



PROJECT NO.: TCS/00553/11

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

**MONTHLY ENVIRONMENTAL MONITORING AND
AUDIT REPORT (NO.7) – JANUARY 2012**

PREPARED FOR
KWAN LEE-KULY JOINT VENTURE

Quality Index

Date	Reference No.	Prepared By	Certified by
13 February 2012	TCS00553/11/600/R0091v2	 Nicola Hon (Environmental Consultant)	 T.W. Tam (Environmental Team Leader)

Ver.	Date	Description
1	9 February 2012	First submission
2	13 February 2012	Amended against IEC's comments on 12 February 2012

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ENVIRON

Ref.: DSDSHUWNEM00_0_0336L.12

13th Feb 2012

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

By Fax (2827 8700) and Post

Attention: Mr. H.K.Chan and Mr. So Chi Ho

Dear Sirs,

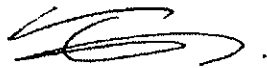
**Re: Agreement No. DP 01/2010
Services as Independent Environmental Checker for the Drainage Improvement
Works in Sha Tin and Tai Po under Contract No. DC/2010/02
Monthly Environmental Monitoring and Audit Report for Jan 2012**

Reference is made to Environment Team's submission of the Monthly Environmental Monitoring and Audit Report for Jan 2012 by Email on 9th Feb 2012 (entitled "DC/2010/22 - Monthly EM&A Report (Contract 2) No.7 - January 2012") and the subsequent revision of the report by Email on 13th Feb 2012.

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
Kwan Lee-Kuly JV

Attn: Mr. T. W. Tam
Attn: Mr. W. K. Chan

By Fax: 2959 6079
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EXECUTIVE SUMMARY

ES.01. This is the 7th Monthly Environmental Monitoring and Audit (EM&A) Report for designated works of *DSD Contract No. DC/2010/02 - Drainage Improvement in Shuen Wan and Shek Wu Wai* (hereafter “Contract 2”) under Environmental Permit No.EP-303/2008, covering a period from **1 to 31 January 2012** (hereinafter ‘the Reporting Period’).

ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

ES.02. Environmental monitoring activities under the EM&A programme in this Reporting Period are summarized in the following table.

Issues	Environmental Monitoring Parameters / Inspection	Occasions
Construction Noise	Leq (30min) Daytime – M2, M3 & M4	12
	Leq (30min) Daytime – M1 & AL1	6
Water Quality	Local Stream Water Sampling - W1 and W2	10
	Local Stream Water Sampling - W3 and W4	12
	Hydrological characteristics measurement – H1 and H2	3
	Hydrological characteristics measurement – H3 and H4	4
Inspection / Audit	Monthly Environmental Site Inspection and audit by IEC	1
	Regular weekly Environmental inspection by the Contractor, ET and Site Representative Engineer	4
Landscape & Visual	Bi-weekly Inspection by a registered Landscape Architect	2

ES.03. 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.

BREACH OF ACTION AND LIMIT (A/L) LEVELS

ES.04. No exceedance in construction noise monitoring is recorded in this Reporting Period. For water quality monitoring, a total of 36 Action/Limit Level exceedances, namely 21 Action/ Limit Level exceedances in dissolved oxygen, 12 Action/Limit Level exceedances in turbidity and 3 Limit Level exceedances in suspended solids were recorded in this Reporting Period. NOEs were issued to notify EPD, IEC, the Contractor and RE. According to construction activities records provided by KLVJ, all the exceedances were considered not related to the works 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	10	11	21	Not related Contract 2	Not required
	Turbidity	1	11	12		
	SS	0	3	3		
Hydrological Characteristics	Water Flow	0	0	0	0	0
	Water Depth	0	0	0	0	0

Note: NOE – Notification of Exceedance

ENVIRONMENTAL COMPLAINT

ES.05. 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 January 2012	0	0	NA

NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES.06. 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 January 2012	0	0	NA

Reporting Period	Environmental Prosecution Statistics		
	Frequency	Cumulative	Complaint Nature
1 – 31 January 2012	0	0	NA

REPORTING CHANGE

ES.07. No report changes were made in this Reporting Period.

SITE INSPECTION BY EXTERNAL PARTIES

ES.08. No site inspection was undertaken by external parties i.e. EPD or AFCD within the Reporting Period.

FUTURE KEY ISSUES

ES.09. During dry season, dust mitigation measures to avoid fugitive dust emissions from loose soil surface or haul road would be a key issue in coming months. Nevertheless, special attention should be paid on the muddy water and other water quality pollutants via site surface water runoff into the local stream Wah Ha River. Mitigation measures for water quality should therefore be fully implemented and maintained.

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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 7th Monthly EM&A Report for Contract 2 presenting the monitoring results and inspection findings for the reporting period from **1 to 31 January 2012**.

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 at Tung Tsz Road, Shuen Wan in this report period are listed below:-

Bay 23	Concrete casting of top slab and wall and backfill
Bay 24	Erection & Removal of formwork for wall; fixing of reinforcement for top slab; concrete casting of top slab and wall and backfill
Bay 25	Fixing of reinforcement for top slab; erection and Removal of formwork for wall; concrete casting of top slab and wall and backfill
Bay 26	Fixing of reinforcement for wall; erection of formwork for top slab and wall; concrete casting of base slab and backfill
Bay 27	Driving sheetpiles; fixing of reinforcement for wall; erection of formwork for wall; concrete casting of top slab and wall and backfill

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)	Notified EPD on 17 October 2011
2	Chemical Waste Producer Registration (WPN5213-727-K2972-02)	Approved on 28 October 2011
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

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	<ul style="list-style-type: none"> A-weighted equivalent continuous sound pressure level (30min) (hereinafter ‘Leq(30min)’ during the normal working hours; and A-weighted equivalent continuous sound pressure level (5min) (hereinafter ‘Leq(5min)’ for construction work during the restricted hours.
Water Quality	<ul style="list-style-type: none"> In Situ Measurement Temperature, Dissolved Oxygen, Dissolved Oxygen Saturation, pH and Turbidity
	<ul style="list-style-type: none"> 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, Treasure Spot Garden
Water Quality	(#) W1	Between the Shuen Wan Marsh and ECA <ul style="list-style-type: none"> Co-ordinates: E839301, N836386 Existing River Bed Level: +1.75mPD).
	W2	Between Tolo Harbour and Proposed Penstock <ul style="list-style-type: none"> Co-ordinates: E839542, N836184 Existing River Bed Level: +1.48mPD)
	(*) W3	Upstream of Tung Tze Shan Road <ul style="list-style-type: none"> Co-ordinates: E838760, N836714 Existing River Bed Level: +5.08mPD)
	W4	Wai Ha Village 29D <ul style="list-style-type: none"> Co-ordinates: E838865, N836621 Existing River Bed Level: +4.05mPD)
Hydrological	H1	Between the Shuen Wan Marsh and ECA <ul style="list-style-type: none"> Coordinates: E839306, N836379)
	H2	Route 10 Sam Kung Temple <ul style="list-style-type: none"> Coordinates: E839163, N836433

Aspect	Location ID	Address
	H3	Upstream of Tung Tze Shan Road • Coordinates: E838760, N836714
	H4	Wai Ha Village 29D • 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 undertaken 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 checked with a portable wind speed meter, which capable to measure wind speed in m/s.

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 m³/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
<i>Construction Noise</i>	
Integrating Sound Level Meter	B&K Type 2238
Calibrator	B&K Type 4231
Portable Wind Speed Indicator	Testo Anemometer
<i>Water quality</i>	
Water Depth Detector	Eagle Sonar
Water Sampler	A transparent PVC cylinder / bucket

Equipment	Model
Thermometer & DO meter	DO Meter YSI 55 or YSI Professional Plus
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 or YSI Professional Plus 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^oC 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 or YSI Professional Plus 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^oC 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
	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)
Volumetric Flow Rate (Q), m ³ /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 The monitoring schedule had been issued to relevant parties before each Reporting Period 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 programme 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, designated monitoring Locations M1 and AL1 for noise monitoring stations, Locations W1 and W2 for water quality monitoring stations, and Locations H1 and H2 for hydrological measurement are requested to perform at both Contracts 1 and 2. Since Contract 1 has already commenced in January 2011, those results measured by Contract 1 would be shared for the Contract 2. This recommendation has been accepted by IEC and submitted to EPD.

RESULTS OF CONSTRUCTION NOISE MONITORING

4.03 In this Reporting Period, 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 ^(*)
5-Jan-12	55.1	58.5	71.0	72.6	68.4
12-Jan-12	52.8	56.9	73.0	67.1	58.9
19-Jan-12	51.8	60.3	68.1	70.8	61.4
26-Jan-12	^	^	73.0	67.9	59.1
Limit Level	>75 dB(A)				

Remarks:

- ^ No monitoring was carried out by ET of Contract 1 due to site closure during Chinese New Year (22-28 Jan 2012)
- (#) 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, 10 sampling days were performed at designated measurement Points W1 & W2 whereas 12 sampling days were performed at W3 & W4 for local stream water quality monitoring. 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 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
3-Jan-12	7.3	7.08	6.22	5.47	1	5.9	1.43	2.90	2.40	4.00	2.00	2.00
5-Jan-12	7.88	7.71	6.90	6.39	6.2	1.8	1.53	1.82	3.80	4.80	2.00	2.00
7-Jan-12	7.61	7.34	5.10	5.43	1	6.8	1.50	1.90	5.60	4.40	2.00	2.00
10-Jan-12	7.22	7.18	7.10	6.27	0.4	21.3	1.68	1.86	1.80	17.00	2.00	2.00
12-Jan-12	6.91	6.91	7.25	6.55	4.1	8.8	1.58	1.91	4.00	6.80	2.00	2.00
14-Jan-12	7.14	6.9	6.90	6.19	5	4.8	1.64	1.85	3.80	2.20	2.00	2.00
17-Jan-12	6.15	6.55	7.60	7.09	2.9	2	1.70	1.82	3.00	3.40	2.00	2.00
19-Jan-12	7.68	7.45	6.50	6.32	1.5	20	3.50	3.10	1.00	15.00	2.00	2.00
21-Jan-12	7.96	8.31	8.41	8.78	7.2	10.4	1.35	1.25	1.20	11.00	2.00	2.00
26-Jan-12	#	#	8.89	8.40	#	#	1.35	1.60	#	#	2.00	2.00
28-Jan-12	#	#	7.62	7.75	#	#	3.05	3.10	#	#	3.00	2.00
30-Jan-12	7.9	7.91	-	-	6.8	10	-	-	1.00	3.60	3.00	2.00
31-Jan-12	-	-	7.18	9.15	-	-	2.85	1.45	-	-	3.00	2.00

No monitoring was carried out by ET of Contract 1 due to site closure during Chinese New Year (22-28 Jan 2012)

(*) Control Station

- Bold and Italic is exceeded Action Level
- Bold with underline is exceeded Limit Level

4.08 During the Reporting Period, field measurements showed that stream water temperatures were within 14.8°C to 21.8°C and pH values within 6.86 to 8.60. Furthermore, salinity measured at W1 and W2 were detected respectively as 0.1-31 ppt and 6.3-27.3 ppt.

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	2	2	1	3	0	0	3	5
W2	5	0	0	8	0	3	5	11
W4	3	9	0	0	0	0	3	9
No of Exceedance	10	11	1	11	0	3	11	25

4.10 As shown in **Table 4-3**, a total of 36 Action/Limit Level exceedances, namely 21 Action/ Limit Level exceedances in dissolved oxygen, 12 Action/Limit Level exceedances in turbidity and 3 Limit Level exceedances in suspended solids were recorded in this Reporting Period. NOEs were issued to notify EPD, IEC, the Contractor and RE upon confirmation of the results.

4.11 To investigate the cause of exceedance, the Contractor stated that the construction activities undertaken during the exceedance days included:-

Bay 23	Concrete casting of top slab and wall and backfill
Bay 24	Erection & Removal of formwork for wall; fixing of reinforcement for top slab; concrete casting of top slab and wall and backfill
Bay 25	Fixing of reinforcement for top slab; erection and Removal of formwork for wall; concrete casting of top slab and wall and backfill
Bay 26	Fixing of reinforcement for wall; erection of formwork for top slab and wall; concrete casting of base slab and backfill

Bay 27	Driving sheetpiles; fixing of reinforcement for wall; erection of formwork for wall; concrete casting of top slab and wall and backfill
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- 4.12 The aforesaid construction activities 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. To minimize the impact to the existing stream, precautionary measures such as sedimentation pit and temporary artificial precipitation stream to remove the suspended solids from wastewater to maintain the water quality of downstream. Based on the observation during regular site inspection with RE and Contractor, the implemented water quality mitigation measures such as the sedimentation pit and temporary artificial precipitation stream are effective. Such precautionary measures would modify and improve by the Contractor base on the actual situation and advice by RE and ET.
- 4.13 For the DO exceedances, it is noted that the construction activities comprised none of DO depleting characteristics. However, algae grow was observed inside the existing channel during joint site inspection which may affect the water quality such as turbidity and oxygen concentration in stream water. The Contractor has been reminded to clean the accumulated algae regularly in order to maintain the water quality of the existing stream. Besides, the recent major construction works of the Project are located at downstream of Locations W3 and W4. Therefore, the water quality exceedances at Locations W3 and W4 affected by the Project is unlikely.
- 4.14 For exceedances in location W2, since tidal effect were affecting the monitoring results of W1(+1.75mPD) and W2(+1.48mPD), it is concluded that the exceedances were not due to the Project.
- 4.15 KLKJV is reminded to fully implement 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

- 4.16 In this Reporting Period, hydrological characteristics measurement at H1, H2, H3 and H4 were carried out on **7, 14, 21 and 28 January 2012**. 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							
7 Jan 12	16:02	Flood	7.45	0.3	2.2350	0.4	0.894
	11:16	Ebb	7.45	0.3	2.2350	0.4	0.894
14 Jan 12	10:29	Flood	7.45	0.3	2.2350	0.3	0.671
	15:47	Ebb	7.45	0.3	2.2350	0.3	0.671
21 Jan 12	15:42	Flood	7.45	0.3	2.2350	0.4	0.894
	10:44	Ebb	7.45	0.3	2.2350	0.4	0.894
28 Jan 12	11:04	Flood	7.45	0.3	2.2350	0.45	1.006
	16:02	Ebb	7.45	0.3	2.2350	0.4	0.894
Measurement Point: H4							
7 Jan 12	16:10	Flood	2.74	0.4	1.0960	0.2	0.219
	11:31	Ebb	2.74	0.4	1.0960	0.2	0.219
14 Jan 12	10:39	Flood	2.74	0.4	1.0960	0.2	0.219
	15:54	Ebb	2.74	0.4	1.0960	0.2	0.219

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
21 Jan 12	15:47	Flood	2.74	0.4	1.0960	0.2	0.219
	10:55	Ebb	2.74	0.4	1.0960	0.2	0.219
28 Jan 12	11:14	Flood	2.74	0.4	1.0960	0.25	0.274
	16:10	Ebb	2.74	0.4	1.0960	0.2	0.219

Remarks: Tide information extract from Tai Po Kau Station

Date	Time	Height(m)	Time	Height(m)	Time	Height(m)	Time	Height(m)
7 Jan 12	0303	0.7	0955	1.3	1247	1.2	2053	2.2
10 Dec 11	0440	0.4	1116	1.5	1501	1.1	2302	2.4
17 Dec 11	0426	1.5	0907	1.0	1651	2.0		
24 Dec 11	0425	0.3	1114	1.5	1554	1.0	2301	2.4
31 Dec 11	0745	1.0	1612	1.8	2136	1.2	2309	1.2

- 4.17 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
7-Jan-12	0.37	0.06	0.30	0.40	0.37	0.06	0.30	0.40
14-Jan-12	0.37	0.24	0.30	0.40	0.24	0.18	0.30	0.40
21-Jan-12	1.03	0.12	0.30	0.40	0.43	0.18	0.30	0.40
28-Jan-12	#	#	0.30	0.40	#	#	0.30	0.40

No monitoring was carried out by ET of Contract 1 due to site closure during Chinese New Year (22-28 Jan 2012)

Table 4-6 Summarized Hydrological Characteristics of Average Volumetric flow rate (Q), m³/s

Date	Mid-Flood				Mid-Ebb			
	H1	H2	H3	H4	H1	H2	H3	H4
7-Jan-12	0.375	0.12	0.89	0.22	0.377	0.06	0.89	0.22
14-Jan-12	0.075	0.06	0.67	0.22	0.377	0.06	0.67	0.22
21-Jan-12	0.075	0.16	0.89	0.22	0.377	0.12	0.89	0.22
28-Jan-12	#	#	1.01	0.27	#	#	0.89	0.22

No monitoring was carried out by ET of Contract 1 due to site closure during Chinese New Year (22-28 Jan 2012)

- 4.18 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.

RESULTS OF ECOLOGICAL MONITORING

- 4.19 According to updated EM&A Manual Section 6.17, ecological monitoring is conducted by the IEC – ENVIRON Hong Kong Limited. In brief, the monitoring tasks include regular check on the retained and transplanted trees and shrubs, monitoring on fauna groups and aquatic fauna within the works area and any ecologically sensitive area within 100 m of the works boundary.
- 4.20 The Ecological Monitoring report in area under Contract 2 is presented in [Appendix N](#).

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)	0	-
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)	10	-

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

6.0 SITE INSPECTION

REGULAR SITE INSPECTION AND MONTHLY AUDIT

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, ET and RE on **5, 11, 19 and 30 January 2012**. Also, joint site inspection with the IEC was carried out on **11 January 2012**. In this Reporting period, 5 observations and 1 reminder were recorded but 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 weekly inspection checklists are attached in **Appendix L**.

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

Date	Findings / Deficiencies	Follow-Up Status
5 Jan 12	<ul style="list-style-type: none"> No adverse environmental impact was observed during site inspection. 	N.A.
11 Jan 12	<ol style="list-style-type: none"> The algae and mud accumulated in the sedimentation tanks should be cleaned regularly in order to maintain its functioning. Chemical container should be stored in proper area with drip tray provided. <ul style="list-style-type: none"> As a reminder, the Contractor should properly implement the air quality mitigation measure such as covering of soil stockpile and cleaning of exit of the site before public holiday. 	Item 1 has been followed on 30 Jan 2012. Item 2 has been follow on 19 Jan 2012
19 Jan 12	<ol style="list-style-type: none"> The algae and mud accumulated in the sedimentation system should be cleaned regularly in order to maintain its functioning. 	The observations have been rectified before the site inspection on 30 Jan 2012.
30 Jan 12	<ol style="list-style-type: none"> Free chemical container was found standing on bare ground, the Contractor should store them in proper area with drip tray provided to avoid chemical leakage. Stagnant water accumulated in the trip tray was observed after rainfall, the Contractor should clean it to avoid mosquito breeding. 	The observation has been rectified before the site inspection on 5 Jan 2012.

LANDSCAPE AND VISUAL INSPECTION

6.03 In this Reporting Period, landscape and visual inspection was carried on **11 and 26 January 2012**. The stand-alone of monthly Landscape & Visual Report (**January 2012**) signed by the registered Landscape Architect attach at **Appendix M**.

6.04 According to monthly Landscape & Visual Report (**January 2012**), mitigation measures implemented in Reporting Period list as below:

Table 6-2 Landscape & Visual Inspection of Observations

Parameter	Observation	Recommendation
Visual Screen	<ul style="list-style-type: none"> Construction area for Contract 2 has been extended along Tung Tsz Road. Temporary hoardings, in the form of construction 	No specific recommendation is required.

Parameter	Observation	Recommendation
	<p>barriers, have been erected from west to east parts along Tung Tsz Road and opposite to San Tau Kwok.</p> <ul style="list-style-type: none"> 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. As observed on 26th January 2012, a wetland rehabilitation area, which has been maintained by parties other than the Project Proponent, the Project's Contractor and Sub-contractors, has been demarcated to the southeast of Jade View Villa and adjacent to the active works area. 	
Contaminant / Sediment Control	<ul style="list-style-type: none"> 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 a filtration bed and a sedimentation tank placed along the southern part of the active works areas opposite to Wai Ha before the discharge. As observed, a sheet of PVC liner was overlaid along the filtration beds within the active works area. This practice could lower the chance of contaminating the vegetation in the adjacent Shuen Wan marsh to the south. 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Drained water from underground was observed to be filtered in the sedimentation tank and filtration beds before the discharge. As observed, a sheet of PVC liner was overlaid along the filtration beds within the active works area. This practice could lower the chance of contaminating the vegetation in the adjacent Shuen Wan marsh. No direct discharge of polluted water from the active works area into the adjacent Wai Ha River was observed. As reported in the Monthly EM&A Report for December 2011, soil stockpiled for other contract work at the bank of Wai Ha River to the southwest of Wai Ha was still observed on 11th and 26th January 2012 (Photo 6). However, this did not cause pollution problem to Wai Ha River. 	<ul style="list-style-type: none"> The contractor should prevent any contaminants and sediments from entering the sensitive water-based habitats and implement pollution control measures to minimize any adverse environmental impacts to the water body. The contractor and the Project Proponent should have routine inspection within and adjacent to the Project Area and the Wai Ha River to minimize the contamination and pollution of the Wai Ha River and other sensitive habitats by other contract work.
Existing Trees within Works Area	<ul style="list-style-type: none"> No further tree felling work was observed in this month. Clearance of herbaceous vegetation within the fenced area was recorded. Most trees proposed to be retained within the Project Area were recorded generally in fair health conditions. A retained tree T180 showed poor health condition with its canopy being extensively covered by climber. It is suspected that this tree was dead due to natural dieback. As reported in the Monthly EM&A Report for December 2011, the pruned and topped trees of <i>Leucaena leucocephala</i> (銀合歡) 	<ul style="list-style-type: none"> Within the active works area, maintenance of TPZs for the retained trees and the trees to be transplanted should be continued. Trunk base of all retained trees and trees to be transplanted should be kept clear, with no stockpiled soil, construction equipments and rubbish allowed around the trunk bases and within the TPZs. If necessary, these retained trees or trees to be transplanted shall be watered regularly to maintain their health.

Parameter	Observation	Recommendation
	<p>(Tree no. T069 – T073 and T075) and <i>Macaranga tanarius</i> (血桐) (Tree no. T076) located close to the Project's site office were recorded in the monitoring in December 2011 (Photos 8-9). Regeneration of branches and leaves around the wounds was slow.</p> <ul style="list-style-type: none"> • A TPZ was observed for the tree T025, which is regarded as a "Retained Tree" in accordance with the approved Tree Felling Application Report. Stockpiled soil around the tree trunk base was removed as following the recommended stated in the Monthly EM&A Report for December 2011. • A fallen scaffold branch was observed on the retained tree T168. This tree has been extensively covered by the weedy climbers, which has put additional loading to the tree canopy. This excessive loading to the tree canopy could increase the limb breakage. • No significant signs of damage on other existing tree crowns, trunks and roots resulting from the construction works were observed in this monthly monitoring. • Three specimens (Tree No.: PH01, PH02 and PH03) of the protected shrub species of conservation interest <i>Pavetta hongkongensis</i> was transplanted to Area C under Contract 1 of the Project since December 2011. The dead specimen (Tree No.: PH04, due to natural dieback) was still remained at its original location. 	<ul style="list-style-type: none"> • 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 the construction works. In addition, the Main Contractor and the Project Proponent should have routine inspection on any tree remedial works conducted by other party on the trees within the Project Area.
Construction Light	<ul style="list-style-type: none"> • 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 **February 2012** is scheduled to be conducted in the week of **6 and 20 February 2012**.

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
July 2011 –December 2011	0	0	NA
January 2012	0	0	NA

Table 7-2 Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics		
	Frequency	Cumulative	Complaint Nature
July 2011 –December 2011	0	0	NA
January 2012	0	0	NA

Table 7-3 Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Prosecution Statistics		
	Frequency	Cumulative	Complaint Nature
July 2011 –December 2011	0	0	NA
January 2012	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 PME 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 at all times and particularly during rainstorms
- (d) Water pumped out from excavated pits shall be discharged into silt 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 of 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 minimize the generation of waste from his work. Avoidance and minimization 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 recycling 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	<ul style="list-style-type: none"> • Wastewater were appropriately treated by treatment facilities; • Drainage channels were provided to convey run-off into the treatment facilities; and • Drainage systems were regularly and adequately maintained.
Air Quality	<ul style="list-style-type: none"> • Regular watering to reduce dust emissions from all exposed site surface, particularly during dry weather; • Frequent watering for particularly dusty construction areas and areas close to air sensitive receivers; • Cover all excavated or stockpile of dusty material by impervious sheeting or sprayed with water to maintain the entire surface wet; • Public roads around the site entrance/exit had been kept clean and free from dust; and • Tarpaulin covering of any dusty materials on a vehicle leaving the site.

Issues	Environmental Mitigation Measures
Noise	<ul style="list-style-type: none"> • Good site practices to limit noise emissions at the sources; • Use of quiet plant and working methods; • Use of site hoarding or other mass materials as noise barrier to screen noise at ground level of NSRs; • Use of shrouds/temporary noise barriers to screen noise from relatively static PMEs; • Scheduling of construction works nearby Tung Tsz Road; and • Alternative use of plant items within one worksite, where practicable.
Waste and Chemical Management	<ul style="list-style-type: none"> • 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; • Waste arising should be kept to a minimum and be handled, transported and disposed of in a suitable manner; • 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 • Chemical waste shall be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes.
General	<ul style="list-style-type: none"> • 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 box culvert
- Installation of Sheet Piling.
- Trench Excavation
- Formwork erection

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;
- Ensure dust suppression measures are implemented properly;
- Disposal of empty engine oil containers within site area;
- 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

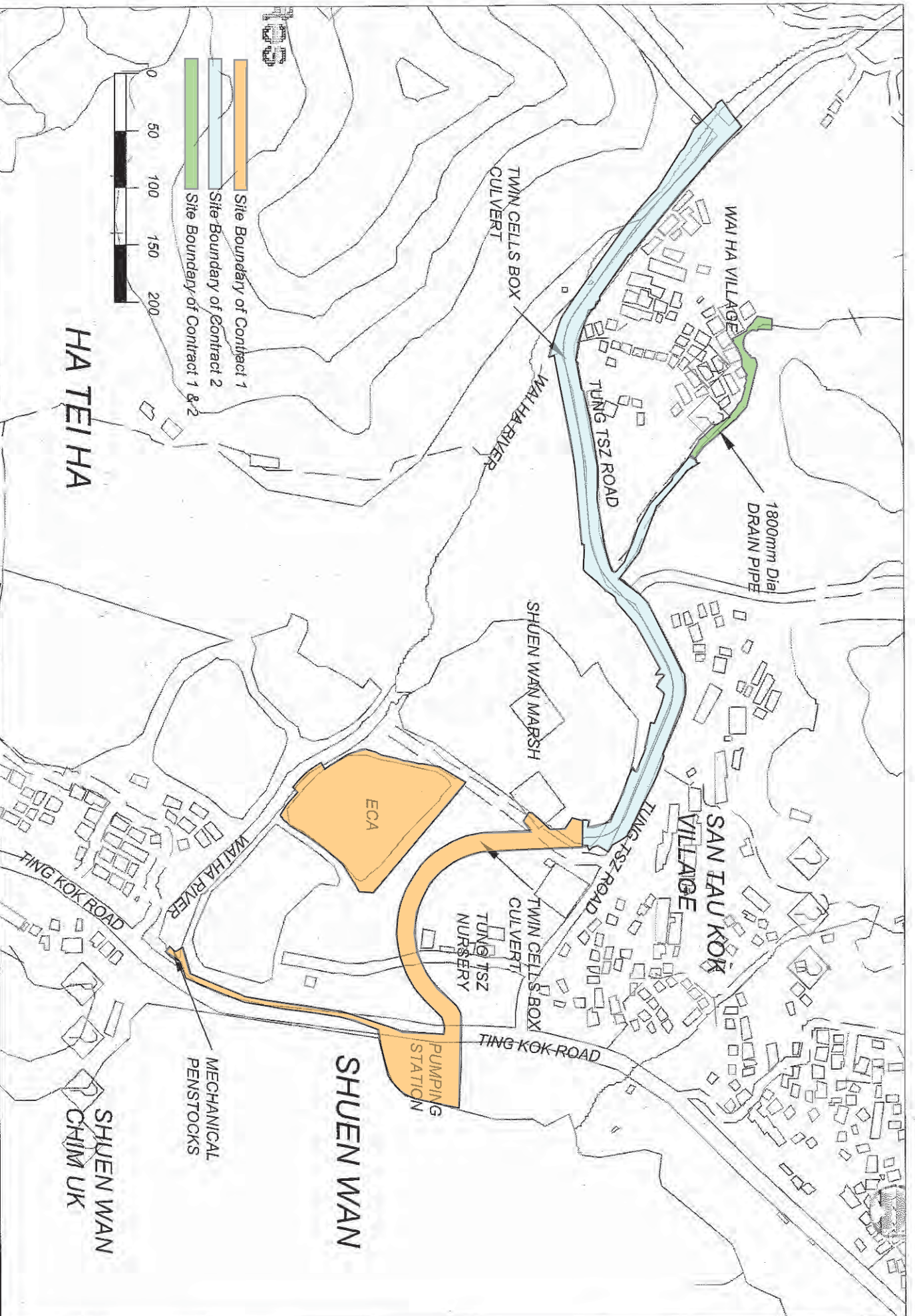
- 10.01 This is the 7th monthly EM&A report for Contract 2 presenting the monitoring results and inspection findings for the Reporting Period from **1 to 31 January 2012**.
- 10.02 No noise complaint (which is an Action Level exceedance) was received and no construction noise measurement results that exceeded the Limit Level were recorded in this Reporting Period. No NOE or the associated corrective actions were therefore issued.
- 10.03 For water quality monitoring, a total of 36 Action/Limit Level exceedances, namely 21 Action/Limit Level exceedances in dissolved oxygen, 12 Action/Limit Level exceedances in turbidity and 3 Limit Level exceedances in suspended solids were recorded in this Reporting Period. 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 KLKJV, all the exceedances are considered not due to the Project.
- 10.04 Furthermore, the hydrological characteristics of water depth and water flow rate were found no exceedance in this Reporting Period.
- 10.05 No documented complaint, notification of summons or successful prosecution was received.
- 10.06 Weekly environmental site inspections had been carried out by the Contractor, ET and the RE on **5, 11, 19 and 30 January 2012**. Furthermore, joint site inspection with the IEC was carried out on **11 January 2012**. 5 observations and 1 reminder were recorded but no non-compliance was noted during the site inspection. In general, it was reminded that air mitigation measures such as covering of stockpile and watering at site exit should be maintained especially during dry season. The environmental performance of the Project was therefore considered satisfactory.
- 10.07 In this Reporting Period, landscape and visual inspection was carried on **11 and 26 January 2012**. The stand-alone of monthly Landscape & Visual Report (**January 2012**) as signed by the registered Landscape Architect.
- 10.08 No site visit was undertaken by any external party in this Reporting Period.

RECOMMENDATIONS

- 10.09 As excavation works of construction box culvert or a trench, surface runoff or water discharge to local stream course should be key environment aspect issue. The contractor is reminded that mitigation measures for water quality and ecology should be fully implemented.
- 10.10 During dry season, special attention should be paid to the dust mitigation measures to avoid fugitive dust emissions from loose soil surface or haul road. On the other hand, construction noise should be other key environmental issue during sheet-piling process. The noise mitigation measures should be necessary to implement in accordance with EM&A Manual stipulation.
- 10.11 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.
- 10.12 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.

Appendix A

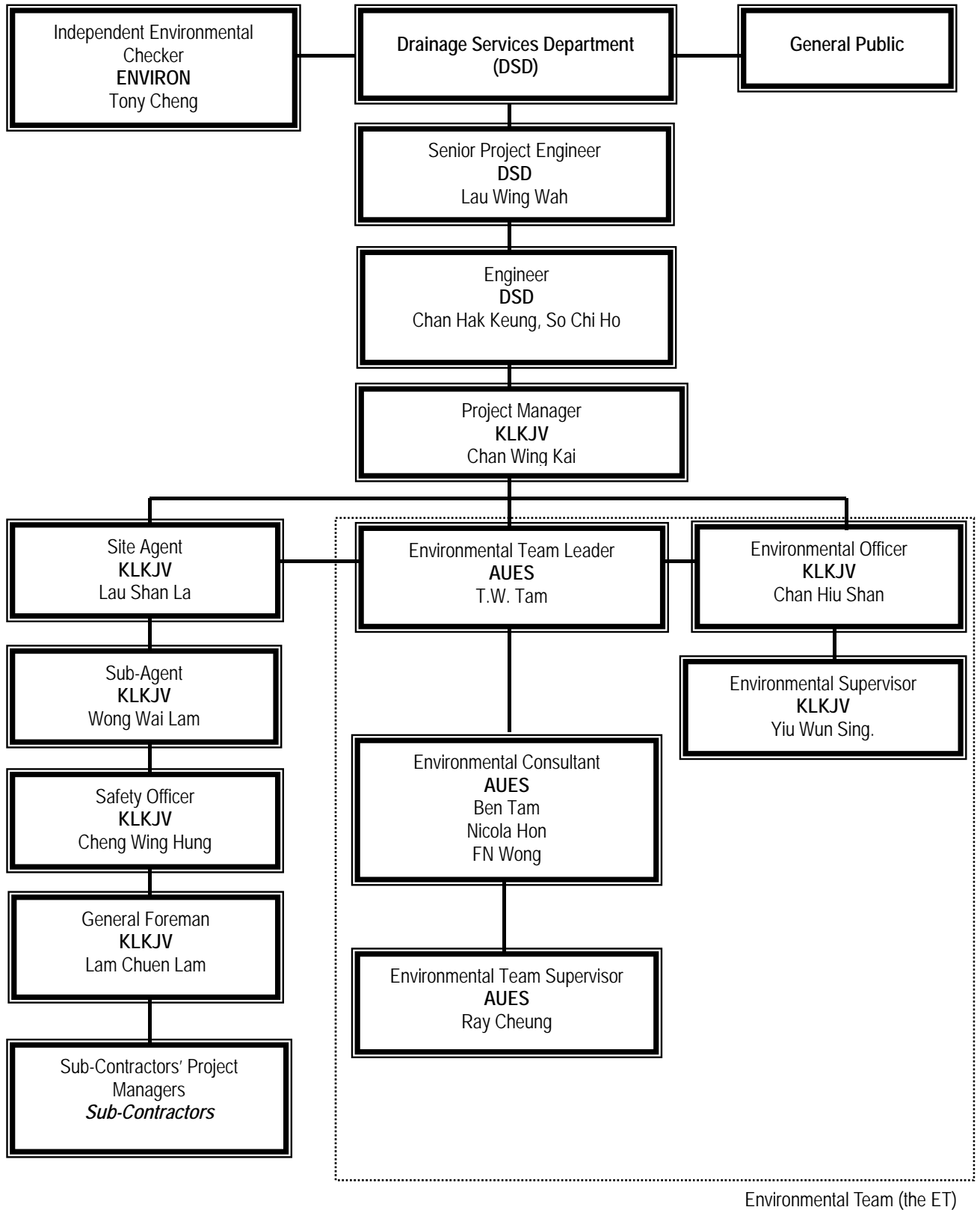
Site Location Plan (DSD Contract 1 and Contract 2 at Shuen Wan)



Site Location Plan of DSD Contract 1 and Contract 2 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. Chan Hak Keung	2594 7596	2827 8700
DSD	Engineer	Mr. So Chi Ho	2594 7356	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. Lau Shan La	2674 3888	2674 9988
KLKJV	Sub- Agent	Mr. Wong Wai Lam,	2674 3888	2674 9988
KLKJV	Technical Manager	Mr. Yeung Tai Yung	9674 9712	2674 9988
KLKJV	Site Forman	Mr. Lam Chuen Lam	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

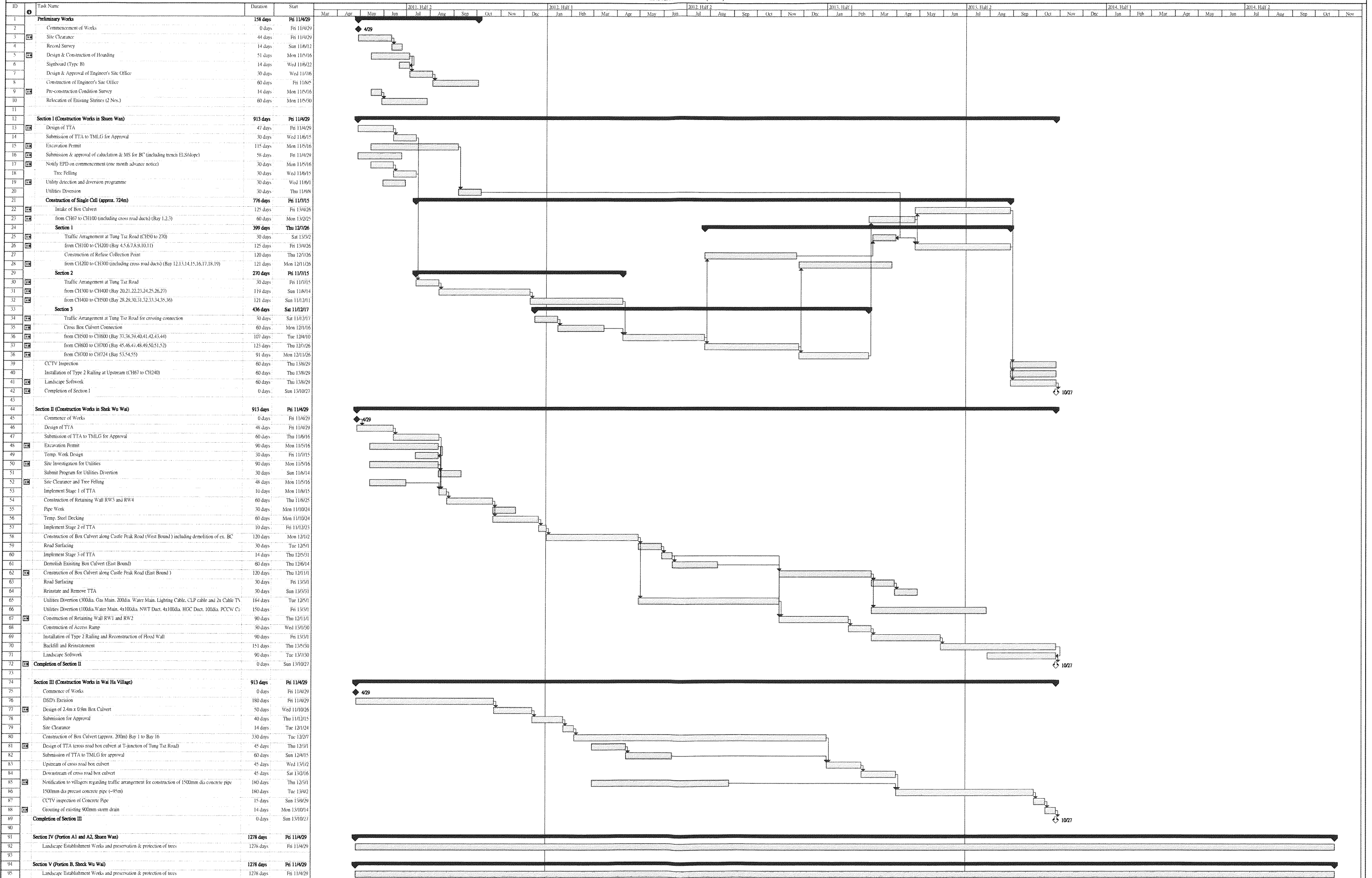
ENVIRON (IEC) – ENVIRON Hong Kong Limited

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

Appendix C

Master and Three Months Rolling Construction Programs

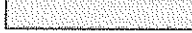








MASTER PROGRAMME (Rev. 2)

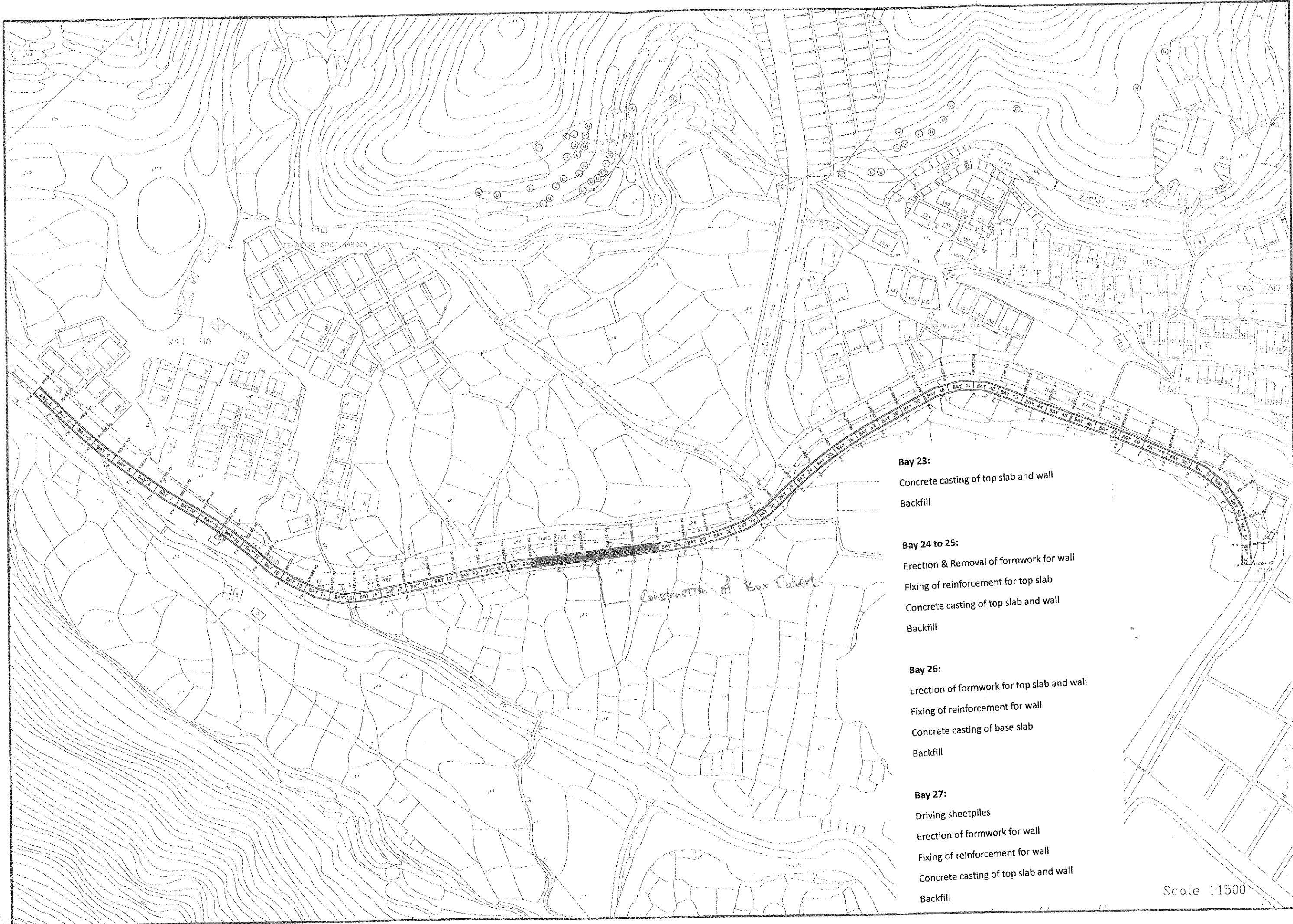


Rolling Programme for Tung Tsz Road (dated 17 Jan 2012)

ID	Task Name	Duration	Start	Finish	Predecessors	2012												2013																			
						Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	
1	Contract Period	913 days	Fri 11/4/29	Sun 13/10/27		[Gantt bar for Contract Period]																															
2	Bay 20, 21, 22	6 days	Sun 11/11/20	Fri 11/11/25		[Gantt bar for Bay 20, 21, 22]																															
3	Backfill & removal sheetpile	6 days	Sun 11/11/20	Fri 11/11/25		[Gantt bar for Backfill & removal sheetpile]																															
4	Bay 23, 24, 25, 26, 27	74 days	Sat 11/11/26	Tue 12/2/7		[Gantt bar for Bay 23, 24, 25, 26, 27]																															
5	Bay 23	42 days	Sat 11/11/26	Fri 12/1/6		[Gantt bar for Bay 23]																															
26	Bay 24	42 days	Sun 11/12/4	Sat 12/1/14		[Gantt bar for Bay 24]																															
47	Bay 25	42 days	Mon 11/12/12	Sun 12/1/22		[Gantt bar for Bay 25]																															
68	Bay 26	42 days	Tue 11/12/20	Mon 12/1/30		[Gantt bar for Bay 26]																															
89	Bay 27	42 days	Wed 11/12/28	Tue 12/2/7		[Gantt bar for Bay 27]																															
110	Bay 34, 35, 36, 37, 38	74 days	Wed 12/2/8	Sat 12/4/21		[Gantt bar for Bay 34, 35, 36, 37, 38]																															
111	Bay 34	42 days	Wed 12/2/8	Tue 12/3/20		[Gantt bar for Bay 34]																															
132	Bay 35	42 days	Thu 12/2/16	Wed 12/3/28		[Gantt bar for Bay 35]																															
153	Bay 36	42 days	Fri 12/2/24	Thu 12/4/5		[Gantt bar for Bay 36]																															
174	Bay 37	42 days	Sat 12/3/3	Fri 12/4/13		[Gantt bar for Bay 37]																															
195	Bay 38	42 days	Sun 12/3/11	Sat 12/4/21		[Gantt bar for Bay 38]																															
216	Bay 39, 40, 41, 42, 43, 44	82 days	Sun 12/4/22	Thu 12/7/12		[Gantt bar for Bay 39, 40, 41, 42, 43, 44]																															
217	Bay 39	42 days	Sun 12/4/22	Sat 12/6/2		[Gantt bar for Bay 39]																															
238	Bay 40	42 days	Mon 12/4/30	Sun 12/6/10		[Gantt bar for Bay 40]																															
259	Bay 41	42 days	Tue 12/5/8	Mon 12/6/18		[Gantt bar for Bay 41]																															
280	Bay 42	42 days	Wed 12/5/16	Tue 12/6/26		[Gantt bar for Bay 42]																															
301	Bay 43	41 days	Thu 12/5/24	Tue 12/7/3		[Gantt bar for Bay 43]																															
322	Bay 44	42 days	Fri 12/6/1	Thu 12/7/12		[Gantt bar for Bay 44]																															
343	Bay 45, 46, 47, 48	66 days	Fri 12/7/13	Sun 12/9/16		[Gantt bar for Bay 45, 46, 47, 48]																															
344	Bay 45	42 days	Fri 12/7/13	Thu 12/8/23		[Gantt bar for Bay 45]																															
365	Bay 46	42 days	Sat 12/7/21	Fri 12/8/31		[Gantt bar for Bay 46]																															
386	Bay 47	42 days	Sun 12/7/29	Sat 12/9/8		[Gantt bar for Bay 47]																															
407	Bay 48	42 days	Mon 12/8/6	Sun 12/9/16		[Gantt bar for Bay 48]																															
428	Bay 49, 50, 51, 52	66 days	Mon 12/9/17	Wed 12/11/21		[Gantt bar for Bay 49, 50, 51, 52]																															
429	Bay 49	42 days	Mon 12/9/17	Sun 12/10/28		[Gantt bar for Bay 49]																															
450	Bay 50	42 days	Tue 12/9/25	Mon 12/11/5		[Gantt bar for Bay 50]																															
471	Bay 51	42 days	Wed 12/10/3	Tue 12/11/13		[Gantt bar for Bay 51]																															
492	Bay 52	42 days	Thu 12/10/11	Wed 12/11/21		[Gantt bar for Bay 52]																															
513	Bay 53, 54, 55	58 days	Thu 12/11/22	Fri 13/1/18		[Gantt bar for Bay 53, 54, 55]																															
514	Bay 53	42 days	Thu 12/11/22	Wed 13/1/2		[Gantt bar for Bay 53]																															
535	Bay 54	42 days	Fri 12/11/30	Thu 13/1/10		[Gantt bar for Bay 54]																															
556	Bay 55	42 days	Sat 12/12/8	Fri 13/1/18		[Gantt bar for Bay 55]																															
577	Bay 30, 31, 32, 33	66 days	Sat 13/1/19	Mon 13/3/25		[Gantt bar for Bay 30, 31, 32, 33]																															
578	Bay 30	42 days	Sat 13/1/19	Fri 13/3/1		[Gantt bar for Bay 30]																															
599	Bay 31	42 days	Sun 13/1/27	Sat 13/3/9		[Gantt bar for Bay 31]																															
620	Bay 32	42 days	Mon 13/2/4	Sun 13/3/17		[Gantt bar for Bay 32]																															
641	Bay 33	42 days	Tue 13/2/12	Mon 13/3/25		[Gantt bar for Bay 33]																															
662	Bay 28, 29	50 days	Tue 13/3/26	Tue 13/5/14		[Gantt bar for Bay 28, 29]																															
663	Bay 28	42 days	Tue 13/3/26	Mon 13/5/6		[Gantt bar for Bay 28]																															
684	Bay 29	42 days	Wed 13/4/3	Tue 13/5/14		[Gantt bar for Bay 29]																															
705	Bay 16, 17, 18, 19	66 days	Fri 12/7/13	Sun 12/9/16		[Gantt bar for Bay 16, 17, 18, 19]																															
706	Bay 19	42 days	Fri 12/7/13	Thu 12/8/23		[Gantt bar for Bay 19]																															
727	Bay 18	42 days	Sat 12/7/21	Fri 12/8/31		[Gantt bar for Bay 18]																															

Printed on: 17 Jan 2012
 Revised on: 17 Jan 2012

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



- Bay 23:**
 Concrete casting of top slab and wall
 Backfill

- Bay 24 to 25:**
 Erection & Removal of formwork for wall
 Fixing of reinforcement for top slab
 Concrete casting of top slab and wall
 Backfill

- Bay 26:**
 Erection of formwork for top slab and wall
 Fixing of reinforcement for wall
 Concrete casting of base slab
 Backfill

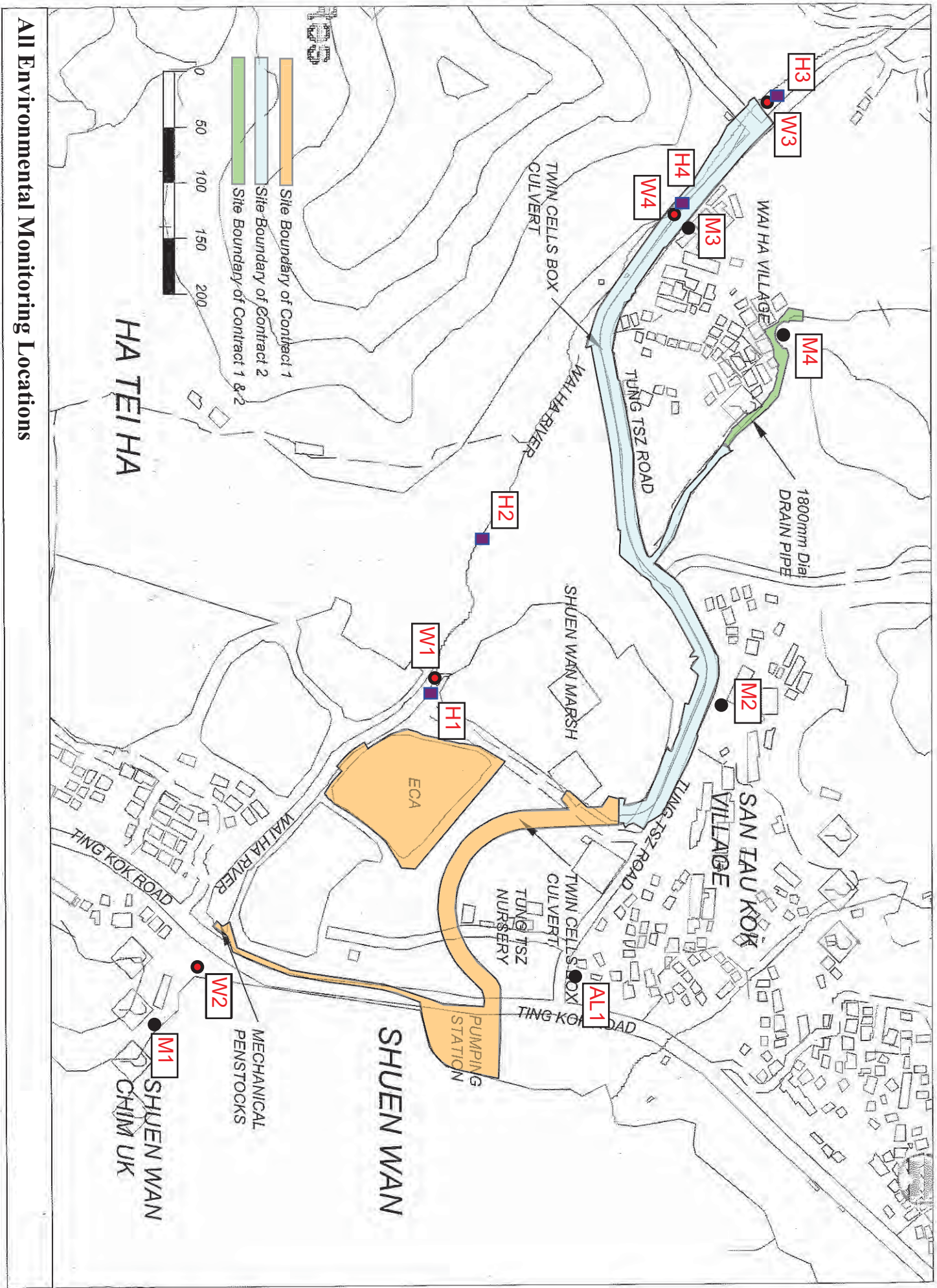
- Bay 27:**
 Driving sheetpiles
 Erection of formwork for wall
 Fixing of reinforcement for wall
 Concrete casting of top slab and wall
 Backfill

Construction of Box Culvert

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 Professional Plus (Serial No. 10G101946)	16 Nov 11	16 Feb 12
4		YSI SOnde 6820/ 650MDS (Serial No. 02J0912/08K0788 AA)	16 Dec 11	16Mar 12
5	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 2. Carry out investigation. 3. Report the results of investigation to the IEC, ER and Contractor. 4. Discuss with the Contractor and formulate remedial measures 5. Increase monitoring frequency to check mitigation effectiveness.	1. Review the analyzed results submitted by the ET. 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly 3. Supervise the implementation of remedial measures	1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Require Contractor to propose remedial measures for the analyzed noise problem 4. Check remedial measures are properly implemented.	1. Submit noise mitigation proposals to IEC 2. Implement noise mitigation proposals
Limit Level	1. Notify IEC, ER, EPD and Contractor 2. Identify source. 3. Repeat measurements to confirm findings 4. Increase monitoring frequency. 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly 3. Supervise the implementation of remedial measures	1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Require Contractor to propose remedial measures for the analyzed noise problem 4. Check remedial measures properly implemented. 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 2. Submit proposals for remedial actions to IEC within 3 working days of notification 3. Implement the agreed proposals 4. Resubmit proposals if problem still not under control 5. Stop the relevant portion 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	<ol style="list-style-type: none"> Repeat in-situ measurements to confirm findings; Identify reasons for non-compliance and source(s) of impact; Inform IEC, Contractor and Engineer; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IEC, Engineer and Contractor; Ensure mitigation measures are implemented. Repeat measurement on next day of exceedance. 	<ol style="list-style-type: none"> Discuss mitigation measures with ET, Engineer and Contractor; Review proposals on mitigation measures submitted by Contractor and advise the Engineer accordingly; Assess effectiveness of implemented mitigation measures. 	<ol style="list-style-type: none"> Discuss proposed mitigation measures with IEC, ET and Contractor; Make agreement on mitigation measures to be implemented; Assess effectiveness of implemented mitigation measures. 	<ol style="list-style-type: none"> Inform Engineer and confirm in writing notification of the non-compliance; Rectify unacceptable practice; Check all plant and equipment; Consider changes in working methods; Discuss with ET, IEC and Engineer and propose mitigation measures to IEC and Engineer within three working days; Implement agreed mitigation measures.
Action level being exceeded by more than two consecutive sampling days	<ol style="list-style-type: none"> Repeat in-situ measurements to confirm findings; Identify reasons for non-compliance and source(s) of impact; Inform IEC, Contractor and Engineer; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IEC, Engineer and Contractor; Ensure mitigation measures are implemented. Prepare to increase the monitoring frequency to daily; Repeat measurement on next day of exceedance. 	<ol style="list-style-type: none"> Discuss mitigation measures with ET, Engineer and Contractor; Review proposals on mitigation measures submitted by Contractor and advise the Engineer accordingly; Assess effectiveness of implemented mitigation measures. 	<ol style="list-style-type: none"> Discuss proposed mitigation measures with IEC, ET and Contractor; Make agreement on mitigation measures to be implemented; Assess effectiveness of implemented mitigation measures. 	<ol style="list-style-type: none"> Inform Engineer and confirm in writing notification of the non-compliance; Rectify unacceptable practice; Check all plant and equipment; Consider changes in working methods; Discuss with ET, IEC and Engineer and propose mitigation measures to IEC and Engineer within three working days; Implement agreed mitigation measures
LIMIT LEVEL				
Limit level being exceeded by one sampling day	<ol style="list-style-type: none"> Repeat in-situ measurements to confirm findings; Identify reasons for non-compliance and source(s) of impact; Inform EPD, IEC, Contractor and Engineer; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IEC, Engineer and Contractor; Ensure mitigation measures are implemented; Increase the monitoring frequency to daily until no exceedance of Limit Level. 	<ol style="list-style-type: none"> Discuss mitigation measures with ET, Engineer and Contractor; Review proposals on mitigation measures submitted by Contractor and advise the Engineer accordingly; Assess effectiveness of implemented mitigation measures. 	<ol style="list-style-type: none"> Discuss proposed mitigation measures with IEC, ET and Contractor; Request Contractor to critically review the working methods; Make agreement on mitigation measures to be implemented; Assess effectiveness of implemented mitigation measures. 	<ol style="list-style-type: none"> Inform Engineer and confirm in writing notification of the non-compliance; Rectify unacceptable practice; Check all plant and equipment; Consider changes in working methods; Discuss with ET, IEC and Engineer and propose mitigation measures to IEC and Engineer within three working days; Implement agreed mitigation measures.
Limit level being exceeded by more than two consecutive sampling days	<ol style="list-style-type: none"> Repeat in-situ measurements to confirm findings; Identify reasons for non-compliance and source(s) of impact; Inform EPD, IEC, Contractor and Engineer; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IEC, Engineer and Contractor; Ensure mitigation measures are implemented. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days. 	<ol style="list-style-type: none"> Discuss mitigation measures with ET, Engineer and Contractor; Review proposals on mitigation measures submitted by Contractor and advise the Engineer accordingly; Assess effectiveness of implemented mitigation measures. 	<ol style="list-style-type: none"> Discuss proposed mitigation measures with IEC, ET and Contractor; Request Contractor to critically review the working methods; Make agreement on mitigation measures to be implemented; Assess effectiveness of implemented mitigation measures; 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. 	<ol style="list-style-type: none"> Inform Engineer and confirm in writing notification of the non-compliance; Rectify unacceptable practice; Check all plant and equipment; Consider changes in working methods; Discuss with ET, IEC and Engineer and propose mitigation measures to IEC and Engineer within three working days; Implement agreed mitigation measures; 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	<ol style="list-style-type: none"> 1. Repeat in-situ measurements to confirm findings; 2. Identify reasons for non-compliance and source(s) of impact; 3. Inform IEC, Contractor and Engineer; 4. Check monitoring data, Contractor's working methods and any excavation works or dewatering processes; 5. Discuss mitigation measures with IEC, Engineer and Contractor; 6. Ensure mitigation measures are implemented. 7. Repeat measurement on next day of exceedance. 	<ol style="list-style-type: none"> 1. Discuss mitigation measures with ET, Engineer and Contractor; 2. Review proposals on mitigation measures submitted by Contractor and advise the Engineer accordingly; 3. Assess effectiveness of implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Discuss proposed mitigation measures with IEC, ET and Contractor; 2. Make agreement on mitigation measures to be implemented; 3. Assess effectiveness of implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Inform Engineer and confirm in writing notification of the non-compliance; 2. Rectify unacceptable practice; 3. Check working methods and any excavation works or dewatering processes; 4. Consider changes in working methods and plans; 5. Discuss with ET, IEC and Engineer and propose mitigation measures to IEC and Engineer within three working days; 6. Implement agreed mitigation measures.
Action level being exceeded by more than two consecutive sampling days	<ol style="list-style-type: none"> 1. Repeat in-situ measurements to confirm findings; 2. Identify reasons for non-compliance and source(s) of impact; 3. Inform IEC, Contractor and Engineer; 4. Check monitoring data, Contractor's working methods and any excavation works or dewatering processes; 5. Discuss mitigation measures with IEC, Engineer and Contractor; 6. Ensure mitigation measures are implemented. 7. Prepare to increase the monitoring frequency to daily; 8. Repeat measurement on next day of exceedance. 	<ol style="list-style-type: none"> 1. Discuss mitigation measures with ET, Engineer and Contractor; 2. Review proposals on mitigation measures submitted by Contractor and advise the Engineer accordingly; 3. Assess effectiveness of implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Discuss proposed mitigation measures with IEC, ET and Contractor; 2. Make agreement on mitigation measures to be implemented; 3. Assess effectiveness of implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Inform Engineer and confirm in writing notification of the non-compliance; 2. Rectify unacceptable practice; 3. Check working methods and any excavation works or dewatering processes; 4. Consider changes in working methods and plans; 5. Discuss with ET, IEC and Engineer and propose mitigation measures to IEC and Engineer within three working days; 6. Implement agreed mitigation measures
LIMIT LEVEL				
Limit level being exceeded by one sampling day	<ol style="list-style-type: none"> 1. Repeat in-situ measurements to confirm findings; 2. Identify reasons for non-compliance and source(s) of impact; 3. Inform AFCD, IEC, Contractor and Engineer; 4. Check monitoring data, and Contractor's working methods and any excavation works or dewatering processes; 5. Discuss mitigation measures with IEC, Engineer and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit level. 	<ol style="list-style-type: none"> 1. Discuss mitigation measures with ET, Engineer and Contractor; 2. Review proposals on mitigation measures submitted by Contractor and advise the Engineer accordingly; 3. Assess effectiveness of implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Discuss proposed mitigation measures with IEC, ET and Contractor; 2. Request Contractor to critically review the working methods; 3. Make agreement on mitigation measures to be implemented; 4. Assess effectiveness of implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Inform Engineer and confirm in writing notification of the non-compliance; 2. Rectify unacceptable practice; 3. Check working methods and any excavation works or dewatering processes; 4. Consider changes in working methods and plans; 5. Discuss with ET, IEC and Engineer and propose mitigation measures to IEC and Engineer within three working days; 6. Implement agreed mitigation measures.
Limit level being exceeded by more than two consecutive sampling days	<ol style="list-style-type: none"> 1. Repeat in-situ measurements to confirm findings; 2. Identify reasons for non-compliance and source(s) of impact; 3. Inform AFCD, IEC, Contractor and Engineer; 4. Check monitoring data and Contractor's working methods and any excavation works or dewatering processes; 5. Discuss mitigation measures with IEC, Engineer and Contractor; 6. Ensure mitigation measures are implemented. 7. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days. 	<ol style="list-style-type: none"> 1. Discuss mitigation measures with ET, Engineer and Contractor; 2. Review proposals on mitigation measures submitted by Contractor and advise the Engineer accordingly; 3. Assess effectiveness of implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Discuss proposed mitigation measures with IEC, ET and Contractor; 2. Request Contractor to critically review the working methods; 3. Make agreement on mitigation measures to be implemented; 4. Assess effectiveness of implemented mitigation measures; 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. 	<ol style="list-style-type: none"> 1. Inform Engineer and confirm in writing notification of the non-compliance; 2. Rectify unacceptable practice; 3. Check working methods and any excavation works or dewatering processes; 4. Consider changes in working methods and plans; 5. Discuss with ET, IEC and Engineer and propose mitigation measures to IEC and Engineer within three working days; 6. Implement agreed mitigation measures; 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 and the Coming Month

Monitoring Schedule in this Reporting Period – January 2012

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

	Monitoring Day
	Sunday or Public Holiday

Monitoring Schedule in the coming month – February 2012

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

	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-Jan-12	Sun	Holiday					
2-Jan-12	Mon	Holiday					
3-Jan-12	Tue	Cloudy	0	16.9	68	7.5	68
4-Jan-12	Wed	Fresh northerly winds	Trace	12.4	59.5	4.6	67.5
5-Jan-12	Thu	Cloudy and misty.	0.8	8.8	76	9.2	78.5
6-Jan-12	Fri	Mainly fine	0.5	10.5	81.5	6.5	84.5
7-Jan-12	Sat	Mainly fine and dry.	0	12.1	82.4	5.1	85.7
8-Jan-12	Sun	Mainly fine and dry.	0	15.4	66.5	6.9	69
9-Jan-12	Mon	Cloudy	0	15.1	69	7.5	75
10-Jan-12	Tue	Moderate north to northeasterly winds.	0	14.3	76	6.5	80.5
11-Jan-12	Wed	Cloudy and misty.	0.4	15.7	73.7	10.2	69.5
12-Jan-12	Thu	Moderate north to northeasterly winds.	0.9	14.3	79.2	7.5	79
13-Jan-12	Fri	Mainly fine and dry.	2.3	14.6	81	6.2	87
14-Jan-12	Sat	Moderate north to northeasterly winds.	0.6	16.9	82.7	7.8	81
15-Jan-12	Sun	Moderate easterly winds.	19.1	16.1	96.5	5.5	95
16-Jan-12	Mon	Mainly fine and dry.	8.7	14	87.5	7	89
17-Jan-12	Tue	Cloudy.	0	15.8	73.7	8	72.5
18-Jan-12	Wed	Moderate northeasterly winds.	0	17.7	77.2	11	76
19-Jan-12	Thu	Cloudy and cold	0	19.6	83.2	7	83
20-Jan-12	Fri	Cool	0	17.3	86.2	9.7	82.5
21-Jan-12	Sat	Cloudy and misty.	Trace	16.3	85	11	82.7
22-Jan-12	Sun	Holiday					
23-Jan-12	Mon	Holiday					
24-Jan-12	Tue	Holiday					
25-Jan-12	Wed	Holiday					
26-Jan-12	Thu	Cloudy and misty.	0.8	9.8	88	7.5	91.2
27-Jan-12	Fri	Cloudy and misty.	0	13.9	86	6.5	89.2
28-Jan-12	Sat	Moderate easterly winds.	0	17.6	82	7.2	87.2
29-Jan-12	Sun	Moderate north to northeasterly winds.	0	15	76.5	6	82.5
30-Jan-12	Mon	Cloudy.	0	15.6	69.7	6.9	69.5
31-Jan-12	Tue	Mainly fine and dry.	0	14.7	60	9	56.5

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

Appendix I

Data Base of Monitoring Results

Construction Noise Measurement Data

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

Date	Start Time	1 st Leq _{5min}	2 nd Leq _{5min}	3 rd Leq _{5min}	4 th Leq _{5min}	5 th Leq _{5min}	6 th Leq _{5min}	Leq _{30min} *
5-Jan-12	11:33							55.1
12-Jan-12	13:04	-	-	-	-	-	-	52.8
19-Jan-12	12:07							51.8
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} *
5-Jan-12	12:05							58.5
12-Jan-12	13:41	-	-	-	-	-	-	56.9
19-Jan-12	11:33	-	-	-	-	-	-	60.3
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	1 st Leq _{5min}	2 nd Leq _{5min}	3 rd Leq _{5min}	4 th Leq _{5min}	5 th Leq _{5min}	6 th Leq _{5min}	Leq _{30min}	Corrected* Leq _{30min}
5-Jan-12	11:33	71.1	57.3	65.9	70.1	61.2	69.7	68.0	71.0
12-Jan-12	10:48	64.8	62.7	64.7	72.3	74.7	67.8	70.0	73.0
19-Jan-12	14:46	66.8	59.9	62.7	67.8	65.1	63.8	65.1	68.1
26-Jan-12	14:15	64.8	62.3	64.7	72.3	74.7	67.3	70.0	73.0
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	1 st Leq _{5min}	2 nd Leq _{5min}	3 rd Leq _{5min}	4 th Leq _{5min}	5 th Leq _{5min}	6 th Leq _{5min}	Leq _{30min}	Corrected* Leq _{30min}
5-Jan-12	10:30	69.6	64.4	63.1	71.9	72.7	68.2	69.6	72.6
12-Jan-12	10:16	66.1	65.8	55.7	61.8	66.1	62.4	64.1	67.1
19-Jan-12	13:40	69.9	65.9	67.8	68.6	67.2	65.8	67.8	70.8
26-Jan-12	13:05	66.3	65.4	55.8	66.1	66.3	62.8	64.9	67.9
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)

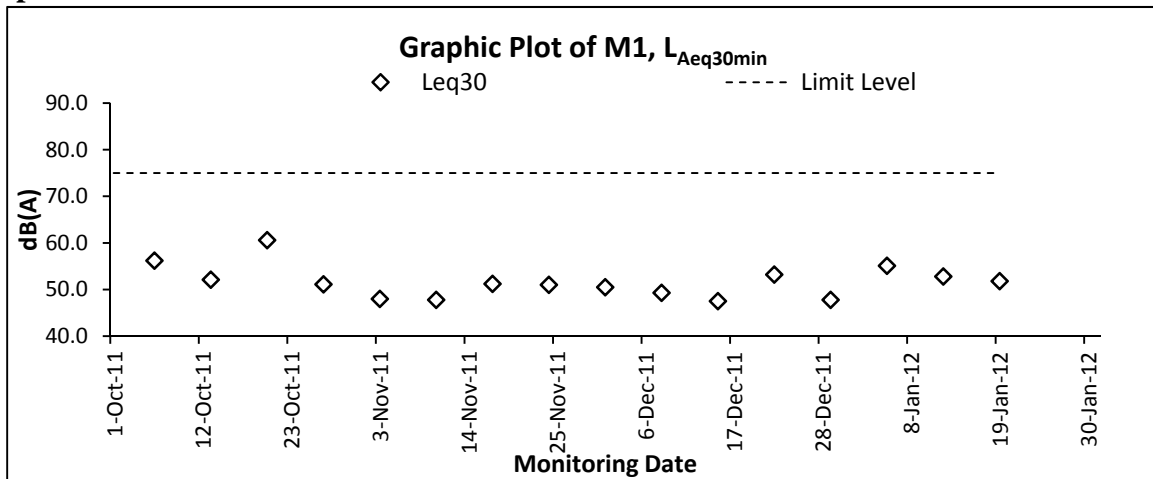
Date	Start Time	1 st Leq _{5min}	2 nd Leq _{5min}	3 rd Leq _{5min}	4 th Leq _{5min}	5 th Leq _{5min}	6 th Leq _{5min}	Leq _{30min}	Corrected* Leq _{30min}
5-Jan-12	11:02	58.2	69.9	60.0	63.5	61.7	67.6	65.4	68.4
12-Jan-12	10:48	51.2	54.0	57.2	56.2	58.2	55.4	55.9	58.9
19-Jan-12	14:15	57.8	54.8	61.3	59.0	58.3	56.4	58.4	61.4
26-Jan-12	13:40	51.4	54.4	57.6	56.4	58.3	55.6	56.1	59.1
Limit Level								> 75 dB(A)	

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

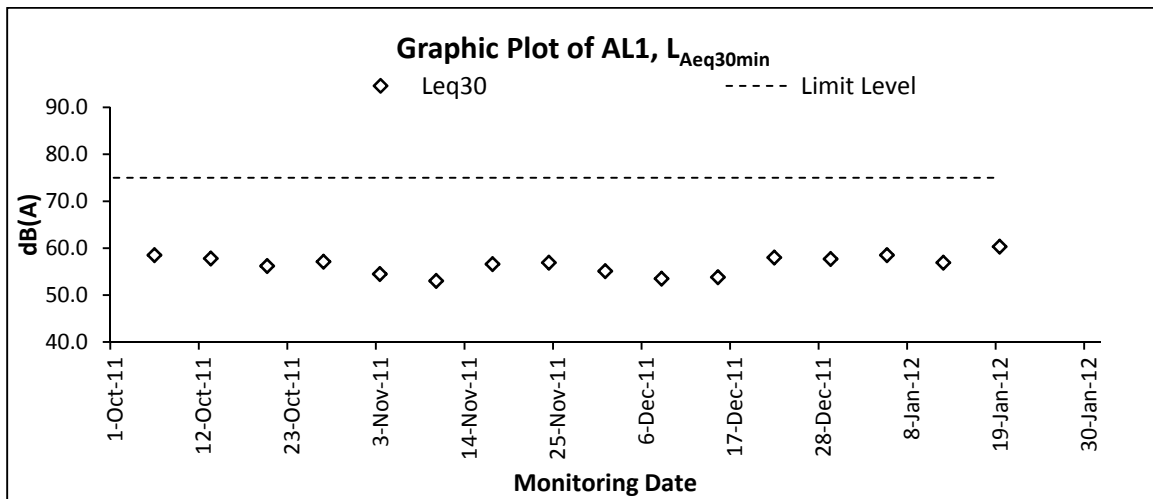
Appendix J

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

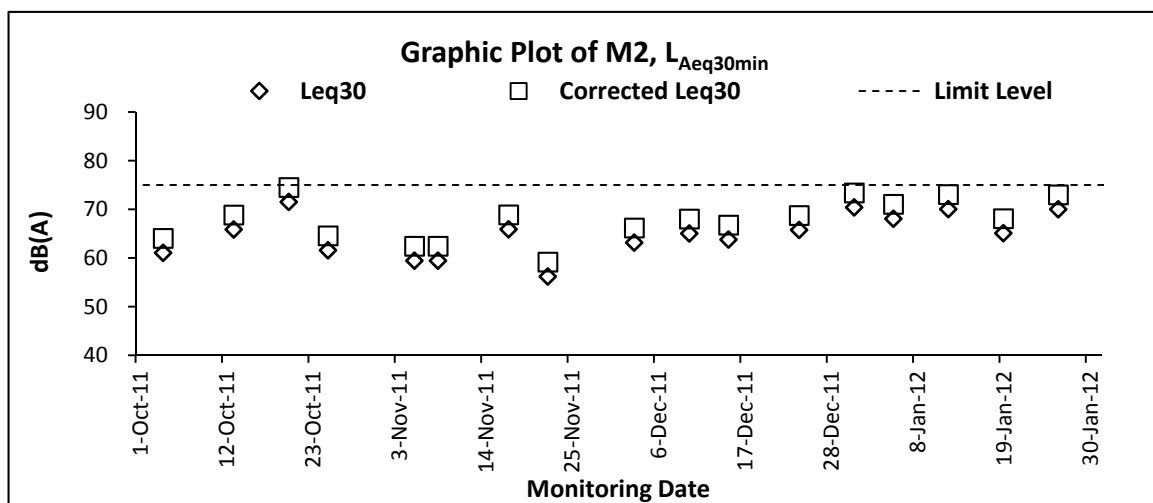
Graphic Plot – Construction Noise



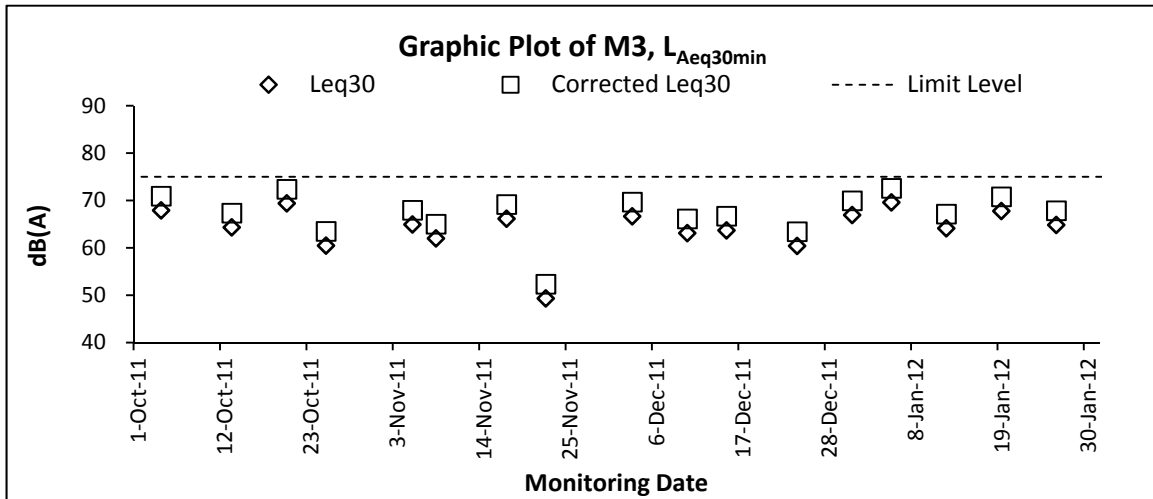
Remark: The monitoring is undertaken under façade situation. No façade correction is added according to acoustical principles and EPD guidelines.



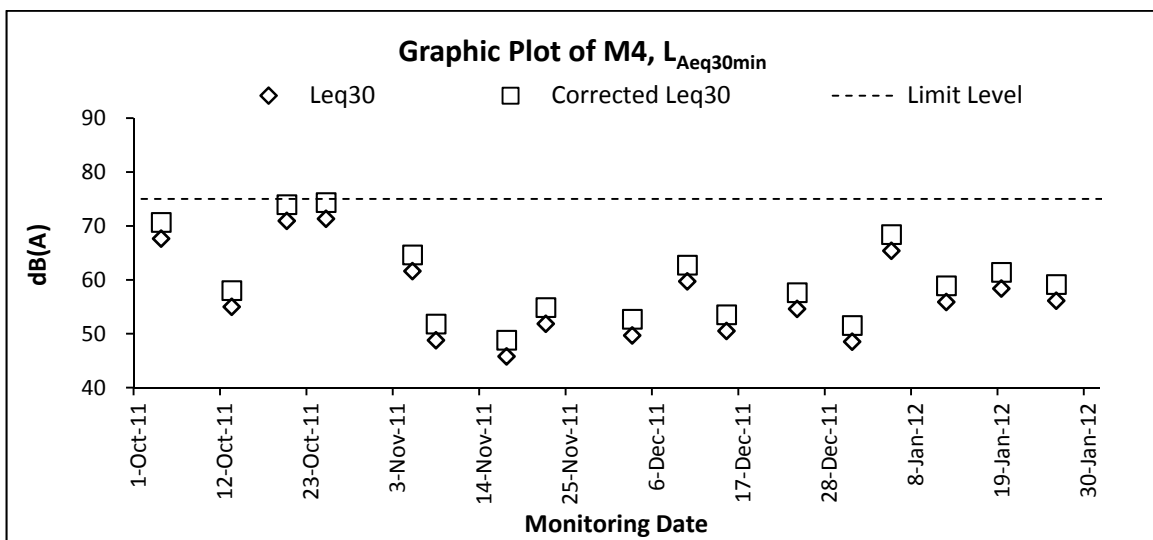
Remark: The monitoring is undertaken under façade situation. No façade correction is added according to acoustical principles and EPD guidelines.



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

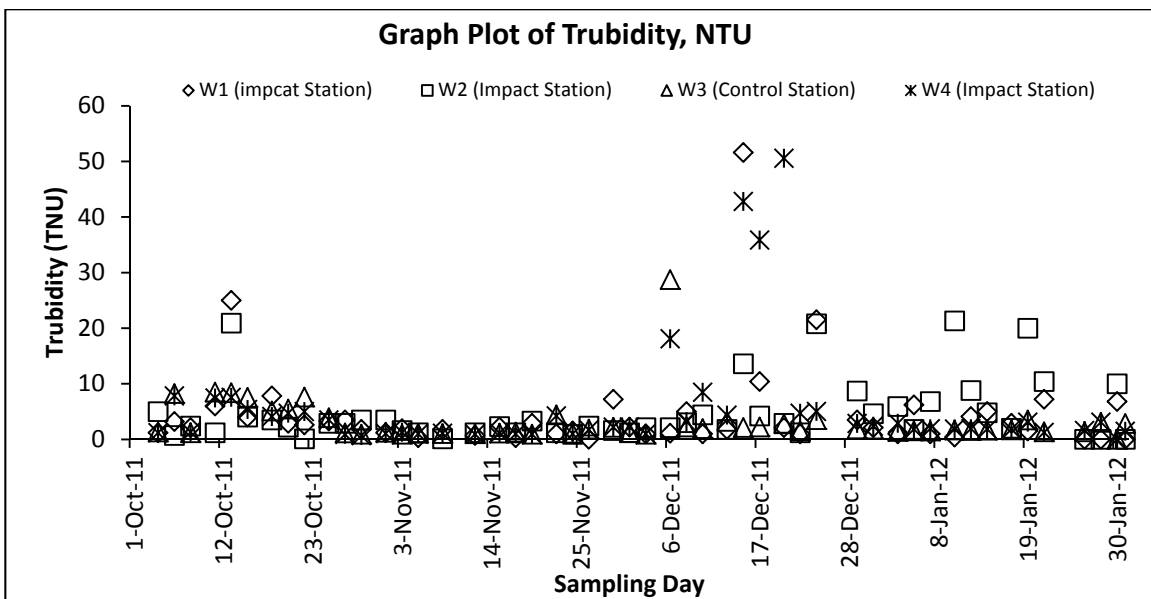
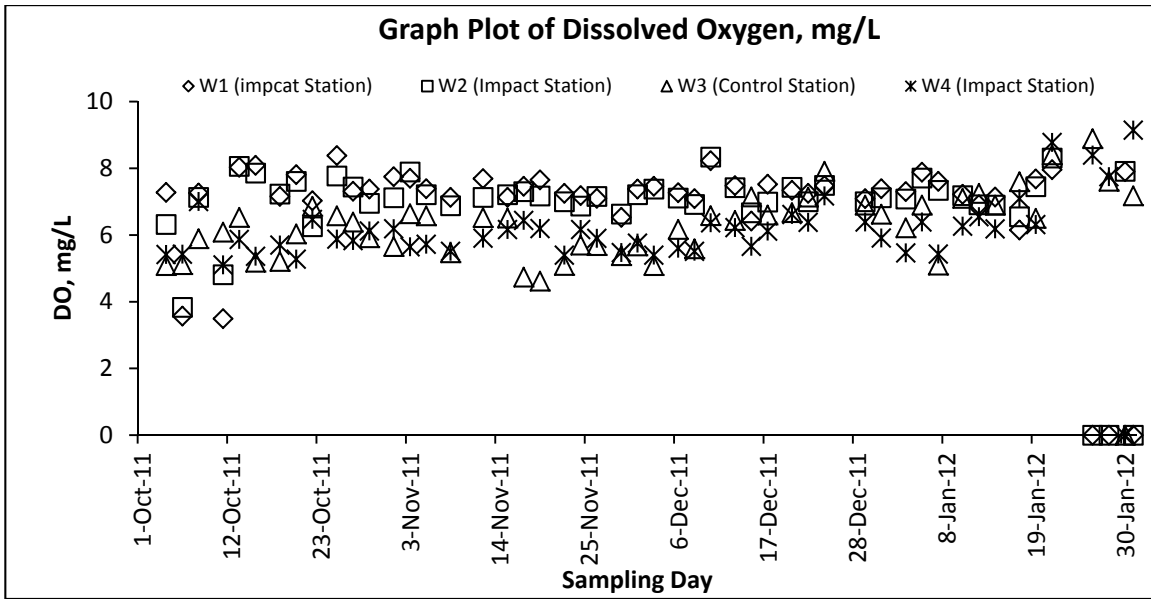


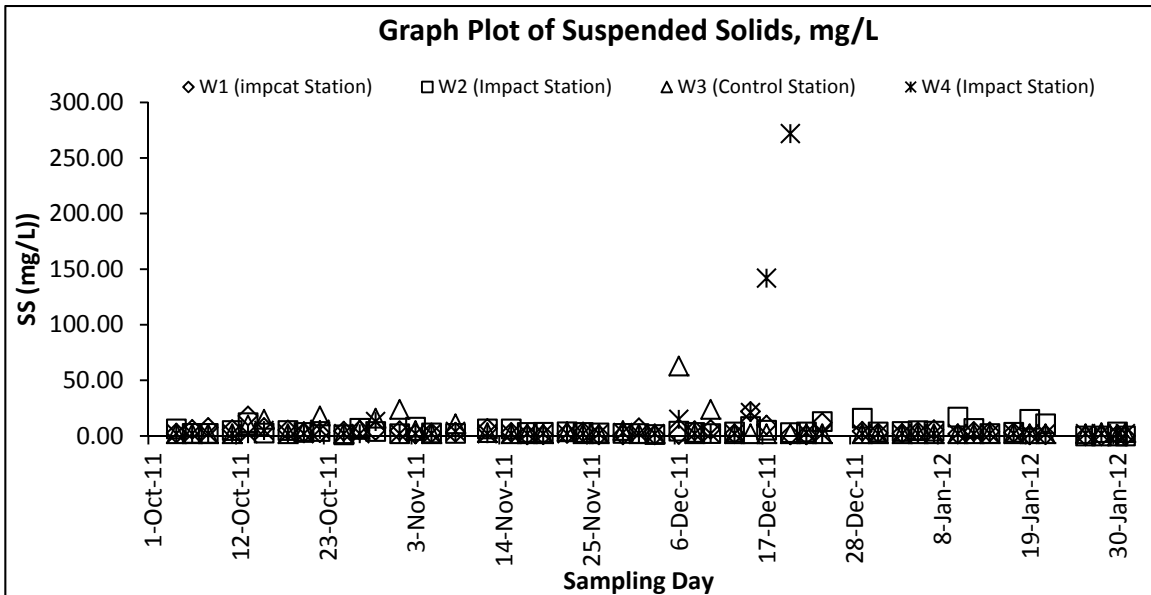
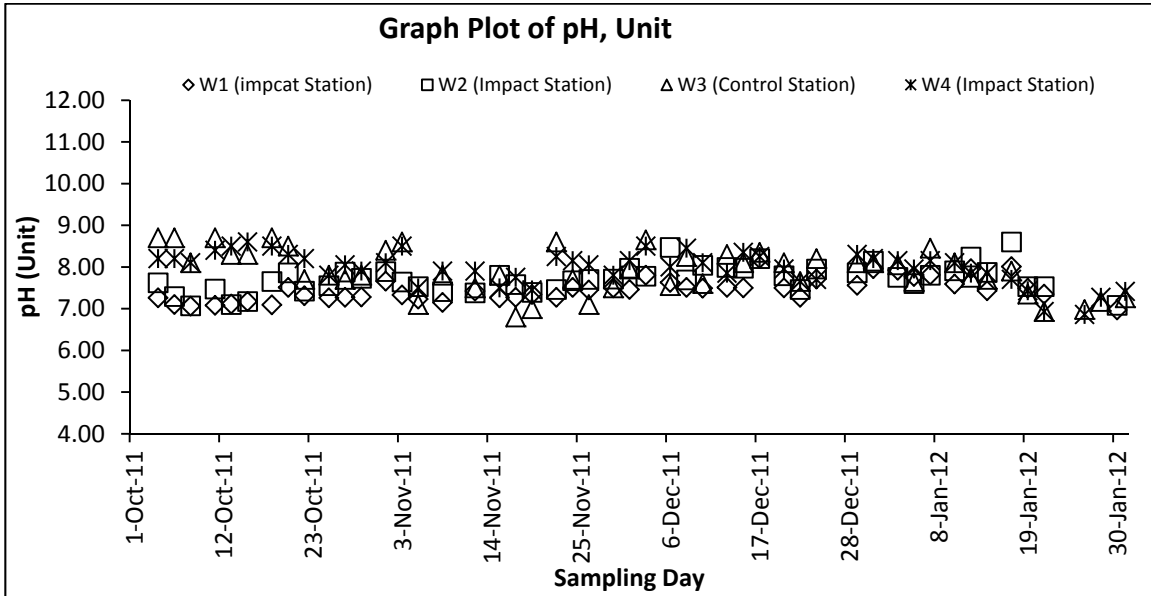
Remark: The monitoring is undertaken under free field situation. A façade correction of +3 dB(A) has been added according to acoustical principles and EPD guidelines



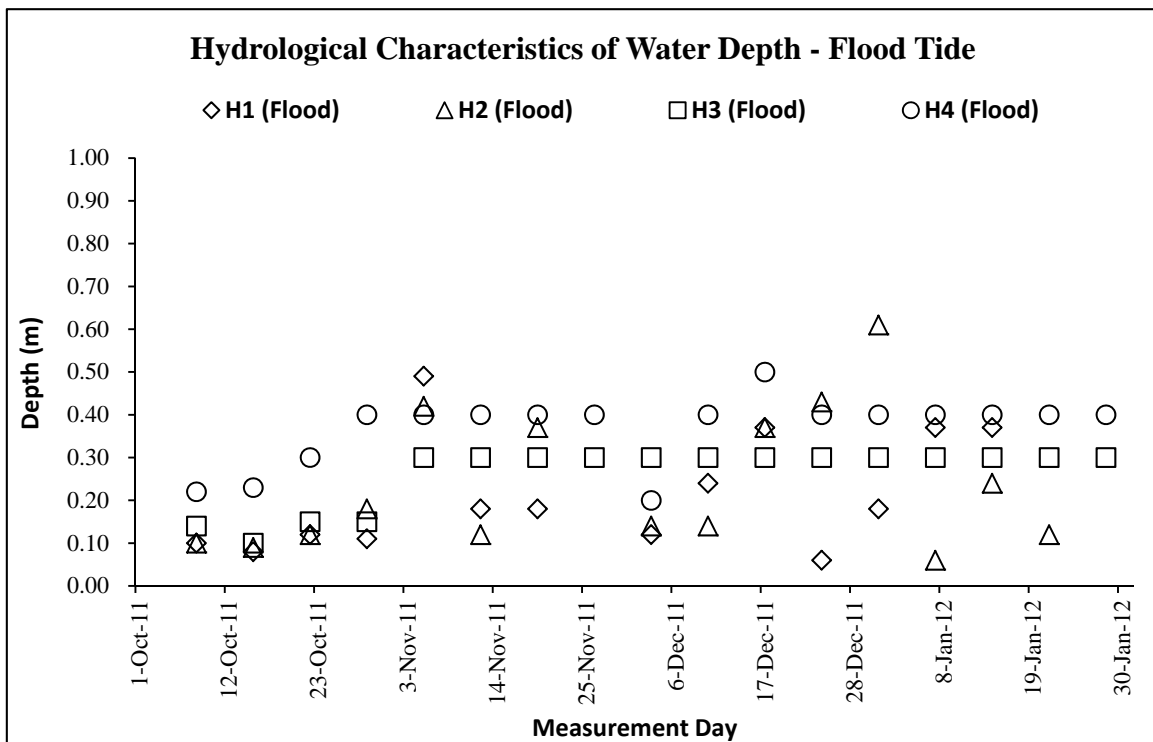
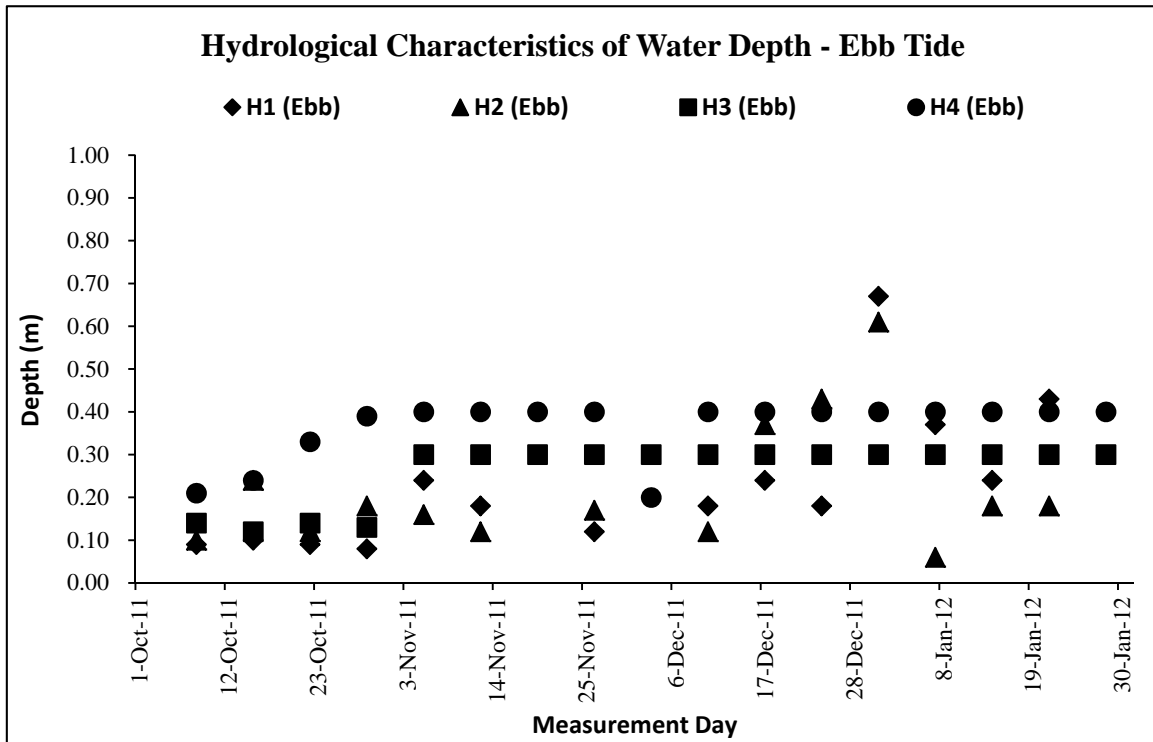
Remark: The monitoring is undertaken under free field situation. A façade correction of +3 dB(A) has been added according to acoustical principles and EPD guidelines

Graphic Plot – Water Quality

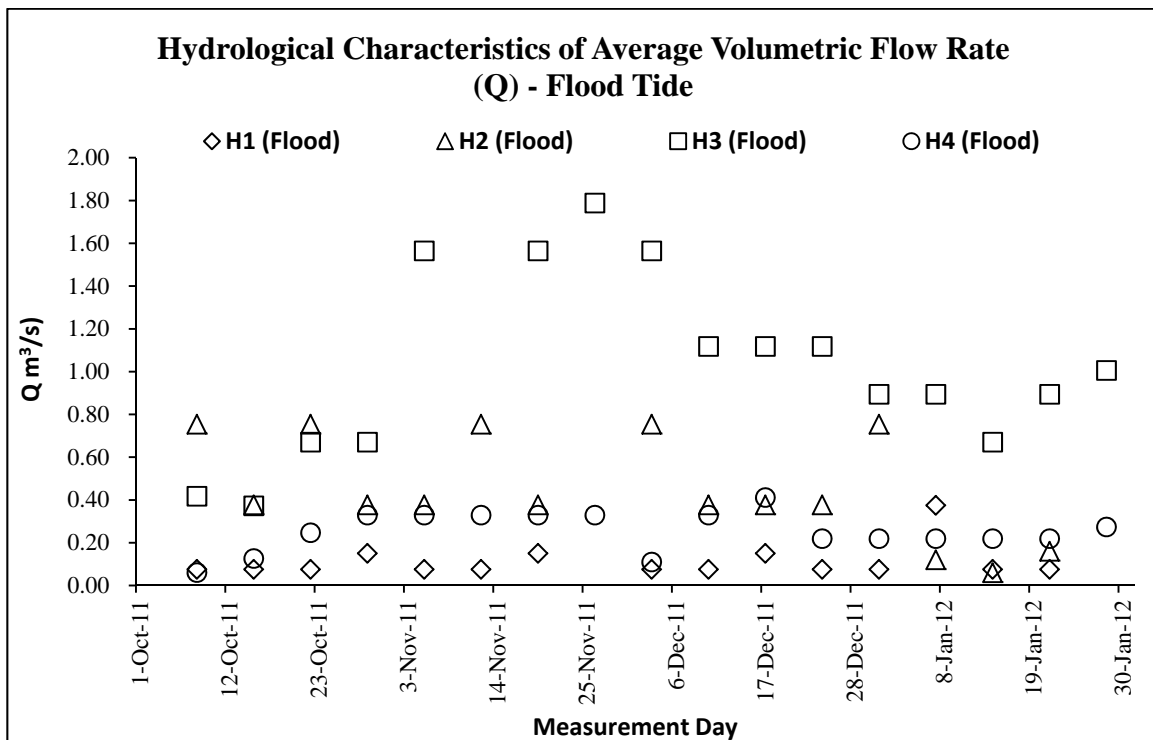
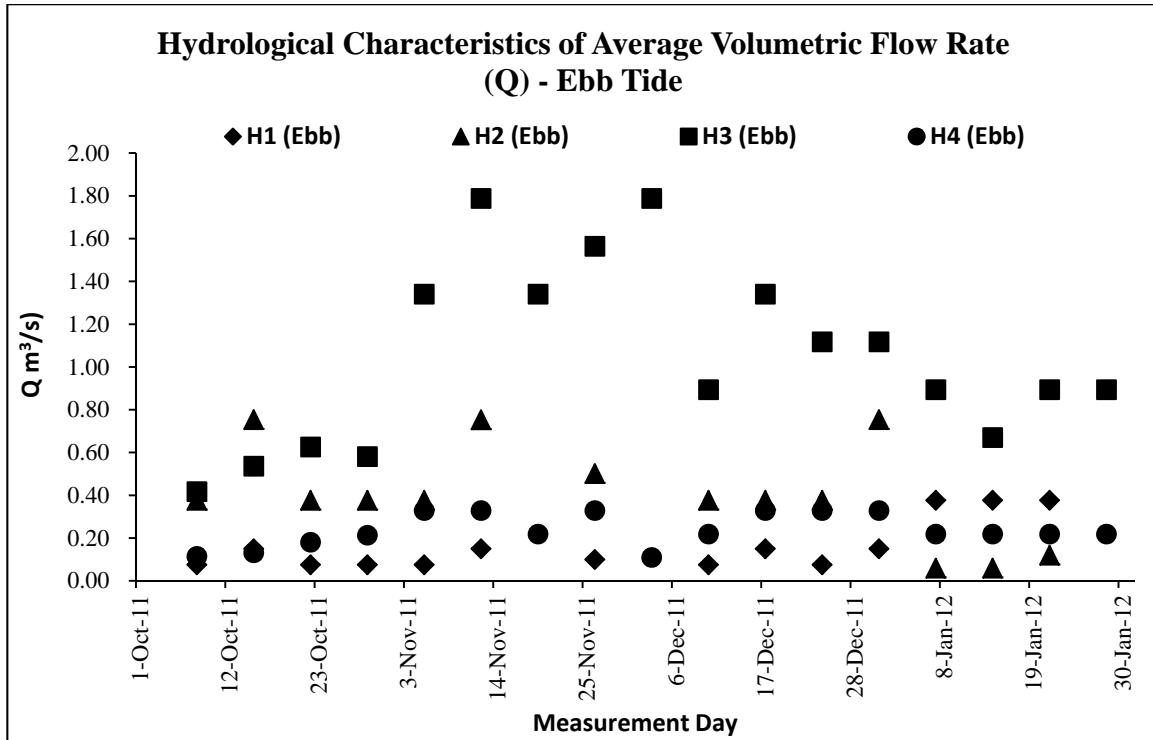




Graphic Plot – Hydrological Characteristics (Water Depth)



Graphic Plot – Hydrological Characteristics (Water Flow Rate)



Appendix K

Monthly Summary Waste Flow Table

Monthly Summary Waste Flow Table for 2012 (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 '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m ³)
Jan	Nil	0	0	0	0	0	0	0	0	0	0.01
Feb											
Mar											
Apr											
May											
June											
Sub-Total	Nil	0	0	0	0	0	0	0	0	0	0.01
July											
Aug											
Sept											
Oct											
Nov											
Dec											
Total	Nil	0	0	0	0	0	0	0	0	0	0.01
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 '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m 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	2	1.9	
2.					
3.					
4.					
5.					
6.					
7.					
8.					
Total Estimated Quantity of Timber Used			2		

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
Drainage Improvement in Shuen Wan and Shek Wu Wai
Inspection: Tung Tsz Road, Shuen Wan
Date: 5 January 2012
Time: 11:00

Inspected by _____
IEC/IEC's Representative: _____
RE/RE's Representative: Lau Siu Chuen
ETL/ ET's Representative: Tony Wong
EO/EO's Representative: Chan Hiu Shan
Contractor's Representative: Chan Hiu Shan

Checklist No. DC1002-05012012

PART A:

GENERAL INFORMATION

Environmental Permit No.

Weather: Sunny Fine Cloudy Rainy Calm **EP-303/2008**
 Temperature: °C
 Humidity: High Moderate Low **N/A**
 Wind: Strong Breeze Light

Area Inspected

1. Box Culvert Bay 23 - 27
- 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
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Section 1: Water Quality

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

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

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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3.11	Are valid Construction Noise Permit(s) posted at site entrances?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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).	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Section 4: Waste/Chemical Management							
4.01	Waste Management Plan had been submit to Engineer for approval.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.02	Are receptacles available for general refuse collection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.03	Is general refuse sorting or recycling implemented?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.04	Is general refuse disposed of properly and regularly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.05	Is the Contractor registered as a chemical waste producer?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.06	Are the chemical waste containers properly labelled?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.07	Are the chemical wastes stored in proper storage areas?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.08	Is the chemical waste storage area properly labelled?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.09	Is the chemical waste storage area used for storage of chemical waste only?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.10	Are incompatible chemical wastes stored in different areas?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.11	Are the chemical wastes disposed of by licensed collectors?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.12	Are trip tickets for chemical wastes disposal available for inspection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.13	Are chemical/fuel storage areas bunded?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.14	Are designated areas identified for storage and sorting of construction wastes?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.15	Are construction wastes sorted (inert and non-inert) on site?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.16	Are construction wastes reused?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.17	Are construction wastes disposed of properly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.18	Are site hoardings and signboards made of durable materials instead of timber?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.19	Is trip ticket system implemented for the disposal of construction wastes and records available for inspection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.20	Are appropriate procedures followed if contaminated material exists?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
4.21	Is relevant license/ permit for disposal of construction waste or excavated materials available for inspection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.22	Site cleanliness and appropriate waste management training had provided for the site workers.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.23	Contaminated sediments will managed according to WBTC No.12/2000 and EWTB TC(W) No. 34/2002.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Section 5: Landscape & Visual							
5.01	Are retained and transplanted trees in health condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.02	Are retained and transplanted trees properly protected?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.04	Is damage to trees outside site boundary due to construction activities avoided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.05	Is the night-time lighting controlled to minimize glare to sensitive receivers?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Section 6: Ecology							
6.01	Gabion banks and base had been provide for channel linings and banks for typical sections of work area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
6.02	Prevent site effluent/runoff discharge to the seasonal wetlands at Wai Ha River?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6.03	Stockpiling or disposal of materials, and any dredging or construction activities at the seasonal wetlands at Wai Ha River are prohibited?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Section 7: Others							
7.01	Are relevant Environmental Permits posted at all vehicle site entrances/exits?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	


Remarks

Follow up of last Site Inspection (29-12-2011):

1. Stagnant water was not observed.	
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Observations recorded in this Site Inspection (5-1-2012):

No adverse environmental impact was observed during site inspection.	
--	--

<i>IEC's representative</i>	<i>RE's representative</i>	<i>ET's representative</i>	<i>EO's representative</i>	<i>Contractor's representative</i>
				
()	()	(Tony Wong)	()	()

Environmental Site Inspection Checklist

Project: DSD Contract No. DC/2010/02
Drainage Improvement in Shuen Wan and Shek Wu Wai
Inspection: Tung Tsz Road, Shuen Wan
Date: 11 January 2012
Time: 10:00

Inspected by _____
IEC/IEC's Representative: Justin Ye
RE/RE's Representative: H.K Chan, S.O. Tso
ETL/ ET's Representative: T.W. Tam
EO/EO's Representative: Chan Hiu Shan
Contractor's Representative: W.K. Chan

Checklist No. DC1002-11012012

PART A:

GENERAL INFORMATION

Environmental Permit No.

Weather: Sunny Fine Cloudy Rainy Calm **EP-303/2008**
 Temperature: °C
 Humidity: High Moderate Low **N/A**
 Wind: Strong Breeze Light

Area Inspected

1. Box Culvert Bay 23 - 27
- 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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.02	Is the effluent discharged in accordance with the discharge licence?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.03	Is the discharge of turbid water avoided?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.04	Are there proper desilting facilities in the drainage systems to reduce SS levels in effluent?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark 1
1.05	Are there channels, sandbags or bunds to direct surface run-off to sedimentation tanks?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.06	Are there any perimeter channels provided at site boundaries to intercept storm runoff from crossing the site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.07	Is drainage system well maintained?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark 1
1.08	As excavation proceeds, are temporary access roads protected by crushed stone or gravel?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.09	Are temporary exposed slopes properly covered?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.10	Are earthworks final surfaces well compacted or protected?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
1.11	Are manholes adequately covered or temporarily sealed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.12	Are there any procedures and equipment for rainstorm protection?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.13	Are wheel washing facilities well maintained?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.14	Is runoff from wheel washing facilities avoided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.15	Are there toilets provided on site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.16	Are toilets properly maintained?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.17	Are the vehicle and plant servicing areas paved and located within roofed areas?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.18	Is the oil leakage or spillage avoided?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark 2
1.19	Are there any measures to prevent leaked oil from entering the drainage system?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.20	Are there any measures to collect spilt cement and concrete washings during concreting works?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.21	Are there any oil interceptors/grease traps in the drainage systems for vehicle and plant servicing areas, canteen kitchen, etc?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
1.22	Are the oil interceptors/grease traps maintained properly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Environmental Site Inspection Checklist

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

Environmental Site Inspection Checklist

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3.10	Are Construction Noise Permit(s) applied for general construction works during restricted hours?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3.11	Are valid Construction Noise Permit(s) posted at site entrances?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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).	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Section 4: Waste/Chemical Management							
4.01	Waste Management Plan had been submit to Engineer for approval.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.02	Are receptacles available for general refuse collection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.03	Is general refuse sorting or recycling implemented?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.04	Is general refuse disposed of properly and regularly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.05	Is the Contractor registered as a chemical waste producer?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.06	Are the chemical waste containers properly labelled?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.07	Are the chemical wastes stored in proper storage areas?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark 2
4.08	Is the chemical waste storage area properly labelled?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.09	Is the chemical waste storage area used for storage of chemical waste only?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.10	Are incompatible chemical wastes stored in different areas?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.11	Are the chemical wastes disposed of by licensed collectors?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.12	Are trip tickets for chemical wastes disposal available for inspection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.13	Are chemical/fuel storage areas bunded?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.14	Are designated areas identified for storage and sorting of construction wastes?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.15	Are construction wastes sorted (inert and non-inert) on site?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.16	Are construction wastes reused?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.17	Are construction wastes disposed of properly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.18	Are site hoardings and signboards made of durable materials instead of timber?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.19	Is trip ticket system implemented for the disposal of construction wastes and records available for inspection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.20	Are appropriate procedures followed if contaminated material exists?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
4.21	Is relevant license/ permit for disposal of construction waste or excavated materials available for inspection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.22	Site cleanliness and appropriate waste management training had provided for the site workers.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.23	Contaminated sediments will managed according to WBTC No.12/2000 and EWTB TC(W) No. 34/2002.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Section 5: Landscape & Visual							
5.01	Are retained and transplanted trees in health condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.02	Are retained and transplanted trees properly protected?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Environmental Site Inspection Checklist


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5.03	Are surgery works carried out for the damaged trees?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.04	Is damage to trees outside site boundary due to construction activities avoided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.05	Is the night-time lighting controlled to minimize glare to sensitive receivers?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Section 6: Ecology							
6.01	Gabion banks and base had been provide for channel linings and banks for typical sections of work area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
6.02	Prevent site effluent/runoff discharge to the seasonal wetlands at Wai Ha River?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6.03	Stockpiling or disposal of materials, and any dredging or construction activities at the seasonal wetlands at Wai Ha River are prohibited?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Section 7: Others							
7.01	Are relevant Environmental Permits posted at all vehicle site entrances/exits?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Remarks

Follow up of last Site Inspection (5-1-2012):

Nil.

Observations recorded in this Site Inspection (11-1-2012):

<p>1) The algae and mud accumulated in the sedimentation tanks should be cleaned regularly in order to maintain its functioning.</p>	
<p>2) Chemical container should be stored in proper area with drip tray provided.</p>	
<p>As a reminder, the Contractor should properly implement the air quality mitigation measure such as covering of soil stockpile and cleaning of exit of the site before public holiday.</p>	

IEC's representative

RE's representative

ET's representative

EO's representative

Contractor's representative



() () (T.W. Tam) () ()

Environmental Site Inspection Checklist

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

Inspection: Tung Tsz Road, Shuen Wan

Date: 19 January 2012

Time: 11:00

Inspected by _____
IEC/IEC's Representative: _____
RE/RE's Representative: Lau Siu Chuen
ETL/ ET's Representative: Tony Wong
EO/EO's Representative: Chan Hiu Shan
Contractor's Representative: Chan Hiu Shan

Checklist No. DC1002-19012012

PART A:

GENERAL INFORMATION

Environmental Permit No.

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

Temperature: °C

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

Wind: Strong Breeze Light

Area Inspected

1. Box Culvert Bay 23 - 27
- 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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.02	Is the effluent discharged in accordance with the discharge licence?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.03	Is the discharge of turbid water avoided?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.04	Are there proper desilting facilities in the drainage systems to reduce SS levels in effluent?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark 1
1.05	Are there channels, sandbags or bunds to direct surface run-off to sedimentation tanks?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.06	Are there any perimeter channels provided at site boundaries to intercept storm runoff from crossing the site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.07	Is drainage system well maintained?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.08	As excavation proceeds, are temporary access roads protected by crushed stone or gravel?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.09	Are temporary exposed slopes properly covered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
1.10	Are earthworks final surfaces well compacted or protected?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
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1.12	Are there any procedures and equipment for rainstorm protection?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.13	Are wheel washing facilities well maintained?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.14	Is runoff from wheel washing facilities avoided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.15	Are there toilets provided on site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.16	Are toilets properly maintained?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.17	Are the vehicle and plant servicing areas paved and located within roofed areas?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.18	Is the oil leakage or spillage avoided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.19	Are there any measures to prevent leaked oil from entering the drainage system?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.20	Are there any measures to collect spilt cement and concrete washings during concreting works?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.21	Are there any oil interceptors/grease traps in the drainage systems for vehicle and plant servicing areas, canteen kitchen, etc?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
1.22	Are the oil interceptors/grease traps maintained properly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Environmental Site Inspection Checklist

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

Environmental Site Inspection Checklist

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3.11	Are valid Construction Noise Permit(s) posted at site entrances?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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).	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Section 4: Waste/Chemical Management							
4.01	Waste Management Plan had been submit to Engineer for approval.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.02	Are receptacles available for general refuse collection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.03	Is general refuse sorting or recycling implemented?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.04	Is general refuse disposed of properly and regularly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.05	Is the Contractor registered as a chemical waste producer?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.06	Are the chemical waste containers properly labelled?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.07	Are the chemical wastes stored in proper storage areas?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.08	Is the chemical waste storage area properly labelled?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.09	Is the chemical waste storage area used for storage of chemical waste only?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.10	Are incompatible chemical wastes stored in different areas?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.11	Are the chemical wastes disposed of by licensed collectors?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.12	Are trip tickets for chemical wastes disposal available for inspection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.13	Are chemical/fuel storage areas bunded?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.14	Are designated areas identified for storage and sorting of construction wastes?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.15	Are construction wastes sorted (inert and non-inert) on site?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.16	Are construction wastes reused?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.17	Are construction wastes disposed of properly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.18	Are site hoardings and signboards made of durable materials instead of timber?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.19	Is trip ticket system implemented for the disposal of construction wastes and records available for inspection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.20	Are appropriate procedures followed if contaminated material exists?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
4.21	Is relevant license/ permit for disposal of construction waste or excavated materials available for inspection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.22	Site cleanliness and appropriate waste management training had provided for the site workers.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.23	Contaminated sediments will managed according to WBTC No.12/2000 and EWTB TC(W) No. 34/2002.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Section 5: Landscape & Visual							
5.01	Are retained and transplanted trees in health condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.02	Are retained and transplanted trees properly protected?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Environmental Site Inspection Checklist


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5.03	Are surgery works carried out for the damaged trees?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.04	Is damage to trees outside site boundary due to construction activities avoided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.05	Is the night-time lighting controlled to minimize glare to sensitive receivers?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Section 6: Ecology							
6.01	Gabion banks and base had been provide for channel linings and banks for typical sections of work area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
6.02	Prevent site effluent/runoff discharge to the seasonal wetlands at Wai Ha River?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6.03	Stockpiling or disposal of materials, and any dredging or construction activities at the seasonal wetlands at Wai Ha River are prohibited?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Section 7: Others							
7.01	Are relevant Environmental Permits posted at all vehicle site entrances/exits?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Remarks

Follow up of last Site Inspection (11-1-2012):

<ol style="list-style-type: none"> 1. The algae and mud accumulated in the sedimentation tanks should be cleaned. 2. The chemical container on bare ground was found to be removed. 	
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Observations recorded in this Site Inspection (19-1-2012):

<ol style="list-style-type: none"> 1) The algae and mud accumulated in the sedimentation system should be cleaned regularly in order to maintain its functioning. 	
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IEC's representative

RE's representative

ET's representative

EO's representative

Contractor's representative


 (Tony Wong)

() () (Tony Wong) () ()

Environmental Site Inspection Checklist

Project: DSD Contract No. DC/2010/02
Drainage Improvement in Shuen Wan and Shek Wu Wai
Inspection: Tung Tsz Road, Shuen Wan
Date: 30 January 2012
Time: 11:00

Inspected by _____
IEC/IEC's Representative: _____
RE/RE's Representative: Lau Siu Chuen
ETL/ ET's Representative: Ben Tam
EO/EO's Representative: Chan Hiu Shan
Contractor's Representative: Chan Hiu Shan

Checklist No. DC1002-30012012

PART A:

GENERAL INFORMATION

Environmental Permit No.

Weather: Sunny Fine Cloudy Rainy Calm **EP-303/2008**
 Temperature: °C
 Humidity: High Moderate Low **N/A**
 Wind: Strong Breeze Light

Area Inspected

1. Box Culvert Bay 23 - 27
- 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
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Section 1: Water Quality

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

Environmental Site Inspection Checklist

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1.23	Is used bentonite recycled where appropriate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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 50m ³ capacities for sedimentation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
1.25	No excavation is undertaken in the settlement area.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.26	Concreting wastes water should be neutralized below the pH Action Levels before discharge.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.27	Mobile toilets should provide on site and located away the Wai Ha River course.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.25	License collector should be employed for handling the sewage of mobile toilet.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Section 2: Air Quality							
2.01	Are there wheel washing facilities with high pressure jets provided at every vehicle exit point?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.02	Are vehicles washed to remove any dusty materials from their bodies and wheels before leaving construction sites?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.03	Are the excavated materials sprayed with water during handling?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.04	Are stockpiles of dusty materials sprayed with water, covered or placed in sheltered areas?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.05	Is the exposed earth properly treated within six months after the last construction activities?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.06	Are the access roads sprayed with water to maintain the entire road surface wet or paved?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.07	Is the surface where any drilling, cutting, polishing or breaking operation continuously sprayed with water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
2.08	Is the load on vehicles covered entirely by clean impervious sheeting?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.09	Is the loading of materials to a level higher than the side and tail boards during transportation by vehicles avoided?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.10	Is the road leading to the construction site within 30m of the vehicle entrance kept clear of dusty materials?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.11	Is dark smoke emission from plant/equipment avoided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.12	Are de-bagging, batching and mixing processes carried out in sheltered areas during the use of bagged cement?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
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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).	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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4.03	Is general refuse sorting or recycling implemented?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.04	Is general refuse disposed of properly and regularly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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4.06	Are the chemical waste containers properly labelled?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.07	Are the chemical wastes stored in proper storage areas?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark 1
4.08	Is the chemical waste storage area properly labelled?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.09	Is the chemical waste storage area used for storage of chemical waste only?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.10	Are incompatible chemical wastes stored in different areas?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.11	Are the chemical wastes disposed of by licensed collectors?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.12	Are trip tickets for chemical wastes disposal available for inspection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.13	Are chemical/fuel storage areas bunded?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.14	Are designated areas identified for storage and sorting of construction wastes?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.15	Are construction wastes sorted (inert and non-inert) on site?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.16	Are construction wastes reused?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.17	Are construction wastes disposed of properly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.18	Are site hoardings and signboards made of durable materials instead of timber?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.19	Is trip ticket system implemented for the disposal of construction wastes and records available for inspection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.20	Are appropriate procedures followed if contaminated material exists?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
4.21	Is relevant license/ permit for disposal of construction waste or excavated materials available for inspection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.22	Site cleanliness and appropriate waste management training had provided for the site workers.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.23	Contaminated sediments will managed according to WBTC No.12/2000 and EWTB TC(W) No. 34/2002.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Section 5: Landscape & Visual							
5.01	Are retained and transplanted trees in health condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.02	Are retained and transplanted trees properly protected?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.04	Is damage to trees outside site boundary due to construction activities avoided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.05	Is the night-time lighting controlled to minimize glare to sensitive receivers?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Section 6: Ecology							
6.01	Gabion banks and base had been provide for channel linings and banks for typical sections of work area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
6.02	Prevent site effluent/runoff discharge to the seasonal wetlands at Wai Ha River?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6.03	Stockpiling or disposal of materials, and any dredging or construction activities at the seasonal wetlands at Wai Ha River are prohibited?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Section 7: Others							
7.01	Are relevant Environmental Permits posted at all vehicle site entrances/exits?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Remarks

Follow up of last Site Inspection (19-1-2012):

1. The algae and mud accumulated in the sedimentation system was found to be cleaned	
--	--

Observations recorded in this Site Inspection (30-1-2012):

<p>Free chemical container was found standing on bare ground, the Contractor should store them in proper area with drip tray provided to avoid chemical leakage.</p>	
<p>1) Stagnant water accumulated in the trip tray was observed after rainfall, the Contractor should clean it to avoid mosquito breeding.</p>	


IEC's representative

RE's representative

ET's representative

EO's representative

Contractor's representative



() () (Ben Tam) () ()

Appendix M
Monthly Landscape & Visual Report

**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
January 2012
(Issue 1)**

February 2012

Environmental
Resources
Management

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08 February 2012

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_20120208

Dear Shan,

***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 January 2012, 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
Senior Landscape Architect

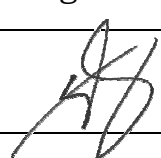
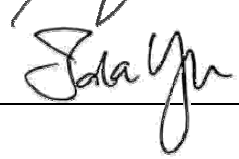


**Contract No. DC/2010/02 – Drainage
Improvement Works in Shuen Wan and
Shek Wu Wai**

Bi-weekly Landscape & Visual Monitoring

**EM&A (Landscape & Visual) Report January 2012
(Issue 1)**

February 2012

	Name	Signature
Prepared & Reviewed by:	Sean FONG	
Verified by:	Ida YU	
Date:	2nd February 2012	

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3	LANDSCAPE & VISUAL MONITORING RESULTS	2
4	AUDIT SCHEDULE.....	5

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Appendix A – Photographs

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 7th November 2011) 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 in the works areas under Contract 2 of the Project.

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 root ball 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 (January 2012) 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). The bi-weekly monitoring was conducted on 11th and 26th January 2012.

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

3.2 Visual Screen

3.2.1 No follow-up action by the Contractor is required as from the *Monthly EM&A Report for December 2011*.

Observation

3.2.2 Construction area for Contract 2 has been extended along Tung Tsz Road. Temporary hoardings, in the form of construction barriers, have been erected from west to east parts along Tung Tsz Road and opposite to San Tau Kwok.

3.2.3 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.

3.2.4 As observed on 26th January 2012, a wetland rehabilitation area, which has been maintained by parties other than the Project Proponent, the Project's Contractor and Sub-contractors, has been demarcated to the southeast of Jade View Villa and adjacent to the active works area (**Photo 3**).

Recommendation

3.2.5 No specific recommendation is required.

3.3 Contaminant/ Sediment Control

3.3.1 No follow-up action by the Contractor is required as from the *Monthly EM&A Report for December 2011*.

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 a filtration bed and a sedimentation tank placed along the southern part of the active works areas opposite to Wai Ha before the discharge (**Photo 4**). As observed, a sheet of PVC liner was overlaid along the filtration beds within the active works area. This practice could lower the chance of contaminating the vegetation in the adjacent Shuen Wan marsh to the south.

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

3.4.1 No follow-up action by the Contractor is required as from the *Monthly EM&A Report for December 2011*.

Observation

3.4.2 Drained water from underground was observed to be filtered in the sedimentation tank and filtration beds before the discharge (**Photo 4**). As

observed, a sheet of PVC liner was overlaid along the filtration beds within the active works area. This practice could lower the chance of contaminating the vegetation in the adjacent Shuen Wan marsh. No direct discharge of polluted water from the active works area into the adjacent Wai Ha River was observed (**Photo 5**). As reported in the *Monthly EM&A Report for December 2011*, soil stockpiled for other contract work at the bank of Wai Ha River to the southwest of Wai Ha was still observed on 11th and 26th January 2012 (**Photo 6**). However, this did not cause pollution problem to Wai Ha River.

Recommendation

- 3.4.3 The contractor should prevent any contaminants and sediments from entering the sensitive water-based habitats and implement pollution control measures to minimize any adverse environmental impacts to the water body.
- 3.4.4 The contractor and the Project Proponent should have routine inspection within and adjacent to the Project Area and the Wai Ha River to minimize the contamination and pollution of the Wai Ha River and other sensitive habitats by other contract work.

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

- 3.6.1 A Tree Protection Zone (TPZ) was demarcated around the tree T025 retained within the active works area. The soil stockpiled around the tree trunk base of T025 was removed, as following the recommendation stated in the *Monthly EM&A Report for December 2011*. Individual trees retained within the active works area have been protected within TPZs.

Observation

- 3.6.2 No further tree felling work was observed in this month. Clearance of herbaceous vegetation within the fenced area was recorded.
- 3.6.3 Most trees proposed to be retained within the Project Area were recorded generally in fair health conditions. A retained tree T180 showed poor health condition with its canopy being extensively covered by climber. It is suspected that this tree was dead due to natural dieback (**Photo 7**).
- 3.6.4 As reported in the *Monthly EM&A Report for December 2011*, the pruned and topped trees of *Leucaena leucocephala* (銀合歡) (Tree no. T069 – T073 and T075) and *Macaranga tanarius* (血桐) (Tree no. T076) located close to the Project's site office were recorded in the monitoring in December 2011 (**Photos 8-9**). Regeneration of branches and leaves around the wounds was slow.
- 3.6.5 A TPZ was observed for the tree T025, which is regarded as a "Retained Tree" in accordance with the approved Tree Felling Application Report (**Photo 10**). Stockpiled soil around the tree trunk base was removed as following the recommended stated in the *Monthly EM&A Report for December 2011*.

- 3.6.6 A fallen scaffold branch was observed on the retained tree T168 (**Photo 11**). This tree has been extensively covered by the weedy climbers, which has put additional loading to the tree canopy. This excessive loading to the tree canopy could increase the limb breakage.
- 3.6.7 No significant signs of damage on other existing tree crowns, trunks and roots resulting from the construction works were observed in this monthly monitoring.
- 3.6.8 Three specimens (Tree No.: PH01, PH02 and PH03) of the protected shrub species of conservation interest *Pavetta hongkongensis* was transplanted to Area C under Contract 1 of the Project since December 2011 (**Photos 12-13**). The dead specimen (Tree No.: PH04, due to natural dieback) was still remained at its original location (**Photo 14**).

Recommendations

- 3.6.9 Within the active works area, maintenance of TPZs for the retained trees and the trees to be transplanted should be continued. Trunk base of all retained trees and trees to be transplanted should be kept clear, with no stockpiled soil, construction equipments and rubbish allowed around the trunk bases and within the TPZs. If necessary, these retained trees or trees to be transplanted shall be watered regularly to maintain their health.
- 3.6.10 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 the construction works. In addition, the Main Contractor and the Project Proponent should have routine inspection on any tree remedial works conducted by other party on the trees within the Project Area.

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 February 2012 is scheduled to be conducted in the weeks of 6th and 20th February 2012.

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 – Wetland rehabilitation area was observed adjacent to the active works area.



Photo 4 – Sedimentation tank for water drained from the underground.



Photo 5 – Upper stream of Wa Ha River. No direct water discharge into the Wai Ha River since no active construction work from the Project has been commenced adjacent to the River.



Photo 6 – Stockpiled soil was still observed at the bank of the Wai Ha.







	
<p>Photo 7 – Retain tree T180 was suspected dying.</p>	<p>Photo 8 – Pruned and topped trees T075 and T076.</p>
	
<p>Photo 9 – Pruned and topped trees (T069-T073) along Tung Tsz Road. Regeneration of branches and leaves was slow.</p>	<p>Photo 10 – A TPZ has been established around the Tree T025 and the stockpiled soil around the tree trunk base was removed.</p>
	
<p>Photo 11 – A fallen scaffold branch was observed on the retained tree T168.</p>	<p>Photo 12 – The protected shrubs of <i>P. hongkongensis</i> (PH01 and PH02) were transplanted to Area C under Contract 1.</p>



Photo 13. The protected shrub of *P. hongkongensis* (PH03) was transplanted to Area C under Contract 1.



Photo 14 – The dead *P. hongkongensis* PH04 was remained in the same location. Climber was observed on this dead specimen.

Appendix N

**Ecological Monitoring in Area
under Contract 2**

Agreement No. DP/01/2010
Drainage Improvement Works in Shatin and Tai Po:
Ecological Monitoring in area under Contract 2
(Report 6b for Jan 2012)

Prepared for:
Drainage Services Department

Prepared by:
ENVIRON Hong Kong Limited

Date:
Feb 2011

Reference Number:
R2410_V1.0

Agreement No. DP/01/2010
Drainage Improvement Works in Shatin and Tai Po:
Ecological Monitoring in area under Contract 2
(Report 6b for Jan 2012)

Prepared by:



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Report\201201\120208\6b*

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- Table 2: List of vegetation recorded from works area under Contracts 2 and 100 m buffer area in the impact monitoring survey conducted in January 2012. Vegetation species presents in the identified location was indicated by “V”.
- Table 3: List of avifauna species and maximum counts recorded from the impact monitoring survey in January 2012 at work area under Contracts 2 and 100 m buffer area.
- Table 4: Relative abundance of aquatic species recorded in Wai Ha River within the 100 m buffer of works boundary under Contracts 2 in the impact monitoring survey during January 2012.

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- Figure 1: Map showing the ecological monitoring transect and the boundary of assessment area.
- Figure 2: SEMP 3, the third sampling point of Wai Ha River under Contract 2.
- Figure 3: SEMP 4, the forth sampling point of Wai Ha River under Contract 2.

1. Introduction

1.1 Project description

The Drainage Improvement Works in Shuen Wan was undertaken to minimize the potential flooding impacts in Sha Tin and Tai Po area. Although the Ecological Impact Assessment in the EIA Report identified that ecological impacts resulting from the proposed drainage improvement works at Shuen Wan were anticipated to be very minor in scale, ecological mitigation and ecological monitoring were recommended in the EM&A Manual (http://env-shuenwan.com/pdf/review_note_em&a_rev.3.pdf) as stipulated under Environment Permit No. EP-303/2008.

Scope of ecological impact monitoring was described in the Particular Specifications and EM & A Manual of the projects. In brief, the monitoring tasks include regular check on the retained and transplanted trees and shrubs, monitoring on fauna groups and aquatic fauna within the works area and any ecologically sensitive area within 100 m of the works boundary.

China-Hong Kong Ecology Consultants Co. was commissioned by ENVIRON Hong Kong Limited to perform the ecological impact monitoring survey for the projects under Contract 2 since July 2011.

The outline of this ecological monitoring report was as follow:

- Highlights of this report
- Summary of construction activities for the month
- Monitoring methodology
- Monitoring data
- Remedial measures adopted to the adverse condition
- Record of complains and remedial measures
- Review of monitoring results
- Forecast of works programme and monitoring requirements
- Comments and brief summary

This is the report No. 4 ecological monitoring conducted on 19th January 2012 within the works boundary under Contract 2 and area within 100 m from the works boundary.

2. Highlights of this report

- Field survey was conducted on 19th January 2012
- Construction activities of Contract 2 was initiated since June 2011
- Lower number of species was observed within the works area under Contract 2, but habitats in the 100 m buffer area retain its natural condition.

3. Summary of construction activities for the month

Major construction activities carried out in Contract 2 at Wai Ha Village and Tung Tsz Road by the contractor during the present monitoring period (January 2012) includes:

- Bay 20 to 22:
 - Backfilling
 - Removal of shoring and sheetpile

- Bay 23 to 27:
 - Driving sheetpile for bays
 - Excavation and installation of lateral shoring system
 - Erection of formwork for base slab
 - Fixing of reinforcement for base slab

- Bay 23 to 26:
 - Laying of rockfill
 - Laying of blinding

- Bay 23 to 24:
 - Concrete casting of base slab

4. Monitoring Methodology

Ecological monitoring methods were generally followed those described in the baseline ecological surveys (DC/2009/22). However, sampling area maybe reduced because of habitat change, for instance, deforestation and channel modification due to drainage works, where sampling was not applicable. Survey data and evaluation are detailed in the following sections.

4.1 Vegetation survey

Vegetation survey was performed along the designated transects (Figure 1) for ecological monitoring as described in the project specifications to monitor the vegetation health which could be adversely influenced by any bad site practice. Qualitative data of plants within the works boundary and wetland vegetation in the 100 m buffer area of Contract 2 adjacent to construction site and wetland was recorded. Riparian vegetation including aquatic and emergent at 4 stream ecological monitoring points (hereinafter referred to as "SEMP") under Contract 2 (i.e. SEMP 3 & 4; Figure 2 & 3) along the affected stream channel and riparian habitat was recorded in terms of species, relative abundance and average heights. Any signs of damages and adverse health problems directly caused the works were recorded and reported. Nomenclature and protection status of the species followed those documented in the AFCD website (www.hkbiodiversity.net) and Hong Kong Herbarium (2004).

4.2 Avifauna

Bird survey was conducted by following the proposed transects which cover the major ecologically sensitive areas of the Project (Figure 1). All bird species were recorded with special attention paid on the species of conservation importance and wetland-dependent species. List of bird species recorded and the relative abundance was provided.

4.3 Herpetofauna

Herpetofauna groups are considered to be inactive during dry season (November to March), thus detailed herpetofauna monitoring was not conducted.

4.4 Butterflies and Odonata

Odonates and butterfly are considered to be inactive during dry season (November to March), thus detailed monitoring was not conducted.

4.5 Mammals

As the monitoring site was situated near traffics, plant nursery and residential buildings, mammals were unlikely inhabited at the site except rodents, domestic dogs and cats. Detailed mammal monitoring was not conducted. However, any sighting, tracks and signs of mammals encountered during survey of other faunal groups was recorded. Bat was surveyed by search for potential colony habitat, such as palm trees, which are often used by fruit bats as nesting sites.

4.6 Aquatic fauna

Monitoring of aquatic fauna was carried out mainly by bank-side observation, sometimes with the aid of binoculars, at two stream ecological monitoring points under Contract 2 (i.e. SEMP 3 & 4). These points are selected for covering representative sections of Wai Ha River and are shown in Figure 1. Netting and fish traps were also deployed at these points to collect supplementary data. Aquatic fauna seen/collected was identified in situ to the lowest possible taxon and relative abundance was presented.

5. Monitoring data

5.1 Vegetation survey

The habitats identified in area under Contract 2 are river course, wooded area, mangrove, marsh and developed area (including village). Vegetation were found in wooded area, mangrove, marsh, develop area and river bank. The riparian vegetation which were dominated by *Leucaena leucocephala*, *Bidens alba*, and *Rhaphiolepis salicifolias* with average coverage ranged from 15% to 40% (Table 1). A list of plant species recorded from different habitats within the assessment area under Contract 2 is presented on Table 2. A

total of 180 species were recorded within the assessment boundary in which 175 species were recorded within the buffer area, while 120 species recorded within the work areas under Contract 2. About 20% of common vegetation species in the edge of marsh under Contract 2 were removed due to direct conflict with the construction activities. Most of the vegetation species were distributed in the secondary woodland area. Among them, species protected under Hong Kong ordinance were found in buffer area under Contract 2, namely *Aquilaria sinensis* (Cap. 586), *Cibotium barometz* (Cap. 586). Three individuals of protected species *Pavetta hongkongensis* located within works area of Contract 2 were transplanted to ECA on 20th Dec 2011.

5.2 Birds watch

A total of 11 bird species were recorded in the current survey (Table 3). In the work area under Contract 2, 2 bird species were recorded in which none are considered to be of conservation concern. A total of 11 bird species were recorded in the 100m buffer area in which two wetland dependent species (*Egretta garzetta* and *Casmerodius alba*), but they are common in suitable habitats in Hong Kong (Viney et al., 2005).

5.3 Herpetofauna

It is not actively recorded in the current survey, but three Red-eared sliders (*Trachemys scripta elegans*) were observed at SEMP3.

5.4 Butterflies

It is not recorded in the current survey.

5.5 Odonata

It is not recorded in the current survey.

5.6 Mammal

Three black goats (*Capra sp.*) were observed in works area under Contract 2 and they are likely to be reared by local villagers in Tung Tsz. No other mammals or trace of mammals was observed within the assessment area.

5.7 Aquatic fauna

Under Contract 2 (i.e. SEMP 3 & 4), a total of 10 fish species, 1 crustacean, 1 gastropod and 1 arthropod were recorded and most of them were freshwater species. *Carassius auratus* was commonly observed at SEMP 3 because of the traditional Buddhist practice from the nearby temple in which captured organisms were released back to nature. In addition, river section at SEMP 3 is relatively natural and the presence of *Parazacco*

spilurus may imply that good water quality at this section is maintained. Overall, no protected or rare species were recorded.

6. Remedial measures adopted to the adverse condition

There was no non-compliance event recorded within this reporting month.

7. Record of complains and remedial measures

There was no complaint in relation to environmental issue recorded in this reporting month.

8. Review of the monitoring results

During the present survey period, construction activities were carried out at works area under Contract 2, while 100 m buffer area remains natural. Much of the construction activities are carried out along Tung Tsz Road under Contract 2. In general, low numbers of species were recorded within the works area under Contract 2 than that of 100 m buffer area because of the associated constructions and urbanized in nature. Water quality in river section of Contract 2 (i.e. SEMP 3 & 4) was maintained at good condition as indicated by the presence of *Parazacco spilurus*. In addition, most of the construction activities are restricted in the developed area with low ecological significance. As mitigation measures recommended in the EM&A Manual were properly implemented during the current survey, and hence the residual environmental impacts would be minimized.

9. Forecast of works programme and monitoring requirements

The tentative construction activities undertaken by the contractor at Wai Ha Village and Tung Tsz Road in the coming month are as follows

- Bay 25 to 28:
 - Excavation and sheetpile
 - Geotextile and rockfill
 - Top slab of box culvert
 - Backfill and removal of sheetpile
 - Removal of shoring and sheetpile

- Bay 23 to 27:
 - Driving sheetpile for bays
 - Excavation and installation of lateral shoring system
 - Erection of formwork for base slab
 - Fixing of reinforcement for base slab

- Bay 23 to 26:
 - Laying of rockfill
 - Laying of blinding

- Bay 23 to 24:
 - Concrete casting of base slab

The monitoring programme described in EM&A will strictly follow to verify compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

10. Comments and summary

The bi-monthly ecological impact monitoring under Contracts 2 was conducted in January 2012 and relevant flora and fauna data were collected according to project specification and EM & A Manual. As indicated by the low abundance and diversity of species within the work areas, habitats within the work boundary under Contracts 2 offer few ecological opportunities for colonization of fauna and flora. Given that the construction activities are restricted in the developed area with proper mitigation measures being implemented, disturbances associated with the current construction activities are largely affecting area with low ecological significance. On the other hand, the natural habitats in the 100 m buffer area are retained at acceptable condition, and hence the 100 m buffer area has not been significantly affected by the construction works.

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Figure

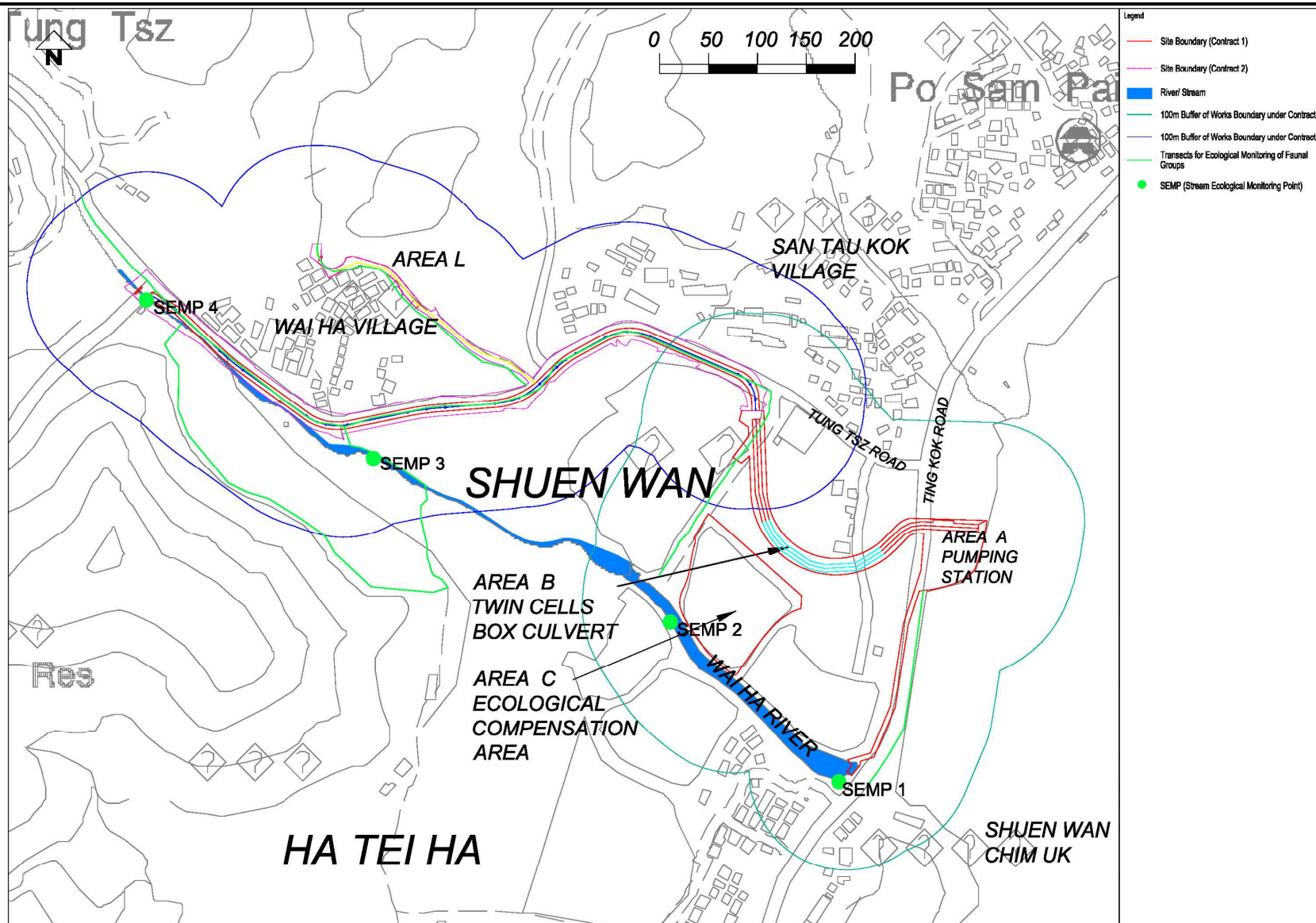


Figure: 1

Title: Map showing the ecological monitoring transect and the boundary of assessment area.

Project: Agreement No. DP/01/2010 Drainage Improvement Works in Shatin and Tai Po: Ecological Monitoring in area under Contract 2 (Jan 2012, Report6b)

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Figure: 2

Title: SEMP 3, the third sampling point of Wai Ha River under Contract 2.

Project: Agreement No. DP/01/2010 Drainage Improvement Works in Shatin and Tai Po: Ecological Monitoring in area under Contract 2 (Jan 2012, Report6b)

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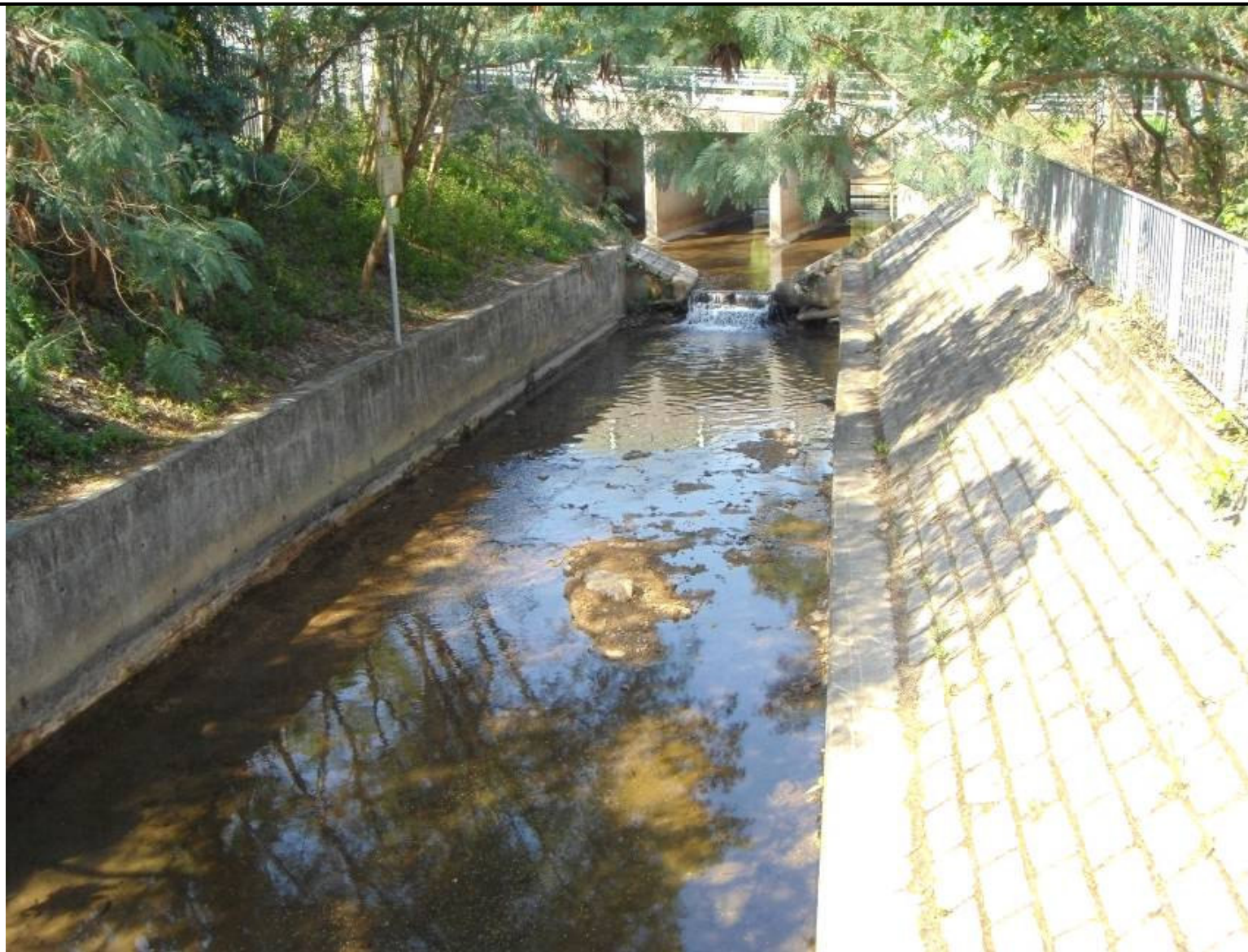


Figure: 3

Title: SEMP 4, the forth sampling point of Wai Ha River under Contract 2.

Project: Agreement No. DP/01/2010 Drainage Improvement Works in Shatin and Tai Po: Ecological Monitoring in area under Contract 2 (Jan 2012, Report6b)

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Table

Table 1. List of riparian vegetation and coverage (%) recorded from two stream sampling points under Contract 2 (i.e. SEMP 3 & 4).

Species	Family	Growth form	Sampling point	SEMP 3		SEMP 4	
			Status in Hong Kong	Height (cm)	%	Height (cm)	%
<i>Bidens alba</i>	ASTERACEAE	Herb	E			0.8	15
<i>Leucaena leucocephala</i>	MIMOSACEAE	Small Tree	E			4	30
<i>Microstegium ciliatum</i>	POACEAE	Perennial Procumbent Herb	N	1.2	10		
<i>Pistia stratiotes</i>	ARACEAE	Floating Aquatic Herb	N	0.1	10		
<i>Polygonum chinensis</i>	POLYGONACEAE	Herb	N	0.8	5		
<i>Polygonum lapathifolium</i>	POLYGONACEAE	Herb	N	0.8	10		
<i>Rhaphiolepis salicifolia</i>	ROSACEAE	Shrub or Small Tree	N	1.2	15		
<i>Spirodela polyrrhiza</i>	LEMNACEAE	Floating Small Herb	N			n/a	5
<i>Wedelia chinensis</i>	ASTERACEAE	Perennial Herb	N	n/a	10		
Bare	n/a	n/a	n/a	n/a	40	n/a	50

*Key:

E = Exotic

N = Native

n/a = not available

Table 2. List of vegetation recorded from works area under Contracts 2 and 100 m buffer area in the impact monitoring survey conducted in January 2012. Vegetation species presents in the identified location was indicated by “V”.

Habitat	Species name	Family	Growth form	*Status in Hong Kong	Work Area of Contract 2	100 m buffer area under Contract 2
Stream	<i>Chrysalidocarpus lutescens</i>	ARECACEAE	Shrub Palm	E	V	V
	<i>Melia azedarach</i>	MELIACEAE	Tree	E	V	V
	<i>Murraya paniculata</i>	RUTACEAE	Small Tree	E	V	V
	<i>Lantana camara</i>	VERBENACEAE	Shrub	E	V	V
	<i>Ficus hispida</i>	MORACEAE	Tree	N	V	V
	<i>Ficus virens</i>	MORACEAE	Tree	N	V	V
	<i>Chrysopogon aciculatus</i>	POACEAE	Perennial Herb	N	V	V
	<i>Microstegium ciliatum</i>	POACEAE	Perennial Procumbent Herb	N	V	V
	<i>Mucuna birdwoodiana</i>	FABACEAE (PAPILIONACEAE)	Climber: Vine	N	V	V
	<i>Pistia stratiotes</i>	ARACEAE	Floating Aquatic Herb	N	V	V
	<i>Cyperus flabelliformis</i>	CYPERACEAE	Herb	E	V	V
	<i>Acanthopanax gracilistylus</i>	ARALIACEAE	Shrub	E	V	V
	<i>Ficus triangularis</i>	MORACEAE	Tree	E	V	V
	<i>Spirodela polyrrhiza</i>	LEMNACEAE	Floating Small Herb	N	V	V
	<i>Glochidion zeylanicum</i>	EUPHORBIACEAE	Shrub or Small Tree	N	V	V
<i>Sterculia lanceolata</i>	STERCULIACEAE	Semi-deciduous	N	V	V	

Habitat	Species name	Family	Growth form	*Status in Hong Kong	Work Area of Contract 2	100 m buffer area under Contract 2
			Tree			
	<i>Albizia lebbek</i>	MIMOSACEAE	Tree	E		V
	<i>Arundinella nepalensis</i>	POACEAE	Perennial Herb	N		V
	<i>Bidens alba</i>	ASTERACEAE	Herb	E		V
	<i>Clerodendrum inerme</i>	VERBENACEAE	Shrub	N		V
	<i>Coculus orbiculatus</i>	MENISPERMACEAE	Climber: Vine	N		V
	<i>Hibiscus tiliaceus</i>	MALVACEAE	Tree or Shrub	N		V
	<i>Leucaena leucocephala</i>	MIMOSACEAE	Small Tree	E		V
	<i>Manilkara zapota</i>	SAPOTACEAE	Tree	E		V
	<i>Sapium discolor</i>	EUPHORBIACEAE	Tree	N		V
Developed area	<i>Pericampylus glaucus</i>	MENISPERMACEAE	Woody Vine	N	V	V
	<i>Ficus variegata</i> var. <i>chlorocarpa</i>	MORACEAE	Tree or Shrub	N	V	V
	<i>Citrus reticulata</i> Blanco	RUTACEAE	Small Tree	E	V	V
	<i>Salvia japonica</i>	LAMIACEAE (LABIATAE)	Herb	N	V	V
	<i>Morus alba</i>	MORACEAE	Tree or Shrub	N	V	V
	<i>Emilia sonchifolia</i>	ASTERACEAE	Herb	N	V	V
	<i>Clausena lansium</i>	RUTACEAE	Small Tree	E	V	V
	<i>Pyrostegia venusta</i>	BIGNONIACEAE	Climber: Vine	E	V	V
	<i>Psidium guajava</i>	MYRTACEAE	Tree	E	V	V
	<i>Catharanthus roseus</i>	APOCYNACEAE	Subshrub	N	V	V
	<i>Archontophoenix alexandrae</i>	ARECACEAE	Tree Palm	E	V	V
	<i>Desmodium</i>	FABACEAE	Shrub	N	V	V

Habitat	Species name	Family	Growth form	*Status in Hong Kong	Work Area of Contract 2	100 m buffer area under Contract 2
	<i>heterocarpon</i>	(PAPILIONACEAE)				
	<i>Rhinacanthus nasutus</i>	ACANTHACEAE	Herb	E	V	V
	<i>Acacia confusa</i>	MIMOSACEAE	Tree	E		V
	<i>Artocarpus macrocarpon</i>	MORACEAE	Tree	E		V
	<i>Averrhoa carambola</i>	OXALIDACEAE	Small Tree	E		V
	<i>Bauhinia blakeana</i>	CAESALPINIACEAE	Tree or Shrub	N		V
	<i>Bauhinia variegata</i>	CAESALPINIACEAE	Tree	E		V
	<i>Bridelia tomentosa</i>	EUPHORBIACEAE	Shrub or Small Tree	N		V
	<i>Calliandra haematocephala</i>	MIMOSACEAE	Shrub	E		V
	<i>Caryota ochlandra</i>	ARECACEAE	Tree palm	E		V
	<i>Cassia spectabilis</i>	CAESALPINIACEAE	Small Tree	E		V
	<i>Casuarina equisetifolia</i>	CASUARINACEAE	Tree	E		V
	<i>Citrus grandis</i>	CASUARINACEAE	Tree	E		V
	<i>Cordyline fruticosa</i>	AGAVACEAE	Shrub	E		V
	<i>Cynodon dactylon</i>	POACEAE	Perennial Herb	N		V
	<i>Dracaena draco</i>	AGAVACEAE	Tree	E		V
	<i>Elaeocarpus haminanensis</i>	ELAEOCARPACEAE	Small Tree	E		V
	<i>Eleusine indica</i>	POACEAE	Herb	N		V
	<i>Eriobotrya japonica</i>	ROSACEAE	Small Tree	E		V
	<i>Ficus benjamina</i>	MORACEAE	Tree	E		V
	<i>Ficus elastica</i>	MORACEAE	Tree	E		V
	<i>Ficus simplicissima</i>	MORACEAE	Shrub	N		V
	<i>Hibiscus rosa-sinensis</i>	MALVACEAE	Shrub	E		V

Habitat	Species name	Family	Growth form	*Status in Hong Kong	Work Area of Contract 2	100 m buffer area under Contract 2
	<i>Lantana camara</i>	VERBENACEAE	Shrub	E		V
	<i>Litchi chinensis</i>	SAPINDACEAE	Tree	E		V
	<i>Lumnitzera racemosa</i>	COMBRETACEAE	Shrub or Small Tree	N		V
	<i>Lygodium japonicum</i>	LYGODIACEAE	Climbing Herb	N		V
	<i>Melaleuca quinquenervia</i>	MYRTACEAE	Tree	E		V
	<i>Oxalis corniculata</i>	OXALIDACEAE	Perennial Herb	N		V
	<i>Phoenix roebelenii</i>	ARECACEAE	Small Tree Palm	E		V
	<i>Polygonum hydropiper</i>	POLYGONACEAE	Herb	N		V
	<i>Psychotria serpens</i>	RUBIACEAE	Climber: Vine	N		
	<i>Pterocypsela indica</i>	ASTERACEAE	Herb	N		V
	<i>Rhapis excelsa</i>	ARECACEAE	Shrub Palm	N		V
	<i>Sansevieria trifasciata</i>	AGAVACEAE	Perennial Herb	E		V
	<i>Schefflera actinophylla</i>	ARALIACEAE	Climbing Shrub	E		V
	<i>Schefflera heptaphylla</i>	ARALIACEAE	Tree	N		V
	<i>Sesbania cannabina</i>	FABACEAE	Herb	E		V
	<i>Terminalia catappa</i>	COMBRETACEAE	Large Tree	E		V
	<i>Thuja orientalis</i>	CUPRESSACEAE	Tree	E		V
	<i>Tradescantia spathacea</i>	COMMELINACEAE	Herb	E		V
	<i>Youngia japonica</i>	ASTERACEAE	Herb	N		V
	<i>Phragmites karka</i>	POACEAE	Perennial Herb	N	V	
	<i>Coix lacryma-jobi</i>	POACEAE	Herb	N	V	
	<i>Apluda mutica</i>	POACEAE	Perennial Herb	N	V	
	<i>Glochidion puberum</i>	EUPHORBIACEAE	Shrub	N	V	
	<i>Acanthus ilicifolius</i>	ACANTHACEAE	Shrub	N	V	V

Habitat	Species name	Family	Growth form	*Status in Hong Kong	Work Area of Contract 2	100 m buffer area under Contract 2
	<i>Acrostichum aureum</i>	ACROSTICHACEAE	Herb	N	V	V
	<i>Aegiceras corniculatum</i>	MYRSINACEAE	Shrub	N	V	V
	<i>Alocasia odora</i>	ARACEAE	Perennial Herb	N	V	V
	<i>Avicennia marina</i>	VERBENACEAE	Shrub	N	V	V
	<i>Digitaria ciliaris</i>	POACEAE	Herb	N	V	V
	<i>Panicum repens L.</i>	POACEAE	Perennial Herb	N	V	V
	<i>Pennisetum alopecuroides</i>	POACEAE	Perennial Herb	N	V	V
	<i>Phragmites australis</i>	POACEAE	Perennial Herb	N	V	V
	<i>Plantago major</i>	PLANTAGINACEAE	Perennial herb	N	V	V
	<i>Solanum nigrum</i>	SOLANACEAE	Herb	N	V	V
Plantation	<i>Bischofia javanica</i>	EUPHORBIACEAE	Tree	N	V	V
	<i>Scolopia chinensis</i>	FLACOURTIACEAE	Tree or Large Shrub	N	V	V
	<i>Piper hancei</i>	PIPERACEAE	Climber: Vine	N	V	V
	<i>Dimocarpus longan</i>	SAPINDACEAE	Tree	E	V	V
	<i>Paederia scandens</i>	RUBIACEAE	Climber: Vine	N	V	V
	<i>Cleistocalyx operculatus</i>	MYRTACEAE	Tree	N	V	V
	<i>Antidesma bunius</i>	EUPHORBIACEAE	Tree	N	V	V
	<i>Litsea monopetala</i>	LAURACEAE	Small Tree	N	V	V
	<i>Microcos paniculata</i>	TILIACEAE	Shrub or Small Tree	N	V	V
	<i>Maesa perlaris</i>	MYRSINACEAE	Shrub	N	V	V
	<i>Boehmeria nivea (L.) Gaudich.</i>	URTICACEAE	Subshrub or shrub	E	V	V

Habitat	Species name	Family	Growth form	*Status in Hong Kong	Work Area of Contract 2	100 m buffer area under Contract 2
	<i>Mallotus apelta</i>	EUPHORBIACEAE	Shrub or Small Tree	N	V	V
	<i>Sapindus saponaria</i>	SAPINDACEAE	Tree	N	V	V
	<i>Aporusa dioica</i>	EUPHORBIACEAE	Tree	N	V	V
	<i>Wedelia chinensis</i>	ASTERACEAE	Perennial Herb	N	V	V
	<i>Carica papaya</i>	CARICACEAE	Tree	E	V	V
	<i>Rubus reflexus</i>	ROSACEAE	Climbing Shrub	N	V	V
	<i>Brassica rapa</i>	BRASSICACEAE (CRUCIFERAE)	Biennial Herb	E	V	V
	<i>Mucuna championii Benth.</i>	FABACEAE	Climbing Vine	N		V
	<i>Pinus massoniana</i>	PINACEAE	Tree	N	V	V
Cultivated land	<i>Coriandrum sativum</i>	APIACEAE (UMBELLIFERAE)	Herb	E	V	V
	<i>Allium fistulosum</i>	LILIACEAE	Herb	E	V	V
	<i>Lactuca sativa</i>	ASTERACEAE	Herb	E	V	V
	<i>Musa x paradisiaca L.</i>	MUSACEAE	Perennial Herb	E	V	V
	<i>Lycopersicon esculentum</i>	SOLANACEAE	Herb	E	V	V
	<i>Chrysanthemum coronarium</i>	ASTERACEAE	Herb	E	V	V
	<i>Myosoton aquaticum</i>	CARYOPHYLLACEAE	Herb	N	V	V
	<i>Drymaria diandra</i>	CARYOPHYLLACEAE	Herb	N	V	V
	<i>Eupatorium odoratum</i>	ASTERACEAE	Perennial Herb	E	V	V
	<i>Conyza canadensis</i>	ASTERACEAE	Herb	E	V	V
	<i>Polygonum chinensis</i>	POLYGONACEAE	Herb	N	V	V
	<i>Pueraria lobata</i>	FABACEAE	Climber: Vine	N	V	V

Habitat	Species name	Family	Growth form	*Status in Hong Kong	Work Area of Contract 2	100 m buffer area under Contract 2
	<i>Panicum maximum</i>	POACEAE	Perennial Herb	E	V	V
	<i>Pteridium aquilinum</i>	PTERIDIACEAE	Herb	N	V	V
	<i>Polygonum lapathifolium</i>	POLYGONACEAE	Herb	N	V	V
	<i>Colocasia esculenta</i>	ARACEAE	Herb	N	V	V
	<i>Cuscuta chinensis</i>	CUSCUTACEAE	Parasitic Herb	N	V	V
	<i>Panicum trypheron</i>	POACEAE	Perennial Herb	E	V	V
Secondary woodland	<i>Mallotus paniculatus</i>	EUPHORBIACEAE	Tree or Shrub	N	V	V
	<i>Litsea glutinosa</i>	LAURACEAE	Tree	N	V	V
	<i>Trifolium repens</i>	FABACEAE (PAPILIONACEAE)	Herb	E	V	V
	<i>Hedyotis hedyotideia</i>	RUBIACEAE	Scandent Shrub	N	V	V
	<i>Solanum torvum</i>	SOLANACEAE	Shrub	E	V	V
	<i>Uvaria macrophylla</i>	ANNONACEAE	Climbing Shrub	N	V	V
	<i>Psychotria asiatica</i>	RUBIACEAE	Tree or Shrub	N	V	V
	<i>Glochidion eriocarpum</i>	EUPHORBIACEAE	Shrub	N	V	V
	<i>Ardisia quinquegona</i>	MYRSINACEAE	Shrub	N	V	V
	<i>Pteris semipinnata</i>	PTERIDACEAE	Herb	N	V	V
	<i>Melastoma sanguineum</i>	MELASTOMATACEAE	Shrub	N	V	V
	<i>Lasianthus chinensis</i>	RUBIACEAE	Shrub	N	V	V
	<i>Cinnamomum camphora</i>	LAURACEAE	Large Tree	N	V	V
	<i>Rhus hypoleuca</i>	ANACARDIACEAE	Shrub or Small Tree	N	V	V
	<i>Syzygium jambos (L.) Alston</i>	MYRTACEAE	Tree	E	V	V

Habitat	Species name	Family	Growth form	*Status in Hong Kong	Work Area of Contract 2	100 m buffer area under Contract 2
	<i>Canthium dicoccum</i>	RUBIACEAE	Tree or Shrub	N	V	V
	<i>Stephania longa</i>	MENISPERMACEAE	Climber: Vine	N	V	V
	<i>Aquilaria sinensis</i>	THYMELAEACEAE	Tree	N (Cap. 586)		V
	<i>Bridelia insulana</i>	EUPHORBIACEAE	Shrub	N	V	V
	<i>Disporum cantoniense</i>	LILIACEAE	Herb	E	V	V
	<i>Litsea cubeba</i>	LAURACEAE	Shrub to Small Tree	N	V	V
	<i>Cibotium barometz</i>	DICKSONIACEAE	Large Herb	N (Cap. 586)		V
	<i>Sapium discolor</i>	EUPHORBIACEAE	Tree	N	V	V
	<i>Melastoma candidum</i>	MELASTOMATACEAE	Shrub	N	V	V
	<i>Dicranopteris pedata</i>	GLEICHENIACEAE	Herb	N	V	V
	<i>Cratoxylum cochinchinense</i>	CLUSIACEAE	Tree or Shrub	N	V	V
	<i>Desmos chinensis</i>	ANNONACEAE	Shrub	N	V	V
	<i>Acronychia pedunculata</i>	RUTACEAE	Tree	N	V	V
	<i>Selaginella uncinata</i>	SELAGINELLACEAE	Herb	N	V	V
	<i>Rhus succedanea</i>	ANACARDIACEAE	Shrub or Small Tree	N	V	V
	<i>Millettia reticulata</i>	FABACEAE (PAPILIONACEAE)	Climber: Vine	N	V	V
	<i>Embelia ribes</i>	MYRSINACEAE	Climber: Vine	N	V	V
	<i>Pavetta hongkongensis</i>	RUBIACEAE	Tree or Shrub	N (Cap. 96)		V
	<i>Mangifera indica</i>	ANACARDIACEAE	Tree	E	V	V
	<i>Cinnamomum burmannii</i>	LAURACEAE	Tree or Large Shrub	N	V	V

Habitat	Species name	Family	Growth form	*Status in Hong Kong	Work Area of Contract 2	100 m buffer area under Contract 2
	<i>Ficus microcarpa</i>	MORACEAE	Tree	N	V	V
	<i>Byttneria aspera</i>	STERCULIACEAE	Woody Vine	N	V	V
	<i>Equisetum debile</i>	EQUISETACEAE	Herb	N	V	V
	<i>Bambusa sp.</i>	POACEAE	Clumped Tree Bamboo	/	V	V
	<i>Rourea microphylla</i>	CONNARACEAE	Climbing Shrub	N	V	V
	<i>Pennisetum alopecuroides</i>	POACEAE	Perennial Herb	N	V	V
	<i>Ipomea cairica</i>	CONVOLVULACEAE	Climber: Twining Herb	E	V	V
	<i>Mikania micrantha</i>	ASTERACEAE	Climbing Herb	E	V	V
Wooded area	<i>Celtis sinensis</i>	ULMACEAE	Tree	N		V
	<i>Ligustrum sinensis</i>	OLEACEAE	Tree or Shrub	N		V
	<i>Macaranga tanarius</i>	EUPHORBIACEAE	Tree	N		V
	<i>Pandanus tectorius</i>	PANDANACEAE	Shrub or Small Tree	N		V
	<i>Excoecaria agallocha</i>	EUPHORBIACEAE	Tree	N		V
	<i>Kandelia obovata</i>	RHIZOPHORACEAE	Shrub or Small Tree	N		V
	<i>Thespesia populnea</i>	MALVACEAE	Tree or Shrub	N		V
	<i>Zoysia sinica</i>	POACEAE	Perennial Herb	N		V
Marsh	<i>Acanthus ilicifolius</i>	ACANTHACEAE	Shrub	N		V
	<i>Acrostichum aureum</i>	ACROSTICHACEAE	Herb	N		V
	<i>Aegiceras corniculatum</i>	MYRSINACEAE	Shrub	N		V
	<i>Alocasia odora</i>	ARACEAE	Perennial Herb	N		V
	<i>Avicennia marina</i>	VERBENACEAE	Shrub	N		V

Habitat	Species name	Family	Growth form	*Status in Hong Kong	Work Area of Contract 2	100 m buffer area under Contract 2
	<i>Digitaria ciliaris</i>	POACEAE	Herb	N		V
	<i>Ficus hispida</i>	MORACEAE	Tree	N		V
	<i>Hibiscus tiliaceus</i>	MALVACEAE	Tree or Shrub	N		V
	<i>Ipomea cairica</i>	CONVOLVULACEAE	Climber: Twining Herb	E		V
	<i>Kandelia obovata</i>	RHIZOPHORACEAE	Shrub or Small Tree	N		V
	<i>Macaranga tanarius</i>	EUPHORBIACEAE	Tree	N		V
	<i>Mikania micrantha</i>	ASTERACEAE	Climbing Herb	E		V
	<i>Panicum repens L.</i>	POACEAE	Perennial Herb	N		V
	<i>Pennisetum alopecuroides</i>	POACEAE	Perennial Herb	N		V
	<i>Phragmites australis</i>	POACEAE	Perennial Herb	N		V
	<i>Plantago major</i>	PLANTAGINACEAE	Perennial herb	N		V
	<i>Polygonum lapathifolium</i>	POLYGONACEAE	Herb	N		V
	<i>Pueraria lobata</i>	FABACEAE	Climber: Vine	N		V
	<i>Schefflera heptaphylla</i>	ARALIACEAE	Tree	N		V
	<i>Solanum nigrum</i>	SOLANACEAE	Herb	N		V
	<i>Solanum torvum</i>	SOLANACEAE	Shrub	E		V

***Key:**

E = Exotic

N = Native

Table 3. List of avifauna species and maximum counts recorded from the impact monitoring survey in January 2012 at work area under Contracts 2 and 100 m buffer area.

Species	Common name	Habitat	Conservation status in Hong Kong	Work area: Contract 2	100m buffer area
<i>Acridotheres cristatellus</i>	Crested Myna				3
<i>Casmerodius alba</i>	Great Egret	W			1
<i>Copsychus saularis</i>	Oriental Magpie Robin				1
<i>Egretta garzetta</i>	Little Egret	W			2
<i>Lanius schach</i>	Long-tailed Shrike				1
<i>Motacilla alba</i>	White Wagtail				2
<i>Motacilla cinerea</i>	Grey Wagtail			1	1
<i>Orthotomus sutorius</i>	Common Tailorbird				1
<i>Passer montanus</i>	Eurasian Tree Sparrow			2	5
<i>Pycnonotus jocosus</i>	Red-whiskered Bulbul				2
<i>Streptopelia chinensis</i>	Spotted Dove				2
Total number of species:			11	2	11

*** Key:**

W = Wetland dependent species

Table 4. Relative abundance of aquatic species recorded in Wai Ha River within the 100 m buffer of works boundary under Contracts 2 in the impact monitoring survey during January 2012.

Species	Common name	¹ Life-cycle characteristics	² Origin	SEMP 3	SEMP 4
<i>Carassius auratus</i>	Goldfish	F	I	+++	+
<i>Cyprinus carpio</i>	Common Carp	F	I	+	
<i>Gambusia affinis</i>	Mosquito Fish	F	I	++	++
<i>Oreochromis niloticus</i>	Nile Tilapa	F	I	+	+
<i>Parazacco spilurus</i>	Predaceous Chub	F	N	+	+
<i>Poecilia reticulata</i>	Guppy	F	I	++	++
<i>Puntius semifasciolatus</i>	Chinese Barb	F	N	++	
<i>Rhinogobius duospilus</i>	Goby	F	N	+	++
<i>Rhinogobius giurinus</i>	Barcheek Goby	D	N	+	
<i>Xiphophorus hellerii</i>	Swordtail	F	I	++	++
<i>Uca arcuata</i>	Fiddler Crab	M	N	+	
<i>Pomacea lineata</i>	Apple snail	F	I	+	
<i>Gerris sp.</i>	Water Strider	F	/	+	
Total number of species:	13			13	7

Key:

Relative abundance:

+ : Species exists in the survey area

++ : Species common in the survey area

+++ : Species abundant in the survey area

¹ Life-cycle characteristics:

M = Marine vagrant

F = Freshwater species

²Origin:

N = Native

I = Introduced; / = not available