated by the workforce;
- (c) Any unused chemicals or those with remaining functional capacity should be recycled;
- (d) Prior to disposal of C&D waste, it is recommended that wood, steel and other metals be separated for re-use and/or recycling and inert waste 19inimize as fill material to 19inimize the quantity of waste to be disposed of to landfill;
- (e) Proper storage and site practices to 19inimize the potential for damage or contamination of construction materials; and
- (f) Plan and stock construction materials carefully to 19inimize amount of waste generated and avoid unnecessary generation of waste.

### **Landscape and Visual Mitigation Measures**

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

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

**Table 8-1 Environmental Mitigation Measures**

| <b>Issues</b> | <b>Environmental Mitigation Measures</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Water Quality | <ul style="list-style-type: none"> <li>• Wastewater were appropriately treated by treatment facilities;</li> <li>• Drainage channels were provided to convey run-off into the treatment facilities;</li> <li>• Drainage systems were regularly and adequately maintained.</li> <li>• De-silting facility was provided to treat the discharged water; also the treated water was reused for spraying the road surface;</li> <li>• Exposed stockpiles and exposed soil surfaces were covered with tarpaulin or impervious sheets to 19inimize dust emission;</li> <li>• The stockpiles of materials were placed in the locations away from the drainage channel so as to avoid releasing materials into the channel;</li> <li>• Wheel washing facilities has been provided at site exits to ensure that earth, mud and debris would not be carried out of the works areas by vehicles;</li> <li>• A discharge licence was issued by EPD for discharging effluent from the construction site;</li> <li>• A licensed waste collector have been applied from EPD; and</li> <li>• Illegal disposal of chemicals should be strictly prohibited.</li> </ul> |

| Issues                        | Environmental Mitigation Measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Air Quality                   | <ul style="list-style-type: none"> <li>Regular watering to reduce dust emissions from all exposed site surface, particularly during dry weather;</li> <li>Frequent watering for particularly dusty construction areas and areas close to air sensitive receivers;</li> <li>Cover all excavated or stockpile of dusty material by impervious sheeting or sprayed with water to maintain the entire surface wet;</li> <li>Public roads around the site entrance/exit had been kept clean and free from dust;</li> <li>Tarpaulin covering of any dusty materials on a vehicle leaving the site;</li> <li>Water sprinkler system was provided at haul road to reduce dust emissions during the vehicles passing through the haul road;</li> <li>The vehicle speed within the site is limited to 5km/hr; and</li> <li>Wheel washing facilities have been provided at the site exit.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Noise                         | <ul style="list-style-type: none"> <li>Good site practices to limit noise emissions at the sources;</li> <li>Use of quiet plant and working methods according to EP-327/2009/A;</li> <li>Use of site hoarding with noise barriers to screen noise at ground level of NSRs;</li> <li>Use of shrouds/temporary noise barriers to screen noise from relatively static PMEs according to EP-327/2009/A;</li> <li>Use of temporary noise barrier with surface density <math>7\text{kg/m}^2</math> to be assumed that the noise reduction is 10 dB(A) for stable plants and 5dB(A) for movable plant in accordance with approved EIA Report Appendix 4A Table 4A3.2;</li> <li>Idle equipment are turned off or throttled down;</li> <li>No construction works shall be undertaken during school examination period in the Ha Tsuen Sewage Pumping Station according to EP-327/2009/A; and</li> <li>Alternative use of plant items within one worksite, where practicable.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Waste and Chemical Management | <ul style="list-style-type: none"> <li>Excavated material was reused on site as far as possible to minimize off-site disposal. Scrap metals or abandoned equipment was recycled if possible;</li> <li>Waste arising was kept to a minimum and be handled, transported and disposed of in a suitable manner;</li> <li>The Contractor adopted a trip ticket system for the disposal of C&amp;D materials to any designed public filling facility and/ or landfill;</li> <li>Chemical waste was handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes;</li> <li>Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal;</li> <li>To encourage collection of aluminium cans by individual collectors, separate 20inimz bins were provided to segregate this waste from other general refuse generated by the workforce;</li> <li>Any unused chemicals or those with remaining functional capacity were recycled;</li> <li>Prior to disposal of C&amp;D waste, wood, steel and other metals were separated for re-use and recycling and inert waste 20inimize as fill material to 20inimize the quantity of waste to be disposed of to landfill;</li> <li>Proper storage and site practices to 20inimize the potential for damage or contamination of construction materials; and</li> <li>Plan and stock construction materials carefully to 20inimize amount of waste generated and avoid unnecessary generation of waste.</li> </ul> |
| Landscape and Visual          | <ul style="list-style-type: none"> <li>Hoarding was erected around site boundary properly;</li> <li>The transplanted tree and landscaping plants were kept in regular inspection;</li> <li>All preserved trees were protected and fenced off properly;</li> <li>No construction activities were carried out in the protection zone of the preserved trees.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| General                       | <ul style="list-style-type: none"> <li>The site was generally kept tidy and clean.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

## **9. IMPACT FORECAST**

### **KEY ISSUES FOR THE COMING MONTH**

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

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

## 10. CONCLUSIONS AND RECOMMENDATIONS

### CONCLUSIONS

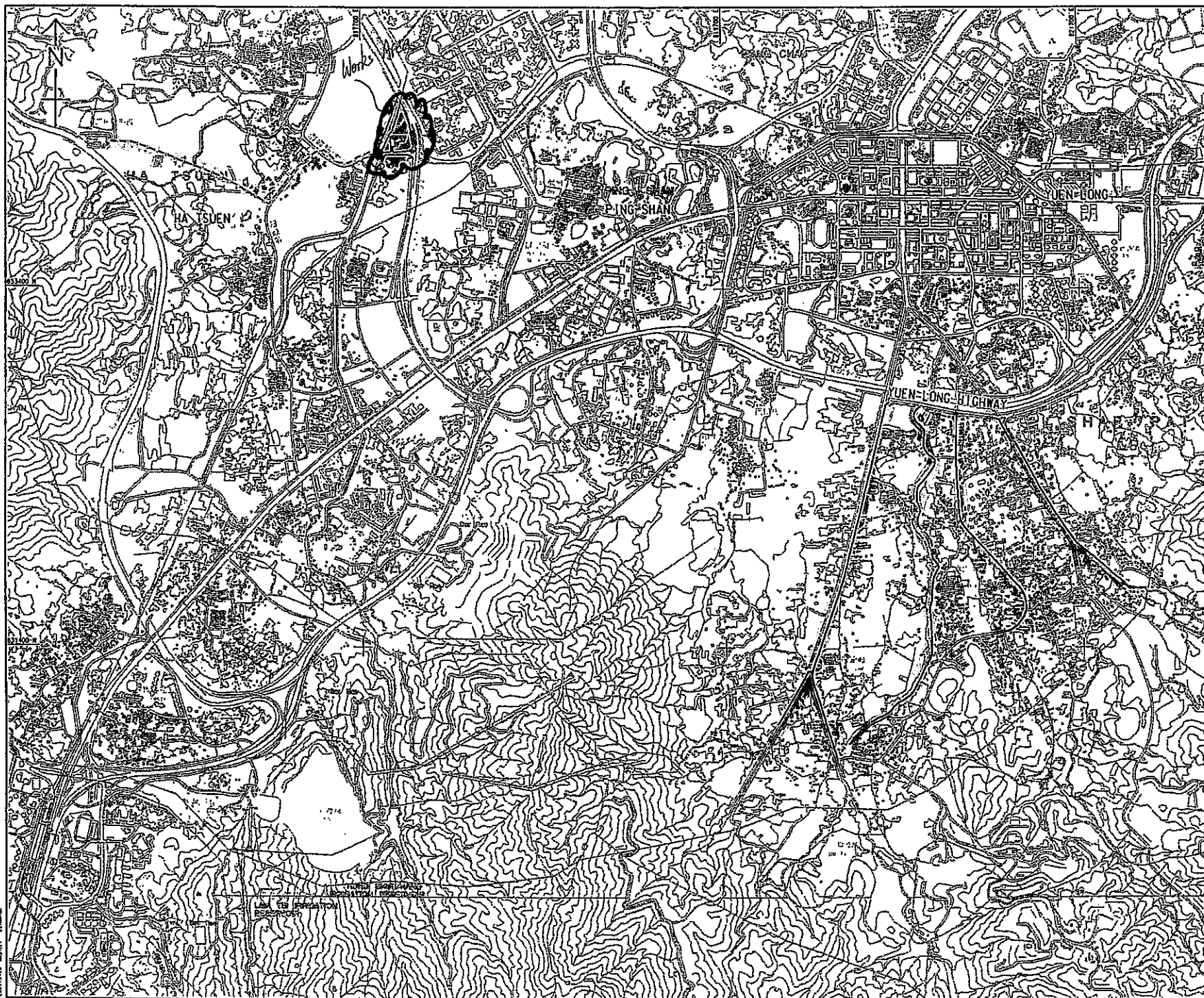
- 10.01 This is the 32<sup>nd</sup> Monthly EM&A Report for the designated work of the Project, covering the construction period from 1 to 30 September 2012.
- 10.02 No 1-hour TSP and 24-hour TSP monitoring results that triggered the Action or Limit Level was recorded in this Reporting Period.
- 10.03 No noise complaint (which is an Action Level exceedance) was received and no construction noise measurement results exceeded the Limit Level were recorded in this Reporting Period.
- 10.04 No Action/Limit Level exceedance was recorded for the water quality monitoring during Reporting Period.
- 10.05 No effluent quality monitoring was carried out by the Contractor in this Reporting Period.
- 10.06 No documented complaint, notification of summons or successful prosecution was received.
- 10.07 The ET had carried out site inspection on 4, 11, 19 and 25 September 2012. No non-compliance was observed during the inspections. Overall, the environmental performance of the Project was therefore considered satisfactory.
- 10.08 The landscape and visual impacts monitoring results and findings will be submitted separately as a stand-alone document. The Contractor is reminded that the landscape and visual impacts site audit shall be carried out by a competent landscape architect, as a member of ET to implement the EM&A programme.

### RECOMMENDATIONS

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

## **Appendix A**

### **Site Layout Plan**



# LEGEND:

- SEWERAGE PIPE
- RISING MAIN
- SEWER PUMPING STATION

|   |                |            |       |
|---|----------------|------------|-------|
| 1 | TENDER DRAWING | 05/01/2017 | 05-09 |
|---|----------------|------------|-------|

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

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

LOCATION PLAN

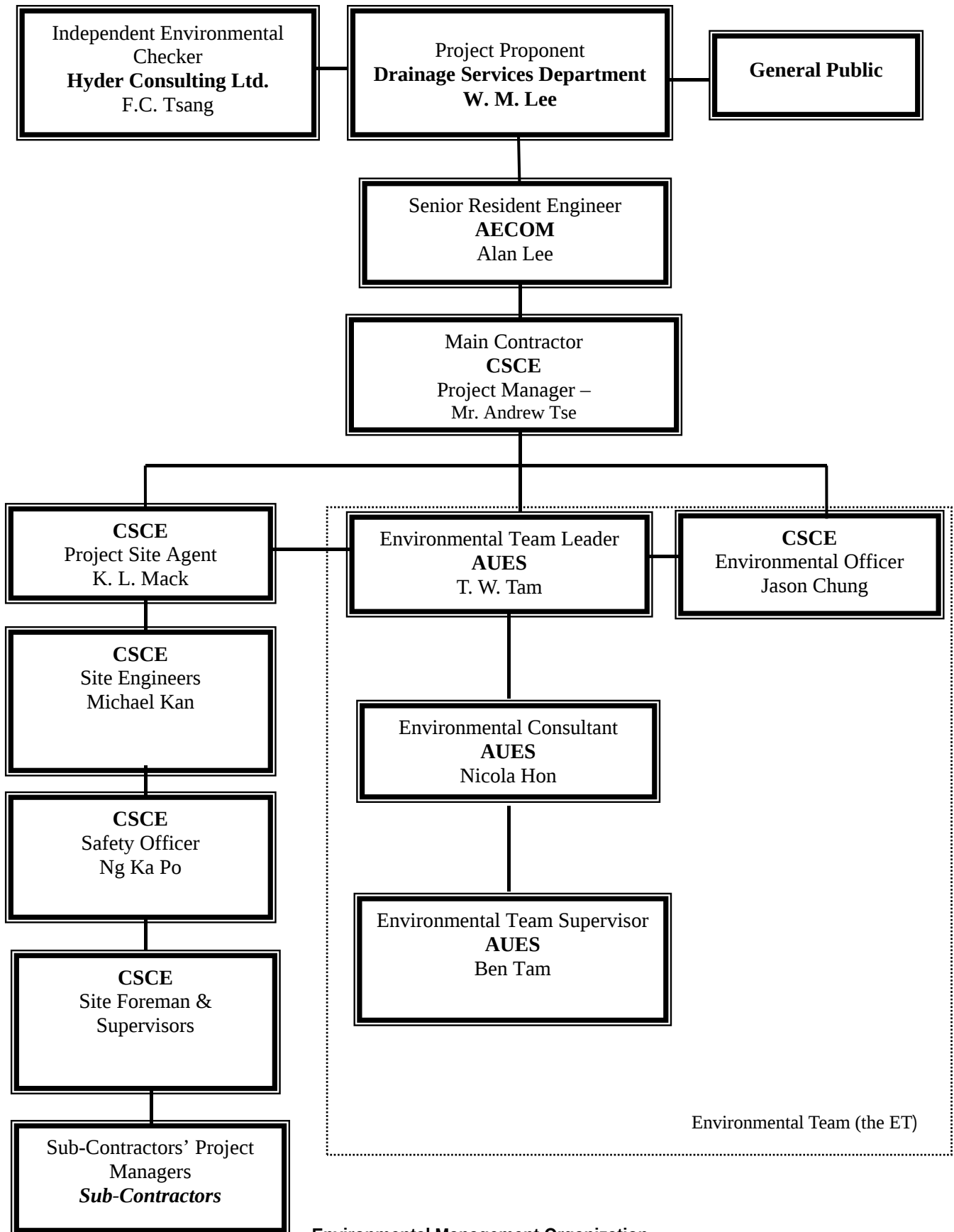
AECOM

|          |                  |
|----------|------------------|
| DRGNO.   | 60022017/C1/1001 |
| SCALE    | AS SHOWN         |
| DATE     | 05/01/2017       |
| BY       | 05/01/2017       |
| FOR      | 05/01/2017       |
| APPROVED | 05/01/2017       |
| CHECKED  | 05/01/2017       |
| DESIGNED | 05/01/2017       |
| DRAWN    | 05/01/2017       |
| SCALE    | AS SHOWN         |
| DATE     | 05/01/2017       |
| BY       | 05/01/2017       |
| FOR      | 05/01/2017       |
| APPROVED | 05/01/2017       |
| CHECKED  | 05/01/2017       |
| DESIGNED | 05/01/2017       |
| DRAWN    | 05/01/2017       |

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## **Appendix B**

### **On-site environmental management**



**Contact Details of Key Personnel**

| Organization | Project Role                      | Name of Key Staff | Tel No.   | Fax No.   |
|--------------|-----------------------------------|-------------------|-----------|-----------|
| DSD          | Employer                          | Mr. W. M. Lee     | --        | 2827-8700 |
| AECOM        | Senior Resident Engineer          | Mr. Alan Lee      | 9706 9568 | 2472 0132 |
| Hyder        | Independent Environmental Checker | Dr. F C Tsang     | 2911 2744 | 2805 5028 |
| CSCE         | Project Manager                   | Mr. Andrew Tse    | 2472 0113 | 2472-0229 |
| CSCE         | Site Agent                        | Mr. K L Mack      | 2472 0113 | 2472-0229 |
| CSCE         | Site Engineer                     | Mr. Michael Kan   | 2472 0113 | 2472-0229 |
| CSCE         | Environmental Officer             | Mr. Jason Chung   | 2472 0113 | 2472-0229 |
| CSCE         | Environmental Supervisor          | Mr. Chan Yau Pang | 2472 0113 | 2472-0229 |
| CSCE         | Safety Officer                    | Mr. Ng Ka Po      | 2472 0113 | 2472-0229 |
| AUES         | Environmental Team Leader         | Mr. T. W. Tam     | 2959-6059 | 2959-6079 |
| AUES         | Environmental Consultant          | Ms. Nicola Hon    | 2959-6059 | 2959-6079 |
| AUES         | Team Supervisor                   | Mr. Ben Tam       | 2959-6059 | 2959-6079 |

**Legend:**

*DSD (Employer) – Drainage Services Department*

*AECOM (Engineer) – AECOM*

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

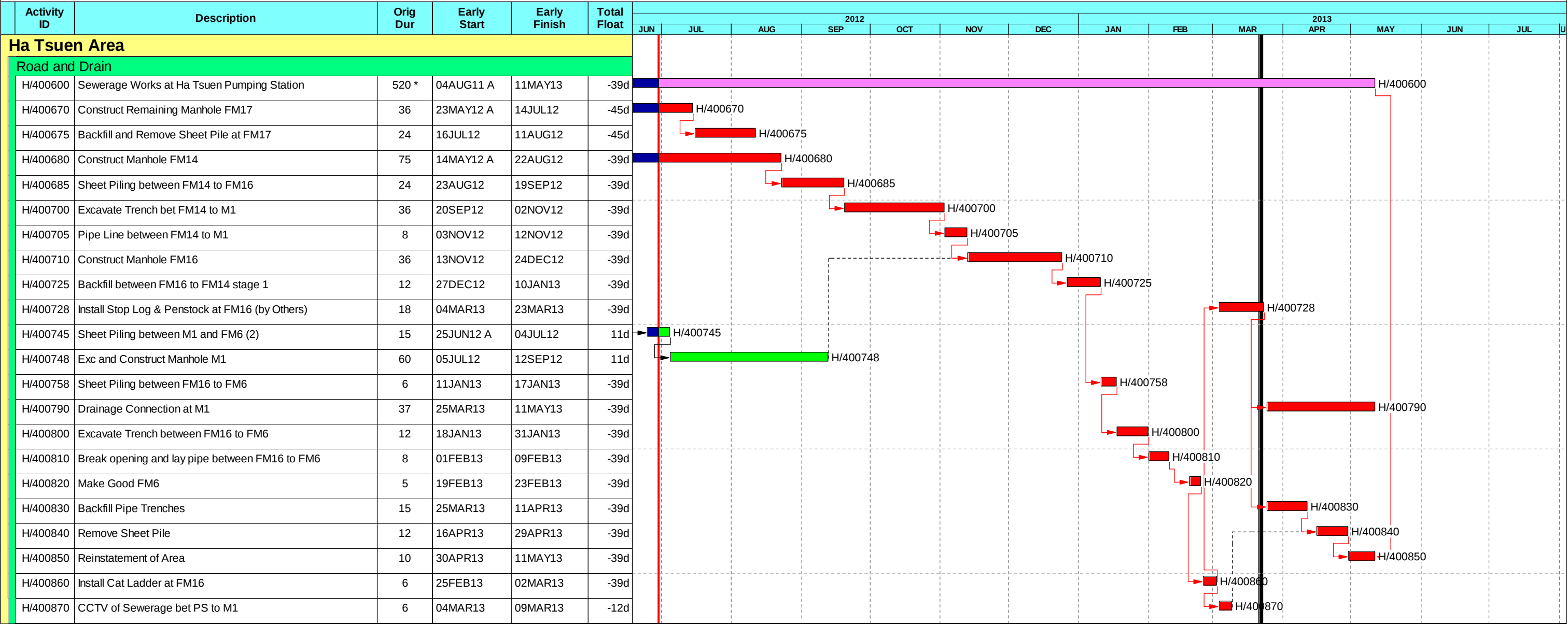
*Hyder (IEC) – Hyder Consulting Limited*

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

## **Appendix C**

### **Master Construction Program**

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



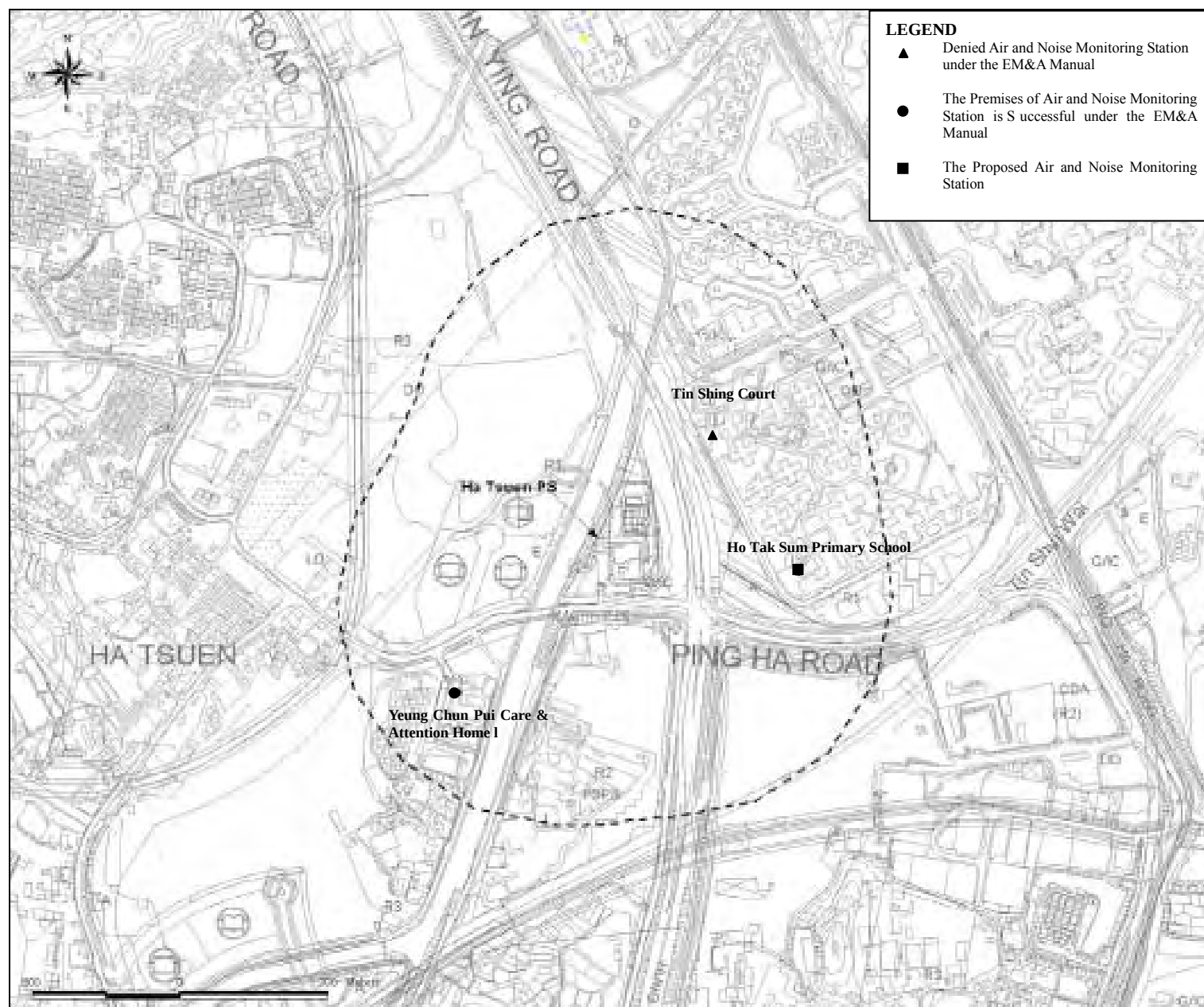
|                           |         |                       |
|---------------------------|---------|-----------------------|
| Start date                | 17SEP09 | Early bar             |
| Finish date               | 13JUN19 | Progress bar          |
| Run date                  | 16JUL12 | Critical bar          |
| Project name              | WP8A    | Summary bar           |
| Page number               | 1A      | Start milestone point |
| c Primavera Systems, Inc. |         | Finish milestone poin |



## **Appendix D**

### **Monitoring Location of EM&A Programme**

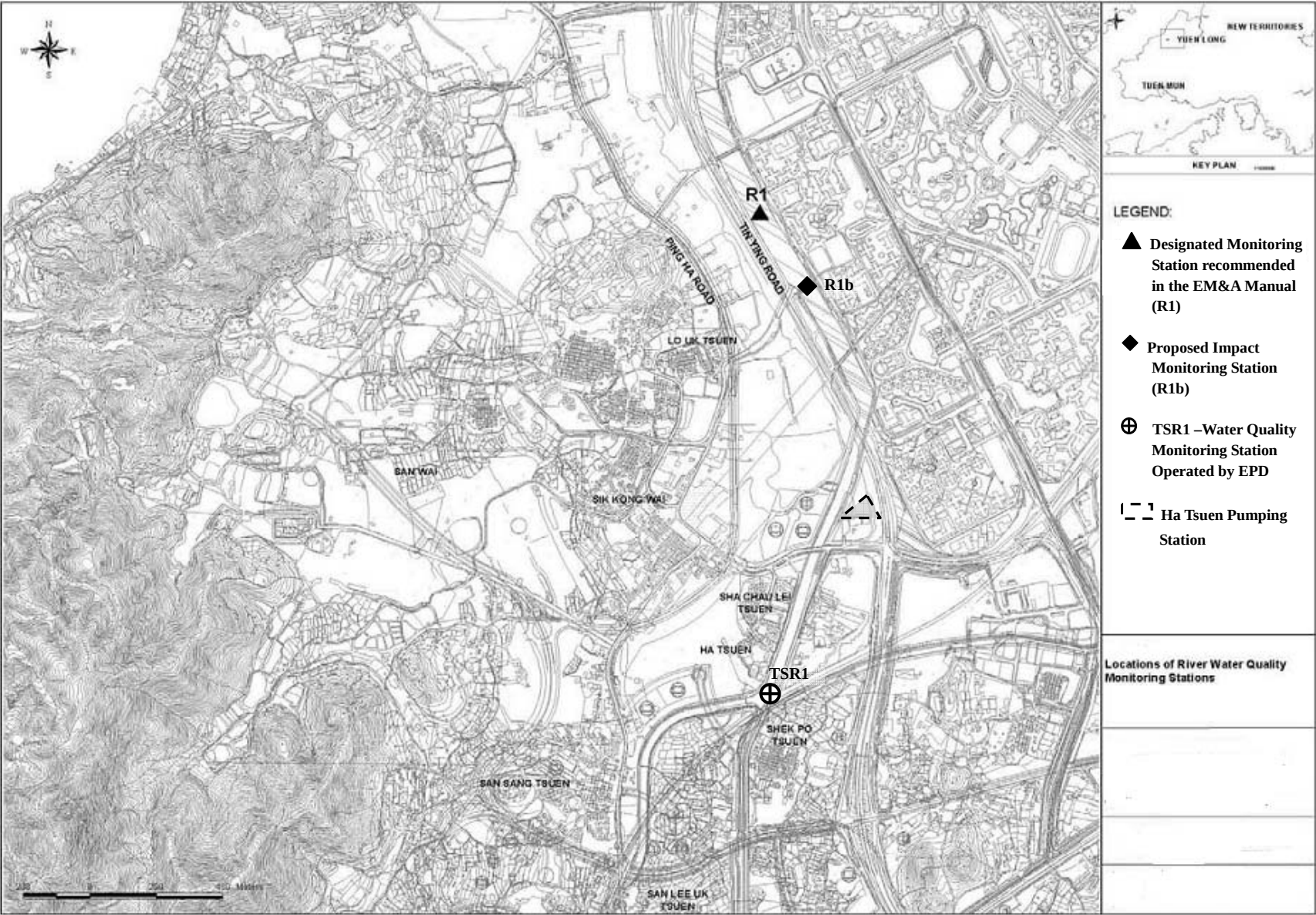
Proposed Air and Noise Monitoring Station



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

**Proposed Water Quality Monitoring Location**

**AUES**



## **Appendix E**

### **Calibration certificates**

**Equipment Calibration Certificates List**

| Items | Aspect | Description of Equipment                                                                                       | Date of Calibration | Date of Next Calibration |
|-------|--------|----------------------------------------------------------------------------------------------------------------|---------------------|--------------------------|
| 1     | Air    | Thermo Anderson Model GS2310 TSP high volume air sampling system<br>(AM1 - Ho Tak Sum Primary School)          | 27 Jul 12           | 27 Sep 12                |
| 2     |        | Thermo Anderson Model GS2310 TSP high volume air sampling system<br>(AM2 Yeung Chun Pui Care & Attention Home) | 27 Aug 12           | 27 Oct 12                |
| 3     |        | Calibration Kit TISCH Model TE-5025A<br>Orifice ID 1483 and Rootsmeter S/N 0438320                             | 17 May 12           | 17 May 13                |
| 4     |        | TSI DustTrak Model 8520<br>(Serial number: 23080)                                                              | 8 Mar 12            | 8 Mar 13                 |
| 5     | Noise  | Bruel & Kjaer 4231 Acoustical Calibrator<br>(Serial number 2713428)                                            | 20 Apr 12           | 20 Apr 13                |
| 6     |        | Bruel & Kjaer 2238 Integrating Sound Level Meter<br>(Serial number: 2285721)                                   | 20 Apr 12           | 20 Apr 13                |
| 7     | Water  | YSI Professional Plus<br>(Serial number: 10G101946)                                                            | 16 Jul 12           | 16 Oct 12                |
| 8     |        | HACH 21000Q<br>(Serial number: 11030C008499)                                                                   | 17 Jul 12           | 13 Oct 12                |

## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

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

Date of Calibration: 27-Jul-12  
Next Calibration Date: 27-Sep-12  
Technician: Ben Tam

### CONDITIONS

Sea Level Pressure (hPa)  
Temperature (°C)

1005  
25.8

Corrected Pressure (mm Hg)  
Temperature (K)

753.75  
299

### CALIBRATION ORIFICE

Make-> TISCH  
Model-> 5025A  
Calibration Date-> 17-May-12

Qstd Slope -> 2.02742  
Qstd Intercept -> -0.02027  
Expiry Date-> 17-May-13

### CALIBRATION

| Plate No. | H2O (L) (in) | H2O (R) (in) | H2O (in) | Qstd (m3/min) | I (chart) | IC corrected | LINEAR REGRESSION     |
|-----------|--------------|--------------|----------|---------------|-----------|--------------|-----------------------|
| 18        | 4.9          | 4.9          | 9.8      | 1.546         | 51        | 50.65        | Slope = 36.9354       |
| 13        | 3.6          | 3.6          | 7.2      | 1.326         | 42        | 41.71        | Intercept = -6.6755   |
| 10        | 2.5          | 2.5          | 5        | 1.107         | 35        | 34.76        | Corr. coeff. = 0.9992 |
| 7         | 1.7          | 1.7          | 3.4      | 0.915         | 27        | 26.82        |                       |
| 5         | 1.2          | 1.2          | 2.4      | 0.770         | 22        | 21.85        |                       |

#### Calculations :

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

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

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration ( deg F)

Pstd = actual pressure during calibration ( mm Hg)

#### For subsequent calculation of sampler flow:

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

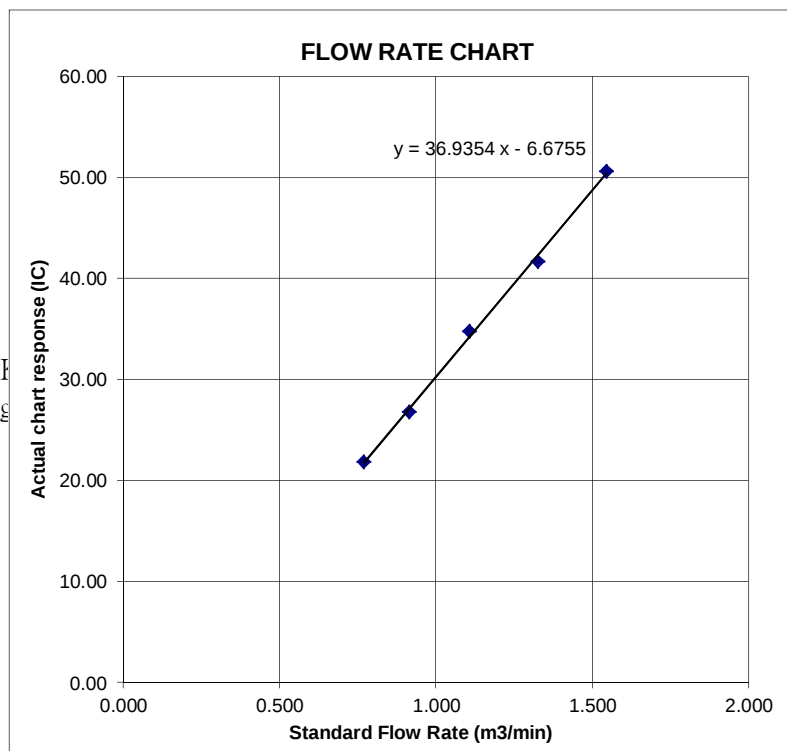
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

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

Date of Calibration: 27-Aug-12  
Next Calibration Date: 27-Oct-12  
Technician: Mr. Ben Tam

### CONDITIONS

Sea Level Pressure (hPa) 1001.4  
Temperature (°C) 30.8

Corrected Pressure (mm Hg) 751.05  
Temperature (K) 304

### CALIBRATION ORIFICE

Make-> TISCH  
Model-> 5025A  
Calibration Date-> 17-May-12

Qstd Slope -> 2.02742  
Qstd Intercept -> -0.02027  
Expiry Date-> 17-May-13

### CALIBRATION

| Plate No. | H2O (L) (in) | H2O (R) (in) | H2O (in) | Qstd (m3/min) | I (chart) | IC corrected | LINEAR REGRESSION                                               |
|-----------|--------------|--------------|----------|---------------|-----------|--------------|-----------------------------------------------------------------|
| 18        | 4.5          | 4.5          | 9.0      | 1.467         | 49        | 47.78        | Slope = 33.3356<br>Intercept = -1.1019<br>Corr. coeff. = 0.9986 |
| 13        | 3.5          | 3.5          | 7.0      | 1.295         | 43        | 41.93        |                                                                 |
| 10        | 2.5          | 2.5          | 5.0      | 1.096         | 37        | 36.08        |                                                                 |
| 7         | 1.7          | 1.7          | 3.4      | 0.905         | 29        | 28.28        |                                                                 |
| 5         | 1.0          | 1.0          | 2.0      | 0.697         | 23        | 22.43        |                                                                 |

#### Calculations :

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

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

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration ( deg F)

Pstd = actual pressure during calibration ( mm Hg)

#### For subsequent calculation of sampler flow:

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

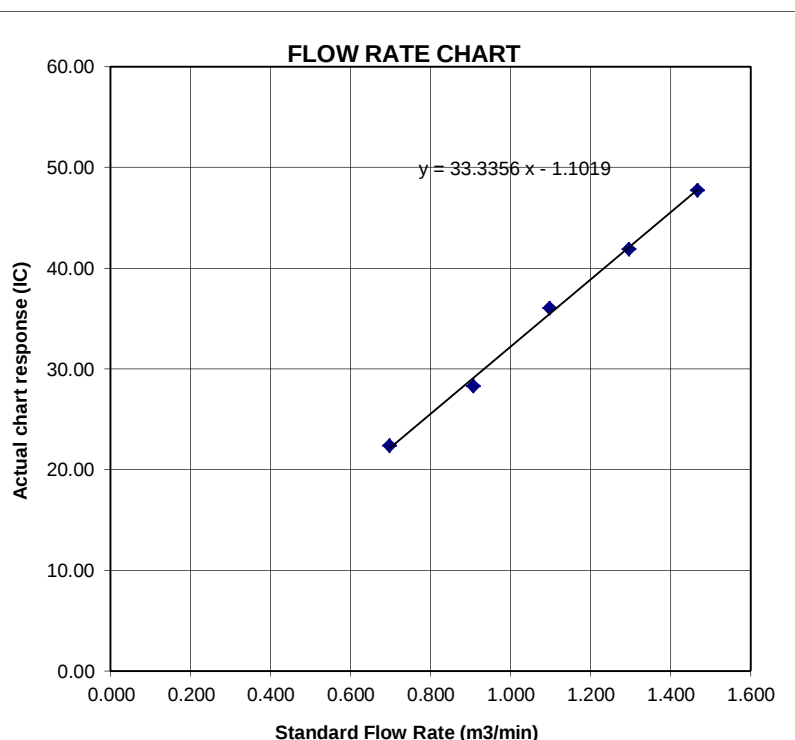
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure





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

# AIR POLLUTION MONITORING EQUIPMENT

## ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

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

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

## DATA TABULATION

| Vstd                                | (x axis)<br>Qstd | (y axis) |  | Va                        | (x axis)<br>Qa | (y axis) |
|-------------------------------------|------------------|----------|--|---------------------------|----------------|----------|
| 1.0018                              | 0.7085           | 1.4185   |  | 0.9957                    | 0.7042         | 0.8829   |
| 0.9976                              | 1.0016           | 2.0061   |  | 0.9915                    | 0.9955         | 1.2486   |
| 0.9955                              | 1.1173           | 2.2429   |  | 0.9894                    | 1.1105         | 1.3959   |
| 0.9945                              | 1.1686           | 2.3524   |  | 0.9884                    | 1.1615         | 1.4641   |
| 0.9890                              | 1.4088           | 2.8371   |  | 0.9830                    | 1.4003         | 1.7657   |
| Qstd slope (m) = 2.02742            |                  |          |  | Qa slope (m) = 1.26953    |                |          |
| intercept (b) = -0.02027            |                  |          |  | intercept (b) = -0.01262  |                |          |
| coefficient (r) = 0.99996           |                  |          |  | coefficient (r) = 0.99996 |                |          |
| y axis = SQRT[H2O(Pa/760) (298/Ta)] |                  |          |  | y axis = SQRT[H2O(Ta/Pa)] |                |          |

## CALCULATIONS

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

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

For subsequent flow rate calculations:

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



# CERTIFICATE OF CALIBRATION AND TESTING

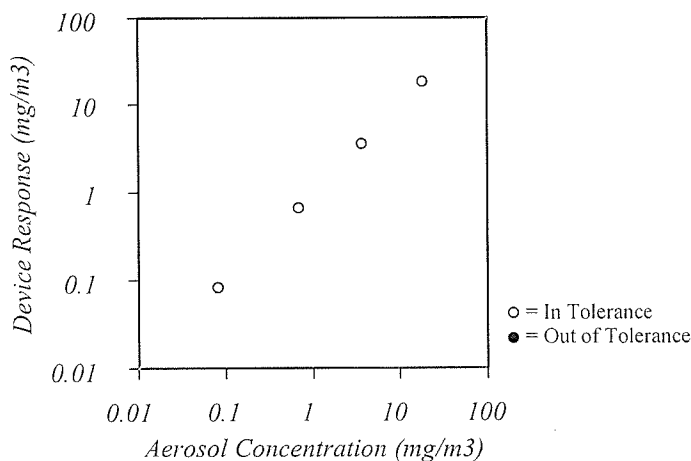
TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA  
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 <http://www.tsi.com>

|                       |               |            |               |       |
|-----------------------|---------------|------------|---------------|-------|
| Environment Condition |               |            | Model         | 8520  |
| Temperature           | 68.5 (20.3)   | °F (°C)    | Serial Number | 23080 |
| Relative Humidity     | 19            | %RH        |               |       |
| Barometric Pressure   | 29.11 (985.8) | inHg (hPa) |               |       |

☒ As Left  
☐ As Found

☒ In Tolerance  
☐ Out of Tolerance

Concentration Linearity Plot



System ID: DTH01-02

## Zero Stability Results

|                          |                          |                          |            |
|--------------------------|--------------------------|--------------------------|------------|
| Average:                 | Minimum:                 | Maximum:                 | Time:      |
| 0.000 :mg/m <sup>3</sup> | 0.000 :mg/m <sup>3</sup> | 0.001 :mg/m <sup>3</sup> | 2:00 :hrs. |

TSI Incorporated does hereby certify that all materials, components, and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSI and the customer and with all published specifications. All performance and acceptance tests required under this contract were successfully conducted according to required specifications. There is no NIST standard for optical mass measurements. Calibration of this instrument performed by TSI has been done using emery oil and has been nominally adjusted to respirable mass of standard ISO 12103-1, A1 test dust (Arizona dust). Our calibration ratio is greater than 1.2:1

| Measurement Variable | System ID | Last Cal. | Cal. Due |
|----------------------|-----------|-----------|----------|
| Barometric Pressure  | E003733   | 02-25-12  | 02-25-13 |
| Humidity             | E002873   | 11-14-11  | 11-14-12 |
| DC Voltage           | E003315   | 01-03-12  | 01-03-13 |
| Microbalance         | M001324   | 01-04-11  | 01-04-13 |
| Flowmeter            | E003769   | 06-13-11  | 06-13-12 |

| Measurement Variable | System ID | Last Cal. | Cal. Due |
|----------------------|-----------|-----------|----------|
| Temperature          | E002873   | 11-14-11  | 11-14-12 |
| DC Voltage           | E003314   | 01-03-12  | 01-03-13 |
| Photometer           | E003319   | 01-26-12  | 07-26-12 |
| Pressure             | E003511   | 11-11-11  | 11-11-12 |

*Tom Jay*  
Calibrated

☒ Final Function  
Check

March 8, 2012

Date



# 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 :  $(23 \pm 2)^{\circ}\text{C}$   
Line Voltage / 電壓 : ---

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

**TEST SPECIFICATIONS / 測試規範**

Calibration check

**DATE OF TEST / 測試日期** : 20 April 2012

**TEST RESULTS / 測試結果**

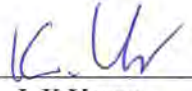
The results apply to the particular unit-under-test only.  
All results are within manufacturer's specification.  
The results are detailed in the subsequent page(s).

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

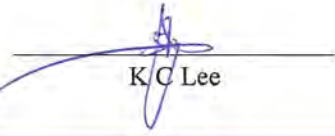
Tested By  
測試

:

  
L K Yeung

Certified By  
核證

:

  
K C Lee

Date of Issue  
簽發日期

:

23 April 2012

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

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

輝創工程有限公司 - 校正及檢測實驗室

c/o 香港新界屯門興安里一號青山灣機樓四樓

Tel/電話: 2927 2606

Fax/傳真: 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com

# Certificate of Calibration

## 校正證書

Certificate No. : C122427  
證書編號

- 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 <sub>AFP</sub> | 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 <sub>AFP</sub> | 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 <sub>AFP</sub> | A                   | F              | 94.00         | 1           | 94.0             | Ref.                        |
|             | L <sub>ASP</sub> |                     | S              |               |             | 94.0             | ± 0.1                       |
|             | L <sub>AIP</sub> |                     | I              |               |             | 94.1             | ± 0.1                       |

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c/o 香港新界屯門興安里一號青山灣機樓四樓

Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

# Certificate of Calibration

## 校正證書

Certificate No. : C122427  
證書編號

### 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 <sub>AFP</sub>   | A                   | F              | 106.0         | Continuous     | 106.0            | Ref.                        |
|             | L <sub>AFMax</sub> |                     |                |               | 200 ms         | 105.0            | -1.0 ± 1.0                  |
|             | L <sub>ASP</sub>   | S                   | Continuous     |               | 106.0          | Ref.             |                             |
|             | L <sub>ASMax</sub> |                     | 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 <sub>AFP</sub> | 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 <sub>CFP</sub> | C                   | F              | 94.00         | 31.5 Hz  | 91.1             | -3.0 ± 1.5                  |
|             |                  |                     |                |               | 63 Hz    | 93.3             | -0.8 ± 1.5                  |
|             |                  |                     |                |               | 125 Hz   | 93.8             | -0.2 ± 1.0                  |
|             |                  |                     |                |               | 250 Hz   | 94.0             | 0.0 ± 1.0                   |
|             |                  |                     |                |               | 500 Hz   | 94.0             | 0.0 ± 1.0                   |
|             |                  |                     |                |               | 1 kHz    | 94.0             | Ref.                        |
|             |                  |                     |                |               | 2 kHz    | 93.8             | -0.2 ± 1.0                  |
|             |                  |                     |                |               | 4 kHz    | 93.2             | -0.8 ± 1.0                  |
|             |                  |                     |                |               | 8 kHz    | 90.9             | -3.0 (+1.5 ; -3.0)          |
|             |                  |                     |                |               | 12.5 kHz | 87.8             | -6.2 (+3.0 ; -6.0)          |

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c/o 香港新界屯門興安里一號青山灣機樓四樓

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Website/網址: www.suncreation.com

# 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 <sub>Aeq</sub> | A                   | 10 sec.          | 4               | 1                   | 1/10              | 110.0            | 100                   | 99.9         | ± 0.5             |
|             |                  |                     |                  |                 |                     | 1/10 <sup>2</sup> |                  | 90                    | 89.6         | ± 0.5             |
|             |                  |                     | 60 sec.          |                 |                     | 1/10 <sup>3</sup> |                  | 80                    | 79.8         | ± 1.0             |
|             |                  |                     | 5 min.           |                 |                     | 1/10 <sup>4</sup> |                  | 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.

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Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

# Certificate of Calibration

## 校正證書

Certificate No. : 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 :  $(23 \pm 2)^{\circ}\text{C}$   
Line Voltage / 電壓 : ---

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

**TEST SPECIFICATIONS / 測試規範**

Calibration

**DATE OF TEST / 測試日期** : 20 April 2012

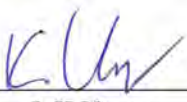
**TEST RESULTS / 測試結果**

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

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

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

Tested By  
測試

  
L K Yeung

Certified By  
核證

  
K C Lee

Date of Issue  
簽發日期

23 April 2012

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

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Fax/傳真: 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com

# Certificate of Calibration

## 校正證書

Certificate No. : C122426  
證書編號

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.
- The results presented are the mean of 3 measurements at each calibration point.
- Test equipment :

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

- Test procedure : MA100N.

- Results :

### 5.1 Sound Level Accuracy

#### 5.1.1 Before Adjustment

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

#### 5.1.2 After Adjustment

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

### 5.2 Frequency Accuracy

#### 5.2.1 Before Adjustment

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

#### 5.2.2 After Adjustment

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

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輝創工程有限公司

Sun Creation Engineering Limited

Calibration and Testing Laboratory

## Certificate of Calibration 校正證書

Certificate No. : C122426

證書編號

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

Note :

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c/o 香港新界屯門興安里一號青山灣機樓四樓

Tel/電話: 2927 2606

Fax/傳真: 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com



## ALS Technichem (HK) Pty Ltd

### REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

**CONTACT:** MR RAY CHEUNG  
**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:** HK1218772  
**LABORATORY:** HONG KONG  
**DATE RECEIVED:** 16/07/2012  
**DATE OF ISSUE:** 17/07/2012

**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 and Temperature  
**Description:** YSI Professional Plus  
**Brand Name:** YSI  
**Model No.:** YSI Professional Plus  
**Serial No.:** 10G101946  
**Equipment No.:** --  
**Date of Calibration:** 16 July, 2012

#### NOTES

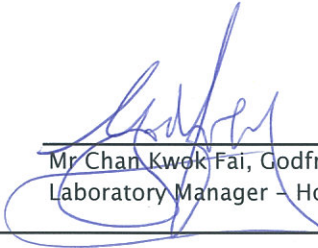
This is the Final Report and supersedes any preliminary report with this batch number.  
Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

#### 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](mailto:hongkong@alsglobal.com)

  
Mr Chan Kwek Fai, Godfrey  
Laboratory Manager - Hong Kong

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Page 1 of 2

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:** HK1218772  
**Amendment:** 1  
**Date of Issue:** 17/07/2012  
**Client:** ACTION UNITED ENVIRO SERVICES



**Description:** YSI Professional Plus  
**Brand Name:** YSI  
**Model No.:** YSI Professional Plus  
**Serial No.:** 10G101946  
**Equipment No.:** --  
**Date of Calibration:** 16 July, 2012

**Date of next Calibration:** 16 October, 2012

## Parameters:

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

| Expected Reading (mg/L)       | Displayed Reading (mg/L) | Tolerance (mg/L) |
|-------------------------------|--------------------------|------------------|
| 1.82                          | 1.79                     | -0.03            |
| 4.15                          | 4.15                     | 0.00             |
| 7.85                          | 7.90                     | 0.05             |
| Tolerance Limit ( $\pm$ mg/L) |                          | 0.20             |

## pH Value

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

| Expected Reading (pH Unit)    | Displayed Reading (pH Unit) | Tolerance (pH unit) |
|-------------------------------|-----------------------------|---------------------|
| 4.0                           | 4.06                        | 0.06                |
| 7.0                           | 7.05                        | 0.05                |
| 10.0                          | 10.06                       | 0.06                |
| Tolerance Limit ( $\pm$ unit) |                             | 0.20                |

## Salinity

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

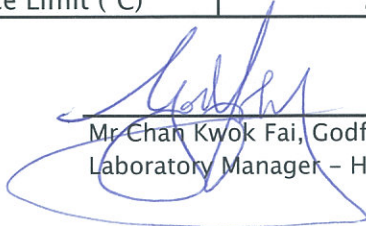
| Expected Reading (g/L)     | Displayed Reading (g/L) | Tolerance (%) |
|----------------------------|-------------------------|---------------|
| 0                          | 0.00                    | --            |
| 10                         | 9.57                    | -4.3          |
| 20                         | 18.93                   | -5.4          |
| 30                         | 29.74                   | -0.9          |
| Tolerance Limit ( $\pm$ %) |                         | 10.0          |

## Temperature

Method Ref: Section 6 of International Accreditation New Zealand Technical

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

| Reading of Ref. thermometer ( $^{\circ}$ C ) | Displayed Reading ( $^{\circ}$ C ) | Tolerance ( $^{\circ}$ C ) |
|----------------------------------------------|------------------------------------|----------------------------|
| 9.5                                          | 9.2                                | -0.3                       |
| 22.0                                         | 21.6                               | -0.4                       |
| 40.5                                         | 40.3                               | -0.2                       |
| Tolerance Limit ( $^{\circ}$ C)              |                                    | 2.0                        |

  
 Mr Chan Kwok Fai, Godfrey  
 Laboratory Manager - Hong Kong



## ALS Technichem (HK) Pty Ltd

### REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

**CONTACT:** MR RAY CHEUNG  
**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:** HK1218502  
**LABORATORY:** HONG KONG  
**DATE RECEIVED:** 12/07/2012  
**DATE OF ISSUE:** 17/07/2012

**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:** Turbidity  
**Description:** Turbidimeter  
**Brand Name:** HACH  
**Model No.:** 2100Q  
**Serial No.:** 11030C008499  
**Equipment No.:** --  
**Date of Calibration:** 13 July, 2012

#### NOTES

This is the Final Report and supersedes any preliminary report with this batch number.

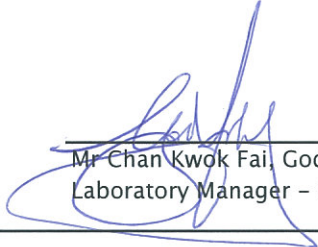
Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

#### ISSUING LABORATORY: HONG KONG

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ALS Technichem (HK) Pty Ltd  
11/F Chung Shun Knitting Centre  
1-3 Wing Yip Street  
Kwai Chung  
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**Phone:** 852-2610 1044  
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**Email:** [hongkong@alsglobal.com](mailto:hongkong@alsglobal.com)

  
Mr Chan Kwok Fai, Godfrey  
Laboratory Manager - Hong Kong

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# REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1218502  
Date of Issue: 17/07/2012  
Client: ACTION UNITED ENVIRO SERVICES



Description: Turbidimeter  
Brand Name: HACH  
Model No.: 2100Q  
Serial No.: 11030C008499  
Equipment No.: --  
Date of Calibration: 13 July, 2012

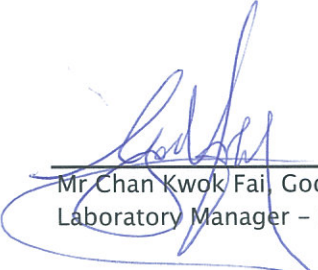
Date of next Calibration: 13 October, 2012

## Parameters:

### Turbidity

Method Ref: ALPHA 21st Ed. 2130B

| Expected Reading (NTU)      | Displayed Reading (NTU) | Tolerance (%) |
|-----------------------------|-------------------------|---------------|
| 0                           | 0.23                    | --            |
| 4                           | 4.36                    | 9.00          |
| 40                          | 37.9                    | -5.25         |
| 80                          | 75.3                    | -5.88         |
| 400                         | 386                     | -3.50         |
| 800                         | 790                     | -1.25         |
| Tolerance Limit ( $\pm\%$ ) |                         | 10.0          |

  
Mr Chan Kwok Fai, Godfrey  
Laboratory Manager - Hong Kong



Hong Kong Accreditation Service  
香港認可處

**Certificate of Accreditation**  
**認可證書**

*This is to certify that*  
特此證明

**ALS TECHNICHEM (HK) PTY LIMITED**

**11/F., Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, New Territories, Hong Kong**  
香港新界葵涌永業街1-3號忠信針織中心11樓

*has been accepted by the HKAS Executive, on the recommendation of the Accreditation Advisory Board, as a*  
為香港認可處執行機關根據認可諮詢委員會建議而接受的

**HOKLAS Accredited Laboratory**  
「香港實驗所認可計劃」認可實驗所

*This laboratory meets the requirements of ISO / IEC 17025 : 2005 – General requirements for the competence*  
此實驗所符合ISO / IEC 17025 : 2005 – 《測試及校正實驗所能力的通用規定》所訂的要求，  
*of testing and calibration laboratories and it has been accredited for performing specific tests or calibrations as*  
獲認可進行載於香港實驗所認可計劃《認可實驗所名冊》內下述測試類別中的指定  
*listed in the HOKLAS Directory of Accredited Laboratories within the test category of*  
測試或校正工作

**Environmental Testing**  
環境測試

*This laboratory is accredited in accordance with the recognised International Standard ISO / IEC 17025 : 2005.*  
本實驗所乃根據公認的國際標準 ISO / IEC 17025 : 2005 獲得認可。

*This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory*  
這項認可資格演示在指定範疇所需的技術能力及實驗所質量管理體系的運作  
*quality management system (see joint IAF-ILAC-ISO Communiqué).*  
(見國際認可論壇、國際實驗所認可合作組織及國際標準化組織的聯合公報)。

*The common seal of the Hong Kong Accreditation Service is affixed hereto by the authority of the HKAS Executive*  
香港認可處根據認可處執行機關的權限在此蓋上通用印章

CHAN Sing Sing, Terence, Executive Administrator  
執行幹事 陳成城  
Issue Date : 5 May 2009  
簽發日期：二零零九年五月五日

Registration Number : **HOKLAS 066**  
註冊號碼：

Date of First Registration : 15 September 1995  
首次註冊日期：一九九五年九月十五日



## **Appendix F**

### **Meteorological information**

### Meteorological Data Extracted from HKO during the Reporting Period

| Date      |     | Weather                                                                 | Lau Fau Shan Weather Station |                           |                   |                            |                |
|-----------|-----|-------------------------------------------------------------------------|------------------------------|---------------------------|-------------------|----------------------------|----------------|
|           |     |                                                                         | Total Rainfall (mm)          | Mean Air Temperature (°C) | Wind Speed (km/h) | Mean Relative Humidity (%) | Wind Direction |
| 1-Sep-12  | Sat | Sunny intervals, moderate easterly winds                                | 0.0                          | 28.4                      | 13.1              | 80                         | 80             |
| 2-Sep-12  | Sun | Sunny intervals, Moderate easterly winds                                | 1.0                          | 28.7                      | 12.7              | 77                         | 70             |
| 3-Sep-12  | Mon | Hot, sunny periods ,cloudy, Sunny intervals                             | 0.0                          | 28.3                      | 9.6               | 78                         | 70             |
| 4-Sep-12  | Tue | Sunny intervals, a few showers, moderate easterly winds                 | 4.0                          | 28.2                      | 15.3              | 80                         | 70             |
| 5-Sep-12  | Wed | Sunny intervals, a few showers, Fresh easterly winds                    | 0.0                          | 27.9                      | 13.3              | 81                         | 70             |
| 6-Sep-12  | Thu | Sunny intervals                                                         | 0.0                          | 29.4                      | 15.7              | 77                         | 80             |
| 7-Sep-12  | Fri | a few showers, squally thunderstorms,                                   | 0.0                          | 28.7                      | 10.5              | 81                         | 70             |
| 8-Sep-12  | Sat | Fine, very hot, light to moderate east to southeasterly winds.          | 0.0                          | 27.9                      | 7.9               | 85                         | 140            |
| 9-Sep-12  | Sun | Hot, fine, light to moderate east to southeasterly winds.               | 21.0                         | 27.7                      | 8.6               | 85                         | 140            |
| 10-Sep-12 | Mon | Fine, very hot, light to moderate east to southeasterly winds.          | 0.0                          | 28.6                      | 11.0              | 81                         | 140            |
| 11-Sep-12 | Tue | Mainly fine, very hot, Moderate east to southeasterly winds.            | 0.0                          | 29                        | 9.0               | 75                         | 140            |
| 12-Sep-12 | Wed | Fine, very hot, isolated showers, moderate east to southeasterly winds. | 0.0                          | 28.4                      | 7.4               | 78                         | 60             |
| 13-Sep-12 | Thu | Very hot, isolated showers, light winds.                                | 0.5                          | 27.9                      | 9.3               | 79                         | 140            |
| 14-Sep-12 | Fri | Dry, sunny periods, light to moderate north to northeasterly winds.     | 0.0                          | 25.9                      | 20.6              | 62                         | 30             |
| 15-Sep-12 | Sat | Mainly fine, very hot, moderate east to southeasterly winds.            | 0.0                          | 25.8                      | 14.5              | 63                         | 30             |
| 16-Sep-12 | Sun | Fine, dry, Light to moderate north to northeasterly winds.              | 0.0                          | 26.5                      | 11.3              | 59                         | 40             |
| 17-Sep-12 | Mon | Fine, dry, Light to moderate north to northeasterly winds.              | 0.0                          | 26.2                      | 12.2              | 49                         | 340            |
| 18-Sep-12 | Tue | Dry, cloudy, sunny intervals, moderate east to northeasterly winds.     | 0.0                          | 26.5                      | 9.6               | 59                         | 70             |
| 19-Sep-12 | Wed | Cloudy, moderate to fresh easterly winds.                               | 0.0                          | 26.8                      | 9.2               | 72                         | 80             |
| 20-Sep-12 | Thu | cloudy, a few showers, moderate to fresh easterly winds                 | 0.0                          | 26.9                      | 13.3              | 78                         | 70             |
| 21-Sep-12 | Fri | Dry, Cloudy, Moderate to fresh northerly winds.                         | 0.0                          | 27.9                      | 15.2              | 77                         | 80             |
| 22-Sep-12 | Sat | Sunny periods. Light to moderate easterly winds.                        | 0.0                          | 28.2                      | 9.5               | 84                         | 70             |
| 23-Sep-12 | Sun | Fine, dry, Light to moderate north to northeasterly winds.              | 0.0                          | 28                        | 10.1              | 85                         | 140            |
| 24-Sep-12 | Mon | Rain, Light to moderate easterly winds.                                 | 1.5                          | 27.1#                     | 8.3#              | 91#                        | 070#           |
| 25-Sep-12 | Tue | cloudy, a few showers, moderate to fresh easterly winds                 | 1.5                          | 27                        | 13.4#             | 82                         | 080#           |
| 26-Sep-12 | Wed | Dry, Cloudy, Moderate to fresh northerly winds.                         | 0.0                          | 27.1                      | 9.0               | 80                         | 70             |
| 27-Sep-12 | Thu | cloudy, a few showers, moderate to fresh easterly winds                 | 0.0#                         | 28.9#                     | 14.0#             | 61#                        | 350#           |
| 28-Sep-12 | Fri | Dry, Cloudy, Moderate to fresh northerly winds.                         | 0.0                          | 27.8                      | 19.7              | 58                         | 360            |
| 29-Sep-12 | Sat | Sunny periods. Light to moderate easterly winds.                        | 0.0                          | 26.9                      | 14.3              | 58                         | 20             |
| 30-Sep-12 | Sun | HOLIDAY                                                                 | 0.0                          | 25.1                      | 11.6              | 59                         | 70             |

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

# missing (less than 24 hourly observations a day)

Rainfall measured in increment of 0.5 mm. Amount of < 0.5 mm cannot be detected

## **Appendix G**

### **Event and Action Plan**

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

| EVENT        | ACTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | ET                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | IEC                                                                                                                                                                                                                                                                                                                            | ER                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | CONTRACTOR                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Action level | <ol style="list-style-type: none"> <li>1. Notify IEC and Contractor;</li> <li>2. Carry out investigation;</li> <li>3. Report the results of investigation to the IEC and Contractor;</li> <li>4. Discuss with the Contractor and formulate remedial measures ;</li> <li>5. Increase monitoring frequency to check the effectiveness of mitigation measures.</li> </ol>                                                                                                                                                                                                                                                  | <ol style="list-style-type: none"> <li>1. Review the analyzed results submitted by the ET;</li> <li>2. Review the proposed remedial measures by the Contractor and advise the ER accordingly;</li> <li>3. Supervise the implementation of remedial measures.</li> </ol>                                                        | <ol style="list-style-type: none"> <li>1. Confirm receipt of notification in writing;</li> <li>2. Notify Contractor;</li> <li>3. Require Contractor to propose remedial measures for the analyzed noise problem;</li> <li>4. Ensure mitigation measures are properly implemented.</li> </ol>                                                                                                                                                                                | <ol style="list-style-type: none"> <li>1. Submit noise mitigation proposal to IEC;</li> <li>2. Implement noise mitigation proposals.</li> </ol>                                                                                                                                                                                                                                                                                 |
| Limit level  | <ol style="list-style-type: none"> <li>1. Notify IEC, ER, EPD &amp; Contractor;</li> <li>2. Identify source;</li> <li>3. Repeat measurement to confirm findings;</li> <li>4. Increase monitoring frequency;</li> <li>5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented;</li> <li>6. Inform IEC, ER and EPD the causes and actions taken for the exceedances;</li> <li>7. Assess the effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results;</li> <li>8. If exceedance stops, cease additional monitoring.</li> </ol> | <ol style="list-style-type: none"> <li>1. Discuss amongst ER, ET, and Contractor on the potential remedial actions;</li> <li>2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly;</li> <li>3. Supervise the implementation of remedial measures.</li> </ol> | <ol style="list-style-type: none"> <li>1. Confirm receipt of notification in writing;</li> <li>2. Notify Contractor;</li> <li>3. Require Contractor to propose remedial measures for the analyzed noise problem;</li> <li>4. Ensure mitigation measures are properly implemented;</li> <li>5. If exceedances continue, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.</li> </ol> | <ol style="list-style-type: none"> <li>1. Undertake immediate action to avoid further exceedance;</li> <li>2. Submit proposals for remedial actions to IEC within 3 working days of notification;</li> <li>3. Implement the agreed proposals;</li> <li>4. Resubmit proposals if problem still not under control;</li> <li>5. Stop the relevant portion of works as determined by ER, until the exceedance is abated.</li> </ol> |

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



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

## **Appendix H**

### **Monitoring Schedule in Reporting Month and Coming Month**

### Monitoring Schedule for Reporting Period

| Date |           | Dust Monitoring |             | Noise Monitoring | Water Quality |
|------|-----------|-----------------|-------------|------------------|---------------|
|      |           | 1-hour TSP      | 24-hour TSP |                  |               |
| Sat  | 1-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 |

### Monitoring Schedule for Coming Month

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

|  |                          |
|--|--------------------------|
|  | Monitoring Day           |
|  | Sunday or Public Holiday |

## **Appendix I**

### **Results Data**

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

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

| DATE      | SAMPLE NUMBER | ELAPSED TIME |          |         | MIN CHART READING | MAX CHART READING | AVG CHART READING | AVG TEMP (°C) | STANDARD        |                    |                     | INITIAL FILTER WEIGHT (g) | FINAL FILTER WEIGHT (g) | WEIGHT DUST COLLECTED (g) | Dust 24-hr TSP in air (ug/m³) |
|-----------|---------------|--------------|----------|---------|-------------------|-------------------|-------------------|---------------|-----------------|--------------------|---------------------|---------------------------|-------------------------|---------------------------|-------------------------------|
|           |               | INITIAL      | FINAL    | (min)   |                   |                   |                   |               | AVG PRESS (hPa) | FLOW RATE (m³/min) | AIR VOLUME (std m³) |                           |                         |                           |                               |
| 3-Sep-12  | 25007         | 11622.19     | 11645.67 | 1408.80 | 34                | 39                | 36.5              | 29.4          | 1008.4          | 1.16               | 1633                | 2.8325                    | 2.8584                  | 0.0259                    | 16                            |
| 8-Sep-12  | 25055         | 11645.67     | 11669.35 | 1420.80 | 33                | 39                | 36.0              | 28.8          | 1012.1          | 1.15               | 1632                | 2.828                     | 2.9035                  | 0.0755                    | 46                            |
| 14-Sep-12 | 25068         | 11669.35     | 11693.24 | 1433.40 | 35                | 40                | 37.5              | 26.9          | 1009.3          | 1.19               | 1707                | 2.7902                    | 2.9256                  | 0.1354                    | 79                            |
| 20-Sep-12 | 25091         | 11693.24     | 11717.03 | 1427.40 | 36                | 39                | 37.5              | 27.2          | 1011.6          | 1.19               | 1701                | 2.8144                    | 2.8752                  | 0.0608                    | 36                            |
| 26-Sep-12 | 25093         | 11717.03     | 11741.11 | 1444.80 | 32                | 38                | 35.0              | 27            | 1010.7          | 1.12               | 1624                | 2.8081                    | 2.8935                  | 0.0854                    | 53                            |

Action Level : 162      Limit Level : 260

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

| DATE      | SAMPLE NUMBER | ELAPSED TIME |          |         | MIN CHART READING | MAX CHART READING | AVG CHART READING | AVG TEMP (°C) | STANDARD        |                    |                     | INITIAL FILTER WEIGHT (g) | FINAL FILTER WEIGHT (g) | WEIGHT DUST COLLECTED (g) | Dust 24-hr TSP in air (ug/m³) |
|-----------|---------------|--------------|----------|---------|-------------------|-------------------|-------------------|---------------|-----------------|--------------------|---------------------|---------------------------|-------------------------|---------------------------|-------------------------------|
|           |               | INITIAL      | FINAL    | (min)   |                   |                   |                   |               | AVG PRESS (hPa) | FLOW RATE (m³/min) | AIR VOLUME (std m³) |                           |                         |                           |                               |
| 3-Sep-12  | 24969         | 13163.91     | 13187.98 | 1444.20 | 32                | 36                | 34.0              | 29.4          | 1008.4          | 1.04               | 1506                | 2.7583                    | 2.8172                  | 0.0589                    | 39                            |
| 8-Sep-12  | 25053         | 13187.98     | 13212.05 | 1444.20 | 31                | 37                | 34.0              | 28.8          | 1012.1          | 1.05               | 1511                | 2.8165                    | 2.8565                  | 0.0400                    | 26                            |
| 14-Sep-12 | 25067         | 13212.05     | 13235.53 | 1408.80 | 34                | 39                | 36.5              | 26.9          | 1009.3          | 1.12               | 1581                | 2.8158                    | 2.9488                  | 0.1330                    | 84                            |
| 20-Sep-12 | 25095         | 13235.53     | 13259.62 | 1445.40 | 33                | 37                | 35.0              | 27.2          | 1011.6          | 1.08               | 1558                | 2.7905                    | 2.8823                  | 0.0918                    | 59                            |
| 26-Sep-12 | 25094         | 13259.62     | 13283.79 | 1450.20 | 33                | 38                | 35.5              | 27            | 1010.7          | 1.09               | 1585                | 2.7946                    | 2.9545                  | 0.1599                    | 101                           |

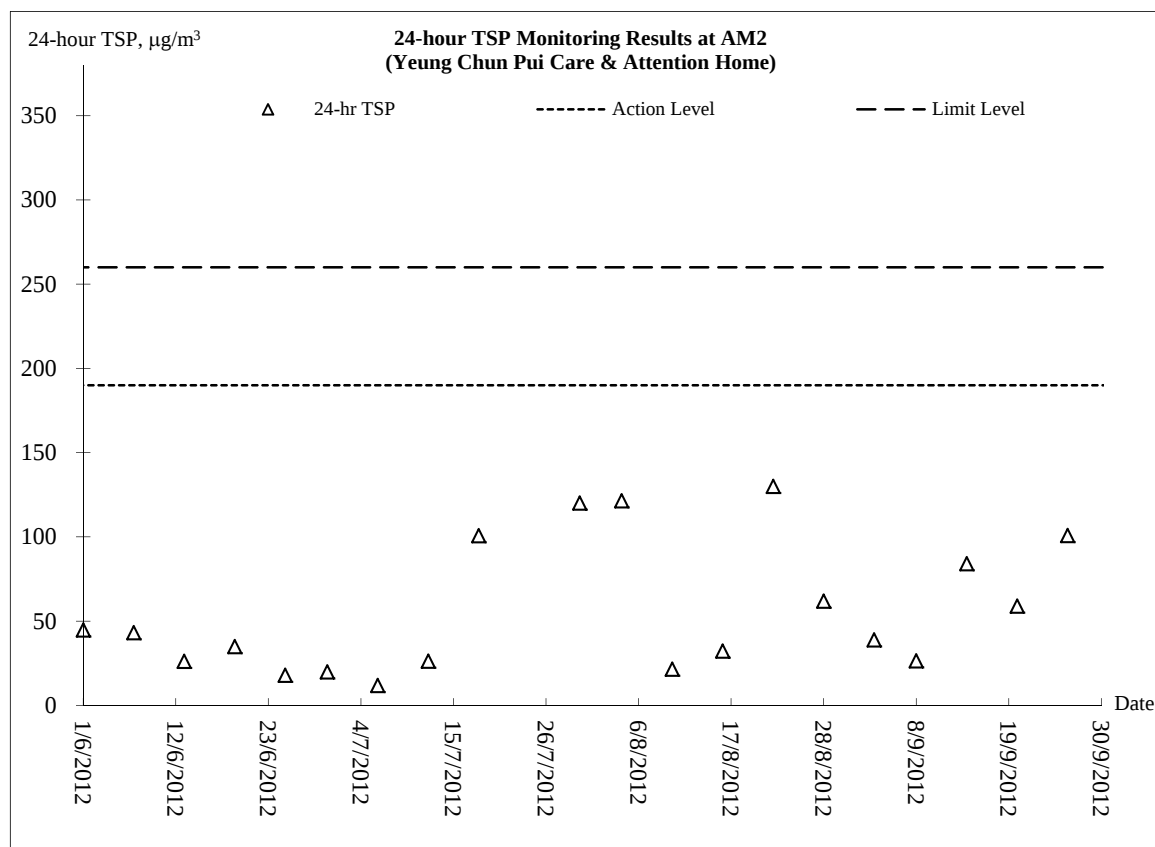
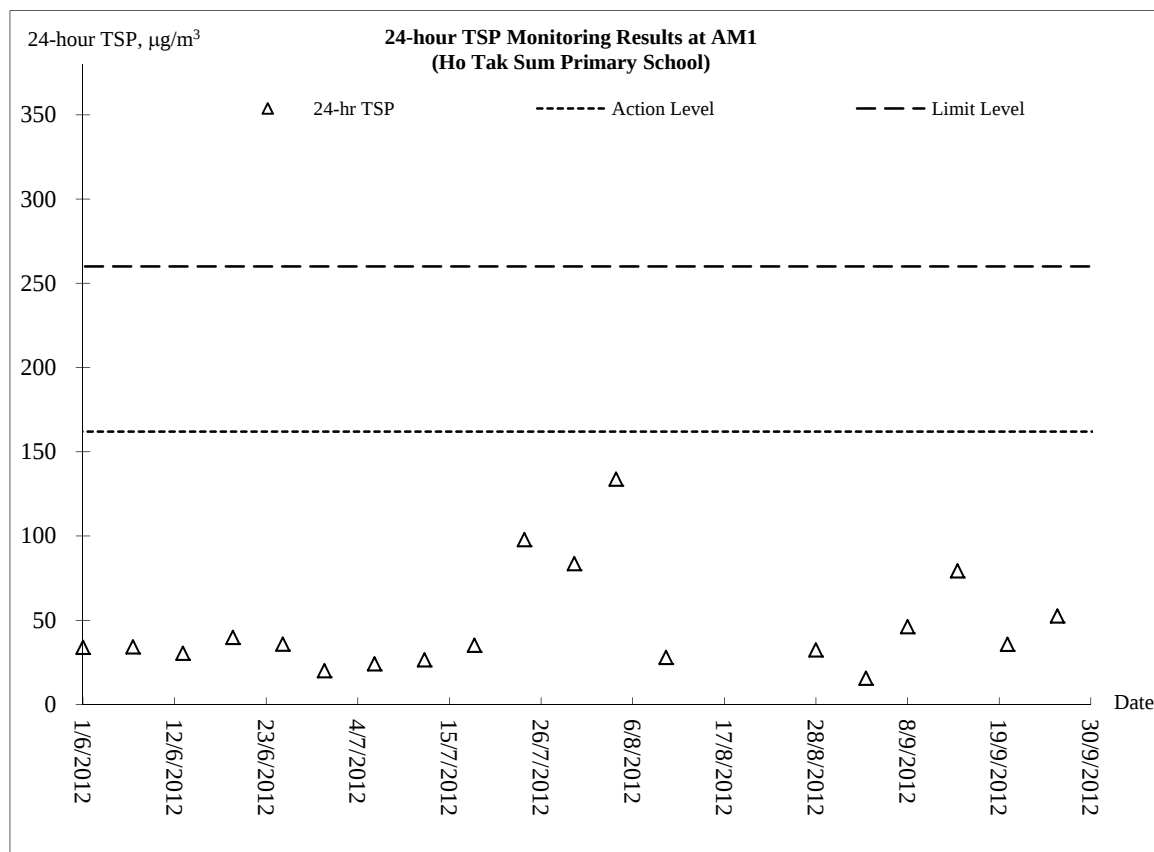
Action Level : 190      Limit Level : 260

| ACTION/ LIMIT  |          |      |           |           |           |      |         |       |                 |      |     |     |           |      |  |  |  |  |  |
|----------------|----------|------|-----------|-----------|-----------|------|---------|-------|-----------------|------|-----|-----|-----------|------|--|--|--|--|--|
| Date           | Location |      |           |           | DO (mg/L) |      | DOS (%) |       | Turbidity (NTU) |      | pH  |     | SS (mg/L) |      |  |  |  |  |  |
|                |          |      |           |           | ACT       | 4.6  |         |       | ACT             | 15.6 | ACT |     | ACT       | 31.5 |  |  |  |  |  |
|                |          |      |           |           | LIM       | 4    |         |       | LIM             | 16.2 | LIM |     | LIM       | 31.9 |  |  |  |  |  |
| Date 4-Sep-12  |          |      |           |           |           |      |         |       |                 |      |     |     |           |      |  |  |  |  |  |
|                | Location | Time | Depth (m) | Temp (oC) | DO (mg/L) |      | DOS (%) |       | Turbidity (NTU) |      | pH  |     | SS (mg/L) |      |  |  |  |  |  |
| R1b            | 16:08    | 0.60 | 28.3      | 28.3      | 6.76      | 6.5  | 85.8    | 83.3  | 9.1             | 9.1  | 7.9 | 7.9 | 15        | 15.0 |  |  |  |  |  |
|                |          |      | 28.3      |           | 6.33      |      | 80.7    |       | 9.2             |      | 7.9 |     | 15        |      |  |  |  |  |  |
| Date 6-Sep-12  |          |      |           |           |           |      |         |       |                 |      |     |     |           |      |  |  |  |  |  |
|                | Location | Time | Depth (m) | Temp (oC) | DO (mg/L) |      | DOS (%) |       | Turbidity (NTU) |      | pH  |     | SS (mg/L) |      |  |  |  |  |  |
| R1b            | 9:58     | 0.60 | 27.2      | 27.2      | 9.43      | 9.4  | 116.2   | 114.8 | 7.3             | 7.6  | 7.9 | 8.0 | 8         | 8.0  |  |  |  |  |  |
|                |          |      | 27.2      |           | 9.27      |      | 113.3   |       | 7.9             |      | 8   |     | 8         |      |  |  |  |  |  |
| Date 8-Sep-12  |          |      |           |           |           |      |         |       |                 |      |     |     |           |      |  |  |  |  |  |
|                | Location | Time | Depth (m) | Temp (oC) | DO (mg/L) |      | DOS (%) |       | Turbidity (NTU) |      | pH  |     | SS (mg/L) |      |  |  |  |  |  |
| R1b            | 9:53     | 0.50 | 29.2      | 29.2      | 10.45     | 11.1 | 108.6   | 113.4 | 12.5            | 12.5 | 7.5 | 7.6 | 27        | 27.0 |  |  |  |  |  |
|                |          |      | 29.2      |           | 11.65     |      | 118.2   |       | 12.5            |      | 7.6 |     | 27        |      |  |  |  |  |  |
| Date 10-Sep-12 |          |      |           |           |           |      |         |       |                 |      |     |     |           |      |  |  |  |  |  |
|                | Location | Time | Depth (m) | Temp (oC) | DO (mg/L) |      | DOS (%) |       | Turbidity (NTU) |      | pH  |     | SS (mg/L) |      |  |  |  |  |  |
| R1b            | 9:50     | 0.60 | 28.1      | 28.1      | 11.19     | 11.1 | 128.9   | 127.0 | 14.0            | 14.7 | 7.9 | 7.9 | 25        | 25.0 |  |  |  |  |  |
|                |          |      | 28.1      |           | 10.97     |      | 125.1   |       | 15.4            |      | 7.9 |     | 25        |      |  |  |  |  |  |
| Date 13-Sep-12 |          |      |           |           |           |      |         |       |                 |      |     |     |           |      |  |  |  |  |  |
|                | Location | Time | Depth (m) | Temp (oC) | DO (mg/L) |      | DOS (%) |       | Turbidity (NTU) |      | pH  |     | SS (mg/L) |      |  |  |  |  |  |
| R1b            | 10:23    | 0.80 | 26.9      | 26.9      | 8.5       | 8.1  | 78.8    | 75.7  | 6.8             | 7.2  | 8.1 | 8.2 | 15        | 15.0 |  |  |  |  |  |
|                |          |      | 26.9      |           | 7.7       |      | 72.5    |       | 7.6             |      | 8.2 |     | 15        |      |  |  |  |  |  |
| Date 15-Sep-12 |          |      |           |           |           |      |         |       |                 |      |     |     |           |      |  |  |  |  |  |
|                | Location | Time | Depth (m) | Temp (oC) | DO (mg/L) |      | DOS (%) |       |                 |      |     |     |           |      |  |  |  |  |  |

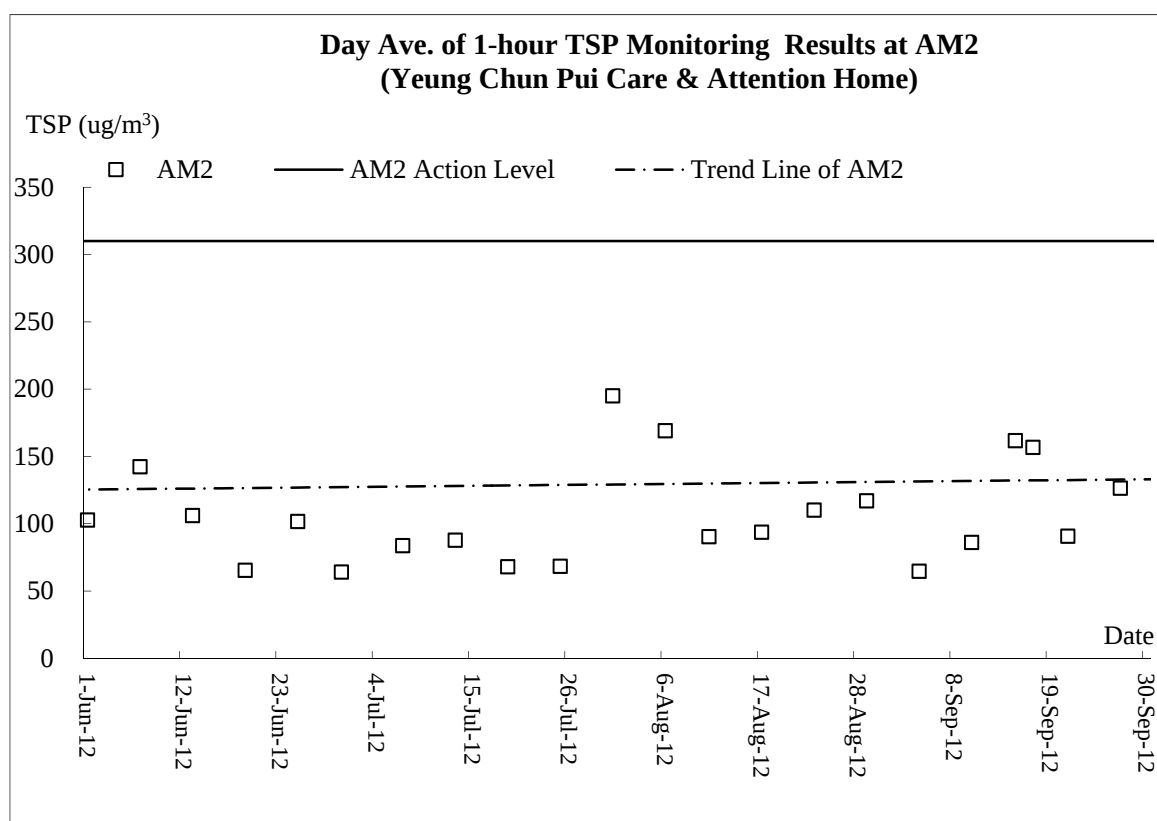
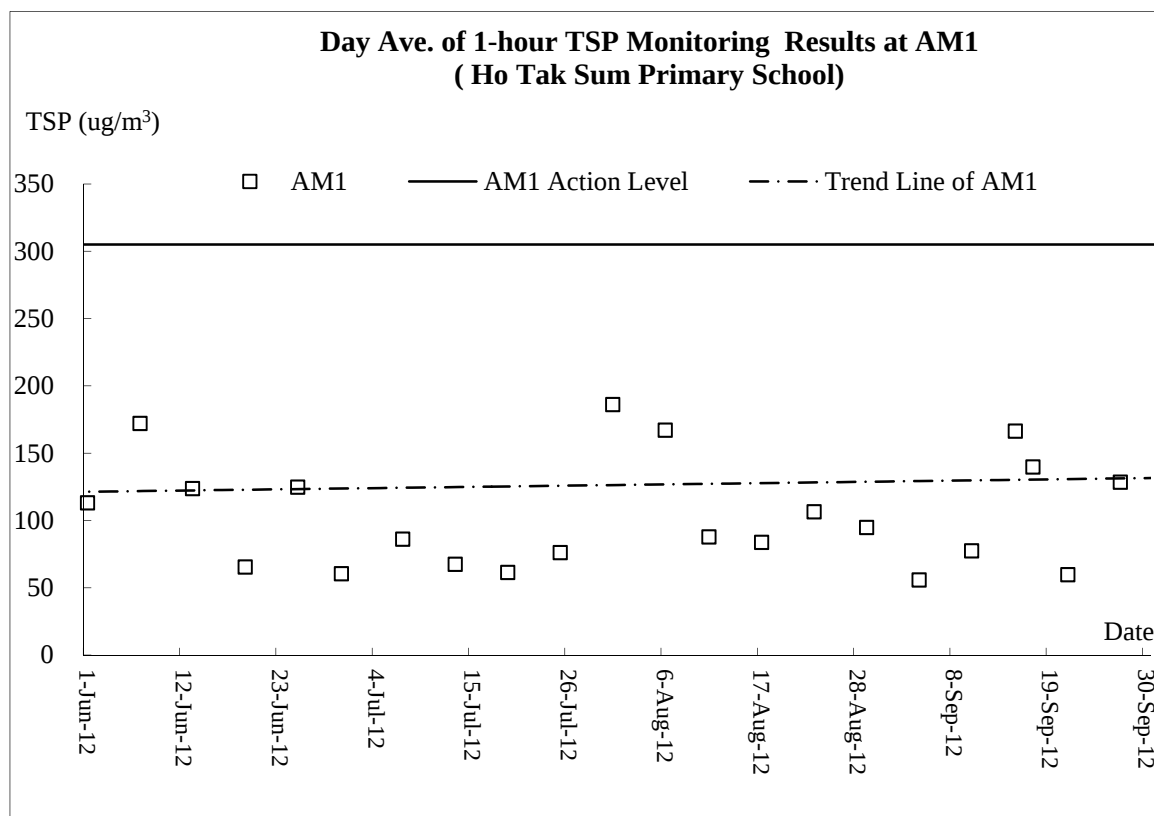
## **Appendix J**

### **Graphical plots**

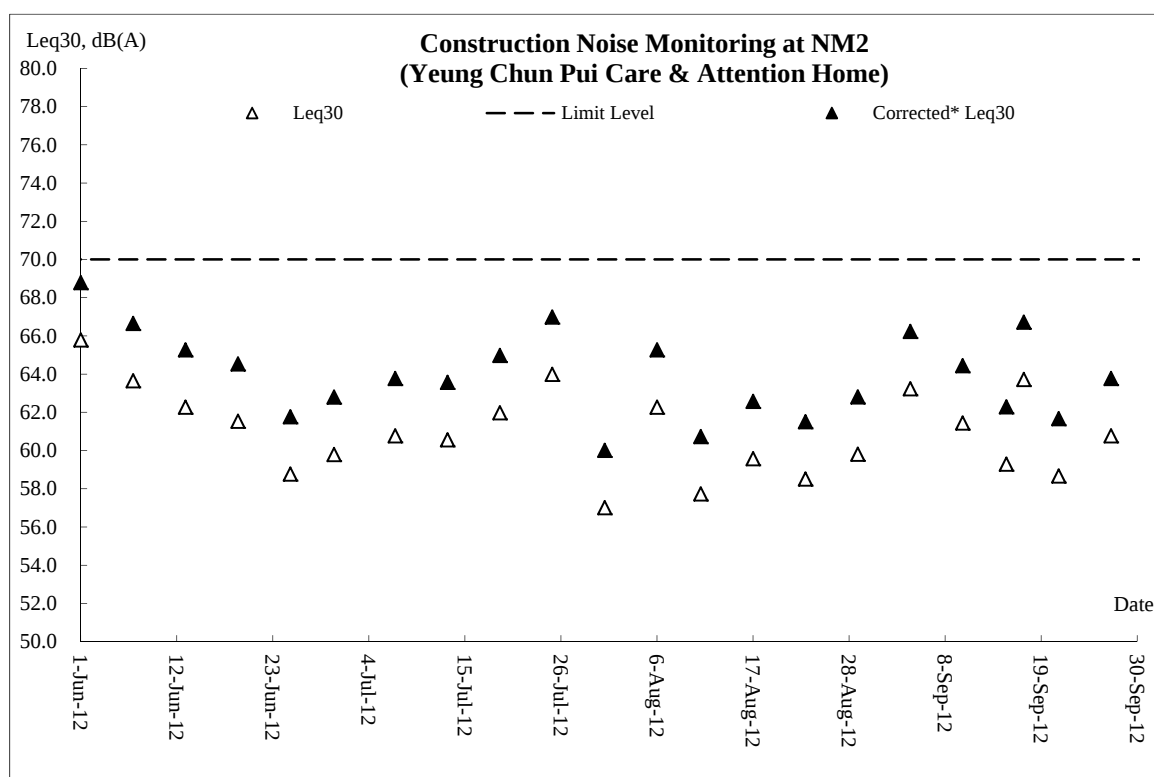
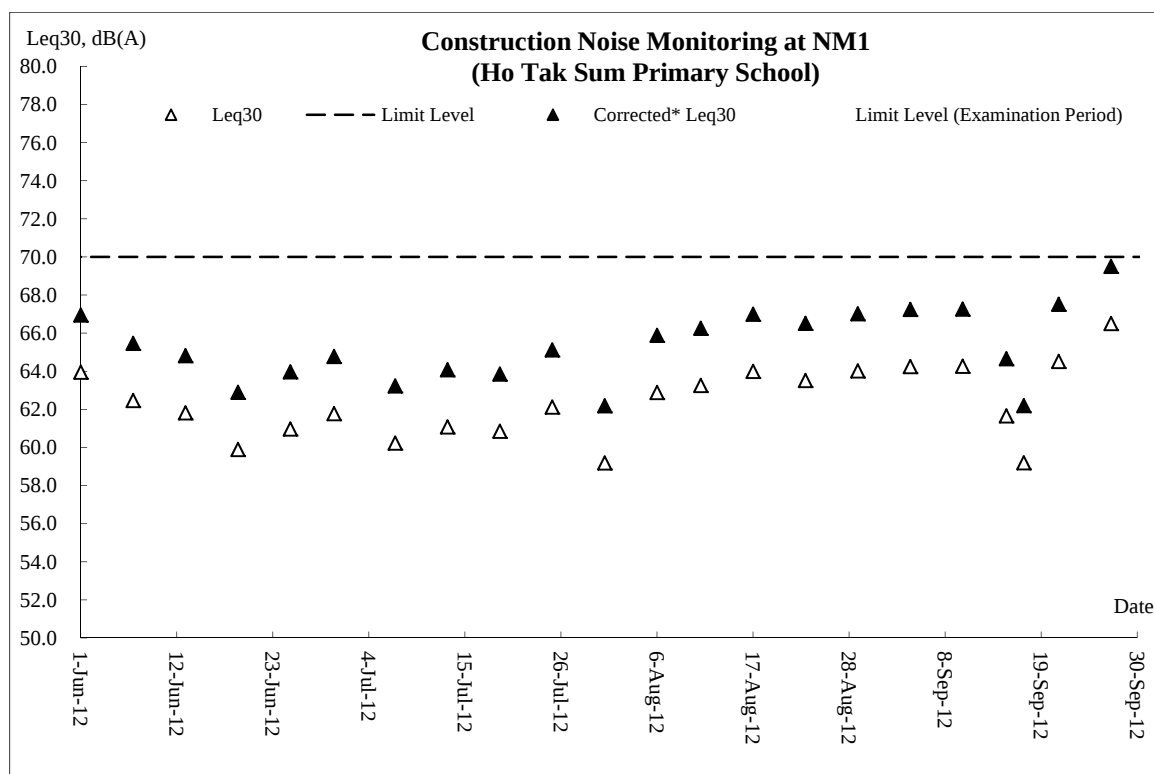
## Air Quality – 24-hour TSP



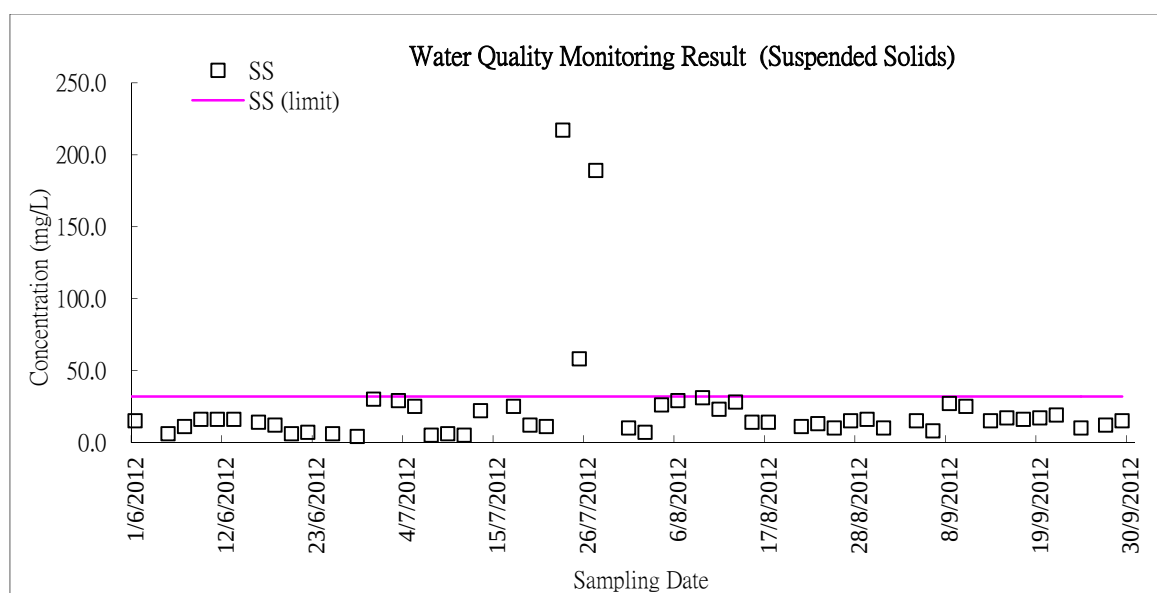
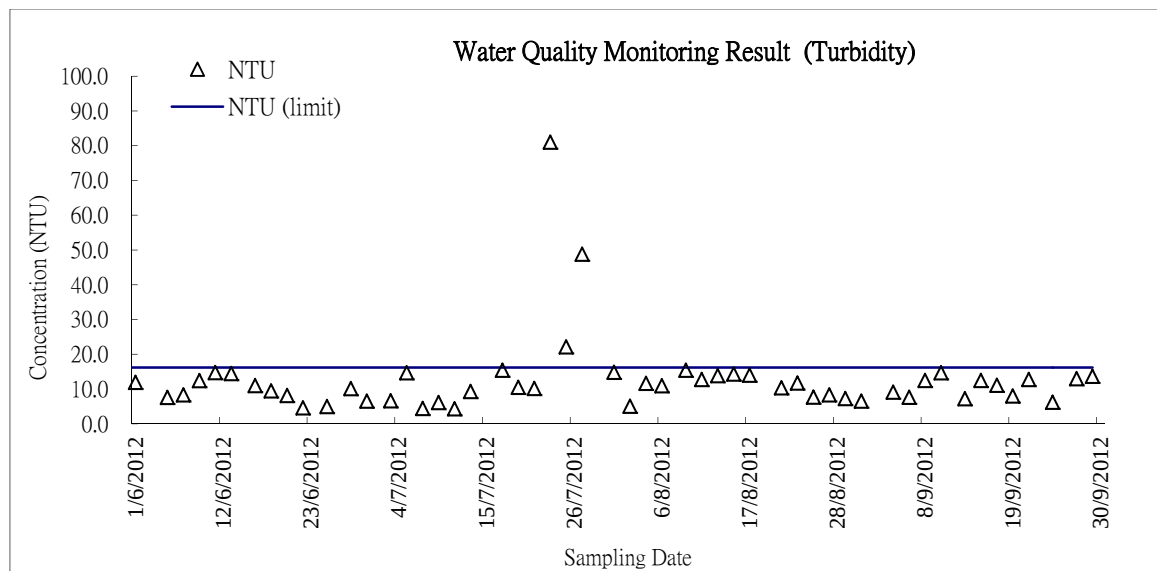
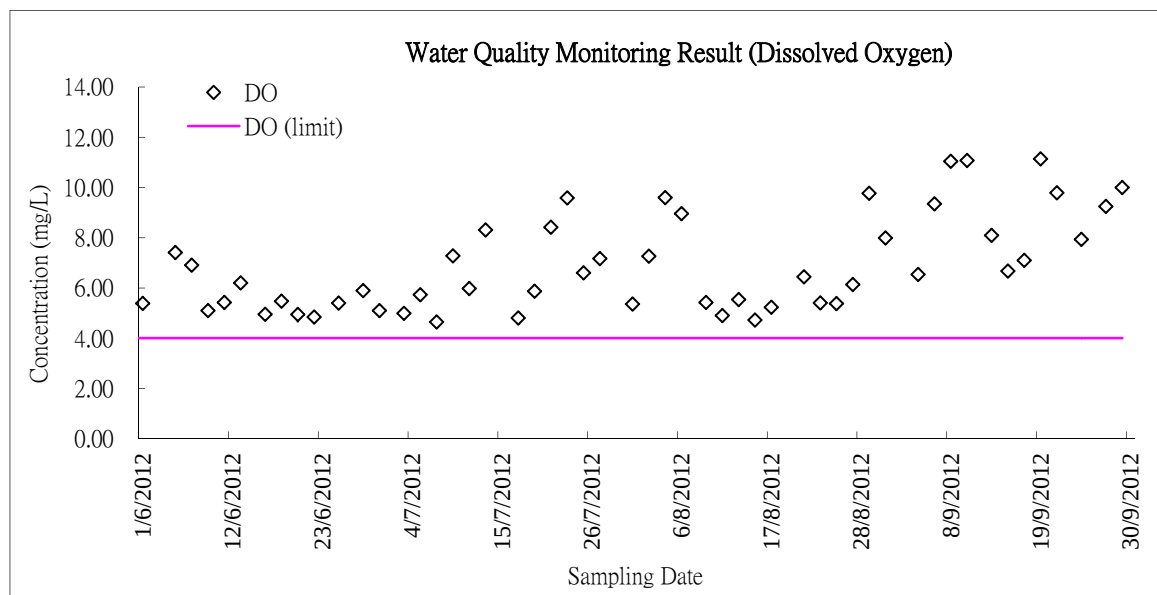
## Air Quality – 1 hour TSP



## Construction Noise



## Water Quality – Local Stream Course (R1b)



## **Appendix K**

### **Monthly Summary Waste Flow Table**

**Drainage Service Department**  
**Monthly Summary Waste Flow Table**  
**for Contract with Waste Management Plan under ETWB TCW No. 15/2003**  
**Reporting Year: 2012**  
**Contract No. DC/2009/08**

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

| 2012<br>Month   | Actual Quantities of Inert C&D Materials Generated / Imported (in '000 m <sup>3</sup> ) |                                                                         |                           |                             |                            |                          | Actual Quantities of Other C&D Materials / Wastes Generated |                               |                                                                                       |                |                                         |
|-----------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------|---------------------------|-----------------------------|----------------------------|--------------------------|-------------------------------------------------------------|-------------------------------|---------------------------------------------------------------------------------------|----------------|-----------------------------------------|
|                 | Total Quantities<br>Generated                                                           | Broken Concrete<br>(including rock for<br>recycling into<br>aggregates) | Reused in the<br>Contract | Reused in Other<br>Projects | Disposed as<br>Public Fill | Imported C&D<br>Material | Metal                                                       | Paper/ Cardboard<br>Packaging | Plastic<br>(bottles/containers,<br>plastic sheets/ foams<br>from package<br>material) | Chemical Waste | Others (e.g.<br>General Refuse<br>etc.) |
|                 | [a+b+c+d]                                                                               | (a)                                                                     | (b)                       | (c)                         | (d)                        |                          | (in '000kg)                                                 | (in '000kg)                   | (in '000kg)                                                                           | (in '000kg)    | (in '000m <sup>3</sup> )                |
| January         | 1.856                                                                                   | 0                                                                       | 0                         | 0                           | 1.856                      | 0                        | 0                                                           | 0                             | 0.000                                                                                 | 0              | 0.001                                   |
| February        | 1.516                                                                                   | 0                                                                       | 0                         | 0                           | 1.516                      | 0                        | 0                                                           | 0                             | 0.000                                                                                 | 0              | 0.001                                   |
| March           | 2.256                                                                                   | 0                                                                       | 0                         | 0                           | 2.256                      | 0                        | 0                                                           | 0                             | 0.000                                                                                 | 0              | 0.001                                   |
| April           | 2.134                                                                                   | 0                                                                       | 0                         | 0                           | 2.134                      | 0                        | 0                                                           | 0                             | 0.000                                                                                 | 0              | 0.002                                   |
| May             | 3.213                                                                                   | 0                                                                       | 0                         | 0                           | 3.213                      | 0                        | 0                                                           | 0                             | 0.000                                                                                 | 0              | 0.001                                   |
| June            | 1.524                                                                                   | 0                                                                       | 0                         | 0                           | 1.524                      | 0                        | 0                                                           | 0                             | 0.000                                                                                 | 0              | 0.001                                   |
| Half-year total | 12.499                                                                                  | 0                                                                       | 0                         | 0                           | 12.499                     | 0                        | 0                                                           | 0                             | 0.000                                                                                 | 0              | 0.007                                   |
| July            | 3.132                                                                                   | 0                                                                       | 0                         | 0                           | 3.132                      | 0                        | 0                                                           | 0                             | 0.000                                                                                 | 0              | 0.001                                   |
| August          | 3.321                                                                                   | 0                                                                       | 0                         | 0                           | 3.321                      | 0                        | 0                                                           | 0                             | 0.000                                                                                 | 0              | 0.001                                   |
| September       | 1.152                                                                                   | 0                                                                       | 0                         | 0                           | 1.152                      | 0                        | 0                                                           | 0                             | 0.000                                                                                 | 0              | 0.001                                   |
| October         | 0.000                                                                                   |                                                                         |                           |                             |                            |                          |                                                             |                               |                                                                                       |                |                                         |
| November        | 0.000                                                                                   |                                                                         |                           |                             |                            |                          |                                                             |                               |                                                                                       |                |                                         |
| December        | 0.000                                                                                   |                                                                         |                           |                             |                            |                          |                                                             |                               |                                                                                       |                |                                         |
| Yearly Total    | 20.104                                                                                  | 0                                                                       | 0                         | 0                           | 20.104                     | 0                        | 0                                                           | 0                             | 0.000                                                                                 | 0              | 0.010                                   |

## **Appendix L**

### **Inspection Checklist**

**Project:** DC/2009/08  
**Construction of Yuen Long South Branch**  
**Sewers and Expansion of Ha Tsuen PS**

**Inspection** \_\_\_\_\_

**Date:** 4 September 2012

**Time:** 10:00

**Inspected by** \_\_\_\_\_

**RE's representative:** K.P. Cheung

**IEC's representative:** \_\_\_\_\_

**ET's representative:** Nicola Hon

**Contractor's representative:** Chan Yau Pang/ Jason Chung

**Checklist No.** DC200908-04-Sep-2012

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

**Weather:** ☒ Sunny ☐ Fine ☐ Cloudy ☐ Rainy

**Temperature:** 27.9 °C

**Humidity:** ☒ High ☐ Moderate ☐ Low

**Wind:** ☐ Strong ☐ Breeze ☒ Light ☐ Calm

**PART B: SITE AUDIT**

**Section 1: Water Quality**

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

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

|                                                                                                                      | Not Observed                        | Yes                                 | No                       | Follow up                | Not Applicable           | Photo/ Remarks |
|----------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|----------------|
| 4.02 Is general refuse sorting or recycling implemented?                                                             | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.03 Is general refuse disposed of properly and regularly?                                                           | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.04 Is the Contractor registered as a chemical waste producer?                                                      | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.05 Are the chemical waste containers properly labelled?                                                            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.06 Are the chemical wastes stored in proper storage areas?                                                         | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.07 Is the chemical waste storage area properly labelled?                                                           | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.08 Is the chemical waste storage area used for storage of chemical waste only?                                     | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.09 Are incompatible chemical wastes stored in different areas?                                                     | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.10 Are the chemical wastes disposed of by licensed collectors?                                                     | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.11 Are trip tickets for chemical wastes disposal available for inspection?                                         | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.12 Are chemical/fuel storage areas bunded?                                                                         | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.13 Are designated areas identified for storage and sorting of construction wastes?                                 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.14 Are construction wastes sorted on site?                                                                         | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.15 Are construction wastes reused?                                                                                 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.16 Are construction wastes disposed of properly?                                                                   | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.17 Are site hoardings and signboards made of durable materials instead of timber?                                  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.18 Is trip ticket system implemented for the disposal of construction wastes and records available for inspection? | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.19 Are appropriate procedures followed if contaminated material exists?                                            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.20 Is relevant license/ permit for disposal of construction waste or excavated materials available for inspection? | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| <b>Section 5: Landscape &amp; Visual</b>                                                                             |                                     |                                     |                          |                          |                          |                |
| 5.01 Are retained and transplanted trees in health condition?                                                        | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 5.02 Are retained and transplanted trees properly protected?                                                         | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 5.03 Are surgery works carried out for the damaged trees?                                                            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 5.04 Is damage to trees outside site boundary due to construction activities avoided?                                | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 5.05 Is the night-time lighting controlled to minimize glare to sensitive receivers?                                 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| <b>Section 6: Others</b>                                                                                             |                                     |                                     |                          |                          |                          |                |
| 6.01 Are relevant Environmental Permits posted at all vehicle site entrances/exits?                                  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 6.02 Is mosquito control measures adequately implemented?                                                            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |

Remarks:

Follow up of Last Site Inspection:

- 1) larvicidal oil record sheet is shown in Shui Tsiu San Tsuen Pumping Station,

Observations recorded in this Site Inspection: ( 4-Sep-2012)



Photo 1:  
Oil leaking from an idled plant was observed in Tai Shue Ha East Road, the Contractor should clean the oil stain promptly after the maintenance work to avoid potential land contamination.



Photo 2:  
Mud trail was observed at the exit/ entrance of the site of Ha Tsuen Sewage Pumping Station, wheel washing facility should be properly maintained. Also, watering at the site exit should be applied more frequently.

RE's representative

IEC's representative

ET's representative

Contractor's  
representative

*Handwritten signature of Nicola Hon*

( ) ( ) ( Nicola Hon ) ( )

**Project:** DC/2009/08  
**Construction of Yuen Long South Branch**  
**Sewers and Expansion of Ha Tsuen PS**

**Inspection** \_\_\_\_\_

**Date:** 11 September 2012

**Time:** 10:00

**Inspected by** \_\_\_\_\_

**RE's representative:** K.P. Cheung

**IEC's representative:** \_\_\_\_\_

**ET's representative:** Nicola Hon

**Contractor's representative:** Chan Yau Pang/ Jason Chung

**Checklist No.** DC200908-11-Sep-2012

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

**Weather:** ☒ Sunny ☐ Fine ☐ Cloudy ☐ Rainy

**Temperature:** 29.9 °C

**Humidity:** ☐ High ☒ Moderate ☐ Low

**Wind:** ☐ Strong ☐ Breeze ☒ Light ☐ Calm

**PART B: SITE AUDIT**

**Section 1: Water Quality**

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

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

# Environmental Site Inspection Checklist

|                                                                                                                      | Not Observed                        | Yes                                 | No                       | Follow up                | Not Applicable           | Photo/ Remarks |
|----------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|----------------|
| 4.02 Is general refuse sorting or recycling implemented?                                                             | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.03 Is general refuse disposed of properly and regularly?                                                           | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.04 Is the Contractor registered as a chemical waste producer?                                                      | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.05 Are the chemical waste containers properly labelled?                                                            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.06 Are the chemical wastes stored in proper storage areas?                                                         | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.07 Is the chemical waste storage area properly labelled?                                                           | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.08 Is the chemical waste storage area used for storage of chemical waste only?                                     | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.09 Are incompatible chemical wastes stored in different areas?                                                     | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.10 Are the chemical wastes disposed of by licensed collectors?                                                     | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.11 Are trip tickets for chemical wastes disposal available for inspection?                                         | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.12 Are chemical/fuel storage areas bunded?                                                                         | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.13 Are designated areas identified for storage and sorting of construction wastes?                                 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.14 Are construction wastes sorted on site?                                                                         | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.15 Are construction wastes reused?                                                                                 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.16 Are construction wastes disposed of properly?                                                                   | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.17 Are site hoardings and signboards made of durable materials instead of timber?                                  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.18 Is trip ticket system implemented for the disposal of construction wastes and records available for inspection? | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.19 Are appropriate procedures followed if contaminated material exists?                                            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.20 Is relevant license/ permit for disposal of construction waste or excavated materials available for inspection? | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| <b>Section 5: Landscape &amp; Visual</b>                                                                             |                                     |                                     |                          |                          |                          |                |
| 5.01 Are retained and transplanted trees in health condition?                                                        | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 5.02 Are retained and transplanted trees properly protected?                                                         | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 5.03 Are surgery works carried out for the damaged trees?                                                            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 5.04 Is damage to trees outside site boundary due to construction activities avoided?                                | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 5.05 Is the night-time lighting controlled to minimize glare to sensitive receivers?                                 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| <b>Section 6: Others</b>                                                                                             |                                     |                                     |                          |                          |                          |                |
| 6.01 Are relevant Environmental Permits posted at all vehicle site entrances/exits?                                  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 6.02 Is mosquito control measures adequately implemented?                                                            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |

**Remarks:****Follow up of Last Site Inspection:**

- 1) The oil stain observed in Tai Shue Ha East Road has been cleaned.
- 2) No mud trail was observed at the exit/ entrance of the site of Ha Tsuen Sewage Pumping Station.

**Observations recorded in this Site Inspection: ( 11-Sep-2012)**

No adverse environmental impact was observed during site inspection.

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**RE's representative****IEC's representative****ET's representative****Contractor's  
representative**

( )

( )

( Nicola Hon )

( )

Project: DC/2009/08  
Construction of Yuen Long South Branch  
Sewers and Expansion of Ha Tsuen PS

Inspection: \_\_\_\_\_

Date: 19 September 2012

Time: 10:00

Inspected by \_\_\_\_\_

RE's representative: K.P. Cheung

IEC's representative: Dr. F.C. Tsang

ET's representative: Nicola Hon

Contractor's representative: Chan Yau Pang/ Jason Chung

Checklist No. DC200908-19-Sep-2012

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

Weather: ☐ Sunny ☒ Fine ☐ Cloudy ☐ Rainy

Temperature: 27.6 °C

Humidity: ☐ High ☒ Moderate ☐ Low

Wind: ☐ Strong ☐ Breeze ☒ Light ☐ Calm

**PART B: SITE AUDIT**

**Section 1: Water Quality**

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

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

# Environmental Site Inspection Checklist

|                                                                                                                      | Not Observed                        | Yes                                 | No                       | Follow up                           | Not Applicable           | Photo/ Remarks |
|----------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|----------------|
| 4.02 Is general refuse sorting or recycling implemented?                                                             | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |                |
| 4.03 Is general refuse disposed of properly and regularly?                                                           | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |                |
| 4.04 Is the Contractor registered as a chemical waste producer?                                                      | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |                |
| 4.05 Are the chemical waste containers properly labelled?                                                            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |                |
| 4.06 Are the chemical wastes stored in proper storage areas?                                                         | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |                |
| 4.07 Is the chemical waste storage area properly labelled?                                                           | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Photo 2        |
| 4.08 Is the chemical waste storage area used for storage of chemical waste only?                                     | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |                |
| 4.09 Are incompatible chemical wastes stored in different areas?                                                     | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |                |
| 4.10 Are the chemical wastes disposed of by licensed collectors?                                                     | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |                |
| 4.11 Are trip tickets for chemical wastes disposal available for inspection?                                         | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |                |
| 4.12 Are chemical/fuel storage areas bunded?                                                                         | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |                |
| 4.13 Are designated areas identified for storage and sorting of construction wastes?                                 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |                |
| 4.14 Are construction wastes sorted on site?                                                                         | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |                |
| 4.15 Are construction wastes reused?                                                                                 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |                |
| 4.16 Are construction wastes disposed of properly?                                                                   | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |                |
| 4.17 Are site hoardings and signboards made of durable materials instead of timber?                                  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |                |
| 4.18 Is trip ticket system implemented for the disposal of construction wastes and records available for inspection? | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |                |
| 4.19 Are appropriate procedures followed if contaminated material exists?                                            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |                |
| 4.20 Is relevant license/ permit for disposal of construction waste or excavated materials available for inspection? | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |                |
| <b>Section 5: Landscape &amp; Visual</b>                                                                             |                                     |                                     |                          |                                     |                          |                |
| 5.01 Are retained and transplanted trees in health condition?                                                        | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |                |
| 5.02 Are retained and transplanted trees properly protected?                                                         | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |                |
| 5.03 Are surgery works carried out for the damaged trees?                                                            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |                |
| 5.04 Is damage to trees outside site boundary due to construction activities avoided?                                | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |                |
| 5.05 Is the night-time lighting controlled to minimize glare to sensitive receivers?                                 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |                |
| <b>Section 6: Others</b>                                                                                             |                                     |                                     |                          |                                     |                          |                |
| 6.01 Are relevant Environmental Permits posted at all vehicle site entrances/exits?                                  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |                |
| 6.02 Is mosquito control measures adequately implemented?                                                            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |                |

## Remarks:

Follow up of Last Site Inspection:

Nil

Observations recorded in this Site Inspection: ( 19-Sep-2012)

1. Chemical container without drip tray was observed at Shui Tsiu San Tsuen Pumping Station, the Contractor should provide drip tray underneath to prevent chemical leakage and land contamination.



2. The chemical storage area at Ha Tsuen Sewage Pumping Station was not labeled correctly, the Contractor should replace it with a right label

RE's representative

IEC's representative

ET's representative

Contractor's  
representative

( )

( )

( Nicola Hon )

( )

**Project:** DC/2009/08  
**Construction of Yuen Long South Branch**  
**Sewers and Expansion of Ha Tsuen PS**

**Inspection** \_\_\_\_\_

**Date:** 25 September 2012

**Time:** 10:00

**Inspected by** \_\_\_\_\_

**RE's representative:** K.P. Cheung

**IEC's representative:** \_\_\_\_\_

**ET's representative:** Nicola Hon

**Contractor's representative:** Chan Yau Pang/ Jason Chung

**Checklist No.** DC200908-25-Sep-2012

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

**Weather:** ☐ Sunny ☒ Fine ☐ Cloudy ☐ Rainy

**Temperature:** 26.8 °C

**Humidity:** ☐ High ☒ Moderate ☐ Low

**Wind:** ☐ Strong ☐ Breeze ☒ Light ☐ Calm

**PART B: SITE AUDIT**

**Section 1: Water Quality**

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

# Environmental Site Inspection Checklist

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

# Environmental Site Inspection Checklist

|                                                                                                                      | Not Observed                        | Yes                                 | No                       | Follow up                | Not Applicable           | Photo/ Remarks |
|----------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|----------------|
| 4.02 Is general refuse sorting or recycling implemented?                                                             | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.03 Is general refuse disposed of properly and regularly?                                                           | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.04 Is the Contractor registered as a chemical waste producer?                                                      | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.05 Are the chemical waste containers properly labelled?                                                            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.06 Are the chemical wastes stored in proper storage areas?                                                         | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.07 Is the chemical waste storage area properly labelled?                                                           | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.08 Is the chemical waste storage area used for storage of chemical waste only?                                     | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.09 Are incompatible chemical wastes stored in different areas?                                                     | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.10 Are the chemical wastes disposed of by licensed collectors?                                                     | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.11 Are trip tickets for chemical wastes disposal available for inspection?                                         | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.12 Are chemical/fuel storage areas bunded?                                                                         | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.13 Are designated areas identified for storage and sorting of construction wastes?                                 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.14 Are construction wastes sorted on site?                                                                         | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.15 Are construction wastes reused?                                                                                 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.16 Are construction wastes disposed of properly?                                                                   | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.17 Are site hoardings and signboards made of durable materials instead of timber?                                  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.18 Is trip ticket system implemented for the disposal of construction wastes and records available for inspection? | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.19 Are appropriate procedures followed if contaminated material exists?                                            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 4.20 Is relevant license/ permit for disposal of construction waste or excavated materials available for inspection? | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| <b>Section 5: Landscape &amp; Visual</b>                                                                             |                                     |                                     |                          |                          |                          |                |
| 5.01 Are retained and transplanted trees in health condition?                                                        | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 5.02 Are retained and transplanted trees properly protected?                                                         | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 5.03 Are surgery works carried out for the damaged trees?                                                            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 5.04 Is damage to trees outside site boundary due to construction activities avoided?                                | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 5.05 Is the night-time lighting controlled to minimize glare to sensitive receivers?                                 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| <b>Section 6: Others</b>                                                                                             |                                     |                                     |                          |                          |                          |                |
| 6.01 Are relevant Environmental Permits posted at all vehicle site entrances/exits?                                  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |
| 6.02 Is mosquito control measures adequately implemented?                                                            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                |

## Remarks:

**Follow up of Last Site Inspection:**

1. The chemical container was found to be removed at Shui Tsiu San Tsuen Pumping Station.
2. Correct label was found in the chemical storage area at Ha Tsuen Sewage Pumping Station.

**Observations recorded in this Site Inspection: ( 25-Sep-2012)**

No adverse environmental impact was observed during site inspection.

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*RE's representative**IEC's representative**ET's representative**Contractor's  
representative*

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( Nicola Hon )

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