PROJECT NO.: TCS00409/08

DSD CONTRACT NO. DC/2007/08 DRAINAGE IMPROVEMENTS WORKS IN TAI PO TIN, PING CHE, MAN UK PIN AND LIN MA HANG

41ST MONTHLY ENVIRONMENTAL MONITORING & AUDIT REPORT FOR THE DESIGNATED WORKS UNDER THE PROJECT – JULY 2012 CHANNELS MUP03A&B, MUP04A&B, MUP05 AND LMH01

PREPARED FOR

CHIU HING CONSTRUCTION & TRANSPORTATION COMPANY LIMITED

Quality Index

Date	Reference No.	Prepared By	Certified by
10 August 2012	TCS00409/08/600/R1167v2		
		Ben Tam Environmental Consultant	T.W. Tam Environmental Team Leader

Version	Date	Remarks
1	10 August 2012	First Submission
2	29 August 2012	Amended from IEC's comment on 29 August 2012

ENVIRON

Ref.: DSDFANLGEM01_0_1140L.12

28 Sept 2012

By Fax (26598323) and By Post

Engineer's Representative Office
Black & Veatch Hong Kong Ltd
503 Tai Po Tin, Ta Kwu Ling
Fanling, New Territories

Attention: Mr. Gilbert Ying

Dear Mr. Ying,

Re: Contract No. DC/2007/08 (EP No. EP-277/2007/A)
Drainage Improvement Works at Tai Po Tin, Ping Che,
Man Uk and Lin Ma Hang
40th Monthly EM&A Report for Channels MUP03A&B, MUP04A&B, MUP05
and LMH01 for Jul 2012 (Rev. 2)

Reference is made to the submission of 41st Monthly EM&A Report (ref. no.: R1167v2) for the Designated Project Channels MUP03A&B, MUP04A&B, MUP05 and LMH01 provided by the Environmental Team by email on 7 Sept 2012.

We would like to inform that we have no further comment on the captioned report.

Please also note that the Monthly EM&A Report had been verified in accordance with the Condition 3.4 of the Environmental Permit No. EP-277/2007/A.

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

Yours sincerely,

David Yeung
Independent Environmental Checker

c.c. AUES Attn: Mr. T. W. Tam Fax: 2959-6079

Q:\Projects\DSDFANLGEM01\Corr\DSDFANLGEM01_0_1140L.12.doc

EXECUTIVE SUMMARY

ES.01 This is the **41st** monthly EM&A Report for Channels MUP03A&B, MUP04A&B, MUP05 and LMH01 covering a period from **26 June 2012** to **25 July 2012** (the Reporting Period). These works are classified as Designated Projects under the Environmental Impact Assessment Ordinance (Cap. 499) and Environmental Permit No.EP277/2007/A.

ES.02 As construction works were undertaken only at Channels MUP03A&B, MUP04A&B, MUP05 during the Reporting Period, environmental monitoring for air quality, construction noise, water quality and ecology was therefore performed at those channels only.

ES.03 In air quality and noise monitoring, there were no Action/ Limit Level exceedance recorded in this reporting period.

ES.04 In stream water quality monitoring, there were 6 exceedances recorded in the reporting period (2 action level exceedances and 4 limit level exceedances). According to the information from Contractor, it is recorded from Hong Kong Observatory that adverse weather brought from Typhoon Vicente during the captioned days. There is no major construction activity was carried out except de-watering and flood preventive measures. The exceedances at the captioned stations would be the consequences of rainfall recorded or seasonal variation. We would conclude that the exceedances were not works related under the project.

Station	DO		Turbidity		pH Value		SS		Total Exceedance	
	Action	Limit	Action	Limit	Action	Limit	Action	Limit	Action	Limit
MUP-W4 (a)	0	0	0	0	0	0	**2**	0	**2**	0
MUP-W5 (b)	0	0	0	0	0	0	0	**2**	0	**2**
MUP-W6 (b)	0	0	0	0	0	0	0	**2**	0	**2**
Exceedances	0	0	0	0	0	0	**2**	**4**	**2**	**4**

Remarks: (a) impact station; (be) Temporary or mobile station

ES.05 **Four** ecological general audits were performed in this reporting month at the nominated construction channel (MUP05). No non-compliance was observed during the auditing period and all of the mitigation measures were found effectively implemented.

ES.06 No written or verbal complaint, notification of summons or successful prosecution was received (written or verbal) for each media during the Reporting Period. No adverse environmental impacts were observed during the weekly site inspection and environmental audit which indicated that the implemented mitigation measures for air quality, construction noise, water quality and ecology were effective. Minor deficiencies found during the weekly site inspection were in general rectified within the specified deadlines. The environmental performance of the Project was therefore considered satisfactory.

ES.07 As wet season has come, the coming excavation works of the channels, ingression of surface runoff into the river within MUP Channels continues to be the key issue in future months. The contractor is reminded that mitigation measures for water quality and ecology should therefore be fully implemented.

ES.08 In addition, attention should be paid to noise impact during the construction work progress, and with other environmental issues identified in the EM&A Manual. Mitigation measures recommended in the Environmental Study Report (ESR) and summarized in Mitigation Measure Implementation Schedule should continually be applied.

TABLE OF CONTENTS PAGE

Appendices

Tables

1. INTRODUCTION

The Chiu Hing Construction & Transportation Company Limited (CHCT) was appointed by the Drainage Services Department (DSD) to perform a contract – Contract No. DC/2007/08 *Drainage Improvement Works at Tai Po Tin, Ping Che, Man Uk Pin and Lin Ma Hang* (the Project). Total construction time is approximately 32 months.

The Project involves construction of various river channels: some classified as Designated Project (DP) and some Non-designated Project (Non-DP) under the Environmental Impact Assessment Ordinance (Cap. 499), as summarized in ***Table 1-1***.

Table 1-1 Summary of the Channels under the Project

Channel ID	Location	Designated / Non-Designated
TKL02	Tai Po Tin	Non-Designated
TKL07	Ping Che / Ta Kwu Ling	Non-Designated
MUP01	Man Uk Pin	Non-Designated
MUP02		Non-Designated
MUP03A and MUP03B		Designated (EP277/2007/A)
MUP04A and MUP04B		Designated (EP277/2007/A)
MUP05		Designated (EP277/2007/A)
LMH01	Lin Ma Hang	Designated (EP277/2007/A)

This is the **41st** monthly report covering data from **26 June 2012 to 25 July 2012** to present the monitoring results of air quality, construction noise, water quality and ecology for the Designated Project of Channels MUP03A&B, MUP04A&B, MUP05 and LMH01 under the Environmental Monitoring & Audit Manual [*382486/73//Issue2*]. A set of location plans showing all DP works covered in this report are illustrated in ***Appendix A.*** Details of EM&A requirements for the Designated Project are summarized below:

(a) Channel MUP03A&B – NA
(b) Channel MUP04A&B – the scope of environmental monitoring includes construction noise, air quality and water quality
(c) Channel MUP05 – the scope of environmental monitoring includes construction noise, air quality, water quality and ecology
(d) Channel LMH01 – the scope of environmental monitoring includes construction noise, air quality, water quality and ecology

It has been agreed among the Engineer's Representative (ER), the Independent Envionmental Checker (IEC), the Contractor (CHCT), the Environmental Team (ET) and the Environmental Protection Department (EPD) that 25th of each month is the cut-off day of each reporting month. Data collected after the 26th of every month will be reported in the next issue.

1.1 REPORT STRUCTURE

This report has been written in accordance with the requirements set out in the *Environmental Monitoring and Audit Manual* (the EM&A Manual) with the following structure:

Section 1 Introduction
Section 2 Basic Project Information
Section 3 Environmental status
Section 4 Summary of Impact EM&A Requirements
Section 5 Impact Monitoring Results
Section 6 Report on Non-Compliance (NC), Complaint, Notification of Summons (NOS) and Successful prosecution
Section 7 Conclusions and Recommendations

2. BASIC PROJECT INFORMATION

2.1 PROJECT ORGANIZATION

The organization chart and lines of communication with respect to the on-site environmental management and the management structure are shown in ***Appendix B***.

2.2 MASTER CONSTRUCTION PROGRAM FOR THE PROJECT

The master construction program of the Project is shown in ***Appendix C***. Environmental mitigation measures implemented are shown in ***Appendix C.***

2.3 WORKS UNDERTAKEN DURING THE REPORTING MONTH

During this reporting month, the construction work undertaken at the designated work areas is listed as follows:

Channel	**Carried out defect works during construction period as follow:**
MUP03A&B, MUP04A&B; and MUP05	• Install outstanding fencing, railing and signates • landscape softworks and establishment works • Rectify defective concrete on grasscrete/paving
LMH01	Not yet commenced

Future construction works is provided in ***Appendix C.***

3. ENVIRONMENTAL STATUS

3.1 WORK UNDERTAKEN DURING THE MONTH WITH ILLUSTRATIONS

In this reporting month, the construction work was undertaken at Channels MUP03A&B, MUP04A&B and MUP05. All proposed construction channels are located at Man Uk Pin. The environmental mitigation Implement is shown in ***Table 3-1***.

Table 3-1 Environmental Mitigation Measures Undertake in the Reporting Month

Location	Construction Activities	Environmental Mitigation Measures to be deployed
MUP03A&B, MUP04A&B; and MUP05	Carried out defect works during construction period as follow: 1. install outstanding fencing, railing and signates; 2. landscape softworks and establishment works; 3. Rectify defective concrete on grasscrete/paving	♦ Water spraying will be provided before and during handling of excavated material. ♦ Retained tree will be properly protected before works commenced

3.2 IMPLEMENTATION OF ENVIRONMENTAL PROTECTION AND POLLUTION CONTROL

The implementation of environmental protection and pollution control/mitigation measures as recommended in the EM&A Manual or ES is shown in ***Appendix C***.

A summary status of the permits, licences, and/or notifications on environmental protection for this Project in this reporting month is presented in ***Table 3-2***.

Table 3-2 Status of Environmental Licenses and Permits

Item	Item Description	Permit Status
1	Environmental Permit No.EP277/2007/A	Issued on 1 Dec 2009
2	Air Pollution Control (Construction Dust)	Notification to EPD on 27/12/2007
3	Chemical Waste Producer Registration • 5213-652-C3251-04 • 5213-652-C3251-05	 Valid date: 23 July 2008 Valid date: 15 August 2008
4	Water Pollution Control (Discharge license) • W5/1G34/1 • W5/1G35/1 • W5/1I324/1 • W5/1I325/1	 Expiry date: 31 August 2013 Expiry date: 31 August 2013 Expiry date: 31 August 2013 Expiry date: 31 August 2013
5	Account for Disposal of Construction Waste No. 7006522	Valid date: 9 January 2008
6	Construction Noise Permit	Nil

4. SUMMARY OF IMPACT MONITORING REQUIREMENTS

Environmental monitoring and audit for air quality, noise, water quality and ecology have been recommended in the EM&A Manual. They are summarized below.

4.1 MONITORING PARAMETERS

The monitoring parameters are summarized in ***Table 4-1***.

Table 4-1 Summary of Monitoring Parameters

Environmental Issue	Parameters	
Air Quality	• 1-hour Total Suspended Particulate (1-hour TSP); and • 24-hour Total Suspended Particulate (24-hour TSP)	
Construction Noise	• A-weighted equivalent continuous sound pressure level (30min) (Leq(30min)) during the normal working hours; and • A-weighted equivalent continuous sound pressure level (5min) (Leq(5min)) for construction work during the Restricted Hours	
Water Quality	• In-situ Measurement	temperature, dissolved oxygen (DO), dissolved oxygen saturation (DOS), pH value, water depth, temperature & turbidity
	• Laboratory Analysis	suspended solids (SS)
Ecology	MUP05 and LMH01	• The stream conditions monitoring (in-situ measurements of DO, pH and turbidity; laboratory testing of SS); • General site audit to reporting the mitigation measures are properly implemented during the construction phase

4.2 MONITORING LOCATIONS

4.2.1 Monitoring Locations Proposed in the EM&A manuals

Monitoring locations have been identified in the EM&A Manual. They are shown in ***Appendix D*** and summarized in ***Table 4-2***.

Table 4-2 Monitoring Locations Proposed in the EM&A Manuals

Issue	Channel	Sensitive Receiver	Monitoring Location ID	Detailed Address
Air	MUP04A	MUP04A-2	MUP-A3	Village house near Loi Tung
	MUP05	MUP05-2 (same as MUP01/02-1)	MUP-A1 (same as MUP01/02-A1)	Village north of Loi Tung (same as Village house at Man Uk Pin)
	MUP05	MUP05-4	MUP-A2a#	Village north of Loi Tung
Noise	MUP04A	MUP04A-2	MUP-N4	Village house near Loi Tung
	MUP05	MUP05-2 (same as MUP01/02-1)	MUP-N1 (same as MUP01/02-N1)	Village north of Loi Tung (same as Village house at Man Uk Pin)
		MUP05-4	MUP-N2	Village north of Loi Tung
		MUP05-6	MUP-N3	Village north of Loi Tung
	LMH01	LMH01-1	LMH-N1*	Village of Lin Ma Hang(**Remark: Mobile station subject to the location of the construction works to be measured at Sensitive Receiver LMH01-1 or LMH01-2 or LMH01-3 or LMH01-4 or LMH01-5*)
		LMH01-2		
		LMH01-3		
		LMH01-4		
		LMH01-5		
Water	MUP04A	Control Station	MUP-W3	Upstream of MUP04A works
	MUP05	Control Station	MUP-W1 (same as MUP01/02-W1)	Upstream of MUP01 works
		Control Station	MUP-W2 (same as MUP01/02-W2)	Upstream of MUP02 works
		Impact Station	MUP-W4	Downstream of MUP05 works immediately at the discharge point to River Indus
		Temporary / Mobile Station	MUP-W5	Within MUP05, downstream of the discharge point of MUP01/02 and upstream of the discharge point of MUP04A
		Temporary / Mobile Station	MUP-W6	Within MUP05, downstream of the discharge point of MUP01/02 and MUP04A

Issue	Channel	Sensitive Receiver	Monitoring Location ID	Detailed Address
Water	LMH01	Control Station	LMH-W1	Upstream of LMH01 works
		Control Station	LMH-W2	Upstream of LMH01 works
		Impact Station	LMH-W3	Downstream of all LMH01 works immediately at the discharge point to Shenzhen River
		Temporary / Mobile Station	LMH-W4	Upstream and downstream of particular group of LMH01 works
		Temporary / Mobile Station	LMH-W5	Upstream and downstream of particular group of LMH01 works
		Temporary / Mobile Station	LMH-W6	Upstream and downstream of particular group of LMH01 works
Ecology	MUP05 and LMH01	Water Quality of Stream		Upstream and downstream of Construction site
		General Site audit (with emphasis on ecological mitigation measures)		Along stream channel, within 100m upstream and downstream of construction site
	LMH01	Surveys of fish species		Along stream channel, within 100m upstream and downstream of construction site

Access to the original air quality monitoring location MUP-A2 has been denied. The nearby air quality sensitive receiver MUP05-4 is recommended to be the replacement of the denied MUP-A2 and named MUP-A2a for ease of reference.

4.3 MONITORING FREQUENCY

The impact monitoring should be conducted during the construction activities pass through the contract period to ensure the ambient environmental conditions compliance with the environmental performance criteria i.e. Action and Limit Levels for the Project. The impact monitoring frequency specified in the EM&A Manual is summarized below.

Air Quality
Parameters: 24-hour TSP and 1-hour TSP.
Frequency: Once every 6 days for 24-hour TSP & three times every 6 days for 1-hour TSP.
Duration: During the course of construction works

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

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

Ecology

According to the EM&A Manual [*382486/73/Issue2*], ecology monitoring is only performed at the Channels MUP05 and LMH01 during the construction phase, the monitoring requirements are listed as following:

Parameters:

(a) General site audit with emphasis on ecology mitigation measure;
(ii) Water quality of stream (DO, pH, turbidity and SS); and
(iii) Survey of fish species, which is only requested at Channel LMH01

Frequency:

(b) Once a week for general site audit throughout the construction period;
(ii) Three times per week for stream monitoring; and
(iii) Once per week for survey of fish species.

Duration:

Throughout the whole construction period

4.4 MONITORING EQUIPMENT

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

4.4.1 Air Quality

A list of air quality monitoring equipments is shown in ***Table 4-3***.

Table 4-3 Air Quality Monitoring Equipment

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

4.4.2 Construction Noise

A list of construction noise monitoring equipments is shown in ***Table 4-4.***

Table 4-4 Construction Noise Monitoring Equipment

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

4.4.3 Water Quality

Monitoring Equipment for water quality are shown in ***Table 4-5.***

Table 4-5 Water Quality Monitoring Equipment

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

4.4.4 Equipment Calibration

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

Air Quality

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

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

Noise

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

Water Quality

In-situ monitoring instruments are calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme at 3 monthly intervals.

4.4.5 Ecology

The following equipment will be used for monitoring:-

- General: field note books and survey forms, digital camera; and
- Binoculars (7-10x and 8 x 30 magnification);

4.4.6 Others EM&A Requirement

Landscape & Visual and Cultural Heritage impact monitoring are also required for the Designated Project and stipulated in EM&A manual [*382486/73//Issue2*] ***Section 7*** and ***Section 8*** accordingly

Landscape & Visual

Landscape and visual mitigation measures should be implemented during construction phase according to the EM&A Manual. The construction phase landscape and visual EM&A shall be carried out as part of the site audit program. Site inspection will be undertaken at least once every two weeks throughout the construction period.

Cultural Heritage

Cultural heritage of the Terrance Wall (AAHB-855) at Lin Ma Hang (LMH01) is required to be carried out during the construction phase in accordance with the EM&A Manual [*382486/73//Issue2*].

4.5 MONITORING PROCEDURE

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

4.5.1 Air Quality

1-hour TSP

Operation of the 1-hour TSP meter is follow manufacturer's Operation and Service Manual. The 1-hour TSP monitor, a TSI Dust Track Aerosol Monitor Model 8520, or Sibata LD-3 Laser Dust Meter is a portable, battery-operated laser photometer. The 1-hour TSP meter provides a real time 1-hour TSP measurement based on 90^0 light scattering. The 1-hour TSP monitor consists of the following:

- A pump to draw sample aerosol through the optic chamber where TSP is measured;
- A sheath air system to isolate the aerosol in the chamber to keep the optics clean for maximum reliability; and
- A built-in data logger compatible with Windows based program to facilitate data collection, analysis and reporting.

The 1-hour TSP meter using was within the valid period, calibrated by the manufacturer prior to purchasing. Zero response of the instrument was checked before and after each monitoring event.

24 –hour TSP

The equipment used for 24-hour TSP measurement is the HVS brand named Thermo Andersen, Model GS2310 TSP high volume air sampling system, which complied with EPA Code of Federal Regulation, Appendix B to Part 50. The HVS consists of the following:

- An anodized aluminum shelter;
- A 8"x10" stainless steel filter holder;

- A blower motor assembly;
- A continuous flow/pressure recorder;
- A motor speed-voltage control/elapsed time indicator;
- A 6-day mechanical timer, and
- A power supply of 220v/50 Hz

The HVS is calibrated prior the impact monitoring to following the manufacturer's instruction using the NIST-certified standard calibrator brand named Tisch Calibration Kit Model TE-5028A. Regular HVS operation and maintenance as well as filter paper installation and collection was performed by the ET's competent technicians, whereas laboratory analyses were conducted in a local HOKLAS accredited laboratory, ALS Technichem (HK) Pty Ltd (hereinafter 'ALS'). The analyzed 24-hour TSP filters were kept in ALS for six months prior to disposal.

Meteorological Information

All relevant data including temperature, pressure, weather conditions, elapsed-time meter reading for the start and stop of the sampler, identification and weight of the filter paper is recorded in detail.

Meteorological information is sourced from the Hong Kong Observatory (Ta Kwu Ling Station). The data included wind direction, wind speed, humidity, rainfall, air pressure and temperature etc that in general is required for evaluating the air quality for air quality monitoring.

4.5.2 Construction Noise

Sound level meters listed above comply with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications, as recommended in Technical Memorandum BE issued under the Noise Control Ordinance (NCO).

All noise measurements are performed with the meter set to FAST response and on the A-weighted equivalent continuous sound pressure level (Leq). Leq(30min) measurements are used as the monitoring parameter for the time period throughout the construction phase.

The sound level meter is set higher than 1.2m above the existing ground. The microphone is pointed to the site with the microphone facing perpendicular to the line of sight. The windshield is fitted for all measurements. The measurement point at impact locations is normally set close to the exterior of the building.

Immediately prior to and following each noise measurement the accuracy of the sound level meter is checked using an acoustic calibrator generating a known sound pressure level at a known frequency (94dBA). Measurements are accepted as valid due to the calibration levels from before and after the noise measurement agree to within 1.0dB.

4.5.3 Water Quality

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

Water Depth

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

Dissolved Oxygen (DO)

A portable Extech Instrument, ExStik^{R} DO600 DO Meter is used for in-situ DO measurement. The DO meter is capable of measuring DO in the range of 0 – 20 mg/L and 0 – 200 % saturation and checked against water saturated ambient air on each monitoring day prior to monitoring.

Although the DO Meter automatically compensates ambient water temperature to a standard temperature of 20^{0}C for ease of comparison of the data under the changing reality, the temperature readings of the DO Meter is recorded.

pH

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

Turbidity

A portable Hach 2100p turbidity Meter is used for in-situ turbidity measurement. The turbidity meter is capable of measuring turbidity in the range of 0 – 1000 NTU.

Suspended Solids (SS)

SS is determined by ALS using HOKLAS accredited analytical methods namely ALS Method EA-025. The limit of report is 2mg/L

Water Sampler

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

Sample Container

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

Sample Storage and delivery

A 'Willow' 33-liter plastic cool box packed with ice is used to preserve the collected water samples prior to arrival at the laboratory. The temperature of the cool box is maintained as close to 4^0C as possible without being frozen. Samples are delivered to the laboratory end of sampling day or following day within the maximum storage time requirement.

Chemical Analysis

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

4.5.4 Ecology

Weekly site audit covering the whole assessment area is conducted during the construction work at Channels MUP05 and LMH01, focusing on the status/condition of the study area and its immediate vicinity, especially those sensitive habitats that have been identified in the ESR and/or habitats of conservation importance as stated in the EIAO TM.

Any changes found during the site audit have been marked and reported in the Monthly EM&A Report, and for those changes will be predicted to possibly or probably have had an impact on flora and fauna distribution or numbers should be highlighted in the Monthly EM&A report.

Ecology of water quality monitoring at the stream as requested to undertake in upstream and downstream of construction site Channels MUP05 and LMH01. The location of monitoring stations and requirements are same as the Water Quality Monitoring at the Channels MUP05 and LMH01. The procedure of water monitoring is same as the Water Quality monitoring.

4.6 ENVIRONMENTAL QUALITY PERFORMANCE LIMITS

Baseline EM&A monitoring was carried out from17 September to 13 October 2008, and ecological baseline monitoring for the habitat updating was performed on 16 September 2008 in accordance with the EM&A Manuals requirements. A summary of Action/Limit (A/L) Levels for air quality, construction noise, stream water quality, ecology and Landscape & Visual are shown in ***Tables 4-6***, ***4-7, 4-8, 4-9*** and ***4-10*** respectively.

Table 4-6 Action and Limit Levels for Air Quality

Monitoring Station	Action Level (μg /m³)		Limit Level (μg/m³)	
	1-hour TSP	24-hour TSP	1-hour TSP	24-hour TSP
MUP-A1	>307	>156	> 500	> 260
MUP-A2a	>300	>149	> 500	> 260
MUP-A3	>299	>150	> 500	> 260

Table 4-7 Action and Limit Levels for Construction Noise

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

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

Table 4-8 Action and Limit Levels for Water Quality

Monitoring Location		DO (mg/L)		Turbidity (NTU)		pH (Unit)		SS (mg/L)	
ID	Station Type	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level
MUP-W1	Control	NA	NA	NA	NA	NA	NA	NA	NA
MUP-W2	Control	NA	NA	NA	NA	NA	NA	NA	NA
MUP-W3	Control	NA	NA	NA	NA	NA	NA	NA	NA
MUP-W4	Impact	5.27	5.18	18.03	24.81	6.5 – 8.5	6.0 – 9.0	15.8	17.6
MUP-W5	Mobile	4.42	4.37	7.88	8.54	6.5 – 8.5	6.0 – 9.0	6.0	6.0
MUP-W6	Mobile	4.54	4.51	11.81	14.84	6.5 – 8.5	6.0 – 9.0	3.9	4.8
LMH-W1	Control	NA	NA	NA	NA	NA	NA	NA	NA
LMH-W2	Control	NA	NA	NA	NA	NA	NA	NA	NA
LMH-W3	Impact	3.96	3.62	11.31	12.10	6.5 – 8.5	6.0 – 9.0	8.8	10.6
LMH-W4	Mobile	4.34	3.98	5.33	5.95	6.5 – 8.5	6.0 – 9.0	3.0	3.0
LMH-W5	Mobile	2.14	2.07	31.46	35.33	6.5 – 8.5	6.0 – 9.0	25.0	29.8
LMH-W6	Mobile	2.67	2.65	12.32	13.02	6.5 – 8.5	6.0 – 9.0	4.8	6.6

Note: - For DO, non-compliance of water quality limits occurs when monitoring result is lower than the limits.
- For SS and turbidity, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
- For pH, non-compliance of water quality limits occurs when monitoring result is exceeded the range of limits.

Table 4-9 Action and Limit Levels for Ecology in Construction Phase at Channels MUP05 and LMH01

Parameter	Action Level	Limit Level
• Any construction works do not cause adverse ecological impacts outside the work site of Channels • Where natural banks are to be retained are protected from adverse effects of engineering works, including impacts to riparian vegetation along these banks • The existing natural stream channel is protected from adverse effect of engineering works, including potential indirect impacts through increased sedimentation • Rock/fines used to form the bottom of the widened channel have the appropriate physical characteristics to permit re-establishment of semi-natural stream conditions • The recommended mitigation measures are properly implemented by the Contractor	Non-conformity on one occasion	Repeated Non-conformity

Table 4-10 Action Level for Landscape and Visual Impact in Construction Phase

Parameter	Action Level	Limit Level
Any trespass by the contractor outside the limit of the works, including any damage to existing trees, woodland and vegetation	Non-conformity on one occasion	Repeated non-conformity

4.7 EVENT AND ACTION PLANS

An Event Action Plan for air quality, construction noise, water quality and ecology has been implemented for this designated project. Details of the Event Action Plan are presented in ***Appendix F***.

4.8 ENVIRONMENTAL MITIGATION MEASURES

The project ESR has recommended environmental mitigation measures to minimize potential environmental impacts arising from the construction of the project. A full list of the mitigation measures is detailed in ***Appendix C***.

4.9 DATA MANAGEMENT AND DATA QA/QC CONTROL

The impact monitoring data is handled by the ET's systematic data recording and management, which complies with an in-house certified (ISO 9001:2000) Quality Management System. Standard Field Data Sheets (FDS) are used in the EM&A program.

The monitoring data recorded in the equipment e.g. 1-hour TSP meters and noise meters are downloaded directly at the end of each monitoring day. The downloaded monitoring data are input into a computerized database properly maintained by the ET. The laboratory results are input directly into the computerized database and QA/QC checked by personnel other than those who input the data.

For monitoring activities which require laboratory analysis, the responsible laboratory, ALS, follows the QA/QC requirements as set out under their HOKLAS scheme for all laboratory testing.

5. IMPACT MONITORING RESULTS

In this reporting month, construction works and environmental monitoring had started at Channels MUP03A&B, MUP04A&B and MUP05 located in Man Uk Pin. No impact monitoring has yet been undertaken at Channel LMH01 due to no construction activities during the month. In the future when the EM&A programme will cover all four channels once works in Channel LMH01 start.

The scheduled impact monitoring in this month is shown in ***Appendix G*** and the monitoring results are detailed in the following sub-sections. The meteorological data during the Reporting Period are summarized in ***Appendix J***.

5.1 AIR QUALITY

According to the EM&A Manual, air monitoring is only required to conduct at Channels MUP04A and MUP05 during the construction phase. In this reporting period, the results of impact air quality monitoring for 24-hour and 1-hour TSP are summarized in ***Tables 5-1*** and ***5-2***. The detailed 24-hour TSP monitoring data are shown in ***Appendix H*** and the graphic plots are shown in ***Appendix I***.

Table 5-1 Summary of 1-hour TSP Monitoring Results (μg/m³)

Date	MUP-A1 (MUP05)				MUP-A2a (MUP05)				MUP-A3 (MUP04A)			
	Start Time	Measurement			Start Time	Measurement			Start Time	Measurement		
		1st	2nd	3rd		1st	2nd	3rd		1st	2nd	3rd
30-Jun-12	10:50	84	82	84	10:15	69	71	68	10:47	55	54	52
7-Jul-12	10:00	67	71	71	13:14	68	86	52	09:45	41	47	53
13-Jul-12	11:25	121	124	122	11:30	109	111	120	13:05	120	122	123
19-Jul-12	13:30	56	54	59	10:15	40	38	41	10:20	54	62	57
25-Jul-12	11:00	68	66	66	11:05	64	66	61	11:10	62	68	69
Average (range)	80 (54 – 124)				71 (38 – 120)				69 (41 – 123)			

Table 5-2 Summary of 24-hour TSP Monitoring Results (μg/m³)

Date	MUP-A1 (MUP05)	MUP-A2a (MUP05)	MUP-A3 (MUP04A)
30-Jun-12	29	power failure#	power failure#
6-Jul-12	10	power failure#	power failure#
12-Jul-12	20	35	power failure#
18-Jul-12	27	169	power failure#
24-Jul-12	39	power failure#	power failure#
Average (range)	25 (10 – 39)	102 (35-169)	NA

Power failure and no make up of lost samples.

As shown in ***Tables 5-1*** and ***5-2***, there was no exceedance recorded in 1-hour TSP and 24-hour TSP during this reporting period. As a reminder, the Contractor is advised to increase the frequency of water spraying especially in the sunny and dry days. There were total 8 power failures incident recorded at Location MUP-A2a and MUP-A3. It is noted by the Contractor they have tried to fix the problem from power supplier. However, they could not get contact to the residents who supply power all the time. In recent month, monitoring location MUP-A1 and MUP-A2a has been resumed. We have constantly liaised with the Contractor to rectify the power supply problem and Contractor will deploy another stable power source. On the other hands, it is shown that there is no works near those locations in recent months. It is believed that the site area would not cause exceeding for monitoring results or significant impact for air quality. However, the Contractor is needed to resume the power supply as soon as possible.

5.2 CONSTRUCTION NOISE

According to the EM&A Manual, noise monitoring is only required to perform at Channels MUP04A and MUP05 during the construction phase. All noise monitoring results are summarized in ***Tables 5-3*** to ***5-6*** and graphic plot are shown in ***Appendix I***.

Table 5-3 Results of Construction Noise Monitoring at Channels MUP-N1 / MUP01/02-N1 (MUP05)

Date	Start Time	1st Leq5	2nd Leq5	3rd Leq5	4th Leq5	5th Leq5	6th Leq5	Leq30 dB(A)
30-Jun-12	13:00	70.6	69.1	74.4	67.4	65.7	66.6	70
7-Jul-12	10:00	74.6	67.0	62.8	60.3	60.2	61.9	68
13-Jul-12	11:32	60.4	53.1	57.6	54.7	55.8	58.5	57
19-Jul-12	10:15	68.6	69.3	70.2	69.8	71.6	69.3	70
25-Jul-12	11:30	64.7	54.6	64.4	55.7	54.7	52.6	61
Limit Level (Leq30)		**75 dB(A)**						

Table 5-4 Results of Construction Noise Monitoring at Channels MUP-N2 (MUP05)

Date	Start Time	1st Leq5	2nd Leq5	3rd Leq5	4th Leq5	5th Leq5	6th Leq5	Leq30 dB(A)
30-Jun-12	10:15	65.4	70.0	65.8	64.3	65.0	62.9	66.2
7-Jul-12	13:00	64.2	61.2	62.1	66.8	62.6	63.0	63.7
13-Jul-12	11:25	53.8	53.1	54.0	51.2	52.0	52.8	52.9
19-Jul-12	10:45	68.3	59.0	68.2	68.3	67.3	68.5	67.5
25-Jul-12	13:00	72.9	74.1	62.5	71.6	69.4	70.0	71.3
Limit Level (Leq30)		**75 dB(A)**						

Table 5-5 Results of Construction Noise Monitoring at Channels MUP-N3 (MUP05)

Date	Start Time	1st Leq5	2nd Leq5	3rd Leq5	4th Leq5	5th Leq5	6th Leq5	Leq30 dB(A)
30-Jun-12	11:20	74.7	70.1	73.0	71.9	68.9	70.9	72.0
7-Jul-12	10:35	66.6	66.6	65.1	66.7	61.6	67.0	65.9
13-Jul-12	11:28	69.3	65.5	68.6	67.4	69.7	68.7	68.4
19-Jul-12	10:20	69.0	68.2	68.0	67.6	68.7	70.0	68.7
25-Jul-12	11:25	70.9	69.2	62.7	59.3	68.9	63.8	67.5
Limit Level (Leq30)		**75 dB(A)**						

Table 5-6 Results of Construction Noise Monitoring at Channels MUP-N4 (MUP04A)

Date	Start Time	1st Leq5	2nd Leq5	3rd Leq5	4th Leq5	5th Leq5	6th Leq5	Leq30 dB(A)
30-Jun-12	10:47	70.4	71.4	73.9	73.0	73.6	73.5	72.8
7-Jul-12	11:25	62.4	66.1	61.2	66.7	64.1	61.9	64.2
13-Jul-12	13:00	51.4	49.5	50.5	53.5	58.7	53.2	54.0
19-Jul-12	10:00	59.5	60.6	62.3	57.3	61.6	62.4	60.9
25-Jul-12	11:20	67.3	65.9	71.0	65.1	71.3	67.1	68.6
Limit Level (Leq30)		**75 dB(A)**						

As shown in ***Tables 5-3*** to ***5-6***, the construction noise levels fluctuated well below the Limit Level. No documented complaints against the construction noise were registered during the Reporting Period. No NOE or corrective actions were therefore required for the parameter

5.3 WATER QUALITY

In this reporting month, a total of 13 sampling days were performed for stream water quality monitoring according to the EM&A Manual requirements. Detailed in-situ measurements and laboratory results are shown in **Appendix H** and graphic plots given in **Appendix I**.

In stream water quality monitoring, there were 6 exceedances recorded in the reporting period (2 action level exceedances and 4 limit level exceedances). According to the information from Contractor, it is recorded from Hong Kong Observatory that adverse weather brought from Typhoon Vicente during the captioned days. There is no major construction activity was carried out except de-watering and flood preventive measures. The exceedances at the captioned stations would be the consequences of rainfall recorded or seasonal variation. We would conclude that the exceedances were not works related under the project. A summary of exceedances in this reporting month is provided in ***Table 5-7*** below:

Table 5-7 Summary of Stream Water Quality Exceedances

Station	DO		Turbidity		pH Value		SS		Total Exceedance	
	Action	Limit	Action	Limit	Action	Limit	Action	Limit	Action	Limit
MUP-W4 (a)	0	0	0	0	0	0	**2**	0	**2**	0
MUP-W5 (b)	0	0	0	0	0	0	0	**2**	0	**2**
MUP-W6 (b)	0	0	0	0	0	0	0	**2**	0	**2**
Exceedances	0	0	0	0	0	0	**2**	**4**	**2**	**4**

For pH measurements, the results shown that the range of pH unit was within 6.72 – 7.92 and within the lower or upper bounds of Action Limit Level.

5.4 ECOLOGY

According to the EM&A Manual [*382486/73//Issue2*], ecology monitoring is required for Channels MUP05 and LMH01 during the construction phase. In this reporting period, the construction works of Channels LMH01and MUP05 are at late stage.

In this reporting month, four site visits were carried out on 28th June, 5th, 14th and 19th July 2012. During all site visits, it was noted that sediment-loaded water running in the stream. The sediments were likely partially from natural runoff of stream riparian and catchment where the sediments were bought by rain fall. Some construction material including soil and rocks piled in the stream or riverbed also contribute to soil erosion and led to sediment-loading water in the drainage system. The contractor has been reminded to carry out all the required sediment control measures to make sure no sediment-loaded water being discharged to the watercourse.

The detailed findings are listed in the table below and the checklists are attached in ***Appendix L***.

Table 5-8 Summary of Defects and Deficiencies Identified and Follow-up Actions and Remedies Taken

Date of Audit	Defects and Deficiencies Identified	Recommendation	Follow-up Actions and Remedies Taken
28th June 2012	Piles of soil and rocks on streambed with potential soil erosion problem during storm; Sediment-loaded water in the stream noted;	Soil erosion control; Remove soil piles in the streambed	To be taken
5th July 2012	Piles of soil and rocks on streambed with potential soil erosion problem during storm; Sediment-loaded water in the stream noted;	Soil erosion control; Remove soil piles in the streambed	To be taken
14th July 2012	Piles of soil and rocks on streambed with potential soil erosion problem during storm; Sediment-loaded water in the stream noted;	Soil erosion control; Remove soil piles in the streambed	To be taken
19th July 2012	Piles of soil and rocks on streambed with potential soil erosion problem during storm; Sediment-loaded water in the stream noted;	Soil erosion control; Remove soil piles in the streambed	To be taken

5.5 OTHER FACTORS INFLUENCING THE MONITORING RESULTS

There were no other noticeable external factors generally affecting the monitoring results in this reporting month.

5.6 QA/QC RESULTS AND DETECTION LIMITS

Not applicable.

6. REPORT ON NON-COMPLIANCE, COMPLAINT, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTION

6.1 RECORD OF NON-COMPLIANCE OF ACTION AND LIMIT LEVELS

No Action or Limit Level exceedance was identified for air quality, construction noise but 6 exceedances were recorded for stream water quality monitoring. For details please refer to section 5.3. No associated corrective actions were required.

6.2 ENVIRONMENTAL COMPLAINTS

No written or verbal complaints were received (written or verbal) for each medium during the Reporting Period.

6.3 RECORD OF NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTION

No notification of summons or successful prosecutions was recorded during the Reporting Period.

6.4 REVIEW OF REASONS FOR AND IMPLICATION OF NON-COMPLIANCE, COMPLAINT AND NOTICE OF SUMMONS

No non-compliance, complaint or Notice of Summons was received in this reporting month.

6.5 DESCRIPTION OF FOLLOW-UP ACTIONS TAKEN

It follows from ***Sections 6.1*** and ***6.4*** that no follow-up actions were necessary.

6.6 OTHERS

6.6.1 Solid and Liquid Waste Management Status

The quantity of waste for disposal or reuse is summarized in ***Tables 6-1*** and ***6-2.*** The monthly summary of waste flow table is shown in ***Appendix M***.

Table 6-1 Summary of Quantities of Waste for Disposal

Type of Waste	Quantity	Disposal Location
C&D Materials (Inert) (in '000m^3)	0	Tuen Mun 38 Fill Bank
	0	Reused in other Projects
C&D Materials (Non-Inert) (in '000m^3)	0	NENT
Chemical Waste (in '000kg)	0	NA
General Refuse (in '000m^3)	0	NA

Table 6-2 Summary of Quantities of Waste for Reuse/Recycling

Type of Waste	Quantity	Disposal Location
Metals for Recycling (in '000kg)	0	NA
Paper for Recycling (in '000kg)	0	NA
Plastics for Recycling (in '000kg)	0	NA

There was no known site effluent discharged but it was assumed that an estimated volume of 50m^3 of waste water was discharged in this reporting month.

6.6.2 Site Inspection and Environmental Audit

A total of **4** weekly environmental site inspection and audit were conducted jointly by the ER, EO and ET during the Reporting Period on **28 June, 5, 12 and 19 July 2012**. No adverse environmental impacts were observed which indicated that the mitigation measures implemented were effective. Minor deficiencies found in the site inspections and audit was promptly rectified within the specified deadlines. Findings of the site inspection and environmental audit are summarized below. Performa of the weekly ET site inspection and audit activities are presented in ***Appendix K***.

Table 6-3 Summary of Findings of Site Inspection and Environmental Audit

Date	Findings / Deficiencies	Follow-Up Status
28 June 2012	• No adverse environmental impacts were observed during the site inspection. Full implementation of the required environmental mitigation measures, in particular wheel washing of the vehicles prior to exit, is reminded.	--
5 Jul 2012	• No adverse environmental impacts were observed during the site inspection. Full implementation of the required environmental mitigation measures, in particular de-watering and flood preventive measures in adverse weather, is reminded.	--
12 July 2012	• No adverse environmental impacts were observed during the site inspection. Full implementation of the required environmental mitigation measures is reminded.	--
19 July 2012	• No adverse environmental impacts were observed during the site inspection. Full implementation of the required environmental mitigation measures, particularly watering of the dry and dusty surfaces during dusty construction activities and wheel washing of the construction vehicles prior to exit the site is reminded.	--

6.6.3 Works to be undertaken in the Forth-Coming Month

Works to be undertaken next month are shown in the construction program enclosed in ***Appendix C***. In addition, the activities undertaken in the Reporting Period including construction, preparation and site clearance activities will also continue in the future. They are summarized below:

The forthcoming activities in the next two months:
Carried out defect works during construction period as follow:

(a) Install outstanding fencing, railing and signates;
(b) Landscape softworks and establishment works;
(c) Rectify defective concrete on grasscrete/paving;

6.6.4 Future Key Issues and Mitigation Measures for the Forth-Coming Month

As wet season has come, the coming excavation works of the channels, ingression of surface runoff into the river within MUP Channels continues to be the key issue in future months. The contractor is reminded that mitigation measures for water quality and ecology should therefore be fully implemented.

In addition, attention should be paid to noise impact during the construction work progress, and with other environmental issues identified in the EM&A Manual. Mitigation measures recommended in the Environmental Study Report (ESR) and summarized in Mitigation Measure Implementation Schedule should continually be applied.

7 CONCLUSIONS AND RECOMMENDATIONS

This is the **41st** monthly EM&A Report for Channels MUP03A&B, MUP04A&B, MUP05 and LMH01 - Designated Project, covering a period from **26 June 2012** to **25 July 2012**.

In air quality and noise monitoring, there were no Action/ Limit Level exceedance recorded in this reporting period. No associated corrective actions were therefore required.

For water quality, there were also 6 exceedances recorded in the reporting period (2 action level exceedances and 4 limit level exceedances). According to the information from Contractor, it is recorded from Hong Kong Observatory that adverse weather brought from Typhoon Vicente during the captioned days. There is no major construction activity was carried out except de-watering and flood preventive measures. The exceedances at the captioned stations would be the consequences of rainfall recorded or seasonal variation. We would conclude that the exceedances were not works related under the project.

No written or verbal complaints, notifications of summons or successful prosecutions were received during the Reporting Period. No adverse environmental impacts were observed during the weekly site inspection and environmental audit, which indicated that the implemented mitigation measures for air quality, construction noise and water quality were effective. A few minor deficiencies found in the weekly site inspection and they were rectified within the specified deadlines. The environmental performance of the Project was therefore considered satisfactory.

As wet season has come, the coming excavation works of the channels, ingression of surface runoff into the river within MUP Channels continues to be the key issue in future months. The contractor is reminded that mitigation measures for water quality and ecology should therefore be fully implemented.

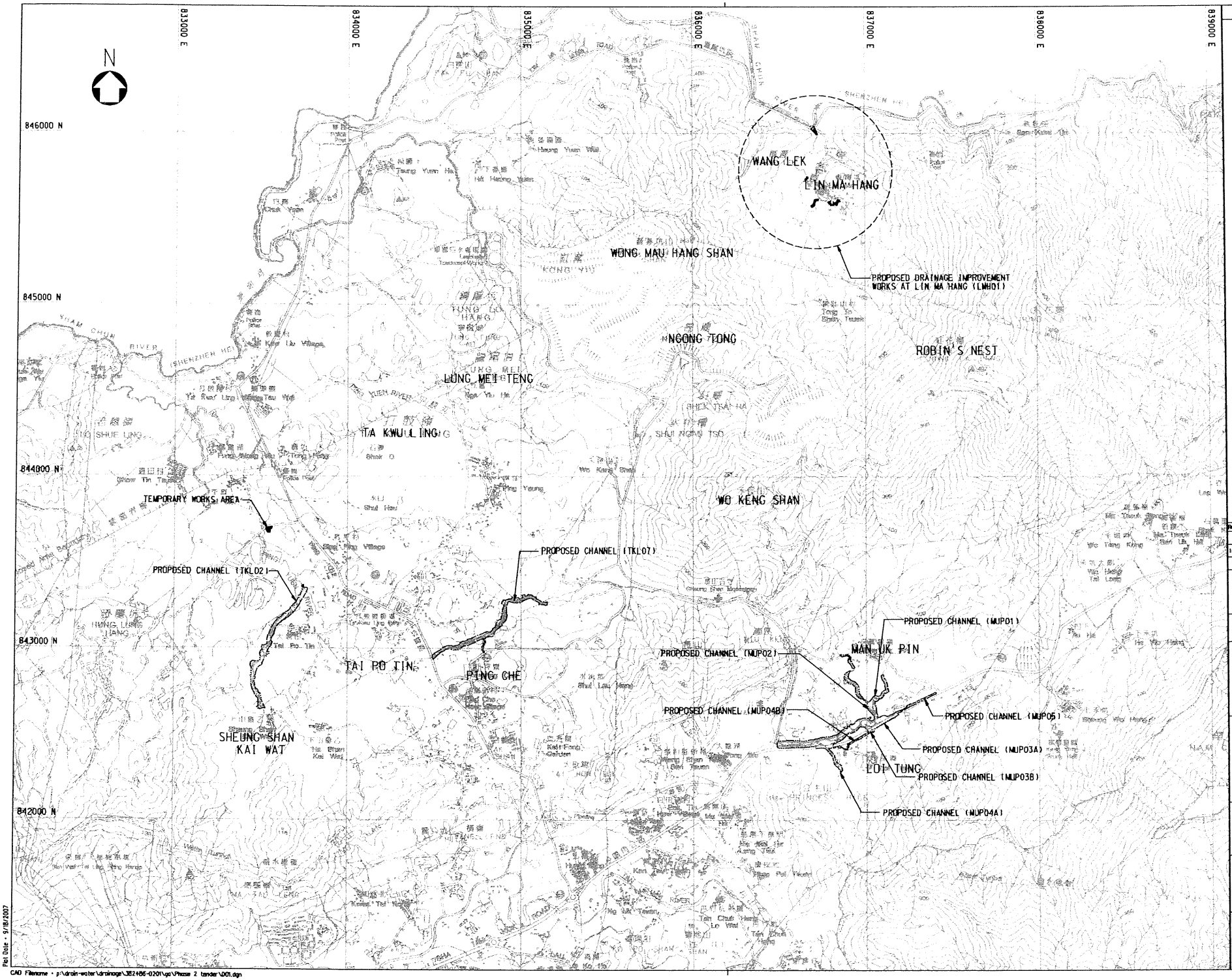
In addition, attention should be paid to noise impact during the construction work progress, and with other environmental issues identified in the EM&A Manual. Mitigation measures recommended in the Environmental Study Report (ESR) and summarized in Mitigation Measure Implementation Schedule should continually be applied.

Impact monitoring should be immediately undertaken upon the construction works commencement at Channel LMH01 and will be reported in the coming month.

- End of Text -

Appendix A

Site Location Plan



LEGEND

SITE BOUNDARY

Revision	Date	Description		Initial
	Designed	Checked	Drawn	Checked
Initial	KSC	YSY	LHS	PKL
Date	05/07	05/07	05/07	05/07

Approved

Contract no.
DC/2007/08

Contract title
DRAINAGE IMPROVEMENT WORKS AT TAI PO TIN, PING CHE, MAN UK PIN AND LIN MA HANG

Drawing title
LOCATION PLAN FOR PROPOSED CHANNELS IN TA KWU LING AND SHA TAU KOK

Drawing no.
001

Scale
A1 1:10000
A3 1:20000

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

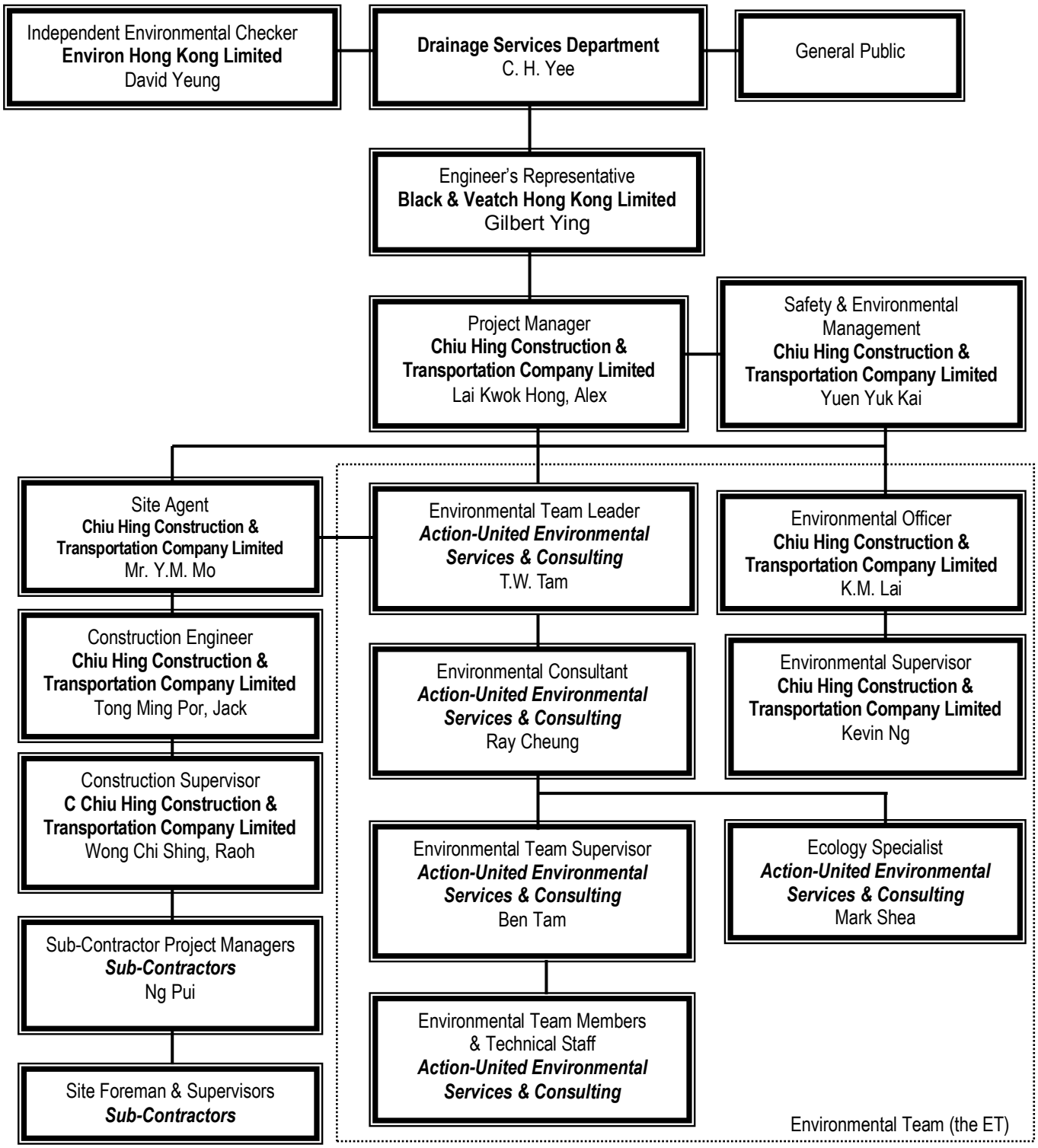
BLACK & VEATCH HONG KONG LIMITED
柏威工程顧問有限公司

Plot Date = 9/8/2007

CAD Filename = p:\drain-water\drainage\382486-0201\gc\Phase 2 tender\001.dgn

Appendix B

Environmental Management Organization and Contacts of Key Personnel



Environmental Management Organization

Contact Details of Key Personnel

Organization	Project Role	Name of Key Staff	Tel No.	Fax No.
DSD	Employer	Mr. C. H. Yee	2594-7347	2827-8700
B&V	Engineer's Representative	Mr. Gilbert Ying	2659-8787	2659-8323
Environ	Independent Environmental Checker	Mr. David Yeung	3743-0788	3548-6988
CHCT	Project Manager	Mr. Lai Kwok Hong, Alex	2659-8221	2659-8232
CHCT	Safety & Environmental Manager	Mr. Yuen Yuk Kai	2659-8221	2659-8232
CHCT	Site Agent	Mr. Y.M. Mo	2659-8221	2659-8232
CHCT	Construction Engineer	Mr. Tong Ming Por, Jacky	2659-8221	2659-8232
CHCT	Construction Supervisor	Mr. Roah Wong	2659-8221	2659-8232
CHCT	Structural Engineer	Mr. Kwok Chin Ming	2659-8221	2659-8232
CHCT	Site Forman	Mr. Chung Ping Kai	2659-8221	2659-8232
CHCT	Environmental Officer	Mr. K.M. Lai	2659-8221	2659-8232
CHCT	Environmental Supervisor	Mr. Kevin Ng	2659-8221	2659-8232
Kin Tat	Sub-contractor Project Manager	Mr. Ng Pui	2659-8221	2659-8232
AUES	Environmental Team Leader	Mr. T.W. Tam	2959-6059	2959-6079
AUES	Environmental Consultant	Mr. Ray Cheung	2959-6059	2959-6079
AUES	Environmental Team Supervisor	Mr. Ben Tam	2959-6059	2959-6079
AUES	Ecologist	Mr. Mark Shea	2959-6059	2959-6079

Legends:

DSD *(Employer) – Drainage Services Department*

B&V *(Engineer) – Black & Veatch Hong Kong Limited*

CHCT *(Main Contractor) – Chiu Hing Construction & Transportation Company Limited*

Environ *(IEC) – Environ Hong Kong Limited*

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

Appendix C

Master Construction Program
Future Construction Works &
Environmental Mitigation Implementation Schedule

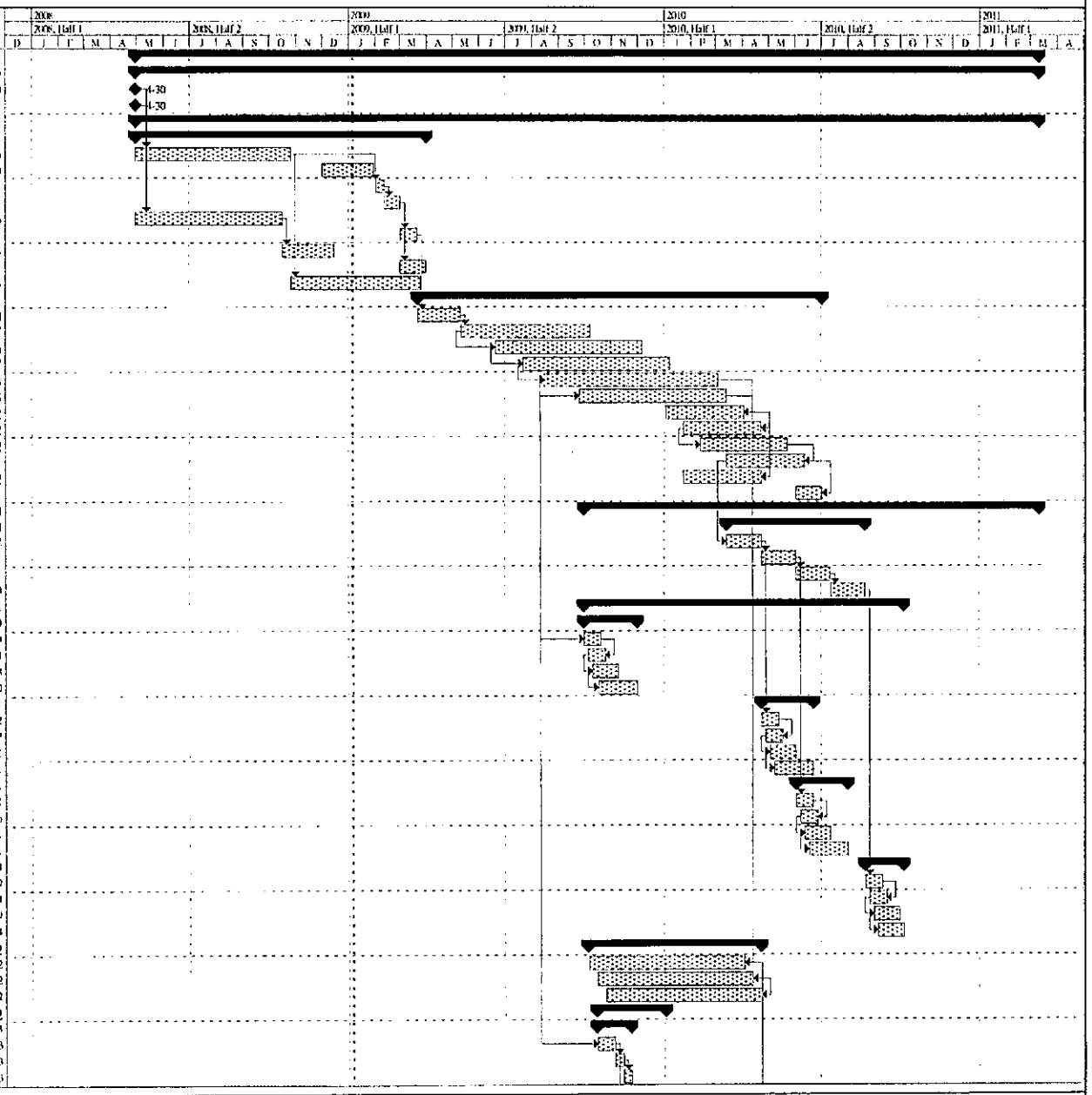
Master Construction Program

CHIU HING CONSTRUCTION & TRANSPORTATION Co., Ltd

MASTER PROGRAMME 05 (Section 1 of works)

CONTRACT: DC/2007/8. DRAINAGE IMPROVEMENT WORKS at TAI PO TIN, PING CHE, MAN UK PIN AND LIN MA HANG

ID	Task Name	Duration	Start	Finish
1	CONTRACT: DC/2007/08 (The Woks)	1045 days	Wed 08-4-30	Thu 11-3-10
2	Section 1 - Tai Po Tin (Portion B)	1045 days	Wed 08-4-30	Thu 11-3-10
3	Commencement Date	0 days	Wed 08-4-30	Wed 08-4-30
4	Handover of Portion B	0 days	Wed 08-4-30	Wed 08-4-30
5	River TKL02 with section 5 of works	1045 days	Wed 08-4-30	Thu 11-3-10
6	Prelim Works	336 days	Wed 08-4-30	Tue 09-3-31
7	Baseline Monitoring	180 days	Wed 08-4-30	Sun 08-10-26
8	Initial survey	60 days	Tue 08-12-2	Fri 09-1-30
9	Mobilisation	10 days	Mon 09-2-2	Wed 09-2-11
10	Site clearance	18 days	Thu 09-2-12	Sun 09-3-1
11	Tree survey + report	170 days	Wed 08-4-30	Thu 08-10-16
12	Construct Access Road	20 days	Mon 09-3-2	Sat 09-3-21
13	Remove and Transplant trees	60 days	Fri 08-10-17	Mon 08-12-15
14	Implement Drainage Improvement measures	30 days	Mon 09-3-2	Tue 09-3-31
15	Utility Survey/diversion	150 days	Mon 08-10-27	Wed 09-3-25
16	Main River Construction	467 days	Sun 09-3-22	Thu 10-7-1
17	Temporary Flow Diversion	50 days	Sun 09-3-22	Sun 09-5-10
18	Open cut excavation	150 days	Mon 09-5-11	Wed 09-10-7
19	Rock & granular filling for the base of gabion	170 days	Sat 09-6-20	Sun 09-12-6
20	Blinding layer for the gabion construction	170 days	Wed 09-7-22	Thu 10-1-7
21	Backfilling and gabion construction by layers	200 days	Sun 09-8-16	Wed 10-3-3
22	Gabion block construction in the middle of the river	170 days	Fri 09-9-25	Sat 10-3-13
23	200 Rip Rap filling	90 days	Sun 10-1-3	Fri 10-4-2
24	granular fill for the maintenance access	90 days	Sat 10-1-23	Thu 10-4-22
25	Construction of maintenance access	100 days	Fri 10-2-12	Sat 10-5-22
26	Rip Rap filling inside the maintenance access	90 days	Sun 10-3-14	Fri 10-6-11
27	Grassed cellular concrete paving	90 days	Sat 10-1-23	Thu 10-4-22
28	Construction of concrete transition channel	30 days	Wed 10-6-2	Thu 10-7-1
29	River Associated Works	527 days	Wed 09-9-30	Thu 11-3-10
30	Footbridge construction	160 days	Sun 10-3-14	Fri 10-8-20
31	FBT02-1 at CH 406 approximate	40 days	Sun 10-3-14	Thu 10-4-22
32	VBT02-1 at CH507 approximate	40 days	Fri 10-5-23	Tue 10-6-1
33	FBTH2-2 at CH510 approximate	40 days	Wed 10-6-2	Sun 10-7-11
34	FBT02-1 at CH662 approximate	40 days	Mon 10-7-12	Fri 10-8-20
35	Ramp construction	370 days	Wed 09-9-30	Mon 10-10-4
36	At CH0 Approximate	62 days	Wed 09-9-30	Mon 09-11-30
37	Granular filling with geotextile filter	20 days	Wed 09-9-30	Mon 09-10-19
38	Concrete for the blinding layer	20 days	Mon 09-10-5	Sat 09-10-24
39	Base slab construction for the ramp	30 days	Sat 09-10-10	Sun 09-11-8
40	Wall construction for the ramp	45 days	Sat 09-10-17	Mon 09-11-30
41	At CH106 Approximate	60 days	Fri 10-4-23	Mon 10-6-21
42	Granular filling with geotextile filter	20 days	Fri 10-4-23	Wed 10-5-12
43	Concrete for the Binding Layer	20 days	Wed 10-4-28	Mon 10-5-17
44	Base slab construction for the ramp	30 days	Mon 10-5-3	Tue 10-6-1
45	Wall construction for the ramp	45 days	Sat 10-5-8	Mon 10-6-21
46	At CH301 Approximate	60 days	Wed 10-6-2	Sat 10-7-31
47	Granular filling with geotextile filter	20 days	Wed 10-6-2	Mon 10-6-21
48	Concrete for the Binding Layer	20 days	Mon 10-6-7	Sat 10-6-26
49	Base slab construction for the ramp	30 days	Sat 10-6-12	Sun 10-7-11
50	Wall construction for the ramp	45 days	Thu 10-6-17	Sat 10-7-31
51	At CH662 Approximate	45 days	Sat 10-8-21	Mon 10-10-4
52	Granular filling with geotextile filter	20 days	Sat 10-8-21	Thu 10-9-9
53	Concrete for the blinding layer	20 days	Thu 10-8-26	Tue 10-9-14
54	Base slab construction for the ramp	30 days	Tue 10-8-31	Wed 10-9-29
55	Wall construction for the ramp	30 days	Sun 10-9-5	Mon 10-10-4
56	Verge/footpath construction	200 days	Mon 09-10-5	Thu 10-4-22
57	Subase construction for the verges	180 days	Mon 09-10-5	Fri 10-4-2
58	Grassed cellular concrete/concrete paving	180 days	Thu 09-10-15	Mon 10-4-12
59	Type 2 railing construction	180 days	Sun 09-10-25	Thu 10-4-22
60	Retaining wall construction	80 days	Thu 09-10-15	Sat 10-1-2
61	At CH0 Approximate	40 days	Thu 09-10-15	Mon 09-11-23
62	Type D Leshaped RW construction	20 days	Thu 09-10-15	Tue 09-11-3
63	Prefocated pipe installation	10 days	Wed 09-11-4	Fri 09-11-13
64	Backfilling the RW	10 days	Sat 09-11-14	Mon 09-11-23

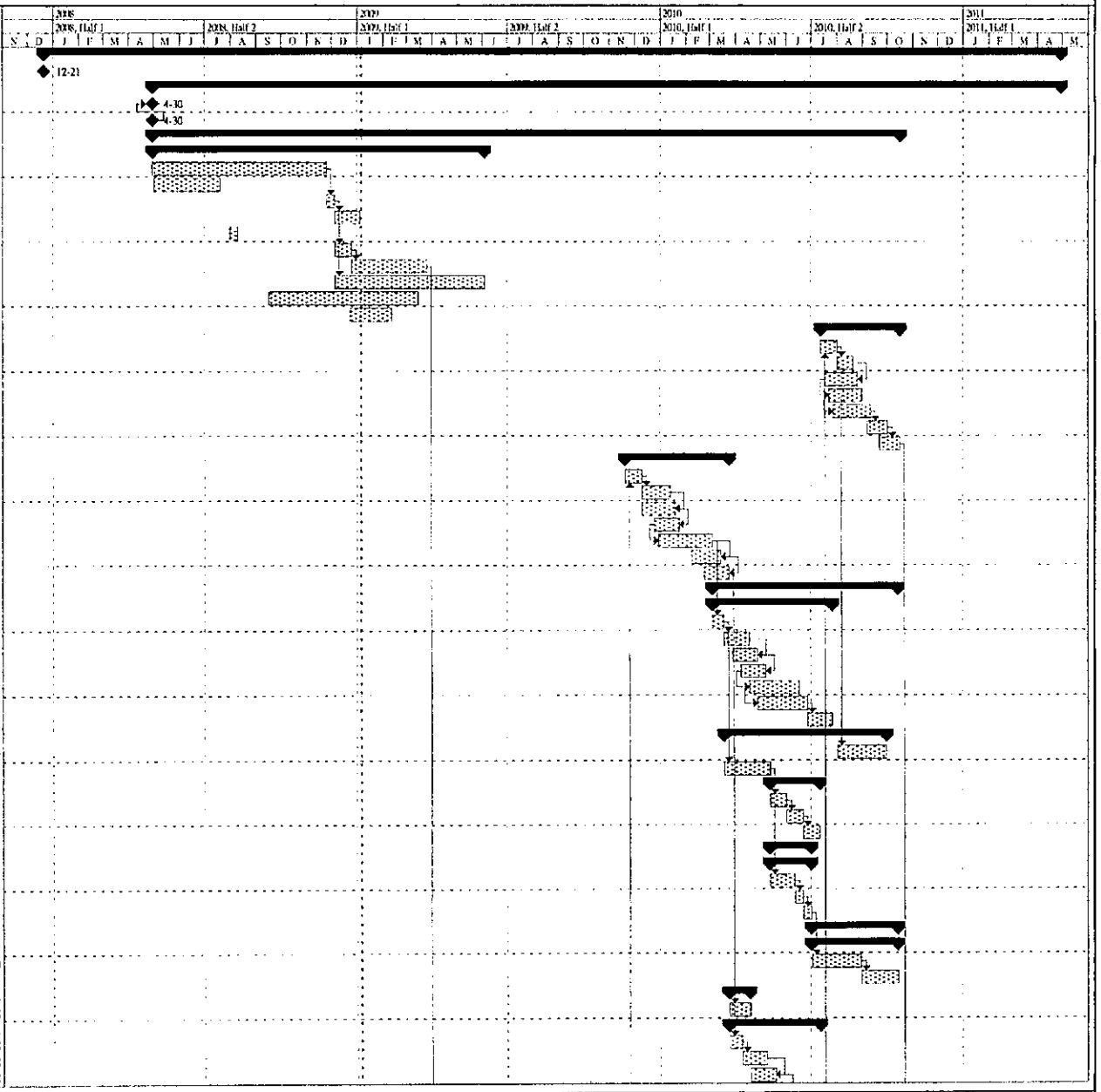


Project: Master Programme (Rev.05)
Date: 01/2009

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

CHIU HING CONSTRUCTION & TRANSPORTATION Co., Ltd
MASTER PROGRAMME 05 (Section 2 of works)
CONTRACT: DC/2007/8. DRAINAGE IMPROVEMENT WORKS at TAI PO TIN, PING CHE, MAN UK PIN AND LIN MA HANG

ID	Task Name	Duration	Start	Finish
1	CONTRACT: DC/2007/08 (The Woks)	1226 days	Fri 07-12-21	Fri 11-4-29
2	Handover of Portion A	0 days	Fri 07-12-21	Fri 07-12-21
3	Section 2 & 5- Ping Che (Portion C & E)	1095 days	Wed 08-4-30	Fri 11-4-29
4	Commencement Date	0 days	Wed 08-4-30	Wed 08-4-30
5	Hand over of Portion C & E	0 days	Wed 08-4-30	Wed 08-4-30
6	River TK1/07 (Portion C & E)	900 days	Wed 08-4-30	Sat 10-10-16
7	Prelim Works	400 days	Wed 08-4-30	Wed 09-6-3
8	Basline monitoring	210 days	Wed 08-4-30	Tue 08-11-25
9	Initial Survery	30 days	Fri 08-5-2	Sun 08-7-20
10	Mobilisation	10 days	Wed 08-11-26	Fri 08-12-5
11	Site clearance	30 days	Sat 08-12-6	Sun 09-1-4
12	Tree survey	10 days	Fri 08-8-1	Sun 08-8-10
13	Construct Access Road	20 days	Sat 08-12-6	Thu 08-12-25
14	Remove and Transplant the trees	90 days	Fri 08-12-26	Wed 09-3-25
15	Utility Survey/diversion	180 days	Sat 08-12-6	Wed 09-6-3
16	Design submussions to PS 1.68	180 days	Wed 08-9-17	Sun 09-3-15
17	Implement Drainage Improvement Measures	50 days	Wed 08-12-24	Wed 09-2-11
18	Main River Construction (CH0 to CH80)	96 days	Tue 10-7-13	Sat 10-10-16
19	Temporary Flow Diversion	20 days	Tue 10-7-13	Sun 10-8-1
20	Open cut excavation	20 days	Mon 10-8-2	Sat 10-8-21
21	Rock & ganular filling for the base of gabion	40 days	Sun 10-7-18	Thu 10-8-26
22	Blinding layer for the gabion construction	40 days	Fri 10-7-23	Tue 10-8-31
23	Backfilling and gabion constrution by layers	46 days	Wed 10-7-28	Sat 10-9-11
24	Ganular Filling for the river	25 days	Tue 10-9-7	Fri 10-10-1
25	Grassed cellular concrete paving	25 days	Wed 10-9-22	Sat 10-10-16
26	Main River Construction (CH150 to CH270 approx	125 days	Fri 09-11-20	Wed 10-3-24
27	Temporary flow diversion	20 days	Fri 09-11-20	Wed 09-12-9
28	Open cut excavation	35 days	Thu 09-12-10	Wed 10-1-13
29	Rock & ganular filling for the base of gabion	40 days	Thu 09-12-10	Mon 10-1-18
30	Blinding layer for the gabion construction	30 days	Fri 09-12-25	Sat 10-1-23
31	Backfilling and gabion constrution by layers	65 days	Wed 09-12-30	Thu 10-3-4
32	Ganular Filling for the river	35 days	Mon 10-2-8	Sun 10-3-14
33	Grassed cellular concrete paving	30 days	Tue 10-2-23	Wed 10-3-24
34	River associated Works	224 days	Fri 10-3-5	Thu 10-10-14
35	Box culvert construction at CH230 approximate	144 days	Fri 10-3-5	Mon 10-7-26
36	Temporary flow diversion	14 days	Fri 10-3-5	Thu 10-3-18
37	Open cut excavation	30 days	Fri 10-3-19	Sat 10-4-17
38	Granular filling with geotextile filter	30 days	Mon 10-3-29	Tue 10-4-27
39	Concrete for blindling layer	30 days	Thu 10-4-8	Fri 10-5-7
40	Base slab construction	60 days	Sun 10-4-18	Wed 10-6-16
41	Wall & Top Slab construction	60 days	Wed 10-4-28	Sat 10-6-26
42	Backfilling	30 days	Sun 10-6-27	Mon 10-7-26
43	Foothridge construction	196 days	Fri 10-3-19	Thu 10-9-30
44	FBT07-1 at CH 35 approximate	60 days	Mon 10-8-2	Thu 10-9-30
45	FBT07-2 at CH250 approximate	55 days	Fri 10-3-19	Wed 10-5-12
46	Verge/footpath construction	60 days	Thu 10-5-13	Sun 10-7-11
47	Subase construction for the verges	20 days	Thu 10-5-13	Tue 10-6-1
48	Gassed cellular concrete/concrete paving	20 days	Wed 10-6-2	Mon 10-6-21
49	Type 2 railing construction	20 days	Tue 10-6-22	Sun 10-7-11
50	Retaining wall construction	50 days	Thu 10-5-13	Thu 10-7-1
51	At CH230 Approximate	50 days	Thu 10-5-13	Thu 10-7-1
52	Type D L-shaped RW construction	30 days	Thu 10-5-13	Fri 10-6-11
53	Preforated pipe installation	10 days	Sat 10-6-12	Mon 10-6-21
54	Backfilling the RW	10 days	Tue 10-6-22	Thu 10-7-1
55	U Channel construction	105 days	Fri 10-7-2	Thu 10-10-14
56	375 UC at CH230 Approximate	105 days	Fri 10-7-2	Thu 10-10-14
57	Trench excavation	60 days	Fri 10-7-2	Mon 10-8-30
58	Concrete for the U channel	45 days	Tue 10-8-31	Thu 10-10-14
59	Inlet Pipes	25 days	Thu 10-3-25	Sun 10-4-18
60	Inlet pipe at CH270 Approximate	25 days	Thu 10-3-25	Sun 10-4-18
61	Main River Construction (CH80 to CH150 approximat	110 days	Thu 10-3-25	Mon 10-7-12
62	Temporary Flow Diversion	15 days	Thu 10-3-25	Thu 10-4-8
63	Open cut excavation	30 days	Fri 10-4-9	Sat 10-5-8
64	Rock & ganular filling for the base of gabion	30 days	Mon 10-4-19	Tue 10-5-18

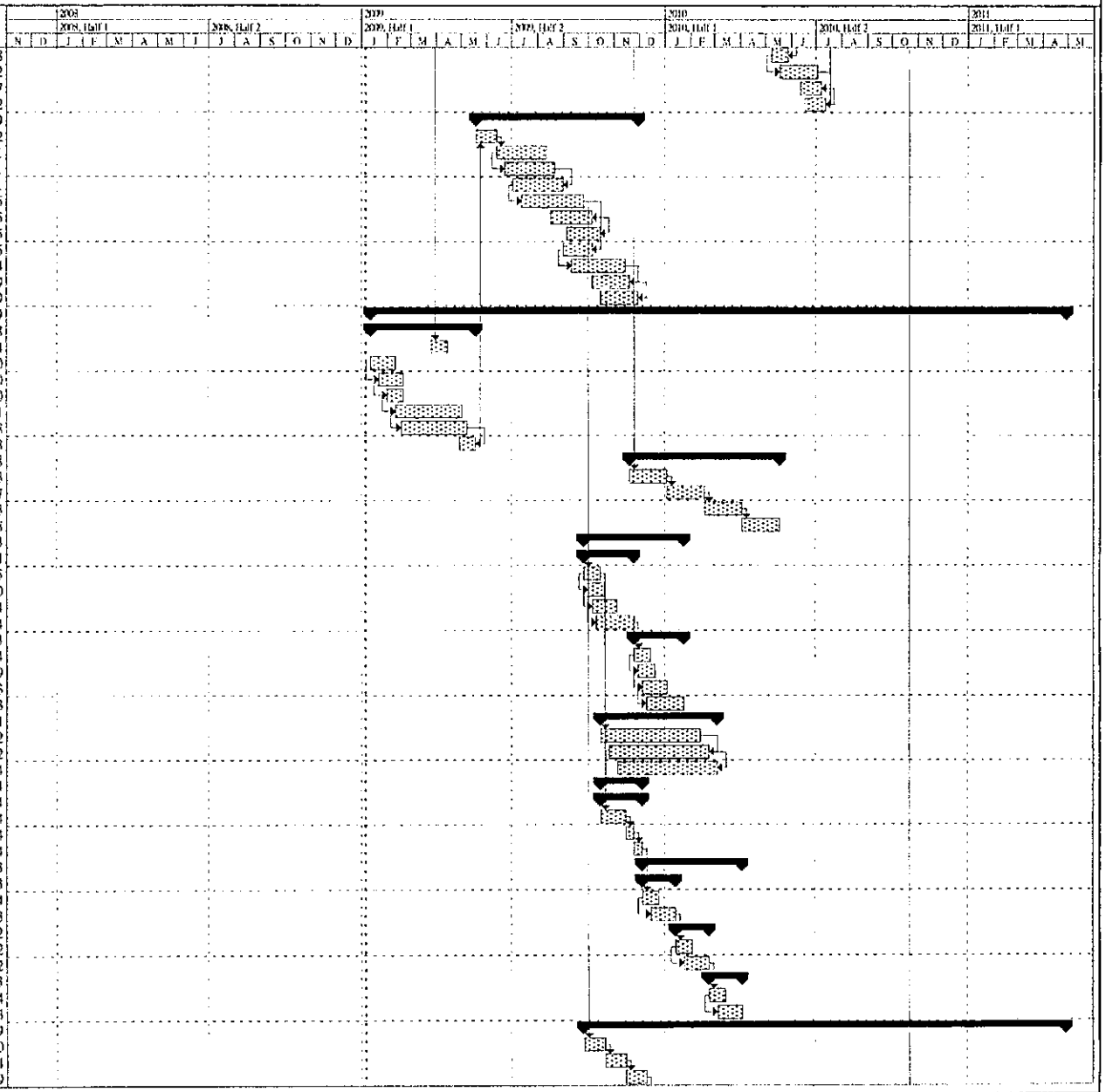


Project: Master Programme (Rev.05)
Date: 01/2009

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

CHIU HING CONSTRUCTION & TRANSPORTATION Co., Ltd
MASTER PROGRAMME 05 (Section 2 of works)
CONTRACT: DC/2007/B. DRAINAGE IMPROVEMENT WORKS at TAI PO TIN, PING CHE, MAN UK PIN AND LIN MA HANG

ID	Task Name	Duration	Start	Finish
65	Blinding layer for the gabion construction	20 days	Sun 10-5-9	Fri 10-5-28
66	Backfilling and gabion construtuion by layers	45 days	Wed 10-5-19	Fri 10-7-2
67	Ganular Filling for the river	25 days	Sun 10-6-13	Wed 10-7-7
68	Grassed cellular concrete paving	25 days	Fri 10-6-18	Mon 10-7-12
69	Main River Construction (CH270 to CH670 approxima	195 days	Tue 09-5-19	Sun 09-11-29
70	Temporary Flow Diversion	25 days	Tue 09-5-19	Fri 09-6-12
71	Open cut excavation	60 days	Sat 09-6-13	Tue 09-8-11
72	Rock & ganular filling for the base of gabion	60 days	Tue 09-6-23	Fri 09-8-21
73	Blinding layer for the gabion construction	60 days	Fri 09-7-3	Mon 09-8-31
74	Backfilling and gabion construtuion by layers	75 days	Mon 09-7-13	Fri 09-9-25
75	Gabion block constuction in the middle of the river	50 days	Mon 09-8-17	Mon 09-10-5
76	200 Rip Rap filling	40 days	Sun 09-9-6	Thu 09-10-15
77	Granular fill for the Maintenance access	35 days	Tue 09-9-1	Mon 09-10-5
78	Construction of Maintenance access	65 days	Fri 09-9-11	Sat 09-11-14
79	Rip Rap filling inside the Maintenance access	45 days	Tue 09-10-6	Thu 09-11-19
80	Grassed cellular concrete paving	45 days	Fri 09-10-16	Sun 09-11-29
81	River Associated Works	838 days	Mon 09-1-12	Fri 11-4-29
82	Box culvert construction at (CH670 to CH838 appr	127 days	Mon 09-1-12	Mon 09-5-18
83	Temporary flow diversion	20 days	Thu 09-3-26	Tue 09-4-14
84	Open cut excavation	30 days	Mon 09-1-12	Tue 09-2-10
85	Granular filling with geotextile filter	30 days	Thu 09-1-22	Fri 09-2-20
86	Concrete for blindling layer	20 days	Sun 09-2-1	Fri 09-2-20
87	Base slab construction	80 days	Wed 09-2-11	Fri 09-5-1
88	Wall & Top Slab construction	80 days	Wed 09-2-18	Fri 09-5-8
89	Backfilling	20 days	Wed 09-4-29	Mon 09-5-18
90	Footbridge construction	180 days	Fri 09-11-20	Tue 10-5-18
91	FBT07-3 at CH317 approximate	45 days	Fri 09-11-20	Sun 10-1-3
92	FBT07-4 at CH445 approximate	45 days	Mon 10-1-4	Wed 10-2-17
93	FBT07-5 at CH600 approximate	45 days	Thu 10-2-18	Sat 10-4-3
94	FBT07-6 at CH687 approximate	45 days	Sun 10-4-4	Tue 10-5-18
95	Ramp construction	120 days	Sat 09-9-26	Sat 10-1-23
96	At CH517 Approximate	60 days	Sat 09-9-26	Tue 09-11-24
97	Granular filling with geotextile filter	20 days	Sat 09-9-26	Thu 09-10-15
98	Concrete for the blinding layer	20 days	Thu 09-10-1	Tue 09-10-20
99	Base slab construction for the ramp	30 days	Tue 09-10-6	Wed 09-11-4
100	Wall construction for the ramp	45 days	Sun 09-10-11	Tue 09-11-24
101	At CH600 Approximate	60 days	Wed 09-11-25	Sat 10-1-23
102	Granular filling with geotextile filter	20 days	Wed 09-11-25	Mon 09-12-14
103	Concrete for the blinding layer	20 days	Mon 09-11-30	Sat 09-12-19
104	Base slab construction for the ramp	30 days	Sat 09-12-5	Sun 10-1-3
105	Wall construction for the ramp	45 days	Thu 09-12-10	Sat 10-1-23
106	Verge/footpath construction	140 days	Fri 09-10-16	Thu 10-3-4
107	Subase construction for the verges	120 days	Fri 09-10-16	Fri 10-2-12
108	Grassed cellular concrete/concrete paving	120 days	Mon 09-10-26	Mon 10-2-22
109	Type 2 railing construction	120 days	Thu 09-11-5	Thu 10-3-4
110	Retaining wall construction	50 days	Fri 09-10-16	Fri 09-12-4
111	At CH1687 Approximate	50 days	Fri 09-10-16	Fri 09-12-4
112	Type D L-shaped RW construction	30 days	Fri 09-10-16	Sat 09-11-14
113	Preforated pipe installation	10 days	Sun 09-11-15	Tue 09-11-24
114	Backfilling the RW	10 days	Wed 09-11-25	Fri 09-12-4
115	U Channel construction	120 days	Sat 09-12-5	Sat 10-4-3
116	375&525 UC at CH352 Approximate	40 days	Sat 09-12-5	Wed 10-1-13
117	Trench excavation	20 days	Sat 09-12-5	Thu 09-12-24
118	Concrete for the U channel	30 days	Tue 09-12-15	Wed 10-1-13
119	525UC at CH552 Approximate	40 days	Thu 10-1-14	Mon 10-2-22
120	Trench excavation	20 days	Thu 10-1-14	Tue 10-2-2
121	Concrete for the U channel	30 days	Sun 10-1-24	Mon 10-2-22
122	525&600 UC at CH690 Approximate	40 days	Tue 10-2-23	Sat 10-4-3
123	Trench excavation	20 days	Tue 10-2-23	Sun 10-3-14
124	Concrete for the U channel	30 days	Fri 10-3-5	Sat 10-4-3
125	Inlet Pipes	581 days	Sat 09-9-26	Fri 11-4-29
126	Inlet pipe at CH100 Approximate	25 days	Sat 09-9-26	Tue 09-10-20
127	Inlet pipe at CH400 Approximate	25 days	Wed 09-10-21	Sat 09-11-14
128	Inlet pipe at CH408 Approximate	25 days	Sun 09-11-15	Wed 09-12-9

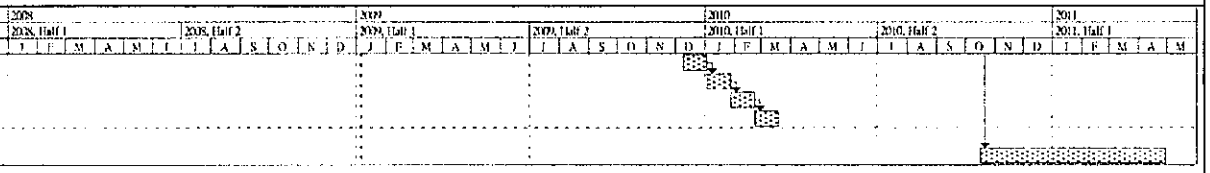


Project: Master Programme (Rev 05)
Date: 01/2009

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

CHIU HING CONSTRUCTION & TRANSPORTATION Co., Ltd
MASTER PROGRAMME 05 (Section 2 of works)
CONTRACT: DC/2007/8. DRAINAGE IMPROVEMENT WORKS at TAI PO TIN, PING CHE, MAN UK PIN AND LIN MA HANG

ID	Task Name	Duration	Start	Finish
129	Inlet pipe at CH450 Approximate	25 days	Thu 09-12-10	Sun 10-1-3
130	Inlet pipe at CH570 Approximate	25 days	Mon 10-1-4	Thu 10-1-28
131	Inlet pipe at CH630 Approximate	25 days	Fri 10-1-29	Mon 10-2-22
132	Inlet pipe at CH750 Approximate	25 days	Tue 10-2-23	Fri 10-3-19
133				
134	Section 5 of works for EKL07	105 days	Sun 10-10-17	Fri 11-4-29

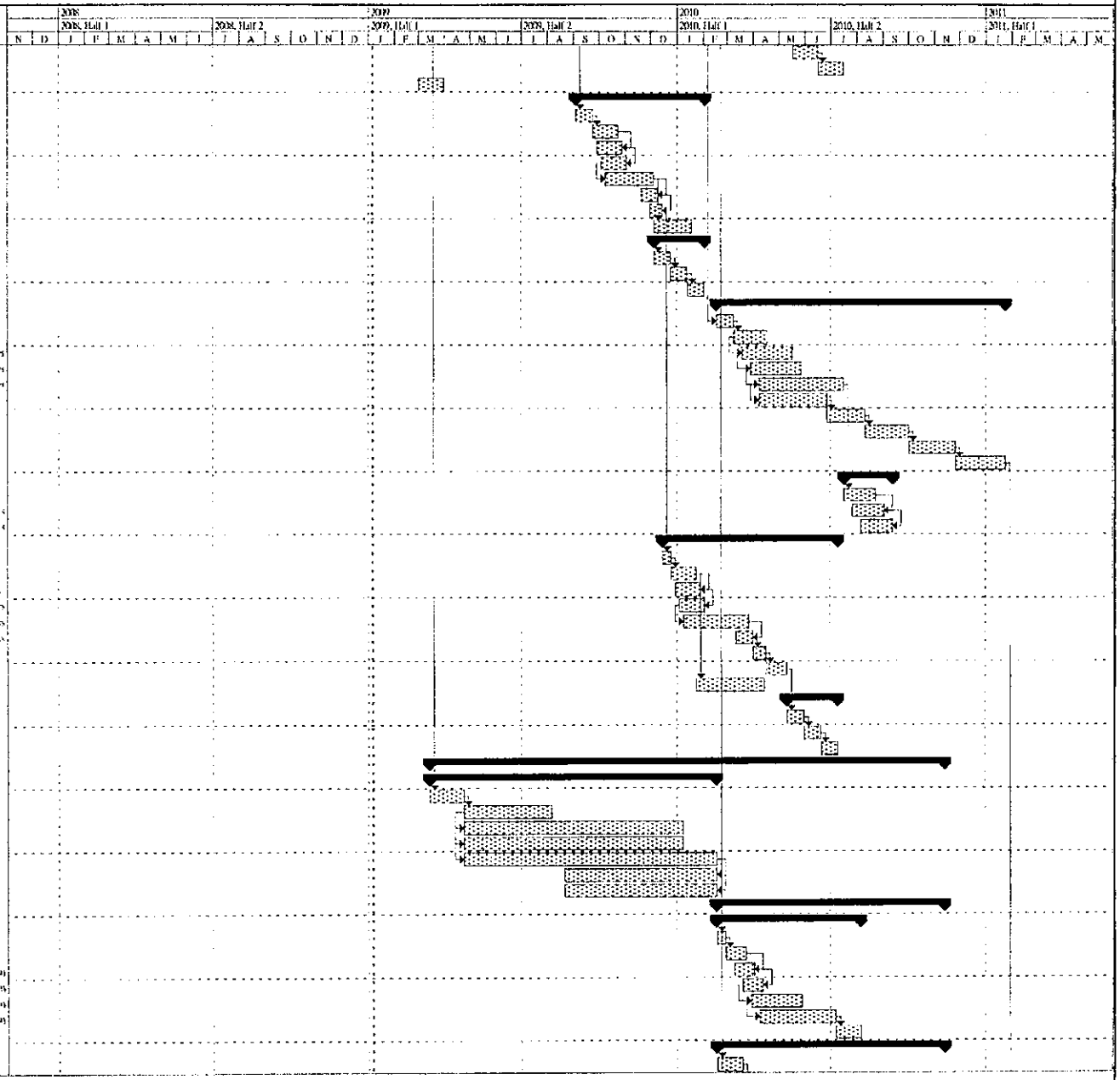


Project: Master Programme (Rev 05)
Date: 01/2009

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

CHIU HING CONSTRUCTION & TRANSPORTATION Co., Ltd
MASTER PROGRAMME 05 (Section 3 of works)
CONTRACT: DC/2007/8. DRAINAGE IMPROVEMENT WORKS at TAI PO TIN, PING CHE, MAN UK PIN AND LIN MA HANG

ID	Task Name	Duration	Start	Finish	Predecessors
66	600mm dia. pipe construction	30 days	Tue 10-5-18	Wed 10-6-16	65
67	900mm dia. pipe construction	30 days	Thu 10-6-17	Fri 10-7-16	66
68	H.C. at CH E+93	30 days	Mon 09-3-2	Tue 09-4-21	
69	River MUI03B (Portion D)	332 days	Fri 09-9-4	Tue 10-2-2	
70	Temporary Flow Diversion	20 days	Fri 09-9-4	Wed 09-9-23	53
71	Open cut excavation	30 days	Thu 09-9-24	Fri 09-10-23	70
72	Rock & granular filling for the base of gabion	30 days	Tue 09-9-29	Wed 09-10-28	71FF+5 days
73	Blinding layer for the gabion construction	30 days	Sun 09-10-4	Mon 09-11-2	72FF+5 days
74	Backfilling and gabion construction by layers	57 days	Fri 09-10-9	Thu 09-12-4	73SS+5 days
75	Gabion block construction in the middle of the river	20 days	Fri 09-11-20	Wed 09-12-9	74FF+5 days
76	200 Rip Rap filling	15 days	Mon 09-11-30	Mon 09-12-14	75FF+5 days
77	FBM03-1 footbridge at CH E+60 Approximate	45 days	Sat 09-12-5	Mon 10-1-18	74
78	Verge/footpath construction	60 days	Sat 09-12-5	Tue 10-2-2	
79	Subase construction for the verges	20 days	Sat 09-12-5	Thu 09-12-24	74
80	Grassed cellular concrete/concrete paving	20 days	Fri 09-12-25	Wed 10-1-13	79
81	Type 2 railing construction	20 days	Thu 10-1-14	Tue 10-2-2	80
82	River MUI05A (Portion D)	342 days	Wed 10-2-17	Mon 11-1-24	
83	Temporary Flow Diversion	20 days	Wed 10-2-17	Mon 10-3-8	64SS
84	Open cut excavation	81 days	Tue 10-3-23	Sat 10-6-12	83
85	Rock & granular filling for the base of gabion	60 days	Fri 10-3-19	Mon 10-5-17	83SS+10 days
86	Blinding layer for the gabion construction	60 days	Mon 10-3-29	Thu 10-5-27	85SS+10 days
87	Backfilling and gabion construction by layers	100 days	Thu 10-4-8	Fri 10-7-16	86SS+10 days
88	Gabion block construction in the middle of the river	80 days	Thu 10-4-8	Sat 10-6-26	87SS
89	300 Rip Rap filling	15 days	Sun 10-6-27	Tue 10-7-13	88
90	VBM01-2 vehicular bridge at CH D+11 Approximate	52 days	Wed 10-8-11	Fri 10-10-1	89
91	VBM01-1 vehicular bridge at CH D+48 Approximate	55 days	Sat 10-10-2	Thu 10-11-25	90
92	Construct 4X1650mm dia. pipes at CH D+185 Approximate	60 days	Fri 10-11-26	Mon 11-1-24	91
93	Verge/footpath construction	58 days	Sat 10-7-17	Sun 10-9-12	
94	Subase construction for the verges	58 days	Sat 10-7-17	Mon 10-8-23	87
95	Grassed cellular concrete/concrete pavers	38 days	Tue 10-7-27	Thu 10-9-2	94FF+10 days
96	Type 2 railing construction	38 days	Fri 10-8-6	Sun 10-9-12	95FF+10 days
97	River MUI03B (Portion D)	207 days	Tue 09-12-15	Fri 10-7-9	
98	Temporary Flow Diversion	10 days	Tue 09-12-15	Thu 09-12-24	76
99	Open cut excavation	40 days	Fri 09-12-25	Sat 10-1-23	98
100	Rock & granular filling for the base of gabion	30 days	Wed 09-12-30	Thu 10-1-28	99SS+5 days
101	Blinding layer for the gabion construction	30 days	Mon 10-1-4	Tue 10-2-2	100FF+5 days
102	Backfilling and gabion construction by layers	77 days	Sat 10-1-9	Fri 10-3-26	101SS+5 days
103	Gabion block construction in the middle of the river	20 days	Fri 10-3-12	Wed 10-3-31	102FF+5 days
104	300 Rip Rap filling	15 days	Thu 10-4-1	Thu 10-4-15	103
105	Construct 1350mm dia. pipes	35 days	Fri 10-4-16	Mon 10-5-10	104
106	Manhole MH1 to MH7 construction	50 days	Sun 10-1-31	Tue 10-3-23	90
107	Verge/footpath construction	60 days	Tue 10-5-11	Fri 10-7-9	
108	Subase construction for the verges	20 days	Tue 10-5-11	Sun 10-5-30	105
109	Grassed cellular concrete/concrete pavers	20 days	Mon 10-5-31	Sat 10-6-19	108
110	Type 2 railing construction	20 days	Sun 10-6-20	Fri 10-7-9	109
111	River MUI05 (Portion D)	610 days	Sat 09-3-14	Sat 10-11-13	
112	Main River Construction (CH C+0.00 to C+914 approxima	340 days	Sat 09-3-14	Tue 10-2-16	
113	Temporary flow diversion	40 days	Sat 09-3-14	Wed 09-4-22	9
114	Open cut excavation	105 days	Thu 09-4-23	Wed 09-8-5	113
115	Rock & granular filling for the base of gabion	260 days	Thu 09-4-23	Thu 10-1-7	114SS
116	Blinding layer for the gabion construction	260 days	Thu 09-4-23	Thu 10-1-7	115SS
117	Backfilling and gabion construction by layers	300 days	Thu 09-4-23	Tue 10-2-16	116SS
118	Granular Filling for the river	180 days	Fri 09-8-21	Tue 10-2-16	117FF
119	Grassed cellular concrete paving	180 days	Fri 09-8-21	Tue 10-2-16	118FF
120	River associated Works	220 days	Wed 10-2-17	Sat 10-11-13	
121	Box culvert construction at CH C+190 approximate	130 days	Wed 10-2-17	Thu 10-8-5	
122	Temporary flow diversion	10 days	Wed 10-2-17	Fri 10-2-26	117
123	Open cut excavation	24 days	Sat 10-3-27	Mon 10-4-26	122
124	Granular filling with geotextile filter	24 days	Tue 10-3-9	Thu 10-4-1	123FF+10 days
125	Concrete for blinding layer	24 days	Fri 10-3-19	Sun 10-4-11	124FF+10 days
126	Base slab construction	60 days	Mon 10-3-29	Thu 10-5-27	125SS+10 days
127	Wall & Top Slab construction	90 days	Thu 10-4-8	Tue 10-7-6	126SS+10 days
128	Backfilling	30 days	Wed 10-7-7	Thu 10-8-5	127
129	Footbridge/Vehicular Bridge Construction	270 days	Wed 10-2-17	Sat 10-11-13	
130	VBM05-1st CH C+20 approximate	30 days	Wed 10-2-17	Thu 10-3-18	117

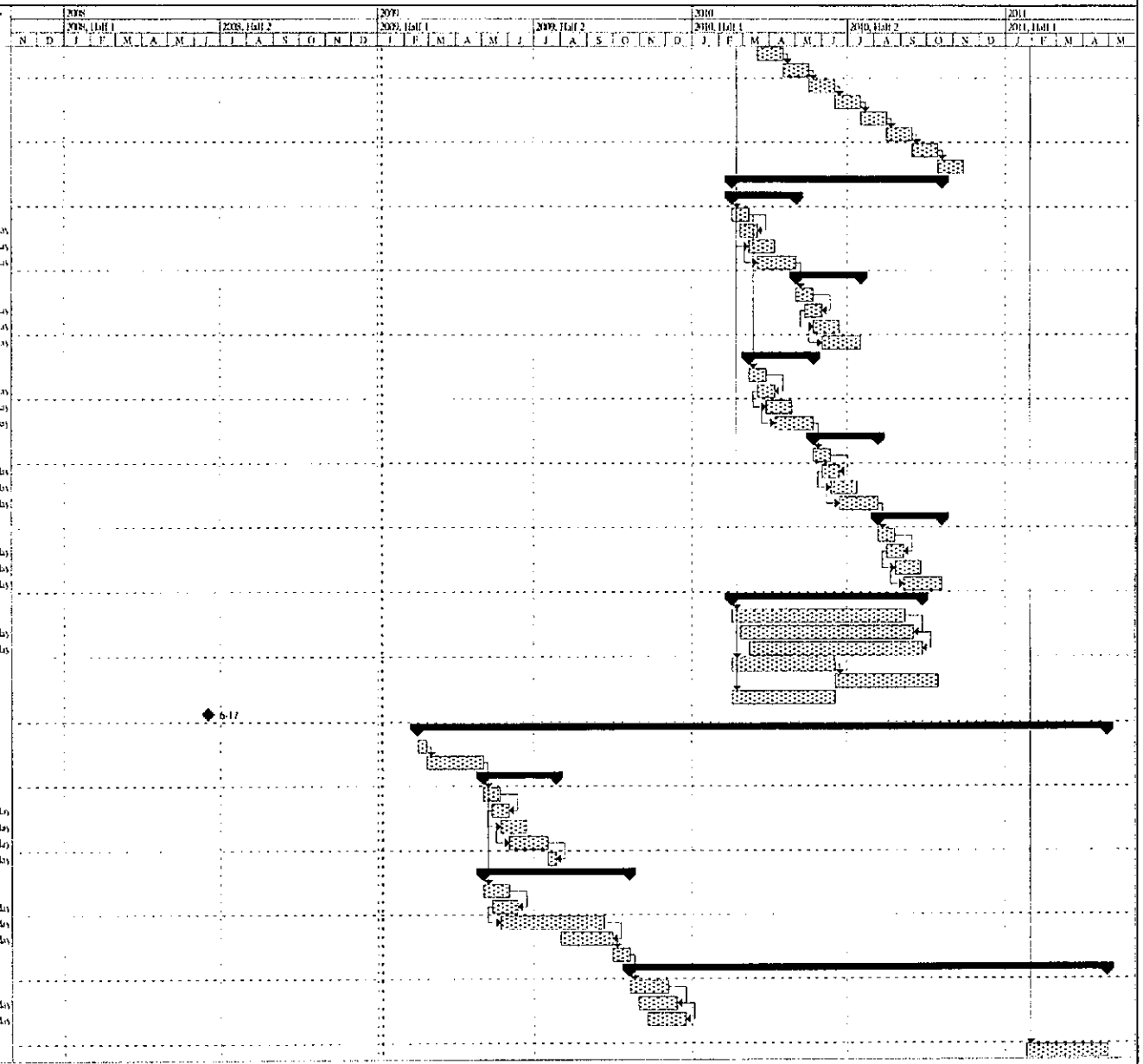


Project: Master Programme (Rev.05)
Date: 01/2009

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

CHIU HING CONSTRUCTION & TRANSPORTATION Co., Ltd
MASTER PROGRAMME 05 (Section 3 of works)
CONTRACT: DC/2007/8. DRAINAGE IMPROVEMENT WORKS at TAI PO TIN, PING CHE, MAN UK PIN AND LIN MA HANG

ID	Task Name	Duration	Start	Finish	Predecessors
131	FBM05-1at CH C+139 approximate	20 days	Fri 10-3-19	Sat 10-4-17	130
132	VBM05-2 at CH C+190 approximate	20 days	Sun 10-4-18	Mon 10-5-17	131
133	VBM05-1 at CH C+261 approximate	30 days	Tue 10-5-18	Wed 10-6-16	132
134	VBM05-1 at CH C+398 approximate	30 days	Thu 10-6-17	Fri 10-7-16	133
135	FBM05-2 at CH C+561 approximate	30 days	Sat 10-7-17	Sun 10-8-15	134
136	FBM05-1at CH C+661 approximate	30 days	Mon 10-8-16	Tue 10-9-14	135
137	FBM05-1at CH C+893 approximate	30 days	Wed 10-9-15	Thu 10-10-14	136
138	FBM05-5 at CH C+942 approximate	30 days	Fri 10-10-15	Sat 10-11-13	137
139	Ramp construction	245 days	Wed 10-2-17	Tue 10-10-19	
140	At CH C+398 Approximate	75 days	Wed 10-2-17	Sun 10-5-2	
141	Granular filling with geotextile filter	30 days	Wed 10-2-17	Mon 10-3-8	117
142	Concrete for the blinding layer	20 days	Sat 10-2-27	Thu 10-3-18	141FF+10 days
143	Base slab construction for the ramp	30 days	Tue 10-3-9	Wed 10-4-7	142SS+10 days
144	Wall construction for the ramp	15 days	Fri 10-3-19	Sun 10-5-2	143SS+10 days
145	At CH C+561 Approximate	75 days	Mon 10-5-3	Fri 10-7-16	
146	Granular filling with geotextile filter	30 days	Mon 10-5-3	Sat 10-5-22	144
147	Concrete for the blinding layer	20 days	Thu 10-6-13	Tue 10-6-3	146FF+10 days
148	Base slab construction for the ramp	30 days	Sun 10-5-23	Mon 10-6-21	147SS+10 days
149	Wall construction for the ramp	45 days	Wed 10-6-2	Fri 10-7-16	148SS+10 days
150	At CH C + 361 Approximate	75 days	Tue 10-3-9	Sat 10-5-22	
151	Granular filling with geotextile filter	30 days	Tue 10-3-9	Sun 10-3-28	141
152	Concrete for the blinding layer	20 days	Fri 10-3-19	Wed 10-4-7	151FF+10 days
153	Base slab construction for the ramp	30 days	Mon 10-3-29	Tue 10-4-27	152SS+10 days
154	Wall construction for the ramp	45 days	Thu 10-4-8	Sat 10-5-22	153SS+10 days
155	At CH C + 894 Approximate	75 days	Sun 10-5-23	Thu 10-8-5	
156	Granular filling with geotextile filter	20 days	Sun 10-5-23	Fri 10-6-11	154
157	Concrete for the blinding layer	20 days	Wed 10-6-2	Mon 10-6-21	156FF+10 days
158	Base slab construction for the ramp	30 days	Sat 10-6-12	Sun 10-7-11	157SS+10 days
159	Wall construction for the ramp	45 days	Tue 10-6-22	Thu 10-8-5	158SS+10 days
160	At CH C + 942 Approximate	75 days	Fri 10-8-6	Tue 10-10-19	
161	Granular filling with geotextile filter	20 days	Fri 10-8-6	Wed 10-8-25	159
162	Concrete for the blinding layer	20 days	Mon 10-8-16	Sat 10-9-4	161FF+10 days
163	Base slab construction for the ramp	30 days	Thu 10-8-26	Fri 10-9-24	162SS+10 days
164	Wall construction for the ramp	45 days	Sun 10-9-5	Tue 10-10-19	163SS+10 days
165	Verge/footpath construction	222 days	Wed 10-2-17	Sun 10-9-26	
166	Subase construction for the verges	202 days	Wed 10-2-17	Mon 10-9-6	117
167	Grassed cellular concrete/concrete paving	202 days	Sat 10-2-27	Thu 10-9-16	166FF+10 days
168	Type 2 railing construction	202 days	Tue 10-3-9	Sun 10-9-26	167FF+10 days
169	Retaining wall construction	120 days	Wed 10-2-17	Wed 10-6-16	117
170	U Channel construction	120 days	Thu 10-6-17	Thu 10-10-14	169
171	Inlet Pipes	120 days	Wed 10-2-17	Wed 10-6-16	117
172	Handover of Portion E	0 days	Tue 04-6-17	Tue 04-6-17	
173	River MI05/05 (Portion E)	803 days	Mon 09-2-16	Fri 11-4-29	
174	Temporary flow diversion	10 days	Mon 09-2-16	Wed 09-2-25	
175	Open cut excavation	66 days	Thu 09-2-26	Sat 09-5-2	174
176	Retangular Channel	85 days	Sun 09-5-3	Sun 09-7-26	
177	Rock & granular filling for the base of gabion	20 days	Sun 09-5-3	Fri 09-5-22	175
178	Blinding layer for the gabion construction	20 days	Wed 09-5-13	Mon 09-6-1	177FF+10 days
179	Base slab construction	30 days	Sat 09-5-23	Sun 09-6-21	178SS+10 days
180	Wall construction	45 days	Tue 09-6-2	Thu 09-7-16	179SS+10 days
181	Granular filling inside the channel	10 days	Fri 09-7-17	Sun 09-7-26	180FF+10 days
182	Gabion Construction	170 days	Sun 09-5-3	Mon 09-10-19	
183	Rock & granular filling for the base of gabion	30 days	Sun 09-5-3	Mon 09-6-1	175
184	Blinding Layer for the gabion construction	30 days	Wed 09-5-13	Thu 09-6-11	183FF+10 days
185	Backfilling and gabion construction by layers	120 days	Sat 09-5-23	Sat 09-9-19	184SS+10 days
186	Gabion block construction in the middle of the river	60 days	Sat 09-8-1	Tue 09-9-29	185FF+10 days
187	200 Rip Rap filling	30 days	Wed 09-9-30	Mon 09-10-19	186
188	Verge/footpath construction	557 days	Tue 09-10-20	Fri 11-4-29	
189	Subase construction for the verges	15 days	Tue 09-10-20	Thu 09-12-3	187
190	Grassed cellular concrete/concrete paving	15 days	Fri 09-10-30	Sun 09-12-13	189SS+10 days
191	Type 2 railing construction	15 days	Mon 09-11-9	Wed 09-12-23	190FS+10 days
192					
193	the Remaining section 5 of works of MUP	90 days	Tue 11-1-25	Fri 11-4-29	92

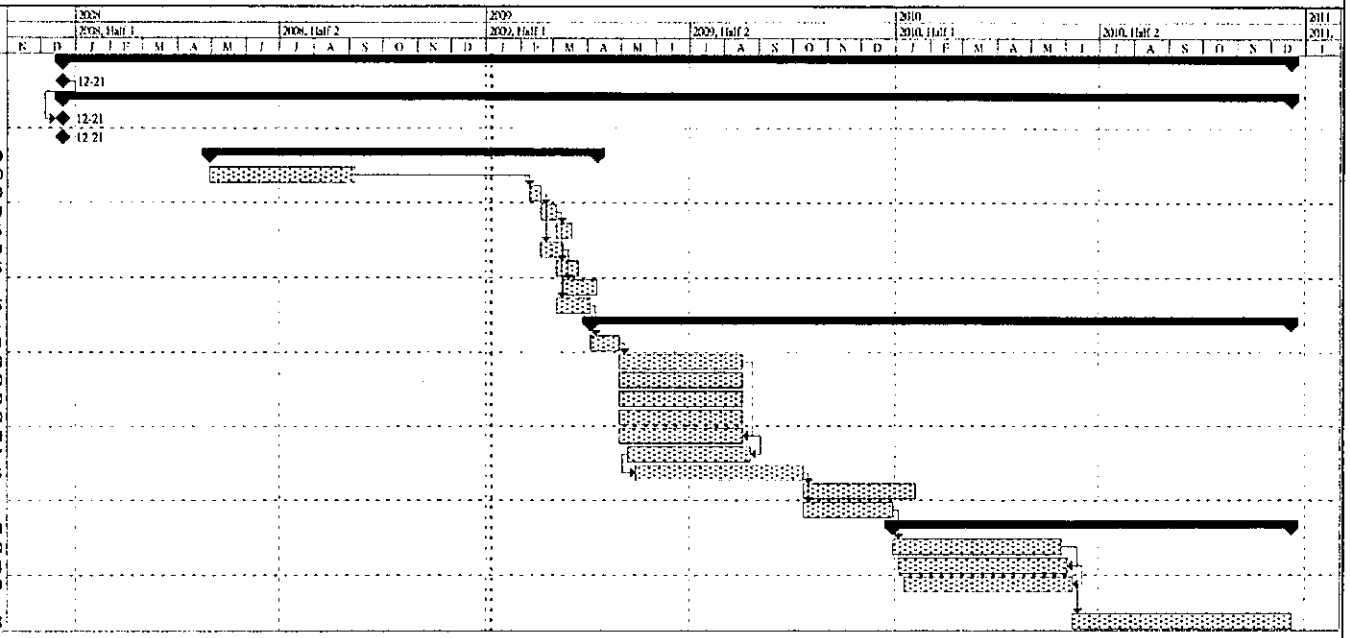


Project: Master Programme (Rev.05)
Date: 01/2009

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

CHIU HING CONSTRUCTION & TRANSPORTATION Co., Ltd
MASTER PROGRAMME 05 (Section 4 of works)
CONTRACT: DC/2007/8. DRAINAGE IMPROVEMENT WORKS at TAI PO TIN, PING CHE, MAN UK PIN AND LIN MA HANG

ID	Task Name	Duration	Start
1	CONTRACT: DC/2007/08 (The Woks)	1095 days	Fri 07-12-21
2	Handover of Portion A	0 days	Fri 07-12-21
3	Section 4 & 5 of works - Lin Man Hang (Portion F)	1095 days	Fri 07-12-21
4	Commencement Date	0 days	Fri 07-12-21
5	Handover of Portion F	0 days	Fri 07-12-21
6	Prelim Works	345 days	Wed 08-4-30
7	Baseline Monitoring	130 days	Wed 08-4-30
8	Mobilisation	10 days	Mon 09-2-9
9	Site clearance	14 days	Thu 09-2-19
10	Initial site survey	14 days	Thu 09-3-5
11	Tree survey	20 days	Thu 09-2-19
12	Construct Access Road	20 days	Thu 09-3-5
13	Remove and Transplant the trees	30 days	Wed 09-3-11
14	Underground Utility Survey	30 days	Thu 09-3-5
15	River LMH01	625 days	Sat 09-4-4
16	Temporary flow diversion	26 days	Sat 09-4-4
17	Open excavation and construction for CH P+0 to CH P+35.	110 days	Thu 09-4-30
18	Open excavation and construction for CH 0+0 to CH 0+35.	110 days	Thu 09-4-30
19	Open excavation and construction for CH R+0 to CH R+35	110 days	Thu 09-4-30
20	Open excavation and construction for CH T+0 to CH T+35	110 days	Thu 09-4-30
21	Rock & ganular filling for the base of gabion	110 days	Thu 09-4-30
22	Blinding layer for the gabion construction	110 days	Thu 09-5-7
23	Backfilling and gabion constrution by layers	150 days	Thu 09-5-14
24	Ganular Filling for the river	100 days	Sun 09-10-11
25	Rip Rap lining to stabilise the river	80 days	Sun 09-10-11
26	Verge/footpath construction	355 days	Wed 09-12-30
27	Subase construction for the verges	150 days	Wed 09-12-30
28	Gassed cellular concrete/concrete paving	150 days	Mon 10-1-4
29	Type 2 milling	150 days	Sat 10-1-9
30			
31	Section 5 of works for Lin Ma Hang	195 days	Tue 10-6-8



Project: Master Programme (Rev 05)
Date: 01/2009

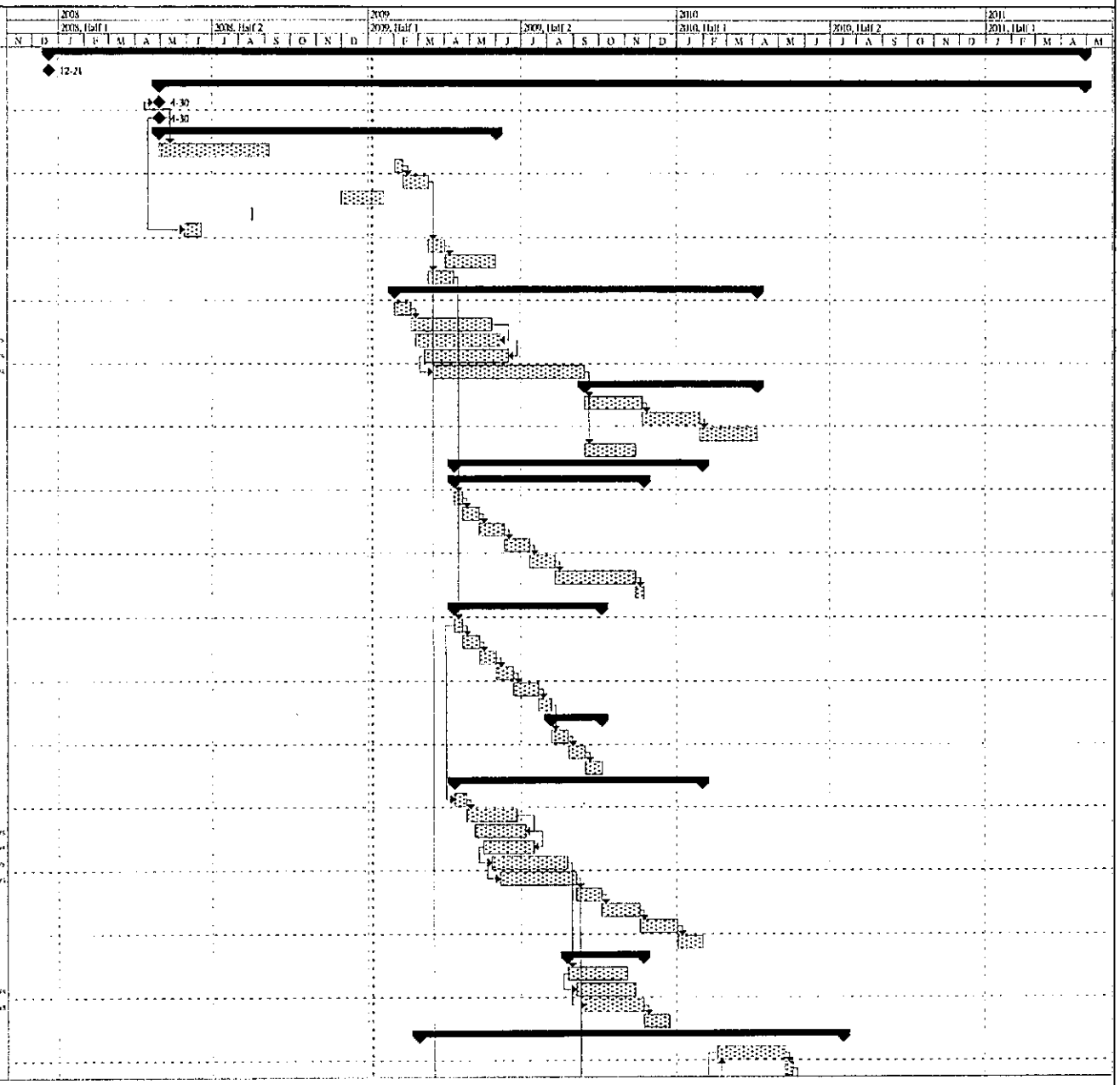
Task | Progress | Summary | Rolled Up Critical Task | Rolled Up Progress | External Tasks | Group By Summary
Critical Task | Milestone | Rolled Up Task | Rolled Up Milestone | Split | Project Summary | Deadline

CHIU HING CONSTRUCTION & TRANSPORTATION Co., Ltd

MASTER PROGRAMME 05 (Section 3 of works)

CONTRACT: DC/2007/8. DRAINAGE IMPROVEMENT WORKS at TAI PO TIN, PING CHE, MAN UK PIN AND LIN MA HANG

ID	Task Name	Duration	Start	Finish	Predecessors
1	CONTRACT. DC/2007/08 (The Whole)	1226 days	Fri 07-12-21	Fri 11-4-29	
2	Handover of Portion A	0 days	Fri 07-12-21	Fri 07-12-21	
3	Section 3 - Man Uk Pin (Portion D & E)	1095 days	Wed 08-4-30	Fri 11-4-29	
4	Commencement Date	0 days	Wed 08-4-30	Wed 08-4-30	5
5	Handover of Portion D	0 days	Wed 08-4-30	Wed 08-4-30	
6	Prelim Works	398 days	Wed 08-4-30	Mon 09-6-1	
7	Baseline Monitoring	130 days	Wed 08-4-30	Sat 08-9-6	5
8	Mobilization	10 days	Mon 09-2-2	Wed 09-2-11	
9	Site clearance	30 days	Thu 09-2-12	Fri 09-3-13	8
10	Initial site survey	50 days	Mon 08-12-1	Mon 09-1-19	
11	Application of XP	1 day	Sun 08-8-17	Sun 08-8-17	
12	Tree survey	30 days	Fri 08-5-30	Wed 08-6-18	8SS+30 days
13	Construct Access Road	30 days	Sat 09-3-14	Thu 09-4-2	9
14	Removal and Transplanting of trees	60 days	Fri 09-4-3	Mon 09-6-1	13
15	Underground Utility Survey	30 days	Sat 09-3-14	Sun 09-4-12	9
16	River MUP01 (Portion D)	429 days	Mon 09-2-2	Tue 10-4-6	
17	Temporary Flow Diversion	20 days	Mon 09-2-2	Sat 09-2-21	
18	Open cut excavation	95 days	Sun 09-2-22	Wed 09-5-27	17
19	Rock & gandar filling for the base of gabion	103 days	Fri 09-2-27	Sat 09-6-6	18FF+10 days
20	Blinding layer for the gabion construction	103 days	Mon 09-3-9	Tue 09-6-16	19FF+10 days
21	Backfilling and gabion construction by layers	189 days	Thu 09-3-19	Mon 09-9-14	20SS+10 days
22	Verge/Footpath construction	204 days	Tue 09-9-15	Tue 10-4-6	
23	Subase construction for the verges	68 days	Tue 09-9-15	Sat 09-11-21	21
24	Closed cellular concrete/concrete paving	68 days	Sun 09-11-22	Thu 10-1-28	23
25	Type 2 railing construction	68 days	Fri 10-1-29	Tue 10-4-6	24
26	300UC construction	60 days	Tue 09-9-15	Fri 09-11-13	21
27	River MUP02 (Portion D)	294 days	Mon 09-4-13	Sun 10-1-31	
28	Stabilise existing river bank	225 days	Mon 09-4-13	Mon 09-11-23	
29	Temporary flow diversion	10 days	Mon 09-4-13	Wed 09-4-22	15
30	Sheet pile installation	20 days	Thu 09-4-23	Tue 09-5-12	29
31	Excavate & erect shoring support	30 days	Wed 09-5-13	Thu 09-6-11	30
32	Rock & gandar filling for the base of gabion	30 days	Fri 09-6-12	Sat 09-7-11	31
33	Blinding layer for the gabion construction	30 days	Sun 09-7-12	Mon 09-8-10	32
34	Backfilling and gabion construction by layers	95 days	Tue 09-8-11	Fri 09-11-13	33
35	Removal of the sheet piles	10 days	Sat 09-11-14	Mon 09-11-23	34
36	MUP02 Bypass	175 days	Mon 09-4-13	Sun 09-10-4	
37	Temporary Flow Diversion	10 days	Mon 09-4-13	Wed 09-4-22	15
38	Open cut excavation	20 days	Thu 09-4-23	Tue 09-5-12	37
39	Rock & gandar filling for the base of gabion	20 days	Wed 09-5-13	Mon 09-6-1	38
40	Blinding layer for the gabion construction	20 days	Tue 09-6-2	Sun 09-6-21	39
41	Backfilling and gabion construction by layers	30 days	Mon 09-6-22	Tue 09-7-21	40
42	Filling of Rip Rap	15 days	Wed 09-7-22	Wed 09-8-5	41
43	Verge/Footpath construction	60 days	Thu 09-8-6	Sun 09-10-4	
44	Subase construction for the verges	20 days	Thu 09-8-6	Tue 09-8-25	42
45	Closed cellular concrete/concrete paving	20 days	Wed 09-8-26	Mon 09-9-14	44
46	Type 2 railing construction	20 days	Tue 09-9-15	Sun 09-10-4	45
47	Main River of MUP02	291 days	Mon 09-4-13	Sun 10-1-31	
48	Temporary Flow Diversion	14 days	Mon 09-4-13	Sun 09-4-26	37SS
49	Open cut excavation	60 days	Mon 09-4-27	Thu 09-6-25	48
50	Rock & gandar filling for the base of gabion	60 days	Thu 09-5-7	Sun 09-7-5	19FF+10 days
51	Blinding layer for the gabion construction	60 days	Sun 09-5-17	Wed 09-7-15	50FF+10 days
52	Backfilling and gabion construction by layers	90 days	Wed 09-5-27	Mon 09-8-24	51SS+10 days
53	Gabion block construction in the middle of the river	90 days	Sat 09-6-6	Thu 09-9-3	52SS+10 days
54	300 Rip Rap filling	30 days	Fri 09-9-4	Sat 09-10-3	53
55	FBM02-1 footbridge at CH 8+455 Approximate	15 days	Sun 09-10-4	Tue 09-11-17	54
56	FBM02-2 footbridge at CH 8+820 Approximate	45 days	Wed 09-11-18	Fri 10-1-1	55
57	RW type D at CH8+525 Approximate	30 days	Sat 10-1-2	Sun 10-1-31	56
58	Verge/Footpath construction	90 days	Tue 09-8-25	Sun 09-11-22	
59	Subase construction for the verges	70 days	Tue 09-8-25	Mon 09-11-2	52
60	Closed cellular concrete/concrete paving	20 days	Fri 09-9-4	Thu 09-11-12	59SS+10 days
61	Type 2 railing construction	30 days	Mon 09-9-14	Sun 09-11-22	60SS+10 days
62	300 &375 UC at CH8+800 Approximate	30 days	Mon 09-11-23	Tue 09-12-22	61
63	River MUP03A (Portion D)	502 days	Mon 09-3-2	Fri 10-7-16	
64	600UC construction	30 days	Wed 10-2-17	Fri 10-3-19	117
65	Manholes construction	10 days	Sat 10-5-8	Mon 10-5-17	64



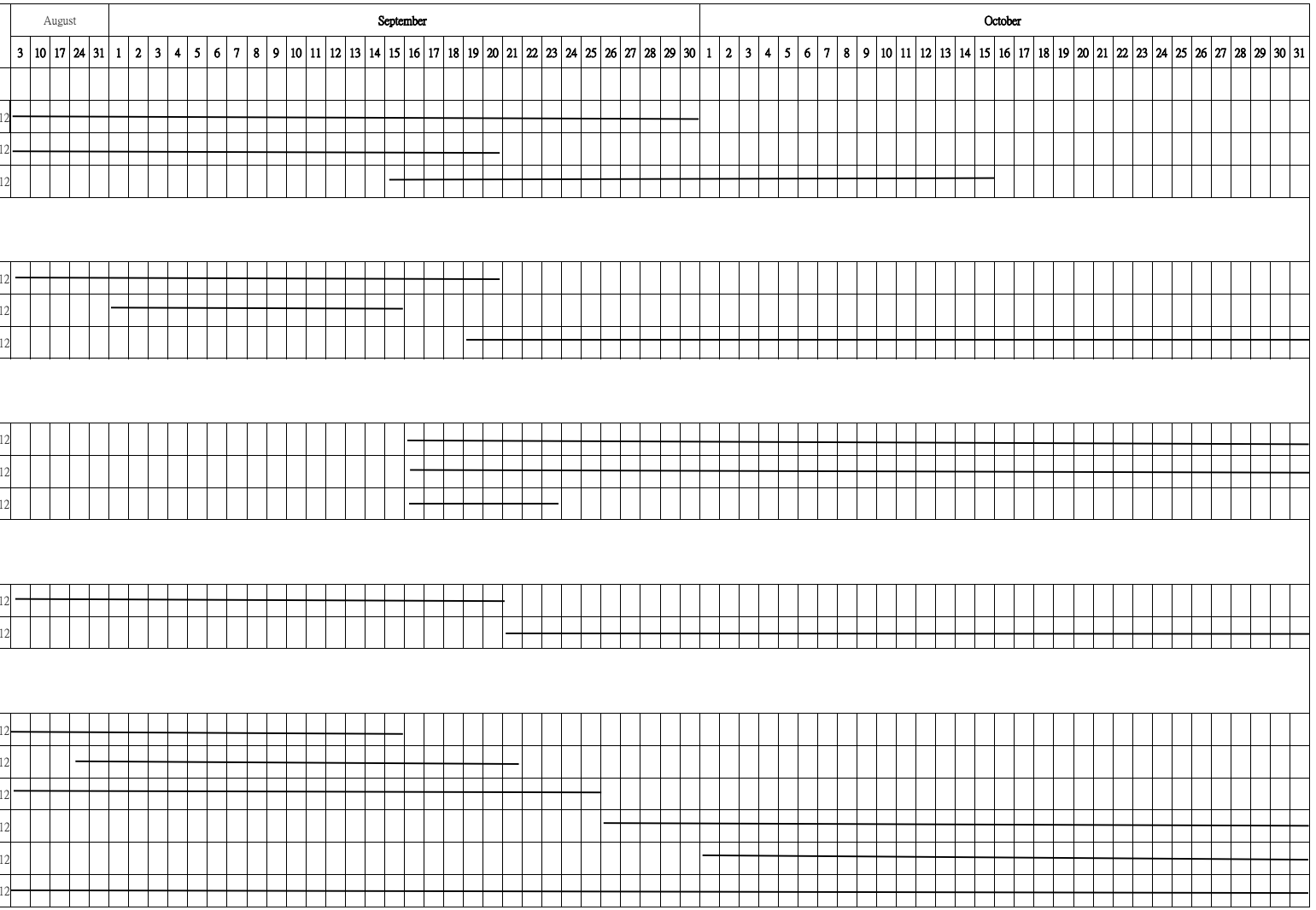
Project: Master Programme (Rev.06)
Date: 01/2009

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

Future Construction Program

Three month rolling programme at Man Uk Pin (MUP)

Item	Description	Duration	Start	finish
	MUP01			
1	Footpath (1.6m concrete paving)	61	1/8/2012	30/9/2012
2	Surface Channel	51	1/8/2012	20/9/2012
3	Chain-link fence & railing	31	15/9/2012	15/10/2012
	MUP02			
1	Footpath (1.0m grassed paving)	51	1/8/2012	20/9/2012
2	Surface Channel	15	1/9/2012	15/9/2012
3	Chain-link fence & railing	43	19/9/2012	31/10/2012
	MUP03			
1	Chain-link fence & railing	47	15/9/2012	31/10/2012
2	Type 2 railing	47	15/9/2012	31/10/2012
3	Vehicular parapet	9	15/9/2012	23/9/2012
MUP04				
1	Drainage works	51	1/8/2012	20/9/2012
2	Type 2 railing	41	21/9/2012	31/10/2012
MUP05				
1	Footpath (1.0m grassed paving)	46	1/8/2012	15/9/2012
2	Surface channel	30	24/8/2012	22/9/2012
3	Footpath (1.6m Concrete paving)	56	1/8/2012	25/9/2012
4	Chain-link fence & Fence	36	26/9/2012	31/10/2012
5	Tree planting & hydroseeding	31	1/10/2012	31/10/2012
6	Site Clearance	90	1/8/2012	31/10/2012



Environmental Mitigation Implementation Schedule

APPENDIX A
IMPLEMENTATION SCHEDULE OF THE PROPOSED MITIGATION MEASURES

Table A1 Implementation Schedule of Air Quality Mitigation Measures

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
Air Quality - Construction Phase									
3.6.1	2.9.2	*Construction Dust* In order to comply with Air Pollution Control Ordinance (APCO), the Contractor should undertake at all times measures to prevent dust nuisance as a results of his activities. The Contractors are required to follow all the requirements for dust control stipulated in the Air Pollution Control (Construction Dust) Regulation. Dust suppression measures should be installed as part of good construction practice, and they should be incorporated in the Contract Specification and implemented to minimize dust nuisance to within acceptable levels arising from the works. The followings are examples of the dust suppression measures. (i) The area in which excavation takes place shall be sprayed with water immediately prior to, during and immediately after the excavation to minimise dust generation. (ii) The Contractor shall frequently clean and water the site to minimize fugitive dust emissions.	To prevent dust nuisance on ASRs during construction	All works site / during construction	Construction Contractor		√		Air Pollution Control Ordinance Air Pollution Control (Construction Dust) Regulation

D = Design, C = Construction, O = Operation

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		(iii) Effective water sprays shall be used during the delivery and handling of aggregate, and other similar materials, when dust is likely to be created and to dampen all stored materials during dry and windy weather. (iv) Watering of exposed surfaces shall be conducted at least 2 times per day especially during dry and windy weather. (v) Areas within the site where there is a regular movement of vehicles must be regularly watered as often as necessary for effective suppression of dust or as often as directed by the Engineer. (vi) Where dusty material are being discharged to vehicle from a conveying system at a fixed transfer point, a three-sided roofed enclosure with a flexible curtain across the entry shall be provided. Exhaust fans shall be provided for this enclosure and vented to a suitable fabric filter system. (vii) The Contractor shall restrict all motorised vehicles within the site, excluding those on public roads, to a maximum speed of 15 km per hour and confine haulage and delivery vehicles to designated roadways inside the site. (viii) Wheel washing facilities shall be installed and used by all vehicles leaving the site. No earth, mud, debris, dust and the like shall be deposited on public roads. Water in the wheel cleaning							

D = Design, C = Construction, O = Operation

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		facility shall be changed at frequent intervals and sediments shall be removed regularly. The Contractor shall submit details of proposals for the wheel cleaning facility. Such wheel washing facilities shall be usable prior to any earthworks excavating activity on the site. The Contractor shall also provide a hard-surfaced road between any washing facility and the public road. (ix) All vehicle exhausts should be directly vertically upwards or directed away from the ground. (x) Any materials dropped on paved roads will need to be cleaned up immediately to prevent dust nuisance.							
3.6.2	2.9.3	*Odour* In the event that excavated materials are found to be odourous, the following measures should be implemented by the Contractor. (i) Place odorous excavated material as far away (say, at least 20m) from air sensitive receivers as possible. (ii) Temporary stockpiles of odorous excavated material should be properly covered with tarpaulin and should be removed off-site as soon as practically possible within 24 hours to	To prevent odour nuisance on ASRs during construction	All works site / during construction	Construction Contractor		√		Air Pollution Control Ordinance Environmental Impact Assessment Ordinance

D = Design, C = Construction, O = Operation

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		avoid any odour nuisance arising.							
Air Quality - Operational Phase									
		N/A							

Table A2 Implementation Schedule of Noise Mitigation Measures

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
Noise - Construction Phase									
4.6.2 – 4.6.5	Table 3.4	*Level 1 Mitigation – Use of Quiet Plant* The use of quiet plant is considered to be the most effective ways of alleviating construction noise impact. The Contractor should use quiet plant with sound power level lower than that stipulated in the TM-GW as the Level 1 mitigation for construction noise. The quiet plant used in the construction noise calculation is shown in Appendix B. The Contractor can propose other suitable alternative equipment with similar or lower sound power level. The use of mini or lower power rating equipment (e.g. mini excavator) should also be considered where practical. This technique would be feasible and practical at some locations given the limited space available for using large size construction equipment and the small scale works involved (e.g. localised bank improvement at LMH01, U-channel and drainage pipes at MUP03 & 04B). The contractor should take note of ETWB TCW No. 19/2005 on the use of QPME.	To protect NSRs from noise during construction	All works site / during construction	Construction Contractor		√		Environmental Impact Assessment Ordinance ETWB TCW No. 19/2005

D = Design, C = Construction, O = Operation

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
4.6.7 – 4.6.8	Table 3.4	*Level 2 Mitigation - Use of Temporary Noise Barriers* Since most of the NSRs within the Project area are typically low-rise village houses of not more than 3 storeys tall, it would be effective to have noise screening structures or temporary noise barriers purposely-built along the site boundary to provide additional protection to NSRs close to the construction site boundary. This could be in the form of purposely-built site hoarding constructed from appropriate materials with a minimum superficial density of 7 kg/m^2. Noise barrier should be provided for noisy construction activities that would be undertaken close (about 25m or less) to NSRs. With the exception of NSRs MUP04A-2 and MUP05-6, the noise barrier should have a vertical height of at least 2.5 m or (depending on the height of the NSRs to be protected) a height ensuring that the operating equipment can be shielded from the view of the NSRs. For NSR MUP04A-2, the temporary noise barrier should have a minimum height of 3.5m with a small cantilevered upper portion. For MUP05-6, the temporary noise barrier should have a minimum height of 3m with a small cantilevered upper portion. The temporary noise barrier should have no gaps or opening at joints. The Contractor should regularly inspect and maintain the noise	To protect NSRs from noise during construction	All works site located at 25m or less from NSRs as shown in Figures 4.4 – 4.6 / during construction	Construction Contractor		√		Environmental Impact Assessment Ordinance

D = Design, C = Construction, O = Operation

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		barrier to ensure its effectiveness. For the construction works which have the potential to exceed the noise standards on nearby NSR and whose line of sight cannot be effectively blocked by the temporary noise barrier, movable (mobile) barriers should be provided. Movable barriers of at least 2.5 m height with a small cantilevered upper portion and skid footing can be located within a few meters of stationary plant (e.g. generator, compressor) and within about 5 m or more of a mobile equipment (e.g. excavator, mobile crane), such that the line of sight to the NSR is blocked by the barriers.							
4.6.11	Table 3.4	*Good Site Practices* In general, potential construction noise impact can be minimised or avoided by imposing a combination of the following good site practices as mitigation measures: (a) Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction period. (b) Construction plant should be sited away from NSRs.	To protect NSRs from noise during construction	All works site / during construction	Construction Contractor		√		Environmental Impact Assessment Ordinance

D = Design, C = Construction, O = Operation

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		(c) Machines and plant that may be in intermittent use should be shut down between works periods or should be throttled down to a minimum. (d) Equipment known to emit sound strongly in one direction should be orientated such that the noise is directed away from nearby NSRs. (e) Material stockpiles and other structures (such as site offices) should be effectively utilised to shield on-site construction activities. (f) Stationary equipment should be located within the channel when weather conditions permit (e.g. dry season). (g) The Contractor shall devise, arrange methods of working and carrying out the works in such manner as to minimise noise impacts on the surrounding environment, and shall provide experienced personnel with suitable training to ensure that these measures are implemented properly. (h) In the event that new schools are built near the works area, the Contractor should minimize construction noise exposure to the schools (especially during examination periods). The Contractor should liaise with the school and the Examination Authority to							

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		ascertain the exact dates and times of all examination periods during the course of the contract and to avoid noisy activities during these periods.							
4.6.13 – 4.6.14	Table 3.4	To adopt good public relation with the local communities and maintain effective communication channel with the public such as setting up a 24-hour hotline system for enquiry and complaint.	To promote good public relation and maintain effective communication during construction	All works site / during construction	Project Office (Engineer) & Construction Contractor		√		Environmental Impact Assessment Ordinance
4.6.17 & 4.6.18	Table 3.4	Further mitigation by restricting concurrent usage of several equipment at the same time.	To further mitigate construction noise at NSRs MUP04A-2 & MUP04B-2	For works within 20m of NSRs MUP04A-2 & MUP04B-2 / during construction	Construction Contractor		√		Environmental Impact Assessment Ordinance
4.6.19	Table 3.4	The use of purpose built temporary noise barriers would not be practicable for works at LMH01 as the works are small scale, short duration and within village environs with very limited working space. It may also hamper access causing inconvenience to the villagers. The process of installing and dismantling the noise barriers itself would create additional noise nuisance. The use of light-weight mobile barrier is considered more preferable.	To protect NSRs at LMH01 from noise during construction	All works site located at 25m or less from NSRs as shown in Figure 4.6 / during construction	Construction Contractor		√		Environmental Impact Assessment Ordinance

D = Design, C = Construction, O = Operation

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
4.6.20 – 4.6.21	Table 3.4	Employ quiet working method (e.g. mini-concrete crusher, saw & lift) during demolition works of crossings, restrict concurrent usage of several equipment at the same time such as parking dump truck, concrete lorry mixer outside main village area. The use of dump truck or concrete lorry mixer will be limited to only about 1 trip every few days.	To further mitigate construction noise at NSRs for LMH01	Construction works at LMH01 / during construction	Construction Contractor		√		Environmental Impact Assessment Ordinance
4.8.4	Table 3.4	It is recommended that works programme should be scheduled such that only one crossing is constructed at any one time. Bank improvement work can be conducted concurrently.	To mitigate cumulative noise impact at LMH01	Crossing construction at LMH01 / during construction	Construction Contractor		√		Environmental Impact Assessment Ordinance
4.9.1	3.8.1	The Contractor should design, construct, operate and maintain the mitigation measures throughout the construction stage and as required by the Engineer. Before commencement of the works, the Contractor should submit to the Engineer for approval (as part of their method statement) details of the mitigation measures to be employed under the works. The Contractor's proposed mitigation measures should also be certified by the ET Leader and verified by the IEC to ensure the intended noise reduction effectiveness can be achieved.	To protect NSRs from noise during construction and to ensure the Contractor will properly implement the mitigation measures	All works site / during construction	Construction Contractor		√		Environmental Impact Assessment Ordinance

D = Design, C = Construction, O = Operation

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
Noise - Operational Phase									
		N/A							

* D=Design, C=Construction, O=Operation
N/A Not applicable

Table A3 Implementation Schedule of Water Quality Mitigation Measures

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
Water Quality - Construction Phase									
5.6.2	4.9.2	*General* The contractor shall observe and comply with the Water Pollution Control Ordinance (WPCO) and its subsidiary regulations. The contractor shall carry out the works in such a manner as to minimise adverse impacts on the water quality during execution of the works. In particular the contractor shall arrange his method of working to minimise the effects on the water quality within and outside the site and on the transport routes.	To minimize adverse water quality impact during construction	All works site / during construction	Construction Contractor		√		Water Pollution Control Ordinance
5.6.3	4.9.3	The contractor shall follow the practices, and be responsible for the design, construction, operation and maintenance of all the mitigation measures below and as specified in ProPECC PN 1/94 - Construction Site Drainage. In particular, the contractor shall submit and implement an Erosion Control Plan (as part of the Environmental Management Plan) which shall incorporate details of the mitigation measures recommended below to reduce water quality impacts arising from construction works. The design of the mitigation measures and the Plan shall be submitted by the contractor to the Engineer for approval.	To minimize adverse water quality impact during construction	All works site / during construction	Construction Contractor		√		ProPECC PN 1/94 ETWB TCW No. 19/2005

D = Design, C = Construction, O = Operation

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
5.6.4	4.9.4	*Site Surface Runoff* Proper construction site drainage management measures shall be implemented to control site runoff and drainage, and thereby prevent high sediment loadings from reaching downstream sections of the river and adjacent agricultural land.	To minimize adverse water quality impact during construction	All works site / during construction	Construction Contractor		√		ProPECC PN 1/94
5.6.5	4.9.5	Turbid water from construction sites must be treated to minimise the solids content before being discharged. Advice on the handling and disposal of site discharge is given in the ProPECC Note PN 1/94 - Construction Site Drainage.	To minimize adverse water quality impact during construction	All works site / during construction	Construction Contractor		√		ProPECC PN 1/94
5.6.6	4.9.6	In general, surface run-off from construction sites should be discharged into waterbodies via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels or earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Perimeter channels at site boundaries should be provided to intercept storm run-off from outside the site so that it will not wash across the site (or into the proposed channel works area). Catchpits and perimeter channels should be constructed in advance of earthworks.	To minimize adverse water quality impact during construction	All works site / during construction	Construction Contractor		√		ProPECC PN 1/94

D = Design, C = Construction, O = Operation

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
5.6.7	4.9.7	Silt removal facilities, channels should be maintained and the deposited silt and grit should be removed regularly, at the onset of and after each rainstorm to ensure proper functioning of these facilities at all times.	To minimize adverse water quality impact during construction	All works site / during construction	Construction Contractor		√		ProPECC PN 1/94
5.6.8	4.9.8	Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into the nearby waterbodies. Open stockpiles susceptible to erosion should be covered with tarpaulin or similar fabric and provided with containment such as bunds, sand bag barriers or equivalent measures, especially during the wet season (April – September) or when heavy rainstorm is predicted. Runoff to watercourses should be reduced by minimising flat exposed areas of permeable soil, and by forming pits or diversion channels into which runoff can flow to suitable treatment facilities before discharge.	To minimize adverse water quality impact during construction	All works site / during construction	Construction Contractor		√		ProPECC PN 1/94
5.6.9	4.9.9	*De-watering / Excavation of Streams and Removal of Sediment* The use of containment structures such as earth bund or sand bag barriers wrapped with geotextile fabric or similar material or diversion channels is recommended to facilitate a dry or at least confined excavation within watercourses.	To minimize adverse water quality impact during construction	All works site / during construction	Construction Contractor		√		Water Pollution Control Ordinance

D = Design, C = Construction, O = Operation

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
5.6.10	4.9.10	Excavation works at the existing stream section of MUP05 should be programmed to be carried out during periods of low flow (dry season from 1st October to 31st March) to minimise impacts on downstream water quality and sensitive receivers. For the ecologically sensitive stream of LMH01, the restriction period should be further extended for an additional month (i.e. excavation works allowed from 1st November to 31st March) to protect the aquatic fauna from silty runoff due to possible heavy rain during the transitional period of the wet / dry seasons.	To minimize adverse water quality impact from excavation works during wet season	MUP05 & LMH01 / during construction	Construction Contractor		√		Water Pollution Control Ordinance
5.6.11	4.9.11	In addition, the excavation works should be carried out in sections to reduce the area of exposed surfaces as described below. For MUP05, the first 300m upstream section will have no restriction. For the remaining sections of MUP05 (within existing stream course), the length would be restricted to 300m at any one time. For MUP04A, a 100m restriction should be imposed for the entire stream works area to cater for potential cumulative impact on MUP05.	Restrict length of excavation work to minimise impacts on downstream water quality and sensitive receivers	MUP05 & MUP04A / during construction	Construction Contractor		√		Water Pollution Control Ordinance
5.6.12	4.9.12	As for LMH01, given its relatively small scale works but sensitive nature of the stream, it is recommended that only either one portion of bank	To minimize adverse water quality impact on LMH01 during	LMH01 / during construction	Construction Contractor		√		Water Pollution Control Ordinance

D = Design, C = Construction, O = Operation

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		improvement works or one vehicular crossing reconstruction should be carried out at any one time.	construction						
5.6.14	4.9.14	After dewatering of the streams, the sediments should be allowed to dry before excavation (yet still maintain a moist state to avoid dust nuisance). This will facilitate excavation of the sediments and also minimise the risk of drained water flowing back into watercourses as the sediment is handled. Where time or weather constraints require handling of wet sediment, care should be taken in the removal of sediment and the storage area should be bunded to prevent silty runoff entering watercourses. Given its small quantity, all excavated sediment should be reused on-site as backfilling material.	To minimize adverse water quality impact during construction (in particular when excavating and handling sediments)	All works site where sediment removal is required / during construction	Construction Contractor		√		Water Pollution Control Ordinance
5.6.15	4.9.15	Excavated sediment will likely be temporarily stored on-site for reuse as backfilling material. This should be stored in a bunded area and covered during wet season or when rainstorm is forecasted to avoid inadvertent release of silts and suspended solids to nearby water bodies.	To minimize adverse water quality impact during construction (in particular when excavating and handling sediments)	All works site where sediment removal is required / during construction	Construction Contractor		√		Water Pollution Control Ordinance
5.6.16	4.9.16	Regular monitoring of suspended solids and turbidity should be conducted during excavation works. Any exceedance of water quality in the	To minimize adverse water quality impact during construction	All works site / during construction	Construction Contractor		√		Water Pollution Control Ordinance

D = Design, C = Construction, O = Operation

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		nearby water bodies caused by inadvertent release of site runoff should be rectified in accordance with EM&A programme for this Project.							
5.6.17	4.9.17	*Concreting Work* Runoff should be carefully channelled to prevent concrete-contaminated water from entering watercourses. Adjustment of pH can be achieved by adding a suitable neutralising reagent to wastewater prior to discharge. Re-use of the supernatant from the sediment pits for washing out of concrete lorries should be practised.	To minimize adverse water quality impact during construction (in particular concreting works)	All works site / during construction	Construction Contractor		√		Water Pollution Control Ordinance
5.6.18	4.9.18	Any exceedance of acceptable range of pH levels in the nearby water bodies caused by inadvertent release of site runoff containing concrete should be monitored and rectified under the EM&A programme for this Project.	To minimize adverse water quality impact during construction (in particular concreting works)	All works site / during construction	Construction Contractor		√		Water Pollution Control Ordinance
5.6.19	4.9.19	To protect the sensitive stream of Lin Ma Hang, no concrete should be used during bank improvement works at LMH01.	To minimize adverse water quality impact on LMH01 during construction	LMH01 bank improvement works / during construction	Construction Contractor		√		Environmental Impact Assessment Ordinance
5.6.20	4.9.20	*Site Workshop or Depot* Any contractor generating waste oil or other	To minimize adverse	All works site /	Construction		√		Water Pollution

D = Design, C = Construction, O = Operation

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		chemicals as a result of his activities should register as a chemical waste producer and provide a safe storage area for chemicals on site. The storage site should be located away from existing water courses.	water quality impact during construction	during construction	Contractor				Control Ordinance
5.6.21	4.9.21	All compounds in works areas should be located on areas of hard standing with provision of drainage channels and settlement ponds where necessary to allow interception and controlled release of settled/treated water; and provision of bunding for all potentially hazardous materials on site including fuels. Hard standing compounds should drain via an oil interceptor. To prevent spillage of fuels or other chemicals to water courses, all fuel tanks and storage areas should be sited on sealed areas, within a bund of a capacity equal to 110% of the storage capacity of the largest tank. Disposal of the waste oil should be done by a licensed collector. Oil interceptors should be regularly inspected and cleaned to avoid wash-out of oil during storm conditions. A bypass should be provided to avoid overload of the interceptor's capacity. Good housekeeping practices should be implemented to minimise careless spillage and to keep the storage and the work space in a tidy and clean condition. Appropriate training including safety codes and relevant manuals should be given to the personnel who regularly handle the chemicals on site.	To minimize adverse water quality impact during construction	All works site / during construction	Construction Contractor		√		Water Pollution Control Ordinance

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
5.6.22	4.9.22	The contractor should prepare an emergency contingency plan (spill action plan) for the Project to contain and remove all accidental spillage of chemicals and hazardous materials on-site including fuels at short notice and to prevent or minimize the quantities of contaminants entering the stream water and affecting the habitats. The contractor should submit the emergency contingency plan to the ET for review & comment and the engineer for approval.	To prevent or minimize the quantities of contaminants entering the stream water and affecting the habitats in case of accidental spillage of chemicals and hazardous materials	All works site / during construction	Construction Contractor		√		Water Pollution Control Ordinance
5.6.24	4.9.24	*Presence of Additional Population (Workers)* Sewage arising from the additional population of workers on site should be collected in a suitable storage facility, such as portable chemical toilets. An adequate number of portable toilets should be provided for the construction workforce. The portable toilets should be maintained in a state that will not deter the workers from using them. The collected wastewater from sewage facilities and also from eating areas or washing facilities must be disposed of properly, in accordance with the WPCO requirements. Wastewater collected should be discharged into foul sewers and collected by licensed collectors.	To minimize adverse water quality impact during construction	All works site / during construction	Construction Contractor		√		ProPECC PN 1/94 Water Pollution Control Ordinance

D = Design, C = Construction, O = Operation

Table A4 Implementation Schedule of Waste Management Measures

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
Waste - Construction Phase									
6.5.2 – 6.5.3	5.1.2 – 5.1.3	*General* Upon appointment, the main contractor of each construction contract should prepare and implement an Environmental Management Plan (EMP) in accordance with ETWB TCW No. 19/2005 – Environmental Management on Construction Sites which should describe the arrangements for avoidance, reuse, recovery, recycling, storage, collection, treatment and disposal of different categories of waste to be generated from the construction activities. Such a management plan should incorporate site specific factors, such as the designation of areas for segregation and temporary storage of reusable and recyclable materials. The EMP should be submitted to the Engineer for approval. The contractor shall implement the waste management practices in the EMP throughout the construction stage of the Project. The EMP should be reviewed regularly and updated (preferably monthly) by the contractor. The EMP should take into account the recommended mitigation measures in the EIA Report. The contractor also should refer to the Construction and Demolition Material Management Plan (C&DMMP) in Appendix D1 (of the EIA) to facilitate him in the preparation of the EMP of the Contract.	Waste reduction, reuse, recycling and proper disposal of waste	All works site / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005

D = Design, C = Construction, O = Operation

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
6.5.4	5.1.4	Training of construction staff should be undertaken by the contractor about the concept of site cleanliness and appropriate waste management procedures. The contractor should develop and provide toolbox talk for on-site sorting of C&D materials to enhance worker's awareness in handling, sorting, reuse and recycling of C&D materials. Requirements for staff training should be included in the EMP.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005
6.5.5	5.1.5	Good planning and site management practice should be employed to eliminate over ordering or mixing of construction materials to reduce wastage. Proper storage and site practices will minimise the damage or contamination of construction materials.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005
6.5.6	5.1.6	Where waste generation is unavoidable, the potential for recycling or reuse should be rigorously explored. If wastes cannot be recycled, disposal routes described in the EMP should be followed. A recoding system for the amount of waste generated, recycled and disposed (including the disposal sites) should be implemented. In order to monitor the disposal of C&D material and solid wastes at public filling facilities and landfills and to control fly-tipping, a trip-ticket system should be included.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005 31/2004
6.5.7	5.1.7	Regular cleaning and maintenance of the waste storage area should be provided.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance

D = Design, C = Construction, O = Operation

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
									ETWB TCW No. 19/2005
6.5.8	5.1.8	*On-site Sorting, Reuse and Recycling* All waste materials should be segregated into categories covering: • excavated materials suitable for reuse on-site; • excavated materials suitable for public filling facilities; • remaining C&D waste for landfill; • chemical waste; and • general refuse for landfill.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005
6.5.9	5.1.9	Proper segregation and disposal of construction waste should be implemented. Separate containers should be provided for inert and non-inert wastes.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005
6.5.10	5.1.10	Sorting is important to recover materials for reuse and recycling. Specific area should be allocated for on-site sorting of C&D materials and to provide a temporary storage area for those sorted materials	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005, 31/2004

D = Design, C = Construction, O = Operation

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		such as metals, concrete, timber, plastics, glass, excavated spoils, bricks / tiles and waste papers. If area is limited, all C&D materials should at least be sorted on-site into inert and non-inert component. Non-inert materials (C&D waste) such as bamboo, timber, vegetation, packaging waste and other organic materials should be reused and recycled wherever possible and disposed of to designated landfill only as a last resort. Inert materials (public fill) such as concrete, stone, clay, brick, soil, asphalt and the like should be separated and reuse in this or other projects (subject to approval by the relevant parties in accordance with the ETWB TCW No. 31/2004) before disposed of at a public filling facility operated by Civil Engineering and Development Department (CEDD). Steel and other metals should be recovered from demolition waste stream and recycled.							
6.5.11	5.1.11	The reuse of inert materials such as soil, rock and broken concrete should be maximised. Waste should be separated into fine, soft and hard materials. With the use of a crusher coarse material can be crushed to make it suitable for use as fill material where fill is required in the works. This minimises the use of imported material and maximises use of the C&D material produced.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005
6.5.12	5.1.12	Prior to export of material from the site, the	Waste reduction, reuse,	All work sites /	Construction		√		Waste Disposal

D = Design, C = Construction, O = Operation

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		potential for it to be reused should be assessed. With the exception of excavated clay most C&D material can easily be reused. Waste separation methods should be followed to ensure that C&D waste is separated at source. Suitable soft materials should be used for landscaping and grading of embankments. Fine material should be separated out and used as topsoil.	recycling and proper disposal of waste	during construction	Contractor				Ordinance ETWB TCW No. 19/2005
6.5.13	5.1.13	The feasibility of using recycled aggregates in lieu of virgin materials should be rigorously considered during the detailed design and construction stages as stipulated in WBTC No. 12/2002 and ETWB TCW No. 24/2004. In general, recycled aggregates are suitable for use as fill materials in earthworks, road sub-base formation, and drainage works. Recycled aggregates can also be used in concrete (up to Grade 35) for mass concrete walls and other minor structures such as planter boxes, toe wall planters and pavement, etc.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005, 24/2004 WBTC No. 12/2002
6.5.14	5.1.14	Recycled inert C&D material should be used in the works as sub-bases for access roads and footpaths of the proposed channels. Recycled aggregates should be considered for use in concrete as outlined in the above mentioned technical circulars. Some recycled rock material can be reused in the gabions, as rock fill or as stream bed material. This is dependent on size of rock fragments but can be	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		achieved by appropriate use of a crusher.							
6.5.15	5.1.15	*Site Clearance / Demolition Materials* *Excavated Materials* All C&D materials should be sorted on-site into inert and non-inert components by the contractor. Non inert materials (C&D waste) such as wood, glass and plastic should be reuse and recycle before disposal to a designated landfill as a last resort (currently assume to be the nearby NENT Landfill). Inert materials (public fill) such as soil, rubble, sand, rock, brick and concrete should be separated and where appropriate broken down to size suitable for subsequent filling. Suitable C&D material should be use as pipe bedding or for backfilling of retaining walls, box culvert and formation of channel embankments. Excavated rocks from existing streams should be reuse for rip-rap lining and gabion lining. Inert materials should be reused on-site or in other projects approved by relevant parties in accordance with the ETWB TCW No. 31/2004 before disposed of at public filling facilities. Steel and other metals should be recovered from C&D materials and recycled.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005, 31/2004
6.5.16	5.1.16	Excavated sediment from existing stream should be reuse on-site as backfilling material.	Reuse of excavated sediment to minimize offsite disposal	MUP04A / during construction	Construction Contractor		√		Waste Disposal Ordinance

D = Design, C = Construction, O = Operation

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
6.5.17	5.1.17	Good quality reusable topsoil should be stockpiled for later landscaping works. Stockpiles should be less than 2 m in height, formed to a safe angle of repose and hydroseeded or covered with tarpaulin to prevent erosion during the rainy season and to minimise dust generation.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005
6.5.18	5.1.18	Control measures for temporary stockpiles on-site should be taken in order to minimize the noise, generation of dust, pollution of water and visual impact. These measures include: • surface of stockpiled soil should be regularly wetted with water especially during dry season; • disturbance of stockpiled soil should be minimized; • stockpiled soil should be properly covered with tarpaulin especially when heavy rain storms are predicted; • stockpiling areas should be enclosed where space is available; • stockpiling location should be away from the water bodies; and • an independent surface water drainage system	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005

D = Design, C = Construction, O = Operation

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		equipped with silt traps should be installed at the stockpiling area.							
6.5.19	5.1.19	The identification of final disposal sites for C&D materials generated by the construction works will be considered during the detailed design stage of the Project when the volume and types of C&D materials can be more accurately estimated. The Public Fill Committee of CEDD should be consulted on designated outlets (e.g. public filling area) for public fill, whilst EPD should be consulted on landfills for C&D waste. Disposal of C&D waste to landfill must not have more than 50% (by weight) inert material. The C&D waste delivered for landfill disposal should contain no free water and the liquid content should not exceed 70% by weight.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005
6.5.20	5.1.20	In order to avoid dust or odour impacts, any vehicle leaving a works area carrying C&D waste or public fill should have their load covered before leaving the construction site.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005 WBTC No. 19/2001
6.5.21	5.1.21	C&D materials should be disposed of at designated public filling facilities or landfills. Disposal of	Waste reduction, reuse, recycling and proper	All work sites / during	Construction Contractor		√		Waste Disposal Ordinance

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		these materials for use at other construction projects is subject to the approval of the EPD, Engineer and/or relevant authorities, such as LandsD, PlanD, etc. Furthermore, unauthorized disposal of C&D materials in particular on private agricultural land is prohibited and may be subject to relevant enforcement and regulating actions. The contractor shall refer and strictly follow the trip-ticket system for the disposal of C&D material as stipulated in the ETWB TCW No. 31/2004.	disposal of waste	construction					ETWB TCW No. 19/2005, 31/2004
6.5.22	5.1.22	*Chemical Waste* Where the construction processes produce chemical waste, the contractor must register with EPD as a chemical waste producer. Wastes classified as chemical wastes are listed in the Waste Disposal (Chemical Waste) (General) Regulation. These wastes are subject to stringent disposal routes. EPD requires information on the particulars of the waste generation processes including the types of waste produced, their location, quantities and generation rates. A nominated contact person must be registered with EPD. An updated list of licensed chemical waste collector can be obtained from EPD.	Waste reduction, reuse, recycling and proper disposal of chemical waste	All work sites / during construction	Construction Contractor		√		Waste Disposal (Chemical Waste) (General) Regulation, Code of Practice on the Packaging Labelling and Storage of Chemical Waste
6.5.23	5.1.23	Storage, handling, transport and disposal of chemical waste should be arranged in accordance with the	Waste reduction, reuse, recycling and proper	All work sites / during	Construction Contractor		√		Waste Disposal (Chemical Waste) (General)

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published by EPD, and should be collected by a licensed chemical waste collector.	disposal of chemical waste	construction					Regulation, Code of Practice on the Packaging Labelling and Storage of Chemical Waste
6.5.24	5.1.24	Suitable containers should be used for specific types of chemical wastes, containers should be properly labelled (English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulations), resistance to corrosion, stored safely and closely secure. Stored volume should not be kept more than 450 liters unless the specification has been approved by the EPD. Storage area should be enclosed by three sides by a wall, partition of fence that is at least 2 m height or height of tallest container with adequate ventilation and space.	Waste reduction, reuse, recycling and proper disposal of chemical waste	All work sites / during construction	Construction Contractor		√		Waste Disposal (Chemical Waste) (General) Regulation, Code of Practice on the Packaging Labelling and Storage of Chemical Waste
6.5.25	5.1.25	Hard standing, impermeable surfaces draining via oil interceptors should be provided in works area compounds. Interceptors should be regularly emptied to prevent release of oils and grease into the surface water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain. Oil and fuel bunkers should be bunded and/or enclosed on three sides to prevent discharge due to accidental spillages or breaches of tanks. Bunding	Waste reduction, reuse, recycling and proper disposal of chemical waste	Work sites / During construction	Construction Contractor		√		Waste Disposal (Chemical Waste) (General) Regulation, Code of Practice on the Packaging Labelling and Storage of Chemical Waste

D = Design, C = Construction, O = Operation

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		should be of sufficient capacity to accommodate 110% of the volume of the largest container or 20% of the total volume of waste, whichever is largest. Waste collected from any grease traps should be collected and disposed of by a licensed contractor.							
6.5.26	5.1.26	Lubricants, waste oils and other chemical wastes are likely to be generated during the maintenance of vehicles and mechanical equipment. Used lubricants should be collected and stored in individual containers which are fully labelled in English and Chinese and stored in a designated secure place. If possible, such waste should be sent to oil recycling companies, and the empty oil drums collected by appropriate companies for reuse or refill.	Waste reduction, reuse, recycling and proper disposal of chemical waste	All work sites / during construction	Construction Contractor		√		Waste Disposal (Chemical Waste) (General) Regulation, Code of Practice on the Packaging Labelling and Storage of Chemical Waste
6.5.27	5.1.27	The registered chemical waste producer (i.e. the contractor) has to arrange for the chemical waste to be collected by licensed collectors. The licensed collector should regularly take chemical waste to a licensed chemical waste treatment facility (such as the Chemical Waste Treatment Centre in Tsing Yi). A trip ticket system operates to control the movement of chemical wastes.	Waste reduction, reuse, recycling and proper disposal of chemical waste	All work sites / during construction	Construction Contractor		√		Waste Disposal (Chemical Waste) (General) Regulation, Code of Practice on the Packaging Labelling and Storage of Chemical Waste
6.5.28	5.1.28	No lubricants, oils, solvents or paint products should be allowed to discharge into water courses,	Waste reduction, reuse, recycling and proper	All work sites / during	Construction Contractor		√		Waste Disposal (Chemical Waste)

D = Design, C = Construction, O = Operation

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		either by direct discharge, or as contaminants carried in surface water runoff from the construction site.	disposal of chemical waste	construction					(General) Regulation, Code of Practice on the Packaging Labelling and Storage of Chemical Waste
6.5.29	5.1.29	*Concrete Waste* Dry concrete waste (considered as public fill) should be sorted out from the other wastes and recycled for reuse or sorted out for disposal at designated public filling facilities.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005, 33/2002
6.5.30	5.1.30	*Wooden Materials* All wooden materials used on-site should be kept separate from other wastes to avoid damage and to facilitate reuse. Timber which cannot be reused should be sorted out from other waste and stored separately from all inert waste before being disposed of to landfill.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005, 33/2002
6.5.31	5.1.31	Reusable steel or concrete panel shutters, fencing and hoarding and signboard should be used as a preferred alternative to items made of wood, to minimise wastage of wood. Attention should be paid to WBTC No. 19/2001 - Metallic Site Hoardings and Signboards to reduce the amount of	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005, 33/2002

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		timber used on construction sites. Metallic alternatives to timber are readily available and should be used rather than new timber. Recast concrete units should be adopted wherever feasible to minimize the use of timber formwork.							
6.5.32	5.1.32	Only waste material need be taken to a landfill. It should be separated from recyclable wood and steel materials. As for all waste types these materials should be reused on-site or other approved sites before disposal is considered as an option. Disposal to landfill should only be considered as a final option. Contractors are responsible for storage of re-useable materials on-site.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005, 33/2002
6.5.33	5.1.33	*Municipal Waste* General refuse generated on-site should be stored in enclosed bins or skips and collected separately from other construction and chemical wastes and disposed of at designated landfill. A temporary refuse collection point should be set up by the contractor to facilitate the collection of refuse by licensed contractors. The removal of waste from the site should be arranged on a daily or at least on every second day by the contractor to minimise any potential odour impacts, minimise the presence of pests, vermin and other scavengers and prevent unsightly accumulation of waste.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005

D = Design, C = Construction, O = Operation

Table A5 Implementation Schedule of Ecological Impact Measures

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
Ecology - Construction Phase									
7.9.3	6.5.2	*LMH01* Given the ecological importance of Lin Ma Hang stream, it is proposed that construction works at LMH01 should be restricted to the dry season period from 1st November – 31st March. The small scale of works should allow all construction to be completed within dry season to ensure that the risk of erosion and sedimentation due to heavy rain on the works areas, as well as disturbance impacts to surrounding areas, will be minimised.	Minimize ecological impacts during construction at LMH01	All works sites at LMH01 / during construction	Construction Contractor		√		Environmental Impact Assessment Ordinance
7.9.4	6.5.3	In addition, the breaking of existing shotcrete banks at LMH01 should be restricted to hand-held equipment. Concrete should not be used for construction of the gabion banks.	Minimize ecological impacts during construction at LMH01	All works sites at LMH01 / during construction	Construction Contractor		√		Environmental Impact Assessment Ordinance
7.9.5	6.5.4	Potential disturbance impacts to surrounding habitats and pollution risks (water quality impacts) to the stream should be minimised by adoption of appropriate site management procedures, as detailed in ETWB TCW No. 5/2005; including among others the location of access to the site and storage of materials, and treatment of construction site waste to prevent	Minimize ecological impacts during construction at LMH01	All works sites at LMH01 / during construction	Construction Contractor		√		Environmental Impact Assessment Ordinance

D = Design, C = Construction, O = Operation

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		pollution of the stream. These site management measures are listed in the subsequent section.							
7.9.9	6.5.8	*MUP05 (natural stream section)* <u>Streambed</u> One of the main benefits of the proposed stream widening measures is that the existing natural stream bed is left undisturbed. Accordingly, works should be carried out in such a way that as much as possible of the natural stream bed should be left undisturbed and that where disturbance is essential this should be minimised in terms of area, magnitude and duration to minimise potential impacts to stream fauna and to ensure refuges for these species during the period of the works. Avoidance of the stream bed can be achieved by conducting the earthworks to widen the stream from the landward side, by not lowering the widened channel to the same level as, or below, the existing channel, and by leaving the existing stream untouched except during the final stage, when the newly formed widened stream bed is joined to the existing stream.	Minimize ecological impacts during construction at MUP05	All works sites at MUP05 / during construction	Construction Contractor		√		Environmental Impact Assessment Ordinance
7.9.10	6.5.9	In addition, the widened stream bottom should be floored with natural materials (natural rock and fines of varying sizes) to approximate as closely as possible to the rocky components of a natural stream bottom. Natural materials of a smaller particle size (sand and silt grains) will soon be	Minimize ecological impacts during construction at MUP05	All works sites at MUP05 / during construction	Construction Contractor		√		Environmental Impact Assessment Ordinance

D = Design, C = Construction, O = Operation

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		deposited naturally.							
7.9.11	6.5.10	In order to minimise potential impacts to stream fauna during excavation of the widened "two-stage" channel, this work should be limited to the dry season as far as possible, between 1st October and 31st March. As rainfall is low at this time, erosion is less likely and deposition of sediment downstream of the works should be minimised. This also avoids the time when stream fauna are at the most vulnerable stage in their life cycle (eggs and young larvae). Any essential works outside the dry season should be temporarily isolated from the stream to prevent the risk of pollution or sedimentation affecting the ecological integrity of the stream.	Minimize ecological impacts during construction at MUP05	All works sites at MUP05 / during construction	Construction Contractor		√		Environmental Impact Assessment Ordinance
7.9.12	6.5.11	As required to minmize potential water quality impacts (Section 5.6), excavation works at the stream section of MUP05 should be restricted to 300m length at any one time. No restriction is considered necessary for the first 300m upstream concrete drains section. Excavation works at MUP04A should be restricted to 100m to cater for potential cumulative impact on MUP05.	Minimize ecological impacts during construction at MUP05	All works sites at MUP05 / during construction	Construction Contractor		√		Environmental Impact Assessment Ordinance
7.9.13	6.5.12	Appropriate site management procedures during the construction phase should be adopted, as	Minimize ecological impacts during	All works sites at MUP05 / during	Construction Contractor		√		Environmental Impact Assessment

D = Design, C = Construction, O = Operation

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		recommended in ETWB TCW No. 5/2005, to minimise potential disturbance impacts and pollution risks (water quality impacts) to the stream. This should include the location of access to the site and storage of materials, and treatment of construction site waste to prevent pollution of the stream. These site management measures are listed in the subsequent section.	construction at MUP05	construction					Ordinance
7.9.20, Table 7.29	6.5.19 & Table 6.6	The loss of bankside trees, and associated riparian habitats, should be mitigated through transplanting existing trees to suitable locations wherever possible, and through supplemental planting of native trees and bamboos in locations where the project area includes sufficient space adjacent to the stream but outside the channel itself (in addition to retaining in-situ as much trees as possible). The appropriate species of trees and bamboos include. ▪ *Celtis tetranda (sinensis)* ▪ *Ficus hispida* ▪ *Ficus microcarpa* ▪ *Litsea glutinosa* ▪ *Sapium discolor* ▪ *Schleffera arboricolar (octophylla)* ▪ *Trema tomentosa*	Mitigate the loss of bankside trees and associated riparian habitats at MUP05	MUP05 / during construction	Construction Contractor		√		Environmental Impact Assessment Ordinance

D = Design, C = Construction, O = Operation

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		▪ *Bambusa eutuldoides*							
7.9.21	6.5.20	The proposed landscape compensatory planting of about 740 trees (approximately 1,100 m^2) along the MUP channels will serve dual purpose of landscape impact mitigation as well as mitigating the loss of riparian trees.	Dual purpose of landscape impact mitigation and mitigate the loss of riparian trees at the MUP channels	MUP channels / during construction	Construction Contractor		√		Environmental Impact Assessment Ordinance
7.9.22 Table 7.29 (8.11.27)	6.5.21 Table 6.6 (7.5.11)	The Landscape Plan to be submitted prior to commencement of planting or landscaping works should take into account the recommended plant species.	To ensure the recommended plant species are taken into account in the Landscape Plan	All works site / during detailed design and construction	DSD (or its appointed Detailed Design Engineer) Construction Contractor to implement the approved planting plan	√	√		Environmental Impact Assessment Ordinance
7.9.23	6.5.22	The recommended site management measures are generally good site practices and proper water quality control / waste management measures to be implemented by the contractor for all works near stream courses. These measures include: ▪ Construction activities should be restricted to works area that should be clearly demarcated.	Recommended site management measures to minimize ecological impacts during construction at LMH01 and MUP05	All works sites at LMH01 and MUP05 / during construction	Construction Contractor		√		Environmental Impact Assessment Ordinance

D = Design, C = Construction, O = Operation

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		▪ Excavation works should be carried out during the dry season where stream flow is low. Where adequate space is available, works should be carefully phased such that only one side of the channel is constructed. Temporary diversion should be provided to ensure continuous water flow to the downstream section. ▪ The proposed works site inside or in the proximity of natural streams should be temporarily isolated, such as using bunds or sandbag barriers (wrapped with geotextile fabric) or other similar techniques, to prevent adverse impacts on the stream water quality. ▪ For the stream section where the existing natural stream bed and bank will be left untouched, no disturbance to the stream bed and bank should be allowed from construction works, equipment or workers. If temporary access track on streambed is unavoidable, this should be kept to the minimum width and length. Temporary stream crossings should be supported on stilts above the stream bed. ▪ Adequate temporary drainage measures including sediment and oil/grease traps should be provided to prevent contaminated site run-off entering the water bodies. ▪ Stockpiling of construction materials, spoils and waste should be properly covered and located away from water bodies to prevent silty runoff and other pollutants from entering							

D = Design, C = Construction, O = Operation

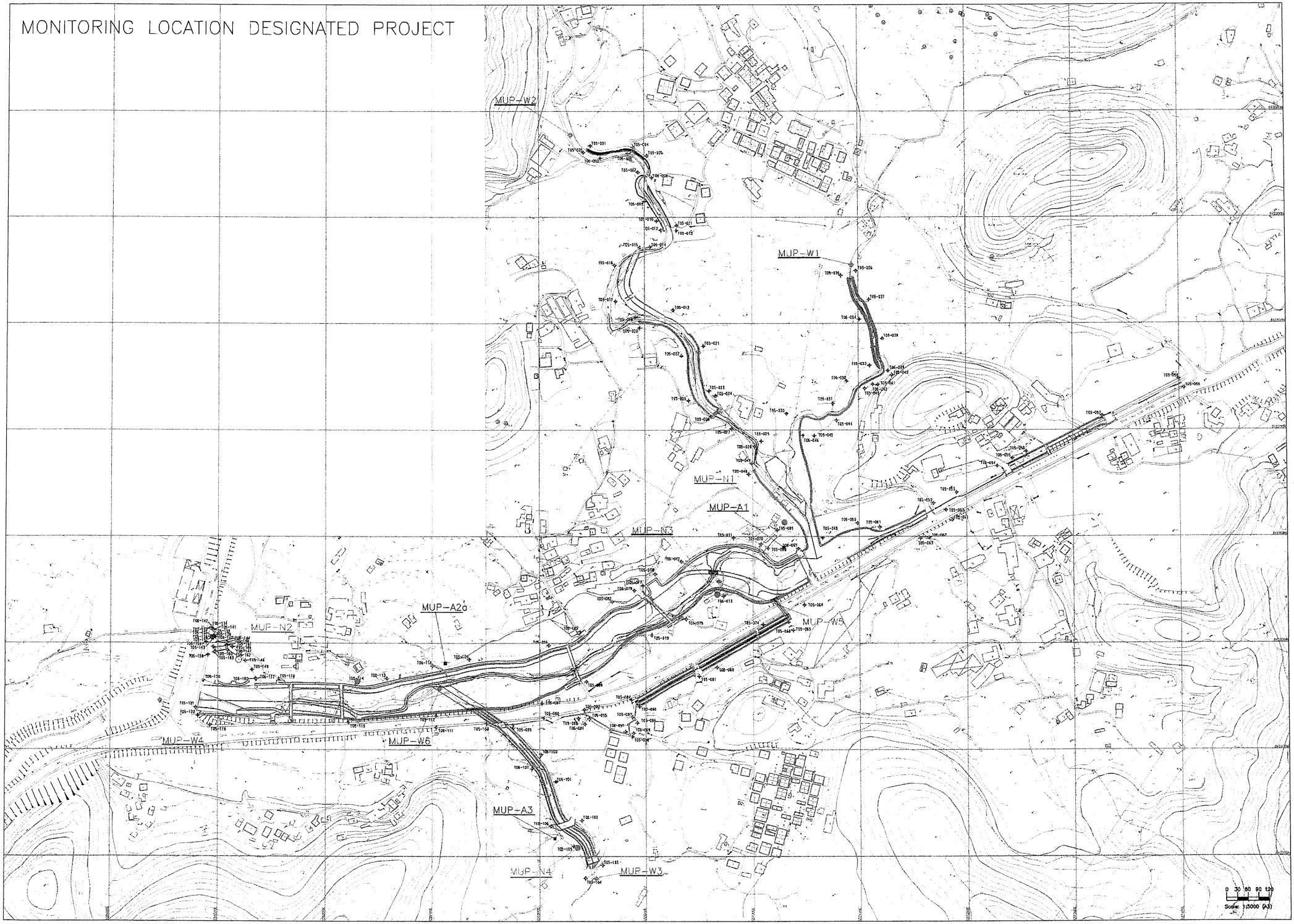
EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		the water bodies during rain storms. ▪ Construction effluent, site run-off and sewage should be properly collected, treated and disposed. ▪ Supervisory staff of the contractor should be assigned to station on site to closely supervise and monitor the construction works. All workers should be regularly briefed to avoid disturbing the flora and fauna near the works area.							
7.9.24	6.5.23	The contractor should provide details of the mitigation measures to be implemented during construction stage as part of their working method statement to the Engineer for approval. This should be reviewed by the Environmental Team Leader.	Minimize ecological impacts during construction at LMH01 and MUP05 and to ensure the contractor will properly implement the mitigation measures	All works sites at LMH01 and MUP05 / during construction	Construction Contractor		√		Environmental Impact Assessment Ordinance
Ecology - Operation Phase									
7.9.6	6.5.5	*LMH01* Very little or no management / maintenance of the completed sections of LMH01 are expected. Removal of obstruction should be undertaken only when flooding or safety issues have been identified.	Minimize ecological impacts during operation of LMH01	LMH01 / during operation stage	DSD (or DSD's maintenance contractor)			√	Environmental Impact Assessment Ordinance

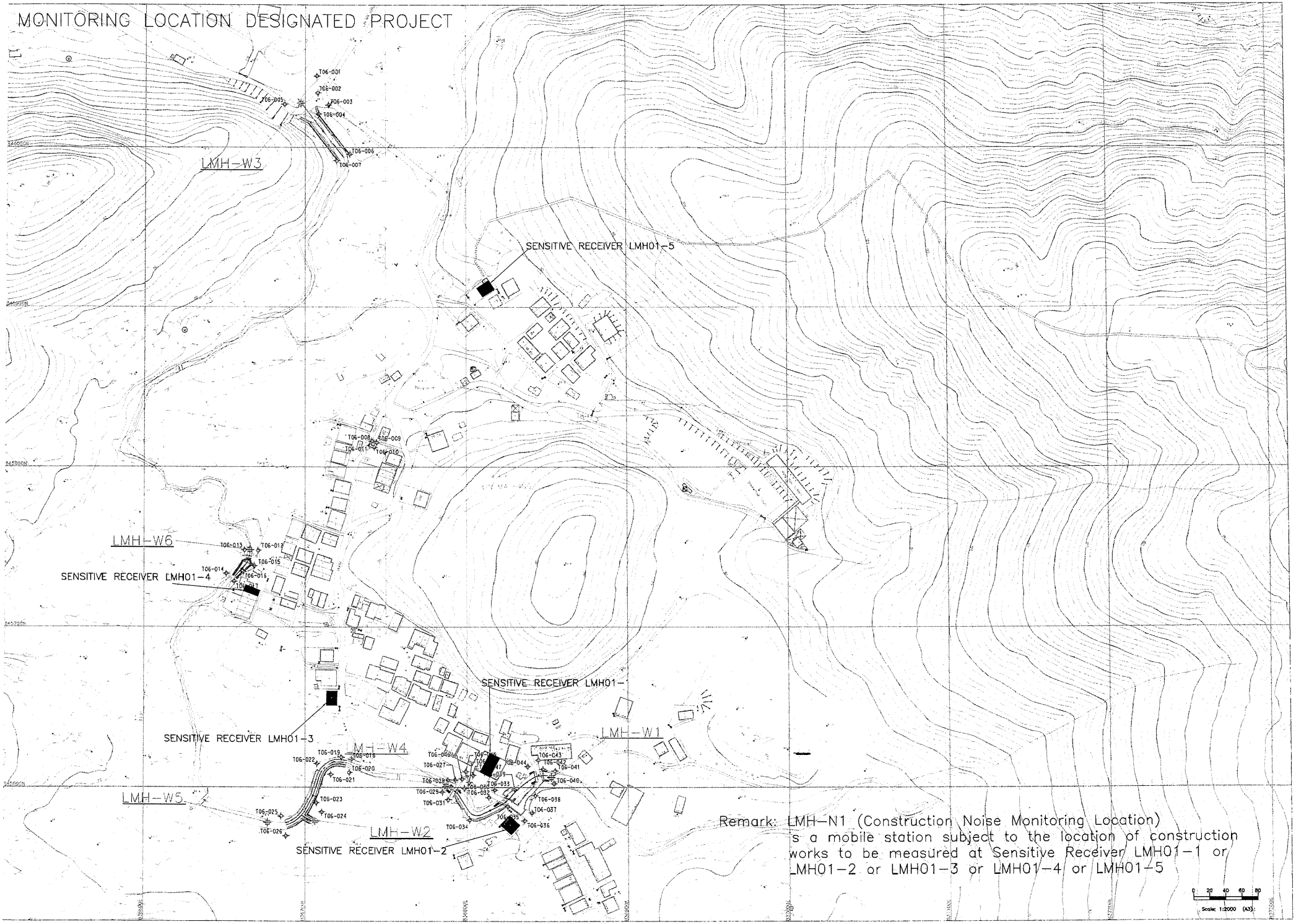
D = Design, C = Construction, O = Operation

Appendix D

Environmental Monitoring Locations

MONITORING LOCATION DESIGNATED PROJECT




MONITORING LOCATION DESIGNATED PROJECT
LMH-W3
SENSITIVE RECEIVER LMH01-5
LMH-W6
SENSITIVE RECEIVER LMH01-4
SENSITIVE RECEIVER LMH01-
SENSITIVE RECEIVER LMH01-3
LMH-W4
LMH-W1
LMH-W5
LMH-W2
SENSITIVE RECEIVER LMH01-2
Remark: LMH-N1 (Construction Noise Monitoring Location)
s a mobile station subject to the location of construction
works to be measured at Sensitive Receiver LMH01-1 or
LMH01-2 or LMH01-3 or LMH01-4 or LMH01-5
0 20 40 60 80
Scale: 1:2000 (A3)

Appendix E

Certificates of Calibration

Equipment Calibration List

Items	Aspect	Description of Equipment	Date of Calibration	Date of Next Calibration
1*	Air	TSP Sampler Calibration Spreadsheet for MUP-A1	13 May 12	13 Jul 12
			13 Jul 12	13 Sep 12
2*		TSP Sampler Calibration Spreadsheet for MUP-A2	7 Jul 12	7 Sep 12
3#		TSP Sampler Calibration Spreadsheet for MUP-A3	30 Jun 11	30 Aug 11
4		DustTrak Model 8520 EQ064	13 Sep 2011	13 Sep 2012
5		AM510 11008017	10 Oct 2011	10 Oct 2012
6	Noise	Bruel & Kjaer Integrating Sound Level Meter EQ010 (Serial No. 2285721)	20 Apr 12	20 Apr 13
7		Bruel & Kjaer Integrating Sound Level Meter EQ082 (Serial No. 2713428)	20 Apr 12	20 Apr 13
8		NL-31 Rion Sound Level Meter EQ068 (Serial No. 00410247)	20 Apr 12	20 Apr 13
9	Water	YSI Sonde 6820 / 650 MDS (Serial No. 02J0912/02K0788 AA) (DO, pH, Turbidity)	27 Apr 12	27 Jul 12

*Note: Calibration certificates will only be provided when monitoring equipment is re-calibrated or new.
Calibration could not conduct due to power failure.
.

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

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

CONDITIONS

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

CALIBRATION ORIFICE

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

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected
18	5.8	5.8	11.6	1.685	48	47.16
13	4.2	4.2	8.4	1.434	38	37.34
10	3.5	3.5	7.0	1.310	32	31.44
7	2.5	2.5	5.0	1.107	26	25.55
5	1.3	1.3	2.6	0.799	16	15.72

LINEAR REGRESSION

Slope = 35.3090
Intercept = -13.2960
Corr. coeff. = 0.9966

Calculations :

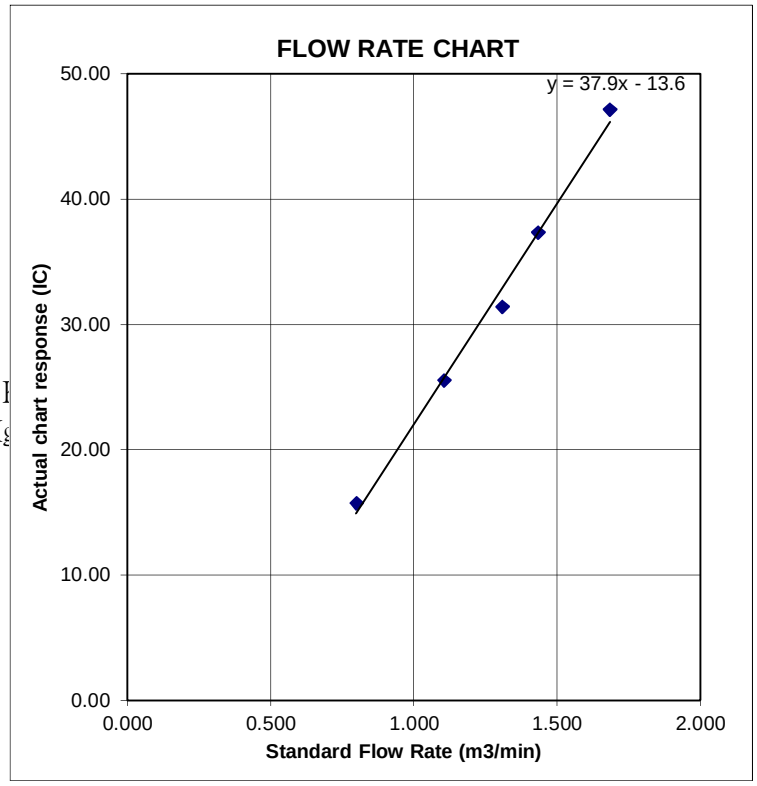
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

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



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Man Uk Pin Near DD46 Lot 676	Date of Calibration:	7-Jul-12
Location ID :	MUP-A2	Next Calibration Date:	7-Sep-12
		Technician:	Mr. Ben Tam

CONDITIONS

Sea Level Pressure (hPa)	1005.9	Corrected Pressure (mm Hg)	754.425
Temperature (°C)	29.1	Temperature (K)	302

CALIBRATION ORIFICE

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

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.5	5.5	11.0	1.641	50	49.14	Slope = 41.0757
13	4.3	4.3	8.6	1.451	44	43.24	Intercept = -17.5037
10	3.5	3.5	7.0	1.310	37	36.36	Corr. coeff. = 0.9984
7	2.6	2.6	5.2	1.129	29	28.50	
5	1.5	1.5	3.0	0.858	18	17.69	

Calculations :

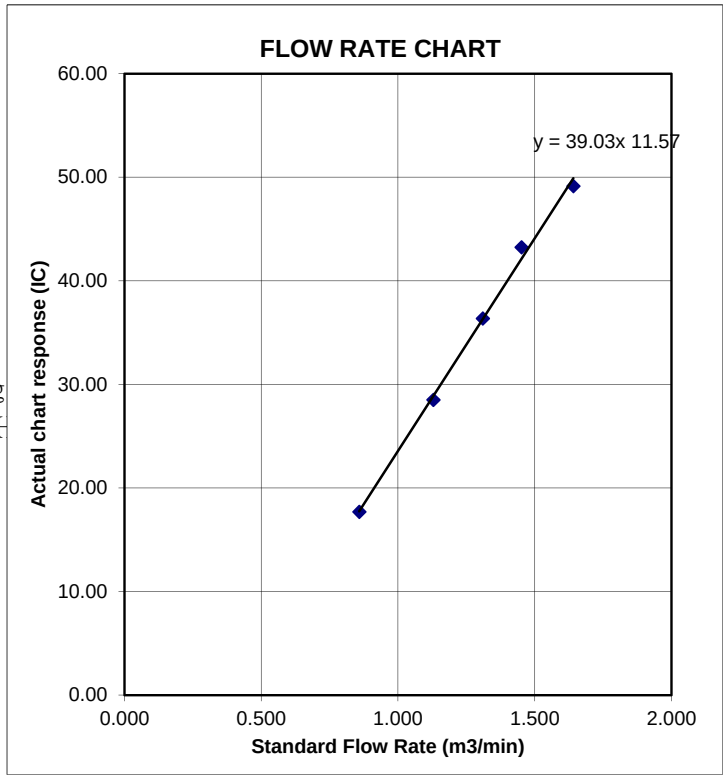
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

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



Appendix F

Details of the Event Action Plan

Event/Action Plan for Air Quality

EVENT	ACTION			
	ET Leader	IEC	ER	Contractor
ACTION LEVEL				
Exceedance for one sample	1. Identify source 2. Inform IEC, ER and Contractor 3. Repeat measurement to confirm findings 4. Increase monitoring frequency to daily	1. Check monitoring data submitted by ET Leader 2. Check Contractor's working method	1. Notify Contractor	1. Rectify any unacceptable practice 2. Amend working methods if appropriate
Exceedance for two or more consecutive samples	1. Identify source 2. Inform IEC, ER and Contractor 3. Repeat measurement to confirm findings 4. Increase monitoring frequency to daily 5. Discuss with IEC, Contractor and ER on remedial actions required 6. If exceedance continue, arrange meeting with IEC, ER and Contractor 7. If exceedance stops, cease additional monitoring	1. Check monitoring data submitted by ET Leader 2. Check Contractor's working method 3. Discuss with ET Leader and Contractor on possible remedial measures 4. Advise the ER on the effectiveness of the proposed remedial measures 5. Supervise implementation of remedial measures	1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Ensure remedial measure properly implemented	1. Submit proposals for remedial actions to IEC and ER within 3 working days notification 2. Implement the agreed proposals 3. Amend proposal if apprpriate
LIMIT LEVEL				
Exceedance for one sample	1. Identify source 2. Inform IEC, ER, EPD and Contractor 3. Repeat measurement to confirm findings 4. Increase monitoring frequency to daily 5. Access effectiveness of Contractor's remedial actions and kept IEC, EPD and ER informed of results	1. Check monitoring data submitted by ET Leader 2. Check Contractor's working method 3. Discuss with ET Leader and Contractor on possible remedial measures 4. Advise the ER on the effectiveness of the proposed remedial measures 5. Audit implementation of remedial measures	1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Ensure remedial measures properly implemented	1. Take immediate action to avoid for the exceedance 2. Submit proposals for remedial actions to IEC and ER within 3 working days of notification 3. Implement the agreed proposals 4. Amend proposal if appropriate
Exceedance for two or more consecutive samples	1. Notify IEC, ER, Contractor and EPD 2. Identify source 3. Repeat measurement to confirm findings 4. Increase monitoring frequency to daily 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented 6. Arrange meeting with IEC, Contractor and ER to discuss the remedial actions to be taken 7. Access effectiveness of Contractor's remedial actions and kept IEC, EPD and ER informed of results 8. If exceedance stops, cease additional monitoring	1. Discuss amongst ER, ET Leader 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. Audit the implementation of remedial measures	1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. In consultation with IEC, agree with the Contractor on the remedial measures to be implemented 4. Ensure 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 for the exceedance 2. Submit proposals for remedial actions to IEC and ER 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 unit the exceedance is abate

Event/Action Plan for Water Quality

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

Event/Action Plan for Ecology

EVENT	ACTION			
	ET Leader	IEC	ER	Contractor
Non-conformity on one occasion	1. Identify source 2. Inform the IEC and ER 3. Discuss remedial actions with IEC, the ER and the Contractor 4. Monitor remedial actions until rectification has been completed	1. Check monitoring results 2. Check the Contractor's working method 3. Discuss with the ET and Contractor on possible remedial measures 4. Advise the ER on effectiveness of proposed remedial measures 5. Check the implementation of remedial measures	1. Notify Contractor 2. Ensure remedial measures are properly implemented 3. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the works in the case of serous non-conformity until situation is rectified	1. Take immediate action to avoid further problem 2. Amend working methods if needed 3. Submit proposals for remedial actions to ET, ER and IEC 4. Rectify damage and implement the agreed remedial actions
Repeated Non-confirmity	1. Identify source 2. Inform the IEC, ER, EPD and AFCD 3. Increase monitoring frequency 4. Discuss remedial actions with IEC, the ER and the Contractor 5. Monitor remedial actions until rectification has been completed 6. If exceedance stops, cease additional monitoring	1. Check monitoring results 2. Check the Contractor's working method 3. Discuss with the ET and Contractor on possible remedial measures 4. Supervise the implementation of remedial measures 5. Advise the ER on effectiveness of proposed remedial measures and keep EPD and AFCD informed	1. Notify Contractor 2. Ensure remedial measures are properly implemented 3. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the works in the case of serous non-conformity until situation is rectified	1. Take immediate action to avoid further problem 2. Amend working methods if needed 3. Submit proposals for remedial actions to ET, ER and IEC 4. Rectify damage and implement the agreed remedial actions

Event/Action Plan for Landscape and Visual Impact

EVENT	ACTION			
	ET Leader	IEC	ER	Contractor
Non-conformity on one occasion	1. Identify source 2. Inform the IEC and the ER 3. Discuss remedial actions with IEC, the ER and the Contractor 4. Monitor remedial actions until rectification has been completed	1. Check report 2. Check the Contractor's working method 3. Discuss with the ET and Contractor on possible remedial measures 4. Advise the ER on effectiveness of proposed remedial measures	1. Notify the Contractor 2. Ensure remedial measures are properly implemented.	1. Amend working methods if needed 2. Rectify damage and undertake remedial measures or any necessary replacement
Repeated Non-conformity	1. Identify source 2. Inform the IEC, ER, EPD and AFCD 3. Increase monitoring (site audit) frequency 4. Discuss remedial actions with IEC, the ER and the Contractor 5. Monitor remedial actions until rectification has been completed 6. If exceedance stops, cease additional monitoring (site audit)	1. Check report 2. Check the Contractor's working method 3. Discuss with the ET and Contractor on possible remedial measures 4. Advise the ER on effectiveness of proposed remedial measures. 5. Supervise the implementation of remedial measures	1. Notify Contractor 2. Ensure remedial measures are properly implemented	1. Amend working methods if needed 2. Rectify damage and undertake remedial measures or any necessary replacement

Event/Action Plan for Construction Noise

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

Appendix G

Monitoring Schedule

Monitoring Schedule for Channels MUP in this Reporting Month

Date		Air Quality		Noise L_{eq} 30min	Water Quality	Ecology	
		1-hour TSP	24-hour TSP			Water Quality	Ecology Surveys
Tue	26-June-12						
Wed	27-June-12				■	■	
Thu	28-June-12						■
Fri	29-June-12				■	■	
Sat	30-June-12	■	■	■			
Sun	1-July-12						
Mon	2-July-12						
Tue	3-July-12				■	■	
Wed	4-July-12						
Thu	5-July-12				■	■	■
Fri	6-July-12		■				
Sat	7-July-12	■		■	■	■	
Sun	8-July-12						
Mon	9-July-12				■	■	
Tue	10-July-12						
Wed	11-July-12				■	■	
Thu	12-July-12		■				■
Fri	13-July-12	■		■	■	■	
Sat	14-July-12						
Sun	15-July-12						
Mon	16-July-12				■	■	
Tue	17-July-12						
Wed	18-July-12		■		■	■	
Thu	19-July-12	■		■			■
Fri	20-July-12				■	■	
Sat	21-July-12						
Sun	22-July-12						
Mon	23-July-12				■	■	
Tue	24-July-12		■				
Wed	25-July-12	■		■	■	■	

■	Monitoring Day
■	Sunday or Public Holiday

Parameters:

Air
Noise
Water
Ecology Survey

Location ID

MUP-A1 (Same as MUP01/02-A1), MUP-A2a, MUP-A3,
MUP05-N1 (Same as MUP01/02-N1), MUP-N2, MUP-N3, MUP-N4,
MUP-W1 (Same as MUP01/02-W1), MUP-W2 (Same as MUP01/02-W2), MUP-W3, MUP-W4, MUP-W5, MUP-W6
As location in MUP05

Monitoring Schedule for Channels MUP in coming month

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

■	Monitoring Day
■	Sunday or Public Holiday

Parameters:

Air
Noise
Water
Ecology Survey

Location ID

MUP-A1 (Same as MUP01/02-A1), MUP-A2a, MUP-A3,
MUP05-N1 (Same as MUP01/02-N1), MUP-N2, MUP-N3, MUP-N4,
MUP-W1 (Same as MUP01/02-W1), MUP-W2 (Same as MUP01/02-W2), MUP-W3, MUP-W4, MUP-W5, MUP-W6
As location in MUP05

Appendix H

Detailed Impact Monitoring Data of Air Quality and Water Quality

DSD CONTRACT NO. DC/2007/08

Drainage Improvements Works in Tai Po Tin, Ping Che, Man Uk Pin and Lin Ma Hang

24- hour TSP Monitoring Data

DATE	SAMPLE NUMBER	ELAPSED TIME INITIAL	ELAPSED TIME FINAL	ELAPSED TIME (min)	MIN CHART READING	MAX CHART READING	AVG CHART READING	AVG TEMP (oC)	AVG PRESS (hPa)	STANDARD FLOW RATE (m3/min)	AIR VOLUME (std m3)	BLANK SAMPLE NUMBER	BLANK INTIAL WEIGHT (g)	BLANK FINAL WEIGHT (g)	BLANK DIFF WEIGHT (g)	INITIAL FILTER WEIGHT (g)	FINAL FILTER WEIGHT (g)	WEIGHT DUST COLLECTED (g)	Dust 24-hr TSP in Air (ug/m3)	Action Level	Limit Level
24-hour TSP Monitoring Data for MUP-A1 (same as MUP01/02-A1)																					
30-Jun-12	24862	3773.82	3797.82	1440.00	35	38	36.5	26.6	1004.6	1.4031	2020.43	NA	3.5701	3.5703	0.001	2.7246	2.7833	0.0587	29	156	260
6-Jul-12	24865	3797.82	3822.89	1504.20	36	39	37.5	28.5	1006.1	1.4287	2148.99	NA	3.5701	3.5701	0.001	2.7384	2.7605	0.0221	10	156	260
12-Jul-12	24872	3822.89	3848.47	1534.80	38	39	38.5	30	1006.9	1.4545	2232.31	NA	2.7653	2.7653	0.001	2.7052	2.7509	0.0457	20	156	260
18-Jul-12	24870	3848.47	3872.58	1446.60	35	38	36.5	29.1	1006.6	1.3998	2025.01	NA	3.5720	3.5721	0.001	2.7447	2.8011	0.0564	27	156	260
24-Jul-12	24902	3872.58	3898.57	1559.40	37	39	38	26.9	996.5	1.4404	2246.18	NA	2.7810	2.7810	0.001	2.7264	2.8146	0.0882	39	156	260
24-hour TSP Monitoring Data for MUP-A2a																					
30-Jun-12	power failure																	0.0000	power failure	149	260
6-Jul-12	power failure																	0.0000	power failure	149	260
12-Jul-12	24853	1758.6	1782.68	1444.80	37	39	38	30	1006.9	1.3407	1937.01	NA	2.7653	2.7653	0.001	2.7653	2.8324	0.0671	34	149	260
18-Jul-12	23913	1782.68	1806.76	1444.80	38	39	38.5	29.1	1006.6	1.3539	1956.19	NA	3.572	3.5721	0.001	3.0315	3.2561	0.2246	114	149	260
24-Jul-12	power failure																		power failure	149	260
24-hour TSP Monitoring Data for MUP-A3																					
30-Jun-12	power failure																		power failure	150	260
6-Jul-12	power failure																		power failure	150	260
12-Jul-12	power failure																		power failure	150	260
18-Jul-12	power failure																		power failure	150	260
24-Jul-12	power failure																		power failure	150	260

DSD CONTRACT NO. DC/2007/08
Drainage Improvements Works in Tai Po Tin, Ping Che, Man Uk Pin and Lin Ma Hang

Water Quality Monitoring Data for MUP05

Date	27-Jun-12															
Location	Time	Depth (m)	Temp(oC)		DO (mg/L)		DOS(%)		Turbidity(NTU)		pH		SS	
MUP-W1 (Control) (MUP01/02-W1)	03:15	0.1	27.6	27.6	4.90	4.9	72.40	72.9	7.12	7.1	7.18	7.3	5.00	5.0
			27.6		4.91		73.40		7.15		7.37		5.00	
MUP-W2 (Control) (MUP01/02-W2)	02:05	0.3	29.4	29.4	4.86	4.9	62.70	63.8	7.98	8.1	7.43	7.3	4.00	4.0
			29.4		4.97		64.80		8.13		7.21		4.00	
MUP-W3 (Control)	02:50	0.2	29.3	29.3	4.02	4.1	48.60	49.1	5.10	5.5	7.11	7.2	4.00	4.0
			29.3		4.12		49.60		5.80		7.28		4.00	
MUP-W4 (Impact)	02:20	0.5	28.8	28.8	5.82	5.9	70.40	71.3	8.90	8.6	7.63	7.6	4.00	4.0
			28.8		5.97		72.10		8.20		7.51		4.00	
MUP-W5 (mobile)	03:00	0.5	27.2	27.2	4.96	5.0	57.60	58.0	5.90	5.6	7.38	7.4	3.00	3.0
			27.2		4.99		58.30		5.20		7.50		3.00	
MUP-W6 (mobile)	02:37	0.5	27.8	27.8	4.94	5.0	76.20	77.2	5.00	5.2	7.30	7.4	3.00	3.0
			27.8		5.08		78.20		5.40		7.48		3.00	

Date	29-Jun-12															
Location	Time	Depth (m)	Temp(oC)		DO (mg/L)		DOS(%)		Turbidity(NTU)		pH		SS	
MUP-W1 (Control) (MUP01/02-W1)	02:55	0.1	32.0	32.0	4.02	4.1	50.50	52.0	4.61	4.6	6.99	7.0	4.00	4.0
			32.0		4.16		53.40		4.59		6.95		4.00	
MUP-W2 (Control) (MUP01/02-W2)	01:55	0.3	33.0	33.0	3.96	4.0	60.80	61.9	4.32	4.3	7.32	7.4	6.00	6.0
			33.0		4.08		62.90		4.23		7.44		6.00	
MUP-W3 (Control)	02:40	0.2	32.0	32.0	5.27	5.3	49.60	51.2	3.95	3.9	6.95	7.0	3.00	3.0
			32.0		5.33		52.70		3.87		6.99		3.00	
MUP-W4 (Impact)	02:10	0.5	34.0	34.0	5.65	5.7	62.20	63.0	4.68	4.6	7.18	7.2	<2	2.0
			34.0		5.71		63.80		4.55		7.28		<2	
MUP-W5 (mobile)	02:30	0.3	33.7	33.7	5.62	5.6	49.90	50.2	4.30	4.3	7.20	7.2	4.00	4.0
			33.7		5.63		50.40		4.22		7.12		4.00	
MUP-W6 (mobile)	02:20	0.5	33.4	33.4	5.05	5.1	39.70	39.8	4.68	4.6	7.16	7.2	3.00	3.0
			33.4		5.14		39.80		4.56		7.31		3.00	

Date	3-Jul-12															
Location	Time	Depth (m)	Temp(oC)		DO (mg/L)		DOS(%)		Turbidity(NTU)		pH		SS	
MUP-W1 (Control) (MUP01/02-W1)	03:05	0.1	33.1	33.1	5.21	5.3	60.80	62.7	5.93	5.9	7.63	7.5	3.00	3.0
			33.1		5.41		64.60		5.87		7.41		3.00	
MUP-W2 (Control) (MUP01/02-W2)	02:00	0.3	28.9	28.9	4.06	4.1	60.00	61.5	4.22	4.2	7.47	7.5	4.00	4.0
			28.9		4.11		62.90		4.08		7.61		4.00	
MUP-W3 (Control)	02:33	0.1	3.1	16.6	3.93	4.0	49.60	50.5	6.66	6.6	7.00	7.3	5.00	5.0
			30.1		3.99		51.40		6.58		7.60		5.00	
MUP-W4 (Impact)	02:15	0.5	32.9	32.9	5.31	5.4	68.70	69.1	4.98	4.9	7.33	7.4	4.00	4.0
			32.9		5.55		69.40		4.88		7.48		4.00	
MUP-W5 (mobile)	02:40	0.3	32.1	32.1	5.02	5.1	60.20	60.8	5.14	5.2	7.40	7.4	4.00	4.0
			32.1		5.12		61.40		5.31		7.34		4.00	
MUP-W6 (mobile)	02:25	0.3	36.0	36.0	4.58	4.6	33.90	34.5	7.00	7.0	7.10	7.2	3.00	3.0
			36.0		4.67		35.00		7.03		7.24		3.00	

Date	5-Jul-12															
Location	Time	Depth (m)	Temp(oC)		DO (mg/L)		DOS(%)		Turbidity(NTU)		pH		SS	
MUP-W1 (Control) (MUP01/02-W1)	11:00	0.3	26.2	26.2	3.26	3.3	39.70	40.4	6.35	6.4	7.23	7.2	3.00	3.0
			26.2		3.31		41.00		6.50		7.22		3.00	
MUP-W2 (Control) (MUP01/02-W2)	10:00	0.3	27.5	27.5	3.87	3.8	52.90	51.7	5.60	5.5	7.63	7.8	3.00	3.0
			27.5		3.81		50.40		5.33		7.88		3.00	
MUP-W3 (Control)	10:37	0.25	28.0	28.0	3.48	3.4	72.30	71.5	5.60	5.4	7.45	7.5	3.00	3.0
			28.0		3.35		70.60		5.16		7.52		3.00	
MUP-W4 (Impact)	10;20	1	26.5	26.5	5.29	5.3	63.40	64.6	5.21	5.5	7.33	7.4	4.00	4.0
			26.5		5.37		65.80		5.80		7.39		4.00	
MUP-W5 (mobile)	10:42	1	27.7	27.7	6.18	6.1	88.20	86.1	5.35	5.5	7.30	7.3	4.00	4.0
			27.7		6.04		83.90		5.58		7.21		4.00	
MUP-W6 (mobile)	10:30	0.3	27.0	27.0	4.75	4.8	58.20	60.8	5.84	5.7	7.24	7.3	3.00	3.0
			27.0		4.91		63.40		5.49		7.36		3.00	

Date	7-Jul-12															
Location	Time	Depth (m)	Temp(oC)		DO (mg/L)		DOS(%)		Turbidity(NTU)		pH		SS	
MUP-W1 (Control) (MUP01/02-W1)	03:00	0.2	30.9	30.9	4.25	4.4	49.40	51.5	5.37	5.4	7.12	7.4	6.00	6.0
			30.9		4.46		53.50		5.47		7.61		6.00	
MUP-W2 (Control) (MUP01/02-W2)	01:50	0.3	31.5	31.5	5.02	5.1	60.60	61.2	4.78	4.9	7.48	7.6	3.00	3.0
			31.5		5.13		61.70		4.97		7.66		3.00	
MUP-W3 (Control)	02:30	0.2	30.0	30.0	3.06	3.1	39.80	40.9	5.38	5.4	7.26	7.3	7.00	7.0
			30.0		3.17		41.90		5.46		7.34		7.00	
MUP-W4 (Impact)	02:10	0.5	30.3	30.3	5.93	5.9	53.30	53.3	5.85	5.9	7.36	7.4	8.00	8.0
			30.3		5.84		53.20		5.91		7.45		8.00	
MUP-W5 (mobile)	02:40	0.3	33.0	33.0	4.41	4.5	52.80	54.4	4.95	5.0	7.28	7.3	<2	2.0
			33.0		4.68		55.90		4.99		7.31		<2	
MUP-W6 (mobile)	02:20	0.3	28.9	28.9	5.04	5.1	49.90	48.3	7.54	7.6	7.20	7.3	2.00	2.0
			28.9		5.11		46.70		7.65		7.38		2.00	

Date	9-Jul-12															
Location	Time	Depth (m)	Temp(oC)		DO (mg/L)		DOS(%)		Turbidity(NTU)		pH		SS	
MUP-W1 (Control) (MUP01/02-W1)	03:00	0.2	29.3	29.3	6.88	6.9	86.40	87.1	6.37	6.6	7.05	7.2	3.00	3.0
			29.3		6.99		87.80		6.78		7.31		3.00	
MUP-W2 (Control) (MUP01/02-W2)	01:55	0.3	34.7	34.7	4.68	4.7	63.20	64.3	3.95	3.9	7.45	7.5	3.00	3.0
			34.7		4.79		65.30		3.88		7.56		3.00	
MUP-W3 (Control)	02:40	0.2	30.5	30.5	5.94	5.9	87.30	86.1	6.30	6.4	7.48	7.4	<2	2.0
			30.5		5.90		84.90		6.44		7.38		<2	
MUP-W4 (Impact)	2;10	0.5	30.2	30.2	5.97	6.0	80.50	81.1	9.21	9.1	7.34	7.4	<2	2.0
			30.2		6.08		81.60		9.02		7.48		<2	
MUP-W5 (mobile)	02:47	1	29.2	29.2	4.53	4.6	62.10	63.7	2.69	2.6	7.40	7.5	<2	2.0
			29.2		4.64		65.30		2.41		7.56		<2	
MUP-W6 (mobile)	02:30	0.3	28.5	28.5	9.97	10.0	92.80	93.1	5.85	5.8	7.01	7.1	<2	2.0
			28.5		9.95		93.40		5.76		7.15		<2	

Date	11-Jul-12															
Location	Time	Depth (m)	Temp(oC)		DO (mg/L)		DOS(%)		Turbidity(NTU)		pH		SS	
MUP-W1 (Control) (MUP01/02-W1)	11:32	0.2	29.5	29.5	6.78	6.8	84.10	85.1	4.16	4.1	7.11	7.1	3.00	3.0
			29.5		6.82		86.00		4.08		7.07		3.00	
MUP-W2 (Control) (MUP01/02-W2)	11:05	0.1	30.2	30.2	4.69	4.8	63.10	64.8	3.64	3.8	7.41	7.5	2.00	2.0
			30.2		4.88		66.50		3.98		7.50		2.00	
MUP-W3 (Control)	11:40	0.1	30.6	30.6	5.90	5.9	86.60	85.4	5.99	6.5	7.39	7.4	2.00	2.0
			30.6		5.82		84.10		7.08		7.43		2.00	
MUP-W4 (Impact)	11:13	0.4	31.7	31.7	5.99	6.0	81.40	82.6	7.81	7.9	7.48	7.5	2.00	2.0
			31.7		6.01		83.70		8.05		7.48		2.00	
MUP-W5 (mobile)	11:21	0.5	31.2	31.2	4.83	4.9	65.50	66.1	6.29	6.3	7.48	7.5	2.00	2.0
			31.2		4.90		66.70		6.35		7.52		2.00	
MUP-W6 (mobile)	11:16	0.4	31.6	31.6	9.66	9.6	89.40	88.9	6.25	6.7	7.12	7.1	3.00	3.0
			31.6		9.54		88.40		7.17		7.17		3.00	

DSD CONTRACT NO. DC/2007/08

Drainage Improvements Works in Tai Po Tin, Ping Che, Man Uk Pin and Lin Ma Hang

Water Quality Monitoring Data for MUP05

Date	13-Jul-12													
Location	Time	Depth (m)	Temp(oC)		DO (mg/L)		DOS(%)		Turbidity(NTU)		pH		SS	
MUP-W1 (Control) (MUP01/02-W1)	03:00	0.1	32.2	32.2	6.44	6.5	82.70	82.9	5.25	5.3	6.81	6.9	<2	2.0
			32.2		6.48		83.10		5.34		6.93		<2	
MUP-W2 (Control) (MUP01/02-W2)	01:50	0.3	29.9	29.9	8.70	8.7	94.80	94.6	6.66	6.8	7.19	7.2	<2	2.0
			29.9		8.64		94.30		6.84		7.21		<2	
MUP-W3 (Control)	02:30	0.1	32.4	32.4	3.97	4.0	63.40	63.0	4.87	4.8	6.66	6.7	<2	2.0
			32.4		4.04		62.50		4.76		6.77		<2	
MUP-W4 (Impact)	02:10	0.5	30.2	30.2	5.60	5.6	63.40	63.1	12.10	12.0	7.07	7.1	<2	2.0
			30.2		5.54		62.80		11.80		7.10		<2	
MUP-W5 (mobile)	02:40	0.5	30.3	30.3	5.06	5.1	69.80	69.4	7.70	7.5	7.24	7.2	<2	2.0
			30.3		5.13		68.90		7.20		7.19		<2	
MUP-W6 (mobile)	02:20	0.2	30.0	30.0	6.12	6.1	73.20	73.8	8.06	8.1	6.77	6.8	<2	2.0
			30.0		6.08		74.40		8.12		6.74		<2	

Date	16-Jul-12													
Location	Time	Depth (m)	Temp(oC)		DO (mg/L)		DOS(%)		Turbidity(NTU)		pH		SS	
MUP-W1 (Control) (MUP01/02-W1)	02:40	0.1	32.8	32.8	3.65	3.7	56.60	55.3	7.40	7.4	7.19	7.2	3.00	3.0
			32.8		3.71		53.90		7.48		7.20		3.00	
MUP-W2 (Control) (MUP01/02-W2)	01:45	0.2	30.5	30.5	5.21	5.2	55.60	56.2	5.39	5.4	7.39	7.4	3.00	3.0
			30.5		5.24		56.80		5.41		7.44		3.00	
MUP-W3 (Control)	02:50	0.1	33.1	33.1	6.27	6.2	78.60	78.1	13.20	13.1	7.78	7.7	2.00	2.0
			33.1		6.19		77.60		13.00		7.69		2.00	
MUP-W4 (Impact)	02:02	0.5	30.8	30.8	5.85	5.8	50.90	51.3	7.22	7.3	7.32	7.3	3.00	3.0
			30.8		5.80		51.60		7.39		7.35		3.00	
MUP-W5 (mobile)	02:17	0.4	31.3	31.3	5.86	5.8	59.90	59.4	6.74	6.8	7.55	7.6	<2	2.0
			31.3		5.77		58.80		6.86		7.61		<2	
MUP-W6 (mobile)	2;10	0.2	29.0	29.0	5.07	5.1	56.80	55.7	11.20	11.1	6.95	7.0	<2	2.0
			29.0		5.13		54.60		11.07		7.02		<2	

Date	18-Jul-12													
Location	Time	Depth (m)	Temp(oC)		DO (mg/L)		DOS(%)		Turbidity(NTU)		pH		SS	
MUP-W1 (Control) (MUP01/02-W1)	03:05	0.1	33.3	33.3	3.06	3.1	51.90	52.6	5.33	5.4	7.07	7.1	<2	2.0
			33.3		3.18		53.30		5.50		7.17		<2	
MUP-W2 (Control) (MUP01/02-W2)	02:05	0.3	32.0	32.0	4.37	4.3	61.80	61.0	5.40	5.6	7.69	7.7	2.00	2.0
			32.0		4.23		60.10		5.88		7.66		2.00	
MUP-W3 (Control)	02:40	0.1	33.2	33.2	5.76	5.7	55.90	55.2	8.64	8.8	7.98	7.9	<2	2.0
			33.2		5.71		54.40		8.93		7.86		<2	
MUP-W4 (Impact)	02:20	0.3	32.5	32.5	6.15	6.1	60.90	60.4	7.62	7.5	7.47	7.4	<2	2.0
			32.5		6.11		59.90		7.37		7.41		<2	
MUP-W5 (mobile)	02:47	0.4	33.2	33.2	4.68	4.7	56.70	56.4	4.82	4.8	7.68	7.7	<2	2.0
			33.2		4.66		56.10		4.69		7.62		<2	
MUP-W6 (mobile)	02:30	0.2	33.0	33.0	5.17	5.1	49.40	47.8	4.67	4.8	7.04	7.1	<2	2.0
			33.0		5.08		46.20		4.84		7.10		<2	

Date	20-Jul-12													
Location	Time	Depth (m)	Temp(oC)		DO (mg/L)		DOS(%)		Turbidity(NTU)		pH		SS	
MUP-W1 (Control) (MUP01/02-W1)	03:00	0.2	31.8	31.8	4.55	4.6	56.20	57.9	5.53	5.6	7.26	7.3	<2	2.0
			31.8		4.73		59.60		5.70		7.41		<2	
MUP-W2 (Control) (MUP01/02-W2)	01:55	0.4	30.2	30.2	5.16	5.2	66.10	67.7	6.09	6.4	7.77	7.8	<2	2.0
			30.2		5.33		69.20		6.78		7.81		<2	
MUP-W3 (Control)	02:35	0.2	33.0	33.0	4.11	4.3	60.80	63.3	6.77	6.8	7.56	7.4	<2	2.0
			33.0		4.58		65.70		6.76		7.20		<2	
MUP-W4 (Impact)	02:15	0.4	31.1	31.1	5.42	5.5	65.40	66.8	6.76	6.6	7.05	7.2	<2	2.0
			31.1		5.56		68.10		6.51		7.37		<2	
MUP-W5 (mobile)	02:43	0.5	32.7	32.7	4.67	4.8	62.20	65.0	7.65	7.6	7.37	7.4	<2	2.0
			32.7		4.94		67.80		7.53		7.46		<2	
MUP-W6 (mobile)	02:25	0.2	32.5	32.5	4.85	4.9	51.40	53.1	5.33	5.4	7.24	7.3	<2	2.0
			32.5		4.93		54.80		5.44		7.33		<2	

Date	23-Jul-12													
Location	Time	Depth (m)	Temp(oC)		DO (mg/L)		DOS(%)		Turbidity(NTU)		pH		SS	
MUP-W1 (Control) (MUP01/02-W1)	02:40	0.1	31.5	31.5	3.36	3.5	49.90	51.1	6.57	6.7	7.39	7.5	16.00	16.0
			31.5		3.73		52.30		6.78		7.58		16.00	
MUP-W2 (Control) (MUP01/02-W2)	01:35	0.3	32.5	32.5	4.02	4.4	60.80	63.3	4.71	4.7	7.45	7.5	17.00	17.0
			32.5		4.68		65.70		4.66		7.55		17.00	
MUP-W3 (Control)	02:10	0.2	31.7	31.7	5.02	5.2	51.70	52.6	18.90	19.1	7.59	7.5	17.00	17.0
			31.7		5.31		53.40		19.30		7.47		17.00	
MUP-W4 (Impact)	01:55	0.3	32.6	32.6	5.99	5.8	57.70	57.0	6.99	7.0	7.25	7.3	16.00	16.0
			32.6		5.66		56.20		7.05		7.38		16.00	
MUP-W5 (mobile)	02:17	0.3	30.6	30.6	5.02	5.0	49.40	49.0	3.20	4.2	7.42	7.3	18.00	18.0
			30.6		4.93		48.50		5.11		7.25		18.00	
MUP-W6 (mobile)	02:03	0.2	32.5	32.5	4.88	4.8	47.60	48.3	4.10	4.8	7.21	7.3	16.00	16.0
			32.5		4.79		48.90		5.56		7.29		16.00	

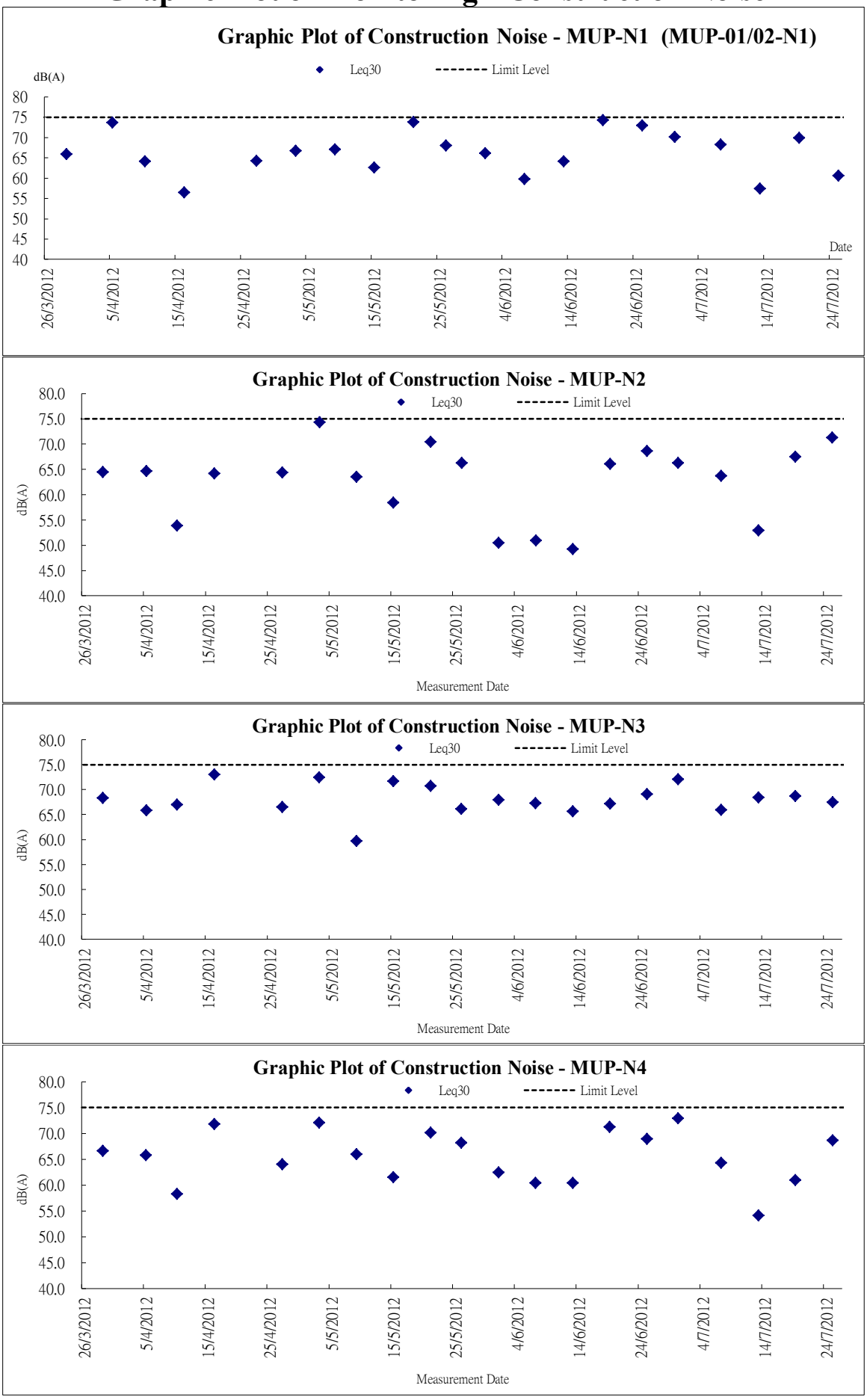
Date	25-Jul-12													
Location	Time	Depth (m)	Temp(oC)		DO (mg/L)		DOS(%)		Turbidity(NTU)		pH		SS	
MUP-W1 (Control) (MUP01/02-W1)	04:00	0.1	28.0	28.0	3.16	3.2	43.30	44.5	16.60	17.2	7.03	7.0	17.00	17.0
			28.0		3.18		45.60		17.80		7.06		17.00	
MUP-W2 (Control) (MUP01/02-W2)	02:55	0.3	29.5	29.5	4.04	4.1	52.80	54.6	13.70	14.3	7.55	7.6	16.00	16.0
			29.5		4.16		56.30		14.80		7.60		16.00	
MUP-W3 (Control)	03:30	0.2	30.1	30.1	4.37	4.4	61.90	61.5	27.80	28.4	7.37	7.4	17.00	17.0
			30.1		4.42		61.10		28.90		7.41		17.00	
MUP-W4 (Impact)	03:12	0.4	29.9	29.9	5.73	5.8	48.40	48.9	4.84	4.8	7.54	7.6	17.00	17.0
			29.9		5.84		49.30		4.77		7.58		17.00	
MUP-W5 (mobile)	03:40	0.4	30.5	30.5	5.29	5.2	57.50	56.2	5.52	5.6	7.68	7.7	16.00	16.0
			30.5		5.17		54.80		5.66		7.63		16.00	
MUP-W6 (mobile)	3;20	0.2	30.8	30.8	5.00	5.0	50.60	51.0	7.58	7.5	7.06	7.1	16.00	16.0
			30.8		4.98		51.30		7.47		7.18		16.00	

Appendix I

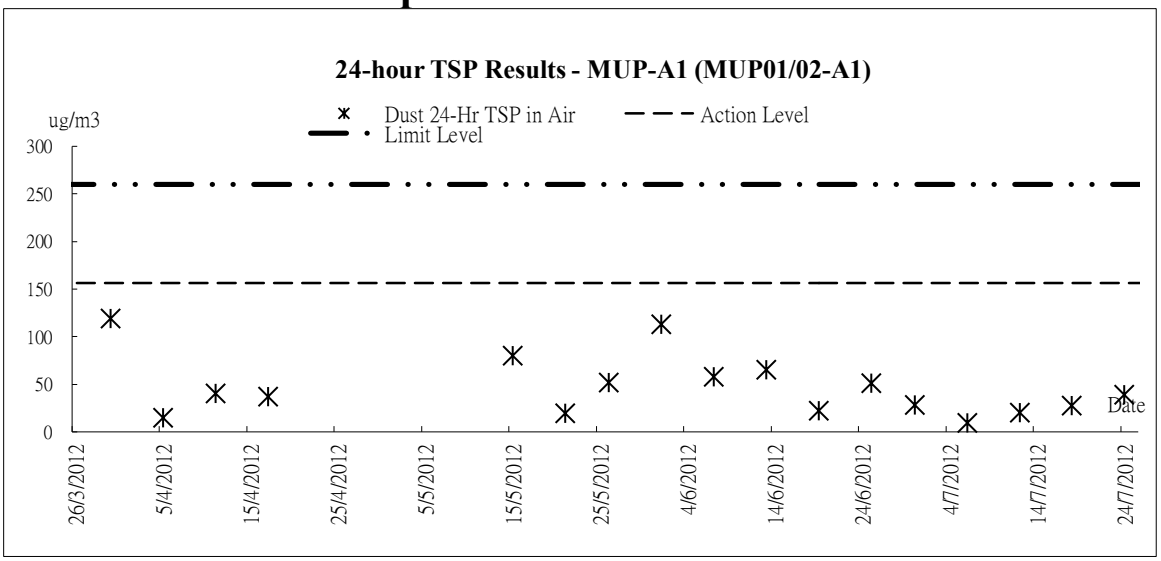
Graphic Plot of Monitoring

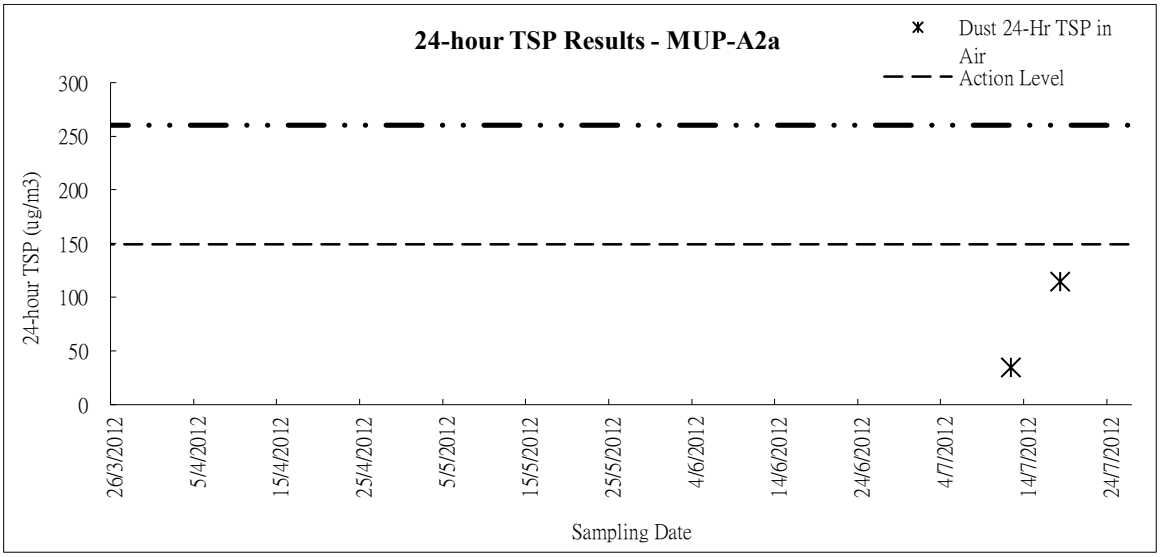
1. Construction Noise
2. Air Quality
3. Water Quality

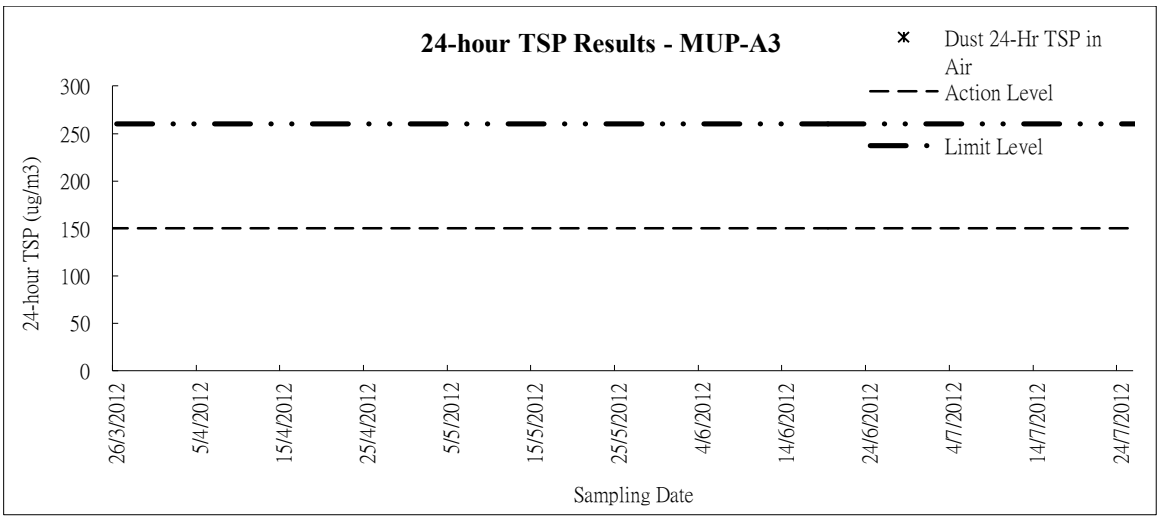
Graphic Plot of Monitoring - Construction Noise



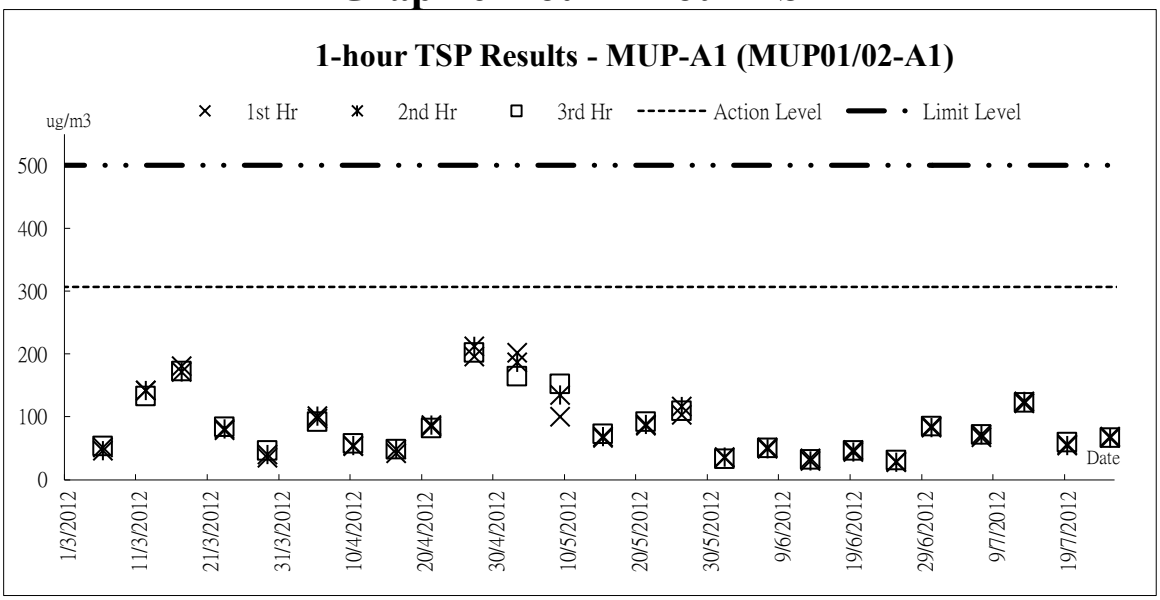
Graphic Plot of Monitoring - Air Quality
Graphic Plot – 24-hour TSP

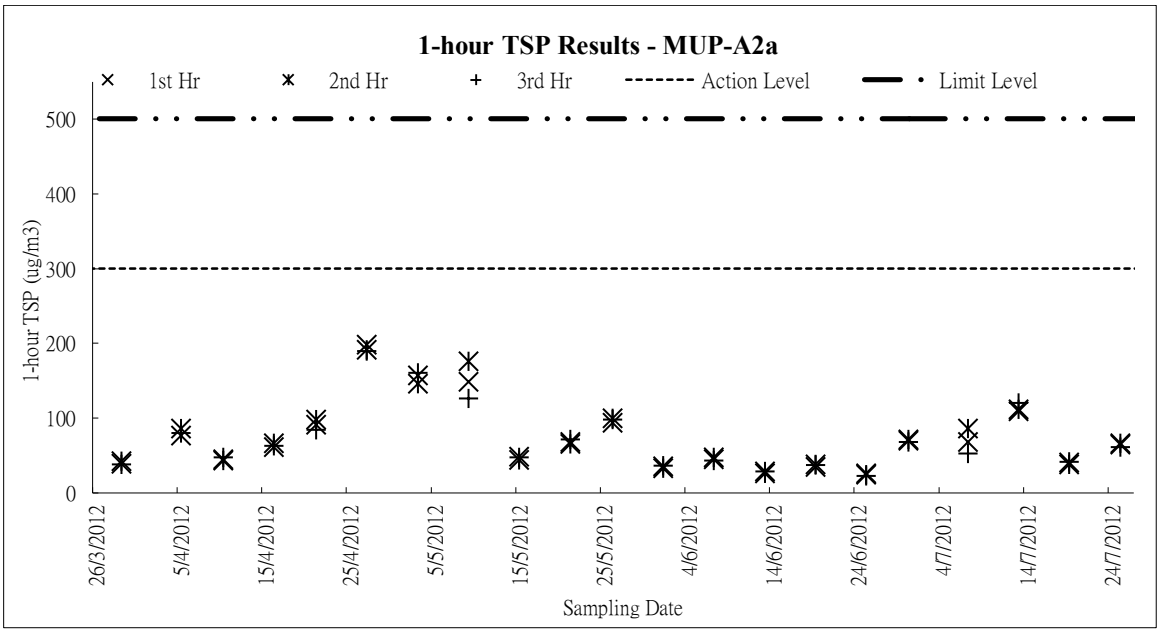


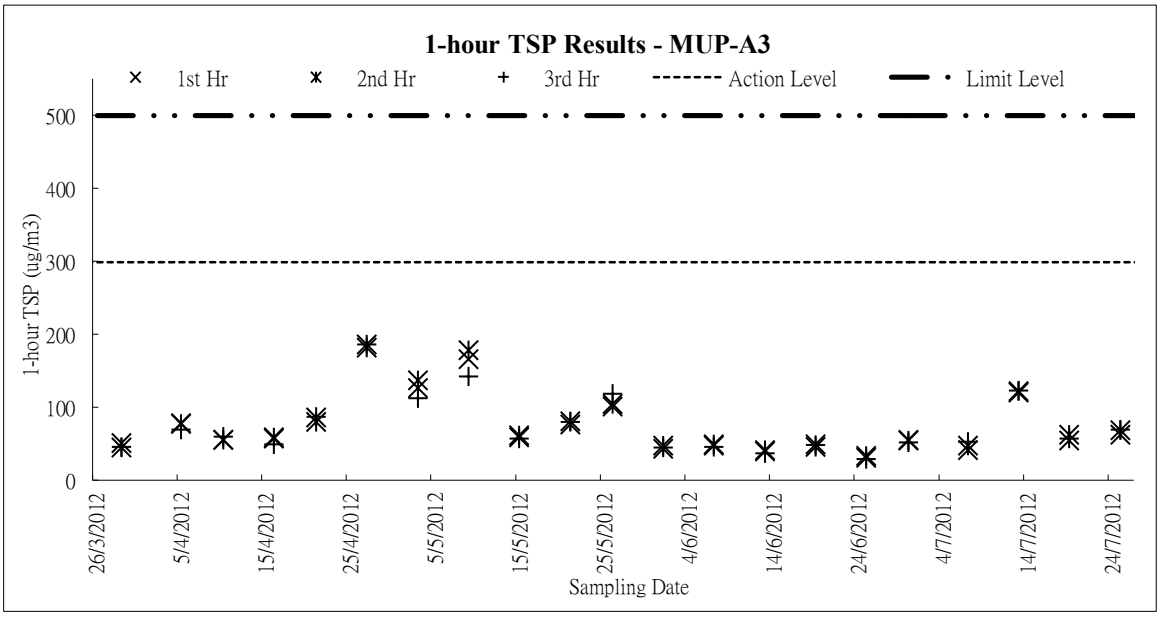




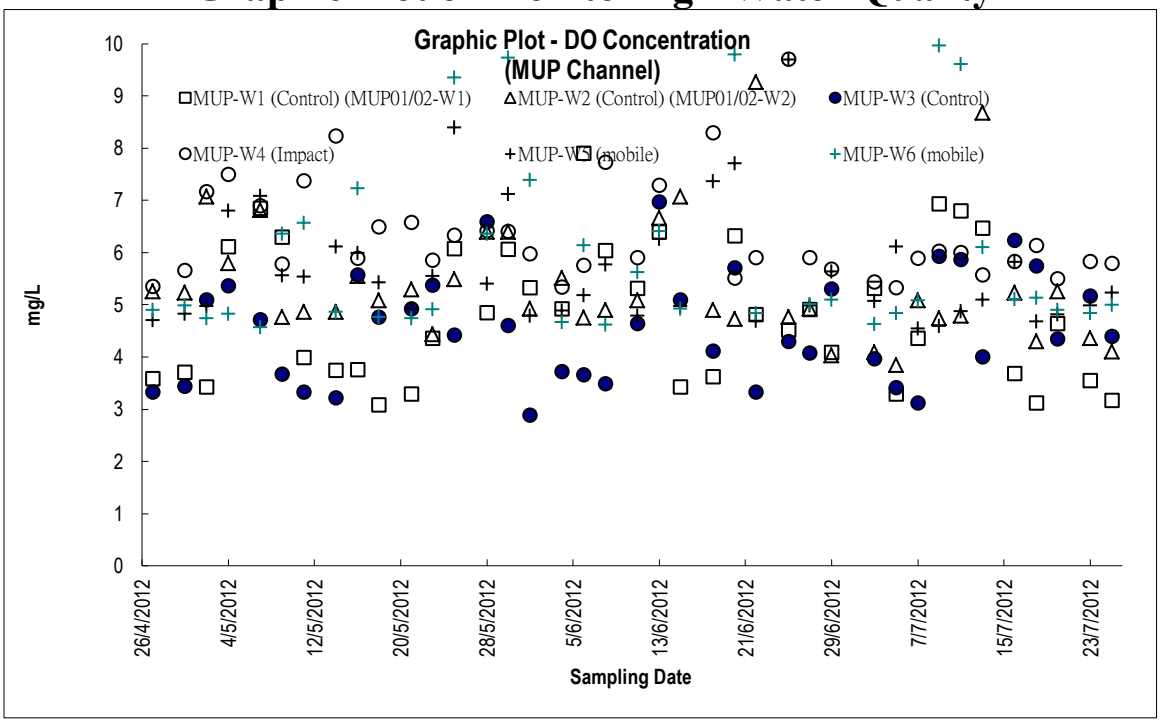
Graphic Plot – 1-hour TSP

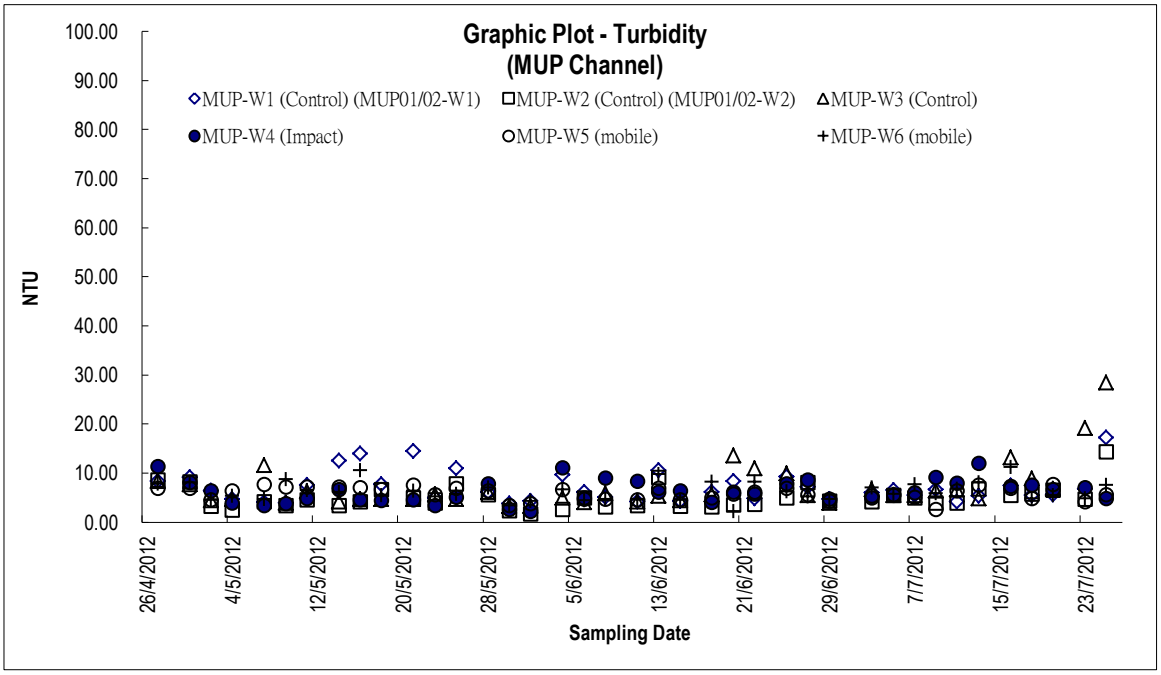


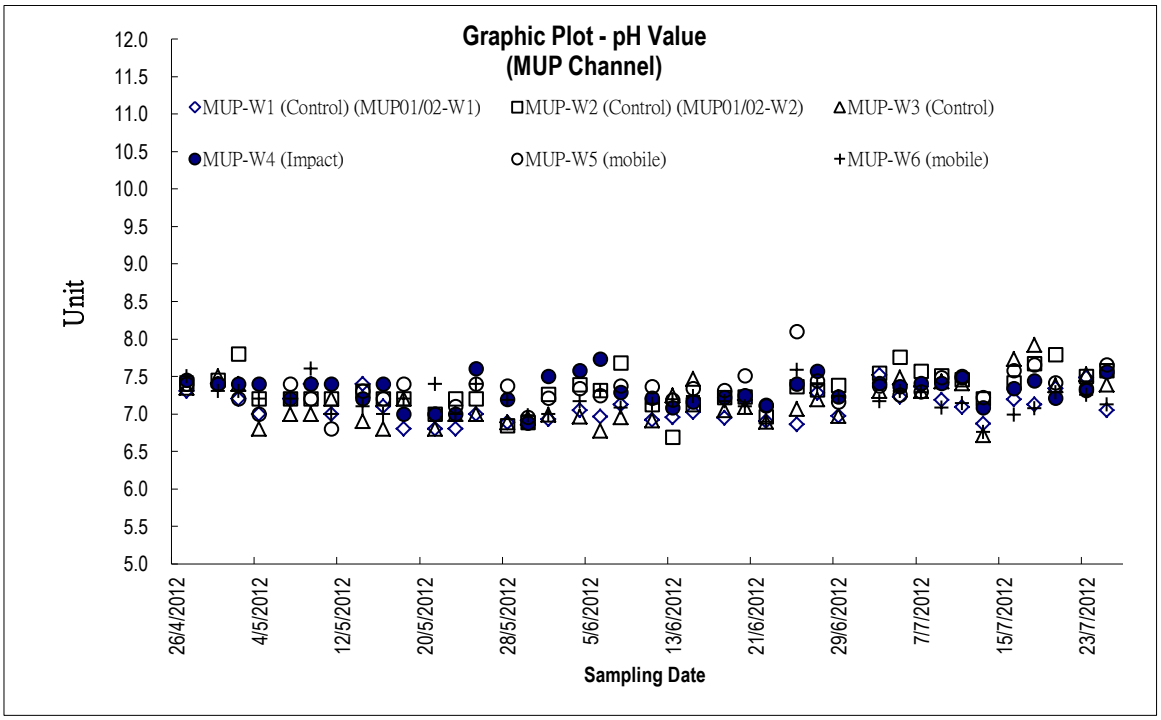


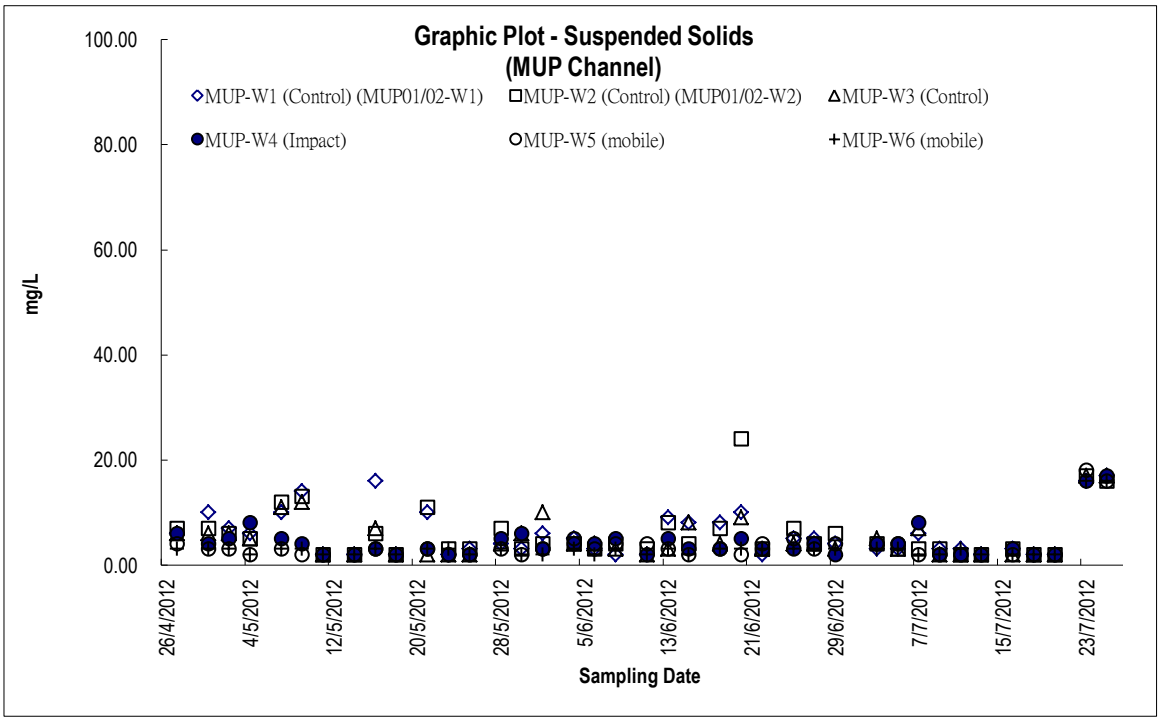


Graphic Plot of Monitoring - Water Quality






Graphic Plot - pH Value
(MUP Channel)
MUP-W1 (Control) (MUP01/02-W1)
MUP-W2 (Control) (MUP01/02-W2)
MUP-W3 (Control)
MUP-W4 (Impact)
MUP-W5 (mobile)
MUP-W6 (mobile)
Unit
12.0
11.5
11.0
10.5
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
26/4/2012
4/5/2012
12/5/2012
20/5/2012
28/5/2012
5/6/2012
13/6/2012
21/6/2012
29/6/2012
7/7/2012
15/7/2012
23/7/2012
Sampling Date


Graphic Plot - Suspended Solids
(MUP Channel)
MUP-W1 (Control) (MUP01/02-W1)
MUP-W2 (Control) (MUP01/02-W2)
MUP-W3 (Control)
MUP-W4 (Impact)
MUP-W5 (mobile)
MUP-W6 (mobile)
mg/L
100.00
80.00
60.00
40.00
20.00
0.00
26/4/2012
4/5/2012
12/5/2012
20/5/2012
28/5/2012
5/6/2012
13/6/2012
21/6/2012
29/6/2012
7/7/2012
15/7/2012
23/7/2012
Sampling Date

Appendix J

Meteorological Records

Meteorological Data in this Reporting Month

Date		Weather	Total Rainfall (mm)	Ta Kwu Ling			
				Mean Air Temp. (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction
26-Jun-12	Tue	Moderate west to northwesterly winds.	0.8	28	9	81	S
27-Jun-12	Wed	Very hot in the afternoon.	Trace	29.6	8	76.7	E/SE
28-Jun-12	Thu	Mainly fine and hot	0	29.6	6.5	77.5	E/NE
29-Jun-12	Fri	Tropical Storm	3.9	29.6	11.7	75	N
30-Jun-12	Sat	Tropical Storm	38.1	27	12.7	79	N
1-Jul-12	Sun	HOLIDAY					
2-Jul-12	Mon	HOLIDAY					
3-Jul-12	Tue	Moderate southwesterly winds.	0	28.9	7.2	77	E/NE
4-Jul-12	Wed	Mainly fine.	0	28.7	7.5	76	E/NE
5-Jul-12	Thu	Very hot in the afternoon.	22	27.4	6.9	65	S/SE
6-Jul-12	Fri	Moderate south to southwesterly winds.	0.8	28.5	8.7	78.5	SE
7-Jul-12	Sat	Very hot during the day	2.7	28.9	9.2	80	SE
8-Jul-12	Sun	Mainly fine.	0.4	28.8	7.2	77	SE
9-Jul-12	Mon	Mainly fine and very hot	Trace	28.7	6	77	E
10-Jul-12	Tue	Fine and very hot apart from one or two isolated showers at first.	Trace	28.8	6.6	74.7	S/SW
11-Jul-12	Wed	Very hot in the afternoon.	Trace	29.2	7.2	75	S/SW
12-Jul-12	Thu	Mainly cloudy with a few showers.	1.3	29	7.5	75.5	S/SW
13-Jul-12	Fri	Hot with sunny intervals	9	28.8	10.5	78.5	S/SW
14-Jul-12	Sat	Moderate southwesterly winds, fresh offshore.	7	29.5	8.5	75	S/SW
15-Jul-12	Sun	Mainly fine and very hot.	2.1	30.2	6	71.5	S/SW
16-Jul-12	Mon	Mainly fine and very hot.	18.1	29.9	8	75.5	S/SW
17-Jul-12	Tue	Moderate south to southwesterly winds.	1	29.4	7.2	77.5	S/SW
18-Jul-12	Wed	Sunny periods in the afternoon.	34.3	27.6	9	83.2	E
19-Jul-12	Thu	Mainly cloudy with a few showers.	Trace	29.9	6.5	77	S/SW
20-Jul-12	Fri	Mainly fine and very hot.	4.2	29.9	4.6	76.5	N/NE
21-Jul-12	Sat	The Strong Wind Signal, No. 1	2.2	30.6	7.8	80	E/NE
22-Jul-12	Sun	The Strong Wind Signal, No. 1	1	29	19.5	77	E/NE
23-Jul-12	Mon	The Strong Wind Signal, No. 3	112	26.5	23.7	83	NE
24-Jul-12	Tue	The Strong Wind Signal, No. 3	99.5	26.7	36.2	88.7	E/SE
25-Jul-12	Wed	Moderate east to southeasterly winds.	82.3	25.6	13.1	91	E

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

 # missing (less than 24 hourly observations a day)

Appendix K

Proforma of the Weekly ET Site Inspection Checklist

Environmental Team – Weekly Site Inspection and Audit Checklist

Project:	***DSD Contract No. DC/2007/08***	**Inspected by**	**Checklist No.** **DC200708-28-Jun-2012**
	Drainage Improvement Works at Tai Po Tin, Ping Che, Man Uk Pin and Lin Ma Hang	**IEC/IEC's Representative:**	
		RE/ RE's Representative:	
Inspection		**ETL/ ET's Representative:**	Wong F. N./Ben Tam
Date:	**28-June-2012**	**EO/ EO's Representative:**	Lai Kwok Hong Alex
Time:	13:00	**Contractor's Representative:**	

PART A: **GENERAL INFORMATION** **Environmental Permit No. EP-277/2007/A**

Weather: ☑ Sunny ☐ Fine ☐ Cloudy ☐ Rainy ☐ Calm ☐

Temperature: 30 ^{0}C ☐

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

Wind: ☐ Strong ☐ Breeze ☑ Light ☐ Calm

Channel **Area Inspected**

TKL02
TKL07
MUP01/02
MUP05

PART B: **SITE AUDIT**

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

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

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
3.07	Are air compressors fitted with valid noise emission labels during operation?	☑	☐	☐	☐	☐	
3.08	Are flaps and panels of mechanical equipment closed during operation?	☐	☑	☐	☐	☐	
3.09	Are Construction Noise Permit(s) applied for percussive piling works?	☑	☐	☐	☐	☐	
3.10	Are Construction Noise Permit(s) applied for general construction works during restricted hours?	☐	☑	☐	☐	☐	
3.11	Are valid Construction Noise Permit(s) posted at site entrances?	☐	☑	☐	☐	☐	
3.12	Use of quiet plant had been used on site to minimise the construction noise impact to the surrounding residences/dwellings (Level 1 mitigation measures).	☑	☐	☐	☐	☐	
3.13	Temporary/Moveable noise barrier or site hoarding are provide or erect at the site boundary to minimise the noise impact of the closest NSRs or stationary equipments shield by the noise barrier which cannot visible from NSRs (Level 2 mitigation measure)	☑	☐	☐	☐	☐	
3.14	Temporary/Moveable noise barrier equal to or more than 3m height with 10kg/m2 are provide for noise mitigation measures (Level 2 mitigation measures).	☑	☐	☐	☐	☐	
Section 4: Waste/Chemical Management							
4.01	Waste Management Plan had been submit to Engineer for approval.	☐	☑	☐	☐	☐	
4.02	Are receptacles available for general refuse collection?	☐	☑	☐	☐	☐	
4.03	Is general refuse sorting or recycling implemented?	☐	☑	☐	☐	☐	
4.04	Is general refuse disposed of properly and regularly?	☐	☑	☐	☐	☐	
4.05	Is the Contractor registered as a chemical waste producer?	☑	☐	☐	☐	☐	
4.06	Are the chemical waste containers properly labelled?	☑	☐	☐	☐	☐	
4.07	Are the chemical containers stored in proper storage areas?	☐	☑	☐	☐	☐	
4.08	Is the chemical waste storage area properly labelled?	☐	☑	☐	☐	☐	
4.09	Is the chemical waste storage area used for storage of chemical waste only?	☐	☑	☐	☐	☐	
4.10	Are incompatible chemical wastes stored in different areas?	☑	☐	☐	☐	☐	
4.11	Are the chemical wastes disposed of by licensed collectors?	☑	☐	☐	☐	☐	
4.12	Are trip tickets for chemical wastes disposal available for inspection?	☑	☐	☐	☐	☐	
4.13	Are chemical/fuel storage areas bunded?	☐	☑	☐	☐	☐	
4.14	Are designated areas identified for storage and sorting of construction wastes?	☐	☑	☐	☐	☐	
4.15	Are construction wastes sorted (inert and non-inert) on site?	☐	☑	☐	☐	☐	
4.16	Are construction wastes reused?	☐	☑	☐	☐	☐	
4.17	Are construction wastes disposed of properly?	☐	☐	☐	☑	☐	
4.18	Are site hoardings and signboards made of durable materials instead of timber?	☐	☑	☐	☐	☐	
4.19	Is trip ticket system implemented for the disposal of construction wastes and records available for inspection?	☐	☑	☐	☐	☐	
4.20	Are appropriate procedures followed if contaminated material exists?	☐	☑	☐	☐	☐	
4.21	Is relevant license/ permit for disposal of construction waste or excavated materials available for inspection?	☐	☑	☐	☐	☐	
4.22	Site cleanliness and appropriate waste management training had provided for the site workers.	☐	☑	☐	☐	☐	
4.23	Contaminated sediments will be managed according to WBTC No.12/2000 and EWTB TC(W) No. 34/2002.	☐	☑	☐	☐	☐	

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 5: Landscape & Visual							
5.01	Are retained and transplanted trees in health condition?	☐	☑	☐	☐	☐	
5.02	Are retained and transplanted trees properly protected?	☐	☑	☐	☐	☐	
5.03	Are surgery works carried out for the damaged trees?	☐	☐	☐	☐	☑	
5.04	Is damage to trees outside site boundary due to construction activities avoided?	☐	☑	☐	☐	☐	
5.05	Is the night-time lighting controlled to minimize glare to sensitive receivers?	☐	☑	☐	☐	☐	
Section 6: Ecology							
6.01	Gabion banks and base had been provide for channel linings and banks for typical sections?	☑	☐	☐	☐	☐	
6.02	Prevent site effluent/runoff discharge to the seasonal wetlands?	☑	☐	☐	☐	☐	
6.03	Stockpiling or disposal of materials, and any dredging or construction activities at the seasonal wetlands are prohibited?	☑	☐	☐	☐	☐	
Section 7: Others							
7.01	Are relevant Environmental Permits posted at all vehicle site entrances/exits?	☐	☑	☐	☐	☐	
7.02	Is any mosquito control measures implemented to prevent mosquito breeding?						

Remarks

Follow-Up of Last Site Inspection: Not required for reminders.

Findings of Site Inspection on 28 Jun 2012:

1. No adverse environmental impacts were observed during the site inspection. Full implementation of the required environmental mitigation measures, in particular wheel washing of the vehicles prior to exit, is reminded.

IEC's representative	*RE's representative*	*ET's representative*	*EO's representative*	*Contractor's representative*
( )	(H. N. Cheung)	(F. N. Wong)	(Lai Kwok Hong)	( )

Environmental Team – Weekly Site Inspection and Audit Checklist

Project:	***DSD Contract No. DC/2007/08***	**Inspected by**	**Checklist No.** **DC200708-5-Jul-2012**
	Drainage Improvement Works at Tai Po Tin, Ping Che, Man Uk Pin and Lin Ma Hang	**IEC/IEC's Representative:**	
		RE/ RE's Representative:	
Inspection		**ETL/ ET's Representative:**	Wong F. N./Ben Tam
Date:	**5-July-2012**	**EO/ EO's Representative:**	Lai Kwok Hong Alex
Time:	13:00	**Contractor's Representative:**	

PART A: **GENERAL INFORMATION** **Environmental Permit No. EP-277/2007/A**

Weather: ☐ Sunny ☐ Fine ☐ Cloudy ☑ Rainy ☐ Calm ☐

Temperature: 30 ^{0}C ☐

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

Wind: ☐ Strong ☐ Breeze ☑ Light ☐ Calm

Channel **Area Inspected**

TKL02
TKL07
MUP01/02
MUP05

PART B: **SITE AUDIT**

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

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

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
3.07	Are air compressors fitted with valid noise emission labels during operation?	☑	☐	☐	☐	☐	
3.08	Are flaps and panels of mechanical equipment closed during operation?	☐	☑	☐	☐	☐	
3.09	Are Construction Noise Permit(s) applied for percussive piling works?	☑	☐	☐	☐	☐	
3.10	Are Construction Noise Permit(s) applied for general construction works during restricted hours?	☐	☑	☐	☐	☐	
3.11	Are valid Construction Noise Permit(s) posted at site entrances?	☐	☑	☐	☐	☐	
3.12	Use of quiet plant had been used on site to minimise the construction noise impact to the surrounding residences/dwellings (Level 1 mitigation measures).	☑	☐	☐	☐	☐	
3.13	Temporary/Moveable noise barrier or site hoarding are provide or erect at the site boundary to minimise the noise impact of the closest NSRs or stationary equipments shield by the noise barrier which cannot visible from NSRs (Level 2 mitigation measure)	☑	☐	☐	☐	☐	
3.14	Temporary/Moveable noise barrier equal to or more than 3m height with 10kg/m2 are provide for noise mitigation measures (Level 2 mitigation measures).	☑	☐	☐	☐	☐	
Section 4: Waste/Chemical Management							
4.01	Waste Management Plan had been submit to Engineer for approval.	☐	☑	☐	☐	☐	
4.02	Are receptacles available for general refuse collection?	☐	☑	☐	☐	☐	
4.03	Is general refuse sorting or recycling implemented?	☐	☑	☐	☐	☐	
4.04	Is general refuse disposed of properly and regularly?	☐	☑	☐	☐	☐	
4.05	Is the Contractor registered as a chemical waste producer?	☑	☐	☐	☐	☐	
4.06	Are the chemical waste containers properly labelled?	☑	☐	☐	☐	☐	
4.07	Are the chemical containers stored in proper storage areas?	☐	☑	☐	☐	☐	
4.08	Is the chemical waste storage area properly labelled?	☐	☑	☐	☐	☐	
4.09	Is the chemical waste storage area used for storage of chemical waste only?	☐	☑	☐	☐	☐	
4.10	Are incompatible chemical wastes stored in different areas?	☑	☐	☐	☐	☐	
4.11	Are the chemical wastes disposed of by licensed collectors?	☑	☐	☐	☐	☐	
4.12	Are trip tickets for chemical wastes disposal available for inspection?	☑	☐	☐	☐	☐	
4.13	Are chemical/fuel storage areas bunded?	☐	☑	☐	☐	☐	
4.14	Are designated areas identified for storage and sorting of construction wastes?	☐	☑	☐	☐	☐	
4.15	Are construction wastes sorted (inert and non-inert) on site?	☐	☑	☐	☐	☐	
4.16	Are construction wastes reused?	☐	☑	☐	☐	☐	
4.17	Are construction wastes disposed of properly?	☐	☐	☐	☑	☐	
4.18	Are site hoardings and signboards made of durable materials instead of timber?	☐	☑	☐	☐	☐	
4.19	Is trip ticket system implemented for the disposal of construction wastes and records available for inspection?	☐	☑	☐	☐	☐	
4.20	Are appropriate procedures followed if contaminated material exists?	☐	☑	☐	☐	☐	
4.21	Is relevant license/ permit for disposal of construction waste or excavated materials available for inspection?	☐	☑	☐	☐	☐	
4.22	Site cleanliness and appropriate waste management training had provided for the site workers.	☐	☑	☐	☐	☐	
4.23	Contaminated sediments will be managed according to WBTC No.12/2000 and EWTB TC(W) No. 34/2002.	☐	☑	☐	☐	☐	

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 5: Landscape & Visual							
5.01	Are retained and transplanted trees in health condition?	☐	☑	☐	☐	☐	
5.02	Are retained and transplanted trees properly protected?	☐	☑	☐	☐	☐	
5.03	Are surgery works carried out for the damaged trees?	☐	☐	☐	☐	☑	
5.04	Is damage to trees outside site boundary due to construction activities avoided?	☐	☑	☐	☐	☐	
5.05	Is the night-time lighting controlled to minimize glare to sensitive receivers?	☐	☑	☐	☐	☐	
Section 6: Ecology							
6.01	Gabion banks and base had been provide for channel linings and banks for typical sections?	☑	☐	☐	☐	☐	
6.02	Prevent site effluent/runoff discharge to the seasonal wetlands?	☑	☐	☐	☐	☐	
6.03	Stockpiling or disposal of materials, and any dredging or construction activities at the seasonal wetlands are prohibited?	☑	☐	☐	☐	☐	
Section 7: Others							
7.01	Are relevant Environmental Permits posted at all vehicle site entrances/exits?	☐	☑	☐	☐	☐	
7.02	Is any mosquito control measures implemented to prevent mosquito breeding?						

Remarks

Follow-Up of Last Site Inspection: Not required for reminders.

Findings of Site Inspection on 5 Jul 2012:

1. No adverse environmental impacts were observed during the site inspection. Full implementation of the required environmental mitigation measures, in particular de-watering and flood preventive measures in adverse weather, is reminded.

IEC's representative	*RE's representative*	*ET's representative*	*EO's representative*	*Contractor's representative*
( )	(H. N. Cheung)	(F. N. Wong)	(Lai Kwok Hong)	( )

Environmental Team – Weekly Site Inspection and Audit Checklist

Project:	***DSD Contract No. DC/2007/08***	**Inspected by**	**Checklist No.** **DC200708-12-Jul-2012**
	Drainage Improvement Works at Tai Po Tin, Ping Che, Man Uk Pin and Lin Ma Hang	**IEC/IEC's Representative:**	
		RE/ RE's Representative:	
Inspection		**ETL/ ET's Representative:**	Wong F. N./Ben Tam
Date:	**12-July-2012**	**EO/ EO's Representative:**	Lai Kwok Hong Alex
Time:	15:00	**Contractor's Representative:**	

PART A: **GENERAL INFORMATION** **Environmental Permit No. EP-277/2007/A**

Weather: ☑ Sunny ☐ Fine ☐ Cloudy ☐ Rainy ☐ Calm ☐

Temperature: 30 ^{0}C ☐

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

Wind: ☐ Strong ☐ Breeze ☑ Light ☐ Calm

Channel **Area Inspected**

TKL02
TKL07
MUP01/02
MUP05

PART B: **SITE AUDIT**

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

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

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
3.07	Are air compressors fitted with valid noise emission labels during operation?	☑	☐	☐	☐	☐	
3.08	Are flaps and panels of mechanical equipment closed during operation?	☐	☑	☐	☐	☐	
3.09	Are Construction Noise Permit(s) applied for percussive piling works?	☑	☐	☐	☐	☐	
3.10	Are Construction Noise Permit(s) applied for general construction works during restricted hours?	☐	☑	☐	☐	☐	
3.11	Are valid Construction Noise Permit(s) posted at site entrances?	☐	☑	☐	☐	☐	
3.12	Use of quiet plant had been used on site to minimise the construction noise impact to the surrounding residences/dwellings (Level 1 mitigation measures).	☑	☐	☐	☐	☐	
3.13	Temporary/Moveable noise barrier or site hoarding are provide or erect at the site boundary to minimise the noise impact of the closest NSRs or stationary equipments shield by the noise barrier which cannot visible from NSRs (Level 2 mitigation measure)	☑	☐	☐	☐	☐	
3.14	Temporary/Moveable noise barrier equal to or more than 3m height with 10kg/m2 are provide for noise mitigation measures (Level 2 mitigation measures).	☑	☐	☐	☐	☐	
Section 4: Waste/Chemical Management							
4.01	Waste Management Plan had been submit to Engineer for approval.	☐	☑	☐	☐	☐	
4.02	Are receptacles available for general refuse collection?	☐	☑	☐	☐	☐	
4.03	Is general refuse sorting or recycling implemented?	☐	☑	☐	☐	☐	
4.04	Is general refuse disposed of properly and regularly?	☐	☑	☐	☐	☐	
4.05	Is the Contractor registered as a chemical waste producer?	☑	☐	☐	☐	☐	
4.06	Are the chemical waste containers properly labelled?	☑	☐	☐	☐	☐	
4.07	Are the chemical containers stored in proper storage areas?	☐	☑	☐	☐	☐	
4.08	Is the chemical waste storage area properly labelled?	☐	☑	☐	☐	☐	
4.09	Is the chemical waste storage area used for storage of chemical waste only?	☐	☑	☐	☐	☐	
4.10	Are incompatible chemical wastes stored in different areas?	☑	☐	☐	☐	☐	
4.11	Are the chemical wastes disposed of by licensed collectors?	☑	☐	☐	☐	☐	
4.12	Are trip tickets for chemical wastes disposal available for inspection?	☑	☐	☐	☐	☐	
4.13	Are chemical/fuel storage areas bunded?	☐	☑	☐	☐	☐	
4.14	Are designated areas identified for storage and sorting of construction wastes?	☐	☑	☐	☐	☐	
4.15	Are construction wastes sorted (inert and non-inert) on site?	☐	☑	☐	☐	☐	
4.16	Are construction wastes reused?	☐	☑	☐	☐	☐	
4.17	Are construction wastes disposed of properly?	☐	☐	☐	☑	☐	
4.18	Are site hoardings and signboards made of durable materials instead of timber?	☐	☑	☐	☐	☐	
4.19	Is trip ticket system implemented for the disposal of construction wastes and records available for inspection?	☐	☑	☐	☐	☐	
4.20	Are appropriate procedures followed if contaminated material exists?	☐	☑	☐	☐	☐	
4.21	Is relevant license/ permit for disposal of construction waste or excavated materials available for inspection?	☐	☑	☐	☐	☐	
4.22	Site cleanliness and appropriate waste management training had provided for the site workers.	☐	☑	☐	☐	☐	
4.23	Contaminated sediments will be managed according to WBTC No.12/2000 and EWTB TC(W) No. 34/2002.	☐	☑	☐	☐	☐	

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 5: Landscape & Visual							
5.01	Are retained and transplanted trees in health condition?	☐	☑	☐	☐	☐	
5.02	Are retained and transplanted trees properly protected?	☐	☑	☐	☐	☐	
5.03	Are surgery works carried out for the damaged trees?	☐	☐	☐	☐	☑	
5.04	Is damage to trees outside site boundary due to construction activities avoided?	☐	☑	☐	☐	☐	
5.05	Is the night-time lighting controlled to minimize glare to sensitive receivers?	☐	☑	☐	☐	☐	
Section 6: Ecology							
6.01	Gabion banks and base had been provide for channel linings and banks for typical sections?	☑	☐	☐	☐	☐	
6.02	Prevent site effluent/runoff discharge to the seasonal wetlands?	☑	☐	☐	☐	☐	
6.03	Stockpiling or disposal of materials, and any dredging or construction activities at the seasonal wetlands are prohibited?	☑	☐	☐	☐	☐	
Section 7: Others							
7.01	Are relevant Environmental Permits posted at all vehicle site entrances/exits?	☐	☑	☐	☐	☐	
7.02	Is any mosquito control measures implemented to prevent mosquito breeding?						

Remarks

Follow-Up of Last Site Inspection: Not required for reminders.

Findings of Site Inspection on 12 July 2012:

1. No adverse environmental impacts were observed during the site inspection. Full implementation of the required environmental mitigation measures is reminded.

IEC's representative	*RE's representative*	*ET's representative*	*EO's representative*	*Contractor's representative*
( )	(H. N. Cheung)	(F. N. Wong)	(Lai Kwok Hong)	( )

Environmental Team – Weekly Site Inspection and Audit Checklist

Project:	***DSD Contract No. DC/2007/08***	**Inspected by**	**Checklist No.** **DC200708-19-Jul-2012**
	Drainage Improvement Works at Tai Po Tin, Ping Che, Man Uk Pin and Lin Ma Hang	**IEC/IEC's Representative:**	
		RE/ RE's Representative:	
Inspection		**ETL/ ET's Representative:**	Wong F. N./Ben Tam
Date:	**19-July-2012**	**EO/ EO's Representative:**	Lai Kwok Hong Alex
Time:	15:00	**Contractor's Representative:**	

PART A: **GENERAL INFORMATION** **Environmental Permit No. EP-277/2007/A**

Weather: ☑ Sunny ☐ Fine ☐ Cloudy ☐ Rainy ☐ Calm ☐

Temperature: 31 ^{0}C ☐

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

Wind: ☐ Strong ☐ Breeze ☑ Light ☐ Calm

Channel **Area Inspected**

TKL02
TKL07
MUP01/02
MUP05

PART B: **SITE AUDIT**

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

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

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
3.07	Are air compressors fitted with valid noise emission labels during operation?	☑	☐	☐	☐	☐	
3.08	Are flaps and panels of mechanical equipment closed during operation?	☐	☑	☐	☐	☐	
3.09	Are Construction Noise Permit(s) applied for percussive piling works?	☑	☐	☐	☐	☐	
3.10	Are Construction Noise Permit(s) applied for general construction works during restricted hours?	☐	☑	☐	☐	☐	
3.11	Are valid Construction Noise Permit(s) posted at site entrances?	☐	☑	☐	☐	☐	
3.12	Use of quiet plant had been used on site to minimise the construction noise impact to the surrounding residences/dwellings (Level 1 mitigation measures).	☑	☐	☐	☐	☐	
3.13	Temporary/Moveable noise barrier or site hoarding are provide or erect at the site boundary to minimise the noise impact of the closest NSRs or stationary equipments shield by the noise barrier which cannot visible from NSRs (Level 2 mitigation measure)	☑	☐	☐	☐	☐	
3.14	Temporary/Moveable noise barrier equal to or more than 3m height with 10kg/m2 are provide for noise mitigation measures (Level 2 mitigation measures).	☑	☐	☐	☐	☐	
Section 4: Waste/Chemical Management							
4.01	Waste Management Plan had been submit to Engineer for approval.	☐	☑	☐	☐	☐	
4.02	Are receptacles available for general refuse collection?	☐	☑	☐	☐	☐	
4.03	Is general refuse sorting or recycling implemented?	☐	☑	☐	☐	☐	
4.04	Is general refuse disposed of properly and regularly?	☐	☑	☐	☐	☐	
4.05	Is the Contractor registered as a chemical waste producer?	☑	☐	☐	☐	☐	
4.06	Are the chemical waste containers properly labelled?	☑	☐	☐	☐	☐	
4.07	Are the chemical containers stored in proper storage areas?	☐	☑	☐	☐	☐	
4.08	Is the chemical waste storage area properly labelled?	☐	☑	☐	☐	☐	
4.09	Is the chemical waste storage area used for storage of chemical waste only?	☐	☑	☐	☐	☐	
4.10	Are incompatible chemical wastes stored in different areas?	☑	☐	☐	☐	☐	
4.11	Are the chemical wastes disposed of by licensed collectors?	☑	☐	☐	☐	☐	
4.12	Are trip tickets for chemical wastes disposal available for inspection?	☑	☐	☐	☐	☐	
4.13	Are chemical/fuel storage areas bunded?	☐	☑	☐	☐	☐	
4.14	Are designated areas identified for storage and sorting of construction wastes?	☐	☑	☐	☐	☐	
4.15	Are construction wastes sorted (inert and non-inert) on site?	☐	☑	☐	☐	☐	
4.16	Are construction wastes reused?	☐	☑	☐	☐	☐	
4.17	Are construction wastes disposed of properly?	☐	☐	☐	☑	☐	
4.18	Are site hoardings and signboards made of durable materials instead of timber?	☐	☑	☐	☐	☐	
4.19	Is trip ticket system implemented for the disposal of construction wastes and records available for inspection?	☐	☑	☐	☐	☐	
4.20	Are appropriate procedures followed if contaminated material exists?	☐	☑	☐	☐	☐	
4.21	Is relevant license/ permit for disposal of construction waste or excavated materials available for inspection?	☐	☑	☐	☐	☐	
4.22	Site cleanliness and appropriate waste management training had provided for the site workers.	☐	☑	☐	☐	☐	
4.23	Contaminated sediments will be managed according to WBTC No.12/2000 and EWTB TC(W) No. 34/2002.	☐	☑	☐	☐	☐	

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 5: Landscape & Visual							
5.01	Are retained and transplanted trees in health condition?	☐	☑	☐	☐	☐	
5.02	Are retained and transplanted trees properly protected?	☐	☑	☐	☐	☐	
5.03	Are surgery works carried out for the damaged trees?	☐	☐	☐	☐	☑	
5.04	Is damage to trees outside site boundary due to construction activities avoided?	☐	☑	☐	☐	☐	
5.05	Is the night-time lighting controlled to minimize glare to sensitive receivers?	☐	☑	☐	☐	☐	
Section 6: Ecology							
6.01	Gabion banks and base had been provide for channel linings and banks for typical sections?	☑	☐	☐	☐	☐	
6.02	Prevent site effluent/runoff discharge to the seasonal wetlands?	☑	☐	☐	☐	☐	
6.03	Stockpiling or disposal of materials, and any dredging or construction activities at the seasonal wetlands are prohibited?	☑	☐	☐	☐	☐	
Section 7: Others							
7.01	Are relevant Environmental Permits posted at all vehicle site entrances/exits?	☐	☑	☐	☐	☐	
7.02	Is any mosquito control measures implemented to prevent mosquito breeding?						

Remarks

Follow-Up of Last Site Inspection: Not required for reminders.

Findings of Site Inspection on 19 July 2012:

1. No adverse environmental impacts were observed during the site inspection. Full implementation of the required environmental mitigation measures, particularly watering of the dry and dusty surfaces during dusty construction activities and wheel washing of the construction vehicles prior to exit the site is reminded.

IEC's representative	*RE's representative*	*ET's representative*	*EO's representative*	*Contractor's representative*
( )	(H. N. Cheung)	(F. N. Wong)	(Lai Kwok Hong)	( )

Appendix L

Proforma of Ecology Inspection Checklist

Environmental Team – Ecological Site Inspection and Audit Checklist

Project:	***DSD Contract No. DC/2007/08*** **Drainage Improvement Works at Tai Po Tin, Ping Che, Man Uk Pin and Lin Ma Hang**	**Inspected by**	**Checklist No.** 120628
		IEC/IEC's Representative:	
		RE/RE's Representative:	
Inspection		**ETL/ ET's Representative:**	Mark Shea
Date:	**28 June 2012**	**EO/EO's Representative:**	Lai Kwok Hong Alex
Time:	16:30 pm	**Contractor's Representative:**	

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

Weather: ☐ Sunny ☐ Fine ☑ Cloudy ☐ Rainy ☐ Calm ☑ **EP-277/2007A**

Temperature: 31 ^{0}C ☐

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

Wind: ☐ Strong ☑ Breeze ☐ Light ☐ Calm

Channel	**Area Inspected**
MUP01/02/05	All

PART B: **SITE AUDIT**

Note:	**EM&A REF:**	**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 6: Ecology								
1.01	6.5.8	earthworks to widen the stream have been undertaken from the landward side and existing stream untouched except during the final stage	☐	✓	☐	☐	☐	
1.04	6.5.9	widened stream bottom floored with natural materials to approximate as closely as possible to the rocky components of a natural stream bottom	☐	✓	☐	☐	☐	
1.02	6.5.10	Any essential works outside the dry season have been temporarily isolated from the stream	☐	☐	☐	☐	✓	
1.03	6.5.11	Excavation works have been restricted to 300m length at any one time	☐	✓	☐	☐	☐	
1.04	6.5.13	native riparian trees which would be impacted during construction works have been transplanted to suitable sites within the project area where possible	☐	☐	☐	✓	☐	
1.05	6.5.22	Construction activities have been restricted to works area that should be clearly demarcated	☐	✓	☐	☐	☐	
1.06	6.5.22	Temporary diversions have been provided to ensure continuous water flow to the downstream section.	☐	✓	☐	☐	☐	
1.07	6.5.22	The proposed works site inside or in the proximity of natural streams have been temporarily isolated	☐	✓	☐	☐	☐	
1.08	6.5.22	no disturbance to the stream bed and bank have been found from construction works, equipment or workers for the stream section where the existing natural stream bed and bank will be left untouched	☐	☐	☐	✓	☐	
1.09	6.5.22	Temporary access track on streambed have been kept to the minimum width and length	☐	✓	☐	☐	☐	
1.09	6.5.22	Temporary stream crossings are supported on stilts above the stream bed.	☐	☐	☐	☐	✓	
1.10	6.5.22	Adequate temporary drainage measures including sediment and oil/grease traps have been provided to prevent contaminated site run-off entering the water bodies	☐	✓	☐	☐	☐	
1.11	6.5.22	Stockpiling of construction materials, spoils and waste have been properly covered and located away from water bodies	☐	☐	☐	✓	☐	

Note:	EM&A REF:	**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
1.12	6.5.22	Supervisory staff of the contractor have been assigned to station on site to closely supervise and monitor the construction works	☐	✓	☐	☐	☐	
1.13	6.5.22	workers have bee regularly briefed to avoid disturbing the flora and fauna near the works area	☐	✓	☐	☐	☐	
1.14	6.5.22	Construction effluent, site run-off and sewage have been properly collected, treated and disposed	☐	☐	☐	✓	☐	
1.15	6.5.22	details of the mitigation measures to be implemented during construction stage have been submitted to the Engineer for approval	☐	✓	☐	☐	☐	

Remarks

MUP05: Soil and rocks are observed piled in riverbed, attention should be paid to potential erosion caused by storm or heavy rain. Without control measure, the potential runoff with sediments will affect down stream/riverbed.

Recommended actions:

- Soil erosion control;
- Remove soil piles in the streambed

IEC's representative	*RE's representative*	*ET's representative*	*EO's representative*	*Contractor's representative*
( )	( )	(Mark Shea)	( )	( )

Environmental Team – Ecological Site Inspection and Audit Checklist

Project:	***DSD Contract No. DC/2007/08*** **Drainage Improvement Works at Tai Po Tin, Ping Che, Man Uk Pin and Lin Ma Hang**	**Inspected by**	**Checklist No.** **120705**
		IEC/IEC's Representative:	
		RE/RE's Representative:	
Inspection		**ETL/ ET's Representative:**	Mark Shea
Date:	**5 July 2012**	**EO/EO's Representative:**	Lai Kwok Hong Alex
Time:	16:30 pm	**Contractor's Representative:**	

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

Weather:	☐ Sunny	☐ Fine	☐ Cloudy	☑ Rainy	☐ Calm	☑	**EP-277/2007A**
Temperature:	31 ^{0}C					☐	
Humidity:	☐ High	☑ Moderate	☐ Low			☐	**N/A**
Wind:	☐ Strong	☑ Breeze	☐ Light	☐ Calm			

Channel	**Area Inspected**
MUP01/02/05	All

PART B: **SITE AUDIT**

Note:	**EM&A REF:**	**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 6: Ecology								
1.01	6.5.8	earthworks to widen the stream have been undertaken from the landward side and existing stream untouched except during the final stage	☐	✓	☐	☐	☐	
1.04	6.5.9	widened stream bottom floored with natural materials to approximate as closely as possible to the rocky components of a natural stream bottom	☐	✓	☐	☐	☐	
1.02	6.5.10	Any essential works outside the dry season have been temporarily isolated from the stream	☐	☐	☐	☐	✓	
1.03	6.5.11	Excavation works have been restricted to 300m length at any one time	☐	✓	☐	☐	☐	
1.04	6.5.13	native riparian trees which would be impacted during construction works have been transplanted to suitable sites within the project area where possible	☐	☐	☐	✓	☐	
1.05	6.5.22	Construction activities have been restricted to works area that should be clearly demarcated	☐	✓	☐	☐	☐	
1.06	6.5.22	Temporary diversions have been provided to ensure continuous water flow to the downstream section.	☐	✓	☐	☐	☐	
1.07	6.5.22	The proposed works site inside or in the proximity of natural streams have been temporarily isolated	☐	✓	☐	☐	☐	
1.08	6.5.22	no disturbance to the stream bed and bank have been found from construction works, equipment or workers for the stream section where the existing natural stream bed and bank will be left untouched	☐	☐	☐	✓	☐	
1.09	6.5.22	Temporary access track on streambed have been kept to the minimum width and length	☐	✓	☐	☐	☐	
1.09	6.5.22	Temporary stream crossings are supported on stilts above the stream bed.	☐	☐	☐	☐	✓	
1.10	6.5.22	Adequate temporary drainage measures including sediment and oil/grease traps have been provided to prevent contaminated site run-off entering the water bodies	☐	✓	☐	☐	☐	
1.11	6.5.22	Stockpiling of construction materials, spoils and waste have been properly covered and located away from water bodies	☐	☐	☐	✓	☐	

Note:	EM&A REF:	**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
1.12	6.5.22	Supervisory staff of the contractor have been assigned to station on site to closely supervise and monitor the construction works	☐	✓	☐	☐	☐	
1.13	6.5.22	workers have bee regularly briefed to avoid disturbing the flora and fauna near the works area	☐	✓	☐	☐	☐	
1.14	6.5.22	Construction effluent, site run-off and sewage have been properly collected, treated and disposed	☐	☐	☐	✓	☐	
1.15	6.5.22	details of the mitigation measures to be implemented during construction stage have been submitted to the Engineer for approval	☐	✓	☐	☐	☐	

Remarks

MUP05: Soil and rocks are observed piled in riverbed, attention should be paid to potential erosion caused by storm or heavy rain. Without control measure, the potential runoff with sediments will affect down stream/riverbed.

Recommended actions:

- Soil erosion control;
- Remove soil piles in the streambed

IEC's representative	*RE's representative*	*ET's representative*	*EO's representative*	*Contractor's representative*
( )	( )	(Mark Shea)	( )	( )

Environmental Team – Ecological Site Inspection and Audit Checklist

Project:	***DSD Contract No. DC/2007/08*** **Drainage Improvement Works at Tai Po Tin, Ping Che, Man Uk Pin and Lin Ma Hang**	**Inspected by**	**Checklist No.** 120714
		IEC/IEC's Representative:	
		RE/RE's Representative:	
Inspection		**ETL/ ET's Representative:**	Mark Shea
Date:	**14 July 2012**	**EO/EO's Representative:**	Lai Kwok Hong Alex
Time:	16:00 pm	**Contractor's Representative:**	

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

Weather:	☐ Sunny	☑ Fine	☐ Cloudy	☐ Rainy	☐ Calm	☑	**EP-277/2007A**
Temperature:	31 ^{0}C					☐	
Humidity:	☐ High	☑ Moderate	☐ Low			☐	**N/A**
Wind:	☐ Strong	☑ Breeze	☐ Light	☐ Calm			

Channel	**Area Inspected**
MUP01/02/05	All

PART B: **SITE AUDIT**

Note:	**EM&A REF:**	**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 6: Ecology								
1.01	6.5.8	earthworks to widen the stream have been undertaken from the landward side and existing stream untouched except during the final stage	☐	✓	☐	☐	☐	
1.04	6.5.9	widened stream bottom floored with natural materials to approximate as closely as possible to the rocky components of a natural stream bottom	☐	✓	☐	☐	☐	
1.02	6.5.10	Any essential works outside the dry season have been temporarily isolated from the stream	☐	☐	☐	☐	✓	
1.03	6.5.11	Excavation works have been restricted to 300m length at any one time	☐	✓	☐	☐	☐	
1.04	6.5.13	native riparian trees which would be impacted during construction works have been transplanted to suitable sites within the project area where possible	☐	☐	☐	✓	☐	
1.05	6.5.22	Construction activities have been restricted to works area that should be clearly demarcated	☐	✓	☐	☐	☐	
1.06	6.5.22	Temporary diversions have been provided to ensure continuous water flow to the downstream section.	☐	✓	☐	☐	☐	
1.07	6.5.22	The proposed works site inside or in the proximity of natural streams have been temporarily isolated	☐	✓	☐	☐	☐	
1.08	6.5.22	no disturbance to the stream bed and bank have been found from construction works, equipment or workers for the stream section where the existing natural stream bed and bank will be left untouched	☐	☐	☐	✓	☐	
1.09	6.5.22	Temporary access track on streambed have been kept to the minimum width and length	☐	✓	☐	☐	☐	
1.09	6.5.22	Temporary stream crossings are supported on stilts above the stream bed.	☐	☐	☐	☐	✓	
1.10	6.5.22	Adequate temporary drainage measures including sediment and oil/grease traps have been provided to prevent contaminated site run-off entering the water bodies	☐	✓	☐	☐	☐	
1.11	6.5.22	Stockpiling of construction materials, spoils and waste have been properly covered and located away from water bodies	☐	☐	☐	✓	☐	

Note:	EM&A REF:	**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
1.12	6.5.22	Supervisory staff of the contractor have been assigned to station on site to closely supervise and monitor the construction works	☐	✓	☐	☐	☐	
1.13	6.5.22	workers have bee regularly briefed to avoid disturbing the flora and fauna near the works area	☐	✓	☐	☐	☐	
1.14	6.5.22	Construction effluent, site run-off and sewage have been properly collected, treated and disposed	☐	☐	☐	✓	☐	
1.15	6.5.22	details of the mitigation measures to be implemented during construction stage have been submitted to the Engineer for approval	☐	✓	☐	☐	☐	

Remarks

MUP05: Soil and rocks are observed piled in riverbed, attention should be paid to potential erosion caused by storm or heavy rain.

Recommended actions:

- Soil erosion control;
- Remove soil piles in the streambed

IEC's representative	*RE's representative*	*ET's representative*	*EO's representative*	*Contractor's representative*
( )	( )	(Mark Shea)	( )	( )

Environmental Team – Ecological Site Inspection and Audit Checklist

Project:	***DSD Contract No. DC/2007/08*** **Drainage Improvement Works at Tai Po Tin, Ping Che, Man Uk Pin and Lin Ma Hang**	**Inspected by**	**Checklist No.** 120719
		IEC/IEC's Representative:	
		RE/RE's Representative:	
Inspection		**ETL/ ET's Representative:**	Mark Shea
Date:	**19 July 2012**	**EO/EO's Representative:**	Lai Kwok Hong Alex
Time:	16:00 pm	**Contractor's Representative:**	

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

Weather:	☐ Sunny	☐ Fine	☑ Cloudy	☐ Rainy	☐ Calm	☑	**EP-277/2007A**
Temperature:	32 ^{0}C					☐	
Humidity:	☐ High	☑ Moderate	☐ Low			☐	**N/A**
Wind:	☐ Strong	☐ Breeze	☑ Light	☐ Calm			

Channel	**Area Inspected**
MUP01/02/05	All

PART B: **SITE AUDIT**

Note:	**EM&A REF:**	**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 6: Ecology								
1.01	6.5.8	earthworks to widen the stream have been undertaken from the landward side and existing stream untouched except during the final stage	☐	✓	☐	☐	☐	
1.04	6.5.9	widened stream bottom floored with natural materials to approximate as closely as possible to the rocky components of a natural stream bottom	☐	✓	☐	☐	☐	
1.02	6.5.10	Any essential works outside the dry season have been temporarily isolated from the stream	☐	☐	☐	☐	✓	
1.03	6.5.11	Excavation works have been restricted to 300m length at any one time	☐	✓	☐	☐	☐	
1.04	6.5.13	native riparian trees which would be impacted during construction works have been transplanted to suitable sites within the project area where possible	☐	☐	☐	✓	☐	
1.05	6.5.22	Construction activities have been restricted to works area that should be clearly demarcated	☐	✓	☐	☐	☐	
1.06	6.5.22	Temporary diversions have been provided to ensure continuous water flow to the downstream section.	☐	✓	☐	☐	☐	
1.07	6.5.22	The proposed works site inside or in the proximity of natural streams have been temporarily isolated	☐	✓	☐	☐	☐	
1.08	6.5.22	no disturbance to the stream bed and bank have been found from construction works, equipment or workers for the stream section where the existing natural stream bed and bank will be left untouched	☐	☐	☐	✓	☐	
1.09	6.5.22	Temporary access track on streambed have been kept to the minimum width and length	☐	✓	☐	☐	☐	
1.09	6.5.22	Temporary stream crossings are supported on stilts above the stream bed.	☐	☐	☐	☐	✓	
1.10	6.5.22	Adequate temporary drainage measures including sediment and oil/grease traps have been provided to prevent contaminated site run-off entering the water bodies	☐	✓	☐	☐	☐	
1.11	6.5.22	Stockpiling of construction materials, spoils and waste have been properly covered and located away from water bodies	☐	☐	☐	✓	☐	

Note:	EM&A REF:	**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
1.12	6.5.22	Supervisory staff of the contractor have been assigned to station on site to closely supervise and monitor the construction works	☐	✓	☐	☐	☐	
1.13	6.5.22	workers have bee regularly briefed to avoid disturbing the flora and fauna near the works area	☐	✓	☐	☐	☐	
1.14	6.5.22	Construction effluent, site run-off and sewage have been properly collected, treated and disposed	☐	☐	☐	✓	☐	
1.15	6.5.22	details of the mitigation measures to be implemented during construction stage have been submitted to the Engineer for approval	☐	✓	☐	☐	☐	

Remarks

MUP05: Soil and rocks are observed piled in riverbed, attention should be paid to potential erosion caused by storm or heavy rain. Without control measure, the potential runoff with sediments will affect downstream / riverbed.

Recommended actions:

- Soil erosion control;
- Remove soil piles in the streambed

IEC's representative	*RE's representative*	*ET's representative*	*EO's representative*	*Contractor's representative*
( )	( )	(Mark Shea)	( )	( )

Appendix M

Monthly Summary Waste Flow Table

Name of Department: DSD **Contract No.: DC/2007/08** **Date:** 25-Jul-12

Monthly Summary Waste Flow Table for 2012 (26 June to 25 July 2012)

Month	Actual Quantities of Inert C&D Wastes 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 '000m3)
Jan	2.392	0	0.2	1.062	0	1.13	0	0	0	0	0
Feb	1.97	0	0	1.87	0	0.1	0	0	0	0	0
Mar	2.65	0	0	2.35	0	0.3	0	0	0	0	0
Apr	2.83	0	0	2.68	0	0.15	0	0	0	0	0.011
May	1.37	0	0.1	1.27	0	0	0	0	0	0	0
Jun	0.9	0	0.9	0	0	0	0	0	0	0	0
Sub-total	12.112	0	1.2	9.232	0	1.68	0	0	0	0	0.011
Jul	0.52	0	0.52	0	0	0	0	0	0	0	0
Aug											
Sep											
Oct											
Nov											
Dec											
Total	12.632	0	1.72	9.232	0	1.68	0	0	0	0	0.011

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 '000 kg)**	**(in '000 kg)**	**(in '000 kg)**	**(in '000m^3)**
283.5	35.1	47.5	107	32	24	60	1	1	1	10

Notes:

(1) The performance targets are given in PS Clause 25.01F(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. (PS Clause 25.01E(4)(b) refers). [Delete Note (4) and the table above on the forecast, where inapplicable].

1.37

0.9

2.27

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

Contract No. : DC/2007/08 Date: : 25 July 2012

Contract Title: DRAINAGE IMPROVEMENT WORKS AT TAI PO TIN, PING CHE, MAN UK PIN & LIN MA HANG

Item No.	Description of Works Process or Activity [see note (a) below]	Justifications for Using Timber in Temporary Construction Works	Est. Quantities of Timber Used (m^3)	Actual Quantities used (m^3)	Remarks
1.	Construction of footpath and Grasscrete paving at MUP05 and MUP01	Formwork for Supporting formwork	2.24	2.3	
2	Construction of U-Channel	Formwork Supporting	0.5	0.4	
		Total Estimated Quantity of Timber Used	2.74		

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 Engineer's Representative monthly together with the Waste Flow Table for review and monitoring in accordance with the PS Clause 25.01E(5).

Appendix N

Response to Comments

DSD Contract DC/2007/08 – Drainage Improvement Works at Tai Po Tin, Ping Che, Man Uk and Lin Ma Hang

1st Response to IEC Comments – EM&A Report (Designated Project)

Item	Section / Paragraph	Comment	Response
1	Appendix A, B, D	Titles un-match to table of contents	Amended
2	Appendix L	Ecology inspection checklist incomplete (page 1, top right)	updated
3	Appendix M	Please(ask relative party to) update forecast to a more realistic figure	The forecast of total quantities of C&D material in Appendix M is for the whole project, therefore no need to correct the figure.
4	Table 3.1	EM&A programme is still ongoing, please change 'maintenance period' to 'construction period'	Revised