PROJECT NO.: TCS/00553/11

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

MONTHLY ENVIRONMENTAL MONITORING AND AUDIT REPORT (NO.36) – JUNE 2014

PREPARED FOR
KWAN LEE-KULY JOINT VENTURE

Quality Index

Date	Reference No.	Prepared By	Certified by
22 July 2014	TCS00553/11/600/R0371v1	 Ben Tam (Environmental Consultant)	 T.W. Tam (Environmental Team Leader)

Ver.	Date	Description
1	22 July 2014	First submission

Ref.: DSDSHUWNEM00_0_0656L.14 4 Aug 2014

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

By Fax (2827 8700) and Post

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

Dear Sirs,

Re: Agreement No. DP 01/2010
Services as Independent Environmental Checker for the Drainage Improvement Works in Sha Tin and Tai Po under Contract No. DC/2010/02
Monthly Environmental Monitoring and Audit Report for June 2014

Reference is made to Environment Team's submission of the Monthly Environmental Monitoring and Audit Report for June 2014 by Email on 1 August 2014 (entitled "DC/2010/22 - Monthly Impact EM&A Report (Contract 2) No.35 - June 2014").

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

Thank you very much for your kind attention and please do not hesitate to contact Mr. Max Lee (5181 - 5165) or the undersigned should you have any queries.

Yours sincerely,

Tony Cheng
Independent Environmental Checker

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

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EXECUTIVE SUMMARY

ES.01. This is the **36th** Monthly Environmental Monitoring and Audit (EM&A) Report for designated works of *DSD Contract No. DC/2010/02 - Drainage Improvement in Shuen Wan and Shek Wu Wai* (hereafter "Contract 2") under Environmental Permit No.EP-303/2008, covering a period from **1 to 30 June 2014** (hereinafter 'the Reporting Period').

ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

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

Issues	Environmental Monitoring Parameters / Inspection	Occasions
Construction Noise	$L_{eq\ (30min)}$ Daytime – M2, M3 & M4	12
	$L_{eq\ (30min)}$ Daytime – M1 & AL1	8
Water Quality	Local Stream Water Sampling – W1, W3 and W4	13
	Local Stream Water Sampling – W2	12
	Hydrological characteristics measurement – H1 and H2	4
	Hydrological characteristics measurement – H3 and H4	4
Inspection / Audit	Monthly Environmental Site Inspection and audit by IEC	1
	Regular weekly Environmental inspection by the Contractor, ET and Site Representative Engineer	4
Ecological	Bi- monthly Ecological Monitoring	0
Landscape & Visual	Bi-weekly Inspection by a registered Landscape Architect	2

ES.03. In this Reporting Period, no ecological monitoring in Area under Contract 2 was performed.

ES.04. Landscape and visual inspection was carried on **13 and 24 June 2014** and the monthly Landscape & Visual Report (**June 2014**) has been signed by the registered Landscape Architect.

BREACH OF ACTION AND LIMIT (A/L) LEVELS

ES.05. No exceedance in construction noise monitoring is recorded in this Reporting Period. For water quality monitoring, a total of 80 Action/ Limit Level exceedances, namely 42 exceedances in dissolved oxygen, 33 exceedances in turbidity and 6 exceedances in SS were recorded in this Reporting Period. NOEs were issued to notify EPD, IEC, the Contractor and RE upon confirmation of the results. The statistics of environmental exceedance, NOE issued and investigation result are summarized in the following table.

Environmental Issues	Monitoring Parameters	Action Level	Limit Level	Event & Action		
				NOE Issued	Investigation	Corrective Actions
Construction Noise	$L_{eq(30min)}$ Daytime	0	0	0	N.A.	N.A.
Water Quality	DO	**42**	0	**42**	Not project related	N.A.
	Turbidity	**5**	**28**	**33**		
	SS	**1**	**4**	**5**		
Hydrological Characteristics	Water Flow	0	0	0	N.A.	N.A.
	Water Depth	0	0	0	N.A.	N.A.

Note: NOE – Notification of Exceedance

SITE INSPECTION

ES.06. Weekly environmental site inspections had been carried out by the Contractor, ET and the RE on **6, 13, 20 and 23 June 2014** Furthermore, joint site inspection with the IEC was carried out on **23 June 2014.** In this Reporting Period, **1** observation was recorded but no non-compliance was noted during the site inspection.

ENVIRONMENTAL COMPLAINT

ES.07. No written or verbal complaint was recorded in this Reporting Period.

NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES.08. No environmental summons or successful prosecutions were recorded in this Reporting Period.

REPORTING CHANGE

ES.09. No report changes were made in this Reporting Period.

FUTURE KEY ISSUES

ES.10. During wet season special attention should be paid on the muddy water and other water quality pollutants via site surface water runoff into the local stream Wah Ha River. As an effective water quality mitigation measure, the rock bund in the de-silting channel should be repaired regularly and ensure the de-silting performance.

ES.11. Dust mitigation measures to avoid fugitive dust emissions from loose soil surface or haul road would also be a key issue in coming months.

ES.12. On the other hand, construction noise should be other key environmental issue during sheet-piling process. The noise mitigation measures should be necessary to implement in accordance with EM&A Manual stipulation. Dust mitigation measures to avoid fugitive dust emissions from loose soil surface or haul road is also reminded.

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1.0 INTRODUCTION

PROJECT BACKGROUND

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

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

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

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

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

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

1.07 This is the **36th** Monthly EM&A Report for Contract 2 presenting the monitoring results and inspection findings for the reporting period from **1 to 30 June 2014.**

REPORT STRUCTURE

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

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

2.0 PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS AND SUBMISSION

PROJECT ORGANIZATION AND MANAGEMENT STRUCTURE

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

CONSTRUCTION PROGRESS

2.02 The master construction programs are enclosed in ***Appendix C*** and the major construction activities undertaken at Tung Tsz Road, Shuen Wan in this Report Period are listed below:-

- Rectification of minor defects of all Box Culverts

SUMMARY OF ENVIRONMENTAL SUBMISSIONS

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

Table 2-1 Status of Environmental Licenses and Permits

Item	Description	License/Permit Status
1	Air Pollution Control (Construction Dust)	Notified EPD on 17 October 2011
2	Chemical Waste Producer Registration (WPN5213-727-K2972-02)	Approved on 28 October 2011
3	Water Pollution Control Ordinance (Discharge License) WT00009528-2011	Valid to 31 July 2016
4	Billing Account for Disposal of Construction Waste (Account No.: 7012838)	Effective

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

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

3.0 EM&A PROGRAM REQUIREMENT FOR THE CONTRACT 2

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

MONITORING PARAMETERS

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

Table 3-1 Summary of Monitoring Parameters

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

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

MONITORING LOCATIONS

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

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

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

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

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

MONITORING FREQUENCY

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

Construction Noise

Frequency: Once a week during 0700-1900 on normal weekdays for $L_{eq(30min)}$

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

- 3 consecutive $L_{eq(5min)}$ at restrict hour from 1700 – 2300;
- 3 consecutive $L_{eq(5min)}$ for restrict hour from 2300 – 0700 next day;
- 3 consecutive $L_{eq(5min)}$ for Sunday or public holiday from 0700 – 1900;

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

Water Quality

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

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

Hydrological Characteristics

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

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

Ecology

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

Landscape & Visual

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

MONITORING EQUIPMENT

Noise Monitoring

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

Water Quality Monitoring

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

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

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

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

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

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

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

Hydrological Characteristics

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

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

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

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

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

Equipment	Model
Thermometer & DO meter	YSI DO Meter 550A or YSI Professional Plus or YSI Sonde6820 / 650MDS
pH meter	YSI pH10N or YSI Professional Plus or YSI Sonde 6820 / 650MDS
Turbidimeter	Hach 2100Q or YSI Sonde 6820 / 650MDS
Sample Container	High density polythene bottles (provided by laboratory)
Storage Container	'Willow' 33-litre plastic cool box
Suspended Solids	HOKLAS-accredited laboratory (ALS Technichem (HK) Pty Ltd)
Hydrological Characteristics	
Water flow meter	GLOBAL WATER model FP211
Water Depth Detector	Eagle Sonar or an appropriate steel ruler or rope with appropriate weight

MONITORING METHODOLOGY

Noise Monitoring

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

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

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

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

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

Water Quality

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

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

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

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

3.26 A portable YSI DO Meter 550A or YSI Professional Plus is used for in-situ DO measurement. The DO meter is capable of measuring DO in the range of 0 - 20 mg/L and 0 - 200 % saturation and checked against water saturated ambient air on each monitoring day prior to monitoring. Although the DO Meter automatically compensates ambient water temperature to a standard temperature of 20^0C for ease of comparison of the data under the changing reality, the temperature readings of the DO Meter are be recorded in the field data sheets. The equipment calibration is performed on quarterly basis.

3.27 A portable YSI pH10N Meter or or YSI Professional Plus is used for in-situ pH measurement. The pH meter is capable of measuring pH in the range of 0 – 14 and readable to 0.1. Standard buffer solutions of pH 7 and pH 10 are used for calibration of the instrument before and after measurement. The equipment calibration is performed on quarterly basis.

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

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

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

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

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

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

Hydrological Characteristics

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

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

DATA MANAGEMENT AND DATA QA/QC CONTROL

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

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

OTHERS MONITORING IMPLEMENTATION FOR THE CONTRACT

Ecology

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

Landscape and Visual

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

DETERMINATION OF ACTION/LIMIT (A/L) LEVELS

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

Table 3-5 Action and Limit Levels for Construction Noise

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

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

** *To be selected based on the Area Sensitivity Rating of A/B/C, and the conditions of the applicable CNP(s) must be followed*

Table 3-6 Action and Limit Levels for Water Quality

Parameter	Performance Criteria	Impact Station		
		W1	W2	W4
DO Concentration (mg/L)	Action Level	7.27	7.26	9.27
	Limit Level	4.00	4.00	4.00
pH	Action Level	NA	NA	NA
	Limit Level	6 - 9	6 - 9	6 - 9
Turbidity (NTU)	Action Level	4.77	2.46	3.32
	Limit Level	5.26	3.42	4.52
Suspended Solids (mg/L)	Action Level	9.73	8.89	6.98
	Limit Level	10.77	9.75	7.66

Notes:

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

Table 3-7 Action and Limit Levels for Hydrological Characteristics

Parameter	Acceptance Criteria	Monitoring Station	
		H1	H2
Water Depth (m)	Action Level	0.08 (80% of baseline water depth)	0.40 (80% of baseline water depth)
	Limit Level	0.06 (60% of baseline water depth)	0.30 (60% of baseline water depth)
Volumetric Flow Rate (Q), m^3/s	Action Level	120% of control station's water flow rate on the same day of measurement	120% of control station's water flow rate on the same day of measurement
	Limit Level	140% of control station's water flow rate on the same day of measurement	140% of control station's water flow rate on the same day of measurement

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

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

EQUIPMENT CALIBRATION

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

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

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

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

METEOROLOGICAL INFORMATION

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

4.0 IMPACT MONITORING RESULTS

4.01 The monitoring schedule had been issued to relevant parties before each Reporting Period which presented in ***Appendix G***. The works undertaken during the Reporting Period are illustrated in ***Appendix C.*** The monitoring results are presented in the following sub-sections.

MONITORING RESULTS SHARING

4.02 Environmental Permit EP-203/2008 was issued on 25 February 2008 by EPD which adopted for both Contracts 1 and 2 of DSD construction at Shuen Wan. Also, the EM&A programme of both contracts are undertaken in accordance with the same updated EM&A Manual which has to be carried out during construction period. According to the updated EM&A manual, designated monitoring Locations M1 and AL1 for noise monitoring stations, Locations W1 and W2 for water quality monitoring stations, and Locations H1 and H2 for hydrological measurement are requested to perform at both Contracts 1 and 2. Since Contract 1 has already commenced in January 2011, those results measured by Contract 1 would be shared for the Contract 2. This recommendation has been accepted by IEC and submitted to EPD.

RESULTS OF CONSTRUCTION NOISE MONITORING

4.03 In this Reporting Period, the noise monitoring results at the designated locations M1, AL1, M2, M3 and M4 are summarized in ***Table 4-1***. The detail monitoring data are presented in ***Appendix I***. The graphical plot is shown in ***Appendix J***.

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

Date	$L_{eq(30min)}$ (dB(A)		Date	$L_{eq(30min)}$ (dB(A)		
	M1(#)	AL1(#)		M2(*)	M3(*)	M4(*)
4-Jun-14	64.4	67.4	5-Jun-14	58.3	54.4	53.1
11-Jun-14	64.5	67.4	11-Jun-14	62.7	57.5	51.1
18-Jun-14	60.5	65.8	18-Jun-14	63.0	59.9	52.8
25-Jun-14	61.5	65.4	27-Jun-14	58.3	59.1	53.2
Limit Level	**75 dB(A)**					

Remarks:

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

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

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

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

RESULTS OF LOCAL STREAM WATER QUALITY MONITORING

4.06 In this Reporting Period, **13** sampling days at W1, W3 and W4 and **12** sampling days at W2 were performed at designated measurement Points for local stream water quality monitoring. The monitoring results including in-situ measurements and laboratory testing results are provided in ***Appendix I***. The graphical plots are shown in ***Appendix J***.

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

Table 4-2 Water Quality Results Summary for W1 & W2

Sampling date	DO (mg/L)			Turbidity (NTU)			SS (mg/L)		
	W1 (ebb)	W1 (flood)	W2	W1 (ebb)	W1 (flood)	W2	W1 (ebb)	W1 (flood)	W2
3-Jun-14	***7.05***	***6.63***	#	4.1	4.7	#	2.00	2.00	#
4-Jun-14	--	--	7.35	--	--	**4.1**	--	--	2.20
5-Jun-14	***6.24***	***5.95***	#	**6.5**	**8.3**	#	2.00	2.00	#
6-Jun-14	--	--	8.41	--	--	**48.4**	--	--	**44.00**
7-Jun-14	***7.07***	***6.79***	#	**7.7**	**8.0**	#	2.00	2.00	#
9-Jun-14	***7.16***	***6.97***	7.52	4.4	4.0	**5.8**	2.00	2.00	**13.00**
11-Jun-14	***6.46***	***6.26***	7.91	2.4	2.9	**4.4**	2.00	2.00	7.60
13-Jun-14	***7.12***	***6.79***	7.61	4.2	***5.0***	**4.1**	2.00	2.00	**13.00**
16-Jun-14	***6.68***	***6.22***	***7.17***	**11.6**	**10.7**	**4.8**	2.00	2.00	5.00
18-Jun-14	***6.28***	***6.48***	8.34	4.6	4.7	**3.8**	6.00	7.00	4.60
20-Jun-14	***6.81***	***6.60***	7.83	***4.8***	***5.0***	**3.9**	2.00	2.00	4.20
23-Jun-14	***6.98***	***6.82***	***7.25***	**6.3**	**5.6**	**4.3**	6.00	5.00	5.40
25-Jun-14	***6.77***	***7.23***	7.97	**7.4**	**8.2**	**4.9**	3.00	2.00	8.60
27-Jun-14	***6.52***	***6.16***	7.85	**5.7**	**6.3**	**4.6**	5.00	5.00	**23.00**
30-Jun-14	***6.44***	***6.27***	7.28	4.1	4.0	**4.0**	3.00	4.00	2.80

- *Bold and Italic is indicated exceeded Action Level*; *Bold with underline is indicated exceeded Limit Level*

 # No data was provided by Contract 1.

Table 4-3 Water Quality Results Summary for W3 & W4

Sampling date	DO (mg/L)		Turbidity (NTU)		SS (mg/L)	
	W3	W4	W3	W4	W3	W4
3-Jun-14	6.90	***7.05***	3.70	***3.43***	2.00	2.00
4-Jun-14	--	--	--	--	--	--
5-Jun-14	6.53	***6.27***	3.24	3.30	2.00	2.00
6-Jun-14	--	--	--	--	--	--
7-Jun-14	6.88	***6.68***	4.69	**5.64**	2.00	2.00
9-Jun-14	7.71	***7.30***	3.00	3.28	2.00	2.00
11-Jun-14	7.19	***6.91***	1.92	2.19	3.00	2.00
13-Jun-14	7.43	***7.90***	2.99	3.10	2.00	2.00
16-Jun-14	6.51	***6.68***	5.19	***3.69***	2.00	2.00
18-Jun-14	6.67	***6.80***	1.93	2.00	6.00	6.00
20-Jun-14	6.89	***6.77***	2.00	1.74	2.00	2.00
23-Jun-14	6.55	***5.85***	6.78	**9.78**	5.00	6.00
25-Jun-14	7.08	***7.01***	7.84	**7.10**	7.00	2.00
27-Jun-14	7.21	***7.82***	13.75	**18.45**	7.00	***7.00***
30-Jun-14	6.76	***7.00***	2.93	3.00	2.00	3.00

- *Bold and Italic is indicated exceeded Action Level*; *Bold with underline is indicated exceeded Limit Level*

4.08 During the Reporting Period, field measurements showed that stream water temperatures were within 26.1℃ to 32.80℃ and pH values within 6.40 to 8.33.

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

Table 4-4 Statistics Water Quality Exceedance

Station	DO		Turbidity		SS		Total Exceedance	
	Action	Limit	Action	Limit	Action	Limit	Action	Limit
W1	**26**	0	**3**	**12**	0	0	**29**	**12**
W2	**3**	0	0	**12**	0	**4**	**3**	**16**
W4	**13**	0	**2**	**4**	**1**	0	**16**	**4**
No. of Exceedance	**42**	0	**5**	**28**	**1**	**4**	**48**	**32**

4.10 As shown in ***Table 4-4***, a total of 80 Action/ Limit Level exceedances, namely 42 exceedances in dissolved oxygen, 33 exceedances in turbidity and 5 exceedances in SS were recorded in this Reporting Period. NOEs were issued to notify EPD, IEC, the Contractor and RE upon confirmation of the results.

4.11 According to site information provided by the Contractor, the site activities undertaken on site included installing sheetpile in Box Culvert and excavation.

4.12 The active construction activities may increase the turbidity and suspended solids levels of the stream by washed out from stockpiles of dusty materials, excavated surface or dusty haul roads. To minimize the impact to the existing stream, precautionary measures such as sedimentation pit and temporary artificial precipitation stream to remove the suspended solids from wastewater have been implemented on-site. During regular site inspection with RE and Contractor, the implemented water quality mitigation measures are considered as moderate with the needed of regular maintenance. The investigation results for the exceedances are summarized as follows:

- For the DO exceedances, the construction activities comprised none of DO depleting characteristics. Therefore, it is considered that all the DO exceedances were due to natural variation of the stream and not related to the works under the Project.
- For the turbidity and SS exceedances at W2, since no construction activities under Contract 2 was carried out close to W2, it is concluded that the exceedances were not project related.
- For the turbidity and SS exceedances recorded at W4, it is noted that the turbidity and SS levels recorded in the control station (W3) at the same days were similar to W4, therefore it is concluded that the exceedances at W4 were likely due to natural variation and not related to the project.
- For monitoring points W1, it is noted that the water quality at W1 was affected by marine water that comes from the Tolo Harbour during flood tide. Therefore, it is considered that the exceedances in W1 were not related to the works under the Project.

4.13 KLKJV is reminded to fully implement the required water quality mitigation measures in accordance with the updated EM&A Manual stipulation during construction under the Project. In particular when excavation and the associated box culvert construction works are undertaken near Wai Ha River, all construction wastewater or runoff generated from work area should be treated and drained to the designated discharge point. Moreover, as an effective water quality mitigation measure, the rock bund in the de-silting channel should be repaired regularly and ensure the de-silting performance.

RESULTS OF HYDROLOGICAL CHARACTERISTICS MONITORING

4.14 In this Reporting Period, hydrological characteristics measurements were carried out on **6, 7, 13, 20 and 27 June 2014.** The monitoring data of H1 and H2 provided by DC/2009/22 is showed ***Appendix I***. The detailed H3 and H4 measurement results in this Reporting Period are presented in ***Tables 4-5***.

Table 4-5 Detailed monitoring results of hydrological characteristics at H3 and H4

Date	Measurement Time	Tide Condition	River Width (m)	Water Depth (m)	Cut Section (m^2)	Velocity Flow Rate (m/s)	Average Volumetric Flow Rate (Q), m^3/s
Measurement Point: H3							
7-Jun-14	13:41	Flood	7.45	0.3	2.2350	0.18	0.402
	9:30	Ebb	7.45	0.1	0.7450	0.12	0.089
13-Jun-14	17:35	Flood	7.45	0.17	1.2665	0.4	0.507
	12:51	Ebb	7.45	0.16	1.1920	0.1	0.119
20-Jun-14	12:38	Flood	7.45	0.25	1.8625	0.4	0.745
	17:39	Ebb	7.45	0.22	1.6390	0.3	0.492

Date	Measurement Time	Tide Condition	River Width (m)	Water Depth (m)	Cut Section (m^2)	Velocity Flow Rate (m/s)	Average Volumetric Flow Rate (Q), m^3/s
27-Jun-14	17:39	Flood	7.45	0.21	1.5645	0.3	0.469
	12:59	Ebb	7.45	0.19	1.4155	0.1	0.142
Measurement Point: H4							
7-Jun-14	14:03	Flood	2.74	0.1	0.2740	0.15	0.041
	9:49	Ebb	2.74	0.1	0.2740	0.1	0.027
13-Jun-14	17:47	Flood	2.74	0.13	0.3562	0.1	0.036
	13:07	Ebb	2.74	0.13	0.3562	0.1	0.036
20-Jun-14	12:47	Flood	2.74	0.21	0.5754	0.2	0.115
	17:57	Ebb	2.74	0.2	0.5480	0.2	0.110
27-Jun-14	17:53	Flood	2.74	0.18	0.4932	0.2	0.099
	13:15	Ebb	2.74	0.17	0.4658	0.1	0.047

4.15 Hydrological characteristics results of the all measurement points are summarized in ***Tables 4-6*** and ***4-7***.

Table 4-6 Summarized Hydrological Characteristics of Water Depth, m

Date	Mid-Flood				Mid-Ebb			
	H1	H2	H3	H4	H1	H2	H3	H4
6-Jun-14	0.6	0.6	--	--	0.36	0.3	--	--
7-Jun-14	#	#	0.30	0.10	#	#	0.10	0.10
13-Jun-14	#	#	0.17	0.13	0.24	0.24	0.16	0.13
20-Jun-14	0.48	0.48	0.25	0.21	#	#	0.22	0.20
27-Jun-14	0.48	0.36	0.21	0.18	0.36	0.24	0.19	0.17

 # No data was provided by Contract 1.

Table 4-7 Summarized Hydrological Characteristics of Average Volumetric flow rate (Q), m^3/s

Date	Mid-Flood				Mid-Ebb			
	H1	H2	H3	H4	H1	H2	H3	H4
6-Jun-14	0.3	1.507	--	--	0.075	1.507	--	--
7-Jun-14	#	#	0.40	0.04	#	#	0.09	0.03
13-Jun-14	#	#	0.51	0.04	0.15	0.754	0.12	0.04
20-Jun-14	0.15	0.754	0.75	0.12	#	#	0.49	0.11
27-Jun-14	0.075	0.754	0.47	0.10	0.15	1.507	0.14	0.05

 # No data was provided by Contract 1.

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

RESULTS OF ECOLOGICAL MONITORING

4.17 According to updated EM&A Manual Section 6.17, bi-monthly ecological monitoring is conducted by the IEC – ENVIRON Hong Kong Limited. In brief, the monitoring tasks include regular check on the retained and transplanted trees and shrubs, monitoring on fauna groups and aquatic fauna within the works area and any ecologically sensitive area within 100 m of the works boundary.

4.18 In this Reporting Period, no ecological monitoring in Area under Contract 2 was performed. The details monitoring report is presented in ***Appendix M***.

5.0 WASTE MANAGEMENT

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

RECORDS OF WASTE QUANTITIES

5.02 All types of waste arising from the construction work are classified into the following:

- Construction & Demolition (C&D) Material;
- Chemical Waste;
- General Refuse; and
- Excavated Soil.

5.03 The quantities of waste for disposal in this Reporting Period are summarized in ***Table 5-1*** and ***5-2*** and the Monthly Summary Waste Flow Table is shown in ***Appendix K***. Whenever possible, materials were reused on-site as far as practicable.

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

Type of Waste	Quantity	Disposal Location
C&D Materials (Inert) (m^3)	0	-
Reused in this Contract (Inert) (m^3)	0	-
Reused in other Projects (Inert) (m^3)	0	-
Disposal as Public Fill (Inert) (m^3)	17763	Tuen Mun Area 38

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

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

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

6.0 SITE INSPECTION

REGULAR SITE INSPECTION AND MONTHLY AUDIT

6.01 According to the Updated Environmental Monitoring and Audit Manual, regular site inspection to evaluate the project environmental performance should be carried out during construction phase. Weekly environmental site inspections had been carried out by the Contractor, ET and RE on **6, 13, 20 and 23 June 2014.** Also, joint site inspection with the IEC was carried out on **23 June 2014**. In this Reporting period, **1** observation was recorded but no non-compliance was noted.

6.02 Observations for the site inspection and monthly audit within this Reporting Period are summarized in ***Table 6-1***.

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

Date	Findings / Deficiencies	Follow-Up Status
6 June 2014	No adverse environmental issue was observed during site inspection.	-
13 June 2014	No adverse environmental issue was observed during site inspection.	-
20 June 2014	No adverse environmental issue was observed during site inspection.	-
23 June 2014	• Construction waste (timber) observed inside the river course should be removed.	Rectified on 16 May 2014

LANDSCAPE AND VISUAL INSPECTION

6.03 In this Reporting Period, landscape and visual inspection was carried on **13 and 24 June 2014.**

6.04 The stand-alone of monthly Landscape & Visual Report signed by the registered Landscape Architect. Mitigation measures implemented in this Reporting Period are presented in the monthly Landscape & Visual Report (**June 2014**) which is enclosed in ***Appendix L***.

6.05 The next bi-weekly Landscape & Visual Monitoring in **July 2014** is scheduled to be conducted in the week of **7 and 21 July 2014**.

7.0 ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION

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

Table 7-1 Statistical Summary of Environmental Complaints

Reporting Period	Environmental Complaint Statistics		
	Frequency	Cumulative	Complaint Nature
July 2011 – May 2014	1	1	Air Quality (1)
June 2014	0	1	Air Quality (1)

Table 7-2 Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics		
	Frequency	Cumulative	Complaint Nature
July 2011 – May 2014	0	0	NA
June 2014	0	0	NA

Table 7-3 Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Prosecution Statistics		
	Frequency	Cumulative	Complaint Nature
July 2011 – May 2014	0	0	NA
June 2014	0	0	NA

8.0 IMPLEMENTATION STATUS OF MITIGATION MEASURES

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

Noise Mitigation Measure

(a) Only well-maintained plant should be operated on-site and plant shall be serviced regularly during the construction program;
(b) Silencers or mufflers on construction equipment should be utilized and shall be properly maintained during the construction program;
(c) Mobile plant, if any, should be sited as far from NSRs as possible;
(d) Machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum;
(e) Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs;
(f) Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities;
(g) Use of quieter plants to carry out the construction tasks proposed for the Project;
(h) Use about 3.5m high of temporary noise barriers as screened the noisy PMEs to carry out construction of box culvert and site clearance.
(i) Low Impact Method, such as using PMEs smaller in size and to be enclosed by noise enclosure, should be adopted for the construction of box culvert and pipe laying in Wai Ha; and
(j) Use of noise enclosure during the works area for pipe laying in Wai Ha.

Dust Mitigation Measure

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

(a) Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved road, with complete coverage, particularly during dry weather;
(b) Use of frequent watering for particularly dusty static construction areas and areas close to ASRs;
(c) Tarpaulin covering of all dusty vehicle loads transported to, from and between site location;
(d) Establishment and use of vehicle wheel and body washing facilities at the exit points of the site;
(e) Routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs;
(f) Stockpiled excavated materials should be covered with tarpaulin and should be removed offsite within 24 hours to avoid any odour nuisance arising.

Local Stream Water Quality Mitigation Measure

(a) Before commencing any site formation work, all sewer and drainage connections shall be sealed to prevent debris, soil, sand etc. from entering public sewers/drains;
(b) Temporary ditches shall be provided to facilitate run-off discharge into appropriate watercourses, via a silt retention pond. No site run-off shall enter the fishponds at Shuen Wan;
(c) Sand/silt removal facilities such as sand traps, silt traps and sediment basins shall be provided to remove sand/silt particles from runoff to meet the requirements of the Technical Memorandum standard under the Water Pollution Control Ordinance. The design of silt removal facilities shall be based on the guidelines provided in ProPECC PN 1/94. All drainage facilities and erosion and sediment control structures shall be inspected monthly and maintained to ensure proper and efficient operation al all times and particularly during rainstorms
(d) Water pumped out from excavated pits shall be discharged into sill removal facilities;

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Waste Mitigation Measures

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

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

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

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

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

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

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

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

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

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

Table 8-1 Environmental Mitigation Measures

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

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

9.0 IMPACT FORCAST

CONSTRUCTION ACTIVITIES FOR THE FORTH-COMING MONTH

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

- Rectification of minor defects of all Box Culverts

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

KEY ISSUES FOR THE COMING MONTH

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

- Implementation of dust suppression measures at all times;
- Ensure dust suppression measures are implemented properly;
- Disposal of empty engine oil containers within site area;
- Sediment catch-pits and silt removal facilities should be regularly maintained;
- Management of chemical wastes;
- Discharge of site effluent to the nearby local stream or storm drainage, stockpiling or disposal of materials, and any dredging or construction area at this area are prohibited;
- Follow-up of improvement on general waste management issues; and
- Implementation of construction noise preventative control measures.

10.0 CONCLUSIONS AND RECOMMENTATIONS

CONCLUSIONS

10.01 This is the **36th** monthly EM&A report for Contract 2 presenting the monitoring results and inspection findings for the Reporting Period from **1 to 30 June 2014**.

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

10.03 For water quality monitoring, a total of 80 Action/ Limit Level exceedances, namely 42 exceedances in dissolved oxygen, 33 exceedances in turbidity and 5 exceedances in SS were recorded in this Reporting Period. NOEs were issued to notify EPD, IEC, the Contractor and RE upon confirmation of the results. It is concluded that exceedances were not related to the Project.

10.04 The hydrological characteristics of water depth and water flow rate were found no exceedance in this Reporting Period.

10.05 In this Reporting Period, no ecological monitoring in Area under Contract 2 was performed.

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

10.07 Weekly environmental site inspections had been carried out by the Contractor, ET and the RE on **6, 13, 20 and 23 June 2014**. Furthermore, joint site inspection with the IEC was carried out on **23 June 2014**. In this Reporting Period, **1** observation was recorded but no non-compliance was noted during the site inspection.

10.08 In this Reporting Period, landscape and visual inspection was carried on **13 and 24 June 2014** and the monthly Landscape & Visual Report (**June 2014**) has been signed by the registered Landscape Architect.

RECOMMENDATIONS

10.09 During wet season and river works is in progress, surface runoff or water discharge to local stream course should be key environment aspect issue. The Contractor is reminded that mitigation measures for water quality and ecology should be fully implemented. As an effective water quality mitigation measure, the rock bund in the de-silting channel should be repaired regularly and ensure the de-silting performance.

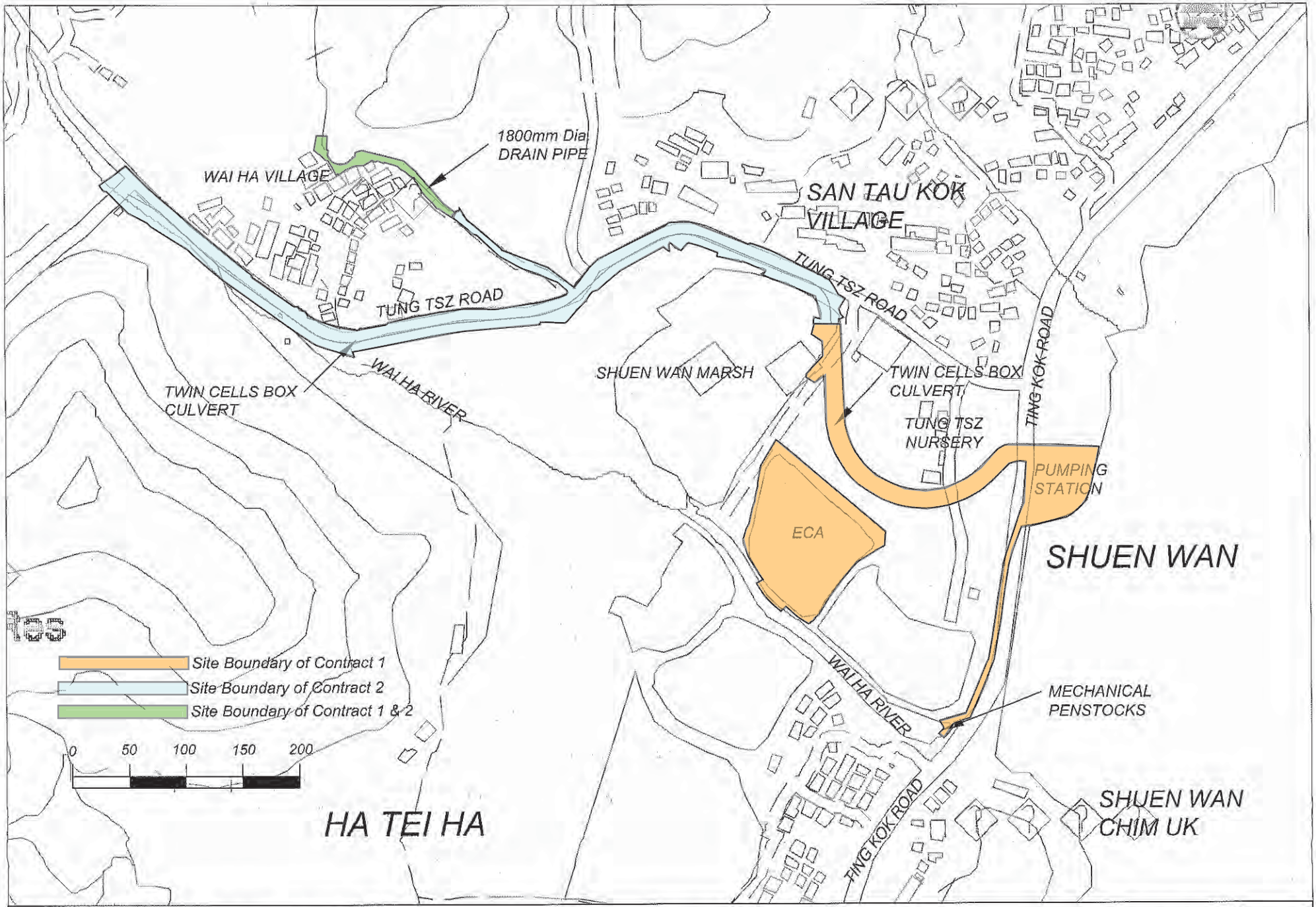
10.10 Dust mitigation measures to avoid fugitive dust emissions from loose soil surface or haul road would also be a key issue in coming months.

10.11 Special attention should be also paid on the muddy water and other water quality pollutants via site surface water runoff into the local stream Wah Ha River. As an effective water quality mitigation measure, the rock bund in the de-silting channel should be repaired regularly and ensure the de-silting performance.

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

Appendix A

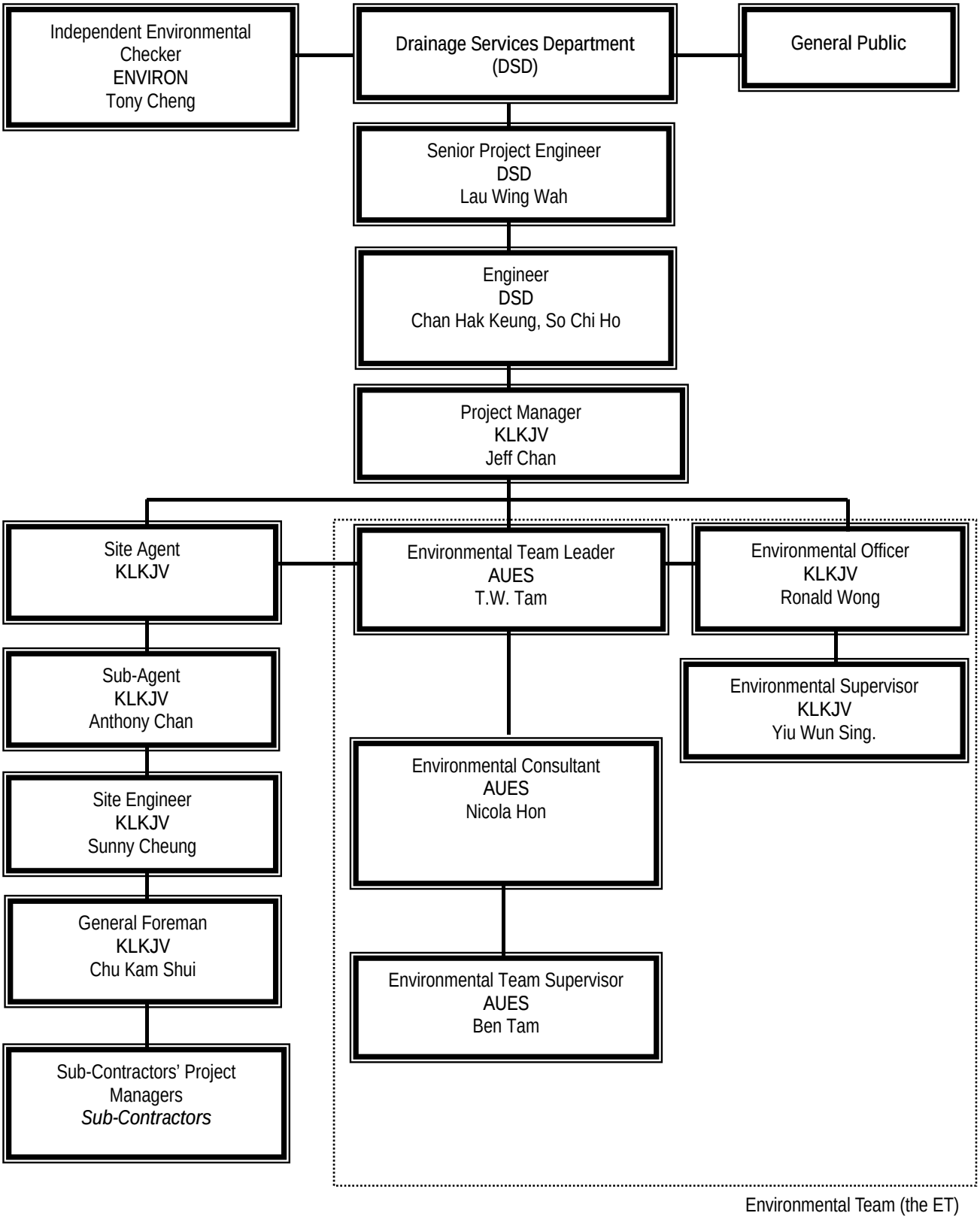
Site Location Plan
(DSD Contract 1 and Contract 2 at Shuen Wan)



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

Appendix B

Organization Chart and the Key Contact Person



Environmental Management Organization

Contact Details of Key Personnel

Organization	Project Role	Name of Key Staff	Tel No.	Fax No.
DSD	Employer	Mr. Luk Wai Hung	2594 7400	2827 8700
DSD	Senior Engineer	Mr. Lau Wing Wah	2594 7402	2827 8700
DSD	Engineer	Mr. Chan Hak Keung	2594 7596	2827 8700
DSD	Engineer	Mr. So Chi Ho	2594 7356	2827 8700
DSD	Senior Inspector	Mr. Tso Si On	6778 2708	2827 8700
ENVIRON	Independent Environmental Checker	Mr. Tong Cheng	3465-2888	3465-2899
KLKJV	Project Director	Mr. Poon Chi Yeung Francis	2674 3888	2674 9988
KLKJV	Project Manager	Mr. Jeff Chan	2674 3888	2674 9988
KLKJV	Sub- Agent	Mr. Anthony Chan	2674 3888	2674 9988
KLKJV	Site Forman	Mr. Chu Kam Shui	2674 3888	2674 9988
KLKJV	Environmental Officer	Mr. Ronald Wong	2674 3888	2674 9988
KLKJV	Environmental Supervisor	Mr. Yiu Wun Sing	2674 3888	2674 9988
AUES	Environmental Team Leader	Mr. T.W. Tam	2959-6059	2959-6079
AUES	Environmental Consultant	Miss. Nicola Hon	2959-6059	2959-6079
AUES	Environmental Supervisor	Mr. Ben Tam	2959-6059	2959-6079

Legends:

DSD (Employer) – Drainage Services Department

DSD (Engineer) – Drainage Services Department

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

ENVIRON (IEC) – ENVIRON Hong Kong Limited

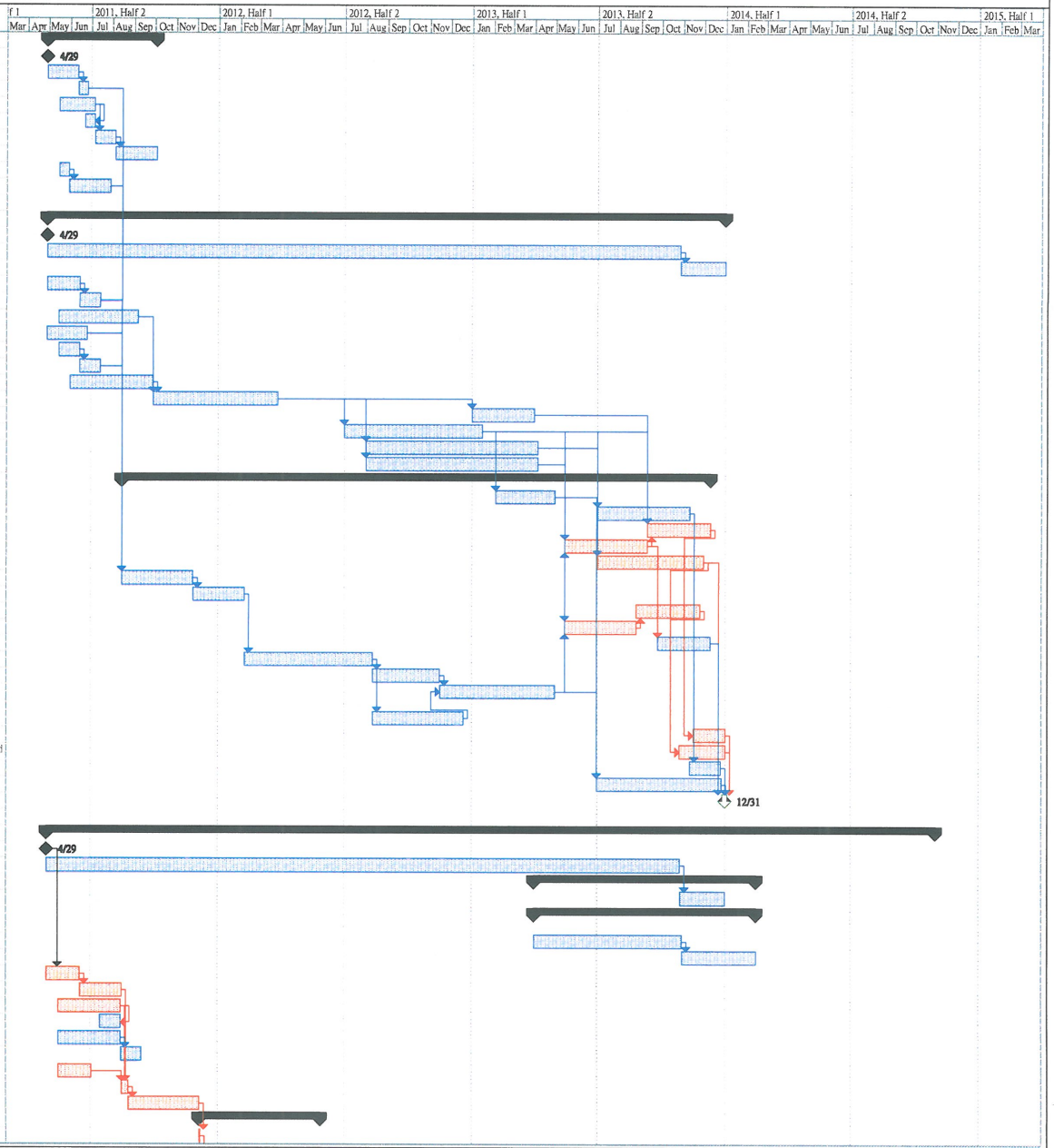
AUES (ET) – Action-United Environmental Services & Consulting

Appendix C

Master Construction Programs

Contract No.: DC/2010/02
Contract Title: Drainage Improvement Works in Shuen Wan and Shek Wu Wai
Updated Programme (No. 6)

ID	Task Name	Duration	Start	Finish	Predecessors
1	**Preliminary Works**	**158 days**	**Fri 11 Apr 29**	**Mon 11 Oct 3**	
2	Commencement of Works	0 days	Fri 11 Apr 29	Fri 11 Apr 29	
3	Site Clearance	44 days	Fri 11 Apr 29	Sat 11 Jun 11	
4	Record Survey	14 days	Sun 11 Jun 12	Sat 11 Jun 25	3
5	Design & Construction of Hoarding	51 days	Mon 11 May 16	Tue 11 Jul 5	
6	Signboard (Type B)	14 days	Wed 11 Jun 22	Tue 11 Jul 5	5FF
7	Design & Approval of Engineer's Site Office	30 days	Wed 11 Jul 6	Thu 11 Aug 4	5
8	Construction of Engineer's Site Office	60 days	Fri 11 Aug 5	Mon 11 Oct 3	7
9	Pre-construction Condition Survey	14 days	Mon 11 May 16	Sun 11 May 29	
10	Relocation of Existing Shrines (2 Nos.)	60 days	Mon 11 May 30	Thu 11 Jul 28	9
11					
12	**Section I (Construction Works in Shuen Wan)**	**978 days**	**Fri 11 Apr 29**	**Tue 13 Dec 31**	
13	**Commencement of Works**	0 days	Fri 11 Apr 29	Fri 11 Apr 29	
14	**Original Contract Period**	913 days	Fri 11 Apr 29	Sun 13 Oct 27	
15	**Extension of Time - due to Inclement Weather**	65 days	Mon 13 Oct 28	Tue 13 Dec 31	14
16	Design of TTA	47 days	Fri 11 Apr 29	Tue 11 Jun 14	
17	Submission of TTA to TMLG for Approval	30 days	Wed 11 Jun 15	Thu 11 Jul 14	16
18	Excavation Permit	115 days	Mon 11 May 16	Wed 11 Sep 7	
19	Submission & approval of caluclation & MS for BC (including trench ELS/slope)	58 days	Fri 11 Apr 29	Sat 11 Jun 25	
20	Notify EPD on commencement (one month advance notice)	30 days	Mon 11 May 16	Tue 11 Jun 14	
21	Tree Felling	30 days	Wed 11 Jun 15	Thu 11 Jul 14	20
22	Utility detection and diversion programme	120 days	Wed 11 Jun 1	Wed 11 Sep 28	
23	Utilities corordination	180 days	Thu 11 Sep 29	Mon 12 Mar 26	18,22
24	Tempory disconnection of fire hydrant (Bay 7)	90 days	Tue 13 Jan 1	Sun 13 Mar 31	23
25	CLP's overhead pole diversion (bay 1 to Bay 15)	199 days	Sun 12 Jul 1	Tue 13 Jan 15	23
26	Relocation/ diversion of light post (near Bay 13)	248 days	Wed 12 Aug 1	Fri 13 Apr 5	23
27	Relocation/ diversion of light post (near Bay 32)	248 days	Wed 12 Aug 1	Fri 13 Apr 5	23
28	**Construction of Single Cell (approx. 724m)**	**849 days**	**Mon 11 Aug 15**	**Tue 13 Dec 10**	
29	**Intake of Box Culvert - in progress**	86 days	Mon 13 Feb 4	Tue 13 Apr 30	25
30	from CH67 to CH127 (Bay 1,2,3,4,5)	133 days	Mon 13 Jul 1	Sun 13 Nov 10	25
31	from CH127 to CH152 (Bay 6,7)	91 days	Wed 13 Sep 11	Tue 13 Dec 10	32,24,25
32	from CH152 to CH200 (Bay 8,9,10,11)	119 days	Wed 13 May 15	Tue 13 Sep 10	41,25
33	from CH200 to CH297 (Bay 12,13,14,15,16,17,18,19)	153 days	Mon 13 Jul 1	Sat 13 Nov 30	26,25
34	**from CH297 to CH334 (Bay 20,21,22) completed**	**103 days**	**Mon 11 Aug 15**	**Fri 11 Nov 25**	**17,19,21,10,4**
35	**from CH334 TO CH395 (Bay 23,24,25,26,27) completed**	**74 days**	**Sat 11 Nov 26**	**Tue 12 Feb 7**	**34**
36	from CH395 to CH419 (Bay 28,29)	92 days	Mon 13 Aug 26	Mon 13 Nov 25	37
37	From CH419 to CH455 (Bay 30,31,32)	103 days	Wed 13 May 15	Sun 13 Aug 25	41,27
38	from CH455 to CH480 (Bay 33,34)	76 days	Thu 13 Sep 26	Tue 13 Dec 10	32FS+15 days
39	**from CH480 to CH541 (Bay 35,36,37,38,39) completed**	**185 days**	**Wed 12 Feb 8**	**Fri 12 Aug 10**	**35**
40	**from CH541 to CH577 (Bay 40,41,42) completed**	97 days	Sat 12 Aug 11	Thu 12 Nov 15	39
41	**from CH577 to CH674 (Bay 43,44,45,46,47,48,49,50) in progress**	166 days	Fri 12 Nov 16	Tue 13 Apr 30	40,42FS-44 days
42	**from CH674 to CH732 (Bay 51,52,53,54,55) completed**	131 days	Sat 12 Aug 11	Wed 12 Dec 19	39
43	RCP (above Bay 6)	46 days	Sat 13 Nov 16	Tue 13 Dec 31	31FS-25 days
44	CCTV Inspection	66 days	Sun 13 Oct 27	Tue 13 Dec 31	36FS-30 days,33FS-35 d
45	Installation of Type 2 Railing at Upstream (CH67 to CH240)	45 days	Mon 13 Nov 11	Wed 13 Dec 25	30
46	Landscape Softwork	180 days	Sun 13 Jan 30	Thu 13 Dec 26	29,41FS+60 days
47	**Completion of Section I**	0 days	Tue 13 Dec 31	Tue 13 Dec 31	46,45,43,44,33,38
48					
49	**Section II (Construction Works in Shek Wu Wai)**	**1281 days**	**Fri 11 Apr 29**	**Thu 14 Oct 30**	
50	Commence of Works	0 days	Fri 11 Apr 29	Fri 11 Apr 29	
51	Original Contract Period	913 days	Fri 11 Apr 29	Sun 13 Oct 27	
52	**Extension of Time**	**320 days**	**Mon 13 Apr 1**	**Fri 14 Feb 14**	
53	EOT due to inclement weather	65 days	Mon 13 Oct 28	Tue 13 Dec 31	51
54	**Utilities in conflict with Construction of Box Culvert at downstream**	**320 days**	**Mon 13 Apr 1**	**Fri 14 Feb 14**	
55	utilities diversions	213 days	Mon 13 Apr 1	Wed 13 Oct 30	
56	construction of remaining works	107 days	Thu 13 Oct 31	Fri 14 Feb 14	55
57	Design of TTA	48 days	Fri 11 Apr 29	Wed 11 Jun 15	50
58	Submission of TTA to TMLG for Approval	60 days	Thu 11 Jun 16	Sun 11 Aug 14	57
59	Excavation Permit	90 days	Mon 11 May 16	Sat 11 Aug 13	
60	Temp. Work Design	30 days	Fri 11 Jul 15	Sat 11 Aug 13	59FF
61	Site Investigation for Utilities	90 days	Mon 11 May 16	Sat 11 Aug 13	
62	Submit Program for Utilities Diversion	30 days	Sun 11 Aug 14	Mon 11 Sep 12	61
63	Site Clearance and Tree Felling	48 days	Mon 11 May 16	Sat 11 Jul 2	
64	Implement Stage 1 of TTA	10 days	Mon 11 Aug 15	Wed 11 Aug 24	58,59,63
65	Temp. Steel Decking and temporary carriageway	102 days	Thu 11 Aug 25	Sun 11 Dec 4	64
66	**Box Culvert Construction**	**175 days**	**Mon 11 Dec 5**	**Sun 12 May 27**	
67	Implement Stage 2 of TTA	1 day	Mon 11 Dec 5	Mon 11 Dec 5	65

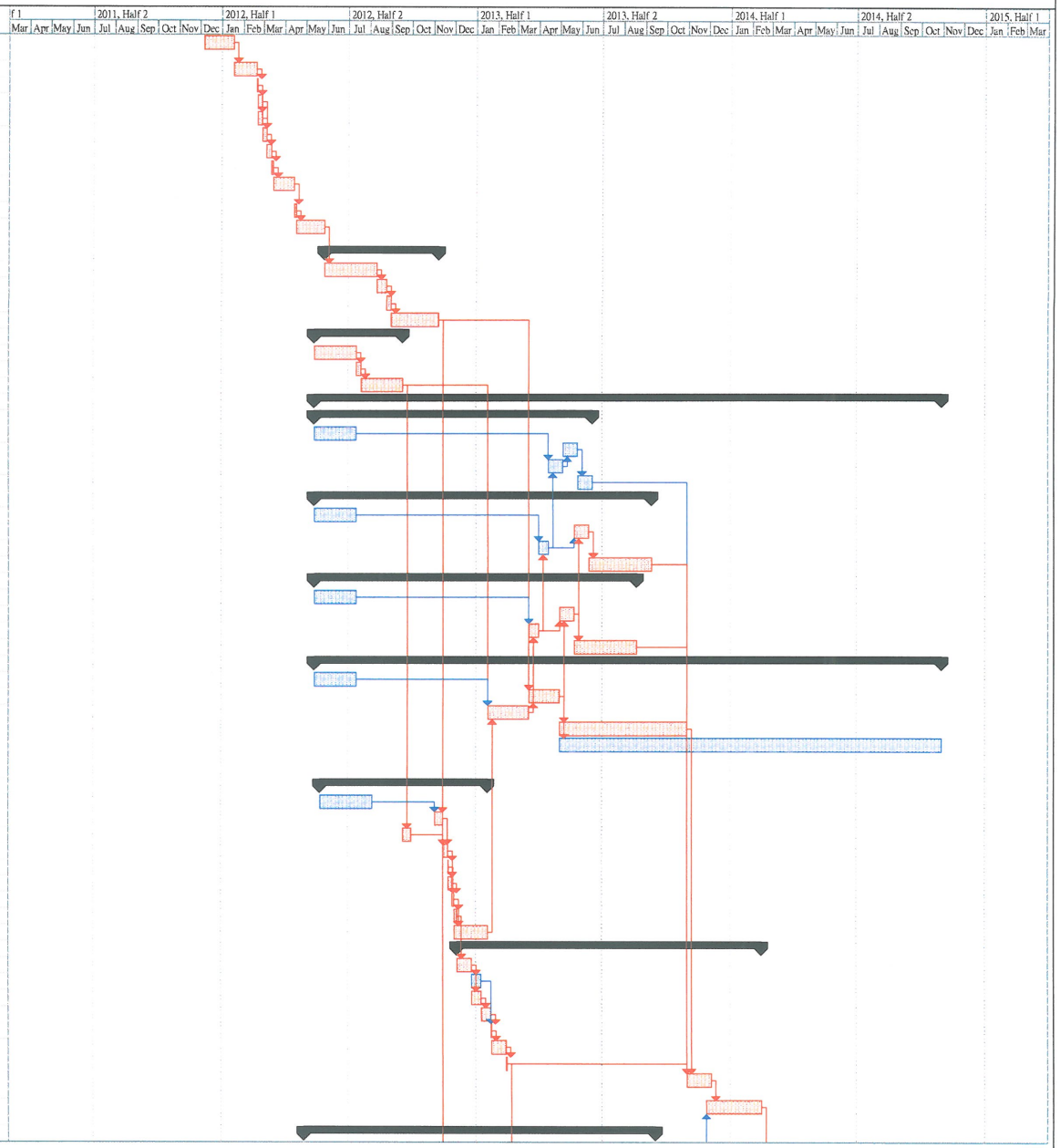


Data Date: 09 Jan 2013
Printed on : 30 March 2013

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

Contract No.: DC/2010/02
Contract Title: Drainage Improvement Works in Shuen Wan and Shek Wu Wai
Updated Programme (No. 6)

ID	Task Name	Duration	Start	Finish	Predecessors
68	Construction of Box Culvert along Castle Peak Road (West Bound) including demolition of ex. BC	43 days	Tue 11 Dec 6	Tue 12 Jan 17	67
69	Temporary carriageway for stage 3 TTA	33 days	Wed 12 Jan 18	Sun 12 Feb 19	68
70	Implement Stage 3 of TTA	1 day	Mon 12 Feb 20	Mon 12 Feb 20	69
71	Trial pit for utilities	7 days	Tue 12 Feb 21	Mon 12 Feb 27	70
72	Construction of steel footbridge	7 days	Tue 12 Feb 21	Mon 12 Feb 27	70
73	Installation of steel sheet piles	6 days	Tue 12 Feb 28	Sun 12 Mar 4	72,71
74	Temporary support for utilities	7 days	Mon 12 Mar 5	Sun 12 Mar 11	73
75	Demolish Exisiting Box Culvert (East Bound)	3 days	Mon 12 Mar 12	Wed 12 Mar 14	74
76	Construction of Base Slab & Wall of Box Culvert along Castle Peak Road (East Bound)	30 days	Thu 12 Mar 15	Fri 12 Apr 13	75
77	Remove Temporary flow diversion	3 days	Sat 12 Apr 14	Mon 12 Apr 16	76
78	Construction of 3.5m wide top slab of box culvert along Castle Peak Road (East Bound)	41 days	Tue 12 Apr 17	Sun 12 May 27	77
79	**Construction of RW1 wing wall portion**	**164 days**	**Mon 12 May 28**	**Wed 12 Nov 7**	
80	CLP (overhead pole) - cable laying	75 days	Mon 12 May 28	Fri 12 Aug 10	78
81	CLP (overhead pole) - changing over	14 days	Sat 12 Aug 11	Fri 12 Aug 24	80
82	*CLP (overhead pole) - removal of overhead pole*	*7 days*	*Sat 12 Aug 25*	*Fri 12 Aug 31*	*81*
83	Retaining wall RW1 - wing wall portion	68 days	Sat 12 Sep 1	Wed 12 Nov 7	82
84	**Construction of RW2 (wing wall)**	**127 days**	**Mon 12 May 14**	**Mon 12 Sep 17**	
85	PCCW - XP application	60 days	Mon 12 May 14	Thu 12 Jul 12	
86	PCCW - demolition of existing joint box/ cable drawpit	7 days	Fri 12 Jul 13	Thu 12 Jul 19	85
87	Retaining wall RW2 (wing wall)	60 days	Fri 12 Jul 20	Mon 12 Sep 17	86
88	**Utilities Diversion by UU**	**900 days**	**Mon 12 May 14**	**Thu 14 Oct 30**	
89	**CLP (2no. 11kV cables)**	**399 days**	**Mon 12 May 14**	**Sun 13 Jun 16**	
90	CLP (2 no. 11kV cables) - XP application	60 days	Mon 12 May 14	Thu 12 Jul 12	
91	CLP (2 no. 11kV cables) - ducting & cable works (near RW1)	21 days	Mon 13 May 6	Sun 13 May 26	92
92	CLP (2 no. 11kV cables) - ducting & cable works (near RW2)	21 days	Mon 13 Apr 15	Sun 13 May 5	90,97
93	CLP (2 no. 11kV cables) - changing over	21 days	Mon 13 May 27	Sun 13 Jun 16	91
94	**NWT**	**484 days**	**Mon 12 May 14**	**Mon 13 Sep 9**	
95	NWT - XP application	60 days	Mon 12 May 14	Thu 12 Jul 12	
96	NWT - manholes & ducting construction works (near RW1)	21 days	Wed 13 May 22	Tue 13 Jun 11	97,101
97	NWT - manholes & ducting construction works (near RW2)	14 days	Mon 13 Apr 1	Sun 13 Apr 14	95,102
98	NWT - diversion & changing over	90 days	Wed 13 Jun 12	Mon 13 Sep 9	96
99	**HGC**	**463 days**	**Mon 12 May 14**	**Mon 13 Aug 19**	
100	HGC - XP application	60 days	Mon 12 May 14	Thu 12 Jul 12	
101	HGC - manholes & ducting construction works (near RW1)	21 days	Wed 13 May 1	Tue 13 May 21	102,106
102	HGC - manholes & ducting construction works (near RW2)	14 days	Mon 13 Mar 18	Sun 13 Mar 31	100,107
103	HGC - diversion & changing over	90 days	Wed 13 May 22	Mon 13 Aug 19	101
104	**PCCW**	**900 days**	**Mon 12 May 14**	**Thu 14 Oct 30**	
105	PCCW - XP application	60 days	Mon 12 May 14	Thu 12 Jul 12	
106	PCCW - manholes & ducting construction works (near RW1)	44 days	Mon 13 Mar 18	Tue 13 Apr 30	83,107
107	PCCW - manholes & ducting construction works (near RW2)	59 days	Fri 13 Jan 18	Sun 13 Mar 17	87,105,119
108	PCCW - diversion & changing over (local cables)	183 days	Wed 13 May 1	Wed 13 Oct 30	106
109	PCCW - diversion & changing over (overseas cables - about 4 nos.) - to be hanged up for construction of remaining Box Culvert	548 days	Wed 13 May 1	Thu 14 Oct 30	106
110	**WSD**	**241 days**	**Tue 12 May 22**	**Thu 13 Jan 17**	
111	WSD - material delivery	75 days	Tue 12 May 22	Sat 12 Aug 4	
112	WSD - pipes frabrication, installation & laying (near RW1)	12 days	Sat 12 Nov 3	Wed 12 Nov 14	83FS-5 days,111
113	WSD - pipes frabrication, installation & laying (near RW2)	12 days	Tue 12 Sep 18	Sat 12 Sep 29	87
114	WSD - excavation of connection points	7 days	Thu 12 Nov 15	Wed 12 Nov 21	112,113
115	WSD - inspection of connection points with WSD	1 day	Thu 12 Nov 22	Thu 12 Nov 22	114
116	WSD - swabling/ flushing/ sterilization	6 days	Thu 12 Nov 22	Tue 12 Nov 27	114
117	WSD - shutdown & commissioning by WSD	3 days	Wed 12 Nov 28	Fri 12 Nov 30	116,115
118	WSD - removal of disused pipes/ reinstatement	4 days	Sat 12 Dec 1	Tue 12 Dec 4	117
119	WSD - diversion of 3 nos. dia.25 pipes	48 days	Sat 12 Dec 1	Thu 13 Jan 17	117
120	**Remaining box culvert**	**437 days**	**Wed 12 Dec 5**	**Fri 14 Feb 14**	
121	Construction of top slab of box culvert for East Bound	21 days	Wed 12 Dec 5	Tue 12 Dec 25	118
122	Construction of temp. footway at downstream	14 days	Wed 12 Dec 26	Tue 13 Jan 8	121
123	Backfilling and removal of temporary works	14 days	Wed 12 Dec 26	Tue 13 Jan 8	121
124	Temporary road surface for East Bound	14 days	Wed 13 Jan 9	Tue 13 Jan 22	123
125	Resume the east bound traffic	1 day	Wed 13 Jan 23	Wed 13 Jan 23	122,124
126	Temporary road surface for West Bound	21 days	Thu 13 Jan 24	Wed 13 Feb 13	125
127	Resume Castle Peak Road traffic for both direction	1 day	Thu 13 Feb 14	Thu 13 Feb 14	126
128	Construction of remaining top slab of box culvert and footpath at downstream	35 days	Thu 13 Oct 31	Wed 13 Dec 4	127,108,93,98,103
129	Implementation of TTA, Permanent road surface & Paving block for footpath and associated works	79 days	Thu 13 Nov 28	Fri 14 Feb 14	128FS-7 days,136
130	**Retaining Wall RW1 & Access Ramp**	**505 days**	**Sun 12 Apr 29**	**Sun 13 Sep 15**	



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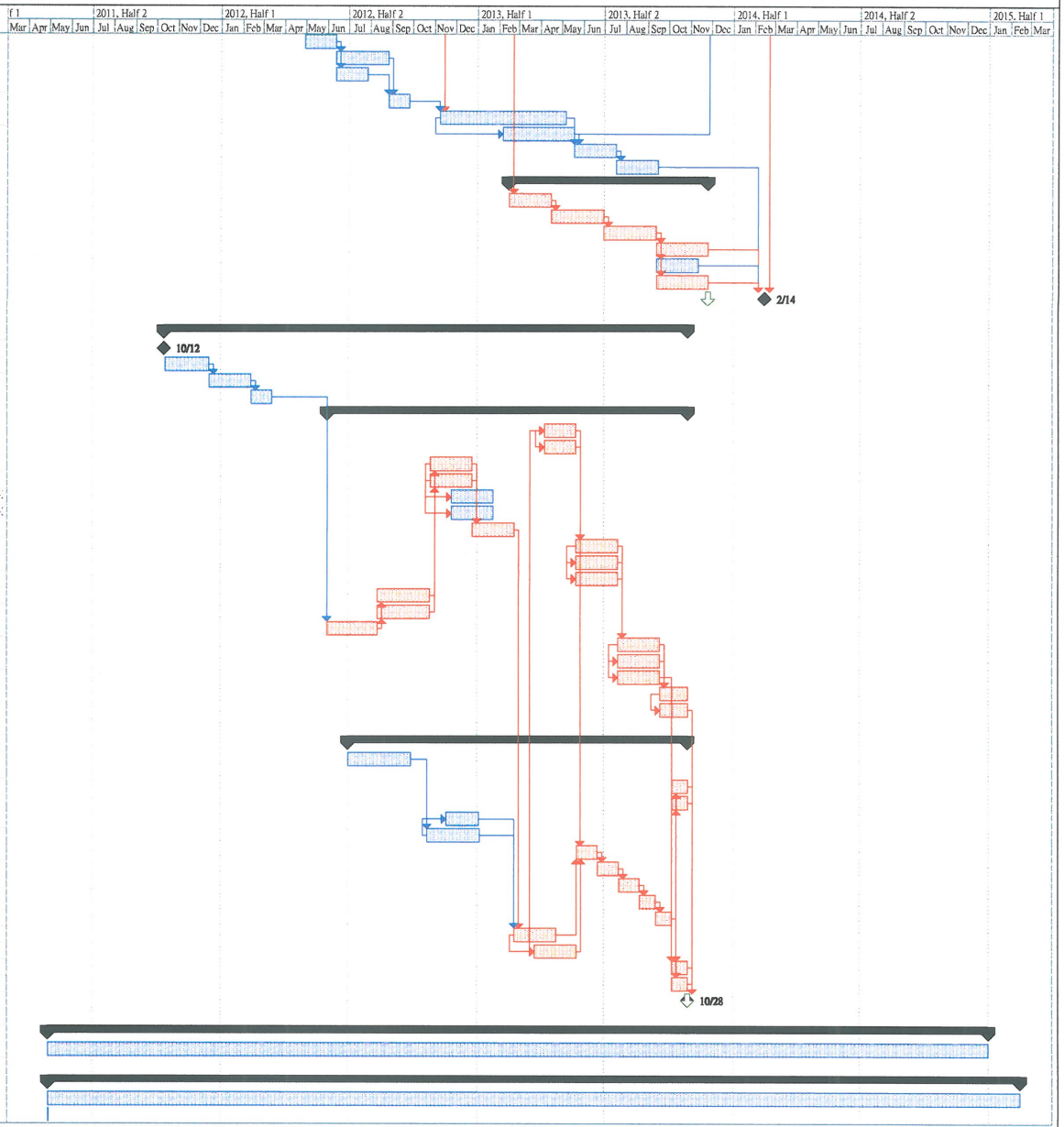
Task | Milestone | Rolled Up Task | Rolled Up Milestone | Split | Project Summary | Inactive Task | Deadline
Critical Task | Summary | Rolled Up Critical Task | Rolled Up Progress | External Tasks | Group By Summary | Progress

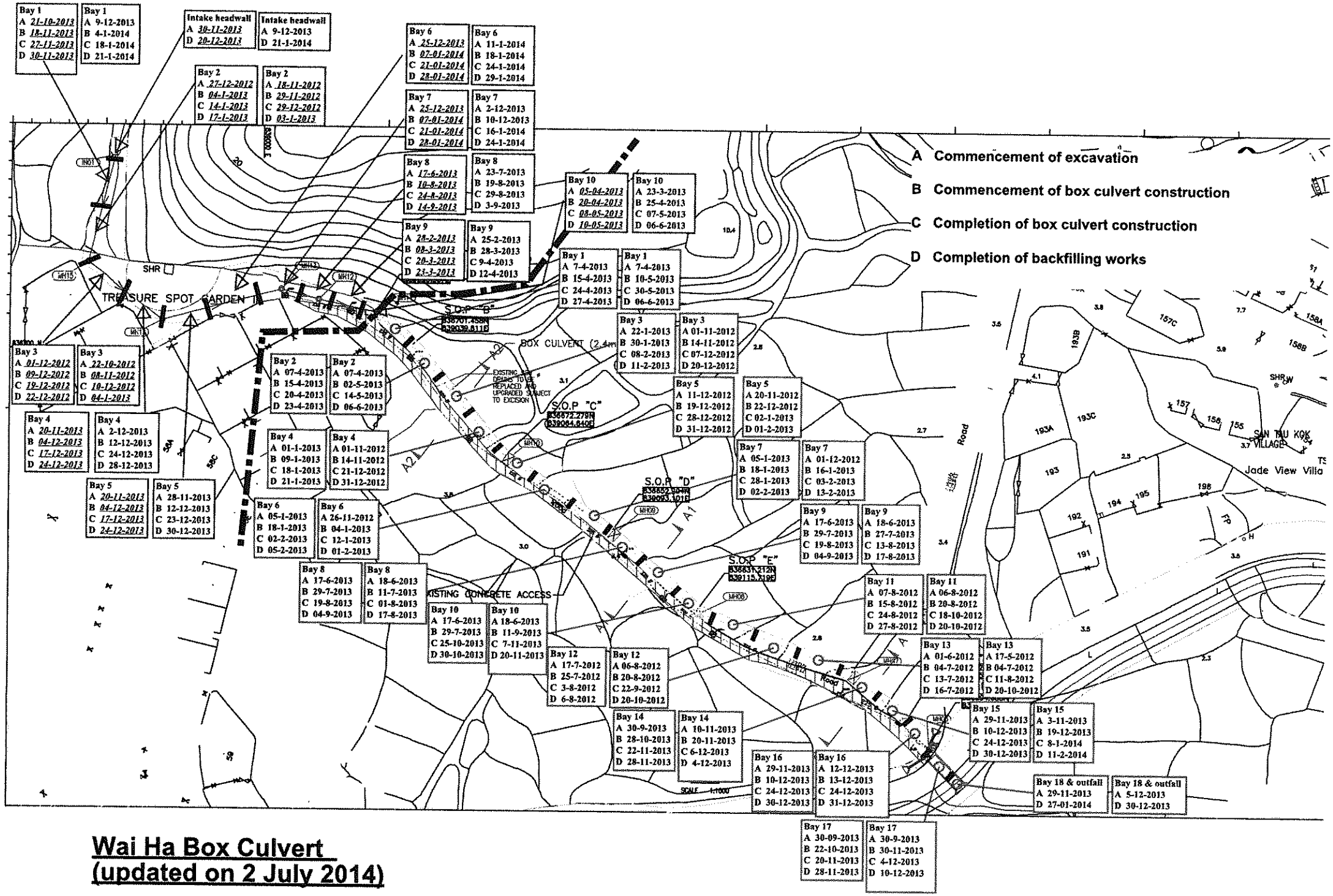
Contract No.: DC/2010/02
Contract Title: Drainage Improvement Works in Shuen Wan and Shek Wu Wai
Updated Programme (No. 6)

ID	Task Name	Duration	Start	Finish	Predecessors
131	Design & submission of TTA (San Tin Tsuen Road) for construction RW1	45 days	Sun 12 Apr 29	Tue 12 Jun 12	
132	Relocation of fire hydrant	75 days	Wed 12 Jun 13	Sun 12 Aug 26	131
133	Coordination with RMO & TD to finalize the implementation date of TTA at San Tin Tsuen Road	45 days	Wed 12 Jun 13	Fri 12 Jul 27	131
134	Implementation of TTA at San Tin Tsuen Road	30 days	Mon 12 Aug 27	Tue 12 Sep 25	132,133
135	Construction of RW1	180 days	Thu 12 Nov 8	Mon 13 May 6	83,134
136	Construction of access ramp	102 days	Wed 13 Feb 6	Sat 13 May 18	135SS+90 days
137	Construction of concrete parapet	60 days	Sun 13 May 19	Wed 13 Jul 17	136,135
138	Installation of railing and vehicular gate	60 days	Thu 13 Jul 18	Sun 13 Sep 15	137
139	**Retaining Wall RW3 & RW4**	**284 days**	**Fri 13 Feb 15**	**Mon 13 Nov 25**	
140	Removal of steel road bridge at upstream	60 days	Fri 13 Feb 15	Mon 13 Apr 15	127
141	Construction of RW4	75 days	Tue 13 Apr 16	Sat 13 Jun 29	140
142	Construction of RW3	75 days	Sun 13 Jun 30	Thu 13 Sep 12	141
143	UU diversion/ permanent works	74 days	Fri 13 Sep 13	Mon 13 Nov 25	142
144	Installation of Type 2 railing and construction of flood wall	60 days	Fri 13 Sep 13	Mon 13 Nov 11	142
145	Reinstatement of footpath and planter areas	74 days	Fri 13 Sep 13	Mon 13 Nov 25	142
146	**Completion of Section II**	0 days	Fri 14 Feb 14	Fri 14 Feb 14	145,138,143,144,129
147					
148	**Section III (Construction Works in Wai Ha Village)**	**748 days**	**Wed 11 Oct 12**	**Mon 13 Oct 28**	
149	Commence of Works	0 days	Wed 11 Oct 12	Wed 11 Oct 12	
150	Design of 2.4m x 0.9m Box Culvert	63 days	Thu 11 Oct 13	Wed 11 Dec 14	
151	Submission of design & works proposal for Approval	60 days	Thu 11 Dec 15	Sun 12 Feb 12	150
152	Site Clearance & trial pits	30 days	Mon 12 Feb 13	Tue 12 Mar 13	151
153	**Construction of Box Culvert (approx. 200m) Bay 1 to Bay 16**	**515 days**	**Fri 12 Jun 1**	**Mon 13 Oct 28**	
154	Bay 1	45 days	Sun 13 Apr 7	Tue 13 May 21	185SS+14 days
155	Bay 2	45 days	Sun 13 Apr 7	Tue 13 May 21	154SS
156	Bay 3	60 days	Fri 12 Oct 26	Mon 12 Dec 24	164,165
157	Bay 4	60 days	Fri 12 Oct 26	Mon 12 Dec 24	164,165
158	Bay 5	60 days	Sun 12 Nov 25	Wed 13 Jan 23	156SS+30 days,157SS+.
159	Bay 6	60 days	Sun 12 Nov 25	Wed 13 Jan 23	156SS+30 days,157SS+.
160	Bay 7	60 days	Tue 12 Dec 25	Fri 13 Feb 22	156,157
161	Bay 8	60 days	Wed 13 May 22	Sat 13 Jul 20	154,155
162	Bay 9	60 days	Wed 13 May 22	Sat 13 Jul 20	161SS
163	Bay 10	60 days	Wed 13 May 22	Sat 13 Jul 20	161SS
164	Bay 11	75 days	Sun 12 Aug 12	Thu 12 Oct 25	166
165	Bay 12	75 days	Sun 12 Aug 12	Thu 12 Oct 25	166
166	Bay 13	72 days	Fri 12 Jun 1	Sat 12 Aug 11	152
167	Bay 14	60 days	Sun 13 Jul 21	Wed 13 Sep 18	161,162,163
168	Bay 15	60 days	Sun 13 Jul 21	Wed 13 Sep 18	167SS
169	Bay 16	60 days	Sun 13 Jul 21	Wed 13 Sep 18	167SS
170	Bay 17	40 days	Thu 13 Sep 19	Mon 13 Oct 28	167,168,169
171	Bay 18 and Outfall	40 days	Thu 13 Sep 19	Mon 13 Oct 28	170SS
172					
173	**Construction of box culvert (1m x 1m) Bay 1 to Bay 8 (approx. 95m)**	**485 days**	**Sun 12 Jul 1**	**Mon 13 Oct 28**	
174	Notification to villagers regarding traffic arrangement for construction of 1m x 1m box culvert	90 days	Sun 12 Jul 1	Fri 12 Sep 28	
175	Intake headwall	23 days	Sun 13 Oct 6	Mon 13 Oct 28	183
176	Bay 1	23 days	Sun 13 Oct 6	Mon 13 Oct 28	183
177	Bay 2	47 days	Sun 12 Nov 18	Thu 13 Jan 3	178SS+27 days
178	Bay 3	75 days	Mon 12 Oct 22	Fri 13 Jan 4	174
179	Bay 4	30 days	Thu 13 May 23	Fri 13 Jun 21	154,155,184,185
180	Bay 5	30 days	Sat 13 Jun 22	Sun 13 Jul 21	179
181	Bay 6	30 days	Mon 13 Jul 22	Tue 13 Aug 20	180
182	Bay 7	23 days	Wed 13 Aug 21	Thu 13 Sep 12	181
183	Bay 8	23 days	Fri 13 Sep 13	Sat 13 Oct 5	182
184	Bay 9	60 days	Sat 13 Feb 23	Tue 13 Apr 23	177,178,160
185	Bay 10	60 days	Sun 13 Mar 24	Wed 13 May 22	184SS+29 days
186	CCTV inspection of box culvert	23 days	Sun 13 Oct 6	Mon 13 Oct 28	183,169
187	Grouting of existing 900mm storm drain	23 days	Sun 13 Oct 6	Mon 13 Oct 28	183
188	**Completion of Section III**	0 days	Mon 13 Oct 28	Mon 13 Oct 28	171,175,176,186,187
189					
190	**Section IV (Portion A1 and A2, Shuen Wan)**	**1343 days**	**Fri 11 Apr 29**	**Wed 14 Dec 31**	
191	Landscape Establishment Works and preservation & protection of trees	1343 days	Fri 11 Apr 29	Wed 14 Dec 31	
192					
193	**Section V (Portion B, Sheck Wu Wai)**	**1388 days?**	**Fri 11 Apr 29**	**Sat 15 Feb 14**	
194	Landscape Establishment Works and preservation & protection of trees	1388 days	Fri 11 Apr 29	Sat 15 Feb 14	
195		1 day?	Fri 11 Apr 29	Fri 11 Apr 29	

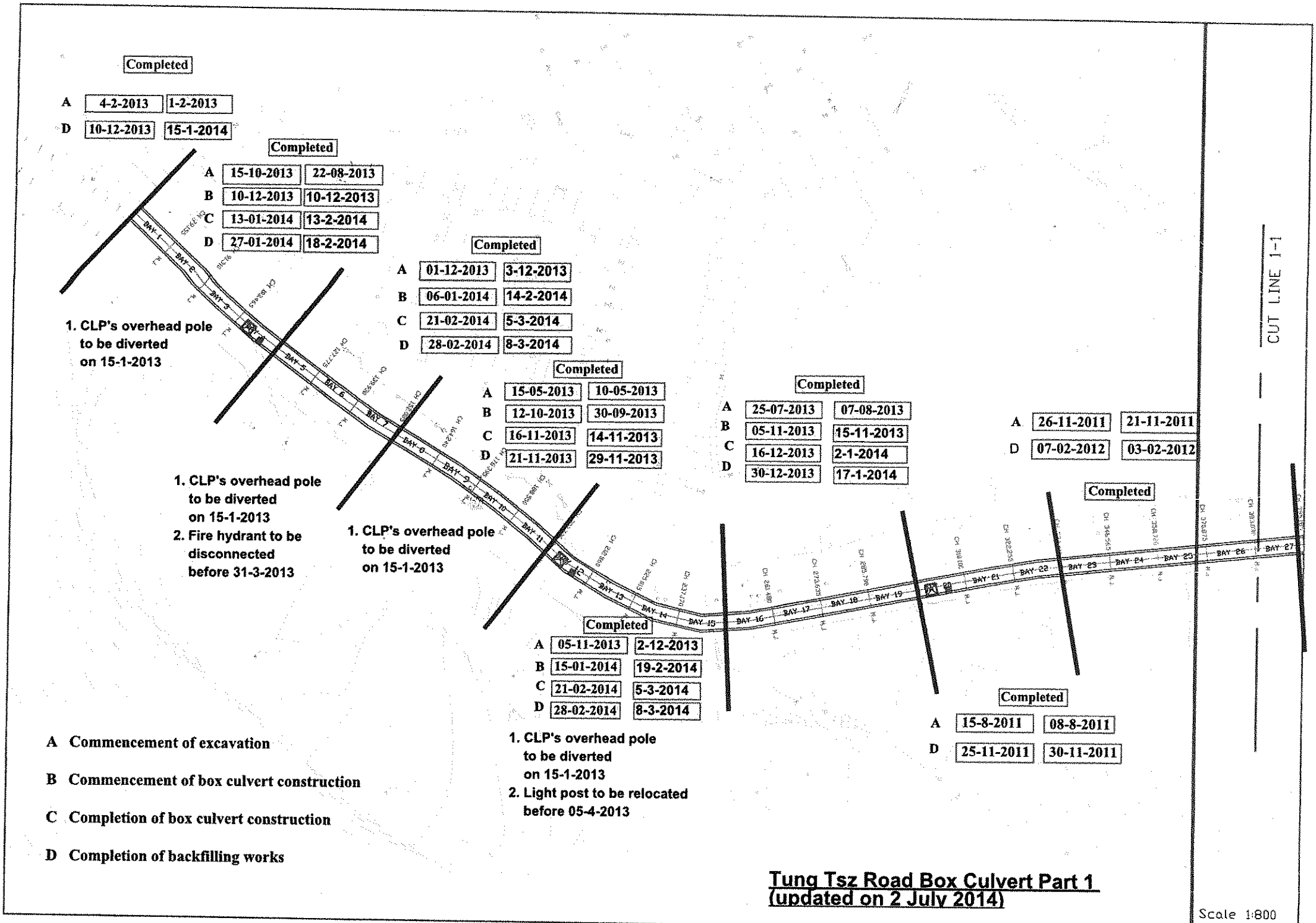


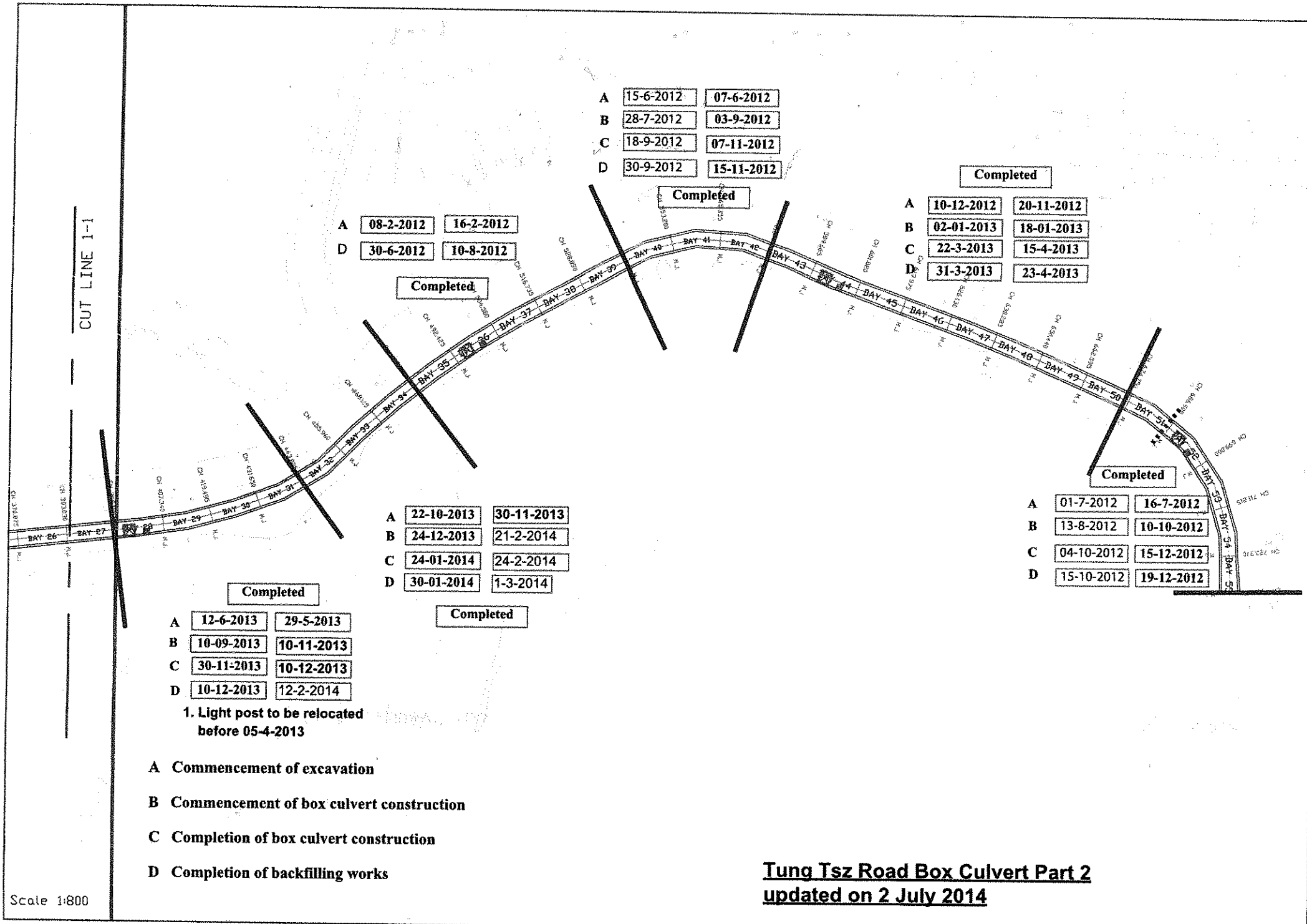
Data Date: 09 Jan 2013
Printed on : 30 March 2013

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



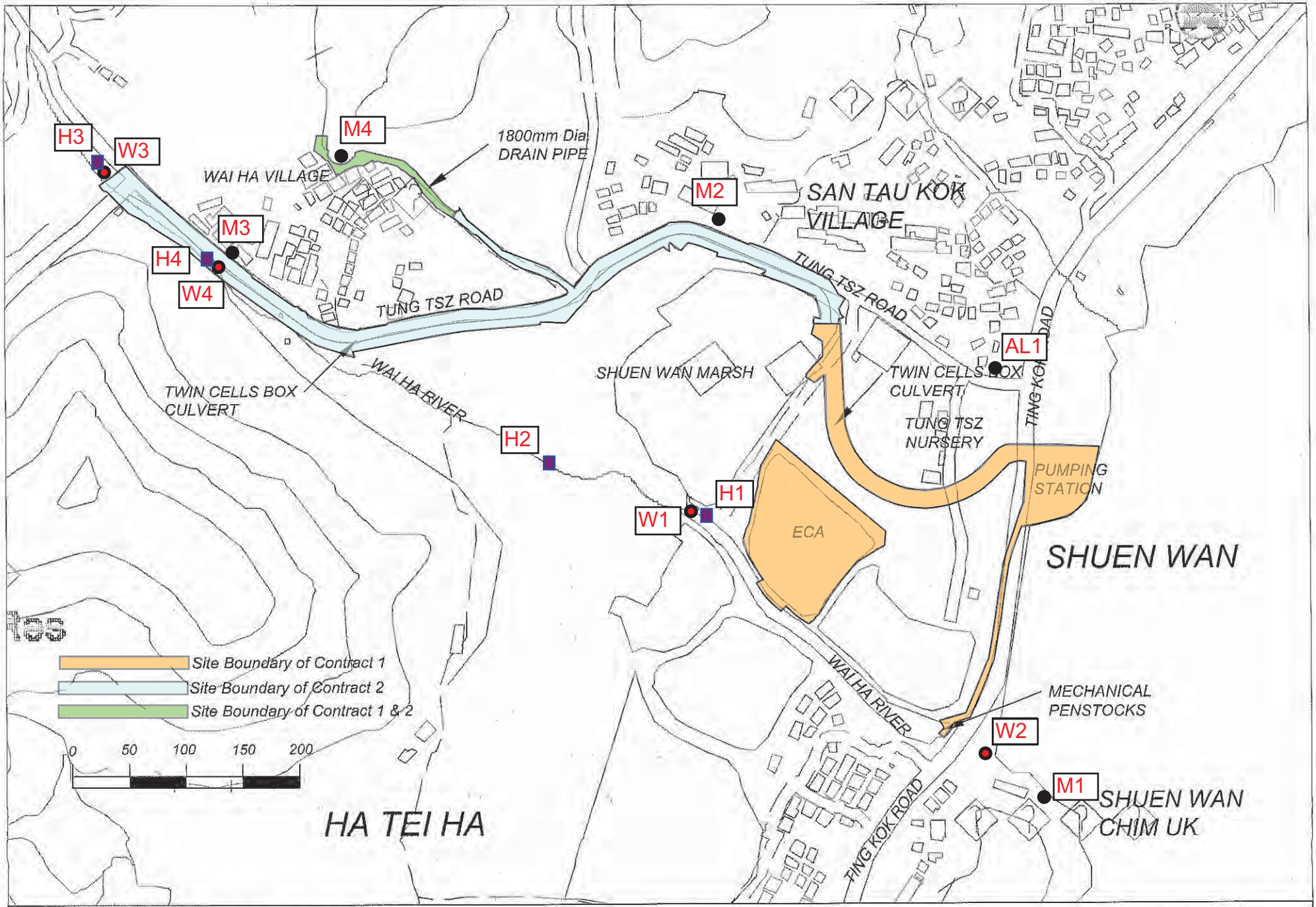
Wai Ha Box Culvert (updated on 2 July 2014)


Completed
A 4-2-2013 1-2-2013
D 10-12-2013 15-1-2014
1. CLP's overhead pole to be diverted on 15-1-2013
Completed
A 15-10-2013 22-08-2013
B 10-12-2013 10-12-2013
C 13-01-2014 13-2-2014
D 27-01-2014 18-2-2014
Completed
A 01-12-2013 3-12-2013
B 06-01-2014 14-2-2014
C 21-02-2014 5-3-2014
D 28-02-2014 8-3-2014
1. CLP's overhead pole to be diverted on 15-1-2013
2. Fire hydrant to be disconnected before 31-3-2013
Completed
A 15-05-2013 10-05-2013
B 12-10-2013 30-09-2013
C 16-11-2013 14-11-2013
D 21-11-2013 29-11-2013
1. CLP's overhead pole to be diverted on 15-1-2013
Completed
A 25-07-2013 07-08-2013
B 05-11-2013 15-11-2013
C 16-12-2013 2-1-2014
D 30-12-2013 17-1-2014
Completed
A 26-11-2011 21-11-2011
D 07-02-2012 03-02-2012
Completed
A 05-11-2013 2-12-2013
B 15-01-2014 19-2-2014
C 21-02-2014 5-3-2014
D 28-02-2014 8-3-2014
1. CLP's overhead pole to be diverted on 15-1-2013
2. Light post to be relocated before 05-4-2013
Completed
A 15-8-2011 08-8-2011
D 25-11-2011 30-11-2011
CUT LINE 1-1
A Commencement of excavation
B Commencement of box culvert construction
C Completion of box culvert construction
D Completion of backfilling works
Tung Tsz Road Box Culvert Part 1
(updated on 2 July 2014)
Scale 1:800


CUT LINE 1-1
A 15-6-2012 07-6-2012
B 28-7-2012 03-9-2012
C 18-9-2012 07-11-2012
D 30-9-2012 15-11-2012
Completed
A 08-2-2012 16-2-2012
D 30-6-2012 10-8-2012
Completed
Completed
A 10-12-2012 20-11-2012
B 02-01-2013 18-01-2013
C 22-3-2013 15-4-2013
D 31-3-2013 23-4-2013
A 22-10-2013 30-11-2013
B 24-12-2013 21-2-2014
C 24-01-2014 24-2-2014
D 30-01-2014 1-3-2014
Completed
Completed
A 01-7-2012 16-7-2012
B 13-8-2012 10-10-2012
C 04-10-2012 15-12-2012
D 15-10-2012 19-12-2012
Completed
A 12-6-2013 29-5-2013
B 10-09-2013 10-11-2013
C 30-11-2013 10-12-2013
D 10-12-2013 12-2-2014
1. Light post to be relocated before 05-4-2013
A Commencement of excavation
B Commencement of box culvert construction
C Completion of box culvert construction
D Completion of backfilling works
Scale 1:800
Tung Tsz Road Box Culvert Part 2
updated on 2 July 2014

Appendix D

Environmental Monitoring Locations



All Environmental Monitoring Locations

Appendix E

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

Equipment Calibration List

Items	Aspect	Description of Equipment	Date of Calibration	Date of Next Calibration
1	Noise	Rion Sound Level Meter (Serial No. 00410247)	29 Apr 14	29 Apr 15
2		Rion Sound Calibrator (Serial No. 34246492)	28 Feb 14	28 Feb 15
3	Water	SONDA YSI 6820 (Serial No. 02J0912)	11 Apr 14	11 Jul 14

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

Appendix F

Event and Action Plan

Event Action Plan for Construction Noise

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

Event and action Plan for Water Quality

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

Event and action Plan for Hydrological Characteristics

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

Appendix G

Monitoring Schedule in Reporting Period and the Coming Month

Monitoring Schedule in this Reporting Period – June 2014

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

	Monitoring Day
	Sunday or Public Holiday

Monitoring Schedule for next Reporting Period – July 2014

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

	Monitoring Day
	Sunday or Public Holiday

Appendix H

Meteorological Data of Reporting Period

Meteorological Data in Reporting Period

Date		Weather	Total Rainfall (mm)	Tai Po Station		Shatin Station	
				Mean Air Temp. (°C)	Mean Relative Humidity (%)	Wind Speed (km/h)	Wind Direction
1-Jun-14	Sun	Mainly fine apart from isolated showers. Very hot in the afternoon. Light to moderate southwesterly winds.	3.7	30.2	77.5	10.8	SW
2-Jun-14	Mon	Mainly fine apart from isolated showers. Very hot in the afternoon. Light to moderate southwesterly winds.	0	30.6	71	13.2	SW
3-Jun-14	Tue	Mainly fine apart from isolated showers. Very hot in the afternoon. Light to moderate southwesterly winds.	Trace	29.3	76	10.5	S/SW
4-Jun-14	Wed	Mainly fine apart from isolated showers. Very hot in the afternoon. Light to moderate southwesterly winds.	0	29.3	75.5	10	S/SW
5-Jun-14	Thu	Mainly cloudy with showers and a few squally thunderstorms. Moderate to fresh south to southwesterly winds.	0.2	29.9	78.5	11.9	S/SW
6-Jun-14	Fri	Mainly cloudy with a few showers and squally thunderstorms. Moderate southwesterly winds.	17.2	27.1	87.7	8.5	N/NE
7-Jun-14	Sat	Mainly cloudy with a few showers. Moderate easterly winds, occasionally fresh offshore.	7.6	26.3	91	6.5	S/SW
8-Jun-14	Sun	Mainly cloudy with sunny intervals. Moderate easterly winds, occasionally fresh offshore.	57.6	28.6	81.5	6.5	S/SW
9-Jun-14	Mon	Mainly cloudy with sunny intervals and a few showers. Moderate easterly winds, occasionally fresh offshore.	Trace	27.6	80.5	7.9	E/SE
10-Jun-14	Tue	Mainly cloudy with one or two showers. Moderate easterly winds, occasionally fresh offshore.	Trace	28.5	77	6.6	E/NE
11-Jun-14	Wed	Mainly cloudy with a few showers. Moderate to fresh easterly winds.	Trace	26.8	84.2	7.7	E/NE
12-Jun-14	Thu	Mainly fine. Moderate to fresh easterly winds.	0	28.4	67.2	7.2	N
13-Jun-14	Fri	Fine and hot apart from some haze. Very dry during the day. Moderate east to northeasterly winds.	0	27.5	63.2	9.5	N/NE
14-Jun-14	Sat	Fine and hot apart from some haze. Very dry during the day. Moderate east to northeasterly winds.	Trace	29.1	65.5	11	N/NE
15-Jun-14	Sun	Hot with sunny periods. There will also be a few showers. Moderate southwesterly winds.	9.9	27.8	79	8.2	S/SW
16-Jun-14	Mon	Cloudy at first. Sunny intervals in the afternoon. Moderate southwesterly winds.	3.8	29.7	80	11.2	SW
17-Jun-14	Tue	Hot with sunny periods. There will also be a few showers. Moderate southwesterly winds.	1.1	28.7	85	10.9	SW
18-Jun-14	Wed	Hot with sunny periods. There will also be a few showers. Moderate southwesterly winds.	6	29.1	82.5	12	S/SW
19-Jun-14	Thu	Hot with sunny intervals in the afternoon. Moderate south to southwesterly winds.	10.5	29.1	79.7	7.9	S/SW
20-Jun-14	Fri	Mainly cloudy with scattered showers. Moderate to fresh south to southwesterly winds.	29.2	27.9	86.7	10.4	S/SW
21-Jun-14	Sat	Mainly cloudy with a few showers. Light to moderate southerly winds.	47.6	27.6	89.2	7	S/SW
22-Jun-14	Sun	Mainly cloudy with a few showers. Light to moderate southerly winds.	14.9	26.3	91	9.7	S/SW
23-Jun-14	Mon	Mainly cloudy with showers. A few thunderstorms at first. Light to moderate southerly winds, gusty at times.	41.5	26.9	93	4.5	N/NE
24-Jun-14	Tue	Mainly cloudy with scattered showers and isolated thunderstorms. Light to moderate southerly winds.	45.9	27	90.7	10.5	N/NE
25-Jun-14	Wed	Mainly cloudy with a few showers. A few thunderstorms at first. Moderate southerly winds.	18.5	26.8	92	9	S/SW
26-Jun-14	Thu	Hot with sunny periods. There will also be a few showers. Moderate southerly winds.	0.1	30.2	77.5	7.7	S/SW
27-Jun-14	Fri	Mainly fine apart from one or two isolated showers. Very hot. Light to moderate southerly winds.	0	30.1	72.7	7.5	S/SW
28-Jun-14	Sat	Sunny periods and a few showers tomorrow. Hot with temperatures ranging from 28 to 32 degrees. Moderate southerly winds.	0	30	76.5	6.2	S/SE
29-Jun-14	Sun	Sunny periods and a few showers tomorrow. Hot with temperatures ranging from 28 to 32 degrees. Moderate southerly winds.	20.4	28.7	80	6.2	E
30-Jun-14	Mon	Mainly fine apart from one or two isolated showers. Very hot. Light to moderate southerly winds.	0.9	28.1	81.5	8.3	SE

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

Appendix I

Data Base of Monitoring Results

Construction Noise Measurement Data

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

Date	Start Time	1st Leq_{5min}	2nd Leq_{5min}	3rd Leq_{5min}	4th Leq_{5min}	5th Leq_{5min}	6th Leq_{5min}	Leq_{30min*}
4-Jun-14	9:25	-	-	-	-	-	-	64.4
11-Jun-14	12:20	-	-	-	-	-	-	64.5
18-Jun-14	11:20	-	-	-	-	-	-	60.5
25-Jun-14	13:35	-	-	-	-	-	-	61.5
Limit Level		-						**> 75 dB(A)**

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

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

Date	Start Time	1st Leq5min	2nd Leq5min	3rd Leq5min	4th Leq5min	5th Leq5min	6th Leq5min	Leq30min*
4-Jun-14	10:05	-	-	-	-	-	-	67.4
11-Jun-14	13:00	-	-	-	-	-	-	67.4
18-Jun-14	12:00	-	-	-	-	-	-	65.8
25-Jun-14	14:10	-	-	-	-	-	-	65.4
Limit Level		-						**> 75 dB(A)**

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

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

Date	Start Time	1st Leq_{5min}	2nd Leq_{5min}	3rd Leq_{5min}	4th Leq_{5min}	5th Leq_{5min}	6th Leq_{5min}	Leq_{30min}	Corrected* Leq_{30min}
5-Jun-14	17:56	54.4	54.9	54.9	55.3	53.9	57.4	55.3	58.3
11-Jun-14	13:00	56.0	55.7	59.2	59.0	61.6	62.3	59.7	62.7
18-Jun-14	18:11	59.2	58.0	58.4	63.6	58.7	58.8	60.0	63.0
27-Jun-14	14:17	58.1	55.6	54.9	52.7	54.6	54.0	55.3	58.3
Limit Level		-						**> 75 dB(A)**	

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

Designated Monitoring Station – M3 (31,Wai Ha)

Date	Start Time	1st Leq_{5min}	2nd Leq_{5min}	3rd Leq_{5min}	4th Leq_{5min}	5th Leq_{5min}	6th Leq_{5min}	Leq_{30min}	Corrected* Leq_{30min}
5-Jun-14	16:44	52.6	50.6	50.3	51.3	50.5	52.7	51.4	54.4
11-Jun-14	11:01	53.8	55.7	53.1	52.6	57.1	52.3	54.5	57.5
18-Jun-14	17:01	54.3	58.9	54.3	55.0	60.2	54.0	56.9	59.9
27-Jun-14	11:45	53.5	52.7	52.4	59.8	57.7	55.3	56.1	59.1
Limit Level		-						**> 75 dB(A)**	

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

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

Date	Start Time	1st Leq_{5min}	2nd Leq_{5min}	3rd Leq_{5min}	4th Leq_{5min}	5th Leq_{5min}	6th Leq_{5min}	Leq_{30min}	Corrected* Leq_{30min}
5-Jun-14	17:20	48.8	49.1	51.8	49.0	49.6	51.4	50.1	53.1
11-Jun-14	11:36	46.2	47.9	45.2	48.4	49.4	49.8	48.1	51.1
18-Jun-14	17:34	46.8	45.2	46.1	51.4	54.3	47.0	49.8	52.8
27-Jun-14	13:39	51.2	50.5	49.8	50.5	50.1	49.0	50.2	53.2
Limit Level		-						**> 75 dB(A)**	

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

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AUES

Location	Action / Limit Level	DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
W1 (impact)		Action	7.27	Action	n/a	Action	4.77	Action	n/a	Action	9.73
		Limit	4	Limit	n/a	Limit	5.26	Limit	n/a	Limit	10.77
W2 (impact)		Action	7.26	Action	n/a	Action	2.46	Action	n/a	Action	8.89
		Limit	4	Limit	n/a	Limit	3.42	Limit	n/a	Limit	9.75
W3 (control)		n/a		n/a		n/a		n/a		n/a	
W4 (impact)		Action	9.27	Action	n/a	Action	3.32	Action	n/a	Action	6.98
		Limit	4	Limit	n/a	Limit	4.52	Limit	n/a	Limit	7.66

Date	3-Jun-14												
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
W1 - ebb (impact)	15:35	0.22	26.1	26.1	7.1	7.0	86.1	85.6	4.18	4.1	7.1	7.1	<2	2.0
			26.1		6.99		85		3.99		7.1		<2	
W1- flood (impact)	9:00	0.28	24.2	24.2	6.72	6.6	78.6	77.5	4.59	4.7	7.3	7.3	<2	2.0
			24.2		6.54		76.4		4.78		7.3		<2	
W2 (Impact)														
W3 (control)	16:00	0.19	26	26.0	6.96	6.9	84.7	84.0	3.67	3.7	7.1	7.1	<2	2.0
			26		6.84		83.2		3.72		7.1		<2	
W4 (impact)	16:17	0.16	25.7	25.7	7.08	7.0	85.9	85.6	3.54	3.4	7	7.0	<2	2.0
			25.7		7.01		85.3		3.32		7		<2	

Date	4-Jun-14												
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
W1 - ebb (impact)														
W1- flood (impact)														
W2 (Impact)	16:00	<1	27.5	27.5	7.35	7.4	78	78.0	4.1	4.1	8.16	8.2	2.2	2.2
			27.5		7.35		78		4.1		8.16		2.2	
W3 (control)														
W4 (impact)														

Date	5-Jun-14												
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
W1 - ebb (impact)	16:59	0.22	27.6	27.6	6.18	6.2	77.3	78.1	6.54	6.5	7.3	7.4	<2	2.0
			27.6		6.29		78.9		6.36		7.4		<2	
W1- flood (impact)	9:58	0.26	27.3	27.3	5.91	6.0	73.9	74.4	8.19	8.3	7.1	7.1	2	2.0
			27.3		5.99		74.9		8.33		7.1		2	
W2 (Impact)														
W3 (control)	17:17	0.21	27.8	27.8	6.51	6.5	81.5	81.8	3.21	3.2	7.5	7.5	<2	2.0
			27.8		6.55		82		3.27		7.5		<2	
W4 (impact)	17:41	0.17	27.7	27.7	6.26	6.3	78	77.7	3.38	3.3	7.5	7.5	2	2.0
			27.7		6.28		77.4		3.22		7.5		2	

Date	6-Jun-14												
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
W1 - ebb (impact)														
W1- flood (impact)														
W2 (Impact)	16:00	<1	27.6	27.6	8.41	8.4	98	98.0	48.4	48.4	7.91	7.9	44	44.0
			27.6		8.41		98		48.4		7.91		44	
W3 (control)														
W4 (impact)														

Date	7-Jun-14												
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
W1 - ebb (impact)	9:00	0.23	26.1	26.1	7.04	7.1	87.3	87.8	7.64	7.7	7.3	7.3	<2	2.0
			26.1		7.1		88.2		7.77		7.3		<2	
W1- flood (impact)	13:25	0.26	26.4	26.4	6.73	6.8	83.4	84.3	7.92	8.0	7.1	7.1	<2	2.0
			26.4		6.85		85.1		8.07		7.1		<2	
W2 (Impact)		<1		0.0		0.0		0.0		0.0		0.0		0.0
			0		0		0		0		0		0	
W3 (control)	13:41	0.18	26.3	26.3	6.95	6.9	86.1	85.5	4.72	4.7	7.6	7.6	<2	2.0
			26.3		6.81		84.9		4.66		7.6		<2	
W4 (impact)	14:03	0.15	26.2	26.2	6.76	6.7	83.4	82.6	5.31	5.6	7.4	7.4	<2	2.0
			26.2		6.59		81.7		5.97		7.4		<2	

Date	9-Jun-14												
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
W1 - ebb (impact)	9:43	0.23	27.6	27.6	7.11	7.2	88.8	89.5	4.33	4.4	7	7.0	<2	2.0
			27.6		7.21		90.1		4.47		7		<2	
W1- flood (impact)	16:11	0.28	28.3	28.3	6.95	7.0	86.9	87.1	4.08	4.0	6.9	6.9	<2	2.0
			28.3		6.98		87.2		3.86		6.9		<2	
W2 (Impact)	10:40	<1	26.7	26.7	7.52	7.5	80	80.0	5.8	5.8	7.45	7.5	13	13.0
			26.7		7.52		80		5.8		7.45		13	
W3 (control)	16:38	0.21	28.2	28.2	7.78	7.7	97.7	96.5	2.91	3.0	7.2	7.2	<2	2.0
			28.2		7.63		95.2		3.08		7.2		<2	
W4 (impact)	16:53	0.16	28.5	28.5	7.34	7.3	91.6	91.1	3.31	3.3	7.2	7.2	<2	2.0
			28.5		7.26		90.6		3.24		7.2		<2	

Date	11-Jun-14

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Location	Action / Limit Level	DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
W1 (impact)		Action	7.27	Action	n/a	Action	4.77	Action	n/a	Action	9.73
		Limit	4	Limit	n/a	Limit	5.26	Limit	n/a	Limit	10.77
W2 (impact)		Action	7.26	Action	n/a	Action	2.46	Action	n/a	Action	8.89
		Limit	4	Limit	n/a	Limit	3.42	Limit	n/a	Limit	9.75
W3 (control)		n/a		n/a		n/a		n/a		n/a	
W4 (impact)		Action	9.27	Action	n/a	Action	3.32	Action	n/a	Action	6.98
		Limit	4	Limit	n/a	Limit	4.52	Limit	n/a	Limit	7.66

Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
W1 - ebb (impact)	11:06	0.22	27.5	27.5	6.57	6.5	81.3	79.9	2.33	2.4	7.4	7.4	<2	2.0
			27.5		6.34		78.5		2.38		7.4		<2	
W1- flood (impact)	17:22	0.24	27.6	27.6	6.32	6.3	78.9	77.8	2.97	2.9	7.5	7.5	<2	2.0
			27.6		6.19		76.6		2.82		7.5		<2	
W2 (Impact)	12:20	<1	27.1	27.1	7.91	7.9	88	88.0	4.4	4.4	8.18	8.2	7.6	7.6
			27.1		7.91		88		4.4		8.18		7.6	
W3 (control)	11:26	0.18	27.5	27.5	7.2	7.2	89.1	89.0	1.95	1.9	7.3	7.3	3	3.0
			27.5		7.18		88.8		1.88		7.3		3	
W4 (impact)	11:39	0.16	27.6	27.6	6.87	6.9	84.9	85.4	2.25	2.2	7.3	7.3	2	2.0
			27.6		6.95		85.9		2.13		7.3		2	

Date	13-Jun-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
W1 - ebb (impact)	12:34	0.24	27.2	27.2	7.15	7.1	89.4	89.2	4.12	4.2	7.3	7.3	<2	2.0
			27.2		7.08		89		4.37		7.3		<2	
W1- flood (impact)	17:18	0.29	27.6	27.6	6.74	6.8	87.4	88.0	4.99	5.0	7.4	7.4	<2	2.0
			27.6		6.83		88.6		5.08		7.3		<2	
W2 (Impact)	14:00	<1	27.5	27.5	7.61	7.6	78	78.0	4.1	4.1	7.86	7.9	13	13.0
			27.5		7.61		78		4.1		7.86		13	
W3 (control)	17:37	0.17	27.5	27.5	7.46	7.4	93.9	93.4	2.99	3.0	6.9	6.9	<2	2.0
			27.5		7.39		92.8		2.98		6.9		<2	
W4 (impact)	17:49	0.13	27.3	27.3	7.83	7.9	98	99.1	3.14	3.1	7	7.0	<2	2.0
			27.3		7.97		100.1		3.05		7		<2	

Date	16-Jun-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
W1 - ebb (impact)	14:53	0.25	29.1	29.1	6.62	6.7	85.7	86.5	11.9	11.6	7.1	7.1	<2	2.0
			29.1		6.74		87.2		11.3		7.1		<2	
W1- flood (impact)	9:00	0.32	28.7	28.7	6.32	6.2	82	80.9	10.5	10.7	7.2	7.2	<2	2.0
			28.7		6.11		79.7		10.8		7.2		<2	
W2 (Impact)	16:00	<1	26.8	26.8	7.17	7.2	73	73.0	4.8	4.8	8.13	8.1	5	5.0
			26.8		7.17		73		4.8		8.13		5	
W3 (control)	15:16	0.18	29.5	29.5	6.58	6.5	85.3	84.2	5.1	5.2	7.4	7.4	<2	2.0
			29.5		6.43		83.1		5.28		7.4		<2	
W4 (impact)	15:39	0.17	29.3	29.3	6.66	6.7	86.4	86.7	3.74	3.7	7.4	7.4	<2	2.0
			29.3		6.7		86.9		3.64		7.3		<2	

Date	18-Jun-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
W1 - ebb (impact)	16:34	0.24	28.6	28.6	6.34	6.3	81.8	81.4	4.61	4.6	7.6	7.6	6	6.0
			28.5		6.21		80.9		4.52		7.6		6	
W1- flood (impact)	9:51	0.28	28.1	28.1	6.41	6.5	83.3	83.8	4.78	4.7	7.4	7.4	7	7.0
			28.1		6.55		84.2		4.64		7.4		7	
W2 (Impact)	16:00	<1	27.4	27.4	8.34	8.3	83	83.0	3.8	3.8	7.81	7.8	4.6	4.6
			27.4		8.34		83		3.8		7.81		4.6	
W3 (control)	16:49	0.17	28.7	28.7	6.64	6.7	85.4	85.7	1.88	1.9	8	8.0	6	6.0
			28.7		6.69		86		1.97		8		6	
W4 (impact)	16:57	0.14	28.5	28.5	6.83	6.8	87.3	87.2	1.93	2.0	7.8	7.8	6	6.0
			28.5		6.76		87.1		2.06		7.8		6	

Date	20-Jun-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
W1 - ebb (impact)	17:35	0.27	28.6	28.6	6.82	6.8	81.6	81.0	4.79	4.8	7.1	7.1	<2	2.0
			28.6		6.79		80.4		4.84		7		<2	
W1- flood (impact)	12:21	0.32	29.1	29.1	6.54	6.6	78.7	79.0	4.96	5.0	7.2	7.2	<2	2.0
			29.1		6.66		79.3		5.03		7.2		<2	
W2 (Impact)	13:25	<1	27.5	27.5	7.83	7.8	85	85.0	3.9	3.9	7.88	7.9	4.2	4.2
			27.5		7.83		85		3.9		7.88		4.2	
W3 (control)	17:41	0.22	28.2	28.2	6.87	6.9	82.3	82.5	2.06	2.0	7.2	7.2	<2	2.0
			28.2		6.91		82.7		1.94		7.2		<2	
W4 (impact)	17:59	0.20	28.3	28.3	6.74	6.8	81.1	81.3	1.71	1.7	7.3	7.3	<2	2.0
			28.3		6.8		81.4		1.76		7.3		<2	

Date	23-Jun-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
W1 - ebb (impact)	9:59	0.28	30.7	30.7	7.01	7.0	84.7	84.4	6.41	6.3	7.1	7.1	6	6.0
			30.7		6.94		84.1		6.26		7.1		6	
W1- flood (impact)	15:37	0.33	29	29.0	6.84	6.8	83.8	83.5	5.67	5.6	7	7.0	5	5.0
			29		6.79		83.2		5.5		7		5	
W2 (Impact)	11:00	<1	27.5	27.5	7.25	7.3	75	75.0	4.3	4.3	8.14	8.1	5.4	5.4
			27.5		7.25		75		4.3		8.14		5.4	
W3 (control)	10:33	0.25	30.5	30.5	6.57	6.6	79.2	79.1	6.76	6.8	7	7.0	5	5.0
			30.5		6.53		79		6.8		7		5	
W4 (impact)	10:21	0.24	30.1	30.1	5.86	5.8	71.2	71.0	9.86	9.8	7.4	7.4	6	6.0
			30.1		5.83		70.8		9.69		7.4		6	

Date	25-Jun-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	

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Location	Action/ Limit Level				DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
W1 (impact)					Action	7.27	Action	n/a	Action	4.77	Action	n/a	Action	9.73
					Limit	4	Limit	n/a	Limit	5.26	Limit	n/a	Limit	10.77
W2 (impact)					Action	7.26	Action	n/a	Action	2.46	Action	n/a	Action	8.89
					Limit	4	Limit	n/a	Limit	3.42	Limit	n/a	Limit	9.75
W3 (control)					n/a		n/a		n/a		n/a		n/a	
W4 (impact)					Action	9.27	Action	n/a	Action	3.32	Action	n/a	Action	6.98
					Limit	4	Limit	n/a	Limit	4.52	Limit	n/a	Limit	7.66
W1 - ebb (impact)	11:11	0.17	26.1	26.1	6.81	6.8	85	84.1	7.47	7.4	7.2	7.2	3	3.0
			26.1		6.72		83.2		7.4		7.2		3	
W1- flood (impact)	17:00	0.31	26.7	26.7	7.25	7.2	90.3	90.0	8.26	8.2	7.4	7.4	2	2.0
			26.7		7.2		89.7		8.17		7.4		2	
W2 (Impact)	12:35	<1	27.5	27.5	7.97	8.0	83	83.0	4.9	4.9	8.33	8.3	8.6	8.6
			27.5		7.97		83		4.9		8.33		8.6	
W3 (control)	16:25	0.27	26.8	26.8	7.1	7.1	88.2	87.9	7.81	7.8	7.2	7.2	7	7.0
			26.8		7.05		87.5		7.87		7.2		7	
W4 (impact)	16:47	0.19	27	27.0	7.03	7.0	87.4	87.1	7.18	7.1	7.1	7.1	2	2.0
			27		6.98		86.8		7.02		7.1		2	

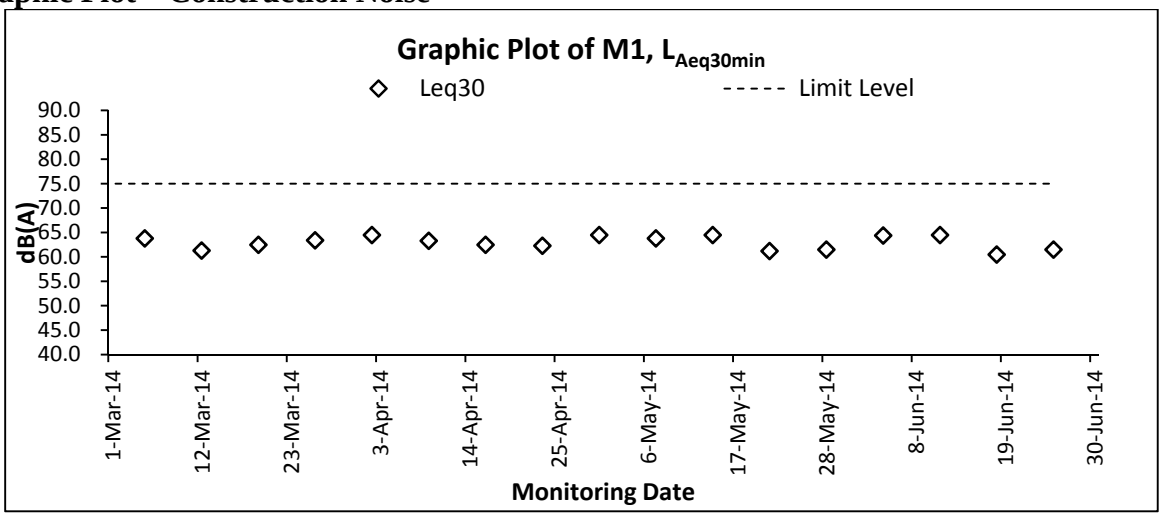
Date	27-Jun-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
W1 - ebb (impact)	12:46	0.27	32.8	32.8	6.44	6.5	91.7	93.8	5.65	5.7	7.1	7.1	5	5.0
			32.8		6.59		95.8		5.72		7.1		5	
W1- flood (impact)	17:27	0.31	32.3	32.3	6.17	6.2	88.8	87.9	6.44	6.3	7.3	7.3	5	5.0
			32.3		6.15		87		6.23		7.3		5	
W2 (Impact)	9:10	<1	27.7	27.7	7.85	7.9	80	80.0	4.6	4.6	7.68	7.7	23	23.0
			27.7		7.85		80		4.6		7.68		23	
W3 (control)	13:02	0.19	31.8	31.8	7.19	7.2	97.8	98.0	13.4	13.8	7.3	7.3	7	7.0
			31.8		7.23		98.2		14.1		7.3		7	
W4 (impact)	13:18	0.17	32	32.0	7.76	7.8	105.5	106.6	18.6	18.5	7.2	7.2	7	7.0
			32		7.88		107.6		18.3		7.2		7	

Date	30-Jun-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
W1 - ebb (impact)	14:10	0.27	28.3	28.3	6.51	6.4	95.6	94.9	4.15	4.1	6.4	6.4	3	3.0
			28.3		6.37		94.1		4.01		6.4		3	
W1- flood (impact)	9:00	0.33	27.2	27.2	6.24	6.3	92.3	92.6	4.04	4.0	6.6	6.6	4	4.0
			27.2		6.3		92.9		3.92		6.6		4	
W2 (Impact)	14:00	<1	27.9	27.9	7.28	7.3	75	75.0	4	4.0	7.83	7.8	2.8	2.8
			27.9		7.28		75		4		7.83		2.8	
W3 (control)	14:39	0.28	28.6	28.6	6.73	6.8	97.4	97.8	2.87	2.9	6.9	6.9	<2	2.0
			28.6		6.79		98.1		2.99		6.9		<2	
W4 (impact)	14:52	0.25	28.8	28.8	7.04	7.0	103.1	56.8	3.06	3.0	7	7.1	3	3.0
			28.8		6.96		10.4		2.93		7.1		3	

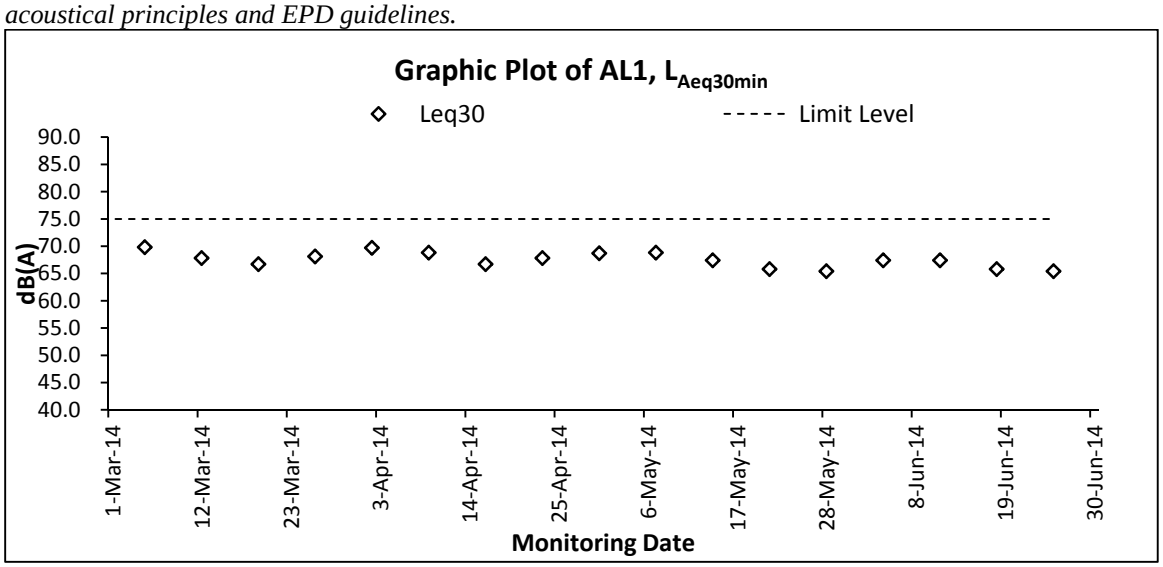
Appendix J

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

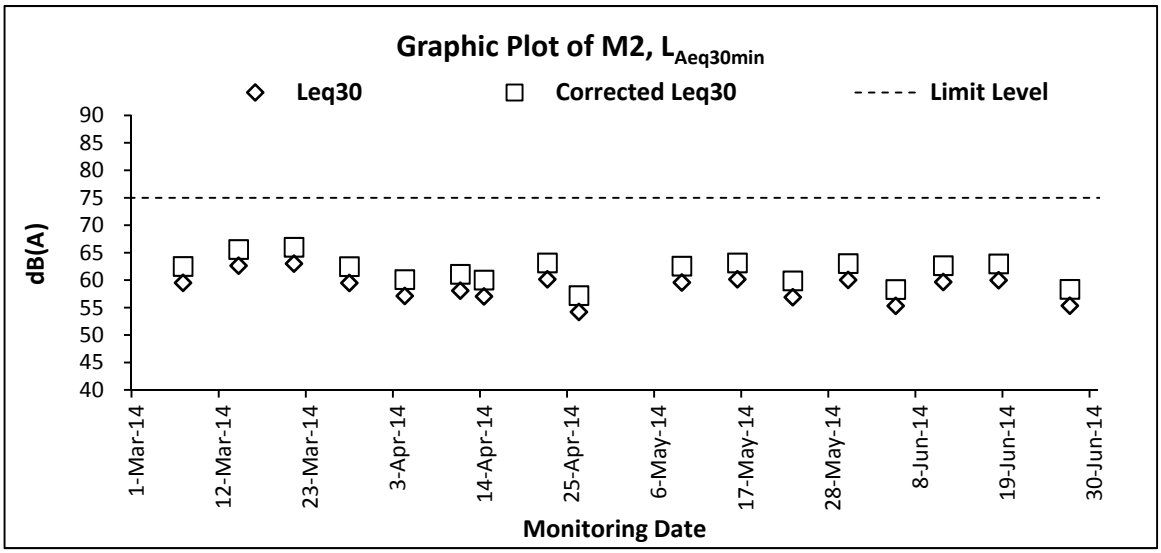
Graphic Plot – Construction Noise



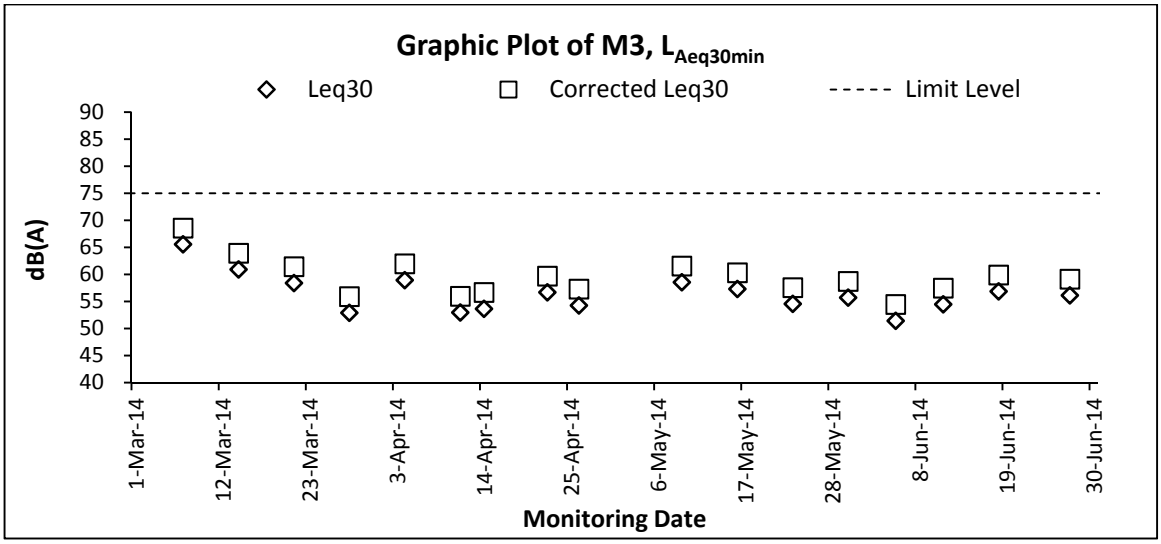
Remark: The monitoring is undertaken under façade situation. No façade correction is added according to acoustical principles and EPD guidelines.



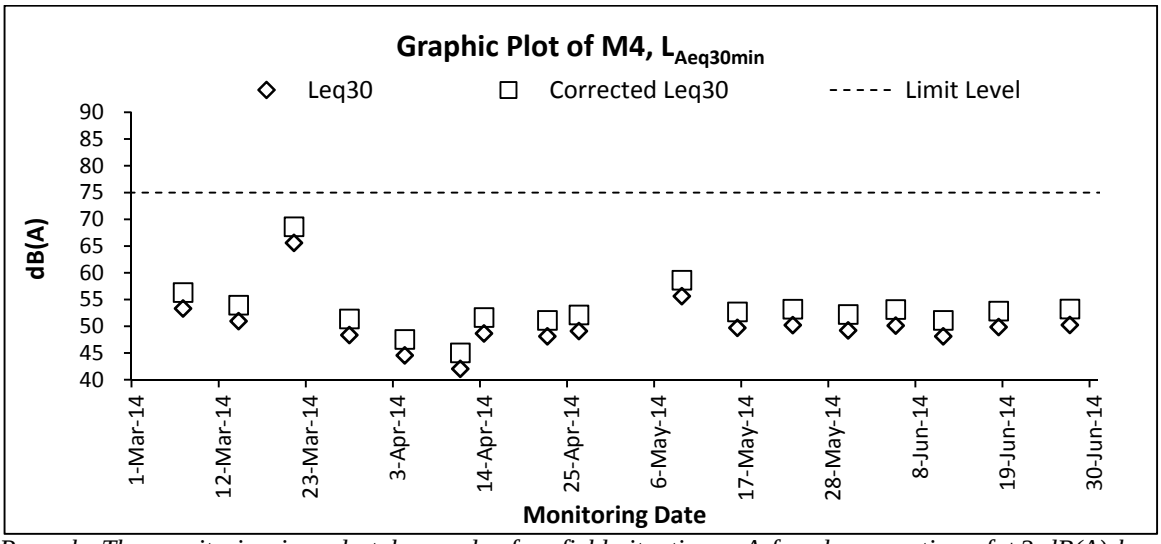
Remark: The monitoring is undertaken under façade situation. No façade correction is added according to acoustical principles and EPD guidelines.



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

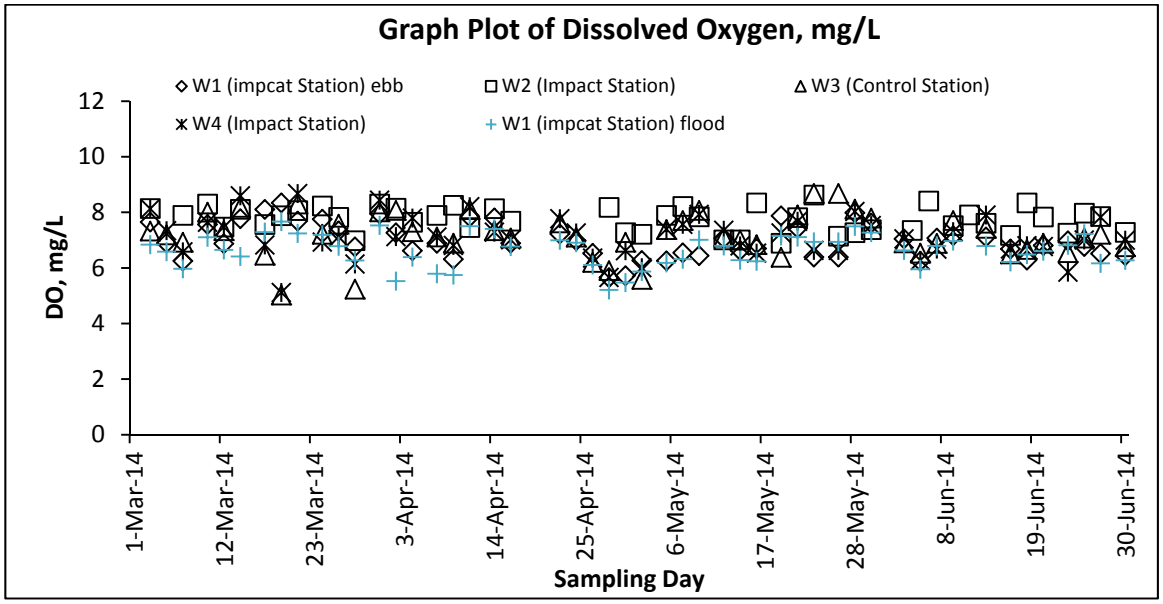


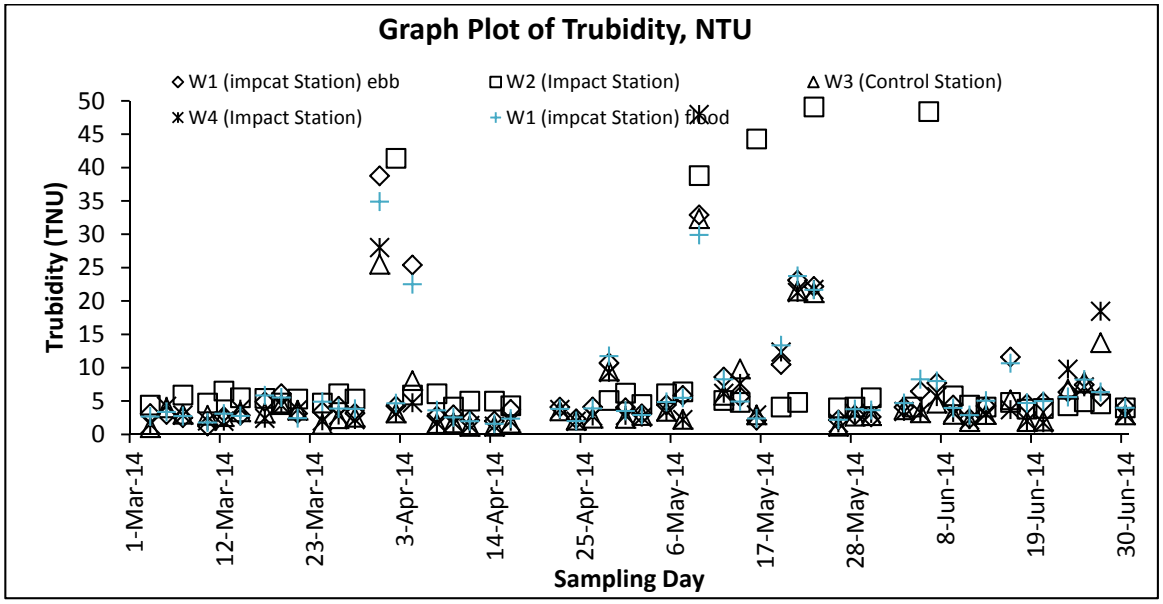
Remark: The monitoring is undertaken under free field situation. A façade correction of +3 dB(A) has been added according to acoustical principles and EPD guidelines

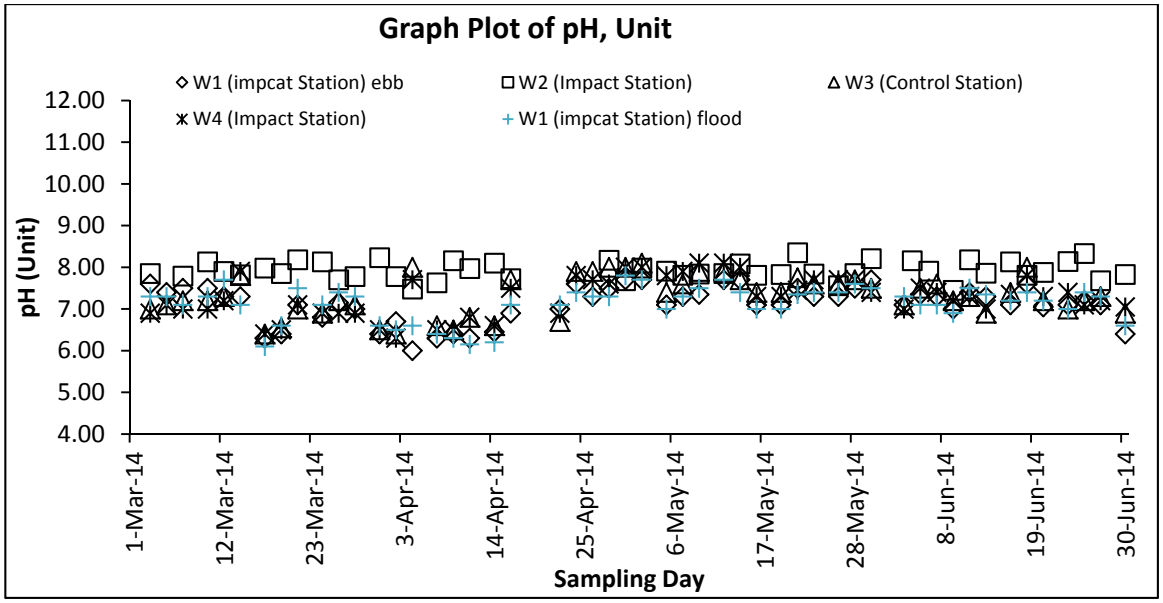


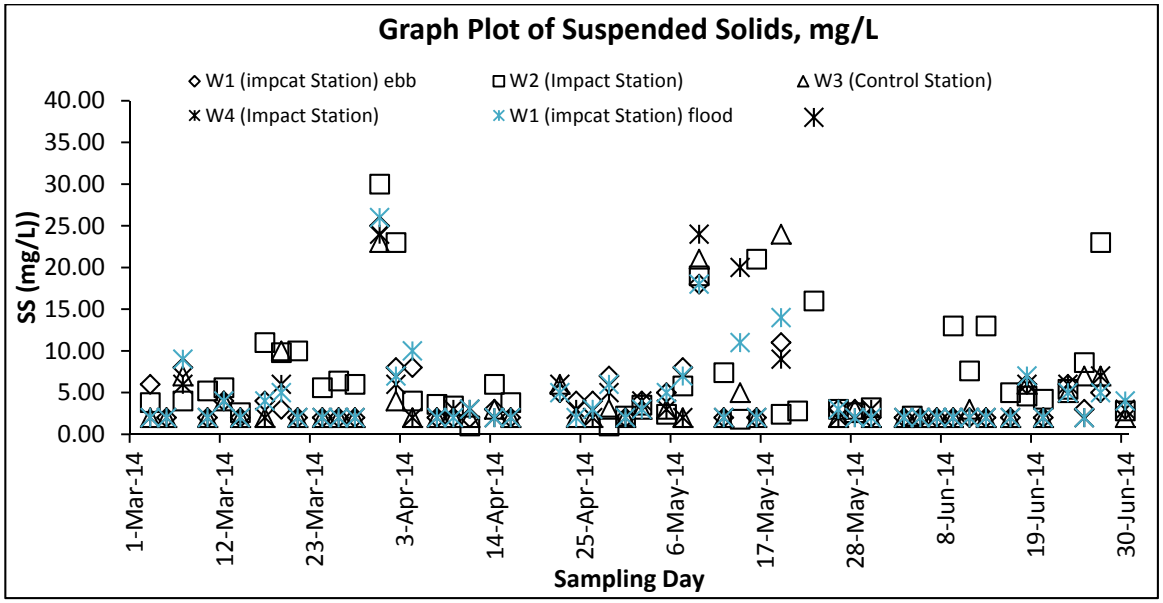
Remark: The monitoring is undertaken under free field situation. A façade correction of +3 dB(A) has been added according to acoustical principles and EPD guidelines

Graphic Plot – Water Quality

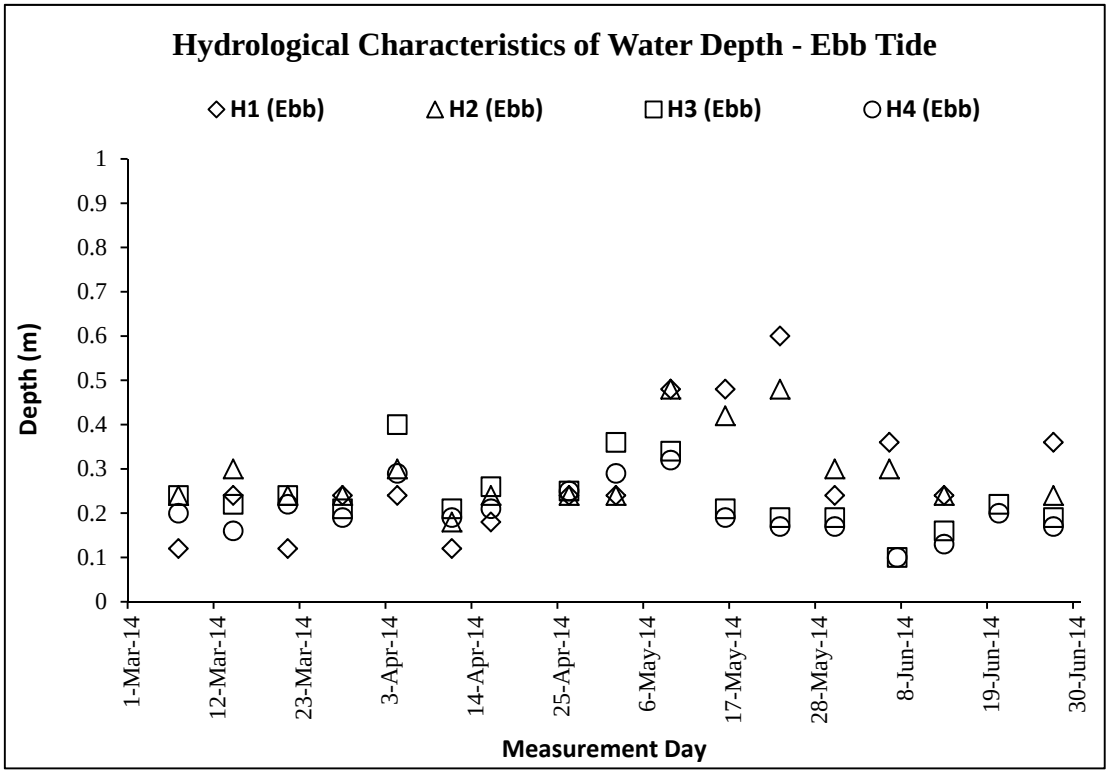


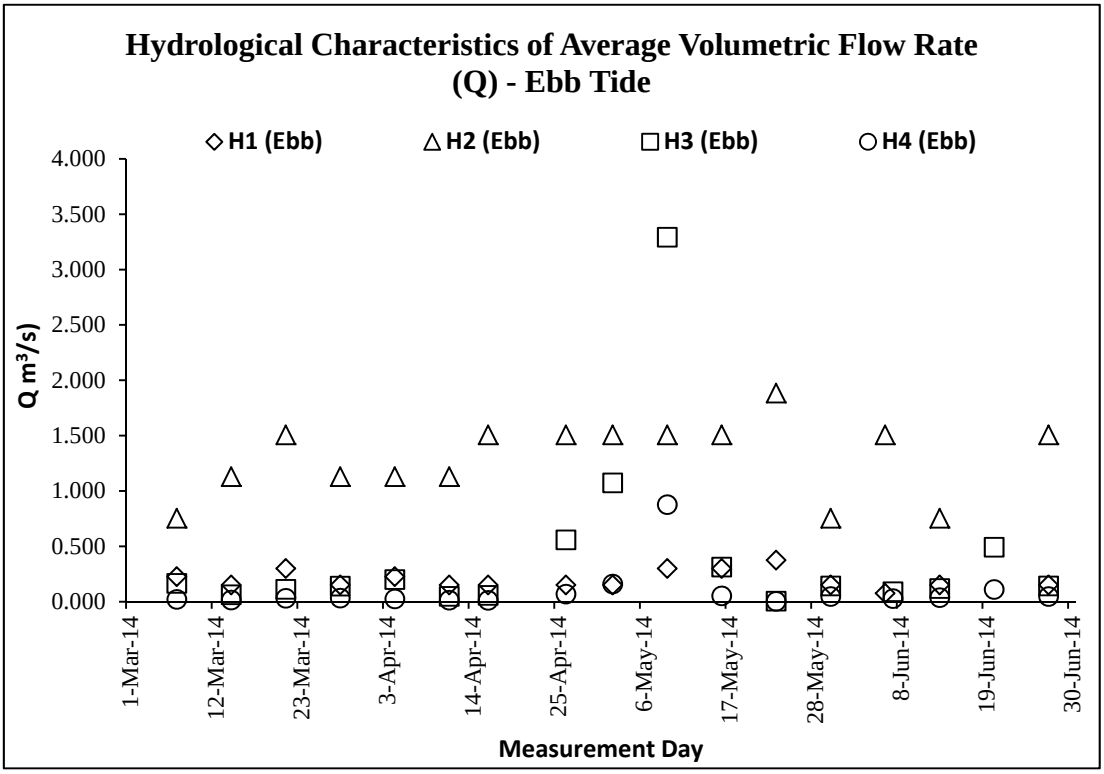




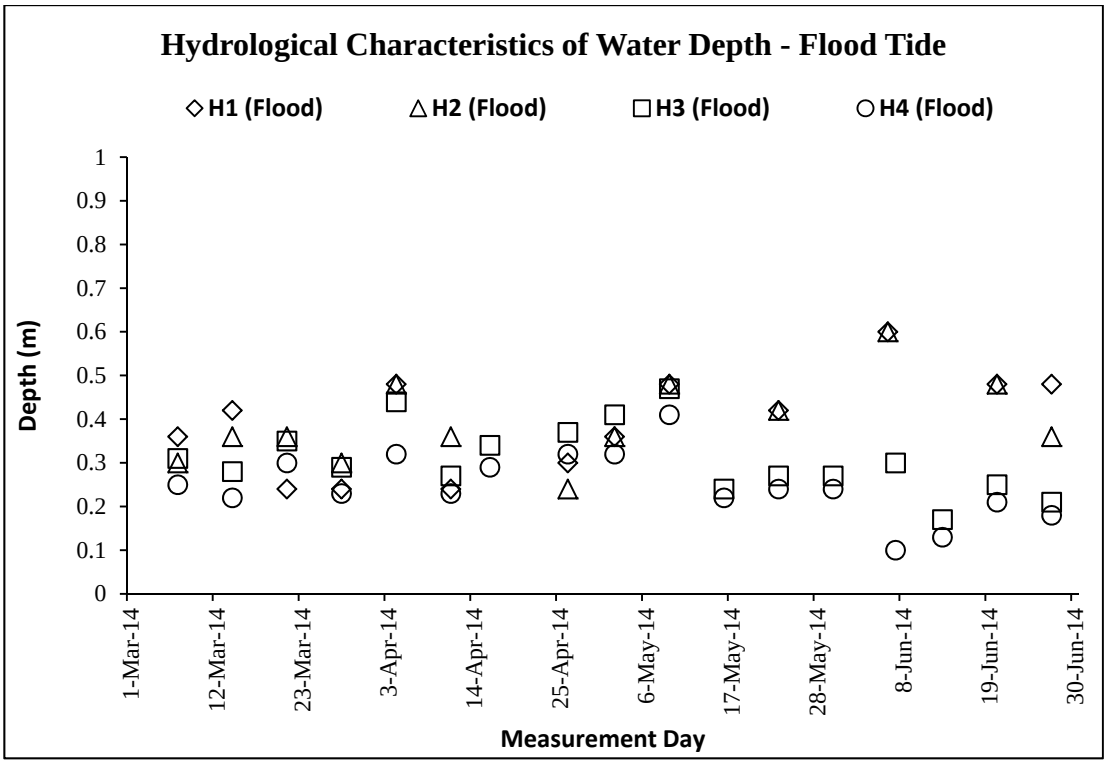

Graph Plot of Suspended Solids, mg/L
W1 (impcat Station) ebb
W2 (Impact Station)
W3 (Control Station)
W4 (Impact Station)
W1 (impcat Station) flood
SS (mg/L))
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
1-Mar-14
12-Mar-14
23-Mar-14
3-Apr-14
14-Apr-14
25-Apr-14
6-May-14
17-May-14
28-May-14
8-Jun-14
19-Jun-14
30-Jun-14
Sampling Day

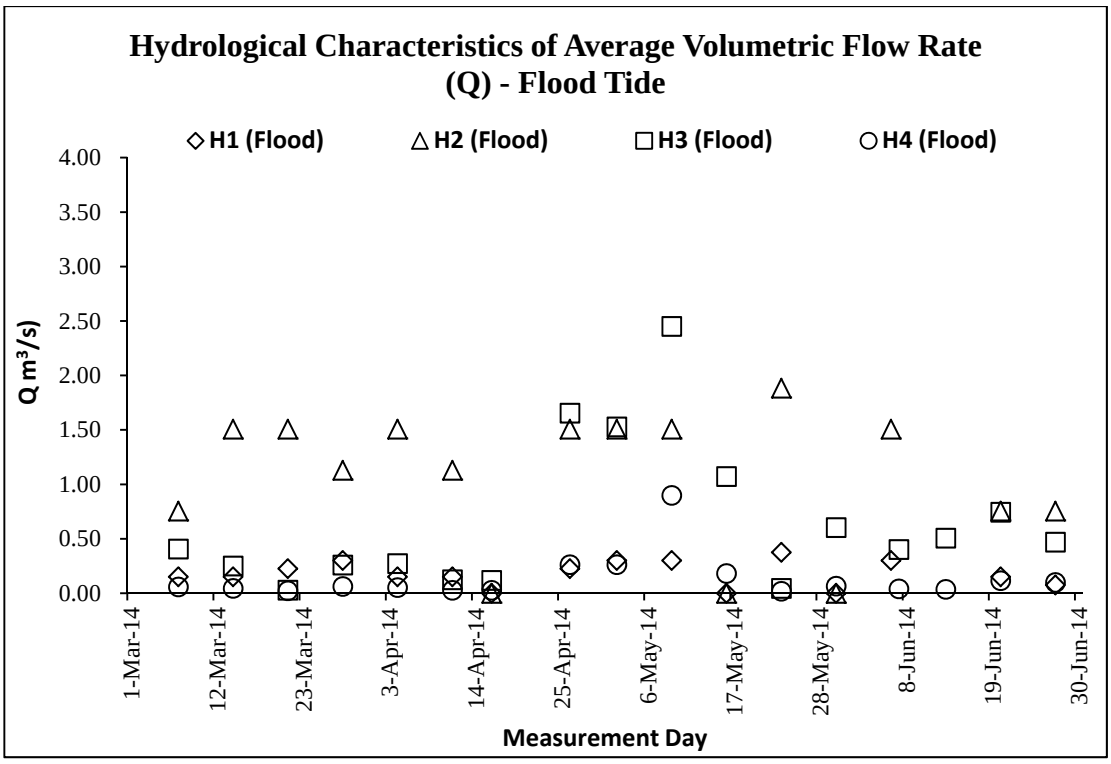
Graphic Plot – Hydrological Characteristics (Water Depth)





Graphic Plot – Hydrological Characteristics (Water Flow Rate)





Appendix K

Monthly Summary Waste Flow Table

Name of Department: DSD

Monthly Summary Waste Flow Table for 2011, 2013 to 2014 (Year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)
Apr 2011	Nil	0	0	0	0	0	0	0	0	0	0
May 2011	Nil	0	0	0	0	0	0	0	0	0	0
June 2011	Nil	0	0	0	0	0	0	0	0	0	0
July 2011	Nil	0	0	0	0	0	0	0	0	0	0
Aug 2011	0.7855	0	0	0.7855	0	0	0	0	0	0	0
Sept 2011	Nil	0	0	0	0	0	0	0	0	0	0
Oct 2011	Nil	0	0	0	0	0	0	0	0	0	0.02
Nov 2011	Nil	0	0	0	0	0	0	0	0	0	0.045
Dec 2011	0.08	0	0	0	0.08	0	0	0	0	0	0
Jan 2012	Nil	0	0	0	0	0	0	0	0	0	0.01
Feb 2012	0.01	0	0	0	0.01	0	0	0	0	0	0.03
Mar 2012	0.405	0	0	0	0.405	0	0	0	0	0	0
Apr 2012	0.005	0	0	0	0.005	0	0	0	0	0	0
May 2012	0.165	0	0	0	0.165	0	0	0	0	0	0
June 2012	0.145	0	0	0	0.145	0	0	0	0	0	0.035
July 2012	0.005	0	0	0	0.005	0	0	0	0	0	0.005
Aug 2012	0.775	0	0	0	0.775	0	0	0	0	0	0
Sept 2012	0.21	0	0	0	0.21	0	0	0	0	0	0
Oct 2012	0.49	0	0	0	0.49	0	0	0	0	0	0
Nov 2012	0	0	0	0	0	0	0	0	0	0	0.03
Dec 2012	0	0	0	0	0	0	0	0	0	0	0.01
Jan 2013	0.035	0	0	0	0.035	0	0	0	0	0	0.025
Feb. 2013	0.035	0	0	0	0.035	0	0	0	0	0	0.005
Mar. 2013	0.002	0	0	0	0.002	0	0	0	0	0	0.005
Apr. 2013	0.31	0	0	0	0.31	0	0	0	0	0	0.005
May. 2013	0.04	0	0	0	0.04	0	0	0	0	0	0.035
June 2013	0.37	0	0	0	0.37	0	0	0	0	0	0.017

Name of Department: DSD

July 2013	0.015	0	0	0	0.015	0	0	0	0	0	0.01
Aug 2013	0	0	0	0	0	0	0	0	0	0	0
Sep 2013	0.036	0	0	0	0.036	0	0	0	0	0	0
Oct 2013	0.301	0	0	0	0.301	0	0	0	0	0	0
Nov 2013	0.215	0	0	0	0.215	0	0	0	0	0	0.00525
Dec 2013	0.333	0	0	0	0.333	0	0	0	0	0	0.0045
Jan 2014	0.435	0	0	0	0.435	0	0	0	0	0	0.0150
Feb 2014	0.215	0	0	0	0.215	0	0	0	0	0	0
March 2014	0.036	0	0	0	0.036	0	0	0	0	0	0
April 2014	0.333	0	0	0	0.333	0	0	0	0	0	0
May 2014	0.333	0	0	0	0.333	0	0	0	0	0	0
June 2014	1.7763	0	0	0	1.7763	0	0	0	0	0	0
Total	**7.8063**	**0**	**0**	**0.7855**	**7.1113**	**0**	**0**	**0**	**0**	**0**	**0.3095**

Forecast of Total Quantities of C&D Materials to be Generated from the Contract*										
Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)
23	1	10	0	10	2	5	2	1	1	3

Notes:

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

Name of Department: DSD

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

Contract No. : DC/2010/02

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

Item No.	Description of Works Process or Activity [see note (a) below]	Justifications for Using Timber in Temporary Construction Works	Est. Quantities of Timber Used (m3)	Actual Quantities used (m3)	Remarks
1.	Formwork for concreting	Easy handle by manpower	2.71	2.7	
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		Total Estimated Quantity of Timber Used	2.71		

Notes:

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

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

Appendix L

Monthly Landscape & Visual Inspection Report

Contract No. DC/2010/02
Drainage Improvement Works in Shuen Wan and Shek Wu Wai
Bi-weekly Landscape & Visual Monitoring

EM&A (Landscape & Visual) Report (June 2014)
(Issue 1)

Job Ref.: 09/317/161D KLKJV-SW
Date: July 2014

Contract No. DC/2010/02
Drainage Improvement Works in Shuen Wan and Shek Wu Wai
Bi-weekly Landscape & Visual Monitoring

EM&A (Landscape & Visual) Report (June 2014)

(Issue 1)

July 2014

	Name	Signature
Prepared by:	**Tracy HO**	
Reviewed by:	**Ida YU**	
Date:	**3rd July 2014**	

Job Ref.: 09/317/161D KLKJV-SW
127 Commercial Centre, Palm Springs, Yuen Long, New Territories, Hong Kong
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CONTENTS

LIST OF APPENDICES

1 INTRODUCTION

1.1.1 The Landscape and Visual Monitoring of the Project is conducted to fulfill Clauses 5.2 and 5.4 of EP-303/2008 and the monitoring requirements in accordance with Section 7 of the approved updated EM&A Manual (approved by EPD on 31st May 2012) of the Project. A Baseline Review on updating the landscape and visual condition, and the mitigation measures of the Project (including Contracts 1 and 2 of the Project) was undertaken before the commencement of the Project. The review findings were updated in the Baseline Environmental Monitoring Report submitted to the EPD on 14th February 2011.

1.1.2 This monthly monitoring report will detail the scope of landscape and visual monitoring work, monitoring findings and observations, and any recommendation and advice on proper implementation of the landscape mitigation measures in the works areas under Contract 2 of the Project.

2 SCOPE OF MONITORING

2.1 Monitoring objectives

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

2.2 Monitoring during Construction Phase

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

- *Visual Screen* – Use of hoardings as visual screens for the construction in the works areas;
- *Contaminant/ Sediment Control* – Use of temporary barriers, covers and drainage provision around the construction works as contaminant/ sediment control to prevent the contaminants and sediments from entering the sensitive water-based habitats;
- *Pollution Control* – Implementation of pollution control measures to minimize any adverse environmental impacts to the surrounding habitats;
- *Liaison with Nursery* (Not relevant to Contract 2 of the Project) – Liaison with the nursery operator as necessary to minimize any adverse impact to the daily operation and plant holding capacity of the nursery;
- Existing Trees within Works Area – Maintenance and protection of the existing trees, especially their crowns, trunks and roots, within work sites; and
- Construction Light – Provision of construction light should be controlled at night to avoid excessive glare to the surrounding villages and to Plover Cove.

2.3 Monitoring during Operational Phase

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

- Viewing area formation by planting with shrubs, grasses and benches along the area;
- Architectural design of the pump house will help it fit into the existing suburban, natural to semi-natural surroundings (Not relevant to Contract 2 of the Project);
- Landscape design of pump house by providing sufficient planting around its boundary fence (Not relevant to Contract 2 of the Project);
- Enhancement planting along Tung Tsz Road with shrubs/ trees of suitable species to help protect the stream and marshes;
- Construction of box culvert should be with at least 1.0m soil depth for enhancement planting;
- Transplanting of existing affected trees to adjacent locations should be carried out;
- Preparation for transplanting is needed to allow sufficient time for root pruning and rootball preparation prior to transplanting; and
- Reinstatement of affected area should be carried out to check that the works areas are properly reinstated.

3 LANDSCAPE & VISUAL MONITORING RESULTS

3.1 Monitoring Date(s)

3.1.1 This monthly Landscape and Visual Monitoring (June 2014) was conducted to cover only areas of Contract 2 of the Project (i.e. the construction of a twin-cell box culvert close to Shuen Wan Conservation Area and Wai Ha River along Tung Tsz Road, and a drainage pipe near Wai Ha Village). The bi-weekly monitoring was conducted on 13th and 24th June 2014.

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

3.2 Visual Screen

3.2.1 No follow-up action by the Contractor is required as from the *Monthly EM&A Report for May 2014*.

Observation

3.2.2 Temporary hoardings, in the form of construction barriers, have been erected from west to east parts along Tung Tsz Road from the opposite side of Wai Ha to the opposite side of San Tau Kwok. The construction site along the access road from Tung Tsz Road towards Treasure Spot Garden II has also been demarcated with temporary construction barriers. Another section of temporary hoardings has been erected next to the path outside Treasure Spot Garden II. **Photos 1-2** show the views of the erected hoardings along the active works area under Contract 2.

3.2.3 Construction works for building the box culverts in the works area along Tung Tsz Road opposite to Wai Ha and next to Wai Ha River have been stopped as observed during the inspection on 13th and 24th June 2014 (**Photos 3-4**). The sand bags used to divide the river were removed (**Photo 5**).

3.2.4 To the southeast of Jade View Villa and adjacent to the current active works area, a demarcated wetland rehabilitation area has been maintained by parties other than the Project Proponent, the Project's Contractor and Sub-contractors since January 2012. Temporary construction barriers surrounding the eastern side of the area were removed in June 2014 (**Photo 6**).

3.2.5 The temporary parking area was still maintained at the end of the access path to Treasure Spot Garden Phase II (**Photo 7**). The untagged leaning tree was still guyed at the edge of the area within a Tree Protection Zone (TPZ), which was demarcated by orange construction nets and vehicles were still parked next to the TPZ (**Photo 8**).

3.2.6 As reported in the previous *Monthly EM&A Reports*, dumping on the Taro field located along the path towards the Treasure Spot Garden was observed and a paved area created for parking next to the retained tree groups (T088 – T091) has been found since November 2012. In October 2013, the path to Treasure Spot Garden II was expanded towards the Taro field due to the reprovision of vehicular access road to the villagers during the works at the entrance of the Treasure Spot Garden. Cement mortar discharged to the Taro field was observed in March 2014 and such area was covered by ground vegetation (**Photo 9**).

3.2.7 Construction works have been stopped at the end of the Treasure Spot Garden II near the retained tree T103 and the works area was surrounded by temporary construction barriers and chain-link fence (**Photo 10**).

3.2.8 The works area near the previous collapsed tree T190 (*Ficus hispida*) was found to be expanded to the grassland on the south in January 2014. Most of the construction materials stored in this area were removed in April 2014. This area has been covered by a mat since May 2014 and hydroseeding was applied as observed in June 2014 **(Photo 11)**.

3.2.9 A fenced area has been seen on the field next to the construction site along the access to Treasure Spot Garden since March 2014 (**Photo 12**). The area was surrounded by chain-link fence and a sign on the gate stated that it was a private land. As confirmed by the Contractor, this area was not fenced by the construction works related to the current project.

3.2.10 No hoardings have been erected along the rest of the proposed works area since neither construction works nor any associated preparation works have been commenced.

Recommendations

3.2.11 No specific recommendation is required. However, with regard to the previous dumping incident by other parties on the Taro field near the Treasure Spot Garden, the Contractor is recommended to check the site condition regularly to avoid any extent of dumping or paving of area within the project boundary.

3.2.12 The Contractor should also make sure there are no piled rocks, construction materials or programmed construction works influencing the existing trees within the Project Area or the wetland rehabilitation area. Otherwise, the Contractor should request the on-site workers to remove those piled rocks or construction materials. As a reminder, the Contractor should keep all construction works within the Project Boundary.

3.2.13 The Contractor could establish a warning sign to remind the driver to beware of the presence of the tree(s) close to the temporary parking area.

3.3 Contaminant/ Sediment Control

3.3.1 No follow-up action by the Contractor is required as from the *Monthly EM&A Report for May 2014*.

Observation

3.3.2 The exit point of Contract 2 works area opposite to the tree group T021-029 (*Leucaena leucocephala*) was closed in June 2014 (**Photo 13**).

3.3.3 As observed during the inspection on 13th and 24th June 2014, most of the construction works in Contract 2 works area have been stopped. No more muddy water has been released from the works area. The river water was generally clear (**Photos 14-16**). Down the stream near the public toilet, no more litter and broken branches from the adjacent trees were found blocking the stream (**Photo 15**).

3.3.4 In June 2014, no water from the nearby box culvert and from the works area opposite to Wai Ha was released to the area near the expanded works area near the previous collapsed tree T190 (*Ficus hispida*), which was removed in January 2014.

Recommendations

3.3.5 Regular monitoring should be conducted to ensure no direct discharge or leakage of contaminants or any polluted fluid into the adjacent Wai Ha River and the nearby Shuen Wan marsh. The Contractor should maintain regular check (e.g. daily) on the sedimentation and filtration facilities and appropriate sedimentation beds and/or tanks throughout the construction phase (e.g. check the function of the sedimentation beds and remove surplus sand and gravels deposited along the beds or within the tanks) to make sure all discharged water was filtered appropriately prior to any discharge.

3.3.6 The Contractor should have *ad hoc* inspection and emergency measures for any accidental spillage of polluted fluid, contaminants or grease from the construction sites. To prevent the impact of the unclear discharge on the nearby vegetated area, it is suggested to overlay PVC liners along the site edge and remove any surplus sand and gravels deposited in the beds and tank even some parts of the construction works may be completed at this stage. If needed (e.g. after heavy rainfall), the Contractor is suggested to remove the broken branches in the stream so as to prevent their blockage of the stream flow and trapping greasy substances in the stream.

3.4 Pollution Control

3.4.1 No follow-up action by the Contractor is required as from the *Monthly EM&A Report for May 2014*.

Observation

3.4.2 Most of the construction works in Contract 2 works area have been stopped in as observed on 13th and 24th June 2014. No more muddy water has been released from the works area. The river water was generally clear (**Photos 14-16**). Down the stream near the public toilet, no more litter and broken branches from the adjacent trees were found blocking the stream (**Photo 15**).

3.4.3 In June 2014, no water from the nearby box culvert and from the works area opposite to Wai Ha was released to the area near the expanded works area near the previous collapsed tree T190 (*Ficus hispida*).

3.4.4 No direct water discharge into the upper stream of Wai Ha River was observed as most of the construction works in Contract 2 works area have been stopped (**Photo 17**).

3.4.5 Excavation work was noted from the area opposite to Jade View Villa to the exit point near Shuen Wan Tung Tsz Children's Playground in May 2014. This area was covered by a mat in June 2014. As observed on 24th June 2014, this area was waterlogged and unclear water has overflowed to the nearby marsh area **(Photo 18)**.

Recommendations

3.4.6 The Contractor should prevent any contaminants and sediments from entering the sensitive water-based habitats (i.e. Shuen Wan marsh and Wai Ha River) and implement pollution control measures to minimize any adverse environmental impacts to the water body. The Contractor should maintain appropriate sedimentation beds and/or tanks throughout the construction phase. The Contractor should adopt a good site practice in maintaining appropriate sedimentation beds and filtration tanks as recommended in the above Section for Contaminant/ Sediment Control. Muddy water pumped from the works area should be filtered appropriately through sedimentation beds or other filtration system prior to the discharge.

3.4.7 The Contractor should have *ad hoc* inspection and emergency measures for any accidental spillage of polluted fluid, contaminants or grease from the construction sites. It is also recommended to overlay PVC liners along the site edge and remove any surplus sand and gravels deposited in the beds and tank so as to prevent the impact of the unclear discharge on the nearby vegetated area. Moreover, the Contractor should restrict and control the works areas where cement mortar has to be applied, and avoid spraying the cement mortar and chemical fluids on vegetation and waterbody.

3.5 Liaison with Nursery

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

3.6 Existing Trees within Works Areas

3.6.1 Individual trees retained within the active works area have been protected within TPZs. The protection measures generally follow the recommendations stated in the *Monthly EM&A Report for May 2014*. Particular observations are highlighted in the following paragraphs.

Observation

3.6.2 Most trees which are proposed to be retained within the Project Area were recorded generally in fair health condition and some of the retained trees were naturally covered by invasive climbers.

3.6.3 As stated in Section 3.2, a TPZ was set up with orange construction nets to protect the untagged leaning tree from the newly formed temporary parking area at Treasure Spot Garden Phase II. However, the vehicle could still be parked close to the TPZ (**Photo 8**).

3.6.4 The retained trees T167 (*Litsea monopetala*) and T168 (*Celtis sinensis*) were topped after the vegetation clearance in the surrounding works area in November 2013 (**Photo 19**). Both of them have been monitored and both were in poor health condition with development of

watersprouts along trunks or branches. Excavated soil was found piling around their trunk flares.

3.6.5 Temporary storage of construction materials close to the trunk flares of T093 and T094 (both *Litsea cubeba*) was removed in June 2014. Spread of cement mortar on the soil has been noted on the soil surface close toT093 and T094 (**Photos 20-21**).

3.6.6 Construction works at the end of the Treasure Spot Garden have been stopped in June 2014. However, excavated soil and rocks and construction materials were still piled close to the root flare of the tree T103 in June 2014 (**Photo 22**).

3.6.7 Sheet piling works were conducted within the tree root zone of a retained tree T025 (*Celtis sinensis*) in June 2013. Due to the close proximity of the erected sheet piles to the tree, root damage by previous sheet piling works was anticipated. The tree was also over-pruned in June 2013. It has been temporarily guyed by strings so as to provide additional support to the tree. The nearby piled sheets were removed in the previous months. The condition of the tree has been closely monitored (**Photo 23**). Excessive soil was still piled close to the root flare of T025 (**Photo 24**).

3.6.8 Concrete pavement, which was assumed to be applied for additional parking area for the villagers, was still observed close to the root flare of the tree group T089-091, together with the storage of wooden plates by the villagers (**Photo 25**).

3.6.9 Excavation work was noted between T153 and T155 and severe exposed roots have been noted on these two trees **(Photo 26).**

3.6.10 Excavation work was noted very close to the tree group T181-T183 in May 2014. Excavated soil was noted piling around their trunk flare and the orange construction nets covered on the three trees were removed. These trees have been surrounded by some stones since May 2014 **(Photo 27)**. Exposed and pruned roots were noted on T183 **(Photo 28)**.

3.6.11 Another two untagged trees (*Cleistocalyx nervosum* and *Macaranga tanarius* var. *tomentosa*) near the tree group T181-T183 but outside the Project boundary were also affected by the excavation work conducted by a party other than the Contractor of this Project. Severe exposed roots have been noted on these two trees since May 2014 **(Photos 29-30)**.

3.6.12 The two scaffolds of T089 were found broken and removed after the adverse weather in early May 2014 **(Photo 31)**.

3.6.13 No significant signs of damage on other existing tree crowns, trunks and roots resulting from the construction works were observed in this monthly monitoring.

3.6.14 As Area C under Contract 1 of the Project has been formally handed over to AFCD for management and maintenance since October 2012, no access into the ECA is allowed. Two transplanted shrubs of *Pavetta hongkongensis* (PH-01 and PH-03) were inspected through the fence of Tung Tsz Nursery and they have remained in satisfactory condition (**Photos 32-33**).

Recommendations

3.6.15 Within the active works area, maintenance of TPZs for the retained trees and the trees to be transplanted should be continued. Trunk bases of all retained trees should be kept clear, with no stockpiled soil, construction equipments and rubbish allowed around the trunk bases and within the TPZs. If necessary, these retained trees shall be watered regularly to maintain their

health. All fallen trees or tree parts of the existing trees maintained within the works area of Contract No. DC/2010/02 should be removed if they pose imminent hazards to the people/property or cause obstruction to the traffic. Any broken tree parts still attached to the trees could be pruned appropriately to prevent their potential hazard to the public and property.

3.6.16 Disturbance is prohibited in all TPZs. In any practical circumstances, the contractor should follow Section 8 of Annex 4 of the approved Landscape Plan for protecting the existing trees from any potential damages resulting from the construction works. In addition, the Contractor and the Project Proponent should have routine inspection on any tree remedial works conducted by other party on the trees within the Project Area.

3.6.17 The tape and ropes tied on the tree trunk of the retained tree T103 should be removed. If necessary, it is recommended to remove the overgrown climbers on the tree canopy so as to reduce the crown load supported by this tree. As the construction works around T103 was resumed in January 2014, the Contractor should have close monitoring of the stability and health condition of this tree.

3.6.18 With regard to the previous tree topping incident on the retained trees (such as T088 and T089), as well as T118 in which the civil work was undertaken close to the tree trunk and potentially damage the tree roots, the Contractor is suggested to monitor all trees protected within the project boundary regularly. The Contractor should also be aware of any potential damage on the trees by other contractor(s) undertaking construction work concurrently. In addition, the Contractor should design and programme the civil works by taking into consideration of providing adequate buffer zone between the tree dripline and the civil work. No spreading of cement mortar within the tree root zone is allowed, and any cement mortar spread immediately around the trunk flares should be removed immediately.

3.6.19 Tree topping (like the case for T025, T167 and T168) should be prohibited and the Contractor should appoint qualified landscape contractor to perform appropriate pruning practice. The pruning works should follow any local, national or international standards for pruning works and relevant tree remedial works. Given that the tree roots of T025 could be damaged by previous sheet piling works and the topped tree exists with unbalanced tree form, the long-term tree stability and health condition should be checked after the removal of the sheet piles. In addition, the excessive soil piled close to the trunk flare of T025 should be removed to prevent suffocation of trunk. The Contractor should have close monitoring of tree stability with regard to its unbalanced tree form and health condition. Meanwhile, the Contractor and sub-contractor should carefully design the civil works. Common civil works, such as excavation and sheet piling works should be programmed and designed carefully by taking tree buffer zone into consideration. The works should avoid affecting the tree canopy, trunk and underground root zone with regard to tree dripline as far as possible.

3.6.20 As the concrete paved temporary parking area at Treasure Spot Garden Phase II was close to the untagged tree, the roots may be damaged and hence the stability of the tree would be affected. The tree may also be damaged by the parking vehicles. Therefore, the Contractor is advised to provide better tree protection measures such as increasing the buffer zone between the parking area and the trees and establish a warning sign to remind the driver to beware of the presence of trees within the tree protection zone. The health and stability of the tree should also be monitored by the Contractor regularly.

3.6.21 As temporary storage of construction materials were once noted within the dripline areas of T093, T094, T103 and T119-122, the Contractor is advised to establish proper Tree Protection

Zone (e.g. an area of at least 1m from tree trunks) and prohibit any construction works and storage of construction materials within and close to the zone.

3.6.22 As there were excavation works (either by the Project or by the third party) close to T118 as observed in February 2014, between T153 and T155 as observed in April 2014, close to T181, T182, T183 and two untagged trees as observed in May 2014, the Contractor should have close monitoring of the stability and health condition of these trees. In addition, for the recent excavation work around tree group of T181-T183 conducted by the third party, the Contractor should regularly check the status of these trees and have close liaison with the third party for maintaining appropriate tree protection during the works.

3.7 Construction Light

3.7.1 No follow-up action on maintenance of construction light is required as from the *Monthly EM&A Report for May 2014*.

Observation

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

Recommendation

3.7.3 No specific recommendation is required.

4 AUDIT SCHEDULE

4.1.1 The next bi-weekly Landscape & Visual Monitoring in July 2014 is scheduled to be conducted in the weeks of 7th and 21st July 2014 .

Appendix A

Photographs

	
Photo 1 – Temporary hoardings have been erected along Tung Tsz Road opposite to Wai Ha.	**Photo 2** – Temporary hoardings have been erected along the access road from Tung Tsz Road to Treasure Spot Garden II.
	
Photo 3 – Construction works for building the box culverts along Tung Tsz Road opposite to Wai Ha outside the public toilet have been stopped.	**Photo 4** – Construction works have been stopped next to Wai Ha River.
	
Photo 5 – The sand bags used to divide the river were removed.	**Photo 6** – Temporary construction barriers surrounding the eastern side of the wetland rehabilitation area were removed.

	
Photo 7 – Temporary parking area was still maintained at the end of the access path to Treasure Spot Garden Phase II.	**Photo 8** – The untagged tree (Red arrow) was guyed at the edge of the parking area within a Tree Protection Zone demarcated by orange construction nets (Blue arrow).
	
Photo 9 – Cement mortar was discharged to the Taro field next to the access road from Tung Tsz Road to Treasure Spot Garden II. This area was covered by ground vegetation as observed in June 2014.	**Photo 10** – Construction works have been stopped at the end of the Treasure Spot Garden II near the retained tree T103 and the works area was surrounded by temporary construction barriers and chain-link fence.
	
Photo 11 –The construction materials stored on the works area near the location of the previously removed tree T190 (*Ficus hispida*) were removed. This area has been covered by a mat in May 2014 and hydroseeding was applied in June 2014.	**Photo 12** – A fenced area was seen on the field next to the construction site along the access to Treasure Spot Garden in March 2014. The area was still surrounded by chain-link fence by an unknown party.

	
Photo 13 – One exit point opposite to the tree group T021-029 (*Leucaena leucocephala*) was closed.	**Photo 14** – The river water was noted clear near the tree group T119-122.
	
Photo 15 – Down the stream near the public toilet, the water was noted clear and free of any blockage from litter and broken branches.	**Photo 16** – The water was still noted clear at the lower stream.
	
Photo 17 – No direct water discharge into the upper stream of Wai Ha River was observed as the construction works have been concentrated at the lower end of the river.	**Photo 18** – The area opposite to Jade View Villa to the exit point near Shuen Wan Tung Tsz Children's Playground was covered by a mat. The area was waterlogged and unclear water overflowed into the nearby marsh area.

	
Photo 19 – Topped T167 (Red arrow) and T168 (Blue arrow) were in poor health condition with development of watersprouts. Excavated soil was noted piling around the trunk flare.	**Photo 20 –** Storage of construction materials and sand piling close to the trunk flares of T093 was removed. Cement mortar has been noted on the soil surface close to T093.
	
Photo 21 – Storage of construction materials and sand piling close to the trunk flares of T094 was removed. Cement mortar has been noted on the soil surface close to T094.	**Photo 22** – Excavated soil and rocks and construction materials were noted piling close to the trunk base of the retained tree T103.
	
Photo 23 – The retained tree T025 was temporarily guyed to provide additional support to this tree.	**Photo 24** – Close-up view of the trunk flare of T025.

	
Photo 25 – Concrete pavement was observed close to the root flares of the tree group T089-091.	**Photo 26** – Excavation work was noted between T153 and T155 and severe exposed roots were noted on these two trees.
	
Photo 27 – Excavation work was noted very close to the tree group T181-T183. Excavated soil was noted piling around their trunk flares and the orange construction nets covered on the three trees were removed. These trees have been surrounded by some stones.	**Photo 28** – Exposed and pruned roots were noted on T183.
	
Photo 29 – Excavation work was noted next to an untagged tree (*Cleistocalyx nervosum*) (Red arrow). Severe exposed roots were noted on this tree.	**Photo 30** – Excavation work was noted next to an untagged tree (*Macaranga tanarius* var. *tomentosa*) (Red arrow). Severe exposed roots were noted on this tree.

	
Photo 31 – The two scaffolds of T089 were broken and removed.	**Photo 32** – The transplanted shrub of *Pavetta hongkongensis* (PH01) in Area C under Contract 1 has remained in satisfactory condition.
	
Photo 33 – The transplanted shrub of *Pavetta hongkongensis* (PH03) in Area C under Contract 1 has remained in satisfactory condition.	

Appendix M

Ecological Monitoring Report in Area under Contract 2 (Not Used)