PROJECT NO.: TCS/00553/11

**CONTRACT NO. DC/2010/02 –**
**DRAINAGE IMPROVEMENT IN SHUEN WAN AND SHEK WU WAI**

# ENVIRONMENTAL MONITORING AND AUDIT (EM&A) MONTHLY REPORT (NO.2) – AUGUST 2011

PREPARED FOR
**KWAN LEE-KULY JOINT VENTURE**

**Quality Index**

| Date | Reference No. | Prepared By | Certified by |
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| | | (Environmental Consultant) | (Environmental Team Leader) |
| 10 October 2011 | TCS00553/11/600/R0032v3 |  |  |
| | | Nicola Hon | T.W. Tam |

| Ver | Date | Prepared by: | Certified by: | Description |
|---|---|---|---|---|
| 1 | 15 Sept 2011 | Nicola Hon | T.W. Tam | First submission |
| 2 | 20 Sep 2011 | Nicola Hon | T.W. Tam | Amended against IEC's comments on 19 Sep 2011 |
| 3 | 10 Oct 2011 | Nicola Hon | T.W. Tam | Updated by the RLA on 7 Oct 2011 |
| | | | | |

ENVIRON

Ref.: DSDSHUWNEM00_0_0235L.11 11th Oct 2011

Drainage Services Department
Projects and Development Branch
Drainage Projects Division
40/F, 44/F & 45/F., Revenue Tower
5 Gloucester Road,
Wan Chai, Hong Kong

By Post and Fax (2827 8700)

Attention : Mr. Ronald Siu (Engr / Drainage Projects 19)

Dear Mr. Siu,

**Re: Agreement No. DP 01/2010**
**Services as Independent Environmental Checker for the Drainage Improvement Works in Sha Tin and Tai Po under Contract No. DC/2010/02**
**Monthly Environmental Monitoring and Audit Report for Aug 2011**

Reference is made to Environment Team's submission of the Monthly Environmental Monitoring and Audit Report for Aug 2011 by Email on 15th Sep 2011 (entitled "Drainage Improvement Works in Shuen Wan, Tai Po - Contract 2 - No.2 EM&A Monthly Report for August 2011") and the subsequent revision of the report by Email on 10th Oct 2011.

Please be informed that we have no further comment on the captioned revised report. We write to verify the captioned submission in accordance with Condition 5.4 of EP-303/2008.

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

Yours sincerely,

Tony Cheng
Independent Environmental Checker

| | | | |
|---|---|---|---|
| c.c. | AUES | Attn: Mr. T. W. Tam | By Fax: 2959 6079 |
| | Kwan Lee-Kuly JV | Attn: Mr. W. K. Chan | By Fax: 2674 6688 |

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## EXECUTIVE SUMMARY

ES.01. ***Kwan Lee-Kuly Joint Venture*** (hereinafter 'KLKJV') has been awarded by Drainage Services Department (hereinafter 'DSD') of the Contract No. DC/2010/02 - Drainage Improvement in Shuen Wan and Shek Wu Wai (hereinafter "the Project"). The works to be executed under the Project are located in along Tung Tsz Road Shuen Wan and Shek Wu Wai, Shatin**.**

ES.02. This Project (hereinafter 'the Contract 2') is part of the Drainage Improvement works amongst Shatin and Tai Po and it is defined as a "Designated Project" which controlled under Environmental Permit EP-303/2008. Currently, DSD has another Contract DC/2009/22 (hereinafter 'the Contract 1') ongoing for construction at Shuen Wan working area which under the same Environmental Permit and the updated Environmental Monitoring and Audit Manual (hereinafter 'the Updated EM&A Manual'). Furthermore, Shek Wu Wai San Tin is a non-designated project work and no environmental monitoring and audit is requested to carry out.

ES.03. Action-United Environmental Services and Consulting (AUES) has been commissioned by KLKJV as the Environmental Team (ET) to implement the relevant EM&A program for the Contract 2.

ES.04. The baseline monitoring of EM&A program was carried out by the Contract 1 Environmental Monitoring Team (hereinafter the "Contract 1 ET") at between 24 September 2010 and 2 February 2011 of period. Re-establishment of Action and Limit Levels of the water quality and hydrological characteristics performance criteria was undertaken prior of construction activities commencement on 20 July 2011. This is served as the yardsticks for assessing the acceptability of the environmental impact during the construction phase impart monitoring for Contract 2 of the project.

ES.05. Impact EM&A program of the Contract 2 started on 20 July 2011. The re-establishment A/L levels to use for Contract 2 are given in below:

**Action and Limit Levels for Construction Noise Monitoring**

| Time Period | Action Level in dB(A) | Limit Level in dB(A) |
|---|---|---|
| Daytime<br>0700 – 1900 hrs on normal weekdays | When one documented complaint is received | > 75* dB(A) |

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

**Action and Limit Levels for Water Quality**

| Parameter | Performance Criteria | Impact Station | | |
|---|---|---|---|---|
| | | W1 | W2 | W4 |
| DO Concentration (mg/L) | Action Level | 7.27 | 7.26 | 9.27 |
| | Limit Level | 7.05 | 6.44 | 7.98 |
| pH | Action Level | NA | NA | NA |
| | Limit Level | 6 - 9 | 6 - 9 | 6 - 9 |
| Turbidity (NTU) | Action Level | 4.77 | 2.46 | 3.32 |
| | Limit Level | 5.26 | 3.42 | 4.52 |
| Suspended Solids (mg/L) | Action Level | 9.73 | 8.89 | 6.98 |
| | Limit Level | 10.77 | 9.75 | 7.66 |

*Remarks:*

- *For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits;*
- *For turbidity and SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits; and*
- *For pH, non-compliance of the quality limits occurs when monitoring result is lower than 6 and higher than 9*

**Action and Limit Levels Proposal for Hydrological Characteristics**

| Parameter | Acceptance Criteria | Monitoring Station | |
|---|---|---|---|
| | | H1 | H2 |
| Water Depth (m) | Action Level | 0.08 (80% of baseline water depth) | 0.40 (80% of baseline water depth) |
| | Limit Level | 0.06 (60% of baseline water depth) | 0.30 (60% of baseline water depth) |
| Water Flow Rate (m3/s) | Action Level | 120% of control station's water flow rate on the same day of measurement | 120% of control station's water flow rate on the same day of measurement |
| | Limit Level | 140% of control station's water flow rate on the same day of measurement | 140% of control station's water flow rate on the same day of measurement |

*Remarks: H3, H4 is a reference to monitor any changes in the hydrological characteristics of Wai Ha River arising from the work contract 2 to affect the Shuen Wan Marsh.*

ES.06. This is the **2nd** month EM&A report for designated works of Contract 2 under Environmental Permit No.EP-303/2008, covering a period from **1 August 2011 to 31 August 2011** (hereinafter 'the Reporting Period').

**ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES**

ES.07. Environmental monitoring activities under the EM&A program in this Reporting Period are summarized in the following table.

| Issues | Environmental Monitoring Parameters / Inspection | Occasions |
|---|---|---|
| Construction Noise | Leq (30min) Daytime | 20 |
| Water Quality | Local Stream Water Sampling - W1 and W2 | 13 |
| | Local Stream Water Sampling - W3 and W4 | 13 |
| | Hydrological characteristics measurement – H1 and H2 | 4 |
| | Hydrological characteristics measurement – H3 and H4 | 4 |
| Inspection / Audit | Monthly Environmental Site Inspection and audit by Environmental Team and IEC | 1 |
| | Regular weekly Environmental inspection by the Contractor and Site Representative Engineer | 5 |

ES.08. According to updated EM&A Manual Section 6.17, ecological monitoring is conducted by the IEC. Furthermore, a registered Landscape Architect as member of the ET is employed by the Contractor to undertake landscape and visual inspection. During this reporting period, landscape and visual inspection was carried out by a registered Landscape Architect on **24 August 2011.**

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

ES.09. No exceedance in construction noise monitoring is recorded in this Reporting Period. No Notification of Exceedance (NOE) was therefore issued. For water quality monitoring, 36, 10 and 4 Action/Limit Levels exceedances were respectively recorded for DO, Turbidity and Suspended Solids. NOEs were issued to notify EPD, IEC, the Contractor and RE. According to construction activities records provided by KLKVJ and the results of Control Station W3, all the exceedances are considered not due to the work under the Project. The statistics of environmental exceedance, NOE issued and investigation of exceedance are summarized in the following table.

| Environmental Issues | Monitoring Parameters | Action Level | Limit Level | Event & Action | | |
|---|---|---|---|---|---|---|
| | | | | NOE Issued | Investigation | Corrective Actions |
| **Construction Noise** | $Leq_{30min}$ Daytime | 0 | 0 | 0 | 0 | 0 |
| **Water Quality** | DO | 2 | 34 | 36 | Not related Contract 2 | Not required |
| | Turbidity | 5 | 5 | 10 | | |
| | SS | 1 | 3 | 4 | | |
| **Hydrological Characteristics** | Water Flow | 0 | 0 | 0 | 0 | 0 |
| | Water Depth | 0 | 0 | 0 | 0 | 0 |

*Note: NOE – Notification of Exceedance*

### ENVIRONMENTAL COMPLAINT

ES.10. No written or verbal complaint was recorded in this Reporting Period. The statistics of environmental complaint are summarized in the following table.

| Reporting Period | Environmental Complaint Statistics | | |
|---|---|---|---|
| | Frequency | Cumulative | Complaint Nature |
| 1 – 31 August 2011 | 0 | 0 | NA |

### NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES.11. No environmental summons or successful prosecutions were recorded in this Reporting Period. The statistics of environmental complaint are summarized in the following tables

| Reporting Period | Environmental Summons Statistics | | |
|---|---|---|---|
| | Frequency | Cumulative | Complaint Nature |
| 1 – 31 August 2011 | 0 | 0 | NA |

| Reporting Period | Environmental Prosecution Statistics | | |
|---|---|---|---|
| | Frequency | Cumulative | Complaint Nature |
| 1 – 31 August 2011 | 0 | 0 | NA |

### REPORTING CHANGE

ES.12. In this reporting month, there are no any changes to be report.

### SITE INSPECTION BY EXTERNAL PARTIES

ES.13. No site inspection was undertaken by external parties i.e. EPD or AFCD within the Reporting Period.

### FUTURE KEY ISSUES

ES.14. During wet season (April to November), muddy water and other water quality pollutants via site surface water runoff into the local stream Wah Ha River would be the key issue in the forth-coming month. Mitigation measures for water quality should therefore be fully implemented.

ES.15. On the other hand, construction noise should be other key environmental issue during sheet-piling process. The noise mitigation measures accordingly should be necessary to implement.

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# 1.0 INTRODUCTION

## PROJECT BACKGROUND

1.01 ***Kwan Lee-Kuly Joint Venture*** (hereinafter 'KLKJV') has been awarded by Drainage Services Department (hereinafter 'DSD') of the Contract No. DC/2010/02 - Drainage Improvement in Shuen Wan and Shek Wu Wai (hereinafter 'the Project'). The Project is scheduled to commence in May 2011 and complete in March 2014 for about 35 months.

1.02 The works to be executed under the Project are located in Shuen Wan and Shek Wu Wai. The works mainly comprise construction of about 735 metres long single-cell box culvert along Tung Tsz Road in Shuen Wan, Tai Po and construction of about 15 m long three-cell box culvert in Shek Wu Wai, San Tin .

1.03 For the Project, the construction work at Tung Tsz Road Shuen Wan (hereinafter 'the Contract 2') is part of the Drainage Improvement works amongst Shatin and Tai Po and it is defined as a "Designated Project" which controlled under Environmental Permit EP-303/2008. Currently, DSD has another Contract DC/2009/22 (hereinafter 'the Contract 1') ongoing for construction at Shuen Wan working area which under the same Environmental Permit and the updated Environmental Monitoring and Audit Manual (hereinafter 'the Updated EM&A Manual'). Both DSD contract's site boundary at Shuen Wan are shown in ***Appendix A***. On the other hand, Shek Wu Wai San Tin is a non-designated project work and no environmental monitoring and audit is request to carry out.

1.04 In order to effectively implement the environmental protection measures stipulated in the Project Profile (hereinafter 'the PP'), Environmental Impact Assessment Report (hereinafter "the EIAR'), Environmental Permit EP303/2008, a corresponding EM&A Manual have been prepared to outline the environmental monitoring and auditing (hereinafter 'the EM&A') programme undertake for the Contracts 1 and 2.

1.05 KLKJV has commissioned Action-United Environmental Services and Consulting (AUES) as an independent environmental team (hereinafter 'the ET') to implement the EM&A program for the environmental protection of the Project. Due to the construction of Contracts 1 and 2 carry out is just about the time, a Proposal Environmental Monitoring Programme and Methodology (hereinafter the "PEMPM") was prepared and submitted to describe EM&A programme would be undertaken during construction period of the Contract 2.

1.06 The baseline monitoring of EM&A program has been performed by the Contract 1 ET. Although Action and Limit levels of environmental performance criteria have established by the Contract 1 ET, the Action/Limit levels re-establishment to use the Contract 2 was conducted by the Contract 2 ET. The re-established environment performance criteria has accepted by the IEC and also submitted to the EPD seek for endorsement.

1.07 This is the **2nd** monthly EM&A report for Contract 2 presenting the monitoring results and inspection findings for the reporting period from **1 August 2011 to 31 August 2011**.

## REPORT STRUCTURE

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

**SECTION 1** **INTRODUCTION**
**SECTION 2** **PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS AND SUBMISSION**
**SECTION 3** **EM&A PROGRAM REQUIREMENT FOR THE PROJECT**
**SECTION 4** **IMPACT MONITORING RESULTS**
**SECTION 5** **WASTE MANAGEMENT**
**SECTION 6** **SITE INSPECTIONS**
**SECTION 7** **ENVIRONMENTAL COMPLAINTS AND NON-COMPLIANCE**
**SECTION 8** **IMPLEMENTATION STATUES OF MITIGATION MEASURES**
**SECTION 9** **IMPACT FORECAST**
**SECTION 10** **CONCLUSIONS AND RECOMMENDATION**

## 2.0 PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS AND SUBMISSION

### PROJECT ORGANIZATION AND MANAGEMENT STRUCTURE

2.01 Organization structure and contact details of relevant parties with respect to on-site environmental management are shown in ***Appendix B***.

### CONSTRUCTION PROGRESS

2.02 The master and three month rolling construction programs are enclosed in ***Appendix C*** and the major construction activities undertaken in this report period are listed below:.

- Carried out initial surveying;
- Carried out Tree Survey;
- Driving sheet-pile for Bays 20 to 23, and
- Excavation and installation of lateral shoring system for Bays 20 to 23

### SUMMARY OF ENVIRONMENTAL SUBMISSIONS

2.03 Summary of the relevant permits, licences, and/or notifications on environmental protection for this Project in this reporting period is presented in ***Table 2-1***.

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

| Item | Description | License/Permit Status |
|---|---|---|
| 1 | Air pollution Control (Construction Dust) | In Progress |
| 2 | Chemical waste Producer Registration | In Progress |
| 3 | Water Pollution Control Ordinance (Discharge License) WT00009528-2011 | Valid to 31 July 2016 |
| 4 | Billing Account for Disposal of Construction Waste (Account No.: 7012838) | Effective |
| 5 | Construction Noise permit | In Progress |

2.04 The "Proposal Environmental Monitoring Programme and Methodology (R0006 Version 2)" was set out in accordance with the Updated Environmental Monitoring and Audit Manual. It was approved by the ER and agreed with the Independent Environmental Checker (IEC) and submitted to the EPD for endorsement.

2.05 For Contract 2 of the Project, no Baseline Monitoring Report was issued by the ETL. However, a new set of the Action/ Limit levels as used to Contract 2 were proposed by ET. It had been accepted by the IEC and also submitted to the EPD seek for endorsement.

## 3.0 EM&A PROGRAM REQUIREMENT FOR THE CONTRACT 2

3.01 The EM&A requirements set out in the PP, EIAR, Environmental Permit EP303/2008 (hereinafter 'the EP'), and the associated updated EM&A Manual, are presented below sub-section.

### MONITORING PARAMETERS

3.02 According to the EIAR and the updated EM&A Manual, The monitoring parameters of each environmental aspect summarized in ***Table 3-1*** will be performed as under the Project.

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

| Environmental Aspect | Parameters | |
|---|---|---|
| Construction Noise | • A-weighted equivalent continuous sound pressure level (30min) (hereinafter 'Leq(30min)' during the normal working hours; and<br>• A-weighted equivalent continuous sound pressure level (5min) (hereinafter 'Leq(5min)' for construction work during the restricted hours. | |
| Water Quality | • In Situ Measurement | Temperature, Dissolved Oxygen, Dissolved Oxygen Saturation, pH and Turbidity |
| | • Laboratory Analysis | Suspended Solids (hereinafter 'SS') |
| Hydrological Characteristics | The water flow and depth measurement onsite | |
| *Ecology | Monitor and audit the proper implementation of mitigation measures stipulated in EIA report and the updated EM&A Manual | |
| Landscape & Visual | Inspect and audit the implementation and maintenance of landscape and visual mitigation measures | |

*Remarks: * the monitoring is carried out by IEC*

### MONITORING LOCATIONS

3.03 Monitoring locations have been proposed in the updated EM&A Manual. Graphic plot to show in ***Appendix D*** and summarized in ***Table 3-2***.

**Table 3-2 Designated Monitoring Locations of the EM&A Programme**

| Aspect | Location ID | Address |
|---|---|---|
| Construction Noise | M1 | 14, Shuen Wan Chim Uk |
| | AL1 | Joint Village Office for Villages in Shuen Wan, Tai PO |
| | M2 | 150, San Tau Kok |
| | M3 | 31, Wai Ha |
| | M4 | Block 15, T rèasure Spot Garden |
| Water Quality | (#) W1 | Between the Shuen Wan Marsh and ECA<br>• Co-ordinates: E839301, N836386<br>• Existing River Bed Level: +1.75mPD). |
| | W2 | Between Tolo Harbour and Proposed Penstock<br>• Co-ordinates: E839542, N836184<br>• Exiting River Bed Level: +1.48mPD) |
| | (*) W3 | Upstream of Tung Tze Shan Road<br>• Co-ordinates: E838760, N836714<br>• Exiting River Bed Level: +5.08mPD) |
| | W4 | Wai Ha Village 29D<br>• Co-ordinates: E838865, N836621<br>• Exiting River Bed Level: +4.05mPD) |
| Hydrological | H1 | Between the Shuen Wan Marsh and ECA<br>• Coordinates: E839306, N836379) |
| | H2 | Route 10 Sam Kung Temple<br>• Coordinates: E839163, N836433 |

| Aspect | Location ID | Address |
|---|---|---|
| | H3 | Upstream of Tung Tze Shan Road<br>• Coordinates: E838760, N836714 |
| | H4 | Wai Ha Village 29D<br>• Coordinates: E838865, N836621 |
| Ecology | Areas within 100m of the works boundary under Contract 2 | |
| Landscape & Visual | As within and adjacent to the construction sites and works areas under the Contract 2, | |

*Remarks:*
*(#) Control Station of Contract 1, however impact station of Contract 2*
*(*) Control Station of Contract 2*

**MONITORING FREQUENCY**

3.04 The monitoring frequency and duration as specified in the updated EM&A Manual are summarized below.

***Construction Noise***

Frequency: Once a week during 0700-1900 on normal weekdays for Leq30min

If the construction work is undertake at restricted hour, the monitoring frequency of construction noise will be conducted in accordance with the related Construction Noise Permit requirement issued by EPD as follow

- 3 consecutive Leq5min at restrict hour from 1700 – 2300;
- 3 consecutive Leq5min for restrict hour from 2300 – 0700 next day;
- 3 consecutive Leq5min for Sunday or public holiday from 0700 – 1900;

Duration: Throughout the construction period when the major construction activities are undertaken

***Water Quality***

Frequency: Three times a week. The interval between 2 sets monitoring are not less than 36 hours

Duration: During the construction phase of Contract 2 to undertake (in accordance with the Updated EM&A Manual Section 4.27).

***Hydrological Characteristics***

Frequency: Once per week at mid-flood and mid-ebb tides

Duration: During the construction phase of Contract 2 to undertake; and one year after the construction is complete as operation phase monitoring (in accordance with the Updated EM&A Manual Section 4.32).

***Ecology***

3.05 In according with Section 6.17 of the Updated EM&A Manual, ecological monitoring should be conducted by the Independent Environmental Checker (hereinafter 'IEC'). Monitoring programme details should be agreed with the Agriculture, Fisheries and Conservation Department (AFCD). Moreover, the IEC should submit reports on the findings of each monitoring trip, and a final report summarizing the monitoring results over the entire monitoring period to AFCD and Environmental Protection Department (EPD). Hence, no monitoring or surveying should be carried out by ET of the Project.

***Landscape & Visual***

3.06 According to Section 7.4 of the Updated EM&A Manual, site inspection bi-weekly should be performed to check the implementation and maintenance of landscape and visual mitigation measures whether to full realize.

**MONITORING EQUIPMENT**

***Noise Monitoring***

3.07 Sound level meter in compliance with the *International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1)* specifications shall be used for noise monitoring. The sound level meter shall be checked with an acoustic calibrator. The wind speed shall be check with a portable wind speed meter, which capable to measure wind speed in m/ $s^{-1}$.

***Water Quality Monitoring***

3.08 **Dissolved Oxygen and Temperature Measuring Equipment** – The instrument should be a portable and weatherproof dissolved oxygen (DO) measuring instrument complete with cable and sensor, and use a DC power source. The equipment should be capable of measuring DO level in the range of 0 – 20mg L-1 and 0 – 200% saturation; and temperature of 0 – 45 degree Celsius.

3.09 **pH Meter** – The instrument shall consist of a potentiometer, a glass electrode, a reference electrode and a temperature-compensating device. It shall be readable to 0.1 pH in arrange of 0 to 14.

3.10 **Turbidity (NTU) Measuring Equipment** – The instrument should be a portable and weatherproof turbidity measuring instrument using a DC power source. It should have a photoelectric sensor capable of measuring turbidity between 0 - 1000 NTU.

3.11 **Water Sampling Equipment** – A water sampler should comprise a transparent PVC cylinder, with a capacity of not less than 2 litres, which can be effectively sealed with latex cups at both ends. The sampler should have a positive latching system to keep it open and prevent premature closure until released by a messenger when the sampler is at the selected water depth.

3.12 **Water Depth Detector** – A portable, battery-operated echo sounder should be used for the determination of water depth at each designated monitoring station. The unit can either be hand held or affixed to the bottom of the work boat.

3.13 **Sample Containers and Storage** – Water samples for SS should be stored in high density polythene bottles with no preservative added, packed in ice (cooled to 4°C without being frozen).

3.14 **Suspended Solids Analysis** – Analysis of suspended solids shall be carried out in a HOKLAS or other international accredited laboratory.

***Hydrological Characteristics***

3.15 **Water Depth Detector** - A portable, battery-operated echo sounder shall be used for the determination of water depth at each designated monitoring station.

3.16 **Stream water flow Equipment** –A portable, battery-operated flow meter should be used for the determination of water flow rate at each designated monitoring location and record in $m^3/s$.

3.17 The monitoring equipment using for the Project's EM&A program were proposed by the ET and verified by the IEC prior commencement of the monitoring. Details of the equipment used for impact monitoring are listed in ***Table 3-3***.

**Table 3-3 Monitoring Equipment Used in EM&A Program**

| Equipment | Model |
|---|---|
| ***Construction Noise*** | |
| Integrating Sound Level Meter | B&K Type 2238 |
| Calibrator | B&K Type 4231 |
| Portable Wind Speed Indicator | Testo Anemometer |
| ***Water quality*** | |
| Water Depth Detector | Eagle Sonar |

| Equipment | Model |
|---|---|
| Water Sampler | A transparent PVC cylinder / bucket |
| Thermometer & DO meter | DO Meter YSI 55 |
| pH meter | Extech EC500 |
| Turbidimeter | Hach 2100Q |
| Sample Container | High density polythene bottles (provided by laboratory) |
| Storage Container | 'Willow' 33-litre plastic cool box |
| Suspended Solids | HOKLAS-accredited laboratory (ALS Technichem (HK) Pty Ltd) |
| **Hydrological Characteristics** | |
| Water flow meter | GLOBAL WATER model FP211 |
| Water Depth Detector | Eagle Sonar or an appropriate steel ruler or rope with appropriate weight |

**MONITORING METHODOLOGY**

**Noise Monitoring**

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

3.19 Sound level meter as listed in ***Table 3-3*** are complied with the *International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1)* specifications, as recommended in Technical Memorandum (TM) issued under the *Noise Control Ordinance (NCO)*.

3.20 During the monitoring, all noise measurements were performed with the meter set to FAST response and on the A-weighted equivalent continuous sound pressure level ($L_{eq}$). $Leq_{(30min)}$ in six consecutive $Leq_{(5min)}$ measurements were used as the monitoring parameter for the time period between 0700-1900 hours on weekdays; and also $Leq_{(15min)}$ in three consecutive $Leq_{(5min)}$ measurements is used as monitoring parameter for other time periods (e.g. during restricted hours), if necessary.

3.21 During the course of measurement, the sound level meter is mounted on a tripod with a height of 1.2m above ground and placed at the assessment point and oriented such that the microphone is pointed to the site with the microphone facing perpendicular to the line of sight. The windshield is fitted for all measurements. The assessment point is normally set as free-field situation for the measurement.

3.22 Prior to noise measurement, the accuracy of the sound level meter is checked by an acoustic calibrator which generated a known sound pressure level at a known frequency. The checking was performed before and after the noise measurement.

**Water Quality**

3.23 Water quality monitoring are conducted at the depth below:-

- Three depths: 1m below water surface, 1m above river bed and at mid-depth when the water depth exceeds 6m, or
- If the water depth is between 3m and 6m, two depths: 1m below water surface and 1m above river bed, and or
- If the water depth is less than 3m, 1 sample at mid-depth is taken

3.24 Water depths are determined prior to measurement and sampling, using a portable battery operated depth detector, brand named 'Eagle Sonar', if the depths exceed 1.5 meter. If the depth between 1.5 meter and 1 meter, plastic tape measurement tied with appropriate weight are used the depth estimation. For the depth well below 1 meter, an appropriate steel ruler or rope with appropriate weight are used for the depth measurement.

3.25 A transparent PVC cylinder, with a capacity of not less than 2 litres, is used for water sampling. The water sampler is lowered into the water body at a predetermined depth. The trigger system of the sampler is activated with a messenger and opening ends of the sampler are closed accordingly then the sample of water is collected. If the water depth is less than 500mm, a water bucket is be used as a water sampler to minimize the possibility of the latching system disturbing sediment during water sampling

3.26 A portable YSI 55 DO Meter is used for in-situ DO measurement. The DO meter is capable of measuring DO in the range of 0 - 20 mg/L and 0 - 200 % saturation and checked against water saturated ambient air on each monitoring day prior to monitoring. Although the DO Meter automatically compensates ambient water temperature to a standard temperature of $20^0$C for ease of comparison of the data under the changing reality, the temperature readings of the DO Meter are be recorded in the field data sheets. The equipment calibration is performed on quarterly basis.

3.27 A portable Extech EC500 pH Meter is used for in-situ pH measurement. The pH meter is capable of measuring pH in the range of 0 – 14 and readable to 0.1. Standard buffer solutions of pH 7 and pH 10 are used for calibration of the instrument before and after measurement. The equipment calibration is performed on quarterly basis.

3.28 A portable Hach 2100Q Turbidity Meter is be used for in-situ turbidity measurement. The turbidity meter is capable of measuring turbidity in the range of 0 – 1000 NTU. The equipment calibration is performed on quarterly basis.

3.29 Water samples are contained in screw-cap PE (Poly-Ethylene) bottles, which are provided and pretreated and 'PE' (Poly-Ethylene) sampling bottles provided and pre-treated according to corresponding analytical requirements. Where appropriate, the sampling bottles are rinsed with the water to be contained. Water sample is then transferred from the sampler to the sample bottles.

3.30 One liter or 500 mL water sample are collected from each depth for SS determination. The collected samples are stored in a cool box maintained at $4^0$C and delivered to laboratory upon completion of the sampling by end of each sampling day.

3.31 All water samples are analyzed with Suspended Solids (SS) as specified in the updated *EM&A Manual* by a local HOKLAS-accredited testing laboratory (ALS Technichem (HK) Pty Ltd HOKLAS registration no. 66). SS are determined by the laboratory upon receipt of the water samples using HOKLAS accredited analytical method. The detection limits and testing method are shown below in ***Table 3-4***. The certificate of ALS Technichem (HK) Pty Ltd is provided in ***Appendix E***.

**Table 3-4 Testing Method and Detection limit of Suspended Solids**

| Determinant | Testing Method | Detection Limit |
|---|---|---|
| Suspended solid | Determination use HOKLAS accredited analytical methods namely ALS Method EA-025 (based on APHA 2540 D) | 2mg/L |

**Hydrological Characteristics**

3.32 A portable, water flow meter, brand named "*GLOBAL WATER model FP211*" are used to determine the water current flow at the designated monitoring stations. A water flow velocity is measured at mid depth of current water body or 0.5m below water level.

3.33 Water depths are determined prior to measurement, using a portable battery operated depth detector, brand named 'Eagle Sonar', if the depths exceed 1.5 meter. If the depth between 1.5 meter and 1 meter, plastic tape measurement tied with appropriate weight are used the depth estimation. For the depths well below 1 meter, an appropriate steel ruler or rope with appropriate

weight are used for the depth measurement.

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

3.34 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.

3.35 The monitoring data recorded in the equipment e.g. noise meter and Multi-parameter Water Quality Monitoring System 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 are input directly into the computerized database and QA/QC checked by personnel other than those who input the data. For monitoring activities require laboratory analysis, the local laboratory follows the QA/QC requirements as set out under the HOKLAS scheme for all laboratory testing.

**OTHERS MONITORING IMPLEMENTATION FOR THE CONTRACT**

***Ecology***

3.36 Ecological monitoring and reporting should be performed by IEC. No equipment and procedure are presented in the EM&A Monthly Report.

***Landscape and Visual***

3.37 A registered Landscape Architect as member of the ET is employed by the Contractor to undertake site inspection. Site inspection will undertake at least once every two weeks throughout the construction period to ensure compliance with the intended aims of the mitigation measures are proposed in the EIA and the updated EM&A Manual, implemented by the Contractor.

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

3.38 The re-established performance criteria for construction noise, water quality and hydrological, namely Action and Limit levels is used for Contract 2 are listed in ***Tables 3-5, 3-6,*** and ***3-7***.

**Table 3-5 Action and Limit Levels for Construction Noise**

| Location | Time Period | Action Level in dB(A) | Limit Level in dB(A) |
|---|---|---|---|
| M1, AL1, M2, M3, M4 | Daytime 0700 – 1900 hrs on normal weekdays | When one documented complaint is received | > 75* dB(A) |
| | 1900 – 2300 on all days and 0700 – 2300 on general holidays (including Sundays | | 60/65/70 dB(A)** |
| | 2300 – 0700 on all days | | 45/50/55 dB(A)** |

*Note:* * *Reduces to 70dB(A) for schools and 65dB(A) during the school examination periods.*
** *To be selected based on the Area Sensitivity Rating of A/B/C, and the conditions of the applicable CNP(s) must be followed*

**Table 3-6 Action and Limit Levels for Water Quality**

| Parameter | Performance Criteria | Impact Station | | |
|---|---|---|---|---|
| | | W1 | W2 | W4 |
| DO Concentration (mg/L) | Action Level | 7.27 | 7.26 | 9.27 |
| | Limit Level | 7.05 | 6.44 | 7.98 |
| pH | Action Level | NA | NA | NA |
| | Limit Level | 6 - 9 | 6 - 9 | 6 - 9 |
| Turbidity (NTU) | Action Level | 4.77 | 2.46 | 3.32 |
| | Limit Level | 5.26 | 3.42 | 4.52 |
| Suspended Solids (mg/L) | Action Level | 9.73 | 8.89 | 6.98 |

| Parameter | Performance Criteria | Impact Station | | |
|---|---|---|---|---|
| | | W1 | W2 | W4 |
| | Limit Level | 10.77 | 9.75 | 7.66 |

*Notes:*

- *The proposed Action/Limit Levels of DO are established to be used 5%-ile/1%-ile of all the baseline data;*
- *The proposed Action/Limit Levels of Turbidity and SS are established to be used 95%-ile/99%-ile of all the baseline data;*
- *For DO, non-compliance of the water quality limits occur is when monitoring result lower than the action/limit levels;*
- *For turbidity and SS, non-compliance of the water quality limits occurs is when monitoring result higher than the limits; and*
- *For pH, non-compliance of the quality limit occur is when monitoring result lower than 6 and higher than 9; and*
- *All the figures given in the table are used for reference only and the EPD may amend the figures whenever it is considered necessary*

**Table 3-7 Action and Limit Levels for Hydrological Characteristics**

| Parameter | Acceptance Criteria | Monitoring Station | |
|---|---|---|---|
| | | H1 | H2 |
| Water Depth (m) | Action Level | 0.08 (80% of baseline water depth) | 0.40 (80% of baseline water depth) |
| | Limit Level | 0.06 (60% of baseline water depth) | 0.30 (60% of baseline water depth) |
| Water Flow Rate (m3/s) | Action Level | 120% of control station's water flow rate on the same day of measurement | 120% of control station's water flow rate on the same day of measurement |
| | Limit Level | 140% of control station's water flow rate on the same day of measurement | 140% of control station's water flow rate on the same day of measurement |

3.39 The locations H3 and H4 are a reference measurement point in order to monitor any changes in the hydrological characteristics of Wai Ha River arising from the work Contract 2 to affect the Shuen Wan Marsh.

3.40 Should non-compliance of the environmental quality criteria occurs, remedial actions will be triggered according to the Event and Action Plan enclosed in ***Appendix F***.

**EQUIPMENT CALIBRATION**

3.41 The sound level meter and calibrator are calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme in yearly basis.

3.42 All the water quality monitoring equipment such as the DO, pH and Turbidity meters are calibrated by HOKLAS accredited laboratory of three month intervals.

3.43 A portable, water flow meter, brand named "*GLOBAL WATER model FP211"* is calibrated in yearly basis.

3.44 All updated calibration certificates of the monitoring equipment used for the impact monitoring program in this reporting period are attached in ***Appendix E***.

**METEOROLOGICAL INFORMATION**

3.45 The meteorological information during the construction phase is obtained from Tai Po and Shatin Stations of the Hong Kong Observatory (HKO). The meteorological data during the impact monitoring days are summarized in ***Appendix H***

## 4.0 IMPACT MONITORING RESULTS

4.01 Further to instructions by KLKJV, the EM&A program was commenced on 20 July 2011 and the monitoring schedule had been issued to relevant parties on 18 July 2011 which presented in ***Appendix G***. The works undertaken during the reporting period are illustrated in ***Appendix C.*** The monitoring results are presented in the following sub-sections.

### MONITORING RESULTS SHARING

4.02 Environmental Permit EP-203/2008 was issued on 25 February 2008 by EPD which adopted for both Contracts 1 and 2 of DSD construction at Shuen Wan. Also, the EM&A program of both contracts are undertaken in accordance with the same updated EM&A Manual which has to be carried out during construction period. According to the updated EM&A manual, monitoring at designated monitoring locations M1 and AL1 for noise monitoring stations, W1 and W2 for water quality monitoring stations, and H1 and H2 for hydrological measurement are performed at both Contracts 1 and 2. Due to Contract 1 has already commenced in January 2011, hence the monitoring results M1 and AL1 of construction noise, W1 and W2 of water quality, H1 and H2 of hydrological measurement as collected by the Contract 1 are shared for the Contract 2. The recommendation is accepted by IEC and submitted to EPD for endorsement.

### RESULTS OF CONSTRUCTION NOISE MONITORING

4.03 In reporting period, all designated noise monitoring locations are respectively conducted four occasions measurement. All noise monitoring results at the designated locations M1, AL1, M2, M3 and M4 are summarized in ***Table 4-1***. The detail monitoring data are presented in ***Appendix I***.

**Table 4-1 Summary of Construction Noise Monitoring Results, dB(A)**

| Date | Leq30min (dB(A)) | | | | |
|---|---|---|---|---|---|
| | **M1(#)** | **AL1(#)** | **M2(*)** | **M3(*)** | **M4(*)** |
| 1 Aug 2011 | | | 68.3 | 68.3 | 61.3 |
| 4 Aug 2011 | 60.5 | 63.9 | | | |
| 11 Aug 2011 | 60.0 | 60.7 | 60.6 | 62.0 | 56.2 |
| 18 Aug 2011 | 61.6 | 69.2 | 66.1 | 63.9 | 56.0 |
| 23 Aug 2011 | | | 64.0 | 65.7 | 56.0 |
| 25 Aug 2011 | 61.9 | 61.7 | | | |
| **Limit Level** | **>75 dB(A)** | | | | |

***Remarks:***

(#) *The monitoring is undertaken under façade situation. No façade correction is added according to acoustical principles and EPD guidelines.*

(*) *The monitoring is undertaken under free field situation. A façade correction of +3 dB(A) has been added according to acoustical principles and EPD guidelines*

4.04 The sound meter was set in a free field situation at the designated monitoring locations M2, M3 and M4, therefore, a façade correction of +3 dB(A) has been added according to acoustical principles and EPD guidelines. For Location A1 and AN1, the monitoring is undertaken under façade situation. No façade correction is added according to acoustical principles and EPD guidelines.

4.05 No noise complaint (which is an Action Level exceedance) was received in this reporting period. As shown in ***Table 4-1,*** all the noise monitoring result are well below 75dB(A) and no Action or Limit Level exceedance was triggered during this reporting period. The graphical plot is shown in ***Appendix J***.

### RESULTS OF LOCAL STREAM WATER QUALITY MONITORING

4.06 In this Reporting Period, all the designated measurement Points W1, W2, W3 and W4 were respectively performed 13 sampling days for local stream water quality monitoring by the Contracts 1 and 2. The monitoring results including in-situ measurements and laboratory testing results are provided in ***Appendix I***. The graphical plots are shown in ***Appendix J***.

4.07 During the Reporting Period, field measurements showed that stream water temperatures were within 27.0℃ to 32.6℃ and pH values within 6.81 to 7.90. Furthermore, salinity measured at W1 and W2 were detected respectively as 0.6-32.2 ppt and 4.9-24.4 ppt.

4.08 Monitoring results of 3 key parameters: dissolved oxygen (DO), turbidity and suspended solids in this Reporting Period, are summarized in ***Table 4-2***.

**Table 4-2 Water Quality Results Summary in Reporting Period**

| Sampling date | DO (mg/L) | | | | Turbidity (NTU) | | | | SS (mg/L) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | W1 | W2 | W3* | W4 | W1 | W2 | W3* | W4 | W1 | W2 | W3* | W4 |
| 1-Aug-11 | | | 6.93 | ***8.39*** | | | 3.73 | 3.21 | | | 2.00 | 2.00 |
| 2-Aug-11 | 7.43 | ***6.50*** | | | 0 | 0 | | | 7.60 | 5.00 | | |
| 3-Aug-11 | | | 7.31 | **7.93** | | | 4.90 | 2.71 | | | 2.00 | 2.00 |
| 4-Aug-11 | **4.44** | **4.90** | | | **13.5** | 0 | | | 6.00 | **13.00** | | |
| 6-Aug-11 | **6.49** | **4.82** | 6.89 | **7.29** | 0 | ***2.5*** | 2.96 | 3.09 | 5.20 | 6.40 | 2.00 | 2.00 |
| 8-Aug-11 | | | 7.26 | **7.36** | | | 6.96 | 3.27 | | | 16.00 | 4.00 |
| 9-Aug-11 | **6.33** | **3.93** | | | 0 | 0 | | | 4.50 | 6.80 | | |
| 11-Aug-11 | **5.00** | **5.03** | 6.01 | **6.21** | 0 | 1.6 | 4.16 | 2.30 | 7.20 | **14.00** | 2.00 | 2.00 |
| 13-Aug-11 | **4.77** | **5.04** | 6.76 | **7.03** | 3.1 | 0 | 4.95 | 3.31 | **12.00** | 8.60 | 2.00 | 2.00 |
| 15-Aug-11 | | | 7.03 | **7.48** | | | 4.20 | 3.29 | | | 2.00 | 2.00 |
| 16-Aug-11 | **6.03** | **4.71** | | | 0 | ***2.9*** | | | 6.00 | 7.00 | | |
| 17-Aug-11 | | | 6.40 | **7.02** | | | 3.58 | 2.03 | | | 2.00 | 2.00 |
| 18-Aug-11 | 8.04 | **4.49** | | | 0 | ***2.5*** | | | 5.00 | 5.00 | | |
| 19-Aug-11 | | | 6.74 | **7.28** | | | 4.38 | 3.19 | | | 2.00 | 2.00 |
| 20-Aug-11 | 8.47 | **3.84** | | | 0 | 0 | | | 1.60 | <1 | | |
| 23-Aug-11 | **6.44** | **3.82** | 6.21 | **6.92** | 0 | ***3.0*** | 1.18 | 1.41 | 1.80 | 2.20 | 2.00 | 2.00 |
| 25-Aug-11 | **4.45** | **3.62** | 5.07 | **5.68** | 2.9 | 2.3 | 1.89 | 3.08 | 6.20 | ***9.20*** | 2.00 | 2.00 |
| 27-Aug-11 | **3.46** | **4.83** | 4.44 | **5.51** | **6.0** | **7.5** | 2.62 | 2.40 | 6.00 | 7.60 | 2.00 | 2.00 |
| 30-Aug-11 | **4.11** | **5.12** | 6.71 | **5.75** | **5.9** | **5.3** | 1.32 | ***3.87*** | 5.00 | 8.20 | 2.00 | 2.00 |

Remarks:
- (*) Control Station
- *Bold and Italic is exceeded Action Level*
- *Bold with underline is exceeded Limit Level*

4.09 A statistics of exceedances for the three parameters: dissolved oxygen (DO), turbidity and suspended solids is shown in ***Table 4-3***.

**Table 4-3 Statistics Water Quality Exceedance in the Reporting Period**

| Station | DO | | Turbidity | | SS | | Total Exceedance | |
|---|---|---|---|---|---|---|---|---|
| | Action | Limit | Action | Limit | Action | Limit | Action | Limit |
| W1 | 0 | 10 | 0 | 3 | 0 | 1 | **0** | **14** |
| W2 | 1 | 12 | 4 | 2 | 1 | 2 | **6** | **16** |
| W4 | 1 | 12 | 1 | 0 | 0 | 0 | **2** | **12** |
| **No of Exceedance** | **2** | **34** | **5** | **5** | **1** | **3** | **8** | **42** |

4.10 During this reporting period, 36, 10 and 4 Action/Limit Levels exceedances were respectively recorded for DO, Turbidity and Suspended Solids. NOEs were issued to notify EPD, IEC, the Contractor and RE upon confirmation of the results.

4.11 For the exceedance Turbidity, excavation of box culvert foundation from Bay 20 to Bay 21 was in progress during the captioned exceedance days. Such activity may lead to increase of turbidity or

suspended solids levels for the nearby stream by washed out from stockpiles of dusty materials, excavated surface or dusty haul roads, etc. To prevent the impact to the existing stream, precautionary measures such as construction of temporary artificial precipitation stream to remove the suspend solids from wastewater to maintain the water quality of downstream by laying geotextile filter and stone below stream was implemented on site. Moreover, no direct wastewater discharged or site runoff from the construction site to the Wai Ha River is occurred during the course of monitoring. Furthermore, tidal effect were affecting the result in Stations W1(+1.75mPD) and W2 (+1.48mPD). Additional, turbidity measurement results of the control station W3, approximately 70% of sampling days is higher than W4. So, it is concluded that the exceedances were not due to the Project.

4.12 For Dissolved Oxygen exceedances, since lower levels in W4 were also recorded at in control station W3 and tidal effect were affecting the result in Stations W1 and W2. It is concluded that all the exceedances were not due to the Project.

4.13 Anyhow, KLKJV should be fully implemented the required water quality mitigation measures in accordance with the updated EM&A Manual stipulation during construction under the Project. In particular when excavation and the associated box culvert construction works are undertaken near Wai Ha River, all construction wastewater or runoff generated from work area should be treated and drained to the designated discharge point.

### RESULTS OF HYDROLOGICAL CHARACTERISTICS MONITORING

4.14 In this Reporting Period, hydrological characteristics measurement at H3 and H4 were carried out on 3, 11, 17 and 25 August 2011. Also, H1 and H2 were measured on 6, 13, 20 and 27 August 2011 by Contract 1 Environmental Team. The monitoring data of H1 and H2 provided by DC/2009/22 is showed ***Appendix I***. The detailed H3 and H4 measurement results in this Reporting Period are presented in ***Tables 4-4***.

**Table 4-4 Detailed monitoring results of hydrological characteristics at H3 and H4**

| Date | Measurement Time | Tide Condition | River Width (m) | Water Depth (m) | Cut Section ($m^2$) | Velocity Flow Rate (m/s) | Average Volumetric Flow Rate (Q), $m^3/s$ |
|---|---|---|---|---|---|---|---|
| **Measurement Point: H3** | | | | | | | |
| 3 Aug 11 | 09:48 | Flood | 7.45 | 0.12 | 0.8940 | 0.6 | 0.536 |
| | 14:41 | Ebb | 7.45 | 0.11 | 0.8195 | 0.6 | 0.492 |
| 11 Aug 11 | 16:20 | Flood | 7.45 | 0.16 | 1.1920 | 0.4 | 0.477 |
| | 10:06 | Ebb | 7.45 | 0.14 | 1.0430 | 0.5 | 0.522 |
| 17 Aug 11 | 10:51 | Flood | 7.45 | 0.07 | 0.5215 | 0.6 | 0.313 |
| | 15:26 | Ebb | 7.45 | 0.08 | 0.5960 | 0.6 | 0.358 |
| 25 Aug 11 | 15:47 | Flood | 7.45 | 0.07 | 0.5215 | 0.6 | 0.313 |
| | 10:08 | Ebb | 7.45 | 0.08 | 0.5960 | 0.7 | 0.417 |
| **Measurement Point: H4** | | | | | | | |
| 3 Aug 11 | 10:03 | Flood | 2.74 | 0.22 | 0.6028 | 0.2 | 0.121 |
| | 14:59 | Ebb | 2.74 | 0.20 | 0.5480 | 0.2 | 0.110 |
| 11 Aug 11 | 16:13 | Flood | 2.74 | 0.20 | 0.5480 | 0.2 | 0.110 |
| | 10:15 | Ebb | 2.74 | 0.20 | 0.5480 | 0.2 | 0.110 |
| 17 Aug 11 | 10:57 | Flood | 2.74 | 0.24 | 0.6576 | 0.1 | 0.066 |
| | 15:48 | Ebb | 2.74 | 0.26 | 0.7124 | 0.2 | 0.142 |
| 25 Aug 11 | 16:03 | Flood | 2.74 | 0.24 | 0.6576 | 0.2 | 0.132 |
| | 10:31 | Ebb | 2.74 | 0.26 | 0.7124 | 0.1 | 0.071 |

Remarks: Tide information extract from Tai Po Kau Station

| Date | Time | Height(m) | Time | Height(m) | Time | Height(m) | Time | Height(m) |
|---|---|---|---|---|---|---|---|---|
| 3 Aug 2011 | 00:25 | 1.8 | 05:30 | 0.9 | 12:35 | 2.2 | 18:20 | 0.5 |
| 6 Aug 2011 | 02:46 | 2.0 | 08:11 | 0.9 | 15:29 | 1.5 | 20:12 | 1.0 |
| 11 Aug 2011 | 00:13 | 1.2 | 07:53 | 2.3 | 14:20 | 0.5 | 21:29 | 1.4 |
| 13 Aug 2011 | 02:20 | 1.1 | 09:34 | 2.3 | 15:41 | 0.4 | 22:31 | 1.6 |

| Date | Time | Height(m) | Time | Height(m) | Time | Height(m) | Time | Height(m) |
|---|---|---|---|---|---|---|---|---|
| 17 Aug 2011 | 00:13 | 1.8 | 05:18 | 0.9 | 12:07 | 2 | 17:52 | 0.8 |
| 20 Aug 2011 | 01:51 | 1.9 | 07:21 | 1.0 | 13:48 | 1.5 | 18:55 | 1.1 |
| 25 Aug 2011 | 05:23 | 2.1 | 13:49 | 0.7 | 21:27 | 1.4 | 23:29 | 1.3 |
| 27 Aug 2011 | 00:32 | 1.3 | 07:50 | 2.3 | 14:47 | 0.5 | 21:28 | 1.6 |

4.15 Hydrological characteristics results of the all measurement points are summarized in ***Tables 4-5*** and ***4-6***.

**Table 4-5 Summarized Hydrological Characteristics of Water Depth, m**

| Date | Mid-Flood | | | | Mid-Ebb | | | |
|---|---|---|---|---|---|---|---|---|
| | **H1** | **H2** | **H3** | **H4** | **H1** | **H2** | **H3** | **H4** |
| 03 Aug 11 | | | 0.12 | 0.22 | | | 0.11 | 0.20 |
| 06 Aug 11 | 0.3 | 0.4 | -- | -- | 0.3 | 0.3 | -- | -- |
| 11 Aug 11 | | | 0.16 | 0.20 | | | 0.14 | 0.20 |
| 13Aug 11 | * | * | -- | -- | 0.2 | 0.6 | -- | -- |
| 17 Aug 11 | | | 0.07 | 0.24 | | | 0.08 | 0.26 |
| 20 Aug 11 | 0.2 | 0.4 | -- | -- | 0.1 | 0.3 | -- | -- |
| 25 Aug 11 | | | 0.07 | 0.24 | | | 0.08 | 0.26 |
| 27 Aug 11 | 0.3 | 0.4 | -- | -- | 0.5 | 0.6 | -- | -- |

Remark: (*) Due to exceed working time, therefore no measurement was conducted by the Contract 1

**Table 4-6 Summarized Hydrological Characteristics of Average Volumetric flow rate (Q), $m^3/s$**

| Date | Mid-Flood | | | | Mid-Ebb | | | |
|---|---|---|---|---|---|---|---|---|
| | **H1** | **H2** | **H3** | **H4** | **H1** | **H2** | **H3** | **H4** |
| 03 Aug 11 | | | 0.536 | 0.121 | | | 0.492 | 0.110 |
| 06 Aug 11 | 0.075 | 0.754 | -- | -- | 0.075 | 0.754 | -- | -- |
| 11 Aug 11 | | | 0.477 | 0.110 | | | 0.522 | 0.110 |
| 13Aug 11 | * | * | -- | -- | 0.075 | 1.130 | -- | -- |
| 17 Aug 11 | | | 0.313 | 0.066 | | | 0.358 | 0.142 |
| 20 Aug 11 | 0.150 | 0.754 | -- | -- | 0.150 | 0.754 | -- | -- |
| 25 Aug 11 | | | 0.313 | 0.132 | | | 0.417 | 0.071 |
| 27 Aug 11 | 0.150 | 0.754 | -- | -- | 0.150 | 0.383 | -- | -- |

Remark: (*) Due to exceed working time, therefore no measurement was conducted by the Contract 1

4.16 To compare the monitoring data between the Reporting Period (rainy season) and baseline monitoring period, the currently water depth and volumetric flow rate has insignificant changed. Furthermore, water depth and water flow rate were found no exceedance in this reporting period.

## 5.0 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 ***Table 5-1*** and ***5-2*** and the Monthly Summary Waste Flow Table is shown in ***Appendix K***. Whenever possible, materials were reused on-site as far as practicable.

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

| Type of Waste | Quantity | Disposal Location |
|---|---|---|
| C&D Materials (Inert) ($m^3$) | 0 | - |
| Reused in this Contract (Inert) ($m^3$) | 0 | - |
| Reused in other Projects (Inert) ($m^3$) | 785.5 | DSD Contract No. DC/2009/22. |
| Disposal as Public Fill (Inert) ($m^3$) | 0 | - |

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

| Type of Waste | Quantity | Disposal Location |
|---|---|---|
| Recycled Metal (kg) | 0 | - |
| Recycled Paper / Cardboard Packing (kg) | 0 | - |
| Recycled Plastic (kg) | 0 | - |
| Chemical Wastes (kg) | 0 | - |
| General Refuses ($m^3$) | 0 | - |

5.04 There was no site effluent or surface runoff discharged in this monthly period.

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

## 6.0 SITE INSPECTION

6.01 According to the Updated Environmental Monitoring and Audit Manual, regular site inspection to evaluate the project environmental performance should be carried out during construction phase. Weekly environmental site inspections had been carried out by the Contractor and RE on 3, 10, 17, 24 and 31 August 2011. Furthermore, joint site inspection with the IEC and ET was carried out on **17 August 2011**. No non-compliance was noted.

6.02 Observations for the site inspection and monthly audit within this Reporting Period are summarized in ***Table 6-1*** and monthly inspection checklist is attached in ***Appendix L***. Moreover, weekly site inspection checklists provided by the Contractor are also showed in ***Appendix L***.

**Table 6-1 Site Inspection of Observations – Findings and Deficiencies**

| Date | Performed by | Findings / Deficiencies | Follow-Up Status |
|---|---|---|---|
| 3 Aug 11 | The Contractor and RE | NA | NA |
| 10 Aug 11 | The Contractor and RE | NA | NA |
| 17 Aug 11 | The Contractor, ER, IEC and ET | A power generator without a drip tray was found at site. The Contractor is reminded that the power generator shall provide a drip tray to prevent land contamination. | Rectified before the next inspection. |
| 23 Aug 11 | The Contractor and RE | NA | NA |
| 30 Aug 11 | The Contractor and RE | The Contractor was reminded that chemical waste disposal should be compliance with Chapter 354C – Waste Disposal (Chemical WASTE) (General) Regulation. | Not require for reminder. |

### LANDSCAPE AND VISUAL INSPECTION

6.03 In this Reporting Period, landscape and visual inspection was carried on 24 August 2011. The stand-alone of monthly Landscape & Visual Report (August 2011) signed by the registered Landscape Architect attach at ***Appendix M***.

6.04 According to monthly Landscape & Visual Report (August 2011), mitigation measures implemented in reporting period list as below:

**Table 6-2 Landscape & Visual Inspection of Observations**

| Parameter | Observation | Recommendation |
|---|---|---|
| Visual Screen | • A section of temporary hoardings have been erected from west to east parts of Tung Tsz Road opposite to San Tau Kwok.<br>• No hoardings have been erected along the rest of the proposed works area since neither construction works nor any associated preparation works have been commenced. | No specific recommendation is required |
| Contaminant / Sediment Control | • No direct discharge of contaminants or any polluted fluid was observed within the active works area. All used water and underground water was collected and drained into filtration beds and a sedimentation tanks before the discharge. | Regular monitoring should be conducted to ensure no direct discharge or leakage of contaminants or any polluted fluid into the adjacent Wai Ha River |
| Pollution Control | • Drained water from underground was observed to be filtered in a sedimentation tank and filtration beds before the discharge. No direct discharge of water into the adjacent Wai Ha | No specific recommendation is required |

| Parameter | Observation | Recommendation |
|---|---|---|
| | River was observed | |
| Existing Trees within Works Area | • Tree felling has not yet been conducted within the working area.<br>• All trees within the Project area were recorded generally in fair health conditions. Four uprooted trees, including T011, T011A, T011B and T011C were observed. As informed by the Contractor, these trees were found uprooted when the Project Team commenced the works in July 2011. | • Within the active works area, proper Tree Protection Zones (TPZs) should be demarcated for retained trees and trees to be transplanted which would be directly affected by the construction work. In addition, if necessary, these retained trees or trees to be transplanted shall be watered regularly to maintain their health.<br>• Disturbance is prohibited in all TPZs. In any practical circumstances, the contractor should follow Section 8 of Annex 4 of the approved Landscape Plan for protecting the existing trees from any potential damages resulting from construction works. |
| Construction Light | No construction light impact to the surrounding villages and to Plover Cove as all construction activities and construction sites are halted at 1800. No construction light at night is provided by the Main Contractor. | No specific recommendation is required |

6.05 The next bi-weekly Landscape & Visual Monitoring in September 2011 is scheduled to be conducted in the week of 5 and 19 September 2011.

## 7.0 ENVIRONMENTAL COMPLAINT 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 |
| 1 – 31 August 2011 | 0 | 0 | NA |

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

| Reporting Period | Environmental Summons Statistics | | |
|---|---|---|---|
| | Frequency | Cumulative | Complaint Nature |
| 1 – 31 August 2011 | 0 | 0 | NA |

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

| Reporting Period | Environmental Prosecution Statistics | | |
|---|---|---|---|
| | Frequency | Cumulative | Complaint Nature |
| 1 – 31 August 2011 | 0 | 0 | NA |

## 8.0 IMPLEMENTATION STATUS OF MITIGATION MEASURES

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

**Noise Mitigation Measure**

(a) Only well-maintained plant should be operated on-site and plant shall be serviced regularly during the construction program;

(b) Silencers or mufflers on construction equipment should be utilized and shall be properly maintained during the construction program;

(c) Mobile plant, if any, should be sited as far from NSRs as possible;

(d) Machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum;

(e) Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs;

(f) Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities;

(g) Use of quieter plants to carry out the construction tasks proposed for the Project;

(h) Use about 3.5m high of temporary noise barriers as screened the noisy PMEs to carry out construction of box culvert and site clearance.

(i) Low Impact Method, such as using PMEs smaller in size and to be enclosed by noise enclosure, should be adopted for the construction of box culvert and pipe laying in Wai Ha; and

(j) Use of noise enclosure during the works area for pipe laying in Wai Ha.

**Dust Mitigation Measure**

8.02 Implementation of mitigation measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices including but not limited to the following:

(a) Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved road, with complete coverage, particularly during dry weather;

(b) Use of frequent watering for particularly dusty static construction areas and areas close to ASRs;

(c) Tarpaulin covering of all dusty vehicle loads transported to, from and between site location;

(d) Establishment and use of vehicle wheel and body washing facilities at the exit points of the site;

(e) Routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs;

(f) Stockpiled excavated materials should be covered with tarpaulin and should be removed offsite within 24 hours to avoid any odour nuisance arising.

**Local Stream Water Quality Mitigation Measure**

(a) Before commencing any site formation work, all sewer and drainage connections shall be sealed to prevent debris, soil, sand etc. from entering public sewers/drains;

(b) Temporary ditches shall be provided to facilitate run-off discharge into appropriate watercourses, via a silt retention pond. No site run-off shall enter the fishponds at Shuen Wan;

(c) Sand/silt removal facilities such as sand traps, silt traps and sediment basins shall be provided to remove sand/silt particles from runoff to meet the requirements of the Technical Memorandum standard under the Water Pollution Control Ordinance. The design of silt removal facilities shall be based on the guidelines provided in ProPECC PN 1/94. All drainage facilities and erosion and sediment control structures shall be inspected monthly and maintained to ensure proper and efficient operation al all times and particularly during rainstorms

(d) Water pumped out from excavated pits shall be discharged into sill removal facilities;

(e) During rainstorms, exposed slope/soil surfaces shall be covered by a tarpaulin or other means. Other measures that need to be implemented before, during, and after rainstorms as summarized in ProPECC PN 1/94 shall be followed

(f) Exposed soil areas shall be minimized to reduce potential for increased siltation and contamination of runoff

(g) Earthwork final surfaces shall be well compacted and subsequent permanent work or surface protection shall be immediately performed to reduce the potential of soil erosion;

(h) Open stockpiles of construction materials or construction wastes on-site shall be covered with tarpaulin or similar fabric during rainstorms;

(i) For the construction of the box culvert next to the existing channel of the Wai Ha River, sand bags should be deployed around the boundary of the works trench to prevent muddy water ingress into the adjacent CA or Wai Ha River. Sand bags should also be used to surround the excavated trench. Generally, the sand bags will be placed up to a height 01 300mm to provide adequate allowance for the built-up water level during rainstorm event. With sand bags in place surface runoff will be intercepted and flow to Wai Ha River or collected by the existing drainage system as usual;

(j) For the construction of the box culvert in the extreme northeast corner of Shuen Wan Marsh Conservation Area sand bags should be deployed along the limit of the works area to prevent muddy water ingress into the CA. Sand bags should be placed to a height 0.1 at least 300mm from ground level and +2.5 mPD (whichever is greater) to provide adequate allowance for the built-up water level during rainstorm events Unpolluted surface runoff within the works area should then be collected and directed into the existing drainage system;

(k) Sheet-piles, which would be installed around the works trench near the Conservation Area, would be extended above ground level for about 2m to serve as hoardings to isolate the works site;

(l) Tarpaulin sheets would be used to cover the excavation areas during heavy rainstorms. This would prevent the ingress of rainwater into the trench minimizing the risk of muddy water getting into Wai Ha River and the adjacent Conservation Area;

(m) Any concrete washing water would be contained inside the works site surrounded by the extended sheet piles. A pump sump at the bottom 0f the trench would be provided to pump any excess water during concrete washing;

(n) Stockpiling the excavated materials adjacent to the Conservation Area would not be allowed. The excavated materials would be either removed off site immediately after excavation, or stockpile at location(s) away from the Conservation Area. The stockpile locations shall be approved by the site engineer;

(o) Debris and refuse generated on-site should be collected, handled and disposed of properly to avoid entering the Wai Ha River and fish ponds at Shuen Wan. Stockpiles of cement and other construction materials should be kept covered when not being used.

(p) Oils and fuels should only be used and stored in designated areas which have pollution prevention facilities to prevent spillage of fuels and solvents to nearby water bodies, all fuel tanks and storage areas should be provided with locks and be sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity 01 the largest tank The bund should be drained of rainwater after a rain event

(q) Temporary sanitary facilities, such as portable chemical toilets, should be employed on-site. A licensed contractor would be responsible for appropriate disposal and maintenance of these facilities;

(r) The excavation works within the upstream end of the existing river channel of the Wai Ha River for the construction of the proposed box culvert should be carried out in dry condition. Containment measures such as bunds and barriers shall be used within the affected length of the river channel and the excavation works restricted to within an enclosed dry section of the channel. The excavation works within Wai Ha River shall be restricted to the period from October to April

**Waste Mitigation Measures**

(a) The Contractor shall observe and comply with the Waste Disposal Ordinance (WDO) and its subsidiary regulations.

(b) The Contractor shall submit to the Engineer for approval a Waste Management Plan with appropriate mitigation measures including the allocation of an area for waste segregation and shall ensure that the day-to-day site operations comply with the approved waste management plan.

(c) The Contractor shall minimise the generation of waste from his work. Avoidance and minimisation of waste generation can be achieved through changing or improving design and practices, careful planning and good site management.

(d) The reuse and recycling of waste shall be practised as far as possible. The recycled materials shall include paper/cardboard, timber and metal etc.

(e) The Contractor shall ensure that Construction and Demolition (C&D) materials are sorted into public fill (inert portion) and C&D waste (non-inert portion). The public fill which comprises soil, rock, concrete, brick, cement plaster/mortar, inert building debris, aggregates and asphalt shall be reused in earth filling, reclamation or site formation works. The C&D waste which comprises metal, timber, paper, glass, junk and general garbage shall be reused or recycled where possible and, as the last resort, disposal of at landfills.

(f) The Contractor shall record the amount of wastes generated, recycled and disposed of (including the disposal sites). The Contractor shall use a trip ticket system for the disposal of C&D materials to any designated public filling facility and/or landfill.

(g) In order to avoid dust or odour impacts, any vehicles leaving a works area carrying construction waste or public fill shall have their load covered.

(h) To avoid the excessive use of wood, reusable steel shutters shall be used as a preferred alternative to formwork and falsework where possible.

(i) The Contractor shall observe and comply with the Waste Disposal (Chemical Waste) (General) Regulation. The Contractor shall apply for registration as chemical waste producer under the Waste Disposal (Chemical Waste) (General) Regulation when chemical waste is produced. All chemical waste shall be properly stored, labeled, packaged and collected in accordance with the Regulation.

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

**Table 8-1 Environmental Mitigation Measures**

| Issues | Environmental Mitigation Measures |
|---|---|
| Water Quality | • Wastewater were appropriately treated by treatment facilities;<br>• Drainage channels were provided to convey run-off into the treatment facilities; and<br>• Drainage systems were regularly and adequately maintained. |
| Air Quality | • Regular watering to reduce dust emissions from all exposed site surface, particularly during dry weather;<br>• Frequent watering for particularly dusty construction areas and areas close to air sensitive receivers;<br>• Cover all excavated or stockpile of dusty material by impervious sheeting or sprayed with water to maintain the entire surface wet;<br>• Public roads around the site entrance/exit had been kept clean and free from dust; and<br>• Tarpaulin covering of any dusty materials on a vehicle leaving the site. |
| Noise | • Good site practices to limit noise emissions at the sources;<br>• Use of quite plant and working methods;<br>• Use of site hoarding or other mass materials as noise barrier to screen noise at ground level of NSRs;<br>• Use of shrouds/temporary noise barriers to screen noise from relatively static PMEs;<br>• Scheduling of construction works nearly Tung Tsz Road; and<br>• Alternative use of plant items within one worksite, where practicable. |

| Issues | Environmental Mitigation Measures |
|---|---|
| Waste and Chemical Management | • Excavated material should be reused on site as far as possible to minimize off-site disposal. Scrap metals or abandoned equipment should be recycled if possible;<br>• Waste arising should be kept to a minimum and be handled, transported and disposed of in a suitable manner;<br>• The Contractor should adopt a trip ticket system for the disposal of C&D materials to any designed public filling facility and/or landfill; and<br>• Chemical waste shall be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes. |
| General | • The site was generally kept tidy and clean. |

## 9.0 IMPACT FORCAST

### CONSTRUCTION ACTIVITIES FOR THE FORTH-COMING MONTH

9.01 Construction activities planned to be carried out next month at Shuen Wan is listed as below:-

- Construction of Project Signboard at Tung Tsz Road;
- Installation of Sheet Piling at Bay 24 to 25 at Tung Tsz Road;;
- Excavation for Box Culvert Bay 20 to 25 at Tung Tsz Road;
- Formwork and concreting of Box Culvert Bay 20 to 25;

9.02 Three months Rolling Construction Program is attached in ***Appendix C***

### KEY ISSUES FOR THE COMING MONTH

9.03 According to construction activities carry out in coming months, key issues to be considered include:

- Implementation of dust suppression measures at all times;
- 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 local stream or storm drainage, stockpiling or disposal of materials, and any dredging or construction area at this area are prohibited;
- Follow-up of improvement on general waste management issues; and
- Implementation of construction noise preventative control measures.

## 10.0 CONCLUSIONS AND RECOMMENTATIONS

### CONCLUSIONS

10.01 This is the 2nd monthly EM&A report for Contract 2 presenting the monitoring results and inspection findings for the reporting period from **1 August 2011 to 31 August 2011**.

10.02 No noise complaint (which is an Action Level exceedance) was received and no construction noise measurement results that exceeded the Limit Level were recorded in this Reporting Period. No NOE or the associated corrective actions were therefore issued.

10.03 During this reporting period, 36, 10 and 4 Action/Limit Levels exceedances were respectively recorded for DO, Turbidity and Suspended Solids. NOEs were issued to notify EPD, IEC, the Contractor and RE upon confirmation of the results. According to information such as construction activities provided by KLKVJ and the results of Control Station W3, all the exceedances are considered not due to the Project. Furthermore, the hydrological characteristics of water depth and water flow rate were found no exceedance in this reporting period.

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

10.05 Weekly environmental site inspections had been carried out by the Contractor and the RE on 3, 10, 17, 24 and 31 August 2011. Furthermore, joint site inspection with the IEC and ET was carried out on **17 August 2011**. No non-compliance was indicated during the site inspection. In general, it was reminded that good house-keeping practice should be maintained. The environmental performance of the Project was therefore considered satisfactory.

10.06 During this reporting period, landscape and visual inspection was carried out by a registered Landscape Architect on **24 August 2011**.

10.07 No site visit was undertaken by any external party in this Reporting Period.

### RECOMMENDATIONS

10.08 During wet season, excavation works of construction box culvert or trench, ingression of surface runoff into Wai Ha River to be the key issue in coming months. The contractor is reminded that mitigation measures for water quality and ecology should be fully implemented.

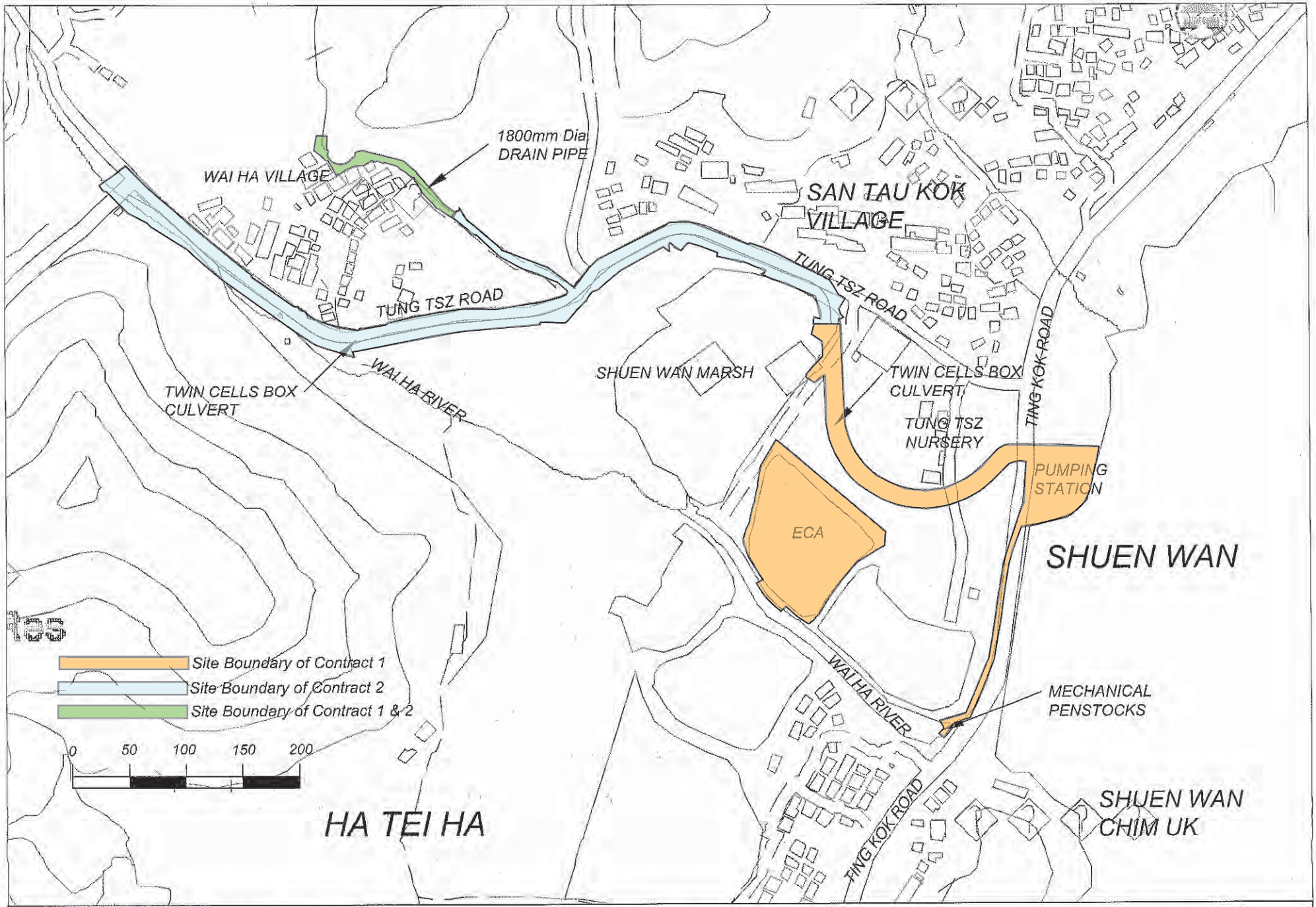
10.09 To control the site performance on waste management, the KLKJV shall ensure that all solid and liquid waste management works are fully in compliance with the relevant license/permit requirements, such as the effluent discharge licence and the chemical waste producer registration. KLKJV is also reminded to implement the recommended environmental mitigation measures according to the Updated Environmental Monitoring and Audit Manual.

10.10 Baseline monitoring of water quality was conducted during typical Hong Kong dry season (November to March of next year). It is important that influence of the seasonal changes is taken into account when interpreting monitoring data of water quality obtained in the coming wet season. Review of the baseline conditions may need to be conducted regularly in particular during times of seasonal changes. If the baseline changes are evident, the environmental performance criteria should be re-established under agreement of the ER and IEC and submitted to the EPD for endorsement.

**END OF TEXT**

# Appendix A

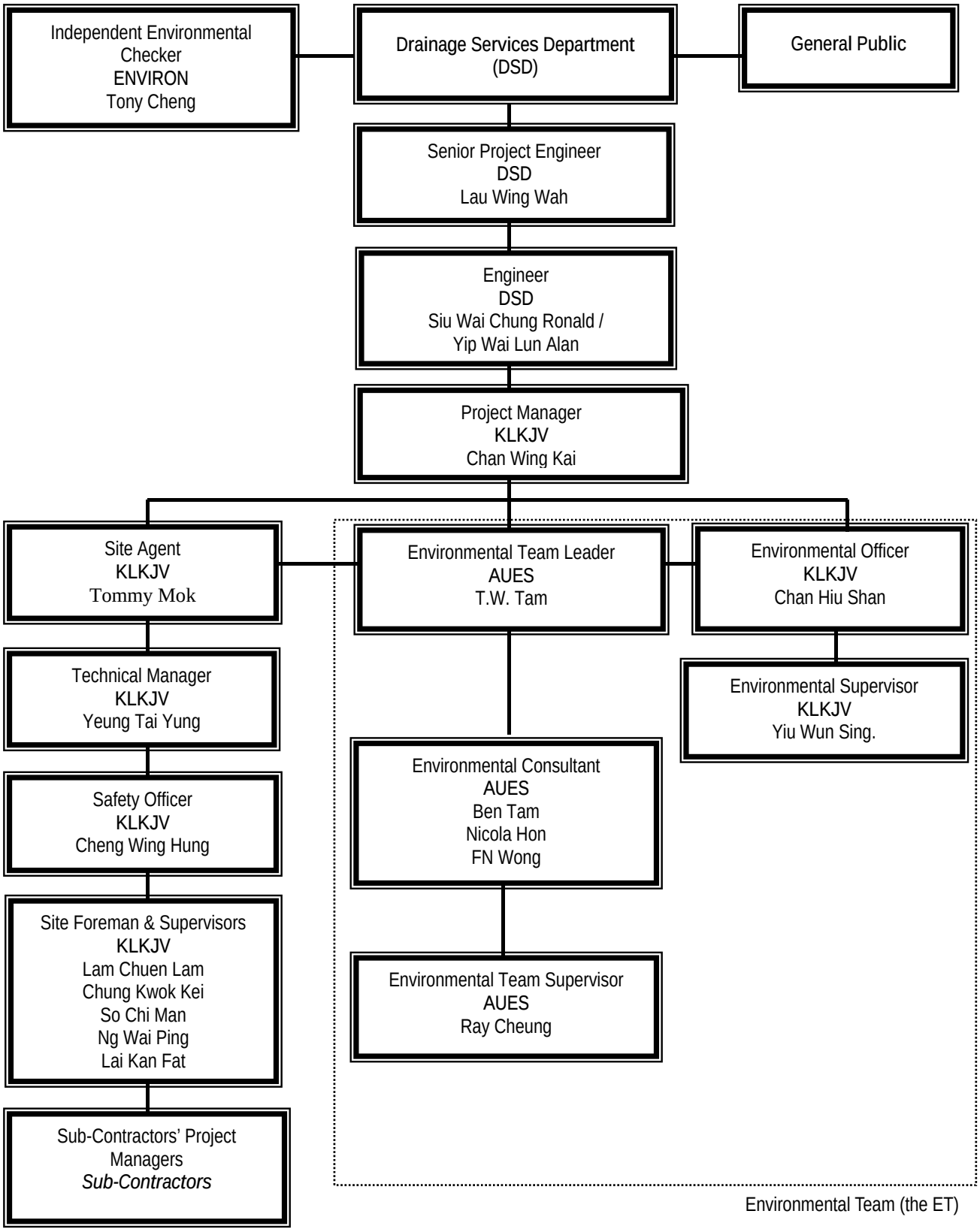
# Site Location Plan
# (DSD Contract 1 and Contract 2 at Shuen Wan)




**Site Location Plan of DSD Contract 1 and Contract at Shuen Wan**

# Appendix B

# Organization Chart and the Key Contact Person




Environmental Management Organization

## Contact Details of Key Personnel

| Organization | Project Role | Name of Key Staff | Tel No. | Fax No. |
|---|---|---|---|---|
| DSD | Employer | Mr. Luk Wai Hung | 2594 7400 | 2827 8700 |
| DSD | Senior Engineer | Mr. Lau Wing Wah | 2594 7402 | 2827 8700 |
| DSD | Engineer | Mr. Siu Wai Chung, Ronald | 2594 7595 | 2827 8700 |
| DSD | Engineer | Mr. Yip Wai Lun | 2594 7359 | 2827 8700 |
| DSD | Senior Inspector | Mr. Tso Si On | 6778 2708 | 2827 8700 |
| ENVIRON | Independent Environmental Checker | Mr. Tong Cheng | 3743-0788 | 3548-6988 |
| KLKJV | Project Director | Mr. Poon Chi Yeung Francis | 2674 3888 | 2674 9988 |
| KLKJV | Project Manager | Mr. Chan Wing Kai | 2674 3888 | 2674 9988 |
| KLKJV | Site Agent | Mr. Mok Chu Hung Tommy | 2674 3888 | 2674 9988 |
| KLKJV | Technical Manager | Mr. Yeung Tai Yung | 9674 9712 | 2674 9988 |
| KLKJV | Site Forman | Mr. Cheung Wai Hung | 2674 3888 | 2674 9988 |
| KLKJV | Environmental Officer | Miss. Chan Hiu Shan | 2674 3888 | 2674 9988 |
| KLKJV | Environmental Supervisor | Mr. Yiu Wun Sing | 2674 3888 | 2674 9988 |
| AUES | Environmental Team Leader | Mr. T.W. Tam | 2959-6059 | 2959-6079 |
| AUES | Senior Environmental Consultant | Mr. Wong Fu Nam | 2959-6059 | 2959-6079 |
| AUES | Environmental Consultant | Miss Nicola Hon | 2959-6059 | 2959-6079 |
| AUES | Environmental Consultant | Mr. Ben Tam | 2959-6059 | 2959-6079 |
| AUES | Environmental Team Supervisor | Mr. Ray Cheung | 2959-6059 | 2959-6079 |

Legends:

*DSD* *(Employer) – Drainage Services Department*

*DSD* *(Engineer) – Drainage Services Department*

*KLKJV* *(Main Contractor) – Kwan Lee-Kuly Joint Venture*

*ENVIRON* *(IEC) – ENVIRON Hong Kong Limited*

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

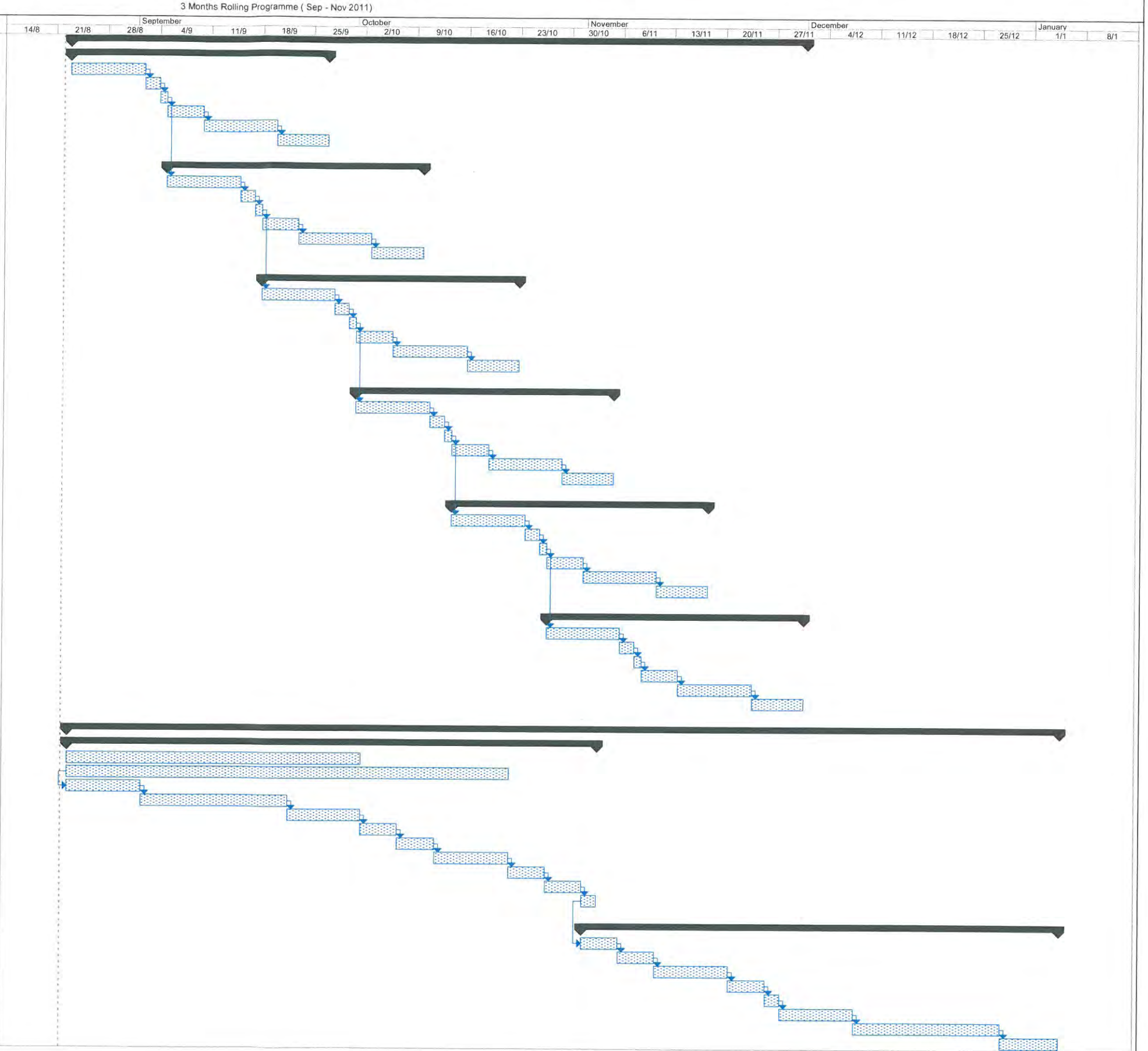
# Appendix C

# Master and Three Months Rolling Construction Programs

Contract No.: DC/2010/02
Contract Title: Drainage Improvement Works in Shuen Wan and Shek Wu Wai

3 Months Rolling Programme ( Sep - Nov 2011)

| ID | Task Name | Duration | Start | Finish | Predecessors |
|---|---|---|---|---|---|
| 1 | **Section 1 (Construction Works in Shuen Wan)** | **100 days** | **Tue 23/8/11** | **Wed 30/11/11** | |
| 2 | **Bay 20** | **35 days** | **Tue 23/8/11** | **Mon 26/9/11** | |
| 3 | Excavation & Installation of Lateral Support | 10 days | Tue 23/8/11 | Thu 1/9/11 | |
| 4 | Laying Geogextile, Rubble Mound & Polythene sheet | 2 days | Fri 2/9/11 | Sat 3/9/11 | 3 |
| 5 | Blinding Layer | 1 day | Sun 4/9/11 | Sun 4/9/11 | 4 |
| 6 | Construction of Base Slab of Box Culvert | 5 days | Mon 5/9/11 | Fri 9/9/11 | 5 |
| 7 | Construction of Top Slab of Box Culveert | 10 days | Sat 10/9/11 | Mon 19/9/11 | 6 |
| 8 | Backfilling & Removal of Lateral Support | 7 days | Tue 20/9/11 | Mon 26/9/11 | 7 |
| 9 | | | | | |
| 10 | **Bay 21** | **35 days** | **Mon 5/9/11** | **Sun 9/10/11** | |
| 11 | Excavation & Installation of Lateral Support | 10 days | Mon 5/9/11 | Wed 14/9/11 | 5 |
| 12 | Laying Geogextile, Rubble Mound & Polythene sheet | 2 days | Thu 15/9/11 | Fri 16/9/11 | 11 |
| 13 | Blinding Layer | 1 day | Sat 17/9/11 | Sat 17/9/11 | 12 |
| 14 | Construction of Base Slab of Box Culvert | 5 days | Sun 18/9/11 | Thu 22/9/11 | 13 |
| 15 | Construction of Top Slab of Box Culveert | 10 days | Fri 23/9/11 | Sun 2/10/11 | 14 |
| 16 | Backfilling & Removal of Lateral Suppoort | 7 days | Mon 3/10/11 | Sun 9/10/11 | 15 |
| 17 | | | | | |
| 18 | **Bay 22** | **35 days** | **Sun 18/9/11** | **Sat 22/10/11** | |
| 19 | Excavation & Installation of Lateral Support | 10 days | Sun 18/9/11 | Tue 27/9/11 | 13 |
| 20 | Laying Geogextile, Rubble Mound & Polythene sheet | 2 days | Wed 28/9/11 | Thu 29/9/11 | 19 |
| 21 | Blinding Layer | 1 day | Fri 30/9/11 | Fri 30/9/11 | 20 |
| 22 | Construction of Base Slab of Box Culvert | 5 days | Sat 1/10/11 | Wed 5/10/11 | 21 |
| 23 | Construction of Top Slab of Box Culveert | 10 days | Thu 6/10/11 | Sat 15/10/11 | 22 |
| 24 | Backfilling & Removal of Lateral Suppoort | 7 days | Sun 16/10/11 | Sat 22/10/11 | 23 |
| 25 | | | | | |
| 26 | **Bay 23** | **35 days** | **Sat 1/10/11** | **Fri 4/11/11** | |
| 27 | Excavation & Installation of Lateral Support | 10 days | Sat 1/10/11 | Mon 10/10/11 | 21 |
| 28 | Laying Geogextile, Rubble Mound & Polythene sheet | 2 days | Tue 11/10/11 | Wed 12/10/11 | 27 |
| 29 | Blinding Layer | 1 day | Thu 13/10/11 | Thu 13/10/11 | 28 |
| 30 | Construction of Base Slab of Box Culvert | 5 days | Fri 14/10/11 | Tue 18/10/11 | 29 |
| 31 | Construction of Top Slab of Box Culveert | 10 days | Wed 19/10/11 | Fri 28/10/11 | 30 |
| 32 | Backfilling & Removal of Lateral Suppoort | 7 days | Sat 29/10/11 | Fri 4/11/11 | 31 |
| 33 | | | | | |
| 34 | **Bay 24** | **35 days** | **Fri 14/10/11** | **Thu 17/11/11** | |
| 35 | Excavation & Installation of Lateral Support | 10 days | Fri 14/10/11 | Sun 23/10/11 | 29 |
| 36 | Laying Geogextile, Rubble Mound & Polythene sheet | 2 days | Mon 24/10/11 | Tue 25/10/11 | 35 |
| 37 | Blinding Layer | 1 day | Wed 26/10/11 | Wed 26/10/11 | 36 |
| 38 | Construction of Base Slab of Box Culvert | 5 days | Thu 27/10/11 | Mon 31/10/11 | 37 |
| 39 | Construction of Top Slab of Box Culveert | 10 days | Tue 1/11/11 | Thu 10/11/11 | 38 |
| 40 | Backfilling & Removal of Lateral Suppoort | 7 days | Fri 11/11/11 | Thu 17/11/11 | 39 |
| 41 | | | | | |
| 42 | **Bay 25** | **35 days** | **Thu 27/10/11** | **Wed 30/11/11** | |
| 43 | Excavation & Installation of Lateral Support | 10 days | Thu 27/10/11 | Sat 5/11/11 | 37 |
| 44 | Laying Geogextile, Rubble Mound & Polythene sheet | 2 days | Sun 6/11/11 | Mon 7/11/11 | 43 |
| 45 | Blinding Layer | 1 day | Tue 8/11/11 | Tue 8/11/11 | 44 |
| 46 | Construction of Base Slab of Box Culvert | 5 days | Wed 9/11/11 | Sun 13/11/11 | 45 |
| 47 | Construction of Top Slab of Box Culveert | 10 days | Mon 14/11/11 | Wed 23/11/11 | 46 |
| 48 | Backfilling & Removal of Lateral Suppoort | 7 days | Thu 24/11/11 | Wed 30/11/11 | 47 |
| 49 | | | | | |
| 50 | **Section II (Construction Works in Shuen Wan)** | **135 days** | **Tue 23/8/11** | **Wed 4/1/12** | |
| 51 | **Preliminary Works** | **72 days** | **Tue 23/8/11** | **Wed 2/11/11** | |
| 52 | Liaison with others | 40 days | Tue 23/8/11 | Sat 1/10/11 | |
| 53 | Tree Felling & Tree Transplantation | 60 days | Tue 23/8/11 | Fri 21/10/11 | |
| 54 | Construction of footing of Temp. Bridge | 10 days | Tue 23/8/11 | Thu 1/9/11 | 53SS |
| 55 | Construction of Temp. Bridge | 20 days | Fri 2/9/11 | Wed 21/9/11 | 54 |
| 56 | Site Formation for Temp. Carriageway on Existing Drainage Channel | 10 days | Thu 22/9/11 | Sat 1/10/11 | 55 |
| 57 | Provision of Temporary Road Lighting | 5 days | Sun 2/10/11 | Thu 6/10/11 | 56 |
| 58 | Removal of Existing Road Lighting | 5 days | Fri 7/10/11 | Tue 11/10/11 | 57 |
| 59 | Concreting Carriageway | 10 days | Wed 12/10/11 | Fri 21/10/11 | 58 |
| 60 | Concreting Footpath | 5 days | Sat 22/10/11 | Wed 26/10/11 | 59 |
| 61 | Erection of Parapet | 5 days | Thu 27/10/11 | Mon 31/10/11 | 60 |
| 62 | Trail Run & Traffic Diversion | 2 days | Tue 1/11/11 | Wed 2/11/11 | 61 |
| 63 | | | | | |
| 64 | **1st Box Culvert Construction** | **65 days** | **Tue 1/11/11** | **Wed 4/1/12** | |
| 65 | Implementation of Temp. Stream Diversion | 5 days | Tue 1/11/11 | Sat 5/11/11 | 62SS |
| 66 | Installation of Lateral Support | 5 days | Sun 6/11/11 | Thu 10/11/11 | 65 |
| 67 | Demolish Existing Box Culvert | 10 days | Fri 11/11/11 | Sun 20/11/11 | 66 |
| 68 | Excavation to Formation Level | 5 days | Mon 21/11/11 | Fri 25/11/11 | 67 |
| 69 | Laying geogextile, Rock Fill & Blinding Layer | 2 days | Sat 26/11/11 | Sun 27/11/11 | 68 |
| 70 | Construction of Base Slab of Box Culvert | 10 days | Mon 28/11/11 | Wed 7/12/11 | 69 |
| 71 | Construction of Top Slab of Box Culvert | 20 days | Thu 8/12/11 | Tue 27/12/11 | 70 |
| 72 | Backfilling & Reinstatement | 8 days | Wed 28/12/11 | Wed 4/1/12 | 71 |



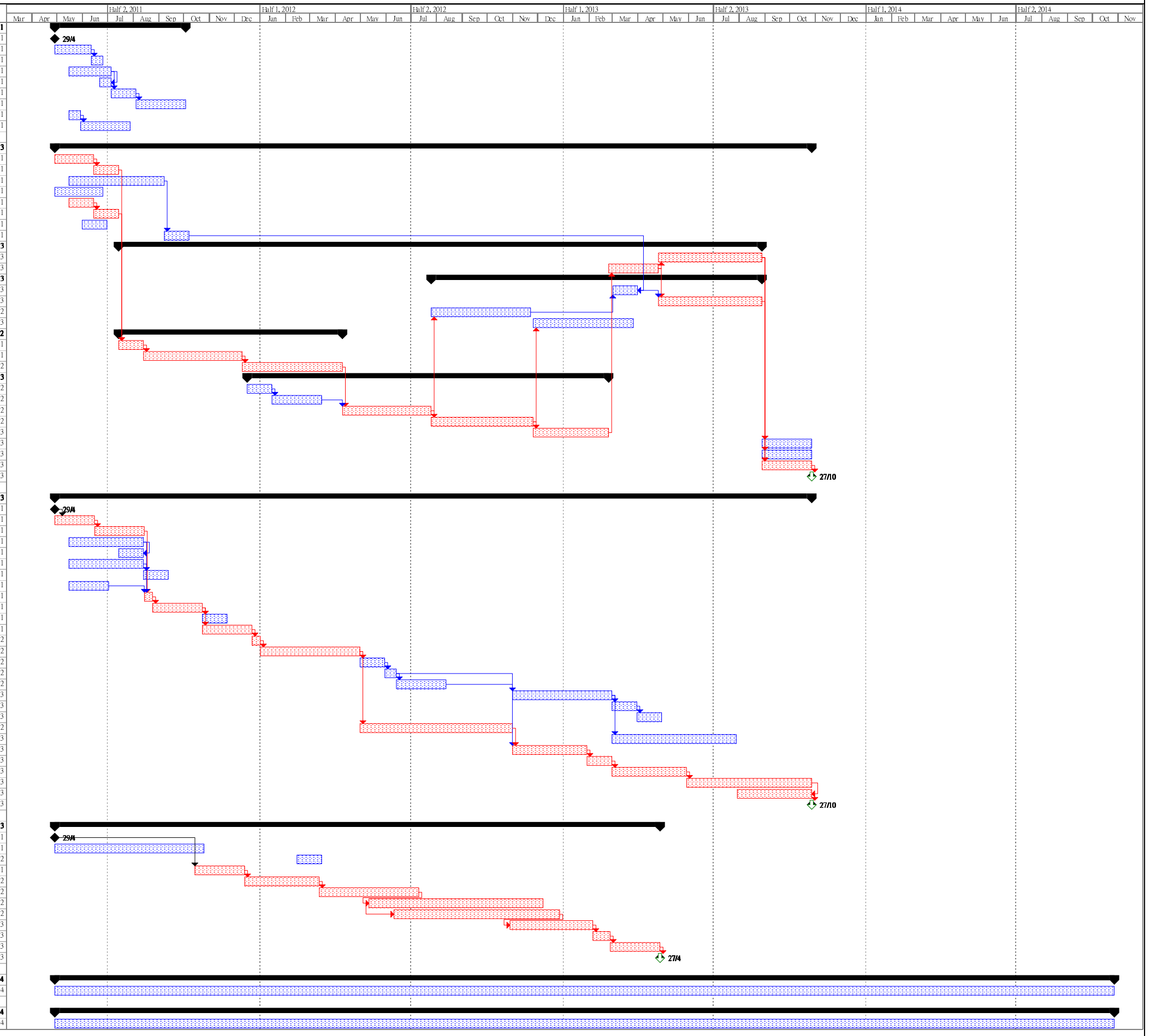

Date: 2011-8-22

Task | Split | Progress | Milestone | Summary | Project Summary | External Tasks | External Milestone | Deadline

Contract No.: DC/2010/02
Contract Title: Drainage Improvement Works in Shuen Wan and Shek Wu Wai

MASTER PROGRAMME (Rev. 1)

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | **Preliminary Works** | **158 days** | **Fri 29/4/11** | **Mon 3/10/11** |
| 2 | Commencement of Works | 0 days | Fri 29/4/11 | Fri 29/4/11 |
| 3 | Site Clearance | 44 days | Fri 29/4/11 | Sat 11/6/11 |
| 4 | Record Survey | 14 days | Sun 12/6/11 | Sat 25/6/11 |
| 5 | Design & Construction of Hoarding | 51 days | Mon 16/5/11 | Tue 5/7/11 |
| 6 | Signboard (Type B) | 14 days | Wed 22/6/11 | Tue 5/7/11 |
| 7 | Design & Approval of Engineer's Site Office | 30 days | Wed 6/7/11 | Thu 4/8/11 |
| 8 | Construction of Engineer's Site Office | 60 days | Fri 5/8/11 | Mon 3/10/11 |
| 9 | Pre-construction Condition Survey | 14 days | Mon 16/5/11 | Sun 29/5/11 |
| 10 | Relocation of Existing Shrines (2 Nos.) | 60 days | Mon 30/5/11 | Thu 28/7/11 |
| 11 | | | | |
| 12 | **Section I (Construction Works in Shuen Wan)** | **913 days** | **Fri 29/4/11** | **Sun 27/10/13** |
| 13 | Design of TTA | 47 days | Fri 29/4/11 | Tue 14/6/11 |
| 14 | Submission of TTA to TMLG for Approval | 30 days | Wed 15/6/11 | Thu 14/7/11 |
| 15 | Excavation Permit | 115 days | Mon 16/5/11 | Wed 7/9/11 |
| 16 | Submission & approval of caluclation & MS for BC (including trench ELS&slope) | 58 days | Fri 29/4/11 | Sat 25/6/11 |
| 17 | Notify EPD on commencement (one month advance notice) | 30 days | Mon 16/5/11 | Tue 14/6/11 |
| 18 | Tree Felling | 30 days | Wed 15/6/11 | Thu 14/7/11 |
| 19 | Utility detection and diversion programme | 30 days | Wed 1/6/11 | Thu 30/6/11 |
| 20 | Utilities Diversion | 30 days | Thu 8/9/11 | Fri 7/10/11 |
| 21 | **Construction of Single Cell (approx. 724m)** | **776 days** | **Fri 15/7/11** | **Wed 28/8/13** |
| 22 | Intake of Box Culvert | 125 days | Fri 26/4/13 | Wed 28/8/13 |
| 23 | from CH67 to CH100 (including cross road ducts) (Bay 1,2,3) | 60 days | Mon 25/2/13 | Thu 25/4/13 |
| 24 | **Section 1** | **399 days** | **Thu 26/7/12** | **Wed 28/8/13** |
| 25 | Traffic Arragnement at Tung Tsz Road (CH50 to 270) | 30 days | Sat 2/5/13 | Sun 31/5/13 |
| 26 | from CH100 to CH200 (Bay 4,5,6,7,8,9,10,11) | 125 days | Fri 26/4/13 | Wed 28/8/13 |
| 27 | Construction of Refuse Collection Point | 120 days | Thu 26/7/12 | Thu 22/11/12 |
| 28 | from CH200 to CH300 (including cross road ducts) (Bay 12,13,14,15,16,17,18,19) | 121 days | Mon 26/11/12 | Tue 26/3/13 |
| 29 | **Section 2** | **270 days** | **Fri 15/7/11** | **Mon 9/4/12** |
| 30 | Traffic Arrangement at Tung Tsz Road | 30 days | Fri 15/7/11 | Sat 13/8/11 |
| 31 | from CH300 to CH400 (Bay 20,21,22,23,24,25,26,27) | 119 days | Sun 14/8/11 | Sat 10/12/11 |
| 32 | from CH400 to CH500 (Bay 28,29,30,31,32,33,34,35,36) | 121 days | Sun 11/12/11 | Mon 9/4/12 |
| 33 | **Section 3** | **436 days** | **Sat 17/12/11** | **Sun 24/2/13** |
| 34 | Traffic Arrangement at Tung Tsz Road for crossing connection | 30 days | Sat 17/12/11 | Sun 15/1/12 |
| 35 | Cross Box Culvert Connection | 60 days | Mon 16/1/12 | Thu 15/3/12 |
| 36 | from CH500 to CH600 (Bay 37,38,39,40,41,42,43,44) | 107 days | Tue 10/4/12 | Wed 25/7/12 |
| 37 | from CH600 to CH700 (Bay 45,46,47,48,49,50,51,52) | 123 days | Thu 26/7/12 | Sun 25/11/12 |
| 38 | from CH700 to CH724 (Bay 53,54,55) | 91 days | Mon 26/11/12 | Sun 24/2/13 |
| 39 | CCTV Inspection | 60 days | Thu 29/8/13 | Sun 27/10/13 |
| 40 | Installation of Type 2 Railing at Upstream (CH67 to CH240) | 60 days | Thu 29/8/13 | Sun 27/10/13 |
| 41 | Landscape Softwork | 60 days | Thu 29/8/13 | Sun 27/10/13 |
| 42 | Completion of Section I | 0 days | Sun 27/10/13 | Sun 27/10/13 |
| 43 | | | | |
| 44 | **Section II (Construction Works in Shek Wu Wai)** | **913 days** | **Fri 29/4/11** | **Sun 27/10/13** |
| 45 | Commence of Works | 0 days | Fri 29/4/11 | Fri 29/4/11 |
| 46 | Design of TTA | 48 days | Fri 29/4/11 | Wed 15/6/11 |
| 47 | Submission of TTA to TMLG for Approval | 60 days | Thu 16/6/11 | Sun 14/8/11 |
| 48 | Excavation Permit | 90 days | Mon 16/5/11 | Sat 13/8/11 |
| 49 | Temp. Work Design | 30 days | Fri 15/7/11 | Sat 13/8/11 |
| 50 | Site Investigation for Utilities | 90 days | Mon 16/5/11 | Sat 13/8/11 |
| 51 | Submit Program for Utilities Divertion | 30 days | Sun 14/8/11 | Mon 12/9/11 |
| 52 | Site Clearance and Tree Felling | 48 days | Mon 16/5/11 | Sat 2/7/11 |
| 53 | Implement Stage 1 of TTA | 10 days | Mon 15/8/11 | Wed 24/8/11 |
| 54 | Construction of Retaining Wall RW3 and RW4 | 60 days | Thu 25/8/11 | Sun 23/10/11 |
| 55 | Pipe Work | 30 days | Mon 24/10/11 | Tue 22/11/11 |
| 56 | Temp. Steel Decking | 60 days | Mon 24/10/11 | Thu 22/12/11 |
| 57 | Implement Stage 2 of TTA | 10 days | Fri 23/12/11 | Sun 1/1/12 |
| 58 | Construction of Box Culvert along Castle Peak Road (West Bound ) including demolition of ex. BC | 120 days | Mon 2/1/12 | Mon 30/4/12 |
| 59 | Road Surfacing | 30 days | Tue 1/5/12 | Wed 30/5/12 |
| 60 | Implement Stage 3 of TTA | 14 days | Thu 31/5/12 | Wed 13/6/12 |
| 61 | Demolish Exisiting Box Culvert (East Bound) | 60 days | Thu 14/6/12 | Sun 12/8/12 |
| 62 | Construction of Box Culvert along Castle Peak Road (East Bound ) | 120 days | Thu 1/11/12 | Thu 28/2/13 |
| 63 | Road Surfacing | 30 days | Fri 1/3/13 | Sat 30/3/13 |
| 64 | Reinstate and Remove TTA | 30 days | Sun 31/3/13 | Mon 29/4/13 |
| 65 | Utilities Divertion (300dia. Gas Main, 200dia. Water Main, Lighting Cable, CLP cable and 2x Cable TV | 184 days | Tue 1/5/12 | Wed 31/10/12 |
| 66 | Utilities Divertion (100dia.Water Main, 4x100dia. NWT Duct, 4x100dia. HCC Duct, 100dia. PCCW Cal | 150 days | Fri 1/3/13 | Sun 28/7/13 |
| 67 | Construction of Retaining Wall RW1 and RW2 | 90 days | Thu 1/11/12 | Tue 29/1/13 |
| 68 | Construction of Access Ramp | 30 days | Wed 30/1/13 | Thu 28/2/13 |
| 69 | Installation of Type 2 Railing and Reconstruction of Flood Wall | 90 days | Fri 1/3/13 | Wed 29/5/13 |
| 70 | Backfill and Reinstatement | 151 days | Thu 30/5/13 | Sun 27/10/13 |
| 71 | Landscape Softwork | 90 days | Tue 30/7/13 | Sun 27/10/13 |
| 72 | **Completion of Section II** | 0 days | Sun 27/10/13 | Sun 27/10/13 |
| 73 | | | | |
| 74 | **Section III (Construction Works in Wai Ha Village)** | **730 days** | **Fri 29/4/11** | **Sat 27/4/13** |
| 75 | Commence of Works | 0 days | Fri 29/4/11 | Fri 29/4/11 |
| 76 | DSD's Excision | 180 days | Fri 29/4/11 | Tue 25/10/11 |
| 77 | Site Clearance | 30 days | Wed 15/2/12 | Thu 15/3/12 |
| 78 | Design of Precast Box | 60 days | Sat 15/10/11 | Tue 13/12/11 |
| 79 | Submission for Approval | 90 days | Wed 14/12/11 | Mon 12/3/12 |
| 80 | Supply Precast Box | 120 days | Tue 13/3/12 | Tue 10/7/12 |
| 81 | Construction of Precast Box (approx. 200m) | 210 days | Sat 12/5/12 | Fri 7/12/12 |
| 82 | Construction of 225dia. VC Pipe (approx. 200m) | 200 days | Mon 11/6/12 | Thu 27/12/12 |
| 83 | Construction of 1500dia. Concrete Pipe (approx. 100m) | 100 days | Mon 29/10/12 | Tue 5/2/13 |
| 84 | CCTV inspection of Concrete Pipe | 21 days | Wed 6/2/13 | Tue 26/2/13 |
| 85 | Reinstatement Concrete Pavement | 60 days | Wed 27/2/13 | Sat 27/4/13 |
| 86 | **Completion of Section III** | 0 days | Sat 27/4/13 | Sat 27/4/13 |
| 87 | | | | |
| 88 | **Section IV (Portion A1 and A2, Shuen Wan)** | **1278 days** | **Fri 29/4/11** | **Mon 27/10/14** |
| 89 | Landscape Establishment Works and preservation & protection of trees | 1278 days | Fri 29/4/11 | Mon 27/10/14 |
| 90 | | | | |
| 91 | **Section V (Portion B, Sheck Wu Wai)** | **1278 days** | **Fri 29/4/11** | **Mon 27/10/14** |
| 92 | Landscape Establishment Works and preservation & protection of trees | 1278 days | Fri 29/4/11 | Mon 27/10/14 |




Data Date: 29 April 2011
Printed on : 18 July 2011

Task | Progress | Summary | Rolled Up Critical Task | Rolled Up Progress | External Tasks | Group By Summary
Critical Task | Milestone | Rolled Up Task | Rolled Up Milestone | Split | Project Summary | Deadline

WAI HA

TREASURE SPIT GARDEN

SAN TAU

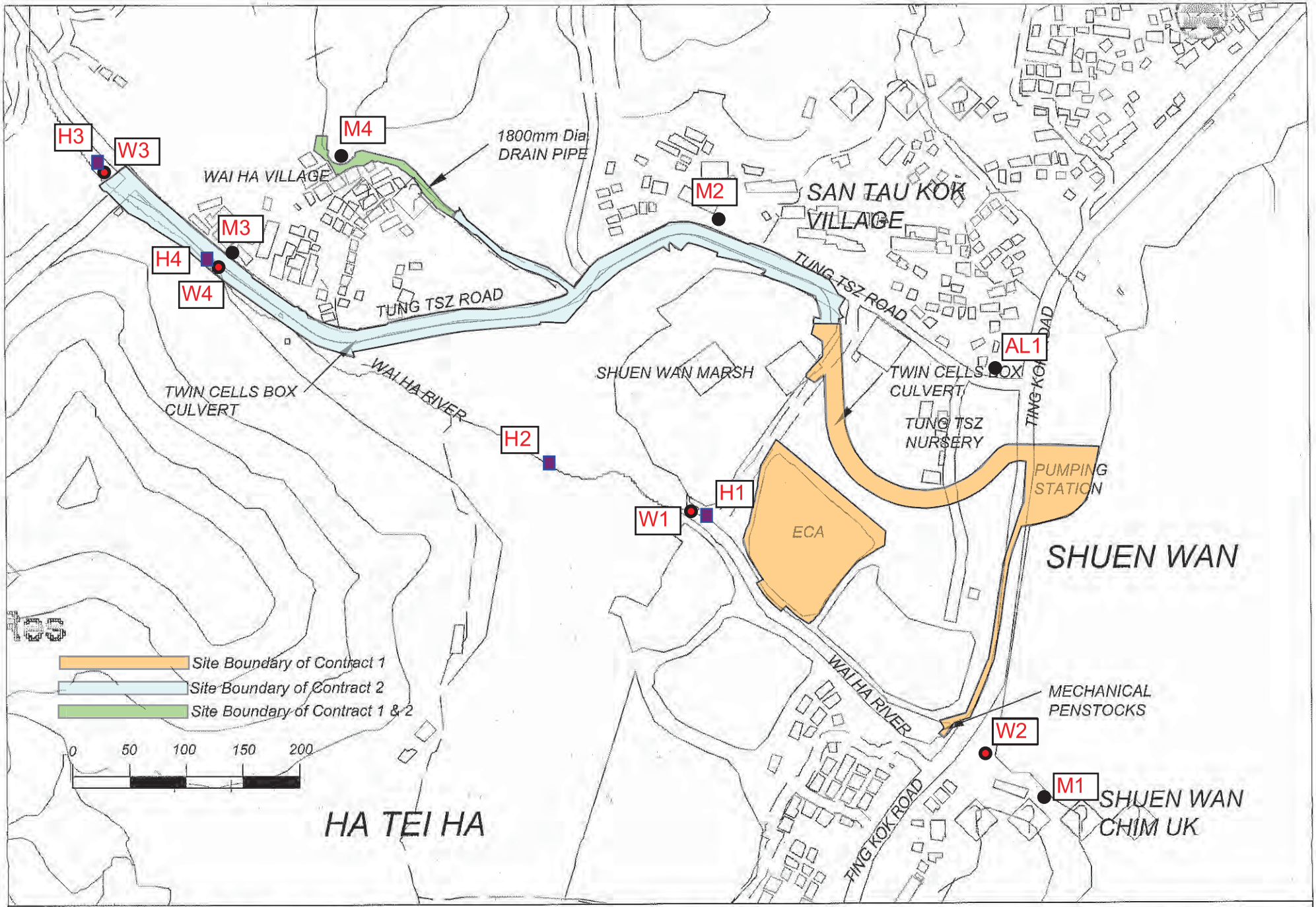
BAY 1 | BAY 2 | BAY 3 | BAY 4 | BAY 5 | BAY 6 | BAY 7 | BAY 8 | BAY 9 | BAY 10 | BAY 11 | BAY 12 | BAY 13 | BAY 14 | BAY 15 | BAY 16 | BAY 17 | BAY 18 | BAY 19 | BAY 20 | BAY 21 | BAY 22 | BAY 23 | BAY 24 | BAY 25 | BAY 26 | BAY 27 | BAY 28 | BAY 29 | BAY 30 | BAY 31 | BAY 32 | BAY 33 | BAY 34 | BAY 35 | BAY 36 | BAY 37 | BAY 38 | BAY 39 | BAY 40 | BAY 41 | BAY 42 | BAY 43 | BAY 44 | BAY 45 | BAY 46 | BAY 47 | BAY 48 | BAY 49 | BAY 50 | BAY 51 | BAY 52 | BAY 53 | BAY 54 | BAY 55

Driving Sheet piles

Scale 1:1500

# Appendix D

# Environmental Monitoring Locations




**All Environmental Monitoring Locations**

# Appendix E

# Calibration certificates of the monitoring equipment and Certificate of ALS Technichem (HK) Pty Ltd

## Equipment Calibration List

| Items | Aspect | Description of Equipment | Date of Calibration | Date of Next Calibration |
|---|---|---|---|---|
| 1 | Noise | Bruel & Kjaer Integrating Sound Level Meter (Serial No. 2285722) | 18 May 11 | 18 May 12 |
| 2 | | Bruel & Kjaer Acoustical Calibrator (Serial No. 2326408) | 04 May 11 | 04 May 12 |
| 3 | Water | YSI DO Meter 55 (Serial No. 97F0837AM) | 18 July 11 | 18 Oct 11 |
| 4 | | Extect EC500 | 18 Jul 11 | 18 Oct 11 |
| 5 | | Turbidimeter HACH 2100Q (Serial No.11030C008499) | 13 Jun 11 | 13 Sep 11 |
| 6 | Hydrological Characteristics | GLOBAL WATER model FP211 (Serial No.1124158766) | 14 Jun 11 | 14 Jun 12 |

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

# Appendix F

# Event and Action Plan

## Event Action Plan for Construction Noise

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

## Event and action Plan for Water Quality

| Event | ET Leader | IEC | ER | Contractor |
|---|---|---|---|---|
| ACTION LEVEL | | | | |
| Action level being exceeded by one sampling day | 1. Repeat in-situ measurements to confirm findings;<br>2. Identify reasons for non-compliance and source(s) of impact;<br>3. Inform IEC, Contractor and Engineer;<br>4. Check monitoring data, all plant, equipment and Contractor's working methods;<br>5. Discuss mitigation measures with IEC, Engineer and Contractor;<br>6. Ensure mitigation measures are implemented.<br>7. Repeat measurement on next day of exceedance. | 1. Discuss mitigation measures with ET, Engineer and Contractor;<br>2. Review proposals on mitigation measures submitted by Contractor and advise the Engineer accordingly;<br>3. Assess effectiveness of implemented mitigation measures. | 1. Discuss proposed mitigation measures with IEC, ET and Contractor;<br>2. Make agreement on mitigation measures to be implemented;<br>3. Assess effectiveness of implemented mitigation measures. | 1. Inform Engineer and confirm in writing notification of the non-compliance;<br>2. Rectify unacceptable practice;<br>3. Check all plant and equipment;<br>4. Consider changes in working methods;<br>5. Discuss with ET, IEC and Engineer and propose mitigation measures to IEC and Engineer within three working days;<br>6. Implement agreed mitigation measures. |
| Action level being exceeded by more than two consecutive sampling days | 1. Repeat in-situ measurements to confirm findings;<br>2. Identify reasons for non-compliance and source(s) of impact;<br>3. Inform IEC, Contractor and Engineer;<br>4. Check monitoring data, all plant, equipment and Contractor's working methods;<br>5. Discuss mitigation measures with IEC, Engineer and Contractor;<br>6. Ensure mitigation measures are implemented.<br>7. Prepare to increase the monitoring frequency to daily;<br>8. Repeat measurement on next day of exeedance. | 1. Discuss mitigation measures with ET, Engineer and Contractor;<br>2. Review proposals on mitigation measures submitted by Contractor and advise the Engineer accordingly;<br>3. Assess effectiveness of implemented mitigation measures. | 1. Discuss proposed mitigation measures with IEC, ET and Contractor;<br>2. Make agreement on mitigation measures to be implemented;<br>3. Assess effectiveness of implemented mitigation measures. | 1. Inform Engineer and confirm in writing notification of the non-compliance;<br>2. Rectify unacceptable practice;<br>3. Check all plant and equipment;<br>4. Consider changes in working methods;<br>5. Discuss with ET, IEC and Engineer and propose mitigation measures to IEC and Engineer within three working days;<br>6. Implement agreed mitigation measures |
| LIMIT LEVEL | | | | |
| Limit level being exceeded by one sampling day | 1. Repeat in-situ measurements to confirm findings;<br>2. Identify reasons for non-compliance and source(s) of impact;<br>3. Inform EPD, IEC, Contractor and Engineer;<br>4. Check monitoring data, all plant, equipment and Contractor's working methods;<br>5. Discuss mitigation measures with IEC, Engineer and Contractor;<br>6. Ensure mitigation measures are implemented;<br>7. Increase the monitoring frequency to daily until no exceedance of Limit Level. | 1. Discuss mitigation measures with ET, Engineer and Contractor;<br>2. Review proposals on mitigation measures submitted by Contractor and advise the Engineer accordingly;<br>3. Assess effectiveness of implemented mitigation measures. | 1. Discuss proposed mitigation measures with IEC, ET and Contractor;<br>2. Request Contractor to critically review the working methods;<br>3. Make agreement on mitigation measures to be implemented;<br>4. Assess effectiveness of implemented mitigation measures. | 1. Inform Engineer and confirm in writing notification of the non-compliance;<br>2. Rectify unacceptable practice;<br>3. Check all plant and equipment;<br>4. Consider changes in working methods;<br>5. Discuss with ET, IEC and Engineer and propose mitigation measures to IEC and Engineer within three working days;<br>6. Implement agreed mitigation measures. |
| Limit level being exceeded by more than two consecutive sampling days | 1. Repeat in-situ measurements to confirm findings;<br>2. Identify reasons for non-compliance and source(s) of impact;<br>3. Inform EPD, IEC, Contractor and Engineer;<br>4. Check monitoring data, all plant, equipment and Contractor's working methods;<br>5. Discuss mitigation measures with IEC, Engineer and Contractor;<br>6. Ensure mitigation measures are implemented.<br>7. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days. | 1. Discuss mitigation measures with ET, Engineer and Contractor;<br>2. Review proposals on mitigation measures submitted by Contractor and advise the Engineer accordingly;<br>3. Assess effectiveness of implemented mitigation measures. | 1. Discuss proposed mitigation measures with IEC, ET and Contractor;<br>2. Request Contractor to critically review the working methods;<br>3. Make agreement on mitigation measures to be implemented;<br>4. Assess effectiveness of implemented mitigation measures;<br>5. Consider and if necessary instruct Contractor to slow down or to stop all or part of the construction activities until no exceedance of Limit Level. | 1. Inform Engineer and confirm in writing notification of the non-compliance;<br>2. Rectify unacceptable practice;<br>3. Check all plant and equipment;<br>4. Consider changes in working methods;<br>5. Discuss with ET, IEC and Engineer and propose mitigation measures to IEC and Engineer within three working days;<br>6. Implement agreed mitigation measures;<br>7. As directed by the Engineer, slow down or stop all or part of the construction activities until no exceedance of Limit level. |

## Event and action Plan for Hydrological Characteristics

| Event | ET Leader | IEC | ER | Contractor |
|---|---|---|---|---|
| ACTION LEVEL | | | | |
| Action level being exceeded by one sampling day | 1. Repeat in-situ measurements to confirm findings;<br>2. Identify reasons for non-compliance and source(s) of impact;<br>3. Inform IEC, Contractor and Engineer;<br>4. Check monitoring data, Contractor's working methods and any excavation works or dewatering processes;<br>5. Discuss mitigation measures with IEC, Engineer and Contractor;<br>6. Ensure mitigation measures are implemented.<br>7. Repeat measurement on next day of exceedance. | 1. Discuss mitigation measures with ET, Engineer and Contractor;<br>2. Review proposals on mitigation measures submitted by Contractor and advise the Engineer accordingly;<br>3. Assess effectiveness of implemented mitigation measures. | 1. Discuss proposed mitigation measures with IEC, ET and Contractor;<br>2. Make agreement on mitigation measures to be implemented;<br>3. Assess effectiveness of implemented mitigation measures. | 1. Inform Engineer and confirm in writing notification of the non-compliance;<br>2. Rectify unacceptable practice;<br>3. Check working methods and any excavation works or dewatering processes;<br>4. Consider changes in working methods and plans;<br>5. Discuss with ET, IEC and Engineer and propose mitigation measures to IEC and Engineer within three working days;<br>6. Implement agreed mitigation measures. |
| Action level being exceeded by more than two consecutive sampling days | 1. Repeat in-situ measurements to confirm findings;<br>2. Identify reasons for non-compliance and source(s) of impact;<br>3. Inform IEC, Contractor and Engineer;<br>4. Check monitoring data, Contractor's working methods and any excavation works or dewatering processes;<br>5. Discuss mitigation measures with IEC, Engineer and Contractor;<br>6. Ensure mitigation measures are implemented.<br>7. Prepare to increase the monitoring frequency to daily;<br>8. Repeat measurement on next day of exeedance. | 1. Discuss mitigation measures with ET, Engineer and Contractor;<br>2. Review proposals on mitigation measures submitted by Contractor and advise the Engineer accordingly;<br>3. Assess effectiveness of implemented mitigation measures. | 1. Discuss proposed mitigation measures with IEC, ET and Contractor;<br>2. Make agreement on mitigation measures to be implemented;<br>3. Assess effectiveness of implemented mitigation measures. | 1. Inform Engineer and confirm in writing notification of the non-compliance;<br>2. Rectify unacceptable practice;<br>3. Check working methods and any excavation works or dewatering processes;<br>4. Consider changes in working methods and plans;<br>5. Discuss with ET, IEC and Engineer and propose mitigation measures to IEC and Engineer within three working days;<br>6. Implement agreed mitigation measures |
| LIMIT LEVEL | | | | |
| Limit level being exceeded by one sampling day | 1. Repeat in-situ measurements to confirm findings;<br>2. Identify reasons for non-compliance and source(s) of impact;<br>3. Inform AFCD, IEC, Contractor and Engineer;<br>4. Check monitoring data, and Contractor's working methods and any excavation works or dewatering processes;<br>5. Discuss mitigation measures with IEC, Engineer and Contractor;<br>6. Ensure mitigation measures are implemented;<br>7. Increase the monitoring frequency to daily until no exceedance of Limit level. | 1. Discuss mitigation measures with ET, Engineer and Contractor;<br>2. Review proposals on mitigation measures submitted by Contractor and advise the Engineer accordingly;<br>3. Assess effectiveness of implemented mitigation measures. | 1. Discuss proposed mitigation measures with IEC, ET and Contractor;<br>2. Request Contractor to critically review the working methods;<br>3. Make agreement on mitigation measures to be implemented;<br>4. Assess effectiveness of implemented mitigation measures. | 1. Inform Engineer and confirm in writing notification of the non-compliance;<br>2. Rectify unacceptable practice;<br>3. Check working methods and any excavation works or dewatering processes;<br>4. Consider changes in working methods and plans;<br>5. Discuss with ET, IEC and Engineer and propose mitigation measures to IEC and Engineer within three working days;<br>6. Implement agreed mitigation measures. |
| Limit level being exceeded by more than two consecutive sampling days | 1. Repeat in-situ measurements to confirm findings;<br>2. Identify reasons for non-compliance and source(s) of impact;<br>3. Inform AFCD, IEC, Contractor and Engineer;<br>4. Check monitoring data and Contractor's working methods and any excavation works or dewatering processes;<br>5. Discuss mitigation measures with IEC, Engineer and Contractor;<br>6. Ensure mitigation measures are implemented.<br>7. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days. | 1. Discuss mitigation measures with ET, Engineer and Contractor;<br>2. Review proposals on mitigation measures submitted by Contractor and advise the Engineer accordingly;<br>3. Assess effectiveness of implemented mitigation measures. | 1. Discuss proposed mitigation measures with IEC, ET and Contractor;<br>2. Request Contractor to critically review the working methods;<br>3. Make agreement on mitigation measures to be implemented;<br>4. Assess effectiveness of implemented mitigation measures;<br>5. Consider and if necessary instruct Contractor to slow down or to stop all or part of the construction activities until no exceedance of Limit Level. | 1. Inform Engineer and confirm in writing notification of the non-compliance;<br>2. Rectify unacceptable practice;<br>3. Check working methods and any excavation works or dewatering processes;<br>4. Consider changes in working methods and plans;<br>5. Discuss with ET, IEC and Engineer and propose mitigation measures to IEC and Engineer within three working days;<br>6. Implement agreed mitigation measures;<br>7. As directed by the Engineer, slow down or stop all or part of the construction activities until no exceedance of Limit level. |

# Appendix G

# Monitoring Schedule in Reporting Period (August 2011) and the Coming Month (September 2011)

## Monitoring Schedule in this Reporting Period – August 2011

| Date | | Stream Monitoring | | Noise Monitoring |
|---|---|---|---|---|
| | | Water Sampling | Flow Monitoring | |
| Mon | 1-Aug-11 | W3, W4 | | M2, M3, M4 |
| Tue | 2-Aug-11 | W1, W2 | | |
| Wed | 3-Aug-11 | W3, W4 | H3, H4 | |
| Thu | 4-Aug-11 | W1, W2 | | M1, AL1 |
| Fri | 5-Aug-11 | | | |
| Sat | 6-Aug-11 | W1, W2, W3, W4 | H1, H2 | |
| Sun | 7-Aug-11 | | | |
| Mon | 8-Aug-11 | W3, W4 | | |
| Tue | 9-Aug-11 | W1, W2 | | |
| Wed | 10-Aug-11 | | | |
| Thu | 11-Aug-11 | W1, W2, W3, W4 | H3, H4 | M1, AL1, M2, M3, M4 |
| Fri | 12-Aug-11 | | | |
| Sat | 13-Aug-11 | W1, W2, W3, W4 | H1, H2 | |
| Sun | 14-Aug-11 | | | |
| Mon | 15-Aug-11 | W3, W4 | | |
| Tue | 16-Aug-11 | W1, W2 | | |
| Wed | 17-Aug-11 | W3, W4 | H3, H4 | |
| Thu | 18-Aug-11 | W1, W2 | | M1, AL1, M2, M3, M4 |
| Fri | 19-Aug-11 | W3, W4 | | |
| Sat | 20-Aug-11 | W1, W2 | H1, H2 | |
| Sun | 21-Aug-11 | | | |
| Mon | 22-Aug-11 | | | |
| Tue | 23-Aug-11 | W1, W2, W3, W4 | | M2, M3, M4 |
| Wed | 24-Aug-11 | | | |
| Thu | 25-Aug-11 | W1, W2, W3, W4 | H3, H4 | M1, AL1 |
| Fri | 26-Aug-11 | | | |
| Sat | 27-Aug-11 | W1, W2, W3, W4 | H1, H2 | |
| Sun | 28-Aug-11 | | | |
| Mon | 29-Aug-11 | | | |
| Tue | 30-Aug-11 | W1, W2, W3, W4 | | |
| Wed | 31-Aug-11 | | | |

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

## Monitoring Schedule in the coming month – September 2011

| Date | | Stream Monitoring | | Noise Monitoring |
|---|---|---|---|---|
| | | Water Sampling | Flow Monitoring | |
| Thu | 1-Sep-11 | **W1, W2, W3, W4** | | |
| Fri | 2-Sep-11 | | | |
| Sat | 3-Sep-11 | **W1, W2, W3, W4** | **H1, H2, H3, H4** | M1, AL1. M2, M3, M4 |
| Sun | 4-Sep-11 | | | |
| Mon | 5-Sep-11 | | | |
| Tue | 6-Sep-11 | **W1, W2, W3, W4** | | |
| Wed | 7-Sep-11 | | | |
| Thu | 8-Sep-11 | **W1, W2, W3, W4** | | |
| Fri | 9-Sep-11 | | | |
| Sat | 10-Sep-11 | **W1, W2, W3, W4** | **H1, H2, H3, H4** | M1, AL1. M2, M3, M4 |
| Sun | 11-Sep-11 | | | |
| Mon | 12-Sep-11 | **W1, W2, W3, W4** | | |
| Tue | 13-Sep-11 | | | |
| Wed | 14-Sep-11 | | | |
| Thu | 15-Sep-11 | **W1, W2, W3, W4** | | M1, AL1. M2, M3, M4 |
| Fri | 16-Sep-11 | | | |
| Sat | 17-Sep-11 | **W1, W2, W3, W4** | **H1, H2, H3, H4** | |
| Sun | 18-Sep-11 | | | |
| Mon | 19-Sep-11 | | | |
| Tue | 20-Sep-11 | **W1, W2, W3, W4** | | |
| Wed | 21-Sep-11 | | | |
| Thu | 22-Sep-11 | **W1, W2, W3, W4** | | M1, AL1. M2, M3, M4 |
| Fri | 23-Sep-11 | | | |
| Sat | 24-Sep-11 | **W1, W2, W3, W4** | **H1, H2, H3, H4** | |
| Sun | 25-Sep-11 | | | |
| Mon | 26-Sep-11 | **W1, W2, W3, W4** | | M1, AL1. M2, M3, M4 |
| Tue | 27-Sep-11 | | | |
| Wed | 28-Sep-11 | **W1, W2, W3, W4** | | |
| Thu | 29-Sep-11 | | | |
| Fri | 30-Sep-11 | **W1, W2, W3, W4** | **H1, H2, H3, H4** | |

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

# Appendix H

# Meteorological Data of Reporting Period

## Meteorological Data in Reporting Period

| Date | | Weather | Total Rainfall (mm) | Tai Po Station | | Shatin Station | |
|---|---|---|---|---|---|---|---|
| | | | | Mean Air Temp. (°C) | Mean Relative Humidity (%) | Wind Speed (km/h) | Wind Direction |
| 1-Aug-11 | Mon | Fine and very hot | 0 | 29.1 | 6.7 | 77.5 | S/SW |
| 2-Aug-11 | Tue | Fine and very hot. Light winds. | 0 | 29.2 | 9.7 | 75 | SW |
| 3-Aug-11 | Wed | Fine and very hot. | 0 | 30 | 9.5 | 64.5 | S/SW |
| 4-Aug-11 | Thu | There will be a few showers | 0 | 29.7 | 8.2 | 73 | SW |
| 5-Aug-11 | Fri | Very hot with sunny periods | 0 | 29.3 | 6.9 | 76.2 | S/SW |
| 6-Aug-11 | Sat | Light to moderate southwesterly winds. | 0 | 30 | 7.3 | 71.2 | SW |
| 7-Aug-11 | Sun | Fine and very hot. Light winds. | 0 | 31.2 | 10 | 67 | SW |
| 8-Aug-11 | Mon | Fine and very hot. | 22.1 | 30.1 | 9.5 | 78 | SW |
| 9-Aug-11 | Tue | Light to moderate southerly winds. | 9.9 | 26.9 | 7.5 | 86.7 | S/SW |
| 10-Aug-11 | Wed | Cloudy with showers and a few squally thunderstorms. | 60.5 | 25.6 | 10.6 | 91.2 | S/SW |
| 11-Aug-11 | Thu | Fine and very hot. | 17.9 | 28.5 | 10.5 | 80 | S/SW |
| 12-Aug-11 | Fri | Light to moderate easterly winds. | 0 | 29.7 | 8.2 | 74.7 | S/SW |
| 13-Aug-11 | Sat | Very hot with sunny periods | 0 | 29.7 | 9.5 | 71.7 | SW |
| 14-Aug-11 | Sun | Fine and very hot. Light winds. | Trace | 30.3 | 9.6 | 67 | S/SW |
| 15-Aug-11 | Mon | Mainly fine. | 0 | 29.2 | 10.1 | 75 | SW |
| 16-Aug-11 | Tue | Moderate southeasterly winds. | 8.5 | 28.6 | 7.5 | 79 | S/SW |
| 17-Aug-11 | Wed | Mainly fine. | 10.1 | Maintenance | 8 | Maintenance | E/SE |
| 18-Aug-11 | Thu | Very hot in the afternoon. | 0 | 28.4 | 9.2 | 71.7 | E/SE |
| 19-Aug-11 | Fri | Light to moderate easterly winds. | 0 | 29 | 7.2 | 75.2 | E/SE |
| 20-Aug-11 | Sat | Fine and very hot. | 3.7 | 29.1 | 8.2 | 77 | E/NE |
| 21-Aug-11 | Sun | Very hot with sunny periods | Trace | 29.4 | 7 | 74 | S/SE |
| 22-Aug-11 | Mon | Light to moderate northerly winds. | 1.4 | 28.6 | 8.5 | 78.7 | S/SW |
| 23-Aug-11 | Tue | Mainly fine. | 0 | 28.8 | 8.5 | 82.5 | SW |
| 24-Aug-11 | Wed | Fine and very hot. Light winds. | 3.9 | 29.4 | 9.7 | 76.7 | S/SW |
| 25-Aug-11 | Thu | Light to moderate northerly winds. | 13.7 | 28.8 | 23.7 | 82.5 | NW |
| 26-Aug-11 | Fri | Mainly cloudy with a few showers and thunderstorms. | Trace | 28.9 | 8.2 | 77 | N/NE |
| 27-Aug-11 | Sat | A few showers | 5.2 | 29.7 | 6.5 | 70 | E/NE |
| 28-Aug-11 | Sun | Moderate west to northwesterly winds. | 0 | 30.1 | 5.1 | 63.5 | N/NW |
| 29-Aug-11 | Mon | Moderate southeasterly winds. | 0.2 | 31.7 | 7.7 | 59.2 | N/NW |
| 30-Aug-11 | Tue | Fine and very hot. Light winds. | 0 | 32.1 | 7.6 | 60.5 | W/NW |
| 31-Aug-11 | Wed | Fine and very hot. | 0 | 31.6 | 6 | 58.5 | N/NW |

** The record was extracted from The Hong Kong Observatory Weather Stations*

# Appendix I

# Data Base of Monitoring Results

**DSD Contract No. DC/2010/02**

**Contract No. - Drainage Improvement in Shuen Wan and Shek Wu Wai**

AUES

**Water Quality Monitoring Results Data**

| Date | 1-Aug-11 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Location** | **Time** | **Depth (m)** | **Temp (oC)** | | **DO (mg/L)** | | **DO (%)** | | **Turbidity (NTU)** | | **pH** | | **SS(mg/L)** | |
| W1 (impact) | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| W2 (impact | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| W3 (control) | 14:08 | 0.10 | 28.2 | 28.3 | 6.81 | 6.9 | 86.2 | 87.3 | 3.84 | 3.7 | 7.6 | 7.7 | <2 | 2.0 |
| | | | 28.4 | | 7.04 | | 88.3 | | 3.62 | | 7.7 | | <2 | |
| W4 (impact) | 14:13 | 0.10 | 27.9 | 28.0 | 8.41 | 8.4 | 105.3 | 105.0 | 3.23 | 3.2 | 7.7 | 7.7 | <2 | 2.0 |
| | | | 28.1 | | 8.36 | | 104.7 | | 3.18 | | 7.7 | | <2 | |

| Date | 2-Aug-11 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Location** | **Time** | **Depth (m)** | **Temp (oC)** | | **DO (mg/L)** | | **DO (%)** | | **Turbidity (NTU)** | | **pH** | | **SS(mg/L)** | |
| W1 (impact) | 14:16 | 1.00 | 31.1 | 31.1 | 8.4 | 8.4 | 98.0 | 98.0 | 0 | 0.0 | 7.34 | 7.3 | 7.6 | 7.6 |
| | | | 31.1 | | 8.4 | | 98.0 | | 0 | | 7.34 | | 7.6 | |
| W2 (impact | 14:00 | 1.00 | 31.3 | 31.3 | 7.5 | 7.5 | 105.0 | 105.0 | 0 | 0.0 | 7.4 | 7.4 | 5 | 5.0 |
| | | | 31.3 | | 7.5 | | 105.0 | | 0 | | 7.4 | | 5 | |
| W3 (control) | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| W4 (impact) | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

| Date | 3-Aug-11 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Location** | **Time** | **Depth (m)** | **Temp (oC)** | | **DO (mg/L)** | | **DO (%)** | | **Turbidity (NTU)** | | **pH** | | **SS(mg/L)** | |
| W1 (impact) | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| W2 (impact | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| W3 (control) | 14:41 | 0.10 | 27.6 | 27.7 | 7.19 | 7.3 | 86.0 | 87.8 | 4.17 | 4.9 | 7.6 | 7.6 | <2 | 2.0 |
| | | | 27.8 | | 7.43 | | 89.6 | | 5.62 | | 7.6 | | <2 | |
| W4 (impact) | 14:59 | 0.10 | 28.3 | 28.4 | 8.14 | 7.9 | 97.3 | 95.3 | 3.17 | 2.7 | 7.7 | 7.8 | <2 | 2.0 |
| | | | 28.4 | | 7.72 | | 93.3 | | 2.24 | | 7.8 | | <2 | |

| Date | 4-Aug-11 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Location** | **Time** | **Depth (m)** | **Temp (oC)** | | **DO (mg/L)** | | **DO (%)** | | **Turbidity (NTU)** | | **pH** | | **SS(mg/L)** | |
| W1 (impact) | 16:00 | <1 | 31.7 | 31.7 | 4.44 | 4.4 | 59.0 | 59.0 | 13.5 | 13.5 | 7.27 | 7.3 | 6 | 6.0 |
| | | | 31.7 | | 4.44 | | 59.0 | | 13.5 | | 7.27 | | 6 | |
| W2 (impact | 16:00 | 1.00 | 32.6 | 32.6 | 4.9 | 4.9 | 71.0 | 71.0 | 0 | 0.0 | 7.44 | 7.4 | 13 | 13.0 |
| | | | 32.6 | | 4.9 | | 71.0 | | 0 | | 7.44 | | 13 | |
| W3 (control) | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| W4 (impact) | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

**DSD Contract No. DC/2010/02**

**Contract No. - Drainage Improvement in Shuen Wan and Shek Wu Wai**

AUES

**Water Quality Monitoring Results Data**

| Date | 6-Aug-11 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Location** | **Time** | **Depth (m)** | **Temp (oC)** | | **DO (mg/L)** | | **DO (%)** | | **Turbidity (NTU)** | | **pH** | | **SS(mg/L)** | |
| W1 (impact) | 16:10 | <1 | 30.5 | 30.5 | 6.49 | 6.5 | 84.0 | 84.0 | 0 | 0.0 | 6.83 | 6.8 | 5.2 | 5.2 |
| | | | 30.5 | | 6.49 | | 84.0 | | 0 | | 6.83 | | 5.2 | |
| W2 (impact | 16:35 | <1 | 32.5 | 32.5 | 4.82 | 4.8 | 65.0 | 65.0 | 2.5 | 2.5 | 7.27 | 7.3 | 6.4 | 6.4 |
| | | | 32.5 | | 4.82 | | 65.0 | | 2.5 | | 7.27 | | 6.4 | |
| W3 (control) | 15:16 | 0.10 | 28.7 | 28.9 | 6.77 | 6.9 | 84.3 | 85.9 | 2.88 | 3.0 | 7.6 | 7.7 | <2 | 2.0 |
| | | | 29 | | 7.00 | | 87.4 | | 3.04 | | 7.7 | | <2 | |
| W4 (impact) | 15:07 | 0.10 | 29.2 | 29.1 | 7.18 | 7.3 | 89.6 | 90.7 | 3.25 | 3.1 | 7.7 | 7.7 | <2 | 2.0 |
| | | | | | | | | | | | | | | |
| | | | 29 | | 7.40 | | 91.7 | | 2.93 | | 7.7 | | <2 | |

| Date | 8-Aug-11 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Location** | **Time** | **Depth (m)** | **Temp (oC)** | | **DO (mg/L)** | | **DO (%)** | | **Turbidity (NTU)** | | **pH** | | **SS(mg/L)** | |
| W1 (impact) | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| W2 (impact | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| W3 (control) | 15:15 | 0.10 | 27.4 | 27.5 | 7.13 | 7.3 | 81.8 | 83.2 | 6.63 | 7.0 | 7.7 | 7.8 | 16 | 16.0 |
| | | | 27.6 | | 7.38 | | 84.5 | | 7.28 | | 7.9 | | 16 | |
| W4 (impact) | 15:07 | 0.20 | 27.5 | 27.5 | 7.29 | 7.4 | 84.2 | 84.5 | 3.17 | 3.3 | 7.9 | 7.9 | 4 | 4.0 |
| | | | 27.4 | | 7.43 | | 84.7 | | 3.36 | | 7.8 | | 4 | |

| Date | 9-Aug-11 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Location** | **Time** | **Depth (m)** | **Temp (oC)** | | **DO (mg/L)** | | **DO (%)** | | **Turbidity (NTU)** | | **pH** | | **SS(mg/L)** | |
| W1 (impact) | 11:20 | <1 | 28.7 | 28.7 | 6.33 | 6.3 | 80.0 | 80.0 | 0 | 0.0 | 6.98 | 7.0 | 4.6 | 4.6 |
| | | | 28.7 | | 6.33 | | 80.0 | | 0 | | 6.98 | | 4.6 | |
| W2 (impact | 10:55 | 1.00 | 30.6 | 30.6 | 3.93 | 3.9 | 51.0 | 51.0 | 0 | 0.0 | 7.23 | 7.2 | 6.8 | 6.8 |
| | | | 30.6 | | 3.93 | | 51.0 | | 0 | | 7.23 | | 6.8 | |
| W3 (control) | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| W4 (impact) | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

| Date | 11-Aug-11 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Location** | **Time** | **Depth (m)** | **Temp (oC)** | | **DO (mg/L)** | | **DO (%)** | | **Turbidity (NTU)** | | **pH** | | **SS(mg/L)** | |
| W1 (impact) | 12:10 | <1 | 29.3 | 29.3 | 5 | 5.0 | 64.0 | 64.0 | 0 | 0.0 | 6.81 | 6.8 | 7.2 | 7.2 |
| | | | 29.3 | | 5 | | 64.0 | | 0 | | 6.81 | | 7.2 | |
| W2 (impact | 11:25 | <1 | 29.6 | 29.5 | 5.03 | 5.0 | 58.0 | 58.0 | 1.6 | 1.6 | 6.99 | 7.0 | 14 | 14.0 |
| | | | 29.3 | | 5.03 | | 58.0 | | 1.6 | | 6.99 | | 14 | |
| W3 (control) | 16:20 | 0.10 | 27.1 | 27.0 | 6.05 | 6.0 | 76.1 | 75.8 | 4.28 | 4.2 | 7.7 | 7.7 | <2 | 2.0 |
| | | | 26.9 | | 5.97 | | 75.4 | | 4.03 | | 7.6 | | <2 | |
| W4 (impact) | 16:13 | 0.20 | 27 | 27.1 | 6.14 | 6.2 | 76.6 | 77.9 | 2.83 | 2.3 | 7.6 | 7.6 | <2 | 2.0 |
| | | | 27.1 | | 6.28 | | 79.1 | | 1.77 | | 7.6 | | <2 | |

**DSD Contract No. DC/2010/02**

**Contract No. - Drainage Improvement in Shuen Wan and Shek Wu Wai**

AUES

**Water Quality Monitoring Results Data**

| Date | 13-Aug-11 | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Location** | **Time** | **Depth (m)** | **Temp (oC)** | | **DO (mg/L)** | | **DO (%)** | | **Turbidity (NTU)** | | **pH** | | **SS(mg/L)** | |
| W1 (impact) | 12:39 | <1 | 30.8 | 30.8 | 4.77 | 4.8 | 70.0 | 70.0 | 3.1 | 3.1 | 7.06 | 7.1 | 12 | 12.0 |
| | | | 30.8 | | 4.77 | | 70.0 | | 3.1 | | 7.06 | | 12 | |
| W2 (impact | 12:17 | <1 | 31.4 | 32.8 | 5.04 | 5.0 | 74.0 | 74.0 | 0 | 0.0 | 7.2 | 7.2 | 8.6 | 8.6 |
| | | | 34.1 | | 5.04 | | 74.0 | | 0 | | 7.2 | | 8.6 | |
| W3 (control) | 17:02 | 0.10 | 28.1 | 28.0 | 6.83 | 6.8 | 84.5 | 83.4 | 4.27 | 4.9 | 7.4 | 7.4 | <2 | 2.0 |
| | | | 27.9 | | 6.69 | | 82.2 | | 5.62 | | 7.4 | | <2 | |
| W4 (impact) | 17:14 | 0.20 | 27.8 | 27.9 | 7.11 | 7.0 | 88.6 | 87.5 | 3.11 | 3.3 | 7.4 | 7.5 | <2 | 2.0 |
| | | | 27.9 | | 6.94 | | 86.4 | | 3.5 | | 7.5 | | <2 | |

| Date | 15-Aug-11 | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Location** | **Time** | **Depth (m)** | **Temp (oC)** | | **DO (mg/L)** | | **DO (%)** | | **Turbidity (NTU)** | | **pH** | | **SS(mg/L)** | |
| W1 (impact) | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| W2 (impact | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| W3 (control) | 16:30 | 0.07 | 28.4 | 28.5 | 6.94 | 7.0 | 83.4 | 84.7 | 4.13 | 4.2 | 7.5 | 7.6 | <2 | 2.0 |
| | | | 28.5 | | 7.12 | | 85.9 | | 4.26 | | 7.6 | | <2 | |
| W4 (impact) | 16:47 | 0.24 | 28.2 | 28.1 | 7.53 | 7.5 | 90.2 | 89.9 | 3.48 | 3.3 | 7.5 | 7.6 | <2 | 2.0 |
| | | | 27.9 | | 7.42 | | 89.5 | | 3.1 | | 7.7 | | <2 | |

| Date | 16-Aug-11 | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Location** | **Time** | **Depth (m)** | **Temp (oC)** | | **DO (mg/L)** | | **DO (%)** | | **Turbidity (NTU)** | | **pH** | | **SS(mg/L)** | |
| W1 (impact) | 14:21 | <1 | 30.1 | 30.1 | 6.03 | 6.0 | 79.0 | 79.0 | 0 | 0.0 | 7.14 | 7.1 | 6 | 6.0 |
| | | | 30.1 | | 6.03 | | 79.0 | | 0 | | 7.14 | | 6 | |
| W2 (impact | 13:55 | 1.00 | 31.8 | 31.8 | 4.71 | 4.7 | 65.0 | 65.0 | 2.9 | 2.9 | 7.21 | 7.2 | 7 | 7.0 |
| | | | 31.8 | | 4.71 | | 65.0 | | 2.9 | | 7.21 | | 7 | |
| W3 (control) | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| W4 (impact) | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

| Date | 17-Aug-11 | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Location** | **Time** | **Depth (m)** | **Temp (oC)** | | **DO (mg/L)** | | **DO (%)** | | **Turbidity (NTU)** | | **pH** | | **SS(mg/L)** | |
| W1 (impact) | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| W2 (impact | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| W3 (control) | 15:26 | 0.08 | 27.5 | 27.5 | 6.32 | 6.4 | 82.8 | 84.1 | 3.61 | 3.6 | 7.6 | 7.6 | <2 | 2.0 |
| | | | 27.4 | | 6.48 | | 85.3 | | 3.55 | | 7.5 | | <2 | |
| W4 (impact) | 15:47 | 0.25 | 27.6 | 27.5 | 6.88 | 7.0 | 87.4 | 88.8 | 2.13 | 2.0 | 7.6 | 7.6 | <2 | 2.0 |
| | | | 27.4 | | 7.15 | | 90.2 | | 1.92 | | 7.6 | | <2 | |

**DSD Contract No. DC/2010/02**

**Contract No. - Drainage Improvement in Shuen Wan and Shek Wu Wai**

AUES

**Water Quality Monitoring Results Data**

| Date | 18-Aug-11 | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Location** | **Time** | **Depth (m)** | **Temp (oC)** | | **DO (mg/L)** | | **DO (%)** | | **Turbidity (NTU)** | | **pH** | | **SS(mg/L)** | |
| W1 (impact) | 15:04 | <1 | 31.7 | 31.7 | 8.04 | 8.0 | 108.0 | 108.0 | 0 | 0.0 | 7.29 | 7.3 | 5 | 5.0 |
| | | | 31.7 | | 8.04 | | 108.0 | | 0 | | 7.29 | | 5 | |
| W2 (impact | 14:40 | 1.00 | 31.9 | 31.9 | 4.49 | 4.5 | 58.0 | 58.0 | 2.5 | 2.5 | 7.15 | 7.2 | 5 | 5.0 |
| | | | 31.9 | | 4.49 | | 58.0 | | 2.5 | | 7.15 | | 5 | |
| W3 (control) | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| W4 (impact) | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

| Date | 19-Aug-11 | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Location** | **Time** | **Depth (m)** | **Temp (oC)** | | **DO (mg/L)** | | **DO (%)** | | **Turbidity (NTU)** | | **pH** | | **SS(mg/L)** | |
| W1 (impact) | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| W2 (impact | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| W3 (control) | 16:13 | 0.09 | 28.1 | 153.6 | 6.60 | 6.7 | 83.2 | 84.5 | 3.62 | 4.4 | 7.7 | 7.8 | <2 | 2.0 |
| | | | 279 | | 6.87 | | 85.8 | | 5.13 | | 7.8 | | <2 | |
| W4 (impact) | 16:21 | 0.22 | 27.9 | 27.9 | 7.25 | 7.3 | 89.9 | 90.2 | 3.41 | 3.2 | 7.7 | 7.7 | <2 | 2.0 |
| | | | 27.8 | | 7.30 | | 90.4 | | 2.97 | | 7.7 | | <2 | |

| Date | 20-Aug-11 | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Location** | **Time** | **Depth (m)** | **Temp (oC)** | | **DO (mg/L)** | | **DO (%)** | | **Turbidity (NTU)** | | **pH** | | **SS(mg/L)** | |
| W1 (impact) | 15:00 | <1 | 31.4 | 31.4 | 8.47 | 8.5 | 112.0 | 112.0 | 0 | 0.0 | 6.93 | 6.9 | 1.6 | 1.6 |
| | | | 31.4 | | 8.47 | | 112.0 | | 0 | | 6.93 | | 1.6 | |
| W2 (impact | 15:15 | <1 | 32.1 | 32.1 | 3.84 | 3.8 | 46.0 | 46.0 | 0 | 0.0 | 6.99 | 7.0 | 1 | 1.0 |
| | | | 32.1 | | 3.84 | | 46.0 | | 0 | | 6.99 | | 1 | |
| W3 (control) | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| W4 (impact) | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

| Date | 23-Aug-11 | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Location** | **Time** | **Depth (m)** | **Temp (oC)** | | **DO (mg/L)** | | **DO (%)** | | **Turbidity (NTU)** | | **pH** | | **SS(mg/L)** | |
| W1 (impact) | 09:30 | <1 | 28.1 | 28.1 | 6.44 | 6.4 | 81.0 | 81.0 | 0 | 0.0 | 6.91 | 6.9 | 1.8 | 1.8 |
| | | | 28.1 | | 6.44 | | 81.0 | | 0 | | 6.91 | | 1.8 | |
| W2 (impact | 09:15 | 1.00 | 29.3 | 29.3 | 3.82 | 3.8 | 45.0 | 45.0 | 3 | 3.0 | 7.03 | 7.0 | 2.2 | 2.2 |
| | | | 29.3 | | 3.82 | | 45.0 | | 3 | | 7.03 | | 2.2 | |
| W3 (control) | 16:15 | 0.08 | 28.8 | 28.7 | 6.35 | 6.2 | 80.5 | 79.0 | 1.35 | 1.2 | 7.5 | 7.6 | <2 | 2.0 |
| | | | 28.6 | | 6.06 | | 77.4 | | 1.01 | | 7.6 | | <2 | |
| W4 (impact) | 16:32 | 0.25 | 27.9 | 28.1 | 7.01 | 6.9 | 87.7 | 86.9 | 1.44 | 1.4 | 6.8 | 7.0 | <2 | 2.0 |
| | | | 28.3 | | 6.82 | | 86.1 | | 1.37 | | 7.2 | | <2 | |

**DSD Contract No. DC/2010/02**

**Contract No. - Drainage Improvement in Shuen Wan and Shek Wu Wai**

AUES

**Water Quality Monitoring Results Data**

| Date | 25-Aug-11 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Location** | **Time** | **Depth (m)** | **Temp (oC)** | | **DO (mg/L)** | | **DO (%)** | | **Turbidity (NTU)** | | **pH** | | **SS(mg/L)** | |
| W1 (impact) | 10:15 | <1 | 29 | 29.0 | 4.45 | 4.5 | 54.0 | 54.0 | 2.9 | 2.9 | 7.11 | 7.1 | 6.2 | 6.2 |
| | | | 29 | | 4.45 | | 54.0 | | 2.9 | | 7.11 | | 6.2 | |
| W2 (impact | 09:40 | <1 | 29.7 | 29.7 | 3.62 | 3.6 | 41.0 | 41.0 | 2.3 | 2.3 | 7.35 | 7.4 | 9.2 | 9.2 |
| | | | 29.7 | | 3.62 | | 41.0 | | 2.3 | | 7.35 | | 9.2 | |
| W3 (control) | 14:47 | 0.07 | 29.2 | 28.9 | 4.98 | 5.07 | 62.7 | 63.6 | 1.89 | 1.9 | 7.1 | 7.0 | <2 | 2.0 |
| | | | 28.5 | | 5.15 | | 64.5 | | 1.89 | | 6.9 | | <2 | |
| W4 (impact) | 15:03 | 0.24 | 27.7 | 27.6 | 5.62 | 5.68 | 71.1 | 71.9 | 2.99 | 3.1 | 7 | 6.9 | <2 | 2.0 |
| | | | 27.4 | | 5.74 | | 72.6 | | 3.17 | | 6.8 | | <2 | |

| Date | 27-Aug-11 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Location** | **Time** | **Depth (m)** | **Temp (oC)** | | **DO (mg/L)** | | **DO (%)** | | **Turbidity (NTU)** | | **pH** | | **SS(mg/L)** | |
| W1 (impact) | 11:51 | 1.00 | 30.4 | 30.4 | 3.46 | 3.5 | 42.0 | 42.0 | 6 | 6.0 | 7.17 | 7.2 | 6 | 6.0 |
| | | | 30.4 | | 3.46 | | 42.0 | | 6 | | 7.17 | | 6 | |
| W2 (impact | 11:20 | 1.00 | 31.2 | 31.2 | 4.83 | 4.8 | 62.0 | 62.0 | 7.5 | 7.5 | 7.56 | 7.6 | 7.6 | 7.6 |
| | | | 31.2 | | 4.83 | | 62.0 | | 7.5 | | 7.56 | | 7.6 | |
| W3 (control) | 14:01 | 0.08 | 30.2 | 30.0 | 4.5 | 4.4 | 60.3 | 58.8 | 2.45 | 2.6 | 7.7 | 7.8 | <2 | 2.0 |
| | | | 29.8 | | 4.38 | | 57.3 | | 2.79 | | 7.8 | | <2 | |
| W4 (impact) | 13:50 | 0.26 | 29.8 | 29.7 | 5.01 | 5.5 | 67.2 | 72.4 | 3.03 | 2.4 | 7.6 | 7.7 | <2 | 2.0 |
| | | | 29.6 | | 6 | | 77.6 | | 1.76 | | 7.7 | | <2 | |

| Date | 30-Aug-11 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Location** | **Time** | **Depth (m)** | **Temp (oC)** | | **DO (mg/L)** | | **DO (%)** | | **Turbidity (NTU)** | | **pH** | | **SS(mg/L)** | |
| W1 (impact) | 12:46 | 1.00 | 30.3 | 30.3 | 4.11 | 4.1 | 49.0 | 49.0 | 5.9 | 5.9 | 7.38 | 7.4 | 5 | 5.0 |
| | | | 30.3 | | 4.11 | | 49.0 | | 5.9 | | 7.38 | | 5 | |
| W2 (impact | 13:21 | 1.00 | 31.3 | 31.3 | 5.12 | 5.1 | 49.0 | 49.0 | 5.3 | 5.3 | 7.65 | 7.7 | 8.2 | 8.2 |
| | | | 31.3 | | 5.12 | | 49.0 | | 5.3 | | 7.65 | | 8.2 | |
| W3 (control) | 16:12 | 0.06 | 28.2 | 28.1 | 6.28 | 6.7 | 85.7 | 90.0 | 1.61 | 1.3 | 7.9 | 7.9 | <2 | 2.0 |
| | | | 27.9 | | 7.13 | | 94.2 | | 1.02 | | 7.8 | | <2 | |
| W4 (impact) | 16:21 | 0.24 | 27.9 | 27.9 | 5.88 | 5.7 | 77.6 | 76.5 | 4.05 | 3.9 | 7.9 | 7.9 | <2 | 2.0 |
| | | | 27.9 | | 5.61 | | 75.4 | | 3.69 | | 7.9 | | <2 | |

## Construction Noise Measurement Data

### Designated Monitoring Station – M1 (14, Shuen Wan Chim Uk)

| Date | Start Time | 1st $Leq_{5min}$ | 2nd $Leq_{5min}$ | 3rd $Leq_{5min}$ | 4th $Leq_{5min}$ | 5th $Leq_{5min}$ | 6th $Leq_{5min}$ | $Leq_{30min*}$ |
|---|---|---|---|---|---|---|---|---|
| 04 Aug 11 | 09:23 | - | - | - | - | - | - | 60.5 |
| 11 Aug 11 | 11:19 | - | - | - | - | - | - | 60.0 |
| 18 Aug 11 | 09:28 | - | - | - | - | - | - | 61.6 |
| 25 Aug 11 | 09:51 | - | - | - | - | - | - | 61.9 |
| **Limit Level** | | - | | | | | | **> 75 dB(A)** |

(*)The monitoring is undertaken under façade situation. No façade correction is added according to acoustical principles and EPD guidelines.

### Designated Monitoring Station – AL1 (Joint Village Office for Villages in Shuen Wan, Tai PO)

| Date | Start Time | 1st $Leq_{5min}$ | 2nd $Leq_{5min}$ | 3rd $Leq_{5min}$ | 4th $Leq_{5min}$ | 5th $Leq_{5min}$ | 6th $Leq_{5min}$ | $Leq_{30min*}$ |
|---|---|---|---|---|---|---|---|---|
| 04 Aug 11 | 11:20 | - | - | - | - | - | - | 63.9 |
| 11 Aug 11 | 12:42 | - | - | - | - | - | - | 60.7 |
| 18 Aug 11 | 10:52 | - | - | - | - | - | - | 69.2 |
| 25 Aug 11 | 10:29 | - | - | - | - | - | - | 61.7 |
| **Limit Level** | | - | | | | | | **> 75 dB(A)** |

(*)The monitoring is undertaken under façade situation. No façade correction is added according to acoustical principles and EPD guidelines.

### Designated Monitoring Station - M2 (150, San Tau Kok)

| Date | Start Time | 1st $Leq_{5min}$ | 2nd $Leq_{5min}$ | 3rd $Leq_{5min}$ | 4th $Leq_{5min}$ | 5th $Leq_{5min}$ | 6th $Leq_{5min}$ | $Leq_{30min}$ | Corrected* $Leq_{30min}$ |
|---|---|---|---|---|---|---|---|---|---|
| 1-Aug-11 | 14:20 | 66.8 | 66.7 | 66.2 | 65.3 | 64.9 | 61.6 | 65.6 | 68.6 |
| 13-Aug-11 | 14:11 | 60.2 | 57.5 | 57.5 | 55.4 | 56.4 | 57.2 | 57.6 | 60.6 |
| 19-Aug-11 | 13:41 | 61.7 | 60.4 | 60.9 | 62.6 | 63.8 | 66.2 | 63.1 | 66.1 |
| 23-Aug-11 | 15:07 | 60.4 | 61.6 | 61.2 | 60.1 | 59.8 | 62.3 | 61.0 | 64.0 |
| **Limit Level** | | - | | | | | | **> 75 dB(A)** | |

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

### Designated Monitoring Station – M3 (31,Wai Ha)

| Date | Start Time | 1st $Leq_{5min}$ | 2nd $Leq_{5min}$ | 3rd $Leq_{5min}$ | 4th $Leq_{5min}$ | 5th $Leq_{5min}$ | 6th $Leq_{5min}$ | $Leq_{30min}$ | Corrected* $Leq_{30min}$ |
|---|---|---|---|---|---|---|---|---|---|
| 1-Aug-11 | 13:11 | 66.4 | 64.5 | 65.0 | 65.9 | 64.6 | 65.3 | 65.3 | 68.3 |
| 13-Aug-11 | 14:43 | 56.8 | 56.2 | 61.6 | 59.8 | 58.6 | 58.9 | 59.0 | 62.0 |
| 19-Aug-11 | 13:00 | 59.7 | 60.2 | 61.3 | 62.6 | 60.3 | 60.9 | 60.9 | 63.9 |
| 23-Aug-11 | 16:36 | 57.8 | 60.2 | 62.1 | 61.8 | 64.4 | 65.6 | 62.7 | 65.7 |
| **Limit Level** | | - | | | | | | **> 75 dB(A)** | |

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

### Designated Monitoring Station – M4 (Block 15, Treasure Spot Garden)

| Date | Start Time | 1st $Leq_{5min}$ | 2nd $Leq_{5min}$ | 3rd $Leq_{5min}$ | 4th $Leq_{5min}$ | 5th $Leq_{5min}$ | 6th $Leq_{5min}$ | $Leq_{30min}$ | Corrected* $Leq_{30min}$ |
|---|---|---|---|---|---|---|---|---|---|
| 1-Aug-11 | 13:46 | 59.6 | 57.4 | 58.8 | 58.0 | 57.6 | 58.3 | 58.3 | 61.3 |
| 13-Aug-11 | 15:31 | 53.4 | 52.7 | 53.1 | 53.1 | 53.1 | 53.5 | 53.2 | 56.2 |
| 19-Aug-11 | 11:02 | 50.7 | 53.4 | 53.4 | 53.8 | 52.1 | 53.6 | 53.0 | 56.0 |
| 23-Aug-11 | 15:42 | 48.7 | 52.3 | 54.6 | 54.2 | 52.8 | 53.3 | 53.0 | 56.0 |
| **Limit Level** | | - | | | | | | **> 75 dB(A)** | |

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

## Environmental Pioneers & Solutions Limited
## Water Quality Monitoring - Summary of On-Site Measurement Results

**Date of Sampling :** 2/8/2011

**Weather :** Sunny

| **Monitoring Location** | **W1** | **W2** | |
|---|---|---|---|
| Time (hhmm) | 14:16 | 14:00 | |
| Tide Mode | Mid-ebb | | |
| River Condition | Normal | Normal | |
| Water Depth (m) | 1 | 1 | |
| pH value | 7.34 | 7.40 | |
| Salinity (ppt) | 23.2 | 23.3 | |
| Temperature ($^{o}$C) | 31.1 | 31.3 | |
| Turbidity (NTU) | 0.0 | 0.0 | 0.0 |
| DO (mg/L) | 8.43 | 7.50 | |
| DO Saturation (%) | 98% | 105% | |
| Suspended Solids (mg/L) | 7.6 | 5.0 | 5.0 |

Remark or Observation :

| | **Name** | **Signature** | **Date** |
|---|---|---|---|
| **Prepared By :** | Alisun Lai |  | 2/8/2011 |

## Environmental Pioneers & Solutions Limited
## Water Quality Monitoring - Summary of On-Site Measurement Results

**Date of Sampling :** 4/8/2011

**Weather :** Sunny

| **Monitoring Location** | **W1** | **W2** | |
|---|---|---|---|
| Time (hhmm) | 16:00 | 16:00 | |
| Tide Mode | Mid-ebb | | |
| River Condition | Noraml | Noraml | |
| Water Depth (m) | <1 | 1 | |
| pH value | 7.27 | 7.44 | |
| Salinity (ppt) | 7.7 | 16.9 | |
| Temperature ($^{o}$C) | 31.7 | 32.6 | |
| Turbidity (NTU) | 13.5 | 0.0 | 0.0 |
| DO (mg/L) | 4.44 | 4.90 | |
| DO Saturation (%) | 59% | 71% | |
| Suspended Solids (mg/L) | 6.0 | 13.0 | 13.0 |

Remark or Observation :

| | **Name** | **Signature** | **Date** |
|---|---|---|---|
| **Prepared By :** | Alisun Lai |  | 4/8/2011 |

## Environmental Pioneers & Solutions Limited
## Water Quality Monitoring - Summary of On-Site Measurement Results

**Date of Sampling :** 6/8/2011

**Weather :** Sunny

| **Monitoring Location** | **W1** | **W2** | |
|---|---|---|---|
| Time (hhmm) | 16:10 | 16:35 | |
| Tide Mode | Mid-ebb | | |
| River Condition | Normal | Normal | |
| Water Depth (m) | <1 | <1 | |
| pH value | 6.83 | 7.27 | |
| Salinity (ppt) | 1.3 | 13.1 | |
| Temperature ($^{o}$C) | 30.5 | 32.5 | |
| Turbidity (NTU) | 0.0 | 2.5 | 2.5 |
| DO (mg/L) | 6.49 | 4.82 | |
| DO Saturation (%) | 84% | 65% | |
| Suspended Solids (mg/L) | 5.2 | 6.4 | 6.4 |

Remark or Observation :

| | **Name** | **Signature** | **Date** |
|---|---|---|---|
| **Prepared By :** | Alisun Lai |  | 6/8/2011 |

## Environmental Pioneers & Solutions Limited
## Water Quality Monitoring - Summary of On-Site Measurement Results

**Date of Sampling :** 9/8/2011

**Weather :** Cloudy

| **Monitoring Location** | **W1** | **W2** | |
|---|---|---|---|
| Time (hhmm) | 11:20 | 10:55 | |
| Tide Mode | Mid-ebb | | |
| River Condition | Normal | Normal | |
| Water Depth (m) | < 1.0 | 1 | |
| pH value | 6.98 | 7.23 | |
| Salinity (ppt) | 9.2 | 17.5 | |
| Temperature ($^{o}$C) | 28.7 | 30.6 | |
| Turbidity (NTU) | 0.0 | 0.0 | 0.0 |
| DO (mg/L) | 6.33 | 3.93 | |
| DO Saturation (%) | 80% | 51% | |
| Suspended Solids (mg/L) | 4.6 | 6.8 | 6.8 |

Remark or Observation :

| | **Name** | **Signature** | **Date** |
|---|---|---|---|
| **Prepared By :** | Alisun Lai |  | 9/8/2011 |

## Environmental Pioneers & Solutions Limited
## Water Quality Monitoring - Summary of On-Site Measurement Results

**Date of Sampling :** 11/8/2011

**Weather :** Sunny

| **Monitoring Location** | **W1** | **W2** | |
|---|---|---|---|
| Time (hhmm) | 12:10 | 11:25 | |
| Tide Mode | Mid-ebb | | |
| River Condition | Normal | Normal | |
| Water Depth (m) | < 1.0 | < 1.0 | |
| pH value | 6.81 | 6.99 | |
| Salinity (ppt) | 11.9 | 14.6 | |
| Temperature ($^{o}$C) | 29.3 | 29.6 | |
| Turbidity (NTU) | 0.0 | 1.6 | 1.6 |
| DO (mg/L) | 5.00 | 5.03 | |
| DO Saturation (%) | 64% | 58% | |
| Suspended Solids (mg/L) | 7.2 | 14.0 | 14.0 |

Remark or Observation :

| | **Name** | **Signature** | **Date** |
|---|---|---|---|
| **Prepared By :** | Alisun Lai |  | 11/8/2011 |

## Environmental Pioneers & Solutions Limited
## Water Quality Monitoring - Summary of On-Site Measurement Results

**Date of Sampling :** 13/8/2011

**Weather :** Sunny

| **Monitoring Location** | **W1** | **W2** | |
|---|---|---|---|
| Time (hhmm) | 12:39 | 12:17 | |
| Tide Mode | Mid-ebb | | |
| River Condition | Normal | Normal | |
| Water Depth (m) | < 1.0 | < 1.0 | |
| pH value | 7.06 | 7.20 | |
| Salinity (ppt) | 15.8 | 18.9 | |
| Temperature ($^{o}$C) | 30.8 | 31.4 | |
| Turbidity (NTU) | 3.1 | 0.0 | 0.0 |
| DO (mg/L) | 4.77 | 5.04 | |
| DO Saturation (%) | 70% | 74% | |
| Suspended Solids (mg/L) | 12.0 | 8.6 | 8.6 |

Remark or Observation :

| | **Name** | **Signature** | **Date** |
|---|---|---|---|
| **Prepared By :** | Alisun Lai |  | 13/8/2011 |

## Environmental Pioneers & Solutions Limited
## Water Quality Monitoring - Summary of On-Site Measurement Results

**Date of Sampling :** 16/8/2011

**Weather :** Sunny

| **Monitoring Location** | **W1** | **W2** | |
|---|---|---|---|
| Time (hhmm) | 14:21 | 13:55 | |
| Tide Mode | Mid-ebb | | |
| River Condition | Normal | Normal | |
| Water Depth (m) | <1 | 1 | |
| pH value | 7.14 | 7.21 | |
| Salinity (ppt) | 8.4 | 16.2 | |
| Temperature ($^{o}$C) | 30.1 | 31.8 | |
| Turbidity (NTU) | 0.0 | 2.9 | 2.9 |
| DO (mg/L) | 6.03 | 4.71 | |
| DO Saturation (%) | 79% | 65% | |
| Suspended Solids (mg/L) | 6.0 | 7.0 | 7.0 |

Remark or Observation :

| | **Name** | **Signature** | **Date** |
|---|---|---|---|
| **Prepared By :** | Alisun Lai |  | 16/8/2011 |

## Environmental Pioneers & Solutions Limited
## Water Quality Monitoring - Summary of On-Site Measurement Results

**Date of Sampling :** 18/8/2011

**Weather :** Sunny

| **Monitoring Location** | **W1** | **W4** | |
|---|---|---|---|
| Time (hhmm) | 15:04 | 14:40 | |
| Tide Mode | Mid-ebb | | |
| River Condition | Normal | Normal | |
| Water Depth (m) | < 1.0 | 1 | |
| pH value | 7.29 | 7.15 | |
| Salinity (ppt) | 3.2 | 10 | |
| Temperature ($^{o}$C) | 31.7 | 31.9 | |
| Turbidity (NTU) | 0.0 | 2.5 | 2.5 |
| DO (mg/L) | 8.04 | 4.49 | |
| DO Saturation (%) | 108% | 58% | |
| Suspended Solids (mg/L) | 5.0 | 5.0 | 5.0 |

Remark or Observation :

| | **Name** | **Signature** | **Date** |
|---|---|---|---|
| **Prepared By :** | Alisun Lai |  | 18/8/2011 |

## Environmental Pioneers & Solutions Limited
## Water Quality Monitoring - Summary of On-Site Measurement Results

**Date of Sampling :** 20/8/2011

**Weather :** Sunny

| **Monitoring Location** | **W1** | **W2** | |
|---|---|---|---|
| Time (hhmm) | 15:00 | 15:15 | |
| Tide Mode | Mid-ebb | | |
| River Condition | Normal | Normal | |
| Water Depth (m) | < 1.0 | < 1.0 | |
| pH value | 6.93 | 6.99 | |
| Salinity (ppt) | 0.6 | 4.9 | |
| Temperature ($^{o}$C) | 31.4 | 32.1 | |
| Turbidity (NTU) | 0.0 | 0.0 | 0.0 |
| DO (mg/L) | 8.47 | 3.84 | |
| DO Saturation (%) | 112% | 46% | |
| Suspended Solids (mg/L) | 1.6 | <1.0 | <1.0 |

Remark or Observation :

| | **Name** | **Signature** | **Date** |
|---|---|---|---|
| **Prepared By :** | Alisun Lai |  | 20/8/2011 |

## Environmental Pioneers & Solutions Limited
## Water Quality Monitoring - Summary of On-Site Measurement Results

**Date of Sampling :** 23/8/2011

**Weather :** Sunny

| **Monitoring Location** | **W1** | **W2** | |
|---|---|---|---|
| Time (hhmm) | 9:30 | 9:15 | |
| Tide Mode | Mid-ebb | | |
| River Condition | Normal | Normal | |
| Water Depth (m) | <1 | 1 | |
| pH value | 6.91 | 7.03 | |
| Salinity (ppt) | 2.5 | 9.4 | |
| Temperature ($^{o}$C) | 28.1 | 29.3 | |
| Turbidity (NTU) | 0.0 | 3.0 | 3.0 |
| DO (mg/L) | 6.44 | 3.82 | |
| DO Saturation (%) | 81% | 45% | |
| Suspended Solids (mg/L) | 1.8 | 2.2 | 2.2 |

Remark or Observation :

| | **Name** | **Signature** | **Date** |
|---|---|---|---|
| **Prepared By :** | Alisun Lai |  | 23/8/2011 |

## Environmental Pioneers & Solutions Limited
## Water Quality Monitoring - Summary of On-Site Measurement Results

**Date of Sampling :** 25/8/2011

**Weather :** Sunny

| **Monitoring Location** | **W1** | **W2** | |
|---|---|---|---|
| Time (hhmm) | 10:15 | 9:40 | |
| Tide Mode | Mid-ebb | | |
| River Condition | Normal | Normal | |
| Water Depth (m) | < 1.0 | <1 | |
| pH value | 7.11 | 7.35 | |
| Salinity (ppt) | 9.2 | 15.5 | |
| Temperature ($^{o}$C) | 29 | 29.7 | |
| Turbidity (NTU) | 2.9 | 2.3 | 2.3 |
| DO (mg/L) | 4.45 | 3.62 | |
| DO Saturation (%) | 54% | 41% | |
| Suspended Solids (mg/L) | 6.2 | 9.2 | 9.2 |

Remark or Observation :

| | **Name** | **Signature** | **Date** |
|---|---|---|---|
| **Prepared By :** | Alisun Lai |  | 25/8/2011 |

## Environmental Pioneers & Solutions Limited
## Water Quality Monitoring - Summary of On-Site Measurement Results

**Date of Sampling :** 27/8/2011

**Weather :** Sunny

| **Monitoring Location** | **W1** | **W2** | |
|---|---|---|---|
| Time (hhmm) | 11:51 | 11:20 | |
| Tide Mode | Mid-ebb | | |
| River Condition | Normal | Normal | |
| Water Depth (m) | <1 | 1 | |
| pH value | 7.17 | 7.56 | |
| Salinity (ppt) | 19.5 | 22.1 | |
| Temperature ($^{o}$C) | 30.4 | 31.2 | |
| Turbidity (NTU) | 6.0 | 7.5 | 7.5 |
| DO (mg/L) | 3.46 | 4.83 | |
| DO Saturation (%) | 42% | 62% | |
| Suspended Solids (mg/L) | 6.0 | 7.6 | 7.6 |

Remark or Observation :

| | **Name** | **Signature** | **Date** |
|---|---|---|---|
| **Prepared By :** | Alisun Lai |  | 27/8/2011 |

## Environmental Pioneers & Solutions Limited
## Water Quality Monitoring - Summary of On-Site Measurement Results

**Date of Sampling :** 30/8/2011

**Weather :** Sunny

| **Monitoring Location** | **W1** | **W2** | |
|---|---|---|---|
| Time (hhmm) | 12:46 | 13:21 | |
| Tide Mode | Mid-ebb | | |
| River Condition | Normal | Normal | |
| Water Depth (m) | 1 | 1 | |
| pH value | 7.38 | 7.65 | |
| Salinity (ppt) | 22.5 | 24.4 | |
| Temperature ($^{o}$C) | 30.3 | 31.3 | |
| Turbidity (NTU) | 5.9 | 5.3 | 5.3 |
| DO (mg/L) | 4.11 | 5.12 | |
| DO Saturation (%) | 49% | 49% | |
| Suspended Solids (mg/L) | 5.0 | 8.2 | 8.2 |

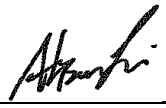
Remark or Observation :

| | **Name** | **Signature** | **Date** |
|---|---|---|---|
| **Prepared By :** | Alisun Lai |  | 30/8/2011 |

大成環境科技拓展有限公司
Environmental Pioneers and Solutions Limited

## Noise Monitoring Data Sheet

| | | | |
|---|---|---|---|
| Monitoring Location | | M1 | AL1 |
| Monitoring Method | | Façade | Façade |
| Date of Monitoring | | 4/8/2011 | 4/8/2011 |
| Weather Condition | | Sunny | Sunny |
| Measurement Start Time (hh:mm) | | 9:23 | 11:20 |
| Measurement Time Length (mins) | | 30 mins | |
| SLM Model & S/N | | SVAN 949 | |
| Wind Speed (m/s) | | 0.2 | 0.2 |
| Measurement Results | $L_{eq}$ (dB(A)) | 60.5 | 63.9 |
| | $L_{10}$ (dB(A)) | 62.9 | 67.0 |
| | $L_{90}$ (dB(A)) | 53.0 | 58.3 |
| Major Construction Noise Source(s) During Monitoring | | The measured noise level was dominated by the background noise in the immediate vicinity of the monitoring location due to its large distance from the construction activities | The measured noise level was dominated by the background noise in the immediate vicinity of the monitoring location due to its large distance from the construction activities |
| Other Noise Source(s) During Monitoring | | – Background Noise<br>– Traffic Noise | – Background Noise<br>– Traffic Noise |

| | Name | Signature | Date |
|---|---|---|---|
| Perpared by: | Alisun Lai |  | 2011/08/04 |

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## Noise Monitoring Data Sheet

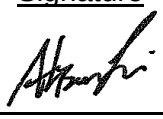
| | | | |
|---|---|---|---|
| Monitoring Location | | M1 | AL1 |
| Monitoring Method | | Façade | Façade |
| Date of Monitoring | | 11/8/2011 | 11/8/2011 |
| Weather Condition | | Sunny | Sunny |
| Measurement Start Time (hh:mm) | | 11:19 | 12:42 |
| Measurement Time Length (mins) | | 30 mins | |
| SLM Model & S/N | | SVAN 949 | |
| Wind Speed (m/s) | | 0.2 | 0.2 |
| Measurement Results | $L_{eq}$ (dB(A)) | 60.0 | 60.7 |
| | $L_{10}$ (dB(A)) | 63.0 | 63.7 |
| | $L_{90}$ (dB(A)) | 53.4 | 49.3 |
| Major Construction Noise Source(s) During Monitoring | | The measured noise level was dominated by the background noise in the immediate vicinity of the monitoring location due to its large distance from the construction activities | The measured noise level was dominated by the background noise in the immediate vicinity of the monitoring location due to its large distance from the construction activities |
| Other Noise Source(s) During Monitoring | | – Background Noise<br>– Traffic Noise | – Background Noise<br>– Traffic Noise |

| | Name | Signature | Date |
|---|---|---|---|
| Perpared by: | Alisun Lai |  | 2011/08/11 |

大成環境科技拓展有限公司
Environmental Pioneers and Solutions Limited

## Noise Monitoring Data Sheet

| | | | |
|---|---|---|---|
| Monitoring Location | | M1 | AL1 |
| Monitoring Method | | Façade | Façade |
| Date of Monitoring | | 18/8/2011 | 18/8/2011 |
| Weather Condition | | Sunny | Sunny |
| Measurement Start Time (hh:mm) | | 9:28 | 10:52 |
| Measurement Time Length (mins) | | 30 mins | |
| SLM Model & S/N | | SVAN 949 | |
| Wind Speed (m/s) | | 0.6 | 0.2 |
| Measurement Results | $L_{eq}$ (dB(A)) | 61.6 | 69.2 |
| | $L_{10}$ (dB(A)) | 65.1 | 64.9 |
| | $L_{90}$ (dB(A)) | 49.0 | 52.0 |
| Major Construction Noise Source(s) During Monitoring | | The measured noise level was dominated by the background noise in the immediate vicinity of the monitoring location due to its large distance from the construction activities | The measured noise level was dominated by the background noise in the immediate vicinity of the monitoring location due to its large distance from the construction activities |
| Other Noise Source(s) During Monitoring | | – Background Noise<br>– Traffic Noise | – Background Noise<br>– Traffic Noise |

| | Name | Signature | Date |
|---|---|---|---|
| Perpared by: | Alisun Lai |  | 2011/08/18 |

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Environmental Pioneers and Solutions Limited

## Noise Monitoring Data Sheet

| | | | |
|---|---|---|---|
| Monitoring Location | | M1 | AL1 |
| Monitoring Method | | Façade | Façade |
| Date of Monitoring | | 25/8/2011 | 25/8/2011 |
| Weather Condition | | Sunny | Sunny |
| Measurement Start Time (hh:mm) | | 9:51 | 10:29 |
| Measurement Time Length (mins) | | 30 mins | |
| SLM Model & S/N | | SVAN 949 | |
| Wind Speed (m/s) | | 1.8 | 1.3 |
| Measurement Results | $L_{eq}$ (dB(A)) | 61.9 | 61.7 |
| | $L_{10}$ (dB(A)) | 65.4 | 65.1 |
| | $L_{90}$ (dB(A)) | 52.6 | 52.3 |
| Major Construction Noise Source(s) During Monitoring | | The measured noise level was dominated by the background noise in the immediate vicinity of the monitoring location due to its large distance from the construction activities | The measured noise level was dominated by the background noise in the immediate vicinity of the monitoring location due to its large distance from the construction activities |
| Other Noise Source(s) During Monitoring | | – Background Noise<br>– Traffic Noise<br>– Public Noise | – Background Noise<br>– Traffic Noise<br>– Public Noise |

| | Name | Signature | Date |
|---|---|---|---|
| Perpared by: | Alisun Lai |  | 2011/08/25 |

| Location | Position | Tide | Date** | Time | Weather | Water Depth (m)* | Water Flow (m/s) | Water Flow ($m^3$/s) |
|---|---|---|---|---|---|---|---|---|
| H1 | Mid | Flood | 6-Aug-2011 | 13:15 | Sunny | ~0.3 | 0.06 | 0.075 |
| H1 | Mid | Flood | 20-Aug-2011 | 9:50 | Sunny | ~0.2 | 0.12 | 0.150 |
| H1 | Mid | Flood | 27-Aug-2011 | 17:02 | Sunny | ~0.3 | 0.12 | 0.150 |
| H2 | Mid | Flood | 6-Aug-2011 | 12:35 | Sunny | ~0.4 | 0.12 | 0.754 |
| H2 | Mid | Flood | 20-Aug-2011 | 9:35 | Sunny | ~0.4 | 0.12 | 0.754 |
| H2 | Mid | Flood | 27-Aug-2011 | 17:30 | Sunny | ~0.4 | 0.12 | 0.754 |
| H1 | Mid | Ebb | 6-Aug-2011 | 16:15 | Sunny | ~0.3 | 0.06 | 0.075 |
| H1 | Mid | Ebb | 13-Aug-2011 | 12:25 | Sunny | ~0.2 | 0.06 | 0.075 |
| H1 | Mid | Ebb | 20-Aug-2011 | 15:05 | Sunny | ~0.1 | 0.12 | 0.150 |
| H1 | Mid | Ebb | 27-Aug-2011 | 11:51 | Sunny | ~0.5 | 0.12 | 0.150 |
| H2 | Mid | Ebb | 6-Aug-2011 | 15:50 | Sunny | ~0.3 | 0.12 | 0.754 |
| H2 | Mid | Ebb | 13-Aug-2011 | 11:45 | Sunny | ~0.6 | 0.18 | 1.130 |
| H2 | Mid | Ebb | 20-Aug-2011 | 15:30 | Sunny | ~0.3 | 0.12 | 0.754 |
| H2 | Mid | Ebb | 27-Aug-2011 | 10:48 | Sunny | ~0.6 | 0.12 | 0.383 |

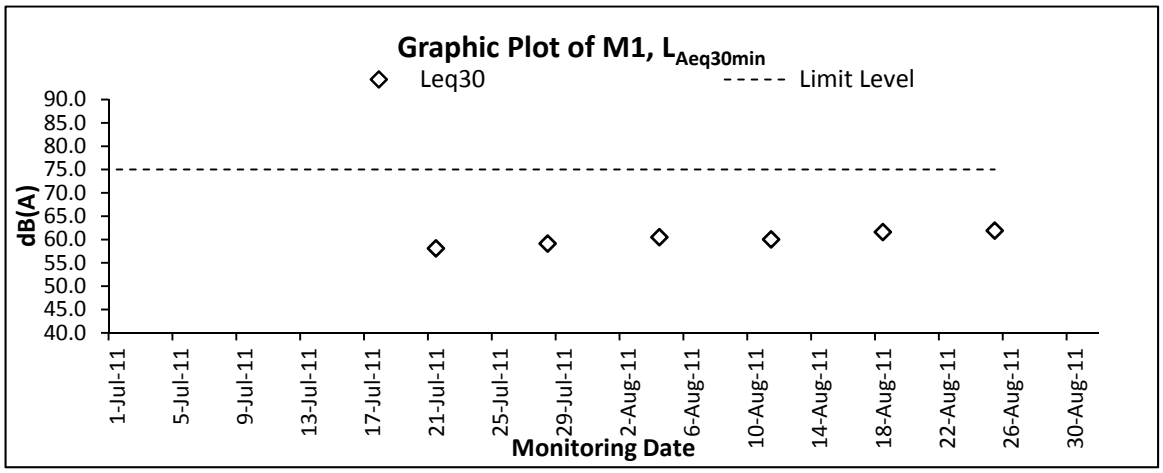
* : Since the water levels were too low for the depth detector to determine, a tape measure was used for estimation.

**: Only one mid-tide is within working hours of construction activity at 13 August ,2011

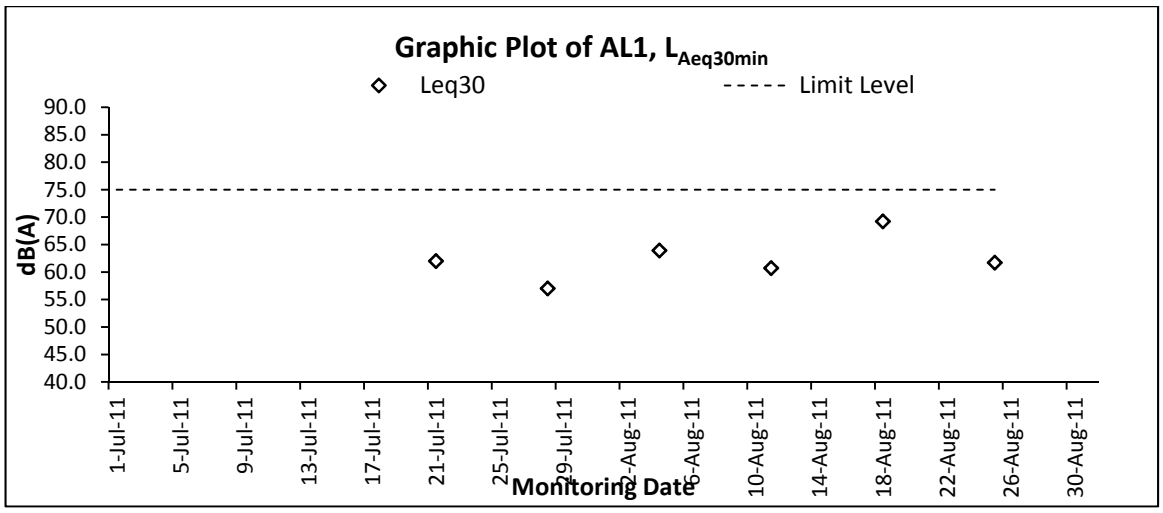
# Appendix J

# Graphical Plots of Impact Monitoring – Noise, Water Quality and Hydrological Characteristics

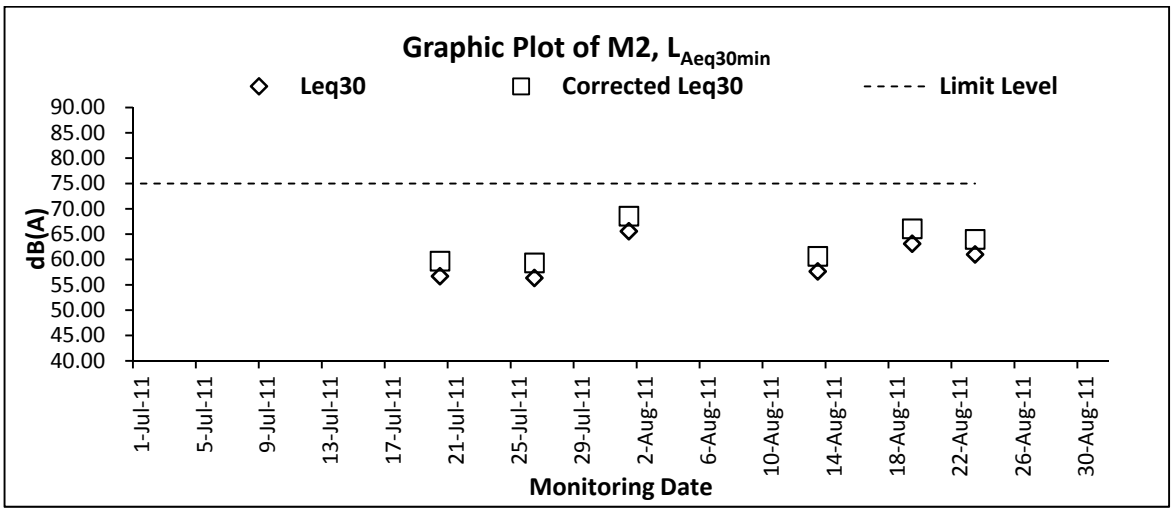
## Graphic Plot – Construction Noise



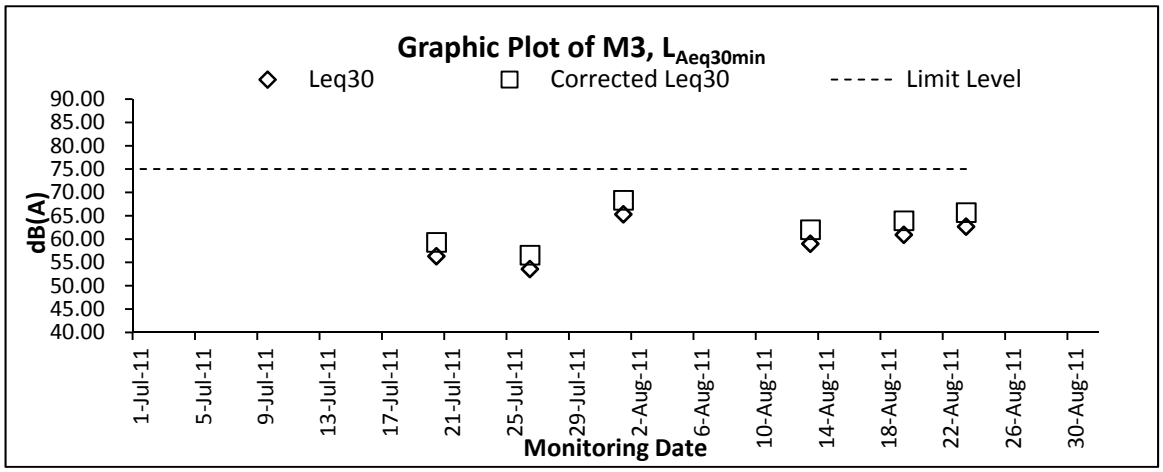

*Remark: The monitoring is undertaken under façade situation. No façade correction is added according to acoustical principles and EPD guidelines.*



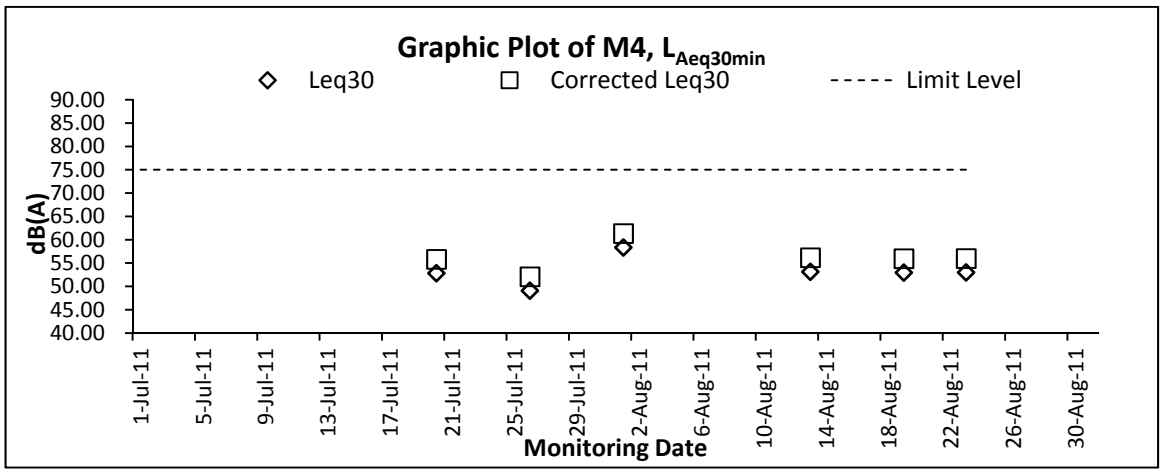

*Remark: The monitoring is undertaken under façade situation. No façade correction is added according to acoustical principles and EPD guidelines.*




*Remark: The monitoring is undertaken under free field situation. A façade correction of +3 dB(A) has been added according to acoustical principles and EPD guidelines*

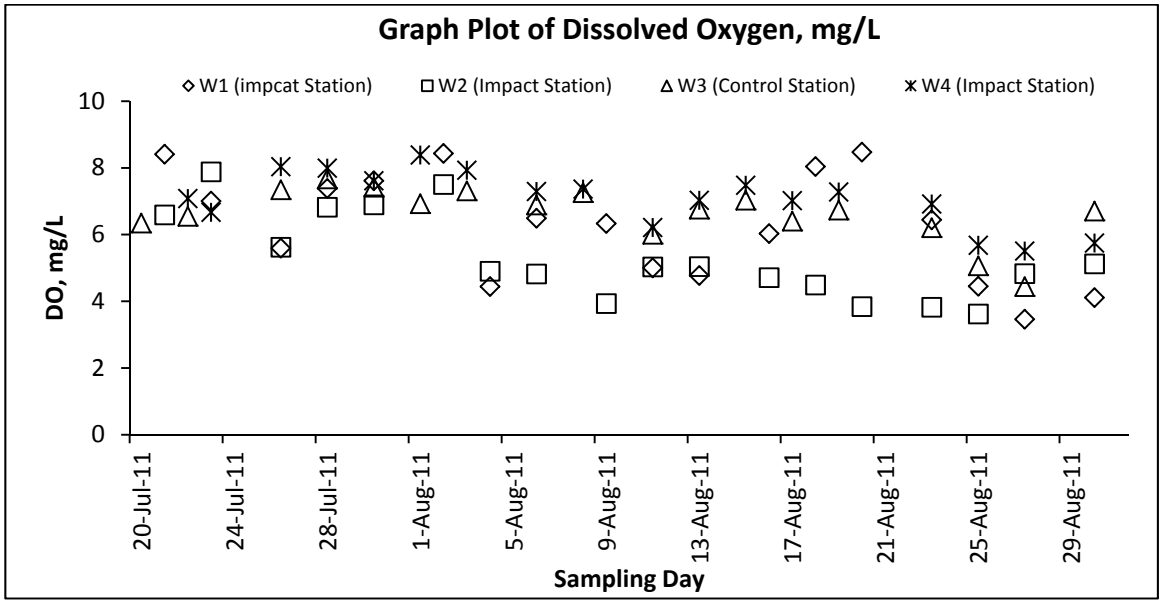


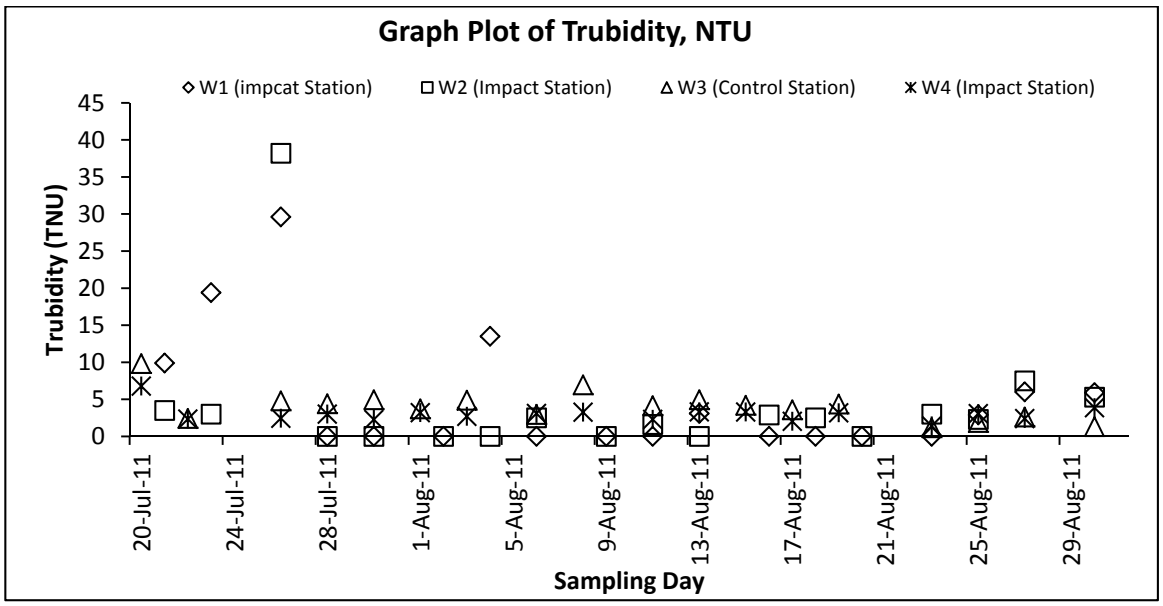

*Remark: The monitoring is undertaken under free field situation. A façade correction of +3 dB(A) has been added according to acoustical principles and EPD guidelines*

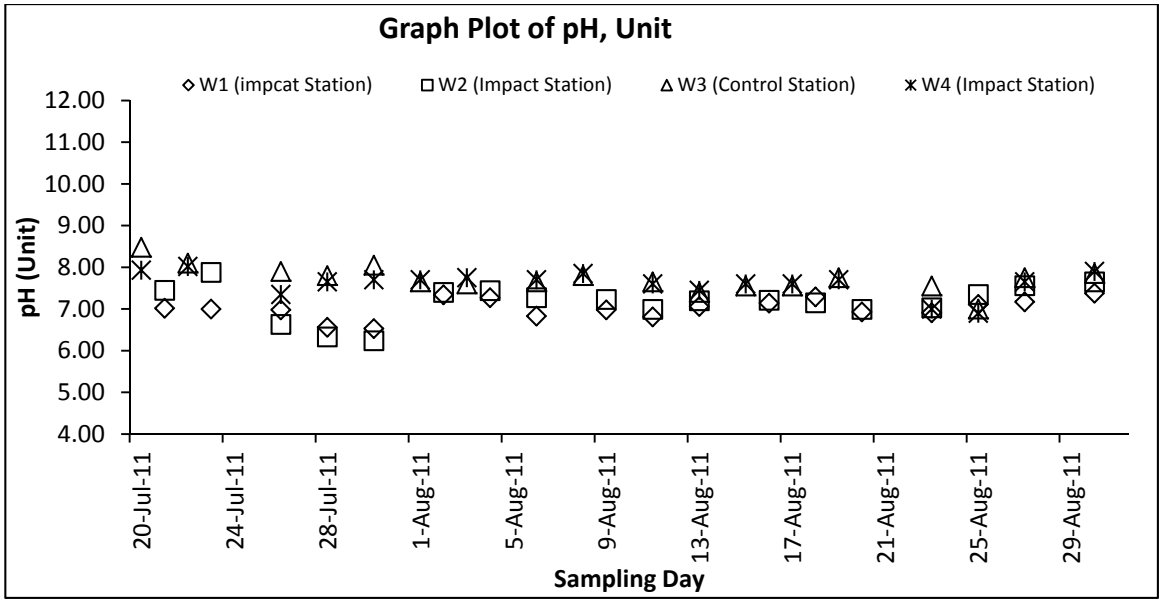


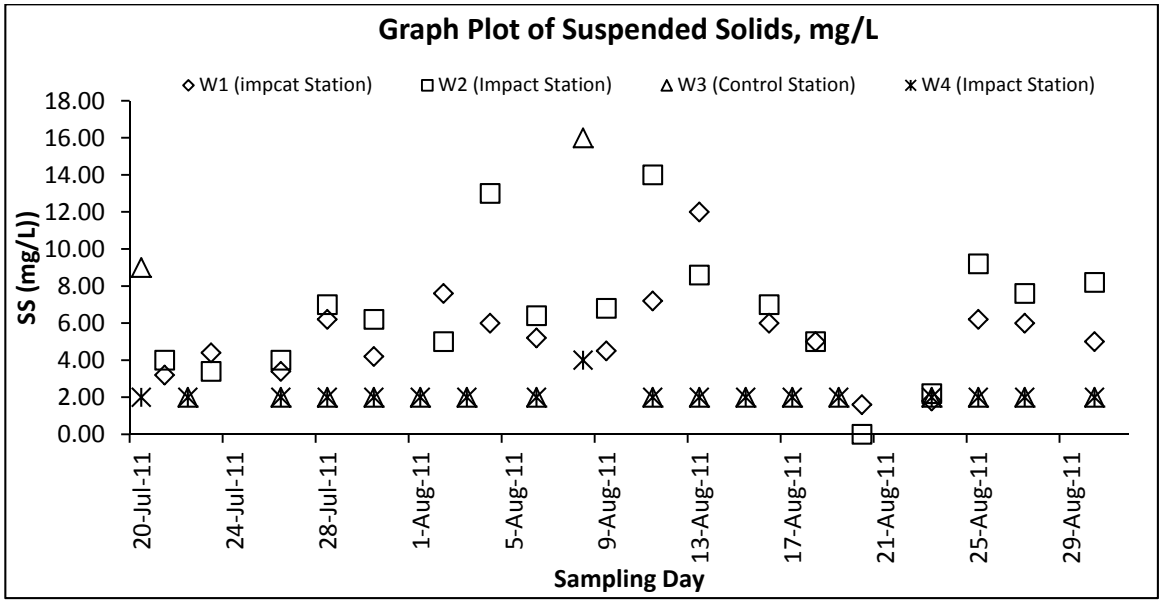

*Remark: The monitoring is undertaken under free field situation. A façade correction of +3 dB(A) has been added according to acoustical principles and EPD guidelines*

## Graphic Plot – Water Quality

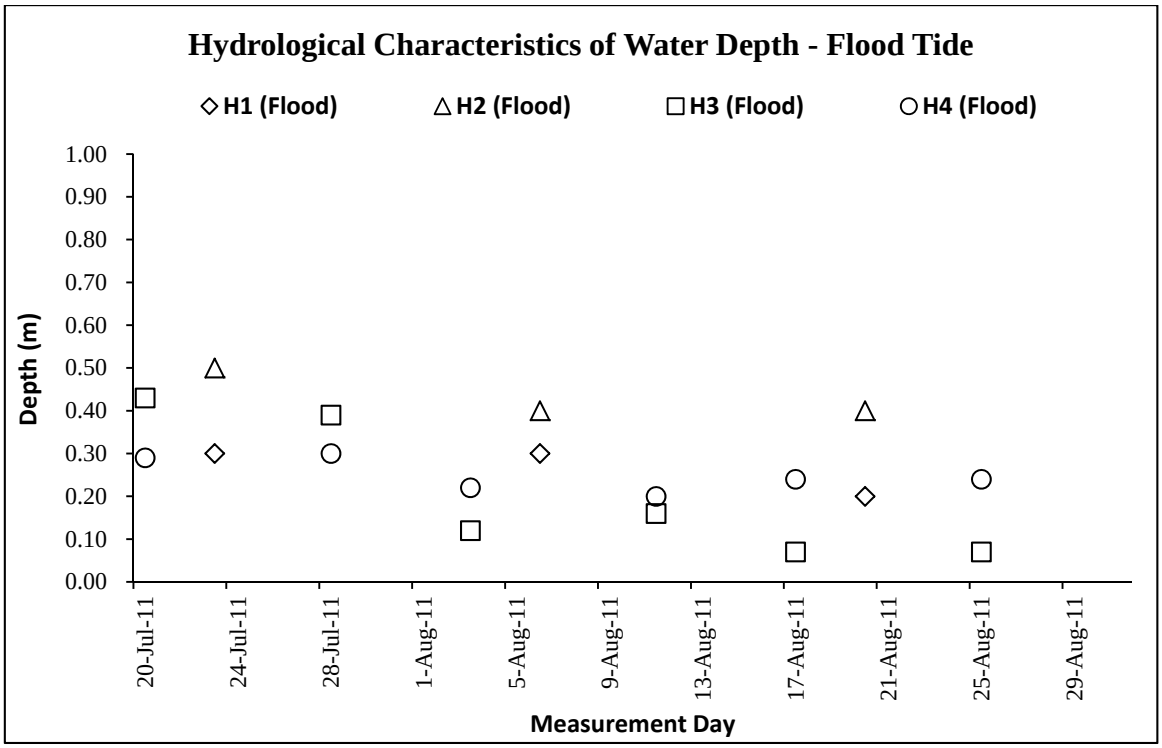


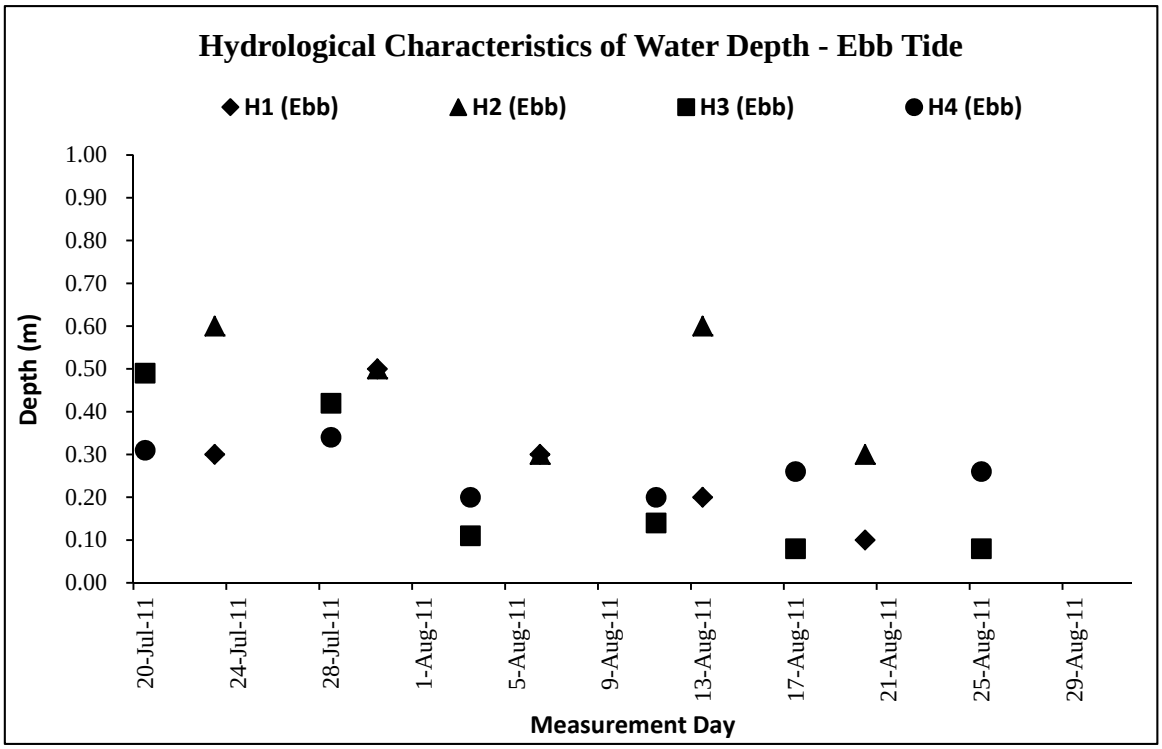



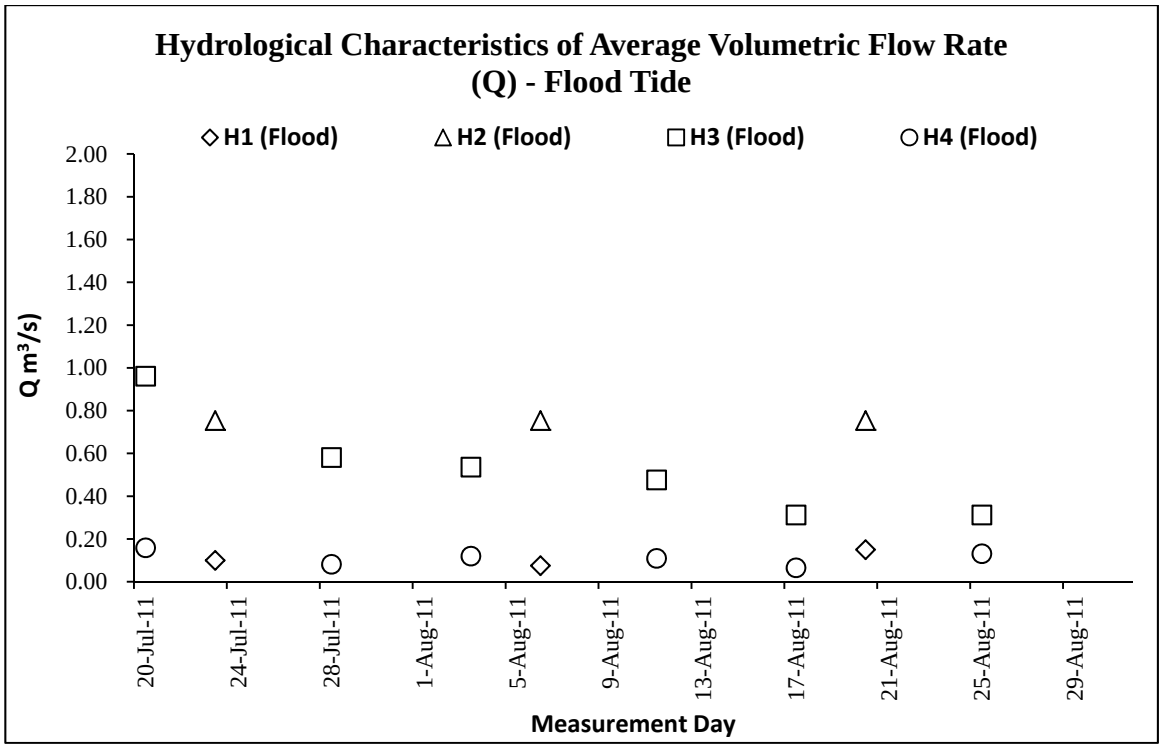

Graph Plot of Suspended Solids, mg/L
W1 (impcat Station)
W2 (Impact Station)
W3 (Control Station)
W4 (Impact Station)
SS (mg/L))
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
20-Jul-11
24-Jul-11
28-Jul-11
1-Aug-11
5-Aug-11
9-Aug-11
13-Aug-11
17-Aug-11
21-Aug-11
25-Aug-11
29-Aug-11
Sampling Day

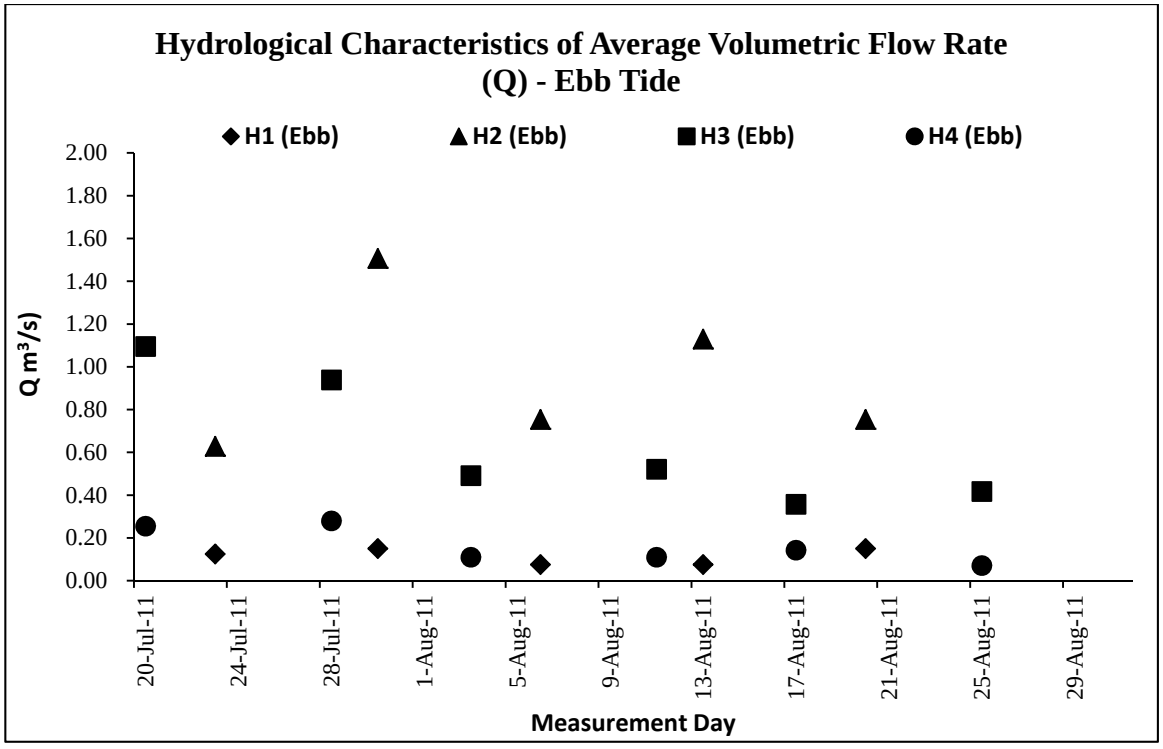
## Graphic Plot – Hydrological Characteristics (Water Depth)



## Graphic Plot – Hydrological Characteristics (Water Flow Rate)



# Appendix K

# Monthly Summary Waste Flow Table

Name of Department: DSD Contract No.: DC/2010/02

# Monthly Summary Waste Flow Table for __2011__ (Year)

| Month | Actual Quantities of Inert C&D Materials Generated Monthly | | | | | | Actual Quantities of C&D Wastes Generated Monthly | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total Quantity Generated | Hard Rock and Large Broken Concrete | Reused in the Contract | Reused in other Projects | Disposed as Public Fill | Imported Fill | Metals | Paper/ cardboard packaging | Plastics (see Note 3) | Chemical Waste | Others, e.g. general refuse |
| | (in '000$m^3$) | (in '000$m^3$) | (in '000$m^3$) | (in '000$m^3$) | (in '000$m^3$) | (in '000$m^3$) | (in '000 kg) | (in '000kg) | (in '000kg) | (in '000kg) | (in '000$m^3$) |
| Apr | Nil | - | - | - | - | - | - | - | - | - | - |
| May | Nil | - | - | - | - | - | - | - | - | - | - |
| June | Nil | - | - | - | - | - | - | - | - | - | - |
| July | Nil | - | - | - | - | - | - | - | - | - | - |
| Aug | 0.7855 | 0 | 0 | 0.7855 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sept | | | | | | | | | | | |
| Oct | | | | | | | | | | | |
| Nov | | | | | | | | | | | |
| Dec | | | | | | | | | | | |
| Total | 0.7855 | 0 | 0 | 0.7855 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Forecast of Total Quantities of C&D Materials to be Generated from the Contract*

| Total Quantity Generated | Hard Rock and Large Broken Concrete | Reused in the Contract | Reused in other Projects | Disposed as Public Fill | Imported Fill | Metals | Paper/ cardboard packaging | Plastics (see Note 3) | Chemical Waste | Others, e.g. general refuse |
|---|---|---|---|---|---|---|---|---|---|---|
| (in '000$m^3$) | (in '000$m^3$) | (in '000$m^3$) | (in '000$m^3$) | (in '000$m^3$) | (in '000$m^3$) | (in '000 kg) | (in '000kg) | (in '000kg) | (in '000kg) | (in '000$m^3$) |
| 23 | 1 | 10 | 0 | 10 | 2 | 5 | 2 | 1 | 1 | 3 |

Notes:

(1) The performance targets are given in ETWB Technical Circular PS Clause 6(14).
(2) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material
(4) The Contractor shall also submit the latest forecast of the total amount of C&D materials expected to be generated from the Works, together with a breakdown of the nature where the total amount of C&D materials expected to be generated from the Works is equal to or exceeding 50,000 m3. (ETWB Technical Circular PS Clause 5(4)(b) refers). [Delete Note (4) and the table above on the forecast, where inapplicable].

## Summary Table for Work Processes or Activities Requiring Timber for Temporary Works

Contract No. : DC/2010/02

Contract Title : Drainage Improvement Works in Shuen Wan and Shek Wu Wai

| Item No. | Description of Works Process or Activity [see note (a) below] | Justifications for Using Timber in Temporary Construction Works | Est. Quantities of Timber Used (m3) | Actual Quantities used (m3) | Remarks |
|---|---|---|---|---|---|
| 1. | Formwork for concreting | Easy handle by manpower | 0.5 | 0.5 | |
| 2. | | | | | |
| 3. | | | | | |
| 4. | | | | | |
| 5. | | | | | |
| 6. | | | | | |
| 7. | | | | | |
| 8. | | | | | |
| | | **Total Estimated Quantity of Timber Used** | 0.5 | | |

Notes:

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

b. The summary table shall be submitted to the *Architect/Engineer's Representative monthly together with the Waste Flow Table for review and monitoring in accordance with the ETWB Technical Circular 19/2005 PS sub-clause 5(5) in Appendix C.

# Appendix L

# Inspection and Auditing Checklist

# Environmental Site Inspection Checklist

| | | | |
|---|---|---|---|
| **Project:** | ***DSD Contract No. DC/2010/02*** | **Inspected by** | **Checklist No.** **082011-01** |
| | ***Drainage Improvement in Shuen Wan and Shek Wu Wai*** | **IEC/IEC's Representative:** | Justin Ye |
| | | **RE/RE's Representative:** | Ronald Siu / Tso Si-on |
| **Inspection** | **Tung Tsz Road, Shuen Wan** | **ETL/ ET's Representative:** | T.W. Tam |
| **Date:** | 17 August 2011 | **EO/EO's Representative:** | Zenki Wong |
| **Time:** | 14:30 | **Contractor's Representative:** | Chan Wing Kai / Tommy Mok |

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

Weather: ☐ Sunny ☑ Fine ☐ Cloudy ☐ Rainy ☐ Calm ☑ **EP-303/2008**

Temperature: 31.2 $^{0}$C

Humidity: ☑ High ☐ Moderate ☐ Low ☐ **N/A**

Wind: ☐ Strong ☐ Breeze ☐ Light ☑

**Area Inspected**

1. Box Culvert Bay 20 - 22
2.
3.

**PART B:** **SITE AUDIT**

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

# Environmental Site Inspection Checklist

| Note: | **Not Obs.**: Not Observed; **Yes**: Compliance; **No**: Non-Compliance; **Follow Up**: Observations requiring follow-Up actions **N/A**: Not Applicable | Not Obs. | Yes | No | Follow Up | N/A | Photo/ Remarks |
|---|---|---|---|---|---|---|---|
| 1.23 | Is used bentonite recycled where appropriate? | ☑ | ☐ | ☐ | ☐ | ☐ | |
| 1.24 | Designated settlement area for runoff/wheel wash waste is provide and located at the streambed with 1-2m deep, 12m long and around 50m3 capacities for sedimentation. | ☐ | ☐ | ☐ | ☐ | ☑ | |
| 1.25 | No excavation is undertaken in the settlement area. | ☑ | ☐ | ☐ | ☐ | ☐ | |
| 1.26 | Concreting wastes water should be neutralized below the pH Action Levels before discharge. | ☑ | ☐ | ☐ | ☐ | ☐ | |
| 1.27 | Mobile toilets should provide on site and located away the Wai Ha River course. | ☐ | ☑ | ☐ | ☐ | ☐ | |
| 1.25 | License collector should be employed for handling the sewage of mobile toilet. | ☐ | ☑ | ☐ | ☐ | ☐ | |
| ***Section 2: Air Quality*** | | | | | | | |
| 2.01 | Are there wheel washing facilities with high pressure jets provided at every vehicle exit point? | ☑ | ☐ | ☐ | ☐ | ☐ | |
| 2.02 | Are vehicles washed to remove any dusty materials from their bodies and wheels before leaving construction sites? | ☐ | ☑ | ☐ | ☐ | ☐ | |
| 2.03 | Are the excavated materials sprayed with water during handling? | ☑ | ☐ | ☐ | ☐ | ☐ | |
| 2.04 | Are stockpiles of dusty materials sprayed with water, covered or placed in sheltered areas? | ☐ | ☐ | ☐ | ☐ | ☐ | |
| 2.05 | Is the exposed earth properly treated within six months after the last construction activities? | ☑ | ☐ | ☐ | ☐ | ☐ | |
| 2.06 | Are the access roads sprayed with water to maintain the entire road surface wet or paved? | ☐ | ☑ | ☐ | ☐ | ☐ | |
| 2.07 | Is the surface where any drilling, cutting, polishing or breaking operation continuously sprayed with water? | ☐ | ☐ | ☐ | ☐ | ☑ | |
| 2.08 | Is the load on vehicles covered entirely by clean impervious sheeting? | ☐ | ☑ | ☐ | ☐ | ☐ | |
| 2.09 | Is the loading of materials to a level higher than the side and tail boards during transportation by vehicles avoided? | ☐ | ☑ | ☐ | ☐ | ☐ | |
| 2.10 | Is the road leading to the construction site within 30m of the vehicle entrance kept clear of dusty materials? | ☑ | ☐ | ☐ | ☐ | ☐ | |
| 2.11 | Is dark smoke emission from plant/equipment avoided? | ☑ | ☐ | ☐ | ☐ | ☐ | |
| 2.12 | Are de-bagging, batching and mixing processes carried out in sheltered areas during the use of bagged cement? | ☐ | ☐ | ☐ | ☐ | ☑ | |
| 2.13 | Are site vehicles travelling within the speed limit not more than 15km/hour? | ☐ | ☑ | ☐ | ☐ | ☐ | |
| 2.14 | Are hoardings of not less than 2.4m high provided along the site boundary, which adjoins areas accessible to the public? | ☐ | ☑ | ☐ | ☐ | ☐ | |
| 2.15 | Is open burning avoided? | ☑ | ☐ | ☐ | ☐ | ☐ | |
| 2.16 | Excavated materials from the stream must remove form site on the same day. The materials shall be stored in covered impermeable skips awaiting removal from site. | ☐ | ☐ | ☐ | ☐ | ☑ | |
| ***Section 3: Noise*** | | | | | | | |
| 3.01 | Are noisy equipment and activities positioned as far as practicable from the sensitive receivers? | ☐ | ☑ | ☐ | ☐ | ☐ | |
| 3.02 | Is silenced equipment adopted? | ☐ | ☑ | ☐ | ☐ | ☐ | |
| 3.03 | Is idle equipment turned off or throttled down? | ☐ | ☑ | ☐ | ☐ | ☐ | |
| 3.04 | Are all plant and equipment well maintained and in good condition? | ☐ | ☑ | ☐ | ☐ | ☐ | |
| 3.05 | Are noise barriers or enclosures provided at areas where construction activities cause noise impact on sensitive receivers? | ☑ | ☐ | ☐ | ☐ | ☐ | |
| 3.06 | Are hand held breakers fitted with valid noise emission labels during operation? | ☑ | ☐ | ☐ | ☐ | ☐ | |
| 3.07 | Are air compressors fitted with valid noise emission labels during operation? | ☑ | ☐ | ☐ | ☐ | ☐ | |
| 3.08 | Are flaps and panels of mechanical equipment closed during operation? | ☑ | ☐ | ☐ | ☐ | ☐ | |
| 3.09 | Are Construction Noise Permit(s) applied for percussive piling works? | ☐ | ☐ | ☐ | ☐ | ☑ | |

# Environmental Site Inspection Checklist

| Note: | **Not Obs.**: Not Observed; **Yes**: Compliance; **No**: Non-Compliance; **Follow Up**: Observations requiring follow-Up actions **N/A**: Not Applicable | Not Obs. | Yes | No | Follow Up | N/A | Photo/ Remarks |
|---|---|---|---|---|---|---|---|
| 3.10 | Are Construction Noise Permit(s) applied for general construction works during restricted hours? | ☐ | ☐ | ☐ | ☐ | ☑ | |
| 3.11 | Are valid Construction Noise Permit(s) posted at site entrances? | ☑ | ☐ | ☐ | ☐ | ☐ | |
| 3.12 | Use of quiet plant had been used on site to minimise the construction noise impact to the surrounding residences/dwellings (Level 1 mitigation measures). | ☐ | ☑ | ☐ | ☐ | ☐ | |
| 3.13 | Temporary/Moveable noise barrier or site hoarding are provide or erect at the site boundary to minimise the noise impact of the closest NSRs or stationary equipments shield by the noise barrier which cannot visible from NSRs (Level 2 mitigation measure) | ☑ | ☐ | ☐ | ☐ | ☐ | |
| 3.14 | Temporary/Moveable noise barrier equal to or more than 3m height with 10kg/m2 are provide for noise mitigation measures (Level 2 mitigation measures). | ☑ | ☐ | ☐ | ☐ | ☐ | |
| ***Section 4: Waste/Chemical Management*** | | | | | | | |
| 4.01 | Waste Management Plan had been submit to Engineer for approval. | ☐ | ☑ | ☐ | ☐ | ☐ | |
| 4.02 | Are receptacles available for general refuse collection? | ☐ | ☑ | ☐ | ☐ | ☐ | |
| 4.03 | Is general refuse sorting or recycling implemented? | ☑ | ☐ | ☐ | ☐ | ☐ | |
| 4.04 | Is general refuse disposed of properly and regularly? | ☐ | ☑ | ☐ | ☐ | ☐ | |
| 4.05 | Is the Contractor registered as a chemical waste producer? | ☑ | ☐ | ☐ | ☐ | ☐ | In Progress |
| 4.06 | Are the chemical waste containers properly labelled? | ☐ | ☑ | ☐ | ☐ | ☐ | |
| 4.07 | Are the chemical wastes stored in proper storage areas? | ☐ | ☑ | ☐ | ☐ | ☐ | |
| 4.08 | Is the chemical waste storage area properly labelled? | ☐ | ☑ | ☐ | ☐ | ☐ | |
| 4.09 | Is the chemical waste storage area used for storage of chemical waste only? | ☐ | ☑ | ☐ | ☐ | ☐ | |
| 4.10 | Are incompatible chemical wastes stored in different areas? | ☐ | ☑ | ☐ | ☐ | ☐ | |
| 4.11 | Are the chemical wastes disposed of by licensed collectors? | ☐ | ☐ | ☐ | ☑ | ☐ | Waiting chemical producer application |
| 4.12 | Are trip tickets for chemical wastes disposal available for inspection? | ☐ | ☐ | ☐ | ☑ | ☐ | Waiting chemical producer application |
| 4.13 | Are chemical/fuel storage areas bunded? | ☐ | ☑ | ☐ | ☐ | ☐ | |
| 4.14 | Are designated areas identified for storage and sorting of construction wastes? | ☑ | ☐ | ☐ | ☐ | ☐ | |
| 4.15 | Are construction wastes sorted (inert and non-inert) on site? | ☑ | ☐ | ☐ | ☐ | ☐ | |
| 4.16 | Are construction wastes reused? | ☑ | ☐ | ☐ | ☐ | ☐ | |
| 4.17 | Are construction wastes disposed of properly? | ☐ | ☑ | ☐ | ☐ | ☐ | |
| 4.18 | Are site hoardings and signboards made of durable materials instead of timber? | ☐ | ☑ | ☐ | ☐ | ☐ | |
| 4.19 | Is trip ticket system implemented for the disposal of construction wastes and records available for inspection? | ☐ | ☑ | ☐ | ☐ | ☐ | |
| 4.20 | Are appropriate procedures followed if contaminated material exists? | ☐ | ☐ | ☐ | ☐ | ☑ | |
| 4.21 | Is relevant license/ permit for disposal of construction waste or excavated materials available for inspection? | ☐ | ☑ | ☐ | ☐ | ☐ | |
| 4.22 | Site cleanliness and appropriate waste management training had provided for the site workers. | ☐ | ☑ | ☐ | ☐ | ☐ | |
| 4.23 | Contaminated sediments will managed according to WBTC No.12/2000 and EWTB TC(W) No. 34/2002. | ☐ | ☐ | ☐ | ☐ | ☑ | |
| ***Section 5: Landscape & Visual*** | | | | | | | |
| 5.01 | Are retained and transplanted trees in health condition? | ☑ | ☐ | ☐ | ☐ | ☐ | |
| 5.02 | Are retained and transplanted trees properly protected? | ☑ | ☐ | ☐ | ☐ | ☐ | |

# Environmental Site Inspection Checklist

| Note: | **Not Obs.**: Not Observed; **Yes**: Compliance; **No**: Non-Compliance; **Follow Up**: Observations requiring follow-Up actions **N/A**: Not Applicable | Not Obs. | Yes | No | Follow Up | N/A | Photo/ Remarks |
|---|---|---|---|---|---|---|---|
| 5.03 | Are surgery works carried out for the damaged trees? | ☑ | ☐ | ☐ | ☐ | ☐ | |
| 5.04 | Is damage to trees outside site boundary due to construction activities avoided? | ☑ | ☐ | ☐ | ☐ | ☐ | |
| 5.05 | Is the night-time lighting controlled to minimize glare to sensitive receivers? | ☐ | ☑ | ☐ | ☐ | ☐ | |
| ***Section 6: Ecology*** | | | | | | | |
| 6.01 | Gabion banks and base had been provide for channel linings and banks for typical sections of work area? | ☐ | ☐ | ☐ | ☐ | ☑ | |
| 6.02 | Prevent site effluent/runoff discharge to the seasonal wetlands at Wai Ha River? | ☐ | ☑ | ☐ | ☐ | ☐ | |
| 6.03 | Stockpiling or disposal of materials, and any dredging or construction activities at the seasonal wetlands at Wai Ha River are prohibited? | ☐ | ☑ | ☐ | ☐ | ☐ | |
| ***Section 7: Others*** | | | | | | | |
| 7.01 | Are relevant Environmental Permits posted at all vehicle site entrances/exits? | ☐ | ☑ | ☐ | ☐ | ☐ | |

**Remarks**

***Follow up of last Site Inspection:***

1. Reminder only, Not request

***Observations recorded in this Site Inspection: (17-08-2011)***

A power generator without a drip tray was found at site. The Contractor is reminded that the power generator shall provide a drip tray to prevent land contamination.

| *IEC's representative* | *RE's representative* | *ET's representative* | *EO's representative* | *Contractor's representative* |
|---|---|---|---|---|
| ( ) | ( ) | ( T.W. Tam ) | ( ) | ( ) |

# Kwan Lee - Kuly JV

**Drainage Services Department**
**Contract No. DC/2010/02**
**Contract Title: Drainage Improvement Works in Shuen Wan and Shek Wu Wai**
**Weekly Environmental Walk (No. 011 )**
**Environmental Inspection Checklist**

Date of Inspection: 3 August 2011 Time 0930
Weather: : Sunny/~~Fine/Overcast/Drizzle/Rain/Storm/Hazy~~ Temperature: 28 $^0$C
Wind: Calm/~~Light/Breeze/Strong~~ Humidity: High/~~Moderate/Low~~
Locations: a. SHEK WU WAI d. Area 1
b. TUNG TSZ ROAD
c. Area 2

Person(s) making the inspection:

| Name in Block Letters | Designation | Organisation |
|---|---|---|
| HO WING CHEONG | AIOW | DSD |
| LAU SIU CHUEN | WSI | DSD |
| WONG KA WAI | WSII | DSD |
| MOK CHU HUNG, TOMMY | SITE AGENT | KLKJV |
| CHAN HIU SHAN | EO | KLKJV |
| LAM CHUEN LAM | FOREMAN | KLKJV |

| | YES | NO | N/A | REMARK |
|---|---|---|---|---|
| 1 GENERAL | | | | |
| a. Environmental Permit (EP) copy at site entrance | (✓) | ( ) | ( ) | |
| b. Environmental posters/notices at place of work | (✓) | ( ) | ( ) | |
| c. Site kept clean and tidy | (✓) | ( ) | ( ) | |
| d. Engine shut off when not in use | (✓) | ( ) | ( ) | |
| e. Proper maintenance of site plant and equipment | (✓) | ( ) | ( ) | |
| f Other: Please specify | ( ) | ( ) | (✓) | |
| 2. AIR POLLUTION | | | | |
| a. Site Perimeter Hoardings provided as required | (✓) | ( ) | ( ) | |
| b. Haul Road paved or kept wet | (✓) | ( ) | ( ) | |
| c. Water spraying during loading and unloading of dusty material | (✓) | ( ) | ( ) | |
| d. Exposed stockpile & dusty materials in storage wetted or covered by tarpaulin as required | (✓) | ( ) | ( ) | |
| e. Dust suppression measures taken and/or dust Screen erected for dusty site activities | (✓) | ( ) | ( ) | |
| f. Wheel washing bays provided at site vehicle exits and maintained in good working order | ( ) | ( ) | (✓) | |
| g. Vehicle wheels washed before leaving site | (✓) | ( ) | ( ) | |
| h. Dump trucks fitted with mechanical tarpaulin cover | (✓) | ( ) | ( ) | |
| i. Dusty loads on vehicles covered by tarpaulin | (✓) | ( ) | ( ) | |
| j. Vehicle speed control (8KM/hr) on site | (✓) | ( ) | ( ) | |
| k. Black smoke emission control from site plant | (✓) | ( ) | ( ) | |
| l. No opening burning of debris on site | (✓) | ( ) | ( ) | |
| m Use of Ultra Low Surphur Diesel (ULSD) for constructional plant and equipment | (✓) | ( ) | ( ) | |
| n. Other: Please specify | ( ) | ( ) | (✓) | |
| 3 WATER POLLUTION | | | | |
| a. Tightly sealed closed grab excavator used for river channel excavation works | (✓) | ( ) | ( ) | |
| b. River excavation works sections by sections as required | ( ) | ( ) | (✓) | |
| c. Splashing of sediment avoided during transfer | (✓) | ( ) | ( ) | |
| d. Floating debris in river cleared | (✓) | ( ) | ( ) | |
| e. Leakage from plant & vessel avoided | (✓) | ( ) | ( ) | |
| f. Wheel washing bay desilted regularly | ( ) | ( ) | (✓) | |
| g. Temporary drainage diversion provided as required | (✓) | ( ) | ( ) | |
| h. Site run-off towards silt traps | (✓) | ( ) | ( ) | |
| i. Silt traps & drainages cleared | (✓) | ( ) | ( ) | |
| Sand bags provided at site entrance and around road gullies as necessary | | | | |
| j. Water Discharge License applied as necessary | (✓) | ( ) | ( ) | |
| k. Wastewater treated as required | (✓) | ( ) | ( ) | |
| l. Treated effluent reused and recycled | ( ) | ( ) | (✓) | |

| | YES | NO | N/A | REMARK |
|---|---|---|---|---|
| m. Chemical toilets provided as necessary | ( ) | ( ) | (✓) | |
| n. Heavy Rainstorm Response Procedure displayed | (✓) | ( ) | ( ) | |
| o. Other: Please specify | ( ) | ( ) | (✓) | |
| **4. NOISE POLLUTION** | | | | |
| a. Temporary noise barriers installed at designated locations as required in EP | ( ) | ( ) | (✓) | |
| b. Noisy plant and equipment sited away from noisy sensitive receiver as possible | ( ) | ( ) | (✓) | |
| c. Air Compressors and portable percussive breakers with Noise Emission Labels | ( ) | ( ) | (✓) | |
| d. Pneumatic percussive breakers fitted with sound mufflers | ( ) | ( ) | (✓) | |
| e. Engine flap covers kept closed of construction plant during operations | ( ) | ( ) | (✓) | |
| Excavator breaker tip wrapped with sound insulating material for breaking work | | | | |
| f. Noise baffles/screens to noisy machines/site activities as necessary | ( ) | ( ) | (✓) | |
| g. Valid Construction Noise Permits (CNP) for works in restricted hours | ( ) | ( ) | (✓) | |
| h. Full compliance with CNP conditions | ( ) | ( ) | (✓) | |
| i. Other: Please specify | ( ) | ( ) | (✓) | |
| **5 RESOURCES MANAGEMENT** | | | | |
| a. Site Perimeter Hoardings made of metal | ( ) | ( ) | (✓) | |
| b. Restricted use of hardwood in formwork | ( ) | ( ) | (✓) | |
| c. Low VOC or water based paint selected as possible | ( ) | ( ) | (✓) | |
| d. Approved larvicide/insecticide for mosquito control work | (✓) | ( ) | ( ) | |
| e. Designated material storage containers/areas | (✓) | ( ) | ( ) | |
| f. Proper storage of materials | (✓) | ( ) | ( ) | |
| g. Other: Please specify | ( ) | ( ) | (✓) | |
| **6. WASTE MANAGEMENT** | | | | |
| a. Designated area for sorting and temporary storage of C & D materials on site | (✓) | ( ) | ( ) | |
| b. Proper sorting of inert and non-inert materials | (✓) | ( ) | ( ) | |
| c. Recycle bins for recycling of different materials | (✓) | ( ) | ( ) | |
| d. Rubbish bins for general rubbish | (✓) | ( ) | ( ) | |
| e. Measures taken to avoid cross contamination of different wastes | (✓) | ( ) | ( ) | |
| f. Disposed of regularly to avoid excessive accumulation | (✓) | ( ) | ( ) | |
| g. Trip tickets and EPD chits duly completed and used in C & D waste disposal | ( ) | ( ) | (✓) | |
| h. Registration as Chemical Waste Producer as required | ( ) | ( ) | (✓) | |
| i. Chemical wastes properly labeled and packaged | ( ) | ( ) | (✓) | |
| j. Chemical wastes pending collection stored properly to avoid leakage | ( ) | ( ) | (✓) | |
| Used trip tickets kept for chemical waste disposal | | | | |
| k.. Proper handling of contaminated soil samples in land contamination investigation work | ( ) | ( ) | (✓) | |
| l. Proper storage of contaminated soil samples in land contamination investigation work | ( ) | ( ) | (✓) | |
| m Other: Please specify | ( ) | ( ) | (✓) | |
| **7 CHEMICALS MANAGEMENT** | | | | |
| a. Dangerous Goods kept below exempted quantities on site or otherwise suitable DG store provided | ( ) | ( ) | (✓) | |
| b. Proper containers for carrying plant fuel or site chemicals | (✓) | ( ) | ( ) | |
| c. Containers carrying plant fuel or site chemicals with suitable chemical labels | (✓) | ( ) | ( ) | |
| d. Fuel drums and containers carrying site chemicals kept closed when not in use | ( ) | ( ) | (✓) | |
| e. Chemicals stored in dry, cool and sheltered place | ( ) | ( ) | (✓) | |
| f. No smoking/ignition source notice displayed near fuel/chemical storage area | (✓) | ( ) | ( ) | |
| g. Suitable fire extinguishers put aside for ready use | (✓) | ( ) | ( ) | |
| h. Chemicals kept away from plant fuel | ( ) | ( ) | (✓) | |
| i. Containers carrying plant fuel or site chemicals placed on drip trays or otherwise store area suitably bunded | ( ) | ( ) | (✓) | |
| Emergency spillage procedure posted | ( ) | ( ) | (✓) | |
| j. Others: Please specify | ( ) | ( ) | (✓) | |

| | YES | NO | N/A | REMARK |
|---|---|---|---|---|
| 8 OTHERS | | | | |
| a. Existing trees and vegetation maintained and protected as required | (✓) | ( ) | ( ) | |
| b. Materials & Plant kept way from existing trees and vegetation | (✓) | ( ) | ( ) | |
| c. Target fauna species re-located and protected as required | ( ) | ( ) | (✓) | |
| d. Topsoil conserved and re-use in landscape works | ( ) | ( ) | (✓) | |
| e. Night-time lighting controlled to minimize glare | ( ) | ( ) | (✓) | |
| f. Others: Please specify | ( ) | ( ) | (✓) | |

9. OTHER COMMENTS

a. _____
b. _____
c. _____

Signed By

Name: CHAN HIU SHAN
Environmental Officer

Signed By

Name & Title: AIONS/D 192 to WING CHEONG
Engineer's Nominated Site Representative

# Kwan Lee - Kuly JV

**Drainage Services Department**
**Contract No. DC/2010/02**
**Contract Title: Drainage Improvement Works in Shuen Wan and Shek Wu Wai**
**Weekly Environmental Walk (No. 012 )**
**Environmental Inspection Checklist**

Date of Inspection: 10 August 2011 Time 0930
Weather: : ~~Sunny/Fine/Overcast/Drizzle~~/Rain/~~Storm/Hazy~~ Temperature: 28 °C
Wind: Calm/~~Light/Breeze/Strong~~ Humidity: High/~~Moderate/Low~~
Locations: a. SHEK WU WAI d. Area 1
b. TUNG TSZ ROAD
c. Area 2

Person(s) making the inspection:

| Name in Block Letters | Designation | Organisation |
|---|---|---|
| HO WING CHEONG | AIOW | DSD |
| LAU SIU CHUEN | WSI | DSD |
| WONG KA WAI | WSII | DSD |
| MOK CHU HUNG, TOMMY | SITE AGENT | KLKJV |
| CHAN HIU SHAN | EO | KLKJV |
| LAM CHUEN LAM | FOREMAN | KLKJV |

| | YES | NO | N/A | REMARK |
|---|---|---|---|---|
| 1 GENERAL | | | | |
| a. Environmental Permit (EP) copy at site entrance | (✓) | ( ) | ( ) | |
| b. Environmental posters/notices at place of work | (✓) | ( ) | ( ) | |
| c. Site kept clean and tidy | (✓) | ( ) | ( ) | |
| d. Engine shut off when not in use | (✓) | ( ) | ( ) | |
| e. Proper maintenance of site plant and equipment | (✓) | ( ) | ( ) | |
| f Other: Please specify | ( ) | ( ) | (✓) | |
| 2. AIR POLLUTION | | | | |
| a. Site Perimeter Hoardings provided as required | (✓) | ( ) | ( ) | |
| b. Haul Road paved or kept wet | (✓) | ( ) | ( ) | |
| c. Water spraying during loading and unloading of dusty material | (✓) | ( ) | ( ) | |
| d. Exposed stockpile & dusty materials in storage wetted or covered by tarpaulin as required | (✓) | ( ) | ( ) | |
| e. Dust suppression measures taken and/or dust Screen erected for dusty site activities | (✓) | ( ) | ( ) | |
| f. Wheel washing bays provided at site vehicle exits and maintained in good working order | ( ) | ( ) | (✓) | |
| g. Vehicle wheels washed before leaving site | (✓) | ( ) | ( ) | |
| h. Dump trucks fitted with mechanical tarpaulin cover | (✓) | ( ) | ( ) | |
| i. Dusty loads on vehicles covered by tarpaulin | (✓) | ( ) | ( ) | |
| j. Vehicle speed control (8KM/hr) on site | (✓) | ( ) | ( ) | |
| k. Black smoke emission control from site plant | (✓) | ( ) | ( ) | |
| l. No opening burning of debris on site | (✓) | ( ) | ( ) | |
| m Use of Ultra Low Surphur Diesel (ULSD) for constructional plant and equipment | (✓) | ( ) | ( ) | |
| n. Other: Please specify | ( ) | ( ) | (✓) | |
| 3 WATER POLLUTION | | | | |
| a. Tightly sealed closed grab excavator used for river channel excavation works | (✓) | ( ) | ( ) | |
| b. River excavation works sections by sections as required | ( ) | ( ) | (✓) | |
| c. Splashing of sediment avoided during transfer | (✓) | ( ) | ( ) | |
| d. Floating debris in river cleared | (✓) | ( ) | ( ) | |
| e. Leakage from plant & vessel avoided | (✓) | ( ) | ( ) | |
| f. Wheel washing bay desilted regularly | ( ) | ( ) | (✓) | |
| g. Temporary drainage diversion provided as required | (✓) | ( ) | ( ) | |
| h. Site run-off towards silt traps | (✓) | ( ) | ( ) | |
| i. Silt traps & drainages cleared Sand bags provided at site entrance and around road gullies as necessary | (✓) | ( ) | ( ) | |
| j. Water Discharge License applied as necessary | (✓) | ( ) | ( ) | |
| k. Wastewater treated as required | (✓) | ( ) | ( ) | |
| l. Treated effluent reused and recycled | ( ) | ( ) | (✓) | |

| | YES | NO | N/A | REMARK |
|---|---|---|---|---|
| m. Chemical toilets provided as necessary | ( ) | ( ) | (✓) | |
| n. Heavy Rainstorm Response Procedure displayed | (✓) | ( ) | ( ) | |
| o. Other: Please specify | ( ) | ( ) | (✓) | |
| **4. NOISE POLLUTION** | | | | |
| a. Temporary noise barriers installed at designated locations as required in EP | ( ) | ( ) | (✓) | |
| b. Noisy plant and equipment sited away from noisy sensitive receiver as possible | ( ) | ( ) | (✓) | |
| c. Air Compressors and portable percussive breakers with Noise Emission Labels | ( ) | ( ) | (✓) | |
| d. Pneumatic percussive breakers fitted with sound mufflers | ( ) | ( ) | (✓) | |
| e. Engine flap covers kept closed of construction plant during operations | ( ) | ( ) | (✓) | |
| Excavator breaker tip wrapped with sound insulating material for breaking work | | | | |
| f. Noise baffles/screens to noisy machines/site activities as necessary | ( ) | ( ) | (✓) | |
| g. Valid Construction Noise Permits (CNP) for works in restricted hours | ( ) | ( ) | (✓) | |
| h. Full compliance with CNP conditions | ( ) | ( ) | (✓) | |
| i. Other: Please specify | ( ) | ( ) | (✓) | |
| **5 RESOURCES MANAGEMENT** | | | | |
| a. Site Perimeter Hoardings made of metal | ( ) | ( ) | (✓) | |
| b. Restricted use of hardwood in formwork | ( ) | ( ) | (✓) | |
| c. Low VOC or water based paint selected as possible | ( ) | ( ) | (✓) | |
| d. Approved larvicide/insecticide for mosquito control work | (✓) | ( ) | ( ) | |
| e. Designated material storage containers/areas | (✓) | ( ) | ( ) | |
| f. Proper storage of materials | (✓) | ( ) | ( ) | |
| g. Other: Please specify | ( ) | ( ) | (✓) | |
| **6. WASTE MANAGEMENT** | | | | |
| a. Designated area for sorting and temporary storage of C & D materials on site | (✓) | ( ) | ( ) | |
| b. Proper sorting of inert and non-inert materials | (✓) | ( ) | ( ) | |
| c. Recycle bins for recycling of different materials | (✓) | ( ) | ( ) | |
| d. Rubbish bins for general rubbish | (✓) | ( ) | ( ) | |
| e. Measures taken to avoid cross contamination of different wastes | (✓) | ( ) | ( ) | |
| f. Disposed of regularly to avoid excessive accumulation | (✓) | ( ) | ( ) | |
| g. Trip tickets and EPD chits duly completed and used in C & D waste disposal | ( ) | ( ) | (✓) | |
| h. Registration as Chemical Waste Producer as required | ( ) | ( ) | (✓) | |
| i. Chemical wastes properly labeled and packaged | ( ) | ( ) | (✓) | |
| j. Chemical wastes pending collection stored properly to avoid leakage | ( ) | ( ) | (✓) | |
| Used trip tickets kept for chemical waste disposal | | | | |
| k.. Proper handling of contaminated soil samples in land contamination investigation work | ( ) | ( ) | (✓) | |
| l. Proper storage of contaminated soil samples in land contamination investigation work | ( ) | ( ) | (✓) | |
| m Other: Please specify | ( ) | ( ) | (✓) | |
| **7 CHEMICALS MANAGEMENT** | | | | |
| a. Dangerous Goods kept below exempted quantities on site or otherwise suitable DG store provided | ( ) | ( ) | (✓) | |
| b. Proper containers for carrying plant fuel or site chemicals | (✓) | ( ) | ( ) | |
| c. Containers carrying plant fuel or site chemicals with suitable chemical labels | (✓) | ( ) | ( ) | |
| d. Fuel drums and containers carrying site chemicals kept closed when not in use | ( ) | ( ) | (✓) | |
| e. Chemicals stored in dry, cool and sheltered place | ( ) | ( ) | (✓) | |
| f. No smoking/ignition source notice displayed near fuel/chemical storage area | (✓) | ( ) | ( ) | |
| g. Suitable fire extinguishers put aside for ready use | (✓) | ( ) | ( ) | |
| h. Chemicals kept away from plant fuel | ( ) | ( ) | (✓) | |
| i. Containers carrying plant fuel or site chemicals placed on drip trays or otherwise store area suitably bunded | ( ) | ( ) | (✓) | |
| Emergency spillage procedure posted | ( ) | ( ) | (✓) | |
| j. Others: Please specify | ( ) | ( ) | (✓) | |

| 8 OTHERS | YES | NO | N/A | REMARK |
|---|---|---|---|---|
| a. Existing trees and vegetation maintained and protected as required | (✓) | ( ) | ( ) | |
| b. Materials & Plant kept way from existing trees and vegetation | (✓) | ( ) | ( ) | |
| c. Target fauna species re-located and protected as required | ( ) | ( ) | (✓) | |
| d. Topsoil conserved and re-use in landscape works | ( ) | ( ) | (✓) | |
| e. Night-time lighting controlled to minimize glare | ( ) | ( ) | (✓) | |
| f. Others: Please specify | ( ) | ( ) | (✓) | |

9. OTHER COMMENTS

a. _____
b. _____
c. _____

Signed By

Name: CHAN HIU SHAN
Environmental Officer

Signed By

Name & Title: Ho Wang Chung
Engineer's Nominated Site Representative

# Kwan Lee - Kuly JV

**Drainage Services Department**
**Contract No. DC/2010/02**
**Contract Title: Drainage Improvement Works in Shuen Wan and Shek Wu Wai**
**Weekly Environmental Walk (No. 013)**
**Environmental Inspection Checklist**

Date of Inspection: 17 August 2011 Time 1400
Weather: : Sunny/~~Fine~~/~~Overcast~~/~~Drizzle~~/~~Rain~~/~~Storm~~/~~Hazy~~ Temperature: 30 °C
Wind: Calm/~~Light~~/~~Breeze~~/~~Strong~~ Humidity: ~~High~~/Moderate/~~Low~~
Locations: a. SHEK WU WAI d. Area 1
b. TUNG TSZ ROAD
c. Area 2

Person(s) making the inspection:

| Name in Block Letters | Designation | Organisation |
|---|---|---|
| SIU WAI CHUNG | ER | DSD |
| YIP WAI LUN | ER | DSD |
| TSO SI ON | SIOW | DSD |
| LI CHI KEUNG | IOW | DSD |
| HO WING CHEONG | AIOW | DSD |
| LAU SIU CHUEN | WSI | DSD |
| WONG KA WAI | WSII | DSD |
| MOK CHU HUNG, TOMMY | SITE AGENT | KLKJV |
| CHAN HIU SHAN | EO | KLKJV |
| LAI KAN FAT | FOREMAN | KLKJV |
| T.W. TAM | E.T. LEADER | AUES |
| JUSTION YE | IEC | ENVIRON |

| | YES | NO | N/A | REMARK |
|---|---|---|---|---|
| **1 GENERAL** | | | | |
| a. Environmental Permit (EP) copy at site entrance | (✓) | ( ) | ( ) | |
| b. Environmental posters/notices at place of work | (✓) | ( ) | ( ) | |
| c. Site kept clean and tidy | (✓) | ( ) | ( ) | |
| d. Engine shut off when not in use | (✓) | ( ) | ( ) | |
| e. Proper maintenance of site plant and equipment | (✓) | ( ) | ( ) | |
| f Other: Please specify | ( ) | ( ) | (✓) | |
| **2. AIR POLLUTION** | | | | |
| a. Site Perimeter Hoardings provided as required | (✓) | ( ) | ( ) | |
| b. Haul Road paved or kept wet | (✓) | ( ) | ( ) | |
| c. Water spraying during loading and unloading of dusty material | (✓) | ( ) | ( ) | |
| d. Exposed stockpile & dusty materials in storage wetted or covered by tarpaulin as required | (✓) | ( ) | ( ) | |
| e. Dust suppression measures taken and/or dust Screen erected for dusty site activities | (✓) | ( ) | ( ) | |
| f. Wheel washing bays provided at site vehicle exits and maintained in good working order | ( ) | ( ) | (✓) | |
| g. Vehicle wheels washed before leaving site | (✓) | ( ) | ( ) | |
| h. Dump trucks fitted with mechanical tarpaulin cover | (✓) | ( ) | ( ) | |
| i. Dusty loads on vehicles covered by tarpaulin | (✓) | ( ) | ( ) | |
| j. Vehicle speed control (8KM/hr) on site | (✓) | ( ) | ( ) | |
| k. Black smoke emission control from site plant | (✓) | ( ) | ( ) | |
| l. No opening burning of debris on site | (✓) | ( ) | ( ) | |
| m Use of Ultra Low Surphur Diesel (ULSD) for constructional plant and equipment | (✓) | ( ) | ( ) | |
| n. Other: Please specify | ( ) | ( ) | (✓) | |
| **3 WATER POLLUTION** | | | | |
| a. Tightly sealed closed grab excavator used for river channel excavation works | (✓) | ( ) | ( ) | |
| b. River excavation works sections by sections as required | ( ) | ( ) | (✓) | |
| c. Splashing of sediment avoided during transfer | (✓) | ( ) | ( ) | |
| d. Floating debris in river cleared | (✓) | ( ) | ( ) | |
| e. Leakage from plant & vessel avoided | (✓) | ( ) | ( ) | |
| f. Wheel washing bay desilted regularly | ( ) | ( ) | (✓) | |
| g. Temporary drainage diversion provided as required | (✓) | ( ) | ( ) | |
| h. Site run-off towards silt traps | (✓) | ( ) | ( ) | |

| | YES | NO | N/A | REMARK |
|---|---|---|---|---|
| i. Silt traps & drainages cleared<br>Sand bags provided at site entrance and around road gullies as necessary | (✓) | ( ) | ( ) | |
| j. Water Discharge License applied as necessary | (✓) | ( ) | ( ) | |
| k. Wastewater treated as required | (✓) | ( ) | ( ) | |
| l. Treated effluent reused and recycled | ( ) | ( ) | (✓) | |
| m. Chemical toilets provided as necessary | ( ) | ( ) | (✓) | |
| n. Heavy Rainstorm Response Procedure displayed | (✓) | ( ) | ( ) | |
| o. Other: Please specify | ( ) | ( ) | (✓) | |
| | ( ) | ( ) | (✓) | |

4. NOISE POLLUTION

| | | | | |
|---|---|---|---|---|
| a. Temporary noise barriers installed at designated locations as required in EP | ( ) | ( ) | (✓) | |
| b. Noisy plant and equipment sited away from noisy sensitive receiver as possible | ( ) | ( ) | (✓) | |
| c. Air Compressors and portable percussive breakers with Noise Emission Labels | ( ) | ( ) | (✓) | |
| d. Pneumatic percussive breakers fitted with sound mufflers | ( ) | ( ) | (✓) | |
| e. Engine flap covers kept closed of construction plant during operations<br>Excavator breaker tip wrapped with sound insulating material for breaking work | ( ) | ( ) | (✓) | |
| f. Noise baffles/screens to noisy machines/site activities as necessary | ( ) | ( ) | (✓) | |
| g. Valid Construction Noise Permits (CNP) for works in restricted hours | ( ) | ( ) | (✓) | |
| h. Full compliance with CNP conditions | ( ) | ( ) | (✓) | |
| i. Other: Please specify | ( ) | ( ) | (✓) | |

5 RESOURCES MANAGEMENT

| | | | | |
|---|---|---|---|---|
| a. Site Perimeter Hoardings made of metal | ( ) | ( ) | (✓) | |
| b. Restricted use of hardwood in formwork | ( ) | ( ) | (✓) | |
| c. Low VOC or water based paint selected as possible | ( ) | ( ) | (✓) | |
| d. Approved larvicide/insecticide for mosquito control work | (✓) | ( ) | ( ) | |
| e. Designated material storage containers/areas | (✓) | ( ) | ( ) | |
| f. Proper storage of materials | (✓) | ( ) | ( ) | |
| g. Other: Please specify | ( ) | ( ) | (✓) | |

6. WASTE MANAGEMENT

| | | | | |
|---|---|---|---|---|
| a. Designated area for sorting and temporary storage of C & D materials on site | (✓) | ( ) | ( ) | |
| b. Proper sorting of inert and non-inert materials | (✓) | ( ) | ( ) | |
| c. Recycle bins for recycling of different materials | (✓) | ( ) | ( ) | |
| d. Rubbish bins for general rubbish | (✓) | ( ) | ( ) | |
| e. Measures taken to avoid cross contamination of different wastes | (✓) | ( ) | ( ) | |
| f. Disposed of regularly to avoid excessive accumulation | (✓) | ( ) | ( ) | |
| g. Trip tickets and EPD chits duly completed and used in C & D waste disposal | ( ) | ( ) | (✓) | |
| h. Registration as Chemical Waste Producer as required | ( ) | ( ) | (✓) | |
| i. Chemical wastes properly labeled and packaged | ( ) | ( ) | (✓) | |
| j. Chemical wastes pending collection stored properly to avoid leakage<br>Used trip tickets kept for chemical waste disposal | ( ) | ( ) | (✓) | |
| k.. Proper handling of contaminated soil samples in land contamination investigation work | ( ) | ( ) | (✓) | |
| l. Proper storage of contaminated soil samples in land contamination investigation work | ( ) | ( ) | (✓) | |
| m Other: Please specify | ( ) | ( ) | (✓) | |

7 CHEMICALS MANAGEMENT

| | | | | |
|---|---|---|---|---|
| a. Dangerous Goods kept below exempted quantities on site or otherwise suitable DG store provided | (✓) | ( ) | ( ) | |
| b. Proper containers for carrying plant fuel or site chemicals | (✓) | ( ) | ( ) | |
| c. Containers carrying plant fuel or site chemicals with suitable chemical labels | (✓) | ( ) | ( ) | |
| d. Fuel drums and containers carrying site chemicals kept closed when not in use | ( ) | ( ) | (✓) | |
| e. Chemicals stored in dry, cool and sheltered place | ( ) | ( ) | (✓) | |
| f. No smoking/ignition source notice displayed near fuel/chemical storage area | (✓) | ( ) | ( ) | |
| g. Suitable fire extinguishers put aside for ready use | (✓) | ( ) | ( ) | |
| h. Chemicals kept away from plant fuel | ( ) | ( ) | (✓) | |
| i. Containers carrying plant fuel or site chemicals placed on drip trays or otherwise store area suitably bunded | ( ) | ( ) | (✓) | |

| | YES | NO | N/A | REMARK |
|---|---|---|---|---|
| Emergency spillage procedure posted | ( ) | ( ) | (✓) | |
| j. Others: Please specify | ( ) | ( ) | (✓) | |

8 OTHERS

| | | | | |
|---|---|---|---|---|
| a. Existing trees and vegetation maintained and protected as required | (✓) | ( ) | ( ) | |
| b. Materials & Plant kept way from existing trees and vegetation | (✓) | ( ) | ( ) | |
| c. Target fauna species re-located and protected as required | ( ) | ( ) | (✓) | |
| d. Topsoil conserved and re-use in landscape works | ( ) | ( ) | (✓) | |
| e. Night-time lighting controlled to minimize glare | ( ) | ( ) | (✓) | |
| f. Others: Please specify | ( ) | ( ) | (✓) | |

9. OTHER COMMENTS

a. _____
b. _____
c. _____

Signed By

Name: CHAN HIU SHAN
Environmental Officer

Signed By

Name & Title: AIOW/DLPC
Engineer's Nominated Site Representative

# Kwan Lee - Kuly JV

## Drainage Services Department
## Contract No. DC/2010/02
## Contract Title: Drainage Improvement Works in Shuen Wan and Shek Wu Wai
### Weekly Environmental Walk (No. 014 )
### Environmental Inspection Checklist

Date of Inspection: 24 August 2011 Time 1400
Weather: : Sunny/~~Fine~~/~~Overcast~~/~~Drizzle~~/~~Rain~~/~~Storm~~/~~Hazy~~ Temperature: 32 °C
Wind: Calm/~~Light~~/~~Breeze~~/~~Strong~~ Humidity: ~~High~~/Moderate/~~Low~~
Locations: a. SHEK WU WAI d. Area 1
b. TUNG TSZ ROAD
c. Area 2

Person(s) making the inspection:

| Name in Block Letters | Designation | Organisation |
|---|---|---|
| LI CHI KEUNG | IOW | DSD |
| HO WING CHEONG | AIOW | DSD |
| LAU SIU CHUEN | WSI | DSD |
| WONG KA WAI | WSII | DSD |
| CHAN HIU SHAN | EO | KLKJV |
| LAM CHUEN LAM | FOREMAN | KLKJV |

| | YES | NO | N/A | REMARK |
|---|---|---|---|---|
| 1 GENERAL | | | | |
| a. Environmental Permit (EP) copy at site entrance | (✓) | ( ) | ( ) | |
| b. Environmental posters/notices at place of work | (✓) | ( ) | ( ) | |
| c. Site kept clean and tidy | (✓) | ( ) | ( ) | |
| d. Engine shut off when not in use | (✓) | ( ) | ( ) | |
| e. Proper maintenance of site plant and equipment | (✓) | ( ) | ( ) | |
| f Other: Please specify | ( ) | ( ) | (✓) | |
| 2. AIR POLLUTION | | | | |
| a. Site Perimeter Hoardings provided as required | (✓) | ( ) | ( ) | |
| b. Haul Road paved or kept wet | (✓) | ( ) | ( ) | |
| c. Water spraying during loading and unloading of dusty material | (✓) | ( ) | ( ) | |
| d. Exposed stockpile & dusty materials in storage wetted or covered by tarpaulin as required | (✓) | ( ) | ( ) | |
| e. Dust suppression measures taken and/or dust Screen erected for dusty site activities | (✓) | ( ) | ( ) | |
| f. Wheel washing bays provided at site vehicle exits and maintained in good working order | ( ) | ( ) | (✓) | |
| g. Vehicle wheels washed before leaving site | (✓) | ( ) | ( ) | |
| h. Dump trucks fitted with mechanical tarpaulin cover | (✓) | ( ) | ( ) | |
| i. Dusty loads on vehicles covered by tarpaulin | (✓) | ( ) | ( ) | |
| j. Vehicle speed control (8KM/hr) on site | (✓) | ( ) | ( ) | |
| k. Black smoke emission control from site plant | (✓) | ( ) | ( ) | |
| l. No opening burning of debris on site | (✓) | ( ) | ( ) | |
| m Use of Ultra Low Surphur Diesel (ULSD) for constructional plant and equipment | (✓) | ( ) | ( ) | |
| n. Other: Please specify | ( ) | ( ) | (✓) | |
| 3 WATER POLLUTION | | | | |
| a. Tightly sealed closed grab excavator used for river channel excavation works | (✓) | ( ) | ( ) | |
| b. River excavation works sections by sections as required | ( ) | ( ) | (✓) | |
| c. Splashing of sediment avoided during transfer | (✓) | ( ) | ( ) | |
| d. Floating debris in river cleared | (✓) | ( ) | ( ) | |
| e. Leakage from plant & vessel avoided | (✓) | ( ) | ( ) | |
| f. Wheel washing bay desilted regularly | ( ) | ( ) | (✓) | |
| g. Temporary drainage diversion provided as required | (✓) | ( ) | ( ) | |
| h. Site run-off towards silt traps | (✓) | ( ) | ( ) | |
| i. Silt traps & drainages cleared Sand bags provided at site entrance and around road gullies as necessary | (✓) | ( ) | ( ) | |
| j. Water Discharge License applied as necessary | (✓) | ( ) | ( ) | |
| k. Wastewater treated as required | (✓) | ( ) | ( ) | |

| | YES | NO | N/A | REMARK |
|---|---|---|---|---|
| l. Treated effluent reused and recycled | ( ) | ( ) | (✓) | |
| m. Chemical toilets provided as necessary | ( ) | ( ) | (✓) | |
| n. Heavy Rainstorm Response Procedure displayed | (✓) | ( ) | ( ) | |
| o. Other: Please specify | ( ) | ( ) | (✓) | |
| **4. NOISE POLLUTION** | | | | |
| a. Temporary noise barriers installed at designated locations as required in EP | ( ) | ( ) | (✓) | |
| b. Noisy plant and equipment sited away from noisy sensitive receiver as possible | ( ) | ( ) | (✓) | |
| c. Air Compressors and portable percussive breakers with Noise Emission Labels | ( ) | ( ) | (✓) | |
| d. Pneumatic percussive breakers fitted with sound mufflers | ( ) | ( ) | (✓) | |
| e. Engine flap covers kept closed of construction plant during operations | ( ) | ( ) | (✓) | |
| Excavator breaker tip wrapped with sound insulating material for breaking work | | | | |
| f. Noise baffles/screens to noisy machines/site activities as necessary | ( ) | ( ) | (✓) | |
| g. Valid Construction Noise Permits (CNP) for works in restricted hours | ( ) | ( ) | (✓) | |
| h. Full compliance with CNP conditions | ( ) | ( ) | (✓) | |
| i. Other: Please specify | ( ) | ( ) | (✓) | |
| **5 RESOURCES MANAGEMENT** | | | | |
| a. Site Perimeter Hoardings made of metal | ( ) | ( ) | (✓) | |
| b. Restricted use of hardwood in formwork | ( ) | ( ) | (✓) | |
| c. Low VOC or water based paint selected as possible | ( ) | ( ) | (✓) | |
| d. Approved larvicide/insecticide for mosquito control work | (✓) | ( ) | ( ) | |
| e. Designated material storage containers/areas | (✓) | ( ) | ( ) | |
| f. Proper storage of materials | (✓) | ( ) | ( ) | |
| g. Other: Please specify | ( ) | ( ) | (✓) | |
| **6. WASTE MANAGEMENT** | | | | |
| a. Designated area for sorting and temporary storage of C & D materials on site | (✓) | ( ) | ( ) | |
| b. Proper sorting of inert and non-inert materials | (✓) | ( ) | ( ) | |
| c. Recycle bins for recycling of different materials | (✓) | ( ) | ( ) | |
| d. Rubbish bins for general rubbish | (✓) | ( ) | ( ) | |
| e. Measures taken to avoid cross contamination of different wastes | (✓) | ( ) | ( ) | |
| f. Disposed of regularly to avoid excessive accumulation | (✓) | ( ) | ( ) | |
| g. Trip tickets and EPD chits duly completed and used in C & D waste disposal | ( ) | ( ) | (✓) | |
| h. Registration as Chemical Waste Producer as required | ( ) | ( ) | (✓) | |
| i. Chemical wastes properly labeled and packaged | ( ) | ( ) | (✓) | |
| j. Chemical wastes pending collection stored properly to avoid leakage | ( ) | ( ) | (✓) | |
| Used trip tickets kept for chemical waste disposal | | | | |
| k.. Proper handling of contaminated soil samples in land contamination investigation work | ( ) | ( ) | (✓) | |
| l. Proper storage of contaminated soil samples in land contamination investigation work | ( ) | ( ) | (✓) | |
| m Other: Please specify | ( ) | ( ) | (✓) | |
| **7 CHEMICALS MANAGEMENT** | | | | |
| a. Dangerous Goods kept below exempted quantities on site or otherwise suitable DG store provided | (✓) | ( ) | ( ) | |
| b. Proper containers for carrying plant fuel or site chemicals | (✓) | ( ) | ( ) | |
| c. Containers carrying plant fuel or site chemicals with suitable chemical labels | (✓) | ( ) | ( ) | |
| d. Fuel drums and containers carrying site chemicals kept closed when not in use | ( ) | ( ) | (✓) | |
| e. Chemicals stored in dry, cool and sheltered place | ( ) | ( ) | (✓) | |
| f. No smoking/ignition source notice displayed near fuel/chemical storage area | (✓) | ( ) | ( ) | |
| g. Suitable fire extinguishers put aside for ready use | (✓) | ( ) | ( ) | |
| h. Chemicals kept away from plant fuel | ( ) | ( ) | (✓) | |
| i. Containers carrying plant fuel or site chemicals placed on drip trays or otherwise store area suitably bunded | ( ) | ( ) | (✓) | |
| Emergency spillage procedure posted | ( ) | ( ) | (✓) | |
| j. Others: Please specify | ( ) | ( ) | (✓) | |

| | YES | NO | N/A | REMARK |
|---|---|---|---|---|
| 8 OTHERS | | | | |
| a. Existing trees and vegetation maintained and protected as required | (✓) | ( ) | ( ) | |
| b. Materials & Plant kept way from existing trees and vegetation | (✓) | ( ) | ( ) | |
| c. Target fauna species re-located and protected as required | ( ) | ( ) | (✓) | |
| d. Topsoil conserved and re-use in landscape works | ( ) | ( ) | (✓) | |
| e. Night-time lighting controlled to minimize glare | ( ) | ( ) | (✓) | |
| f. Others: Please specify | ( ) | ( ) | (✓) | |

9. OTHER COMMENTS

a. _____
b. _____
c. _____

Signed By

Name: CHAN HIU SHAN
Environmental Officer

Signed By

Name & Title: AIOW/DEC
Engineer's Nominated Site Representative

# Kwan Lee - Kuly JV

## Drainage Services Department
## Contract No. DC/2010/02
## Contract Title: Drainage Improvement Works in Shuen Wan and Shek Wu Wai
### Weekly Environmental Walk (No. 015. )
### Environmental Inspection Checklist

Date of Inspection: 31 August 2011 Time 1000
Weather: : ~~Sunny/Fine~~/Overcast/~~Drizzle/Rain/Storm/Hazy~~ Temperature: 31 °C
Wind: Calm/~~Light/Breeze/Strong~~ Humidity: ~~High~~/Moderate/~~Low~~
Locations: a. SHEK WU WAI d. Area 1
b. TUNG TSZ ROAD
c. Area 2

Person(s) making the inspection:

| Name in Block Letters | Designation | Organization |
|---|---|---|
| HO WING CHEONG | AIOW | DSD |
| LAU SIU CHUEN | WSI | DSD |
| WONG KA WAI | WSII | DSD |
| YIP SIU HONG | SITE AGENT | KLKJV |
| CHAN HIU SHAN | EO | KLKJV |

| | YES | NO | N/A | REMARK |
|---|---|---|---|---|
| 1 GENERAL | | | | |
| a. Environmental Permit (EP) copy at site entrance | (✓) | ( ) | ( ) | |
| b. Environmental posters/notices at place of work | (✓) | ( ) | ( ) | |
| c. Site kept clean and tidy | (✓) | ( ) | ( ) | |
| d. Engine shut off when not in use | (✓) | ( ) | ( ) | |
| e. Proper maintenance of site plant and equipment | (✓) | ( ) | ( ) | |
| f Other: Please specify | ( ) | ( ) | (✓) | |
| 2. AIR POLLUTION | | | | |
| a. Site Perimeter Hoardings provided as required | (✓) | ( ) | ( ) | |
| b. Haul Road paved or kept wet | (✓) | ( ) | ( ) | |
| c. Water spraying during loading and unloading of dusty material | (✓) | ( ) | ( ) | |
| d. Exposed stockpile & dusty materials in storage wetted or covered by tarpaulin as required | (✓) | ( ) | ( ) | |
| e. Dust suppression measures taken and/or dust Screen erected for dusty site activities | (✓) | ( ) | ( ) | |
| f. Wheel washing bays provided at site vehicle exits and maintained in good working order | ( ) | ( ) | (✓) | |
| g. Vehicle wheels washed before leaving site | (✓) | ( ) | ( ) | |
| h. Dump trucks fitted with mechanical tarpaulin cover | (✓) | ( ) | ( ) | |
| i. Dusty loads on vehicles covered by tarpaulin | (✓) | ( ) | ( ) | |
| j. Vehicle speed control (8KM/hr) on site | (✓) | ( ) | ( ) | |
| k. Black smoke emission control from site plant | (✓) | ( ) | ( ) | |
| l. No opening burning of debris on site | (✓) | ( ) | ( ) | |
| m Use of Ultra Low Surphur Diesel (ULSD) for constructional plant and equipment | (✓) | ( ) | ( ) | |
| n. Other: Please specify | ( ) | ( ) | (✓) | |
| 3 WATER POLLUTION | | | | |
| a. Tightly sealed closed grab excavator used for river channel excavation works | (✓) | ( ) | ( ) | |
| b. River excavation works sections by sections as required | ( ) | ( ) | (✓) | |
| c. Splashing of sediment avoided during transfer | (✓) | ( ) | ( ) | |
| d. Floating debris in river cleared | (✓) | ( ) | ( ) | |
| e. Leakage from plant & vessel avoided | (✓) | ( ) | ( ) | |
| f. Wheel washing bay desilted regularly | ( ) | ( ) | (✓) | |
| g. Temporary drainage diversion provided as required | (✓) | ( ) | ( ) | |
| h. Site run-off towards silt traps | (✓) | ( ) | ( ) | |
| i. Silt traps & drainages cleared Sand bags provided at site entrance and around road gullies as necessary | (✓) | ( ) | ( ) | |
| j. Water Discharge License applied as necessary | (✓) | ( ) | ( ) | |
| k. Wastewater treated as required | (✓) | ( ) | ( ) | |
| l. Treated effluent reused and recycled | ( ) | ( ) | (✓) | |

| | YES | NO | N/A | REMARK |
|---|---|---|---|---|
| m. Chemical toilets provided as necessary | ( ) | ( ) | (✓) | |
| n. Heavy Rainstorm Response Procedure displayed | (✓) | ( ) | ( ) | |
| o. Other: Please specify | ( ) | ( ) | (✓) | |
| **4. NOISE POLLUTION** | | | | |
| a. Temporary noise barriers installed at designated locations as required in EP | ( ) | ( ) | (✓) | |
| b. Noisy plant and equipment sited away from noisy sensitive receiver as possible | ( ) | ( ) | (✓) | |
| c. Air Compressors and portable percussive breakers with Noise Emission Labels | ( ) | ( ) | (✓) | |
| d. Pneumatic percussive breakers fitted with sound mufflers | ( ) | ( ) | (✓) | |
| e. Engine flap covers kept closed of construction plant during operations | ( ) | ( ) | (✓) | |
| Excavator breaker tip wrapped with sound insulating material for breaking work | | | | |
| f. Noise baffles/screens to noisy machines/site activities as necessary | ( ) | ( ) | (✓) | |
| g. Valid Construction Noise Permits (CNP) for works in restricted hours | ( ) | ( ) | (✓) | |
| h. Full compliance with CNP conditions | ( ) | ( ) | (✓) | |
| i. Other: Please specify | ( ) | ( ) | (✓) | |
| **5 RESOURCES MANAGEMENT** | | | | |
| a. Site Perimeter Hoardings made of metal | ( ) | ( ) | (✓) | |
| b. Restricted use of hardwood in formwork | ( ) | ( ) | (✓) | |
| c. Low VOC or water based paint selected as possible | ( ) | ( ) | (✓) | |
| d. Approved larvicide/insecticide for mosquito control work | (✓) | ( ) | ( ) | |
| e. Designated material storage containers/areas | (✓) | ( ) | ( ) | |
| f. Proper storage of materials | (✓) | ( ) | ( ) | |
| g. Other: Please specify | ( ) | ( ) | (✓) | |
| **6. WASTE MANAGEMENT** | | | | |
| a. Designated area for sorting and temporary storage of C & D materials on site | (✓) | ( ) | ( ) | |
| b. Proper sorting of inert and non-inert materials | (✓) | ( ) | ( ) | |
| c. Recycle bins for recycling of different materials | (✓) | ( ) | ( ) | |
| d. Rubbish bins for general rubbish | (✓) | ( ) | ( ) | |
| e. Measures taken to avoid cross contamination of different wastes | (✓) | ( ) | ( ) | |
| f. Disposed of regularly to avoid excessive accumulation | (✓) | ( ) | ( ) | |
| g. Trip tickets and EPD chits duly completed and used in C & D waste disposal | ( ) | ( ) | (✓) | |
| h. Registration as Chemical Waste Producer as required | ( ) | ( ) | (✓) | |
| i. Chemical wastes properly labeled and packaged | ( ) | ( ) | (✓) | |
| j. Chemical wastes pending collection stored properly to avoid leakage | ( ) | ( ) | (✓) | |
| Used trip tickets kept for chemical waste disposal | | | | |
| k.. Proper handling of contaminated soil samples in land contamination investigation work | ( ) | ( ) | (✓) | |
| l. Proper storage of contaminated soil samples in land contamination investigation work | ( ) | ( ) | (✓) | |
| m Other: Please specify | ( ) | ( ) | (✓) | |
| **7 CHEMICALS MANAGEMENT** | | | | |
| a. Dangerous Goods kept below exempted quantities on site or otherwise suitable DG store provided | ( ) | ( ) | (✓) | |
| b. Proper containers for carrying plant fuel or site chemicals | (✓) | ( ) | ( ) | |
| c. Containers carrying plant fuel or site chemicals with suitable chemical labels | (✓) | ( ) | ( ) | |
| d. Fuel drums and containers carrying site chemicals kept closed when not in use | ( ) | ( ) | (✓) | |
| e. Chemicals stored in dry, cool and sheltered place | ( ) | ( ) | (✓) | |
| f. No smoking/ignition source notice displayed near fuel/chemical storage area | (✓) | ( ) | ( ) | |
| g. Suitable fire extinguishers put aside for ready use | (✓) | ( ) | ( ) | |
| h. Chemicals kept away from plant fuel | ( ) | ( ) | (✓) | |
| i. Containers carrying plant fuel or site chemicals placed on drip trays or otherwise store area suitably bunded | ( ) | ( ) | (✓) | |
| Emergency spillage procedure posted | ( ) | ( ) | (✓) | |
| j. Others: Please specify | ( ) | ( ) | (✓) | |

| 8 OTHERS | YES | NO | N/A | REMARK |
|---|---|---|---|---|
| a. Existing trees and vegetation maintained and protected as required | (✓) | ( ) | ( ) | |
| b. Materials & Plant kept way from existing trees and vegetation | (✓) | ( ) | ( ) | |
| c. Target fauna species re-located and protected as required | ( ) | ( ) | (✓) | |
| d. Topsoil conserved and re-use in landscape works | ( ) | ( ) | (✓) | |
| e. Night-time lighting controlled to minimize glare | ( ) | ( ) | (✓) | |
| f. Others: Please specify | ( ) | ( ) | (✓) | |

9. OTHER COMMENTS

a. Ensure the chemical waste box Compliance with Chapter 354C waste disposal (Chemical Waste) (General) regulation.
b.
c.

Signed By

Name: CHAN HIU SHAN
Environmental Officer

Signed By

Name & Title:
Engineer's Nominated Site Representative

# Appendix M

# Landscape & Visual Report

# Contract No. DC/2010/02 – Drainage Improvement Works in Shuen Wan and Shek Wu Wai

# Bi-weekly Lansdscape & Visual Monitoring – EM&A (Landscape & Visual) Report August 2011 (Issue 1)

**September 2011**

Environmental
Resources
Management

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10 October 2011

Kwan Lee - Kuly Joint Venture
Unit 6, 16/F, Yuen Long Trading Centre
33 Wang Yip Street West
Yuen Long, Hong Kong

***Attn.: Nicola Hon***

*Our ref: 0125606_Cert01_20111010*

Dear Nicola,

***Contract No. DC/2010/02 -***
***Drainage Improvement in Shuen Wan, Tai Po - Contract 2***
***Monthly EM&A (Landscape & Visual) Report***

Reference is made to the Monthly EM&A (Landscape & Visual) Report - Contract 2 for the month of August 2011, please kindly note that we have no adverse comment on the report.

Should you have any queries, please feel free to contact the undersigned at 2271 3117.

Yours sincerely,
For ERM-Hong Kong, Limited

Christina Ip
*RLA*



*Registered Office*
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Taikoo Place
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Hong Kong

*Offices worldwide*

# Contract No. DC/2010/02 – Drainage Improvement Works in Shuen Wan and Shek Wu Wai

# Bi-weekly Landscape & Visual Monitoring

**EM&A (Landscape & Visual) Report August 2011 (Issue 1)**

September 2011

| | Name | Signature |
|---|---|---|
| Prepared & Reviewed by: | **Sandra KAM** | |
| Verified by: | **Ida YU** | |
| Date: | **20th September 2011** | |

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## CONTENTS



## LIST OF APPENDICE

# 1 INTRODUCTION

1.1.1 The Landscape and Visual Monitoring of the Project is conducted to fulfill Clauses 5.2 and 5.4 of EP-303/2008 and the monitoring requirements in accordance with Section 7 of the approved updated EM&A Manual (approved by EPD on December 2010) of the Project. A Baseline Review on updating the landscape and visual condition, and the mitigation measures of the Project (including Contracts 1 and 2 of the Project) was undertaken before the commencement of the Project. The review findings were updated in the Baseline Environmental Monitoring Report submitted to the EPD on 14 February 2011.

1.1.2 This monthly monitoring report will detail the scope of landscape and visual monitoring work, monitoring findings and observations, and any recommendation and advice on proper implementation of the landscape mitigation measures.

# 2 SCOPE OF MONITORING

## 2.1 Monitoring objectives

2.1.1 Landscape and Visual Monitoring of the Project should be conducted in a bi-weekly basis for checking the design, implementation and maintenance of the landscape and visual mitigation measures throughout the construction phase and in a quarterly basis during operational phase of the Project. Observations of any potential conflicts between the proposed mitigation measures and the project works carried out by the Contractors should be recorded. Recommendation and advice on proper implementation of the landscape mitigation measures should be provided to the Contractor for minimizing any potential impacts on the landscape and visual elements.

## 2.2 Monitoring during Construction Phase

2.2.1 The following landscape and visual mitigation measure should be implemented during the construction phase of the Project to minimize the potential impacts:

- *Visual Screen* – Use of hoardings as visual screens for the construction in the works areas;
- *Contaminant/ Sediment Control* – Use of temporary barriers, covers and drainage provision around the construction works as contaminant/ sediment control to prevent the contaminants and sediments from entering the sensitive water-based habitats;
- *Pollution Control* – Implementation of pollution control measures to minimize any adverse environmental impacts to the surrounding habitats;
- *Liaison with Nursery* (Not relevant to Contract 2 of the Project) – Liaison with the nursery operator as necessary to minimize any adverse impact to the daily operation and plant holding capacity of the nursery;

- *Existing Trees within Works Area* – Maintenance and protection of the existing trees, especially their crowns, trunks and roots, within work sites; and

- *Construction Light* – Provision of construction light should be controlled at night to avoid excessive glare to the surrounding villages and to Plover Cove.

## 2.3 Monitoring during Operational Phase

2.3.1 The following landscape and visual mitigation measure should be implemented during the operational phase of the Project to minimize the potential impacts:

- Viewing area formation by planting with shrubs, grasses and benches along the area;

- Architectural design of the pump house will help it fit into the existing suburban, natural to semi-natural surroundings (Not relevant to Contract 2 of the Project);

- Landscape design of pump house by providing sufficient planting around its boundary fence (Not relevant to Contract 2 of the Project);

- Enhancement planting along Tung Tsz Road with shrubs/ trees of suitable species to help protect the stream and marshes;

- Construction of box culvert should be with at least 1.0m soil depth for enhancement planting;

- Transplanting of existing affected trees to adjacent locations should be carried out;

- Preparation for transplanting is needed to allow sufficient time for root pruning and rootball preparation prior to transplanting; and

- Reinstatement of affected area should be carried out to check that the works areas are properly reinstated.

# 3 LANDSCAPE & VISUAL MONITORING RESULTS

## 3.1 Monitoring Date(s)

3.1.1 This monthly Landscape and Visual Monitoring (August 2011) was conducted to cover only areas of Contract 2 of the Project (i.e. the construction of a twin-cell box culvert close to Shuen Wan Conservation Area and Wai Ha River along Tung Tsz Road, and a drainage pipe near Wai Ha Village). Contract 2 of the Project has been commenced in July 2011 and the according monitoring has been started in August 2011. The first monitoring was conducted on 24th August 2011.

3.1.2 All photos stated in this section are recorded in Appendix A.

## 3.2 Visual Screen

*Observation*

3.2.1 A section of temporary hoardings have been erected from west to east parts of Tung Tsz Road opposite to San Tau Kwok.

3.2.2 No hoardings have been erected along the rest of the proposed works area since neither construction works nor any associated preparation works have been commenced. **Photos 1-2** show the views of the erected hoardings in the area.

*Recommendation*

3.2.3 No specific recommendation is required.

## 3.3 Contaminant/ Sediment Control

*3.3.1 Observation*

3.3.2 No direct discharge of contaminants or any polluted fluid was observed within the active works area. All used water and underground water was collected and drained into filtration beds and sedimentation tanks before the discharge (**Photos 3-4**).

*Recommendation*

3.3.3 Regular monitoring should be conducted to ensure no direct discharge or leakage of contaminants or any polluted fluid into the adjacent Wai Ha River.

## 3.4 Pollution Control

*Observation*

3.4.1 Drained water from underground was observed to be filtered in a sedimentation tank and filtration beds before the discharge. No direct discharge of water into the adjacent Wai Ha River was observed (**Photo 3-4**).

*Recommendation*

3.4.2 No specific recommendation is required

## 3.5 Liaison with Nursery

3.5.1 The construction undertaken within Tung Tsz Nursery is restricted under Contract 1 of the Project. This monitoring item is not applicable to Contract 2 of the Project.

## 3.6 Existing Trees within Works Areas

*Observation*

3.6.1 Tree felling has not yet been conducted within the working area.

3.6.2 All trees within the Project area were recorded generally in fair health conditions. Four uprooted trees, including T011, T011A, T011B and T011C (**Photo 5**), were observed. As informed by the Contractor, these trees were found uprooted when the Project Team commenced the works in July 2011.

*Recommendations*

3.6.3 Within the active works area, proper Tree Protection Zones (TPZs) should be demarcated for retained trees and trees to be transplanted. In addition, these retained trees or trees to be transplanted should be watered regularly to maintain its health.

3.6.4 Disturbance is prohibited in all TPZs. In any practical circumstances, the contractor should follow Section 8 of Annex 4 of the approved Landscape Plan for protecting the existing trees from any potential damages resulting from construction works.

## 3.7 Construction Light

*Observation*

3.7.1 No construction light impact to the surrounding villages and to Plover Cove as all construction activities and construction sites are halted at 1800. No construction light at night is provided by the Main Contractor.

*Recommendation*

3.7.2 No specific recommendation is required.

# 4 AUDIT SCHEDULE

4.1.1 The next bi-weekly Landscape & Visual Monitoring in September 2011 is scheduled to be conducted in the week of 5th and 19th September 2011.

# Appendix A
# Photographs

| | |
|---|---|
|  |  |
| **Photo 1 –** Temporary hoardings have been erected around the active works area | **Photo 2 -** Temporary hoardings have been erected along Tung Tsz Road |
|  |  |
| **Photo 3 –** Upper stream of Wa Ha River. No direct water discharge into the Wai Ha River | **Photo 4 –** No direct water discharge into the Wai Ha River since no active works area has been set up adjacent to the River. |
|  |  |
| **Photo 5 –** Trees Nos. T11, T11A, T11B and T11C were found uprooted. | **Photo 6** – Trees Nos. T11, T11A, T11B and T11C were found uprooted. |