PROJECT NO.: TCS/00553/11

CONTRACT NO. DC/2009/22
DRAINAGE IMPROVEMENT WORKS IN SHUEN WAN

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

MONTHLY ENVIRONMENTAL MONITORING AND AUDIT REPORT (NO.42) – DECEMBER 2014

PREPARED FOR
KWAN LEE-KULY JOINT VENTURE

Quality Index

Date	Reference No.	Prepared By	Certified by
5 March 2015	TCS00553/11/600/R0410v2	 Ben Tam (Environmental Consultant)	 T.W. Tam (Environmental Team Leader)

Ver.	Date	Description
1	12 January 2015	First submission
2	5 March 2015	Amended against IEC comments on 5 March 2015

Ref.: DSDSHUWNEM00_0_0685L.15 6 March 2015

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/2009/22 & DC/2010/02
Monthly Environmental Monitoring and Audit Report for December 2014

Reference is made to Environment Team's submission of the Monthly Environmental Monitoring and Audit Report for December 2014 by Email on 6 March 2015 (entitled "DC/2010/22 - Monthly Impact EM&A Report (Contract 2) No.42 - December 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. Tony Cheng (3465 - 2822) 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 **42nd** Monthly Environmental Monitoring and Audit (EM&A) Report for designated works of *DSD Contract No. DC/2009/22* (hereafter "Contract 1") and *DC/2010/02* (hereafter "Contract 2") - *Drainage Improvement in Shuen Wan* under Environmental Permit No.EP-303/2008, covering a period from **1 to 31 December 2014** (hereinafter 'the Reporting Period').

ES.02. Joint site inspection by the EPD, DSD, IEC, the Contractor and ET was carried out on 4 December 2014 to inspect the progress of work and environmental impact. EPD accepted that the EM&A programmes of DC/2009/22 changed to operation phase in view of the construction works under the contract has completed. However, for contract DC/2010/02, impact monitoring of construction phase should be resumed in December 2014 until further approval from the EPD.

ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

ES.03. Environmental monitoring activities for the Project under the Operation Phase of EM&A programmes in this Reporting Period are summarized in the following table.

Environmental Aspect	Monitoring Parameters / Inspection	Contract 1	Contract 2
Construction Noise	$L_{eq\ (30min)}$ Daytime – M1, M2, M3, M4 & AL1	NA	**20 Occasions**
Water Quality	Local Stream Water Sampling (W1, W2, W3 and W4	NA	**12 days**
	Hydrological characteristics measurement – H1, H2, H3 and H4	**4**	**4**
Inspection / Audit	Joint Site Inspection and audit by the Main Contractor, RE, IEC and ET	NA	**1**
	Regular weekly Environmental inspection by the Contractor and Site Representative Engineer	NA	**4**
Ecological	Ecological Monitoring	NA	NA
Landscape & Visual	Bi-weekly Inspection by a registered Landscape Architect	NA	**2 days**

ES.04. In this Reporting Period, no ecological monitoring of the operation phase and construction phase in both Contracts Areas under the Project as performed by IEC.

ES.05. For landscape and visual inspection, no operation phase monitoring of Contract 1 was conducted in this Reporting Period. However, construction phase of landscape and visual inspection of Contract 2 was carried out on **11** and **23 December 2014**. The monthly Landscape & Visual Report of Contract 2 (**December 2014**) has been signed by the registered Landscape Architect.

SITE INSPECTION

ES.06. Regular weekly site inspection performed by the Contractor and Site Representative Engineer was undertaken on **10**, **17**, **24** and **30 December 2014** and joint with the IEC and ET was carried out on **4 December 2014**. During joint site inspection, there were no construction activities conducted at Wai Ha River and non-compliance was noted, however Wai Ha Tsuen pathway reinstatement and Wai Ha River minor defects rectify work under Contract 2 of the Project was observed.

ES.07. On **4 December 2014**, EPD carried out a joint site inspection regarding the proposal of change of EM&A programme from construction phase to operation phase.

ENVIRONMENTAL COMPLAINT

ES.08. No written or verbal complaint was recorded in this Reporting Period.

NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES.09. No environmental summons or successful prosecutions were recorded in this Reporting Period.

REPORTING CHANGE

ES.10. In view of the construction work DC/2010/02 (Contract 2) was not yet completed, EPD disagreed DC/2010/02 (Contract 2) for the proposal of change to operation phase, Impact monitoring of construction phase for Contract 2 was resumed in December 2014 until further approval from the EPD.

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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'). For the Project, construction works at Tung Tsz Road Shuen Wan 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. On the other hand, Shek Wu Wai San Tin is a non-designated project work.

1.02 The Works at Tung Tsz Road Shuen Wan was divided two DSD Contracts i.e. the Contract 1 and the Contract 2. The Contract 1 and the Contract 2 were respectively commencement in ***August 2010*** and ***May 2011***. The Project site boundary is shown in ***Appendix A***.

1.03 Since the Main Contractor and Resident Engineer confirmed that the Contracts 1 and 2 would be completed in end of October 2014, as agreed by IEC, the EM&A programme was changed to Operation Phase according to the Updated EM&A Manual. A formal letter regarding proposal of change the EM&A programme from construction phase to operation phase was submitted to EPD for approval in early November 2014.

1.04 Joint site inspection by the EPD, DSD, IEC, the Contractor and ET was carried out on 4 December 2014 to inspect the progress of work and environmental impact. EPD accepted that the EM&A programmes of DC/2009/22 changed to operation phase in view of the construction works under the contract has completed. However, for contract DC/2010/02, impact monitoring of construction phase should be resumed in December 2014 until further approval from the EPD.

1.05 As instructed by DSD, Action-United Environmental Services and Consulting (AUES) as the Environmental Team (ET) of Contract 2 would take over all relevant EM&A programmes of the Project.

1.06 This is the **42nd** Monthly EM&A Report which combined Contract 1 and Contract 2, was presented the relevant monitoring results and inspection findings for the Reporting Period from **1** to **31 December 2014**.

REPORT STRUCTURE

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

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

2.0 PROJECT ORGANIZATION AND WORKS 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***.

WORKS PROGRESS

2.02 For the Contracts 1, no construction activity was conducted at Tung Tsz Road Shuen Wan. However, pathway reinstatement at Wai Ha Tsuen, minor defects rectify of Box Culverts and reconstruction refuse point was conducted by the Contract 2. The master construction programs of Contract 2 are enclosed in ***Appendix C***

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

3.0 EM&A PROGRAM REQUIREMENT

3.01 EM&A requirements of the Construction and Operation Phases to according the PP, EIAR, Environmental Permit EP303/2008 (hereinafter 'the EP'), and the associated updated EM&A Manual, is presented in below sub-section.

MONITORING PARAMETERS

3.02 According to the updated EM&A Manual of the Project, the Construction and Operation Phases monitoring requirement has showed in ***Table 3-1***.

Table 3-1 Summary of Monitoring Parameters for the Project

Environmental Aspect	Construction Phase	Operation Phase
Construction Noise Monitoring	• A-weighted equivalent continuous sound pressure level (30min) (hereinafter 'Leq(30min)' during the normal working hours	No requirement
Water Quality Monitoring	• In Situ Measurement - Temperature, Dissolved Oxygen, Dissolved Oxygen Saturation, pH and Turbidity • Laboratory Analysis - Suspended Solids	No requirement
Hydrological Characteristics Monitoring	• In-situ measurement including water flow and depth	• In-situ measurement including water flow and depth
Ecological Monitoring and Audit	• Monitor and audit the proper implementation of mitigation measures stipulated in EIA report and the updated EM&A Manual	• Monitor and inspect including the vegetation, fauna (includes avifauna, herpetofauna, odonate and butterfly) and Stream (includes fish and macroinvertebrates)
Landscape and Visual Monitoring	• Inspect and audit the implementation and maintenance of landscape and visual mitigation measures	• Inspect and audit the implementation and maintenance of landscape and visual mitigation measures

Remarks:
(*) the monitoring is carried out by IEC
(#) The monitoring is carried out by the registered Landscape Architect

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

Aspect	Location ID	Address
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
	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 1 and Contract 2	
Landscape & Visual	As within and adjacent to the construction sites and works areas under the Contract 1 and Contract 2	

MONITORING FREQUENCY OF CONSTRUCTION PHASE

3.04 According to the updated EM&A Manual, frequency and duration of the Construction Phase monitoring are summarized below.

Construction Noise

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

If the construction work undertake at restricted hour, the monitoring frequency of construction noise will be conducted in accordance with the related Construction Noise Permit requirement.

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: throughout construction phase of Contract 2 to underway (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 FREQUENCY OF OPERATION PHASE

Hydrological Characteristics

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

Duration: One year after the construction is complete as operation phase monitoring (in accordance with the Updated EM&A Manual Section 4.32).

Ecology

3.07 In according with Section 6.17 of the Updated EM&A Manual, the Operation Phase ecological monitoring would be to conduct by the Independent Environmental Checker (hereinafter 'IEC'). Regular checking and monitoring by quarter month would be performed for one year duration

Landscape & Visual

3.08 According to Section 7.5 of the Updated EM&A Manual, all landscape and visual mitigation measures would be monitored quarterly during the first year of the Operation Phase to check on the effectiveness of the mitigations.

MONITORING EQUIPMENT

Noise Monitoring

3.09 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

3.10 **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.

3.11 **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.

3.12 **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.

3.13 **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.

3.14 **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.

3.15 **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).

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

Hydrological Characteristics

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

3.18 **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.

3.19 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
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

3.20 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.

3.21 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)*.

3.22 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.

3.23 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.

3.24 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

3.25 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

3.26 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.

3.27 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

3.28 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.

3.29 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.

3.30 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.

3.31 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.

3.32 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.

3.33 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

3.34 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.

3.35 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.

OTHERS MONITORING IMPLEMENTATION FOR THE PROJECT

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 once every three months during the first year of the Operation Phase to check on the effectiveness of the mitigations.

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 the Project 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 is obtained from Tai Po and Shatin Stations of the Hong Kong Observatory (HKO) and the summary is shown ***Appendix H***.

DATA MANAGEMENT AND DATA QA/QC CONTROL

3.46 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.

3.47 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.

4.0 MONITORING RESULTS OF CONTRACT 2 OF CONSTRUCTION PHASE

4.01 Since EPD disagreed EM&A programmes of DC/2010/02 changed to operation phase, the monitoring schedule was issued to relevant parties on 4 December 2014 which shown 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.

RESULTS OF CONSTRUCTION NOISE MONITORING

4.02 In this Reporting Period, the noise monitoring results at the all 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 ($L_{Aeq30min}$) Monitoring Results, dB(A)

Date	M1(*)	AL1(*)	M2(*)	M3(*)	M4(*)
5-Dec-14	62	68	62	61	63
13-Dec-14	62	66	66	59	49
19-Dec-14	56	61	65	64	53
27-Dec-14	59	65	61	65	50
Limit Level	**75 dB(A)**				

Remarks:
(*) *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*

4.03 The sound meter was set in a free field situation at the all designated monitoring locations, therefore a façade correction of +3 dB(A) has been added according to acoustical principles and EPD guidelines.

4.04 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

4.05 In this Reporting Period, **12** sampling days were performed at all 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***.

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

Table 4-2 Water Quality Results Summary for Dissolved Oxygen (DO), mg/L

Sampling date	W1 (ebb)	W1 (flood)	W2	W3	W4
5-Dec-14	8.70	8.45	***5.81***	8.02	***8.80***
9-Dec-14	7.60	***7.22***	***7.03***	7.96	***7.98***
11-Dec-14	7.50	***7.21***	***5.85***	9.61	9.93
13-Dec-14	7.69	***6.43***	***6.95***	8.32	***7.41***
15-Dec-14	***6.96***	***6.48***	***6.69***	7.50	***7.31***
17-Dec-14	***6.88***	***6.55***	7.29	7.48	***7.93***
19-Dec-14	***7.12***	***6.49***	***6.31***	7.02	***7.47***
22-Dec-14	7.37	***6.86***	***6.41***	7.39	***7.89***
24-Dec-14	***6.78***	***6.59***	***6.25***	7.22	***7.55***
27-Dec-14	***5.10***	***5.93***	***5.30***	7.23	***7.30***
29-Dec-14	***6.27***	***6.38***	7.68	7.46	***7.53***
31-Dec-14	***7.08***	***6.64***	***6.14***	6.50	***7.04***

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

Table 4-3 Water Quality Results Summary for Turbidity, NTU

Sampling date	W1 (ebb)	W1 (flood)	W2	W3	W4
5-Dec-14	4.65	3.80	**6.62**	2.60	***4.06***
9-Dec-14	3.19	3.05	***2.93***	3.90	***4.12***
11-Dec-14	2.15	1.37	**3.79**	4.36	1.09
13-Dec-14	3.88	4.48	**3.59**	5.00	2.86
15-Dec-14	3.85	3.65	**4.03**	1.43	1.92
17-Dec-14	**5.38**	***5.14***	**5.01**	2.26	2.23
19-Dec-14	**6.47**	***5.14***	**11.32**	12.05	**10.65**
22-Dec-14	4.35	3.69	**4.06**	2.29	2.37
24-Dec-14	3.95	3.28	**4.83**	2.88	3.10
27-Dec-14	4.32	**6.65**	**6.96**	5.44	2.77
29-Dec-14	3.99	2.67	**4.06**	2.50	1.67
31-Dec-14	***4.89***	***5.08***	**6.42**	1.91	2.57

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

Table 4-4 Water Quality Results Summary for Suspended Solids (SS), mg/L

Sampling date	W1 (ebb)	W1 (flood)	W2	W3	W4
5-Dec-14	2.0	2.0	***9.0***	4.0	2.0
9-Dec-14	2.0	2.0	2.5	2.0	2.0
11-Dec-14	2.0	2.0	6.0	6.0	5.0
13-Dec-14	3.0	3.0	4.0	5.0	6.0
15-Dec-14	2.0	2.0	3.0	2.0	2.0
17-Dec-14	3.0	7.0	3.0	2.0	2.0
19-Dec-14	4.0	3.0	5.5	5.0	6.0
22-Dec-14	2.0	2.0	2.5	2.0	2.0
24-Dec-14	2.0	2.0	2.5	2.0	2.0
27-Dec-14	7.0	8.0	7.5	2.0	2.0
29-Dec-14	3.0	3.0	4.0	2.0	2.0
31-Dec-14	3.0	3.0	8.5	3.0	3.0

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

4.07 During the Reporting Period, field measurements showed that stream water temperatures were within 16.4℃ to 23.3℃ and pH values within 7.3 to 8.9.

4.08 A statistics of exceedances for the three parameters: dissolved oxygen (DO), turbidity and suspended solids are shown in ***Table 4-5***.

Table 4-5 Statistics Water Quality Exceedance

Station	DO		Turbidity		SS		Total Exceedance	
	Action	Limit	Action	Limit	Action	Limit	Action	Limit
W1	**18**	0	**4**	**3**	0	0	**22**	**3**
W2	**10**	0	**1**	**11**	**1**	0	**12**	**11**
W4	**11**	0	**2**	**1**	0	0	**13**	**1**
No. of Exceedance	**39**	**0**	**7**	**15**	**1**	**0**	**47**	**15**

4.09 As shown in ***Table 4-4***, a total of 62 Action/ Limit Level exceedances, namely 39 exceedances in dissolved oxygen, 22 exceedances in turbidity and 1 exceedance in SS were recorded in this Reporting Period. NOEs were issued to notify EPD, IEC, the Contractor and RE upon confirmation of the results.

4.10 According to site information provided by the Contractor, the site activities undertaken on site

included rectification of minor defects of all Box Culverts and public roads reinstalled surface. The active construction activities would not disturb the water body. 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 impact monitoring point W2, one Action and eleven Limit Levels exceedance were detected for Turbidity. Moreover, one Action Level exceedance of SS was recorded on 5 December 2014. Since Contract 1 has completed and no construction activities was carried out close to W2 under the Contract 2, it is concluded that the exceedances were not project related.
- For impact monitoring point W4, no SS exceedance was recorded; however, Turbidity was found 2 Action and 1 Limit Levels exceedance. As reviewed Table 4-4, it is noted that turbidity 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 point W1, total 25 Action/Limit levels exceedance was recorded the three key parameters DO, Turbidity and SS. Since W1 location is nearly a sea-shore and Contract 1 has completed. Therefore, it should be affect by marine water as come 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.

RESULTS OF HYDROLOGICAL CHARACTERISTICS MONITORING

4.11 In this Reporting Period, hydrological characteristics measurements were carried out on **5, 11, 19 and 22 December 2014.** The detailed measurement results in this Reporting Period are presented in ***Tables 4-6***.

Table 4-6 Detailed monitoring results of hydrological characteristics at Designated Measurement Points

Measurement Point	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
Date: 5 December 2014							
H1	16:40	Flood	7.45	0.53	3.9485	0.8	3.159
	11:09	Ebb	7.45	0.50	3.7250	0.7	2.608
H2	17:40	Flood	2.74	0.38	1.0412	0.1	0.104
	10:48	Ebb	2.74	0.36	0.9864	<0.1	<0.100
H3	17:07	Flood	7.45	0.38	2.8310	0.3	0.849
	10:24	Ebb	7.45	0.37	2.7565	0.2	0.551
H4	17:21	Flood	2.74	0.29	0.7946	0.3	0.238
	10:39	Ebb	2.74	0.26	0.7124	0.2	0.142
Date: 11 December 2014							
H1	12:00	Flood	7.45	0.4	2.9800	0.5	1.490
	14:21	Ebb	7.45	0.39	2.9055	0.4	1.162
H2	11:07	Flood	2.74	0.34	0.9316	0.1	0.093
	15:27	Ebb	2.74	0.34	0.9316	0.1	0.093
H3	10:44	Flood	7.45	0.37	2.7565	0.4	1.103
	14:52	Ebb	7.45	0.36	2.6820	0.1	0.268
H4	11:01	Flood	2.74	0.28	0.7672	0.3	0.230
	15:18	Ebb	2.74	0.28	0.7672	0.2	0.153
Date: 19 December 2014							
H1	14:04	Flood	7.45	0.48	3.5760	0.6	2.146

Measurement Point	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
	10:34	Ebb	7.45	0.45	3.3525	0.4	1.341
H2	15:49	Flood	2.74	0.35	0.9590	0.1	0.096
	11:42	Ebb	2.74	0.34	0.9316	0.1	0.093
H3	15:33	Flood	7.45	0.4	2.9800	0.5	1.490
	11:15	Ebb	7.45	0.39	2.9055	0.3	0.872
H4	15:42	Flood	2.74	0.32	0.8768	0.3	0.263
	11:34	Ebb	2.74	0.3	0.8220	0.2	0.164
Date: 22 December 2014							
H1	18:02	Flood	7.45	0.51	3.7995	0.3	1.140
	12:03	Ebb	7.45	0.44	3.2780	0.2	0.656
H2	17:42	Flood	2.74	0.31	0.8494	0.1	0.085
	13:12	Ebb	2.74	0.29	0.7946	<0.1	<0.100
H3	17:03	Flood	7.45	0.38	2.8310	0.4	1.132
	12:34	Ebb	7.45	0.36	2.6820	0.3	0.805
H4	17:16	Flood	2.74	0.26	0.7124	0.4	0.285
	12:53	Ebb	2.74	0.25	0.6850	0.3	0.206

4.12 Hydrological characteristics results of the all measurement points are summarized in ***Tables 4-7*** and ***4-8***.

Table 4-7 Summarized Hydrological Characteristics of Water Depth, m

Date	Mid-Flood				Mid-Ebb			
	H1	H2	H3	H4	H1	H2	H3	H4
5-Dec-14	0.53	0.38	0.38	0.29	0.50	0.36	0.37	0.26
11-Dec-14	0.40	0.34	0.37	0.28	0.39	0.34	0.36	0.28
19-Dec-14	0.48	0.35	0.40	0.32	0.45	0.34	0.39	0.30
22-Dec-14	0.51	0.31	0.38	0.26	0.44	0.29	0.36	0.25

Table 4-8 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
5-Dec-14	3.159	0.104	0.849	0.238	2.608	<0.100	0.551	0.142
11-Dec-14	1.490	0.093	1.103	0.230	1.162	0.093	0.268	0.153
19-Dec-14	2.146	0.096	1.490	0.263	1.341	0.093	0.872	0.164
22-Dec-14	1.140	0.085	1.132	0.285	0.656	<0.100	0.805	0.206

4.13 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 was found in this Reporting Period.

RESULTS OF ECOLOGICAL MONITORING

4.14 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.

4.15 Since ecological monitoring of the Contract 2 was conducted in ***November 2014,*** no ecological monitoring in Area under the Contract 2 therefore was performed in this reporting period.

5.0 MONITORING RESULTS OF CONTRACT 1 OF OPERATION PHASE

5.01 The Operation Phase monitoring schedule has issued to relevant parties before the Reporting Period and attached in ***Appendix G***. The monitoring results are presented in the following sub-sections.

RESULTS OF HYDROLOGICAL CHARACTERISTICS MONITORING

5.02 For Contract 1 Operation Phase, hydrological characteristics measurement at H1 and H2 was conducted on **5, 11, 19 and 22 December 2014**. The detailed measurement results were presented in ***Tables 4-6, 4-7 and 4-8*** of ***Section 4*** of this report. Graphical Plots of Hydrological Characteristics shows in ***Appendix D.***

RESULTS OF ECOLOGICAL MONITORING

5.03 According to updated EM&A Manual Section 6.20, quarterly 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 of the **Contract 1**.

5.04 In this Reporting Period, no ecological monitoring in Area under Contract 1 of the Project. For the tentative schedule, operation phase ecological monitoring is predicted to be carried out in **January 2015**.

6.0 WASTE MANAGEMENT

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

RECORDS OF WASTE QUANTITIES

6.02 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.

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

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

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

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

Type of Waste	Quantity	Disposal Location
Recycled Metal (kg)	0	-
Recycled Paper / Cardboard Packing (kg)	0	-
Recycled Plastic (kg)	0	-
Chemical Wastes (kg)	0	-
General Refuses (m^3)	15	Local refuse station

6.04 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.

7.0 SITE INSPECTION

REGULAR SITE INSPECTION AND MONTHLY AUDIT

7.01 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 but no requirement for the Operation Phase. Regular weekly environmental site inspection was carried out by RE with the Contractor on **10**, **17**, **24** and **30 December 2014**.

7.02 Furthermore, the Main Contractor, RE, IEC and ET with EPD was undertaken joint site inspection on **4 December 2014**. For the joint site inspection which covered Contract 1 and Contract 2 areas, EPD agreed the Contract 1 completion but DC/2010/02 disagree due to Wai Ha Tsuen pathway reinstatement and Wai Ha River minor defects rectify work still not yet completed as under the Contract 2.

7.03 During this joint site inspection, no non-compliance was observed but work area cleanness and tidiness maintain was reminded.

LANDSCAPE AND VISUAL INSPECTION

7.04 In this Reporting Period, landscape and visual inspection was carried on **11** and **23 December 2014** for the **Contract 2.** The stand-alone of monthly Landscape & Visual Report signed by the registered Landscape Architect is enclosed in ***Appendix L***.

7.05 The next bi-weekly Landscape & Visual Monitoring in **January 2015** is scheduled to be conducted in the weeks of **5 and 19 January 2015**.

7.06 According to Section 7.5 of the Updated EM&A Manual, quarterly landscape and visual inspection shall carry out during the first year of the Operation Phase of **Contract 1**.

7.07 No landscape and visual inspection of Contract 1 was carried out in this reporting period**.** The Operation Landscape & Visual Monitoring is scheduled to be conducted in **January 2015** of the coming month.

8.0 ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION

8.01 For the Project, no environmental complaint, summons and prosecution was received in this Reporting Period. The statistical summary table of environmental complaint for the **Contract 2** is presented in ***Tables 8-1, 8-2*** and ***8-3***.

Table 8-1 Statistical Summary of Environmental Complaints

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

Table 8-2 Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics		
	Frequency	Cumulative	Complaint Nature
July 2011 – November 2014	0	0	NA
December 2014	0	0	NA

Table 8-3 Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Prosecution Statistics		
	Frequency	Cumulative	Complaint Nature
July 2011 – November 2014	0	0	NA
December 2014	0	0	NA

9.0 IMPLEMENTATION STATUS OF MITIGATION MEASURES

9.01 According to the Updated Environmental Monitoring and Audit Manual, mitigation measures recommended for the Operation Phase are summarized as follows:

Ecology

- To minimize sedimentation, de-silting should be limited to the dry season
- Waste material produced during de-silting should be disposed of in a timely and appropriate manner

Landscape and visual

- 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
- Landscape design of pump house by providing sufficient planting around its boundary fence
- 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
- Reinstatement of affected area should be carried out to check that the works areas are properly reinstated

10.0 CONCLUSIONS AND RECOMMENTATIONS

CONCLUSIONS

10.01 This is the **42nd** monthly EM&A report as combined the Contract 1 and Contract 2 presented the Project Construction and Operation Phases monitoring results with inspection findings for the Reporting Period of **1 to 31 December 2014**.

10.02 No noise complaint (which is an Action Level exceedance) was received in this Reporting Period.

10.03 The hydrological characteristics of water depth and water flow rate as compared baseline monitoring period, the currently water depth and volumetric flow rate has insignificant change.

10.04 In this Reporting Period, no ecological monitoring in Area under the Project was performed by IEC. Furthermore, bi-weekly landscape and visual inspection was carried on **11** and **23 December 2014** for the **Contract 2** but no inspection to conduct for **Contract 1**. The monthly Landscape & Visual Report of **Contract 2** (**December 2014**) has been signed by the registered Landscape Architect

10.05 Regular weekly environmental site inspection was carried out by RE with the Contractor on 10, 17, 24 and 30 December 2014. One joint site inspection by the Main Contractor, RE, IEC and ET with EPD was undertaken on **4 December 2014**. During the joint site inspection finding, Wai Ha Tsuen pathway reinstatement and Wai Ha River minor defects rectify work under the Project is in progress. No non-compliance has observed during the inspection.

10.06 EPD accepted that the EM&A programme of DC/2009/22 changed to operation phase in view of the construction works under the contract has completed. However, for contract DC/2010/02, impact monitoring of construction phase should be resumed in December 2014 until further approval from the EPD

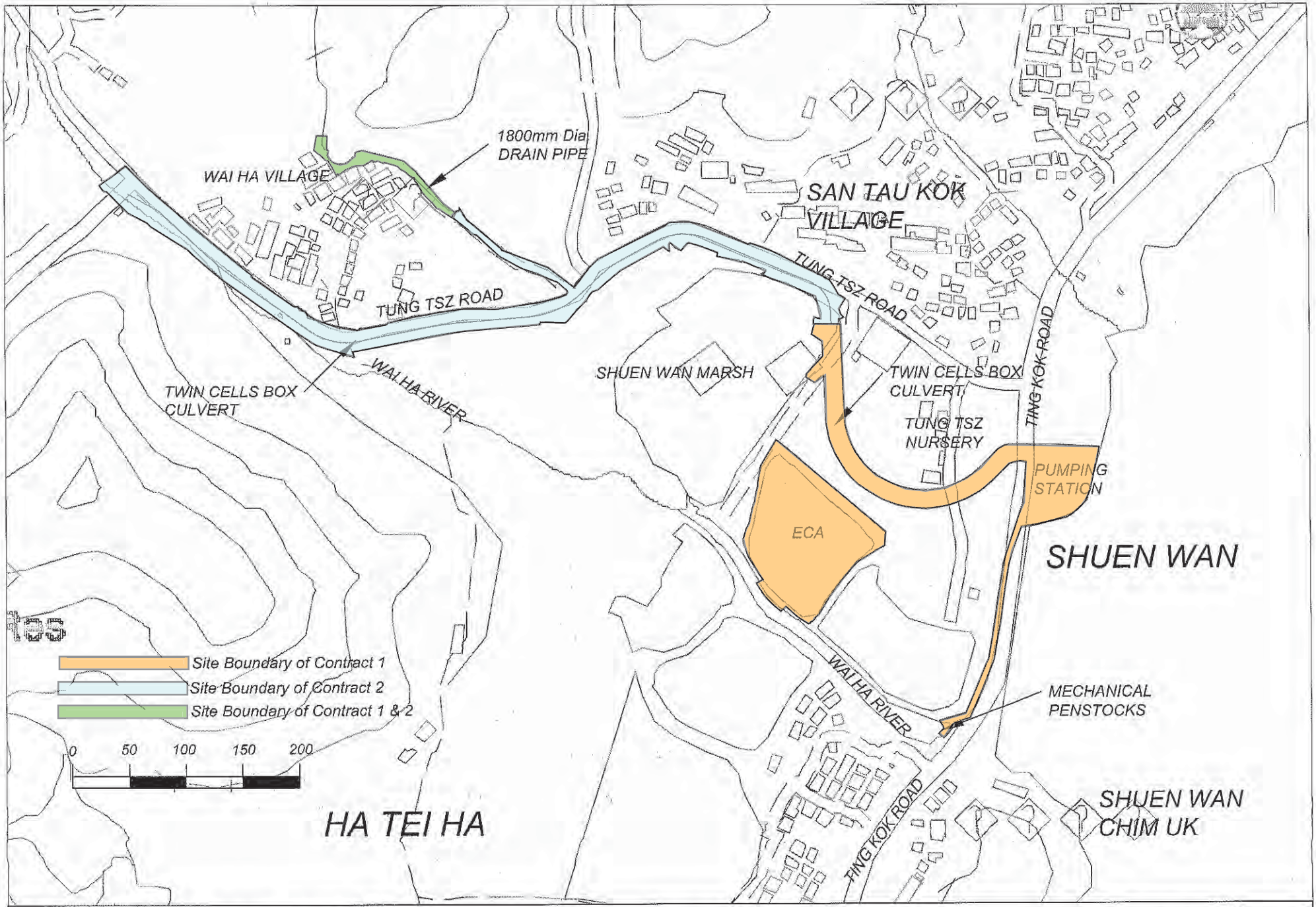
10.07 No documented complaint, notification of summons or successful prosecution was received.

RECOMMENDATIONS

10.08 Due to Wai Ha Tsuen pathway reinstatement and Wai Ha River minor defects rectify work is still in progress. Mitigation measures for construction dust, noise and wastewater discharge with the required monitoring shall be properly maintain and perform until to the Project of all works completion.

Appendix A

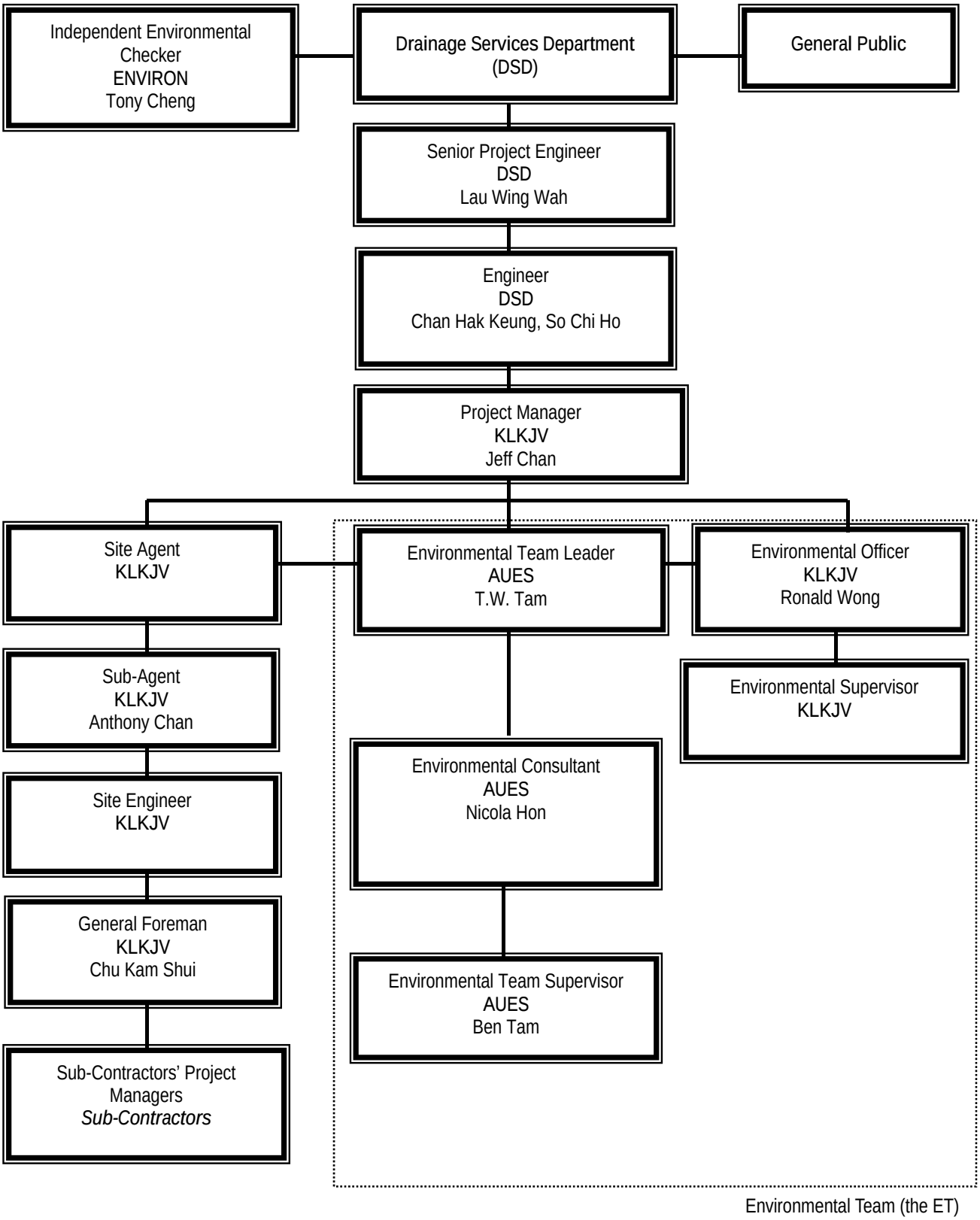
Project Location at Shuen Wan



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
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

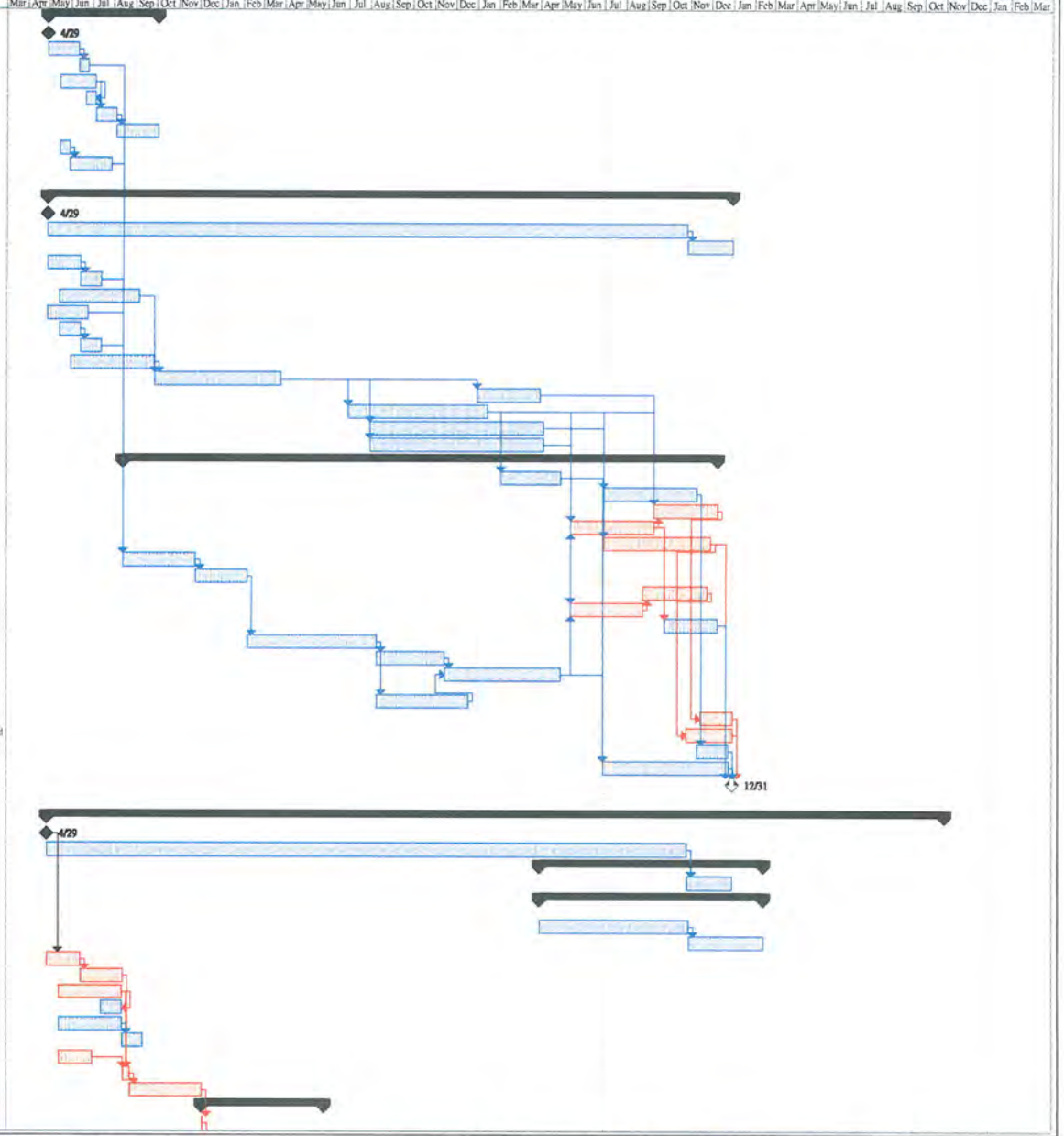
AUES (ET) – Action-United Environmental Services & Consulting

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 coordination	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 CH167 to CH127 (Bay 1,2,3,4,5)	133 days	Mon 13 Jul 1	Sat 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 (CH167 to CH240)	45 days	Mon 13 Nov 11	Wed 13 Dec 25	30
46	Landscape Softwork	180 days	Sun 13 Jun 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	Sat 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

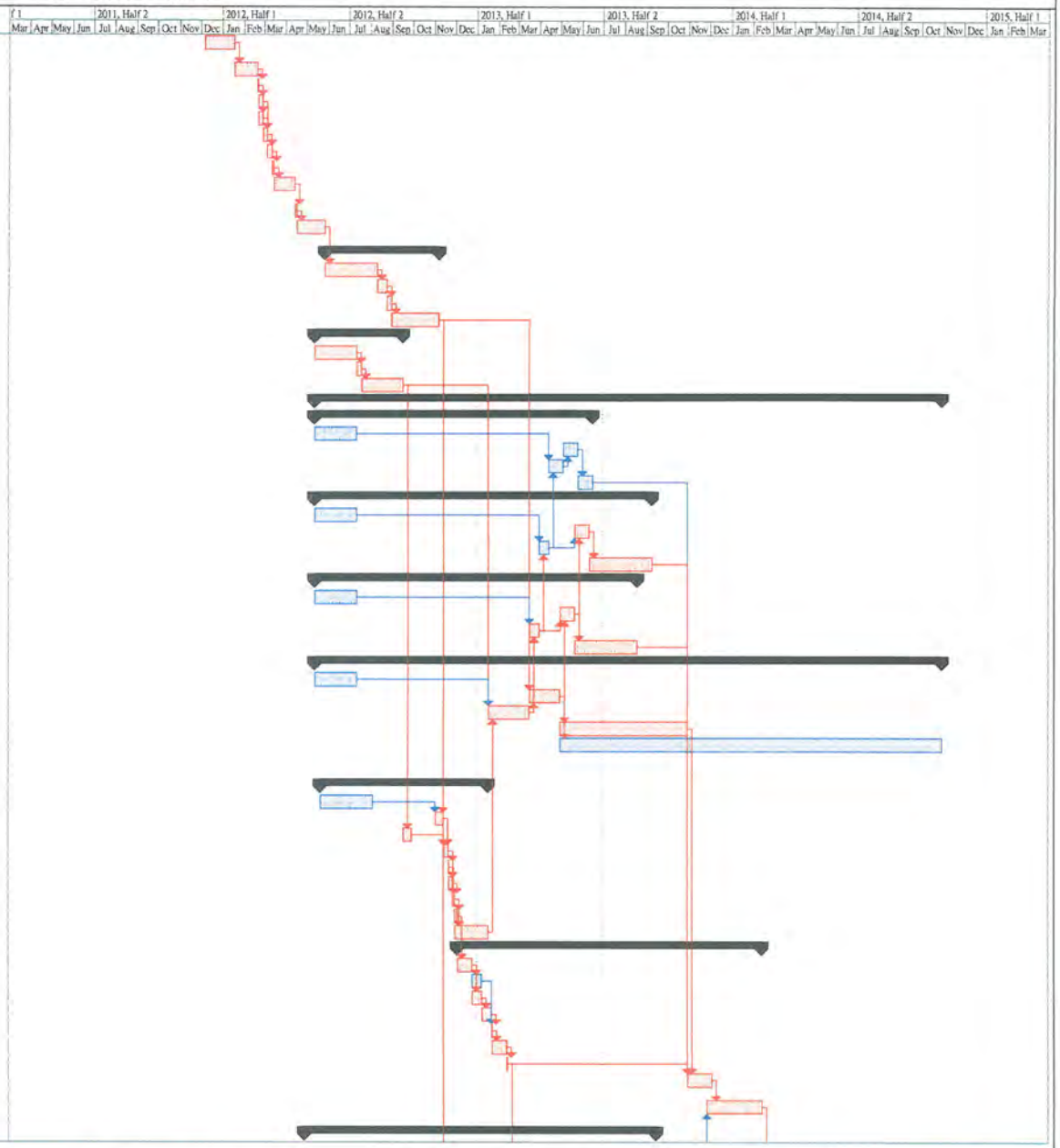


Data Date: 09 Jan 2013
Printed on : 30 March 2013

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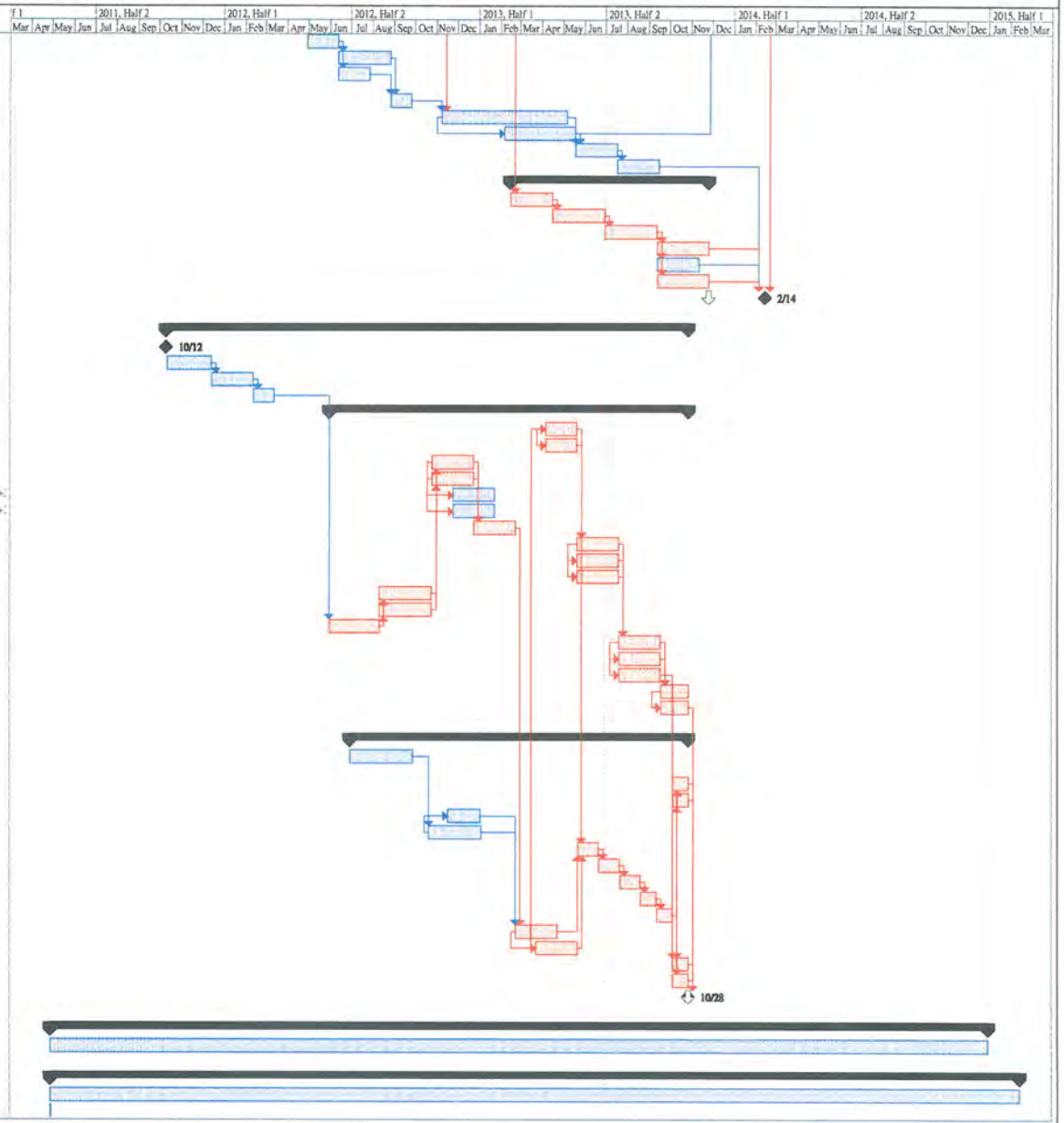
Contract No.: DC/2010/02
Contract Title: Drainage Improvement Works in Shuen Wan and Shek Wu Wai
Updated Programme (No. 6)

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, Shek 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	



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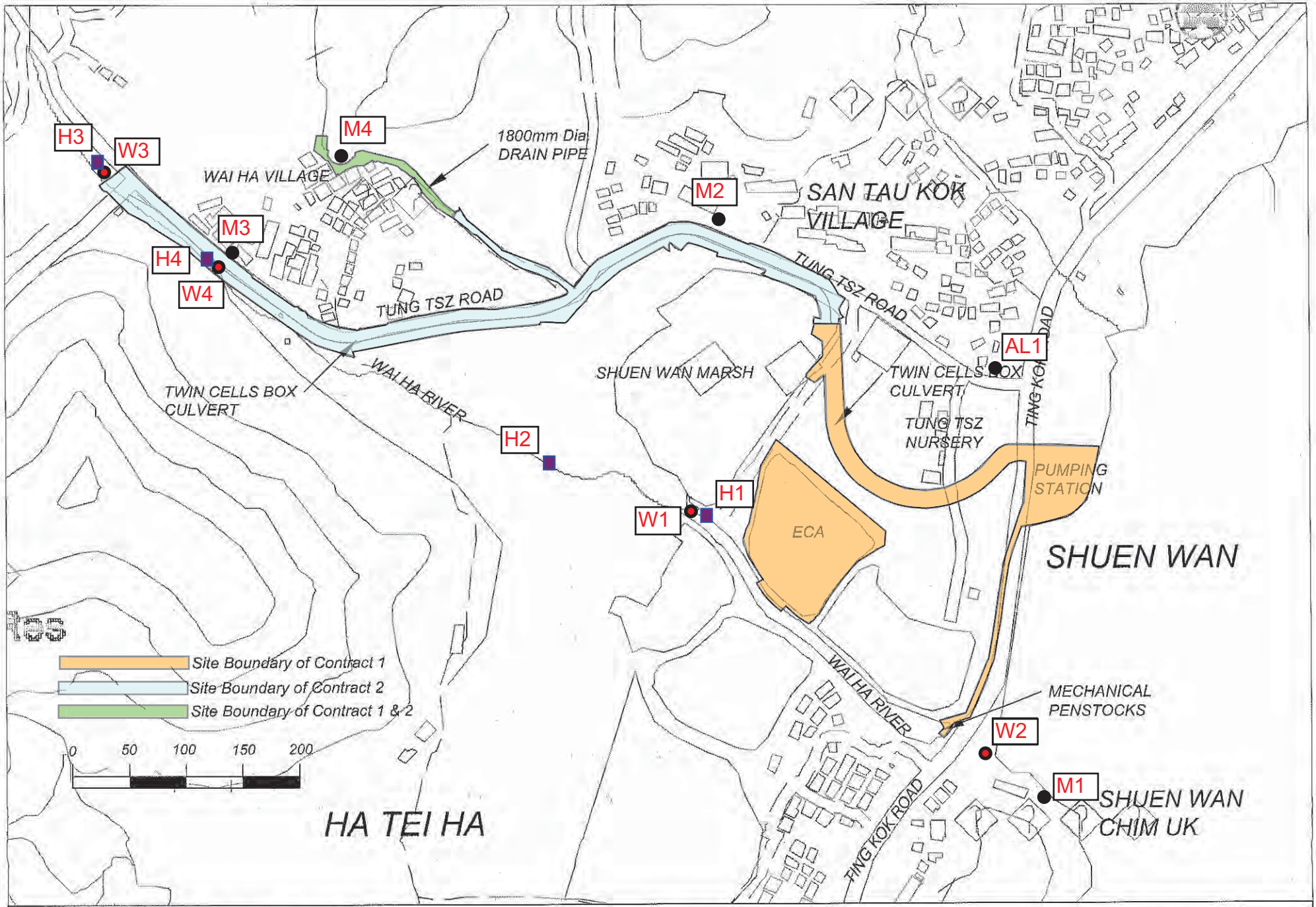
Appendix D

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	YSI 55A (Serial No. 05F2063AZ)	7 Oct 14	7 Jan 15
4		Turbidmeter HACH 2100Q (Serial No. 11030C008499)	24 Oct 14	24 Jan 15
5		pH meter 8685 (Serial No. 212632)	7 Oct 14	7 Jan 15

輝創工程有限公司
Sun Creation Engineering Limited
Calibration and Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C142548
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC14-0853) Date of Receipt / 收件日期 : 14 April 2014

Description / 儀器名稱 : Sound Level Meter (EQ068)
Manufacturer / 製造商 : Rion
Model No. / 型號 : NL-31
Serial No. / 編號 : 00410247
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 26 April 2014

TEST RESULTS / 測試結果

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

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested By 測試 : K C Lee, Project Engineer

Certified By 核證 : K M Wu, Engineer

Date of Issue 簽發日期 : 29 April 2014

Sun Creation Engineering Limited - Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 - 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C142548
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

2. Self-calibration was performed before the test.

3. The results presented are the mean of 3 measurements at each calibration point.

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C140016
CL281	Multifunction Acoustic Calibrator	DC130171

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 120	L_A	A	Fast	94.00	1	93.9	± 0.7

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 120	L_A	A	Fast	94.00	1	93.9 (Ref.)
				104.00		103.9
				114.00		113.9

IEC 60651 Type 1 Spec. : ± 0.4 dB per 10 dB step and ± 0.7 dB for overall different.

6.2 Time Weighting

6.2.1 Continuous Signal

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 120	L_A	A	Fast	94.00	1	93.9	Ref.
			Slow			93.9	± 0.1

Certificate of Calibration
校正證書

Certificate No. : C142548
證書編號

6.2.2 Tone Burst Signal (2 kHz)

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Burst Duration		
20 -110	L_A	A	Fast	106.00	Continuous	106.0	Ref.
	$L_A$max				200 ms	105.0	-1.0 ± 1.0
	L_A		Slow		Continuous	106.0	Ref.
	$L_A$max				500 ms	102.0	-4.1 ± 1.0

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L_A	A	Fast	94.00	31.5 Hz	54.2	-39.4 ± 1.5
					63 Hz	67.6	-26.2 ± 1.5
					125 Hz	77.6	-16.1 ± 1.0
					250 Hz	85.2	-8.6 ± 1.0
					500 Hz	90.6	-3.2 ± 1.0
					1 kHz	93.9	Ref.
					2 kHz	95.2	+1.2 ± 1.0
					4 kHz	95.0	+1.0 ± 1.0
					8 kHz	92.8	-1.1 (+1.5; -3.0)
					12.5 kHz	89.9	-4.3 (+3.0; -6.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L_C	C	Fast	94.00	31.5 Hz	90.6	-3.0 ± 1.5
					63 Hz	93.0	-0.8 ± 1.5
					125 Hz	93.7	-0.2 ± 1.0
					250 Hz	93.9	0.0 ± 1.0
					500 Hz	93.9	0.0 ± 1.0
					1 kHz	93.9	Ref.
					2 kHz	93.8	-0.2 ± 1.0
					4 kHz	93.2	-0.8 ± 1.0
					8 kHz	91.0	-3.0 (+1.5; -3.0)
					12.5 kHz	88.1	-6.2 (+3.0 ; -6.0)

Certificate of Calibration
校正證書

Certificate No. : C142548
證書編號

6.4 Time Averaging

UUT Setting				Applied Value					UUT Reading (dB)	IEC 60804 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Integrating Time	Freq. (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)		
20 - 110	L_{Aeq}	A	10 sec.	4	1	1/10	110.0	100	100.0	± 0.5
						$1/10^2$		90	90.0	± 0.5
			60 sec.			$1/10^3$		80	80.0	± 1.0
			5 min.			$1/10^4$		70	70.0	± 1.0

Remarks : - UUT Microphone Model No. : UC-53A & S/N : 319841

- Mfr's Spec. : IEC 60651 Type 1 & IEC 60804 Type 1

- Uncertainties of Applied Value :

94 dB	: 31.5 Hz - 125 Hz	: ± 0.35 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz - 4 kHz	: ± 0.35 dB
	8 kHz	: ± 0.45 dB
	12.5 kHz	: ± 0.70 dB
104 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)
Burst equivalent level		: ± 0.2 dB (Ref. 110 dB continuous sound level)

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

Note :
The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

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TEST REPORT

for

SOUND CALIBRATOR

Model : NC－74

Serial No. : 34246492

Condition : Temperature 24 ℃

Humidity 38 %RH

Date : February, 28, 2014

Signature :

RION CO., LTD.

NC-74
34246492

1. Sound Pressure Level	94.0 ± 0.25 dB	94.00 dB
2. Frequency	1000 ± 7 Hz	1001.4 Hz
3. Distortion	3 % or less	Pass
4. Alarm Function		Pass
5. Appearance		Pass

Applicable standards

JIS C 1515:2004 Class1
IEC 60942:2003 Class1

RION

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM	**WORK ORDER:**	HK1434253
CLIENT:	ACTION UNITED ENVIRO SERVICES	**LABORATORY:**	HONG KONG
ADDRESS:	RM A 20/F., GOLDEN KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T., HONG KONG	**DATE RECEIVED:**	07/10/2014
		DATE OF ISSUE:	27/10/2014

COMMENTS

The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
The "Tolerance Limit" quoted is the acceptance criteria applicable for similar equipment used by the ALS Hong Kong laboratory or quoted from relevant international standards.
The "Next Calibration Date" is recommended according to best practice principals as practised by the ALS Hong Kong laboratory or quoted from relevant international standards.

Scope of Test:	Dissolved Oxygen and Temperature
Description:	Multifunctional Meter
Brand Name:	YSI
Model No.:	550A
Serial No.:	05F2063AZ
Equipment No.:	--
Date of Calibration:	07 October, 2014

NOTES

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

Mr Fung Lim Chee, Richard
General Manager
Greater China & Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1434253
Date of Issue: 27/10/2014
Client: ACTION UNITED ENVIRO SERVICES

Description: Multifunctional Meter
Brand Name: YSI
Model No.: 550A
Serial No.: 05F2063AZ
Equipment No.: --
Date of Calibration: 07 October, 2014 Date of next Calibration: 07 January, 2015

Parameters:

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

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
3.00	2.99	-0.01
5.02	4.93	-0.09
8.05	8.01	-0.04
	Tolerance Limit (mg/L)	±0.20

Temperature **Method Ref: Section 6 of International Accreditation New Zealand Technical Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.**

Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)
11.0	11.8	+0.8
22.0	23.0	+1.0
38.0	38.5	+0.5
	Tolerance Limit (°C)	±2.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Mr Fung Lim Chee, Richard
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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM	**WORK ORDER:**	HK1434245
CLIENT:	ACTION UNITED ENVIRO SERVICES	**LABORATORY:**	HONG KONG
ADDRESS:	RM A 20/F., GOLDEN KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T., HONG KONG	**DATE RECEIVED:**	21/10/2014
		DATE OF ISSUE:	27/10/2014

COMMENTS

The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
The "Tolerance Limit" quoted is the acceptance criteria applicable for similar equipment used by the ALS Hong Kong laboratory or quoted from relevant international standards.
The "Next Calibration Date" is recommended according to best practice principals as practised by the ALS Hong Kong laboratory or quoted from relevant international standards.

Scope of Test:	Turbidity
Equipment Type:	Turbidimeter
Brand Name:	HACH
Model No.:	2100Q
Serial No.:	11030C008499
Equipment No.:	--
Date of Calibration:	24 October, 2014

NOTES

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

Mr. Fung Lim Chee, Richard
General Manager -
Greater China & Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1434245
Date of Issue: 27/10/2014
Client: ACTION UNITED ENVIRO SERVICES

Equipment Type: Turbidimeter
Brand Name: HACH
Model No.: 2100Q
Serial No.: 11030C008499
Equipment No.: --
Date of Calibration: 24 October, 2014 Date of next Calibration: 24 January, 2015

Parameters:

Turbidity

Method Ref: APHA 21st Ed. 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.02	--
4	3.67	-8.3
40	38.1	-4.8
80	74.2	-7.3
400	377	-5.8
800	830	+3.8
	Tolerance Limit (%)	±10

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM	**WORK ORDER:**	HK1434242
CLIENT:	ACTION UNITED ENVIRO SERVICES	**LABORATORY:**	HONG KONG
ADDRESS:	RM A 20/F., GOLDEN KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T., HONG KONG	**DATE RECEIVED:**	21/10/2014
		DATE OF ISSUE:	27/10/2014

COMMENTS

The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
The "Tolerance Limit" quoted is the acceptance criteria applicable for similar equipment used by the ALS Hong Kong laboratory or quoted from relevant international standards.
The "Next Calibration Date" is recommended according to best practice principals as practised by the ALS Hong Kong laboratory or quoted from relevant international standards.

Scope of Test:	pH
Description:	pH Meter
Brand Name:	--
Model No.:	8685
Serial No.:	1067687
Equipment No.:	--
Date of Calibration:	24 October, 2014

NOTES

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

Mr Fung Lim Chee, Richard
General Manager
Greater China & Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1434242
Date of Issue: 27/10/2014
Client: ACTION UNITED ENVIRO SERVICES

Description: pH Meter
Brand Name: --
Model No.: 8685
Serial No.: 1067687
Equipment No.: --
Date of Calibration: 24 October, 2014 Date of next Calibration: 24 January, 2015

Parameters:

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

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
4.0	4.0	0.00
7.0	6.9	-0.10
10.0	9.9	-0.10
	Tolerance Limit (pH Unit)	±0.20

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Mr Fung Lim Chee, Richard
General Manager -
Greater China & Hong Kong

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 – December 2014

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

	Monitoring Day
	Sunday or Public Holiday

Monitoring Schedule for next Reporting Period – January 2015

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

	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-Dec-14	Mon	Cloudy with a few rain patches. Moderate to fresh east to northeasterly winds.	3.1	18.7	84.2	11.2	N
2-Dec-14	Tue	Cloudy with a few rain patches. Moderate to fresh easterly winds.	4.5	15.2	87.2	10.7	N/NE
3-Dec-14	Wed	Cloudy with a few rain patches. Moderate to fresh easterly winds.	1.7	17.7	84.5	6.5	E/NE
4-Dec-14	Thu	Mainly cloudy and rather cool. Moderate northeasterly winds, occasionally fresh offshore.	5.4	14.4	84.7	11.2	N
5-Dec-14	Fri	Mainly cloudy and rather cool. Moderate northeasterly winds, occasionally fresh offshore.	0.5	13.4	70.5	8.2	N/NW
6-Dec-14	Sat	Mainly cloudy. Cool with one or two light rain patches. Moderate to fresh north to northeasterly winds.	Trace	16.1	64.5	7.6	E/NE
7-Dec-14	Sun	Mainly cloudy. Cool with one or two light rain patches. Moderate to fresh north to northeasterly winds.	0.1	17.1	65.5	7	N/NE
8-Dec-14	Mon	Mainly fine. Moderate to fresh easterly winds.	0.1	17.2	71	5.9	N
9-Dec-14	Tue	Mainly fine. Moderate to fresh easterly winds.	0	19	66.5	8.2	E/NE
10-Dec-14	Wed	Cloudy with a few rain patches. Moderate to fresh east to northeasterly winds.	2.1	20	71.2	5.6	N
11-Dec-14	Thu	Mainly cloudy and dry. Sunny intervals in the afternoon. Moderate northerly winds.	Trace	18	54.7	8	E/NE
12-Dec-14	Fri	Mainly cloudy and dry. Sunny intervals in the afternoon. Moderate northerly winds.	0	14.3	48.5	11.5	N/NW
13-Dec-14	Sat	Mainly cloudy and dry. Sunny intervals in the afternoon. Moderate northerly winds.	0	13	48.2	6.2	N/NE
14-Dec-14	Sun	Fine and very dry. Cloudy. Fresh north to northeasterly winds.	0	14.7	55.2	6.5	N/NE
15-Dec-14	Mon	Fine and very dry. Cloudy. Fresh north to northeasterly winds.	0	16.8	68	4.5	N/NE
16-Dec-14	Tue	Fine and very dry. It will be cold overnight. Fresh north to northeasterly winds.	0	15.9	49.5	11	N
17-Dec-14	Wed	Cloudy with a few rain patches. Moderate to fresh north to northeasterly winds.	0	13	22.5	14.3	N/NE
18-Dec-14	Thu	Cloudy with a few rain patches. Moderate to fresh north to northeasterly winds.	0.1	11.5	40.7	7.6	N/NE
19-Dec-14	Fri	Fine and very dry. It will be cold overnight. Fresh north to northeasterly winds.	14.3	Maintenance		7.9	N
20-Dec-14	Sat	Fine and very dry. It will be cold overnight. Fresh north to northeasterly winds.	0.2	13.8	13.8	7.3	N/NE
21-Dec-14	Sun	Mainly cloudy. Moderate northeasterly winds.	0	15.9	15.9	10	N/NE
22-Dec-14	Mon	Becoming cloudy. Rather cool overnight. Moderate east to northeasterly winds, fresh at first.	0	11.7	45.5	10.4	N/NE
23-Dec-14	Tue	Mainly cloudy. Moderate northeasterly winds.	Trace	14.2	61	7	N/NE
24-Dec-14	Wed	Cloudy. Bright intervals with some haze. Moderate northeasterly winds.	0	17.2	71	6.6	NE
25-Dec-14	Thu	Cloudy. Bright intervals with some haze. Moderate northeasterly winds.	6.7	17.1	71.7	8.5	E/SE
26-Dec-14	Fri	Cloudy. Bright intervals with some haze. Moderate northeasterly winds.	2.2	15.9	86.7	5.7	E
27-Dec-14	Sat	Fine and very dry. It will be cold overnight. Fresh north to northeasterly winds.	0.5	15.2	87.2	6.4	N/NE
28-Dec-14	Sun	Fine and very dry. It will be cold overnight. Fresh north to northeasterly winds.	3.2	13.2	80.7	7.3	N/NW
29-Dec-14	Mon	Mainly cloudy. Moderate northeasterly winds.	0	13.3	54.5	7.2	N/NW
30-Dec-14	Tue	Fine and dry. Moderate east to northeasterly winds, occasionally fresh offshore.	0	13.7	62	7.4	E/SE
31-Dec-14	Wed	Fine and dry. Moderate east to northeasterly winds, occasionally fresh offshore.	0	14.9	59.5	5	N/NE

** 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}	Corrected* Leq_{30min}
5-Dec-14	15:24	58.7	14:24	58.6	58.1	58.5	60.3	59.0	62
13-Dec-14	13:51	60.6	59.5	56.4	56.6	58.9	57.6	58.5	62
19-Dec-14	10:00	55.5	52.0	52.5	50.6	49.7	52.7	52.6	56
27-Dec-14	15:42	55.1	56.6	50.3	57.6	56.7	55.0	55.7	59
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 – AL1 (Joint Village Office for Villages in Shuen Wan, Tai Po)

Date	Start Time	1st Leq_{5min}	2nd Leq_{5min}	3rd Leq_{5min}	4th Leq_{5min}	5th Leq_{5min}	6th Leq_{5min}	Leq_{30min}	Corrected* Leq_{30min}
5-Dec-14	11:08	65.0	16:48	67.0	63.9	62.5	64.3	64.6	68
13-Dec-14	11:18	61.5	63.8	66.1	62.6	62.1	62.7	63.4	66
19-Dec-14	16:03	55.3	57.0	57.6	60.1	56.7	57.0	57.5	61
27-Dec-14	15:06	58.8	62.9	61.9	63.4	62.6	61.7	62.1	65
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 - 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-Dec-14	10:37	60.9	56.1	61.5	61.0	54.6	50.5	58.9	62
13-Dec-14	10:38	62.7	62.3	64.5	63.1	61.8	60.0	62.6	66
19-Dec-14	14:11	60.9	58.0	61.9	61.0	63.9	63.2	61.9	65
27-Dec-14	14:33	56.9	59.0	58.0	55.5	57.6	60.1	58.1	61
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-Dec-14	14:44	59.4	56.7	59.7	58.2	57.8	58.1	58.4	61
13-Dec-14	10:00	54.3	53.4	57.7	53.9	58.0	55.2	55.8	59
19-Dec-14	13:00	59.4	60.0	57.6	61.0	59.9	64.8	61.1	64
27-Dec-14	13:21	63.6	61.7	62.9	62.0	62.2	61.0	62.3	65
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-Dec-14	11:43	66.3	56.2	57.2	56.5	50.7	52.3	60.0	63
13-Dec-14	13:05	41.1	46.5	42.7	47.6	50.1	43.1	46.3	49
19-Dec-14	13:36	48.4	50.6	48.1	48.7	51.5	49.8	49.7	53
27-Dec-14	13:58	44.3	49.9	45.3	47.6	46.9	46.6	47.1	50
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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Contract No. - Drainage Improvement in Shuen Wan and Shek Wu Wai
Summary of Water Quality Monitoring Results

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	5-Dec-14												
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
W1 - ebb (impact)	11:06	0.44	19.5	19.5	8.77	8.7	98.3	97.8	4.63	4.7	7.7	7.7	<2	2.0
			19.5		8.62		97.2		4.67		7.7		<2	
W1- flood (impact)	16:44	0.50	20.3	20.3	8.39	8.5	95.7	96.0	3.85	3.8	7.8	7.8	2	2.0
			20.3		8.51		96.2		3.74		7.8		2	
W2-Edd (Impact)	11:22	0.46	21.2	21.2	6.24	6.2	82.9	81.9	7.15	7.0	7.2	7.2	13	13.0
			21.2		6.09		80.9		6.81		7.2		13	
W2-Flood (Impact)	17:51	0.53	21.7	21.7	5.53	5.5	78.6	76.9	6.18	6.3	7.4	7.4	5	5.0
			21.7		5.38		75.1		6.33		7.4		5	
W3 (control)	21:36	0.37	23.1	23.1	7.97	8.0	92.6	93.3	2.63	2.6	8.2	8.2	4	4.0
			23.1		8.07		93.9		2.56		8.2		4	
W4 (impact)	5:31	0.26	20.7	20.7	8.76	8.8	97.7	98.1	4.21	4.1	7.9	7.9	<2	2.0
			20.7		8.83		98.5		3.91		7.9		<2	

Date	9-Dec-14												
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
W1 - ebb (impact)	14:04	0.41	21.5	21.5	7.53	7.6	89.6	89.9	3.21	3.2	7.7	7.7	<2	2.0
			21.5		7.66		90.1		3.17		7.7		<2	
W1- flood (impact)	9:38	0.48	21.7	21.7	7.23	7.2	86.9	86.7	3.02	3.1	7.3	7.3	<2	2.0
			21.7		7.21		86.4		3.08		7.3		<2	
W2-Edd (Impact)	14:20	0.50	21.6	21.6	7.15	7.2	92.9	93.0	2.96	3.0	7.9	7.9	3	3.0
			21.6		7.16		93.1		3.03		7.9		3	
W2-Flood (Impact)	9:53	0.54	21.9	21.9	6.88	6.9	90.2	90.7	2.82	2.9	7.9	7.9	2	2.0
			21.9		6.94		91.1		2.89		7.9		2	
W3 (control)	14:18	0.37	21.4	21.4	7.95	8.0	89.9	90.0	3.85	3.9	8	8.0	<2	2.0
			21.4		7.96		90		3.94		7.9		<2	
W4 (impact)	14:29	0.25	21.6	21.6	7.95	8.0	90.1	90.5	4.2	4.1	7.7	7.7	<2	2.0
			21.6		8		90.8		4.03		7.7		<2	

Date	11-Dec-14												
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
W1 - ebb (impact)	14:19	0.37	20.7	20.7	7.47	7.5	84.4	84.7	2.13	2.1	7.8	7.8	2	2.0
			20.7		7.52		84.9		2.16		7.8		2	
W1- flood (impact)	12:03	0.40	20.9	20.9	7.22	7.2	81.9	81.7	1.52	1.4	7.9	7.9	2	2.0
			20.9		7.2		81.4		1.21		7.9		2	
W2-Edd (Impact)	14:33	0.31	21.3	21.3	6.13	6.2	83.7	84.2	4.78	4.8	7.4	7.4	6	6.0
			21.3		6.25		84.6		4.88		7.4		6	
W2-Flood (Impact)	11:46	0.33	21.3	21.3	5.53	5.5	76.1	75.3	2.78	2.7	7.4	7.4	6	6.0
			21.3		5.47		74.5		2.7		7.4		6	
W3 (control)	10:46	0.37	20.2	20.2	9.66	9.6	101.3	100.4	4.57	4.4	8.7	8.7	6	6.0
			20.2		9.55		99.4		4.15		8.7		6	
W4 (impact)	11:05	0.28	20.9	20.9	9.87	9.9	102.2	104.0	1.1	1.1	8.5	8.5	5	5.0
			20.9		9.99		105.7		1.07		8.5		5	

Date	13-Dec-14												
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
W1 - ebb (impact)	16:11	0.48	23.3	23.3	7.59	7.7	90.2	90.9	3.95	3.9	7.7	7.7	3	3.0
			23.3		7.78		91.5		3.81		7.7		3	
W1- flood (impact)	11:07	0.51	22.7	22.7	6.37	6.4	76.7	78.9	4.45	4.5	7.9	7.9	3	3.0
			22.7		6.49		81.1		4.5		7.9		3	
W2-Edd (Impact)	16:29	0.50	23	23.0	7.33	7.3	95.3	94.3	3.33	3.4	7.7	7.7	4	4.0
			23		7.21		93.3		3.52		7.7		4	
W2-Flood (Impact)	11:21	0.54	22.5	22.5	6.68	6.6	91.3	90.8	3.65	3.8	7.8	7.8	4	4.0
			22.5		6.58		90.3		3.87		7.8		4	
W3 (control)	11:48	0.39	22.4	22.4	8.38	8.3	96.5	95.3	4.92	5.0	8.5	8.5	5	5.0
			22.4		8.26		94.1		5.08		8.5		5	
W4 (impact)	12:03	0.28	22.1	22.1	7.47	7.4	85.7	84.9	2.95	2.9	8.6	8.6	6	6.0
			22.1		7.34		84		2.76		8.6		6	

Date	15-Dec-14												
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
W1 - ebb (impact)	18:03	0.35	21	21.0	6.9	7.0	90.2	90.4	3.89	3.8	7.7	7.7	<2	2.0
			21		7.01		90.6		3.8		7.7		<2	
W1- flood (impact)	12:36	0.41	21.4	21.4	6.58	6.5	85.1	84.3	3.64	3.7	7.6	7.6	<2	2.0
			21.4		6.38		83.5		3.66		7.6		<2	
W2-Edd (Impact)	18:14	0.28	20.9	20.9	7.01	7.0	94.1	94.3	4.15	4.1	7.8	7.8	3	3.0
			20.9		7.05		94.5		4.08		7.8		3	
W2-Flood (Impact)	12:47	0.33	21.2	21.2	6.44	6.3	95.3	94.1	3.94	4.0	7.6	7.6	3	3.0
			21.2		6.25		92.8		3.96		7.6		3	
W3 (control)	18:37	0.34	20.6	20.6	7.58	7.5	90.7	89.4	1.4	1.4	8.7	8.7	<2	2.0
			20.6		7.41		88		1.46		8.7		<2	
W4 (impact)	18:45	0.27	20.8	20.8	7.34	7.3	82.7	82.2	1.93	1.9	8.3	8.3	<2	2.0
			20.8		7.28		81.6		1.91		8.3		<2	

Date	17-Dec-14												
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
W1 - ebb (impact)	9:12	0.36	20.1	20.1	6.84	6.9	84.1	84.6	5.33	5.4	8.1	8.1	3	3.0
			20.1		6.92		85		5.42		8.1		3	

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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

Date	19-Dec-14															
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
W1 - ebb (impact)	10:38	0.45	16.6	16.6	7.05	7.1	77.6	78.4	6.44	6.5	7.6	7.6	4	4.0
			16.6		7.18		79.1		6.5		7.6		4	
W1- flood (impact)	14:51	0.48	16.4	16.4	6.54	6.5	77.8	77.3	5.05	5.1	8	8.0	3	3.0
			16.4		6.44		76.8		5.22		8		3	
W2-Edd (Impact)	10:51	0.51	16.7	16.7	6.82	6.8	79.1	78.2	9.53	9.5	7.7	7.7	5	5.0
			16.7		6.72		77.3		9.45		7.7		5	
W2-Flood (Impact)	15:16	0.53	16.6	16.6	5.9	5.8	72.8	71.7	13	13.2	8.2	8.2	6	6.0
			16.6		5.79		70.6		13.3		8.2		6	
W3 (control)	11:14	0.39	17.7	17.7	6.95	7.0	72.3	73.1	11.8	12.1	8.9	8.9	5	5.0
			17.7		7.08		73.8		12.3		8.9		5	
W4 (impact)	11:33	0.30	17.9	17.9	7.5	7.5	79.7	79.5	10.9	10.7	8.8	8.8	6	6.0
			17.9		7.43		79.3		10.4		8.8		6	

Date	22-Dec-14															
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
W1 - ebb (impact)	12:06	0.44	16.6	16.6	7.51	7.4	85.5	83.1	4.39	4.4	8.4	8.4	<2	2.0
			16.6		7.22		80.6		4.31		8.4		<2	
W1- flood (impact)	18:00	0.51	17.1	17.1	6.96	6.9	81	79.3	3.78	3.7	8.5	8.5	<2	2.0
			17.1		6.76		77.5		3.59		8.5		<2	
W2-Edd (Impact)	12:19	0.39	17.5	17.5	6.68	6.6	80.7	80.0	3.92	4.0	7.9	7.9	3	3.0
			17.5		6.59		79.3		3.99		7.9		3	
W2-Flood (Impact)	18:14	0.45	17.8	17.8	6.21	6.2	81.8	81.2	4.21	4.2	7.7	7.7	2	2.0
			17.8		6.15		80.5		4.11		7.7		2	
W3 (control)	12;37	0.36	17	17.0	7.34	7.4	78.6	79.3	2.47	2.3	8.6	8.6	<2	2.0
			17		7.44		80		2.11		8.6		<2	
W4 (impact)	12:51	0.25	16.8	16.8	7.94	7.9	85.1	84.2	2.33	2.4	8.8	8.8	<2	2.0
			16.8		7.83		83.2		2.41		8.8		<2	

Date	24-Dec-14															
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
W1 - ebb (impact)	14:21	0.41	21.7	21.7	6.82	6.8	82.4	82.0	4.03	4.0	7.7	7.7	<2	2.0
			21.7		6.74		81.6		3.87		7.7		<2	
W1- flood (impact)	9:13	0.48	21.3	21.3	6.57	6.6	78.3	78.5	3.34	3.3	7.9	7.9	<2	2.0
			21.3		6.61		78.7		3.22		7.9		<2	
W2-Edd (Impact)	14:37	0.36	21.2	21.2	6.47	6.4	84.6	83.8	4.63	4.6	7.3	7.3	3	3.0
			21.2		6.33		82.9		4.49		7.3		3	
W2-Flood (Impact)	9:25	0.42	20.8	20.8	6.13	6.1	82.2	81.6	5.05	5.1	7.5	7.5	2	2.0
			20.8		6.06		81		5.16		7.5		2	
W3 (control)	14:56	0.38	21.5	21.5	7.18	7.2	77.4	78.3	2.87	2.9	8.4	8.4	<2	2.0
			21.5		7.26		79.2		2.89		8.4		<2	
W4 (impact)	15:12	0.34	21.3	21.3	7.61	7.5	82.6	81.7	3.15	3.1	8.4	8.4	<2	2.0
			21.3		7.48		80.8		3.04		8.4		<2	

Date	27-Dec-14															
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
W1 - ebb (impact)	16:18	0.49	20.7	20.7	5.11	5.1	66.8	66.0	4.26	4.3	7.3	7.3	7	7.0
			20.7		5.08		65.2		4.37		7.3		7	
W1- flood (impact)	10:27	0.53	20	20.0	6.03	5.9	71.9	70.4	6.45	6.6	7.6	7.6	8	8.0
			20		5.83		68.8		6.84		7.6		8	
W2-Edd (Impact)	16:37	0.42	19.3	19.3	5.18	5.1	68.9	67.8	6.81	6.8	7.2	7.3	7	7.0
			19.3		5.04		66.6		6.72		7.3		7	
W2-Flood (Impact)	10:42	0.50	18.7	18.7	5.6	5.5	69	68.0	7.07	7.2	7.6	7.6	8	8.0
			18.7		5.37		67		7.23		7.6		8	
W3 (control)	16:54	0.39	20.3	20.3	7.27	7.2	81.8	80.7	5.24	5.4	8.3	8.3	<2	2.0
			20.3		7.18		79.5		5.64		8.3		<2	
W4 (impact)	17:12	0.33	21.1	21.1	7.34	7.3	82.2	81.6	2.98	2.8	8.5	8.5	<2	2.0
			21.1		7.25		81		2.55		8.5		<2	

Date	29-Dec-14															
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
W1 - ebb (impact)	17:12	0.37	20.6	20.6	6.3	6.3	69.7	69.3	4	4.0	7.6	7.6	3	3.0
			20.6		6.24		68.8		3.98		7.6		3	
W1- flood (impact)	13:33	0.41	21.3	21.3	6.34	6.4	71.4	72.0	2.71	2.7	7.9	7.9	3	3.0
			21.3		6.41		72.6		2.63		7.9		3	
W2-Edd (Impact)	17:36	0.54	20.1	20.1	7.72	7.7	86.7	86.4	4.34	4.3	7.8	7.8	4	4.0
			20.1		7.7		86.1		4.28		7.8		4	
W2-Flood	13:49	0.58	21.7	21.7	7.66	7.7	84.3	84.1	3.83	3.8	7.7	7.7	4	4.0

DSD Contract No. DC/2010/02
Contract No. - Drainage Improvement in Shuen Wan and Shek Wu Wai
Summary of Water Quality Monitoring Results

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

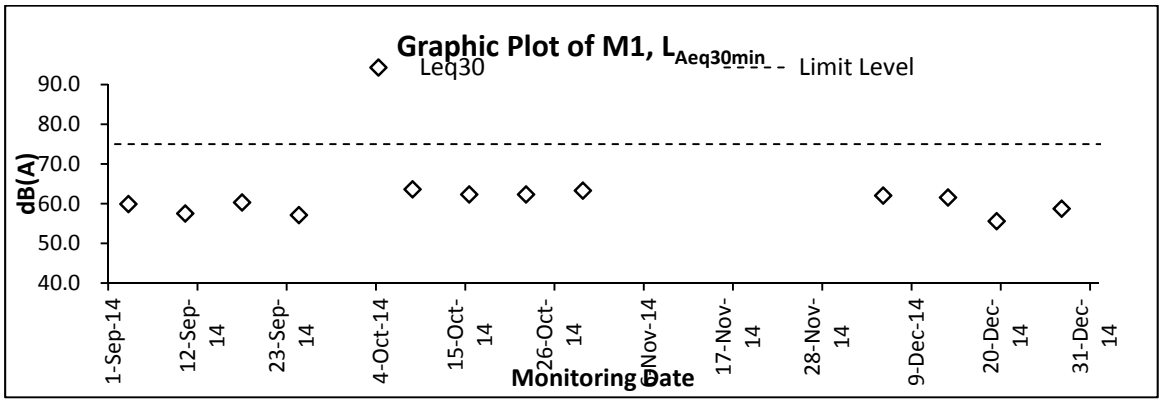
Date	31-Dec-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
(Impact)	13:49	0.38	21.7	21.7	7.64	7.7	83.8	84.1	3.8	3.8	7.7	7.7	4	4.0
W3 (control)	14:02	0.34	19.3	19.3	7.54	7.5	81.7	80.8	2.45	2.5	8.2	8.2	<2	2.0
			19.3		7.38		79.8		2.55		8.2		<2	
W4 (impact)	14:21	0.25	19.4	19.4	7.48	7.5	84.7	83.9	1.63	1.7	8.1	8.1	<2	2.0
			19.4		7.58		83		1.71		8.1		<2	

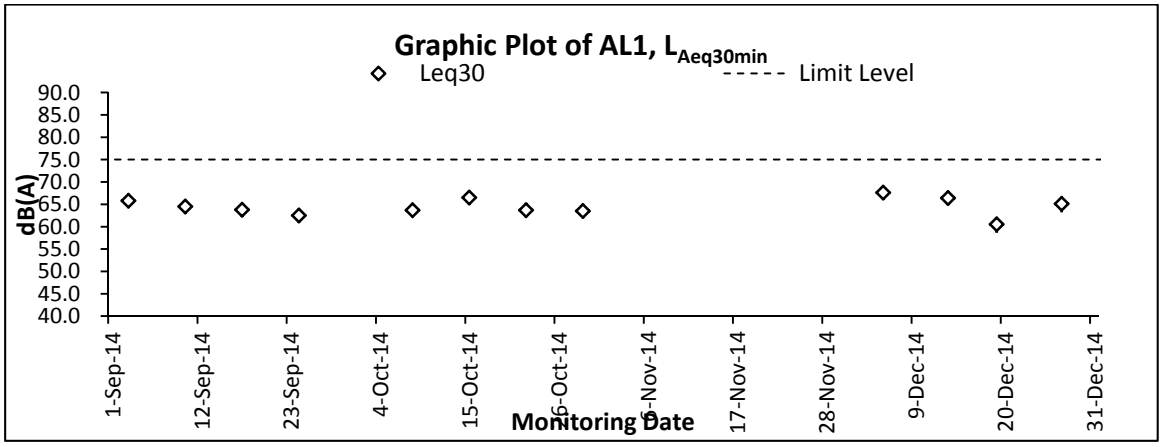
Date	31-Dec-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
W1 - ebb (impact)	9:39	0.49	21.1	21.1	7.1	7.1	83.1	82.6	4.94	4.9	7.5	7.5	3	3.0
			21.1		7.06		82		4.83		7.5		3	
W1- flood (impact)	13:50	0.44	21.8	21.8	6.69	6.6	75.9	75.1	5.11	5.1	7.7	7.7	3	3.0
			21.8		6.59		74.2		5.05		7.7		3	
W2-Edd (Impact)	9:47	0.49	20.8	20.8	6.22	6.2	71.2	71.6	6.49	6.5	7.7	7.7	9	9.0
			20.8		6.26		72		6.54		7.7		9	
W2-Flood (Impact)	14:01	0.52	21.1	21.1	6.09	6.0	68.3	67.8	6.27	6.3	7.5	7.5	8	8.0
			21.1		5.97		67.3		6.39		7.5		8	
W3 (control)	13:41	0.37	21.6	21.6	6.56	6.5	74.1	73.6	1.94	1.9	8.1	8.1	3	3.0
			21.6		6.43		73		1.88		8.1		3	
W4 (impact)	13:49	0.30	21.9	21.9	7.02	7.0	80.3	80.7	2.55	2.6	8.1	8.1	3	3.0
			21.9		7.06		81.1		2.58		8.1		3	

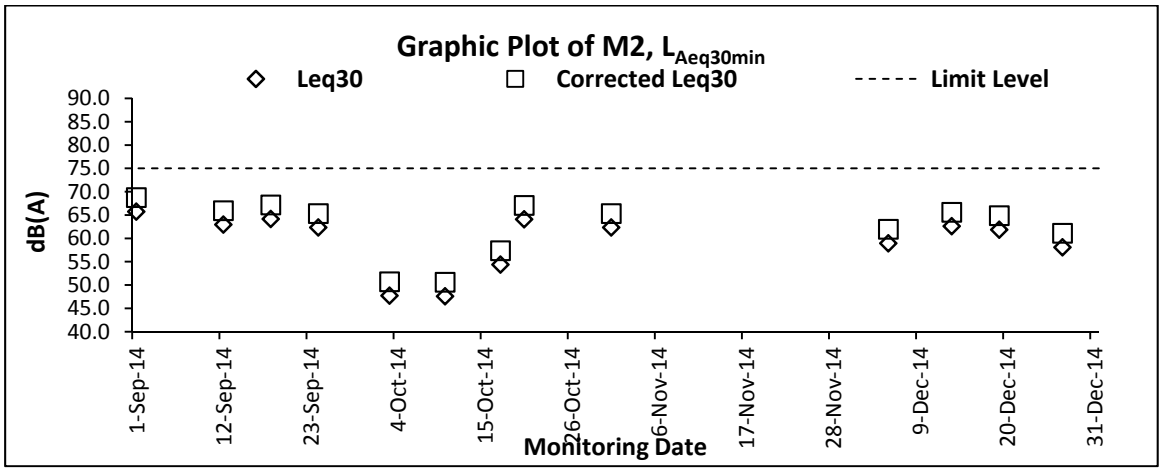
Appendix J

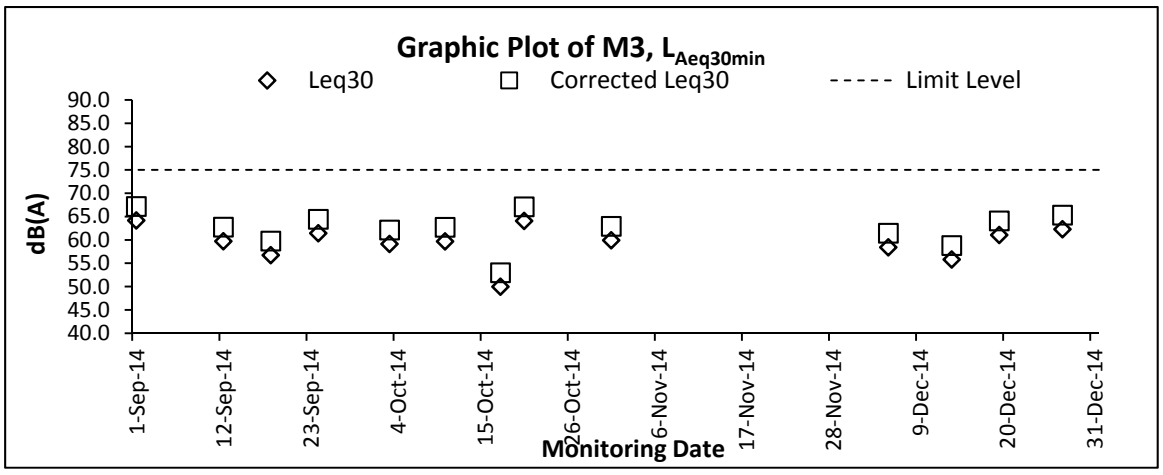
Graphical Plots of Impact Monitoring – Noise, Water Quality and Hydrological Characteristics

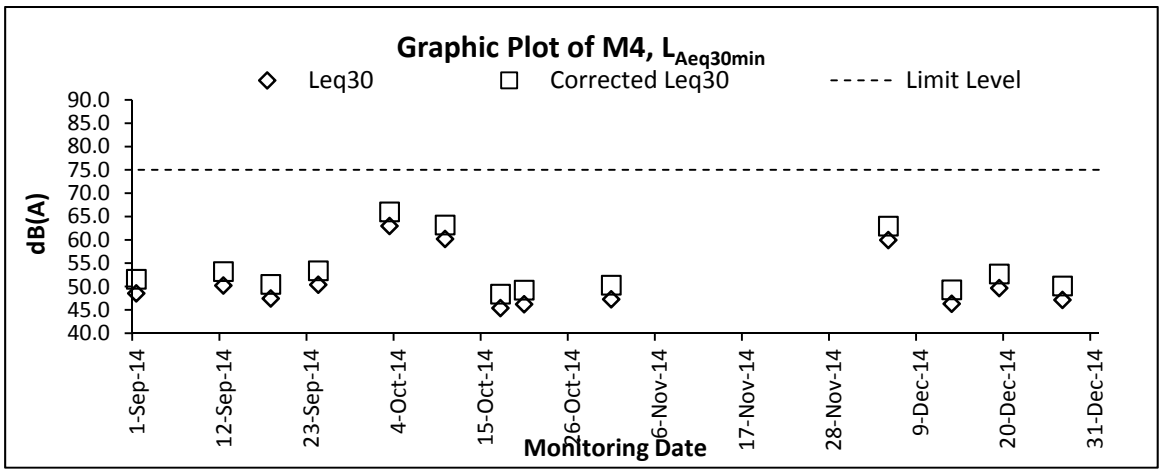
Graphic Plot – Construction Nosie



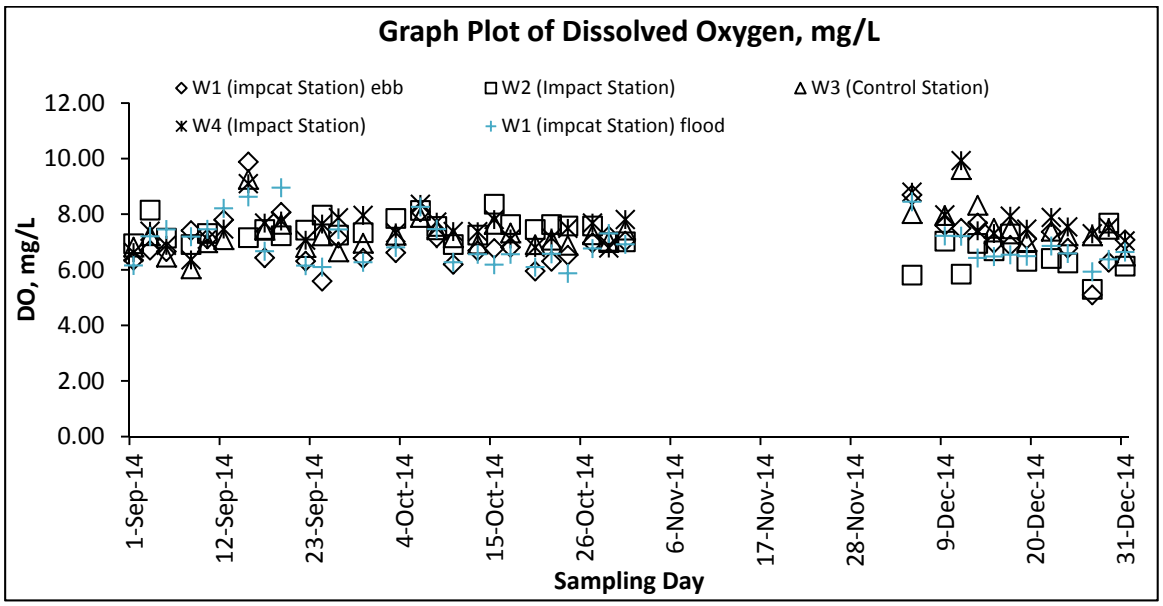


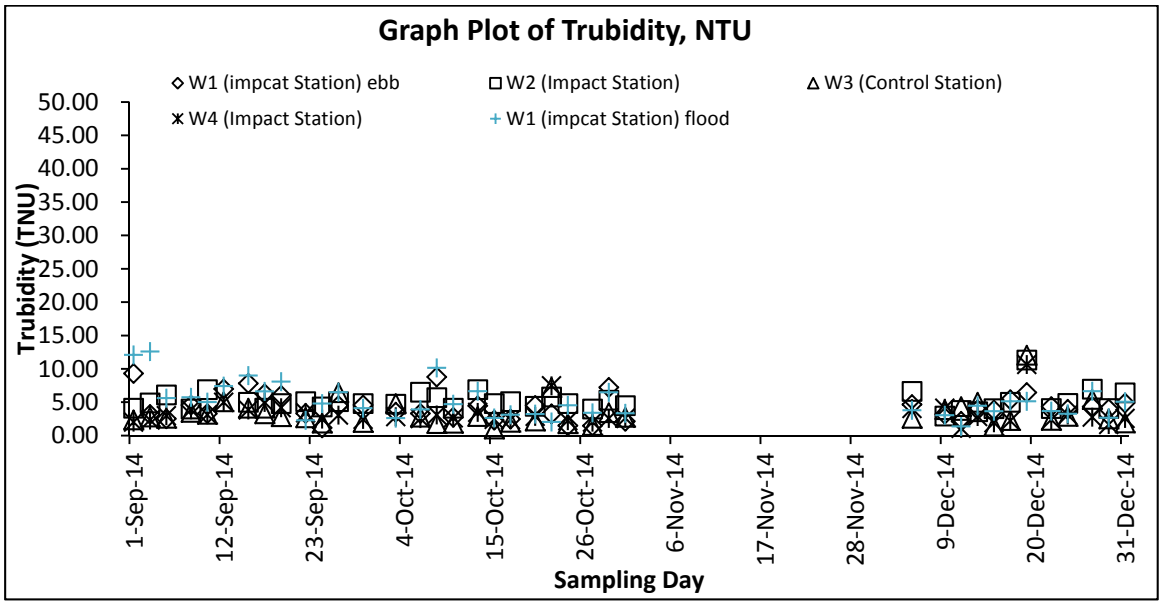


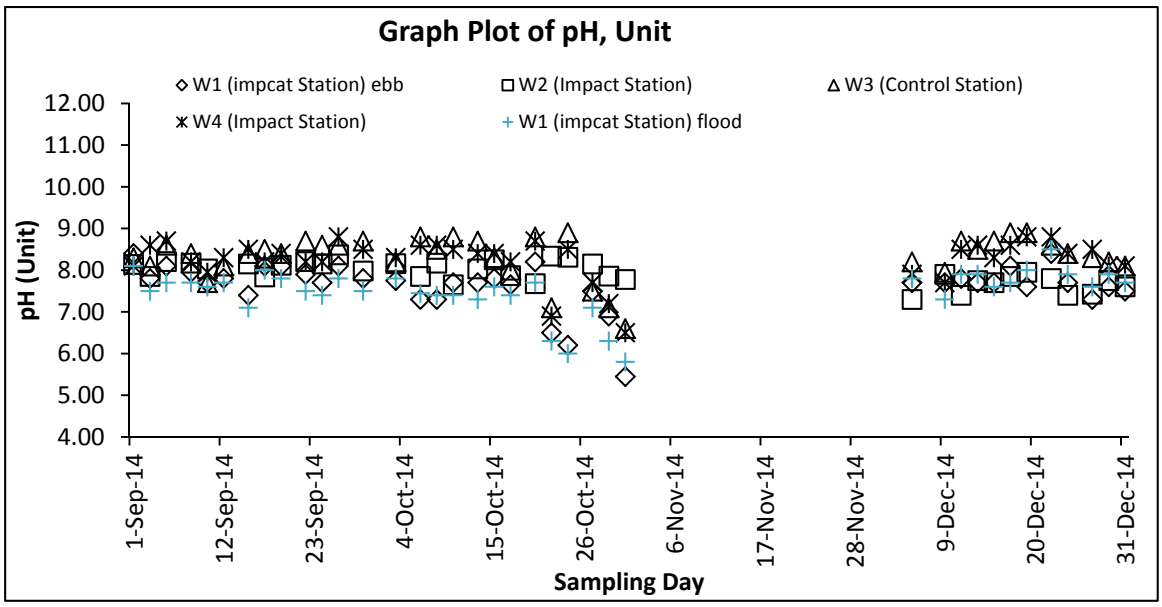

Graphic Plot of M3, $L_{Aeq30min}$
Leq30
Corrected Leq30
Limit Level
dB(A)
90.0
85.0
80.0
75.0
70.0
65.0
60.0
55.0
50.0
45.0
40.0
1-Sep-14
12-Sep-14
23-Sep-14
4-Oct-14
15-Oct-14
26-Oct-14
6-Nov-14
17-Nov-14
28-Nov-14
9-Dec-14
20-Dec-14
31-Dec-14
Monitoring Date

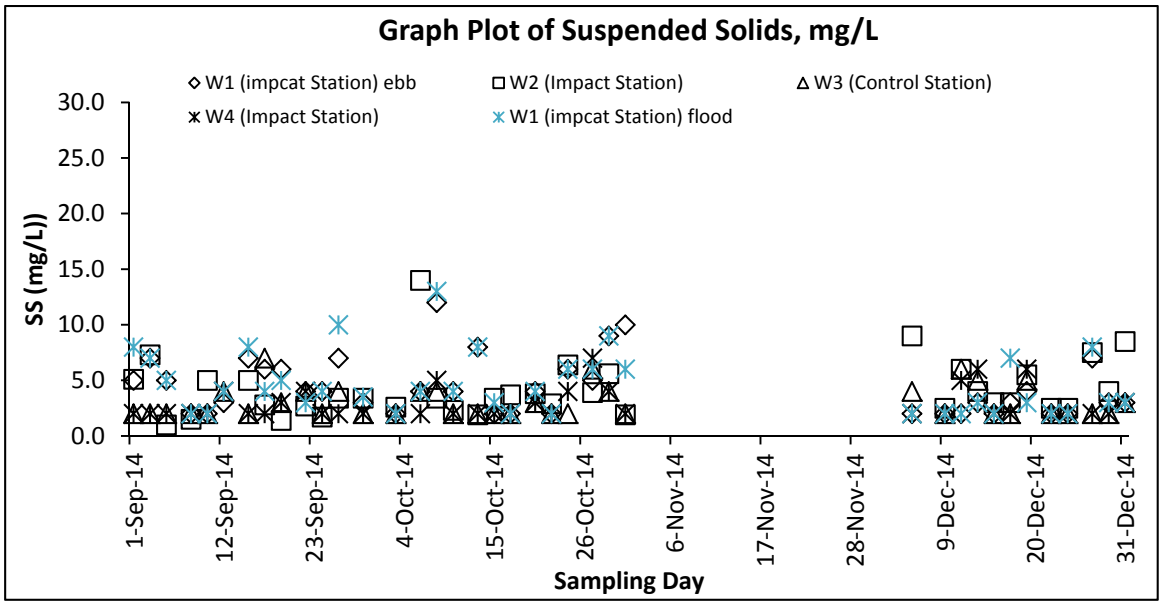

Graphic Plot of M4, $L_{Aeq30min}$
Leq30
Corrected Leq30
Limit Level
dB(A)
90.0
85.0
80.0
75.0
70.0
65.0
60.0
55.0
50.0
45.0
40.0
1-Sep-14
12-Sep-14
23-Sep-14
4-Oct-14
15-Oct-14
26-Oct-14
6-Nov-14
17-Nov-14
28-Nov-14
9-Dec-14
20-Dec-14
31-Dec-14
Monitoring Date

Graphic Plot – Water Quality

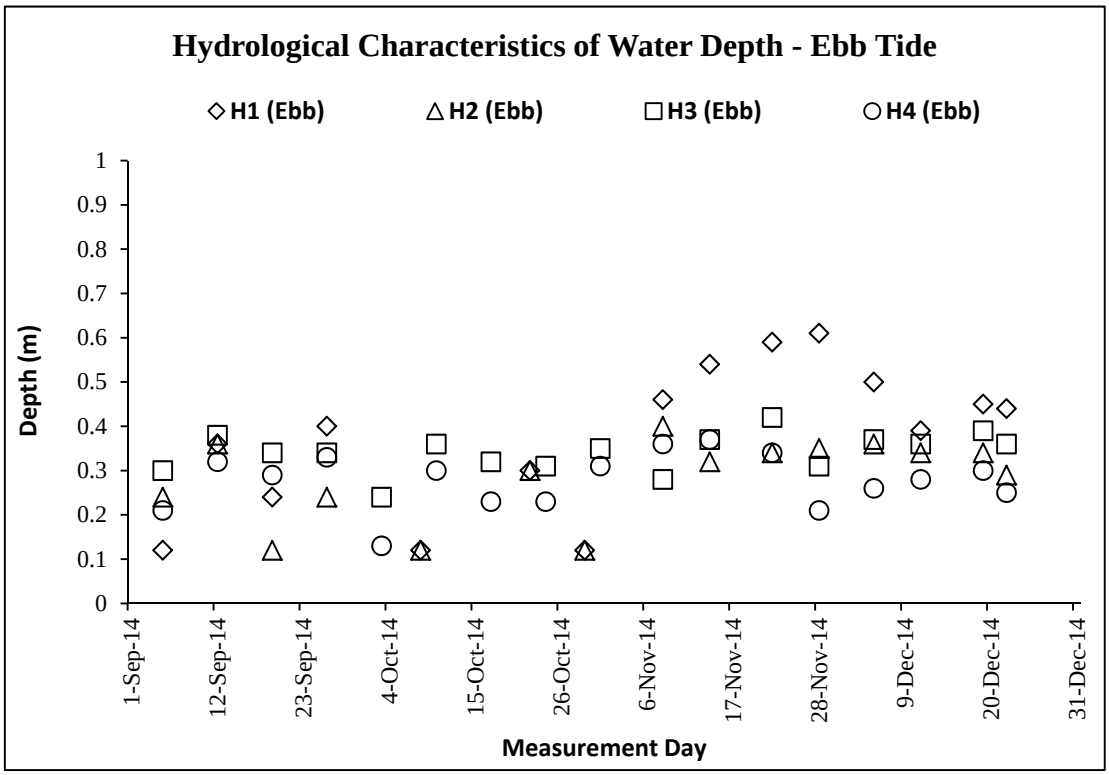


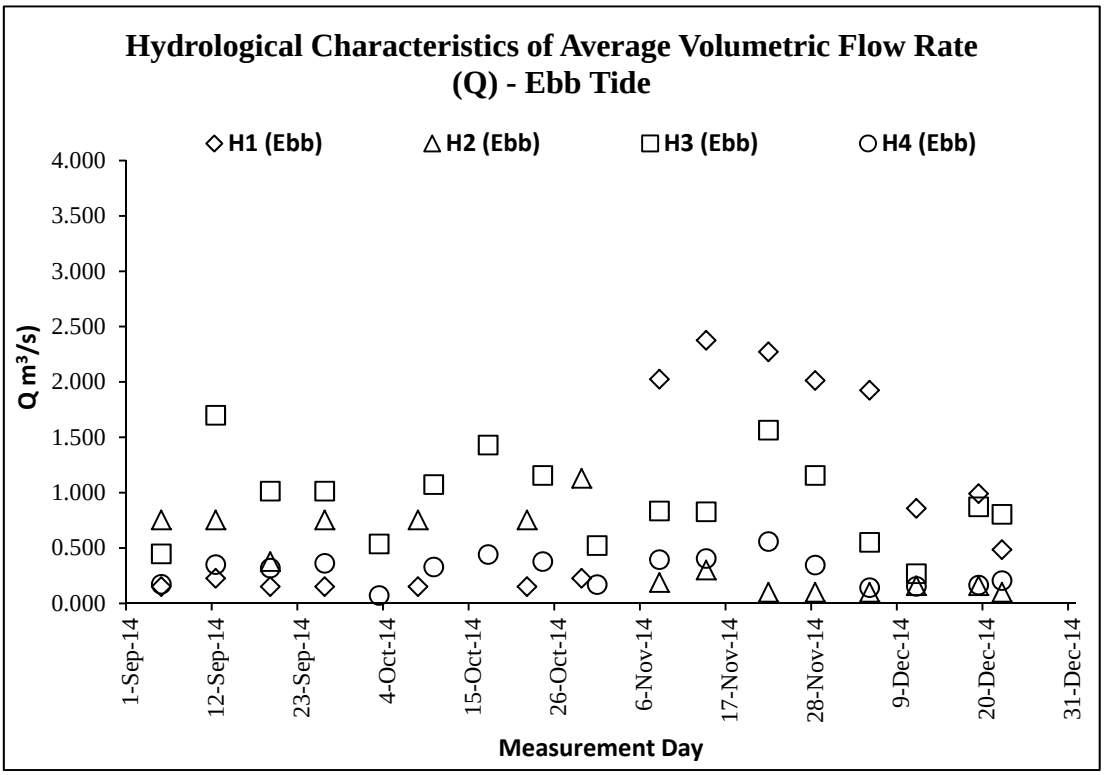



Graph Plot of pH, Unit
W1 (impcat Station) ebb
W2 (Impact Station)
W3 (Control Station)
W4 (Impact Station)
W1 (impcat Station) flood
pH (Unit)
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
1-Sep-14
12-Sep-14
23-Sep-14
4-Oct-14
15-Oct-14
26-Oct-14
6-Nov-14
17-Nov-14
28-Nov-14
9-Dec-14
20-Dec-14
31-Dec-14
Sampling Day

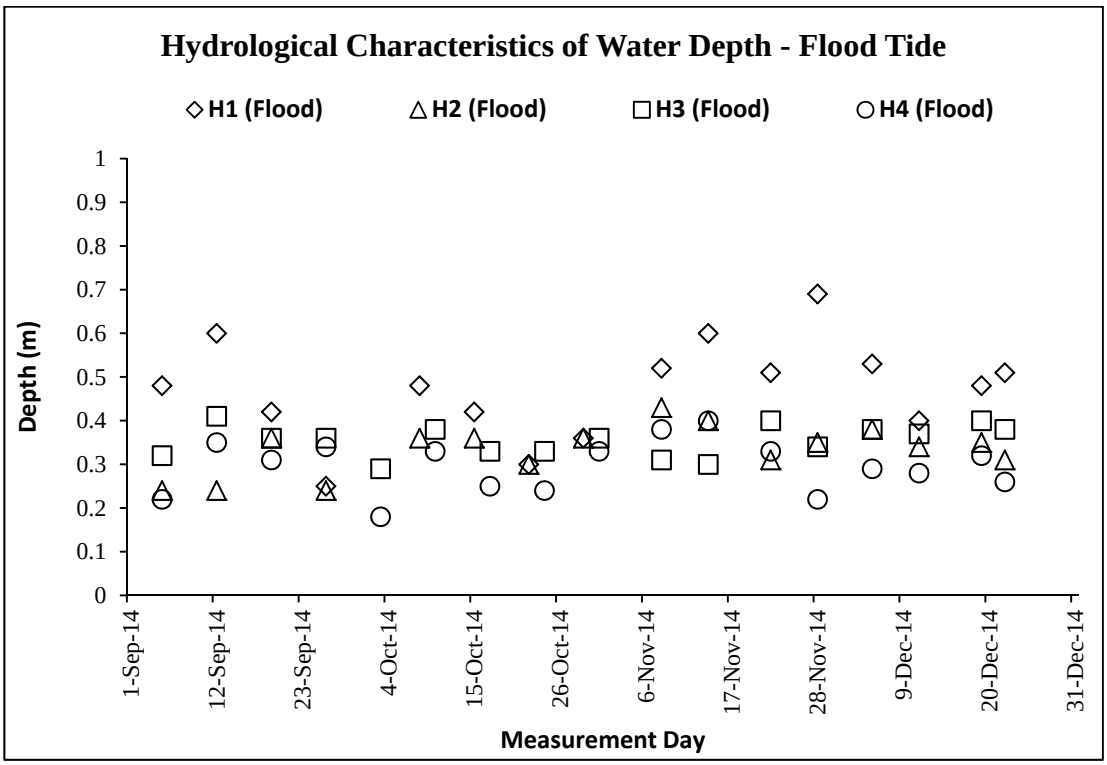

Graph Plot of Suspended Solids, mg/L
W1 (impcat Station) ebb
W2 (Impact Station)
W3 (Control Station)
W4 (Impact Station)
W1 (impcat Station) flood
SS (mg/L))
30.0
25.0
20.0
15.0
10.0
5.0
0.0
1-Sep-14
12-Sep-14
23-Sep-14
4-Oct-14
15-Oct-14
26-Oct-14
6-Nov-14
17-Nov-14
28-Nov-14
9-Dec-14
20-Dec-14
31-Dec-14
Sampling Day

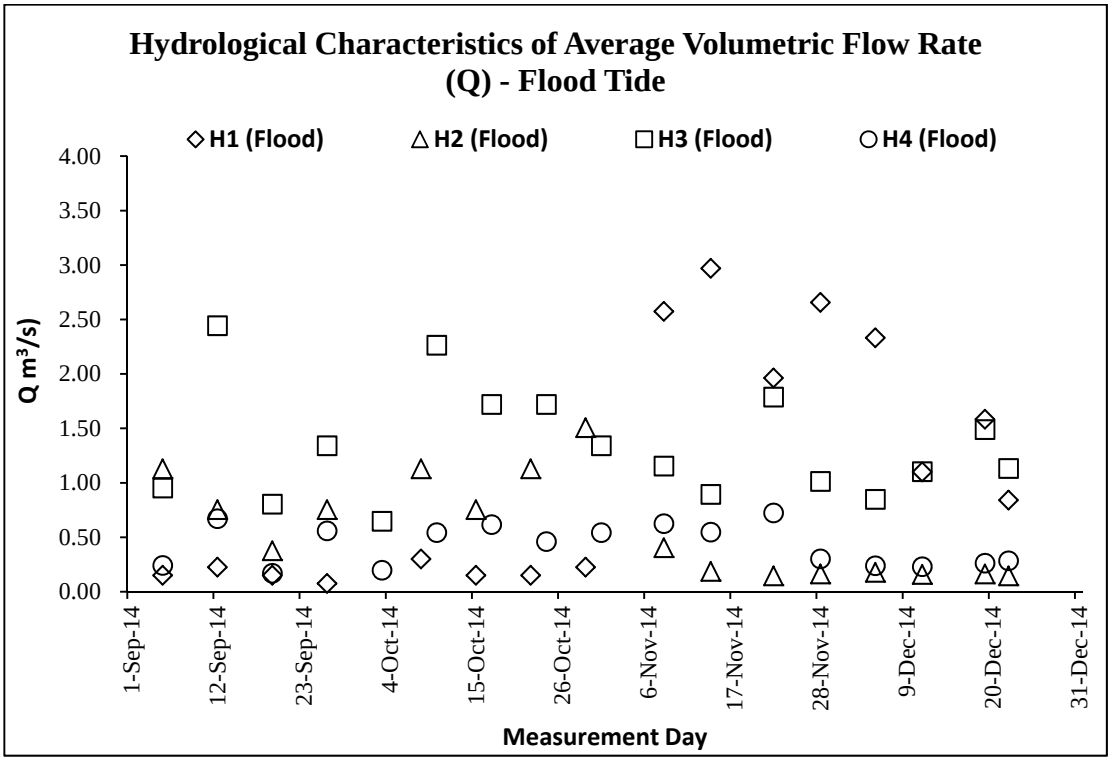
Graphic Plot – Hydrological Characteristics (Water Depth)





Graphic Plot – Hydrological Characteristics (Water Flow Rate)





Appendix K

Monthly Summary Waste Flow Table

Kwan Lee - Kuly Joint Venture
Environmental Management Plan for Contract No. DC/2010/02
Drainage Improvement Works in Shuen Wan and Shek Wu Wai

Name of Department: DSD

Monthly Summary Waste Flow Table

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'000kg)	(in'000kg)	(in'000kg)	(in'000kg)	(in'000m^3)
Jan-14	0.435	-	-	-	0.435	-	-	-	-	-	0.015
Feb-14	0.215	-	-	-	0.215	-	-	-	-	-	0
Mar-14	0.036	-	-	-	0.036	-	-	-	-	-	0
Apr-14	0.333	-	-	-	0.333	-	-	-	-	-	0
May-14	0.333	-	-	-	0.333	-	-	-	-	-	0
Jun-14	1.776				1.776						0
Jul-14	0.461				0.461						0
Aug-14	2.187				2.187						0
Sep-14	0.000				0.000						0
Oct-14	0.680				0.680						0
Nov-14											0.09
Dec-14											0.015
Total	6.456	-	-	-	6.456	-	-	-	-	-	0.12

Forecast of Total Quantities of C & D Materials to be Generated from the Contract											
	Total Quantity Generated	Hand 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'000kg)	(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 PS Clause 26.23(14).
(2) The waste flow table shall also include C & D materials that are specified in the Contract to be imported for used at the Sites.
(3) Plastics refer to plastics bottles/containers, plastic sheets/foam from packaging materials.
(4) The summary table shall be submitted to the Engineer's Representative monthly together with the Waste Flow Table for review and monitoring in accordance with the PS Clause 25.20A(4)

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 (m^3)	Actual Quantities used (m^3)	Remarks
1	Formwork for concreting	Easy handle by manpower	2	1.1	
2					
3					
4					
5					
6					
7					
		Total estimated Quantity of timber Used	2		

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

(b) The summary table shall be submitted to the Engineer's Representative monthly together with the Waste Flow Table for review and monitoring in accordance with the PS Clause 25.20A(5)

Appendix L

Landscape & Visual Inspection Report

Contract No. DC/2009/22 & DC/2010/02
Drainage Improvement Works in Shuen Wan and Shek Wu Wai
Bi-weekly Landscape & Visual Monitoring

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

Job Ref.: 09/317/161A & 09/317/161D KLKJV-SW
Date: January 2015

Contract No. DC/2009/22 & DC/2010/02
Drainage Improvement Works in Shuen Wan and Shek Wu Wai
Bi-weekly Landscape & Visual Monitoring

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

(Issue 1)

January 2015

	Name	Signature
Prepared by:	**Tracy HO**	
Reviewed by:	**Ida YU**	
Date:	**6th January 2015**	

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2 SCOPE OF MONITORING 1
3 LANDSCAPE & VISUAL MONITORING RESULTS 2
4 AUDIT SCHEDULE.....9

LIST OF APPENDICES

Appendix A – Photographs

1 INTRODUCTION

1.1.1 The Landscape and Visual Monitoring of the Project is conducted to fulfill Clauses 5.2 and 5.4 of EP-303/2008 and the monitoring requirements in accordance with Section 7 of the approved updated EM&A Manual (approved by EPD on 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. Besides, since the bi-weekly landscape & visual monitoring for Contract 1 works areas was ended in early December 2014 after the joint site inspection with EPD, which confirmed the completion of construction work within the Contract 1 works area (i.e. Areas A, B and C) on 4th December 2014, no monitoring within Contract 1 works area was conducted. However, an update of the site and tree condition within Contract 1 works area was presented under Section 3.2.

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 (December 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 11th and 23rd December 2014.

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

3.2 Update of Site and Tree Condition within Contract 1 works area

3.2.1 The last bi-weekly landscape & visual monitoring of Contract 1 works area (including Areas A, B and C) was completed on 26th November 2014. The building of pump house (Area A) and automatic mechanical penstock at Wai Ha River estuary, box culvert (Area B) and its associated drainage pipes, and the Ecological Compensatory Area (Area C) were subsequently period from 2012 to 2014. The proposed landscape planting in Contract 1 works area and reinstatement work (including the affected nursery part in Tung Tsz Nursery and planters along Ting Kok Road) were also completed in 2014. With the official handover of the Ecological Compensatory Area (16th October 2012), the pump house (early June 2014) and the affected nursery part (early December 2014) to AFCD, DSD and LCSD respectively, EPD announced the completion of construction phase of Contract 1 (Contract No. DC/2009/22) after the joint site inspection on 4th December 2014.

3.2.2 As reported in the last *Monthly EM&A Report for November 2014* and site observation in early December 2014, all landscape planting work (including planting of trees, shrubs, mangrove, groundcover and climbers, and hydroseeding) proposed in the approved Landscape Plan was completed. Daily operation of the reinstated nursery part was resumed by the Nursery Operator. The transplanted and retained trees within the nursery were handed over to the Nursery. A retained tree U50 (*Ficus elastica*) located within Tung Tsz Nursery was removed by the nursery workers in December 2014.

3.2.3 As confirmed by the EPD, the construction phase of Contract 1 (DC/2009/22) was completed and the Operational Phase has commenced in December 2014. Landscape & Visual monitoring during the Operational Phase will be conducted on quarterly basis.

3.3 Visual Screen

3.3.1 No follow-up action by the Contractor is required as from the *Monthly EM&A Report for December 2014*. The recommendations listed in Report for November 2014 are reminders for good site practices to be implemented by the Contractor throughout the construction phase.

Observation

3.3.2 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 temporary hoardings lined along the construction site along the access road from Tung Tsz Road towards Treasure Spot Garden II were removed in December 2014, and only minor civil work has been left on-site. **Photos 1-2** show the views of the erected hoardings along the works area under Contract 2.

3.3.3 Almost all construction works for building the box culverts in the works area along Tung Tsz Road opposite to Wai Ha, next to Wai Ha River and next to the rehabilitation wetland have been completed **(Photos 3-5)**, leaving minor civil work continued along the path leading from Tung Tsz Road to Treasure Spot Garden II, and excavation work and building a refuse collection point opposite to Wai Ha area (**Photos 6-7**). Hydroseeding was applied in the works area along Tung Tsz Road, and planting of compensatory trees was completed in October 2014 **(Photos 8-9)**.

3.3.4 The temporary parking area was still maintained at the end of the access path to Treasure Spot Garden Phase II **(Photo 10)**. The untagged leaning tree was still guyed at the edge of the area within a Tree Protection Zone (TPZ) **(Photo 11)**.

3.3.5 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 as requested by the villagers during the works at the entrance of the Treasure Spot Garden.

3.3.6 Construction works have been stopped at the end of the Treasure Spot Garden II near the retained tree T103. The temporary construction barriers and chain-link fence next to T103 were removed in December 2014 **(Photo 12)**.

3.3.7 As reported in the previous submitted Monthly EM&A Reports, 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 13)**. The area was still surrounded by chain-link fence and a sign on the

gate stated that it was a private land. This area was not fenced by the construction works related to the current project as reported by the Contractor.

3.3.8 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

3.3.9 No specific recommendation is required in regard to the observations made in December 2014. 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 throughout the construction phase.

3.3.10 For good site practices, 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 throughout the construction phase. 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. The Contractor is also recommended to check the condition of the temporary construction barriers surrounding the works areas, and replace the broken barriers with new barriers.

3.4 Contaminant/ Sediment Control

3.4.1 No follow-up action by the Contractor is required as from the *Monthly EM&A Report for November 2014*. The recommendations listed in Report for November 2014 are reminders for good site practices to be implemented by the Contractor throughout the construction phase.

Observation

3.4.2 Major construction works in Contract 2 works area were completed in October 2014, leaving minor civil works in areas close to Treasure Spot Garden II and some next to Wai Ha. No used water was released from the works area next to Wai Ha River. The river water was clear **(Photos 14-16)**. No water from the nearby box culvert and the works area opposite to Wai Ha was released to the area near the expanded works area next to the previous collapsed tree T190 (*Ficus hispida*).

Recommendations

3.4.3 For good site practice, the Contractor is suggested to conduct regular checking 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.

3.4.4 If any construction works were resumed, 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.

3.5 Pollution Control

3.5.1 No follow-up action by the Contractor is required as from the *Monthly EM&A Report for November 2014*. The recommendations listed in Report for November 2014 are reminders for good site practices to be implemented by the Contractor throughout the construction phase.

Observation

3.5.2 Major construction works in Contract 2 works area were completed, leaving minor civil works conducted in area near Treasure Spot Garden II and some next to Wai Ha. No used water has been released from the works area nearby Wai Ha River. The river water was clear **(Photos 14-15)**. No direct water discharge into the upper stream of Wai Ha River was observed as all major construction works in Contract 2 works area have been completed **(Photo 16)**.

Recommendations

3.5.3 For good site practice, the Contractor should prevent any contaminant and sediment 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 throughout the construction phase. 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.

3.5.4 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.

3.6 Liaison with Nursery

3.6.1 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.

3.7 Existing Trees within Works Areas

3.7.1 Individual trees retained within the active works area have been protected within TPZs. The protection measures (such as the establishment of TPZs) generally follow the recommendations stated in the *Monthly EM&A Report for November 2014*. Particular observations are highlighted in the following paragraphs.

Observation

3.7.2 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 and their canopies have been naturally covered by invasive climbers spreading from the adjacent natural habitats outside the project boundary.

3.7.3 As stated in Section 3.3, 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 **(Photo 10)**.

3.7.4 As reported in the submitted Reports, the retained trees T167 (*Litsea monopetala*) and T168 (*Celtis sinensis*) were topped after the vegetation clearance in the surrounding works area in November 2013. Both of them have been monitored since the topping incident, and both were in fairly poor health condition with vigorous development of epicormics along trunks or branches **(Photo 17)**, forming the tree canopies.

3.7.5 Temporary storage of construction materials close to the trunk flares of T093 and T094 (both *Litsea cubeba*) was removed in June 2014 in accordance with the recommendation listed in the submitted *Monthly EM&A Reports*. The previously discharged cement mortar on the soil has been covered by ground vegetation. The tree health of T093 has been declining since June 2014. No foliage has been observed on the main tree canopy since October 2014, and the previously developed watersprouts found on the tree trunk were dead. Cracked tree bark was noted along the tree trunk and branches of one co-dominant trunk of T093, with sign of termite infestation noted along the lower tree trunk of this co-dominant trunk (**Photos 18-19**). The Contractor has not yet removed one of the hazardous tree trunk and its canopy in December 2014. The relatively healthy co-dominant trunk of T093 pointing towards the forested area was still remained. The Contractor is advised to remove the hazardous tree trunk in January 2015.

3.7.6 Construction works at the end of the Treasure Spot Garden have been stopped since July 2014 and minor civil work may be resumed in the coming months based on the information from the Contractor. As observed in December 2014, no additional piling of excavated soil and rocks was observed around the trunk flare of T103. Rocks were lined around the remaining root ball of T103 (**Photo 20-21**). The climbers overhanging on the tree canopy and a branch of T103 were removed and pruned. As confirmed by the Contractor, these were conducted by a third party not related to the current project.

3.7.7 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 had been temporarily guyed by strings so as to provide additional support to the tree until September 2014. The tree was quite stable at its location and it was in fair health condition as observed in December 2014 **(Photo 22)**.

3.7.8 Concrete pavement, which was applied for additional parking area for the villagers, was still observed close to the root flare of the tree group T089-091, and the trees were in fair condition **(Photo 23)**.

3.7.9 Excavation work was previously noted between T153 and T155. No further excavation work around these two trees was noted after April 2014. Both trees were stable when inspected in December 2014 and the surrounding soil ground has been subsequently covered by herbaceous vegetation **(Photo 24)**.

3.7.10 Excavation work was noted close to the tree group T181-T183 in May 2014 and further planting of ornamental plants on the raised soil ground within this tree group was noted in December 2014 **(Photo 25)**. According to the information by the Contractor, such excavation work and the recent planting around the tree group were conducted by a third party to extend and decorate the access path adjacent to these trees. Excavated soil was noted piling around their trunk flares, while the orange construction nets protecting the three trees were

also removed by the third party before. These trees have been surrounded by some stones to demarcate the tree group area since May 2014 **(Photo 26)**.

3.7.11 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 previously conducted by a party other than the Contractor of this Project. Such observation was reported in the submitted reports.

3.7.12 At the junction of Tung Tsz Road and Tung Tsz Shan Road, the tree trunk from the tree group of T085-T087 was partly uprooted and significantly leaned towards Wai Ha River **(Photos 27-28)**. The Contractor was contacted for immediate removal of the leaning tree part. The Contractor reported that its tree roots are in close contact with the underground high-voltage cables and there is a safety concern when removing the leaning tree part. As the leaning tree part is pointing towards Wai Ha River where no target is noted within the tree fall zone, removal of the leaning tree trunk will not be performed but routine monitoring of its stability will be continued.

3.7.13 All compensatory trees were planted in October 2014 **(Photos 8-9)**, leaving replacement of individual trees of poor condition to be conducted in the wet season. Some individuals of the planted tree species of *Litsea glutinosa* and *Sapium sebiferum* showed transplantation stock. In addition, a number of compensatory trees were either collapsed or even with broken tree trunks **(Photos 29-30)**. These collapsed or broken trees were planted opposite to San Tau Kok and entrance of the access path leading to Treasure Spot Garden II. These trees of poor growth and structural condition may be due to individual poor quality of tree trunks or comparatively small root balls that could not support the trees well. Among these collapsed or uprooted trees found opposite to Treasure Spot Garden II, some of them (including *Sapium sebiferum* and *Hibiscus tiliaceus*) were inundated with tidal water in which their root balls were very wet and muddy during the inspection **(Photo 31).** The underground roots and overall tree health condition would be affected if the trees are inundated periodically during their establishment period. Besides, some bamboo stakes used to support the compensatory trees were not stable or not tied appropriately (**Photo 32**).

3.7.14 As observed on 11th December 2014, mangroves *Kandelia obovata* and *Aegiceras corniculatum* were planted along the sloping area facing Shuen Wan Marsh in the locations proposed in the approved Landscape Plan (**Photo 33**).

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

3.7.16 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. PH01 has remained in satisfactory condition **(Photo 34)**. The previously cut PH03 (cut during grass cutting by a third party who maintain the ECA) was cut again in November 2014 and no significant resprout was noted in December 2014 **(Photo 35)**.

Recommendations

3.7.17 Within the active works area, maintenance of TPZs for the retained trees and recently planted compensatory trees should be maintained. Trunk bases of all retained trees and planted compensatory 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, while all planted compensatory trees

should be watered regularly by the appointed landscape contractor (e.g. at least three times per week during dry season). 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.

3.7.18 Apart from the routine irrigation of the planted compensatory trees, the Contractor should request the appointed landscape contractor to regularly check the stability and condition of the bamboo stakes during each irrigation activity. Trees of poor quality should be replaced with heavy standard trees by following the standard quality as stipulated in Annex 4 of the approved Landscape Plan. However, for the trees which were affected by tidal water, the Contractor needs to reconsider planting these trees to the areas where will not be influenced by the tide.

3.7.19 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.

3.7.20 Though the retained tree T103 was stable in structural condition as inspected in December 2014, the Contractor should have close monitoring of the stability and health condition of this tree.

3.7.21 With regard to the previous tree topping incident on the retained trees (such as T088, T089, T167 and T168), as well as T118 and T093 in which the construction work was undertaken close to the tree trunks or other tree parts as reported previously, and potentially damage the tree roots, the Contractor is reminded 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. These routine tree inspection and site maintenance should be carried out throughout the construction phase.

3.7.22 Tree topping (like the case for T025, T167 and T168 reported previously) 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 previous removal of the guying in October 2014. 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. Any coming civil 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.

3.7.23 With regard to poor health and structural condition of a tree T093 and its tree fall zone may influence the public using the access path leading to Treasure Spot Garden II, the Contractor is recommended to remove the whole hazardous co-dominant trunk and its canopy of T093 as soon as possible (by end of January 2015) so as to remove the risk of whole tree failure

influencing the targets. As informed by the Contractor, this tree part would be removed in early December 2014.

3.7.24 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 maintain the tree protection measures and establish a warning sign to remind the driver to beware of the presence of tree within the tree protection zone. The health and stability of the tree should also be monitored by the Contractor regularly throughout the construction phase.

3.7.25 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, two untagged trees as observed in May 2014 and pruning work on T103 in December 2014, the Contractor should have close inspection of the stability and health condition of these trees. In addition, for the previous 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.

3.8 Construction Light

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

Observation

3.8.2 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

3.8.3 No specific recommendation is required.

4 AUDIT SCHEDULE

4.1.1 The next bi-weekly Landscape & Visual Monitoring in January 2015 is scheduled to be conducted in the weeks of 5th and 19th January 2015.

Appendix A

Photographs

	
Photo 1 – Temporary hoardings have been erected along Tung Tsz Road opposite to Wai Ha.	**Photo 2** – Temporary hoardings along the access road from Tung Tsz Road to Treasure Spot Garden II were removed in December 2014.
	
Photo 3 – All construction works along Wai Ha River were completed.	**Photo 4** – Close-up view of the built drainage structure opposite to Wai Ha.
	
Photo 5 – No construction work was conducted in an extensive area opposite to Treasure Spot Garden II, and the area was naturally vegetated with grass and a tidal pond was maintained.	**Photo 6** – Minor civil work was continued along the access path leading from Tung Tsz Road to Treasure Spot Garden II.

Photo 7 – Minor civil work was conducted for building a refuse collection point opposite to Wai Ha area.

Photo 8 – Compensatory trees were planted in area opposite to Treasure Spot Garden II.

Photo 9 – Compensatory trees were planted in area opposite to Wai Ha.

Photo 10 – Temporary parking area has still been maintained at the end of the access path to Treasure Spot Garden Phase II.

Photo 11 – The untagged tree (indicated by Red arrow) was guyed at the edge of the parking area within a Tree Protection Zone.

Photo 12 – The temporary construction barriers and chain-link fence next to T103 were removed in December 2014.

	
Photo 13 – A fenced area has been seen on the field next to the construction site along the access to Treasure Spot Garden II since March 2014.	**Photo 14 -** The river water was clear in the upper stream section of Wai Ha River.
	
Photo 15 – The river water along the middle section of Wai Ha River was clear.	**Photo 16** – No direct water discharge into the upper stream of Wai Ha River was observed.
	
Photo 17 – Topped trees T167 (indicated by Red arrow) and T168 (indicated by Blue arrow) were in poor health condition with vigorous development of epicormics to form canopies.	**Photo 18** – Co-dominant trunk of T093 (indicated by Red arrow) was in poor condition, with cracked tree bark and sign of termite infestation.

Photo 19 – Close up view of the co-dominant tree trunk of T093 with cracked tree park.

Photo 20 – Branches (indicated by Red arrow) on the retained T103 were pruned by a third party.

Photo 21 – Rocks were lined around the remaining root ball of T103.

Photo 22 – The guying on the retained tree T025 was removed after mid-October 2014, and the tree was in fair condition.

Photo 23 – Concrete pavement maintained for parking area for the villagers was still observed around the tree group T089-T091.

Photo 24 – The soil ground surrounding T153 and T155 has been subsequently covered by herbaceous vegetation.

	
Photo 25 – Planting of ornamental plants was noted on the raised soil ground within the tree group of T181-T183 by a third party.	**Photo 26** – Excavation work was noted very close to the tree group T181-T183 in May 2014. These trees have been surrounded by some stones to demarcate the tree group area by the villagers.
	
Photo 27 – An uprooted tree trunk was noted in the tree group of T085-T087.	**Photo 28** – The uprooted tree trunk leaned severely towards Wai Ha River.
	
Photo 29 – A compensatory tree with broken tree trunk was noted.	**Photo 30** – Some compensatory trees were uprooted and collapsed in an area opposite to Treasure Spot Garden II.

Photo 31 – Some compensatory trees were inundated with tidal water.

Photo 32 – Bamboo stakes used to support the compensatory trees were not stable or noted tied appropriately.

Photo 33 – Mangroves were planted along the sloping area facing Shuen Wan Marsh.

Photo 34 – The transplanted shrub of *Pavetta hongkongensis* (PH01) in Area C under Contract 1 has remained in satisfactory condition.

Photo 35 – The transplanted shrub of *Pavetta hongkongensis* (PH03) was cut by the third party during the recent grass cutting work within Area C. No resprout on the cut specimen was noted.

Appendix M

Ecological Monitoring Report

(Not Used)