PROJECT NO.: TCS/00512/09

DSD CONTRACT NO. DC/2009/13
CONSTRUCTION OF SEWAGE TREATMENT WORKS AT YUNG SHUE WAN AND SOK KWU WAN

YUNG SHUE WAN PORTION AREA
MONTHLY ENVIRONMENTAL MONITORING AND AUDIT (EM&A) REPORT (NO.18) – FEBRUARY 2012

PREPARED FOR
LEADER CIVIL ENGINEERING CORPORATION LIMITED

Quality Index

Date	Reference No.	Prepared By	Approved By
13 March 2012	TCS00512/09/600/R0441v2		
		Nicola Hon Environmental Consultant	T.W. Tam Environmental Team Leader

Version	Date	Description
1	7 March 2012	First Submission
2	13 March 2012	Amended against IEC's comments on 8 March 2012

Scott Wilson CDM Joint Venture

Chief Engineer/Harbour Area Treatment Scheme
Drainage Services Department
5/F Western Magistracy
2A Pok Fu Lam Road
Hong Kong

Your reference:

Our reference: 05117/6/16/386864

Date: 14 March 2012

BY FAX AND EMAIL

Attention: Mr. Kenley C K Kwok

Dear Sirs,

Contract No. DC/2009/13
Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwu Wan
Yung Shue Wan Portion Area
Monthly Environmental Monitoring and Audit (EM&A) Report No. 18 (February 2012)

We refer to the Monthly EM&A Monitoring Report No. 18 for February 2012 received under cover of the email from the Environmental Team, Action-United Environmental Services and Consulting (AUES), dated on 13 March 2012. We have no comment and have verified the captioned report.

Yours faithfully
SCOTT WILSON CDM JOINT VENTURE

Rodney Ip
Independent Environmental Checker

ICWR/SYSL/ecwc

cc Leader Civil Engineering (Attn: Mr Vincent Chan)
AUES (Attn: Mr T.W. Tam)
ER/LAMMA (Attn: Mr Neil Wong)
CDM (Attn: Mr Mark Sin)

EXECUTIVE SUMMARY

ES.01. This is the **18th** monthly Environmental Monitoring and Audit (EM&A) for Yung Shue Wan (hereinafter 'this Report') for the designated works under Environmental Permit [EP-282/2007], covering a period from **1 to 29 February 2012** (hereinafter 'the Reporting Period').

ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

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

Issues	Environmental Monitoring Parameters / Inspection	Occasions
Air Quality	1-hour TSP	10
	24-hour TSP	8
Construction Noise	Leq (30min) Daytime	4
Water Quality	Marine Water Sampling	2
Ecology	Coral Monitoring	0
Inspection / Audit	ET Regular Environmental Site Inspection	4

ES.03. There were 2 events of power failure of high volume sampler were occurred during 24-hour TSP monitoring on 8 February 2012. The incident has been reported to relevant parties on the next day and the provision of power supply was rectified by the Contractor on 13 February 2012 and resumed as scheduling on 14 February.

ES.04. According to the construction information provided by the Contractor, the marine works in Yung Shue Wan has been ceased since 19 January 2012. As agreed by the IEC and RE, the marine water quality and ecology monitoring was suspended from 6 February 2012 until further notice of the commencement of dredging works which tentatively scheduled on 10 April 2012. The relevant letter ref.: TCS00512/10/300/L0425 has been submitted to EPD on 3 February 2012.

BREACH OF ACTION AND LIMIT (A/L) LEVELS

ES.05. No exceedance in construction noise, air quality and water quality monitoring were recorded in this Reporting Period. The statistics of environmental exceedance, NOE issued and investigation of exceedance are summarized in the following table.

Environmental Issues	Monitoring Parameters	Action Level	Limit Level	Event & Action		
				NOE Issued	Investigation	Corrective Actions
Air Quality	1-hour TSP	0	0	0	--	--
	24-hour TSP	0	0	0	--	--
Construction Noise	$L_{eq30min}$ Daytime	0	0	0	--	--
Water Quality	DO	0	0	0	--	--
	Turbidity	0	0	0	--	--
	SS	0	0	0	--	--
Ecology (Coral)	Sediment Cover (%)	-	-	-	--	--
	Bleaching (%)	-	-	-	--	--
	Mortality (%)	-	-	-	--	--

Note: NOE – Notification of Exceedance

ENVIRONMENTAL COMPLAINT, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES.06. No written or verbal complaint, environmental summons or successful prosecutions were recorded in this Reporting Period.

REPORTING CHANGE

ES.07. As agreed by the IEC and RE, the marine water quality and ecology monitoring was suspended from 6 February 2012 until further notice of the commencement of dredging works which tentatively scheduled on 10 April 2012.

SITE INSPECTION BY EXTERNAL PARTIES

ES.08. No site inspection was undertaken by external parties i.e. Environmental Protection Department (EPD) or Agriculture, Fisheries and Conservation Department (AFCD) within the Reporting Period.

FUTURE KEY ISSUES

ES.09. As wet season is approaching, the Contractor shall pay attention on the potential water impact as the construction site is adjacent to the coastline. Muddy water and other water quality pollutants via site surface water runoff into the coral zones of Yung Shue Wan seawall, Shek Kok Tsui and O Tsai should be avoided. Mitigation measures for water quality should be fully implemented.

ES.10. Moreover, the construction dust mitigation measures identified at the EM&A Manuel such as watering at haul road and covering of dusty material should also be implemented and properly maintained during wet season.

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1 INTRODUCTION

PROJECT BACKGROUND

1.01 The Leader Civil Engineering Corporation Limited (Leader) has been awarded the *Contract DC/2009/13 - Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwu Wan* (the Project) by the Drainage Services Department (DSD) on 4 May 2010. The Project is part of an overall plan approved under a statutory EIA for Outlying Islands Sewerage Stage 1 Phase 2 Package J – Sok Kwu Wan Sewage Collection and Treatment (Register No. AEIAR-075/2003) and Disposal Facilities and Outlying Islands Sewerage Stage 1 Phase 1 Package C – Yung Shue Wan Sewage Treatment Works and Outfall (Register No. EIA-124/BC). The Environmental Permit (EP) No. EP-281/2007 and EP-282/2007 for the Project have been obtained by the DSD on 29 June 2007 for the relevant works. After July 2009, EP-281/2007/A stead EP-281/2007 is EP for Sok Kwu Wan relevant Works.

1.02 The Project involves construction of sewage treatment works at Sok Kwu Wan and Yung Shue Wan with a capacity of 1,430m^3/day and 2,850m^3/day respectively to provide secondary treatment, construction of 2 pumping stations at Sok Kwu Wan and 1 pumping station at Yung Shue Wan, construction of submarine outfall from the coastline and lying of underground sewerage pipeline. The site layout plan for the captioned work under the Project is showing in ***Appendix A***

1.03 According to the Particular Specification (PS) and ***Appendix 25*** of the Project, Leader should establish an Environmental Team (ET) to implement the environmental monitoring and auditing works to fulfill the requirements as stipulated in the EM&A Manual. This EM&A Manual is referred to the Appendix D of the Review Report on EIA Study – Yung Shue Wan (Final) in January 2007 (Agreement No. CE 20/2005(DS)).

1.04 Action-United Environmental Services and Consulting (AUES) has been commissioned by Leader as the ET to implement the relevant EM&A programme. Organization chart of the Environmental Team for the Project is shown in ***Appendix B***. For ease of reporting, the proposed EM&A programme for baseline and impact monitoring is spilt to following two stand-alone parts:

(a) Proposed EM&A Programme for Baseline and Impact Monitoring – Sok Kwu Wan (under EP No. 281/2007/A varied on 23 September 2009)

(b) Proposed EM&A Programme for Baseline and Impact Monitoring – Yung Shue Wan (under EP No. 282/2007)

1.05 This is the **18th** monthly EM&A Report for Yung Shue Wan Portion Area which presenting the monitoring results and inspection findings in the Reporting Period from **1 to 29 February 2012**.

REPORT STRUCTURE

1.06 The Monthly Environmental Monitoring and Audit (EM&A) Report – Yung Shue Wan is structured into the following sections:-

SECTION 1 **INTRODUCTION**
SECTION 2 **PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS**
SECTION 3 **SUMMARY OF MONITORING REQUIREMENTS**
SECTION 4 **AIR QUALITY MONITORING RESULTS**
SECTION 5 **CONSTRUCTION NOISE MONITORING RESULTS**
SECTION 6 **WATER QUALITY MONITORING RESULTS**
SECTION 7 **ECOLOGY MONITORING RESULTS**
SECTION 8 **WASTE MANAGEMENT**
SECTION 9 **SITE INSPECTIONS**
SECTION 10 **ENVIRONMENTAL COMPLAINTS AND NON-COMPLIANCE**
SECTION 11 **IMPLEMENTATION STATUES OF MITIGATION MEASURES**
SECTION 12 **IMPACT FORECAST**
SECTION 13 **CONCLUSIONS AND RECOMMENDATION**

2 PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS

PROJECT ORGANIZATION AND MANAGEMENT STRUCTURE

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

CONSTRUCTION PROGRESS

2.02 The master and three month rolling construction programme are enclosed in ***Appendix C*** and the major construction activities undertaken in this Reporting Period are listed below:-

- Construction of Sewage Treatment Works

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) Regulation	Notified 19/5/2010 Case No: 317486
2	Chemical Waste Producer Registration	Issued on 8/6/2010 WPN 5213-912-L2720-01
3	Water Pollution Control Ordinance	Issued on 22/9/2010 WT00007566-2010
4	Billing Account for Disposal of Construction Waste	Issued on 26 May 2010 A/C No: 7010815
5	Construction Noise Permit (no. GW-RS0045-12)	Issued on 20 January 2012 Valid from 20 January 2012 until 19 July 2012

2.04 Summary of the report submission for EM&A Programme is presented in ***Table 2-2***.

Table 2-2 Status of EM&A Programme Submission

Item	EM&A Programme Submission	Status
1	Proposed EM&A Programme for Baseline / Impact Monitoring – Yung Shue Wan (TCS00512/09/600/R0011Ver.5)	Verified by IEC and submitted to EPD on 8 July 2010
2	Method Statement for Coral Monitoring – Yung Shue Wan (TCS00512/09/600/R0071Ver.3)	Verified by IEC and submitted to EPD on 25 November 2010
3	Baseline Air and Noise Monitoring Report - Volume 1 (TCS00512/09/600/R0061Ver.3)	Verified by IEC and submitted to EPD on 31 August 2010
4	Baseline Monitoring Report Volume 2 - Water Quality (TCS00512/09/600/R0158Ver.2)	Verified by IEC and submitted to EPD on 10 March 2011
5	Baseline Survey for Coral Monitoring – Yung Shue Wan (TCS00512/09/600/R0132Ver.3)	Verified by IEC and submitted to EPD on 17 February 2011
6	Methodology of Coral Tagging for Impact Monitoring – Yung Shue Wan	Verified by IEC and submitted to EPD on 28 March 2011
7	Coral Tagging Report (TCS00512/09/600/R0214Ver.4)	Verified by IEC and submitted to EPD on 3 August 2011

3 SUMMARY OF BASELINE MONITORING REQUIREMENTS

ENVIRONMENTAL ASPECT

3.01 The EM&A baseline monitoring programme cover the following environmental issues:

- Air quality;
- Construction noise;
- Marine water quality; and
- Ecology monitoring

3.02 The ET implements the EM&A programme in accordance with the aforementioned requirements. Detailed air quality, construction noise, water quality and ecology of the EM&A programme are presented in the following sub-sections.

3.03 A summary of the air, noise, marine water and ecology monitoring parameters is presented in ***Table 3-1***:

Table 3-1 Summary of the EM&A Requirements

Environmental Issue	Parameters
Air Quality	• 1-hour TSP Monitoring by Real-Time Portable Dust Meter; and • 24-hour TSP Monitoring by High Volume Air Sampler.
Noise	• Leq (30min) during normal working hours; and • Leq (15min) during Restricted Hours.
Marine Water Quality	***In-situ Measurements*** • Dissolved Oxygen Concentration (DO) (mg/L); • Dissolved Oxygen Saturation (%); • Turbidity (NTU); • pH unit; • Salinity (ppt); • Water depth (m); and • Temperature (^{o}C). ***Laboratory Analysis*** • Suspended Solids (SS) (mg/L)
Ecology	• Coral Monitoring

MONITORING LOCATIONS

Air Quality

3.04 Two designated monitoring stations, AC02a located at Yung Shue Wan Refuse Transfer Station and AC04 located at residential area nearby Yung Shue Wan football pitch, were recommended in the *EM&A Manual Section 2.5*. In order to identify and seek for the access of the air monitoring locations designated in the EM&A Manual, site visit was conducted by Leader and ET.

3.05 At the site visit, all designated monitoring locations were identified however the premises for high volume sampler installation were objected by the owner or the residents of nearby. So, alternative air monitoring locations were proposed in accordance with the criteria set out in *EM&A manual Section 2.5.2 and 2.5.3*. The proposed alternative air monitoring stations were accepted by the Engineer Representative (ER) and Independent Environmental Checker (IEC) and EPD for endorsement. Details of renewed air monitoring stations are described in ***Table 3-2***. The graphical of air monitoring stations is shown in ***Appendix D*.**

Table 3-2 Location of Air Quality Monitoring Station

Sensitive Receiver	Location
AC02b	The entrance of RE's site office
AC04c	Next to a power transformer station TP208 Yung Shue Wan and adjacent to the road direct to the construction site

Construction Noise

3.06 According to *EM&A Manual Section 3.4*, one noise sensitive receivers (NC05) designated for the construction noise monitoring was recommended at Yung Shue Wan Portion Area of the Project. The designated monitoring station is identified and successfully granted the premises. The detailed construction noise monitoring station is described in ***Table 3-3*** and graphical is shown in ***Appendix D***.

Table 3-3 Location of Construction Noise Monitoring Station

Sensitive Receiver	Location
NC05	Roof of North Lamma Clinic

Marine Water Quality

3.07 Two control stations (CY1 and CY2) and three impact stations (WY1-WY3) were recommended in the *EM&A Manual Section 4.5*. Impact stations WY1-WY3 were identified close to the sensitive receivers (the coral colonies in the vicinity of Yung Shue Wan, and secondary contact recreation subzone). It is proposed to monitor the impacts from the construction of the submarine outfall as well as the effluent discharge from the proposed STW on water quality. Two control stations: CY1 and CY2 were recommended at locations representative of the project site in its undisturbed condition and located at upstream and downstream of the works area. The marine water quality monitoring stations to be performed under the Project is described in ***Table 3-4*** and shown in ***Appendix D***.

Table 3-4 Location of Marine Water Quality Monitoring Station

Station	Description	Coordinates	
		Easting	Northing
WY1	Coral colonies on seawall at STW site	829 170	809 550
WY2	Coral colonies at Shek kok Tsui	829 000	810 400
WY3	Coral colonies at O Tsai (headland N at SW ferry pier)	829 200	809 850
CY1 (flood)	Control Station	828 400	810 800
CY2 (ebb)	Control Station	828 000	808 800

Coral Monitoring

3.08 The coral monitoring stations to be performed under the Project is show in ***Appendix D***. The details of the monitoring location could be referred to ***Impact Coral Monitoring Report*** which enclosed in ***Appendix M.***

MONITORING FREQUENCY AND PERIOD

3.09 The Impact monitoring carried out in the EM&A programme is basically in accordance with the requirements in *EM&A Manual Sections 2.7, 3.6, 4.7, 4.8, 7.3 and 7.4*. The monitoring requirements are listed as follows:

Air Quality Monitoring

Parameters: 1-hour TSP and 24-hour TSP

Frequency: Once in every six days for 24-hour TSP and three times in every six days for 1-hour TSP

Duration: Throughout the construction period

Noise Monitoring

Parameters: $L_{eq\ 30min)}$ & $L_{eq(5min)}$, L_{10} and L_{90}.

$L_{eq(15min)}$ & $L_{eq(5min)}$, L_{10} and L_{90} during the construction undertaken during Restricted hours (19:00 to 07:00 hours next of normal working day and full day of public holiday and Sunday)

Frequency: Once per week during 0700-1900 hours on normal weekdays. Restricted hour monitoring should depend on conditions stipulated in Construction Noise Permit

Duration: Throughout the construction period

Marine Water Quality Monitoring

Parameters:	Duplicate in-situ measurements: water depth, temperature, dissolved oxygen, pH, turbidity and salinity
	HOKLAS-accredited laboratory analysis: suspended solids
Frequency:	Three days a week, at mid ebb and mid flood tides. The interval between 2 sets of monitoring will be more than 36 hours
Sampling Depth	(i.) Three depths: 1m below water surface, 1m above sea bottom and at mid-depth when the water depth exceeds 6m.
	(ii.) If the water depth is between 3m and 6m, two depths: 1m below water surface and 1m above sea bottom
	(iii.) If the water depth is less than 3m, 1 sample at mid-depth is taken
Duration:	During the course of marine works

Coral Monitoring

Parameters:	Presence and coverage of hard and soft corals such as diversity, abundance and health status of the corals in the general area, plus other physical and biological condition at the underwater environment
Frequency:	One per week for the first three months of the marine works. If no exceedances are reported during the first three months, the frequency may be reduced to twice every month
Duration:	During the course of marine works

Post-Construction Monitoring – Marine Water

3.10 Upon the marine works (dredging and HDD pipe installation) completion, 4 weeks of post-construction monitoring would be undertaken in accordance with the *Section 4.8 of EM&A Manual*. The requirements of post-construction monitoring such as the parameter, frequency, location and sampling depth is same as the impact monitoring.

Post-Construction Monitoring – Ecology Monitoring

3.11 Following completion of the marine works, post project monitoring should be carried out within two weeks of completion of the marine works (HDD and dredging), and should comprise the same two-tier Rapid Assessment Ecological Assessment (REA) method adopted for the baseline survey.

MONITORING EQUIPMENT

Air Quality Monitoring

3.12 The 24-hour and 1-hour TSP levels shall be measured by following the standard high volume sampling method as set out in the *Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50), Appendix B.* If the ET proposes to use a direct reading dust meter to measure 1-hour TSP levels, it shall submit sufficient information to the IEC to approve. The filter paper of 24-hour TSP measurement shall be determined by HOKLAS accredited laboratory.

Noise Monitoring

3.13 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 carrying out the noise monitoring. The sound level meter shall be checked using an acoustic calibrator. The wind speed shall be checked with a portable wind speed meter capable of measuring the wind speed in m/s.

Water Quality Monitoring

3.14 ***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 as included a DO level in the range of 0 – 20mg L-1 and 0 – 200% saturation; and a temperature of 0 – 45 degree Celsius.

3.15 ***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.

3.16 ***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.

3.17 ***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.

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

3.19 ***Salinity Measuring Equipment*** – A portable salinometer capable of measuring salinity in the range of 0 - 40 parts per thousand (ppt) should be provided for measuring salinity of the water at each monitoring location.

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

3.21 ***Monitoring Position Equipment*** - A hand-held or boat-fixed type digital Differential Global Positioning System (DGPS) with way point bearing indication and Radio Technical Commission for maritime (RTCM) Type 16 error message 'screen pop-up' facilities (for real-time auto-display of error messages and DGPS corrections from the Hong Kong Hydrographic Office), or other equipment instrument of similar accuracy, should be provided and used during marine water monitoring to ensure the monitoring vessel is at the correct location before taking measurements.

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

Coral Monitoring

3.23 The monitoring equipments used for the coral monitoring could be referred to ***Impact Coral Monitoring report*** which enclosed in ***Appendix M.***

EQUIPMENT CALIBRATION

3.24 Calibration of the High Volume Sampler (HVS) is performed upon installation in accordance with the manufacturer's instruction using the NIST-certified standard calibrator (Tisch Calibration Kit Model TE-5025A). The calibration data are properly documented and the records are maintained by ET for future reference.

3.25 The 1-hour TSP meter was calibrated by the supplier prior to purchase. Zero response of the equipment was checked before and after each monitoring event. In-house calibration with the High Volume Sampler (HVS) in same condition was undertaken in yearly basis.

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

3.27 The water quality monitoring equipments such as DO meter, pH Meter, turbidity measuring instrument and salinometer, are calibrated by HOKLAS accredited laboratory of three month intervals.

3.28 All updated calibration certificates of the monitoring equipment used for the impact monitoring programme in the Reporting Period would be attached in ***Appendix E***.

METEOROLOGICAL INFORMATION

3.29 The meteorological information during the construction phase is obtained from the Wong Chuk Hang Station of the Hong Kong Observatory (HKO) due to it nearly the Project site.

DATA MANAGEMENT AND DATA QA/QC CONTROL

3.30 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 programme.

3.31 The monitoring data recorded in the equipment e.g. 1-hour TSP meter, sound level meter and Multi-parameter Water Quality Monitoring System, are downloaded directly from the equipments 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.

DETERMINATION OF ACTION/LIMIT (A/L) LEVELS

3.32 According to the Yung Shue Wan Environmental Monitoring and Audit Manual, the air quality, construction noise, marine water quality and coral monitoring were established, namely Action and Limit levels are listed in ***Tables 3-5*** to ***3-8*** as below.

Table 3-5 Action and Limit Levels for Air Quality

Monitoring Station	Action Level (μg /m^3)		Limit Level (μg/m^3)	
	1-hour TSP	24-hour TSP	1-hour TSP	24-hour TSP
AC02b	288	161	500	260
AC04c	290	176	500	260

Table 3-6 Action and Limit Levels for Construction Noise

Recommended Action & Limit Levels of Construction Noise		
Monitoring Location	Action Level	Limit Level
	0700-1900 hours on normal weekdays	
NC05	When one or more documented complaints are received	75 dB(A) *

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

Table 3-7 Action and Limit Levels for Marine Water Quality

Parameter	Performance Criteria	Impact Station		
		WY1	WY2	WY3
DO Concentration (Surface and Middle) (mg/L)	Action Level	3.63	3.53	3.61
	Limit Level	3.32	3.47	3.42
DO Concentration (Bottom) (mg/L)	Action Level	3.33	2.92	3.36
	Limit Level	3.23	2.63	3.14
Turbidity (Depth-Average) (NTU)	Action Level	10.94	14.16	14.99
	Limit Level	17.35	15.20	16.21

Parameter	Performance Criteria	Impact Station		
		WY1	WY2	WY3
Suspended Solids (Depth-Average) (mg/L)	Action Level	17.52	14.04	14.52
	Limit Level	25.62	16.51	16.88

Table 3-8 Action and Limit Levels for Coral Monitoring

Step	Action
1	Commence tagged coral monitoring at the impact site. If no increase in sedimentation cover/bleaching/partial mortality is observed on the hard corals or partial mortality no the soft/black corals, no action is required. If an increase in sedimentation cover/bleaching/partial mortality is observed on the hard corals or partial mortality on the soft/black corals at one or more impact monitoring stations Step 3 should be enacted, if not, Step 2.
2	If non actions are triggered a formal report should be issued along with evidentiary photographs following completion of the survey. Meanwhile monitoring work and construction works should continue uninterrupted.
3	If during the impact monitoring a 15% increase in the percentage of sedimentation on the hard corals occurs at more than 20% of the tagged coral colonies at the Impact Monitoring Station that is not reported at the Control Monitoring Station, then the Action Level is exceeded (Step 4).
4	If the Action Level is exceeded the IC(E) should inform all parties. The data from the water quality monitoring should also be reviewed. If the water quality monitoring shows no attributable effects of the installation works, then the Action Level is not triggered. If the water quality data indicate exceedances (for SS and/or turbidity) the IC(E) should discus with the Contractor the most appropriate method of reducing suspended solids during construction (e.g. reduce rate of dredging). The water quality data reviewed should then be enacted on the next working day.
5	Monitoring should proceed the following day as per Step 1. If during the Impact Monitoring a 25% increase in the percentage of sedimentation on the hard corals at more than 20% of the tagged coral colonies at the Impact Monitoring Station that is not reported at the Control Monitoring Station, then the Limit Level is exceeded (Step 6). If the Limit Level is not exceeded Step 2 is enacted and work continues according to the mitigated method.
6	If the Limit Level is exceeded the Inspector Officer should inform all parties immediately. Should the Limit Level be exceeded, the Contractor should stop works immediately and work out a solution to the satisfaction of the IC(E), EPD and AFCD. The IC(E) should inform the Contractor to suspend marine construction works until an effective solution is identified. Once the solution has identified and agreed with all parties, backfilling works may re-commence.

3.33 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***.

4 IMPACT MONITORING RESULTS - AIR QUALITY

4.01 As informed by Leader, the construction of relevant land works at Yung Shue Wan was commenced on 14 September 2010, therefore, the impact EM&A programme was begun as compliance with the contract Particular Specification, Yung Shue Wan EM&A Manual and the EP.

Result

4.02 In this Reporting Period, the results for 24-hour and 1-hour TSP monitoring are tabulated in ***Tables 4-1 and 4-2***. The 24-hour TSP monitoring data are shown in ***Appendix G*** and the graphical plots are shown in ***Appendix H***.

Table 4-1 Summary of 24-hour and 1-hour TSP Monitoring Results at AC02b

Date	24-hour TSP ($\mu g/m^3$)	1-hour TSP ($\mu g/m^3$)				
		Date	Start Time	1st hour measured	2nd hour measured	3rd hour measured
2-Feb-12	69	2-Feb-12	10:09	84	87	89
8-Feb-12	Power failure	8-Feb-12	10:14	72	91	92
14-Feb-12	117	14-Feb-12	9:18	92	103	97
20-Feb-12	75	20-Feb-12	8:30	91	102	106
25-Feb-12	80	24-Feb-12	13:10	124	109	110
Average (Range)	**85 (69 – 117)**	Average (Range)		**97 (72 – 124)**		

Table 4-2 Summary of 24-hour and 1-hour TSP Monitoring Results at AC04c

Date	24-hour TSP ($\mu g/m^3$)	1-hour TSP ($\mu g/m^3$)				
		Date	Start Time	1st hour measured	2nd hour measured	3rd hour measured
2-Feb-12	97	2-Feb-12	13:47	87	92	90
8-Feb-12	Power failure	8-Feb-12	10:36	87	101	89
14-Feb-12	75	14-Feb-12	13:56	93	88	99
20-Feb-12	68	20-Feb-12	9:00	105	101	113
25-Feb-12	74	24-Feb-12	13:15	118	115	108
Average (Range)	**79 (68 – 97)**	Average (Range)		**99 (87 – 118)**		

4.03 In this Reporting Period, 2 events of power failure of high volume sampler were occurred during 24-hour TSP monitoring on 8 February 2012. The incident has been reported to relevant parties on the next day and the provision of power supply was rectified by the Contractor on 13 February 2012. Since the monitoring was resumed as scheduling on 14 February 2012, there were no making up of lost samples. To avoid re-occurrence of power failure, the Contractor has been reminded to pay more attention on the power issue and ensure stable power source for the HVS.

4.04 As shown in ***Tables 4-1 and 4-2***, the 1-hour TSP monitoring and 24-hour TSP monitoring values fluctuated well below the Action Level during the Reporting Period. No Notification of Exceedance (NOE) of air quality criteria or corrective action was therefore required.

4.05 The meteorological information during the impact monitoring days are summarized in ***Appendix I.***

5 IMPACT MONITORING RESULTS – CONSTRUCTION NOISE

5.01 The noise monitoring results are presented in the following sub-sections.

Result

5.02 In this report period, **4** construction noise monitoring events were undertaken at designated location NC05. The results for $L_{eq30min}$ are tabulated in ***Tables 5-1*** and the graphical plots are shown in ***Appendix H***.

Table 5-1 Summarized of Construction Noise Monitoring Results at NC05

Date	Start Time	End Time	1st set L_{eq5}	2nd set L_{eq5}	3rd set L_{eq5}	4th set L_{eq5}	5th set L_{eq5}	6th set L_{eq5}	L_{eq30}	Corrected L_{eq30}*
2-Feb-12	14:16	14:46	50.6	52.3	50.1	52.6	53.1	52.8	52.1	55.1
8-Feb-12	10:12	10:42	52.3	51.1	50.6	53.8	56.1	52.8	53.2	56.2
14-Feb-12	14:19	14:49	50.3	51.6	51.9	51.6	52.3	51.8	51.6	54.6
20-Feb-12	9:30	10:00	60.5	60.1	59.8	61.3	60.5	60.3	60.4	63.4
Limit Level			-							**75 dB(A)**

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

5.03 It was noted that no noise complaint (which is an Action Level exceedance) was received. In view of the results shown in ***Tables 5-1,*** all the values are well below 75dB(A), therefore, no Action or Limit Level exceedance was triggered during this Reporting Period.

6 IMPACT MONITORING RESULTS – WATER QULAITY

6.01 The construction of marine outfall works was commenced on 9 May 2011 and therefore marine water quality monitoring is required. According to the construction information provided by the Contractor, the marine works in Yung Shue Wan has been ceased since 19 January 2012. As agreed by the IEC and RE, the marine water quality monitoring was suspended from 6 February 2012 until further notice of the commencement of dredging works which tentatively scheduled on 10 April 2012. The relevant letter ref.: TCS00512/10/300/L0425 has been submitted to EPD on 3 February 2012.

6.02 In this reporting period, **2** events of water quality monitoring were carried out at the designated locations. The monitoring results including in-situ measurements and laboratory testing results are presented in ***Appendix G***. The graphical plots are shown in ***Appendix H***.

6.03 During the Reporting Period, field measurements of both control and impact stations showed that marine water of the depth average of the salinity concentration was within **31.03 to 32.80** ppt, and pH value was within **8.23 to 8.45**.

6.04 Monitoring results of 3 key parameters: dissolved oxygen (DO), turbidity and suspended solids in this Reporting Period, are summarized in ***Tables 6-1***, ***6-2, 6-3 and 6-4***. A summary of exceedances for the three parameters: dissolved oxygen (DO), turbidity and suspended solids are shown in ***Table 6-5***.

Table 6-1 Summary of Water Quality Results – Mid-ebb Tides (Dissolved Oxygen)

Sampling date	Dissolved Oxygen conc. of Depth Ave. of Surf. and Mid Layer (mg/L)					Dissolved Oxygen conc. of Depth Ave. of Bottom Layer (mg/L)				
	WY1	WY2	WY3	CY1	CY2	WY1	WY2	WY3	CY1	CY2
2-Feb-12	5.93	5.92	5.93	5.79	5.87	5.73	5.72	5.65	5.51	5.62
4-Feb-12	5.50	5.41	5.38	5.35	5.39	5.22	5.19	5.13	5.03	5.18

Table 6-2 Summary of Water Quality Results – Mid-ebb Tides (Turbidity & Suspended Solids)

Sampling date	Turbidity Depth Ave. (NTU)					Suspended Solids Depth Ave. (mg/L)				
	WY1	WY2	WY3	CY1	CY2	WY1	WY2	WY3	CY1	CY2
2-Feb-12	5.01	5.63	5.32	4.86	5.57	4.55	6.20	6.35	4.57	3.30
4-Feb-12	4.82	5.58	5.06	5.37	5.13	3.65	2.23	1.15	2.13	3.53

Table 6-3 Summary of Water Quality Results – Mid-flood Tides (Dissolved Oxygen)

Sampling date	Dissolved Oxygen conc. of Depth Ave. of Surf. and Mid Layer (mg/L)					Dissolved Oxygen conc. of Depth Ave. of Bottom Layer (mg/L)				
	WY1	WY2	WY3	CY1	CY2	WY1	WY2	WY3	CY1	CY2
2-Feb-12	5.95	5.81	5.87	5.69	5.85	5.93	5.65	5.74	5.48	5.64
4-Feb-12	5.45	5.27	5.39	5.40	5.33	5.09	5.09	5.18	5.06	4.92

Table 6-4 Summary of Water Quality Results – Mid-flood Tides (Turbidity & Suspended Solids)

Sampling date	Turbidity Depth Ave. (NTU)					Suspended Solids Depth Ave. (mg/L)				
	WY1	WY2	WY3	CY1	CY2	WY1	WY2	WY3	CY1	CY2
2-Feb-12	5.11	5.48	4.79	5.51	5.19	4.35	6.27	5.45	4.07	8.60
4-Feb-12	4.79	5.63	5.07	4.67	5.00	4.35	3.20	6.25	2.53	3.57

Table 6-5 Summarized Exceedances of Marine Water Quality

Station	DO (Ave of Surf. & mid-depth)		DO (Ave. of Bottom Layer)		Turbidity (Depth Ave.)		SS (Depth Ave)		Total Exceedance	
	Action	Limit	Action	Limit	Action	Limit	Action	Limit	Action	Limit

Station	DO (Ave of Surf. & mid-depth)		DO (Ave. of Bottom Layer)		Turbidity (Depth Ave.)		SS (Depth Ave)		Total Exceedance	
	Action	Limit	Action	Limit	Action	Limit	Action	Limit	Action	Limit
Mid-Ebb										
WY1	0	0	0	0	0	0	0	0	0	0
WY2	0	0	0	0	0	0	0	0	0	0
WY3	0	0	0	0	0	0	0	0	0	0
Mid-Flood										
WY1	0	0	0	0	0	0	0	0	0	0
WY2	0	0	0	0	0	0	0	0	0	0
WY3	0	0	0	0	0	0	0	0	0	0
No of Exceedance	0	0	0	0	0	0	0	0	0	0

6.05 For marine water monitoring, no exceedance of Action/Limit level was recorded in this Reporting Period. Therefore, no associated corrective actions were then required.

7 IMPACT MONITORING RESULTS – ECOLOGY MONITORING

7.01 Impact monitoring for coral shall be conducted initially at a frequency of once per week for the first three months of the marine works (HDD and dredging). If no exceedances are reported during this period, then the frequency may be reduced to twice every month for the reminder of the marine works.

7.02 According to the construction information provided by the Contractor, the marine works in Yung Shue Wan has been ceased since 19 January 2012. As agreed by the IEC and RE, the ecology monitoring was suspended from 6 February 2012 until further notice of the commencement of dredging works which tentatively scheduled on 10 April 2012.

7.03 No ecology monitoring was carried out in this Reporting Period.

8 WASTE MANAGEMENT

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

Records of Waste Quantities

8.02 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.

8.03 The quantities of waste for disposal in this Reporting Period are summarized in ***Tables 8-1*** and ***8-2*** and the Monthly Summary Waste Flow Table is shown in ***Appendix J***. Whenever possible, materials were reused on-site as far as practicable

Table 8-1 Summary of Quantities of Inert C&D Materials

Type of Waste	Quantity	Disposal Location
C&D Materials (Inert) ('000m^3)	0	-
Reused in this Contract (Inert) ('000m^3)	0	-
Reused in other Projects (Inert) ('000m^3)	0	-
Disposal as Public Fill (Inert) ('000m^3)	0.17	Tuen Mun Area 38

Table 8-2 Summary of Quantities of C&D Wastes

Type of Waste	Quantity	Disposal Location
Metals (kg)	0	-
Paper / Cardboard Packing (kg)	0	-
Plastics (kg)	0	-
Chemical Wastes (kg)	0	-
General Refuses (tonne)	14.586	Yung Shue Wan RTS

8.04 There was no site effluent discharged but the estimated volume of surface runoff was less than 50m^3 in this monthly period.

9 SITE INSPECTION

9.01 According to the Environmental Monitoring and Audit Manual, the environmental site inspection should been formulation by ET Leader. Regular environmental site inspections had been carried out by the ET to confirm the environmental performance. In this reporting period, weekly site inspection by ET was carried out on **7, 14, 21 and 28 February 2012** and a joint-site visit by IEC Representative, RE, the Contractor and ET was carried out on **7 February 2012**.

9.02 The findings/ deficiencies that observed during the weekly site inspection are listed in ***Table 9-1*** and the relevant checklists are attached in ***Appendix K***.

Table 9-1 Site Observations

Date	Findings / Deficiencies	Follow-Up Status
7 February 2012	• Chemical waste inside desilting tank should be removed.	• The deficiency has been rectified on 14 February 2012.
14 February 2012	• No environmental issue was observed during the site inspection.	N.A.
21 February 2012	• No environmental issue was observed during the site inspection.	N.A.
28 February 2012	• The stagnant water in the sedimentation tank should be covered and larvicial oil should be applied.	• The deficiency has been rectified on 6 March 2012.

10 ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

10.01 No environmental complaint, summons and prosecution was received in this reporting period. The statistical summary table of environmental complaint is presented in ***Tables 10-1, 10-2*** and ***10-3***.

Table 10-1 Statistical Summary of Environmental Complaints

Reporting Period	Environmental Complaint Statistics		
	Frequency	Cumulative	Complaint Nature
14 Sep – 30 September 2011	0	0	NA
October – December 2011	0	0	NA
January 2012	0	0	NA
February 2012	0	0	NA

Table 10-2 Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics		
	Frequency	Cumulative	Complaint Nature
14 Sep – 30 September 2011	0	0	NA
October – December 2011	0	0	NA
January 2012	0	0	NA
February 2012	0	0	NA

Table 10-3 Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Prosecution Statistics		
	Frequency	Cumulative	Complaint Nature
14 Sep – 30 September 2011	0	0	NA
October – December 2011	0	0	NA
January 2012	0	0	NA
February 2012	0	0	NA

11 IMPLEMENTATION STATUS OF MITIGATION MEASURES

11.01 The environmental mitigation measures that recommended in the Yung Shue Wan Environmental Monitoring and Audit Manual covered the issues of dust, noise, water and waste and they are summarized as following:

Dust Mitigation Measure

11.02 Installation of 2m high solid fences around the construction site of Pumping Station P2 is recommended. Implementation of the requirements stipulated in the Air Pollution Control (Construction Dust) Regulation and the following good site practices are recommended to control dust emission from the site:

- Stockpiles of imported material kept on site should be contained within hoardings, dampened and / or covered during dry and windy weather;
- Material stockpiled alongside trenches should be covered with tarpaulins whenever works are close to village houses;
- Water sprays should be used during the delivery and handling of cement, sands, aggregates and the like.
- Any vehicle used for moving sands, aggregates and construction waste shall have properly fitting side and tail boards. Materials should not be loaded to a level higher than the side and tail boards, and should be covered by a clean tarpaulin.

Noise Mitigation Measure

11.03 As detailed in the EIA report, concreting work of the Pumping Station P1a and sewer alignment construction activities would likely cause adverse noise impacts on some of the noise sensitive receivers. Appropriate mitigation measures have therefore been recommended. The mitigation measures recommended in the EIA report are summarised below:

(a) Use of quiet equipment for the construction activities of the Pumping Stations and sewer alignment;

(b) Use of temporary noise barrier around the site boundary of Pumping Station P1a;

(c) Use of kick ripper (saw and lift) method to replace the breaker for pavement removal during sewer alignment construction;

(d) Restriction on the number of plant during sewer alignment construction;

(e) Use of noise screening structures in the form of acoustic shed or movable barrier wherever practicable and feasible in areas with sufficient clearance and headroom during the construction of sewer alignment;

(f) Adoption of manual working method wherever practicable and feasible in areas where the worksites of the proposed sewer alignment are located less than 20m from the residential noise sensitive receivers and less than 30m from the temple and the public library; and

(g) Implementation of the following good site practices**:**

- Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme.
- Mobile plant, if any, should be sited as far away from NSRs as possible.
- Machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum.
- Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs.
- Material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities.

Water Quality Mitigation Measure

11.04 No-dig method using Horizontal Directional Drilling (HDD) would be used for the installation of outfall pipe of about 480 m from shore to minimize the potential water quality impacts arising from the dredging works required for the submarine outfall construction. For the remaining outfall pipe of about 240m and the diffuser section, open trench dredging would still be required.

11.05 During the dredging works, the Contractor should be responsible for the design and implementation of the following mitigation measures.

- Dredging should be undertaken using closed grab dredgers with a total production rate of 55m^3/hr;
- Deployment of 2-layer silt curtains with first layer enclosing the grab and the second layer at around 50, from the dredging area while dredging works are in progress;
- all vessels should be sized such that adequate clearance (i.e. minimum clearance of 0.6m) is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash;
- all pipe leakages should be repaired promptly and plant shall not be operated with leaking pipes;
- excess material should be cleaned from the decks and exposed fittings of barges before the vessel is moved;
- adequate freeboard (i.e. minimum of 200m) should be maintained on barges to ensure that decks are not washed by wave action;
- all barges should be fitted with tight fitting seals to their bottom openings to prevent leakage of material; and
- loading of barges and hoppers should be controlled to prevent splashing of dredged material to the surrounding water, and barges and hoppers should not be filled to a level which would cause the overflow of materials or sediment laden water during loading or transportation; and
- the decks of all vessels should be kept tidy and free of oil or other substances that might be accidentally or otherwise washed overboard.

Construction Run-off and Drainage

11.06 The Contractor should observe and comply with the Water Pollution Control Ordinance and the subsidiary regulations. The Contractor should follow the practices, and be responsible for the design, construction, operation and maintenance of all the mitigation measures as specified in ProPECC PN 1/94 "Construction Site Drainage". The design of the mitigation measures should be submitted by the Contractor to the Engineer for approval. These mitigation measures should include the following practices to minimise site surface runoff and the chance of erosion, and also to retain and reduce any suspended solids prior to discharge:

- Provision of perimeter channels to intercept storm-runoff from outside the site. These should be constructed in advance of site formation works and earthworks.
- Works programmes should be designed to minimize works areas at any one time, thus minimising exposed soil areas and reducing the potential for increased siltation and runoff.
- Sand/silt removal facilities such as sand traps, silt traps and sediment basins should be provided to remove the sand/silt particles from run-off. These facilities should be properly and regularly maintained. These facilities shall be carefully planned to ensure that they would be installed at appropriate locations to capture all surface water generated on site.
- Careful programming of the works to minimise soil excavation works during rainy seasons.
- Exposed soil surface should be protected by paving or hydroseeding as soon as possible to reduce the potential of soil erosion.
- Trench excavation should be avoided in the wet season, and if necessary, these should be excavated and backfilled in short sections.
- Open stockpiles of construction materials on site should be covered with tarpaulin or similar fabric.

General Construction Activities

11.07 Debris and rubbish generated on-site should be collected, handled and disposed of properly to avoid entering the nearby coastal waters and stormwater drains. All fuel tanks and storage areas should be provided with locks and be sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank. Open drainage channels and culverts near the works areas should be covered to block the entrance of large debris and refuse.

Wastewater Arising from Workforce

11.08 Portable toilets shall be provided by the Contractors, where necessary, to handle sewage from the workforce. The Contractor shall also be responsible for waste disposal and maintenance practices

Sediment Contamination Mitigation Measure

11.09 The basic requirements and procedures for dredged mud disposal are specified under the WBTC No. 34/2002. The management of the dredging, use and disposal of marine mud is monitored by the MFC, while the licensing of marine dumping is the responsibility of the Director of Environmental Protection (DEP).

11.10 The uncontaminated dredged sediment will be loaded onto barges and transported to the designated marine disposal site. Appropriate dredging methods have been incorporated into the recommended water quality mitigation measures including the use of closed-grab dredgers and silt curtains. Category L sediment would be suitable for disposal at a gazetted open sea disposal ground.

11.11 During transportation and disposal of the dredged marine sediments, the following measures should be taken to minimize potential impacts on water quality:

- Bottom opening of barges should be fitted with tight fitting seals to prevent leakage of material. Excess material should be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved.
- Monitoring of the barge loading should be conducted to ensure that loss of material does not take place during transportation. Transport barges or vessels should be equipped with automatic self-monitoring devices as specified by the DEP.

Construction Waste Mitigation Measure

Good Site Practices and Waste Reduction Measures

11.12 It is not anticipated that adverse waste management related impacts would arise, provided that good site practices are strictly followed. Recommendations for good site practices for the construction waste arising include:

- Nomination of an approved person, such as a site manager, to be responsible for the implementation of good site practices, arranging for collection and effective disposal to an appropriate facility, of all wastes generated at the site.
- Training of site personnel in proper waste management and chemical handling procedures.
- Appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers.
- Provision of sufficient waste disposal points and regular collection for disposal.
- Separation of chemical wastes for special handling and appropriate treatment at the Chemical Waste Treatment Facility.
- Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.
- Maintain records of the quantities of wastes generated, recycled and disposed.

11.13 In order to monitor the disposal of C&D waste at landfills and to control fly tipping, a trip-ticket system should be included as one of the contractual requirements and implemented by an Environmental Team undertaking the Environmental Monitoring and Audit work. An Independent Environmental Checker should be responsible for auditing the results of the system.

11.14 Good management and control can prevent the generation of significant amount of waste. Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include:

- segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal;

- to encourage collection of aluminium cans by individual collectors, separate labelled bins should be provided to segregate this waste from other general refuse generated by the work force;
- any unused chemicals or those with remaining functional capacity should be recycled;
- use of reusable non-timber formwork to reduce the amount of C&D material;
- prior to disposal of C&D waste, it is recommended that wood, steel and other metals should be separated for re-use and / or recycling to minimise the quantity of waste to be disposed of to landfill;
- proper storage and site practices to minimise the potential for damage or contamination of construction materials; and
- plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.

General Site Wastes

11.15 A collection area should be provided where waste can be stored prior to removal from site. An enclosed and covered area is preferred for the collection of the waste to reduce 'wind blow' of light material.

Chemical Wastes

11.16 After use, chemical waste (eg. cleaning fluids, solvents, lubrication oil and fuel) should be handled according to the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Any unused chemicals or those with remaining functional capacity should be recycled. Spent chemicals should be properly stored on site within suitably designed containers, and should be collected by an approved operator for disposal at the Chemical Waste Treatment Facility or other licenced facility in accordance with the Waste Disposal (Chemical Waste) (General) Regulation under the Waste Disposal Ordinance.

11.17 Any service shop and minor maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakages and spillage should only be undertaken with the areas appropriately equipped to control these discharges.

Construction and Demolition Material

11.18 The C&D material should be separated on-site into three categories: (i) public fill, the inert portion of the C&D material (e.g. concrete and rubble), which should be re-used on-site or disposed of at a public filling area; (ii) C&D waste for re-use and/or recycling, the non-inert portion of the C&D material, (e.g. steel and other metals, wood, glass and plastic); (iii) C&D waste which cannot be re-used and/or recycled. The waste producers are responsible for its disposal at strategic landfills.

11.19 In order to minimise the impact resulting from collection and transportation of material for off-site disposal, it was recommended that inert material should be re-used on-site where possible. Prior to disposal of C&D material, it was also recommended that steel and other metals should be separated for re-use and/or recycling where practicable to minimise the quantity of waste to be disposed of to landfill.

Ecology Mitigation Measure

11.20 The following general good practice measures should be adopted to mitigate ecological impacts during marine works (including dredging and HOD);

- Excess material from vessel loading should be cleaned from the decks and exposed fittings before vessels are moved to the backfilling location;
- Dredging should cause no foam, oil, grease, scum, litter or other objectionable matter to be present on the water;
- Adequate freeboard should be maintained to ensure that decks are not washed by wave action;
- All pie leakages should be repaired promptly and plant Should not be operated with leaking pipes; and

- All banges and other vessels should maintain adequate clearance between vessels and the seabed at all stats of the tide and reduce operational speeds to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash.

11.21 In the event of exceedances of ecological action or limit level, the Contractor will be required to revise his operations as a further mitigation measure. Revisions to the operation method may include (but not be limited to):

- Reduction in dredging rate'
- Restriction of dredging in particular areas to specific periods in the tidal cycle

11.22 Should repeated non-compliances with limit level(s) occur the Contractor shall modify his working method until he is able to achieve the required compliances with the limit levels to the satisfaction of the IC(E)

Fisheries Mitigation Measure

11.23 Closed grab dredger, deployment of silt curtains around the immediate dredging area and low dredging rate have been recommended in Water Quality of the EIA report in order to minimise sediment release into the water column.

Landscape & Visual Mitigation Measure

11.24 Mitigation measures recommended in the EIA Report for landscape and visual impacts during the construction stage are summarised below.

- Screening of site construction works by use of hoarding that is appropriate to its site context;
- Retaining existing trees and minimising damage to vegetation where possible by close co-ordination and on site alignment adjusted of rising main and gravity sewer pipelines. Tree protective measures should be implemented to ensure trees identified as to be retained are satisfactorily protected during the construction phase;
- Careful and efficient transplanting of affected trees (1 no.) to temporary or final transplant location (the proposed tree to be transported is a semi-mature *Macaranga tanarius* and is located at the proposed Pumping Station P2 location);
- Short excavation and immediate backfilling of sections upon completion of works to reduce active site area;
- Conservation of top-soil for reuse;
- Night-time light source from marine fleets should be directed away from the residential units

11.25 The implementation schedule of mitigation measures is presented in ***Appendix L***.

11.26 Leader had been implementing the required environmental mitigation measures according to the Yung Shue Wan Environmental Monitoring and Audit Manual subject to the site condition. Environmental mitigation measures generally implemented by Leader in this Reporting Period are summarized in ***Table 11-1***.

Table 11-1 Environmental Mitigation Measures

Issues	Environmental Mitigation Measures
Water Quality	• Drainage channels were provided to convey run-off into the treatment facilities; and • Drainage systems were regularly and adequately maintained.
Air Quality	• Cover all excavated or stockpile of dusty material by impervious sheeting or sprayed with water to maintain the entire surface wet; • Public roads around the site entrance/exit had been kept clean and free from dust; and • Tarpaulin covering of any dusty materials on a vehicle leaving the site.

Issues	Environmental Mitigation Measures
Noise	• Good site practices to limit noise emissions at the sources; • Use of quite plant and working methods; • Use of site hoarding or other mass materials as noise barrier to screen noise at ground level of NSRs; and • To minimize plant number use at the worksite.
Waste and Chemical Management	• Excavated material should be reused on site as far as possible to minimize off-site disposal. Scrap metals or abandoned equipment should be recycled if possible; • Waste arising should be kept to a minimum and be handled, transported and disposed of in a suitable manner; • The Contractor should adopt a trip ticket system for the disposal of C&D materials to any designed public filling facility and/or landfill; and • Chemical waste shall be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes.
General	• The site was generally kept tidy and clean.

12 IMPACT FORECAST

12.01 Key issues to be considered in the coming month include:

Water Quality

- Erect of sand bag in proper area to avoid any muddy surface runoff from the loose soil surface or haul road during the rainy days; and
- The accumulated stagnant water should be drained away.

Air Quality

- Vehicles shall be cleaned of mud and debris before leaving the site;
- Stockpile and loose soil surface shall be covered with tarpaulin sheet or other means to eliminate the fugitive dust;
- Water spaying on the dry haul road and exit/entrance of the site in regular basis is reminded; and
- Public roads around the site entrance/exit had been kept clean and free from dust.

Noise

- Works and equipment should be located to minimize noise nuisance from the nearest sensitive receiver; and
- Idle equipments should be either turned off or throttled down;

Waste and Chemical Management

- Housekeeping on site shall be improved;
- The Contractor is advised to fence off the construction waste at a designated area in order to maintain the tidiness of the site;
- Drip tray and proper label should be provided for all chemical containers.
- C&D waste should be disposed in regular basis.

13 CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

13.01 This is the **18th** Monthly EM&A Report covering the construction period from **1 to 29 February 2012**.

13.02 According to the construction information provided by the Contractor, the marine works in Yung Shue Wan has been ceased since 19 January 2012. As agreed by the IEC and RE, the marine water quality and ecology monitoring was suspended from 6 February 2012 until further notice of the commencement of dredging works which tentatively scheduled on 10 April 2012. The relevant letter ref.: TCS00512/10/300/L0425 has been submitted to EPD on 3 February 2012.

13.03 No 1-hour TSP and 24-TSP monitoring result was found to be triggered the Action or Limit Level in this Reporting Period.

13.04 No noise complaint (an Action Level exceedance) was received and no construction noise measurement results that exceeded the Limit Level were recorded in this Reporting Period.

13.05 No exceedance of Action/Limit level was recorded in marine water monitoring in this Reporting Period.

13.06 No coral monitoring was carried out in this Reporting Period due to the suspension of marine work.

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

13.08 In this reporting period, weekly site inspection by ET was carried out on **7, 14, 21 and 28 February 2012**. Besides, a joint-site visit by IEC Representative, RE, the Contractor and ET was carried out on **7 February 2012**. All the observation has been rectified during the next week site inspection. The environmental performance of the Project was therefore considered as satisfactory.

13.09 No site inspection was undertaken by external parties i.e. Environmental Protection Department (EPD) or Agriculture, Fisheries and Conservation Department (AFCD) within the Reporting Period.

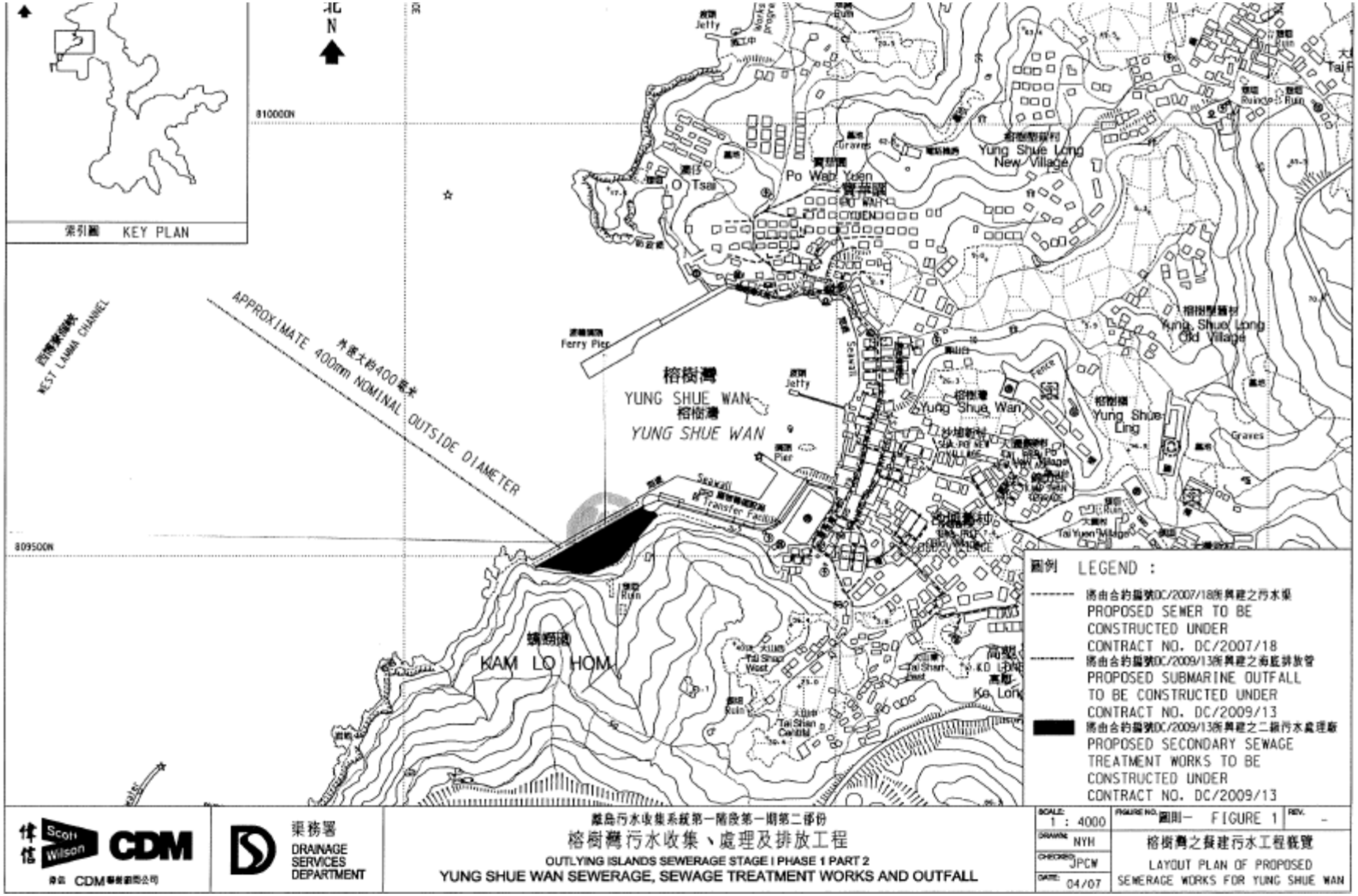
RECOMMENDATIONS

13.10 As wet season is approaching, the Contractor shall pay attention on the potential water impact as the construction site is adjacent to the coastline. Muddy water and other water quality pollutants via site surface water runoff into the coral zones of Yung Shue Wan seawall, Shek Kok Tsui and O Tsai should be avoided. Mitigation measures for water quality should be fully implemented.

13.11 Moreover, the construction dust mitigation measures identified at the EM&A Manuel such as watering at haul road and covering of dusty material should also be implemented and properly maintained during wet season.

Appendix A

Site Layout Plan – Yung Shue Wan Portion Area


北
N
索引圖 KEY PLAN
810000N
809500N
西南丫海峽
WEST LAMMA CHANNEL
APPROXIMATE 400mm NOMINAL OUTSIDE DIAMETER
外徑大約400毫米
Ferry Pier
榕樹灣
YUNG SHUE WAN
YUNG SHUE WAN
Jetty
Pier
Seawall
Transfer Facility
Po Wah Yuen
Yung Shue Long New Village
Yung Shue Long Old Village
Yung Shue Wan
Yung Shue Ling
Graves
Tai Yuen Village
KAM LO HOM
Ko Long
Ruin
圖例 LEGEND :
將由合約編號DC/2007/18所興建之污水渠
PROPOSED SEWER TO BE CONSTRUCTED UNDER CONTRACT NO. DC/2007/18
將由合約編號DC/2009/13所興建之海底排放管
PROPOSED SUBMARINE OUTFALL TO BE CONSTRUCTED UNDER CONTRACT NO. DC/2009/13
將由合約編號DC/2009/13所興建之二級污水處理廠
PROPOSED SECONDARY SEWAGE TREATMENT WORKS TO BE CONSTRUCTED UNDER CONTRACT NO. DC/2009/13
Scott Wilson
CDM
渠務署
DRAINAGE SERVICES DEPARTMENT
離島污水收集系統第一階段第一期第二部份
榕樹灣污水收集、處理及排放工程
OUTLYING ISLANDS SEWERAGE STAGE I PHASE 1 PART 2
YUNG SHUE WAN SEWERAGE, SEWAGE TREATMENT WORKS AND OUTFALL
SCALE: 1 : 4000
DRAWN: NYH
CHECKED: JPCW
DATE: 04/07
FIGURE NO. 圖則一 FIGURE 1
REV. -
榕樹灣之擬建污水工程概覽
LAYOUT PLAN OF PROPOSED SEWERAGE WORKS FOR YUNG SHUE WAN

Appendix B

Organization Structure and Contact Details of Relevant Parties

Contact Details of Key Personnel

Organization	Project Role	Name of Key Staff	Tel No.	Fax No.
DSD	Employer	Mr. Kenley CK Kwok	-	-
SCJV	Engineer's Representative	Mr. Neil Wong	2982 0240	2982 4129
SCJV	Resident Engineer (Yung Shue Wan Portion Area)	Mr. Alfred Cheung	2982 0240	2982 4129
Scott Wilson	Independent Environmental Checker	Mr. Rodney Ip	2410 3750	2428 9922
Leader	Project Manager	Mr. Vincent Chan	2982 1750	2982 1163
Leader	Site Agent	Mr. Ron Hung	2982 1750	2982 1163
Leader	Environmental Officer	Mr. William Wong	2982 8652	2982 8650
Leader	Section Engineer (Yung Shue Wan)	Mr. Burgess Yip	2982 1750	2982 1163
Leader	Site Engineer (Yung Shue Wan)	Mr. Justin Cheng	2982 1750	2982 1163
Leader	Safety Officer	Mr. Edwin Leung	2982 1750	2982 1163
AUES	Environmental Team Leader	Mr. T. W. Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Ms. Nicola Hon	2959 6059	2959 6079
AUES	Assistance Environmental Consultant	Mr. Ray Cheung	2959 6059	2959 6079
AUES	Team Supervisor	Mr. Ben Tam	2959 6059	2959 6079
AUES	Coral Specialist	Mr. Keith Kei	2959 6059	2959 6079

Legend:

DSD (Employer) – Drainage Services Department

CDM (Engineer) – Scott Wilson CDM Joint Venture

Leader (Main Contractor) – Leader Civil Engineering Corporation Limited

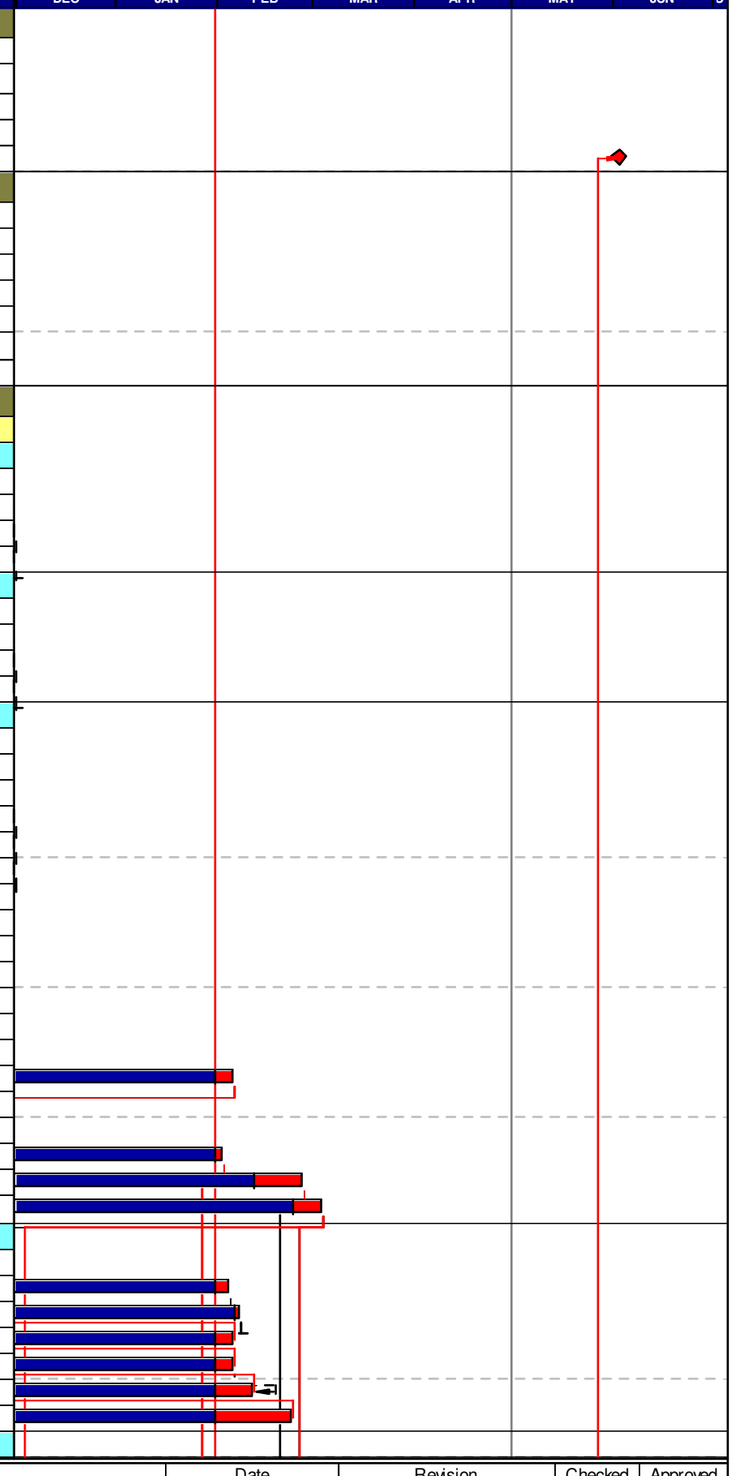
Scott Wilson (IEC) – Scott Wilson Limited

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

Appendix C

A Master and Three Months Rolling Construction Programme

Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors
Project Key Date										
KD0010	Receive Letter of Acceptance	0	100		05/05/10 A		05/05/10 A			KD0125
KD0020	Project Commencement Date	0	100		17/05/10 A		17/05/10 A			E&M0010, E&M0070, E&M1001,
KD0030	Section W1 - Slope Works in Portion A & C (456d)	0	100		14/10/11 A		14/10/11 A			KD0125
KD0050	Section W3 - Footpath Diversion in Ptn G (273d)	0	100		24/03/11 A		24/03/11 A			KD0125
KD0115	Start Operate Temp Sewage Treatment in Port. A&H	0	0		02/06/12		30/06/11 *	-338d *	E&M0510	KD0125
Preliminary (Civil)										
PRE0020	Pre-condition Survey	60	100	17/05/10 A	15/07/10 A	17/05/10 A	15/07/10 A		KD0020	
PRE0040	Erection of Engineer's Site Accommodation at YSW	60	100	17/05/10 A	15/07/10 A	17/05/10 A	15/07/10 A		KD0020	
PRE0050	Taking over the Secondary Engineer's Site Accomm	75	100	17/05/10 A	30/07/10 A	17/05/10 A	30/07/10 A		KD0020	
PRE0060	Application of Consent from Marine Department	60	100	17/05/10 A	15/07/10 A	17/05/10 A	15/07/10 A		KD0020	
PRE0090	Working Group Meeting for Outfall Construction	120	100	17/05/10 A	23/11/10 A	17/05/10 A	23/11/10 A		KD0020	SKW1151
PRE0100	Application & Consent of XP from HyD (Mo Tat Rd)	120	100	17/05/10 A	13/10/10 A	17/05/10 A	13/10/10 A		KD0020	SKW1491, SKW1501
PRE0130	Setup Web-site for EM&A Reporting	90	100	17/05/10 A	31/08/10 A	17/05/10 A	31/08/10 A		KD0020	
Preliminary (E&M)										
Technical Submission										
Process Design of SKWSTW & YSWSTW										
E&M0010	Submission	38	100	17/05/10 A	23/06/10 A	17/05/10 A	23/06/10 A		KD0020	E&M0020, E&M0040, E&M0235
E&M0020	Vetting and Comment by ER	21	100	24/06/10 A	14/07/10 A	24/06/10 A	14/07/10 A		E&M0010	E&M0030, E&M0040
E&M0030	Revision and Resubmission	125	100	17/05/10 A	30/11/11 A	17/05/10 A	30/11/11 A		E&M0020	E&M0080
E&M0080	Approval from the Engineer	14	100	02/11/11 A	30/11/11 A	02/11/11 A	30/11/11 A		E&M0030	E&M0295
Hydraulic Design										
E&M0040	Submission	21	100	17/05/10 A	16/09/10 A	17/05/10 A	16/09/10 A		E&M0010, E&M0020	E&M0050, E&M0101, E&M0240,
E&M0050	Vetting and Comment by ER	14	100	17/09/10 A	09/11/10 A	17/09/10 A	09/11/10 A		E&M0040	E&M0060
E&M0060	Revision and Resubmission	97	100	19/08/10 A	30/11/11 A	19/08/10 A	30/11/11 A		E&M0050	E&M0430
E&M0430	Approval from the Engineer	7	100	29/03/11 A	30/11/11 A	29/03/11 A	30/11/11 A		E&M0060	E&M0295
Equipment Submission & Approval										
E&M0070	Submission of Membrane Module	50	100	17/05/10 A	05/07/10 A	17/05/10 A	05/07/10 A		KD0020	E&M0090
E&M0090	Vetting and Comment by ER	14	100	06/07/10 A	19/07/10 A	06/07/10 A	19/07/10 A		E&M0070	E&M0100
E&M0100	Revision and Resubmission	14	100	20/07/10 A	24/02/11 A	20/07/10 A	24/02/11 A		E&M0090	E&M0160
E&M0101	Submission of Equipment	90	100	04/08/10 A	30/11/11 A	04/08/10 A	30/11/11 A		E&M0040	E&M0102
E&M0102	Vetting and Comment by ER	60	100	18/11/10 A	30/11/11 A	18/11/10 A	30/11/11 A		E&M0101	E&M0103
E&M0103	Revision and Resubmission	60	100	01/02/11 A	30/11/11 A	01/02/11 A	30/11/11 A		E&M0102	E&M0110, E&M0120, E&M0130,
E&M0110	Approval on Coarse Screens	30	100	25/05/11 A	25/05/11 A	25/05/11 A	25/05/11 A		E&M0103	E&M0390
E&M0120	Approval on Fine Screens	30	100	12/09/11 A	12/09/11 A	12/09/11 A	12/09/11 A		E&M0103	E&M0400, E&M3060
E&M0130	Approval on Pumps	30	100	23/06/11 A	23/06/11 A	23/06/11 A	23/06/11 A		E&M0103	E&M0410, E&M3070
E&M0140	Approval on Submersible Mixers	30	100	23/03/11 A	23/03/11 A	23/03/11 A	23/03/11 A		E&M0103	E&M0420, E&M3080
E&M0150	Approval on Grit Removal Equipment	30	100	10/10/11 A	10/10/11 A	10/10/11 A	10/10/11 A		E&M0103	E&M0380, E&M3030
E&M0160	Approval on MBR Membrane Modules (M.M.)	105	100	02/08/10 A	24/02/11 A	02/08/10 A	24/02/11 A		E&M0100	E&M0360, E&M0370, E&M3010
E&M0170	Approval on Sludge Dewatering Equipment	30	100	01/09/11 A	01/09/11 A	01/09/11 A	01/09/11 A		E&M0103	E&M0440, E&M3090
E&M0180	Approval on Valves, Pipes & Fittings	30	80	19/11/11 A	05/02/12	19/11/11 A	30/11/11	-67d	E&M0103	E&M0450, E&M3100
E&M0190	Approval on Penstocks	30	100	15/11/11 A	15/11/11 A	15/11/11 A	15/11/11 A		E&M0103	E&M0460, E&M3110
E&M0200	Approval on Instrumentation	30	100	21/06/11 A	21/06/11 A	21/06/11 A	21/06/11 A		E&M0103	E&M0470, E&M3130
E&M0210	Approval on MCC & LVSB	30	90	19/11/11 A	02/02/12	19/11/11 A	01/04/11	-307d	E&M0103	E&M0480, E&M3140
E&M0220	Approval on BS Equipment	30	50	30/11/11 A	26/02/12	30/11/11 A	04/10/11	-145d	E&M0103, E&M0280	E&M0490, E&M3150
E&M0230	Approval on FS Equipment	30	70	30/11/11 A	03/03/12	30/11/11 A	01/11/11	-123d	E&M0103, E&M0290	E&M0295, E&M0320, E&M0500,
Drawings Submission & Approval										
E&M0235	Sub. P&ID Drawings	100	100	24/06/10 A	22/08/10 A	24/06/10 A	22/08/10 A		E&M0010	
E&M0240	Sub. Plant GA Drawings	45	90	04/08/10 A	04/02/12	04/08/10 A	06/11/11	-90d	E&M0040	E&M0250, E&M0280, E&M0290
E&M0250	Sub. Builder's Works Requirements Drawings	15	90	04/08/10 A	07/02/12	04/08/10 A	07/11/11	-92d	E&M0240, E&M0260, E&M0270	E&M0280, E&M0290
E&M0260	Sub. Mechanical Installation Drawings	60	90	27/09/10 A	05/02/12	27/09/10 A	06/11/11	-92d	E&M0040	E&M0250
E&M0270	Sub. Electrical Installation Drawings	60	90	27/09/10 A	05/02/12	27/09/10 A	06/11/11	-92d	E&M0040	E&M0250, E&M0280
E&M0280	Sub. BS Installation Drawings	120	90	27/09/10 A	11/02/12	27/09/10 A	19/09/11	-145d	E&M0240, E&M0250, E&M0270	E&M0220
E&M0290	Sub. FS Installation Drawings	120	80	13/11/10 A	23/02/12	13/11/10 A	23/10/11	-123d	E&M0240, E&M0250	E&M0230
Statutory Submission										



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c Primavera Systems, Inc.	

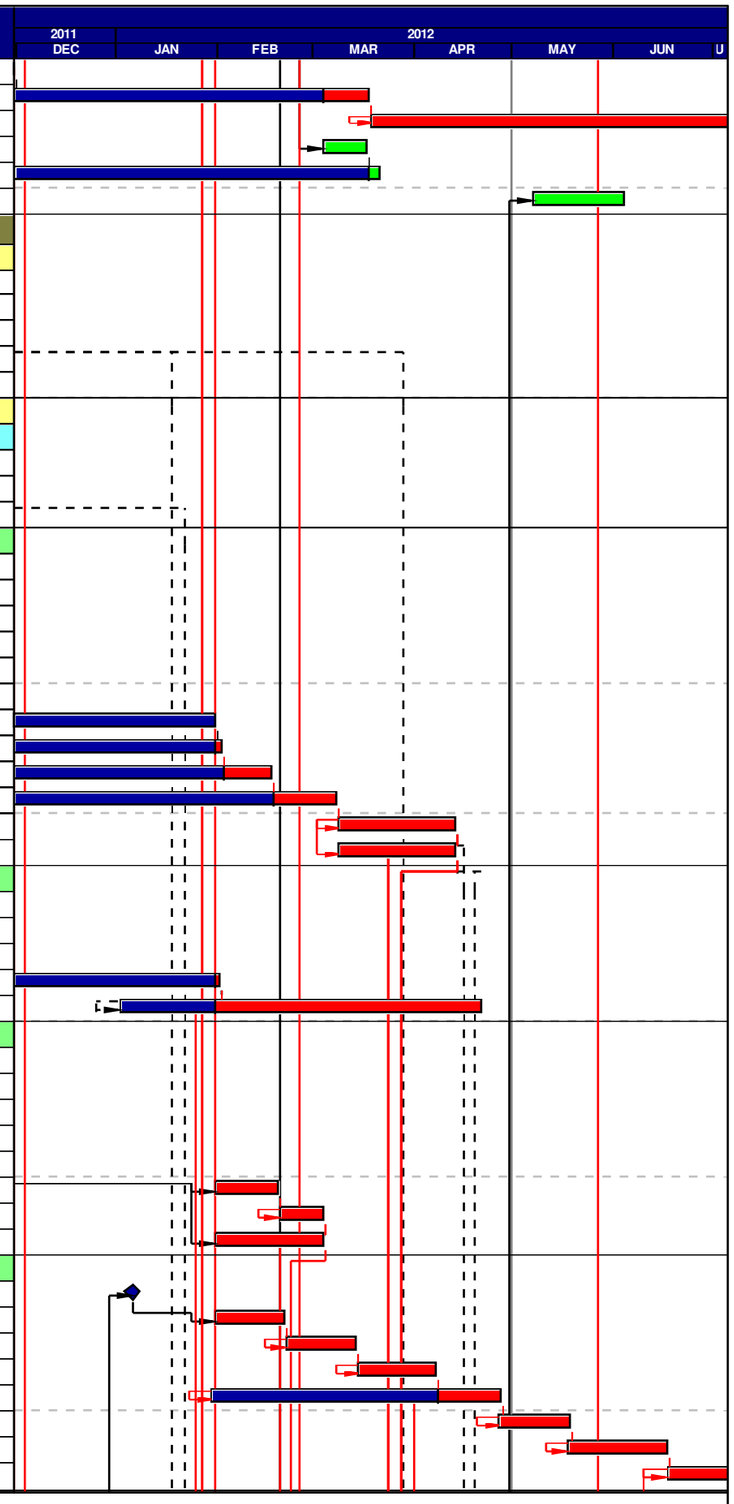
Early bar
Progress bar
Critical bar
Summary bar
Progress point
Critical point
Summary point
Start milestone point
Finish milestone point

Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
Construction of Sewage Treatment Works at YSW & SKW
3-month Rolling Programme (Feb 2012 - Apr 2012)

(Marked on 31 Jan 2012)

Date	Revision	Checked	Approved
31/01/12	Revision 0	RH	VC

Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors
E&M0295	Preparation of Submission to HEC	39	100	01/11/11 A	30/11/11 A	01/11/11 A	30/11/11 A		E&M0080, E&M0230, E&M0430	E&M0300
E&M0300	Application & Approval from HEC	150	90	01/11/11 A	18/03/12	01/11/11 A	05/01/12	-73d	E&M0295	E&M0305
E&M0305	Provision of Cables to the STWs	180	0	19/03/12	14/09/12	06/01/12	03/07/12	-73d	E&M0300	E&M0680
E&M0320	Form 314 Submission to FSD	14	0	04/03/12	17/03/12	25/04/12	08/05/12	52d	E&M0230	E&M0325, E&M0670
E&M0325	Submission to WSD	14	70	01/11/11 A	21/03/12	01/11/11 A	12/05/12	52d	E&M0320	E&M0670, E&M0680
E&M0350	Form 501 Submission to FSD (PS1 & PS2)	28	0	07/05/12	04/06/12	16/01/15	24/02/15	927d	E&M2016	
Yung Shue Wan										
Preliminary										
YSW0020	Approval of Environmental Team	16	100	17/05/10 A	01/06/10 A	17/05/10 A	01/06/10 A		KD0020	YSW0030, YSW0040
YSW0030	Baseline monitoring (Air & Noise)	14	100	31/07/10 A	22/08/10 A	31/07/10 A	22/08/10 A		YSW0020	YSW0035
YSW0035	Baseline Monitoring Report Submission (A & N)	14	100	23/08/10 A	07/09/10 A	23/08/10 A	07/09/10 A		YSW0030	YSW0152, YSW0500, YSW0610,
YSW0040	Baseline monitoring (Water)	213	100	30/07/10 A	31/12/10 A	30/07/10 A	31/12/10 A		YSW0020	YSW0350
YSW0050	Erect Hoarding and Fencing	60	100	17/05/10 A	15/07/10 A	17/05/10 A	15/07/10 A			
Section W 2 - YSW STW & Submarine Outfall										
Civil & Structural Work										
YSW0412	Mobilization	30	100	17/05/10 A	15/06/10 A	17/05/10 A	15/06/10 A		KD0020	YSW0422
YSW0422	Site Clearance	30	100	17/05/10 A	15/06/10 A	17/05/10 A	15/06/10 A		KD0020, YSW0412	YSW0432, YSW0500, YSW0610,
YSW0432	Initial Survey	14	100	02/06/10 A	15/06/10 A	02/06/10 A	15/06/10 A		YSW0422	YSW0510
YSW STP - GL H - T										
YSW0500	ELS & Excavation for Inlet Pumping Station	62	100	17/09/10 A	16/12/10 A	17/09/10 A	16/12/10 A		YSW0035, YSW0422	YSW0510
YSW0510	Sub-structure construction (Inlet Pumping Stn)	30	100	17/12/10 A	04/04/11 A	17/12/10 A	04/04/11 A		YSW0432, YSW0500	YSW0520
YSW0520	Backfill & Remove ELS (Inlet Pumping Stn)	30	100	03/01/11 A	05/05/11 A	03/01/11 A	05/05/11 A		YSW0510	YSW0530, YSW0610
YSW0530	ELS & Excavation for Equalization Tank	40	100	11/01/11 A	08/06/11 A	11/01/11 A	08/06/11 A		YSW0520	YSW0540
YSW0540	Sub-structure construction (Equalization Tank)	40	100	13/06/11 A	28/09/11 A	13/06/11 A	28/09/11 A		YSW0530	YSW0550
YSW0550	Backfilling & Remove ELS (Equalization Tank)	40	100	15/08/11 A	18/10/11 A	15/08/11 A	18/10/11 A		YSW0540	YSW0570
YSW0570	Excavate to formation by open cut	30	100	02/07/11 A	31/01/12 A	02/07/11 A	31/01/12 A		YSW0550	YSW0580
YSW0580	Base slab construction	30	90	06/07/11 A	02/02/12	06/07/11 A	01/07/11	-216d	YSW0570	YSW0590
YSW0590	G/F to 1/F construction	50	70	29/09/11 A	17/02/12	29/09/11 A	16/07/11	-216d	YSW0580	YSW0600
YSW0600	1/F to Roof construction	50	60	01/11/11 A	08/03/12	01/11/11 A	05/08/11	-216d	YSW0590	YSW0720, YSW0800
YSW0720	Water Test	36	0	09/03/12	13/04/12	06/08/11	10/09/11	-216d	YSW0600	E&M0530, E&M0540, E&M0550,
YSW0800	ABWF installation	36	0	09/03/12	13/04/12	06/08/11	10/09/11	-216d	YSW0600	E&M0530, E&M0540, E&M0550,
YSW STP - GL T - X										
YSW0610	Excavate to formation	50	100	08/09/10 A	17/09/10 A	08/09/10 A	17/09/10 A		YSW0035, YSW0422, YSW0520	YSW0620
YSW0620	Base slab construction	60	100	18/09/10 A	23/05/11 A	18/09/10 A	23/05/11 A		YSW0610	YSW0630
YSW0630	G/F to 1/F construction	95	100	27/12/10 A	19/07/11 A	27/12/10 A	19/07/11 A		YSW0620	YSW0640
YSW0640	1/F to Roof Construction	91	98	20/07/11 A	01/02/12	20/07/11 A	26/08/11	-160d	YSW0630	YSW0810, YSW0840
YSW0810	ABWF installation	86	5	02/01/12 A	21/04/12	02/01/12 A	25/09/11	-209d	YSW0640	E&M0610, E&M0620, E&M0630,
YSW STP - GL F - H & DN Tanks										
YSW0650	ELS & Excavation for DN Tanks	70	100	21/08/10 A	14/10/10 A	21/08/10 A	14/10/10 A		YSW0035, YSW0422	YSW0660
YSW0660	Sub-struction construction (DN Tanks)	40	100	15/10/10 A	31/12/10 A	15/10/10 A	31/12/10 A		YSW0650	YSW0670
YSW0670	Backfill & Remove ELS (DN Tanks)	32	100	08/01/11 A	15/03/11 A	08/01/11 A	15/03/11 A		YSW0660	YSW0680
YSW0680	Base slab construction	30	100	16/03/11 A	28/03/11 A	16/03/11 A	28/03/11 A		YSW0670	YSW0690
YSW0690	Superstructure construction upto +10.5mPD	60	100	30/03/11 A	18/06/11 A	30/03/11 A	18/06/11 A		YSW0680	YSW0700, YSW0820
YSW0700	Apply protective paint	20	0	31/01/12	19/02/12	27/02/11	18/03/11	-338d	YSW0690	YSW0710
YSW0710	Water test	14	0	20/02/12	04/03/12	19/03/11	01/04/11	-338d	YSW0700	E&M0510, E&M0630, E&M0640
YSW0820	ABWF installation	34	0	31/01/12	04/03/12	27/02/11	01/04/11	-338d	YSW0690	E&M0510, E&M0630, E&M0640
YSW STP - GL A - F										
YSW0730	Completion of HDD	0	100	06/01/12 A		06/01/12 A			YSW0360	YSW0740
YSW0740	ELS & excavate for Outfall Shaft	22	0	31/01/12	21/02/12	03/07/11	25/07/11	-212d	YSW0730	YSW0750
YSW0750	Sub-structure construction (outfall shaft)	22	0	22/02/12	14/03/12	25/07/11	16/08/11	-212d	YSW0740	YSW0760
YSW0760	Backfill & remove ELS (outfall shaft)	24	0	15/03/12	07/04/12	16/08/11	09/09/11	-212d	YSW0750	YSW0770, YSW1470
YSW0770	Excavate to formation by open cut	22	10	30/01/12 A	27/04/12	30/01/12 A	28/09/11	-212d	YSW0760	YSW0780
YSW0780	Base slab construction	21	0	27/04/12	18/05/12	29/09/11	19/10/11	-212d	YSW0770	YSW0790
YSW0790	Superstructure construction upto +10.5mPD	30	0	18/05/12	17/06/12	20/10/11	18/11/11	-212d	YSW0780	YSW0795, YSW0870
YSW0795	Apply protective paint	30	0	17/06/12	17/07/12	19/11/11	18/12/11	-212d	YSW0790	YSW0830



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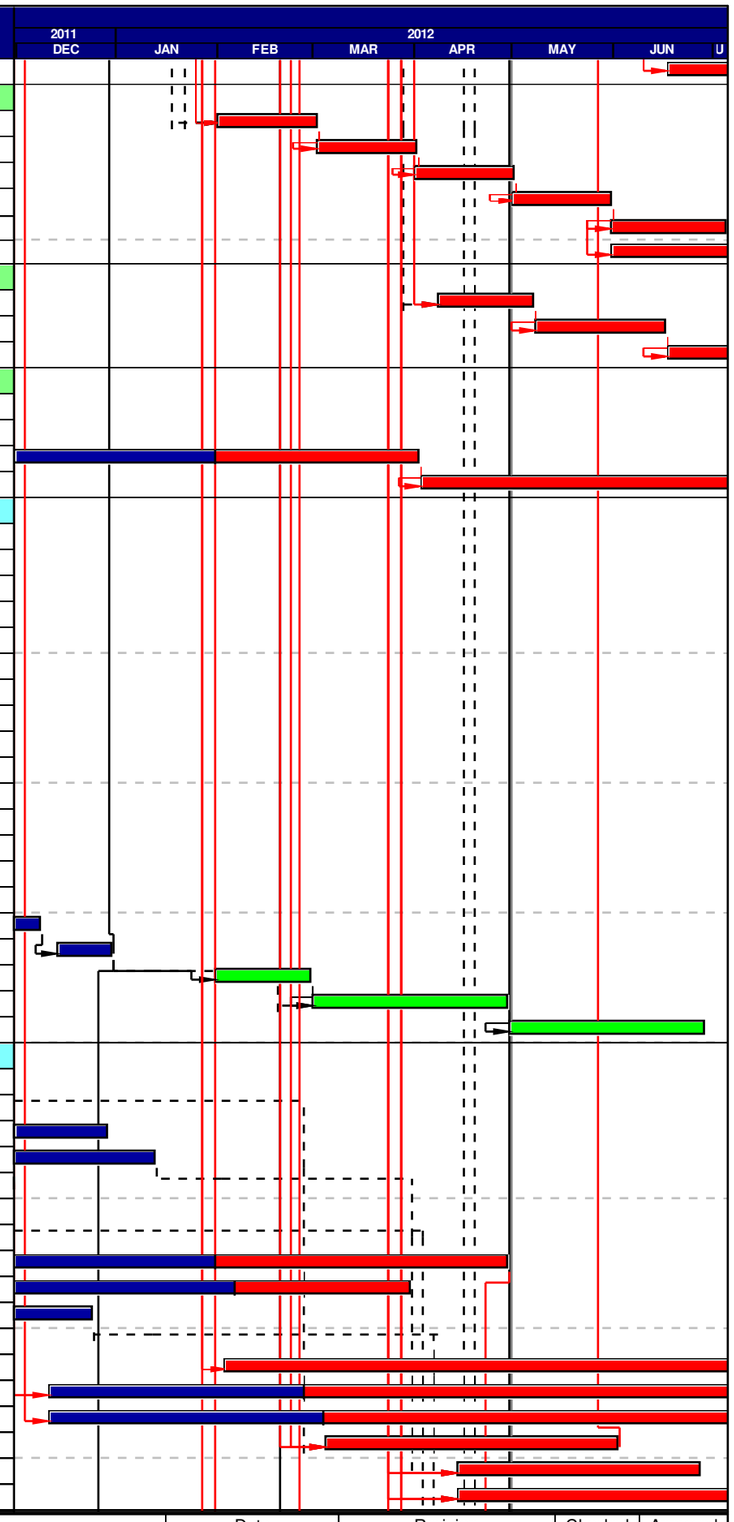
Start milestone point
Finish milestone point

Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
Construction of Sewage Treatment Works at YSW & SKW
3-month Rolling Programme (Feb 2012 - Apr 2012)

(Marked on 31 Jan 2012)

Date	Revision	Checked	Approved
31/01/12	Revision 0	RH	VC

Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors
YSW0870	ABWF installation	60	0	17/06/12	16/08/12	28/12/11	25/02/12	-173d	YSW0790	E&M0520, E&M0605, E&M0630,
Fire Hose Reel / Sprinkler Pump Rm										
YSW0840	ELS & excavate to formation (+0 mPD approx.)	30	0	01/02/12	02/03/12	01/09/11	30/09/11	-154d	YSW0035, YSW0422, YSW0640	YSW0860
YSW0860	Sub-structure construction	30	0	02/03/12	01/04/12	01/10/11	30/10/11	-154d	YSW0840	YSW0880
YSW0880	Backfill & remove ELS	30	0	01/04/12	01/05/12	31/10/11	29/11/11	-154d	YSW0860	YSW0890
YSW0890	Construction Ground Slab at +5.2mPD	30	0	01/05/12	31/05/12	30/11/11	29/12/11	-154d	YSW0880	YSW0900, YSW0930
YSW0900	Superstructure construction upto +8.2mPD	35	0	31/05/12	05/07/12	30/12/11	02/02/12	-154d	YSW0890	YSW0910, YSW0925
YSW0930	Construction of Gurad House	60	0	31/05/12	30/07/12	06/05/12	04/07/12	-26d	YSW0890	E&M0690, KD0040
Emergency Storage Tank										
YSW1470	ELS & excavate to formation (-1.5mPD Approx.)	30	0	08/04/12	07/05/12	07/11/11	06/12/11	-153d	YSW0035, YSW0760	YSW1480
YSW1480	Sub-structure construction	40	0	08/05/12	16/06/12	07/12/11	15/01/12	-153d	YSW1470	YSW1490
YSW1490	Backfill & extract sheetpile	30	0	17/06/12	16/07/12	16/01/12	14/02/12	-153d	YSW1480	YSW1500
Road, Drain, Cable Draw Pits & Ducting										
YSW0152	Temporary Diversion of Drainage	92	100	02/12/10 A	09/05/11 A	02/12/10 A	09/05/11 A		YSW0035	YSW0153
YSW0153	Removal of Ex U-Channel where clash with B. Wall	50	100	20/11/10 A	20/04/11 A	20/11/10 A	20/04/11 A		YSW0152	YSW0154
YSW0154	Construction of Subsoil Drain	90	30	24/08/11 A	02/04/12	24/08/11 A	05/01/12	-88d	YSW0153	YSW0155
YSW0155	RC Concrete Barrier (above Ground Level)	120	0	03/04/12	31/07/12	06/01/12	04/05/12	-88d	YSW0154	YSW1640, YSW1660
Submarine Outfall										
YSW0180	Coordination of HEC	53	100	17/05/10 A	08/07/10 A	17/05/10 A	08/07/10 A			YSW0350
YSW0200	Submission and Approval of Ecologist	60	100	17/05/10 A	15/07/10 A	17/05/10 A	15/07/10 A			YSW0210
YSW0210	Ecology Survey	90	100	16/07/10 A	11/02/11 A	16/07/10 A	11/02/11 A		YSW0200	YSW0350
YSW0220	Submission and Approval of In. Hydro Survey	90	100	17/05/10 A	27/08/10 A	17/05/10 A	27/08/10 A			YSW0230
YSW0230	Hydrogrophical Survey (YSW)	45	100	31/08/10 A	31/01/11 A	31/08/10 A	31/01/11 A		YSW0220	YSW0350
YSW0240	Material Submission, Approval of HDPE pipe	93	100	17/05/10 A	31/03/11 A	17/05/10 A	31/03/11 A			YSW0250
YSW0250	Submit and Approval of Method Statement for HDD	120	100	24/09/10 A	25/03/11 A	24/09/10 A	25/03/11 A		YSW0240	YSW0260, YSW0270, YSW0340
YSW0260	Submission of HDD Method Statement to HEC	14	100	26/01/11 A	24/03/11 A	26/01/11 A	24/03/11 A		YSW0250	YSW0320, YSW0340
YSW0270	Additional G.I. Boreholes (YSW)	62	100	06/11/10 A	19/01/11 A	06/11/10 A	19/01/11 A		YSW0250	YSW0280, YSW0320
YSW0280	Submission of propose alignment to the Eng	14	100	02/02/11 A	04/03/11 A	02/02/11 A	04/03/11 A		YSW0270	YSW0290, YSW0310, YSW0340
YSW0290	Submission of Marine Notice	60	100	31/01/11 A	29/03/11 A	31/01/11 A	29/03/11 A		YSW0280	YSW0350
YSW0310	Construction of Entry Pit and Preparation Work	39	100	15/03/11 A	31/03/11 A	15/03/11 A	31/03/11 A		YSW0280	YSW0320, YSW0330
YSW0320	Prepare of HDD Drill Rig Set-up (YSW)	39	100	02/04/11 A	28/04/11 A	02/04/11 A	28/04/11 A		YSW0260, YSW0270, YSW0310	YSW0330, YSW0350
YSW0330	Establishment of HDD plant & equipment	14	100	09/04/11 A	14/04/11 A	09/04/11 A	14/04/11 A		YSW0310, YSW0320	YSW0340
YSW0340	Setting up at drillhole location	7	100	19/04/11 A	28/04/11 A	19/04/11 A	28/04/11 A		YSW0250, YSW0260, YSW0280,	YSW0350
YSW0350	Drill pilot hole and reaming hole - NS400 - 530m	123	100	29/04/11 A	08/12/11 A	29/04/11 A	08/12/11 A		YSW0040, YSW0180, YSW0210,	YSW0360
YSW0360	Installation of NS400 HDPE 530m	14	100	14/12/11 A	30/12/11 A	14/12/11 A	30/12/11 A		YSW0350	SKW1181, YSW0365, YSW0370,
YSW0365	Set up of Silt Curtain as per EP	30	0	31/01/12	29/02/12	20/07/13	18/08/13	536d	YSW0360	YSW0370
YSW0370	Dredging of Marine Deposit for Diffuser (YSW)	60	0	01/03/12	29/04/12	19/08/13	17/10/13	536d	YSW0360, YSW0365	YSW0380
YSW0380	Diffuser Construction (YSW)	60	0	30/04/12	28/06/12	18/10/13	16/12/13	536d	YSW0370	YSW0390
E&M Works - YSW STP										
E&M0360	Delivery of MBR Memb. Mod. (MBR Tk 4)	137	100	24/02/11 A	21/06/11 A	24/02/11 A	21/06/11 A		E&M0160	E&M0510
E&M0370	Delivery of MBR Membrane Modules - 2nd Shipment	150	100	24/02/11 A	17/10/11 A	24/02/11 A	17/10/11 A		E&M0160	E&M0520
E&M0380	Delivery of Grit Removal Equipment	180	100	10/10/11 A	29/12/11 A	10/10/11 A	29/12/11 A		E&M0150	E&M0530
E&M0390	Delivery of Coarse Screens	162	100	06/09/11 A	12/01/12 A	06/09/11 A	12/01/12 A		E&M0110	E&M0540
E&M0400	Delivery of Fine Screens	180	100	12/09/11 A	30/11/11 A	12/09/11 A	30/11/11 A		E&M0120	E&M0550
E&M0410	Delivery of Pumps	162	100	23/06/11 A	05/09/11 A	23/06/11 A	05/09/11 A		E&M0130	E&M0560
E&M0420	Delivery of Submersible Mixers	162	100	26/02/11 A	17/11/11 A	26/02/11 A	17/11/11 A		E&M0140	E&M0570
E&M0440	Delivery of Sludge Dewatering Equipment	180	50	01/09/11 A	29/04/12	01/09/11 A	28/09/11	-214d	E&M0170	E&M0580
E&M0450	Delivery of Valves, Pipes & Fittings	180	70	30/08/11 A	30/03/12	30/08/11 A	23/01/12	-67d	E&M0180	E&M0590, E&M0605
E&M0460	Delivery of Penstocks	180	100	12/08/11 A	24/12/11 A	12/08/11 A	24/12/11 A		E&M0190	E&M0600
E&M0470	Delivery of Instruments	180	100	03/11/11 A	21/06/11 A	03/11/11 A	21/06/11 A		E&M0200	E&M0610
E&M0480	Delivery of MCC LVSB	177	0	03/02/12	28/07/12	02/04/11	25/09/11	-307d	E&M0210	E&M0620
E&M0490	Delivery of BS Equipment	180	20	11/12/11 A	19/07/12	11/12/11 A	25/02/12	-145d	E&M0220	E&M0630
E&M0500	Delivery FS Equipment	180	20	11/12/11 A	25/07/12	11/12/11 A	24/03/12	-123d	E&M0230	E&M0330, E&M0640
E&M0510	Install Membrane Modules in MBR Tank no. 4	90	0	05/03/12	02/06/12	02/04/11	30/06/11	-338d	E&M0360, YSW0710, YSW0820	KD0115
E&M0540	Install Coarse Screens	75	0	14/04/12	27/06/12	11/09/11	24/11/11	-216d	E&M0390, YSW0720, YSW0800	E&M0530, E&M0550, E&M0570,
E&M0560	Install Pumps	90	0	14/04/12	12/07/12	11/09/11	09/12/11	-216d	E&M0410, YSW0720, YSW0800	E&M0570, E&M0590, E&M0660



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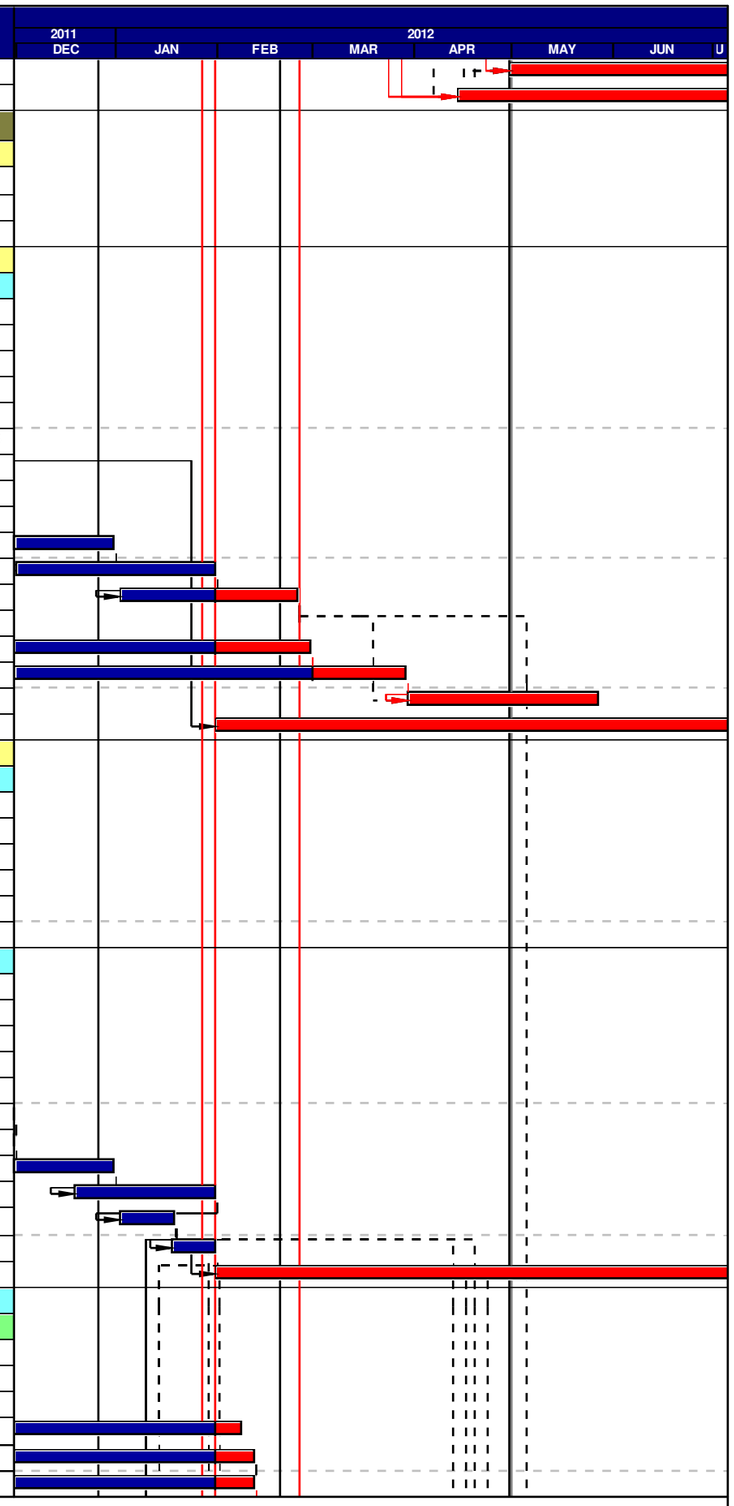
Early bar
Progress bar
Critical bar
Summary bar
Progress point
Critical point
Summary point
Start milestone point
Finish milestone point

Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
Construction of Sewage Treatment Works at YSW & SKW
3-month Rolling Programme (Feb 2012 - Apr 2012)

(Marked on 31 Jan 2012)

Date	Revision	Checked	Approved
31/01/12	Revision 0	RH	VC

Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors
E&M0580	Install Sludge Dewatering Equipment	280	0	30/04/12	03/02/13	29/09/11	04/07/12	-214d	E&M0440, YSW0720, YSW0800	E&M0690
E&M0600	Install Penstocks (Batch 1, GL H - T)	180	0	14/04/12	10/10/12	07/01/12	04/07/12	-98d	E&M0460, YSW0720, YSW0800	E&M0690
Sok Kwu Wan										
Preliminary										
SKW0250	Approval of Environmental Team	16	100	17/05/10 A	01/06/10 A	17/05/10 A	01/06/10 A		KD0020	SKW0260
SKW0260	Baseline monitoring (Air & Noise)	14	100	02/06/10 A	15/06/10 A	02/06/10 A	15/06/10 A		SKW0250	SKW0265, SKW0592, SKW0681,
SKW0265	Baseline Monitoring Submission (A & N)	14	100	16/06/10 A	08/07/10 A	16/06/10 A	08/07/10 A		SKW0260	SKW0592, SKW0681, SKW0921,
Section W 4 - Slope Works in Portions H & I										
Geotechnical Works										
SKW0588	Construct scaffolding access	30	100	15/06/10 A	14/07/10 A	15/06/10 A	14/07/10 A		KD0020	SKW0590
SKW0590	Site Clearance for Slope	100	100	15/07/10 A	22/10/10 A	15/07/10 A	22/10/10 A		SKW0588	SKW0591
SKW0591	Initial Survey for Slope	28	100	21/09/10 A	18/10/10 A	21/09/10 A	18/10/10 A		SKW0590	SKW0592
SKW0592	Temporary Rockfall fence at ex. Footpath	43	100	19/10/10 A	06/01/11 A	19/10/10 A	06/01/11 A		SKW0260, SKW0265, SKW0591	SKW05931
SKW05931	Construction of Haul Road (To +21mPD)	50	100	28/11/10 A	30/12/10 A	28/11/10 A	30/12/10 A		SKW0592	SKW05932
SKW05932	Construction of Haul Road (To +42mPD)	60	100	15/12/10 A	31/01/11 A	15/12/10 A	31/01/11 A		SKW05931	SKW05933, SKW05940, SKW0595
SKW05933	Excavation of Rock Berm (+50mPD to +42.5mPD)	30	100	01/03/11 A	03/05/11 A	01/03/11 A	03/05/11 A		SKW05932	SKW05934
SKW05934	Excavation of Rock Berm (+42.5mPD to +35mPD)	30	100	04/05/11 A	31/05/11 A	04/05/11 A	31/05/11 A		SKW05933	SKW05935, SKW05941
SKW05935	Excavation of Rock Berm (+35mPD to +27.5mPD)	30	100	02/07/11 A	30/09/11 A	02/07/11 A	30/09/11 A		SKW05934	SKW05936
SKW05936	Excavation of Rock Berm (+27.5mPD to +20mPD)	30	100	15/09/11 A	31/12/11 A	15/09/11 A	31/12/11 A		SKW05935	SKW05937, SKW05942
SKW05937	Excavation of Rock Berm (+20mPD to +12.5mPD)	30	100	01/12/11 A	31/01/12 A	01/12/11 A	31/01/12 A		SKW05936	SKW05938
SKW05938	Excavation of Rock Berm (+12.5mPD to +5mPD)	28	10	02/01/12 A	25/02/12	02/01/12 A	17/06/11	-252d	SKW05937	SKW05943, SKW1371
SKW05940	Slope Drainage & Misc. at 50mPD	60	100	01/04/11 A	03/05/11 A	01/04/11 A	03/05/11 A		SKW05932	SKW05941
SKW05941	Slope Drainage & Misc. (+50 to +35mPD)	60	50	04/05/11 A	29/02/12	04/05/11 A	19/05/11	-286d	SKW05934, SKW05940	SKW05942
SKW05942	Slope Drainage & Misc. (+35 to +20mPD)	58	50	01/11/11 A	29/03/12	01/11/11 A	17/06/11	-286d	SKW05936, SKW05941	SKW05943
SKW05943	Slope Drainage & Misc. (+20 to +5mPD)	59	0	30/03/12	27/05/12	18/06/11	15/08/11	-286d	SKW05938, SKW05942	KD0060
SKW0595	Rock Meshing & Rockfall Fence	260	0	31/01/12	16/10/12	29/11/10	15/08/11	-428d	SKW05932	KD0060
Section W 5 - P.S. No. 1 in Portion D										
Civil & Geotechnical Works										
SKW0651	Site Clearance	7	100	17/05/10 A	23/05/10 A	17/05/10 A	23/05/10 A		KD0020	SKW0652
SKW0652	Initial Survey	7	100	24/05/10 A	30/05/10 A	24/05/10 A	30/05/10 A		SKW0651	SKW0661, SKW0681
SKW0661	Transplantation for uncommon vegatation	30	100	31/05/10 A	29/06/10 A	31/05/10 A	29/06/10 A		SKW0652	SKW0681
SKW0681	Excavate to lower the working platform to +3mPD	49	100	30/06/10 A	17/08/10 A	30/06/10 A	17/08/10 A		SKW0260, SKW0265, SKW0652,	SKW0691
SKW0691	ELS to +2.2mPD	40	100	18/08/10 A	26/09/10 A	18/08/10 A	26/09/10 A		SKW0681	SKW0721
SKW0721	Excavate to formation	92	100	17/09/10 A	31/03/11 A	17/09/10 A	31/03/11 A		SKW0691	SKW0741
Structural Works										
SKW0741	Base Slab (BSD2 & BSD3)	15	100	20/04/11 A	28/07/11 A	20/04/11 A	28/07/11 A		SKW0721	SKW0751
SKW0751	Wall & Column (CA1-3,CB1-3,CC1-3, CD1-2) Approx.	14	100	01/09/11 A	30/09/11 A	01/09/11 A	30/09/11 A		SKW0741	SKW0761
SKW0761	Base Slab (BSD1) to +3.98	14	100	01/09/11 A	30/09/11 A	01/09/11 A	30/09/11 A		SKW0751	SKW0771
SKW0771	Wall & Column (CA1-3,CB1-3,CC1-3, CD1-2) to +6.3	14	100	01/10/11 A	31/10/11 A	01/10/11 A	31/10/11 A		SKW0761	SKW0781
SKW0781	Base Slab (GSB1-3,GSC1-5,GSD1-2)	14	100	15/10/11 A	15/11/11 A	15/10/11 A	15/11/11 A		SKW0771	SKW0791
SKW0791	Base Slab (GSE1 & GSF1)	14	100	01/11/11 A	30/11/11 A	01/11/11 A	30/11/11 A		SKW0781	SKW0801
SKW0801	Wall & Column (CE1-3, CF1-3)	14	100	01/11/11 A	30/11/11 A	01/11/11 A	30/11/11 A		SKW0791	SKW0811
SKW0811	Ground Beam (GB1-1,2 GB2-1,2 GB3-1, GBA-1,GBB1-4	14	100	30/11/11 A	31/12/11 A	30/11/11 A	31/12/11 A		SKW0801	SKW0821
SKW0821	Wall & Column (CA1-3,CB1-3,CC1-3, CD1-2) to +10.	14	100	19/12/11 A	31/01/12 A	19/12/11 A	31/01/12 A		SKW0811	SKW0831
SKW0831	Roof Beams & Parapet	14	100	02/01/12 A	18/01/12 A	02/01/12 A	18/01/12 A		SKW0821	E&M1101, E&M1102, E&M1103,
SKW0841	ABWF installation	45	100	18/01/12 A	31/01/12	18/01/12 A	31/01/12		SKW0831	E&M1101, E&M1102, E&M1103,
SKW0861	300mm U-channel & 675mm Step Channel	168	0	31/01/12	16/07/12	01/06/11	15/11/11	-244d	SKW0831, SKW0841	KD0070
E&M Works (PS1)										
Submission & Delivery										
E&M1001	Submission of Pumps	198	100	17/05/10 A	24/02/11 A	17/05/10 A	24/02/11 A		KD0020	E&M1011
E&M1002	Submission of Gen-Set	198	100	17/05/10 A	24/02/11 A	17/05/10 A	24/02/11 A			E&M1012
E&M1003	Submission of DeO System	198	100	17/05/10 A	11/07/11 A	17/05/10 A	11/07/11 A			E&M1013
E&M1004	Submission of LV SB & MCC	180	95	17/05/10 A	08/02/12	17/05/10 A	02/12/10	-433d		E&M1014
E&M1005	Submission of Instrumentation	243	95	17/05/10 A	12/02/12	17/05/10 A	01/05/11	-286d		E&M1015
E&M1006	Submission of FS System	243	95	17/05/10 A	12/02/12	17/05/10 A	05/02/11	-372d		E&M1016



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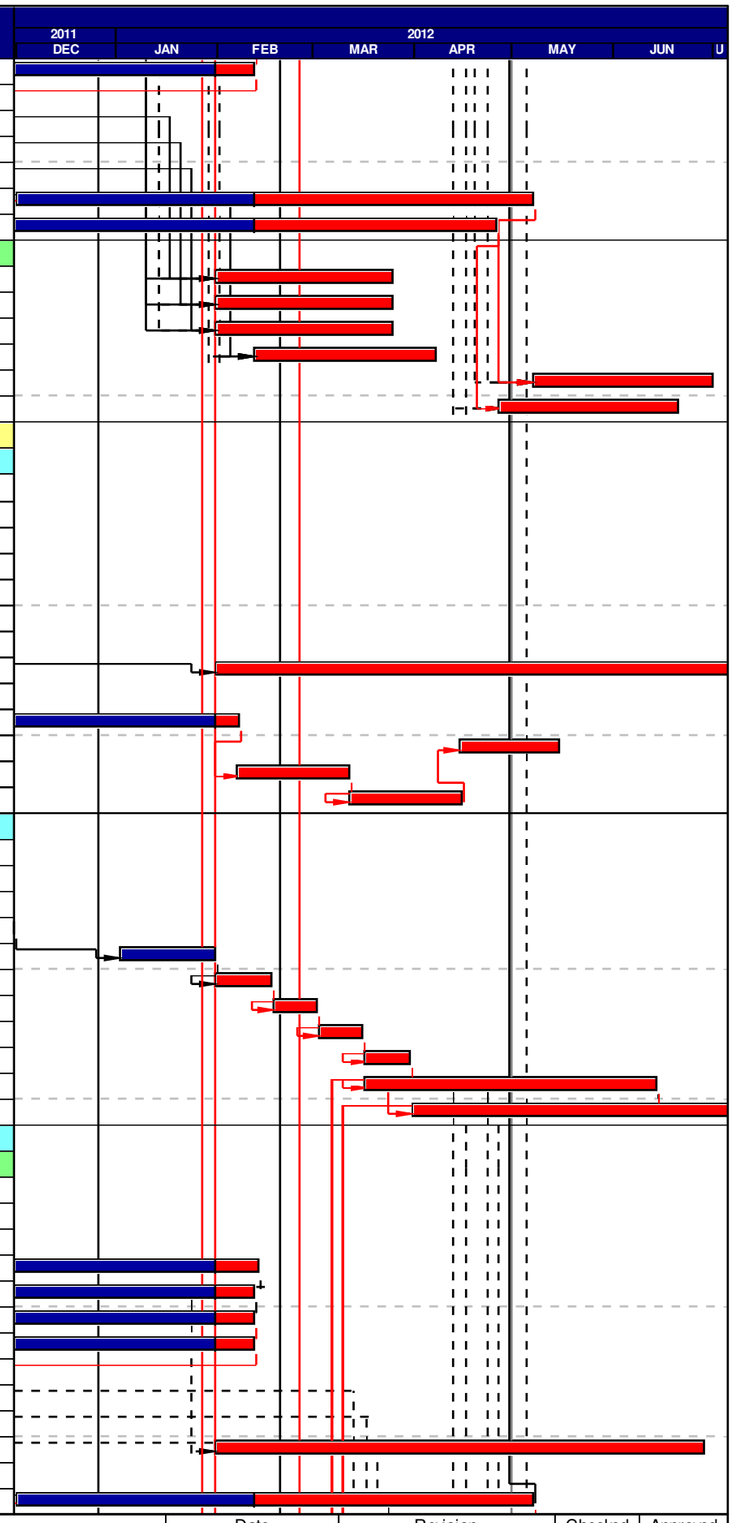
Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
Construction of Sewage Treatment Works at YSW & SKW
3-month Rolling Programme (Feb 2012 - Apr 2012)

(Marked on 31 Jan 2012)

Date	Revision	Checked	Approved
31/01/12	Revision 0	RH	VC

Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors
E&M1007	Submission of BS System	243	95	17/05/10 A	12/02/12	17/05/10 A	16/02/11	-361d		E&M1017
E&M1011	Delivery of Pumps	150	100	24/02/11 A	21/07/11 A	24/02/11 A	21/07/11 A		E&M1001	E&M1101
E&M1012	Delivery of Gen-Set	150	100	24/02/11 A	23/09/11 A	24/02/11 A	23/09/11 A		E&M1002	E&M1102
E&M1013	Delivery of DeO System	150	100	11/07/11 A	28/10/11 A	11/07/11 A	28/10/11 A		E&M1003	E&M1103
E&M1015	Delivery of Instrumentation	90	100	01/11/11 A	03/11/11 A	01/11/11 A	03/11/11 A		E&M1005	E&M1105
E&M1016	Delivery of FS Equipment	107	20	01/12/11 A	07/05/12	01/12/11 A	01/05/11	-372d	E&M1006	E&M1106
E&M1017	Delivery of BS Equipment	107	30	15/11/11 A	26/04/12	15/11/11 A	01/05/11	-361d	E&M1007	E&M1107
Installation, T&C										
E&M1101	Install Pumps	55	0	31/01/12	25/03/12	02/05/11	25/06/11	-274d	E&M1011, SKW0831, SKW0841	E&M1110, E&M1140
E&M1102	Install Gen Set	55	0	31/01/12	25/03/12	02/05/11	25/06/11	-274d	E&M1012, SKW0831, SKW0841	E&M1110, E&M1140
E&M1103	Install DeO System	55	0	31/01/12	25/03/12	02/05/11	25/06/11	-274d	E&M1013, SKW0831, SKW0841	E&M1110, E&M1140
E&M1105	Install Instrumentation	55	0	12/02/12	07/04/12	02/05/11	25/06/11	-286d	E&M1015, SKW0831, SKW0841	E&M1140
E&M1106	Install FS Equipment	55	0	07/05/12	01/07/12	02/05/11	25/06/11	-372d	E&M1016, SKW0831, SKW0841	E&M1130, E&M1140
E&M1107	Install BS Equipment	55	0	27/04/12	20/06/12	02/05/11	25/06/11	-361d	E&M1017, SKW0831, SKW0841	E&M1110, E&M1140
Section W 6 - Sewer and PS No.2 in Portions E&H										
Civil & Geotechnical Works										
SKW0881	Site Clearance	7	100	17/05/10 A	23/05/10 A	17/05/10 A	23/05/10 A		KD0020	SKW0891
SKW0891	Plant mobilization	7	100	17/05/10 A	23/05/10 A	17/05/10 A	23/05/10 A		SKW0881	SKW0892
SKW0892	Initial Survey	30	100	24/05/10 A	22/06/10 A	24/05/10 A	22/06/10 A		SKW0891	SKW0901
SKW0901	Tree Transplantation	30	100	23/06/10 A	22/07/10 A	23/06/10 A	22/07/10 A		SKW0892	SKW0921
SKW0921	Cut Slope & U-Channel	14	100	23/07/10 A	31/01/11 A	23/07/10 A	31/01/11 A		SKW0260, SKW0265, SKW0901	SKW0931, SKW0951
SKW0931	Hoarding & Fencing	14	100	15/09/10 A	07/10/10 A	15/09/10 A	07/10/10 A		SKW0921	SKW0951
SKW0951	Excavate to formation	106	100	04/10/10 A	13/06/11 A	04/10/10 A	13/06/11 A		SKW0921, SKW0931	SKW0961, SKW0971
SKW0961	Mass Conc. Retaining Wall	257	0	31/01/12	13/10/12	04/03/11	15/11/11	-333d	SKW0951	KD0080
SKW1491	Concrete Trough (ChA0+45 - ChA1+75)	180	100	01/03/11 A	31/08/11 A	01/03/11 A	31/08/11 A		PRE0100	SKW15111
SKW15111	Twin DN150 DI Rising Main (ChA0+45 - ChA5+79)	150	95	16/05/11 A	07/02/12	16/05/11 A	09/08/11	-182d	SKW1491	SKW1531
SKW15112	Twin DN150 DI Rising Main (ChA0+00 - ChA0+45)	30	0	15/04/12	15/05/12	17/10/11	15/11/11	-182d	SKW1581	KD0080
SKW1531	Extent village sewers S163.1 & S164.1	34	0	07/02/12	12/03/12	10/08/11	12/09/11	-182d	SKW15111	SKW1581
SKW1581	Construct Manhole no. S163 & S164	34	0	12/03/12	15/04/12	13/09/11	16/10/11	-182d	SKW1531	KD0080, SKW15112
Structural Works										
SKW0971	Base Slab to -3.2mPD	14	100	02/05/11 A	31/08/11 A	02/05/11 A	31/08/11 A		SKW0951	SKW0981
SKW0981	Basement Beam (BBB-1,BBC-1,BBD-1)	14	100	01/09/11 A	15/10/11 A	01/09/11 A	15/10/11 A		SKW0971	SKW0991
SKW0991	Wall & Column to +1.5mPD	14	100	15/10/11 A	31/10/11 A	15/10/11 A	31/10/11 A		SKW0981	SKW1001
SKW1001	Base Slab (BSC-4) to +3mPD	14	100	01/11/11 A	30/11/11 A	01/11/11 A	30/11/11 A		SKW0991	SKW1011
SKW1011	Wall & Column to +5.35mPD	14	100	02/01/12 A	31/01/12 A	02/01/12 A	31/01/12 A		SKW1001	SKW1021
SKW1021	Ground Slab	20	10	31/01/12 A	17/02/12	31/01/12 A	03/03/11	-351d	SKW1011	SKW1031
SKW1031	Ground Beam	14	0	18/02/12	02/03/12	04/03/11	17/03/11	-351d	SKW1021	SKW1041
SKW1041	Wall & Column to +9.35mPD	14	0	03/03/12	16/03/12	18/03/11	31/03/11	-351d	SKW1031	SKW1051
SKW1051	Roof Beams & Parapet	14	0	17/03/12	30/03/12	01/04/11	14/04/11	-351d	SKW1041	E&M2101, E&M2102, E&M2103,
SKW1061	ABWF installation (wet tray/dry tray)	90	0	17/03/12	14/06/12	18/04/11	16/07/11	-334d	SKW1051	E&M2101, E&M2102, E&M2103,
SKW1081	375mm U-channel with catchpits	215	0	31/03/12	31/10/12	15/04/11	15/11/11	-351d	SKW1051	KD0080
E&M Works (PS2)										
Submission & Delivery										
E&M2001	Submission of Pumps	198	100	17/05/10 A	24/02/11 A	17/05/10 A	24/02/11 A		KD0020	E&M2011
E&M2002	Submission of Gen-Set	198	100	17/05/10 A	24/02/11 A	17/05/10 A	24/02/11 A			E&M2012
E&M2003	Submission of DeO System	198	100	17/05/10 A	11/07/11 A	17/05/10 A	11/07/11 A			E&M2013
E&M2004	Submission of LV SB & MCC	271	95	17/05/10 A	13/02/12	17/05/10 A	13/02/11	-365d		E&M2014
E&M2005	Submission of Instrumentation	243	95	17/05/10 A	12/02/12	17/05/10 A	01/05/11	-286d		E&M2015
E&M2006	Submission of FS System	243	95	17/05/10 A	12/02/12	17/05/10 A	05/02/11	-372d		E&M2016
E&M2007	Submission of BS System	243	95	17/05/10 A	12/02/12	17/05/10 A	16/02/11	-361d		E&M2017
E&M2011	Delivery of Pumps	150	100	24/02/11 A	21/07/11 A	24/02/11 A	21/07/11 A		E&M2001	E&M2101
E&M2012	Delivery of Gen-Set	150	100	24/02/11 A	23/09/11 A	24/02/11 A	23/09/11 A		E&M2002	E&M2102
E&M2013	Delivery of DeO System	150	100	11/07/11 A	28/10/11 A	11/07/11 A	28/10/11 A		E&M2003	E&M2103
E&M2014	Delivery of LV SB & MCC	150	0	31/01/12	28/06/12	03/12/10	01/05/11	-424d	E&M2004	E&M2104
E&M2015	Delivery of Instrumentation	90	100	21/06/11 A	03/11/11 A	21/06/11 A	03/11/11 A		E&M2005	E&M2105
E&M2016	Delivery of FS Equipment	107	20	01/12/11 A	07/05/12	01/12/11 A	01/05/11	-372d	E&M2006	E&M0350, E&M2106



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Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
Construction of Sewage Treatment Works at YSW & SKW
3-month Rolling Programme (Feb 2012 - Apr 2012)

(Marked on 31 Jan 2012)

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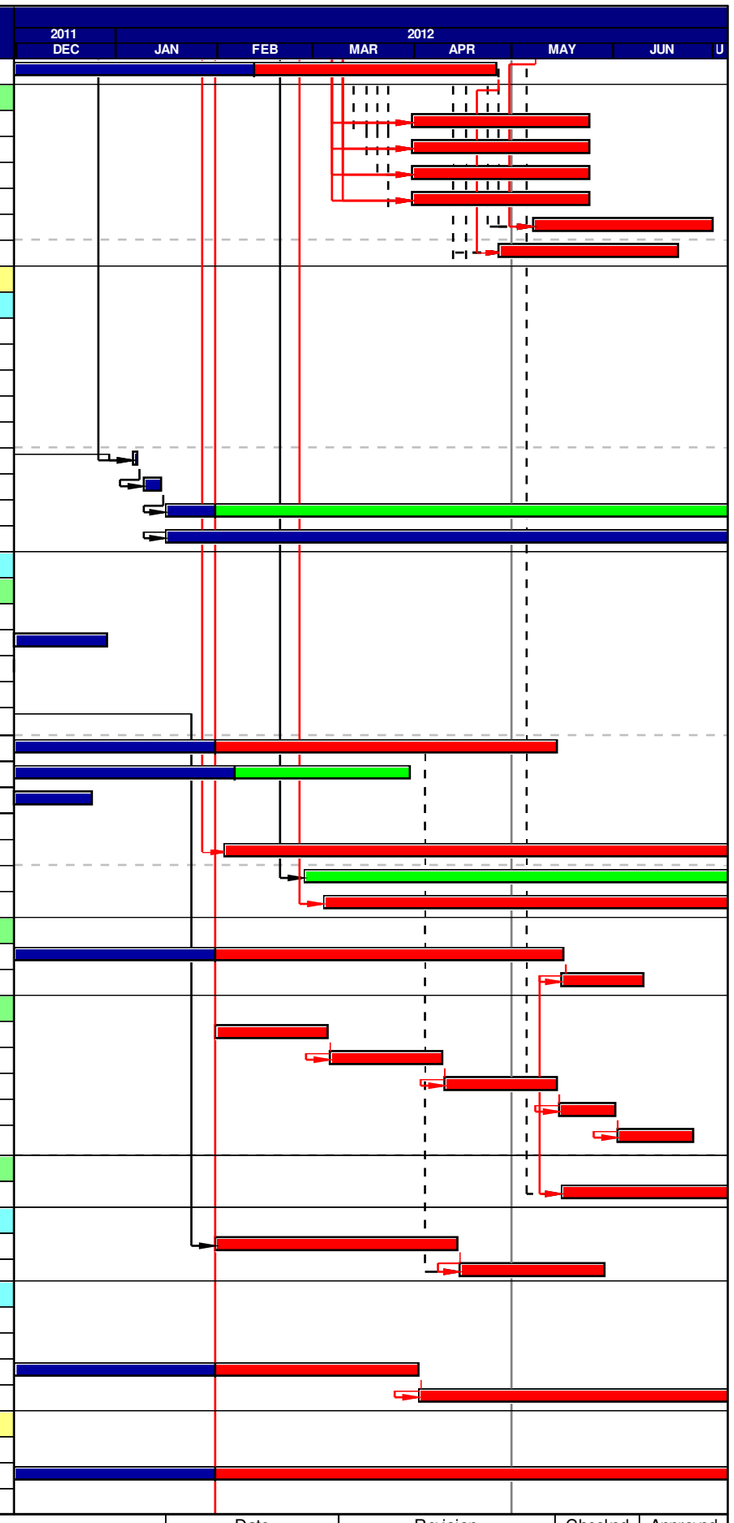
31/01/12	Revision 0	RH	VC

Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors
E&M2017	Delivery of BS Equipment	107	30	15/01/11 A	26/04/12	15/01/11 A	01/05/11	-361d	E&M2007	E&M2107
Installation, T&C										
E&M2101	Install Pumps	55	0	31/03/12	24/05/12	03/07/11	26/08/11	-272d	E&M2011, SKW1051, SKW1061	E&M2110
E&M2102	Install Gen Set	55	0	31/03/12	24/05/12	03/07/11	26/08/11	-272d	E&M2012, SKW1051, SKW1061	E&M2110
E&M2103	Install DeO System	55	0	31/03/12	24/05/12	03/07/11	26/08/11	-272d	E&M2013, SKW1051, SKW1061	E&M2110
E&M2105	Install Instrumentation	55	0	31/03/12	24/05/12	02/05/11	25/06/11	-334d	E&M2015, SKW1051, SKW1061	E&M2140
E&M2106	Install FS Equipment	55	0	07/05/12	01/07/12	02/05/11	25/06/11	-372d	E&M2016, SKW1051, SKW1061	E&M2140
E&M2107	Install BS Equipment	55	0	27/04/12	20/06/12	02/05/11	25/06/11	-361d	E&M2017, SKW1051, SKW1061	E&M2110, E&M2140
Section W 7 - SKW STW ,Sewer and Submarine Outfall										
Submarine Outfall										
SKW1130	Approval of IHS Consultant	180	100	17/05/10 A	27/08/10 A	17/05/10 A	27/08/10 A			SKW1131
SKW1131	Hydrographical Survey (SKW)	300	100	01/02/11 A	28/02/11 A	01/02/11 A	28/02/11 A		KD0020, SKW1130	SKW1231
SKW1141	Baseline Monitoring (Water)	213	100	27/07/10 A	31/12/10 A	27/07/10 A	31/12/10 A		SKW0260, SKW0265	SKW1151
SKW1151	Set up Temporary Working Platform	185	100	15/06/11 A	30/09/11 A	15/06/11 A	30/09/11 A		PRE0090, SKW1141	SKW1171
SKW1171	ELS for HDD Set-up (SKW)	120	100	01/09/11 A	30/09/11 A	01/09/11 A	30/09/11 A		SKW1151	SKW1181
SKW1181	Mobilization of HDD plant & equipment to SKW	60	100	06/01/12 A	07/01/12 A	06/01/12 A	07/01/12 A		SKW1171, YSW0360	SKW1191
SKW1191	Setting up at drillhole location	30	100	09/01/12 A	14/01/12 A	09/01/12 A	14/01/12 A		SKW1181	SKW1201
SKW1201	Drill pilot hole and reaming hole - NS280 - 750m	196	10	16/01/12 A	25/07/12	16/01/12 A	23/01/13	183d	SKW1191	SKW1211
SKW1211	Receiving Pit for HDD (SKW)	180	50	16/01/12 A	23/10/12	16/01/12 A	23/04/13	183d	SKW1201	SKW1221
SKW STW										
Submission & Delivery (E&M)										
E&M3010	Delivery of MBR M.M. - 1st shipment for Temp STP	150	100	24/02/11 A	17/10/11 A	24/02/11 A	17/10/11 A		E&M0160	E&M3170
E&M3030	Delivery of Grit Removal Equipment	180	100	10/10/11 A	29/12/11 A	10/10/11 A	29/12/11 A		E&M0150	E&M3190
E&M3060	Delivery of Fine Screens	136	100	12/09/11 A	30/11/11 A	12/09/11 A	30/11/11 A		E&M0120	E&M3210
E&M3070	Delivery of Pumps	136	100	23/06/11 A	05/09/11 A	23/06/11 A	05/09/11 A		E&M0130	E&M3220
E&M3080	Delivery of Submersible Mixers	180	100	26/07/11 A	17/11/11 A	26/07/11 A	17/11/11 A		E&M0140	E&M3230
E&M3090	Delivery of Sludge Dewatering Equipment	210	50	01/09/11 A	14/05/12	01/09/11 A	12/02/12	-92d	E&M0170	E&M3240
E&M3100	Delivery of Valves, Pipes & Fittings	180	70	30/08/11 A	30/03/12	30/08/11 A	06/06/14	798d	E&M0180	E&M3250
E&M3110	Delivery of Penstocks	180	100	12/08/11 A	24/12/11 A	12/08/11 A	24/12/11 A		E&M0190	E&M3260
E&M3130	Delivery of instruments	180	100	21/06/11 A	03/11/11 A	21/06/11 A	03/11/11 A		E&M0200	E&M3270
E&M3140	Delivery of MCC LVSB	180	0	03/02/12	31/07/12	09/05/11	04/11/11	-270d	E&M0210	E&M3261
E&M3150	Delivery of BS Equipment	180	0	27/02/12	24/08/12	24/12/13	21/06/14	666d	E&M0220	E&M3291
E&M3160	Delivery of FS Equipment	180	0	04/03/12	30/08/12	14/01/12	11/07/12	-50d	E&M0230	E&M0340, E&M3300
Construction of Grid A-G										
SKW1261	Excavate for SKW STW Structure (Grid A -G)	164	35	30/07/11 A	16/05/12	30/07/11 A	27/07/11	-294d		SKW1271, SKW1371
SKW1271	55 M3 Fire Sprinkle Water Tank (FL +0.9 mPD)	25	0	16/05/12	10/06/12	28/07/11	21/08/11	-294d	SKW1261	SKW1281
Construction of Grid G-N										
SKW1321	Equalization Tank no.1 & 2 with base slabs (-2.1	35	0	31/01/12	05/03/12	04/08/11	07/09/11	-180d		SKW1331
SKW1331	Columns & Walls from B/S to G/F Slab (Grid G-N)	35	0	06/03/12	09/04/12	08/09/11	12/10/11	-180d	SKW1321	SKW1341
SKW1341	Ground Floor Slab (Grid G-N)	35	0	10/04/12	14/05/12	13/10/11	16/11/11	-180d	SKW1331	SKW1351
SKW1351	Columns & Walls to 1/F & 1/F Slab (Grid G-N)	18	0	15/05/12	01/06/12	17/11/11	04/12/11	-180d	SKW1341	SKW1361
SKW1361	Columns & Walls to R/F & R/F Slab (Grid G-N)	24	0	02/06/12	25/06/12	05/12/11	28/12/11	-180d	SKW1351	E&M3170, E&M3190, E&M3210,
Construction of Grid N-T										
SKW1371	Excavate for SKW STW Structure (Grid N-T)	80	0	16/05/12	04/08/12	28/07/11	15/10/11	-294d	SKW05938, SKW1261	SKW1381
SKW STP - E&M Works										
E&M3220	Install Pumps	75	0	31/01/12	14/04/12	29/12/11	12/03/12	-33d	E&M3070	E&M3230, E&M3250, E&M3260,
E&M3230	Install Submersible Mixers	45	0	15/04/12	29/05/12	13/03/12	26/04/12	-33d	E&M3080, E&M3220	E&M3250, E&M3260, E&M3311,
Rising Main										
SKW1481	Subm, Approval & Delivery of DI pipes	120	100	17/05/10 A	28/02/11 A	17/05/10 A	28/02/11 A		KD0020	SKW1501
SKW1501	Concrete Trough (ChB0+00 - ChB1+20)	300	100	15/08/11 A	30/09/11 A	15/08/11 A	30/09/11 A		PRE0100, SKW1481	SKW1521
SKW1521	Twin DN150 DI Rising Main (ChB0+00 - ChA4+55)	250	75	15/08/11 A	02/04/12	15/08/11 A	16/03/12	-17d	SKW1501	SKW1541
SKW1541	DN250 DI Pipe (ChC0+00 - ChC0+35 Connection Pit)	208	0	02/04/12	27/10/12	17/03/12	10/10/12	-17d	SKW1521	SKW1561
Section W 8 - Landscape Softworks in All Portions										
SKW1591	Tree Survey	21	100	17/05/10 A	06/06/10 A	17/05/10 A	06/06/10 A		KD0020	SKW1621
SKW1611	Preservation & Protection of Trees	822	73	17/05/10 A	08/09/12	17/05/10 A	15/08/12	-24d	KD0020	KD0100, SKW1631
SKW1621	Transplantation at SKW	60	100	07/06/10 A	05/10/10 A	07/06/10 A	05/10/10 A		SKW1591	



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Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
Construction of Sewage Treatment W orks at YSW & SKW
3-month Rolling Programme (Feb 2012 - Apr 2012)

(Marked on 31 Jan 2012)

Date	Revision	Checked	Approved
31/01/12	Revision 0	RH	VC

Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors
Project Key Date										
KD0010	Receive Letter of Acceptance	0	100		05/05/10 A		05/05/10 A			KD0125
KD0020	Project Commencement Date	0	100		17/05/10 A		17/05/10 A			E&M0010, E&M0070, E&M1001,
KD0030	Section W1 - Slope Works in Portion A & C (456d)	0	100		14/10/11 A		14/10/11 A			KD0125
KD0050	Section W3 - Footpath Diversion in Ptn G (273d)	0	100		24/03/11 A		24/03/11 A			KD0125
KD0115	Start Operate Temp Sewage Treatment in Port. A&H	0	0		02/06/12		30/06/11 *	-338d *	E&M0510	KD0125
+Preliminary (Civil)										
		191	100	17/05/10 A	23/11/10 A	17/05/10 A	23/11/10 A		KD0020	
Preliminary (E&M)										
Technical Submission										
+Process Design of SKWSTW & YSWSTW										
		563	100	17/05/10 A	30/11/11 A	17/05/10 A	30/11/11 A			
+Hydraulic Design										
		563	100	17/05/10 A	30/11/11 A	17/05/10 A	30/11/11 A			
+Equipment Submission & Approval										
		657	96	17/05/10 A	03/03/12	17/05/10 A	30/11/11	-94d		
+Drawings Submission & Approval										
		610	90	24/06/10 A	23/02/12	24/06/10 A	07/11/11	-108d		
+Statutory Submission										
		286	43	01/11/11 A	14/09/12	01/11/11 A	24/02/15	825d		
Yung Shue Wan										
+Preliminary										
		229	100	17/05/10 A	31/12/10 A	17/05/10 A	31/12/10 A			
Section W2 - YSW STW & Submarine Outfall										
+Civil & Structural Work										
		823	54	17/05/10 A	16/08/12	17/05/10 A	04/07/12	-43d		
+Submarine Outfall										
		774	86	17/05/10 A	28/06/12	17/05/10 A	16/12/13	536d		
+E&M Works - YSW STP										
		711	57	24/02/11 A	03/02/13	24/02/11 A	04/07/12	-214d		
Sok Kwu Wan										
+Preliminary										
		53	100	17/05/10 A	08/07/10 A	17/05/10 A	08/07/10 A			
Section W4 - Slope Works in Portions H & I										
+Geotechnical Works										
		855	59	15/06/10 A	16/10/12	15/06/10 A	31/01/12	-428d		
Section W5 - P.S. No. 1 in Portion D										
+Civil & Geotechnical Works										
		319	100	17/05/10 A	31/03/11 A	17/05/10 A	31/03/11 A			
+Structural Works										
		454	53	20/04/11 A	16/07/12	20/04/11 A	31/01/12	-244d		
E&M Works (PS1)										
+Submission & Delivery										
		722	91	17/05/10 A	07/05/12	17/05/10 A	03/11/11	-372d		
+Installation, T&C										
		153	0	31/01/12	01/07/12	02/05/11	25/06/11	-372d		
Section W6 - Sewer and PS No.2 in Portions E&H										
+Civil & Geotechnical Works										
		881	59	17/05/10 A	13/10/12	17/05/10 A	15/11/11	-333d		
+Structural Works										
		549	17	02/05/11 A	31/10/12	04/03/11 A	31/01/12	-351d		
E&M Works (PS2)										
+Submission & Delivery										
		774	86	17/05/10 A	28/06/12	17/05/10 A	03/11/11	-424d		
+Installation, T&C										

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Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors
		93	0	31/03/12	01/07/12	02/05/11	26/08/11	-310d		
Section W 7 - SKW STW ,Sewer and Submarine Outfall										
+Submarine Outfall										
		890	82	17/05/10 A	23/10/12	17/05/10 A	23/04/13	183d		
SKW STW										
+Submission & Delivery (E&M)										
		554	66	24/02/11 A	30/08/12	24/02/11 A	21/06/14	660d		
+Construction of Grid A-G										
		317	30	30/07/11 A	10/06/12	28/07/11 A	21/08/11	-294d		
+Construction of Grid G-N										
		147	0	31/01/12	25/06/12	04/08/11	28/12/11	-180d		
+Construction of Grid N-T										
		80	0	16/05/12	04/08/12	28/07/11	15/10/11	-294d		
+SKW STP - E&M Works										
		120	0	31/01/12	29/05/12	29/12/11	26/04/12	-33d		
+Rising Main										
		895	69	17/05/10 A	27/10/12	17/05/10 A	10/10/12	-17d		
+Section W 8 - Landscape Softworks in All Portions										
		846	75	17/05/10 A	08/09/12	17/05/10 A	15/08/12	-24d		

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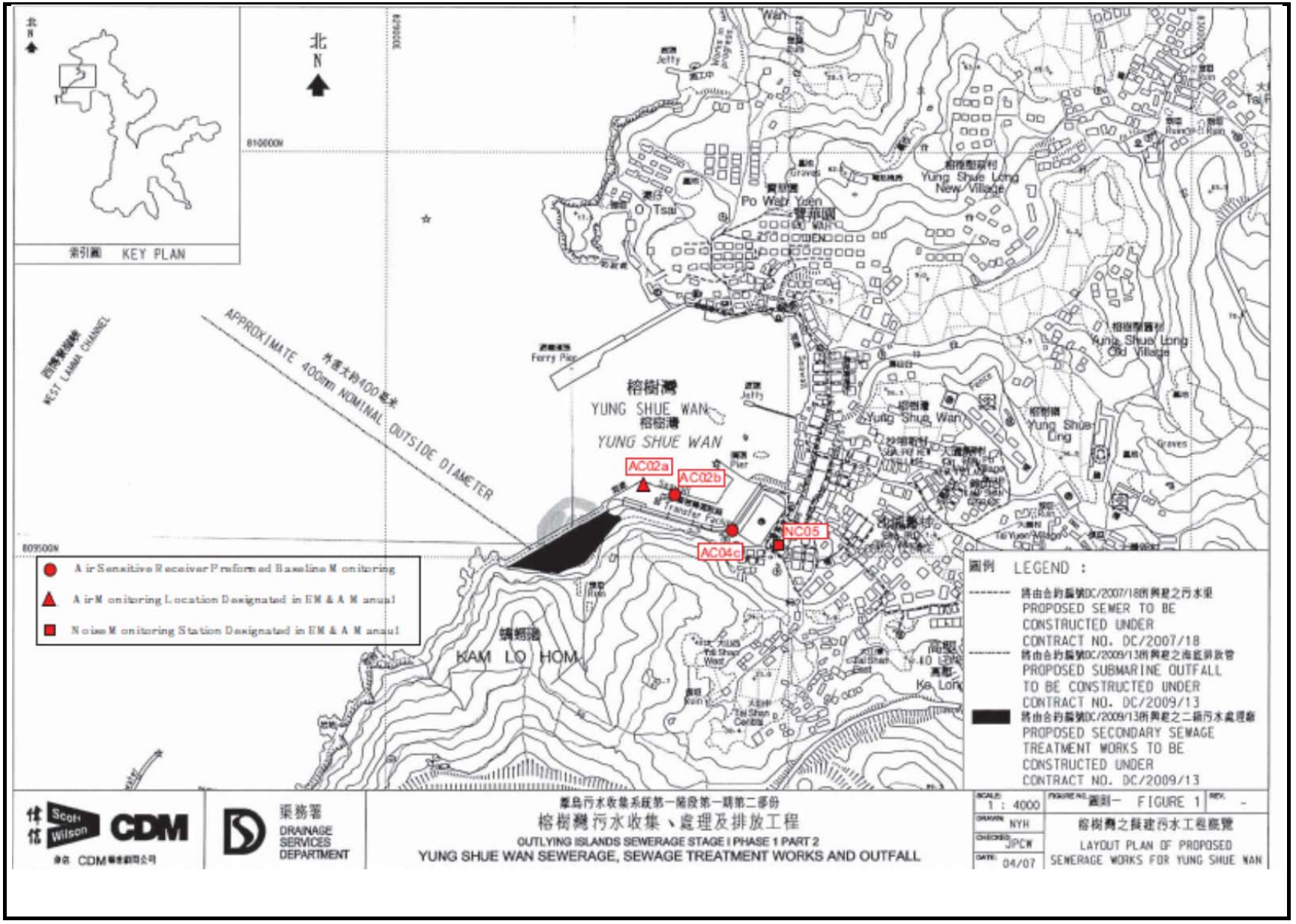
Appendix D

Location of Monitoring Stations (Air Quality / Construction Noise / Water Quality / Dive Surveys of Coral)


索引圖 KEY PLAN
北 N
APPROXIMATE 400mm NOMINAL OUTSIDE DIAMETER
外徑大約400毫米
榕樹灣
YUNG SHUE WAN
AC02a
AC02b
AC04c
NC05
Air Sensitive Receiver Preformed Baseline Monitoring
Air Monitoring Location Designated in EM & A Manual
Noise Monitoring Station Designated in EM & A Manual
KAM LO HOM
圖例 LEGEND :
PROPOSED SEWER TO BE CONSTRUCTED UNDER CONTRACT NO. DC/2007/18
PROPOSED SUBMARINE OUTFALL TO BE CONSTRUCTED UNDER CONTRACT NO. DC/2009/13
PROPOSED SECONDARY SEWAGE TREATMENT WORKS TO BE CONSTRUCTED UNDER CONTRACT NO. DC/2009/13
DRAINAGE SERVICES DEPARTMENT
OUTLYING ISLANDS SEWERAGE STAGE I PHASE 1 PART 2
YUNG SHUE WAN SEWERAGE, SEWAGE TREATMENT WORKS AND OUTFALL
榕樹灣污水收集、處理及排放工程
SCALE 1 : 4000
FIGURE NO. 圖則一 FIGURE 1
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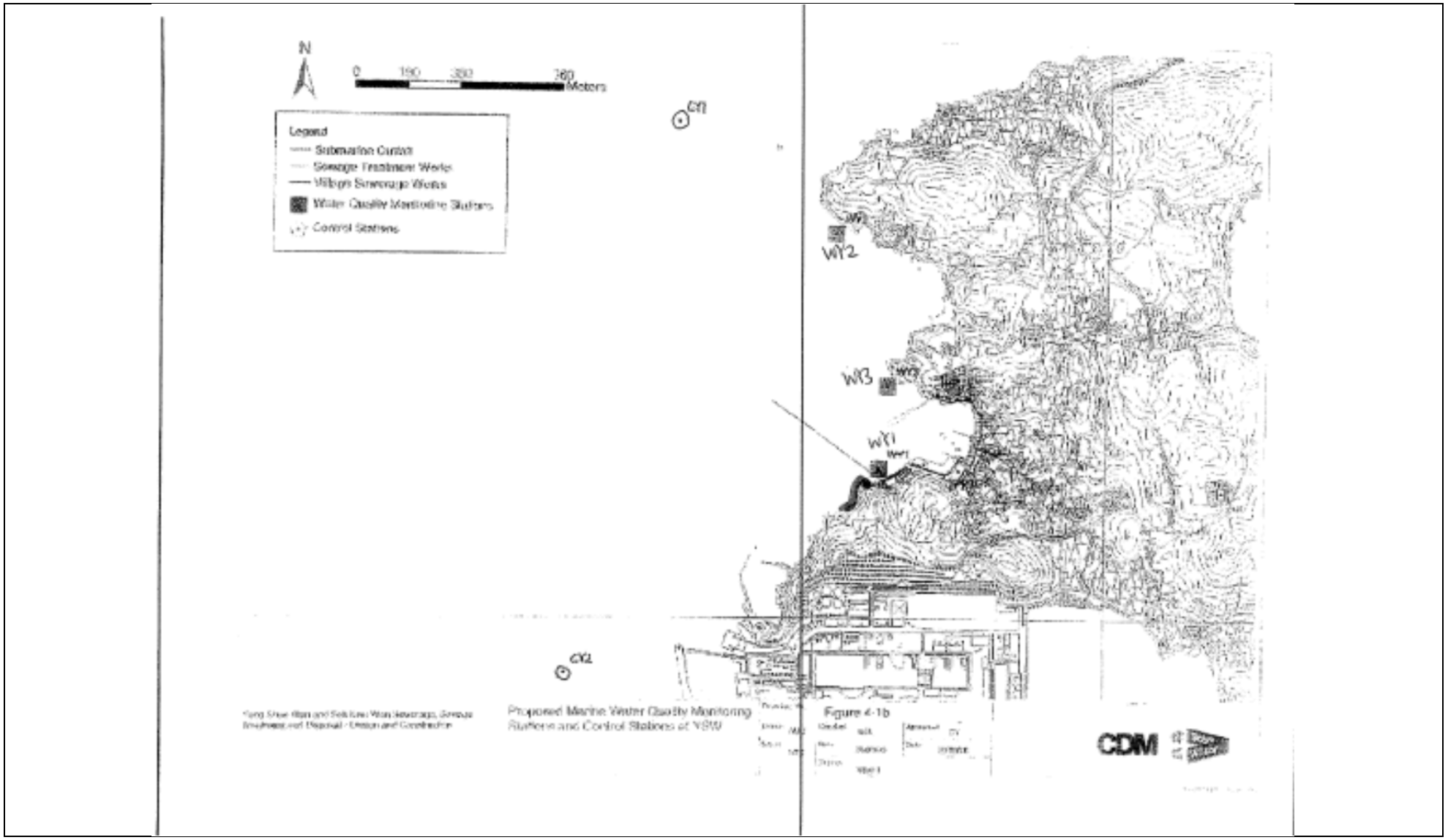
CHECKED JPCW
DATE 04/07
LAYOUT PLAN OF PROPOSED SEWERAGE WORKS FOR YUNG SHUE WAN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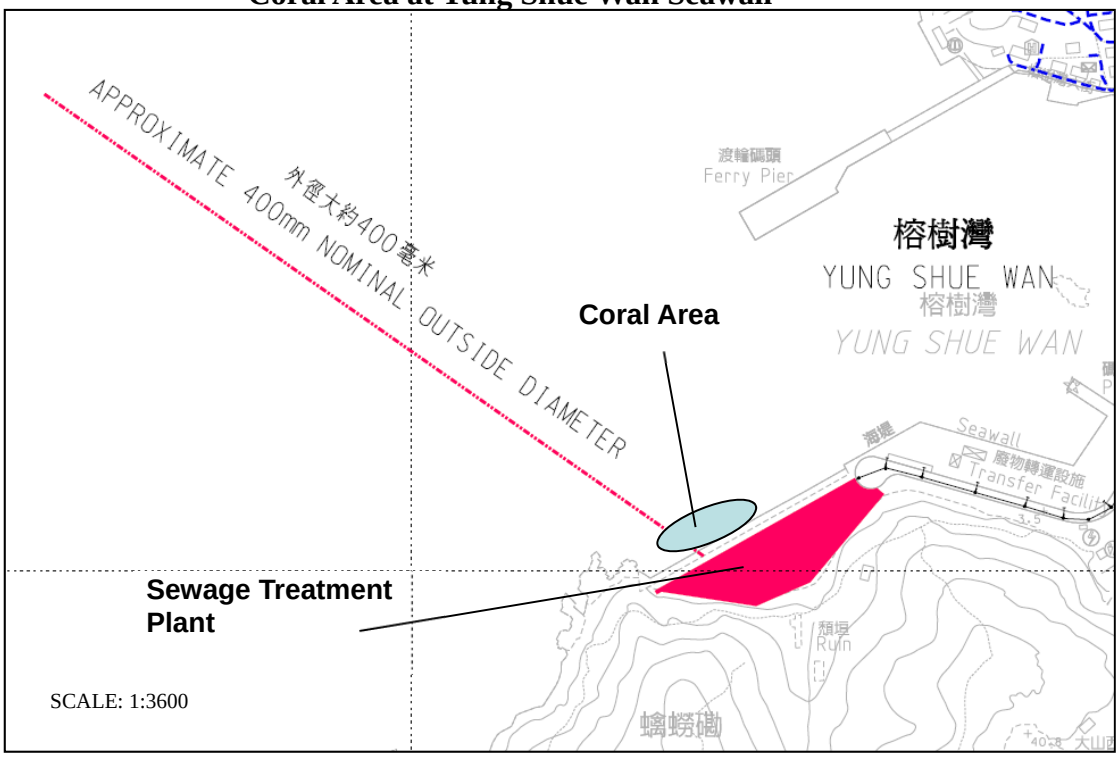
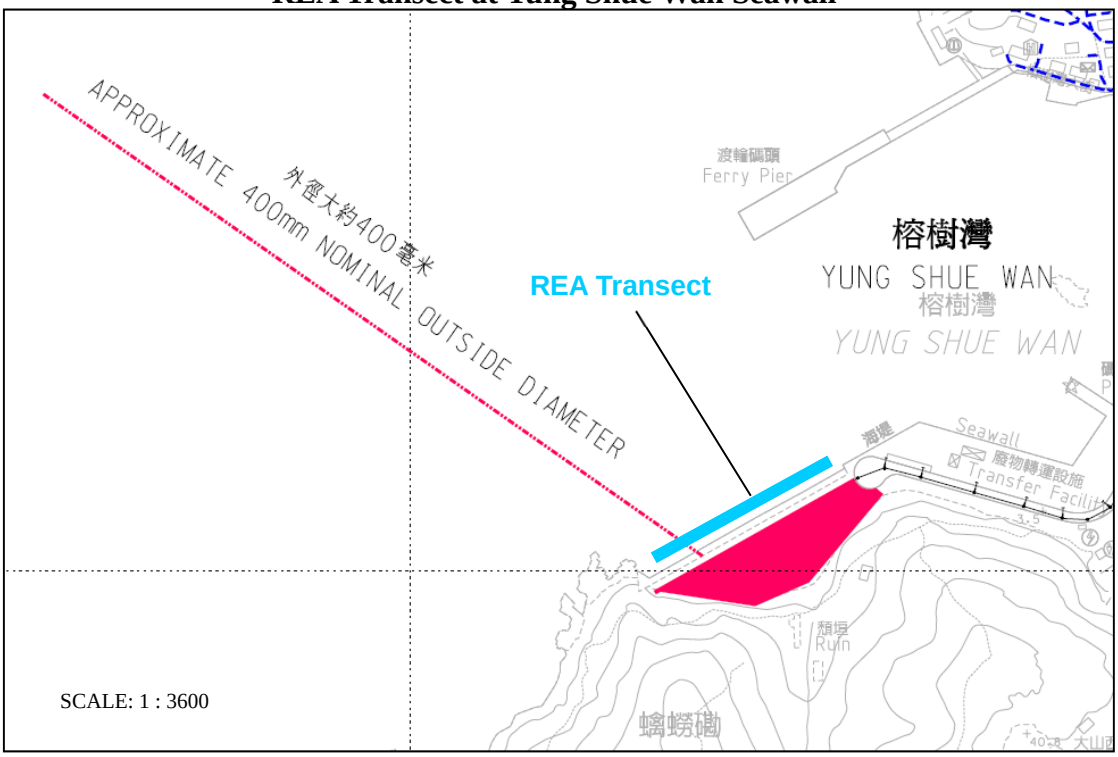
Meters
Legend
Submarine Outfall
Sewage Treatment Works
Village Sewerage Works
Water Quality Monitoring Stations
Control Stations
CR1
CR2
WY1
WY2
WY3
Proposed Marine Water Quality Monitoring Stations and Control Stations at YSW
Figure 4-1b
CDM

Coral Area at Yung Shue Wan Seawall



REA Transect at Yung Shue Wan Seawall



Coral Area at Sham Wan

REA Transect at Sham Wan

Appendix E

Monitoring Equipments Calibration Certificate

TISCH ENVIROMENTAL, INC.
145 SOUTH MIAMI AVE.
VILLAGE OF CLEVES, OH 45002
513.467.9000
877.263.7610 TOLL FREE
513.467.9009 FAX
WWW.TISCH-ENV.COM

AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Jun 02, 2011 Rootsmeter S/N 0438320 Ta (K) - 294
Operator Tisch Orifice I.D. - 1941 Pa (mm) - 754.38

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.4660	3.3	2.00
2	NA	NA	1.00	1.0410	6.4	4.00
3	NA	NA	1.00	0.9310	8.1	5.00
4	NA	NA	1.00	0.8830	8.9	5.50
5	NA	NA	1.00	0.7310	13.0	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
1.0017	0.6833	1.4185		0.9956	0.6791	0.8829
0.9975	0.9582	2.0061		0.9914	0.9524	1.2486
0.9952	1.0690	2.2429		0.9892	1.0625	1.3959
0.9942	1.1260	2.3524		0.9882	1.1191	1.4641
0.9887	1.3526	2.8371		0.9827	1.3444	1.7657
Qstd slope (m) =		2.11693		Qa slope (m) =		1.32558
intercept (b) =		-0.02568		intercept (b) =		-0.01598
coefficient (r) =		0.99993		coefficient (r) =		0.99993
y axis = SQRT[H2O(Pa/760)(298/Ta)]				y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

Vstd = Diff. Vol[(Pa-Diff. Hg)/760](298/Ta)
Qstd = Vstd/Time

Va = Diff Vol [(Pa-Diff Hg)/Pa]
Qa = Va/Time

For subsequent flow rate calculations:

Qstd = 1/m{[SQRT(H2O(Pa/760)(298/Ta))]- b}
Qa = 1/m{[SQRT H2O(Ta/Pa)]- b}

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : YSW RE Offices
Location ID : AC02b

Date of Calibration: 1-Feb-12
Next Calibration Date: 1-Apr-12
Technician: Mr. Ben Tam

CONDITIONS

Sea Level Pressure (hPa)	1020	Corrected Pressure (mm Hg)	765
Temperature (ºC)	15.6	Temperature (K)	289

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.11693
Model->	5025A	Qstd Intercept ->	-0.02568
Serial # ->	1941		

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.5	5.5	11	1.609	58	60.09	Slope = 29.8975
13	4.4	4.4	8.8	1.441	53	54.91	Intercept = 12.0350
10	3.5	3.5	7	1.286	49	50.76	Corr. coeff. = 0.9997
7	2.3	2.3	4.6	1.045	42	43.51	
5	1.4	1.4	2.8	0.818	35	36.26	

Calculations :

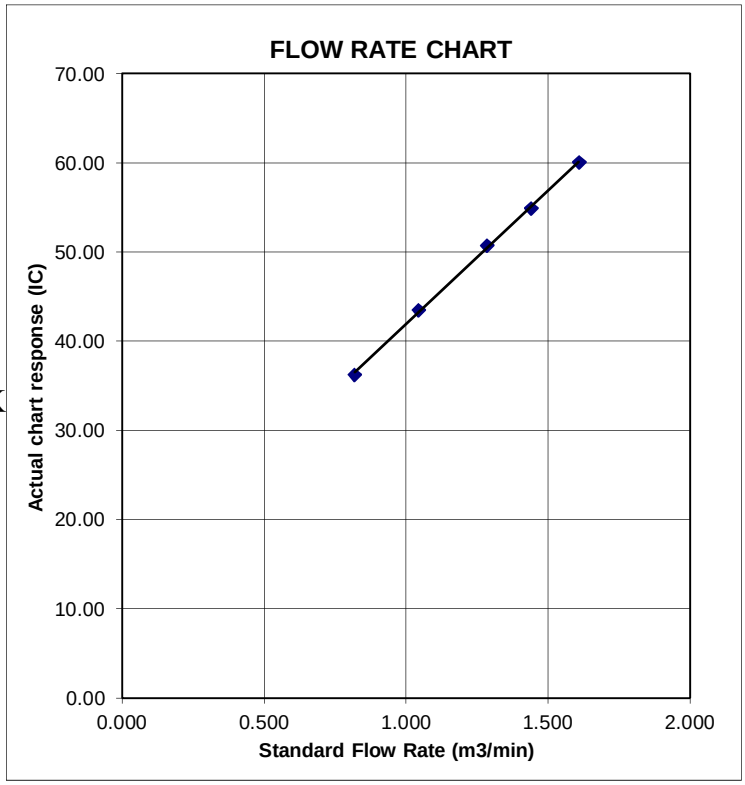
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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

For subsequent calculation of sampler flow:

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

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



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : YSW Playground
Location ID : AC04c

Date of Calibration: 1-Feb-12
Next Calibration Date: 1-Apr-12
Technician: Mr. Ben Tam

CONDITIONS

Sea Level Pressure (hPa)	1020	Corrected Pressure (mm Hg)	765
Temperature (ºC)	15.6	Temperature (K)	289

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.11693
Model->	5025A	Qstd Intercept ->	-0.02568
Serial # ->	1941		

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.1	5.1	10.2	1.550	60	62.16	Slope = 38.2826
13	4.1	4.1	8.2	1.391	54	55.94	Intercept = 2.7835
10	3.3	3.3	6.6	1.249	49	50.76	Corr. coeff. = 0.9999
7	2.4	2.4	4.8	1.067	42	43.51	
5	1.7	1.7	3.4	0.900	36	37.29	

Calculations :

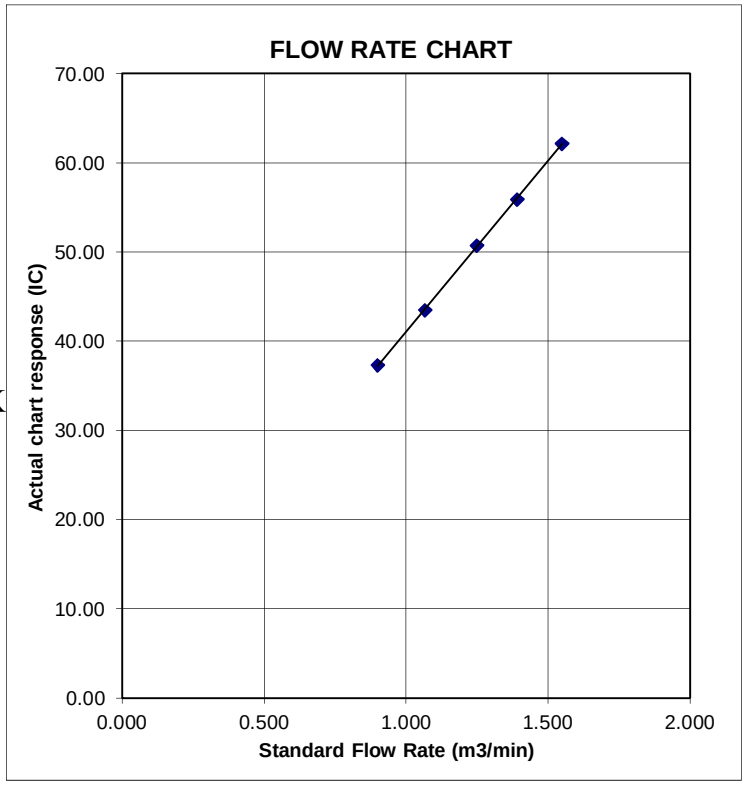
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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

For subsequent calculation of sampler flow:

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

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



CERTIFICATE OF CALIBRATION AND TESTING

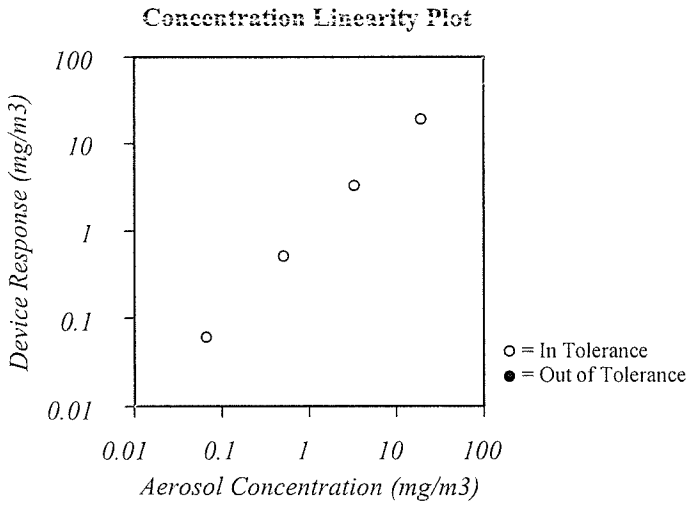
TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

Environment Condition		
Temperature	68.7 (20.4)	°F (°C)
Relative Humidity	41	%RH
Barometric Pressure	28.98 (981.4)	inHg (hPa)

Model	**8520**
Serial Number	**23079**

☒ As Left ☐ As Found

☒ In Tolerance ☐ Out of Tolerance



System ID: DTII01-02

Zero Stability Results

Average:	Minimum:	Maximum:	Time:
0.000 :mg/m³	0.000 :mg/m³	0.001 :mg/m³	4:00 :hrs.

TSI Incorporated does hereby certify that all materials, components, and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSI and the customer and with all published specifications. All performance and acceptance tests required under this contract were successfully conducted according to required specifications. There is no NIST standard for optical mass measurements. Calibration of this instrument performed by TSI has been done using emery oil and has been nominally adjusted to respirable mass of standard ISO 12103-1, A1 test dust (Arizona dust) Our calibration ratio is greater than 1.2:1

Measurement Variable	System ID	Last Cal.	Cal. Due
Barometric Pressure	E003733	01-15-11	02-15-12
Humidity	E002873	11-24-10	11-24-11
DC Voltage	E003315	01-05-11	01-05-12
Microbalance	E001324	01-04-11	01-04-12
Flowmeter	E003769	06-13-11	06-13-12

Measurement Variable	System ID	Last Cal.	Cal. Due
Temperature	E002873	11-24-10	11-24-11
DC Voltage	E003314	01-05-11	01-05-12
Photometer	E003319	07-25-11	01-25-12
Pressure	E003511	11-12-10	11-12-11

T. Thao
Calibrated

☑ Final Function Check

September 13, 2011
Date

TSI P/N 2300157

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

Certificate No. : C112202

Certificate of Calibration

This is to certify that the equipment

Description : Integrating Sound Level Meter (EQ010)

Manufacturer : Bruel & Kjaer

Model No. : 2238

Serial No. : 2285721

has been calibrated for the specific items and ranges.
The results are shown in the Calibration Report No. C112202.

The equipment is supplied by

Co. Name : Action-United Environmental Services and Consulting

Address : Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

Date of Issue : 19 April 2011

Certified by : K C Lee

Calibration and Testing Laboratory of Sun Creation Engineering Limited
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
Tel: 2927 2606 Fax: 2744 8986 E-mail: callab@suncreation.com Website: www.suncreation.com

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

Report No. : C112202

Calibration Report

ITEM TESTED

DESCRIPTION : Integrating Sound Level Meter (EQ010)
MANUFACTURER : Bruel & Kjaer
MODEL NO. : 2238
SERIAL NO. : 2285721

TEST CONDITIONS

AMBIENT TEMPERATURE : (23 ± 2)°C RELATIVE HUMIDITY : (55 ± 20)%
LINE VOLTAGE : ---

TEST SPECIFICATIONS

Calibration check

DATE OF TEST : 18 April 2011 ***JOB NO.*** : IC11-0947

TEST RESULTS

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
- The Bruel & Kjaer Calibration Laboratory, Denmark
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested by : *L L Cheung* *Date : 19 April 2011*

Report No. : C112202

Calibration Report

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

2. Self-calibration using the B & K Acoustic Calibrator 4231, S/N : 2713428 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	C110018
CL281	Multifunction Acoustic Calibrator	C1006860

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)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 130	L_{AFP}	A	F	94.00	1	94.0	± 0.7

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
50 - 130	L_{AFP}	A	F	94.00	1	94.0 (Ref.)
				104.00		104.0
				114.00		114.0

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

Report No. : C112202

Calibration Report

6.2 Time Weighting

6.2.1 Continuous Signal

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 130	L_{AFP}	A	F	94.00	1	94.0	Ref.
	L_{ASP}		S			94.0	± 0.1
	L_{AIP}		I			94.1	± 0.1

6.2.2 Tone Burst Signal (2 kHz)

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Burst Duration		
30 - 110	L_{AFP}	A	F	106.0	Continuous	106.0	Ref.
	L_{AFMax}				200 ms	105.0	-1.0 ± 1.0
	L_{ASP}		S		Continuous	106.0	Ref.
	L_{ASMax}				500 ms	101.9	-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)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L_{AFP}	A	F	94.00	31.5 Hz	54.6	-39.4 ± 1.5
					63 Hz	67.7	-26.2 ± 1.5
					125 Hz	77.7	-16.1 ± 1.0
					250 Hz	85.2	-8.6 ± 1.0
					500 Hz	90.7	-3.2 ± 1.0
					1 kHz	94.0	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	89.7	-4.3 (+3.0 ; -6.0)

Report No. : C112202

Calibration Report

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L_{CFP}	C	F	94.00	31.5 Hz	91.1	-3.0 ± 1.5
					63 Hz	93.2	-0.8 ± 1.5
					125 Hz	93.8	-0.2 ± 1.0
					250 Hz	94.0	0.0 ± 1.0
					500 Hz	94.0	0.0 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	93.8	-0.2 ± 1.0
					4 kHz	93.2	-0.8 ± 1.0
					8 kHz	90.9	-3.0 (+1.5 ; -3.0)
					12.5 kHz	87.8	-6.2 (+3.0 ; -6.0)

6.4 Time Averaging

UUT Setting				Applied Value					UUT Reading (dB)	IEC 60804 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Frequency (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)		
30 - 110	L_{Aeq}	A	10 sec.	4	1	1/10	110.0	100	99.9	± 0.5
						$1/10^2$		90	89.6	± 0.5
			60 sec.			$1/10^3$		80	79.3	± 1.0
			5 min.			$1/10^4$		70	69.9	± 1.0

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

- Uncertainties of Applied Value :

94 dB :	31.5 Hz - 125 Hz	: ± 0.40 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz	: ± 0.40 dB
	4 kHz	: ± 0.50 dB
	8 kHz	: ± 0.70 dB
	12.5 kHz	: ± 1.20 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 Calibration Report 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.

輝創工程有限公司

Sun Creation Engineering Limited Calibration and Testing Laboratory

Certificate No. : C112201

Certificate of Calibration

This is to certify that the equipment

Description : Acoustical Calibrator (EQ082)

Manufacturer : Bruel & Kjaer

Model No. : 4231

Serial No. : 2713428

has been calibrated for the specific items and ranges.
The results are shown in the Calibration Report No. C112201.

The equipment is supplied by

Co. Name : Action-United Environmental Services and Consulting

Address : Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

Date of Issue : 19 April 2011

Certified by : *K C Lee*

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration and Testing Laboratory of Sun Creation Engineering Limited
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
Tel: 2927 2606 Fax: 2744 8986 E-mail: callab@suncreation.com Website: www.suncreation.com

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

Report No. : C112201

Calibration Report

ITEM TESTED

DESCRIPTION : Acoustical Calibrator (EQ082)
MANUFACTURER : Bruel & Kjaer
MODEL NO. : 4231
SERIAL NO. : 2713428

TEST CONDITIONS

AMBIENT TEMPERATURE : (23 ± 2)°C RELATIVE HUMIDITY : (55 ± 20)%
LINE VOLTAGE : ---

TEST SPECIFICATIONS

Calibration check

DATE OF TEST : 18 April 2011 ***JOB NO.*** : IC11-0947

TEST RESULTS

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
- The Bruel & Kjaer Calibration Laboratory, Denmark
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested by : *L L Cheung* *Date : 19 April 2011*

Report No. : C112201

Calibration Report

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours before the commencement of the test.

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

3. Test equipment :

Equipment ID	Description	Certificate No.
CL130	Universal Counter	C103289
CL281	Multifunction Acoustic Calibrator	C1006860
TST150A	Measuring Amplifier	C101008

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	94.0	± 0.2	± 0.2
114 dB, 1 kHz	114.0		

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	1.000 0	1 kHz ± 0.1 %	± 0.1

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

Note :
The values given in this Calibration Report 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.

ALS Technichem (HK) Pty Ltd

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM	**WORK ORDER:**	HK1129081
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:**	09/12/2011
		DATE OF ISSUE:	16/12/2011
PROJECT:	--		

COMMENTS

It is certified that the item under calibration/checking has been calibrated/checked by corresponding calibrated equipment in the laboratory.
Maximum Tolerance and calibration frequency stated in the report, unless otherwise stated, the internal aceptance criteria of ALS will be followed.

Scope of Test:	Dissolved Oxygen, pH, Salinity, Temperature and Turbidity
Description:	YSI Sonde
Brand Name:	YSI
Model No.:	YSI 6820 / 650MDS
Serial No.:	02J0912/02K0788 AA
Equipment No.:	--
Date of Calibration:	16 December, 2011

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.

ISSUING LABORATORY: HONG KONG

Address

ALS Technichem (HK) Pty Ltd

11/F Chung Shun Knitting Centre
1-3 Wing Yip Street
Kwai Chung
HONG KONG

Phone: 852-2610 1044
Fax: 852-2610 2021
Email: hongkong@alsglobal.com

Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1129081
Date of Issue: 16/12/2011
Client: ACTION UNITED ENVIRO SERVICES

Description: YSI Sonde
Brand Name: YSI
Model No.: YSI 6820 / 650MDS
Serial No.: 02J0912/02K0788 AA
Equipment No.: --
Date of Calibration: 16 December, 2011 Date of next Calibration: 16 March, 2012

Parameters:

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

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
5.70	5.83	0.13
6.91	7.05	0.14
8.00	8.08	0.08
	Tolerance Limit (±mg/L)	0.20

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

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
4.0	3.95	-0.05
7.0	6.95	-0.05
10.0	9.92	-0.08
	Tolerance Limit (±unit)	0.20

Salinity **Method Ref: APHA (21st edition), 2520B**

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.00	--
10	10.05	0.5
20	20.10	0.5
30	30.89	3.0
	Tolerance Limit (±%)	10.0

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	10.80	-0.2
22.0	21.40	-0.6
32.0	31.83	-0.2
	Tolerance Limit (°C)	2.0

Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1129081
Date of Issue: 16/12/2011
Client: ACTION UNITED ENVIRO SERVICES

Description: YSI Sonde
Brand Name: YSI
Model No.: YSI 6820 / 650MDS
Serial No.: 02J0912/02K0788 AA
Equipment No.: --
Date of Calibration: 16 December, 2011 Date of next Calibration: 16 March, 2012

Parameters:

Turbidity **Method Ref: APHA 21st Ed. 2130B**

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.6	--
4	4.3	7.5
10	10.0	0.0
20	21.5	7.5
50	50.9	1.8
100	99.4	-0.6
	Tolerance Limit (±%)	10.0

Mr Chan Kwok Fai, Godfrey
Laboratory Manager – Hong Kong

Hong Kong Accreditation Service
香港認可處

Certificate of Accreditation
認可證書

This is to certify that
特此證明

ALS TECHNICHEM (HK) PTY LIMITED

11/F., Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, New Territories, Hong Kong
香港新界葵涌永業街1-3號忠信針織中心11樓

has been accepted by the HKAS Executive, on the recommendation of the Accreditation Advisory Board, as a
為香港認可處執行機關根據認可諮詢委員會建議而接受的

HOKLAS Accredited Laboratory
「香港實驗所認可計劃」認可實驗所

This laboratory meets the requirements of ISO / IEC 17025 : 2005 – General requirements for the competence of testing and calibration laboratories and it has been accredited for performing specific tests or calibrations as listed in the HOKLAS Directory of Accredited Laboratories within the test category of
此實驗所符合ISO / IEC 17025 : 2005 –《測試及校正實驗所能力的通用規定》所訂的要求，獲認可進行載於香港實驗所認可計劃《認可實驗所名冊》內下述測試類別中的指定測試或校正工作

Environmental Testing
環境測試

This laboratory is accredited in accordance with the recognised International Standard ISO / IEC 17025 : 2005.
本實驗所乃根據公認的國際標準 ISO / IEC 17025 : 2005 獲得認可。
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (see joint IAF-ILAC-ISO Communiqué).
這項認可資格演示在指定範疇所需的技術能力及實驗所質量管理體系的運作（見國際認可論壇、國際實驗所認可合作組織及國際標準化組織的聯合公報）。

The common seal of the Hong Kong Accreditation Service is affixed hereto by the authority of the HKAS Executive
香港認可處根據認可處執行機關的權限在此蓋上通用印章

CHAN Sing Sing, Terence, Executive Administrator
執行幹事 陳成城
Issue Date : 5 May 2009
簽發日期：二零零九年五月五日

Registration Number : HOKLAS 066
註冊號碼：

Date of First Registration : 15 September 1995
首次註冊日期：一九九五年九月十五日

This certificate is issued subject to the terms and conditions laid down by HKAS
本證書按照香港認可處訂立的條款及條件發出

L 000552

Appendix F

Event and Action Plan

Air Quality

EVENT	ACTION			
	ET	IC(E)	ER	CONTRACTOR
ACTION LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IC(E) and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
2. Exceedance for two or more consecutive samples	1. Identify source; 2. Inform IC(E) and ER; 3. Advise the ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IC(E) and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with IC(E) and ER; 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ET on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Submit proposals for remedial to ER within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.
LIMIT LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform ER, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IC(E), EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IC(E) within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
2. Exceedance for two or more consecutive samples	1. Notify IC(E), ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IC(E) and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IC(E), 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. In consolidation with the IC(E), agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IC(E) 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.

Construction Noise

EVENT	ACTION			
	ET	**IC(E)**	**ER**	**CONTRACTOR**
Action Level	1. Notify IC(E) and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IC(E), ER and Contractor; 4. Discuss with the Contractor and formulate remedial measures; 5. Increase monitoring frequency to check mitigation effectiveness	1. Review the analysed 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 analysed noise problem; 4. Ensure remedial measures are properly implemented.	1. Submit noise mitigation proposals to IC(E); 2. Implement noise mitigation proposals.
Limit Level	1. Identify source; 2. Inform IC(E), ER, EPD and Contractor; 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 IC(E), ER and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IC(E), 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 Contractors 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 analysed noise problem; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IC(E) 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.

Water Quality

EVENT	ACTION			
	ET	IC(E)	ER	CONTRACTOR
ACTION LEVEL				
1. Exceedance for one sampling day	1. Repeat in-situ measurement on the next day of exceedance to confirm findings; 2. Identify source(s) of impact; 3. Inform ICE, Contractor, ER, EPD and AFCD; and 4. Check monitoring data, all plant, equipment and Contractor's working methods.	1. Check monitoring data submitted by ET and Contractor's working methods	1. Confirm receipt of notification of non-compliance in writing; and 2. Notify Contractor	1. Information the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; and 3. Amend working methods if appropriate
2. Exceedance for two or more consecutive sampling days	1. Same as the above; 2. Inform ICE, Contractor, ER, EPD and AFCD; 3. Discuss mitigation measures with IC(E), RE and Contractor; 4. Ensure well implementation of mitigation measures; and 5. Increase the monitoring frequency to daily until no exceedance of Action Level	1. Same as the above; 2. Discuss with ET and Contractor on possible remedial actions; 3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly; and 4. Supervise the implementation of mitigation measures.	1. Discuss with IC(E) on the proposed mitigation measures; 2. Ensure well implementation of mitigation measures; and 3. Assess the effectiveness of the implemented mitigation measures	1. Same as the above; 2. Check all plant and equipment and consider changes of working methods; 3. Submit proposal of additional mitigation measures to ER within 3 working days of notification and discuss with ET, IC(E), and ER; and 4. Implement the agreed mitigation measures
LIMIT LEVEL				
1. Exceedance for one sampling day	1. Repeat in-situ measurement on the next day of exceedance to confirm findings; 2. Identify source(s) of impact; 3. Inform ICE, Contractor, ER, EPD and AFCD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; and 5. Discuss mitigation measures with IC(E), RE and Contractor	1. Check monitoring data submitted by ET and Contractor's working method 2. Discuss with ER and Contractor on possible remedial actions; and 3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly	1. Confirm receipt of notification failure in writing; and 2. Discuss with IC(E), ET and 3. Contractor on the proposed mitigation measures; and 4. Request Contractor to review the working methods	1. Inform the ER and confirm notification of the failure in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment and consider changes of working methods; and 4. Submit proposal of mitigation measures to ER within 3 working days of notification and discuss with ET and ER
2. Exceedance for two or more consecutive sampling days	1. Same as the above; 2. Ensure mitigation measures are implemented; and 3. Increase the monitoring frequency to daily until no exceedance of Limit Level for two consecutive days	1. Same as the above; and 2. Supervise the Implementation of mitigation measures	1. Same as the above; 2. Ensure well implementation of mitigation measures 3. Make agreement on the mitigation measures to be implemented; and 4. Consider and instruct, if necessary, the Contractor to stow down or to stop all or part of the construction activities until no exceedance of limit level	1. Same as the above; 2. Take immediate action to avoid further exceedance; 3. Implement the agreed mitigation measures; 4. Resubmit proposals of mitigation measures if problem still not under control; and 5. As directed by the Engineer, to slow down or to stop all or part of the construction activities until to no exceedance of Limit Level.

Coral Monitoring

EVENT	ACTION		
	ET	**CONTRACTOR**	**ER/ IC(E)**
Action Level being exceeded	Inform contractor, AFCD and EPD immediately; Discuss mitigation measure with ER/IC(E) and Contractor; Ensure mitigation measures are implemented.	Inform the Engineer and confirm notification of the non-compliance in writing; Propose mitigation measure to ER/IC€ within 1 working day and discuss with Et and ER/IC(E); Ensure mitigation measures are implemented.	Inform contractor, Review water quality monitoring data; Determine whether water quality monitoring data shows effects attributable to the backfilling works; If water quality monitoring data indicates effects attributable to backfilling works, then make agreement on mitigation measures to be implemented; If water quality monitoring data indicates no effects attributable to backfilling works then Action Level is not triggered; Assess the effectiveness of the implemented mitigation measures.
Limit Level	Inform contractor, AFCD and EPD immediately; Discuss mitigation measure with ER/IC(E) and Contractor; Ensure mitigation measures are implemented.	Inform the Engineer and confirm notification of the non-compliance in writing; Suspend backfilling operations; Propose mitigation measure to ER/IC(E) within 3 working days and discuss with Et and ER/IC(E); Implement the agreed mitigation measures.	Inform contractor to suspend backfilling operations; Make agreement on the mitigation measures to be implemented; Assess the effectiveness of the implemented mitigation measures.

Appendix G

Monitoring Data Sheet

24-hour TSP Monitoring Data Sheet

Air Quality Monitoring - 24-hour TSP monitoring data for Yung Shue Wan

24-hour TSP Monitoring Results - AC02b

DATE	ELAPSED TIME	CHART READING						AVG	STANDARD			INITIAL	FINAL	WEIGHT	DUST
	SAMPLE NUMBER	INITIAL	FINAL	ACTUAL (min)	MIN	MAX	AVG	TEMP (oC)	AVG PRESS (hPa)	FLOW RATE (m3/min)	AIR VOLUME (std m3)	FILTER WEIGHT (g)	FILTER WEIGHT (g)	DUST COLLECTED (g)	24-hour TSP IN AIR (ug/m^3)
2-Feb-12	24532	4904.5	4928.27	1426.20	31	36	33.5	16	1021.5	0.74	1055	2.7691	2.8416	0.0725	69
8-Feb-12	power failure														
14-Feb-12	24574	4928.27	4951.99	1423.20	33	36	34.5	19.4	1014.9	0.76	1086	2.7594	2.887	0.1276	117
20-Feb-12	24575	4951.99	4975.76	1426.20	32	37	34.5	15	1018.5	0.77	1104	2.7628	2.846	0.0832	75
25-Feb-12	24533	4975.76	4999.53	1426.20	36	39	37.5	17.1	1011.6	0.87	1237	2.7724	2.8718	0.0994	80

24-hour TSP Monitoring Results - AC04c

DATE	ELAPSED TIME	CHART READING						AVG	STANDARD			INITIAL	FINAL	WEIGHT	DUST
	SAMPLE NUMBER	INITIAL	FINAL	ACTUAL (min)	MIN	MAX	AVG	TEMP (oC)	AVG PRESS (hPa)	FLOW RATE (m3/min)	AIR VOLUME (std m3)	FILTER WEIGHT (g)	FILTER WEIGHT (g)	DUST COLLECTED (g)	24-hour TSP IN AIR (ug/m^3)
2-Feb-12	24531	7469.8	7493.69	1433.40	31	35	33.0	16	1021.5	0.81	1156	2.7571	2.8692	0.1121	97
8-Feb-12	power failure														
14-Feb-12	24550	7493.69	7517.68	1439.40	31	35	33.0	19.4	1014.9	0.80	1149	2.7705	2.8566	0.0861	75
20-Feb-12	24580	7517.68	7541.56	1432.80	33	37	35.0	15	1018.5	0.86	1232	2.7604	2.8441	0.0837	68
25-Feb-12	24605	7541.56	7565.58	1441.20	33	36	34.5	17.1	1011.6	0.84	1210	2.7904	2.8796	0.0892	74

Marine Water Quality Monitoring Data Sheet

Contract No. DC/2009/13

Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwu Wan

AUES

Marine Water Quality Monitoring Result at Yung Shue Wan

Date 2-Feb-12

Date / Time	Location	Tide	Co-ordinates		Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
			East	North	m	m	℃	mg/L	%	NTU	ppt	unit	mg/l
2012/2/2 17:04	WY1	ME	829158	809538	5.6	1.000	15.70	5.90	85.3	4.18	30.31	8.30	4.6
						1.000	15.70	5.96	86.5	5.59	33.45	8.40	
						4.600	15.50	5.70	80.3	5.19	32.28	8.40	4.5
						4.600	15.50	5.75	81.0	5.07	30.91	8.30	
2012/2/2 17:48	WY2	ME	829004	810414	7.9	1.000	15.80	5.98	85.3	5.92	30.09	8.40	5.1
						1.000	15.90	5.99	84.9	5.97	32.08	8.30	
						3.950	15.70	5.85	82.8	5.56	32.88	8.30	5.2
						3.950	15.70	5.86	82.0	6.48	32.09	8.30	
						6.900	15.50	5.72	80.4	4.97	30.45	8.30	8.3
						6.900	15.50	5.71	80.4	4.90	32.15	8.40	
2012/2/2 18:01	WY3	ME	829190	809838	5.3	1.000	15.80	5.98	84.0	6.68	32.28	8.20	5.6
						1.000	15.70	5.87	82.8	4.22	33.25	8.30	
						4.300	15.60	5.69	82.3	4.40	33.19	8.40	7.1
						4.300	15.60	5.60	81.0	5.97	32.48	8.50	
2012/2/2 17:39	CY1	ME	828413	810809	11.9	1.000	15.80	5.87	83.1	5.66	32.09	8.30	2.5
						1.000	15.80	5.98	82.6	4.99	30.14	8.50	
						5.950	15.70	5.68	81.8	4.38	32.22	8.40	5
						5.950	15.60	5.64	79.4	4.02	32.09	8.40	
						10.900	15.50	5.44	79.9	4.21	30.15	8.40	6.2
						10.900	15.40	5.58	78.5	5.88	31.14	8.40	
2012/2/2 17:25	CY2	ME	828009	808811	17.4	1.000	15.80	5.96	86.5	5.26	30.45	8.40	3.7
						1.000	15.80	5.97	86.8	5.92	32.21	8.30	
						8.700	15.70	5.78	82.6	6.48	32.28	8.30	2.6
						8.700	15.70	5.75	82.8	5.00	30.15	8.40	
						16.400	15.50	5.60	80.4	5.92	31.15	8.30	3.6
						16.400	15.50	5.64	81.8	4.82	33.48	8.40	
2012/2/2 12:07	WY1	MF	829179	809554	4.8	1.000	15.70	5.91	85.3	4.19	30.32	8.20	4.7
						1.000	15.80	5.98	86.3	5.99	32.28	8.40	
						3.800	15.60	5.90	84.4	5.38	31.44	8.10	4
						3.800	15.60	5.96	82.8	4.88	32.45	8.20	
2012/2/2 12:51	WY2	MF	829002	810407	8.6	1.000	15.70	5.96	86.3	6.49	31.09	8.40	5
						1.000	15.80	5.93	86.9	5.92	32.25	8.40	
						4.300	15.50	5.67	80.1	5.25	30.47	8.30	8.1
						4.300	15.50	5.68	80.7	4.34	30.49	8.40	
						7.600	15.20	5.63	75.7	4.97	32.15	8.30	5.7
						7.600	15.30	5.66	76.8	5.90	32.86	8.30	
2012/2/2 13:04	WY3	MF	829221	809881	5.2	1.000	15.70	5.86	84.9	4.88	31.97	8.20	6.4
						1.000	15.80	5.88	84.0	4.15	32.92	8.20	
						4.200	15.60	5.78	79.3	4.92	32.11	8.30	4.5
						4.200	15.60	5.69	79.7	5.20	30.97	8.30	
2012/2/2 12:39	CY1	MF	828413	810819	12.4	1.000	15.70	5.86	85.1	4.42	31.19	8.30	3.2
						1.000	15.90	5.71	84.1	4.97	30.22	8.40	
						6.200	15.80	5.68	82.3	5.80	32.40	8.20	3.5
						6.200	15.80	5.51	80.9	5.04	31.56	8.30	
						11.400	15.60	5.52	77.3	6.32	32.08	8.40	5.5
						11.400	15.50	5.44	78.2	6.48	32.44	8.30	
2012/2/2 12:21	CY2	MF	827996	808811	18.1	1.000	15.90	6.03	84.0	5.92	32.58	8.20	7
						1.000	16.00	5.87	85.6	5.02	30.09	8.30	
						9.050	15.80	5.73	81.8	4.47	31.67	8.40	7.6
						9.050	15.80	5.78	82.8	4.47	32.20	8.30	
						17.100	15.70	5.64	79.8	5.31	30.81	8.20	11.2
						17.100	15.70	5.63	80.4	5.96	31.18	8.30	

Remarks: MF - Middle Flood tida
ME - Middle Ebb tida

Contract No. DC/2009/13

Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwu Wan

AUES

Marine Water Quality Monitoring Result at Yung Shue Wan

Date 4-Feb-12

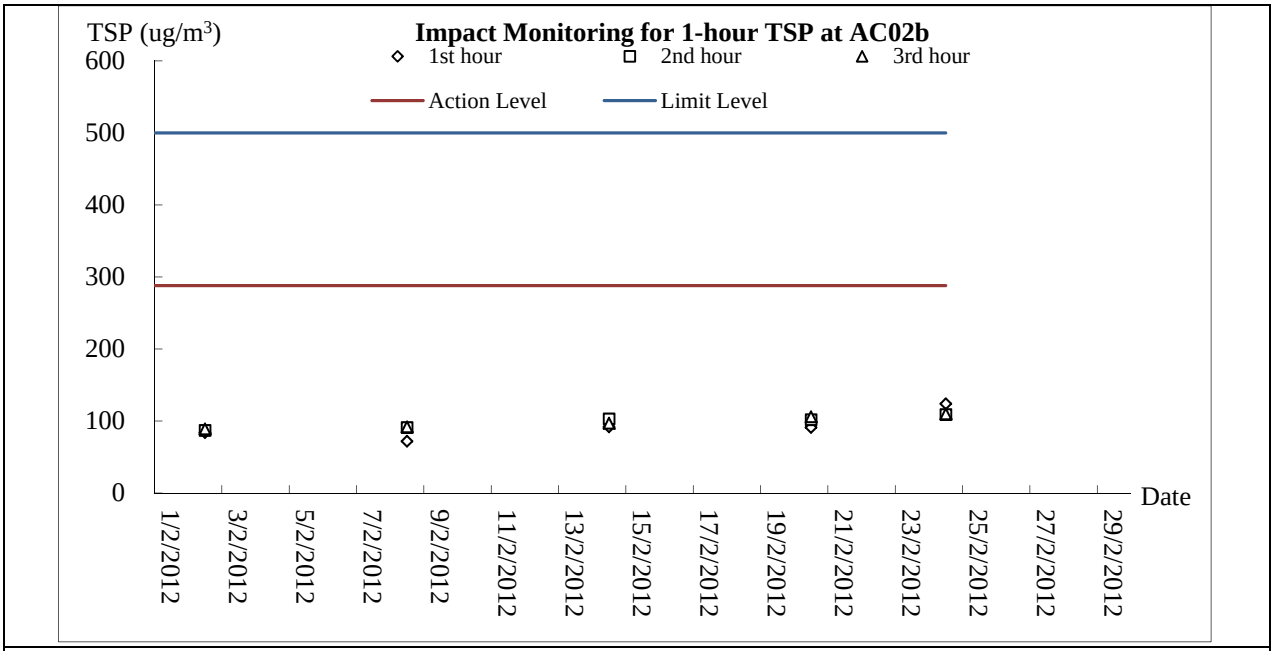
Date / Time	Location	Tide*	Co-ordinates		Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
			East	North	m	m	℃	mg/L	%	NTU	ppt	unit	mg/l
2012/2/4 17:11	WY1	ME	829176	809558	5.2	1.000	15.30	5.55	75.5	4.48	33.45	8.40	4
						1.000	15.30	5.45	75.3	4.40	32.18	8.40	
						4.200	15.00	5.19	73.0	5.31	32.09	8.40	3.3
						4.200	15.00	5.25	72.1	5.07	30.45	8.40	
2012/2/4 17:49	WY2	ME	829006	810423	7.8	1.000	15.30	5.56	77.4	5.22	32.44	8.20	2.6
						1.000	15.20	5.49	78.5	6.21	32.19	8.50	
						3.900	15.10	5.32	75.8	6.28	30.98	8.40	1.7
						3.900	15.00	5.27	76.4	6.08	30.88	8.40	
						6.800	14.90	5.21	73.0	4.49	32.23	8.20	2.4
						6.800	14.90	5.16	73.6	5.22	31.45	8.50	
2012/2/4 17:43	WY3	ME	829218	809872	4.9	1.000	15.10	5.33	77.7	5.21	33.18	8.40	1.2
						1.000	15.20	5.43	77.2	6.24	32.23	8.40	
						3.900	15.20	5.13	74.9	5.28	32.26	8.30	1.1
						3.900	15.20	5.12	73.0	3.49	33.15	8.50	
2012/2/4 18:05	CY1	ME	828403	810811	13.4	1.000	15.20	5.46	78.2	4.18	30.34	8.30	3
						1.000	15.20	5.56	77.7	5.28	31.15	8.30	
						6.700	15.00	5.20	76.2	5.31	30.32	8.20	2.1
						6.700	15.00	5.18	77.4	5.96	32.24	8.40	
						12.400	14.80	5.02	72.2	5.16	31.96	8.30	1.3
						12.400	14.80	5.03	73.0	6.31	33.18	8.40	
2012/2/4 17:28	CY2	ME	828004	808811	17.8	1.000	15.20	5.60	77.4	4.49	32.88	8.50	2.8
						1.000	15.20	5.42	76.2	4.47	31.18	8.50	
						8.900	15.00	5.25	72.1	5.28	32.81	8.50	3.9
						8.900	15.00	5.30	72.9	5.96	32.18	8.50	
						16.800	14.80	5.21	64.3	5.21	32.88	8.30	3.9
						16.800	14.80	5.15	72.8	5.38	33.44	8.40	
2012/2/4 11:28	WY1	MF	829173	809556	4.9	1.000	15.20	5.44	75.5	4.92	32.28	8.40	4.3
						1.000	15.10	5.45	74.6	4.36	30.61	8.40	
						3.900	15.00	5.11	69.6	5.26	33.46	8.30	4.4
						3.900	15.00	5.07	70.2	4.62	33.18	8.30	
2012/2/4 10:51	WY2	MF	829004	810423	7.6	1.000	15.30	5.35	77.7	5.92	32.28	8.30	5.2
						1.000	15.20	5.37	78.1	5.52	32.96	8.20	
						3.800	15.00	5.19	76.4	6.28	31.40	8.40	3.3
						3.800	15.00	5.16	74.6	6.31	30.38	8.30	
						6.600	14.80	5.10	72.8	4.49	32.06	8.30	1.1
						6.600	14.80	5.08	72.6	5.26	32.45	8.30	
2012/2/4 11:12	WY3	MF	829226	809856	4.8	1.000	15.20	5.36	76.1	5.20	30.18	8.30	7.3
						1.000	15.30	5.42	75.5	6.31	31.55	8.40	
						3.800	15.00	5.16	72.3	4.48	31.14	8.50	5.2
						3.800	15.00	5.19	72.8	4.28	32.59	8.50	
2012/2/4 10:39	CY1	MF	828423	810816	12.9	1.000	15.20	5.48	77.5	4.18	30.31	8.20	3.1
						1.000	15.20	5.44	78.5	4.41	32.26	8.30	
						6.450	15.00	5.37	74.3	4.28	32.18	8.40	2.2
						6.450	15.00	5.32	75.5	5.02	30.18	8.40	
						11.900	14.70	5.10	72.1	5.56	31.11	8.30	2.3
						11.900	14.70	5.02	71.8	4.59	30.14	8.30	
2012/2/4 11:49	CY2	MF	827996	808811	17.6	1.000	15.20	5.49	75.5	4.49	32.28	8.20	3
						1.000	15.10	5.44	75.6	4.18	32.23	8.20	
						8.800	15.00	5.16	70.0	5.58	30.18	8.30	3.3
						8.800	15.10	5.21	71.1	4.65	30.15	8.20	
						16.600	14.80	4.85	67.9	5.91	33.44	8.40	4.4
						16.600	14.80	4.99	68.3	5.19	33.15	8.30	

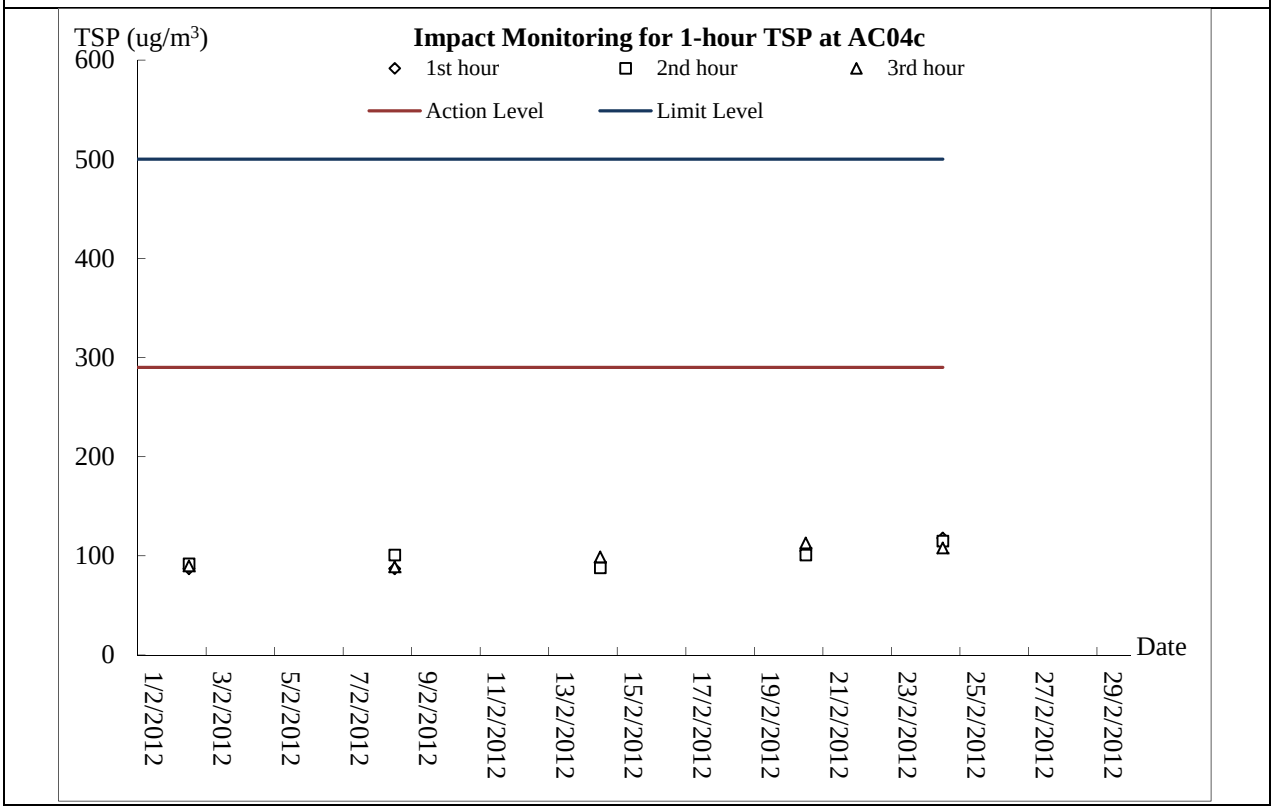
Remarks: MF - Middle Flood tida
ME - Middle Ebb tida

Appendix H

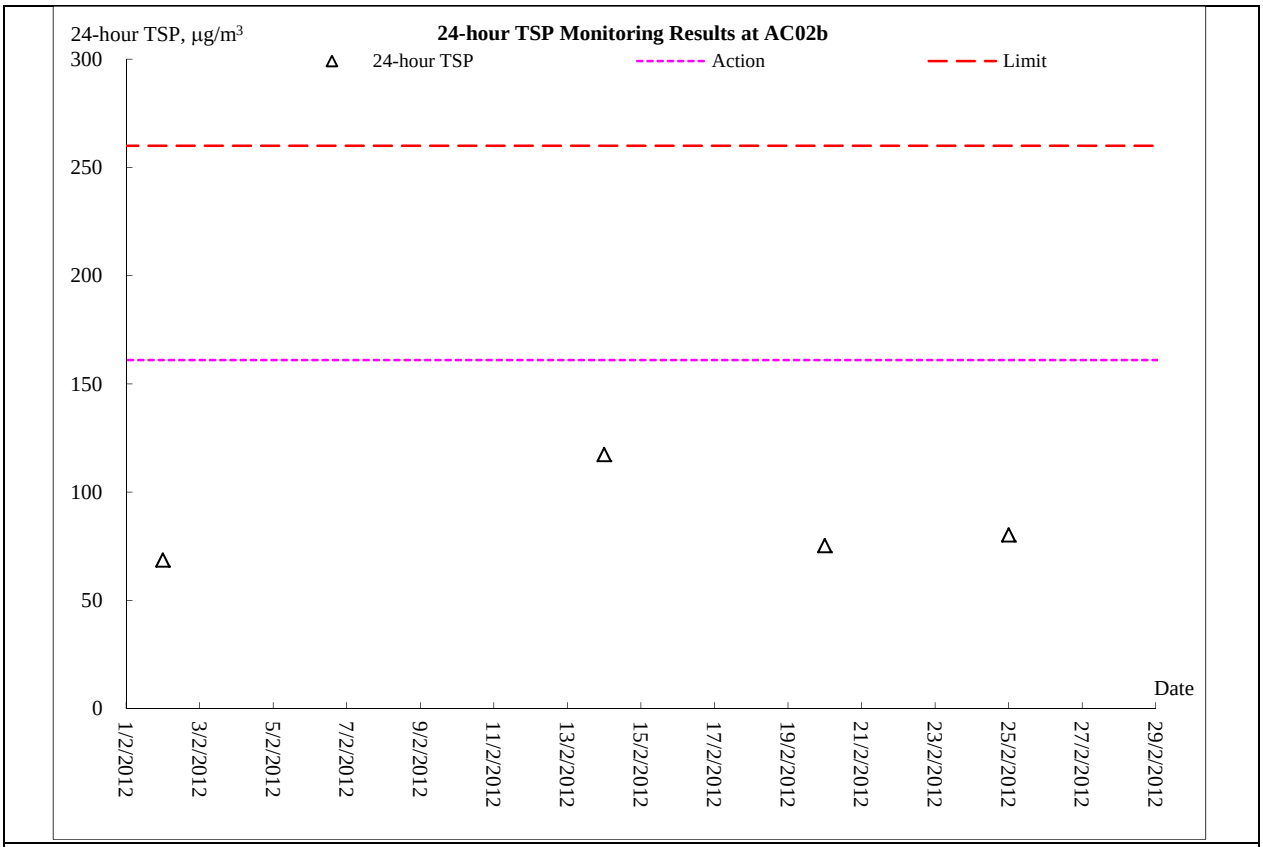
Graphical Plots of Monitoring Results

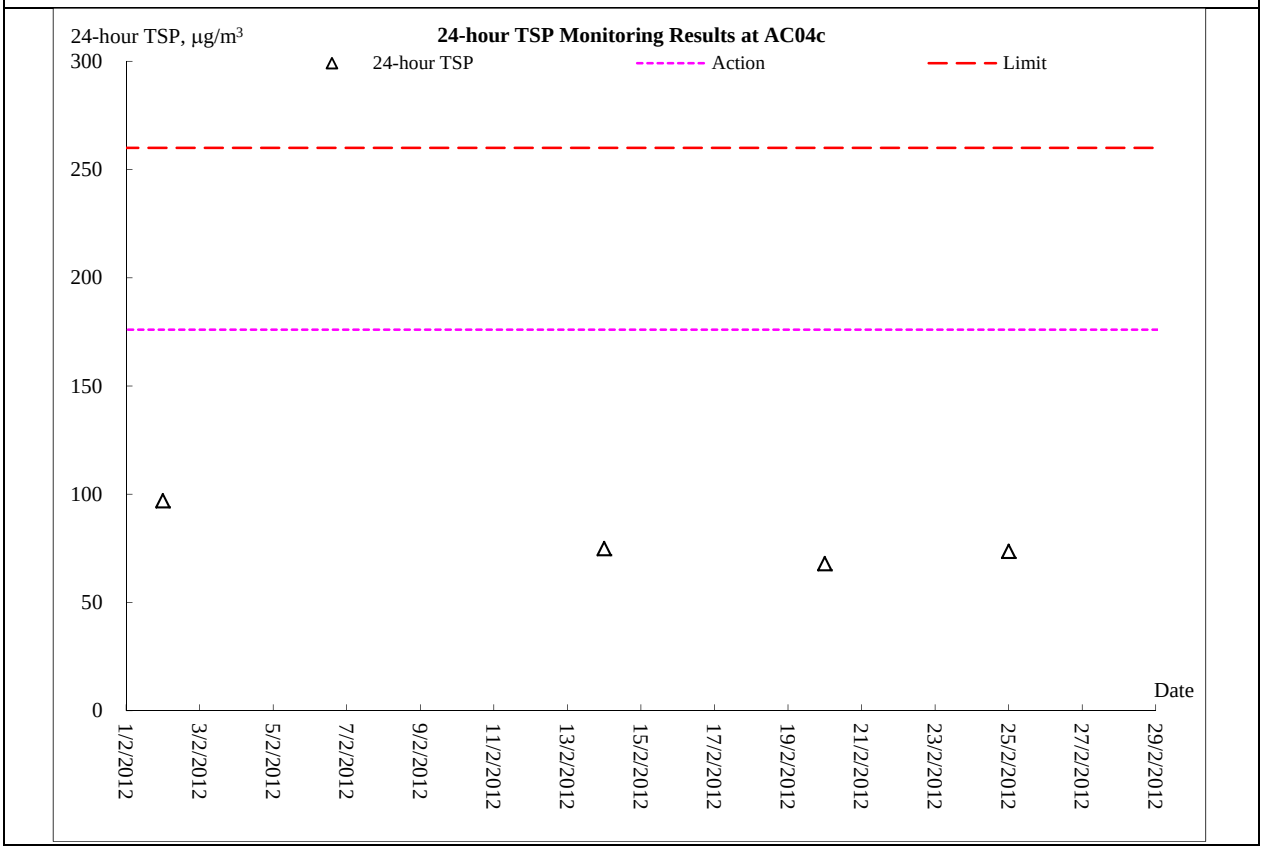
1-hour TSP Monitoring



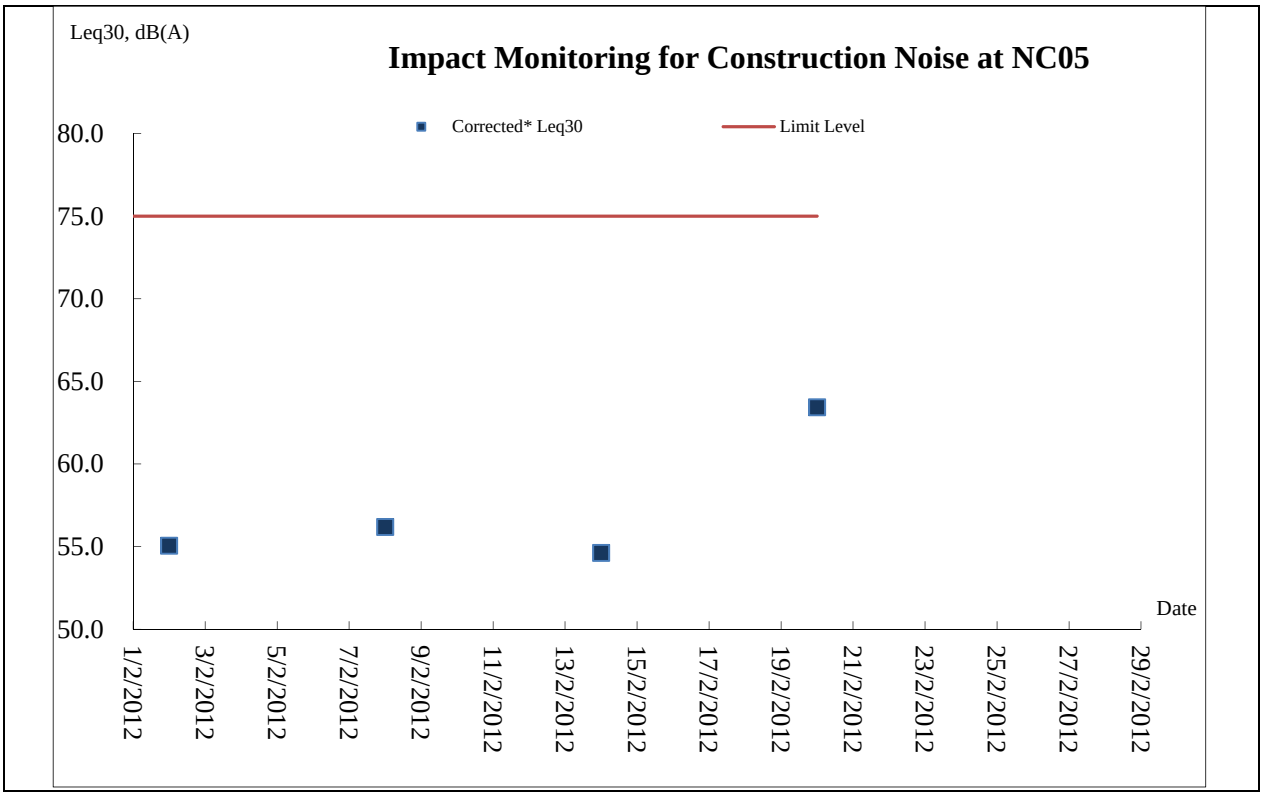


24-hour TSP Monitoring

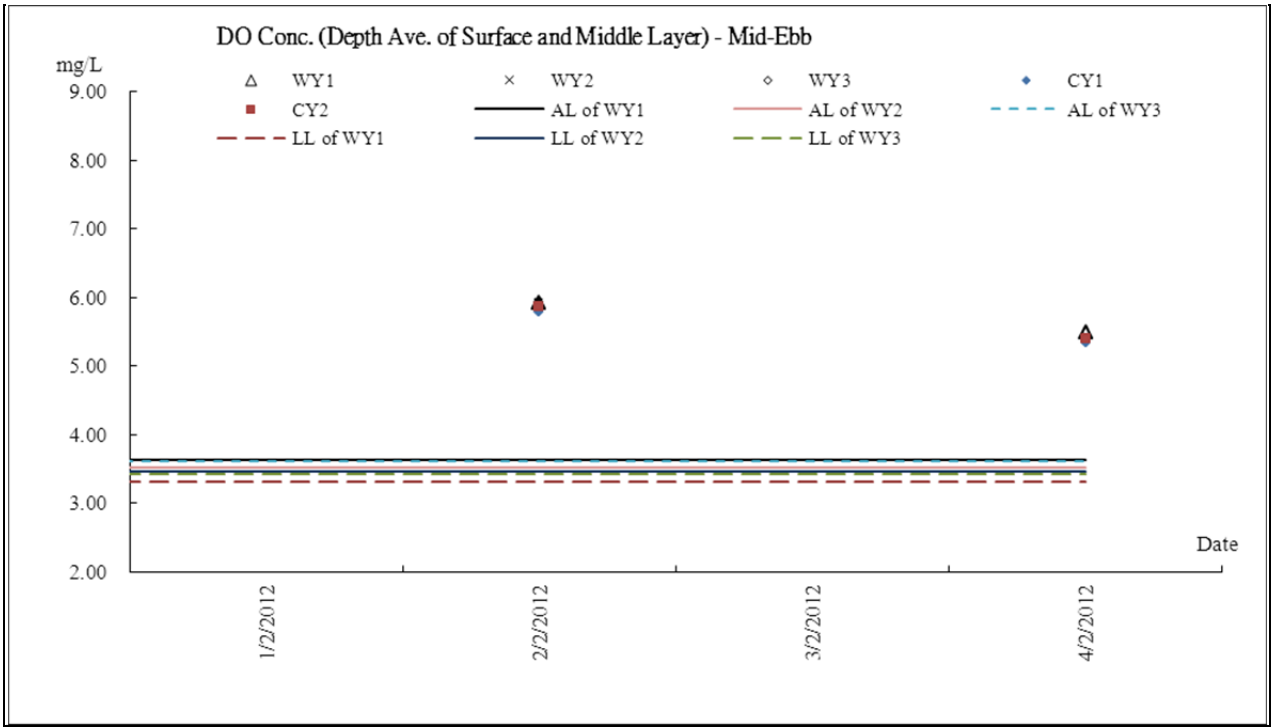


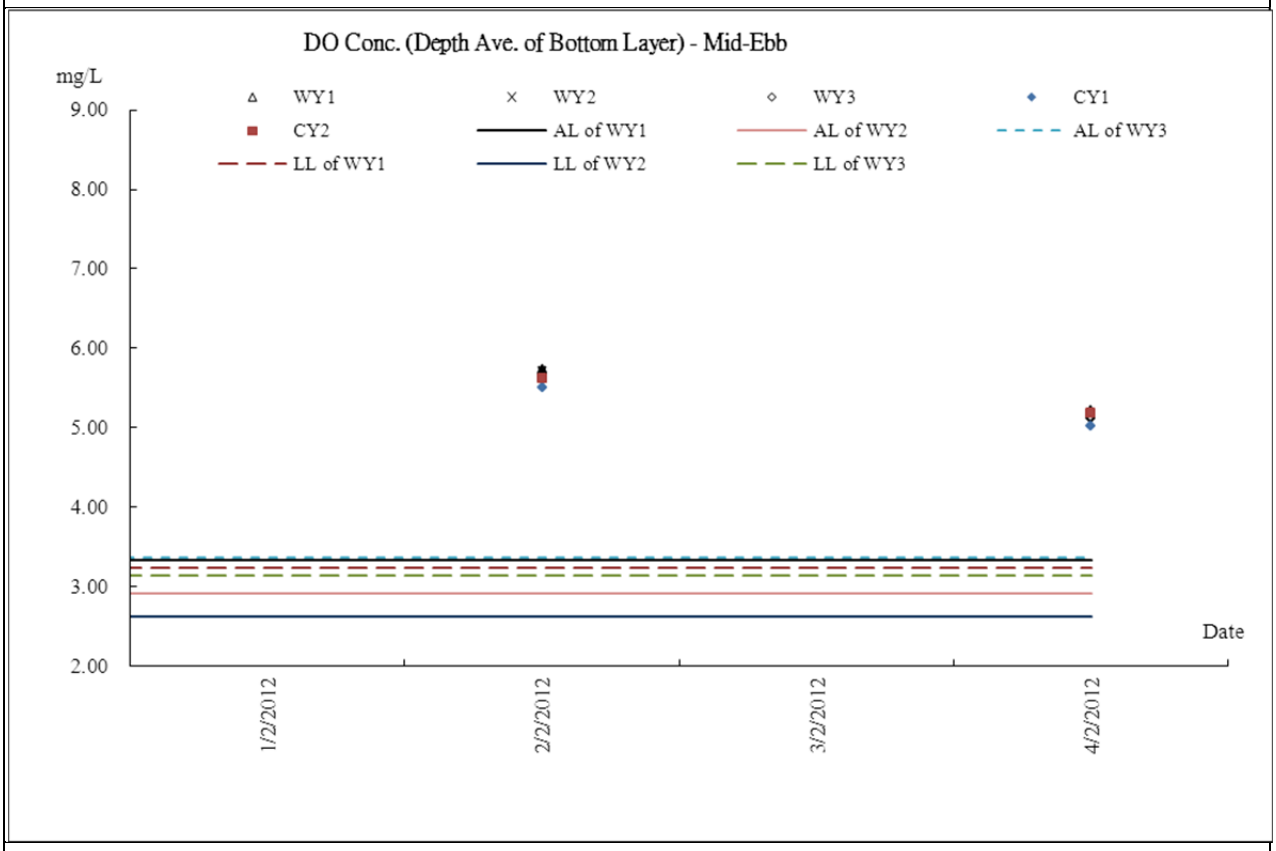


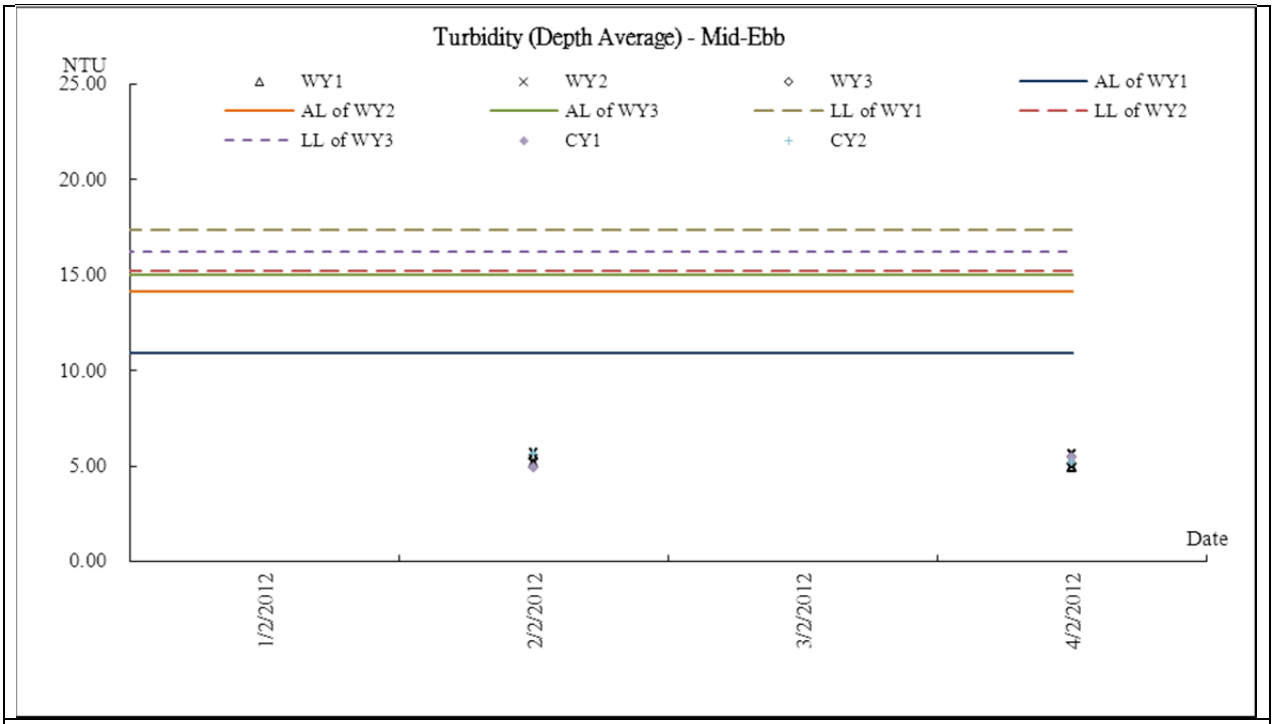
Noise Monitoring

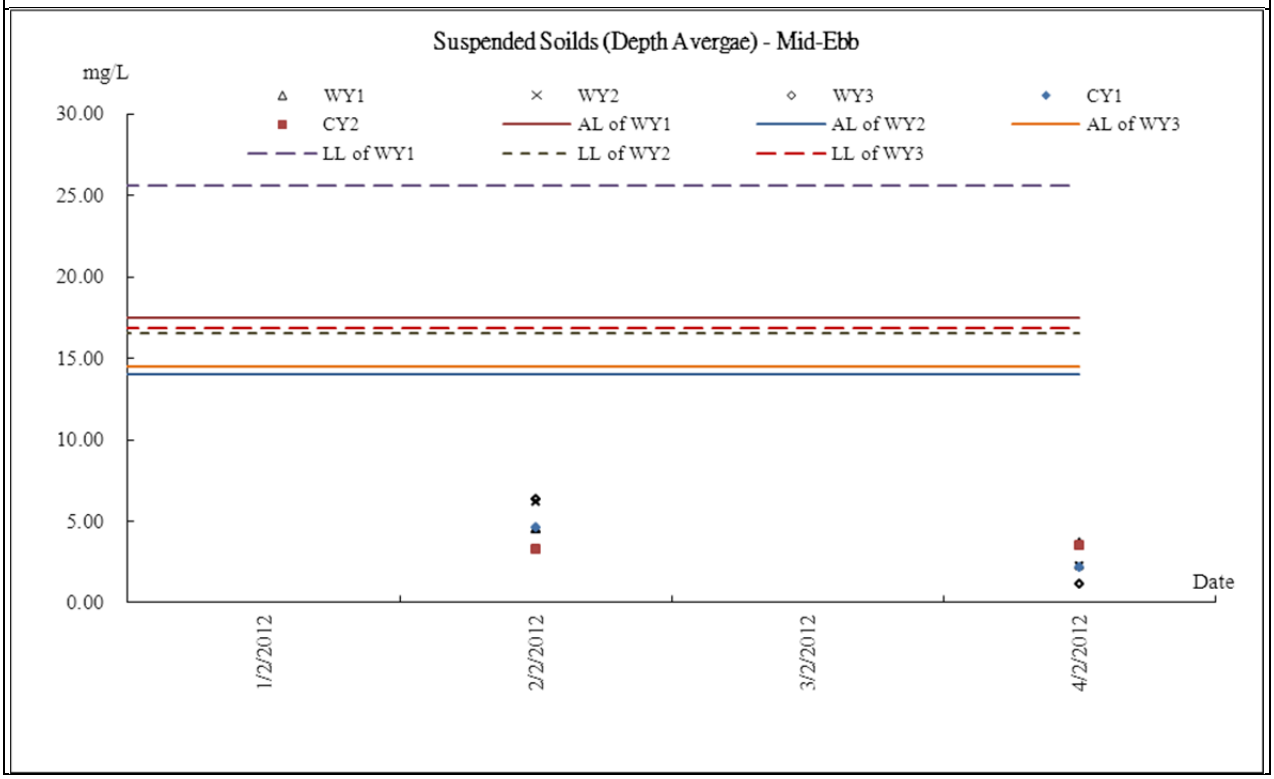


Marine Water Quality Monitoring – Mid Ebb Tide

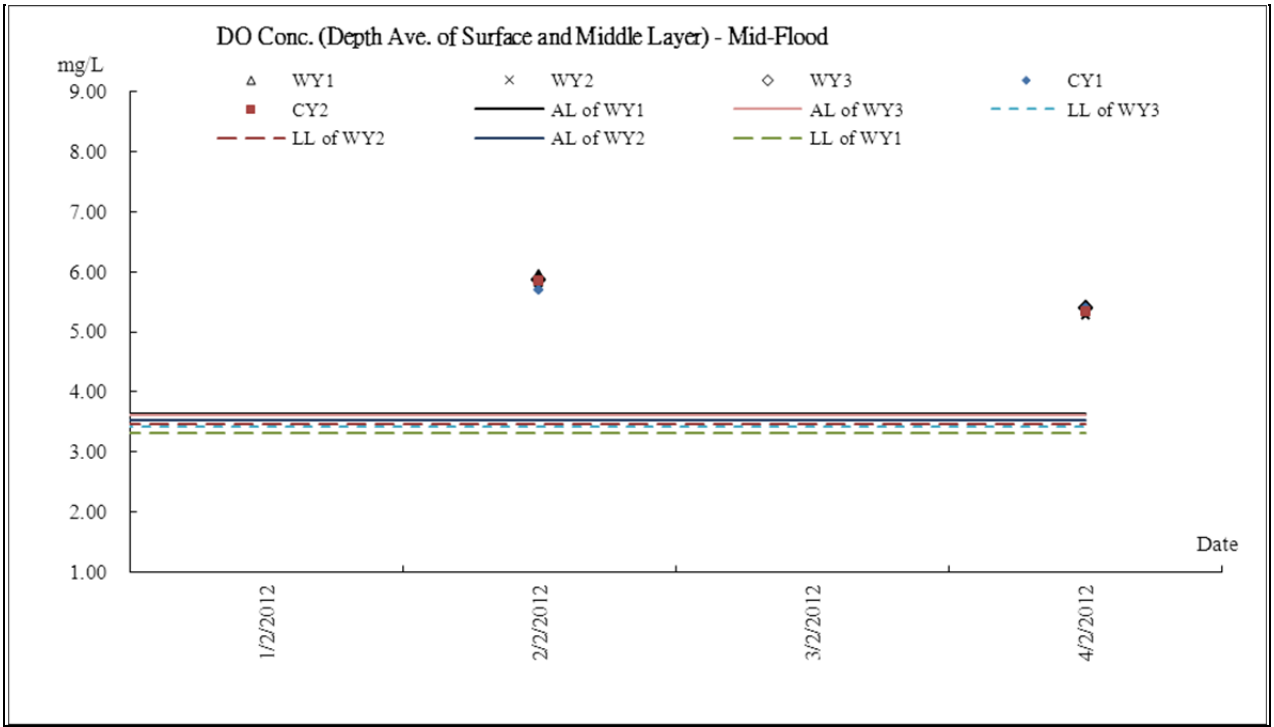


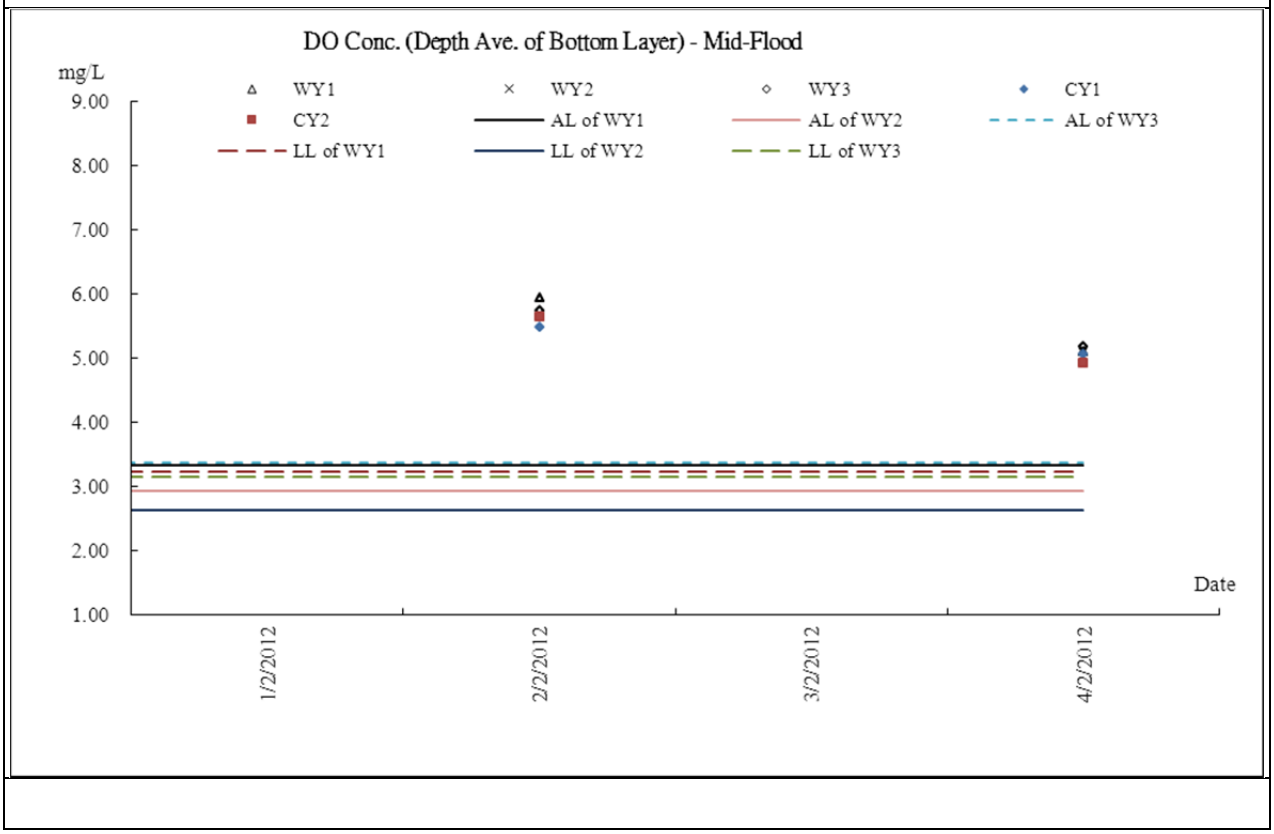


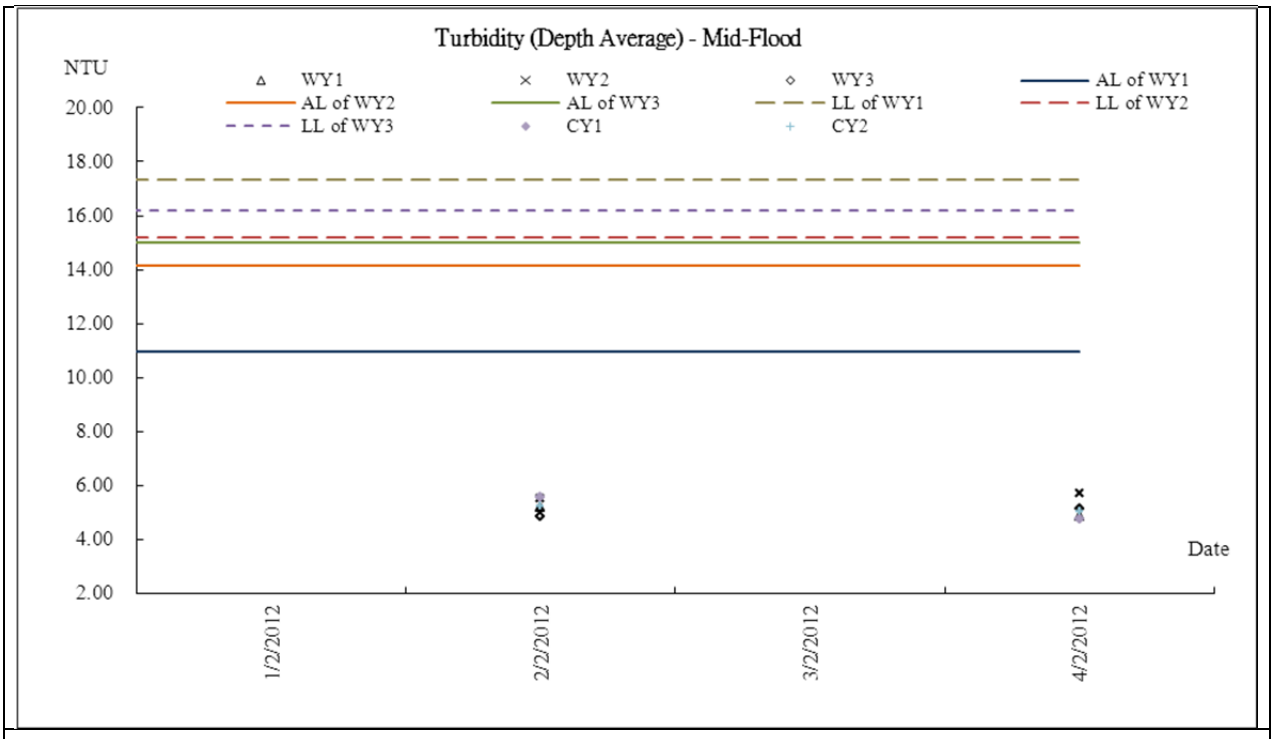

Turbidity (Depth Average) - Mid-Ebb
NTU
25.00
20.00
15.00
10.00
5.00
0.00
WY1
WY2
WY3
AL of WY1
AL of WY2
AL of WY3
LL of WY1
LL of WY2
LL of WY3
CY1
CY2
Date
1/2/2012
2/2/2012
3/2/2012
4/2/2012

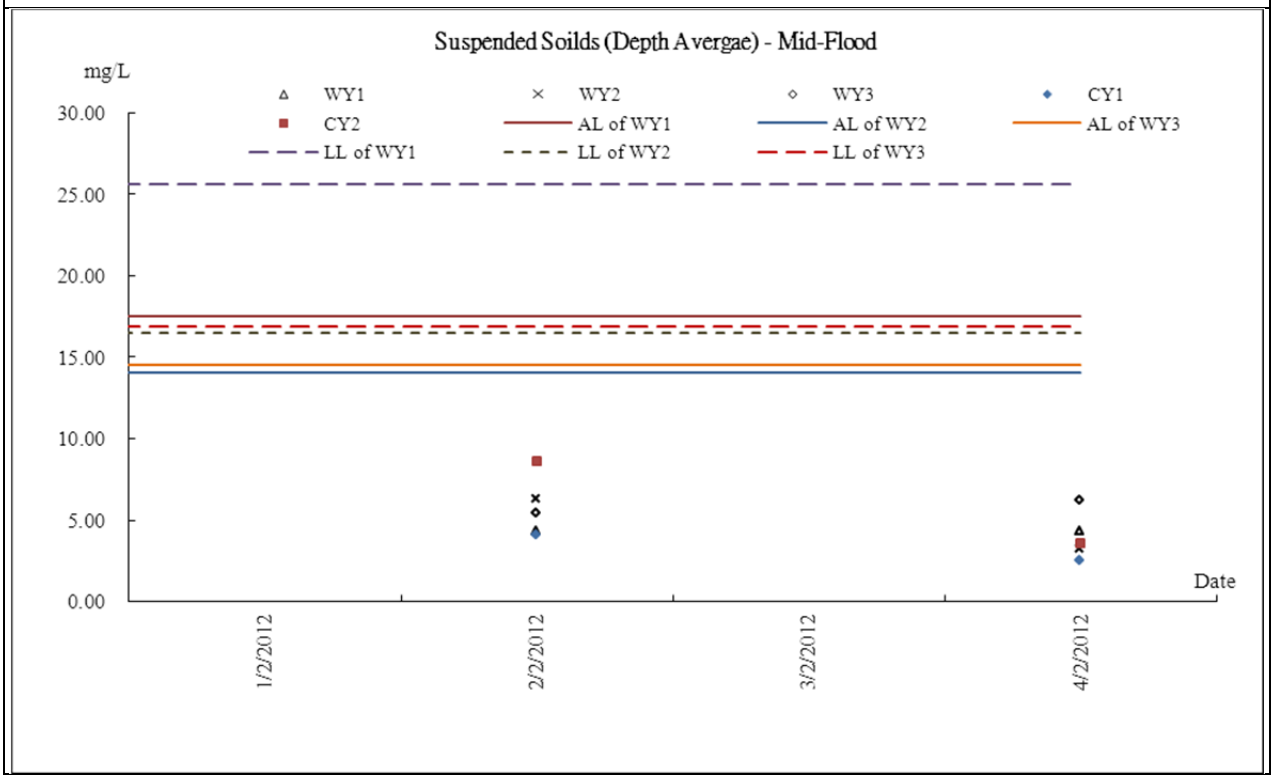

Suspended Soilds (Depth Avergae) - Mid-Ebb
mg/L
30.00
25.00
20.00
15.00
10.00
5.00
0.00
WY1
WY2
WY3
CY1
CY2
AL of WY1
AL of WY2
AL of WY3
LL of WY1
LL of WY2
LL of WY3
Date
1/2/2012
2/2/2012
3/2/2012
4/2/2012

Marine Water Quality Monitoring – Mid Flood Tide






Turbidity (Depth Average) - Mid-Flood
NTU
WY1
WY2
WY3
AL of WY1
AL of WY2
AL of WY3
LL of WY1
LL of WY2
LL of WY3
CY1
CY2
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
Date
1/2/2012
2/2/2012
3/2/2012
4/2/2012


Suspended Soilds (Depth Avergae) - Mid-Flood
mg/L
WY1
WY2
WY3
CY1
CY2
AL of WY1
AL of WY2
AL of WY3
LL of WY1
LL of WY2
LL of WY3
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Date
1/2/2012
2/2/2012
3/2/2012
4/2/2012

Appendix I

Meteorological Information

Meteorological Data Extracted from HKO during the Reporting Period

Date		Weather
1-Feb-12	Wed	Sunny intervals.
2-Feb-12	Thu	Cloudy with a few mist patches
3-Feb-12	Fri	Moderate easterly winds
4-Feb-12	Sat	Mainly cloudy.
5-Feb-12	Sun	Moderate easterly winds
6-Feb-12	Mon	Moderate easterly winds, fresh at times offshore
7-Feb-12	Tue	Mainly cloudy.
8-Feb-12	Wed	Moderate easterly winds
9-Feb-12	Thu	Mainly cloudy.
10-Feb-12	Fri	Cloudy with a few mist patches
11-Feb-12	Sat	Cloudy with one or two rain patches.
12-Feb-12	Sun	Cloudy with a few mist patches
13-Feb-12	Mon	Cloudy with one or two rain patches and coastal fog.
14-Feb-12	Tue	Cloudy with one or two rain patches.
15-Feb-12	Wed	Moderate easterly winds.
16-Feb-12	Thu	Moderate easterly winds
17-Feb-12	Fri	Sunny intervals.
18-Feb-12	Sat	Cloudy with a few mist patches
19-Feb-12	Sun	Sunny intervals.
20-Feb-12	Mon	Moderate easterly winds.
21-Feb-12	Tue	Mainly cloudy with one or two rain patches.
22-Feb-12	Wed	Humid with fog.
23-Feb-12	Thu	Cloudy with a few rain patches
24-Feb-12	Fri	Sunny intervals.
25-Feb-12	Sat	Moderate to fresh northerly winds
26-Feb-12	Sun	Fresh easterly winds
27-Feb-12	Mon	Moderate to fresh northerly winds
28-Feb-12	Tue	Mainly cloudy with one or two rain patches.
29-Feb-12	Wed	Cloudy with a few rain patches at first

Appendix J

Monthly Summary Waste Flow Table

Name of Department: ~~**ArchSD/CEDD/DSD/EMSD/HyD/WSD**~~ **Contract No.:** **DC/2009/13**

Monthly Summary Waste Flow Table for February 2012

Month	Actual Quantities of Inert C&D Materials Generated Monthly												Actual Quantities of C&D Wastes Generated Monthly									
	Total Quantity Generated (a) = (c)+(d)+(e)		Hard Rock and Large Broken Concrete (b)		Reused in the Contract (c)		Reused in other Projects (d)		Disposed as Public Fill (e)		Imported Fill (f)		Metals		Paper/ cardboard packaging		Plastics		Chemical Waste		Others, e.g. rubbish	
	(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 tonne)	
	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW
2011	10.430	33.543	0.160	0.407	0.740	1.059	0.000	32.454	9.690	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	206.870	46.690
Jan	0.000	3.311	0.000	0.000	0.000	0.000	0.000	3.311	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	22.530	5.090
Feb	0.170	6.271	0.000	0.000	0.000	0.000	0.000	6.271	0.170	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	14.860	5.660
Mar																						
Apr																						
May																						
Jun																						
Sub-total	10.599	43.125	0.160	0.407	0.740	1.059	0.000	42.036	9.860	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	244.260	57.440
Jul																						
Aug																						
Sep																						
Oct																						
Nov																						
Dec																						
Total	10.599	43.125	0.160	0.407	0.740	1.059	0.000	42.036	9.860	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	244.260	57.440
	53.724		0.567		1.799		42.036		9.890		0.000		0.000		0.000		0.000		0.000		301.700	

Remark: Assume 1.0 m^3 vehicle dump load = 1.6 tonnes C&D materials

YSW: Yung Shue Wan

SKW: Sok Kwu Wan

Appendix K

Weekly Site Inspection Checklist

Environmental Team – Weekly Site Inspection and Audit Checklist – Yung Shue Wan

AUES

Project: TCS/00512/09

Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwu Wan

Inspected by

ETL/ ET's Representative: Ray Chang

RE's Representative: C.C. Chang

Contractor's Representative: Edwin Leung

IEC's Representative: Selina Leung

Checklist No. TCS512A-

Date: 7-2-2012

Time: 12:00pm

PART A: **GENERAL INFORMATION**

Environmental Permit No.

Weather: ☐ Sunny ☑ Fine ☐ Cloudy ☐ Rainy

☑ EP- 282/2007

Temperature: ____ °C

Humidity: ☐ High ☑ Moderate ☐ Low

Wind: ☐ Strong ☐ Breeze ☑ Light ☐ Calm

Area Inspected

1 Yung Shue Wan

PART B: **SITE AUDIT**

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

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

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

Note: Not Obs.: Not Observed; Yes: Compliance; No: Non-Compliance; Follow Up: Observations requiring follow-up actions N/A: Not Applicable		Not Obs.	Yes	No	Follow Up	N/A	Photo/ Remarks
5.02	Are retained and transplanted trees properly protected?	☐	☐	☐	☐	☑	Refer to Monthly EM&A report - Appendix M
5.03	Are surgery works carried out for the damaged trees?	☐	☐	☐	☐	☑	
5.04	Is damage to trees outside site boundary due to construction activities avoided?	☐	☑	☐	☐	☐	
5.05	Is the night-time lighting controlled to minimize glare to sensitive receivers?	☐	☑	☐	☐	☐	
Section 7: Others							
7.01	Are relevant Environmental Permits posted at all vehicle site entrances/exits?	☐	☑	☐	☐	☐	
7.02	Are the warning sign or larvicidal oil record shown clearly at the construction site?	☐	☑	☐	☐	☐	

(Yung Shue Wan)

Remarks

Findings of Site Inspection (7-2-204 **):** **Follow up:** 14-2-2014

Chemical waste inside desilting tank to be removed (should be rectified within one week)

~~Chemical~~ The issue has been rectified.

IEC's representative	*RE's representative*	*ET's representative*	*EO's representative*	*Contractor's representative*
(Selina Leung)	(CC Cheung)	(Ray Cheung)	(H.S. Leung)	( )

Environmental Team – Weekly Site Inspection and Audit Checklist – Yung Shue Wan

AUES

Project: TCS/00512/09

Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwu Wan

Inspected by

Checklist No. TCS512A-

ETL/ ET's Representative: Ray Chang

RE's Representative: C.C. Cheung

Contractor's Representative: Edwin Leung

IEC's Representative:

Date: 14-2-2012

Time: 11 am

PART A: **GENERAL INFORMATION**

Environmental Permit No.

Weather: ☐ Sunny ☐ Fine ☑ Cloudy ☐ Rainy

☑ EP- 282/2007

Temperature: ☐ °C

Humidity: ☑ High ☐ Moderate ☐ Low

Wind: ☐ Strong ☐ Breeze ☑ Light ☐ Calm

Area Inspected

1 Yung Shue Wan

PART B: **SITE AUDIT**

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

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

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

Note:	Not Obs.: Not Observed; Yes: Compliance; No: Non-Compliance; Follow Up: Observations requiring follow-up actions N/A: Not Applicable	Not Obs.	Yes	No	Follow Up	N/A	Photo/ Remarks
5.02	Are retained and transplanted trees properly protected?	☐	☐	☐	☐	☑	Refer to Monthly EM&A report - Appendix M
5.03	Are surgery works carried out for the damaged trees?	☐	☐	☐	☐	☑	
5.04	Is damage to trees outside site boundary due to construction activities avoided?	☐	☑	☐	☐	☐	
5.05	Is the night-time lighting controlled to minimize glare to sensitive receivers?	☐	☑	☐	☐	☐	
Section 7: Others							
7.01	Are relevant Environmental Permits posted at all vehicle site entrances/exits?	☐	☑	☐	☐	☐	
7.02	Are the warning sign or larvicidal oil record shown clearly at the construction site?	☐	☑	☐	☐	☐	

(Yung Shue Wan)

Remarks

Findings of Site Inspection (14-2-2012 **):** **Follow up:**

No issue has been found during inspection.

IEC's representative	*RE's representative*	*ET's representative*	*EO's representative*	*Contractor's representative*
( )	(C.C. Cheung)	(Ray Cheung)	(H.S. Leung)	( )

Environmental Team – Weekly Site Inspection and Audit Checklist – Yung Shue Wan

AUES

Project: TCS/00512/09
Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwu Wan

Inspected by
ETL/ ET's Representative: Ray Cheung
RE's Representative: C.Y. Kwok
Contractor's Representative: Edwin Leung
IEC's Representative:

Checklist No. TCS512A-

Date: ~~Hour~~ 21-2-2012 **Time:** 11am

PART A: **GENERAL INFORMATION**

Environmental Permit No.
☑ EP- 282/2007

Weather: ☐ Sunny ☑ Fine ☐ Cloudy ☐ Rainy
Temperature: ____ °C
Humidity: ☐ High ☑ Moderate ☐ Low
Wind: ☐ Strong ☐ Breeze ☑ Light ☐ Calm

Area Inspected
1 Yung Shue Wan

PART B: **SITE AUDIT**

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

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

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

Note:	Not Obs.: Not Observed; Yes: Compliance; No: Non-Compliance; Follow Up: Observations requiring follow-Up actions N/A: Not Applicable	Not Obs.	Yes	No	Follow Up	N/A	Photo/ Remarks
5.02	Are retained and transplanted trees properly protected?	☐	☐	☐	☐	☑	Refer to Monthly EM&A report - Appendix M
5.03	Are surgery works carried out for the damaged trees?	☐	☐	☐	☐	☑	
5.04	Is damage to trees outside site boundary due to construction activities avoided?	☐	☑	☐	☐	☐	
5.05	Is the night-time lighting controlled to minimize glare to sensitive receivers?	☐	☑	☐	☐	☐	
Section 7: Others							
7.01	Are relevant Environmental Permits posted at all vehicle site entrances/exits?	☐	☑	☐	☐	☐	
7.02	Are the warning sign or larvicidal oil record shown clearly at the construction site?	☐	☑	☐	☐	☐	

(Yung Shue Wan)

Remarks

Findings of Site Inspection (21-2-2012 **):** **Follow up:**

No issues was observed during site inspection

IEC's representative	*RE's representative*	*ET's representative*	*EO's representative*	*Contractor's representative*
( )	(a.y.chow)	(Ray Chung)	(H.S. Leung)	( )

Environmental Team – Weekly Site Inspection and Audit Checklist – Yung Shue Wan

AUES

Project: TCS/00512/09

Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwu Wan

Date: 28-2-2012

Inspected by

ETL/ ET's Representative: Ray Cheung

RE's Representative: C.C. Cheung

Contractor's Representative: Edwin Leung

IEC's Representative:

Time: 11am

Checklist No. TCS512A-

PART A: **GENERAL INFORMATION**

Weather: ☐ Sunny ☐ Fine ☐ Cloudy ☑ Rainy

Temperature: ☐ °C

Humidity: ☑ High ☐ Moderate ☐ Low

Wind: ☑ Strong ☐ Breeze ☐ Light ☐ Calm

Environmental Permit No.

☑ EP- 282/2007

Area Inspected

1 Yung Shue Wan

PART B: **SITE AUDIT**

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

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

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

Note:	Not Obs.: Not Observed; Yes: Compliance; No: Non-Compliance; Follow Up: Observations requiring follow-up actions N/A: Not Applicable	Not Obs.	Yes	No	Follow Up	N/A	Photo/ Remarks
5.02	Are retained and transplanted trees properly protected?	☐	☐	☐	☐	☑	Refer to Monthly EM&A report - Appendix M
5.03	Are surgery works carried out for the damaged trees?	☐	☐	☐	☐	☑	
5.04	Is damage to trees outside site boundary due to construction activities avoided?	☐	☑	☐	☐	☐	
5.05	Is the night-time lighting controlled to minimize glare to sensitive receivers?	☐	☑	☐	☐	☐	
Section 7: Others							
7.01	Are relevant Environmental Permits posted at all vehicle site entrances/exits?	☐	☑	☐	☐	☐	
7.02	Are the warning sign or larvicidal oil record shown clearly at the construction site?	☐	☑	☐	☐	☐	

(Yung Shue Wan)

Remarks

Findings of Site Inspection (28-2-2012):

~~The silt to be removed from~~ stagnant water

~~the desilting tanks which are not in use.~~

~~(adjacent to storing yard)~~

~~Remark 1~~

The stagnant water in the sedimentation tank needed to apply larvicial oil and be ~~covert~~ covered.

(adjacent to storing yard)

Remark 1

Follow up:

The tank was sprayed larvicial oil and covered.

6-3-2012

Ray

IEC's representative	*RE's representative*	*ET's representative*	*EO's representative*	*Contractor's representative*
( )	(C.C. CHEUNG)	(Ray Cheung)	(H.S. Leung)	( )

Appendix L

Implementation Schedule of Mitigation Measures

Implementation Schedule of Air Quality Measures

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages**			Relevant Legislation & Guidelines
					D	C	O	
Construction Phase								
2.3.18	2.10.2	Adopting the following good site practices and follow the dust control requirements of the Air Pollution Control (Construction Dust) Regulation: • Stockpiles of imported material kept on site should be contained within hoardings, dampened and / or covered during dry and windy weather; • Material stockpiled alongside trenches should be covered with tarpaulins whenever works are close to village houses; • Water sprays should be used during the delivery and handling of cement, sands, aggregates and the like. • Any vehicle used for moving sands, aggregates and construction waste should have properly fitting side and tail boards. Materials should not be loaded to a level higher than the side and tail boards, and should be covered by a clean tarpaulin.	Work site / during construction	All contractors		√		TM- EIAO, APCO, Air Pollution Control (Construction Dust) Regulation
2.10.3	Section 2	1 hour and 24 hour dust monitoring and site audit	Designated air monitoring locations / throughout construction period	Contractor/ Environmental Team		√		EM&A Manual

* All recommendations and requirements resulted during the course of EIA Process, including ACE and/or accepted public comment to the proposed project.
** D=Design, C=Construction, O=Operation
N/A Not applicable

Implementation Schedule of Noise Measures

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location/Timing	Implementation Agent	Implementation Stages **			Relevant Legislation & Guidelines
					D	C	O	
Construction Phase								
\2.4.16	3.8.2	Implementation of following measures during the sewer construction: • Use of quiet PME or method; • Restriction on the number plant (1 item for each type of plant); and • Good Site Practices ➢ Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme. ➢ Mobile plant, if any, should be sited as far away from NSRs as possible. ➢ Machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum. ➢ Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs. ➢ Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities.	Work site /during the construction of Sewer.	Contractor		√		EIAO-TM, NCO
2.10.5 to 2.10.9	Section 35	Noise monitoring	Designated noise monitoring locations / throughout construction period	Contractor/ Environmental Team		√		EM&A Manual

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N/A Not applicable

Implementation Schedule of Water Quality Control Measures

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location (duration /completion of measures)	Implementation Agent	Implementation Stages**			Relevant Legislation and Guidelines
					D	C	O	
Construction Phase								
2.5.23	4.12.1	No-dig method using Horizontal Directional Drilling (HDD) would be used for the installation of main portion of outfall pipes	Marine works site / During construction of submarine outfall	Contractor		√		
4.5.38	4.12.3	Dredging Works Implementation of following measures during the dredging works: • dredging should be undertaken using closed grab dredgers with a maximum total production rate of 55m^3/hr; • deployment of 2-layer silt curtains with the first layer enclosing the grab and the second layer at around 50m from the dredging area while dredging works are in progress; • dredging operation should be undertaken during ebb tide only; • all vessels should be sized such that adequate clearance (i.e. minimum clearance of 0.6m) is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash; • all pipe leakages should be repaired promptly and plant should not be operated with leaking pipes; • excess material should be cleaned from the decks and exposed fittings of barges before the vessel is moved; • adequate freeboard (i.e. minimum of 200mm) should be maintained on barges to ensure that decks are not washed by wave action; • all barges should be fitted with tight fitting seals to their bottom openings to prevent leakage of material; • loading of barges should be controlled to prevent splashing of dredged material to the surrounding water, and barges should not be filled to a level which will cause the overflow of materials or polluted water during loading or transportation; and	Marine works site and at the identified water sensitive receivers/ During construction	Contractor		√		

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location (duration /completion of measures)	Implementation Agent	Implementation Stages**			Relevant Legislation and Guidelines
					D	C	O	
		• the decks of all vessels should be kept tidy and free of oil or other substances that might be accidentally or otherwise washed overboard.						
2.5.39	4.12.4	<u>Construction Run-off and Drainage</u> Implementation of the following site practices outlined in ProPECC PN 1/94 for "Construction Site Drainage" • Provision of perimeter channels to intercept storm-runoff from outside the site. These should be constructed in advance of site formation works and earthworks. • Works programmes should be designed to minimize works areas at any one time, thus minimizing exposed soil areas and reducing the potential for increased siltation and runoff. • Sand / silt removal facilities such as sand traps, silt traps and sediment basins should be provided to remove the sand / silt particles from run-off. These facilities should be properly and regularly maintained. These facilities should be carefully planned to ensure that they would be installed at appropriate locations to capture all surface water generated on site. • Careful programming of the works to minimise soil excavation works during rainy seasons. • Exposed soil surface should be protected by paving or hydroseeding as soon as possible to reduce the potential of soil erosion. • Trench excavation should be avoided in the wet season, and if necessary, these should be excavated and backfilled in short sections. • Open stockpiles of construction materials on site should be covered with tarpaulin or similar fabric	Construction works sites	Contractor		√		ProPECC PN 1/94
2.5.39	4.12.5	<u>General Construction Activities</u> • Debris and rubbish generated on-site should be collected, handled and disposed of properly to avoid entering the nearby coastal waters and stormwater drains.	Construction works sites	Contractor		√		

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location (duration /completion of measures)	Implementation Agent	Implementation Stages**			Relevant Legislation and Guidelines
					D	C	O	
		• All fuel tanks and storage areas should be provided with locks and be sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank. • Open drainage channels and culverts near the works areas should be covered to block the entrance of large debris and refuse.						
2.5.39	4.12.6	Wastewater Arising from Workforce Portable toilets should be provided by the Contractors, where necessary, to handle sewage from the workforce. The Contractor should also be responsible for waste disposal and maintenance practices.	Construction works sites	Contractor		√		
2.10.10	Section 4	Water quality monitoring	Designated water monitoring locations/ throughout construction period	Contractor		√		EM&A Manual

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N/A Not applicable

Implementation Schedule of Sediment Contamination Mitigation Measures

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages**			Relevant Legislation & Guidelines
					D	C	O	
2.9.24	5.2.1	Carrying out Sediment Quality Investigation	Marine works site / prior to construction	DSD	√			WBTC No. 34/2002
2.9.23	5.2.1	Follow the requirement and procedures for dredged mud disposal specified under the WBTC No. 34/2002.	Marine works site / during dredging works	Contractor		√		WBTC No. 34/2002
2.9.23	5.2.2	Implement appropriate dredging methods which have been incorporated into the recommended water quality mitigation measures.	Marine works site, during dredging works	Contractor		√		
2.9.23	5.2.3	During the transportation and disposal of the dredged sediment, the following measures should be taken: • Bottom opening of barges should be fitted with tight fitting seals to prevent leakage of material. Excess material should be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved. • Monitoring of the barge loading should be conducted to ensure that loss of material does not take place during transportation. Transport barges or vessels should be equipped with automatic self monitoring devices as specified by the DEP.	Marine works site and at the identified sensitive receivers	Contractor		√		

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N/A Not applicable

Implementation Schedule of Solid Waste Management Measures

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages **			Relevant Legislation & Guidelines
					D	C	O	
Construction Phase								
2.9.14	6.6.2	Good site practices • Nomination of an approved person, such as a site manager, to be responsible for implementation of good site practices, arranging for collection and effective disposal to an appropriate facility, of all wastes generated at the site • Training (proper waste management and chemical handling procedure) should be provided for site staffs • Appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers. • Provision of sufficient waste disposal points and regular collection for disposal. • Separation of chemical wastes for special handling and appropriate treatment at the Chemical Waste Treatment Facility. • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors. • Maintain records of the quantities of wastes generated, recycled and disposed.	Work sites/During construction	Contractor		√		Waste Disposal Ordinance (Cap.54)
2.9.15	6.2.3	The Contractor will be required to open a billing account under the Construction Waste Disposal Charging Scheme, and to pay for disposal of all construction waste. The construction waste will be sent to a designated reception facility, which in this case will be YSW RTS, where drivers must present a valid chit for disposal of each load.	Work sites/During construction	Contractor		√		Waste disposal (Amendment) Ordinance 2004
2.9.16	6.2.4	Recommendations to achieve waste reduction include: • segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal; • to encourage collection of aluminium cans by individual collectors, separate labelled bins should be provided to	Work sites/During construction	Contractor		√		WBTC No. 4/98, 5/98

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages **			Relevant Legislation & Guidelines
					D	C	O	
		segregate this waste from other general refuse generated by the work force; • any unused chemicals or those with remaining functional capacity should be recycled; • use of reusable non-timber formwork to reduce the amount of C&D material; • prior to disposal of C&D waste, it is recommended that wood, steel and other metals should be separated for re-use and / or recycling to minimise the quantity of waste to be disposed of to landfill; • proper storage and site practices to minimise the potential for damage or contamination of construction materials; and • plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.						
2.9.18	6.2.5	<u>General Site Wastes</u> • A collection area for construction site waste should be provided where waste can be stored prior to removal from site • An enclosed and covered area for the collection of the waste is recommended to reduce 'wind blow' of light material	Work sites/During construction	Contractor		√		Public Health and Municipal Services Ordinance (Cap. 132)
2.9.19	6.2.6 and 6.2.7	<u>Chemical Wastes</u> • After use, chemical waste should be handled according to the Code of Practice on the Package, Labelling and Storage of Chemical Wastes • Any unused chemicals or those with remaining functional capacity should be recycled • Waste should be properly stored on site within suitably designed containers and should be collected by an approved licensed waste collectors for disposal at the Chemical Waste Treatment Facility or other licenced facility in accordance with the Waste Disposal (Chemical Waste) (General) Regulation under the Waste Disposal Ordance.	Work sites/During construction	Contractor		√		Waste Disposal (Chemical Waste) (General) Regulation, Code of Practice on the Packaging Labelling and Storage of Chemical Wastes

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages **			Relevant Legislation & Guidelines
					D	C	O	
		• Any service shop and minor maintenance facilities should be located on hard standing within a bunded area, and sumps and oil interceptors should be provided. • Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should be undertaken within the designated areas equipped control these discharges						
2.9.21 and 2.9.22	6.2.8 and 6.2.9	<u>Construction and Demolition Material</u> • The C&D waste should be separated on-site into three categories: ➢ public fill, the inert portion of the C&D material (e.g. concrete and rubble), which should be re-used on-site or disposed of at a public filling area; ➢ C&D waste for re-use and / or recycling, the non-inert portion of the C&D material, (e.g. steel and other metals, woods, glass and plastic); ➢ C&D waste which cannot be re-used and / or recycled (e.g. wood, glass and plastic) • Where possible, inert material should be re-used on-site • Where practicable, steel and other metals should be separated for re-use and/or recycling prior to disposal of C&D material	During all construction phases	Contractors		√		WBTC No. 4/98, 5/98, 21/2002, 25/99, 12/2000

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N/A Not applicable

Implementation Schedule of Ecological Impact Measures

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages			Relevant Legislation & Guidelines
					D	C	O	
Construction Phase								
2.10.11 and 2.10.12	7.2 and 7.3	Carry out monitoring of corals before, during and after marine works.	Work sites / during construction phase	Contractor		√		
2.6.45 to 2.6.48	7.6.1	Use horizontal directional drilling to avoid direct disturbance to corals	Marine works site / during dredging works	Contractor		√		
2.6.57 to 2.6.58	4.12.3	Deploying of 2-layer silt curtains with the first layer enclosing the grab an the second layer at around 50m from the dredging area while dredging works are in progress	All work sites / during construction phase	Contractor		√		
2.6.51	7.6.1	Fence off the slope stabilisation works area from surrounding shrubland and/ woodland, to prevent access to or disturbance of adjacent habitats. The works area should be as small as is possible, consistent with the requirements of the works.	STW/ During construction	Contractor		√		

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

Implementation Schedule of Fisheries Impact Measures

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages**			Relevant Legislation & Guidelines
					D	C	O	
2.5.37	4.12.4	Use of closed grab dredging and silt curtains around the immediate dredging area and low dredging rates as recommended in Water Quality of the EIA report	Marine works site, during dredging works	Contractor		√		TM on EIA Process

* All recommendations and requirements resulted during the course of EIA Process, including ACE and/or accepted public comment to the proposed project.
** D=Design, C=Construction, O=Operation
N/A Not applicable

Implementation Schedule of Landscape and Visual Impact Measures

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages **			Relevant Legislation & Guidelines
					D	C	O	
Construction Phase								
2.8.37	9.2.2	Careful and efficient transplanting of affected trees to temporary or final transplant location (the proposed tree to be transplanted is a semi-mature *Macaranga tanarius* and is located at the proposed Pumping Station P2 location).	All sites	Contractor		√		WBTC No. 14/2002
2.8.37	9.2.2	Short excavation and immediate backfilling sections upon completion of works to reduce active site area.	All sites	Contractor		√		
2.8.37	9.2.2	Screening of site construction works by use of hoarding that is appropriate to its site.	All sites	Contractor		√		WBTC No. 19/2001
2.8.37	9.2.2	Conservation of topsoil for reuse.	All sites	Contractor		√		
2.8.30	9.2.2	Night-time light source from marine fleets should be directed away from the residential units.	Outfall area.	Contractor		√		

* All recommendations and requirements resulted during the course of EIA Process, including ACE and/or accepted public comment to the proposed project.
** D=Design, C=Construction, O=Operation
N/A Not applicable